

NEW CAR ASSESSMENT PROGRAM  
SIDE IMPACT TESTING  
PASSENGER CARS

1998 MERCEDES-BENZ C230  
4-DOOR SEDAN  
NHTSA NO: MW0500

MGA PROVING GROUNDS  
5000 WARREN ROAD  
BURLINGTON, WI 53105



Test Date: October 22, 1997

Report Date: November 3, 1997

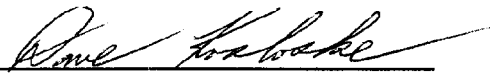
FINAL REPORT

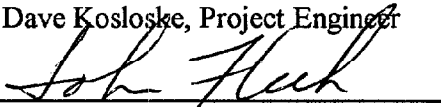
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## TECHNICAL REPORT STANDARD TITLE PAGE

| 1. Report No.<br>214D-MGA-98-06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2. Government Accession No.                          | 3. Recipient's Catalog No.                                                                                                                                                                                              |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
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| 4. Title and Subtitle<br>New Car Assessment Program<br>Side Impact Test of a 1998 Mercedes-Benz C230<br>4-Door Sedan<br>NHTSA No. MW0500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      | 5. Report Date<br>November 3, 1997                                                                                                                                                                                      |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                      | 6. Performing Organization Code<br>MGA                                                                                                                                                                                  |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| 7. Author(s)<br>Dave Kosloske, Project Engineer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                      | 8. Performing Organization Report No.<br>MGA-DOT-214-0                                                                                                                                                                  |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| 9. Performing Organization Name and Address<br>MGA Research Corporation<br>5000 Warren Road<br>Burlington, WI 53105                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                      | 10. Work Unit No.                                                                                                                                                                                                       |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                      | 11. Contract or Grant No.<br>DTNH22-93-C-02047                                                                                                                                                                          |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                      | 14. Sponsoring Agency Code<br>NPS-10                                                                                                                                                                                    |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| 15. Supplementary Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                      |                                                                                                                                                                                                                         |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| 16. Abstract<br>A 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 1998 Mercedes-Benz C230 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 October 22, 1997.<br><br>The impact velocity of the Moving Deformable Barrier (MDB) was 61.3 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 21°C. The target vehicle post test maximum crush was 371 mm at level 3. The test vehicle's performance follows: <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;">67</td> <td style="text-align: center;">64</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">81</td> <td style="text-align: center;">62</td> </tr> <tr> <td>Lower Spine (T<sub>12</sub>) Accel., g</td> <td style="text-align: center;">91</td> <td style="text-align: center;">69</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">86</td> <td style="text-align: center;">67</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">79</td> <td style="text-align: center;">101</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.</p> |                                                      |                                                                                                                                                                                                                         |           |  | <u>DRIVER</u> | <u>PASS.</u> | Left Upper Rib (LUR) Accel., g | 67 | 64 | Left Lower Rib (LLR) Accel., g | 81 | 62 | Lower Spine (T <sub>12</sub> ) Accel., g | 91 | 69 | Thoracic Trauma Index (TTI) | 86 | 67 | Pelvis (PEV) Accel., g | 79 | 101 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>DRIVER</u>                                        | <u>PASS.</u>                                                                                                                                                                                                            |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| Left Upper Rib (LUR) Accel., g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 67                                                   | 64                                                                                                                                                                                                                      |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| Left Lower Rib (LLR) Accel., g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 81                                                   | 62                                                                                                                                                                                                                      |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| Lower Spine (T <sub>12</sub> ) Accel., g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 91                                                   | 69                                                                                                                                                                                                                      |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| Thoracic Trauma Index (TTI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 86                                                   | 67                                                                                                                                                                                                                      |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| Pelvis (PEV) Accel., g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 79                                                   | 101                                                                                                                                                                                                                     |           |  |               |              |                                |    |    |                                |    |    |                                          |    |    |                             |    |    |                        |    |     |
| 17. Key Words<br>New Car Assessment Program (NCAP)<br>FMVSS No. 214D<br>Side Impact Dummy (SID)<br>Occupant Side Impact Protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                      | 18. Distribution Statement<br>Copies of this report are available from:<br>National Highway Traffic Safety Adm.<br>Technical Ref. Division,<br>Room 5108 (NAD-52)<br>400 Seventh Street, S.W.<br>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 Mercedes-Benz C230.

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 Mercedes-Benz C230 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 38.1 mph (61.3 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 October 22, 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 (T<sub>12</sub>) 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)         | 86        | 67       |
| Pelvis (g)      | 79        | 101      |

**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/Mercedes-Benz/C230/4-Door  
Vehicle NHTSA No.: MW0500 VIN: WDBHA23G7WA529032  
Vehicle Body Color: Rose Build Date: 7-97  
Engine Data: 4 Cylinders;     CID; 2.3 Liter;     cc  
Placement X Longitudinal;     Lateral  
Transmission: 4 Speed;     Manual; X Automatic;     Overdrive  
Final Drive: X Rear Wheel Drive;     Frt. Wheel Drive;     Four Wheel Drive  
  
Odometer Reading 138 miles  
Options: X A/C; X Pwr. Steering; X Pwr. Brakes; X Pwr. Windows;  
X Cruise Control;     Tilt Wheel; X Power Door Locks; X ABS  
X Sun Roof

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 28 Psi FRONT  
32 Psi REAR  
Recommended Tire Size: 205/60/R15  
Tires on Test Vehicle: 205/60/R15 Manufacturer: Goodyear

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear;     3rd Seat, 5 Total  
Type of Front Seats: X Bucket;     Bench;     Split Bench  
Type of Front Seat Back:     Fixed; X Adjustable with X Lever(Passenger)  
X Power (Driver)  
  
Vehicle Maximum Capacity Loading = 392.4 kg (A)  
No. of Occupants x 68.04 kg. = 340.2 kg (B)  
Cargo Capacity (A-B) = 52.2 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

|                           |   |                  |                   |   |                 |
|---------------------------|---|------------------|-------------------|---|-----------------|
| Right Front               | = | <u>371.9</u> kg  | Right Rear        | = | <u>336.6</u> kg |
| Left Front                | = | <u>385.6</u> kg  | Left Rear         | = | <u>326.5</u> kg |
| TOTAL FRONT               | = | <u>757.5</u> kg  | TOTAL REAR        | = | <u>663.1</u> kg |
| % of Total Vehicle Weight | = | <u>53.3</u> %;   | % of Total Weight | = | <u>46.7</u> %   |
| TOTAL WEIGHT              | = | <u>1420.6</u> kg |                   |   |                 |

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

|                                                         |   |                  |
|---------------------------------------------------------|---|------------------|
| Total Test Vehicle Delivered Weight with Maximum Fluids | = | <u>1420.6</u> kg |
| Cargo Carrying Capacity of Test Vehicle                 | = | <u>52.2</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>1634.2</u> kg |

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

|                   |   |                  |                   |   |                 |
|-------------------|---|------------------|-------------------|---|-----------------|
| Right Front       | = | <u>374.6</u> kg  | Right Rear        | = | <u>400.5</u> kg |
| Left Front        | = | <u>439.1</u> kg  | Left Rear         | = | <u>420.0</u> kg |
| TOTAL FRONT       | = | <u>813.7</u> kg  | TOTAL REAR        | = | <u>820.5</u> kg |
| % of Total Weight | = | <u>49.8</u> %    | % of Total Weight | = | <u>50.2</u> %   |
| TOTAL TEST WEIGHT | = | <u>1634.2</u> kg |                   |   |                 |

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 679 mm Left Front 684 mm Right Rear 681 mm Left Rear 668 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 669 mm Left Front 659 mm Right Rear 649 mm Left Rear 620 mm

TEST ATTITUDE:

Right Front 670 mm Left Front 670 mm Right Rear 654 mm Left Rear 635 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2686 mm

C.G. = 1322 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side     = 4272 mm

Centerline     = 4501 mm

Left Side       = 4272 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

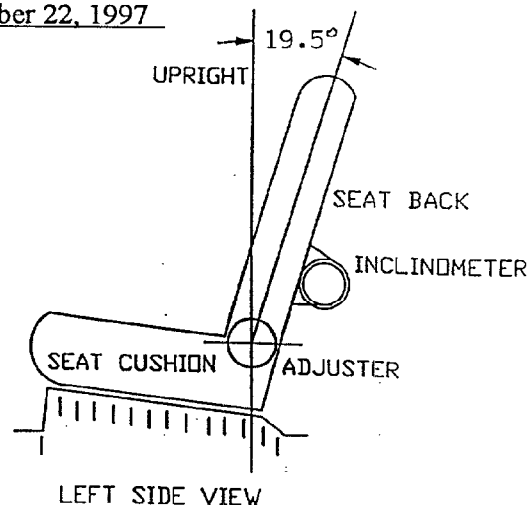
FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 230 mm

Test Position: Mid position of travel (115 mm)

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 19.5°



SECOND POSITION SEAT:

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

Seat Back Adjustment Position: Non-adjustable

ADJUSTABLE STEERING COLUMN POSITION: Non-adjustable

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

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 16.4 gallons

Test Volume: 15.3 gallons 93 % of capacity

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

Wheelbase:      = 2686 mm

Impact Point is 403 mm rearward of front axle centerline

DATA SHEET NO. 2  
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

Overall Length = 4501 mm; Overall Width = 1713 mm

TEST WEIGHT:

Right Front = 391.9 kg Right Rear = 399.2 kg

Left Front = 433.6 kg Left Rear = 401.0 kg

TOTAL FRONT = 825.5 kg TOTAL REAR = 800.2 kg

% of Total Weight = 50.8 % % of Total Weight = 49.2 %

TOTAL VEHICLE WEIGHT = 1625.7 kg

Wheelbase = 2686 mm

Longitudinal C.G. from Center of Front Axle = 1322 mm

Impact Angle with Respect to Impactor = 90° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (268 mm above ground) = 183 mm

2. LEVEL 2 (485 mm above ground) = 358 mm

3. LEVEL 3 (578 mm above ground) = 371 mm

4. LEVEL 4 (850 mm above ground) = 330 mm

5. LEVEL 5 (1307 mm above ground) = 102 mm

Maximum Post-Test Intrusion = 371 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><br><u>and frontal and side</u><br><u>airbags</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>3</u>  |
| Offboard Vehicle                   | = | <u>4</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/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 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: 38.1 mph (61.3 kph) Secondary: 38.1 mph (61.3 kph)

## CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)

### MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

- |    |                                 |                 |
|----|---------------------------------|-----------------|
| 1. | Row A Top of Stack (813 mm)     | = <u>214</u> mm |
| 2. | Row B Mid Stack (686 mm)        | = <u>175</u> mm |
| 3. | Row C Top of Bumper (533 mm)    | = <u>133</u> mm |
| 4. | Row D Center of Bumper (432 mm) | = <u>151</u> mm |

### INSTRUMENTATION:

Number of MDB Data Channels = 7

DATA SHEET NO. 4  
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

VISIBLE DUMMY CONTACT POINTS:

|            | <u>LEFT FRONT SID</u>             | <u>LEFT REAR SID</u>   |
|------------|-----------------------------------|------------------------|
| Head       | <u>B-post and side airbag</u>     | <u>C-post and roof</u> |
| Arm        | <u>door panel and side airbag</u> | <u>door panel</u>      |
| Pelvis     | <u>door panel</u>                 | <u>door panel</u>      |
| Left Knee  | <u>door panel</u>                 | <u>door panel</u>      |
| Right Knee | <u>left knee</u>                  | <u>left knee</u>       |

DOOR OPENING:

|       | <u>LEFT SIDE</u>       | <u>RIGHT SIDE</u>      |
|-------|------------------------|------------------------|
| Front | <u>Remained closed</u> | <u>Remained closed</u> |
| Rear  | <u>Remained closed</u> | <u>Remained closed</u> |

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 2 mm rearward      Vertical: 8 mm high

ARM REST LOCATIONS:

Front: 244 mm from bottom of window

Rear: 237 mm from bottom of window

## POST-TEST OBSERVATIONS (Cont'd)

### SEAT CRUSH:

Front Seat Back: 87 mm    Front Seat Cushion: 47 mm  
Left Rear Seat Back: 180 mm    Rear Seat Cushion: 195 mm

### GLAZING DAMAGE:

Windshield cracked, both driver's side front and rear door glass broken.

### PILLAR PERFORMANCE:

No failure noted

### SILL SEPARATION:

None noted

### AIRBAG DEPLOYMENT STATUS:

|         | <u>DRIVER</u> | <u>REAR PASSENGER</u> |
|---------|---------------|-----------------------|
| Frontal | <u>No</u>     | <u>N/A</u>            |
| Side    | <u>Yes</u>    | <u>N/A</u>            |

### OTHER NOTABLE IMPACT EFFECTS:

Driver's side airbag deployed, passenger's side airbag did not deploy, frontal airbags  
did not deploy.

**SECTION 4**  
**OCCUPANT AND VEHICLE INFORMATION**

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

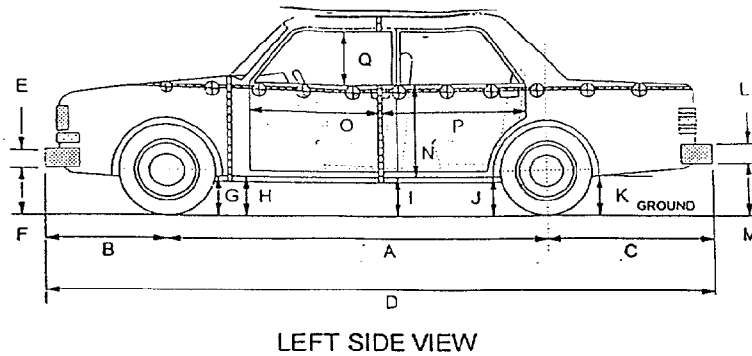
Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

|                             | Front Dummy ID #269 |             |             |             | Rear Dummy ID #270 |             |             |             |
|-----------------------------|---------------------|-------------|-------------|-------------|--------------------|-------------|-------------|-------------|
|                             | Pos. Direct.        |             | Neg. Direct |             | Pos. Direct.       |             | Neg. Direct |             |
|                             | Max (g)             | Time (msec) | Max (g)     | Time (msec) | Max (g)            | Time (msec) | Max (g)     | Time (msec) |
| <b>RIB ACCELERATIONS</b>    |                     |             |             |             |                    |             |             |             |
| Left Upper Rib (LUR) Y      | 67.1                | 24          | -23.4       | 65          | 64.5               | 45          | -4.8        | 132         |
| Left Lower Rib (LLR) Y      | 80.8                | 24          | -13.3       | 68          | 62.1               | 43          | -19.0       | 74          |
| <b>SPINE ACCELERATIONS</b>  |                     |             |             |             |                    |             |             |             |
| Lower Lateral Y             | 91.0                | 27          | -14.6       | 61          | 69.0               | 44          | -37.6       | 69          |
| <b>PELVIS ACCELERATIONS</b> |                     |             |             |             |                    |             |             |             |
| Lateral Y                   | 79.5                | 24          | -13.4       | 78          | 101.1              | 39          | -21.8       | 64          |

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

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



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

J1 = To Pinch Weld  
J2 = To Sill

ALL MEASUREMENTS IN (mm)

|       | PRE-TEST | POST-TEST | Δ CHANGE |
|-------|----------|-----------|----------|
| A     | 2686     | 2612      | -74      |
| B     | 797      | 809       | 12       |
| C     | 1018     | 1018      | 0        |
| D     | 4501     | 4439      | -62      |
| E     | 188      | 188       | 0        |
| F     | 314      | 324       | 10       |
| G     | 164      | 198       | 34       |
| H     | 166      | 194       | 28       |
| I     | 172      | 202       | 30       |
| J1/J2 | 154/148  | 140/124   | -14/-24  |
| K     | 240      | 248       | 8        |
| L     | 146      | 146       | 0        |
| M     | 428      | 442       | 14       |
| N     | 610      | 542       | -68      |
| O     | 635      | 582       | -53      |
| P     | 1178     | 1077      | -101     |
| Q     | 411      | 374       | -37      |
| R     | 4272     | 4281      | 9        |
| S     | 4272     | 4204      | -68      |
| T     | 1713     | 1431      | -282     |

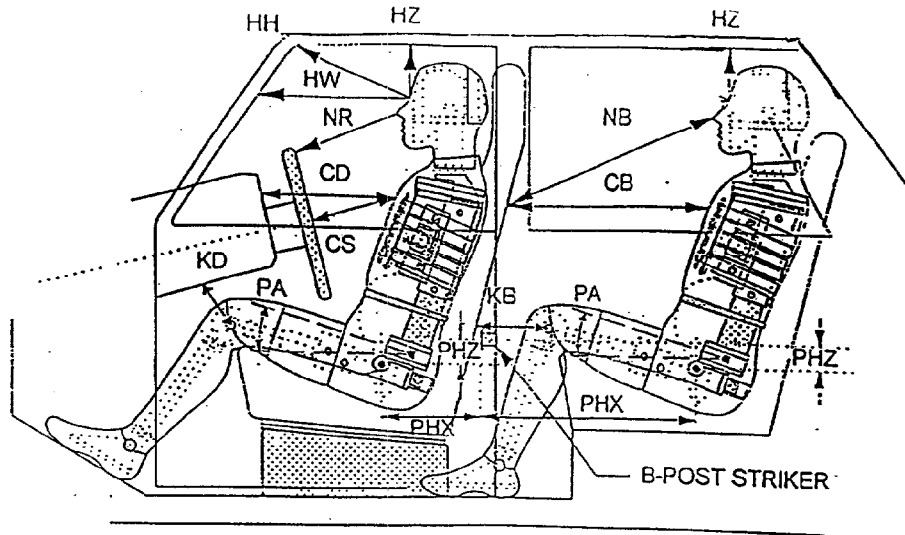
# DATA SHEET NO. 7

## SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

NHTSA NO.: MW0500

Test Date: October 22, 1997



NOTE: All dimensions are in mm with tolerance of  $\pm 3$  mm

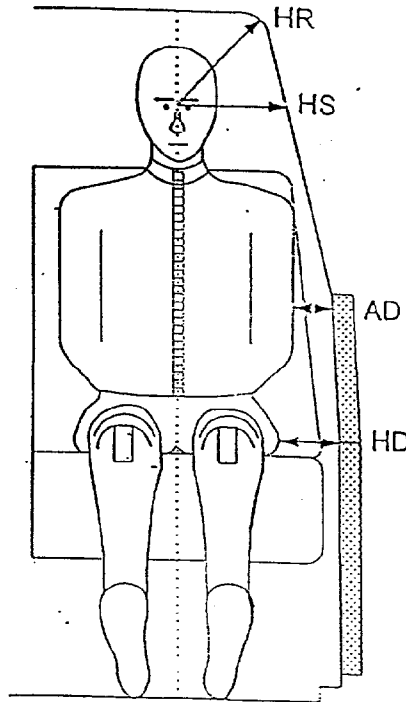
|           | DRIVER SID<br>ID #269 |           | LEFT REAR<br>PASSENGER<br>SID ID #270 |
|-----------|-----------------------|-----------|---------------------------------------|
| HH        | 404                   | HZ        | 144                                   |
| HW        | 612                   | NB        | 616                                   |
| HZ        | 150                   | CB        | 529                                   |
| NR        | 448                   | KBL (KBA) | 230 (0.0°)                            |
| CD        | 518                   | KBR (KBA) | 222 (0.0°)                            |
| CS        | 340                   | PA°       | 24.8°                                 |
| KDL(KDA°) | 120 (24.7°)           | PHX       | 208                                   |
| KDR(KDA°) | 104 (27.2°)           | PHZ       | 320                                   |
| PA°       | 24.0°                 |           |                                       |
| PHX       | 180                   |           |                                       |
| PHZ       | 228                   |           |                                       |

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/Mercedes-Benz/C230/4-Door

NHTSA NO.: MW0500      Test Date: October 22, 1997



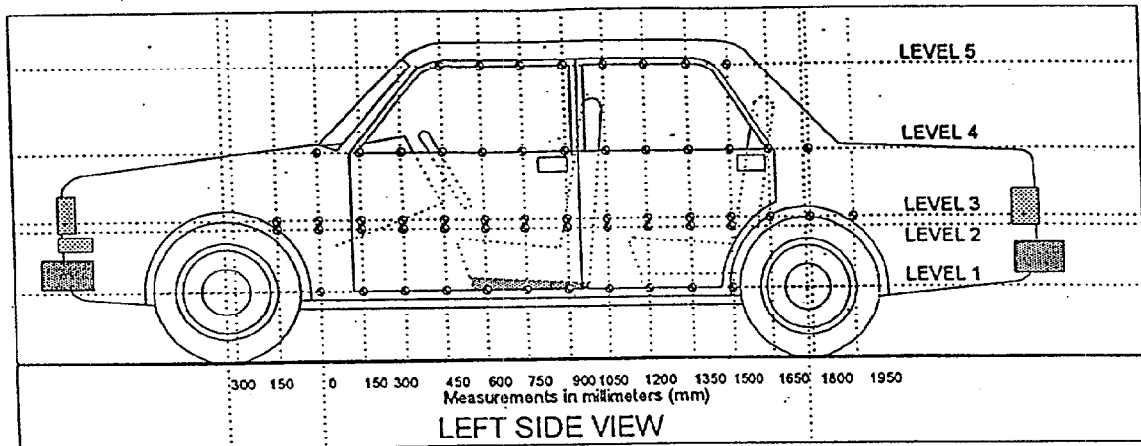
NOTE: All dimensions are in mm

|    | DRIVER SID<br>ID #269 | LEFT REAR PASSENGER<br>SID ID #270 |
|----|-----------------------|------------------------------------|
| HR | 216                   | 220                                |
| HS | 298                   | 268                                |
| AD | 62                    | 120                                |
| HD | 104                   | 164                                |

DATA SHEET NO. 9  
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

NHTSA NO.: MW0500 Test Date: October 22, 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<br>(or Sill Top Height) | = <u>268</u> mm  |
| Level 2 @ Occupant H-Point                               | = <u>485</u> mm  |
| Level 3 @ Mid Door                                       | = <u>578</u> mm  |
| Level 4 @ Window Sill                                    | = <u>850</u> mm  |
| Level 5 @ Window Top                                     | = <u>1307</u> mm |

DATA SHEET NO. 10  
VEHICLE EXTERIOR CRUSH PROFILES

|                            | Level 1 - Axle Centerline |                |                   |
|----------------------------|---------------------------|----------------|-------------------|
| Longitudinal Distance (mm) | Pre-Test (mm)             | Post-Test (mm) | Static Crush (mm) |
| -1800                      |                           |                |                   |
| -1650                      |                           |                |                   |
| -1500                      |                           |                |                   |
| -1350                      |                           |                |                   |
| -1200                      |                           |                |                   |
| -1050                      |                           |                |                   |
| -900                       |                           |                |                   |
| -750                       |                           |                |                   |
| -600                       |                           |                |                   |
| -450                       |                           |                |                   |
| -300                       |                           |                |                   |
| -150                       |                           |                |                   |
| 0 (impact point)           | 621                       | 681            | 60                |
| 150                        | 640                       | 733            | 93                |
| 300                        | 647                       | 773            | 126               |
| 450                        | 647                       | 830            | 183               |
| 600                        | 647                       | 827            | 180               |
| 750                        | 647                       | 824            | 177               |
| 900                        | 647                       | 818            | 171               |
| 1050                       | 647                       | 818            | 171               |
| 1200                       | 647                       | 815            | 168               |
| 1350                       | 647                       | 790            | 143               |
| 1500                       | 651                       | 752            | 101               |
| 1650                       | 651                       | 713            | 62                |
| 1800                       | 644                       | 687            | 43                |

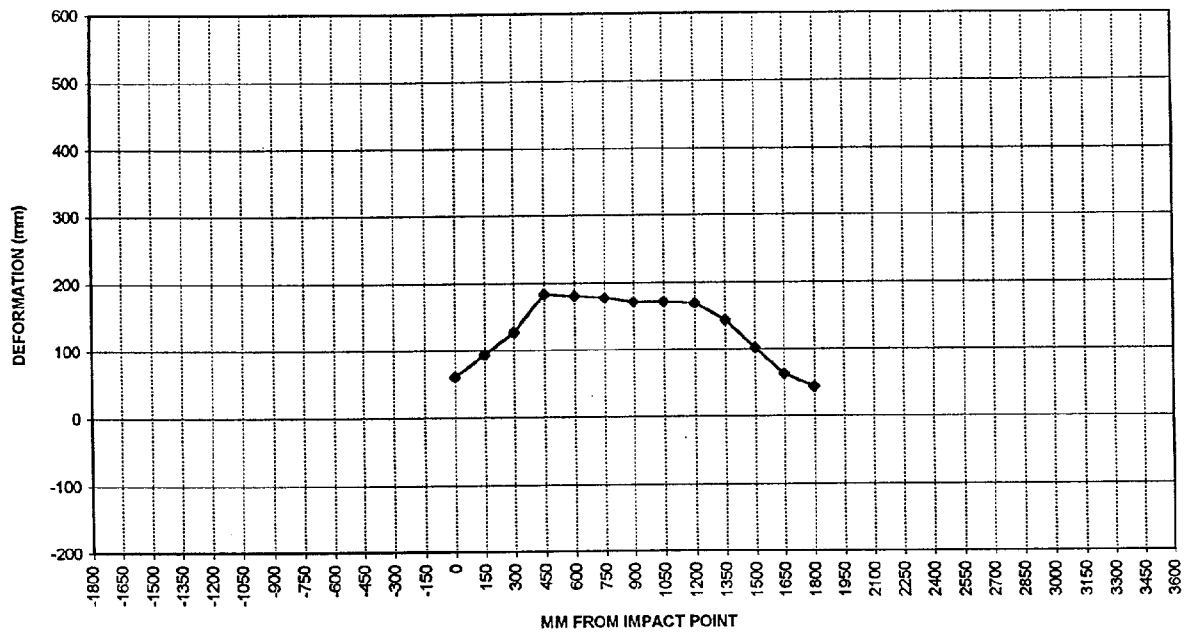
Reference plane is parallel to test vehicle longitudinal centerline.  
 Given dimensions = Reference plane to car body

**DATA SHEET NO. 10**  
**VEHICLE EXTERIOR CRUSH PROFILES**

|                            | Level 1 - Axle Centerline |                |                   |
|----------------------------|---------------------------|----------------|-------------------|
| 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 1 - AXLE CENTERLINE

DATA SHEET NO. 10  
VEHICLE EXTERIOR CRUSH PROFILES

|                            | Level 2 - Occupant H-Point |                |                   |
|----------------------------|----------------------------|----------------|-------------------|
| Longitudinal Distance (mm) | Pre-Test (mm)              | Post-Test (mm) | Static Crush (mm) |
| -1800                      |                            |                |                   |
| -1650                      |                            |                |                   |
| -1500                      |                            |                |                   |
| -1350                      |                            |                |                   |
| -1200                      |                            |                |                   |
| -1050                      | 668                        | 673            | 5                 |
| -900                       | 626                        | 634            | 8                 |
| -750                       | 597                        | 605            | 8                 |
| -600                       |                            |                |                   |
| -450                       |                            |                |                   |
| -300                       |                            |                |                   |
| -150                       |                            |                |                   |
| 0 (impact point)           | 598                        | 806            | 208               |
| 150                        | 602                        | 833            | 231               |
| 300                        | 603                        | 882            | 279               |
| 450                        | 603                        | 898            | 295               |
| 600                        | 603                        | 910            | 307               |
| 750                        | 602                        | 918            | 316               |
| 900                        | 601                        | 925            | 324               |
| 1050                       | 598                        | 930            | 332               |
| 1200                       | 598                        | 934            | 336               |
| 1350                       | 598                        | 956            | 358               |
| 1500                       | 600                        | 958            | 358               |
| 1650                       | 600                        | 948            | 348               |
| 1800                       | 602                        | 917            | 315               |

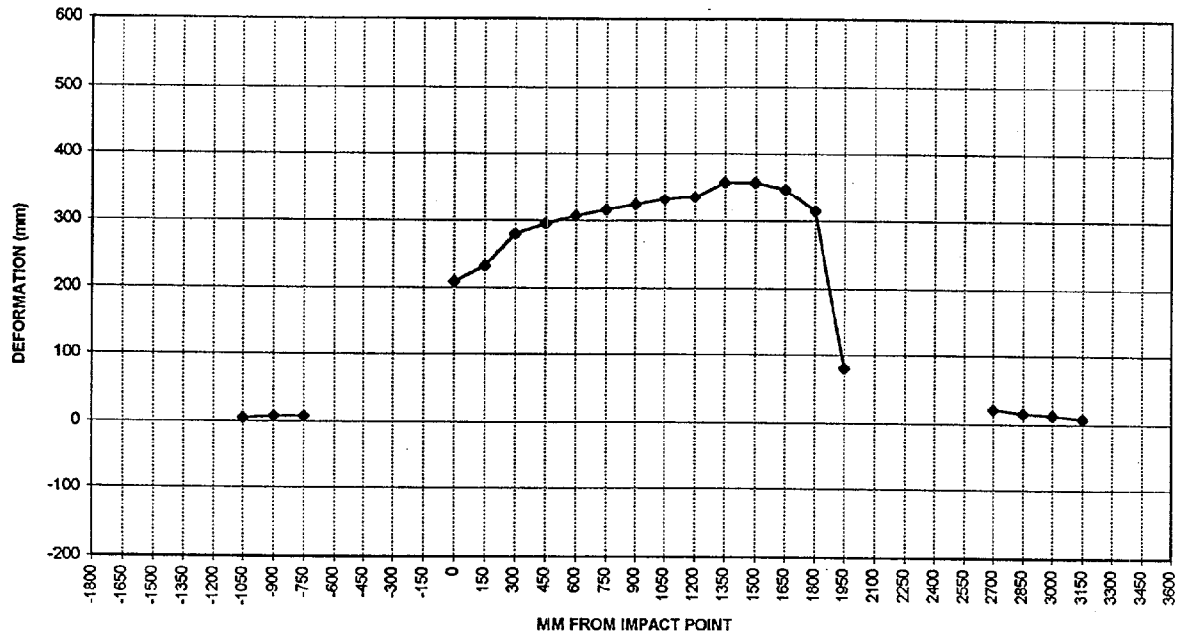
Reference plane is parallel to test vehicle longitudinal centerline.  
Given dimensions = Reference plane to car body

**DATA SHEET NO. 10**  
**VEHICLE EXTERIOR CRUSH PROFILES**

|                            | Level 2 - Occupant H-Point |                |                   |
|----------------------------|----------------------------|----------------|-------------------|
| Longitudinal Distance (mm) | Pre-Test (mm)              | Post-Test (mm) | Static Crush (mm) |
| 1950                       | 596                        | 677            | 81                |
| 2100                       |                            |                |                   |
| 2250                       |                            |                |                   |
| 2400                       |                            |                |                   |
| 2550                       |                            |                |                   |
| 2700                       | 600                        | 622            | 22                |
| 2850                       | 621                        | 637            | 16                |
| 3000                       | 644                        | 657            | 13                |
| 3150                       | 667                        | 675            | 8                 |
| 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**

|                            | Level 3 - Mid-Door |                |                   |
|----------------------------|--------------------|----------------|-------------------|
| Longitudinal Distance (mm) | Pre-Test (mm)      | Post-Test (mm) | Static Crush (mm) |
| -1800                      |                    |                |                   |
| -1650                      |                    |                |                   |
| -1500                      |                    |                |                   |
| -1350                      |                    |                |                   |
| -1200                      |                    |                |                   |
| -1050                      |                    |                |                   |
| -900                       |                    |                |                   |
| -750                       | 614                | 638            | 24                |
| -600                       |                    |                |                   |
| -450                       |                    |                |                   |
| -300                       |                    |                |                   |
| -150                       |                    |                |                   |
| 0 (impact point)           | 598                | 758            | 160               |
| 150                        | 600                | 816            | 216               |
| 300                        | 603                | 873            | 270               |
| 450                        | 603                | 905            | 302               |
| 600                        | 602                | 927            | 325               |
| 750                        | 600                | 941            | 341               |
| 900                        | 600                | 950            | 350               |
| 1050                       | 599                | 948            | 349               |
| 1200                       | 597                | 939            | 342               |
| 1350                       | 597                | 953            | 356               |
| 1500                       | 598                | 969            | 371               |
| 1650                       | 598                | 965            | 367               |
| 1800                       | 599                | 945            | 346               |

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 3 - Mid-Door |                |                   |
|----------------------------|--------------------|----------------|-------------------|
| Longitudinal Distance (mm) | Pre-Test (mm)      | Post-Test (mm) | Static Crush (mm) |
| 1950                       | 599                | 815            | 216               |
| 2100                       | 588                | 630            | 42                |
| 2250                       |                    |                |                   |
| 2400                       |                    |                |                   |
| 2550                       | 603                | 634            | 31                |
| 2700                       | 625                | 648            | 23                |
| 2850                       | 648                | 663            | 15                |
| 3000                       | 667                | 680            | 13                |
| 3150                       | 695                | 705            | 10                |
| 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                       | 685                   | 687            | 2                 |
| -750                       | 662                   | 668            | 6                 |
| -600                       | 653                   | 667            | 14                |
| -450                       | 645                   | 671            | 26                |
| -300                       | 640                   | 674            | 34                |
| -150                       | 634                   | 677            | 43                |
| 0 (impact point)           | 631                   | 697            | 66                |
| 150                        | 627                   | 749            | 122               |
| 300                        | 626                   | 779            | 153               |
| 450                        | 624                   | 844            | 220               |
| 600                        | 624                   | 867            | 243               |
| 750                        | 624                   | 888            | 264               |
| 900                        | 624                   | 895            | 271               |
| 1050                       | 624                   | 897            | 273               |
| 1200                       | 625                   | 900            | 275               |
| 1350                       | 628                   | 930            | 302               |
| 1500                       | 629                   | 949            | 320               |
| 1650                       | 631                   | 961            | 330               |
| 1800                       | 632                   | 902            | 270               |

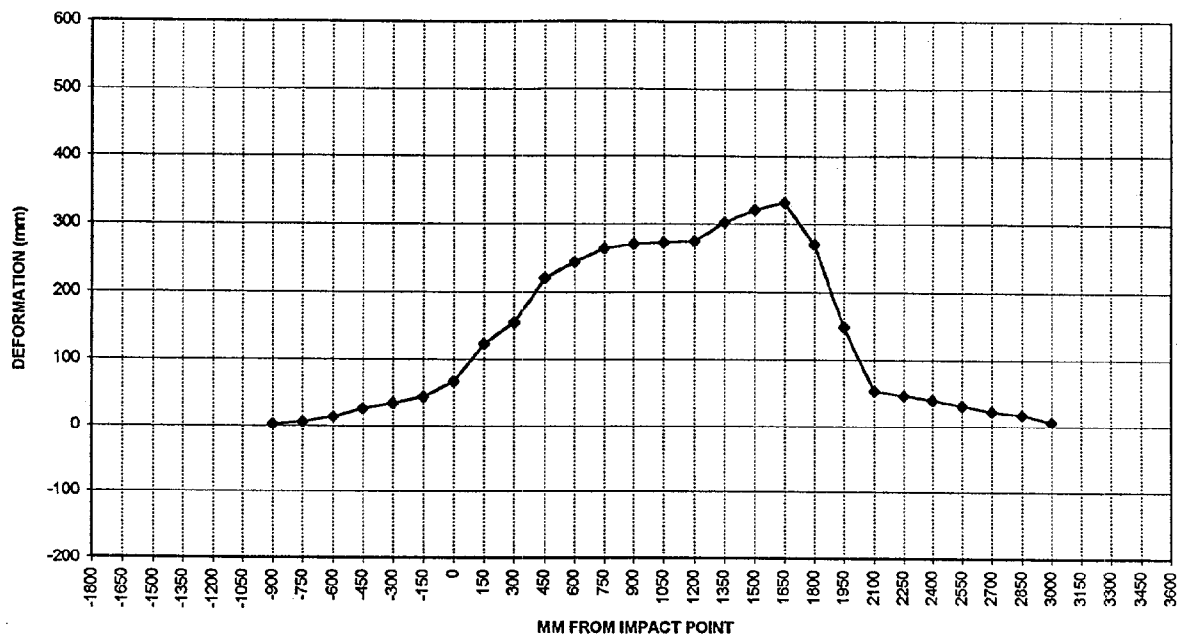
Reference plane is parallel to test vehicle longitudinal centerline.  
Given dimensions = Reference plane to car body

**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                       | 632                   | 779            | 147               |
| 2100                       | 637                   | 690            | 53                |
| 2250                       | 644                   | 690            | 46                |
| 2400                       | 651                   | 691            | 40                |
| 2550                       | 660                   | 692            | 32                |
| 2700                       | 672                   | 695            | 23                |
| 2850                       | 687                   | 705            | 18                |
| 3000                       | 709                   | 716            | 7                 |
| 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

|                            | Level 5 - Window Top |                |                   |
|----------------------------|----------------------|----------------|-------------------|
| Longitudinal Distance (mm) | 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                        | 837                  | 891            | 54                |
| 900                        | 843                  | 910            | 67                |
| 1050                       | 851                  | 929            | 78                |
| 1200                       | 855                  | 947            | 92                |
| 1350                       | 858                  | 960            | 102               |
| 1500                       | 860                  | 943            | 83                |
| 1650                       | 859                  | 932            | 73                |
| 1800                       | 859                  | 919            | 60                |

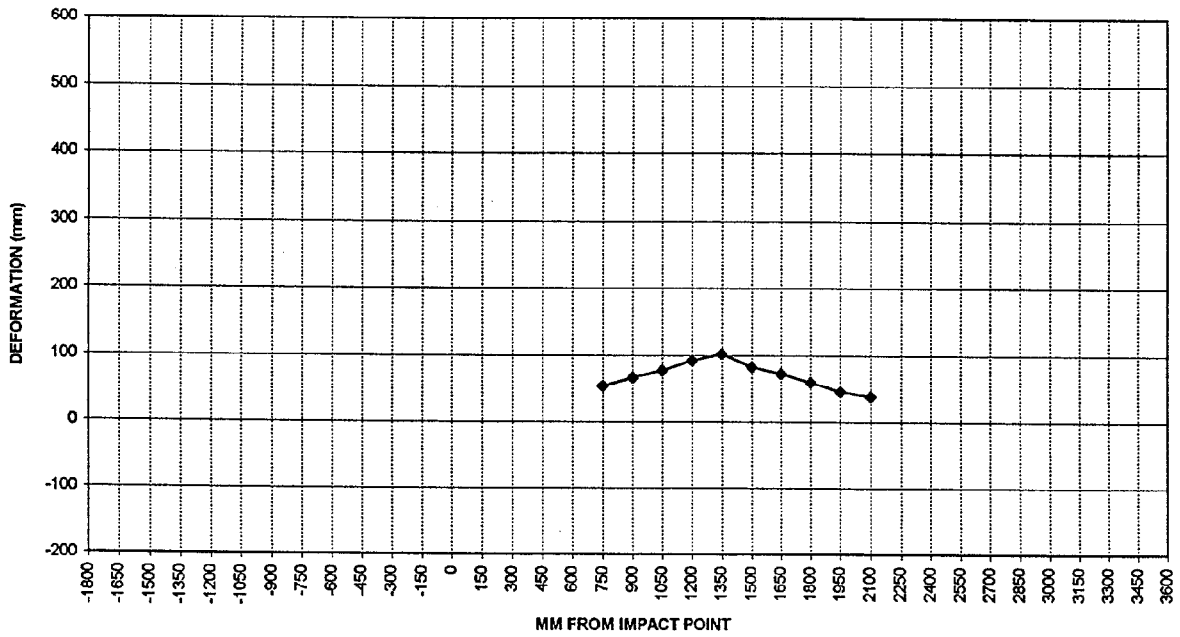
Reference plane is parallel to test vehicle longitudinal centerline.  
 Given dimensions = Reference plane to car body

**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                       | 863                  | 908            | 45                |
| 2100                       | 876                  | 914            | 38                |
| 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



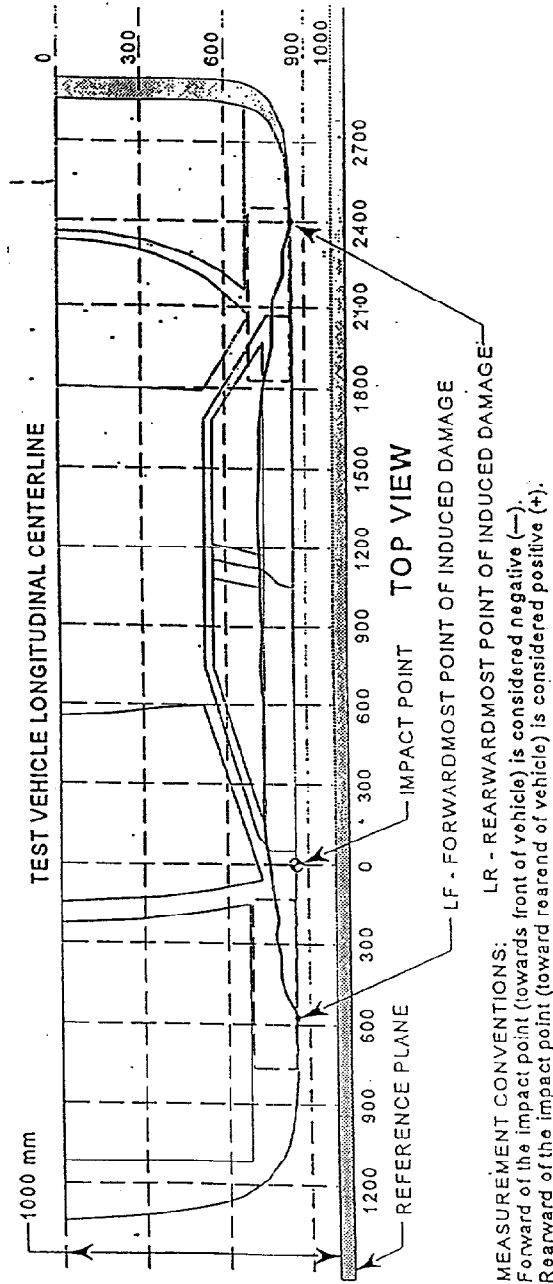
LEVEL 5 - WINDOW TOP

# DATA SHEET NO. 11

## VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

NHTSA NO.: MW0500 Test Date: October 22, 1997



| DPD MEASUREMENTS  | POST-TEST (mm) | PRE-TEST (mm) | STATIC CRUSH (mm) |
|-------------------|----------------|---------------|-------------------|
| 1. (LF = -900 mm) | 687            | 685           | 2                 |
| 2. -230 mm        | 675            | 637           | 38                |
| 3. 608 mm         | 928            | 602           | 326               |
| 4. 1402 mm        | 962            | 597           | 365               |
| 5. 2340 mm        | 690            | 648           | 42                |
| 6. (LR = 3000 mm) | 716            | 709           | 7                 |

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

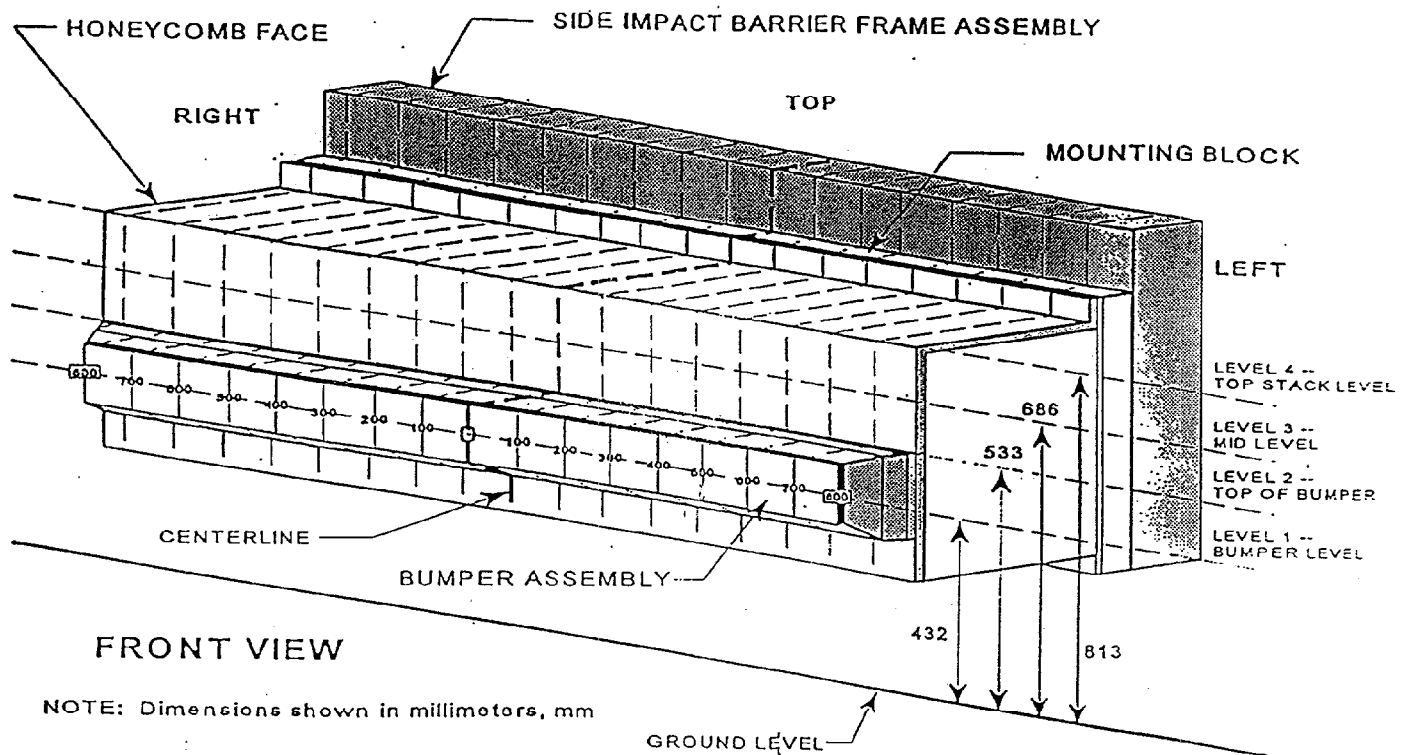
Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

|                    |              | Distance Right of Center (mm) |     |     |     |     |     |     |     |    | Distance Left of Center (mm) |     |     |     |     |     |     |     |
|--------------------|--------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|----|------------------------------|-----|-----|-----|-----|-----|-----|-----|
| Location           | Height at CL | 800                           | 700 | 600 | 500 | 400 | 300 | 200 | 100 | 0  | 100                          | 200 | 300 | 400 | 500 | 600 | 700 | 800 |
| Top Stack Level 4  | 813 mm       | 78                            | 19  | 3   | 6   | 13  | 24  | 28  | 32  | 35 | 44                           | 49  | 59  | 82  | 105 | 132 | 186 | 214 |
| Mid Level Level 3  | 686 mm       | 30                            | 8   | 10  | 15  | 17  | 27  | 29  | 26  | 23 | 24                           | 27  | 31  | 38  | 50  | 84  | 38  | 175 |
| Top Bumper Level 2 | 533 mm       | 83                            | 77  | 66  | 53  | 57  | 70  | 65  | 59  | 65 | 79                           | 79  | 83  | 87  | 92  | 106 | 121 | 133 |
| Mid Bumper Level 1 | 432 mm       | 148                           | 128 | 110 | 100 | 106 | 103 | 96  | 95  | 93 | 94                           | 97  | 100 | 104 | 117 | 137 | 151 | 151 |

See next page for Barrier Face Graphic

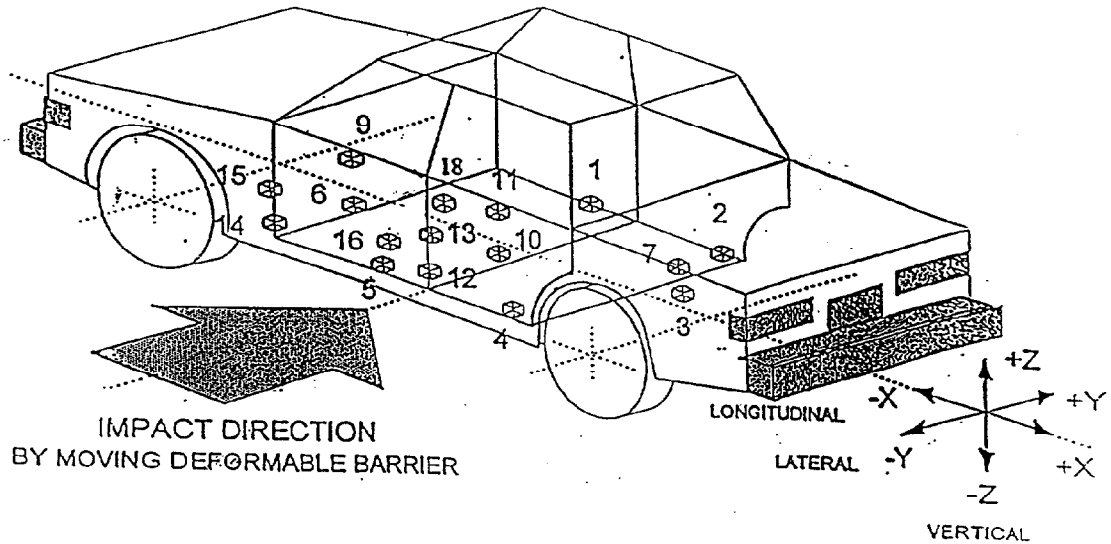
DATA SHEET NO. 12 (Cont'd)



**DATA SHEET 13**  
**TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY**

Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500      Test Date: October 22, 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/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

| Accel.<br>No. | Description                      | Coordinates (mm)* |      |      | Long. (X)<br>Maximums (g's) |       | Lat. (Y)<br>Maximums (g's) |        | Vert. (Z)<br>Maximums (g's) |       | Resultant<br>(g's) |
|---------------|----------------------------------|-------------------|------|------|-----------------------------|-------|----------------------------|--------|-----------------------------|-------|--------------------|
|               |                                  | X                 | Y    | Z    | Pos.                        | Neg.  | Pos.                       | Neg.   | Pos.                        | Neg.  |                    |
| 1             | Rt. Side Sill @ Front Seat       | 2440              | 533  | 191  | 2.0                         | -4.0  | 22.4                       | -2.8   | 18.0                        | -3.2  | 23.1               |
| 2             | Rt. Side Sill @ Rear Seat        | 1457              | 654  | 205  | 1.8                         | -4.6  | 20.9                       | -1.7   | 3.3                         | -5.5  | 21.1               |
| 3             | Rr. Floorpan Above Axle          | 925               | 0    | 504  | 3.0                         | -9.2  | 18.3                       | -3.4   | 12.9                        | -17.4 | 19.7               |
| 4             | Left Side Sill @ Rr. Seat        | 1464              | -658 | 202  | ---                         | ---   | 32.0                       | -5.8   | ---                         | ---   | ---                |
| 5             | Left Side Sill @ Frt. Seat       | 2422              | -532 | 199  | ---                         | ---   | 31.3                       | -10.0  | ---                         | ---   | ---                |
| 6             | Left Front Door on Centerline    | 2483              | -736 | 622  | ---                         | ---   | 192.1                      | -134.0 | ---                         | ---   | ---                |
| 7             | Right Rear Occupant Compartment  | 1755              | 357  | 313  | ---                         | ---   | 19.4                       | -2.4   | ---                         | ---   | ---                |
| 9             | Left Front Door Upper Centerline | 2513              | -742 | 845  | ---                         | ---   | 149.0                      | -93.5  | ---                         | ---   | ---                |
| 10            | Mid Rear of Left Rear Door       | 1598              | -738 | 685  | ---                         | ---   | 169.0                      | -94.6  | ---                         | ---   | ---                |
| 11            | Left Rear Door Upper Centerline  | 1616              | -734 | 902  | ---                         | ---   | 124.2                      | -64.3  | ---                         | ---   | ---                |
| 12            | Left Lower B-Post                | 2062              | -685 | 293  | ---                         | ---   | 47.3                       | -18.6  | ---                         | ---   | ---                |
| 13            | Left Mid B-Post                  | 2004              | -656 | 1053 | ---                         | ---   | 147.3                      | -68.1  | ---                         | ---   | ---                |
| 14            | Left Lower A-Post                | 3067              | -691 | 415  | ---                         | ---   | 136.0                      | -49.0  | ---                         | ---   | ---                |
| 15            | Left Mid A-Post                  | 2987              | -740 | 863  | ---                         | ---   | 74.8                       | -16.1  | ---                         | ---   | ---                |
| 16            | Driver Left Seat Track           | 2137              | -590 | 300  | ---                         | ---   | 52.1                       | -11.9  | ---                         | ---   | ---                |
| 18            | Vehicle CG                       | 2375              | -10  | 340  | 44.6                        | -57.5 | 65.0                       | -63.7  | 35.7                        | -27.3 | 86.1               |

\*Reference: X - Rear Bumper (+ Forward)

Y - Vehicle Centerline (+ To right)

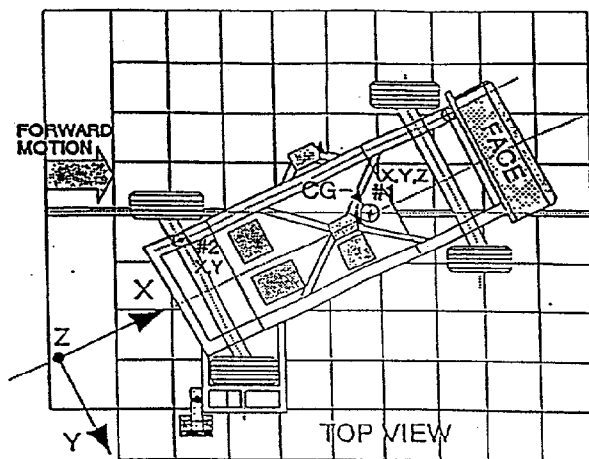
Z - Ground Level (+ Up)

# DATA SHEET NO. 14

## MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997



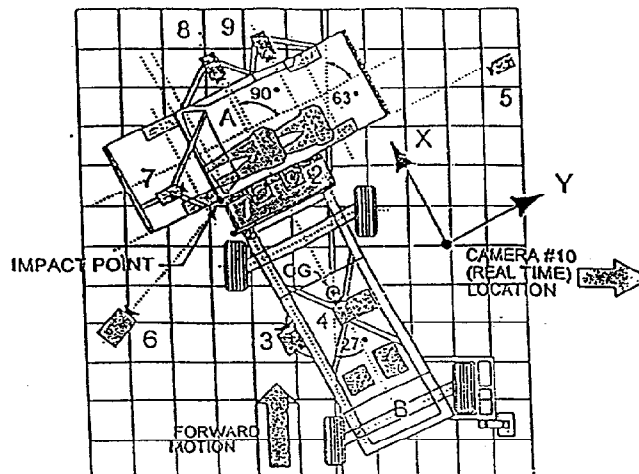
| Accel. No. | Description           | Coordinates (mm)* |      |     | (+ ) Positive |             | (- ) Negative |             |
|------------|-----------------------|-------------------|------|-----|---------------|-------------|---------------|-------------|
|            |                       | X                 | Y    | Z   | Max. (g)      | Time (msec) | Max. (g)      | Time (msec) |
| 1          | MDB Center of Gravity | -1092             | 0    | 483 |               |             |               |             |
|            | Longitudinal (X)      | ---               | ---  | --- | 0.8           | 172         | -19.3         | 32          |
|            | Lateral (Y)           | ---               | ---  | --- | 3.0           | 60          | -4.4          | 70          |
|            | Vertical (Z)          | ---               | ---  | --- | 21.4          | 37          | -25.0         | 42          |
|            | Resultant (R)         | ---               | ---  | --- | 30.6          | 42          | ---           | ---         |
| 2          | Rear Frame Member     | -2591             | -625 | 622 |               |             |               |             |
|            | Longitudinal (X)      | ---               | ---  | --- | 1.5           | 174         | -24.1         | 31          |
|            | Lateral (Y)           | ---               | ---  | --- | 3.2           | 44          | -1.1          | 199         |

\*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/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997



| Camera No. | View                   | Coordinates (mm)* |       |      | Angle | Lens (mm) | Film Speed (fps) |
|------------|------------------------|-------------------|-------|------|-------|-----------|------------------|
|            |                        | X                 | Y     | Z    |       |           |                  |
|            | Real Time              |                   |       |      |       |           |                  |
| 6          | Left Impact            | -520              | -2310 | 1630 |       | 13        | 1020             |
| 8          | Onboard Hood           |                   |       |      |       | 13        | 1015             |
| 9          | Onboard Front Occupant |                   |       |      |       | 8         | 935              |
| 7          | Onboard Rear Occupant  |                   |       |      |       | 8         | NR               |
| 5          | Right Impact           | -830              | 10430 | 1635 |       | 25        | 755              |
| 1          | Top Overall            | 95                | 1360  | 5000 |       | 8         | 1047             |
| 2          | Top Impact             | -240              | -40   | 5000 |       | 13        | 1031             |
| 4          | Cart Overall           |                   |       |      |       | 13        | 840              |
| 3          | Cart Impact            |                   |       |      |       | 35        | 1005             |

\* 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/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 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 38.1 mph (61.3 kph)

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATION(S): None

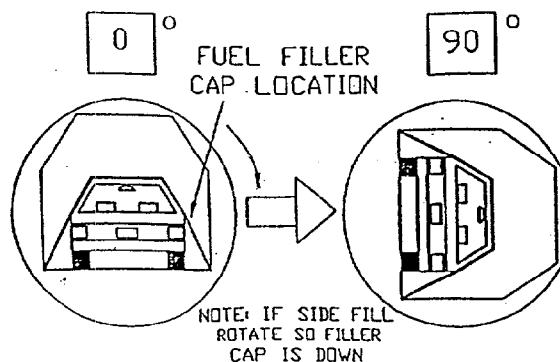
# DATA SHEET 16

## FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

TEST PHASE: 0° - 90°



### DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 47 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 47 seconds

Next Whole Minute Interval = 8 minutes

### FUEL SPILLAGE MEASUREMENT:

| 0° TO 90° ROTATION (FILLER CAP DOWN)      | TEST RESULTS | MAXIMUM ALLOWABLE |
|-------------------------------------------|--------------|-------------------|
| 1. First 5 Minutes From Onset of Rotation | 0 oz         | 5 oz              |
| 2. Sixth Minute From Onset of Rotation    | 0 oz         | 1 oz              |
| 3. Seventh Minute From Onset of Rotation  | 0 oz         | 1 oz              |
| 4. Eighth Minute if Required              | 0 oz         | 1 oz              |

FUEL SPILLAGE LOCATIONS(S): None

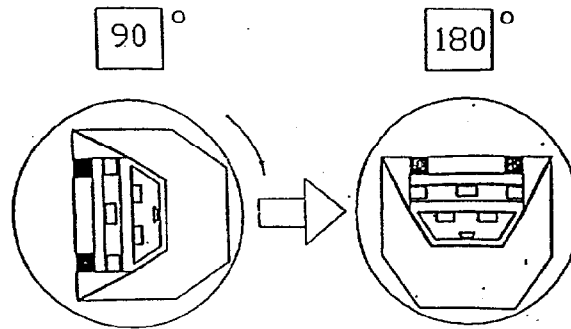
# DATA SHEET 16

## FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

TEST PHASE: 90° - 180°



### DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 32 seconds  
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 32 seconds

Next Whole Minute Interval = 8 minutes

### FUEL SPILLAGE MEASUREMENT:

| 90° TO 180° ROTATION                      | TEST RESULTS | MAXIMUM ALLOWABLE |
|-------------------------------------------|--------------|-------------------|
| 1. First 5 Minutes From Onset of Rotation | 0 oz         | 5 oz              |
| 2. Sixth Minute From Onset of Rotation    | 0 oz         | 1 oz              |
| 3. Seventh Minute From Onset of Rotation  | 0 oz         | 1 oz              |
| 4. Eighth Minute if Required              | 0 oz         | 1 oz              |

FUEL SPILLAGE LOCATIONS(S): None

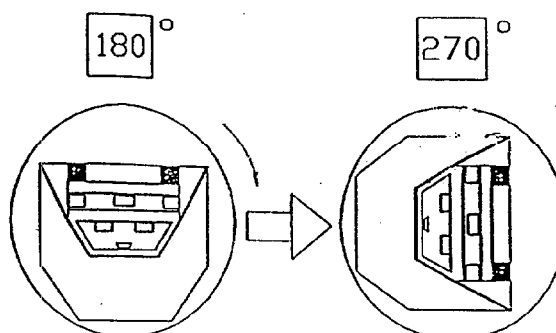
# DATA SHEET 16

## FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

TEST PHASE: 180° - 270°



### DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 28 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 28 seconds

Next Whole Minute Interval = 8 minutes

### FUEL SPILLAGE MEASUREMENT:

| 180° TO 270° ROTATION                     | TEST RESULTS | MAXIMUM ALLOWABLE |
|-------------------------------------------|--------------|-------------------|
| 1. First 5 Minutes From Onset of Rotation | 0 oz         | 5 oz              |
| 2. Sixth Minute From Onset of Rotation    | 0 oz         | 1 oz              |
| 3. Seventh Minute From Onset of Rotation  | 0 oz         | 1 oz              |
| 4. Eighth Minute if Required              | 0 oz         | 1 oz              |

FUEL SPILLAGE LOCATIONS(S): None

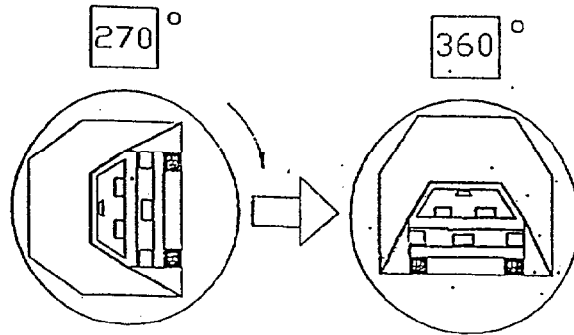
# DATA SHEET 16

## FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Mercedes-Benz/C230/4-Door

Vehicle NHTSA No.: MW0500 Test Date: October 22, 1997

TEST PHASE: 270° - 360°



### DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 52 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 52 seconds

Next Whole Minute Interval = 8 minutes

### FUEL SPILLAGE MEASUREMENT:

| 270° TO 360° ROTATION                     | TEST RESULTS | MAXIMUM ALLOWABLE |
|-------------------------------------------|--------------|-------------------|
| 1. First 5 Minutes From Onset of Rotation | 0 oz         | 5 oz              |
| 2. Sixth Minute From Onset of Rotation    | 0 oz         | 1 oz              |
| 3. Seventh Minute From Onset of Rotation  | 0 oz         | 1 oz              |
| 4. Eighth Minute if Required              | 0 oz         | 1 oz              |

FUEL SPILLAGE LOCATIONS(S): None

## **APPENDIX A - PHOTOGRAPHS**

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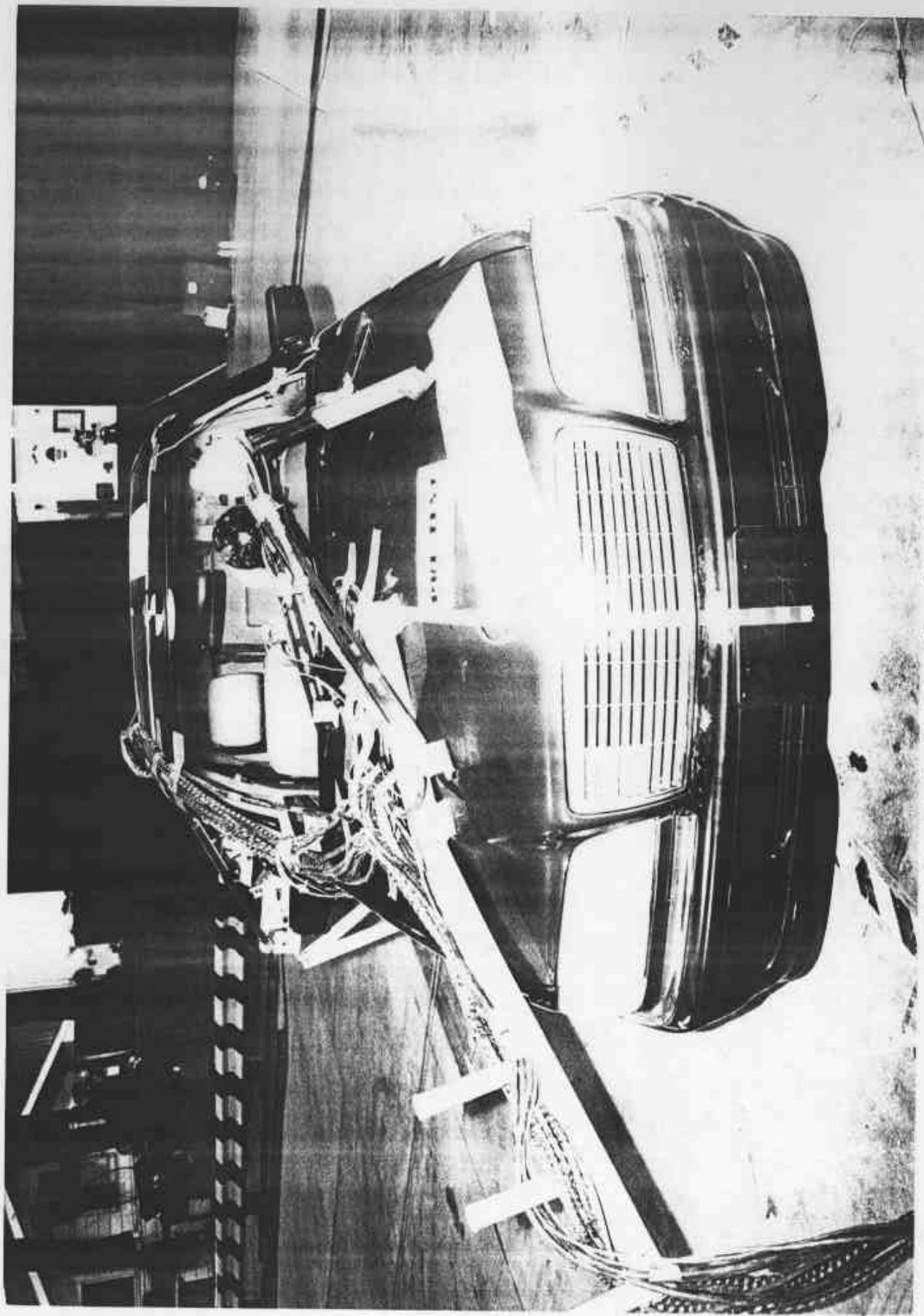


Photo No. A-1 - Pre-Test Front View of Test Vehicle

A-1



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

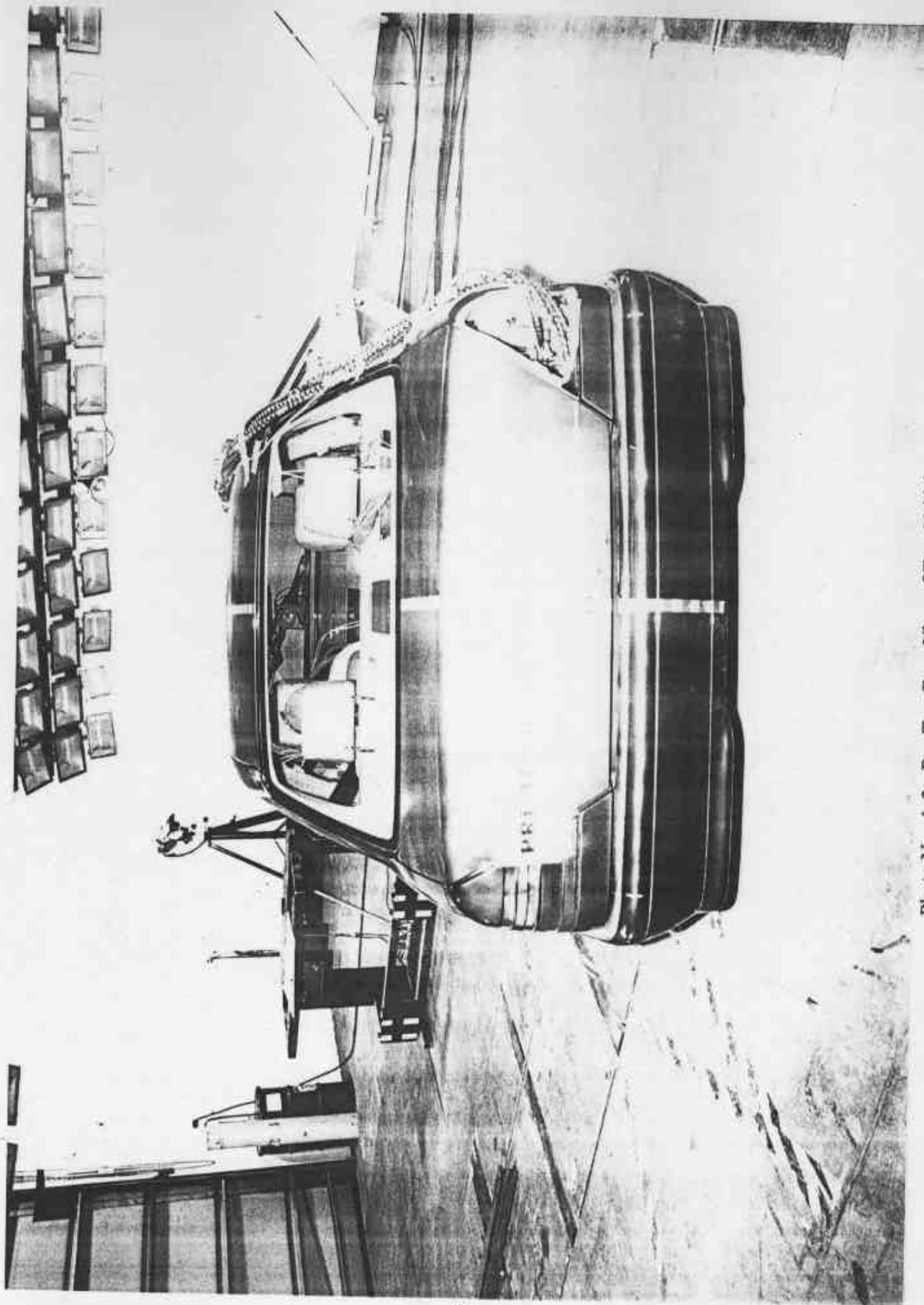


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

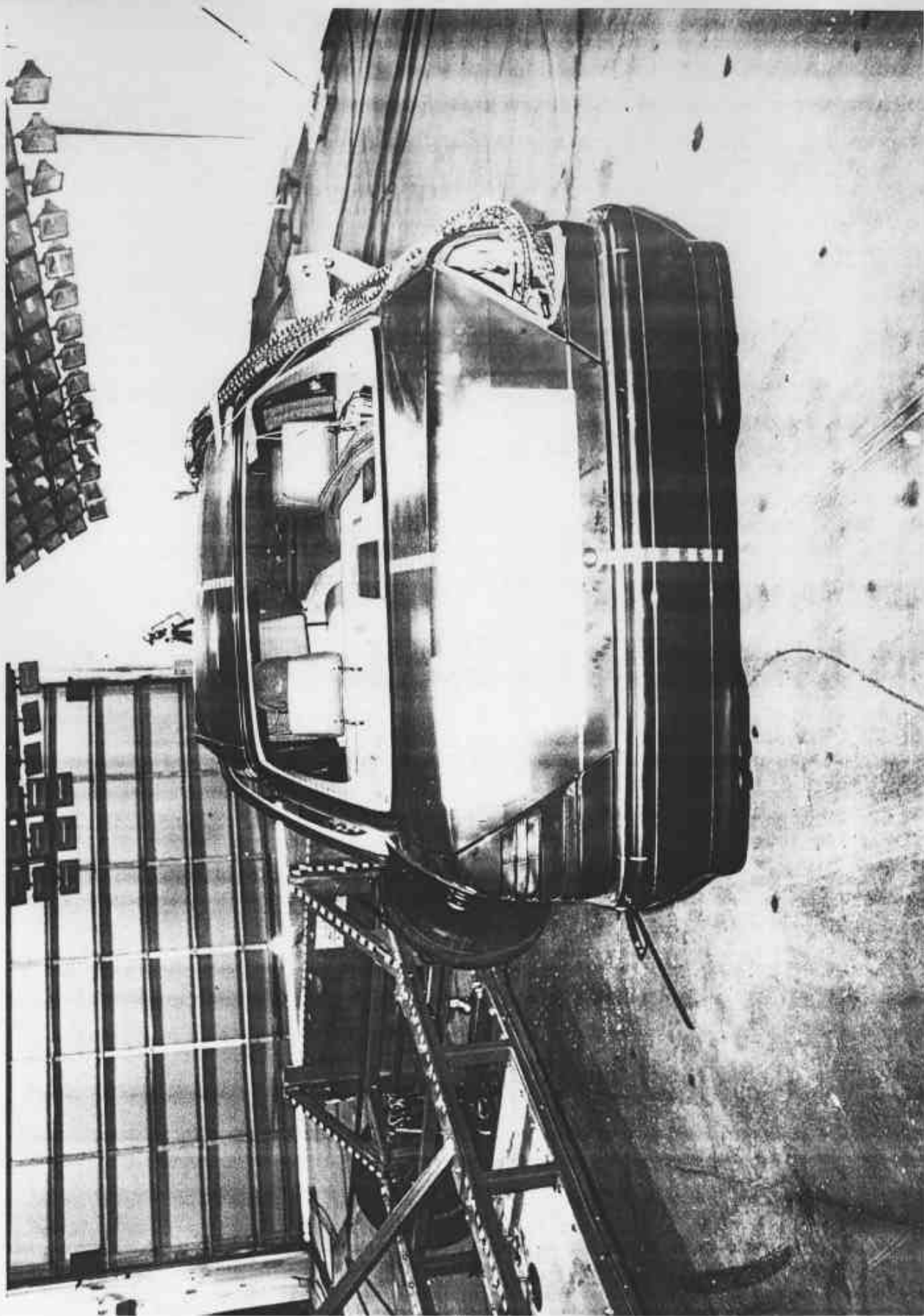


Photo No. A-4 - Post-Test Rear View of Test Vehicle

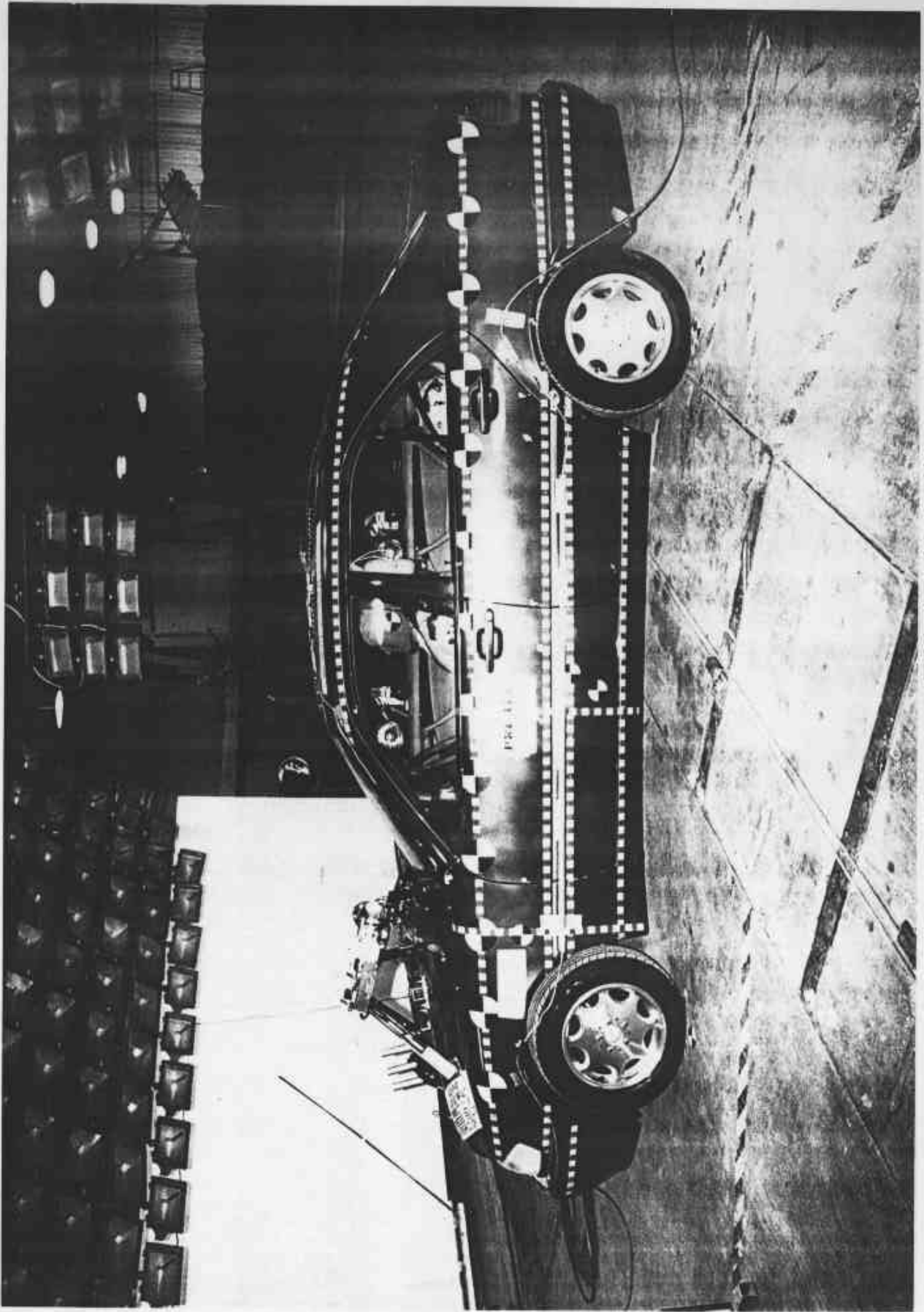


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

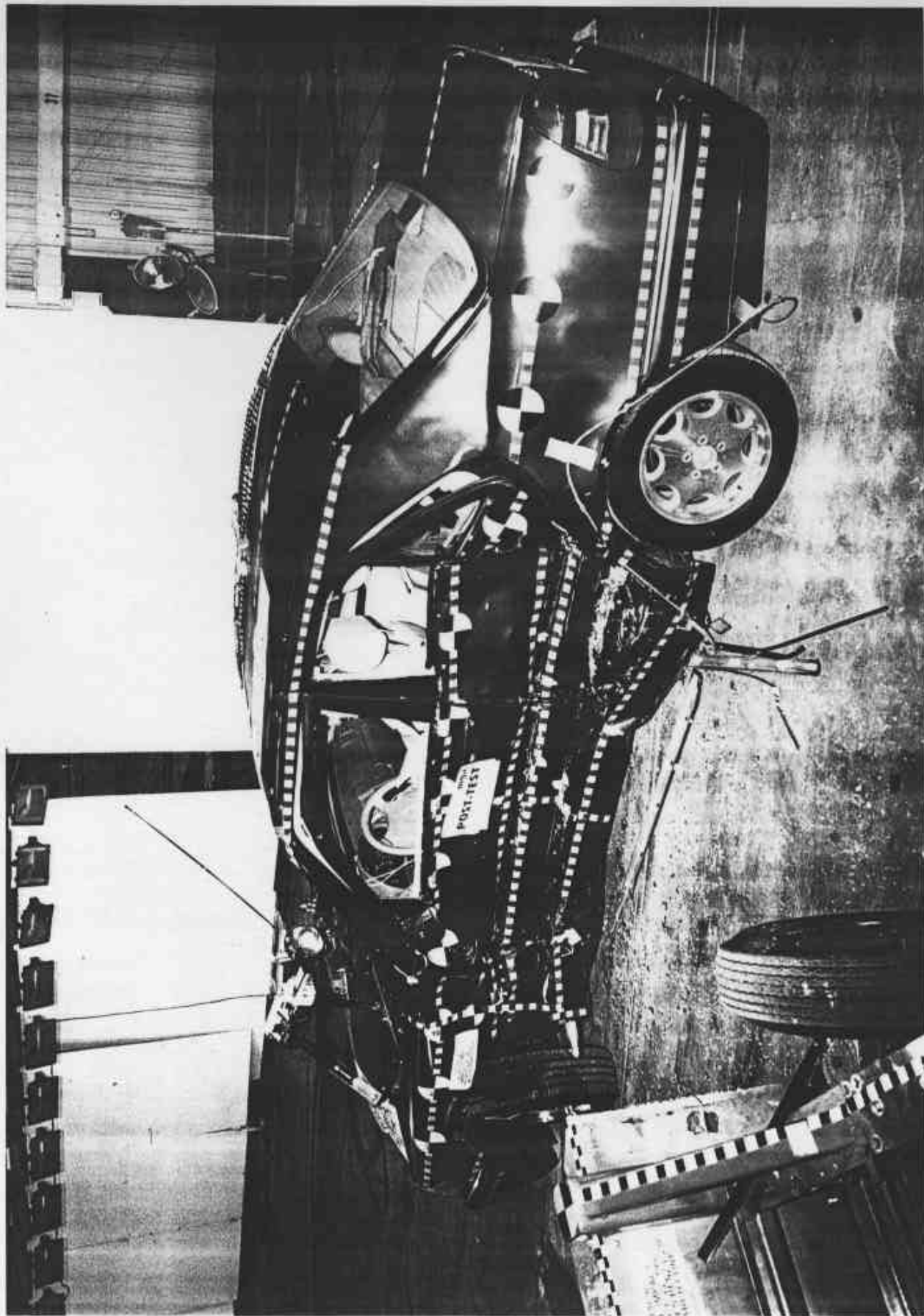


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

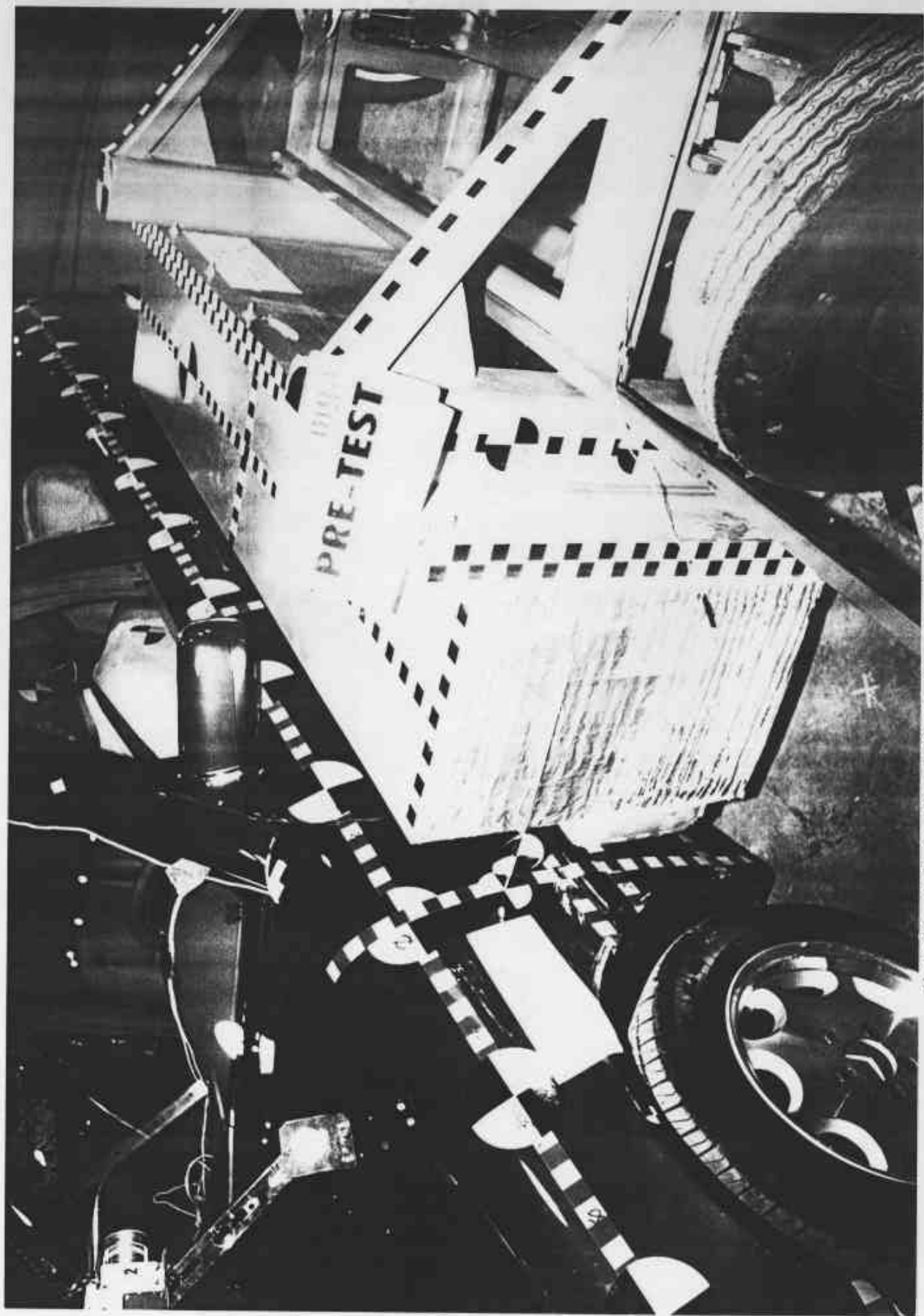


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)

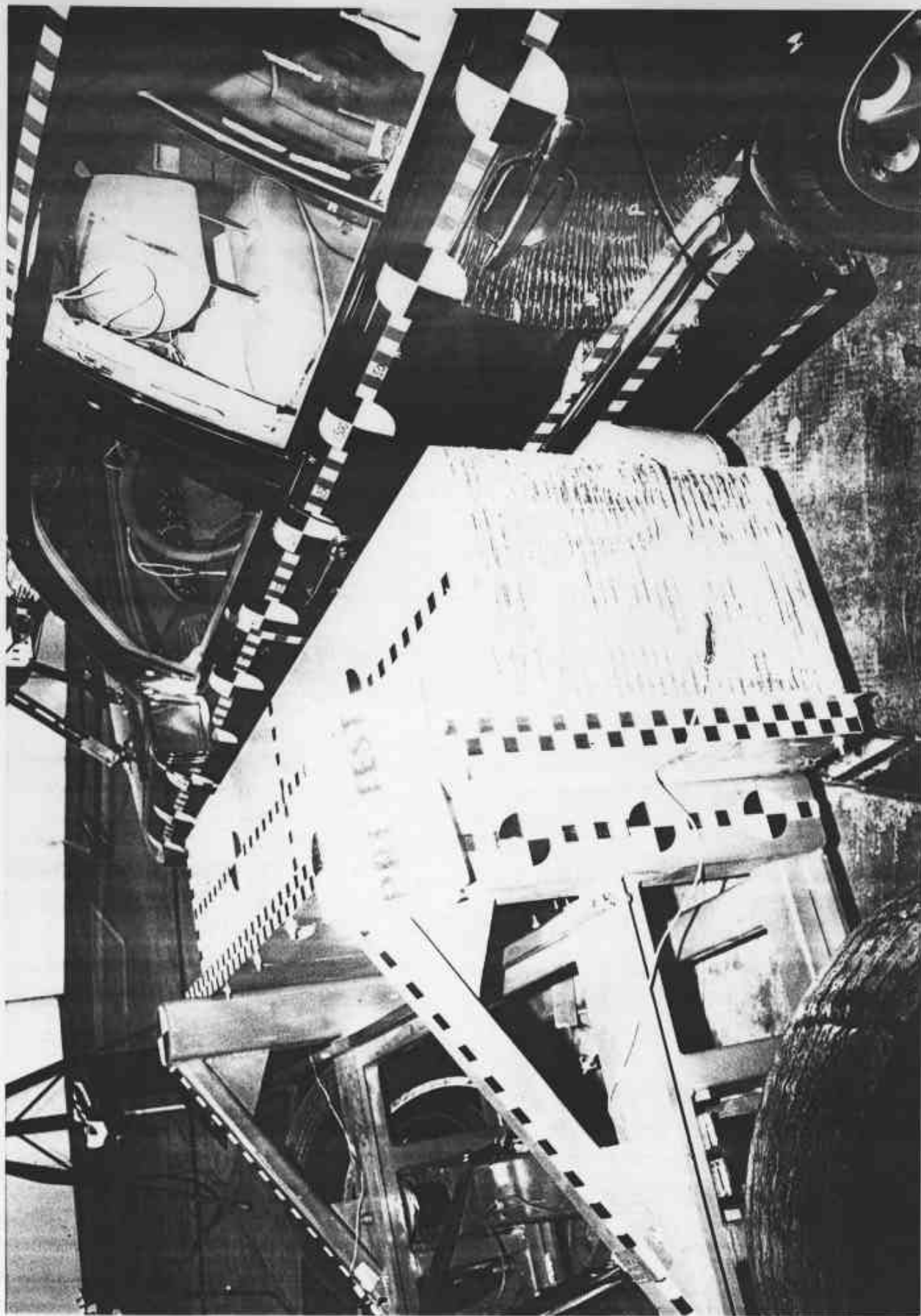


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

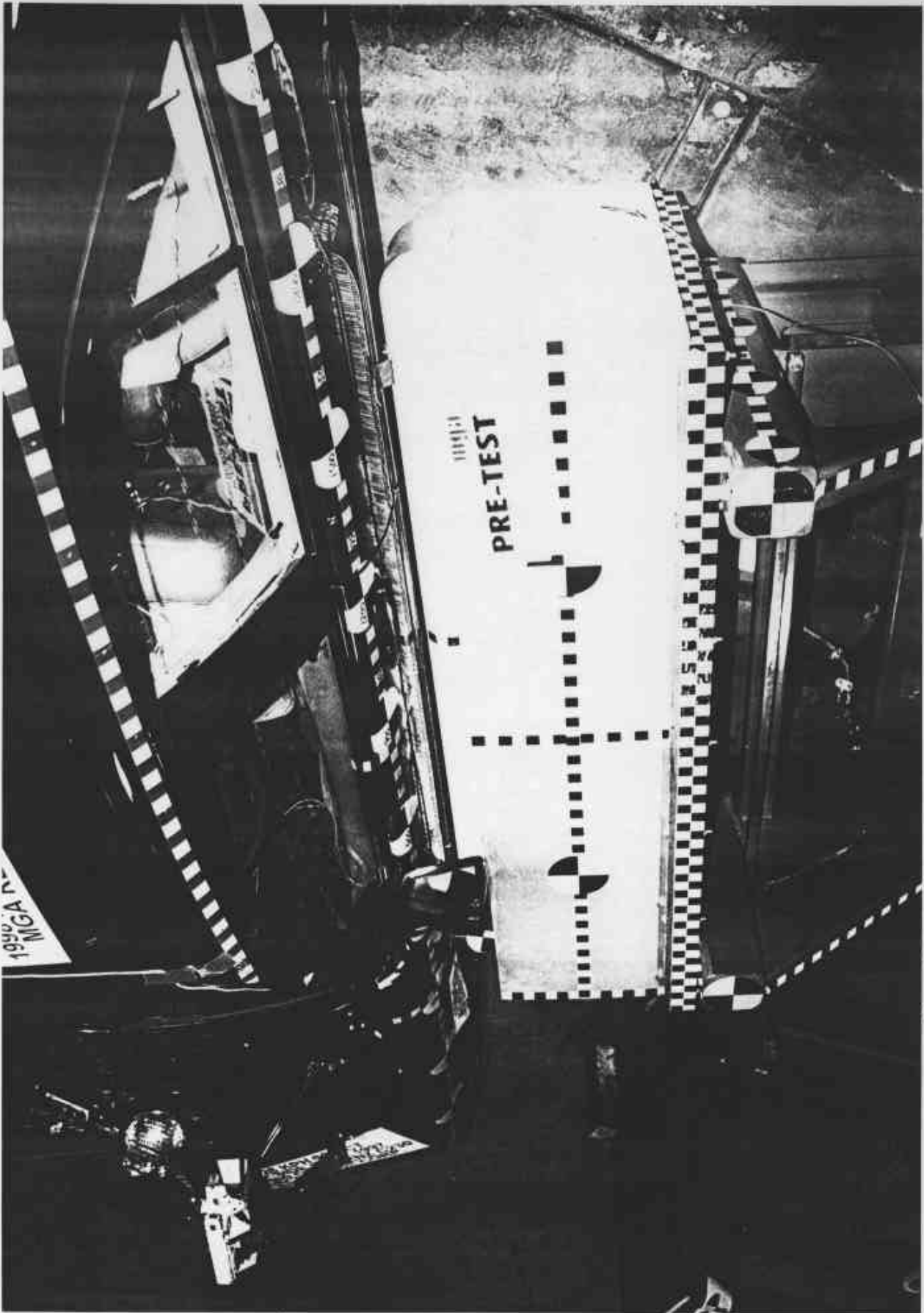


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

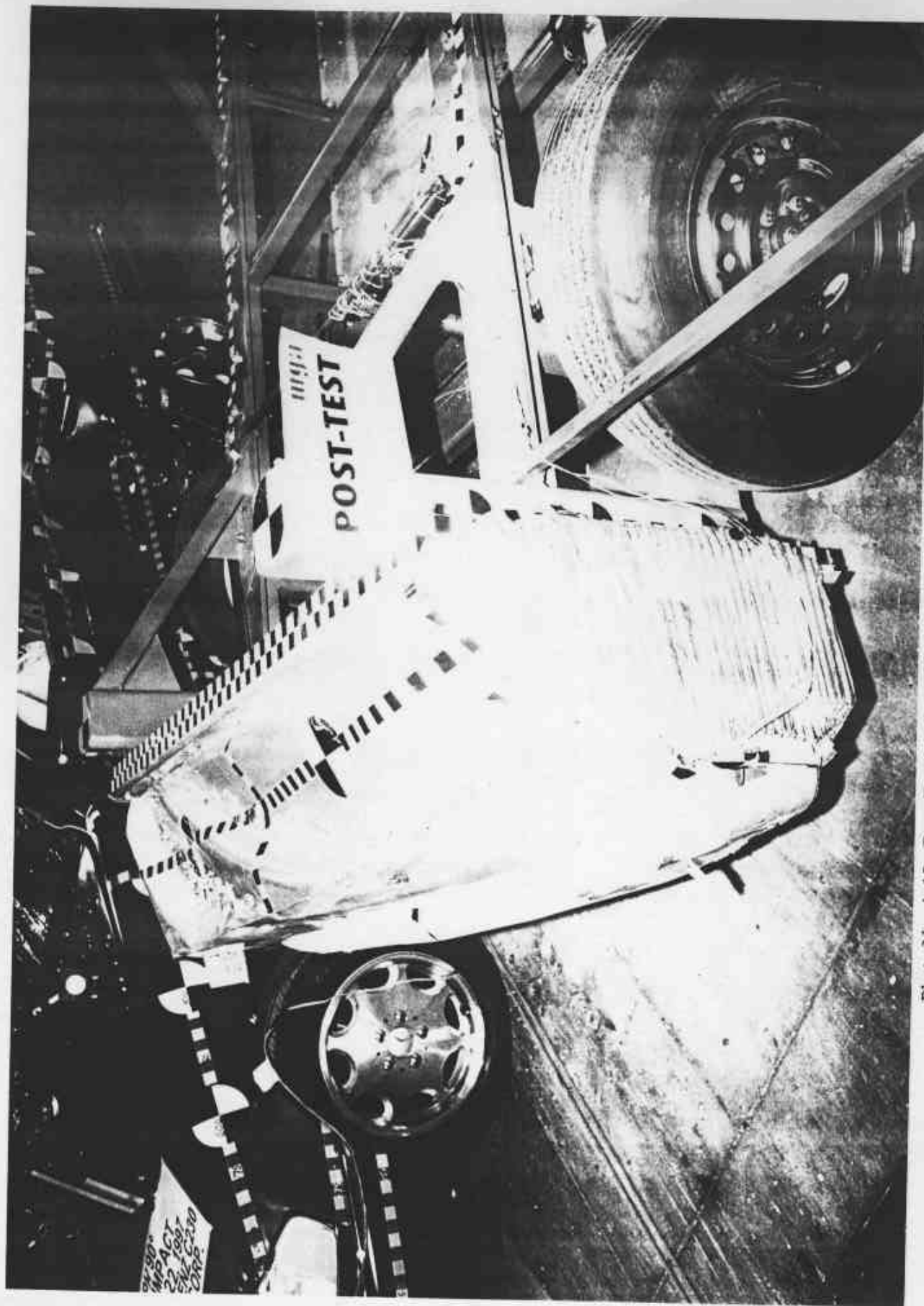


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

A-10

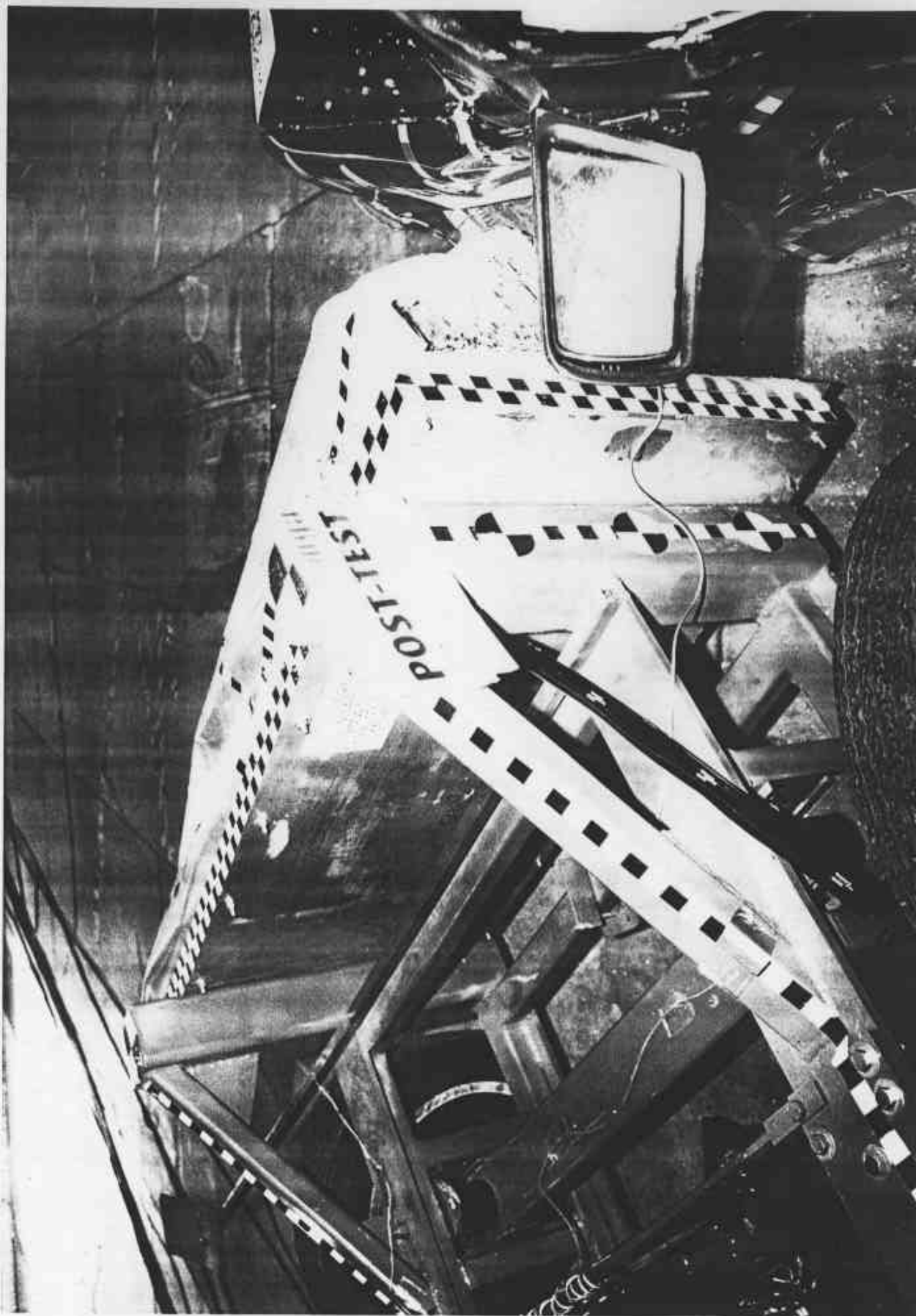


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)



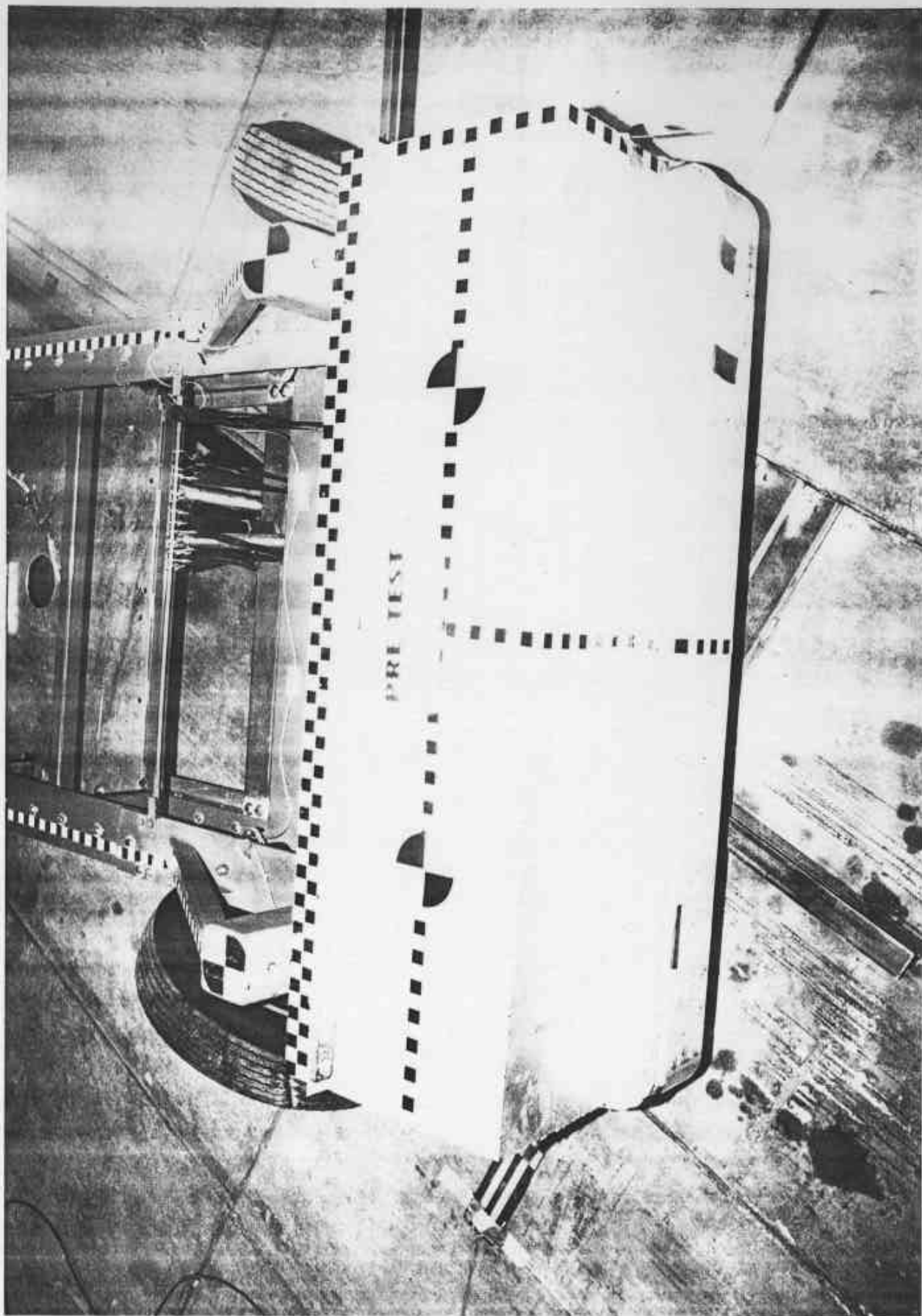


Photo No. A-13 - Pre-Test MDB Top View

A-13

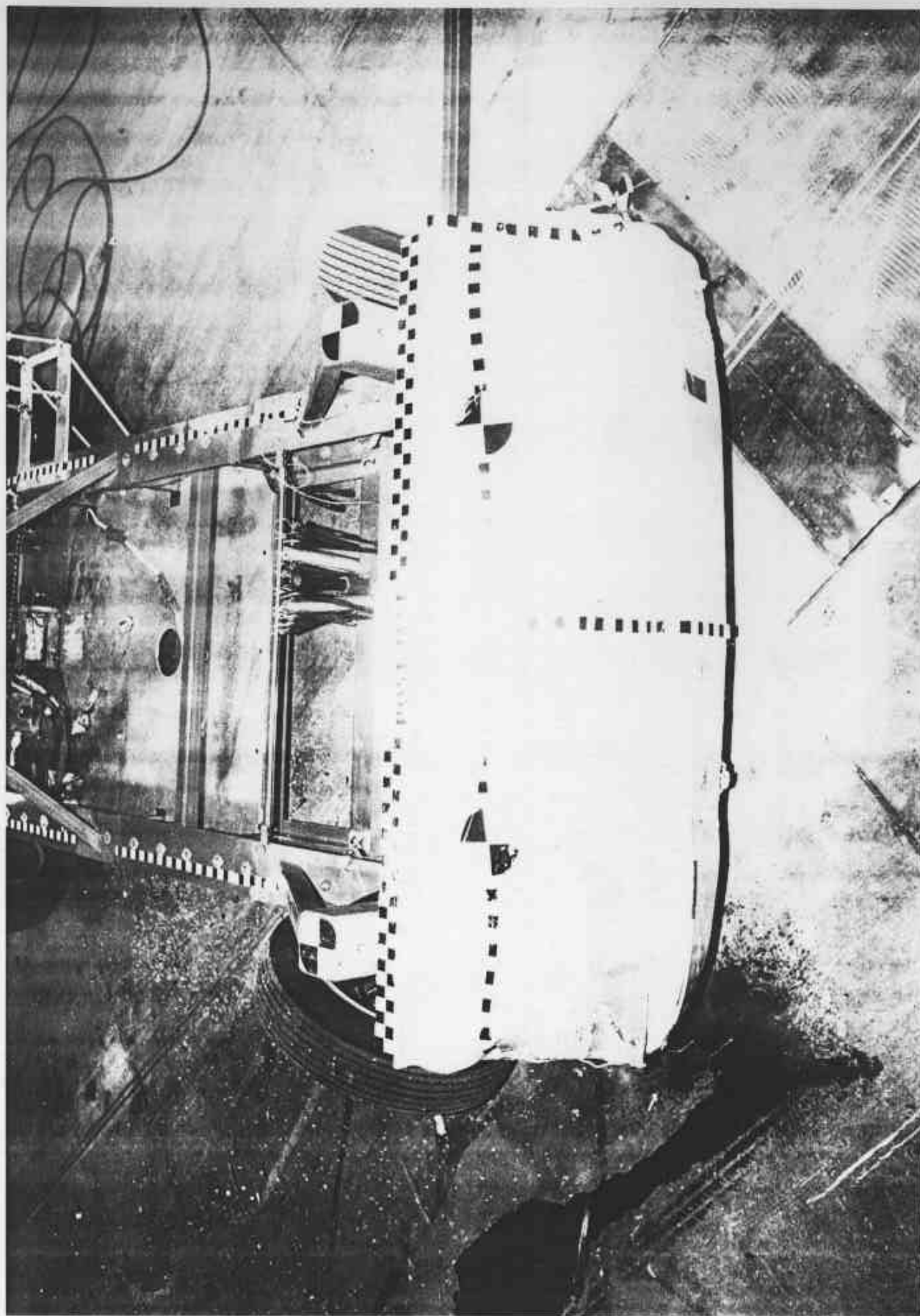
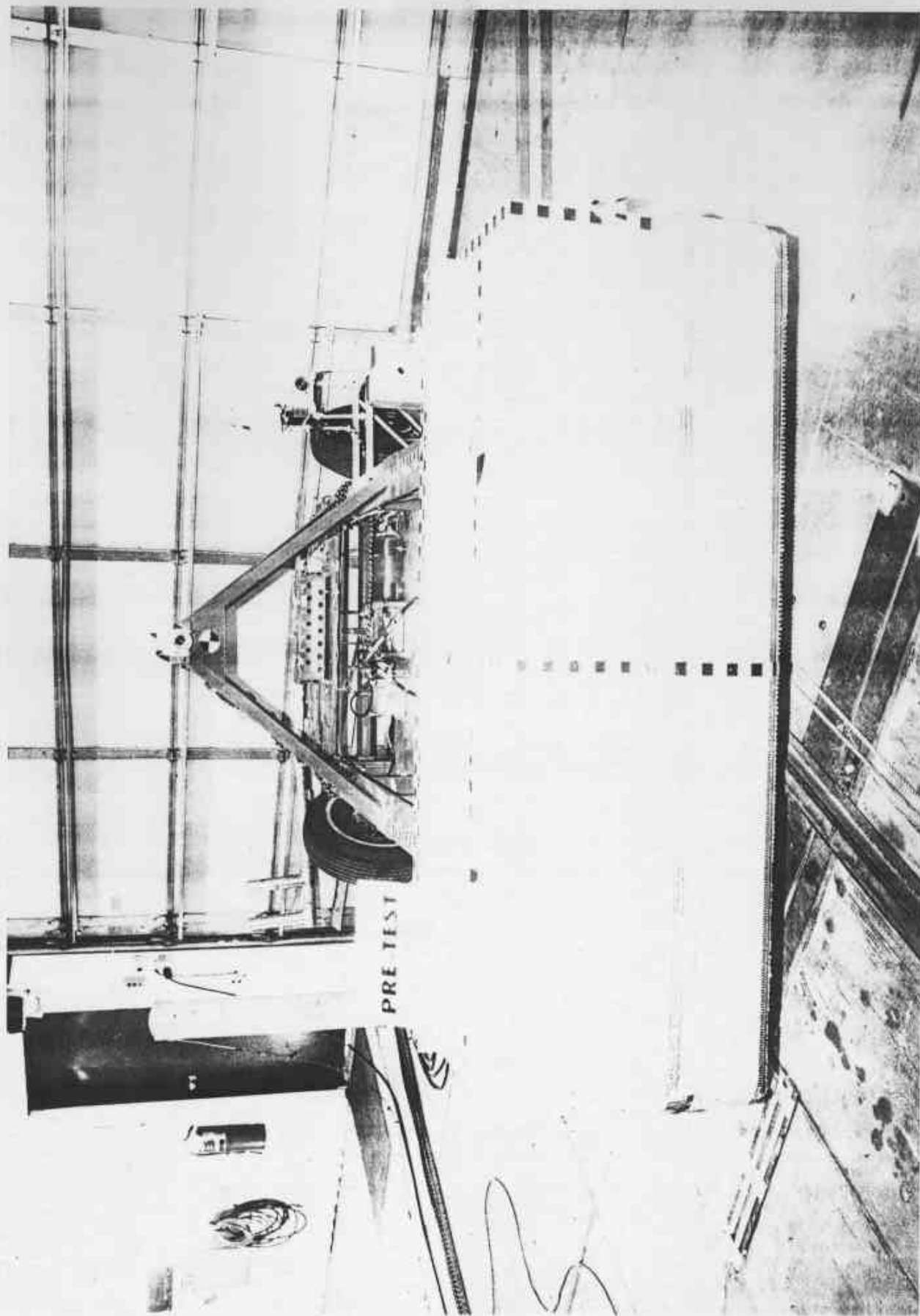


Photo No. A-14 - Post-Test MDB Top View

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A-15

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

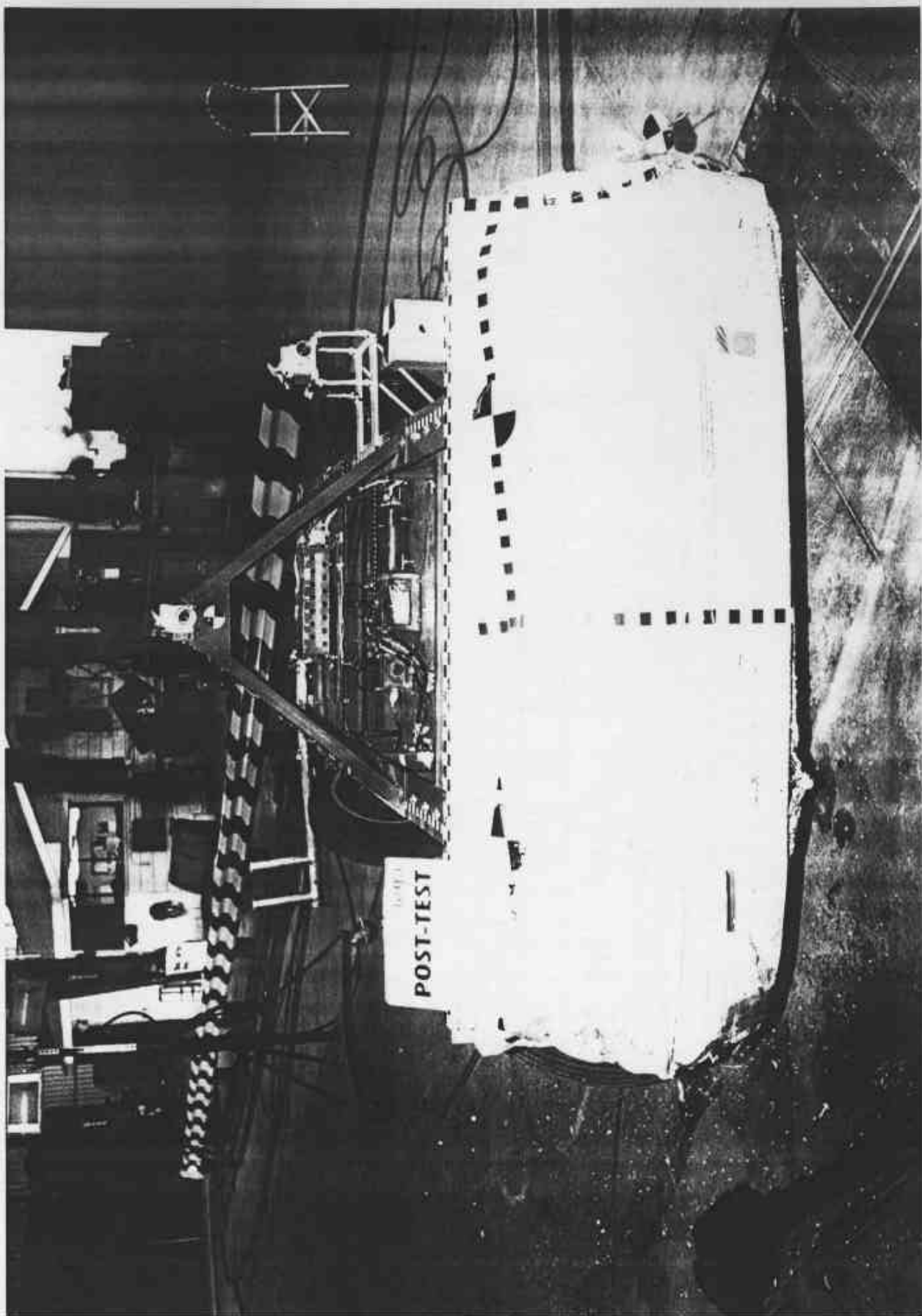


Photo No. A-16 - Post-Test MDB Front View

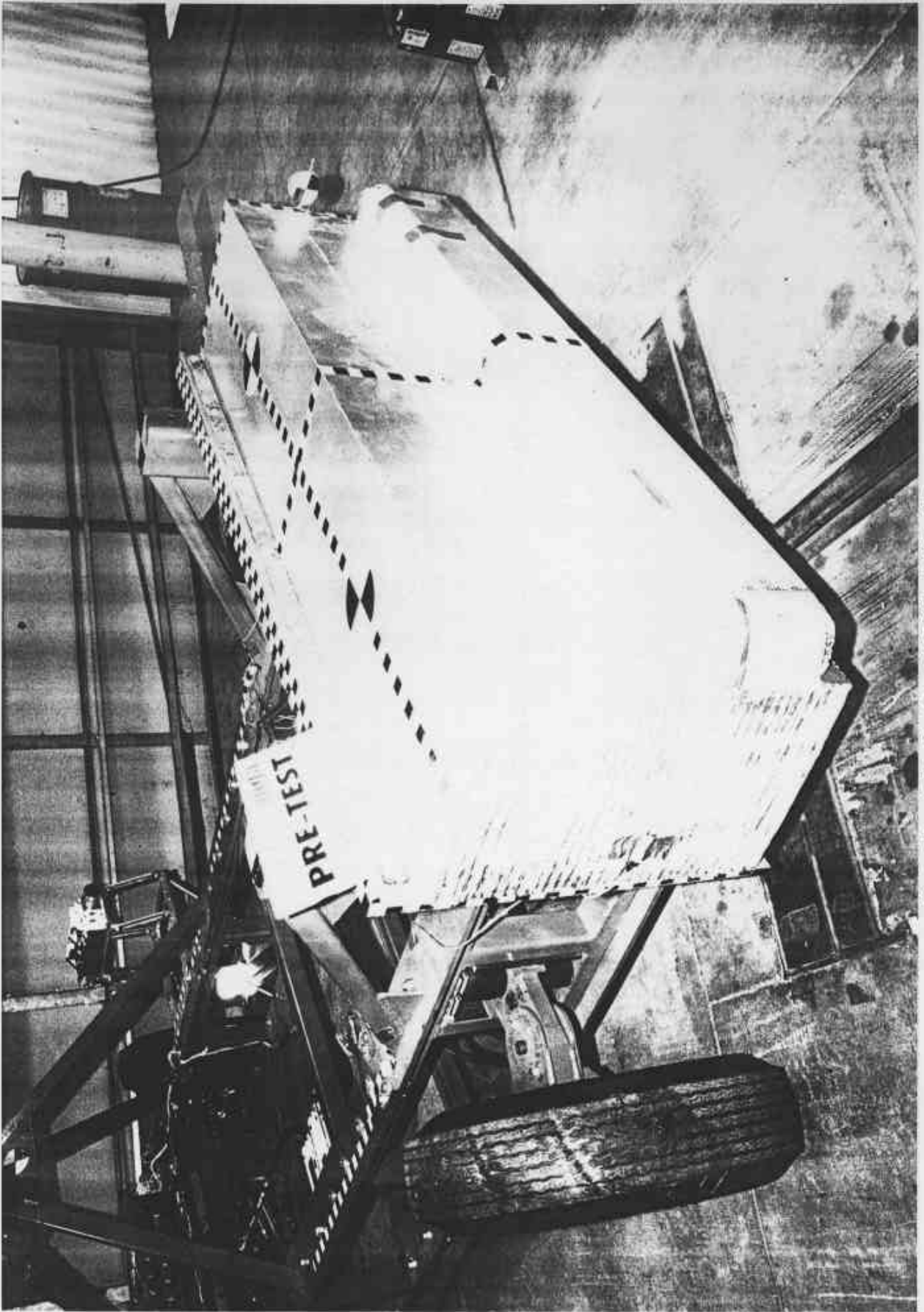


Photo No. A-17 - Pre-Test MDB Right Side View

A-17

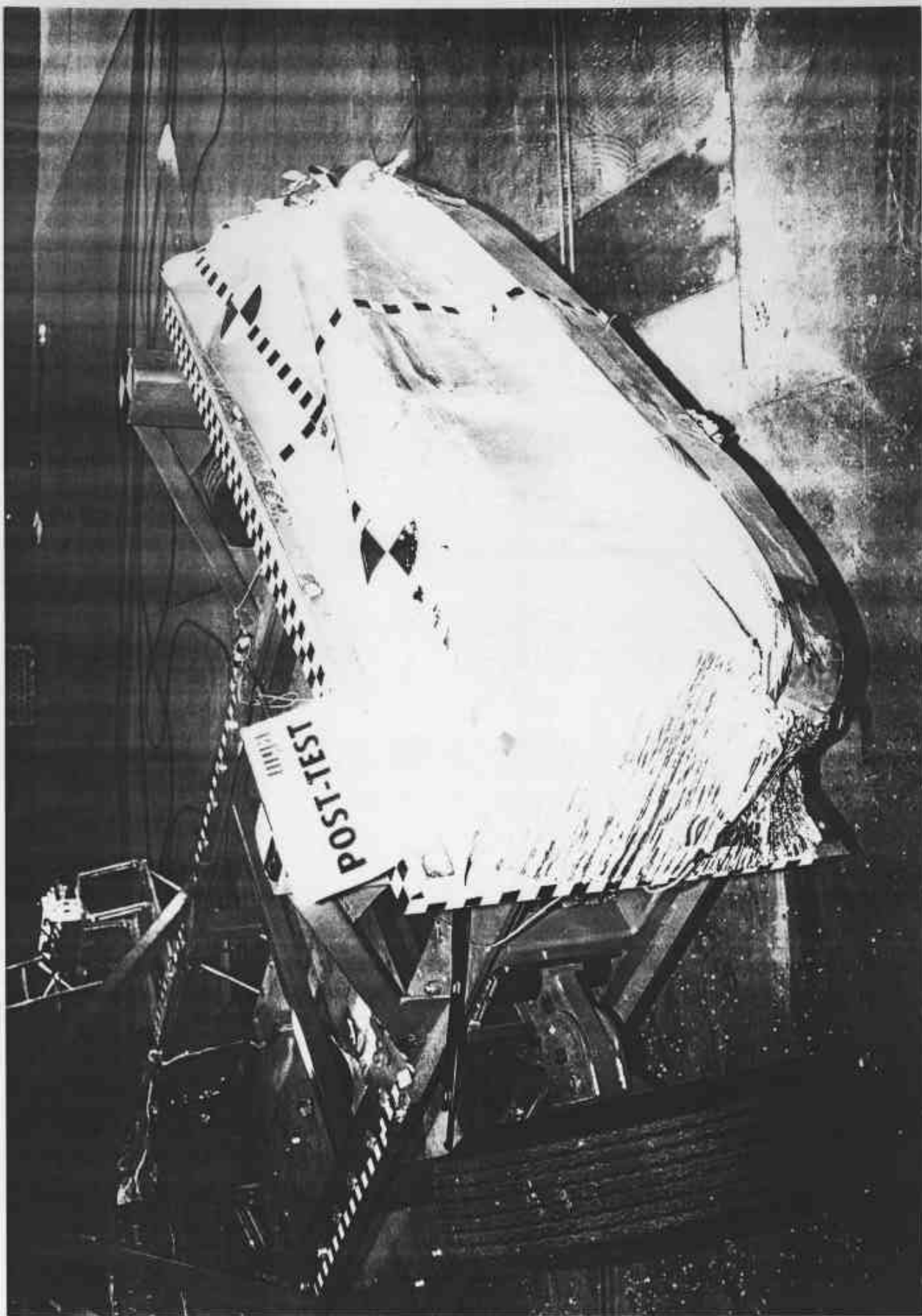


Photo No. A-18 - Post-Test MDB Right Side View

A-18

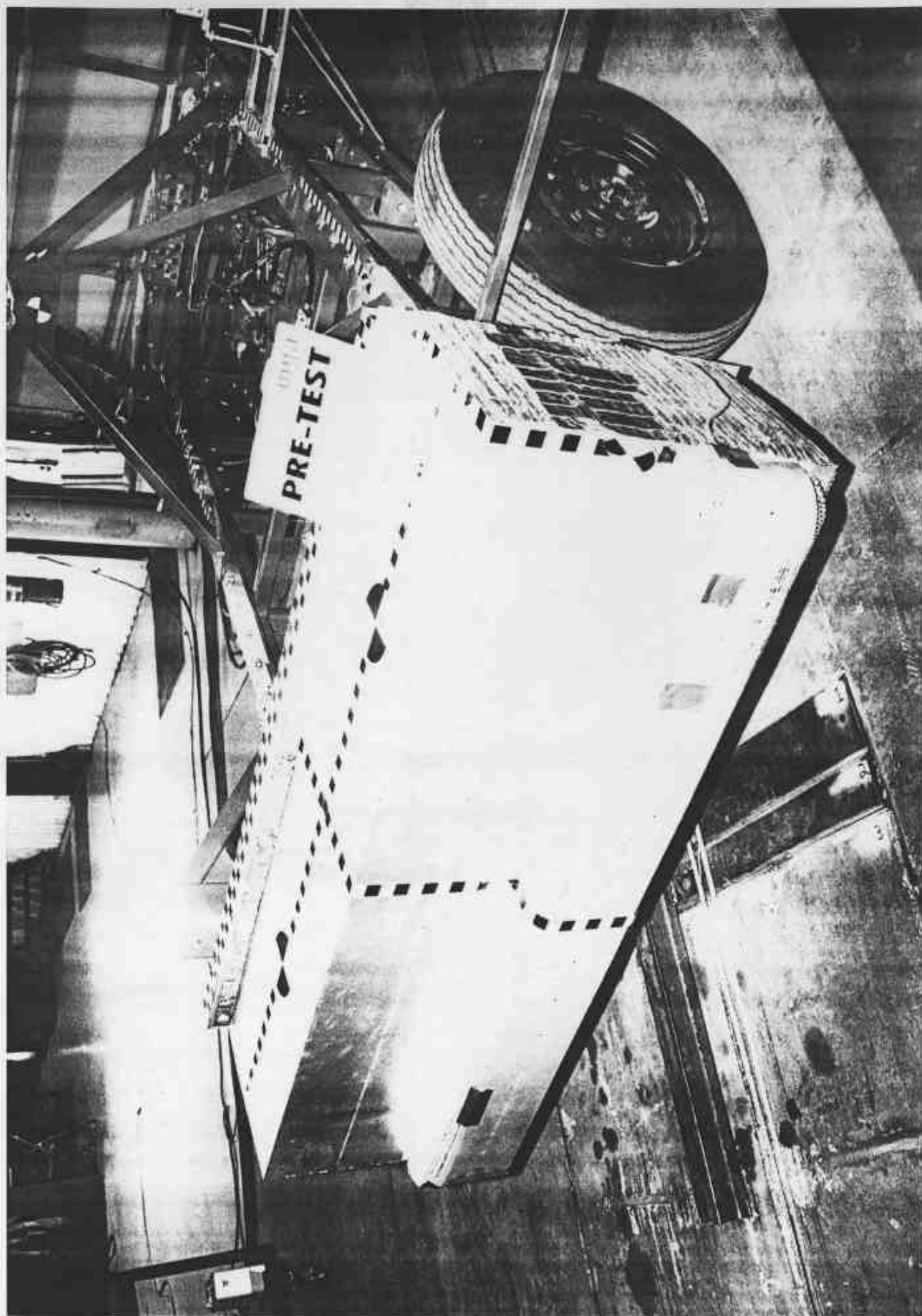


Photo No. A-19 - Pre-Test MDB Left Side View

A-19

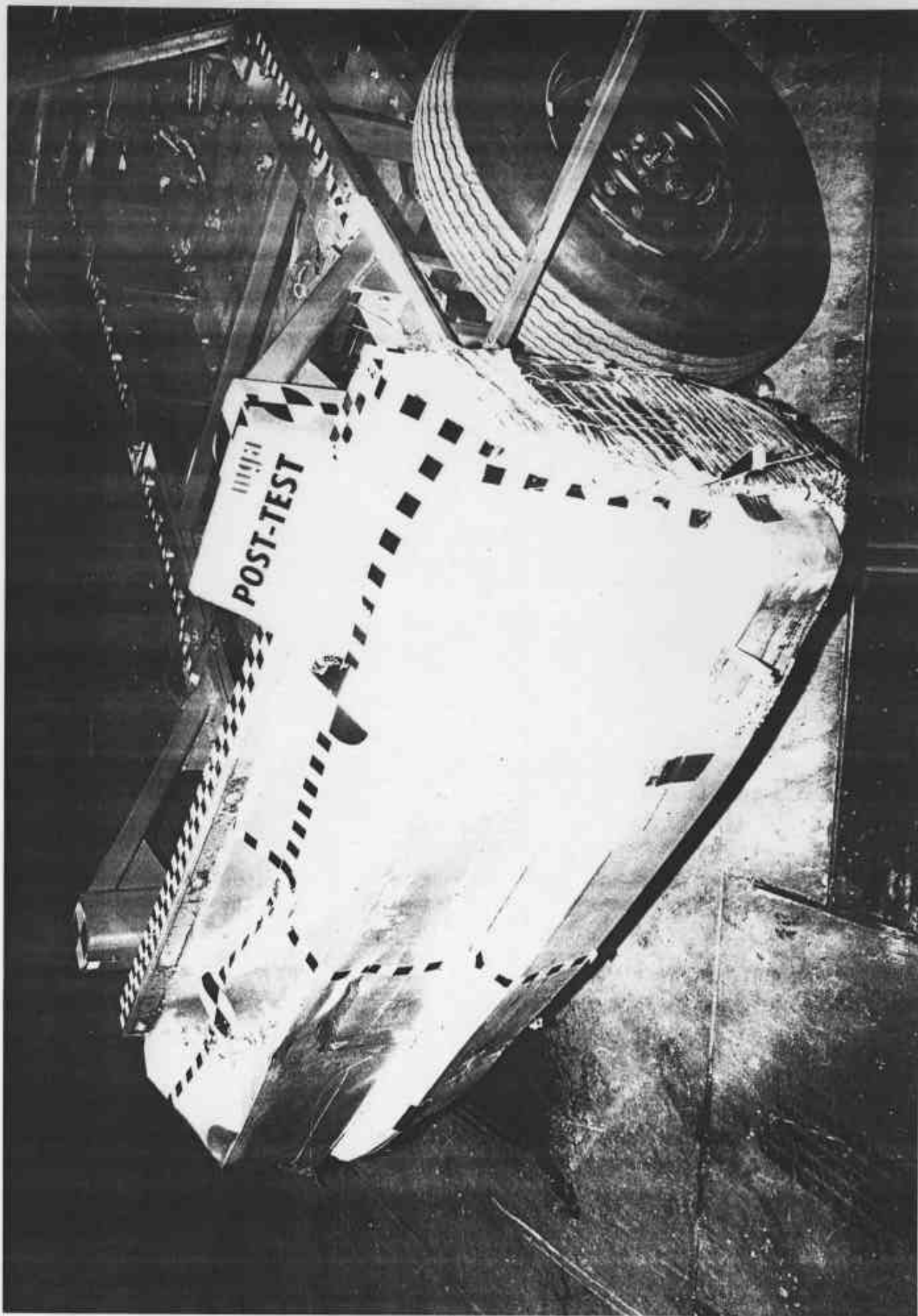


Photo No. A-20 - Post-Test MDB Left Side View

A-20

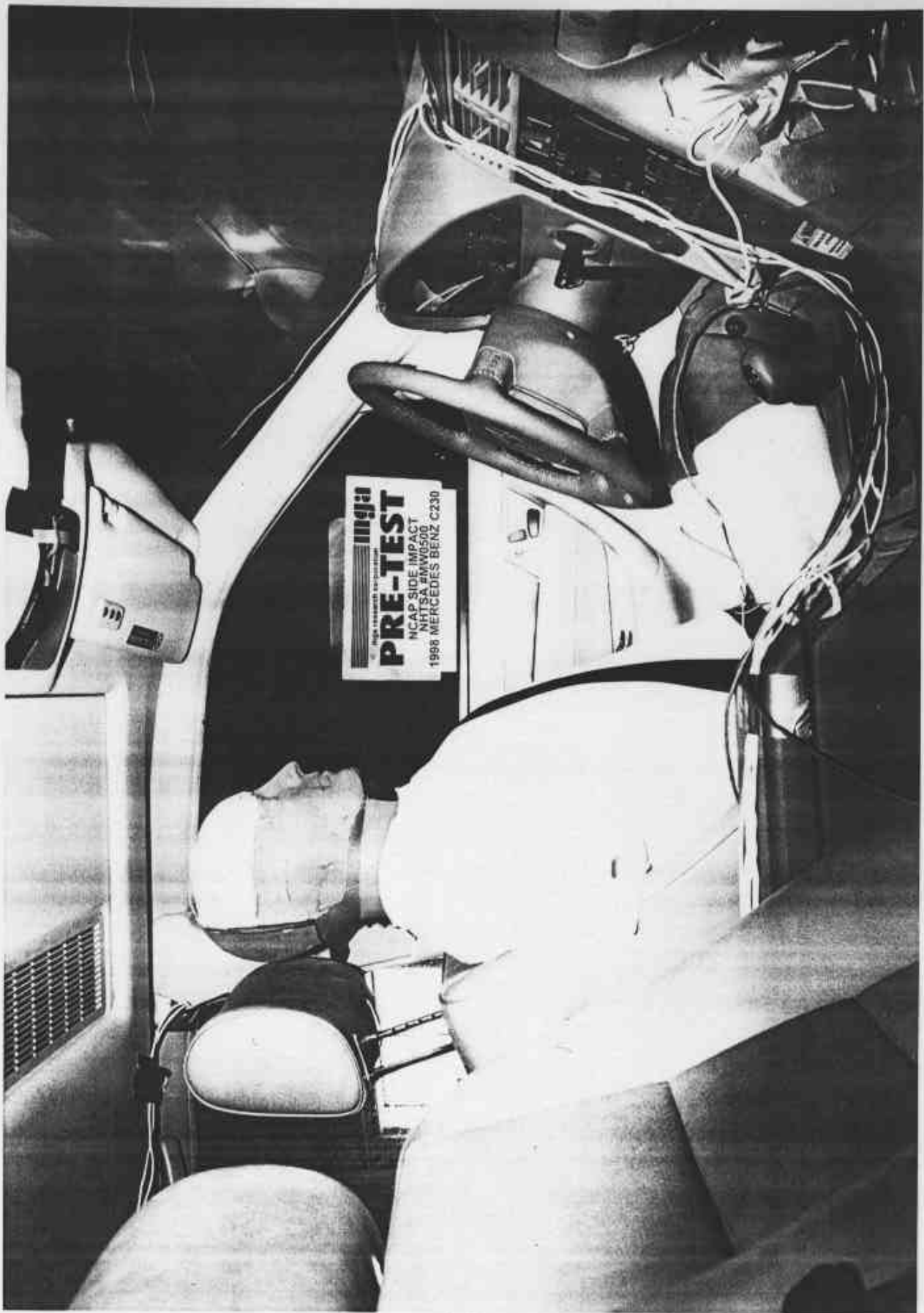


Photo No. A-21 - Pre-Test Driver Dummy Right Side View

A-21

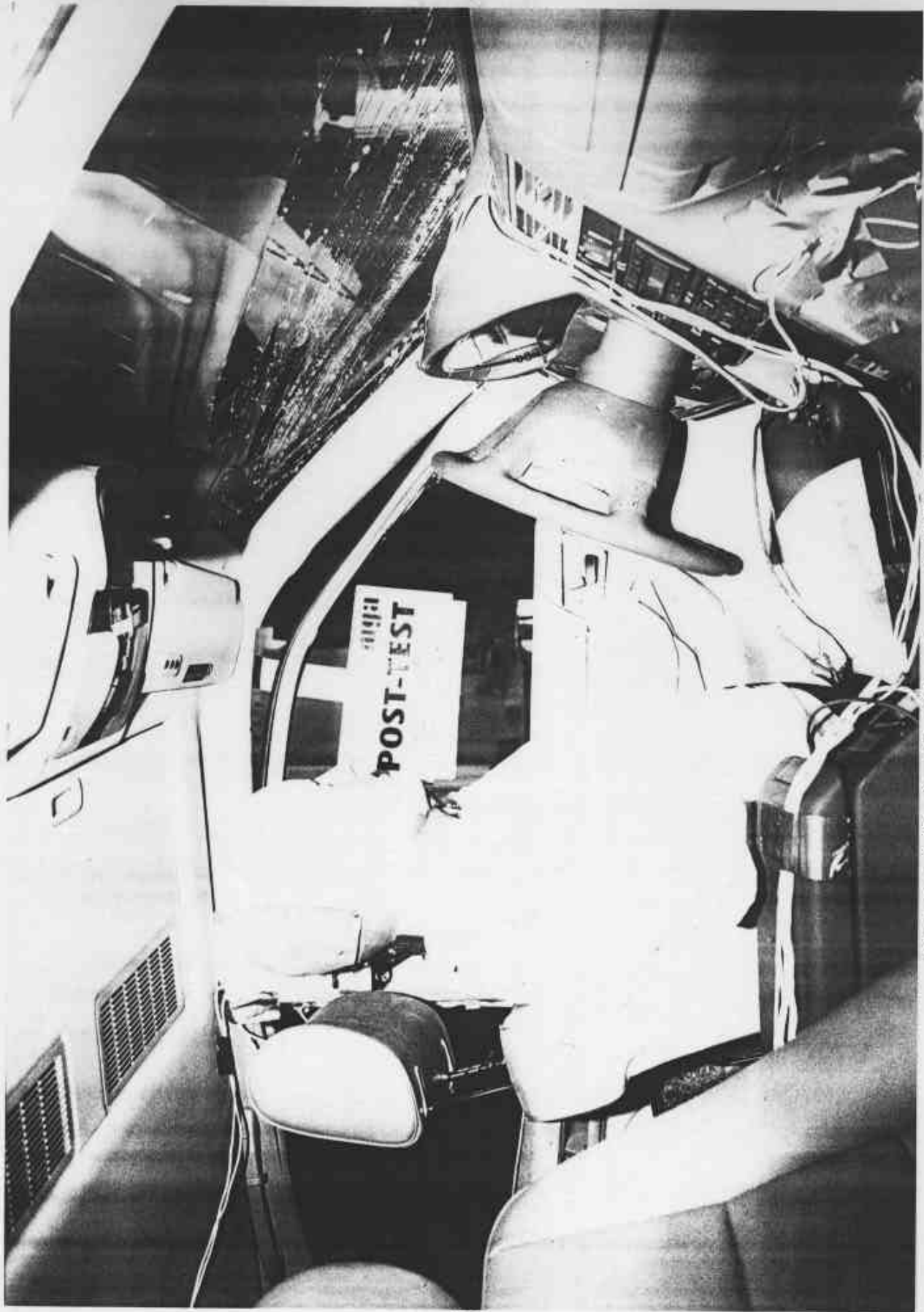
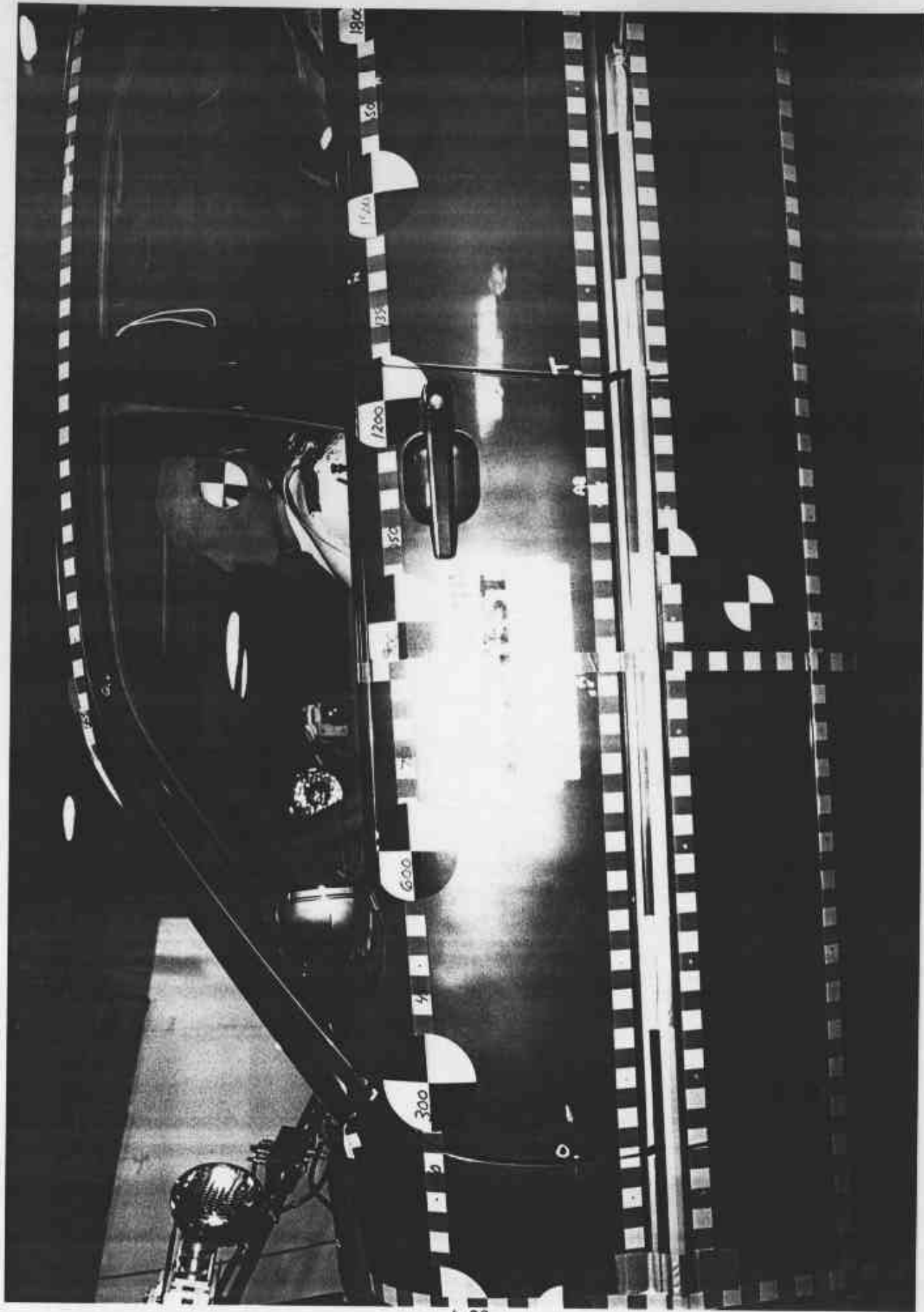


Photo No. A-22 - Post-Test Driver Dummy Right Side View

A-22



A-23

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

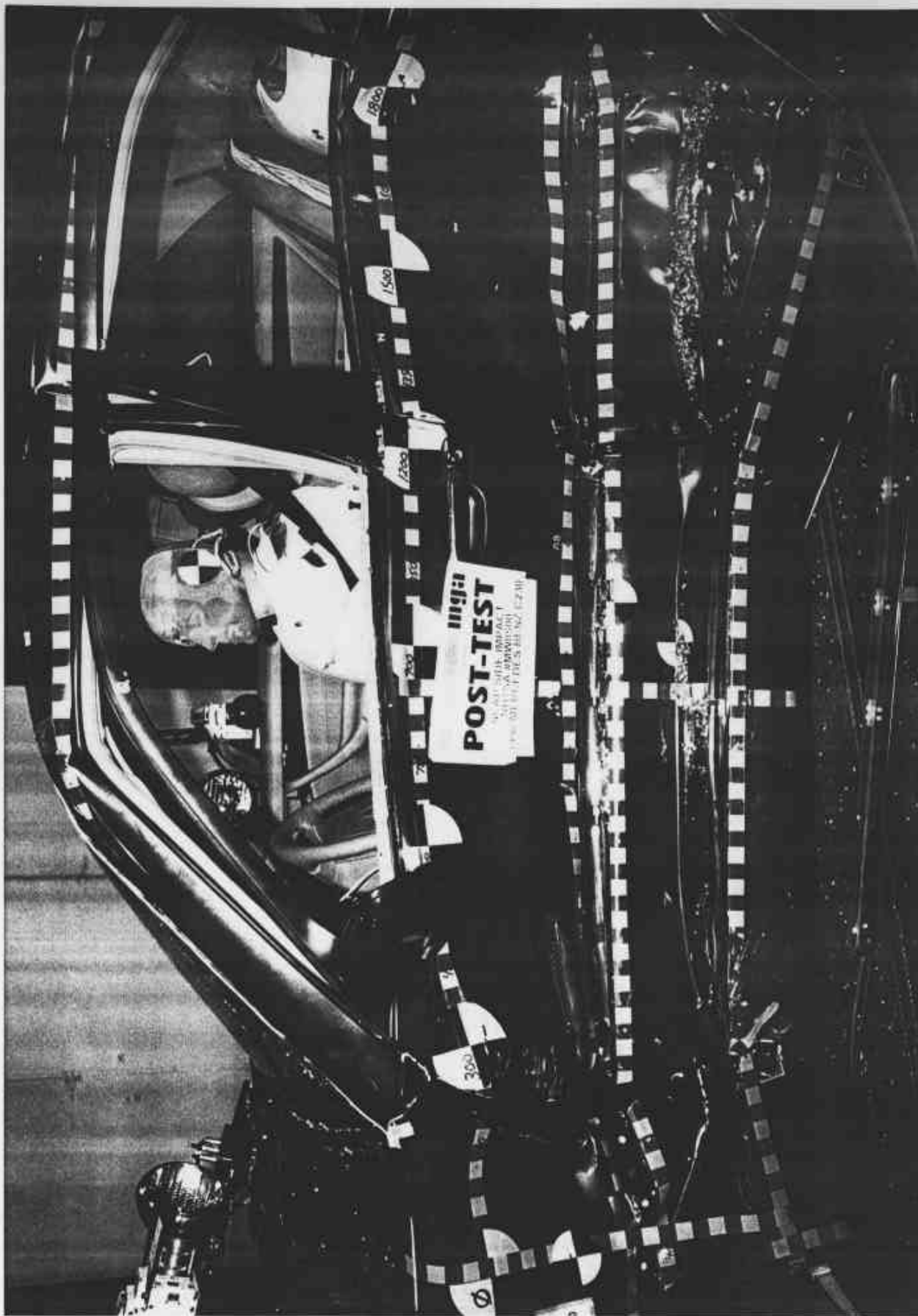


Photo No. A-24 - Post-Test Driver Dummy Left Side View



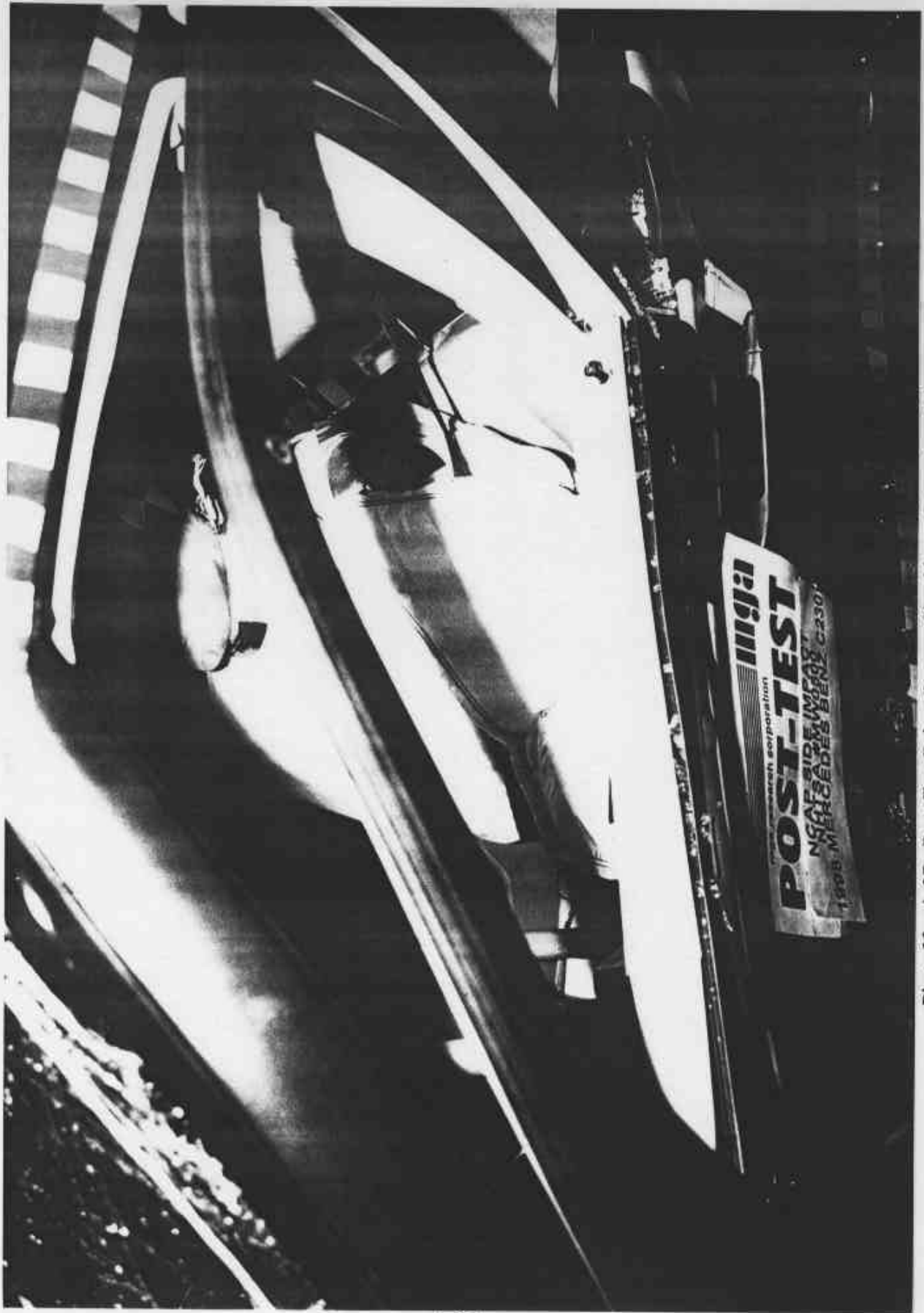
A-25

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



A-26

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



A-27

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

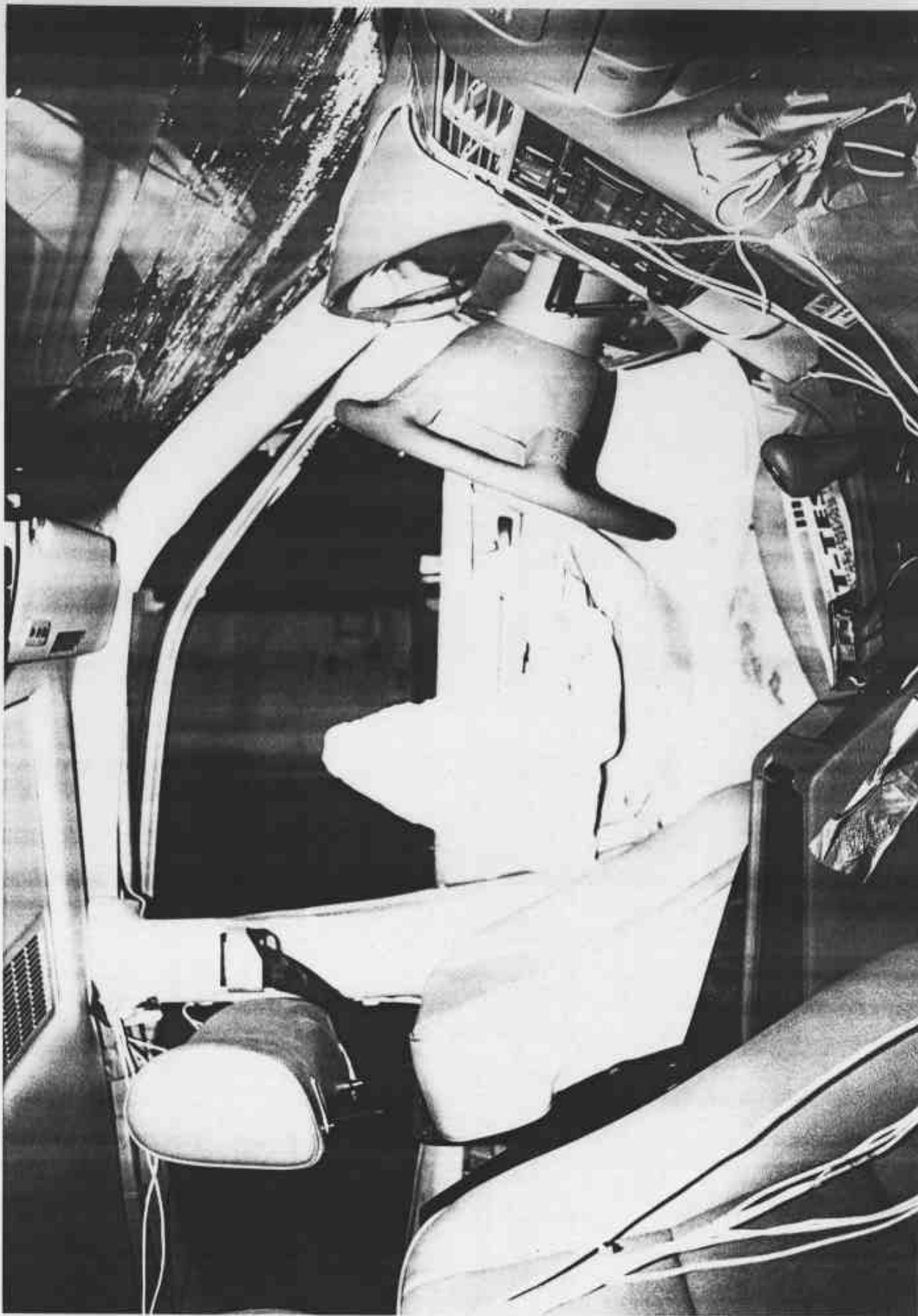


Photo No. A-28 - Post-Test Driver Dummy Contact



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

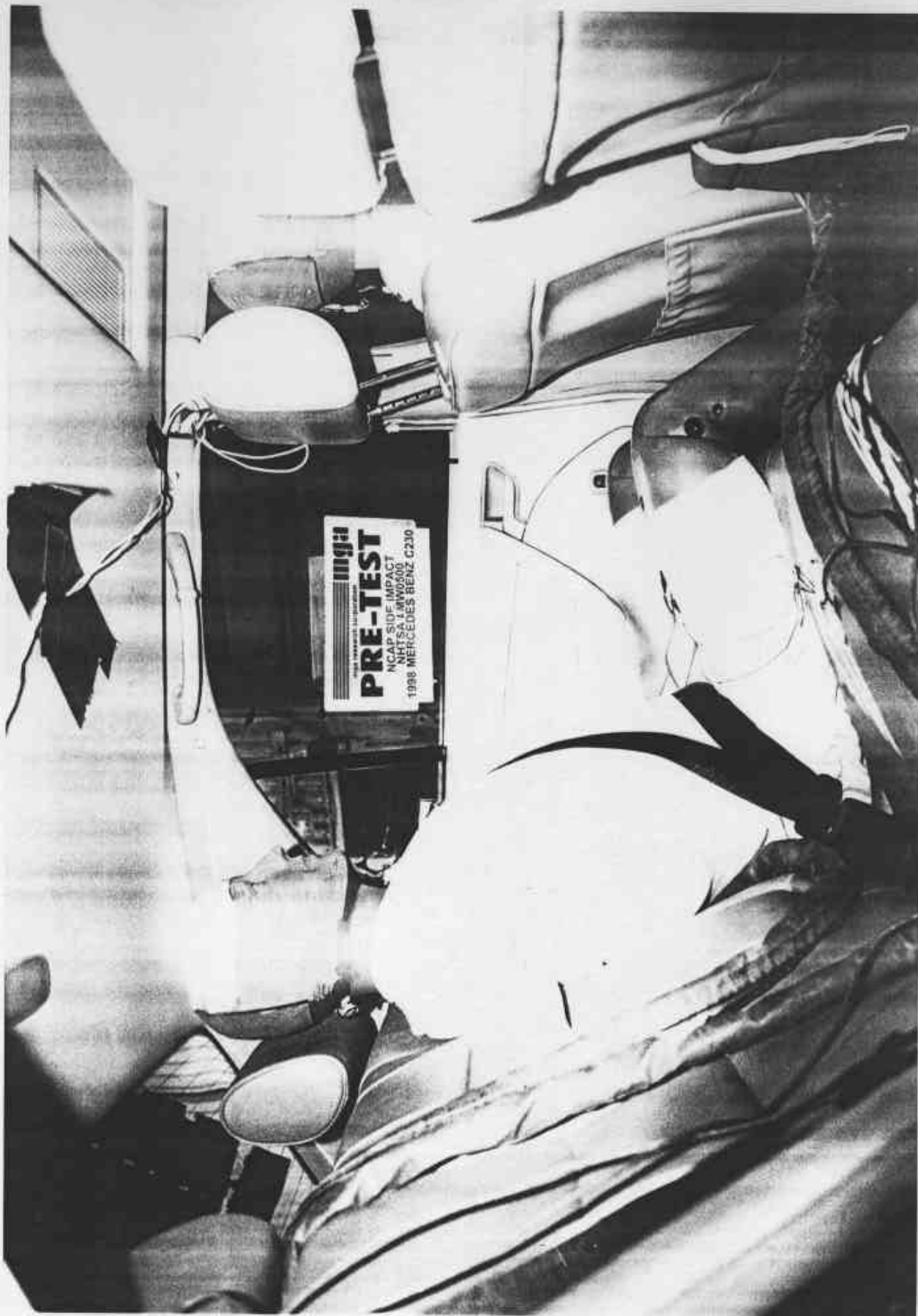


Photo No. A-30 - Pre-Test Passenger Dummy Right Side View

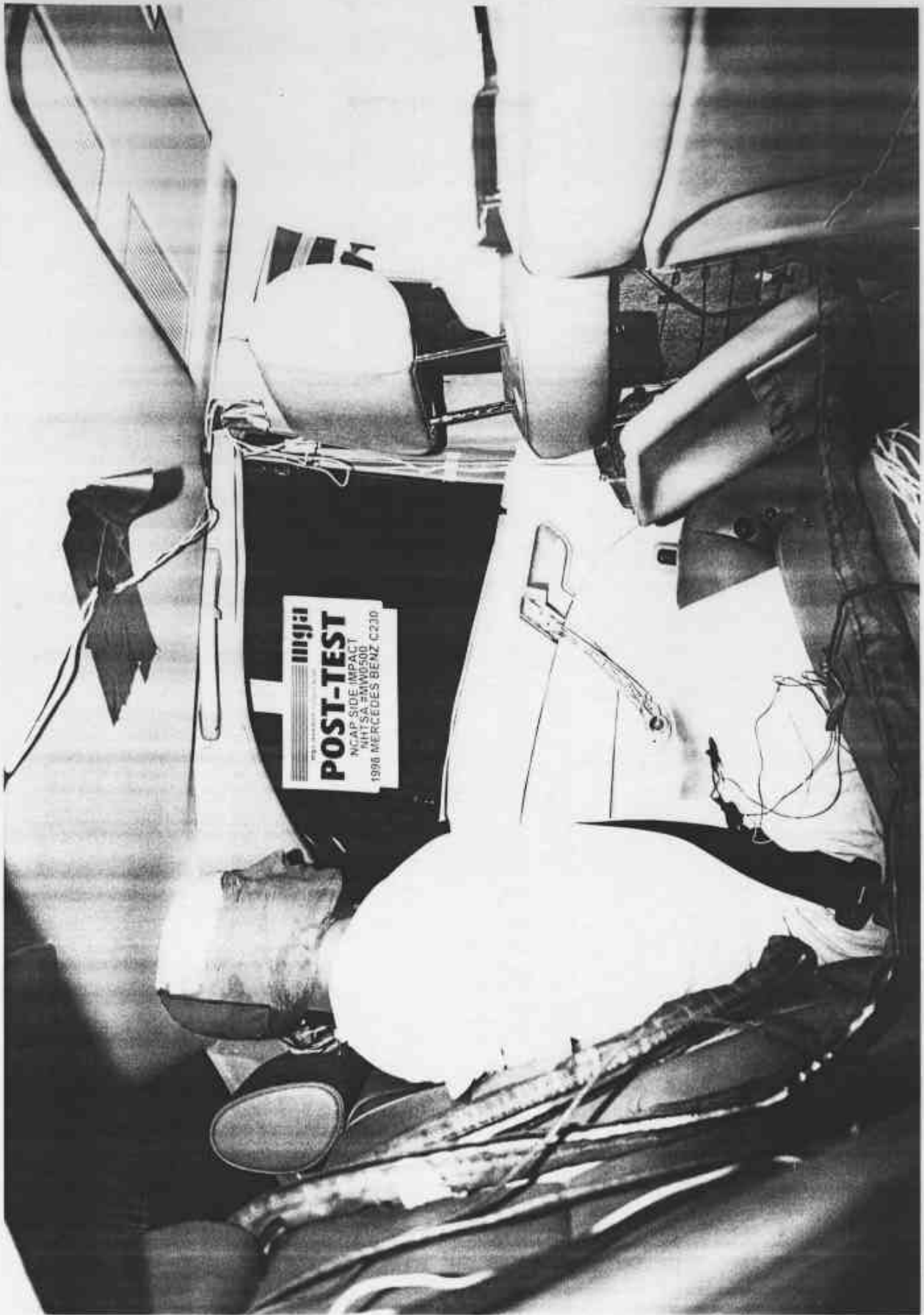


Photo No. A-31 - Post-Test Passenger Dummy Right Side View

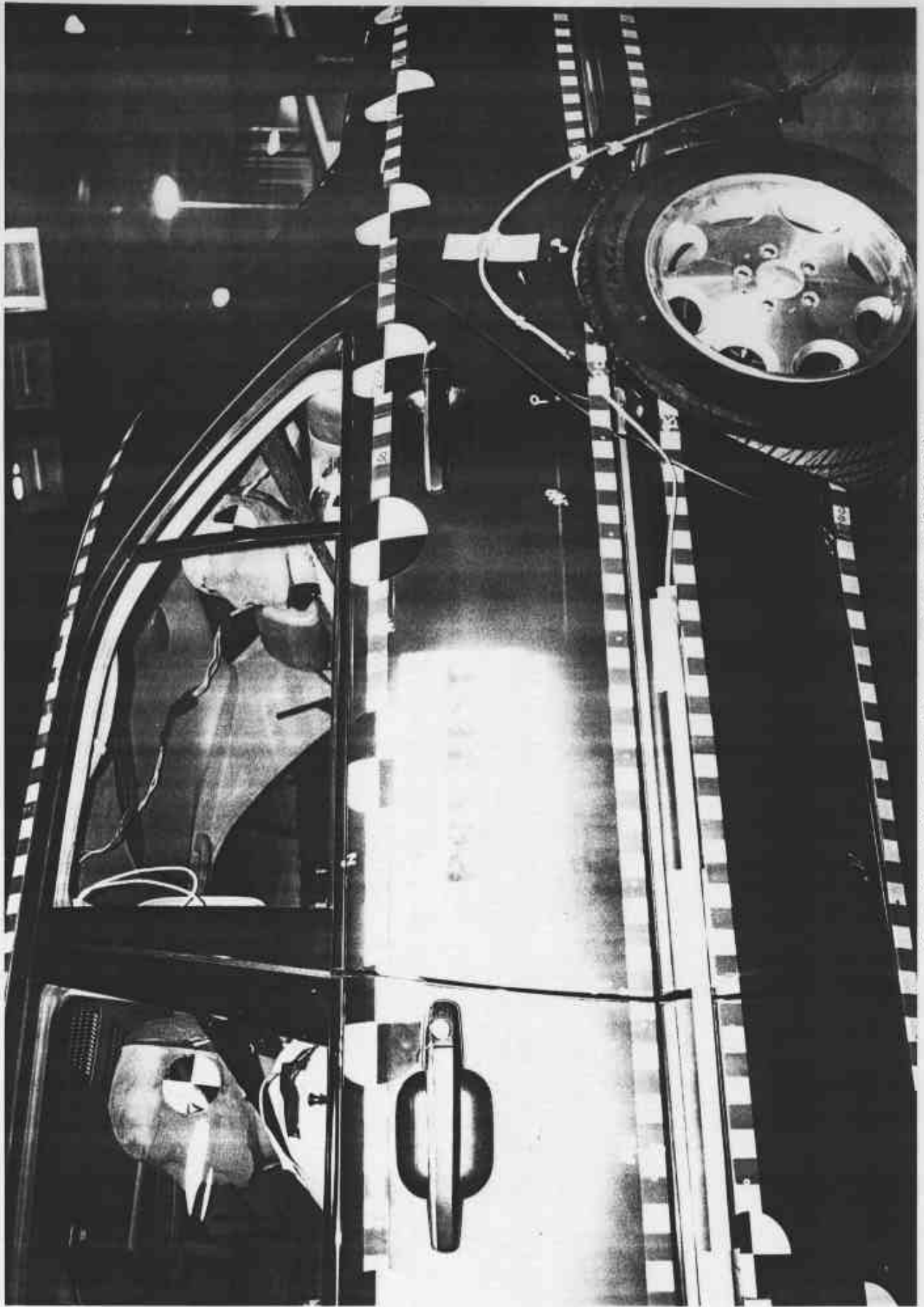


Photo No. A-32 - Pre-Test Passenger Dummy Left Side View

A-32

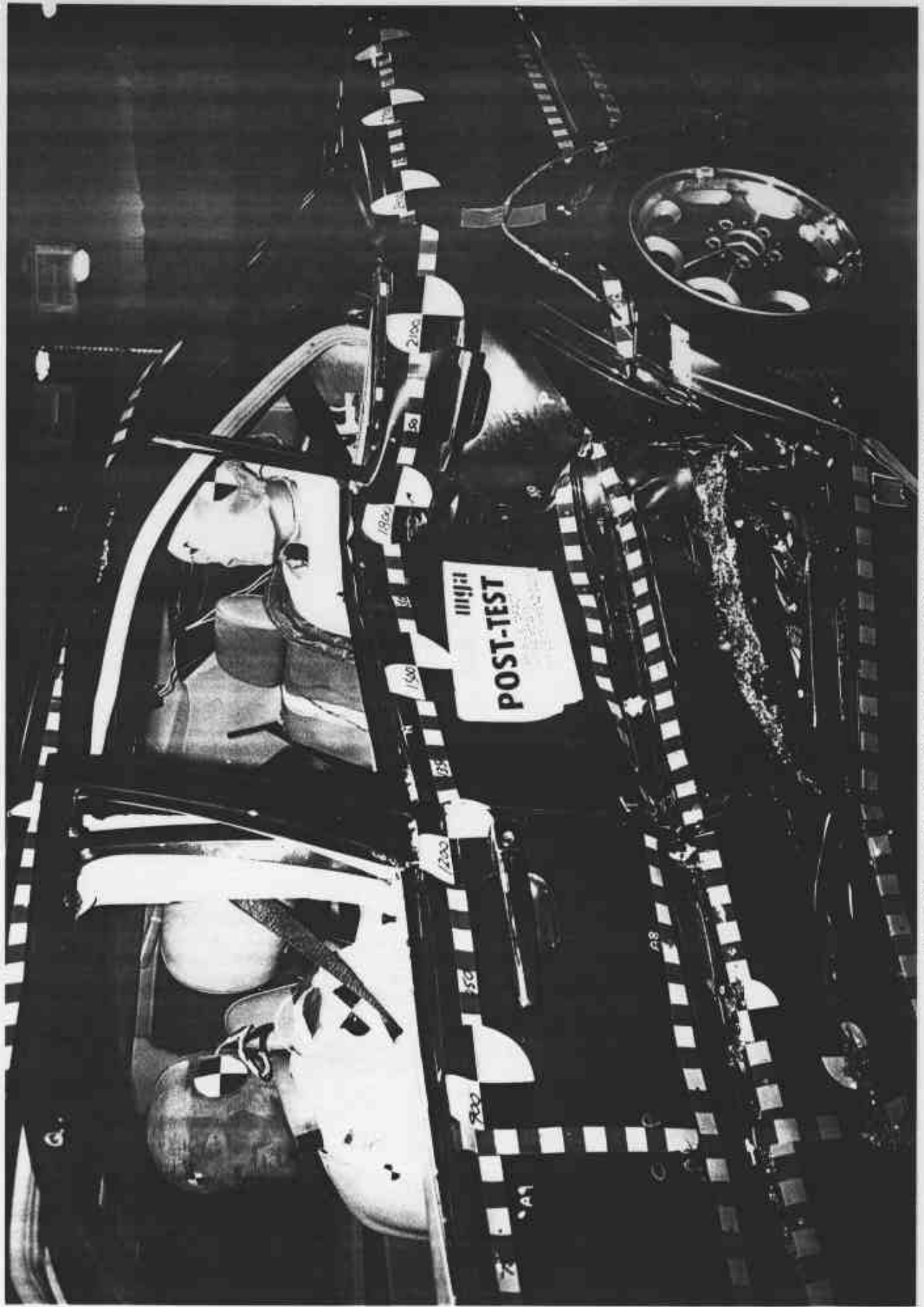


Photo No. A-33 - Post-Test Passenger Dummy Left Side View

A-33

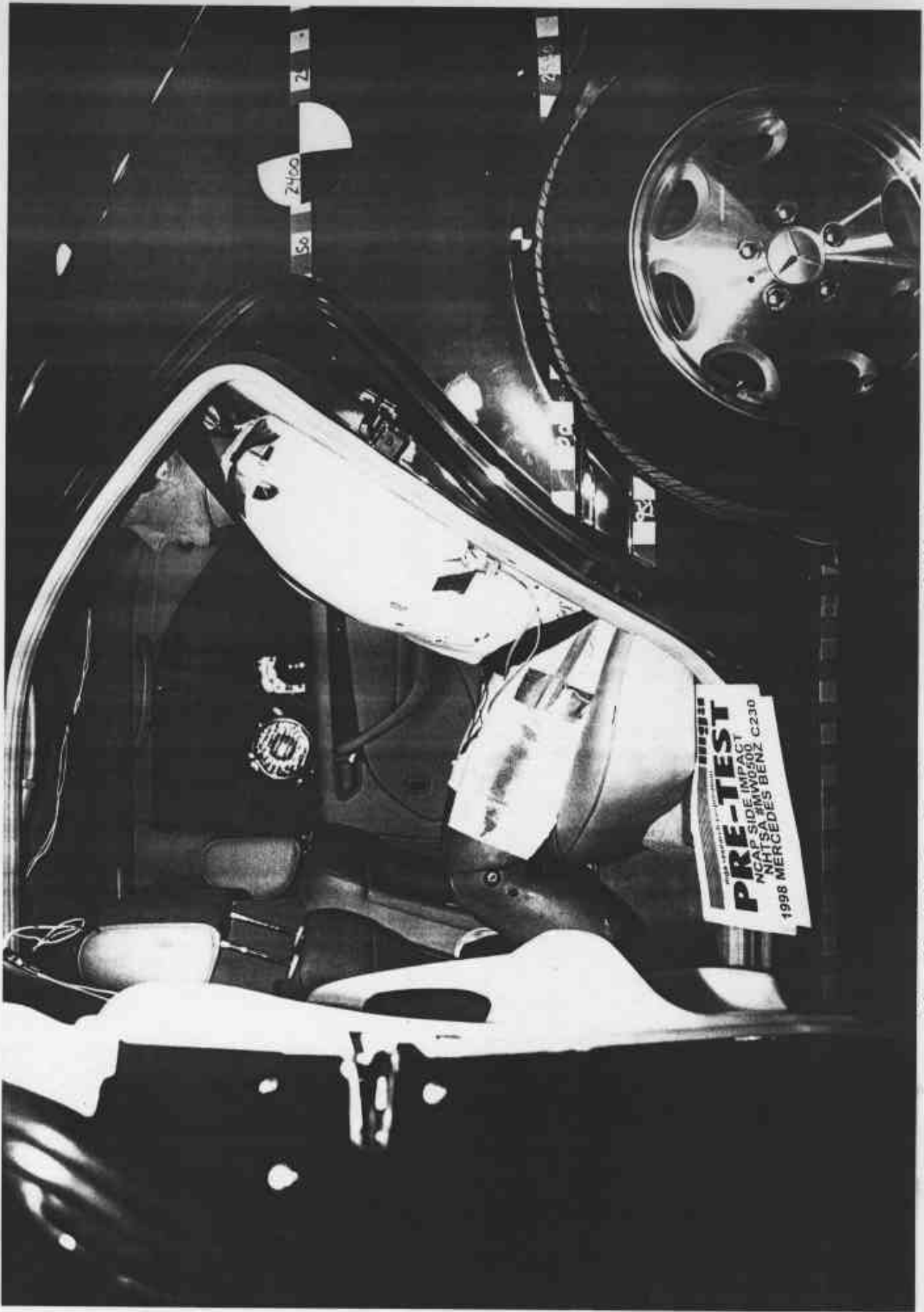


Photo No. A-34 - Pre-Test Passenger Dummy Left Side View (Door Open)

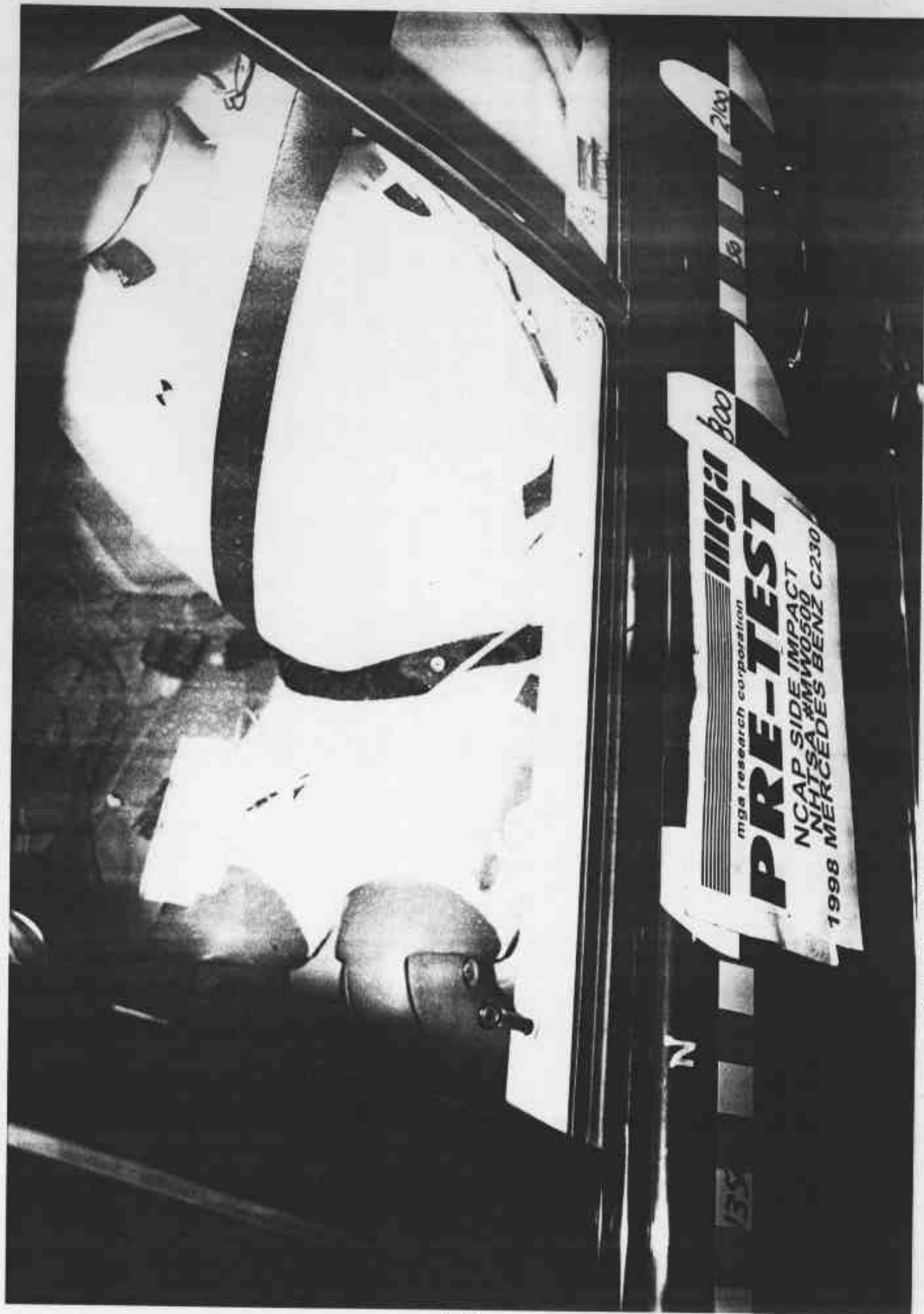


Photo No. A-35 - Pre-Test Passenger Dummy Shoulder and Door Top View

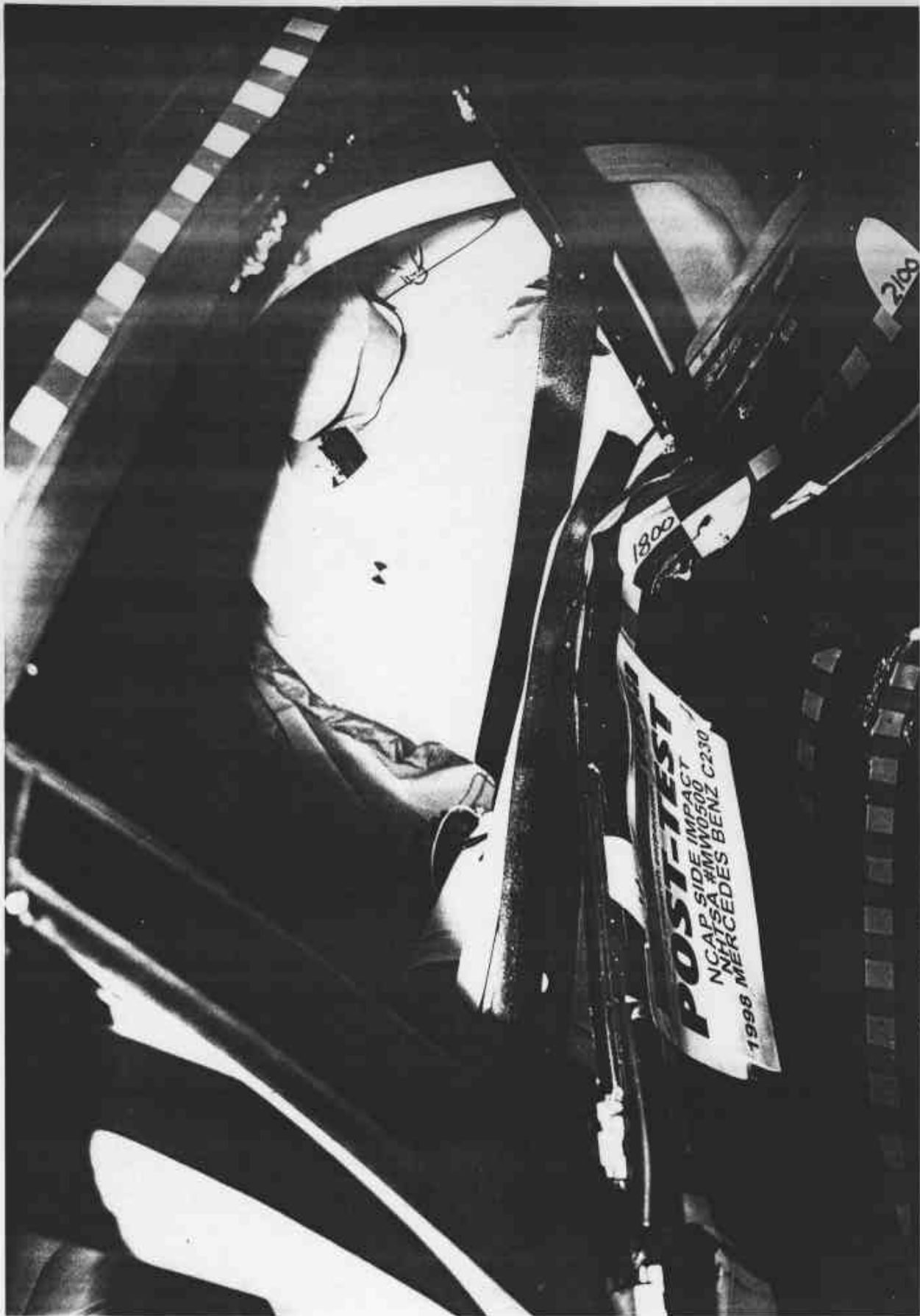


Photo No. A-36 - Post-Test Passenger Dummy Shoulder and Door Top View

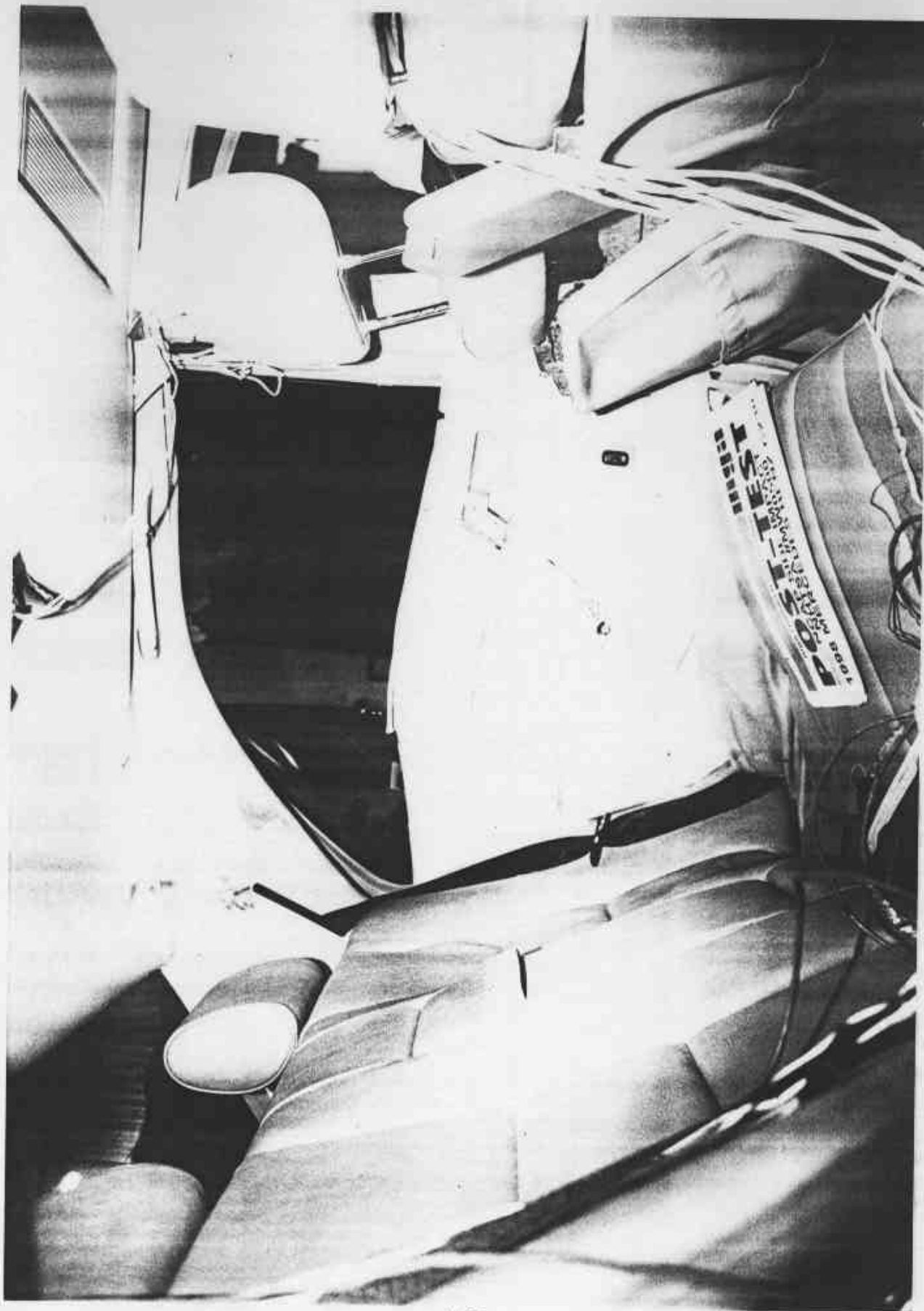
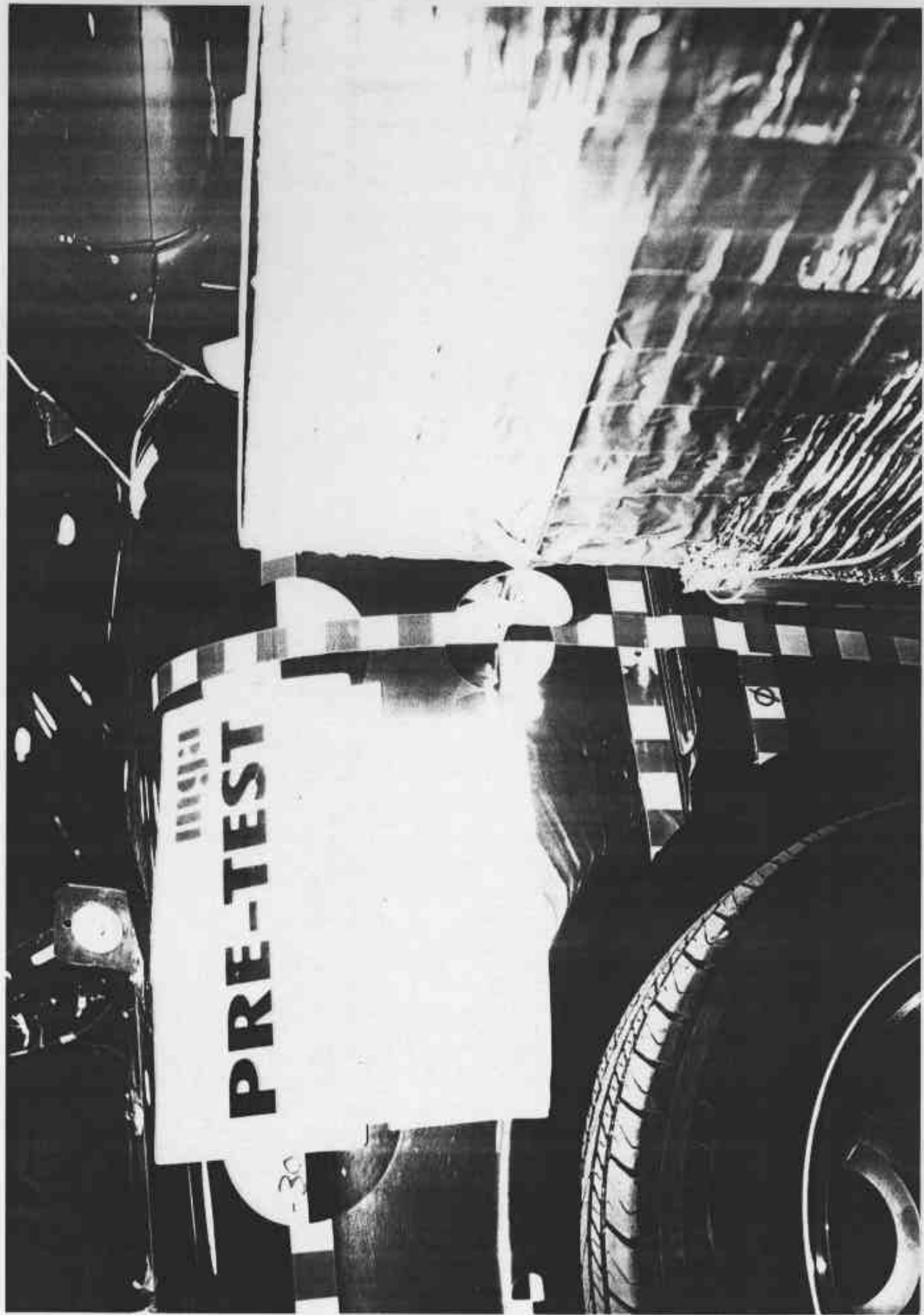


Photo No. A-37 - Post-Test Passenger Dummy Contact



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



A-39

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

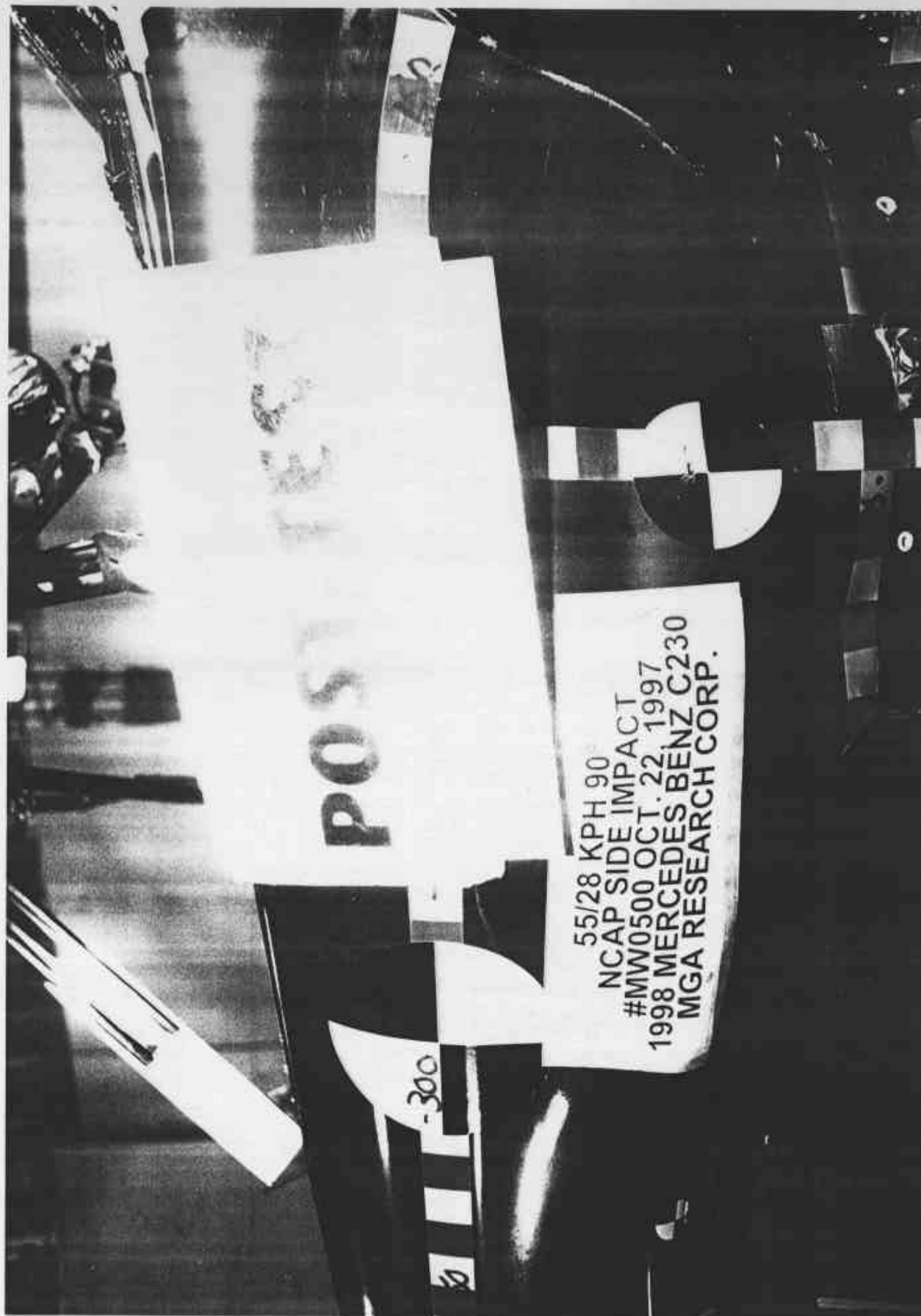
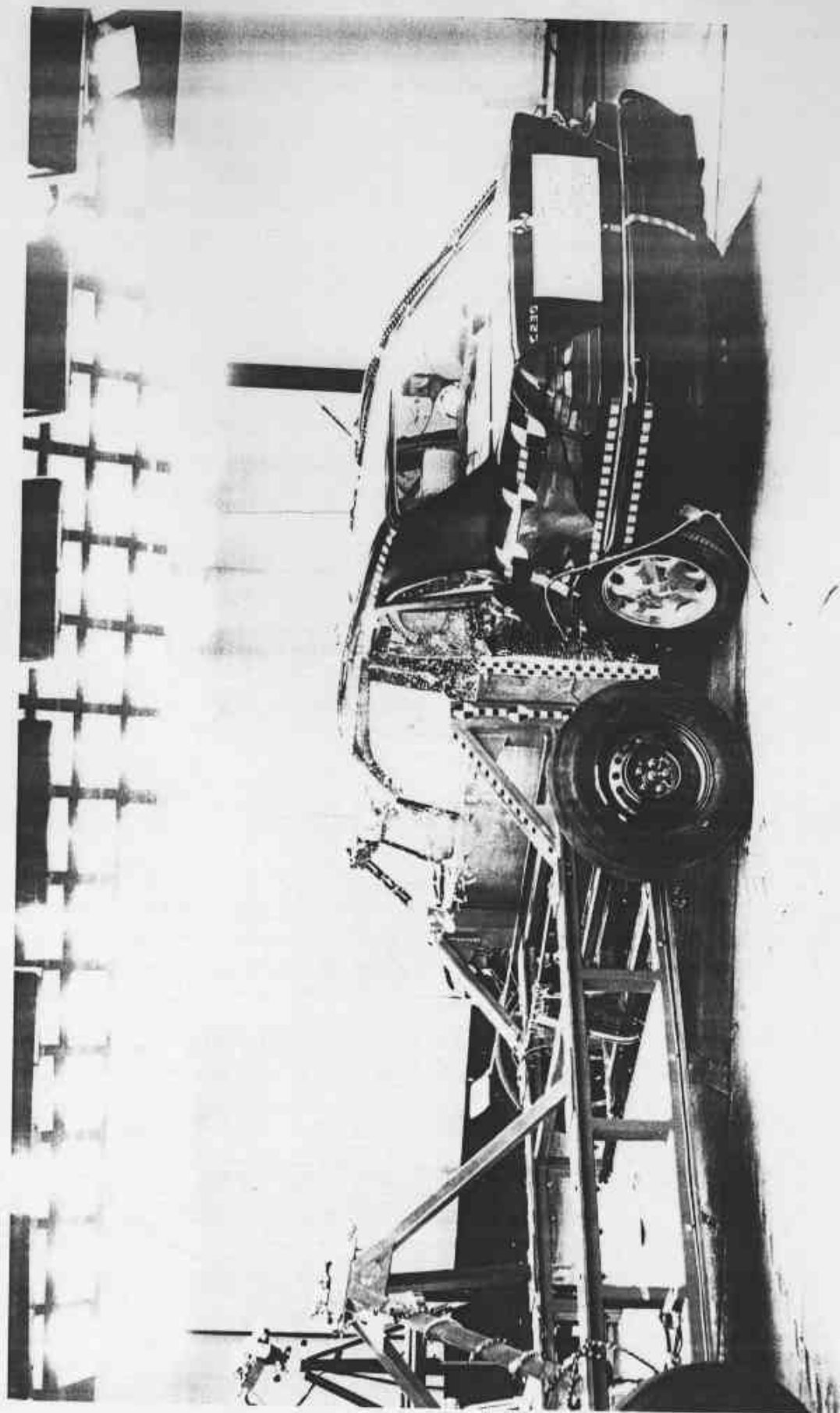


Photo No. A-40 - Post-Test Left Front Impact Point on Vehicle



Photo No. A-41 - Added Vehicle Ballast

A-41



A-42

Photo No. A-42 - Impact

AT EXHAUSTION  
REPLACEMENT DATE:  
DATE OF REPLACEMENT:  
FROM RE-EXAMINATION

|                            |                            |
|----------------------------|----------------------------|
| Exhaust date               | Exhaust date               |
| 9-2012                     | 9-2012                     |
| Left door                  | Right door                 |
| 9-2012                     | 9-2012                     |
| Front<br>Passenger<br>Side | Front<br>Passenger<br>Side |

MADE IN GERMANY  
MFD BY DAIMLER-BENZ AG STUTTGART 07/97  
GVWR 4185 GAWR FRONT/REAR 1960/2225 LBS  
GVWR 1900 GAWR FRONT/REAR 890/1010 KG  
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR  
VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS  
IN EFFECT ON THE DATE OF MANUFACTURE  
WDBHA23G7WA529032 PA  
DANGER CAR



A 202 584 06 79 0

WEIGHT 865 LBS  
FRONT 2 REAR 3  
TIRE SIZE 205/60 R 15 91H  
FRONT 28 PSI REAR 32 PSI  
INFORMATION SEE INSIDE FILLER PIPE COVER

Photo No. A-43 - Vehicle Certification Label

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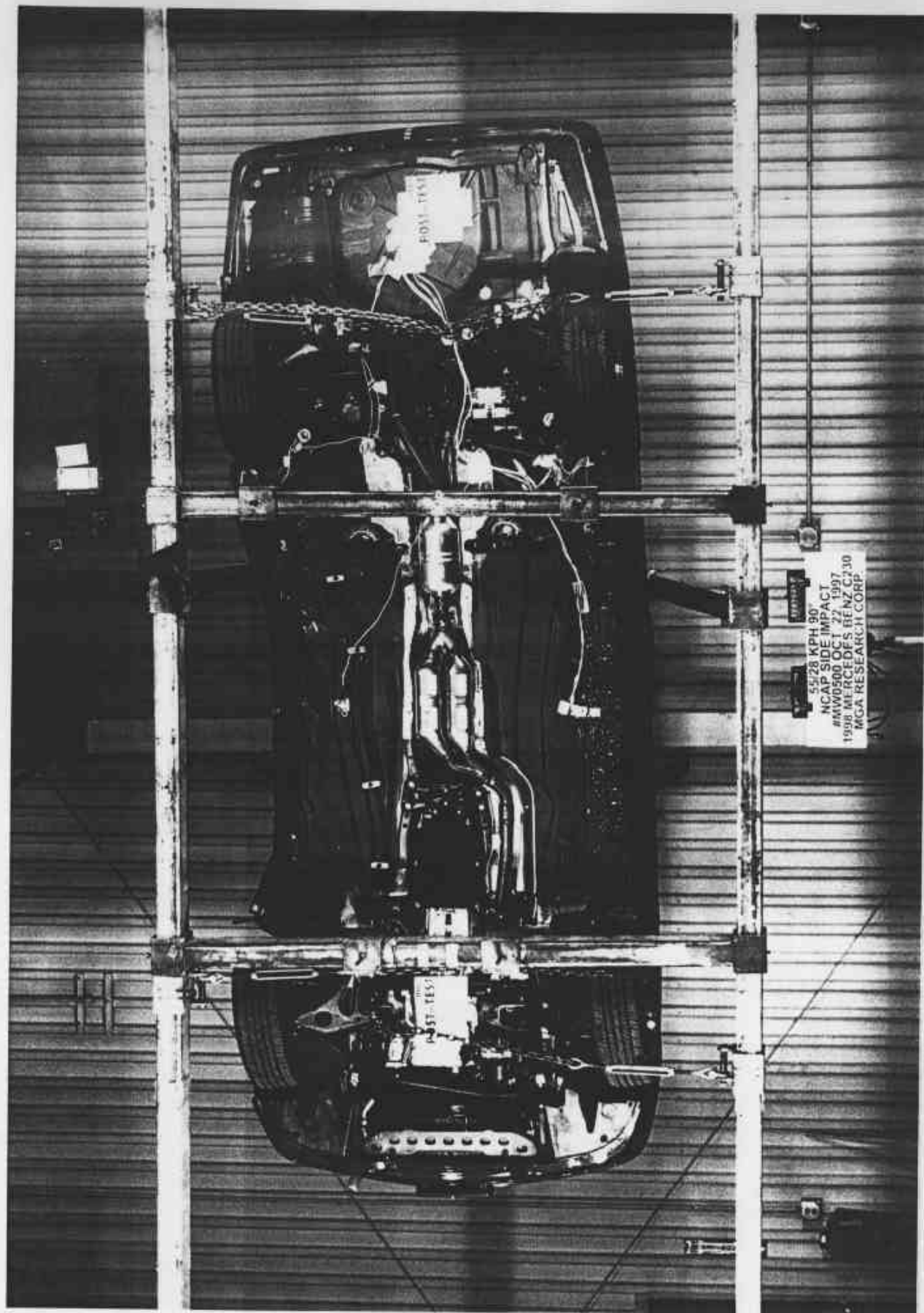
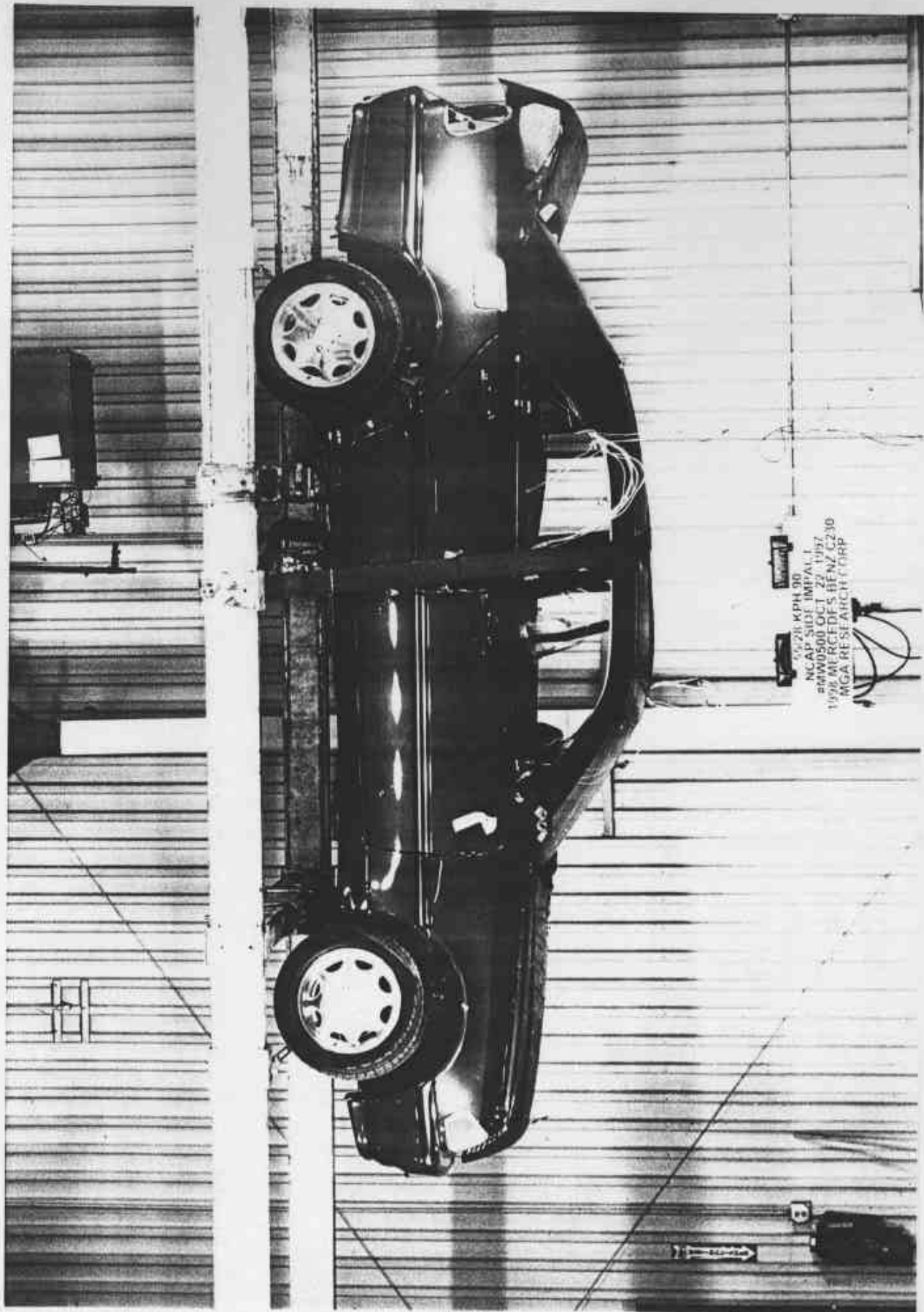


Photo No. A-45 - Rollover 90°

A-45



A-46

Photo No. A-46 - Rollover 180°

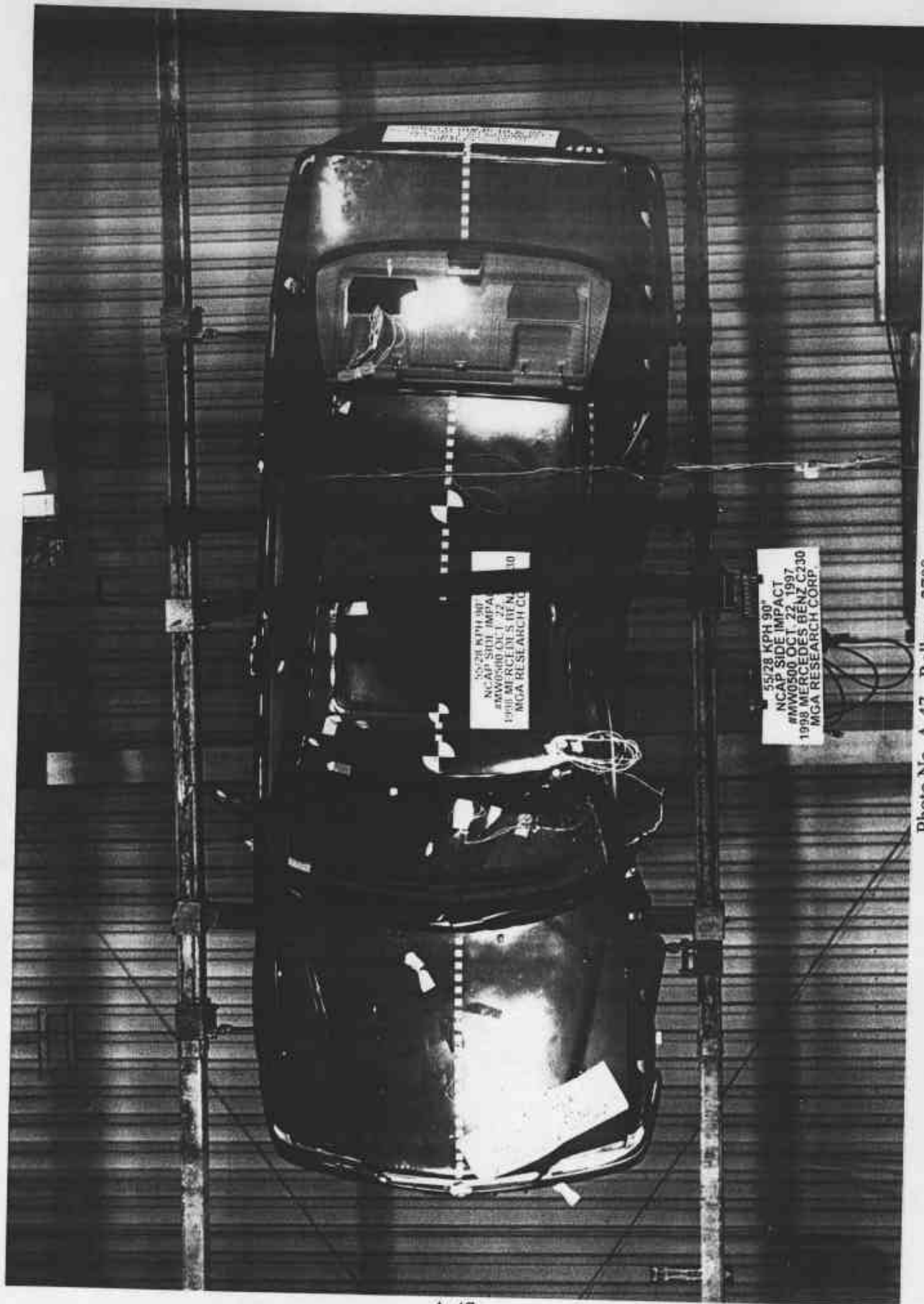


Photo No. A-47 - Rollover 270°



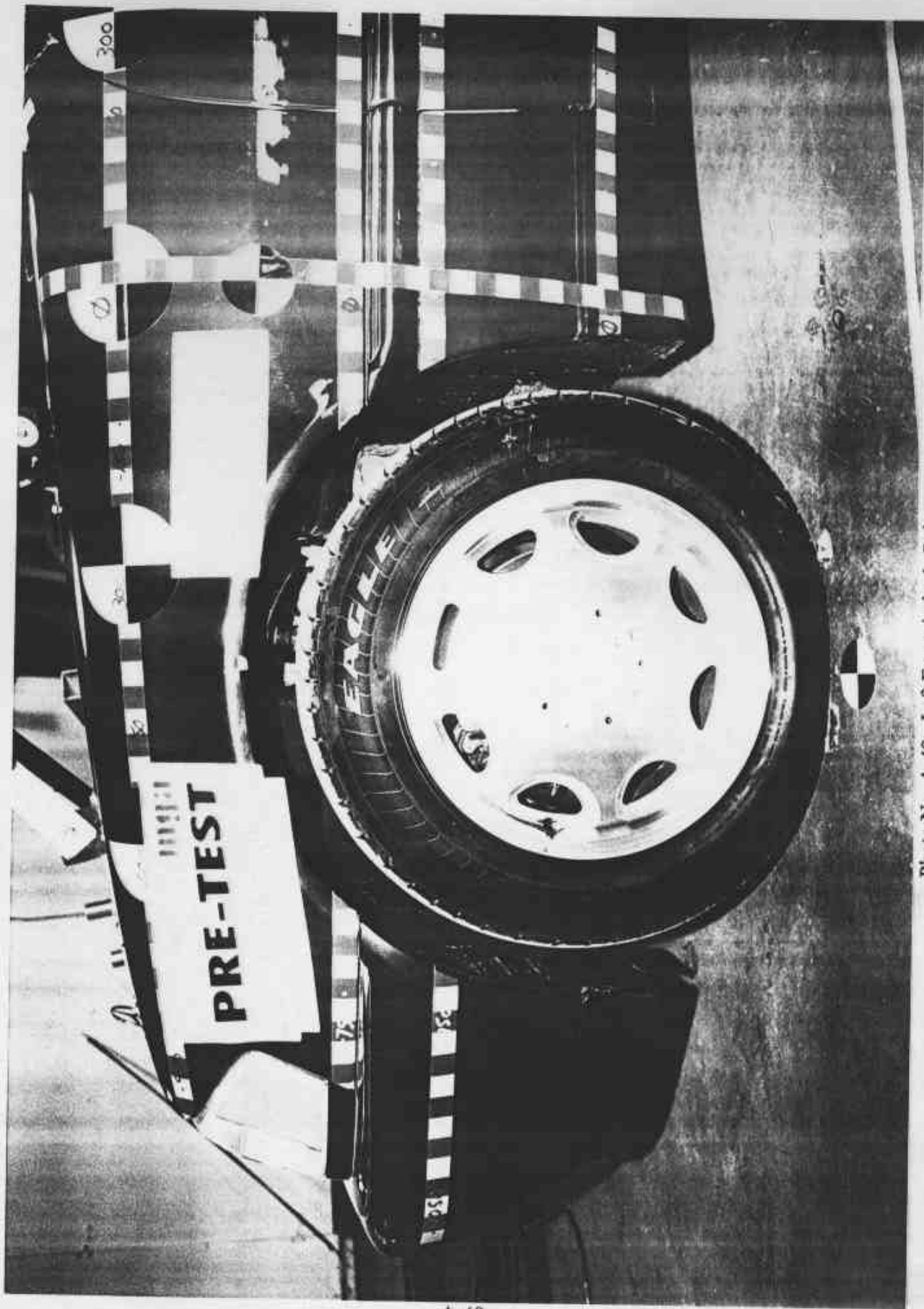


Photo No. A-49 - Left Front Attitude Point

A-49

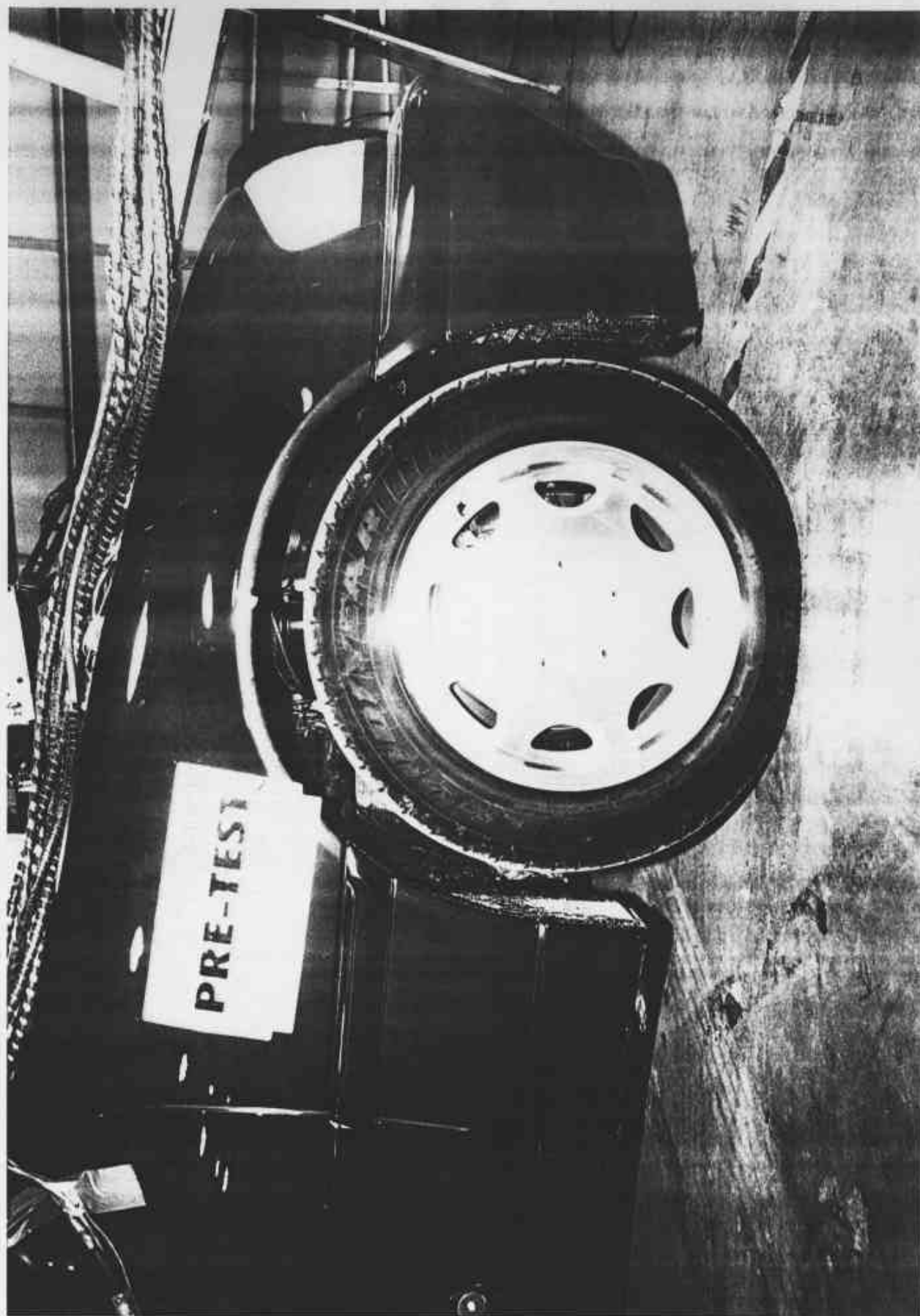


Photo No. A-50 - Right Front Attitude Point

A-50



Photo No. A-51 - Left Rear Attitude Point

A-51

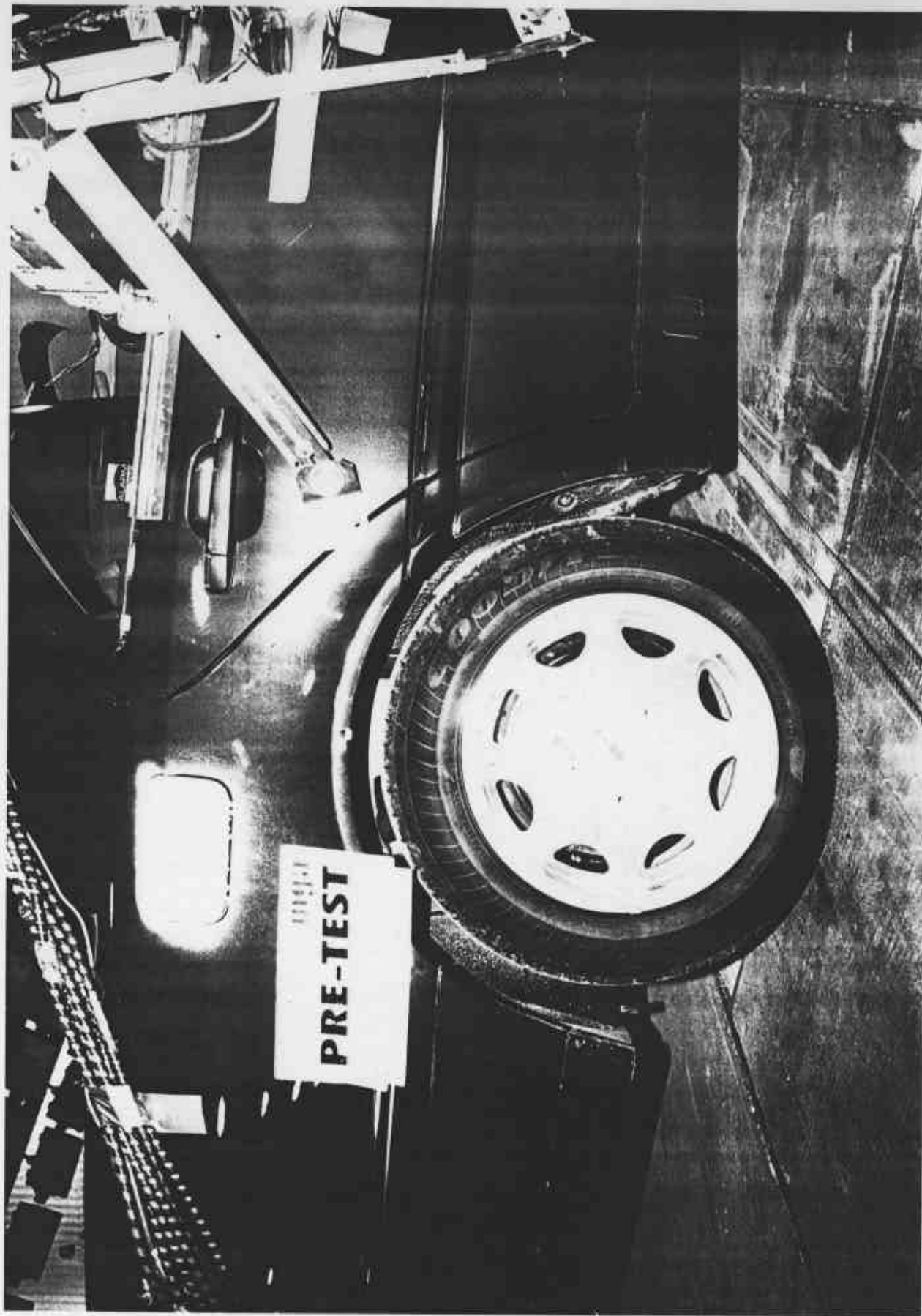


Photo No. A-52 - Right Rear Attitude Point

A-52

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### Barrier:

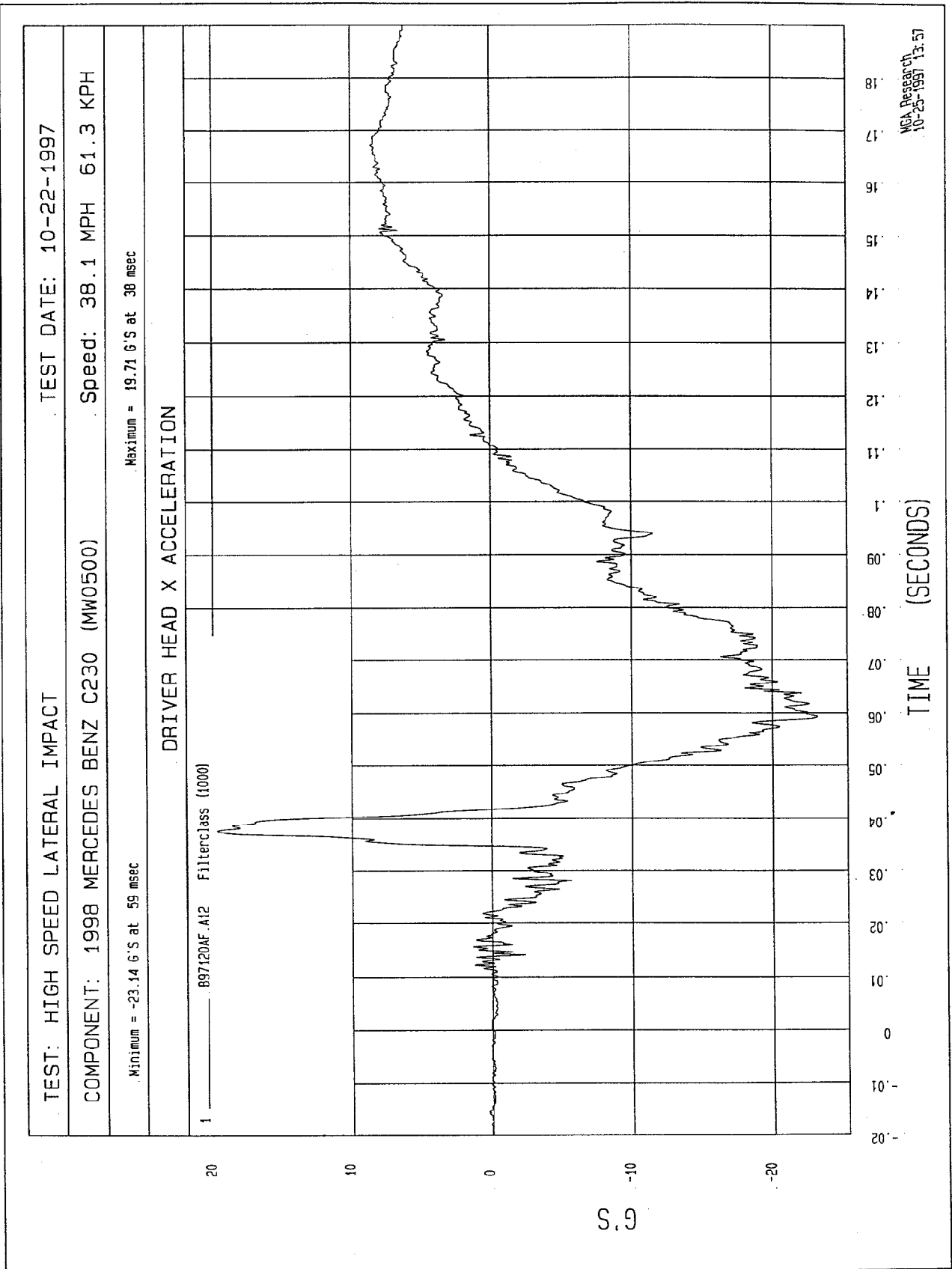
|                                                                                |      |
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| <br><u>FIR Filtered</u>                                                     |                 |
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| Figure B-117 - Driver Upper Rib Y Redundant Acceleration vs. Time           | B-117           |
| Figure B-118 - Driver Lower Rib Y Acceleration vs. Time                     | B-118           |
| Figure B-119 - Driver Lower Rib Y Redundant Acceleration vs. Time           | B-119           |
| Figure B-120 - Driver Lower Spine Y Acceleration vs. Time                   | B-120           |
| Figure B-121 - Driver Lower Spine Y Redundant Acceleration vs. Time         | B-121           |
| Figure B-122 - Driver Pelvis Y Acceleration vs. Time                        | B-122           |
| Figure B-123 - Driver Pelvis Y Redundant Acceleration vs. Time              | B-123           |
| Figure B-124 - Rear Passenger Upper Rib Y Acceleration vs. Time             | B-124           |
| Figure B-125 - Rear Passenger Upper Rib Y Redundant Acceleration vs. Time   | B-125           |
| Figure B-126 - Rear Passenger Lower Rib Y Acceleration vs. Time             | B-126           |
| Figure B-127 - Rear Passenger Lower Rib Y Redundant Acceleration vs. Time   | B-127           |
| Figure B-128 - Rear Passenger Lower Spine Y Acceleration vs. Time           | B-128           |
| Figure B-129 - Rear Passenger Lower Spine Y Redundant Acceleration vs. Time | B-129           |
| Figure B-130 - Rear Passenger Pelvis Y Acceleration vs. Time                | B-130           |
| Figure B-131 - Rear Passenger Pelvis Y Redundant Acceleration vs. Time      | B-131           |

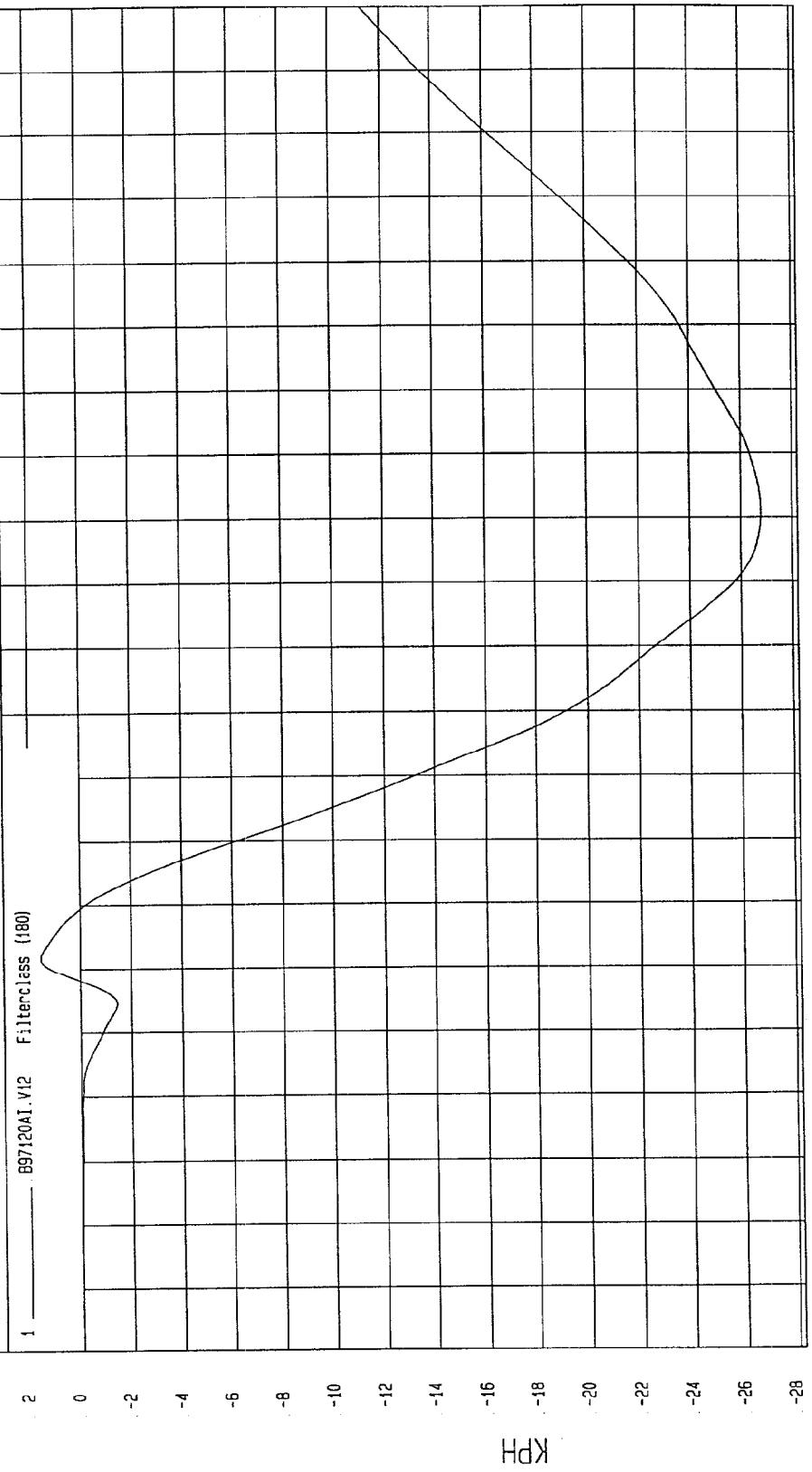


TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

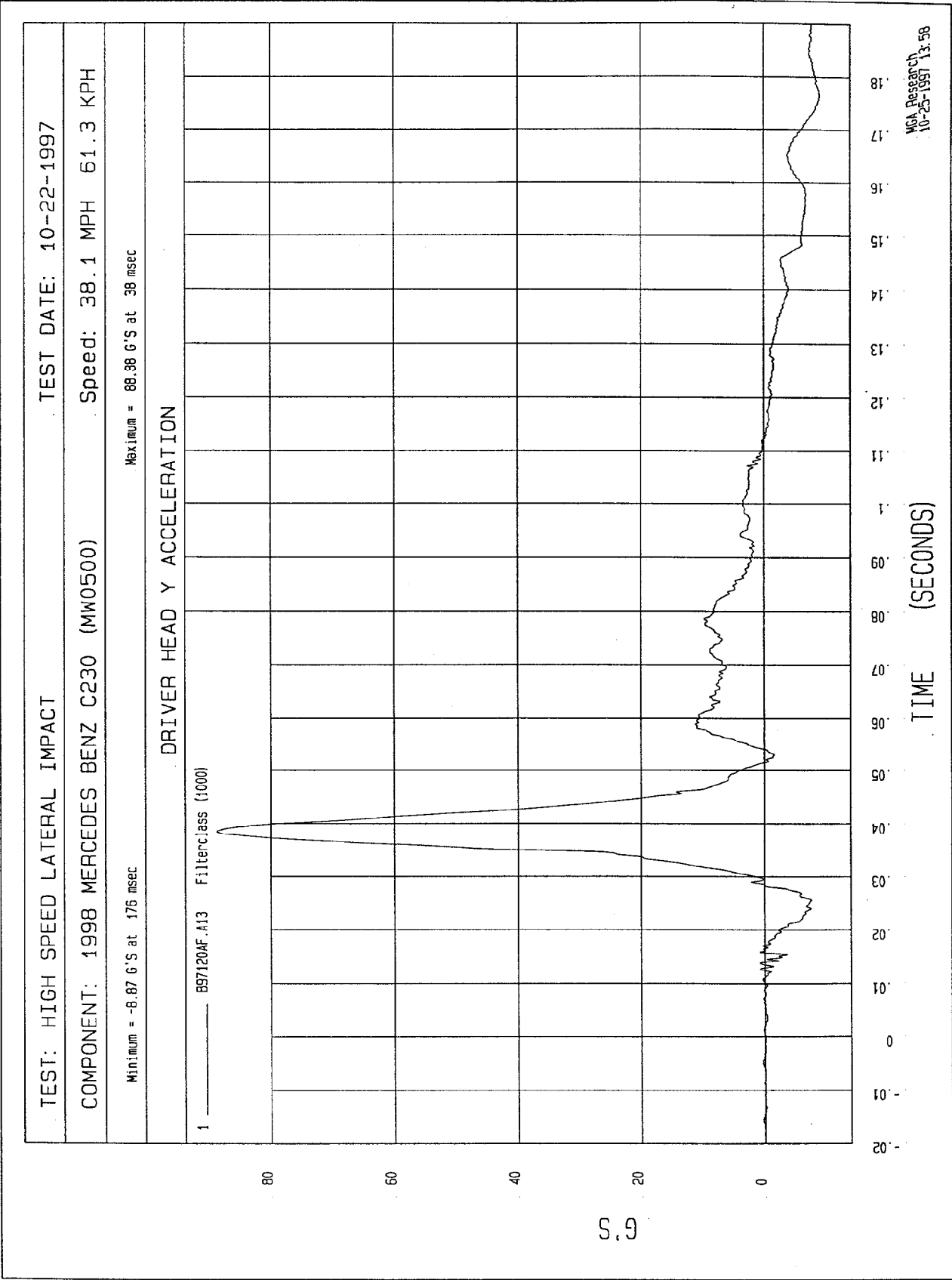
Minimum = -26.79 KPH at 111 msec      Maximum = 1.55 KPH at 42 msec

DRIVER HEAD X VELOCITY



TIME Seconds

NSA Research  
10-25-1997 14:03

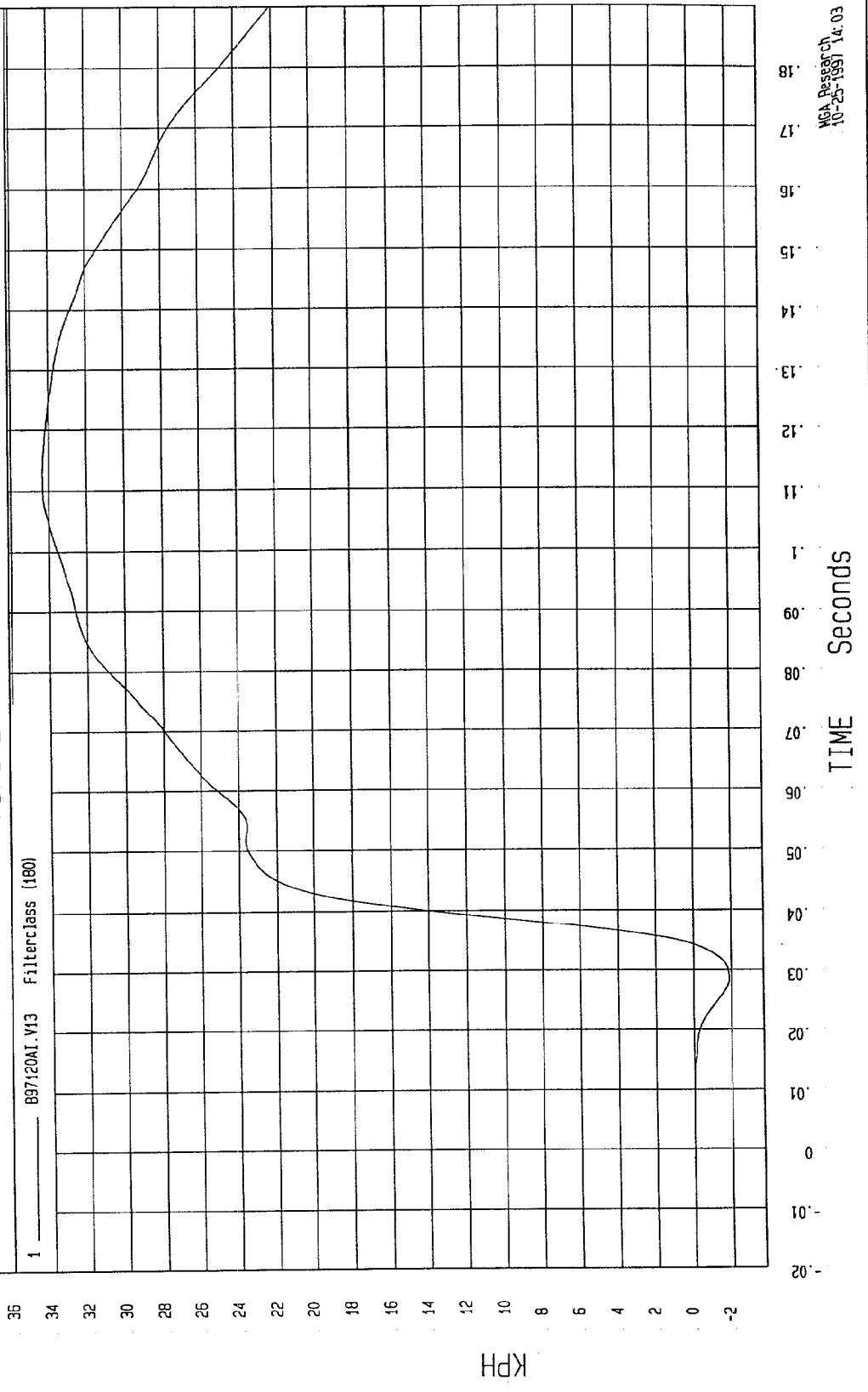


TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

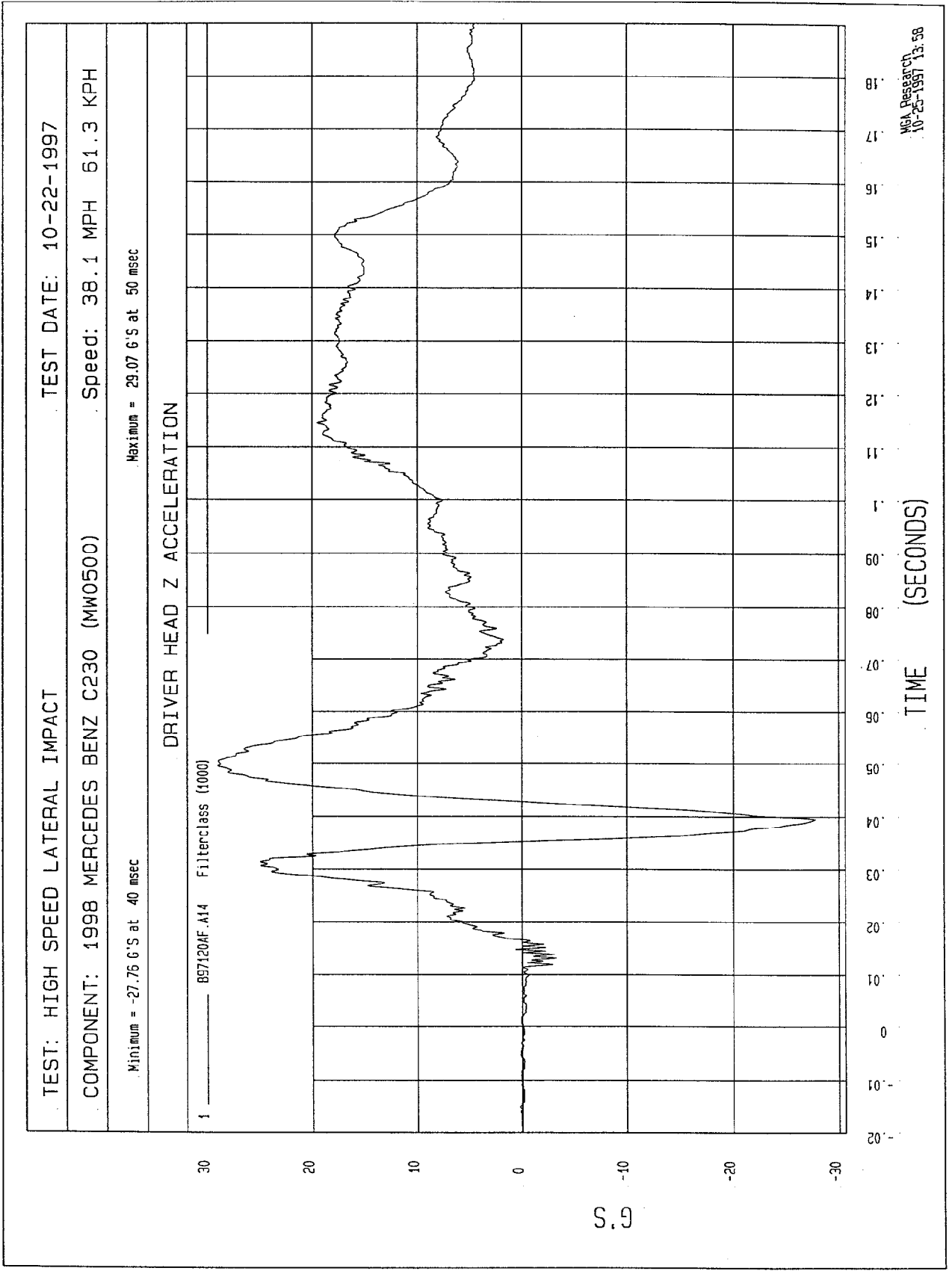
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -1.87 KPH at 28 msec      Maximum = 34.34 KPH at 112 msec

DRIVER HEAD Y VELOCITY



MGA Research  
10-25-1997 14.03



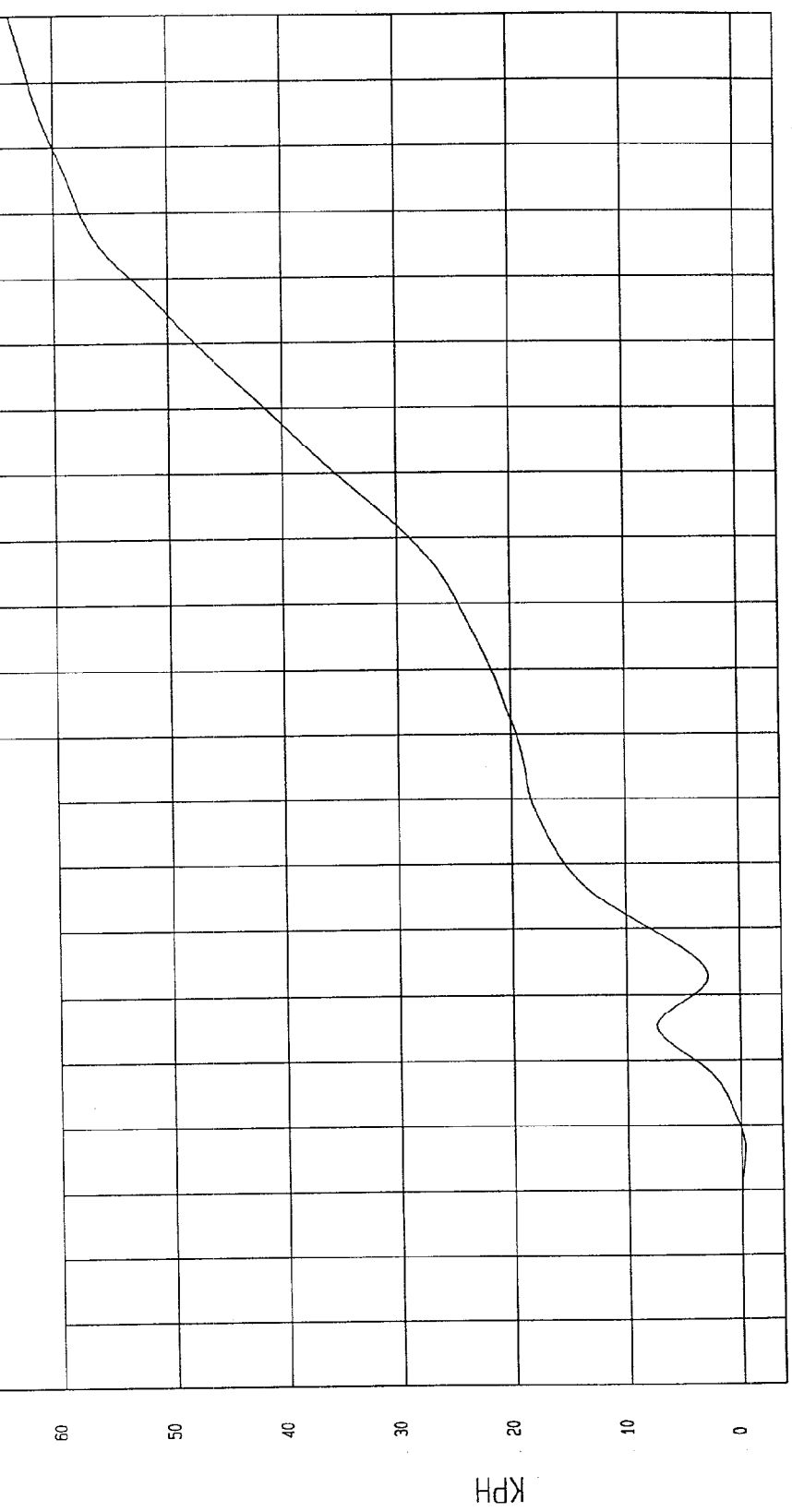
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -.32 KPH at 16 msec Maximum = 65.29 KPH at 200 msec

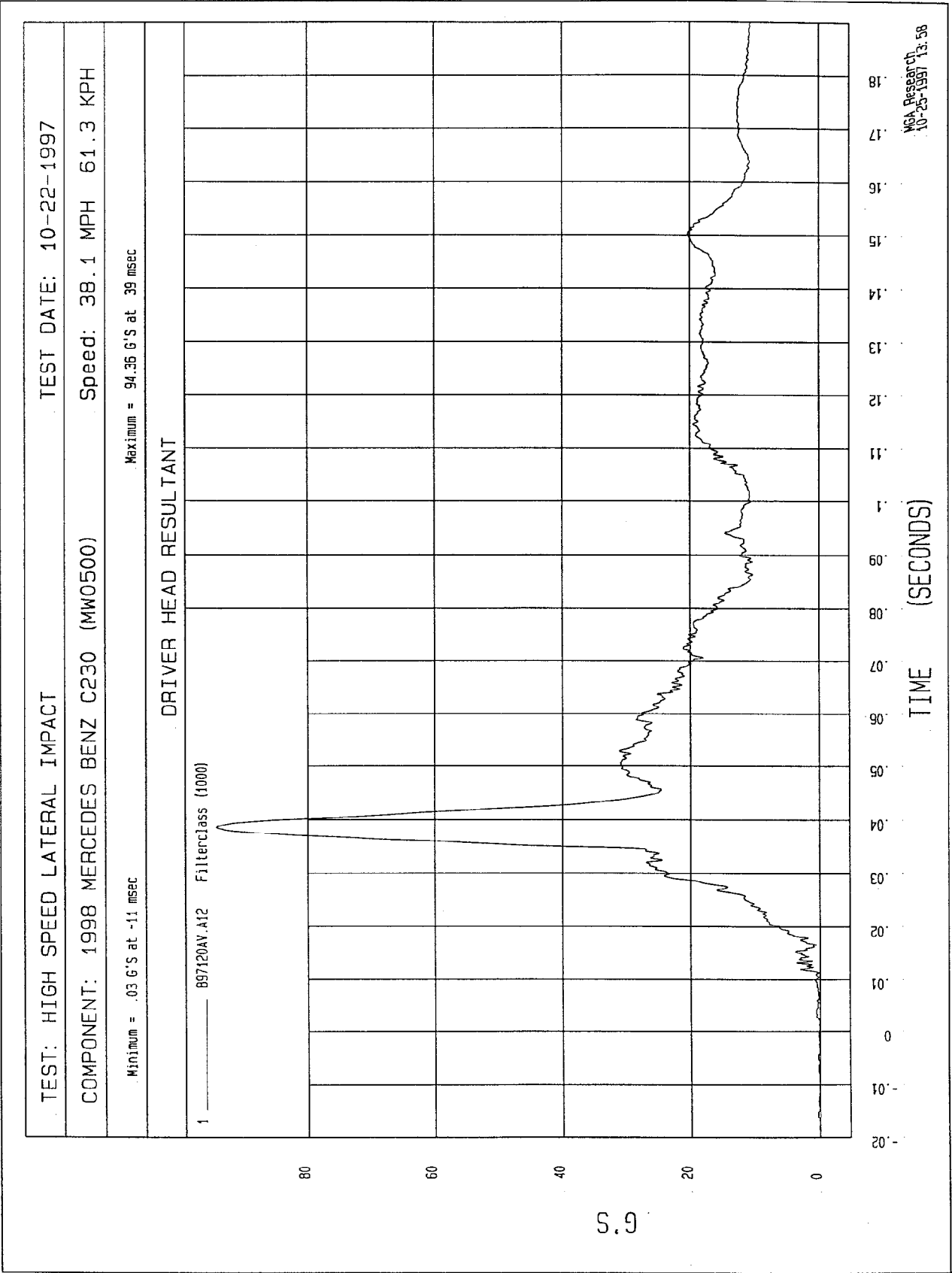
DRIVER HEAD 2 VELOCITY

1 \_\_\_\_\_ B97120A1.V14 Filterclass (180)



NCA Research  
10-25-1997 14:03

TIME Seconds

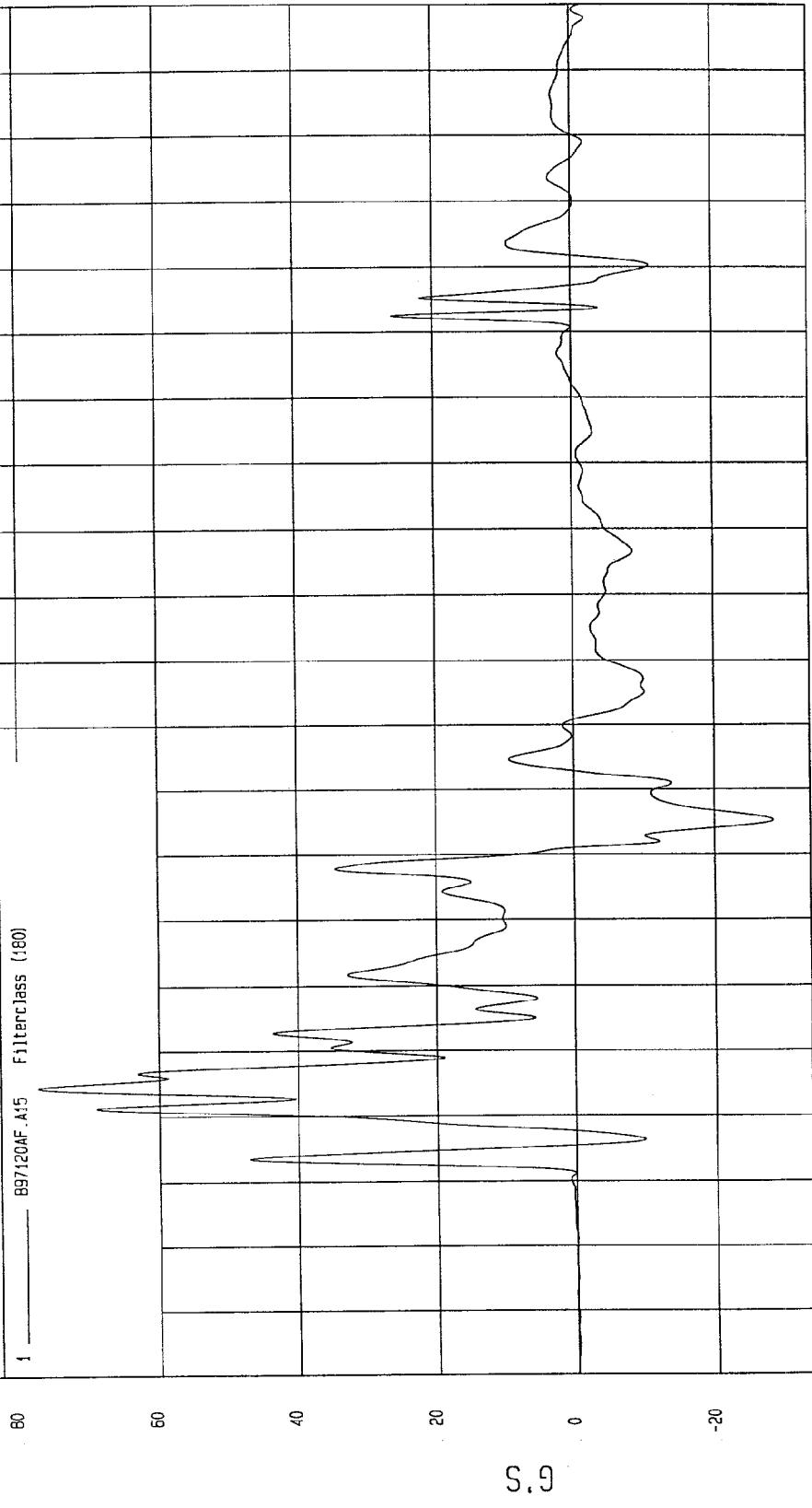


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -28.30 G'S at 65 msec Maximum = 77.32 G'S at 25 msec

DRIVER UPPER RIB Y ACCELERATION



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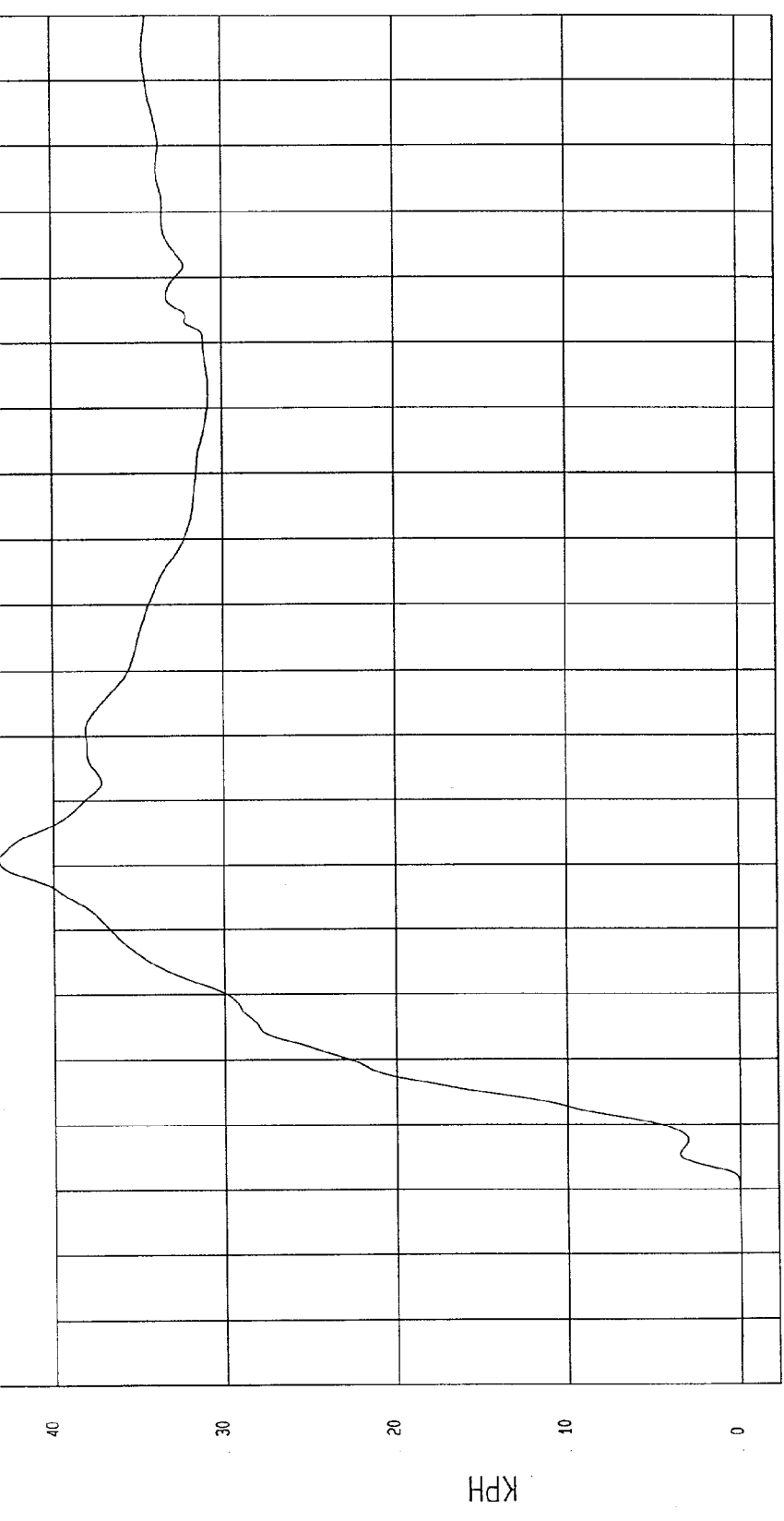
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -3.64E-02 KPH at -10 msec Maximum = 43.21 KPH at 61 msec

DRIVER UPPER RIB Y VELOCITY

1 B97120A1.V15 FilterClass (180)



TIME Seconds  
WCA Research  
10-25-1997 14.04

TEST: HIGH SPEED LATERAL IMPACT

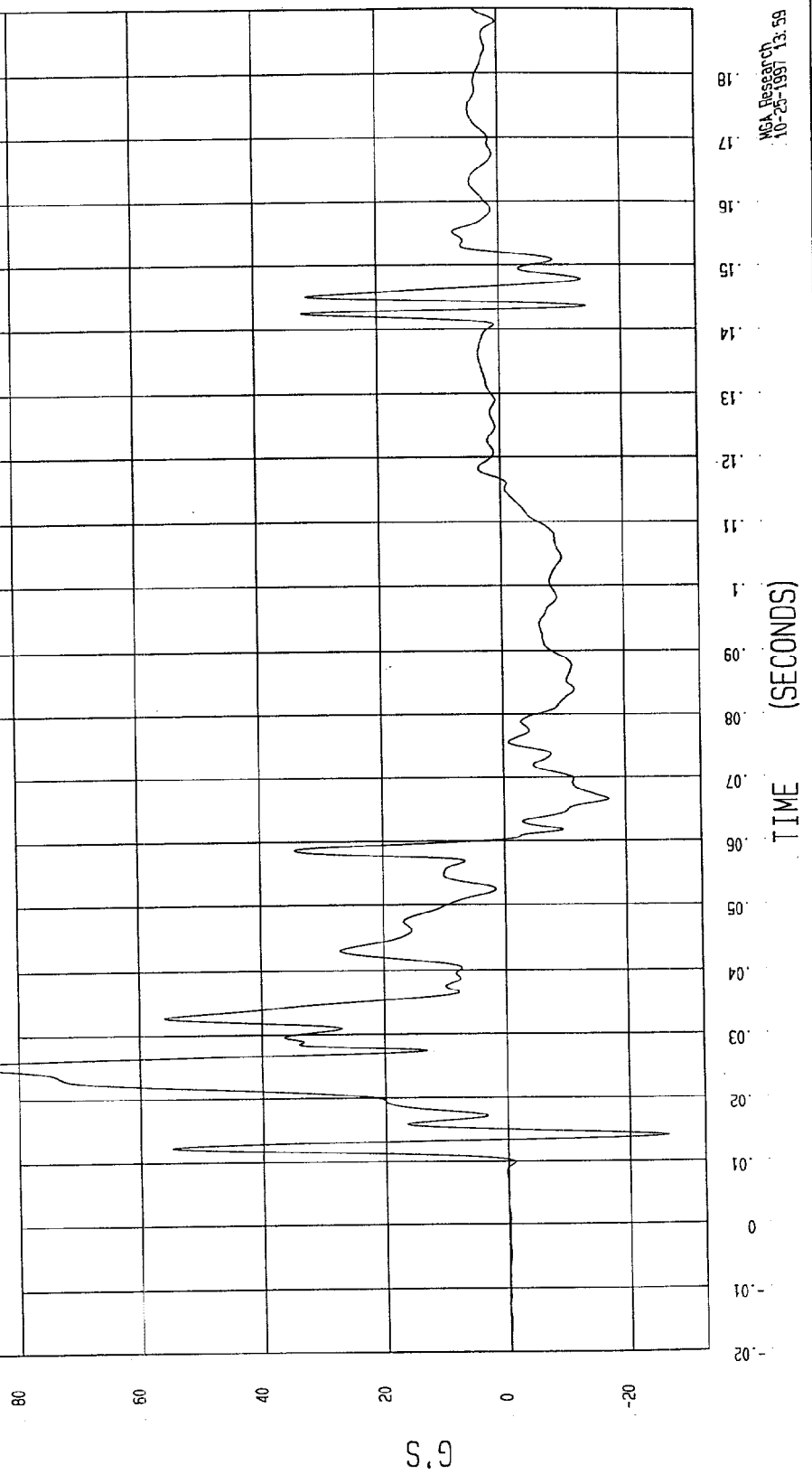
TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

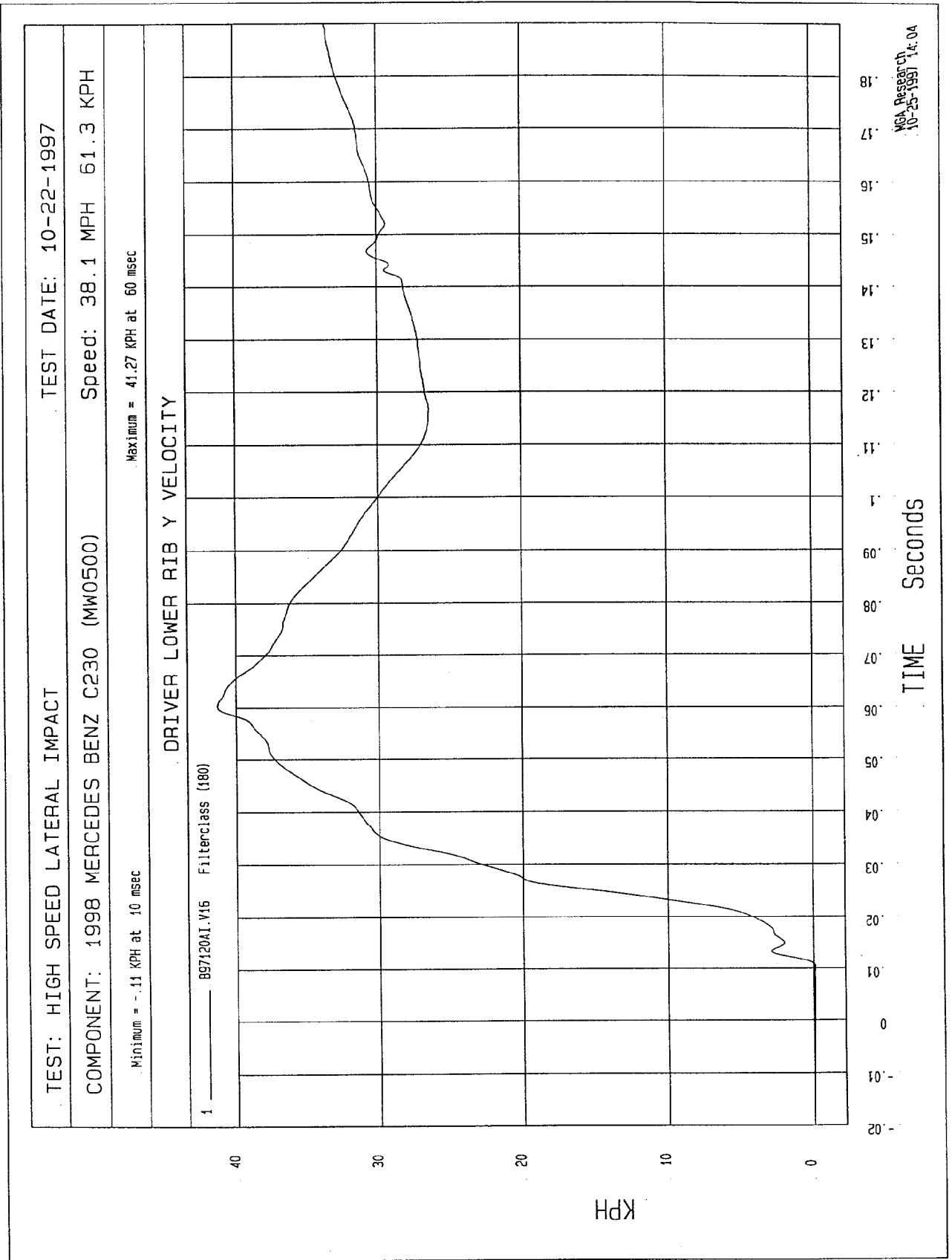
Minimum = -26.33 G'S at 14 msec Maximum = 92.30 G'S at 26 msec

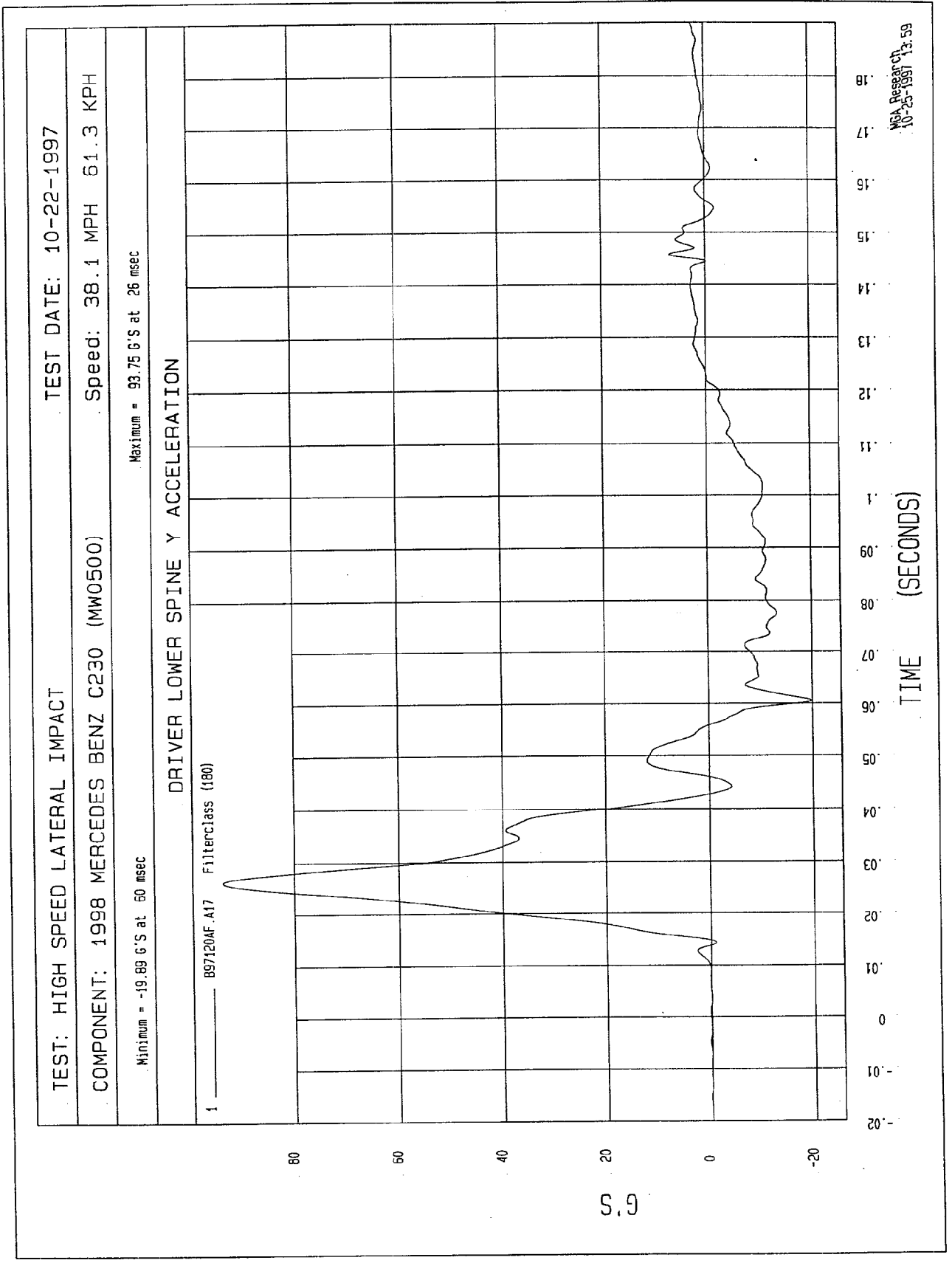
DRIVER LOWER RIB Y ACCELERATION

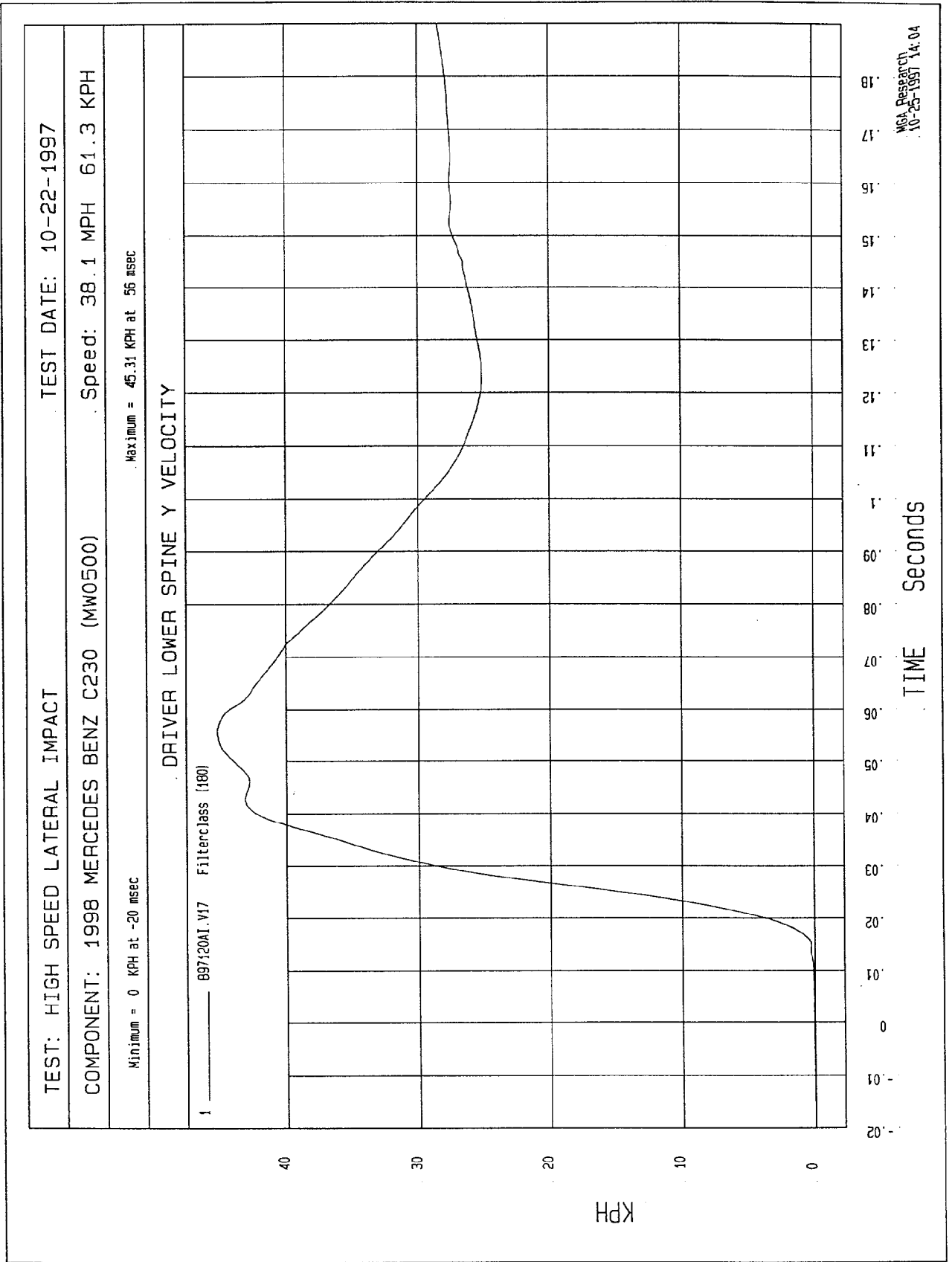
1 — 897120AF.A16 Filterclass (180)



MCA Research  
10-25-1997 13:59







TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

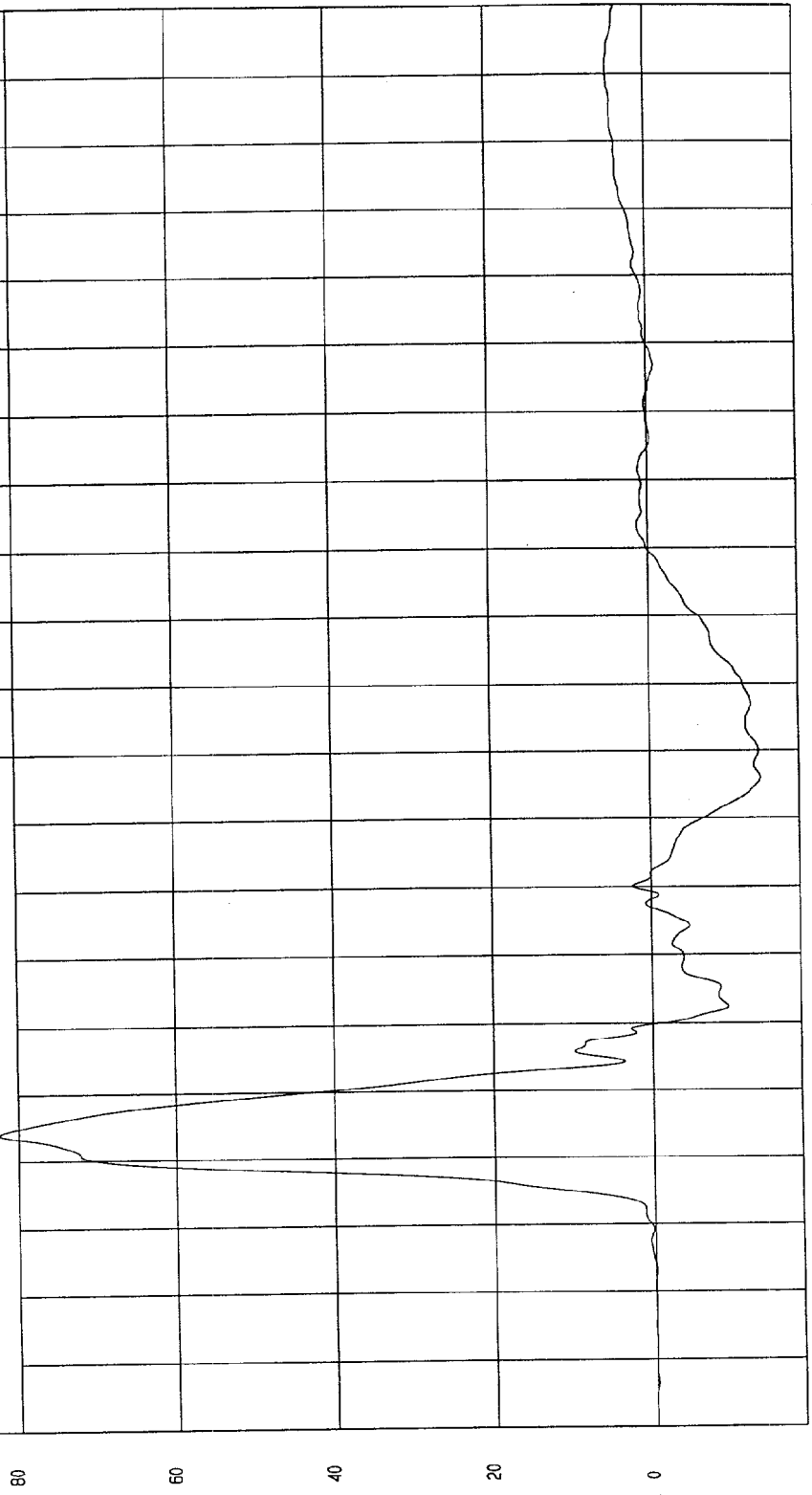
Speed: 38.1 MPH 61.3 KPH

Minimum = -13.70 G'S at 76 msec

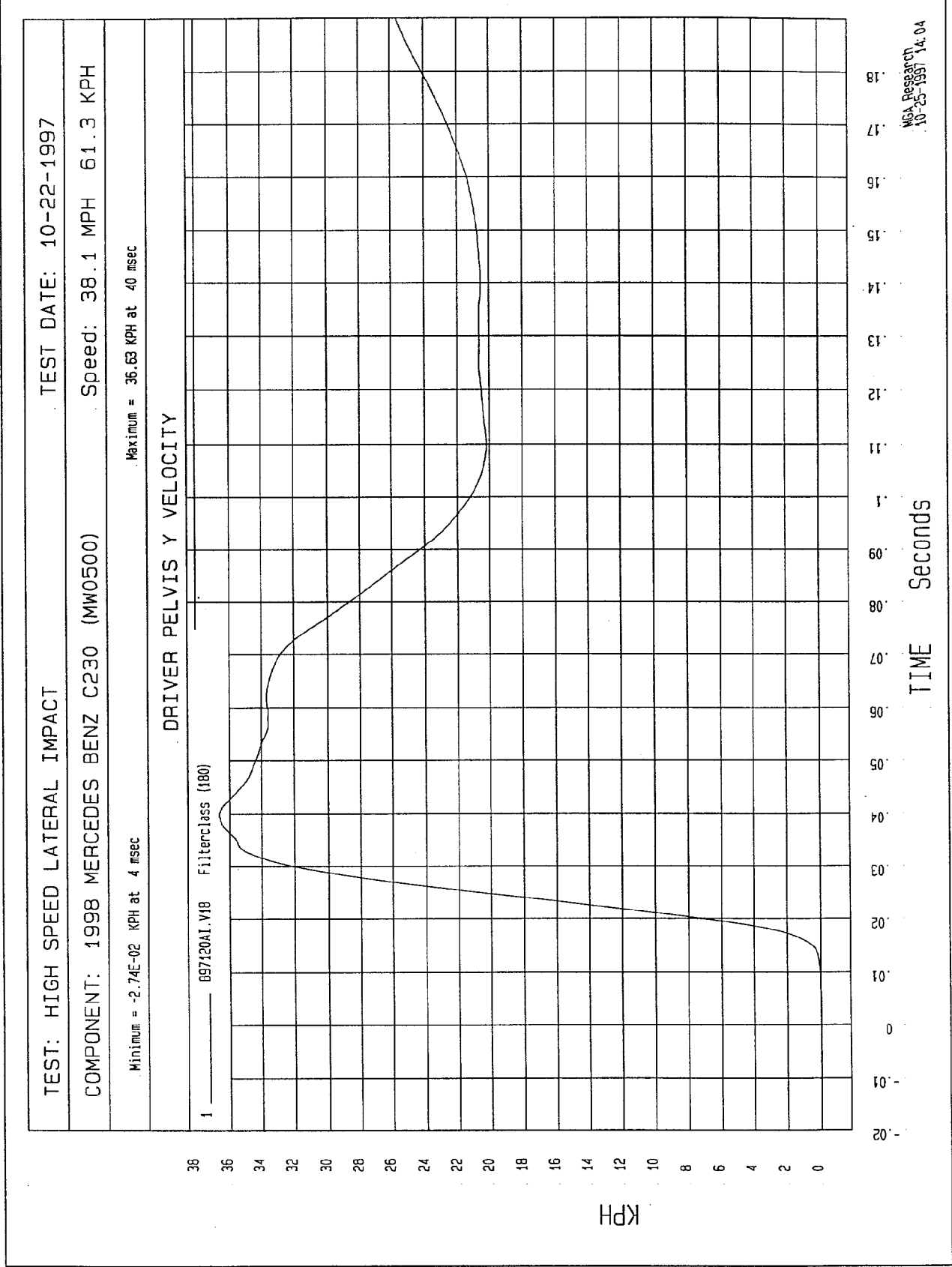
Maximum = 82.35 G'S at 24 msec

DRIVER PELVIS Y ACCELERATION

1 B97120AF.A18 Filterclass (180)



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10-25-1997 13:59

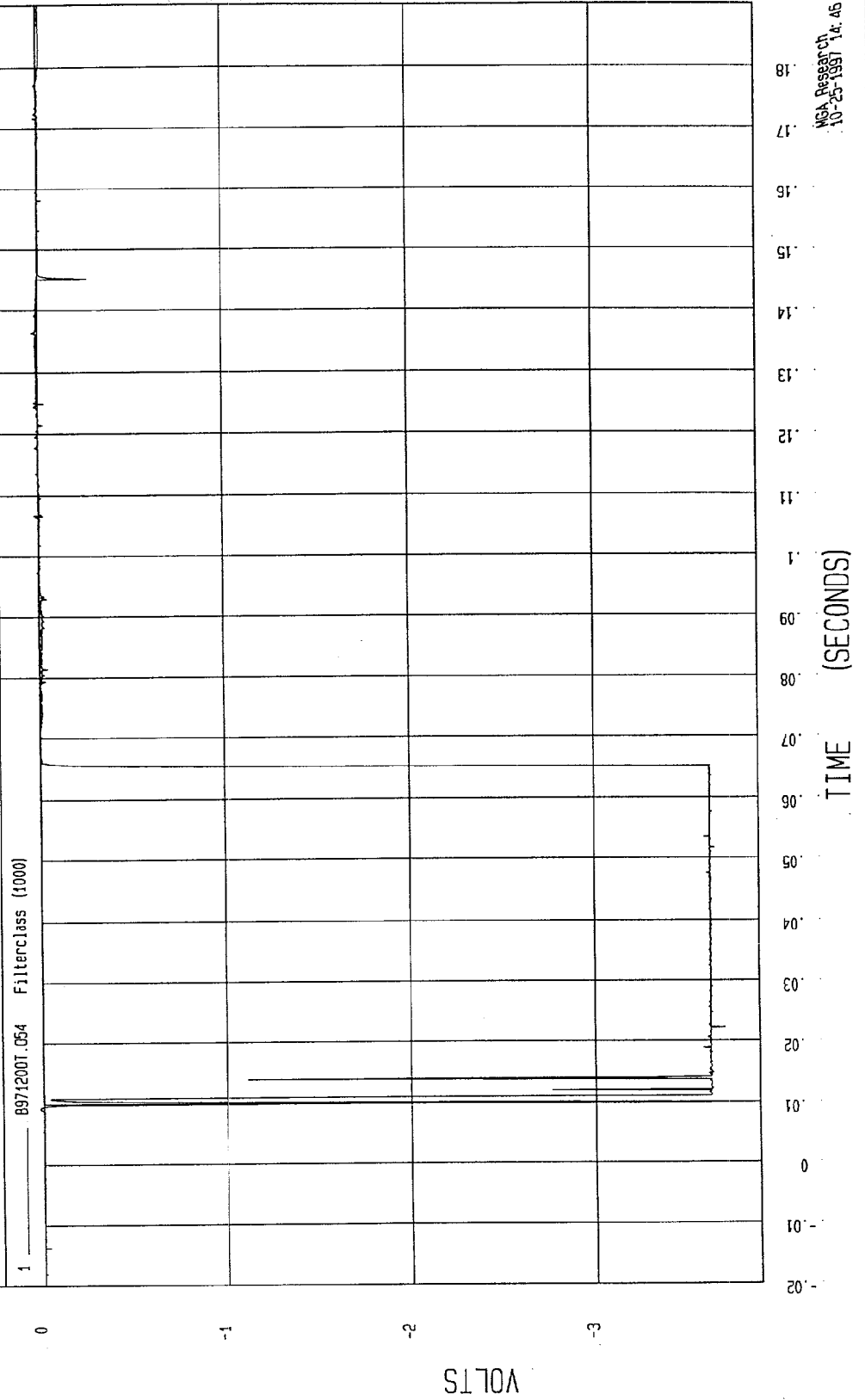


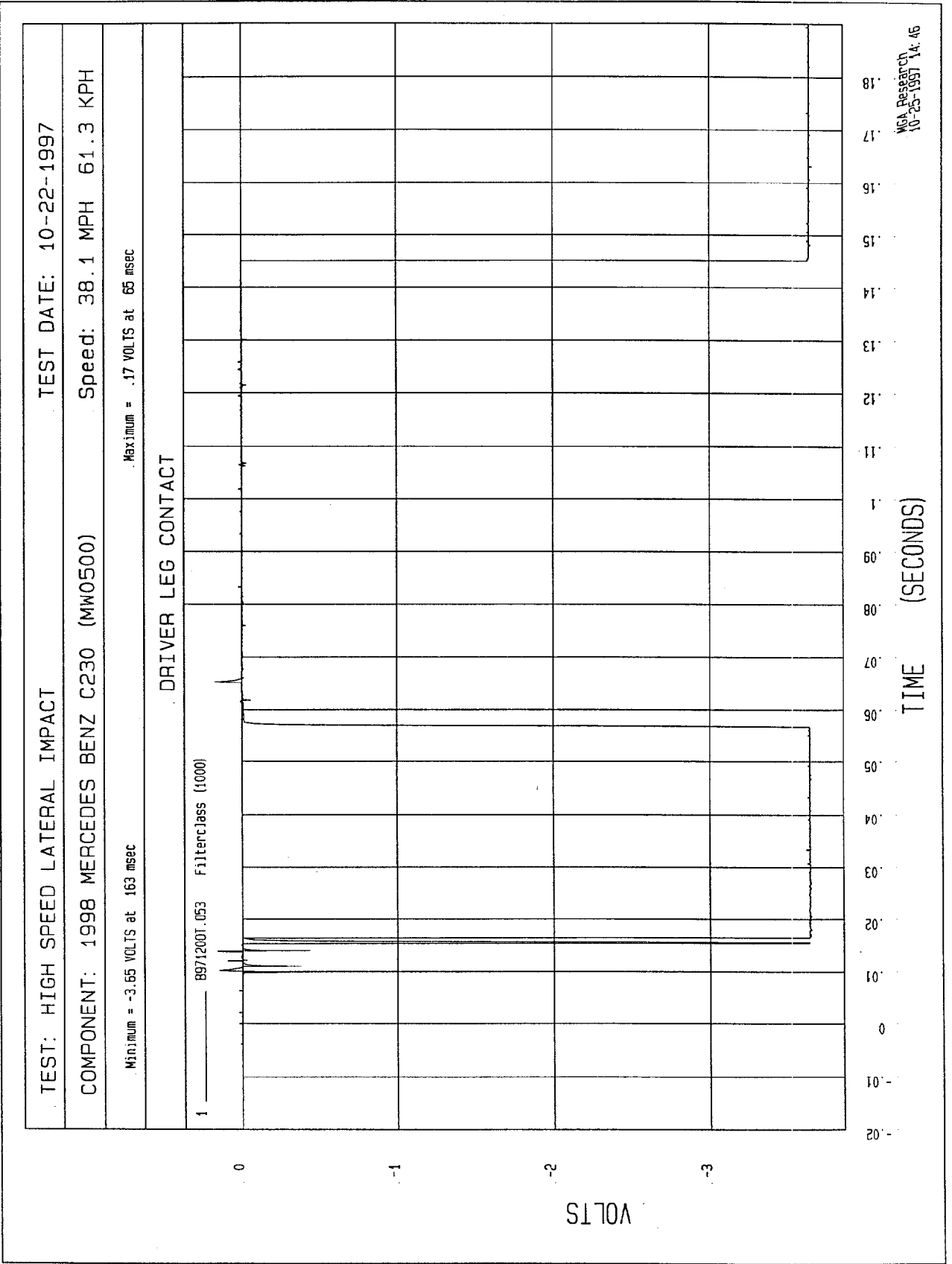
TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

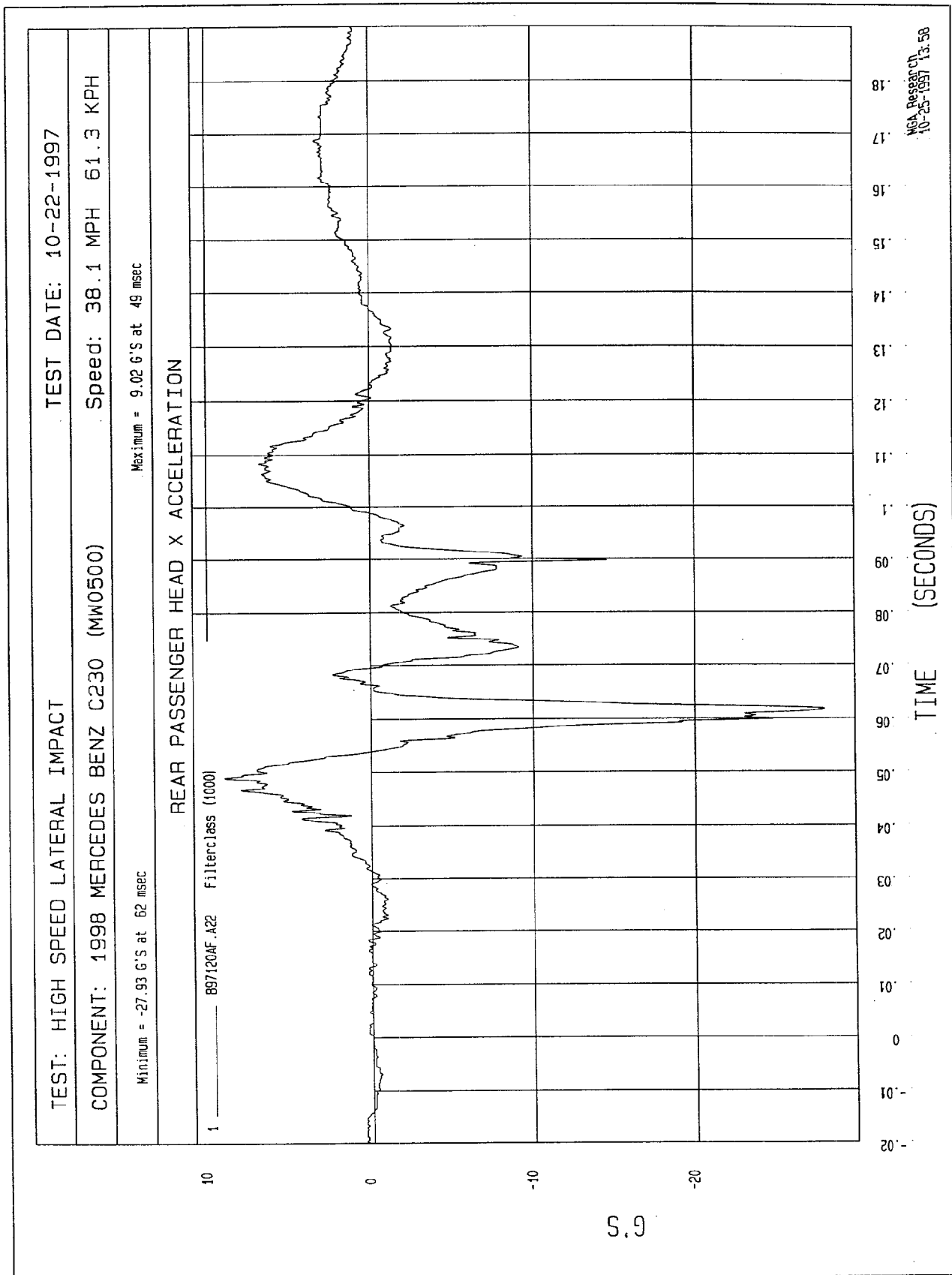
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -3.70 VOLTS at 22 msec      Maximum = 2.88E-02 VOLTS at 136 msec

DRIVER SHOULDER CONTACT







TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Speed: 38.1 MPH 61.3 KPH

Minimum = -6.18 KPH at 99 msec

Maximum = 2.55 KPH at 54 msec

REAR PASSENGER HEAD X VELOCITY

3

1 ——— B97120A1.V22 Filterclass (180)

2

1

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-6

KPH

-0.02  
-0.01  
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0.01  
0.02  
0.03  
0.04  
0.05  
0.06  
0.07  
0.08  
0.09  
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0.18

TIME  
Seconds

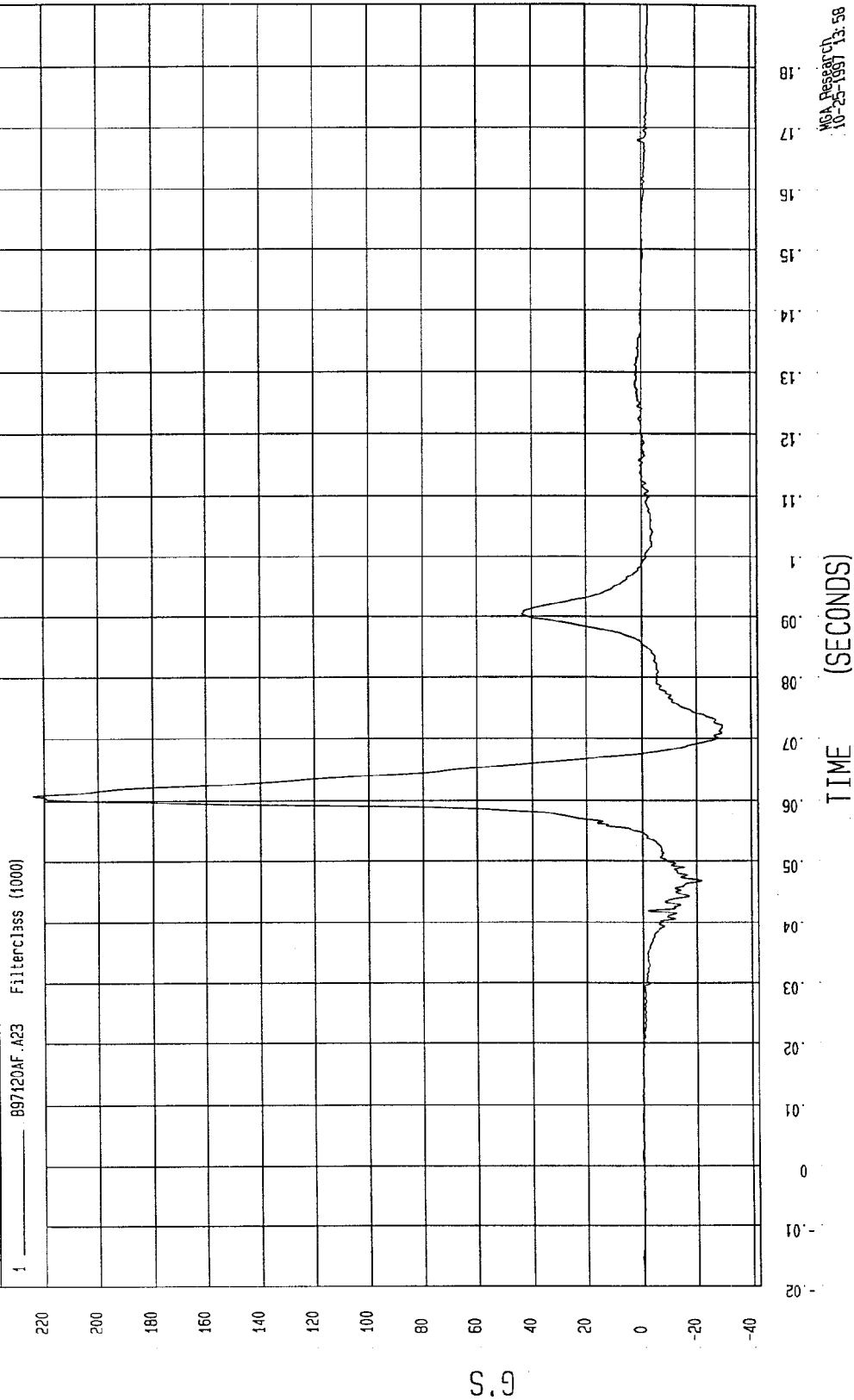
NSA Research  
10-25-1997 14:03

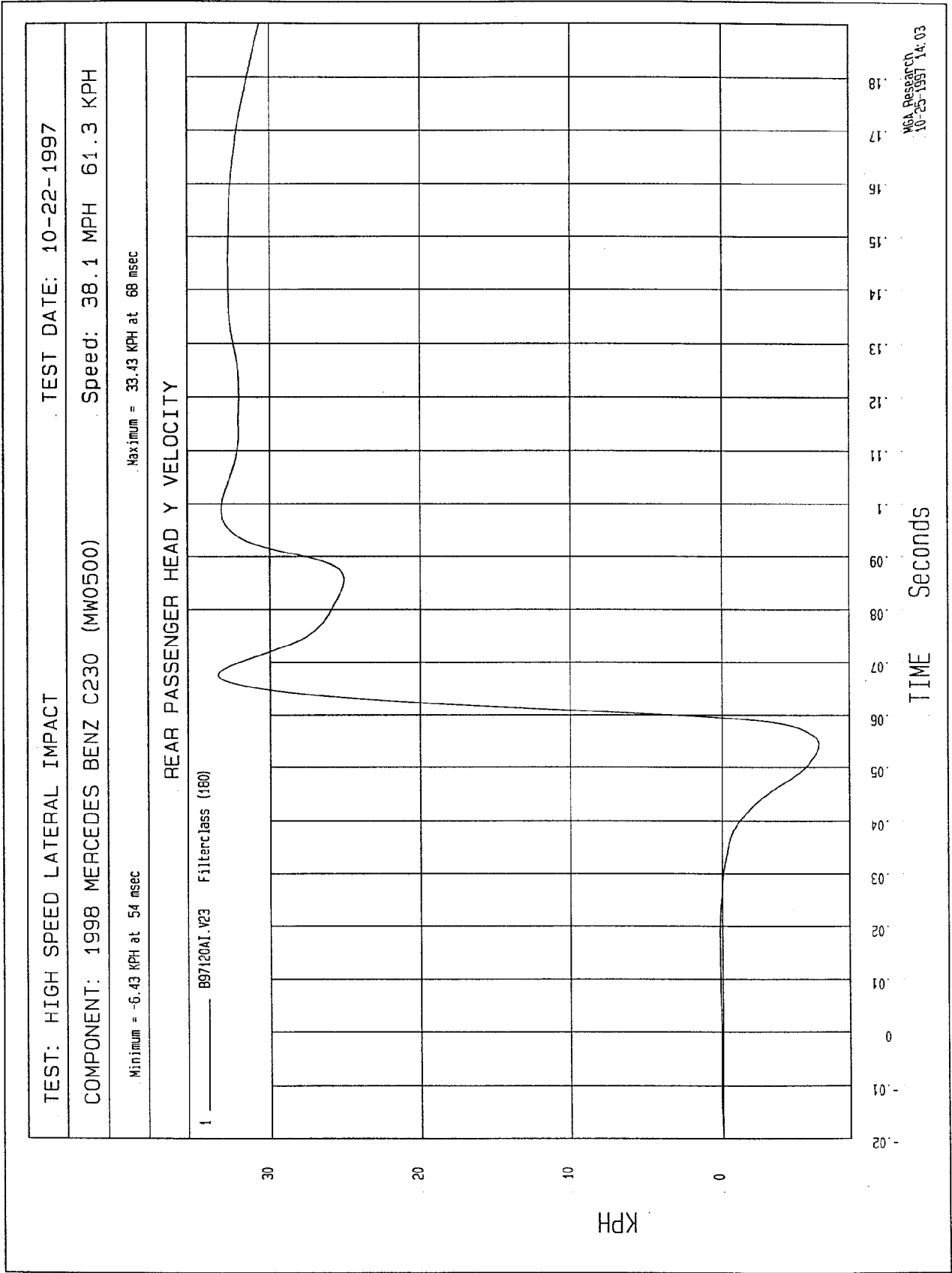
TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -29.59 G'S at 72 msec      Maximum = 223.88 G'S at 61 msec

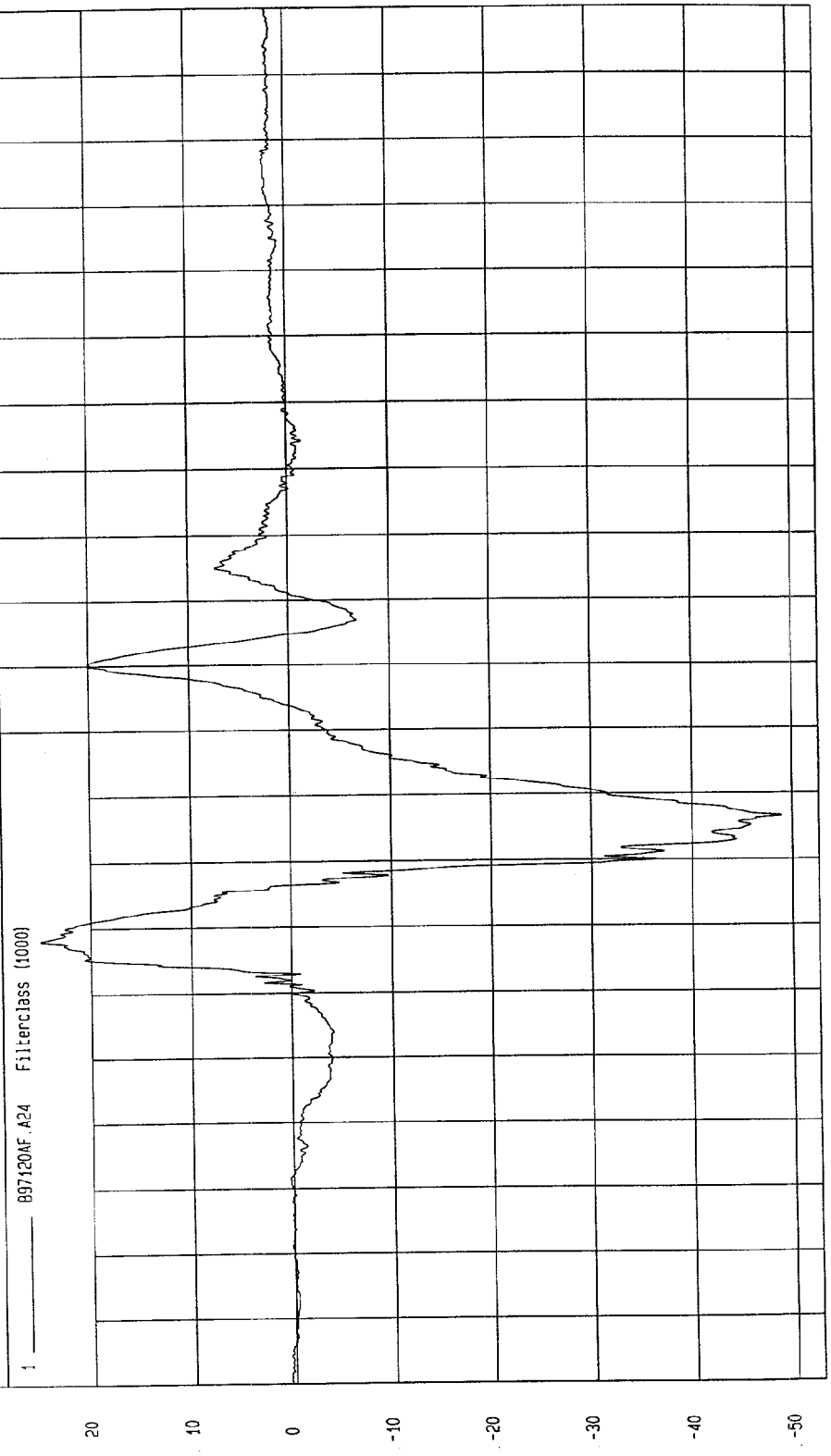
REAR PASSENGER HEAD Y ACCELERATION





|                                             |                                |
|---------------------------------------------|--------------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997          |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH       |
| Minimum = -48.91 G'S at 66 msec             | Maximum = 25.07 G'S at 48 msec |

REAR PASSENGER HEAD Z ACCELERATION



TIME (SECONDS)

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-18

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10-25-1997 13:58

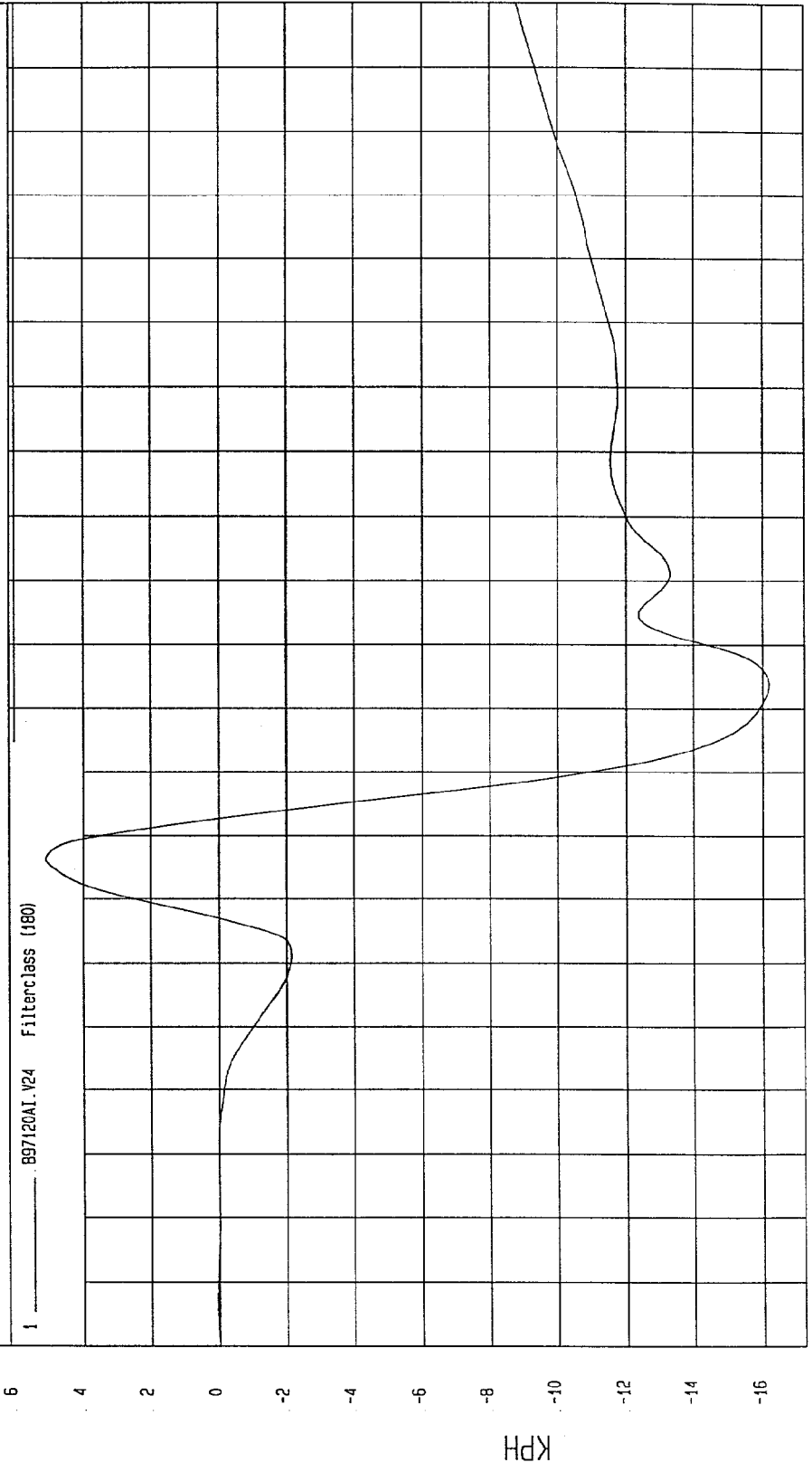
G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -16.19 KPH at 84 msec Maximum = 5.09 KPH at 56 msec

REAR PASSENGER HEAD Z VELOCITY



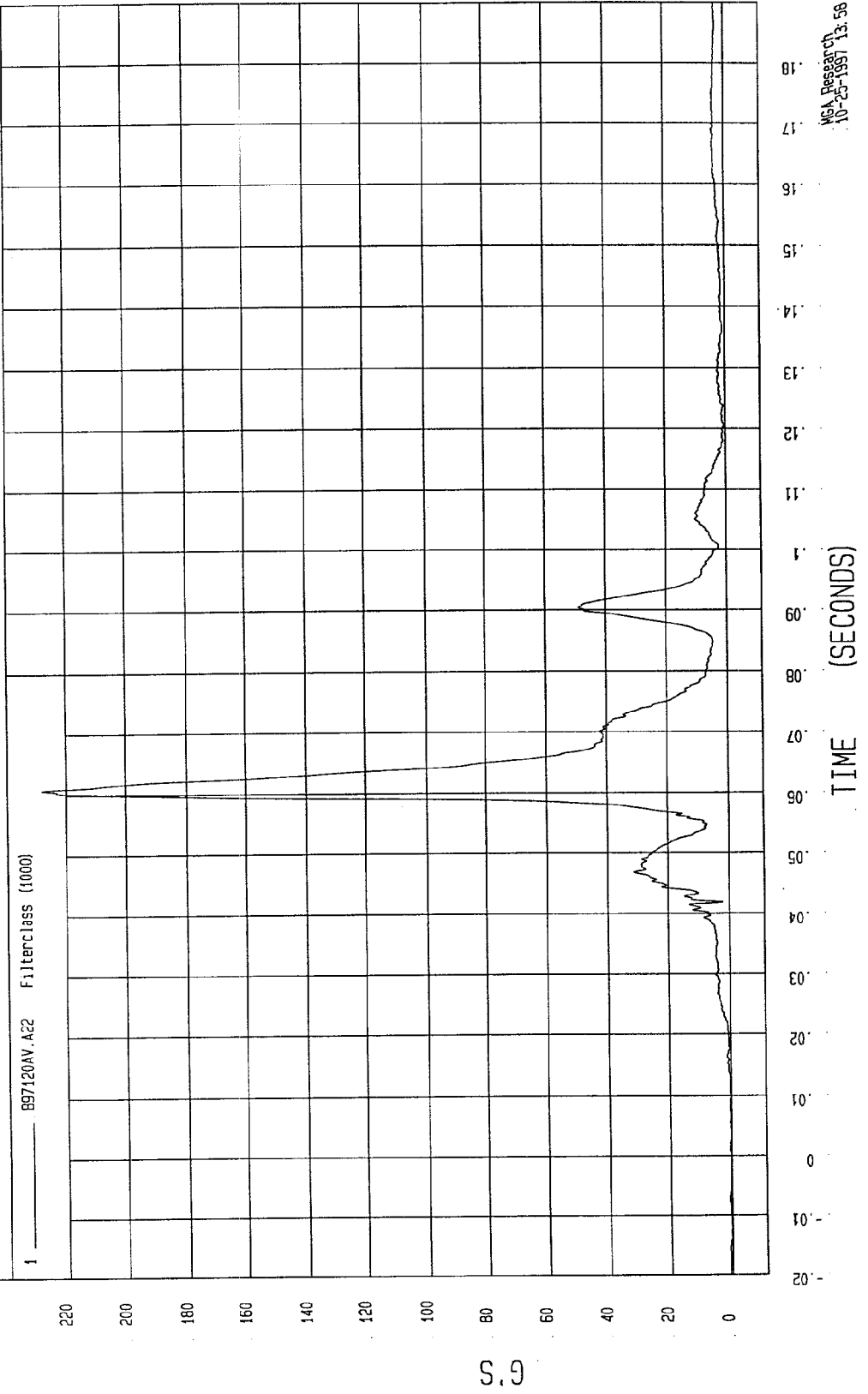
TIME Seconds

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5  
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NEA Research  
10-25-1997 14:04

|                                             |                          |
|---------------------------------------------|--------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997    |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH |
| Minimum = 1.87E-02 G'S at -1 msec           |                          |
| Maximum = 227.79 G'S at 61 msec             |                          |

REAR PASSENGER HEAD RESULTANT



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

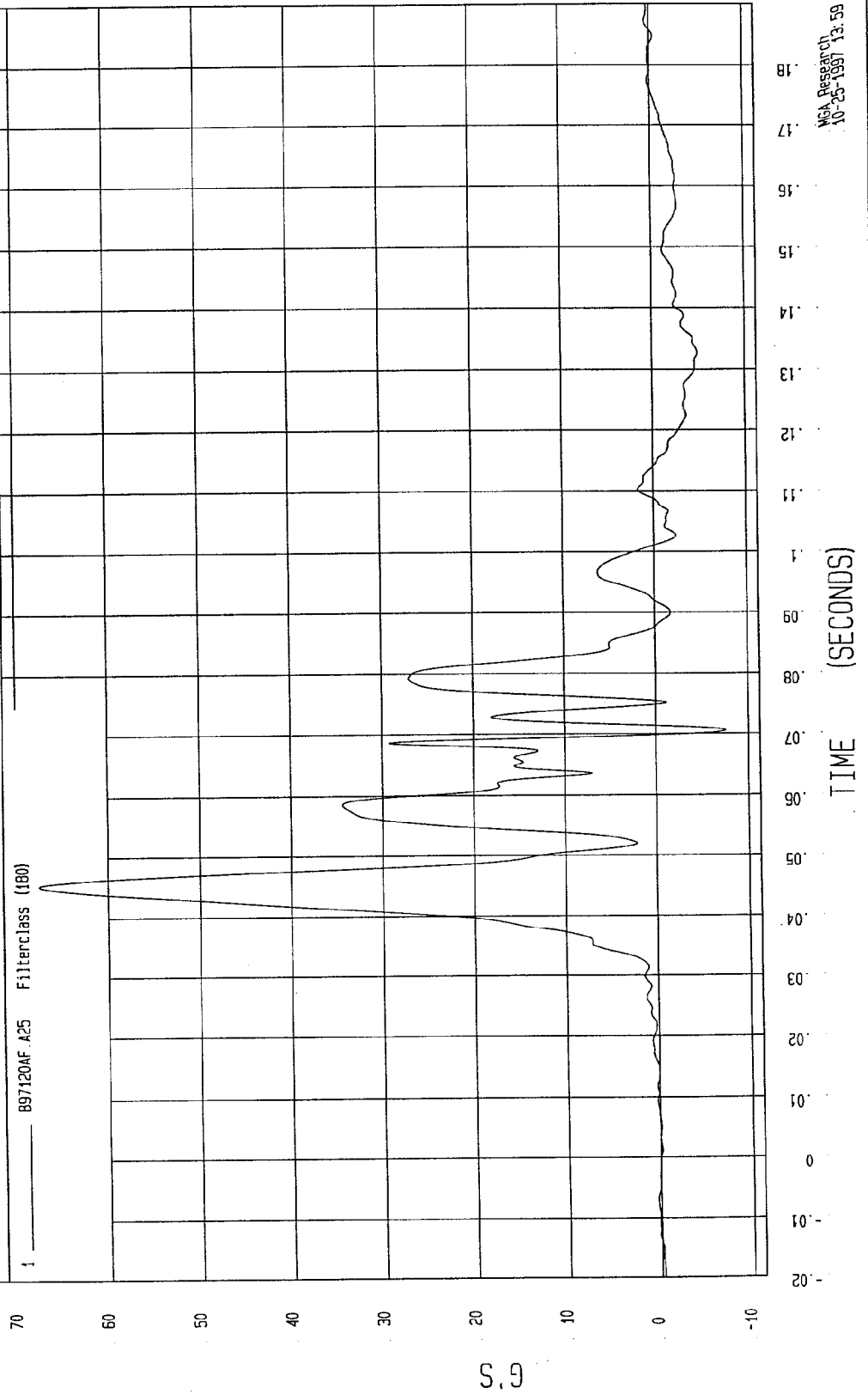
Speed: 38.1 MPH 61.3 KPH

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 67.59 G'S at 45 msec

Minimum = -7.49 G'S at 70 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

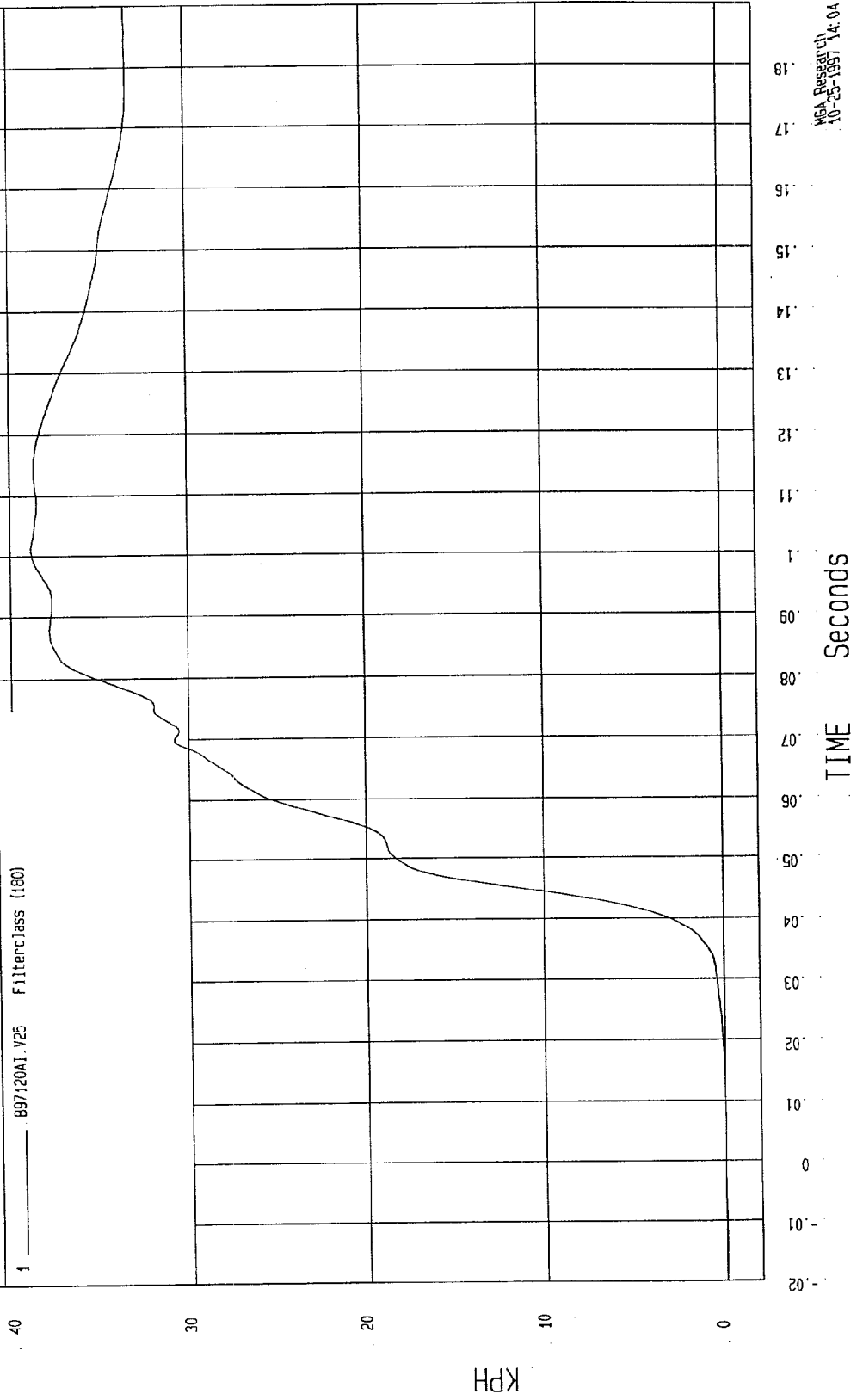


TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

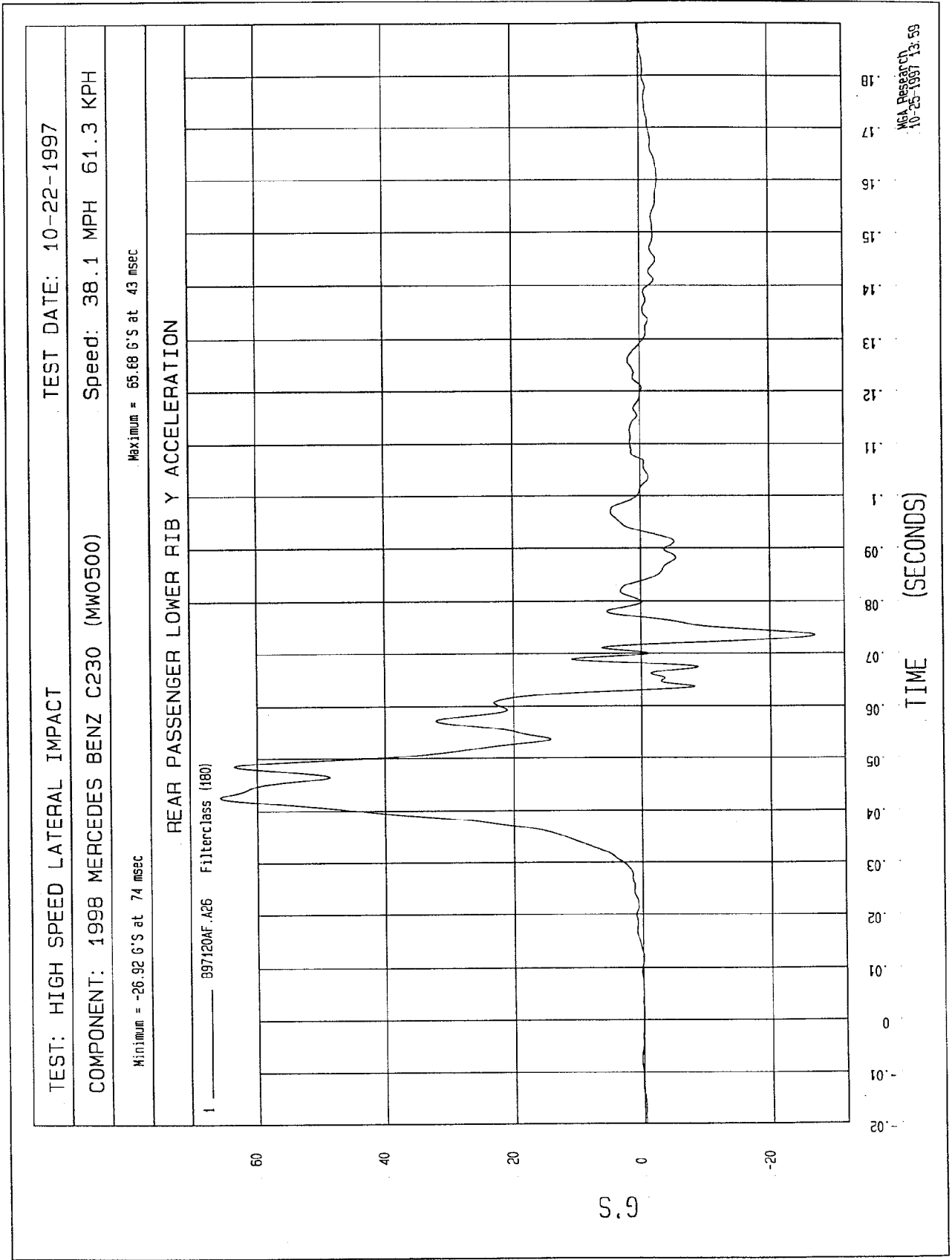
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -.05 KPH at -.14 msec      Maximum = 38.84 KPH at 101 msec

REAR PASSENGER UPPER RIB Y VELOCITY



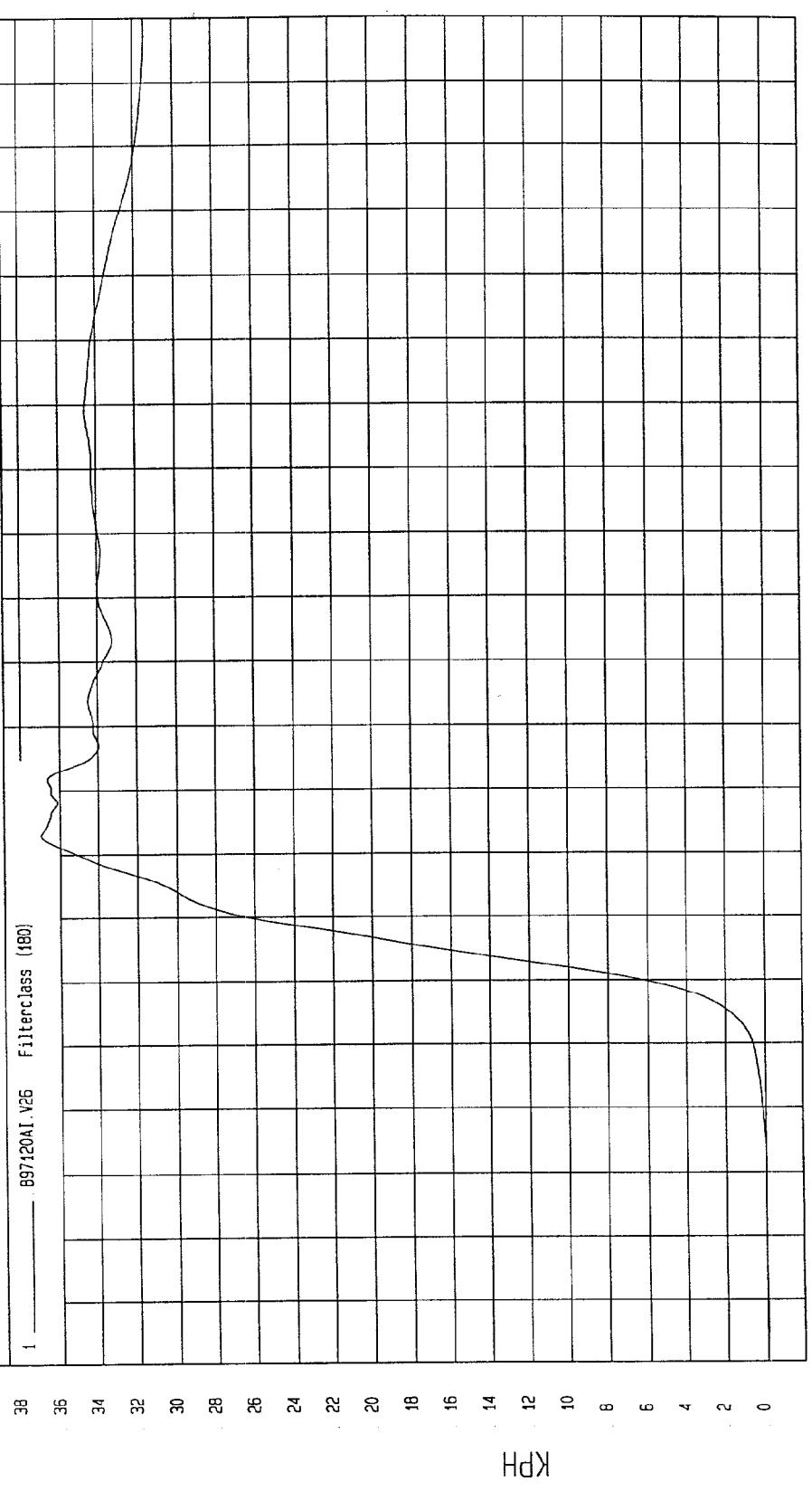
MCA Research  
10-25-1997 14:04



TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997  
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -.05 KPH at -.14 msec      Maximum = 36.96 KPH at 63 msec

REAR PASSENGER LOWER RIB Y VELOCITY



TIME Seconds  
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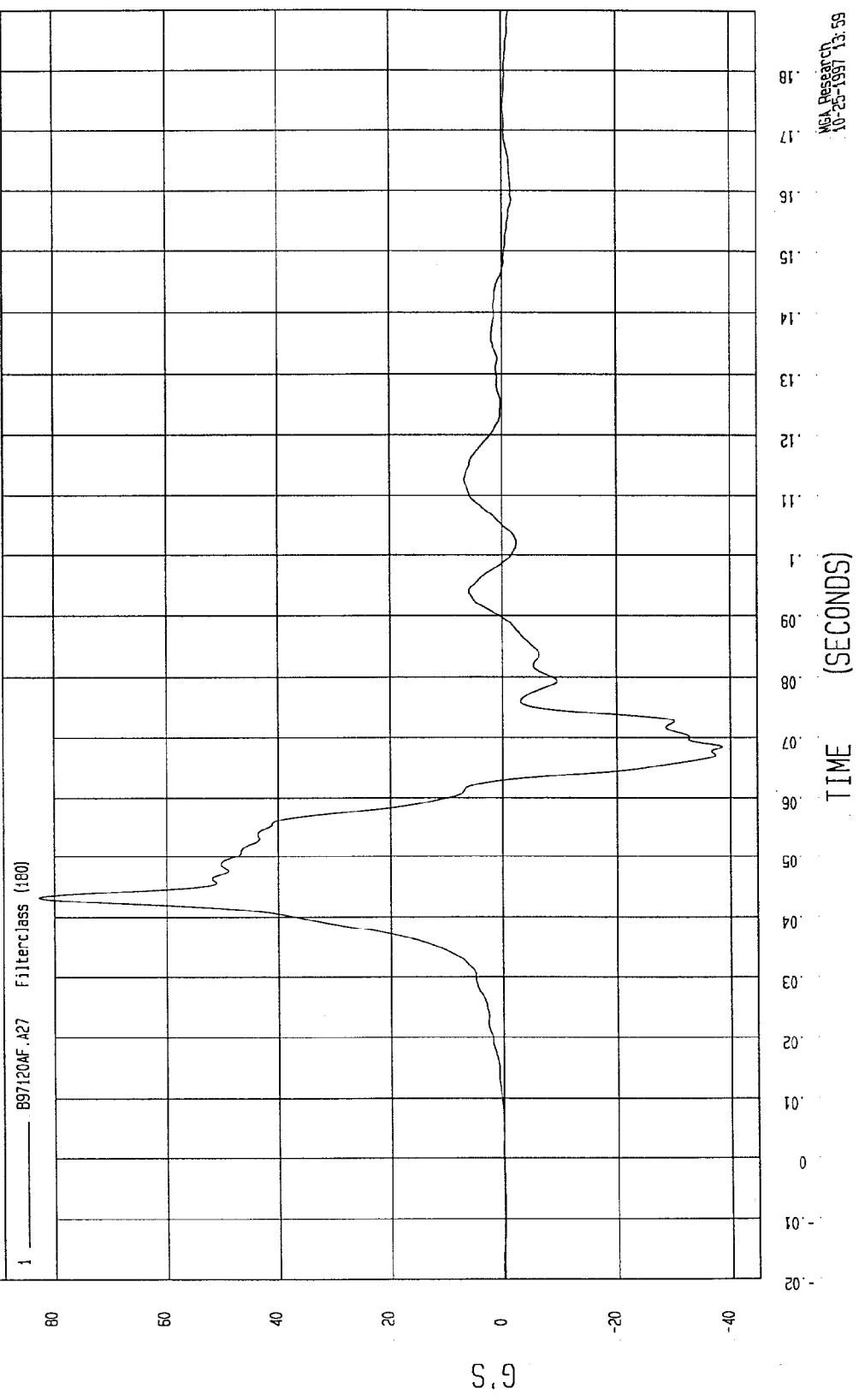
NGA Research  
10-25-1997 14.04

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -38.61 G'S at 68 msec      Maximum = 82.70 G'S at 43 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION



WCA Research  
10-25-1997 13:59

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

SPEED: 38.1 MPH 61.3 KPH

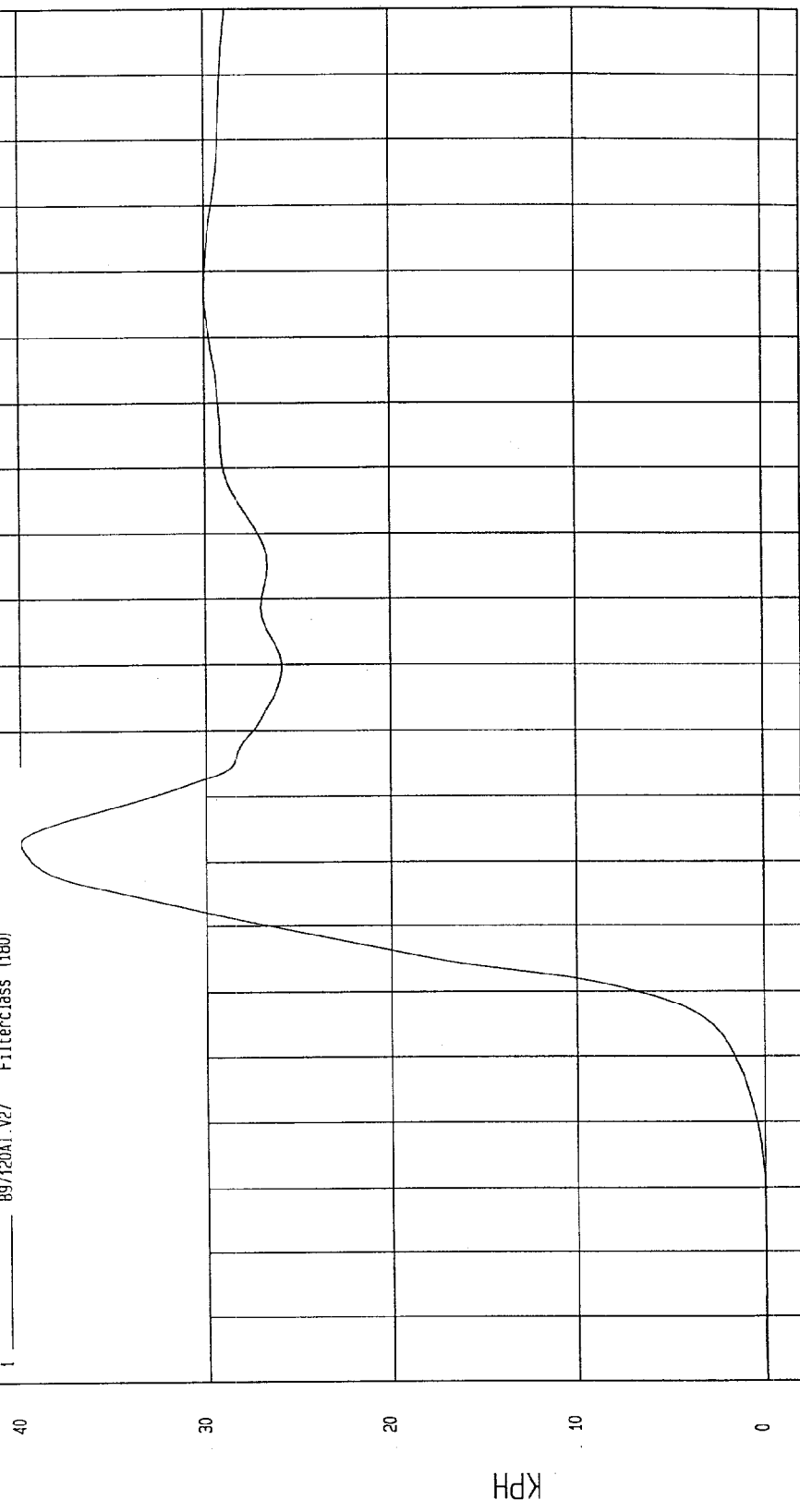
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 39.97 KPH at 53 msec

Minimum = -7.77E-03 KPH at -1 msec

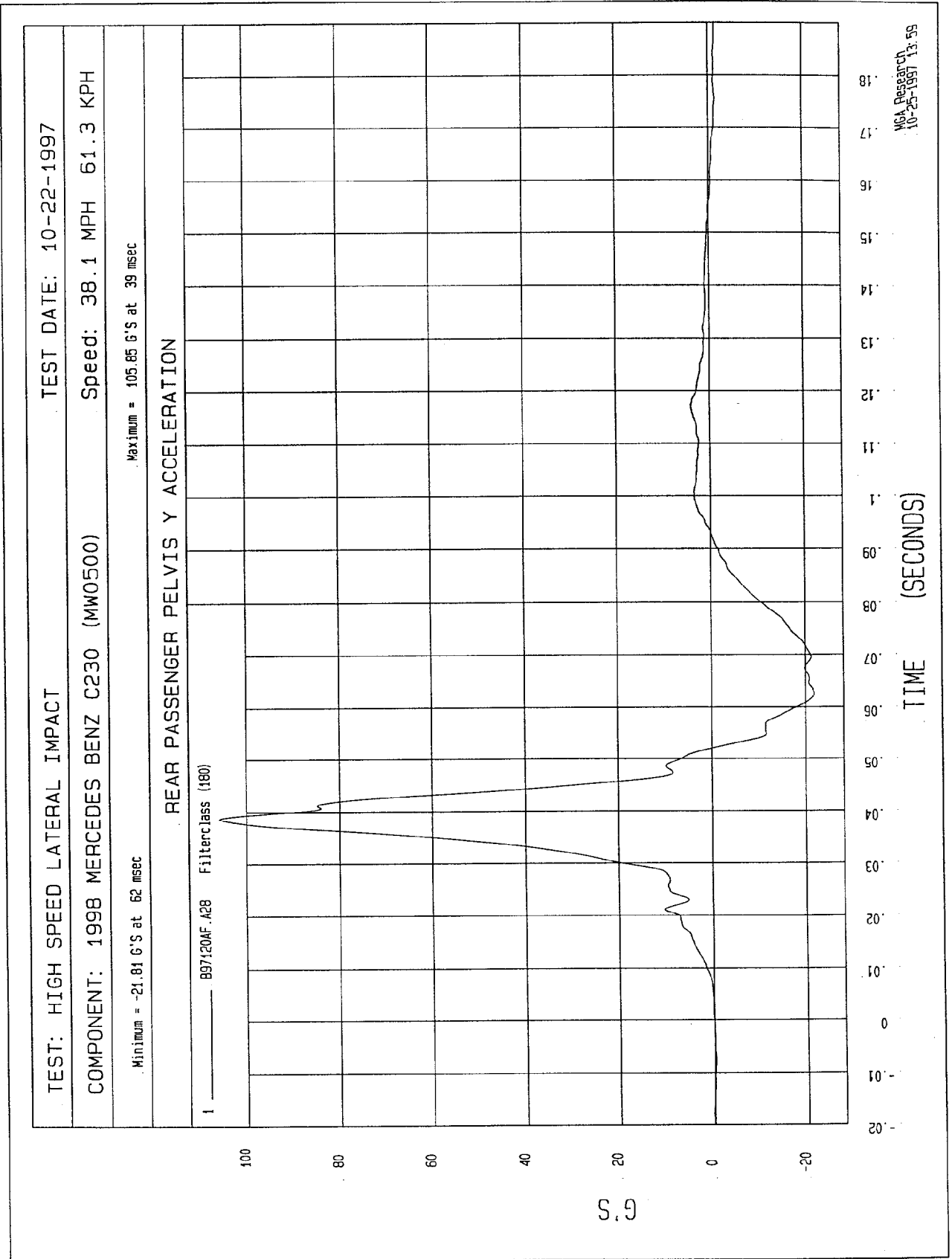
REAR PASSENGER LOWER SPINE Y VELOCITY

1 897120A1.V27 Filterclass (180)



NGA Research  
10-23-1997 14.04

TIME Seconds

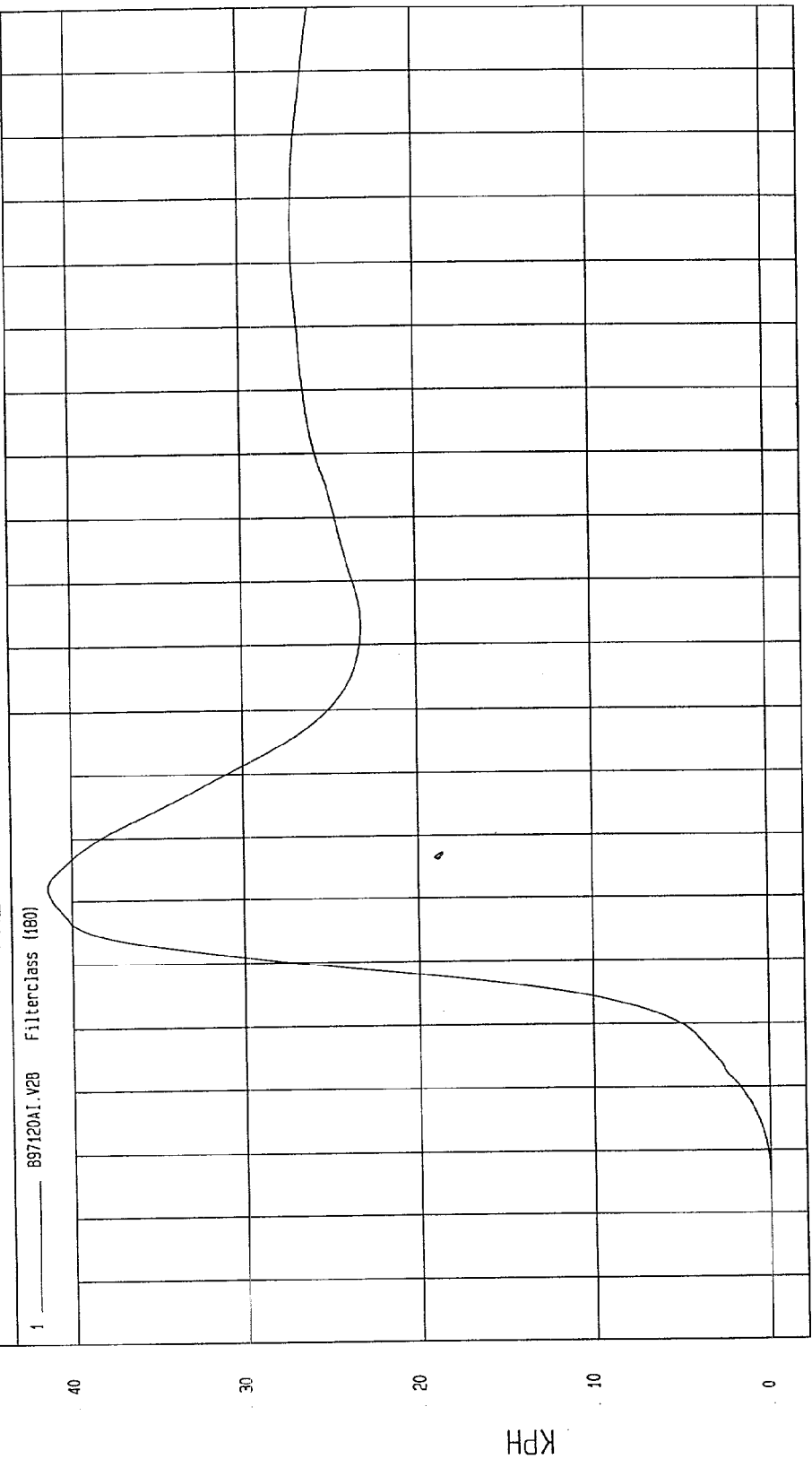


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

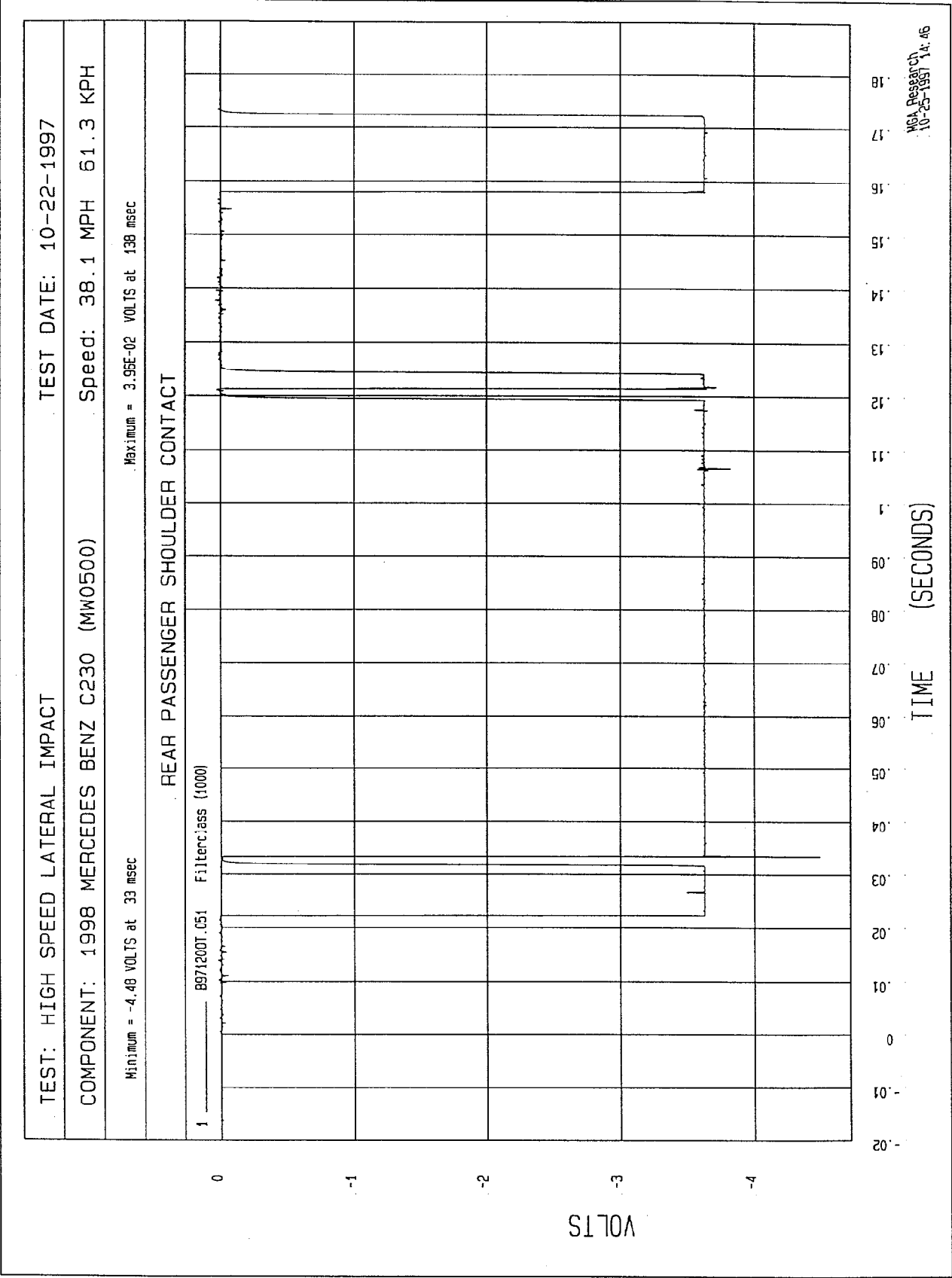
Minimum = -1.50E-02 KPH at -2 msec Maximum = 41.42 KPH at 52 msec

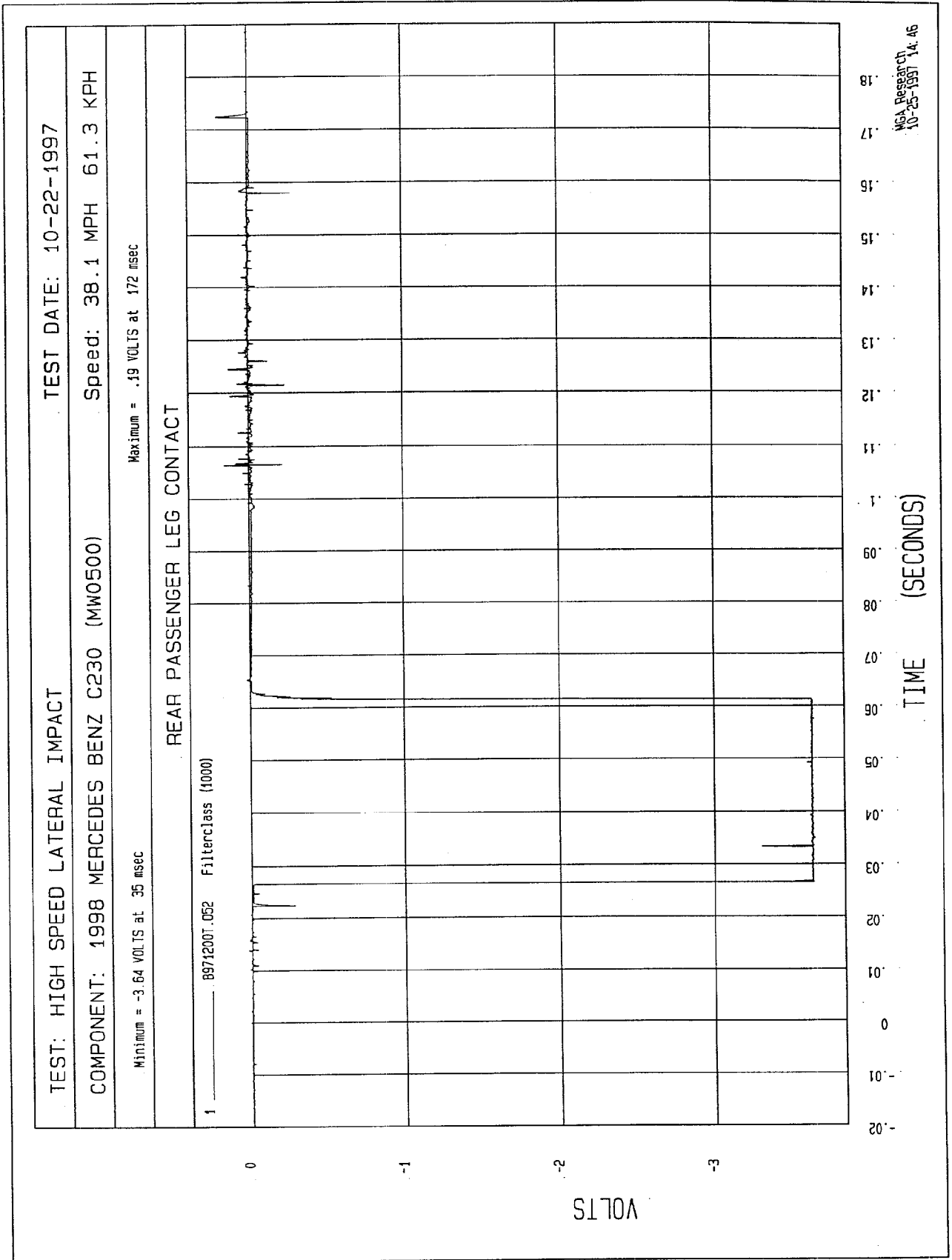
REAR PASSENGER PELVIS Y VELOCITY

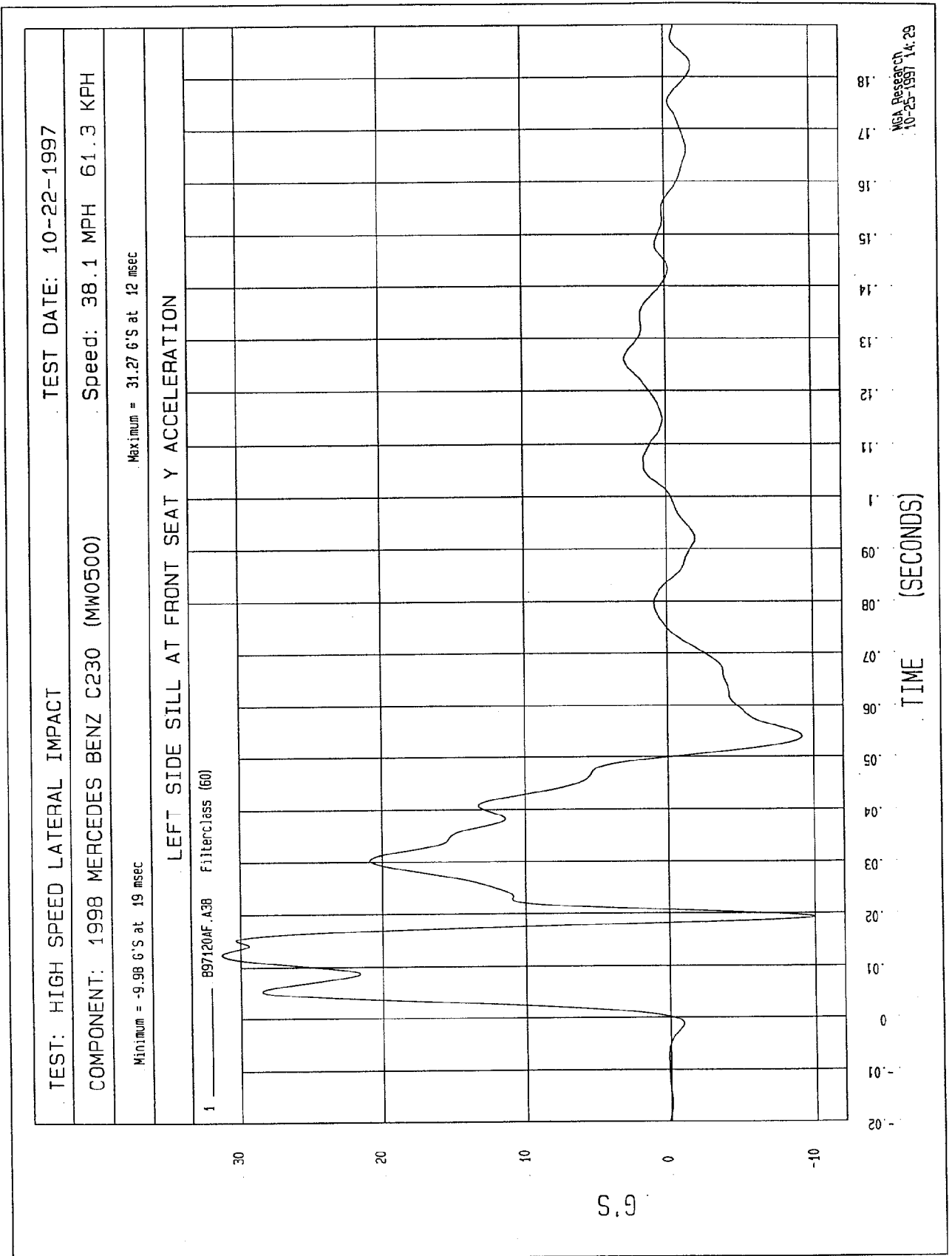


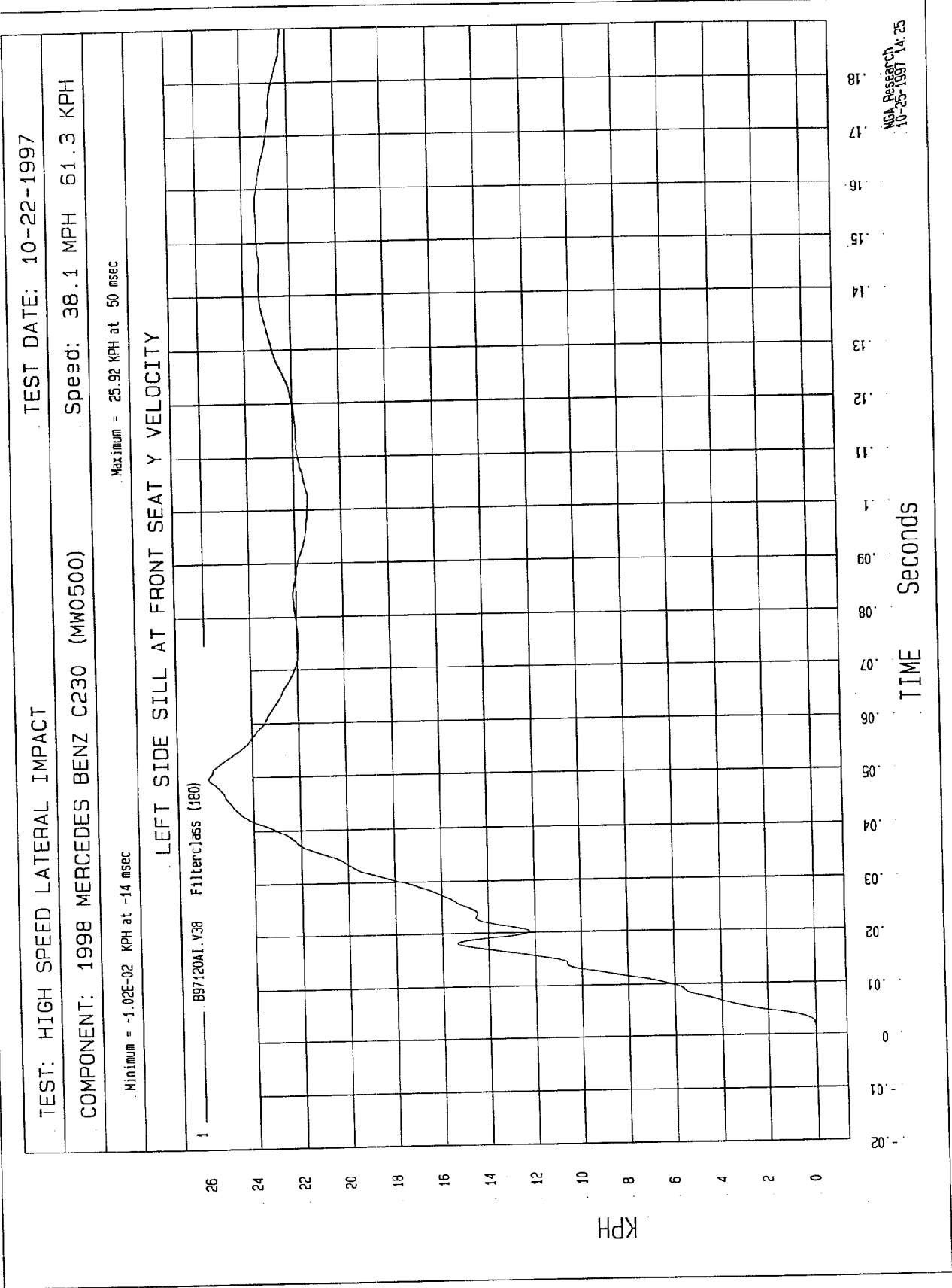
TIME Seconds

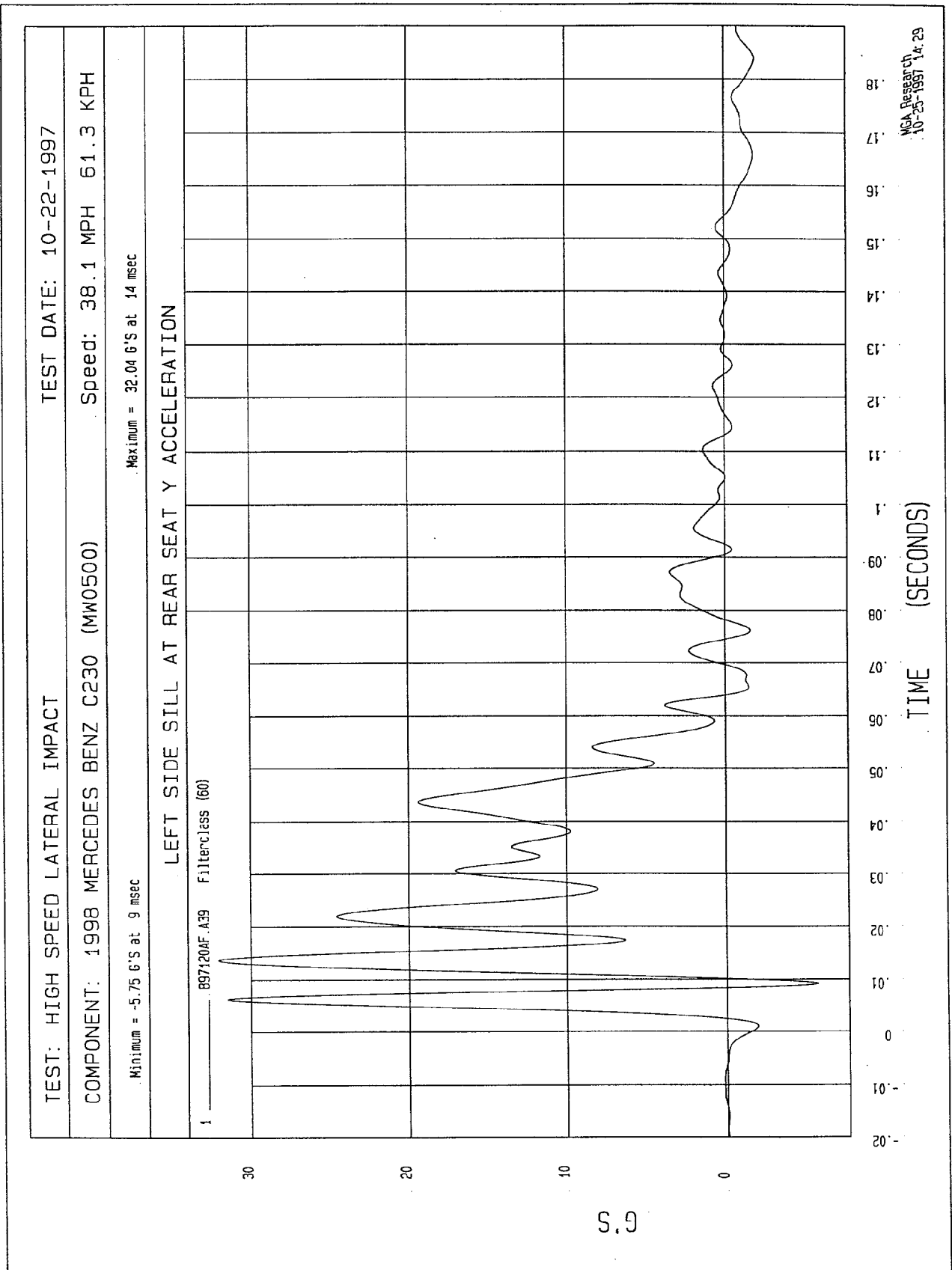
NSA Research  
10-25-1997 14:04

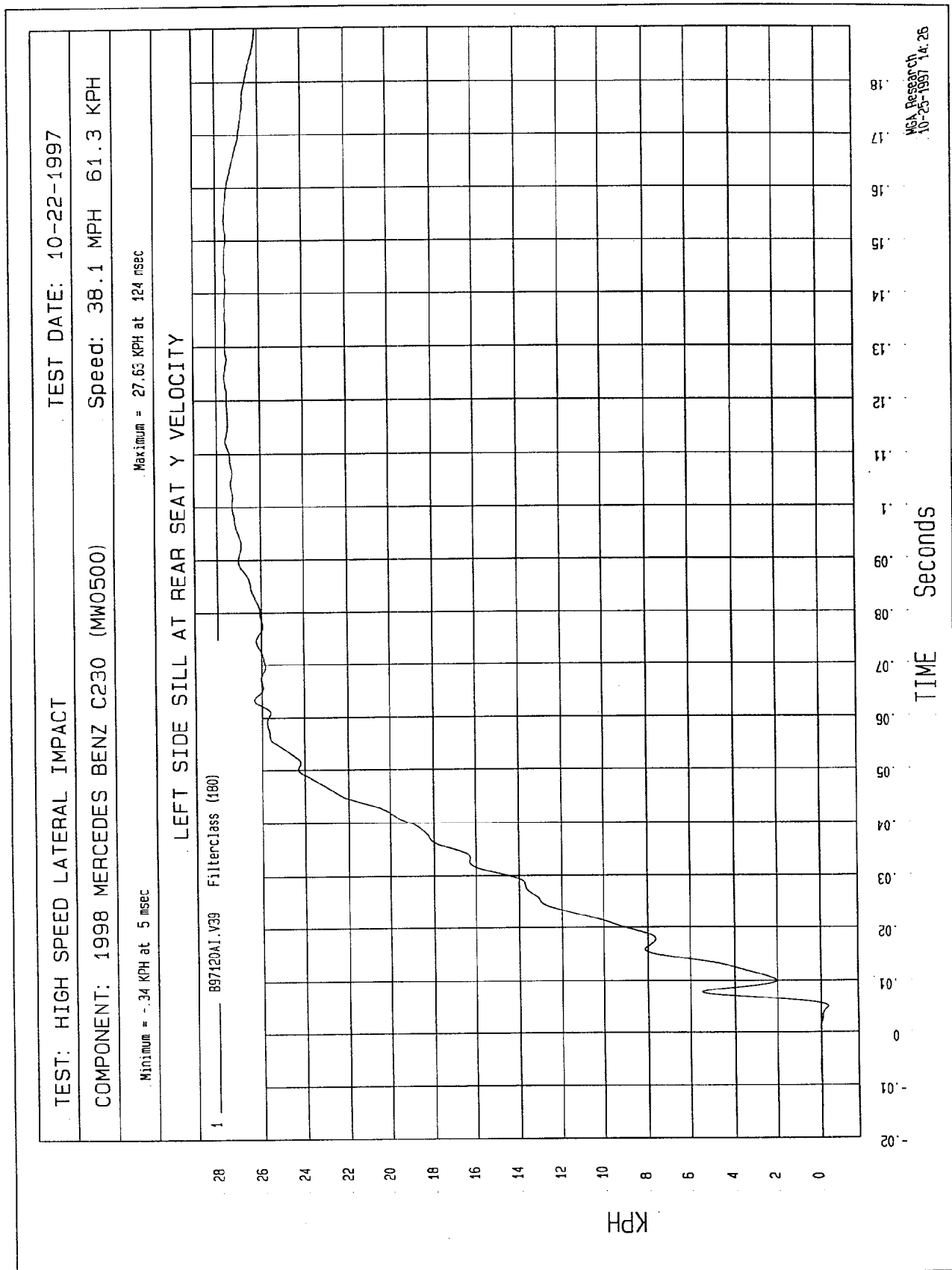


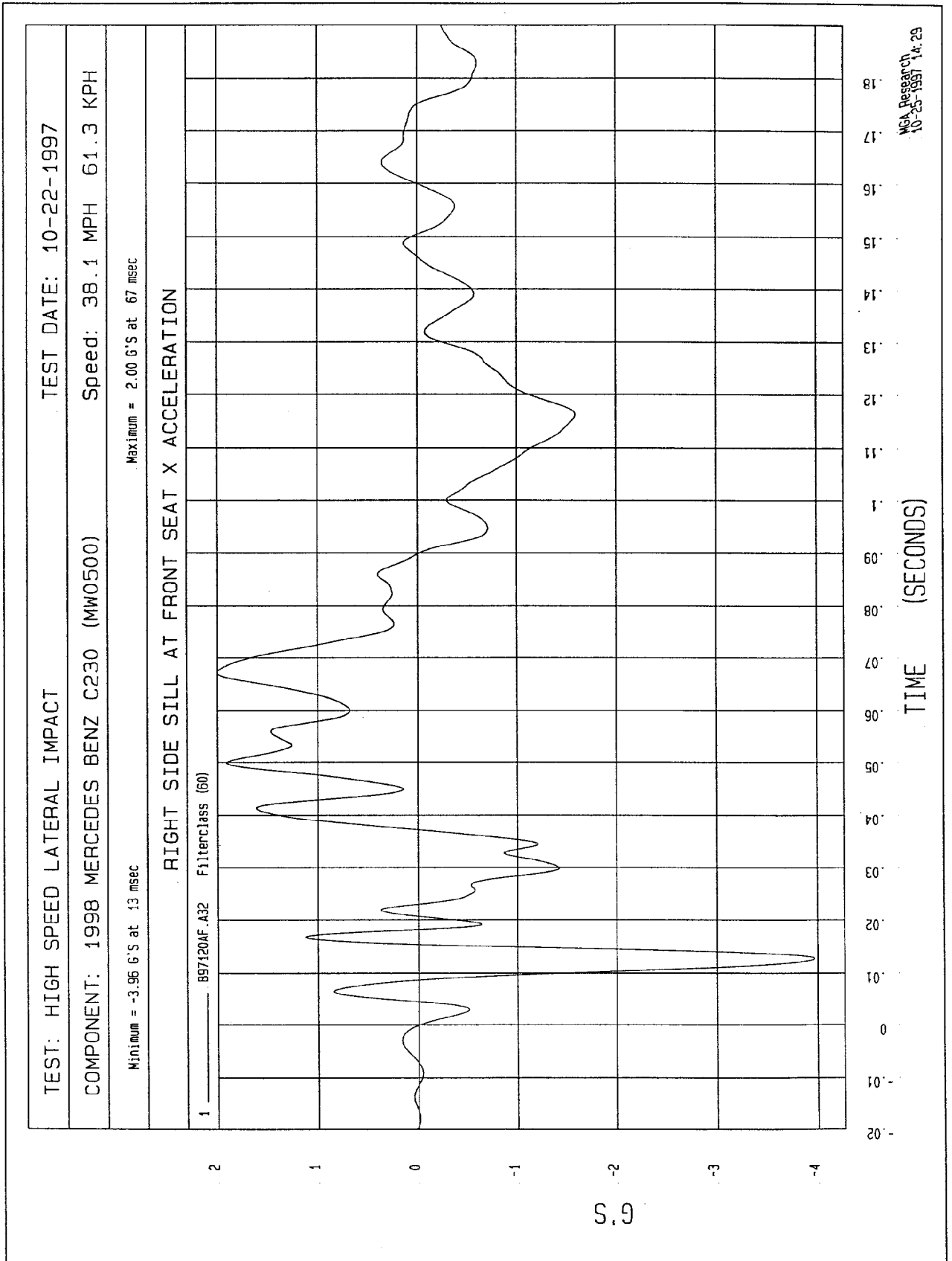






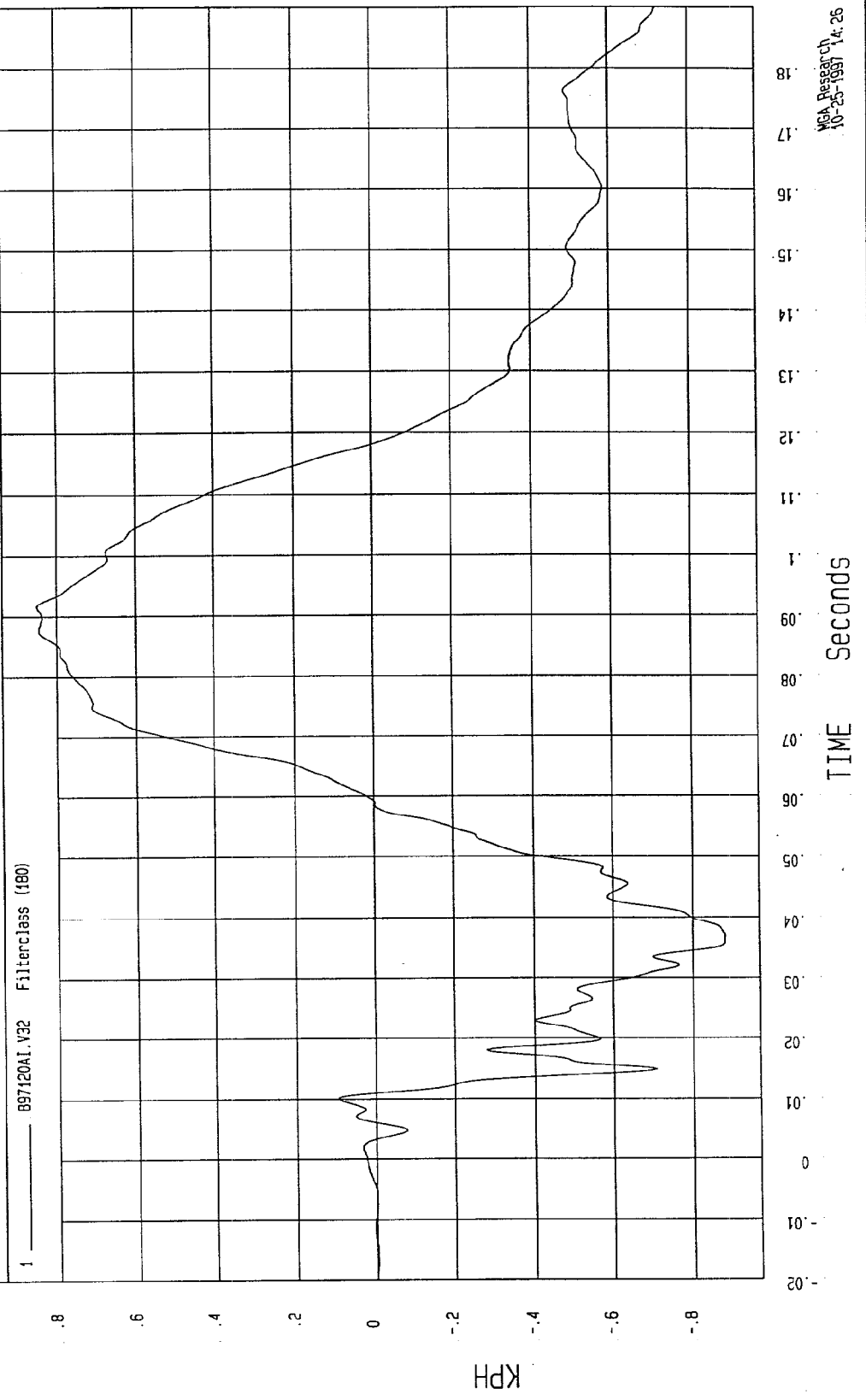






|                                             |                              |
|---------------------------------------------|------------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997        |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH     |
| Minimum = -.88 KPH at 37 msec               | Maximum = .85 KPH at 92 msec |

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY



NSA Research  
10-25-1997 14:26

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

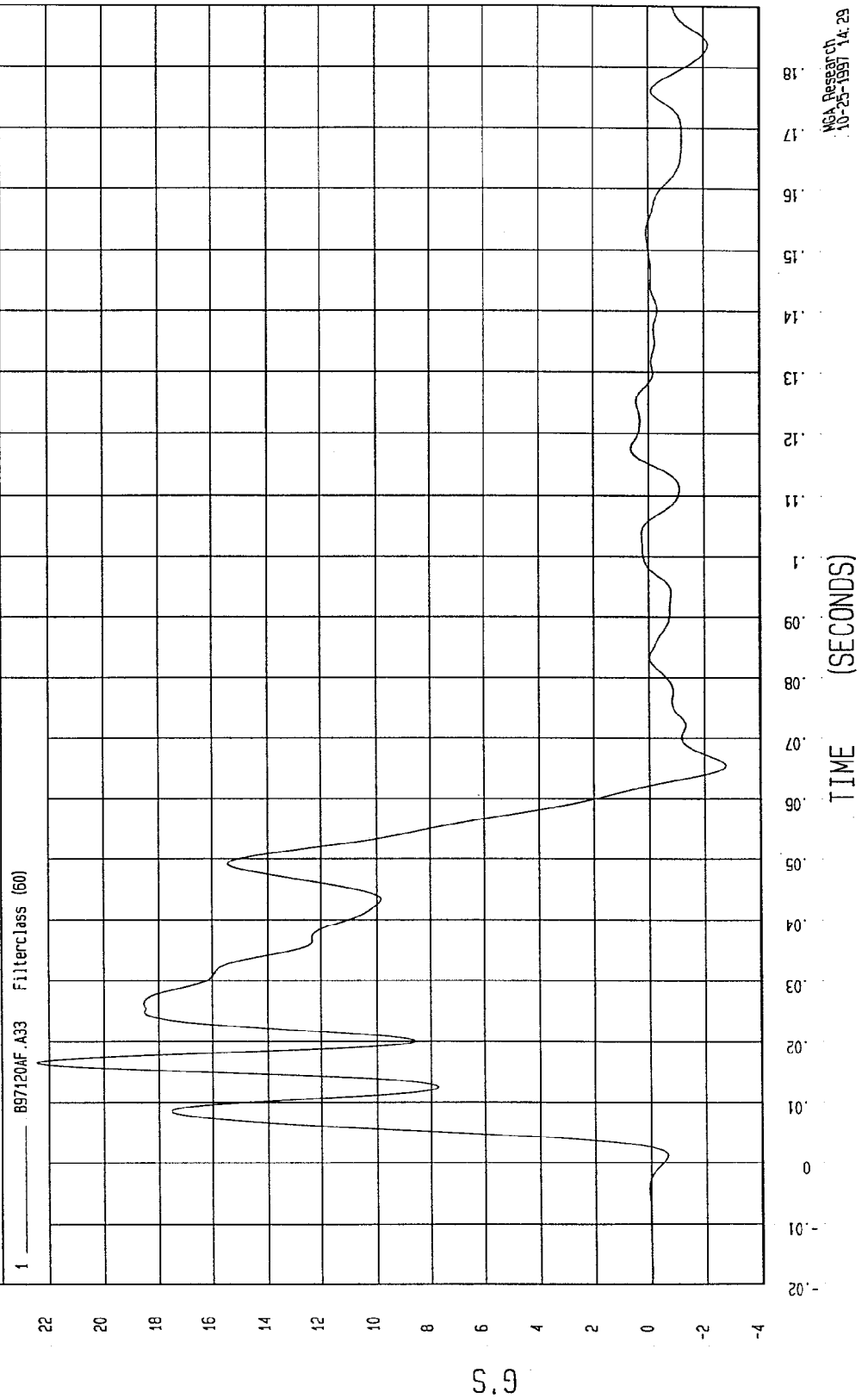
Speed: 38.1 MPH 61.3 KPH

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 22.42 G'S at 16 msec

Minimum = -2.76 G'S at 65 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION

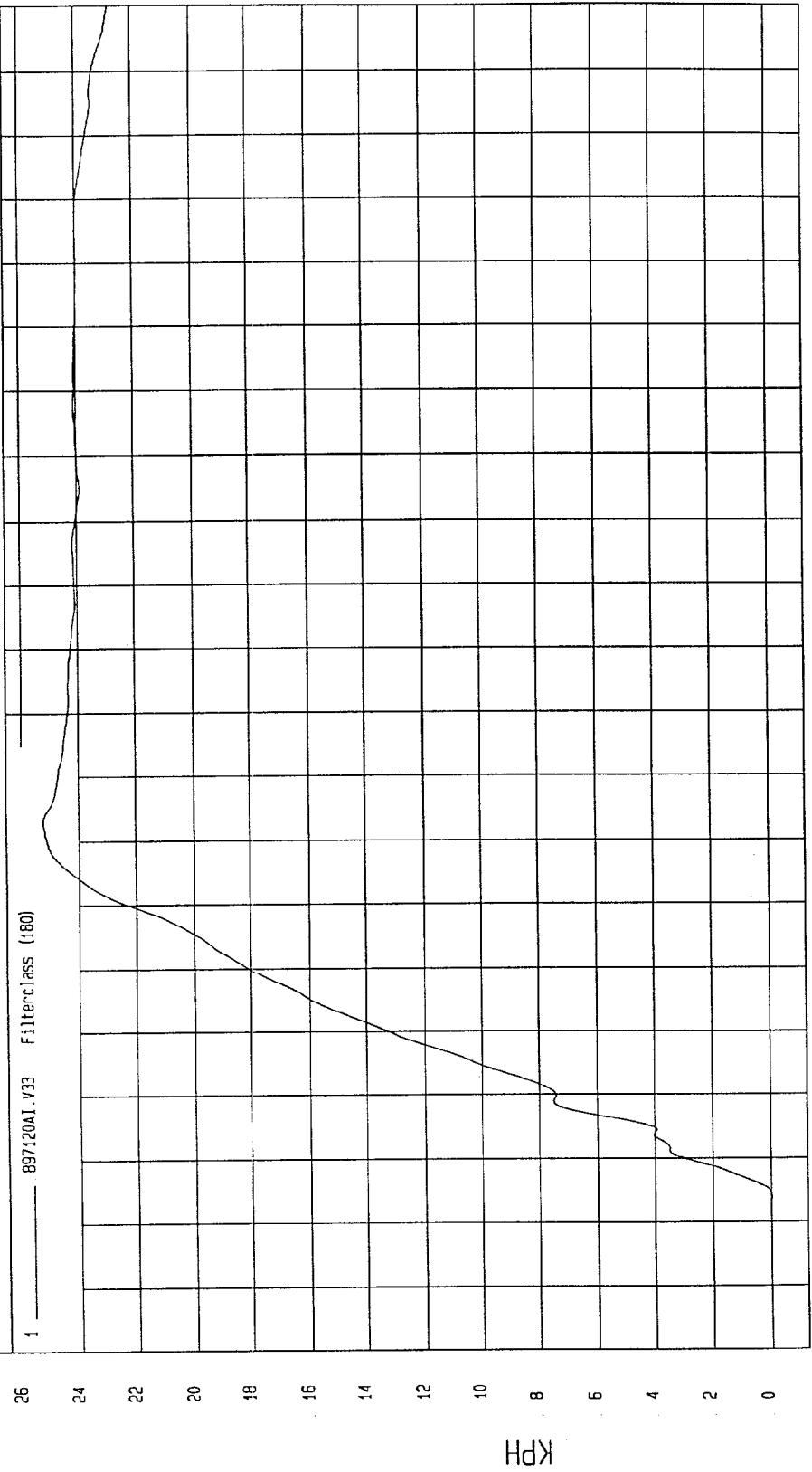


TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -2.20E-02 KPH at 4 msec      Maximum = 25.24 KPH at 63 msec

RIGHT SIDE STILL AT FRONT SEAT Y VELOCITY



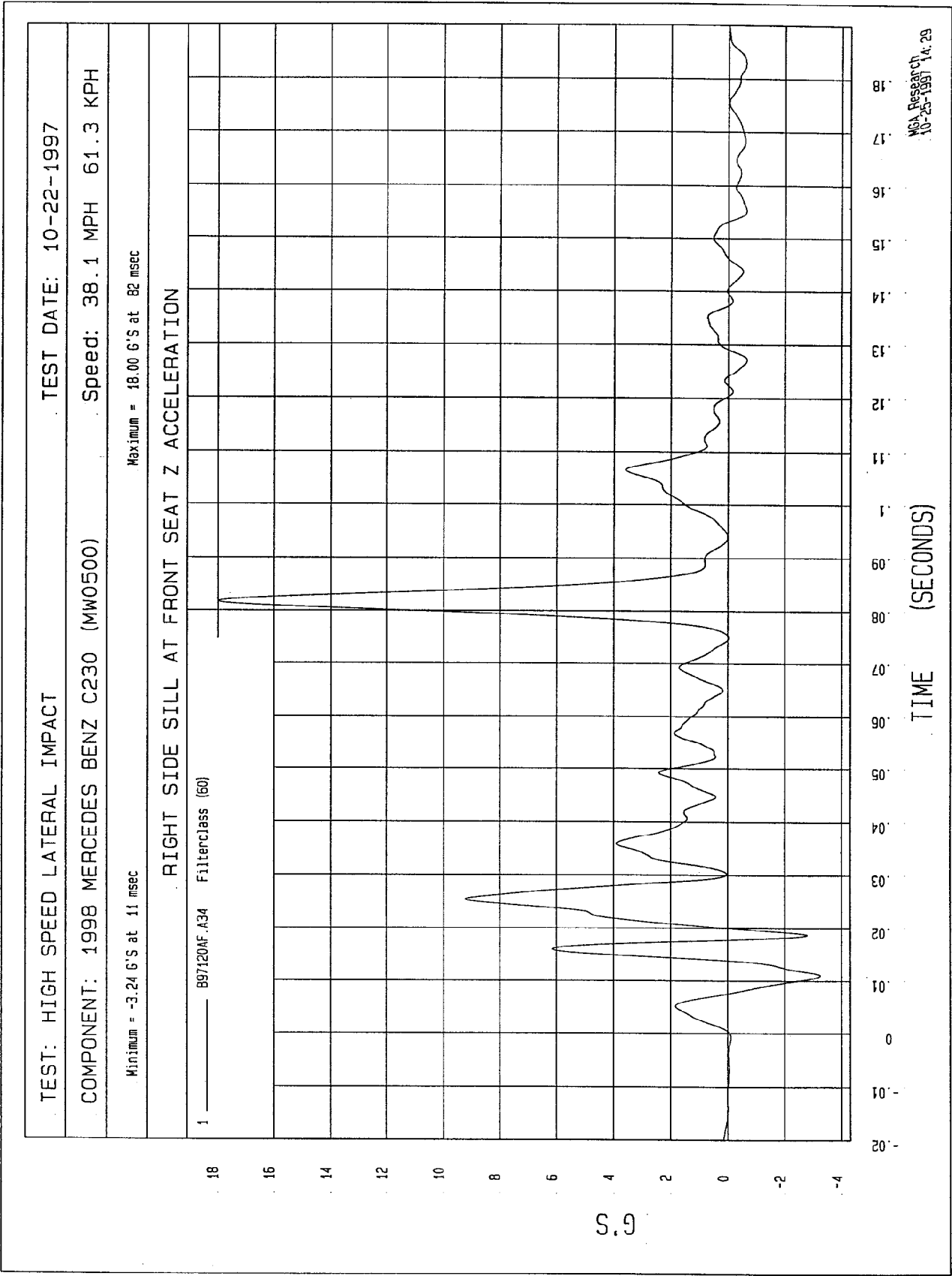
TIME Seconds

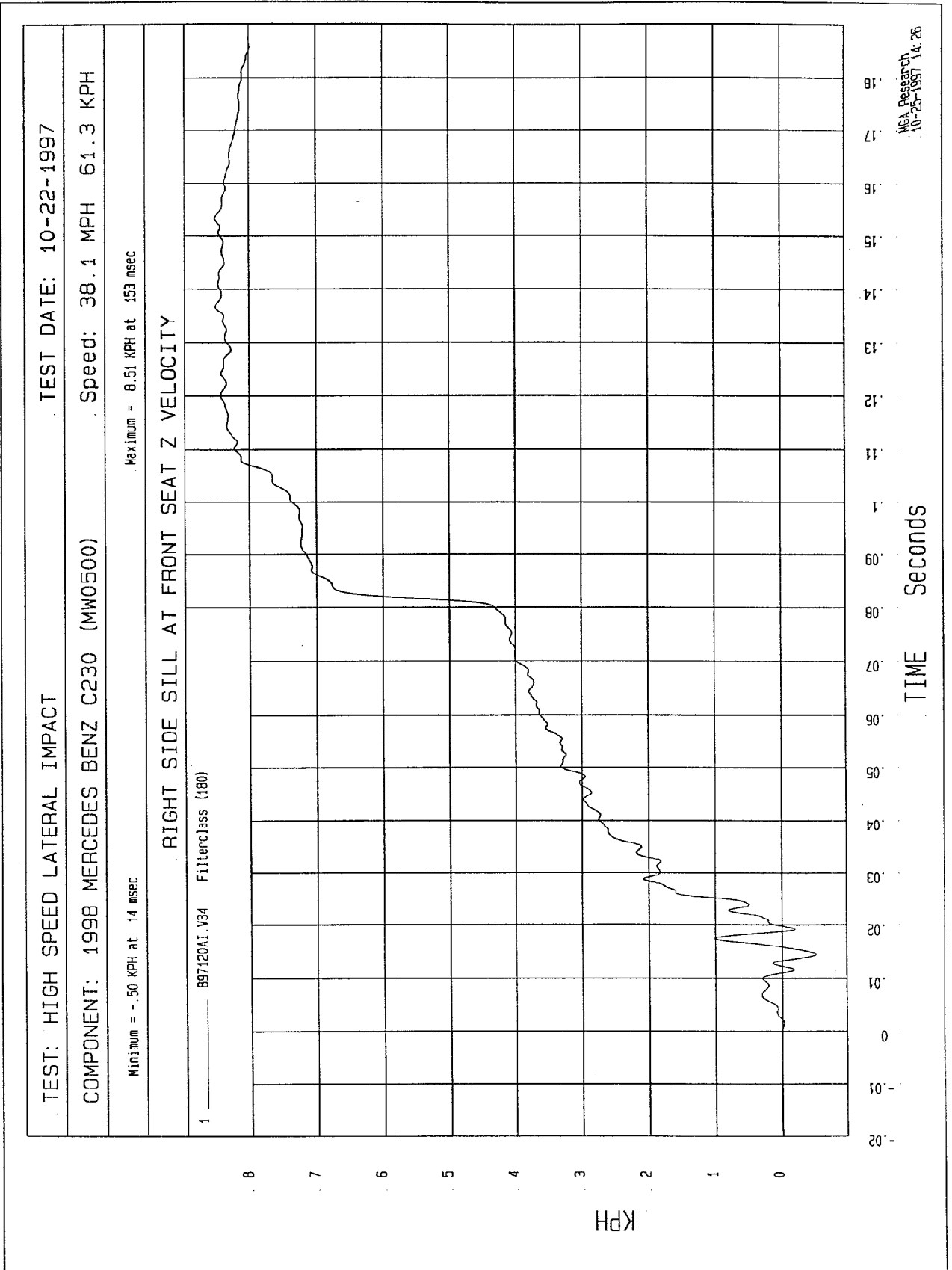
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-0.02

KPH

MCA Research  
10-25-1997 14:26



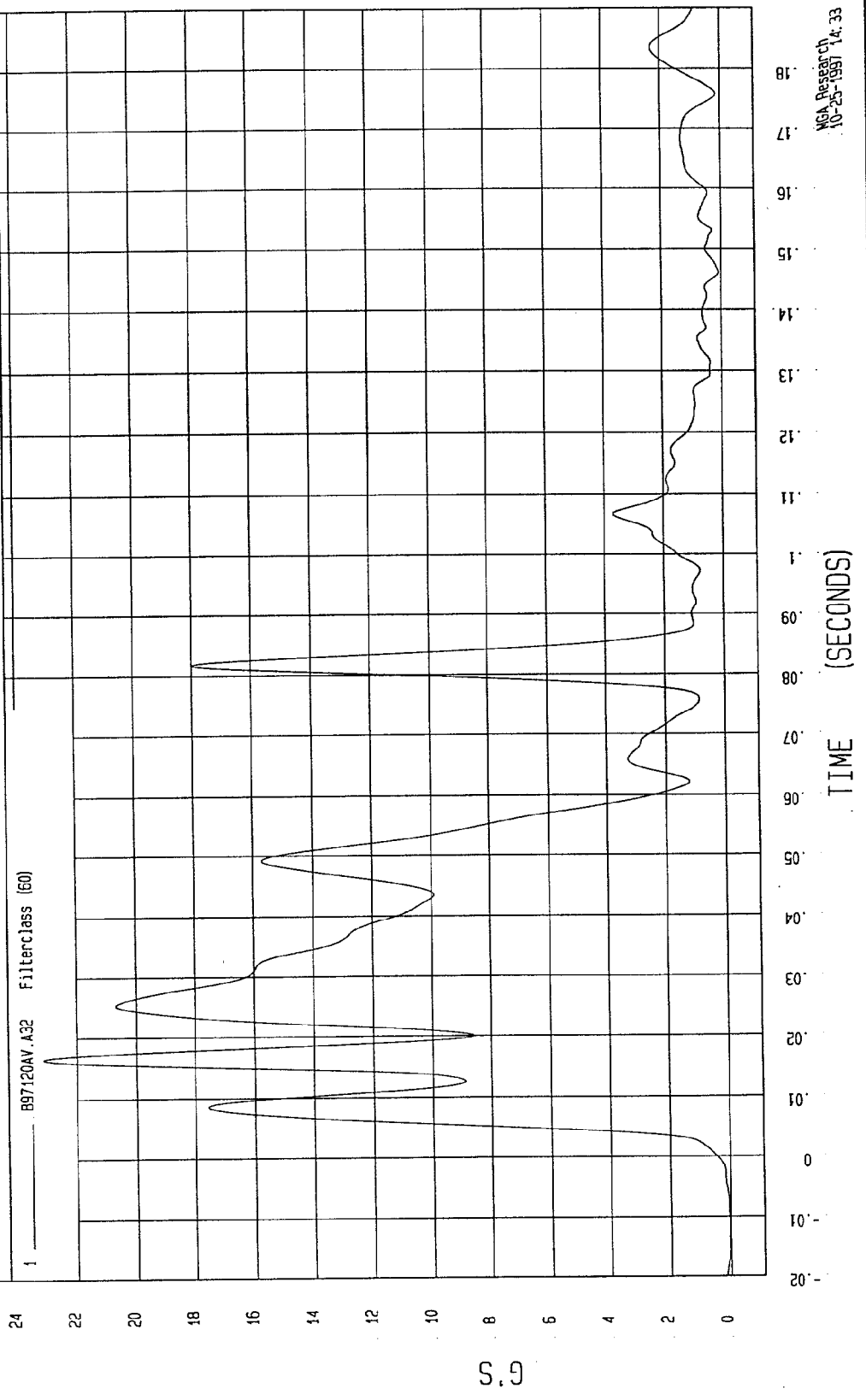


TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = 1.64E-02 G'S at -12 msec      Maximum = 23.14 G'S at 16 msec

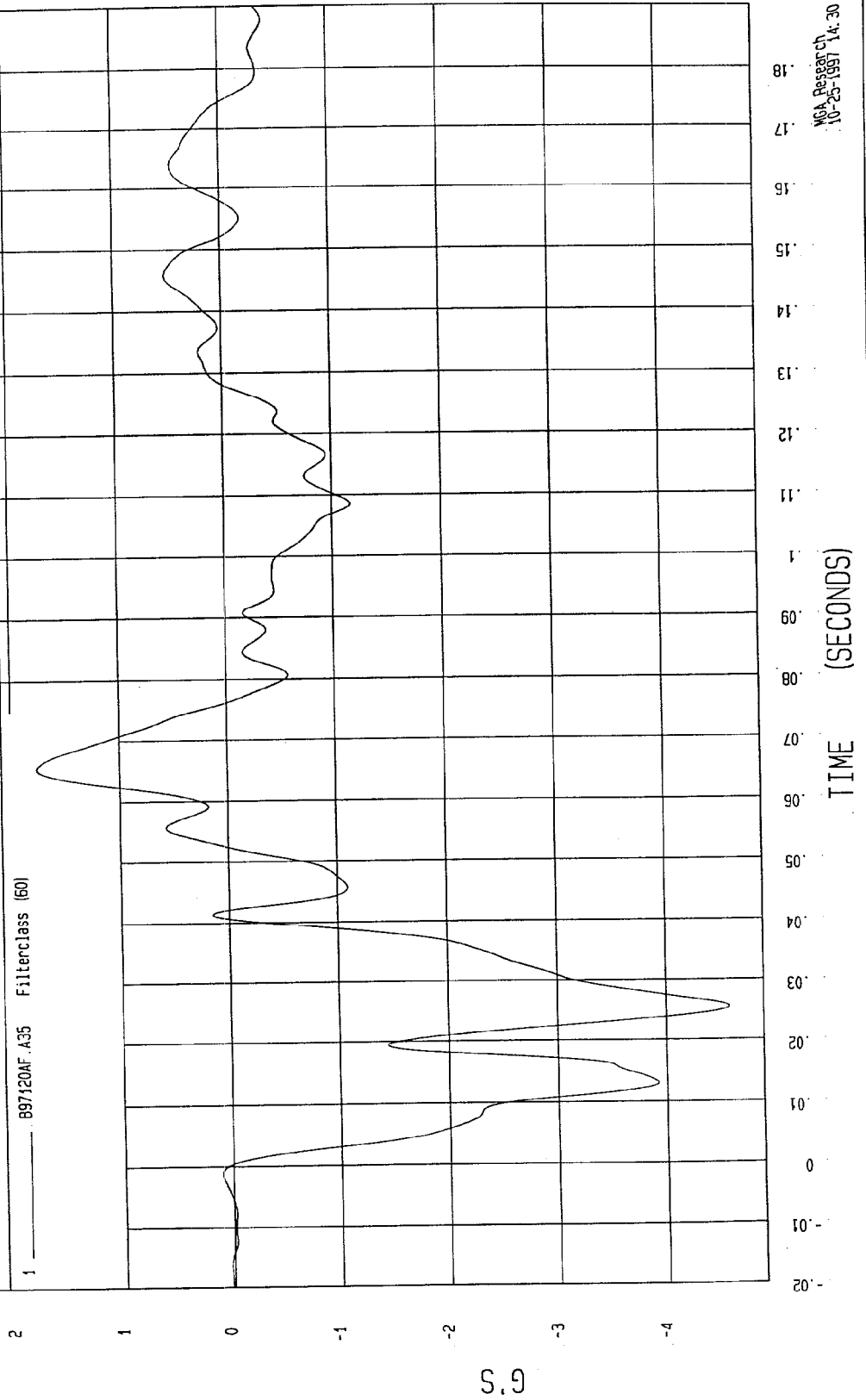
RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION



NCA Research  
10-25-1997 14:33

|                                             |                          |
|---------------------------------------------|--------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997    |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH |
| Minimum = -4.57 G'S at 26 msec              |                          |
| Maximum = 1.76 G'S at 66 msec               |                          |

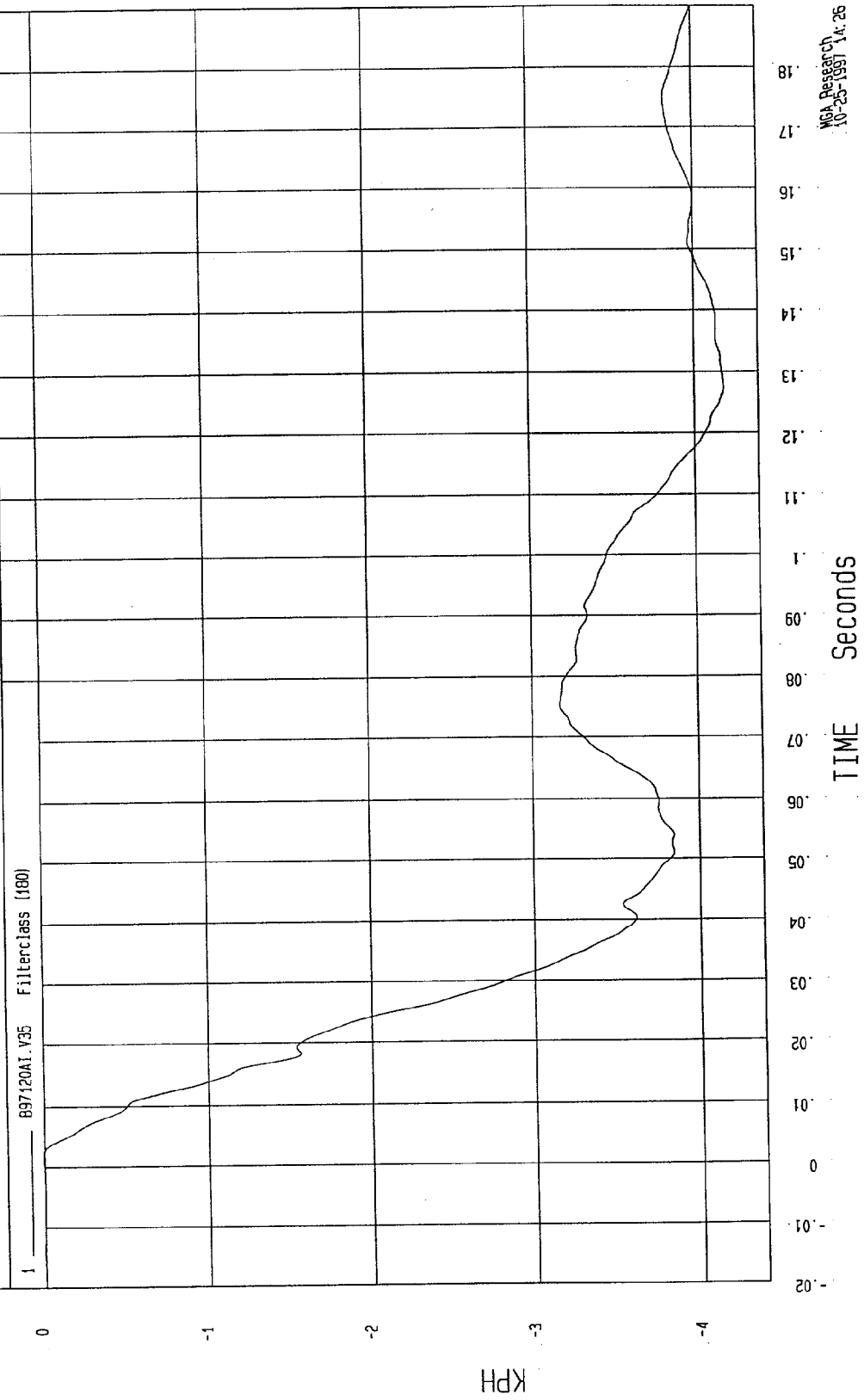
RIGHT SIDE SILL AT REAR SEAT X ACCELERATION



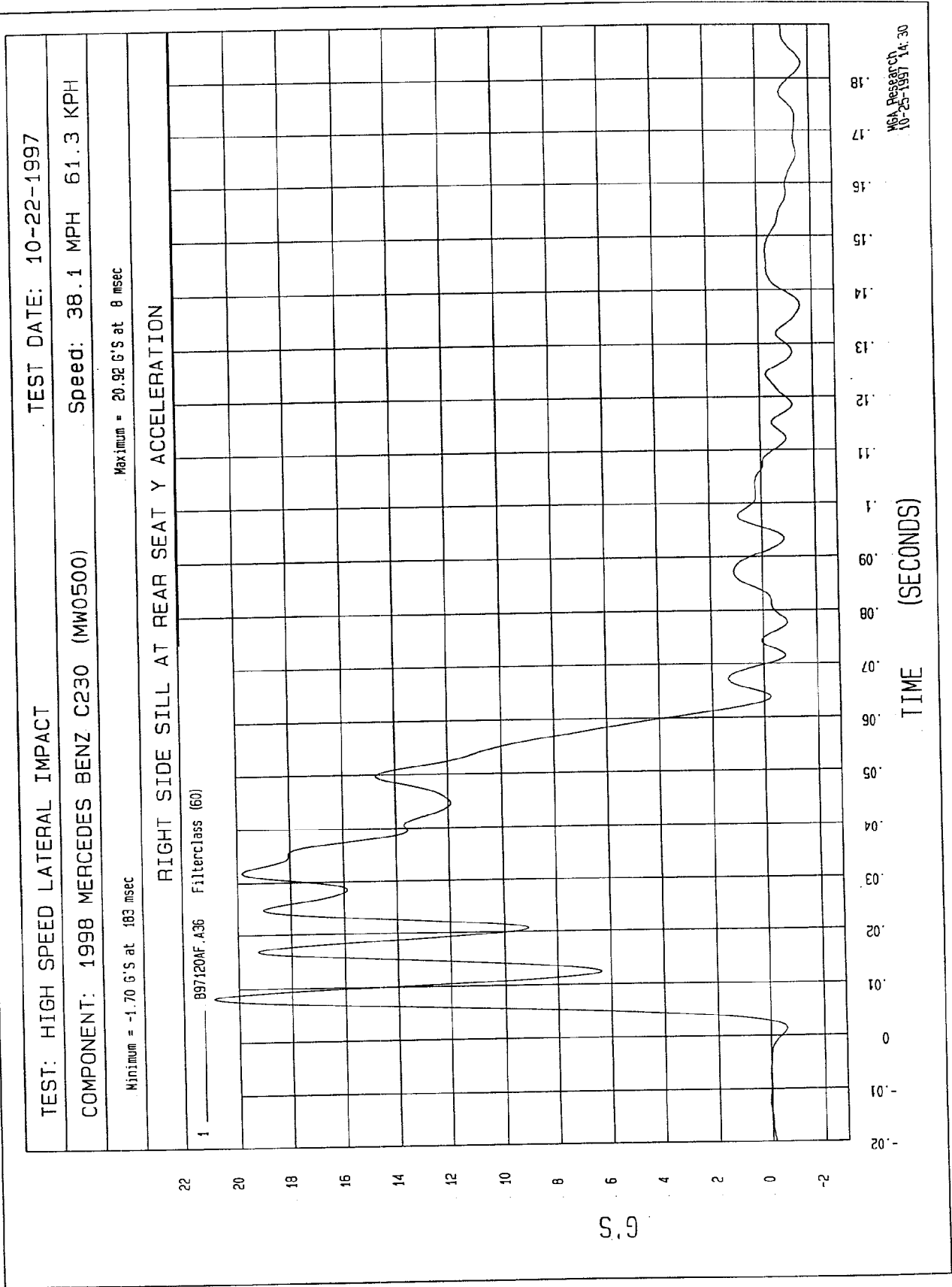
MOA Research  
10-25-1997 14:30

|                                             |                          |
|---------------------------------------------|--------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997    |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH |
| Minimum = -4.17 KPH at 128 msec             |                          |
| Maximum = 7.48E-03 KPH at 2 msec            |                          |

RIGHT SIDE SILL AT REAR SEAT X VELOCITY



NCA Research  
10-25-1997 1A: 26

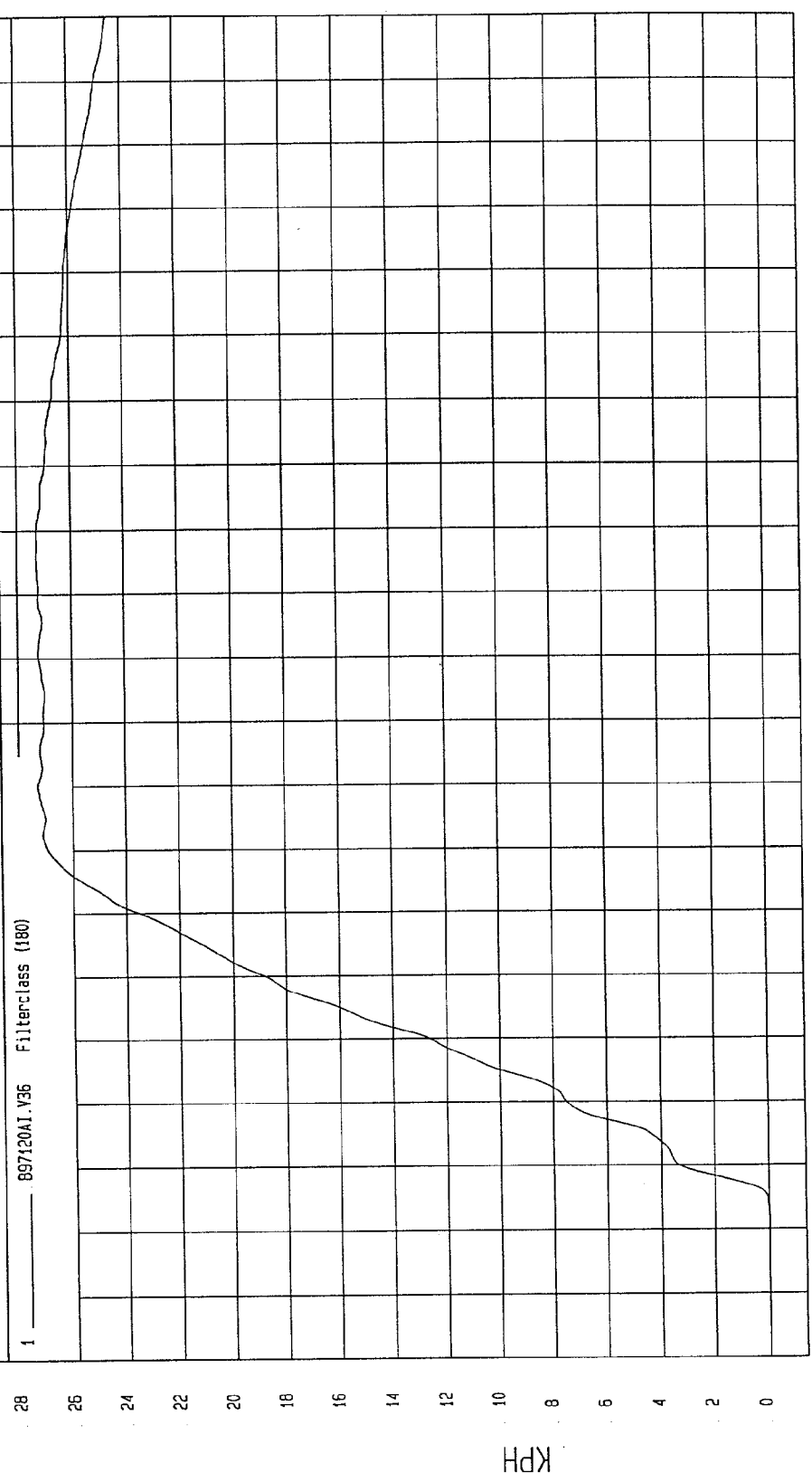


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -.01 KPH at -14 msec Maximum = 27.29 KPH at 70 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY



TIME Seconds

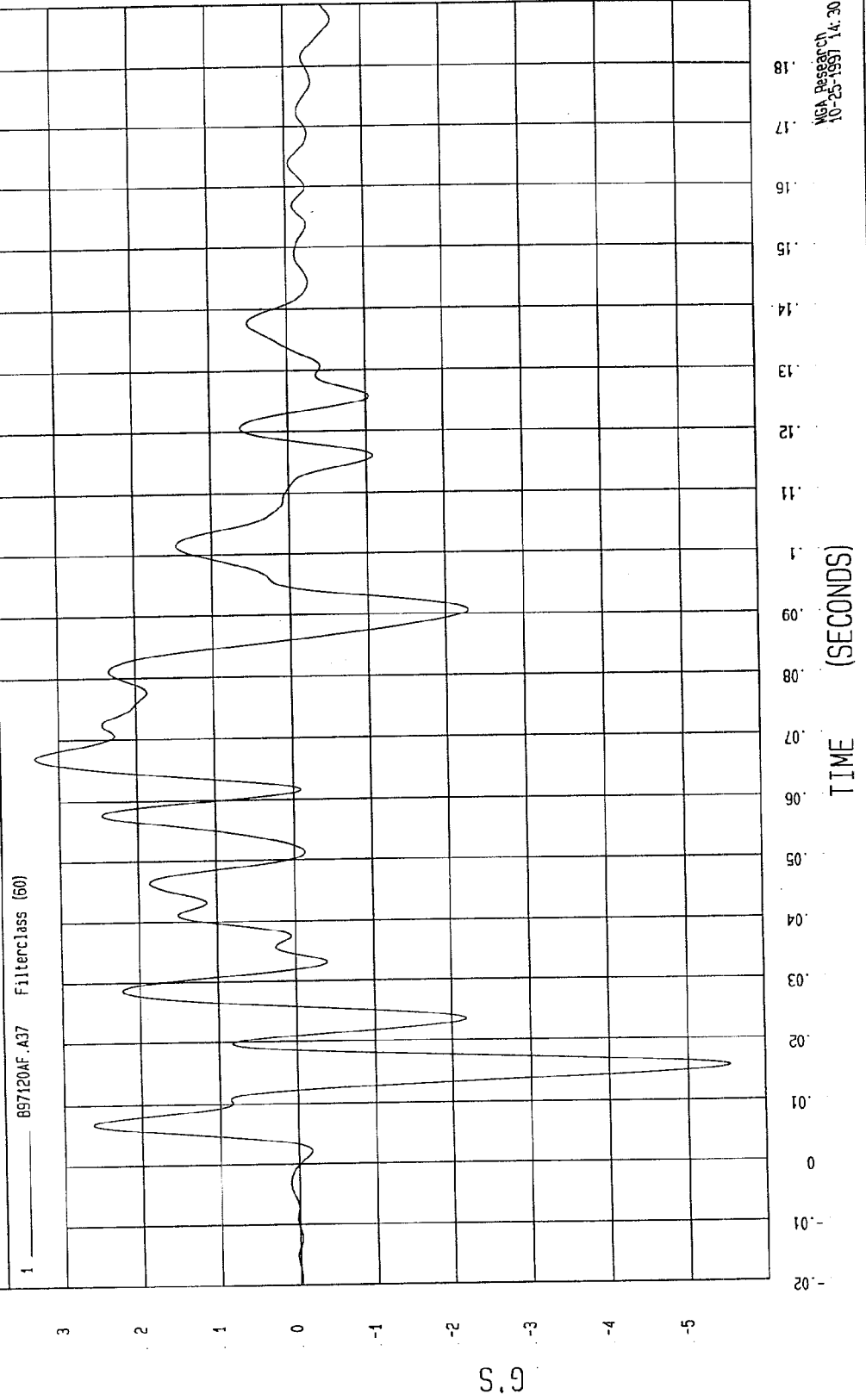
NCA Research  
10-23-1997 14:26

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH    61.3 KPH

Minimum = -5.53 G'S at 16 msec      Maximum = 3.30 G'S at 67 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

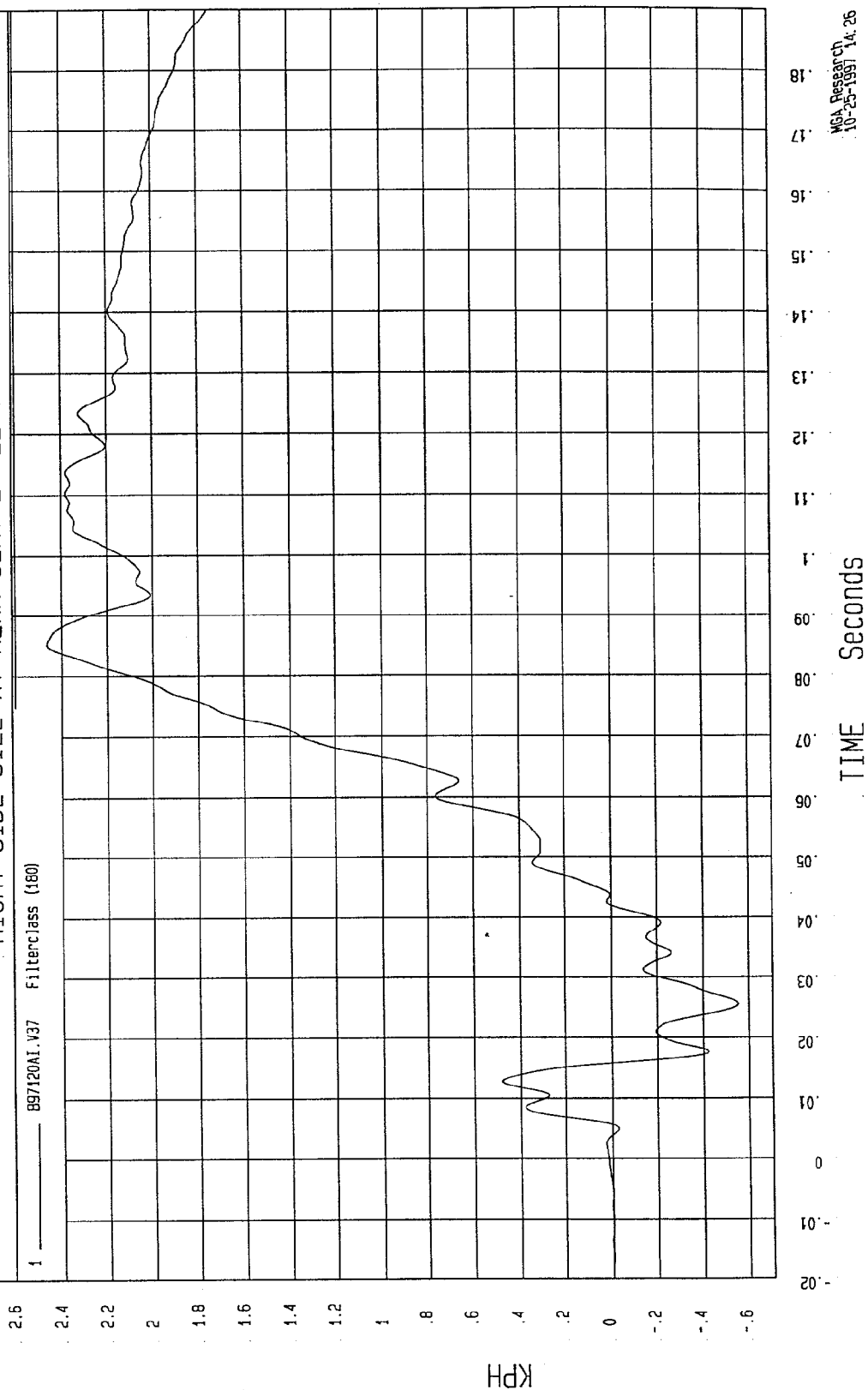
Speed: 38.1 MPH 61.3 KPH

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 2.45 KPH at 85 msec

Minimum = -.55 KPH at 26 msec

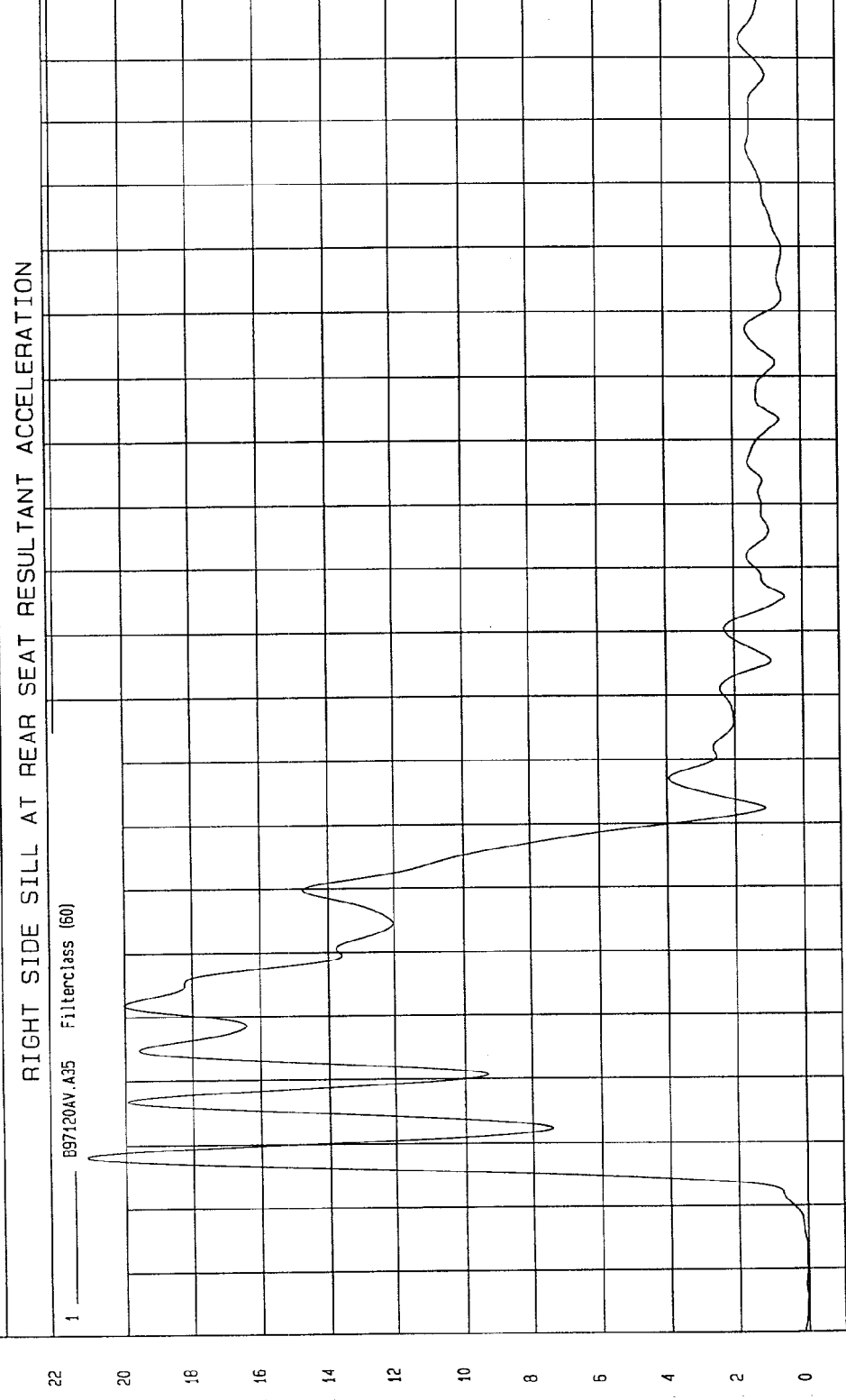
RIGHT SIDE SILL AT REAR SEAT Z VELOCITY



TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = 1.52E-02 G'S at -14 msec      Maximum = 21.12 G'S at 8 msec

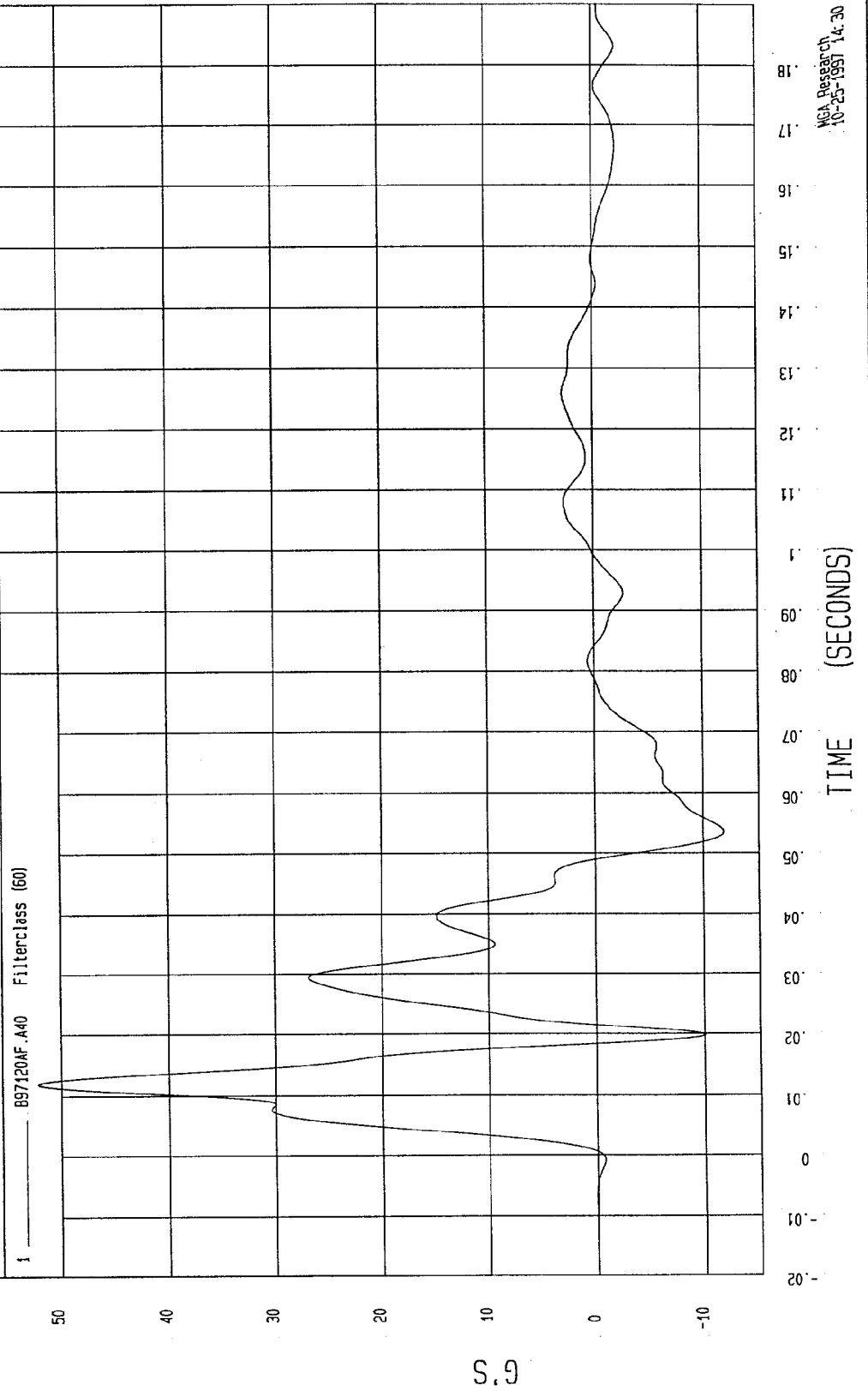


TIME (SECONDS)

WCA Research  
10-23-1997 14:33

|                                             |                                |
|---------------------------------------------|--------------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997          |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH       |
| Minimum = -11.87 G'S at 54 msec             | Maximum = 52.11 G'S at 12 msec |

LEFT FRONT SEAT TRACK Y ACCELERATION

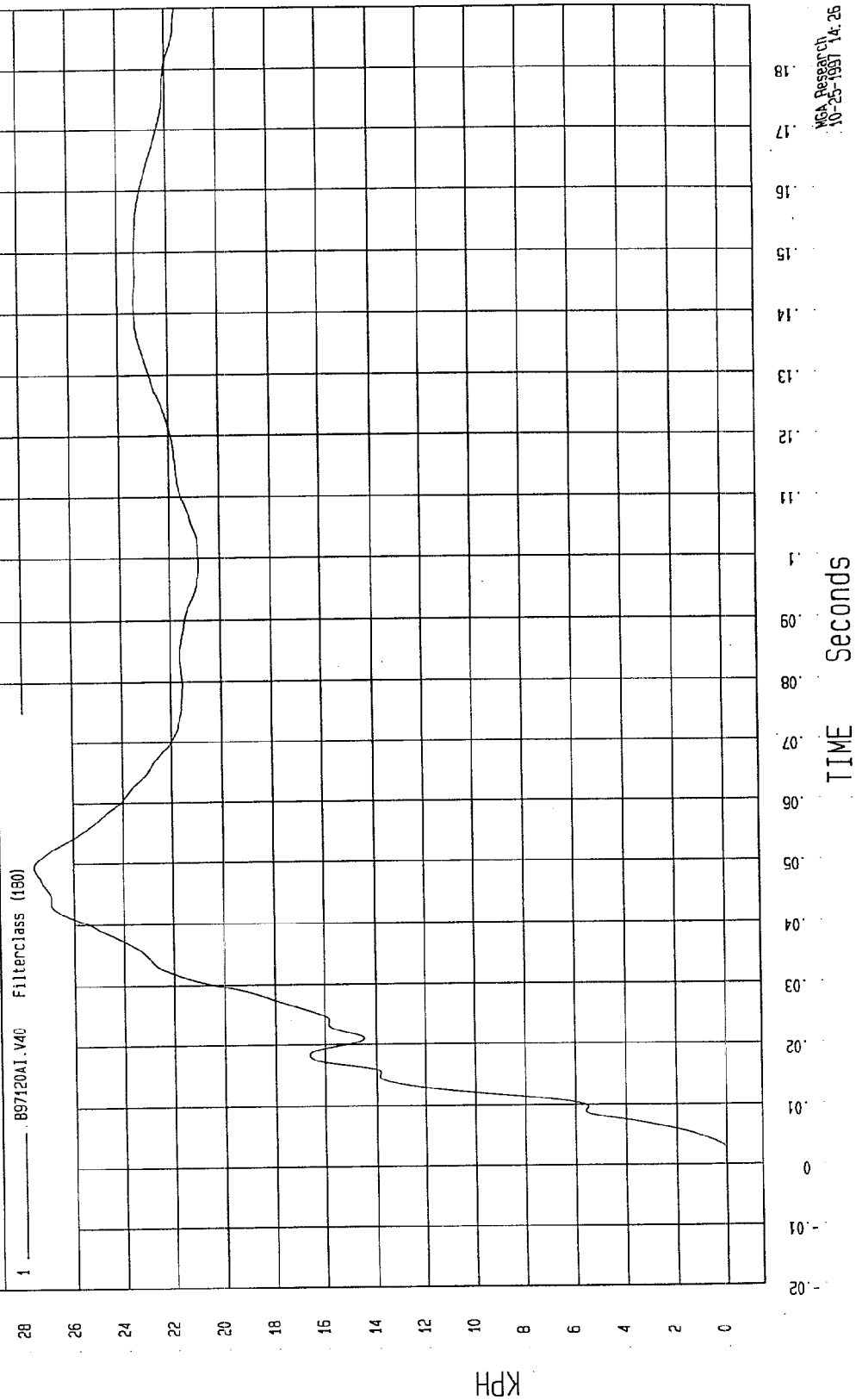


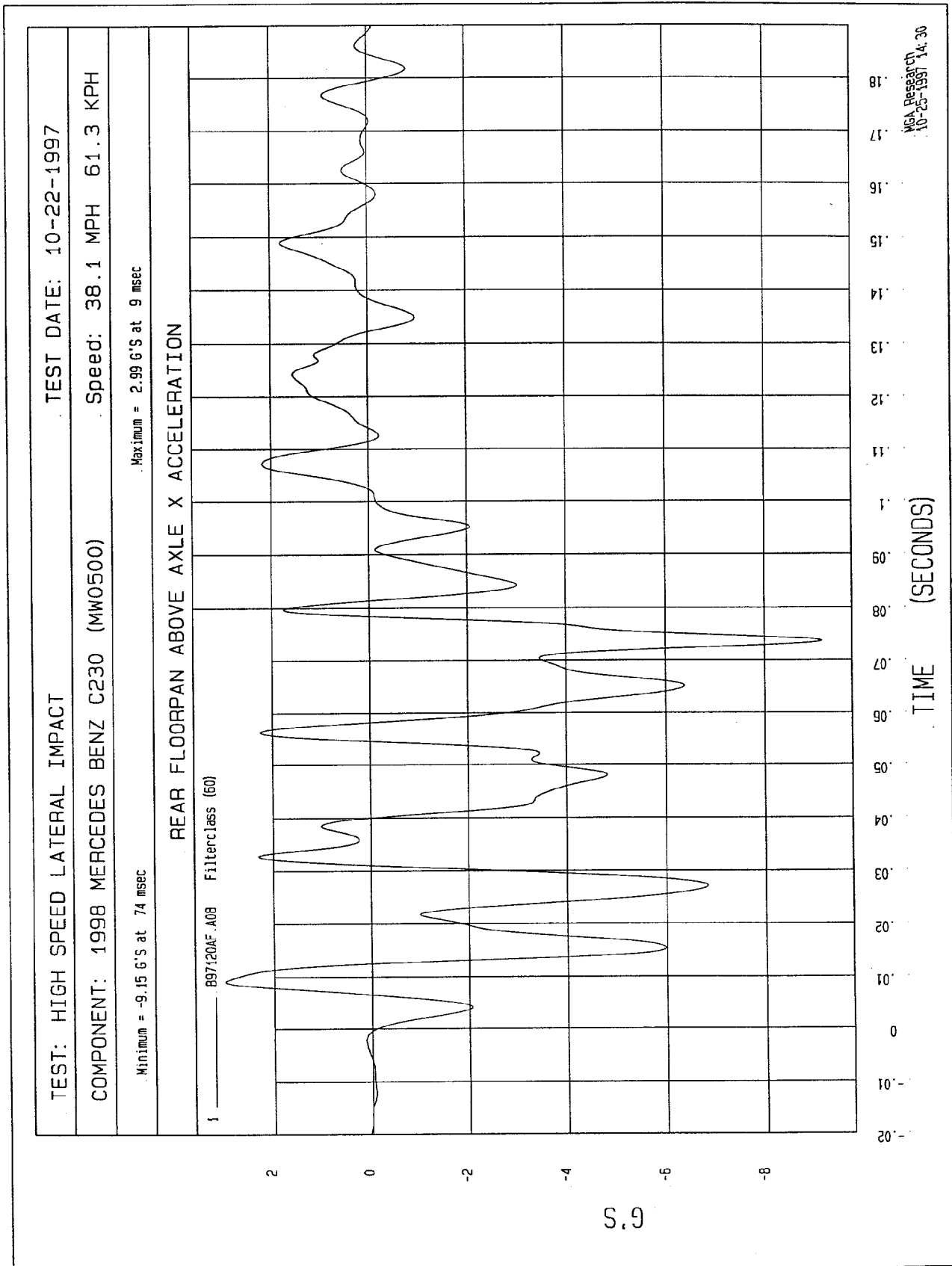
TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -1.12E-02 KPH at 2 msec      Maximum = 27.56 KPH at 49 msec

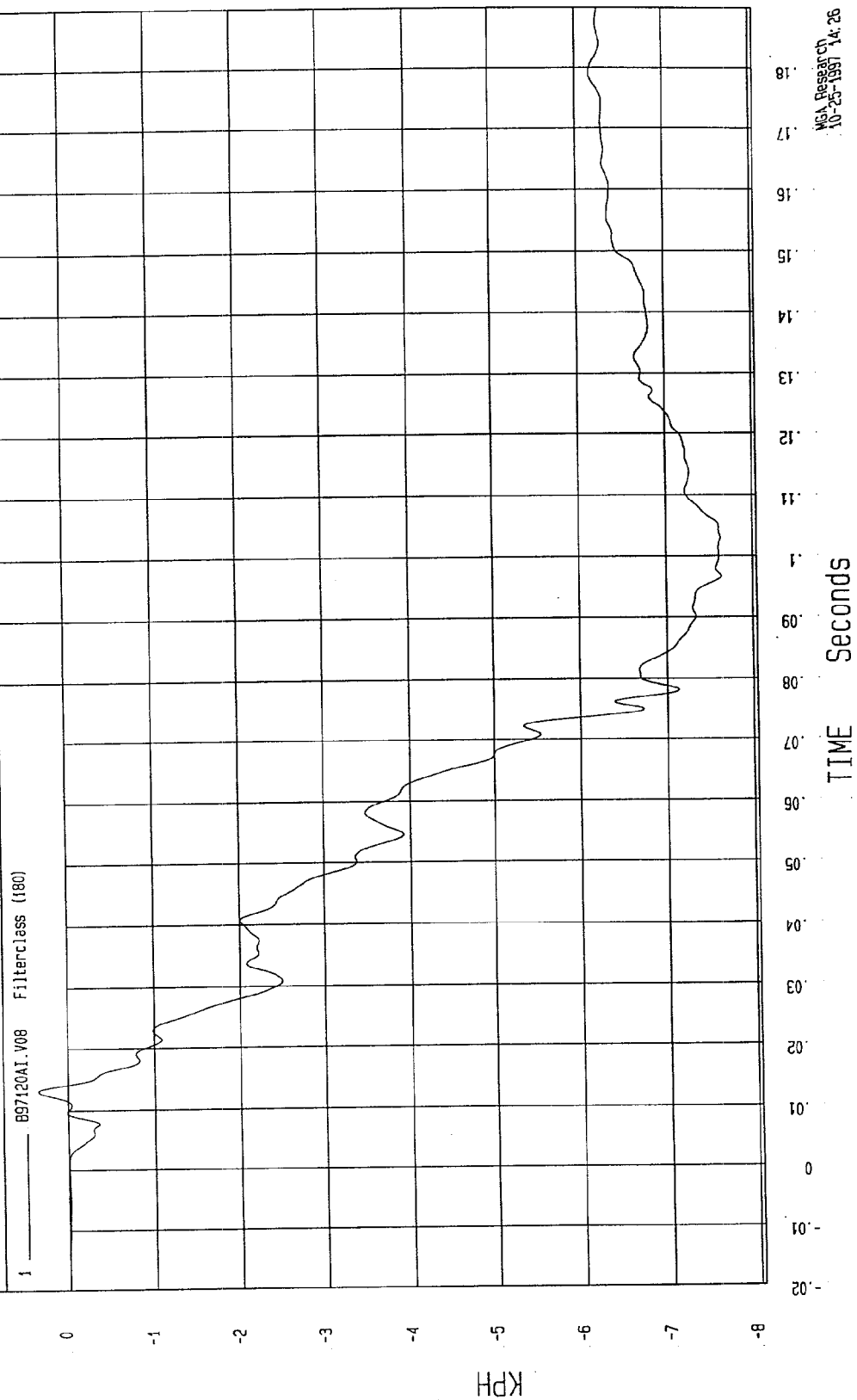
LEFT FRONT SEAT TRACK Y VELOCITY





|                                             |                              |
|---------------------------------------------|------------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997        |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH     |
| Minimum = -7.64 KPH at 97 msec              | Maximum = .34 KPH at 13 msec |

REAR FLOORPAN ABOVE AXLE X VELOCITY



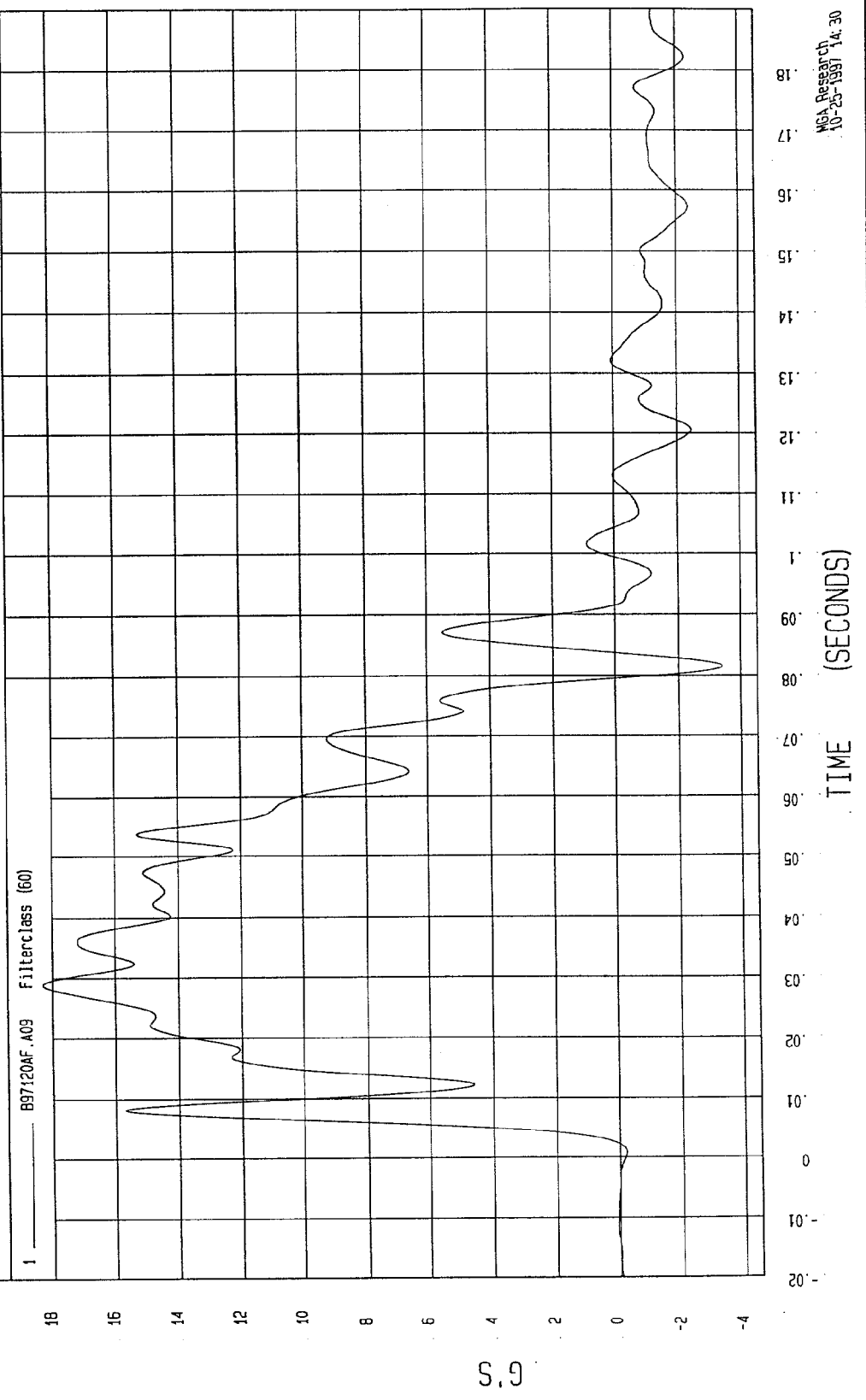
MSA Research  
10-25-1997 14:26

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -3.41 G'S at 82 msec      Maximum = 18.29 G'S at 29 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION



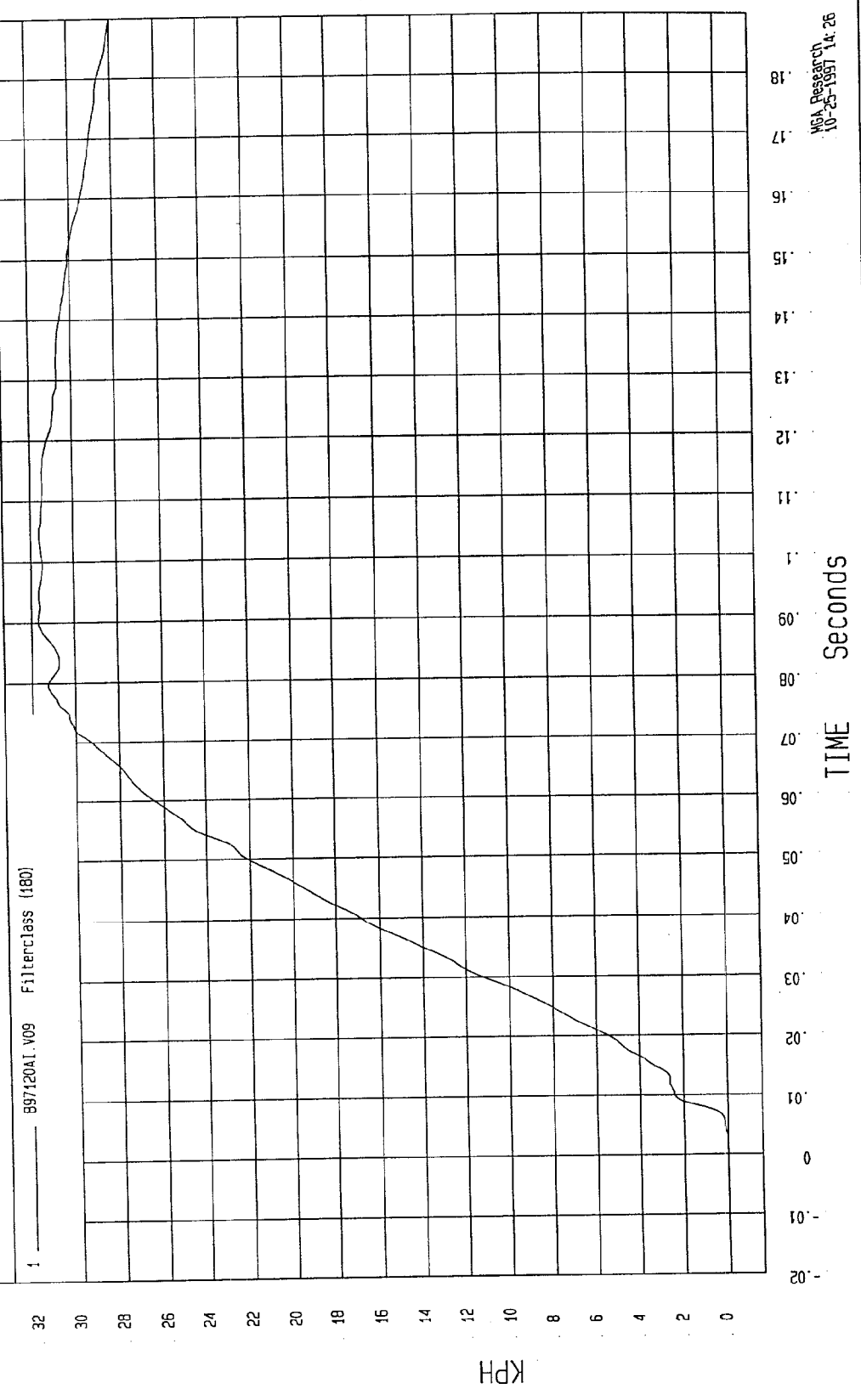
MCA Research  
10-23-1997 14:30

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

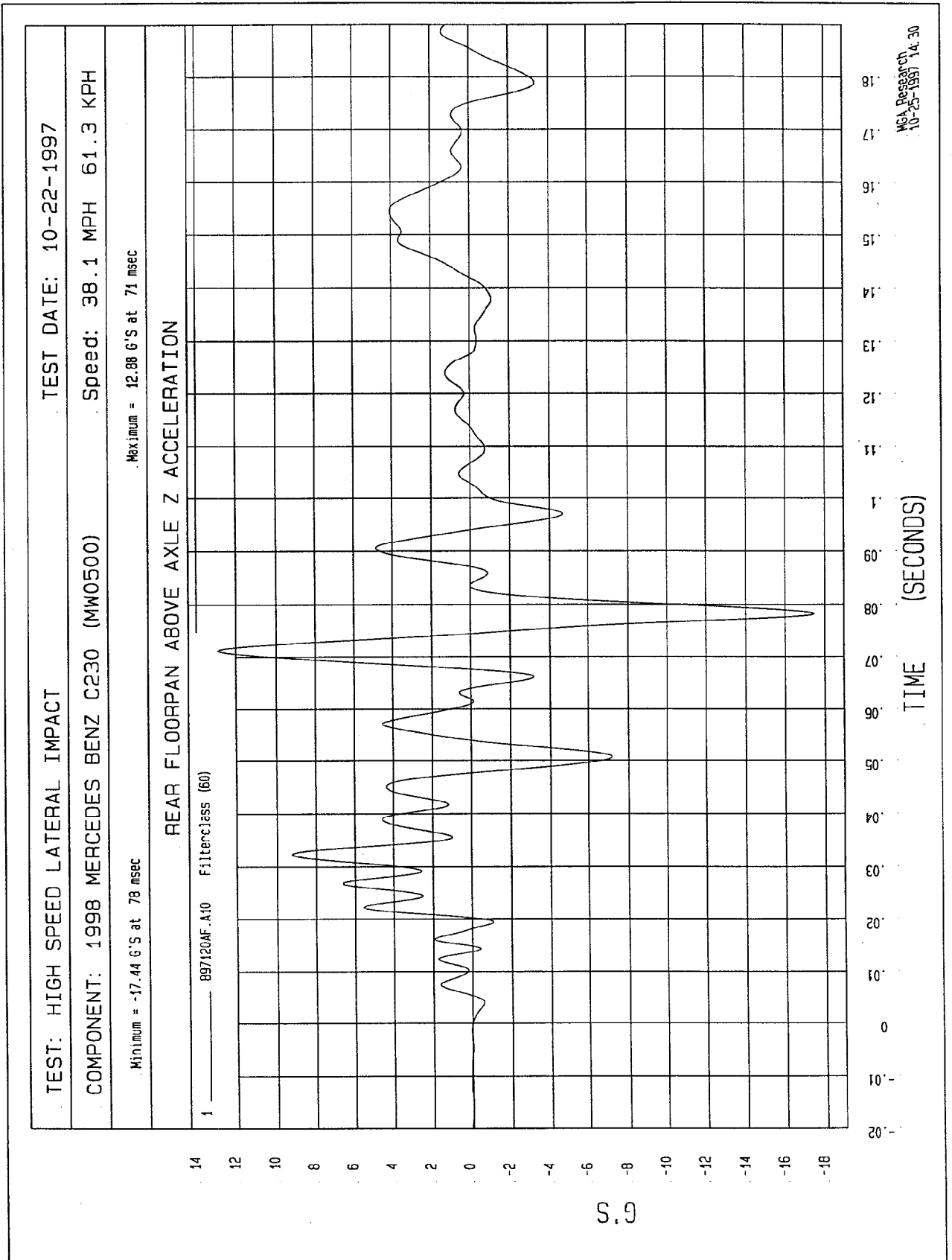
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -7.20E-03 KPH at -14 msec      Maximum = 31.65 KPH at 90 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY

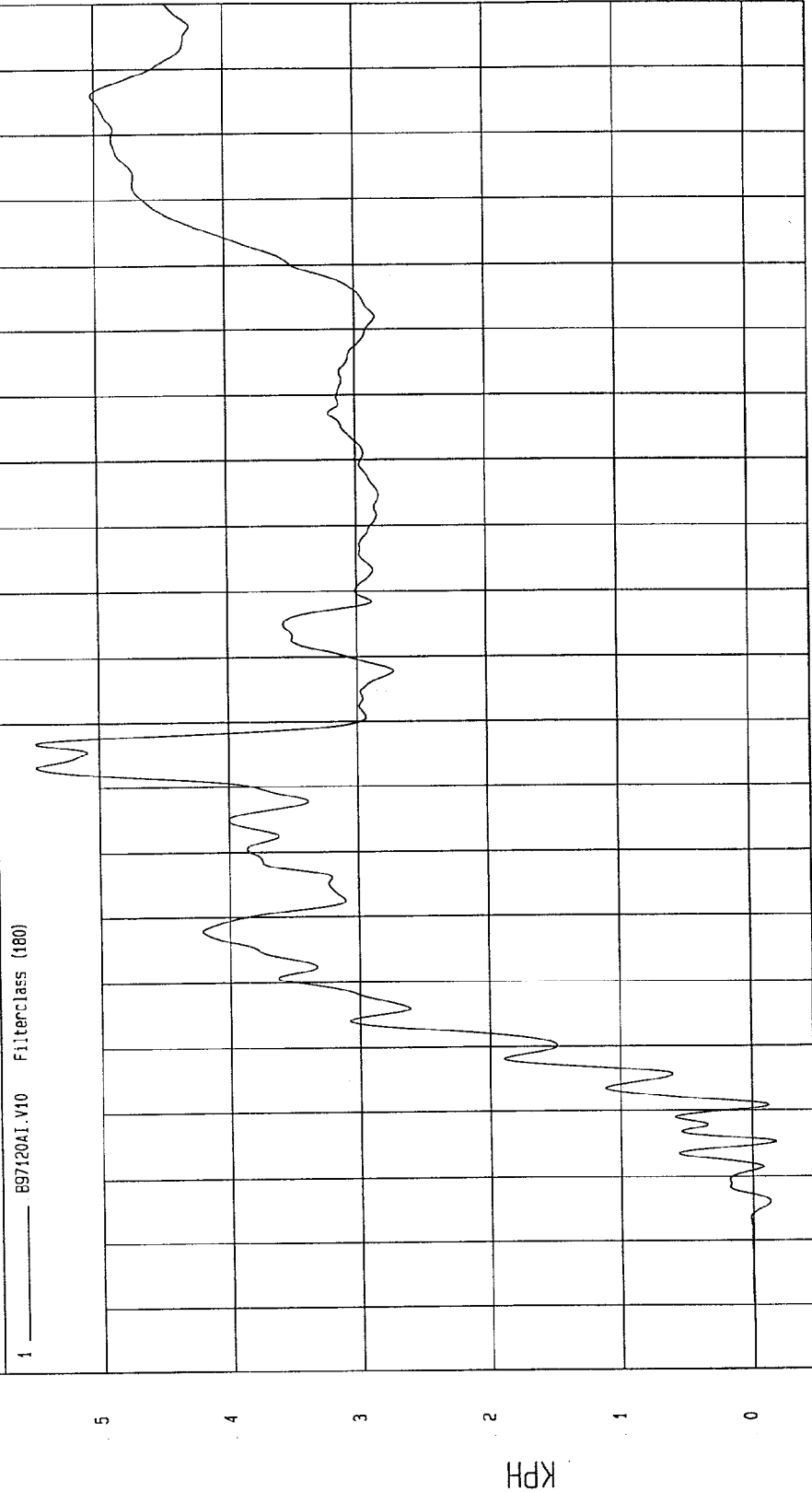


W&A Research  
10-25-1997 14:26



|                                             |                          |
|---------------------------------------------|--------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997    |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH |
| Minimum = -.18 KPH at .15 msec              |                          |
| Maximum = 5.49 KPH at .77 msec              |                          |

REAR FLOORPAN ABOVE AXLE Z VELOCITY



MCA Research  
10-25-1997 14:27

TIME Seconds

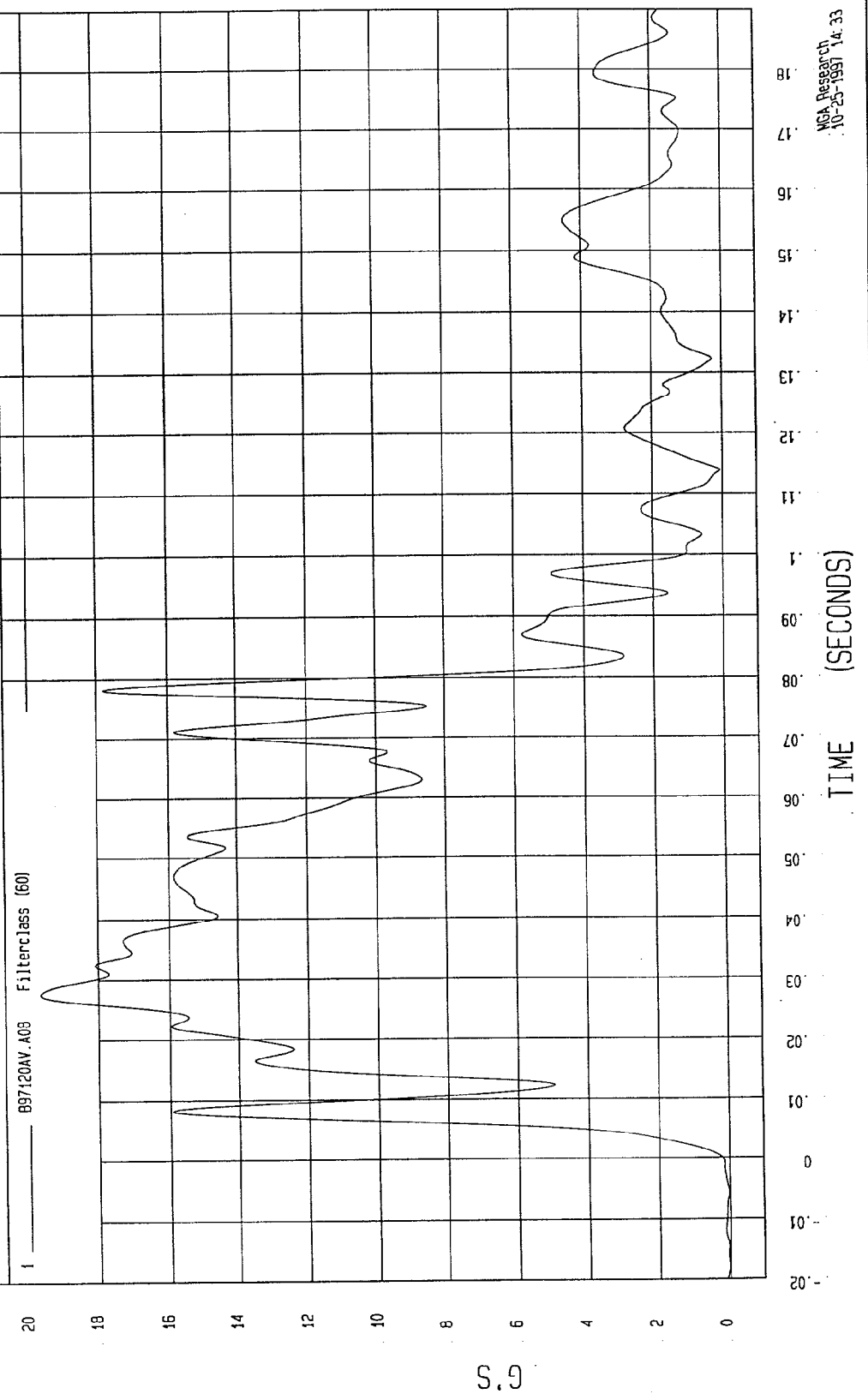
KPH

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = 1.19E-02 G'S at -6 msec Maximum = 19.68 G'S at 28 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION



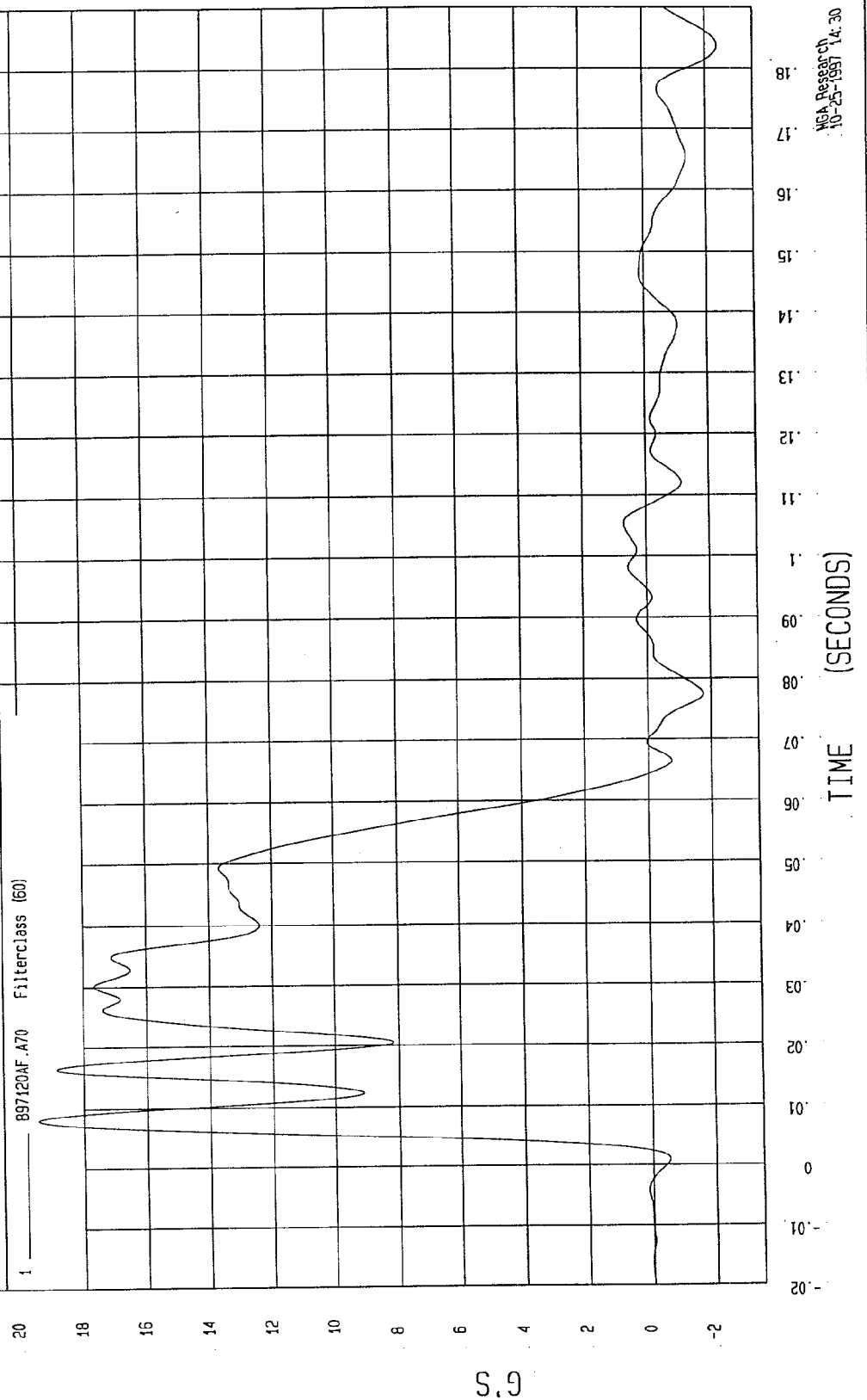
NCA Research  
10-25-1997 14.33

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -2.38 G'S at .084 msec Maximum = 19.43 G'S at 8 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION



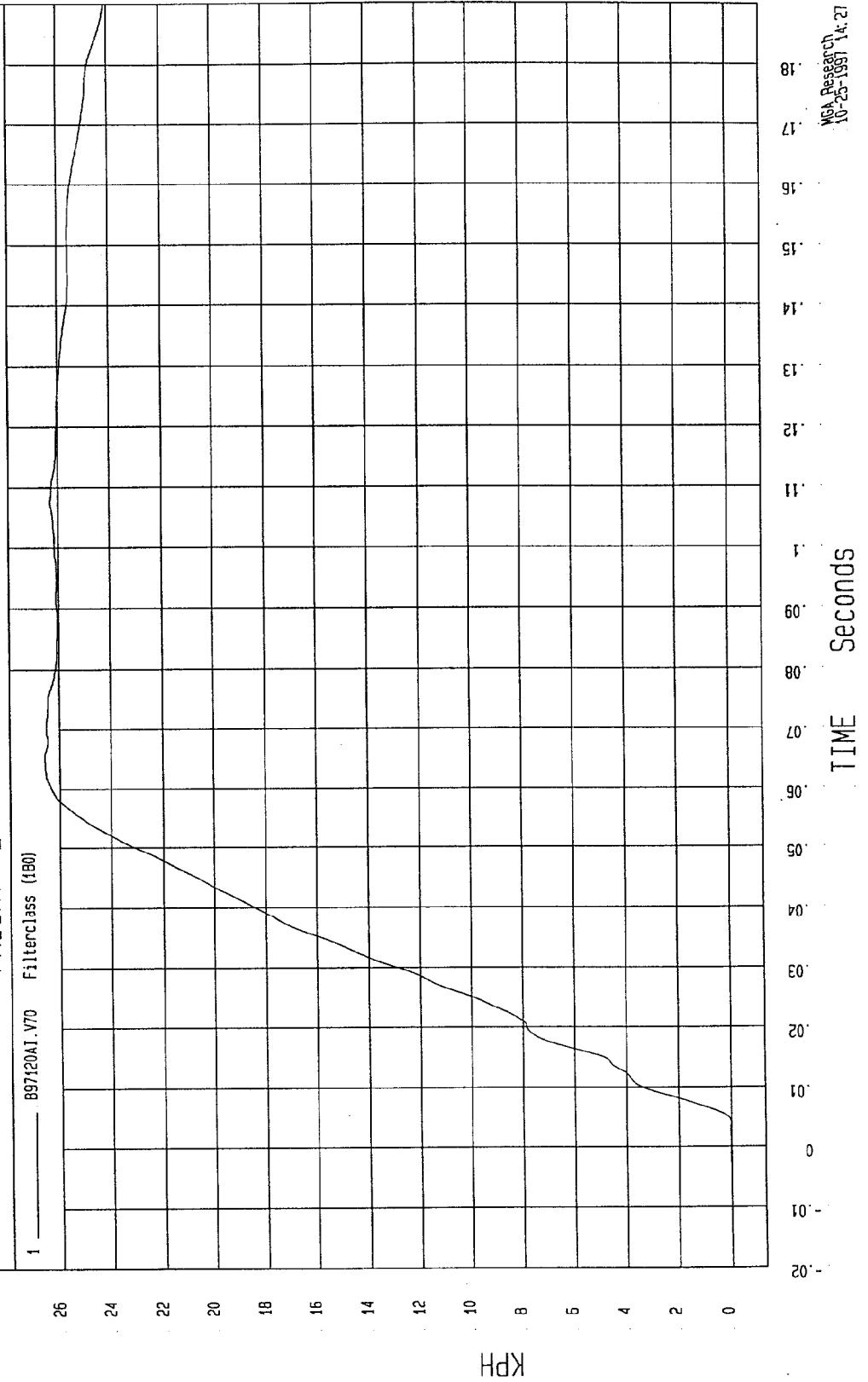
NCA Research  
10-25-1997 14:30

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -7.87E-04 KPH at -11 msec      Maximum = 26.57 KPH at 65 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY



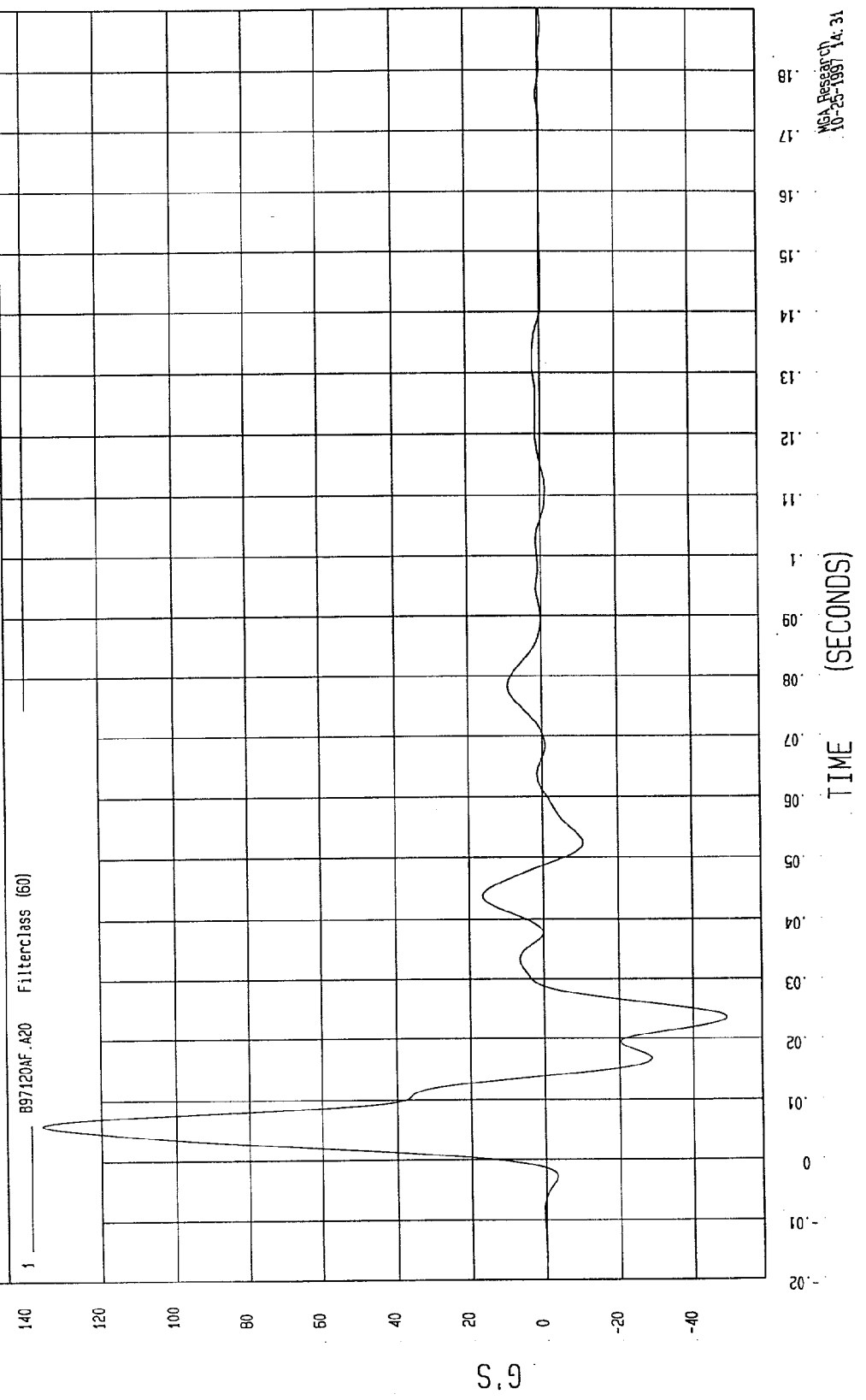
NGA Research  
10-25-1997 14: 27

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -48.95 G'S at 24 msec      Maximum = 135.96 G'S at 6 msec

LEFT LOWER A-POST Y ACCELERATION

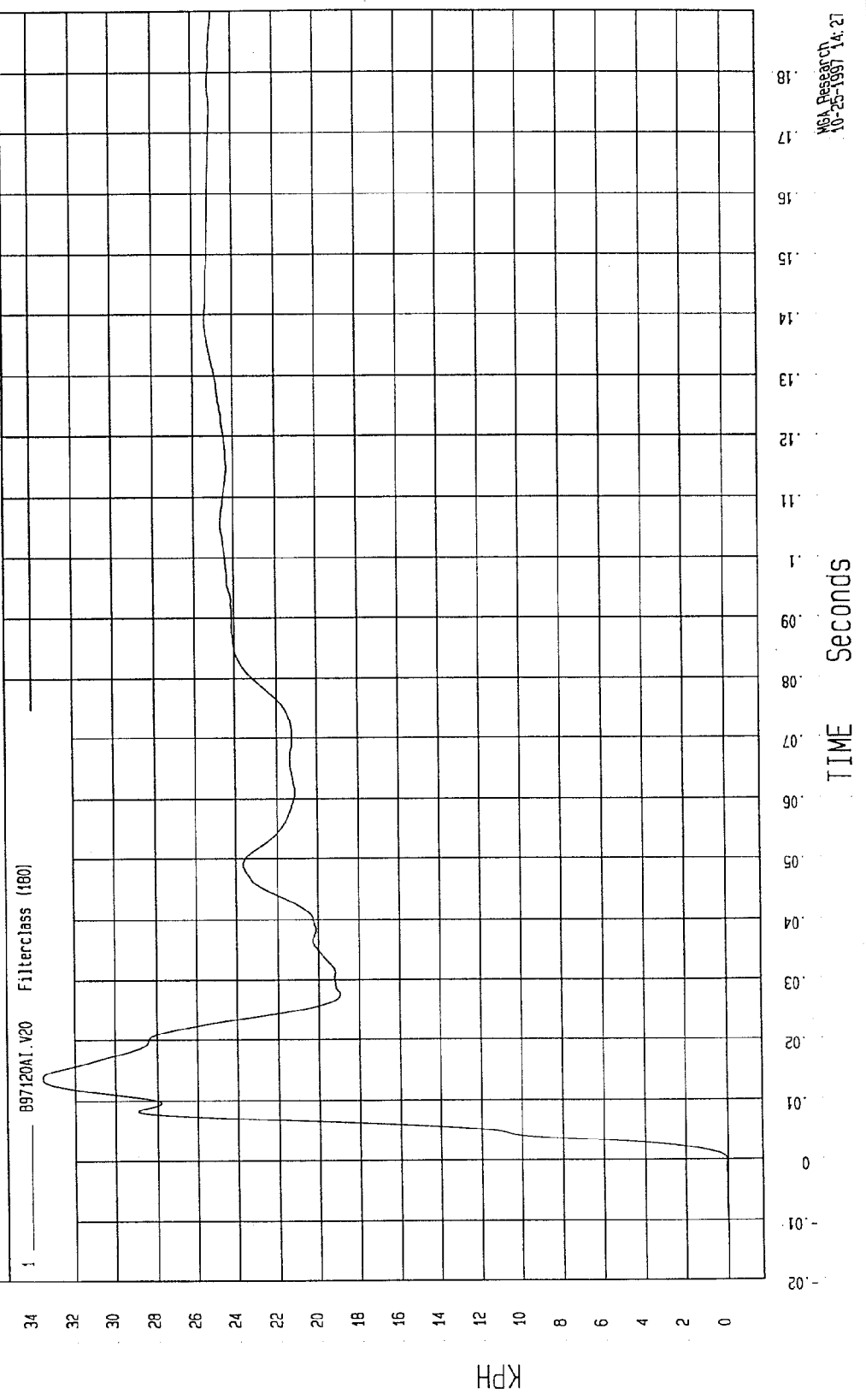


TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH    61.3 KPH

Minimum = -1.19E-02 KPH at -14 msec      Maximum = 33.56 KPH at 14 msec

LEFT LOWER A-POST Y VELOCITY



WSA Research  
10-25-1997 14:27

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

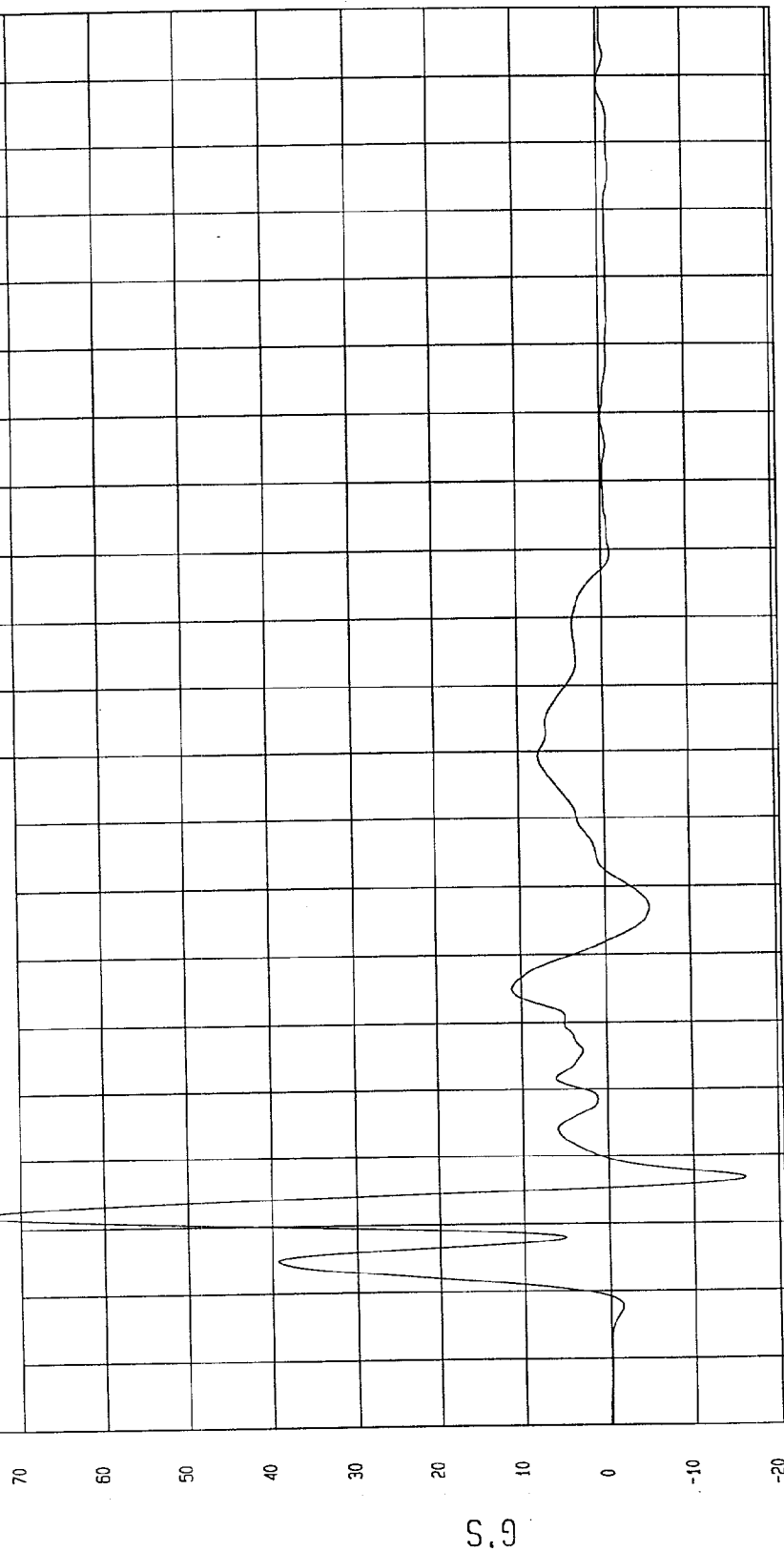
Speed: 38.1 MPH 61.3 KPH

Minimum = -16.07 G'S at .17 msec

Maximum = 74.78 G'S at 12 msec

LEFT MID A-POST Y ACCELERATION

1 ——— B97120AF.M19 Filterclass (60)



MECA Research  
10-25-1997 14:31

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

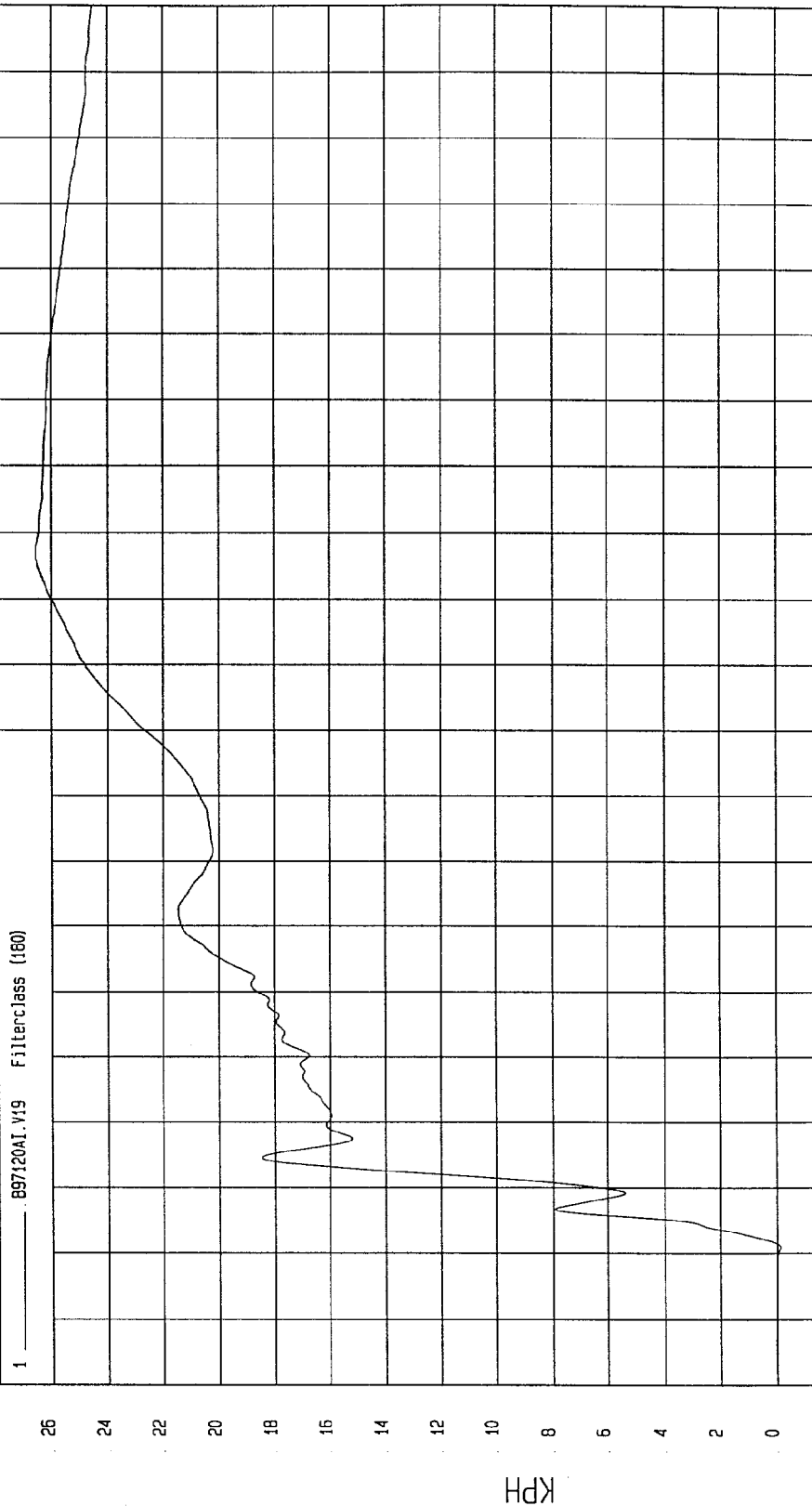
Speed: 38.1 MPH 61.3 KPH

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 26.56 KPH at 107 msec

Minimum = -.11 KPH at 1 msec

LEFT MID A-POST Y VELOCITY



TIME Seconds

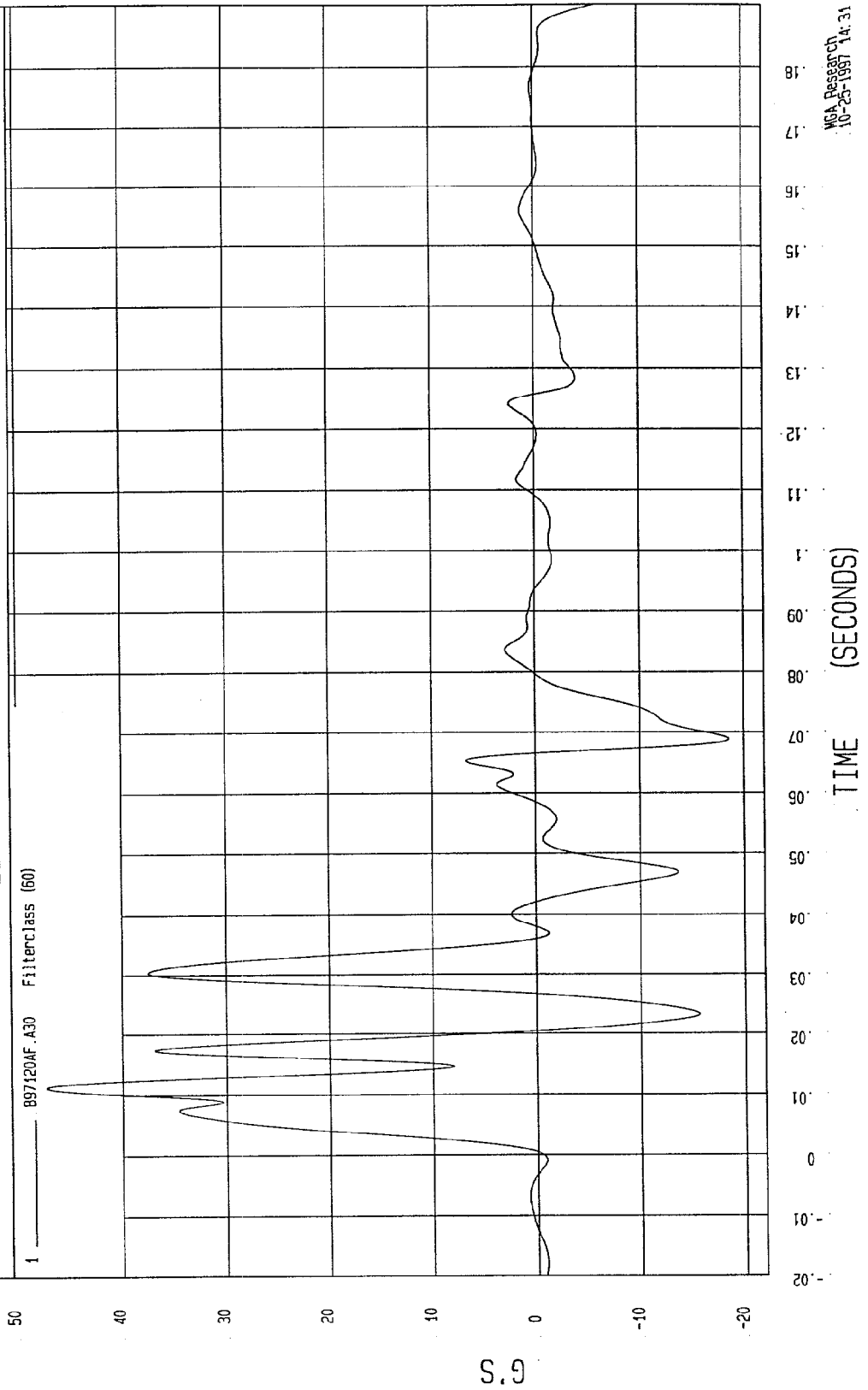
NCA Research  
10-25-1997 14:27

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -18.5g at 69 msec      Maximum = 47.25 g's at 11 msec

LEFT LOWER B-POST Y ACCELERATION



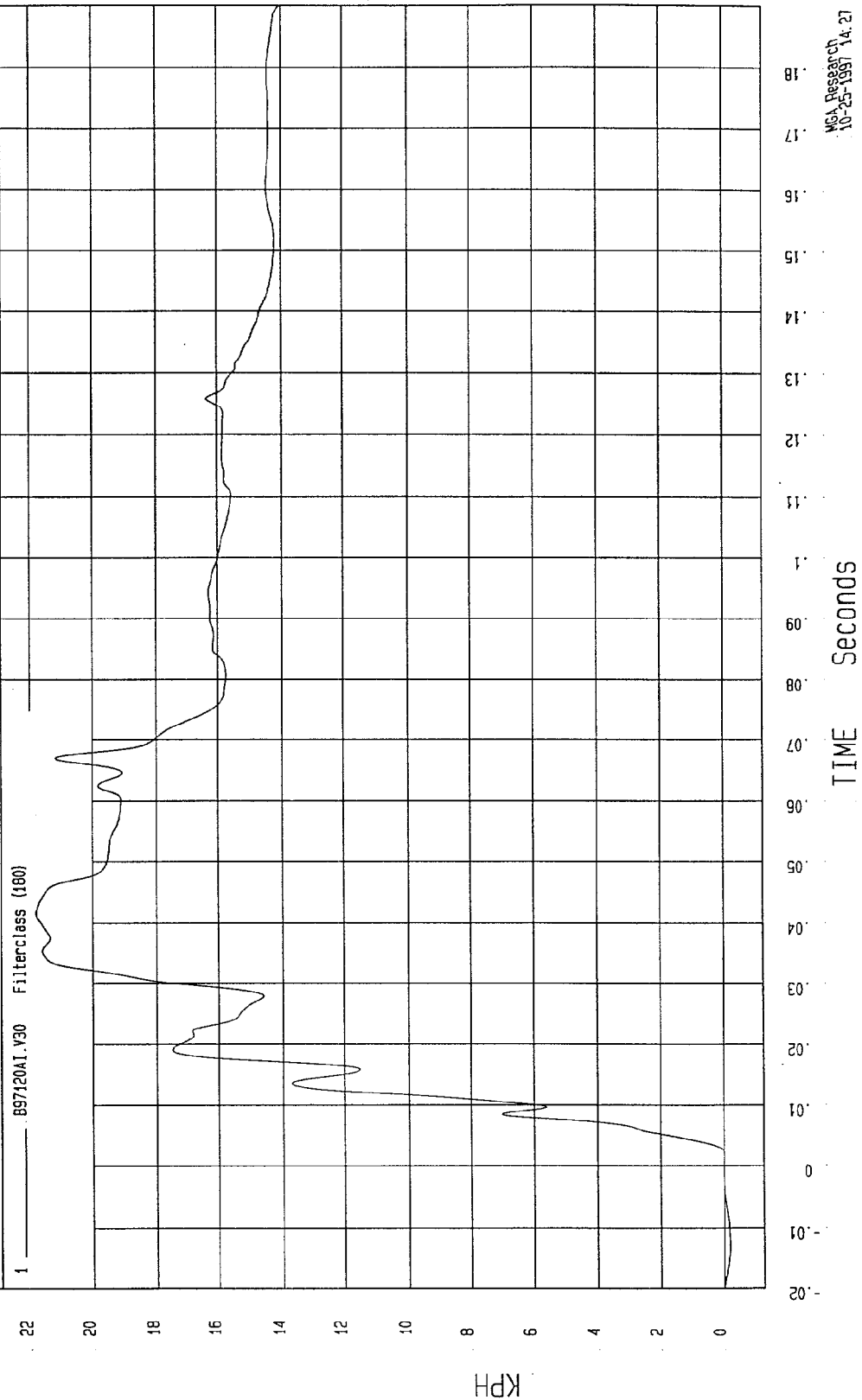
MSA Research  
10-25-1997 14:31

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -.17 KPH at -.13 msec      Maximum = 21.81 KPH at 42 msec

LEFT LOWER B-POST Y VELOCITY



WCA Research  
10-25-1997 14:27

TEST: HIGH SPEED LATERAL IMPACT

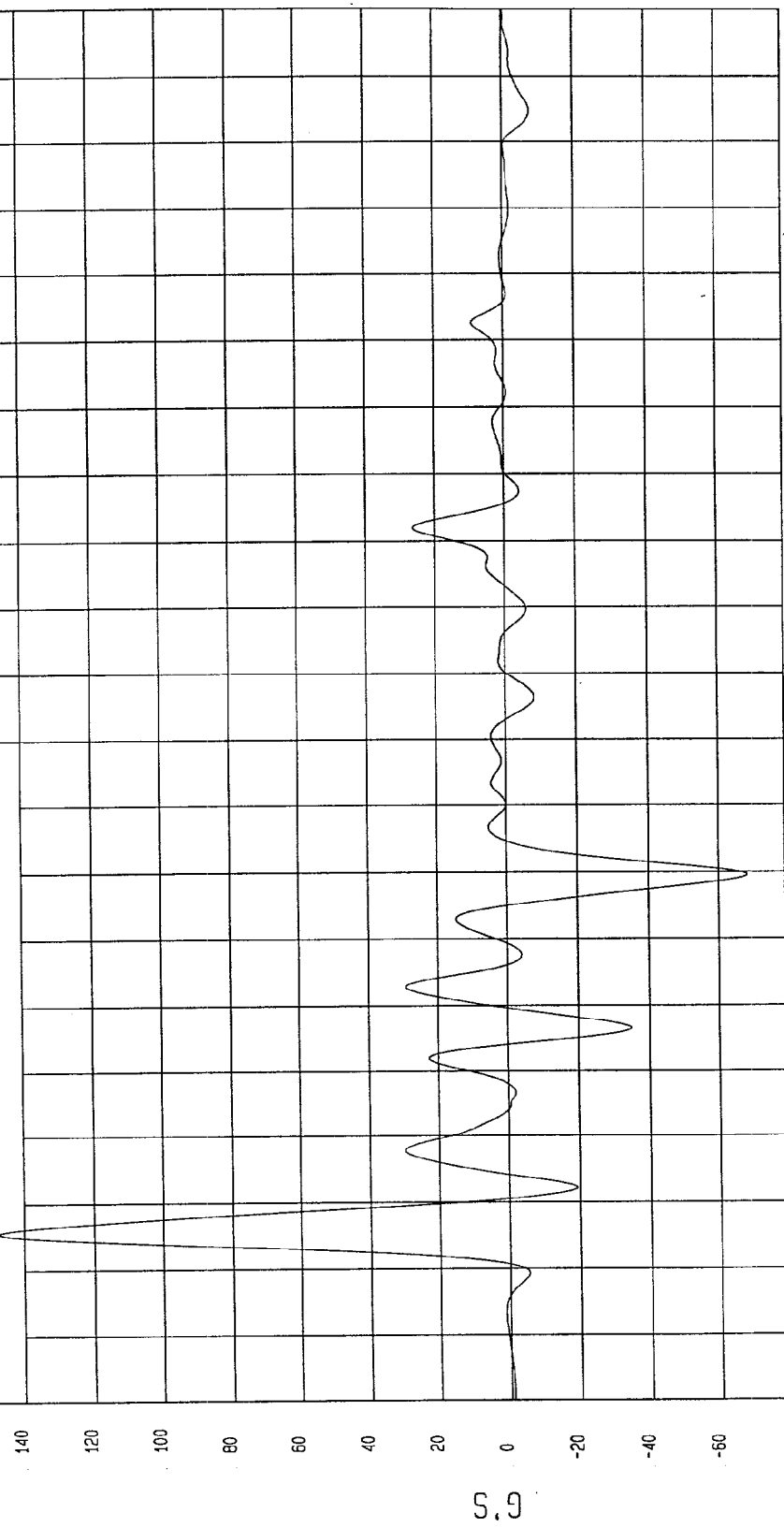
TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -68.09 G'S at 50 msec Maximum = 147.25 G'S at 6 msec

LEFT MID B-POST Y ACCELERATION

1 897120AF.A29 Filterclass (60)



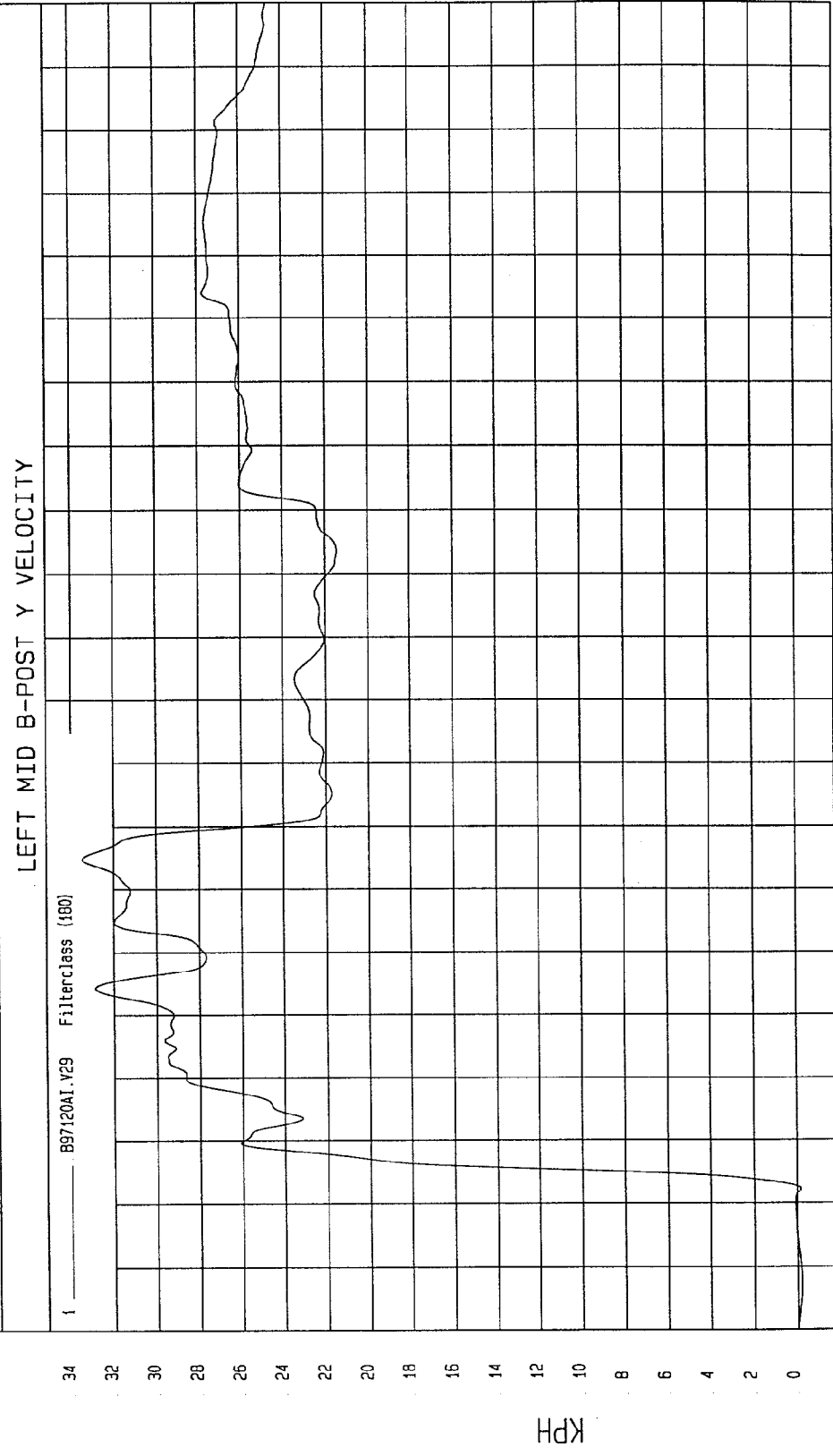
TIME (SECONDS)

MGA Research  
10-25-1997 14:31

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

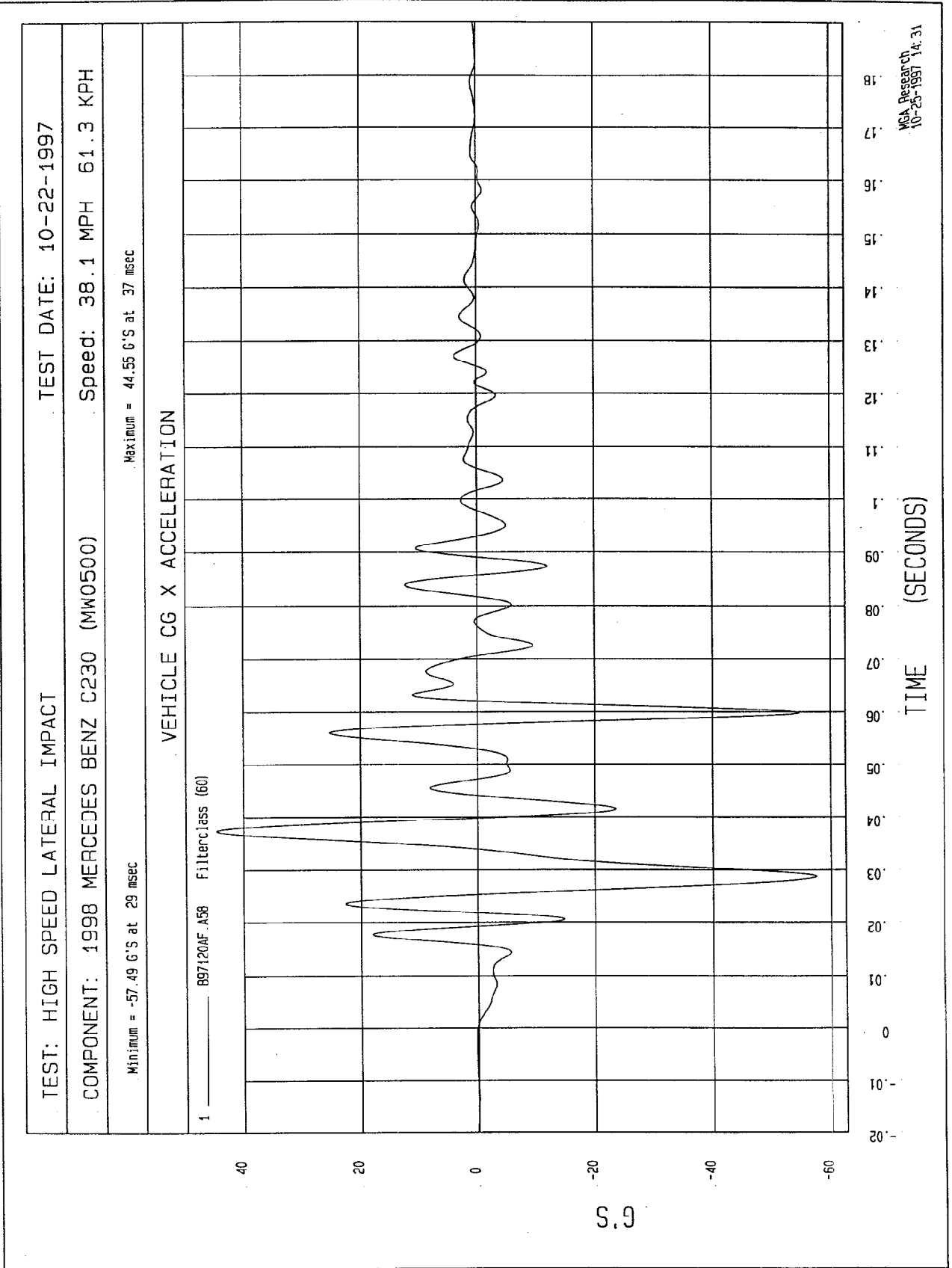
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH    61.3 KPH

Minimum = -18 KPH at -13 msec      Maximum = 33.47 KPH at 55 msec



TIME Seconds

WCA Research  
10-25-1997 14:27



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

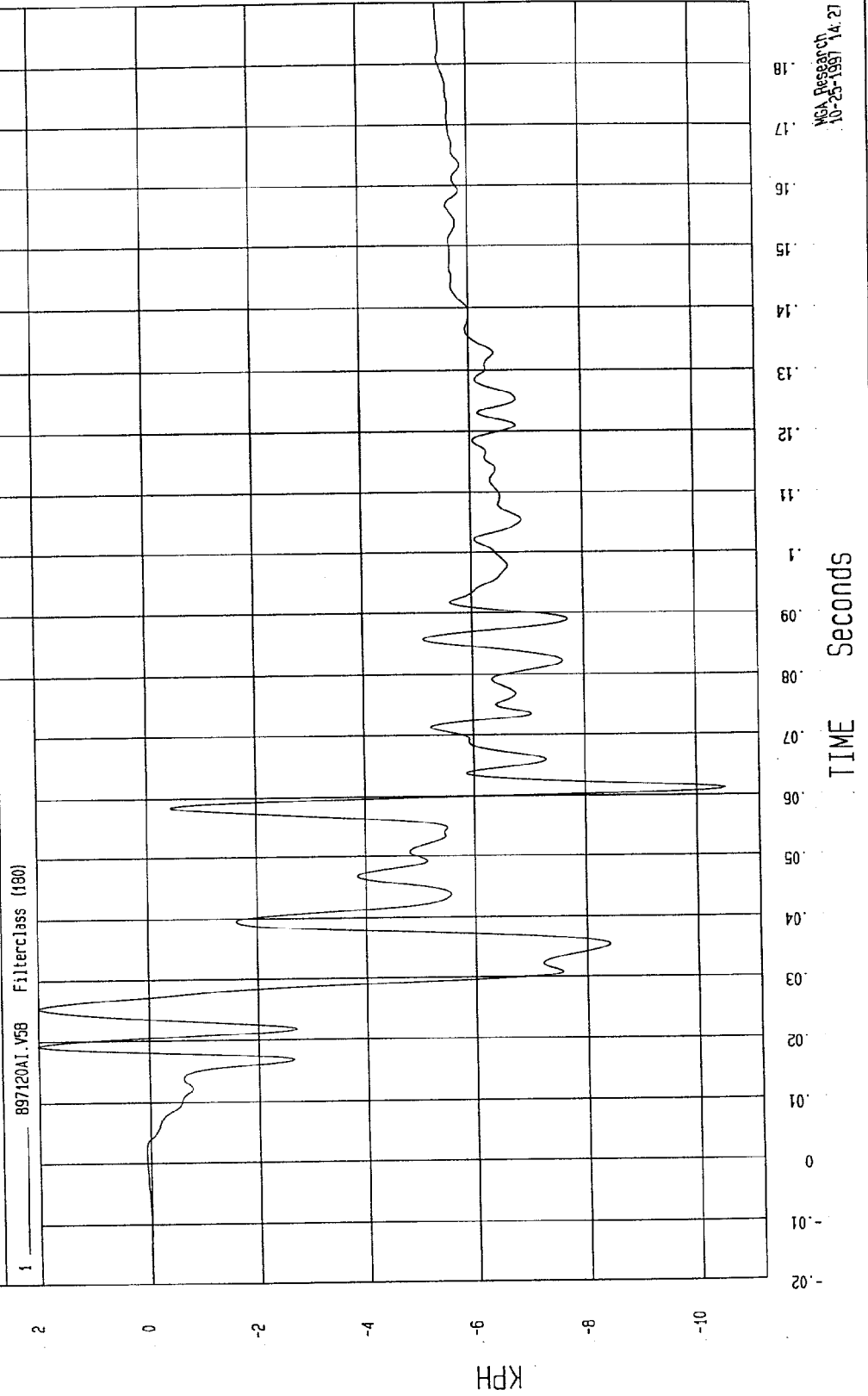
Speed: 38.1 MPH 61.3 KPH

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 2.01 KPH at 19 msec

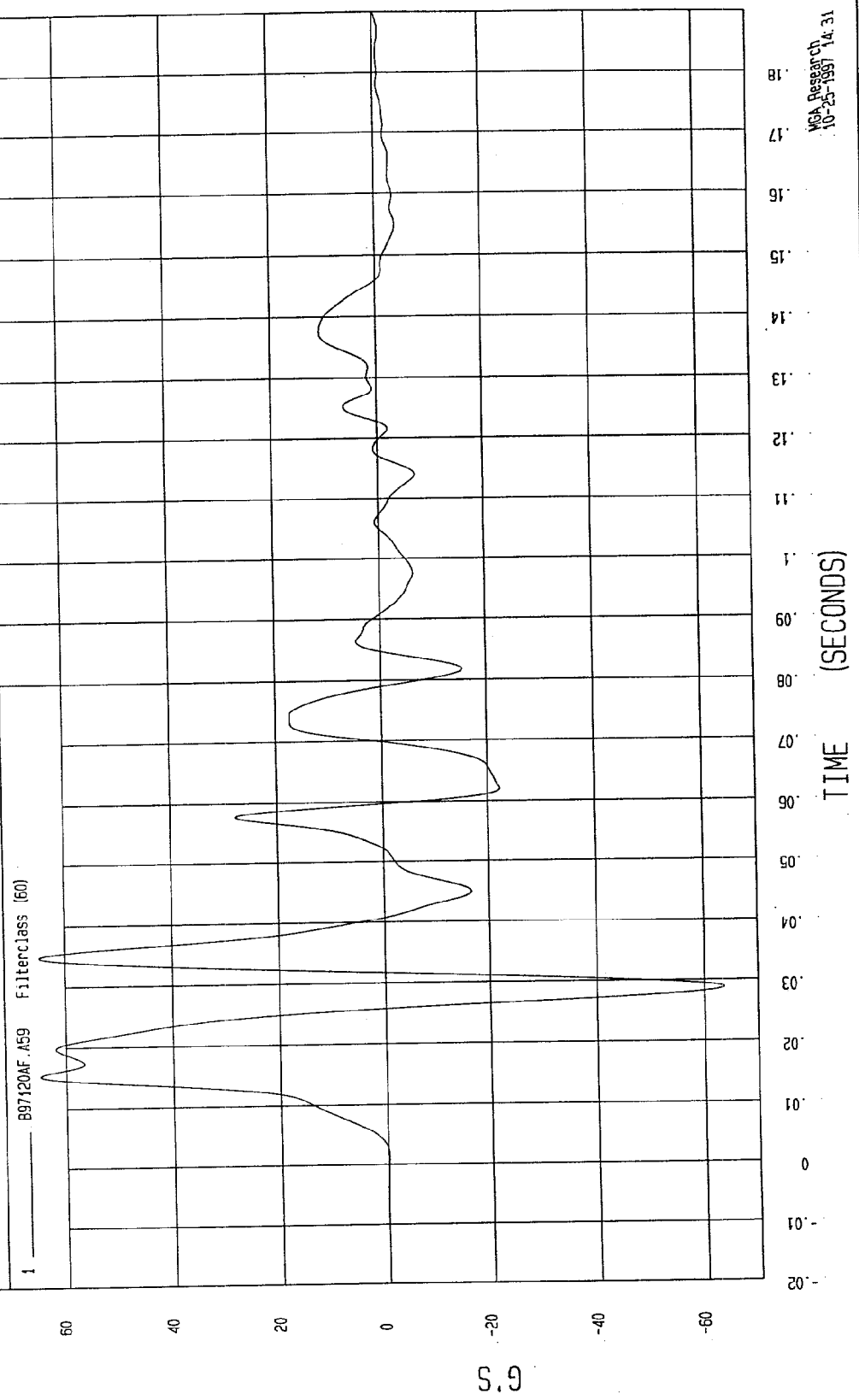
Minimum = -10.51 KPH at 61 msec

VEHICLE CG X VELOCITY



|                                             |                          |
|---------------------------------------------|--------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997    |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH |
| Minimum = -63.68 G's at 29 msec             |                          |
| Maximum = 65.02 G's at 35 msec              |                          |

VEHICLE CG Y ACCELERATION



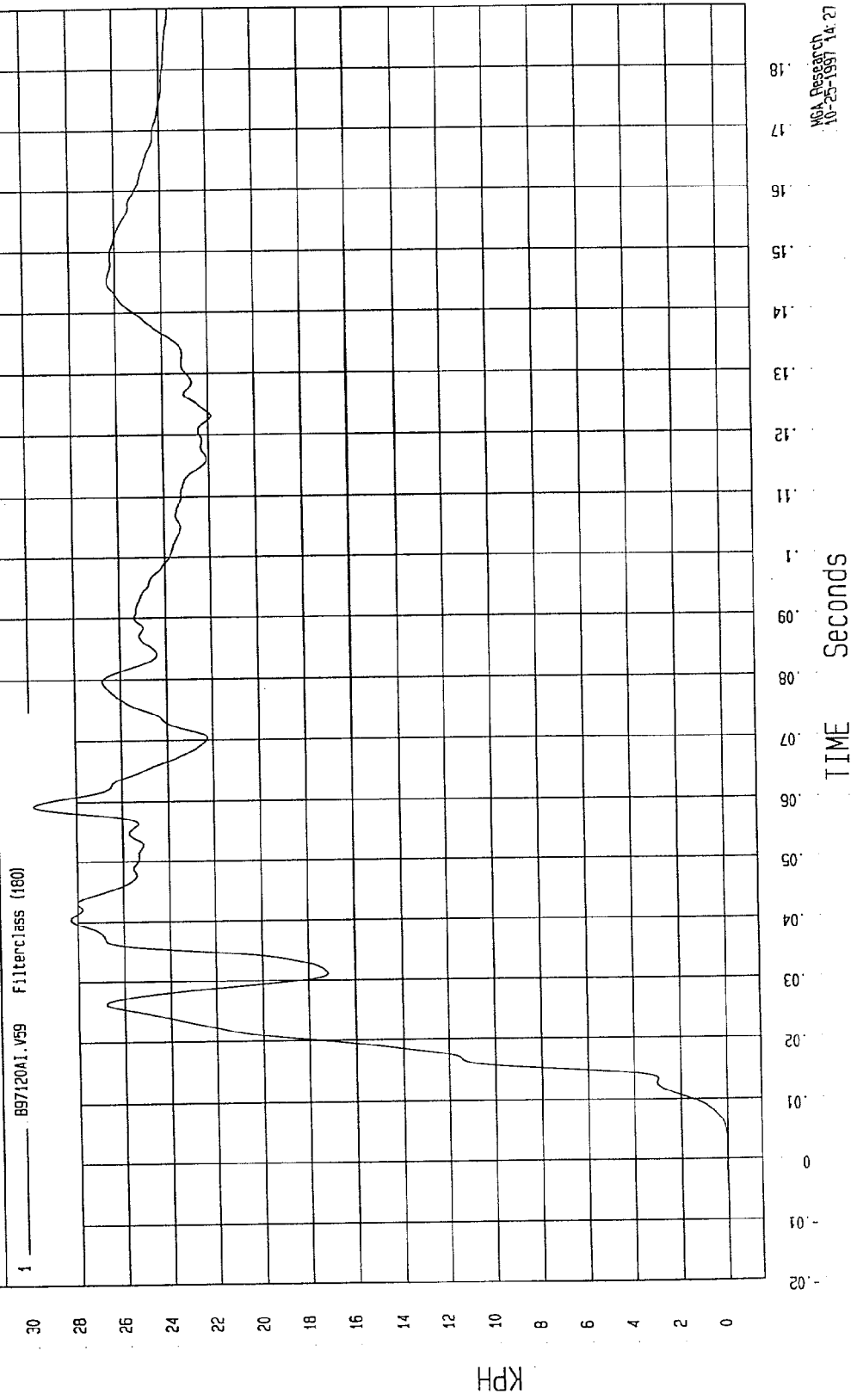
K&A Research  
10-25-1997 14.31

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH    61.3 KPH

Minimum = -1.42E-03 KPH at -19 msec      Maximum = 29.84 KPH at 59 msec

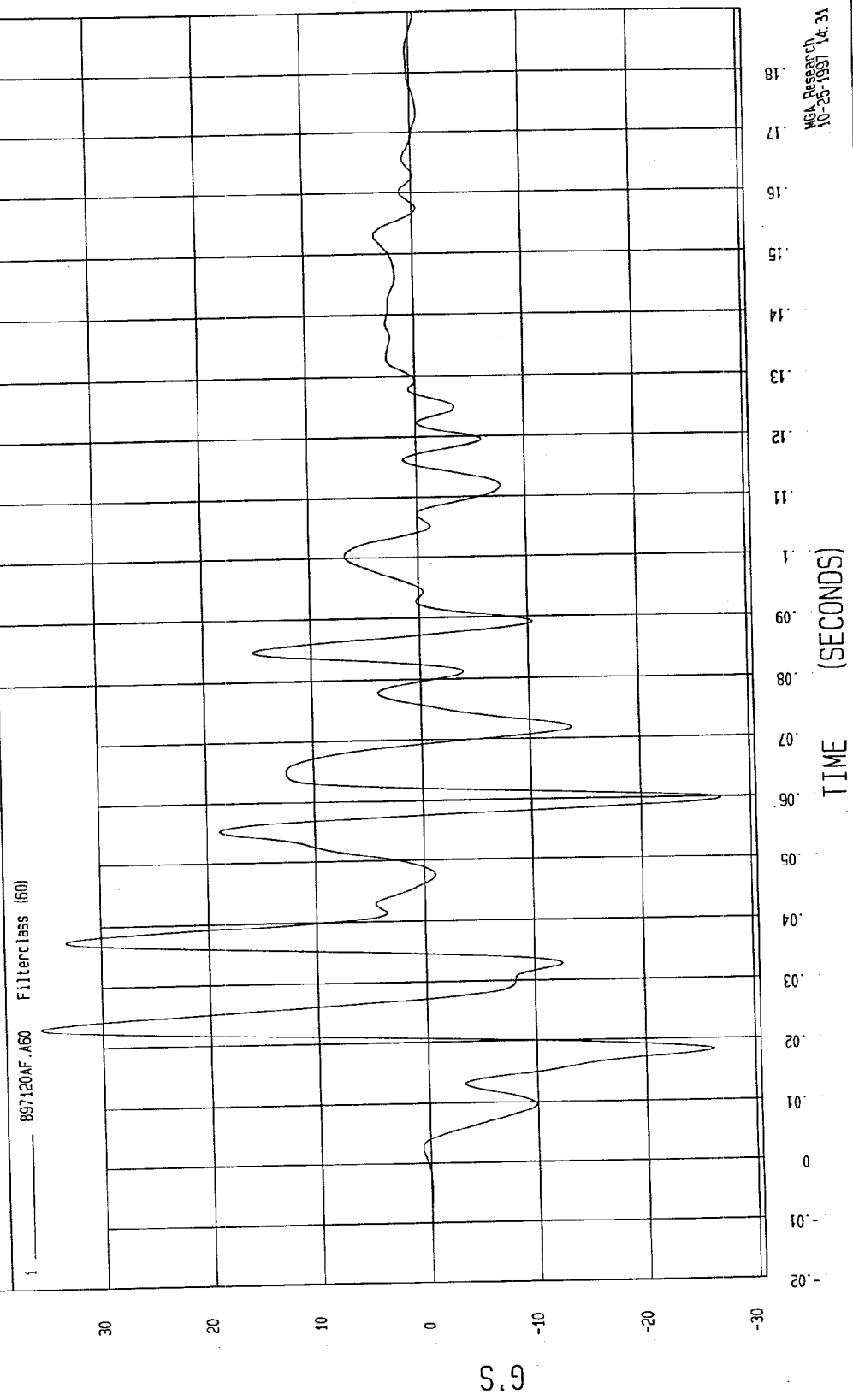
VEHICLE CG Y VELOCITY



MGA Research  
10-25-1997 14:27

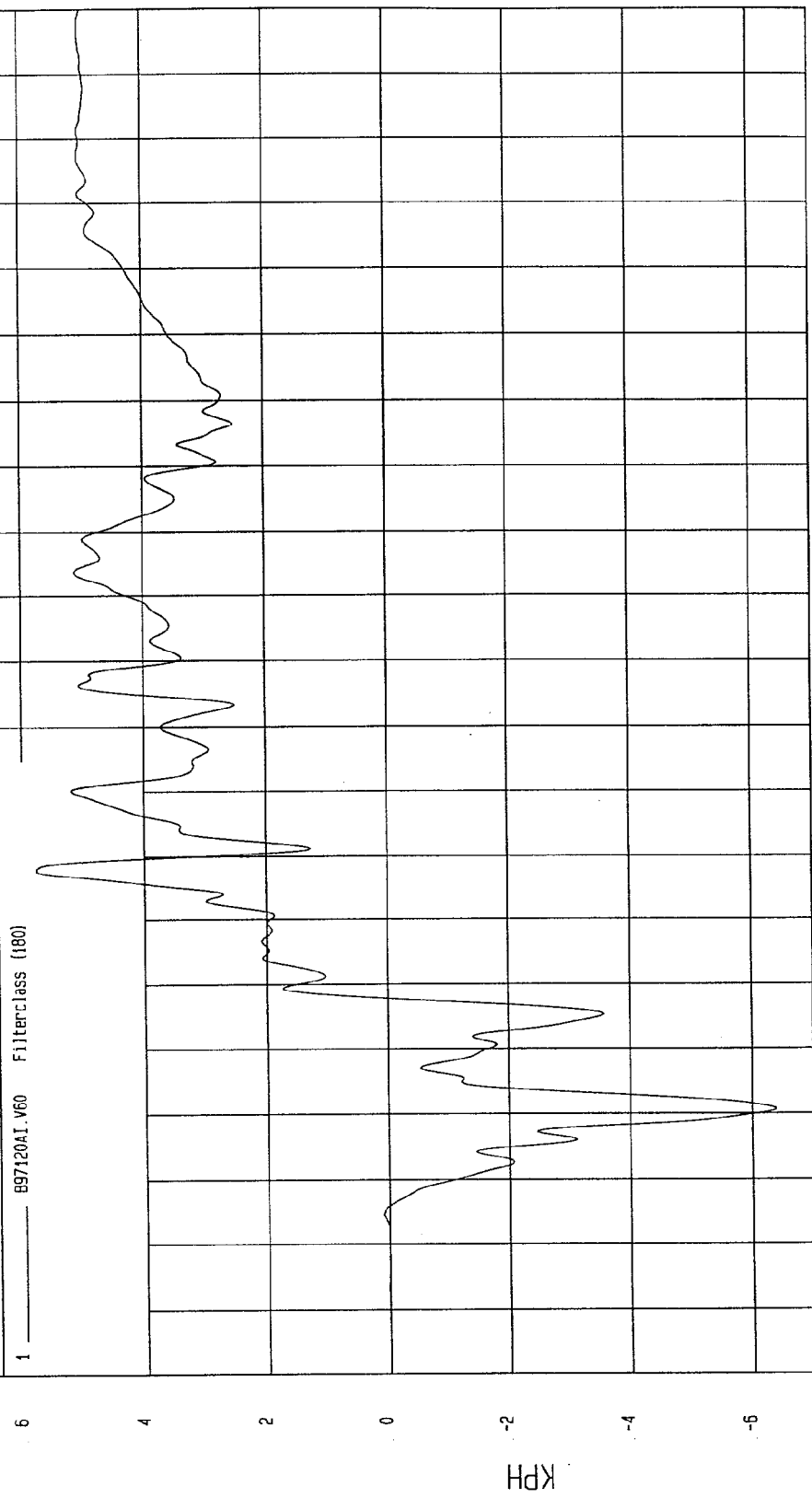
|                                             |                          |
|---------------------------------------------|--------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997    |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH |
| Minimum = -27.33 G'S at 60 msec             |                          |
| Maximum = 35.73 G'S at 23 msec              |                          |

VEHICLE CG Z ACCELERATION



|                                             |                          |
|---------------------------------------------|--------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997    |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH |
| Minimum = -6.39 KPH at 21 msec              |                          |
| Maximum = 5.77 KPH at 58 msec               |                          |

VEHICLE CG Z VELOCITY



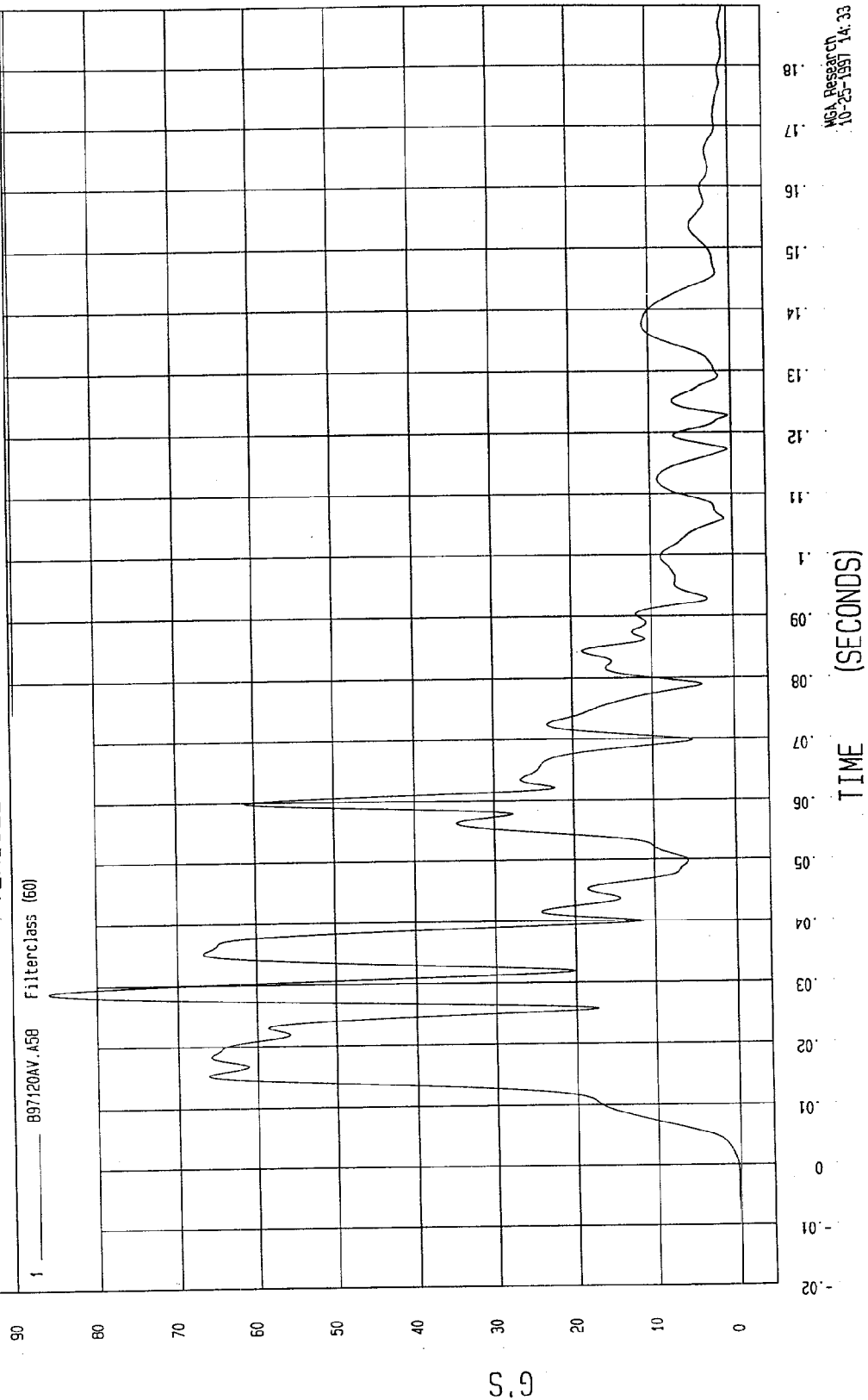
1 ——— B97120A1.V60 Filterclass (180)

TIME Seconds

MEV Research  
10-25-1997 14:27

|                                             |                          |
|---------------------------------------------|--------------------------|
| TEST: HIGH SPEED LATERAL IMPACT             | TEST DATE: 10-22-1997    |
| COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) | Speed: 38.1 MPH 61.3 KPH |
| Minimum = 2.65E-02 G'S at -16 msec          |                          |
| Maximum = 86.11 G'S at 29 msec              |                          |

### VEHICLE CG RESULTANT ACCELERATION



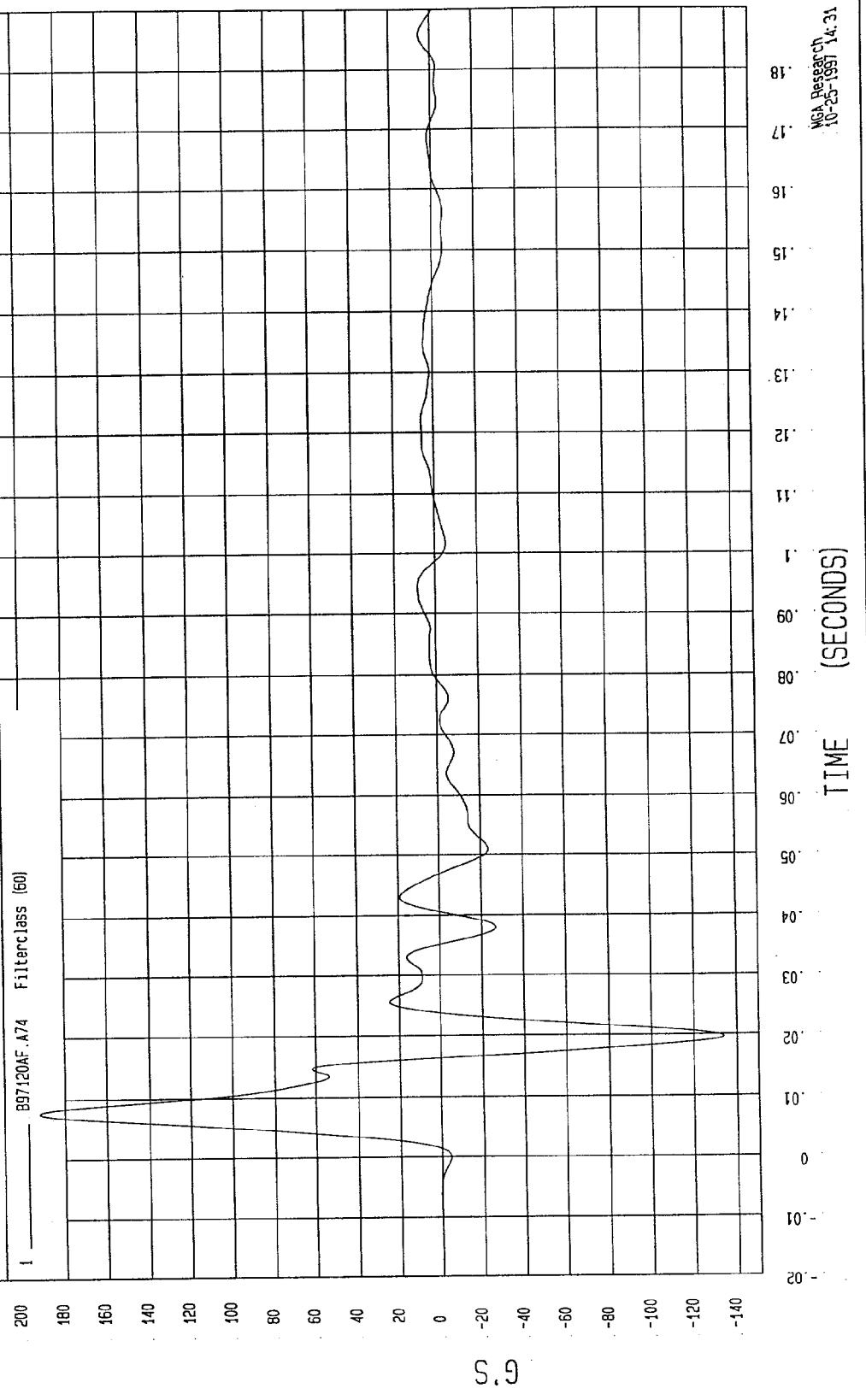
MGA Research  
10-25-1997 14:33

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -134.00 G'S at 20 msec Maximum = 192.11 G'S at 8 msec

LEFT FRONT DOOR ON CENTERLINE Y ACCELERATION



NSA Research  
10-25-1997 14:31

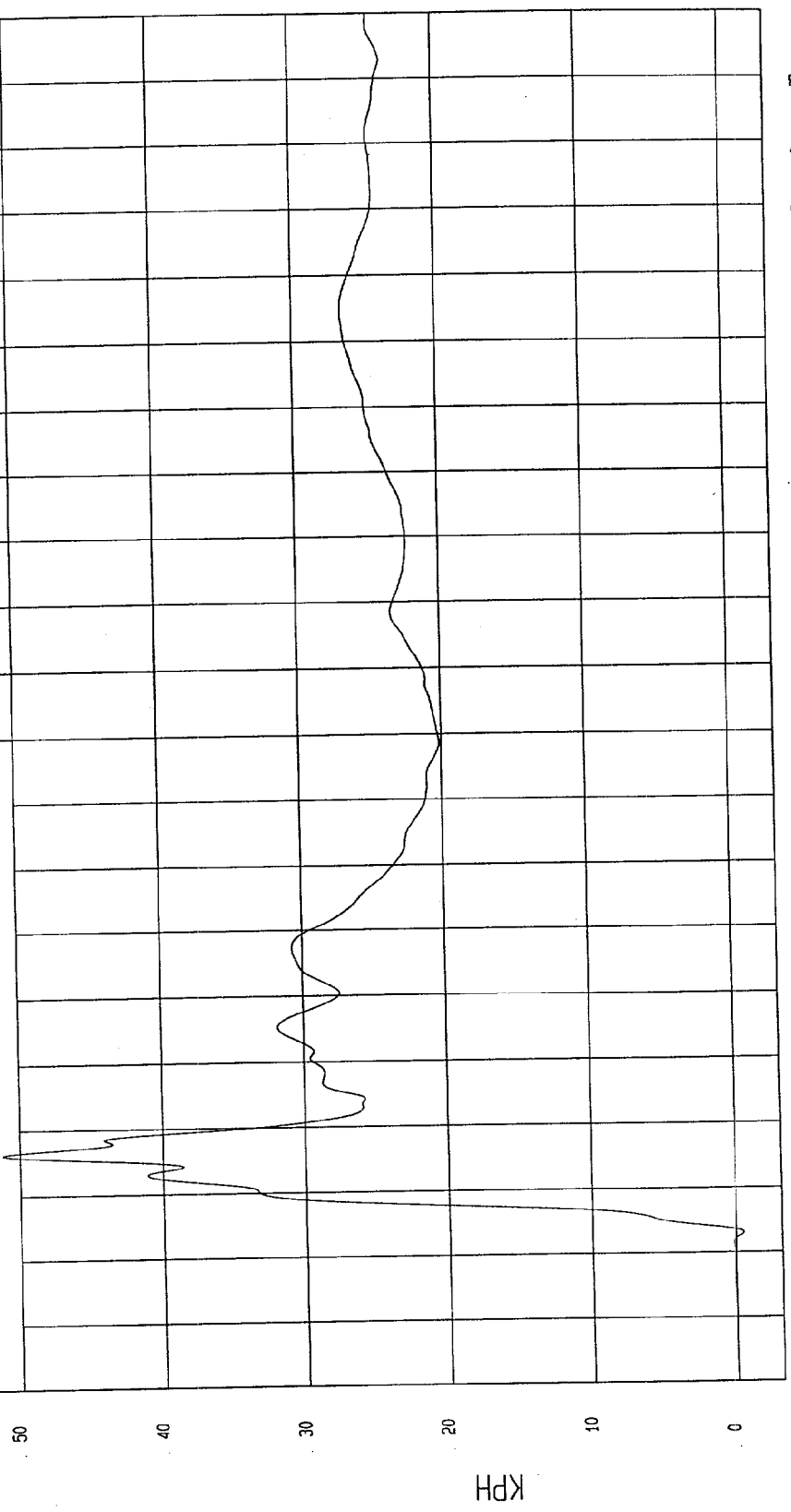
TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH    61.3 KPH

Minimum = -55 KPH at 3 msec      Maximum = 51.20 KPH at 16 msec

LEFT FRONT DOOR ON CENTERLINE Y VELOCITY

1 \_\_\_\_\_ B97120A1.V74 Filterclass (180)



TIME Seconds

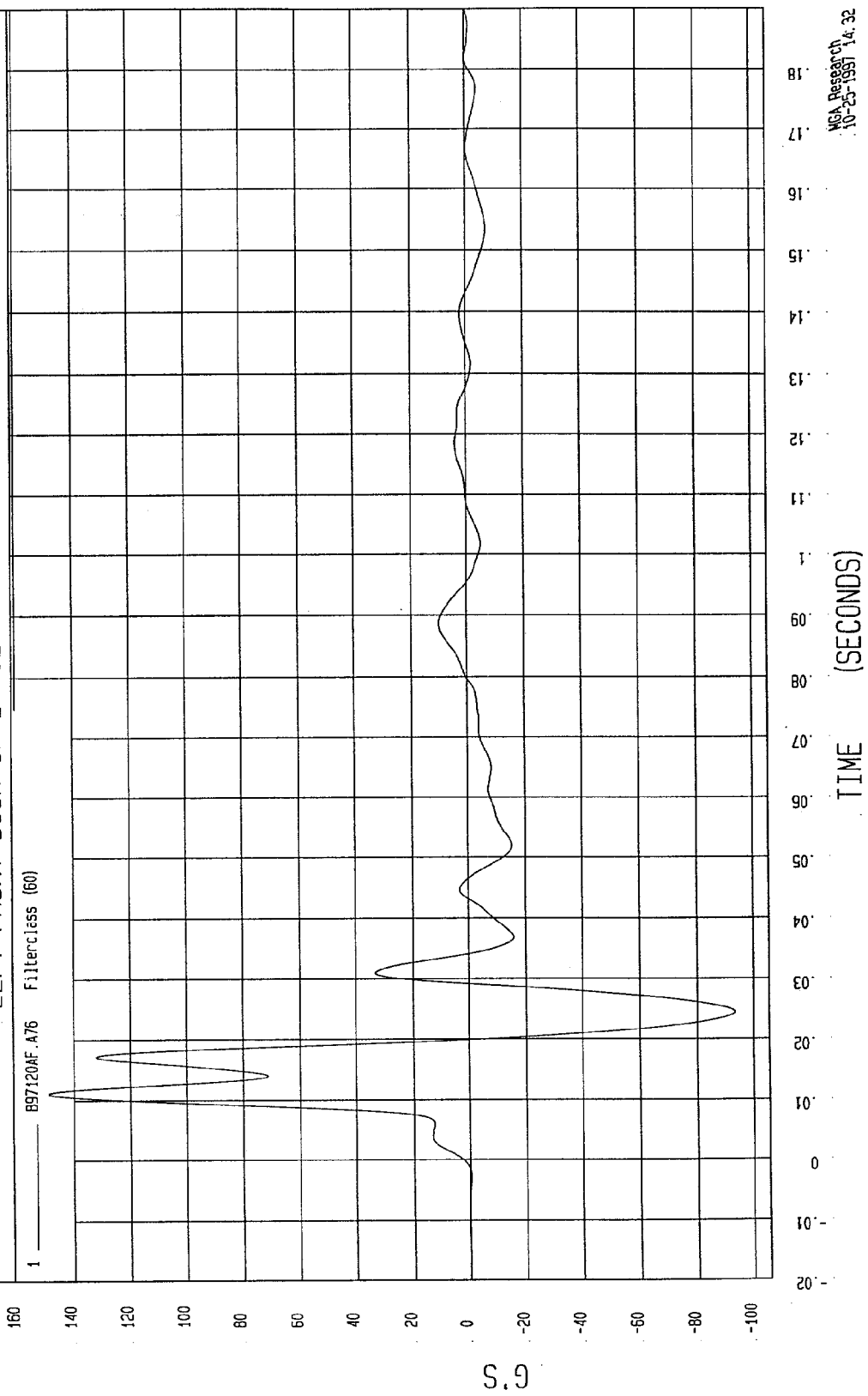
NEA Research  
10-25-1997 14:27

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH    61.3 KPH

Minimum = -93.45 G'S at 24 msec      Maximum = 149.03 G'S at 11 msec

LEFT FRONT DOOR UPPER CENTERLINE Y ACCELERATION



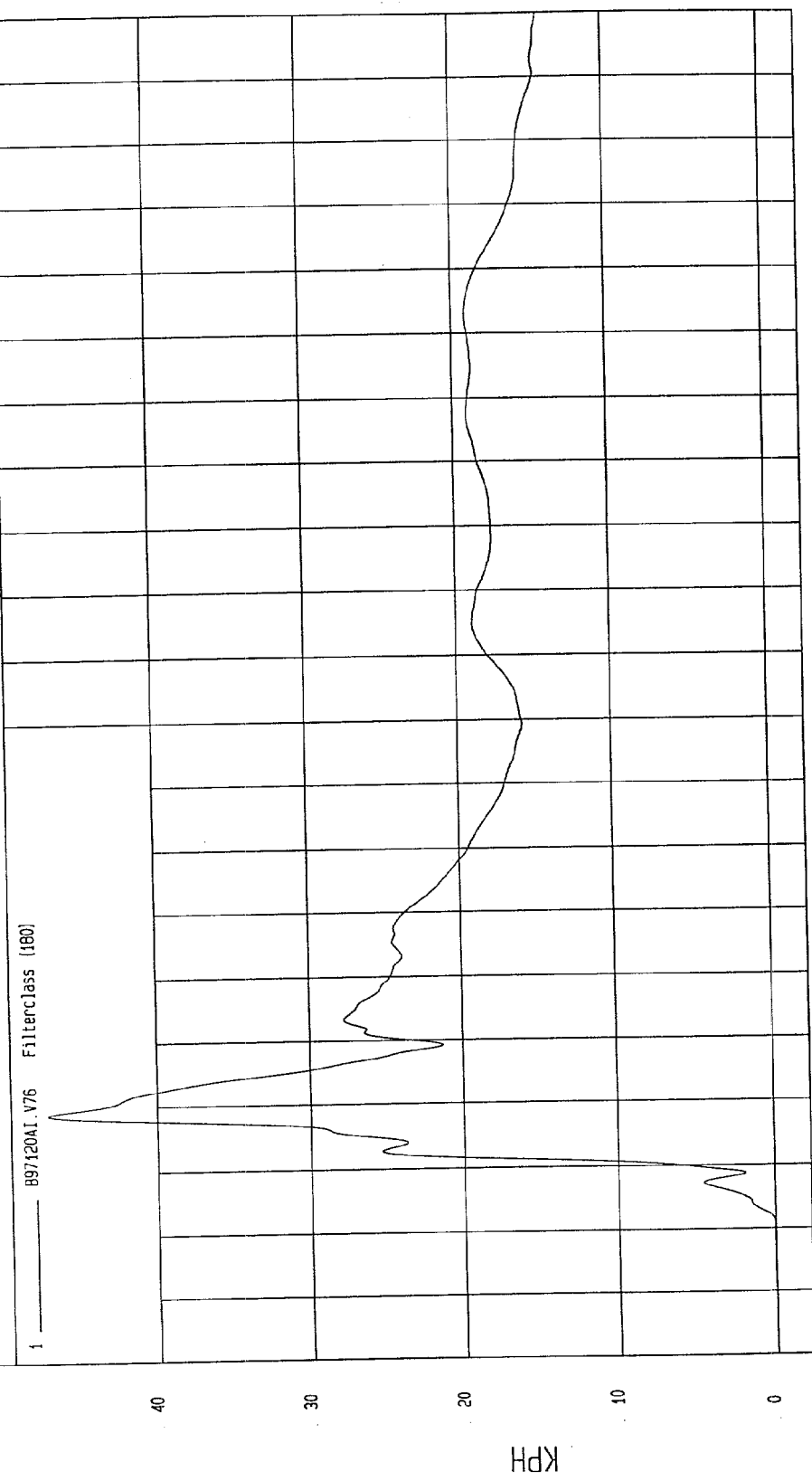
MEA Research  
10-25-1997 14:32

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -5.23E-03 KPH at -14 msec      Maximum = 47.08 KPH at 19 msec

LEFT FRONT DOOR UPPER CENTERLINE Y VELOCITY



TIME Seconds

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

NGI Research  
10-25-1997 14:27

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

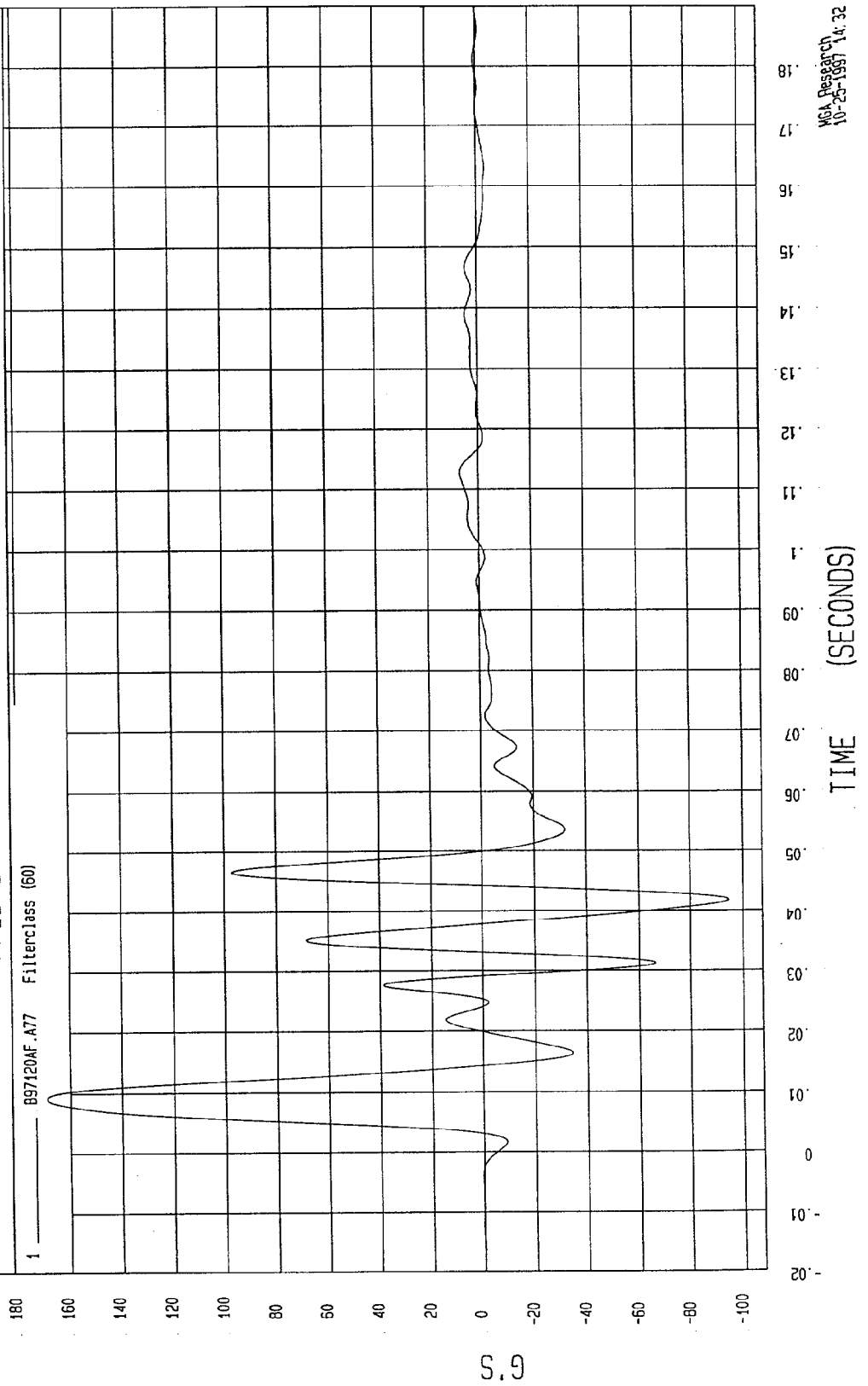
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Speed: 38.1 MPH 61.3 KPH

Minimum = -94.56 G's at 42 msec

Maximum = 168.99 G's at 9 msec

MIDREAR OF LEFT REAR DOOR Y ACCELERATION



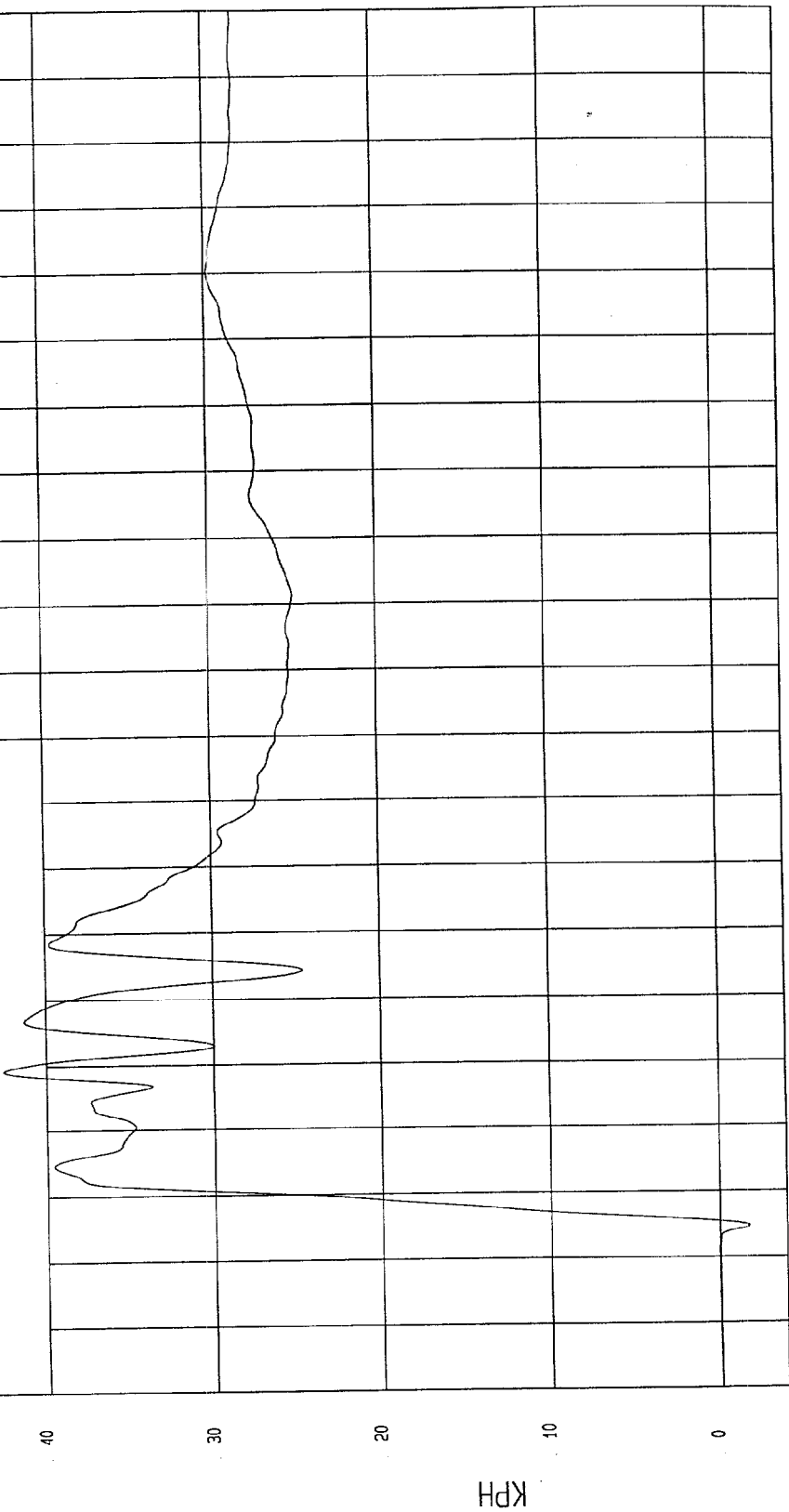
TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -1.74 KPH at 5 msec      Maximum = 42.57 KPH at 29 msec

MIDREAR OF LEFT REAR DOOR Y VELOCITY

1 ——— B97120A1.V77 Filterclass (180)



TIME Seconds

NCA Research  
10-25-1997 14:28

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

Speed: 38.1 MPH 61.3 KPH

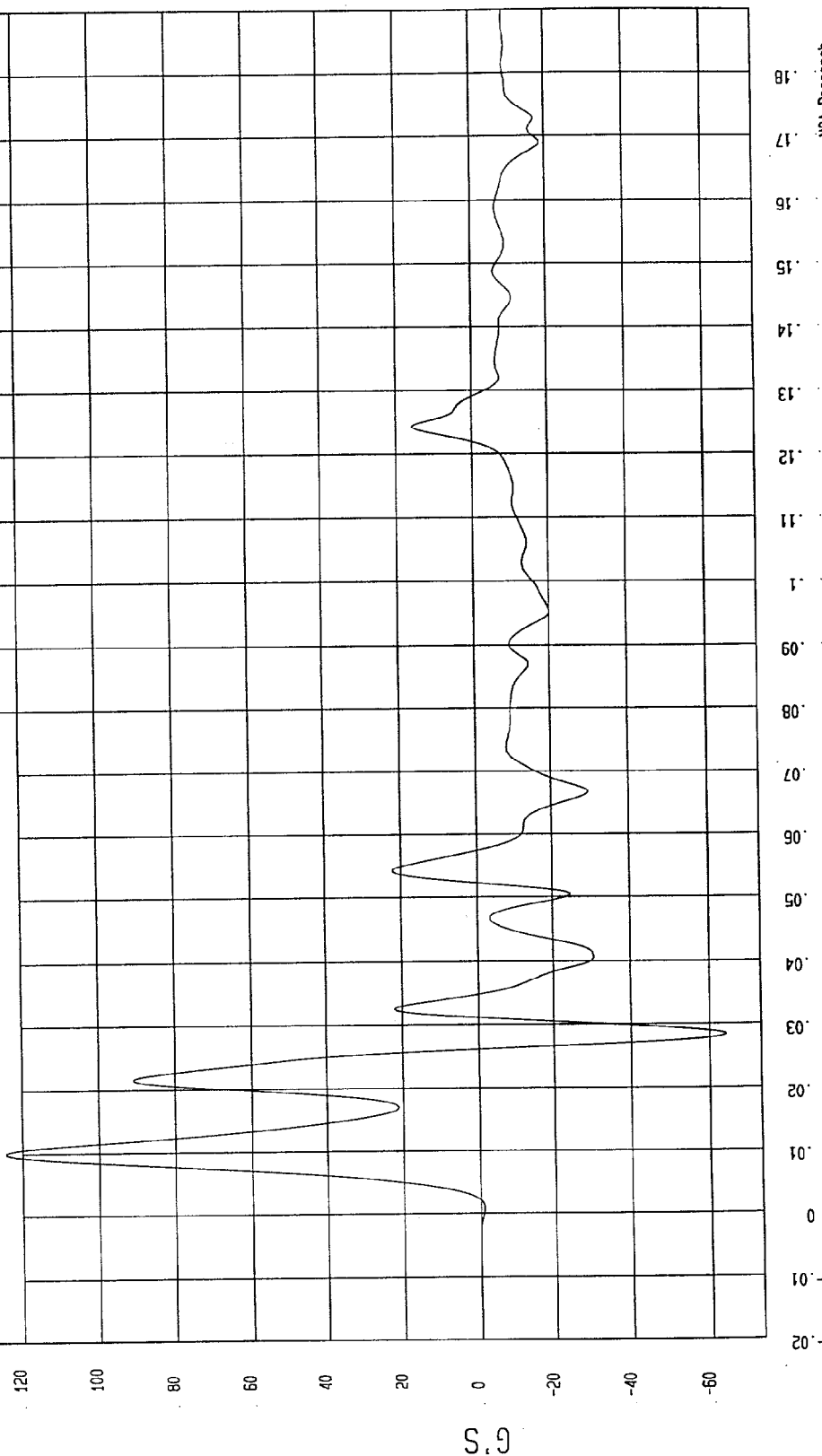
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 124.20 G'S at 10 msec

Minimum = -64.25 G'S at 28 msec

LEFT REAR DOOR UPPER CENTERLINE Y ACCELERATION

1 ——— B97120AF.A78 Filterclass (60)



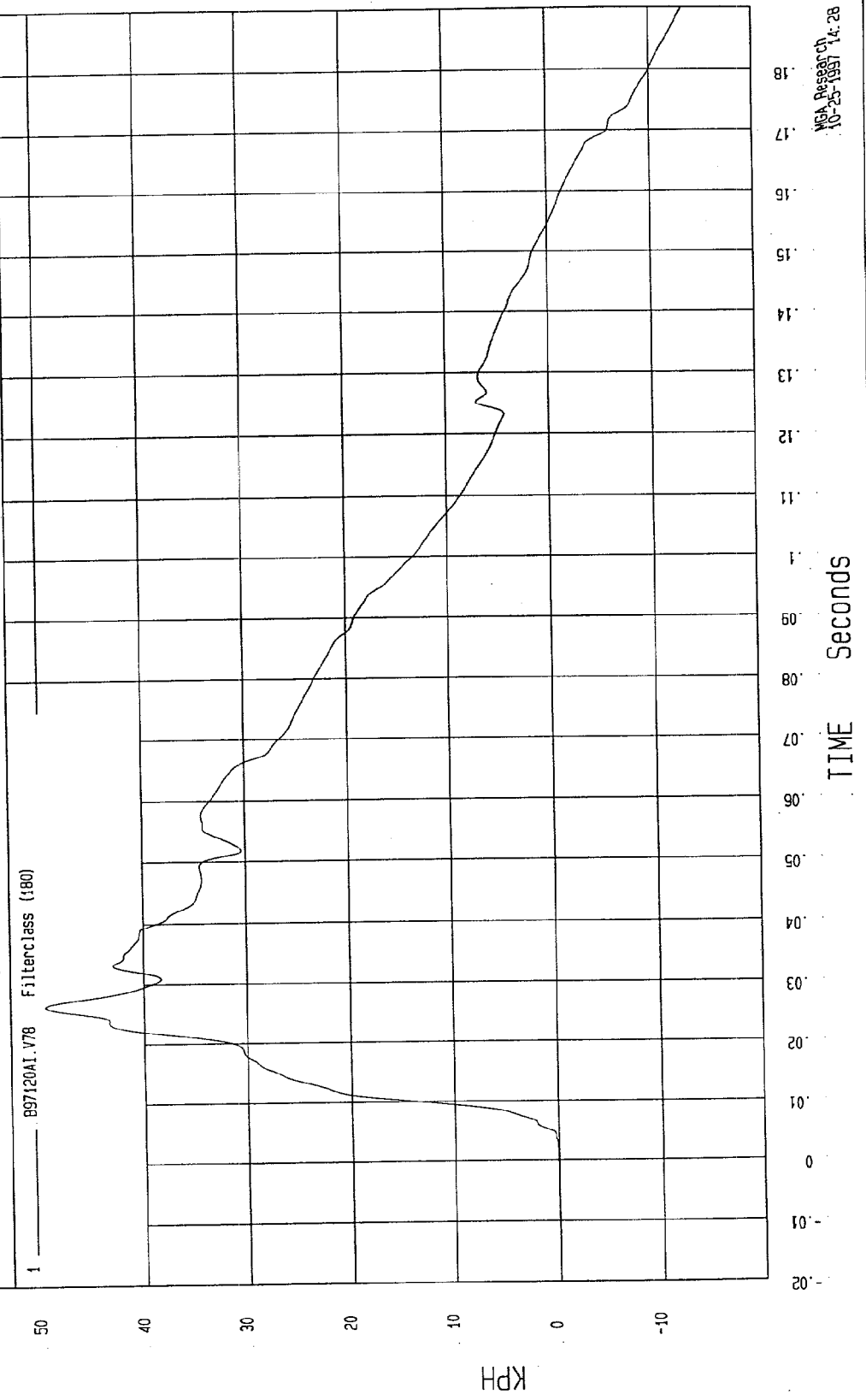
MOA Research  
10-25-1997 14:32

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -16.49 KPH at 200 msec      Maximum = 49.56 KPH at 26 msec

LEFT REAR DOOR UPPER CENTERLINE Y VELOCITY



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

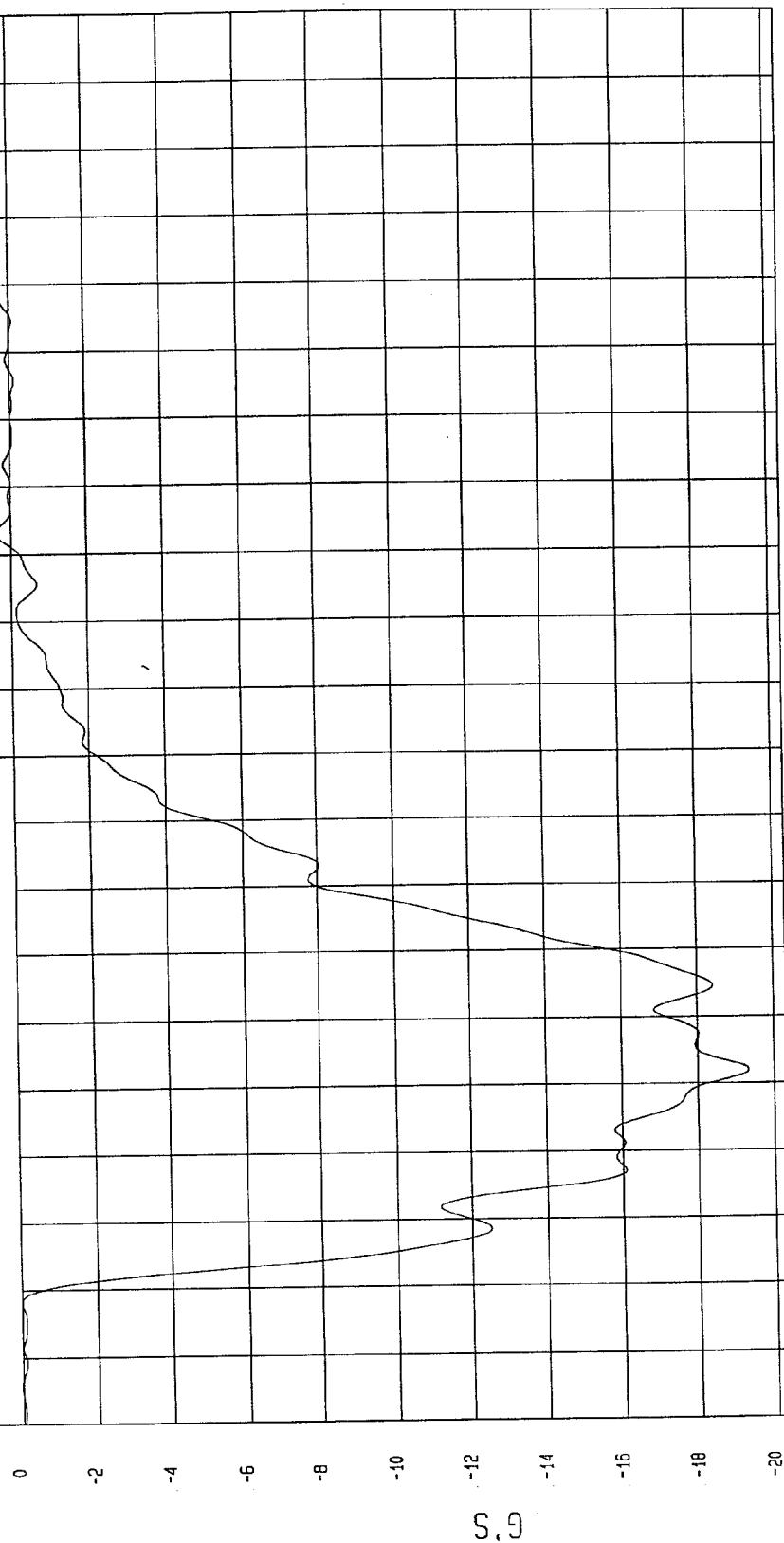
Speed: 38.1 MPH 61.3 KPH

Minimum = -19.32 G's at .32 msec

Maximum = .80 G's at 172 msec

MOVING BARRIER CG X ACCELERATION

1 B97120AF.A02 Filterclass (60)



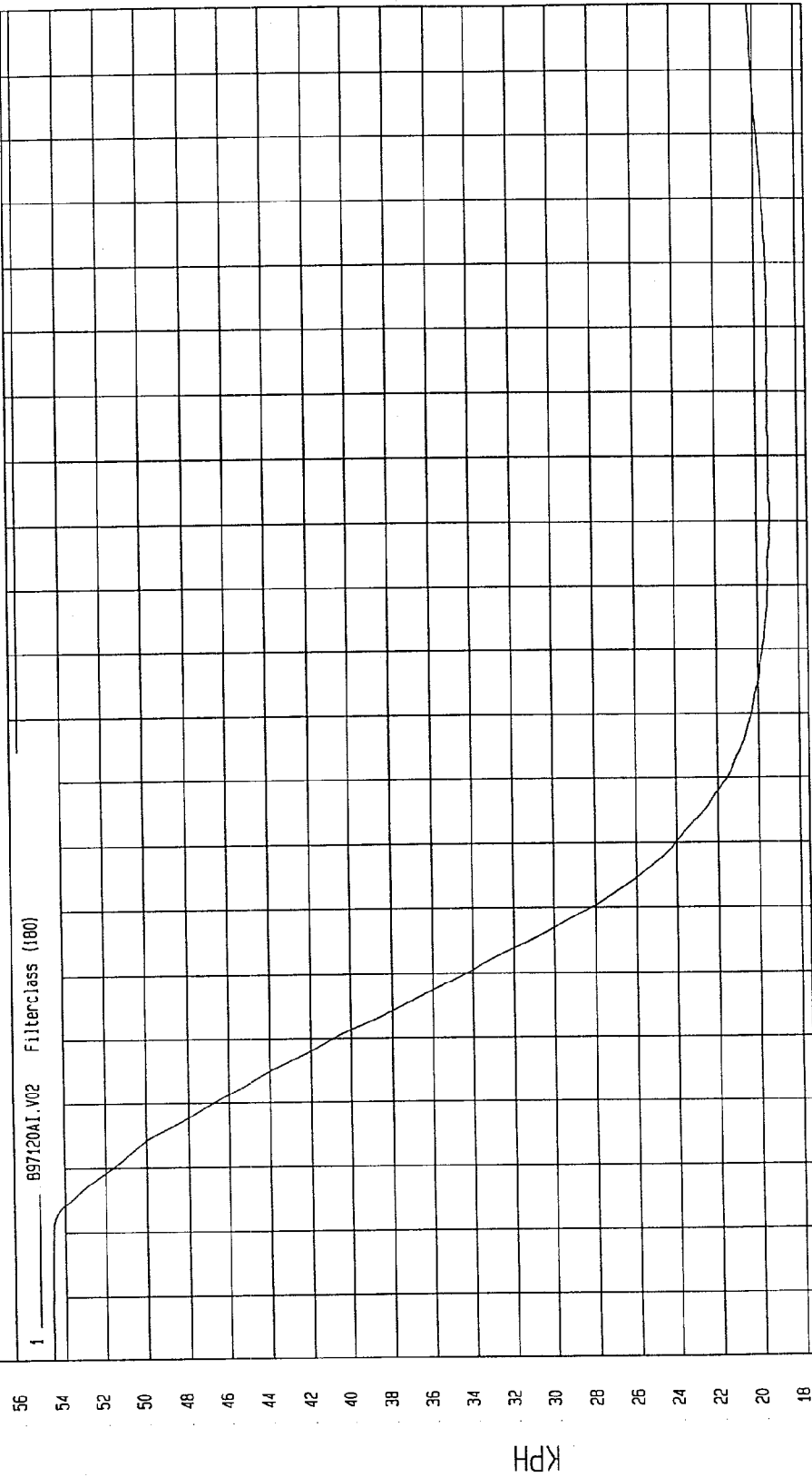
HGA Research  
10-25-1997 14:32

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = 19.34 KPH at 111 msec      Maximum = 54.62 KPH at -20 msec

MOVING BARRIER CG X VELOCITY



TIME Seconds

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

MSA Research  
10-25-1997 14:28

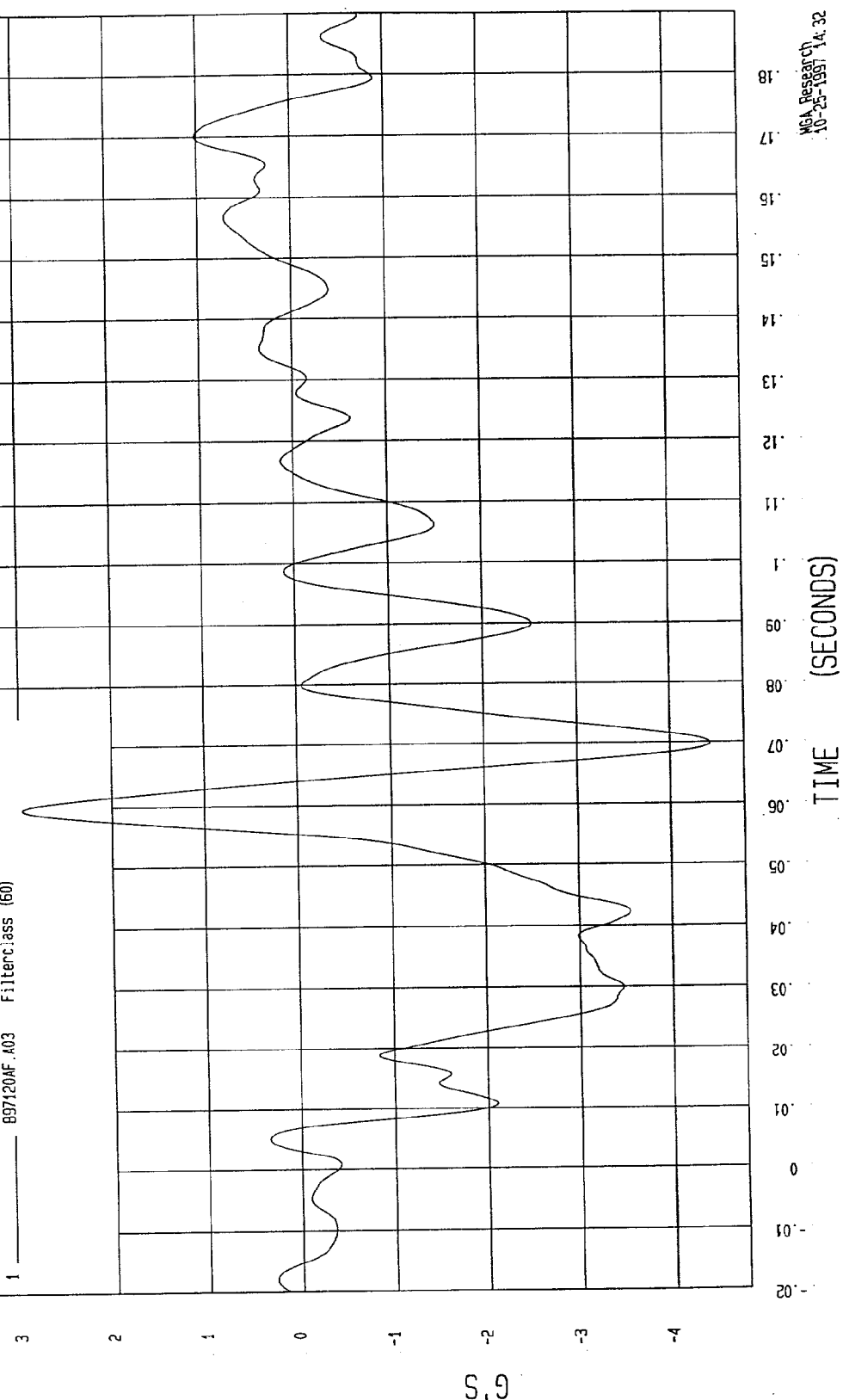
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -4.41 G'S at 70 msec  
Maximum = 2.95 G'S at 60 msec

MOVING BARRIER CG Y ACCELERATION

1 897120AF.A03 Filter: class (60)



MECA Research  
10-25-1997 14: 32

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

Speed: 38.1 MPH 61.3 KPH

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = -27.78 KPH at -15 msec

Minimum = -33.96 KPH at 132 msec

MOVING BARRIER CG Y VELOCITY

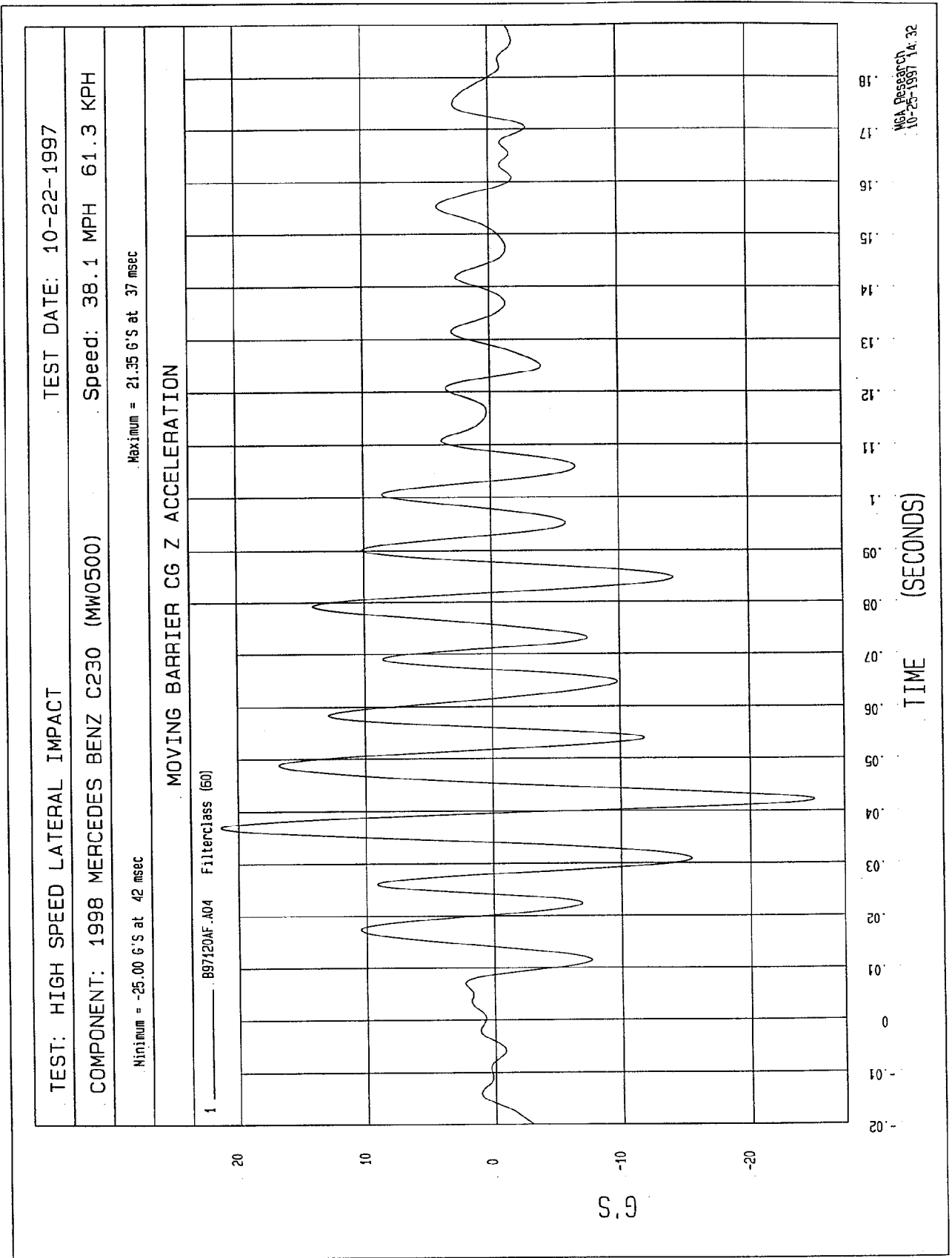
1 B97120A1.V03 Filterclass (180)



MGA Research  
10-25-1997 14:28

TIME Seconds

KPH



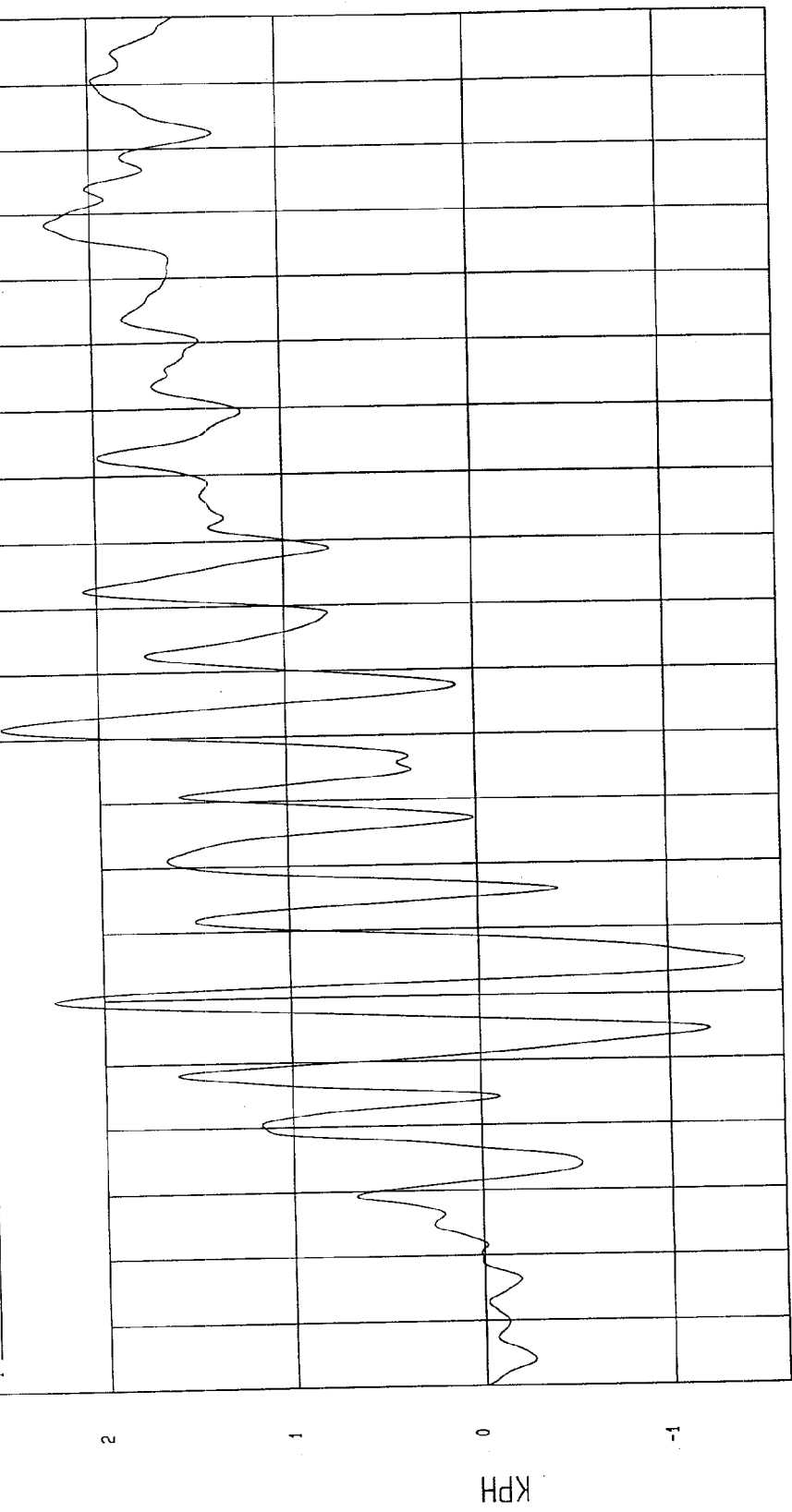
TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -1.40 KPH at 45 msec      Maximum = 2.51 KPH at 82 msec

MOVING BARRIER CG Z VELOCITY

1 \_\_\_\_\_ B97120A1.V04 Filterclass (180)



TIME Seconds

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

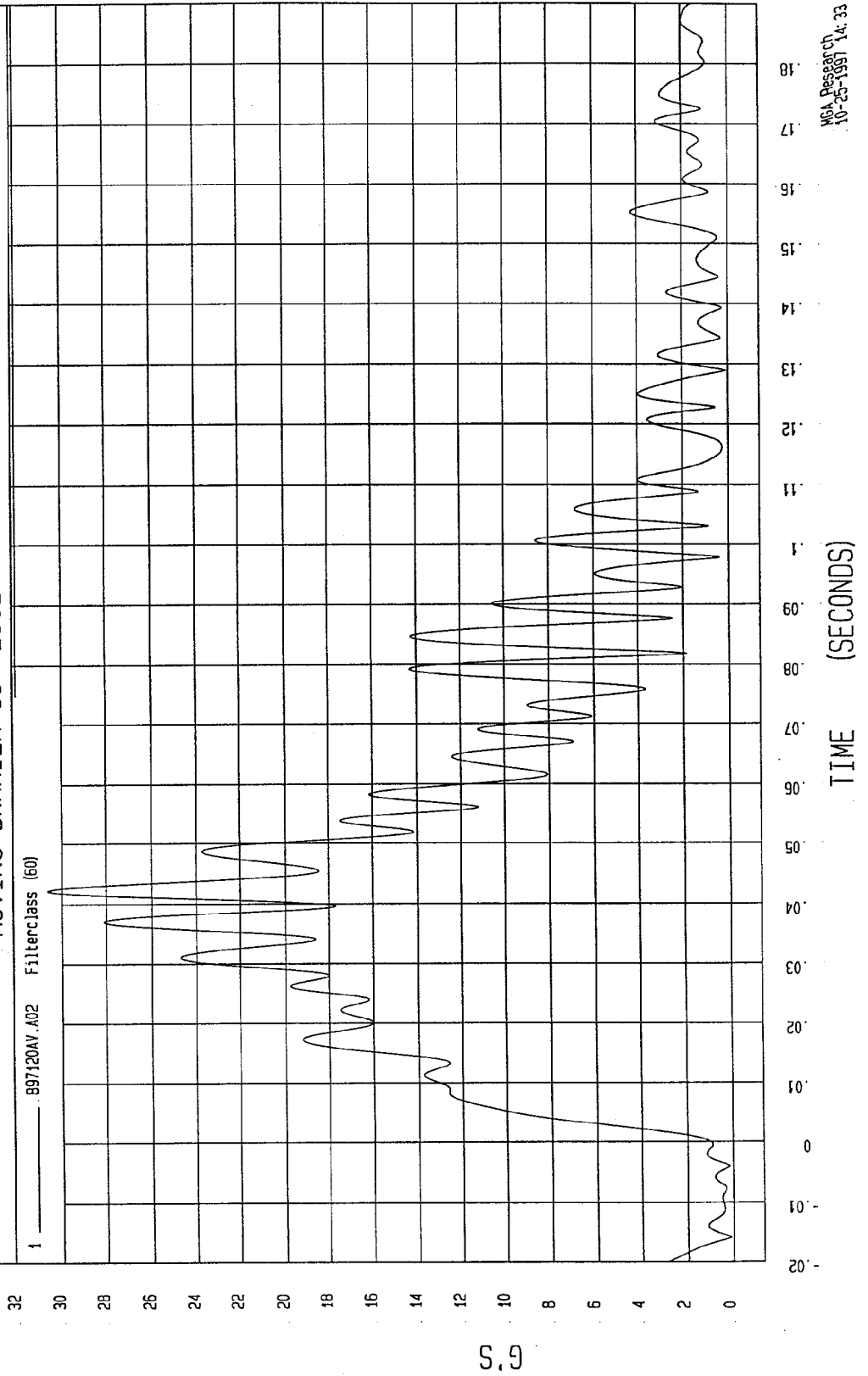
NCA Research  
10-25-1997 14:28

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = .11 G'S at 129 msec      Maximum = 30.62 G'S at 42 msec

MOVING BARRIER CG RESULTANT ACCELERATION

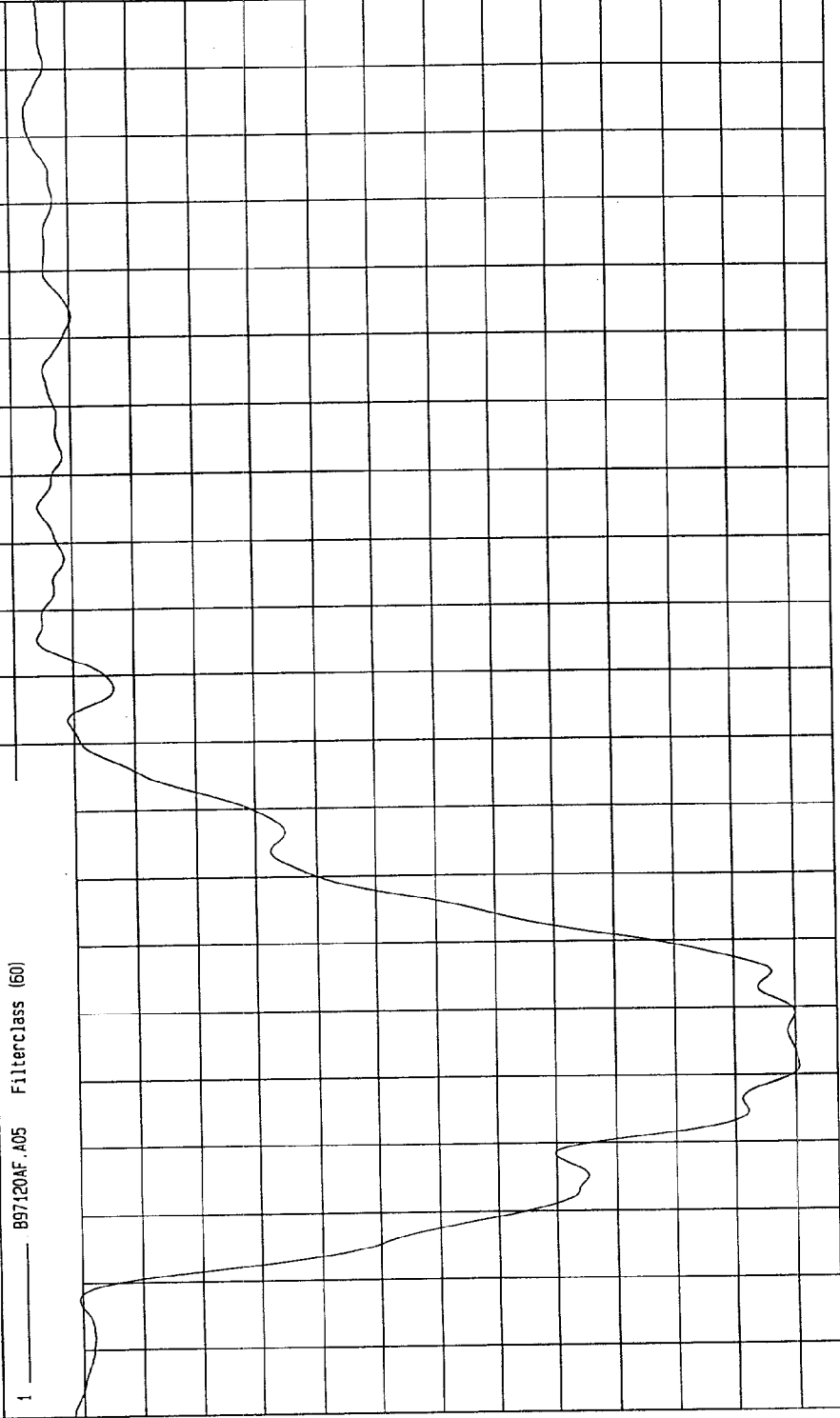


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -24.13 G'S at 31 msec Maximum = 1.46 G'S at 174 msec

MOVING BARRIER REAR AXLE X ACCELERATION



1 B97120AF A05 Filterclass (60)

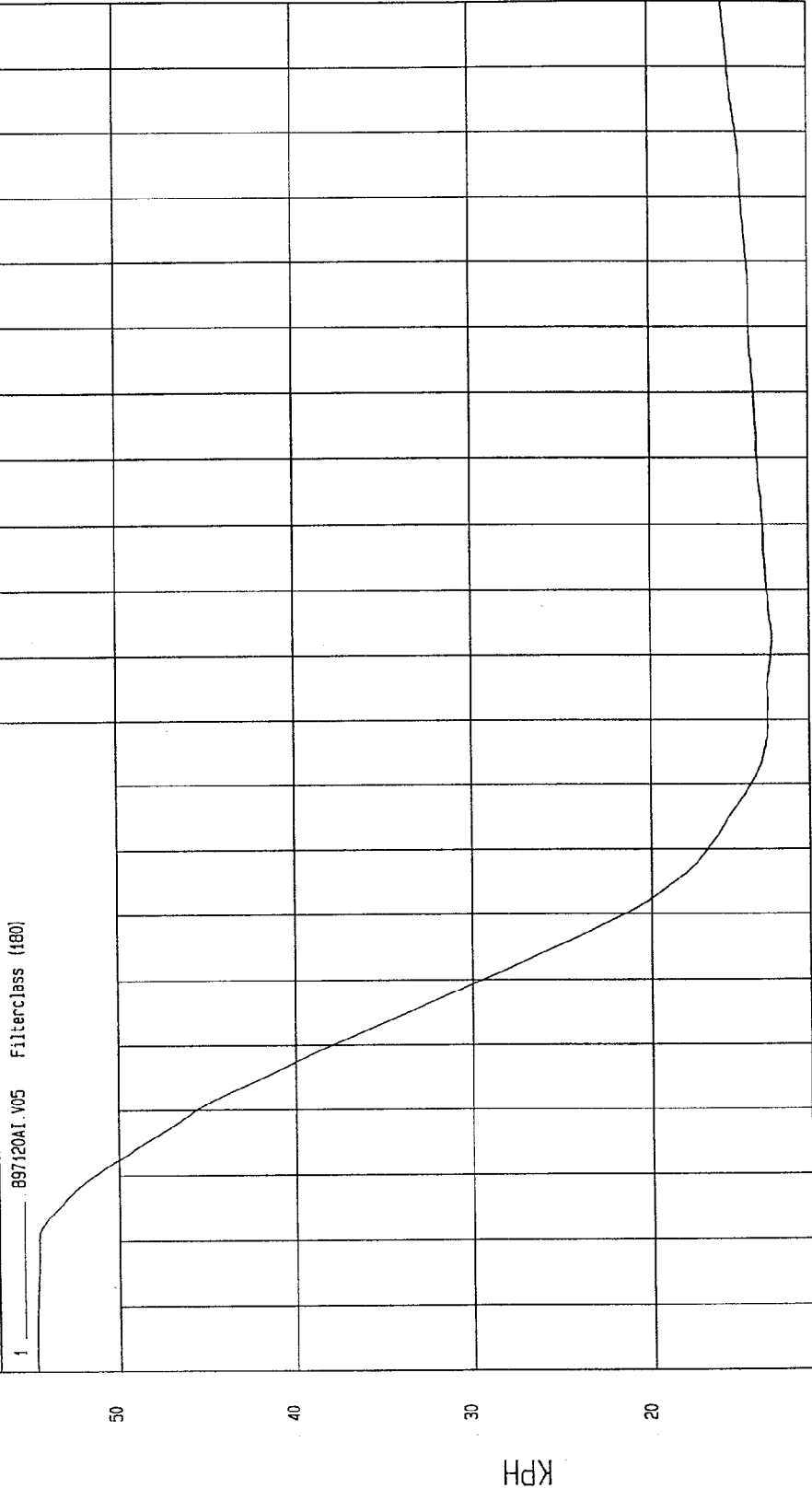
WGA Research  
10-25-1997 14:32

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = 13.25 KPH at 92 msec      Maximum = 54.65 KPH at -17 msec

MOVING BARRIER REAR AXLE X VELOCITY

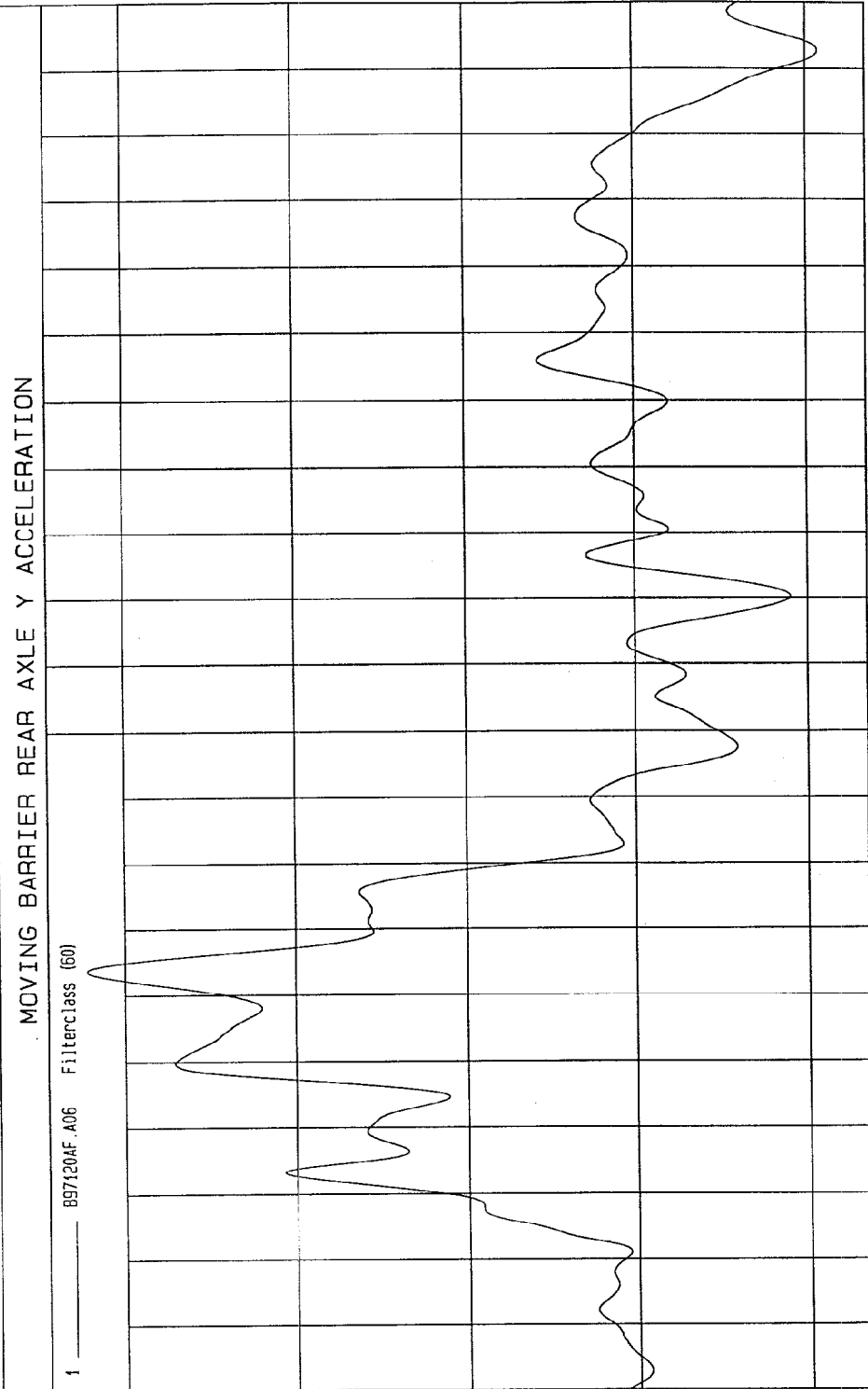


MCA Research  
10-23-1997 14:28

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

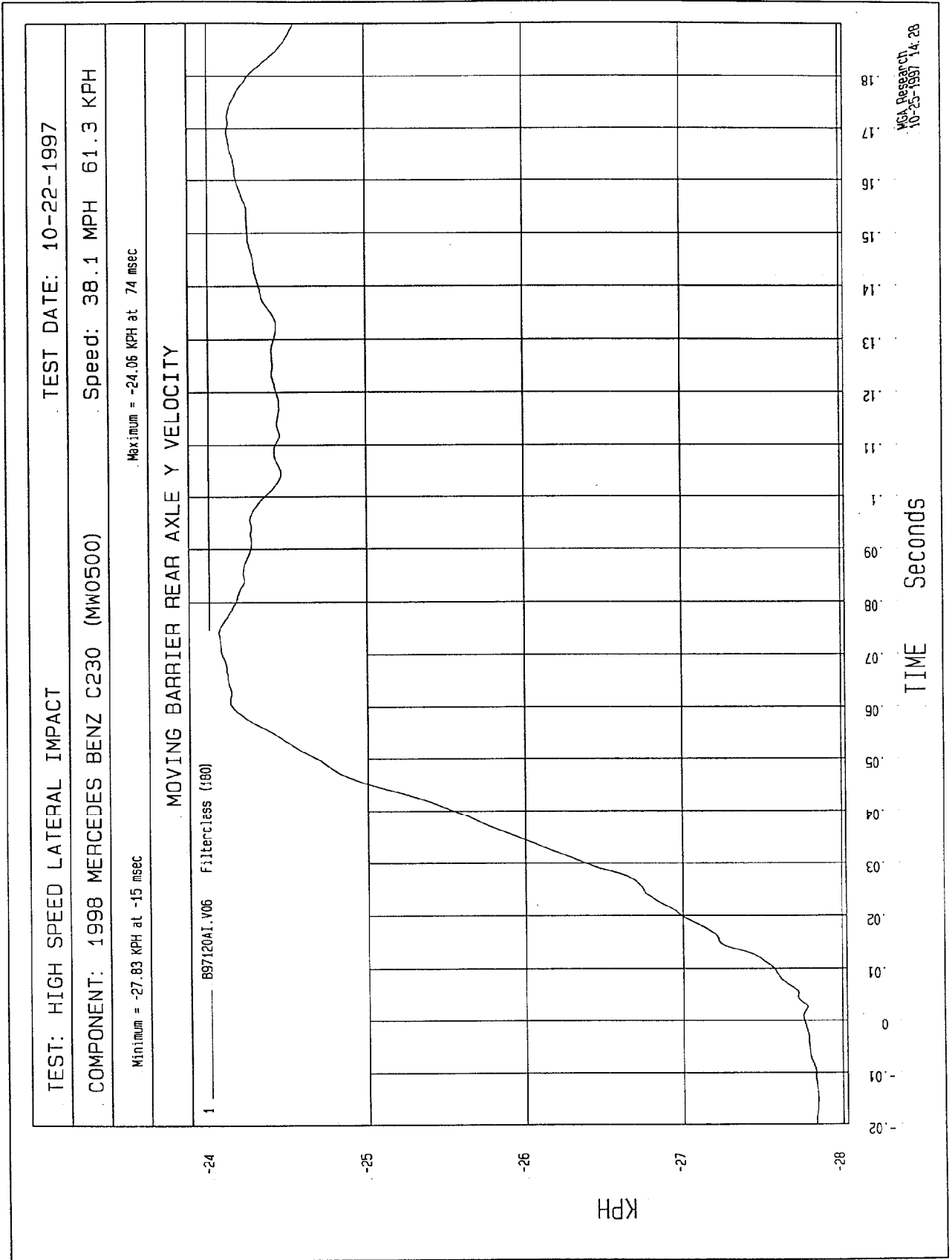
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -1.12 G'S at 199 msec Maximum = 3.21 G'S at 44 msec



TIME (SECONDS)

NSA Research  
10-23-1997 14:32



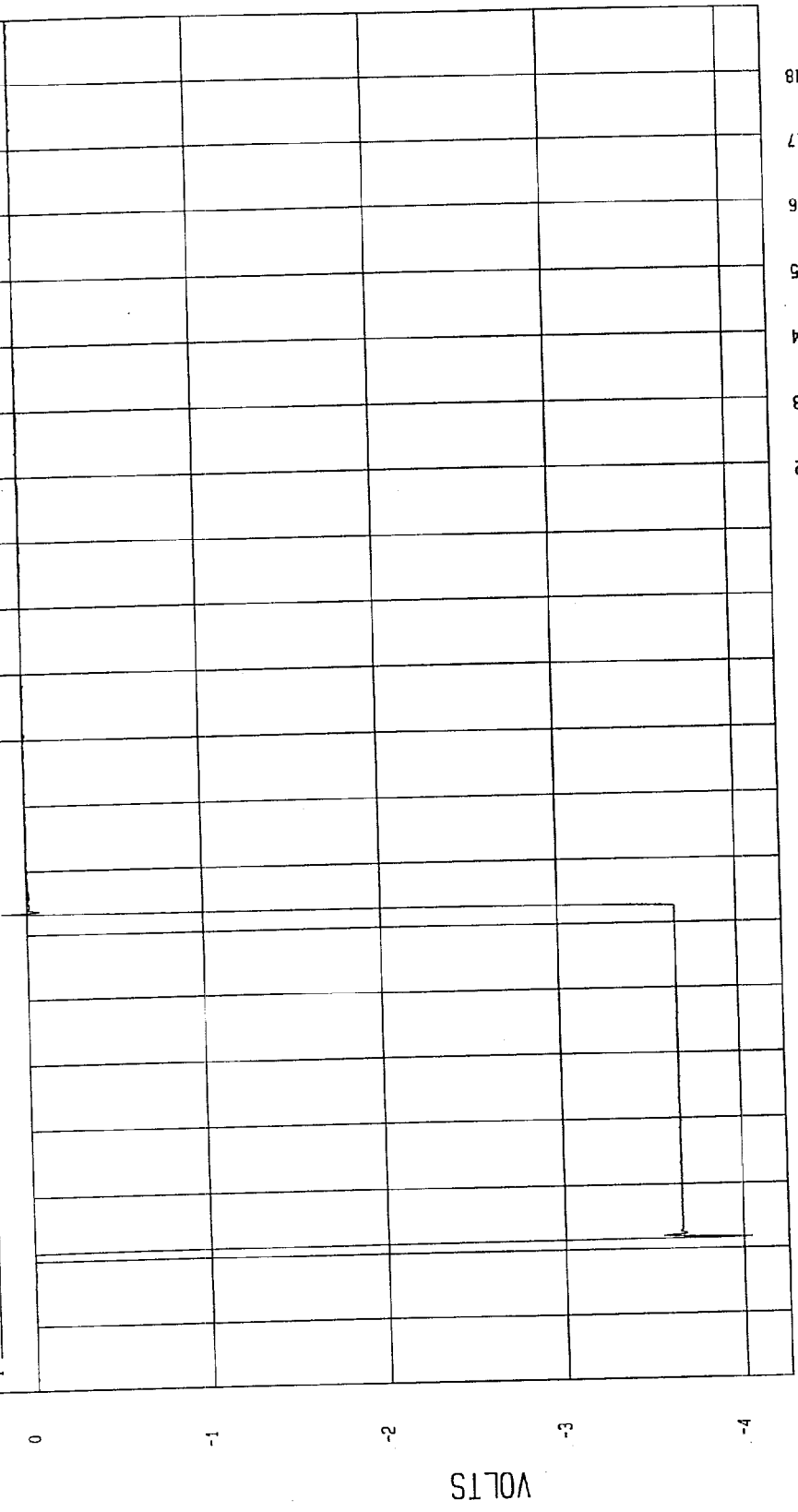
TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -4.04 VOLTS at 2 msec      Maximum = .13 VOLTS at 53 msec

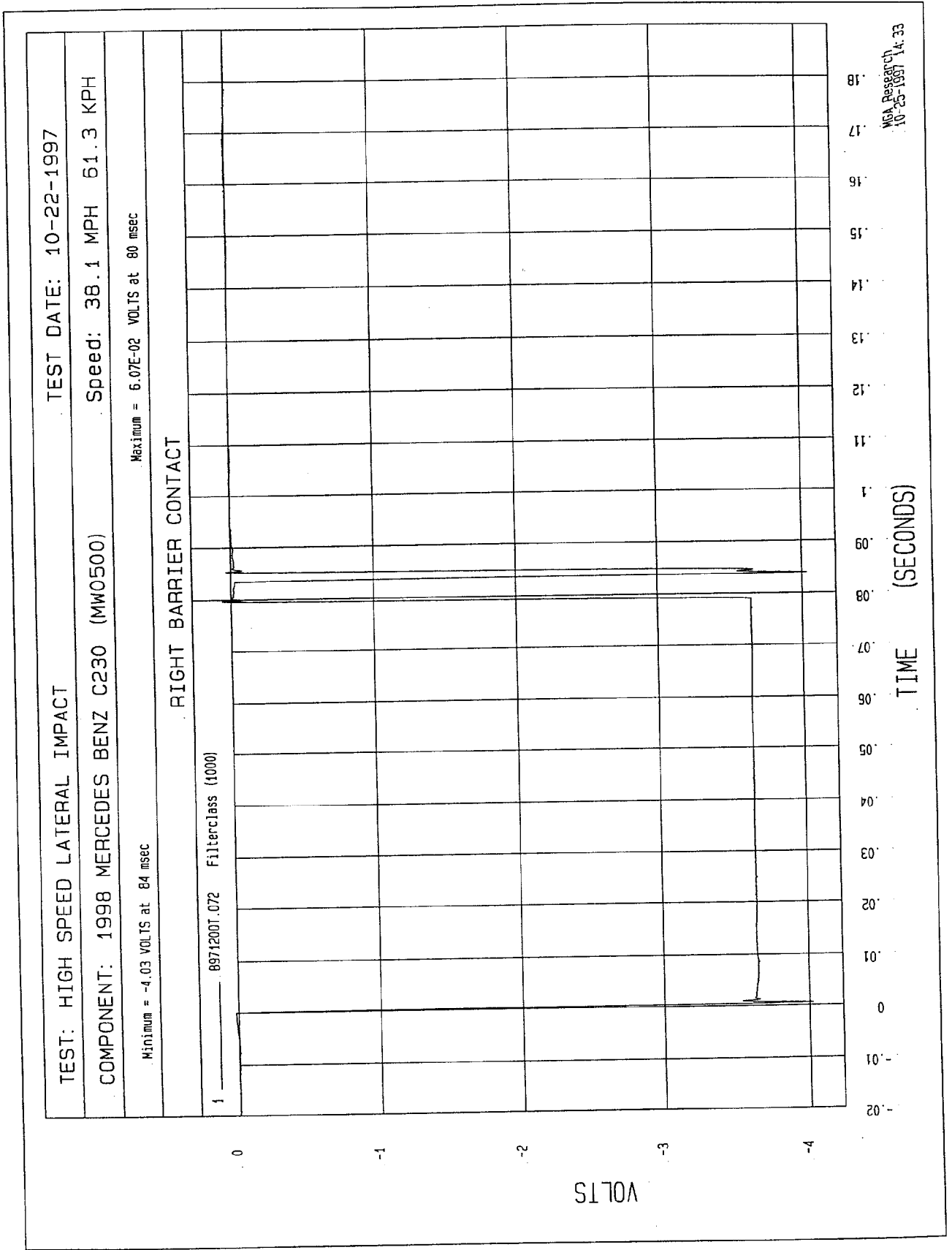
LEFT BARRIER CONTACT

1 \_\_\_\_\_ B9712001.071 Filterclass (1000)



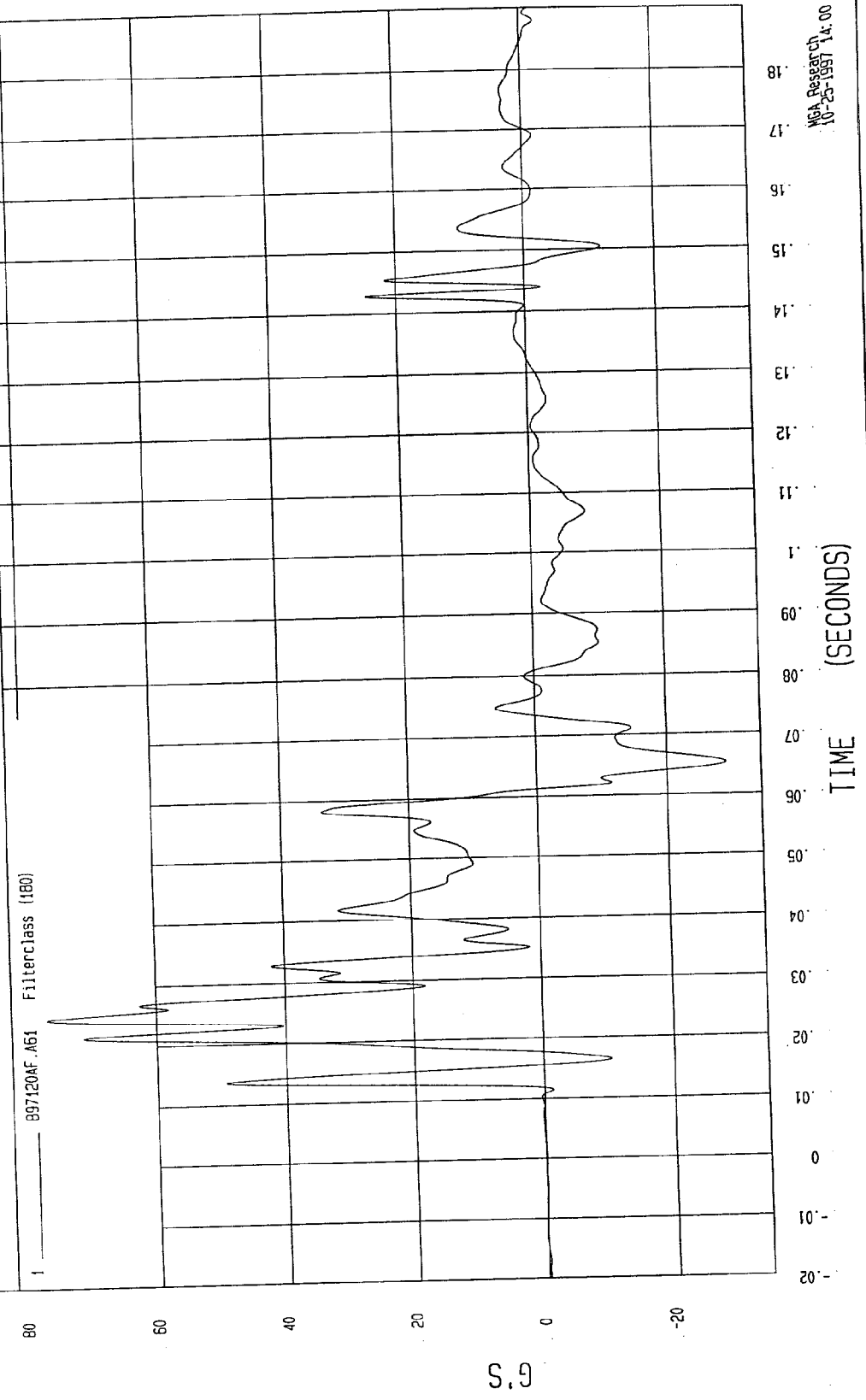
TIME (SECONDS)

MCA Research  
10-25-1997 14:33

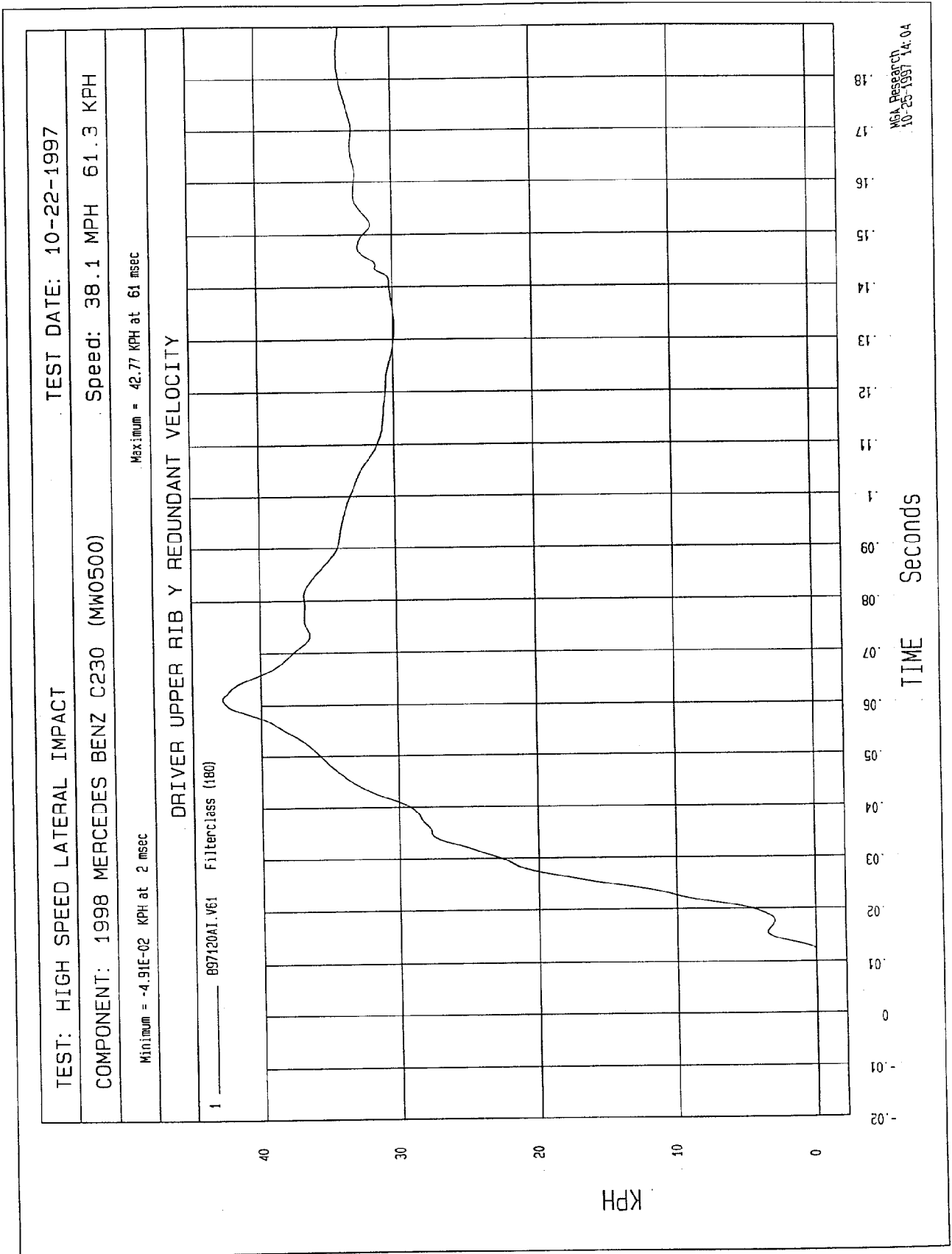


TEST: HIGH SPEED LATERAL IMPACT  
TEST DATE: 10-22-1997  
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)  
Speed: 38.1 MPH 61.3 KPH  
Minimum = -28.97 G'S at 65 msec  
Maximum = 76.85 G'S at 25 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION



MCA Research  
10-25-1997 14:00



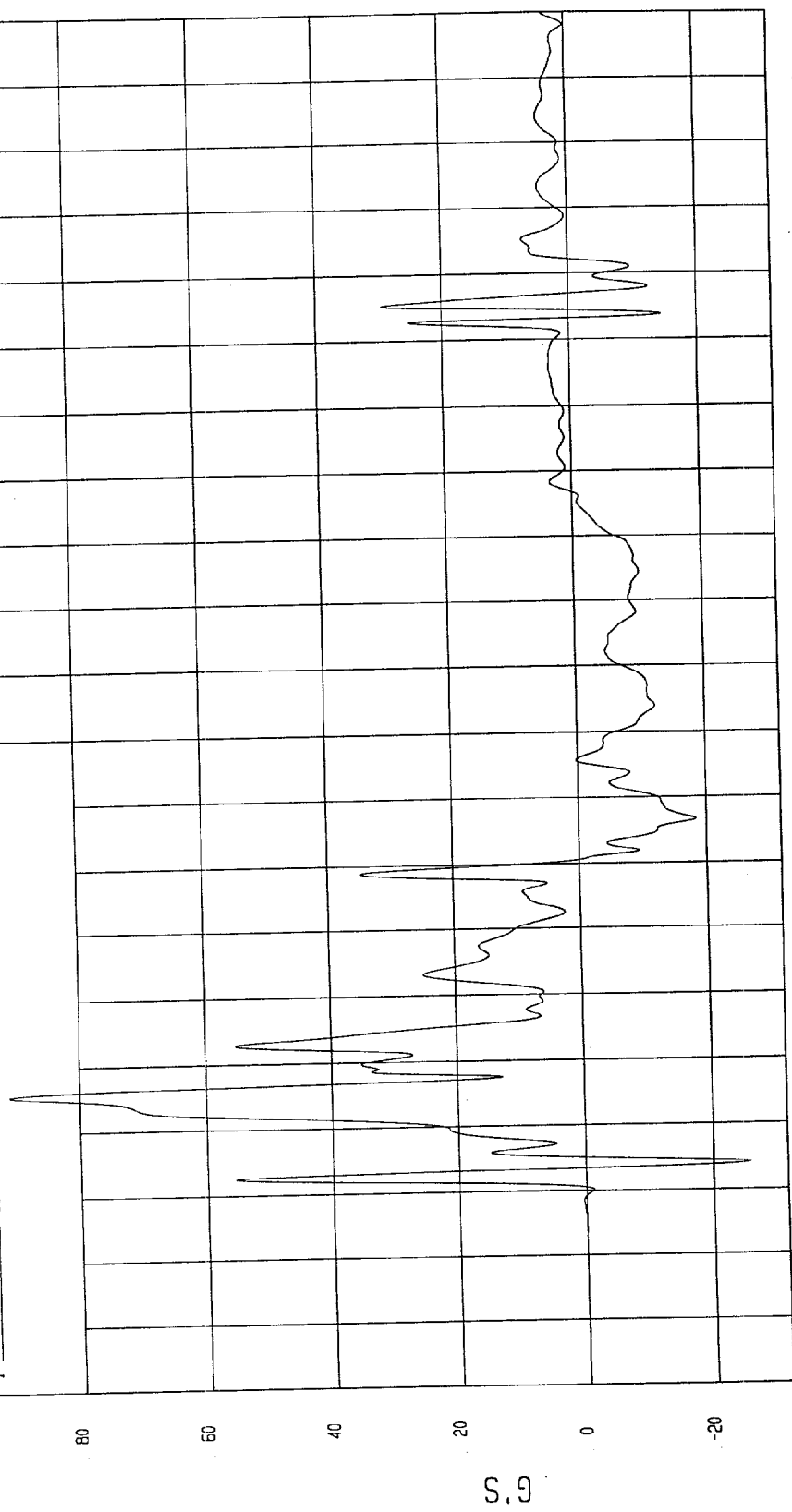
TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -25.79 G'S at 14 msec      Maximum = 91.22 G'S at 26 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 \_\_\_\_\_ 897120AF.A62 Filterclass (180)



TIME (SECONDS)

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

80  
60  
40  
20  
0  
-20

G.S

VEI Research  
10-25-1997 14:00

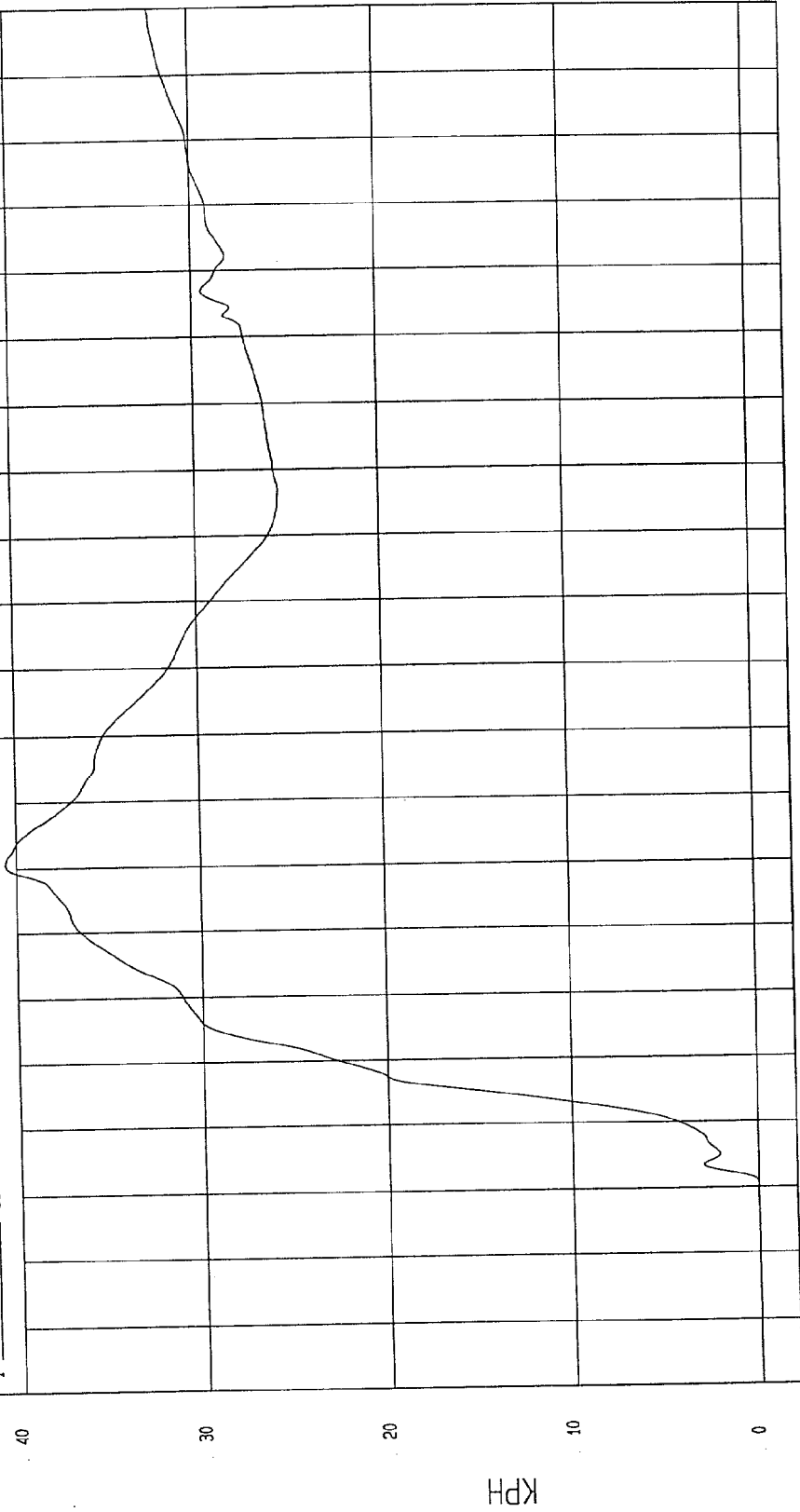
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -7.32E-03 KPH at 10 msec Maximum = 40.58 KPH at 61 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY

1 B97120A1.V62 Filterclass (180)



NGA Research  
10-25-1997 14:04

TIME Seconds

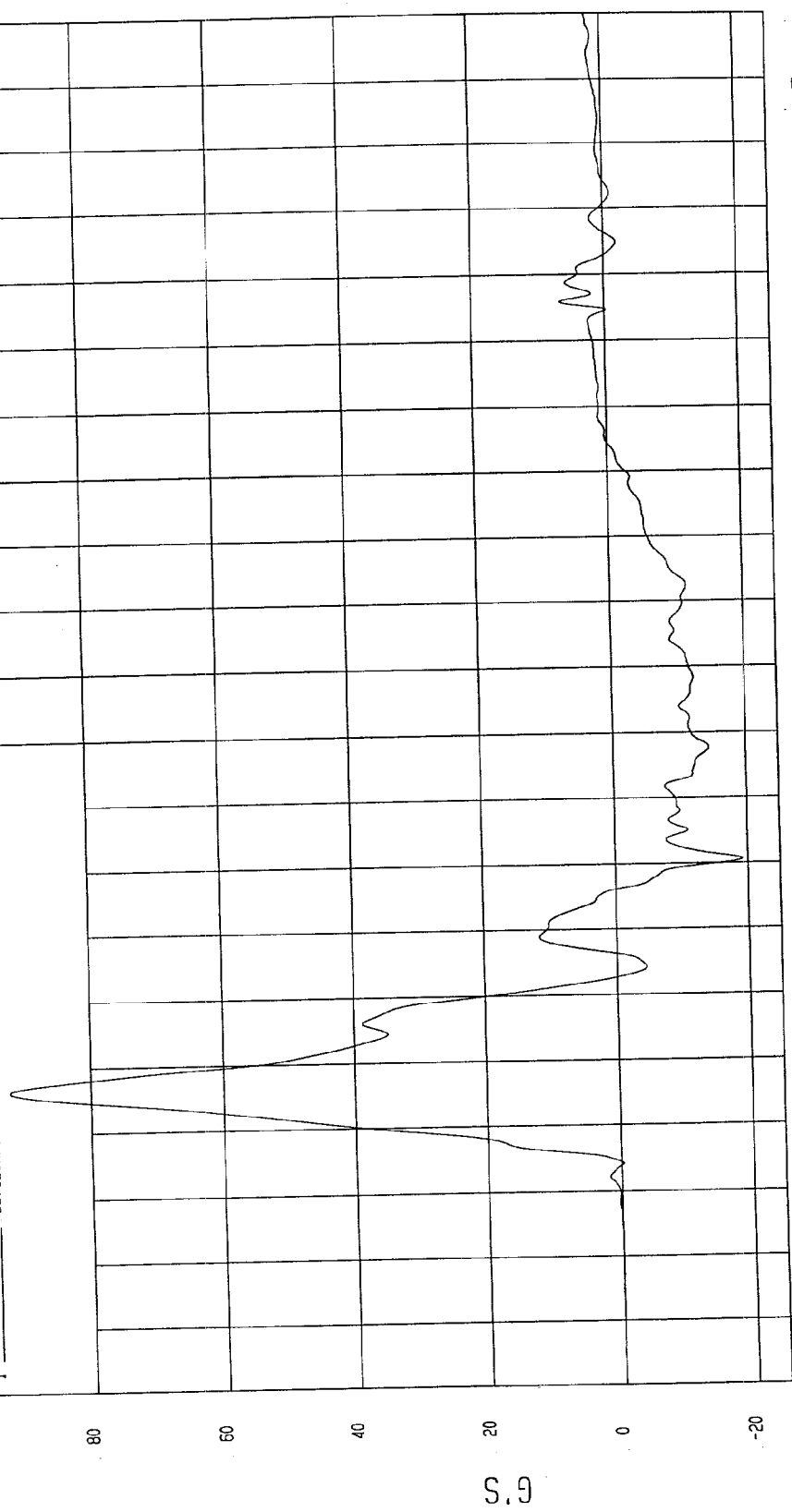
TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -19.19 G'S at 61 msec      Maximum = 92.12 G'S at 26 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 \_\_\_\_\_ 897120AF.A63 Filterclass (180)



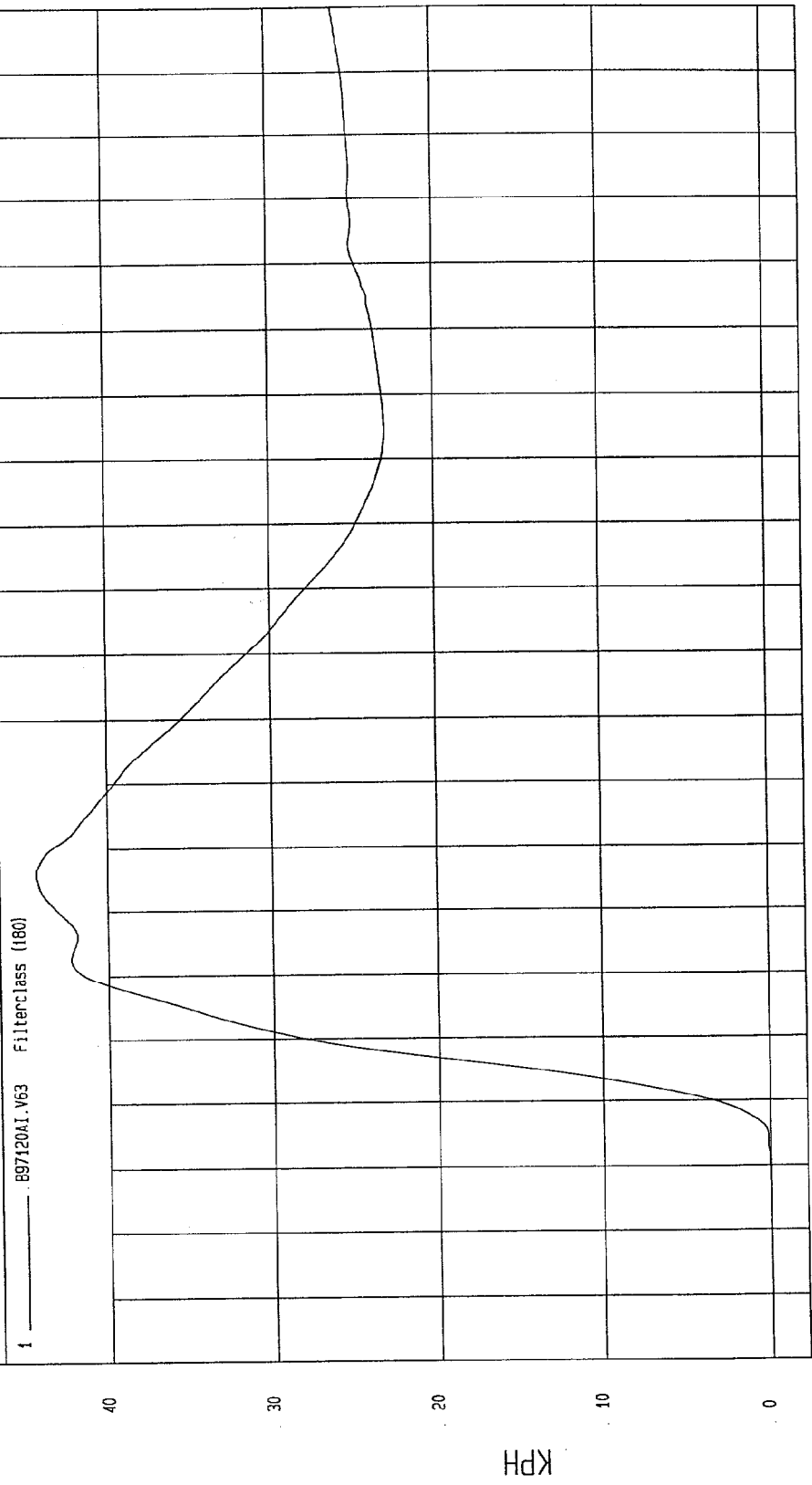
MCA Research  
10-23-1997 14:00

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -1.06E-03 KPH at -16 msec      Maximum = 44.29 KPH at 56 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY



TIME Seconds

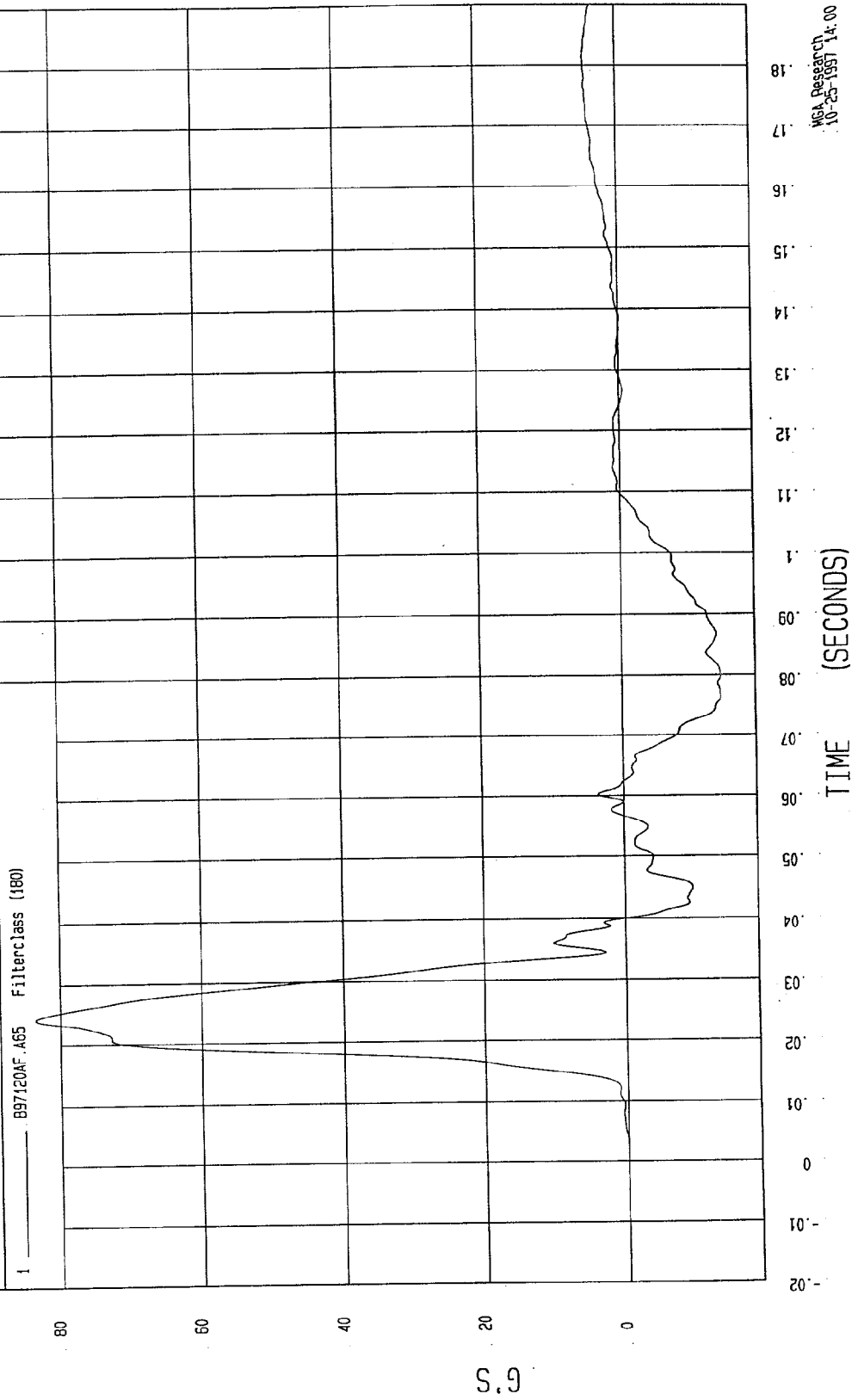
MCA Research  
10-25-1997 14:05

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -13.61 G'S at 80 msec      Maximum = 83.56 G'S at 24 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

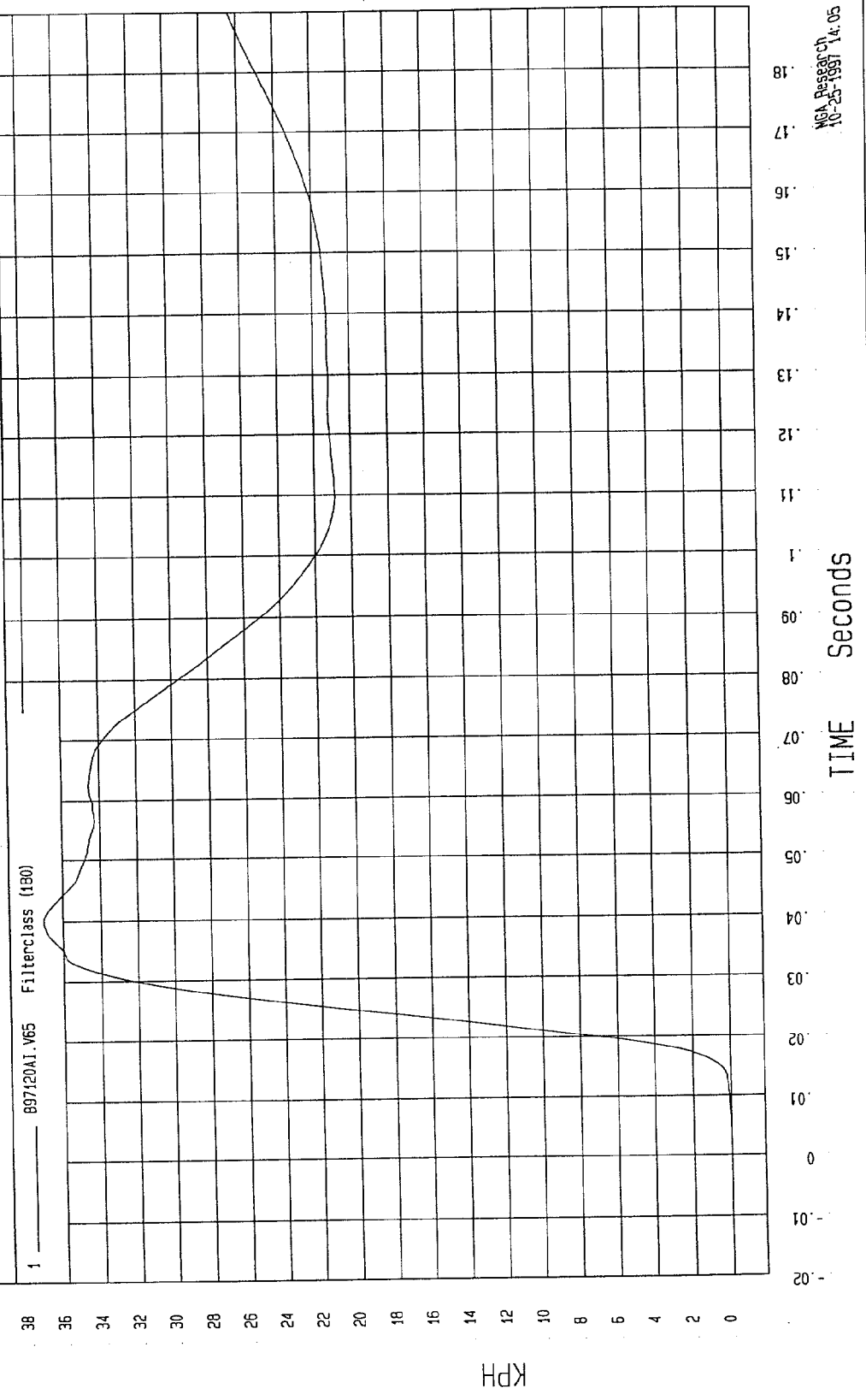


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -1.00E-03 KPH at -9 msec Maximum = 37.05 KPH at 40 msec

DRIVER PELVIS Y REDUNDANT VELOCITY



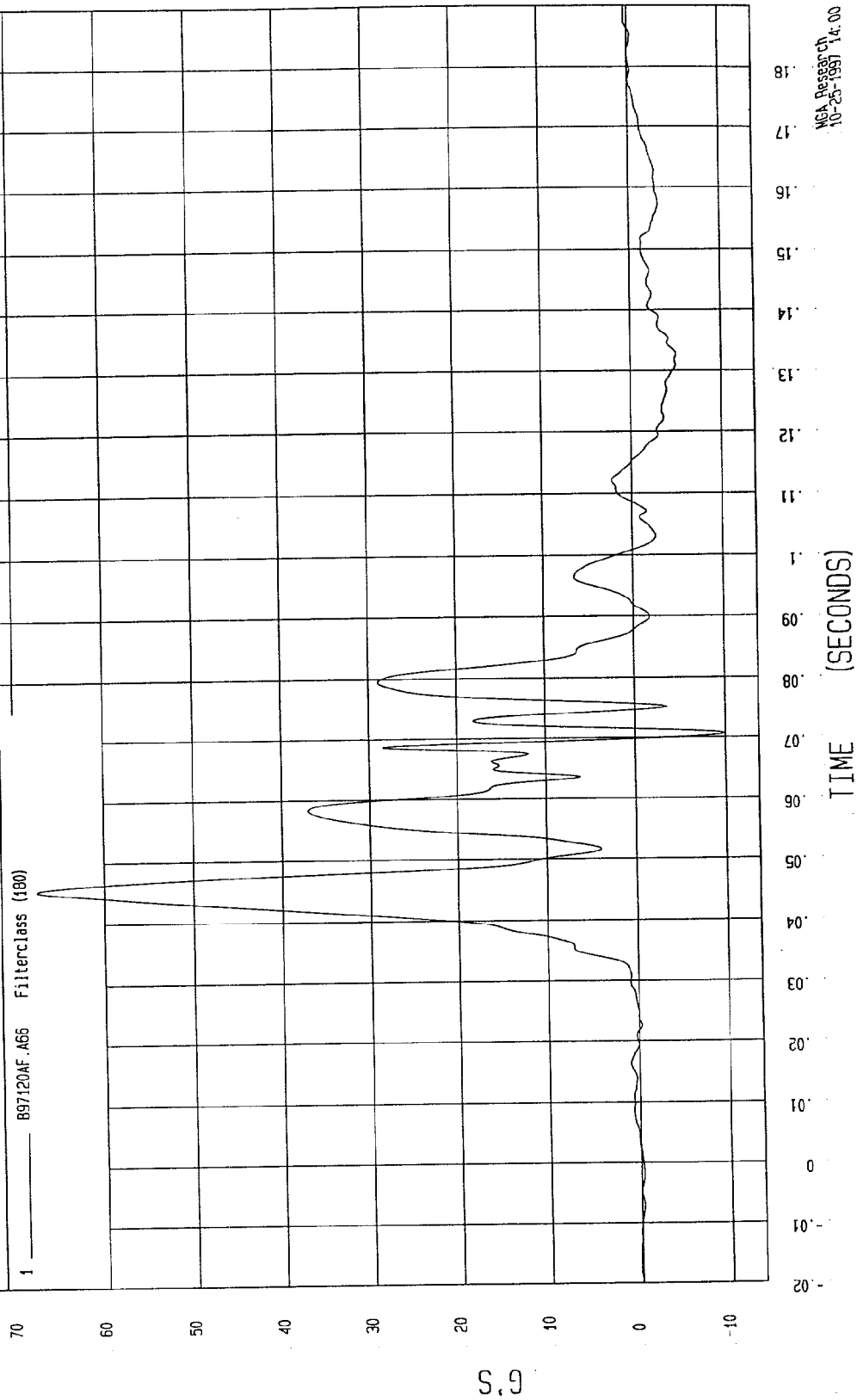
MGA Research  
10-25-1997 14:05

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

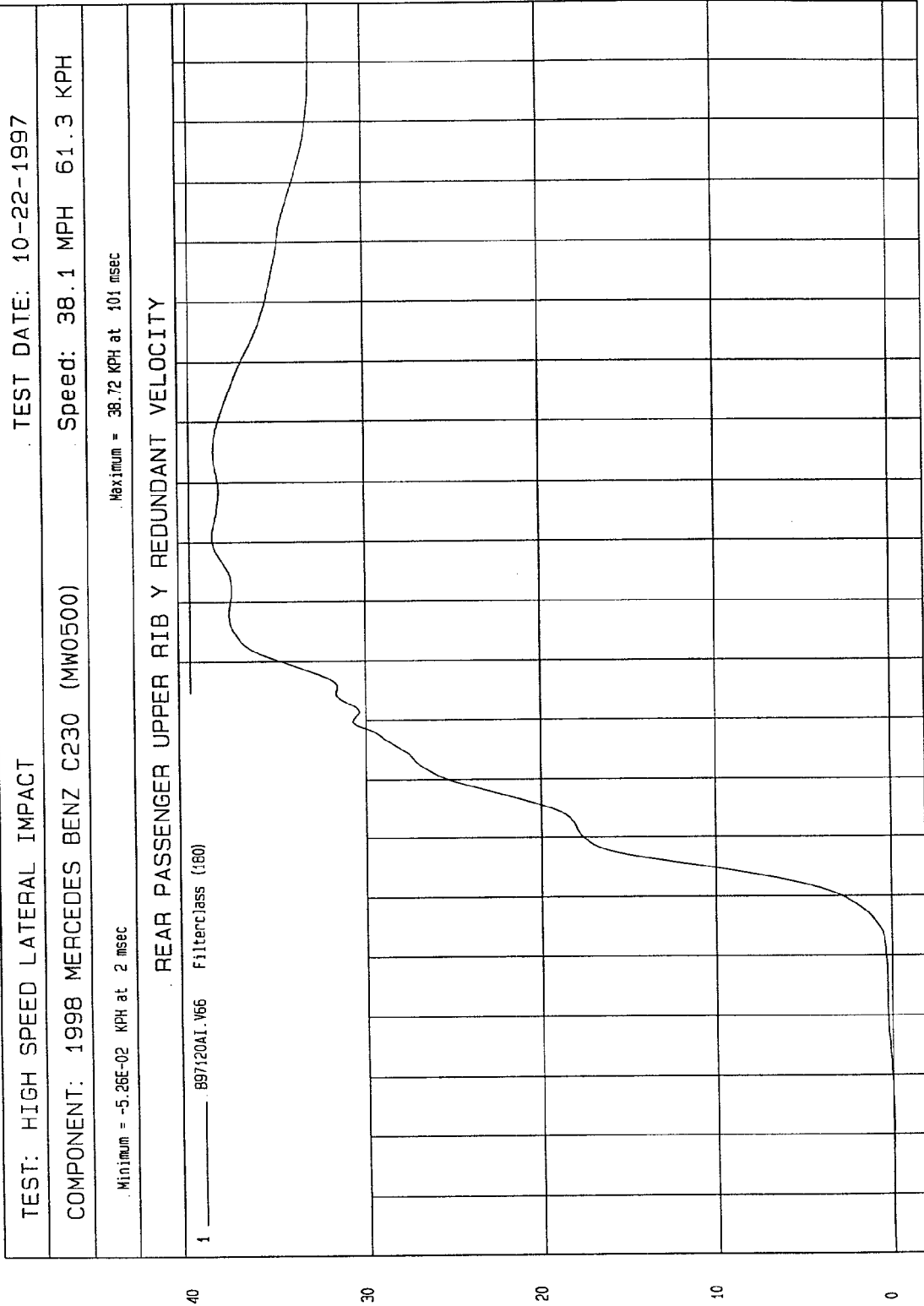
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -9.86 G'S at 71 msec      Maximum = 67.59 G'S at 45 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION



NCA Research  
10-25-1997 14:00



TIME Seconds

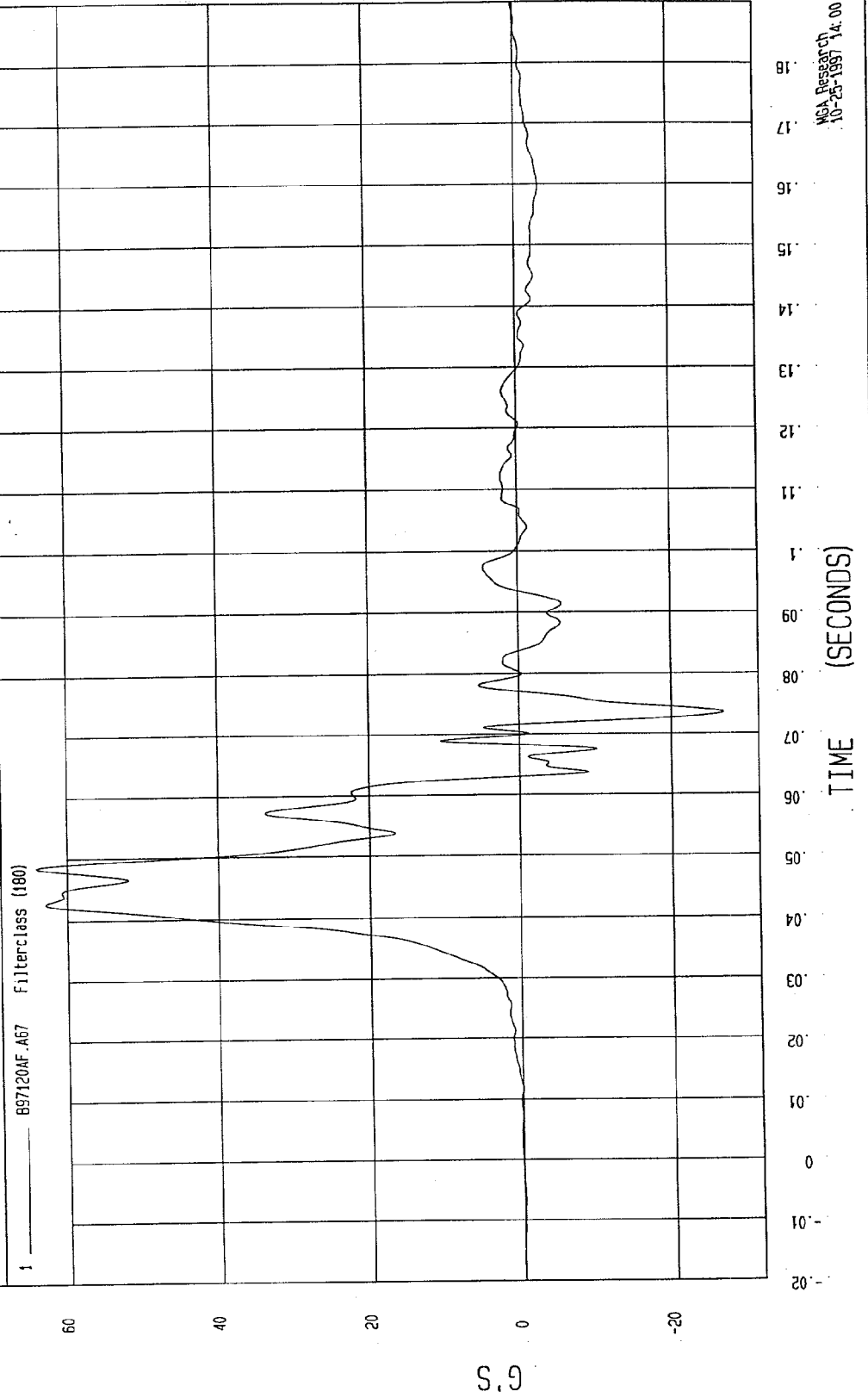
MGA Research  
10-25-1997 14:05

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 51.3 KPH

Minimum = -26.86 G'S at 74 msec      Maximum = 64.04 G'S at 48 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION



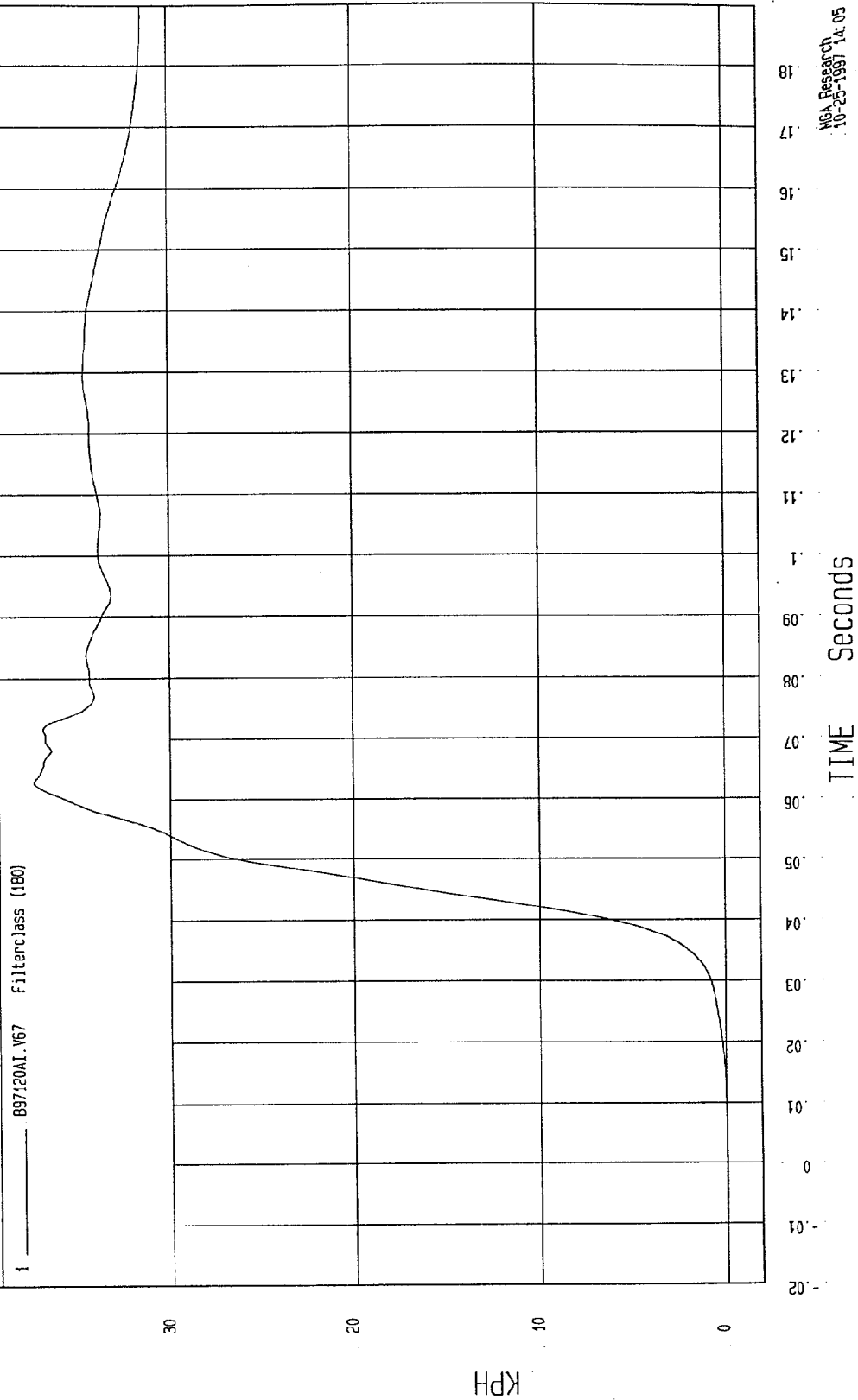
WCA Research  
10-25-1997 14:00

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -2.67E-02 KPH at -3 msec      Maximum = 37.30 KPH at 63 msec

REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY

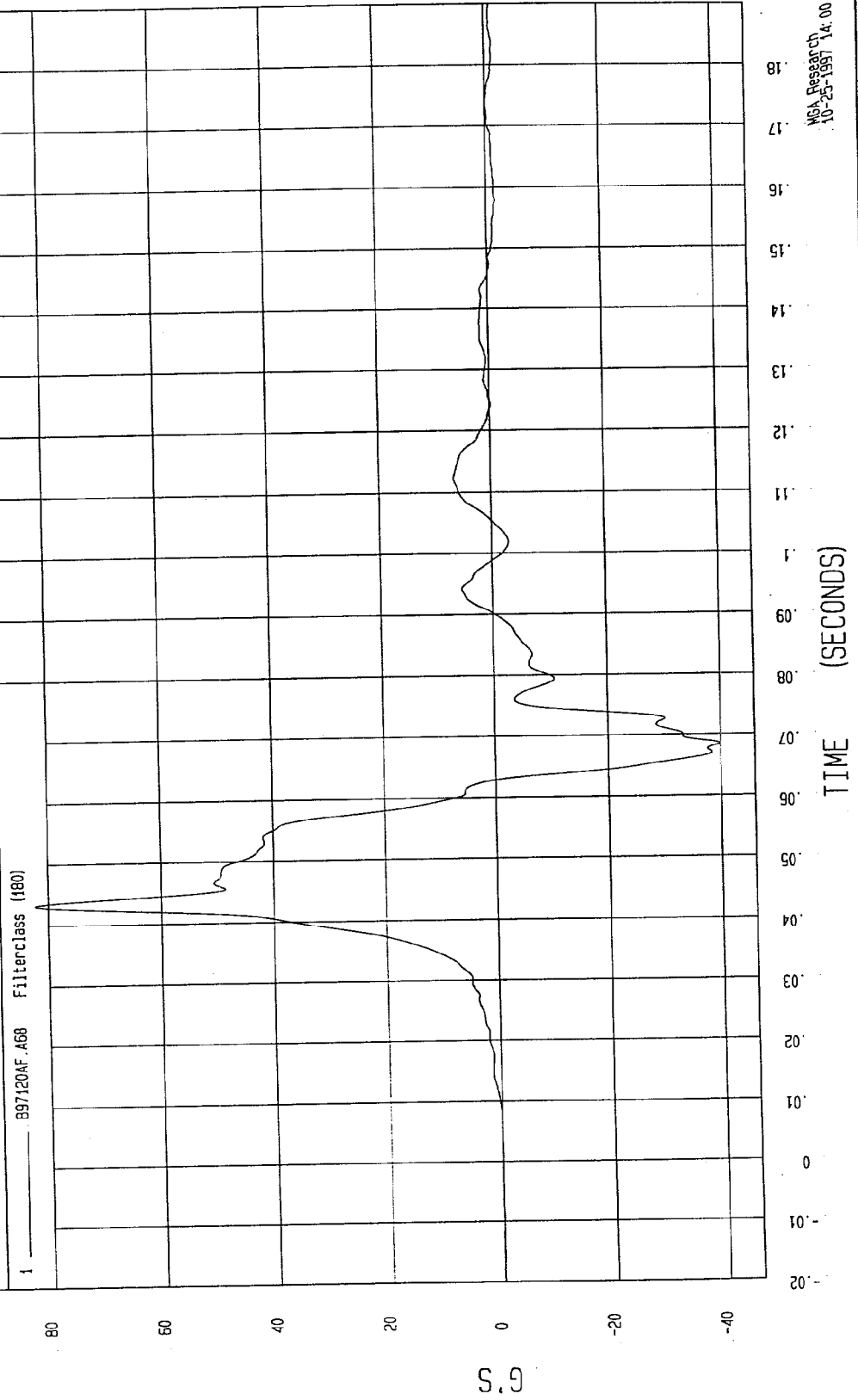


TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

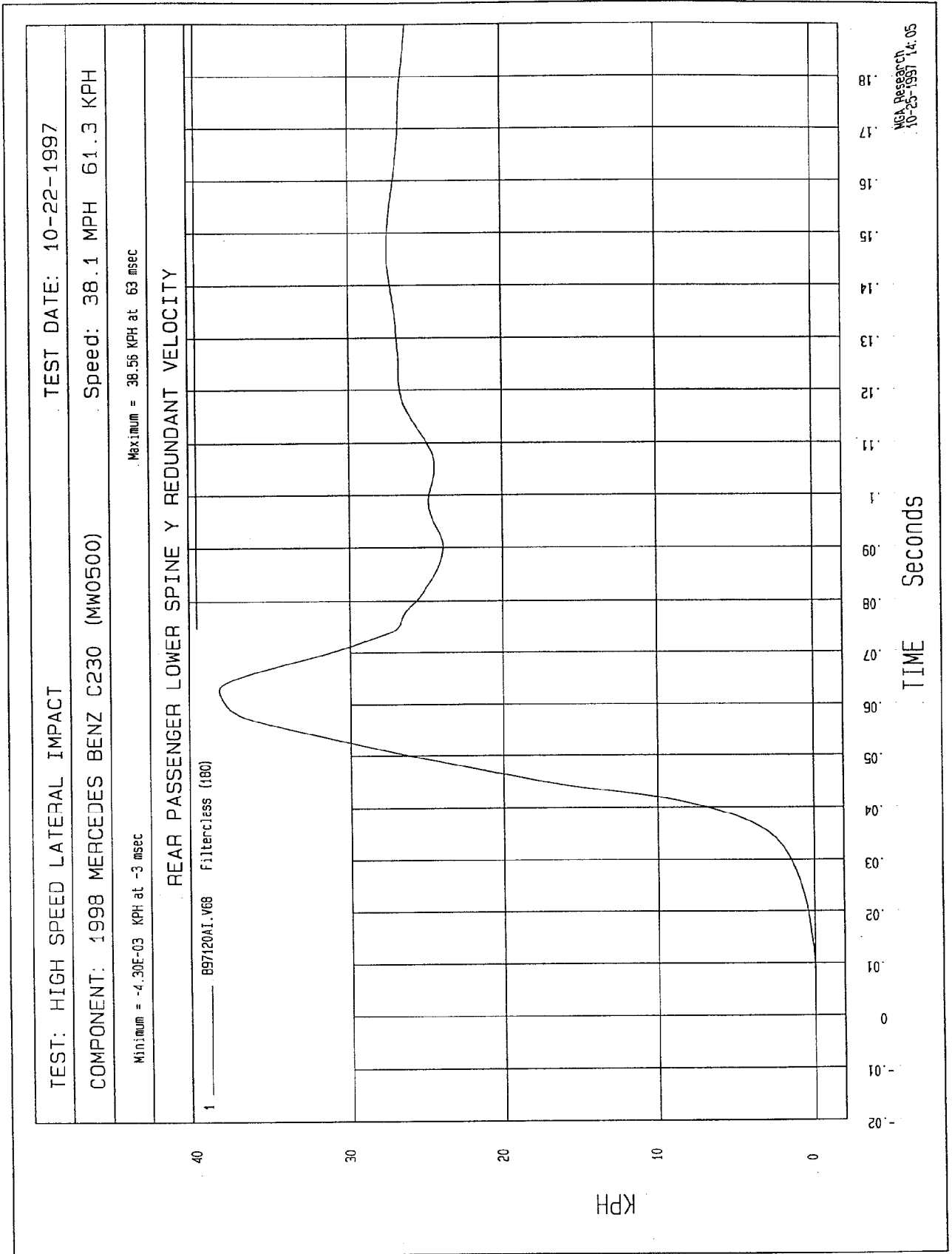
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

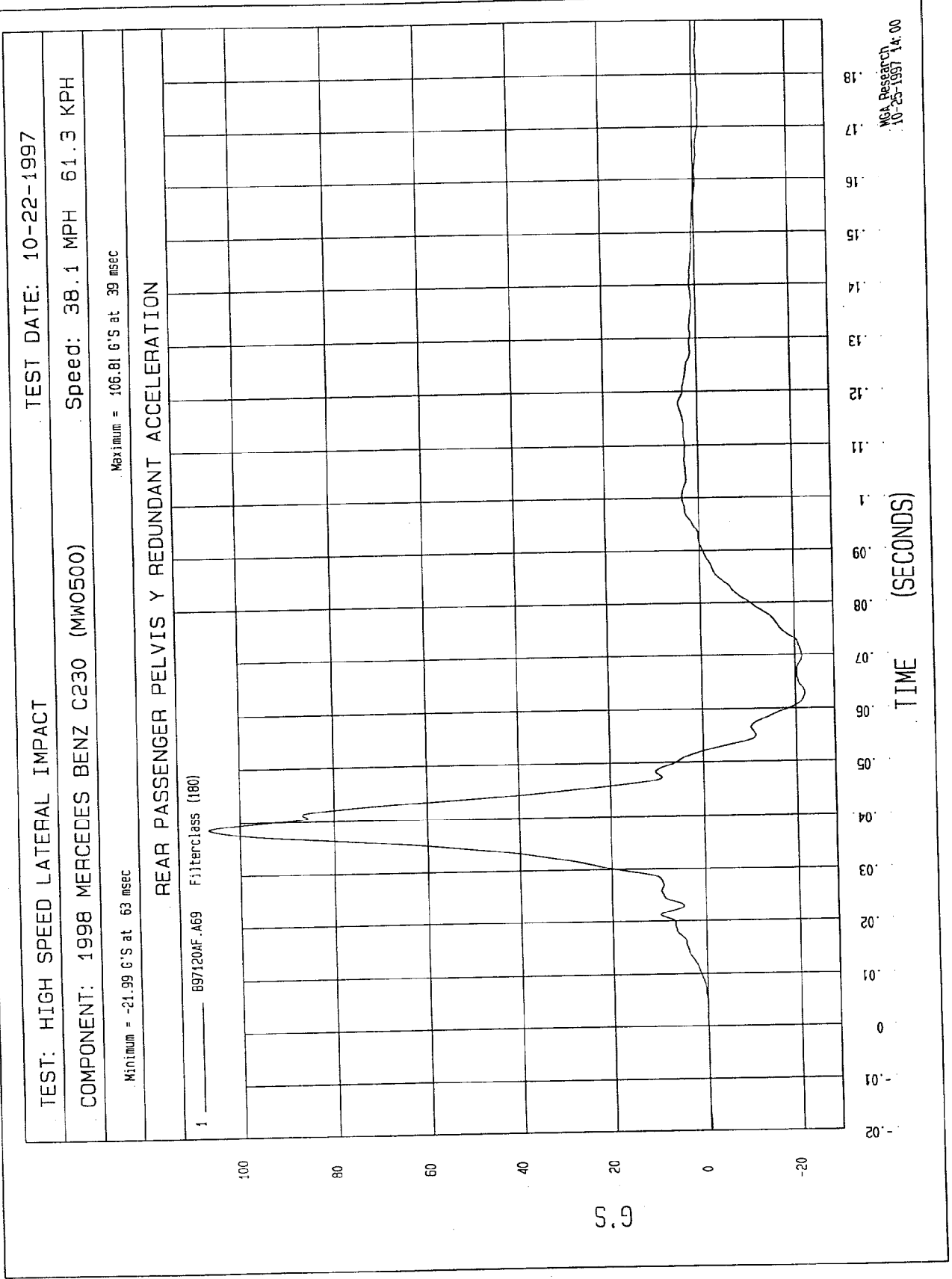
Minimum = -39.90 G'S at 68 msec      Maximum = 82.38 G'S at 43 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION



WSA Research  
10-25-1997 14:00





TEST: HIGH SPEED LATERAL IMPACT

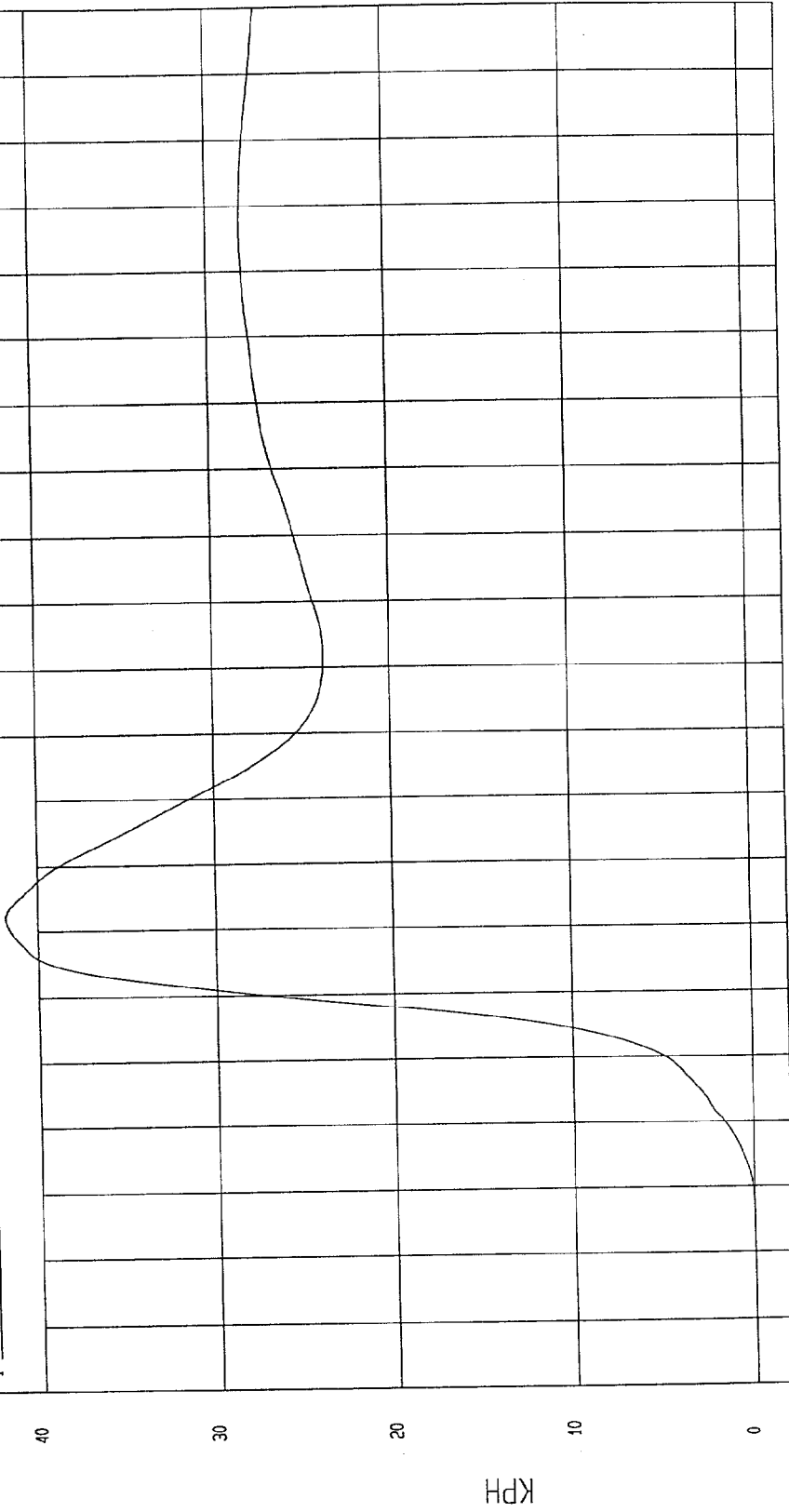
TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -2.49E-02 KPH at -15 msec Maximum = 41.78 KPH at 52 msec

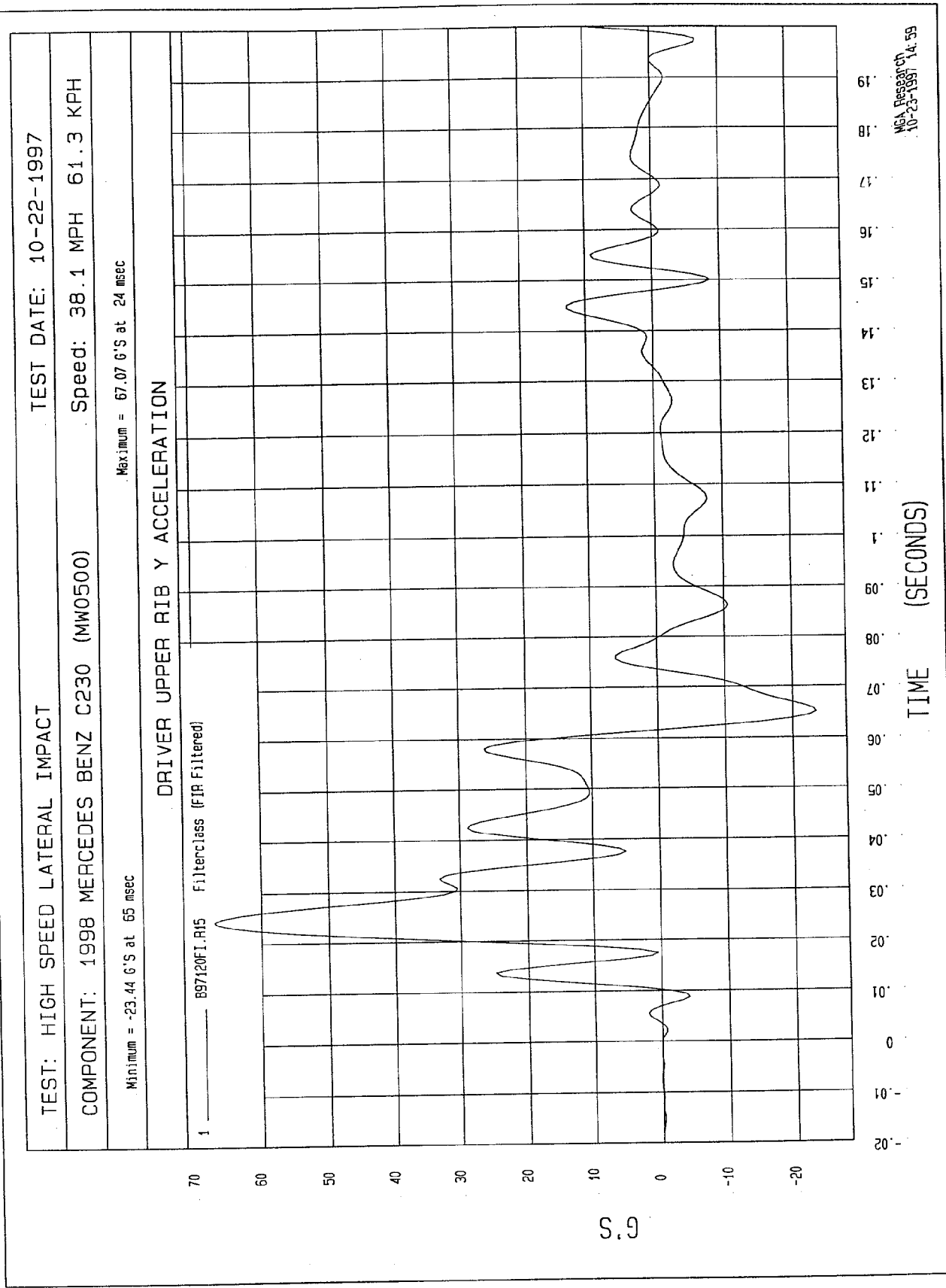
REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 897120A1.V69 Filterclass (180)



TIME Seconds  
MCA Research  
10-25-1997 14.05

## **FINITE IMPULSE RESPONSE (FIR) FILTERED DATA**



TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Speed: 38.1 MPH 51.3 KPH

Maximum = 67.00 G'S at 24 msec

Minimum = -24.43 G'S at 66 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 897120F1.R61 Filterclass (FIR Filtered)

60

40

20

0

-20

G.S

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

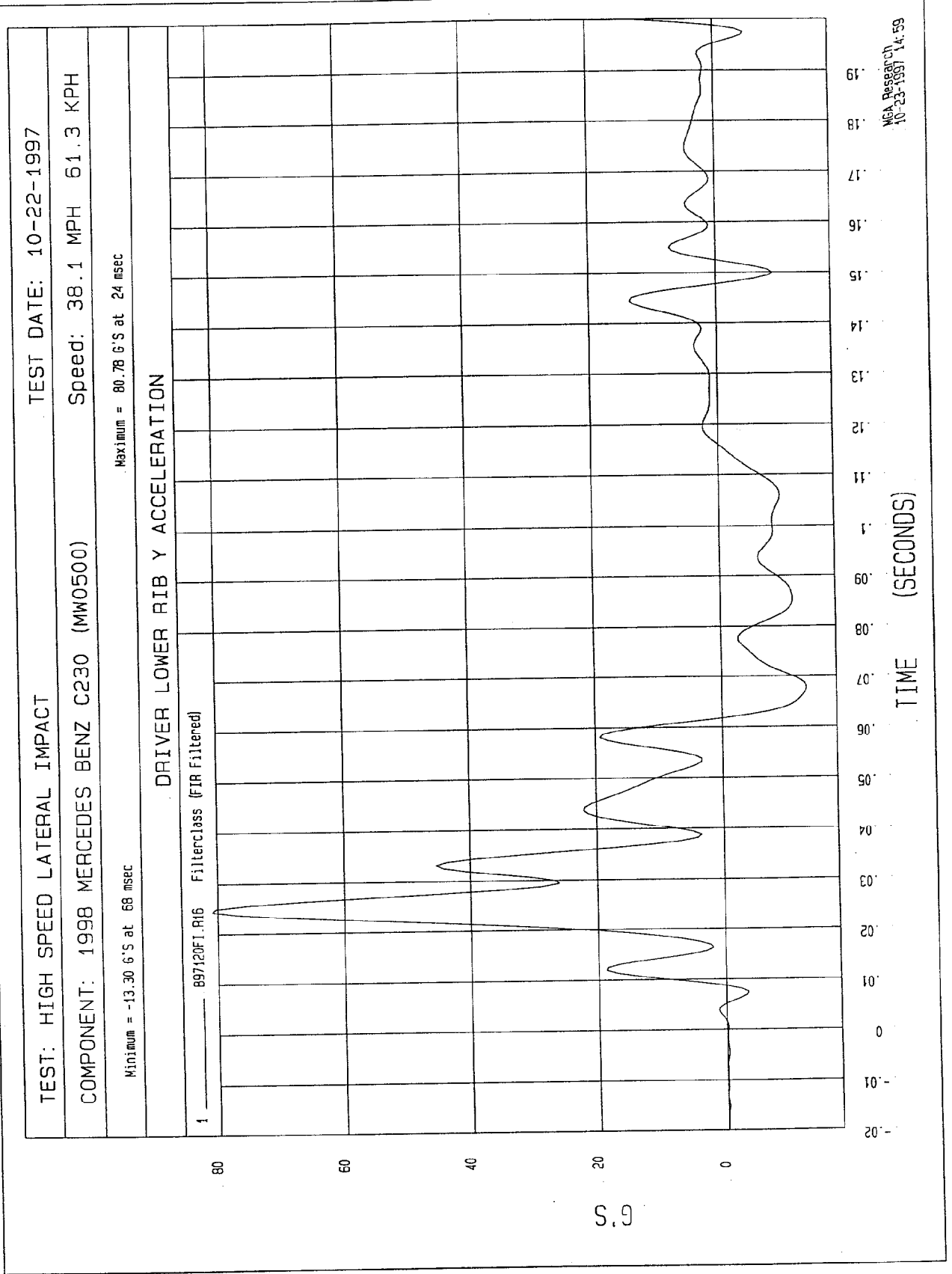
0

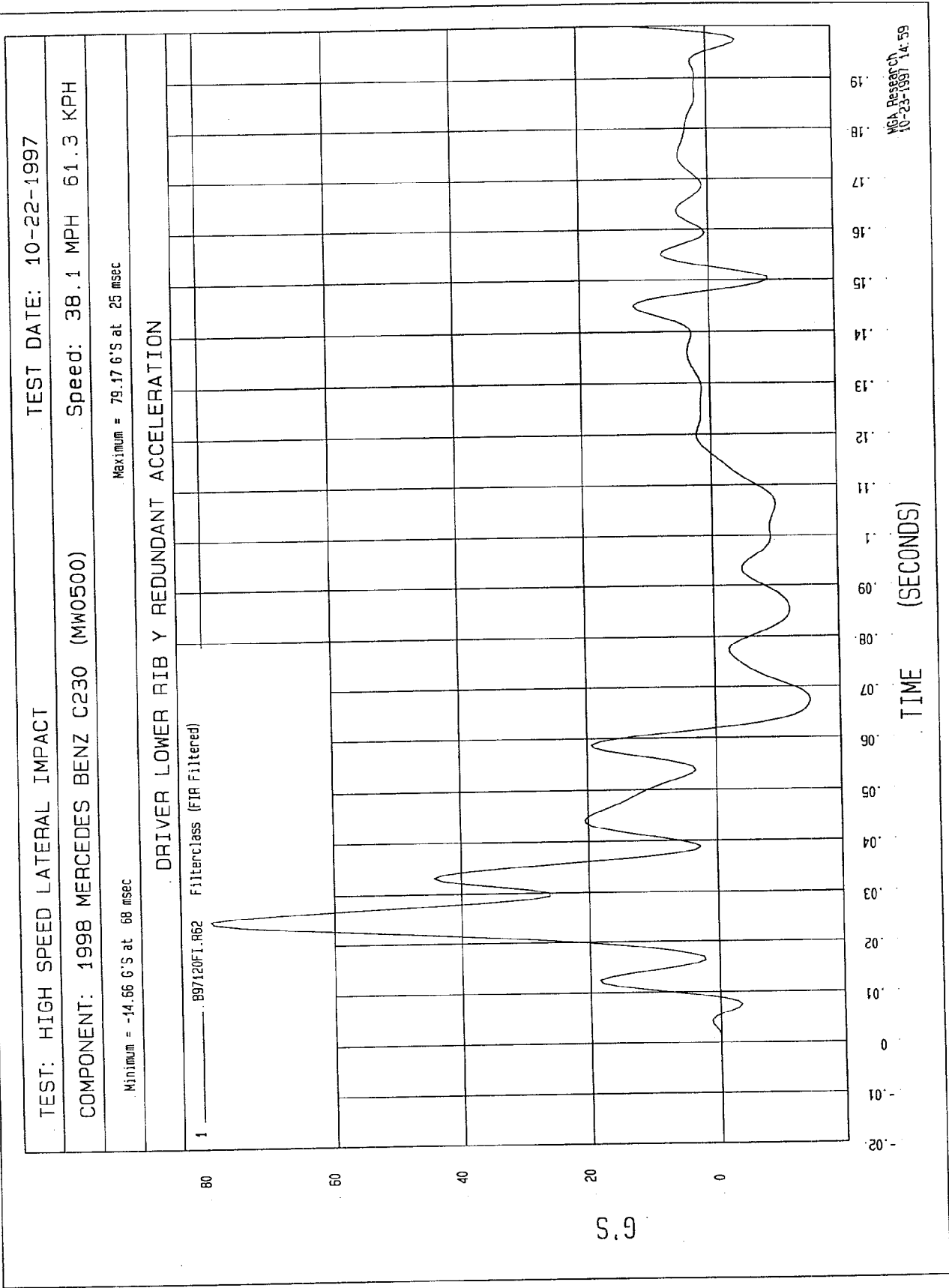
-01

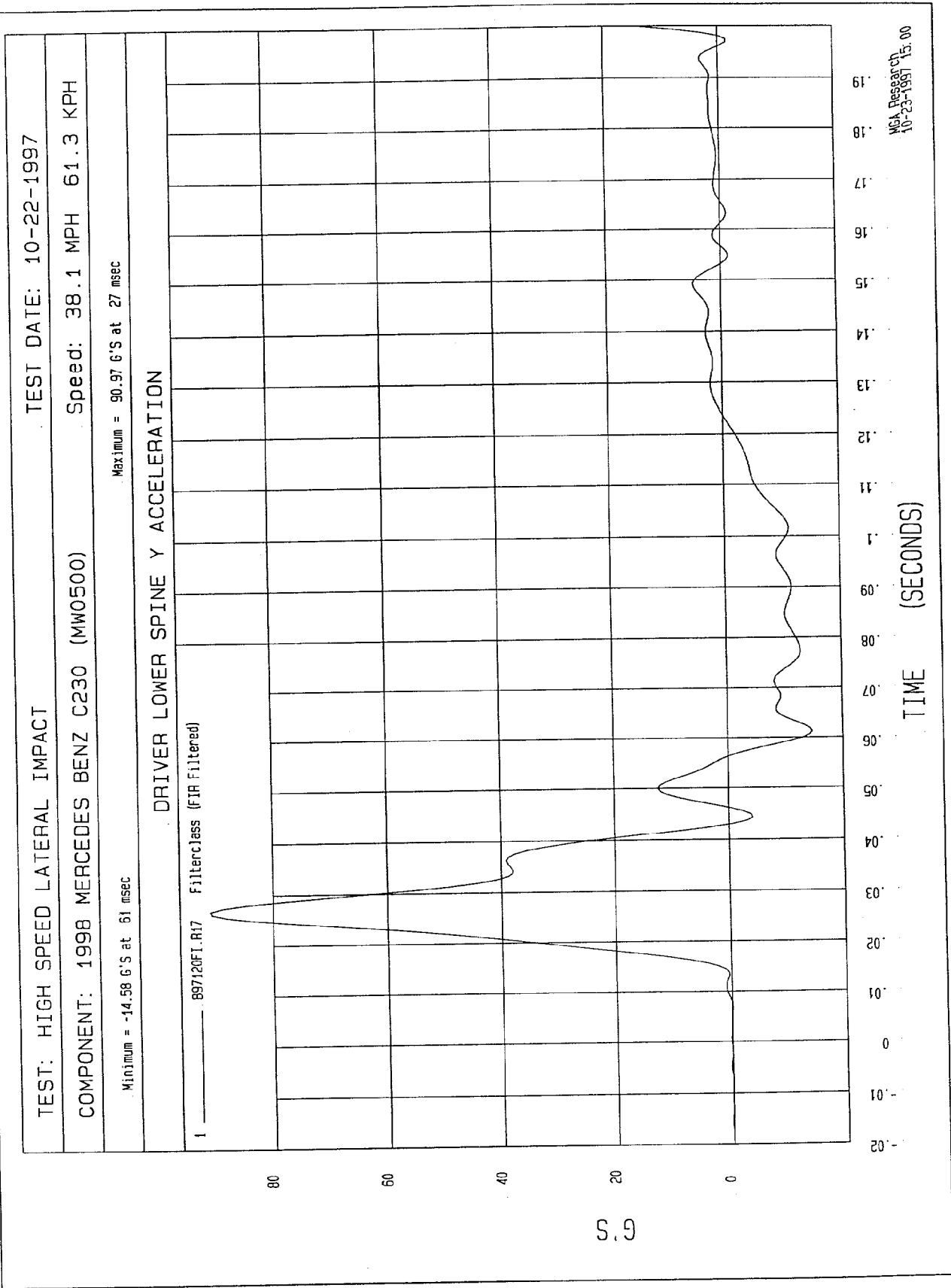
-02

TIME (SECONDS)

MSA Research  
10-23-1997 14:59







TEST DATE: 10-22-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38.1 MPH 61.3 KPH

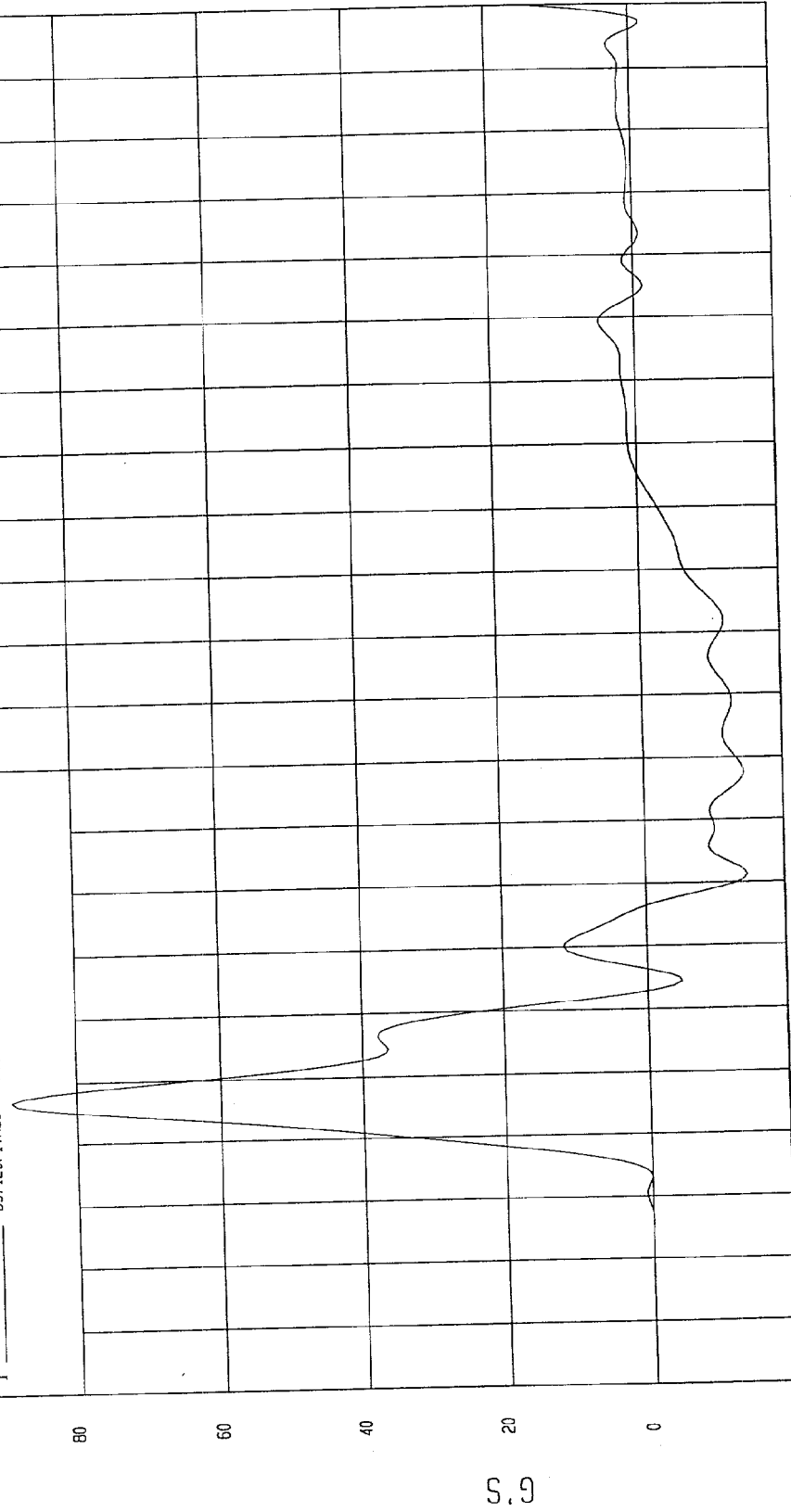
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 89.11 G'S at 27 msec

Minimum = -13.97 G'S at 61 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 897120F1.D63 FilterClass (FIR Filtered)



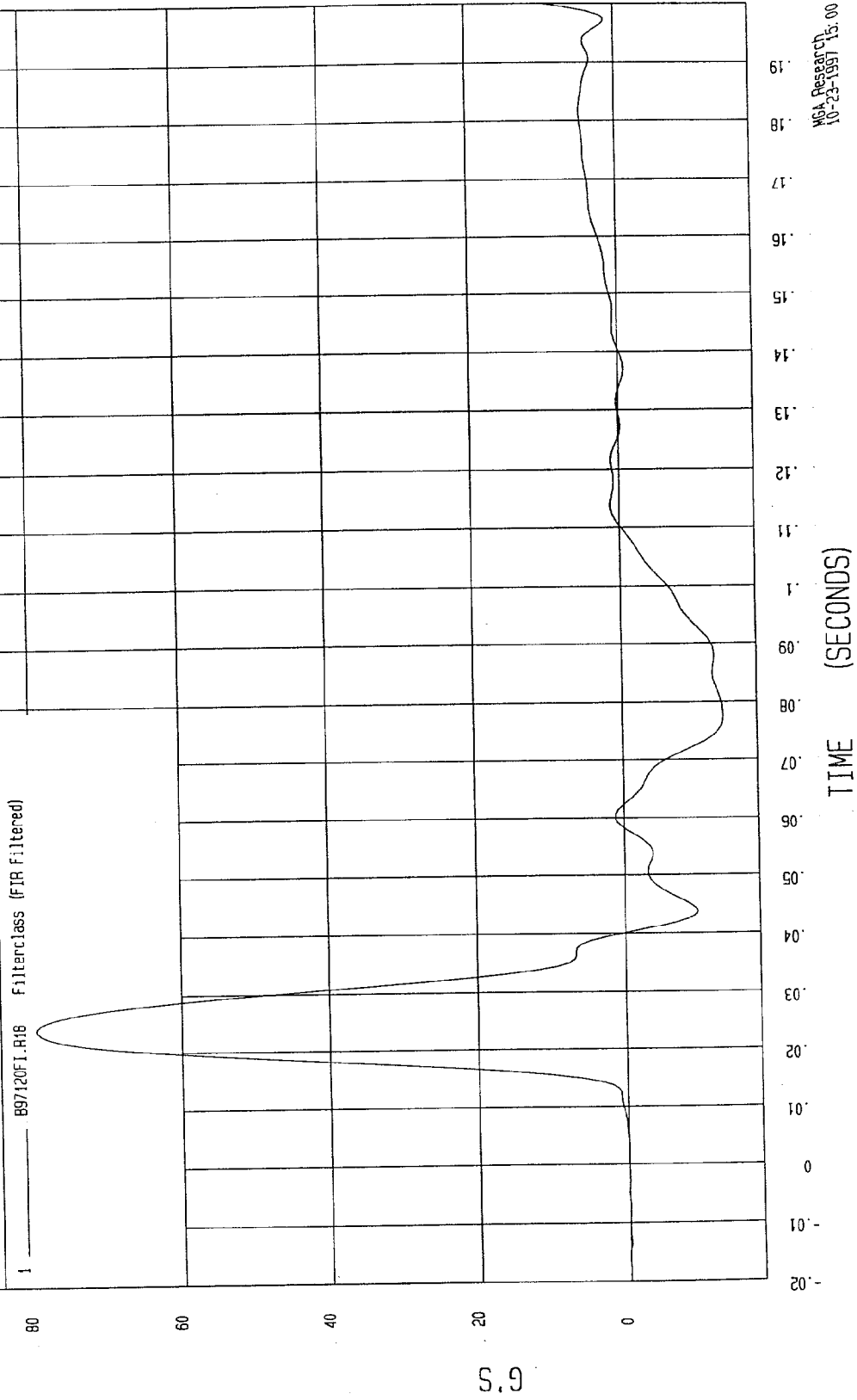
MGA Research Corp.  
10-23-1997 15:00

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -13.39 G'S at 78 msec Maximum = 79.46 G'S at 24 msec

DRIVER PELVIS Y ACCELERATION



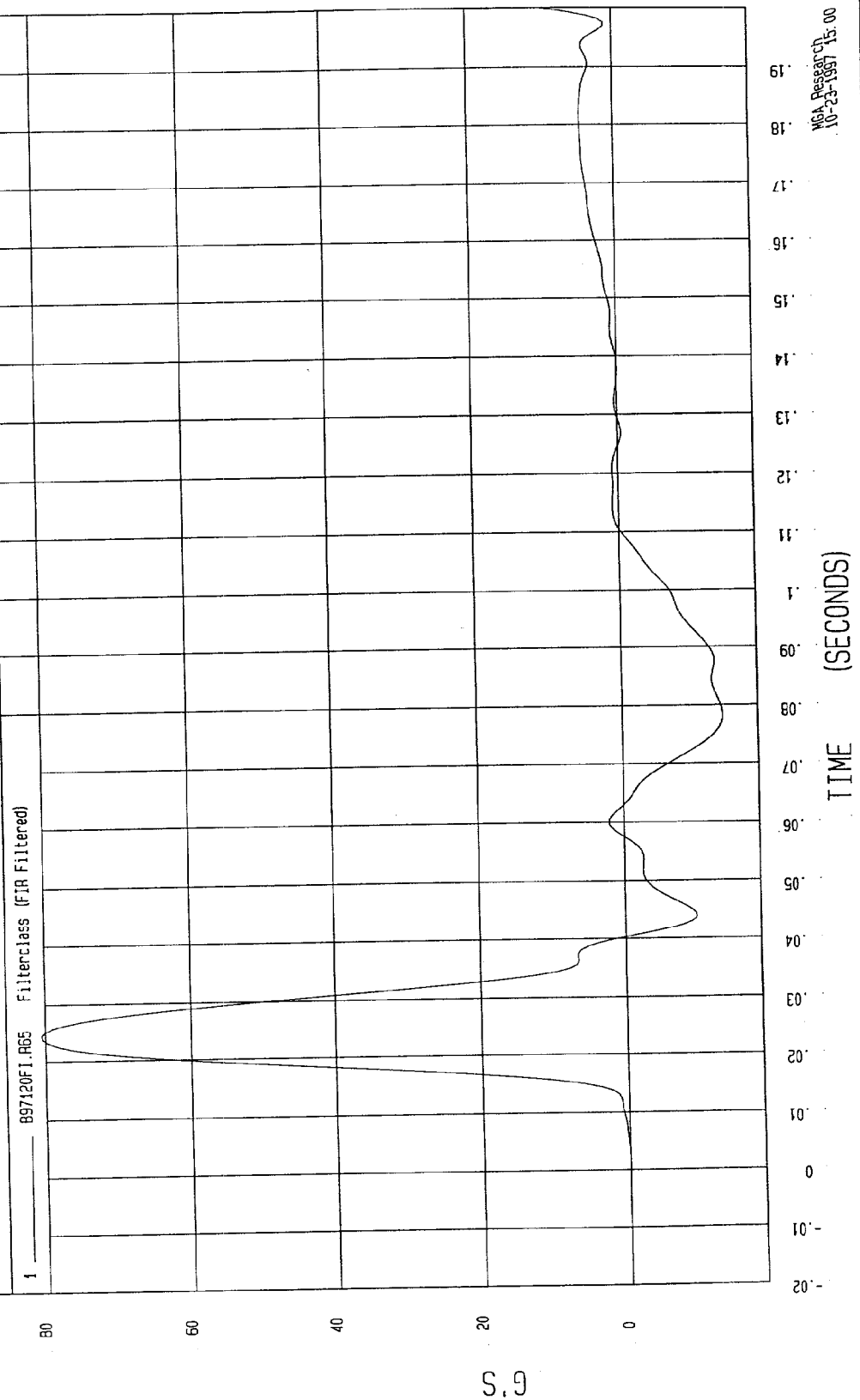
WGA Research  
10-23-1997 15:00

TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -13.85 G'S at 78 msec      Maximum = 80.49 G'S at 24 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION



TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

SPEED: 38.1 MPH 61.3 KPH

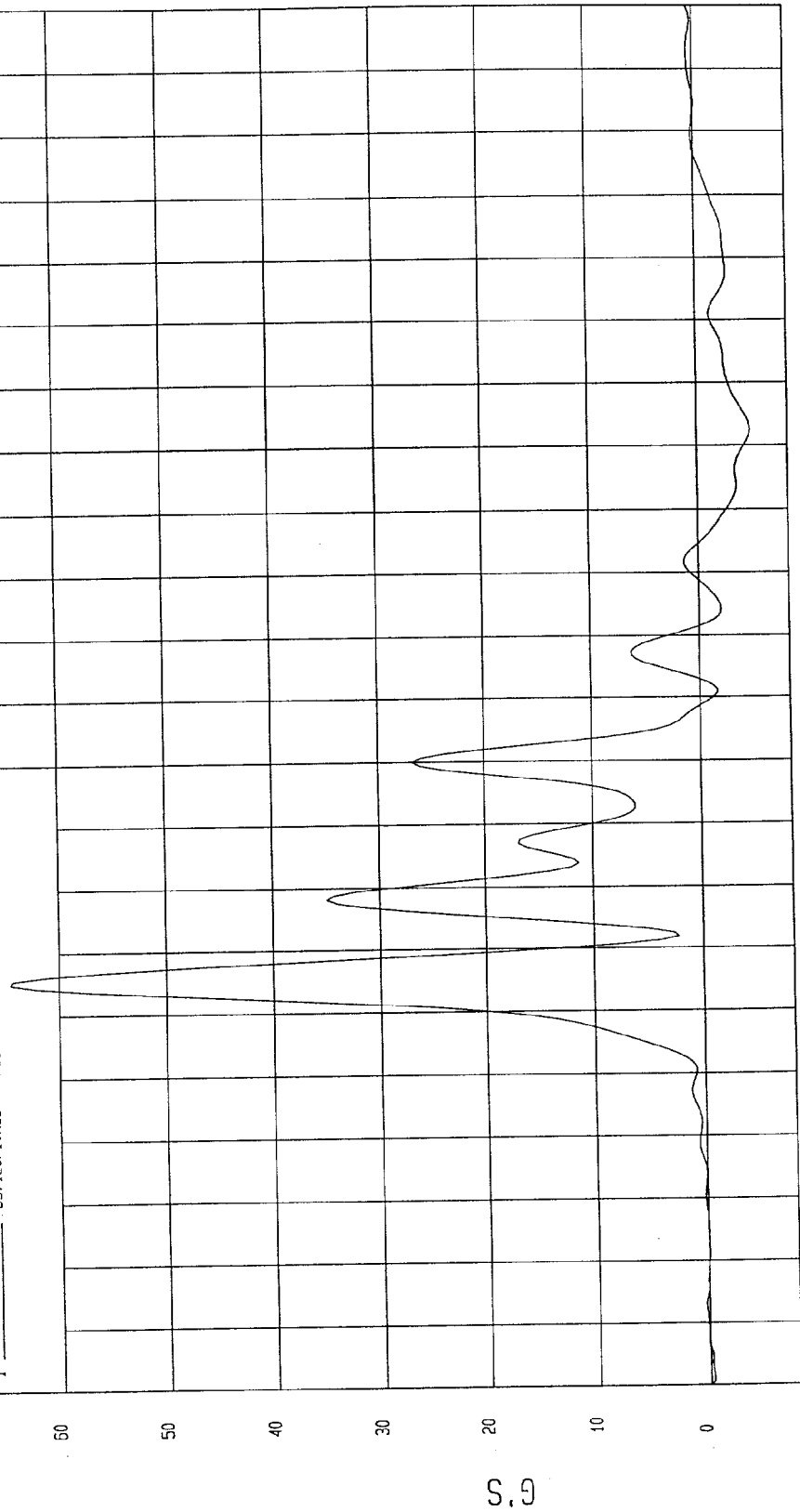
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 64.43 G'S at 45 msec

Minimum = -4.79 G'S at 132 msec

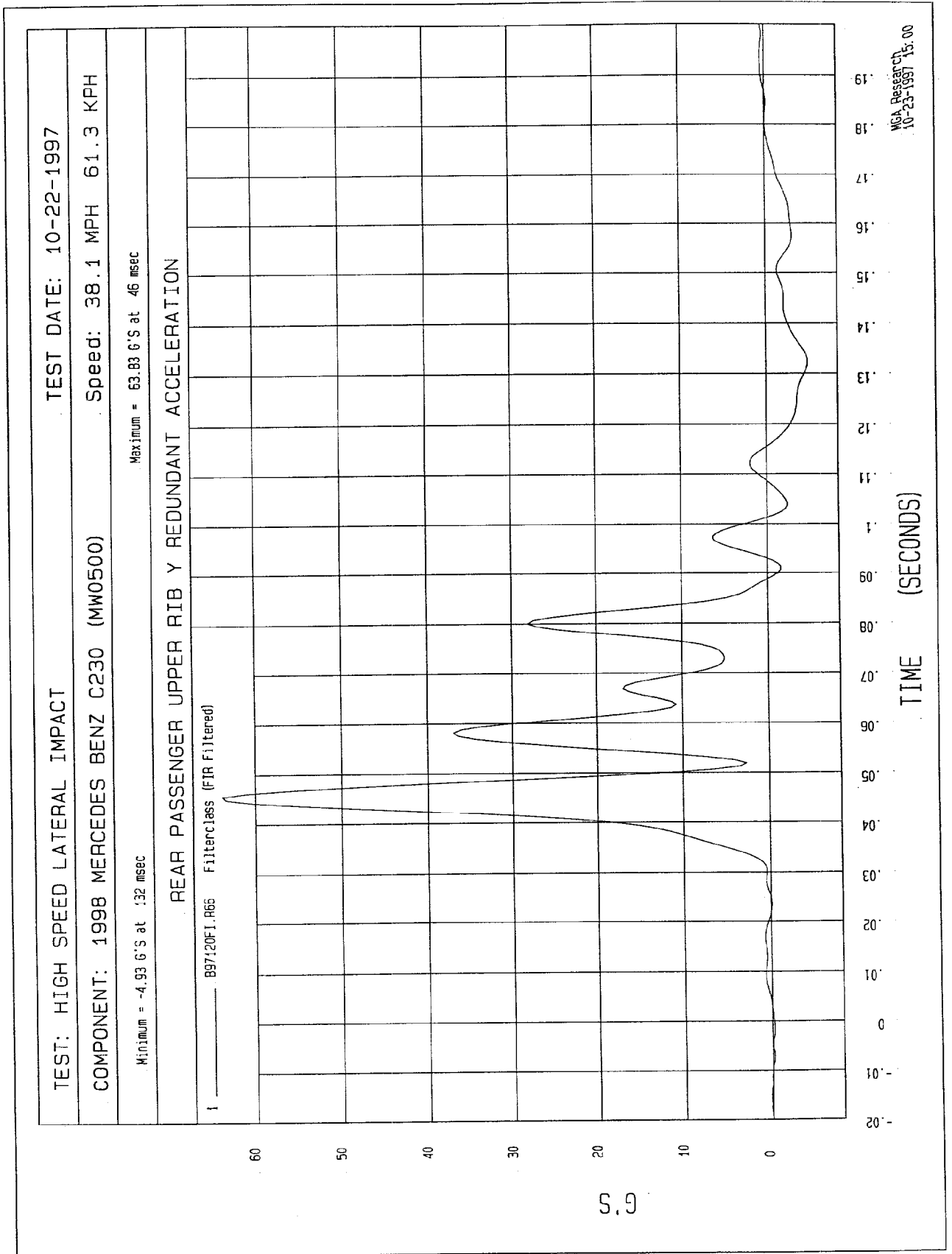
REAR PASSENGER UPPER RIB Y ACCELERATION

1 \_\_\_\_\_ 697120F1.R25 Filterclass (FIR Filtered)



MGA Research  
10-23-1997 15:00

TIME (SECONDS)

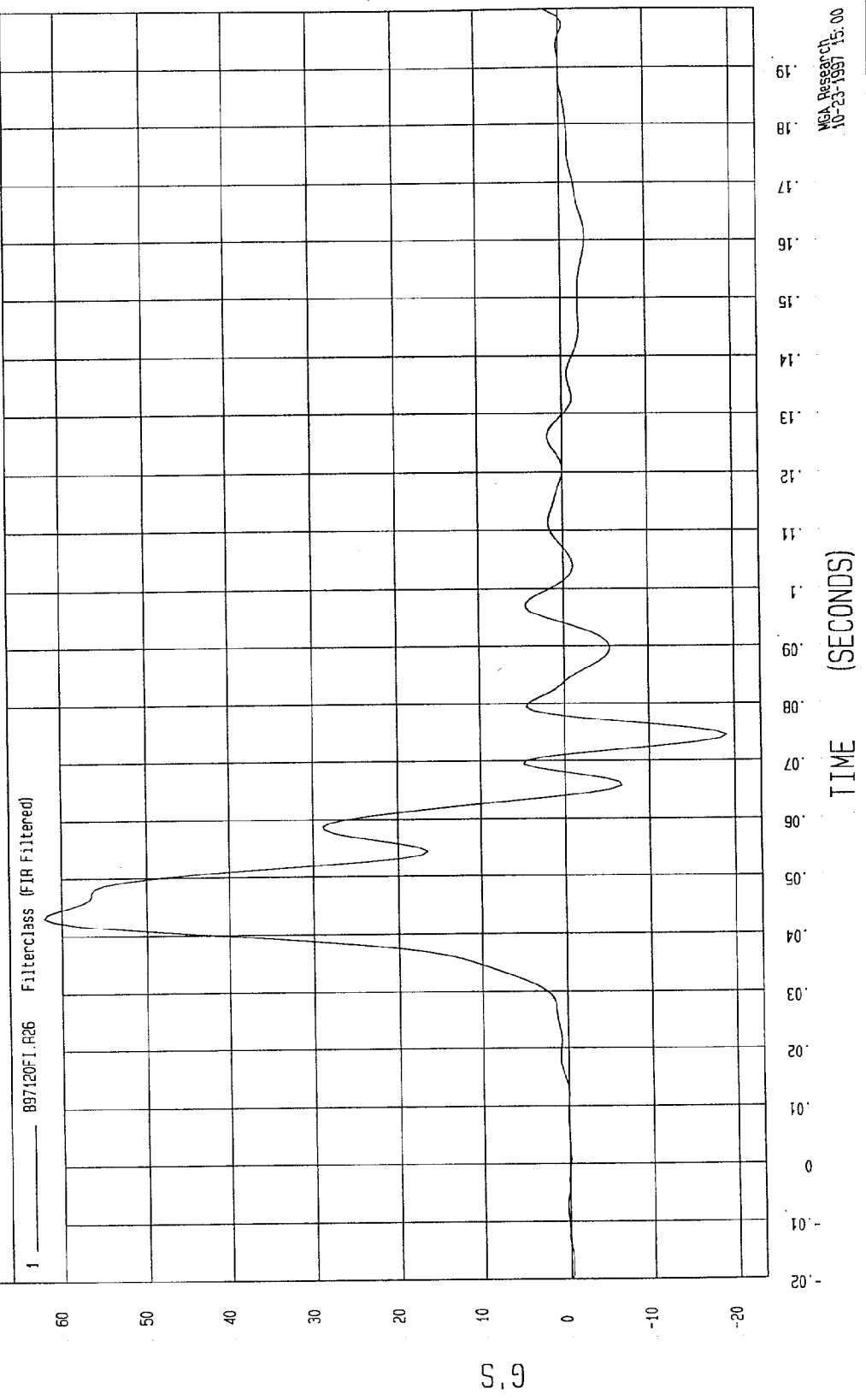


TEST: HIGH SPEED LATERAL IMPACT      TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)      Speed: 38.1 MPH 61.3 KPH

Minimum = -19.04 G'S at 74 msec      Maximum = 62.09 G'S at 43 msec

REAR PASSENGER LOWER RIB Y ACCELERATION



MCA Research  
10-23-1997 15:00

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

Speed: 38.1 MPH 61.3 KPH

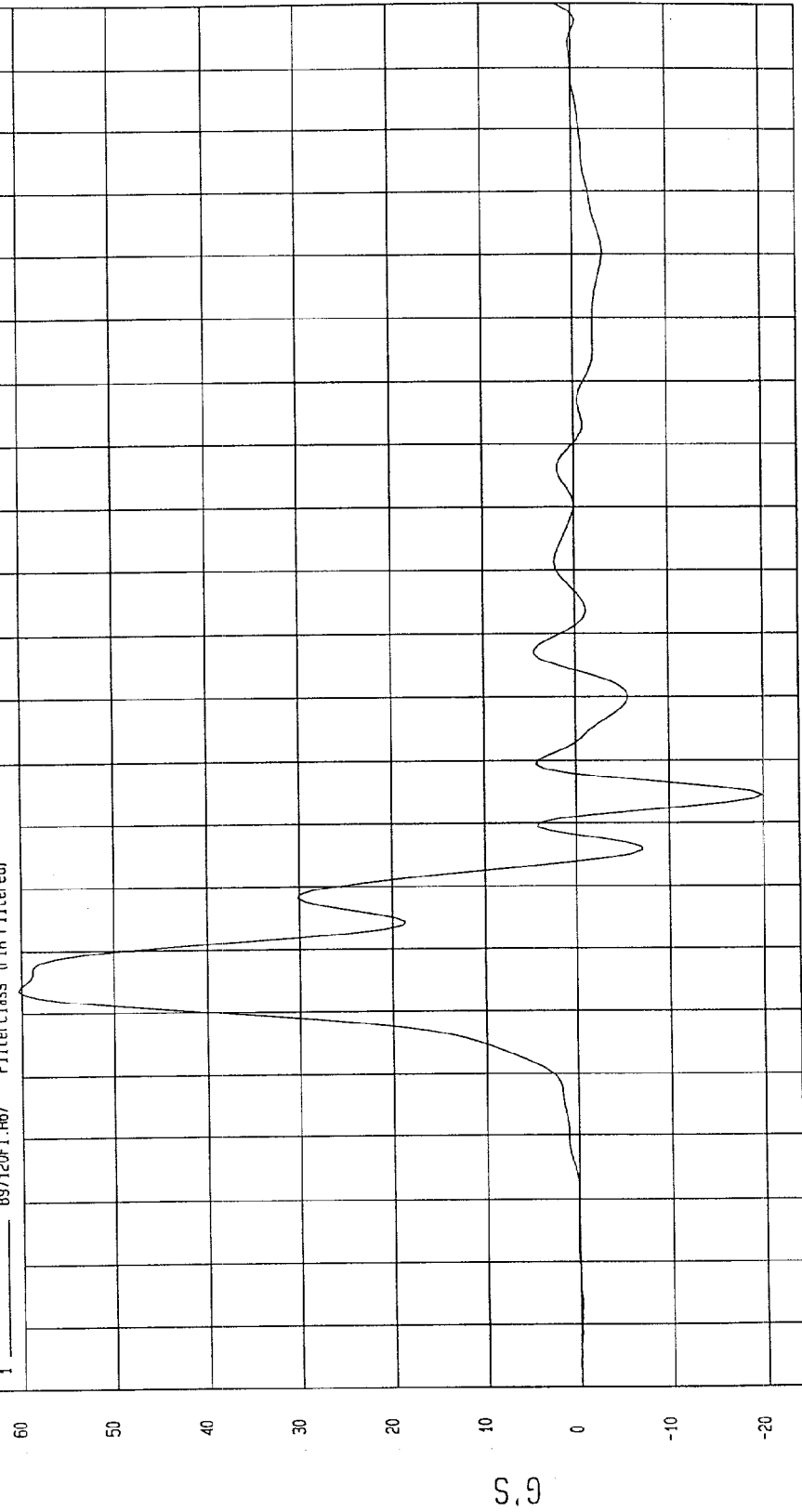
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Maximum = 60.30 G'S at 44 msec

Minimum = -19.84 G'S at 74 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 097120F1.R67 Filterclass (FIR Filtered)



TIME (SECONDS)

WCA Research  
10-23-1997 15:00

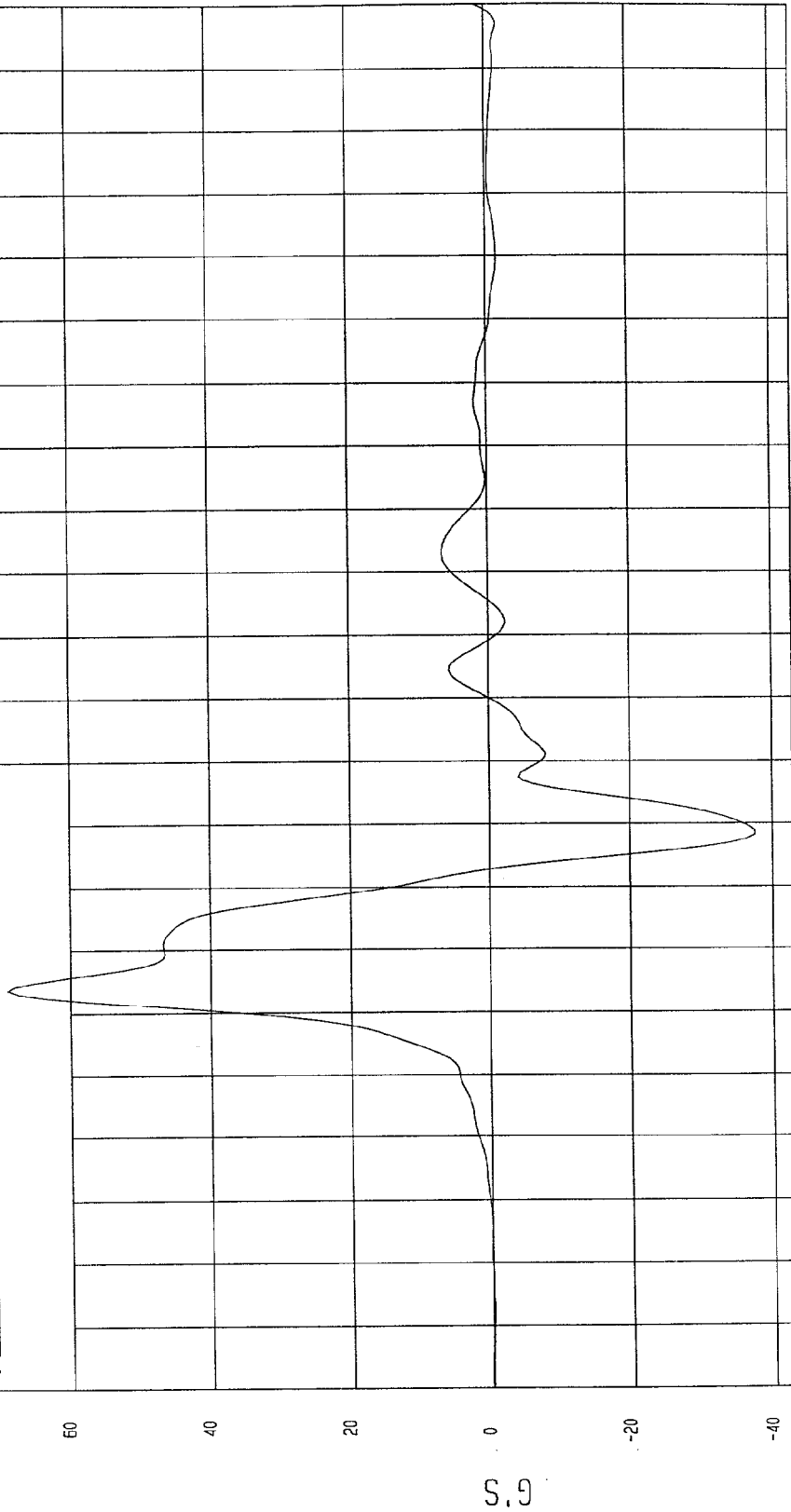
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -37.56 G'S at 69 msec  
Maximum = 68.99 G'S at 44 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 ——— B97120F1.R27 Filterclass (FIR Filtered)



NCA Research  
10-23-1997 15.00

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

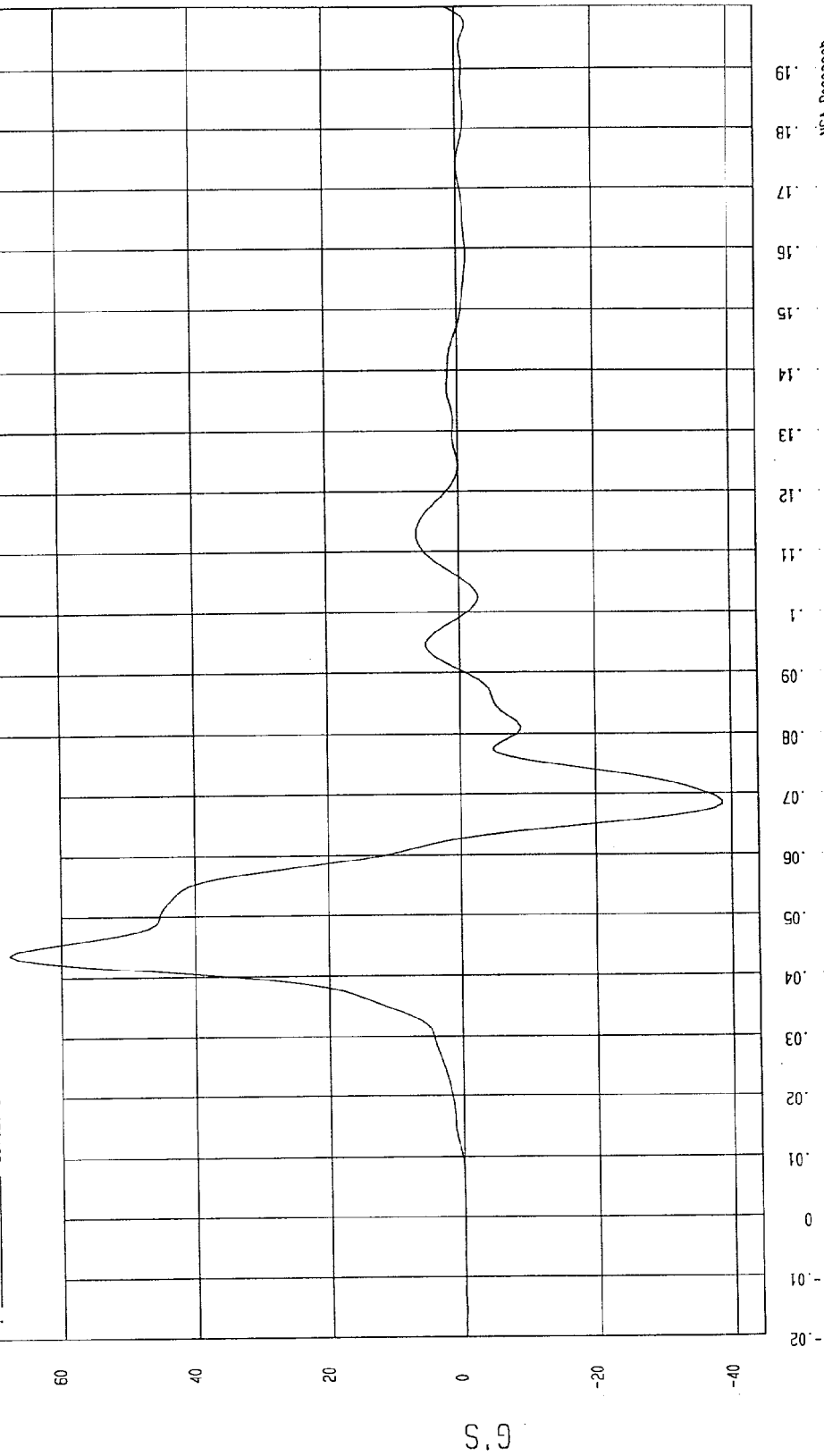
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -38.65 G'S at 69 msec

Maximum = 67.63 G'S at 44 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 B97120F1.R68 Filterclass (FIR Filtered)



MGA Research  
10-23-1997 15:00

TIME (SECONDS)

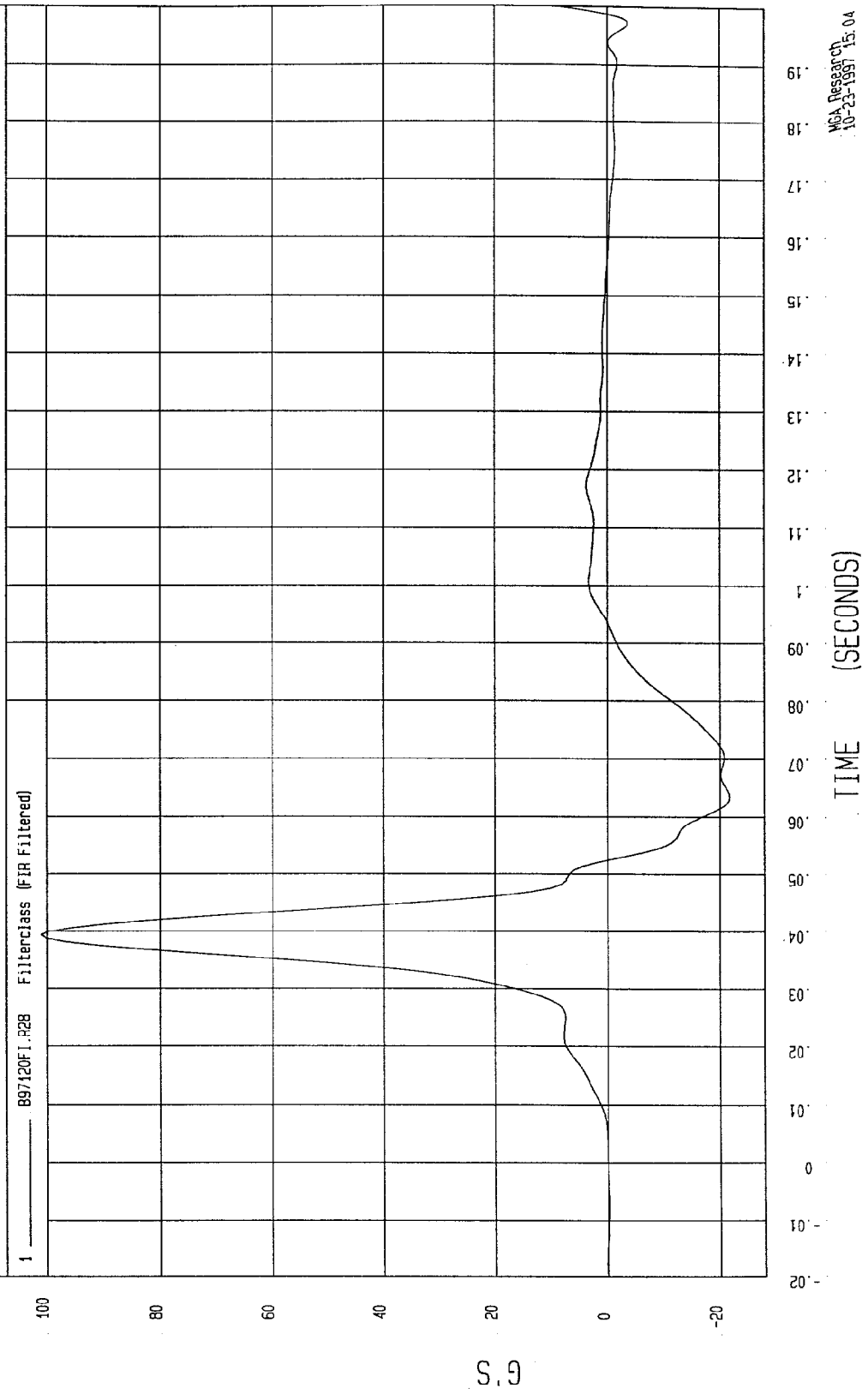
G'S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 10-22-1997

COMPONENT: 1998 MERCEDES BENZ C230 (MW0500) Speed: 38.1 MPH 61.3 KPH

Minimum = -21.77 G'S at 64 msec Maximum = 101.06 G'S at 39 msec

REAR PASSENGER PELVIS Y ACCELERATION



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 10-22-1997

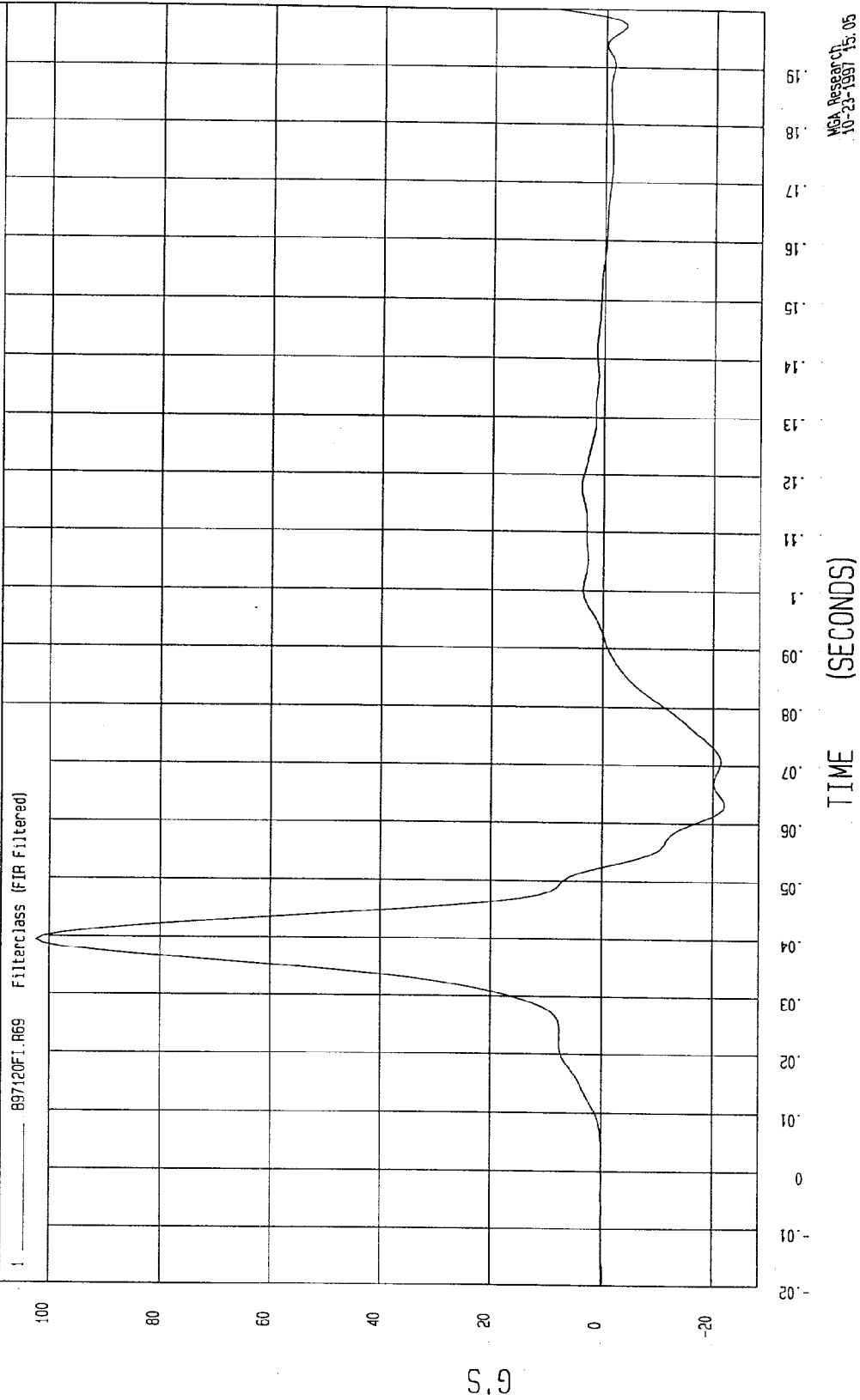
COMPONENT: 1998 MERCEDES BENZ C230 (MW0500)

Speed: 38.1 MPH 61.3 KPH

Minimum = -22.10 G's at 63 msec

Maximum = 102.32 G's at 39 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION



**APPENDIX C**  
**SID CONFIGURATION AND PERFORMANCE VERIFICATION**

REPORT NO. MGA-98-DC06

DUMMY PERFORMANCE CALIBRATIONS

NEW CAR ASSESSMENT PROGRAM  
SIDE IMPACT TEST

1998 MERCEDES-BENZ C230  
NHTSA NO. MW0500

MGA PROVING GROUNDS  
5000 WARREN ROAD  
BURLINGTON, WI 53105



Test Date: October 22, 1997

Report Date: November 3, 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

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PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 269

## Calibration Test Results Summary

Dummy Serial Number: 269

### Pre-Test Calibration

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

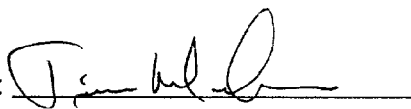
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 269

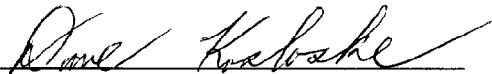
DATE OF VERIFICATION: October 20, 1997

| 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"    | 9.3          |
| KV - Knee Pivot From Back Line | 20.1" - 20.7"   | 20.4         |
| SW - Knee Pivot to Floor       | 19.3" - 19.9"   | 19.4         |
| HW - Hip Width                 | 14.0" - 15.4"   | 15.1         |

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: October 20, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971792

| TEST PARAMETER    | SPECIFICATION   | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE       | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY | 10 - 70%        | 27%          |
| PROBE SPEED       | 14.0 - 14.2 fps | 14.0         |
| UPPER RIB         | 37 - 46 g's     | 42           |
| LOWER RIB         | 37 - 46 g's     | 43           |
| LOWER SPINE       | 15 - 22 g's     | 21           |

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Hall

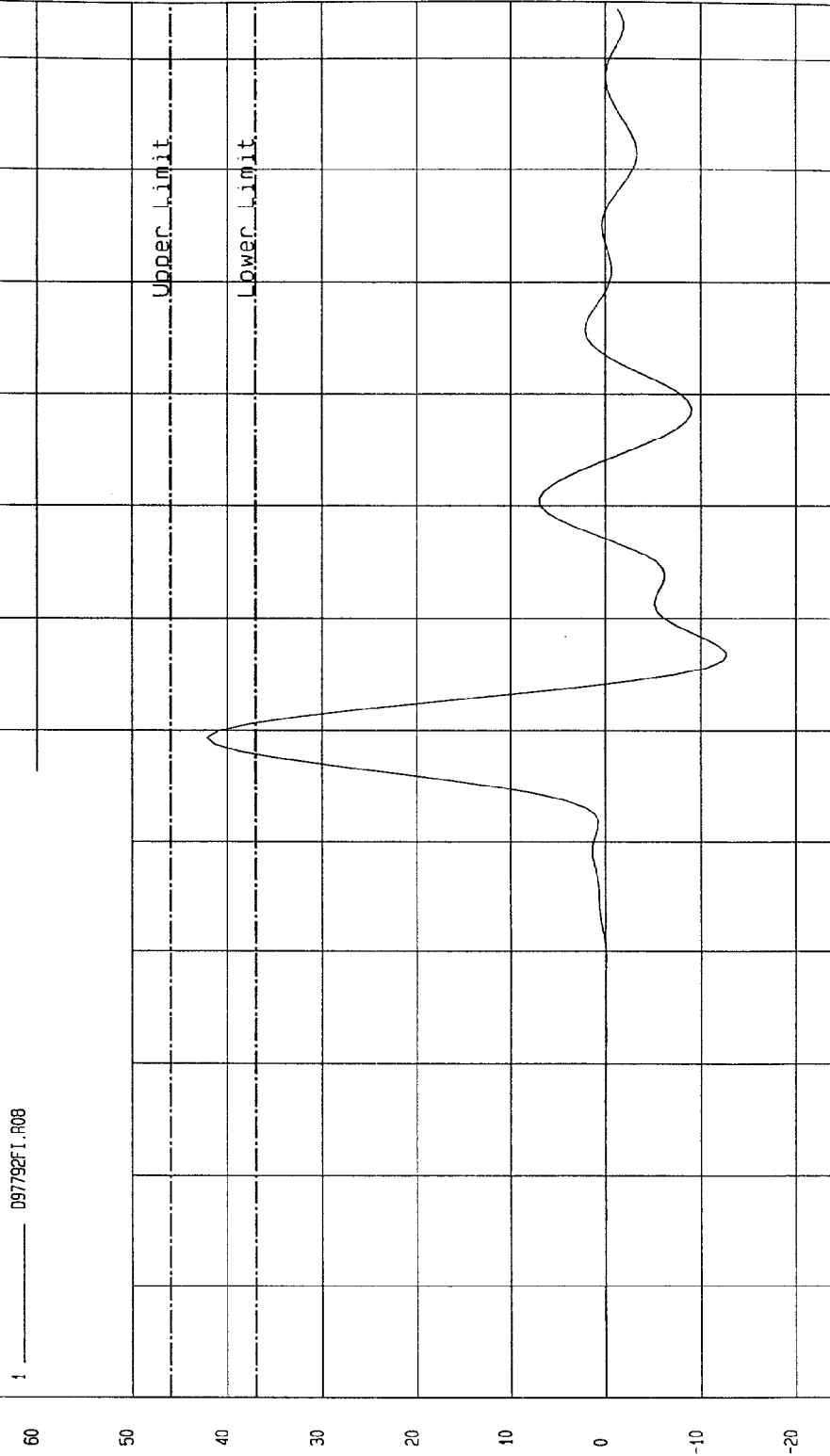
APPROVED BY Dave Kralake

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-20-1997 - 10:18

COMPONENT: DUMMY # 269 Velocity: 14.041 FT/SEC 4.28 M/SEC

Minimum = -12.73 G'S at 66.8 msec Maximum = 42.14 G'S at 59.3 msec

UPPER RIB ACCELERATION



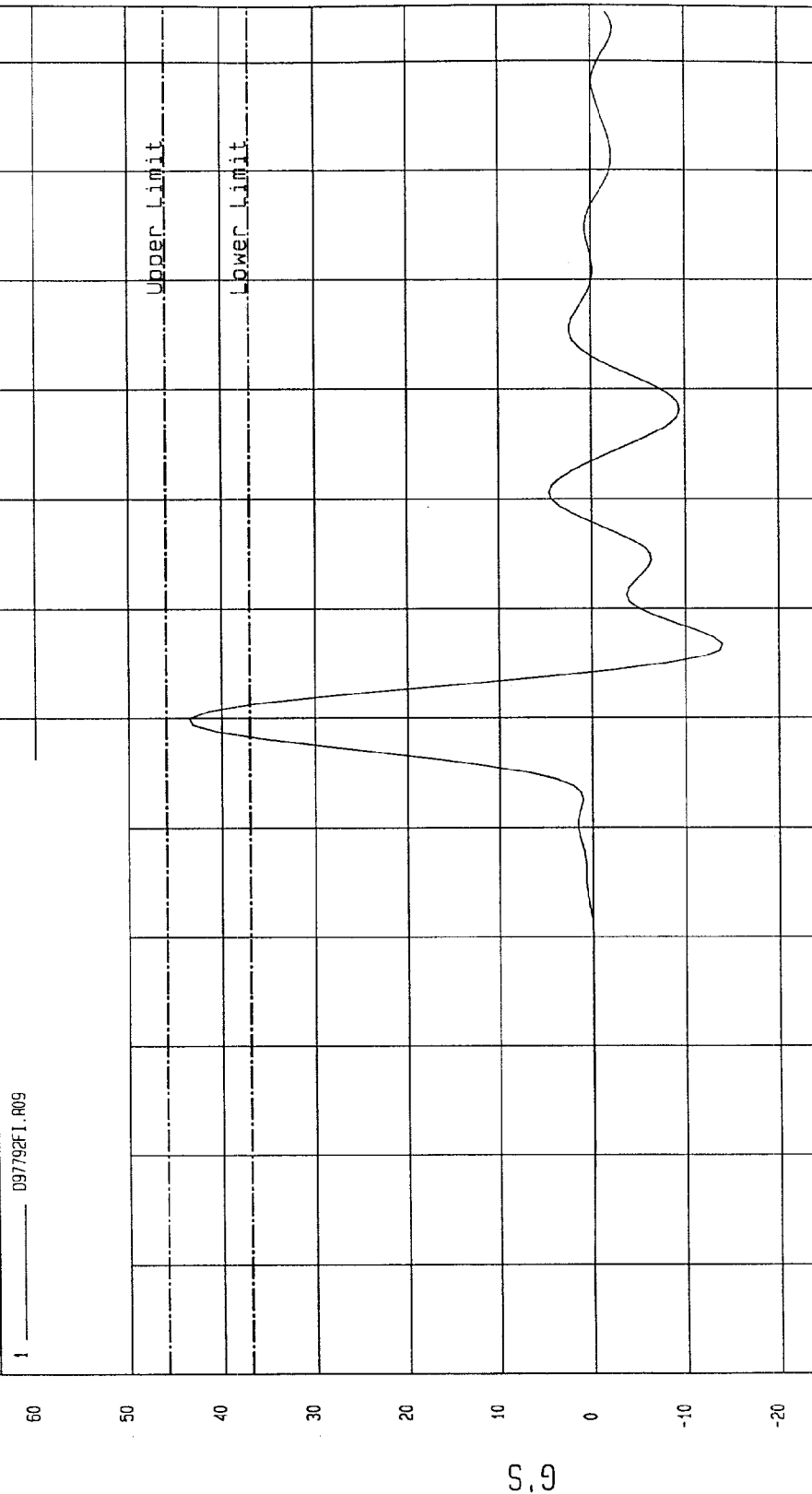
MSA Research  
10-20-1997 10:39

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-20-1997 - 10:18

COMPONENT: DUMMY # 269 Velocity: 14.041 FT/SEC 4.28 M/SEC

Minimum = -13.99 G'S at 66.8 msec Maximum = 43.47 G'S at 60 msec

LOWER RIB ACCELERATION



MCA Research  
10-20-1997 10:39

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-20-1997 - 10:18

COMPONENT: DUMMY # 269 Velocity: 14.041 FT/SEC 4.28 M/SEC

Minimum = -5.38 G'S at 83.1 msec

Maximum = 21.43 G'S at 64.3 msec

LOWER SPINE ACCELERATION

1 \_\_\_\_\_ D97792F1.R10

30

20

10

0

-10

-20

G'S

Upper Limit

Lower Limit

.12

.11

.1

.09

.08

.07

.06

.05

.04

.03

.02

.01

0

TIME (SECONDS)

MCA Research  
10-20-1997 10:39

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: October 20, 1997

DUMMY NUMBER: 269

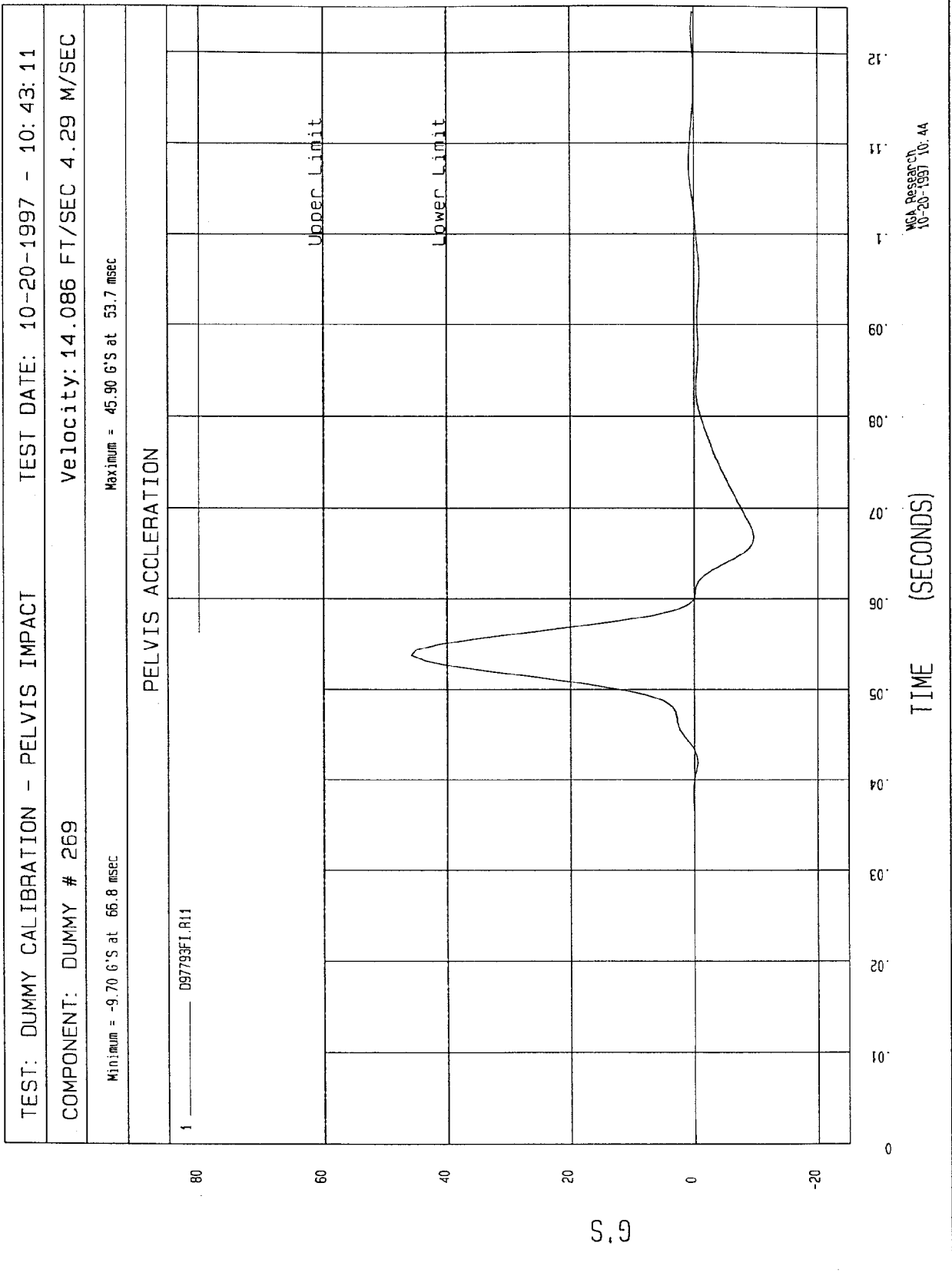
TEST NUMBER: D971793

| TEST PARAMETER      | SPECIFICATION   | TEST RESULTS |
|---------------------|-----------------|--------------|
| TEMPERATURE         | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY   | 10 - 70%        | 27%          |
| PROBE SPEED         | 14.0 - 14.2 f/s | 14.1         |
| PELVIS ACCELERATION | 40 - 60 g's     | 46           |

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim M. L.

APPROVED BY Paul Krabake



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

DATE: October 17, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971794

| TEST PARAMETER    | SPECIFICATION   | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE       | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY | 10 - 70%        | 26%          |
| FORCE @ 0.5 in    | 23.3 - 36.5 lbs | 33.1         |
| FORCE @ 0.75 in   | 36.7 - 49.8 lbs | 46.9         |
| FORCE @ 1.0 in    | 50 - 63 lbs     | 60           |
| FORCE @ 1.3 in    | 73 - 88 lbs     | 83           |

TEST MEETS SPECIFICATIONS

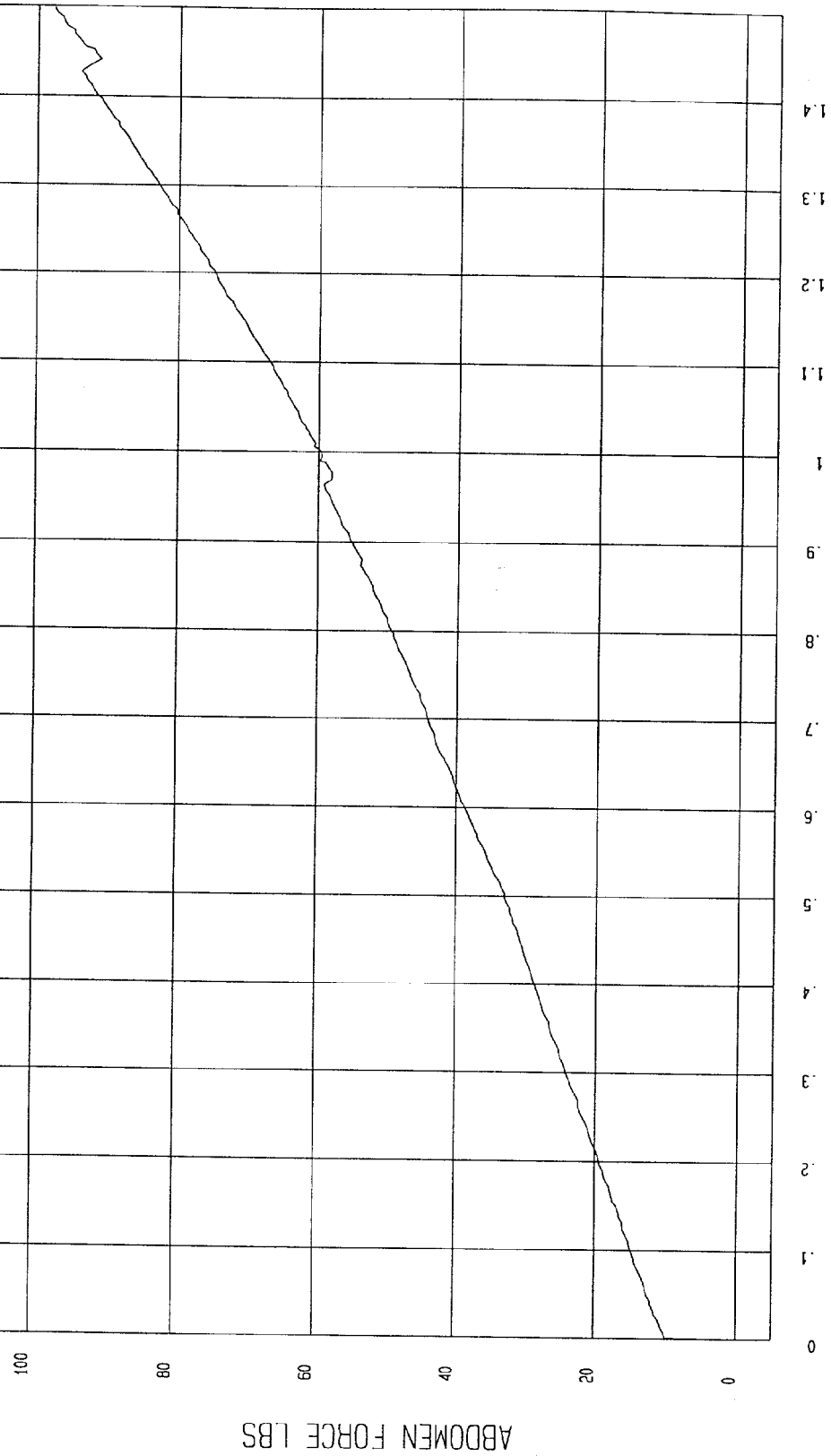
TECHNICIAN Timberlin

APPROVED BY Rene Kabeke

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 10-17-1997 - 11:07

COMPONENT: DUMMY # 269

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MCA Research  
10-17-1997 11:24

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

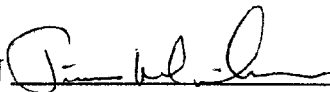
DATE: October 16, 1997

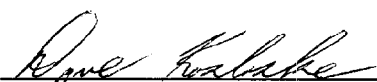
DUMMY NUMBER: 269

TEST NUMBER: D971795

| TEST PARAMETER    | SPECIFICATION | TEST RESULTS |
|-------------------|---------------|--------------|
| TEMPERATURE       | 66 - 78° F    | 70°          |
| RELATIVE HUMIDITY | 10 - 70%      | 28%          |
| FORCE @ 0°        | 0 - 6 lbs     | 0            |
| FORCE @ 20°       | 22 - 34 lbs   | 27           |
| FORCE @ 30°       | 34 - 46 lbs   | 38           |
| FORCE @ 40°       | 46 - 58 lbs   | 50           |
| RETURN ANGLE      | 12° maximum   | 5°           |

TEST MEETS SPECIFICATIONS

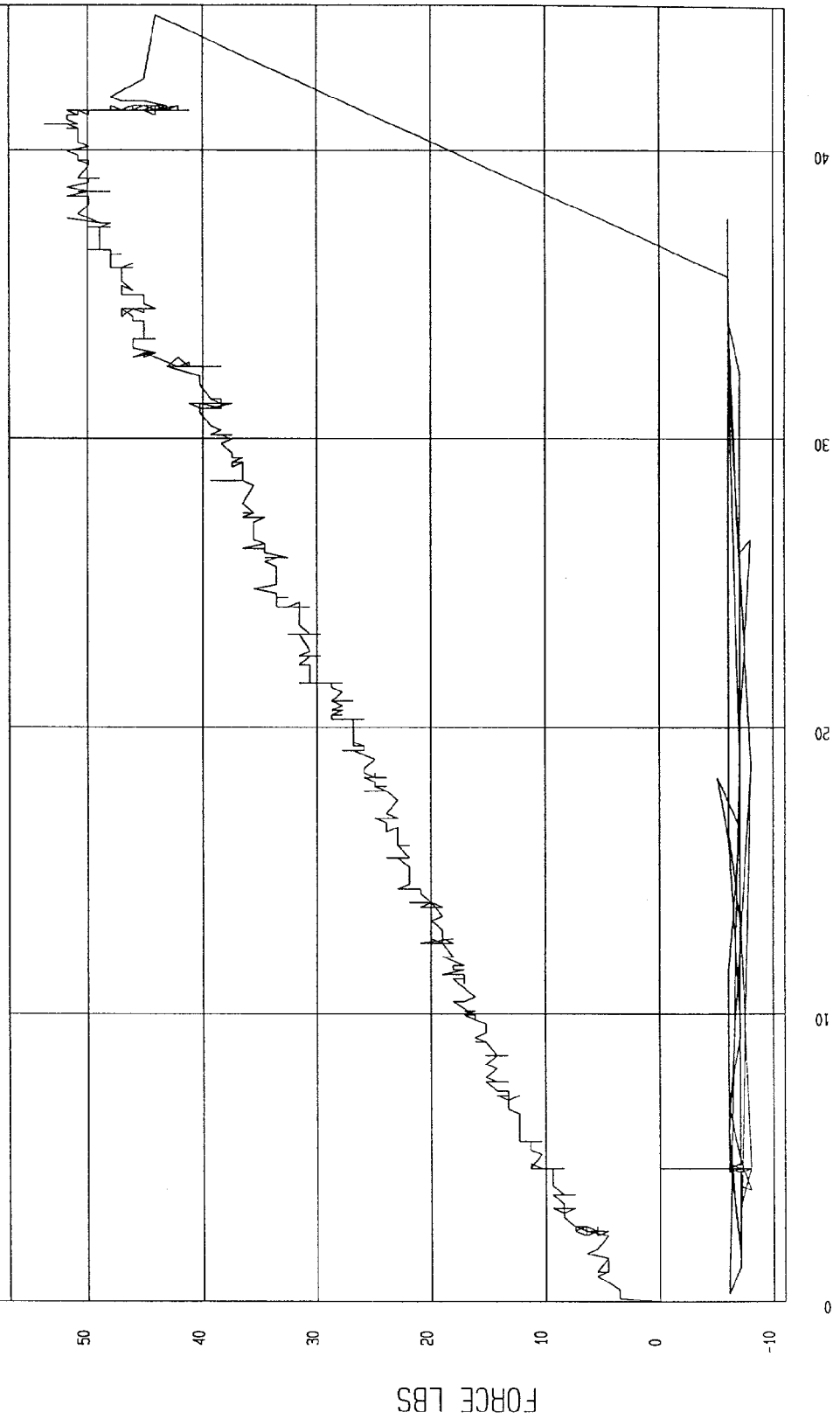
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 10-16-1997 - 15:00

COMPONENT: DUMMY # 269

FORCE as a function of TORSO ROTATION



MGA Research  
10-17-1997 10:23

PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 270

## Calibration Test Results Summary

Dummy Serial Number: 270

### Pre-Test Calibration

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

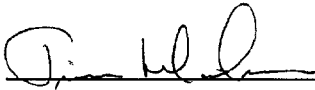
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

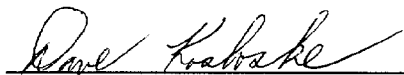
DATE OF VERIFICATION: October 20, 1997

| DESCRIPTION                    | SPECIFICATION   | TEST RESULTS |
|--------------------------------|-----------------|--------------|
| SH - Seated Height             | 35.0" - 35.8"   | 35.4         |
| RH - Rib Height                | 19.75" - 20.50" | 20.50        |
| HP - Hip Pivot Height          | 3.9" ref.       | 3.9          |
| RD - Rib From Back Line        | 9.0" to 9.5"    | 9.4          |
| KV - Knee Pivot From Back Line | 20.1" - 20.7"   | 20.6         |
| SW - Knee Pivot to Floor       | 19.3" - 19.9"   | 19.5         |
| HW - Hip Width                 | 14.0" - 15.4"   | 15.0         |

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

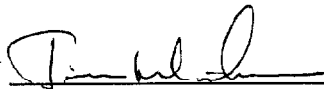
DATE: October 20, 1997

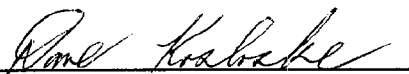
DUMMY NUMBER: 270

TEST NUMBER: D971802

| TEST PARAMETER    | SPECIFICATION   | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE       | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY | 10 - 70%        | 27%          |
| PROBE SPEED       | 14.0 - 14.2 fps | 14.1         |
| UPPER RIB         | 37 - 46 g's     | 41           |
| LOWER RIB         | 37 - 46 g's     | 38           |
| LOWER SPINE       | 15 - 22 g's     | 20           |

TEST MEETS SPECIFICATIONS

TECHNICIAN 

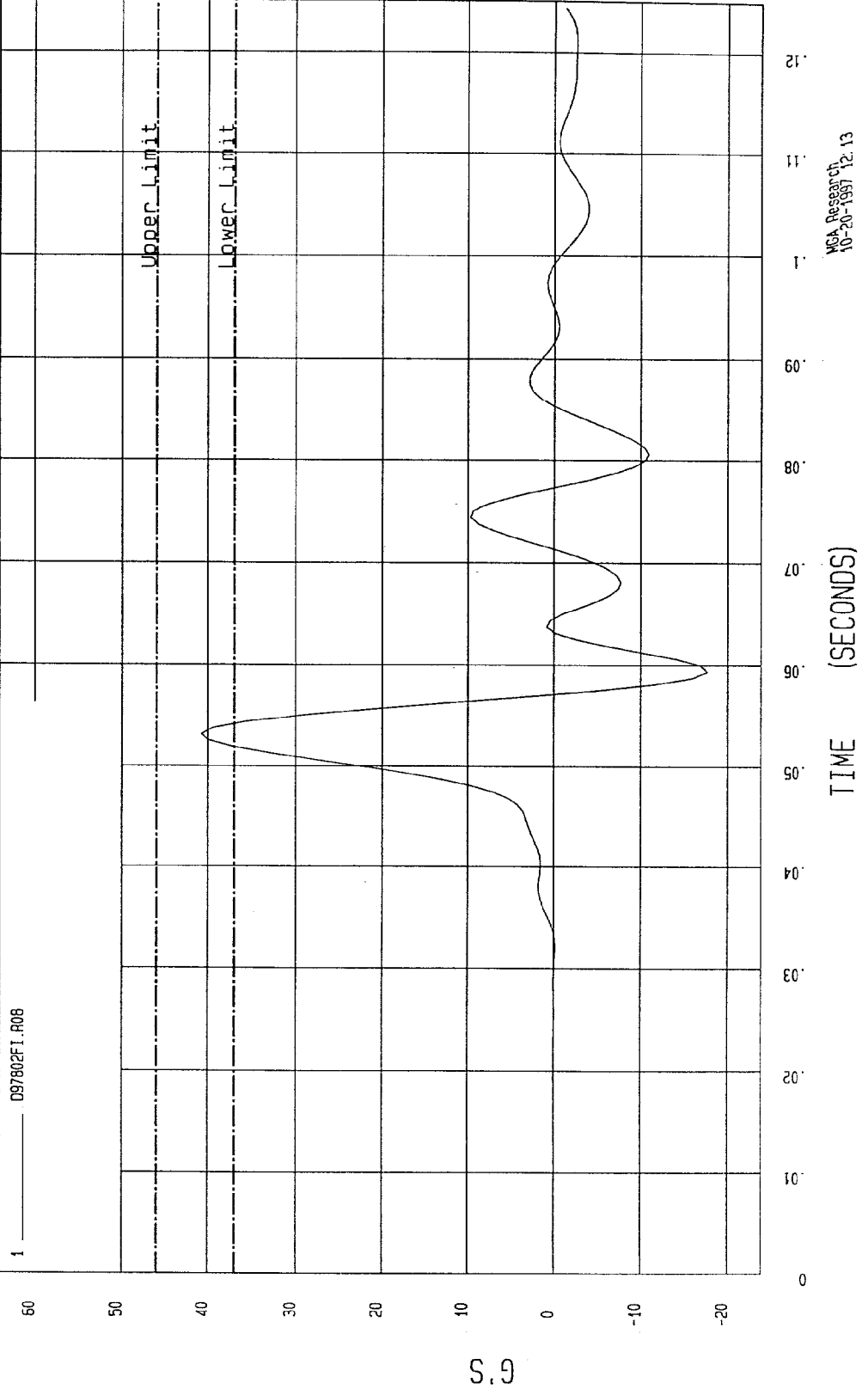
APPROVED BY 

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-20-1997 - 11:36

COMPONENT: DUMMY # 270 Velocity: 14.102 FT/SEC 4.3 M/SEC

Minimum = -17.58 G'S at 59.3 msec Maximum = 40.75 G'S at 53.1 msec

UPPER RIB ACCELERATION



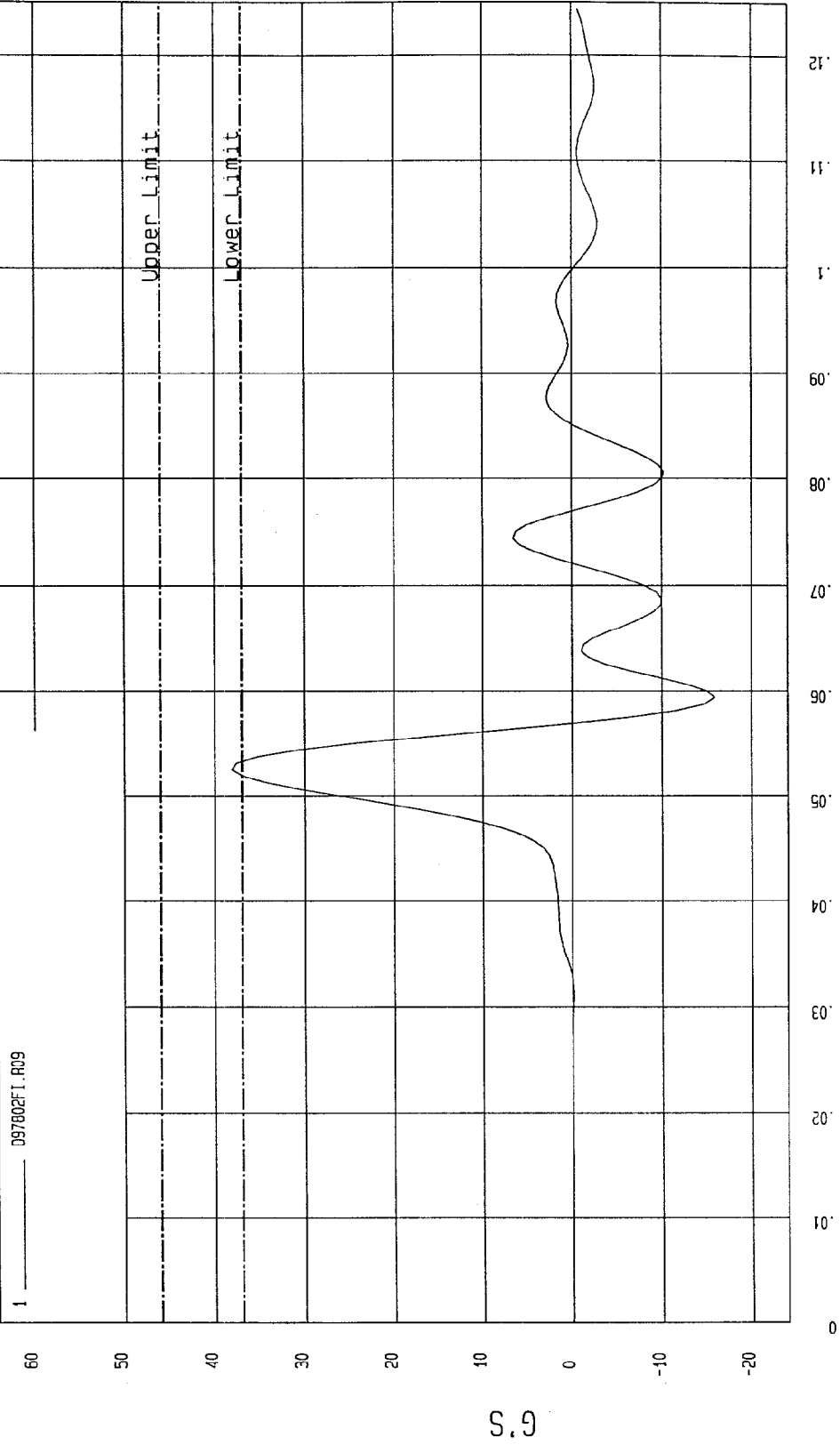
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-20-1997 - 11:36

COMPONENT: DUMMY # 270 Velocity: 14.102 FT/SEC 4.3 M/SEC

Minimum = -15.00 G'S at 59.3 msec

Maximum = 38.12 G'S at 52.5 msec

LOWER RIB ACCELERATION



MOA Research  
10-20-1997 12:13

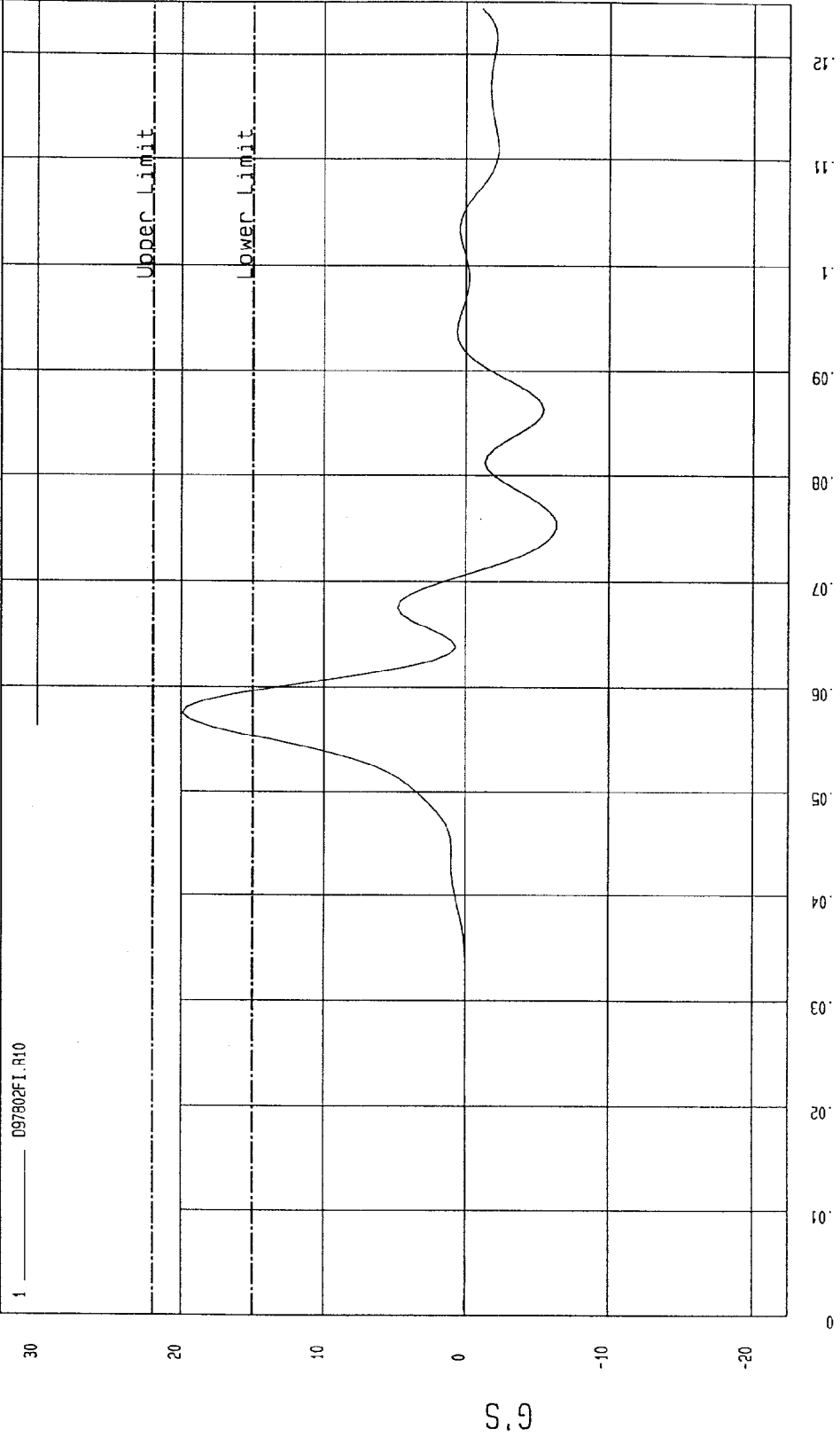
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 10-20-1997 - 11:36

COMPONENT: DUMMY # 270 Velocity: 14.102 FT/SEC 4.3 M/SEC

Minimum = -6.31 G'S at 75.6 msec

Maximum = 19.91 G'S at 57.5 msec

LOWER SPINE ACCELERATION



MGA Research  
10-20-1997 12:14

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: October 20, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971803

| TEST PARAMETER      | SPECIFICATION   | TEST RESULTS |
|---------------------|-----------------|--------------|
| TEMPERATURE         | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY   | 10 - 70%        | 27%          |
| PROBE SPEED         | 14.0 - 14.2 f/s | 14.1         |
| PELVIS ACCELERATION | 40 - 60 g's     | 43           |

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Wilson

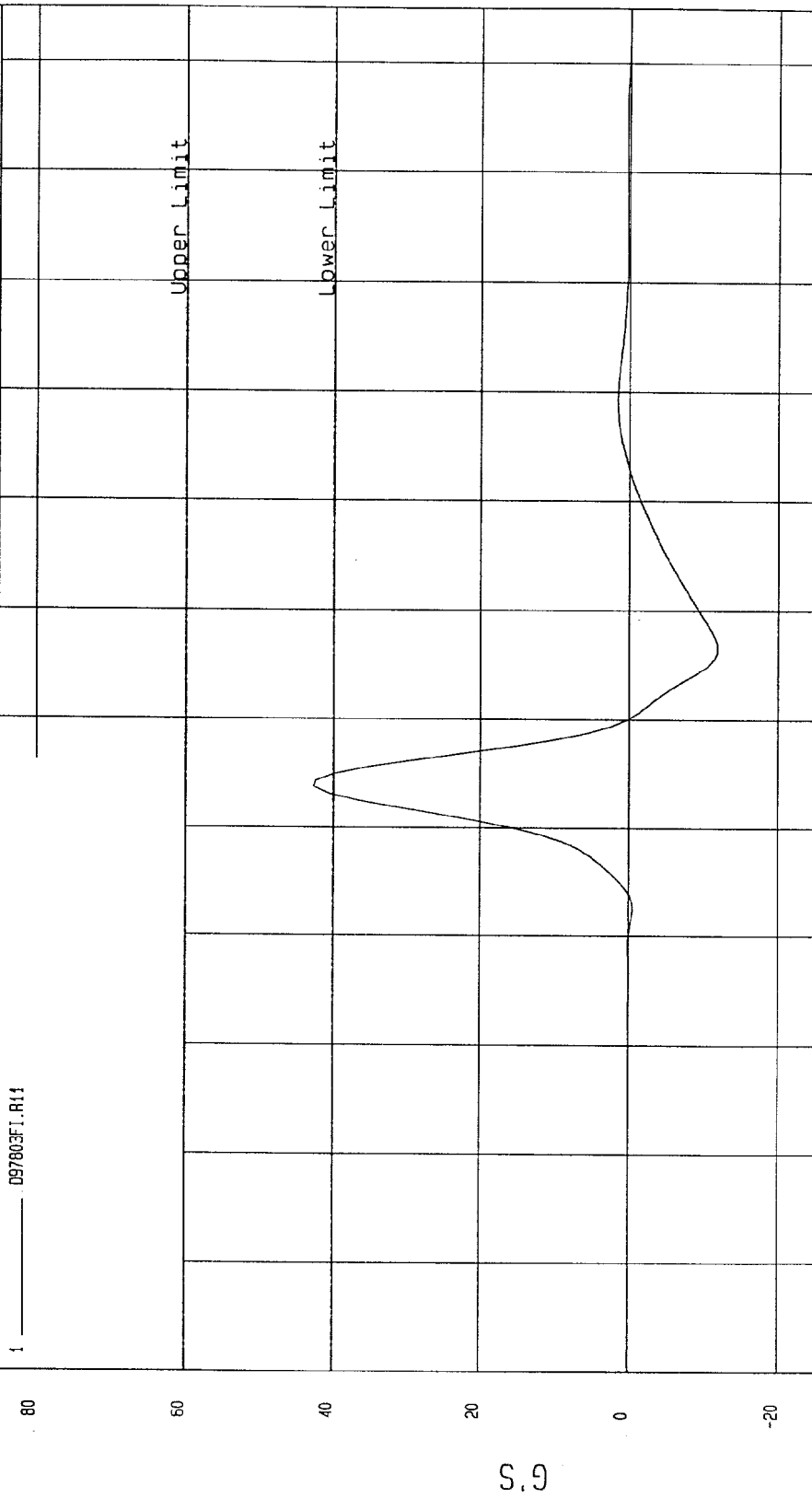
APPROVED BY Dave Krabacke

TEST: DUMMY CALIBRATION - PELVIS IMPACT      TEST DATE: 10-20-1997 - 12:13

COMPONENT: DUMMY # 270      Velocity: 14.079 FT/SEC 4.29 M/SEC

Minimum = -11.71 G'S at 65.8 msec      Maximum = 42.77 G'S at 53.7 msec

PELVIS ACCELERATION



TIME (SECONDS)

MCA Research  
10-20-1997 12:14

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

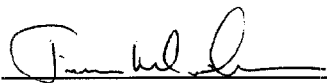
DATE: October 17, 1997

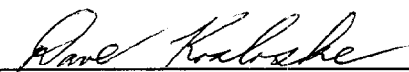
DUMMY NUMBER: 270

TEST NUMBER: D971804

| TEST PARAMETER    | SPECIFICATION   | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE       | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY | 10 - 70%        | 26%          |
| FORCE @ 0.5 in    | 23.3 - 36.5 lbs | 30.3         |
| FORCE @ 0.75 in   | 36.7 - 49.8 lbs | 41.3         |
| FORCE @ 1.0 in    | 50 - 63 lbs     | 56           |
| FORCE @ 1.3 in    | 73 - 88 lbs     | 76           |

TEST MEETS SPECIFICATIONS

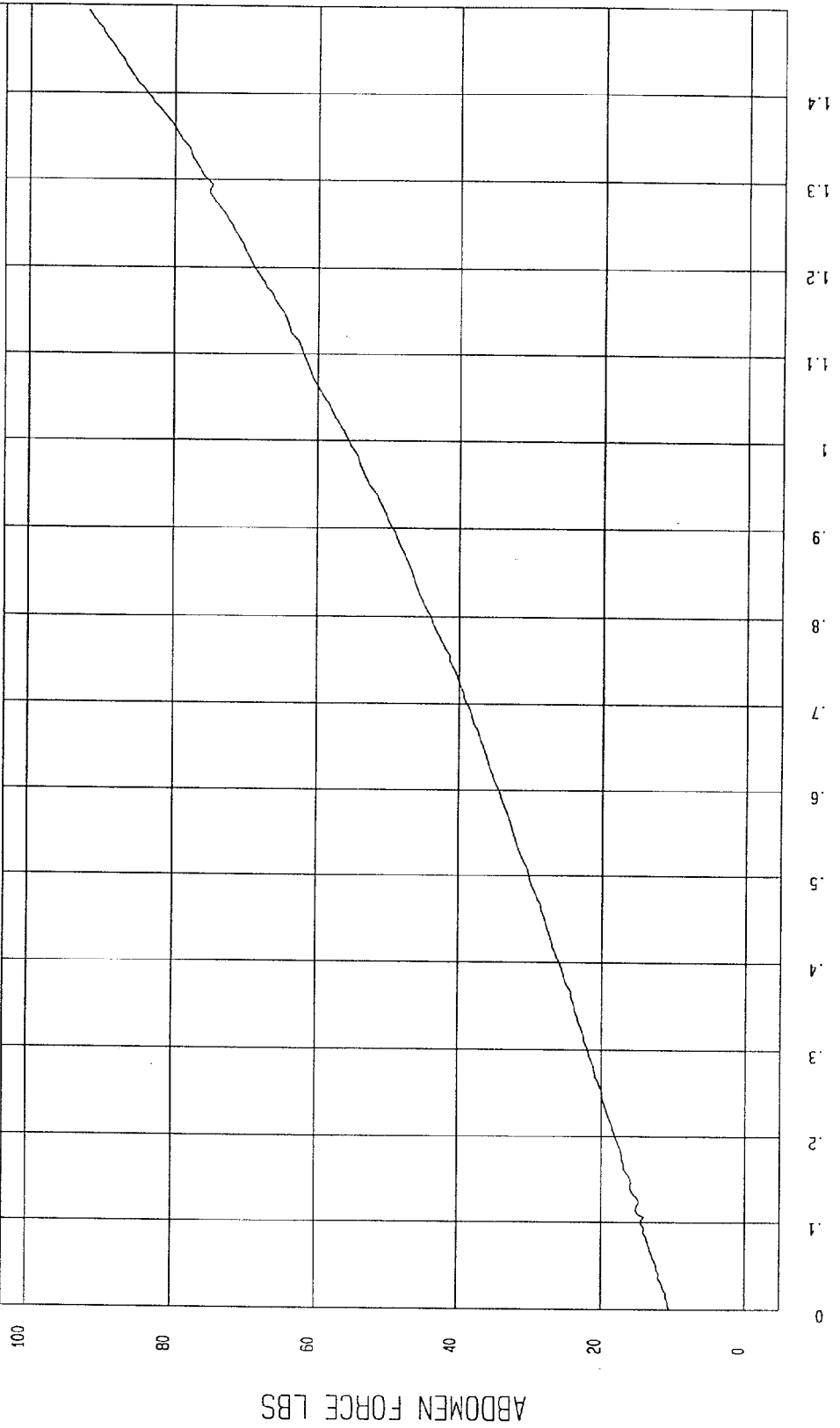
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 10-17-1997 - 11:11

COMPONENT: DUMMY # 270

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MGA Research  
10-17-1997 11:24

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: October 17, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971805

| TEST PARAMETER    | SPECIFICATION | TEST RESULTS |
|-------------------|---------------|--------------|
| TEMPERATURE       | 66 - 78° F    | 70°          |
| RELATIVE HUMIDITY | 10 - 70%      | 26%          |
| FORCE @ 0°        | 0 - 6 lbs     | 0            |
| FORCE @ 20°       | 22 - 34 lbs   | 22           |
| FORCE @ 30°       | 34 - 46 lbs   | 36           |
| FORCE @ 40°       | 46 - 58 lbs   | 51           |
| RETURN ANGLE      | 12° maximum   | 7°           |

TEST MEETS SPECIFICATIONS

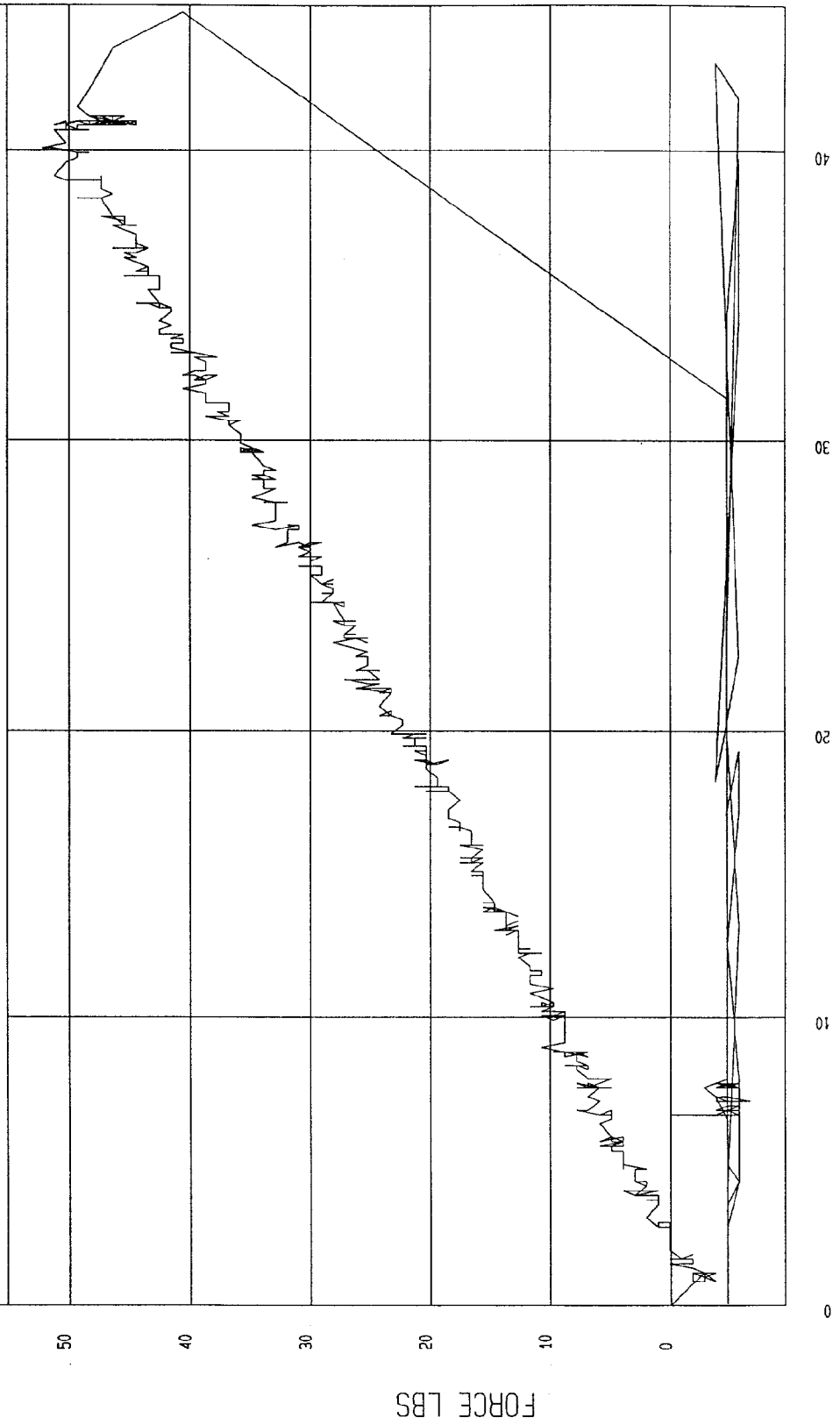
TECHNICIAN Jim White

APPROVED BY Gene Kabiske

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 10-17-1997 - 09:31

COMPONENT: DUMMY # 270

FORCE as a function of TORSO ROTATION



MGA Research  
10-17-1997 10:24

POST-TEST CERTIFICATION DATA

Front Dummy Serial Number: 269

### Calibration Test Results Summary

Dummy Serial Number: 269

#### Post-Test Calibration

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 269

DATE OF VERIFICATION: November 3, 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"    | 9.3          |
| KV - Knee Pivot From Back Line | 20.1" - 20.7"   | 20.4         |
| SW - Knee Pivot to Floor       | 19.3" - 19.9"   | 19.4         |
| HW - Hip Width                 | 14.0" - 15.4"   | 15.1         |

MEASUREMENTS BY:

Jim White

APPROVED BY:

Dave Koschke

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 3, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971952

| TEST PARAMETER    | SPECIFICATION   | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE       | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY | 10 - 70%        | 22%          |
| PROBE SPEED       | 14.0 - 14.2 fps | 14.0         |
| UPPER RIB         | 37 - 46 g's     | 45           |
| LOWER RIB         | 37 - 46 g's     | 44           |
| LOWER SPINE       | 15 - 22 g's     | 22           |

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim H. L.

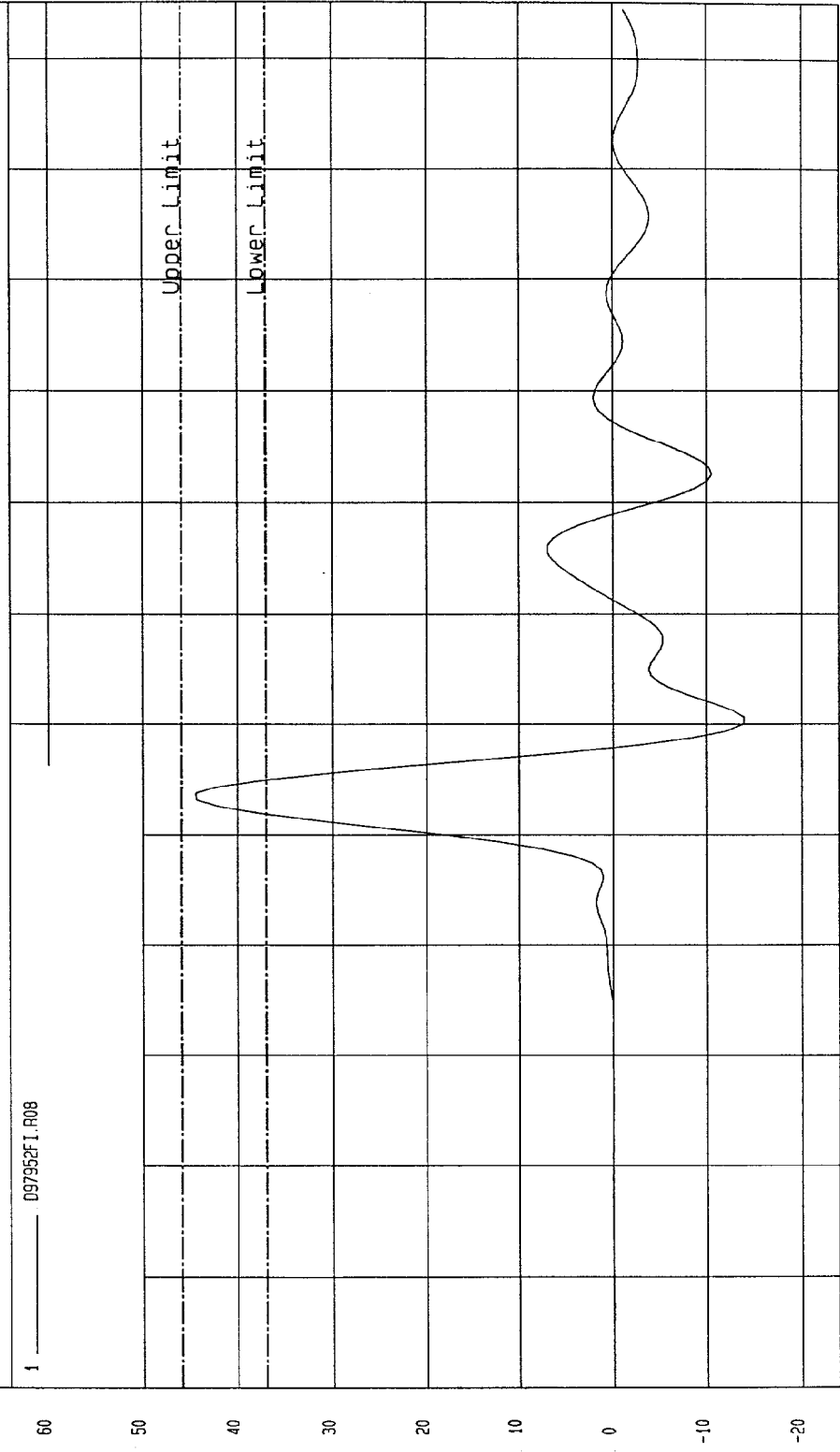
APPROVED BY Paul K. K.

TEST: DUMMY CALIBRATION - THORAX IMPACT      TEST DATE: 11-03-1997 - 16:01

COMPONENT: DUMMY # 269      Velocity: 14.019 FT/SEC 4.27 M/SEC

Minimum = -13.95 G'S at 60.6 msec      Maximum = 44.54 G'S at 53.7 msec

UPPER RIB ACCELERATION



TIME (SECONDS)

0 10 20 30 40 50 60 70 80 90 100 110 120

MGA Research  
11-03-1997 16:47

S.G

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 11-03-1997 - 16:01

COMPONENT: DUMMY # 269 Velocity: 14.019 FT/SEC 4.27 M/SEC

Minimum = -14.17 G'S at 50 msec

Maximum = 44.08 G'S at 53.7 msec

LOWER RIB ACCELERATION

1 097952F1.R09

60

50

40

30

20

10

0

-10

-20

G'S

0

10

20

30

40

50

60

70

80

90

100

110

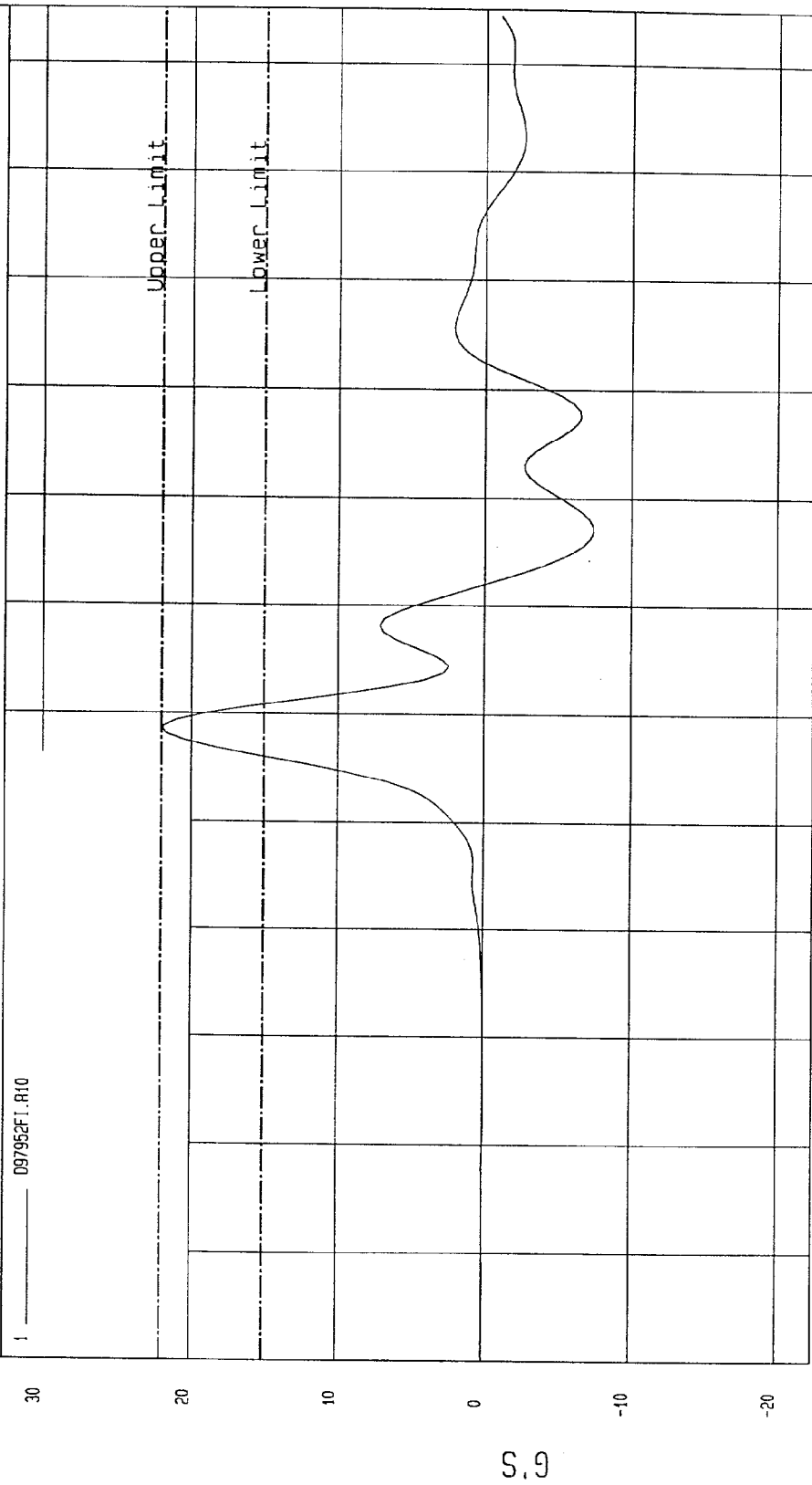
120

TIME (SECONDS)

MSA Research  
11-03-1997 16:48

|                                         |                                    |
|-----------------------------------------|------------------------------------|
| TEST: DUMMY CALIBRATION - THORAX IMPACT | TEST DATE: 11-03-1997 - 16:01      |
| COMPONENT: DUMMY # 259                  | Velocity: 14.019 FT/SEC 4.27 M/SEC |
| Minimum = -7.40 G'S at 76.8 msec        | Maximum = 21.97 G'S at 58.7 msec   |

LOWER SPINE ACCELERATION



TIME (SECONDS)

MCA Research  
11-03-1997 16:48

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

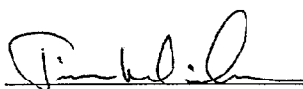
DATE: November 3, 1997

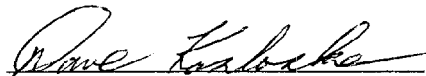
DUMMY NUMBER: 269

TEST NUMBER: D971953

| TEST PARAMETER      | SPECIFICATION   | TEST RESULTS |
|---------------------|-----------------|--------------|
| TEMPERATURE         | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY   | 10 - 70%        | 22%          |
| PROBE SPEED         | 14.0 - 14.2 f/s | 14.0         |
| PELVIS ACCELERATION | 40 - 60 g's     | 45           |

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

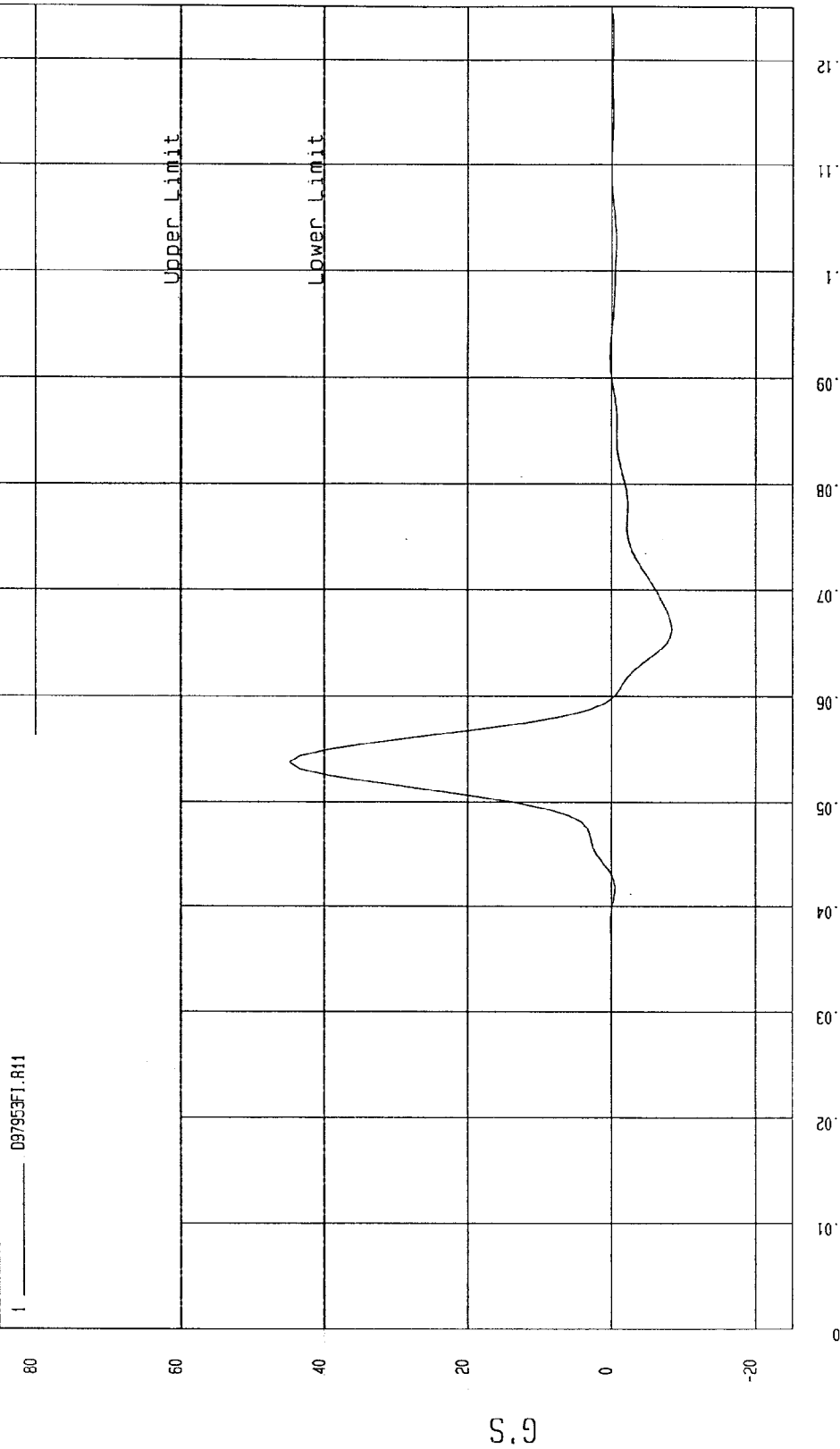
TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 11-03-1997 - 23:08:23

COMPONENT: DUMMY # 269 Velocity: 14.001 FT/SEC 4.27 M/SEC

Minimum = -8.32 G'S at 66.2 msec

Maximum = 44.99 G'S at 53.7 msec

PELVIS ACCELERATION



MCA Research  
11-03-1997 23:08

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST  
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: November 3, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971954

| TEST PARAMETER    | SPECIFICATION   | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE       | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY | 10 - 70%        | 26%          |
| FORCE @ 0.5 in    | 23.3 - 36.5 lbs | 33.7         |
| FORCE @ 0.75 in   | 36.7 - 49.8 lbs | 46.3         |
| FORCE @ 1.0 in    | 50 - 63 lbs     | 61           |
| FORCE @ 1.3 in    | 73 - 88 lbs     | 83           |

TEST MEETS SPECIFICATIONS

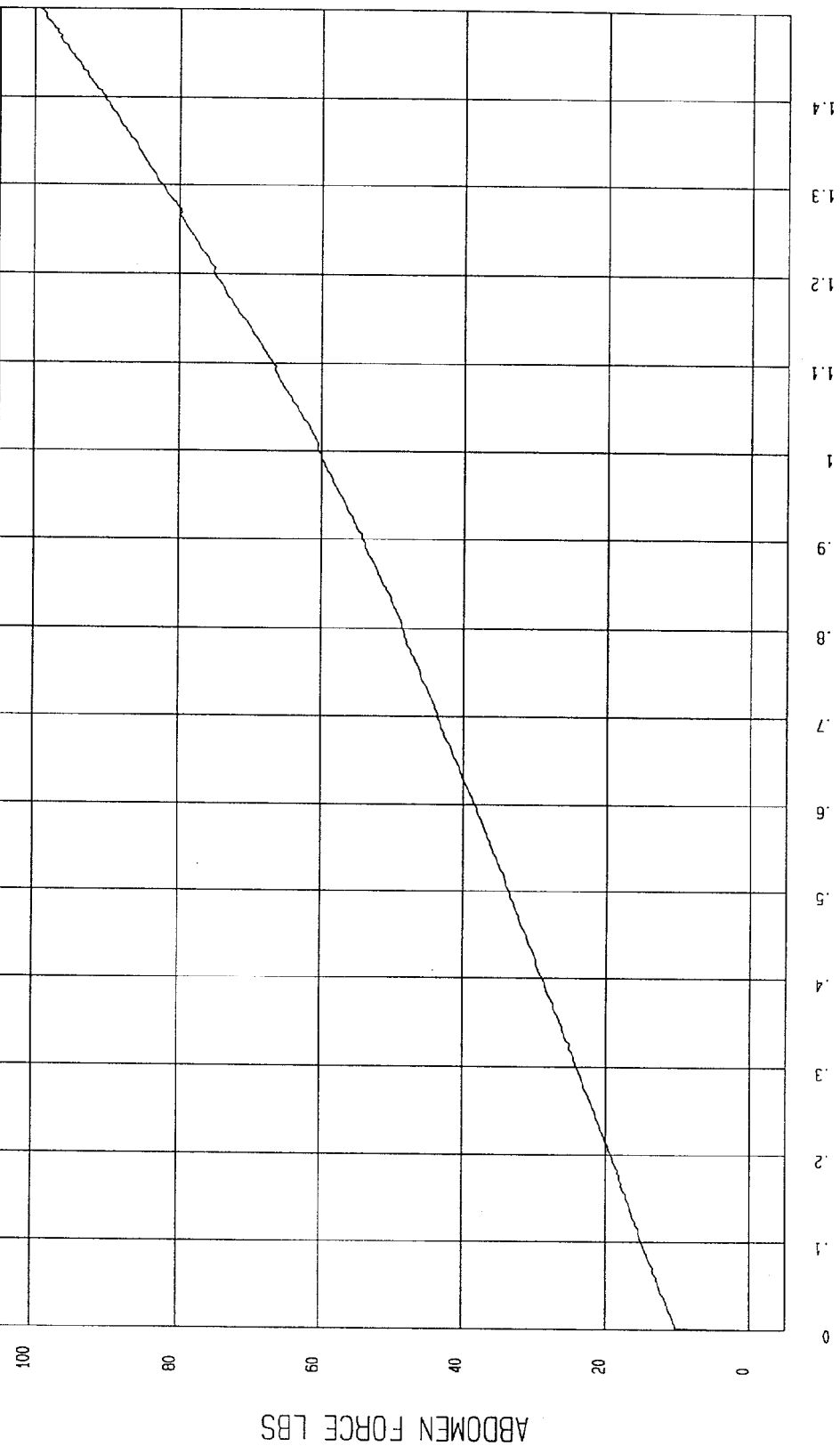
TECHNICIAN Jim W. L.

APPROVED BY Rene K. K.

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 11-03-1997 - 22:35

COMPONENT: DUMMY # 269

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MGA Research  
11-03-1997 22:41

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: November 3, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971955

| TEST PARAMETER    | SPECIFICATION | TEST RESULTS |
|-------------------|---------------|--------------|
| TEMPERATURE       | 66 - 78° F    | 70°          |
| RELATIVE HUMIDITY | 10 - 70%      | 26%          |
| FORCE @ 0°        | 0 - 6 lbs     | 0            |
| FORCE @ 20°       | 22 - 34 lbs   | 25           |
| FORCE @ 30°       | 34 - 46 lbs   | 45           |
| FORCE @ 40°       | 46 - 58 lbs   | 57           |
| RETURN ANGLE      | 12° maximum   | 3°           |

TEST MEETS SPECIFICATIONS

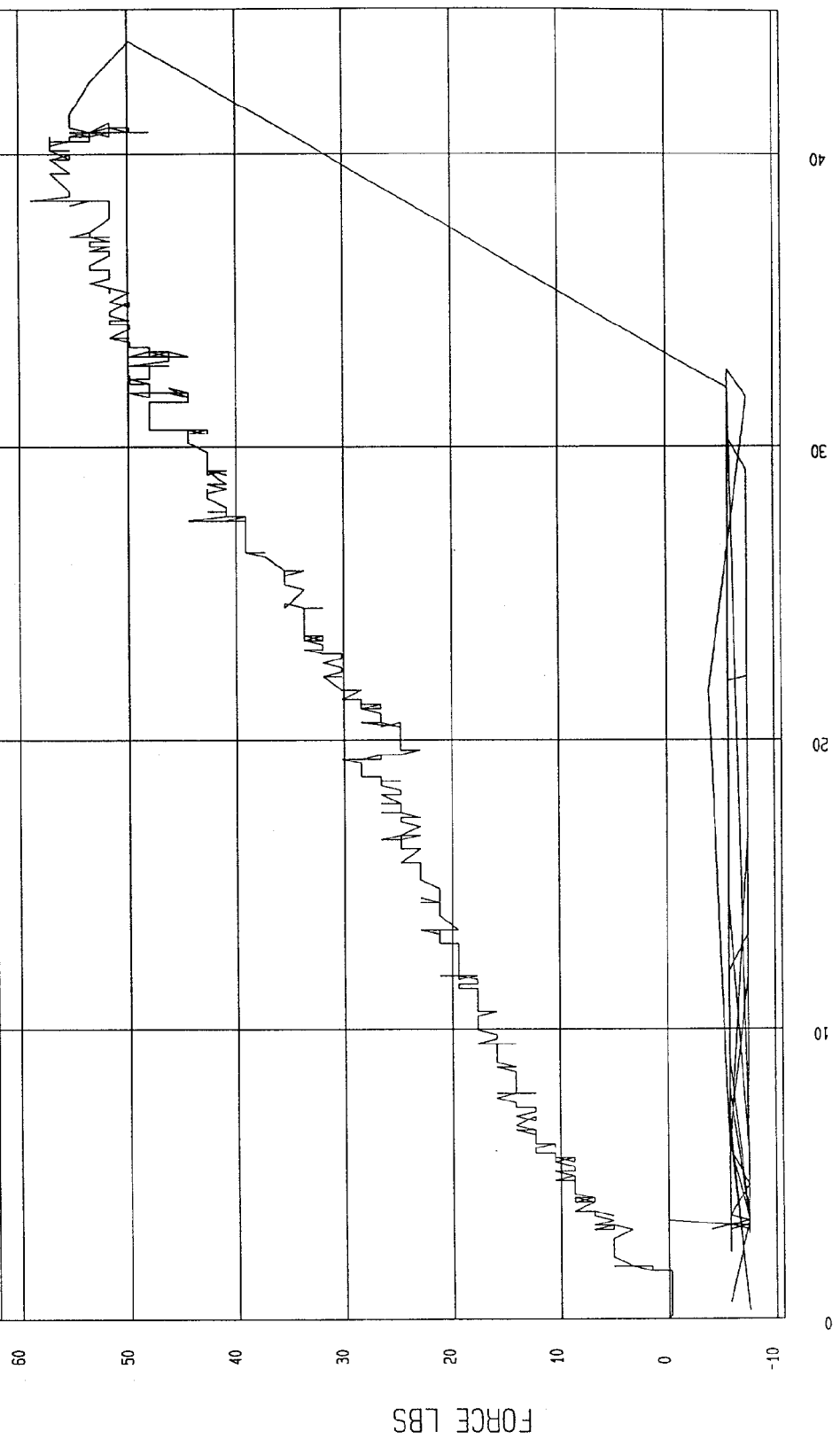
TECHNICIAN Jim White

APPROVED BY Paul Kabeke

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 11-03-1997 - 22:55

COMPONENT: DUMMY # 269

FORCE as a function of TORSO ROTATION



MSA Research  
11-03-1997 23:06

POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 270

## Calibration Test Results Summary

Dummy Serial Number: 270

### Post-Test Calibration

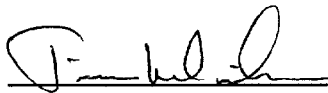
|                             |                                                       |
|-----------------------------|-------------------------------------------------------|
| External Dimensions:        | The dummy passed all external dimension requirements. |
| Thorax Impact Test:         | The thorax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

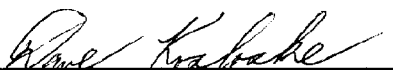
# SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

DATE OF VERIFICATION: November 3, 1997

| DESCRIPTION                    | SPECIFICATION   | TEST RESULTS |
|--------------------------------|-----------------|--------------|
| SH - Seated Height             | 35.0" - 35.8"   | 35.4         |
| RH - Rib Height                | 19.75" - 20.50" | 20.50        |
| HP - Hip Pivot Height          | 3.9" ref.       | 3.9          |
| RD - Rib From Back Line        | 9.0" to 9.5"    | 9.4          |
| KV - Knee Pivot From Back Line | 20.1" - 20.7"   | 20.6         |
| SW - Knee Pivot to Floor       | 19.3" - 19.9"   | 19.5         |
| HW - Hip Width                 | 14.0" - 15.4"   | 15.0         |

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 3, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971962

| TEST PARAMETER    | SPECIFICATION   | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE       | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY | 10 - 70%        | 22%          |
| PROBE SPEED       | 14.0 - 14.2 fps | 14.0         |
| UPPER RIB         | 37 - 46 g's     | 40           |
| LOWER RIB         | 37 - 46 g's     | 38           |
| LOWER SPINE       | 15 - 22 g's     | 20           |

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Wilk

APPROVED BY Dave Kraback

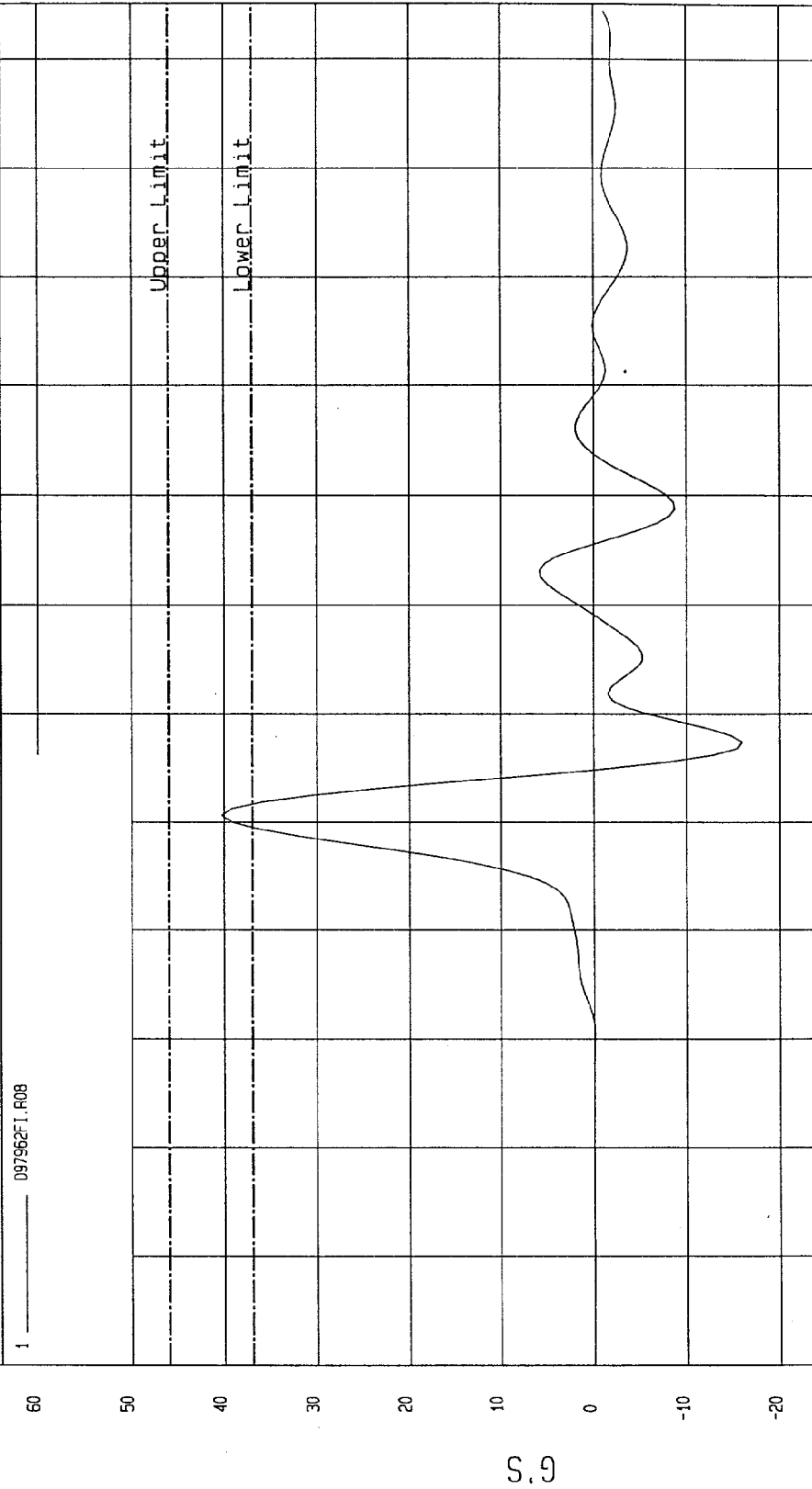
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 11-03-1997 - 16:45

COMPONENT: DUMMY # 270 Velocity: 14.045 FT/SEC 4.28 M/SEC

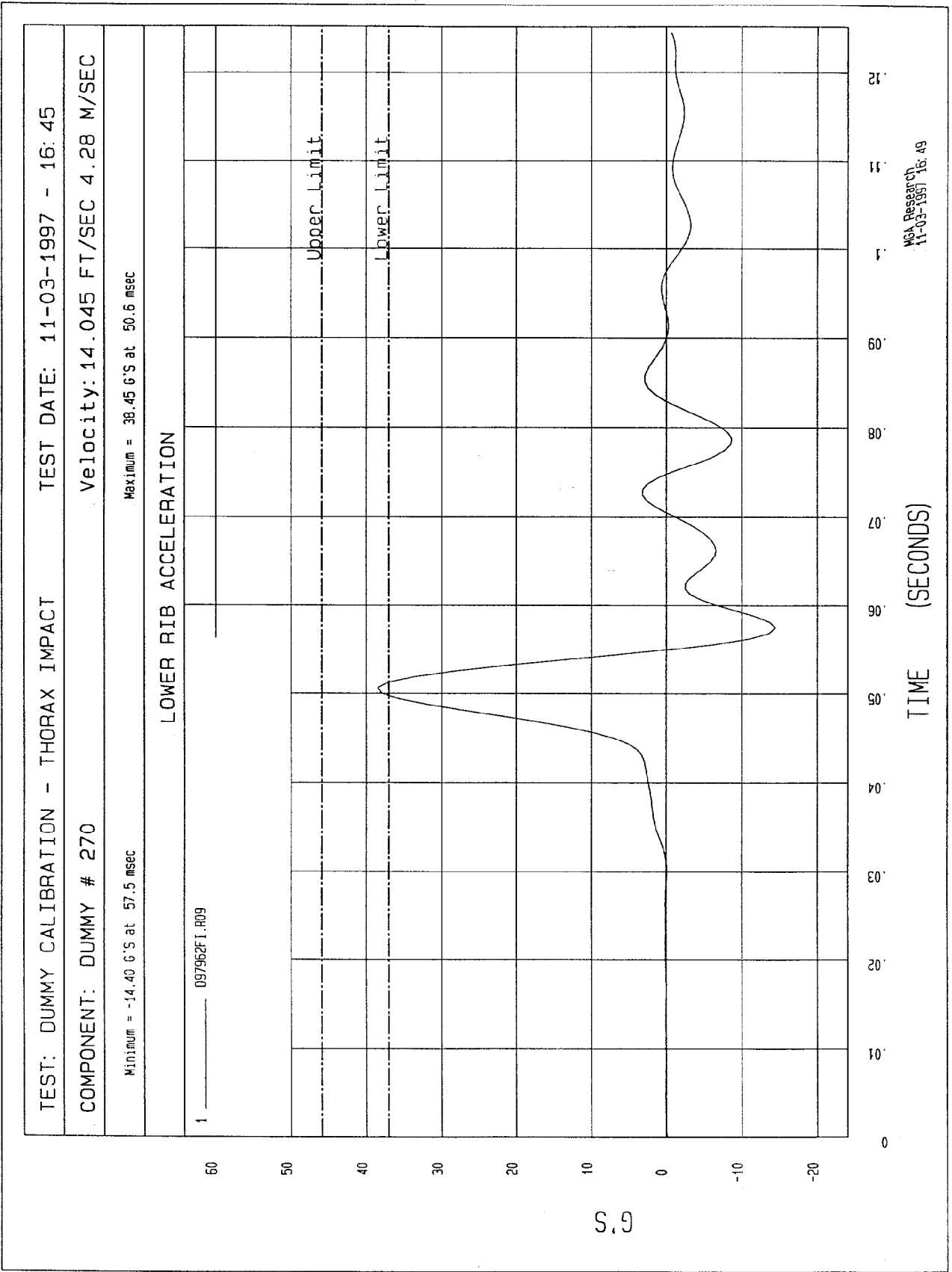
Minimum = -15.97 G'S at 57.5 msec

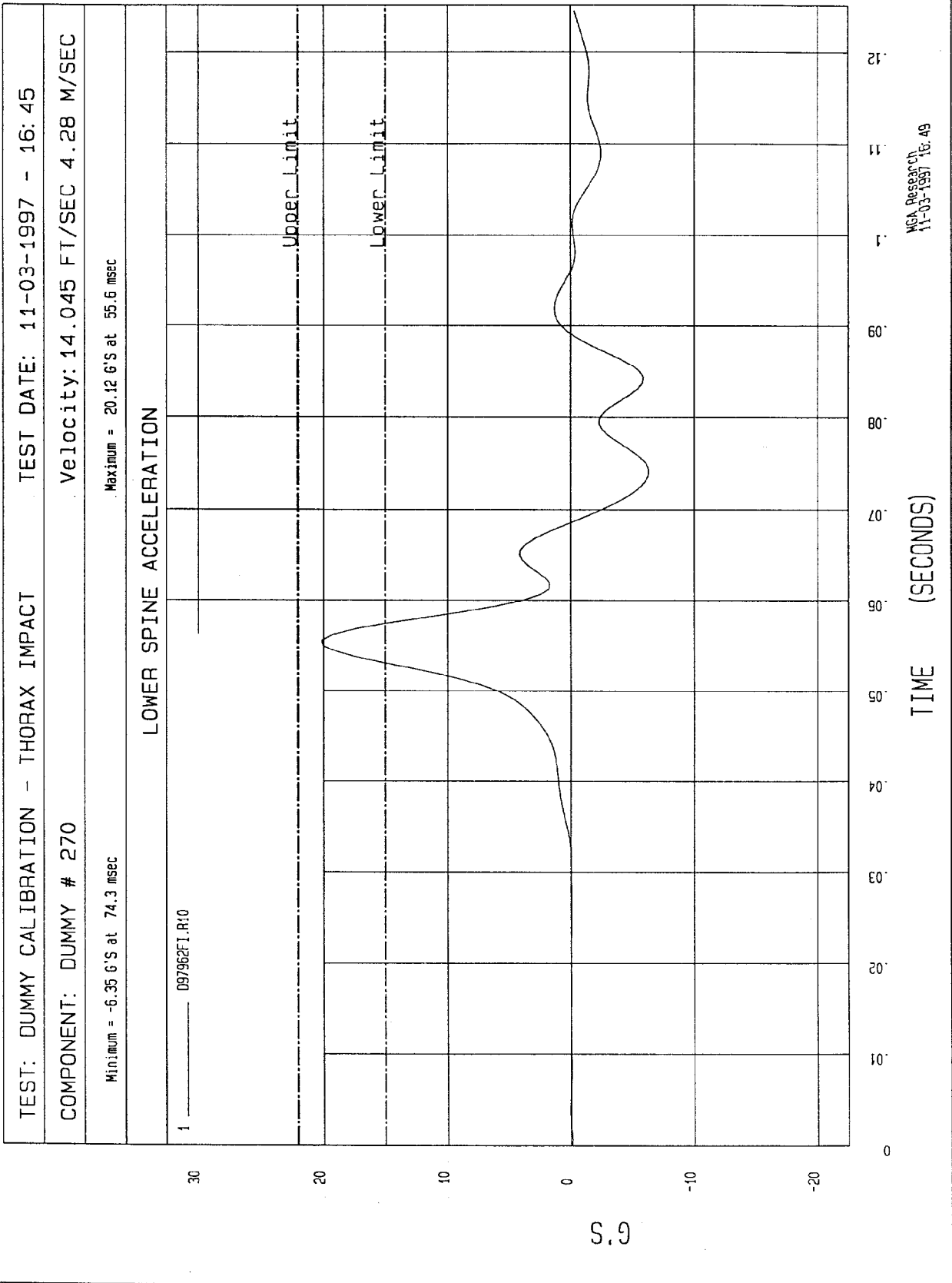
Maximum = 40.25 G'S at 50.6 msec

UPPER RIB ACCELERATION



MCA Research  
11-03-1997 16:49





MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

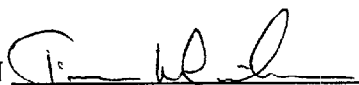
DATE: November 3, 1997

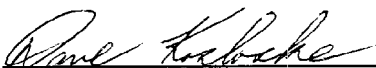
DUMMY NUMBER: 270

TEST NUMBER: D971963

| TEST PARAMETER      | SPECIFICATION   | TEST RESULTS |
|---------------------|-----------------|--------------|
| TEMPERATURE         | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY   | 10 - 70%        | 22%          |
| PROBE SPEED         | 14.0 - 14.2 f/s | 14.0         |
| PELVIS ACCELERATION | 40 - 60 g's     | 49           |

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 11-03-1997 - 16:52

COMPONENT: DUMMY # 270 Velocity: 14.014 FT/SEC 4.27 M/SEC

Minimum = -8.70 G'S at 66.8 msec

Maximum = 48.88 G'S at 55 msec

PELVIS ACCELERATION

1 ——— D97563F1.R11

80

60

40

20

0

-20

Upper Limit

Lower Limit

S.9

12

11

10

90

80

70

60

50

40

30

20

10

0

WGA Research  
11-03-1997 17:09

TIME (SECONDS)

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST  
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

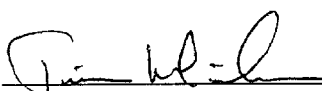
DATE: November 3, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971964

| TEST PARAMETER    | SPECIFICATION   | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE       | 66 - 78° F      | 70°          |
| RELATIVE HUMIDITY | 10 - 70%        | 26%          |
| FORCE @ 0.5 in    | 23.3 - 36.5 lbs | 31.6         |
| FORCE @ 0.75 in   | 36.7 - 49.8 lbs | 44.2         |
| FORCE @ 1.0 in    | 50 - 63 lbs     | 60           |
| FORCE @ 1.3 in    | 73 - 88 lbs     | 84           |

TEST MEETS SPECIFICATIONS

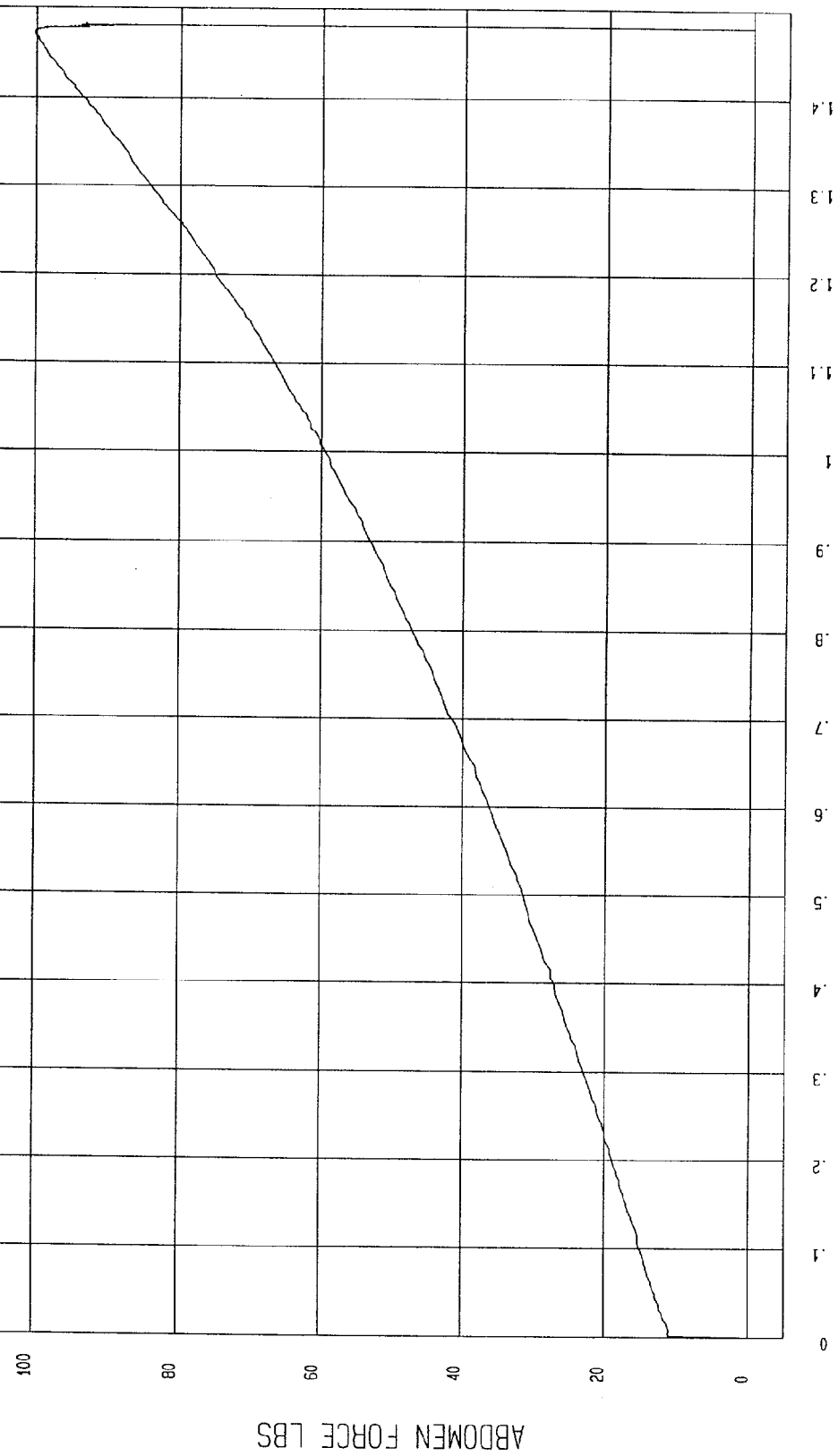
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 11-03-1997 - 22:38

COMPONENT: DUMMY # 270

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



NCA Research  
11-03-1997 22:41

ABDOMEN DISPLACEMENT INCHES

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: November 3, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971965

| TEST PARAMETER    | SPECIFICATION | TEST RESULTS |
|-------------------|---------------|--------------|
| TEMPERATURE       | 66 - 78° F    | 70°          |
| RELATIVE HUMIDITY | 10 - 70%      | 26%          |
| FORCE @ 0°        | 0 - 6 lbs     | 0            |
| FORCE @ 20°       | 22 - 34 lbs   | 27           |
| FORCE @ 30°       | 34 - 46 lbs   | 40           |
| FORCE @ 40°       | 46 - 58 lbs   | 50           |
| RETURN ANGLE      | 12° maximum   | 2°           |

TEST MEETS SPECIFICATIONS

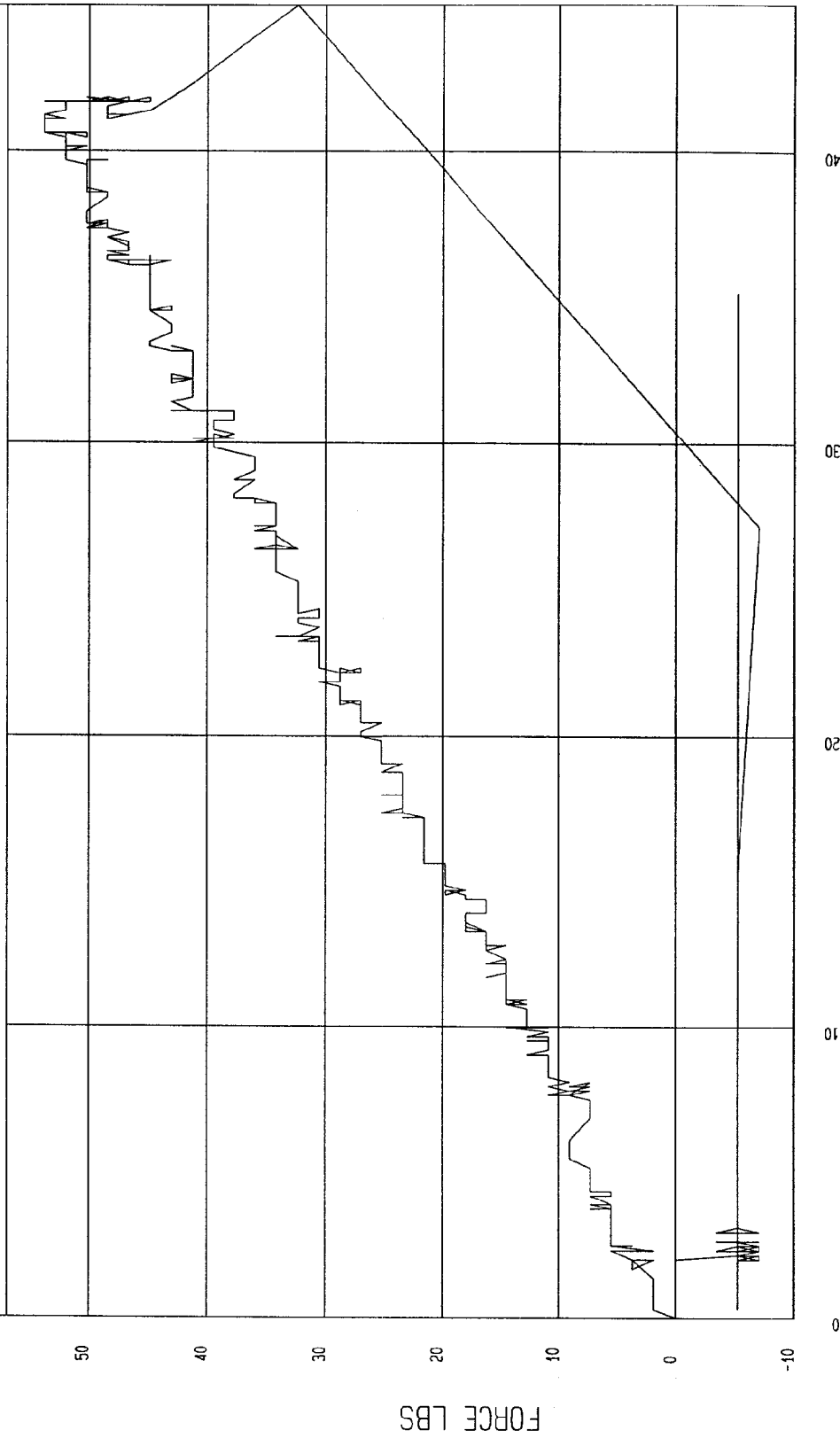
TECHNICIAN Tim W. L.

APPROVED BY Rene K. K.

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 11-03-1997 - 23:04

COMPONENT: DUMMY # 270

FORCE as a function of TORSO ROTATION



NSA Research  
11-03-1997 23:06

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 269

Inspected By: Tim Michnay

Date: November 3, 1997

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

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

## POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 270

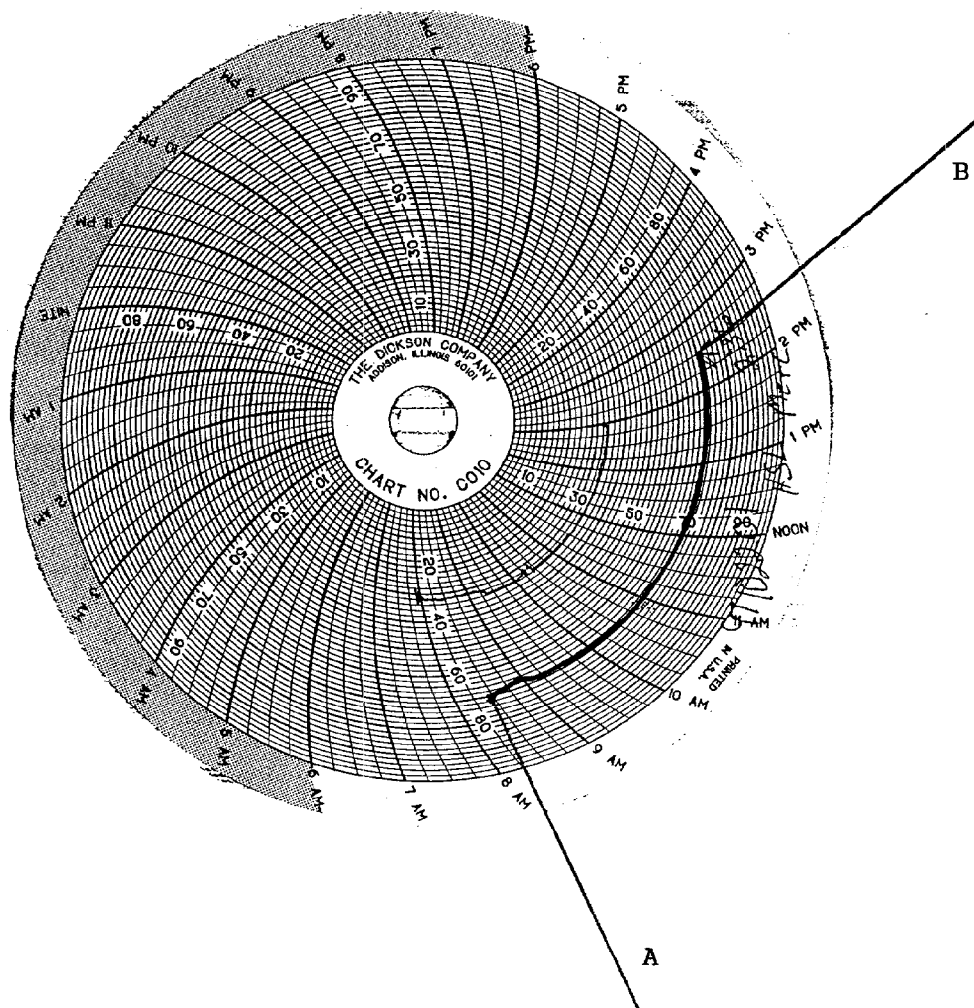
Inspected By: Tim Michnay

Date: November 3, 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. 269

|                         | DRIVER     |              |                    |
|-------------------------|------------|--------------|--------------------|
|                         | SERIAL NO. | MANUFACTURER | CALIBRATION DATE   |
| Upper Rib Y             | AKAC4      | Endevco      | August 6, 1997     |
| Lower Rib Y             | J10431     | Endevco      | August 5 1997      |
| Lower Spine Y           | AGP28      | Endevco      | September 15, 1997 |
| Pelvis Y                | AJ9P7      | Endevco      | August 6, 1997     |
| Upper Rib Redundant Y   | J13642     | Endevco      | August 6, 1997     |
| Lower Rib Redundant Y   | AN9E3      | Endevco      | August 5, 1997     |
| Lower Spine Redundant Y | AJ8T5      | Endevco      | September 15, 1997 |
| Pelvis Redundant Y      | AJ462      | Endevco      | August 6, 1997     |
| Head X                  | AJ9E5      | Endevco      | August 5, 1997     |
| Head Y                  | ALFA7      | Endevco      | August 5, 1997     |
| Head Z                  | AHTT3      | Endevco      | August 5, 1997     |

INSTRUMENTS FOR PASSENGER DUMMY NO. 270

|                         | LEFT REAR PASSENGER |              |                    |
|-------------------------|---------------------|--------------|--------------------|
|                         | SERIAL NO.          | MANUFACTURER | CALIBRATION DATE   |
| Upper Rib Y             | AKAF3               | Endevco      | September 16, 1997 |
| Lower Rib Y             | ALEC1               | Endevco      | September 15, 1997 |
| Lower Spine Y           | ALCH7               | Endevco      | September 16, 1997 |
| Pelvis Y                | AKAD6               | Endevco      | September 11, 1997 |
| Upper Rib Redundant Y   | ALCN9               | Endevco      | September 16, 1997 |
| Lower Rib Redundant Y   | J10411              | Endevco      | September 15, 1997 |
| Lower Spine Redundant Y | AJ420               | Endevco      | September 16, 1997 |
| Pelvis Redundant Y      | AJ9A7               | Endevco      | September 11, 1997 |
| Head X                  | AN8R0               | Endevco      | September 11, 1997 |
| Head Y                  | AN8P8               | Endevco      | September 11, 1997 |
| Head Z                  | AN8M5               | 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               | J10-E14                | Entran       | July 14, 1997    |
| Left Lower A-Post Y             | E10-F19                | Entran       | July 11, 1997    |
| Left Mid B-Post Y               | MGA095                 | Entran       | June 12, 1997    |
| Left Lower B-Post Y             | J10-E05                | Entran       | July 7, 1997     |
| Driver Seat Track Y             | F12-G08                | Entran       | August 1, 1997   |
| Right Side Sill at Front Seat X | A15-Z16                | Entran       | August 4, 1997   |
| Right Side Sill at Front Seat Y | G01-J18                | Entran       | August 7, 1997   |
| Right Side Sill at Front Seat Z | C25-A04                | Entran       | July 7, 1997     |
| Right Side Sill at Rear Seat X  | G01-J14                | Entran       | August 7, 1997   |
| Right Side Sill at Rear Seat Y  | J13-F17                | Entran       | August 6, 1997   |
| Right Side Sill at Rear Seat Z  | I25-J10                | Entran       | August 7, 1997   |
| Left Side Sill at Front Seat Y  | A09-G09                | Entran       | August 5, 1997   |

# VEHICLE INSTRUMENT CALIBRATION

|                                   | VEHICLE ACCELEROMETERS |              |                  |
|-----------------------------------|------------------------|--------------|------------------|
|                                   | SERIAL NO              | MANUFACTURER | CALIBRATION DATE |
| Left Side Sill at Rear Seat Y     | E10-F14                | Entran       | August 7, 1997   |
| Right Rear Occupant Compartment Y | F13-B12                | Entran       | August 7, 1997   |
| Vehicle CG X                      | I25-J20                | Entran       | August 7, 1997   |
| Vehicle CG Y                      | J04-F16                | Entran       | August 7, 1997   |
| Vehicle CG Z                      | J04-F13                | Entran       | August 7, 1997   |
| Left Front Door on Centerline     | B14-R14                | Entran       | June 12, 1997    |
| Left Front Door Upper Centerline  | F20-G03                | Entran       | August 7, 1997   |
| Midrear of Left Rear Door         | J13-F16                | Entran       | August 6, 1997   |
| Left Rear Door Upper Centerline   | J06-D22                | Entran       | June 12, 1997    |
| Rear Floor Pan Above Axle X       | D05-R20                | Entran       | July 7, 1997     |
| Rear Floor Pan Above Axle Y       | F12-G03                | Entran       | July 11, 1997    |
| Rear Floor Pan Above Axle Z       | D05-R16                | Entran       | July 7, 1997     |

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