

#2669

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING
PASSENGER CARS

1998 FORD ESCORT ZX2
2-DOOR SEDAN
NHTSA NO: MW0211

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: September 29, 1997

Report Date: October 7, 1997

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
OFFICE OF CRASHWORTHINESS STANDARDS
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				14. Sponsoring Agency Code NPS-10																			
15. Supplementary Notes																							
<p>16. Abstract</p> <p>A 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 1998 Ford Escort ZX2 2-Door to obtain new car assessment and research data indicant of FMVSS No. 214D performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on September 29, 1997.</p> <p>The impact velocity of the Moving Deformable Barrier (MDB) was 61.5 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 22.2°C. The target vehicle post test maximum crush was 416 mm at level 2. The test vehicle's performance follows:</p> <table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>DRIVER</u></th> <th style="text-align: center;"><u>PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">85.9</td> <td style="text-align: center;">44.3</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">99.2</td> <td style="text-align: center;">70.3</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">100.9</td> <td style="text-align: center;">73.8</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">100.0</td> <td style="text-align: center;">72.0</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">119.8</td> <td style="text-align: center;">126.5</td> </tr> </tbody> </table> <p>The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event. The post-test rollover was stopped prior to 90° rotation due to excessive stoddard spillage (3/4 gallon) from fuel filler cap.</p>							<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	85.9	44.3	Left Lower Rib (LLR) Accel., g	99.2	70.3	Lower Spine (T ₁₂) Accel., g	100.9	73.8	Thoracic Trauma Index (TTI)	100.0	72.0	Pelvis (PEV) Accel., g	119.8	126.5
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17. Key Words New Car Assessment Program (NCAP) FMVSS No. 214D Side Impact Dummy (SID) Occupant Side Impact Protection				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																			
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SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY98 NCAP Side Impact 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 1998 Ford Escort ZX2 2-Door.

This side impact test was conducted in accordance with the New Car Assessment Program Side Impact Testing Procedure dated October 1996.

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 1998 Ford Escort ZX2 2-Door was impacted on the left or driver's 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 38.2 mph (61.5 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 September 29, 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 driver and left rear designated seating positions according to instructions specified in the New Car Assessment Program Side Impact Laboratory Test Procedure which is dated October 1996. 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. Left Upper Rib (LUR) uniaxial accelerometer (Y-direction)
2. Left Lower Rib (LLR) uniaxial accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial accelerometer (Y-direction)
5. Head Center of Gravity triaxial accelerometers (X, Y, and Z-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 test:

Injury Criteria	Front SID	Rear SID
TTI (g)	100	72
Pelvis (g)	119.8	126.5

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: 1998/Ford/Escort/ZX2/2-Door
Vehicle NHTSA No.: MW0211 VIN: 3FALP1136WR135585
Vehicle Body Color: White Build Date: June 1997
Engine Data: 4 Cylinders; CID; 2.0 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 92 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
35 Psi REAR
Recommended Tire Size: P185/65R/14 or P185/60R/15
Tires on Test Vehicle: P185/65R/14 Manufacturer: Goodyear

Vehicle Capacity Data:

Number of Occupants: 2 Front; 2 Rear; 3rd Seat, 4 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 = 308.4 kg (A)
No. of Occupants x 68.04 kg. = 272.2 kg (B)
Cargo Capacity (A-B) = 36.2 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>366.5</u> kg	Right Rear	=	<u>213.6</u> kg
Left Front	=	<u>363.8</u> kg	Left Rear	=	<u>208.7</u> kg
TOTAL FRONT	=	<u>730.3</u> kg	TOTAL REAR	=	<u>422.3</u> kg
% of Total Vehicle Weight	=	<u>63</u> %;	% of Total Weight	=	<u>37</u> %
TOTAL WEIGHT	=	<u>1152.6</u> kg			

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	=	<u>1152.6</u>	kg
Cargo Carrying Capacity of Test Vehicle	=	<u>36.2</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>1350.2</u>	kg

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO (Fully Loaded):

Right Front	=	<u>373.8</u>	kg	Right Rear	=	<u>268.1</u>	kg
Left Front	=	<u>415.5</u>	kg	Left Rear	=	<u>292.6</u>	kg
TOTAL FRONT	=	<u>789.3</u>	kg	TOTAL REAR	=	<u>560.7</u>	kg
% of Total Weight	=	<u>58</u>	%	% of Total Weight	=	<u>42</u>	%
TOTAL TEST WEIGHT	=	<u>1350.0</u>	kg				

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 659 mm Left Front 669 mm Right Rear 669 mm Left Rear 663 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 652 mm Left Front 653 mm Right Rear 639 mm Left Rear 621 mm

TEST ATTITUDE:

Right Front 649 mm Left Front 657 mm Right Rear 642 mm Left Rear 635 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2495 mm

C.G. = 1005 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4055 mm

Centerline = 4455 mm

Left Side = 4055 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 220 mm

Test Position: 12th of 23 total locking position

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 20° (5th locking position)

SECOND POSITION SEAT:

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

Seat Back Adjustment Position: Non-adjustable

ADJUSTABLE STEERING COLUMN POSITION:

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

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

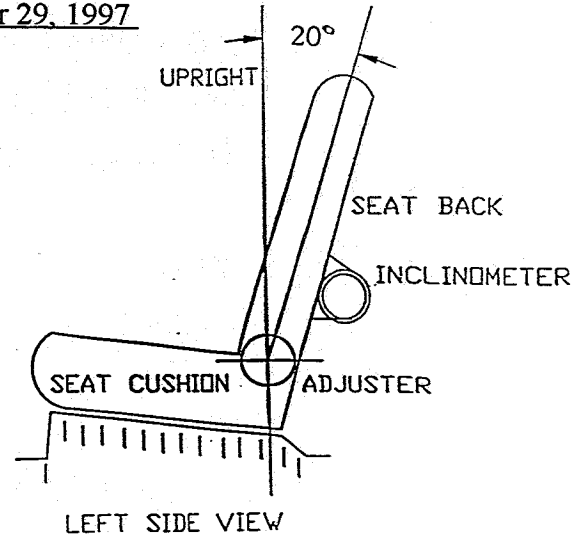
Fuel system usable capacity = 12.7 gallons

Test Volume: 11.8 gallons 93 % of capacity

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

Wheelbase: = 2495 mm

Impact Point is 308 mm rearward of front axle centerline



DATA SHEET NO. 2

TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997

Overall Length = 4455 mm; Overall Width = 1682 mm

TEST WEIGHT:

Right Front = 390.5 kg Right Rear = 263.5 kg

Left Front = 412.3 kg Left Rear = 278.1 kg

TOTAL FRONT = 802.8 kg TOTAL REAR = 541.6 kg

% of Total Weight = 60 % % of Total Weight = 40 %

TOTAL VEHICLE WEIGHT = 1344.4 kg

Wheelbase = 2495 mm

Longitudinal C.G. from Center of Front Axle = 1005 mm

Impact Angle with Respect to Impactor = 90 ° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (248 mm above ground) = 240 mm

2. LEVEL 2 (480 mm above ground) = 416 mm

3. LEVEL 3 (538 mm above ground) = 398 mm

4. LEVEL 4 (880 mm above ground) = 306 mm

5. LEVEL 5 (1284 mm above ground) = 107 mm

Maximum Post-Test Intrusion = 416 mm

OCCUPANTS:

	<u>Left Front Passenger</u>	<u>Left Rear Passenger</u>
Type of Dummy	<u>SID</u>	<u>SID</u>
Restraints Used	<u>type II belt</u> <u>and frontal airbag</u>	<u>type II belt</u>

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)

INSTRUMENTATION:

Number of Vehicle Data Channels:	=	<u>24</u>
Number of Cameras: Onboard Vehicle	=	<u>2</u>
Offboard Vehicle	=	<u>5</u>
Deformable Barrier	=	<u>2</u>
TOTAL	=	<u>9</u>

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

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>1105 mm</u>
C.G. Location From Center Line	=	<u>-12 mm</u>
C.G. Location Above Ground Level	=	<u>484 mm</u>

MDB WEIGHT:

Left Front	=	<u>440.0 kg</u>	Left Rear	=	<u>242.5 kg</u>
Right Front	=	<u>338.2 kg</u>	Right Rear	=	<u>331.9 kg</u>
TOTAL FRONT	=	<u>778.2 kg</u>	TOTAL REAR	=	<u>574.4 kg</u>
TOTAL MDB WEIGHT	=	<u>1352.9 kg</u>			

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

Impact Speed = Primary: 38.17 mph (61.4 kph) Secondary: 38.23 mph (61.5 kph)

CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A Top of Stack (813 mm) = 221 mm
2. Row B Mid Stack (686 mm) = 184 mm
3. Row C Top of Bumper (533 mm) = 141 mm
4. Row D Center of Bumper (432 mm) = 190 mm

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door
Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>to window sill and headrest</u>	<u>to C-post and rear window</u>
Arm	<u>to rear of front door</u>	<u>to trim panel</u>
Pelvis	<u>to armrest</u>	<u>to trim panel armrest</u>
Left Knee	<u>to mid door</u>	<u>to trim panel</u>
Right Knee	<u>none observed</u>	<u>to left knee</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: 3 mm rearward Vertical: 2 mm high

ARM REST LOCATIONS:

Front: 220 mm from bottom of window
Rear: 280 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 61 mm Front Seat Cushion: 123 mm

Left Rear Seat Back: 15 mm Rear Seat Cushion: 207 mm

GLAZING DAMAGE:

Driver door glazing broken. Windshield cracked.

PILLAR PERFORMANCE:

No separation noted

SILL SEPARATION:

No separation noted

AIRBAG DEPLOYMENT STATUS:

	<u>DRIVER</u>	<u>REAR PASSENGER</u>
Front:	<u>No</u>	<u>No</u>
Side:	<u>None</u>	<u>None</u>

OTHER NOTABLE IMPACT EFFECTS:

Fuel spillage from fuel filler cap during static rollover. Frontal airbags did not deploy

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

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

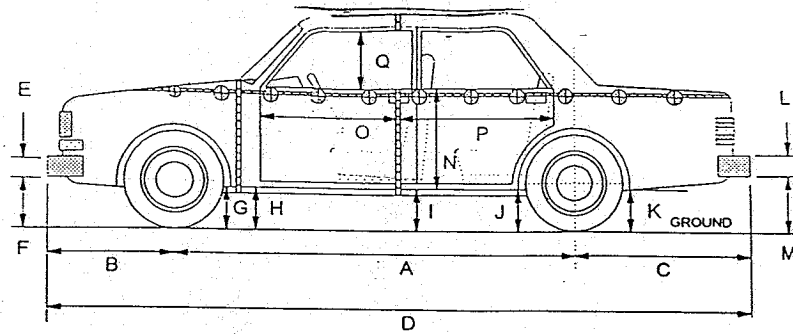
Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997

	Front Dummy ID # 271				Rear Dummy ID # 272			
	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								
Left Upper Rib (LUR) Y	85.9	25	-26.2	69	44.3	41	-7.4	121
Left Lower Rib (LLR) Y	99.2	26	-17.4	79	70.3	39	-13.3	59
SPINE ACCELERATIONS								
Lower Lateral Y	100.9	30	-39.5	59	73.8	38	-31.3	66
PELVIS ACCELERATIONS								
Lateral Y	119.8	25	-26.1	49	126.5	32	-16.0	54

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

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



LEFT SIDE VIEW

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)

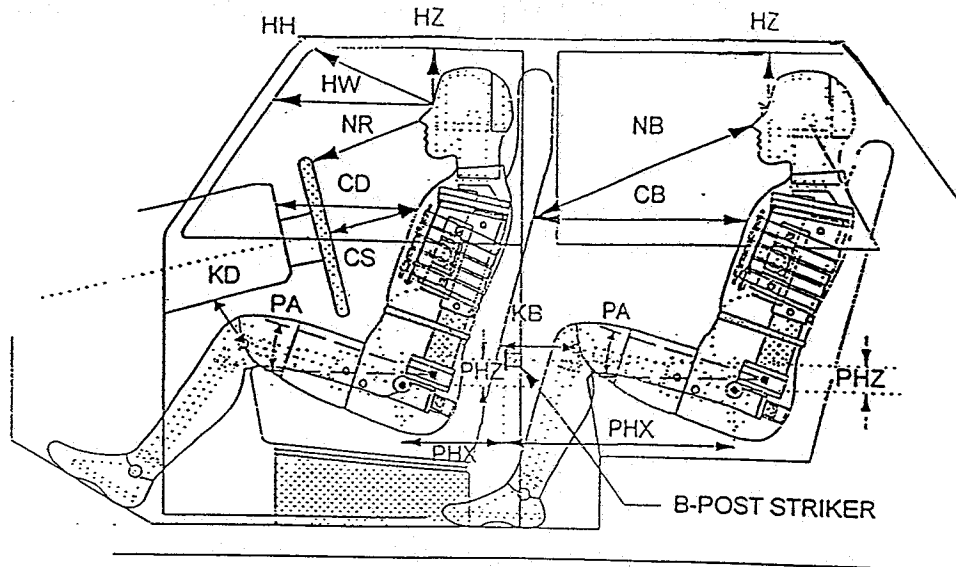
	PRE-TEST	POST-TEST	Δ CHANGE
A	2495	2478	17
B	980	950	30
C	980	972	8
D	4455	4400	55
E	143	145	2
F	398	424	26
G	180	198	18
H	183	202	19
I	172	200	28
J1/J2	177/170	214/205	37/35
K	268	288	20
L	178	180	2
M	374	390	16
N	666	533	133
O	790	778	12
P	503	502	1
Q	450	412	38
R	4055	4060	5
S	4055	4044	11
T	1682	1309	373

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

NHTSA NO.: MW0211 Test Date: September 29, 1997



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

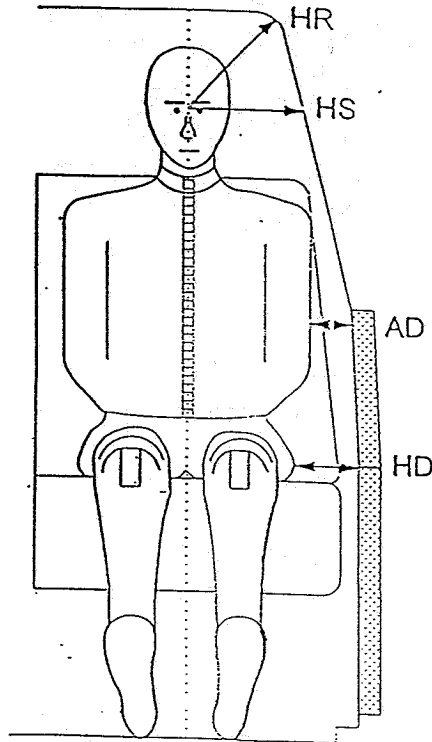
	DRIVER SID ID # 271		LEFT REAR PASSENGER SID ID # 272
HH	377	HZ	100
HW	588	NB	555
HZ	152	CB	460
NR	469	KBL (KBA)	198 (4.5°)
CD	536	KBR (KBA)	188 (2.8°)
CS	353	PA°	400
KDL(KDA°)	172 (14.4°)	PHX	149
KDR(KDA°)	174 (16.3°)	PHZ	23.5
PA°	23.8°		
PHX	430		
PHZ	145		

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: 1998/Ford/Escort/ZX2/2-Door

NHTSA NO.: MW0211 Test Date: September 29, 1997



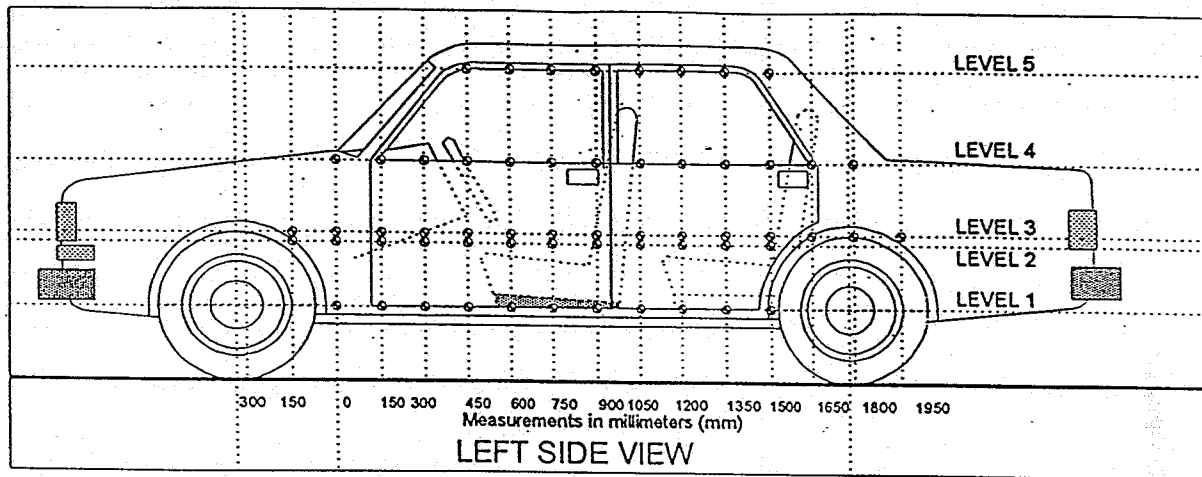
NOTE: All dimensions are in mm

	DRIVER SID ID # 271	LEFT REAR PASSENGER SID ID # 272
HR	190	198
HS	276	250
AD	68	60
HD	132	108

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

NHTSA NO.: MW0211 Test Date: September 29, 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>248</u> mm
Level 2 @ Occupant H-Point	= <u>480</u> mm
Level 3 @ Mid Door	= <u>538</u> mm
Level 4 @ Window Sill	= <u>880</u> mm
Level 5 @ Window Top	= <u>1284</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)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150	678	735	57
300	676	805	129
450	678	829	151
600	677	842	165
750	676	859	183
900	673	870	197
1050	671	881	210
1200	673	904	231
1350	664	904	240
1500	651	866	215
1650	642	829	187
1800	639	787	148

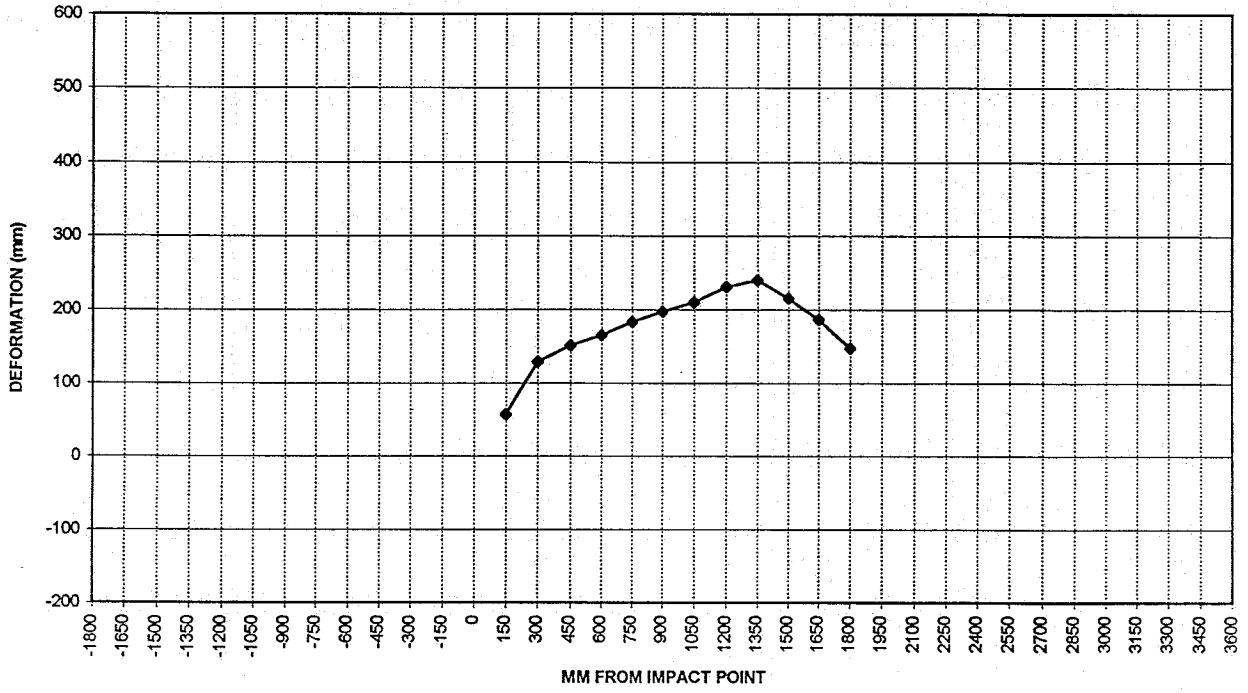
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 1 - Axle Centerline		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950			
2100			
2250			
2400			
2550			
2700			
2850			
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 2 - Occupant H-Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900	680	688	8
-750	649	662	13
-600			
-450			
-300			
-150			
0 (impact point)			
150	608	823	215
300	608	904	296
450	608	944	336
600	607	959	352
750	607	968	361
900	605	970	365
1050	605	993	388
1200	604	1007	403
1350	602	1013	411
1500	601	1017	416
1650	597	989	392
1800	594	933	339

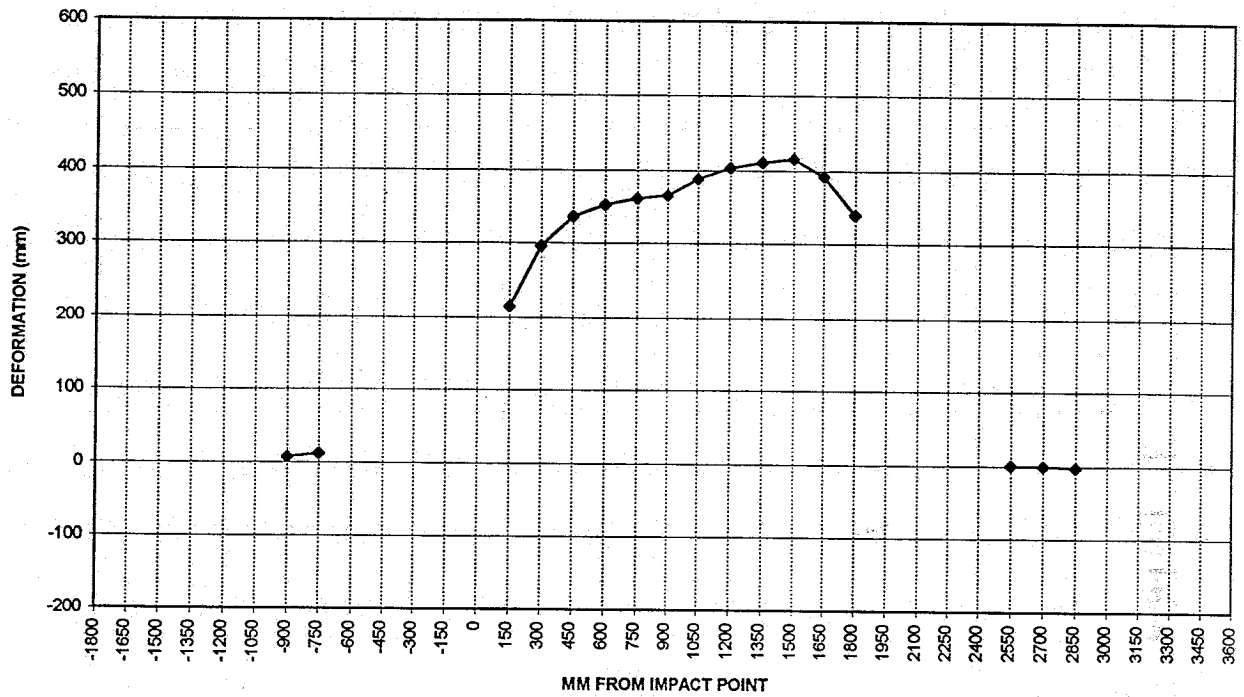
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 2 - Occupant H-Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950			
2100			
2250			
2400			
2550	635	636	1
2700	663	663	0
2850	701	699	-2
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 2 - OCCUPANT H-POINT

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 3 - Mid-Door		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900	676	687	11
-750	645	656	11
-600			
-450			
-300			
-150			
0 (impact point)	611	741	130
150	608	856	248
300	607	899	292
450	606	928	322
600	606	929	323
750	607	951	344
900	607	968	361
1050	606	983	377
1200	605	993	388
1350	604	1000	396
1500	604	1002	398
1650	601	979	378
1800	597	952	355

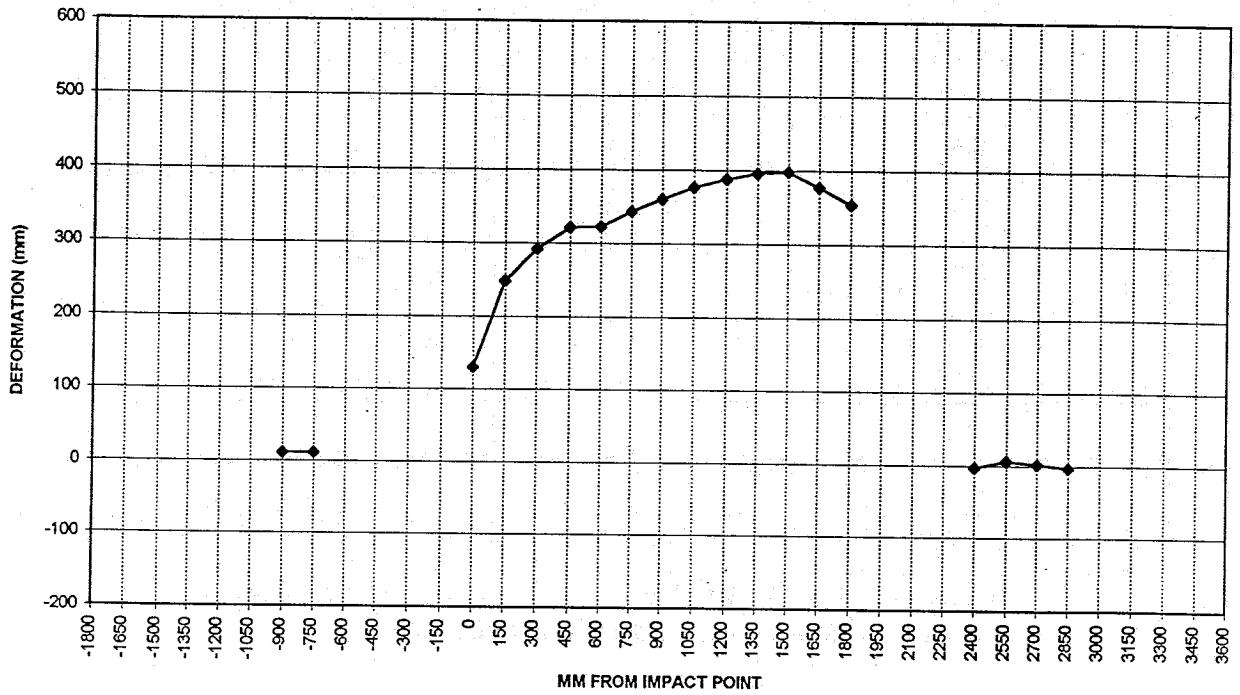
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 3 - Mid-Door		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950			
2100			
2250			
2400	630	627	-3
2550	643	649	6
2700	674	676	2
2850	712	709	-3
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 3 - MID-DOOR

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750	739	741	2
-600	723	732	9
-450	713	726	13
-300	702	721	19
-150	695	717	22
0 (impact point)	687	716	29
150	679	730	51
300	677	784	107
450	678	825	147
600	679	867	188
750	681	879	198
900	680	897	217
1050	679	911	232
1200	677	932	255
1350	674	956	282
1500	674	980	306
1650	670	925	255
1800	668	845	177

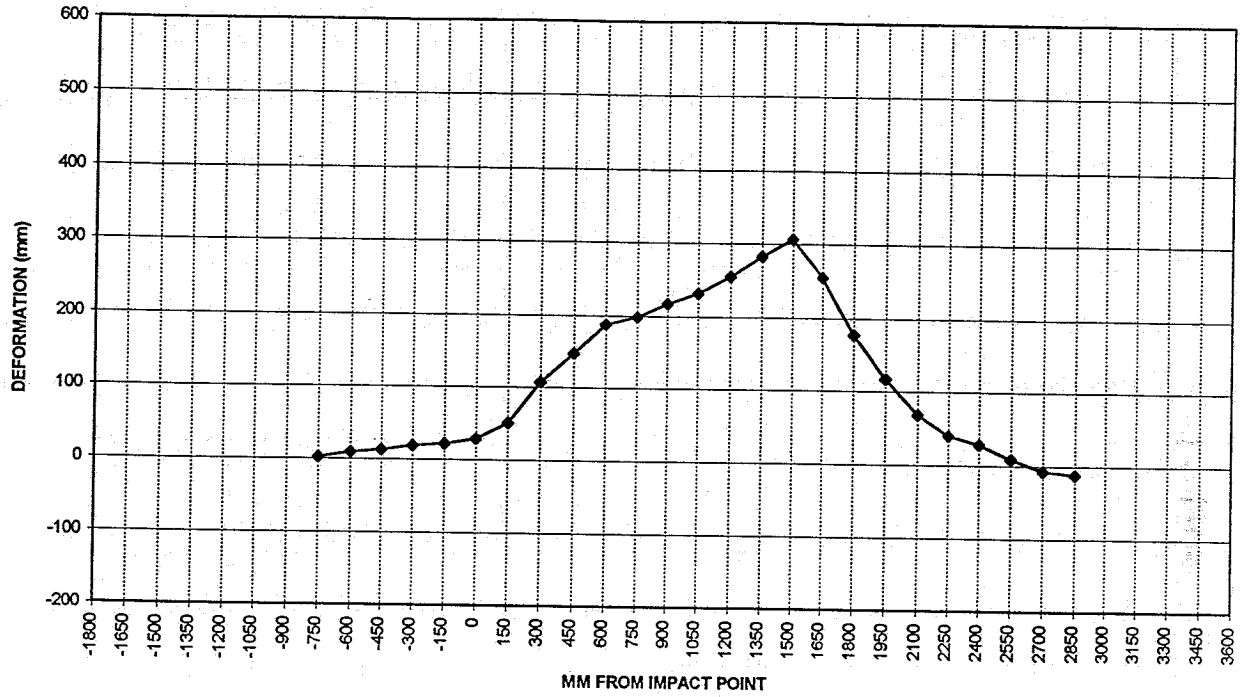
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	669	786	117
2100	676	745	69
2250	680	721	41
2400	690	719	29
2550	701	710	9
2700	721	714	-7
2850	741	729	-12
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 5 - Window Top		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750	897	938	41
900	890	938	48
1050	884	946	62
1200	880	959	79
1350	873	980	107
1500	870	949	79
1650	880	926	46
1800	893	929	36

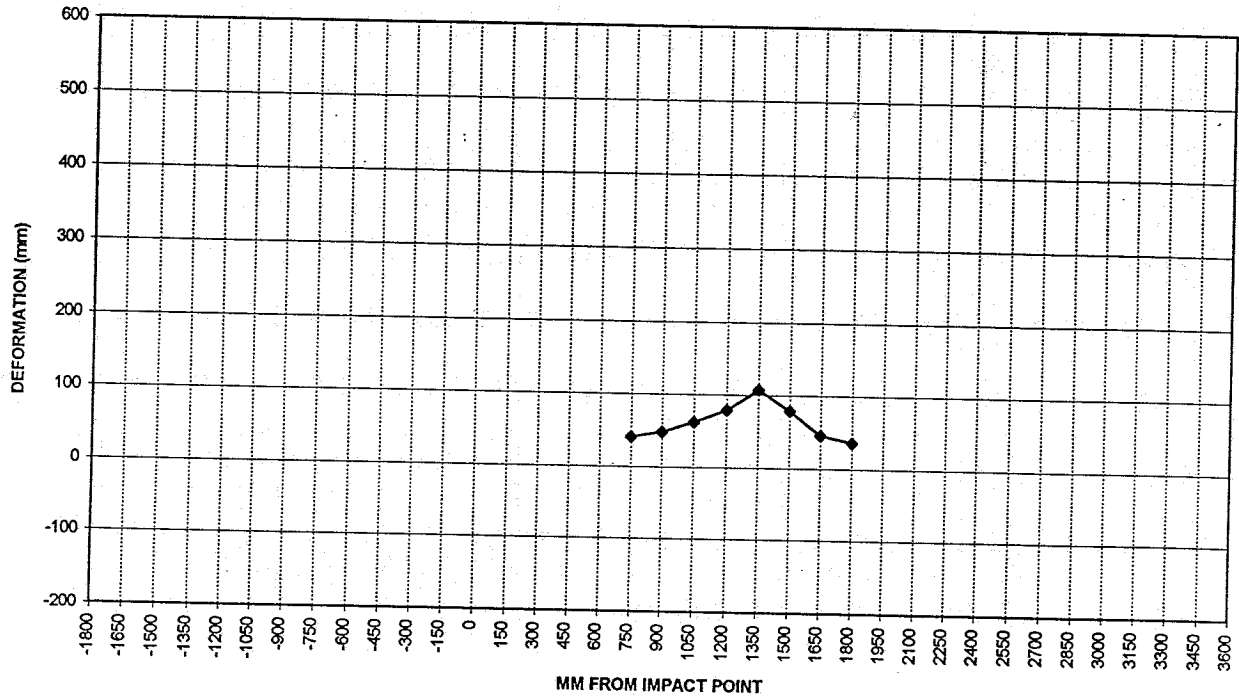
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950			
2100			
2250			
2400			
2550			
2700			
2850			
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



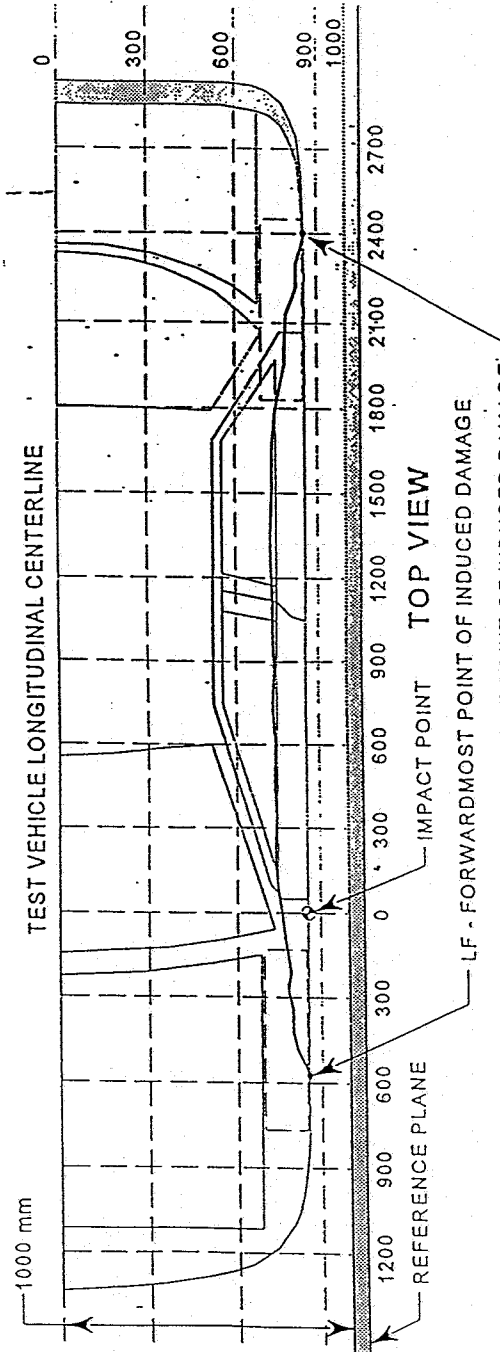
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

NHTSA NO.: MW0211 Test Date: September 29, 1997



MEASUREMENT CONVENTIONS:
 LR - REARWARDMOST POINT OF INDUCED DAMAGE
 Forward of the impact point (towards front of vehicle) is considered negative (-).
 Rearward of the impact point (toward rear of vehicle) is considered positive (+).

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LF = <u>-750</u> mm)	662	662	0
2. <u>-163</u> mm	717	695	22
3. <u>484</u> mm	942	606	336
4. <u>1138</u> mm	1001	605	396
5. <u>1790</u> mm	954	597	357
6. (LR = <u>2550</u> mm)	636	636	0

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

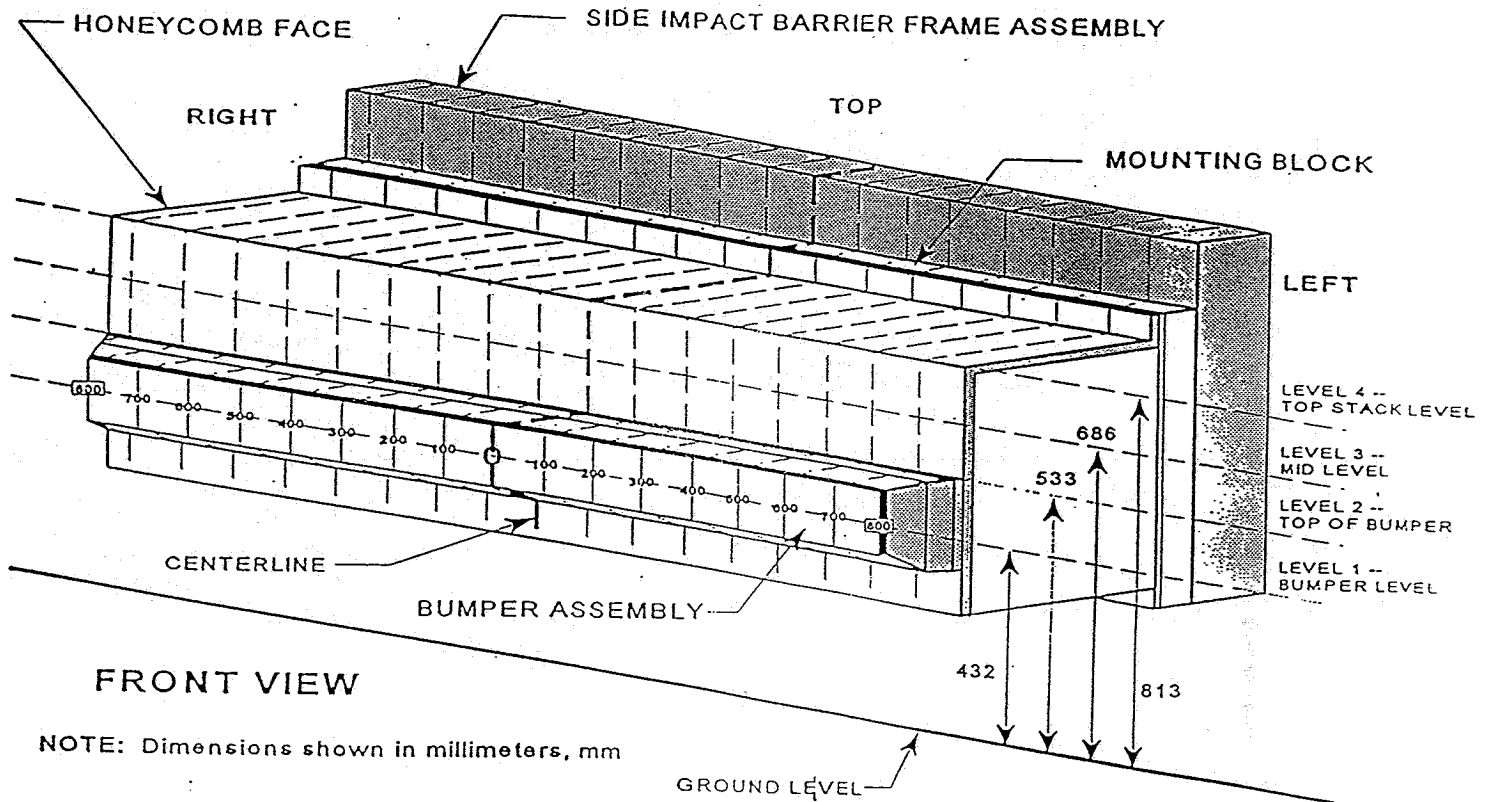
Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997

Location	Height at CL	Distance Right of Center (mm)								Distance Left of Center (mm)									
		800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800	
Top Stack Level 4	813 mm	80	24	2	6	10	12	15	19	19	24	27	32	37	59	82	122	174	221
Mid Level Level 3	686 mm	36	1	1	1	3	2	3	7	12	13	15	17	21	29	51	123	184	
Top Bumper Level 2	533 mm	41	36	19	8	6	4	10	13	19	23	29	41	54	65	83	111	141	
Mid Bumper Level 1	432 mm	90	76	44	32	28	30	31	33	39	44	53	68	83	98	129	166	190	

See next page for Barrier Face Graphic

DATA SHEET NO. 12 (Cont'd)

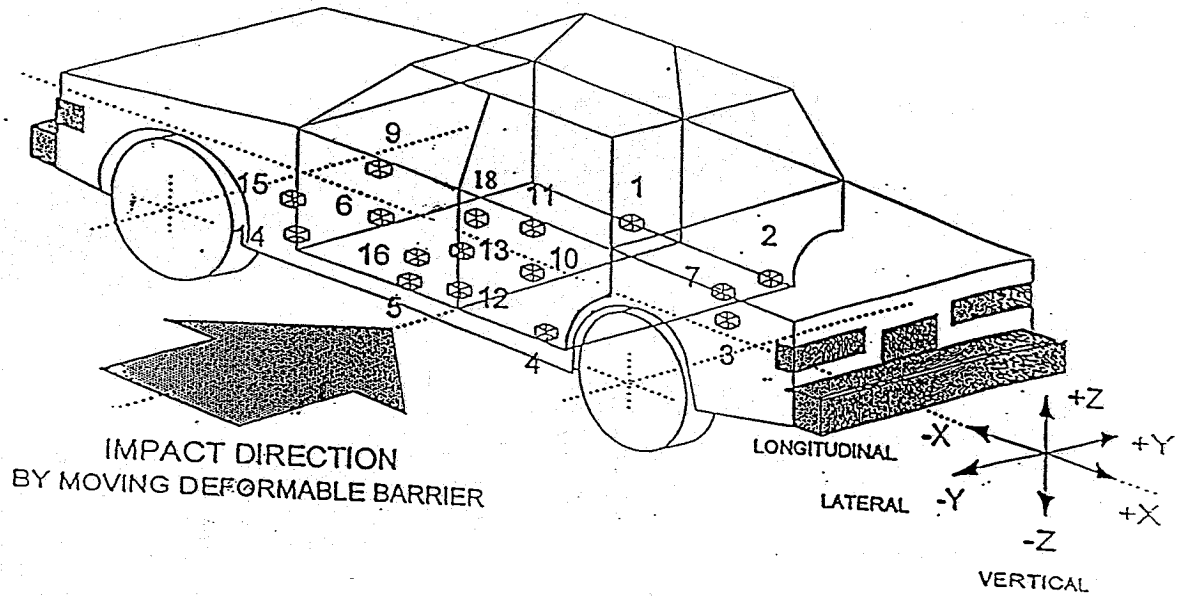


NOTE: Dimensions shown in millimeters, mm

DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997



- 1-RT. Side Sill @ Frt Seat
- 2-RT. Side Sill @ Rr. Seat
- 3-Rr. Floorpan Above Axle
- 4-Left Side Sill @ Rr. Seat
- 5-Left Side Sill @ Frt. Seat
- 6-Left Frt. Door on Centerline
- 7-Rt. Rr. Occ. Compartment
- 9-Left Frt. Door Upper Ctrline

- 10-Midrear of Left Rear Door
- 11-Left Rear Door Upper Ctrline
- 12-Left Lower B-Post
- 13-Left Middle B-Post
- 14-Left Lower A-Post
- 15-Left Middle A-Post
- 16-Front Seat Track
- 18-Vehicle C.G.

DATA SHEET NO. 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY
 Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 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	Rt. Side Sill @ Front Seat	2260	560	184	4.1	4.9	20.9	2.2	3.3	5.4	21.2
2	Rt. Side Sill @ Rear Seat	1472	564	184	4.2	5.3	25.4	3.3	8.0	4.9	26.5
3	Rr. Floorpan Above Axle	951	0	420	4.5	12.9	32.3	3.5	15.7	6.9	34.2
4	Left Side Sill @ Rr. Seat	1496	-566	197	---	---	88.3	17.2	---	---	---
5	Left Side Sill @ Frt. Seat	2228	-568	180	---	---	37.8	8.6	---	---	---
6	Left Front Door Centerline	2298	-716	635	---	---	91.9	178.7	---	---	---
7	Right Rear Occupant Compartment	1682	316	328	---	---	27.7	3.1	---	---	---
8	Mid Rear of Left Front Door	1884	-713	555	---	---	223.3	73.6	---	---	---
9	Left Front Door Upper Centerline	2404	-710	786	---	---	154.0	119.7	---	---	---
12	Left Lower B-Post	1736	-653	278	---	---	69.3	12.7	---	---	---
13	Left Mid B-Post	1713	-675	809	---	---	139.7	129.9	---	---	---
14	Left Lower A-Post	2910	-658	300	---	---	64.5	18.4	---	---	---
15	Left Mid A-Post	2924	-736	182	---	---	38.9	1.7	---	---	---
16	Driver Left Seat Track	2102	-550	240	---	---	41.9	18.2	---	---	---
18	Vehicle CG	2386	0	409	12.7	25.7	57.6	27.8	59.9	21.4	65.3

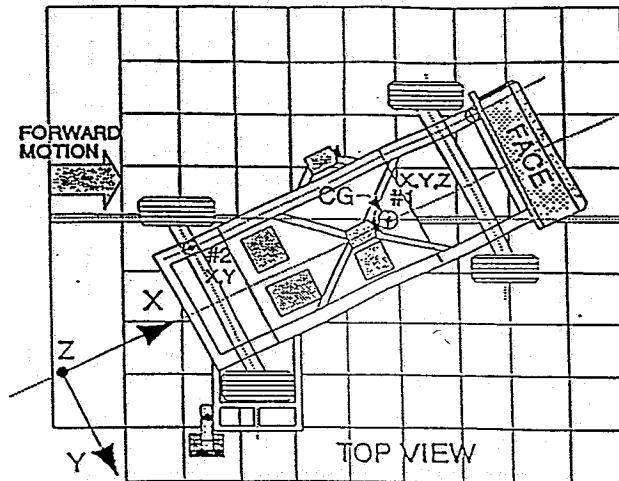
*Reference: X - Rear Bumper (+ Forward)
 Y - Vehicle Centerline (+ To right)
 Z - Ground Level (+ Up)

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997

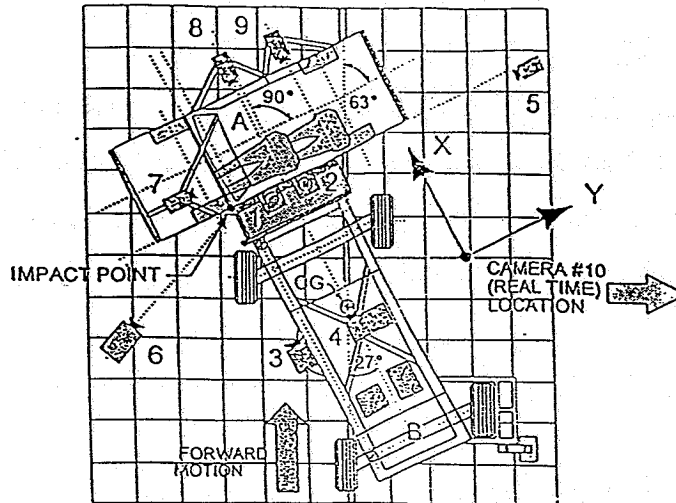


Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	.9	124	18.4	33
	Lateral (Y)	---	---	---	2.8	57	5.8	41
	Vertical (Z)	---	---	---	19.8	61	18.5	67
	Resultant (R)	---	---	---	21.6	61	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	1.5	183	23.3	39
	Lateral (Y)	---	---	---	3.5	43	1.3	176

*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: 1998/Ford/Escort/ZX2/2-Door
 Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time						
6	Left Impact	-420	-2320	1685		13	699
8	Onboard Hood					13	980
9	Onboard Front Occupant					8	952
7	Onboard Rear Occupant					8	1111
5	Right Impact	-505	10450	1670		25	897
1	Top Overall	90	1365	5000		8	980
2	Top Impact	-230	50	5000		13	881
4	Cart Overall					13	917
3	Cart Impact					35	1020

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

DATA SHEET 16
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Ford/Escort/ZX2/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 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 38.2 mph (61.5 kph)

FUEL SPILLAGE MEASUREMENT:

POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases	3/4 gal.	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

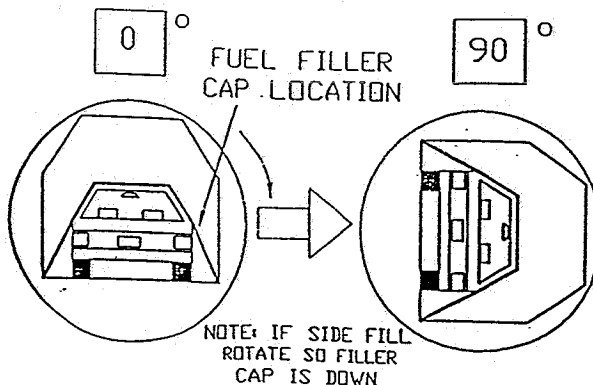
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Ford/Escort/2-Door

Vehicle NHTSA No.: MW0211 Test Date: September 29, 1997

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 0 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 0 minutes 0 seconds

TOTAL TIME = 0 minutes 0 seconds

Next Whole Minute Interval = 0 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): Fuel spillage from fuel filler cap did not allow for full rotation. Approximately 3/4 of a gallon spilled during first 2 minutes of rotation. Rollover discontinued following spill.

APPENDIX A - PHOTOGRAPHS

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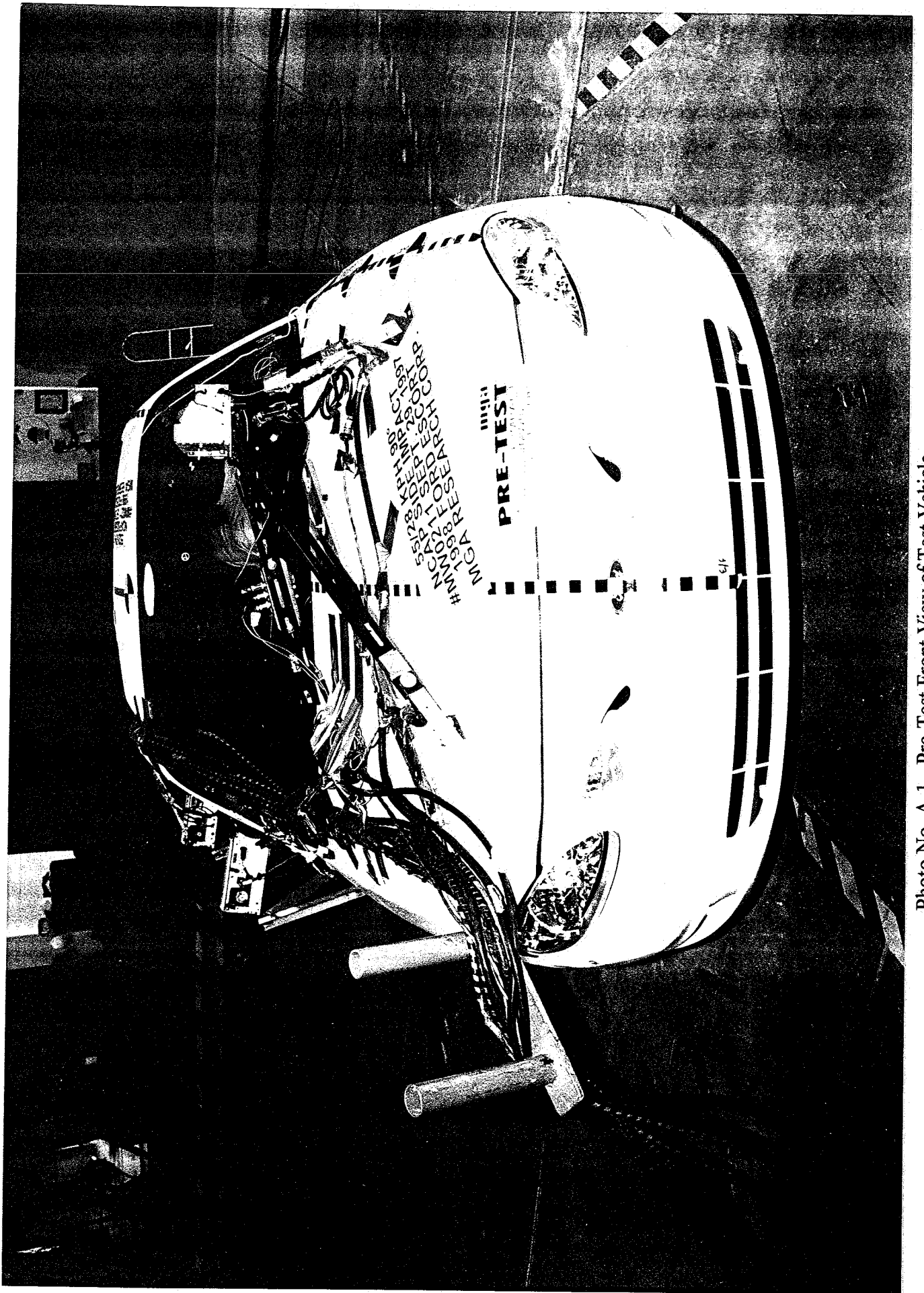


Photo No. A-1 - Pre-Test Front View of Test Vehicle

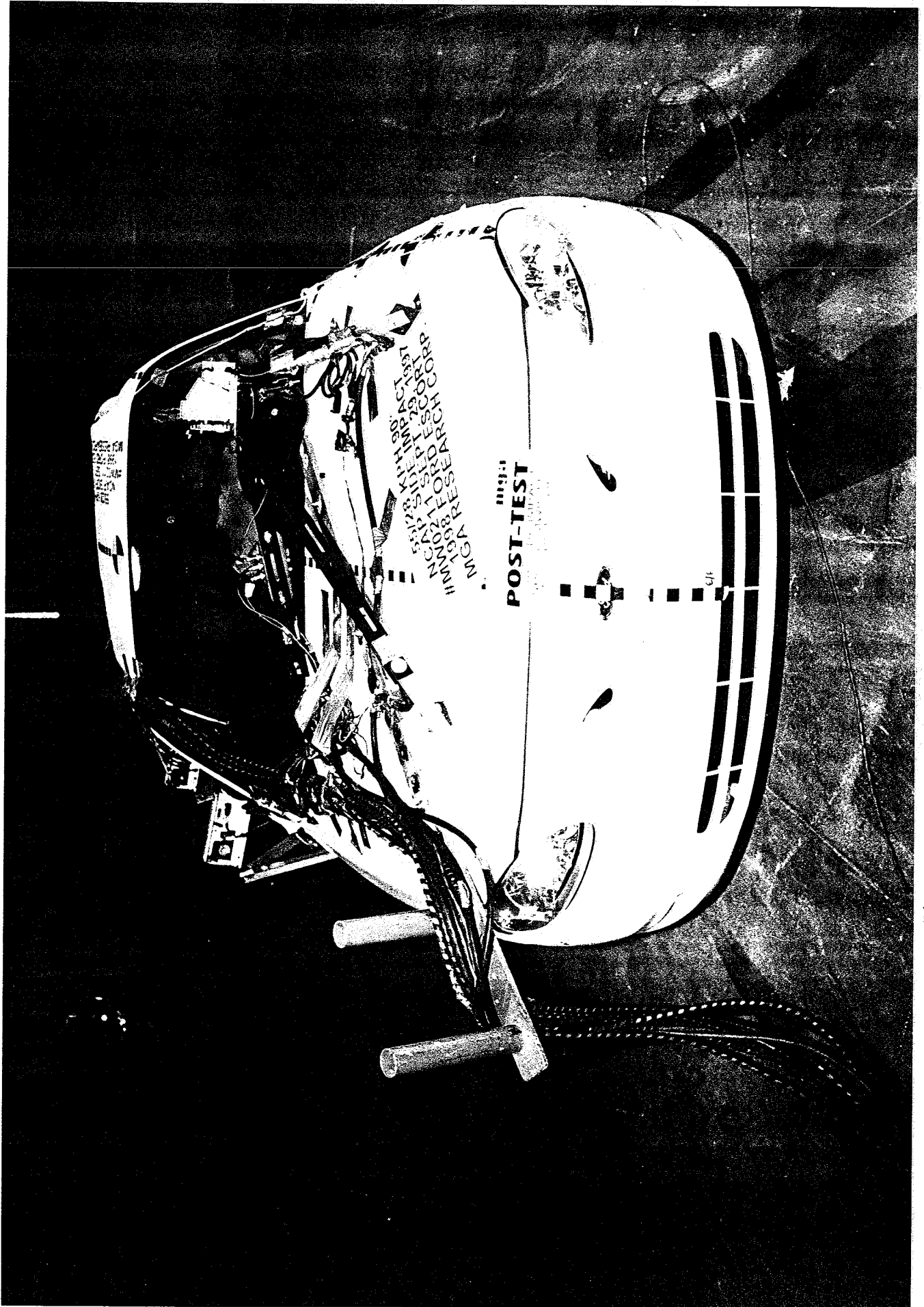
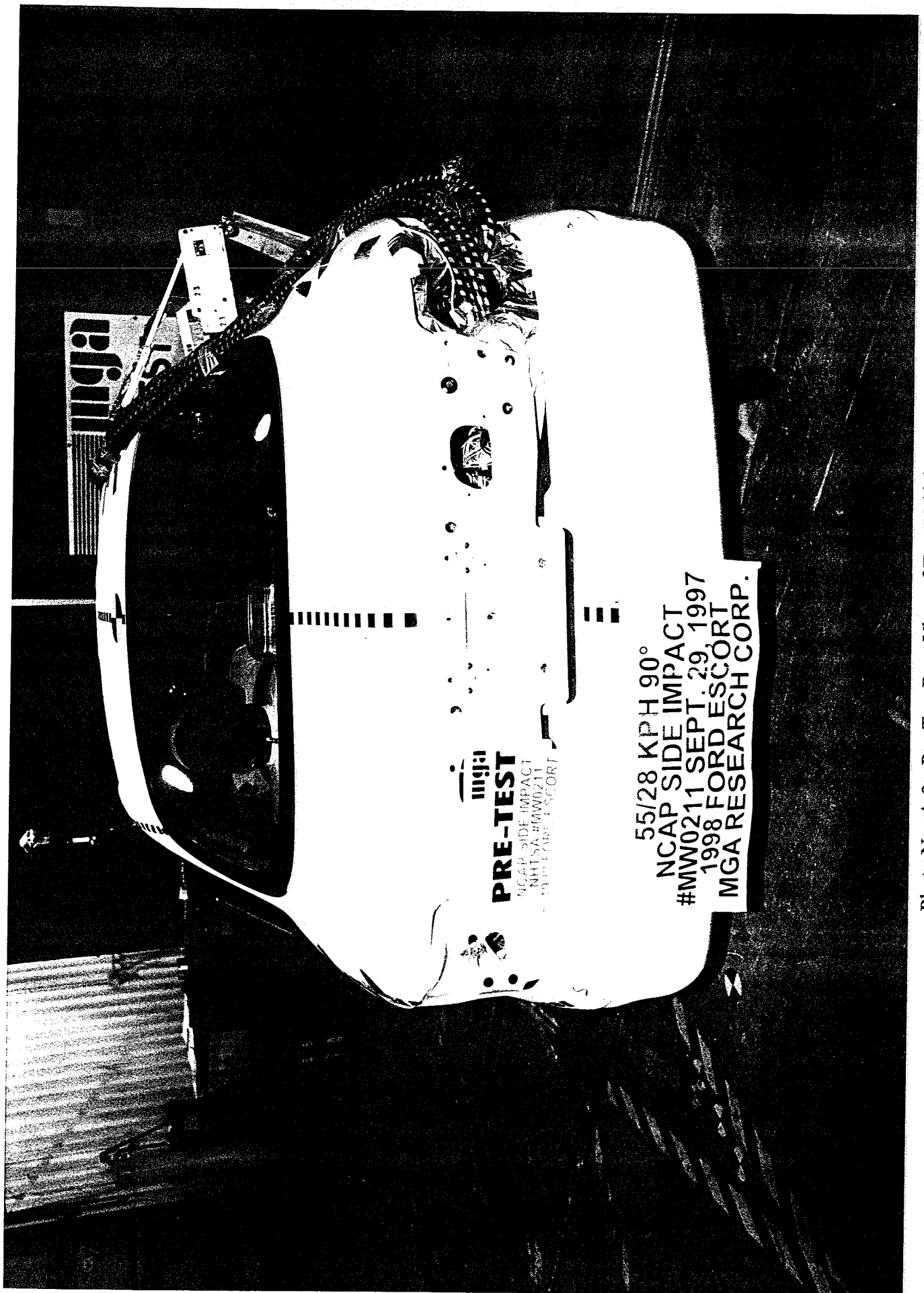


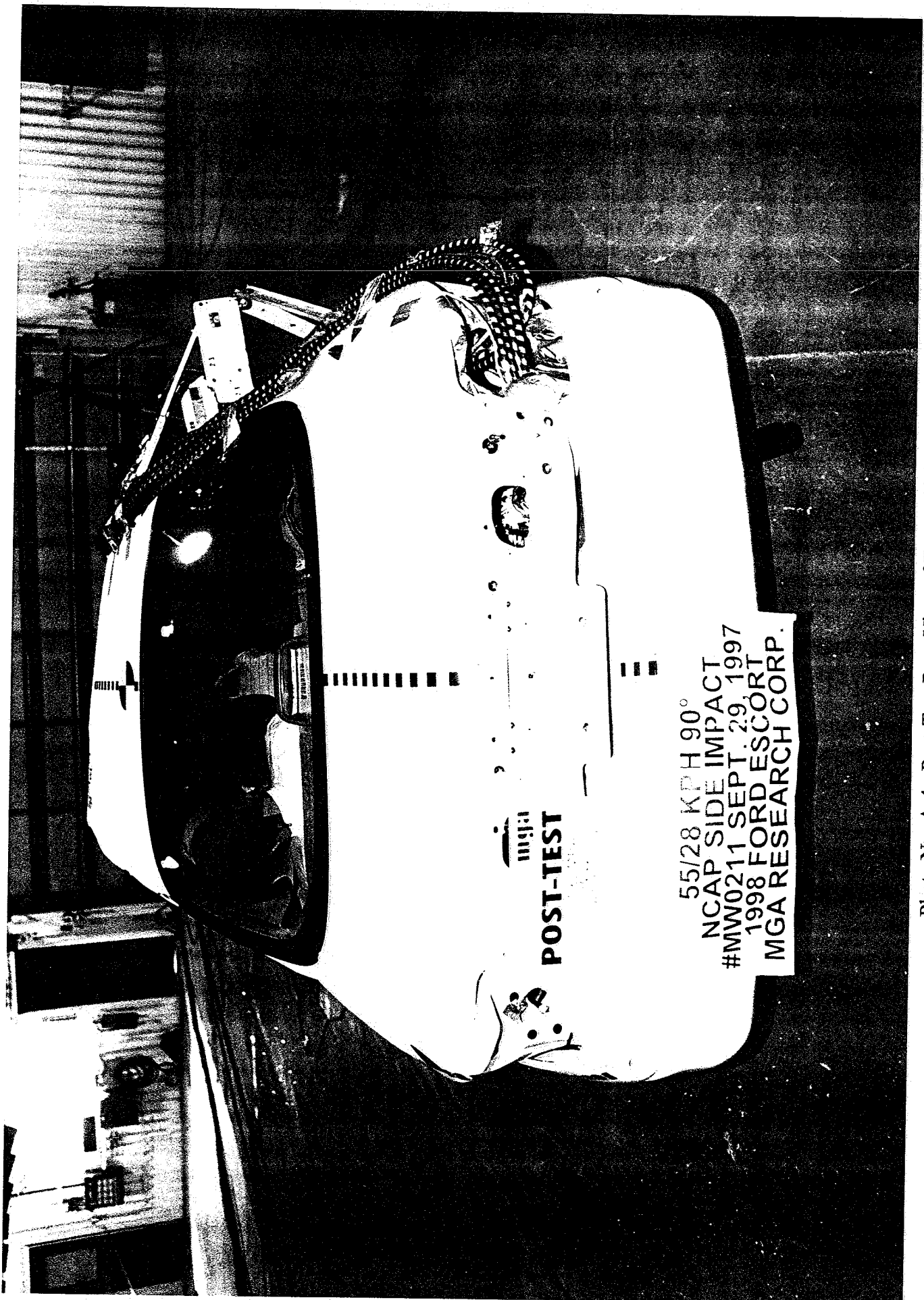
Photo No. A-2 - Post-Test Front View of Test Vehicle



PRE-TEST
NCAP SIDE IMPACT
NHTSA #MW0211
1998 FORD ESCORT

55/28 KPH 90°
NCAP SIDE IMPACT
#MW0211 SEPT. 29, 1997
1998 FORD ESCORT
MGA RESEARCH CORP.

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



POST-TEST

55/28 KPH 90°
NCAP SIDE IMPACT
#MW0211 SEPT. 29, 1997
1998 FORD ESCORT
MGA RESEARCH CORP.

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

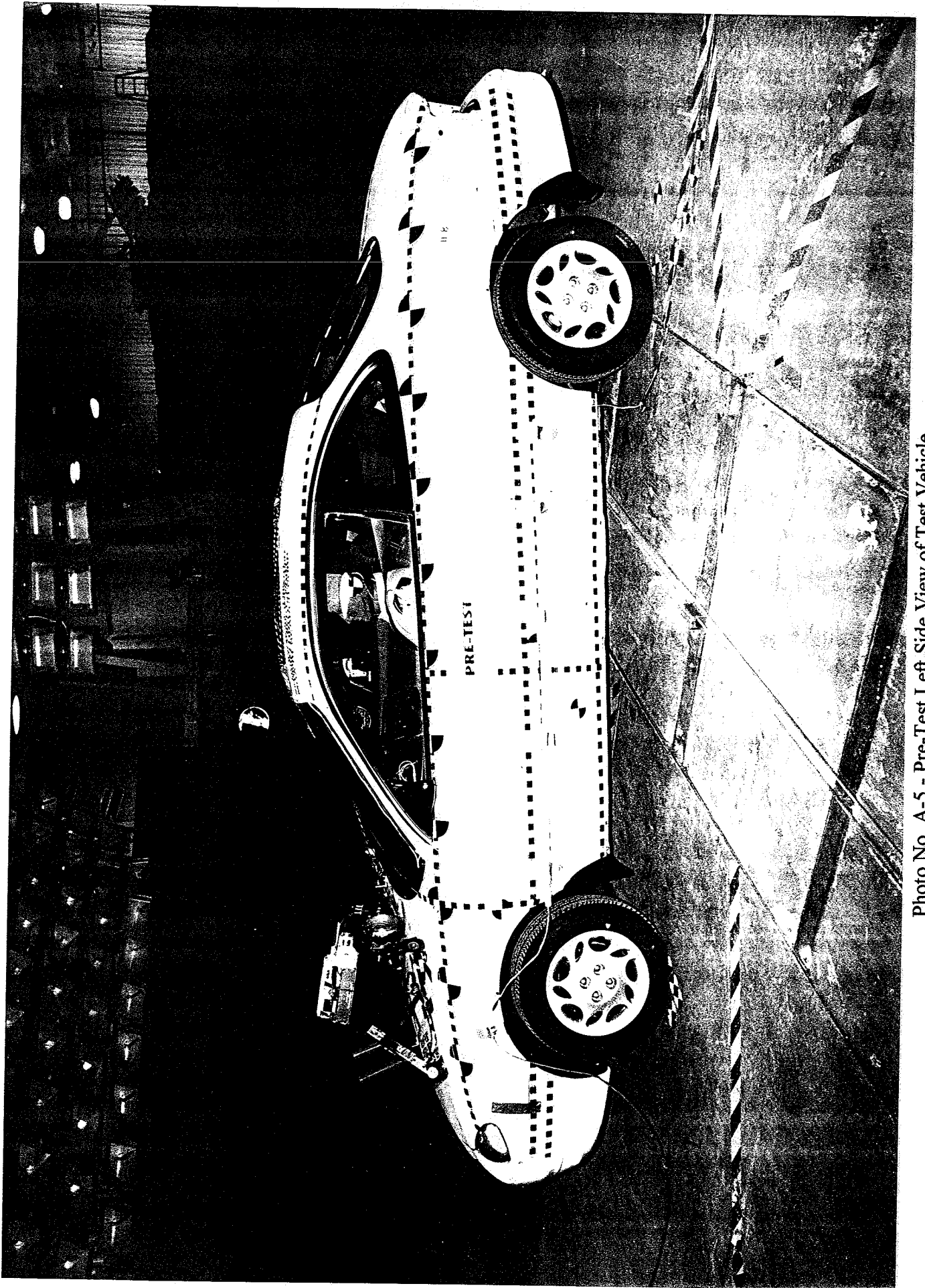


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

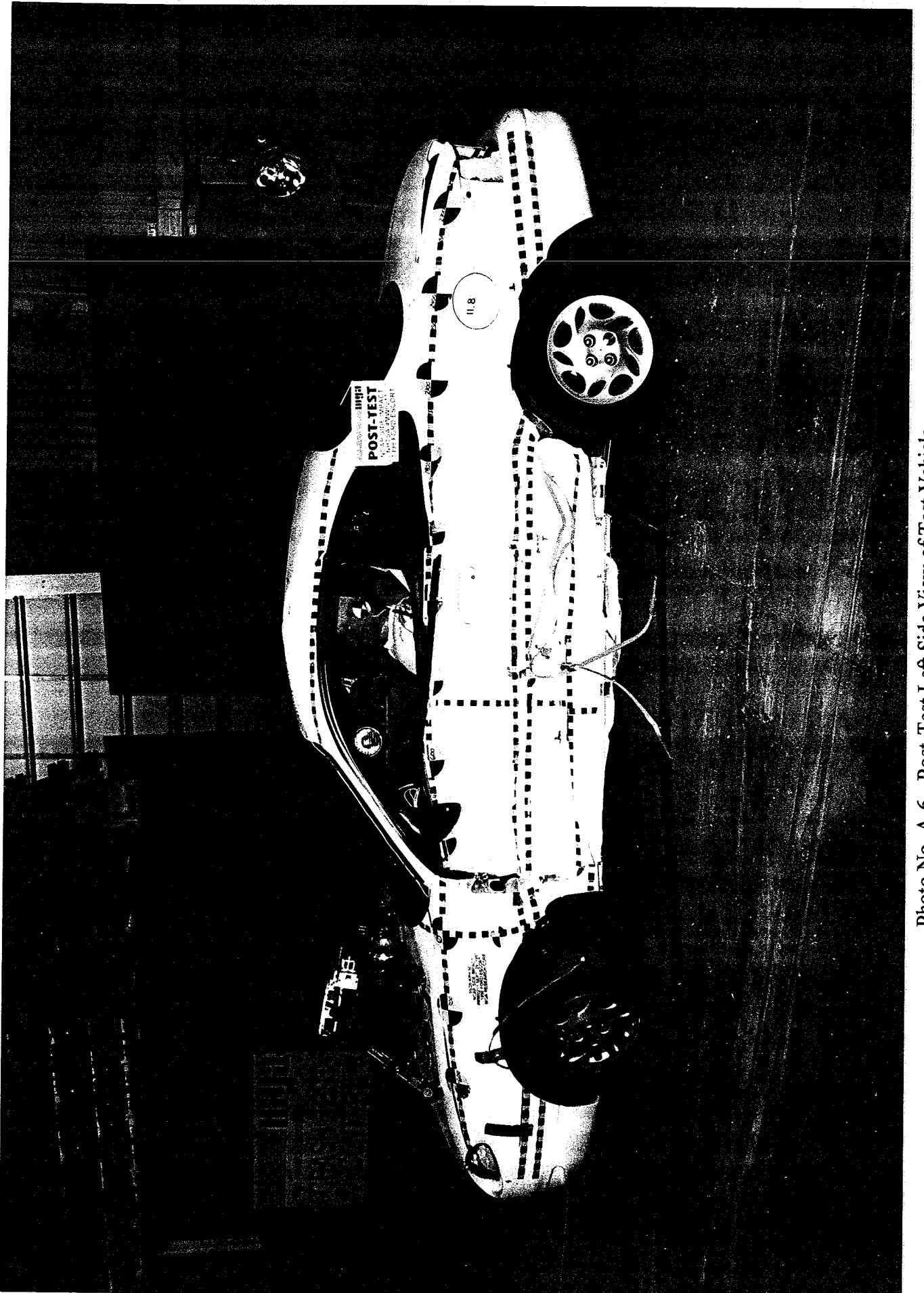


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

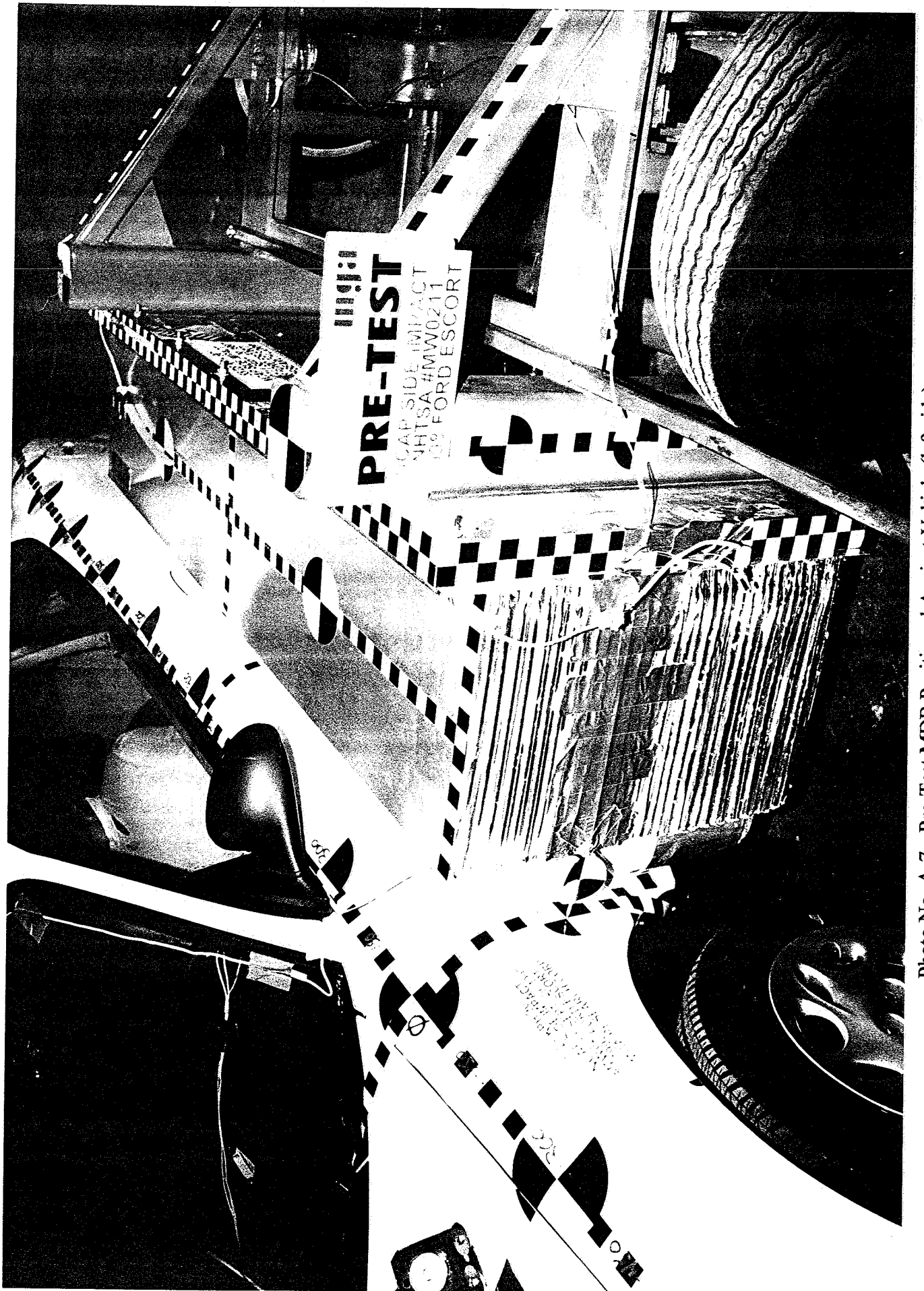


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)

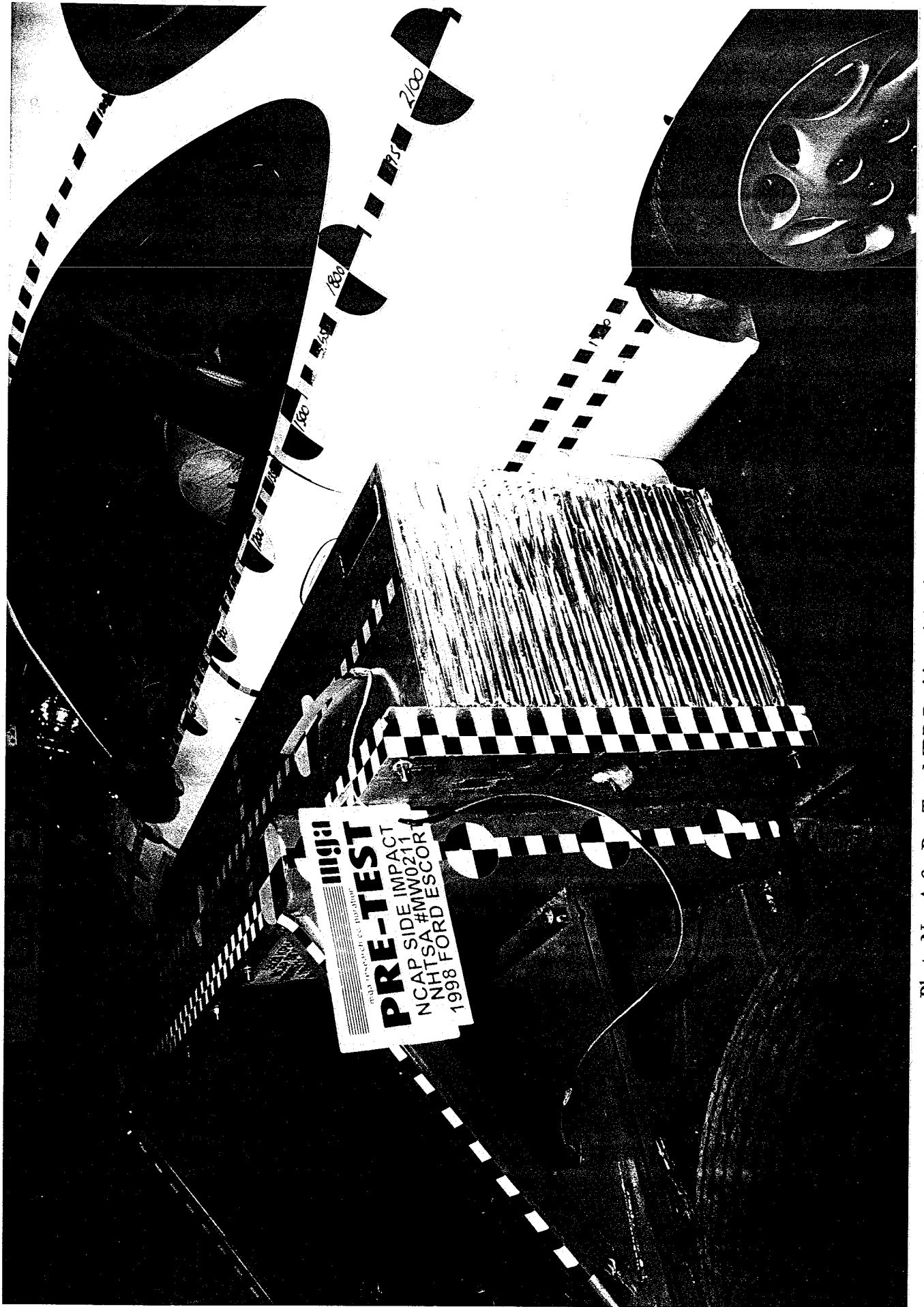


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

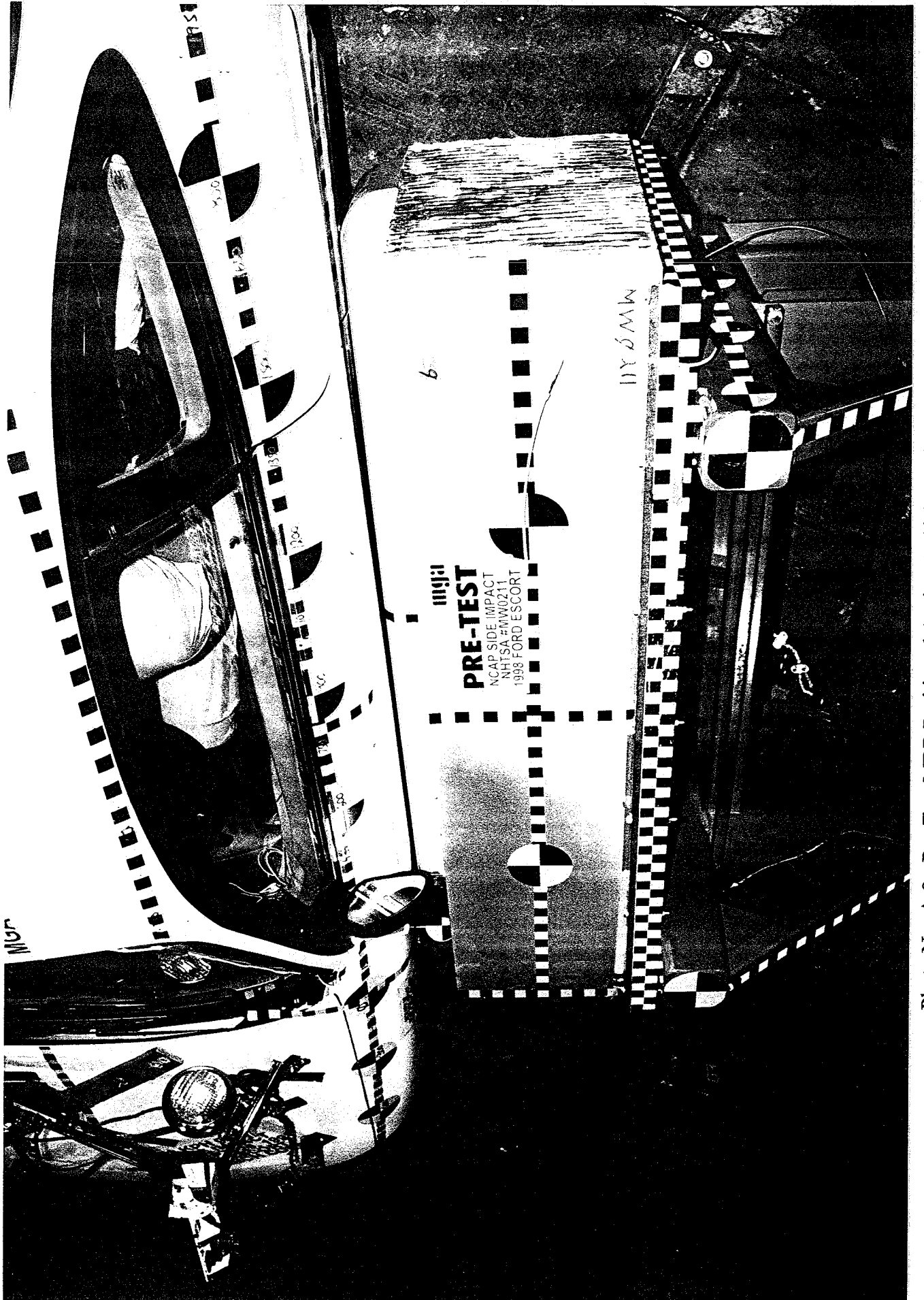


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

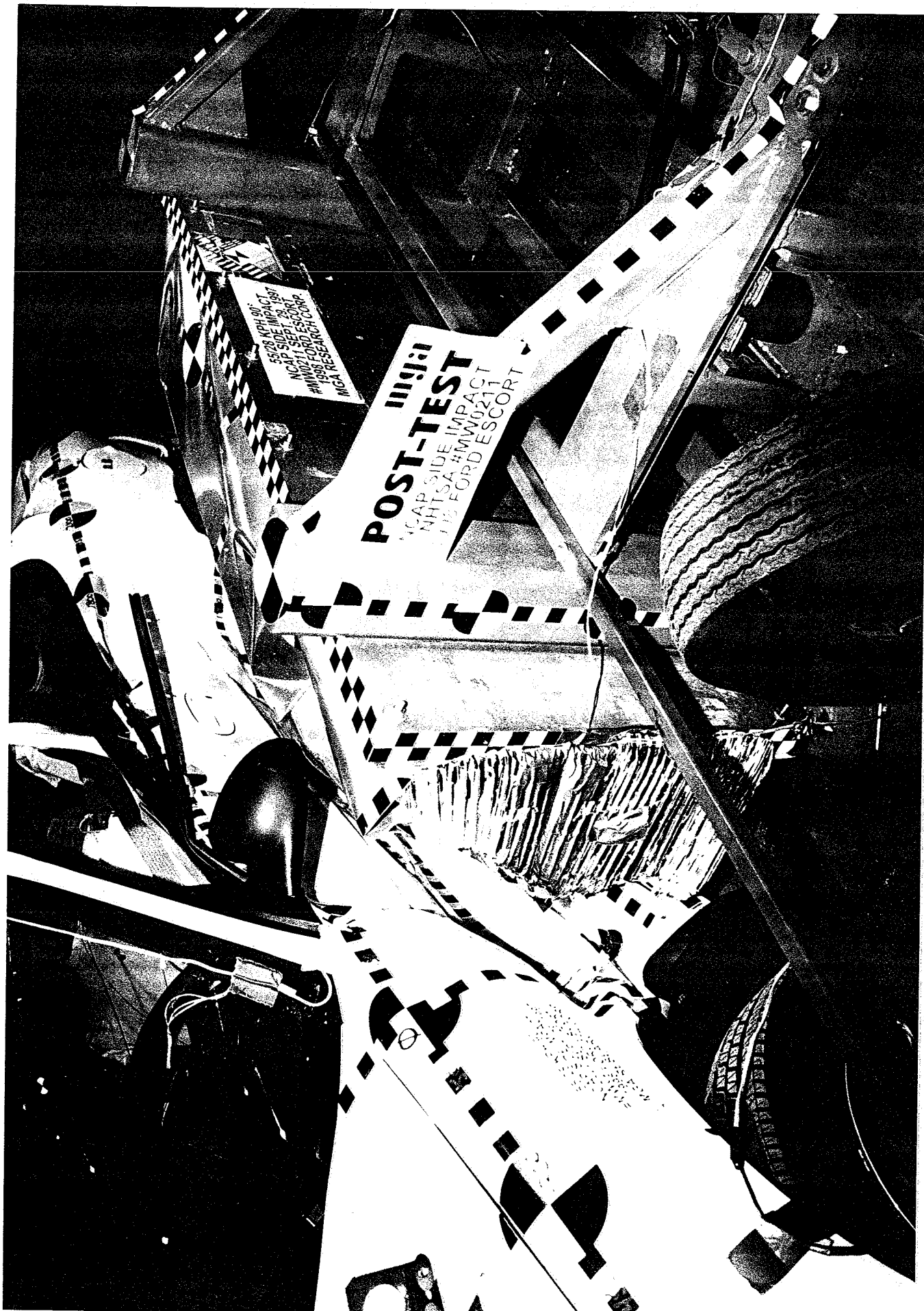


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

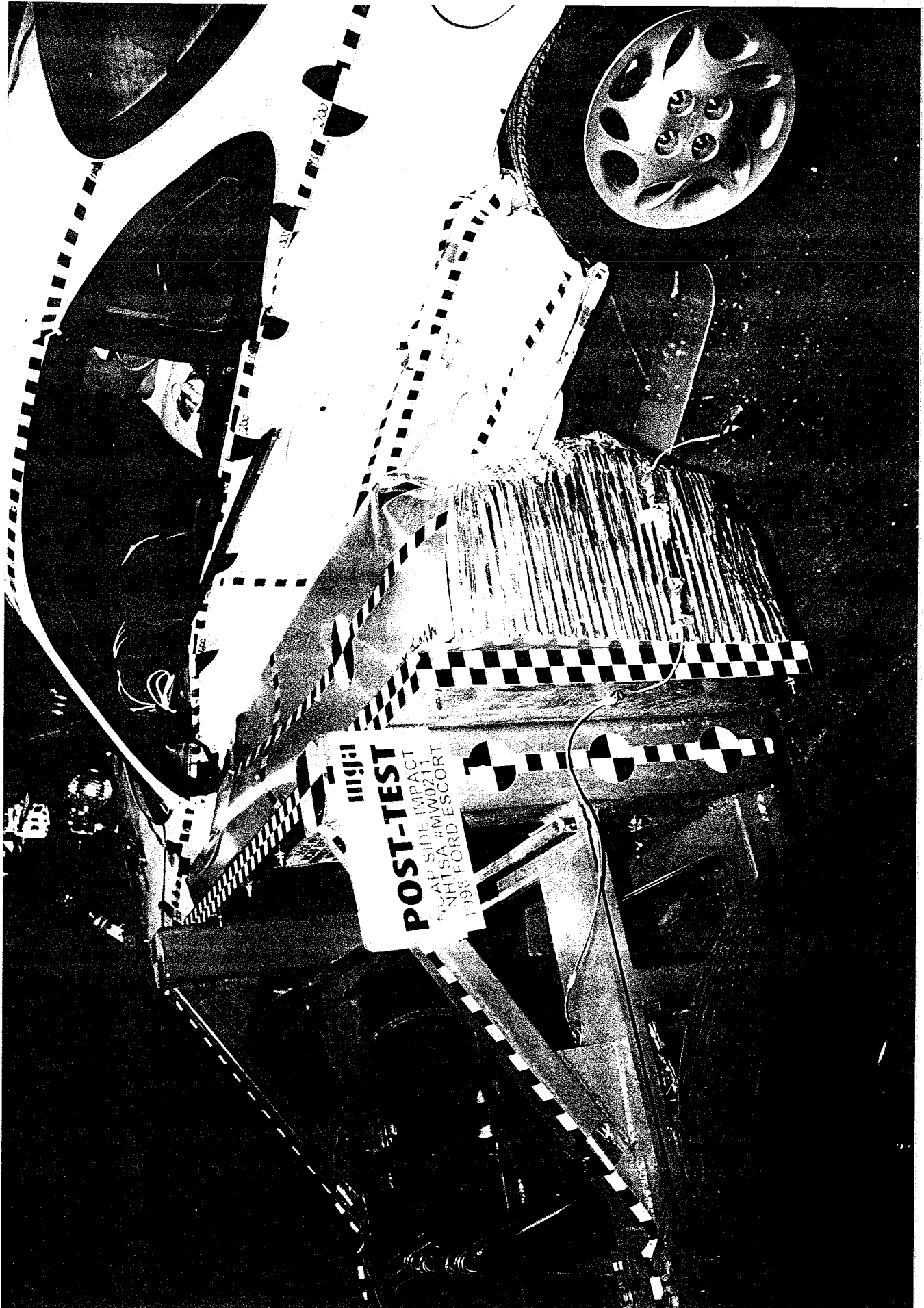
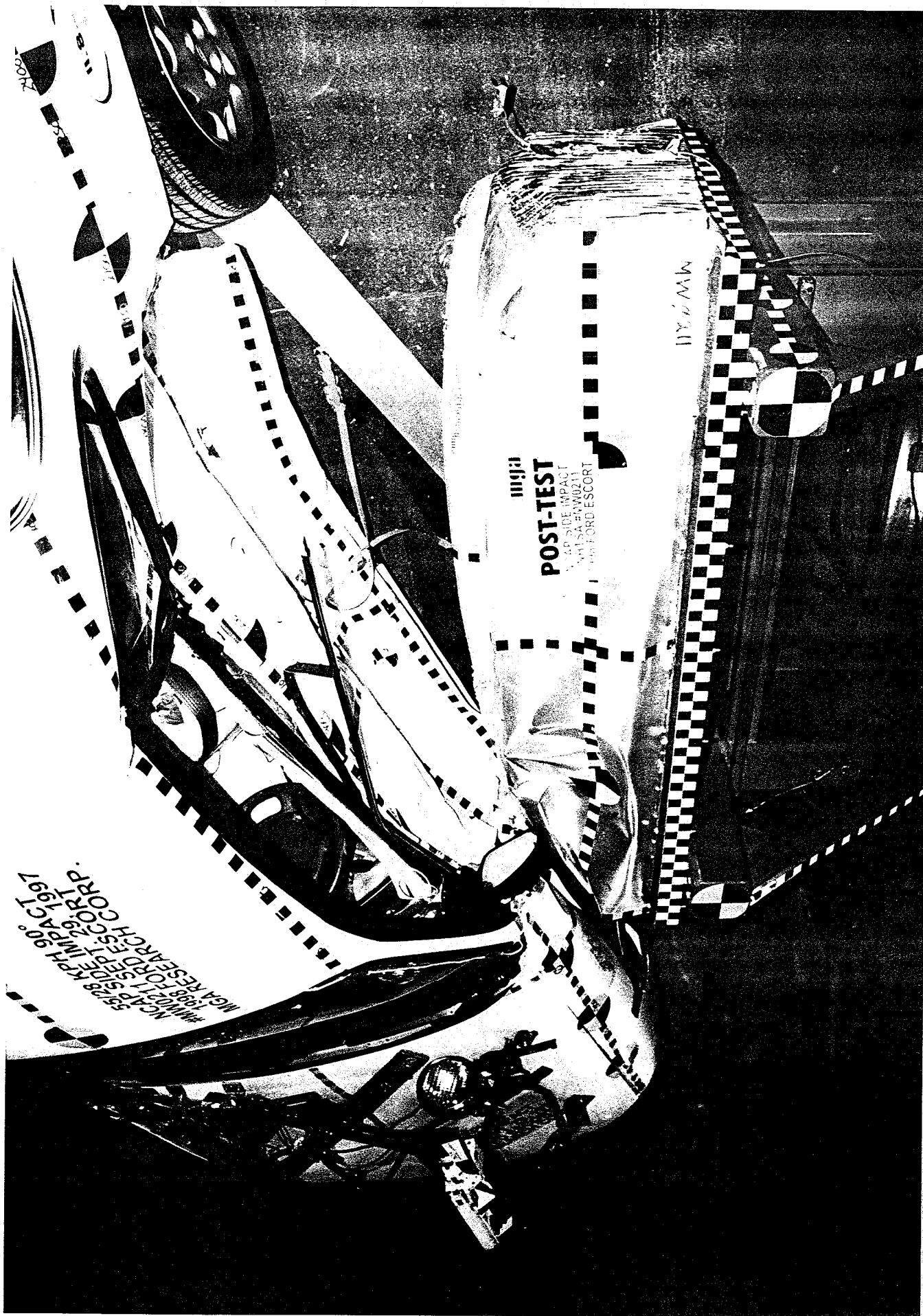


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)



55128 KPH 90°
NHTSA SIDE IMPACT
MAY 1988 FORD ESCORT
MGA RESEARCH CORP.

POST-TEST
LAP SIDE IMPACT
MAY 1988 FORD ESCORT

1126 MM

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

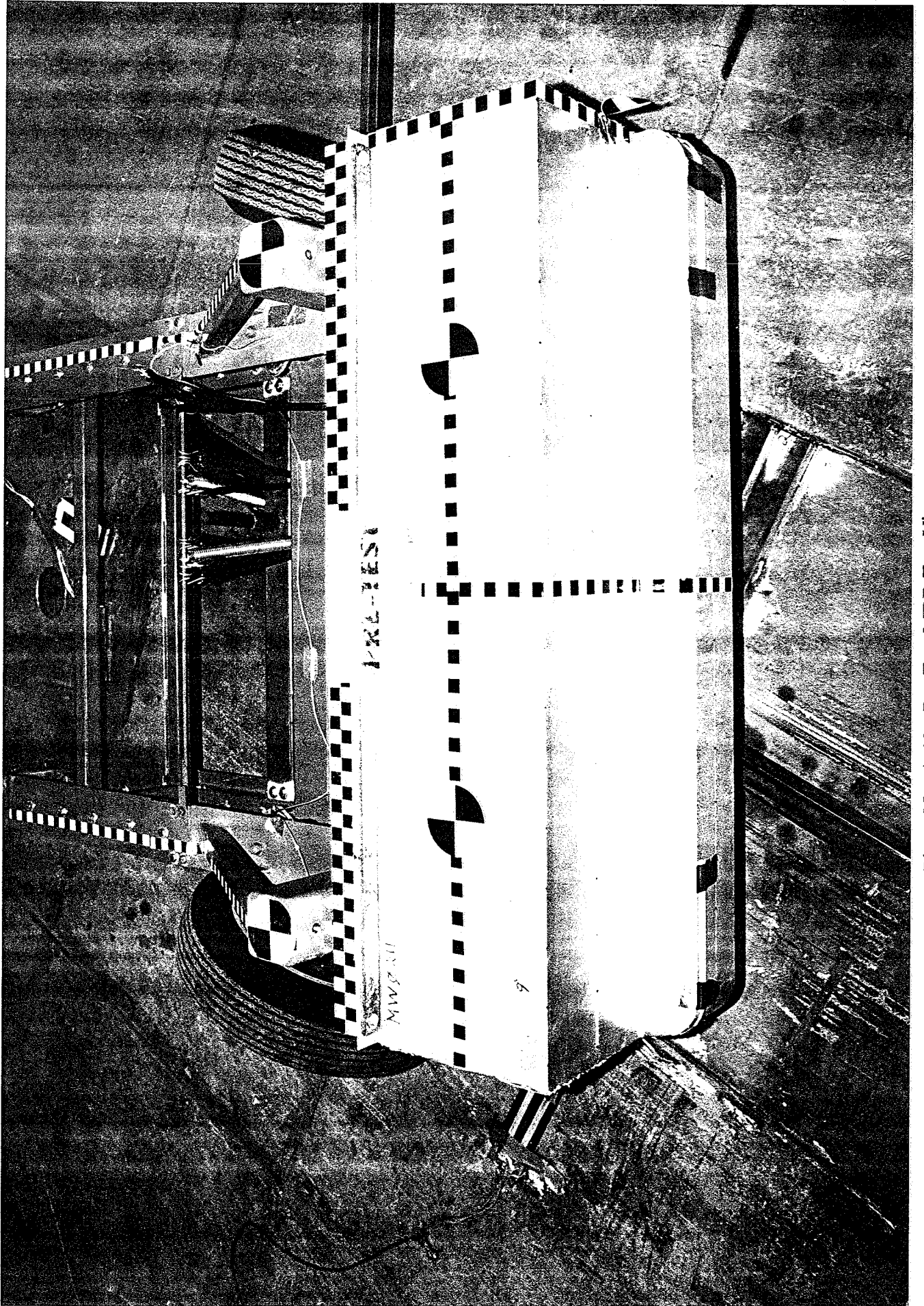


Photo No. A-13 - Pre-Test MDB Top View

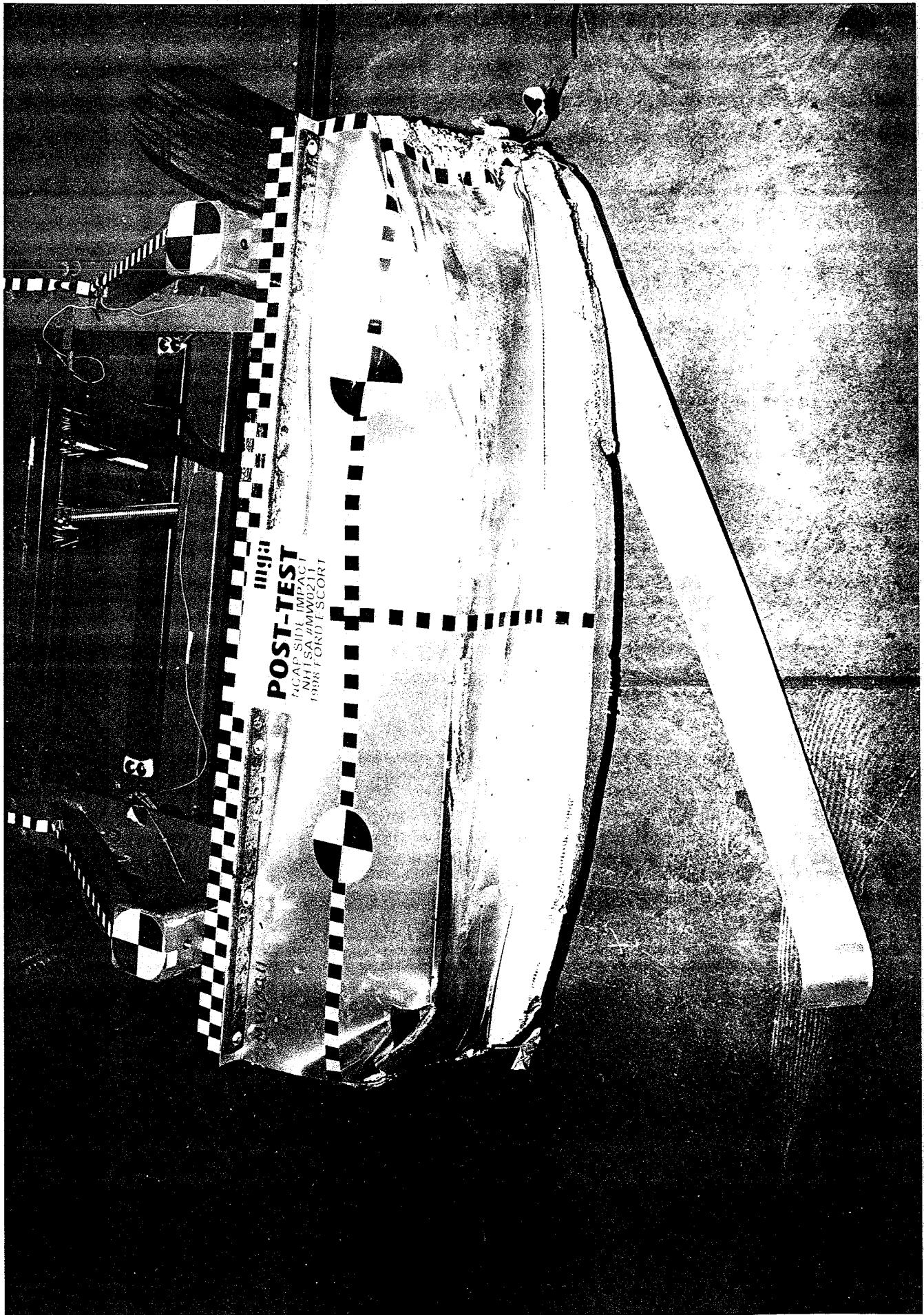
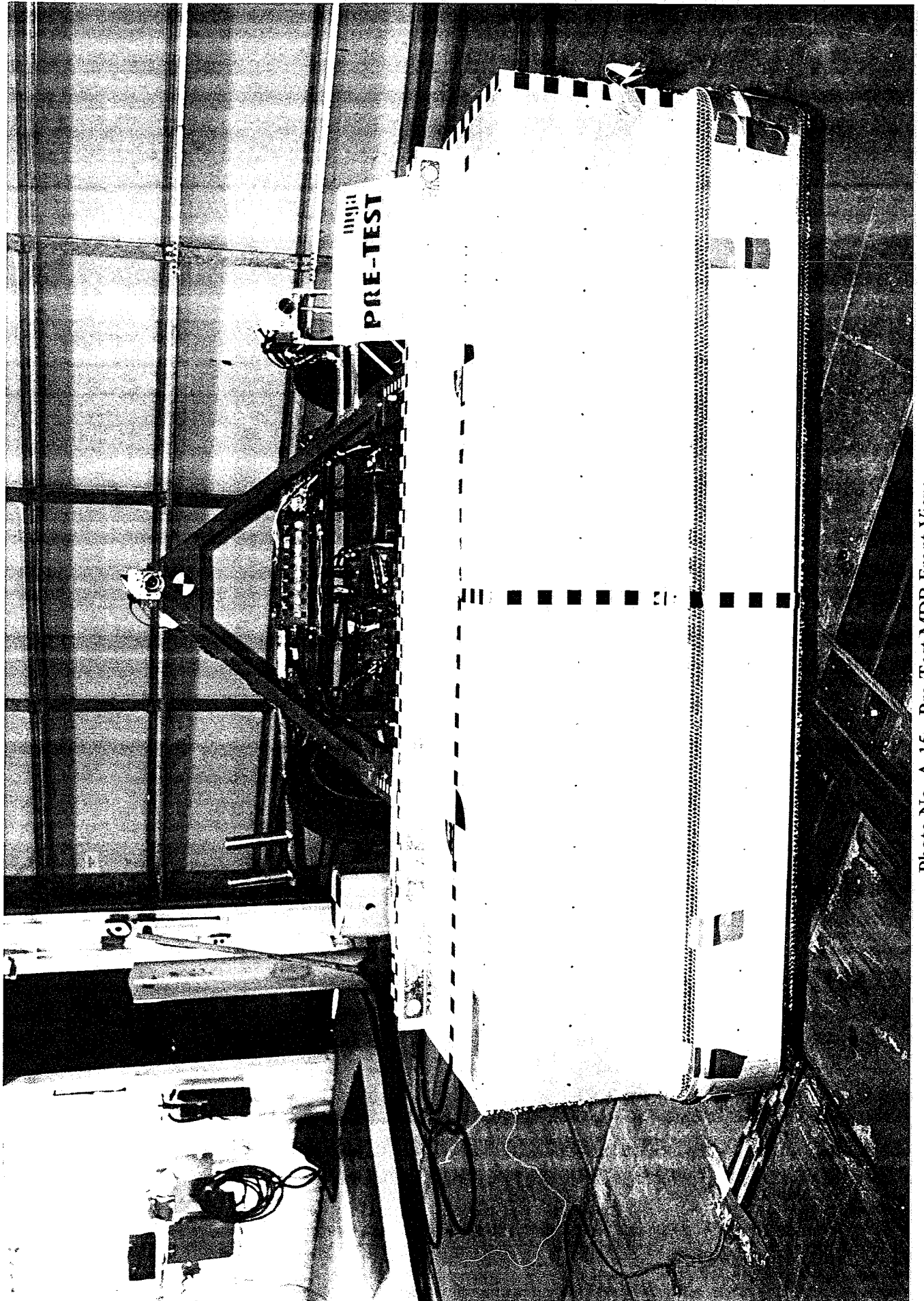


Photo No. A-14 - Post-Test MDB Top View



A-15

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

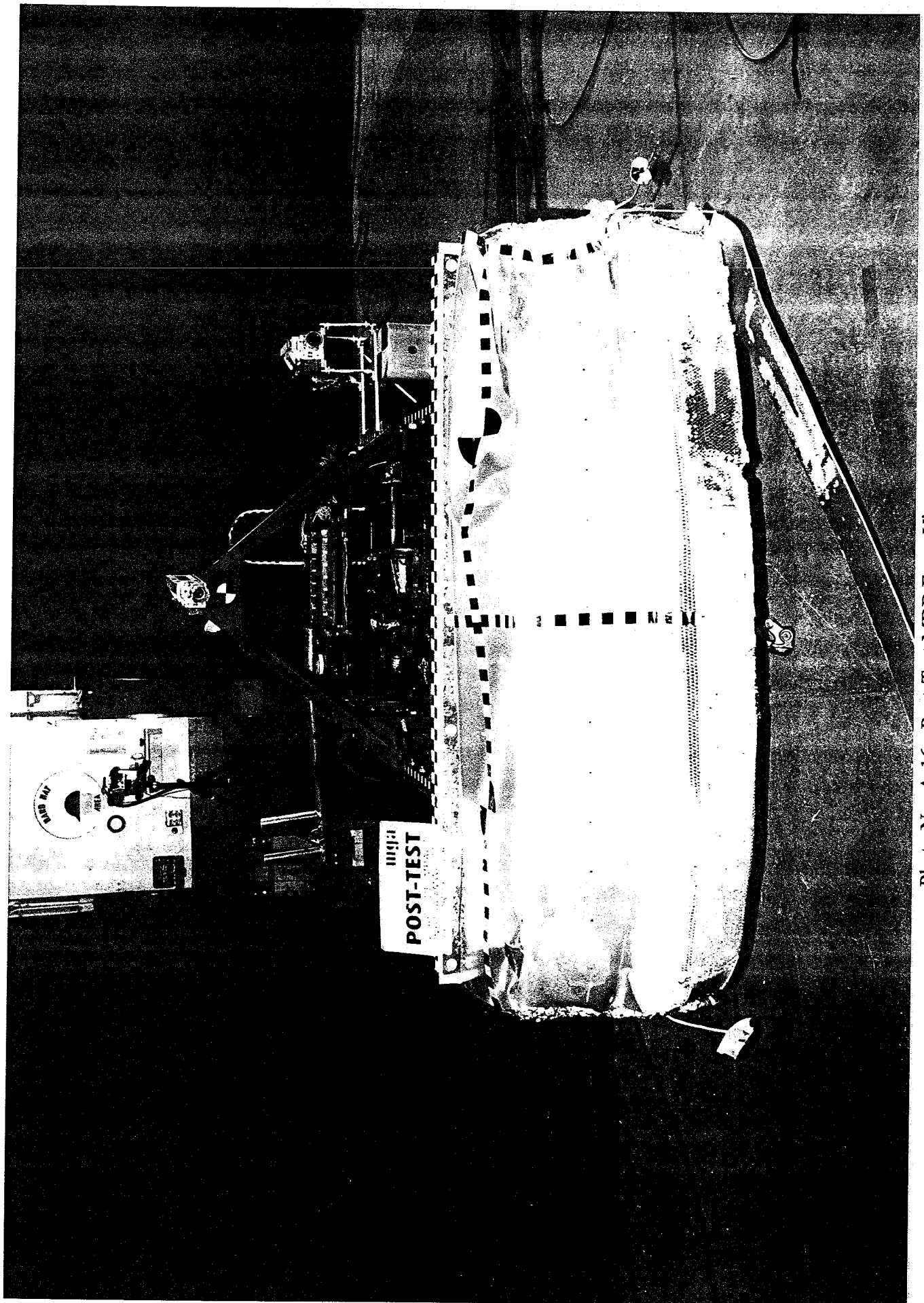


Photo No. A-16 - Post-Test MDB Front View

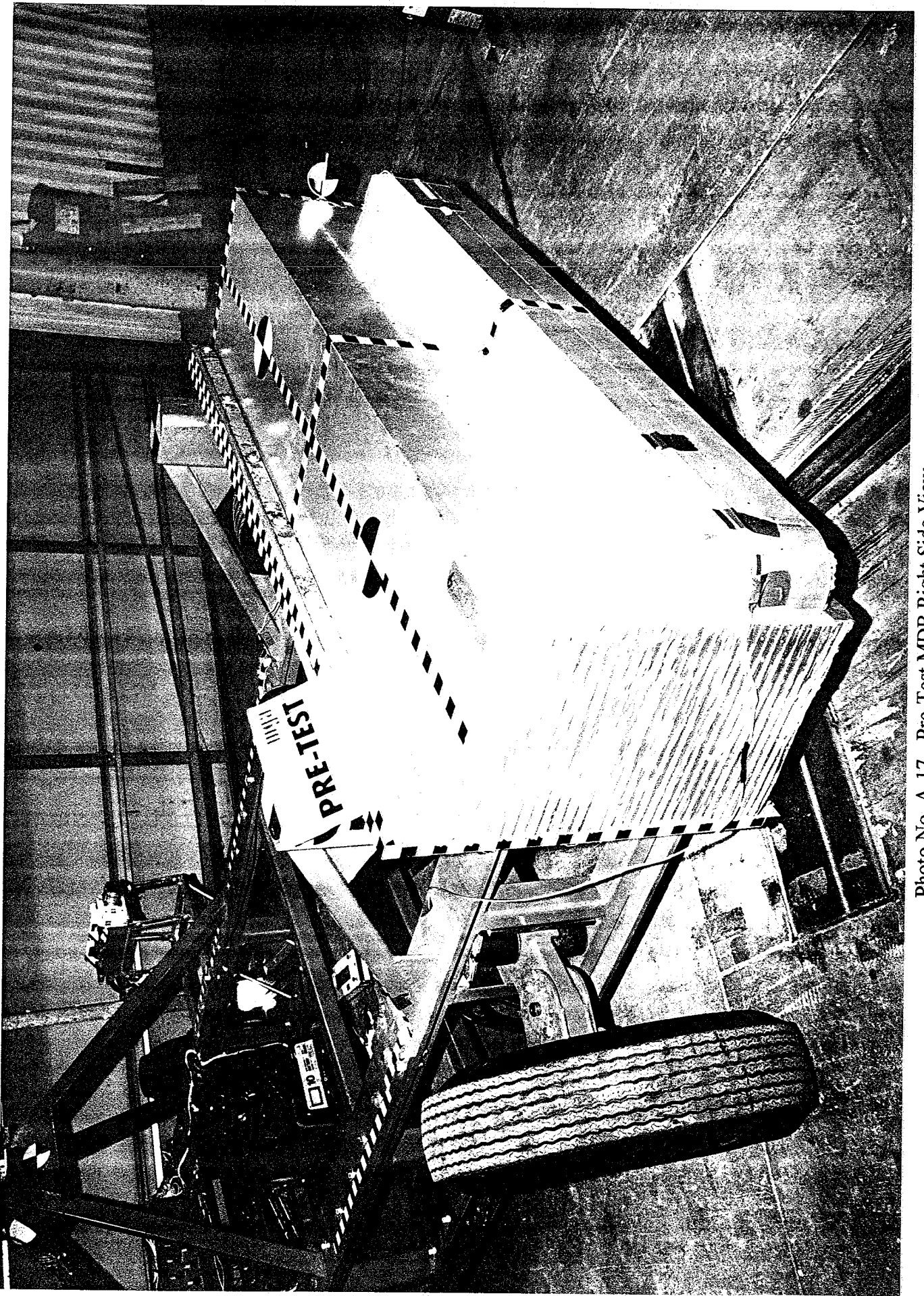


Photo No. A-17 - Pre-Test MDB Right Side View

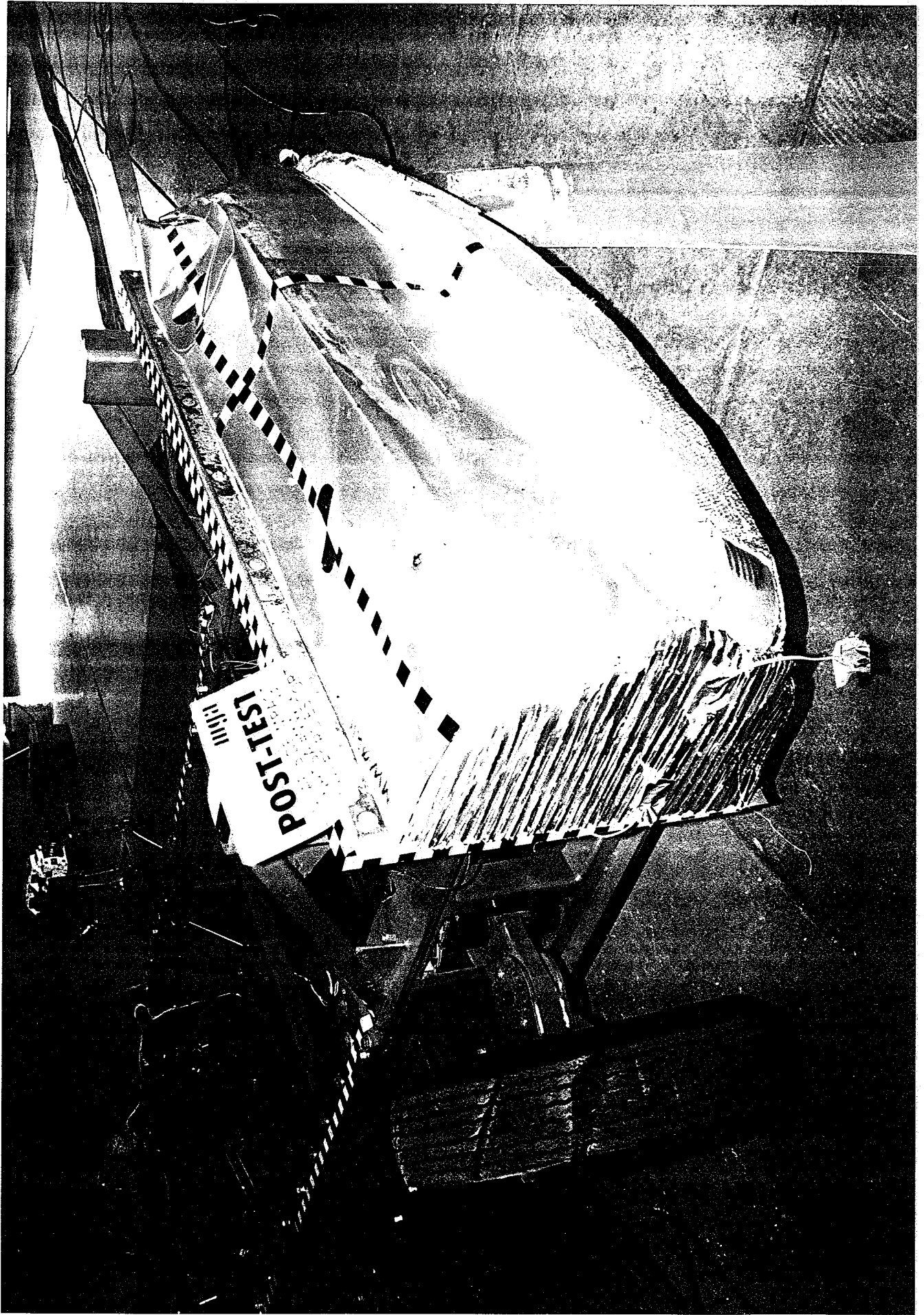


Photo No. A-18 - Post-Test MDB Right Side View

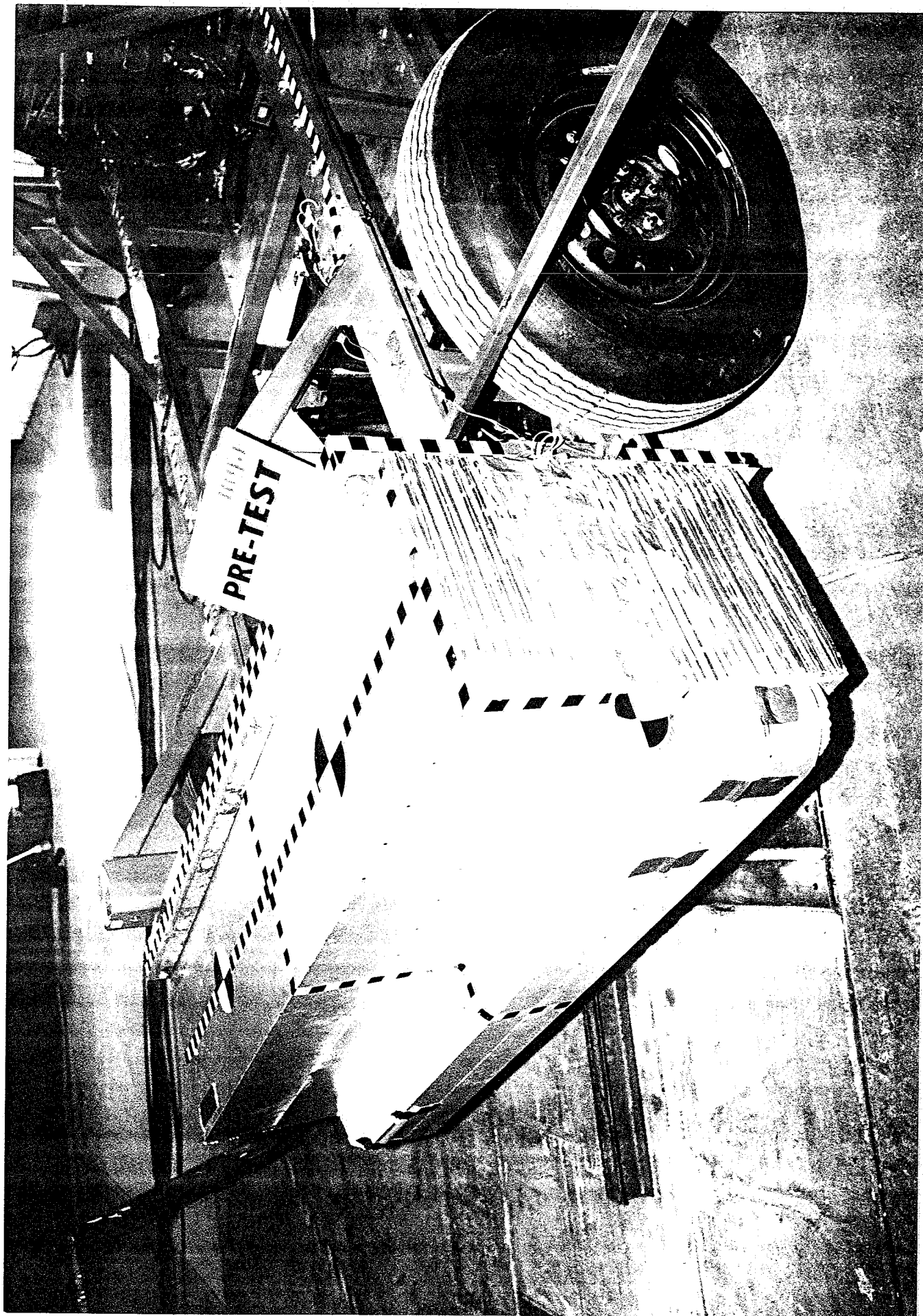


Photo No. A-19 - Pre-Test MDB Left Side View

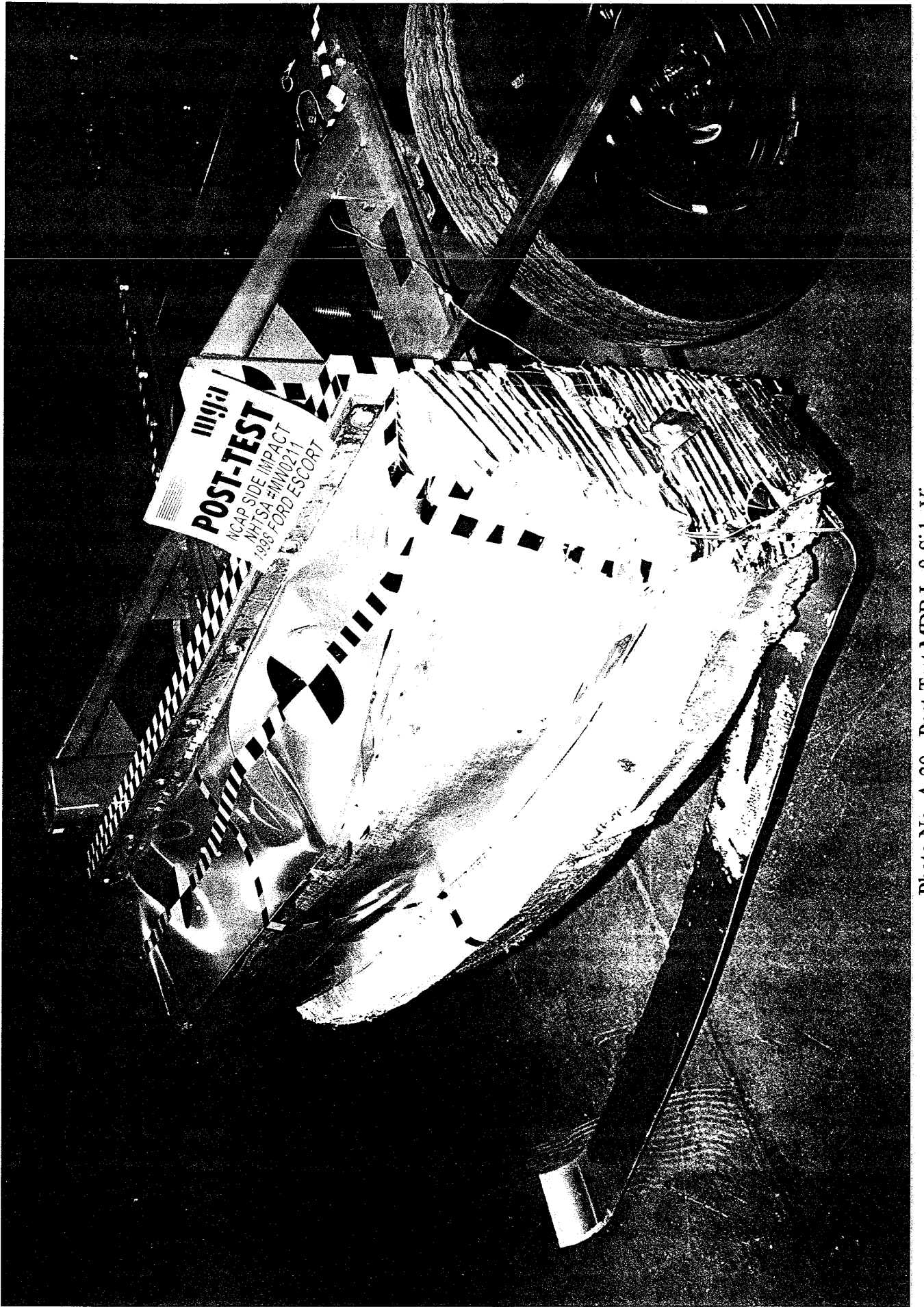


Photo No. A-20 - Post-Test MDB Left Side View

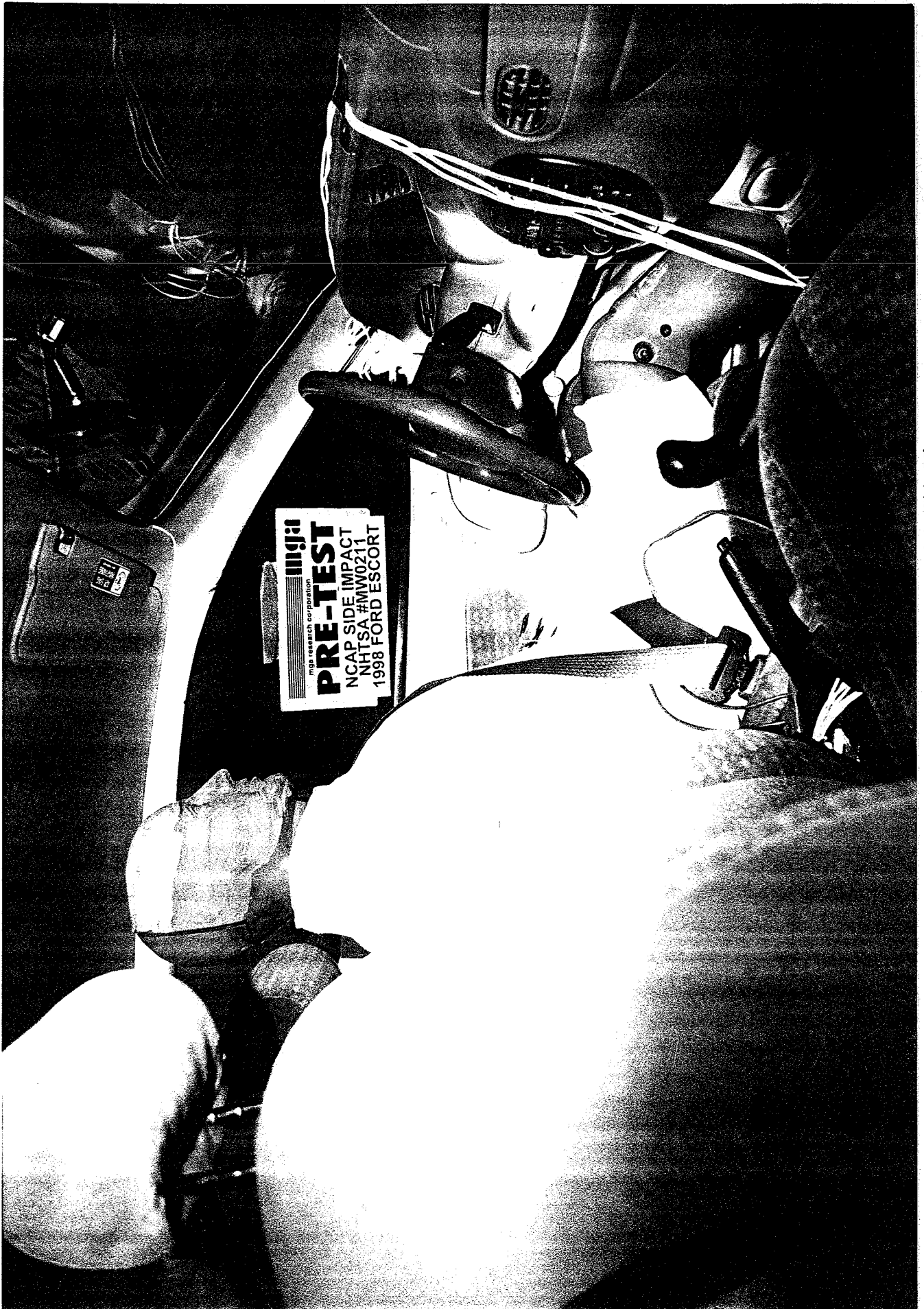
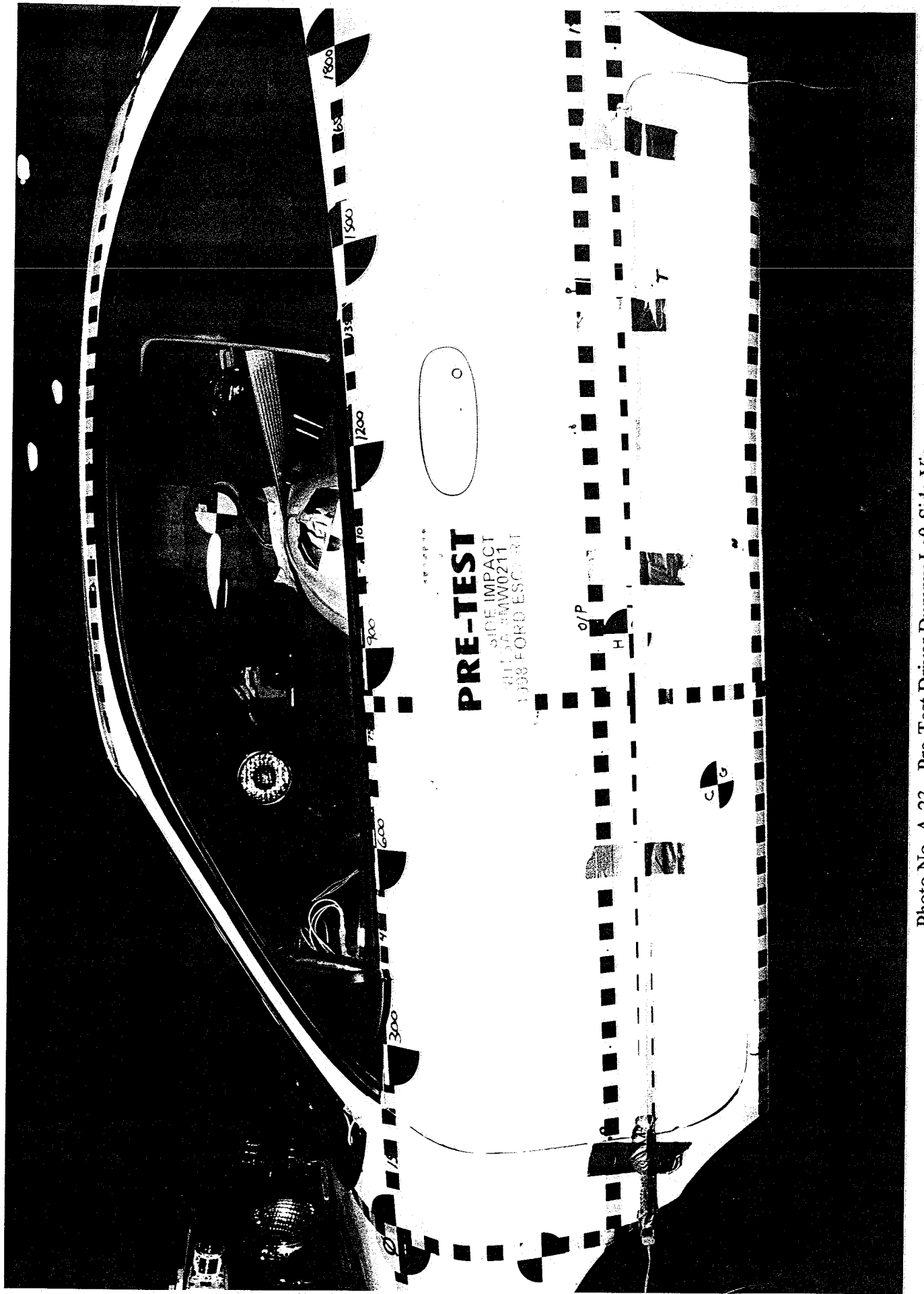


Photo No. A-21 - Pre-Test Driver Dummy Right Side View



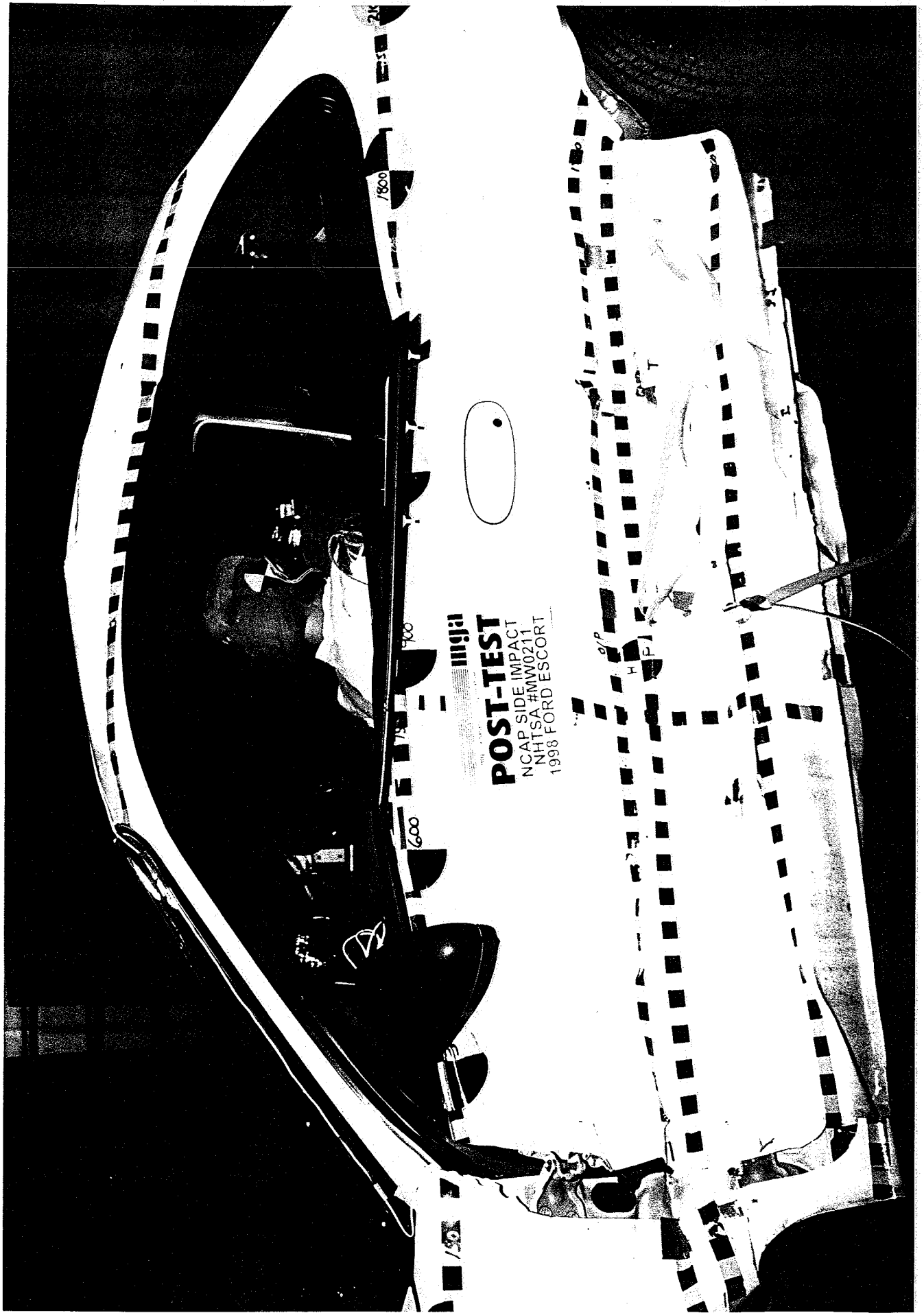
Photo No. A-22 - Post-Test Driver Dummy Right Side View



PRE-TEST
SIDE IMPACT
81134 BMW0211
1988 FORD ESCORT

O

Photo No. A-23 - Pre-Test Driver Dummy Left Side View



A-24

Photo No. A-24 - Post-Test Driver Dummy Left Side View



Photo No. A-25 - Pre-Test Driver Dummy Left Side View (Door Open)

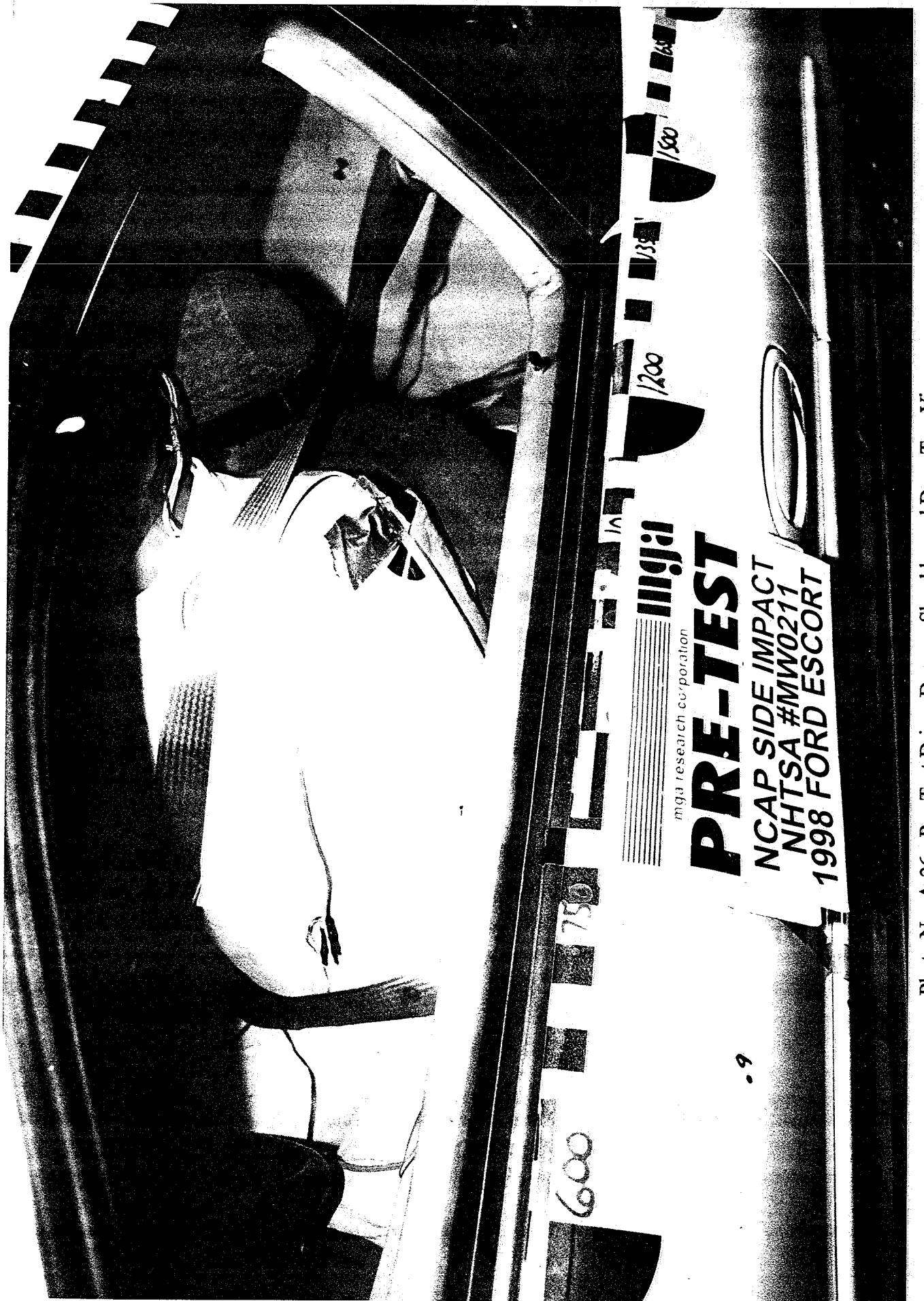


Photo No. A-26 - Pre-Test Driver Dummy Shoulder and Door Top View



Photo No. A-27 - Post-Test Driver Dummy Shoulder and Door Top View



mgaj

mgc research corporation

POST-TEST

NCAP SIDE IMPACT
NHTSA #MW0211
1998 FORD ESCORT

Photo No. A-28 - Post-Test Driver Dummy Contact

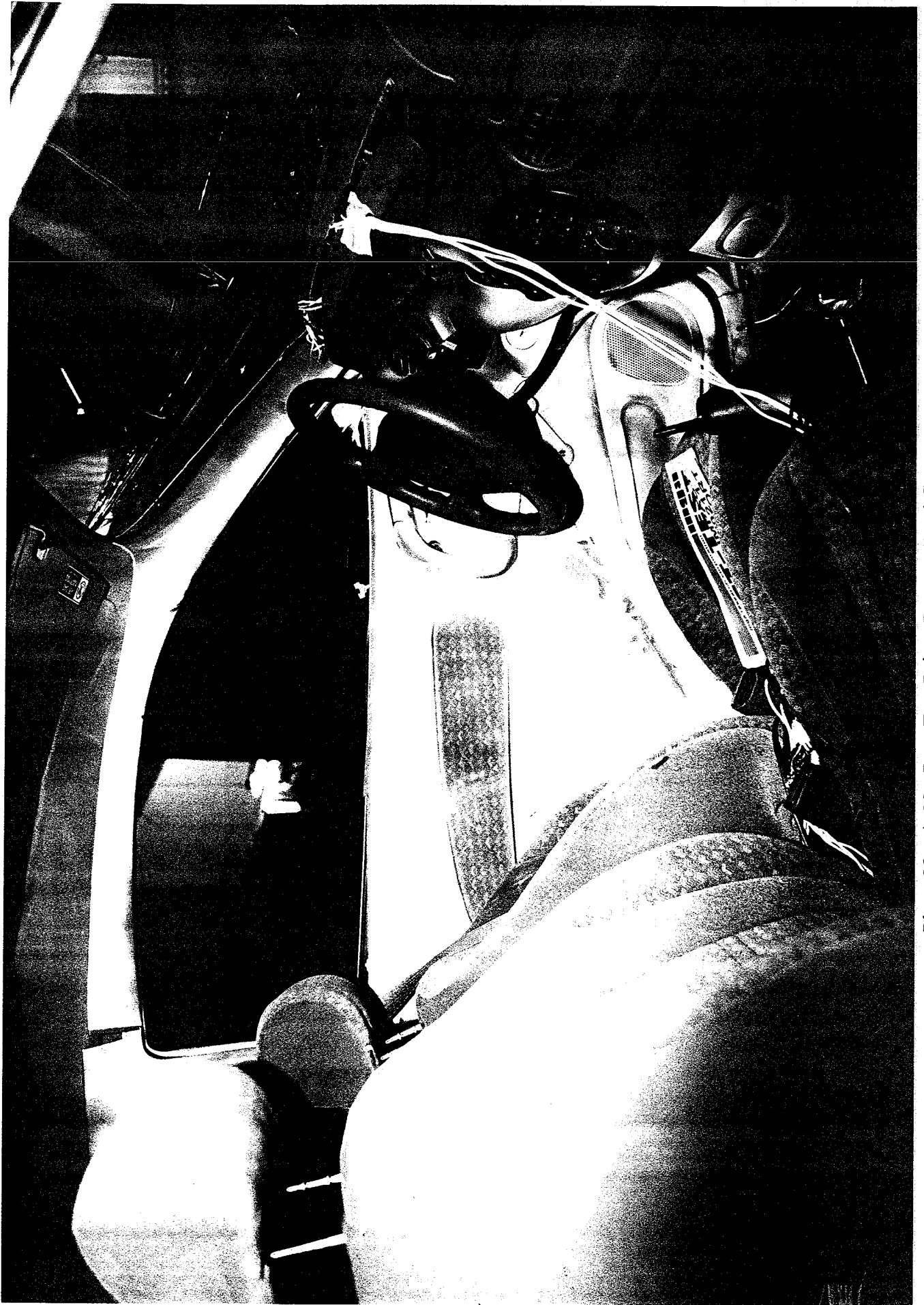


Photo No. A-29 - Post-Test Driver Dummy Head Contact

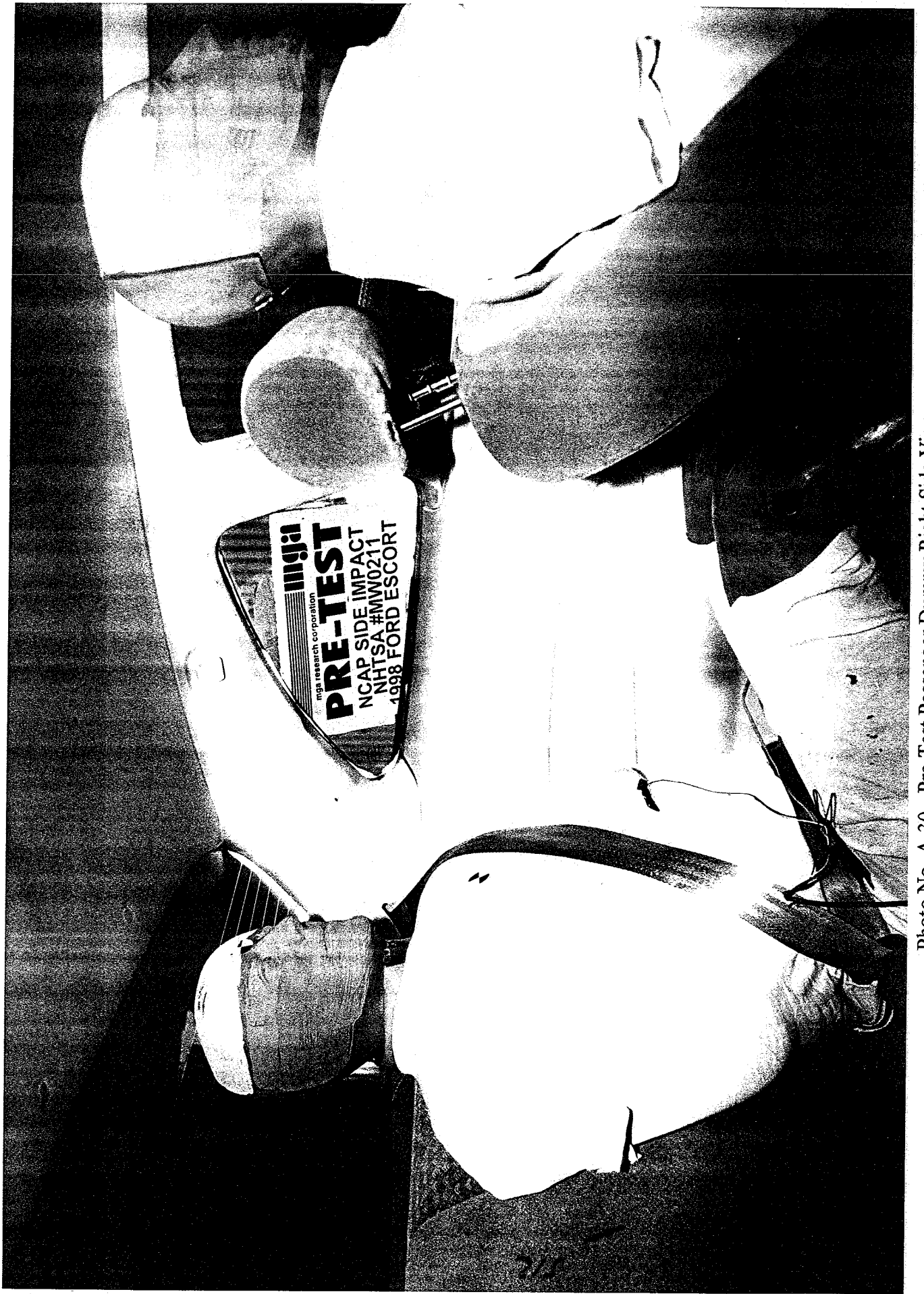
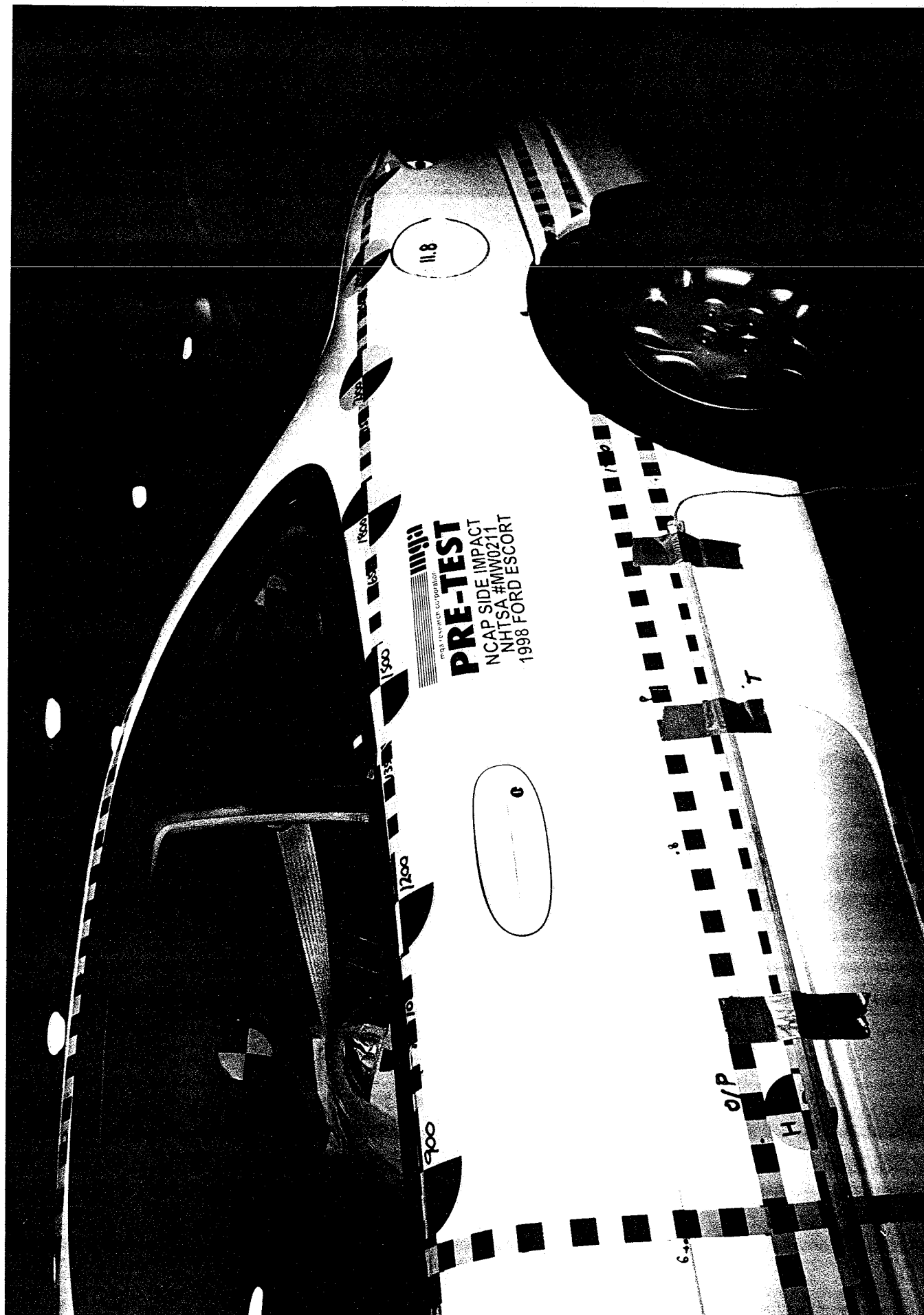


Photo No. A-30 - Pre-Test Passenger Dummy Right Side View

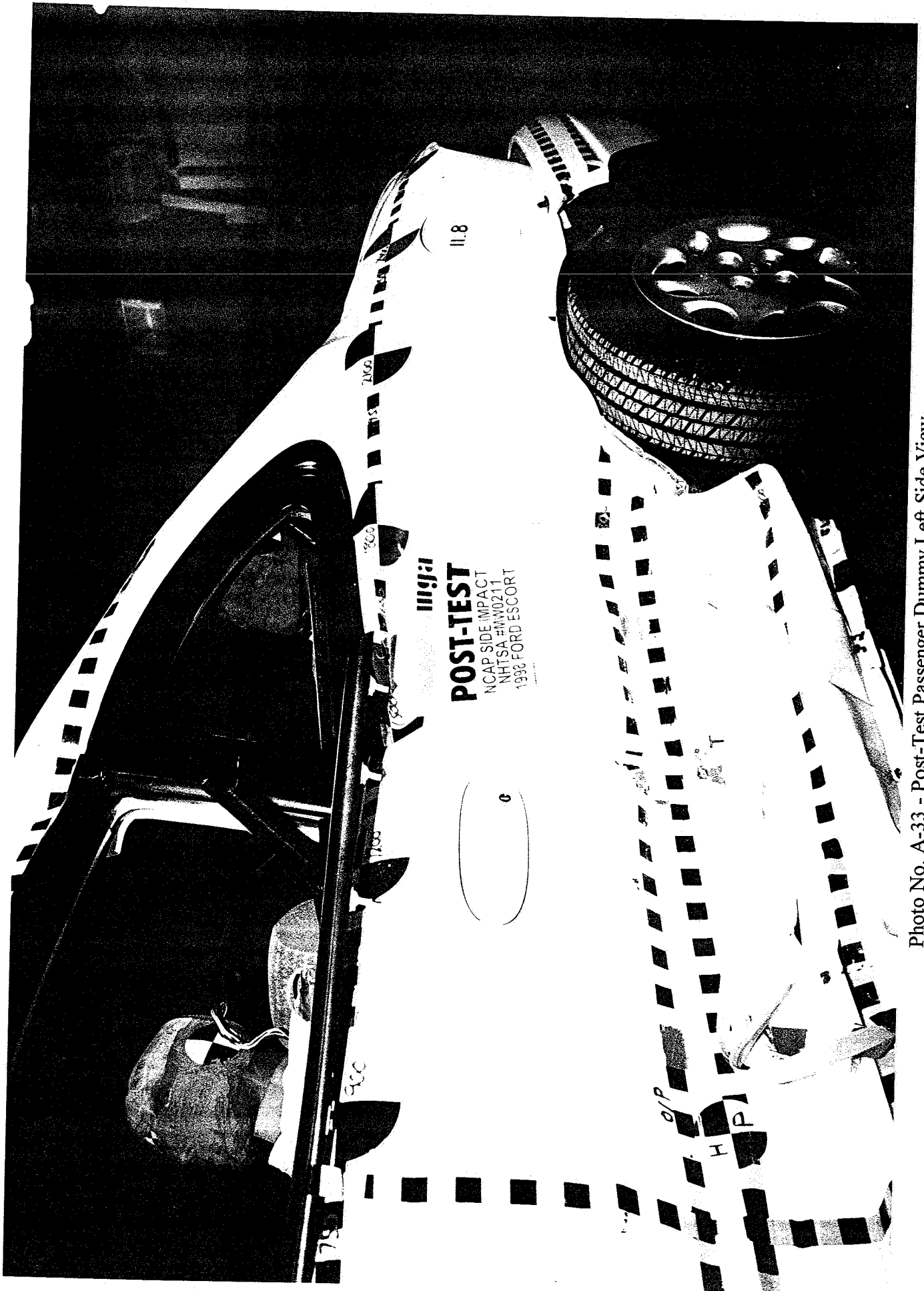


Photo No. A-31 - Post-Test Passenger Dummy Right Side View



A-32

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



POST-TEST
NCAP SIDE IMPACT
NHTSA #HW0211
1993 FORD ESCORT

11.8

11191

G

5CC

5CC

7K60

7K60

H P

o/p

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

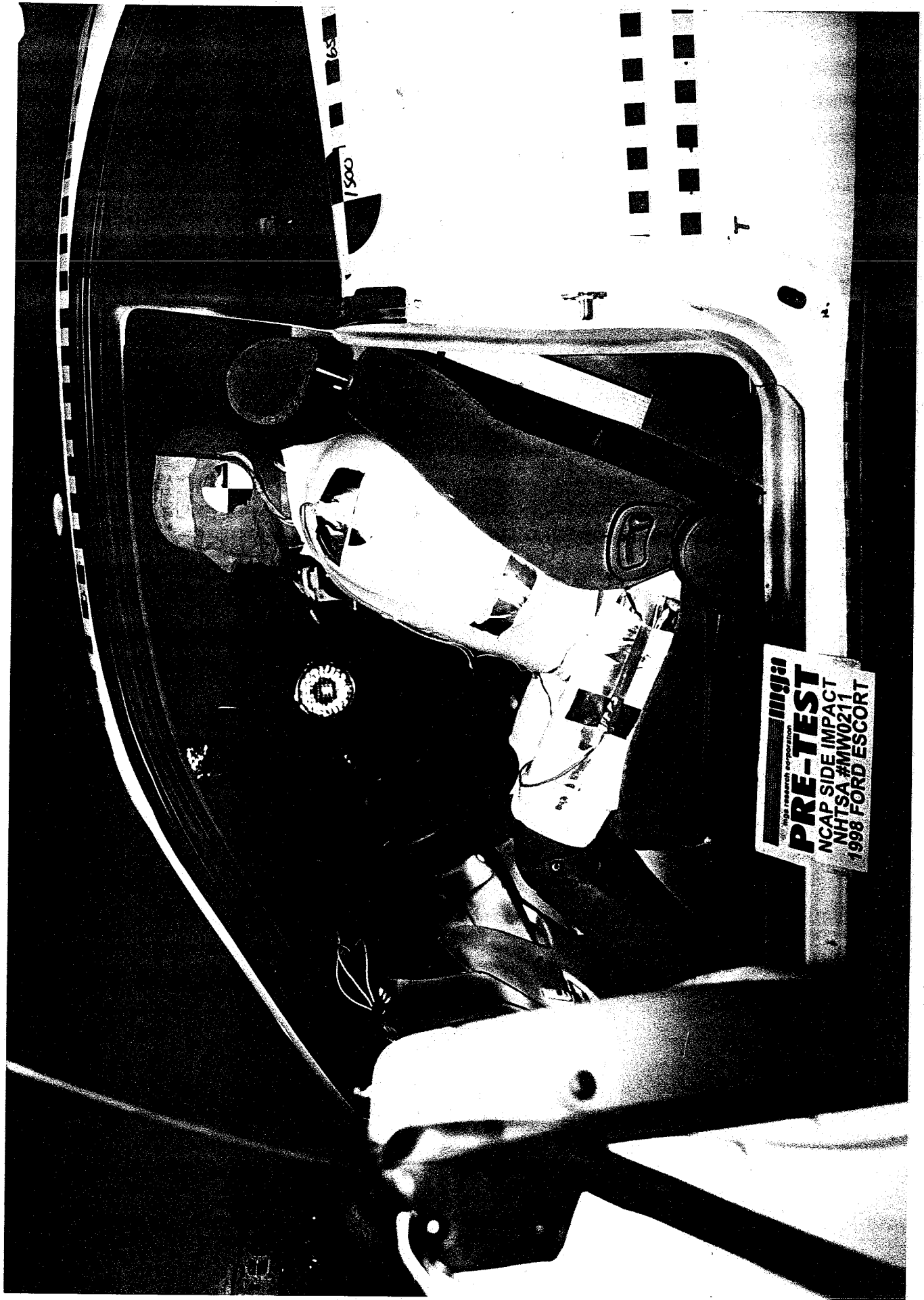


Photo No. A-34 - Pre-Test Passenger Dummy Left Side View (Door Open)



Photo No. A-35 - Pre-Test Passenger Dummy Shoulder and Door Top View



Photo No. A-36 - Post-Test Passenger Dummy Shoulder and Door Top View



Photo No. A-37 - Post-Test Passenger Dummy Contact



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

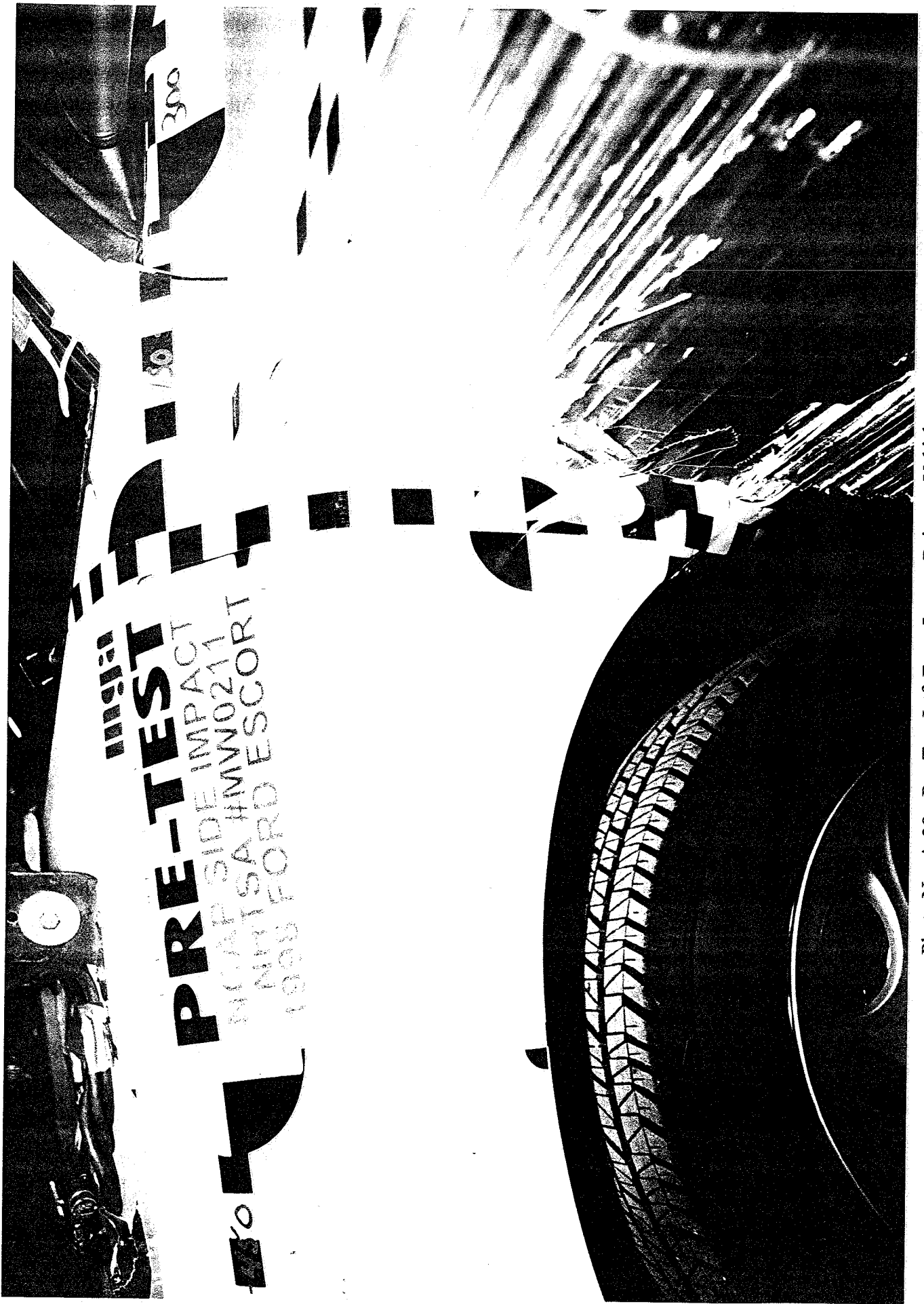


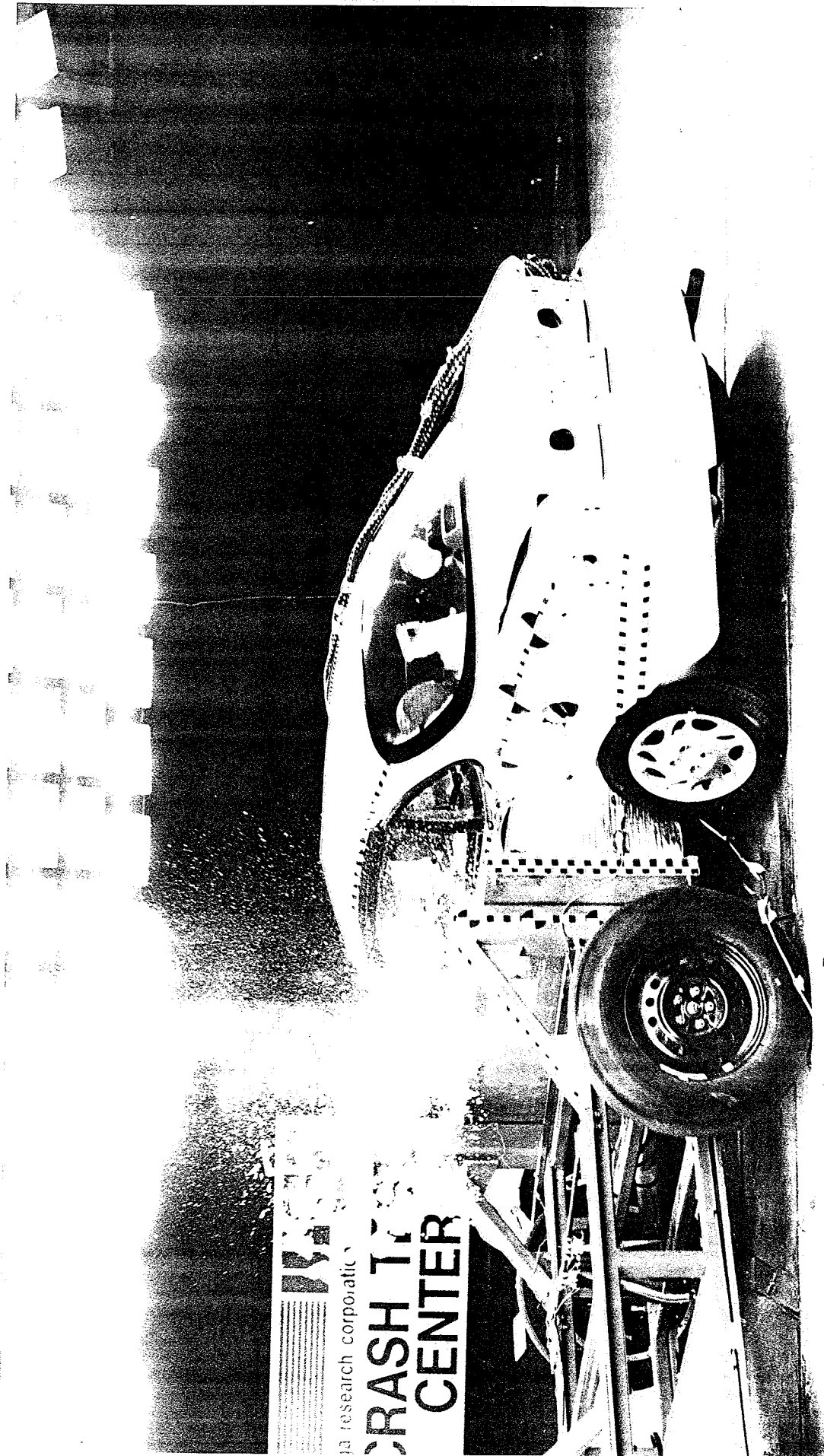
Photo No. A-39 - Pre-Test Left Front Impact Point on Vehicle



POST-TEST

NCAP SIDE IMPACT
NHATSA #M1W0
1998 FORD ESCORT

Photo No. A-40 - Post-Test Left Front Impact Point on Vehicle



W
ia research corporation
**CRASH TEST
CENTER**

A-41

Photo No. A-41 - Impact

MFD. BY FORD MOTOR COMPANY
DATE: 06/97
FRONT GAWR: 1931LB 875KG
REAR GAWR: 1444LB 654KG

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

VIN: 3FALP1136WR135585
TYPE: PASSENGER



F0114
R0042

EXT PNT: MT JRC: 41 IDSO:
BRK INT TRTP/PSRTRAXLETRISPR
A DA H 4T M
MADE IN MEXICO MPU V F 608-54-20472-AA

3FALP1136WR135585

ESCORT/TRACER

RECOMMENDED TIRE SIZE AND INFLATION PRESSURE (COLD)
DIMENSIONS DES PNEUS ET PRESSIONS DE SOUFFLAGE RECOMMANDÉES (À FROID)

TIRE SIZE DIMENSIONS DES PNEUS	LOAD RANGE CHARGE NOMINALE	PRESSURE	
		FRONT AVANT	REAR ARRIÈRE
P185/65R14 P185/60R15	STD	32 PSI / 2.21 kPa 32 PSI / 2.21 kPa	35 PSI / 2.41 kPa 35 PSI / 2.41 kPa
T115/70D14 T115/70D14	T	60 PSI / 4.15 kPa 60 PSI / 4.15 kPa	60 PSI / 4.15 kPa 60 PSI / 4.15 kPa

*MUST BE REPLACED WITH AN EQUIVALENT TIRE SPEED RATED TYPE.
*NE REMPLACER QUE PAR UN PNEU DONT L'INDICE DE VITESSE EST LE MÊME.

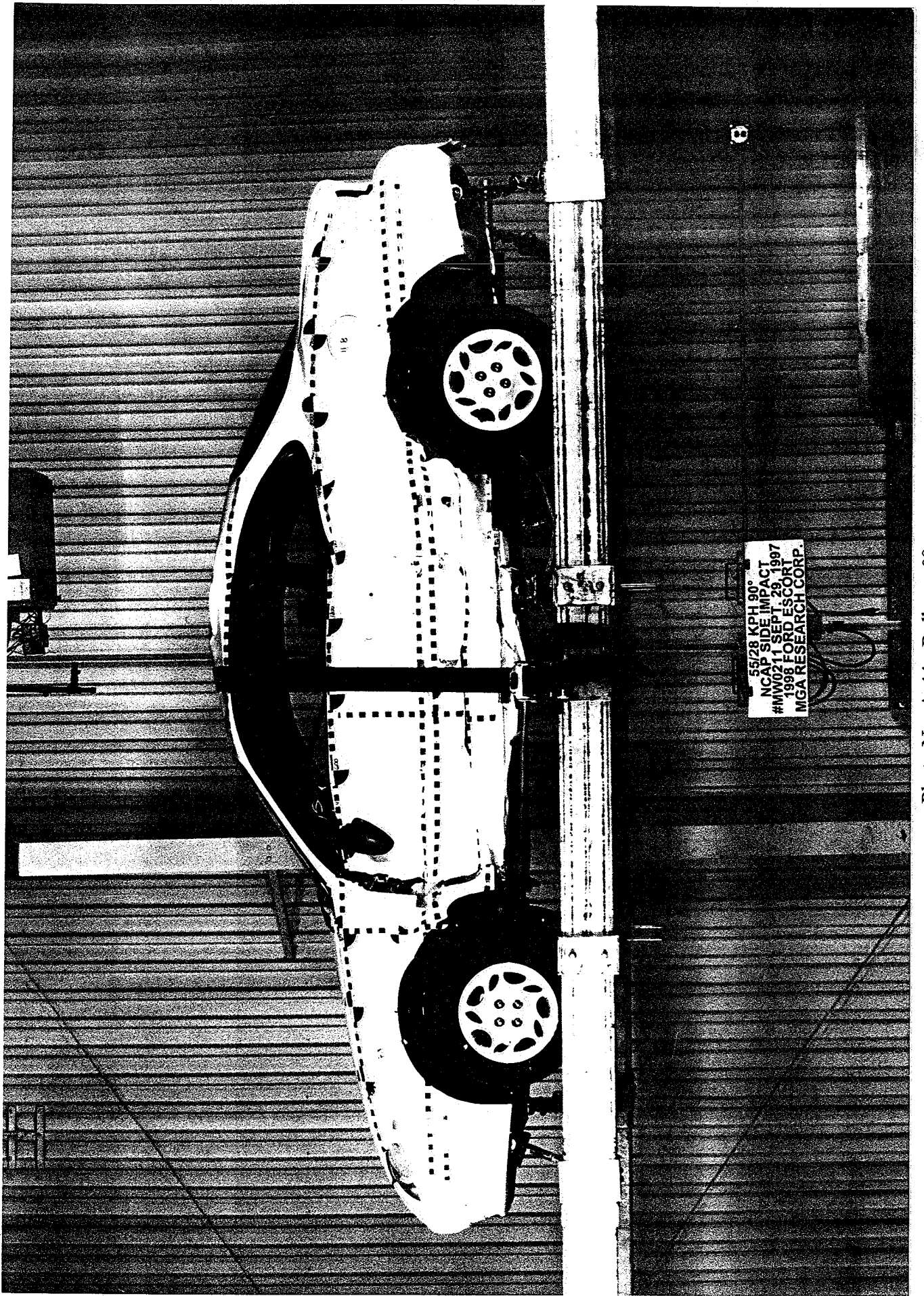
TOTAL LOAD = OCCUPANTS PLUS LUGGAGE	CHARGE TOTALE = OCCUPANTS PLUS BAGAGES
VEHICLE CAPACITY WEIGHT CAPACITÉ PORTERIE DU VÉHICULE	TOTAL OCCUPANTS ADRESSE TOTAL OCCUPANTS
800 kg / 880 lb	4
	REAR ARRIÈRE
	2
	350 kg / 800 lb

FOR SUSTAINED HIGH SPEED, TRAILER TOWING, RECREATIONAL ACCESSORIES OR TIRE CHAIN, EXTRA OCCUPANT - SEE OWNER GUIDE.
POUR VITESSES HAUTES, TIRAGE DE REMORQUE, ACCESSOIRES DE LOISIRS, CHAÎNES À PNEUS - VÉRIFIER LE MANUEL D'UTILISATION.

© 1993-1994 GM

3FALP1130MKT35585

Photo No. A-43 - Tire Placard



55/28 KPH 90°
NCAP SIDE IMPACT
#MW02 L1 SEPT. 29, 1997
1996 FORD ESCORT
MGA RESEARCH CORP.

A-44

Photo No. A-44 - Rollover 0°



Photo No. A-45 - Stoddard Leakage Area

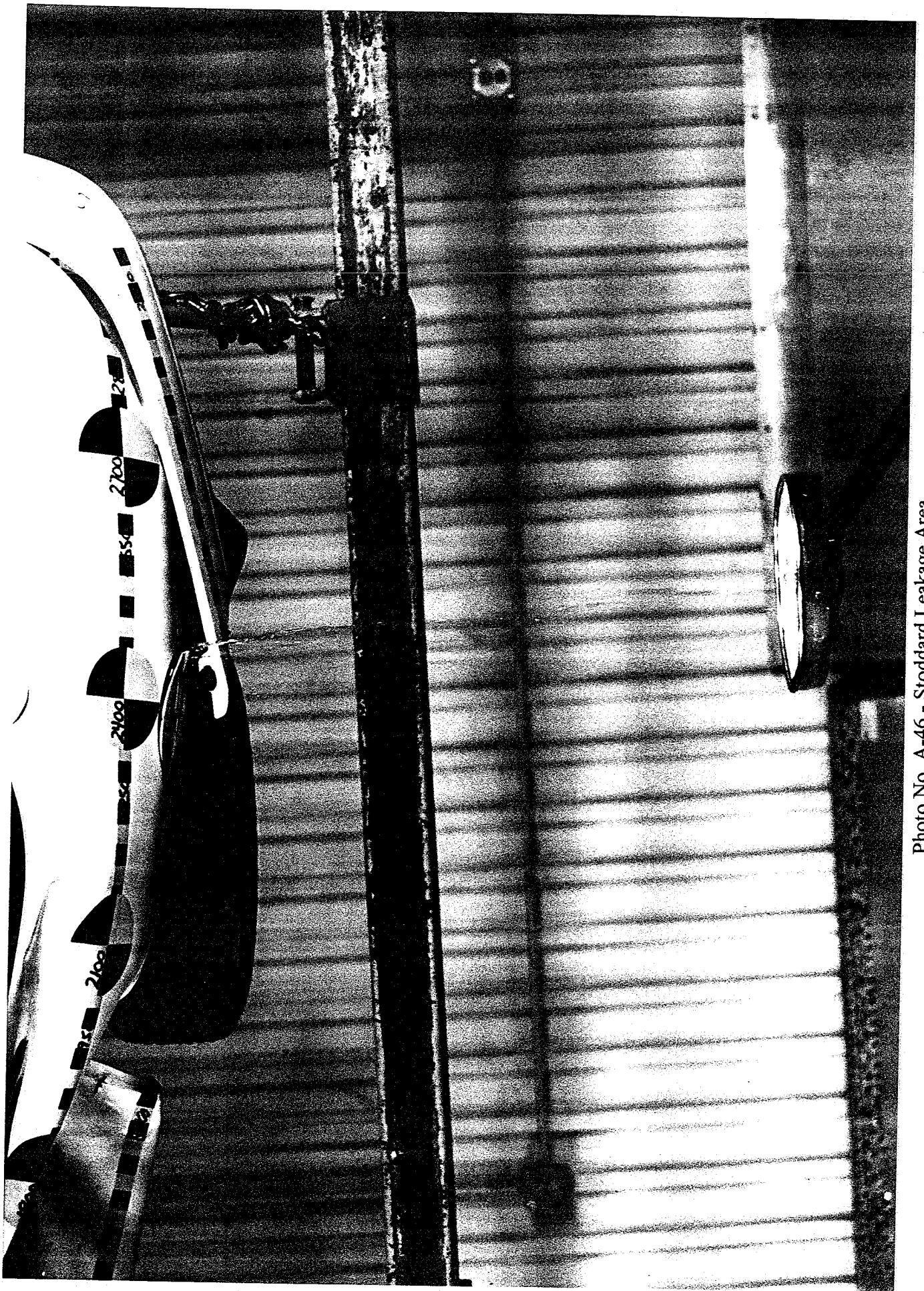


Photo No. A-46 - Stoddard Leakage Area

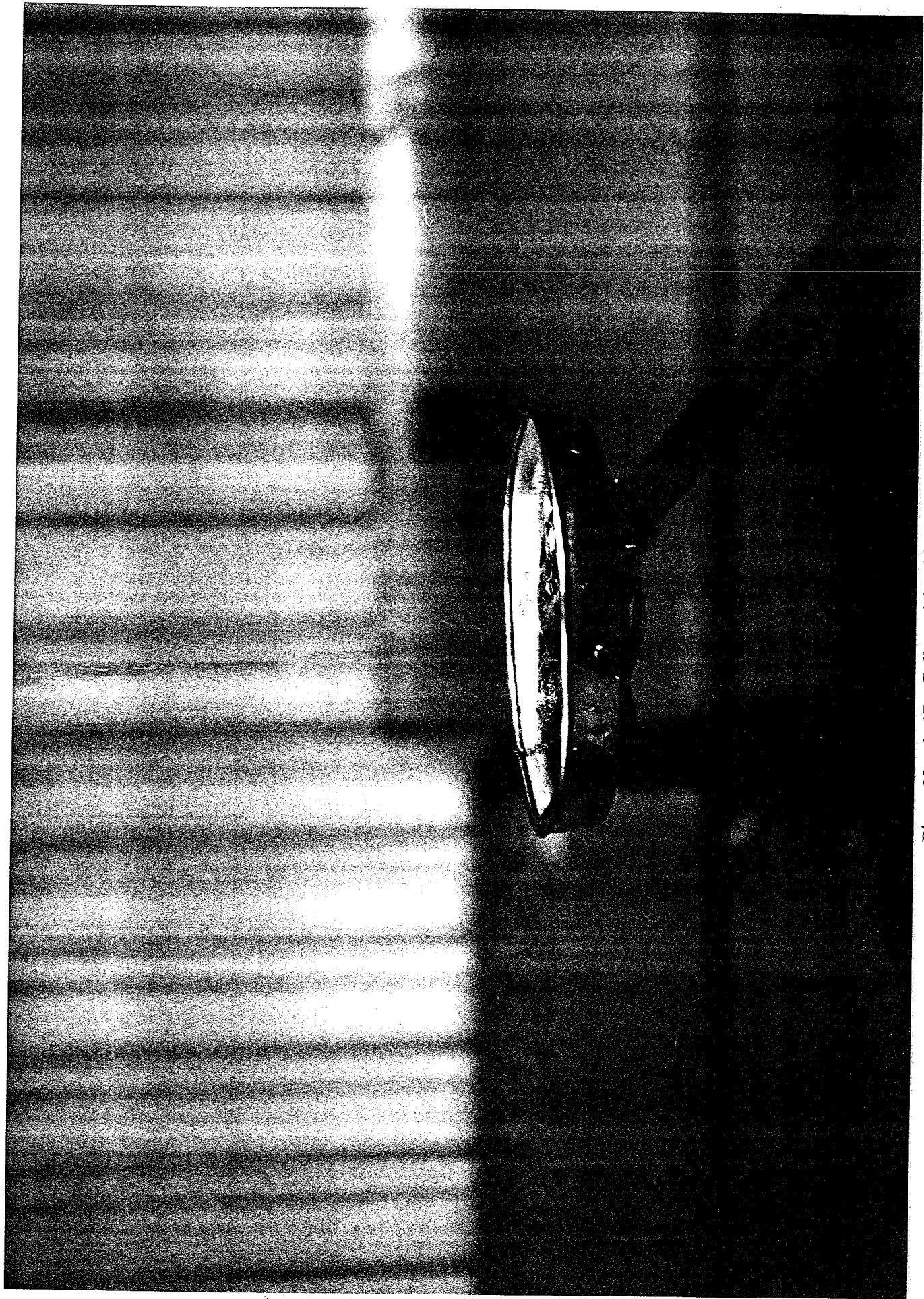
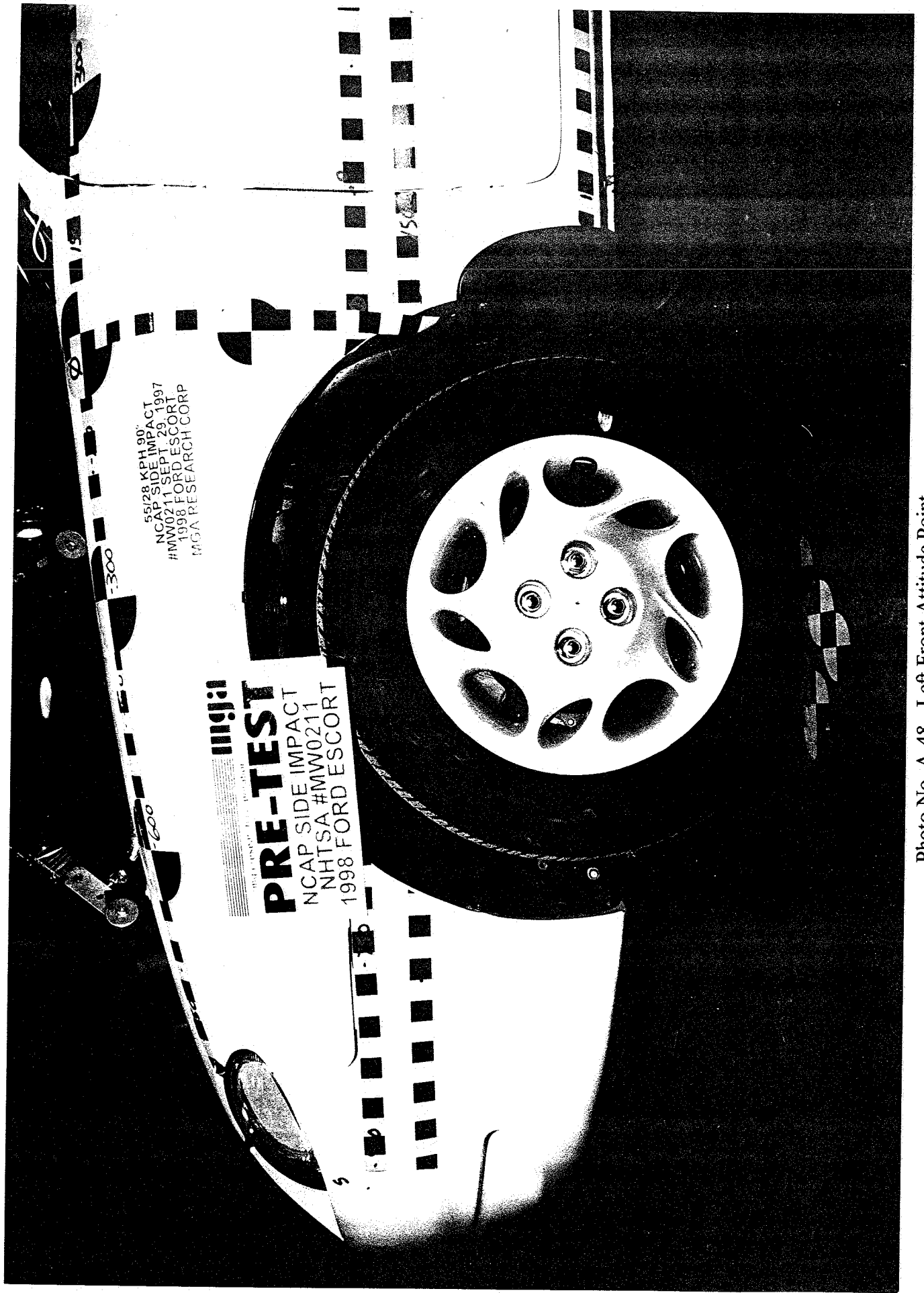


Photo No. A-47 - Collected Stoddard



55/28 KPH 90°
NCAP SIDE IMPACT
#MW0211 SEPT 29, 1997
1998 FORD ESCORT
MGA RESEARCH CORP

PRE-TEST
NCAP SIDE IMPACT
NHTSA #MW0211
1998 FORD ESCORT

Photo No. A-48 - Left Front Attitude Point



PRE-TEST
NCAP SIDE IMPACT
NHTSA #MW0211
1998 FORD ESCORT

Photo No. A-49 - Right Front Attitude Point

11.8

High

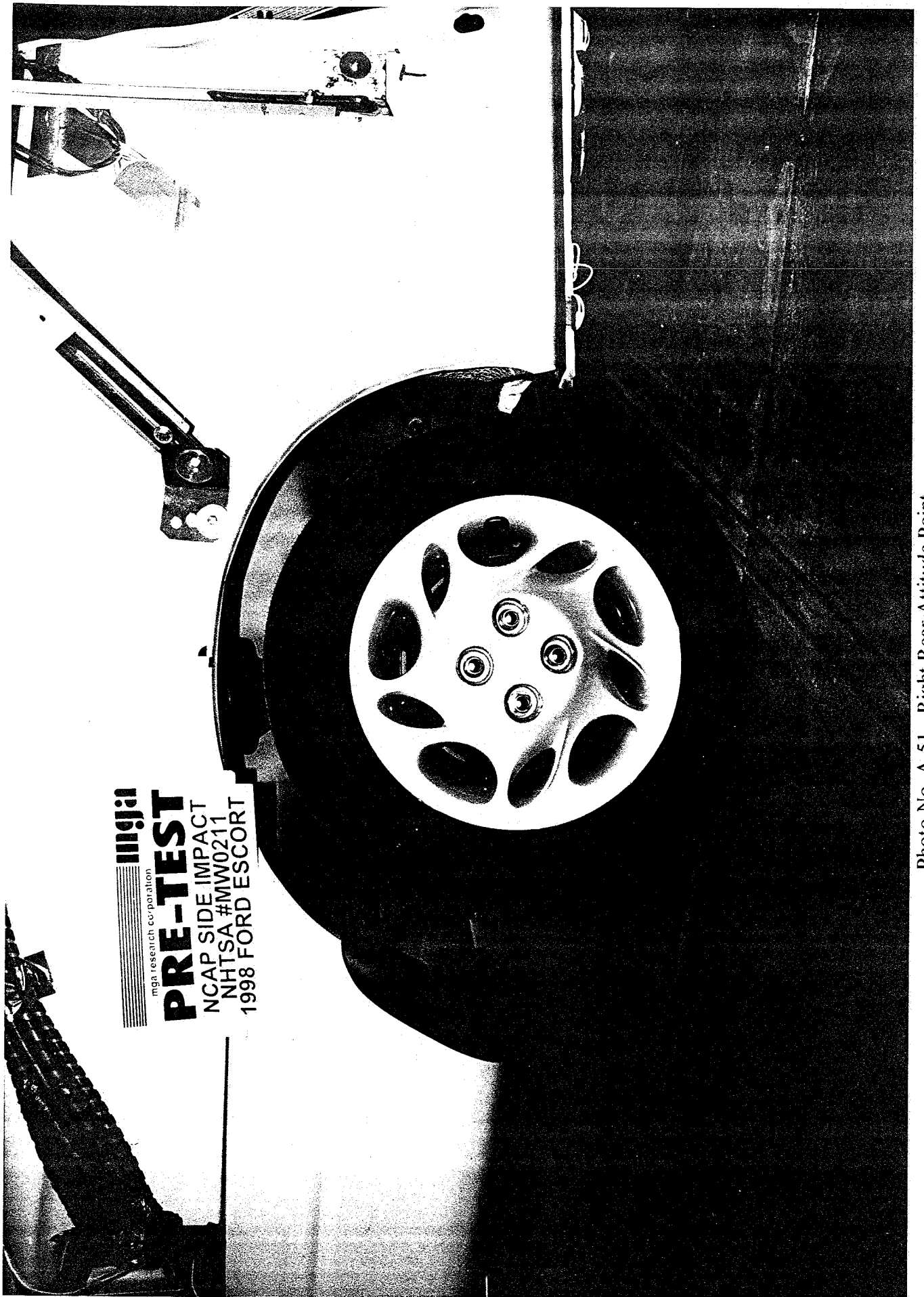
PRE-TEST

NCAP SIDE IMPACT
NHTSA #MW0211
1998 FORD ESCORT



A-50

Photo No. A-50 - Left Rear Attitude Point



mga research corporation
PRE-TEST
NCAP SIDE IMPACT
NHTSA #MW0211
1998 FORD ESCORT

Photo No. A-51 - Right Rear Attitude Point

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TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

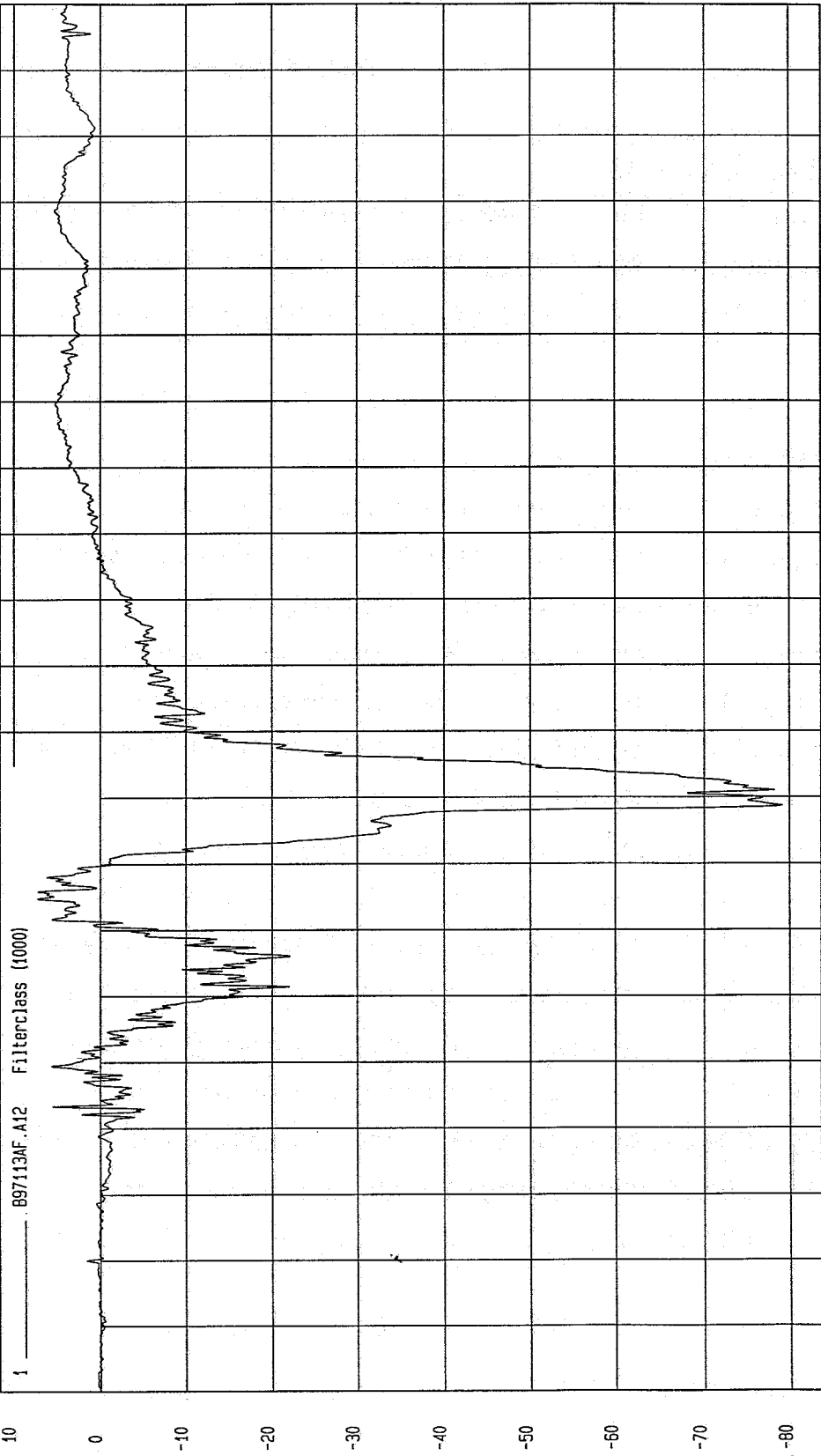
Speed: 38.2 MPH 61.5 KPH

COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 7.28 G'S at 55 msec

Minimum = -79.19 G'S at 69 msec

DRIVER HEAD X ACCELERATION



TIME (SECONDS)

MGA Research
10-02-1997 11: 44

G.S

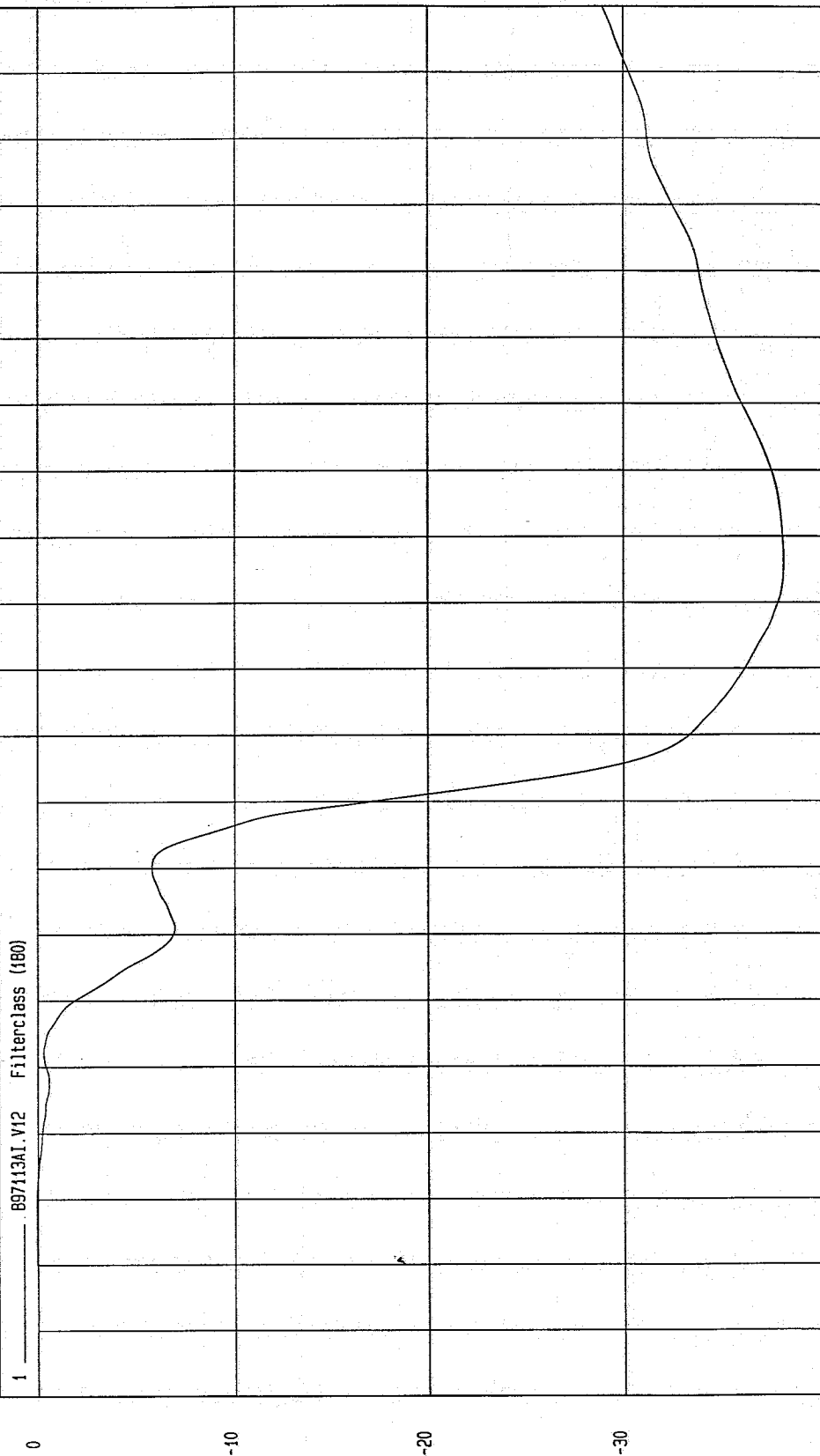
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -38.08 KPH at 106 msec Maximum = 6.87E-02 KPH at 9 msec

DRIVER HEAD X VELOCITY

1 897113A1.V12 Filterclass (180)



MGA Research
10-02-1997 11:52

TIME Seconds

KPH

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

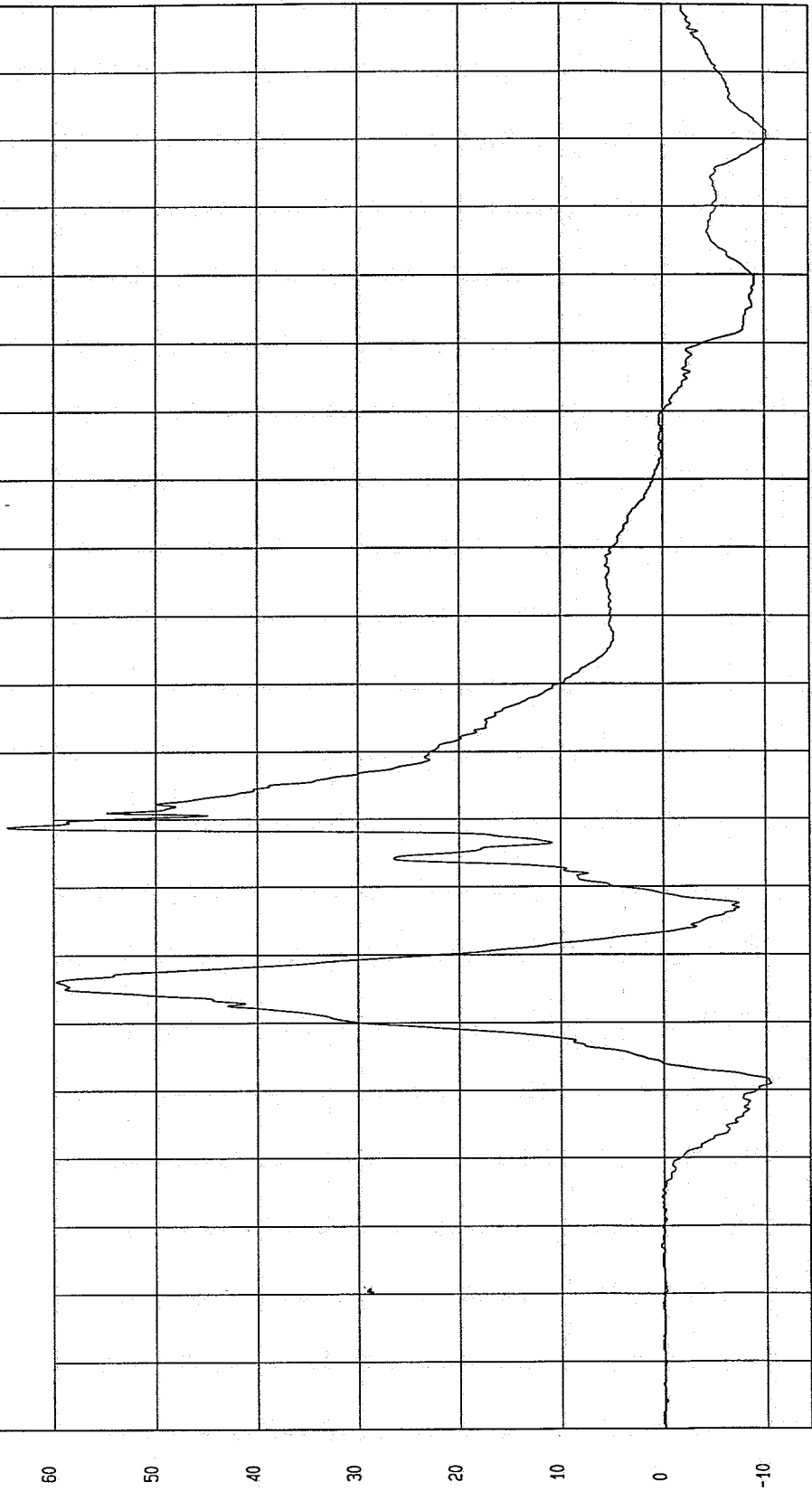
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 64.58 G'S at 69 msec

Minimum = -10.47 G'S at 31 msec

DRIVER HEAD Y ACCELERATION

1 ——— B97113AF.A13 Filterclass (1000)



MCA Research
10-02-1997 11:44

TIME (SECONDS)

G'S

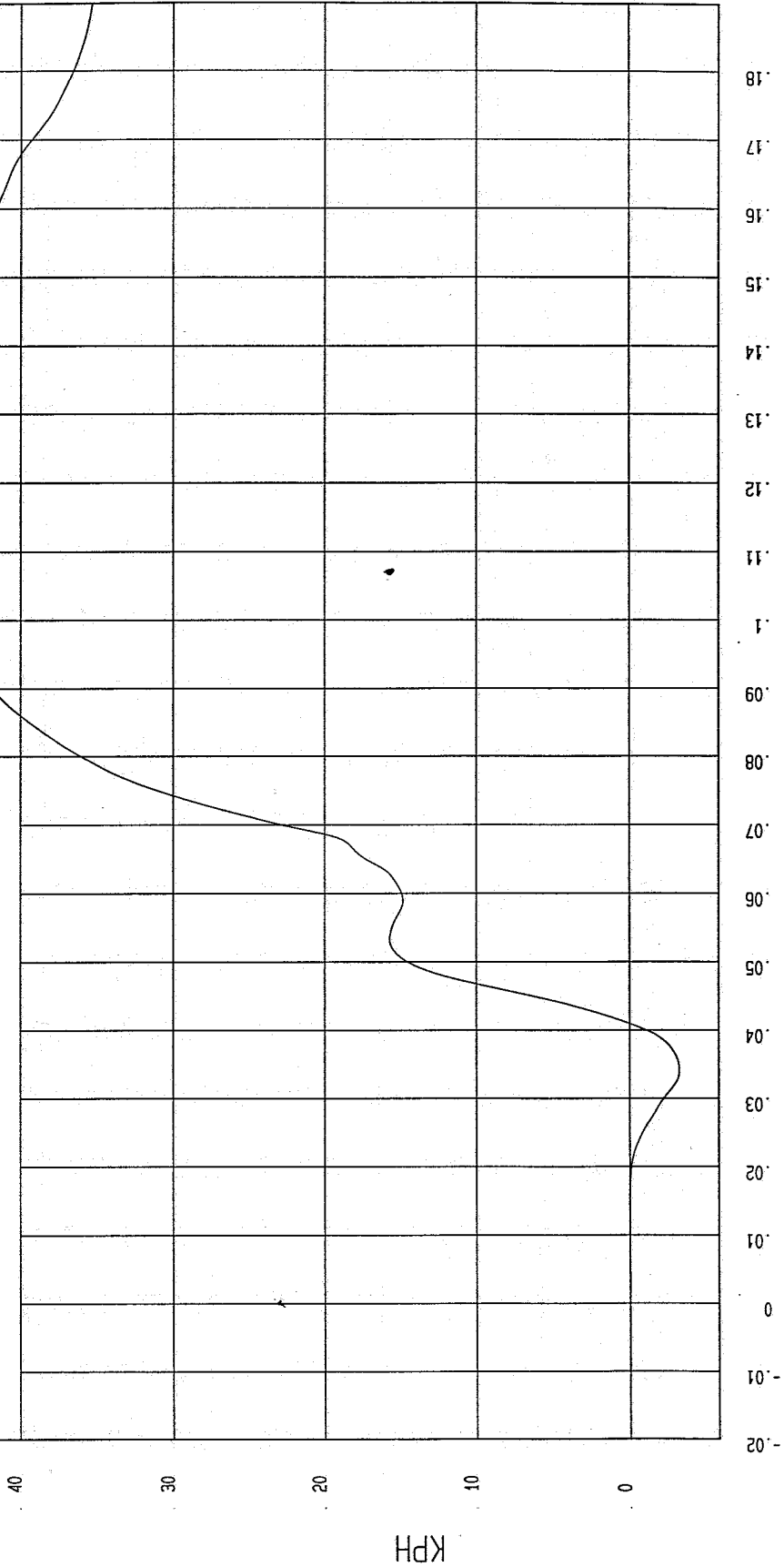
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -3.23 KPH at 34 msec
Maximum = 47.10 KPH at 130 msec

DRIVER HEAD Y VELOCITY

1 ——— B9713AT.V13 Filterclass (180)



NGA Research
10-02-1997 11:52

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

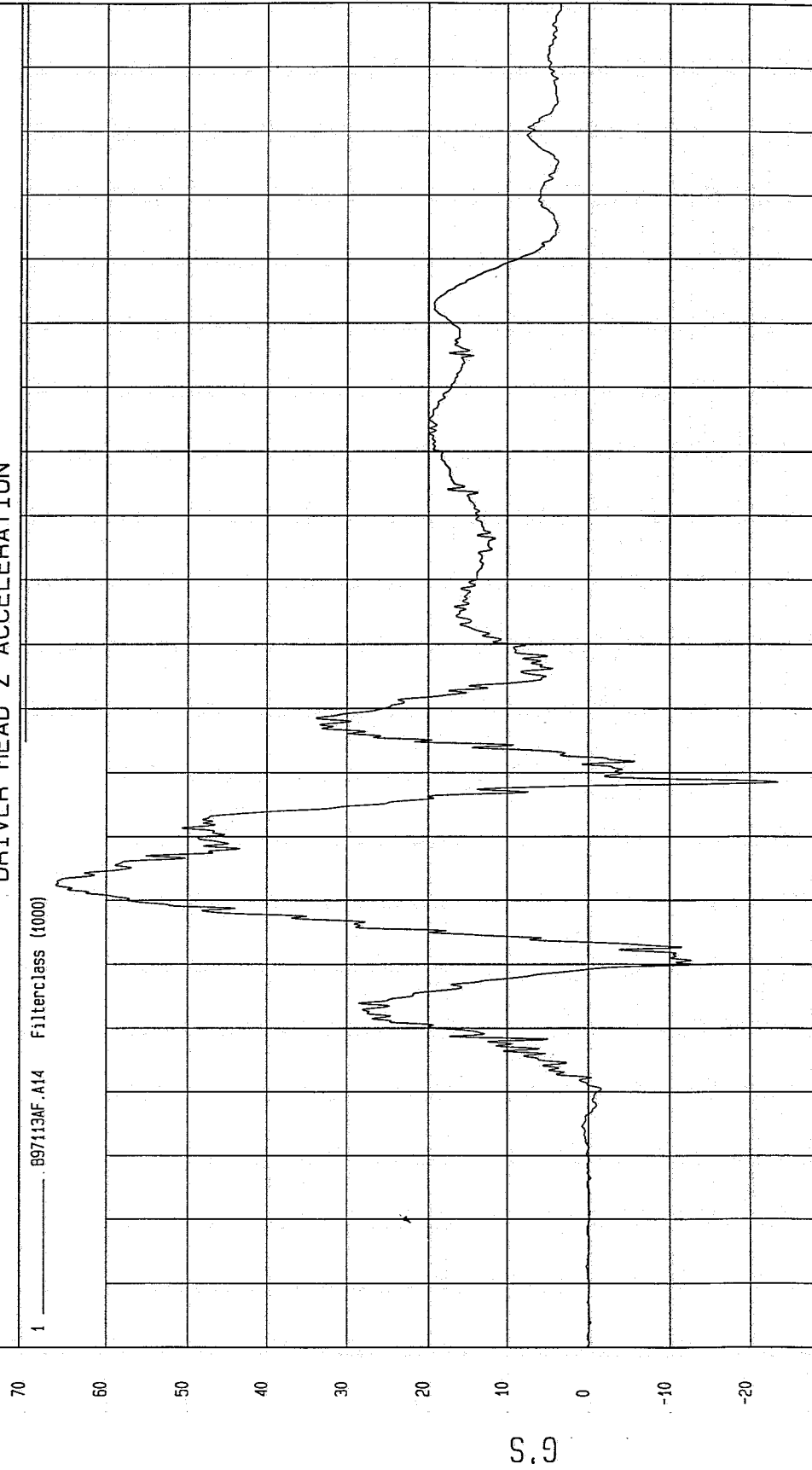
Speed: 38.2 MPH 61.5 KPH

Minimum = -23.46 G'S at 68 msec

Maximum = 66.18 G'S at 52 msec

DRIVER HEAD Z ACCELERATION

1 ——— .897113AF.A14 Filterclass (1000)



TIME (SECONDS)

MSA Research
10-02-1997 11:44

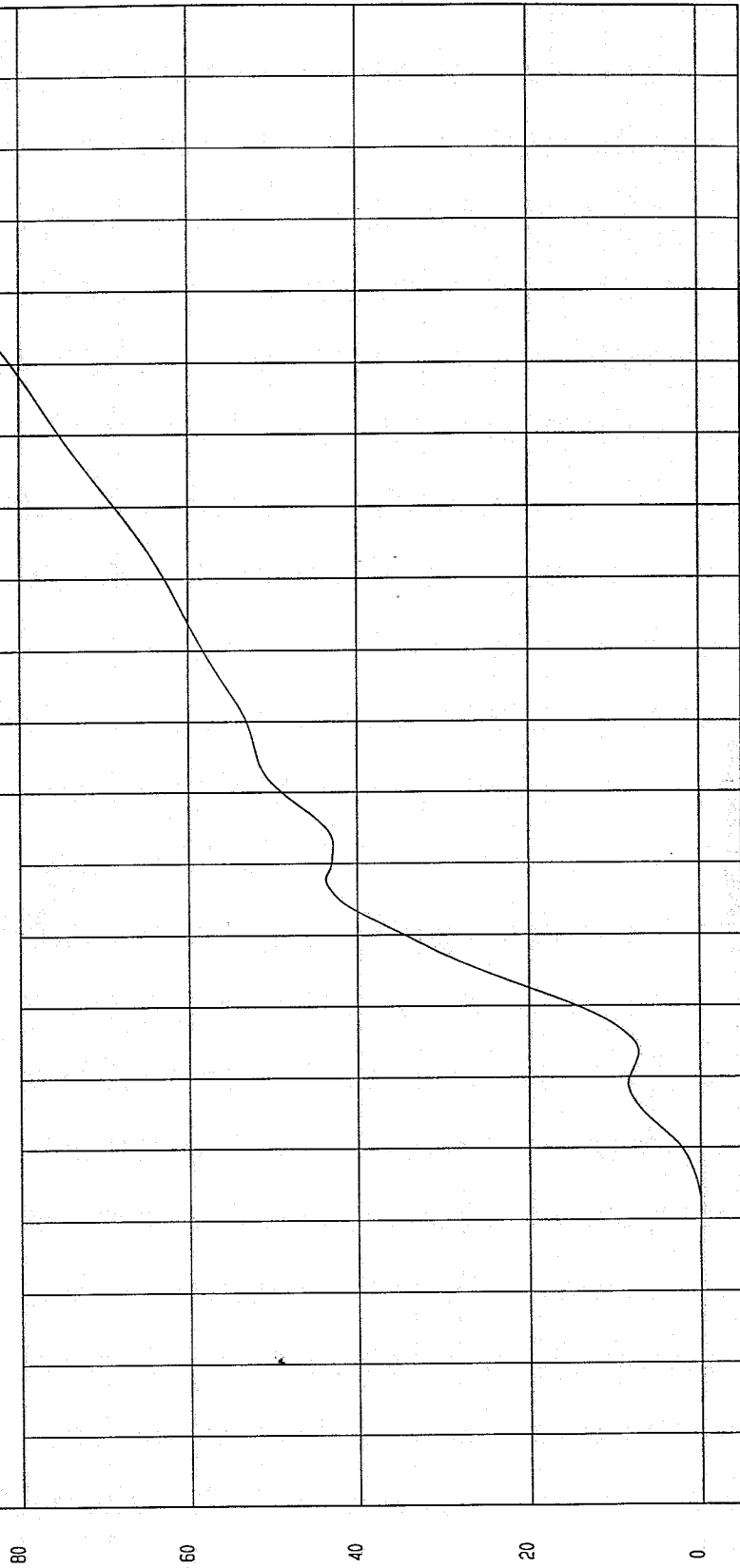
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -6.01E-02 KPH at 21 msec
Maximum = 94.97 KPH at 200 msec

DRIVER HEAD Z VELOCITY

1 897113AI.V14 FilterClass (180)



MCA Research
10-02-1997 11:52

TIME Seconds

KPH

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

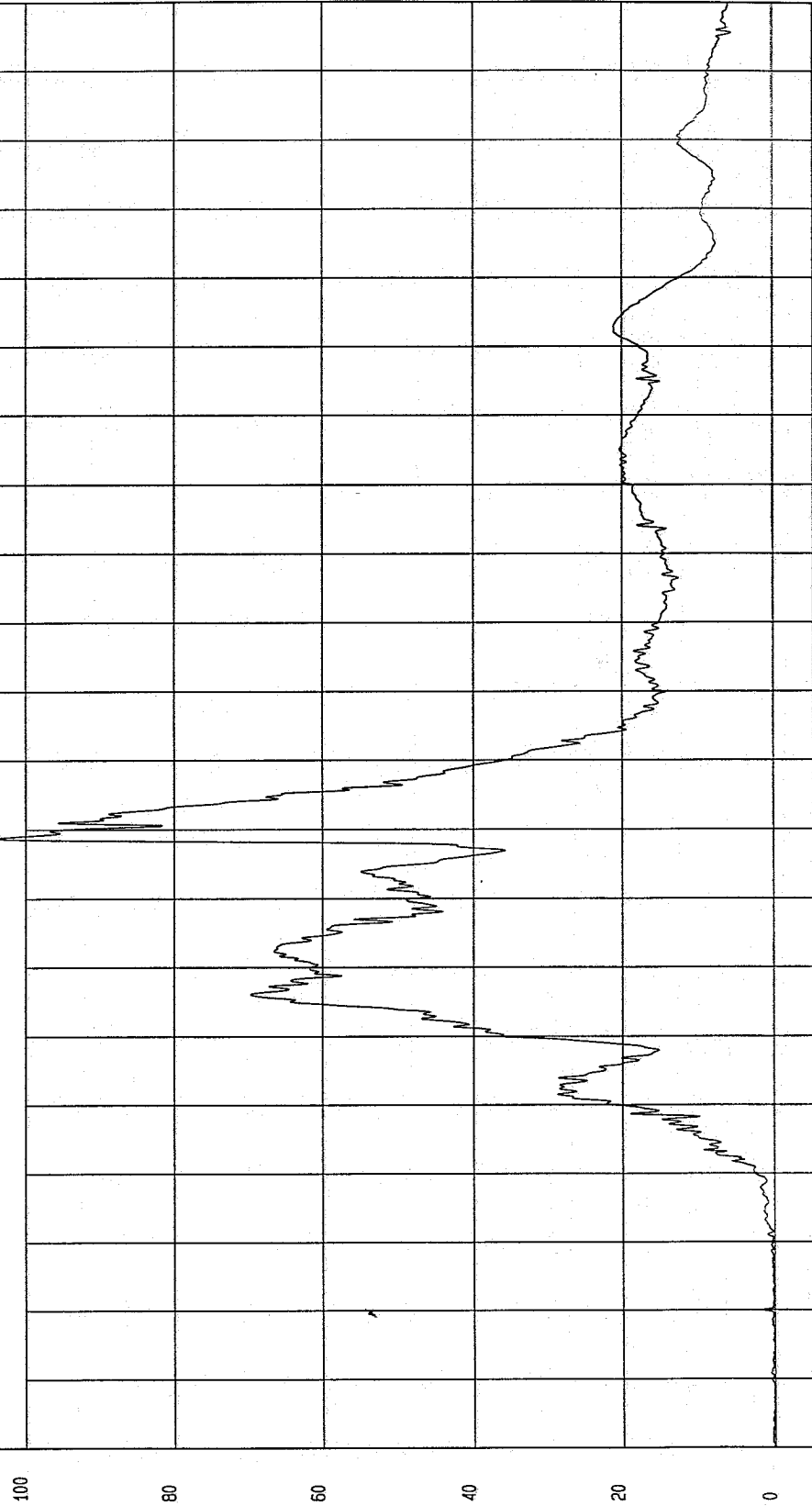
Speed: 38.2 MPH 61.5 KPH

Minimum = 4.59E-02 G'S at -6 msec

Maximum = 103.78 G'S at 69 msec

DRIVER HEAD RESULTANT

1 _____ .B97113AV.A12 Filterclass (1000)



MGA Research
10-02-1997 11:44

TIME (SECONDS)

G'S

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

TEST: HIGH SPEED LATERAL IMPACT

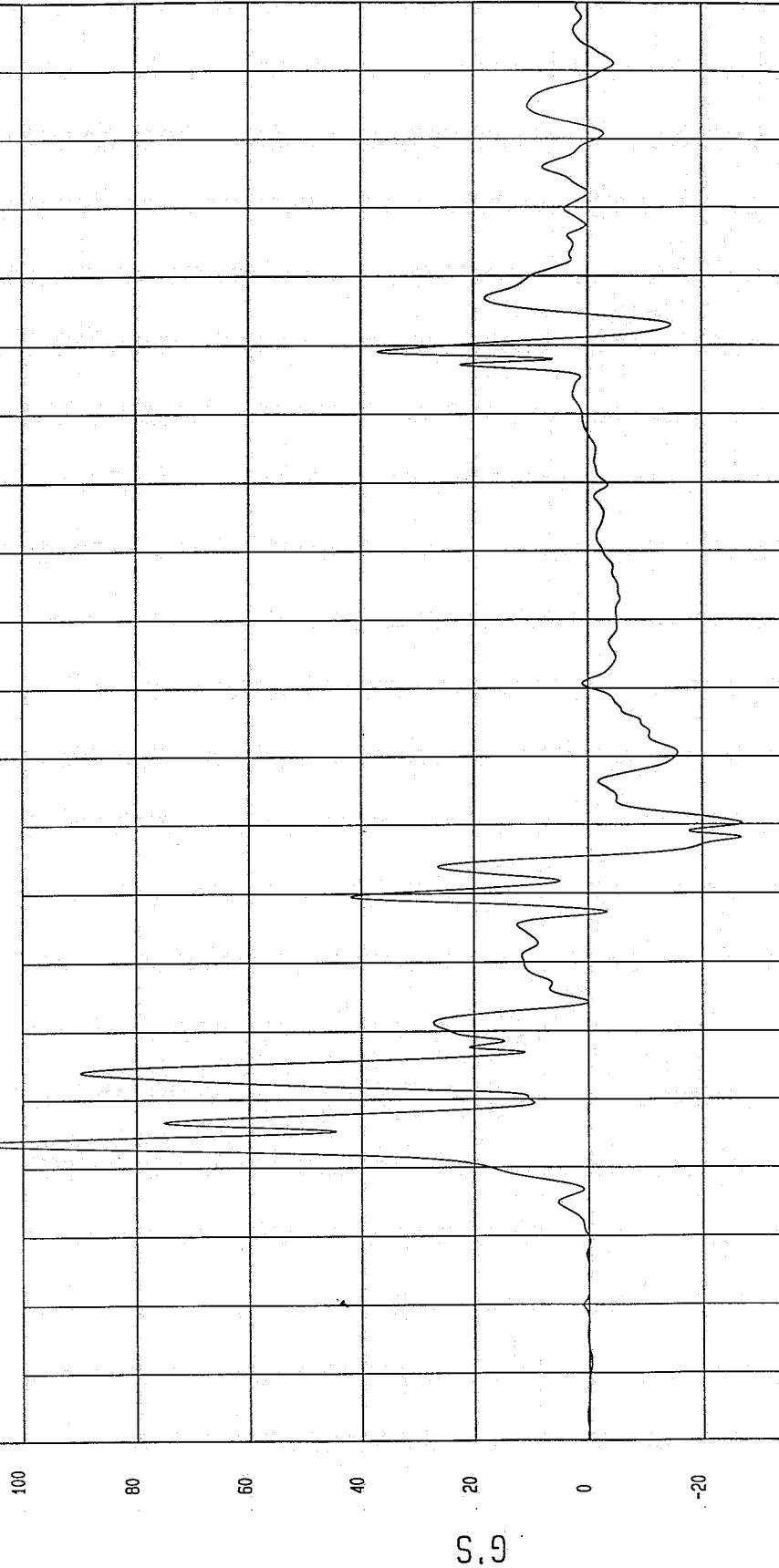
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 109.43 G'S at 24 msec

Minimum = -26.89 G'S at 70 msec

DRIVER UPPER RIB Y ACCELERATION

1 — .897113AF.A15 Filterclass (180)



MGA Research
10-02-1997 11:59

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

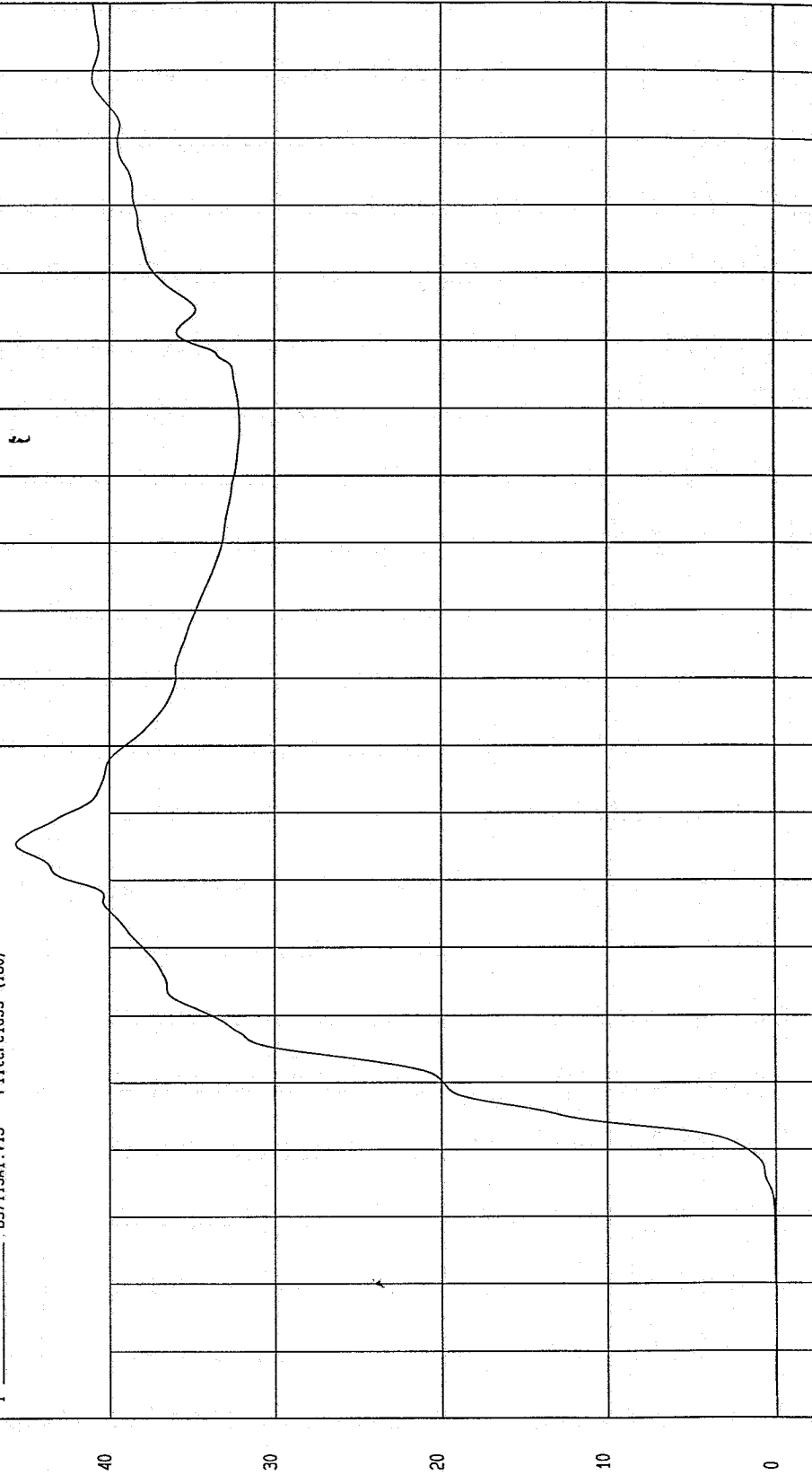
Speed: 38.2 MPH 61.5 KPH

Minimum = -9.99E-03 KPH at -6 msec

Maximum = 45.63 KPH at 65 msec

DRIVER UPPER RIB Y VELOCITY

1 ——— .B97113A1.V15 Filterclass (180)



TIME Seconds

MGA Research
10-02-1997 11:52

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

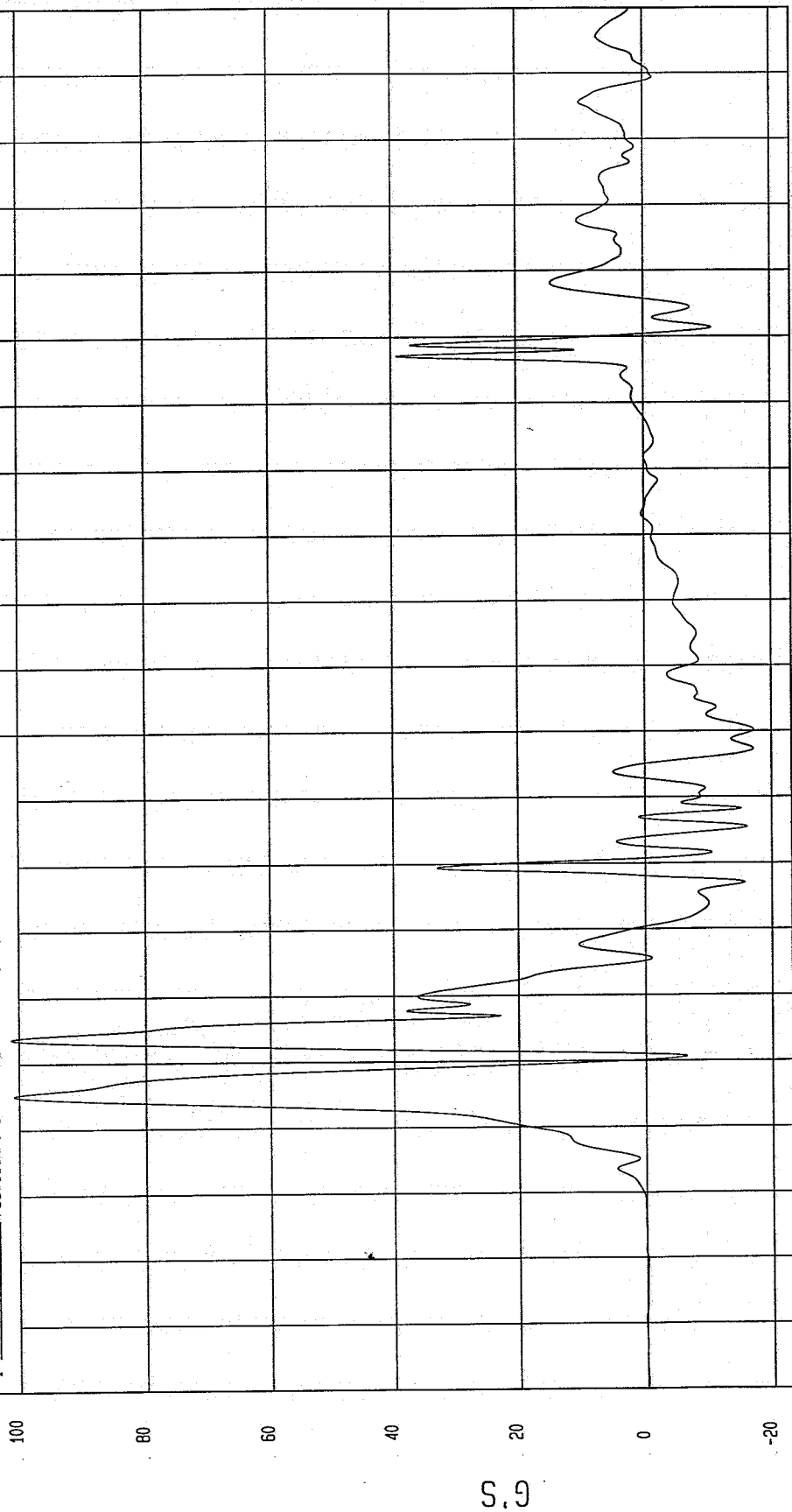
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 101.23 G'S at 34 msec

Minimum = -17.24 G'S at 80 msec

DRIVER LOWER RIB Y ACCELERATION

1 897113AF.A16 Filterclass (180)



MECA Research
10-02-1997 11:59

TIME (SECONDS)

G'S

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

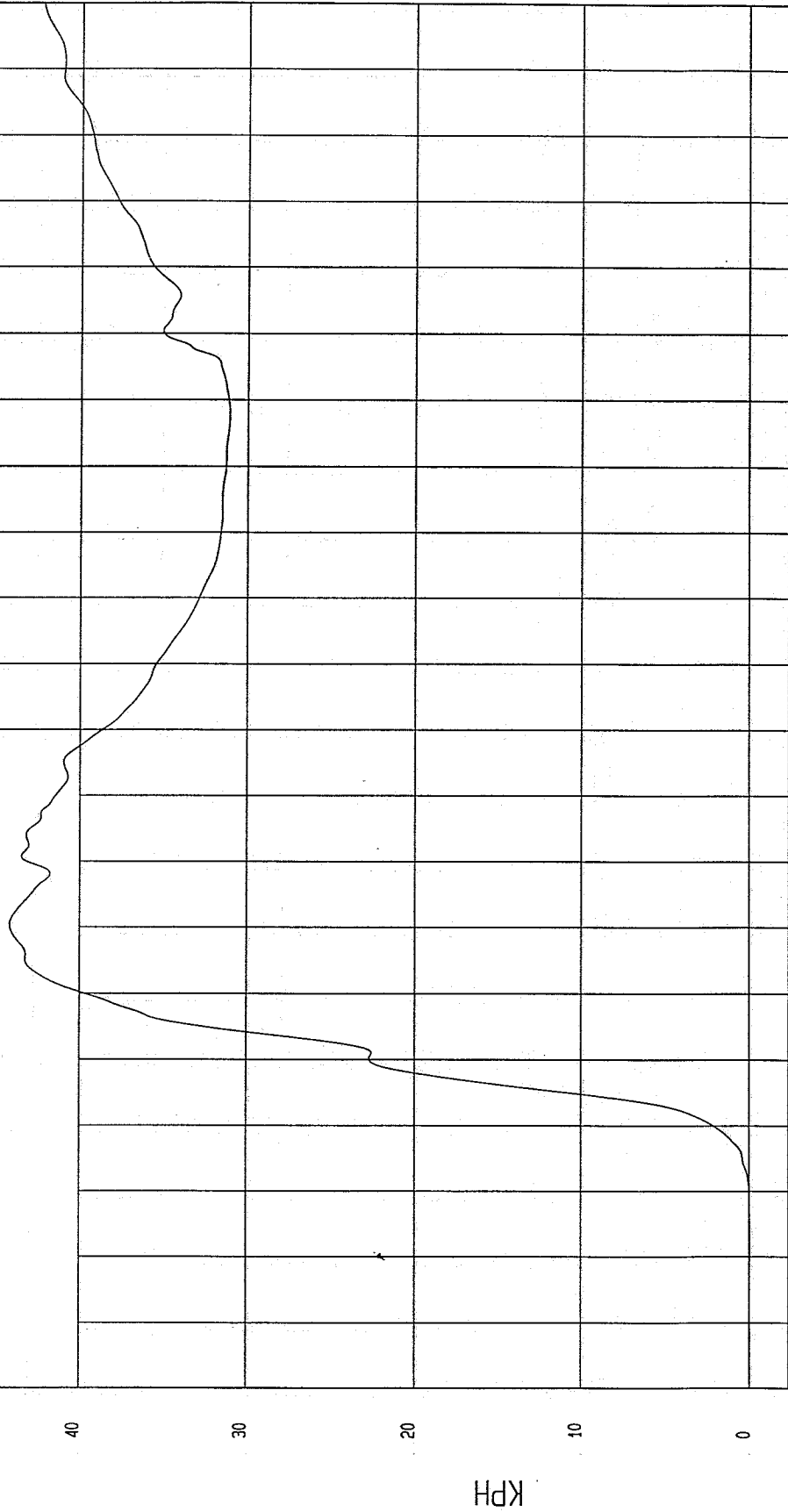
Speed: 38.2 MPH 61.5 KPH

Minimum = -3.10E-02 KPH at 1 msec

Maximum = 44.18 KPH at 50 msec

DRIVER LOWER RIB Y VELOCITY

1 ——— 897113A1.V16 Filterclass (180)



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

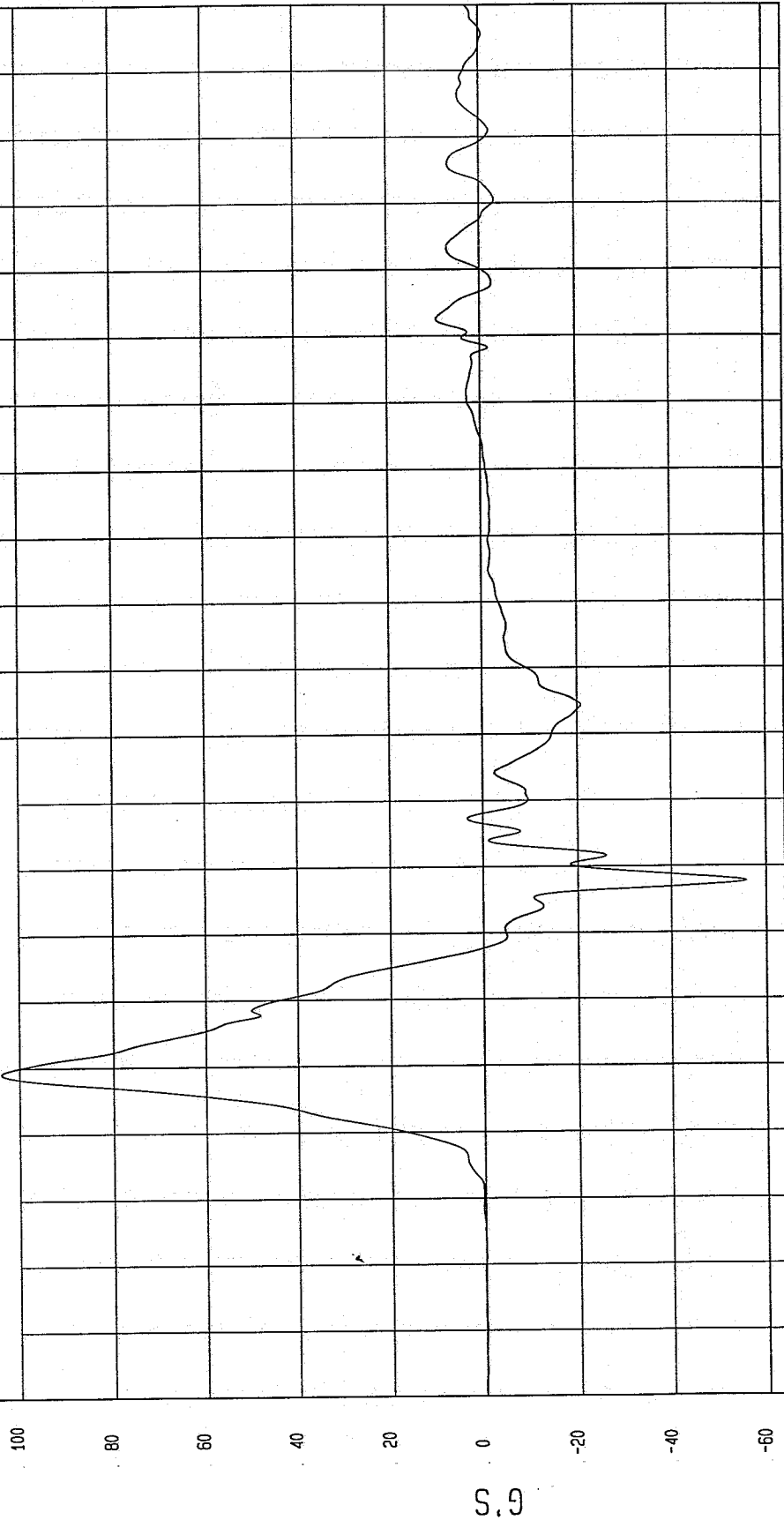
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 103.89 G'S at 29 msec

Minimum = -55.93 G'S at 58 msec

DRIVER LOWER SPINE Y ACCELERATION

1 _____ 897113AF.A17 Filterclass (180)



MCA Research
10-02-1997 11:59

TIME (SECONDS)

G'S

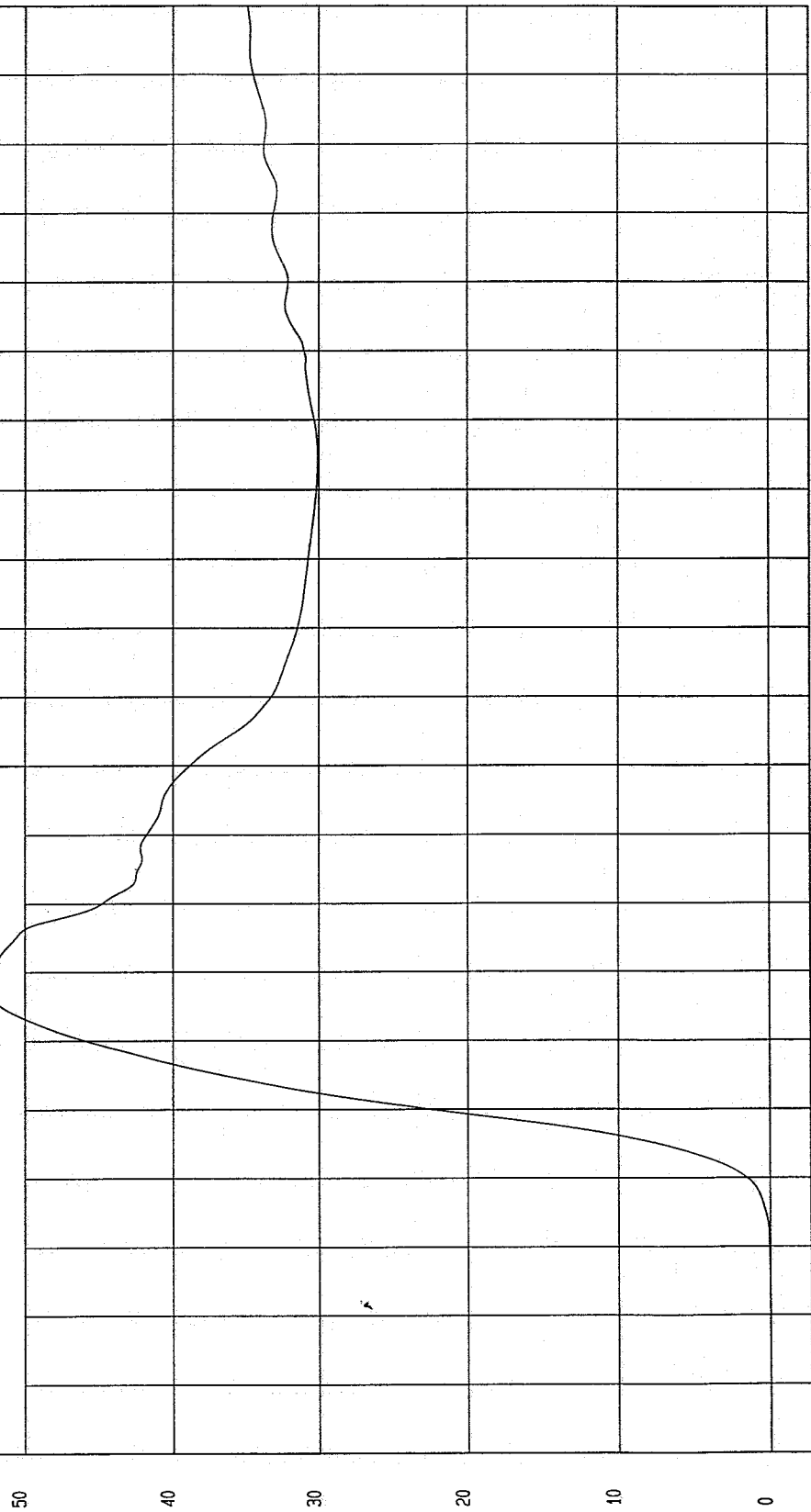
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -.01 KPH at -8 msec
Maximum = 52.42 KPH at 48 msec

DRIVER LOWER SPINE Y VELOCITY

1 _____ B97113AI.V17 Filterclass (180)



NSA Research
10-02-1997 11:53

TIME Seconds

KPH

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

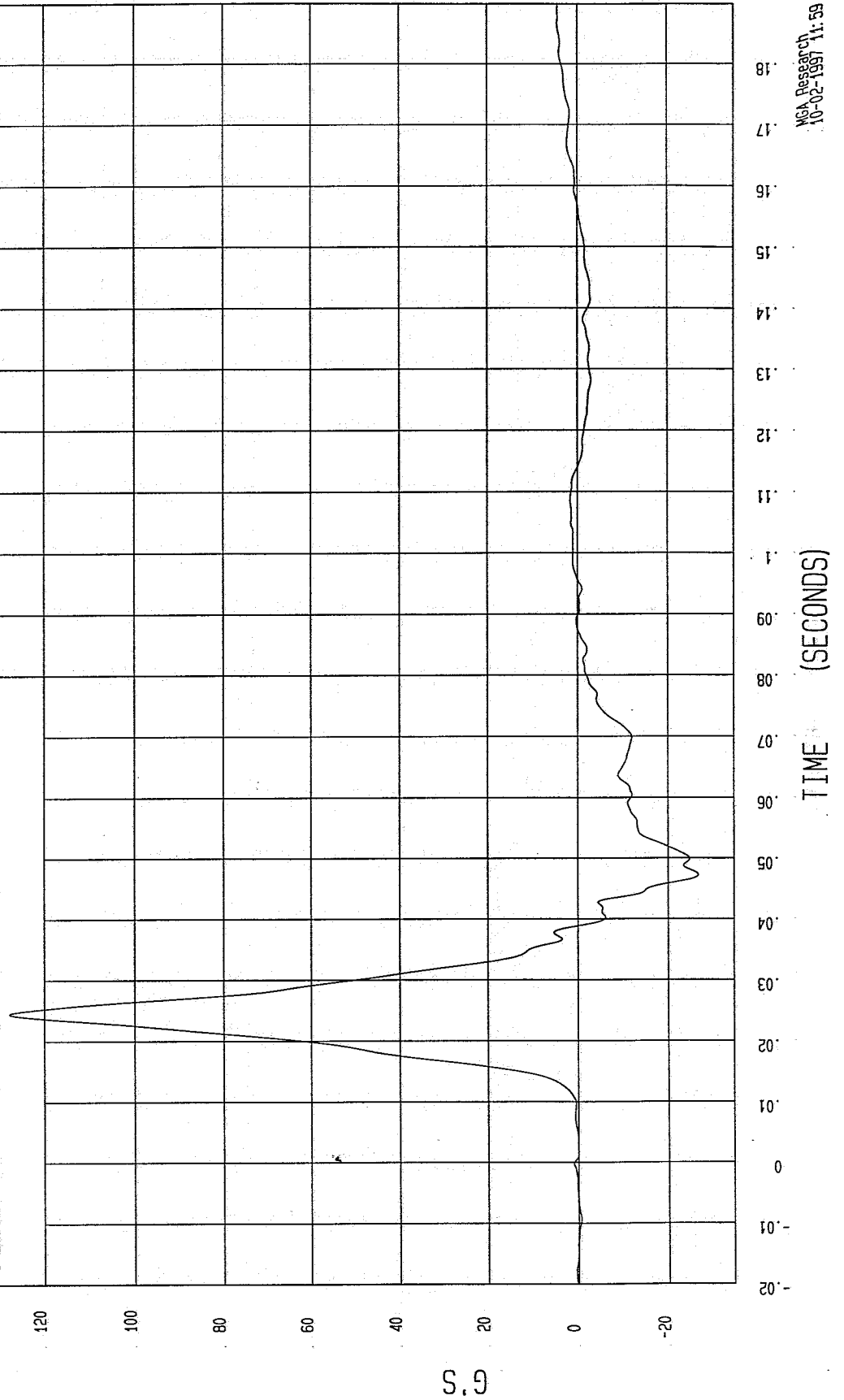
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -26.62 G'S at 47 msec

Maximum = 127.82 G'S at 24 msec

DRIVER PELVIS Y ACCELERATION

1 B97113AF.A18 Filterclass (180)



NCA Research
10-02-1997 11:59

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

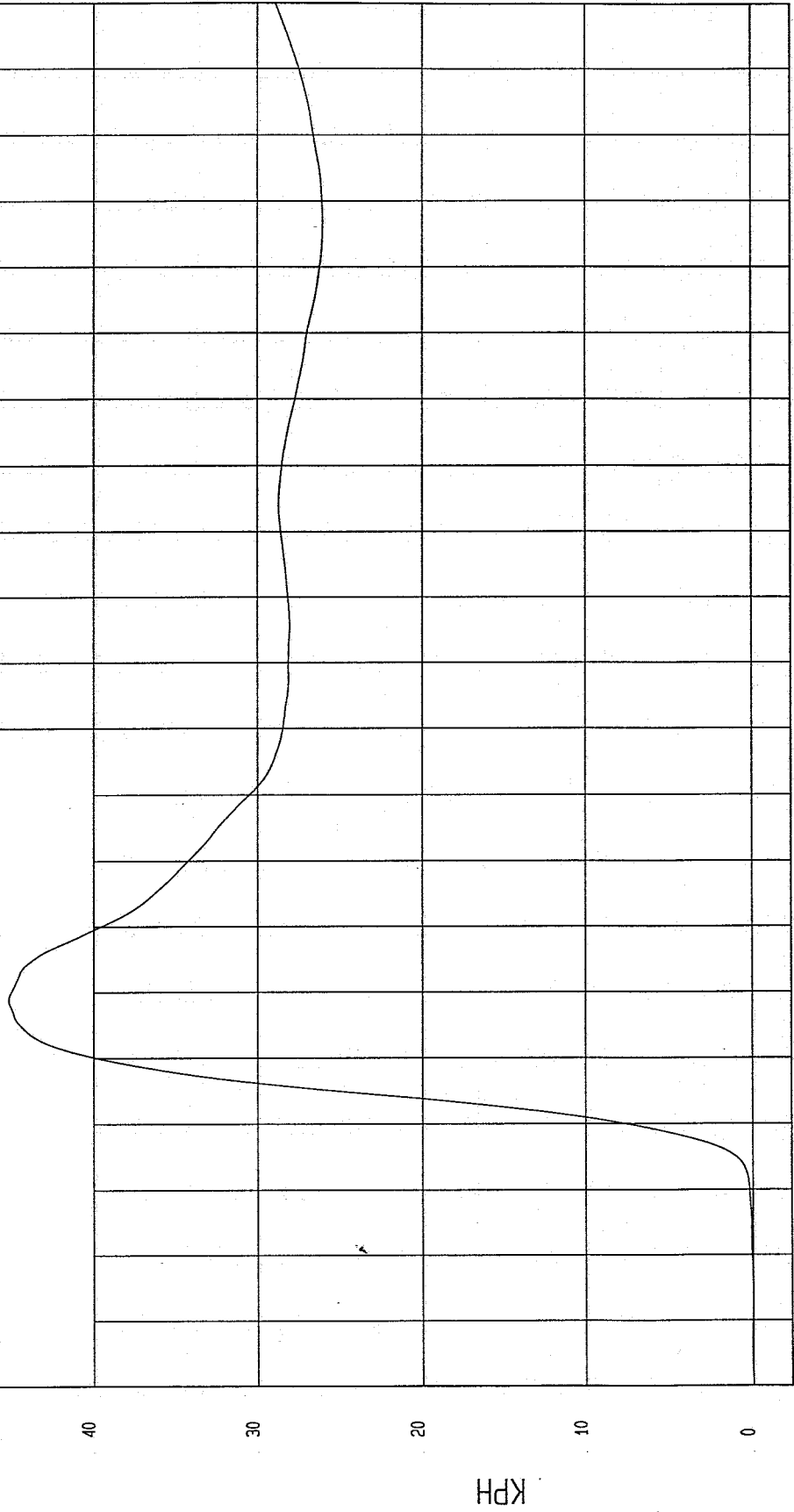
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -5.35E-03 KPH at -7 msec

Maximum = 45.20 KPH at 39 msec

DRIVER PELVIS Y VELOCITY

1 _____ B97113A1.V18 Filterclass (180)

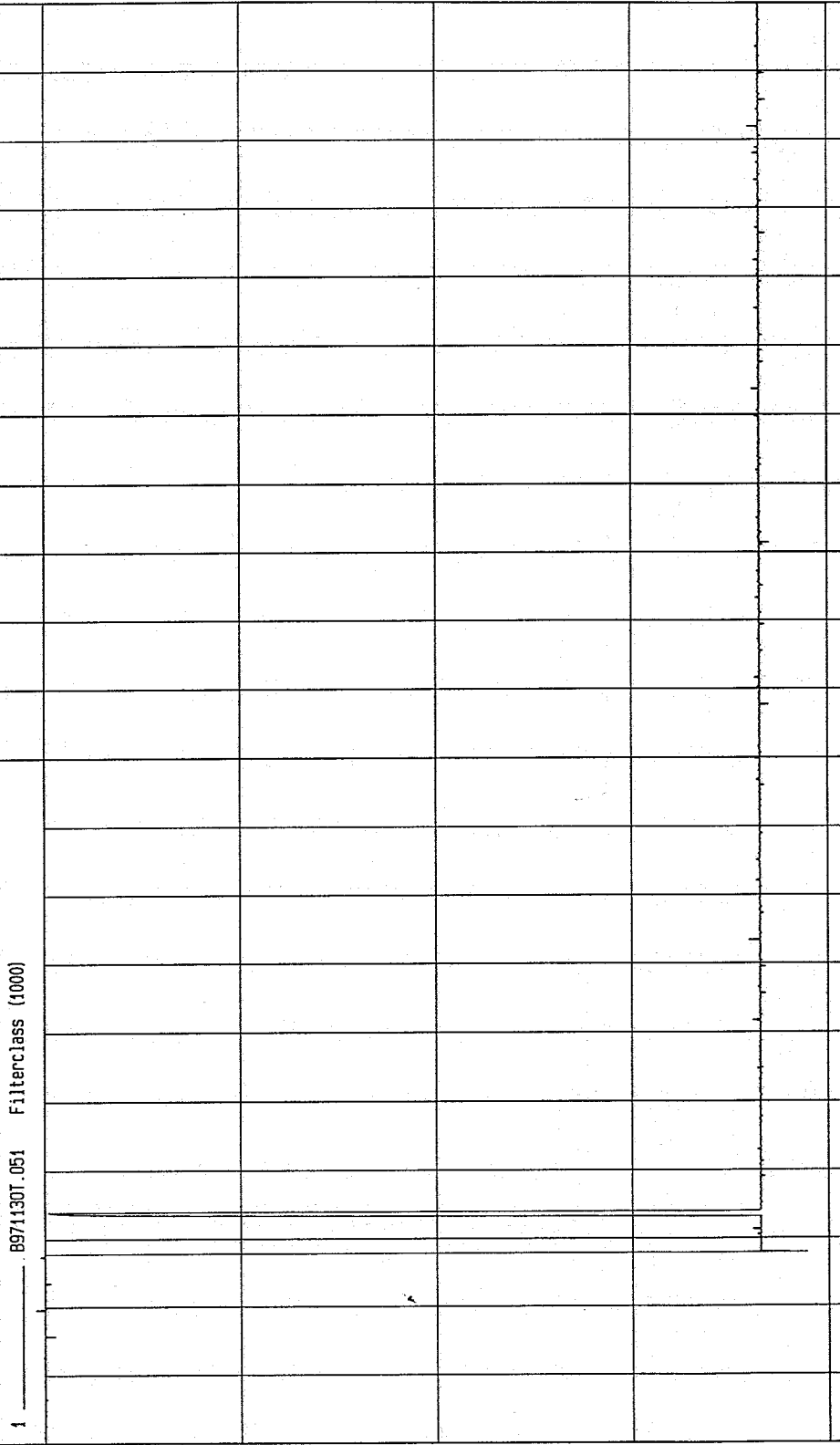


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -3.88 at 8 msec Maximum = 4.62E-02 at 0 msec

DRIVER SHOULDER CONTACT



MCA Research
10-02-1997 11:43

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

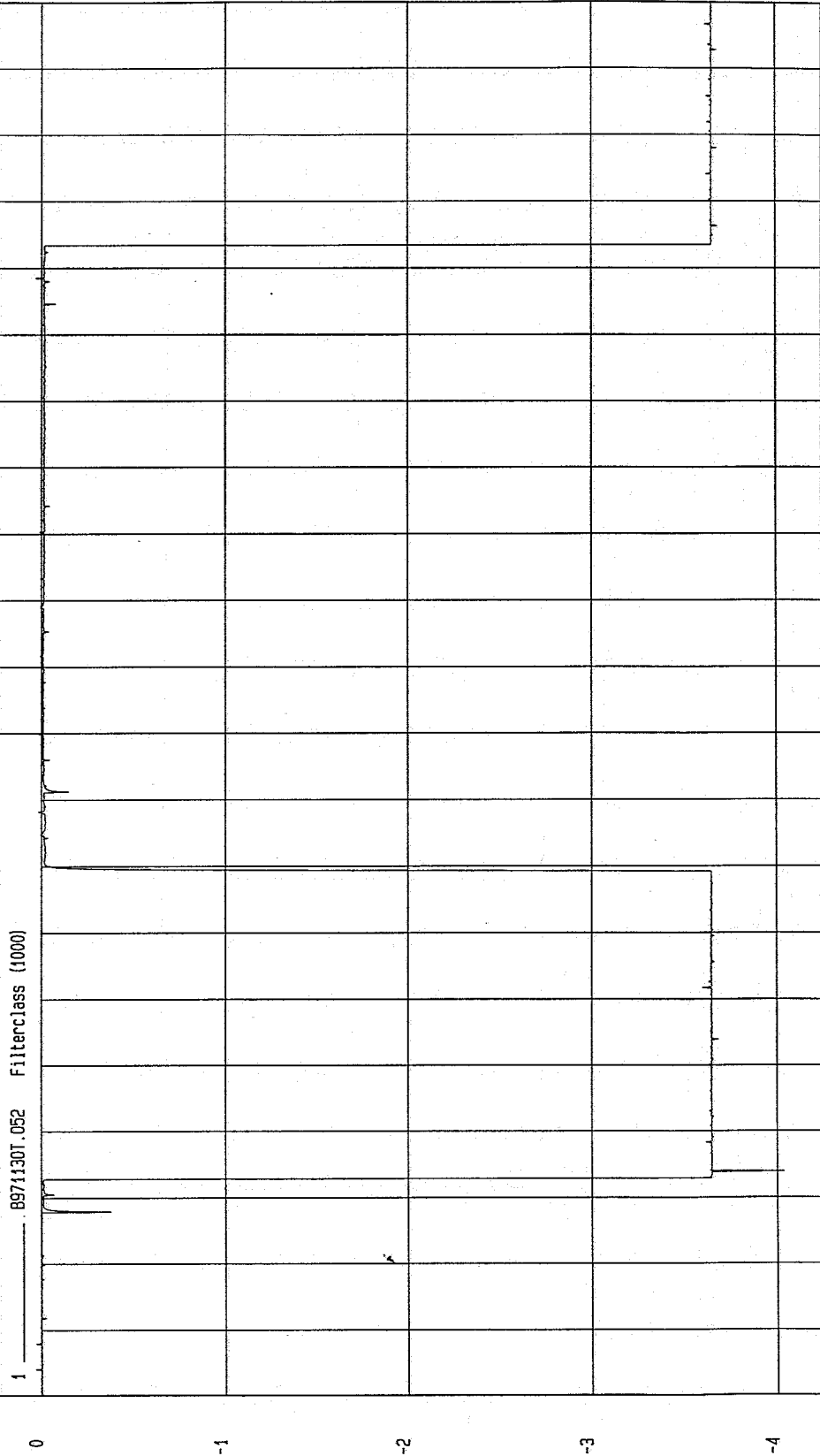
Speed: 38.2 MPH 61.5 KPH

COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 3.01E-02 at -16 msec

Minimum = -4.03 at 14 msec

DRIVER LEG CONTACT



MCA Research
10-02-1997 11:42

TIME (SECONDS)

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

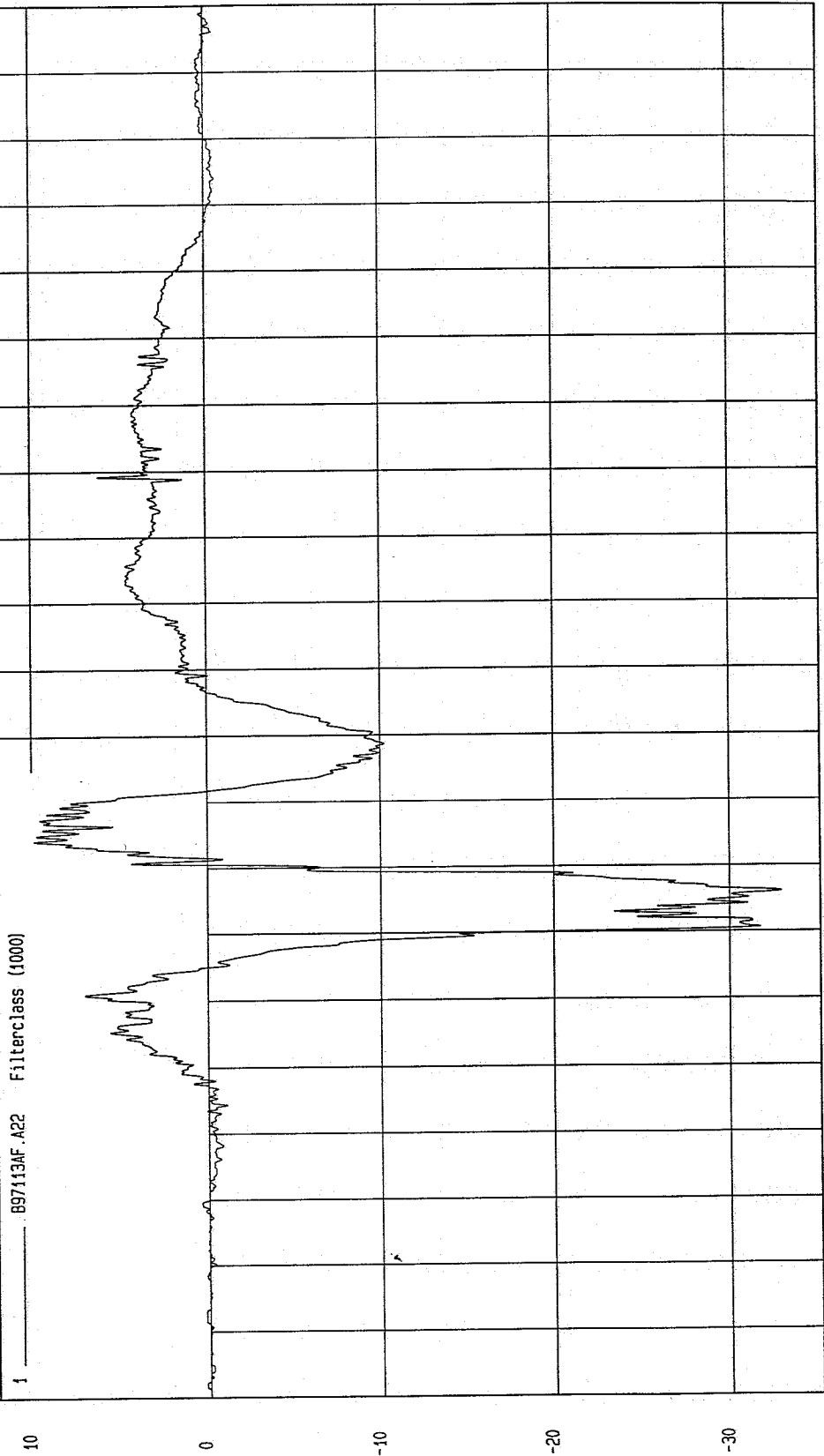
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 9.86 G'S at 64 msec

Minimum = -32.91 G'S at 56 msec

REAR PASSENGER HEAD X ACCELERATION

1 _____ 897113AF.A22 Filterclass (1000)



NCA Research
10-02-1997 11:44

TIME (SECONDS)

G'S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

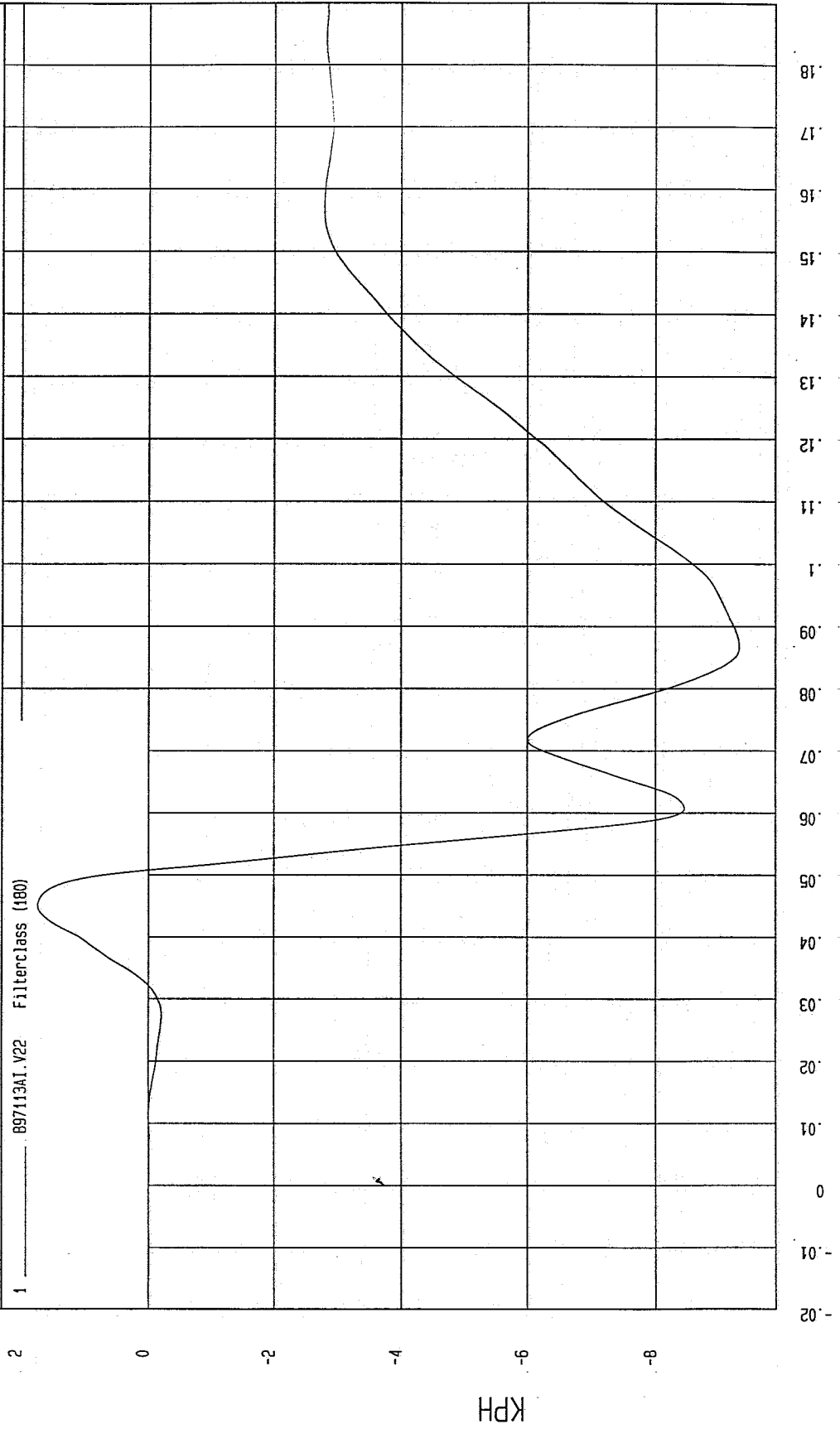
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -9.32 KPH at 87 msec

Maximum = 1.74 KPH at 45 msec

REAR PASSENGER HEAD X VELOCITY

1 897113A1.V22 Filterclass (180)



MGA Research
10-02-1997 11:52

TIME Seconds

KPH

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -10.14 G'S at 40 msec Maximum = 156.38 G'S at 54 msec

REAR PASSENGER HEAD Y ACCELERATION

1 _____ B97113AF.A23 Filterclass (1000)

160

140

120

100

80

60

40

20

0

G.S

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

TIME (SECONDS)

MCA Research
10-02-1997 11:44

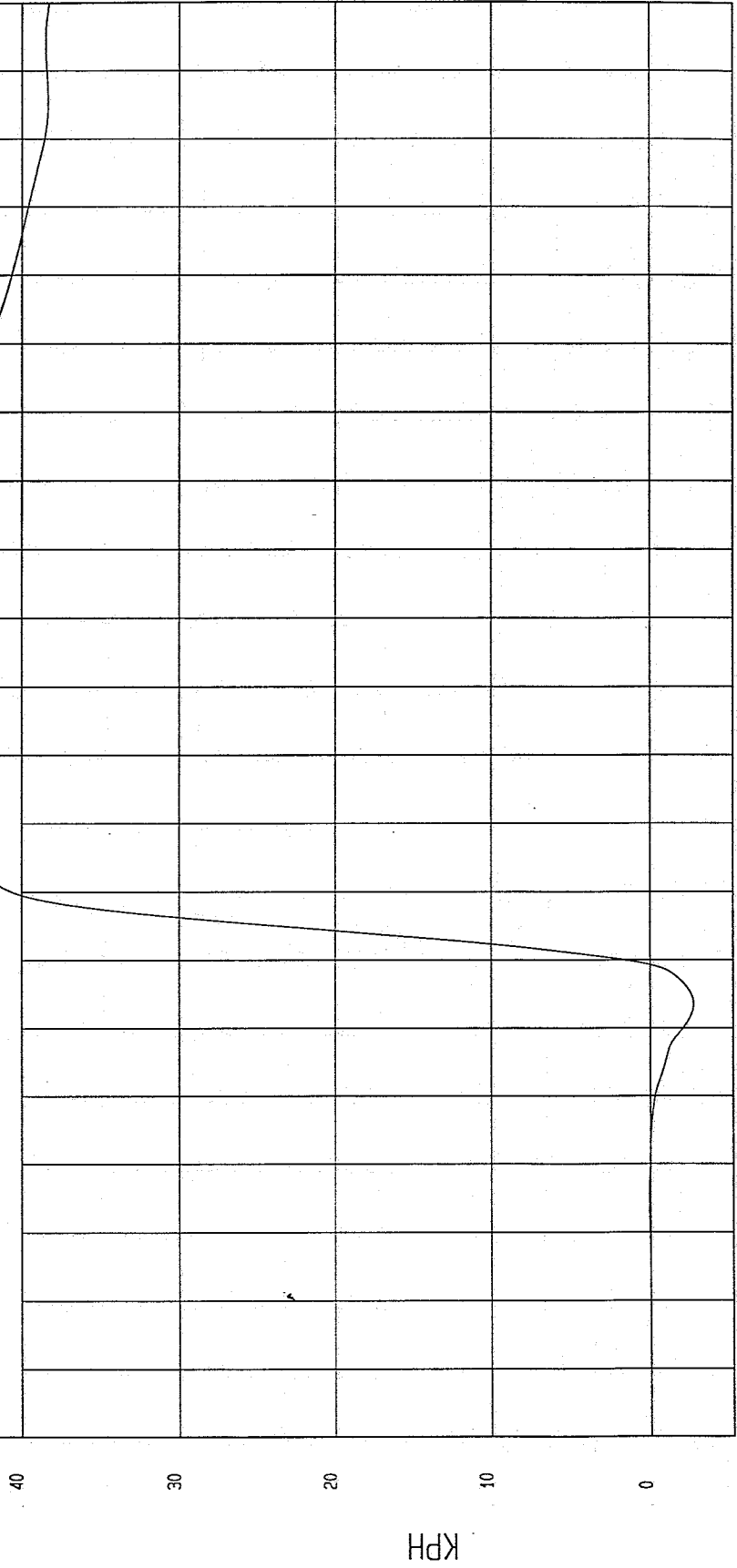
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -2.68 KPH at 44 msec
Maximum = 46.22 KPH at 114 msec

REAR PASSENGER HEAD Y VELOCITY

1 _____ 897113AI.V23 FilterClass (180)



MGA Research
10-02-1997 11:52

TIME Seconds

KPH

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

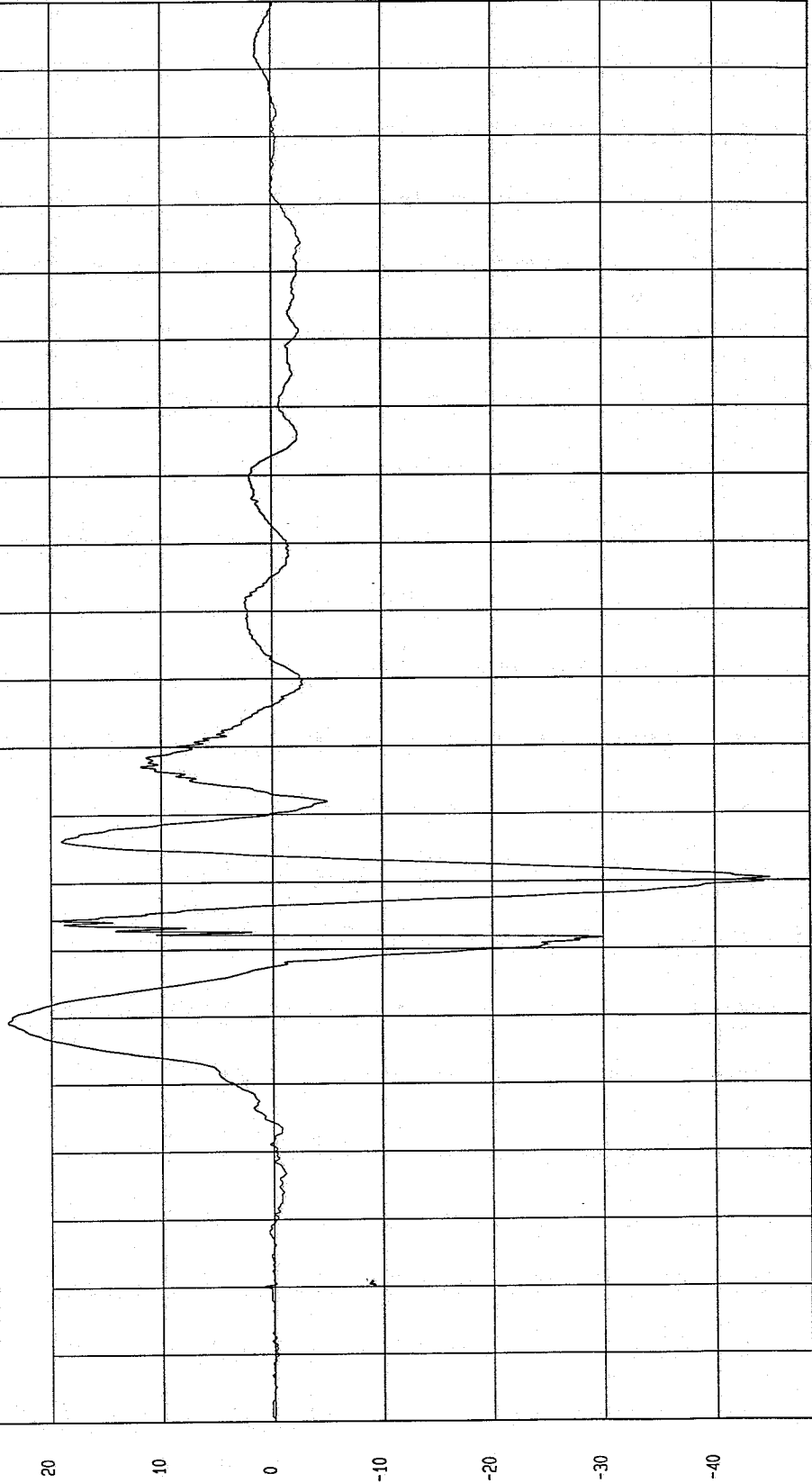
Speed: 38.2 MPH 61.5 KPH

Minimum = -44.82 G'S at 60 msec

Maximum = 23.94 G'S at 39 msec

REAR PASSENGER HEAD Z ACCELERATION

1 ——— 897113AF.A24 Filterclass (1000)



NSA Research
10-02-1997 11.45

TIME (SECONDS)

G'S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

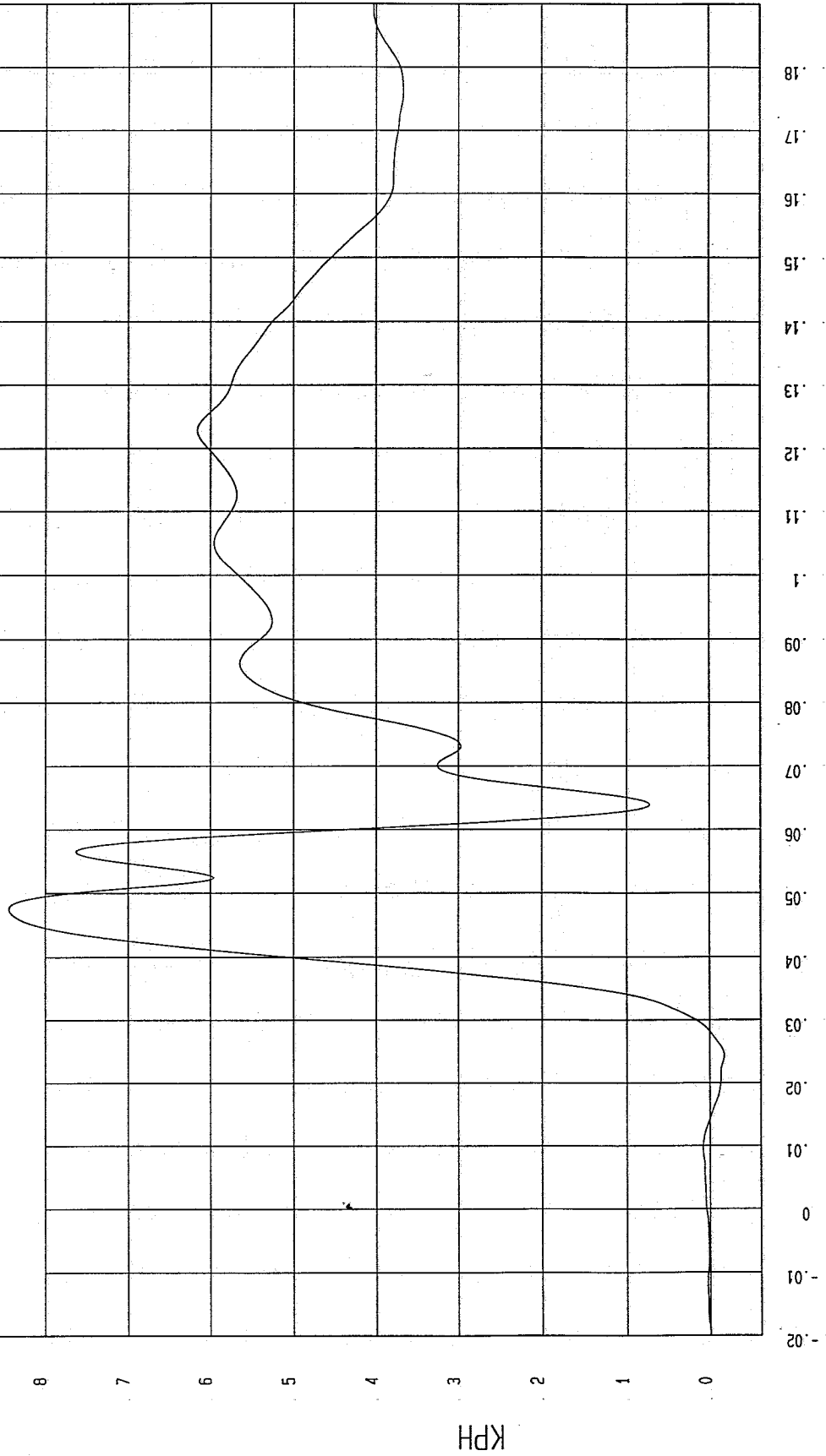
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -.16 KPH at 24 msec

Maximum = 8.43 KPH at 48 msec

REAR PASSENGER HEAD Z VELOCITY

1 _____ .897113AI.V24 Filterclass (180)



MSA Research
10-02-1997 11:52

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

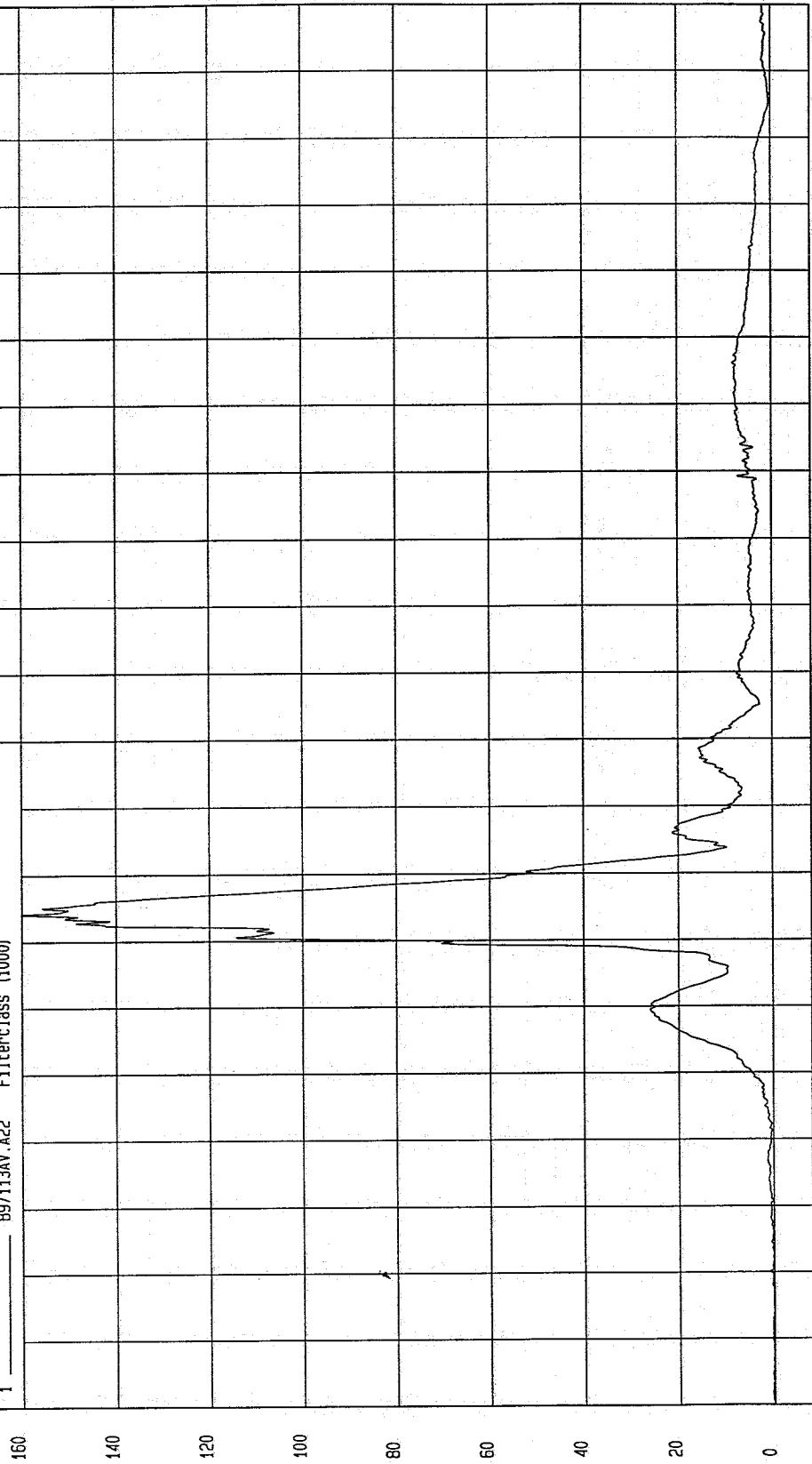
COMPONENT: 1998 FORD ESCORT 2DR

Minimum = 2.29E-02 G'S at -15 msec

Maximum = 160.12 G'S at 54 msec

REAR PASSENGER HEAD RESULTANT

1 897113AV.A22 Filterclass (1000)



NGA Research
10-02-1997 11:45

TIME (SECONDS)

G.S.

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

TEST: HIGH SPEED LATERAL IMPACT

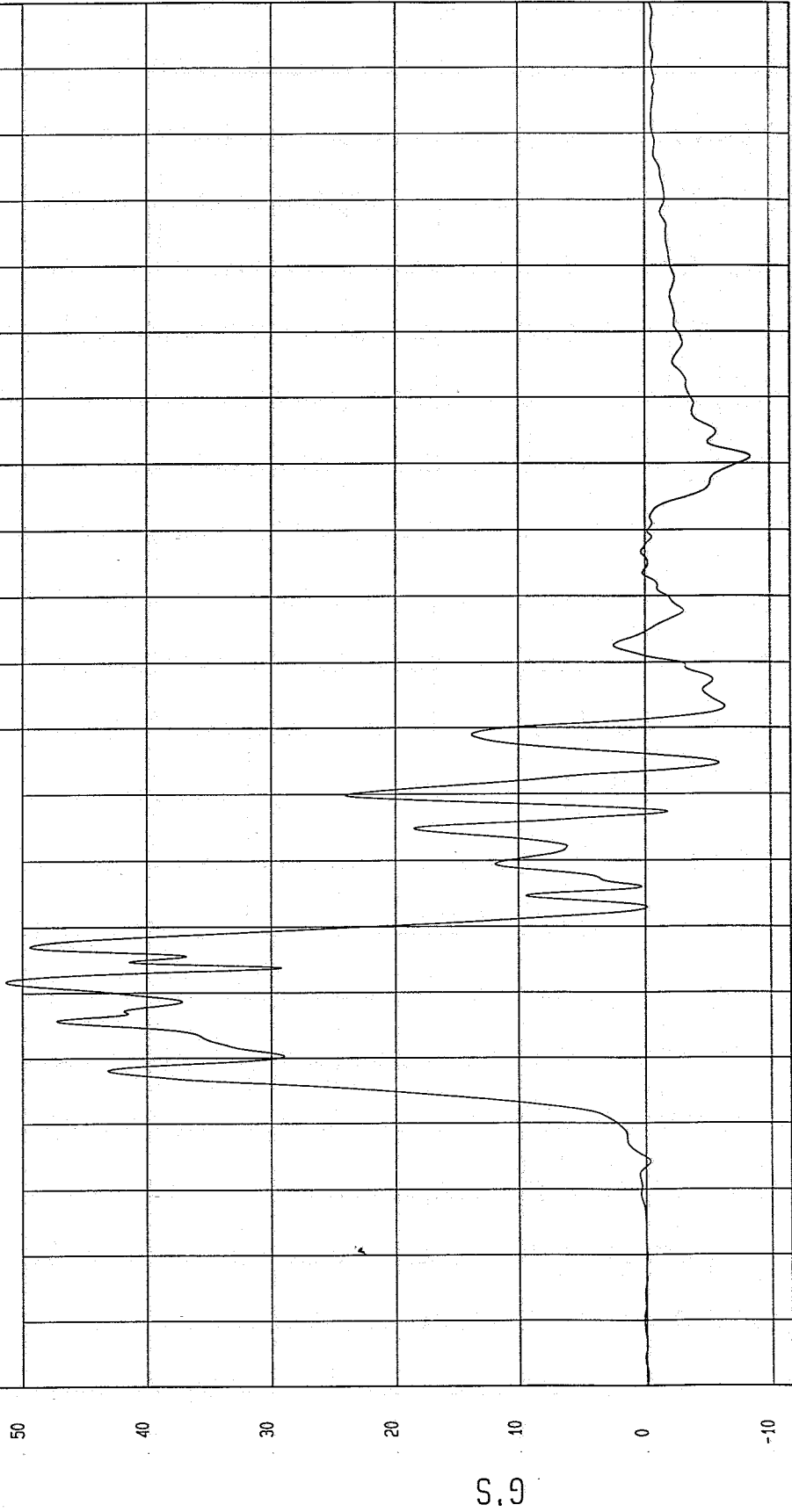
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 51.33 G'S at 42 msec

Minimum = -8.51 G'S at 121 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

1 ——— 897113AF.A25 Filterclass (180)



NCA Research
10-02-1997 11:59

TIME (SECONDS)

G'S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

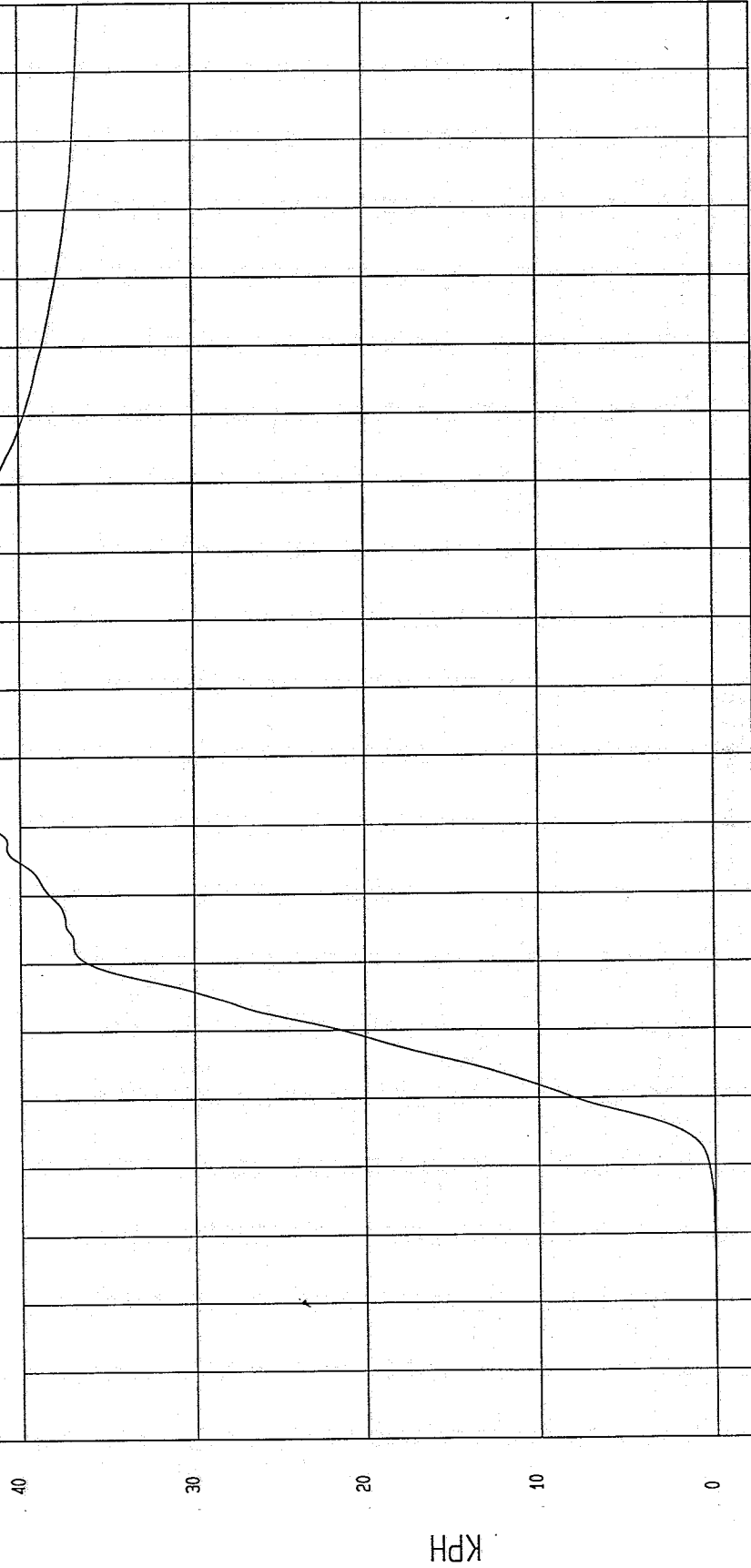
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -8.94E-03 KPH at -17 msec

Maximum = 44.61 KPH at 81 msec

REAR PASSENGER UPPER RIB Y VELOCITY

1 _____ 89713A1.V25 FiltercJass (180)



NCA Research
10-02-1997 11:53

TIME Seconds

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

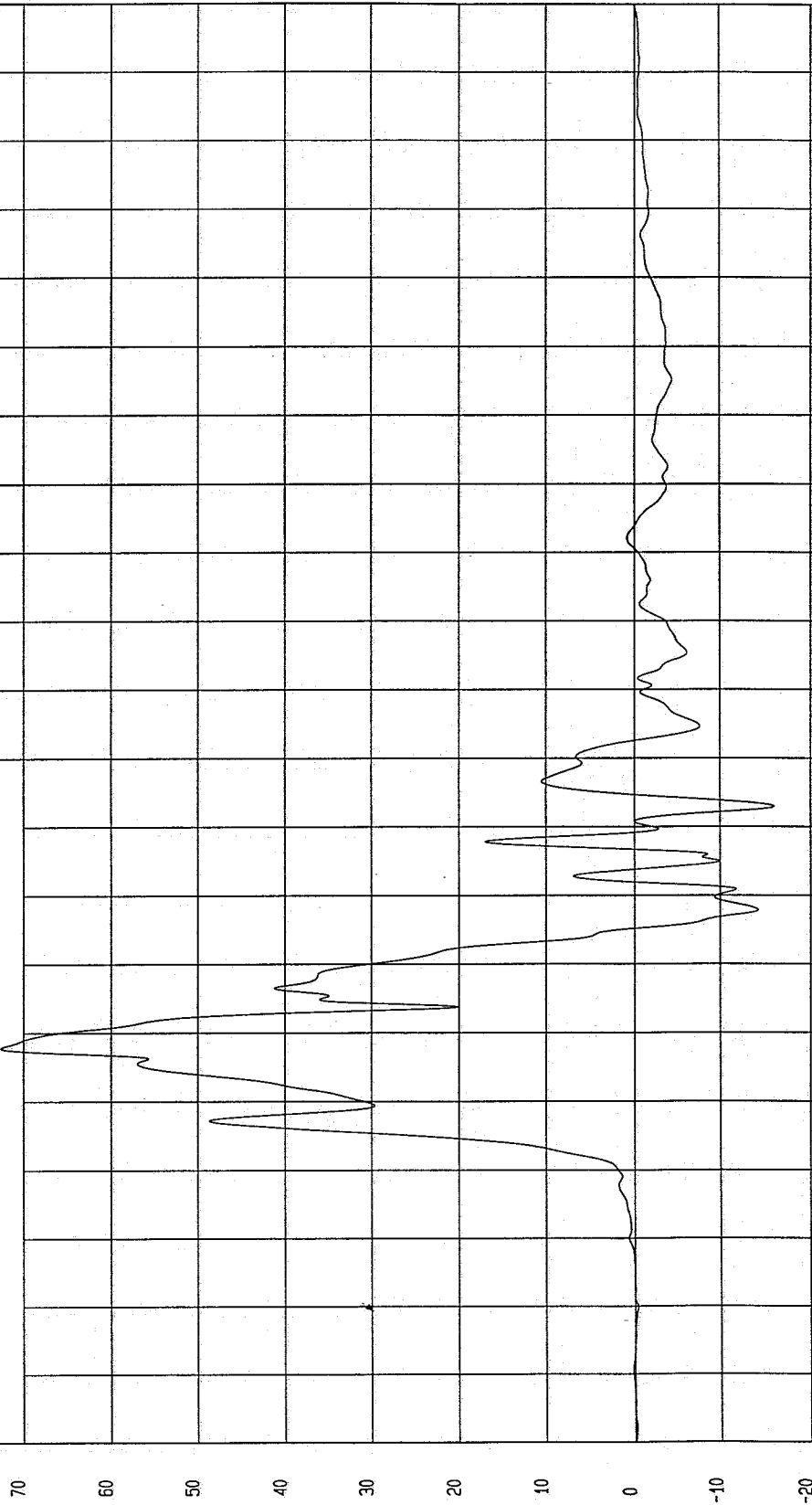
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 72.57 G'S at 38 msec

Minimum = -15.91 G'S at 73 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 ——— .B97113AF.A26 Filterclass (180)



MCA Research
10-02-1997 11:59

TIME (SECONDS)

G'S

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

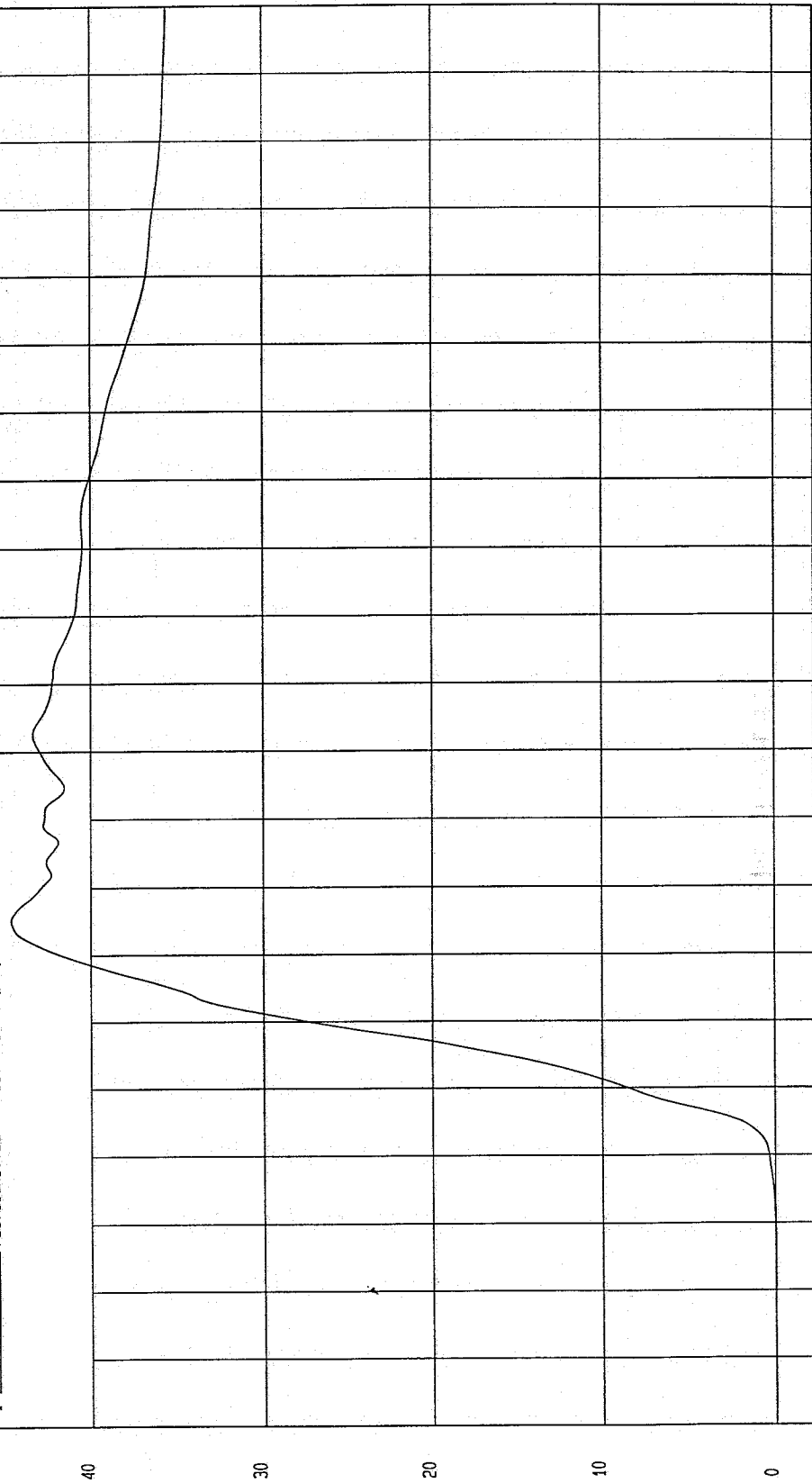
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 44.62 KPH at 55 msec

Minimum = -3.99E-02 KPH at 6 msec

REAR PASSENGER LOWER RIB Y VELOCITY

1 ——— B97113A1.V26 Filterclass (180)



MGA Research
10-02-1997 11:53

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

Speed: 38.2 MPH 61.5 KPH

Minimum = -34.44 G'S at 66 msec

Maximum = 73.20 G'S at 37 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 B97113AF.A27 Filterclass (180)



TIME (SECONDS)

MCA Research
10-02-1997 11:59

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

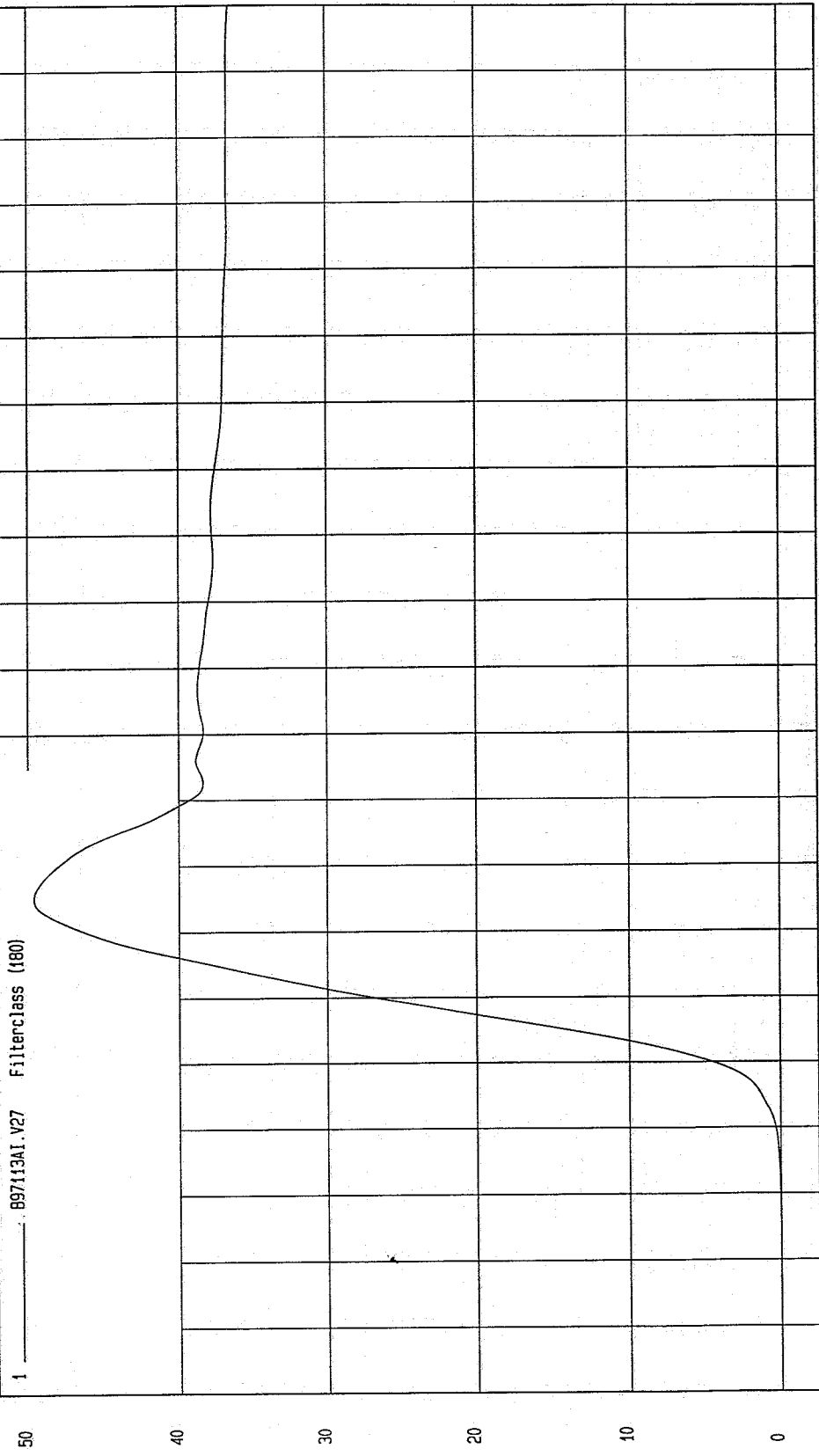
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 49.59 KPH at 55 msec

Minimum = -3.55E-03 KPH at 4 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 897113AI.V27 Filterclass (f80)



MGA Research
10-02-1997 11:53

TIME Seconds

KPH

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

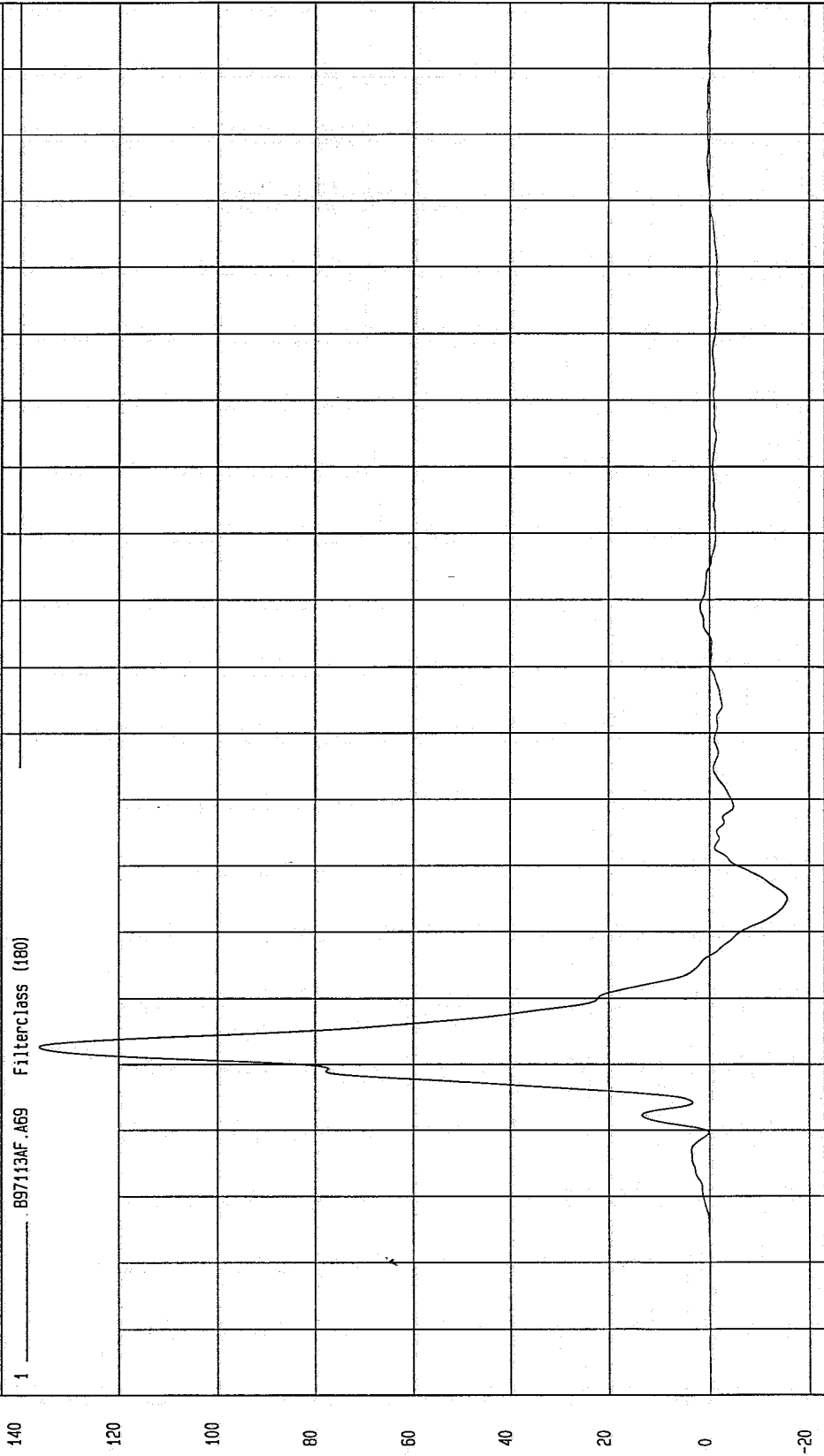
Speed: 38.2 MPH 61.5 KPH

Minimum = -15.59 G'S at 55 msec

Maximum = 136.14 G'S at 33 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 897113AF.A69 Filterclass (180)



TIME (SECONDS)

MCA Research
10-02-1997 11:59

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

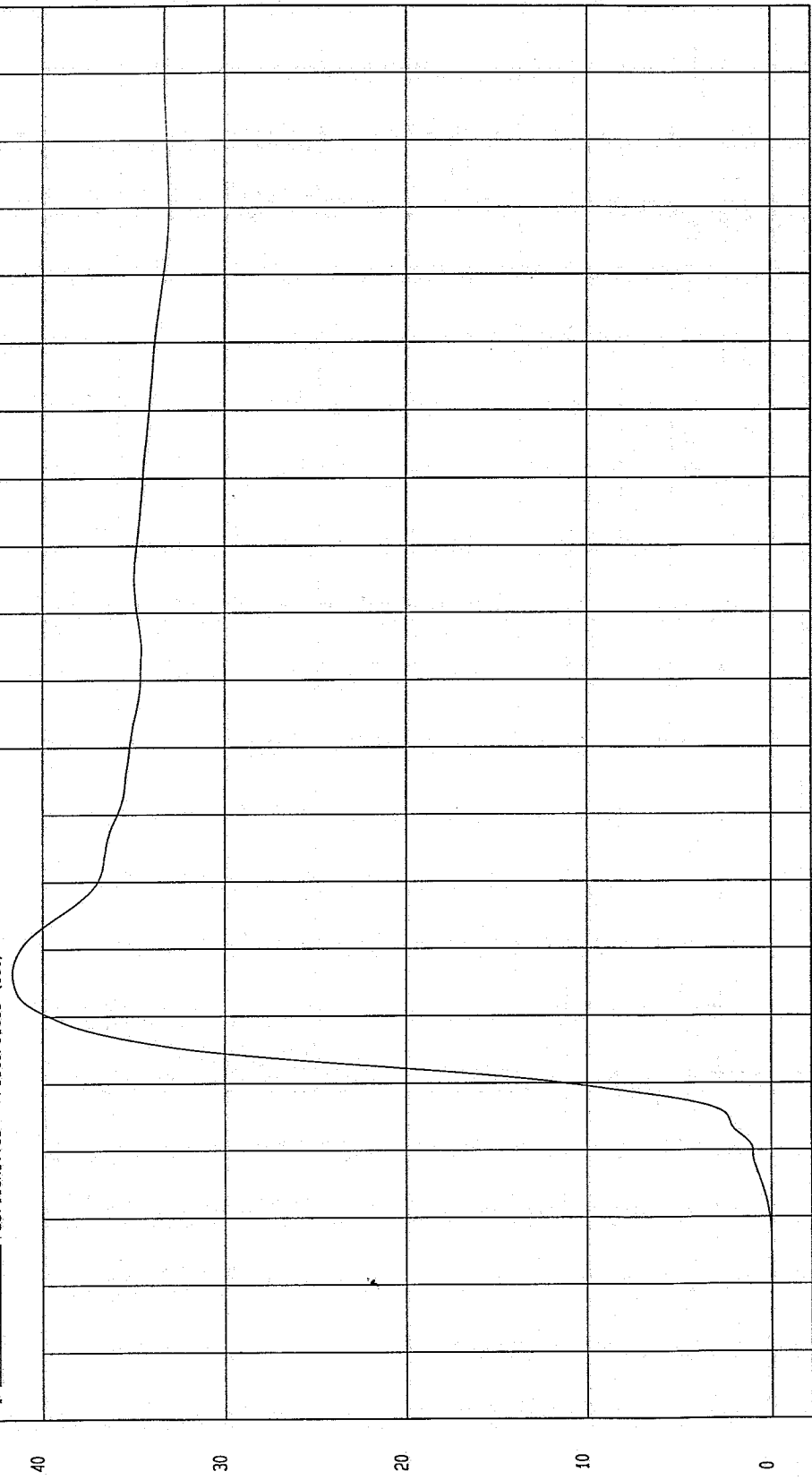
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -1.46E-02 KPH at 3 msec

Maximum = 41.66 KPH at 46 msec

REAR PASSENGER PELVIS Y VELOCITY

1 897113A1.V69 Filterclass (180)



MSA Research
10-02-1997 11:53

TIME Seconds

KPH

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

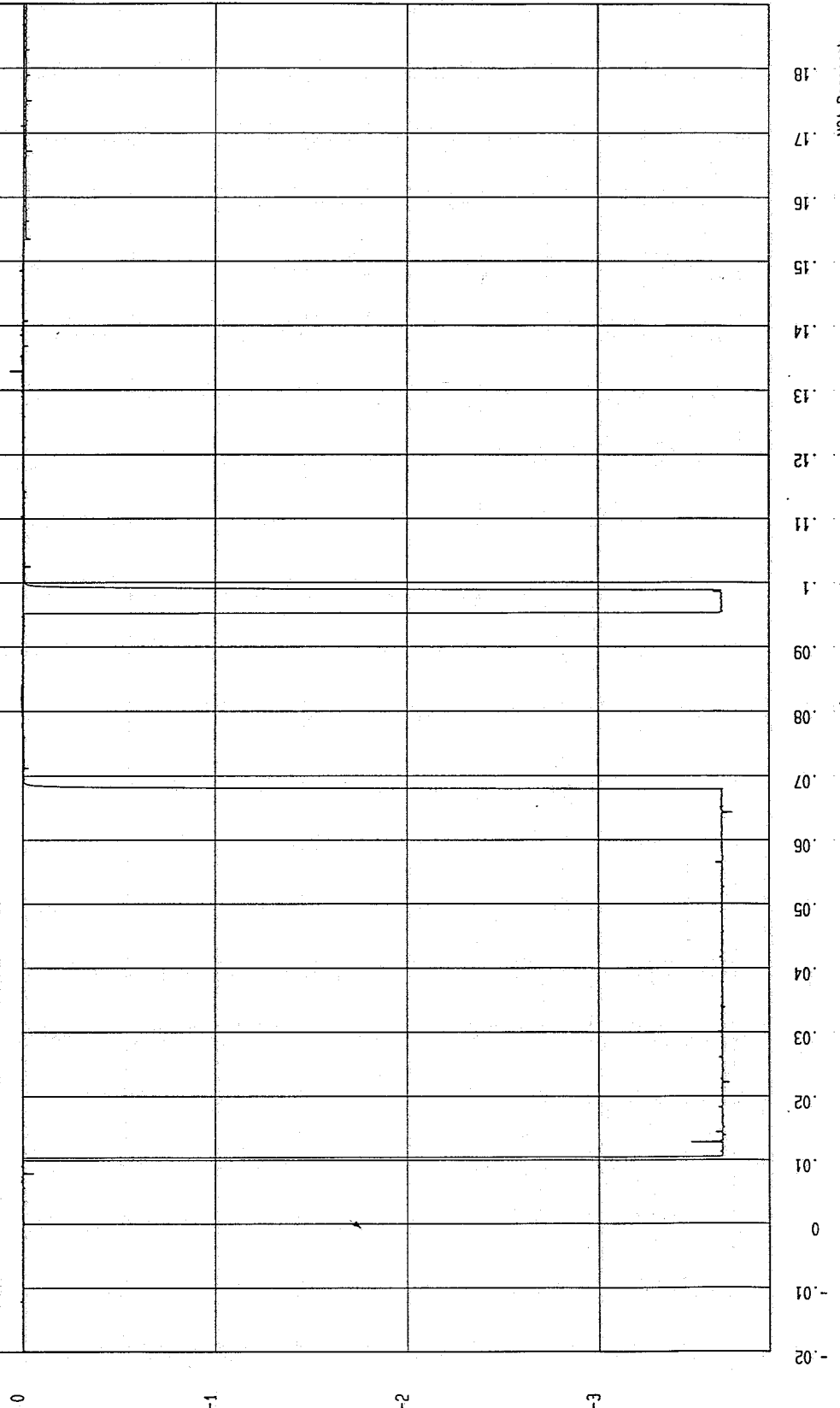
Speed: 38.2 MPH 61.5 KPH

Minimum = -3.69 at 64 msec

Maximum = 6.68E-02 at 133 msec

REAR PASSENGER SHOULDER CONTACT

1 _____ .89711301.053 Filterclass (1000)



TIME (SECONDS)

MCA Research
10-02-1997 11:44

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

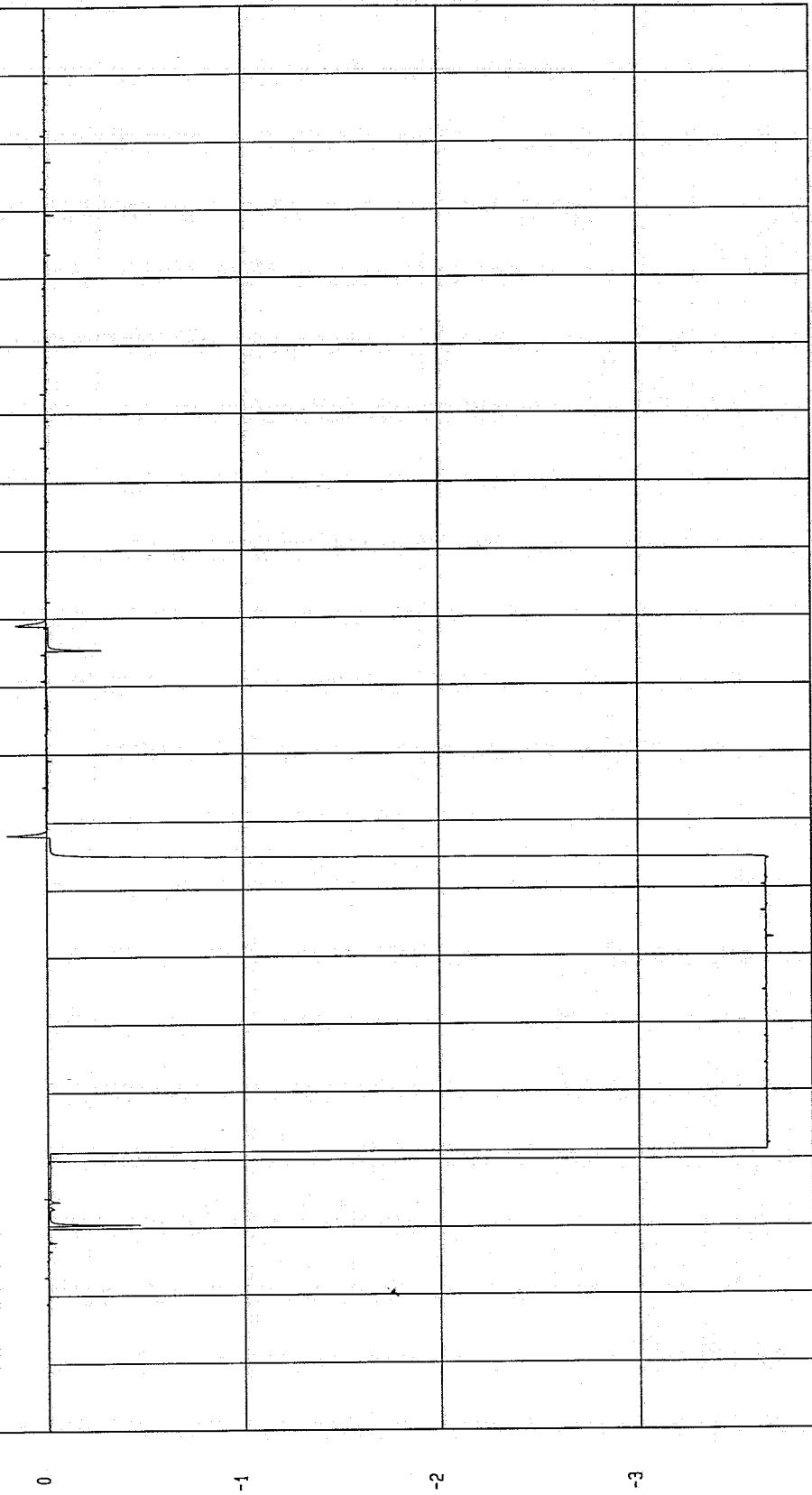
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -3.67 at 53 msec

Maximum = .19 at 68 msec

REAR PASSENGER LEG CONTACT

1 8971130T.054 Filterclass (1000)



MGA Research
10-02-1997 11:43

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

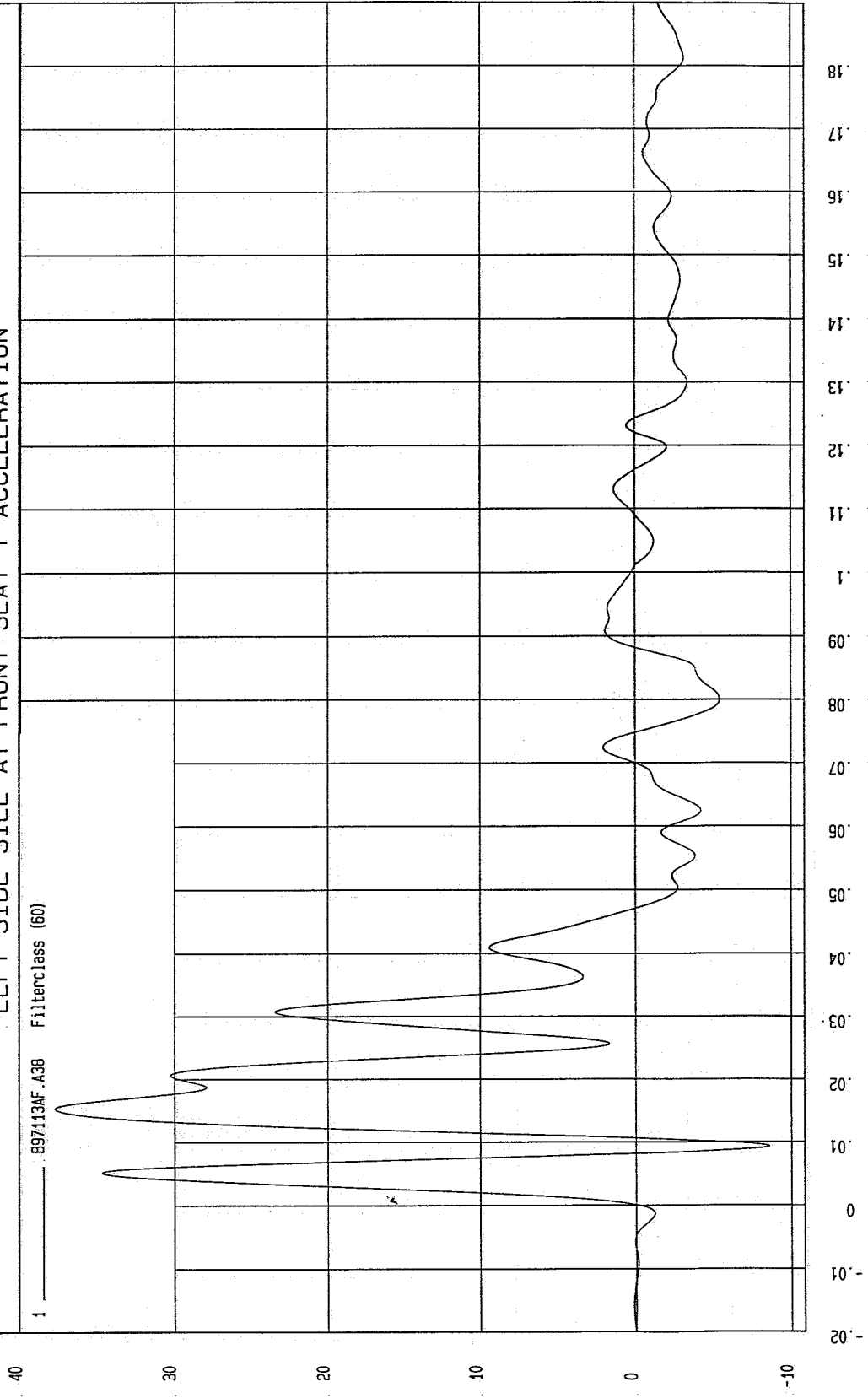
Speed: 38.2 MPH 61.5 KPH

COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 37.77 G'S at 15 msec

Minimum = -8.57 G'S at 9 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION



NCA Research
10-02-1997 11:54

TIME (SECONDS)

G'S

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

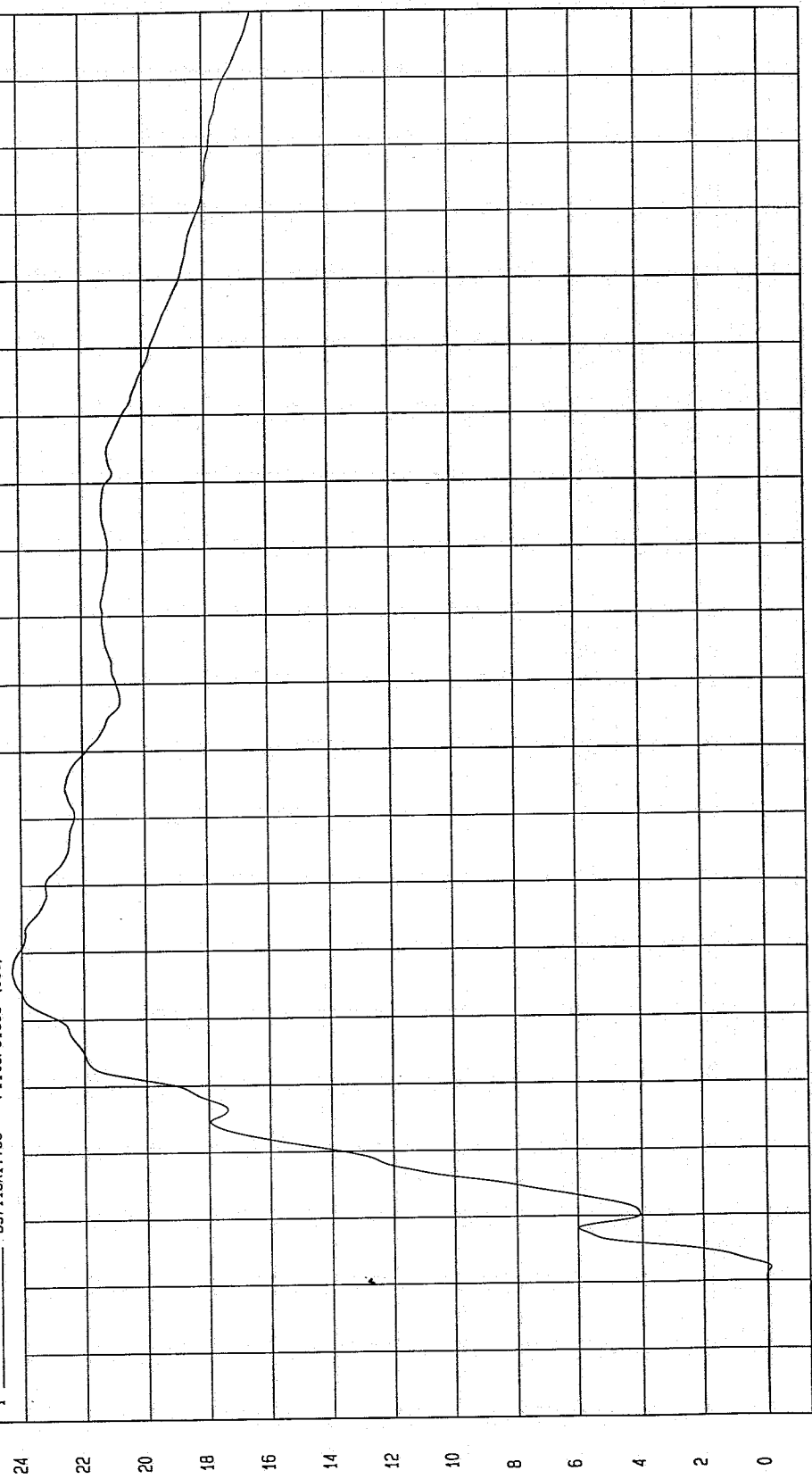
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 24.29 KPH at 47 msec

Minimum = -10 KPH at 2 msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY

1 897113A1.V38 Filterclass (180)



MGA Research
10-02-1997 11:45

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

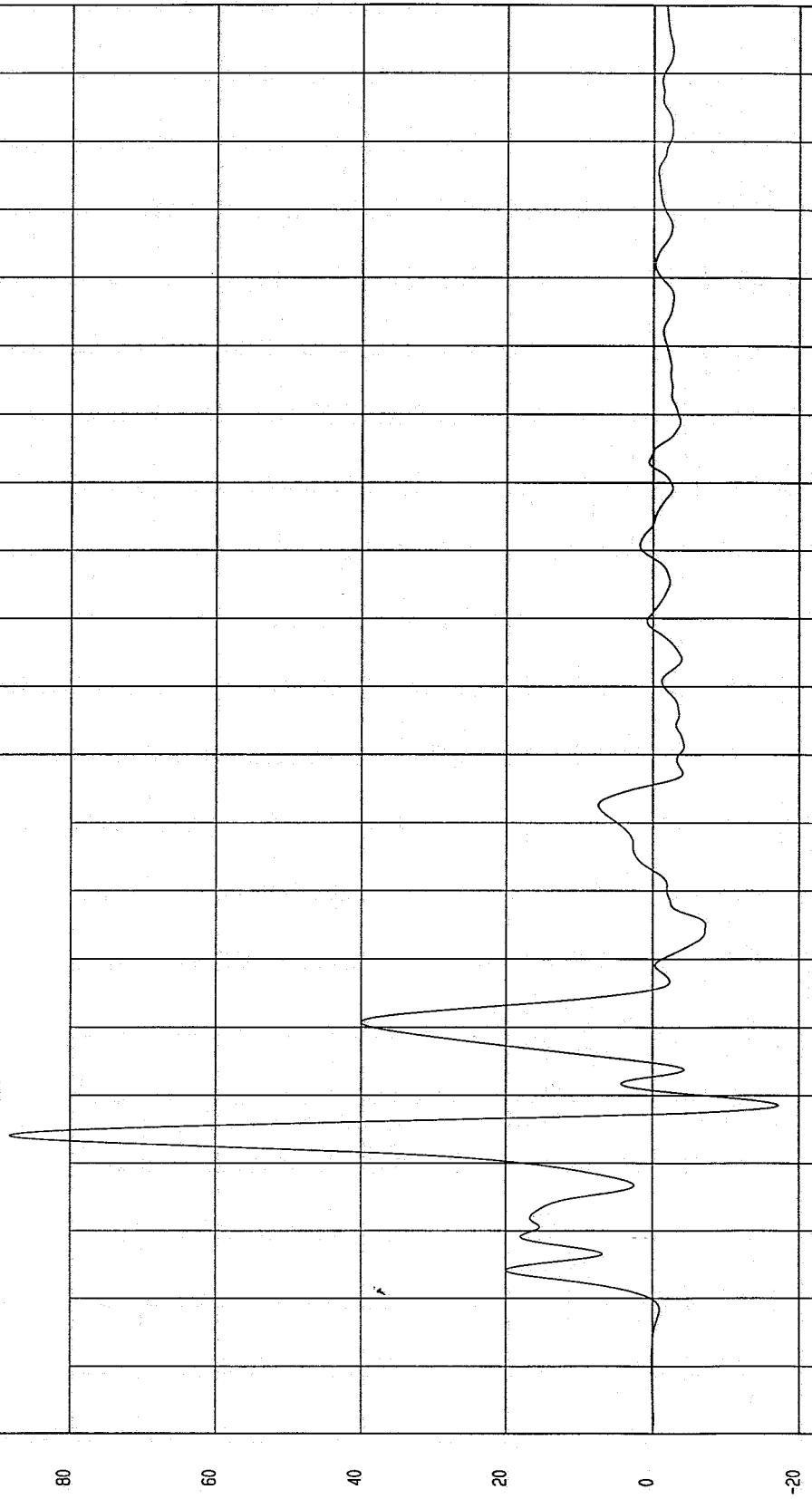
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -17.18 G'S at 29 msec

Maximum = 88.30 G'S at 24 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

1 ——— .B97113AF.A39 FilterClass (60)



MGA Research
10-02-1997 11:5A

TIME (SECONDS)

G.S

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

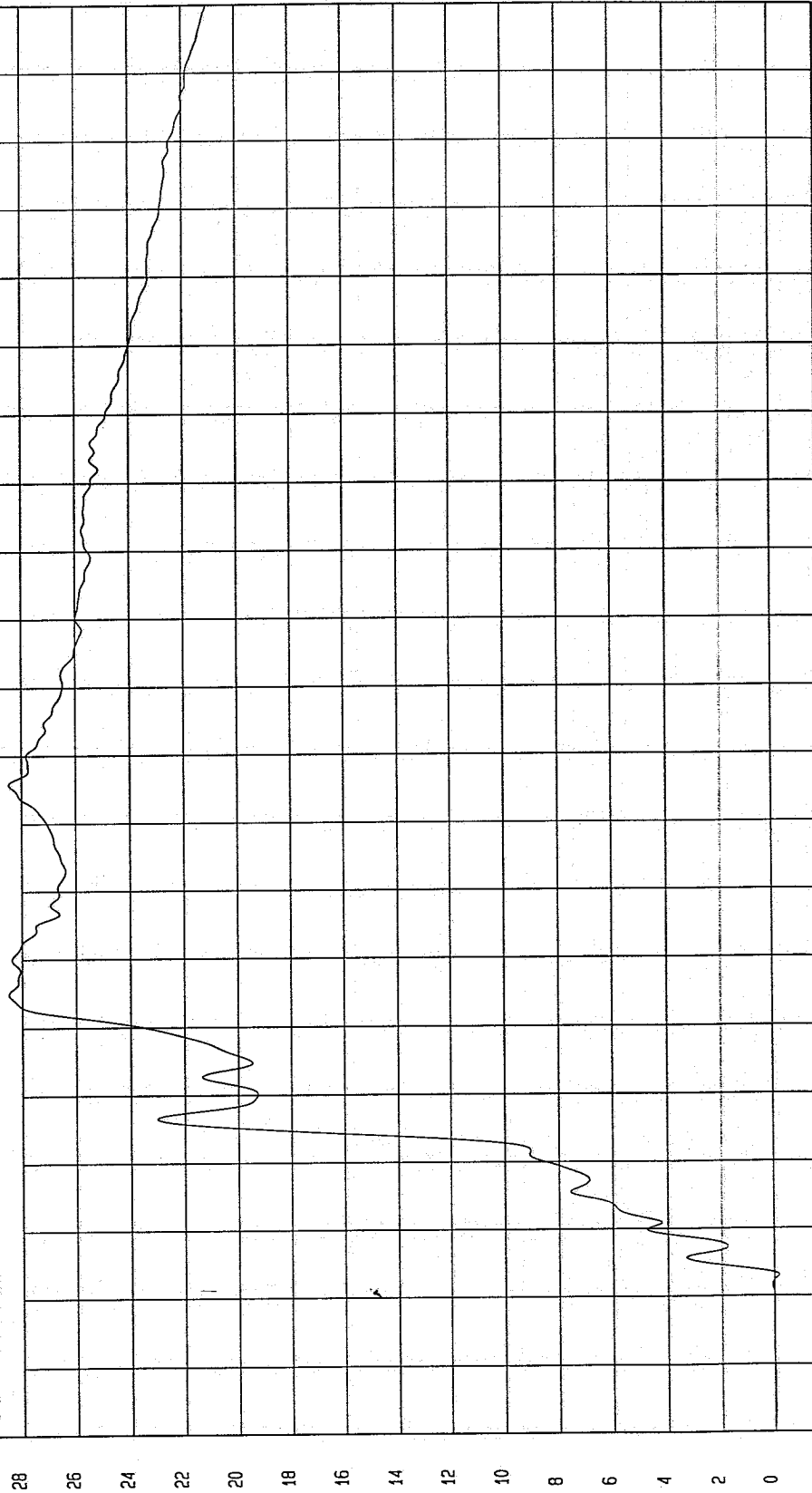
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 28.47 KPH at 45 msec

Minimum = -.16 KPH at 3 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY

1 897113AI.V39 Filterclass (180)



NCA Research
10-02-1997 11:45

TIME
Seconds

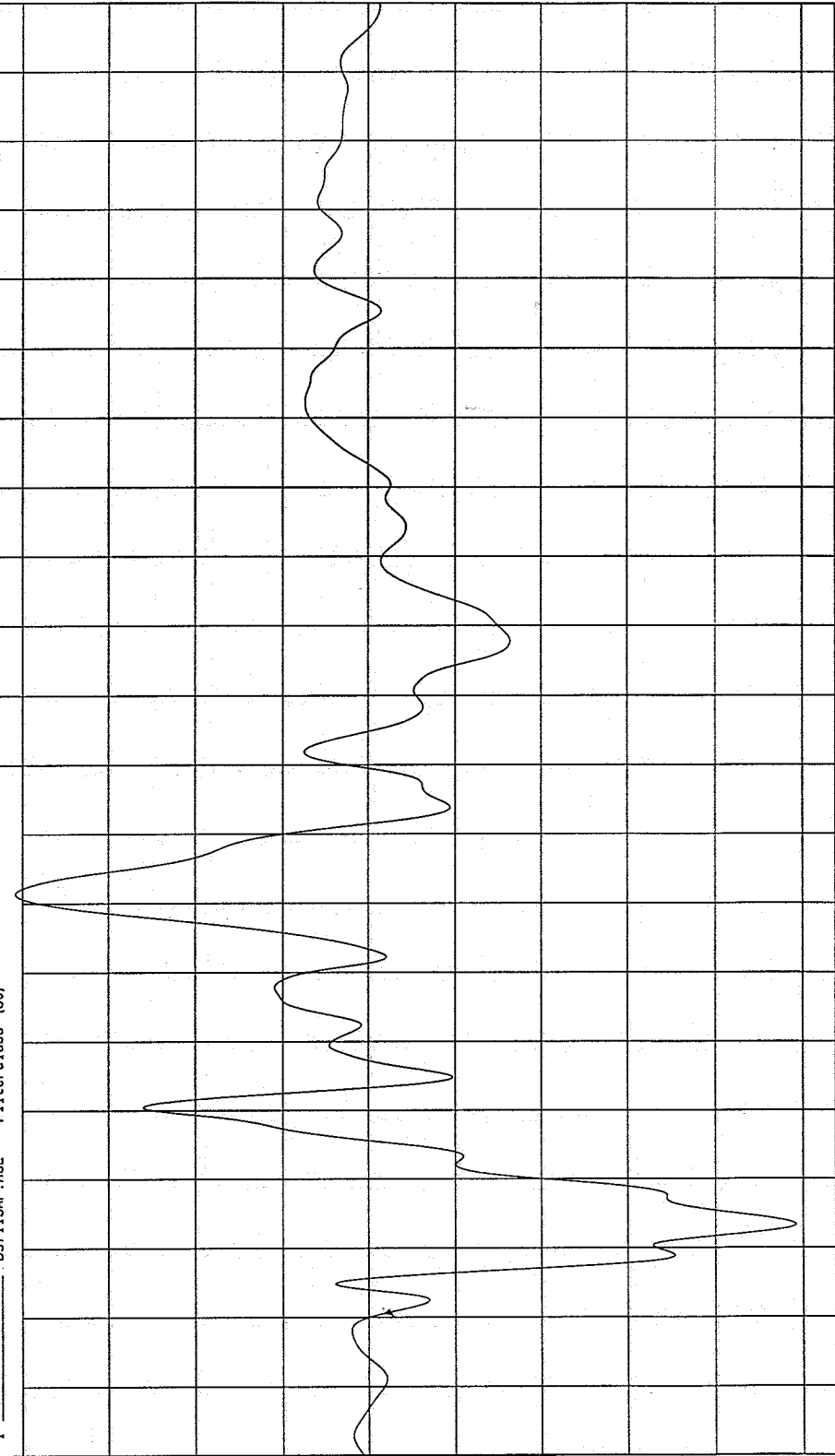
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -4.91 G'S at 13 msec
Maximum = 4.08 G'S at 61 msec

RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION

1 _____ 897113AF.A32 Filterclass (60)



MCA Research
10-02-1997 11:54

TIME (SECONDS)

G'S

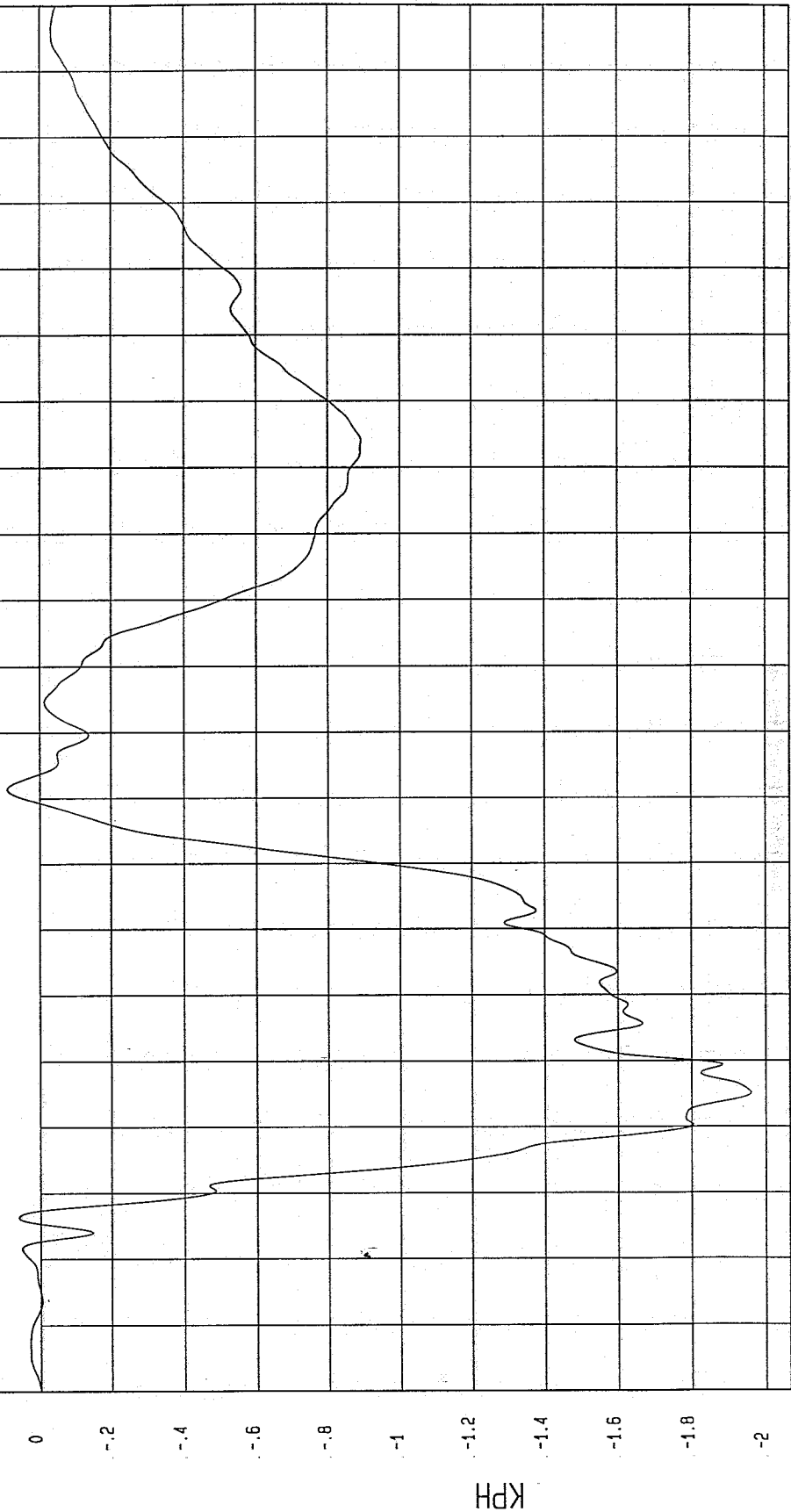
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -1.96 KPH at 25 msec
Maximum = 8.79E-02 KPH at 71 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY

1 897113A1.V32 Filterclass (180)



NGA Research
10-02-1997 11:45

TIME Seconds

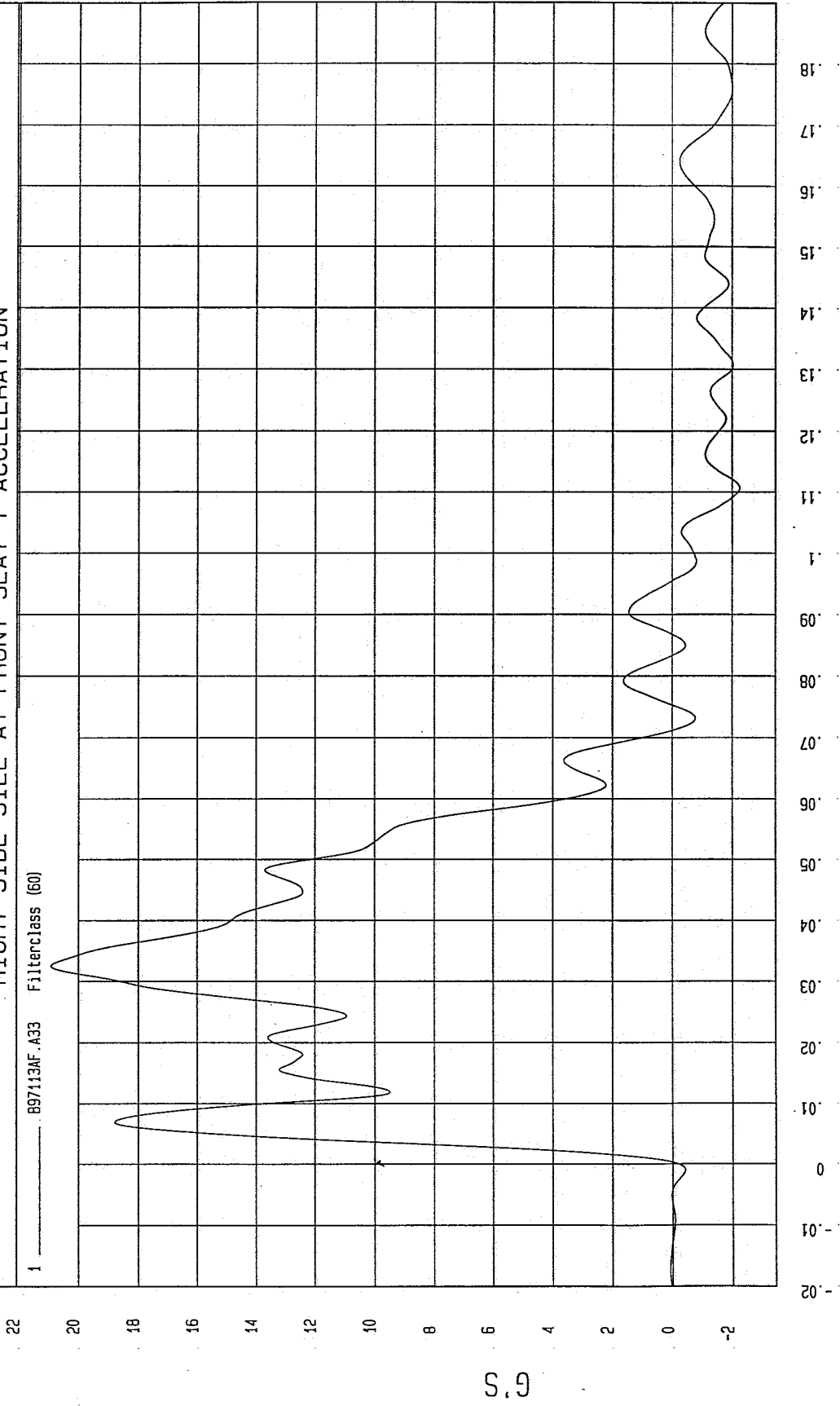
KPH

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -2.24 G'S at 111 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION



MCA Research
10-02-1997 11:54

TIME (SECONDS)

G'S

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

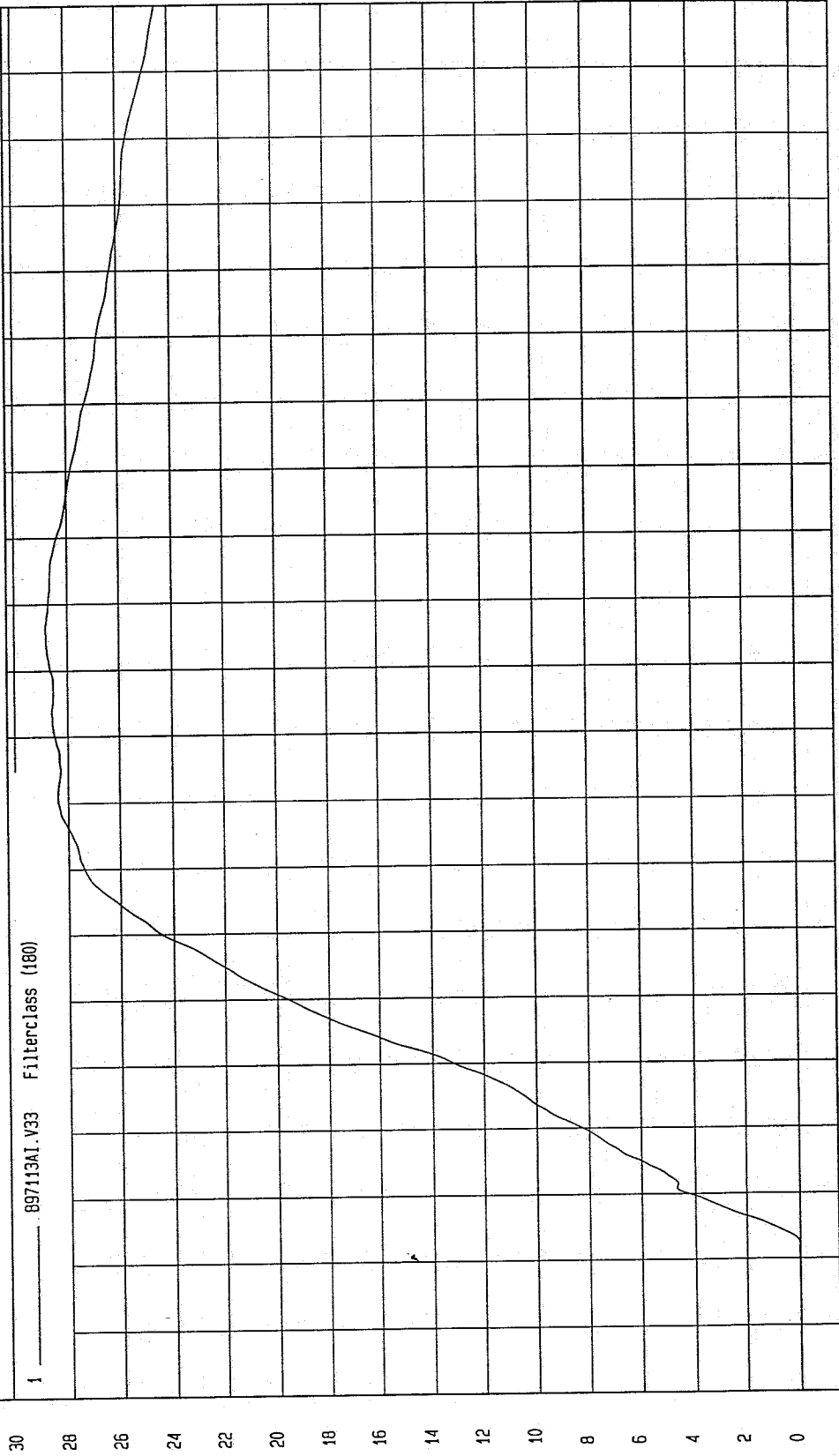
Speed: 38.2 MPH 61.5 KPH

COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 28.84 KPH at 96 msec

Minimum = 0 KPH at -20 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY



MGA Research
10-02-1997 11:46

TIME Seconds

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

TEST: HIGH SPEED LATERAL IMPACT

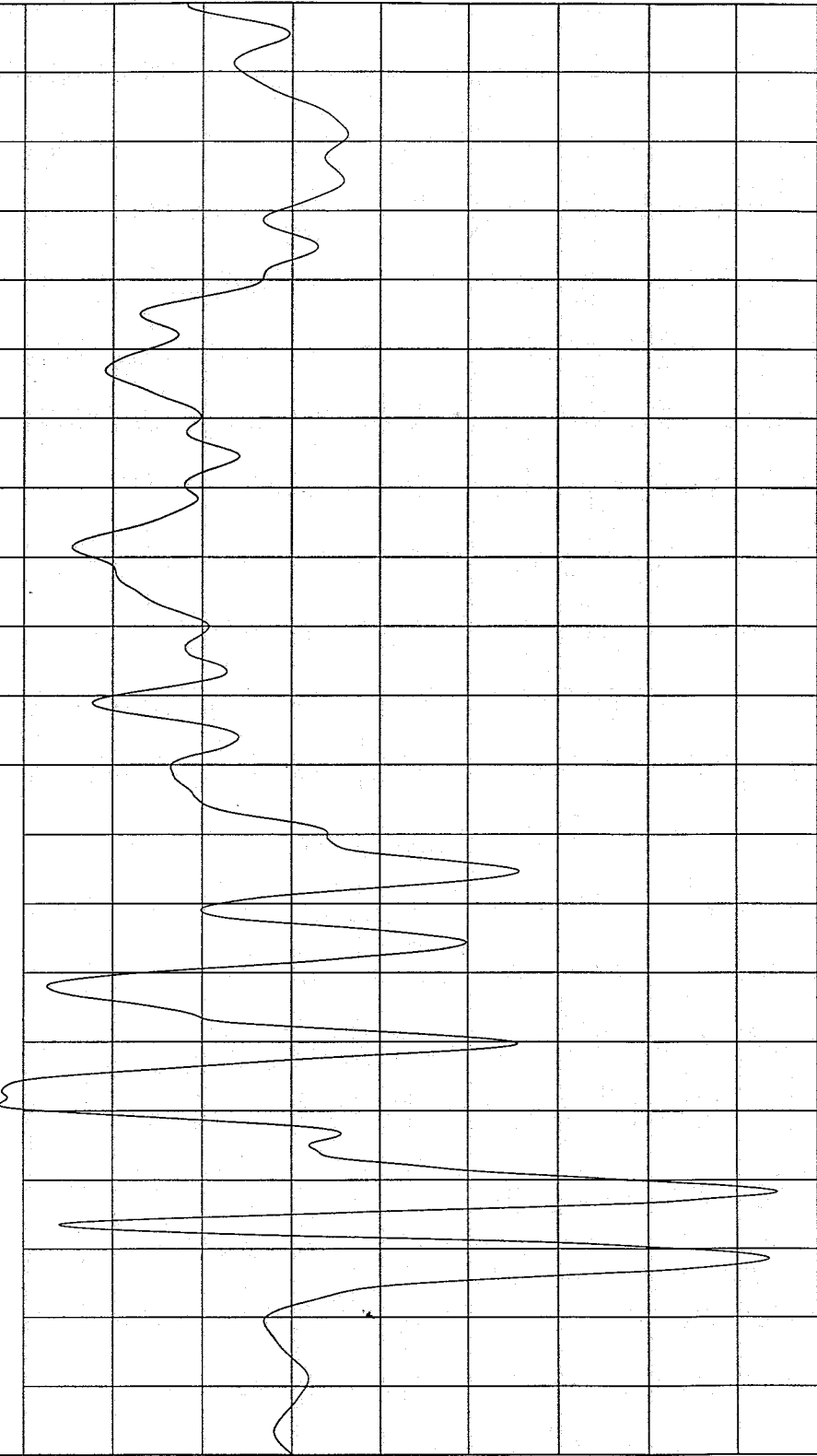
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 3.27 G'S at 31 msec

Minimum = -5.42 G'S at 18 msec

RIGHT SIDE SILL AT FRONT SEAT Z ACCELERATION

1 B97113AF.A34 Filterclass (60)



TIME (SECONDS)

MGA Research
10-02-1997 11:54

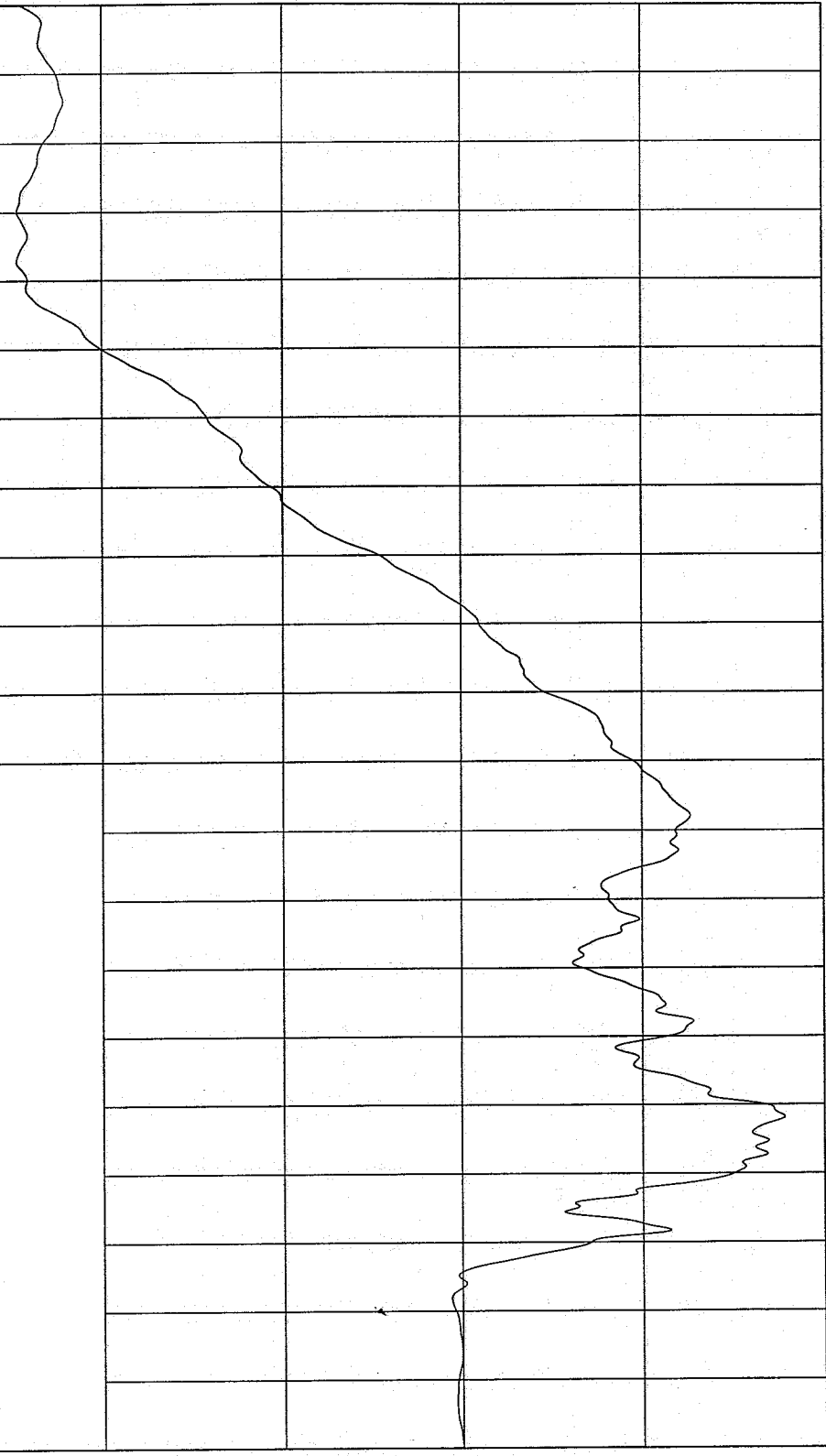
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -1.78 KPH at 28 msec
Maximum = 2.53 KPH at 196 msec

RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 897113AI.V34 Filterclass (180)



NGA Research
10-02-1997 11:46

TIME Seconds

KPH

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

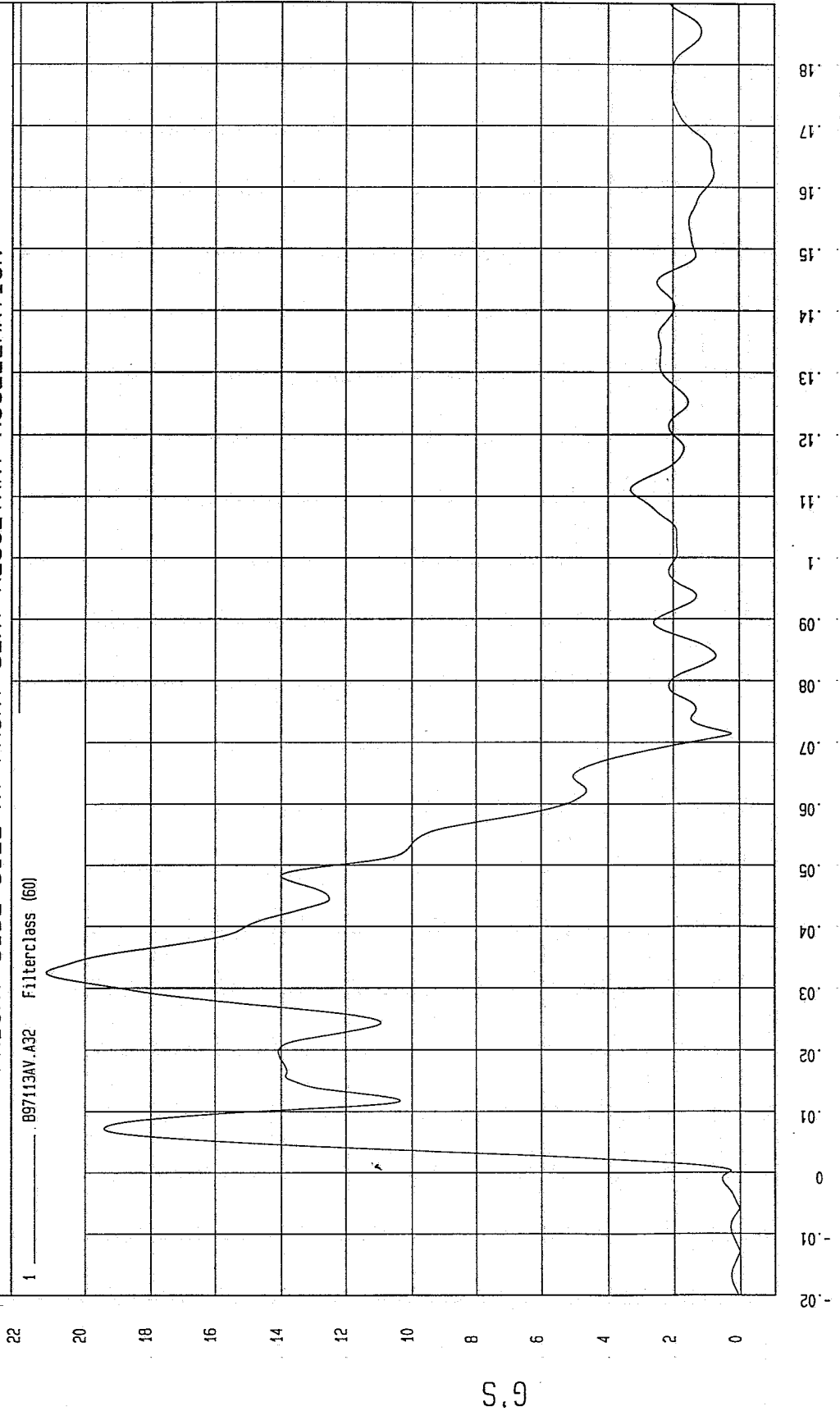
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = 1.22E-02 G'S at -13 msec

Maximum = 21.17 G'S at 32 msec

RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION

1 _____ B97113AV.A32 Filterclass (60)



MGA Research
10-02-1997 11:58

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

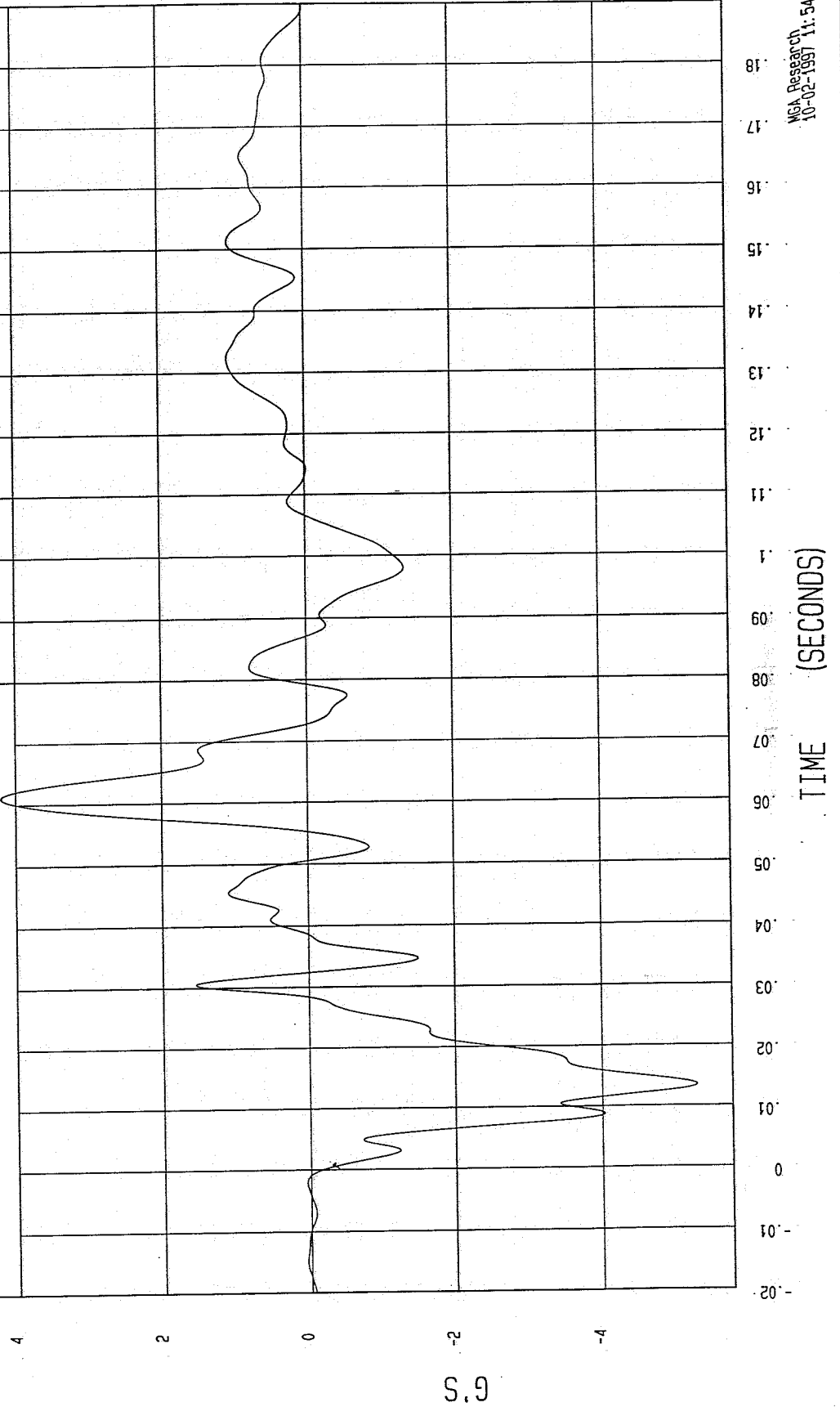
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 4.20 G'S at .61 msec

Minimum = -5.29 G'S at 13 msec

RIGHT SIDE SILL AT REAR SEAT X ACCELERATION

1 _____ 097113AF.A35 Filterclass (60)



MGA Research
10-02-1997 11:54

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

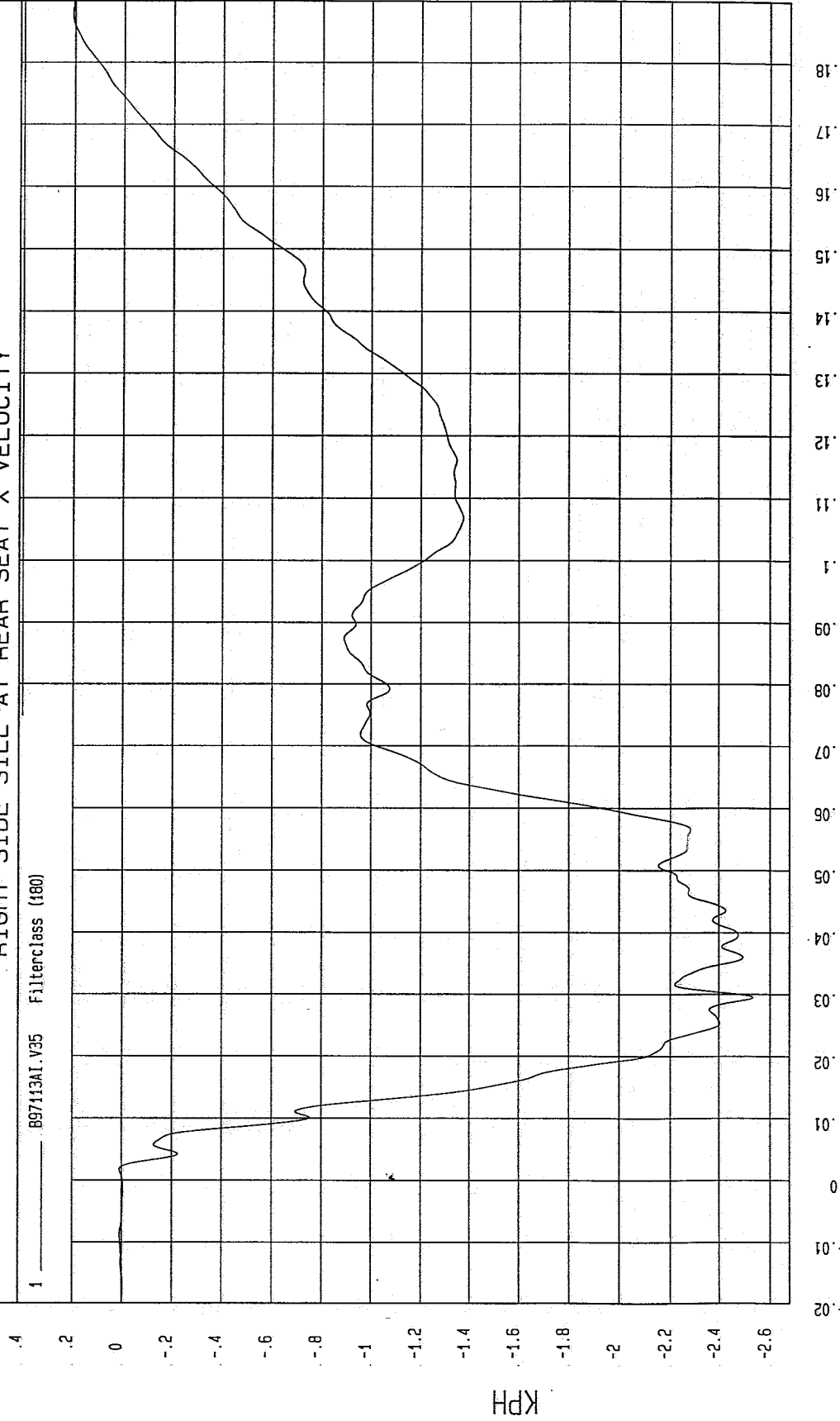
Speed: 38.2 MPH 61.5 KPH

Minimum = -2.53 KPH at 30 msec

Maximum = .27 KPH at 200 msec

RIGHT SIDE SILL AT REAR SEAT X VELOCITY

1 _____ B97113A1.V35 Filterclass (100)



MGA Research
10-02-1997 11:46

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

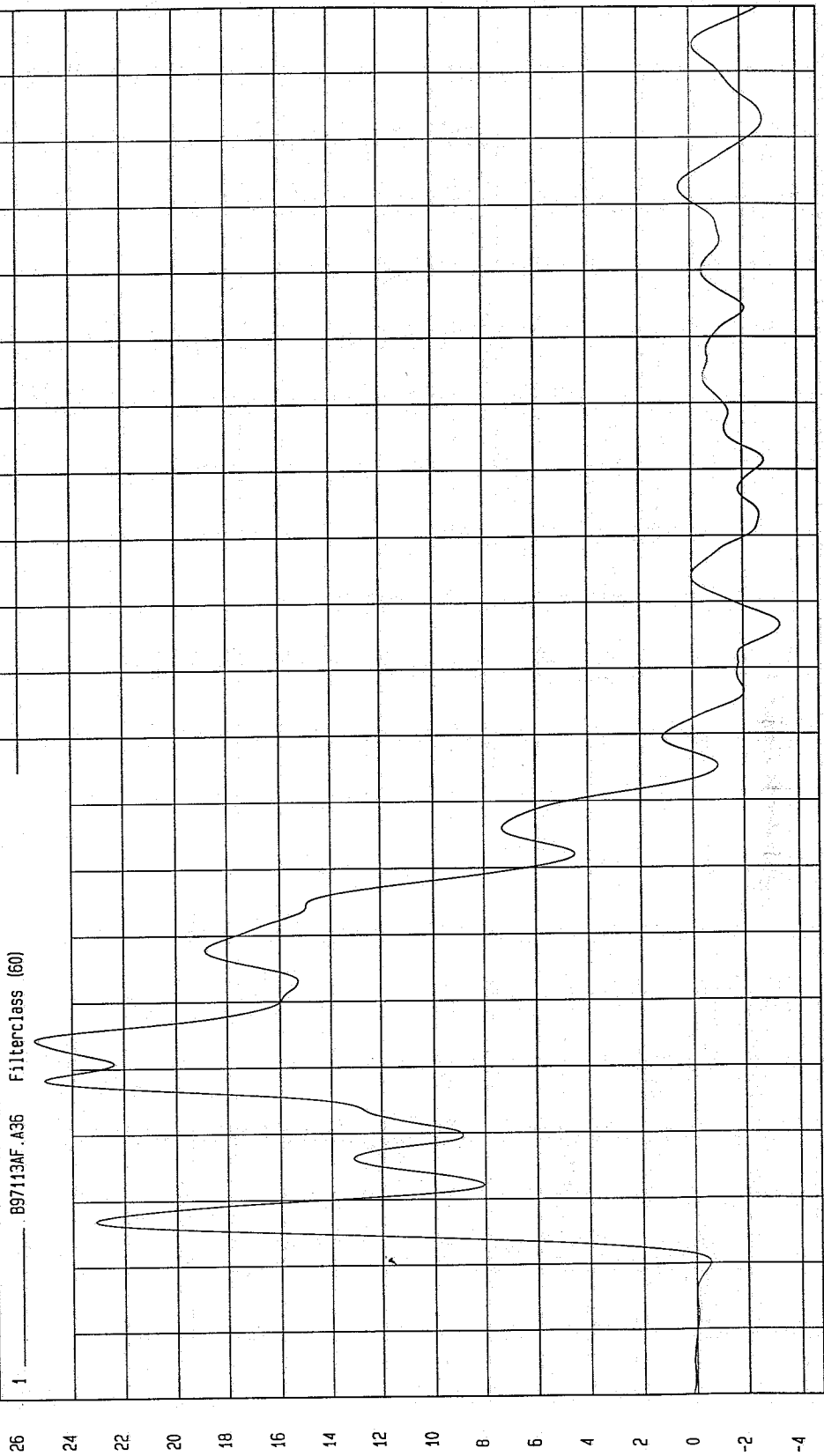
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 25.42 G'S at 34 msec

Minimum = -3.32 G'S at 97 msec

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

1 B97113AF.A36 Filterclass (60)



MCA Research
10-02-1997 11:55

TIME (SECONDS)

G.S

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

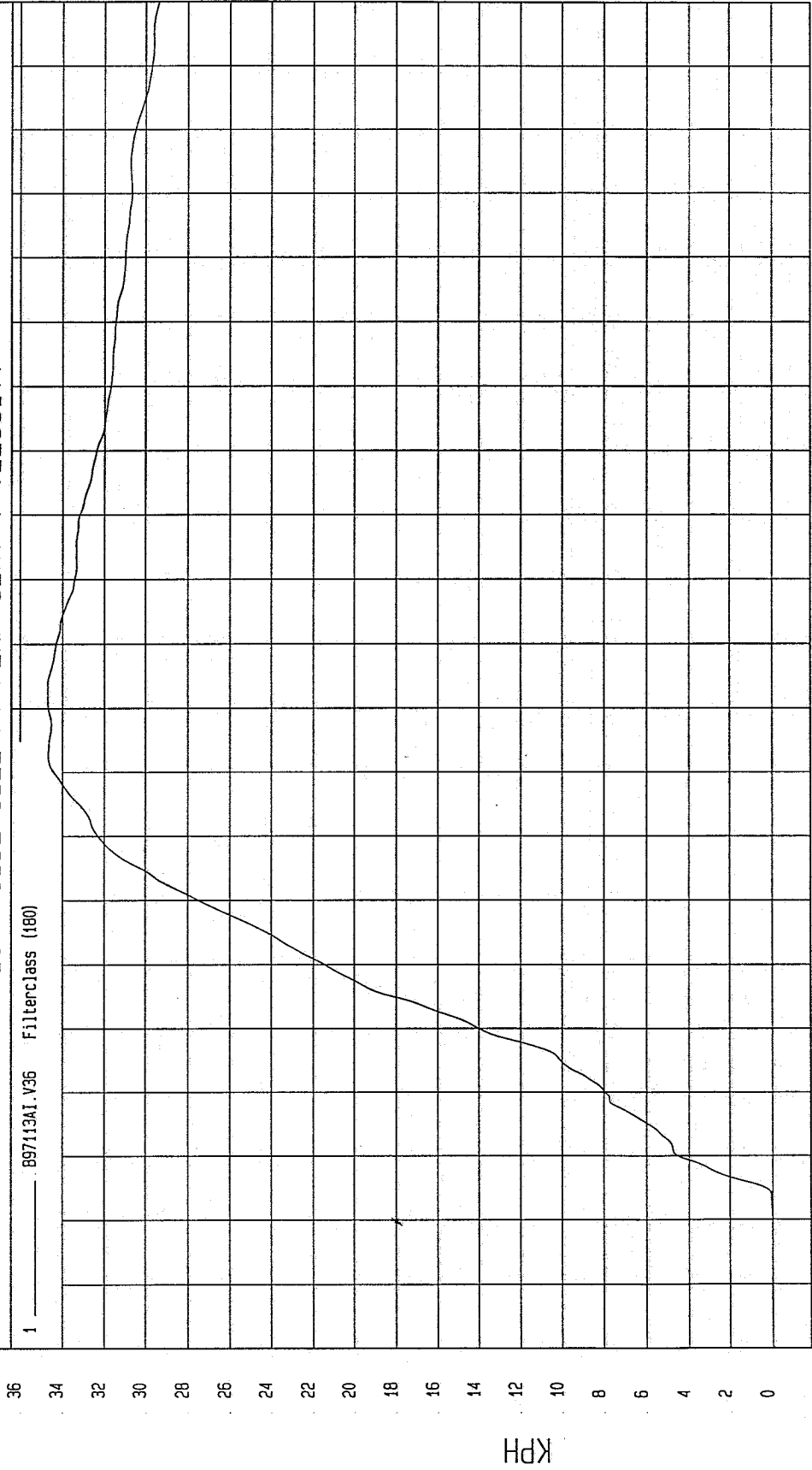
COMPONENT: 1998 FORD ESCORT 2DR

Speed: 38.2 MPH 61.5 KPH

Minimum = 0 KPH at -20 msec

Maximum = 34.69 KPH at 81 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY



NCA Research
10-02-1997 11:46

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

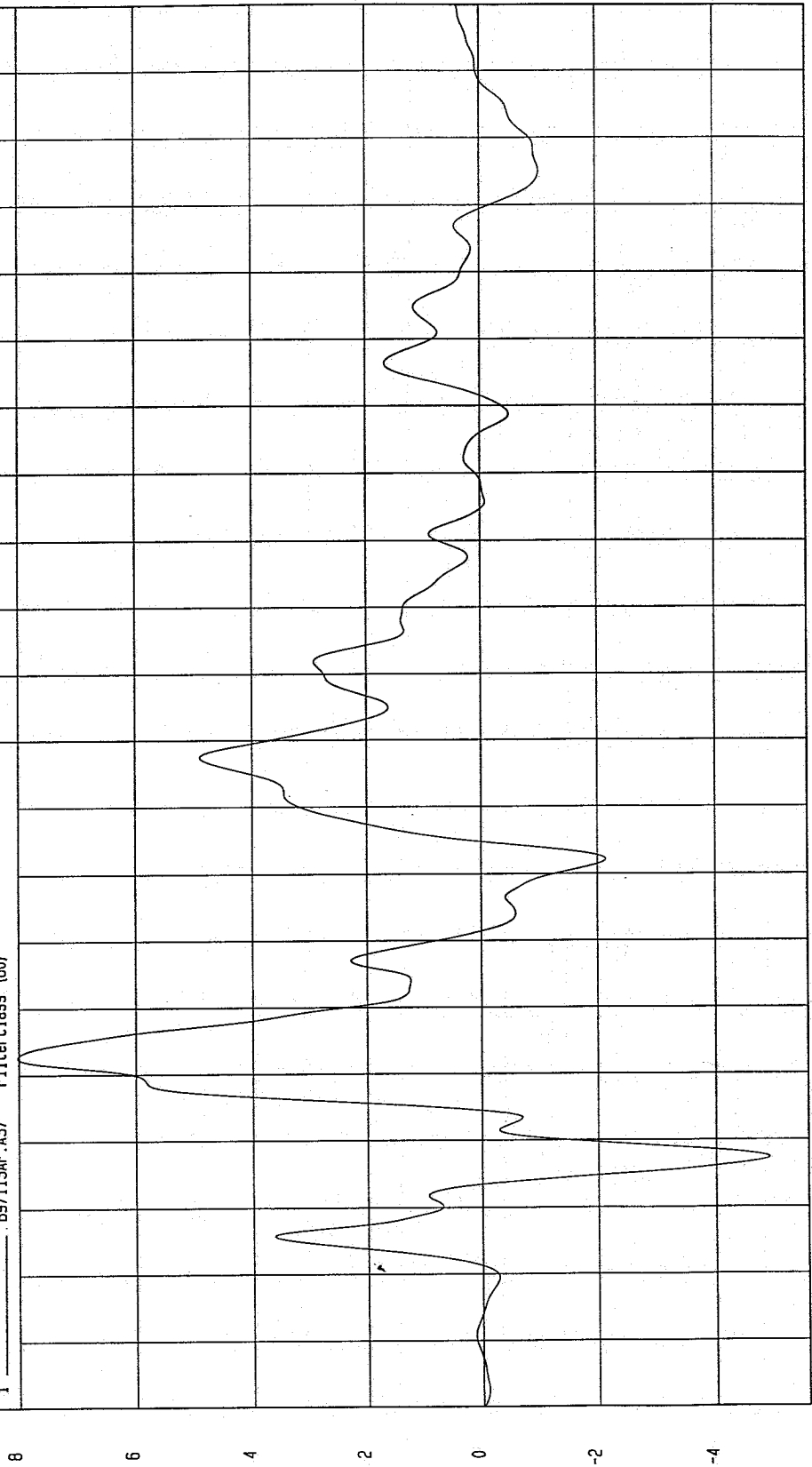
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -4.90 G'S at 17 msec

Maximum = 8.02 G'S at 33 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION

1 097113AF.A37 Filterclass (60)



MCA Research
10-02-1997 11:55

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

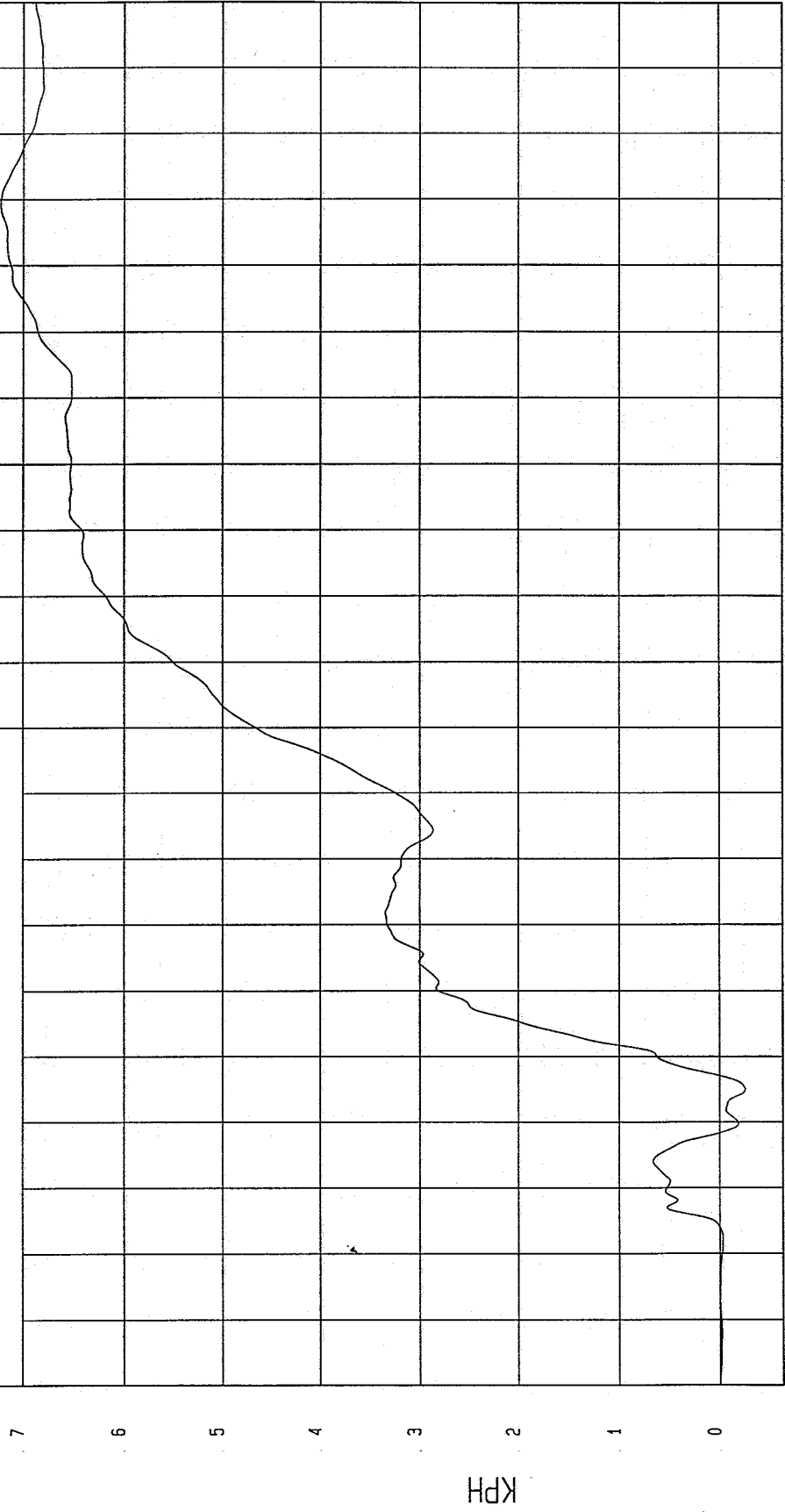
COMPONENT: 1998 FORD ESCORT 2DR

Minimum = -.25 KPH at 25 msec

Maximum = 7.23 KPH at 159 msec

RIGHT SIDE SILL AT REAR SEAT Z VELOCITY

1 _____ 897113A1.V37 Filterclass (180)



TIME Seconds
MCA Research
10-02-1997 11:46

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

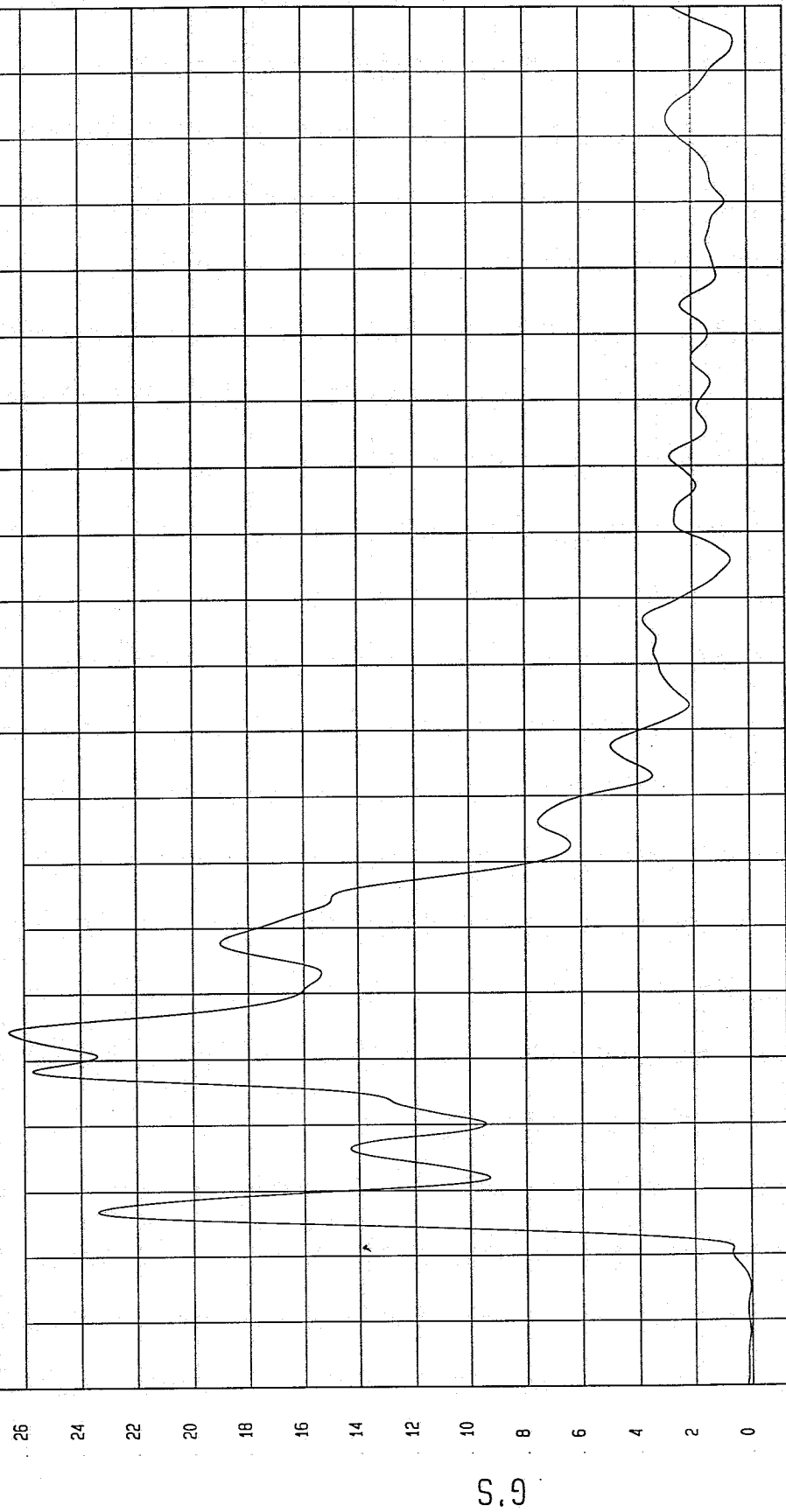
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 26.52 G'S at 34 msec

Minimum = 4.59E-02 G'S at -5 msec

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

1 ——— 897113AV.A35 Filterclass (60)



MGA Research
10-02-1997 11:58

TIME (SECONDS)

G.S

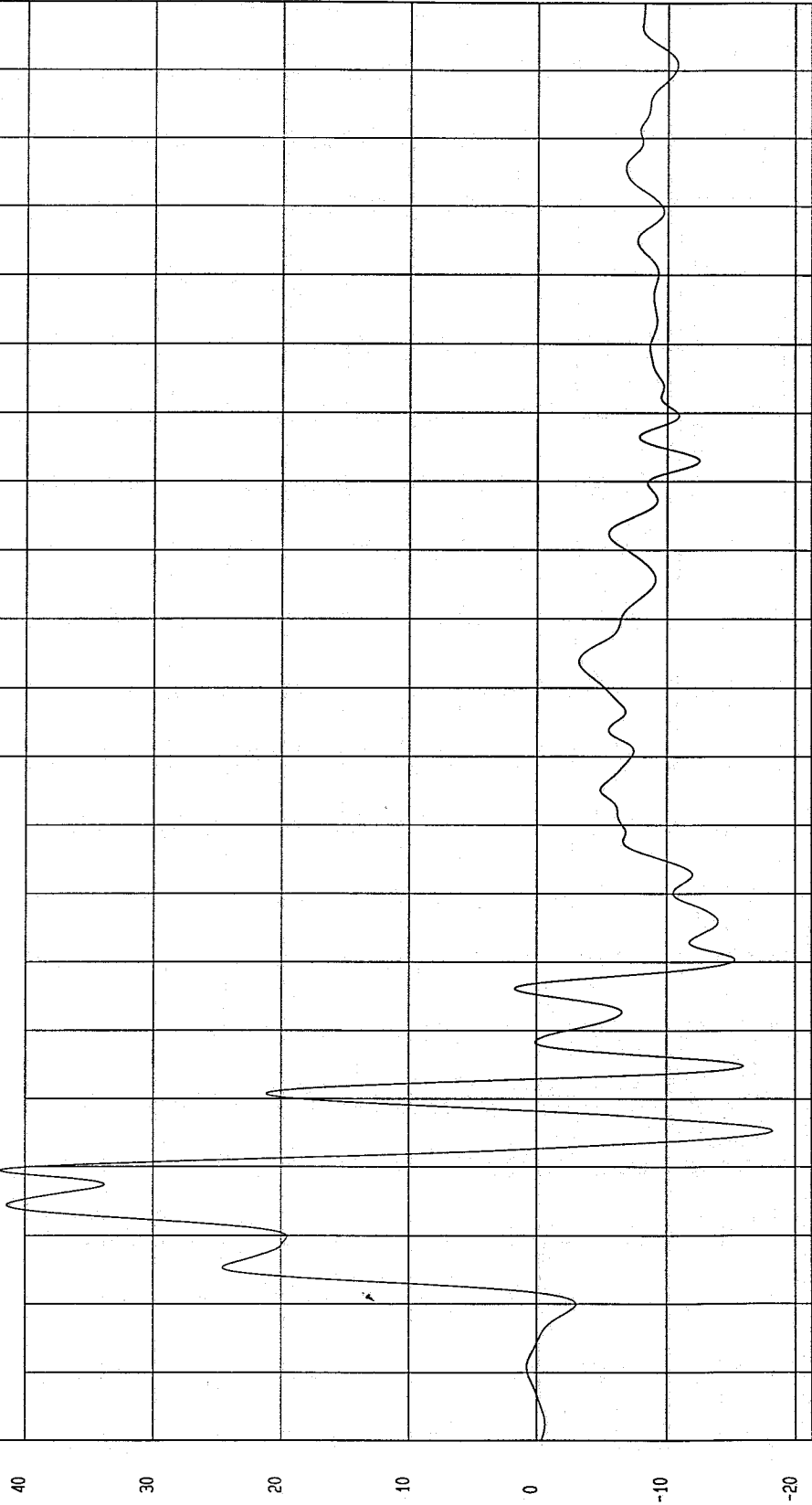
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -18.22 G'S at 25 msec

LEFT FRONT SEAT TRACK Y ACCELERATION

1 _____ B97113AF.A40 Filterclass (60)



NCA Research
10-02-1997 11:55

TIME (SECONDS)

G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

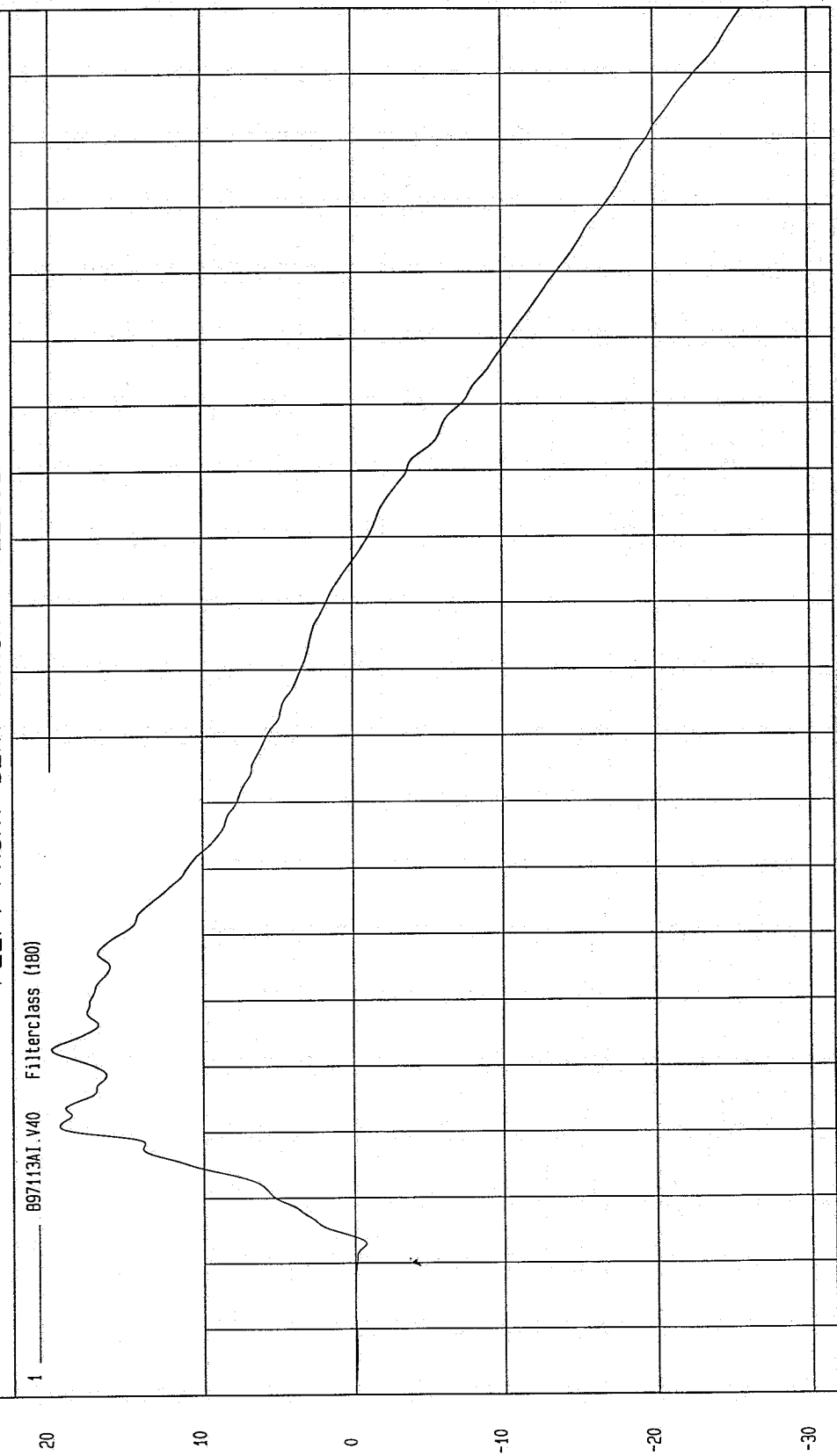
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -29.08 KPH at 200 msec

Maximum = 19.92 KPH at 33 msec

LEFT FRONT SEAT TRACK Y VELOCITY

1 897113A1.V40 FilterClass (180)



MGA Research
10-02-1997 11:46

TIME Seconds

KPH

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

TEST: HIGH SPEED LATERAL IMPACT

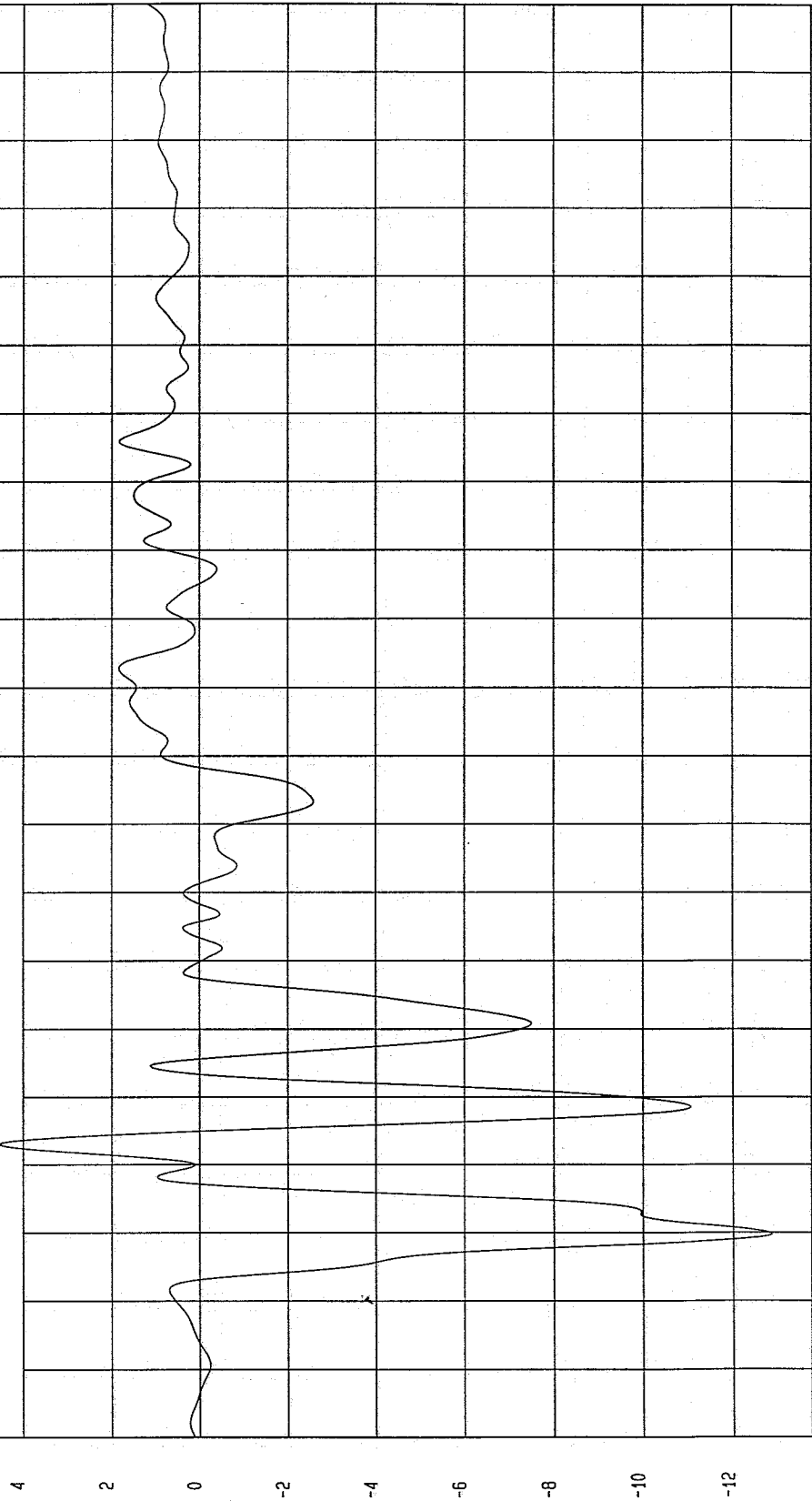
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 4.51 G'S at 23 msec

Minimum = -12.85 G'S at 10 msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION

1 ——— B97113AF.A08 Filterclass (60)



TIME (SECONDS)

MCA Research
10-02-1997 11:55

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

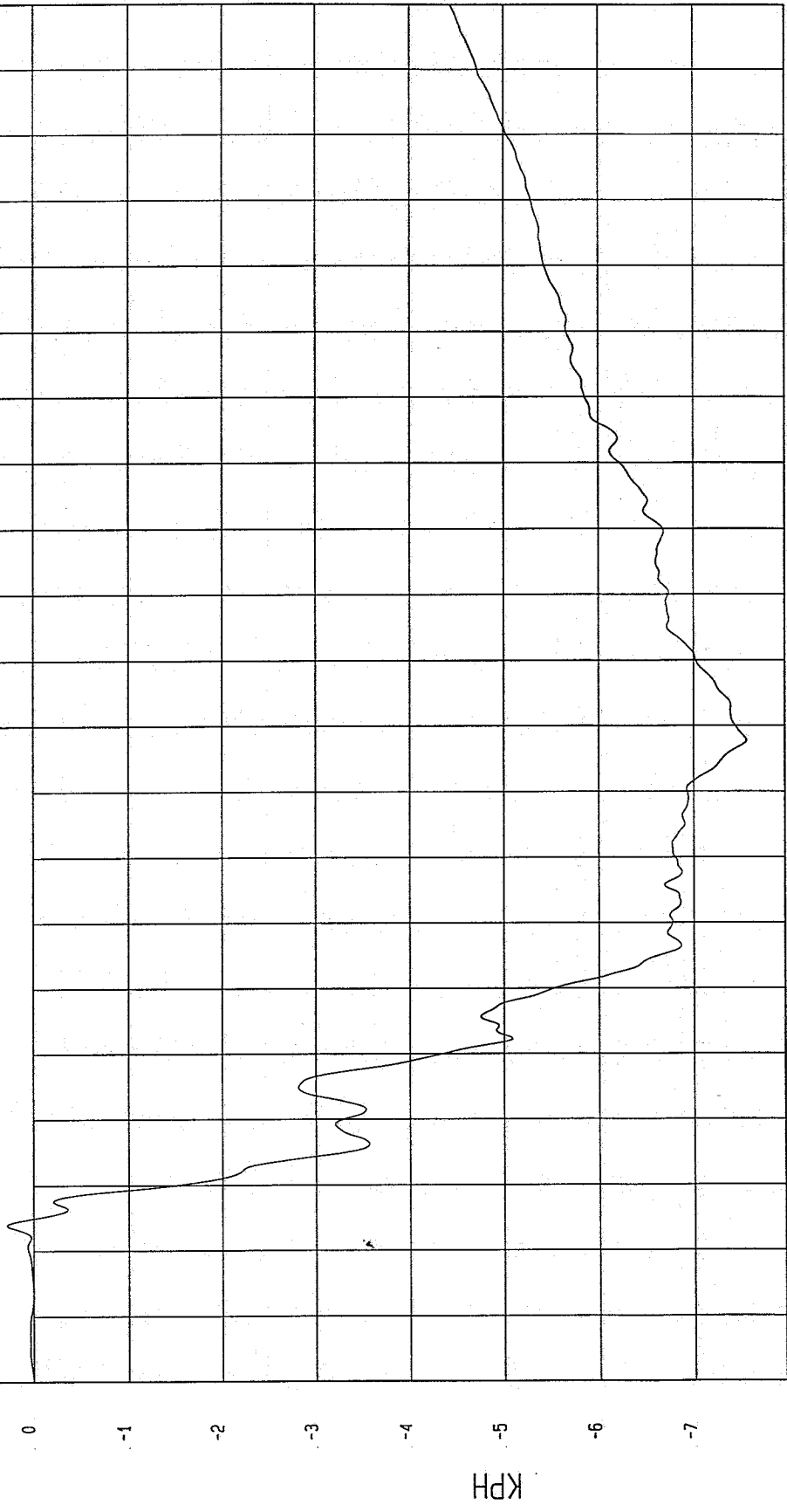
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -7.54 KPH at 78 msec

Maximum = .27 KPH at 4 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

1 897113A1.V08 Filterclass (100)



MGA Research
10-02-1997 11:46

TIME Seconds

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

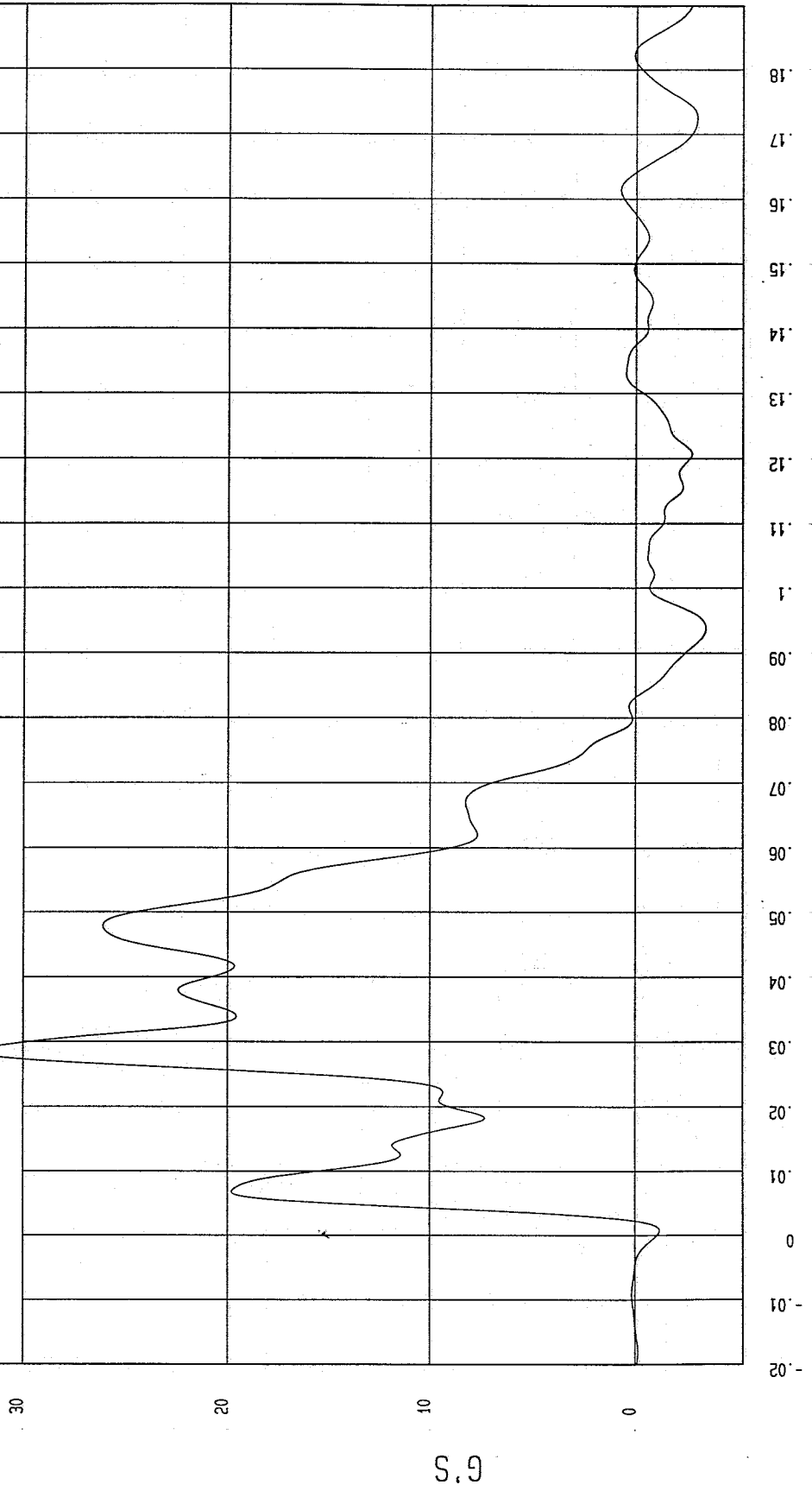
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 32.29 G'S at 28 msec

Minimum = -3.49 G'S at 94 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION

1 .897113AF.A09 Filterclass (60)



MPA Research
10-02-1997 11:55

TIME (SECONDS)

G'S

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

TEST: HIGH SPEED LATERAL IMPACT

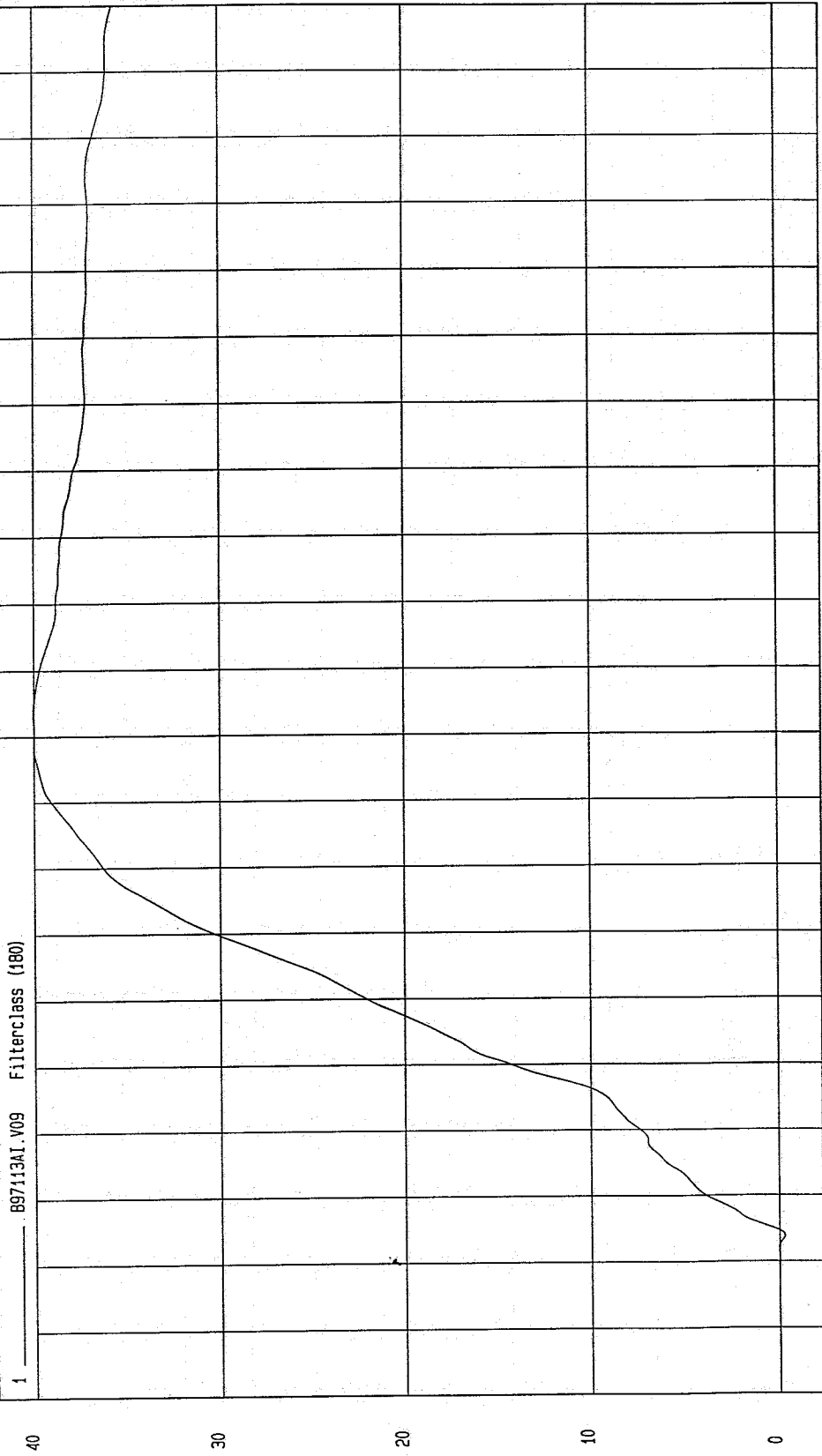
COMPONENT: 1998 FORD ESCORT 2DR

Minimum = -29 KPH at 4 msec

Maximum = 40.05 KPH at 84 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY

1 897113A1.V09 Filterclass (180)



MCA Research
10-02-1997 11:46

TIME Seconds

KPH

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

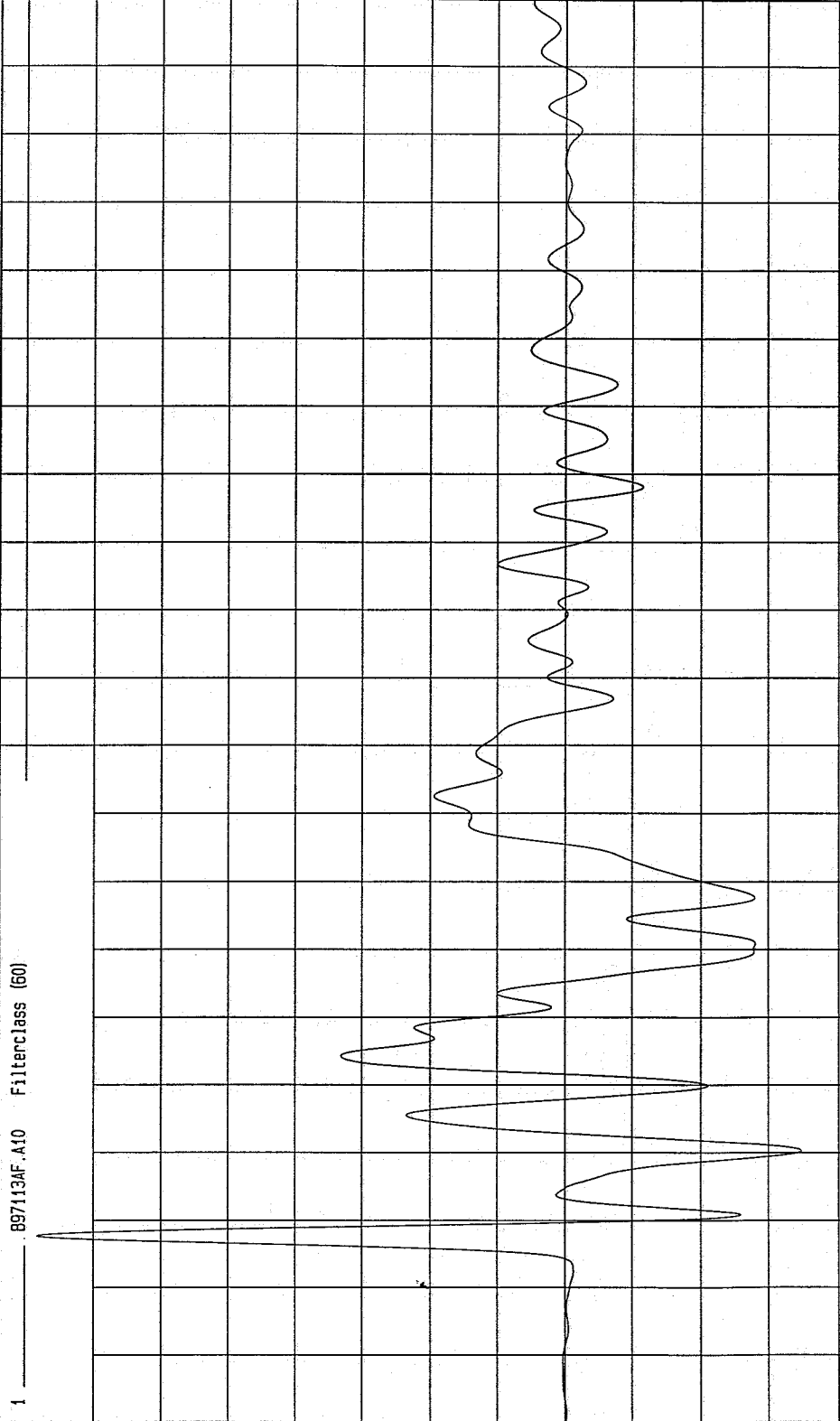
Speed: 38.2 MPH 61.5 KPH

Minimum = -6.94 G'S at 20 msec

Maximum = 15.65 G'S at 8 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION

1 897113AF.A10 Filterclass (50)



18
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-1
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-3
-4
-5
-6
-7
-8

TIME (SECONDS)

0.18
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0.15
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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

MGA Research
10-02-1997 11:55

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

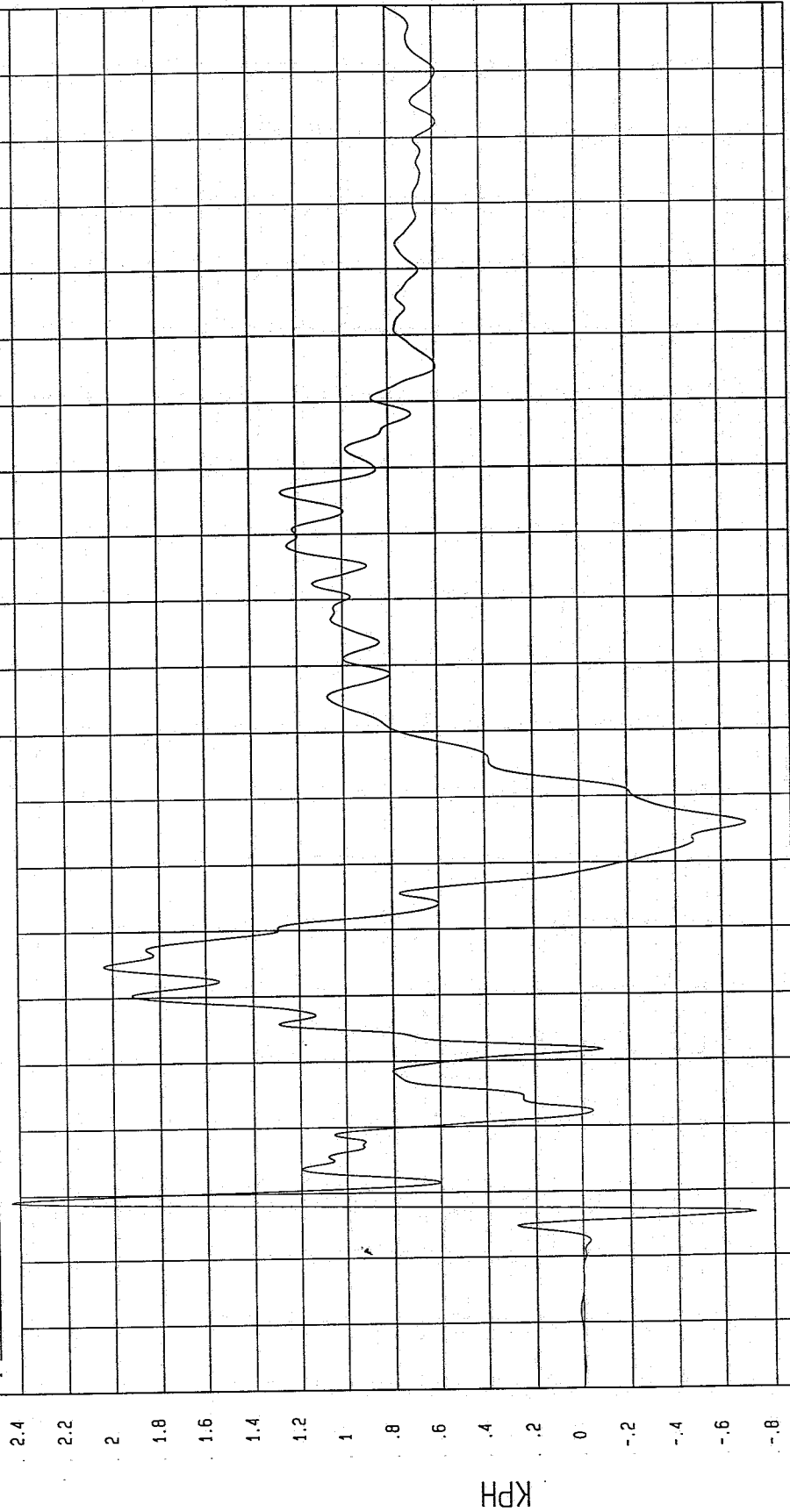
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 2.43 KPH at 9 msec

Minimum = -.72 KPH at 7 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY

1 997113AI.V10 Filterclass (180)



MCA Research
10-02-1997 11:46

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

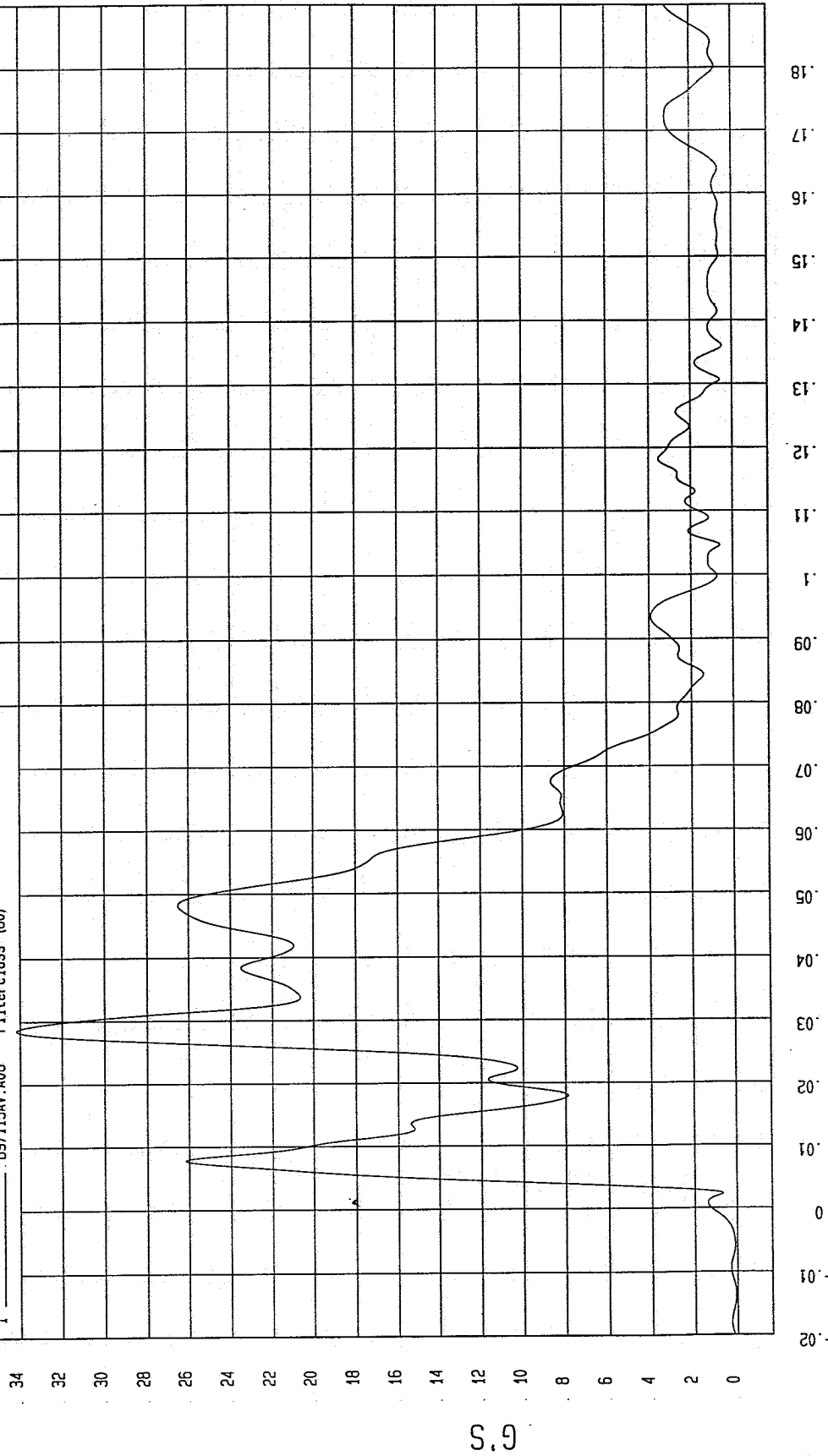
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 34.17 G'S at 28 msec

Minimum = 6.48E-02 G'S at -14 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

1 B9713AV.A08 Filterclass (60)



MGA Research
10-02-1997 11:58

TIME (SECONDS)

G.S

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

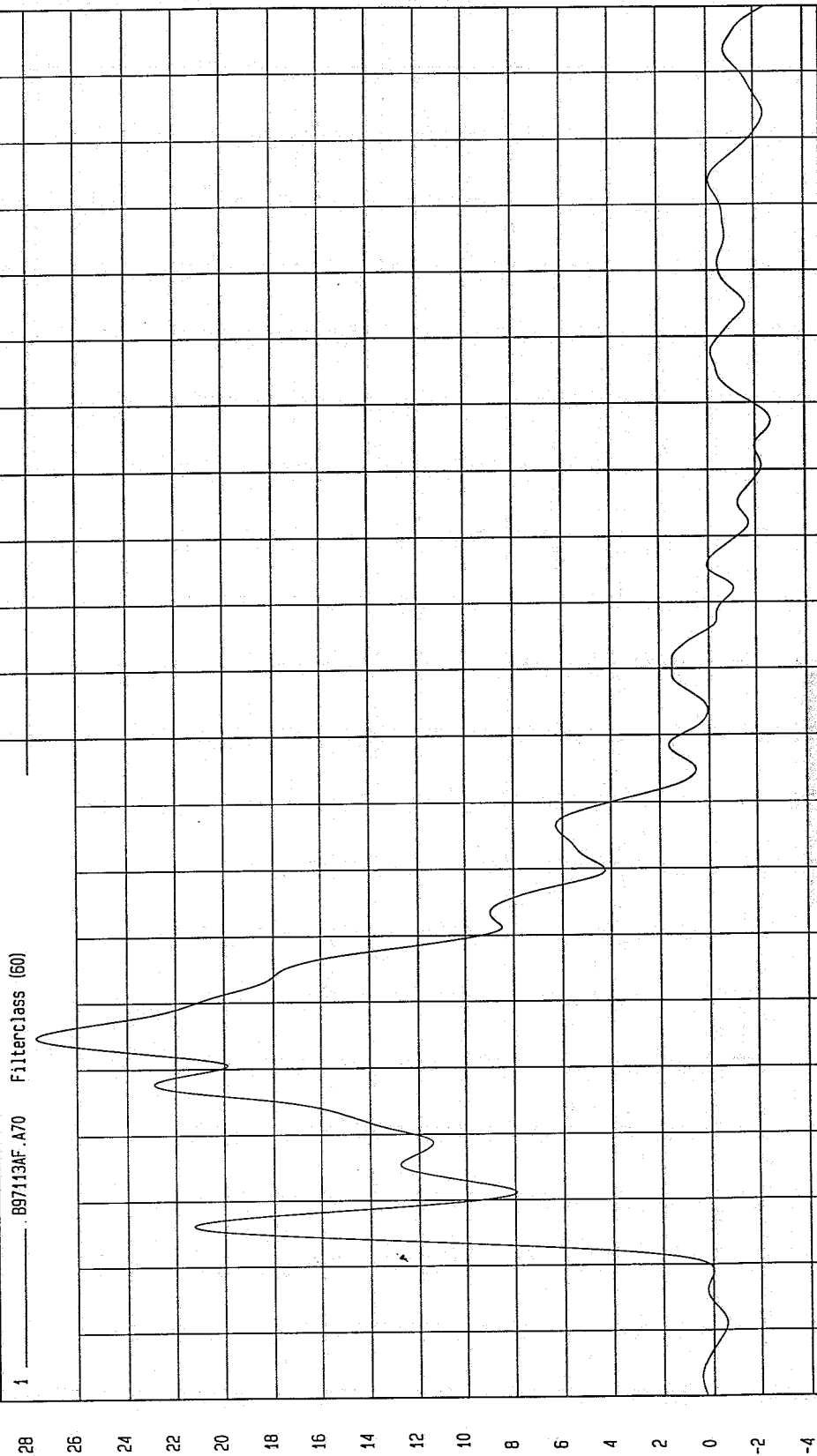
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 27.68 G'S at 35 msec

Minimum = -3.05 G'S at 192 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION

1 B97113AF.A70 Filterclass (60)



WGA Research
10-02-1997 11:55

TIME (SECONDS)

G'S

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

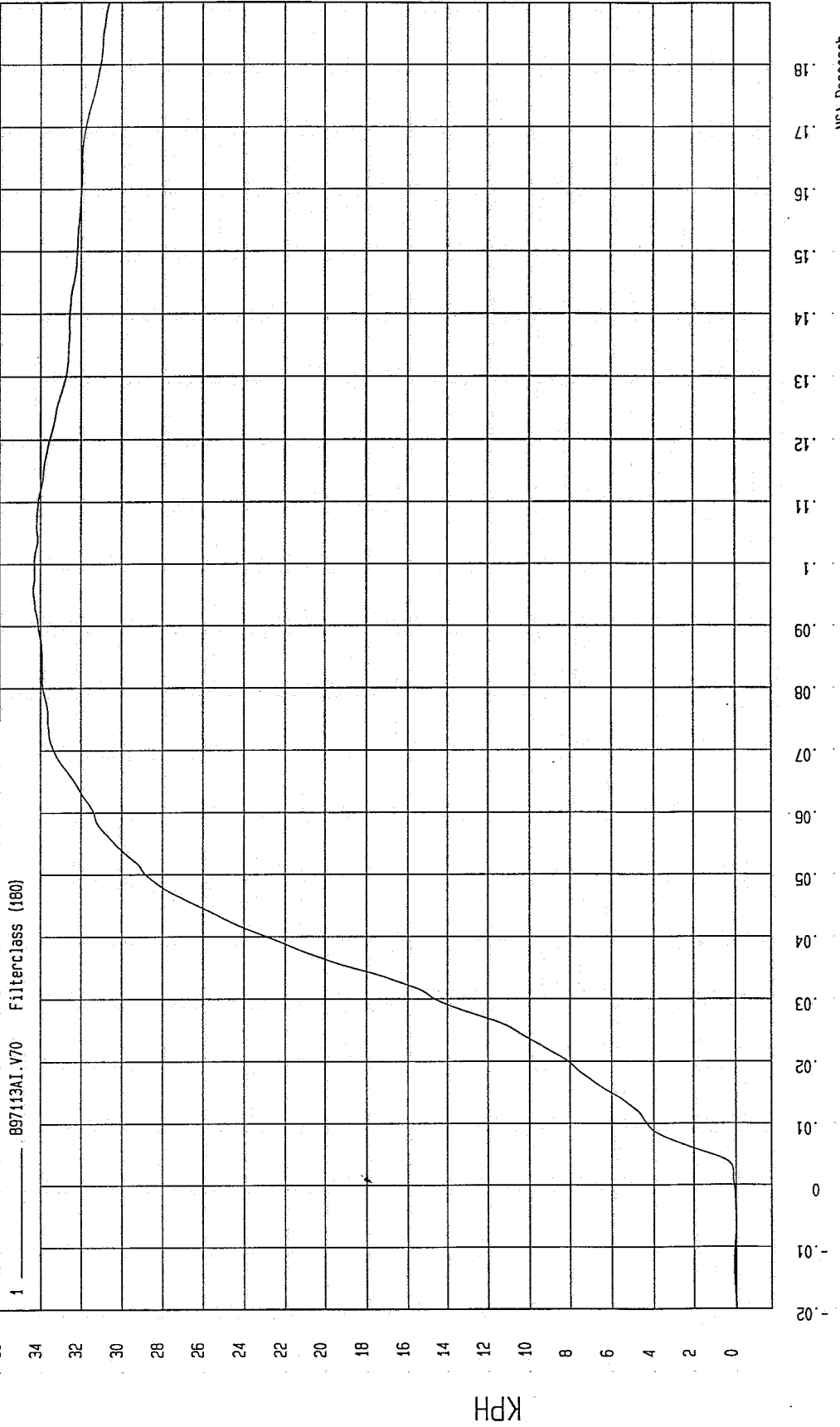
TEST: HIGH SPEED LATERAL IMPACT

COMPONENT: 1998 FORD ESCORT 2DR

Minimum = -4.51E-03 KPH at -6 msec

Maximum = 34.36 KPH at 96 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY



MGA Research
10-02-1997 11:46

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

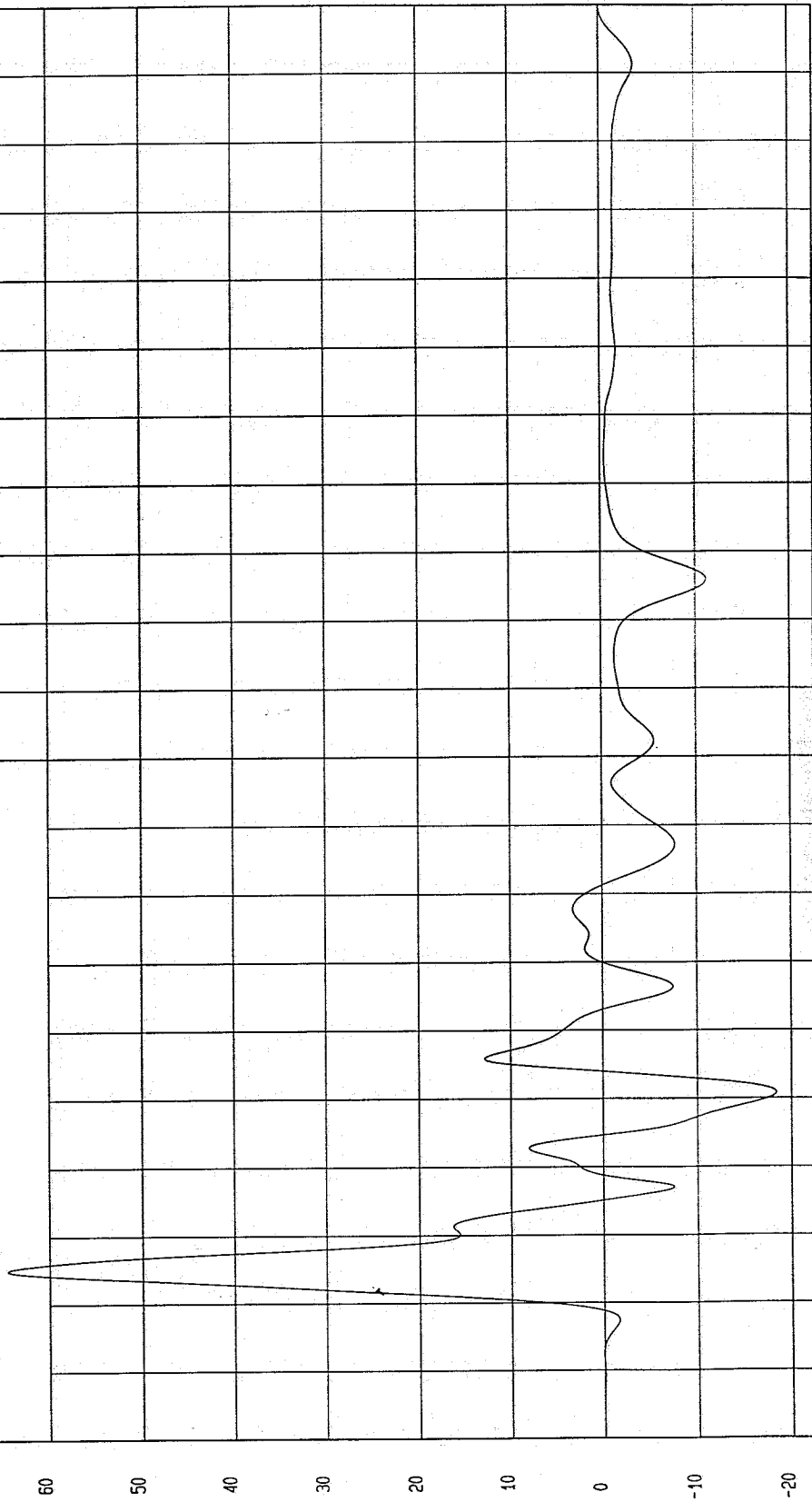
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -18.39 G'S at 31 msec

Maximum = 64.48 G'S at 5 msec

LEFT LOWER A-POST Y ACCELERATION

1 B97113AF.A20 Filterclass (60)



MCA Research
10-02-1997 11:55

TIME (SECONDS)

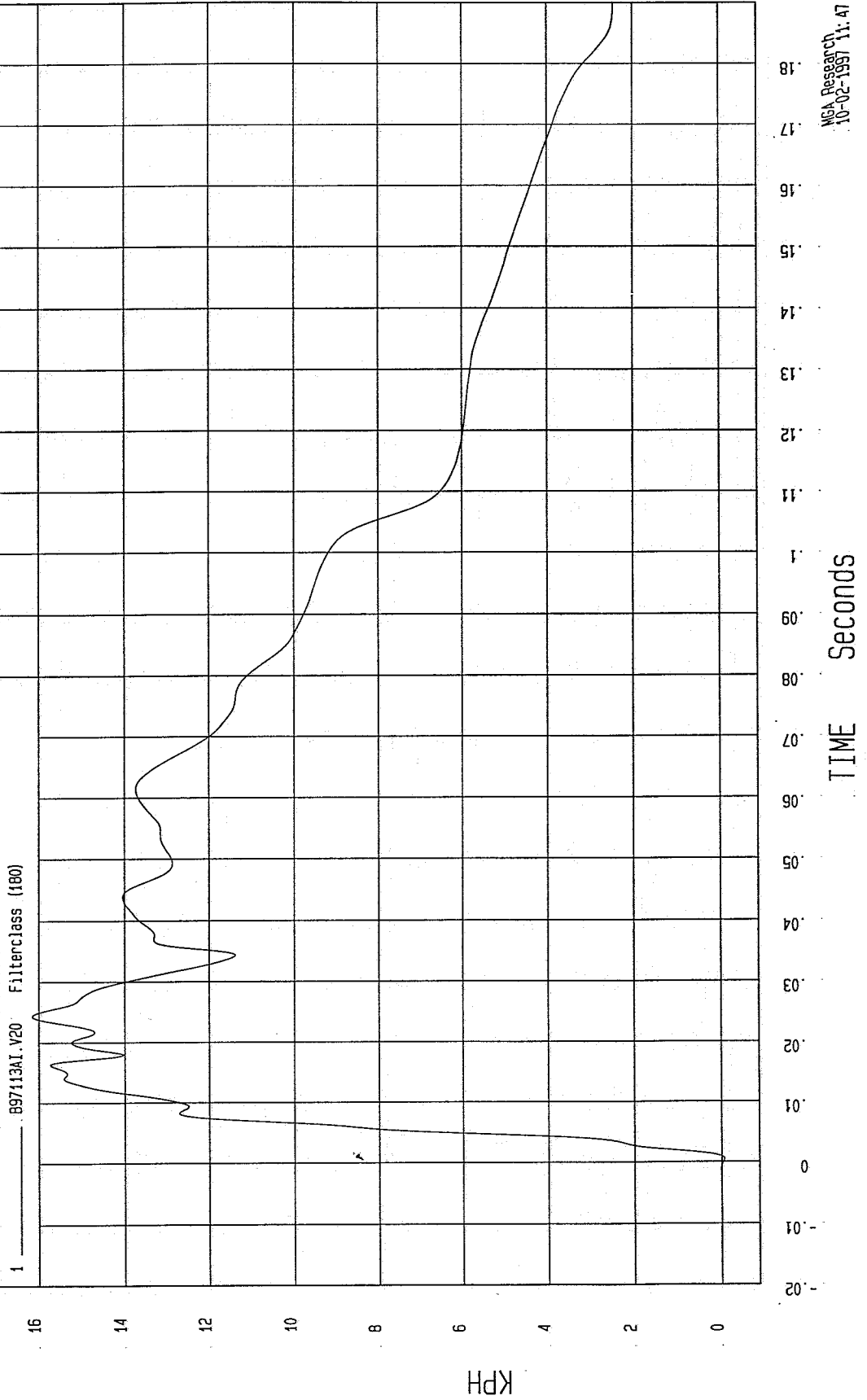
G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -6.48E-02 KPH at 0 msec
Maximum = 16.15 KPH at 24 msec

LEFT LOWER A-POST Y VELOCITY



MCA Research
10-02-1997 11: 47

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

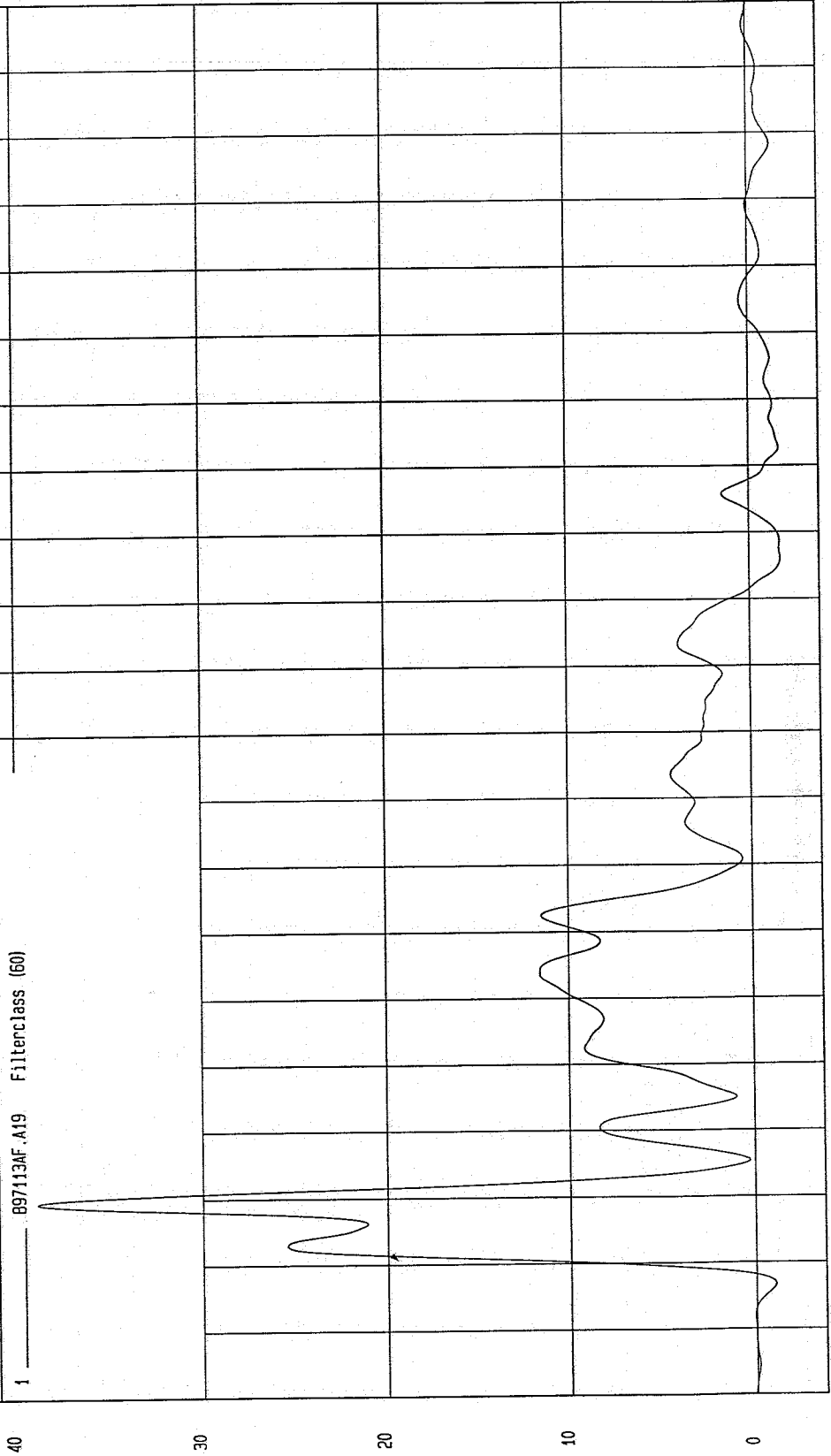
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 38.92 G'S at 10 msec

Minimum = -1.65 G'S at 106 msec

LEFT MID A-POST Y ACCELERATION

1 997113AF.A19 Filterclass (60)



MCA Research
10-02-1997 11:56

TIME (SECONDS)

G'S

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

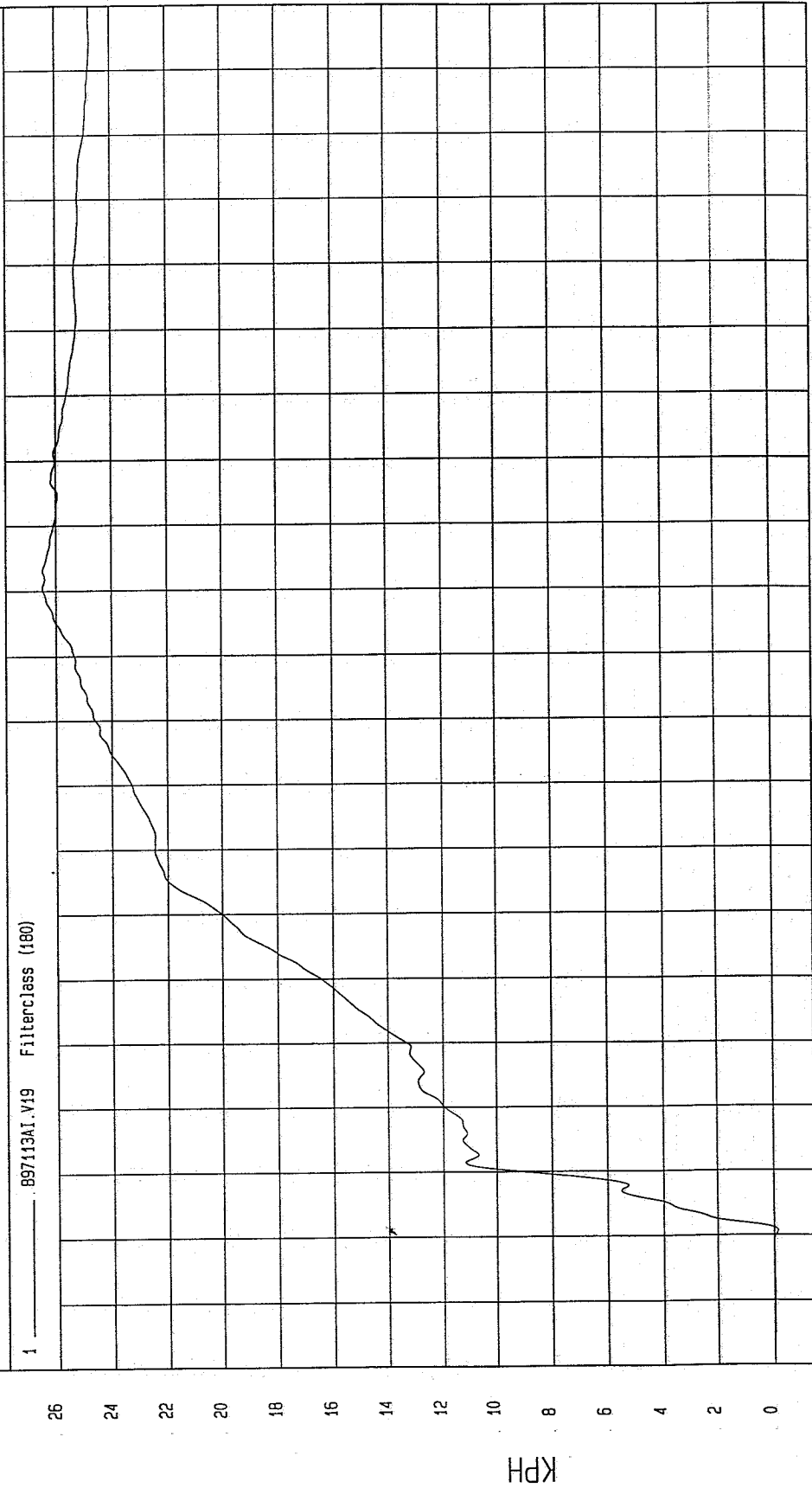
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 26.48 KPH at 100 msec

Minimum = -.13 KPH at 1 msec

LEFT MID A-POST Y VELOCITY

1 .89713AI.V19 Filterclass (180)



MGA Research
10-02-1997 11:47

TIME Seconds

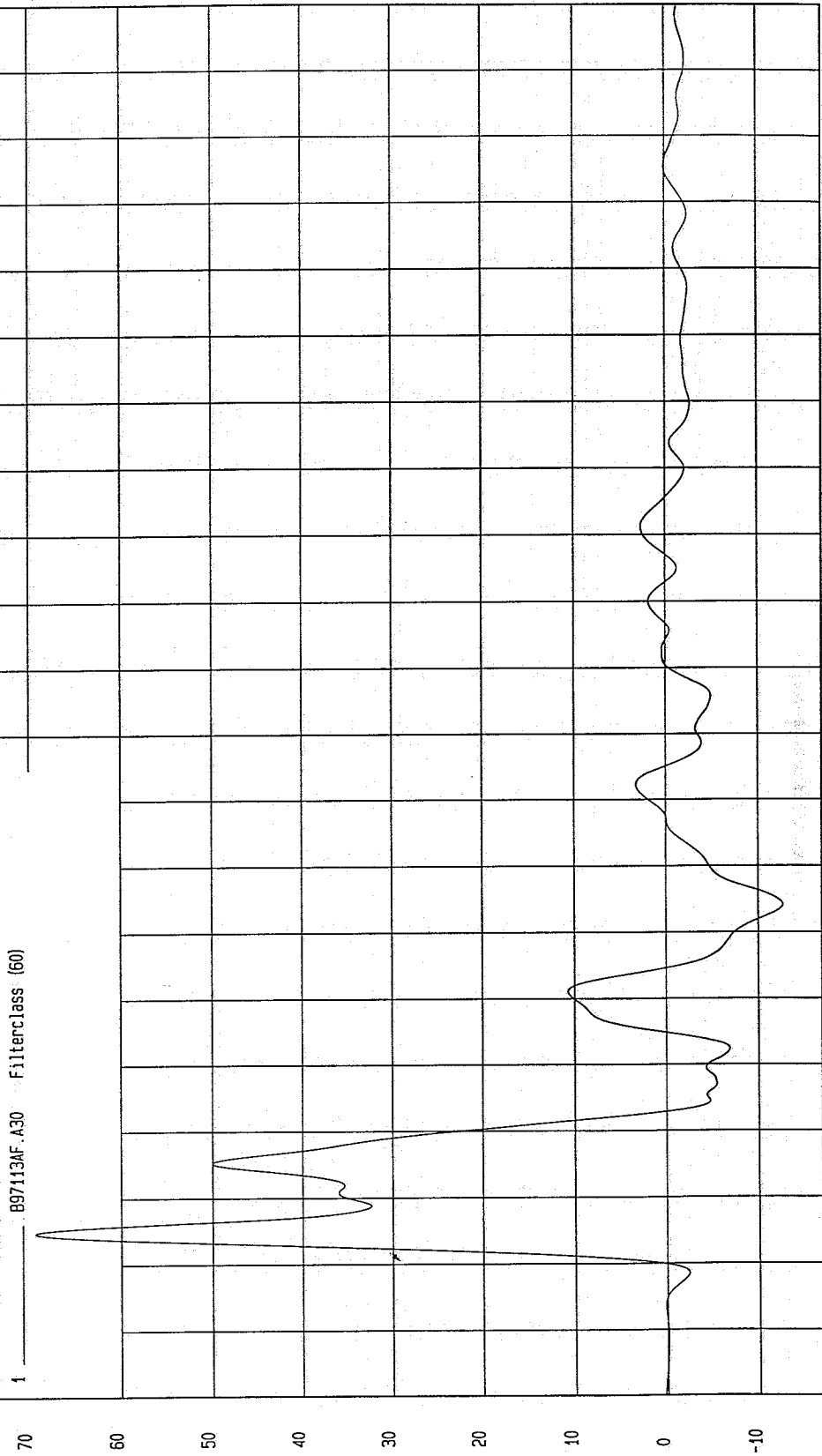
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -12.69 G'S at 54 msec

LEFT LOWER B-POST Y ACCELERATION

1 B97113AF.A30 Filterclass (60)



MGA Research
10-02-1997 11:56

TIME (SECONDS)

G.S

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

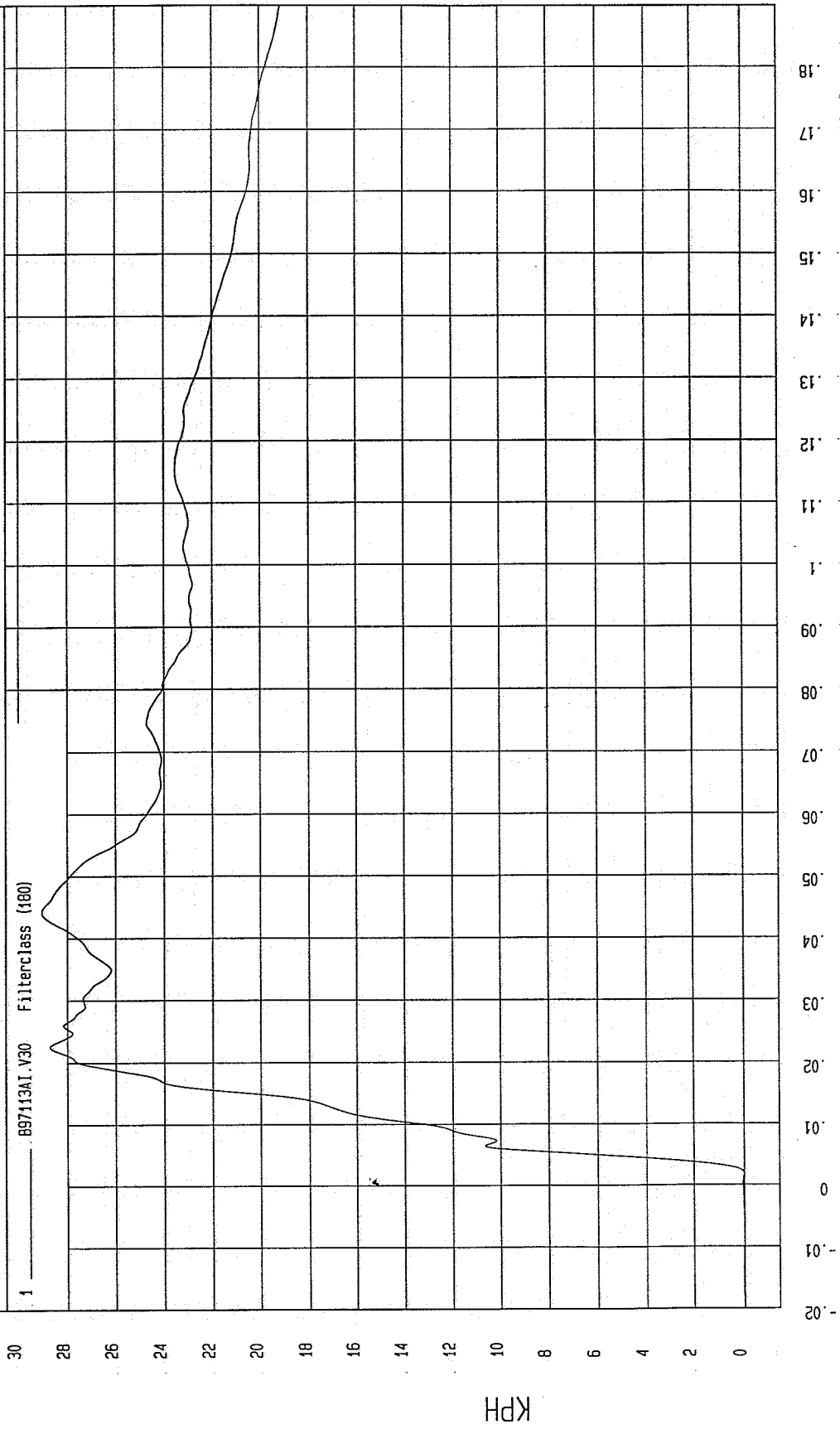
TEST: HIGH SPEED LATERAL IMPACT

COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 29.05 KPH at 44 msec

Minimum = -6.63E-03 KPH at -8 msec

LEFT LOWER B-POST Y VELOCITY



MCA Research
10-02-1997 11:47

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

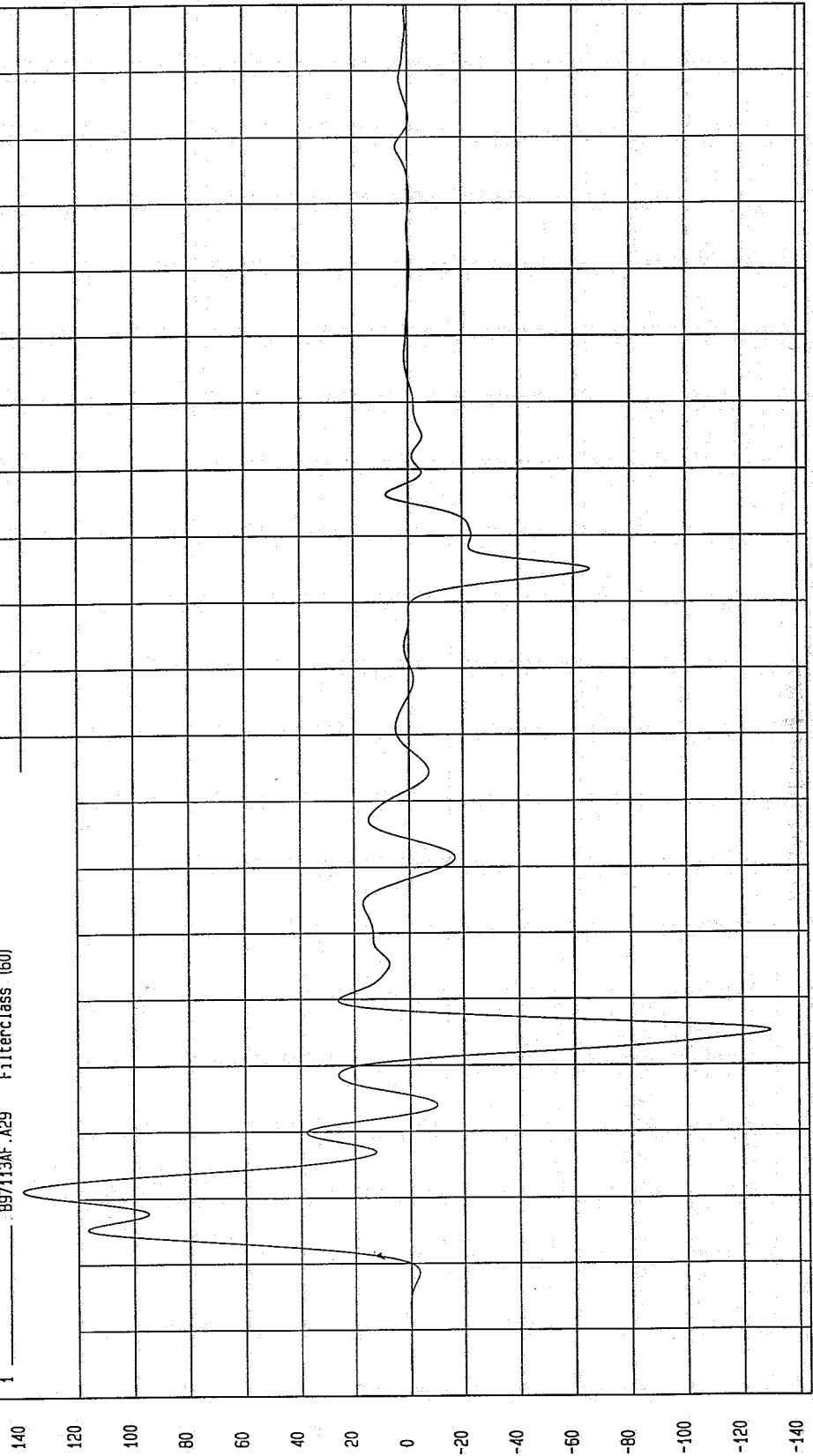
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 139.70 G'S at 11 msec

Minimum = -129.85 G'S at 35 msec

LEFT MID B-POST Y ACCELERATION

1 897113MF.A29 Filterclass (60)



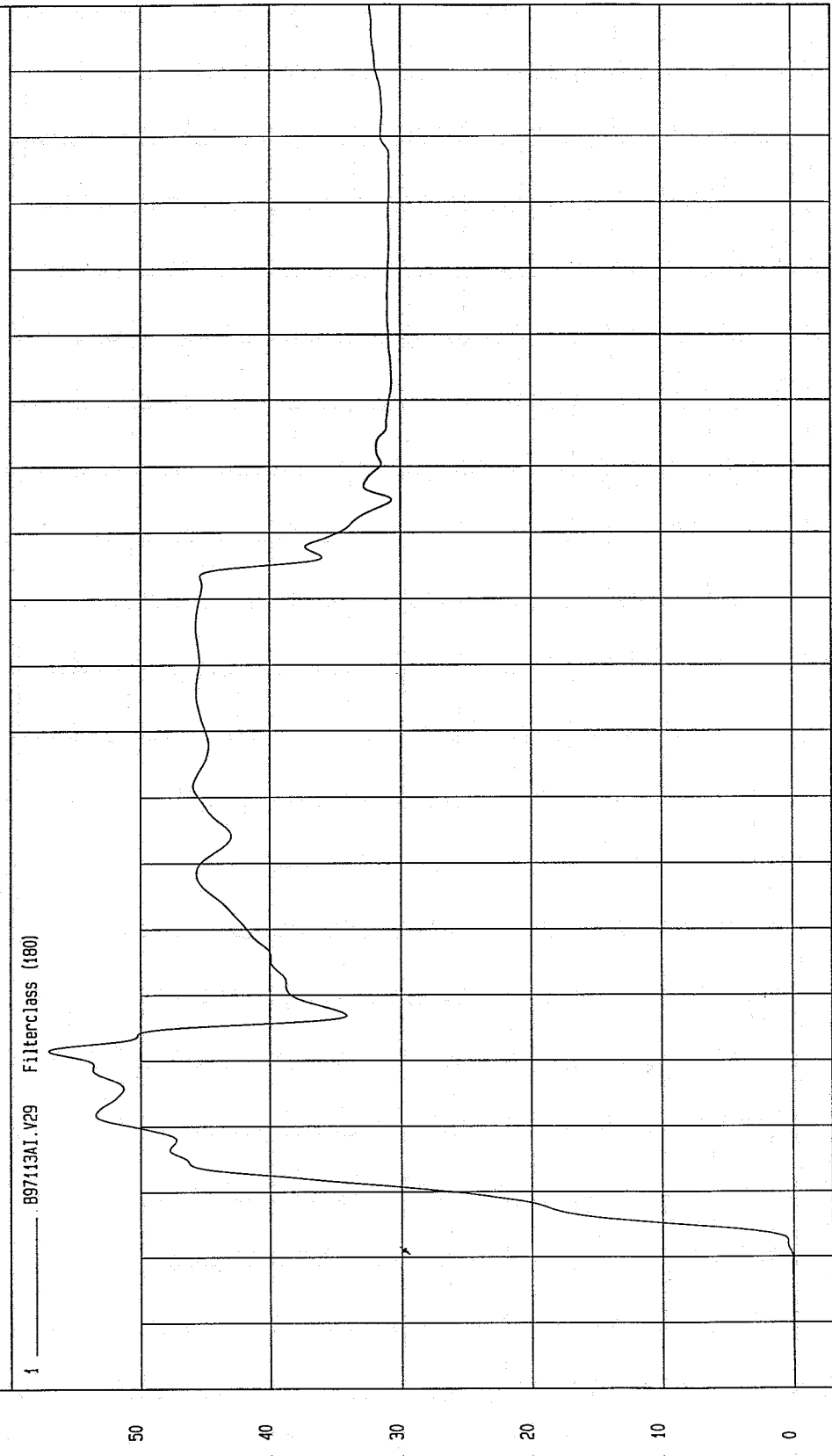
MCA Research
10-02-1997 11:56

TEST: HIGH SPEED LATERAL IMPACT
TEST DATE: 09-29-1997
COMPONENT: 1998 FORD ESCORT 2DR
Speed: 38.2 MPH 61.5 KPH

Minimum = 0 KPH at -20 msec
Maximum = 57.06 KPH at 32 msec

LEFT MID B-POST Y VELOCITY

1 ——— .B97113AI.V29 Filterclass (180)



TIME Seconds
MGA Research
10-02-1997 11: 47

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

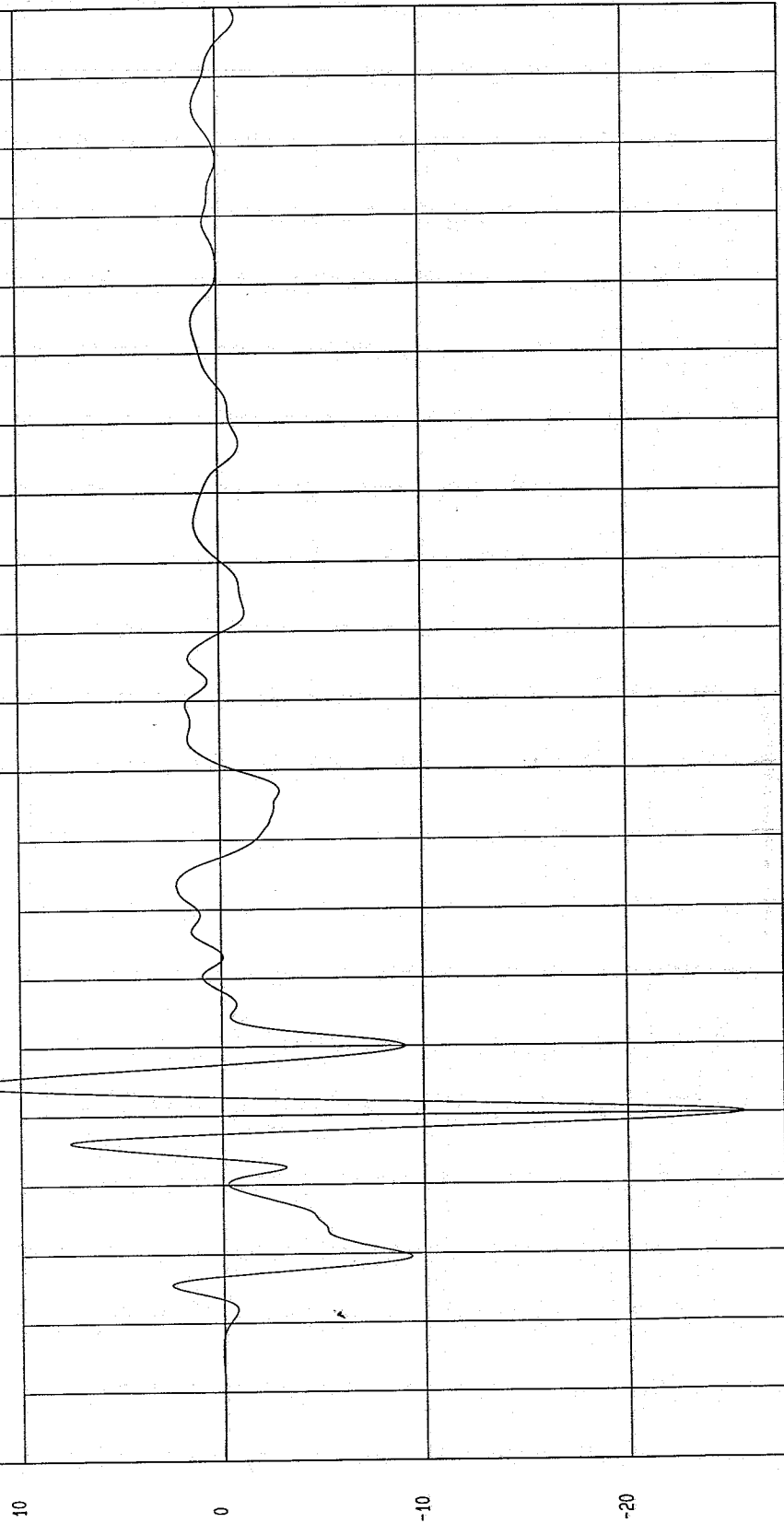
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 12.72 G'S at 35 msec

Minimum = -25.67 G'S at 30 msec

VEHICLE CG X ACCELERATION

1 _____ B97113AF.A58 Filterclass (60)



MGA Research
10-02-1997 11:56

TIME (SECONDS)

G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

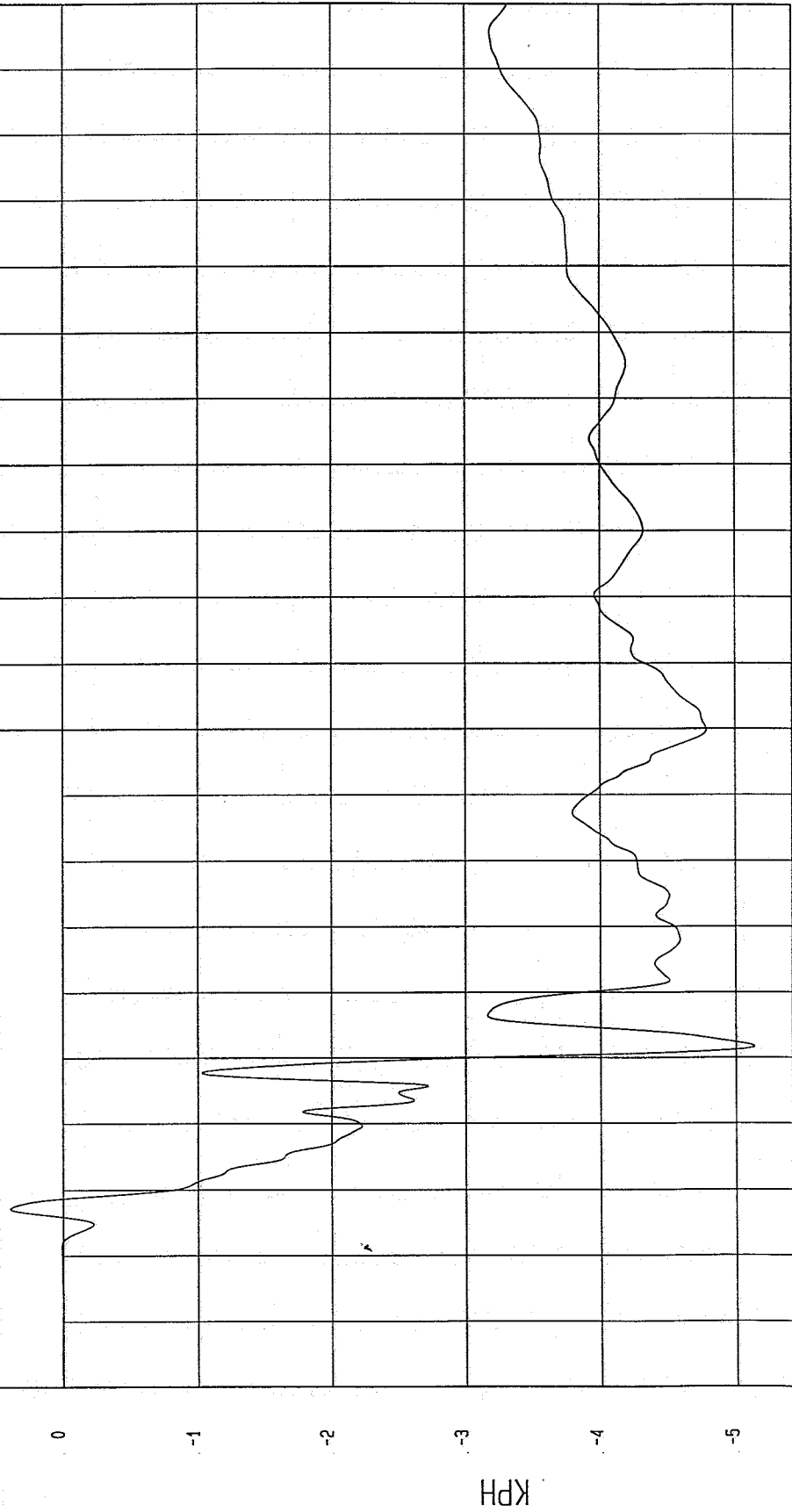
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -5.13 KPH at 32 msec

Maximum = .39 KPH at 7 msec

VEHICLE CG X VELOCITY

1 ——— B97113A1.V56 Filterclass (480)



TEST: HIGH SPEED LATERAL IMPACT
TEST DATE: 09-29-1997
Speed: 38.2 MPH 61.5 KPH

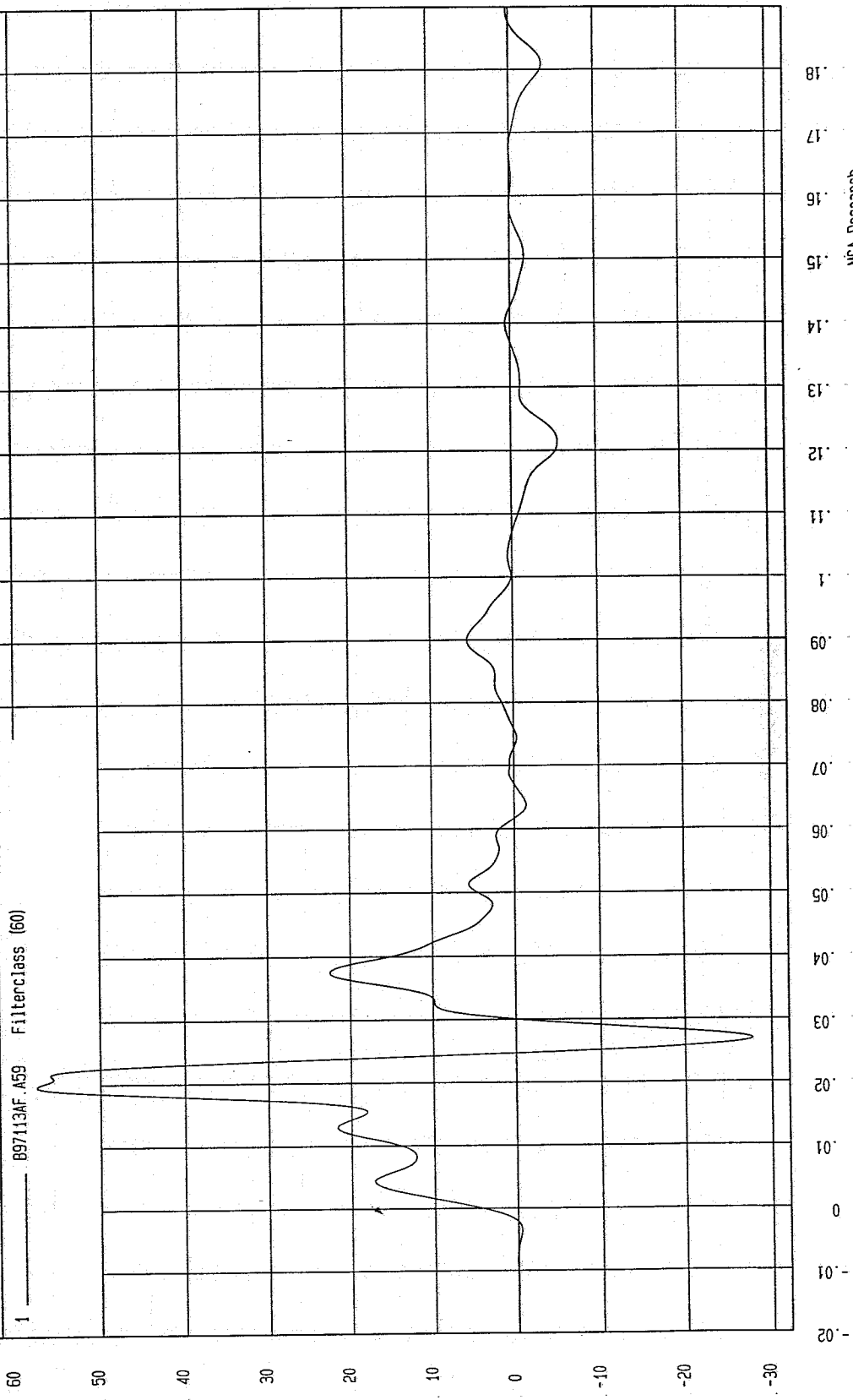
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 57.59 G'S at 20 msec

Minimum = -27.79 G'S at 27 msec

VEHICLE CG Y ACCELERATION

1 _____ 897113AF.A59 Filterclass (60)



MCA Research
10-07-1997 06:28

TIME (SECONDS)

G.S

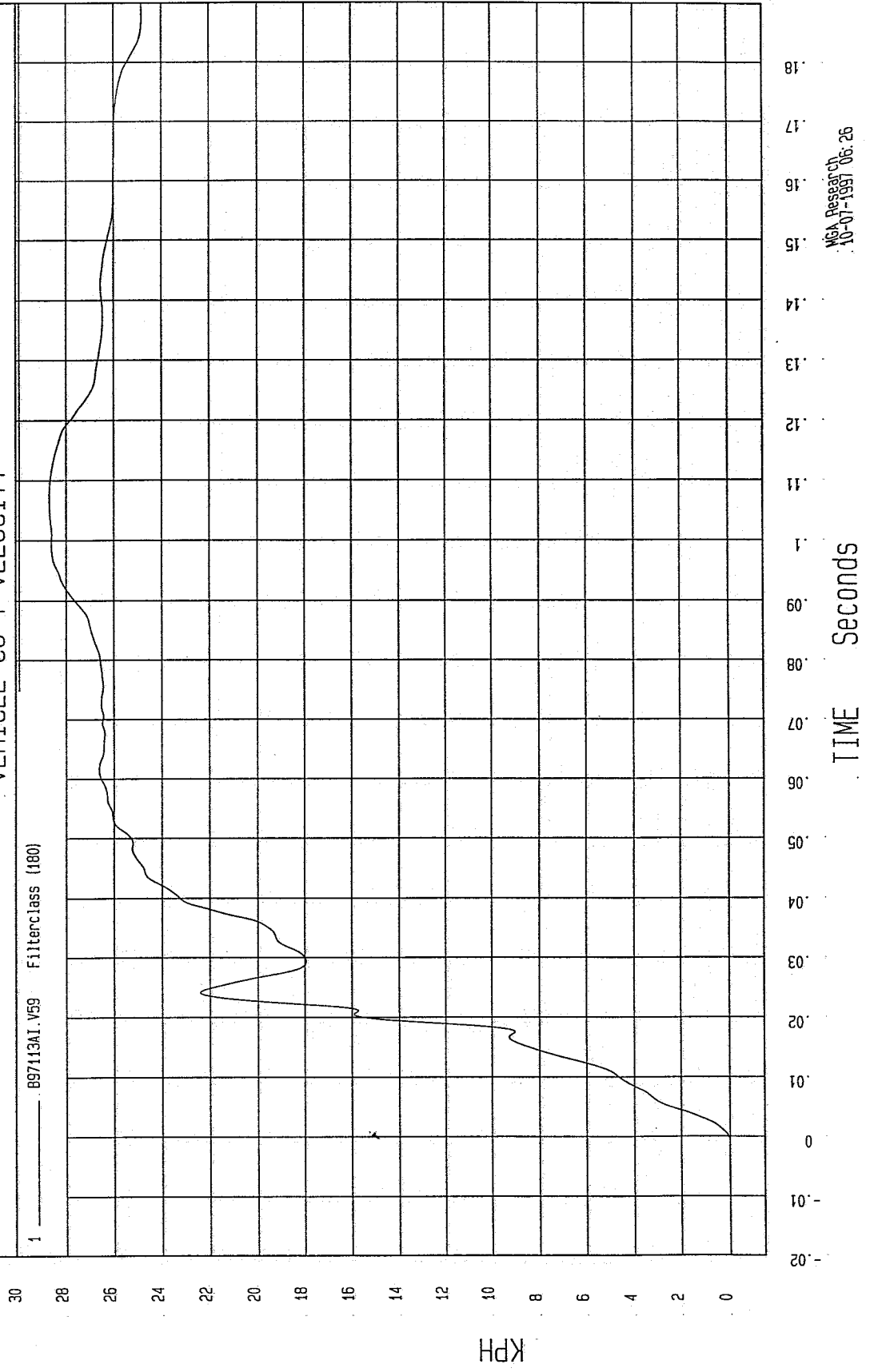
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH.

Minimum = -1.54E-04 KPH at -20 msec

Maximum = 28.70 KPH at 107 msec

VEHICLE CG Y VELOCITY



MCA Research
10-07-1997 06:26

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

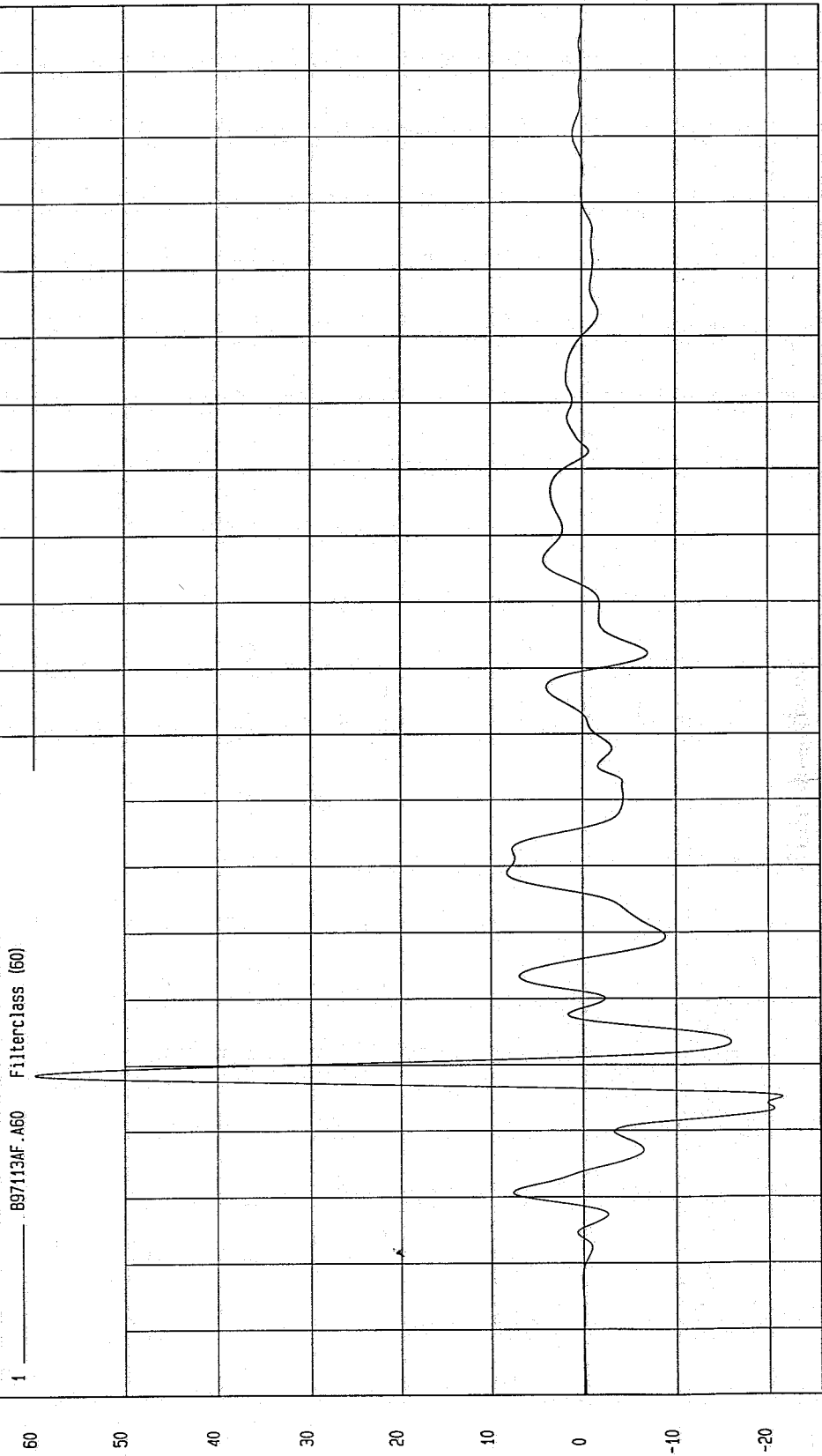
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 59.92 G'S at 29 msec

Minimum = -21.44 G'S at 25 msec

VEHICLE CG Z ACCELERATION

1 ——— .897113AF.A60 Filterclass (60)



MCA Research
10-02-1997 11:56

TIME (SECONDS)

G.S

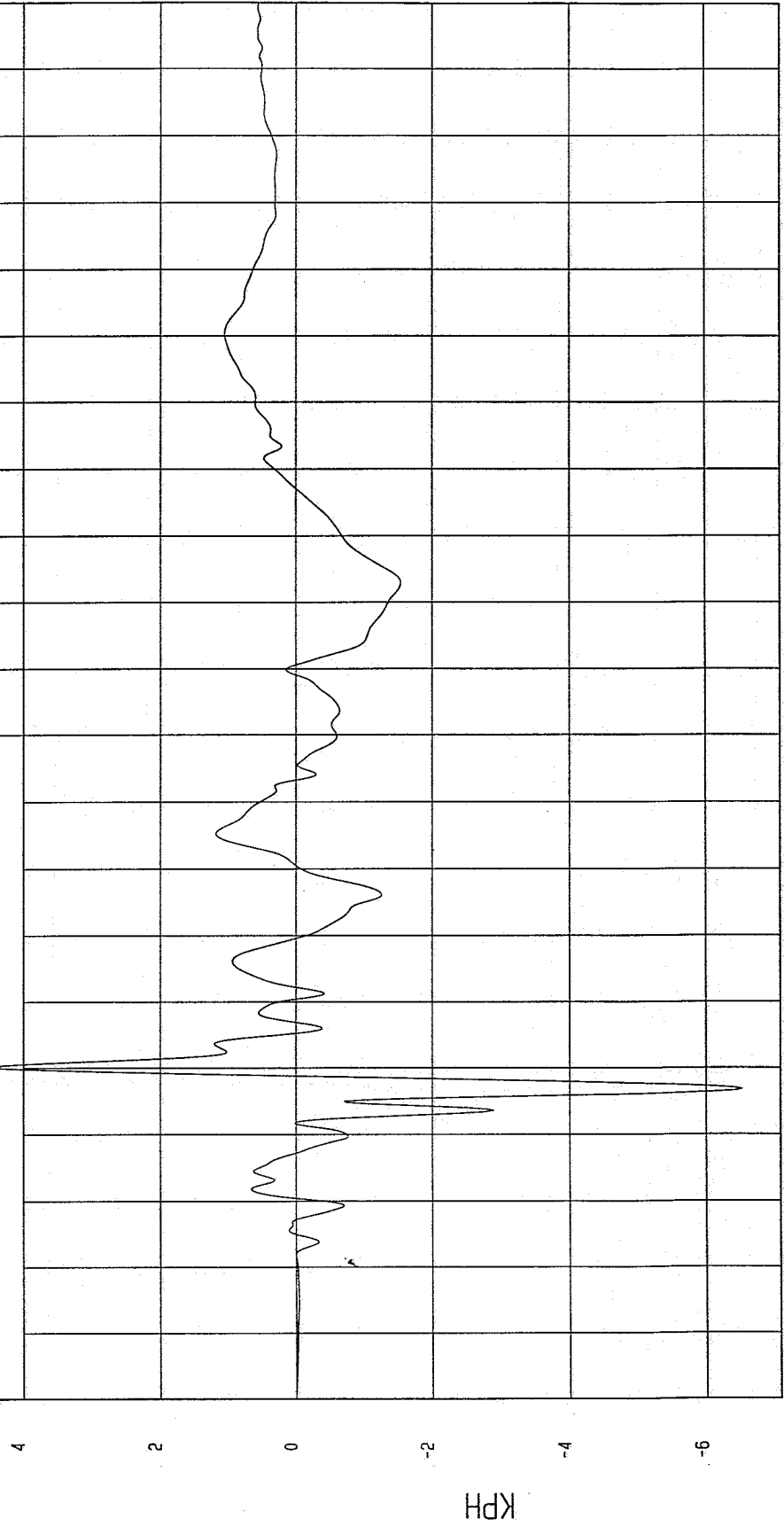
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -6.51 KPH at 27 msec
Maximum = 4.43 KPH at 30 msec

VEHICLE CG Z VELOCITY

1 _____ B97113AI.V60 Filterclass (180)



TIME Seconds
0.18
0.17
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0.02
0.01
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-0.01
-0.02

NCA Research
10-02-1997 11:47

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

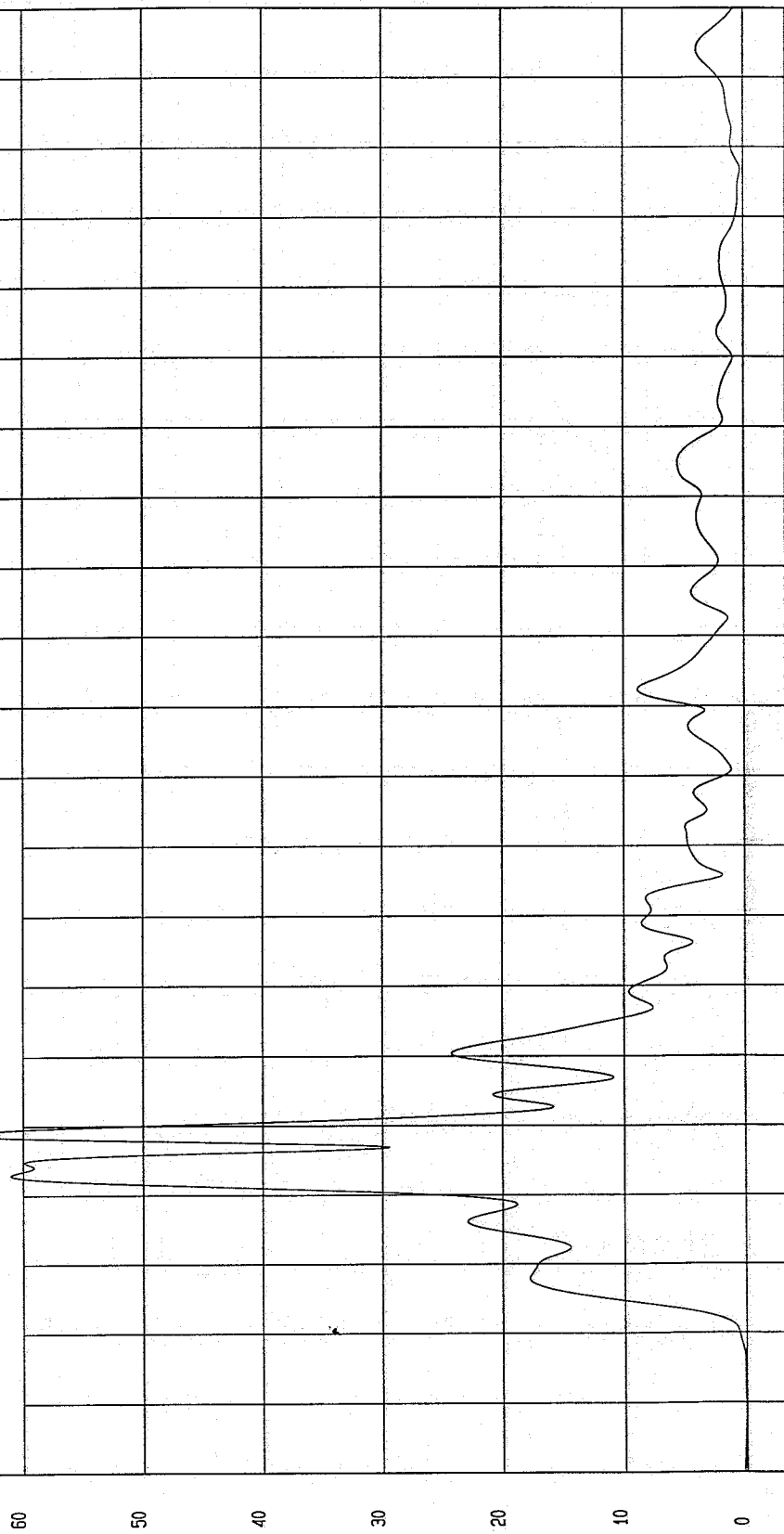
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = 3.49E-02 G'S at -11 msec

Maximum = 65.34 G'S at 29 msec

VEHICLE CG RESULTANT ACCELERATION

1 _____ 897113AV.A58 Filterclass (50)



NGA Research
10-02-1997 11:58

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

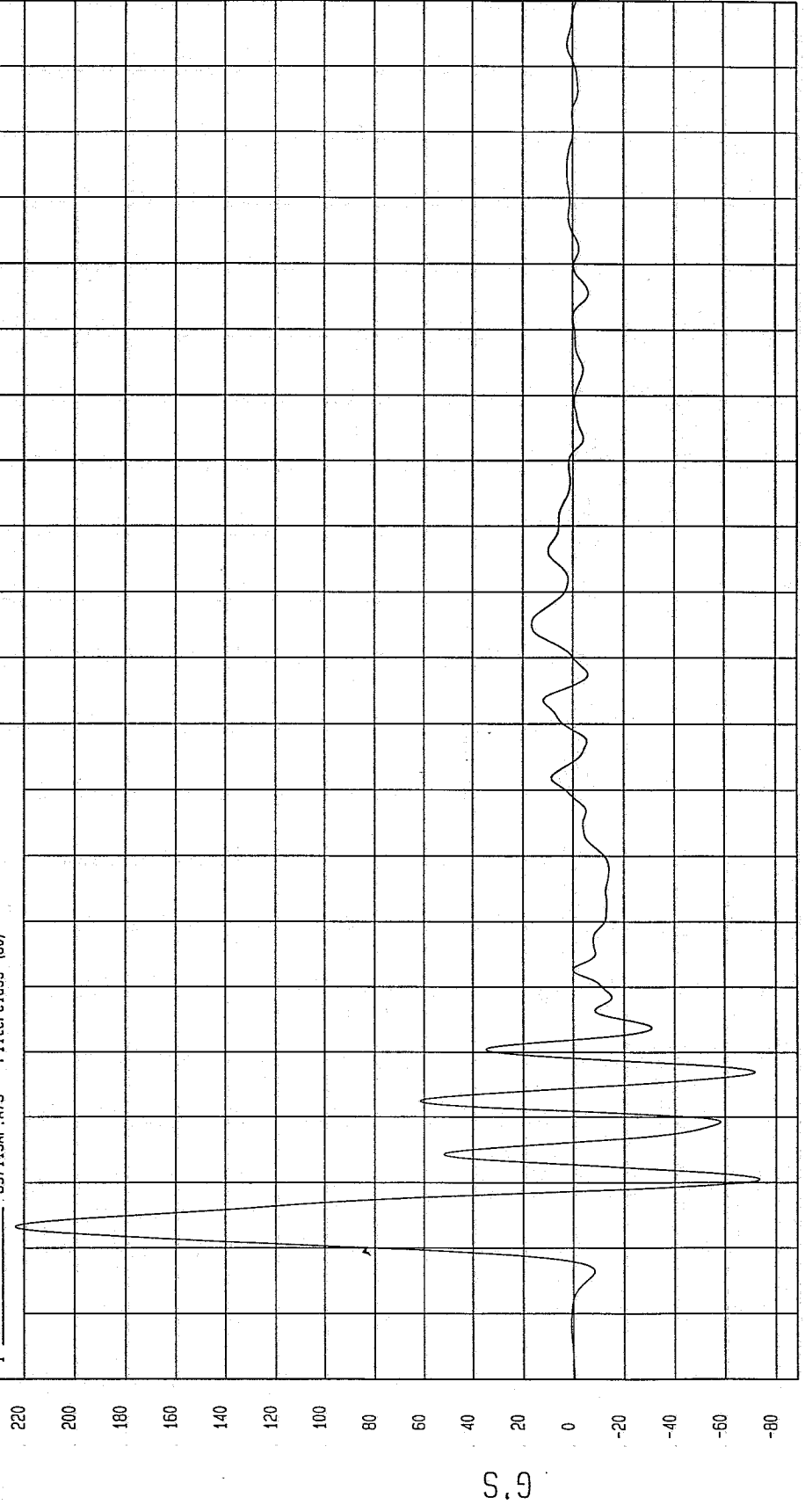
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 223.31 G'S at 3 msec

Minimum = -73.58 G'S at 10 msec

LEFT FRONT DOOR MIDREAR Y ACCELERATION

1 897113AF.A75 Filterclass (60)



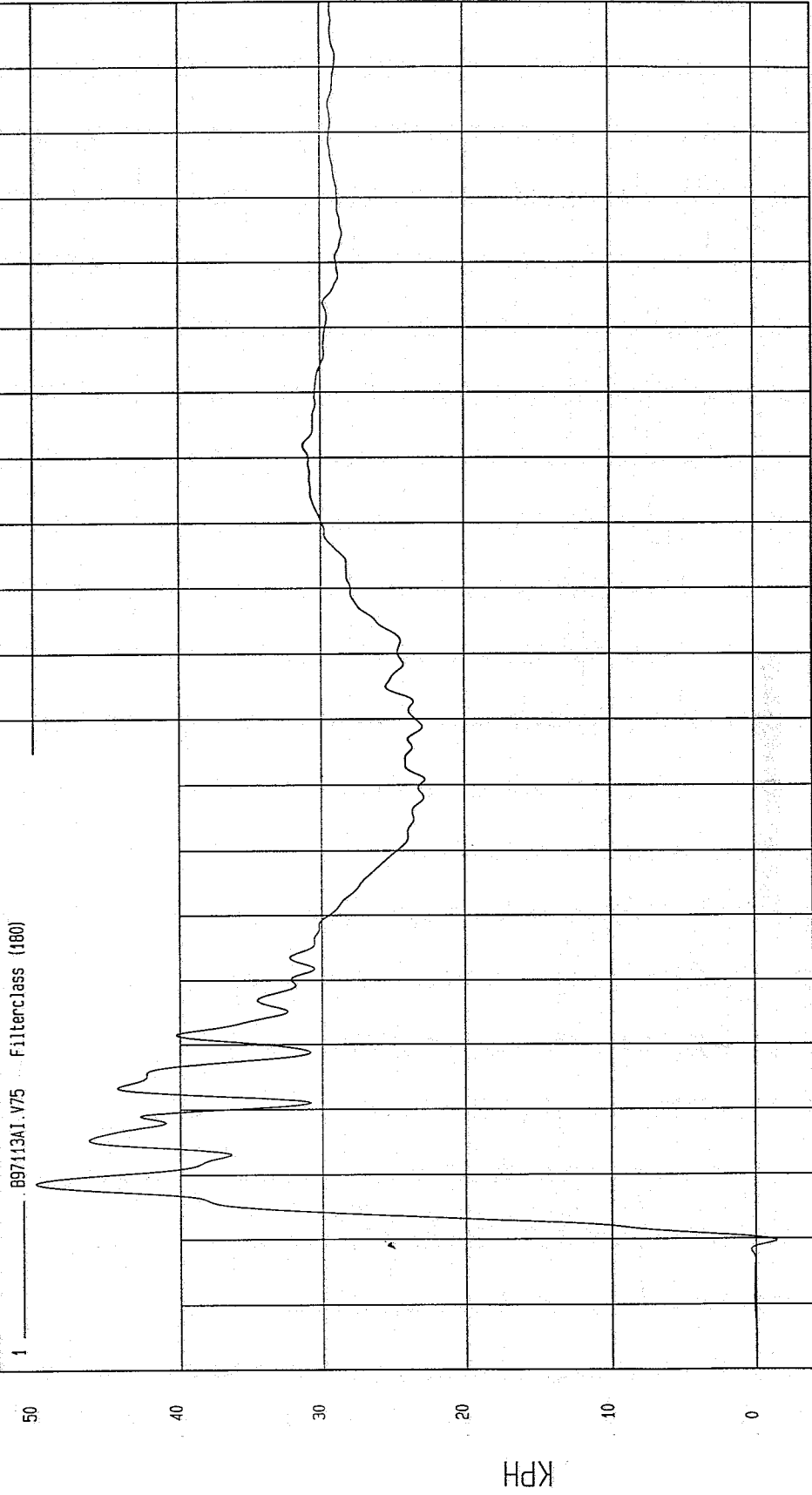
NCA Research
10-07-1997 06:28

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -1.44 KPH at 0 msec Maximum = 49.88 KPH at 9 msec

LEFT FRONT DOOR MIDREAR Y VELOCITY



MEA Research
10-07-1997 06:26

TIME Seconds

KPH

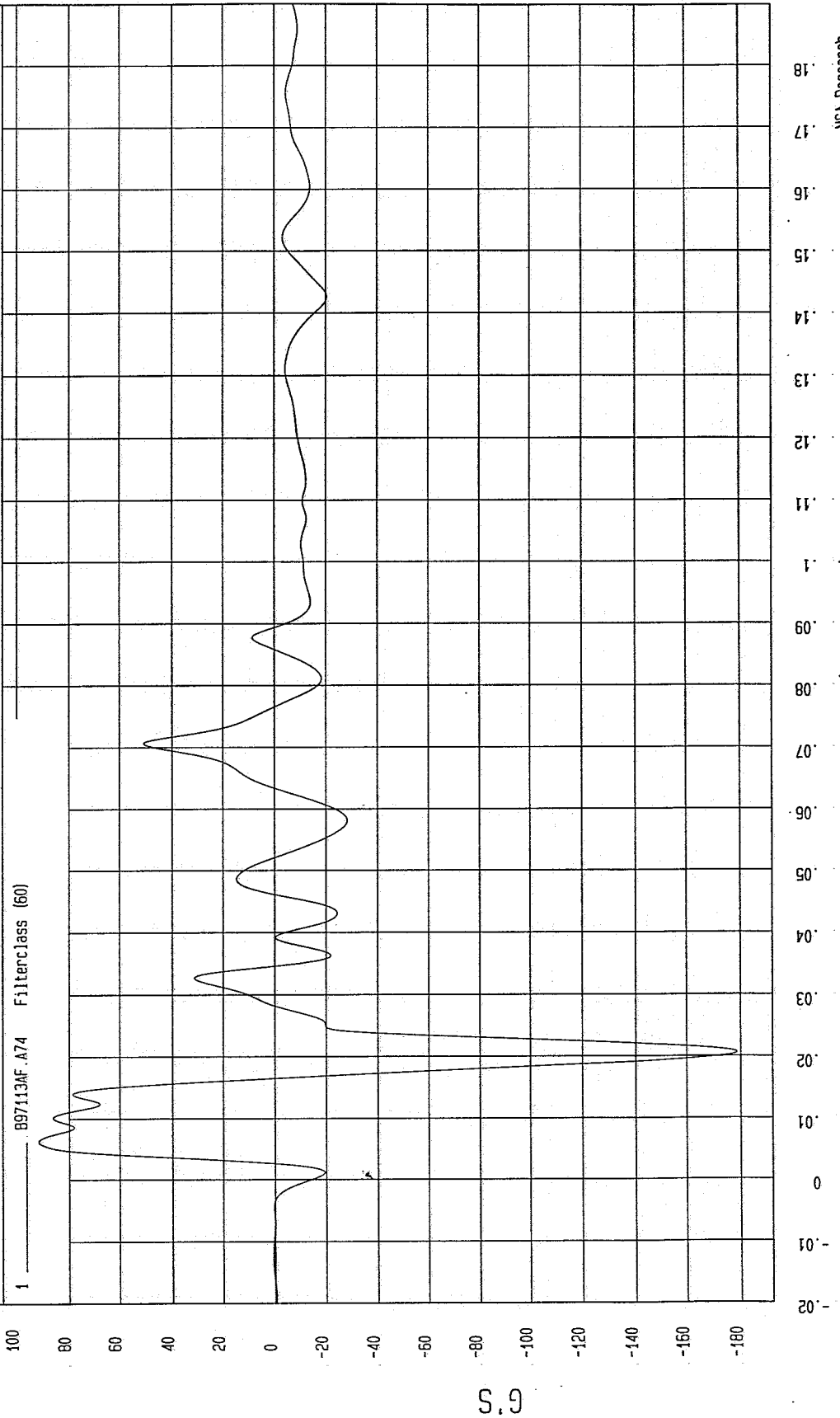
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -178.74 G'S at 21 msec

Maximum = 91.92 G'S at 6 msec

LEFT FRONT DOOR ON CENTERLINE Y ACCELERATION



MGA Research
10-02-1997 11:56

TIME (SECONDS)

G.S

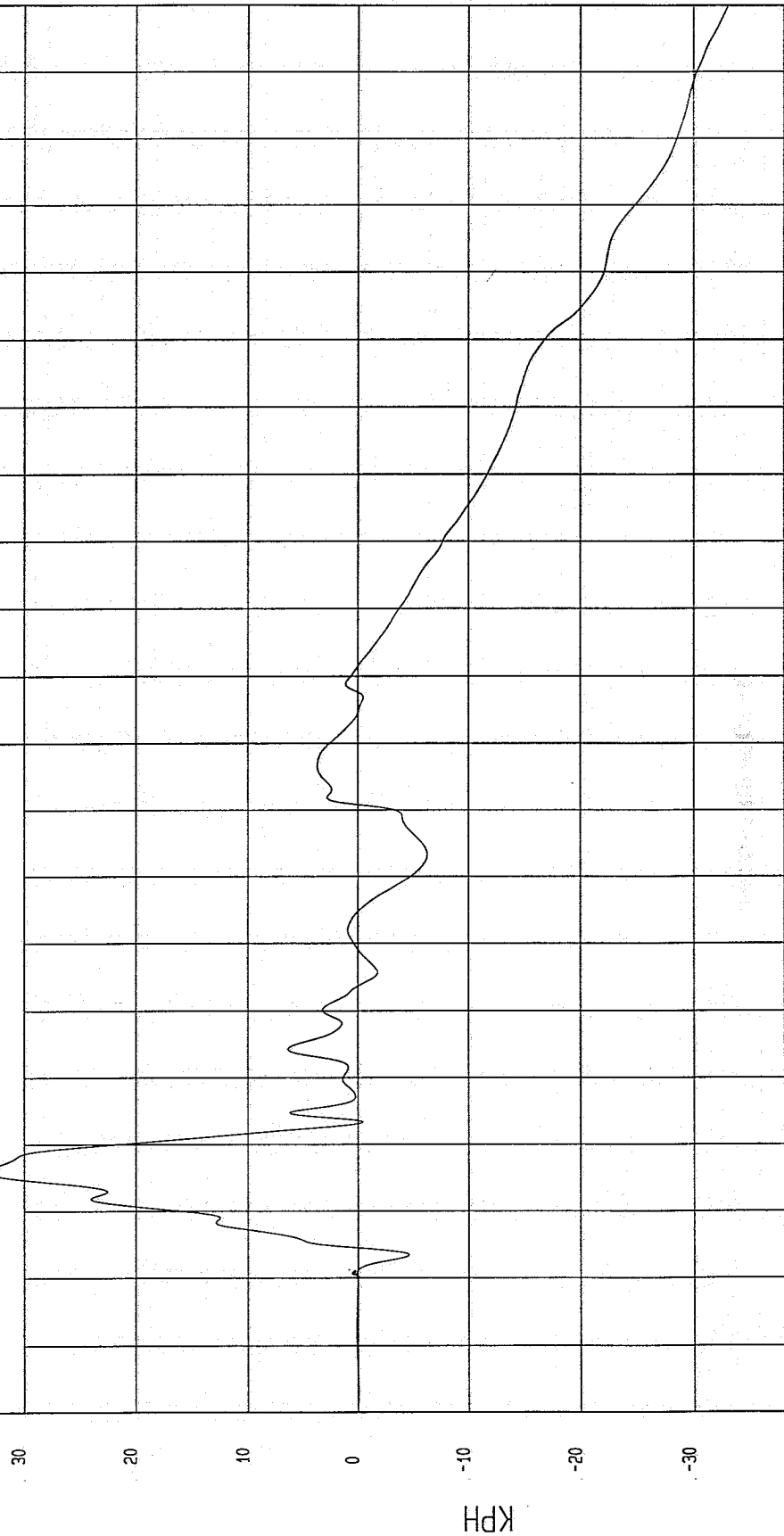
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -34.59 KPH at 200 msec
Maximum = 33.32 KPH at 16 msec

LEFT FRONT DOOR ON CENTERLINE Y VELOCITY

1 897113AI.V74 Filterclass (180)



NGA Report CT
10-02-1997 11.47

TIME Seconds

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

TEST: HIGH SPEED LATERAL IMPACT

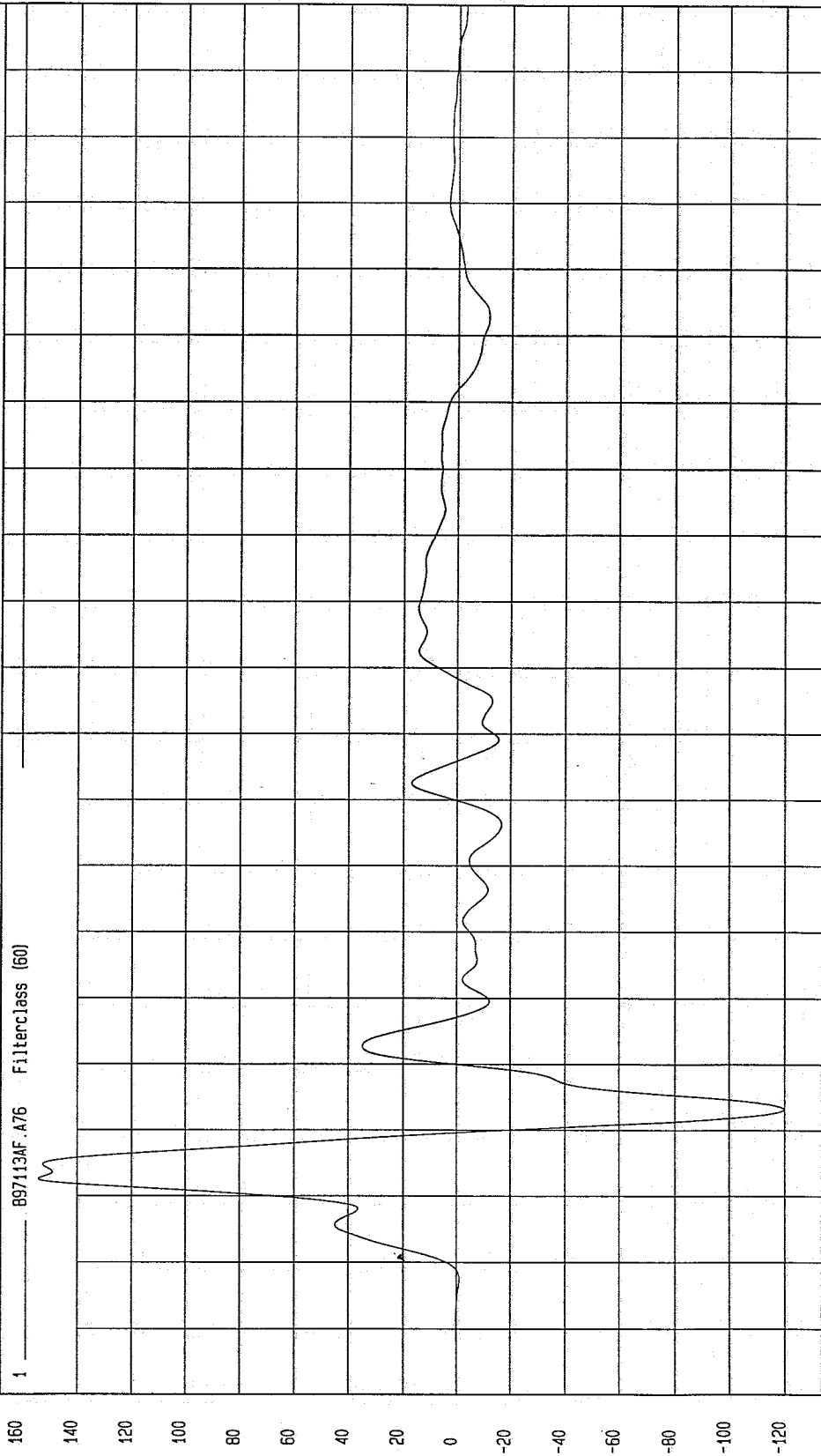
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 153.99 G'S at 13 msec

Minimum = -119.67 G'S at 23 msec

LEFT FRONT DOOR UPPER CENTERLINE Y ACCELERATION

1 897113AF.A76 Filterclass (60)



MGA Research
10-02-1997 11:56

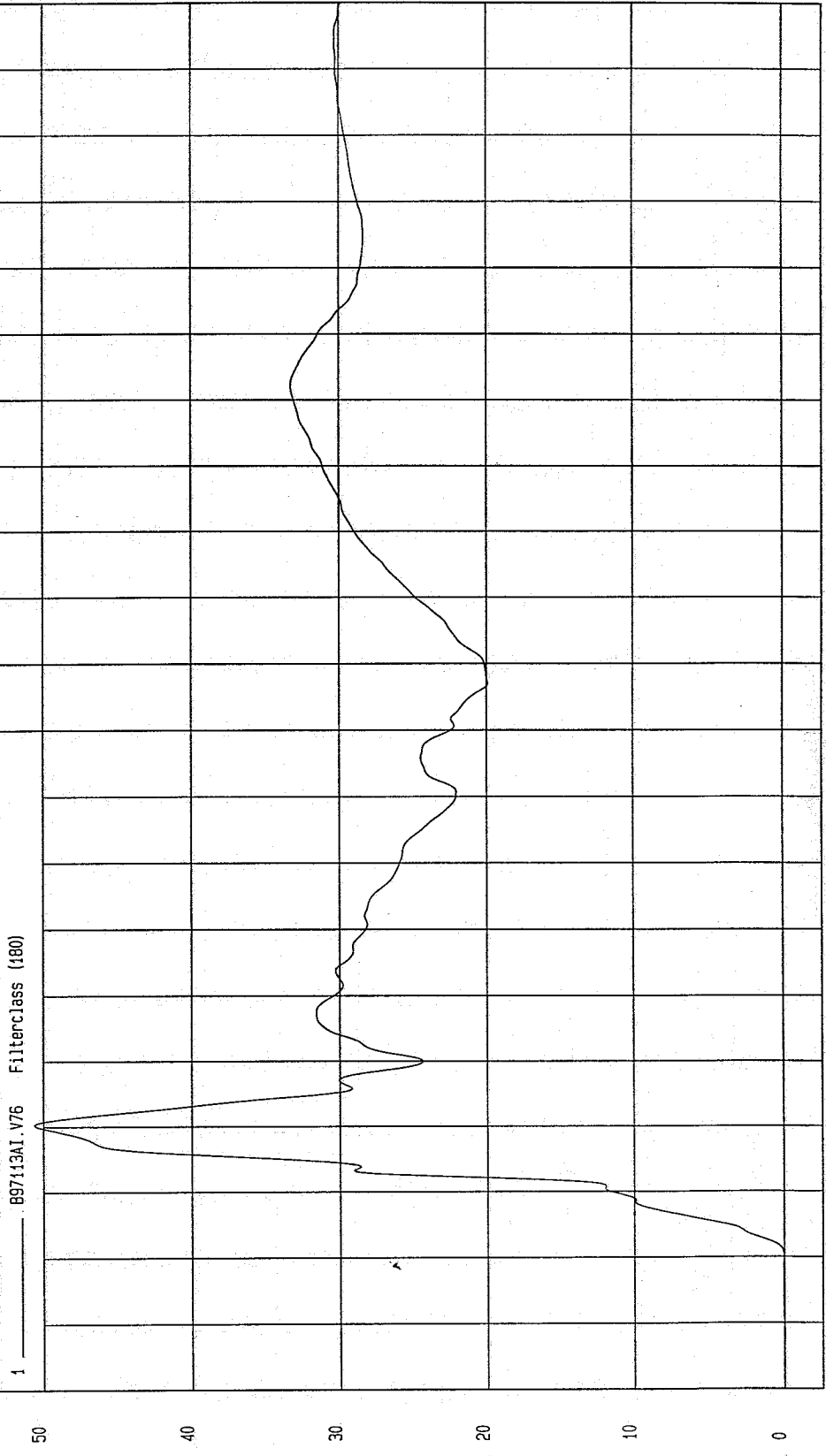
TIME (SECONDS)

G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -9.30E-03 KPH at -12 msec Maximum = 50.61 KPH at 20 msec

LEFT FRONT DOOR UPPER CENTERLINE Y VELOCITY



TIME Seconds
M&A Research
10-08-1997 07:00

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

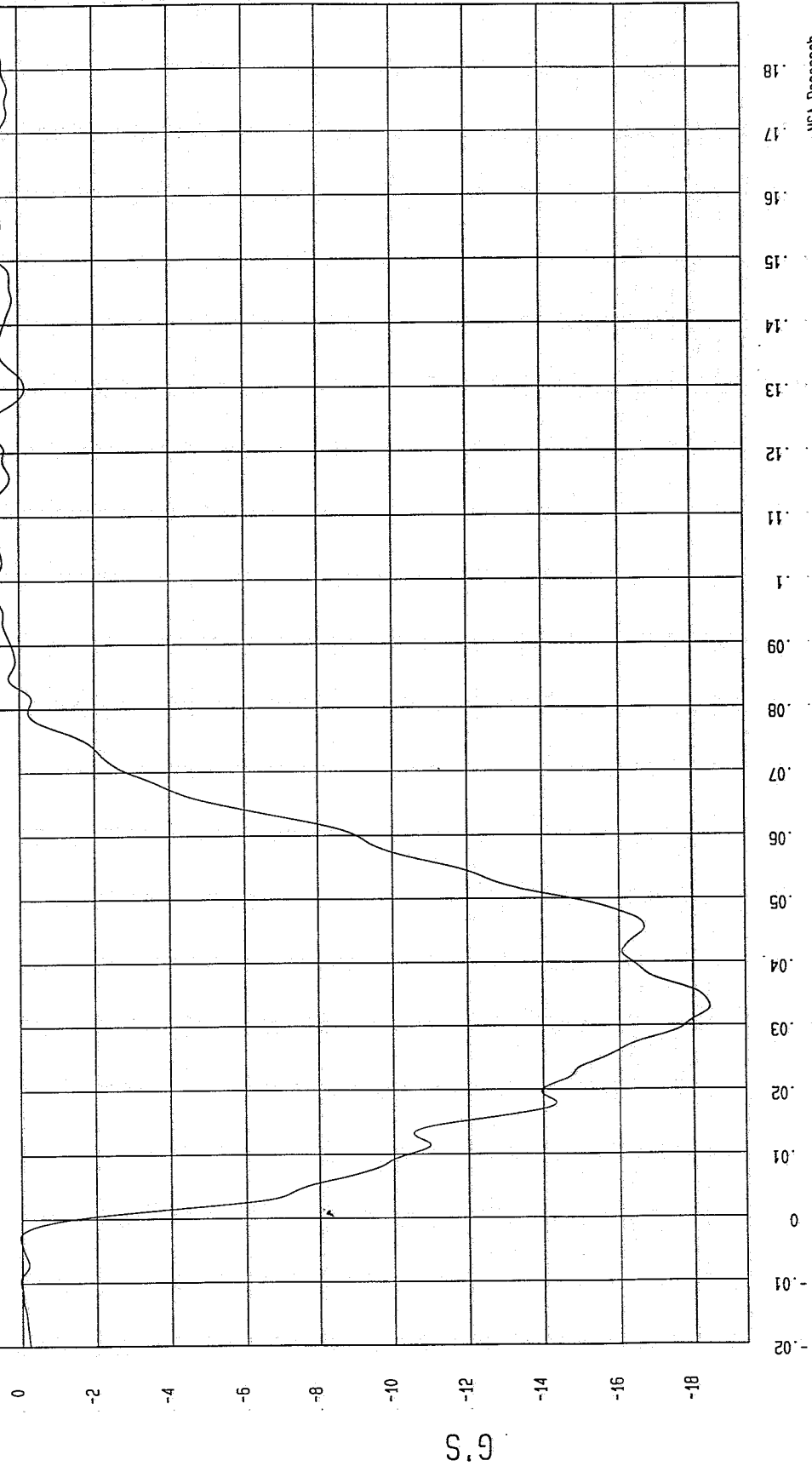
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = .85 G'S at 124 msec

Minimum = -18.42 G'S at 33 msec

MOVING BARRIER CG X ACCELERATION

1 _____ 89713MF.A02 Filterclass (60)



TIME (SECONDS)

MCA Research
10-02-1997 11:57

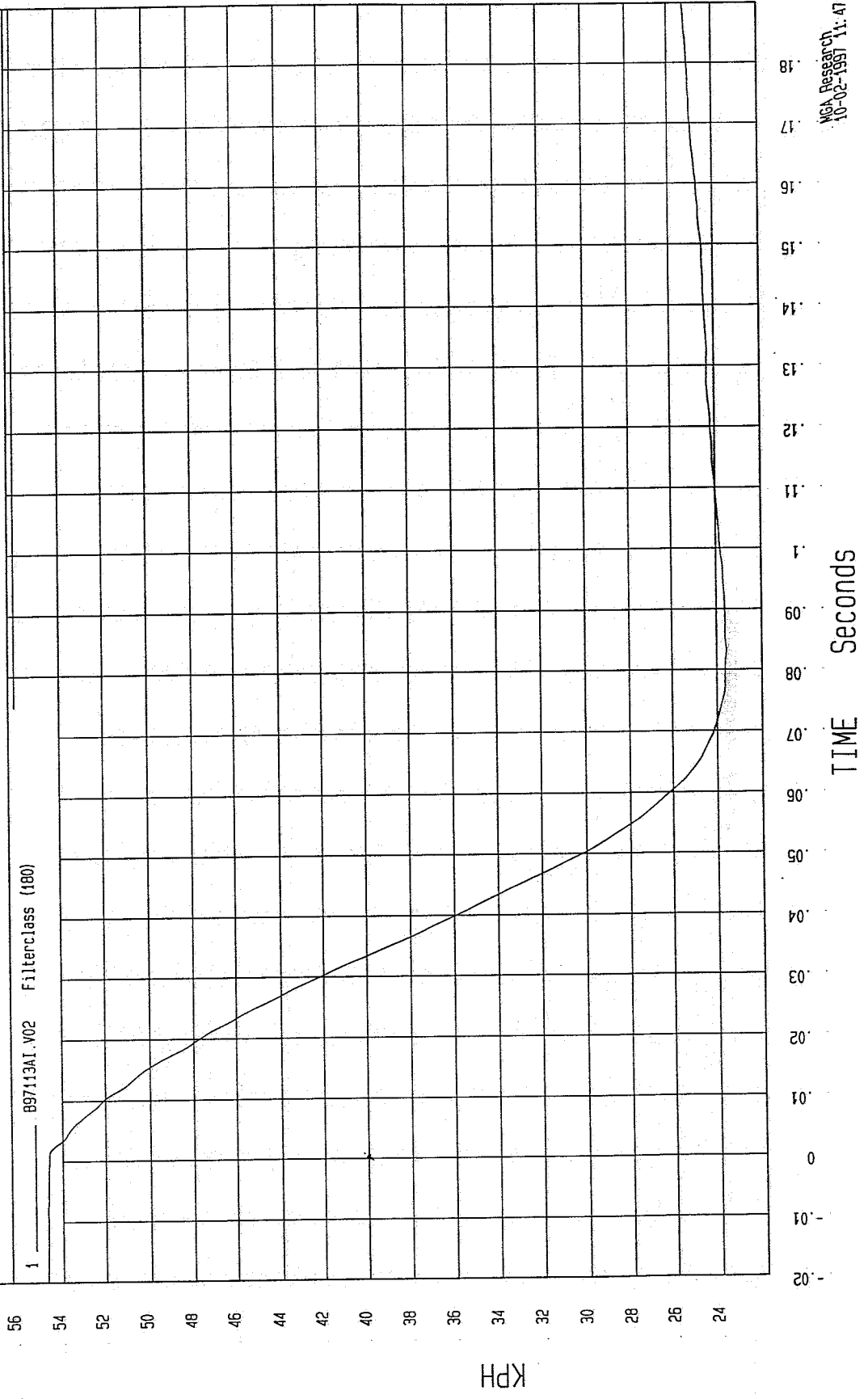
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = 23.56 KPH at 83 msec

Maximum = 54.7 KPH at -20 msec

MOVING BARRIER CG X VELOCITY



NCA Research
10-02-1997 11:47

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

TEST: HIGH SPEED LATERAL IMPACT

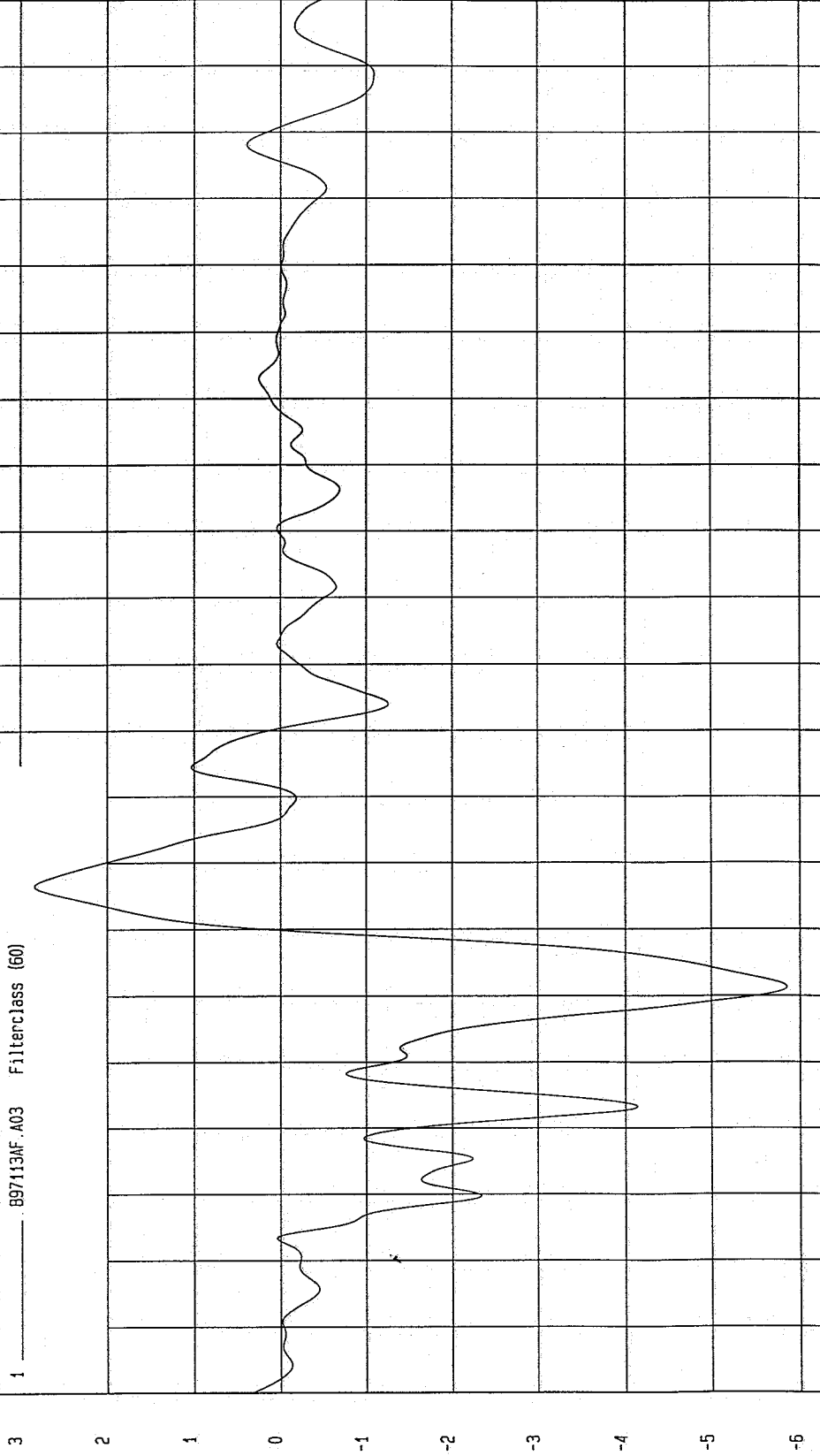
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 2.83 G'S at 57 msec

Minimum = -5.84 G'S at 41 msec

MOVING BARRIER CG Y ACCELERATION

1 ——— .897113AF.A03 Filterclass (60)



MCA Research
10-02-1997 11:57

TIME (SECONDS)

G.S

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

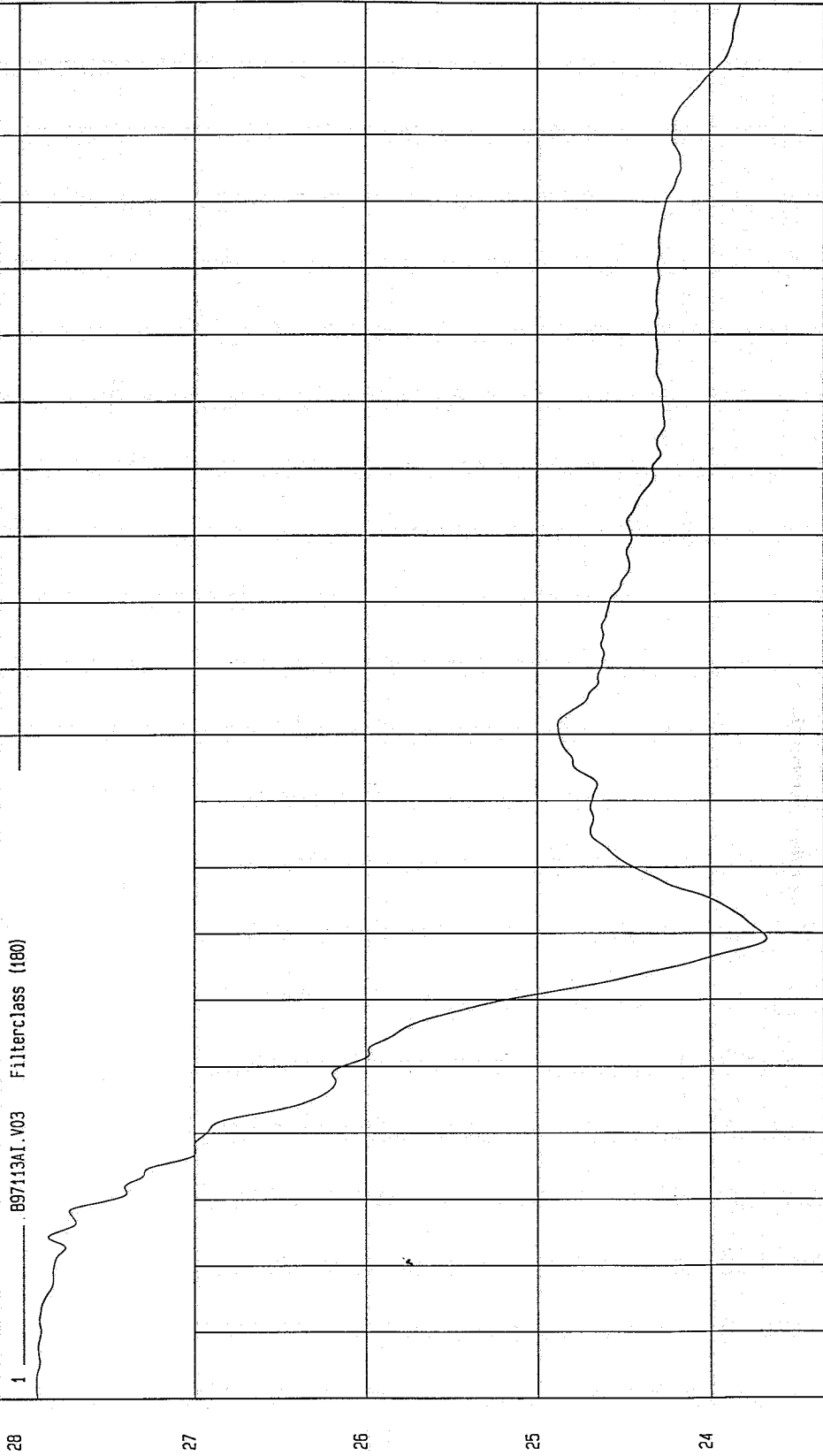
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 27.90 KPH at -17 msec

Minimum = 23.56 KPH at 200 msec

MOVING BARRIER CG Y VELOCITY

1 897113A1.V03 FilterClass (180)



NCA Research
10-02-1997 11:47

TIME Seconds

KPH

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

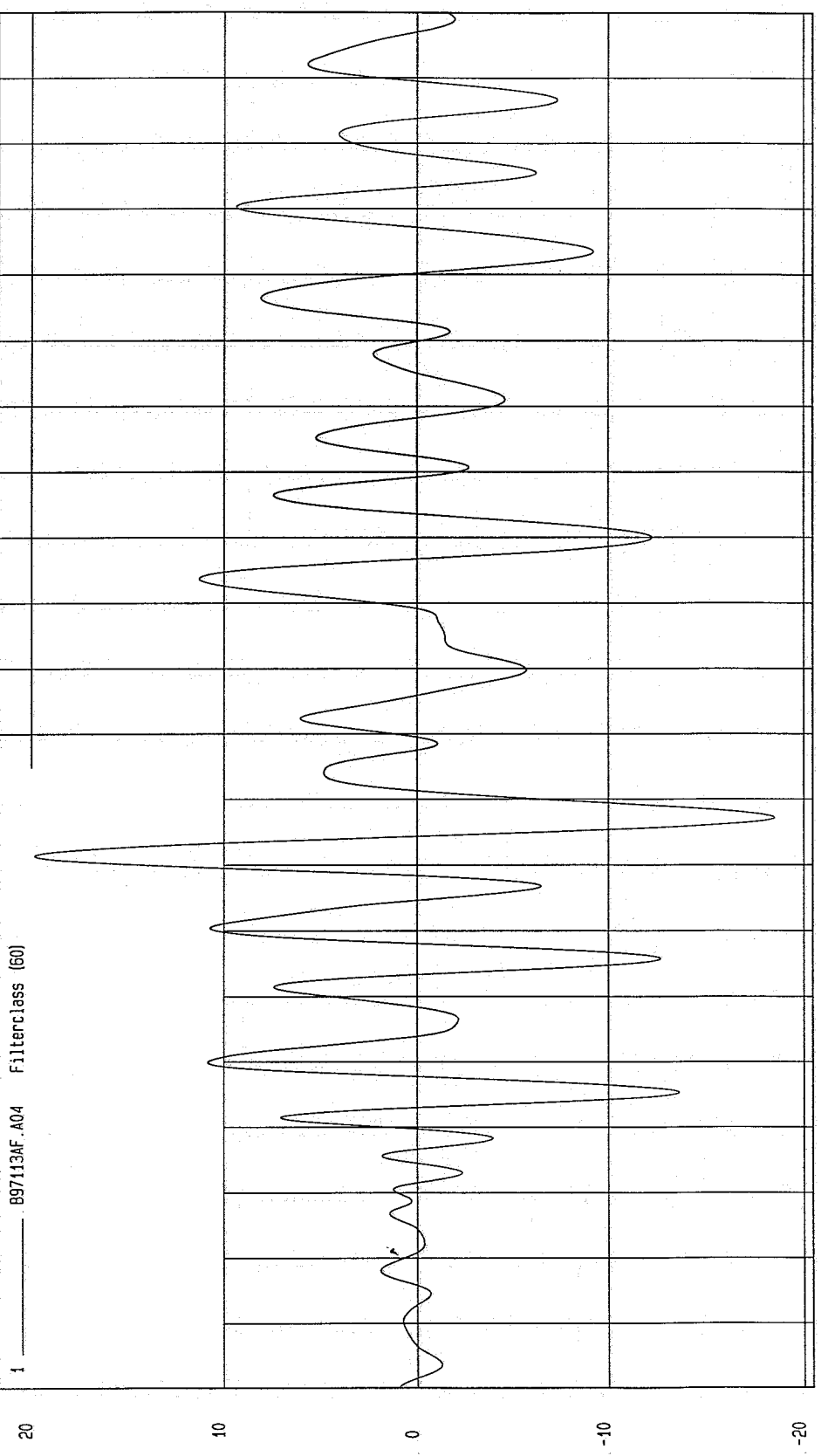
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 19.82 G'S at 61 msec

Minimum = -18.53 G'S at 67 msec

MOVING BARRIER CG Z ACCELERATION

1 _____ 897113AF.A04 Filterclass (60)



NCA Research
10-02-1997 11:57

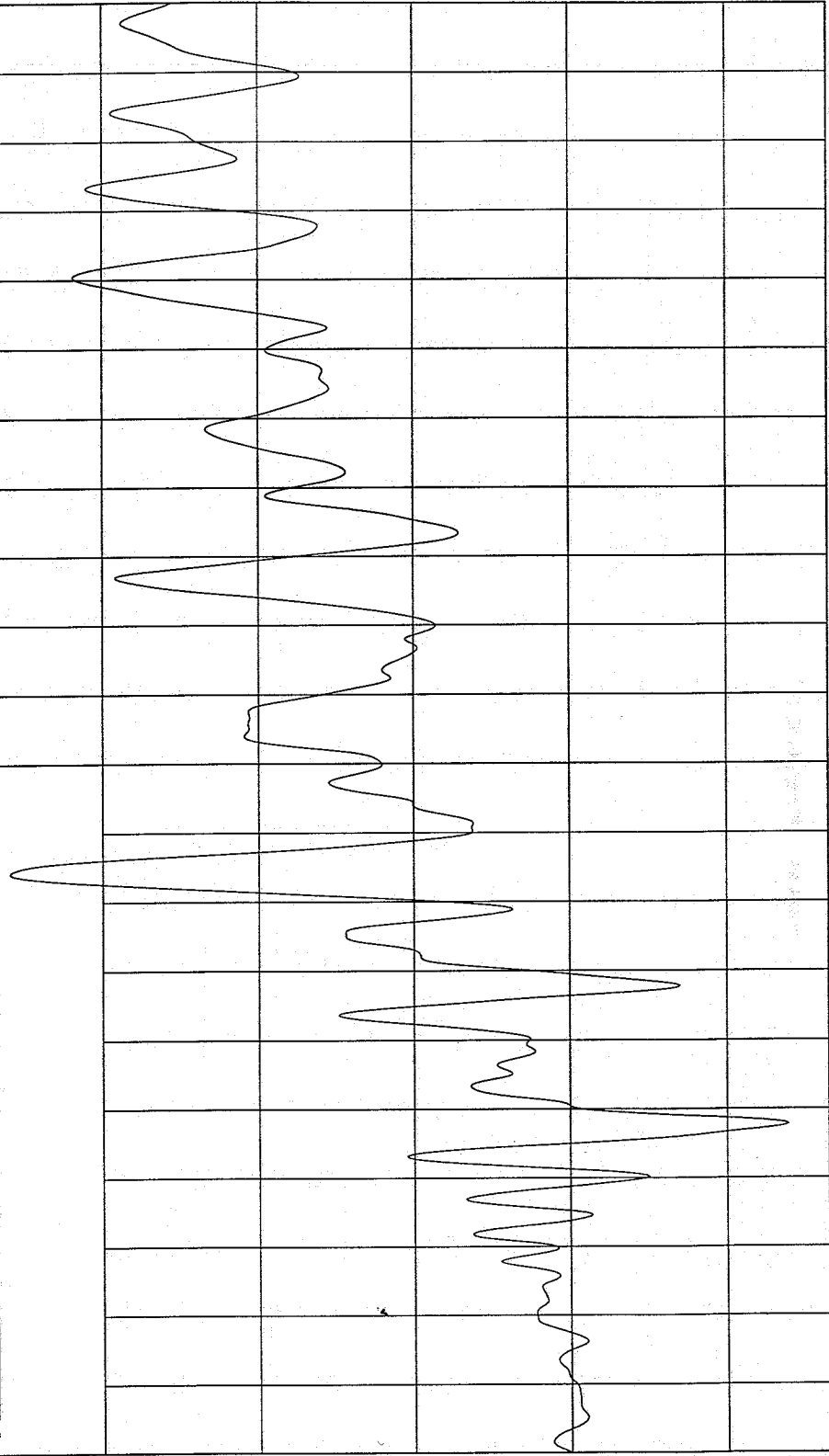
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -1.38 KPH at 28 msec Maximum = 3.59 KPH at 64 msec

MOVING BARRIER CG Z VELOCITY

1 ——— B97113A1.V04 Filterclass (160)



MGA Research
10-02-1997 11:48

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

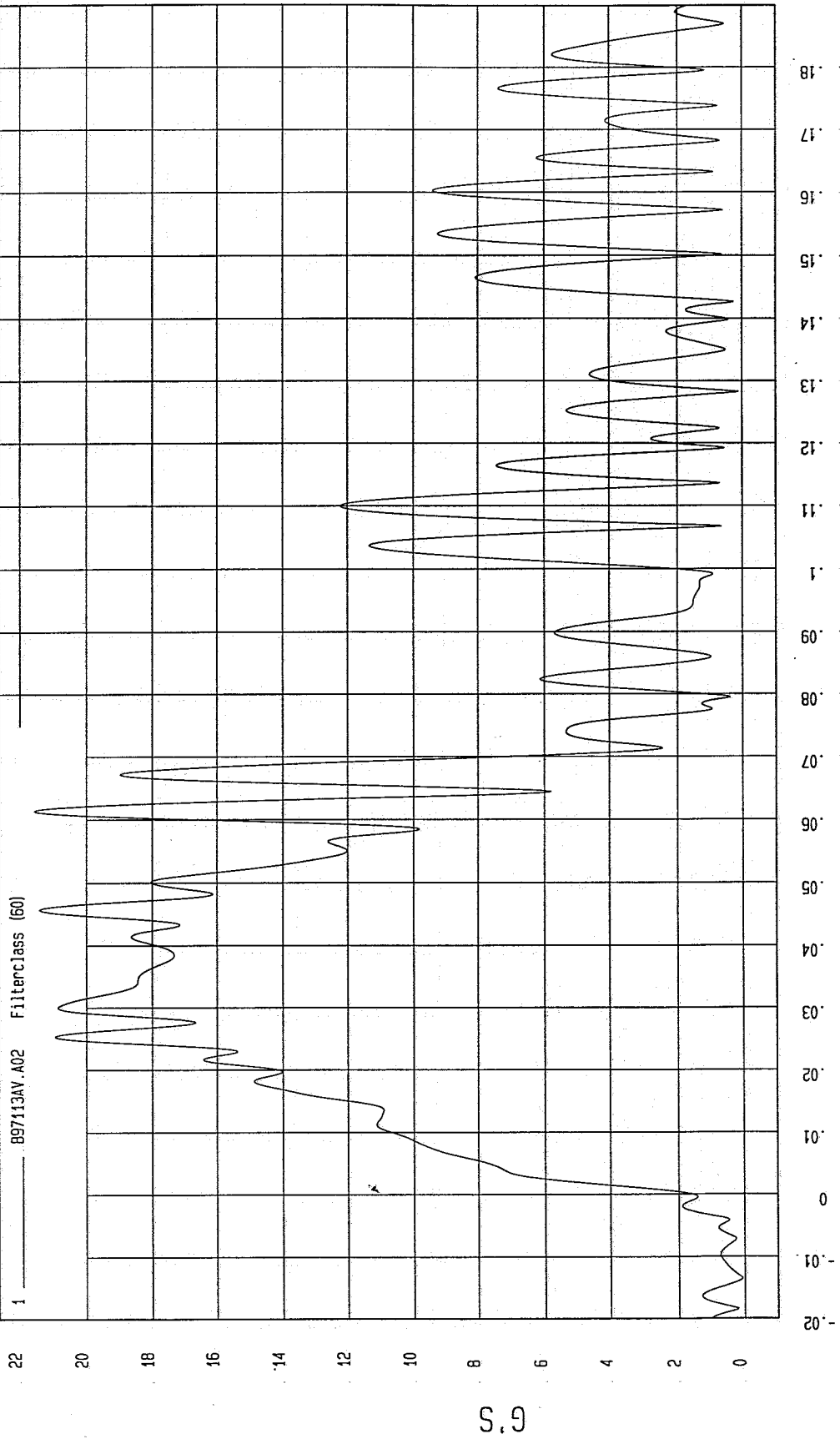
Speed: 38.2 MPH 61.5 KPH

COMPONENT: 1998 FORD ESCORT 2DR

Minimum = 7.01E-02 G'S at -14 msec

Maximum = 21.56 G'S at 61 msec

MOVING BARRIER CG RESULTANT ACCELERATION



MCA Research
10-02-1997 11:58

TIME (SECONDS)

G'S

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

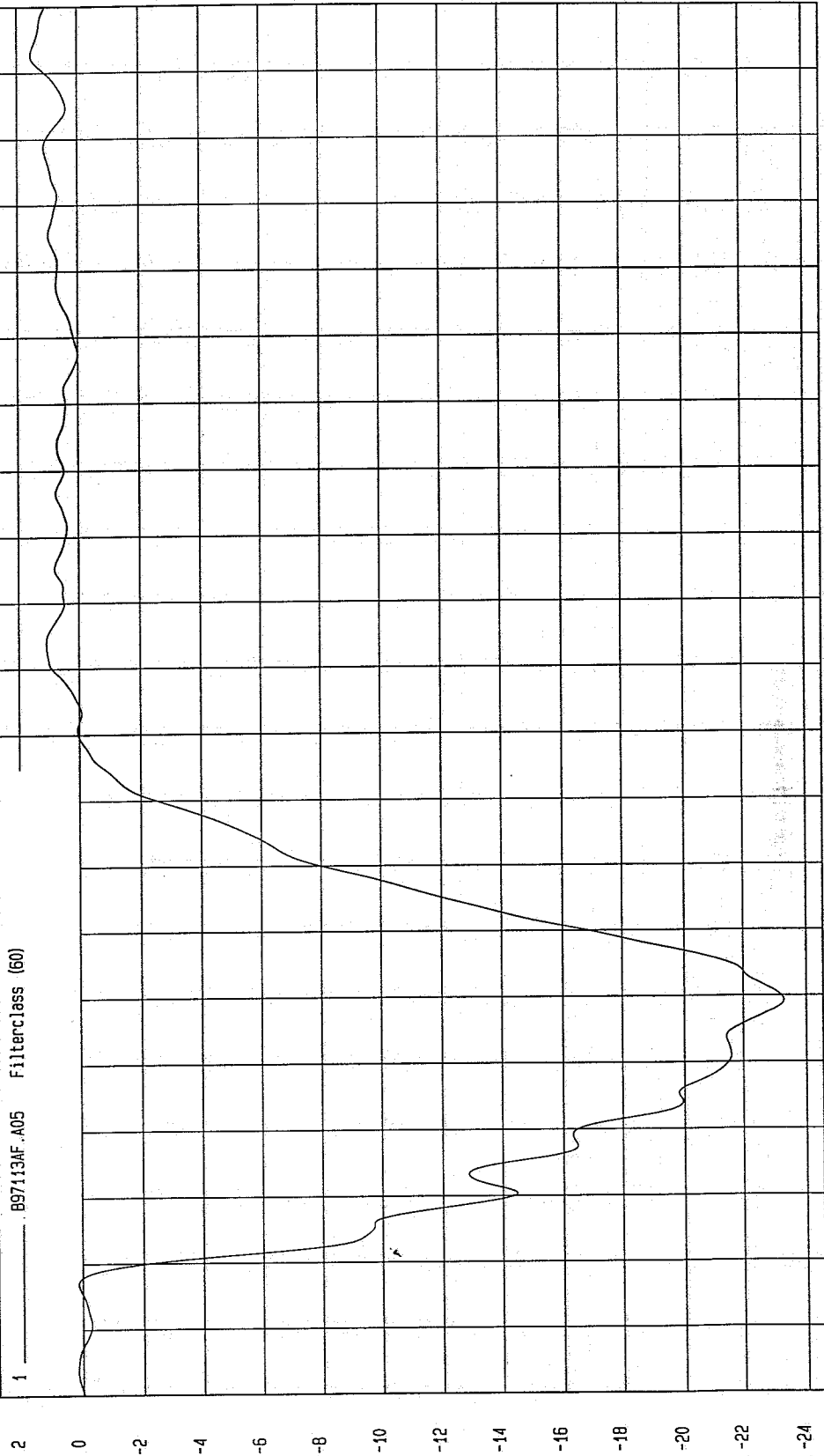
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 1.54 G'S at 183 msec

Minimum = -23.29 G'S at 39 msec

MOVING BARRIER REAR AXLE X ACCELERATION

1 _____ .B97113AF.A05 Filterclass (60)



MGA Research
10-02-1997 11:57

TIME (SECONDS)

G'S

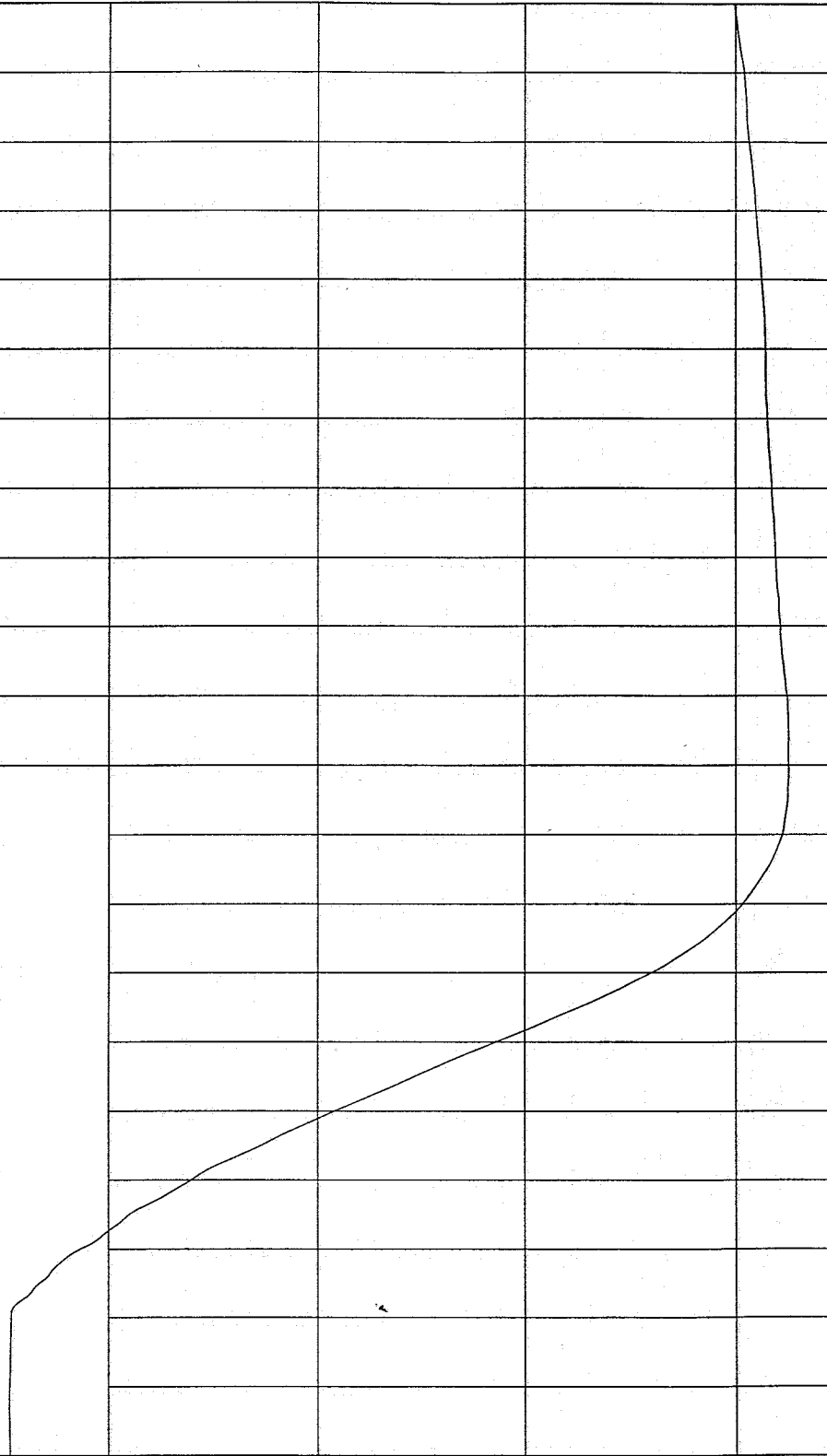
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = 17.46 KPH at 84 msec
Maximum = 54.72 KPH at -12 msec

MOVING BARRIER REAR AXLE X VELOCITY

1 ——— .897113AI.V05 Filterclass (180)



MSA Research
10-02-1997 11:48

TIME Seconds

KPH

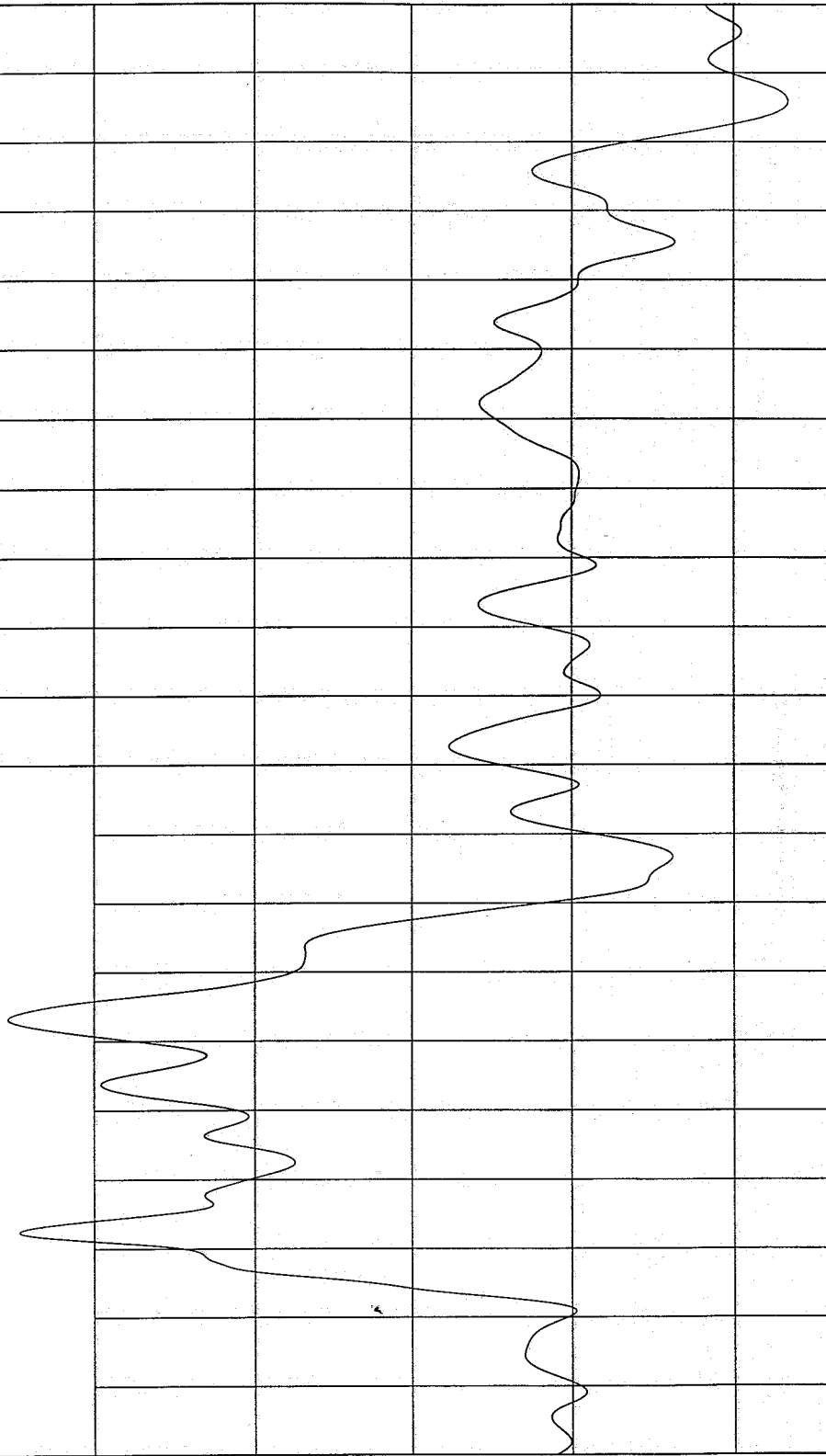
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -1.33 G'S at 176 msec
Maximum = 3.54 G'S at 43 msec

MOVING BARRIER REAR AXLE Y ACCELERATION

1 ——— B97113AF.A06 Filterclass (60)



TIME (SECONDS) MGA Research 10-02-1997 11:57

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

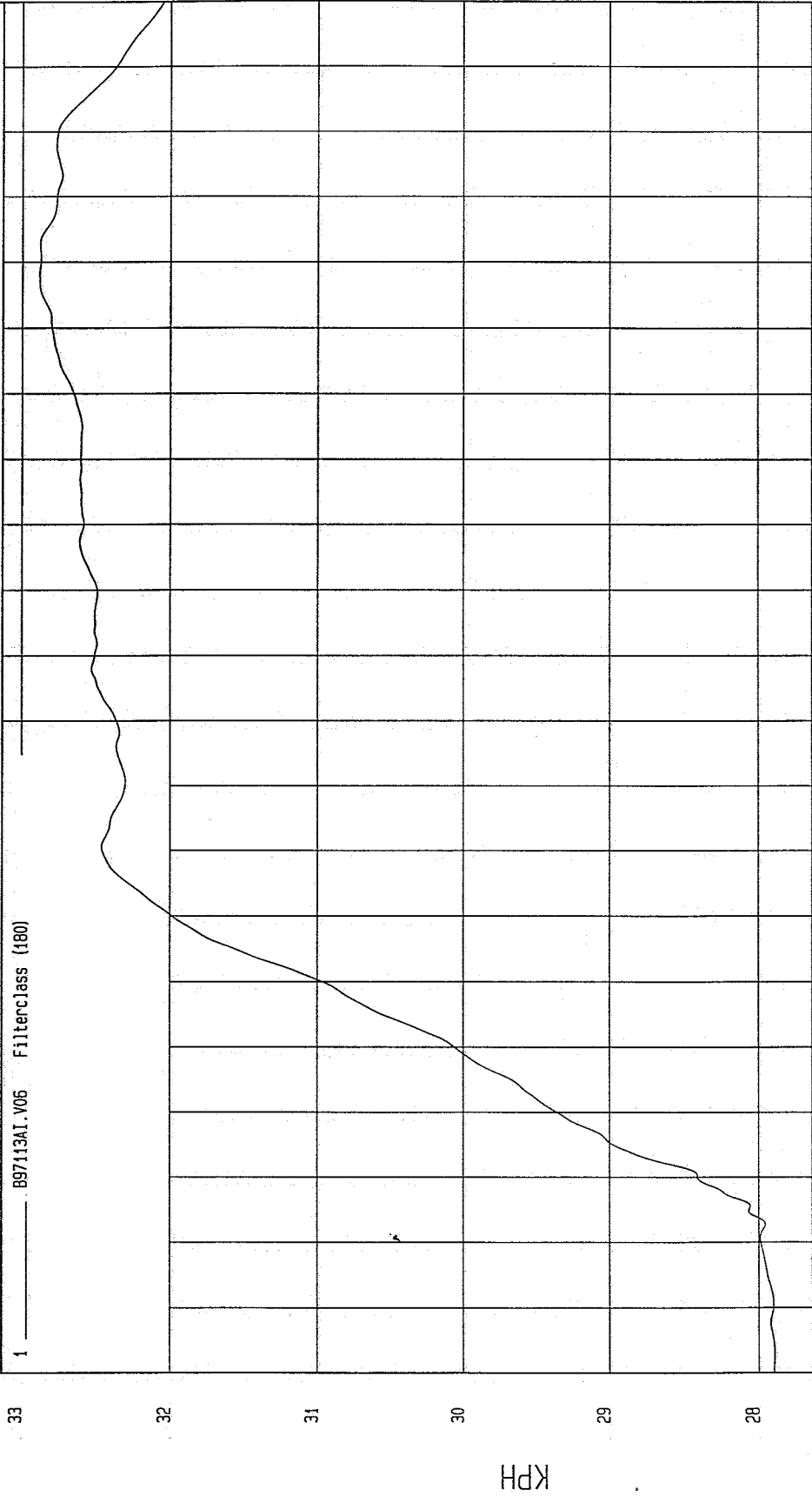
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 32.88 KPH at 148 msec

Minimum = 27.89 KPH at -17 msec

MOVING BARRIER REAR AXLE Y VELOCITY

1 B97113AI.V05 Filterclass (180)



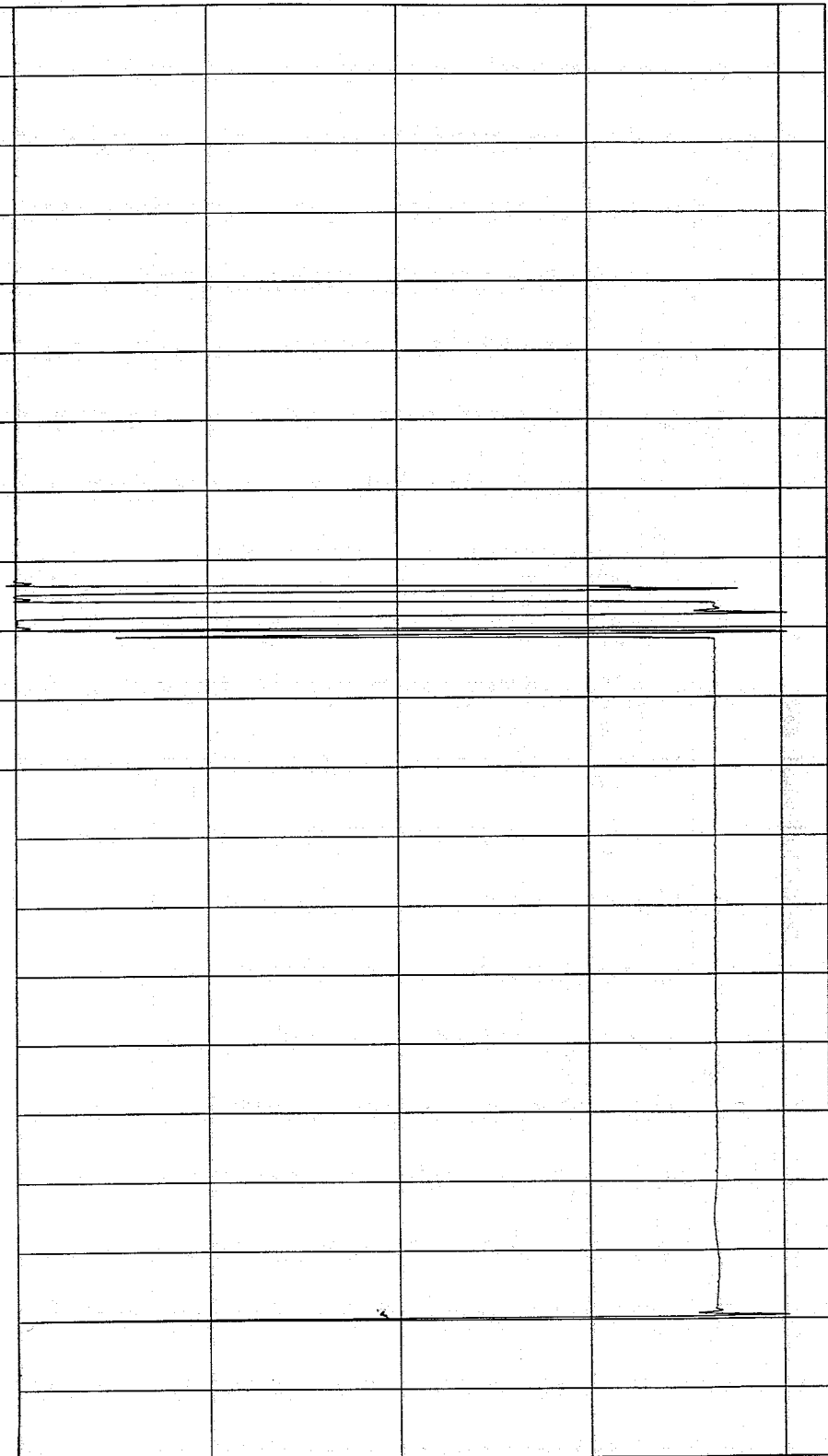
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -4.02 VOLTS at 99 msec Maximum = 4.69E-02 VOLTS at 106 msec

LEFT BARRIER CONTACT

1 8971130T.071 FilterClass (1000)



MCA Research
10-02-1997 11:57

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

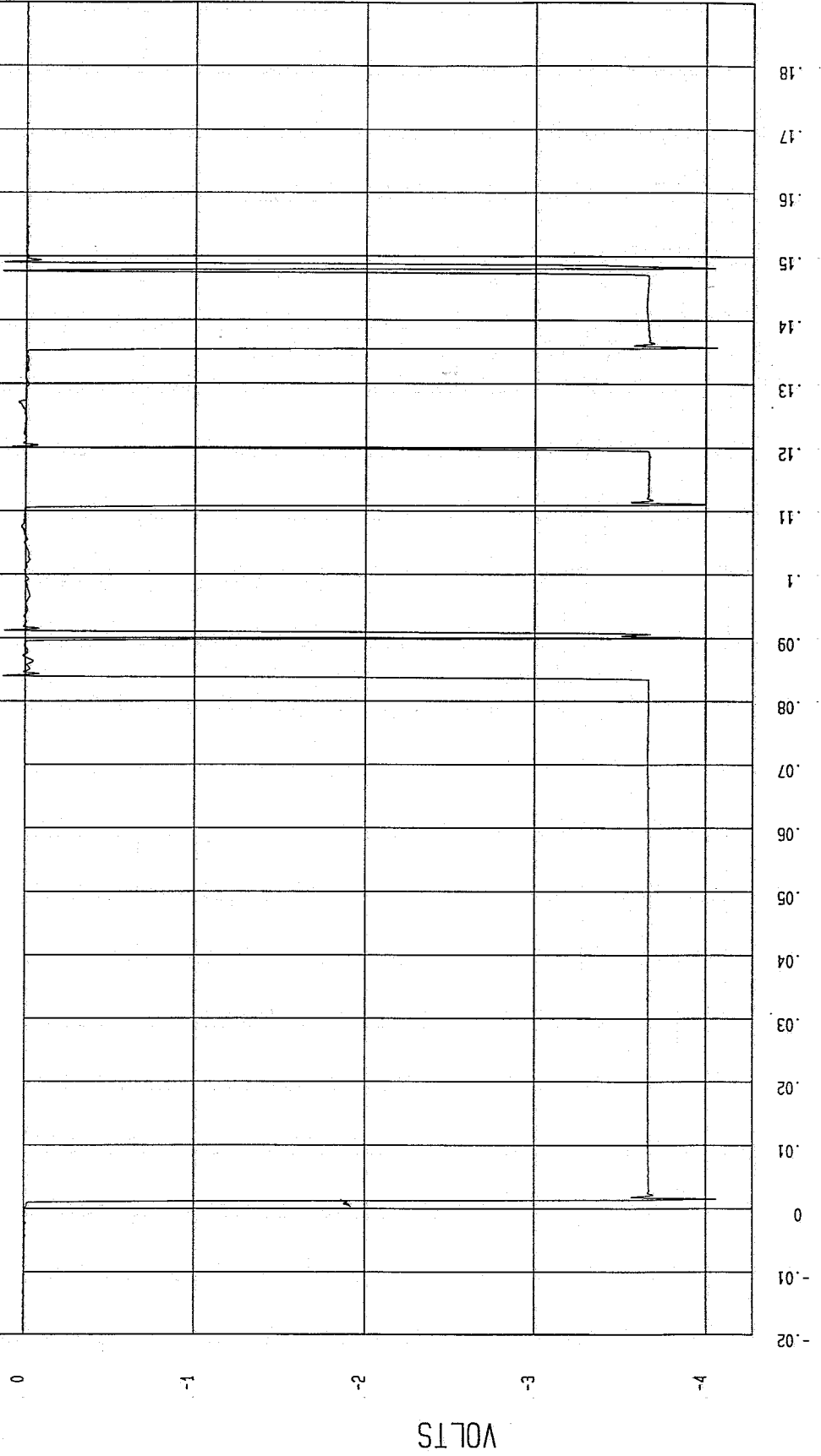
Speed: 38.2 MPH 61.5 KPH

Minimum = -4.06 VOLTS at 136 msec

Maximum = .13 VOLTS at 148 msec

RIGHT BARRIER CONTACT

1 _____ 8971130T.072 Filterclass (1000)



TIME (SECONDS)

MCA Research
10-02-1997 11:57

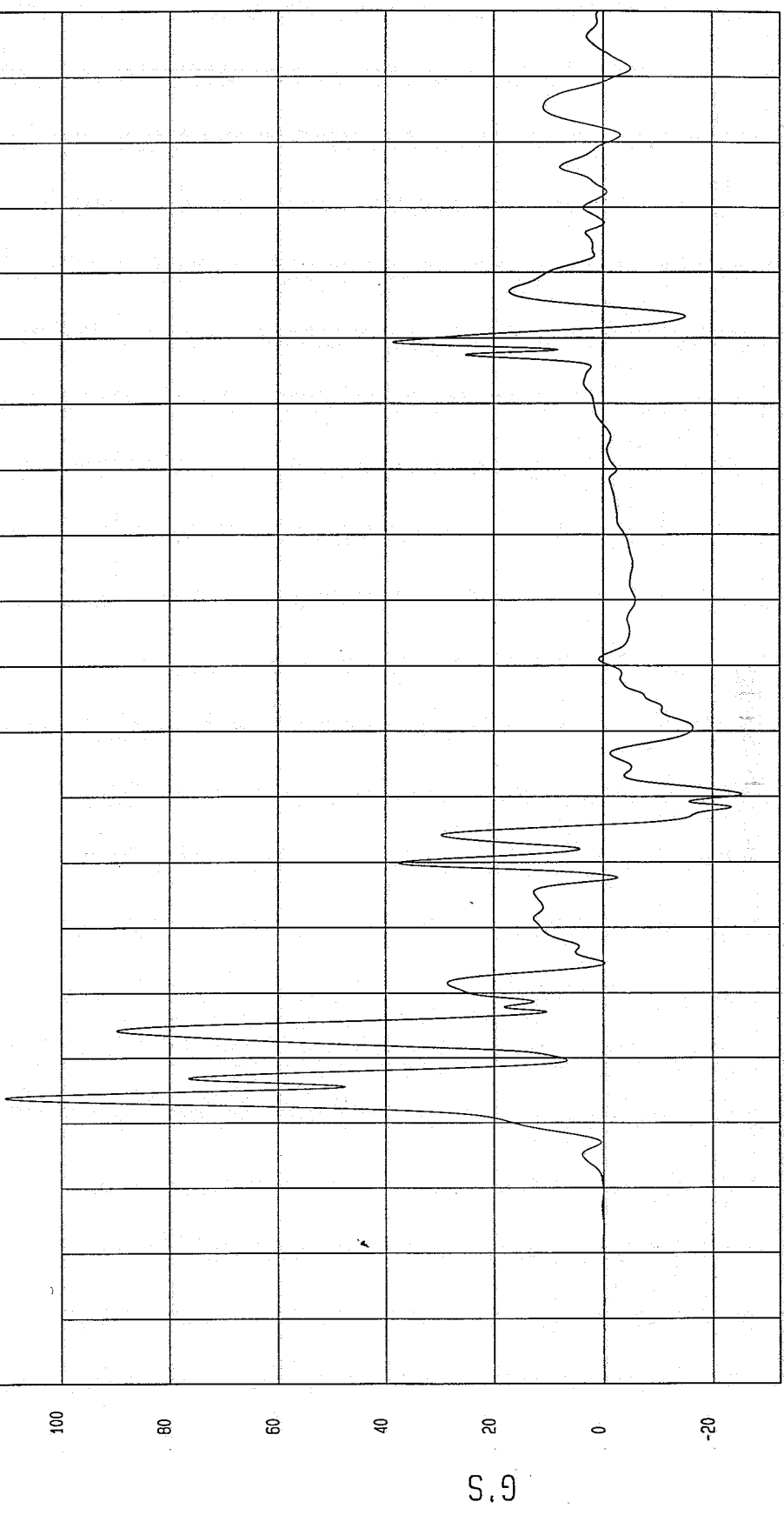
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -25.21 G'S at 70 msec Maximum = 110.42 G'S at 24 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 _____ B97113AF.A61 Filterclass (180)



MGA Research
10-02-1997 11:59

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

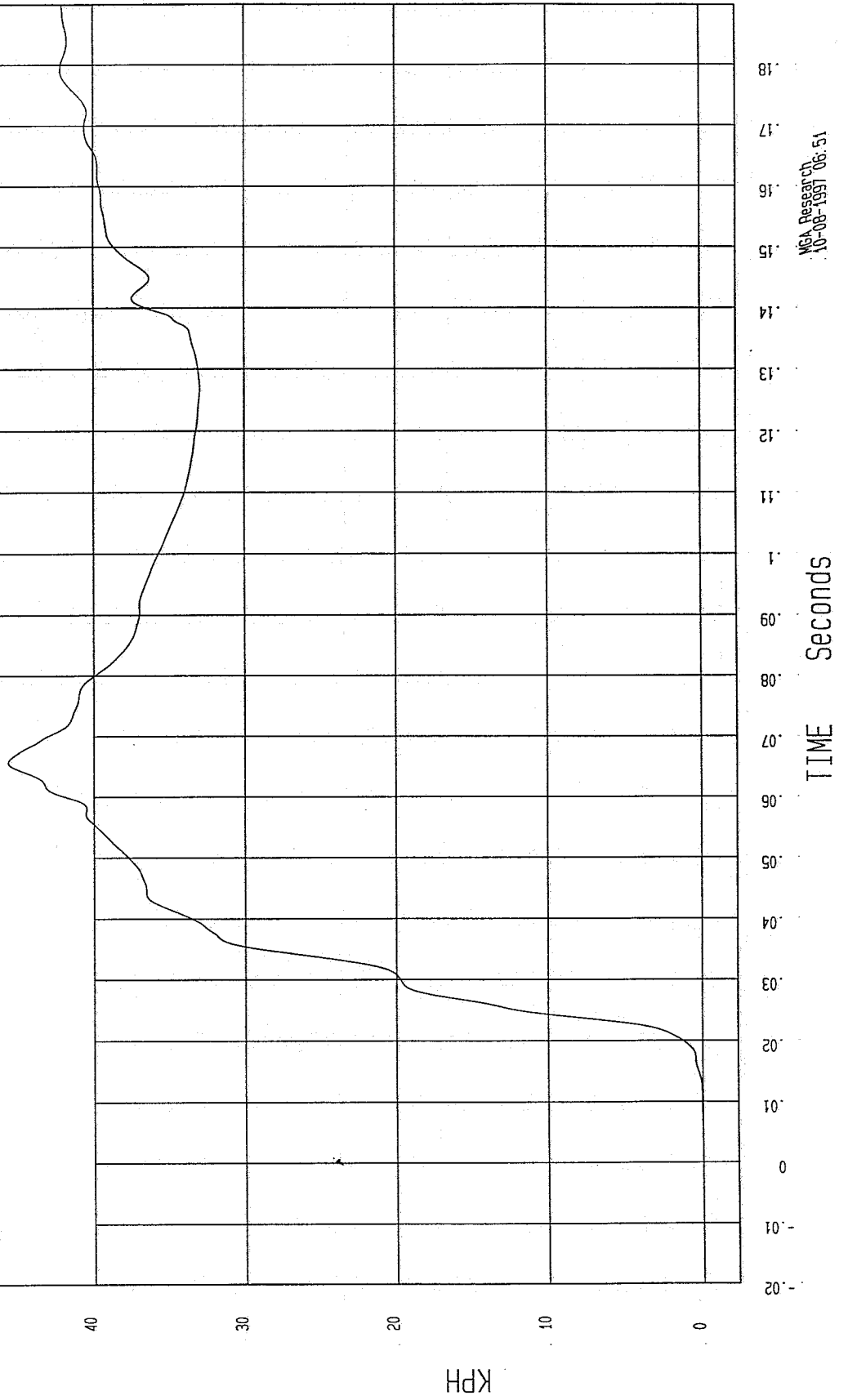
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -1.66E-03 KPH at -18 msec

Maximum = 45.60 KPH at 66 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 _____ B97113A1.V61 Filterclass (180)



NCA Research
10-08-1997 06:51

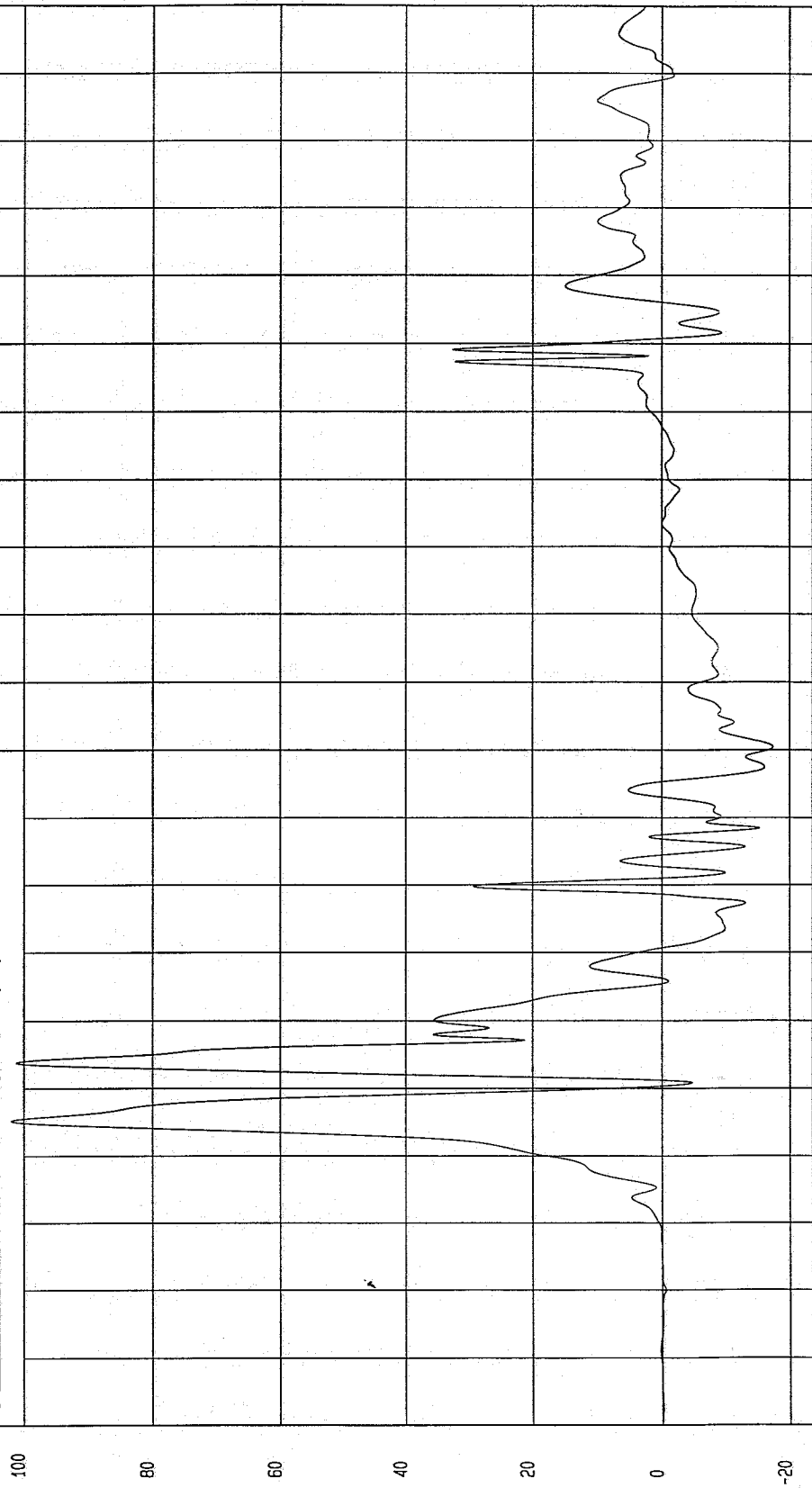
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -17.49 G'S at 80 msec
Maximum = 101.92 G'S at 25 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 897113AF.A62 Filterclass (180)



MCA Research
10-02-1997 12.00

TIME (SECONDS)

G'S

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

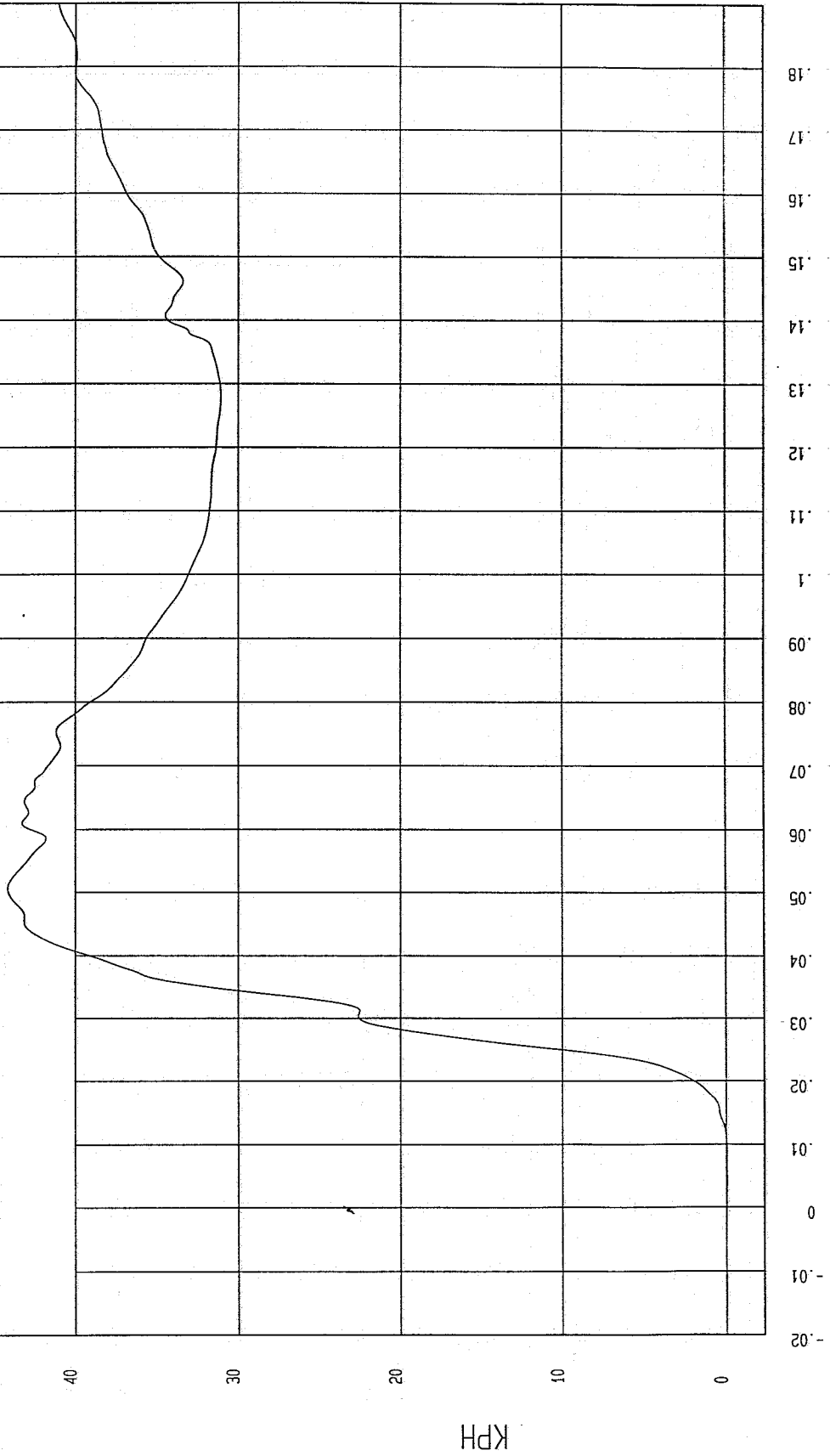
Speed: 38.2 MPH 61.5 KPH

Minimum = -5.30E-02 KPH at 4 msec

Maximum = 44.14 KPH at 51 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY

1 _____ B97113AI.V62 Filterclass (180)



MCA Research
10-08-1997 06:52

TIME Seconds

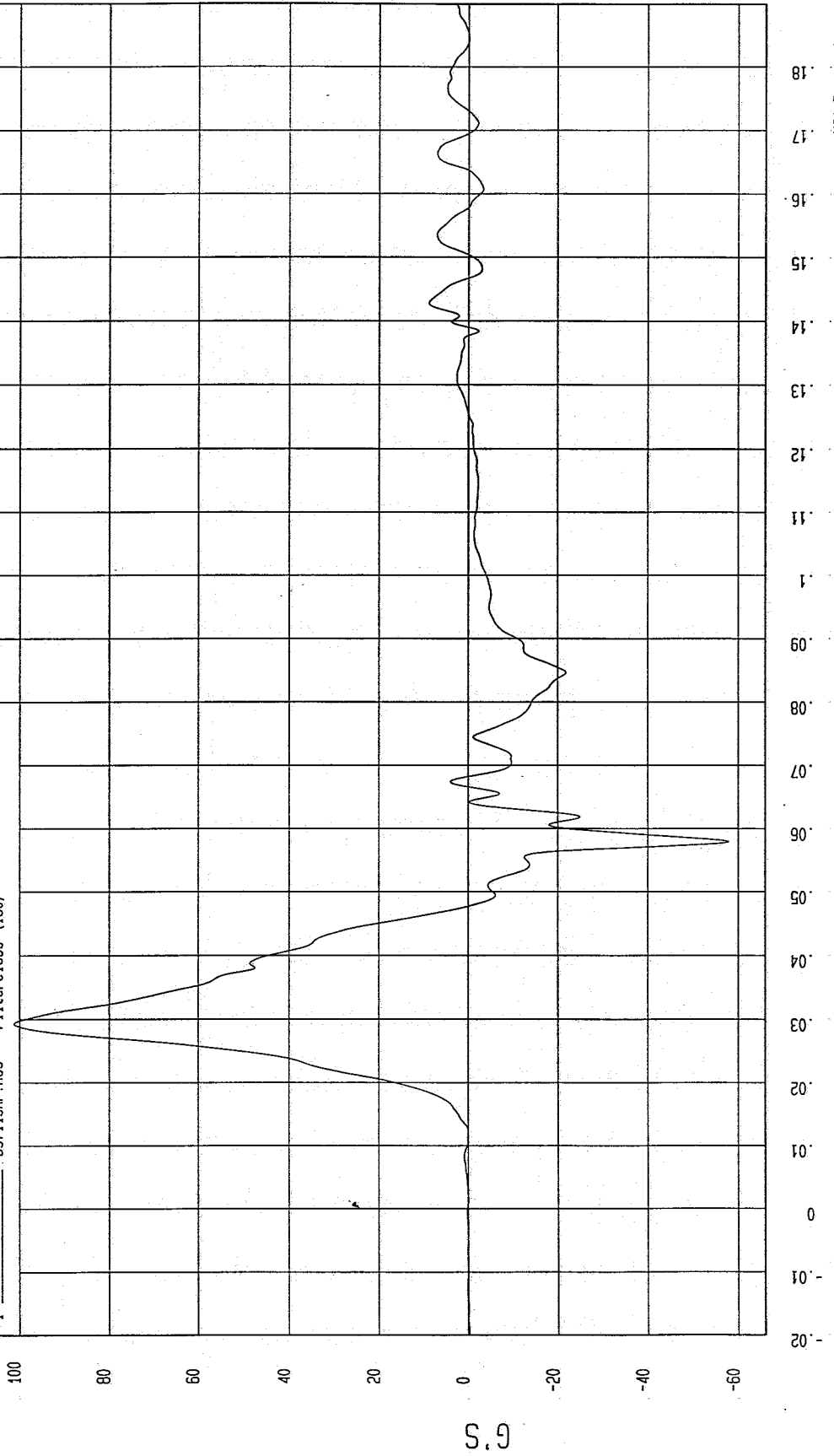
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -57.87 G'S at 58 msec
Maximum = 101.19 G'S at 29 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 _____ 897113AF.A63 Filterclass (180)



NGA Research
10-02-1997 12:00

TIME (SECONDS)

G.S

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

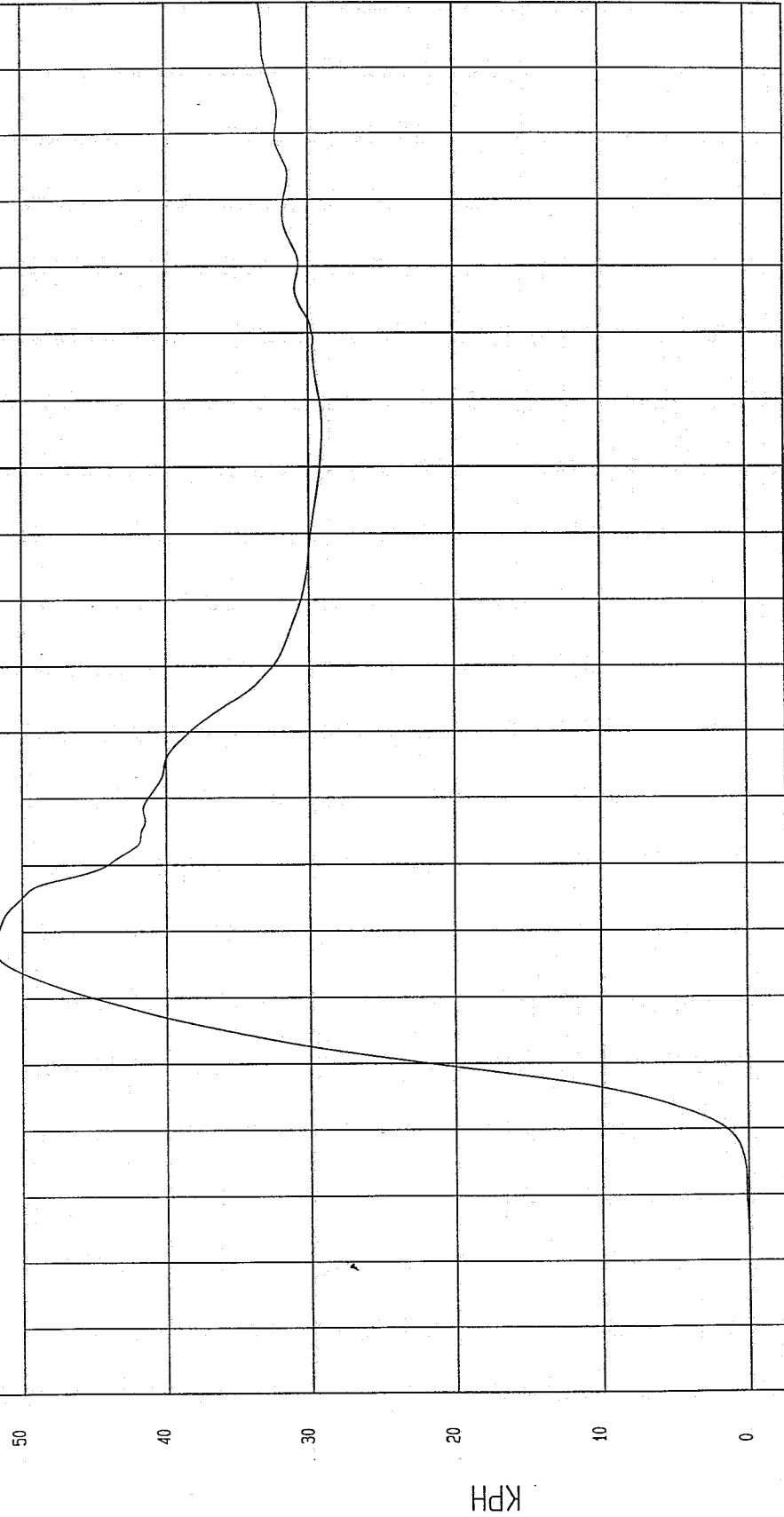
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 51.99 KPH at 48 msec

Minimum = -2.39E-02 KPH at -14 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY

1 ——— .B97113AI.V63 Filterclass (180)



NCA Research
10-06-1997 06:52

TIME Seconds

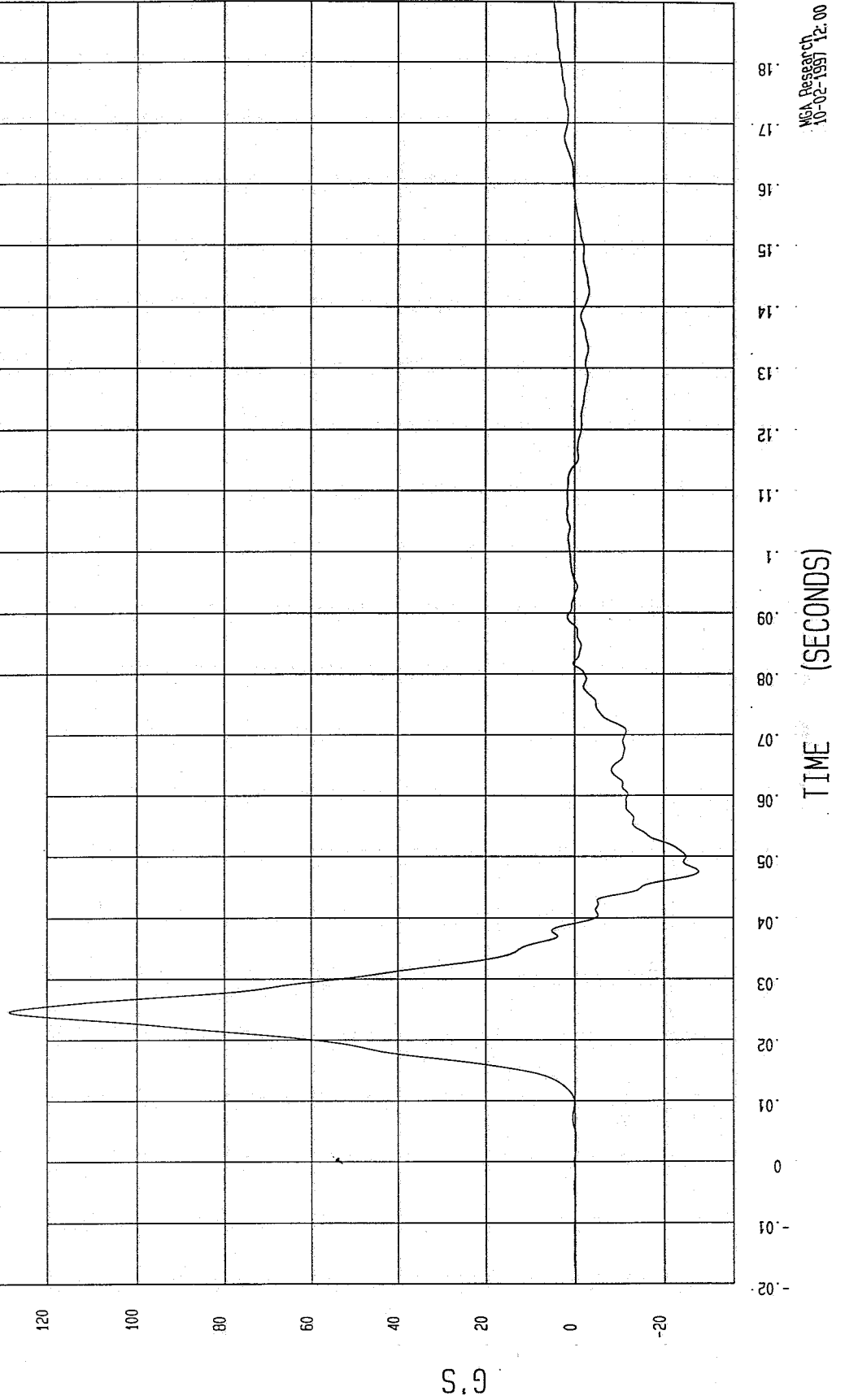
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -27.72 G'S at 48 msec
Maximum = 128.75 G'S at 25 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 89713AF.A65 Filterclass (180)



MGA Research
10-02-1997 12:00

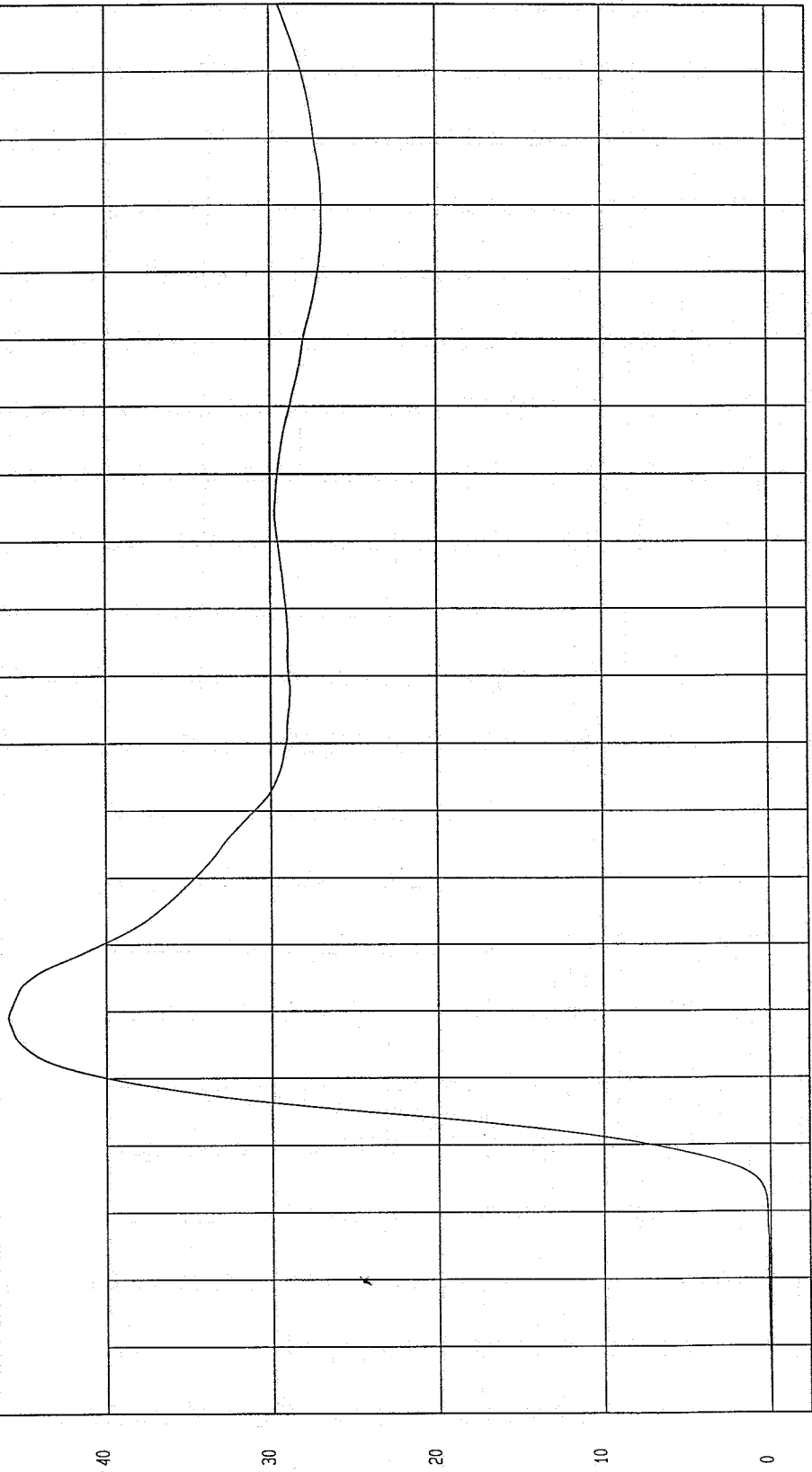
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = 0 KPH at -20 msec Maximum = 45.81 KPH at 39 msec

DRIVER PELVIS Y REDUNDANT VELOCITY

1 89713A1.V65 Filterclass (180)



MCA Research
10-06-1997 06:52

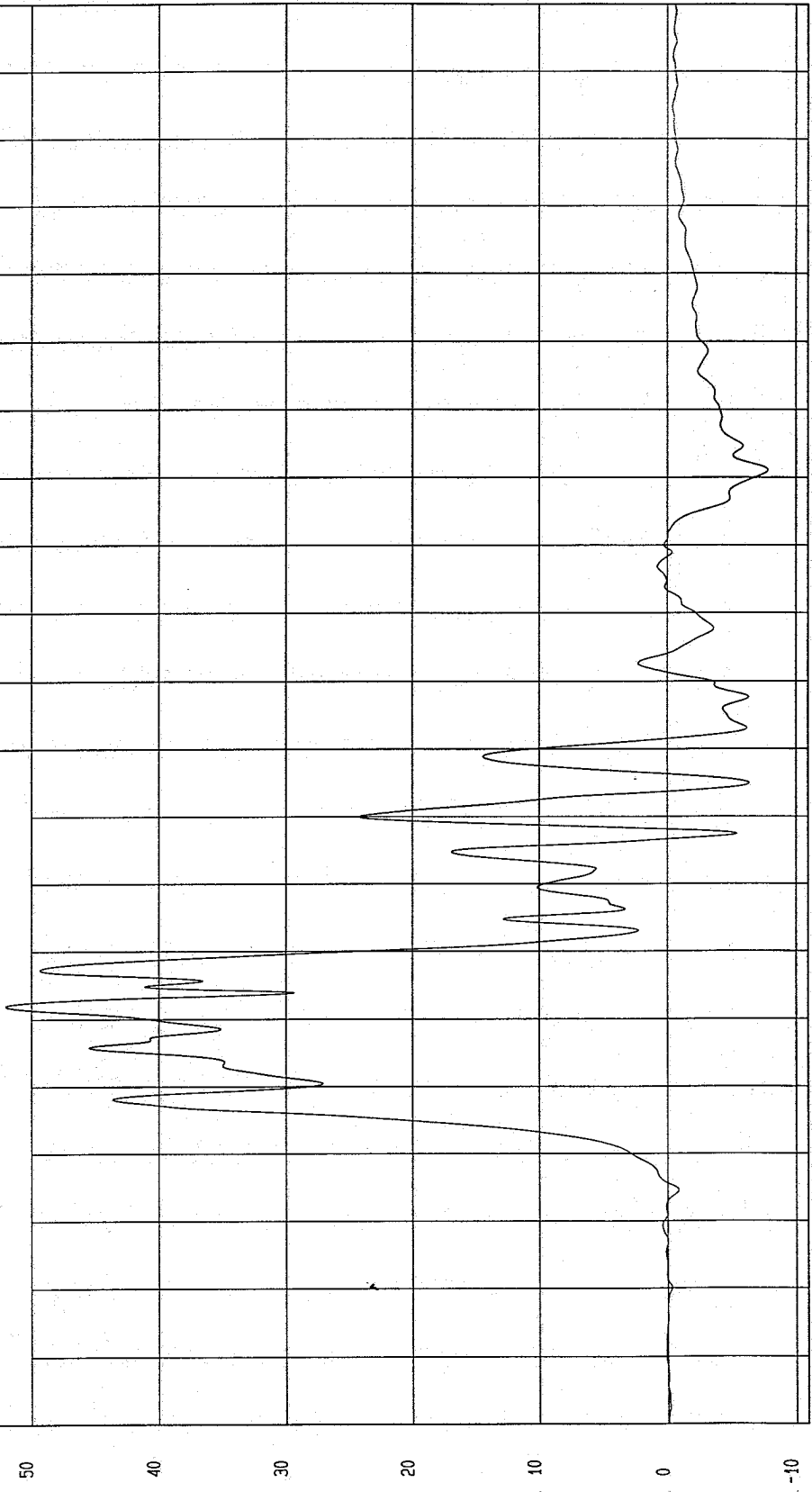
TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT
TEST DATE: 09-29-1997
COMPONENT: 1998 FORD ESCORT 2DR
Speed: 38.2 MPH 61.5 KPH

Minimum = -7.91 G'S at 121 msec
Maximum = 52.01 G'S at 42 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 ——— 897113AF.A66 FilterClass (180)



TIME (SECONDS)

MGA Research
10-02-1997 12:00

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR

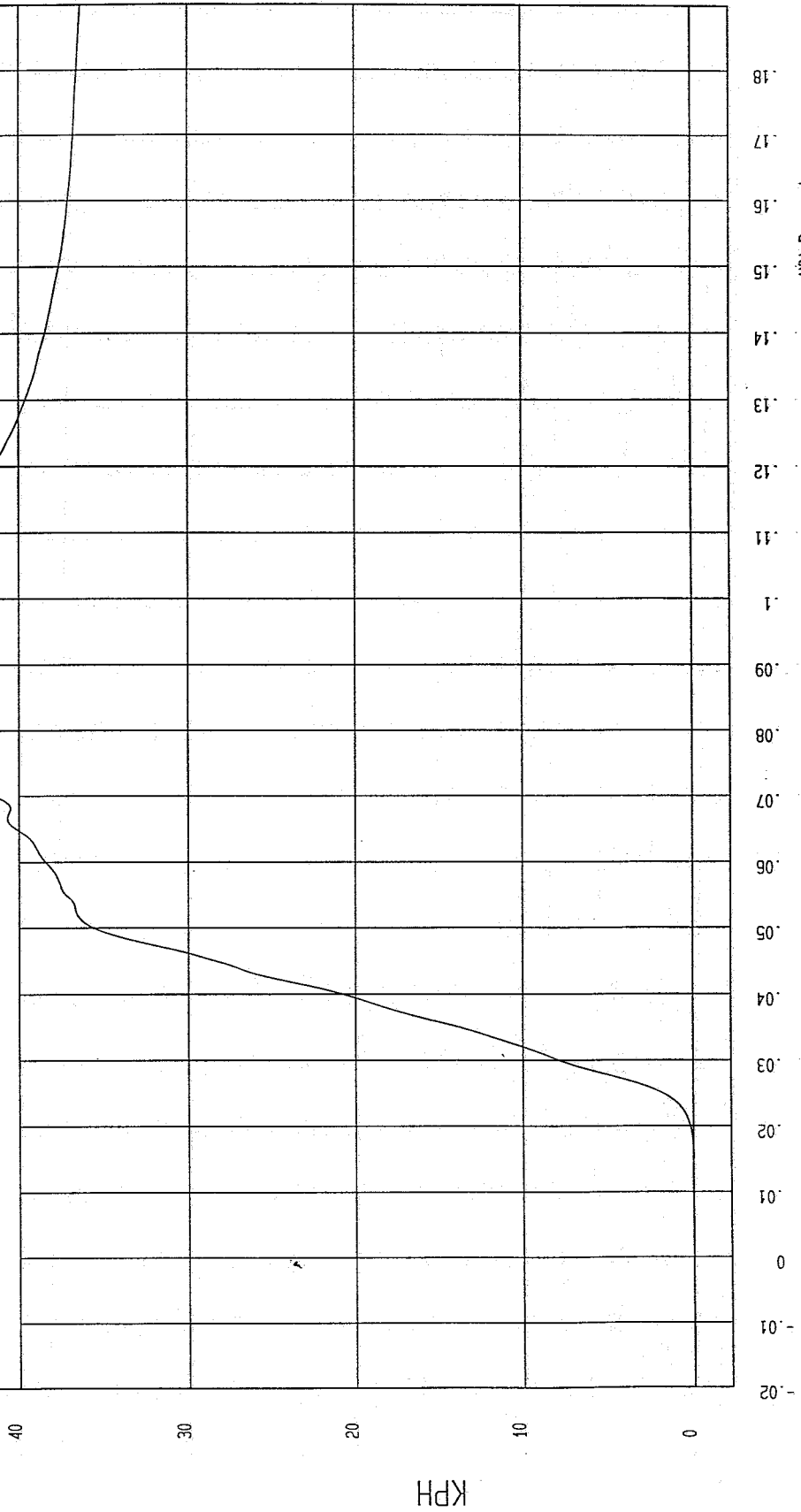
Speed: 38.2 MPH 61.5 KPH

Minimum = -.02 KPH at -.12 msec

Maximum = 44.53 KPH at .82 msec

REAR PASSENGER UPPER RIB Y REDUNDANT VELOCITY

1 _____ B97113A1.V66 Filterclass (480)



MCA Research
10-08-1997 06:52

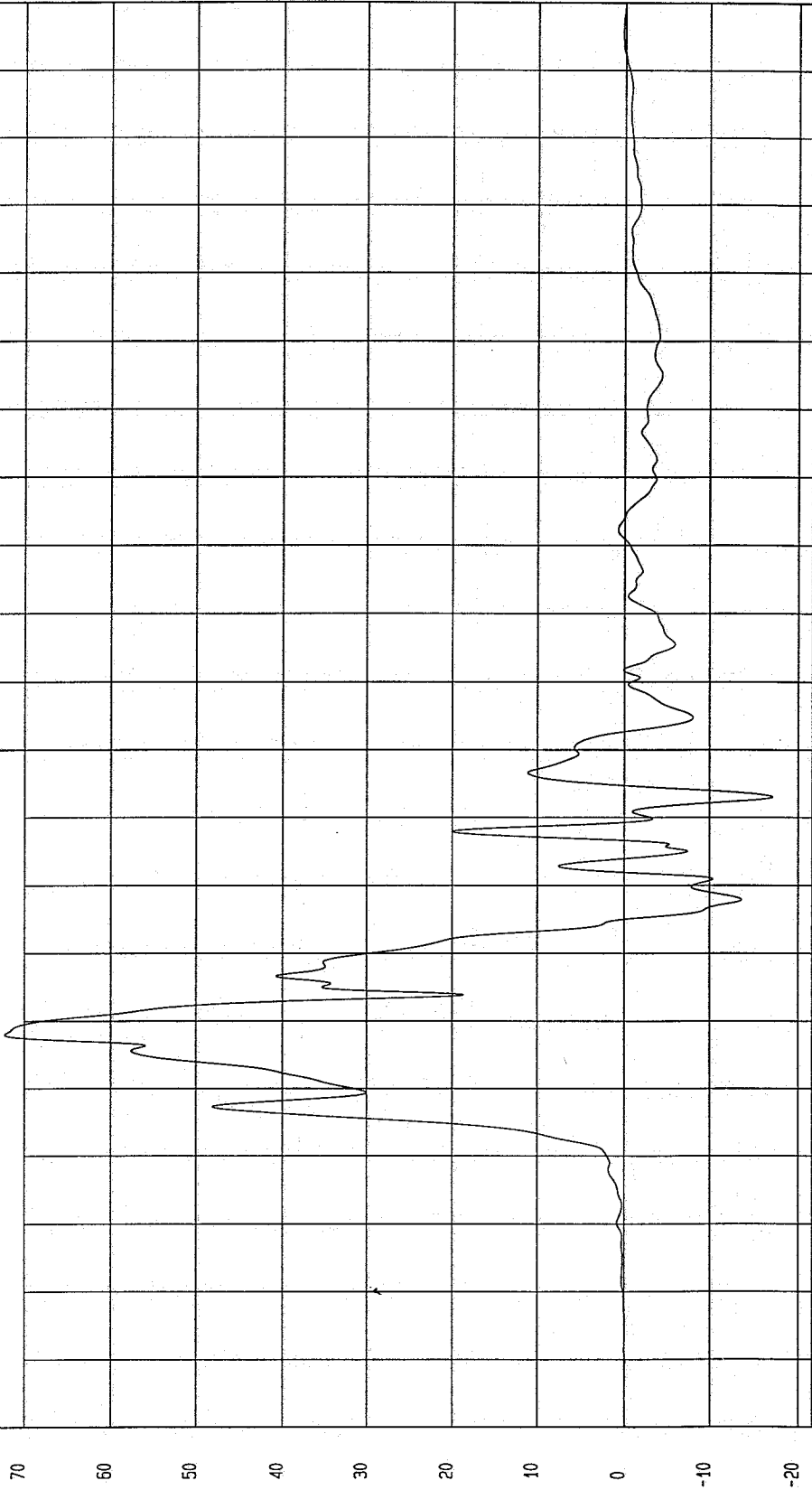
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -17.11 G'S at 73 msec
Maximum = 72.27 G'S at 38 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 _____ B97113AF.A67 Filterclass (480)



NGA Research
10-02-1997 12:00

TIME (SECONDS)

G'S

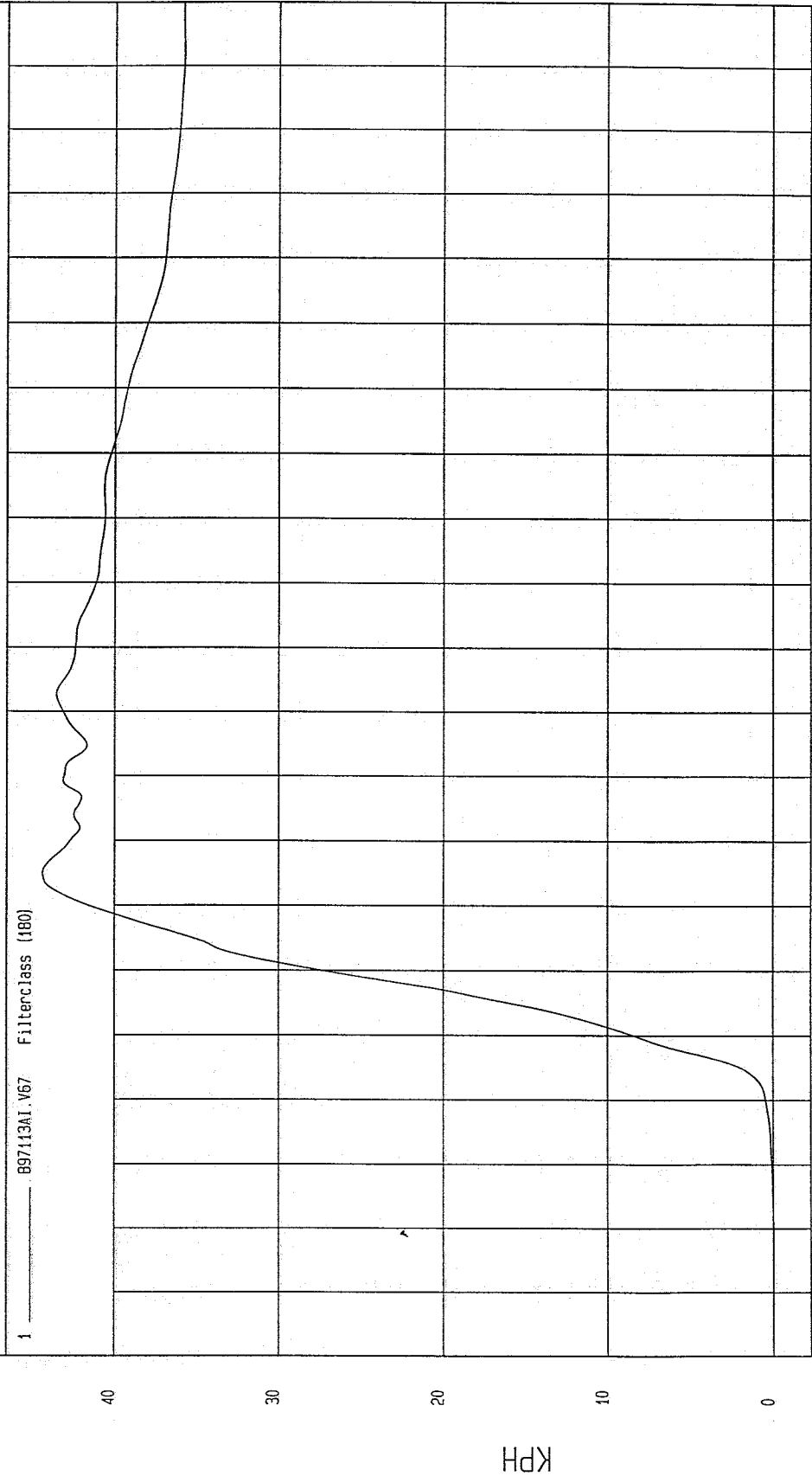
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -3.05E-02 KPH at -3 msec
Maximum = 44.26 KPH at 55 msec

REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY

1 _____ 897113A1.V67 FilterClass (180)



NGA Research
10-08-1997 06:53

TIME Seconds

KPH

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

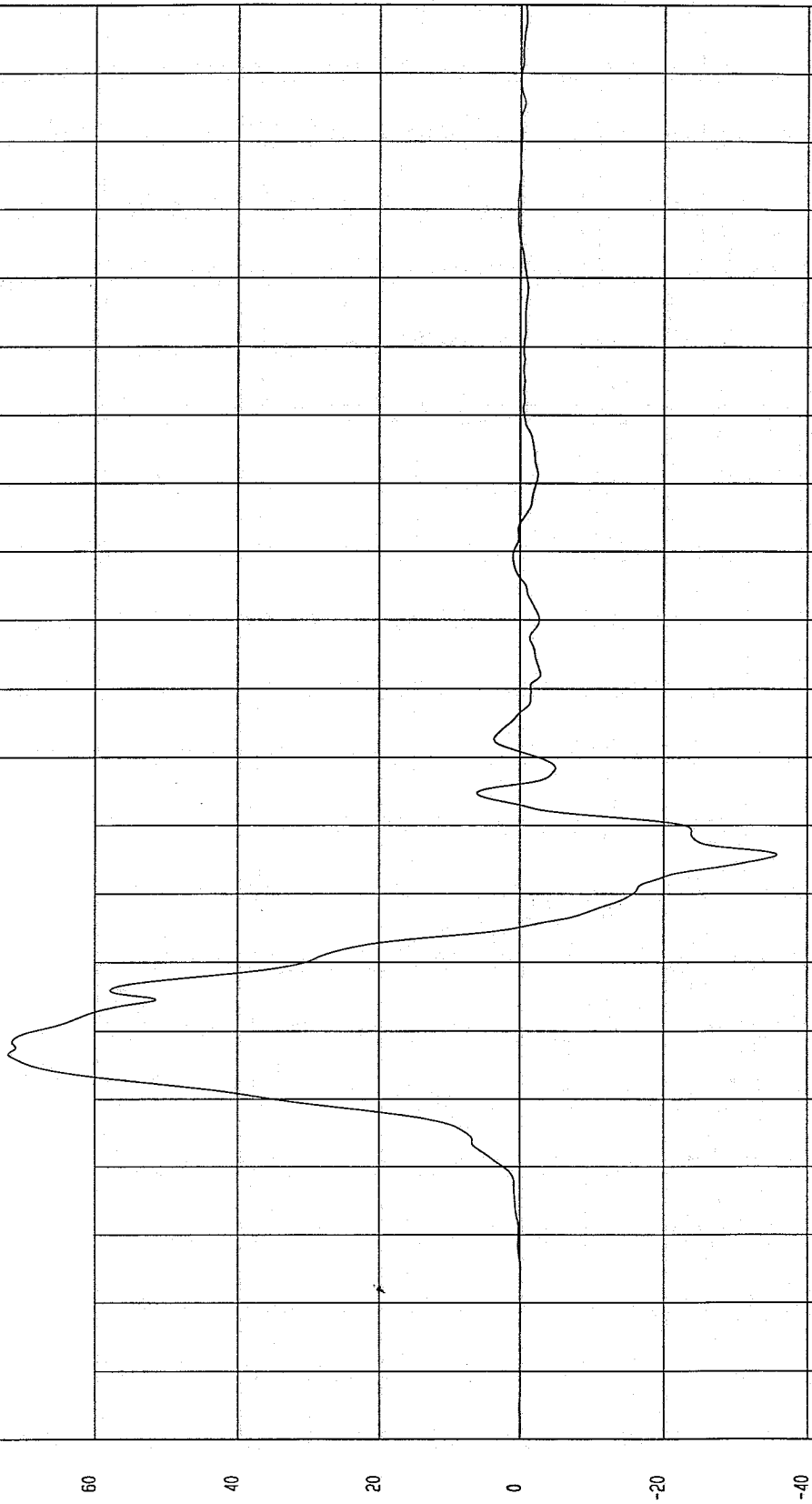
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 72.17 G'S at 37 msec

Minimum = -35.89 G'S at 66 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 _____ 897113AF.A68 Filterclass (180)



WCA Research
10-02-1997 12:00

TIME (SECONDS)

G'S

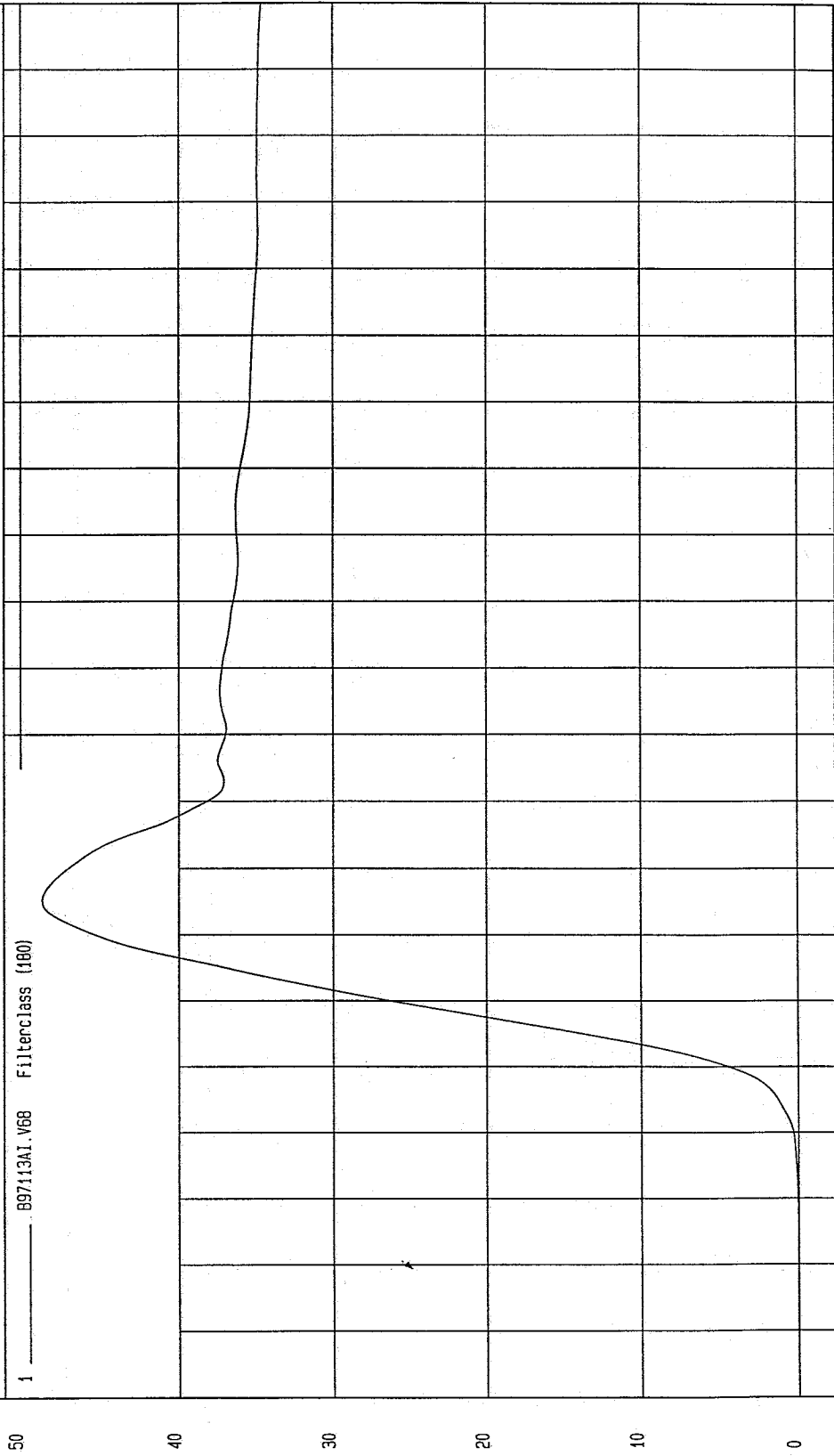
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = 0 KPH at -20 msec
Maximum = 48.62 KPH at 55 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY

1 _____ 897113A1.V68 Filterclass (180)



NSA Research
10-08-1997 06:53

TIME Seconds

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

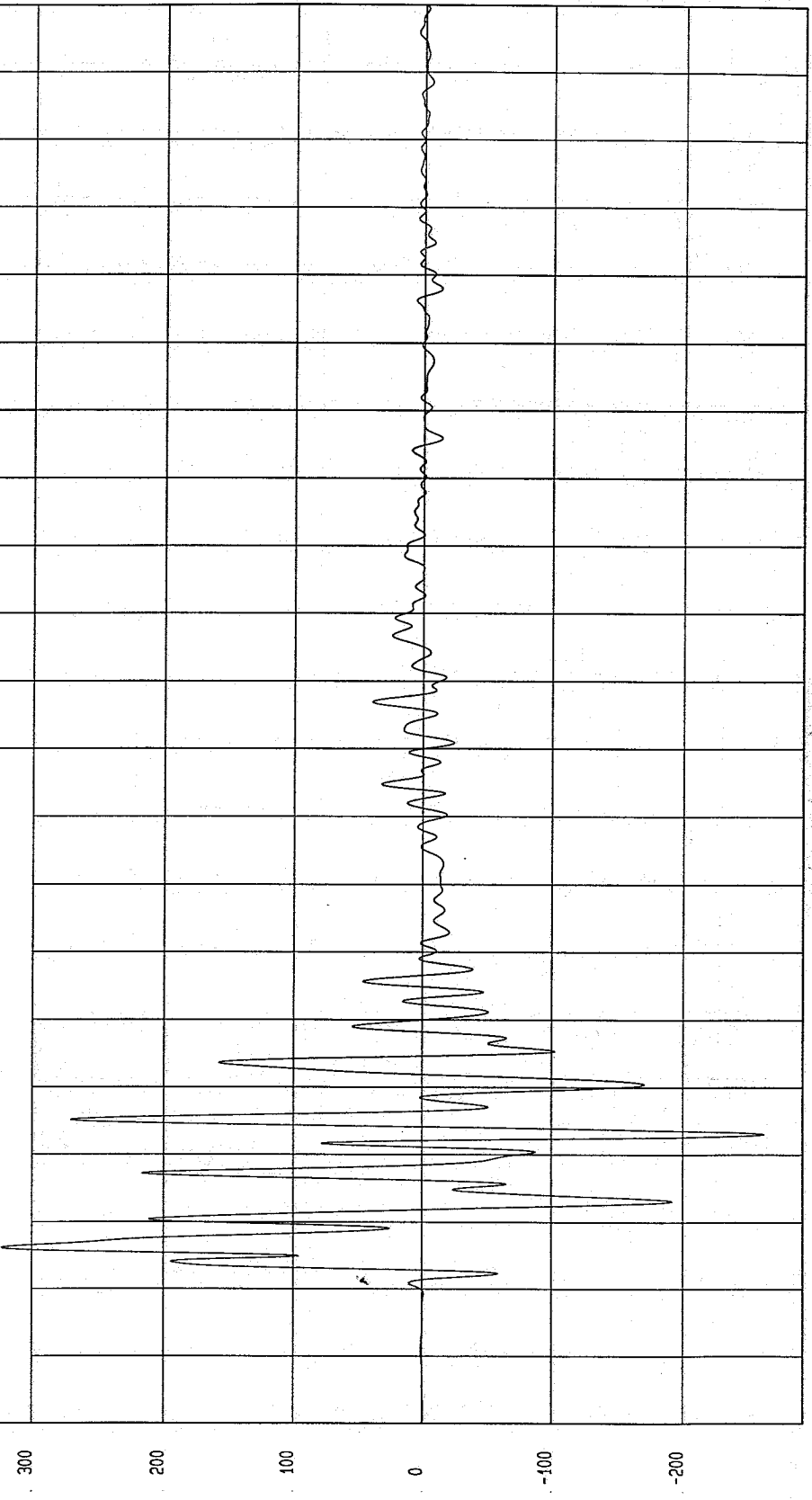
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 323.12 G'S at 6 msec

Minimum = -261.60 G'S at 23 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 897113AF.A75 Filterclass (180)



G.S

MCA Research
10-02-1997 12:00

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

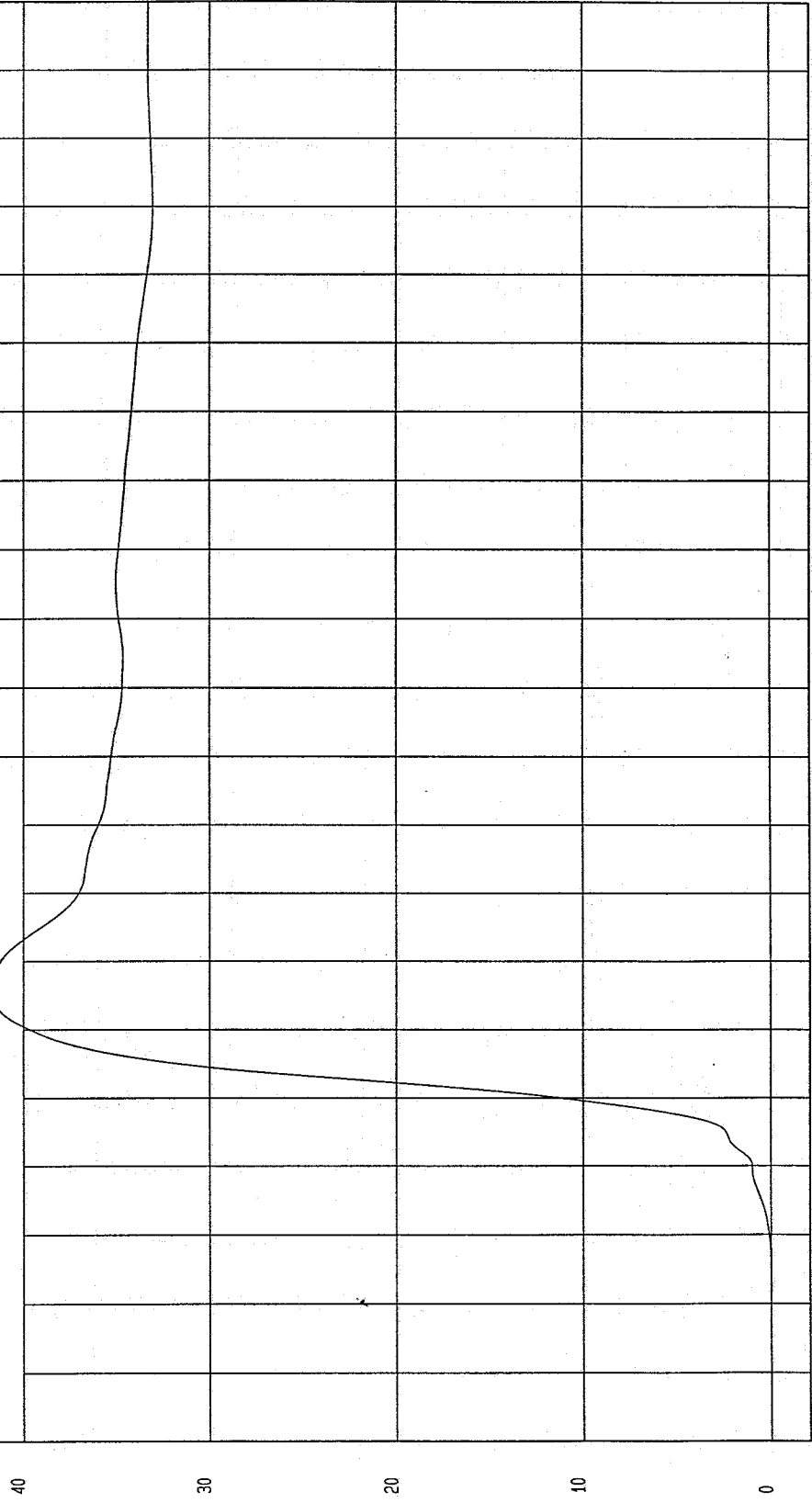
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -1.16E-02 KPH at 3 msec

Maximum = 41.66 KPH at 46 msec

REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 B97113A1.V69 Filterclass (180)



MGA Research
10-08-1997 06:56

TIME Seconds

KPH

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

TEST: HIGH SPEED LATERAL IMPACT

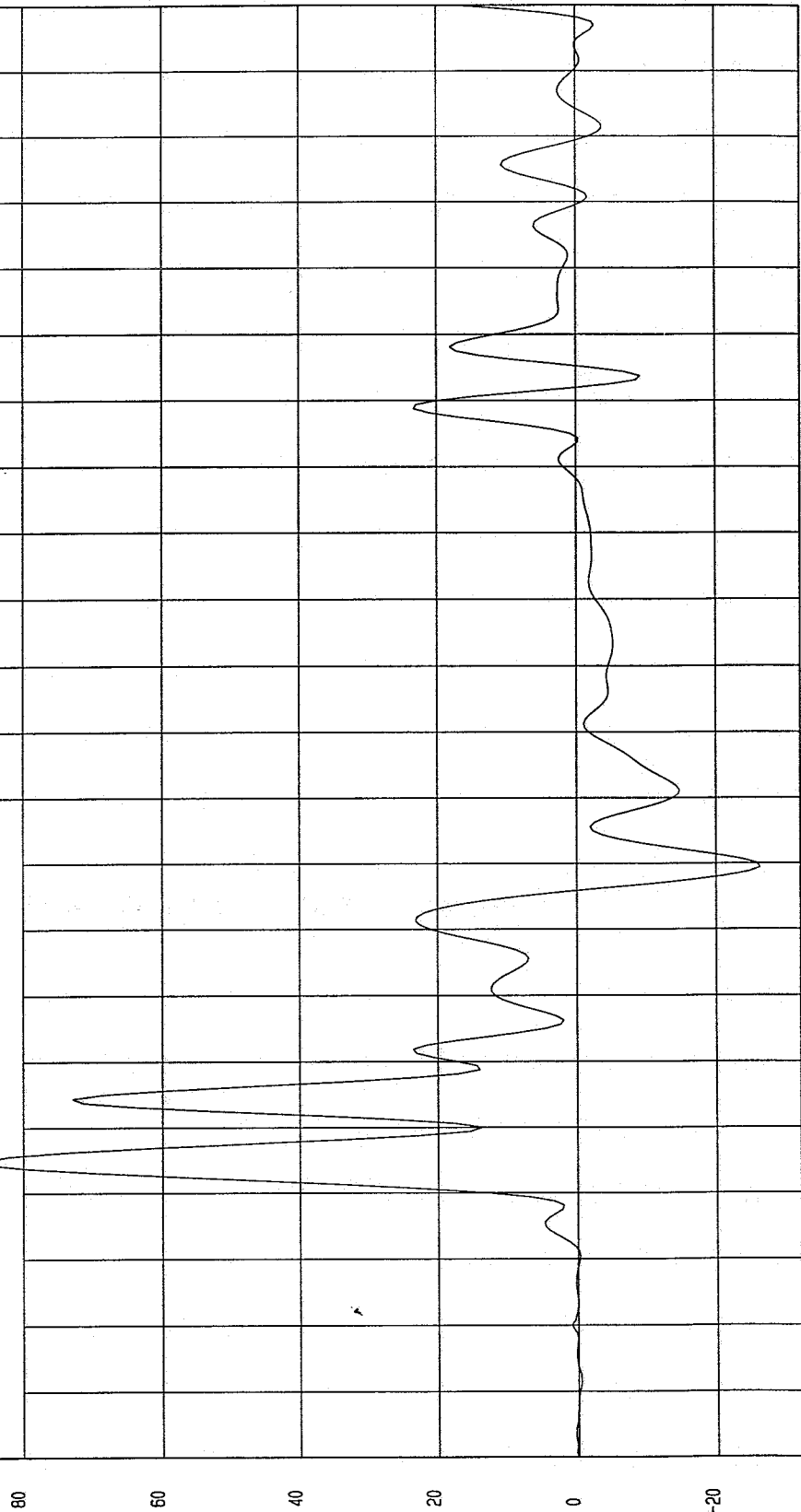
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 85.90 G'S at 25 msec

Minimum = -26.17 G'S at 69 msec

DRIVER UPPER RIB Y ACCELERATION

1 _____ B97113FI.R15 Filterclass (FIR Filtered)



TIME (SECONDS)

MGA Research
10-02-1997 11:42

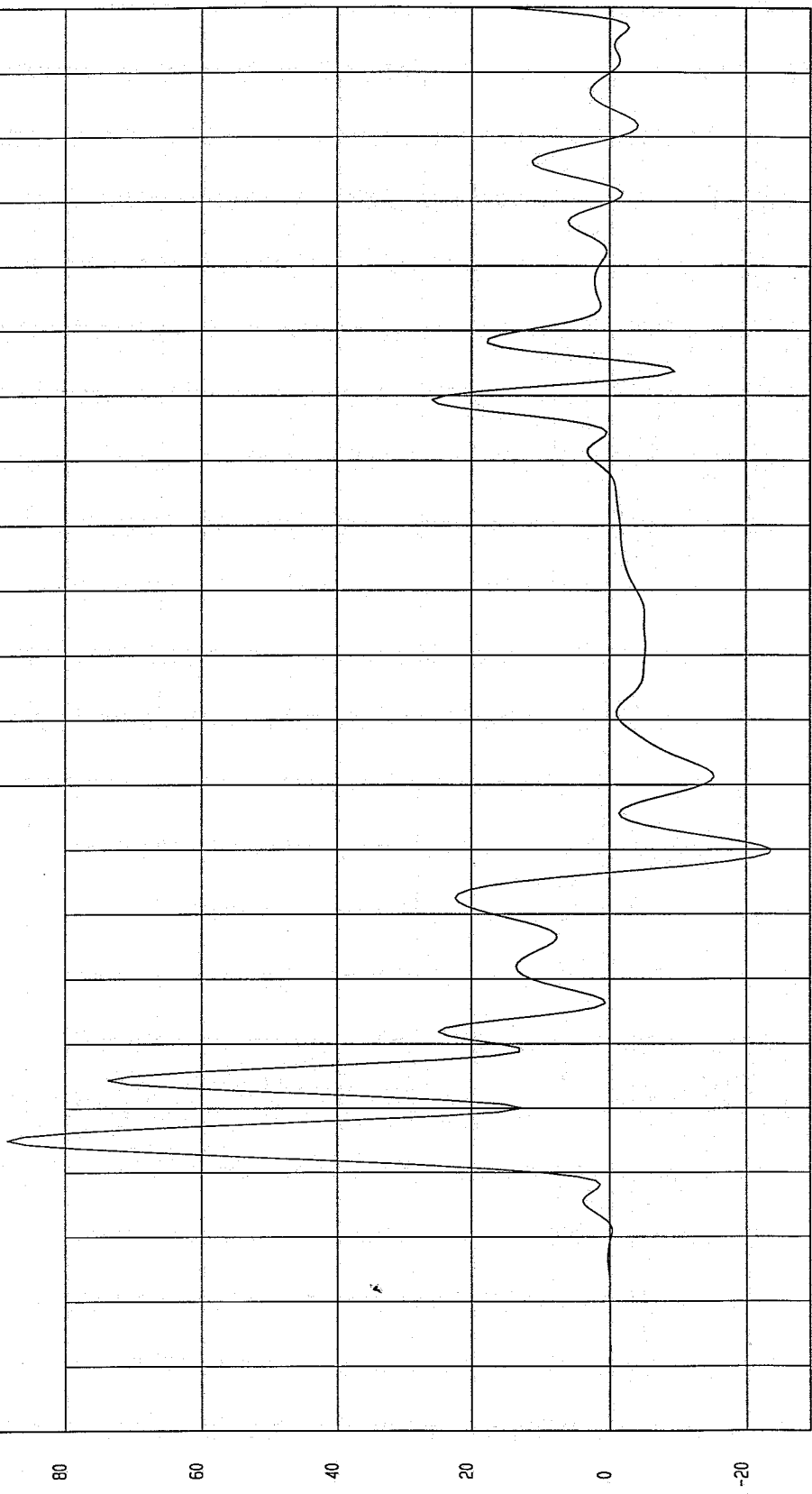
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -23.57 G'S at 70 msec Maximum = 88.44 G'S at 25 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 897113FI.R61 Filterclass (FIR Filtered)



MCA Research
10-02-1997 11:42

TIME (SECONDS)

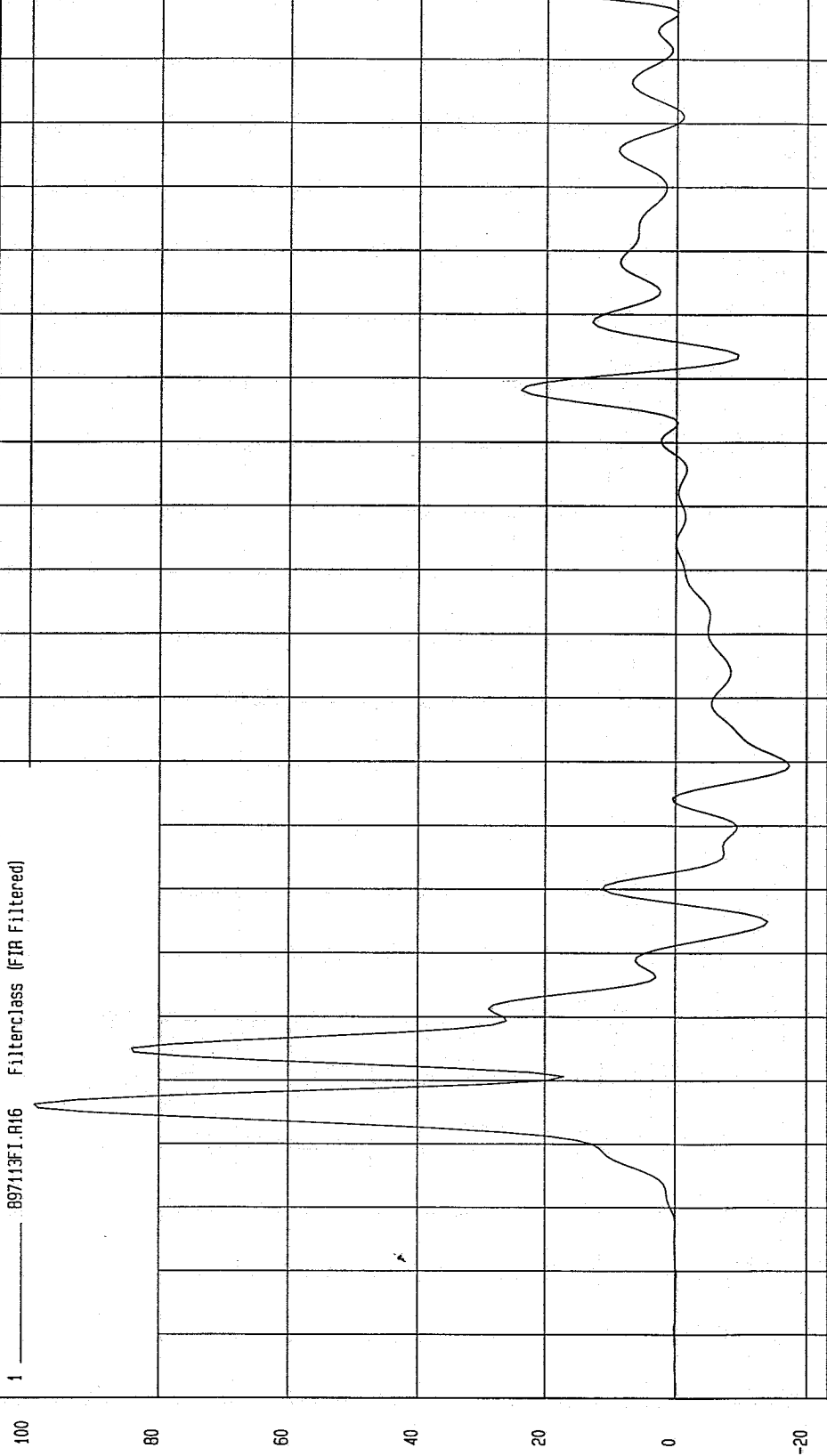
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -17.36 G'S at 79 msec
Maximum = 99.15 G'S at 26 msec

DRIVER LOWER RIB Y ACCELERATION

1 897113FI.R16 FilterClass (FIR Filtered)



TIME (SECONDS)

MGA Research
10-02-1997 11.42

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

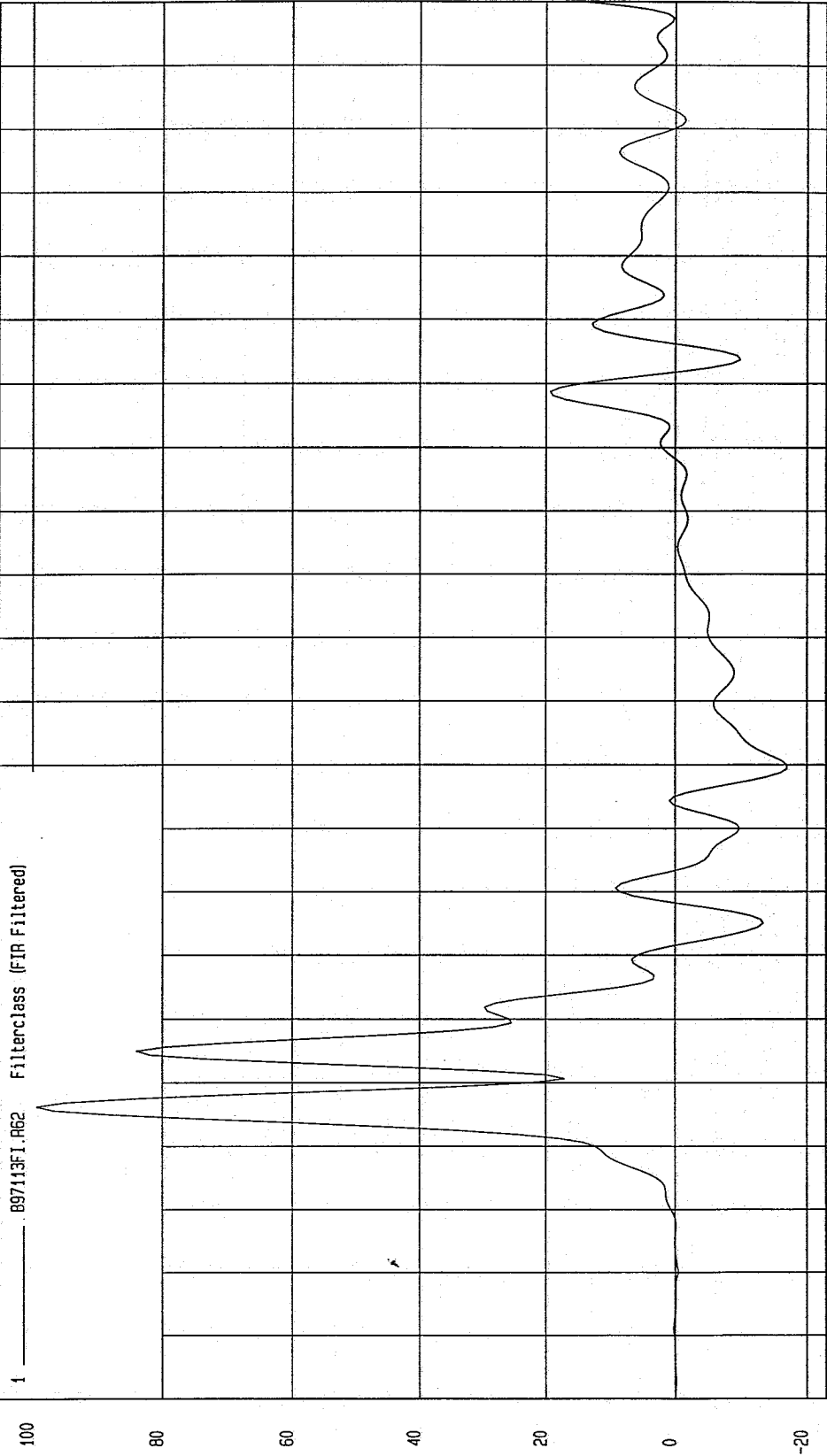
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -17.03 G'S at 80 msec

Maximum = 99.43 G'S at 26 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 897143F1.DR2 FilterClass (FIR Filtered)



NGA Research
10-02-1997 11:42

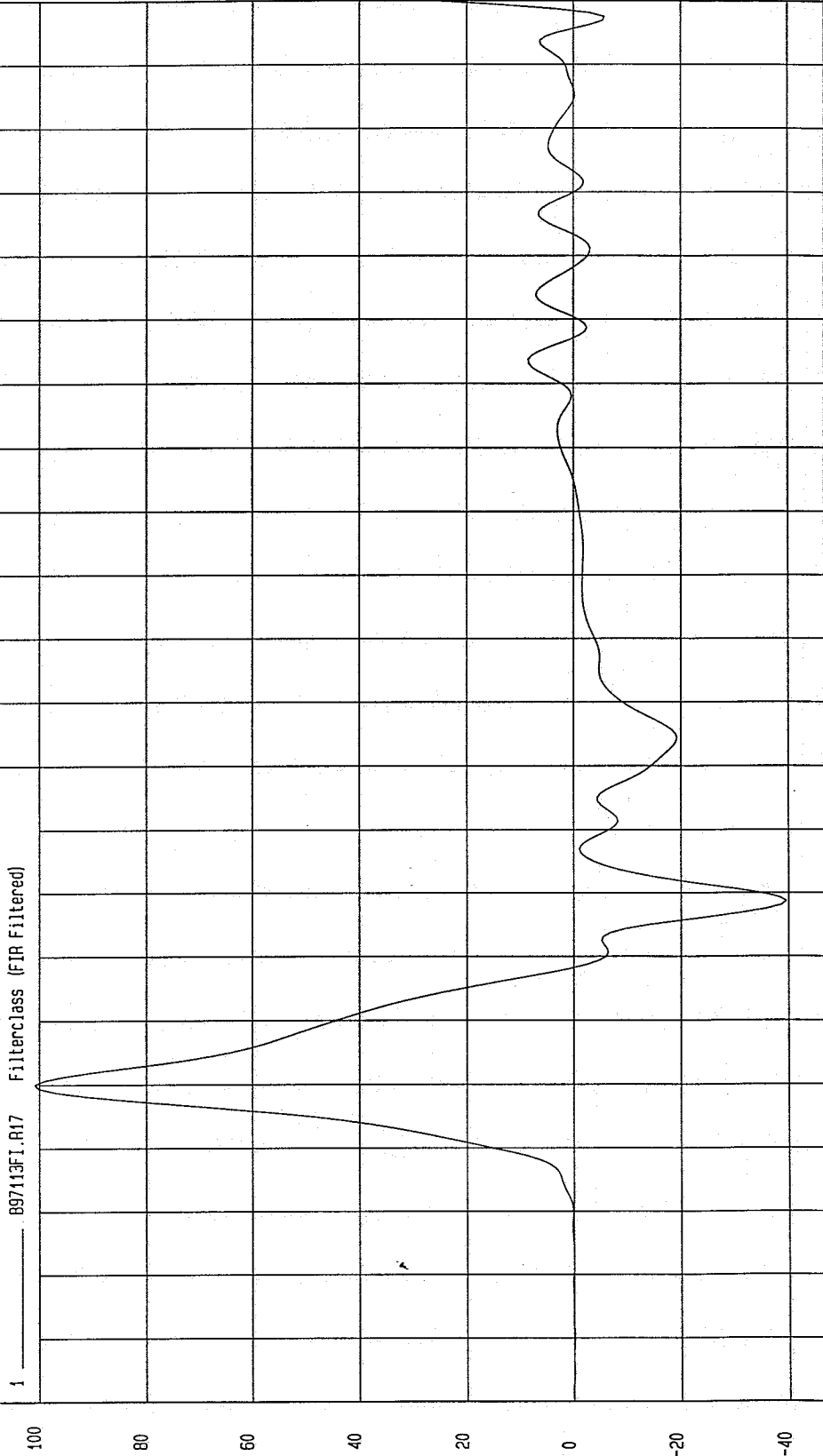
TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -39.52 G'S at 59 msec
Maximum = 100.86 G'S at 30 msec

DRIVER LOWER SPINE Y ACCELERATION



MGA Research Co.
10-02-1997 11:42

TIME (SECONDS)

G'S

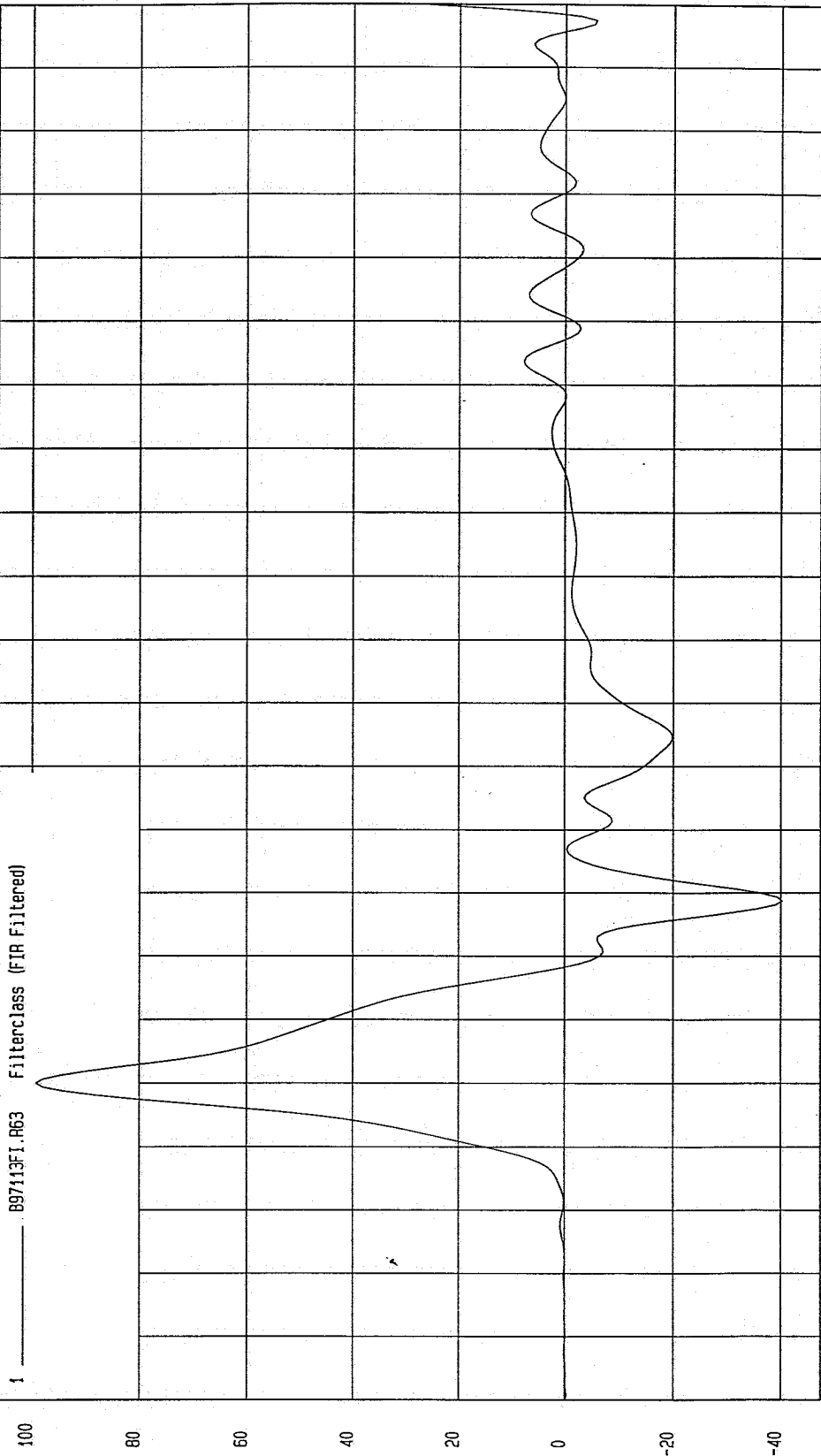
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -40.28 G'S at 59 msec Maximum = 99.32 G'S at 30 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 897113FI.R63 Filterclass (FIR Filtered)



MCA Research
10-02-1997 11:42

TIME (SECONDS)

G.S

TEST DATE: 09-29-1997

Speed: 38.2 MPH 61.5 KPH

TEST: HIGH SPEED LATERAL IMPACT

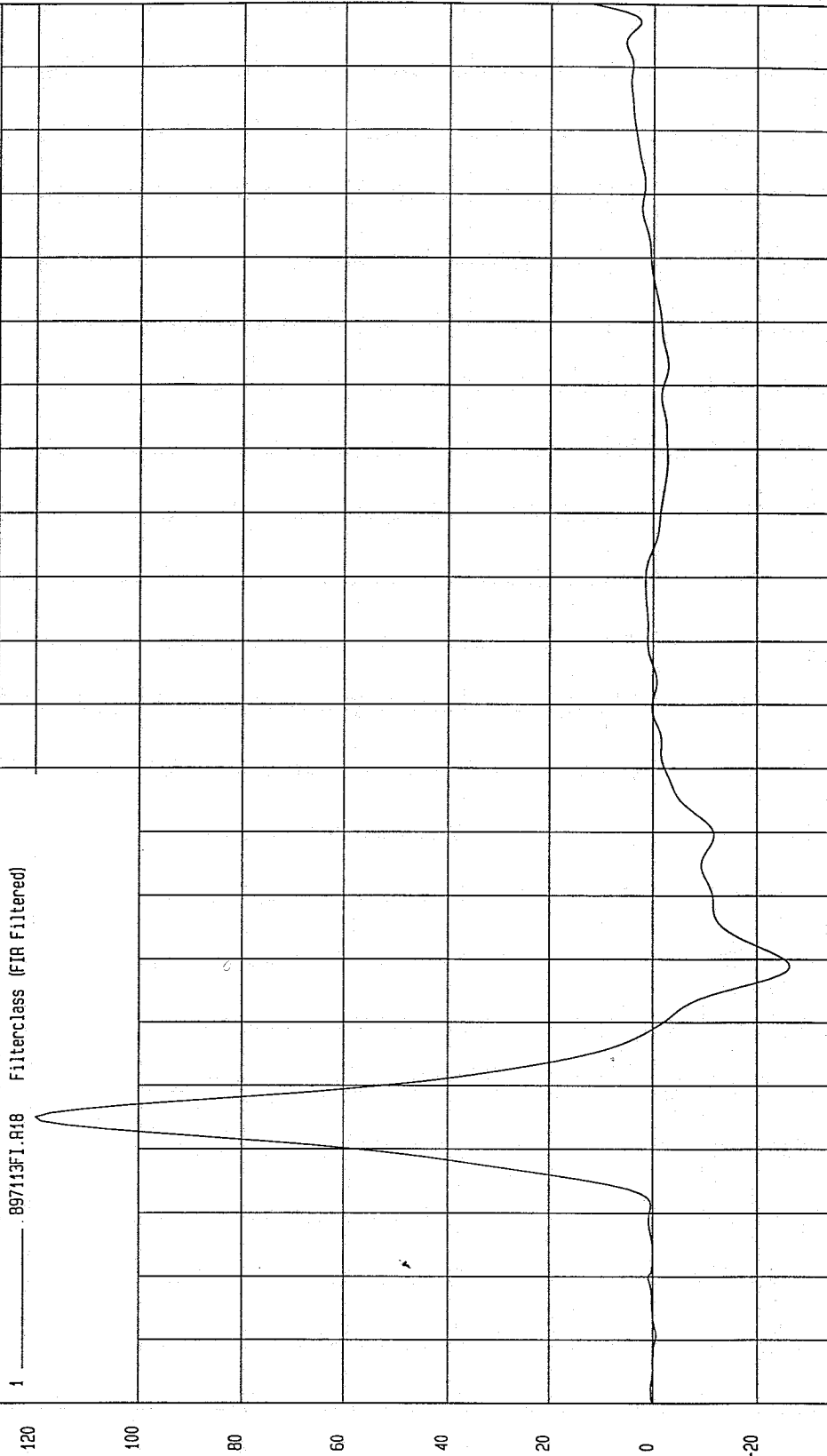
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 119.84 G'S at 25 msec

Minimum = -26.08 G'S at 49 msec

DRIVER PELVIS Y ACCELERATION

1 897113FI.R18 Filterclass (FIR Filtered)



TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

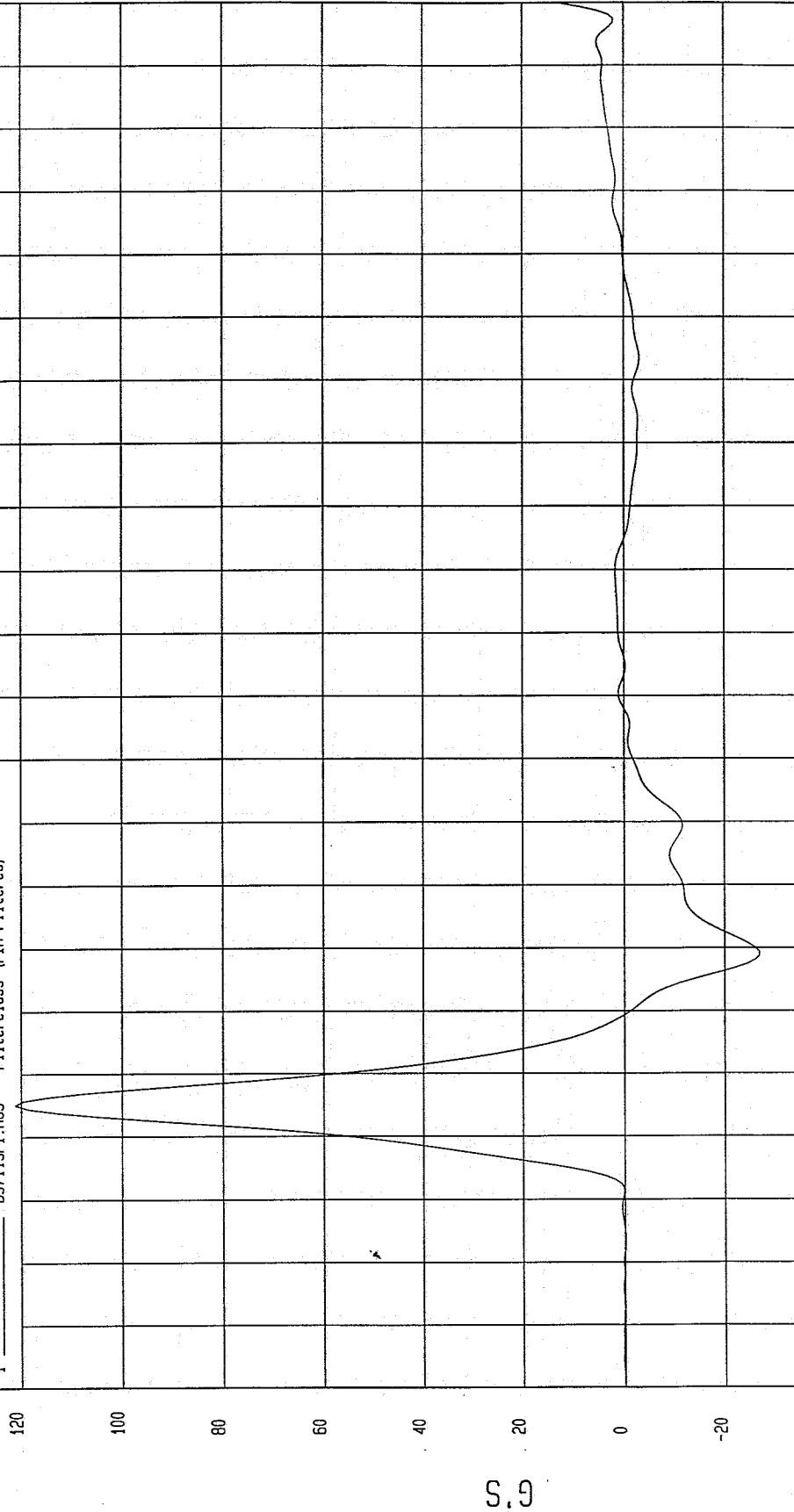
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -26.73 G'S at 49 msec

Maximum = 121.12 G'S at 25 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 B97113F1.R65 FilterClass (FIR Filtered)



NGA Research
10-02-1997 11:42

TIME (SECONDS)

G'S

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH.

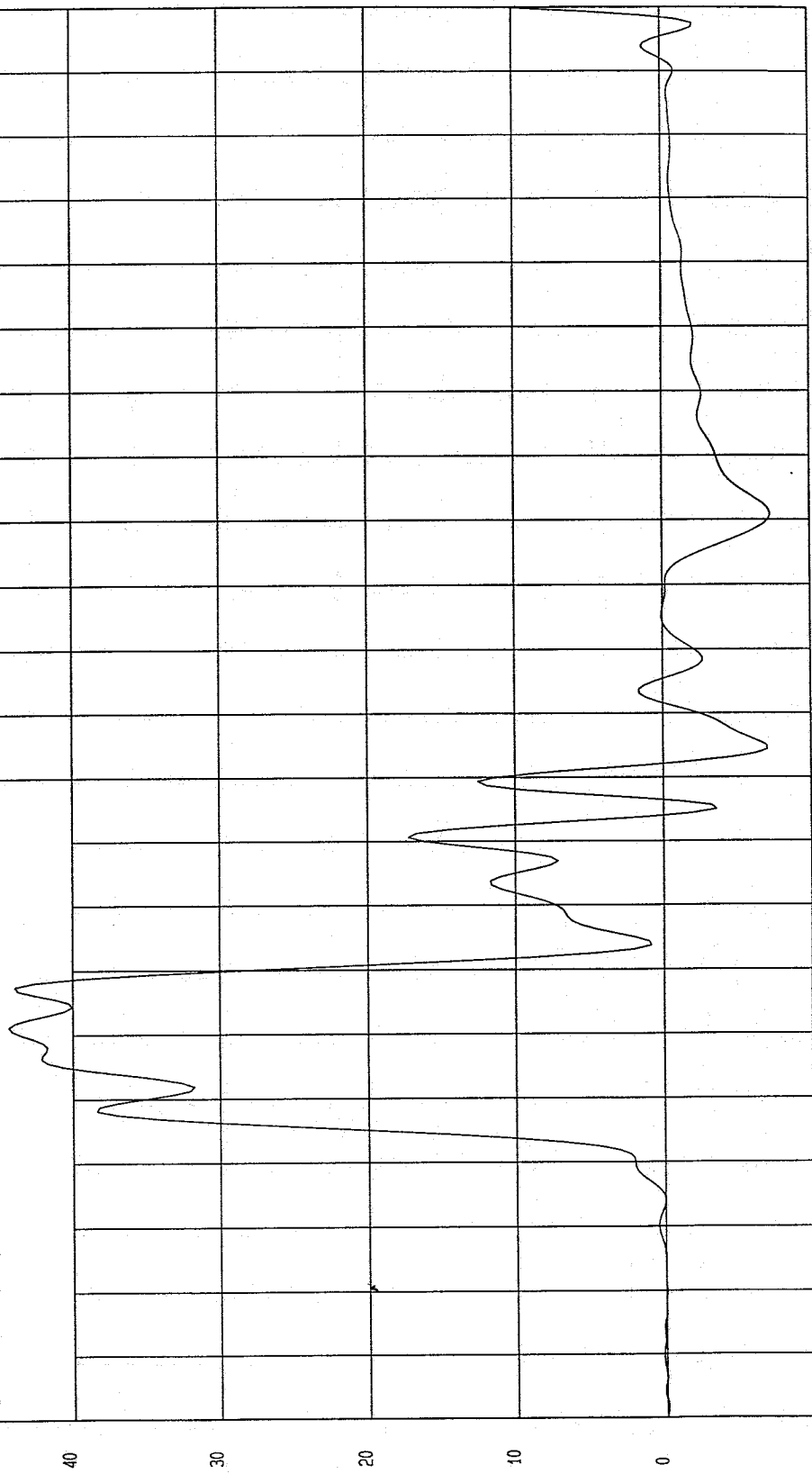
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 44.31 G'S at 41 msec

Minimum = -7.36 G'S at 121 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

1 _____ B97113F1.R25 Filterclass (FIR Filtered)



MGA Research
10-06-1997 14: 49

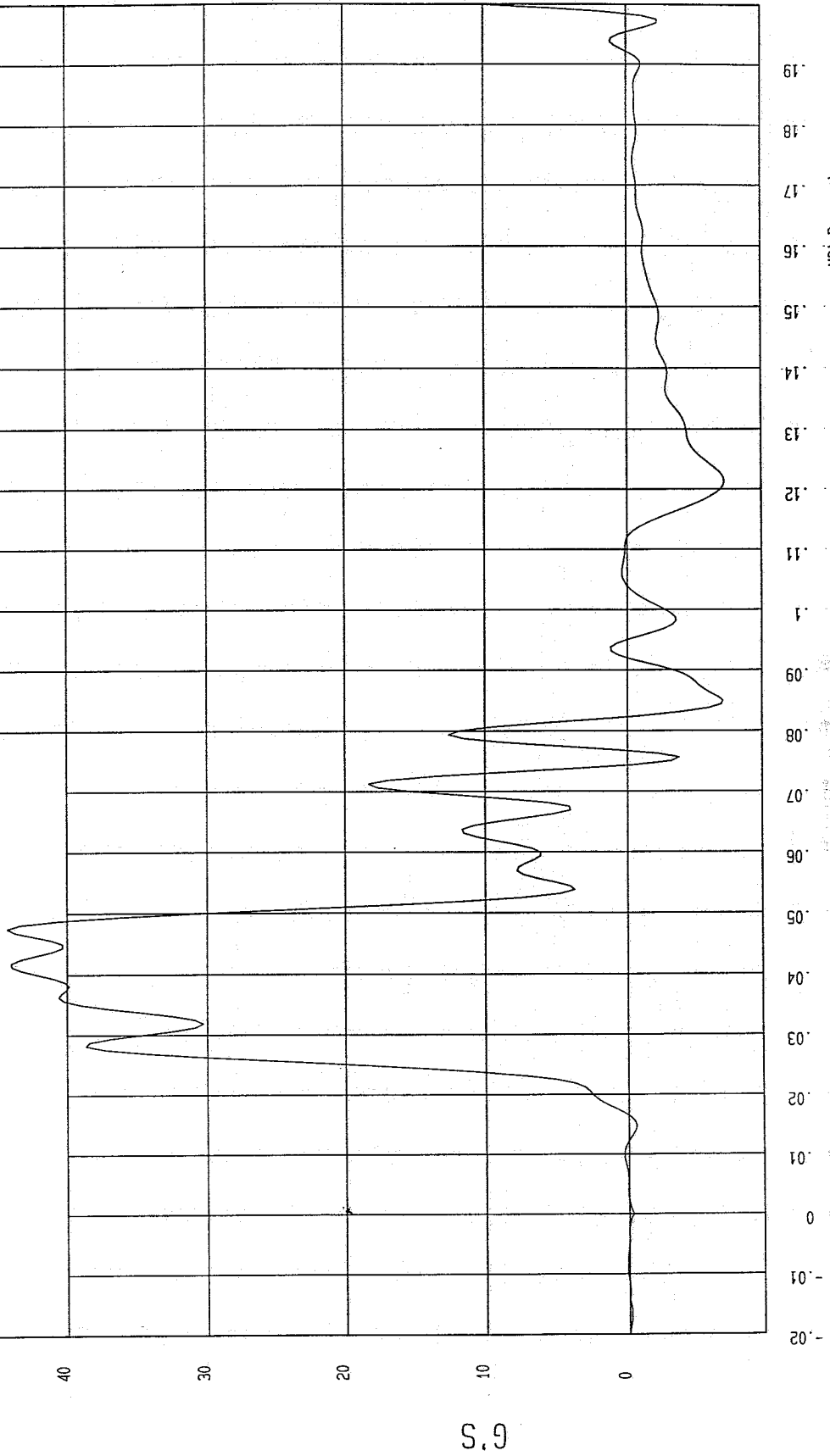
TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -6.90 G'S at 121 msec Maximum = 44.19 G'S at 48 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 89713FT.R66 FilterClass (FIR Filtered)



MCA Research
10-06-1997 14:50

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

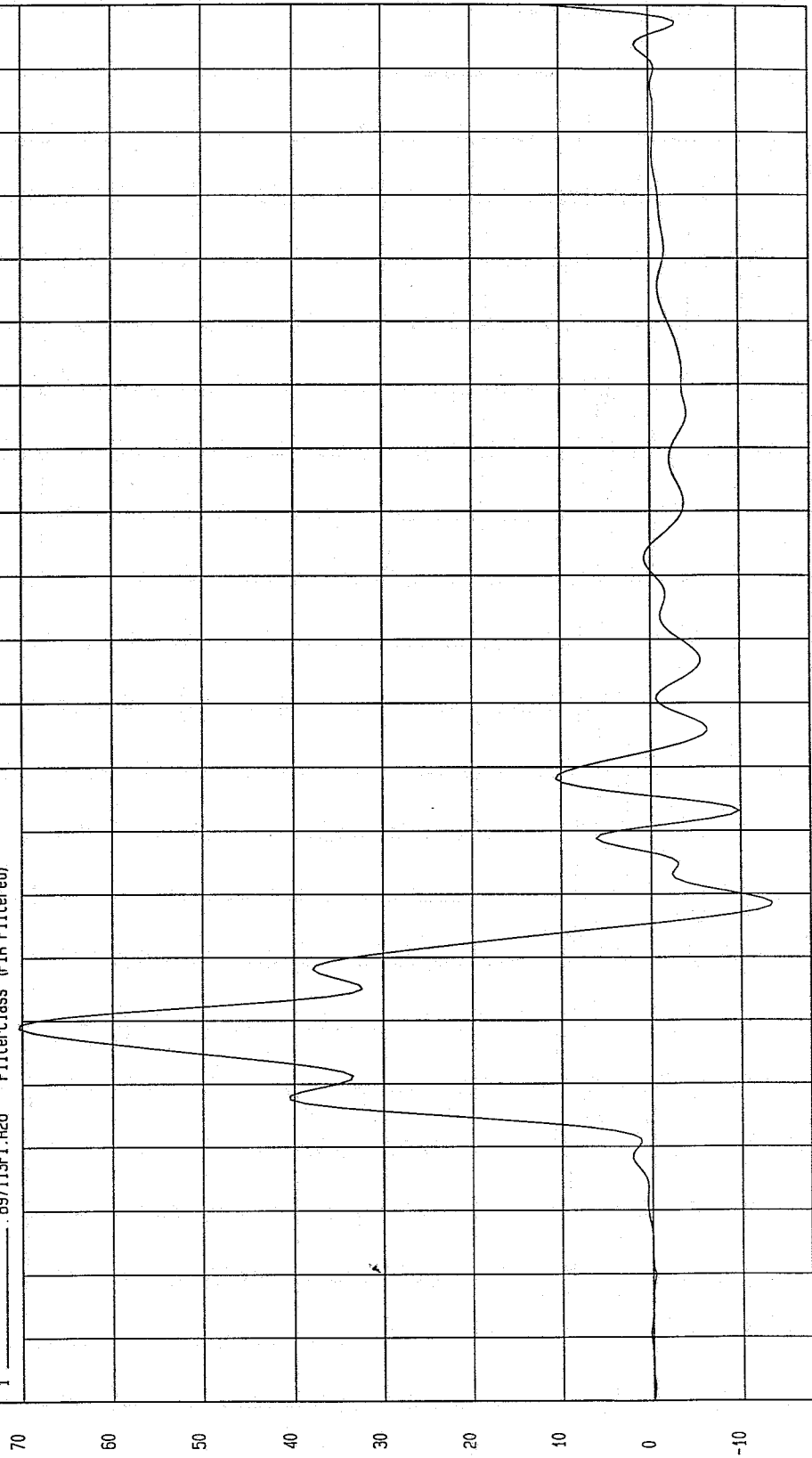
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 70.34 G'S at 39 msec

Minimum = -13.26 G'S at 59 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 897113FI.R26 Filterclass (FIR Filtered)



MCA Research
10-06-1997 14:50

TIME (SECONDS)

G.S

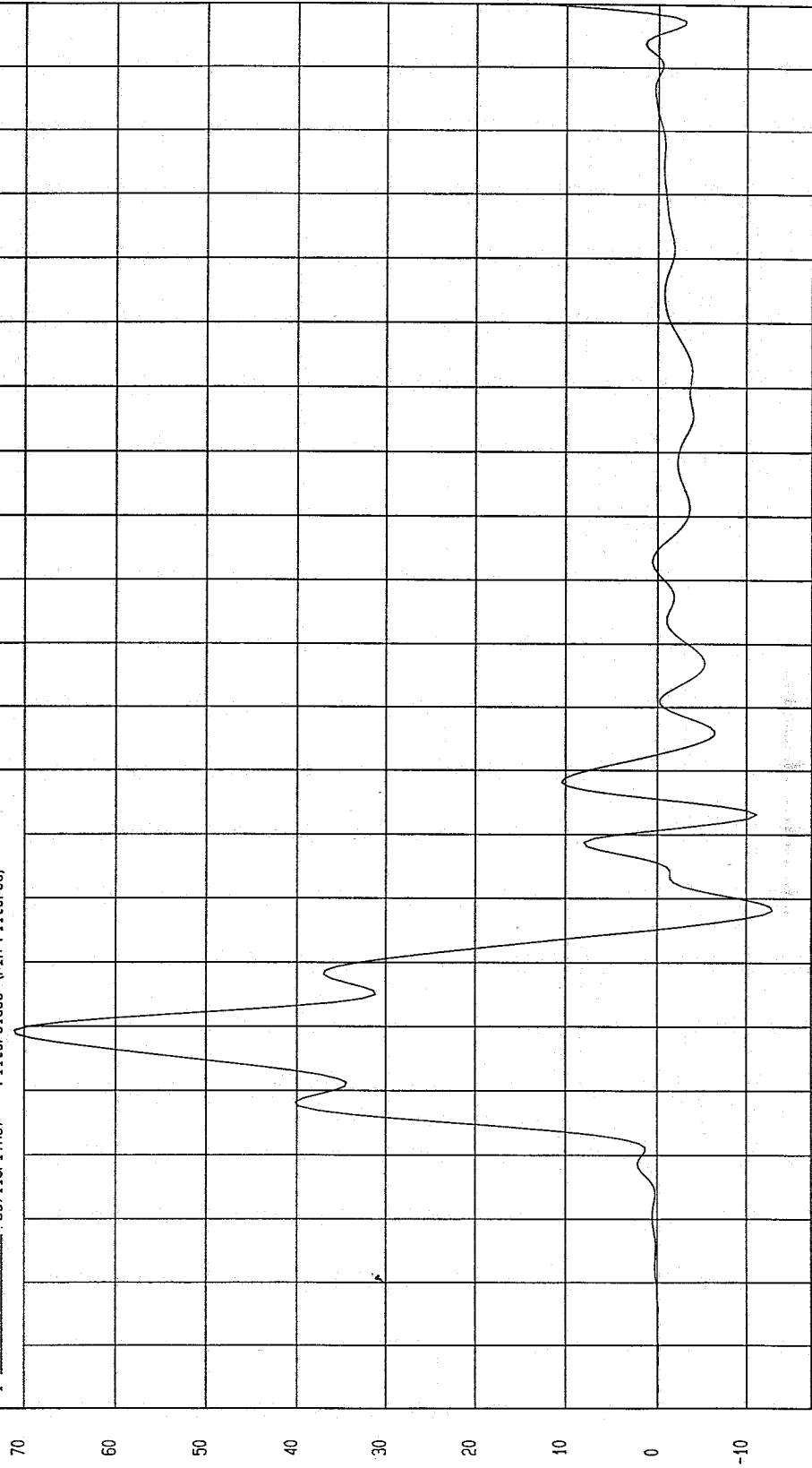
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -12.71 G'S at 58 msec
Maximum = 71.08 G'S at 39 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 .897113FI.R67 Filterclass (FIR Filtered)



MGA Research
10-06-1997 14:50

TIME (SECONDS)

G.S

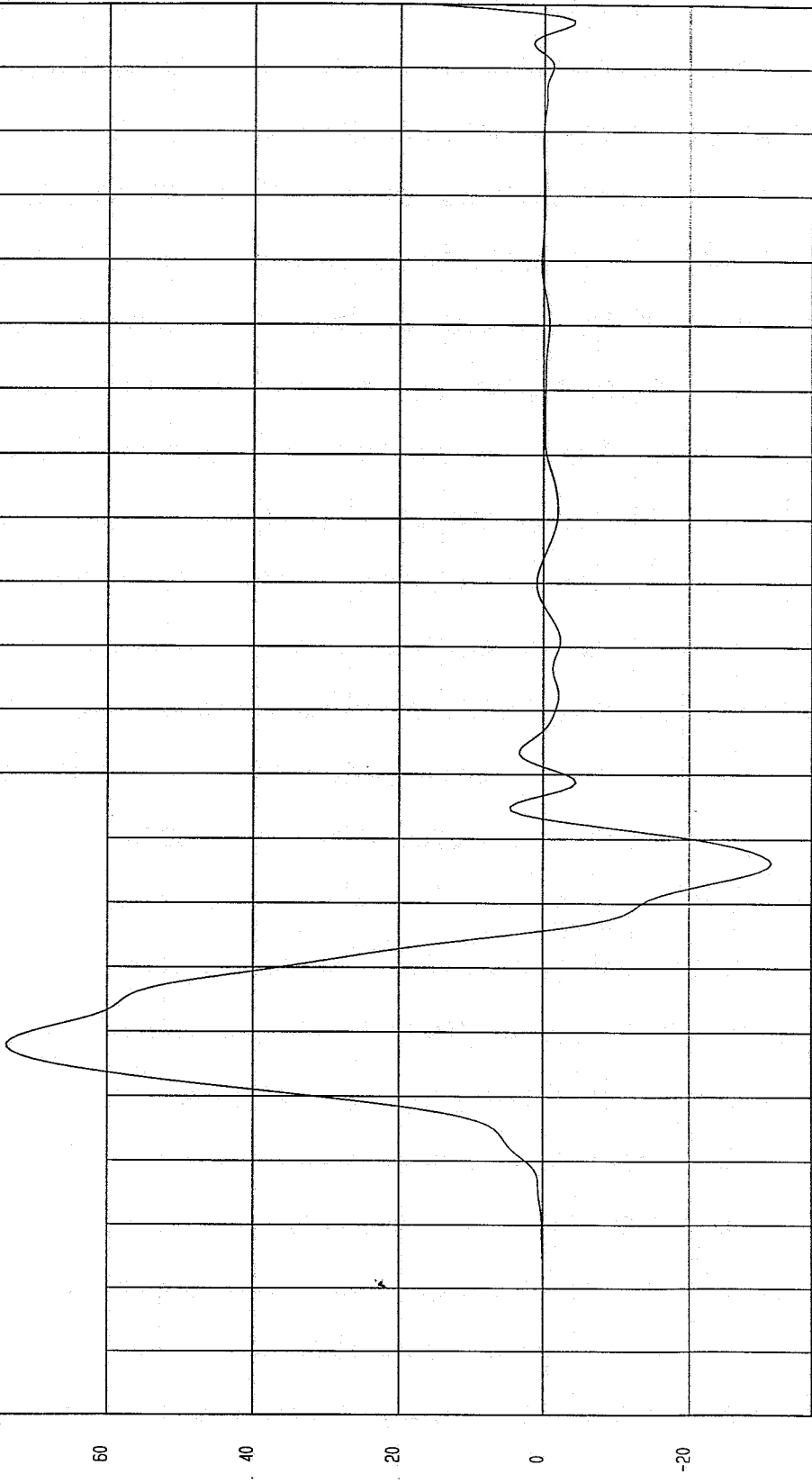
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -31.27 G'S at 66 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 897113FI.R27 FilterClass (FIR Filtered)



MCA Research
10-06-1997 14:50

TEST DATE: 09-29-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.2 MPH 61.5 KPH

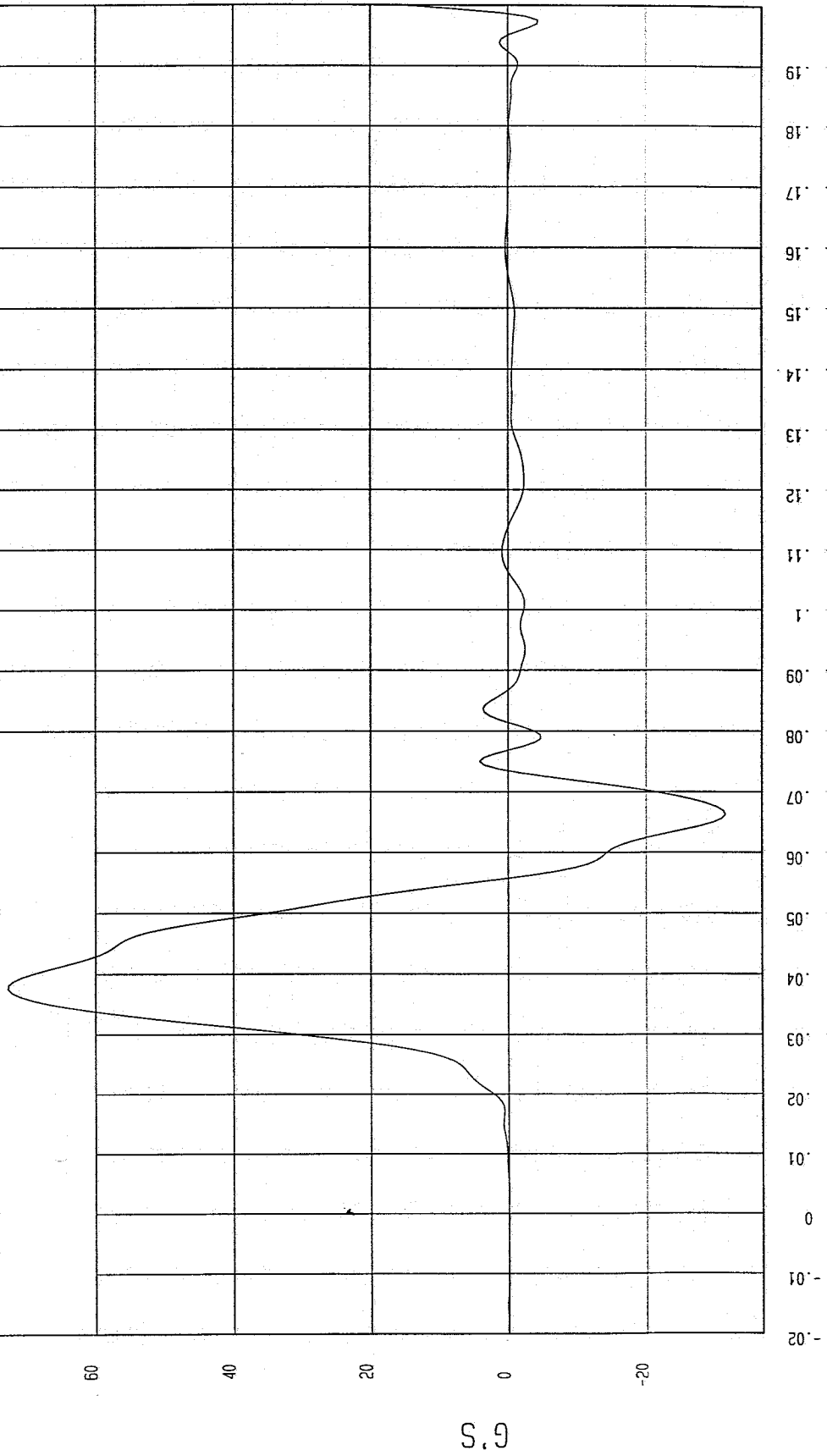
COMPONENT: 1998 FORD ESCORT 2DR

Maximum = 72.67 G's at 38 msec

Minimum = -31.54 G's at 66 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 ——— 897113FI.R68 Filterclass (FIR Filtered)



NGA Research
10-06-1997 14:51

TIME (SECONDS)

G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

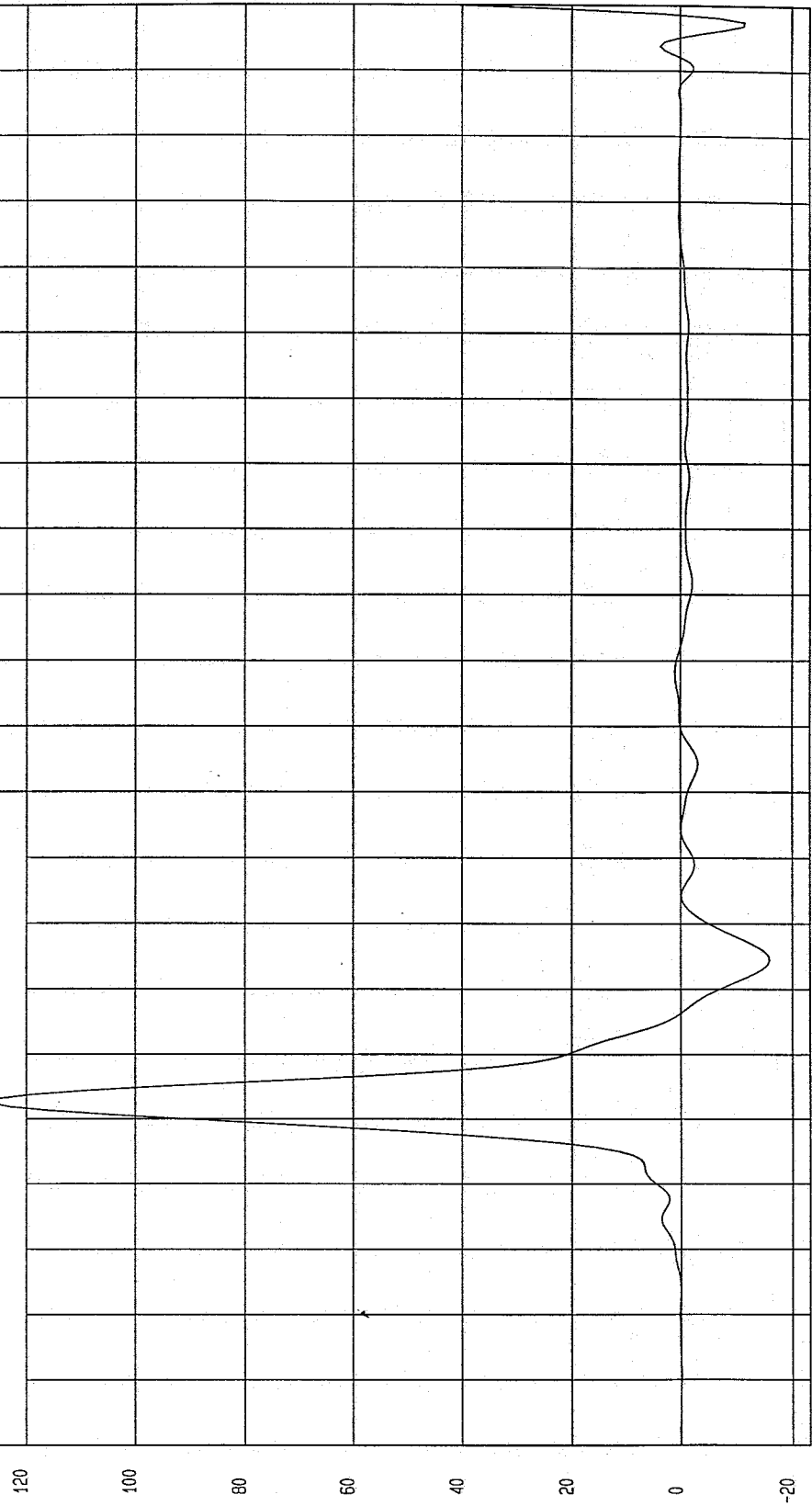
COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -16.00 G'S at 54 msec

Maximum = 126.48 G'S at 32 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 897113FI.R28 Filterclass (FIR Filtered)



M&A Research
10-06-1997 14:51

TIME (SECONDS)

G.S

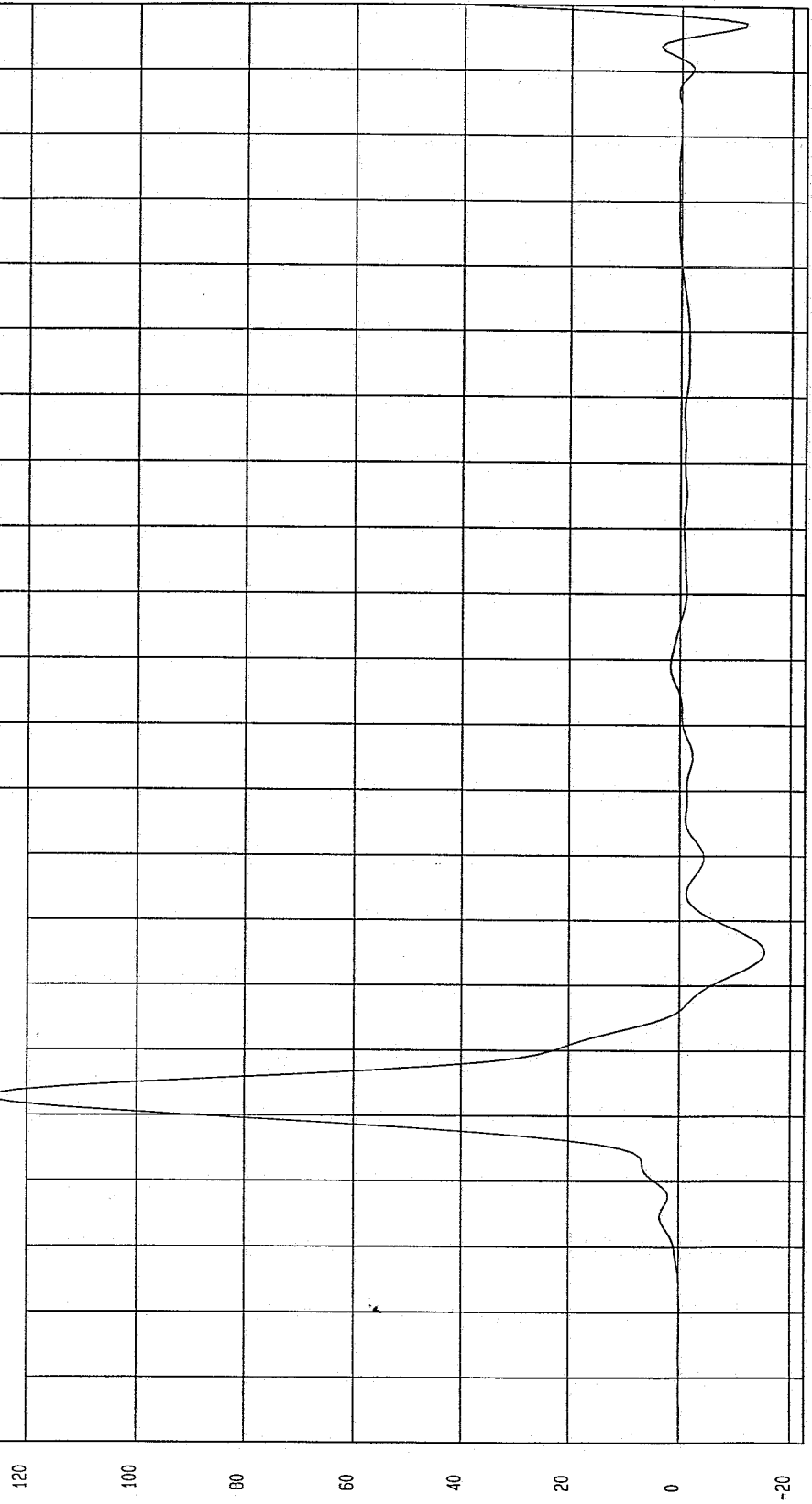
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-29-1997

COMPONENT: 1998 FORD ESCORT 2DR Speed: 38.2 MPH 61.5 KPH

Minimum = -15.43 G'S at 55 msec Maximum = 126.92 G'S at 32 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

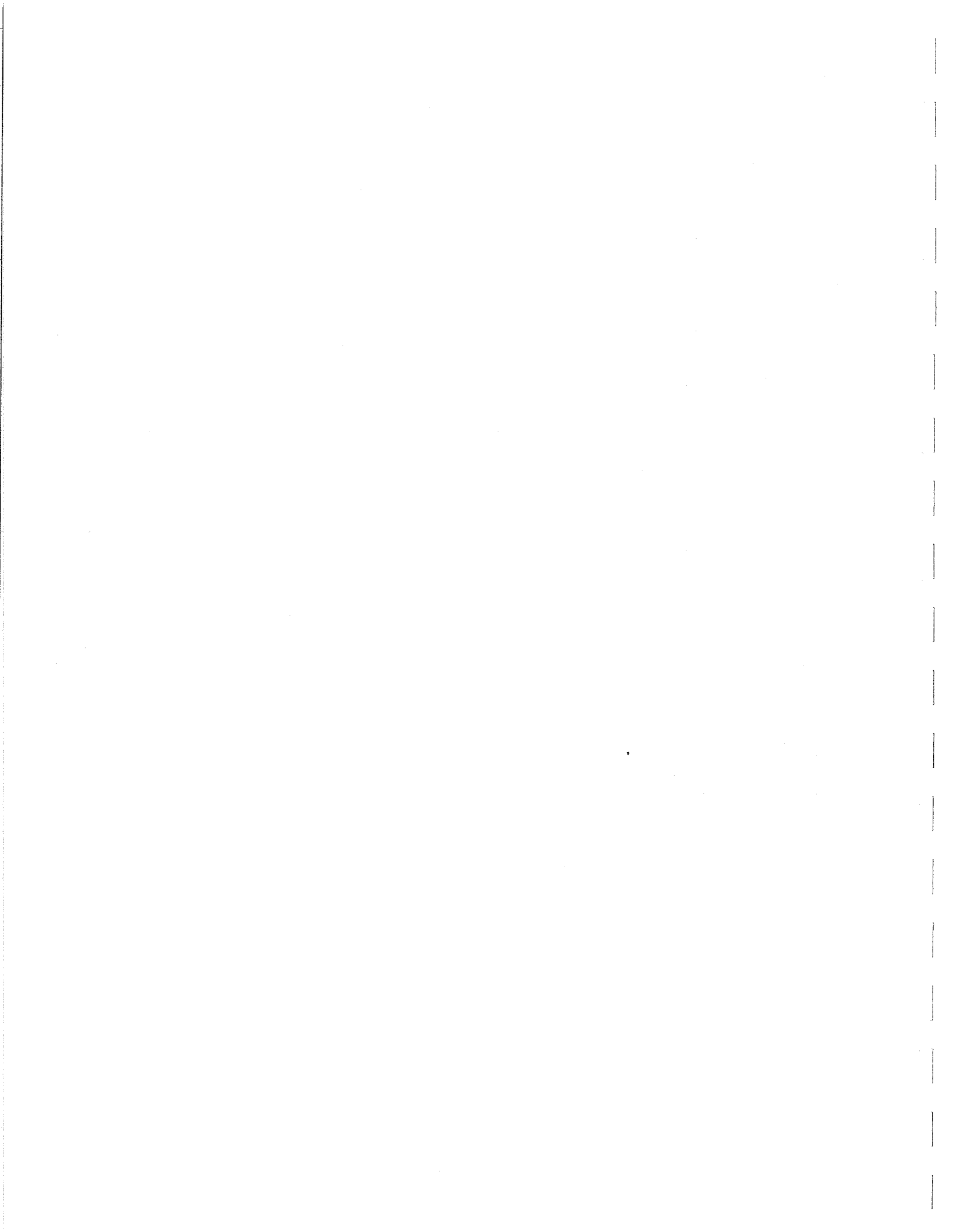
1 ----- 89713FT.R69 FilterClass (FIR Filtered)



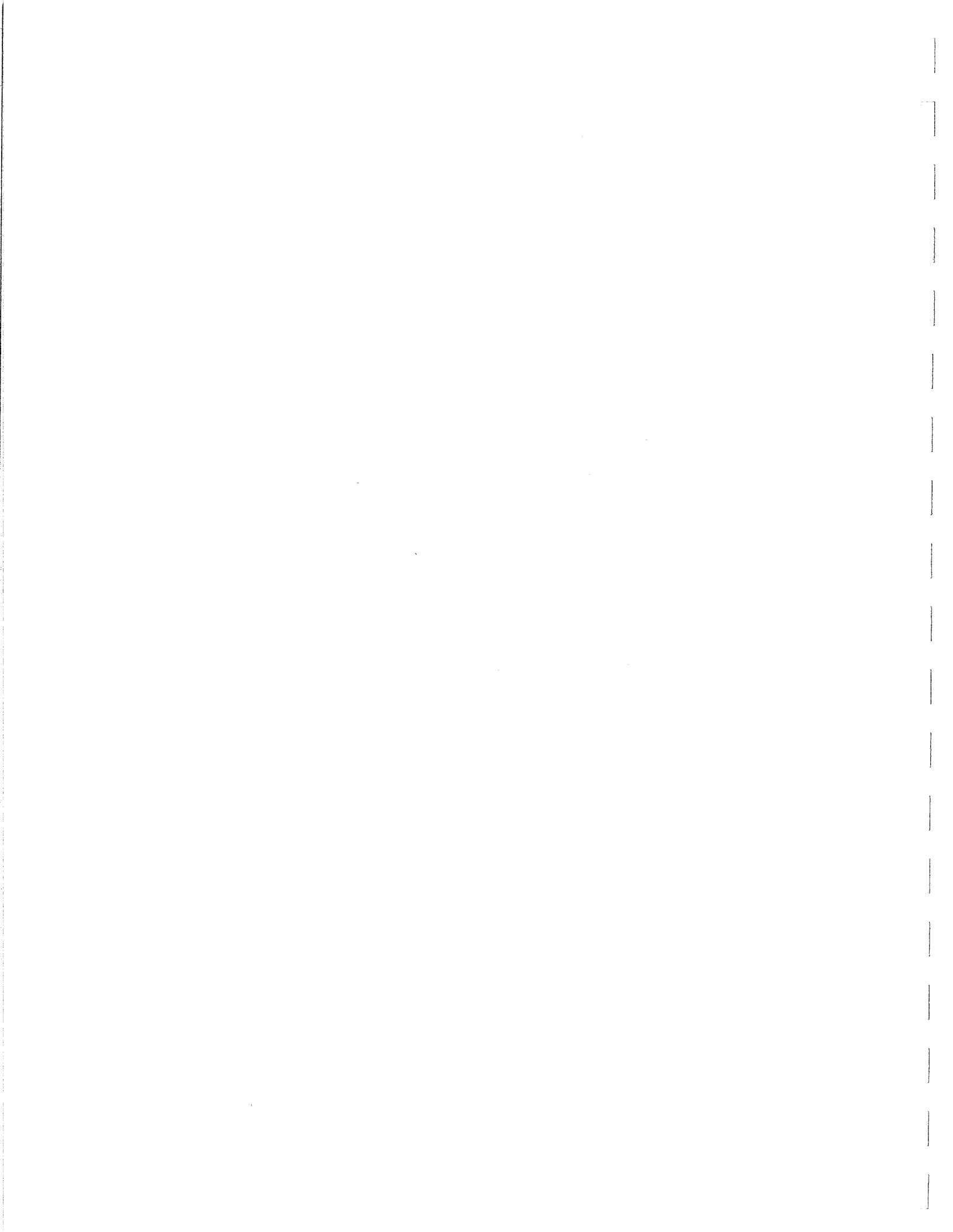
MCA Research
10-06-1997 14:51

TIME (SECONDS)

G.S



APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION



REPORT NO. MGA-97-DC03

DUMMY PERFORMANCE CALIBRATIONS

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

1998 FORD ESCORT 2 DOOR
NHTSA NO. MW0211

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: September 29, 1997

Report Date: October 7, 1997

FINAL REPORT

Prepared For:

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
ROOM 5313, NPS-10
400 SEVENTH STREET, S.W.
Washington, D.C. 20590

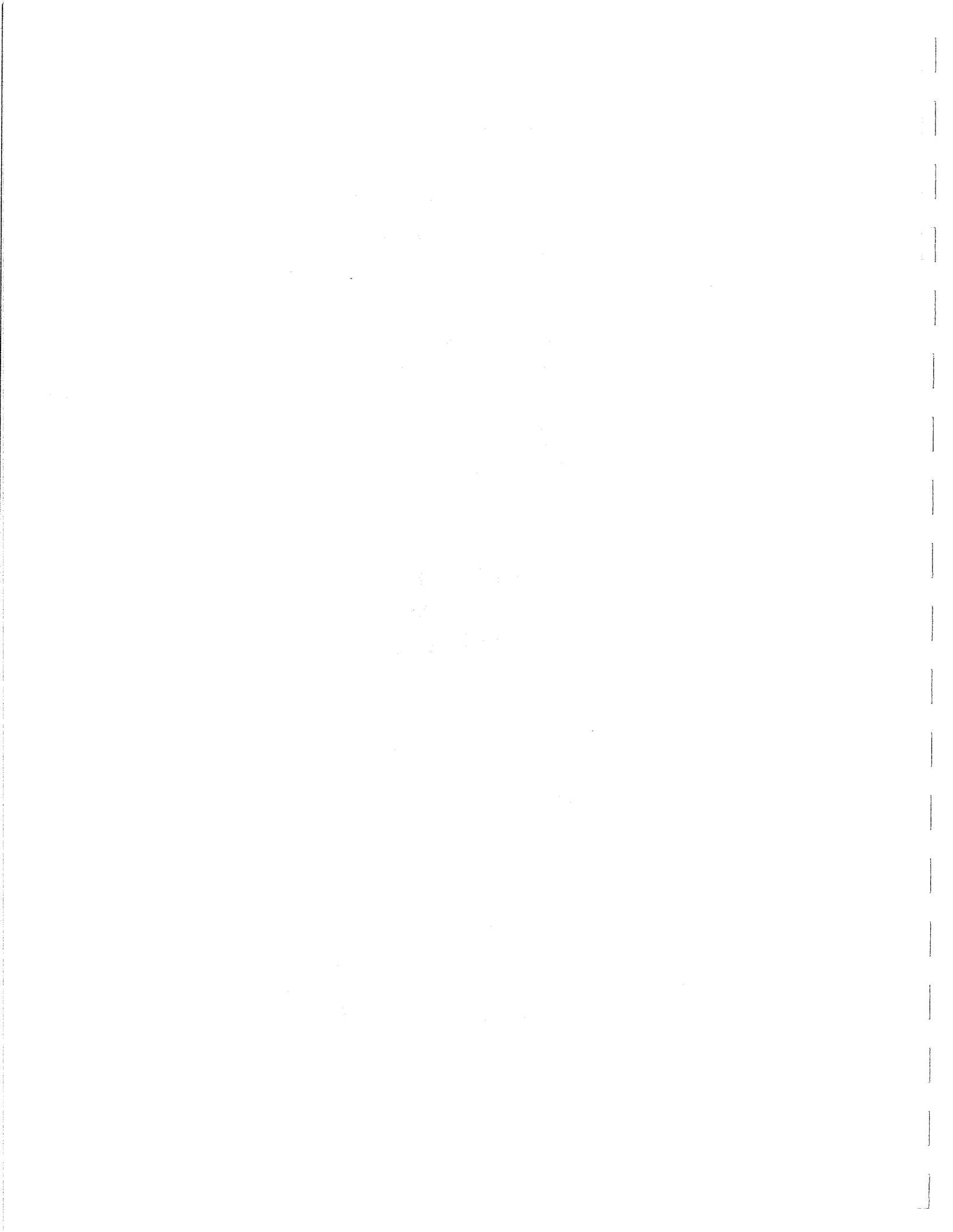
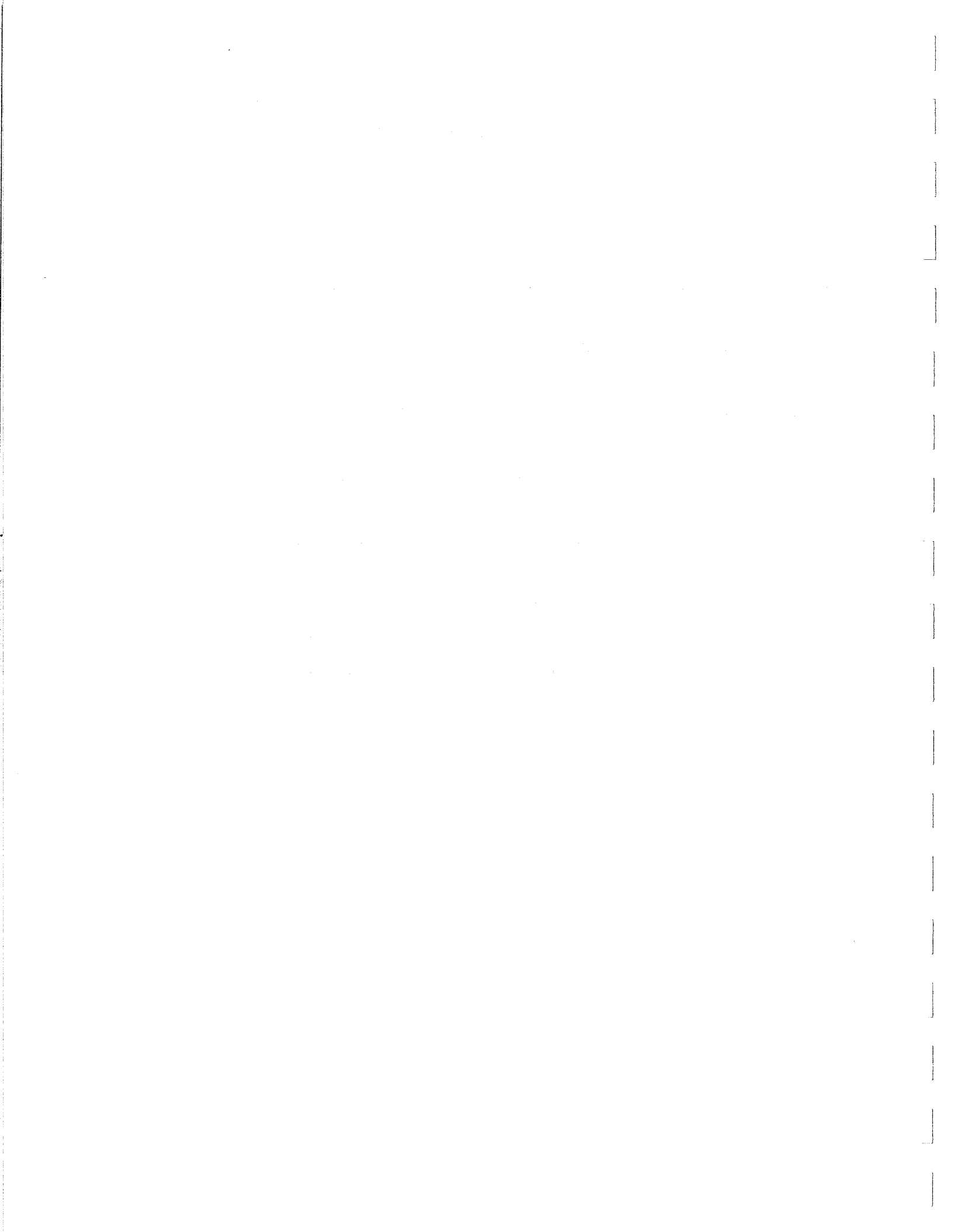


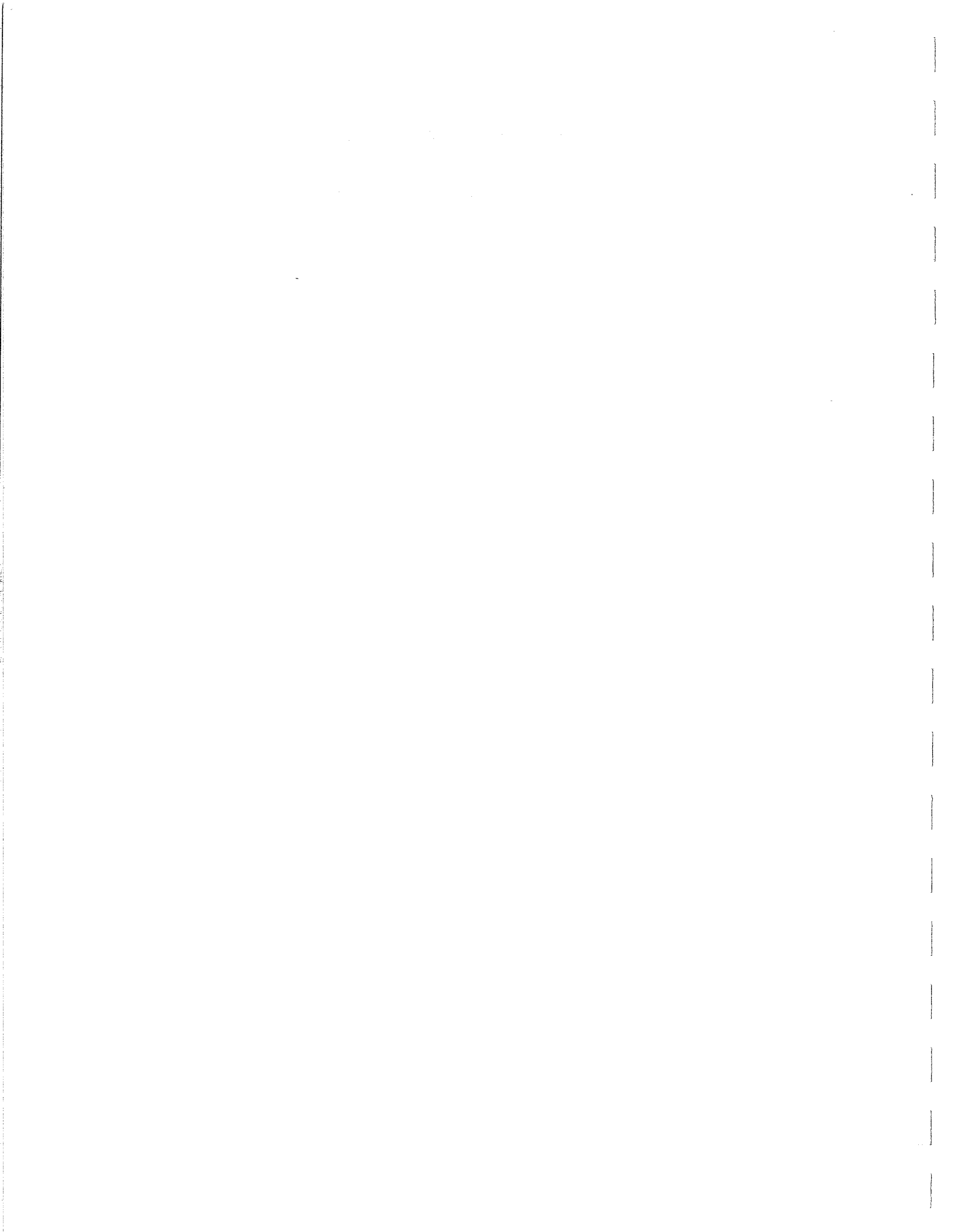
TABLE OF CONTENTS

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DUMMY S/N: 272	PRE-TEST CERTIFICATION DATA	2-1
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DUMMY S/N: 272	POST-TEST CERTIFICATION DATA	4-1
DUMMY S/N: 271	POST-TEST INSPECTION CHECKLIST	5-1
DUMMY S/N: 272	POST-TEST INSPECTION CHECKLIST	6-1
	VEHICLE AND DUMMY TEMPERATURE	7-1



PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 271



Calibration Test Results Summary

Dummy Serial Number: 271

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.: 271

DATE OF VERIFICATION: September 26, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.6
RH - Rib Height	19.75" - 20.50"	20.40
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.4
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

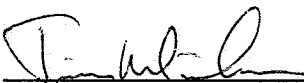
DATE: September 26, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971682

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	42
LOWER RIB	37 - 46 g's	41
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - THORAX IMPACT

TEST DATE: 09-26-1997 - 14:55

COMPONENT: DUMMY # 271

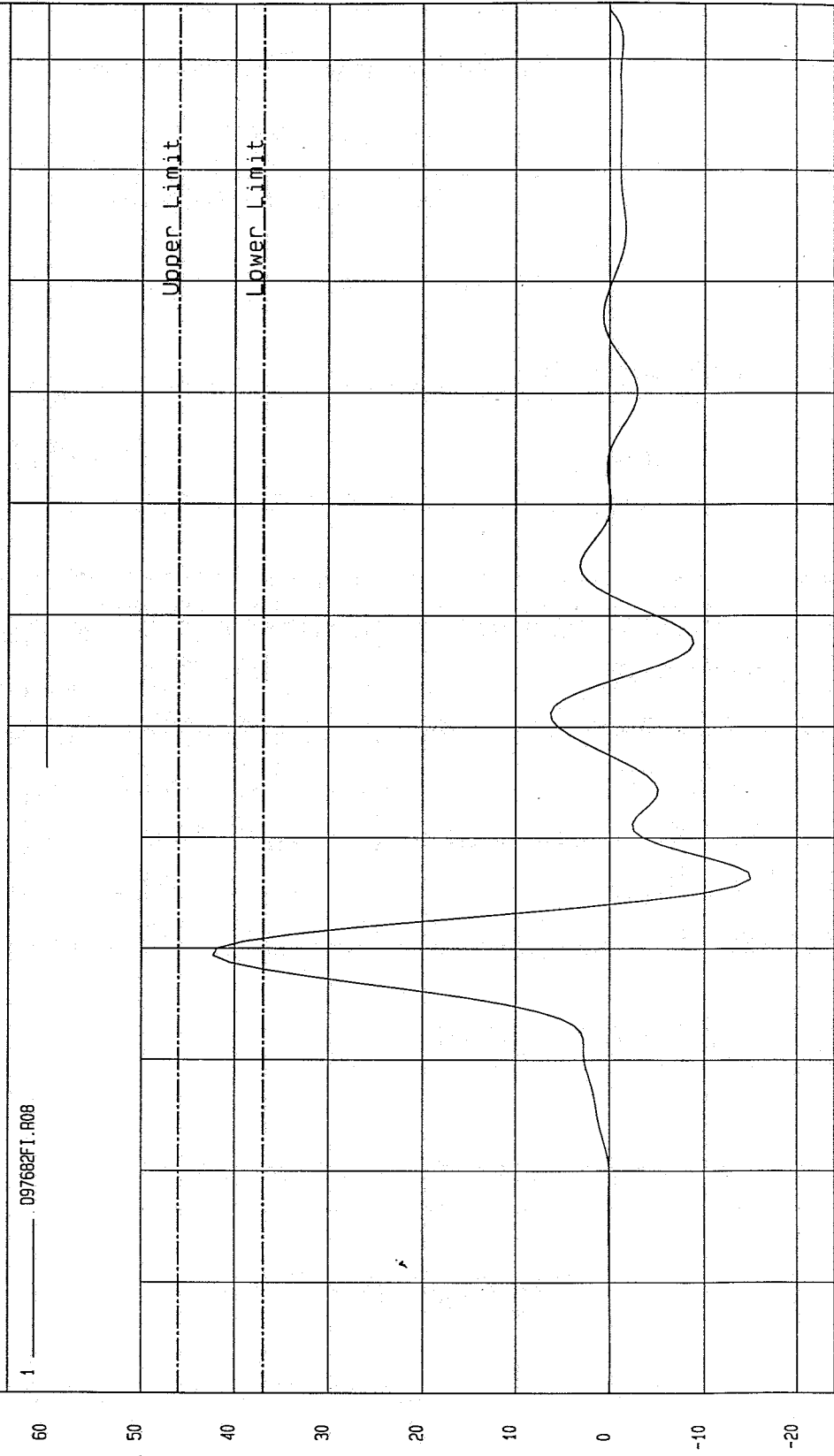
Velocity: 14.084 FT/SEC 4.29 M/SEC

Minimum = -15.01 G'S at 46.2 msec

Maximum = 42.26 G'S at 39.3 msec

UPPER RIB ACCELERATION

1 _____ 097682F1.R08



TIME (SECONDS)

MGA Research
09-26-1997 14:59

G.S

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-26-1997 - 14:55

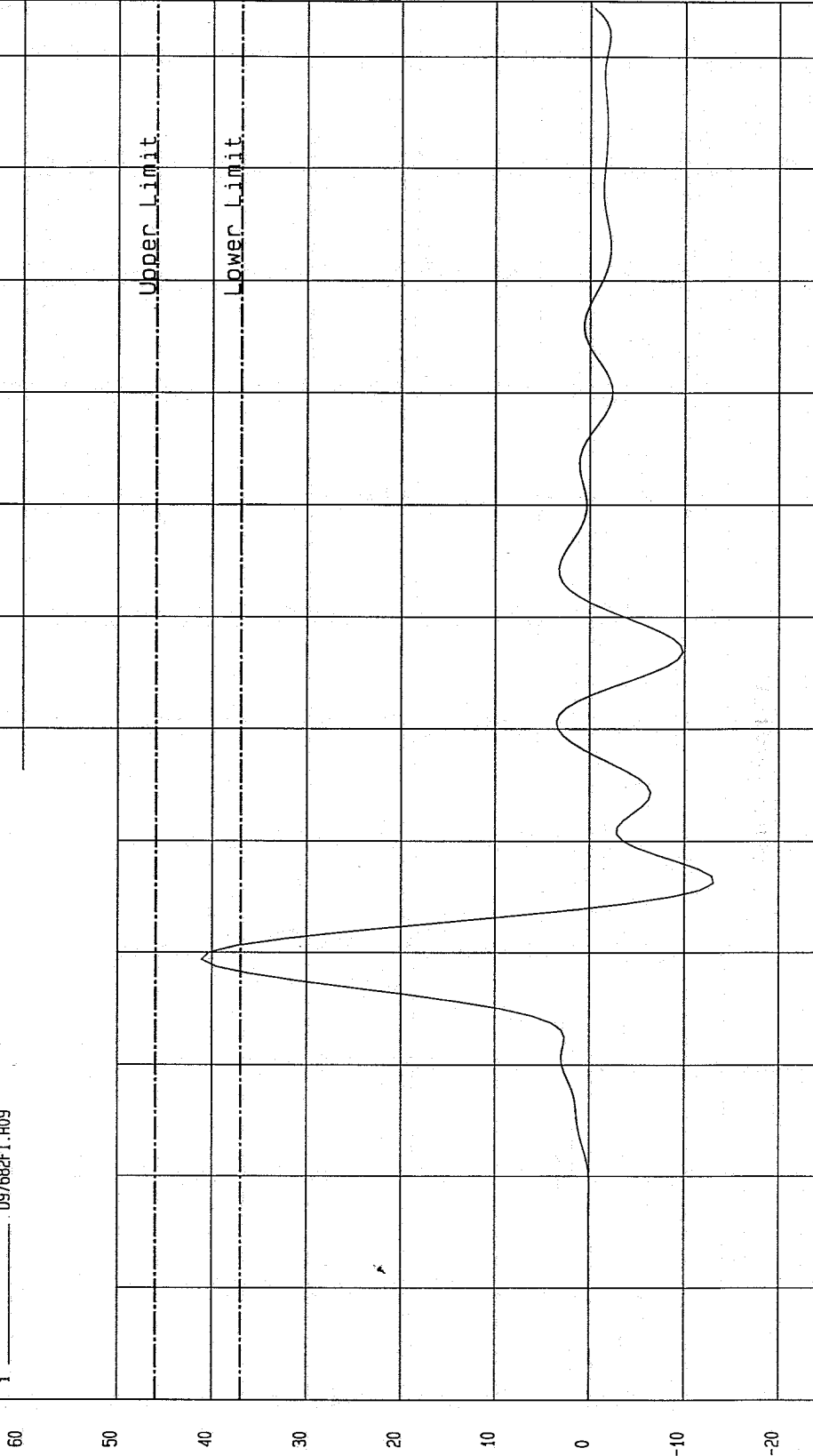
COMPONENT: DUMMY # 271 Velocity: 14.084 FT/SEC 4.29 M/SEC

Minimum = -13.07 G'S at 46.2 msec

Maximum = 41.10 G'S at 39.3 msec

LOWER RIB ACCELERATION

1 _____ 097682FI.R09



TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-26-1997 - 14:55

COMPONENT: DUMMY # 271

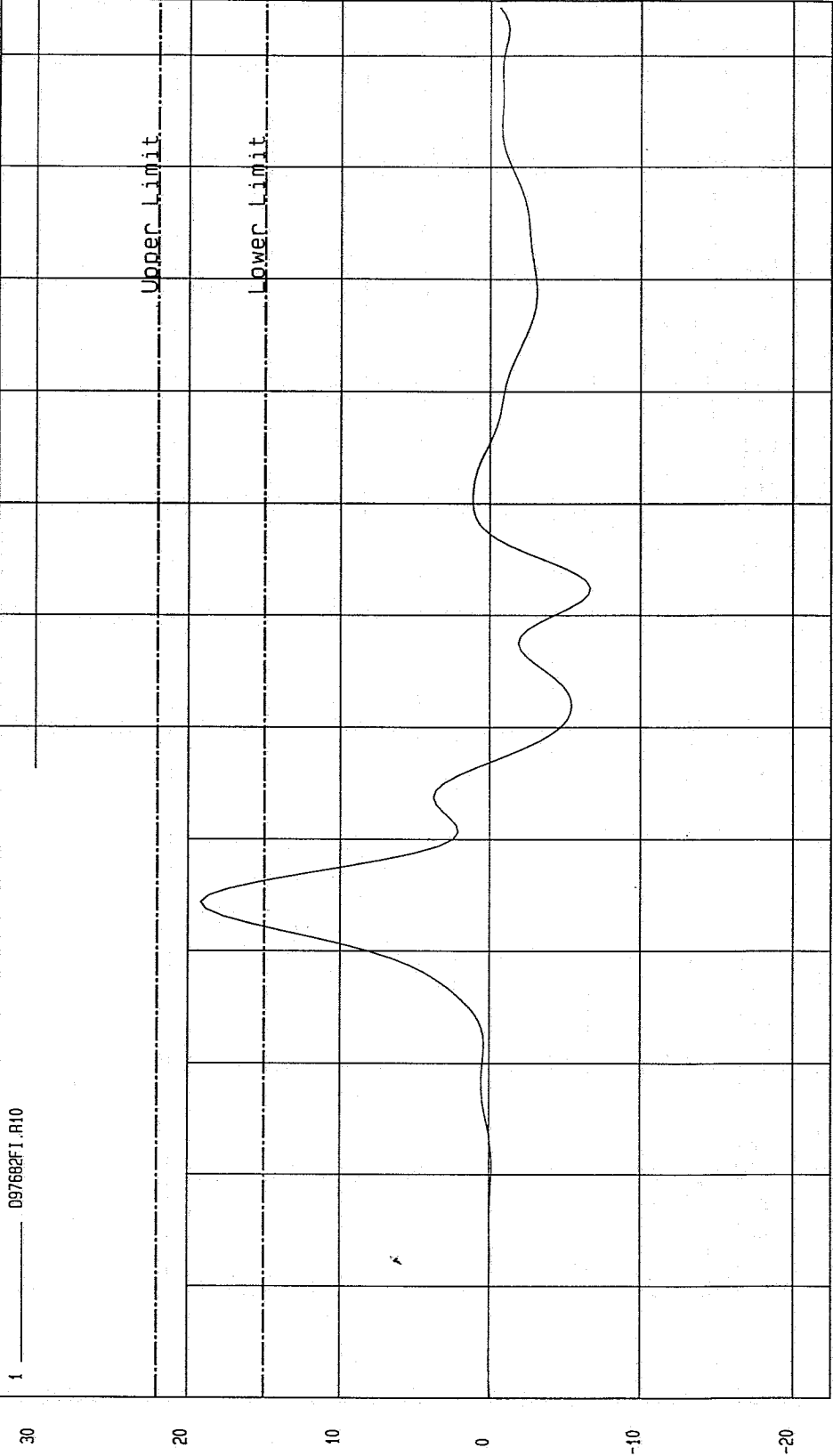
Velocity: 14.084 FT/SEC 4.29 M/SEC

Minimum = -6.64 G'S at 72.5 msec

Maximum = 19.16 G'S at 44.3 msec

LOWER SPINE ACCELERATION

1 097692FI.R10



NSA Research
09-26-1997 15:00

TIME (SECONDS)

G'S

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971683

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	57

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Walsh

APPROVED BY Dave Kobake

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 09-26-1997 - 14:59

COMPONENT: DUMMY # 271 Velocity: 14.132 FT/SEC 4.31 M/SEC

Minimum = -12.72 G'S at 51.2 msec

Maximum = 57.26 G'S at 45.6 msec

PELVIS ACCELERATION

1 ——— 097683FT.R11

80
60
40
20
0
-20

G.S

0 .01 .02 .03 .04 .05 .06 .07 .08 .09 .1 .11 .12

TIME (SECONDS)

NSA Research
09-26-1997 15:00

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971684

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
FORCE @ 0.5 in	23.3 - 36.5 lbs	33.0
FORCE @ 0.75 in	36.7 - 49.8 lbs	44.8
FORCE @ 1.0 in	50 - 63 lbs	59
FORCE @ 1.3 in	73 - 88 lbs	80

TEST MEETS SPECIFICATIONS

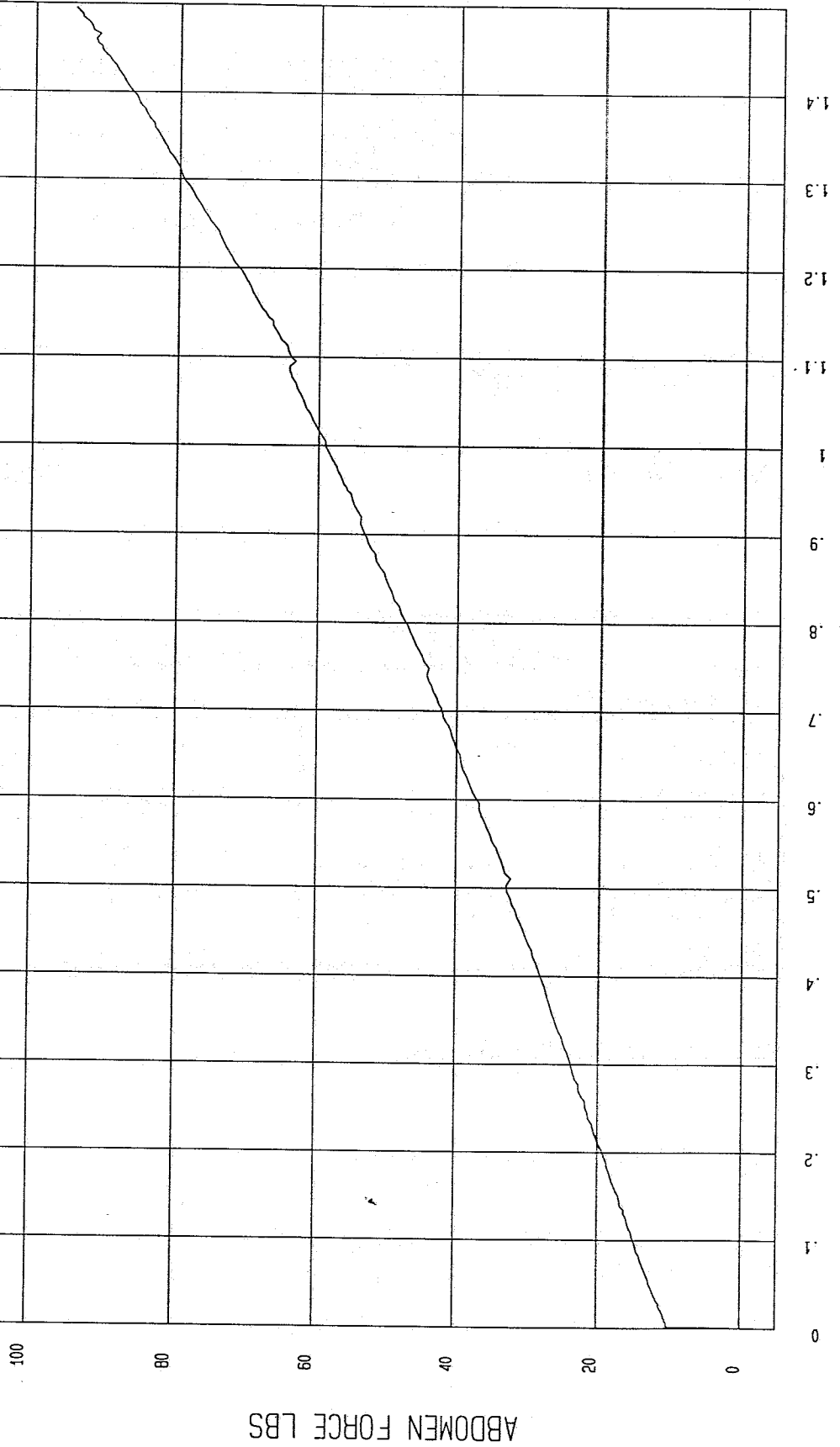
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 09-26-1997 - 14:20

COMPONENT: DUMMY # 271

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MGA Research
09-26-1997 14:25

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971685

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	27
FORCE @ 30°	34 - 46 lbs	40
FORCE @ 40°	46 - 58 lbs	53
RETURN ANGLE	12° maximum	5°

TEST MEETS SPECIFICATIONS

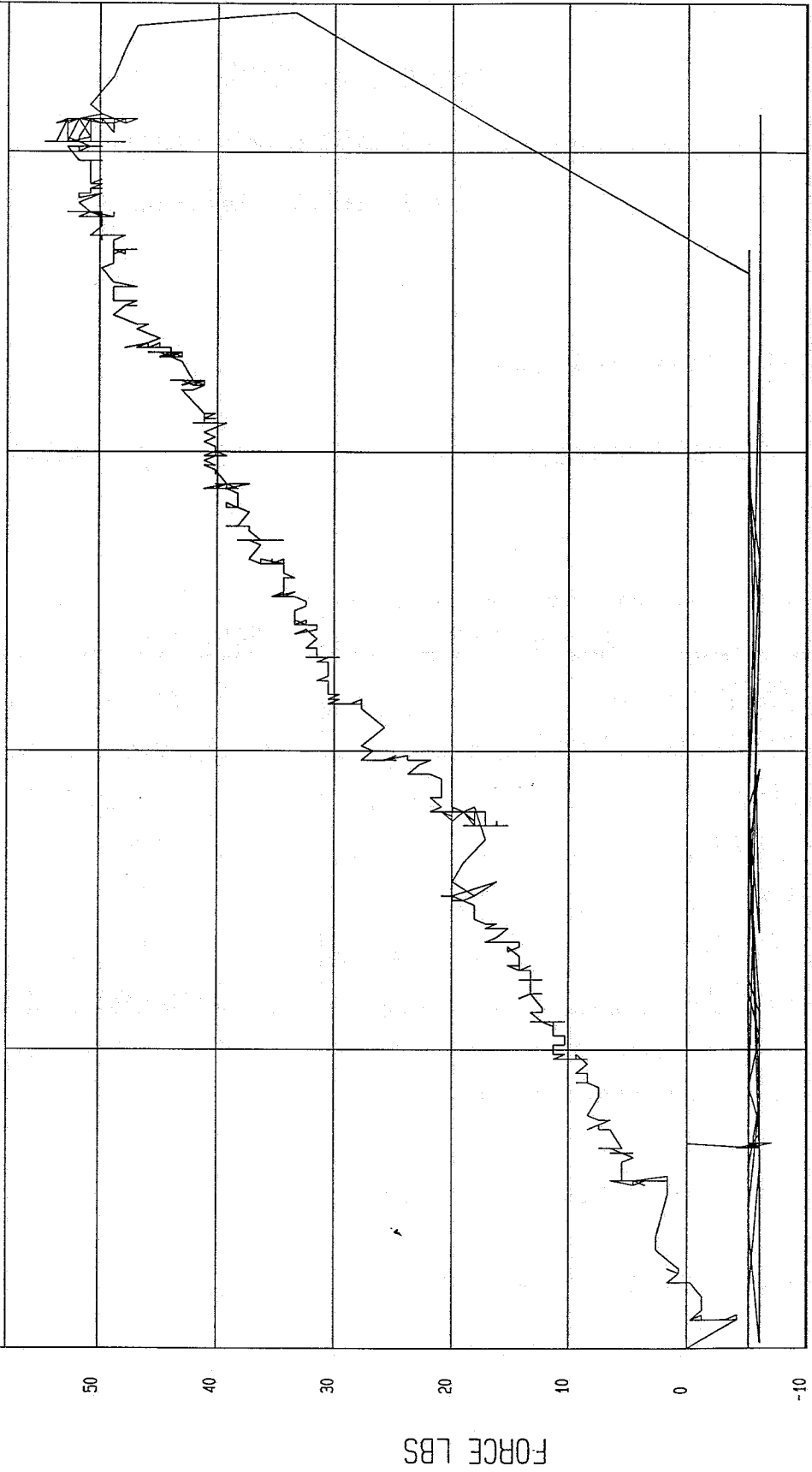
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 09-26-1997 - 13:50

COMPONENT: DUMMY # 271

FORCE as a function of TORSO ROTATION

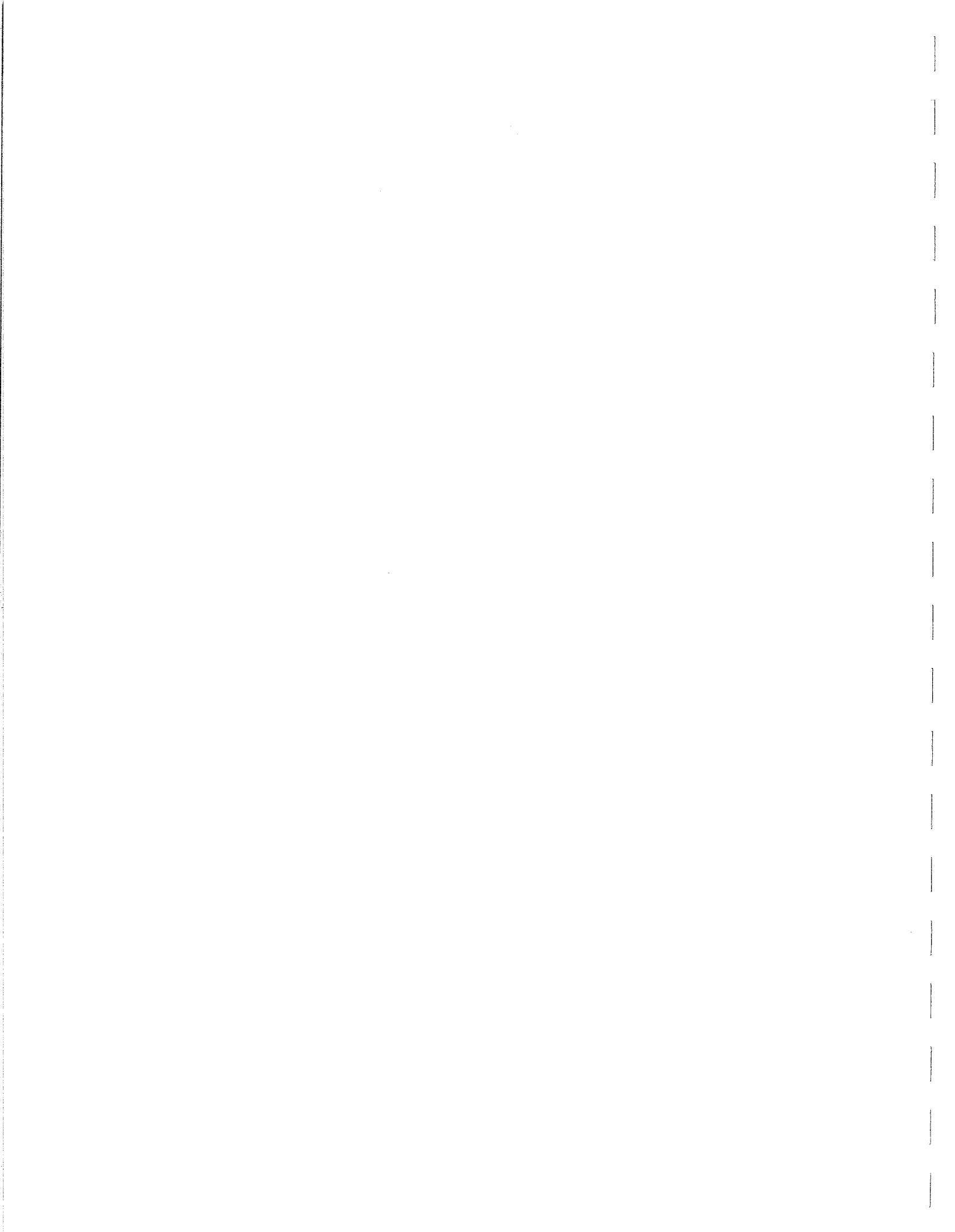


NGA Research
09-26-1997 14:02

TORSO ROTATION DEGREES

PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 272



Calibration Test Results Summary

Dummy Serial Number: 272

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.: 272

DATE OF VERIFICATION: September 26, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.20
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.7
SW - Knee Pivot to Floor	19.3" - 19.9"	19.6
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971692

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	37
LOWER RIB	37 - 46 g's	37
LOWER SPINE	15 - 22 g's	18

TEST MEETS SPECIFICATIONS

TECHNICIAN *Tim White*

APPROVED BY *Dave Koobake*

TEST: DUMMY CALIBRATION - THORAX IMPACT

TEST DATE: 09-26-1997 - 15:45:49

COMPONENT: DUMMY # 272

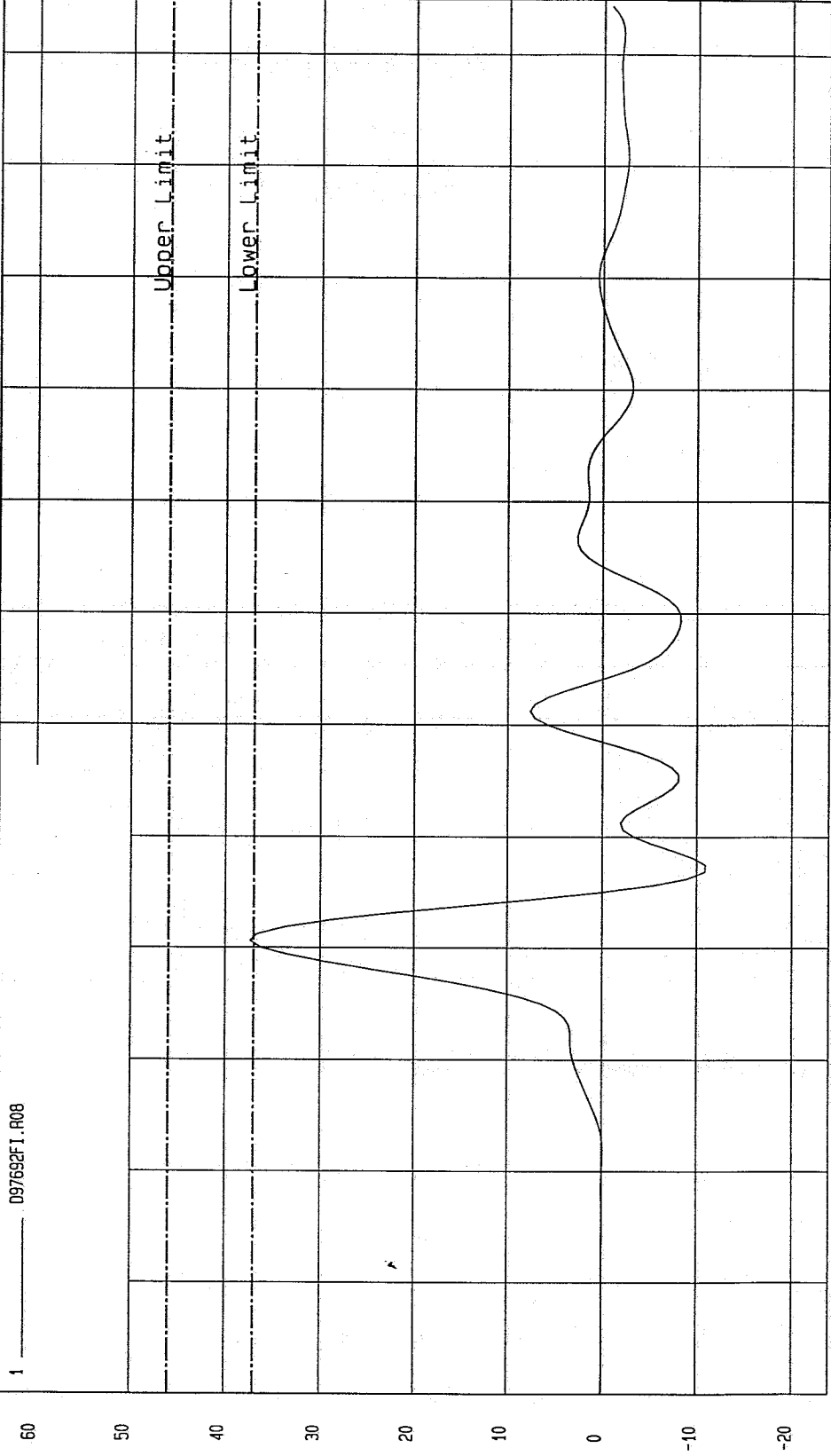
Velocity: 14.149 FT/SEC 4.31 M/SEC

Minimum = -10.92 G's at 47.5 msec

Maximum = 37.39 G's at 40.6 msec

UPPER RIB ACCELERATION

1 _____ 097692F1.R08



TIME (SECONDS)

MGA Research
09-26-1997 15:52

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-26-1997 - 15:47:01

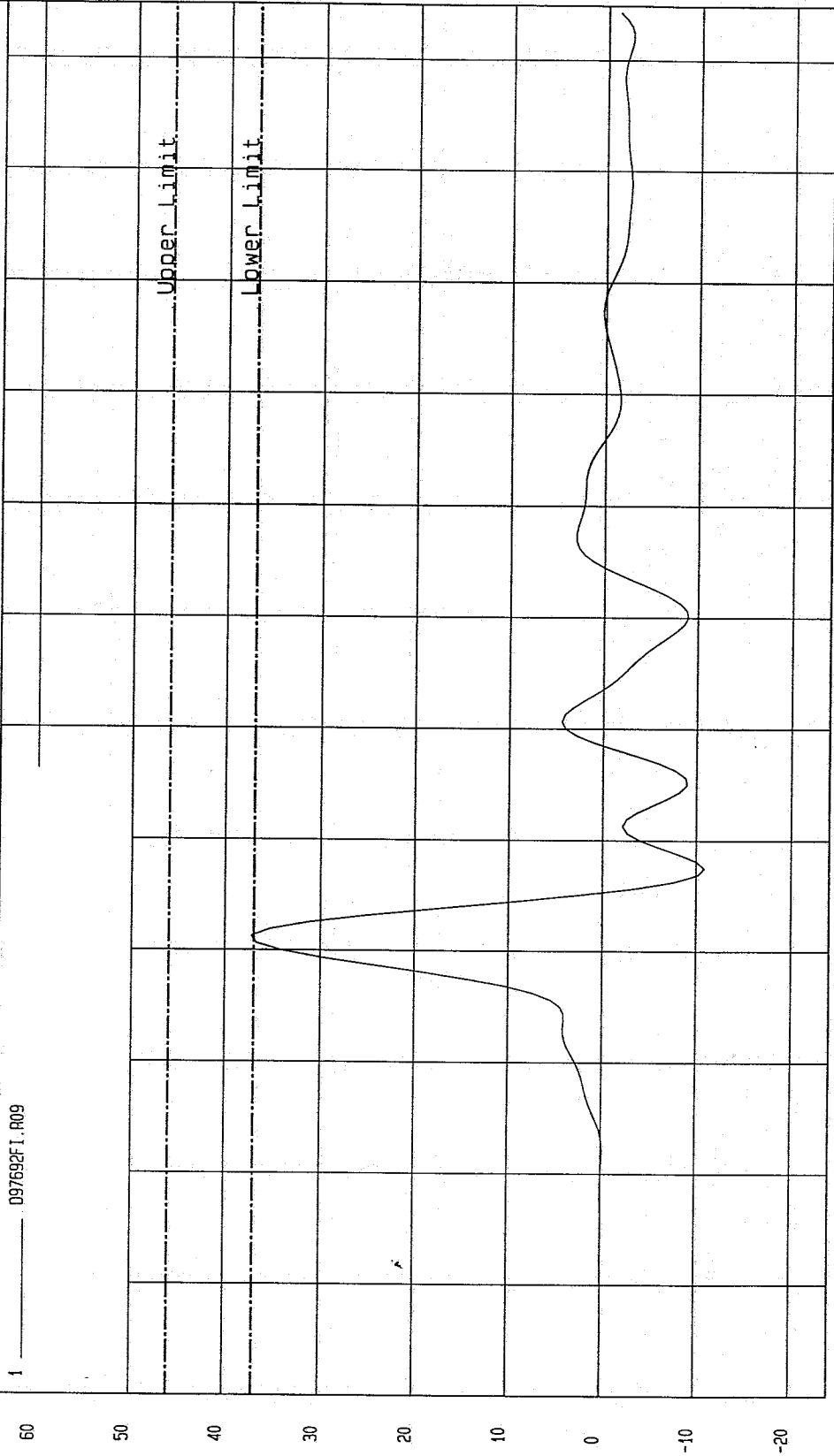
COMPONENT: DUMMY # 272 Velocity: 14.149 FT/SEC 4.31 M/SEC

Minimum = -10.83 G'S at 47.5 msec

Maximum = 37.24 G'S at 41.2 msec

LOWER RIB ACCELERATION

1 _____ 097692FI.R09



MCA Research
09-26-1997 15:53

TIME (SECONDS)

G.S.

TEST: DUMMY CALIBRATION - THORAX IMPACT

TEST DATE: 09-26-1997 - 15:47:25

COMPONENT: DUMMY # 272

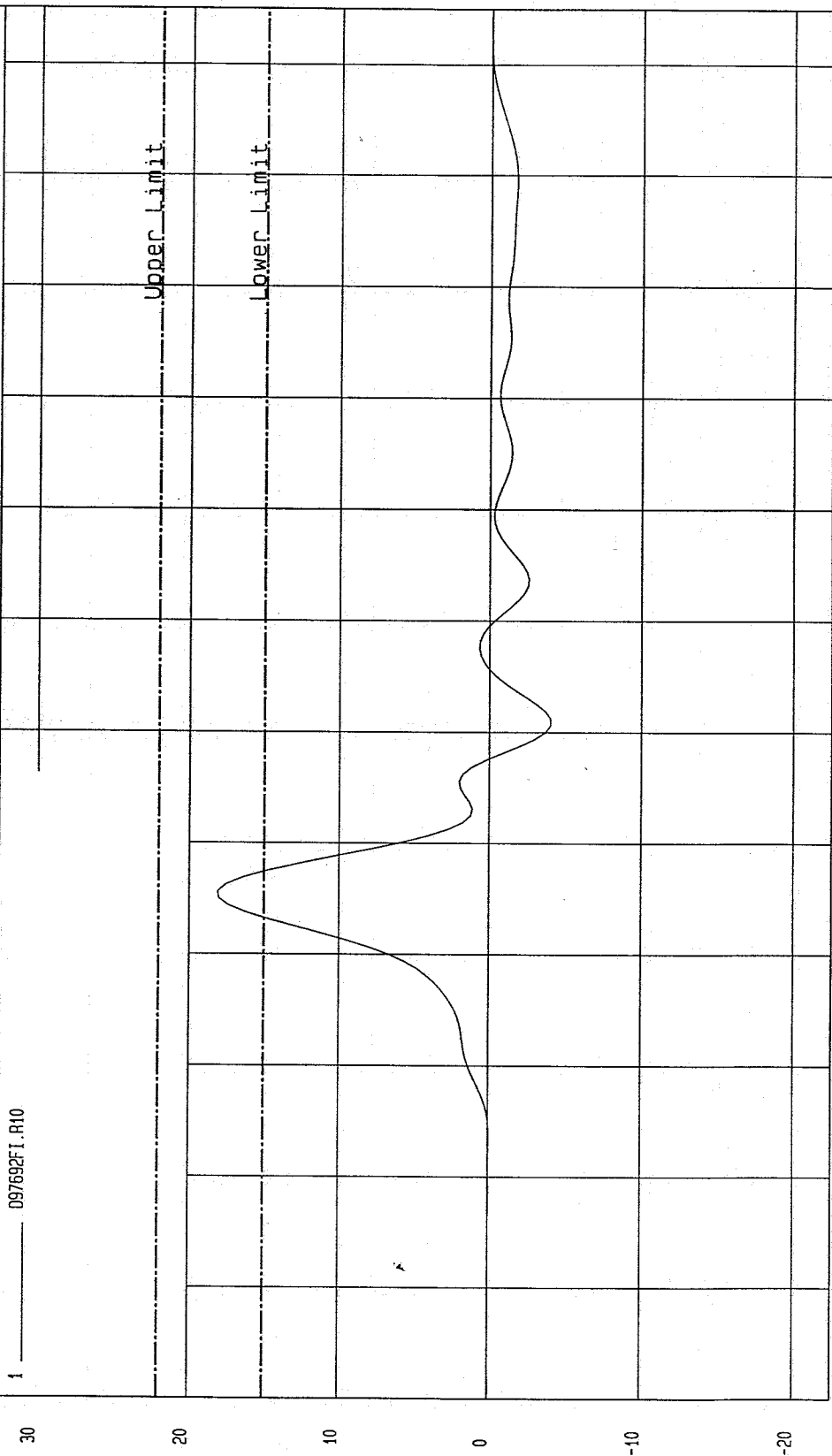
Velocity: 14.149 FT/SEC 4.31 M/SEC

Minimum = -4.05 G'S at 60.6 msec

Maximum = 18.07 G'S at 45.6 msec

LOWER SPINE ACCELERATION

1 _____ 097692FT.R10



TIME (SECONDS)

MSA Research
09-26-1997 15:53

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

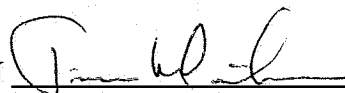
DATE: September 26, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971693

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	43

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - PELVIS IMPACT

TEST DATE: 09-26-1997 - 15:55:43

COMPONENT: DUMMY # 272

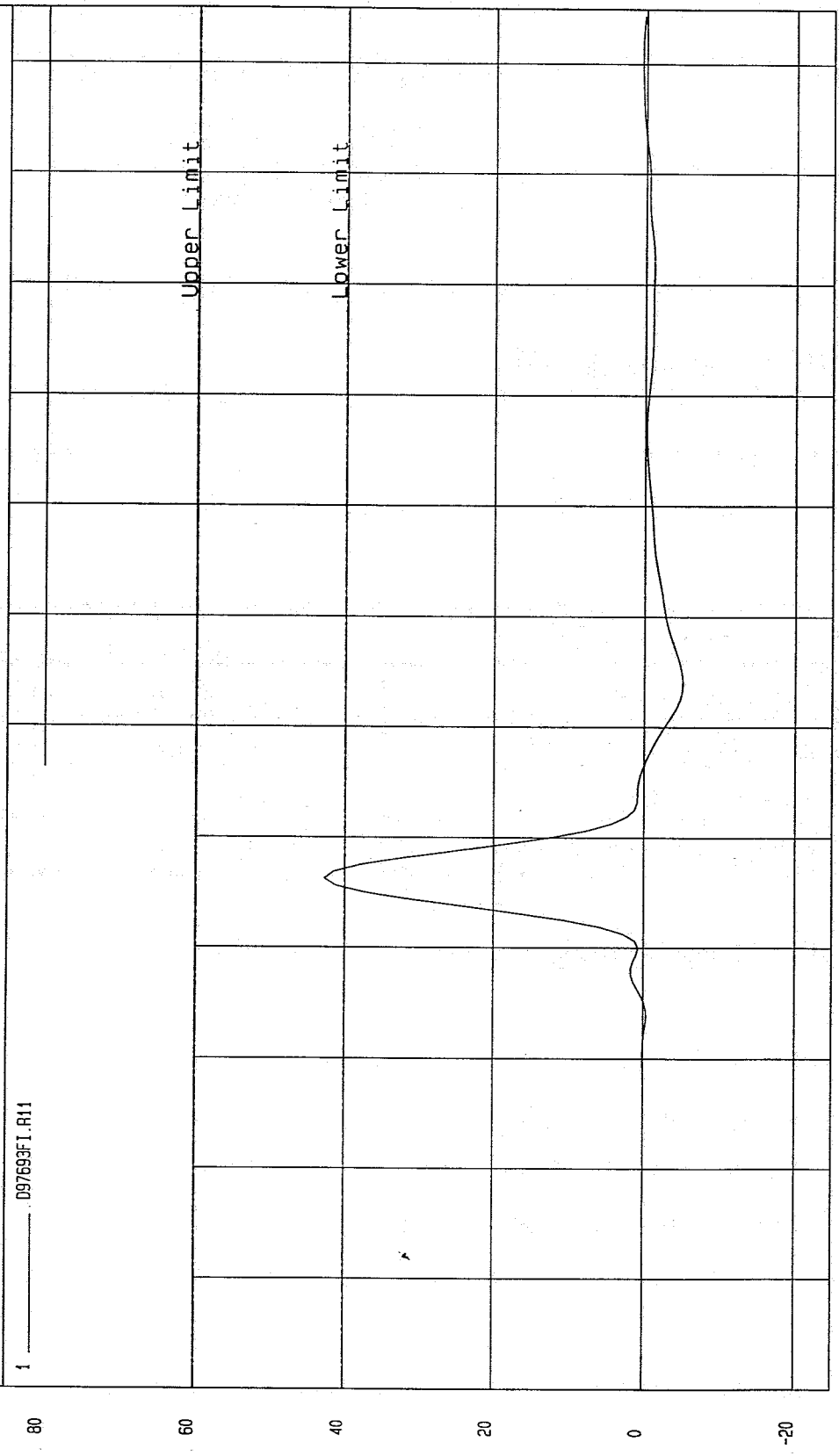
Velocity: 14.055 FT/SEC 4.28 M/SEC

Minimum = -5.02 G'S at 63.7 msec

Maximum = 42.89 G'S at 46.2 msec

PELVIS ACCELERATION

1 _____ 097693FI.RH1



G.S

0 10 20 30 40 60 80
0.00 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.10 0.11 0.12

TIME (SECONDS)

NSA Research
09-26-1997 15:56

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

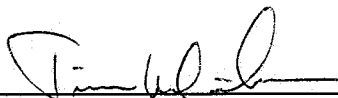
DATE: September 26, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971694

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.2
FORCE @ 0.75 in	36.7 - 49.8 lbs	40.2
FORCE @ 1.0 in	50 - 63 lbs	54
FORCE @ 1.3 in	73 - 88 lbs	73

TEST MEETS SPECIFICATIONS

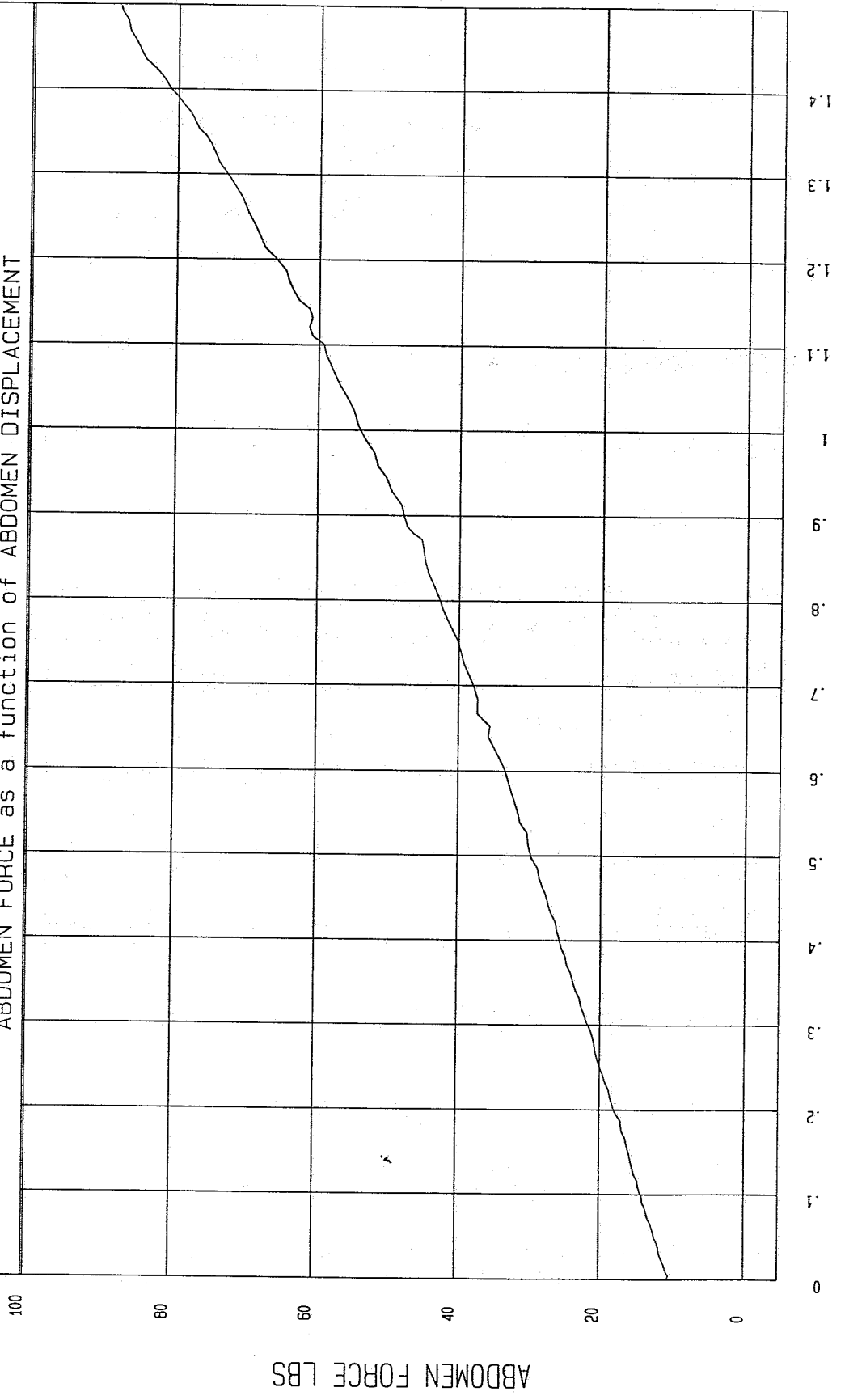
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 09-26-1997 - 14:23

COMPONENT: DUMMY # 272

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



NSA Research
09-26-1997 14:46

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971695

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	23
FORCE @ 30°	34 - 46 lbs	37
FORCE @ 40°	46 - 58 lbs	55
RETURN ANGLE	12° maximum	6°

TEST MEETS SPECIFICATIONS

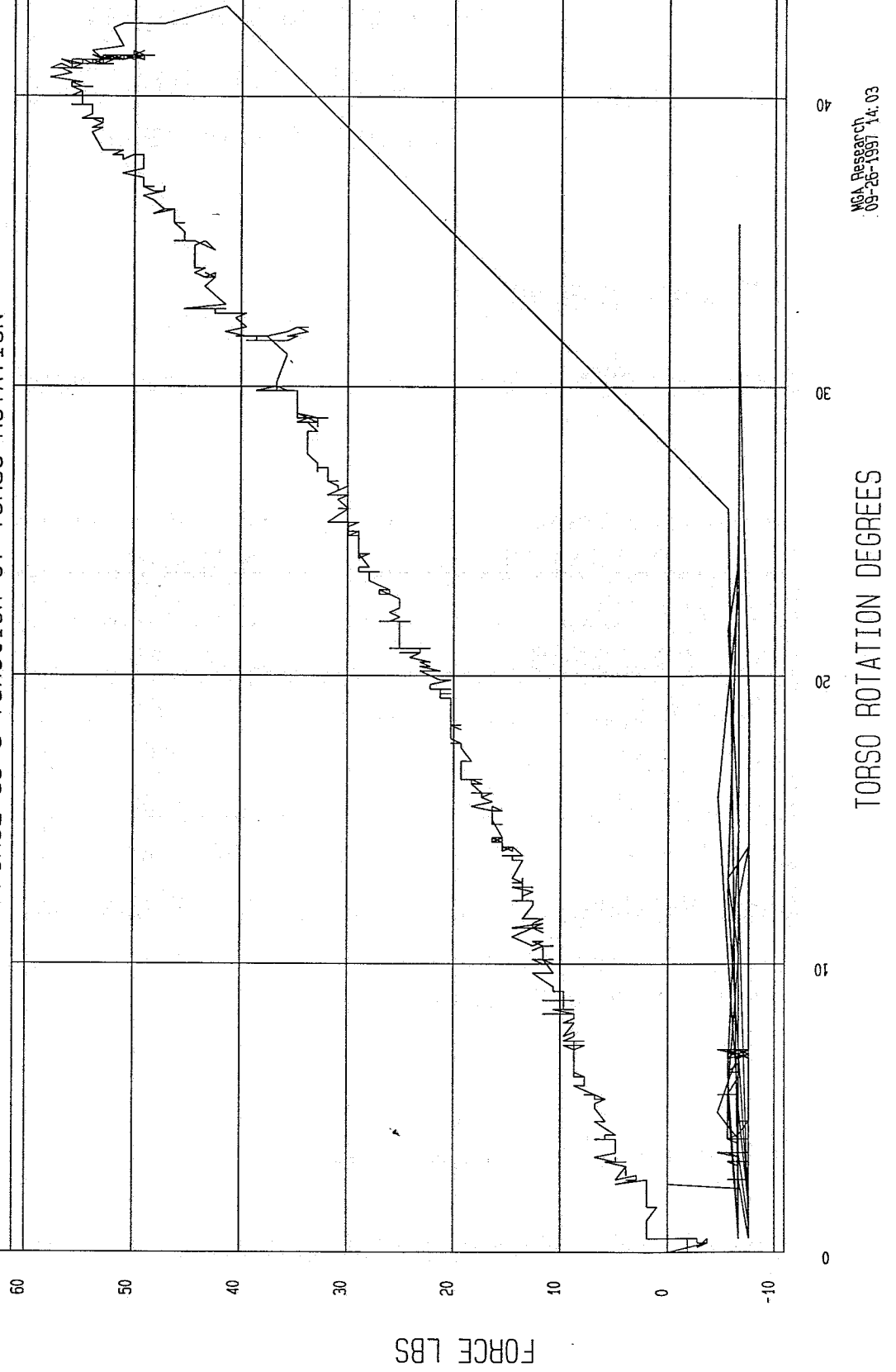
TECHNICIAN Tim White

APPROVED BY Dave Kelsche

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 09-26-1997 ~ 14:00

COMPONENT: DUMMY # 272

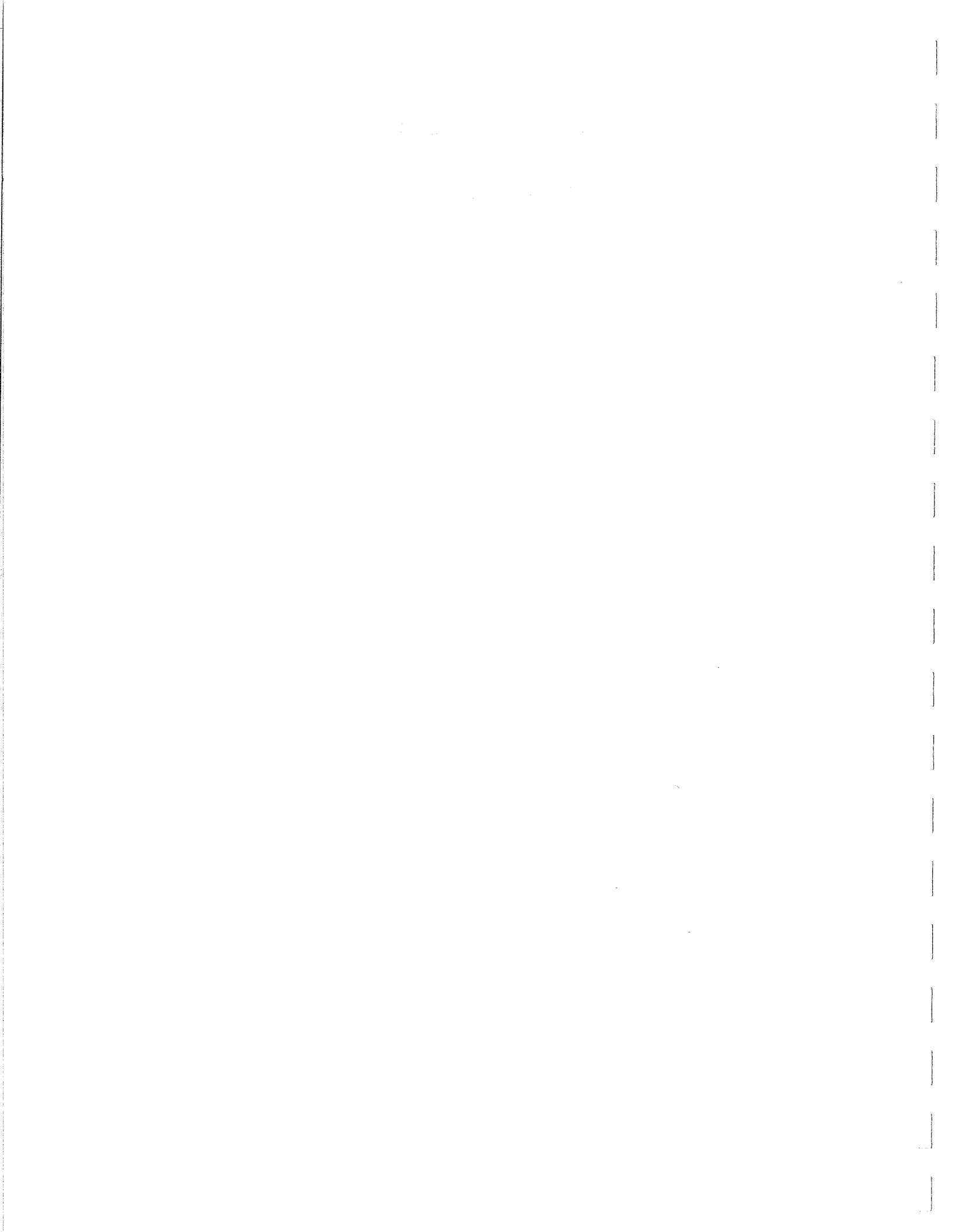
FORCE as a function of TORSO ROTATION



MCA Research
09-26-1997 14:03

POST-TEST CERTIFICATION DATA

Front Dummy Serial Number: 271



Calibration Test Results Summary

Dummy Serial Number: 271

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.: 271

DATE OF VERIFICATION: October 1, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.6
RH - Rib Height	19.75" - 20.50"	20.40
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.4
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY: Jim W. Q.

APPROVED BY: Dave Koszko

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

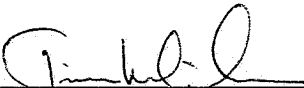
DATE: October 1, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971742

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	34%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	43
LOWER RIB	37 - 46 g's	40
LOWER SPINE	15 - 22 g's	20

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-01-1997 - 09: 44

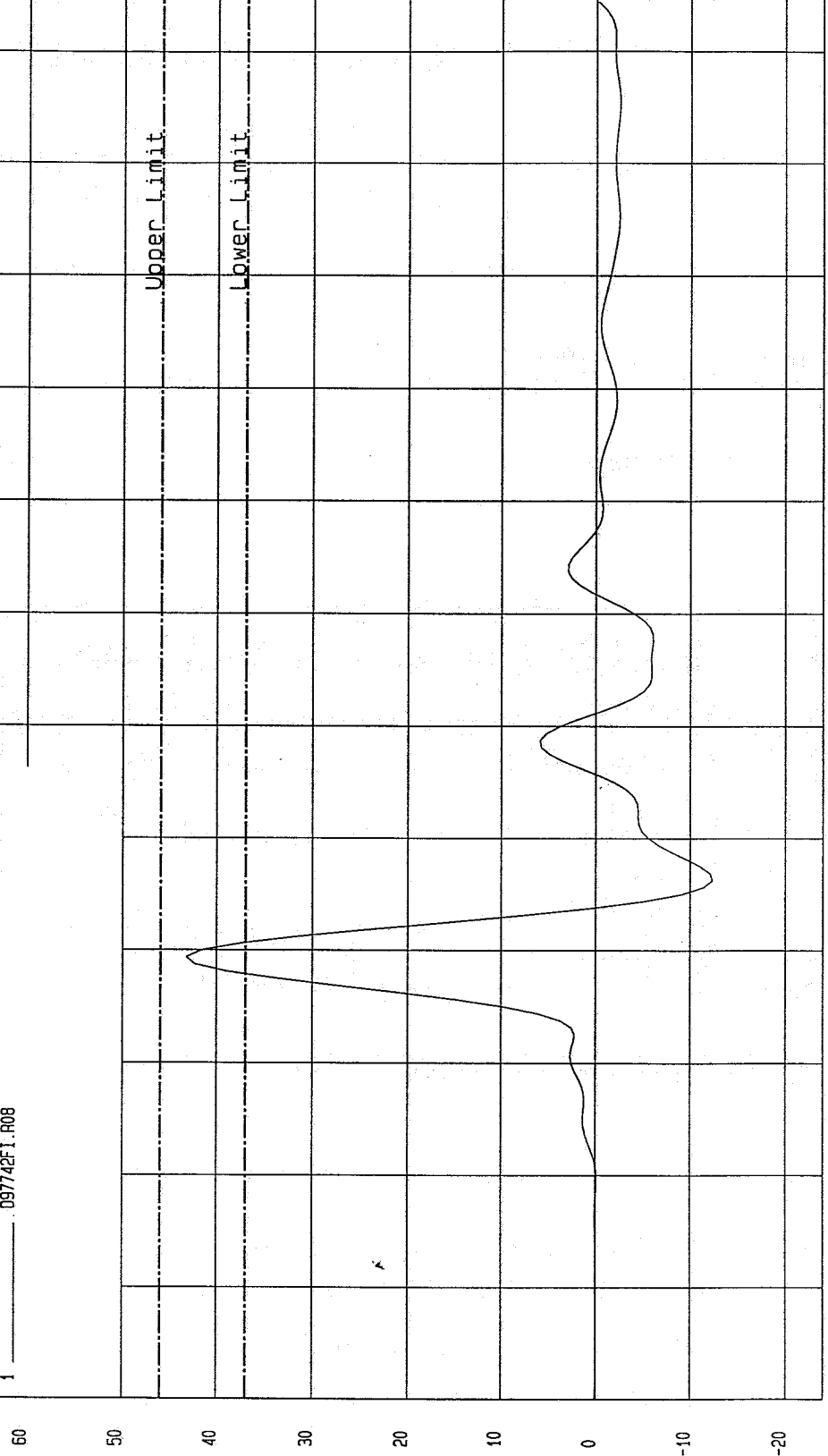
COMPONENT: DUMMY # 271 Velocity: 14.074 FT/SEC 4.29 M/SEC

Minimum = -12.37 G'S at 46.2 msec

Maximum = 43.22 G'S at 39.3 msec

UPPER RIB ACCELERATION

1 .097742FI.R08



TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-01-1997 - 09:44

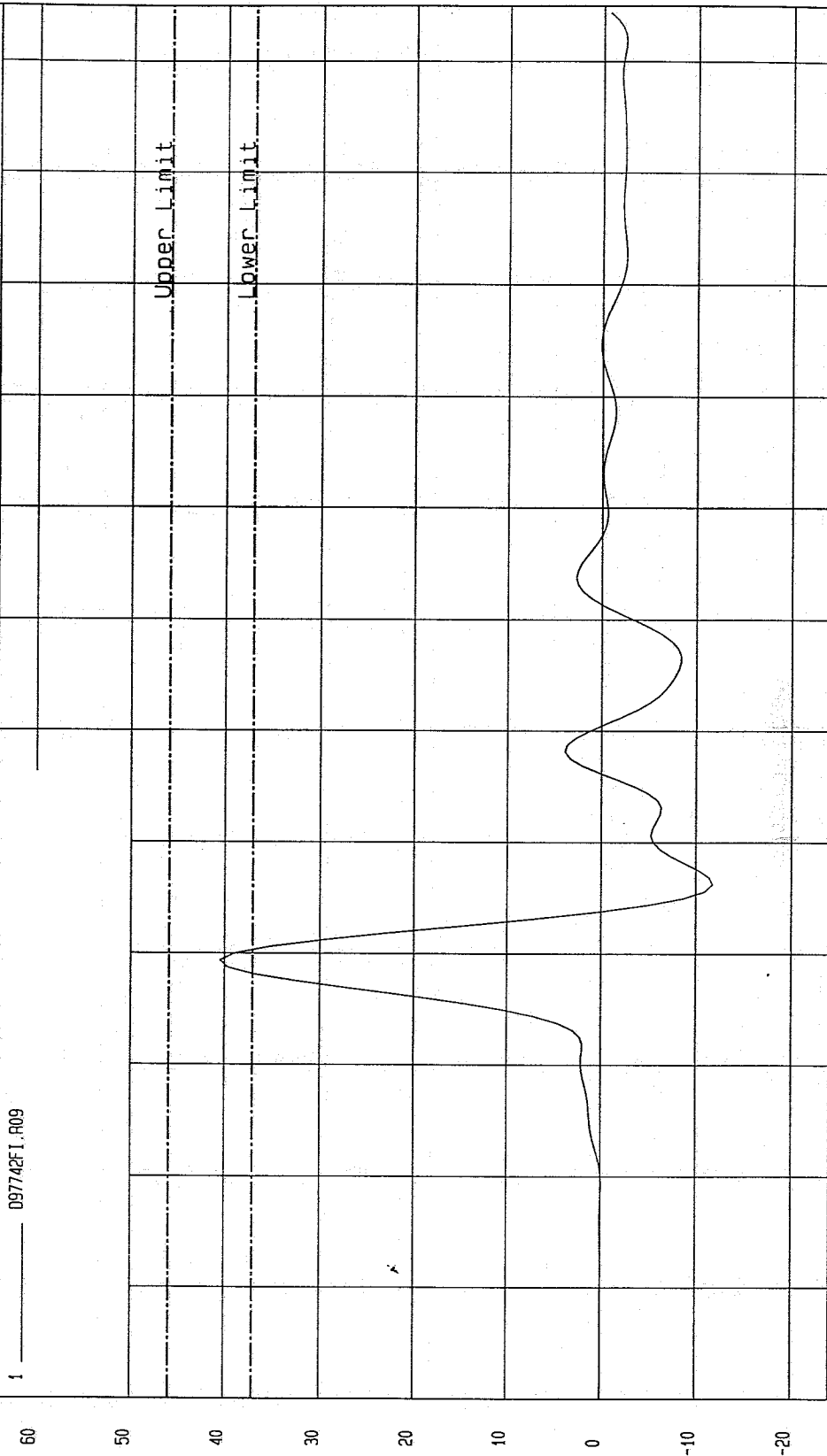
COMPONENT: DUMMY # 271 Velocity: 14.074 FT/SEC 4.29 M/SEC

Minimum = -11.79 G'S at 46.2 msec

Maximum = 40.46 G'S at 39.3 msec

LOWER RIB ACCELERATION

1 ——— 097742F1.R09



TIME (SECONDS)

NCA Research
10-01-1997 09:50

TEST: DUMMY CALIBRATION - THORAX IMPACT

TEST DATE: 10-01-1997 - 09:44

COMPONENT: DUMMY # 271

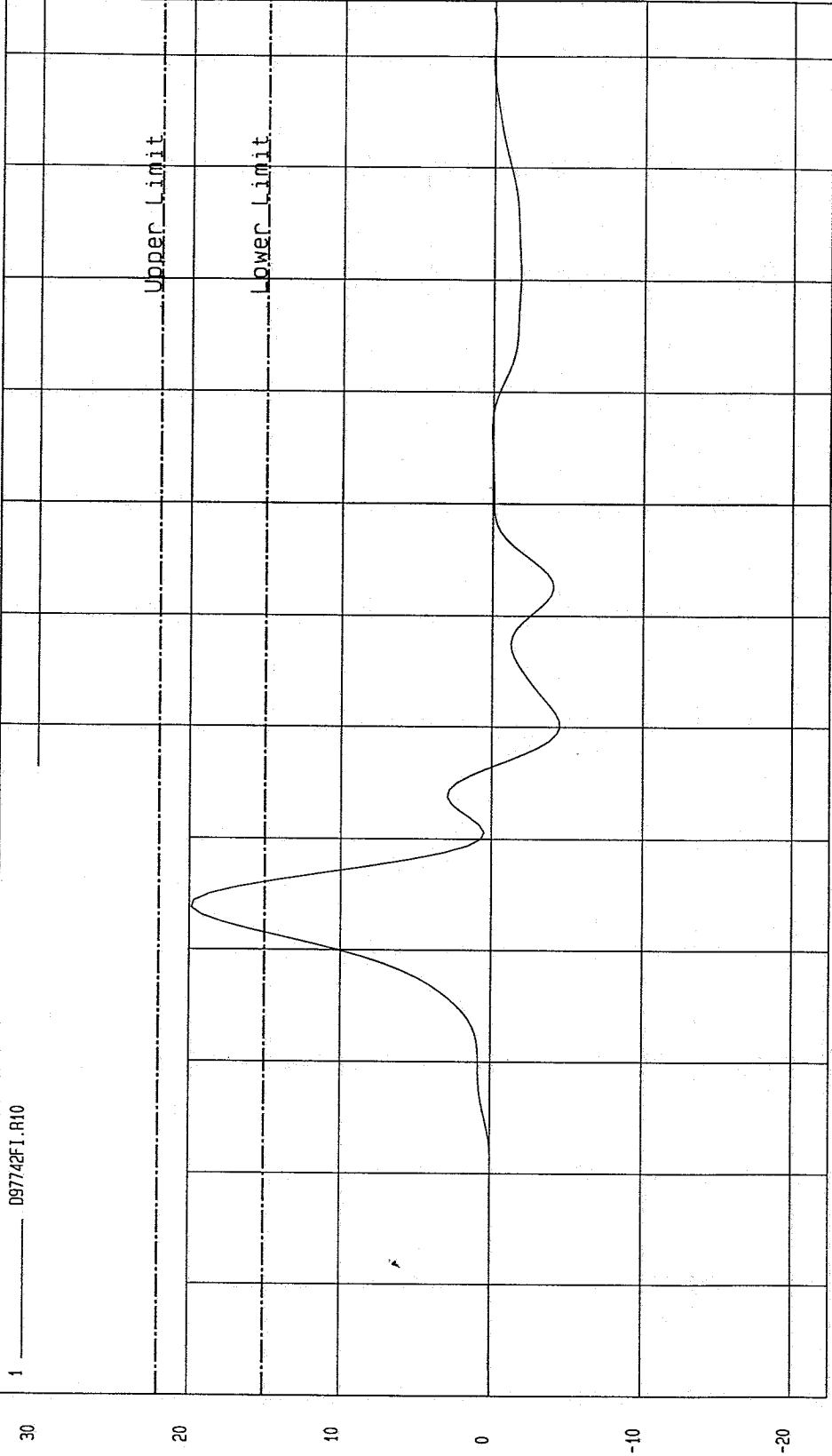
Velocity: 14.074 FT/SEC 4.29 M/SEC

Minimum = -4.54 G'S at 60 msec

Maximum = 19.87 G'S at 43.7 msec

LOWER SPINE ACCELERATION

1 _____ D97742F1.R10



MGA Research Co.
10-01-1997 09:50

TIME (SECONDS)

G.S

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: October 1, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971743

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	35%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	58

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - PELVIS IMPACT

TEST DATE: 10-01-1997 - 09:49

COMPONENT: DUMMY # 271

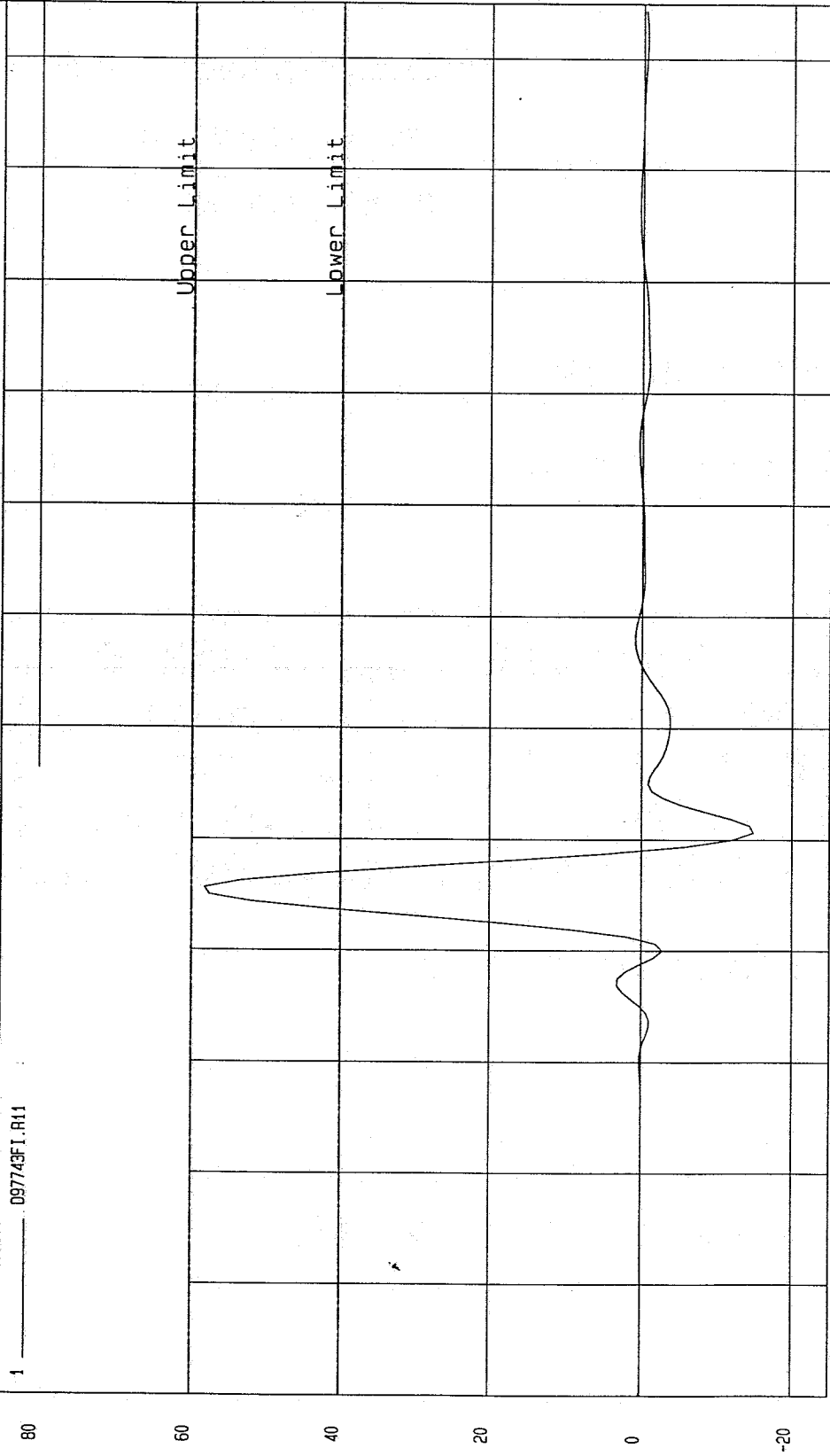
Velocity: 14.056 FT/SEC 4.28 M/SEC

Minimum = -14.90 G'S at 50.6 msec

Maximum = 58.25 G'S at 45.6 msec

PELVIS ACCELERATION

1 097743FI.R11



TIME (SECONDS)

MGA Research
10-01-1997 09:50

G.S

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

DATE: October 1, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971744

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	71°
RELATIVE HUMIDITY	10 - 70%	34%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.7
FORCE @ 0.75 in	36.7 - 49.8 lbs	41.8
FORCE @ 1.0 in	50 - 63 lbs	54
FORCE @ 1.3 in	73 - 88 lbs	73

TEST MEETS SPECIFICATIONS

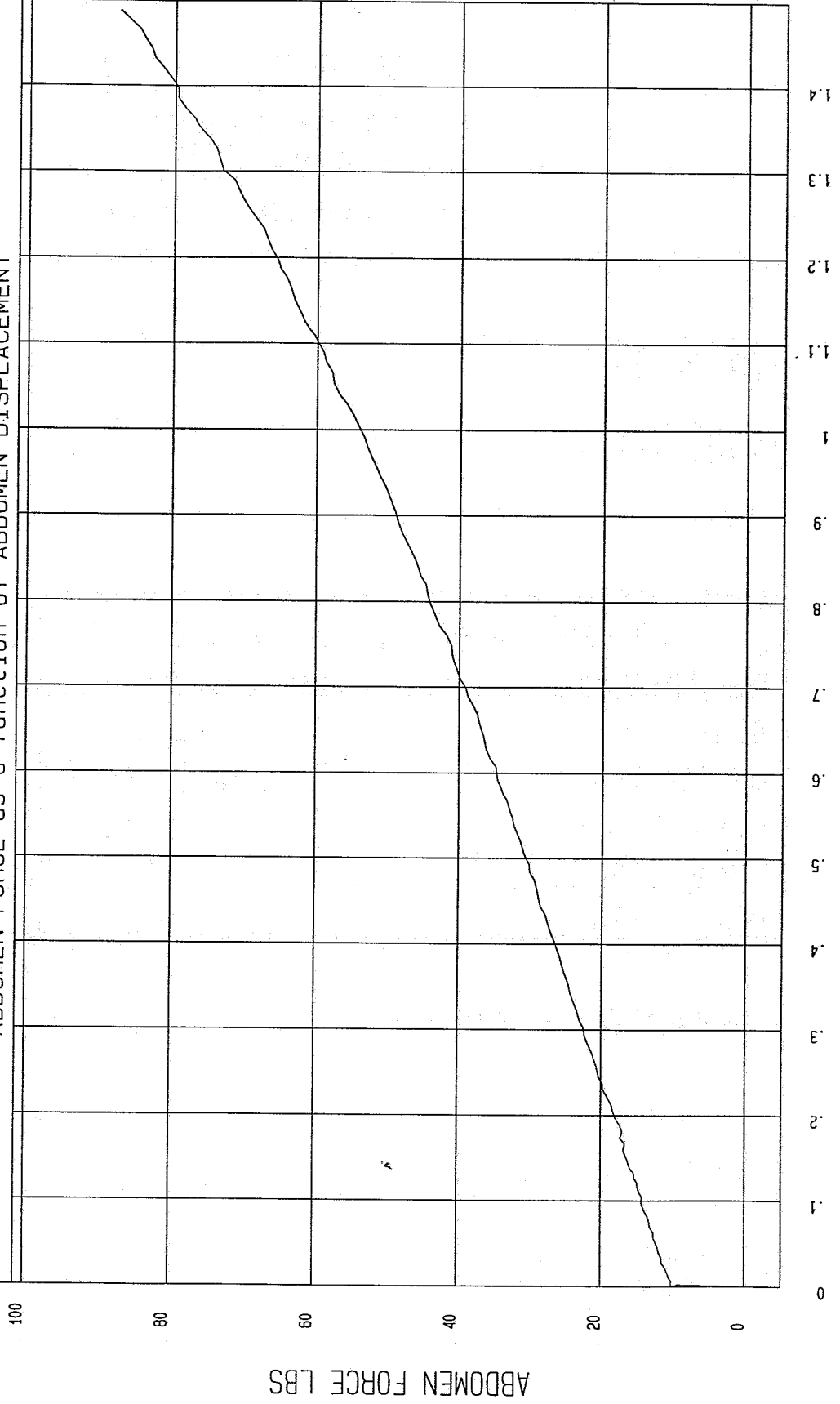
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 10-01-1997 - 11:27

COMPONENT: DUMMY # 271

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



NSA Research
10-01-1997 12:22

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

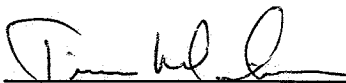
DATE: October 1, 1997


DUMMY NUMBER: 271

TEST NUMBER: D971745

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	71°
RELATIVE HUMIDITY	10 - 70%	34%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	27
FORCE @ 30°	34 - 46 lbs	41
FORCE @ 40°	46 - 58 lbs	57
RETURN ANGLE	12° maximum	6°

TEST MEETS SPECIFICATIONS

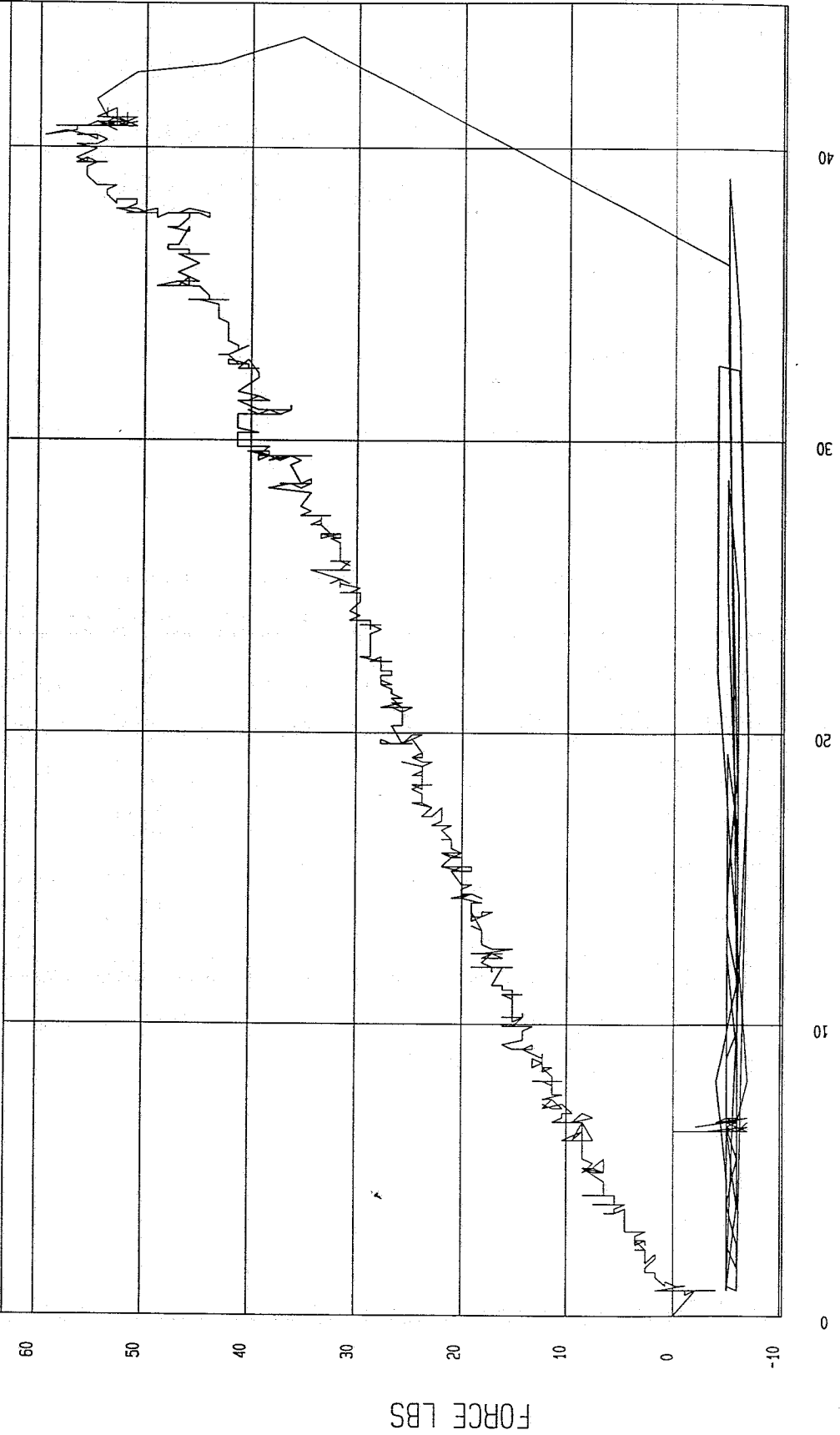
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 10-01-1997 - 10:57

COMPONENT: DUMMY # 271

FORCE as a function of TORSO ROTATION

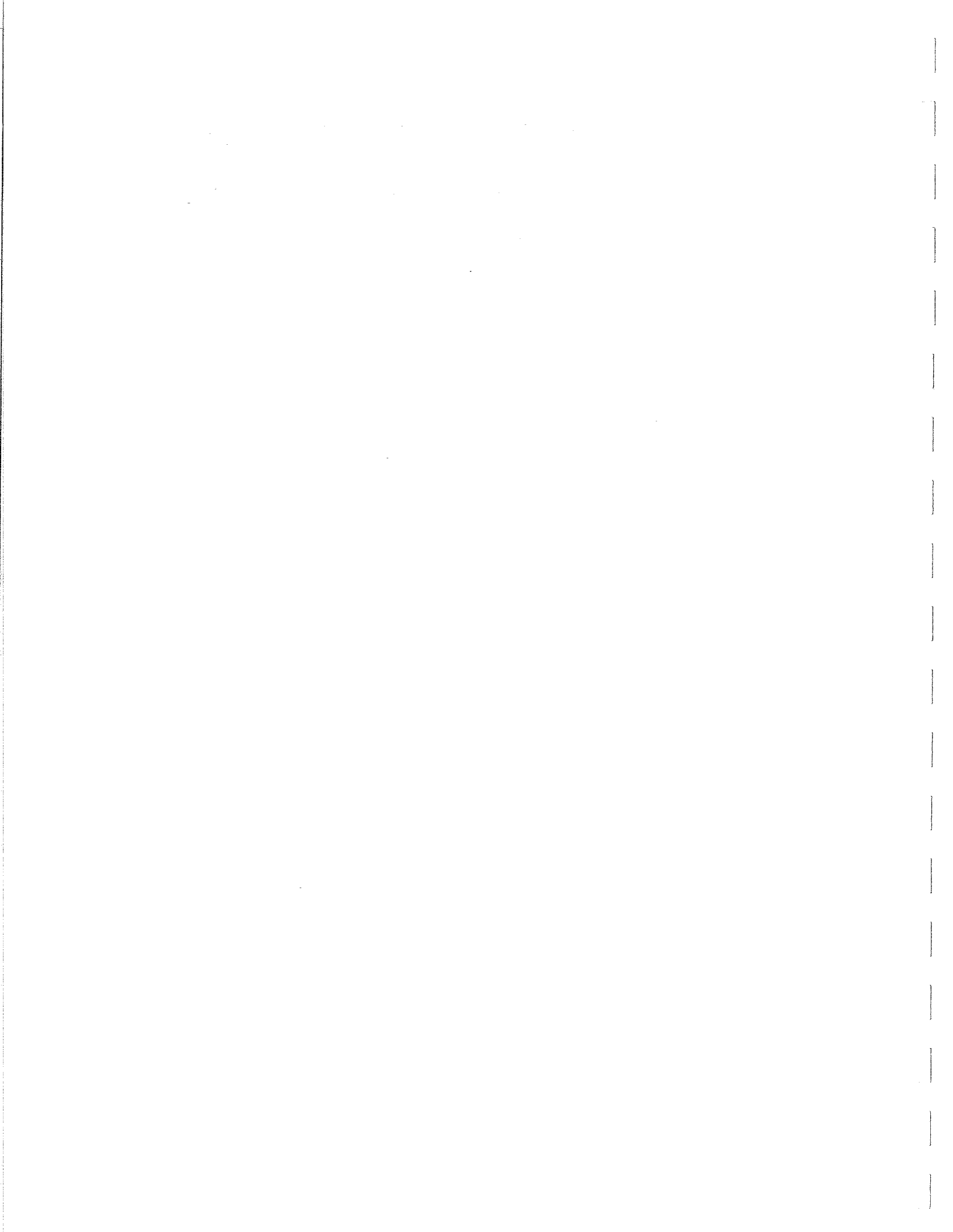


NGA Research
10-01-1997 11:15

TORSO ROTATION DEGREES

POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 272



Calibration Test Results Summary

Dummy Serial Number: 272

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.: 272

DATE OF VERIFICATION: October 1, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.20
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.7
SW - Knee Pivot to Floor	19.3" - 19.9"	9.6
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

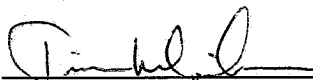
DATE: October 1, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971752

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	34%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	38
LOWER RIB	37 - 46 g's	38
LOWER SPINE	15 - 22 g's	18

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-01-1997 - 10:17

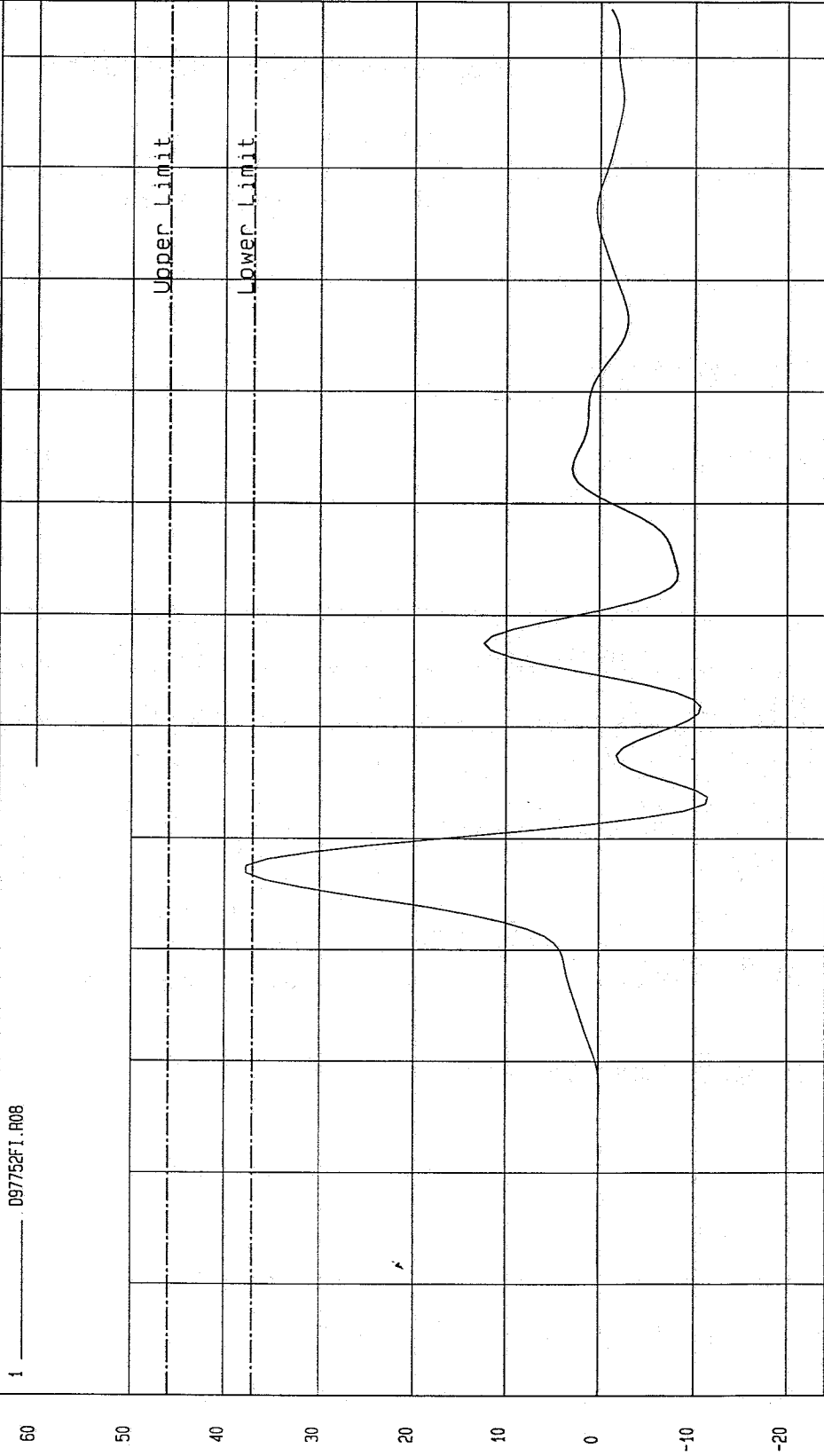
COMPONENT: DUMMY # 272 Velocity: 14.055 FT/SEC 4.28 M/SEC

Minimum = -11.38 G'S at 53.7 msec

Maximum = 37.75 G'S at 46.8 msec

UPPER RIB ACCELERATION

1 _____ 097752FI.R08



MCA Research
10-01-1997 10:25

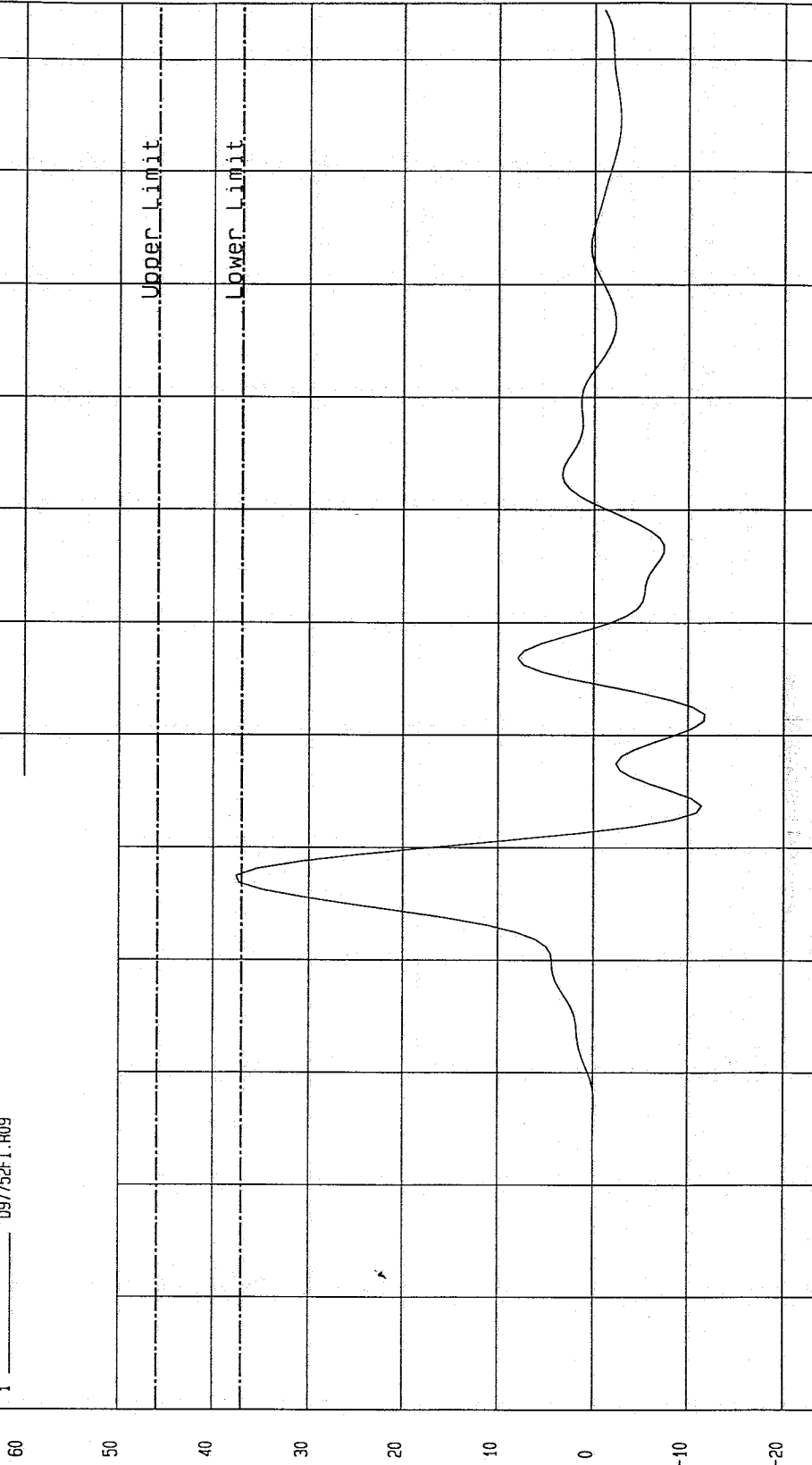
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-01-1997 - 10:17

COMPONENT: DUMMY # 272 Velocity: 14.055 FT/SEC 4.28 M/SEC

Minimum = -11.70 G'S at 61.8 msec

LOWER RIB ACCELERATION

1 097752FI.R09



MCA Research
10-01-1997 10:25

TEST: DUMMY CALIBRATION - THORAX IMPACT

TEST DATE: 10-01-1997 - 10:17

COMPONENT: DUMMY # 272

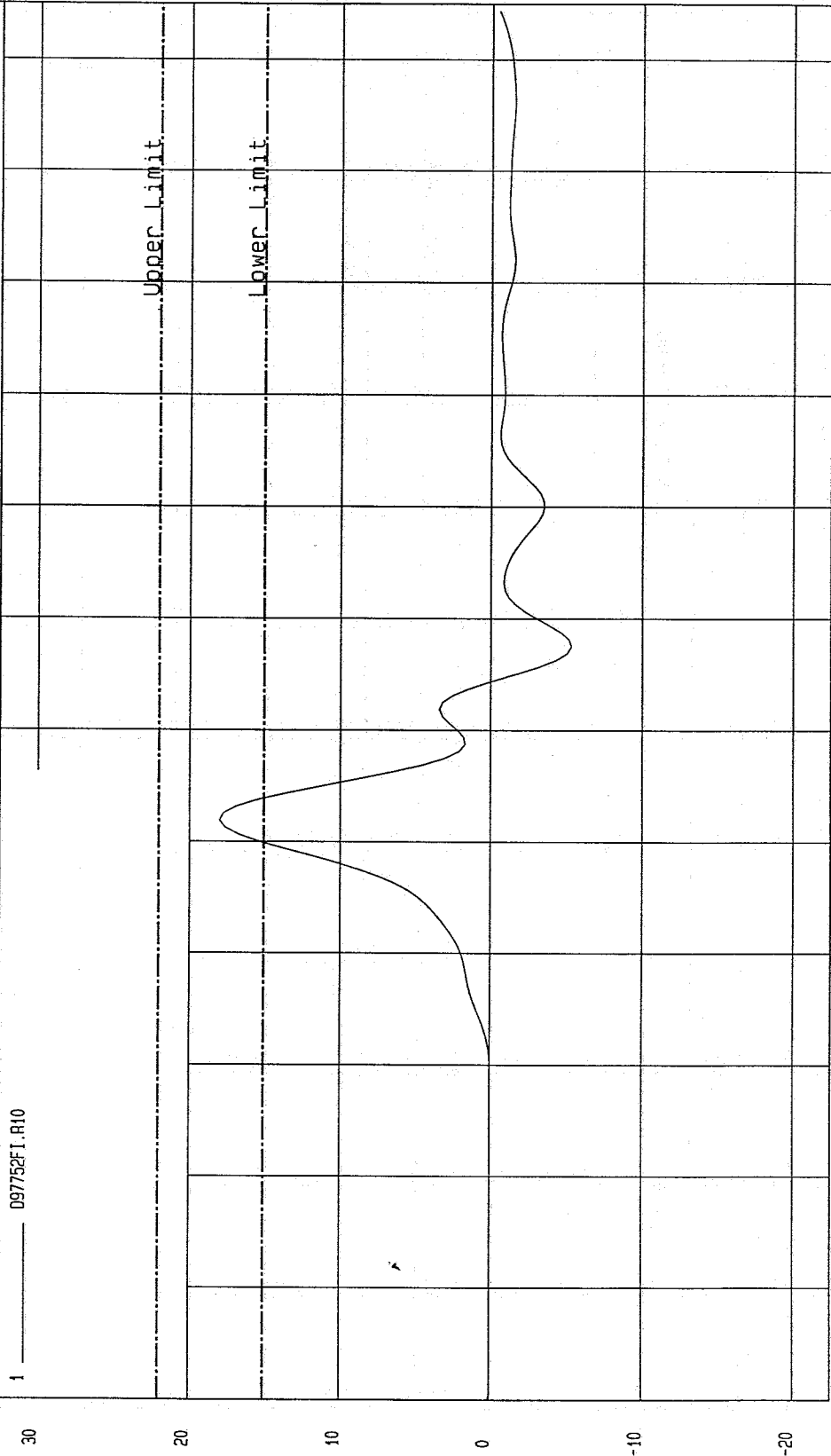
Velocity: 14.055 FT/SEC 4.28 M/SEC

Minimum = -5.36 G'S at 67.5 msec

Maximum = 17.97 G'S at 51.8 msec

LOWER SPINE ACCELERATION

1 ——— D97752FT.R10



MGA Research Co.
10-01-1997 10:28

TIME (SECONDS)

G'S

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

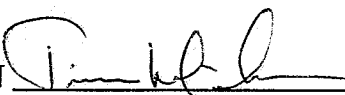
DATE: October 1, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971753

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	34%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	55

TEST MEETS SPECIFICATIONS

TECHNICIAN 

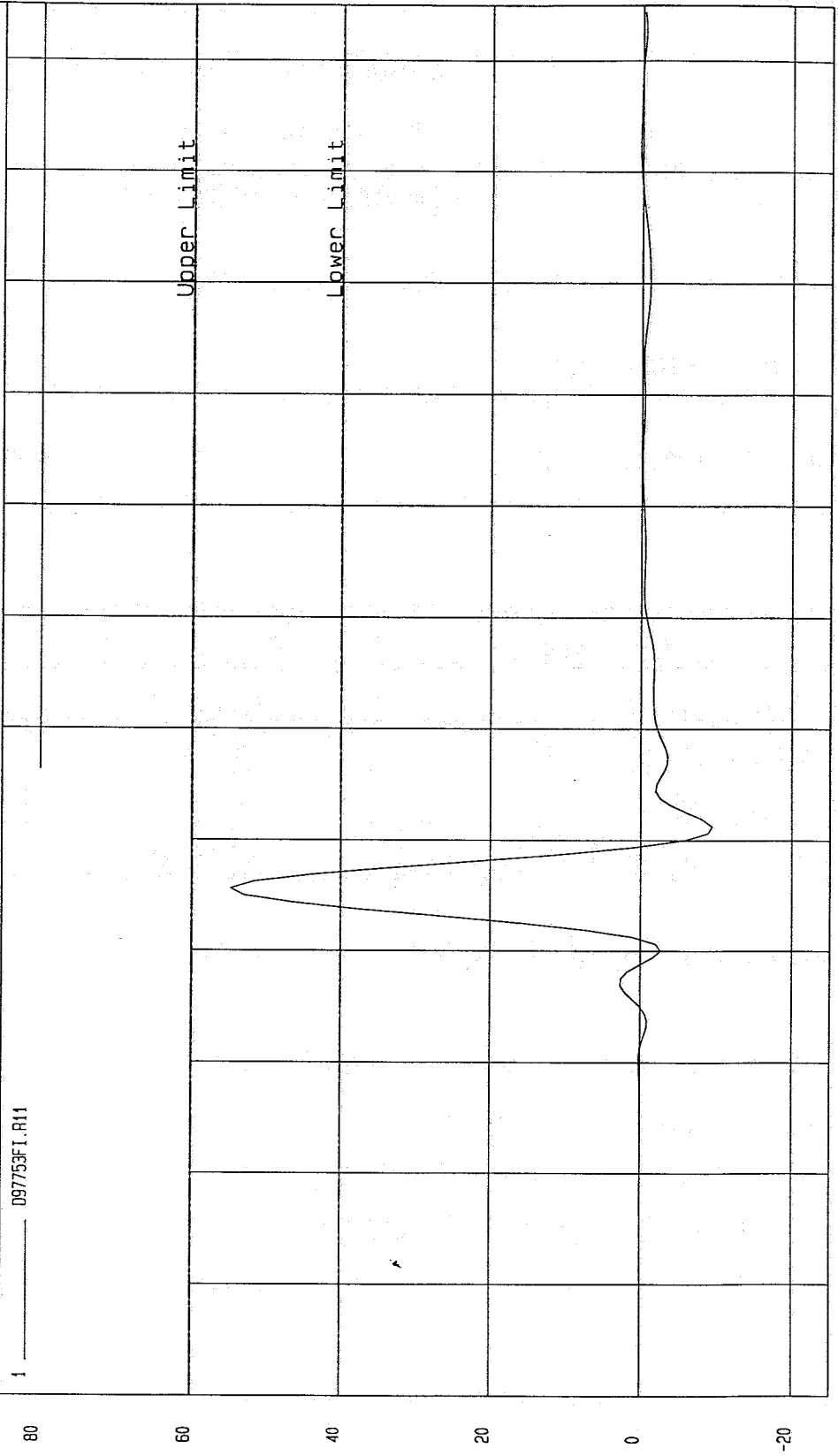
APPROVED BY 

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 10-01-1997 - 10:24:24
COMPONENT: DUMMY # 272 Velocity: 14.078 FT/SEC 4.29 M/SEC

Minimum = -9.37 G'S at 51.2 msec
Maximum = 54.80 G'S at 45.6 msec

PELVIS ACCELERATION

1 ——— D97753FI.R11



MGA Research
10-01-1997 10:27

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: October 1, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971754

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	71°
RELATIVE HUMIDITY	10 - 70%	34%
FORCE @ 0.5 in	23.3 - 36.5 lbs	28.9
FORCE @ 0.75 in	36.7 - 49.8 lbs	39.5
FORCE @ 1.0 in	50 - 63 lbs	53
FORCE @ 1.3 in	73 - 88 lbs	74

TEST MEETS SPECIFICATIONS

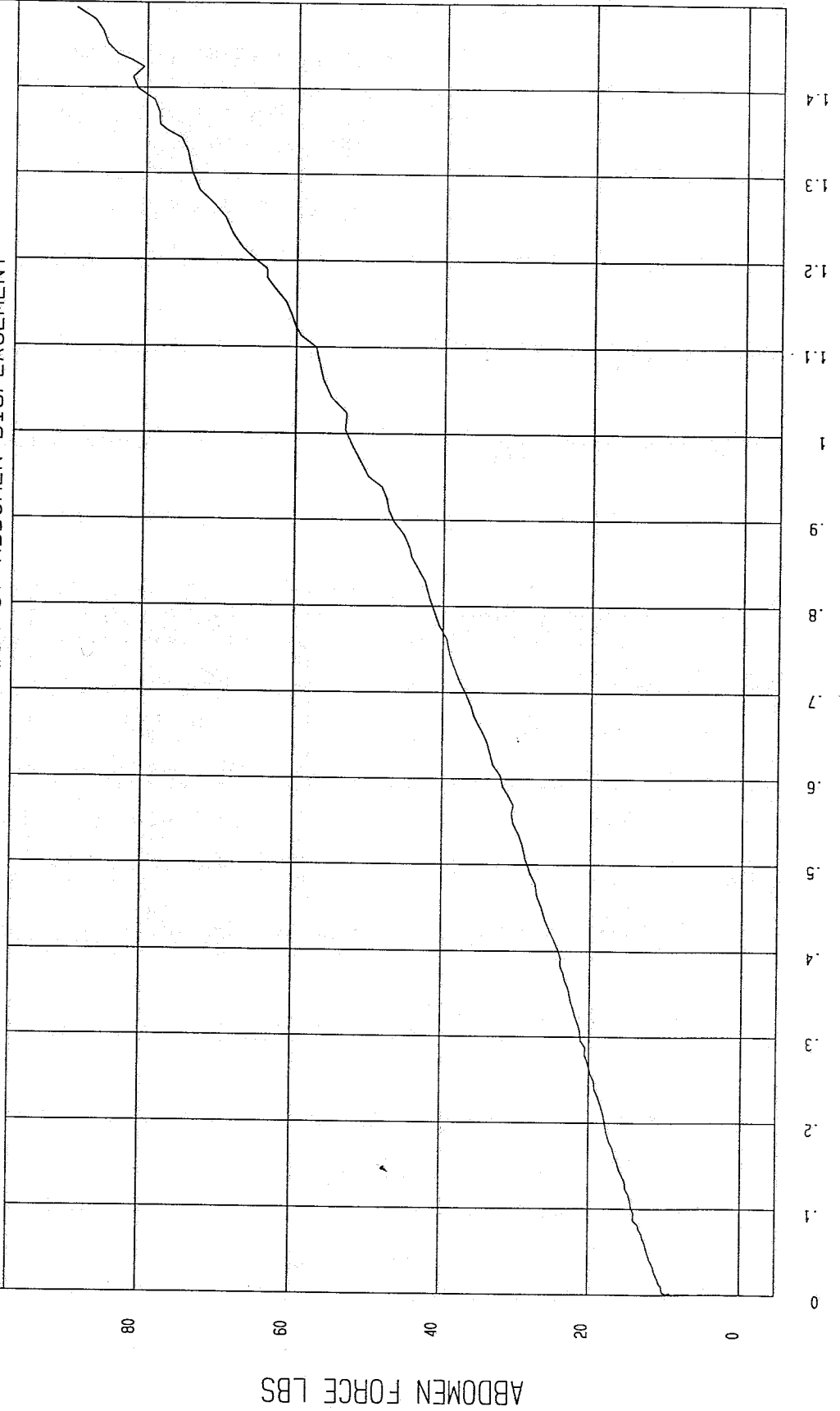
TECHNICIAN Jim [Signature]

APPROVED BY Dave [Signature]

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 10-01-1997 - 11:35

COMPONENT: DUMMY # 272

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



NSA Research
10-01-1997 12:22

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: October 1, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971755

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	71°
RELATIVE HUMIDITY	10 - 70%	34%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	25
FORCE @ 30°	34 - 46 lbs	36
FORCE @ 40°	46 - 58 lbs	54
RETURN ANGLE	12° maximum	6°

TEST MEETS SPECIFICATIONS

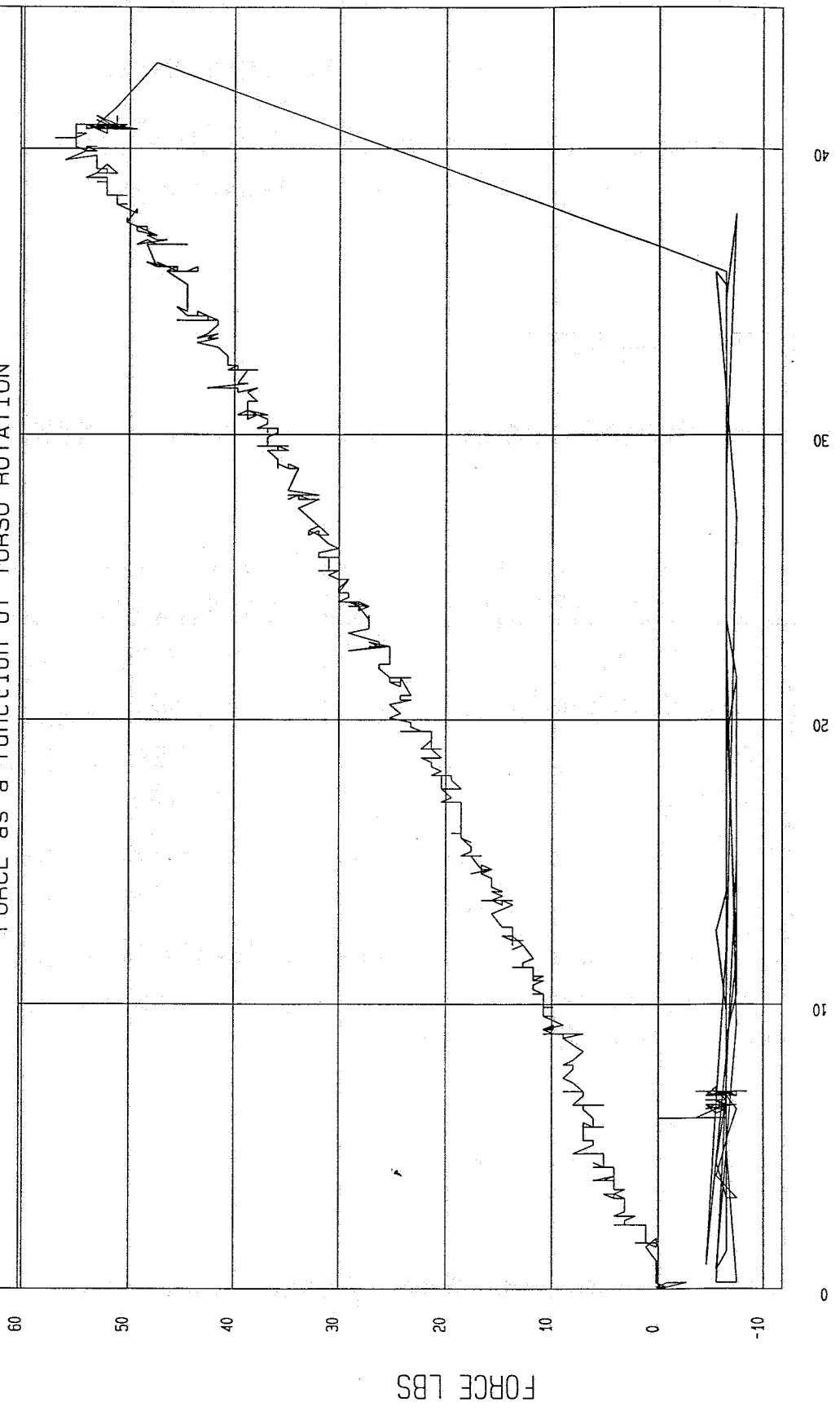
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 10-01-1997 - 11:13

COMPONENT: DUMMY # 272

FORCE as a function of TORSO ROTATION



MCA Research
10-01-1997 11:15

TORSO ROTATION DEGREES

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

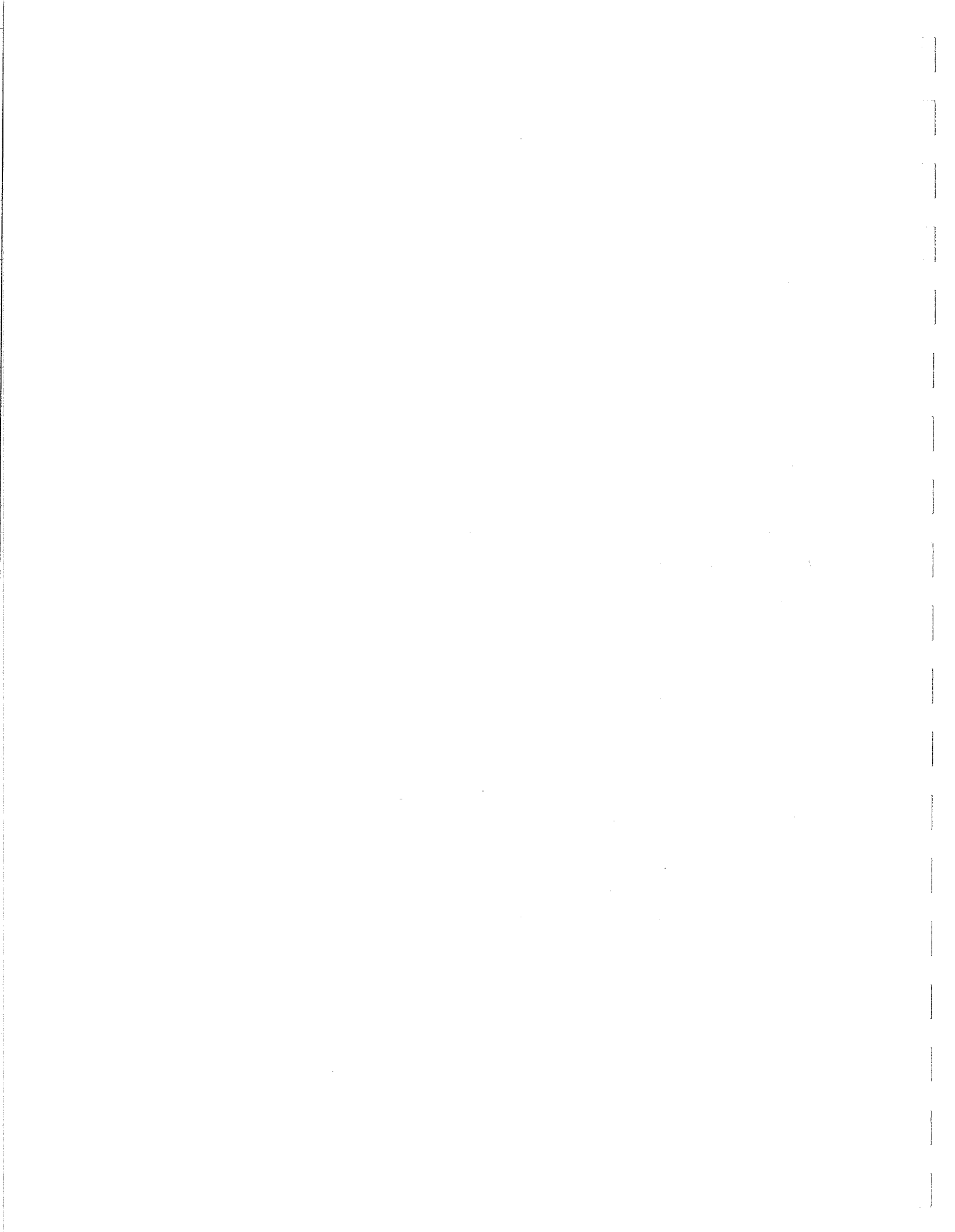
Serial Number: 271

Inspected By: Tim Michnay

Date: October 1, 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	Rivets popped out of foam on impact side. -- Rib wrap replaced.	

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



POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

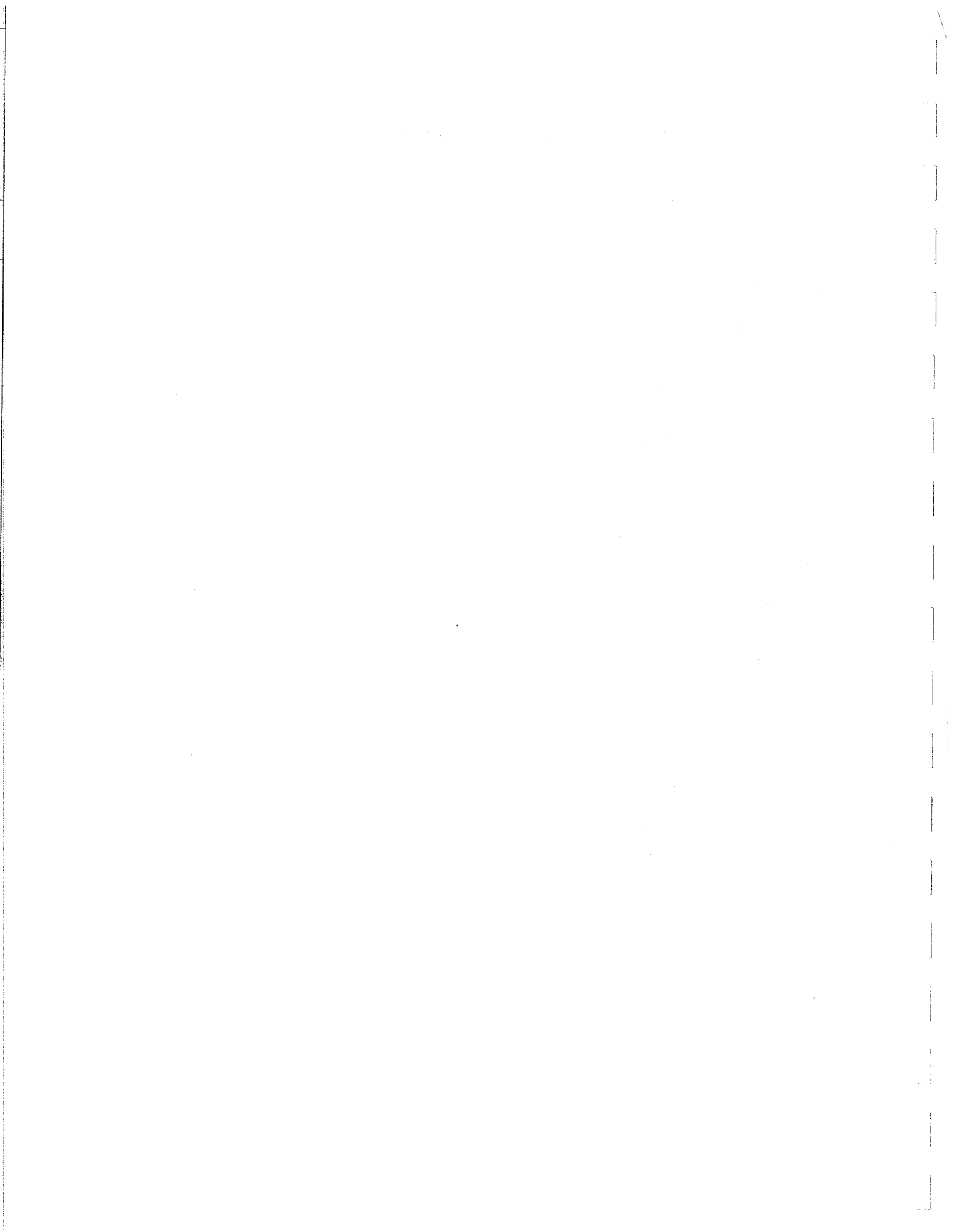
Serial Number: 272

Inspected By: Tim Michnay

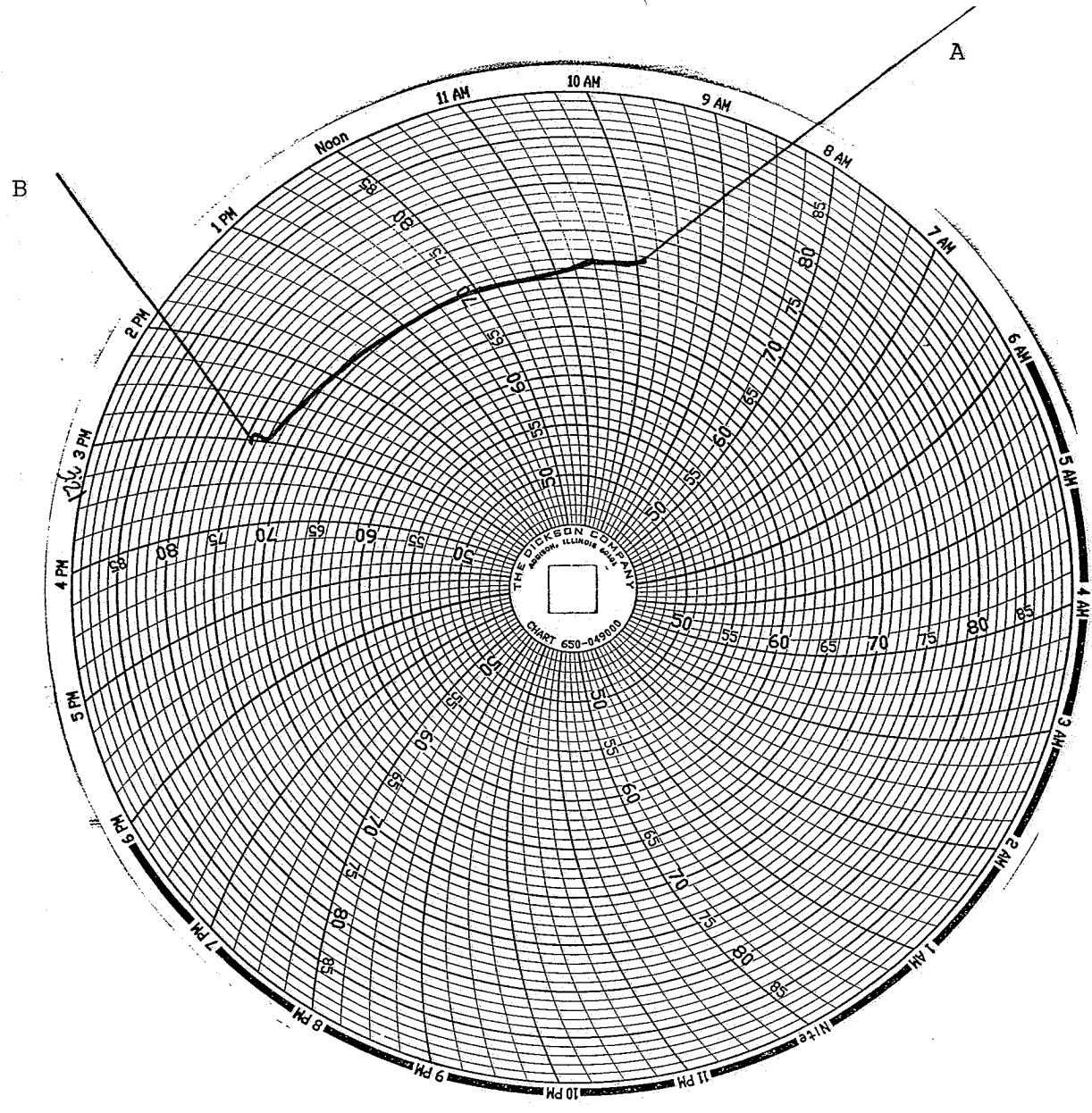
Date: October 1, 1997

<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		

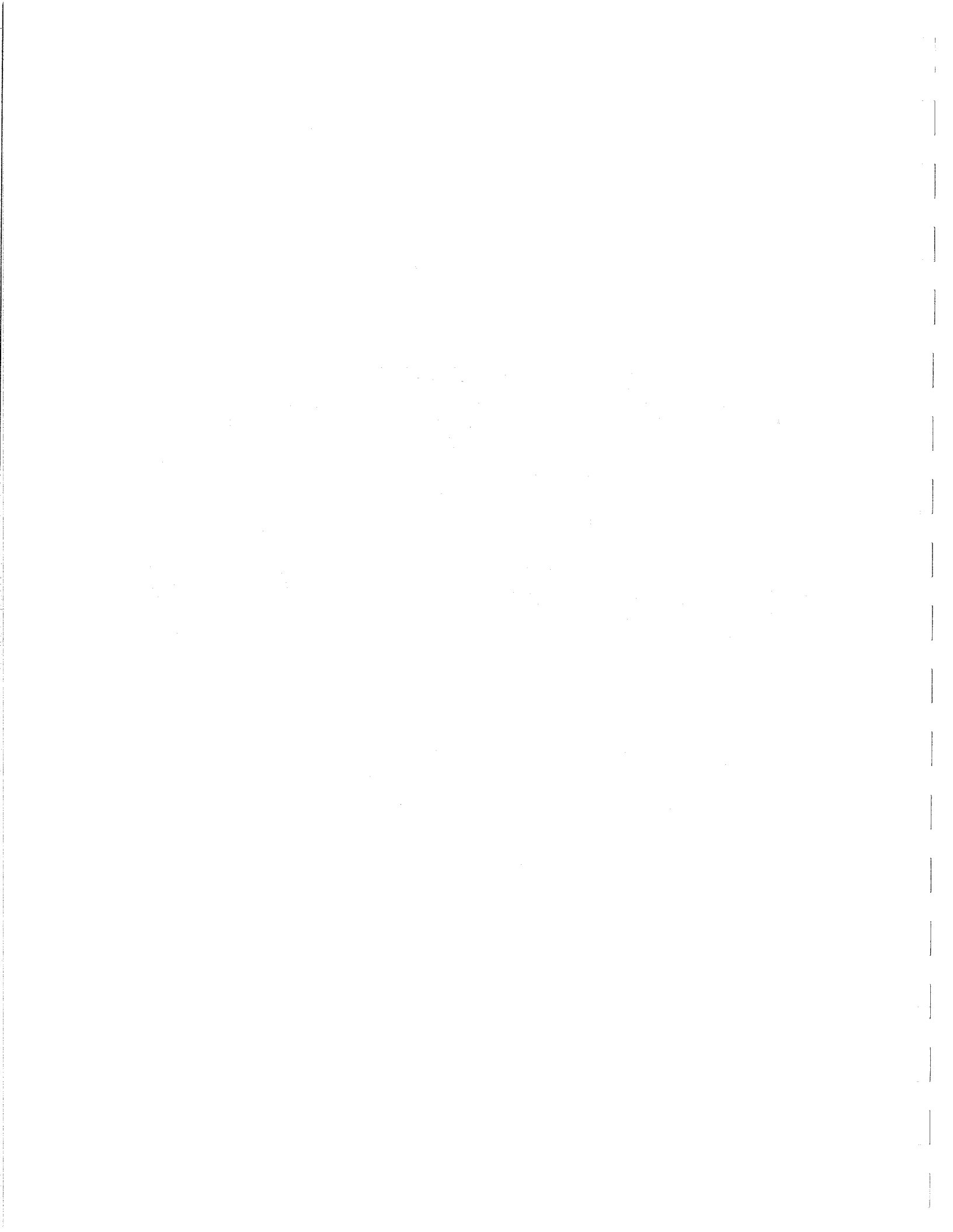
NOTES: (include component/problem/action/reason):



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 DRIVER DUMMY NO. 271

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AP2A4	Endevco	September 11, 1997
Lower Rib Y	AP1B3	Endevco	September 11, 1997
Lower Spine Y	ANAP1	Endevco	September 11, 1997
Pelvis Y	AHTC3	Endevco	September 11, 1997
Upper Rib Redundant Y	AP2D8	Endevco	September 11, 1997
Lower Rib Redundant Y	AP1C6	Endevco	September 11, 1997
Lower Spine Redundant Y	ANAT6	Endevco	September 11, 1997
Pelvis Redundant Y	AGP53	Endevco	September 11, 1997

INSTRUMENTS FOR PASSENGER DUMMY NO. 272

		LEFT REAR PASSENGER	
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	ALFJ7	Endevco	September 11, 1997
Lower Rib Y	APYN0	Endevco	September 11, 1997
Lower Spine Y	AP0G2	Endevco	September 11, 1997
Pelvis Y	APY15	Endevco	September 11, 1997
Upper Rib Redundant Y	ALDD6	Endevco	September 11, 1997
Lower Rib Redundant Y	APYN3	Endevco	September 11, 1997
Lower Spine Redundant Y	AP138	Endevco	September 11, 1997
Pelvis Redundant Y	APY16	Endevco	September 11, 1997

VEHICLE INSTRUMENT CALIBRATION

VEHICLE ACCELEROMETERS			
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	J04-F10	Entran	August 7, 1997
Moving Barrier CG Y	F11-G04	Entran	August 7, 1997
Moving Barrier CG Z	J04-F12	Entran	August 7, 1997
Moving Barrier Rear Axle X	G13-B07	Entran	August 6, 1997
Moving Barrier Rear Axle Y	L14-D04	Entran	August 4, 1997
Left Mid A-Post Y	E10-F10	Entran	August 7, 1997
Left Lower A-Post Y	B13-Z02	Entran	August 1, 1997
Left Mid B-Post Y	F11-G02	Entran	July 14, 1997
Left Lower B-Post Y	E10-F14	Entran	August 7, 1997
Rear Floorpan Above Axle X	I26-D20	Entran	August 7, 1997
Rear Floorpan Above Axle Y	I25-J15	Entran	August 7, 1997
Rear Floorpan Above Axle Z	C20-J10	Entran	August 6, 1997
Driver Seat Track Y	E23-R11	Entran	August 6, 1997
Right Side Sill at Front Seat X	I25-J13	Entran	August 6, 1997
Right Side Sill at Front Seat Y	F20-G12	Entran	August 7, 1997
Right Side Sill at Front Seat Z	F18-G08	Entran	August 7, 1997
Right Side Sill at Rear Seat X	G01-J07	Entran	July 14, 1997
Right Side Sill at Rear Seat Y	J13-F16	Entran	August 6, 1997
Right Side Sill at Rear Seat Z	I25-J14	Entran	August 7, 1997
Left Side Sill at Front Seat Y	D05-R05	Entran	July 2, 1997

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO	MANUFACTURER	CALIBRATION DATE
Left Side Sill at Rear Seat Y	B14-R11	Entran	August 1, 1997
Right Rear Occupant Compartment Y	C14-Z07	Entran	July 2, 1997
Vehicle CG X	F12-G09	Entran	August 7, 1997
Vehicle CG Y	G08-B01	Entran	August 7, 1997
Vehicle CG Z	G13-B03	Entran	August 7, 1997
Left Front Door on Centerline	A10-G05	Entran	July 7, 1997
Midrear of Left Front Door	E10-F03	Entran	August 7, 1997
Left Front Door Upper Centerline	H02-J03	Entran	August 6, 1997

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