V2466

REPORT NO. MGA-96-N01

NEW CAR ASSESSMENT PROGRAM (NCAP)

FRONTAL BARRIER IMPACT TEST

CHRYSLER CORPORATION
1997 CHEVROLET S-10 PICKUP
NHTSA NO. MV0102

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105

Test Date: October 9, 1996

Report Date: November 13, 1996

FINAL REPORT

Prepared For:

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
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15. Supplementary Notes		

16. Abstract

A 56.5 kph (35.1 mph) frontal barrier impact using a 30 load cell barrier was conducted on a 1997 Chevrolet S-10 at the MGA Proving Grounds and Crash Test Center in Burlington, WI. on October 9, 1996.

The barrier impact velocity was 56.5 kph (35.1 mph), and the ambient temperature at the time of impact was 20.6°C. The post-test maximum static crush was 665 mm.

The test vehicle appeared to comply with the requirements of the following Federal Motor Vehicle Safety Standards:

1. FMVSS 212, "Windshield Mounting"
2. FMVSS 219 (partial), "Windshield Zone Intrusion"
3. FMVSS 301, "Fuel System Integrity"

With regard to FMVSS 208, "Occupant Crash Protection" injury criteria, the driver's HIC was 955 and the 3 msec. Clip (Chest g's) was 53 g's. The left and right femur loads for the driver were 4006 and 7485 Newtons, respectively. The passenger's HIC was 1205 and the 3 msec Clip was 43 g's. The left and right femur maximum loads were 3586 and 2703 Newtons respectively.

17. Key Words	18. Distribution Statement
35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP) FMVSS 212 Indicant Testing FMVSS 219 (partial) Indicant Testing FMVSS 301 Indicant Testing	Copies of this report are available from: Technical Ref. Division, NHTSA, NASSIF Building, Room 5108 400 Seventh Street, S.W. Washington, D.C. 20590

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APPROVED BY: _____

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MGA Research Corporation

FINAL REPORT ACCEPTED BY:

_____

Manager, New Car Assess. Program (NCAP)

6 December 1996

Date of Report Acceptance

_____

Contracting Officer's Tech. Rep. (COTR)

12/6/96

Date of Report Acceptance

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SECTION 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is part of the Composite FY'96 Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-90-D-12121. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48 kph (30 mph) FMVSS 208/212/219/301-75 requirements.

The 56 kph (35 mph) frontal barrier impact test was conducted in accordance with the National Highway Traffic Safety Administration (NHTSA) Indicant Test Procedure for New Car Assessment Program (NCAP) dated January 1, 1990. Data for FMVSS No. 212, "Windshield Mounting", FMVSS No. 219 (Partial), "Windshield Zone Intrusion", FMVSS No. 301-75, "Fuel System Integrity," as well as occupant performance data are provided herein.

SECTION 2

SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 30 load cells was impacted by a 1997 Chevrolet S-10 Pickup at a velocity of 56.5 kph (35.1 mph). The test was performed at the MGA Proving Grounds and Crash Test Center on October 9, 1996. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by one real-time camera and 16 high speed cameras. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs) were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head and chest primary and redundant triaxial accelerometers, pelvis triaxial accelerometers, chest displacement transducer, neck load cell, right/left femur load cells, right/left lower leg sensors, and right/left foot accelerometers. Seat belt load cells were also positioned on the driver and passenger shoulder and lap belts to measure dummy torso and pelvic section loading. Calibrated ATDs, driver (Serial No. 037), and right front passenger (Serial No. 036), were used for this test. Certification details, along with instrumentation calibration data, are found in Appendix C and D.

The 111 channels of data were recorded on 10 computers. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

The driver's head struck the inflated airbag. The driver HIC was 955 and the maximum chest (CLIP) deceleration over 3 milliseconds was 53 g's. The maximum chest displacement was 27 mm. The left and right femur loads were 4006 and 7485 Newtons respectively.

The right front passenger's head struck the inflated airbag. The passenger HIC was 1205 and maximum chest (CLIP) deceleration over 3 milliseconds was 43 g's. The maximum chest displacement was 31 mm. The left and right femur loads were 3586 and 2703 Newtons respectively.

GENERAL TEST AND VEHICLE PARAMETER DATA

Vehicle Yr/Make/Model/Body Style: 1997/Chevrolet/S-10/Pickup

NHTSA No.: MV0102 VIN.: 1GCCS19X8VK100825

Body color: Dark Cherry Red Date of Manufacture: 8/96

Engine: 6 Cylinders; __ C.I.D.; 4.3 Liters;

X Gas; ___ Diesel; ___Turbocharged

X Longitudinal; ___Transverse

Transmission: 4 Speed; __ Manual; X Automatic; X Overdrive

Final Drive: ___ Front Wheel; X Rear Wheel; ___ Four Wheel

Odometer Reading: 95 miles

X A/C; X P/S; __ P/B; __ P/wdo;

___P/seats; X Tilt Wheel; X Cruise Control; ___Abs

Type of Occupant Restraint: Type II with center lap and driver airbag.

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front ____ kPa (Psi) Rear ____ kPa (Psi)

Recommended Tire Size: P205/75R15

Recommended Cold Tire Pressure: Front 241 kPa (35 Psi) Rear 241 kPa (35 Psi)

Tires on Vehicle: P205/75R15; Manufacturer: Uniroyal

Number of Occupants: 3 Front; 2 Rear; __3rd Seat; 5 TOTAL

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

Type of Front Seat Back: _Fixed; X Adj. With; ___ Power; X Lever

Vehicle Capacity Weight (VCW) = 376.0 kg. (A)

No. of Occupants x 68.0 kg. = 340.0 kg. (B)

Rated Cargo Weight (RCW) A-B = 36.0 kg.

GVWR 1995.8 kg. GAWR: Front 1134.0 kg.; Rear 1043.3 kg.

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS) = UDW:

Right Front = 468.6 kg Right Rear = 320.7 kg

Left Front = 492.6 kg Left Rear = 312.5 kg

TOTAL FRONT WEIGHT = 961.2 kg (59.3% of Total Vehicle Weight)

TOTAL REAR WEIGHT = 633.2 kg (39.7% of Total Vehicle Weight)

TOTAL UNLOADED DELIVERED WEIGHT (UDW) = 1594.4 kg

CALCULATION FOR TARGET TEST WEIGHT:

UDW = Unloaded Delivered Weight 1594.4 kg

VCW = Vehicle Capacity Weight 376.0 kg

DSC = Designated Seating Capacity 5

RCW* = VCW - 68 (DSC) = 36.0 kg

Target Test Weight = UDW + RCW + (2 dummies x 167 kg/dummy)

Target Test Weight = 1886.4 kg

Note: The target test weight was incorrectly calculated using a RCW of 136 kgs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND CARGO:

Right Front = 517.5 kg Right Rear = 427.3 kg

Left Front = 529.8 kg Left Rear = 408.7 kg

TOTAL FRONT WEIGHT = 1047.3 kg (55.6% of Total Vehicle Weight)

TOTAL REAR WEIGHT = 836.0 kg (44.4% of Total Vehicle Weight)

TOTAL TEST WEIGHT = 1883.3 kg

Weight of ballast secured in vehicle trunk area = 0 kg

Vehicle components removed to meet target weight: Rear seats, spare tire, jack and lug wrench assembly

VEHICLE ATTITUDE (all dimensions in mm):

Delivered Attitude: RF 778 LF 777 RR 776 LR 770

Test Attitude: RF 769 LF 775 RR 735 LR 742

Post Test RF 784 LF 770 RR 734 LR 725

Wheel Base: 3123 mm; C.G. = 1386 mm rearward of front wheel C/L

Remarks: The vehicle was over ballasted by 96.9 kg.

* light trucks and MPVs RCW is 136 kgs or manufacturer's value, whichever is less

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

POST-IMPACT DATA:

Type of Test: 35 mph Frontal Impact Impact Angle: 90°

Date of Test: October 9, 1996 Time of Test: 4:17 p.m.

Ambient Temperature: 20.6 °C (Spec. Range = 18.8 to 25.6°C)

Temperature in Occupant Compartment: 20.6° C

Windshield Molding Temperature: 20.6° C

Required Impact Velocity Range: 55.5 to 57.1 kph

Impact Velocity: primary = 56.5 kph; secondary = 56.3 kph

Distance From Front Bumper to Barrier Face When

Entering Speed Trap: 1305 mm

Exiting Speed Trap: 305 mm

VEHICLE REBOUND AND CRUSH (mm):

Vehicle Length:	Pre-test	= R	5003	C_L	5162	L 4996
	Post-test	= R	4512	C_L	4497	L 4448
	Crush	= R	491	C_L	665	L 548

Distance from front of test vehicle to point of impact (rebound):

R 567 mm C_L 623 mm L 603 mm

VISIBLE DUMMY CONTACT POINTS:

	Driver	Passenger
Head	To airbag and headrest	To dash and header
Chest	To airbag	None noted
Abdomen	None noted	None noted
Left Knee	To steering column and bolster	To dash
Right Knee	To steering column and bolster	To dash

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

POST TEST AIRBAG DATA

Vehicle Yr/Make/Model/Body Style: 1997/Chevrolet/S-10/Pickup

NHTSA No.: MV0102 VIN.: 1GCCS19X8VK100825

A. Number of Vent Holes: Driver 2; Passenger ____

B. Size of Vent Holes: Driver 18 mm; Passenger ____

C. Total Vent Area; Driver 5.1 cm^2 Passenger ____

D. Deflated Airbag Length and Width Dimensions or, if Round, Diameter

Driver; Length 540 mm, Width 490 mm, Diameter___mm

Passenger; Length ____mm, Width ____mm, Diameter___ mm

E. Is the Airbag Tethered?

Driver; X Yes; ___ No; If yes, record length of tether 360 mm

Passenger; ___ Yes; ___ No, If yes, record length of tether ____ mm

Note: No passenger airbag.

SECTION 3

SUMMARY OF RESULTS FOR-------

FMVSS 212, "Windshield Mounting"

FMVSS 219 (Partial), "Windshield Zone Intrusion"

FMVSS 301-75, "Fuel System Integrity"

FMVSS NO. 212, "WINDSHIELD MOUNTING", DATA SHEET

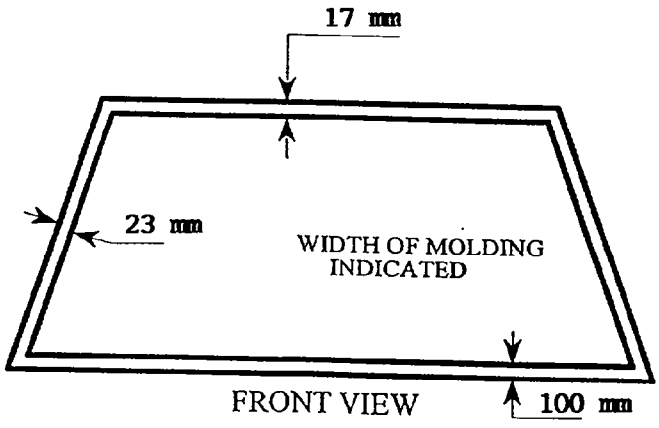
Details of windshield mounting such as retention method, trim type, etc.:
Windshield set in rubber molding with glue

FMVSS 212 Requirements: The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of windshield for vehicles equipped with automatic restraint systems for front occupants.

FMVSS 212 TEST DATA:

	WINDSHIELD PERIPHERY		
	PRE-TEST (mm)	POST-TEST (mm)	PERCENT RETENTION
RIGHT SIDE	2109	2109	100%
LEFT SIDE	2107	2107	100%
TOTAL	4216	4216	100%

AREA OF RETENTION FAILURE: None



FAILURE DETAILS: None

FMVSS NO. 219, "WINDSHIELD ZONE INTRUSION", DATA SHEET

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5" dia. rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the surface of the instrument panel, including padding, and drawing the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contact points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and ½" distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

FMVSS 219 TEST DATA:

A= 1246 mm

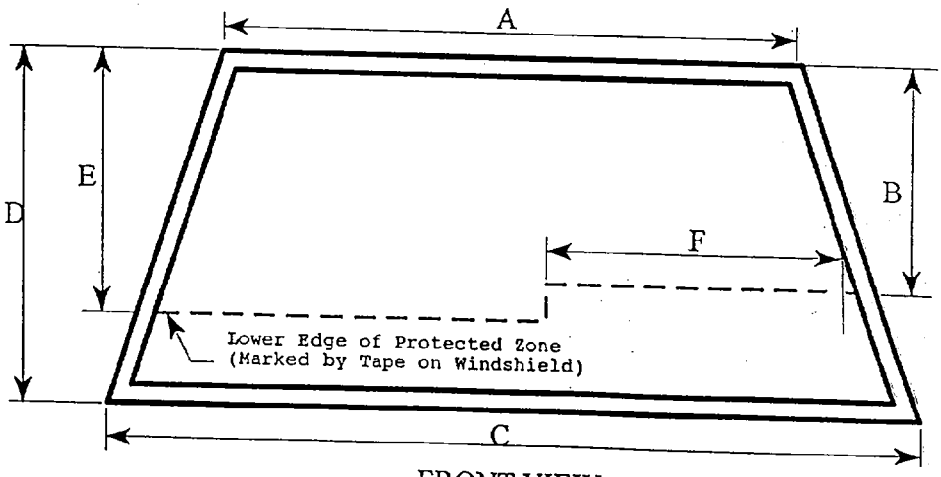
B= 360 mm

C= 1624 mm

D= 674 mm

E= 416 mm

F= 564 mm



FRONT VIEW

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 1/4":
(Show location of penetration)

NONE

FMVSS NO. 301-75, FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: MV0102 Test Date: October 9, 1996

VehicleYr/Mfgr./Make/Model: 1997/Chevrolet/S-10/Pickup

Usable Capacity of Vehicle's Fuel Tank: 70.0 Liters
(figure furnished by vehicle manufacturer)

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.

AMOUNT OF STODDARD SOLVENT ADDED TO VEHICLE'S FUEL TANK:

65.5 Liters which is 93.6 % of the stated USABLE CAPACITY.

TEST VEHICLE IMPACT TYPE: _X_ Frontal (35 mph)

____ Oblique (30 mph) with __° barrier face first contacting (driver/passenger) side

___ Rear Moving Barrier (30 mph)

___ Side Impact MDB (33.2 mph)

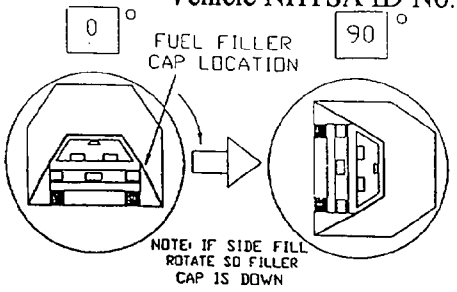
FUEL SPILLAGE MEASUREMENT:

	ACTUAL	MAX ALLOWED
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

SOLVENT SPILLAGE DETAILS: None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 0° - 90° Vehicle NHTSA ID No.: MV0102



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 53 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 53 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min FROM onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

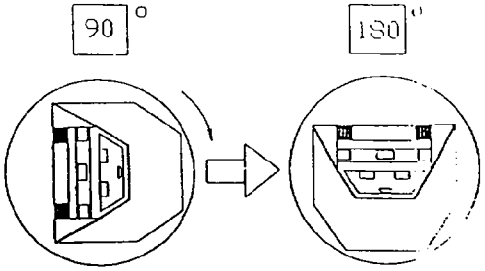
0	0	0	0

Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 90° - 180° Vehicle NHTSA ID No.: MV0102



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 31 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 31 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min FROM onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

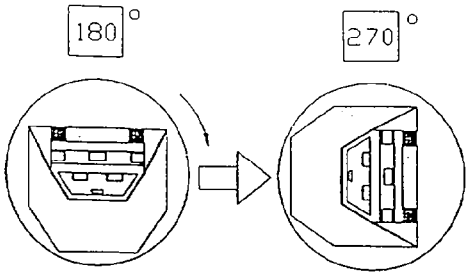
0	0	0	0

Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 180° - 270° Vehicle NHTSA ID No.: MV0102



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 14 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 14 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min FROM onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

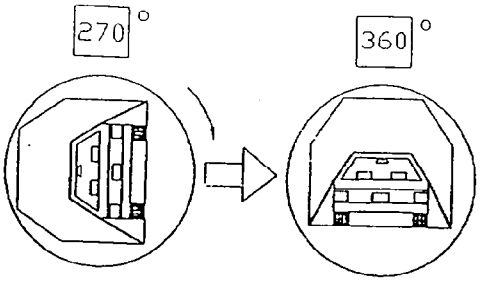
0	0	0	0

Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 270° - 360° Vehicle NHTSA ID No.: MV0102



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 39 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 39 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min FROM onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

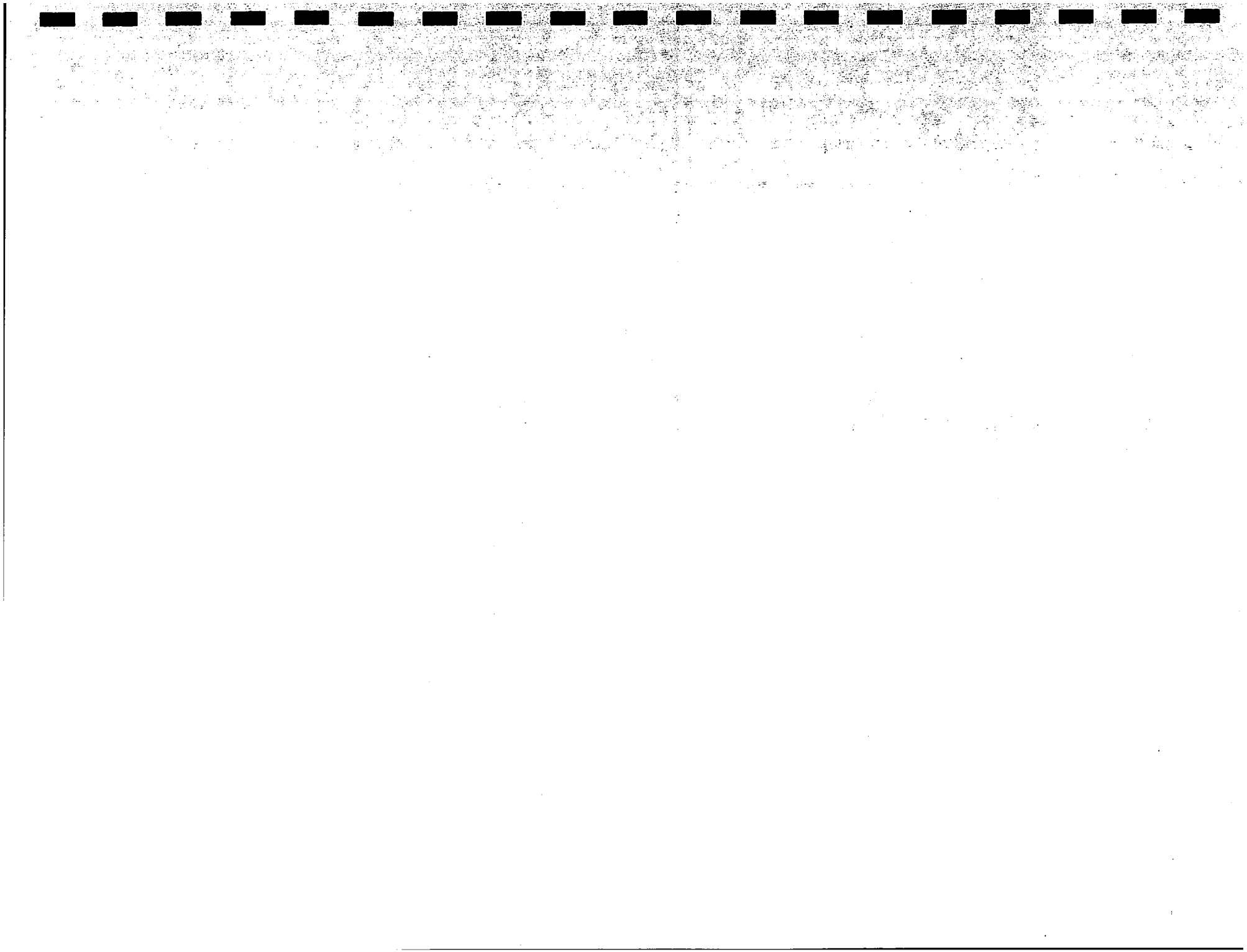
5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None



SECTION 4

OMI FINAL DATA

Occupant and Vehicle Information

I. OMI DATA

1. Dummy Injury Criteria Data Summary
2. Dummy Positioning Data
3. Seat Belt Positioning Data
4. Seat Belt Performance Assessment Data
5. Camera Locations
6. Vehicle Target Locations

II. OVR DATA

1. Load Cell Barrier Data
2. Vehicle Accelerometer Data
3. Test Vehicle Measurements

III. AID DATA

1. Accident Investigation Damage Data Summary

FMVSS NO. 208, "OCCUPANT CRASH PROTECTION", DATA SHEET

VEH. YR./MAKE/MODEL/BODY STYLE: 1997/Chevrolet/S-10/Pickup
VEH. NHTSA NO.: MV0102 TEST DATE: October 9, 1996

MAX. ACCELERATION VALUES: (g's)	DRIVER #037	PASSENGER #036
Head Channel X	-72.1 @ 78 msec.	-139.5 @ 94 msec.
Head Channel Y	39.8 @ 81 msec.	26.2 @ 95 msec.
Head Channel Z	-39.9 @ 72 msec.	-49.1 @ 92 msec.
HEAD RESULTANT	82.7 @ 78 msec.	146.4 @ 94 msec.
Chest Channel X	-53.0 @ 75 msec.	-43.1 @ 64 msec.
Chest Channel Y	9.1 @ 90 msec.	-6.9 @ 77 msec.
Chest Channel Z	19.3 @ 114 msec.	-19.3 @ 97 msec.
CLIP	52.9	43.1
TIME INTERVAL (msec) [3. msec. minimum]	t_1 = 74.1 t_2 = 77.2	t_1 = 63.1 t_2 = 66.2

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	955	1205
t_1 = (msec)	60.0	92.5
t_2 = (msec)	96.0	106.8
Avg. Accel. t_1 to t_2 (g's)	58.8	93.4

[The maximum time interval from t_1 to t_2 is 36 milliseconds.]

MAX. COMPRESSIVE FEMUR FORCES:

Left Side (N)	4006	3586
Right Side (N)	7485	2703

MAXIMUM SEAT BELT FORCES:

Lap Belt (N)	4855	6815
Shoulder Belt (N)	3071	6634

HYBRID III NECK, CHEST AND PELVIS DATA SHEET

VEHICLE YR./MAKE/MODEL/BODY STYLE: 1997/Chevrolet/S-10/Pickup

VEHICLE NHTSA NO.: MV0102 TEST DATE: October 9, 1996

MAXIMUM VALUES	DRIVER DUMMY # 037	PASSENGER DUMMY # 036
Neck Load X (N)	-863.8 @ 86 msec.	-619.7 @ 72 msec.
Neck Load Y (N)	512.2 @ 83 msec.	455.9 @ 100 msec.
Neck Load Z (N)	-4118.1 @ 73 msec.	-1586.8 @ 65 msec.
Neck Moment X (NM)	-25.0 @ 81 msec.	-22.3 @ 101 msec.
Neck Moment Y (NM)	61.1 @ 88 msec.	45.8 @ 65 msec.
Neck Moment Z (NM)	-40.6 @ 97 msec.	-14.0 @ 177 msec.
Chest Deflection X (mm)	27.2	31.5
Time of Max. Occurrence	77 msec.	67 msec.
Pelvis X Acceleration (g's)	-67.7 @ 53 msec.	-60.1 @ 62 msec.
Pelvis Y Acceleration (g's)	9.2 @ 52 msec.	11.2 @ 109 msec.
Pelvis Z Acceleration (g's)	24.6 @ 111 msec.	23.4 @ 108 msec.
Pelvis Resultant (g's)	68.3 @ 52 msec.	61.7 @ 62 msec.

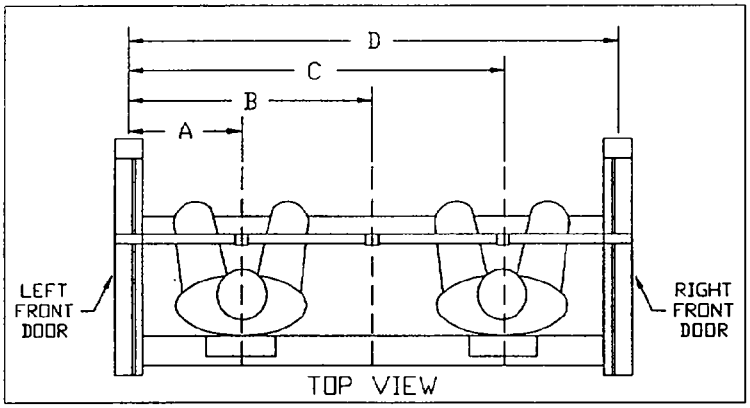
PART 572 DUMMY IN-VEHICLE POSITION

Vehicle NHTSA No.: MV0102 Vehicle: 1997 Chevy S-10 Pickup

SEAT TYPE:	ADJUSTER TYPE:	BUCKET SEAT BACK TYPE:
____Bench	Driver: _X_Manual	____Fixed
____Bucket	____Power	____Adjustable Reclining
_X_Split Bench		
	Passenger: _X_Manual	____ Fixed
	____Power	____Adjustable reclining

DRIVER SEAT POSITION
11th detent rearward out of 21 detents

PASSENGER SEAT POSITION
11th detent rearward of 21 detents



037 DUMMY ID 036

A = Left Door to Driver Centerline	435 mm
B = Left Door to Center Passenger Centerline	784 mm
C = Left Door to Right Passenger Centerline	1140 mm
D = Left Door to Right Door	1568 mm

FRONT SEAT MEASUREMENT TABLE

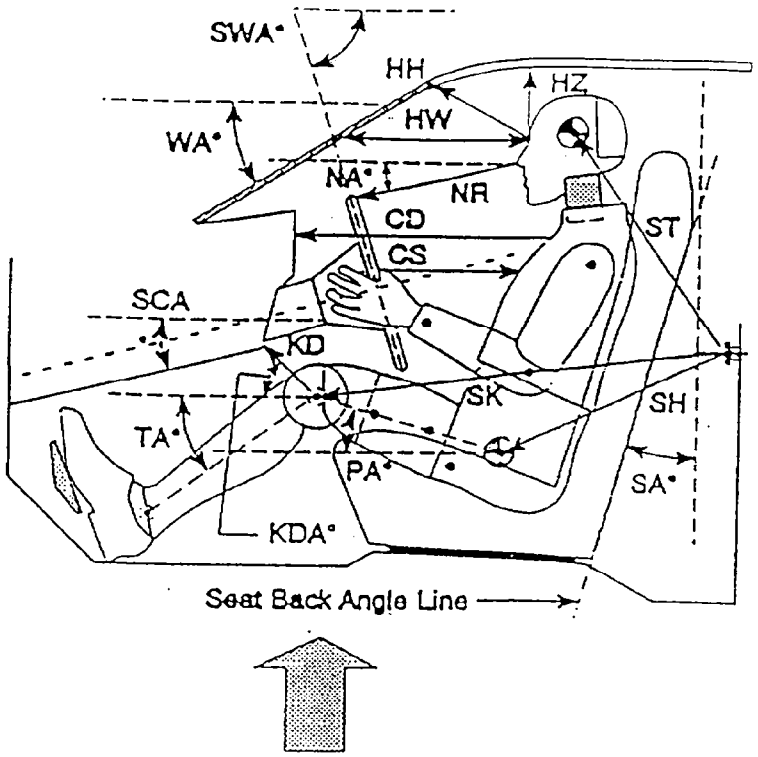
Units (mm)

	DRIVER (Serial #037)	PASSENGER (Serial #036)
WA°	35.5°	
SWA°	20.7°	N/A
SCA°	21.2°	N/A
SA°	22.8°	22.8°
HZ	191	198
HH	476	442
HW	638	625
HR	242	255
NR	378 Angle (NA) 12.7°	N/A
CD	522	551
CS	330	N/A
RA	169	N/A
KDL	160 Angle (KDA) 36.3°	196
KDR	157	208 Angle 21.5°
PA°	23.1°	22.7°
TA°	39.9°	38.9°
KK	243	236
ST*	622 Angle 14.0°	599 Angle 18.0°
SK*	706 Angle 84.5°	680 Angle 88.9°
SH*	301 Angle 100.7°	301 Angle 106.8°
SHY	235	253
HS	347	352
HD	147	134
AD	120	114

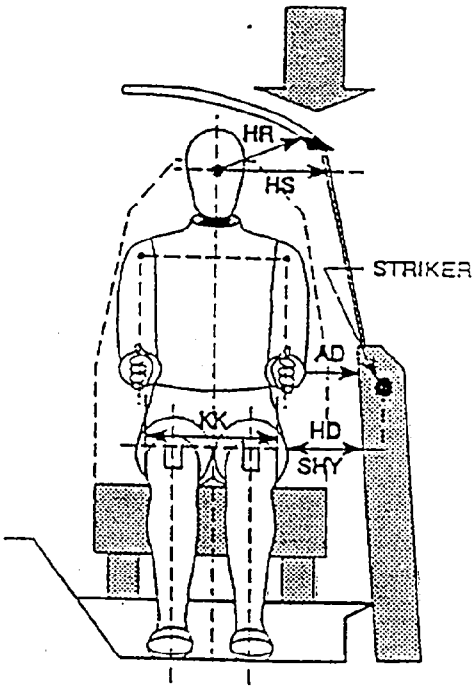
N/A = Not Applicable

* Angles measured from vertical

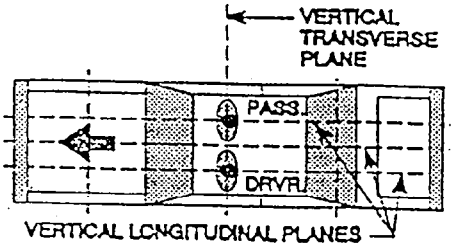
FRONT SEAT MEASUREMENTS



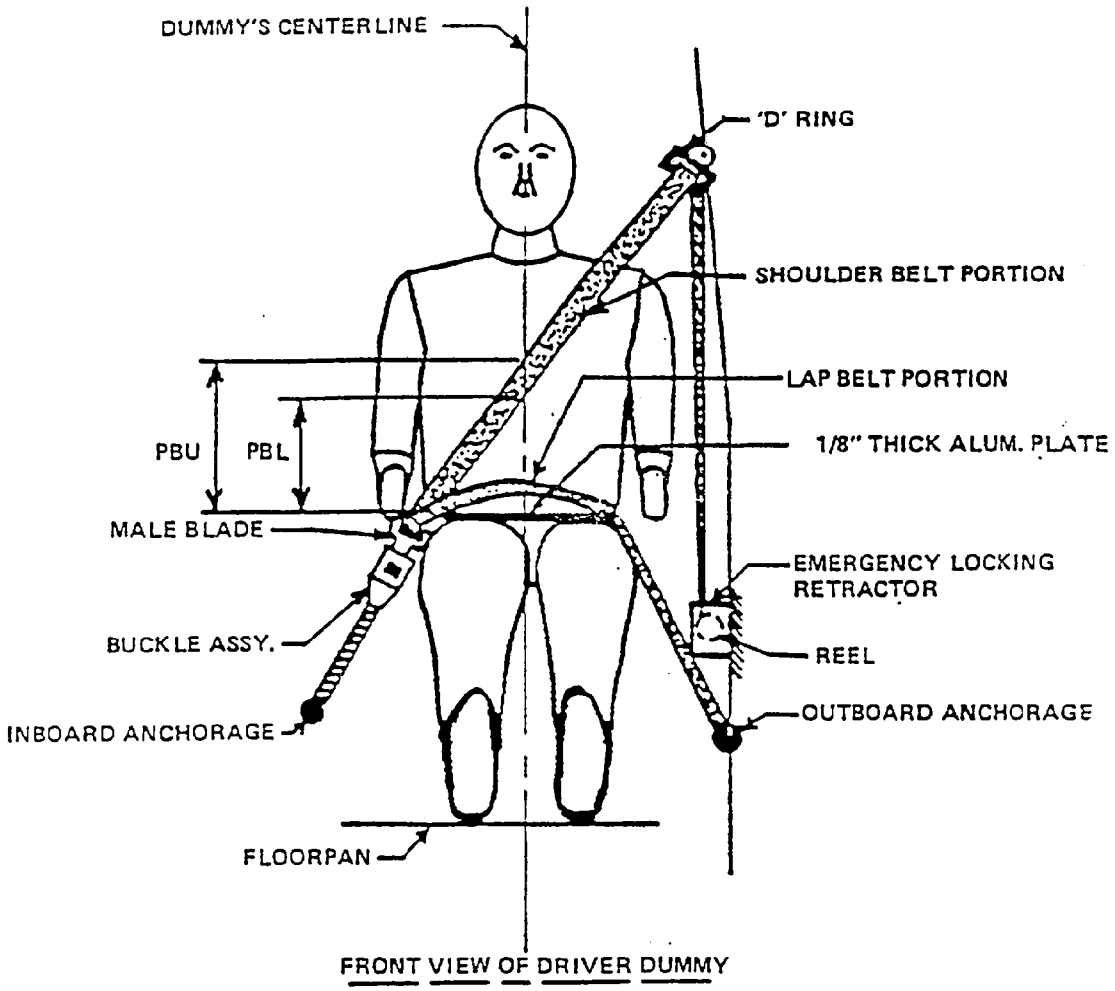
AD - Arm to Door
HD - H-Point to Door
HR - Head to Side Header
HS - Head to Side Window
KK - Knee to Knee
SHY - Striker to H-Point (Y-Direction)



CD - Chest to Dash
CS - Steering Wheel to Chest
HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
KDA - Knee to Dash Angle
KDL - Left Knee to Dash
KDR - Right Knee to Dash
NA - Nose to Rim Angle
NR - Nose to Rim
PA - Pelvic Angle
RA - Rim to Abdomen
SA - Seat Back Angle
SCA - Steering Column Angle
SH - Striker to H-Point
SK - Striker to Knee
ST - Striker to Head
SWA - Steering Wheel Angle
TA - Tibial Angle
WA - Windshield Angle



SEAT BELT POSITIONING DATA



(illustration)

Dimension = mm

	DRIVER DUMMY	PASSENGER DUMMY
PBU -- Top surface of alum. plate to upper edge	303	348
PBL -- Top surface of alum. plate to belt lower edge	230	266

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:	Driver	Passenger	
Length from trim above retractor reel to "D" ring as measured on dummy.	317 mm	318 mm	
Shoulder belt length as measured on Part 572 Dummy.	866 mm	853 mm	
Lap belt length as measured on Part 572 Dummy.	838 mm	836 mm	
SHOULDER BELT SPOOL-OFF DATA:			
As determined by film analysis	51 mm	117 mm	at shoulder
As determined mechanically	57 mm	124 mm	at retractor
As determined electronically between retractor and the "D" ring	47 mm	84 mm	
BELT STRETCH DATA:			
Measured electronically between shoulder belt load cell and the "D" ring.	N/R	N/R	
Measured mechanically	N/R	N/R	
RETRACTOR LOCK-UP TIME:			
As determined by shoulder belt spool-off observed in on-board cameras	65 msec.	68 msec.	

N/R Not Recorded

CAMERA LOCATIONS

VEH. NHTSA NO.: MV0102 ; TEST DATE: October 9, 1996

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1997/Chevrolet/S-10/Pickup

CAMERA POSITION NO.	VIEW	CAMERA POSITIONS (mm.)*			ANGLE (deg)	FILM PLANE TO HEAD TARGET (mm)	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Left Side View	-	-	-	-	-		
2	Left Front View	-820	8530	1560	90	8100	25	1053
3	Steering Column Top	-1910	8300	1575	90	7870	25	939
4	Steering Column Bottom	-1890	8270	1030	90	7840	25	1015
5	Driver Close-up	-1500	10560	1600	90	10130	75	1042
6	Driver Angle	-5250	5710	1980			50	1010
7	Onboard Driver						35	1005
8	Onboard Passenger						35	995
9	Right Overall	-3000	-8340	1285	90	7920	13	1010
10	Right Passenger Half	-1220	-8190	1290	90	7770	25	1000
11	Right Close-up	-1670	-10350	1470	90	9930	75	1020
12	Right Angle	-5280	-5510	1940			50	1005
13	Top Windshield	390	0	2700			13	1036
14	Top Driver	-130	480	1620			13	893
15	Top Passenger	-120	-470	1620			13	935
16	Pit Front	-1240	0	-3165			13	1000
17	Pit Rear	-3070	0	-3145			13	1015

* COORDINATES:

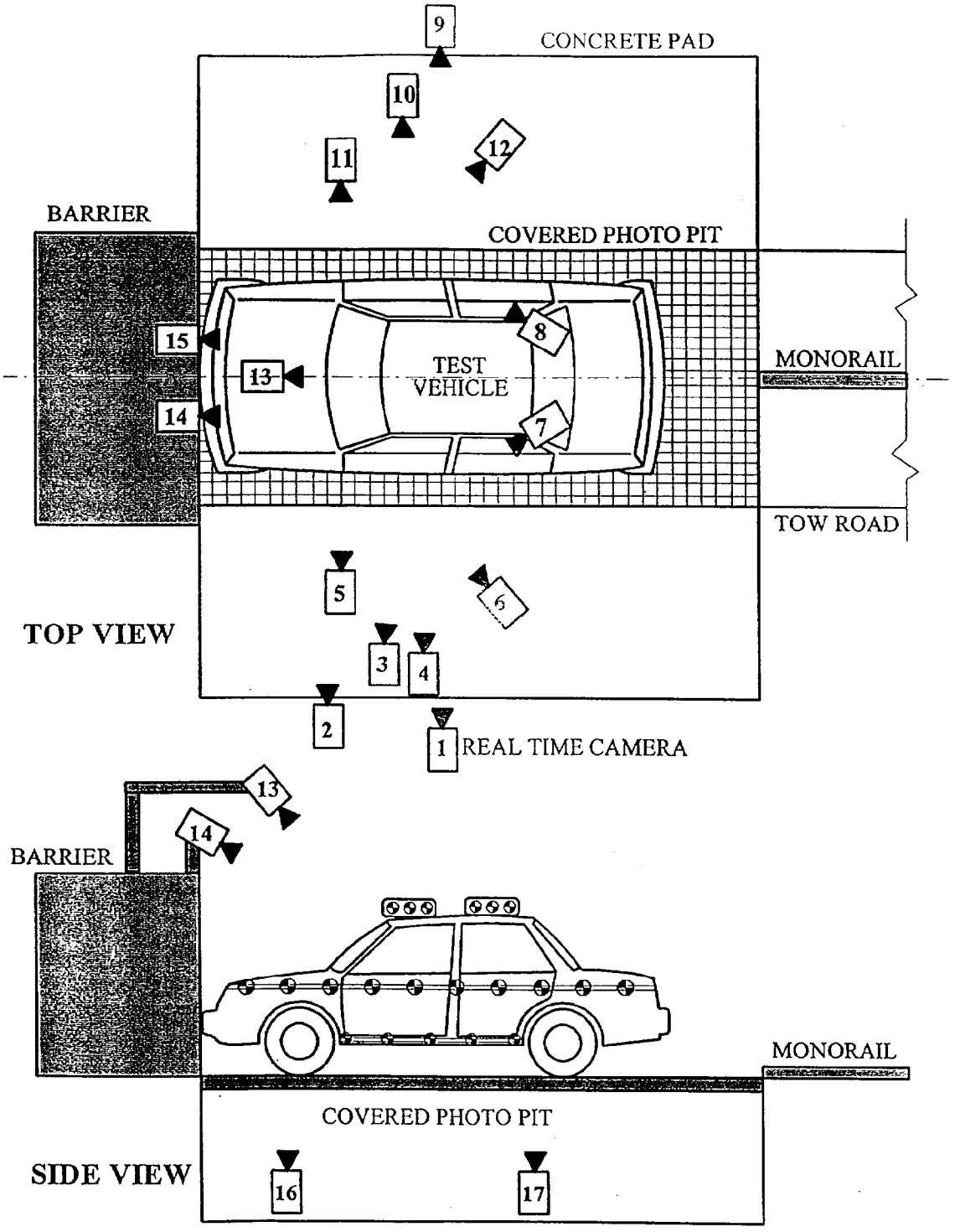
+X = film plane rearward of barrier

+Y = film plane to left of monorail centerline

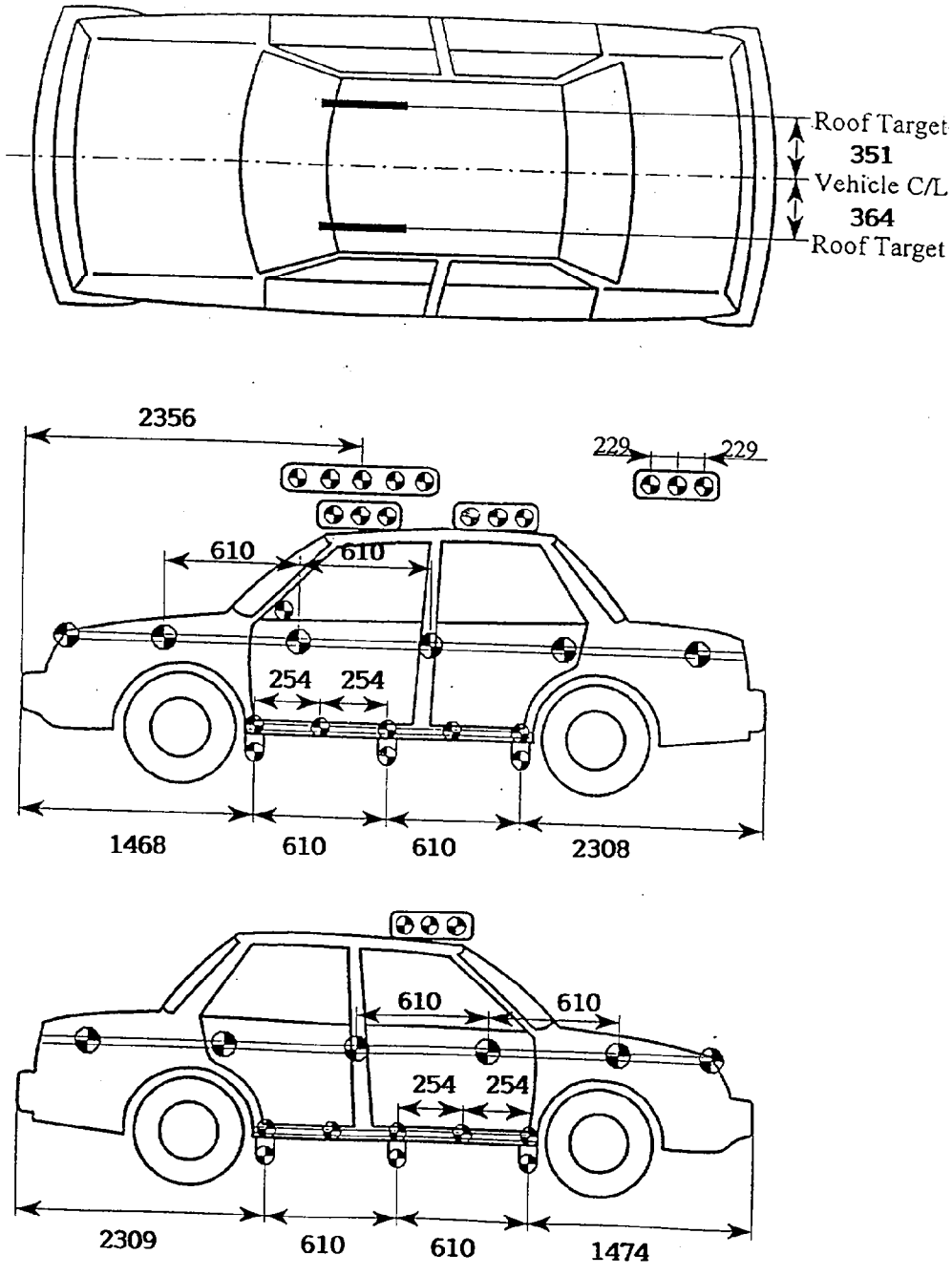
+Z = film plane to above ground level

ORIGIN: For X and Y it is the Impact Point. For Z it is the Floor.

CAMERA LOCATIONS (Cont'd)



VEHICLE TARGET LOCATIONS



(DIMENSIONS IN MM)

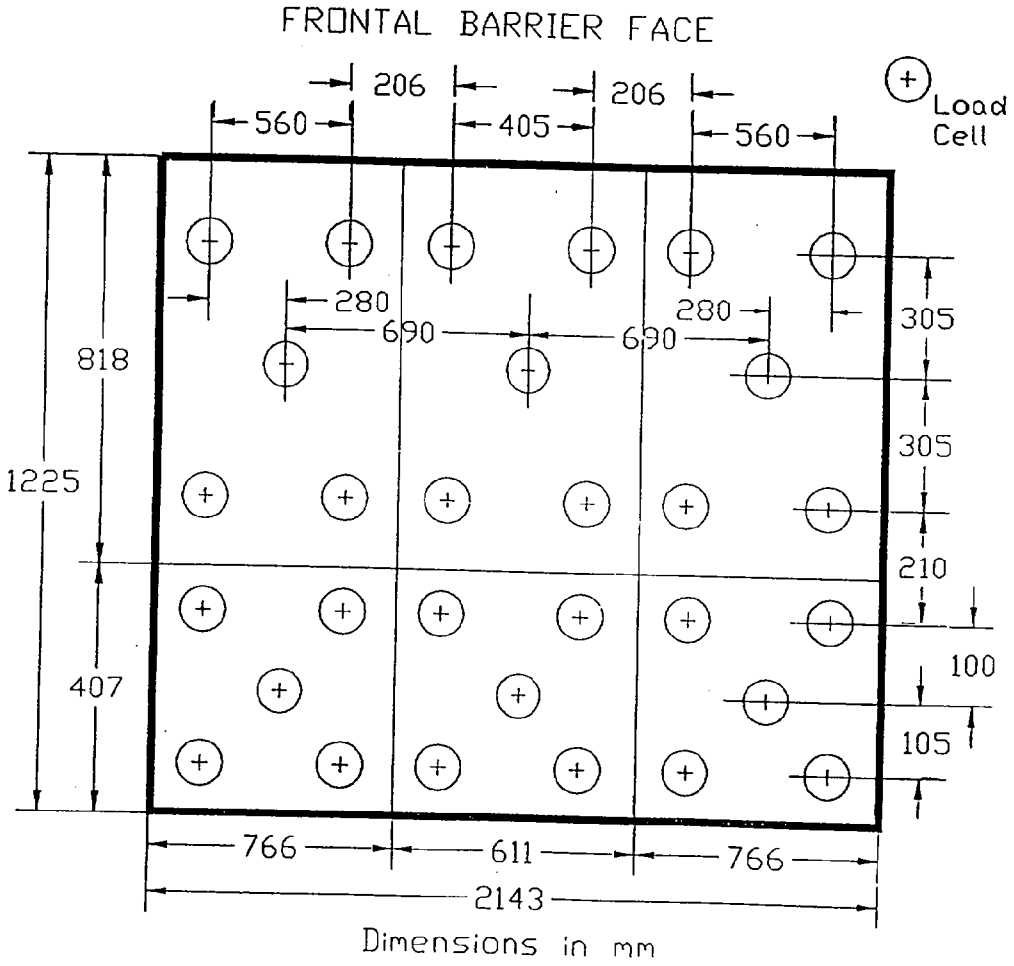
LOAD CELL LOCATIONS ON FIXED BARRIER

30 Load Cells

6 Rows

9 Columns

6 Groupings (5 cells/group)

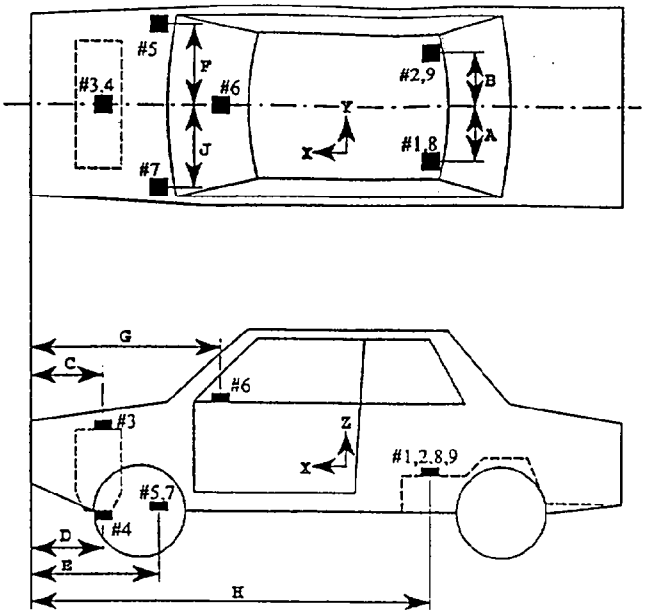


The following data is presented in Appendix B:

(1) Total or Sum of 30 individual load cells

(2) Data from 6 Groupings shown above (5 cells/group)

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



Units: (mm)

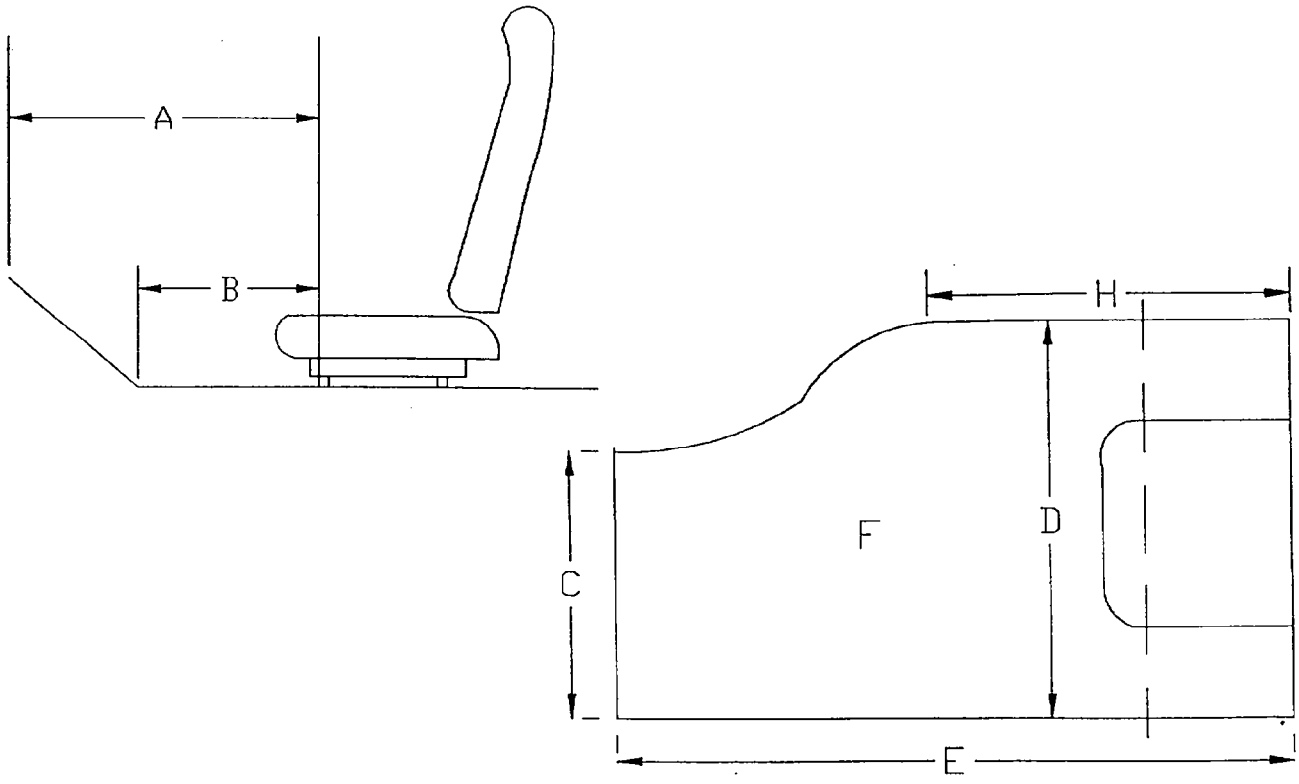
Dimension	Length
A	602
B	602
C	793
D	954
E	1026
F	562
G	1421
H	2497
J	562

ACCEL. NO.	ACCELEROMETER	DIRECTION
1 and 8	Left Rear Seat Crossmember	X
2 and 9	Right Rear Seat Crossmember	X
3	Top of Engine	X
4	Bottom of Engine	X
5	Right Side Brake Caliper	X
6	Instrument Panel	X
7	Left Disc Brake Caliper	X

TEST VEHICLE MEASUREMENTS

STATIC FOOTWELL DEFORMATION

Driver's Side



Units = mm

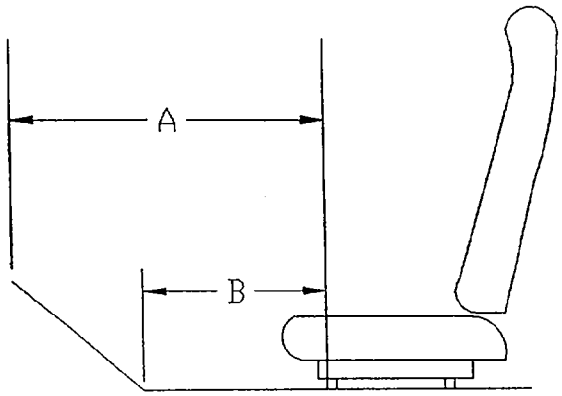
MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	762	648	114
B	582	534	48
C	446	443	3
D	378	371	7
E	1160	1127	33
H*	416	397	19

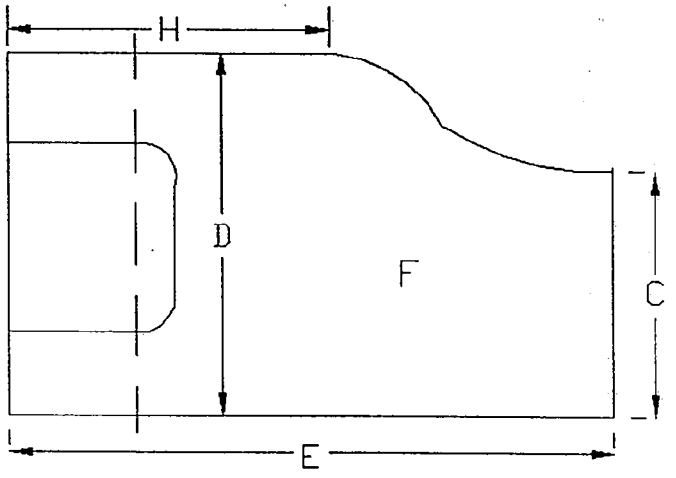
* Measured to seat front mounting point, not the C post.

TEST VEHICLE MEASUREMENTS (Cont'd)

STATIC FOOTWELL DEFORMATION

Passenger's Side





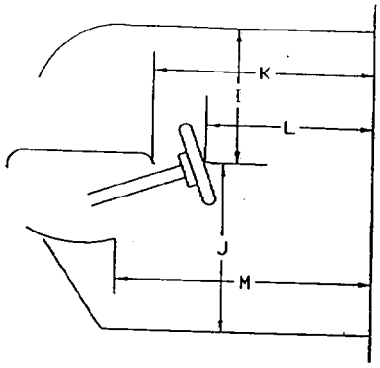
Units = mm

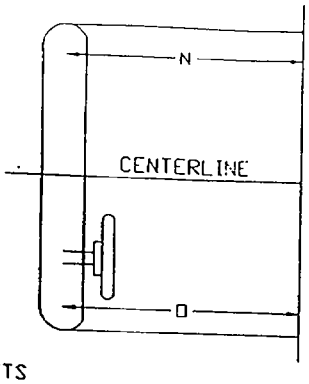
MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	680	637	43
B	526	519	7
C	338	352	-14
D	402	371	31
E	568	544	24
H*	370	312	58

* Measured to seat front mounting point, not the C post.

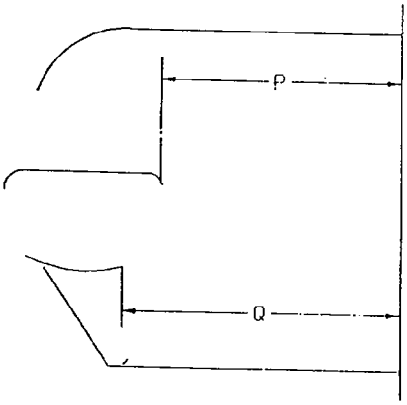
TEST VEHICLE MEASUREMENTS (Cont'd)

STATIC PASSENGER COMPARTMENT INTRUSION





MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



Units = mm

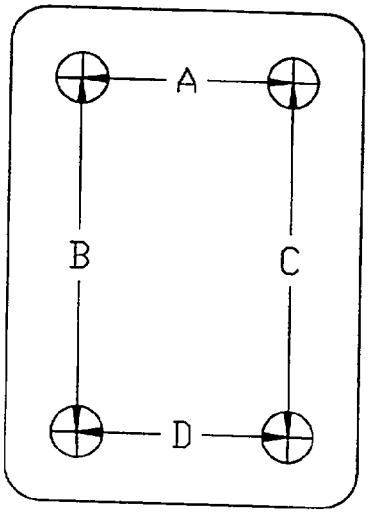
MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
I	454	537	-83
J	670	705	-35
K	824	823	1
L	666	654	12
M	904	953	-49
N	1126	1056	70
O	1126	1076	50
P	852	823	29
Q	362	394	-32

* Measured to seat front mounting point, not the C post.

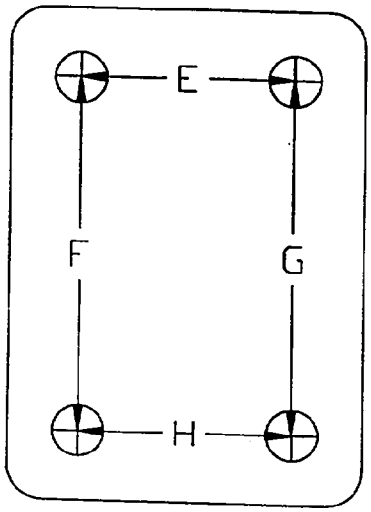
TEST VEHICLE MEASUREMENTS (Cont'd)

UNDERBODY FLOORBOARD DEFORMATION

DRIVER'S SIDE



PASSENGER'S SIDE

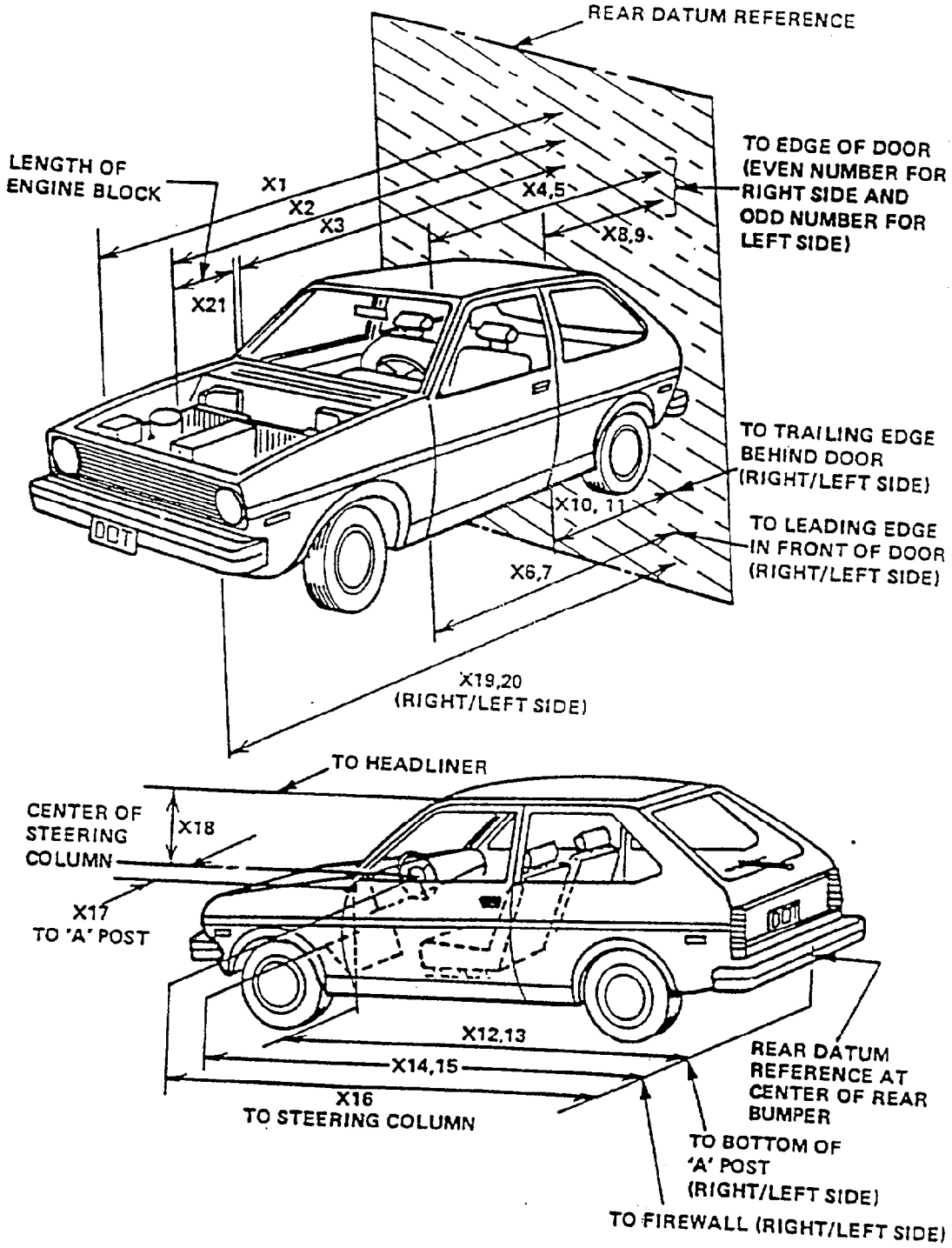


MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	345	362	-17
B	248	246	2
C	310	305	5
D	355	367	-12
E	310	337	-27
F	395	388	7
G	345	344	1
H	380	378	2

TEST VEHICLE MEASUREMENTS (Cont'd)

No.	MEASUREMENT DESCRIPTION:	Pre-Test (mm)	Post-Test (mm)	Diff. (mm)
X1	Total Length of Test Vehicle at Centerline	5162	4497	665
X2	Rear Surface of Vehicle to Front of Engine	4482	4188	294
X3	Rear Surface of Vehicle to Firewall	4022	3867	155
X4	Rear Surface to Upr. Leading Edge of Rt. Door	3743	3726	17
X5	Rear Surface to Upr. Leading Edge of Left Door	3743	3701	42
X6	Rear Surface to Lwr. Leading Edge of Rt. Door	3738	3709	29
X7	Rear Surface to Lwr. Leading Edge of Left Door	3737	3687	50
X8	Rear Surface to Upr. Trailing Edge of Rt. Door	2623	2601	22
X9	Rear Surface to Upr. Trailing Edge of Left Door	2621	2579	42
X10	Rear Surface to Lwr. Trailing Edge of Rt. Door	2622	2594	28
X11	Rear Surface to Lwr. Trailing Edge of Left Door	2620	2573	47
X12	Rear Surface to Bottom of A-Post on Rt. Side	3731	3710	21
X13	Rear Surface to Bottom of A-Post on Left Side	3729	3682	47
X14	Rear Surface to Firewall on Right Side	3943	N/A	---
X15	Rear Surface to Firewall on Left Side	3984	N/A	---
X16	Rear Surface to Steering Column	3248	3162	86
X17	Center of Steering Column to A-Post	457	452	5
X18	Center of Steering Column to Headlining	500	498	2
X19	Rear Surface to Right Side of Front Bumper	5003	4512	491
X20	Rear Surface to Left Side of Front Bumper	4996	4448	548
X21	Length of Engine Block	395	395	0

* Post-test firewall measurement locations were obstructed due to hood and fender deformation.


REAR DATUM REFERENCE
LENGTH OF ENGINE BLOCK
X1
X2
X3
X21
X4,5
X8,9
TO EDGE OF DOOR (EVEN NUMBER FOR RIGHT SIDE AND ODD NUMBER FOR LEFT SIDE)
TO TRAILING EDGE BEHIND DOOR (RIGHT/LEFT SIDE)
X10, 11
TO LEADING EDGE IN FRONT OF DOOR (RIGHT/LEFT SIDE)
X6,7
X19,20 (RIGHT/LEFT SIDE)
TO HEADLINER
CENTER OF STEERING COLUMN
X18
X17 TO 'A' POST
X12,13
X14,15
X16 TO STEERING COLUMN
REAR DATUM REFERENCE AT CENTER OF REAR BUMPER
TO BOTTOM OF 'A' POST (RIGHT/LEFT SIDE)
TO FIREWALL (RIGHT/LEFT SIDE)

ACCIDENT INVESTIGATION DIVISION DATA

FOR 35 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Chevrolet/S-10/Pickup

VEH. NHTSA NO.: MV0102 ; VIN: 1GCCS19X8VK100825

MODEL YEAR: 1997 ; BUILD DATE: 8/96 ; TEST DATE: October 9, 1996

VEH. SIZE CATEGORY: Light Truck ; TEST WEIGHT: 1883.3 kg

VEH. WHEELBASE: 3123 mm; FRONT OVERHANG: 882 mm; OVERALL WIDTH: 1705 mm

ACCELEROMETER DATA:

LOCATION: As per measurements on pages 4-13

CALIBRATION PROCEDURE: As per MGA Calibration Procedure

LINEARITY: >99.9% ; INTEGRATION ALGORITHM: Trapezoidal

VEH: IMPACT SPEED: 56.5 kph ; TIME OF SEPARATION: 204 msec

VELOCITY CHANGE: 56.5 kph

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE: F (Frontal)

CRUSH DEPTH DIMENSIONS:

C1 = 548 mm

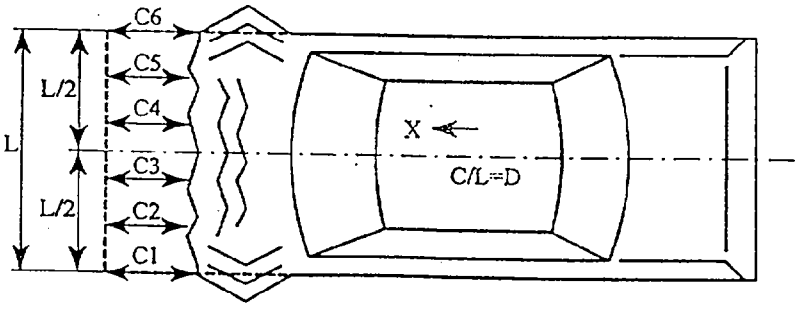
C2 = 584 mm

C3 = 649 mm

C4 = 645 mm

C5 = 571 mm

C6 = 491 mm



MIDPOINT OF DAMAGE: D = Vehicle Centerline (Longitude)

LENGTH OF DAMAGED REGION: L = 1428 mm

APPENDIX A

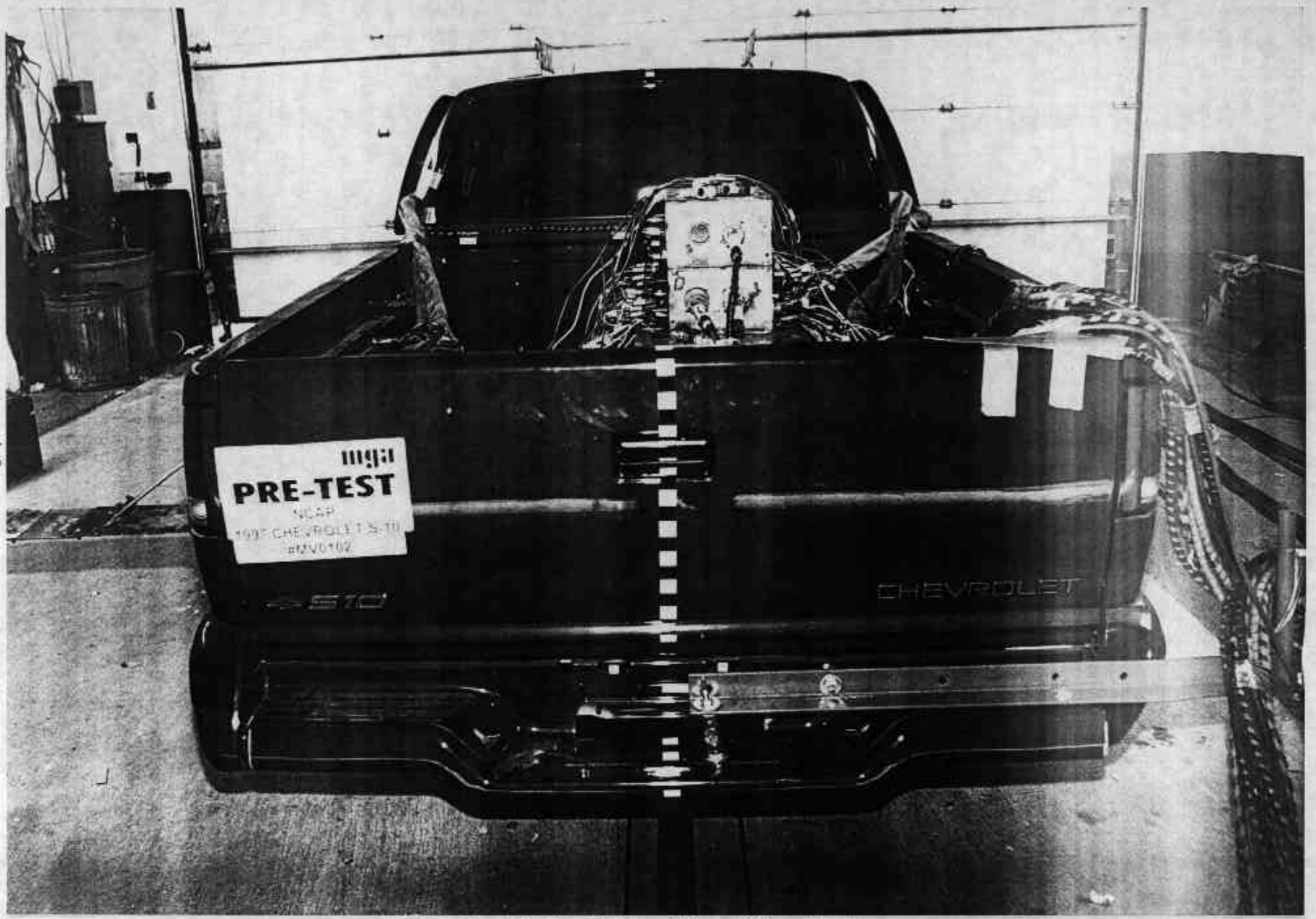
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (Cont'd)

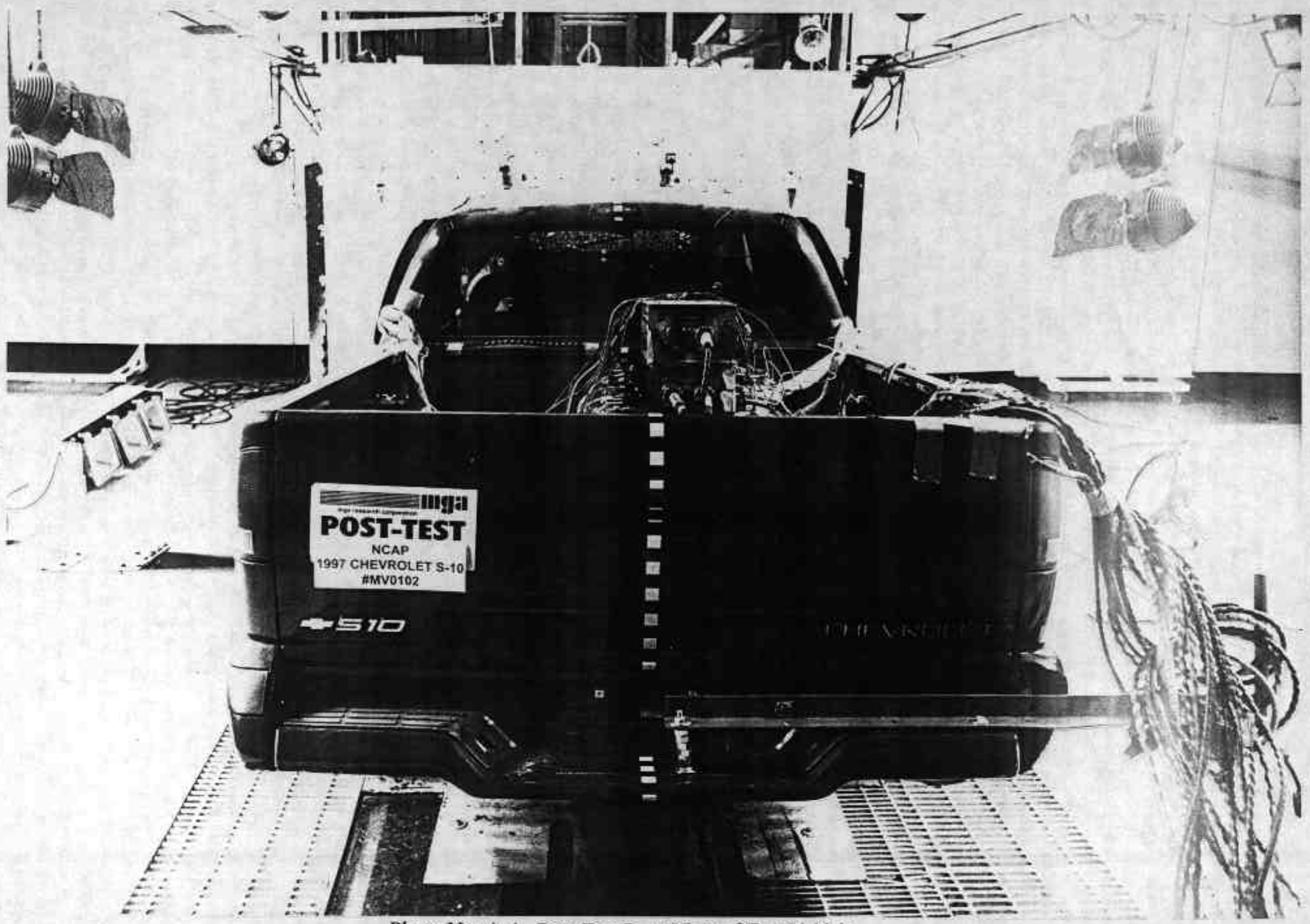
Photo No. A-1 - Pre-Test Front View of Test Vehicle

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



A-3

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



A-4

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

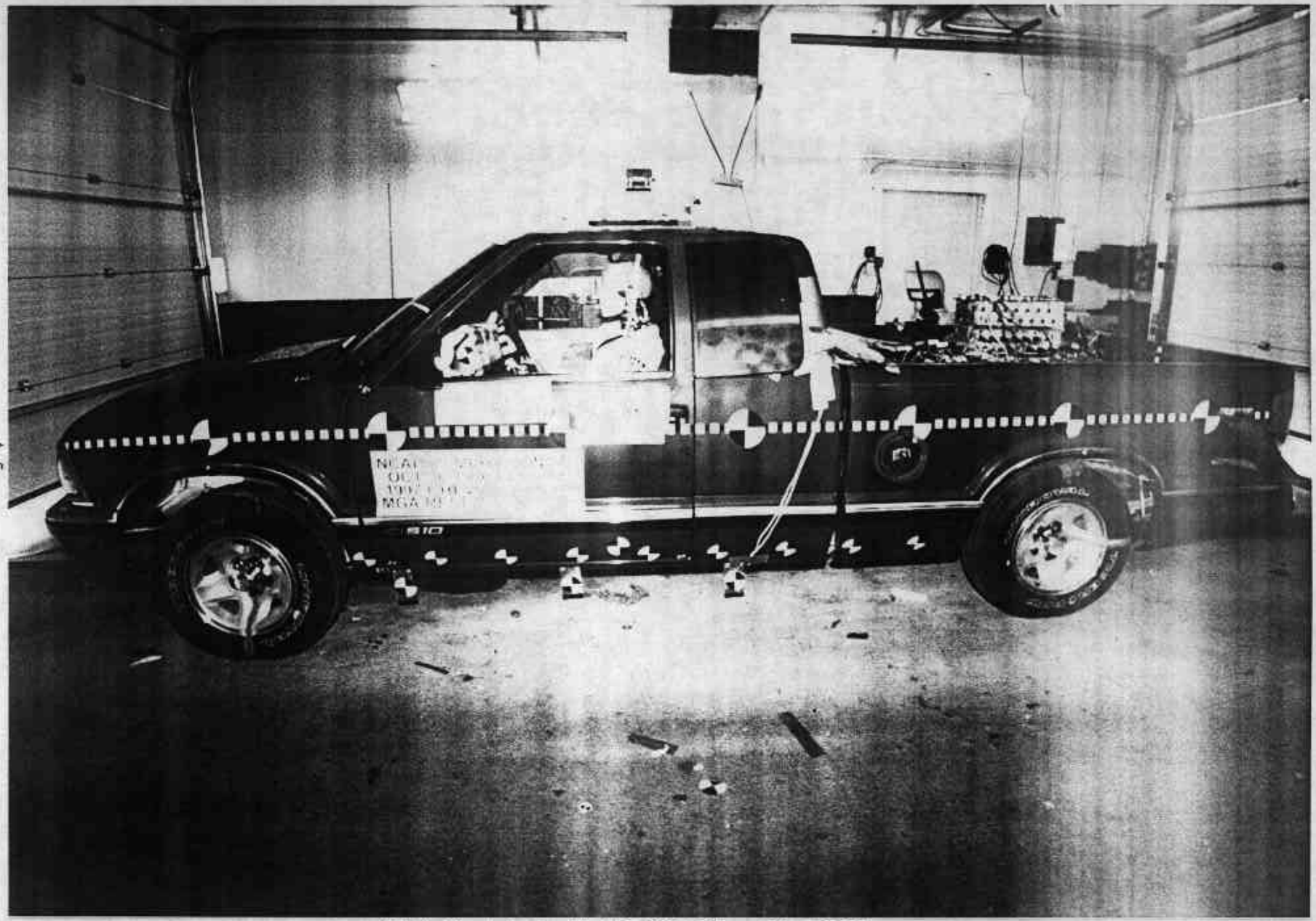


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

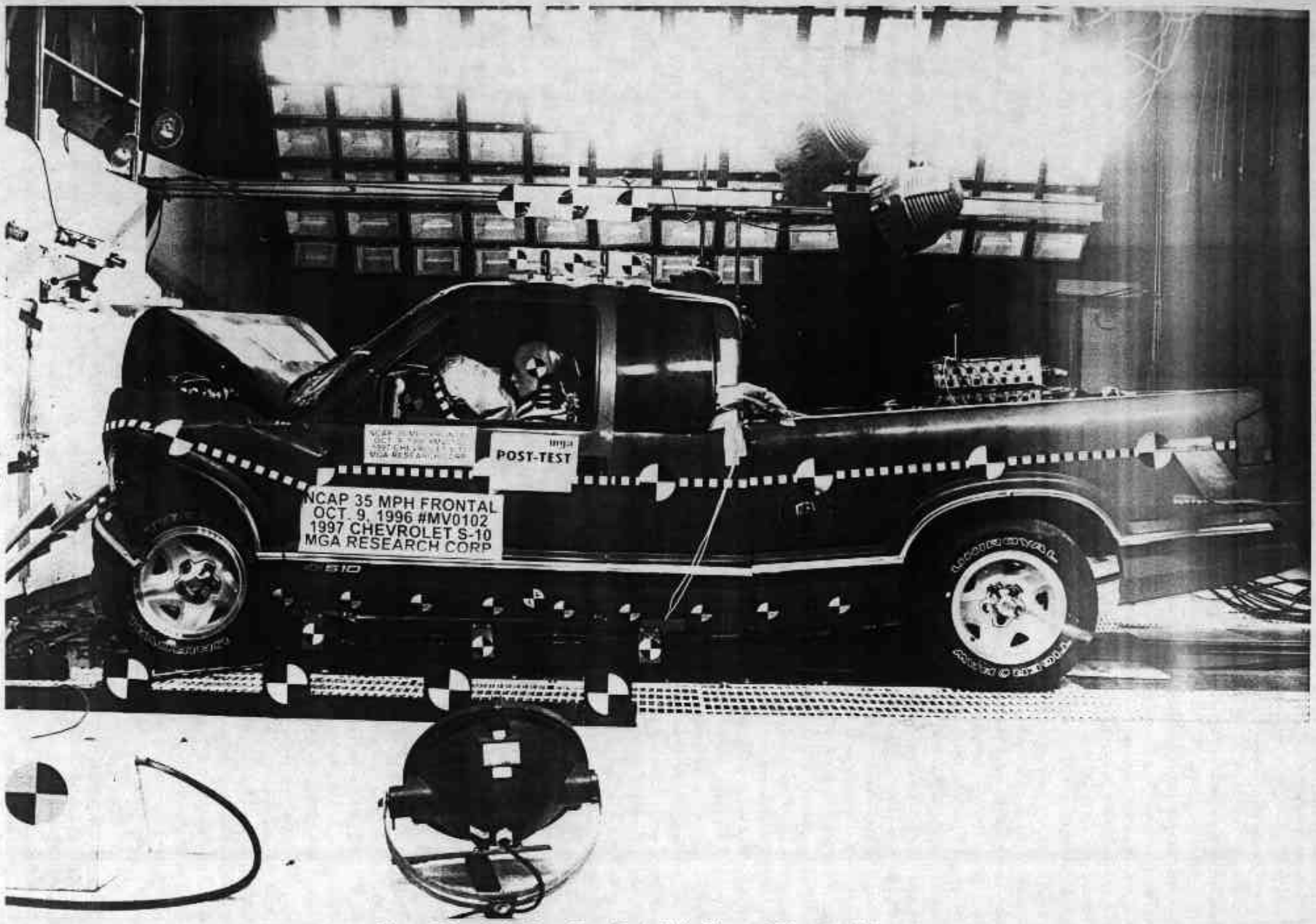


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

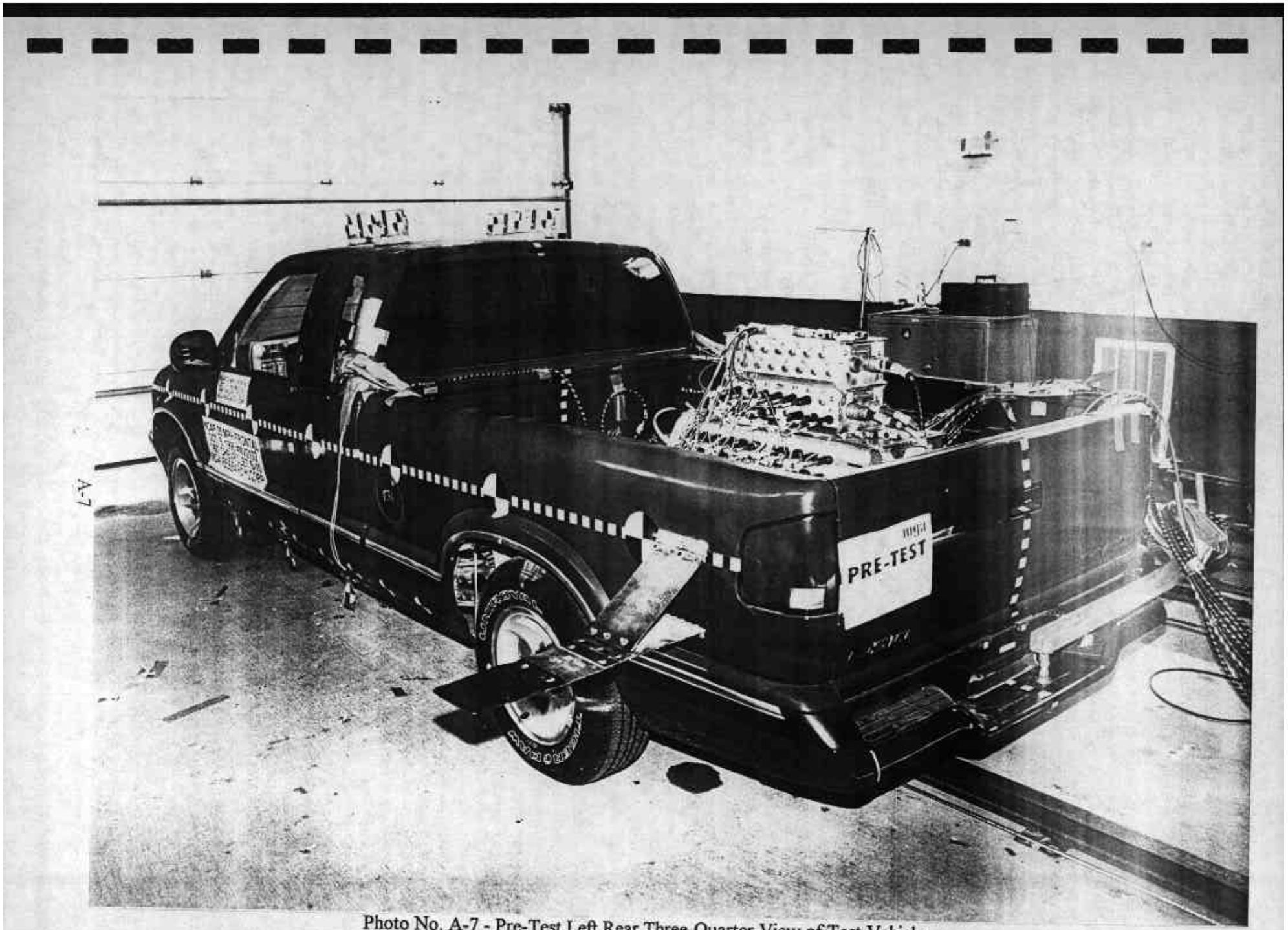


Photo No. A-7 - Pre-Test Left Rear Three-Quarter View of Test Vehicle

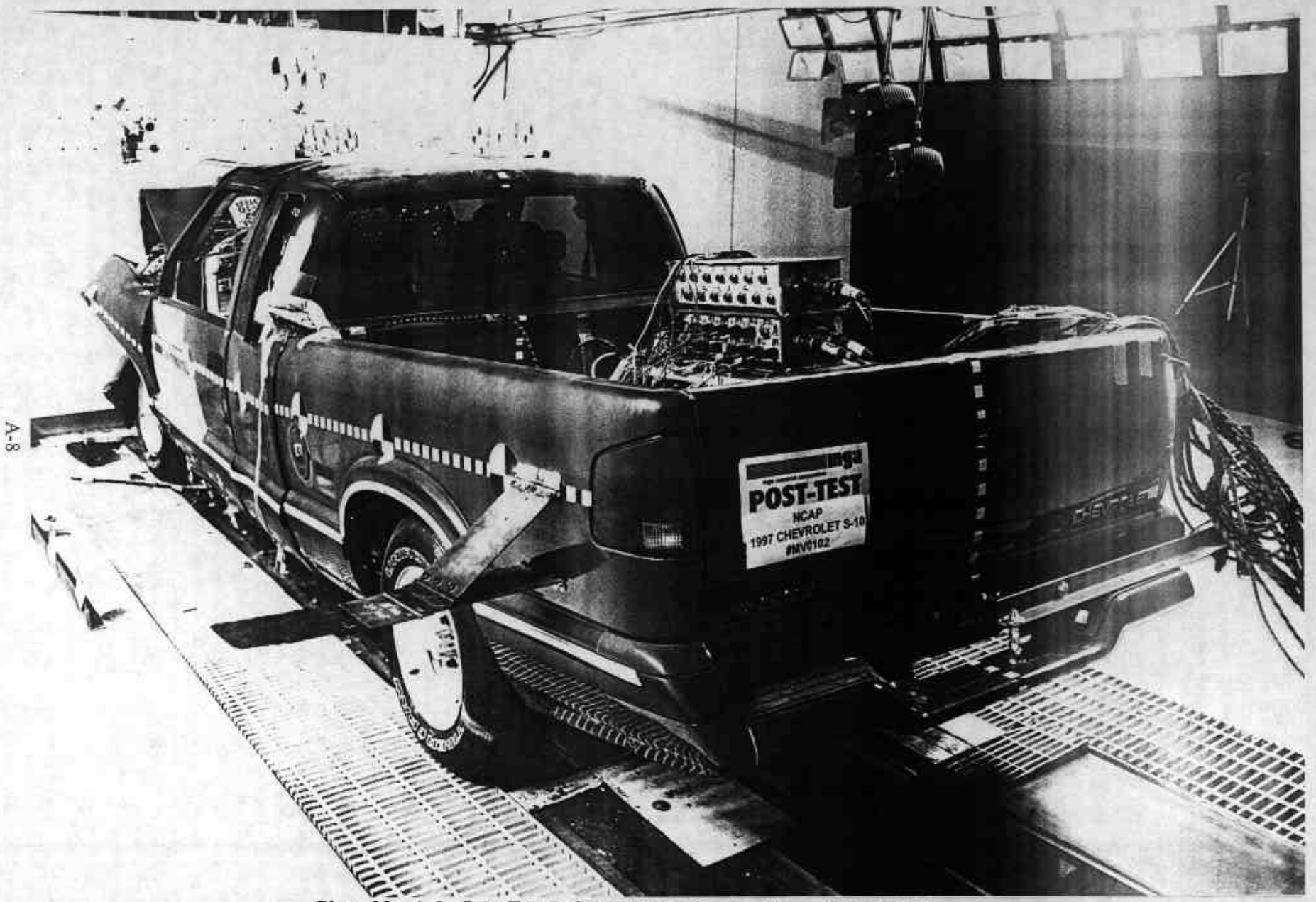


Photo No. A-8 - Post-Test Left Rear Three-Quarter View of Test Vehicle

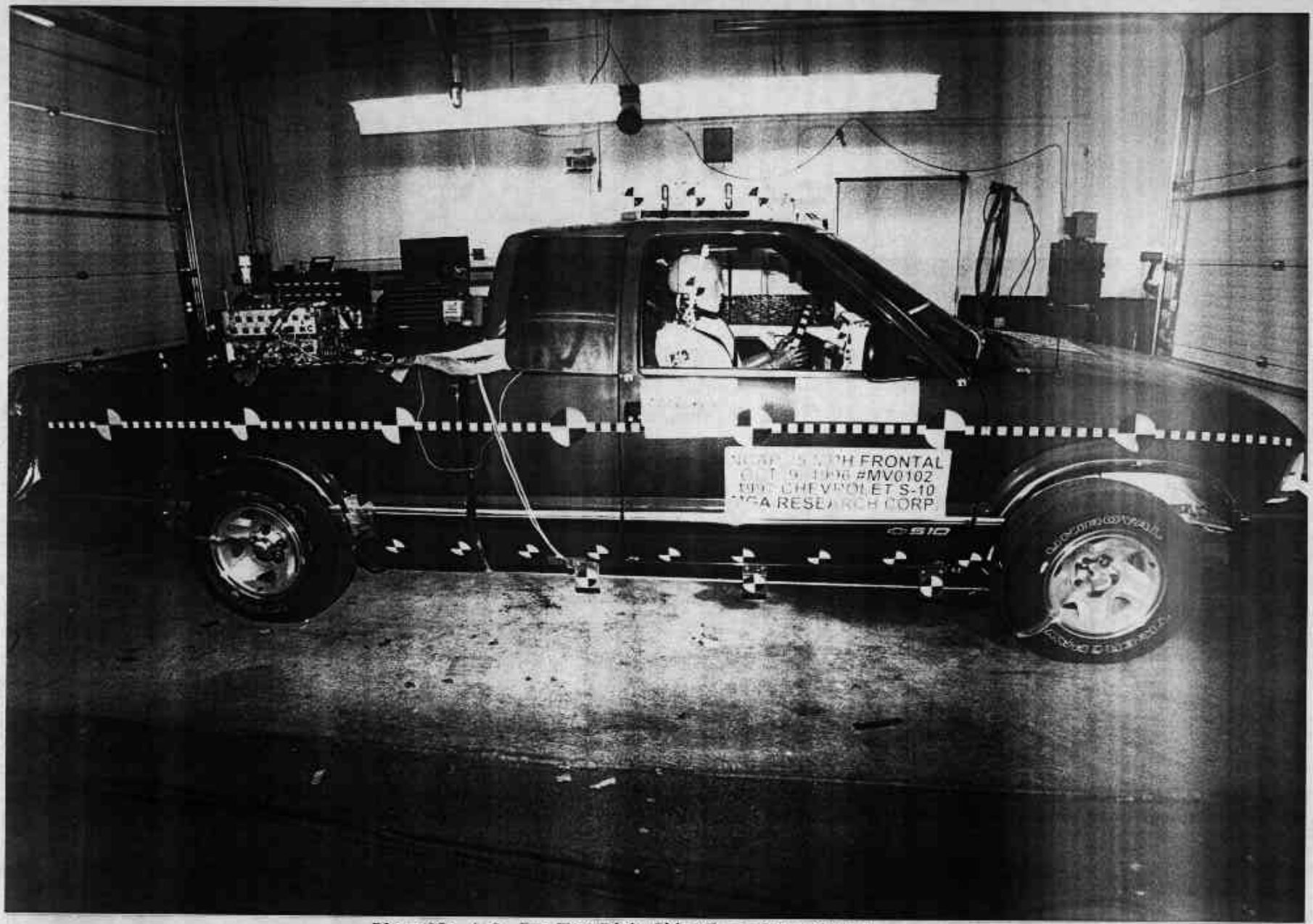


Photo No. A-9 - Pre-Test Right Side View of Test Vehicle

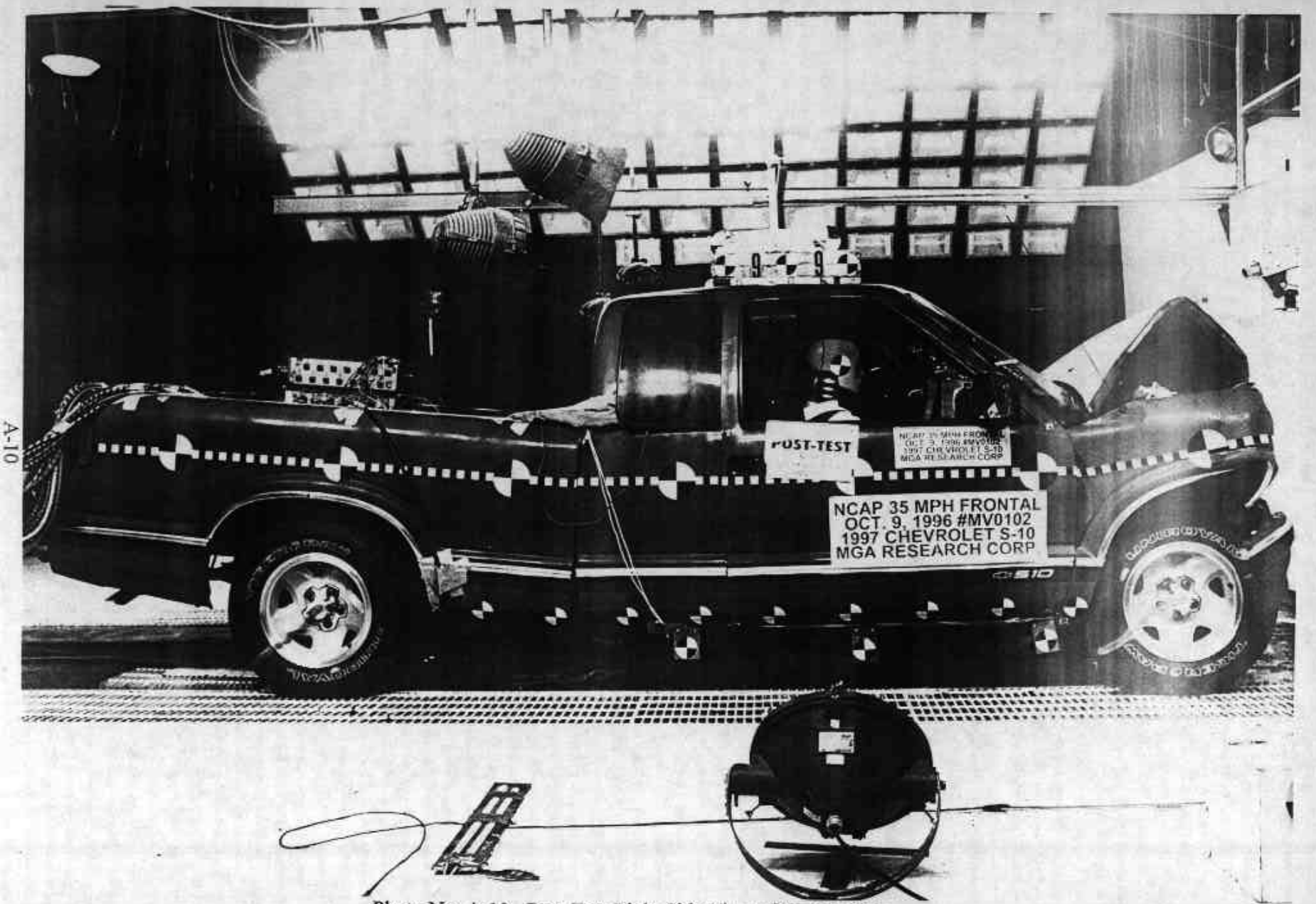


Photo No. A-10 - Post-Test Right Side View of Test Vehicle

A-11

Photo No. A-11 - Pre-Test Right Front Three-Quarter View of Test Vehicle

Photo No. A-12 - Post-Test Right Front Three-Quarter View of Test Vehicle

A-13

Photo No. A-13 - Pre-Test Fuel Filler Cap View

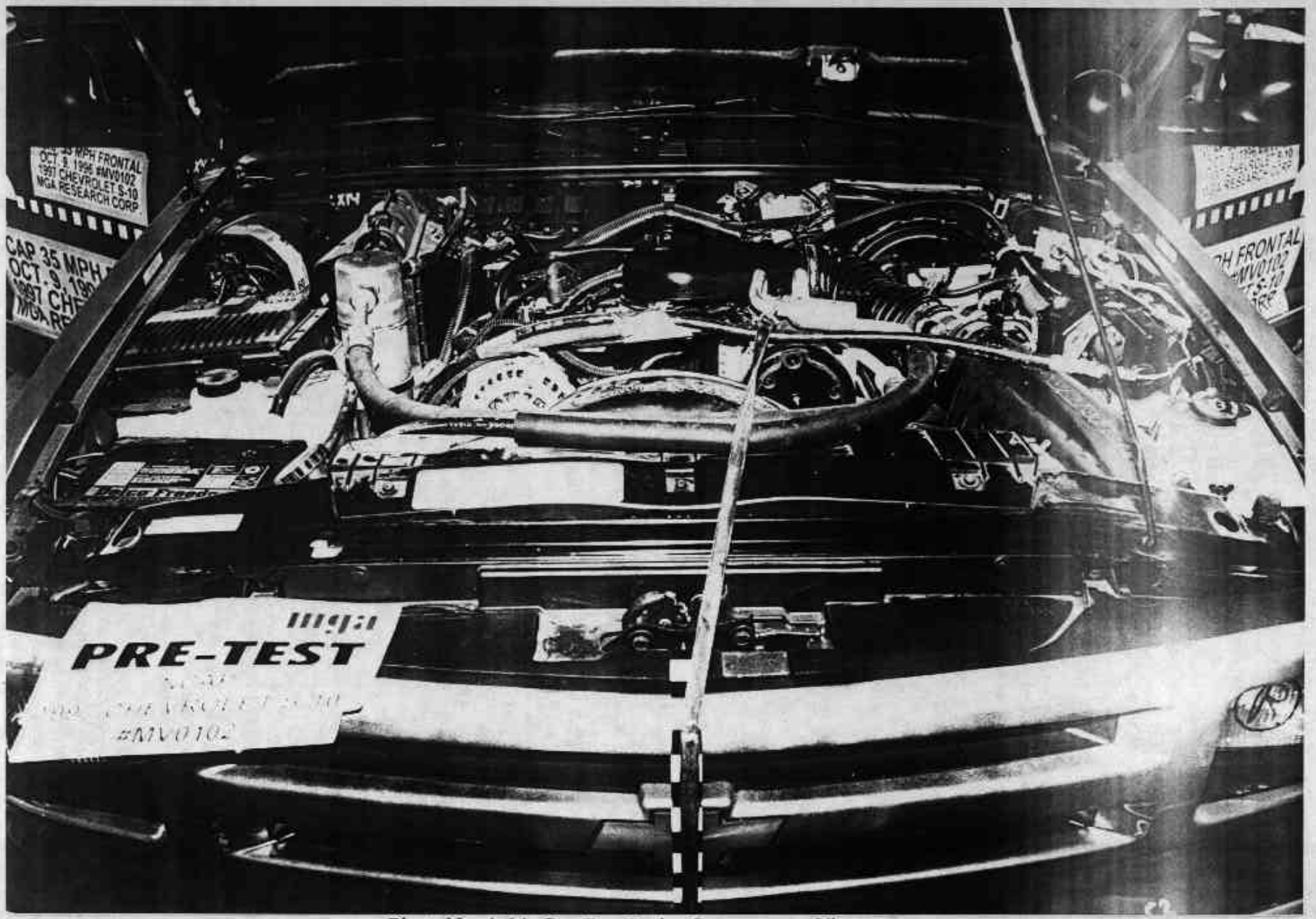


Photo No. A-14 - Pre-Test Engine Compartment View

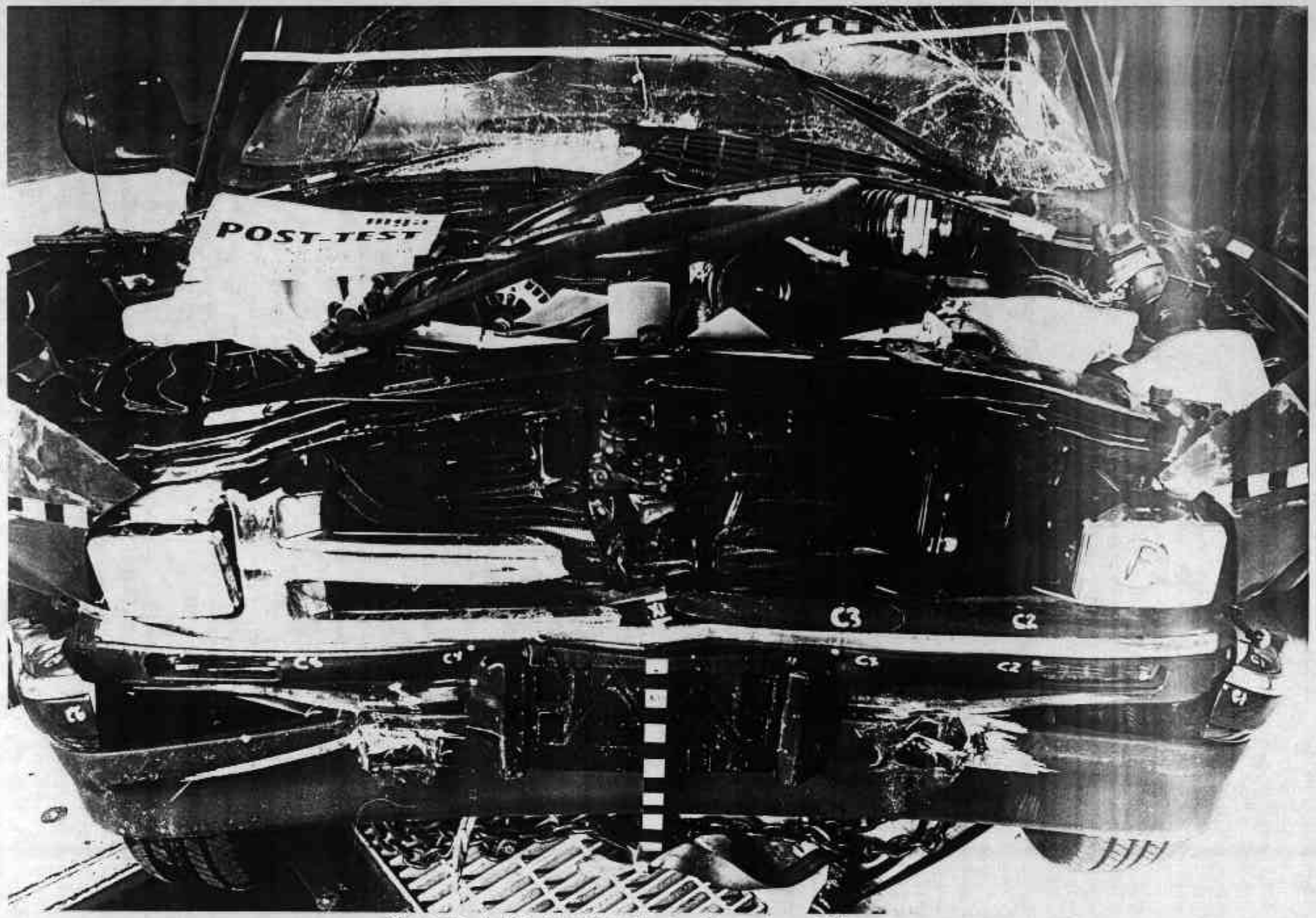
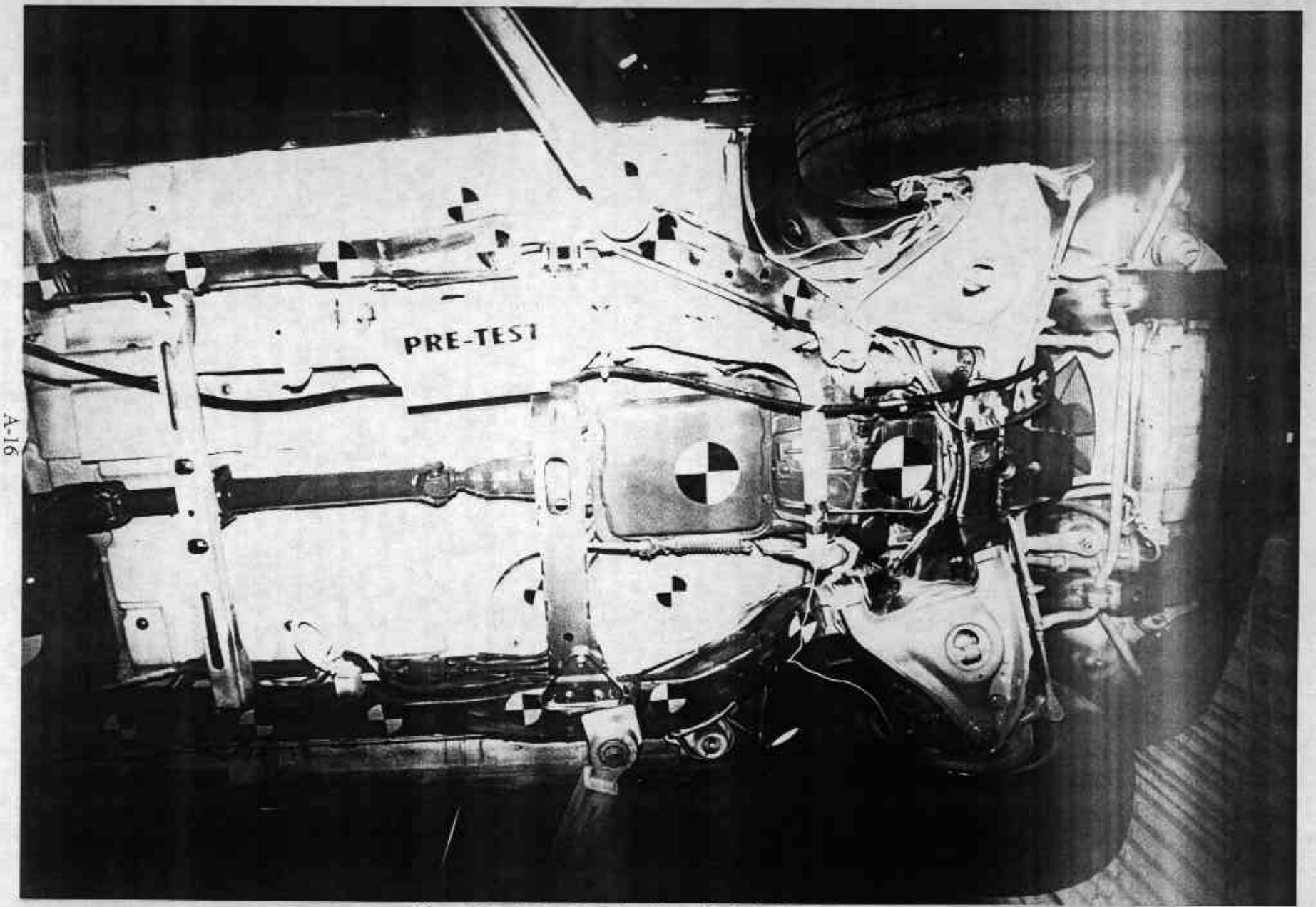
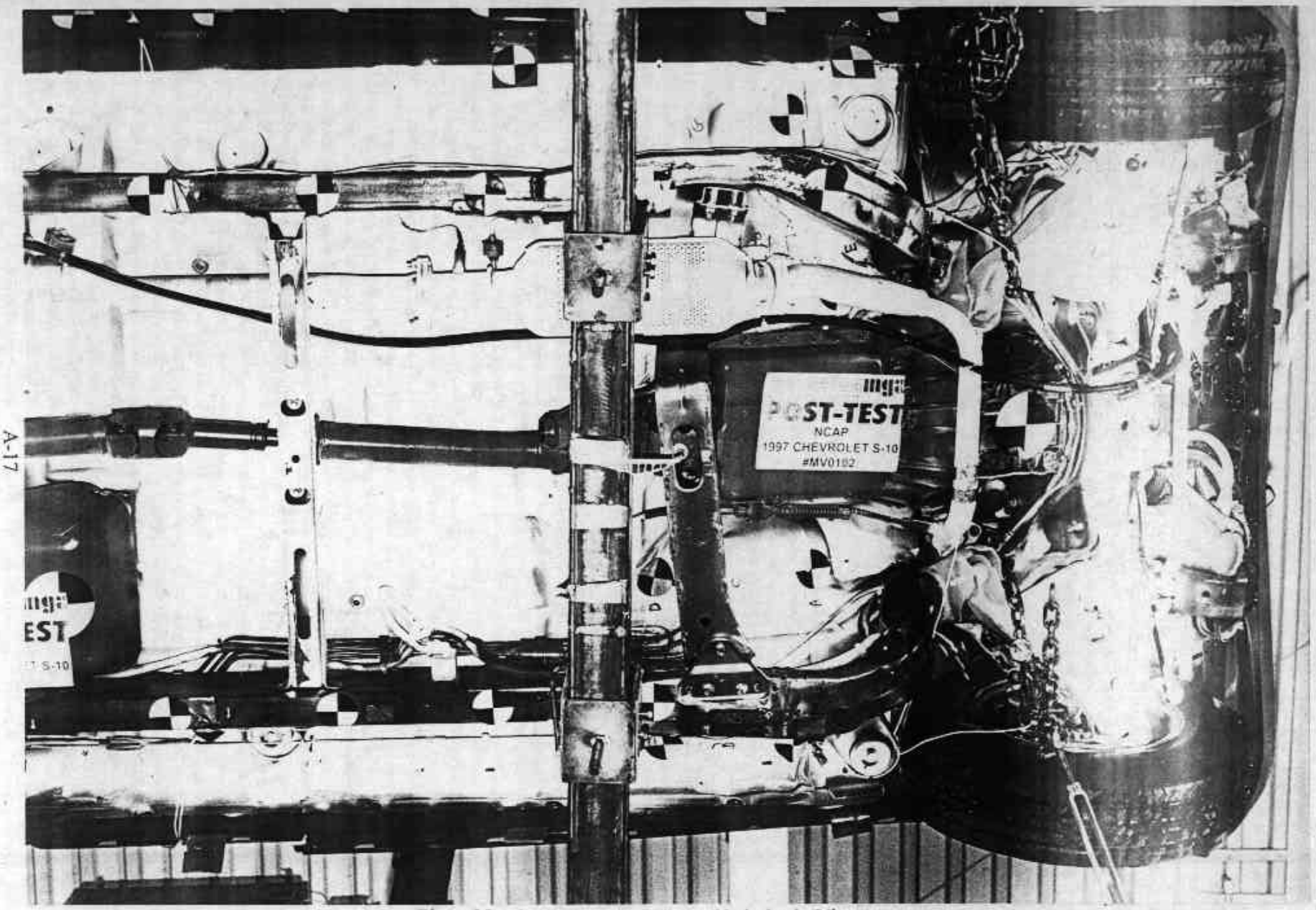


Photo No. A-15 - Post-Test Engine Compartment View



A-16

Photo No. A-16 - Pre-Test Front Underbody View



A-17

Photo No. A-17 - Post-Test Front Underbody View

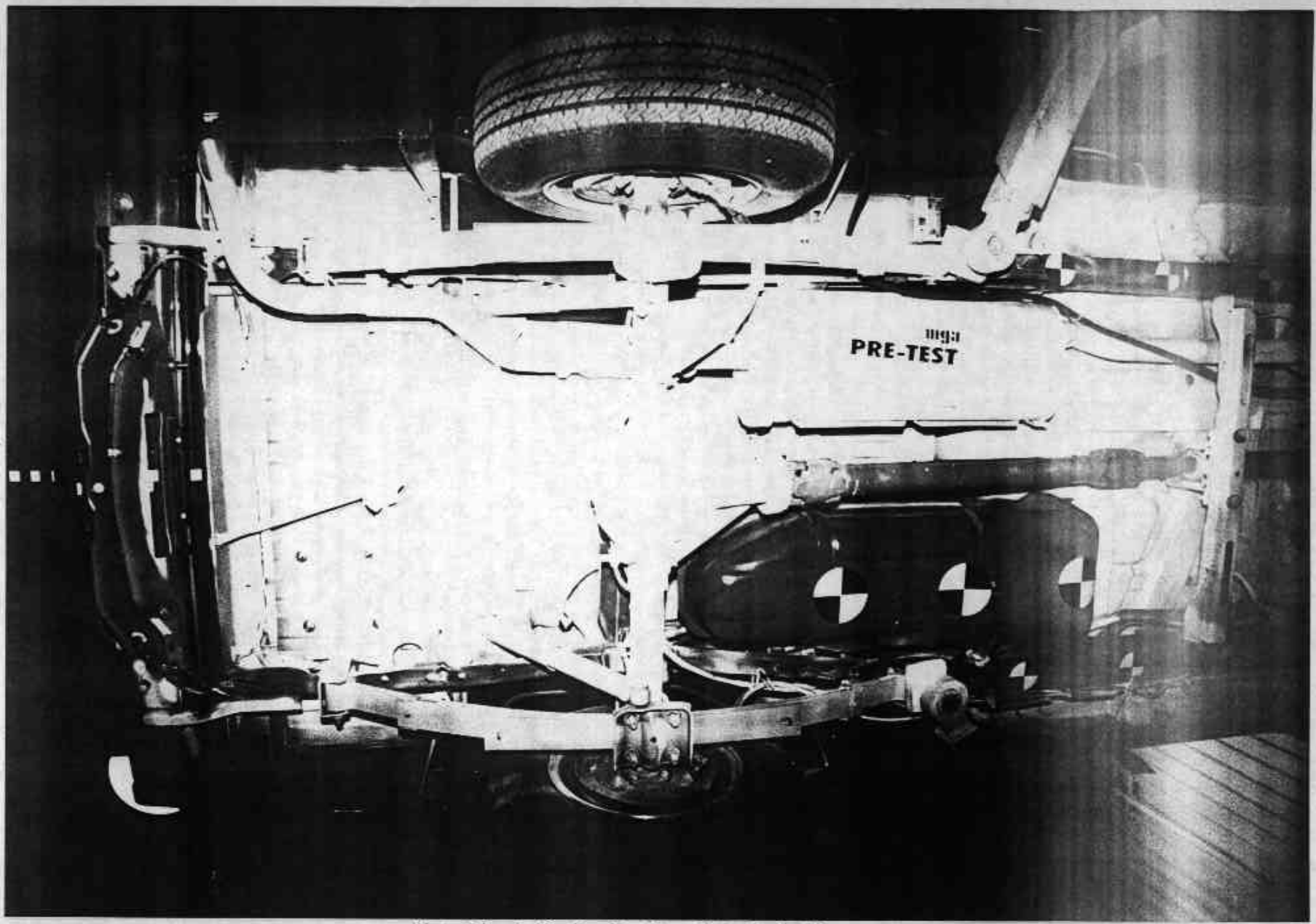


Photo No. A-18 - Pre-Test Rear Underbody View

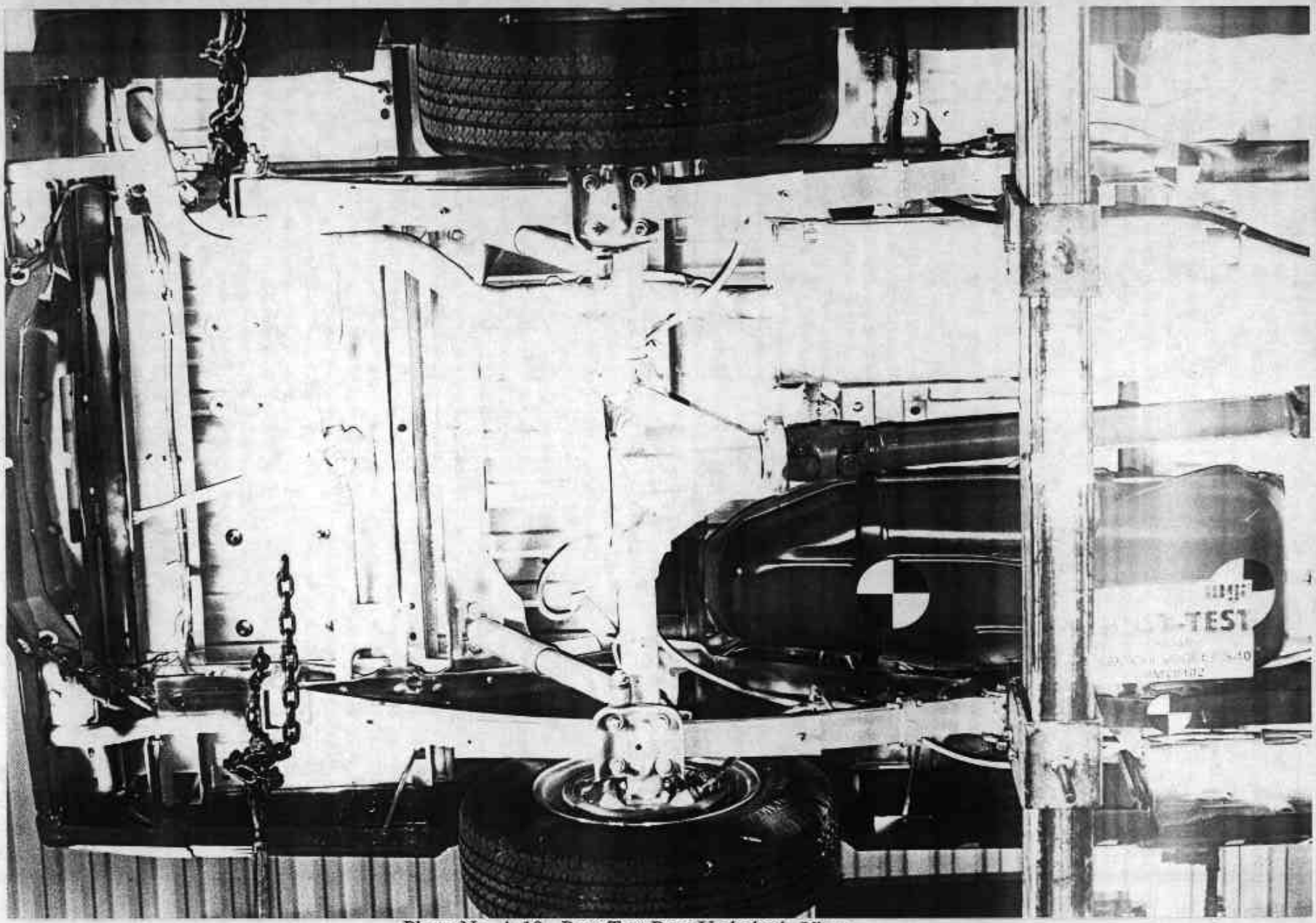


Photo No. A-19 - Post-Test Rear Underbody View

Photo No. A-20 - Pre-Test Windshield View

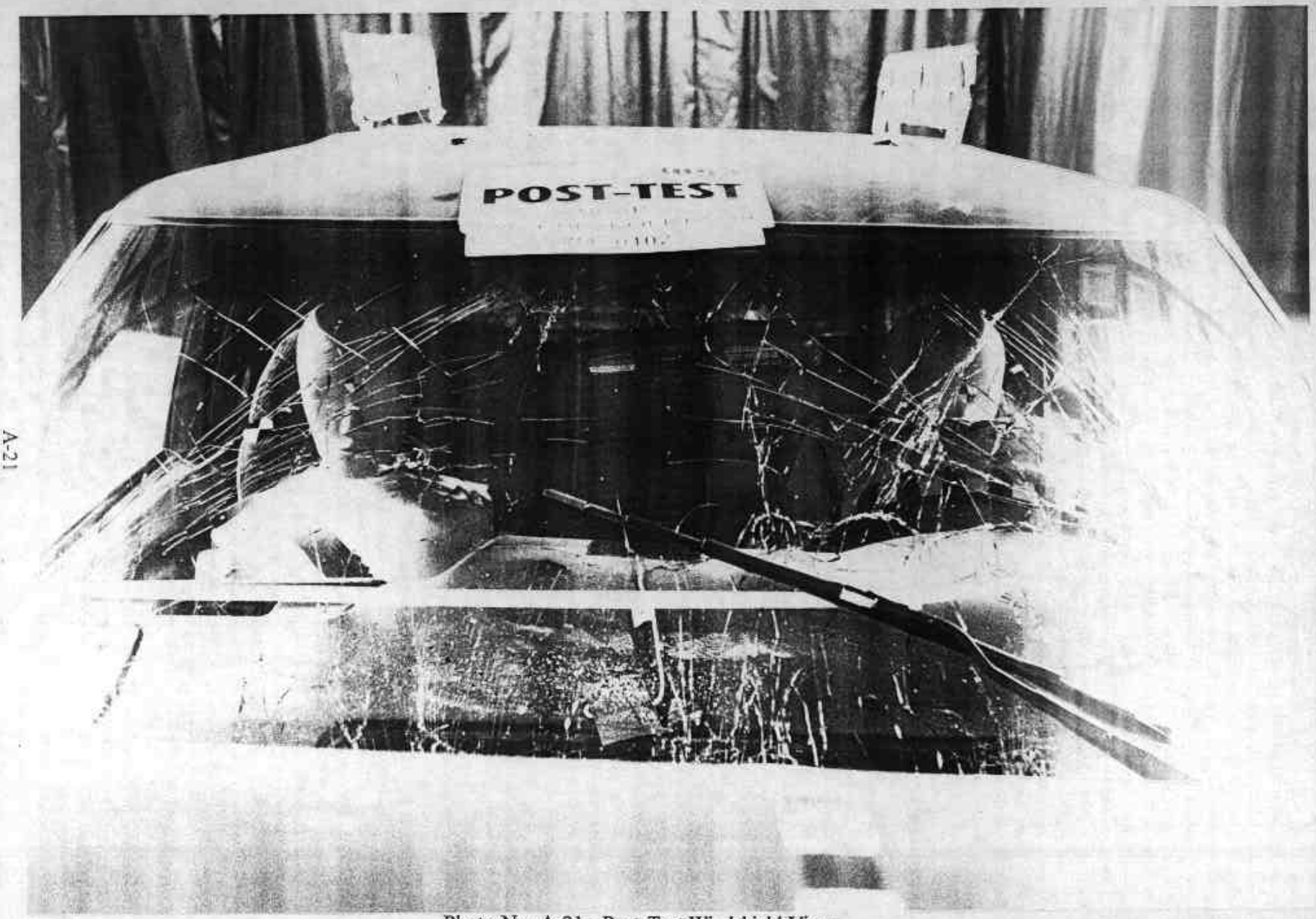
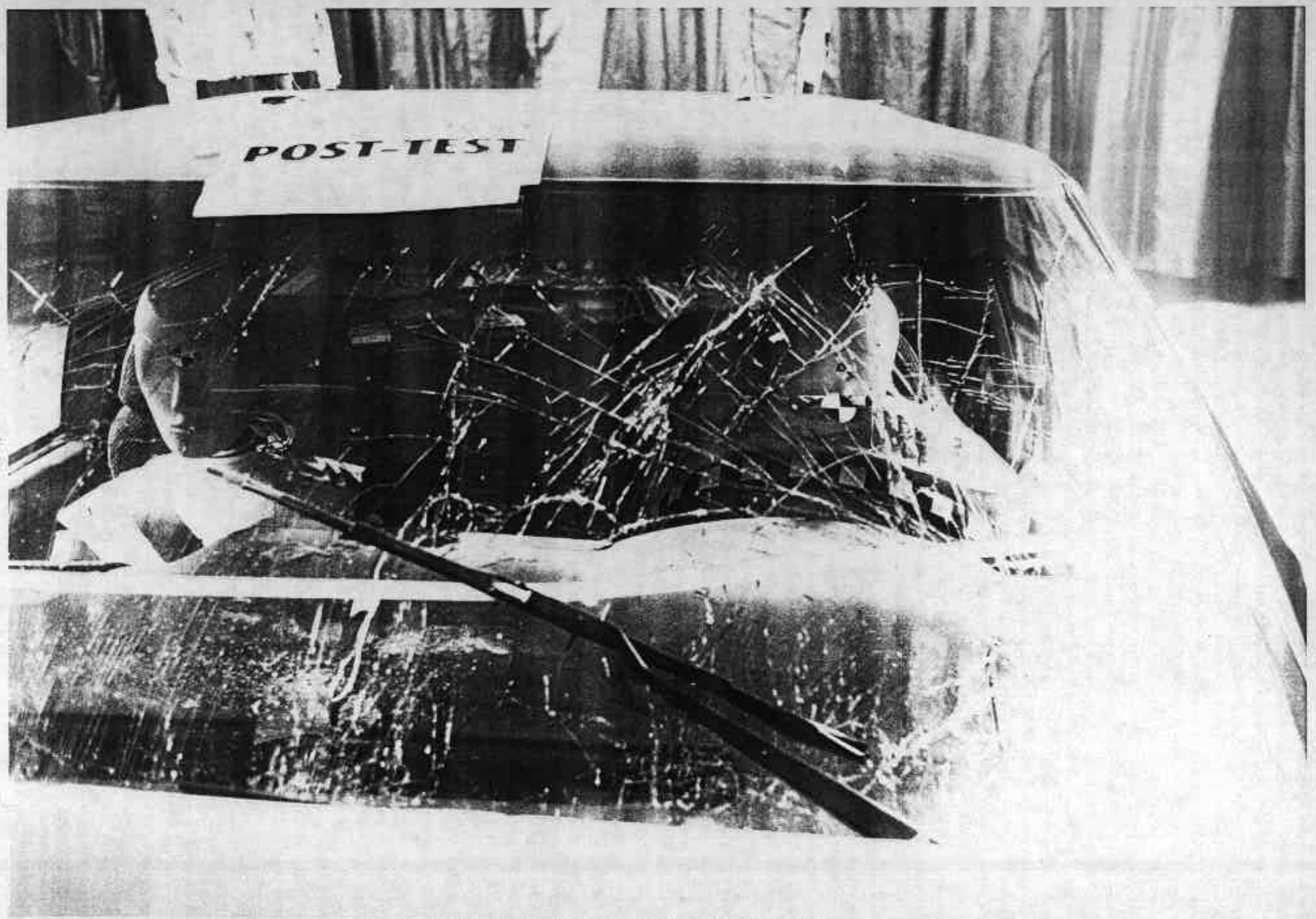


Photo No. A-21 - Post-Test Windshield View

A-22

Photo No. A-22 - Pre-Test Driver Windshield View

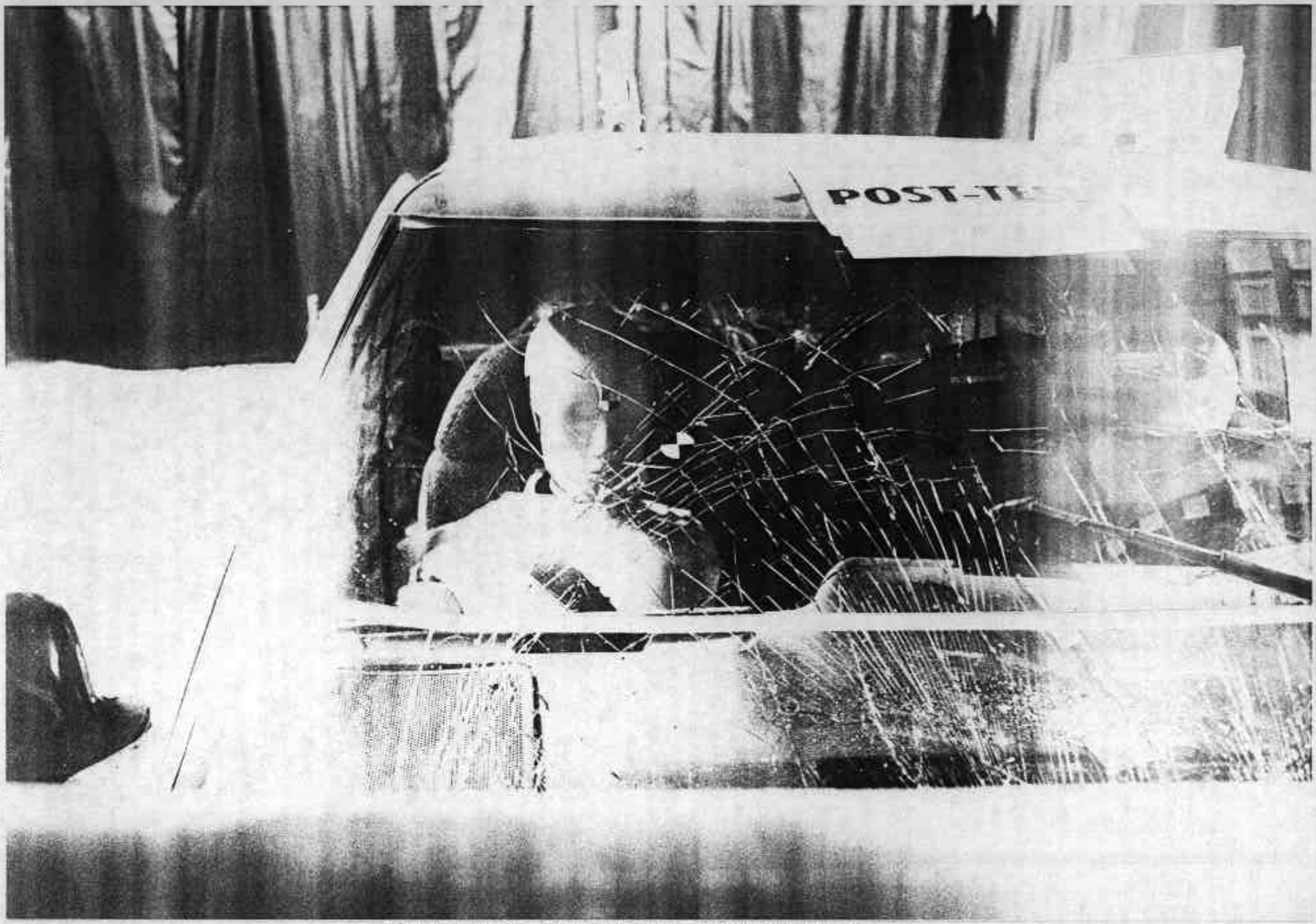


A-23

Photo No. A-23 - Post-Test Driver Windshield View

A-24

Photo No. A-24 - Pre-Test Passenger Windshield View



A-25

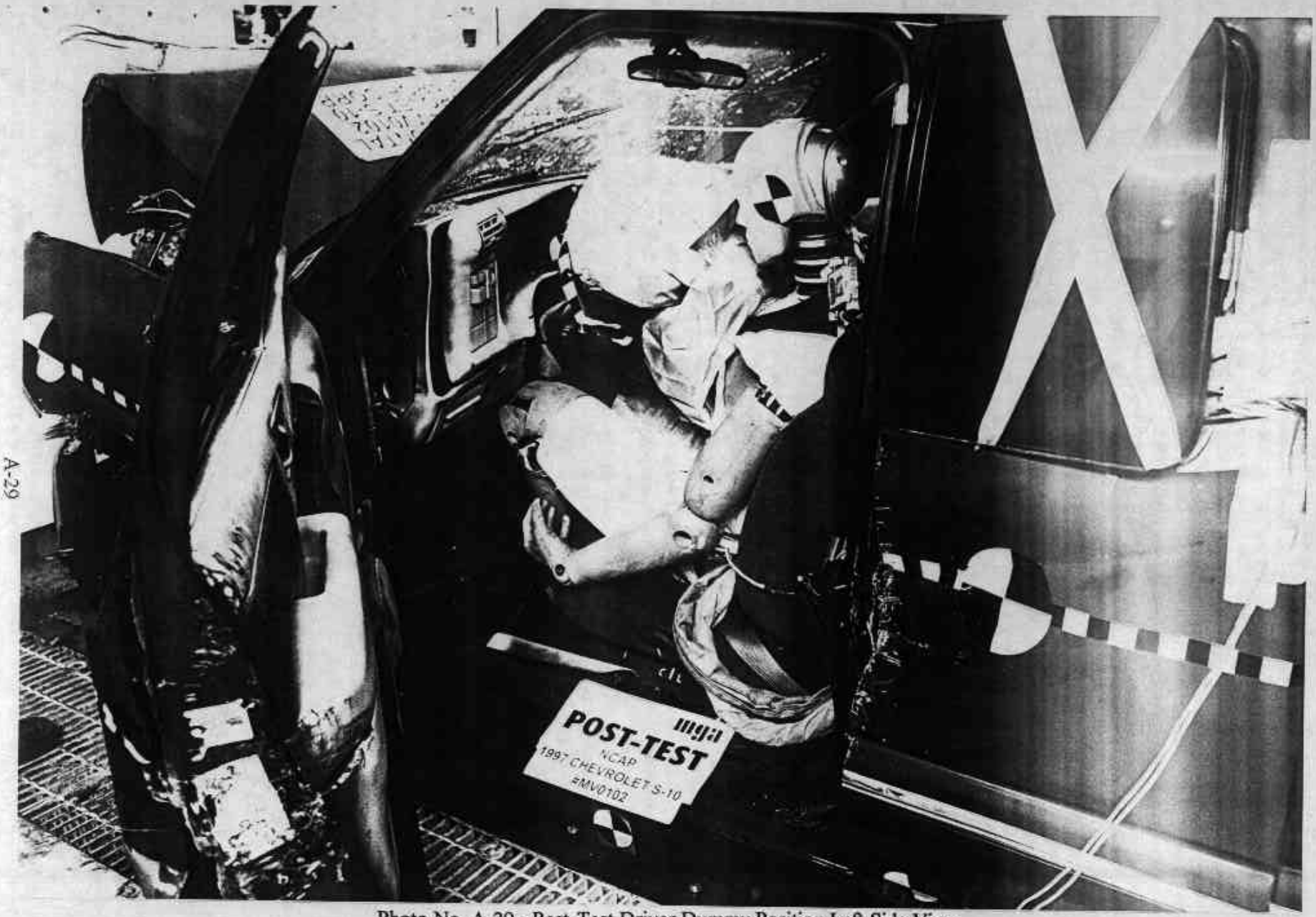
Photo No. A-25 - Post-Test Passenger Windshield View

Photo No. A-26 - Pre-Test Driver Dummy Position Left Side View

Photo No. A-27 - Post-Test Driver Dummy Position Left Side View

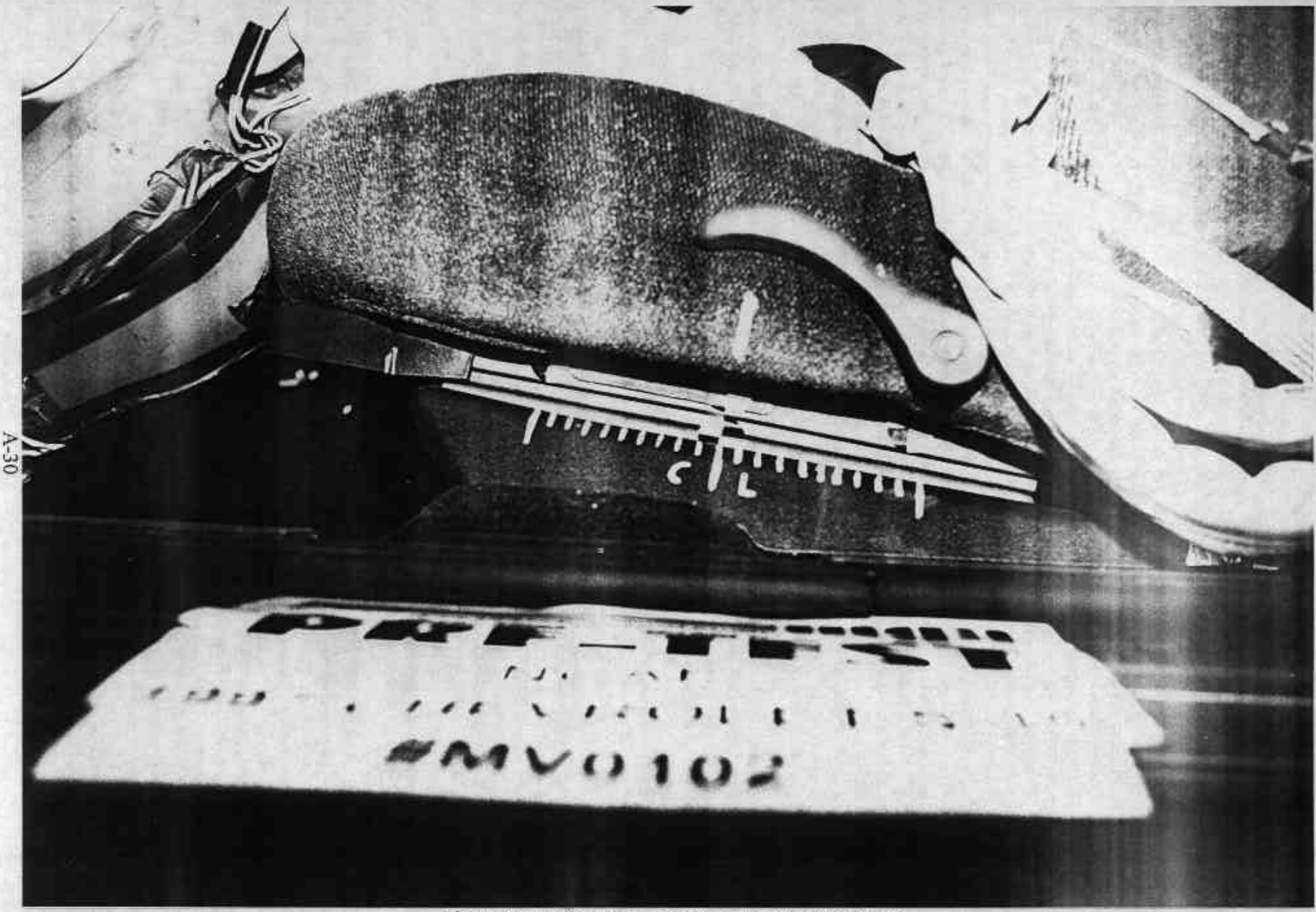
A-28

Photo No. A-28 - Pre-Test Driver Dummy Position Left Side View
(Door Open)



A-29

Photo No. A-29 - Post-Test Driver Dummy Position Left Side View
(Door Open)

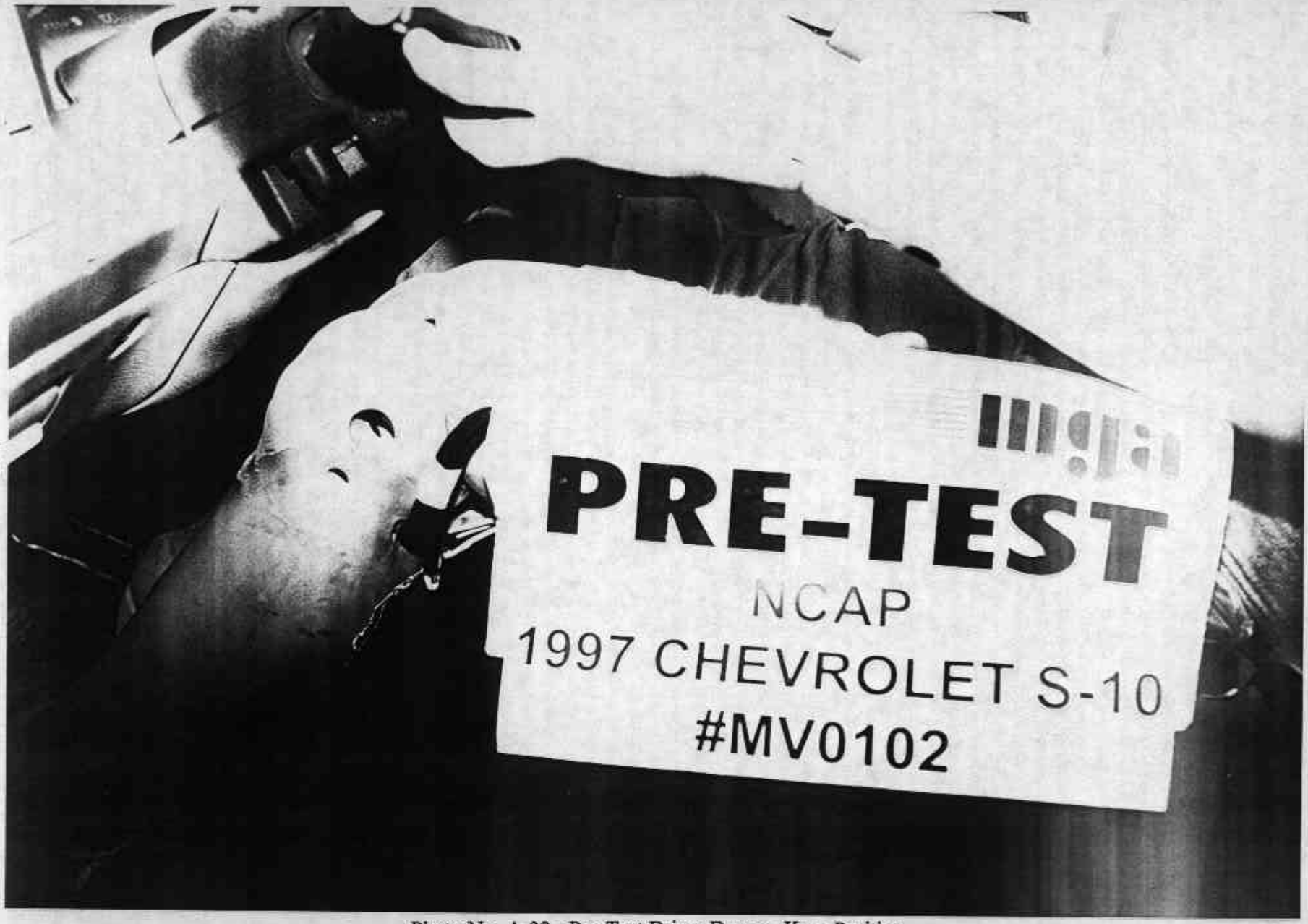


A-30

Photo No. A-30 - Pre-Test Driver Seat Position View

A-31

Photo No. A-31 - Post-Test Driver Seat Position View



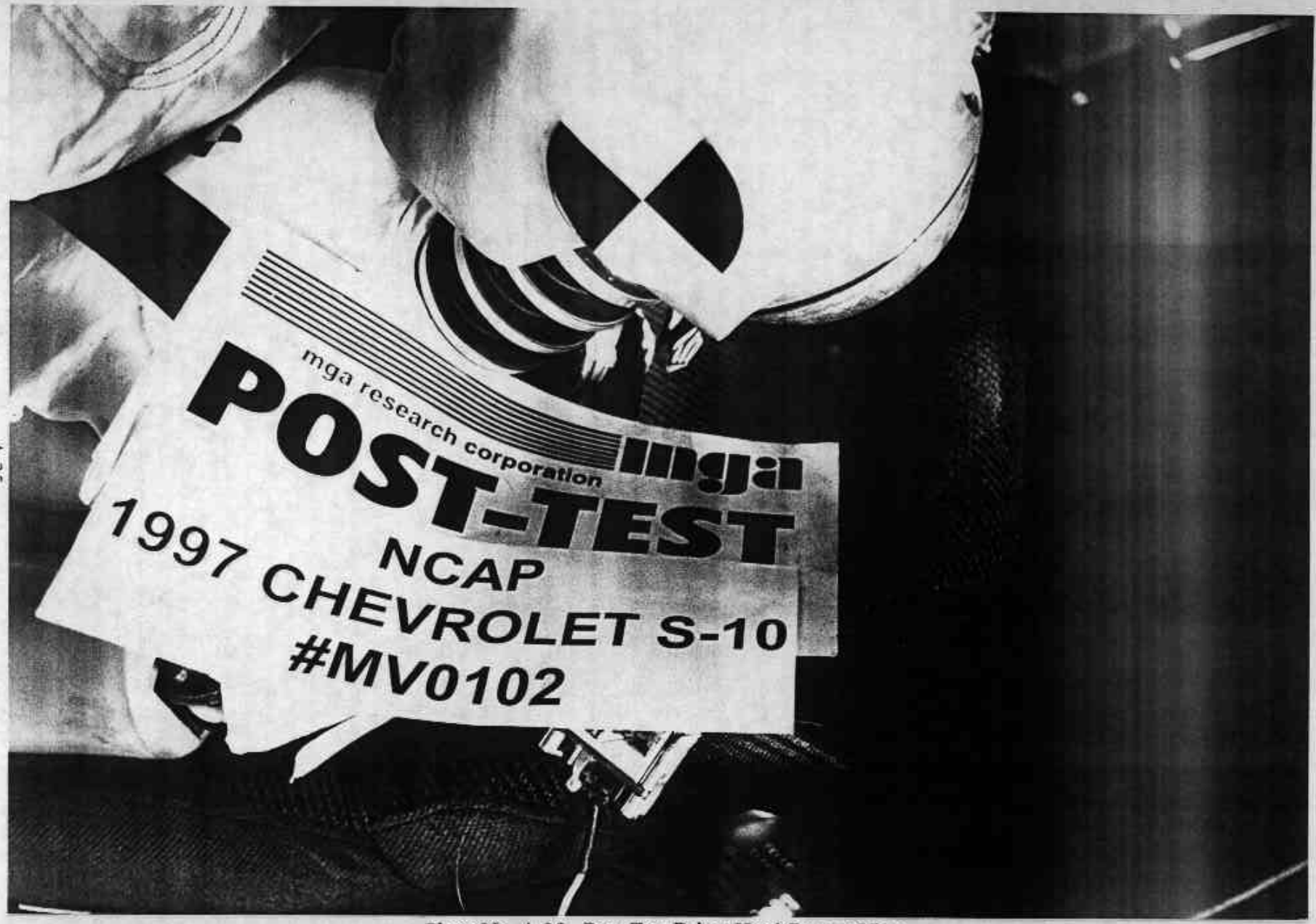
A-32

Photo No. A-32 - Pre-Test Driver Dummy Knee Position

A-33

Photo No. A-33 - Post-Test Driver Dummy Knee Position

Photo No. A-34 - Post-Test Driver Airbag Contact



A-35

Photo No. A-35 - Post-Test Driver Head Contact View

Photo No. A-36 - Pre-Test Passenger Dummy Position Right Side View

A-37

Photo No. A-37 - Post-Test Passenger Dummy Position Right Side View

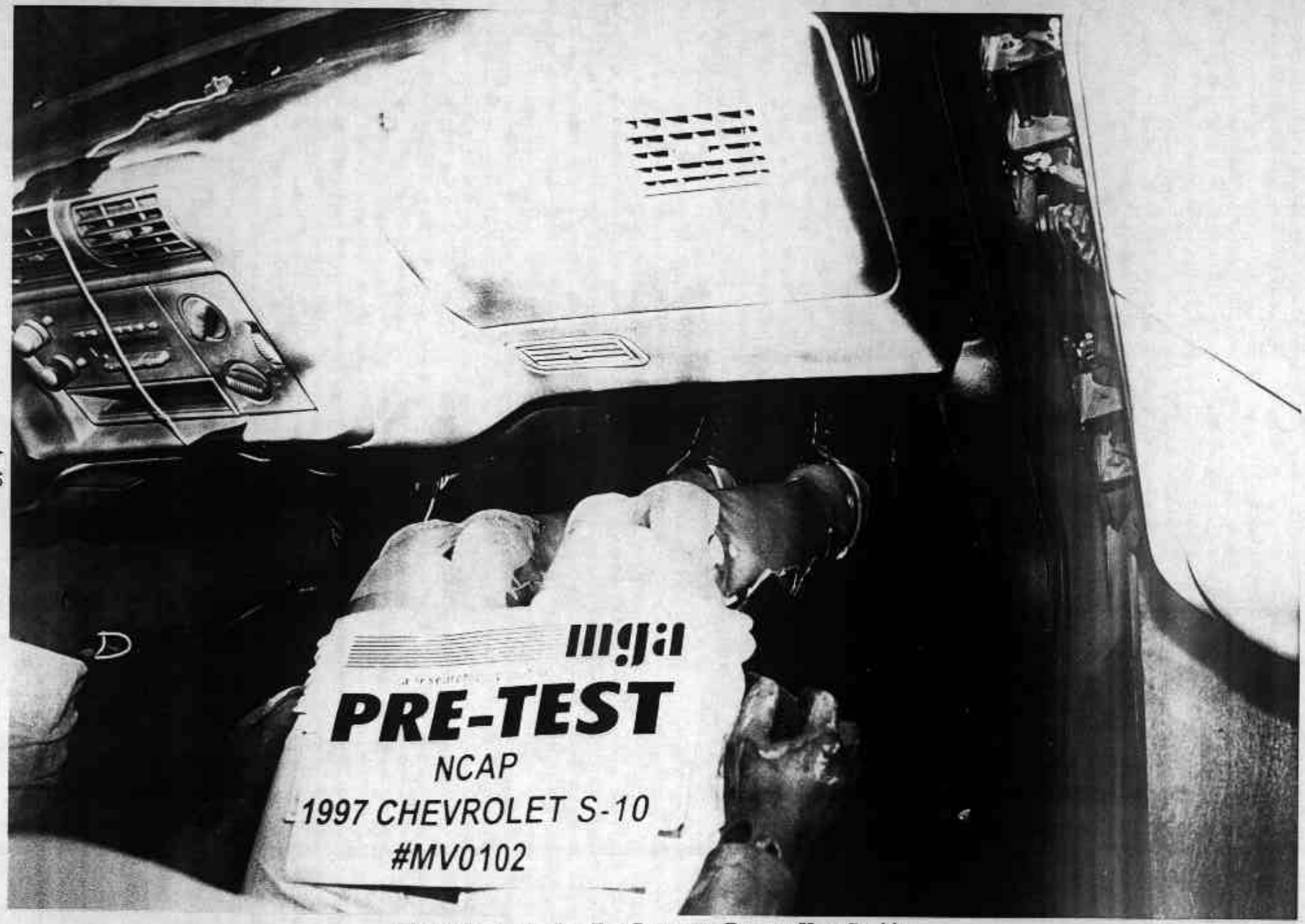
Photo No. A-38 - Pre-Test Passenger Dummy Position Right Side View
(Door Open)

Photo No. A-39 - Post-Test Passenger Dummy Position Right Side View
(Door Open)

A-40

Photo No. A-40 - Pre-Test Passenger Seat Position View

Photo No. A-41 - Post-Test Passenger Seat Position View



A-42

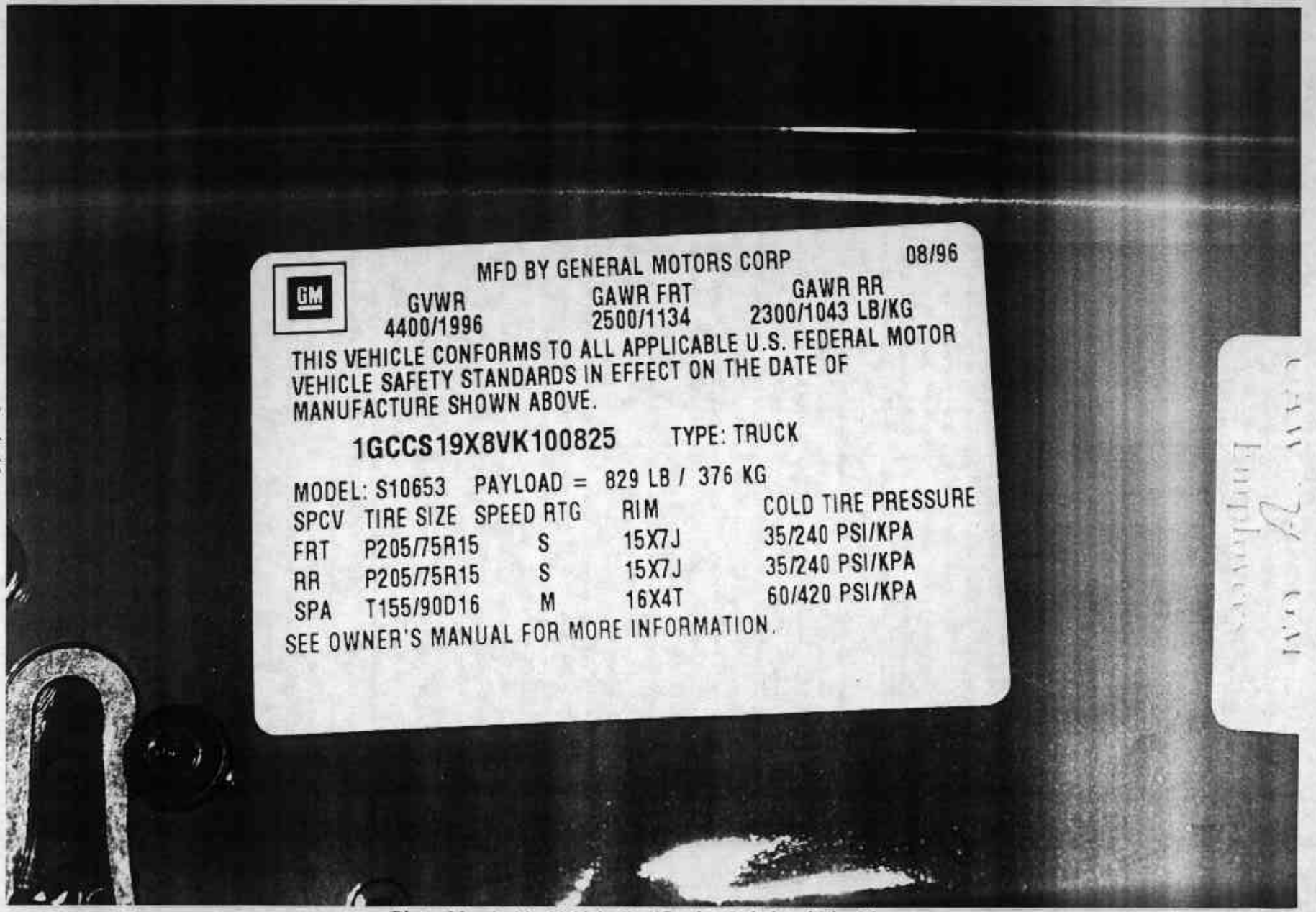
Photo No. A-42 - Pre-Test Passenger Dummy Knee Position

Photo No. A-43 - Post-Test Passenger Head and Knee Contact View

A-44

Photo No. A-44 - Post-Test Passenger Head Contact View

Photo No. A-45 - Post-Test Passenger Seat Belt Failure



A-46

Photo No. A-46 - Vehicle Certification Label and Tire Placard

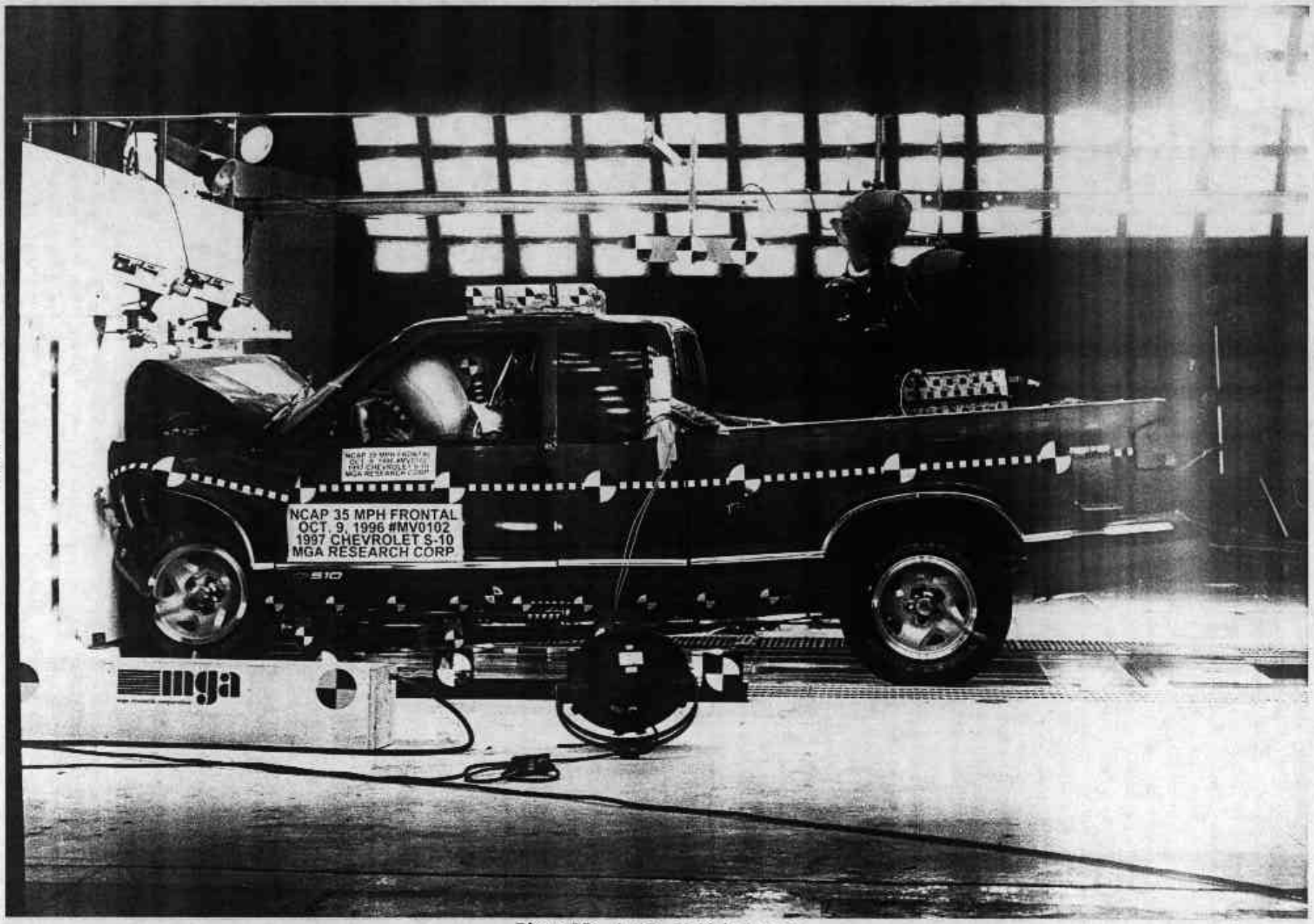


Photo No. A-47 - Vehicle Impact

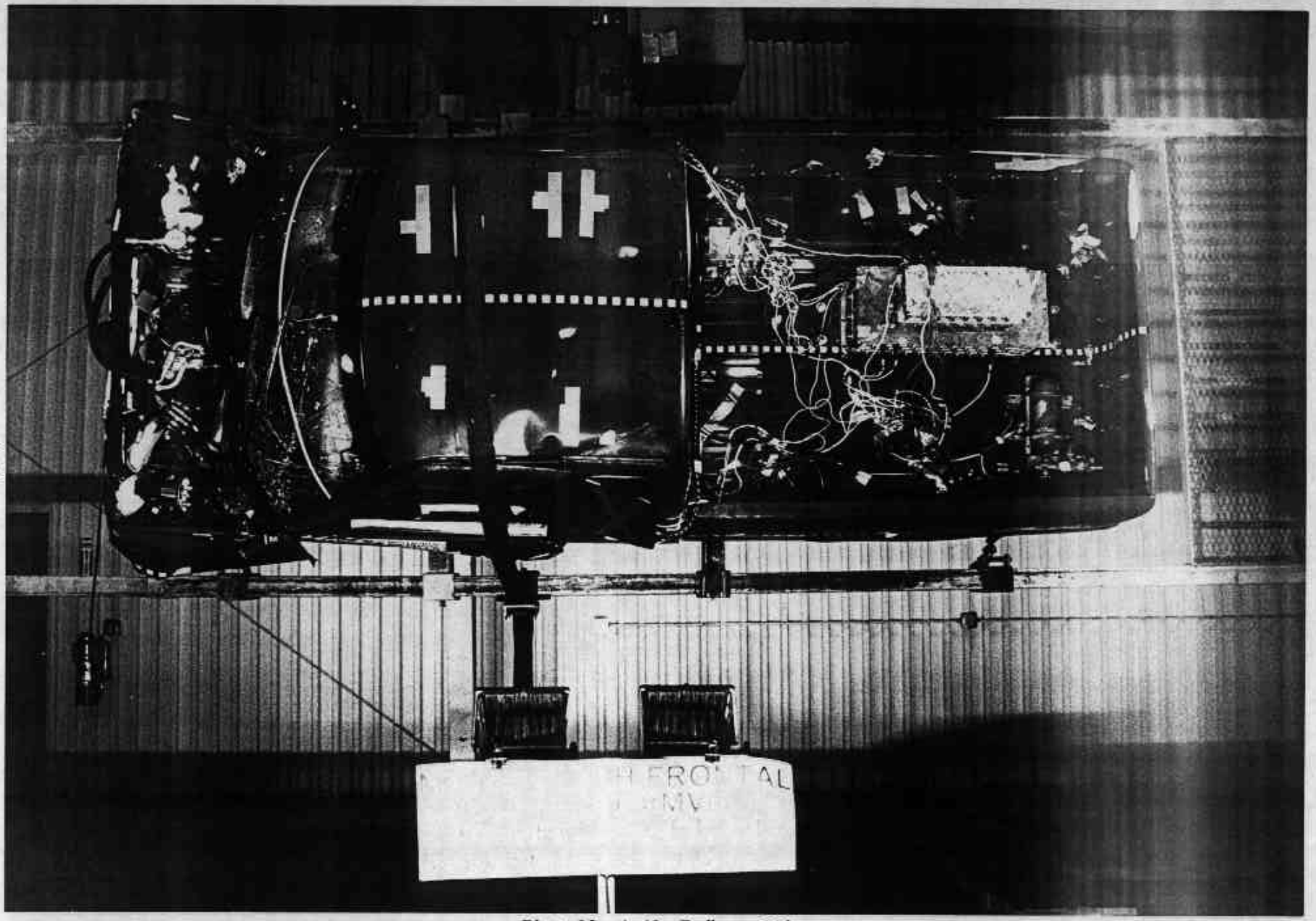
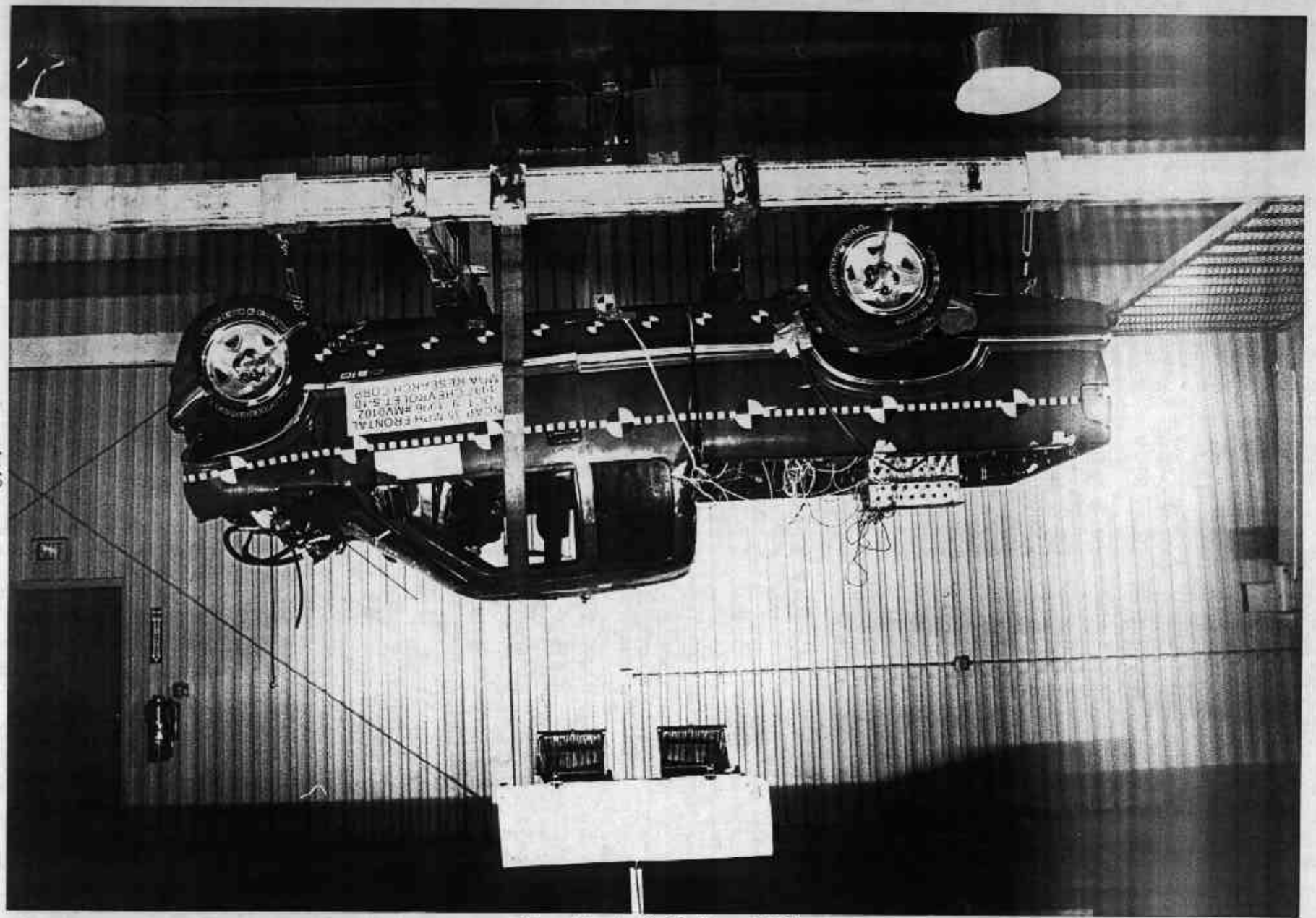
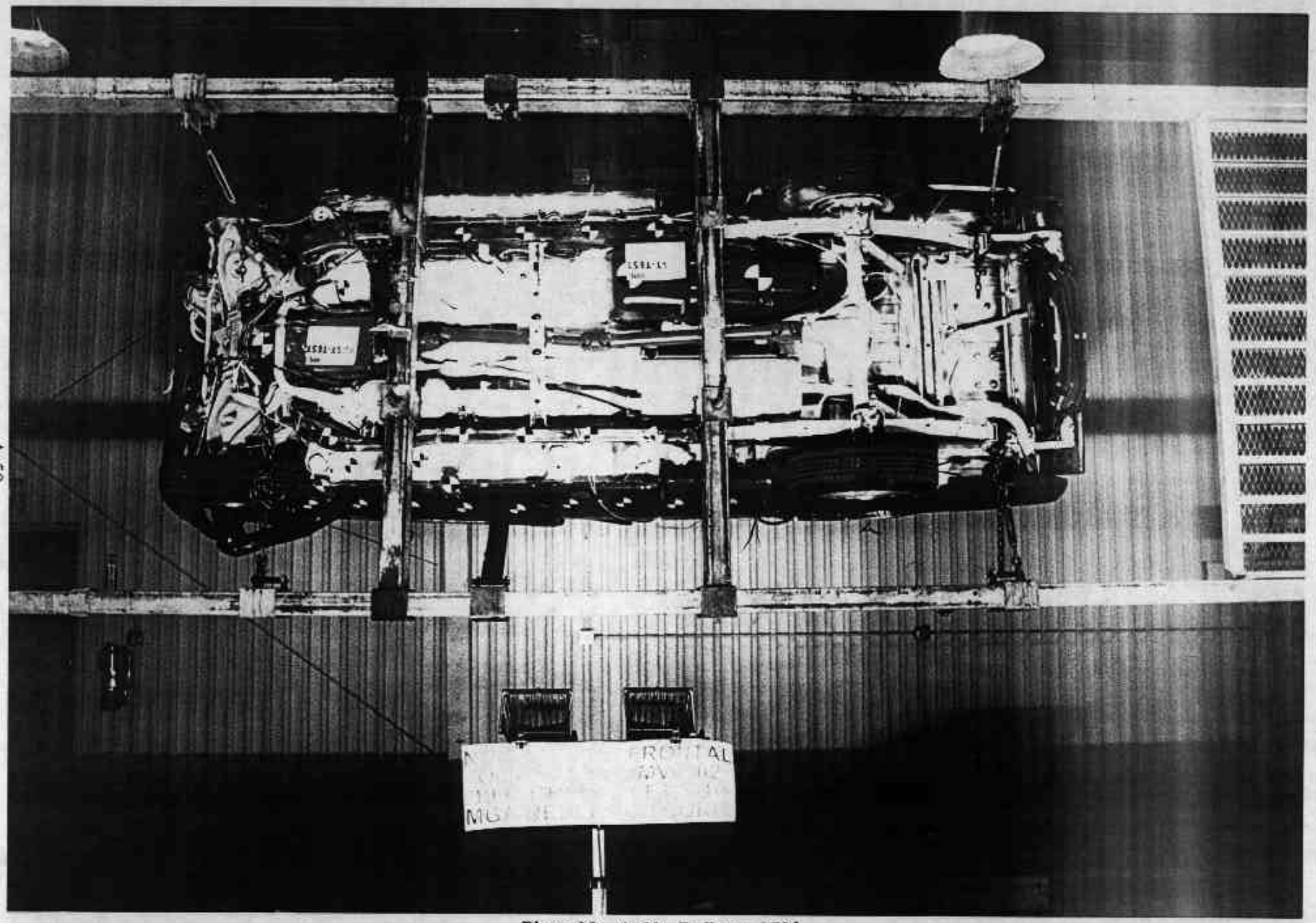


Photo No. A-48 - Rollover 90°



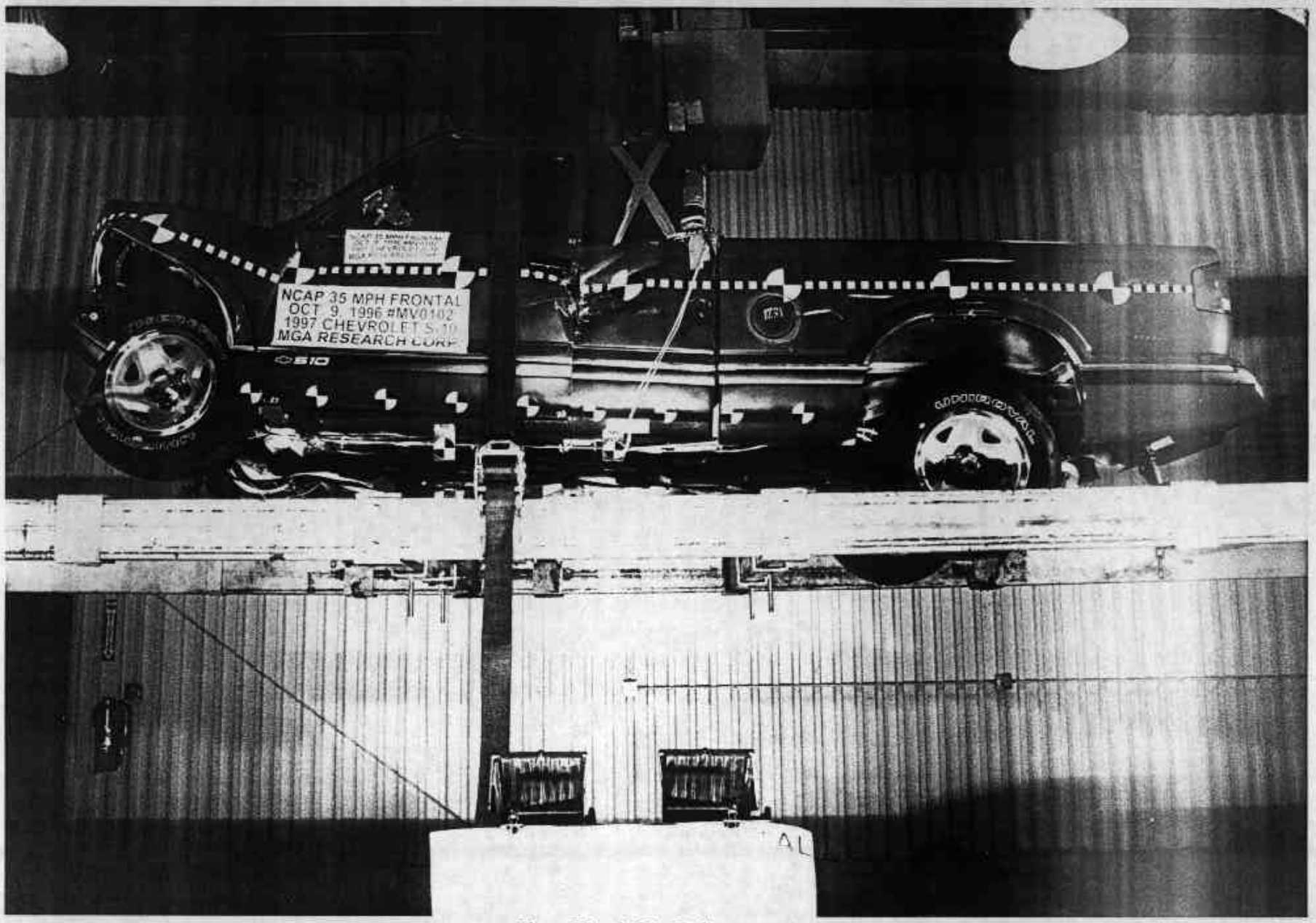
A-49

Photo No. A-49 - Rollover 180°



A-50

Photo No. A-50 - Rollover 270°



A-51

Photo No. A-51 - Rollover 360°

APPENDIX B

Vehicle, Load Cell Barrier and Dummy Response Data

1997 Chevy S-10 Pickup

NHTSA NO.: MV0102

VEHICLE DATA FILTER CHANNEL CLASS

Head Accelerations 1000 (1650 Hz)

Chest Accelerations 180 (300 Hz)

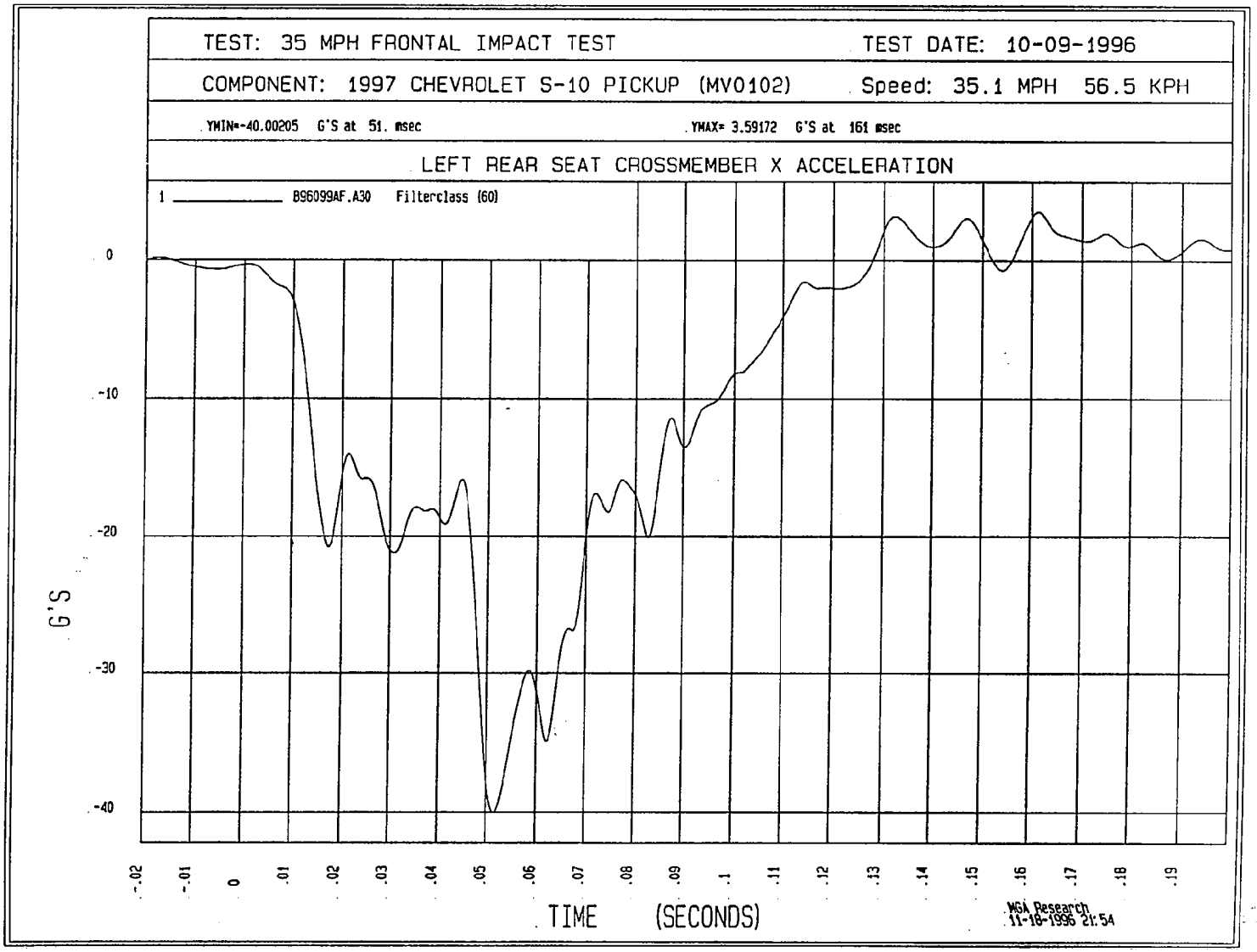
Vehicle Accelerations 60 (100 Hz)

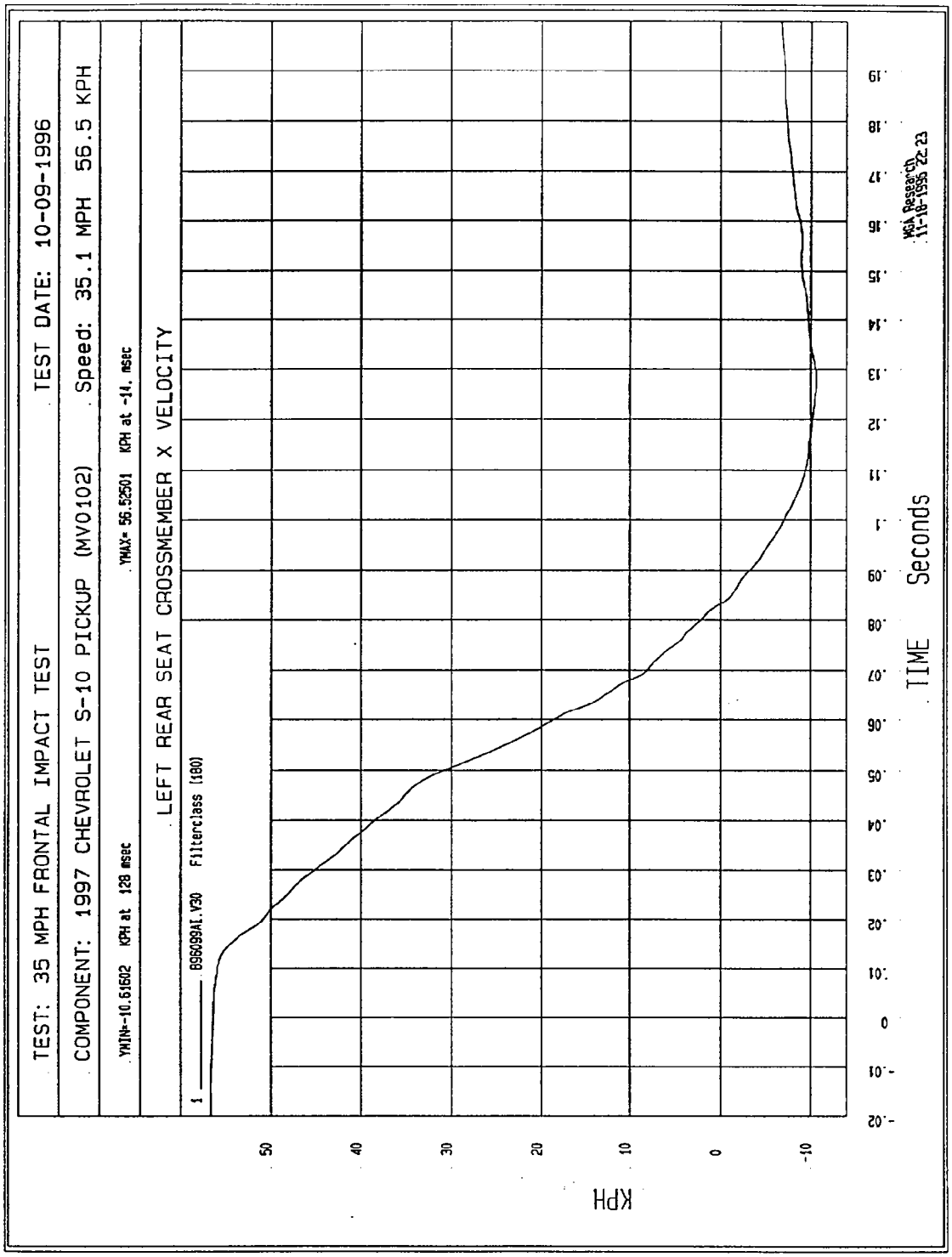
Barrier Load Cells 60 (100 Hz)

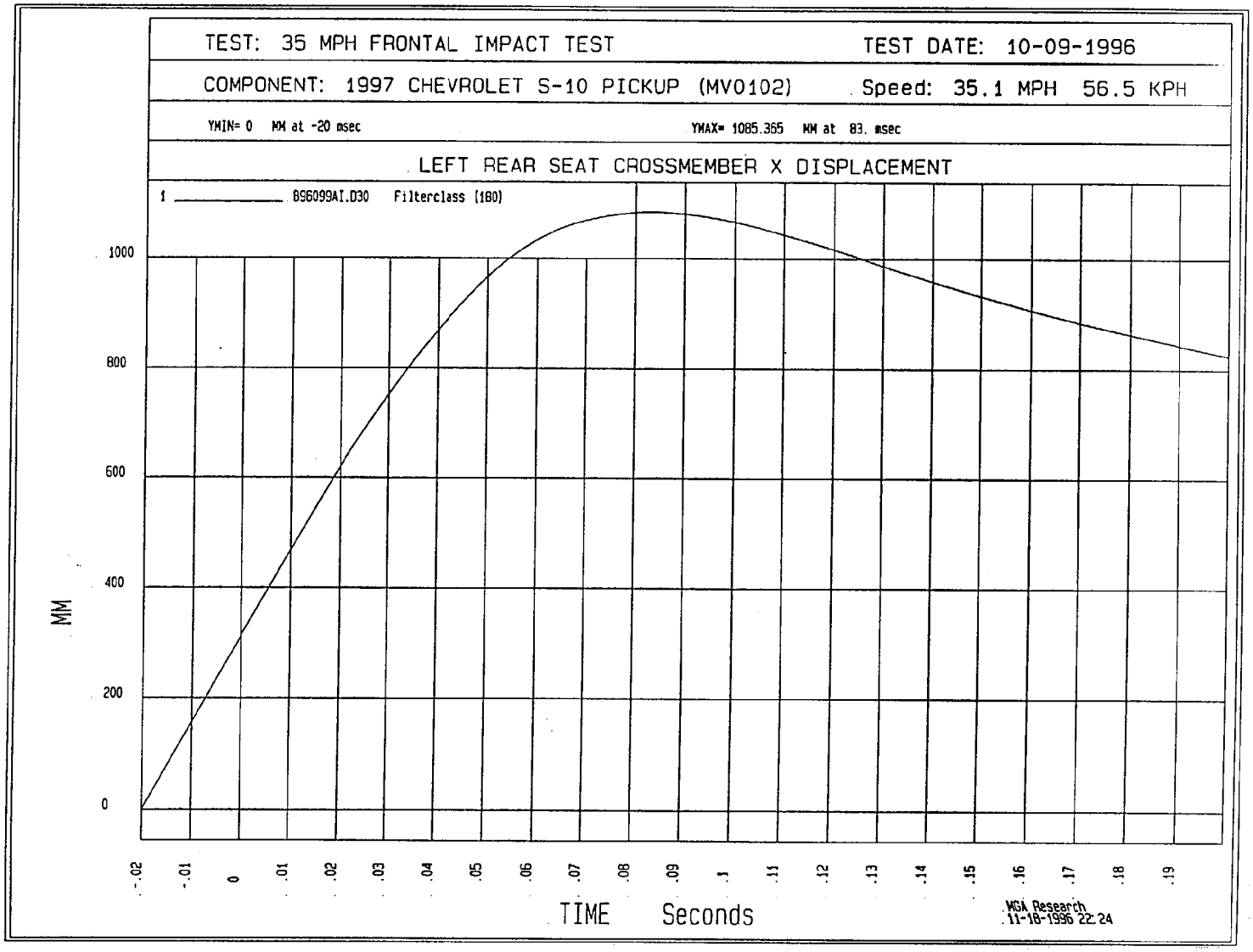
Femur Load Cells 600 (1000 Hz)

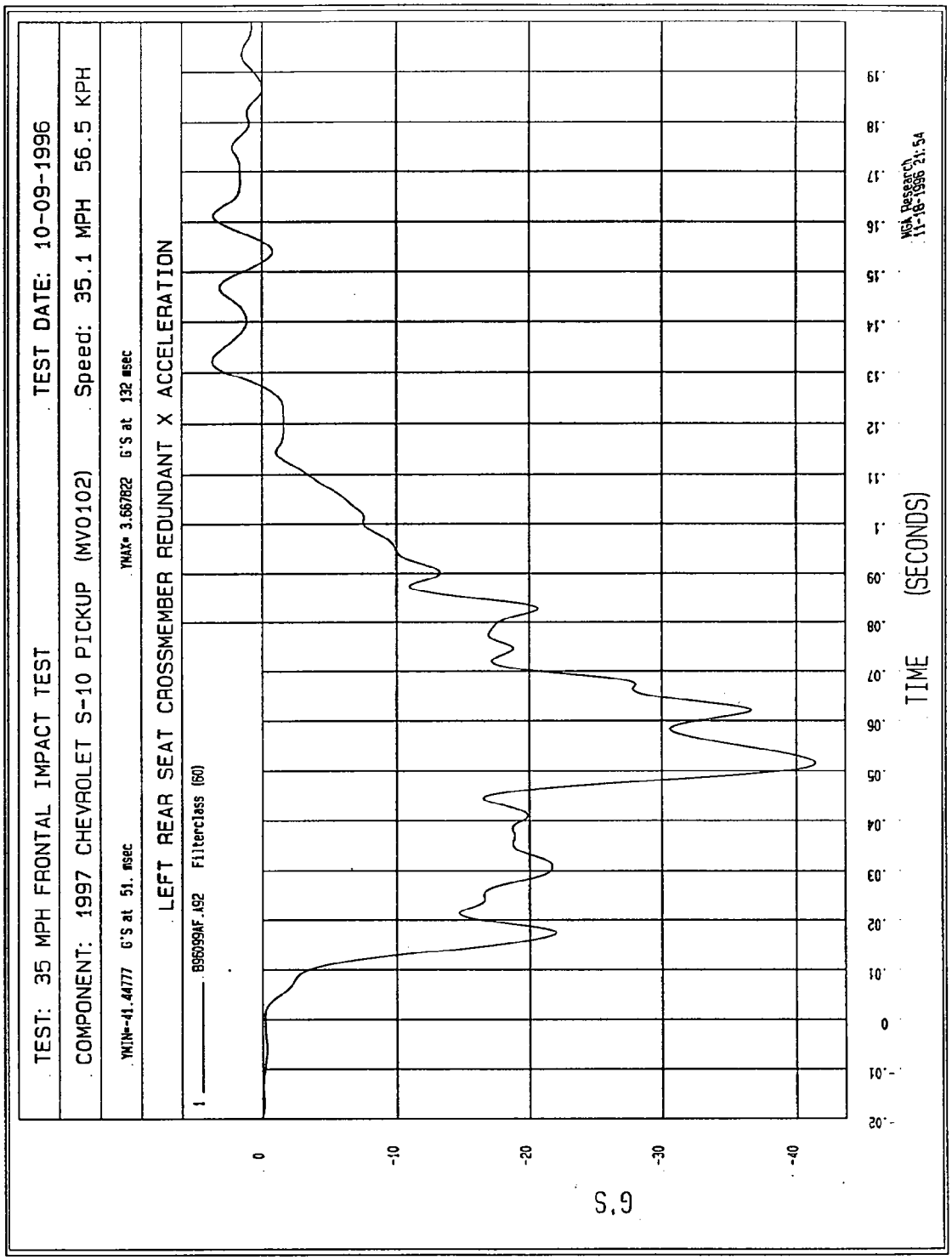
Lap and Torso Belts 60 (100 Hz)

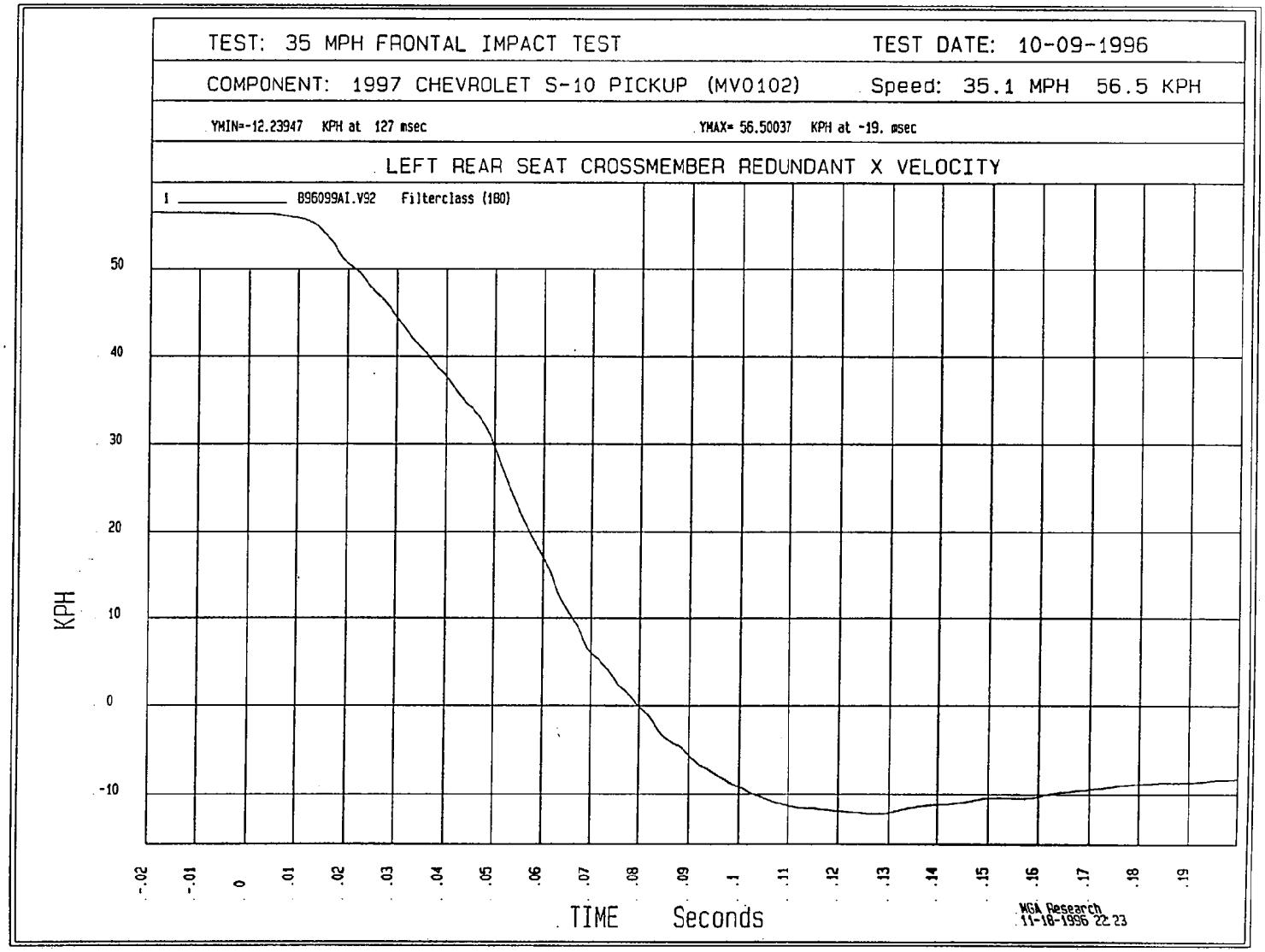
* No Valid Data Collected

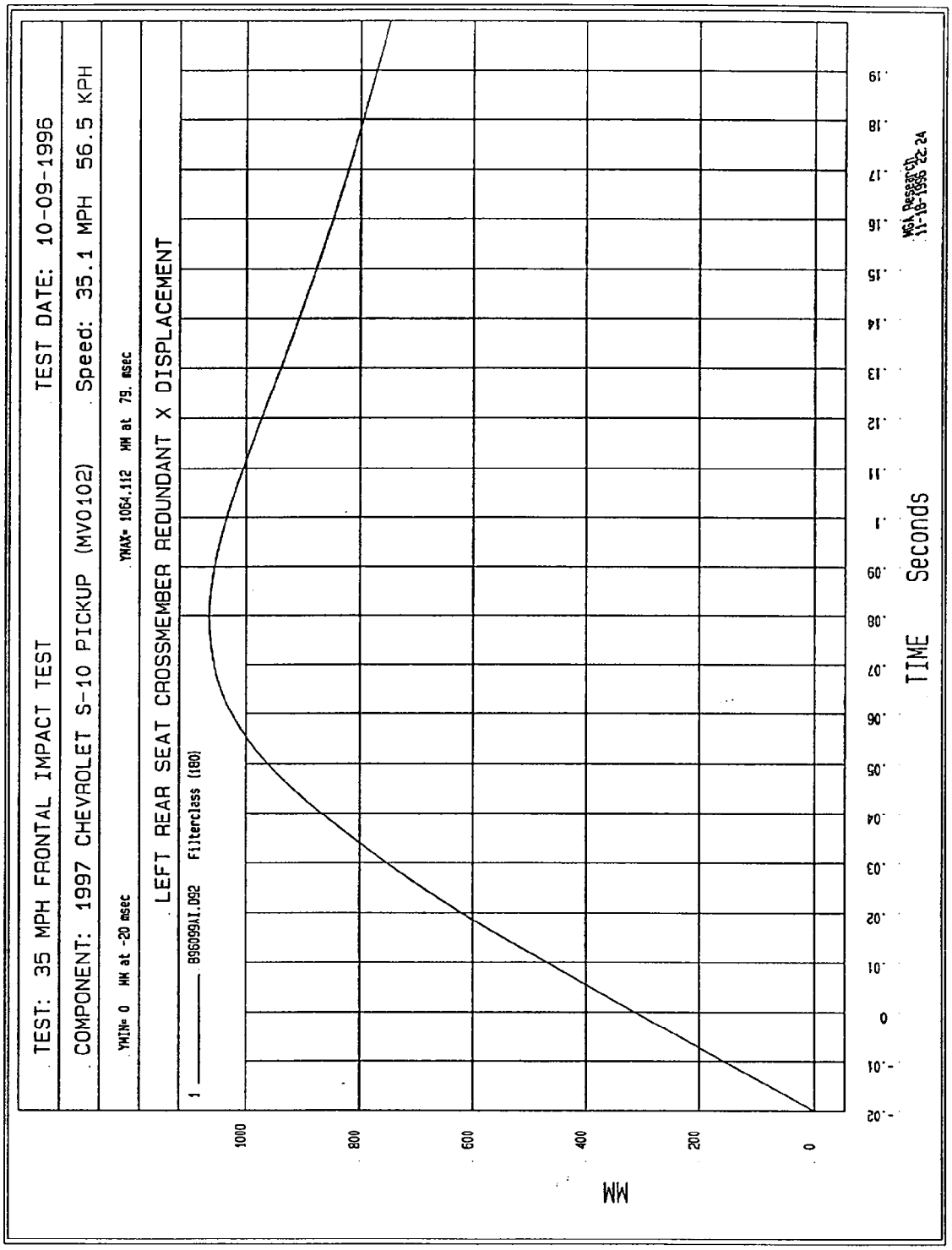

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-40.00205 G'S at 51. msec
YMAX= 3.59172 G'S at 161 msec
LEFT REAR SEAT CROSSMEMBER X ACCELERATION
1 B96099AF.A30 Filterclass (60)
0
-10
-20
-30
-40
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:54

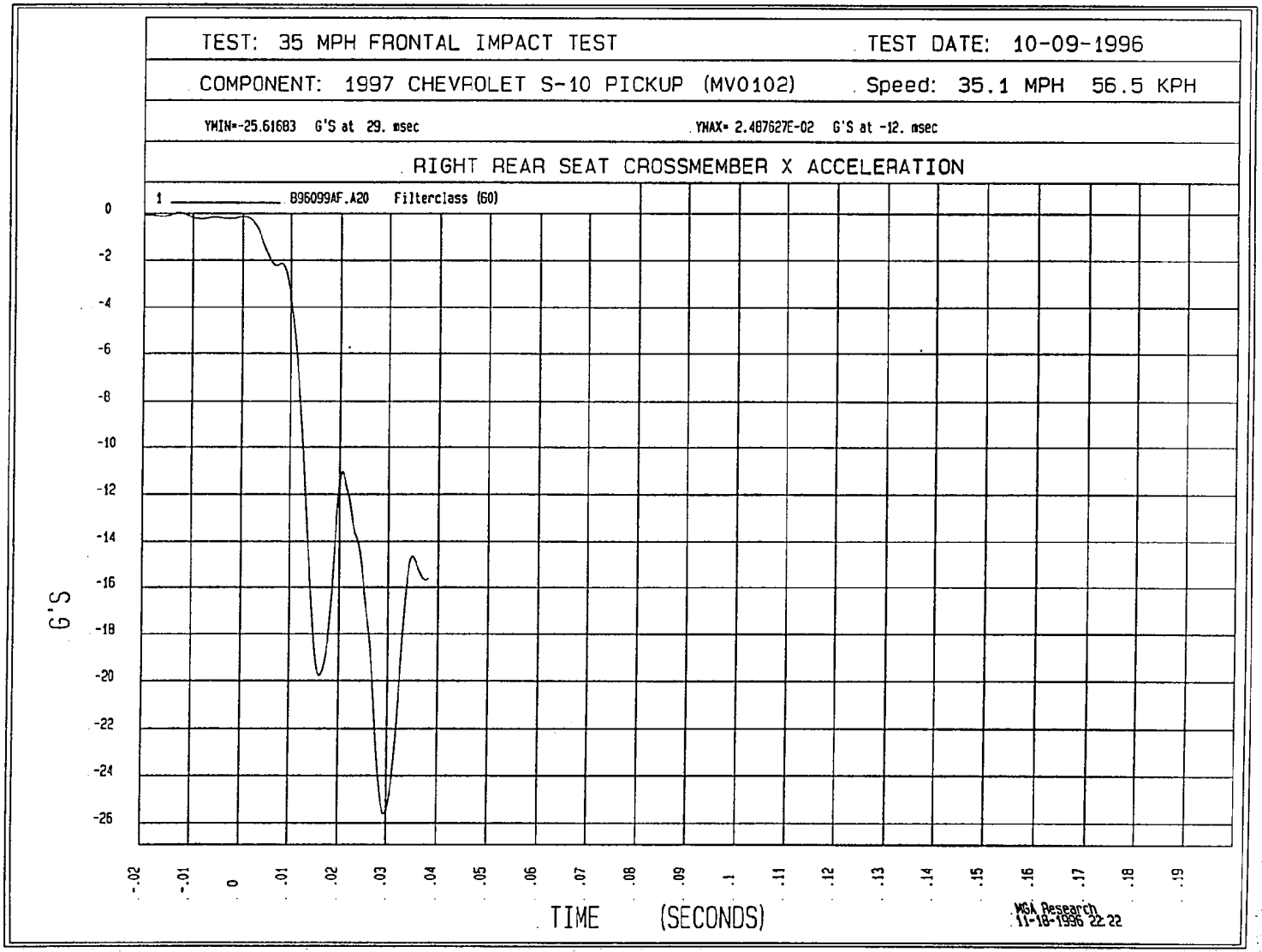

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-10.61602 KPH at 128 msec
YMAX= 56.52501 KPH at -14. msec
LEFT REAR SEAT CROSSMEMBER X VELOCITY
1 _____ 896099AI.Y30 Filterclass (180)
KPH
TIME Seconds
MGA Research
11-16-1995 22:23

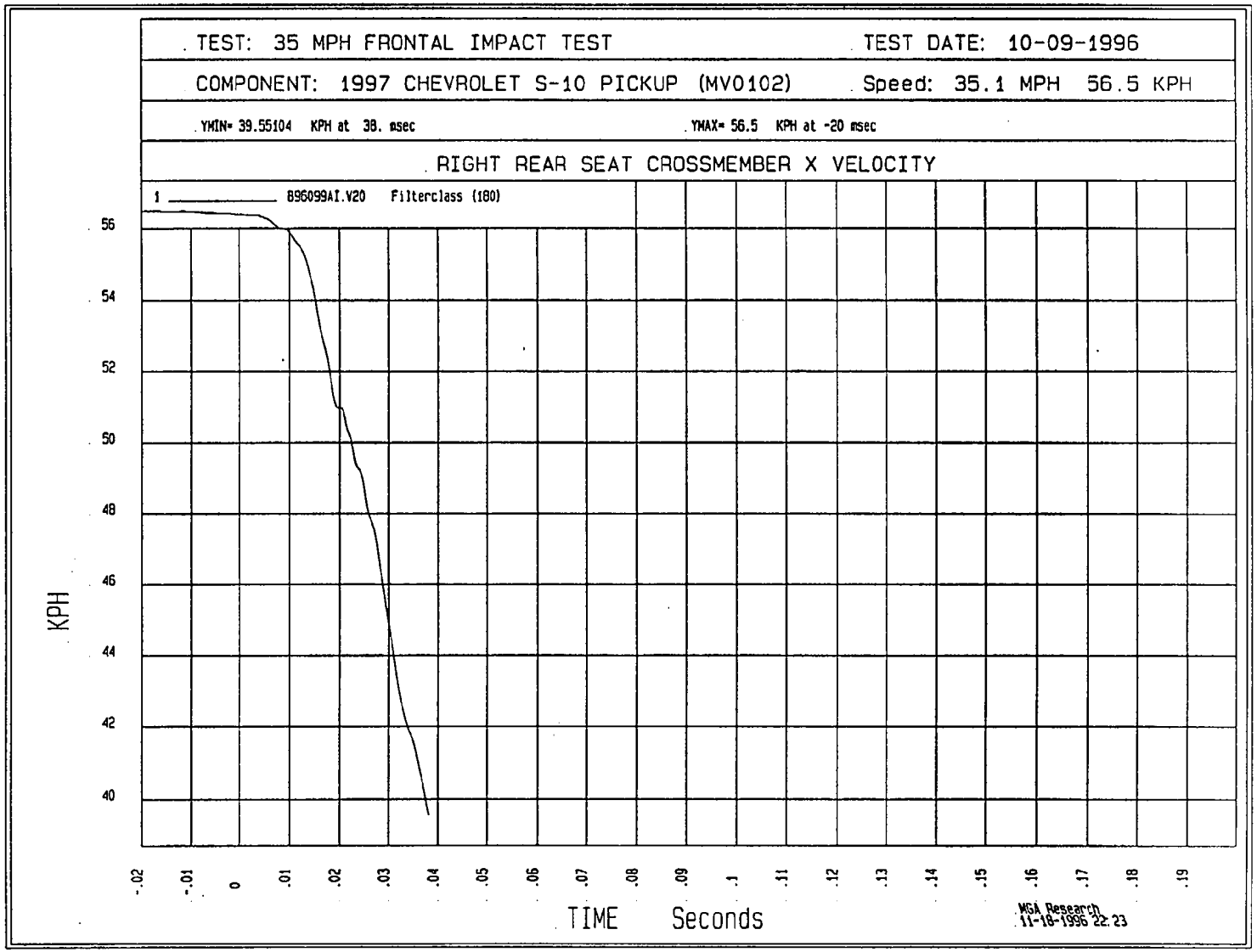

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 0 MM at -20 msec
YMAX= 1085.365 MM at 83. msec
LEFT REAR SEAT CROSSMEMBER X DISPLACEMENT
1 896099AI.D30 Filterclass (180)
MM
1000
800
600
400
200
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:24

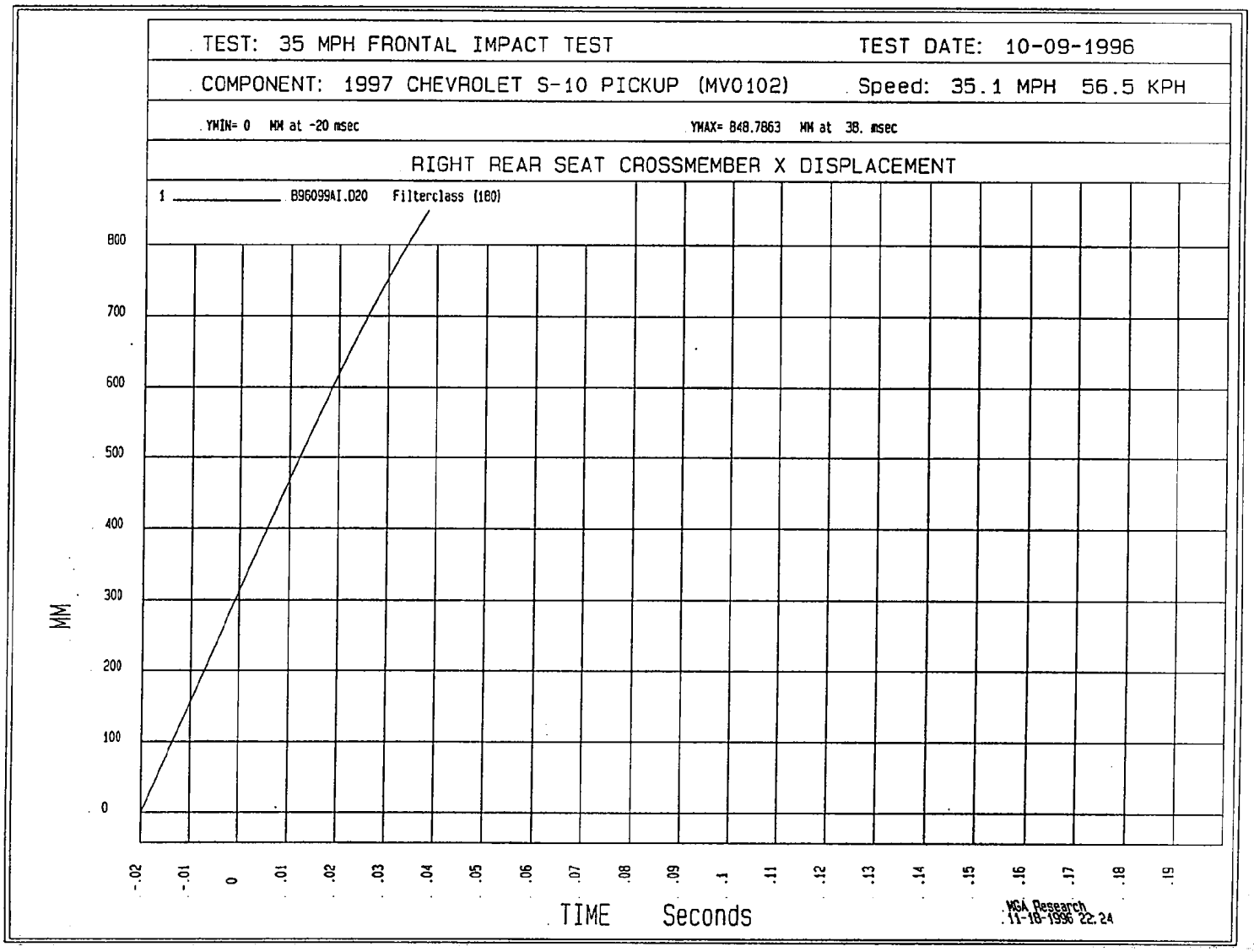

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-41.44777 G'S at 51. msec
YMAX= 3.667822 G'S at 132 msec
LEFT REAR SEAT CROSSMEMBER REDUNDANT X ACCELERATION
1 B95099AF.A92 Filterclass (60)
0
-10
-20
-30
-40
G'S
TIME (SECONDS)
Wsk Research
11-18-1996 21:54

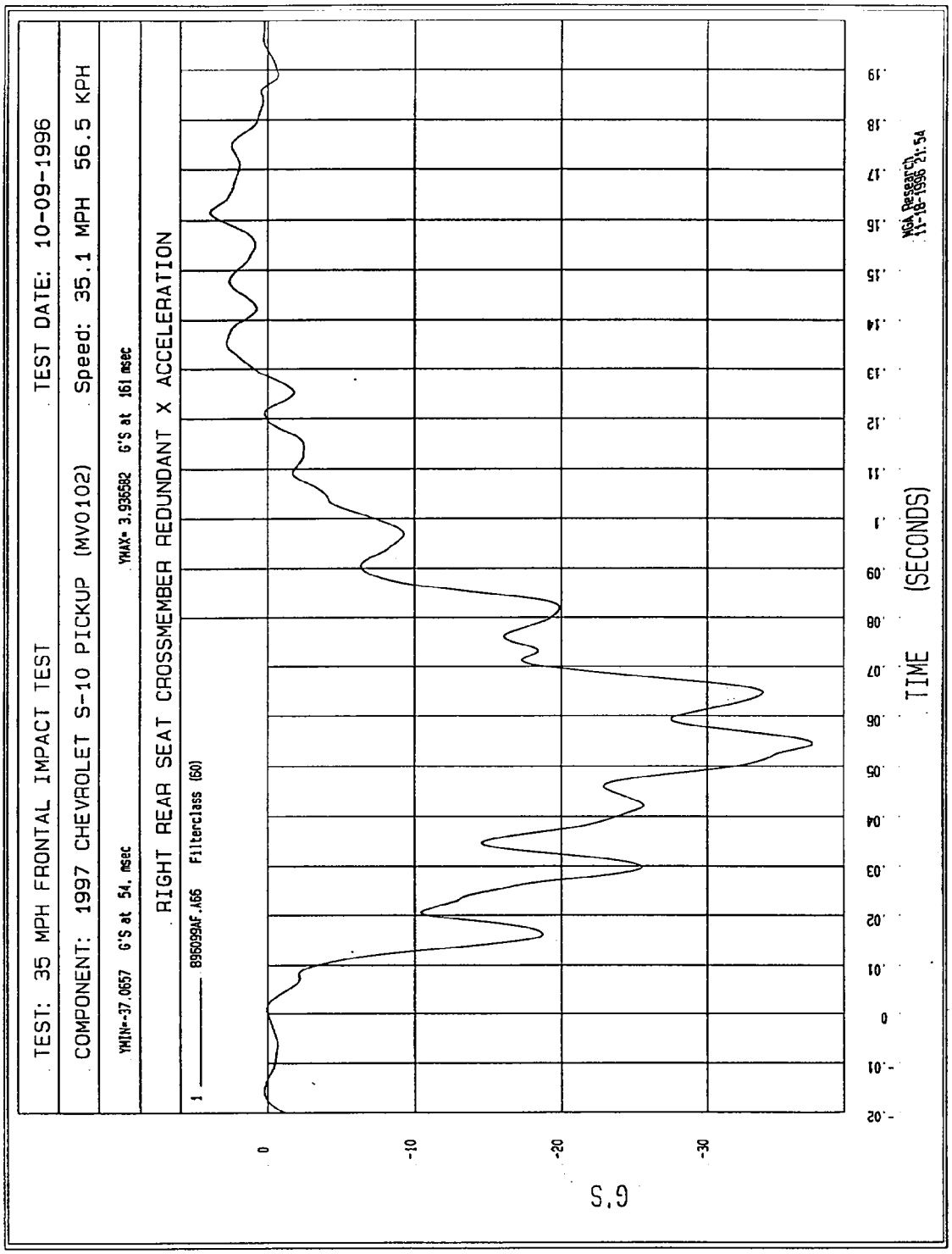

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-12.23947 KPH at 127 msec
YMAX= 56.50037 KPH at -19. msec
LEFT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY
1 B96099AI.V92 Filterclass (180)
KPH
50
40
30
20
10
0
-10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:23

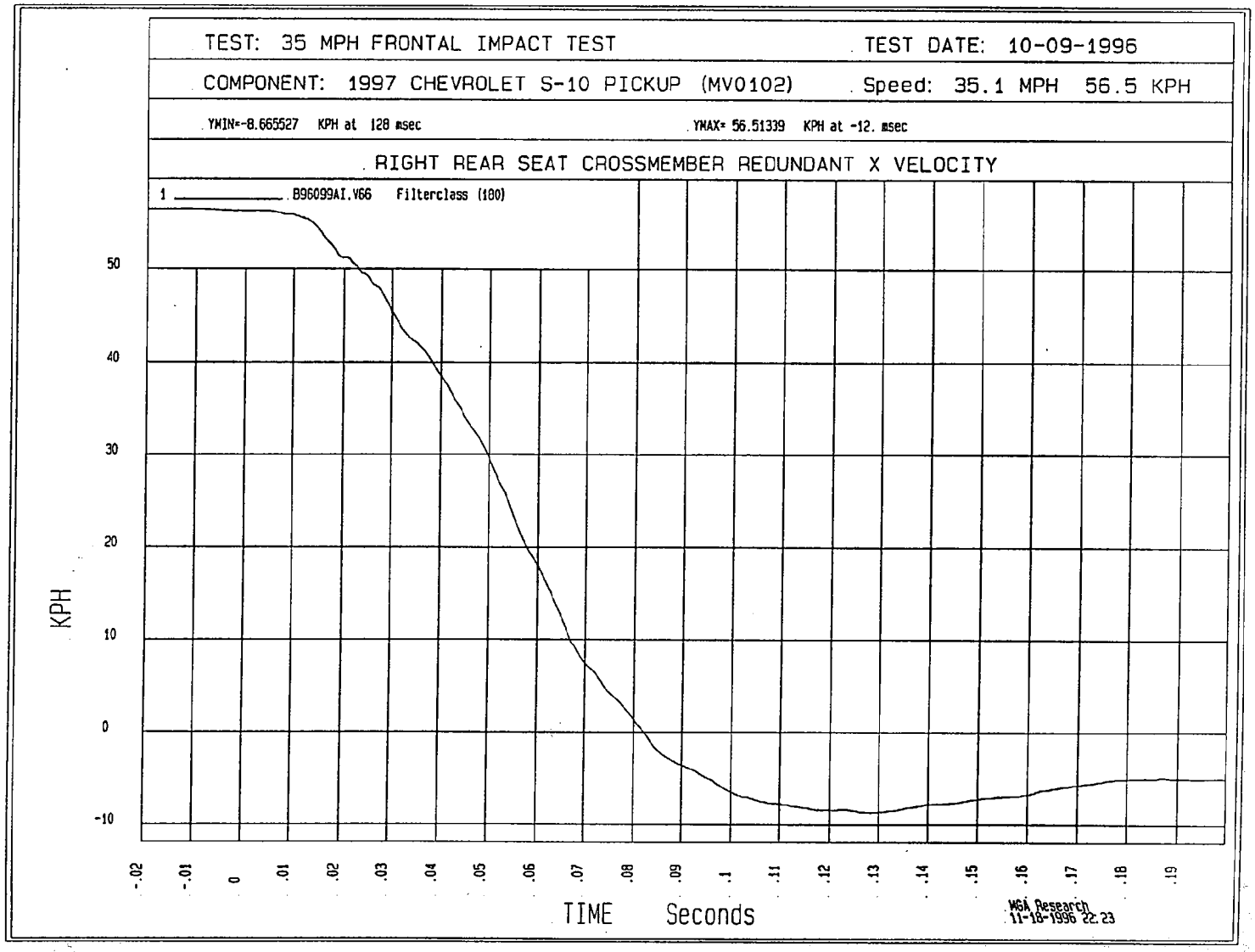

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 0 MM at -20 msec
YMAX= 1064.112 MM at 79. msec
LEFT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT
1 B96099AI.D92 Filterclass (180)
MM
TIME Seconds
MGA Research
11-18-1996 22:24

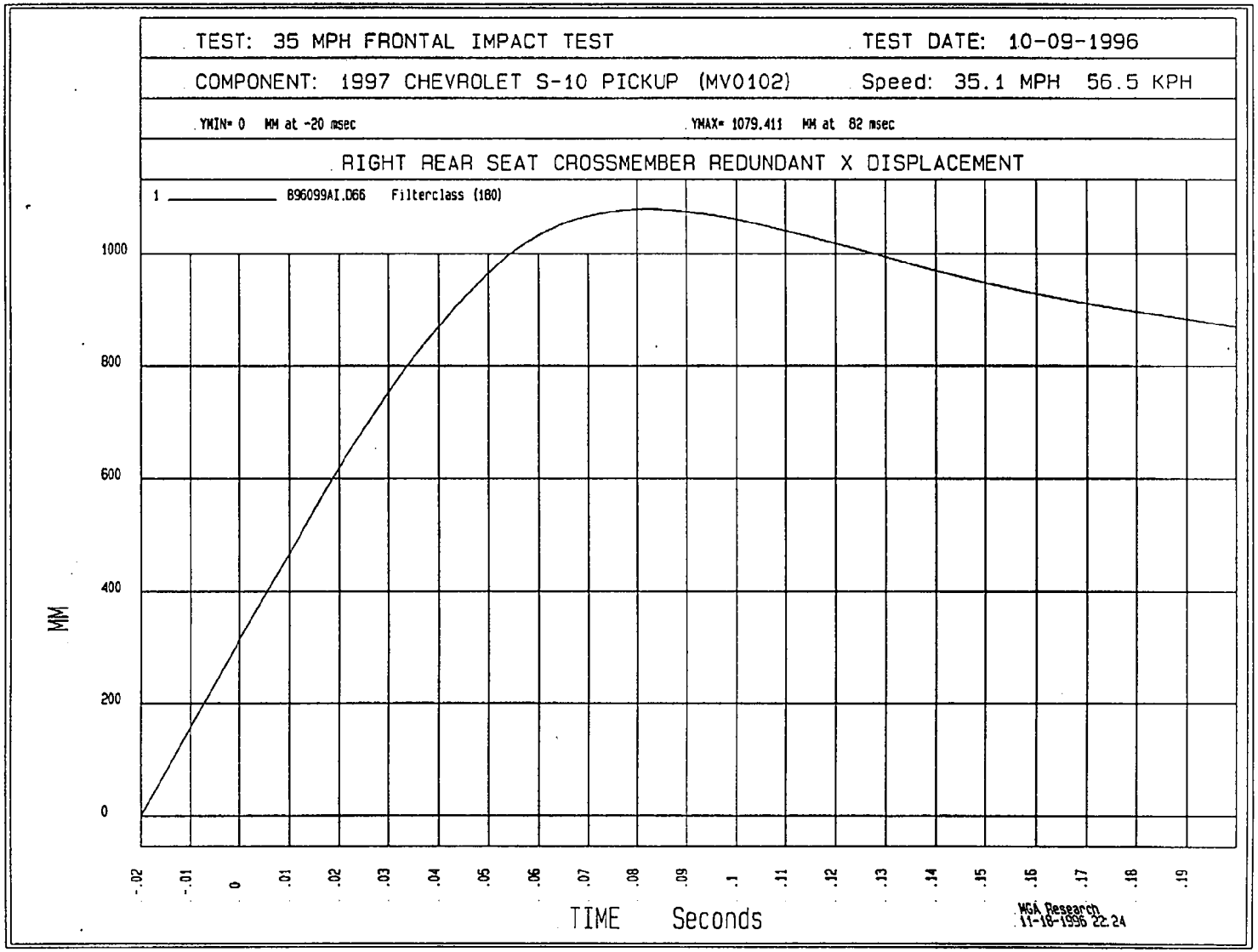

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-25.61683 G'S at 29. msec
YMAX= 2.487627E-02 G'S at -12. msec
RIGHT REAR SEAT CROSSMEMBER X ACCELERATION
1 B96099AF.A20 Filterclass (60)
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:22

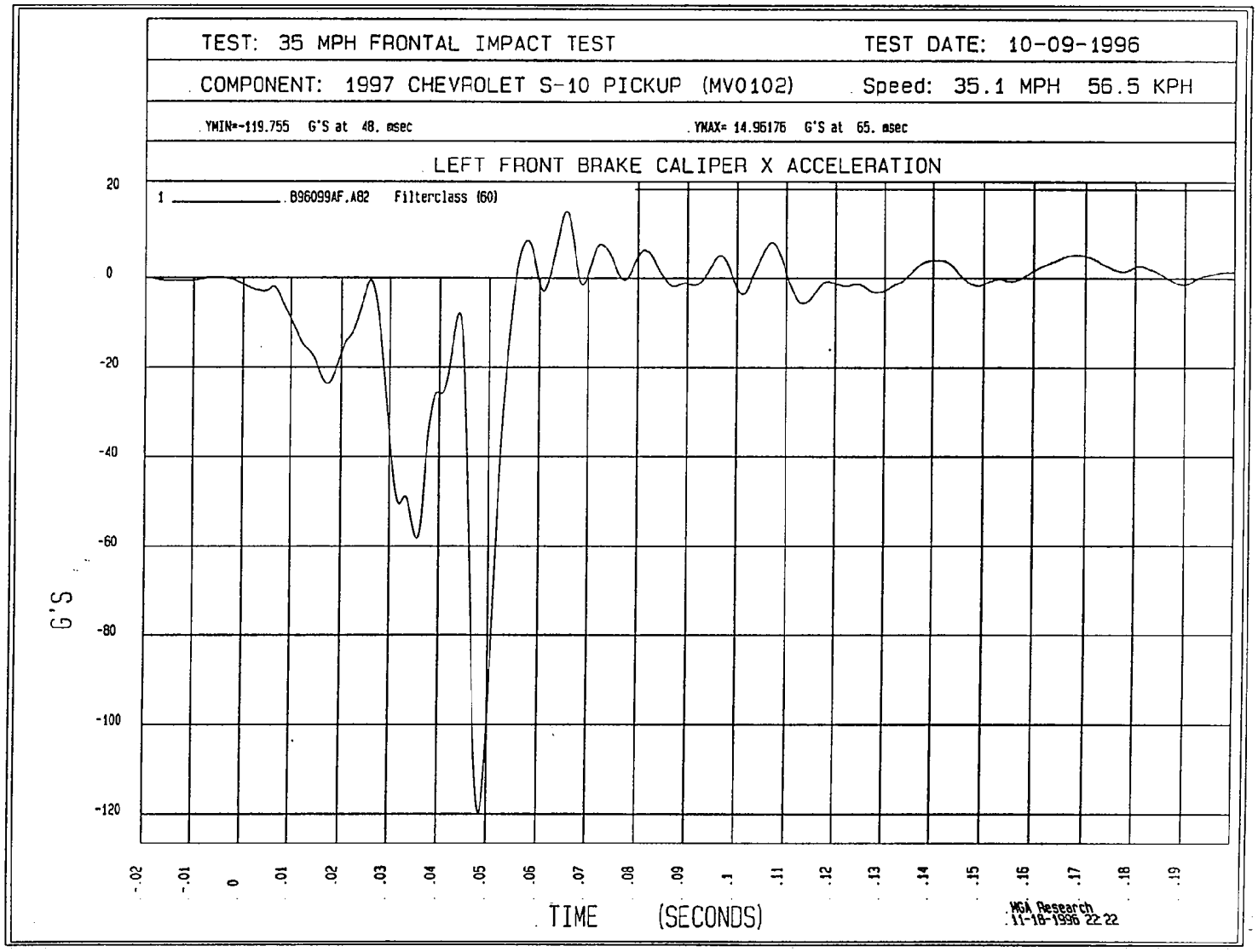

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 39.55104 KPH at 38. msec
YMAX= 56.5 KPH at -20 msec
RIGHT REAR SEAT CROSSMEMBER X VELOCITY
1 B96099AI.V20 Filterclass (180)
KPH
56
54
52
50
48
46
44
42
40
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:23

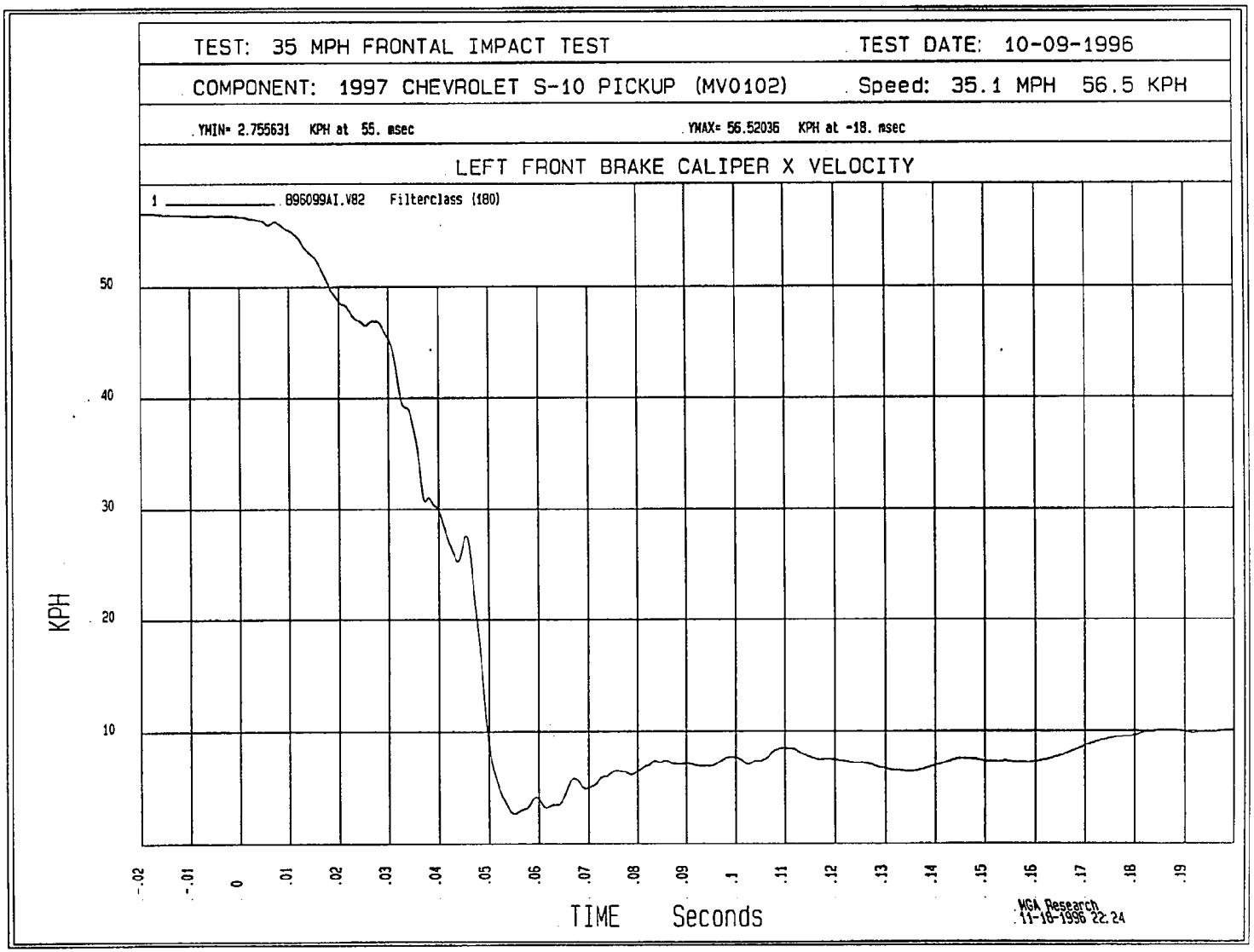

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 0 MM at -20 msec
YMAX= 848.7863 MM at 38. msec
RIGHT REAR SEAT CROSSMEMBER X DISPLACEMENT
1 B96099AI.D20 Filterclass (180)
MM
800
700
600
500
400
300
200
100
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:24

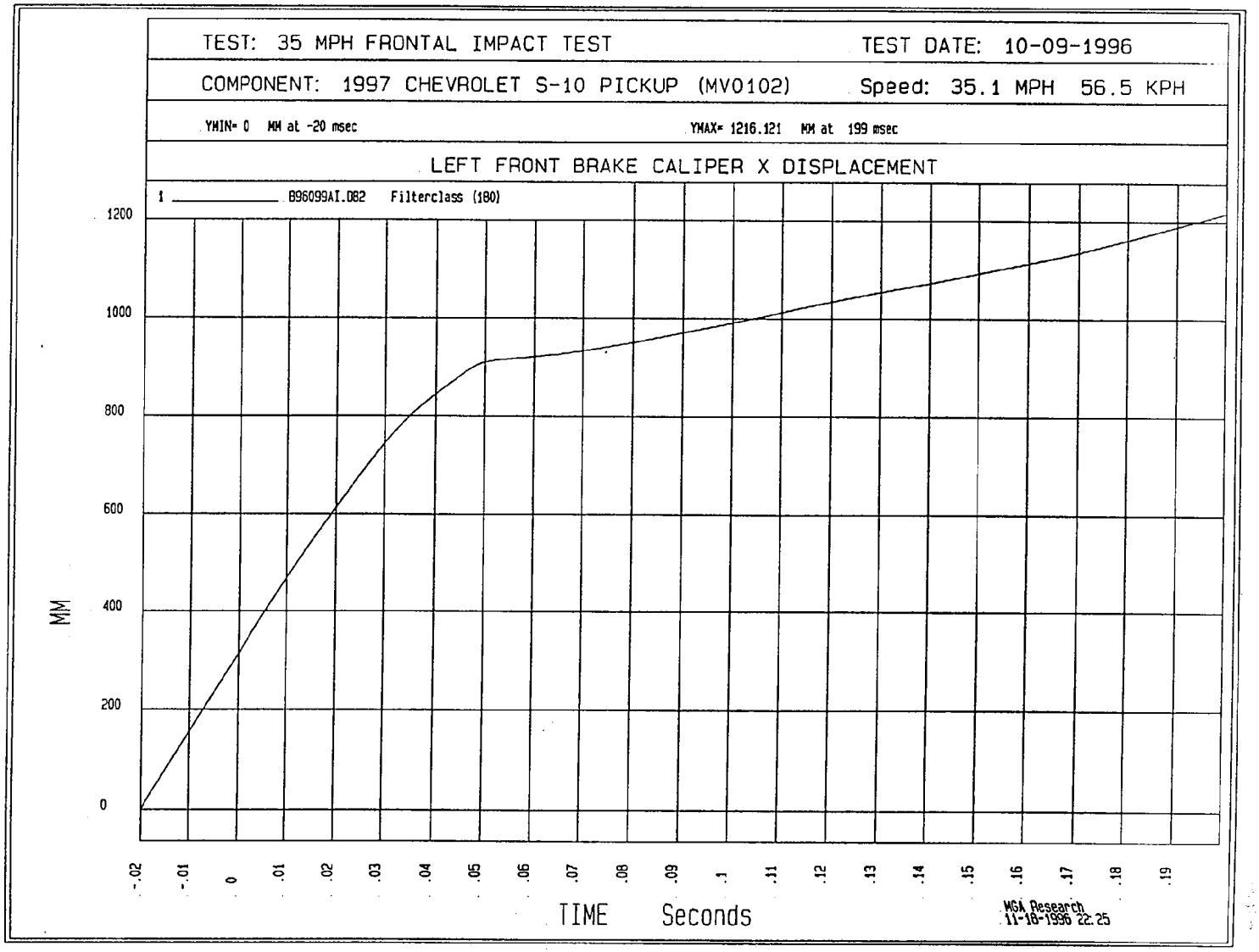

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-37.0657 G'S at 54. msec
YMAX= 3.936582 G'S at 161 msec
RIGHT REAR SEAT CROSSMEMBER REDUNDANT X ACCELERATION
1 _____ 8960994F.A6S Filterclass (60)
0
-10
-20
-30
6'S
TIME (SECONDS)
NCAP Research
11-18-1996 21:54

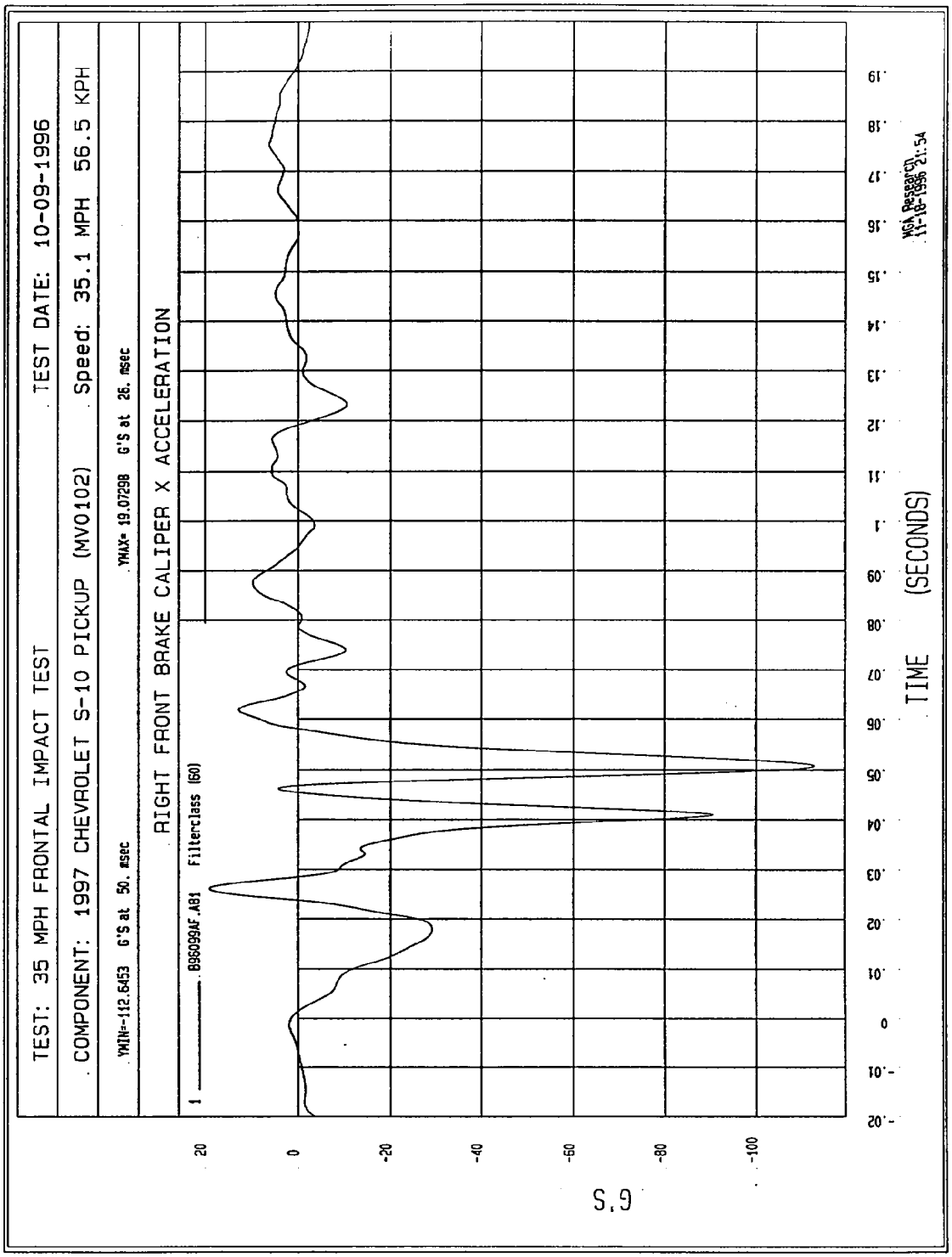

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-8.665527 KPH at 128 msec
YMAX= 56.51339 KPH at -12. msec
RIGHT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY
1 B96099AI.V66 Filterclass (180)
KPH
50
40
30
20
10
0
-10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:23

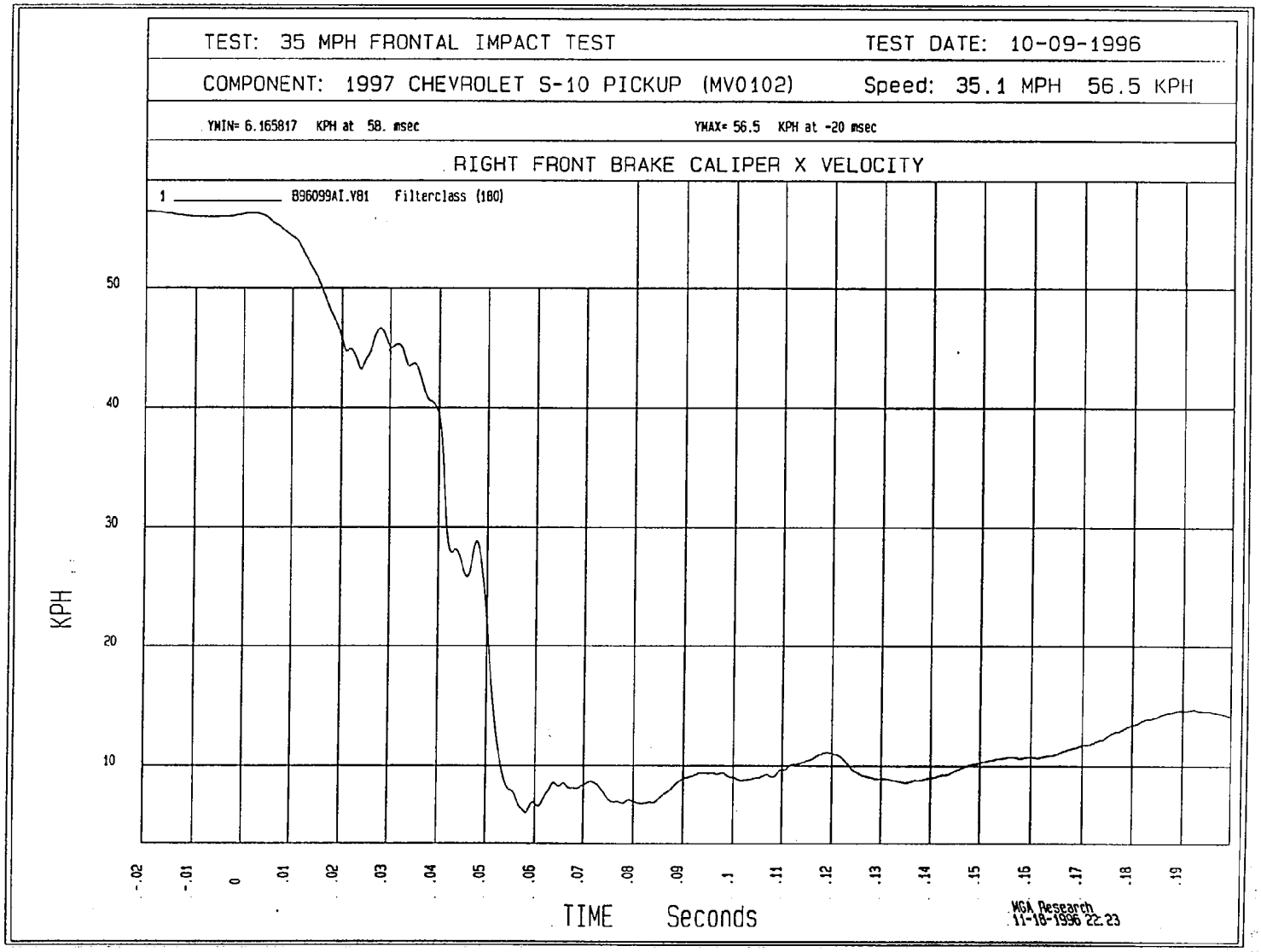

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 0 MM at -20 msec
YMAX= 1079.411 MM at 82 msec
RIGHT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT
1 B96099AI.D66 Filterclass (180)
MM
1000
800
600
400
200
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:24

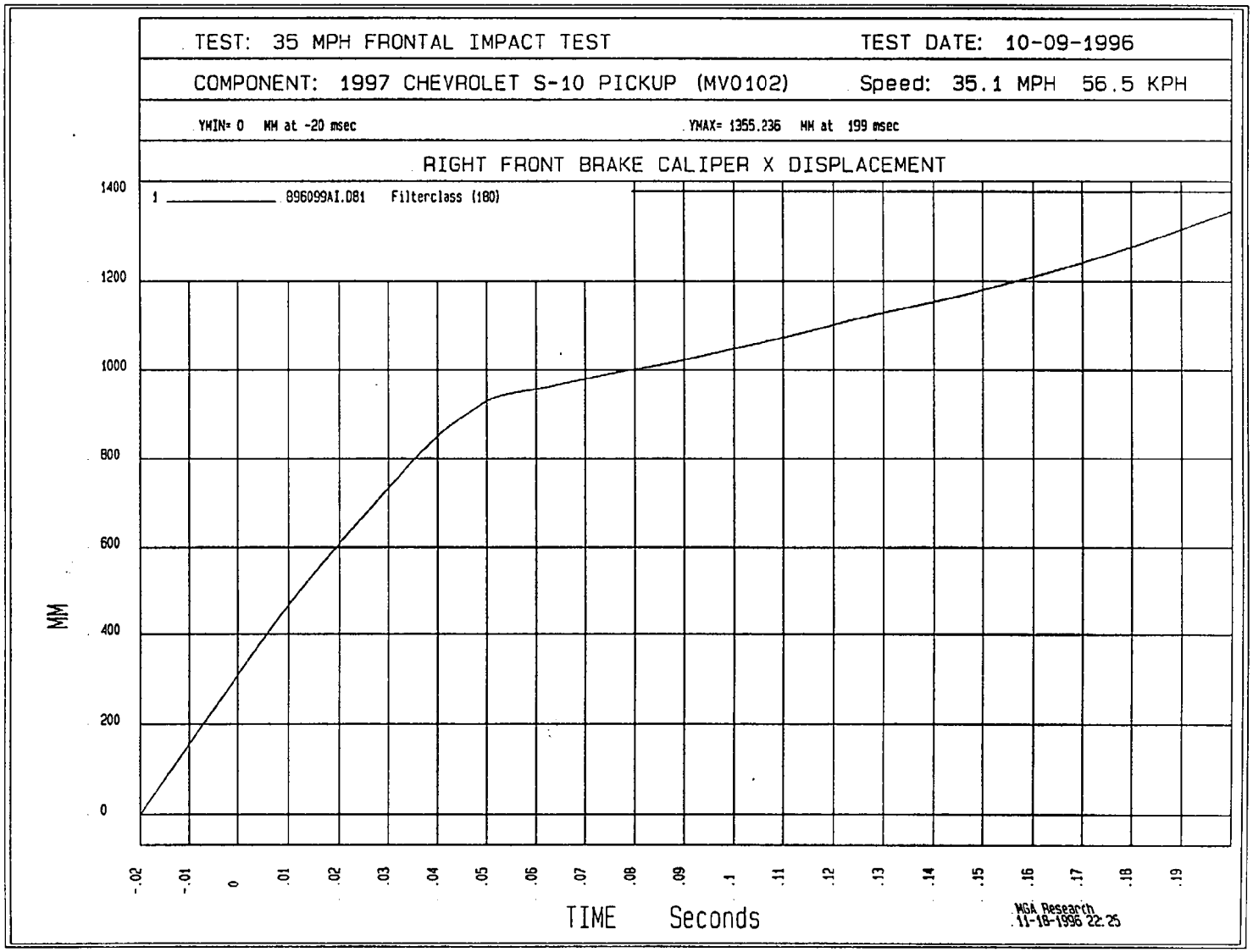

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-119.755 G'S at 48. msec
YMAX= 14.96176 G'S at 65. msec
LEFT FRONT BRAKE CALIPER X ACCELERATION
1 B96099AF.A82 Filterclass (60)
20
0
-20
-40
-60
-80
-100
-120
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:22


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 2.755631 KPH at 55. msec
YMAX= 56.52036 KPH at -18. msec
LEFT FRONT BRAKE CALIPER X VELOCITY
1 B96099AI.V82 Filterclass (180)
KPH
50
40
30
20
10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:24


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 0 MM at -20 msec
YMAX= 1216.121 MM at 199 msec
LEFT FRONT BRAKE CALIPER X DISPLACEMENT
1 B96099AI.082 Filterclass (180)
MM
1200
1000
800
600
400
200
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-10-1996 22:25


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-112.6453 G'S at 50. msec
YMAX= 19.07298 G'S at 26. msec
RIGHT FRONT BRAKE CALIPER X ACCELERATION
1 B96099AF.A81 Filterclass (60)
20
0
-20
-40
-60
-80
-100
G'S
19
18
17
16
15
14
13
12
11
1
09
08
07
06
05
04
03
02
01
0
-01
-02
TIME (SECONDS)
MGA Research
11-10-1996 21:54


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 6.165817 KPH at 58. msec
YMAX= 56.5 KPH at -20 msec
RIGHT FRONT BRAKE CALIPER X VELOCITY
1 896099AI.V01 Filterclass (180)
KPH
50
40
30
20
10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:23


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 0 MM at -20 msec
YMAX= 1355.236 MM at 199 msec
RIGHT FRONT BRAKE CALIPER X DISPLACEMENT
1 896099AI.D81 Filterclass (180)
MM
1400
1200
1000
800
600
400
200
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
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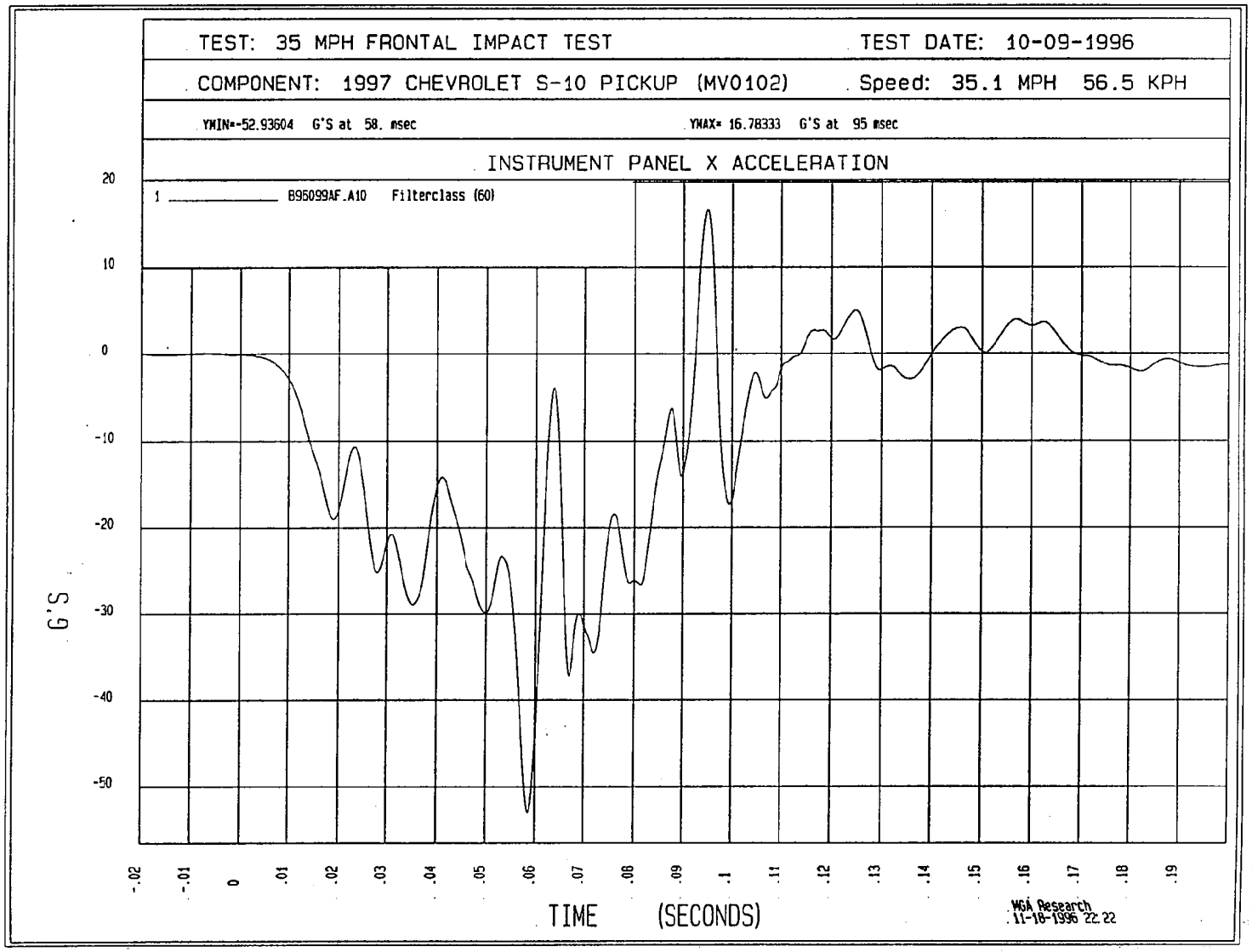
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:25


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-52.93604 G'S at 58. msec
YMAX= 16.78333 G'S at 95 msec
INSTRUMENT PANEL X ACCELERATION
1 B95099AF.A10 Filterclass (60)
20
10
0
-10
-20
-30
-40
-50
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
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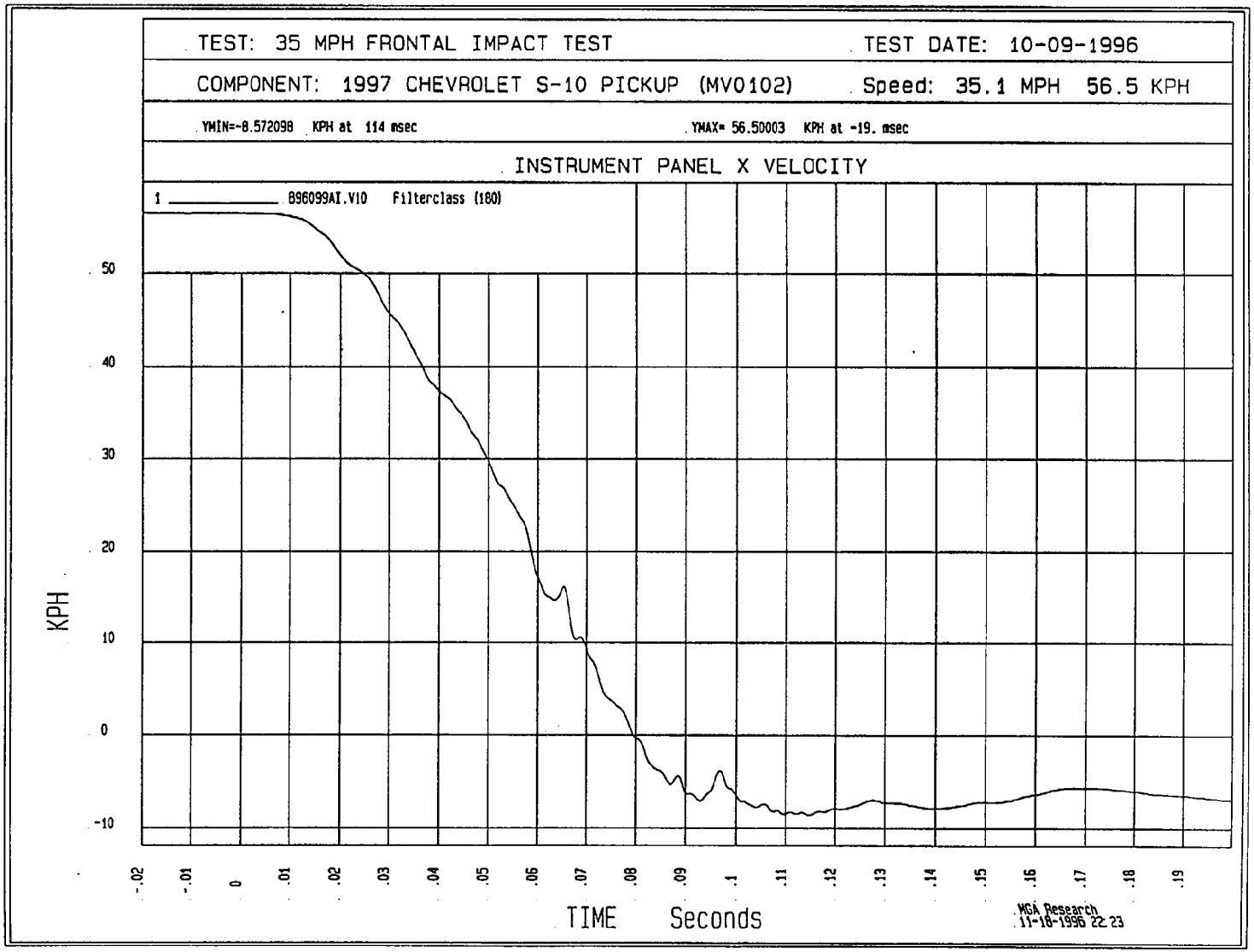
TIME (SECONDS)
MGA Research
11-18-1996 22:22


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-8.572098 KPH at 114 msec
YMAX= 56.50003 KPH at -19. msec
INSTRUMENT PANEL X VELOCITY
1 896099AI.V10 Filterclass (180)
KPH
50
40
30
20
10
0
-10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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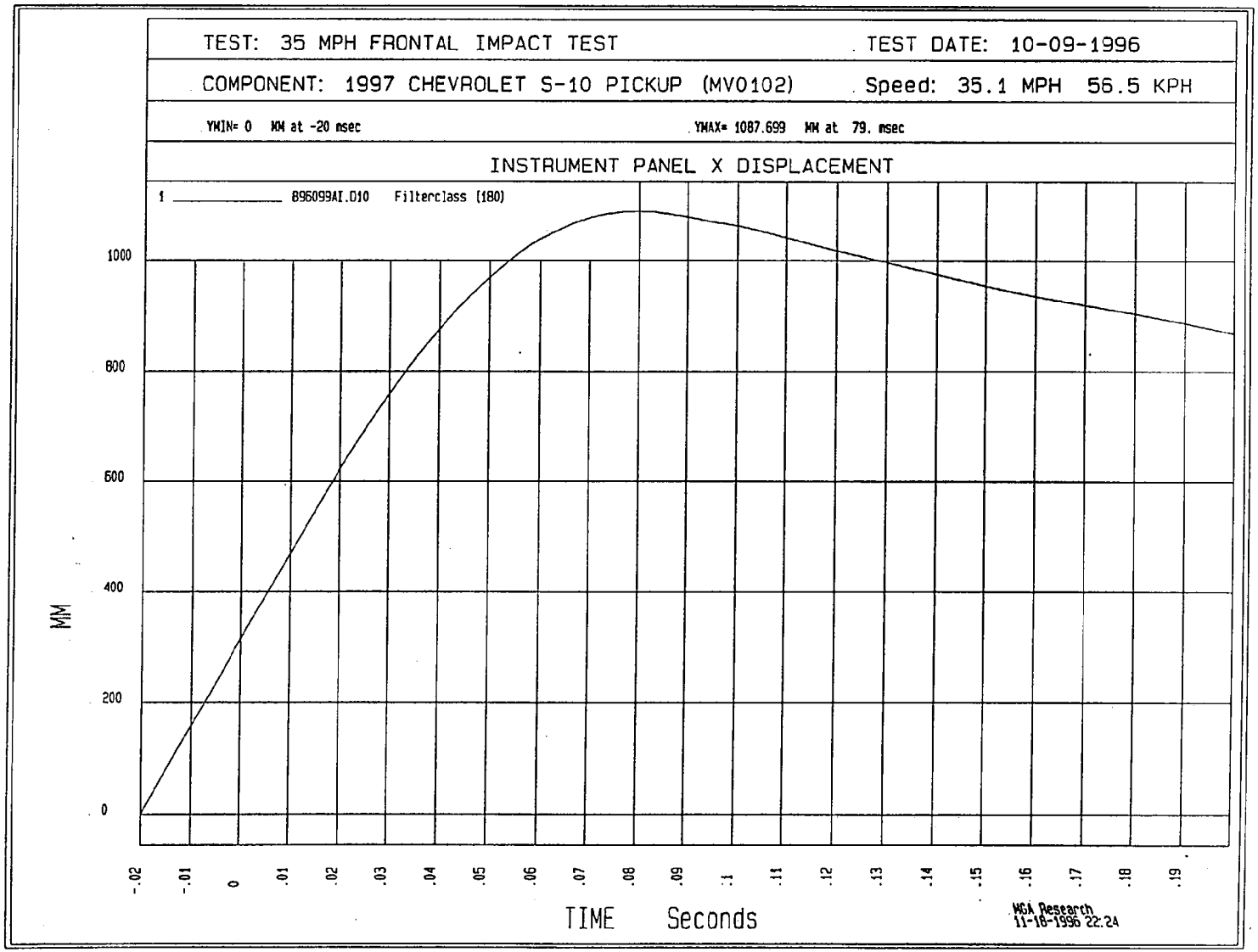
.19
TIME Seconds
MGA Research
11-18-1996 22:23


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 0 MM at -20 msec
YMAX= 1087.699 MM at 79. msec
INSTRUMENT PANEL X DISPLACEMENT
1 896099AI.D10 Filterclass (180)
MM
1000
800
600
400
200
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
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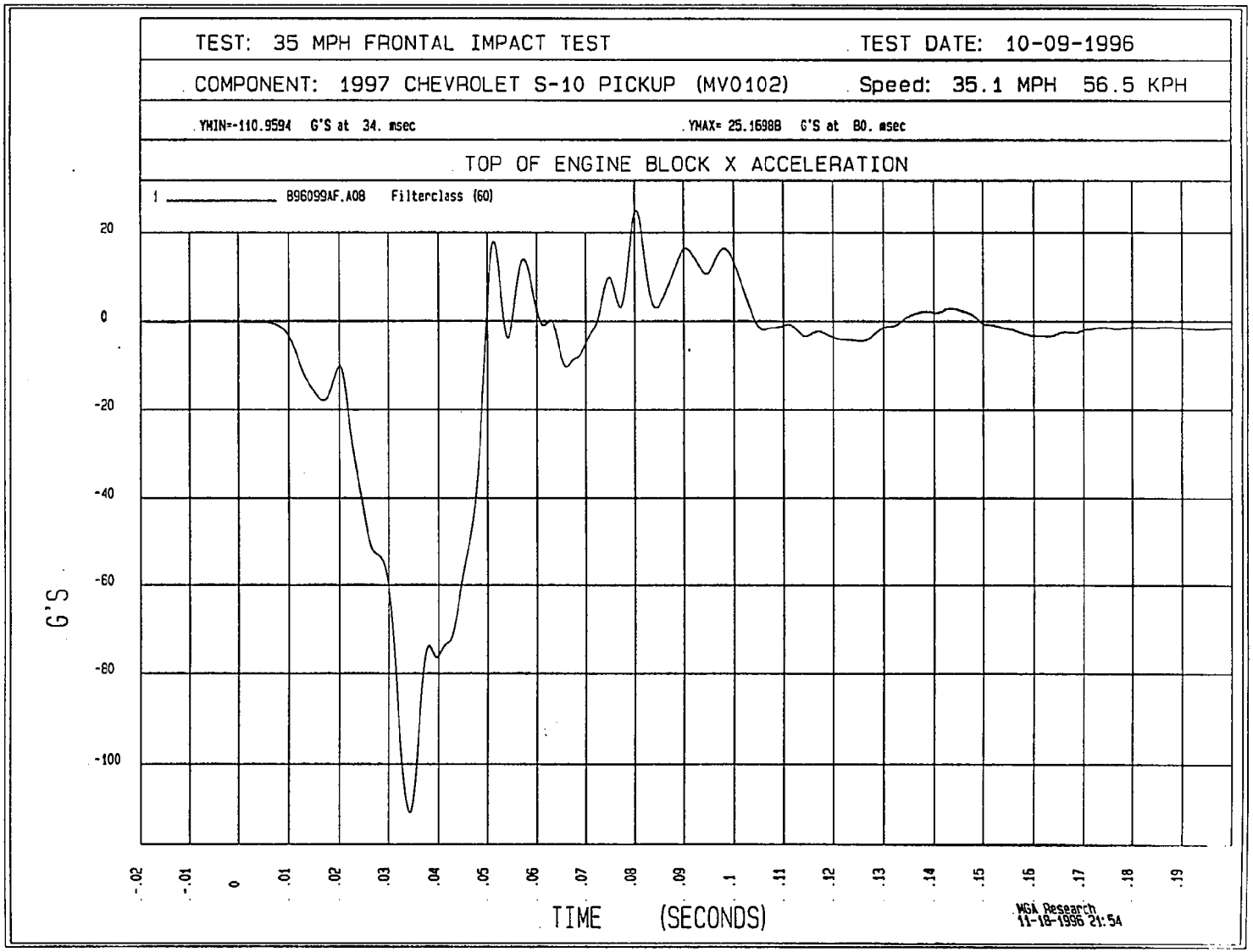
TIME Seconds
MGA Research
11-18-1996 22:24


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-110.9594 G'S at 34. msec
YMAX= 25.16988 G'S at 80. msec
TOP OF ENGINE BLOCK X ACCELERATION
1 B96099AF.A08 Filterclass (60)
20
0
-20
-40
-60
-80
-100
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
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.18
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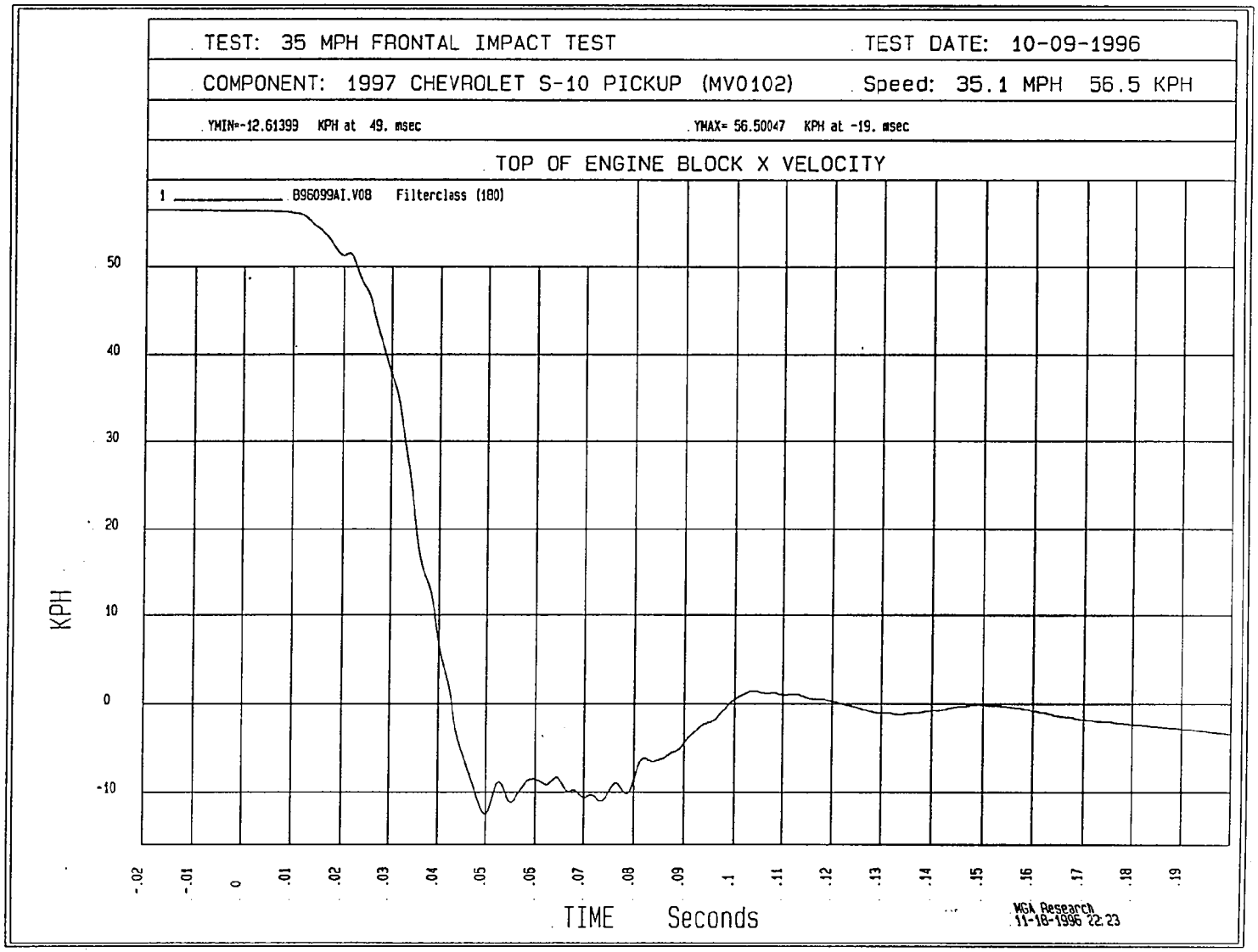
TIME (SECONDS)
MGA Research
11-18-1996 21:54


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-12.61399 KPH at 49. msec
YMAX= 56.50047 KPH at -19. msec
TOP OF ENGINE BLOCK X VELOCITY
1 B96099AI.V08 Filterclass (180)
KPH
50
40
30
20
10
0
-10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
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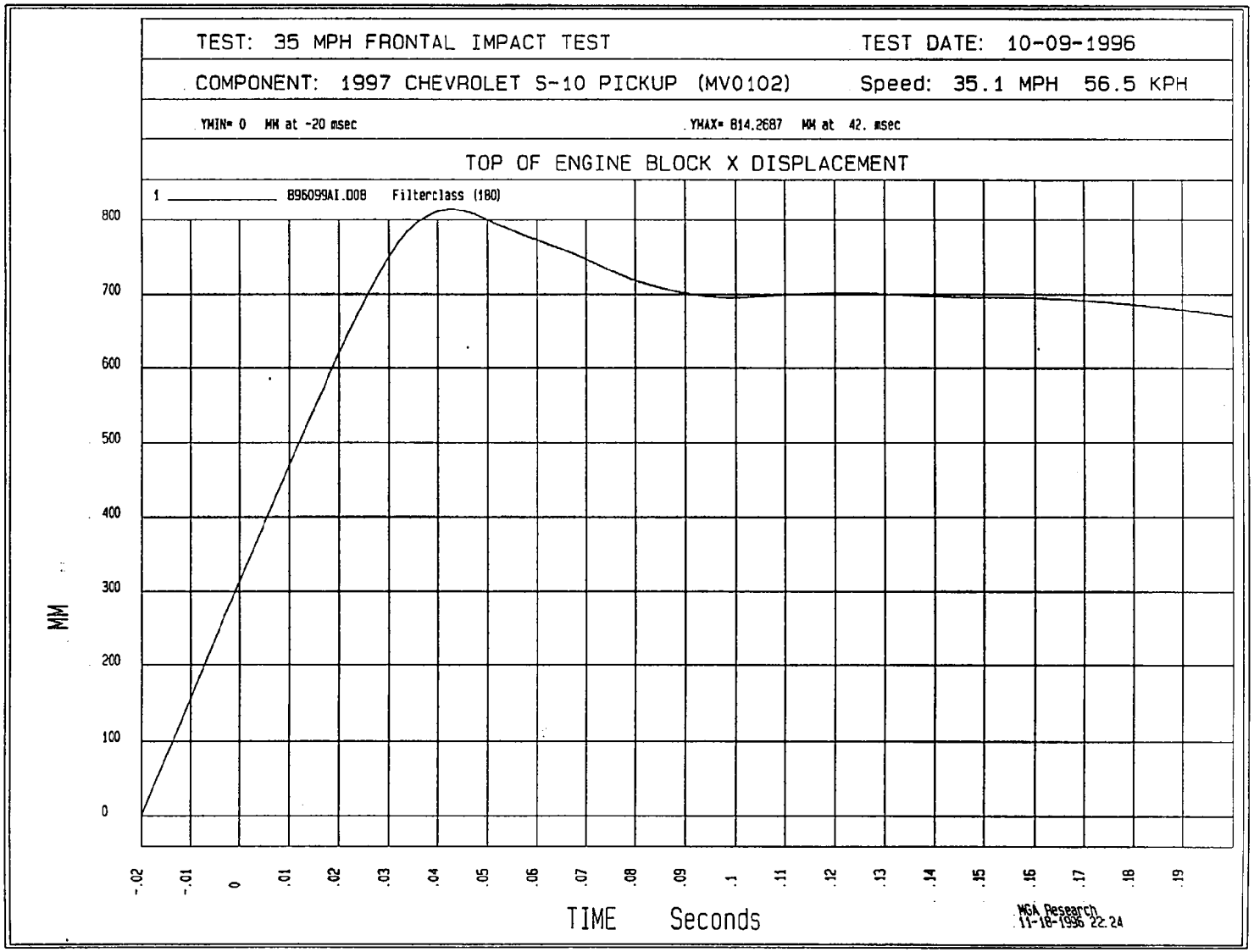
TIME Seconds
MGA Research
11-18-1996 22:23


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 0 MM at -20 msec
YMAX= 814.2687 MM at 42. msec
TOP OF ENGINE BLOCK X DISPLACEMENT
1 896099AI.008 Filterclass (180)
MM
800
700
600
500
400
300
200
100
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
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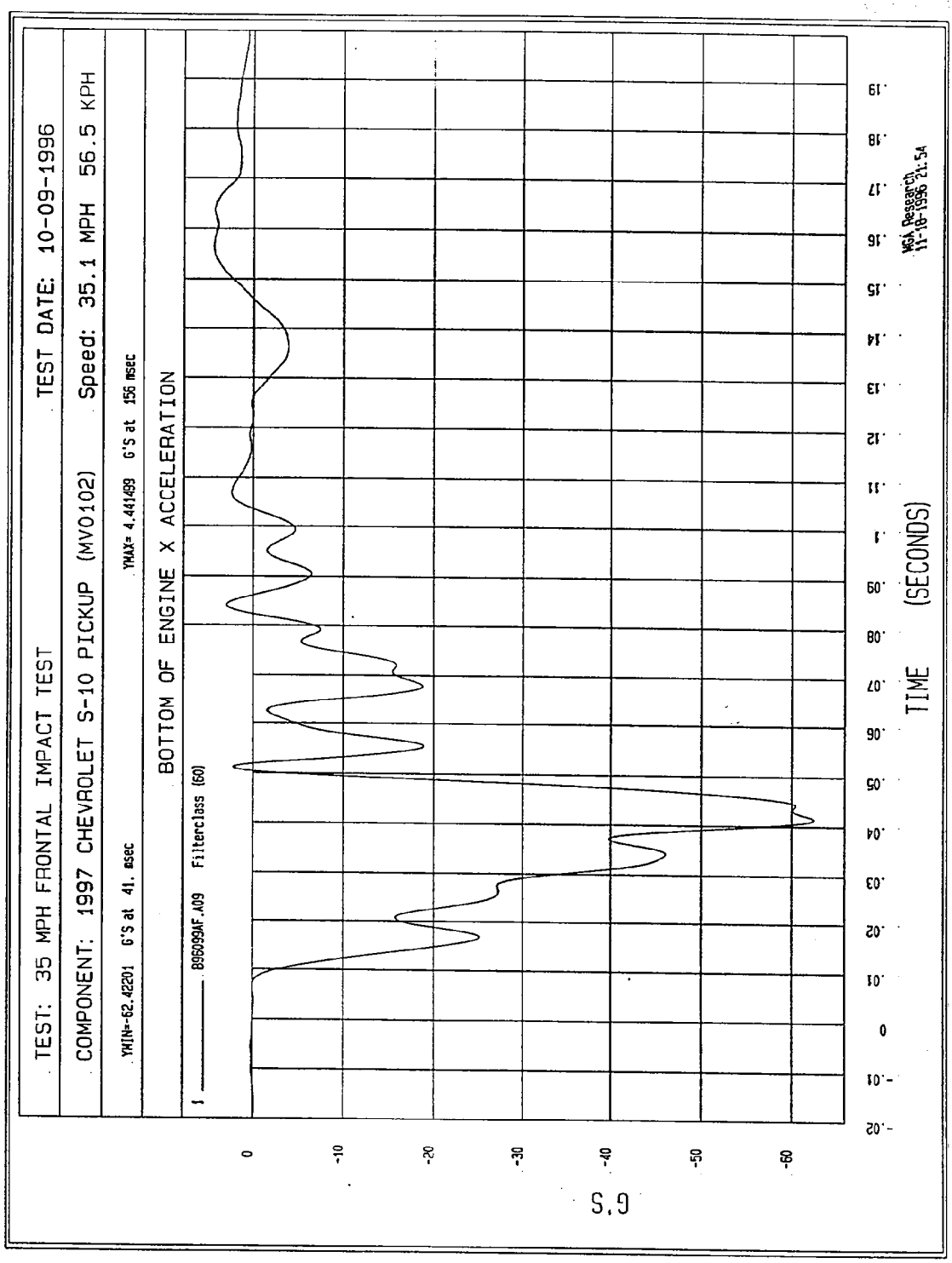
TIME Seconds
MGA Research
11-18-1996 22:24


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-62.42201 G'S at 41. msec
YMAX= 4.441493 G'S at 156 msec
BOTTOM OF ENGINE X ACCELERATION
1 B96099AF.A09 Filterclass (60)
G'S
0
-10
-20
-30
-40
-50
-60
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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.12
.13
.14
.15
.16
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.18
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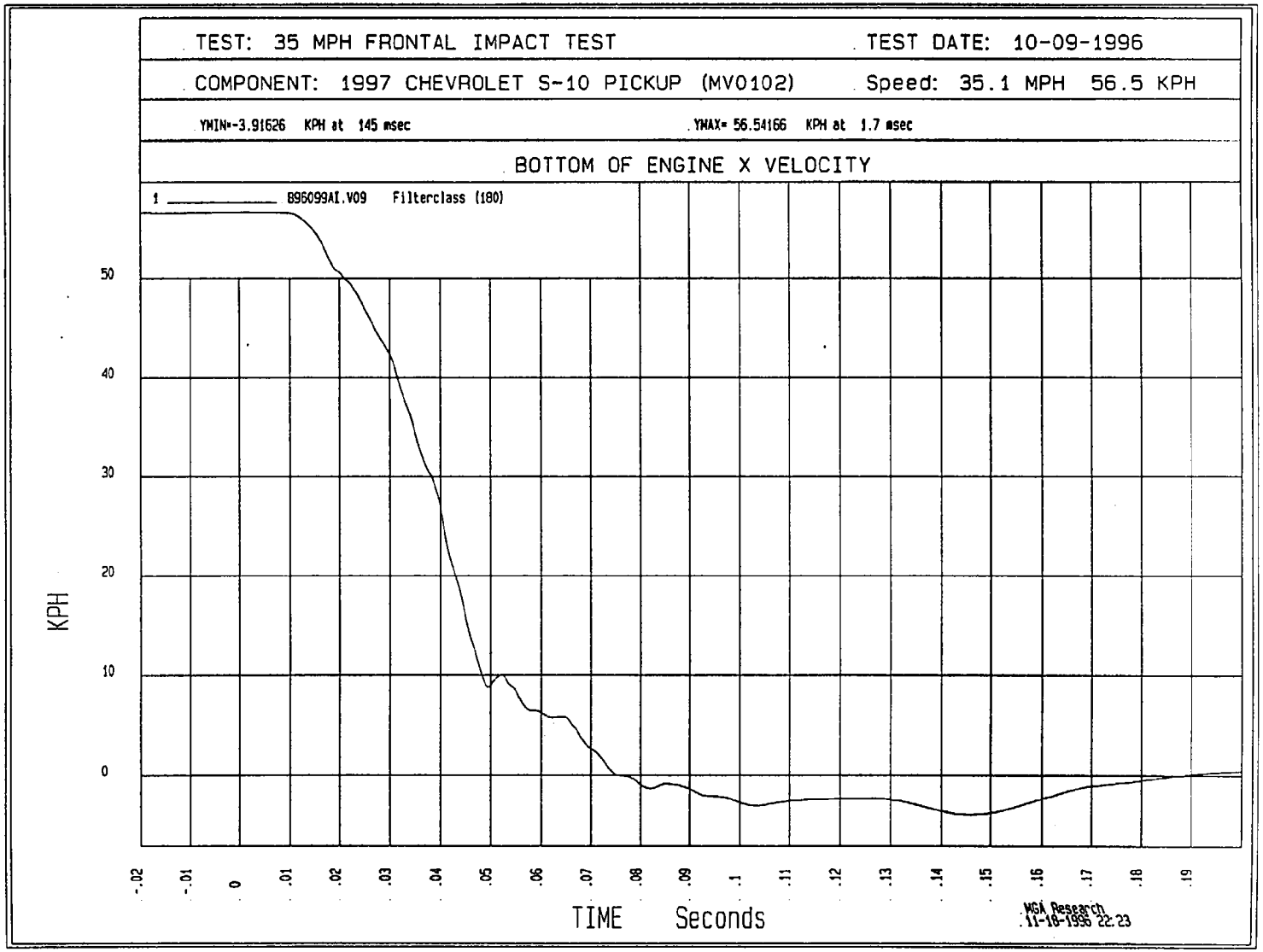
TIME (SECONDS)
MGA Research
11-18-1996 21:54


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-3.91626 KPH at 145 msec
YMAX= 56.54166 KPH at 1.7 msec
BOTTOM OF ENGINE X VELOCITY
1 B96099AI.V09 Filterclass (180)
KPH
50
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
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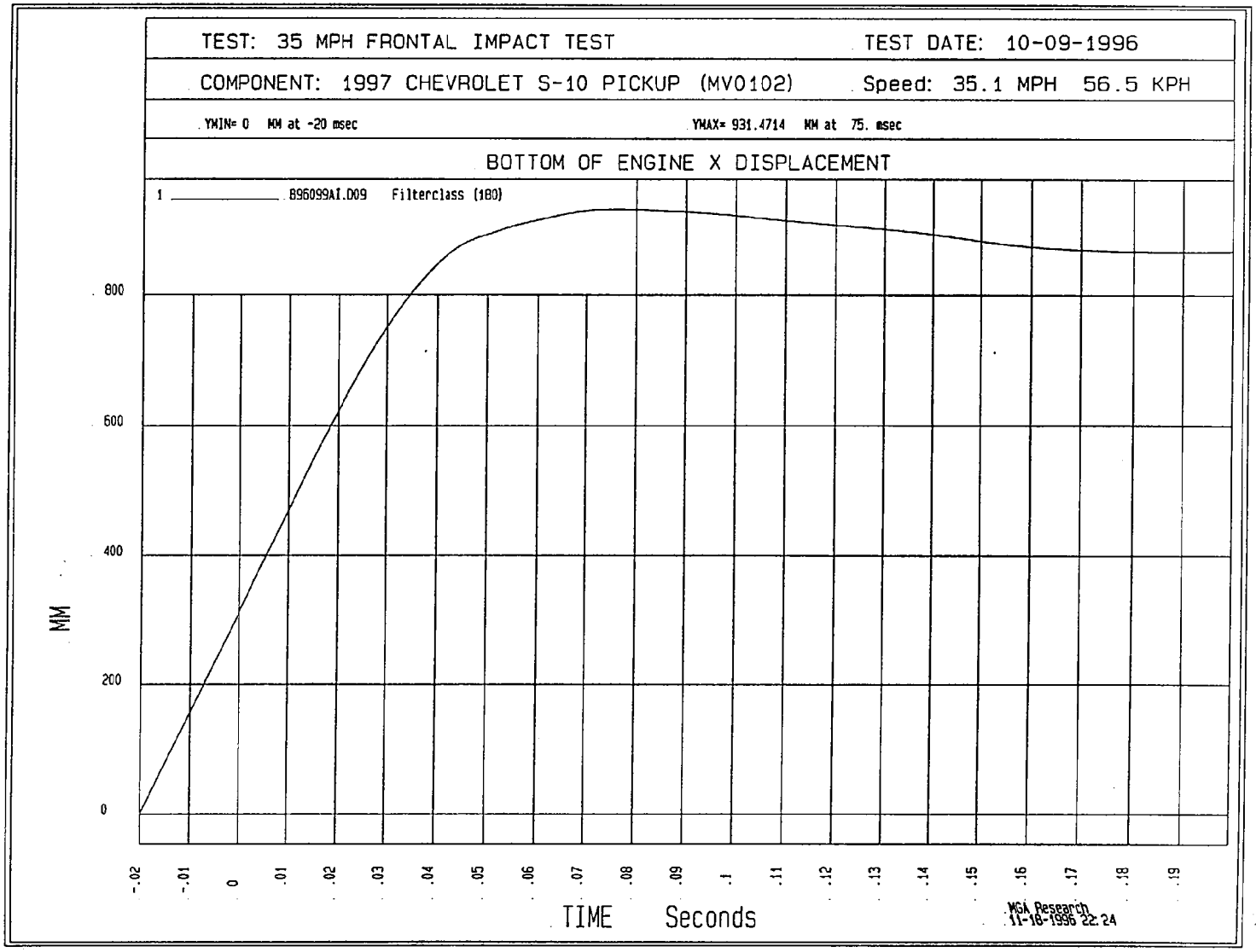
TIME Seconds
MGA Research
11-18-1996 22:23


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 0 MM at -20 msec
YMAX= 931.4714 MM at 75. msec
BOTTOM OF ENGINE X DISPLACEMENT
1 B96099AI.D09 Filterclass (180)
MM
800
600
400
200
0
-.02
-.01
0
.01
.02
.03
.04
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.06
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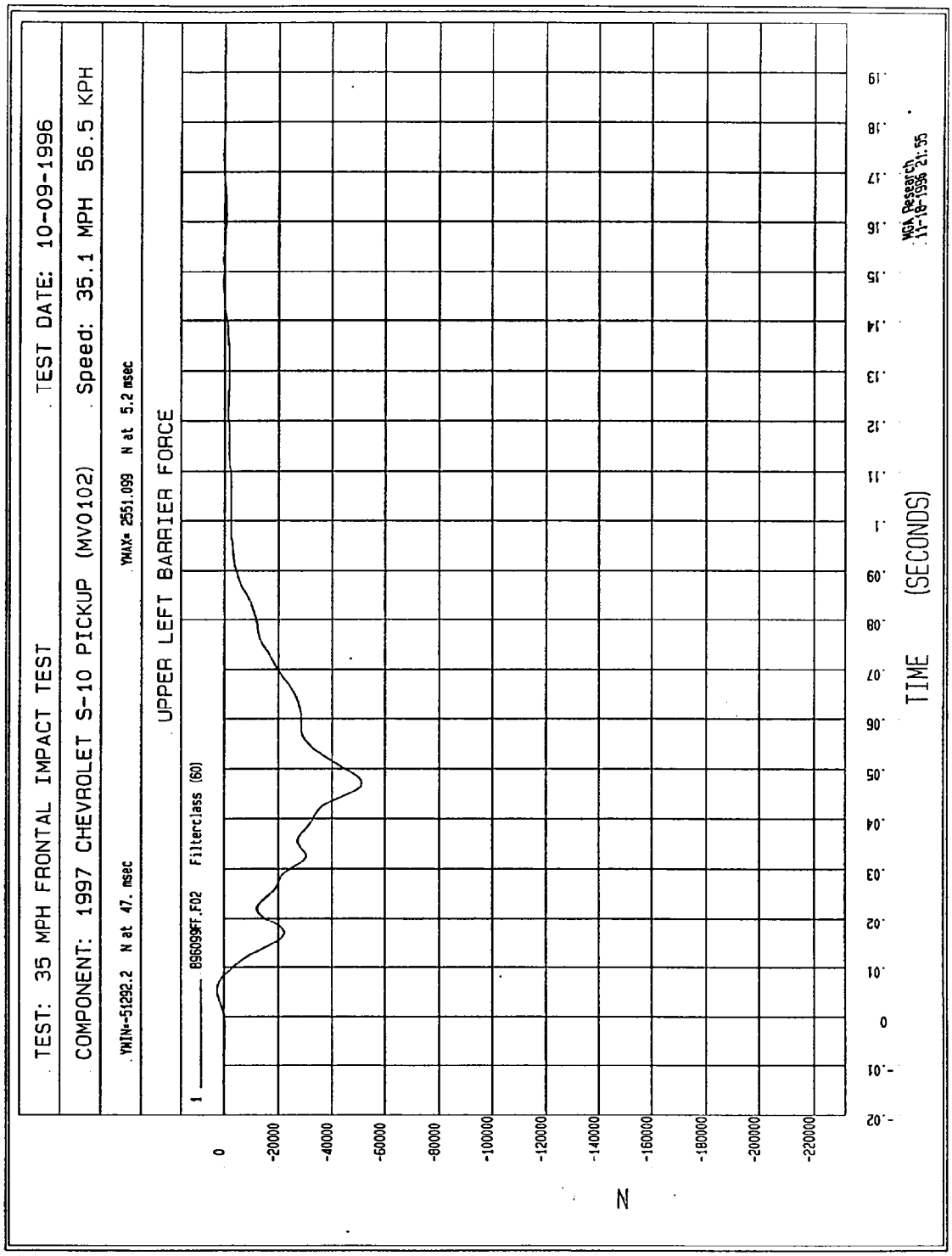
TIME Seconds
MGA Research
11-18-1996 22:24


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-51292.2 N at 47. msec
YMAX= 2551.099 N at 5.2 msec
UPPER LEFT BARRIER FORCE
1 896099ff.f02 Filterclass (60)
0
-20000
-40000
-60000
-80000
-100000
-120000
-140000
-160000
-180000
-200000
-220000
N
-.02
-.01
0
.01
.02
.03
.04
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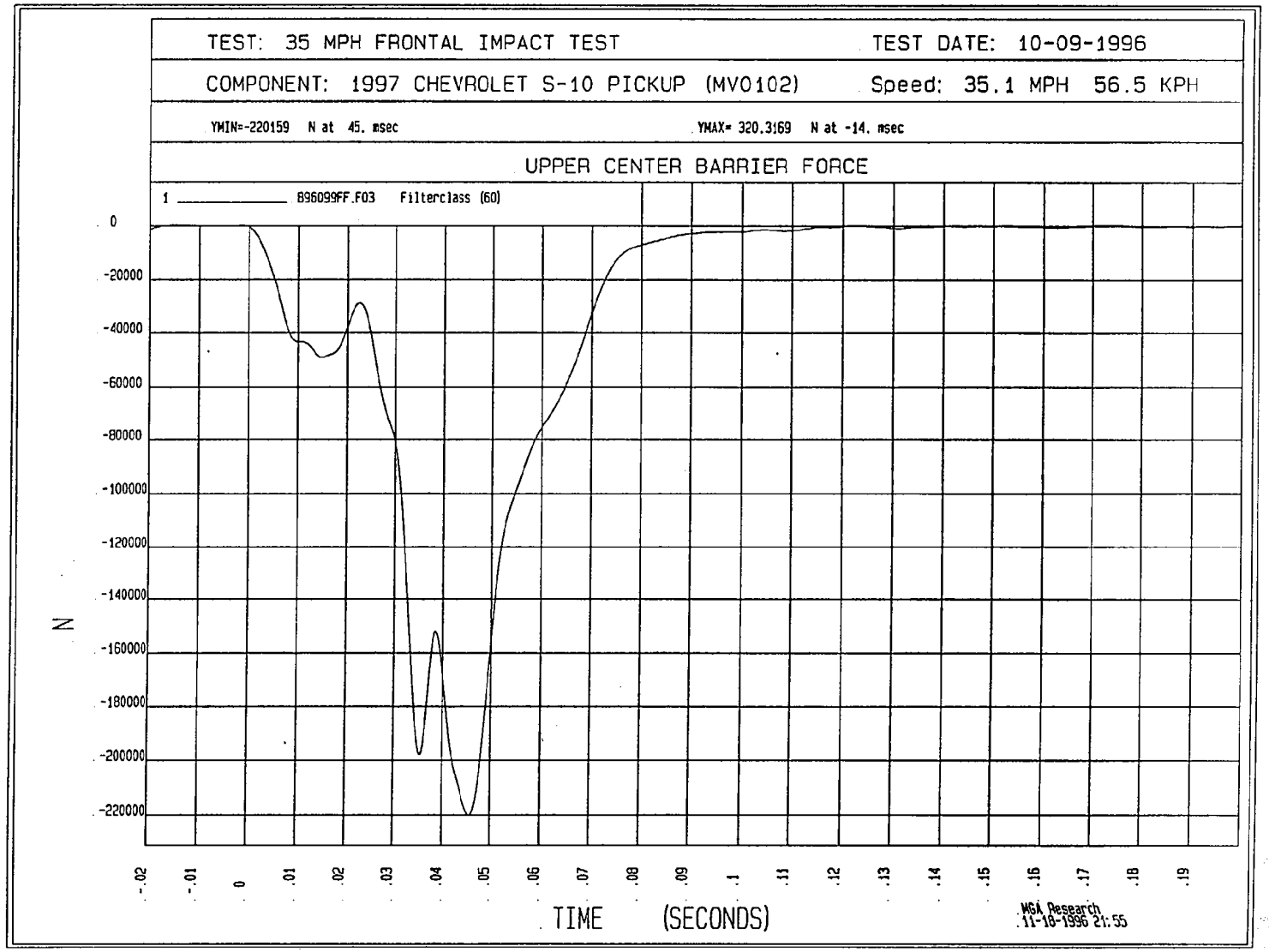
TIME (SECONDS)
NGA Research
11-18-1996 21:55


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-220159 N at 45. msec
YMAX= 320.3169 N at -14. msec
UPPER CENTER BARRIER FORCE
1 896099FF.F03 Filterclass (60)
0
-20000
-40000
-60000
-80000
-100000
-120000
-140000
-160000
-180000
-200000
-220000
N
-.02
-.01
0
.01
.02
.03
.04
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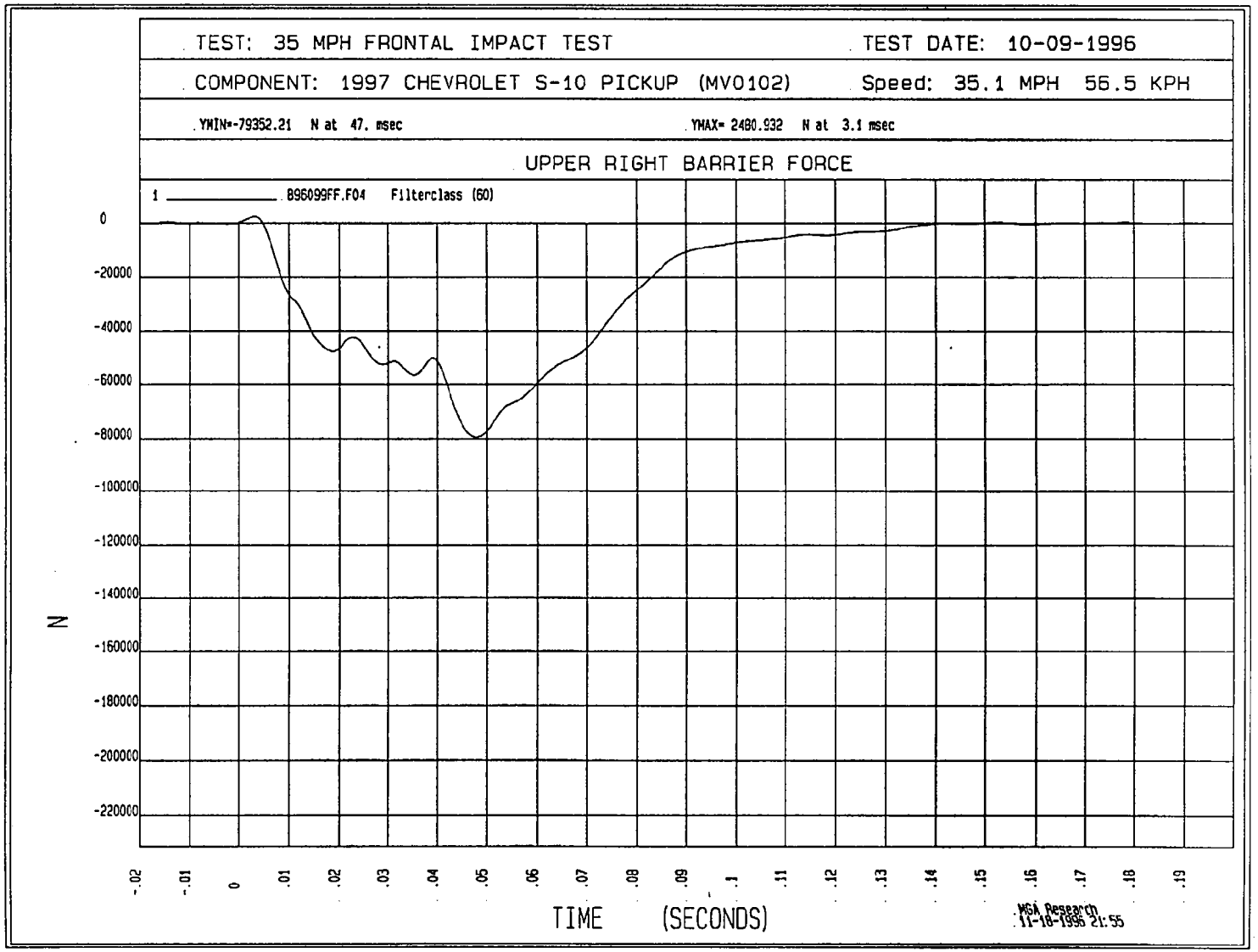
TIME (SECONDS)
MGA Research
11-10-1996 21:55


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-79352.21 N at 47. msec
YMAX= 2480.932 N at 3.1 msec
UPPER RIGHT BARRIER FORCE
1 896099FF.F04 Filterclass (60)
0
-20000
-40000
-60000
-80000
-100000
-120000
-140000
-160000
-180000
-200000
-220000
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
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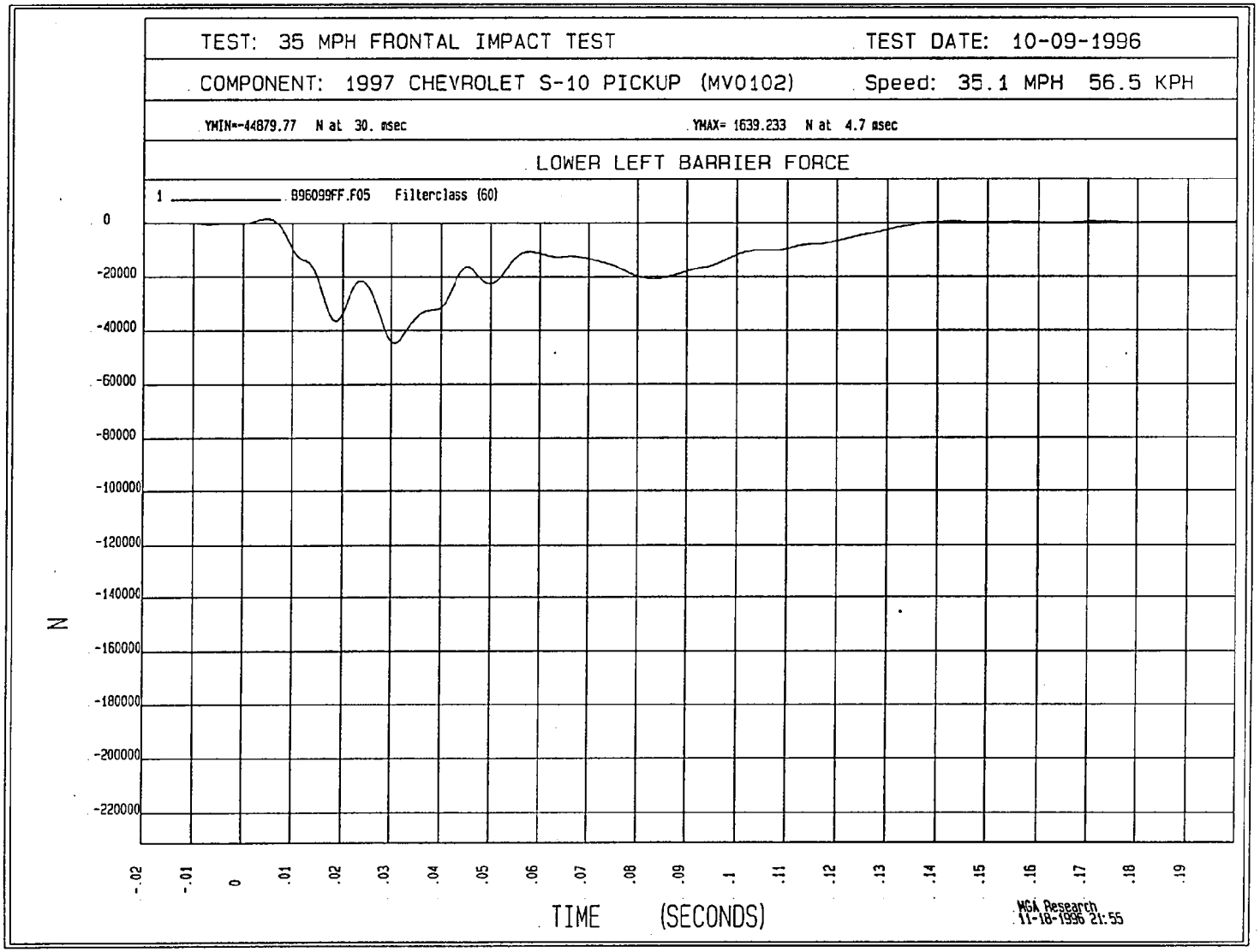
TIME (SECONDS)
MGA Research
11-18-1996 21:55


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-44879.77 N at 30. msec
YMAX= 1639.233 N at 4.7 msec
LOWER LEFT BARRIER FORCE
1 B96099FF.F05 Filterclass (60)
0
-20000
-40000
-60000
-80000
-100000
-120000
-140000
-160000
-180000
-200000
-220000
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
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.09
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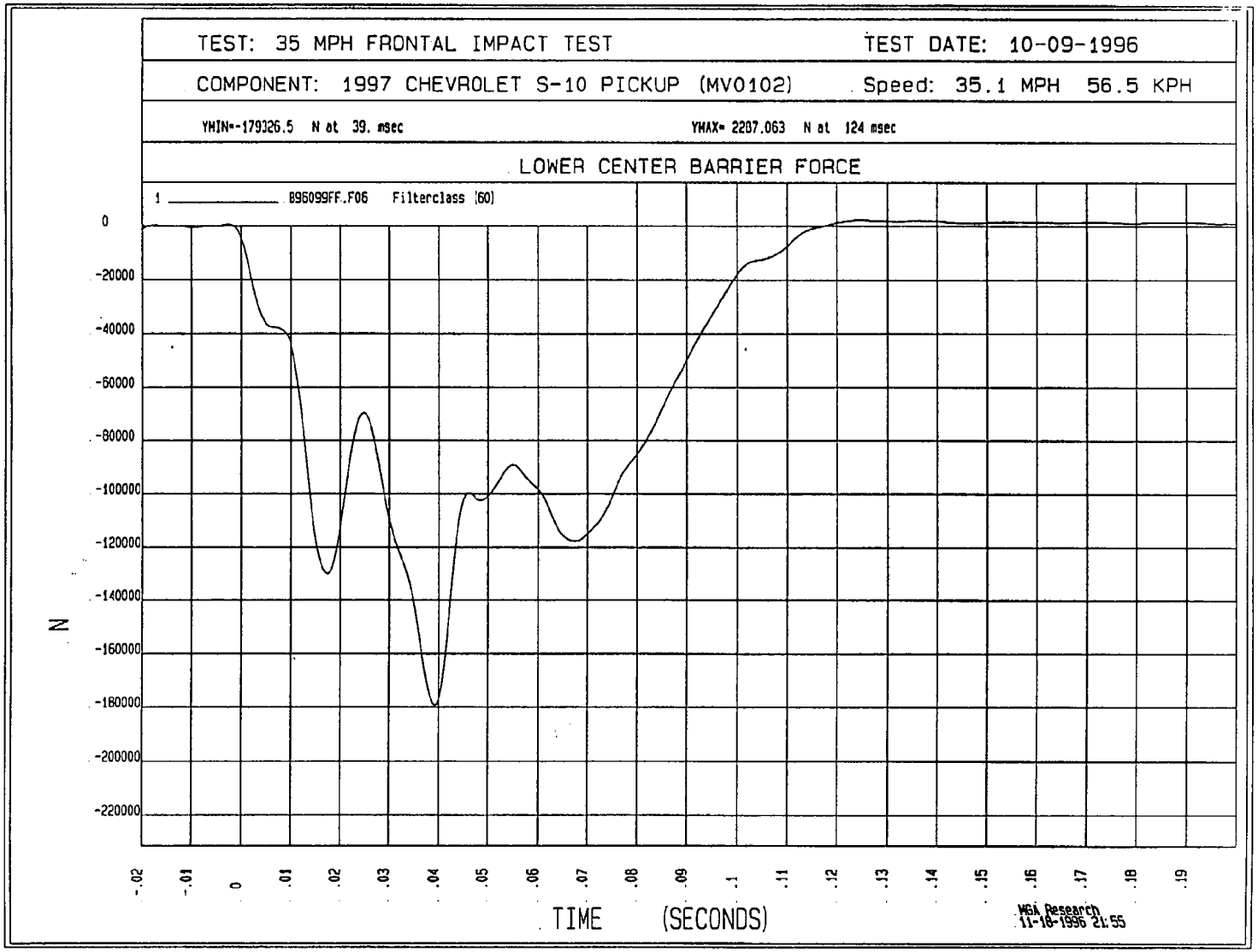
TIME (SECONDS)
MGA Research
11-18-1996 21:55


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-179326.5 N at 39. msec
YMAX= 2207.063 N at 124 msec
LOWER CENTER BARRIER FORCE
1 B96099FF.F06 Filterclass (60)
0
-20000
-40000
-60000
-80000
-100000
-120000
-140000
-160000
-180000
-200000
-220000
N
-.02
-.01
0
.01
.02
.03
.04
.05
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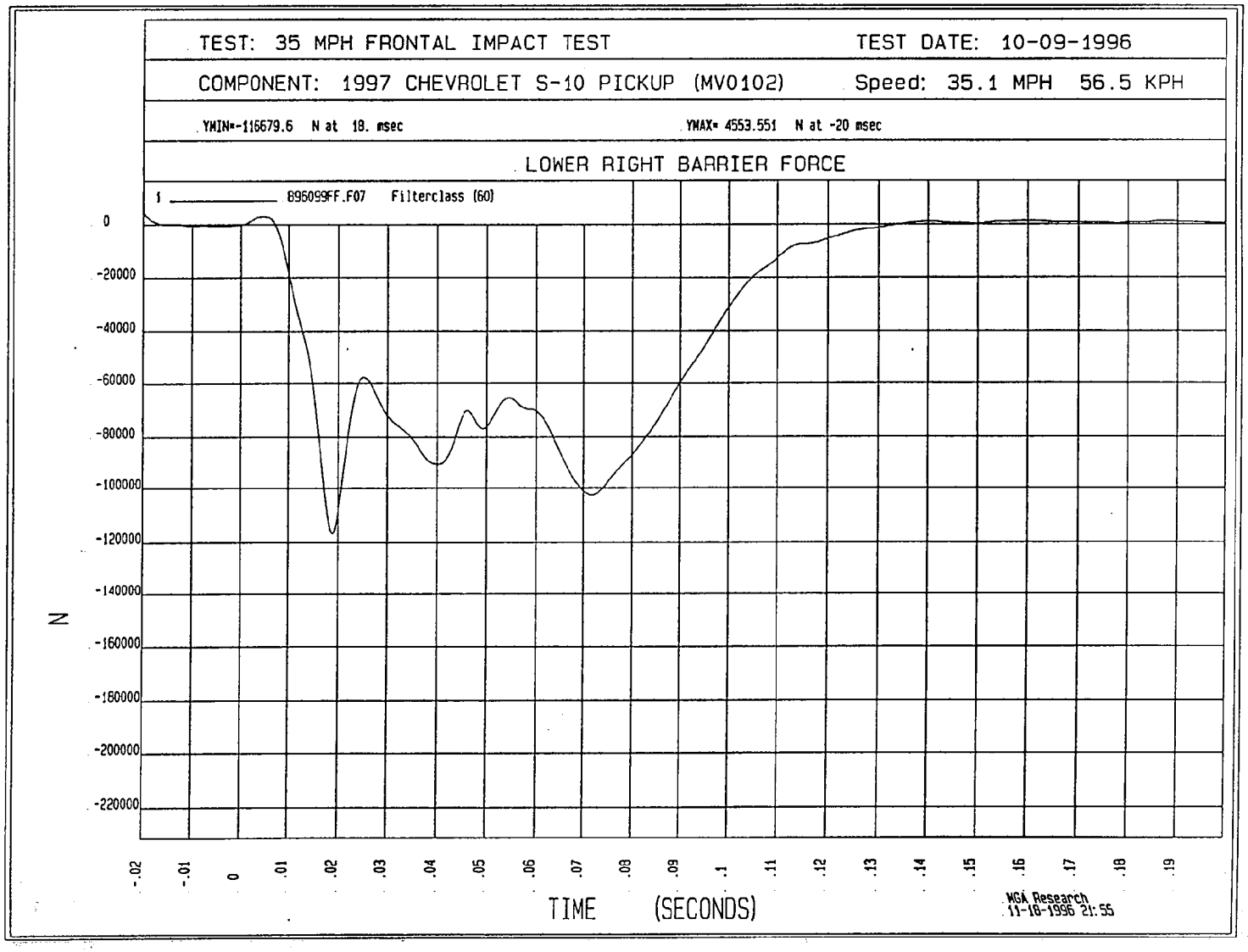
TIME (SECONDS)
MGA Research
11-18-1996 21:55


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-116679.6 N at 18. msec
YMAX= 4553.551 N at -20 msec
LOWER RIGHT BARRIER FORCE
1 896099FF.F07 Filterclass (60)
0
-20000
-40000
-60000
-80000
-100000
-120000
-140000
-160000
-180000
-200000
-220000
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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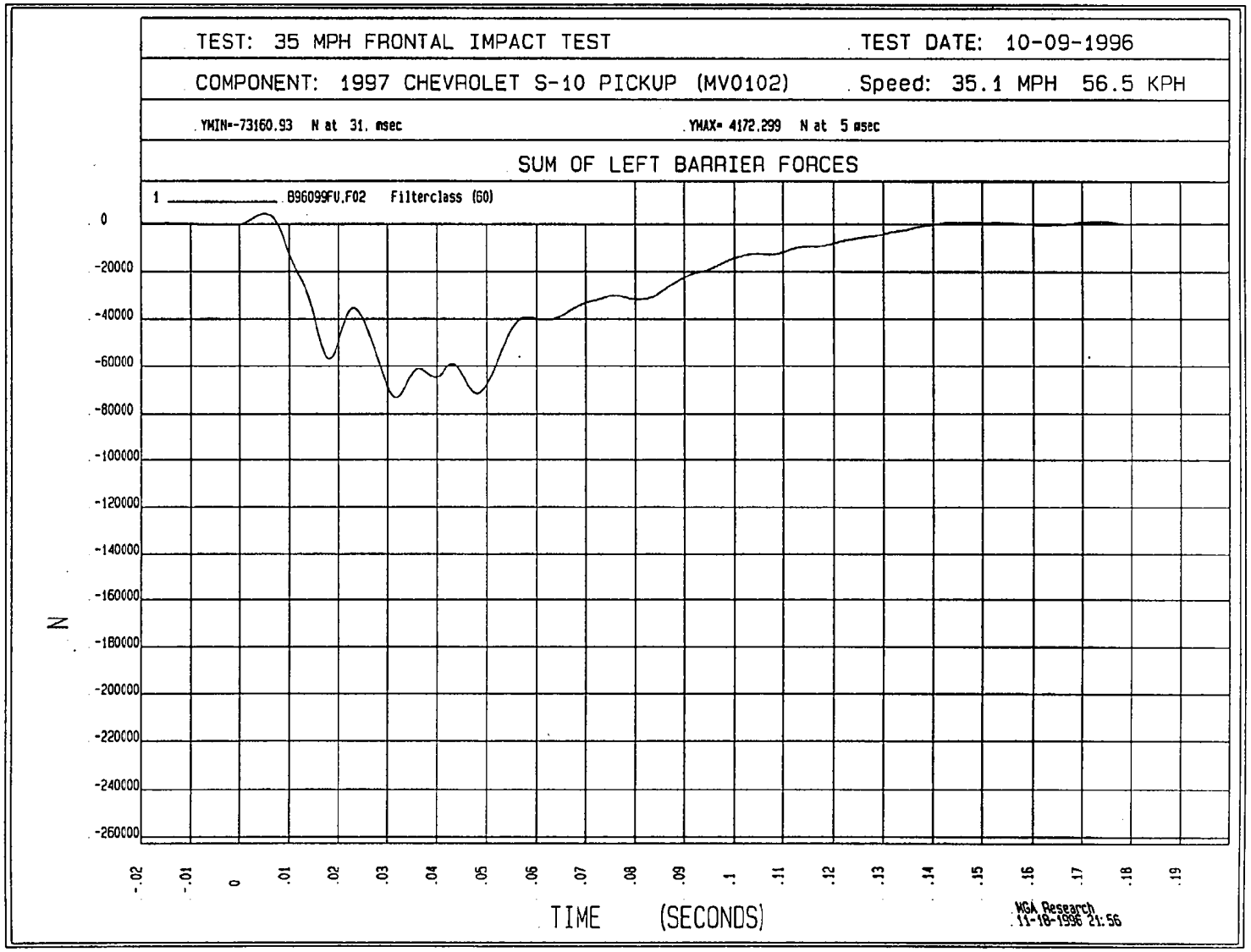
TIME (SECONDS)
MGA Research
11-18-1996 21:55


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-73160.93 N at 31. msec
YMAX= 4172.299 N at 5 msec
SUM OF LEFT BARRIER FORCES
1 B96099FU.F02 Filterclass (60)
0
-20000
-40000
-60000
-80000
-100000
-120000
-140000
-160000
-180000
-200000
-220000
-240000
-260000
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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.11
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.14
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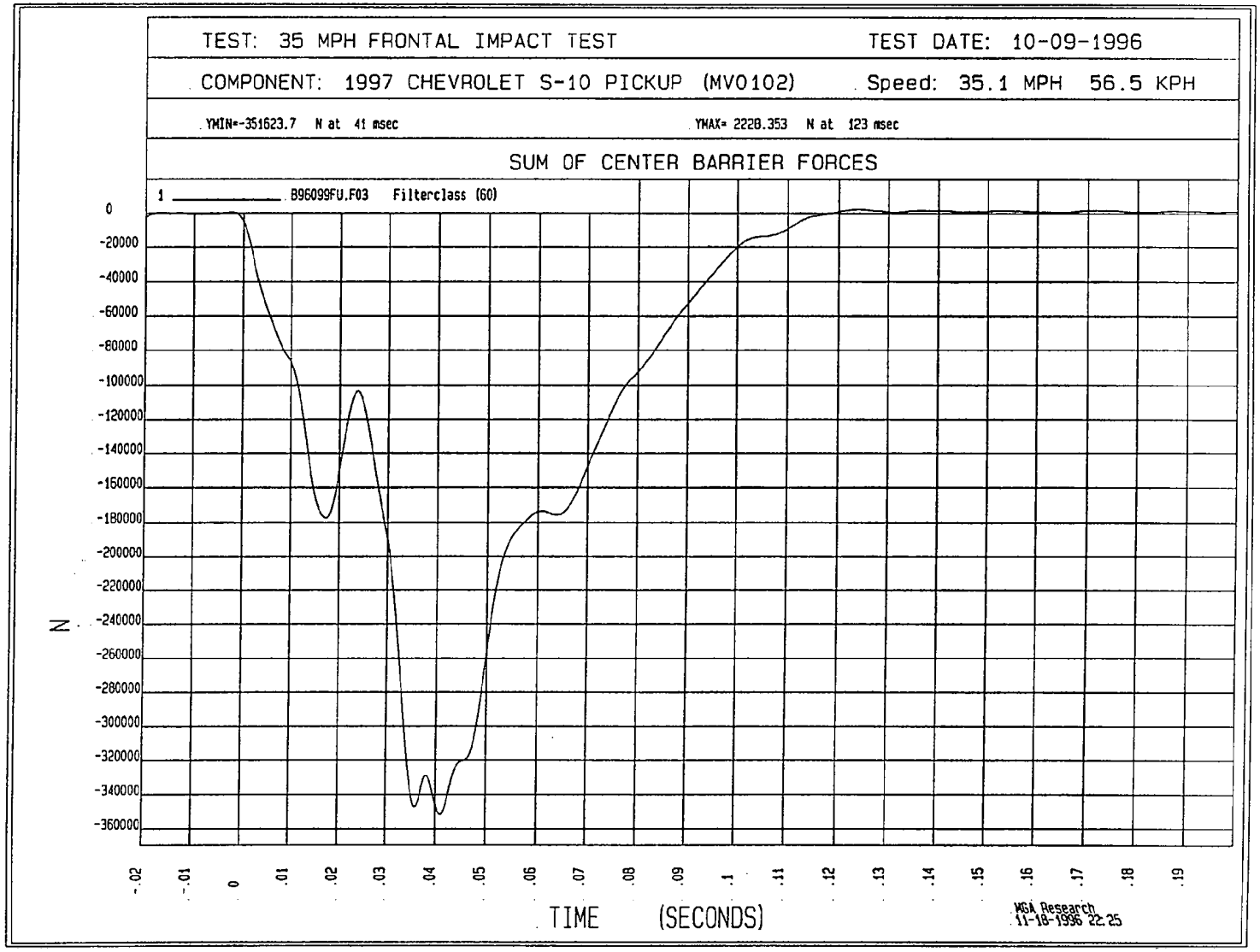
TIME (SECONDS)
MGA Research
11-18-1996 21:56


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-351623.7 N at 41 msec
YMAX= 2228.353 N at 123 msec
SUM OF CENTER BARRIER FORCES
1 B96099FU.F03 Filterclass (60)
0
-20000
-40000
-60000
-80000
-100000
-120000
-140000
-160000
-180000
-200000
-220000
-240000
-260000
-280000
-300000
-320000
-340000
-360000
N
-.02
-.01
0
.01
.02
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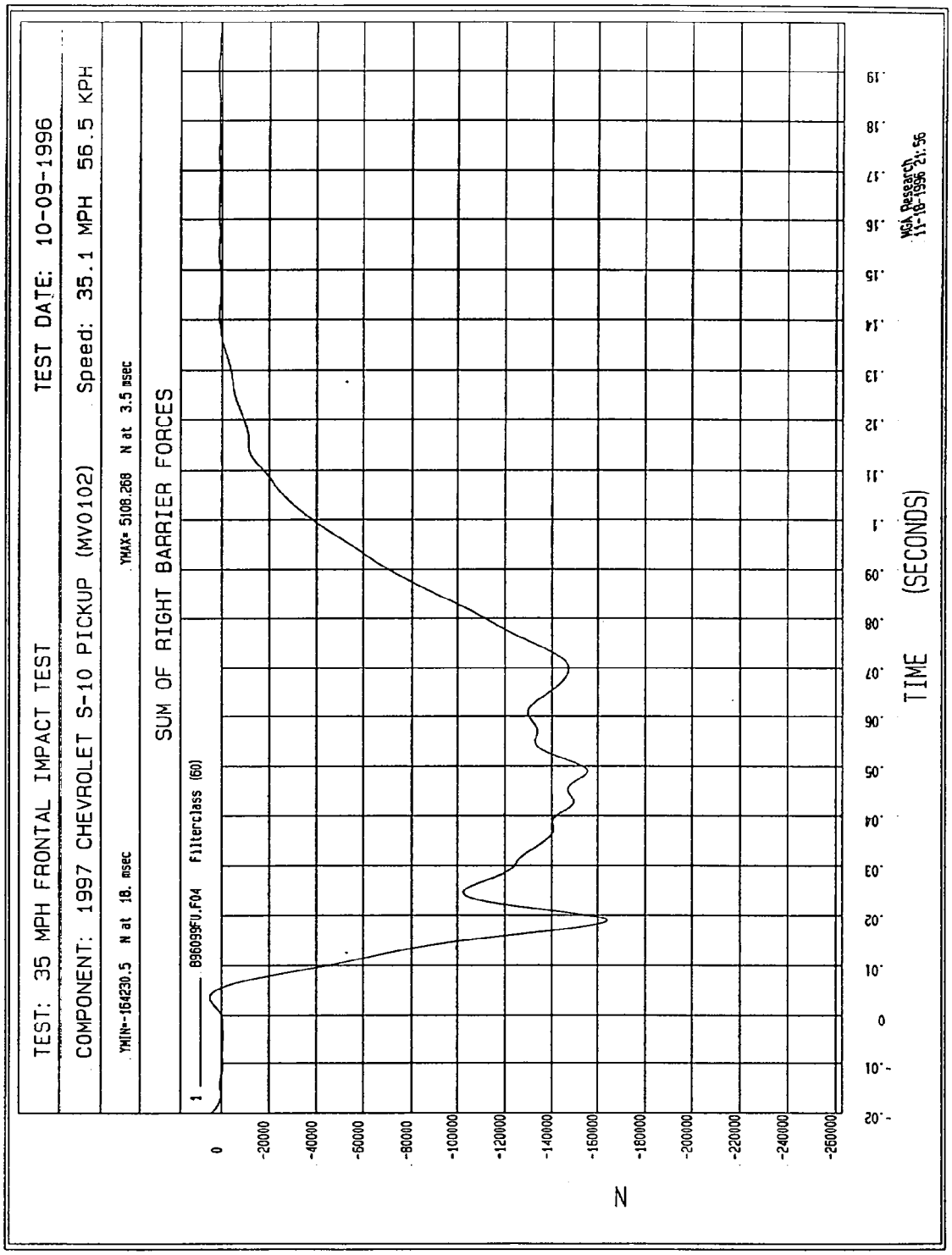
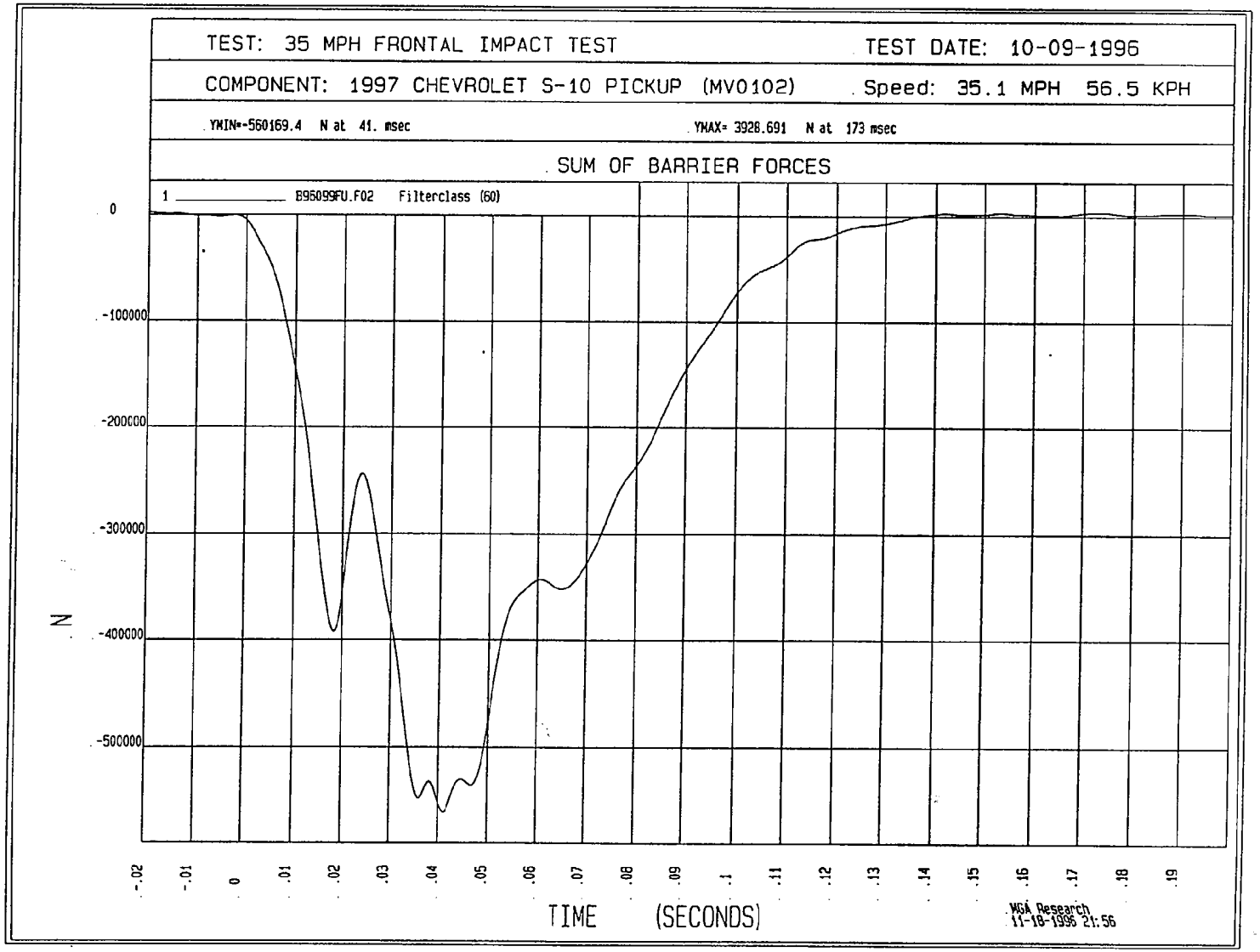
TIME (SECONDS)
MGA Research
11-18-1996 22:25


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-164230.5 N at 18. msec
YMAX= 5108.268 N at 3.5 msec
SUM OF RIGHT BARRIER FORCES
1 ——— 896099FU.F04 Filterclass (60)
N
TIME (SECONDS)
Mga Research
11-18-1996 21:56


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-560169.4 N at 41. msec
YMAX= 3928.691 N at 173 msec
SUM OF BARRIER FORCES
1 B95099FU.F02 Filterclass (60)
0
-100000
-200000
-300000
-400000
-500000
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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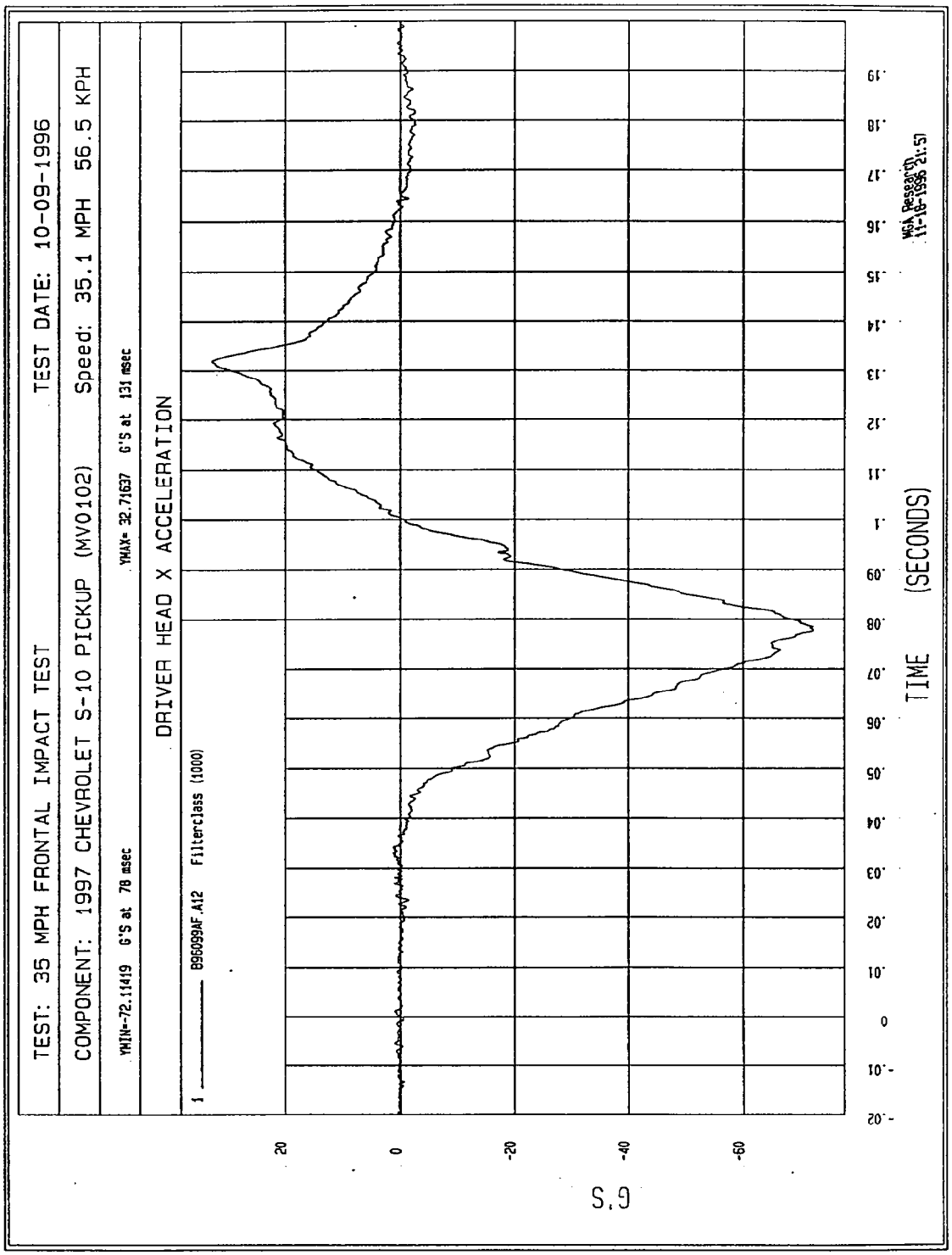
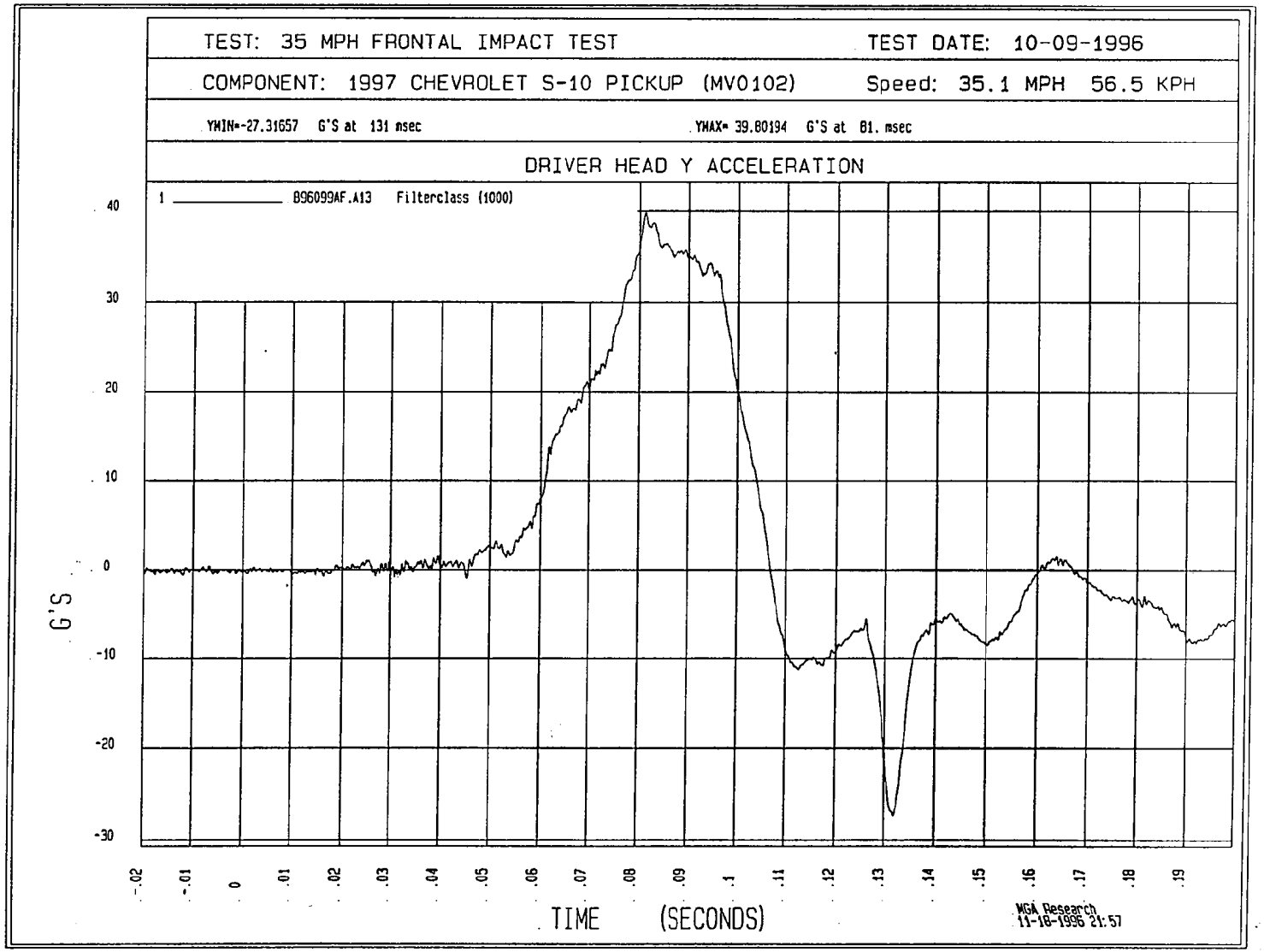
TIME (SECONDS)
MGA Research
11-18-1996 21:56


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-72.11419 G'S at 78 msec
YMAX= 32.71637 G'S at 131 msec
DRIVER HEAD X ACCELERATION
1 _____ 896099AF.A12 Filterclass (1000)
20
0
-20
-40
-60
G'S
TIME (SECONDS)
-20
-10
0
10
20
01
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
MGA Research
11-18-1996 21:57


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-27.31657 G'S at 131 msec
YMAX= 39.80194 G'S at 81. msec
DRIVER HEAD Y ACCELERATION
1 896099AF.A13 Filterclass (1000)
40
30
20
10
0
-10
-20
-30
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
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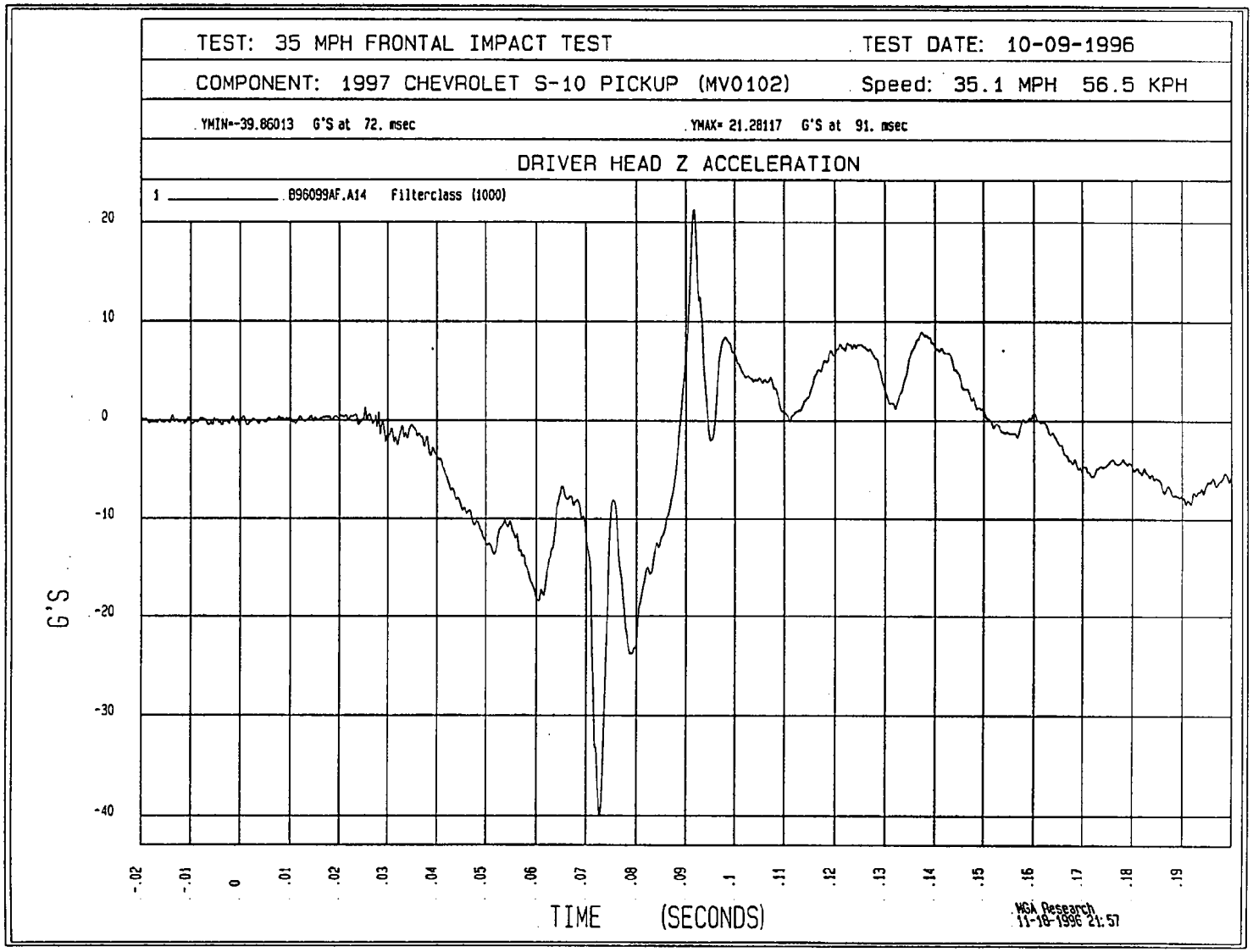
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:57


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-39.86013 G'S at 72. msec
YMAX= 21.28117 G'S at 91. msec
DRIVER HEAD Z ACCELERATION
1 B96099AF.A14 Filterclass (1000)
20
10
0
-10
-20
-30
-40
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
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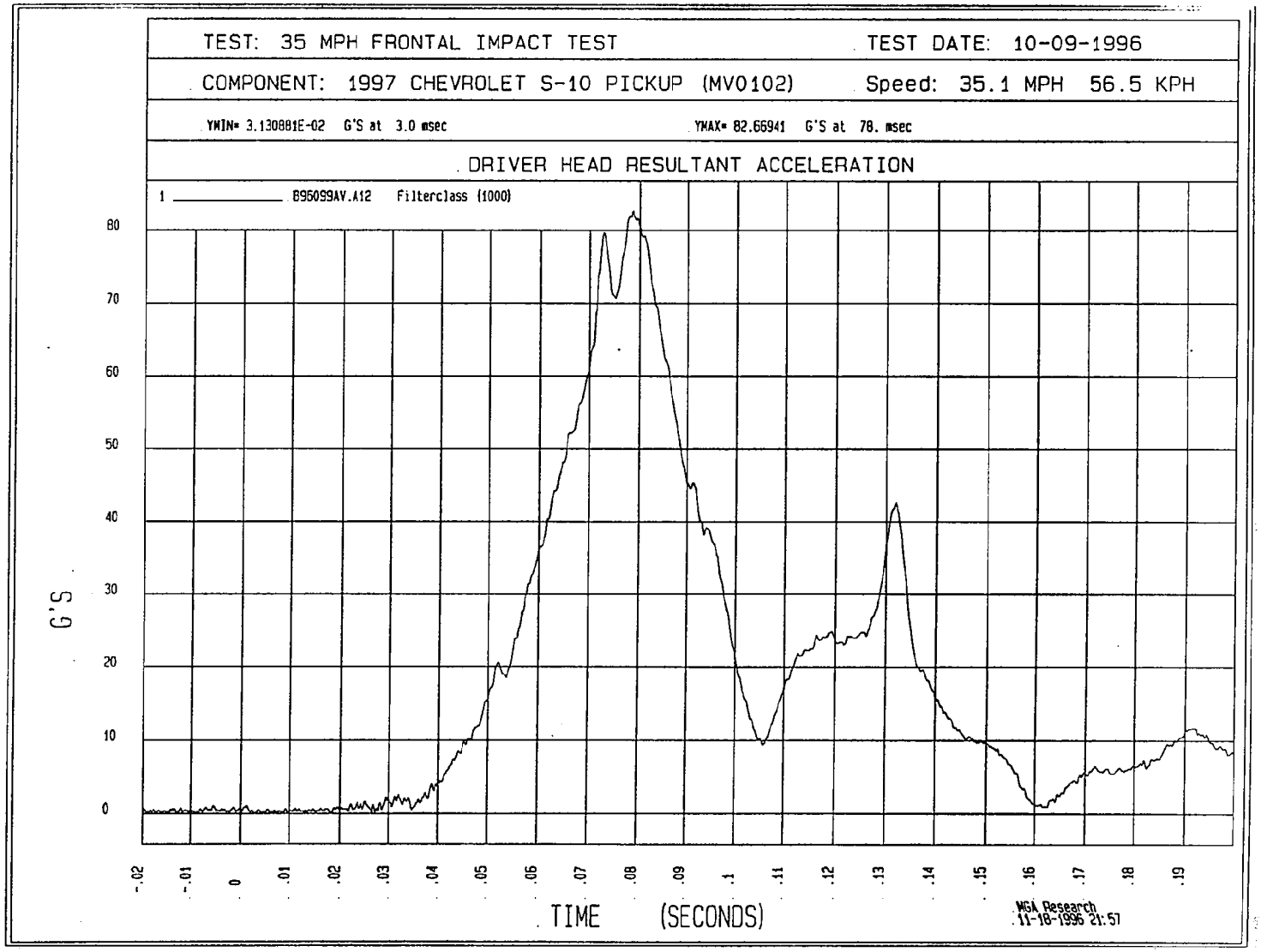
TIME (SECONDS)
MGA Research
11-18-1996 21:57


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 3.130881E-02 G'S at 3.0 msec
YMAX= 82.66941 G'S at 78. msec
DRIVER HEAD RESULTANT ACCELERATION
1 B95099AV.A12 Filterclass (1000)
80
70
60
50
40
30
20
10
0
G's
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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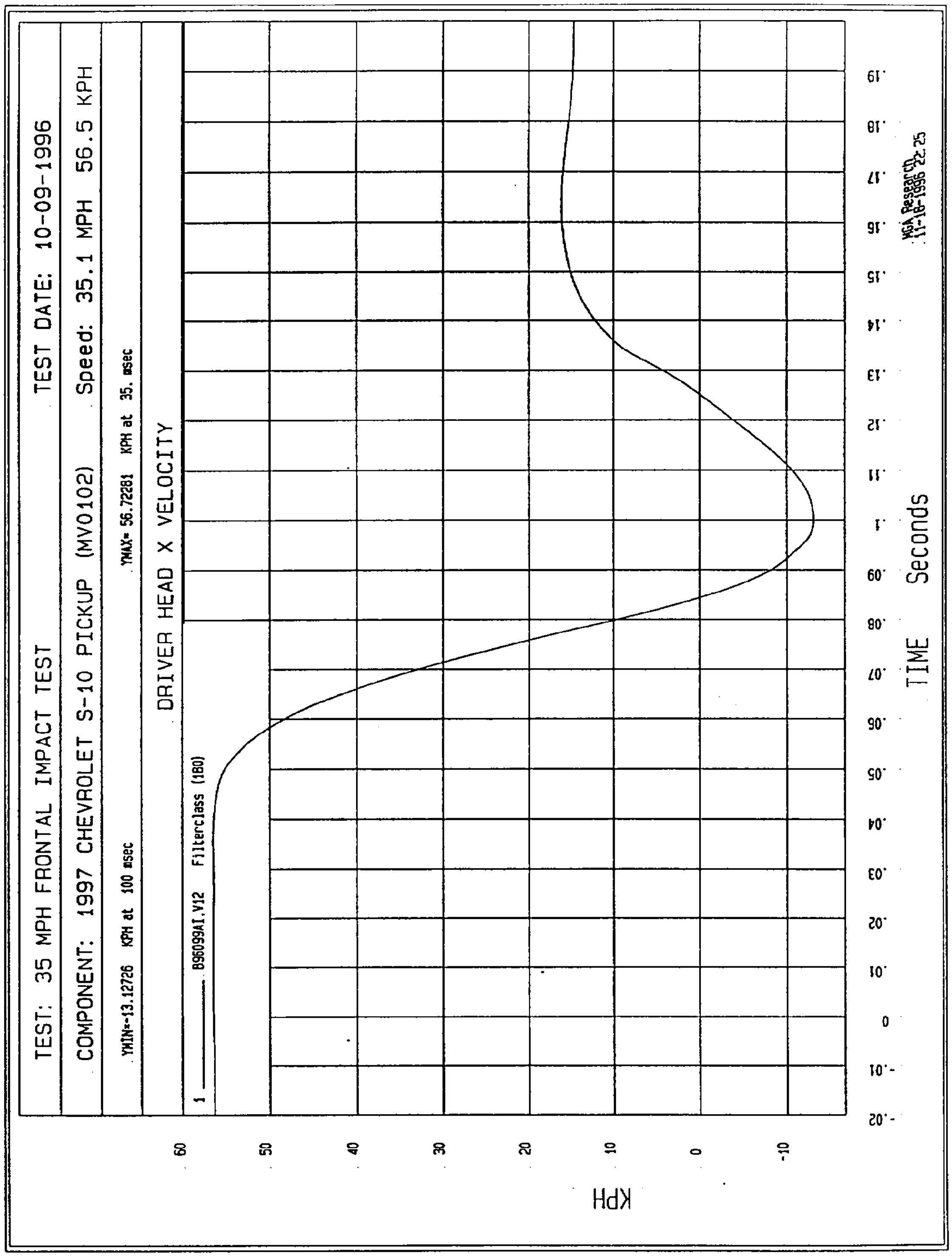
TIME (SECONDS)
MGA Research
11-18-1996 21:57



TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-13.12726 KPH at 100 msec
YMAX= 56.72281 KPH at 35. msec
DRIVER HEAD X VELOCITY
1 B96099AI.V12 Filterclass (180)
60
50
40
30
20
10
0
-10
KPH
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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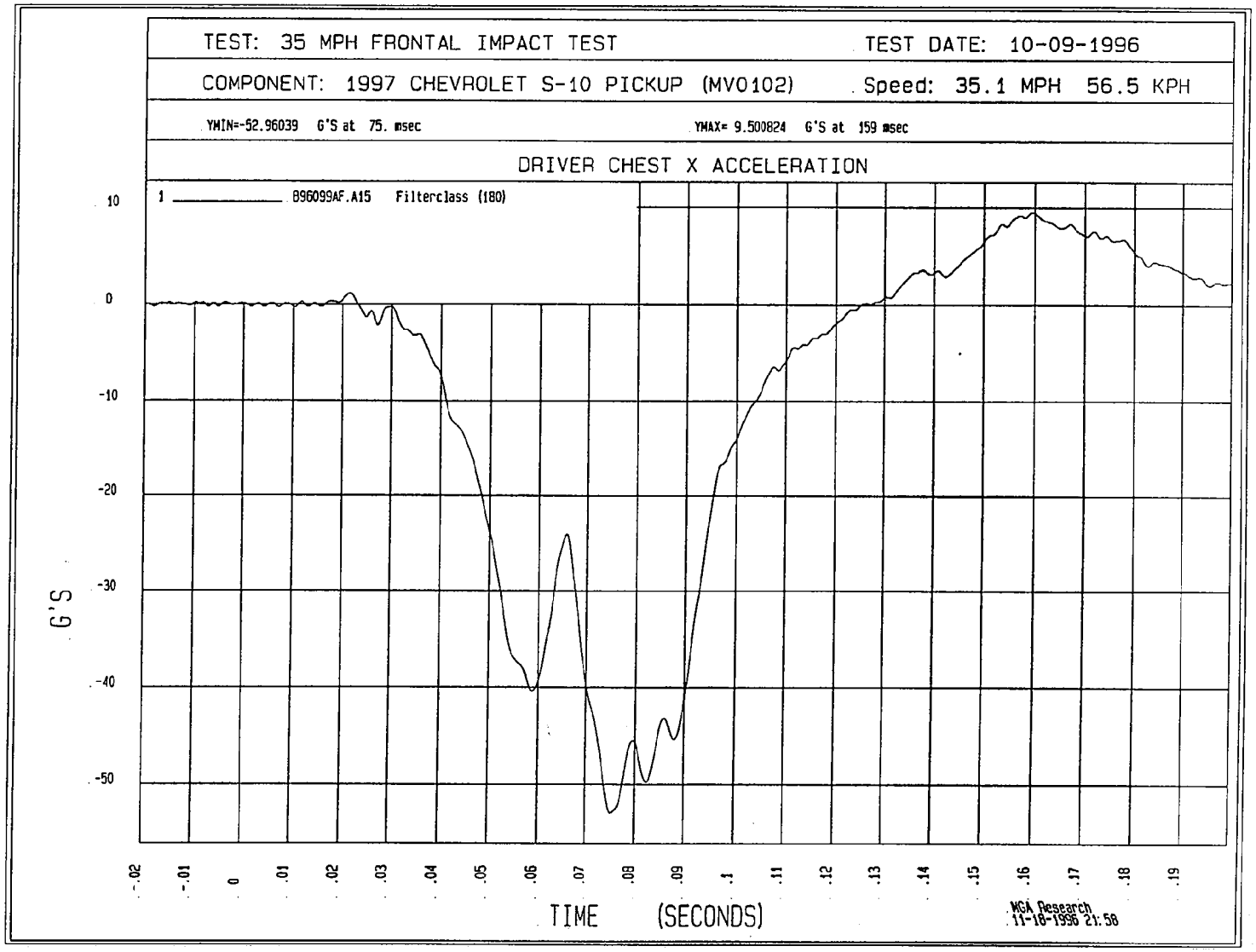
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:25


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-52.96039 G'S at 75. msec
YMAX= 9.500824 G'S at 159 msec
DRIVER CHEST X ACCELERATION
1 B96099AF.A15 Filterclass (180)
10
0
-10
-20
-30
-40
-50
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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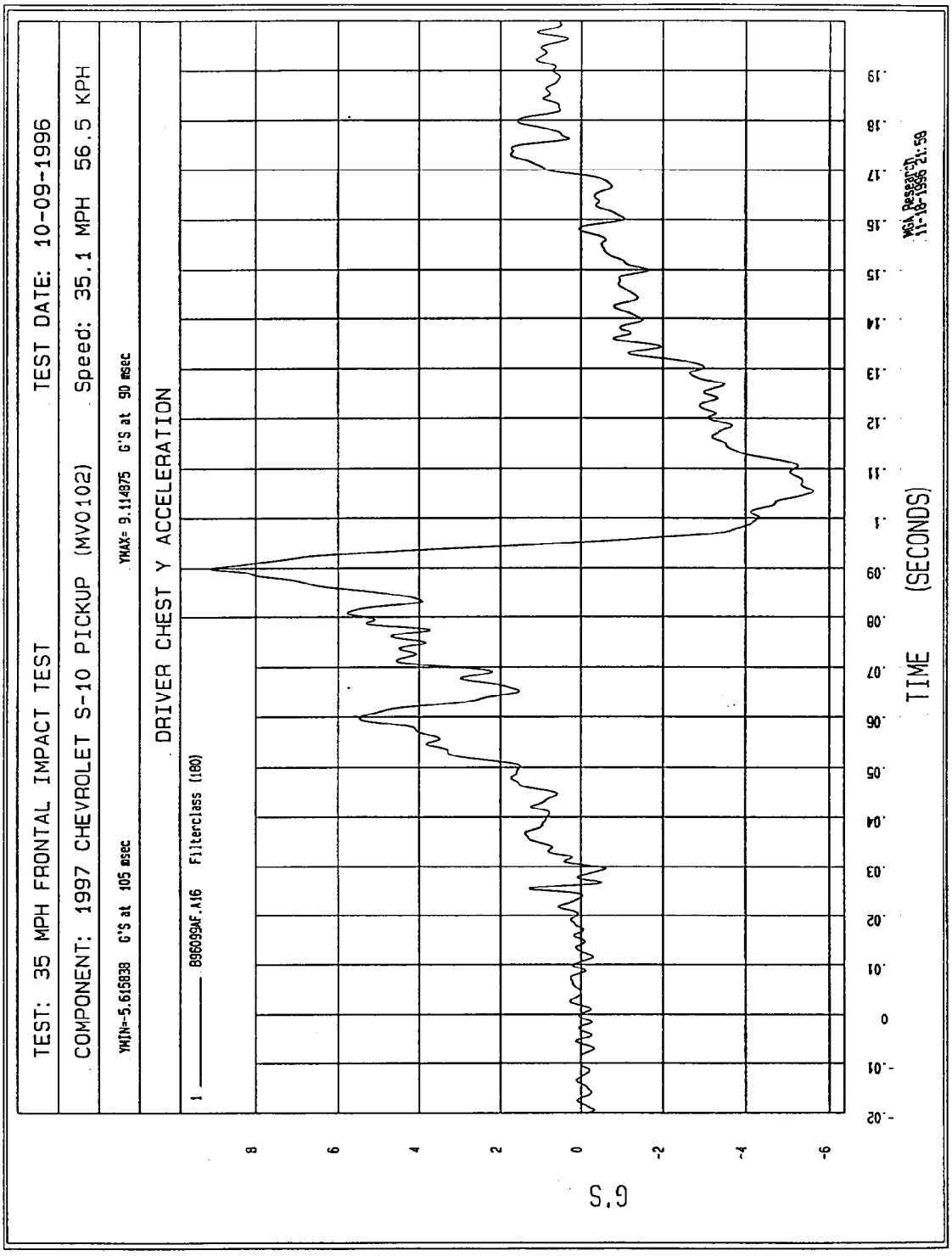
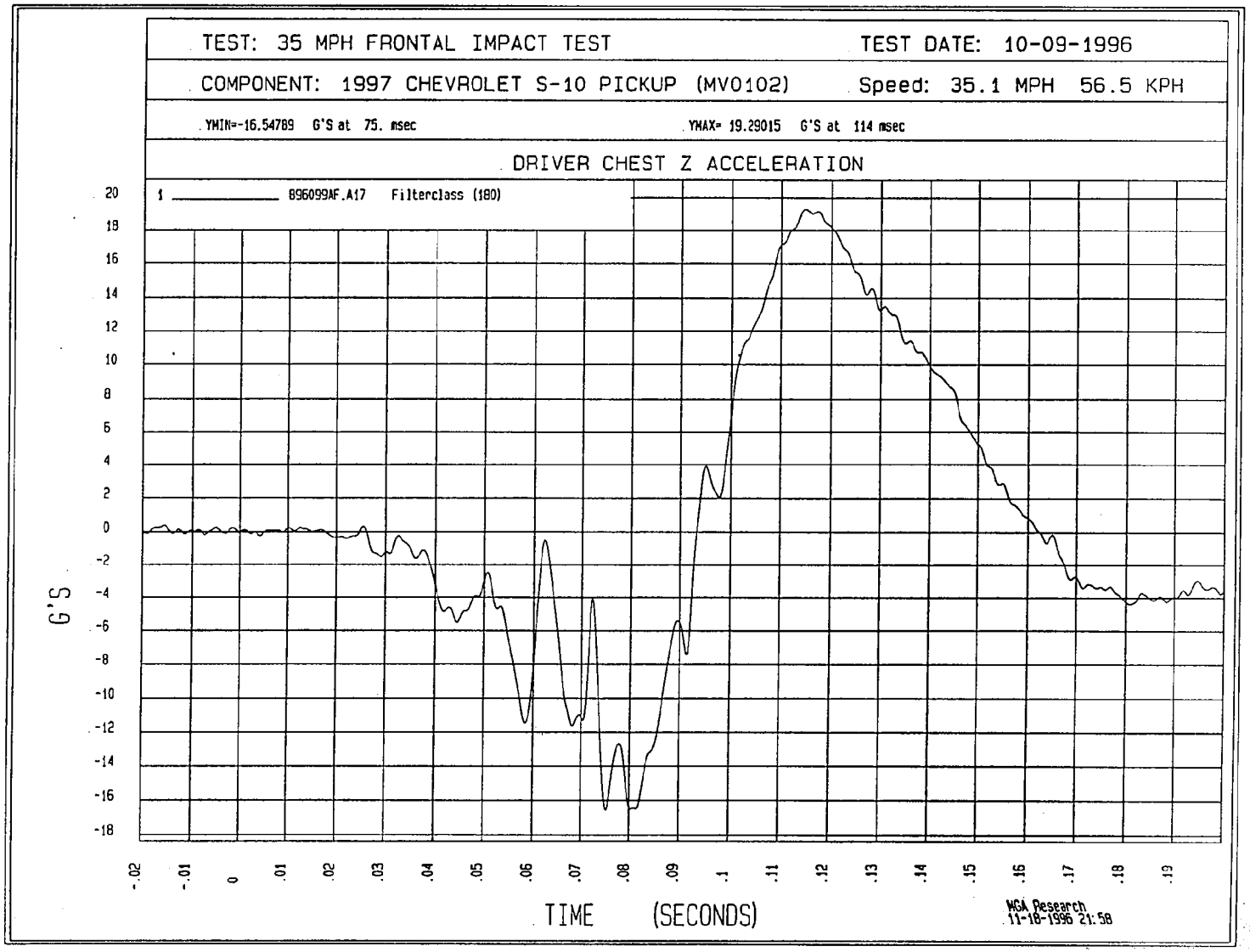
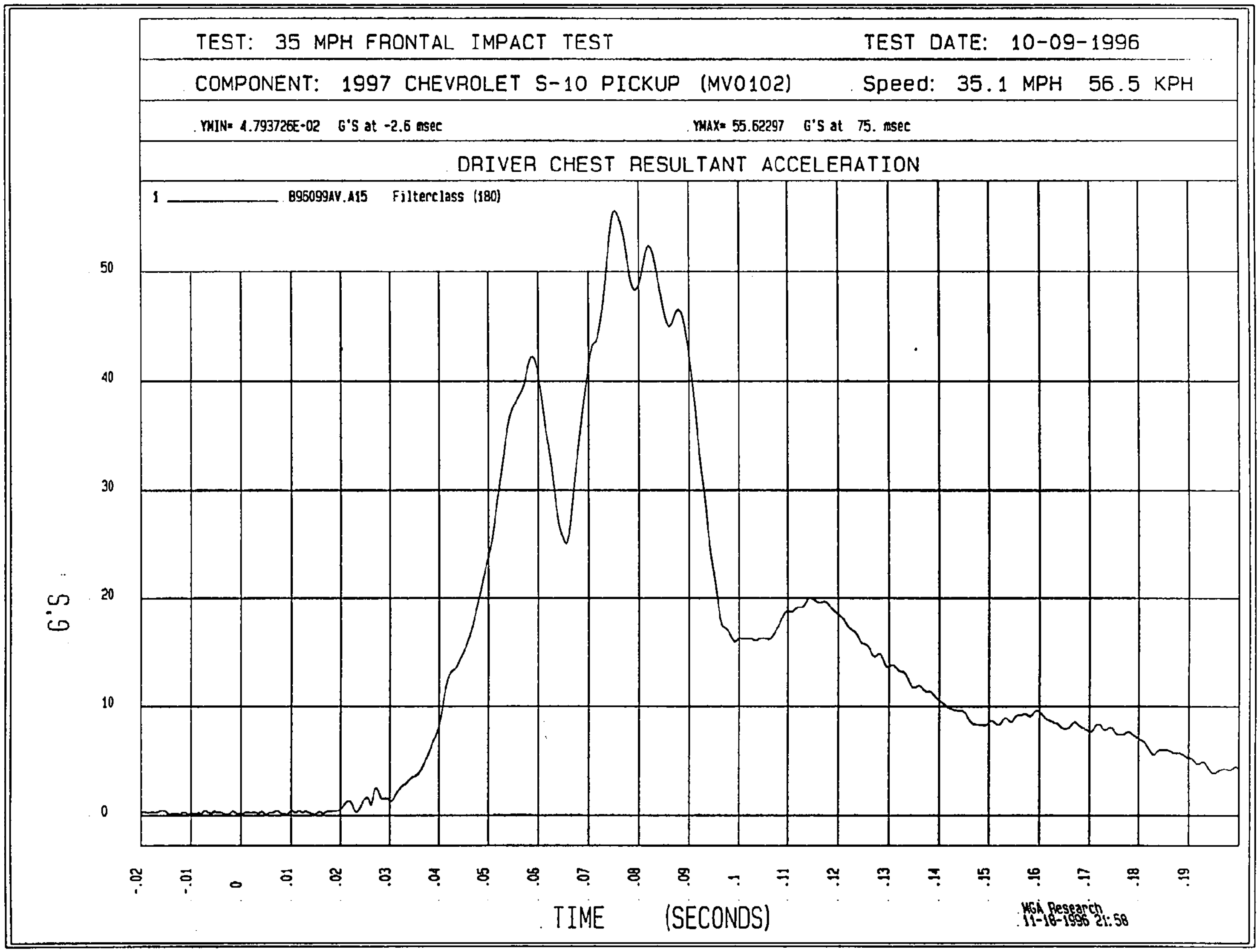
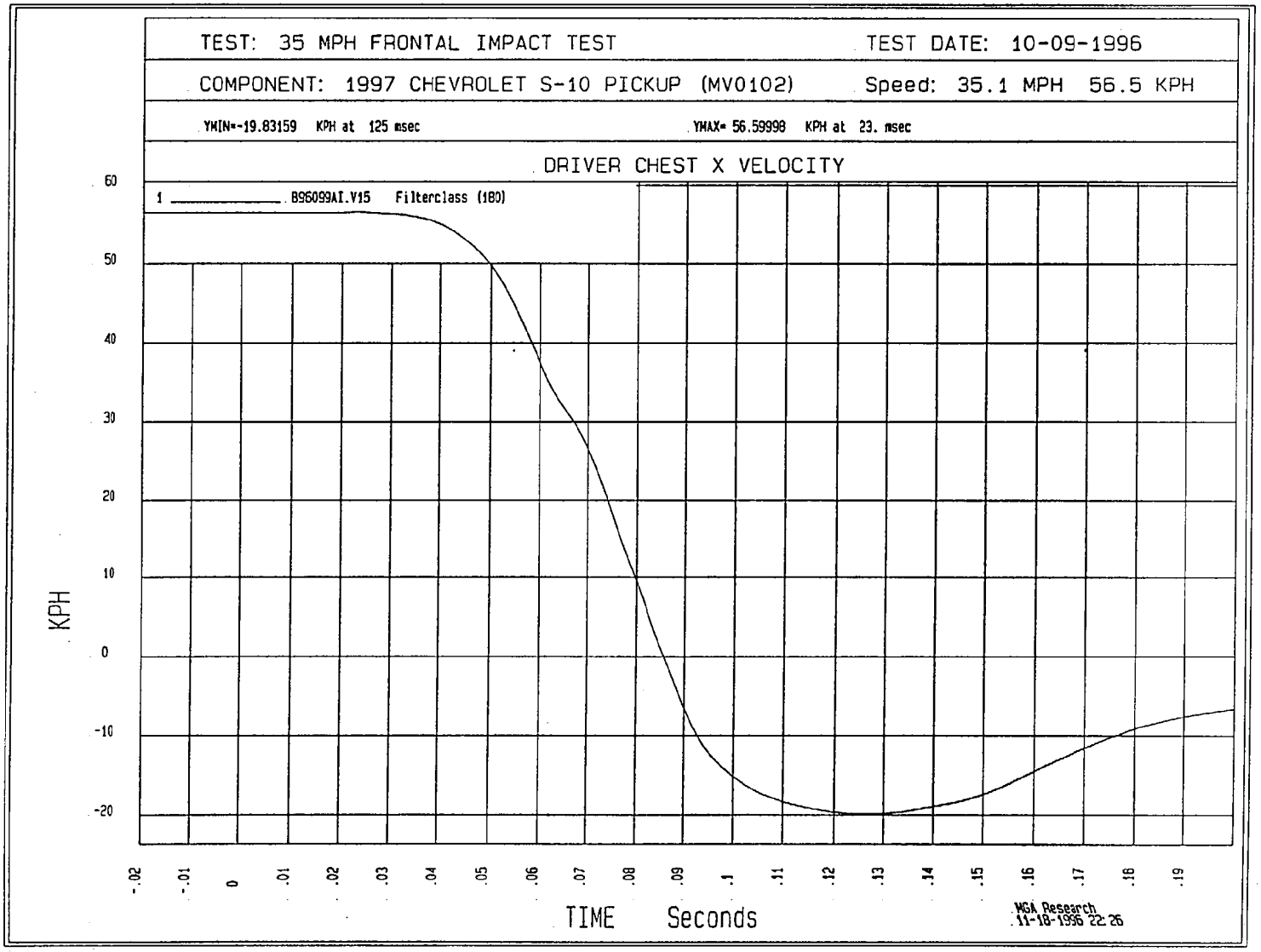
TIME (SECONDS)
MGA Research
11-18-1996 21:58


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-5.615838 G'S at 105 msec
YMAX= 9.114875 G'S at 90 msec
DRIVER CHEST Y ACCELERATION
1 _____ B96099AF.A16 Filterclass (180)
8
6
4
2
0
-2
-4
-6
G'S
.19
.18
.17
.16
.15
.14
.13
.12
.11
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (SECONDS)
MGA Research
11-18-1996 21:59


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-16.54789 G'S at 75. msec
YMAX= 19.29015 G'S at 114 msec
DRIVER CHEST Z ACCELERATION
1 896099AF.A17 Filterclass (180)
G'S
TIME (SECONDS)
MGA Research
11-18-1996 21:58



TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 4.793726E-02 G'S at -2.6 msec
YMAX= 55.62297 G'S at 75. msec
DRIVER CHEST RESULTANT ACCELERATION
1 B95099AV.A15 Filterclass (180)
50
40
30
20
10
0
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
WGA Research
11-18-1996 21:58


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-19.83159 KPH at 125 msec
YMAX= 56.59998 KPH at 23. msec
DRIVER CHEST X VELOCITY
1 B96099AI.V15 Filterclass (180)
KPH
60
50
40
30
20
10
0
-10
-20
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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.17
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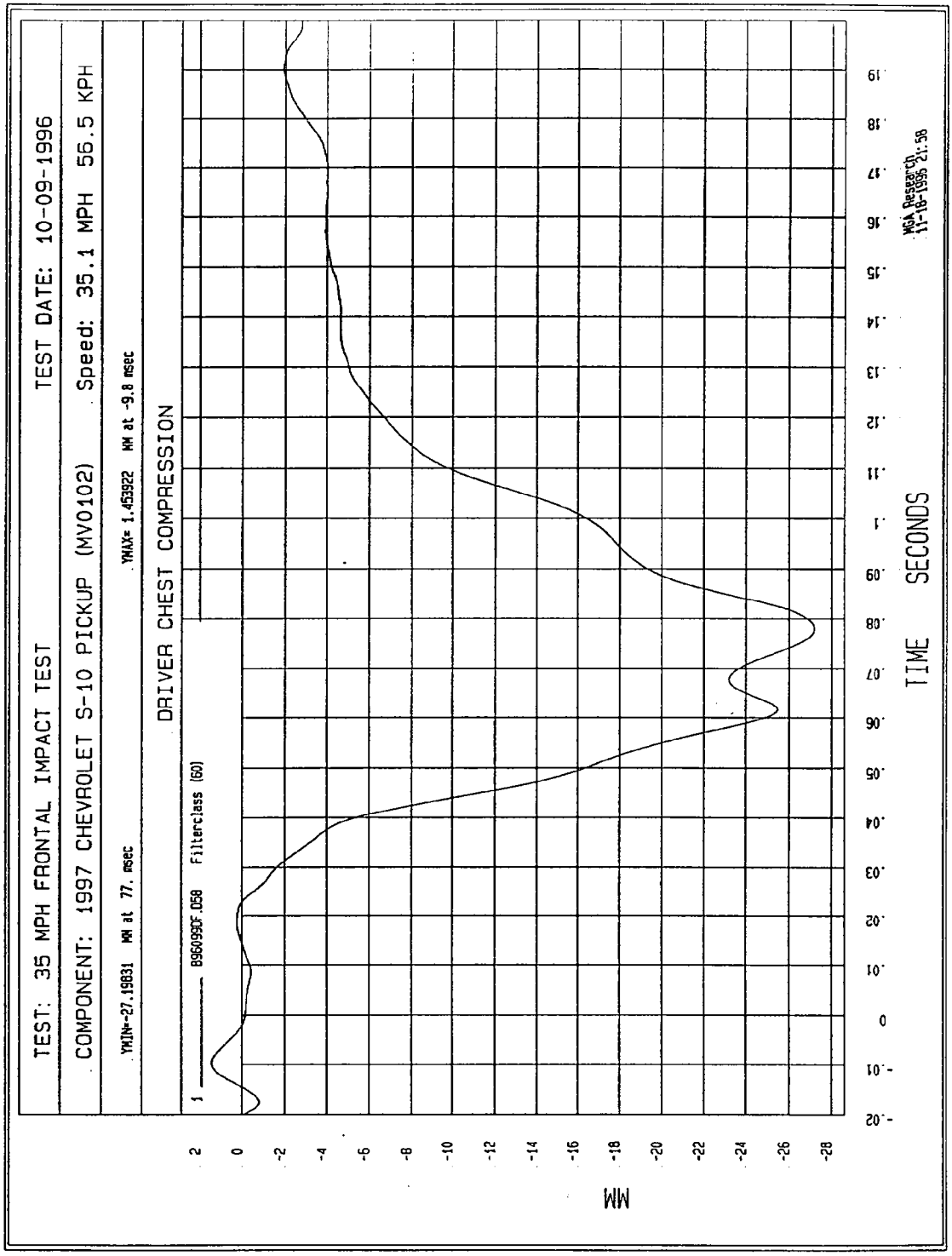
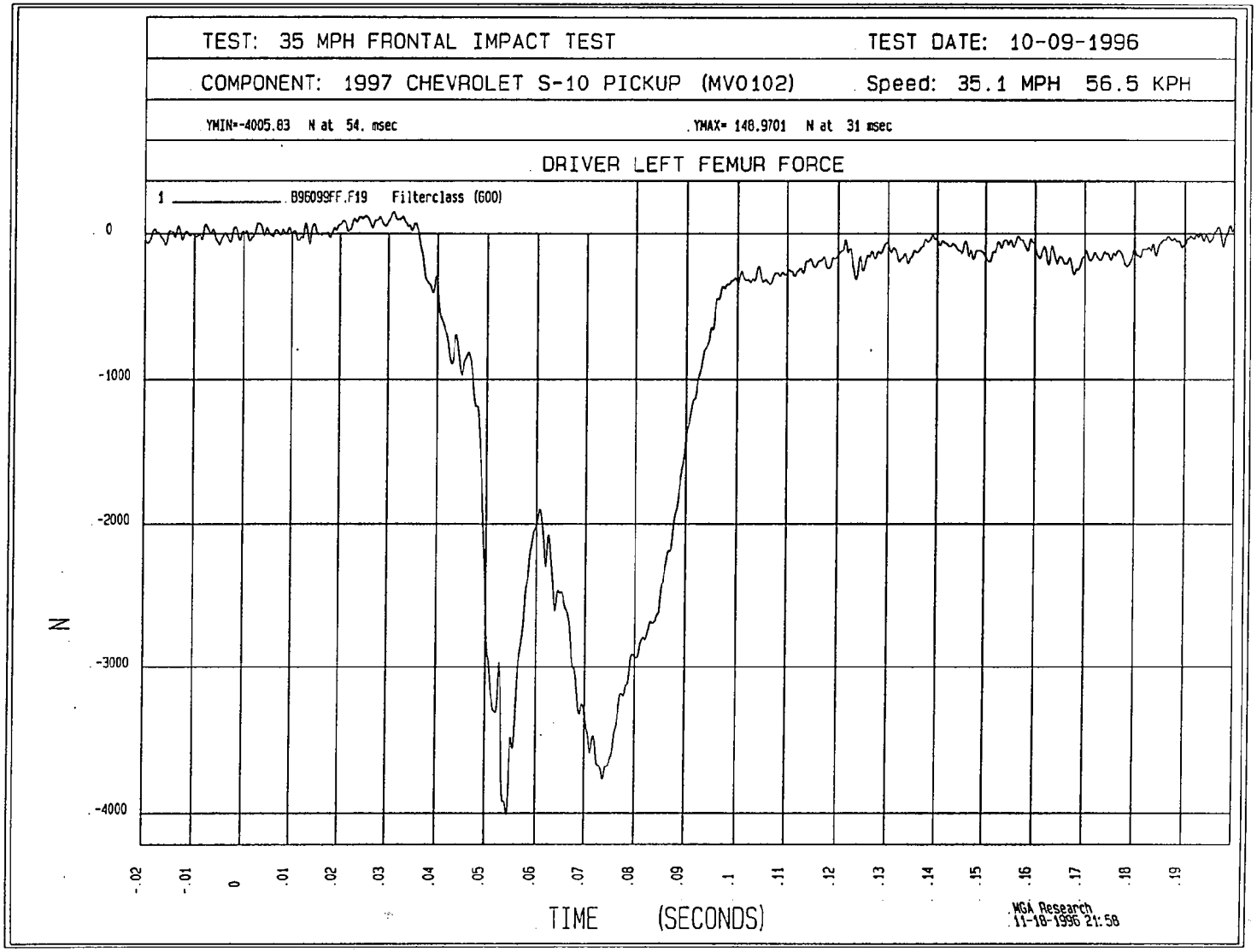
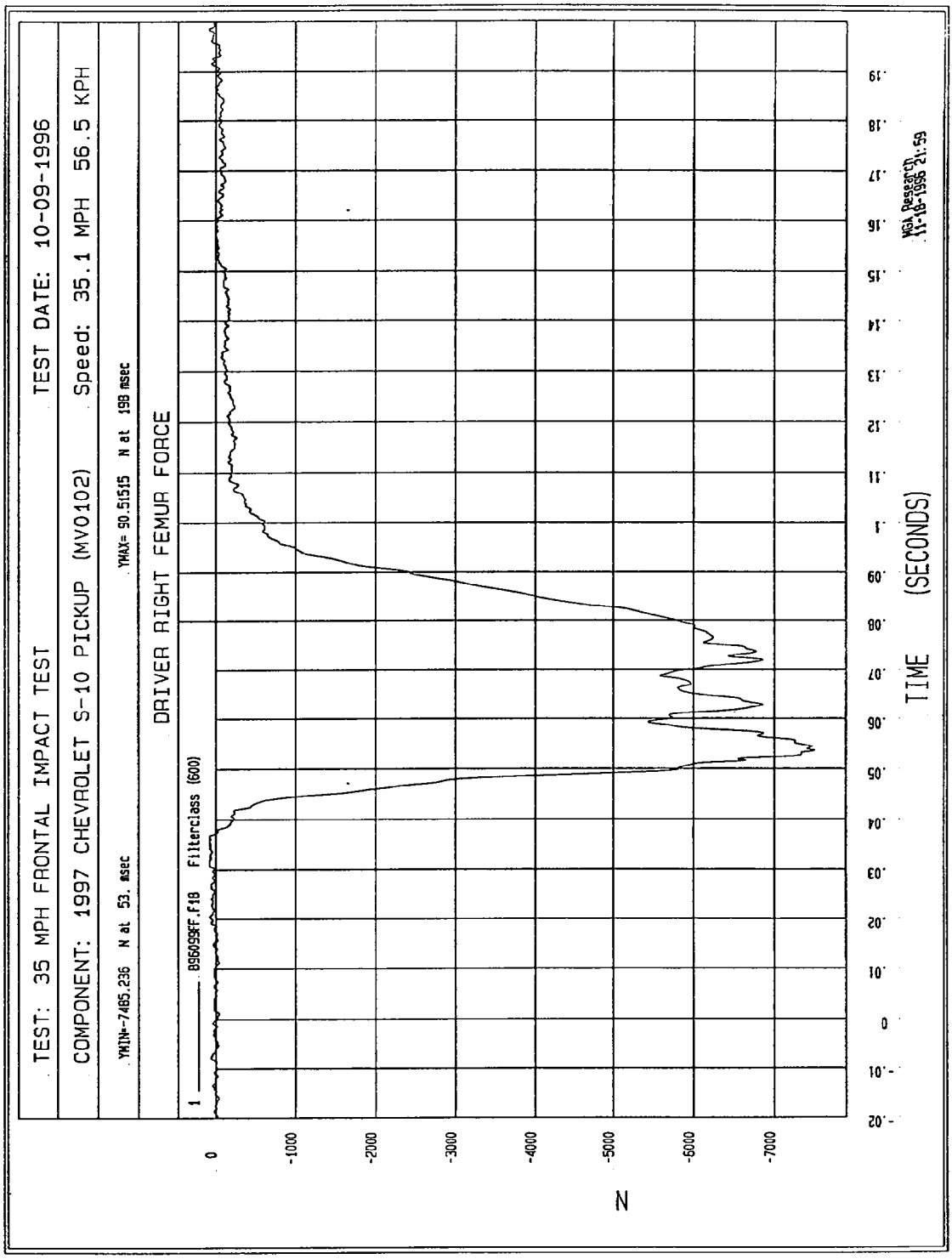
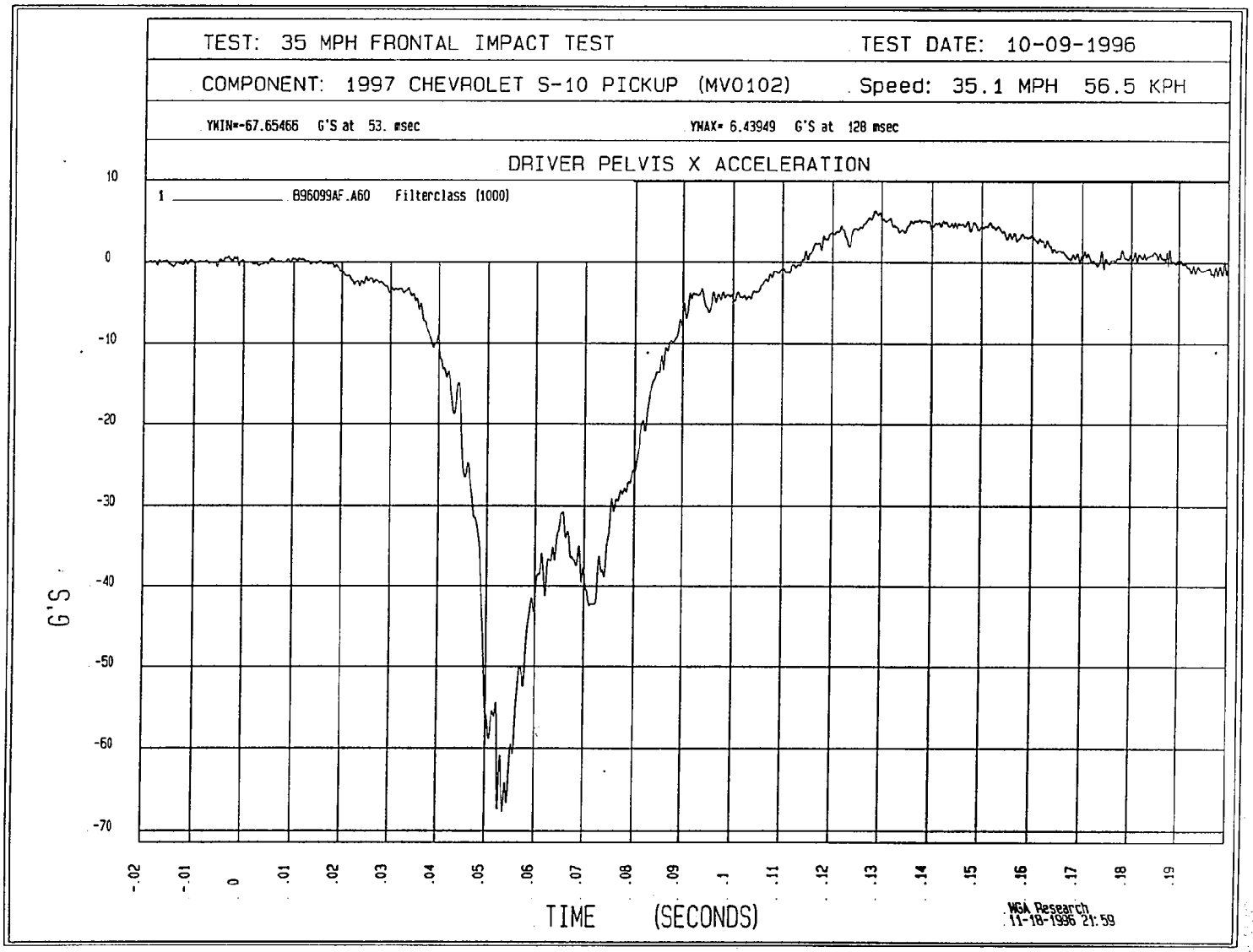
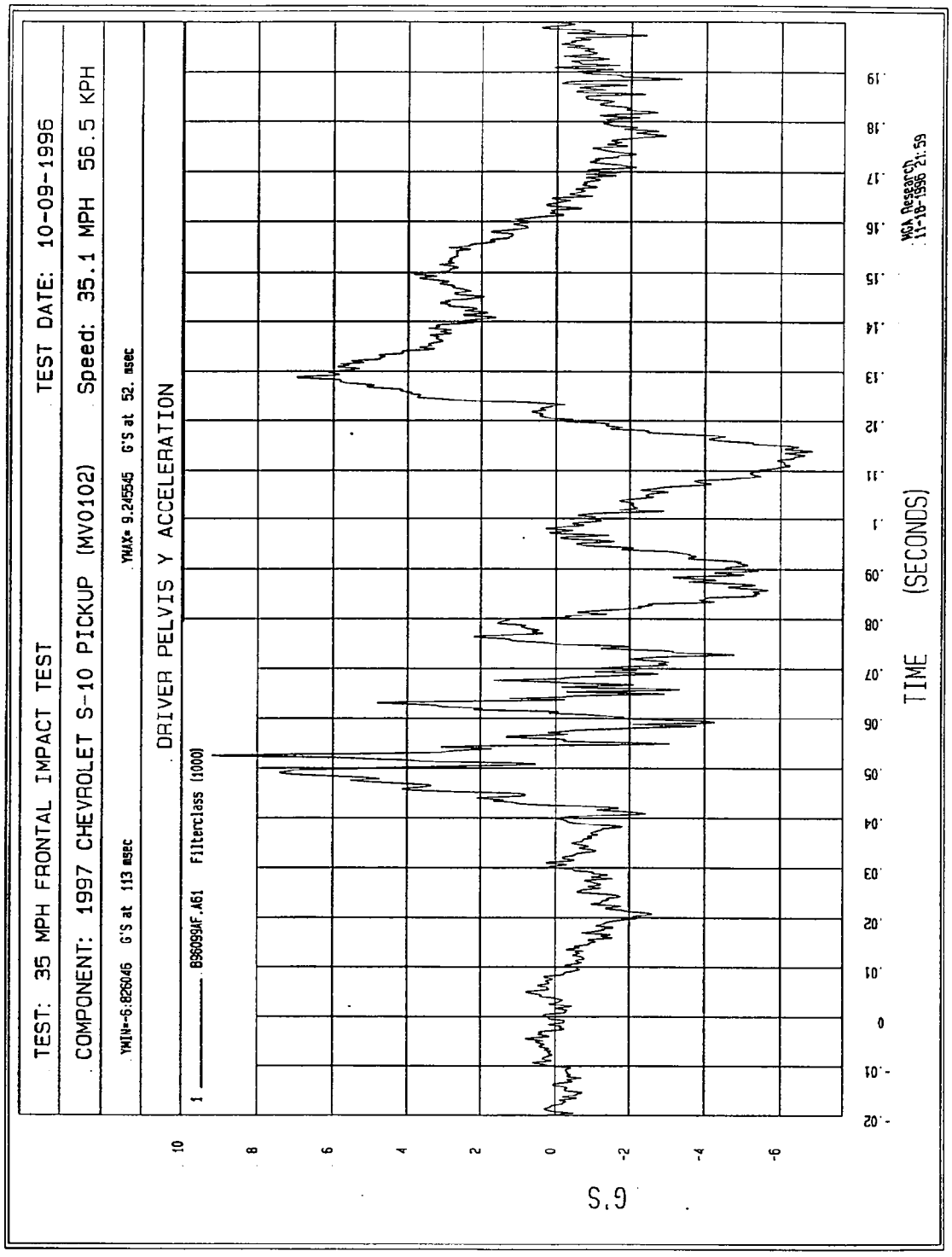
.19
TIME Seconds
MGA Research
11-18-1996 22:26

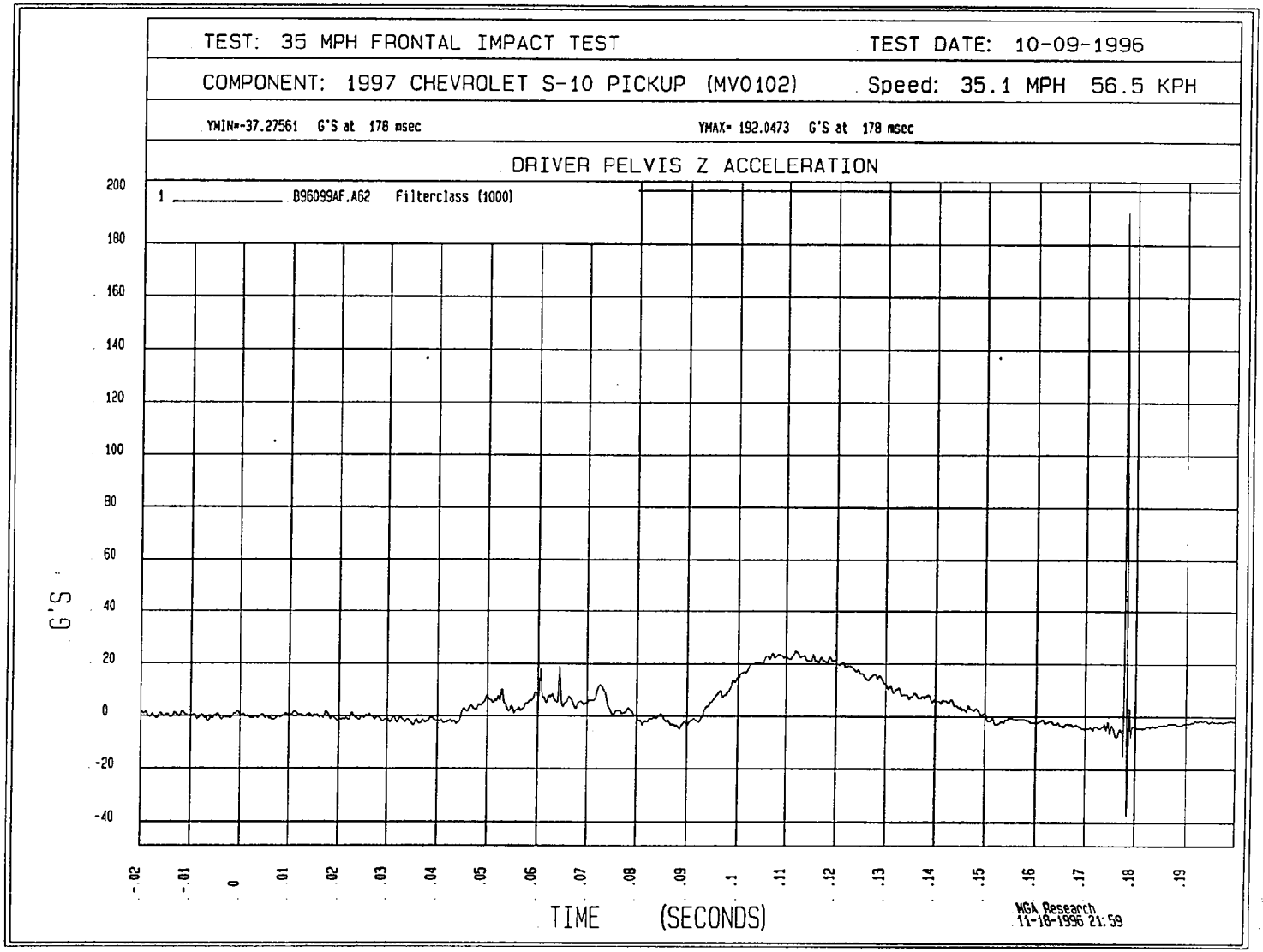

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-27.19831 MM at 77. msec
YMAX= 1.453922 MM at -9.8 msec
DRIVER CHEST COMPRESSION
1 B960990F.058 Filterclass (60)
MM
TIME SECONDS
MGA Research
11-16-1995 21:58

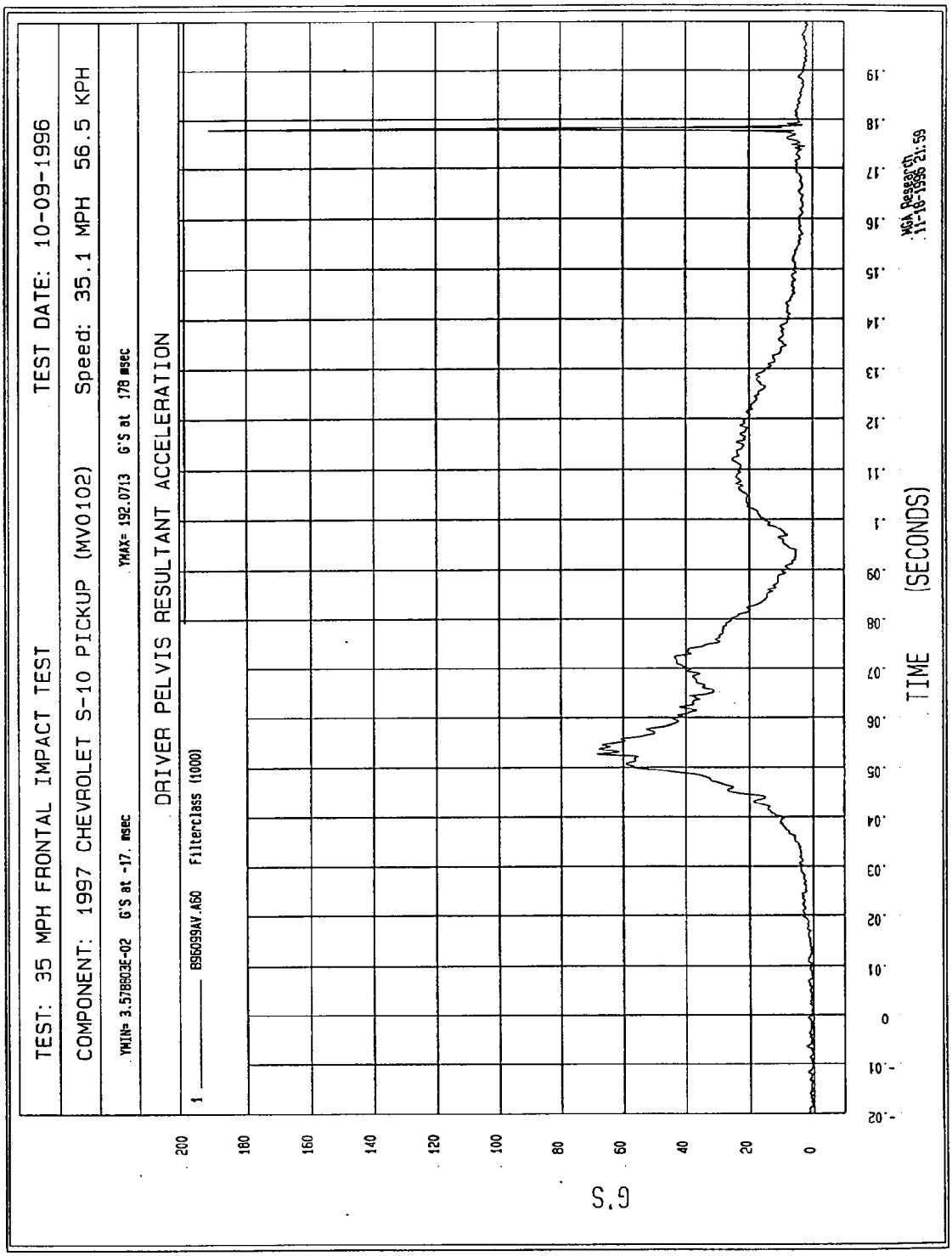

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-4005.83 N at 54. msec
YMAX= 148.9701 N at 31 msec
DRIVER LEFT FEMUR FORCE
1 B96099FF.F19 Filterclass (600)
0
-1000
-2000
-3000
-4000
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:58

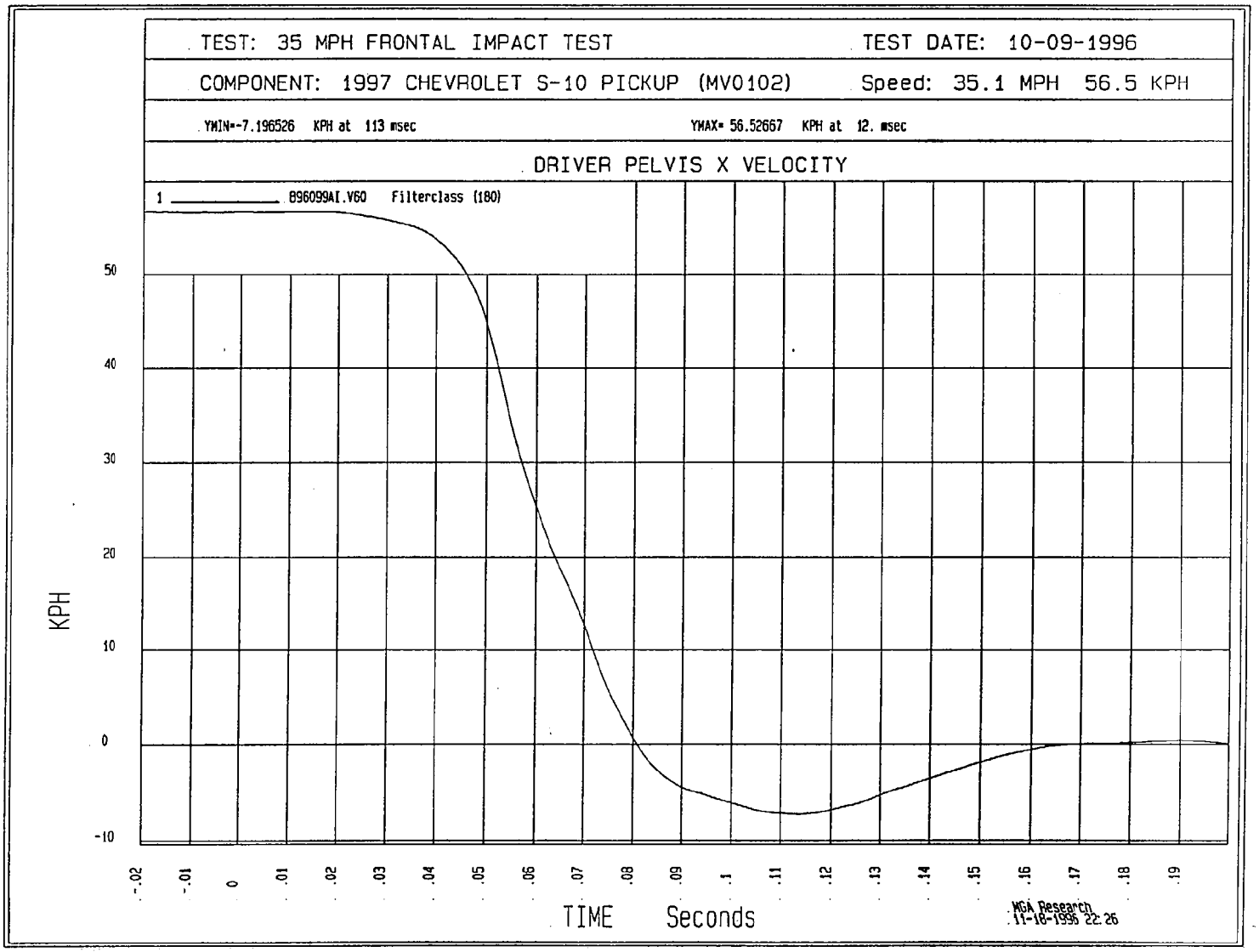

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-7485.236 N at 53. msec
YMAX= 90.51515 N at 198 msec
DRIVER RIGHT FEMUR FORCE
1 _____ 89609SRF.f18 Filterclass (600)
0
-1000
-2000
-3000
-4000
-5000
-6000
-7000
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:59

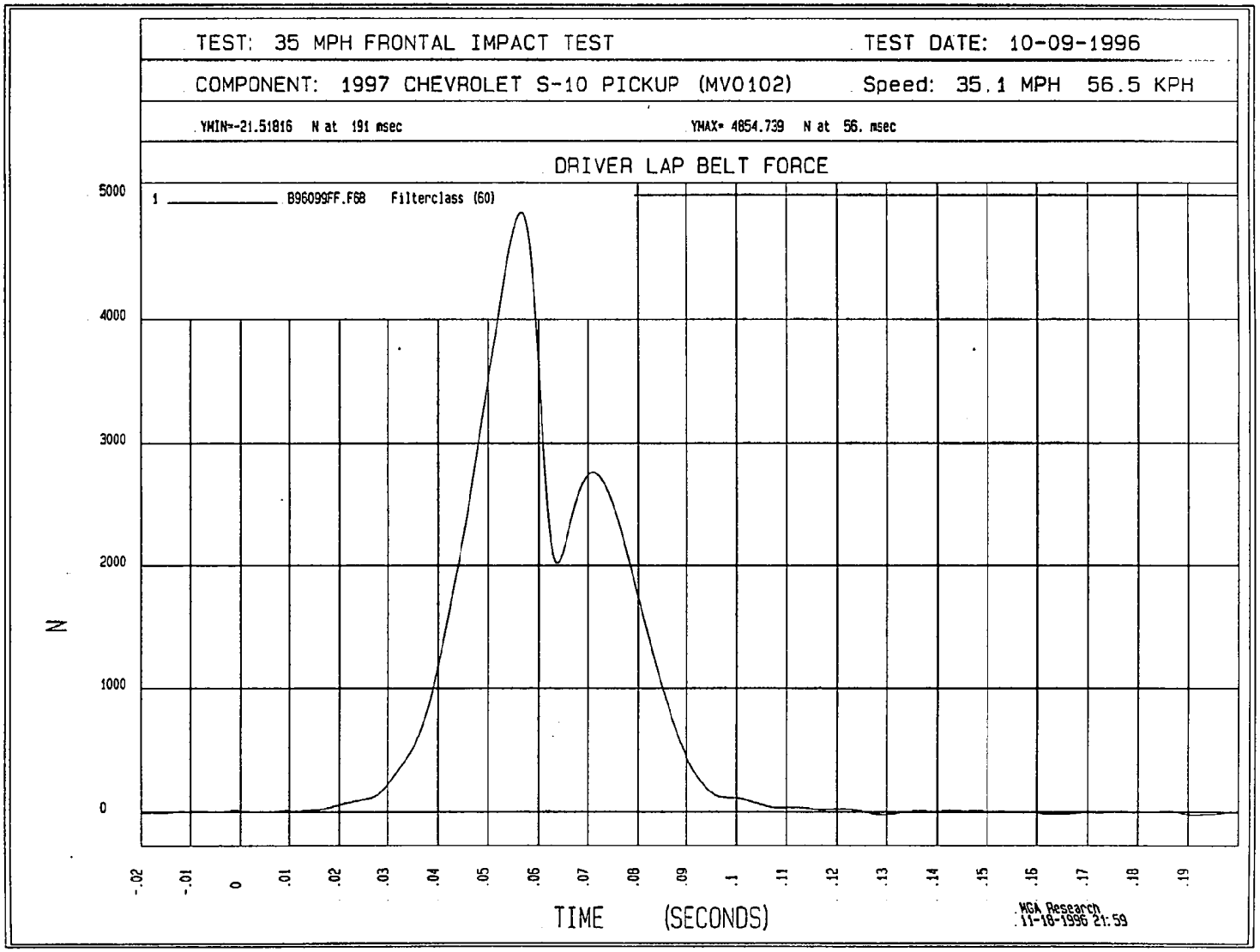

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-67.65466 G'S at 53. msec
YMAX= 6.43949 G'S at 128 msec
DRIVER PELVIS X ACCELERATION
1 896099AF.A60 Filterclass (1000)
10
0
-10
-20
-30
-40
-50
-60
-70
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:59

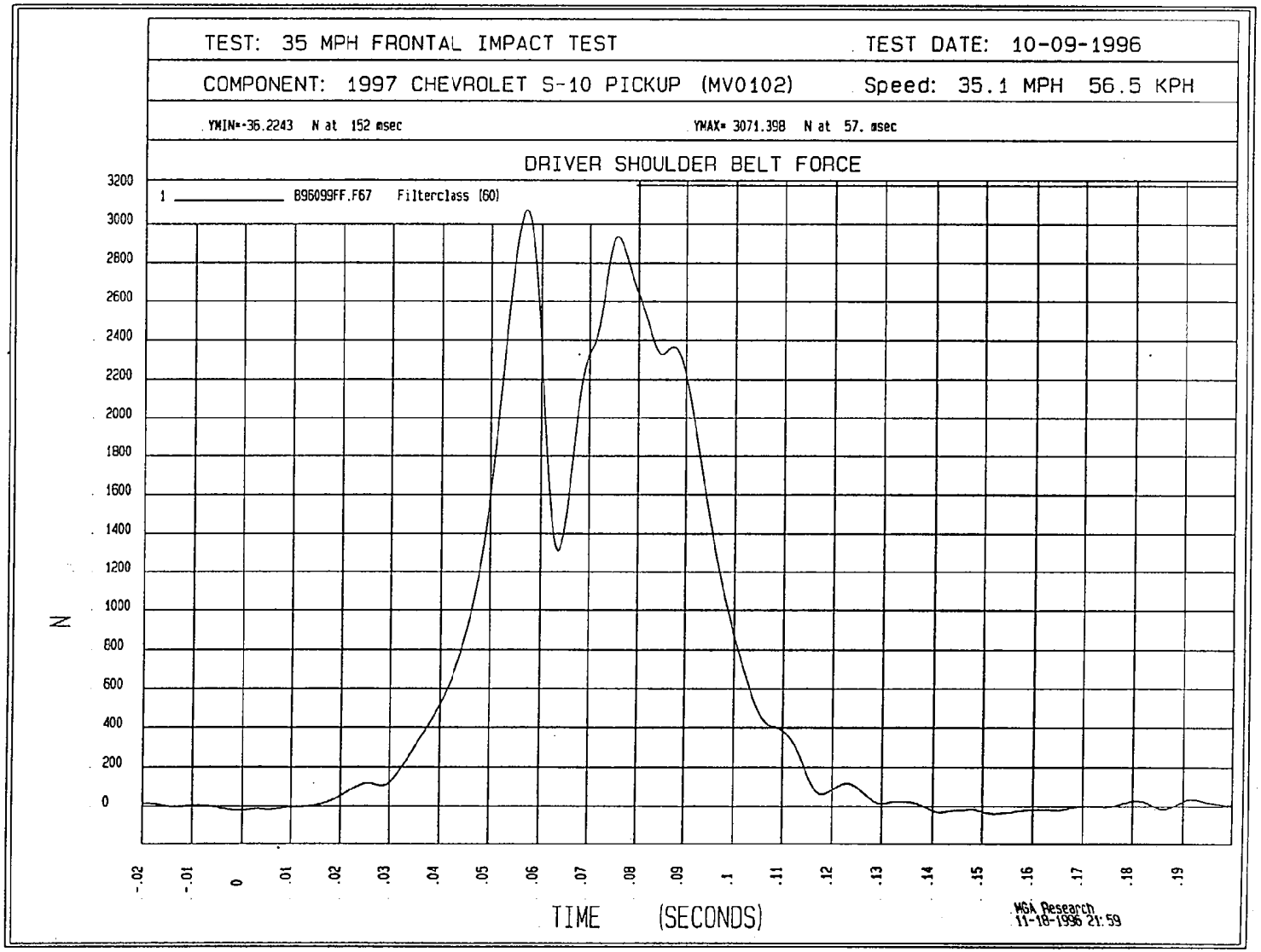

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-6.826046 G'S at 113 msec
YMAX= 9.245545 G'S at 52. msec
DRIVER PELVIS Y ACCELERATION
1 _____ 896099AF.A61 Filterclass (1000)
10
8
6
4
2
0
-2
-4
-6
G's
.19
.18
.17
.16
.15
.14
.13
.12
.11
1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (SECONDS)
MGA Research
11-18-1996 21:59


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-37.27561 G'S at 178 msec
YMAX= 192.0473 G'S at 178 msec
DRIVER PELVIS Z ACCELERATION
1 B96099AF.A62 Filterclass (1000)
200
180
160
140
120
100
80
60
40
20
0
-20
-40
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-10-1996 21:59


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 3.578603E-02 G'S at -17. msec
YMAX= 192.0713 G'S at 178 msec
DRIVER PELVIS RESULTANT ACCELERATION
1 R96099AV.A60 Filterclass (1000)
200
180
160
140
120
100
80
60
40
20
0
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:59


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-7.196526 KPH at 113 msec
YMAX= 56.52667 KPH at 12. msec
DRIVER PELVIS X VELOCITY
1 896099AI.V60 Filterclass (180)
KPH
50
40
30
20
10
0
-10
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-21.51816 N at 191 msec
YMAX= 4854.739 N at 56. msec
DRIVER LAP BELT FORCE
1 B96099FF.F68 Filterclass (60)
5000
4000
3000
2000
1000
0
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:59


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-36.2243 N at 152 msec
YMAX= 3071.398 N at 57. msec
DRIVER SHOULDER BELT FORCE
1 B96099FF.F67 Filterclass (60)
N
3200
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
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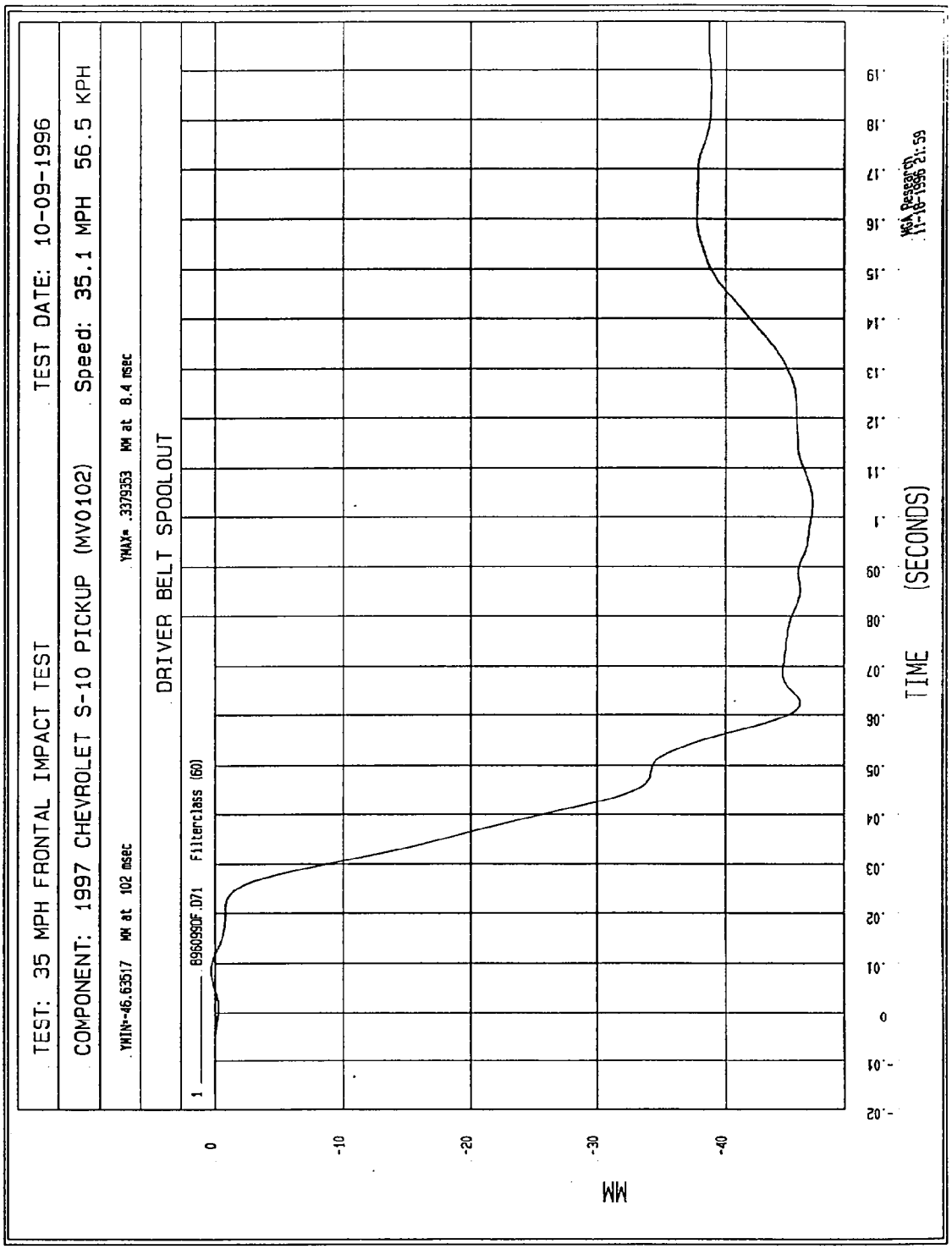
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:59


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-46.63517 MM at 102 msec
YMAX= .3379353 MM at 8.4 msec
DRIVER BELT SPOOLOUT
1 8960990F.071 Filterclass (60)
MM
0
-10
-20
-30
-40
TIME (SECONDS)
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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.11
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.13
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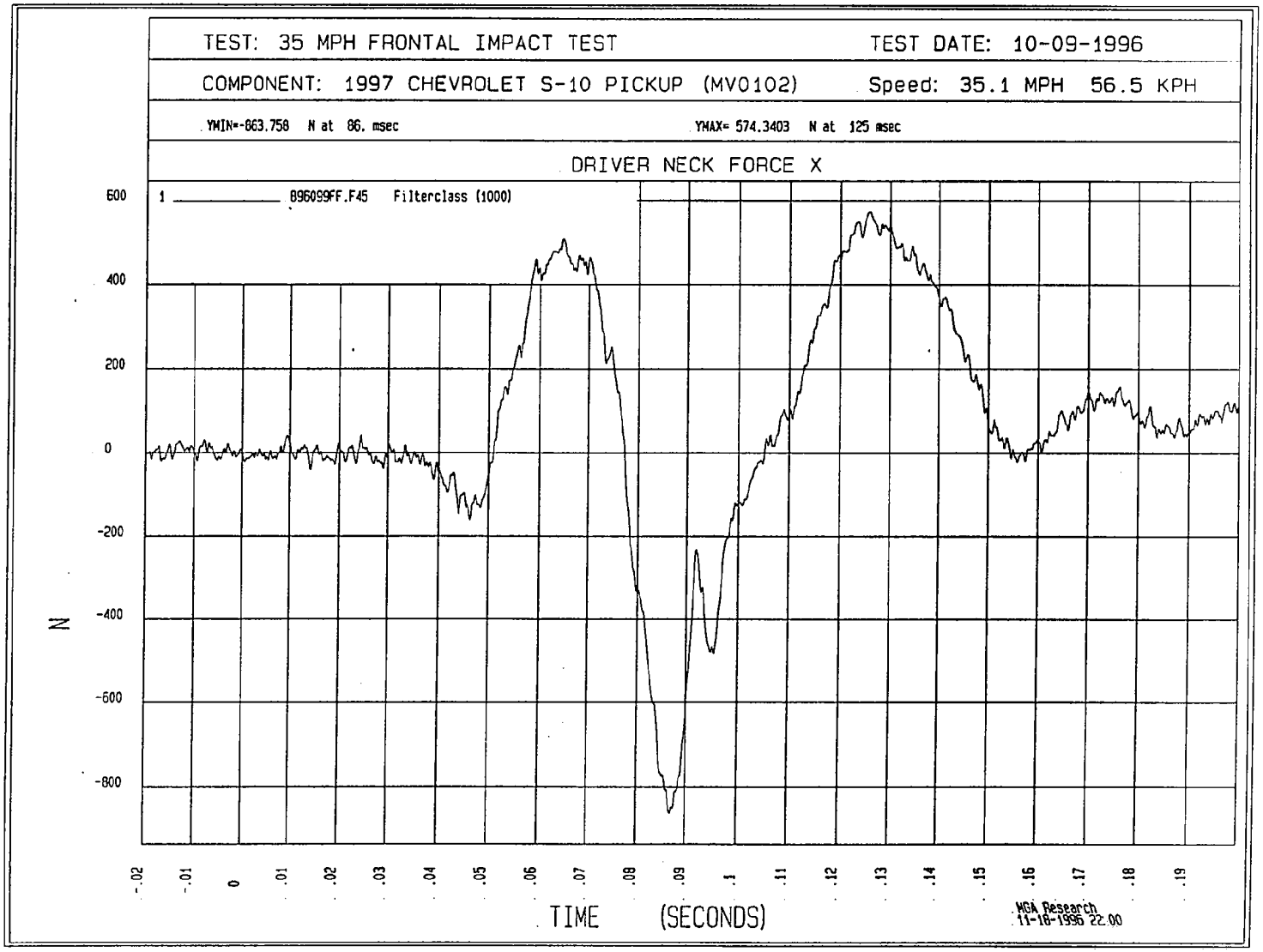
MGA Research
11-18-1996 21:59


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-863.758 N at 86. msec
YMAX= 574.3403 N at 125 msec
DRIVER NECK FORCE X
1 896099FF.F45 Filterclass (1000)
600
400
200
0
-200
-400
-600
-800
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
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.14
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.16
.17
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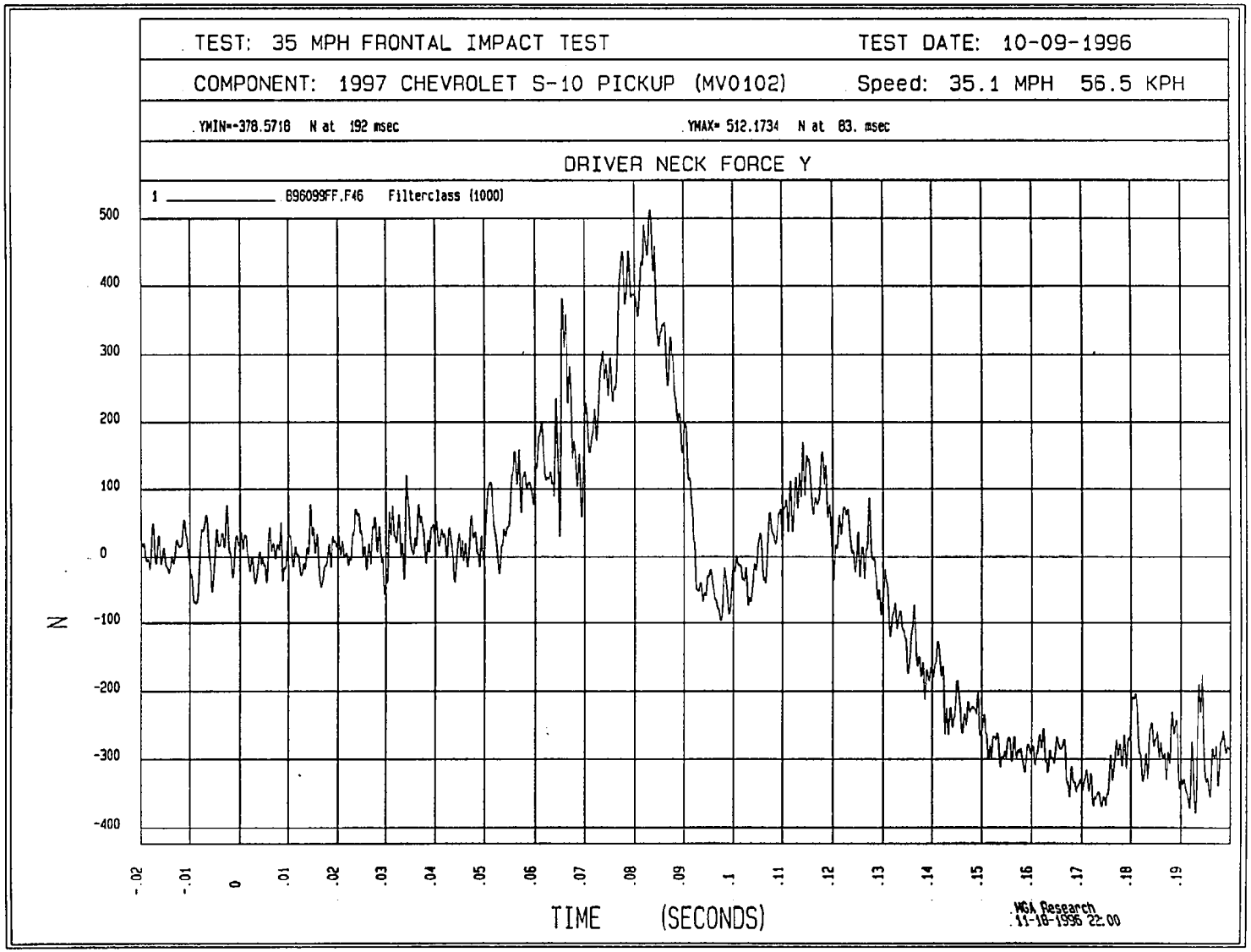
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:00


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-378.5718 N at 192 msec
YMAX= 512.1734 N at 83. msec
DRIVER NECK FORCE Y
1 896099FF.F46 Filterclass (1000)
500
400
300
200
100
0
-100
-200
-300
-400
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
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.08
.09
.1
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.13
.14
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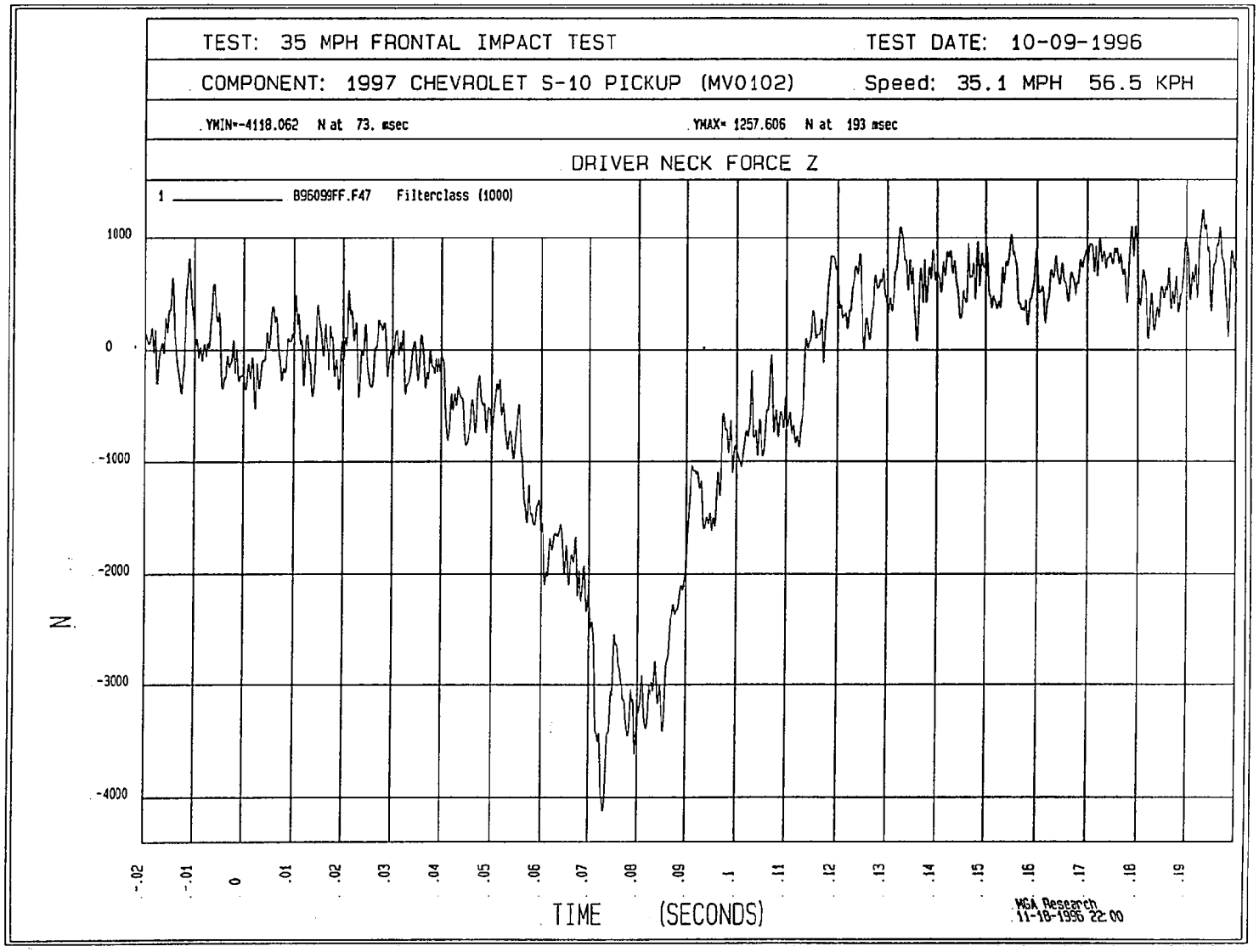
.18
.19
TIME (SECONDS)
MGA Research
11-10-1996 22:00


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-4118.062 N at 73. msec
YMAX= 1257.606 N at 193 msec
DRIVER NECK FORCE Z
1 B96099FF.F47 Filterclass (1000)
1000
0
-1000
-2000
-3000
-4000
N
-.02
-.01
0
.01
.02
.03
.04
.05
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.07
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.1
.11
.12
.13
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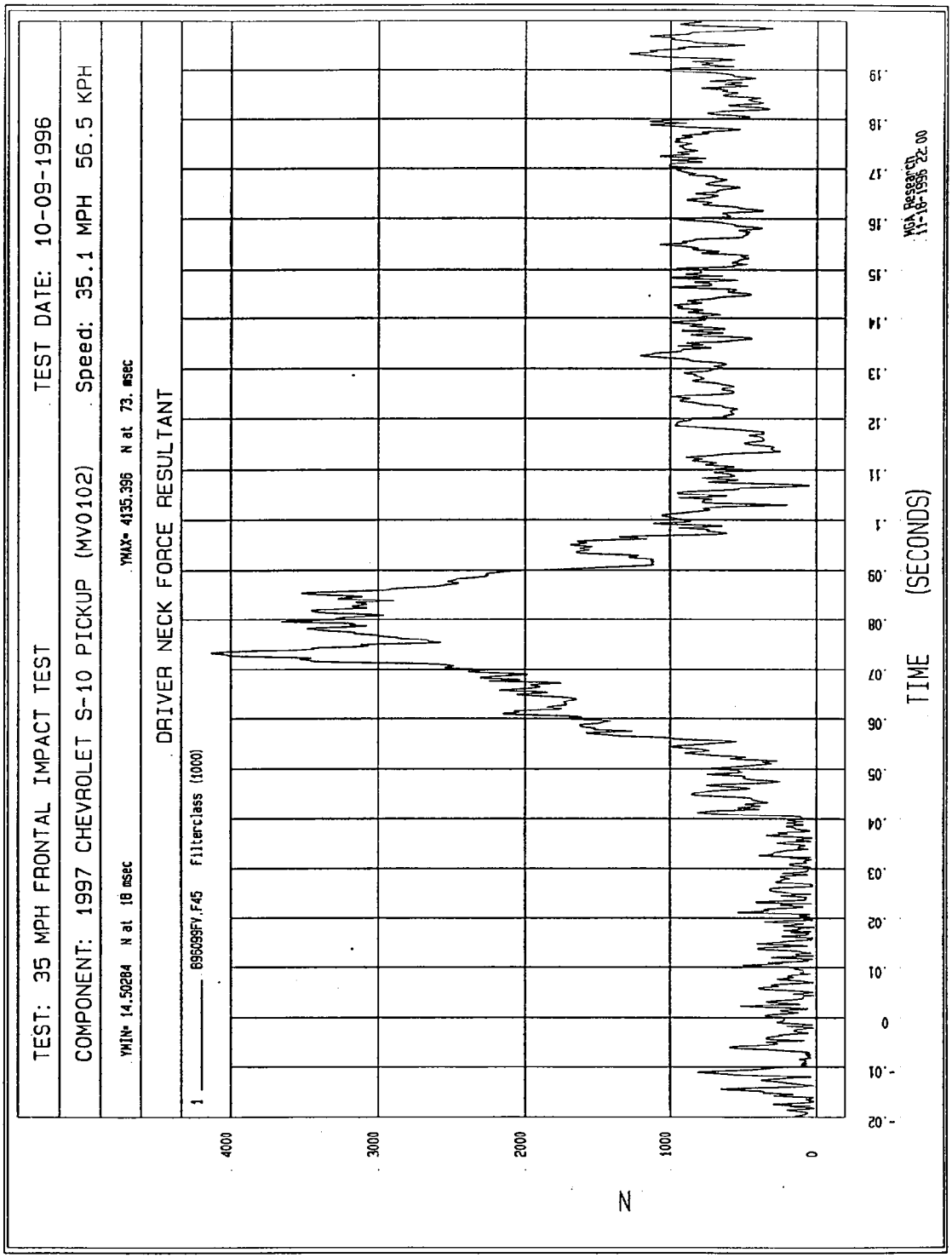
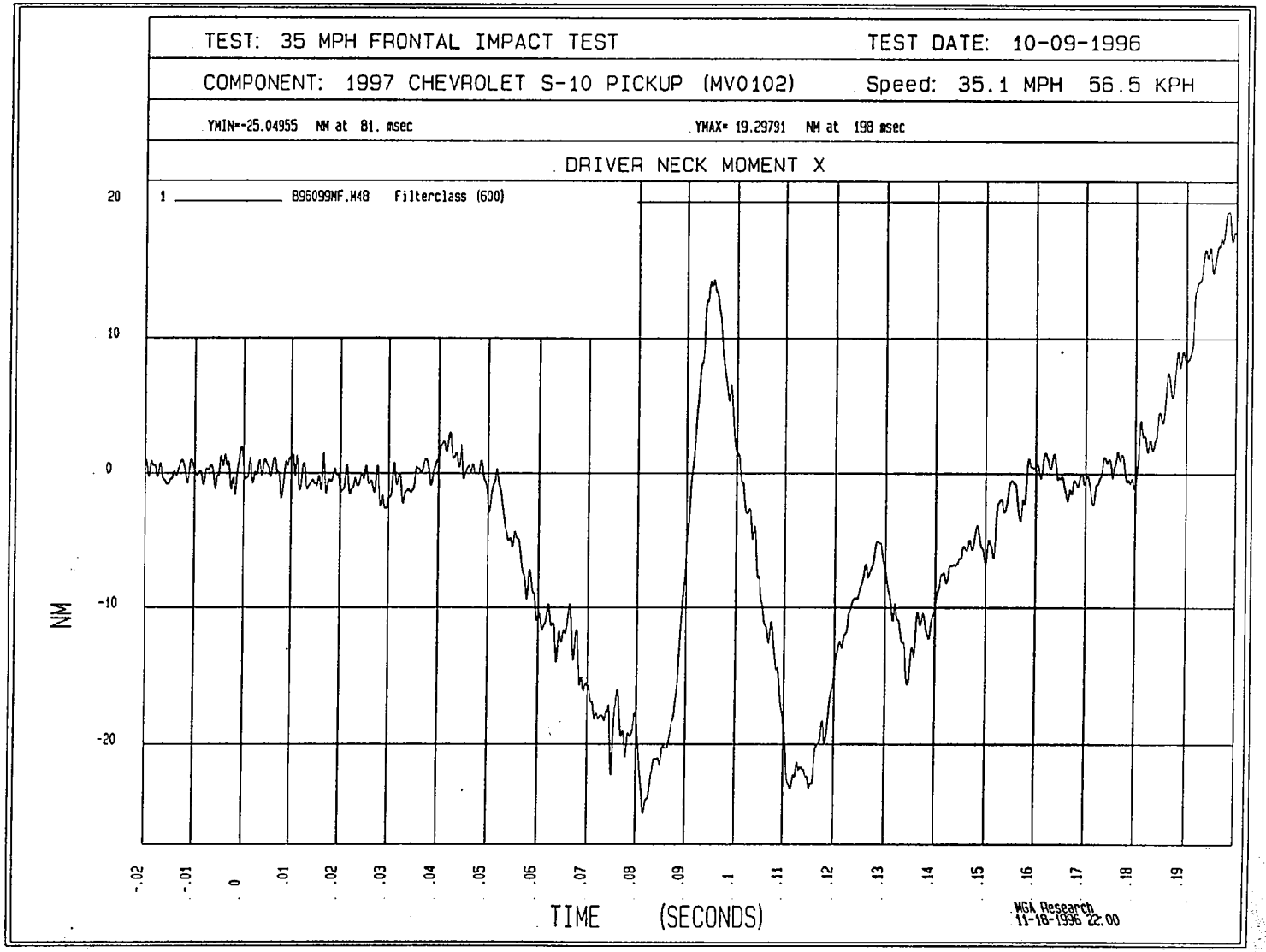
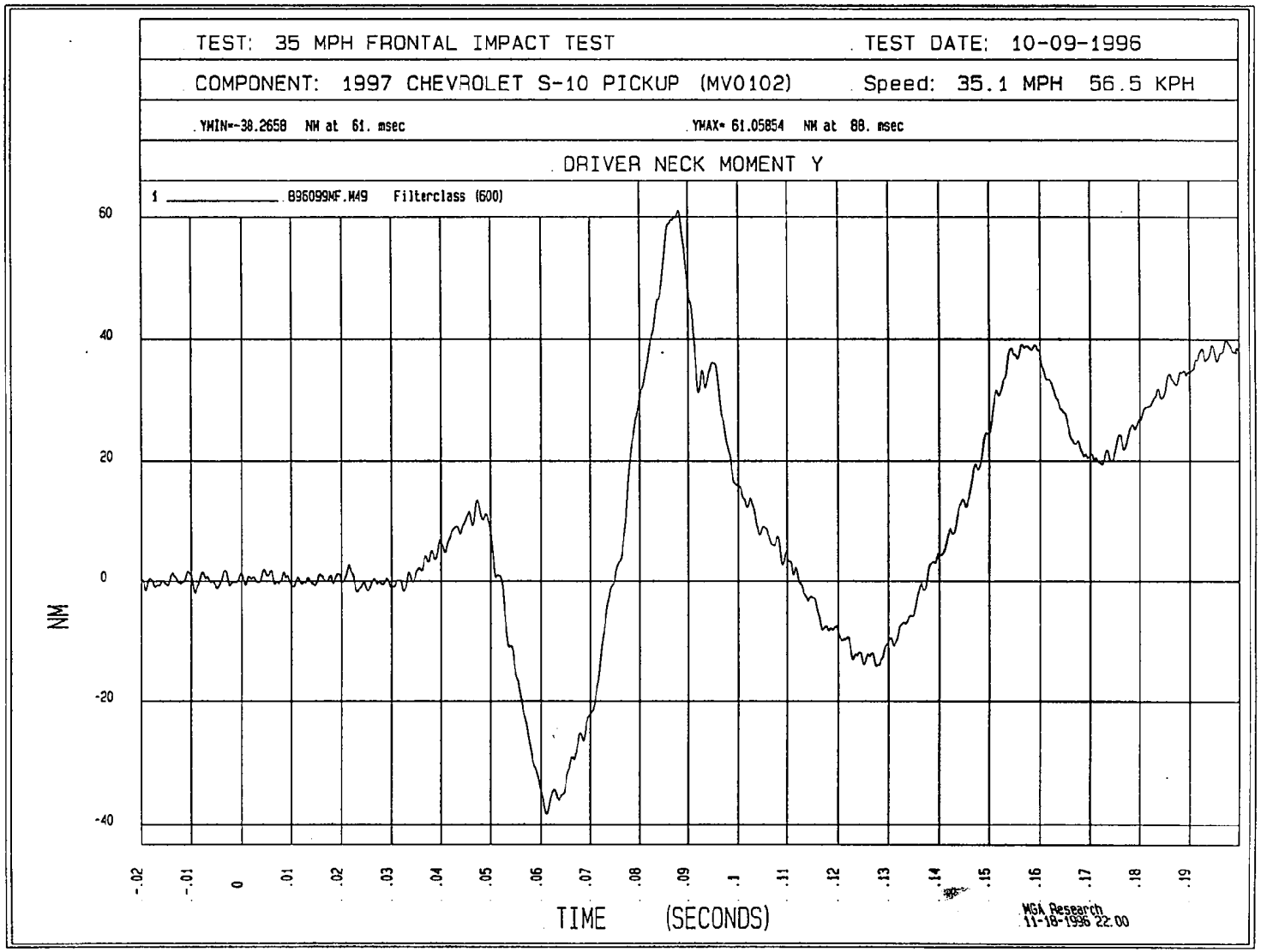
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:00


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 14.50284 N at 18 msec
YMAX= 4135.396 N at 73. msec
DRIVER NECK FORCE RESULTANT
1 _____ 696099FY.F45 Filterclass (1000)
4000
3000
2000
1000
0
N
TIME (SECONDS)
MGA Research
11-16-1995 22:00


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-25.04955 NM at 81. msec
YMAX= 19.29791 NM at 198 msec
DRIVER NECK MOMENT X
1 B95099NF.H48 Filterclass (600)
20
10
0
-10
-20
NM
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:00


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-38.2658 NM at 61. msec
YMAX= 61.05854 NM at 88. msec
DRIVER NECK MOMENT Y
1 836099NF.M49 Filterclass (600)
60
40
20
0
-20
-40
NM
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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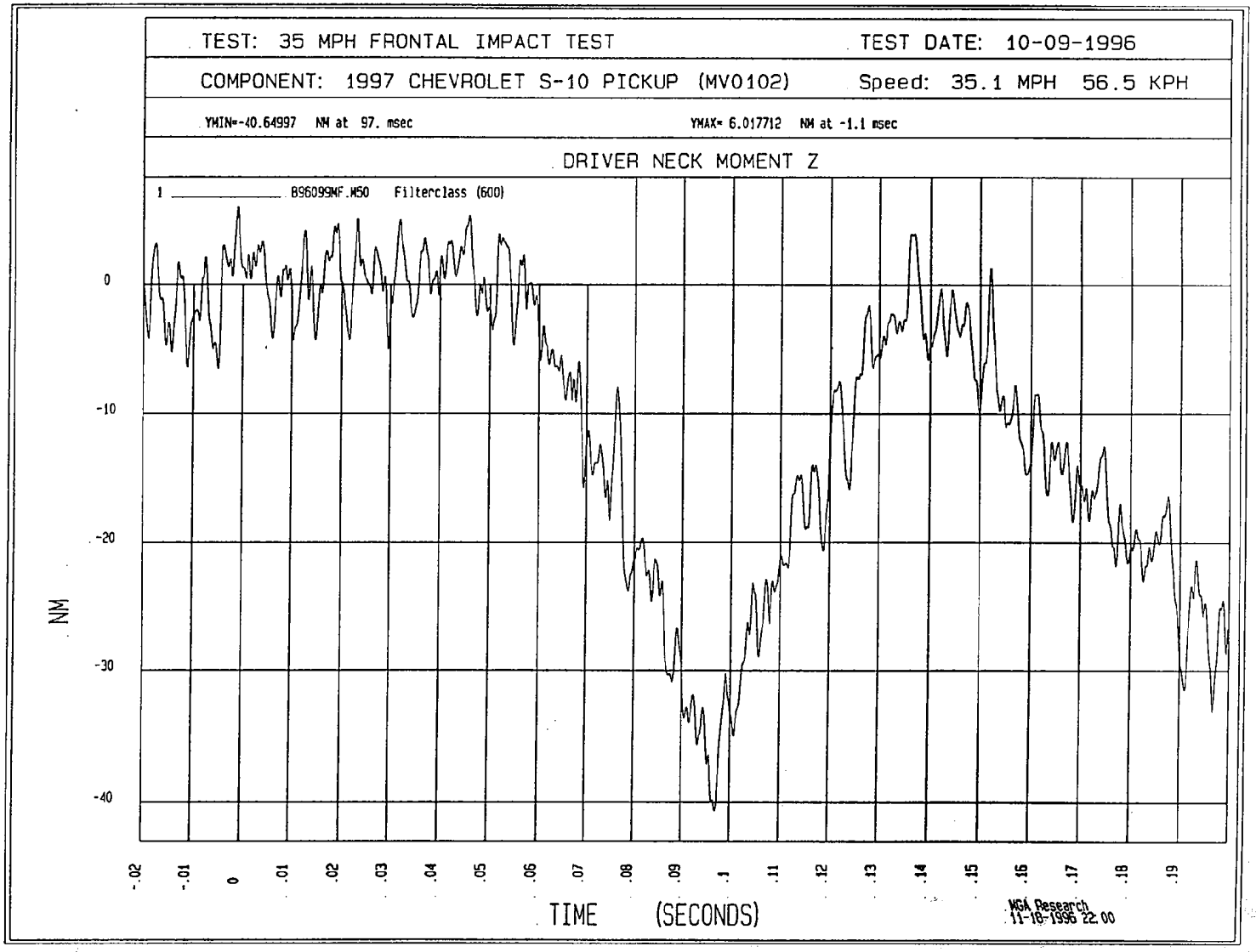
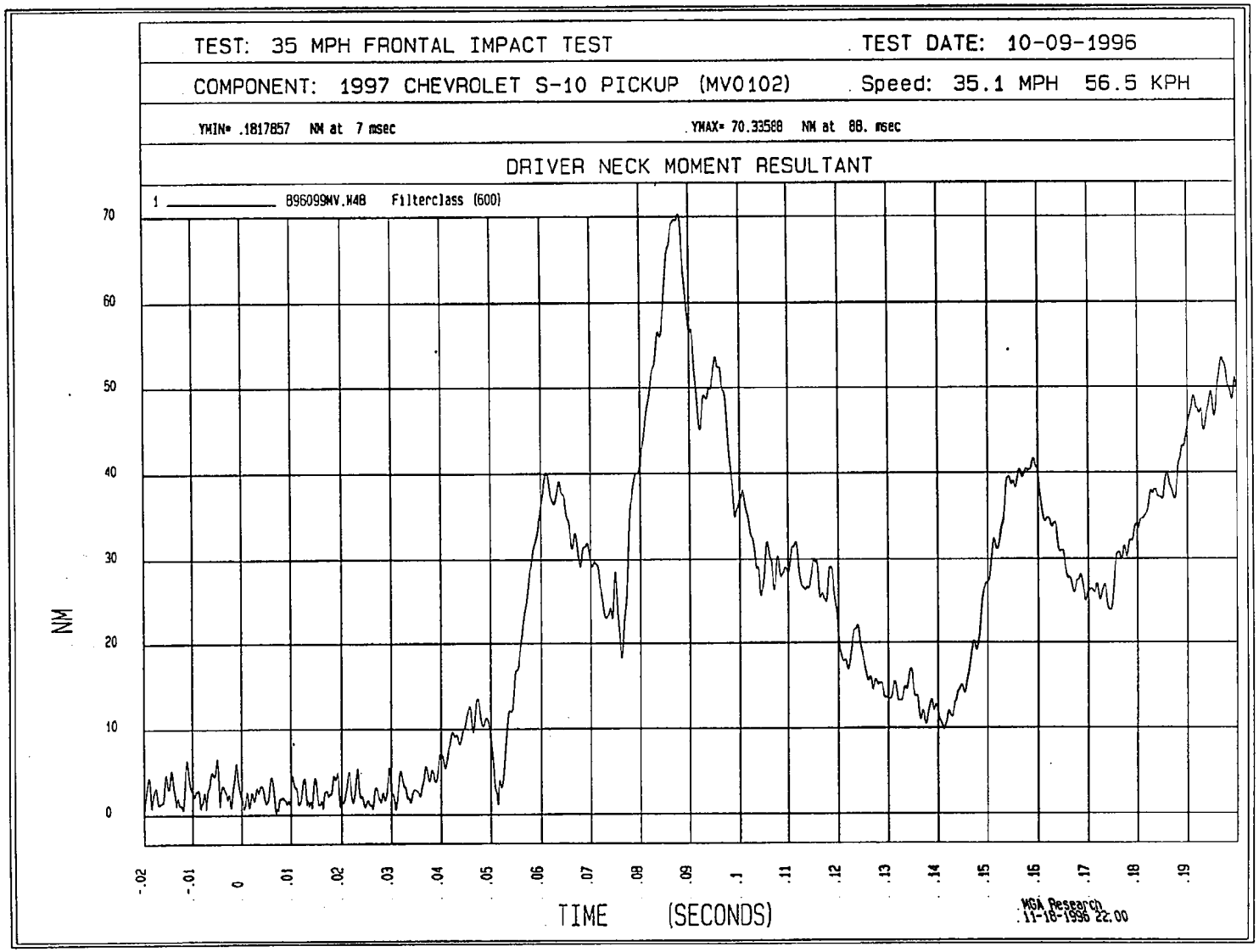
TIME (SECONDS)
MGA Research
11-18-1996 22:00


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-40.64997 NM at 97. msec
YMAX= 6.017712 NM at -1.1 msec
DRIVER NECK MOMENT Z
1 B96099MF.M50 Filterclass (600)
0
-10
-20
-30
-40
NM
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:00


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= .1817857 NM at 7 msec
YMAX= 70.33588 NM at 88. msec
DRIVER NECK MOMENT RESULTANT
1 896099MV.H48 Filterclass (600)
NM
70
60
50
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
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.14
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.18
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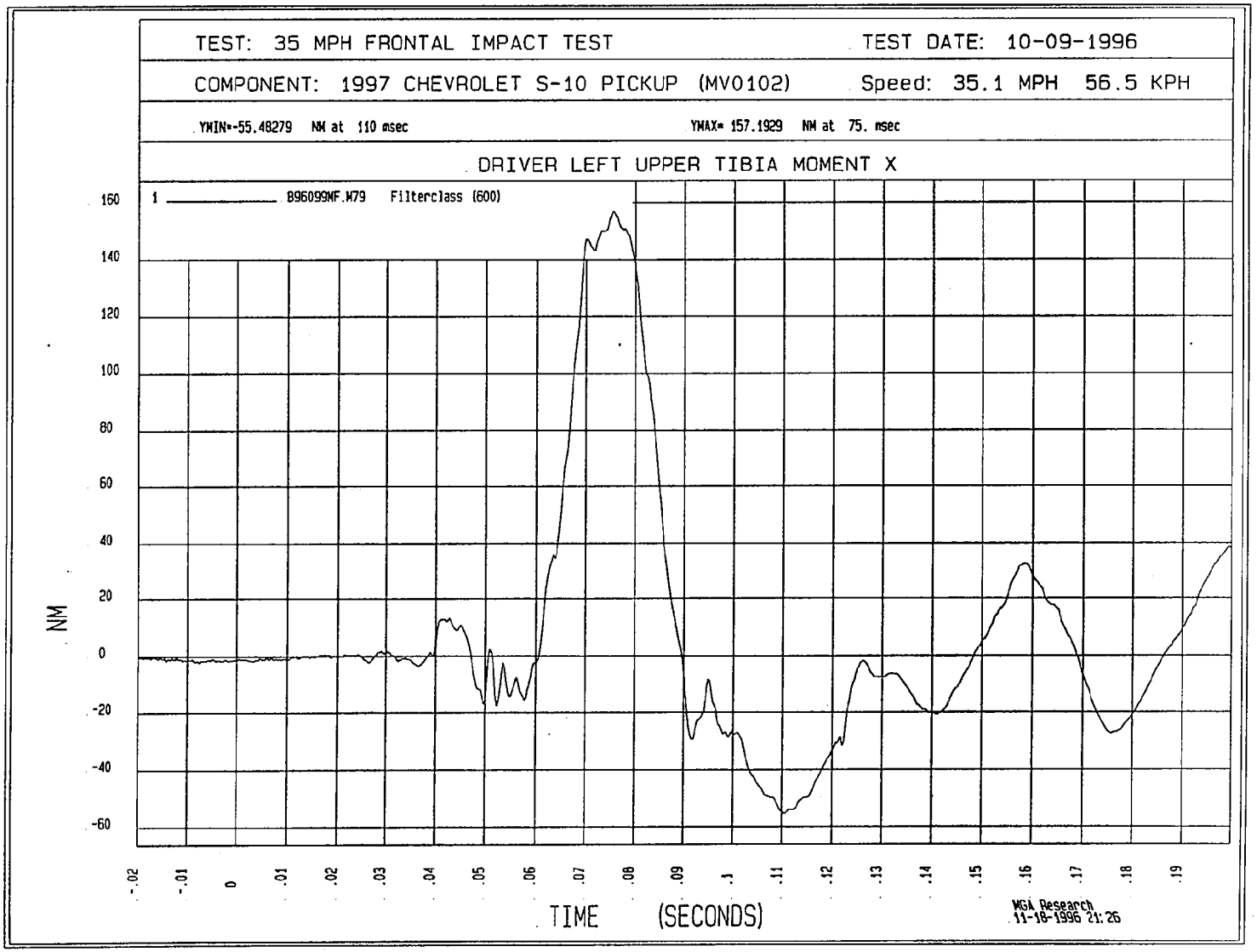
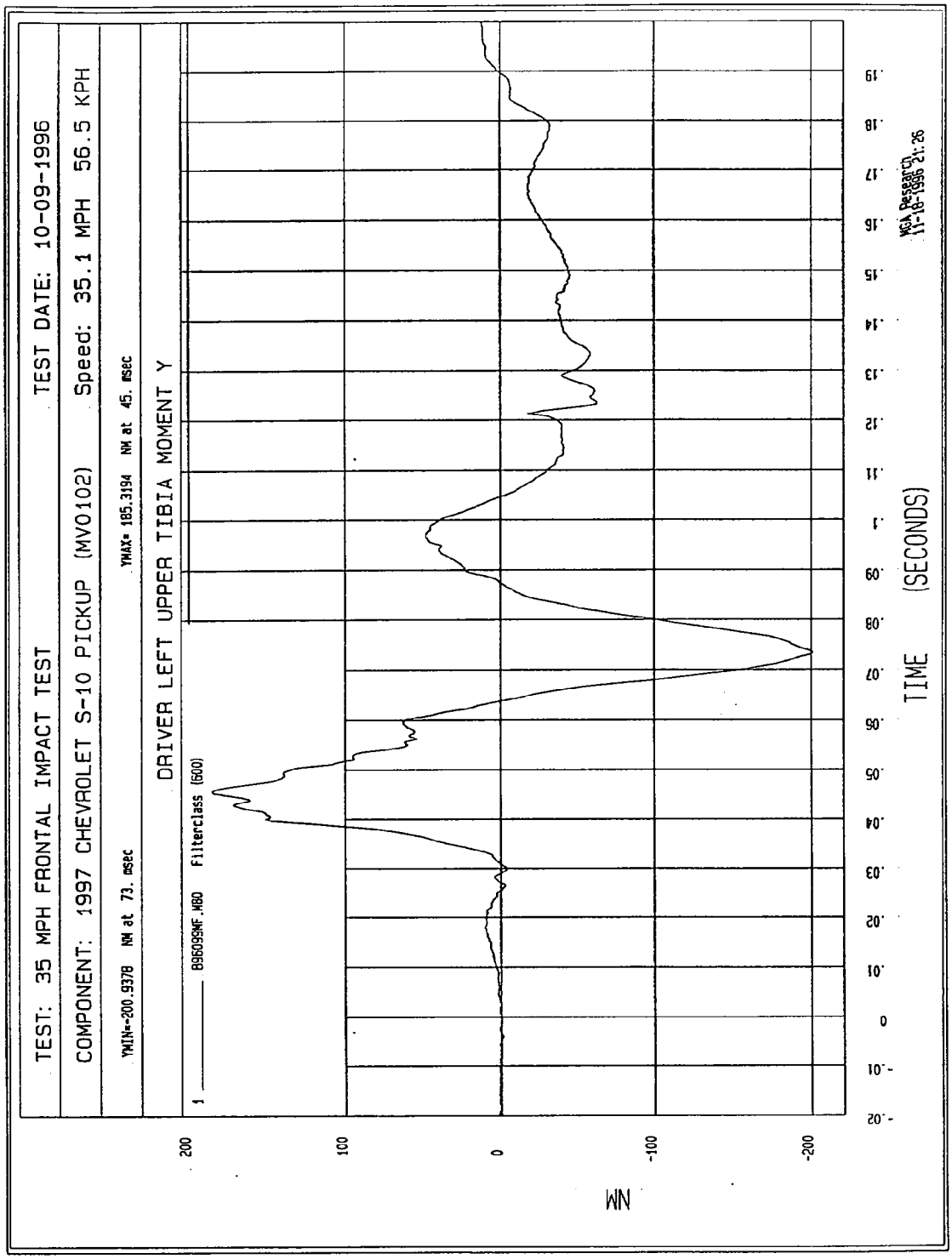
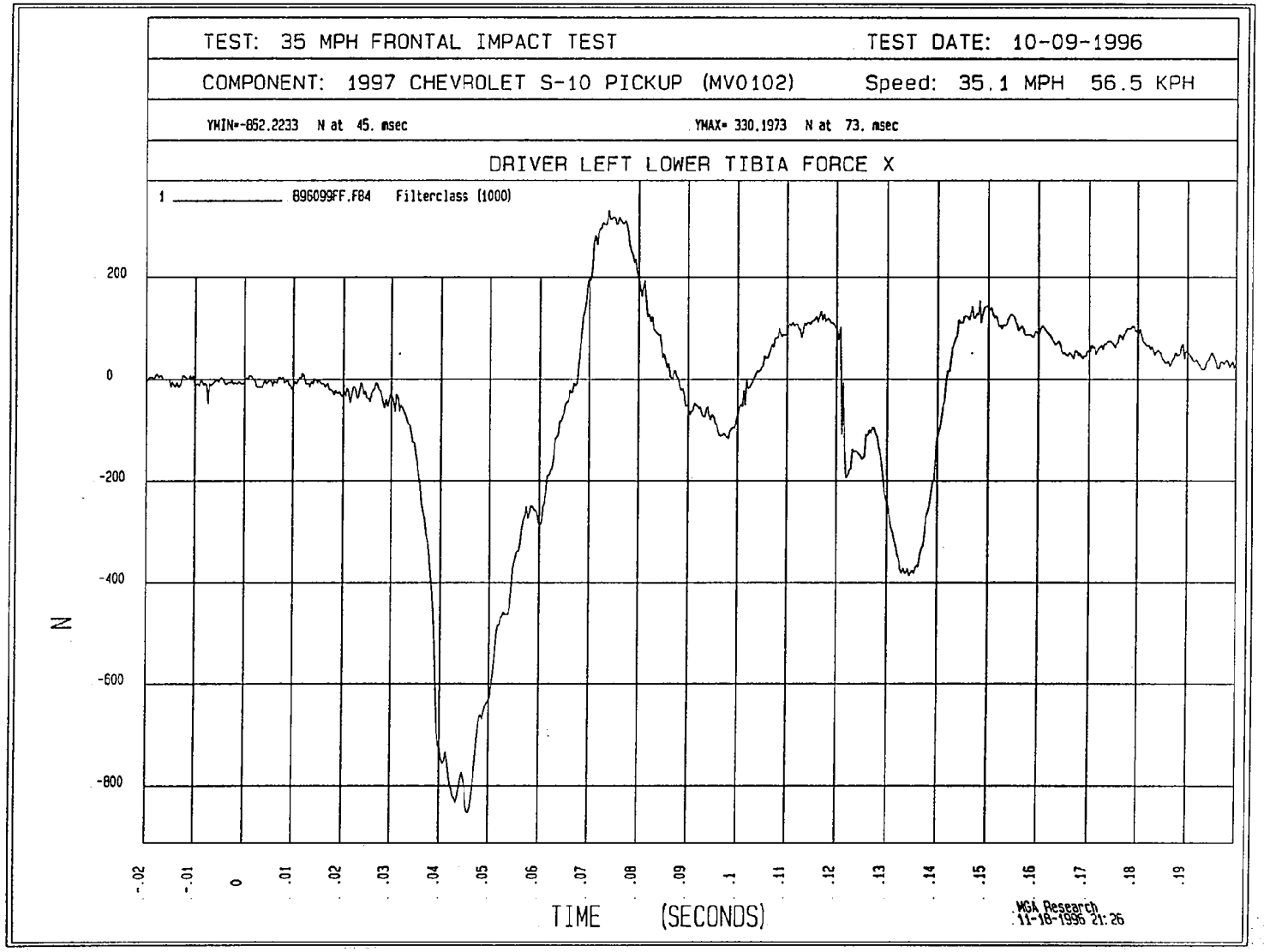
TIME (SECONDS)
MGA Research
11-18-1996 22:00


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-55.48279 NM at 110 msec
YMAX= 157.1929 NM at 75. msec
DRIVER LEFT UPPER TIBIA MOMENT X
1 B96099NF.W79 Filterclass (600)
160
140
120
100
80
60
40
20
0
-20
-40
-60
NM
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-200.9378 NM at 73. msec
YMAX= 185.3194 NM at 45. msec
DRIVER LEFT UPPER TIBIA MOMENT Y
1 B96099MF.M80 Filterclass (600)
NM
200
100
0
-100
-200
TIME (SECONDS)
-20
-10
0
10
20
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
MGA Research
11-18-1996 21:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-852.2233 N at 45. msec
YMAX= 330.1973 N at 73. msec
DRIVER LEFT LOWER TIBIA FORCE X
1 896099FF.F84 Filterclass (1000)
200
0
-200
-400
-600
-800
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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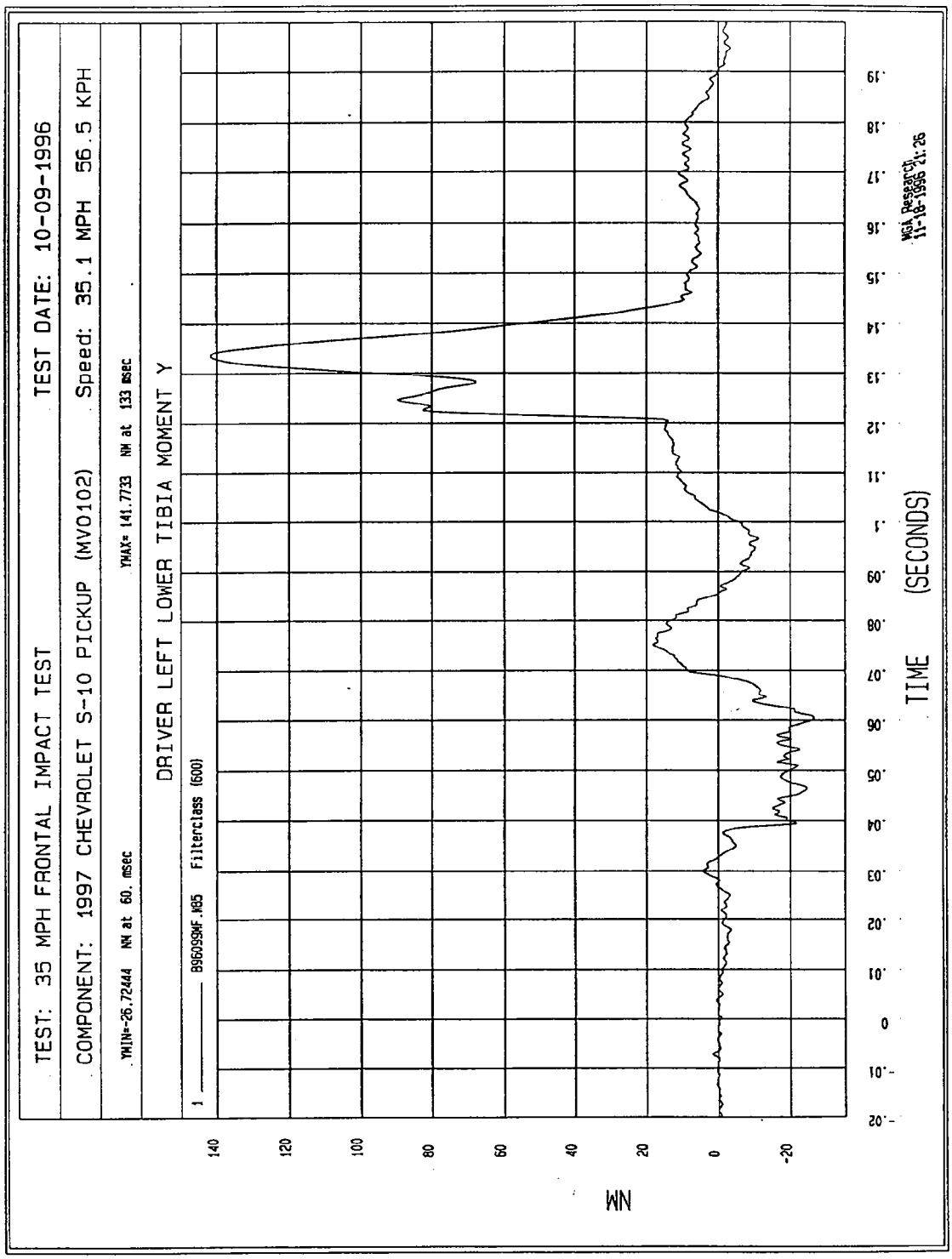
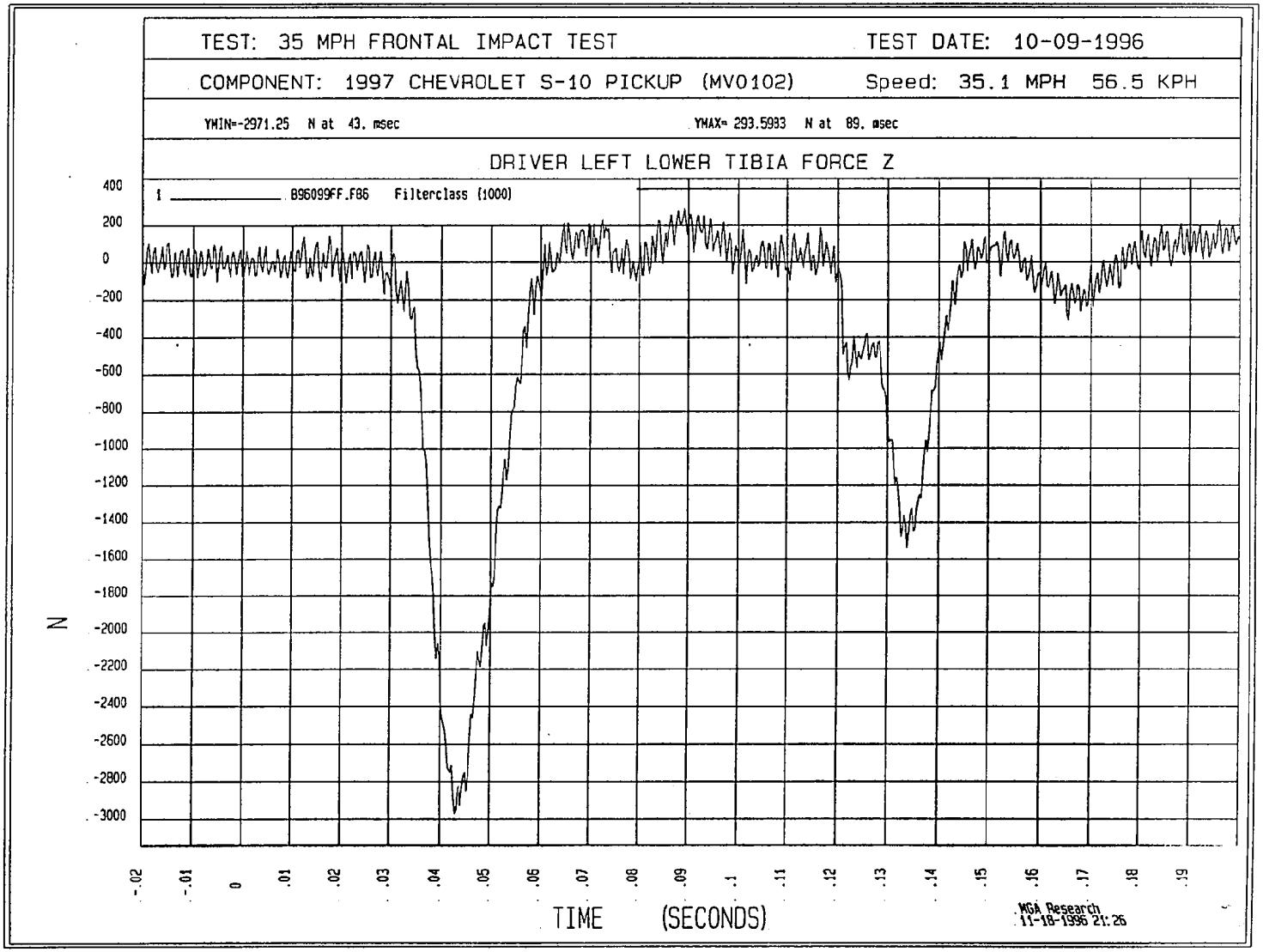
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-26.72444 NM at 60. msec
YMAX= 141.7733 NM at 133 msec
DRIVER LEFT LOWER TIBIA MOMENT Y
1 B960999F.H85 Filterclass (600)
NM
TIME (SECONDS)
Wsa Research
11-18-1996 21:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-2971.25 N at 43. msec
YMAX= 293.5983 N at 89. msec
DRIVER LEFT LOWER TIBIA FORCE Z
1 B96099FF.F86 Filterclass (1000)
400
200
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
-1800
-2000
-2200
-2400
-2600
-2800
-3000
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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.12
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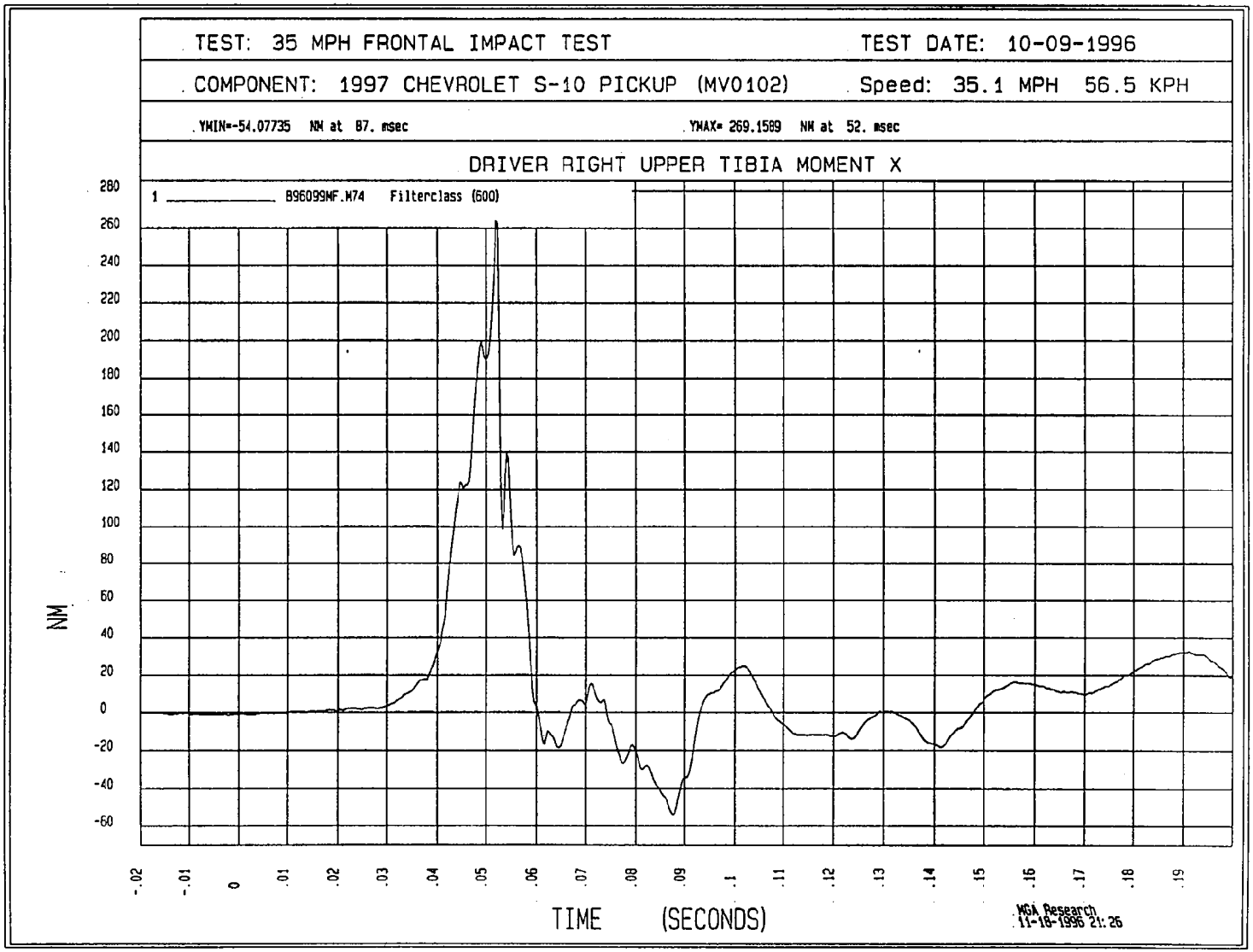
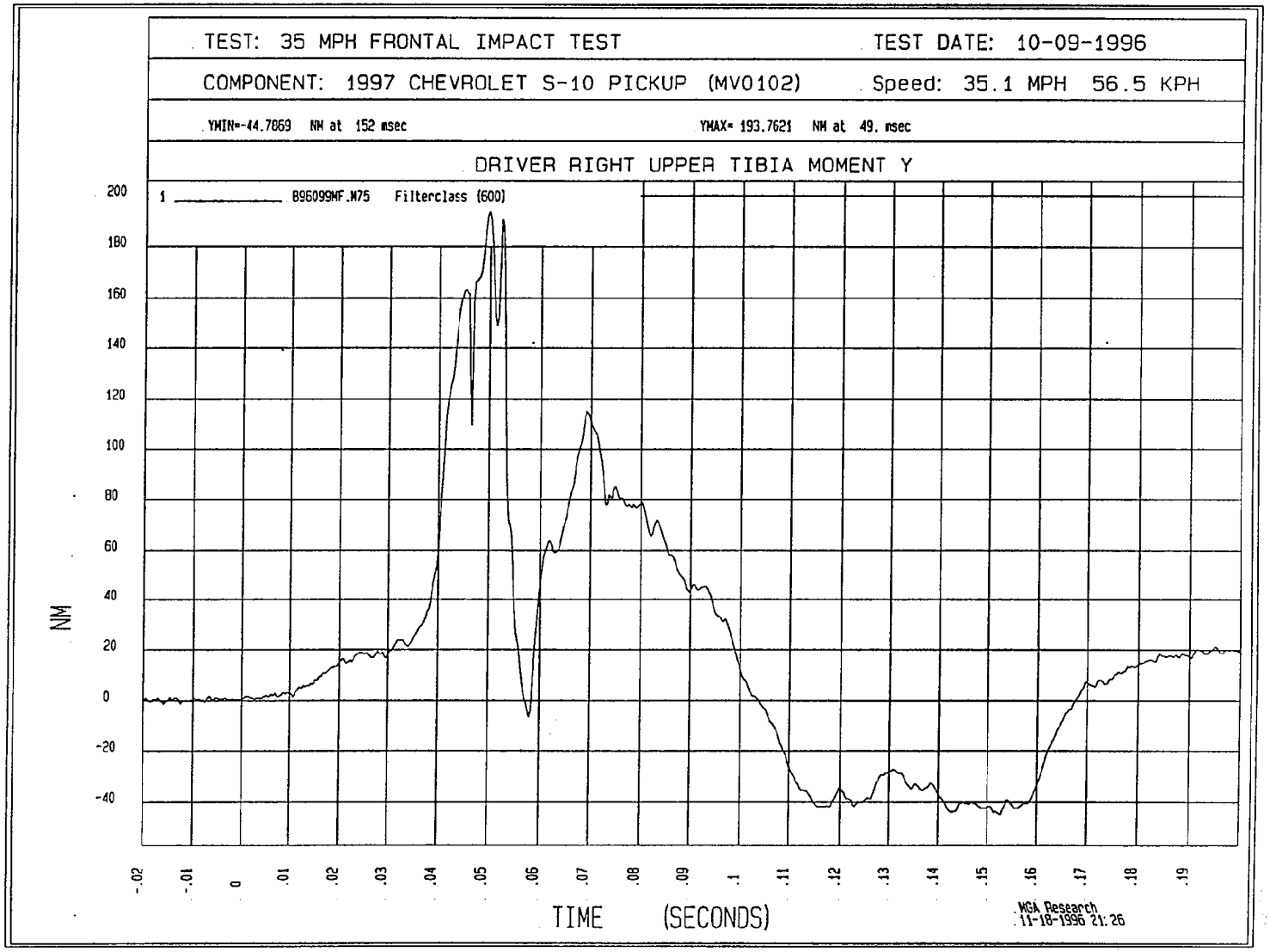
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-54.07735 NM at 87. msec
YMAX= 269.1589 NM at 52. msec
DRIVER RIGHT UPPER TIBIA MOMENT X
1 B96099MF.M74 Filterclass (600)
NM
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 21:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-44.7869 NM at 152 msec
YMAX= 193.7621 NM at 49. msec
DRIVER RIGHT UPPER TIBIA MOMENT Y
1 B96099MF.M75 Filterclass (600)
NM
200
180
160
140
120
100
80
60
40
20
0
-20
-40
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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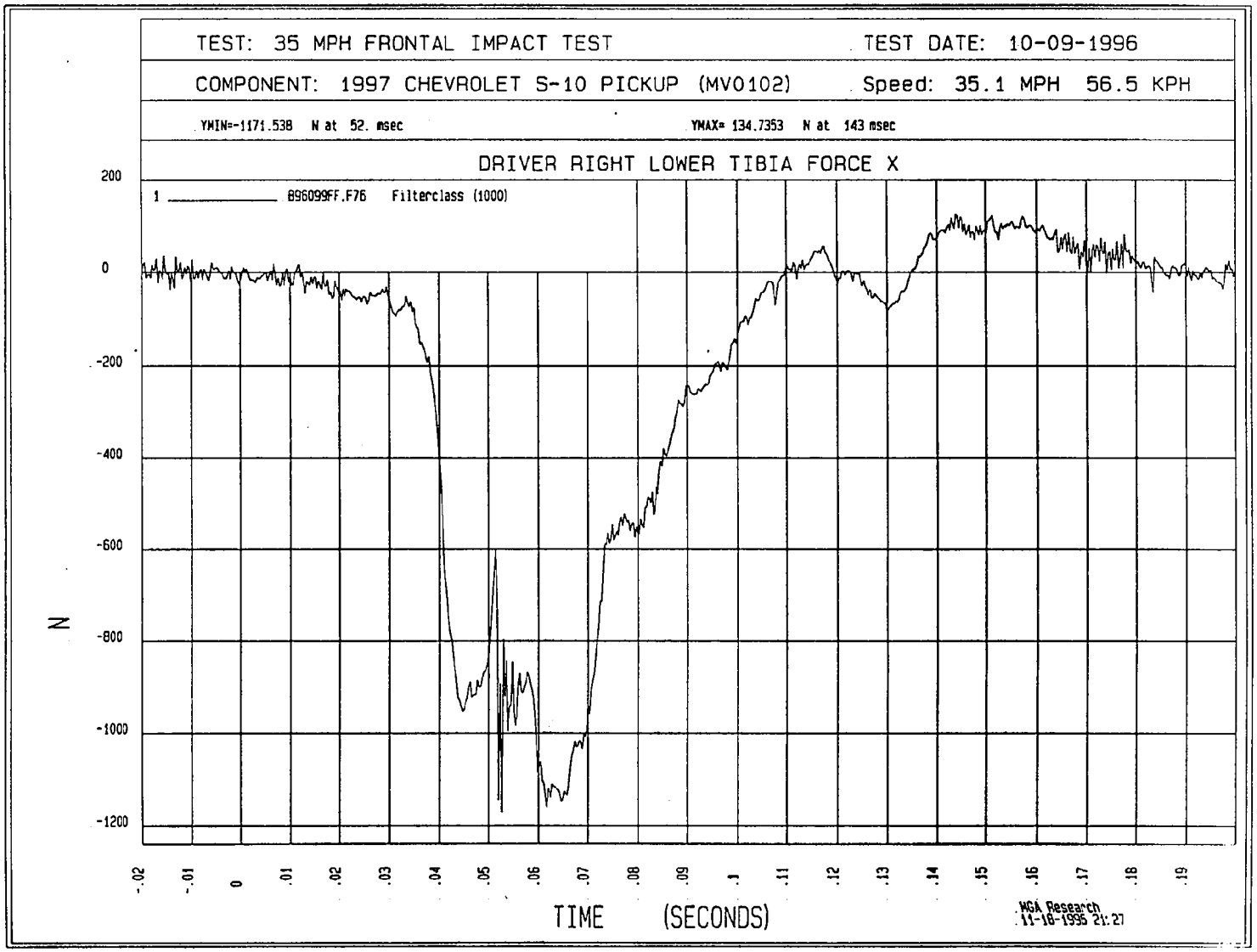
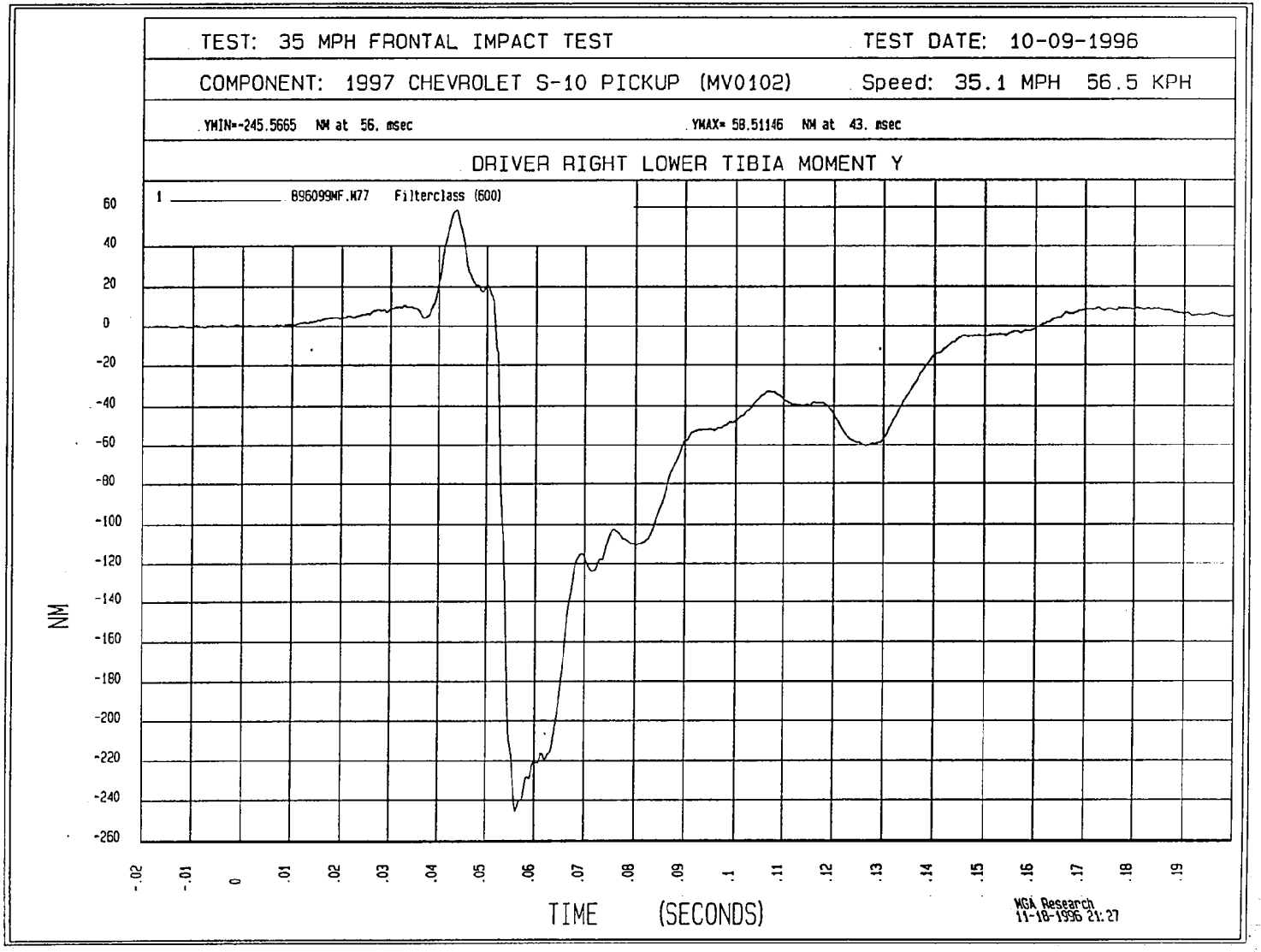
TIME (SECONDS)
MGA Research
11-18-1996 21:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-1171.538 N at 52. msec
YMAX= 134.7353 N at 143 msec
DRIVER RIGHT LOWER TIBIA FORCE X
1 896099FF.F76 Filterclass (1000)
200
0
-200
-400
-600
-800
-1000
-1200
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-10-1996 21:27


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-245.5665 NM at 56. msec
YMAX= 58.51146 NM at 43. msec
DRIVER RIGHT LOWER TIBIA MOMENT Y
1 B96099MF.W77 Filterclass (600)
NM
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
-240
-260
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
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.16
.17
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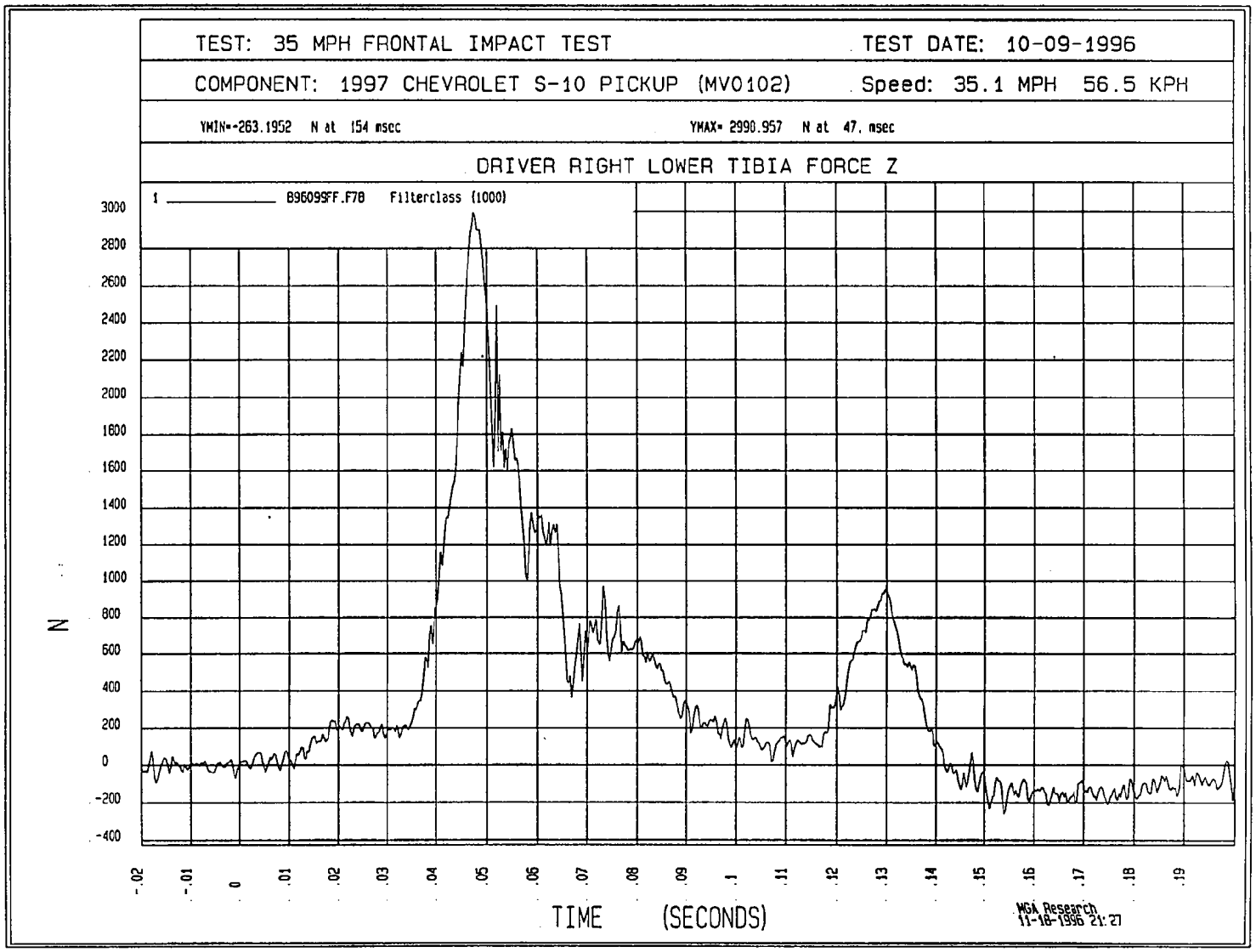
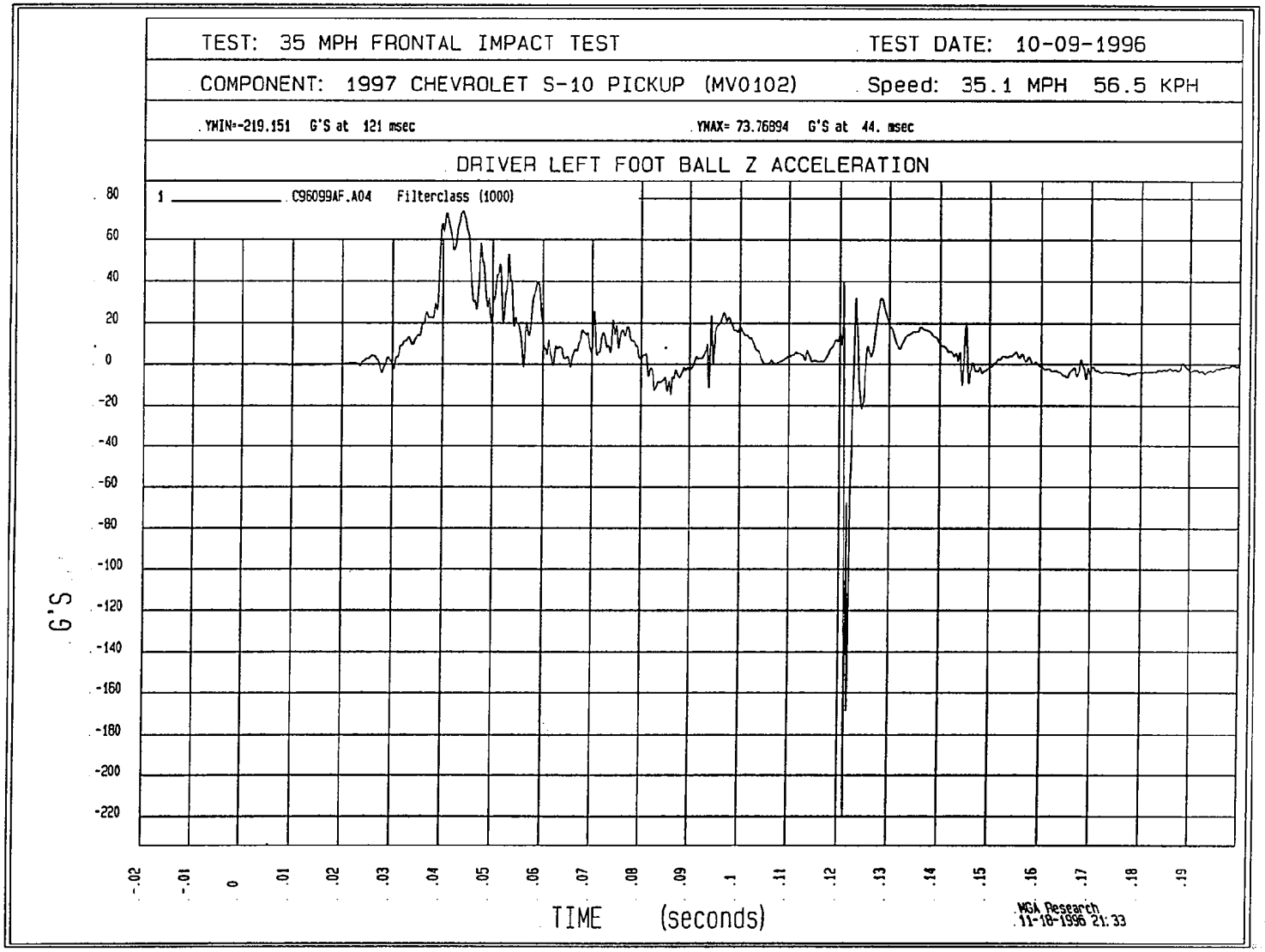
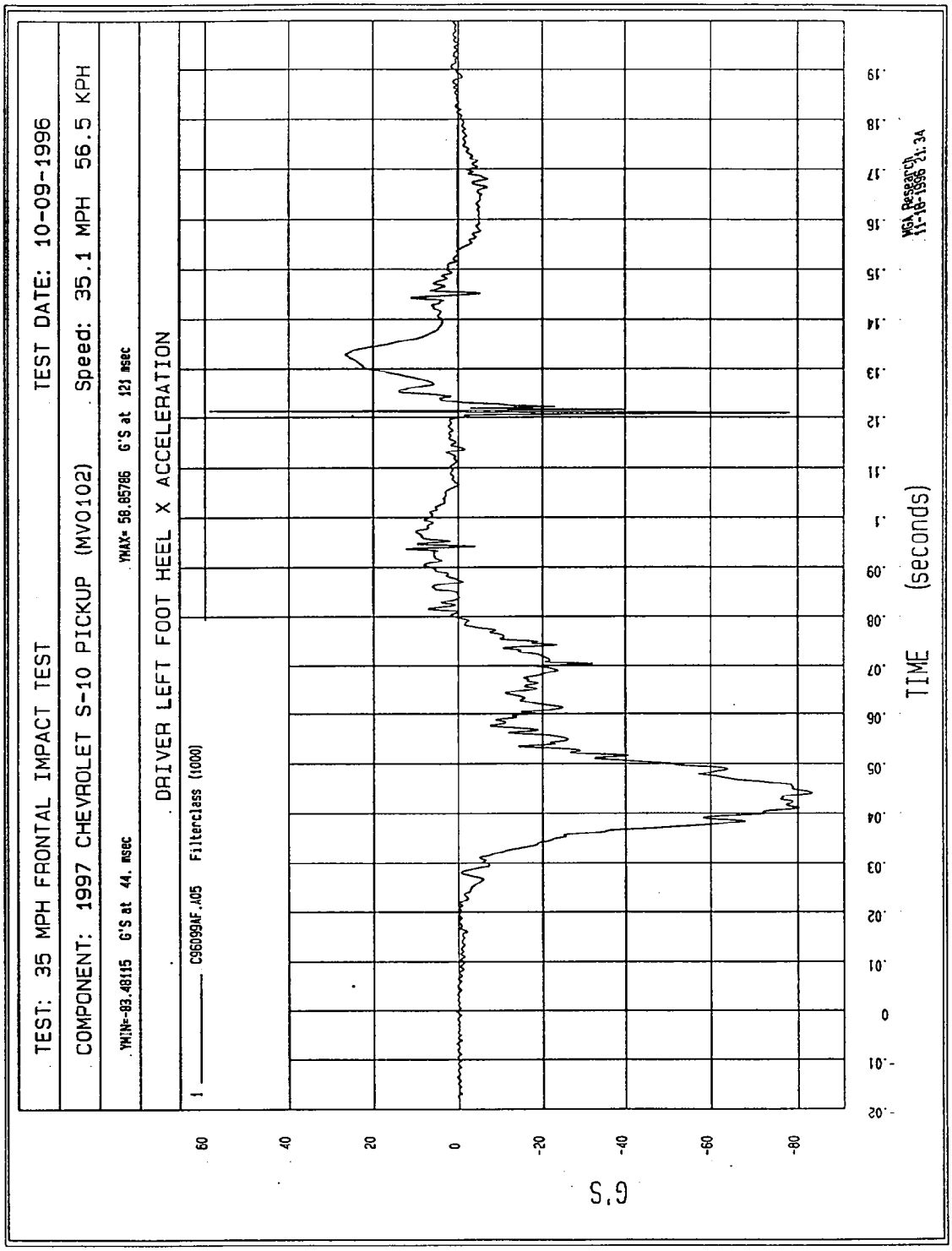
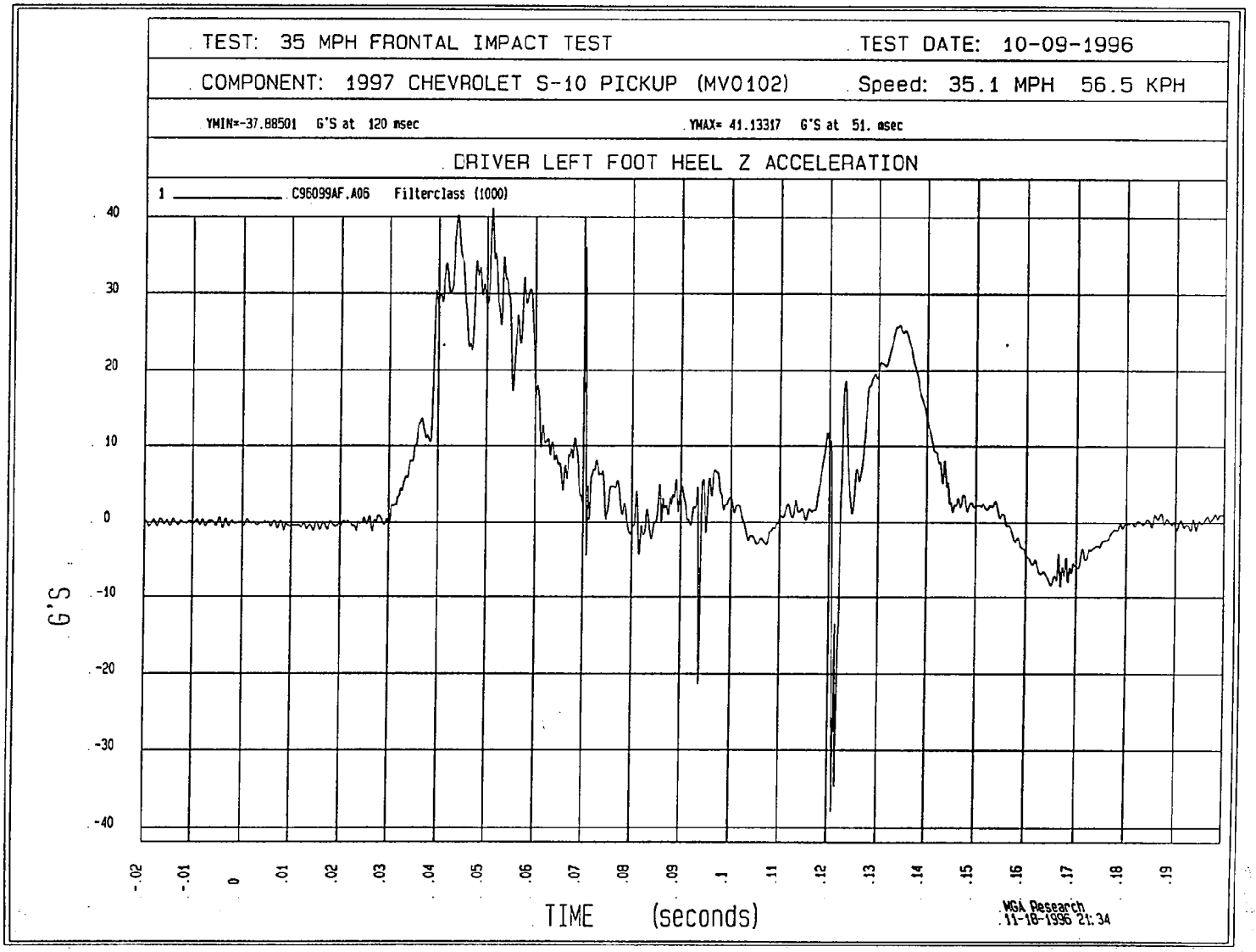
TIME (SECONDS)
NGA Research
11-18-1996 21:27


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-263.1952 N at 154 msec
YMAX= 2990.957 N at 47. msec
DRIVER RIGHT LOWER TIBIA FORCE Z
1 B96099FF.F78 Filterclass (1000)
N
TIME (SECONDS)
MGA Research
11-18-1996 21:27

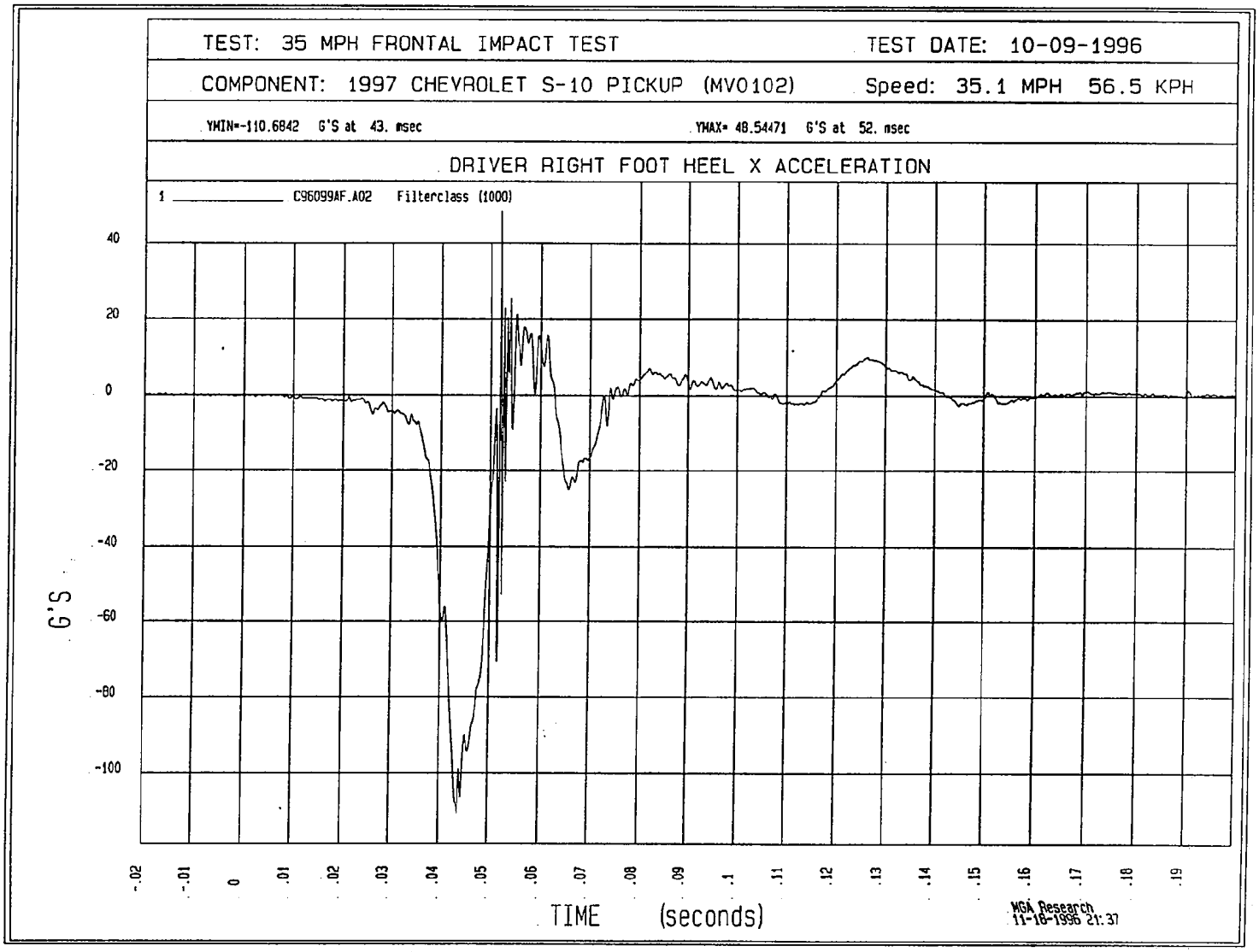

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-219.151 G'S at 121 msec
YMAX= 73.76894 G'S at 44. msec
DRIVER LEFT FOOT BALL Z ACCELERATION
1 C96099AF.A04 Filterclass (1000)
80
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (seconds)
MGA Research
11-18-1996 21:33

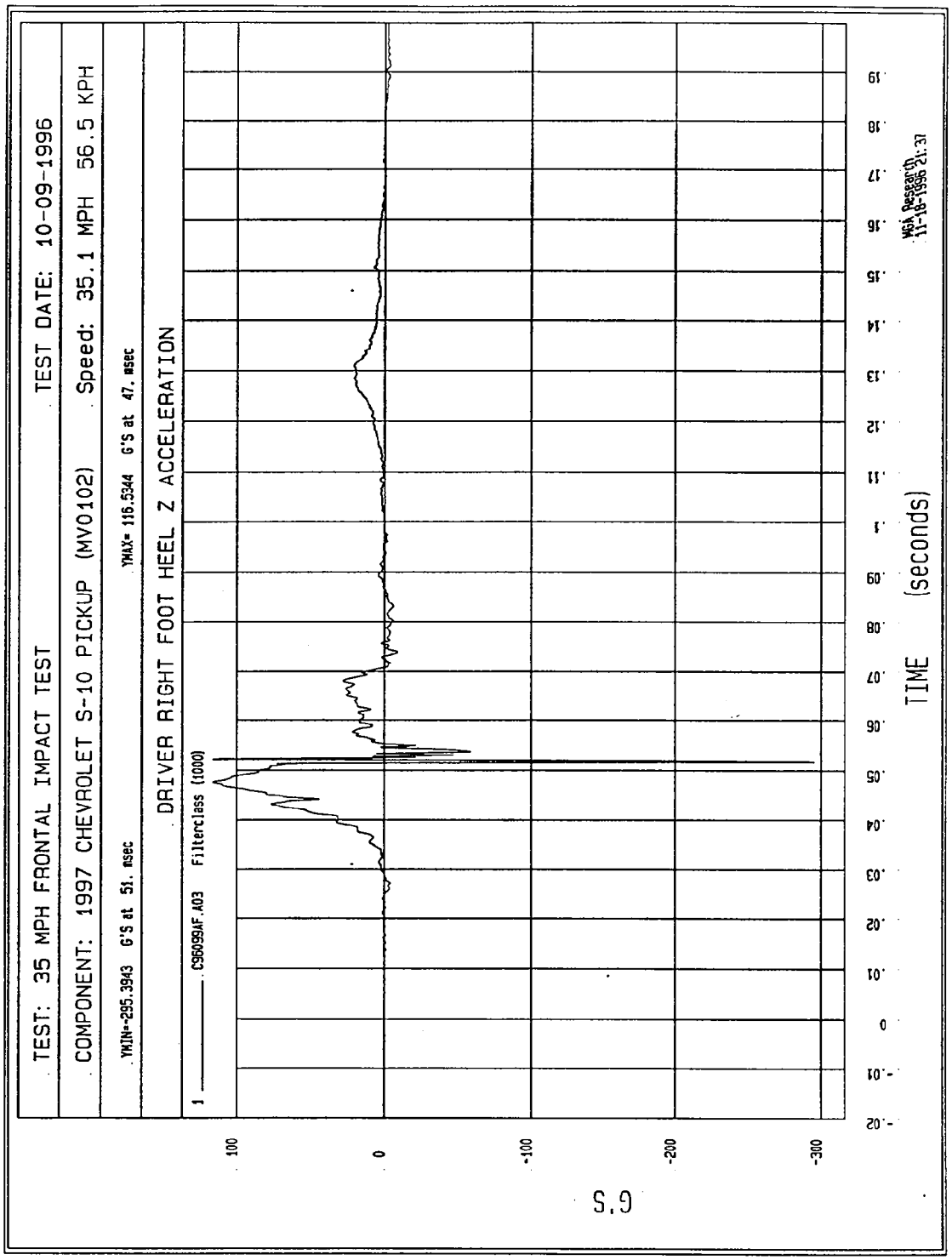

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-83.48115 G'S at 44. msec
YMAX= 58.85786 G'S at 121 msec
DRIVER LEFT FOOT HEEL X ACCELERATION
1 C96099AF.A05 Filterclass (1000)
60
40
20
0
-20
-40
-60
-80
G's
TIME (seconds)
MGA Research
11-18-1996 21:34

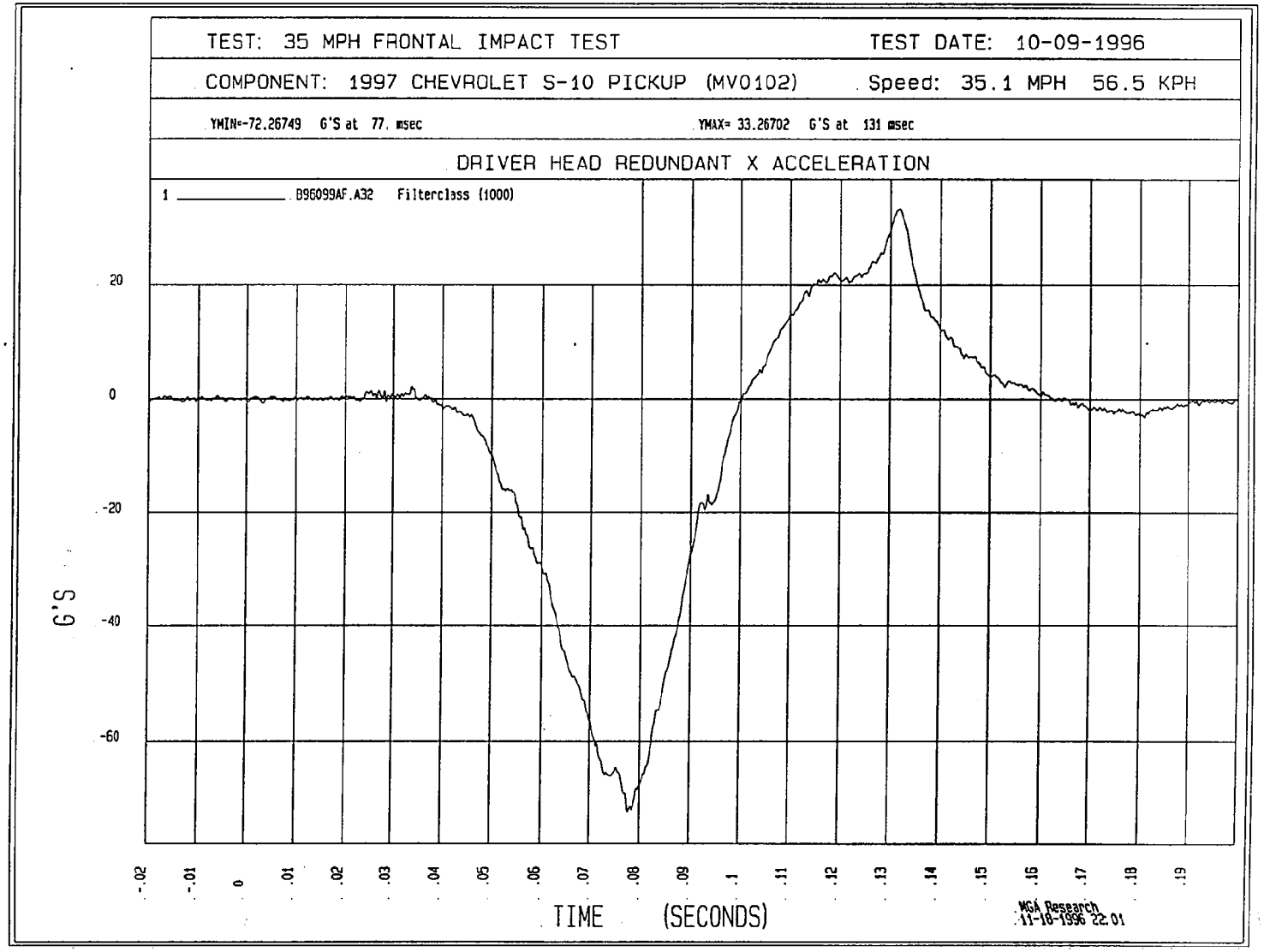

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-37.88501 G'S at 120 msec
YMAX= 41.13317 G'S at 51. msec
DRIVER LEFT FOOT HEEL Z ACCELERATION
1 C96099AF.A06 Filterclass (1000)
40
30
20
10
0
-10
-20
-30
-40
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (seconds)
MGA Research
11-18-1996 21:34

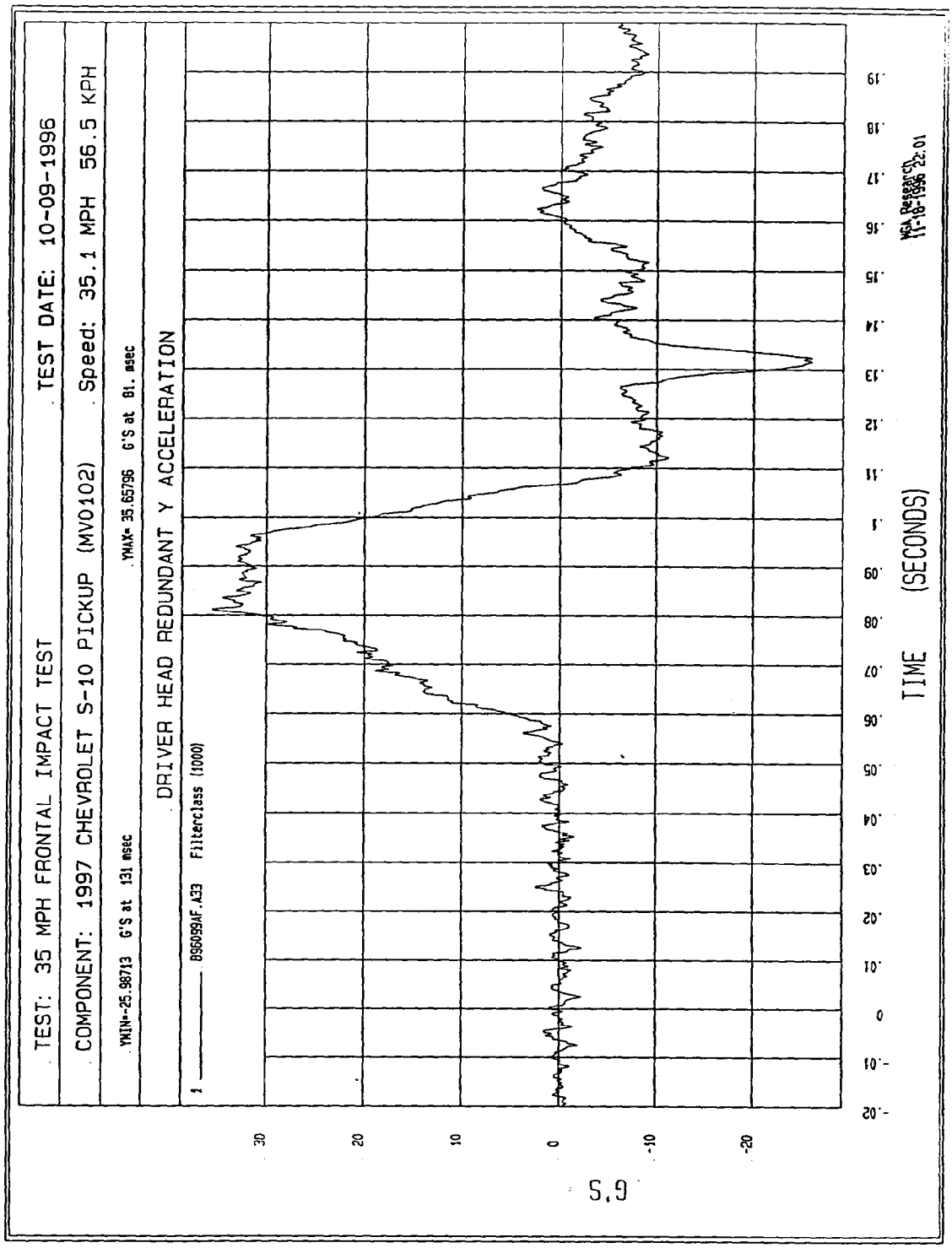
DRIVER RIGHT FOOT BALL Z ACCELERATION VS. TIME

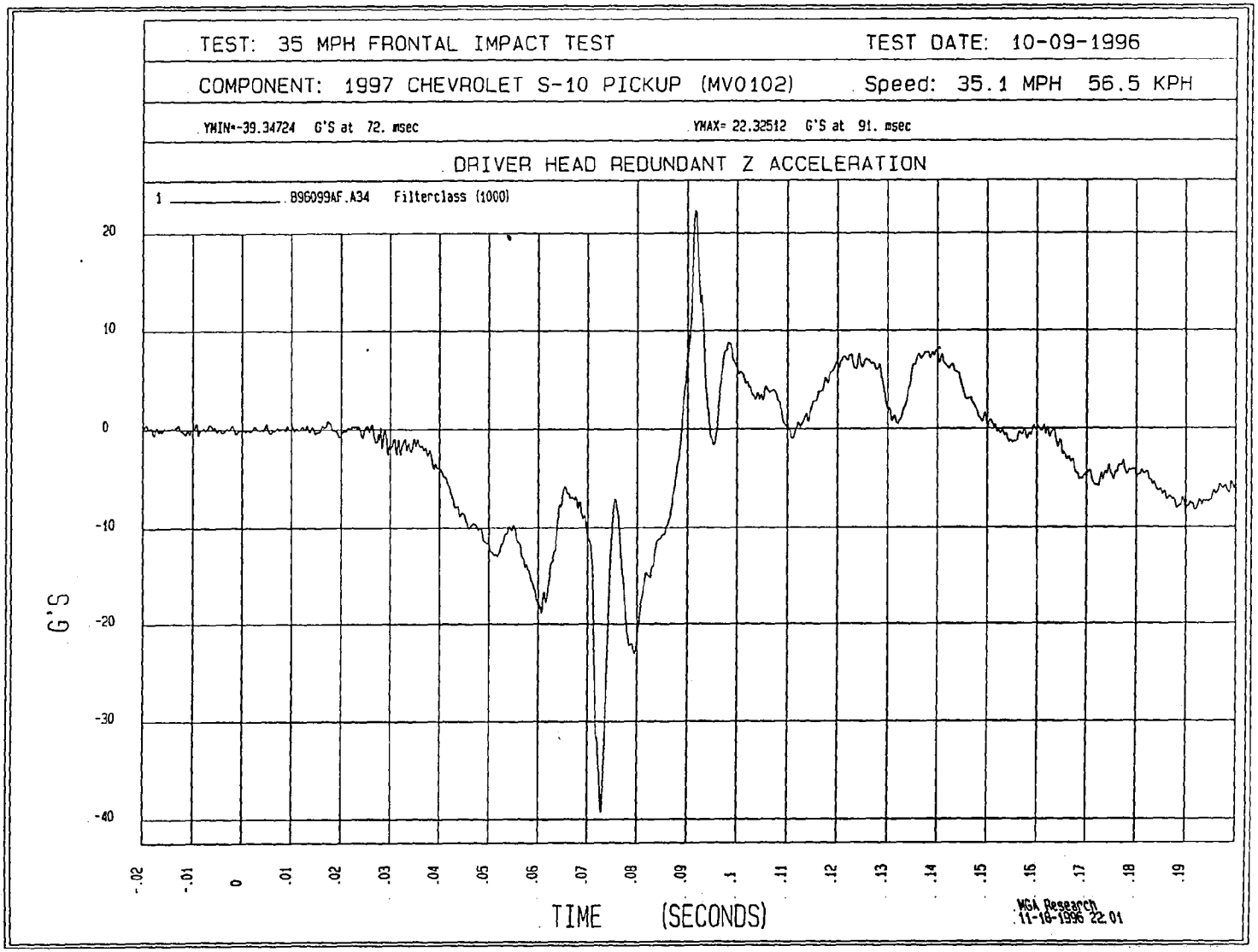
NO VALID DATA COLLECTED


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-110.6842 G'S at 43. msec
YMAX= 48.54471 G'S at 52. msec
DRIVER RIGHT FOOT HEEL X ACCELERATION
1 C96099AF.A02 Filterclass (1000)
40
20
0
-20
-40
-60
-80
-100
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (seconds)
MGA Research
11-18-1996 21:37


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-295.3943 G'S at 51. msec
YMAX= 116.5344 G'S at 47. msec
DRIVER RIGHT FOOT HEEL Z ACCELERATION
1 C9609AF.A03 Filterclass (1000)
100
0
-100
-200
-300
G'S
TIME (seconds)
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
MGA Research
11-18-1996 21:31


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-72.26749 G'S at 77. msec
YMAX= 33.26702 G'S at 131 msec
DRIVER HEAD REDUNDANT X ACCELERATION
1 B96099AF.A32 Filterclass (1000)
20
0
-20
-40
-60
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:01


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-25.98713 G'S at 131 msec
YMAX= 35.65796 G'S at 81. msec
DRIVER HEAD REDUNDANT Y ACCELERATION
1 ——— 896099AF.A33 Filterclass (1000)
30
20
10
0
-10
-20
TIME (SECONDS)
NGA Research
11-18-1996 22:01


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-39.34724 G'S at 72. msec
YMAX= 22.32512 G'S at 91. msec
DRIVER HEAD REDUNDANT Z ACCELERATION
1 B96099AF.A34 Filterclass (1000)
20
10
0
-10
-20
-30
-40
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
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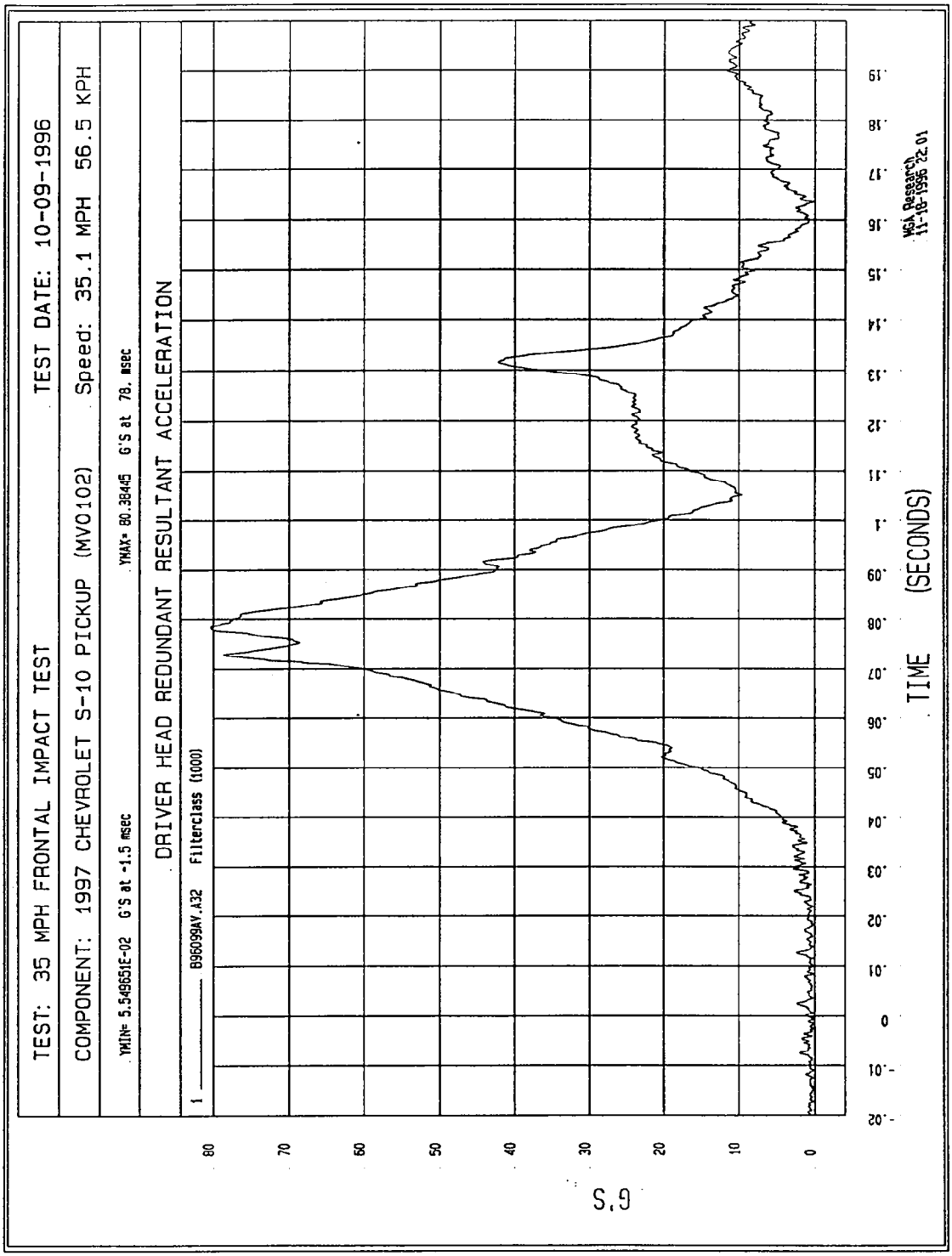
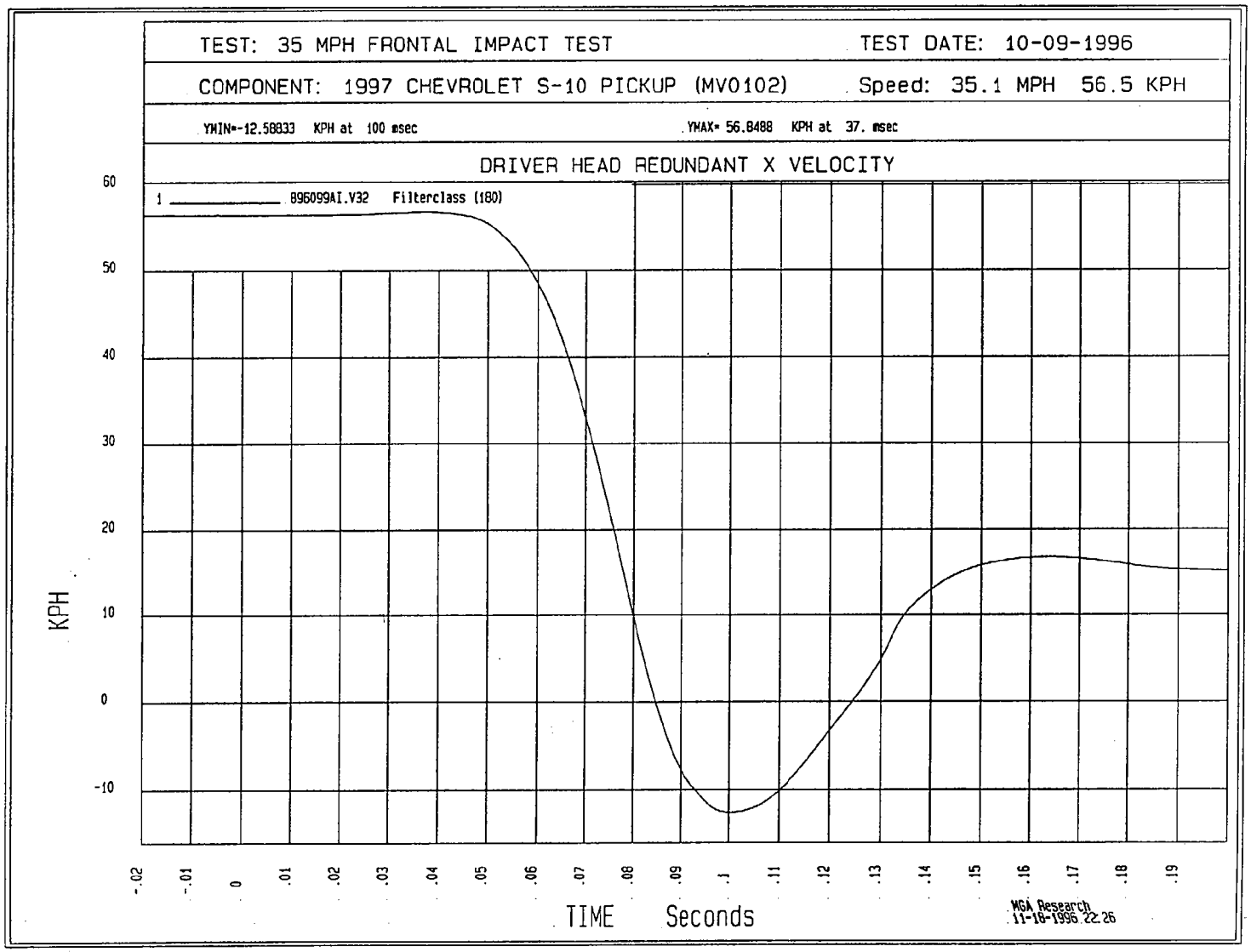
TIME (SECONDS)
MGA Research
11-18-1996 22:01


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 5.549651E-02 G'S at -1.5 msec
YMAX= 80.38445 G'S at 78. msec
DRIVER HEAD REDUNDANT RESULTANT ACCELERATION
1 B96099AY.A32 Filterclass (1000)
G'S
TIME (SECONDS)
MGA Research
11-18-1996 22:01


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-12.58833 KPH at 100 msec
YMAX= 56.8488 KPH at 37. msec
DRIVER HEAD REDUNDANT X VELOCITY
1 896099AI.V32 Filterclass (180)
60
50
40
30
20
10
0
-10
KPH
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
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.12
.13
.14
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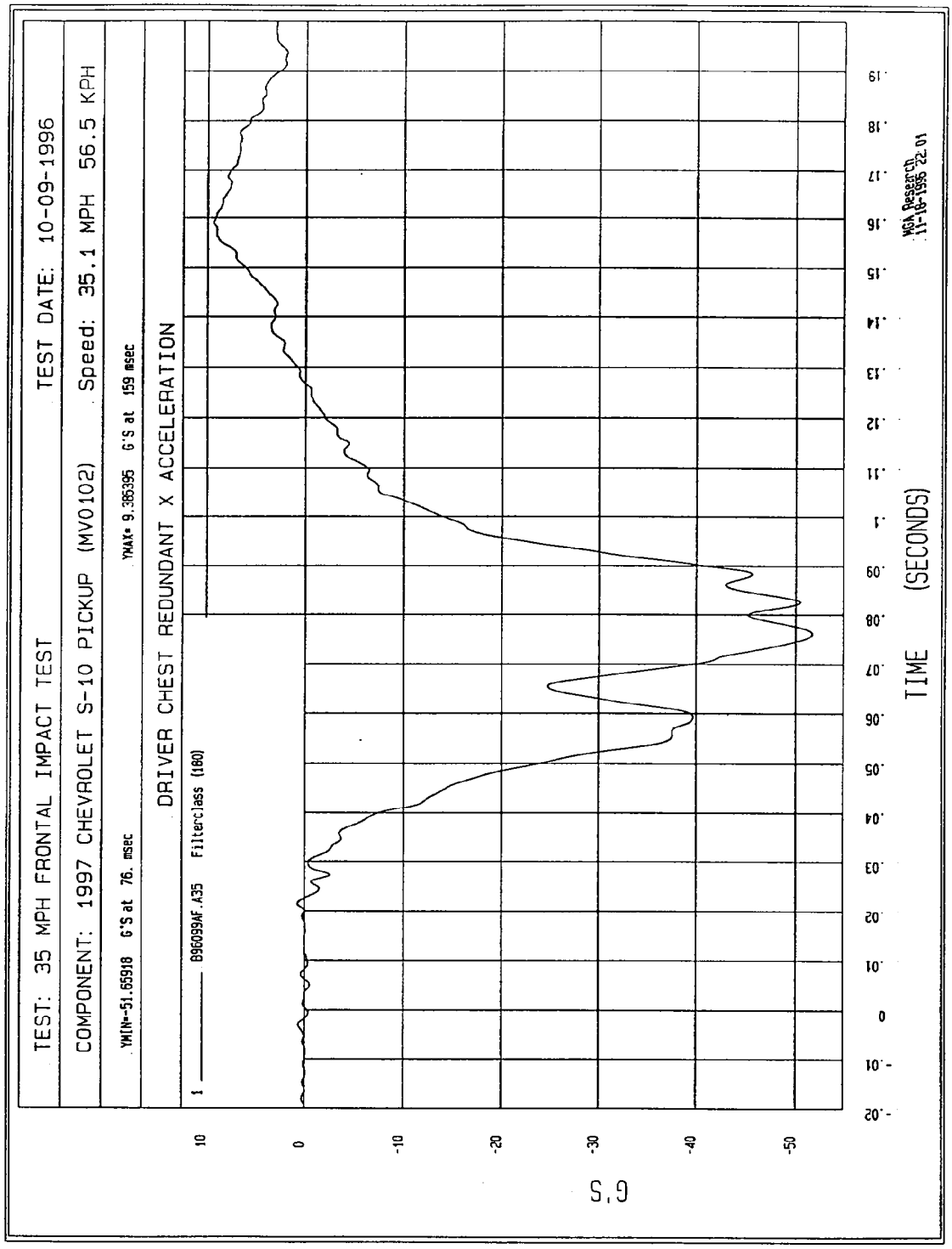
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-51.65918 G'S at 76. msec
YMAX= 9.386395 G'S at 159 msec
DRIVER CHEST REDUNDANT X ACCELERATION
1 D960994F.A35 Filterclass (180)
10
0
-10
-20
-30
-40
-50
G'S
.01
0
.01
.02
.03
.04
.05
.06
.07
.08
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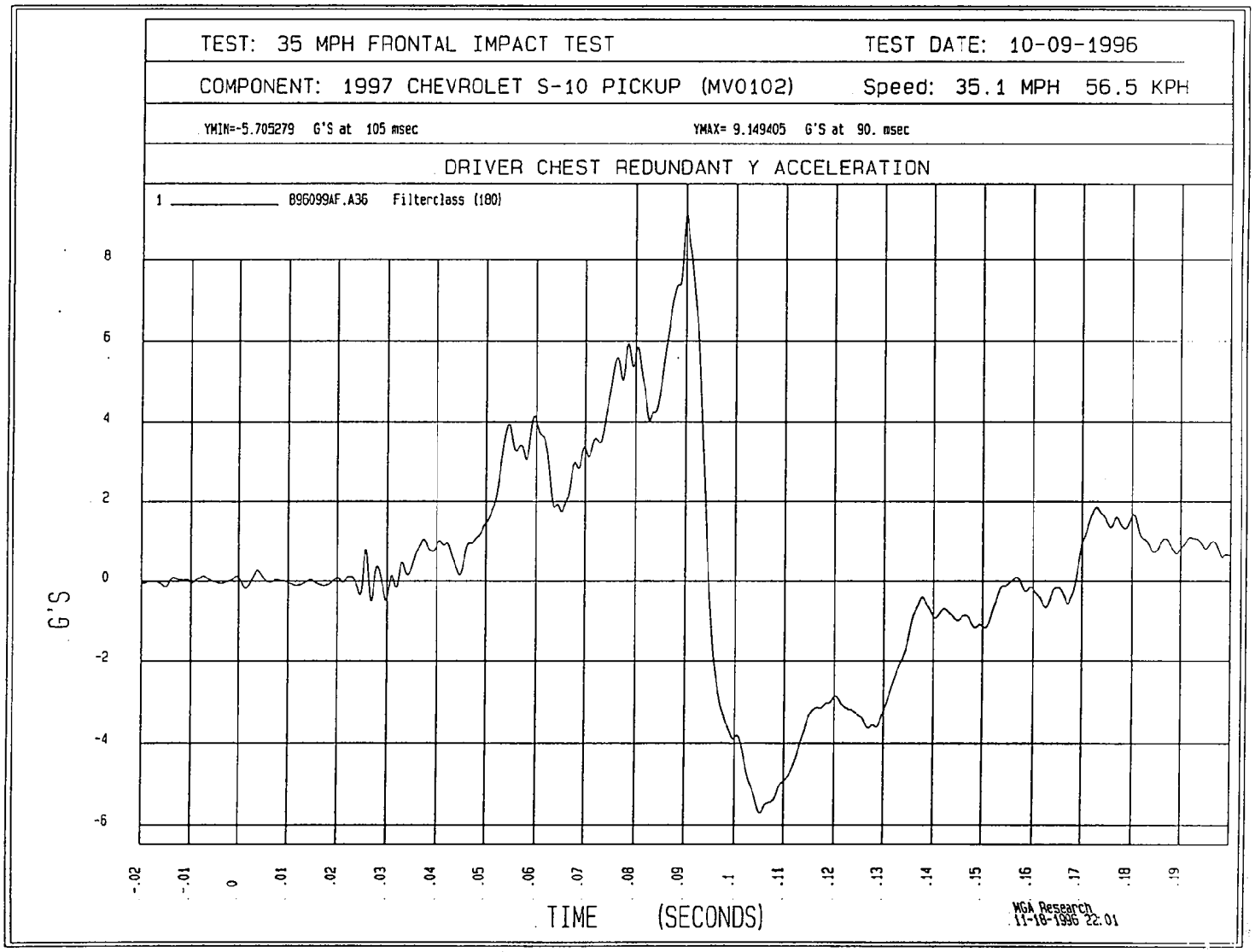
TIME (SECONDS)
MGA Research
11-16-1995 22:01


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-5.705279 G'S at 105 msec
YMAX= 9.149405 G'S at 90. msec
DRIVER CHEST REDUNDANT Y ACCELERATION
1 B96099AF.A36 Filterclass (180)
G'S
8
6
4
2
0
-2
-4
-6
-.02
-.01
0
.01
.02
.03
.04
.05
.06
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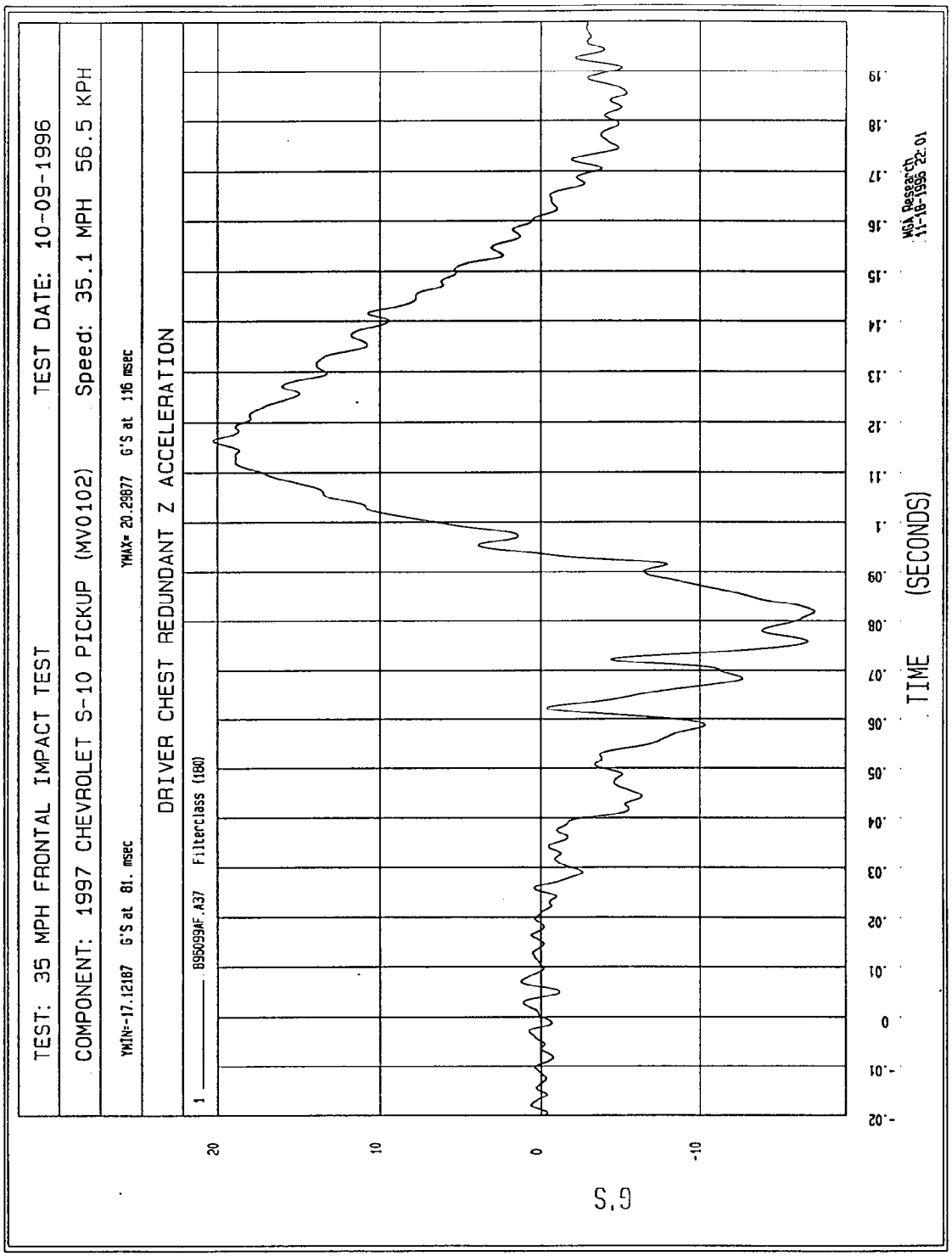
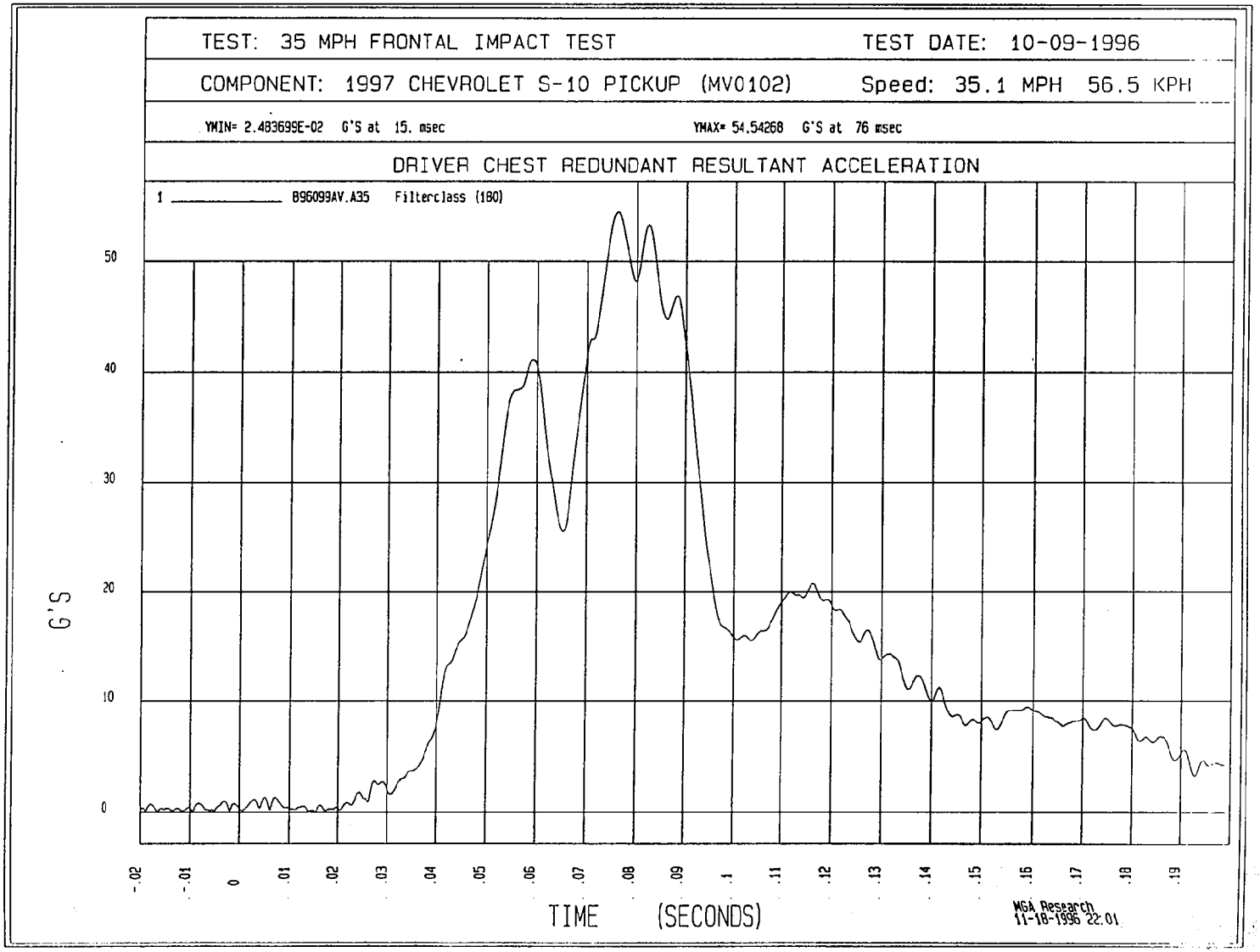
TIME (SECONDS)
MGA Research
11-18-1996 22:01


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-17.12187 G'S at 81. msec
YMAX= 20.29877 G'S at 116 msec
DRIVER CHEST REDUNDANT Z ACCELERATION
1 _____ 895099AF.A37 Filterclass (180)
20
10
0
-10
TIME (SECONDS)
MGA Research
11-16-1995 22:01
6.9


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 2.483699E-02 G'S at 15. msec
YMAX= 54.54268 G'S at 76 msec
DRIVER CHEST REDUNDANT RESULTANT ACCELERATION
1 B96099AV.A35 Filterclass (180)
G'S
50
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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.11
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.17
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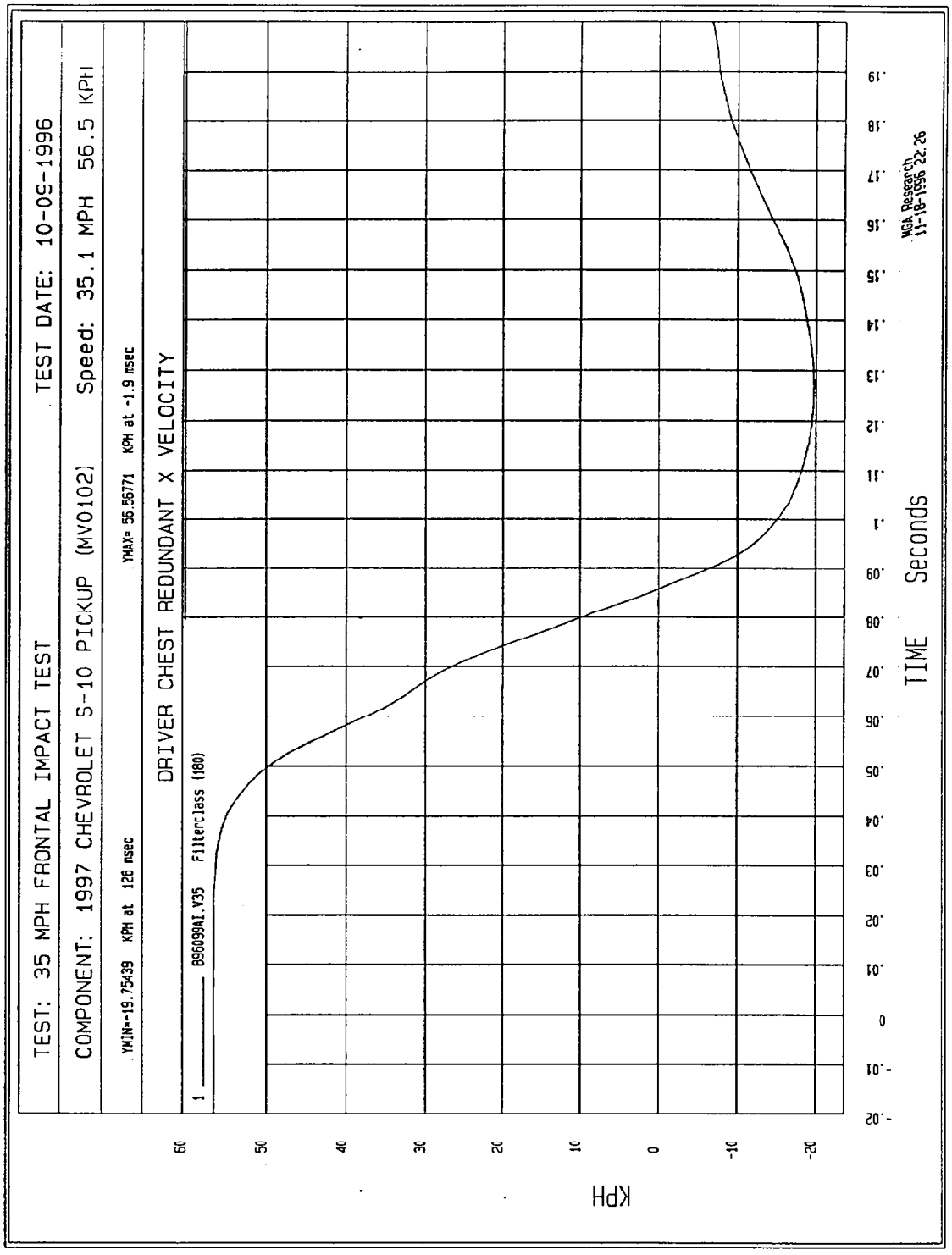
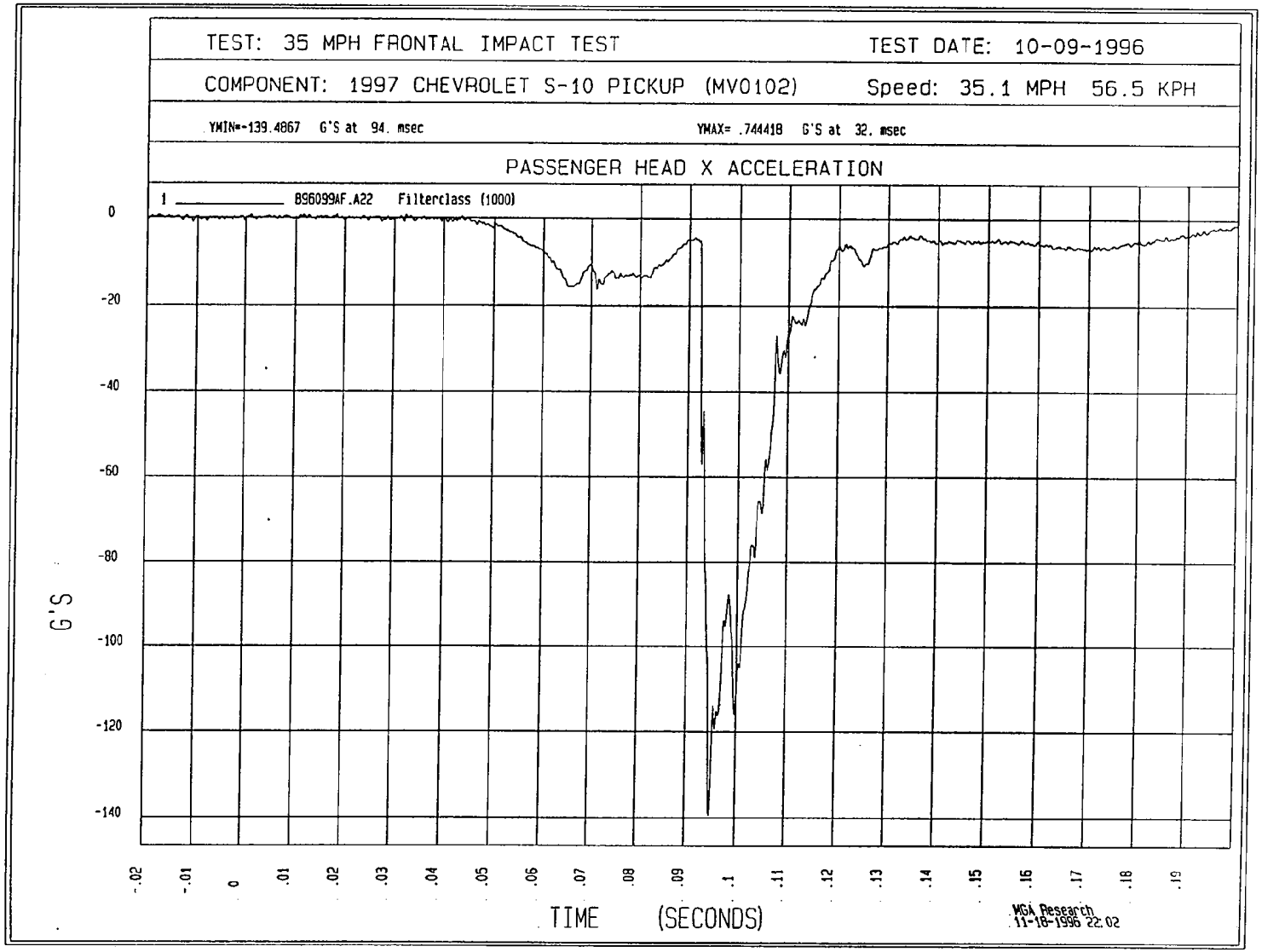
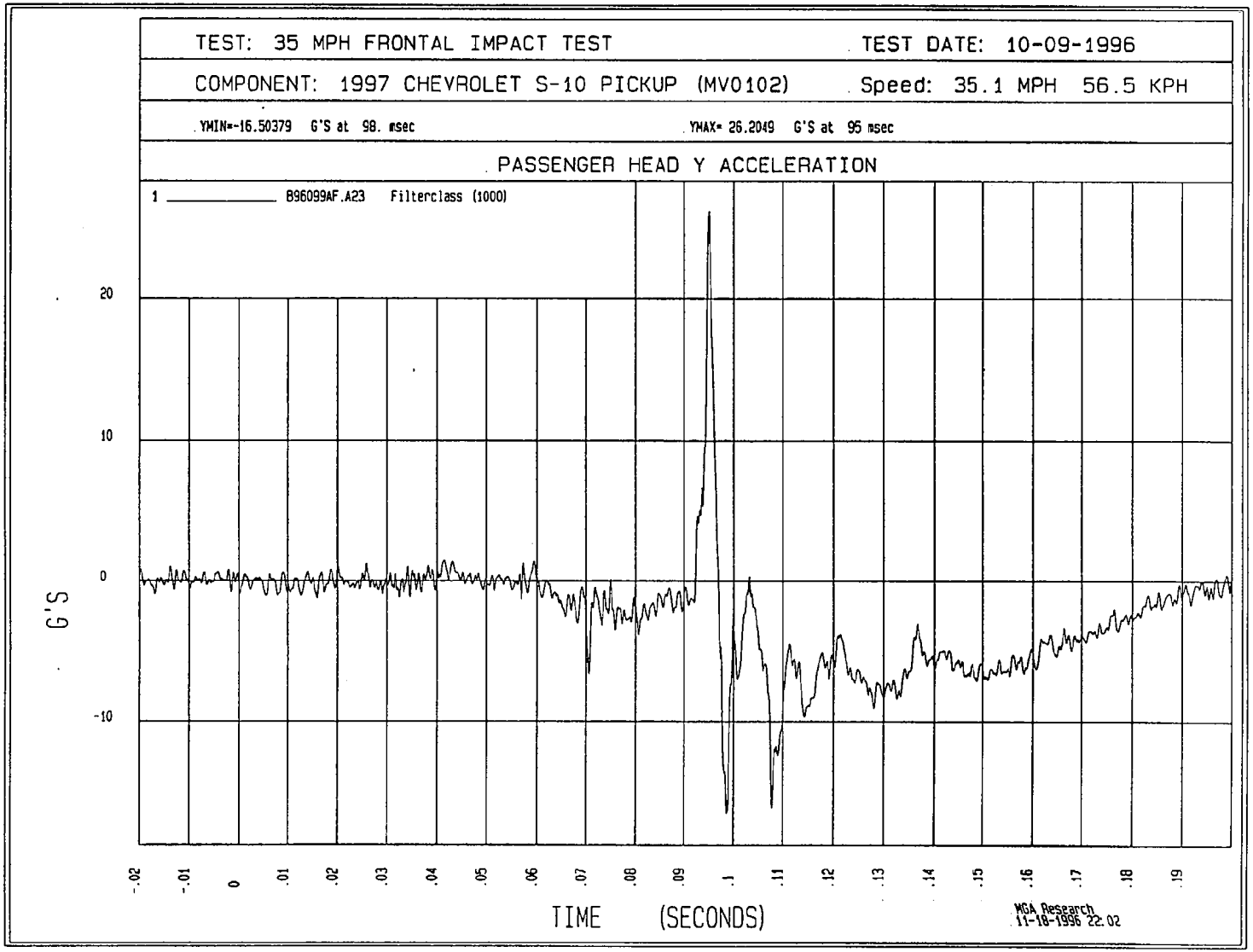
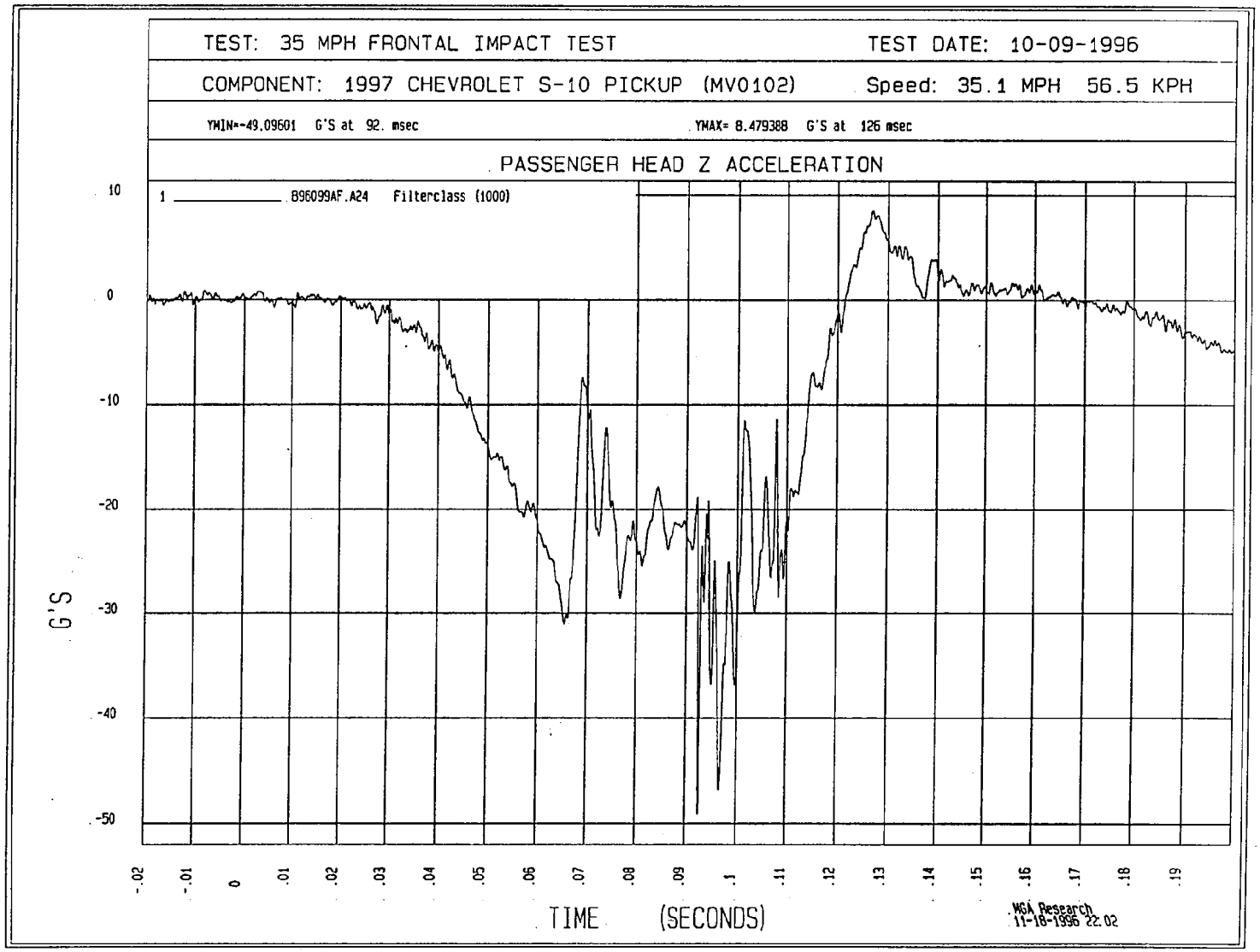
TIME (SECONDS)
MGA Research
11-18-1996 22:01


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-19.75439 KPH at 126 msec
YMAX= 56.55771 KPH at -1.9 msec
DRIVER CHEST REDUNDANT X VELOCITY
1 _____ B96039AI.Y35 Filterclass (180)
KPH
TIME Seconds
MGA Research
11-18-1996 22:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-139.4867 G'S at 94. msec
YMAX= .744418 G'S at 32. msec
PASSENGER HEAD X ACCELERATION
1 B96099AF.A22 Filterclass (1000)
0
-20
-40
-60
-80
-100
-120
-140
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:02


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-16.50379 G'S at 98. msec
YMAX= 26.2049 G'S at 95 msec
PASSENGER HEAD Y ACCELERATION
1 B96099AF.A23 Filterclass (1000)
20
10
0
-10
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:02


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-49.09601 G'S at 92. msec
YMAX= 8.479388 G'S at 126 msec
PASSENGER HEAD Z ACCELERATION
1 B96099AF.A24 Filterclass (1000)
10
0
-10
-20
-30
-40
-50
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
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.16
.17
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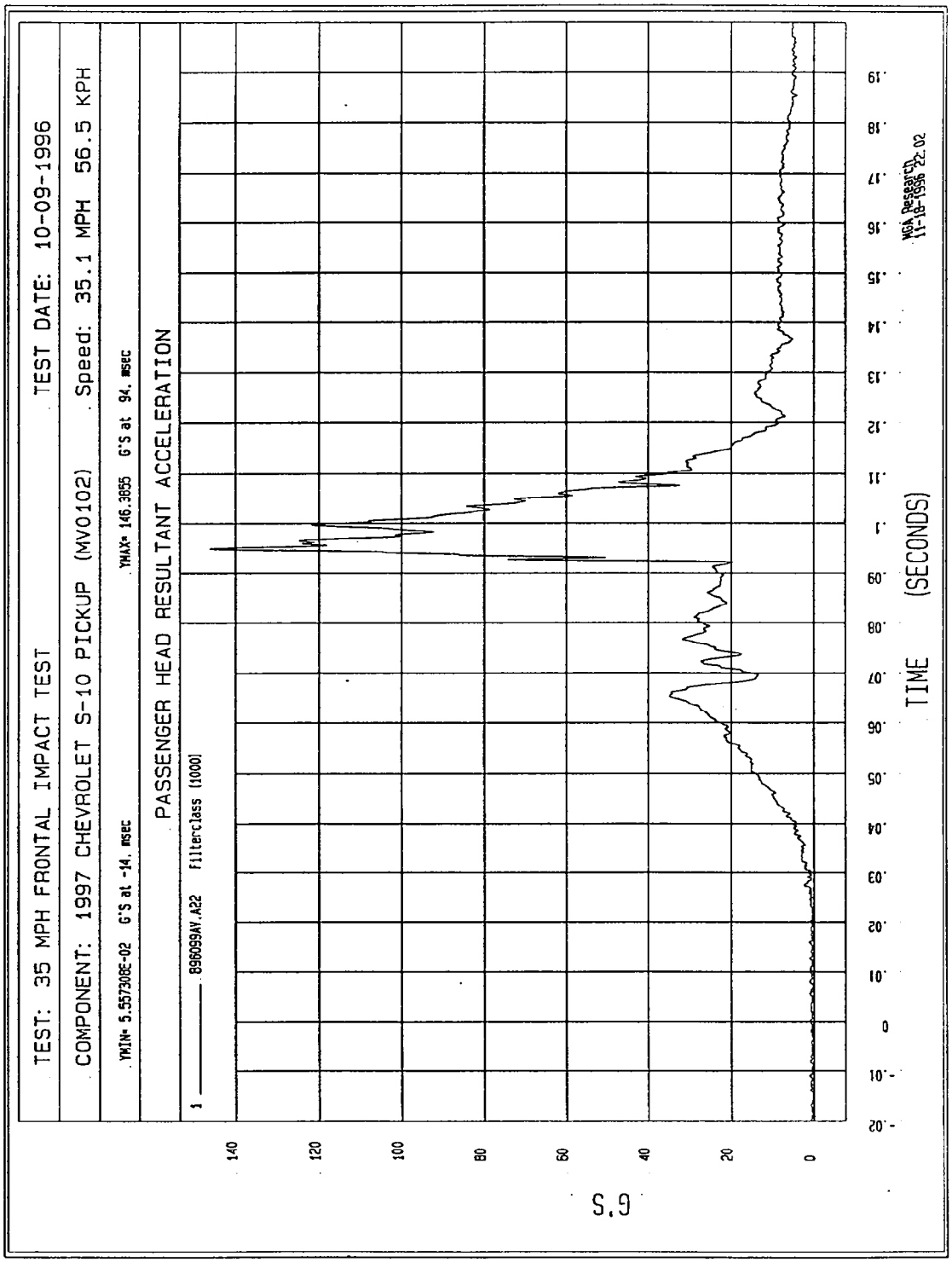
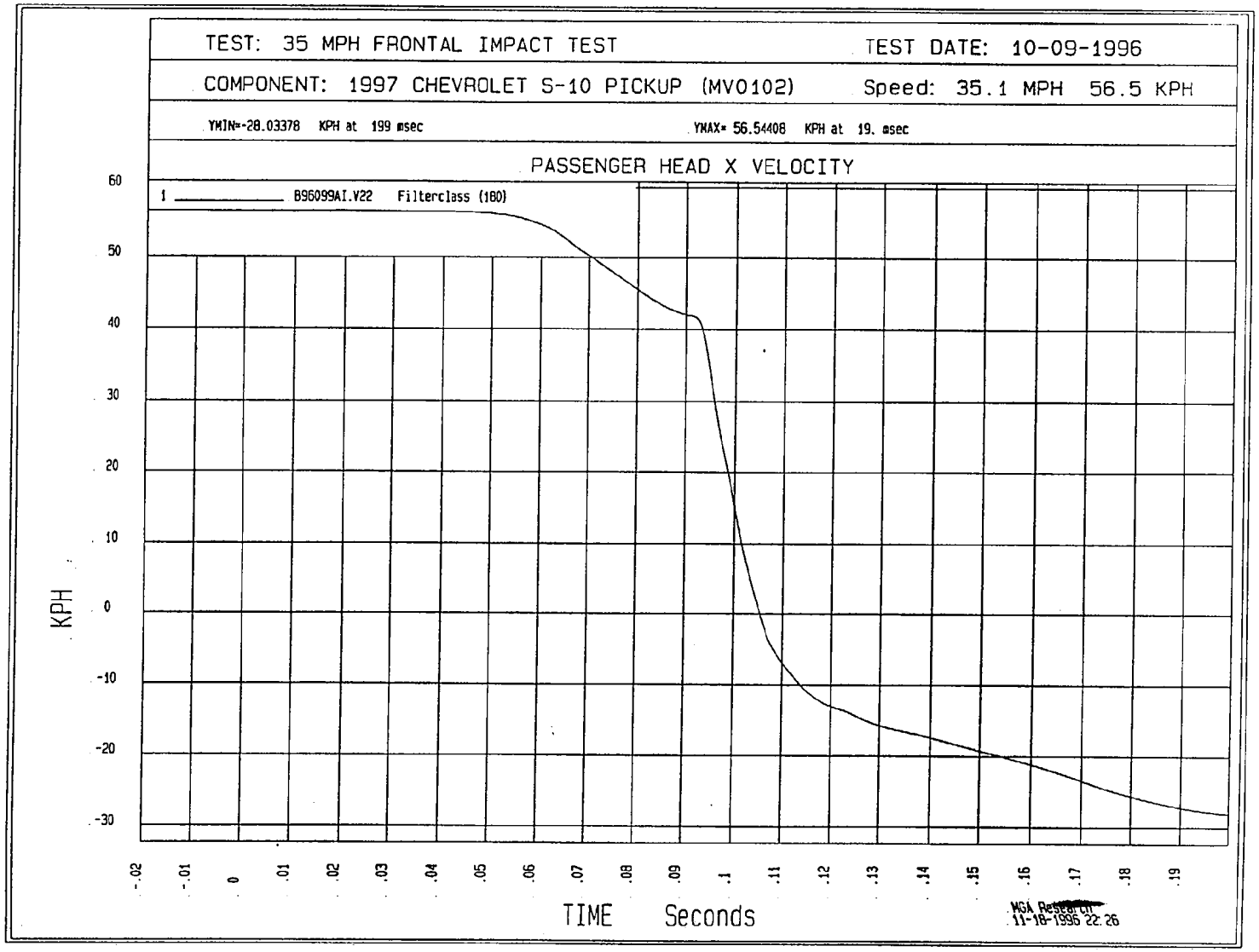
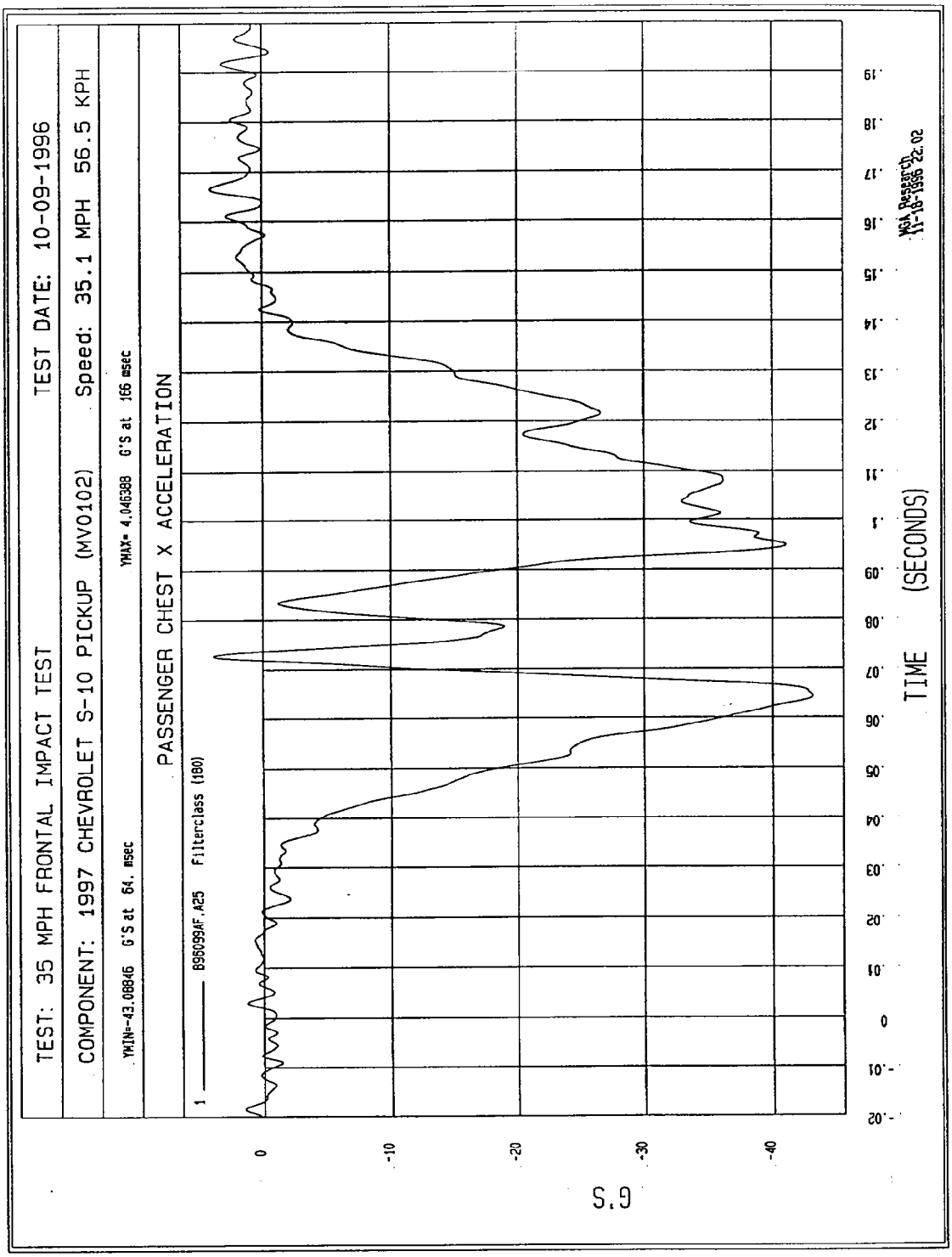
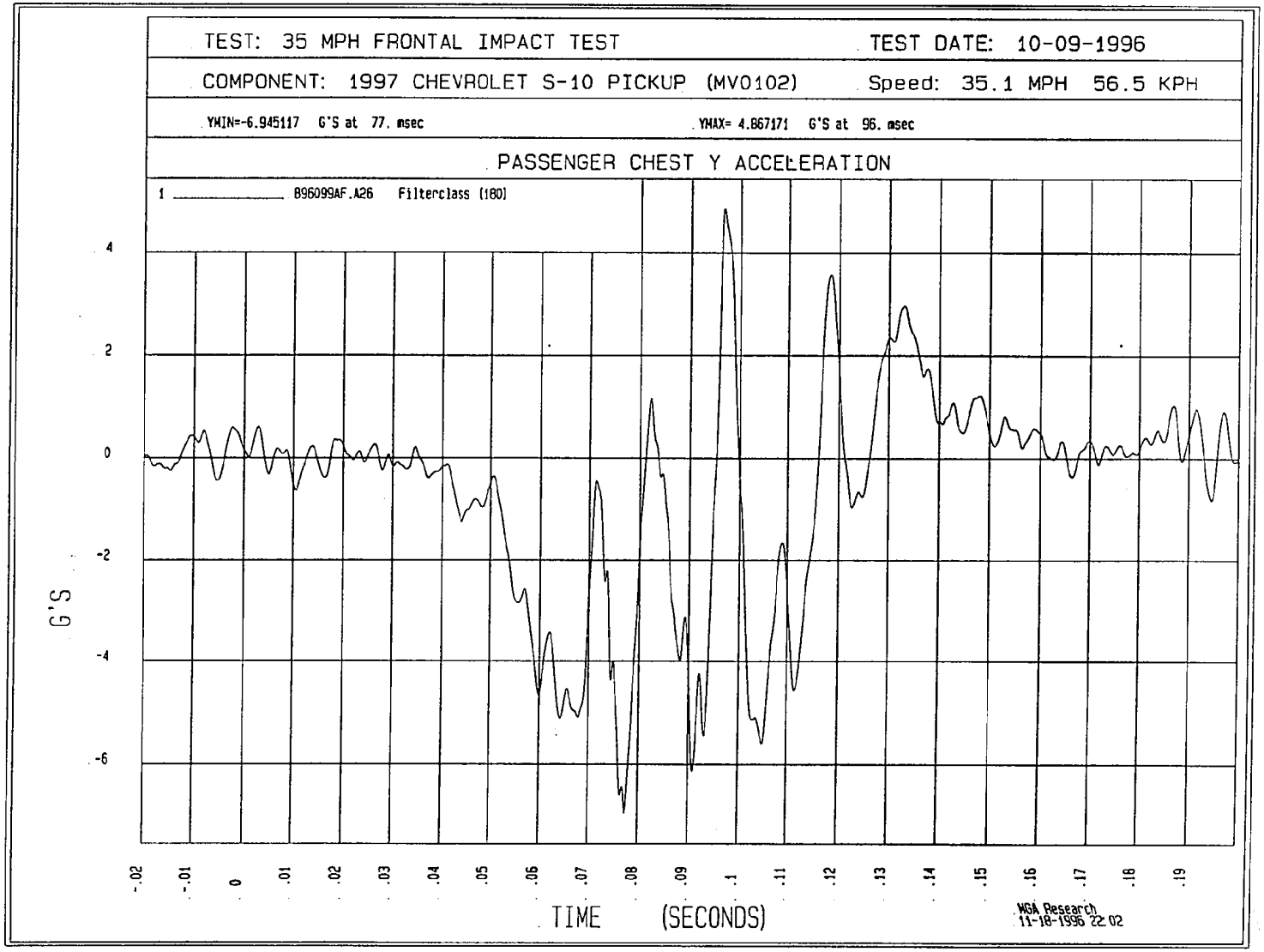
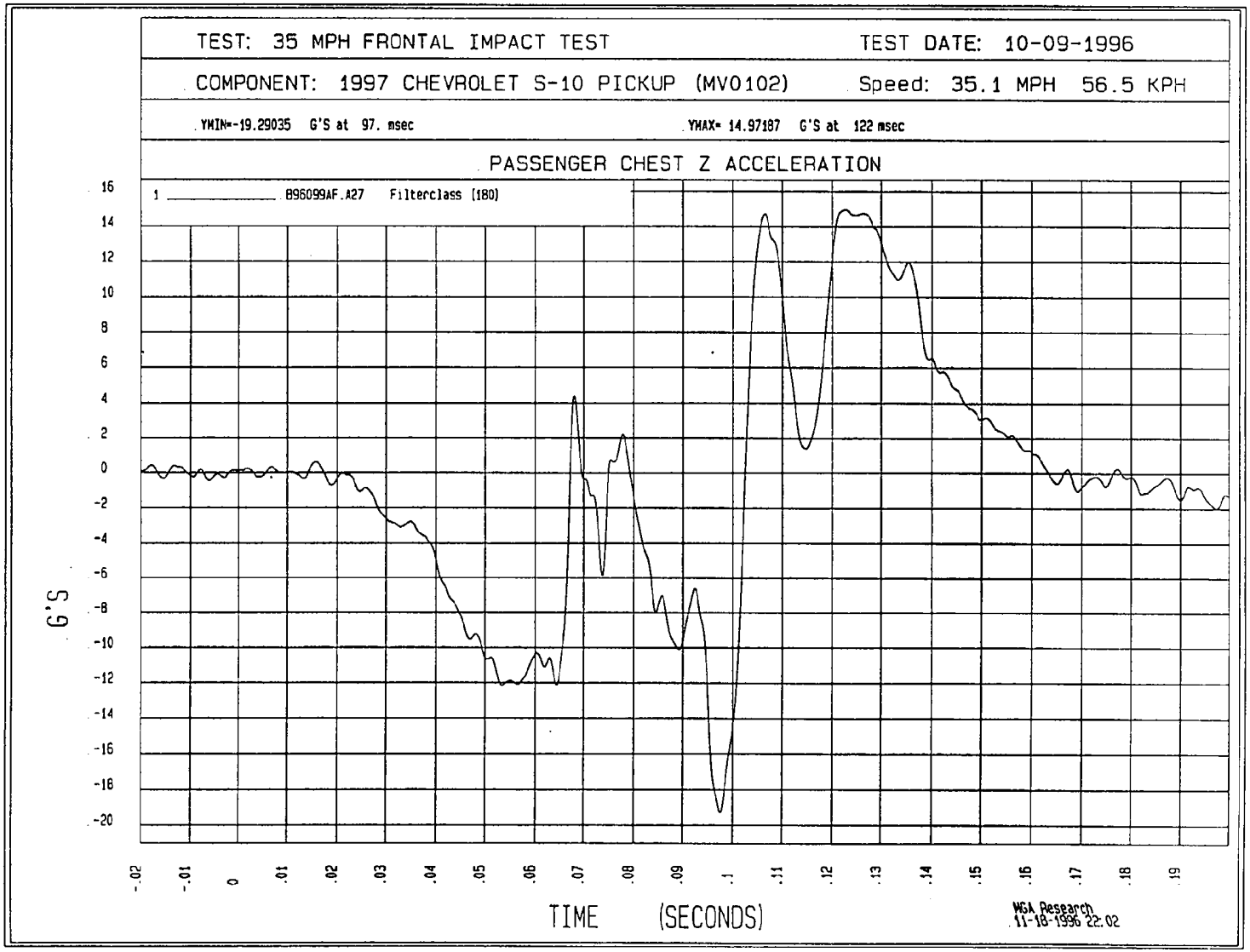
TIME (SECONDS)
MGA Research
11-18-1996 22:02

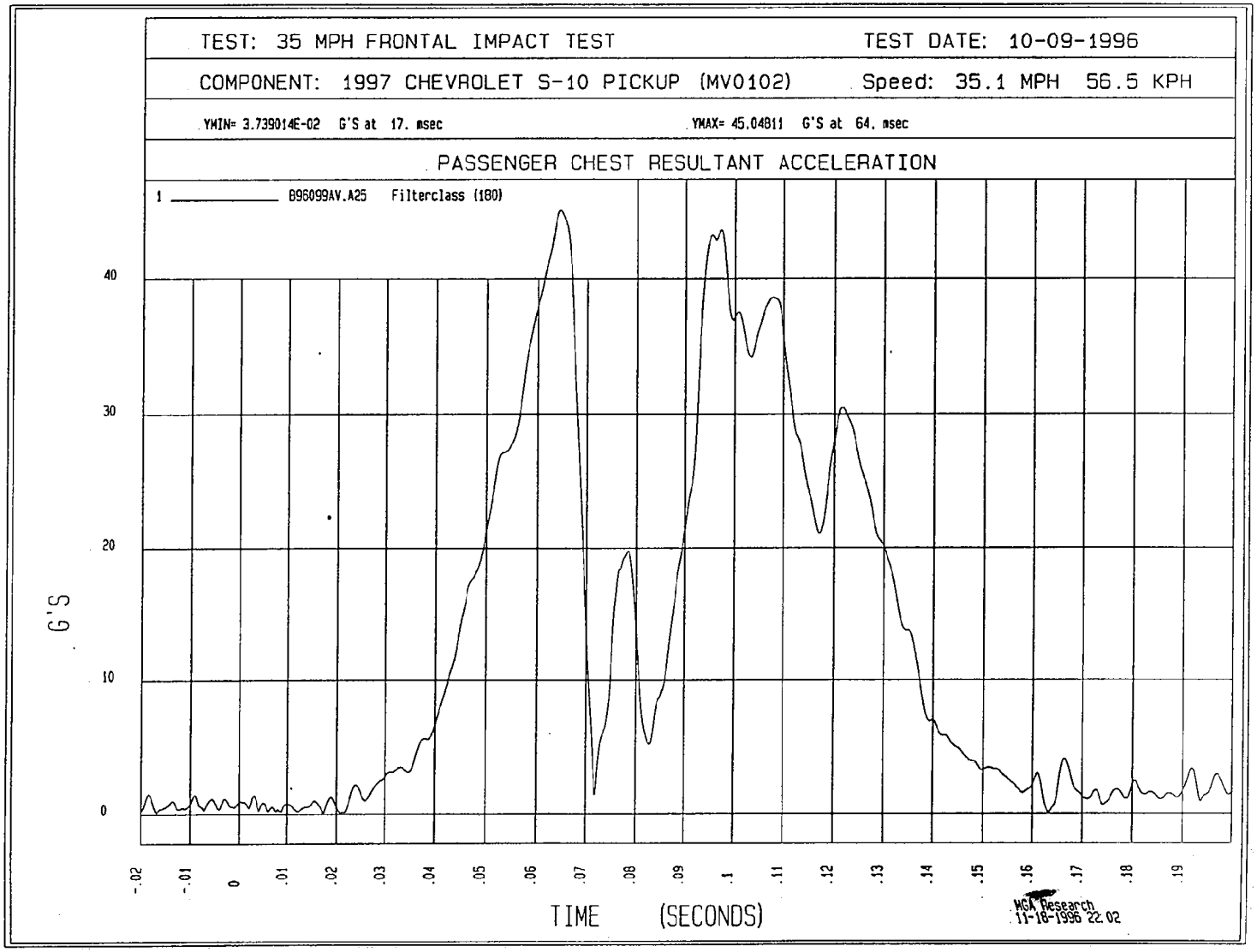

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 5.557308E-02 G'S at -14. msec
YMAX= 146.3655 G'S at 94. msec
PASSENGER HEAD RESULTANT ACCELERATION
1 _____ 896099AV.A22 Filterclass (1000)
140
120
100
80
60
40
20
0
-20
-10
0
10
20
30
40
50
60
70
80
90
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
11-18-1996 22:02
G's


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-28.03378 KPH at 199 msec
YMAX= 56.54408 KPH at 19. msec
PASSENGER HEAD X VELOCITY
1 B96099AI.V22 Filterclass (180)
KPH
60
50
40
30
20
10
0
-10
-20
-30
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996 22:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-43.08846 G'S at 64. msec
YMAX= 4.046388 G'S at 166 msec
PASSENGER CHEST X ACCELERATION
1 ——— 896099AF.A25 Filterclass (180)
0
-10
-20
-30
-40
G'S
.19
.18
.17
.16
.15
.14
.13
.12
.11
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (SECONDS)
MGA Research
11-18-1996 22:02


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-6.945117 G'S at 77. msec
YMAX= 4.867171 G'S at 96. msec
PASSENGER CHEST Y ACCELERATION
1 B96099AF.A26 Filterclass (180)
G'S
4
2
0
-2
-4
-6
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
NGA Research
11-18-1996 22:02


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-19.29035 G'S at 97. msec
YMAX= 14.97187 G'S at 122 msec
PASSENGER CHEST Z ACCELERATION
1 B96099AF.A27 Filterclass (180)
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:02


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 3.739014E-02 G'S at 17. msec
YMAX= 45.04811 G'S at 64. msec
PASSENGER CHEST RESULTANT ACCELERATION
1 B96099AV.A25 Filterclass (180)
G'S
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
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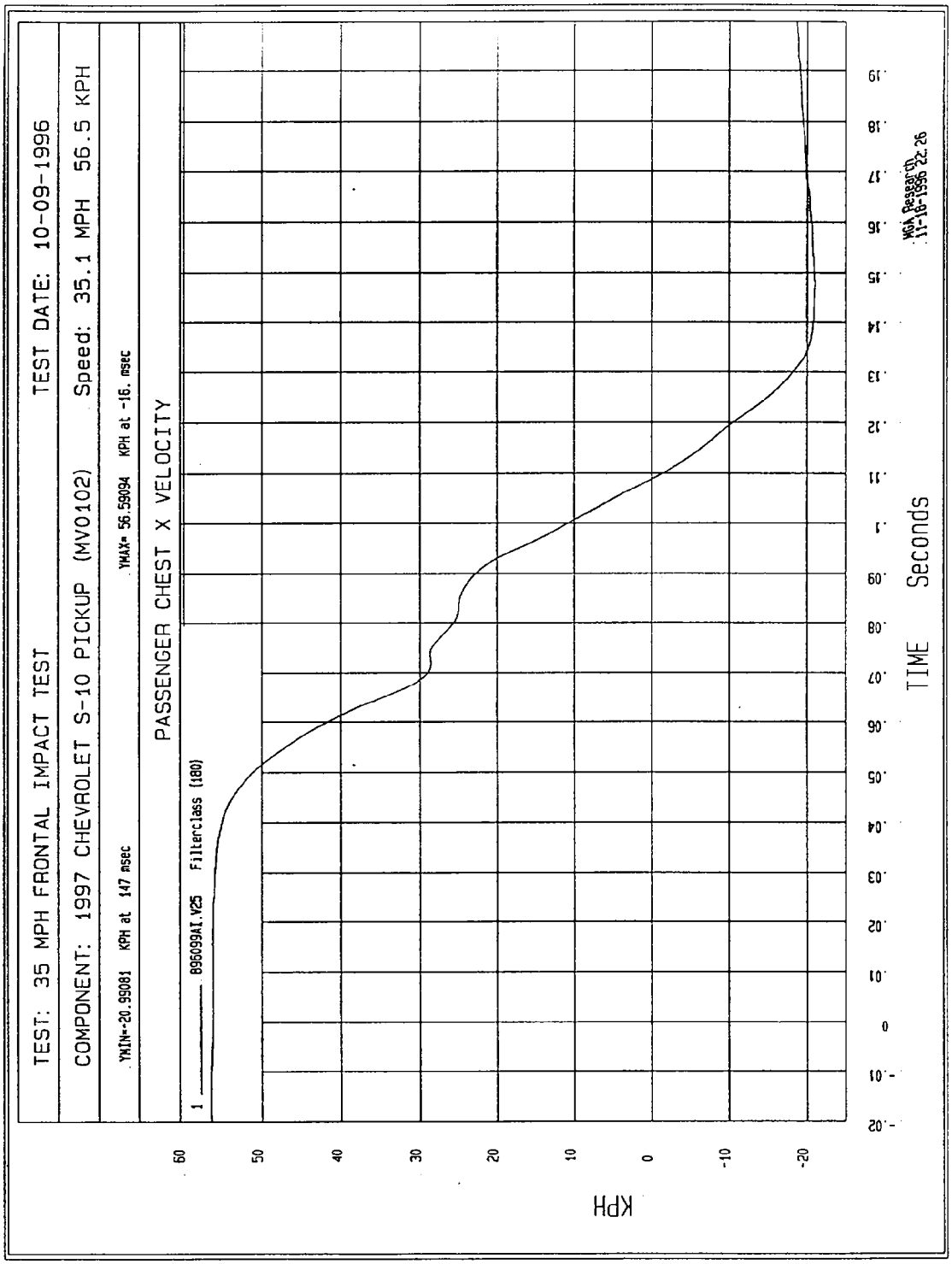
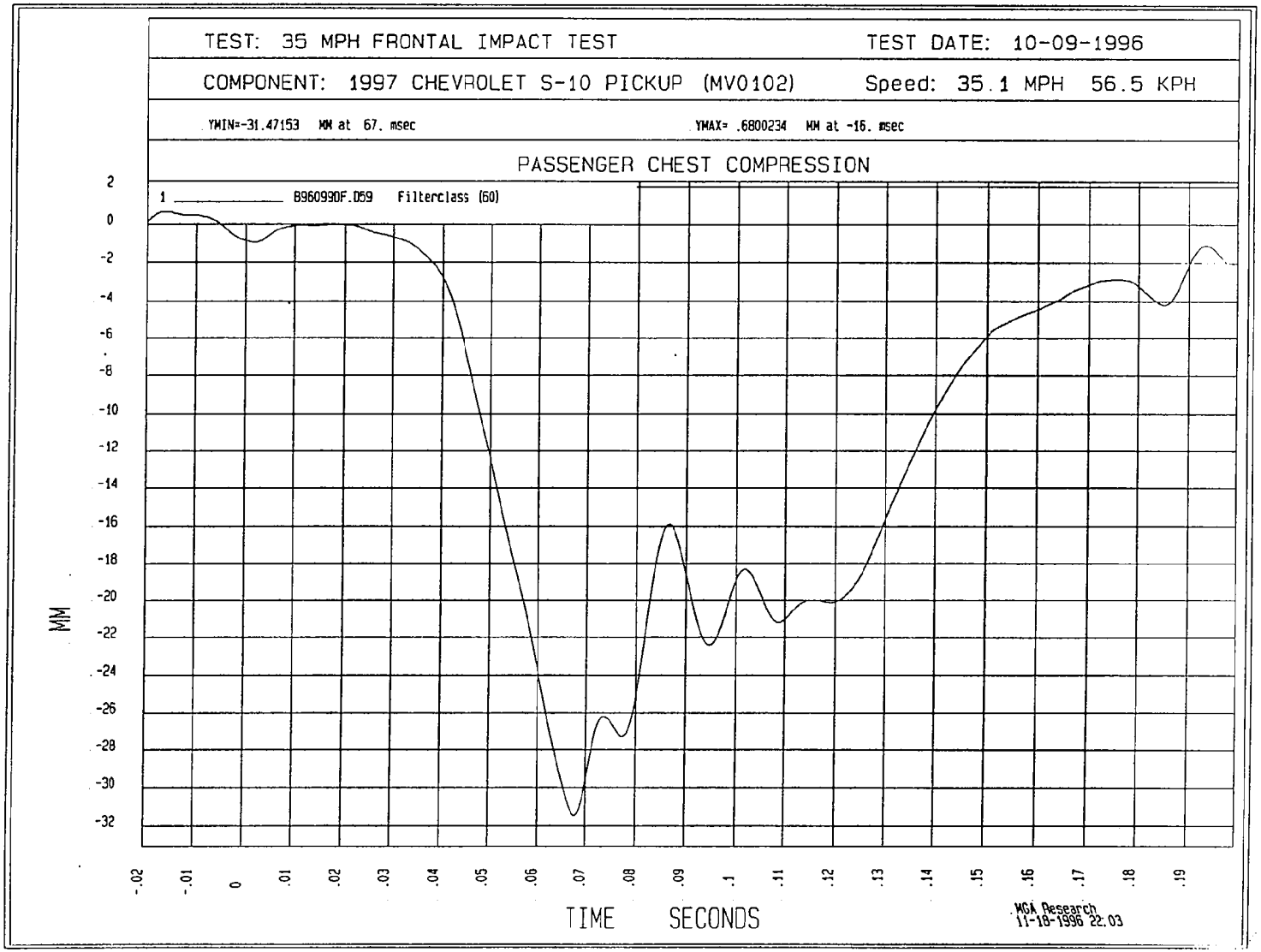
TIME (SECONDS)
MGA Research
11-18-1996 22:02


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-20.99081 KPH at 147 msec
YMAX= 56.59094 KPH at -16. msec
PASSENGER CHEST X VELOCITY
1 896099AI.Y25 Filterclass (180)
KPH
TIME Seconds
MGA Research
11-18-1996 22:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-31.47153 MM at 67. msec
YMAX= .6800234 MM at -16. msec
PASSENGER CHEST COMPRESSION
1 B960990F.059 Filterclass (60)
MM
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
-32
-.02
-.01
0
.01
.02
.03
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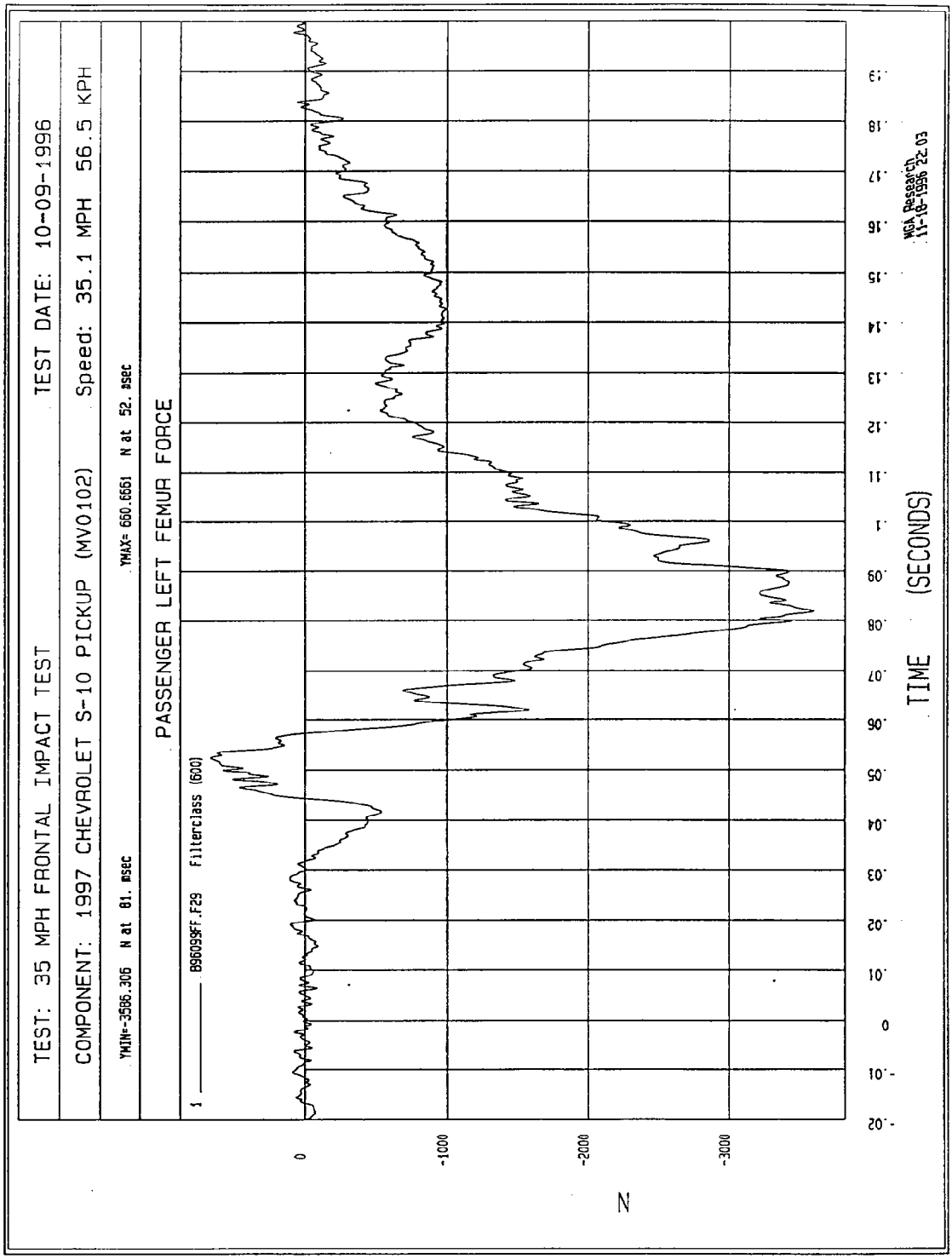
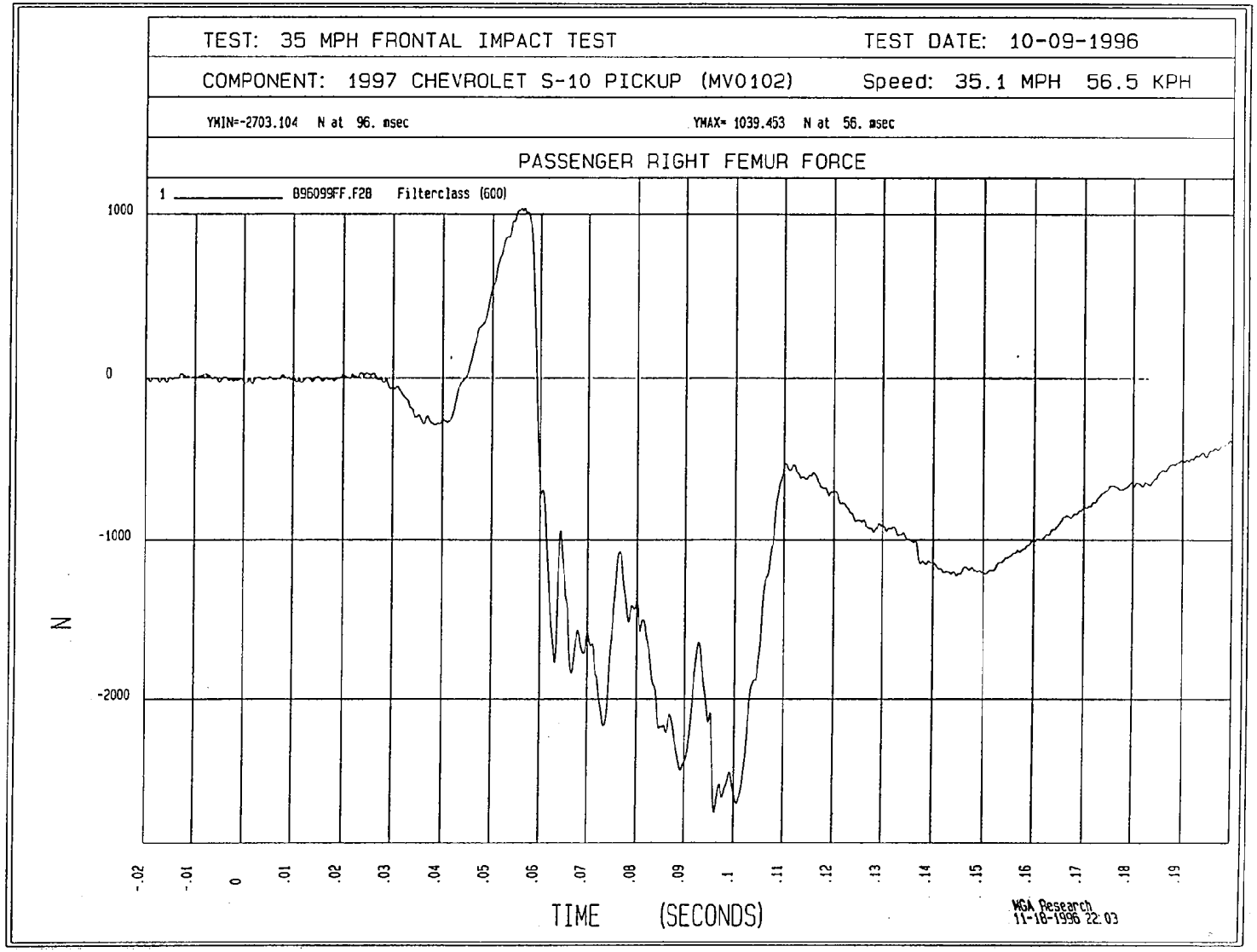
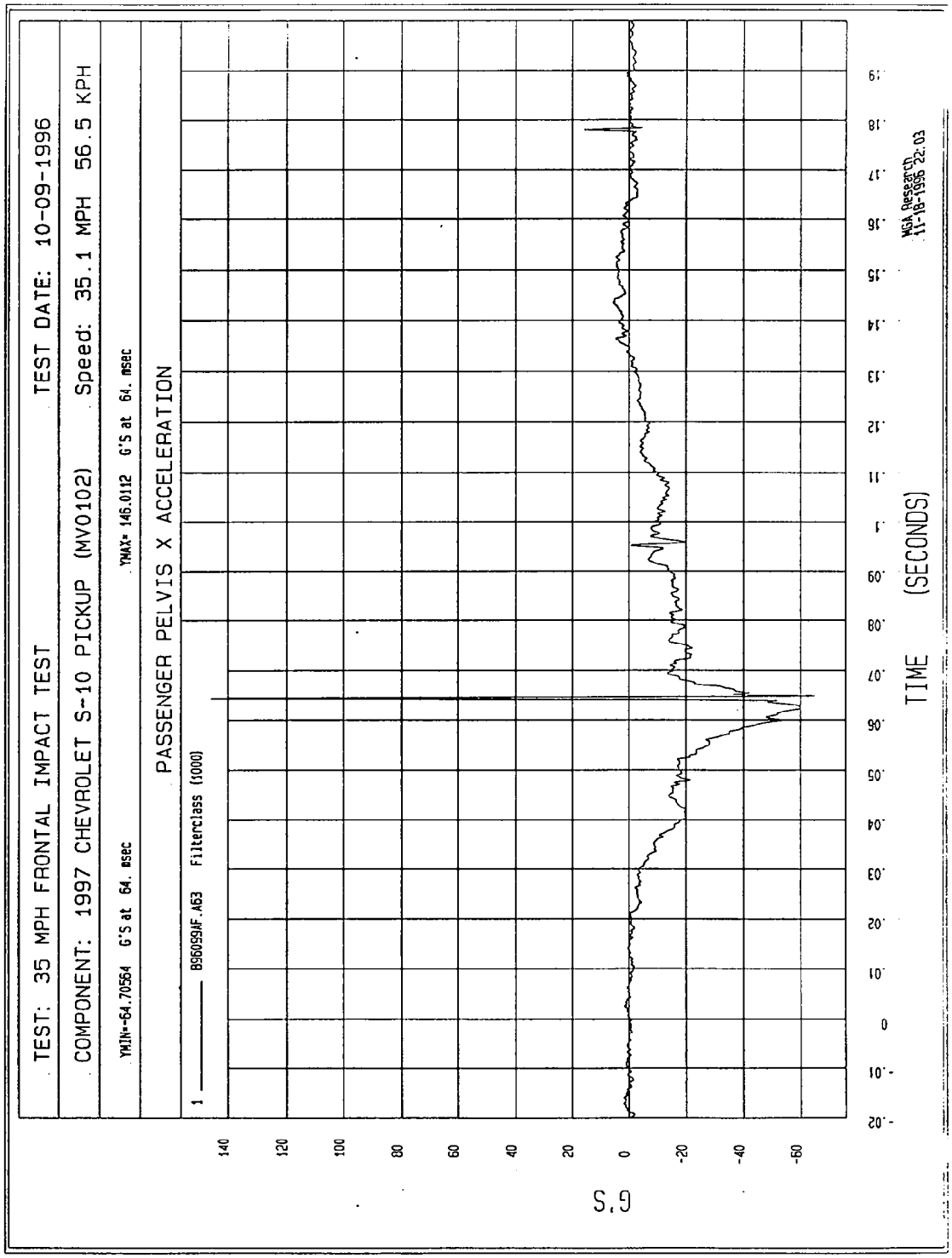
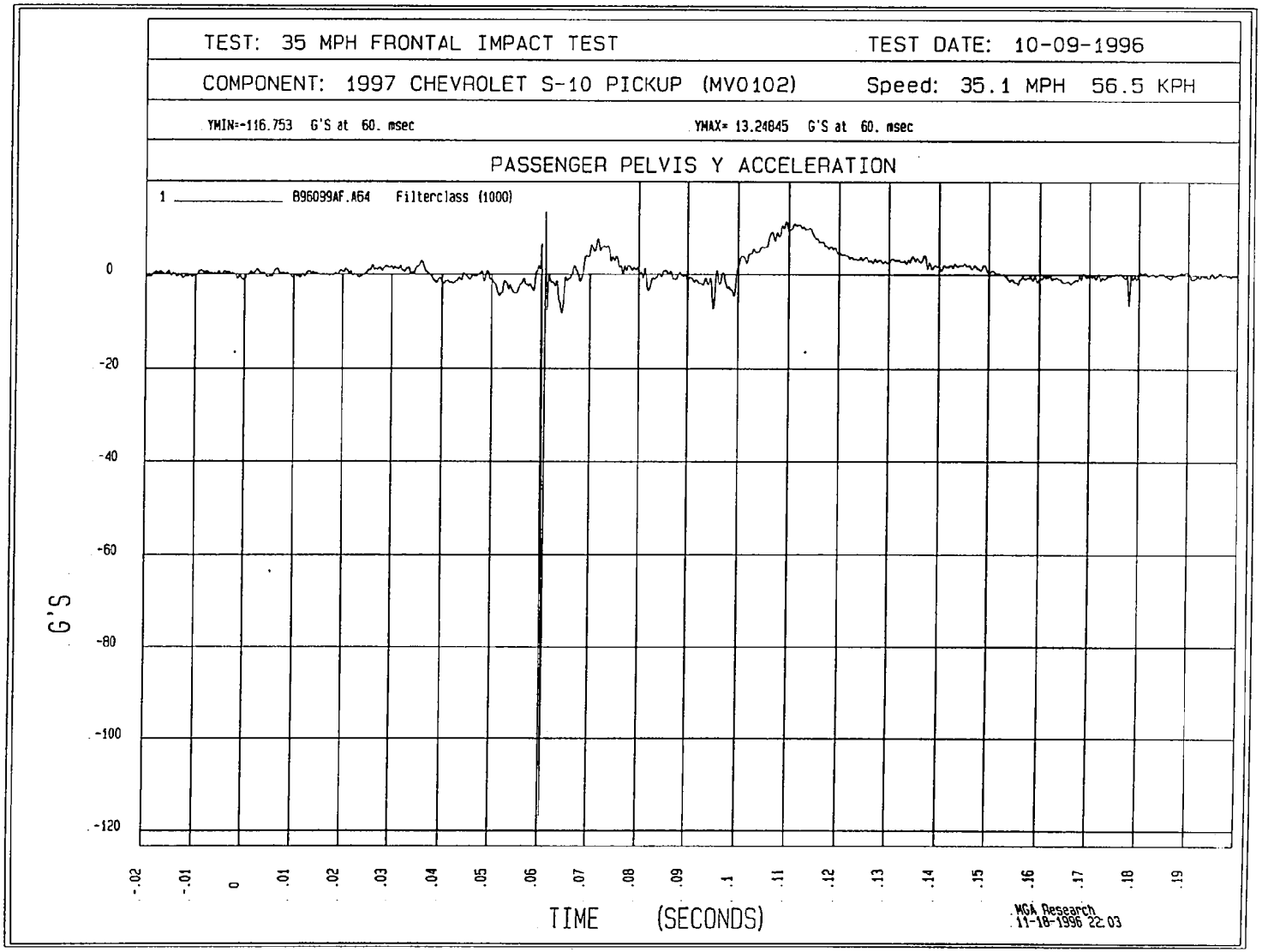
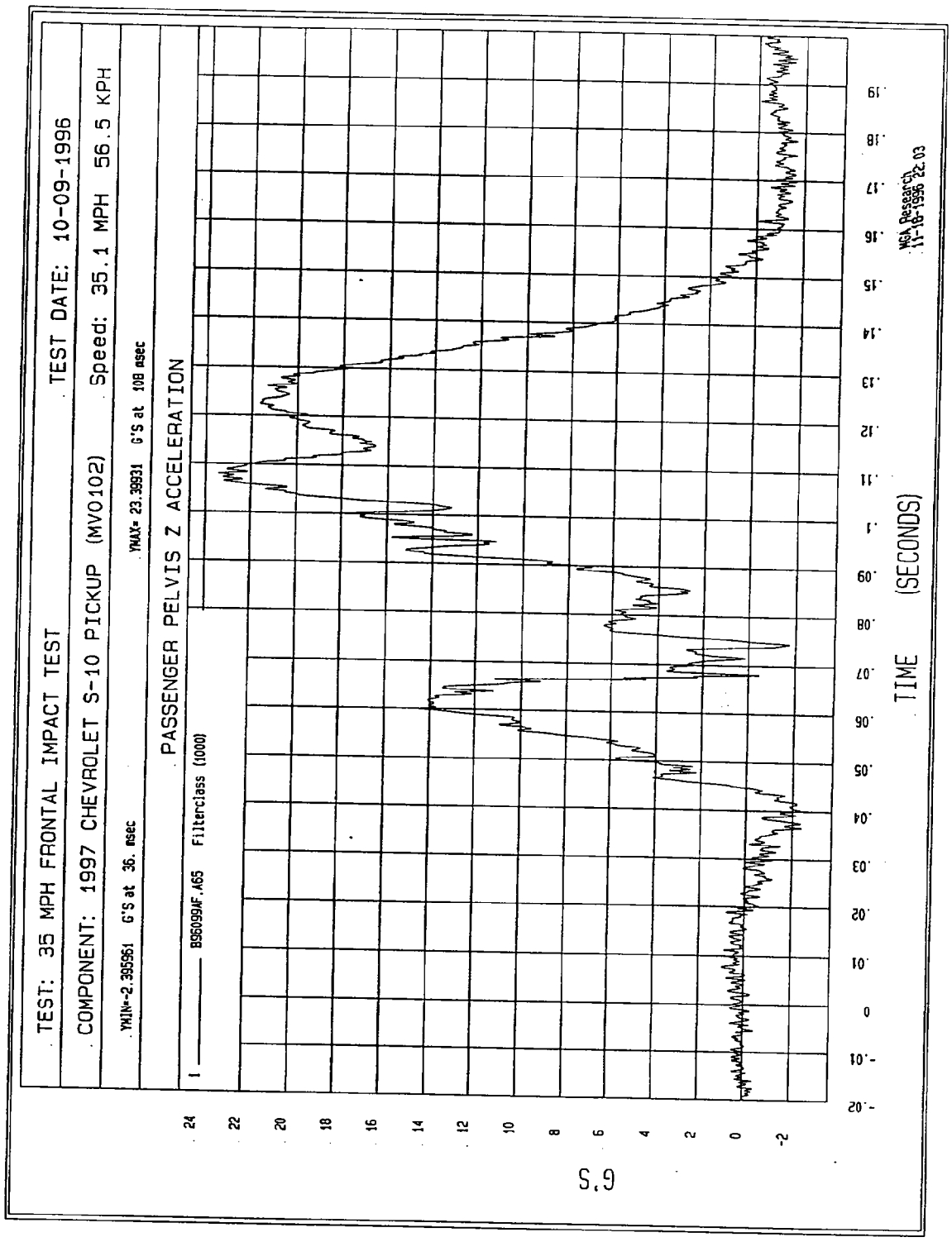
TIME SECONDS
MGA Research
11-18-1996 22:03


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-3586.306 N at 81. msec
YMAX= 660.6661 N at 52. msec
PASSENGER LEFT FEMUR FORCE
1 _____ B96099FF.F29 Filterclass (600)
0
-1000
-2000
-3000
N
TIME (SECONDS)
MGA Research
11-18-1996 22:03


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-2703.104 N at 96. msec
YMAX= 1039.453 N at 56. msec
PASSENGER RIGHT FEMUR FORCE
1 B96099FF.F28 Filterclass (600)
1000
0
-1000
-2000
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:03


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-64.70564 G'S at 64. msec
YMAX= 146.0112 G'S at 64. msec
PASSENGER PELVIS X ACCELERATION
1 B96059AF.A63 Filterclass (1000)
140
120
100
80
60
40
20
0
-20
-40
-60
G'S
TIME (SECONDS)
MGA Research
11-18-1996 22:03


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-116.753 G'S at 60. msec
YMAX= 13.24845 G'S at 60. msec
PASSENGER PELVIS Y ACCELERATION
1 B96099AF.A64 Filterclass (1000)
0
-20
-40
-60
-80
-100
-120
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:03


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-2.395961 G'S at 36. msec
YMAX= 23.39931 G'S at 108 msec
PASSENGER PELVIS Z ACCELERATION
1 B96099AF.A65 Filterclass (1000)
24
22
20
18
16
14
12
10
8
6
4
2
0
-2
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
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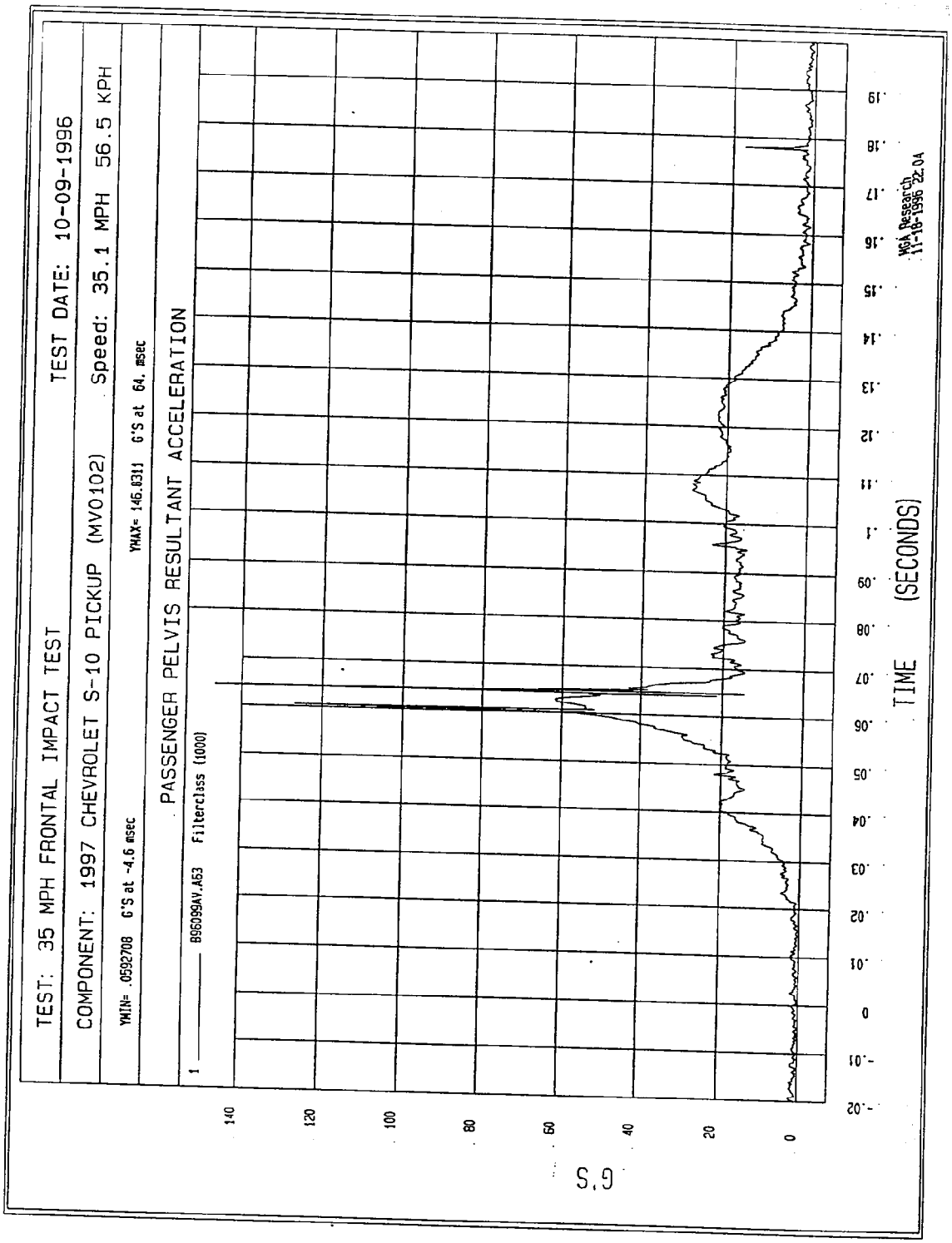
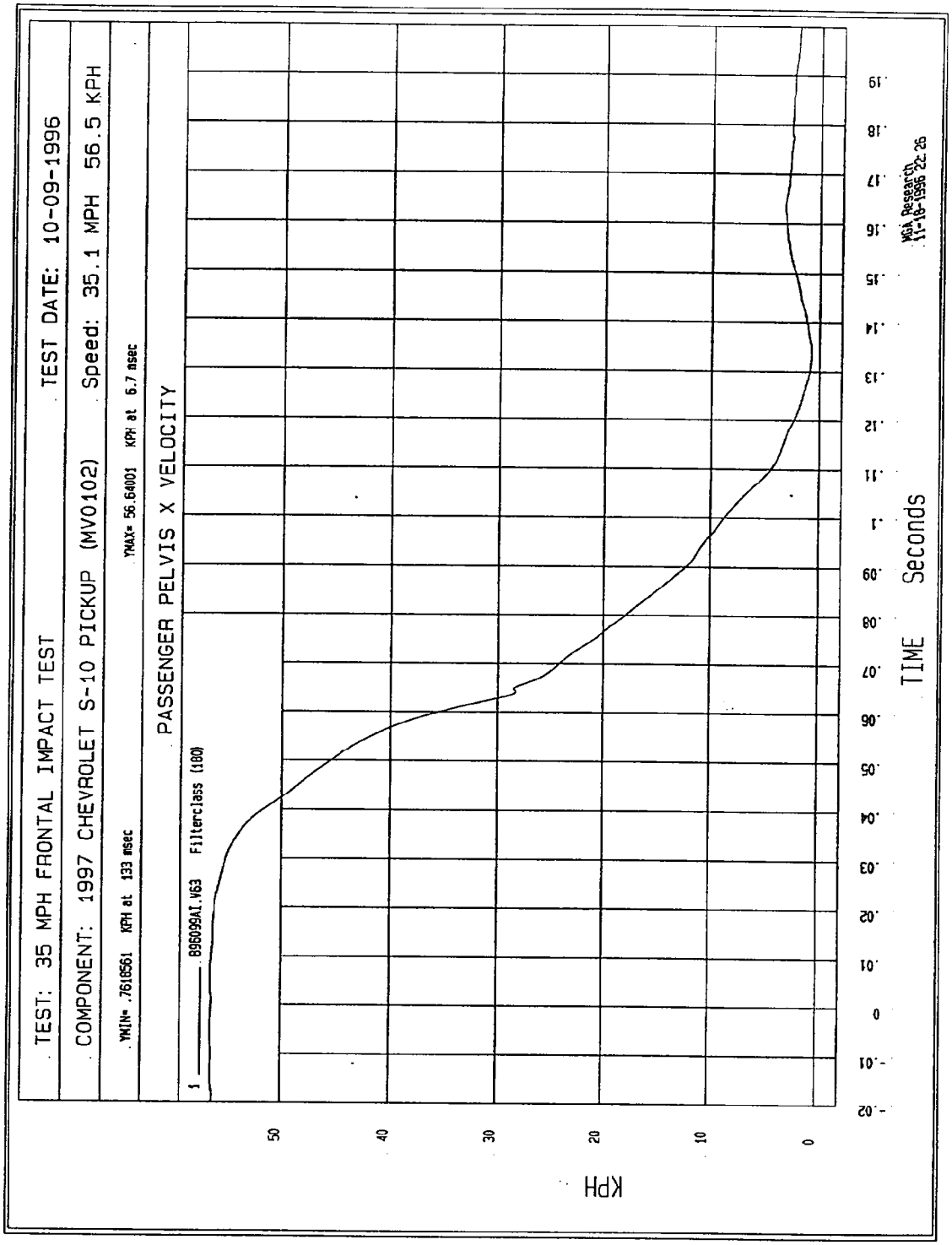
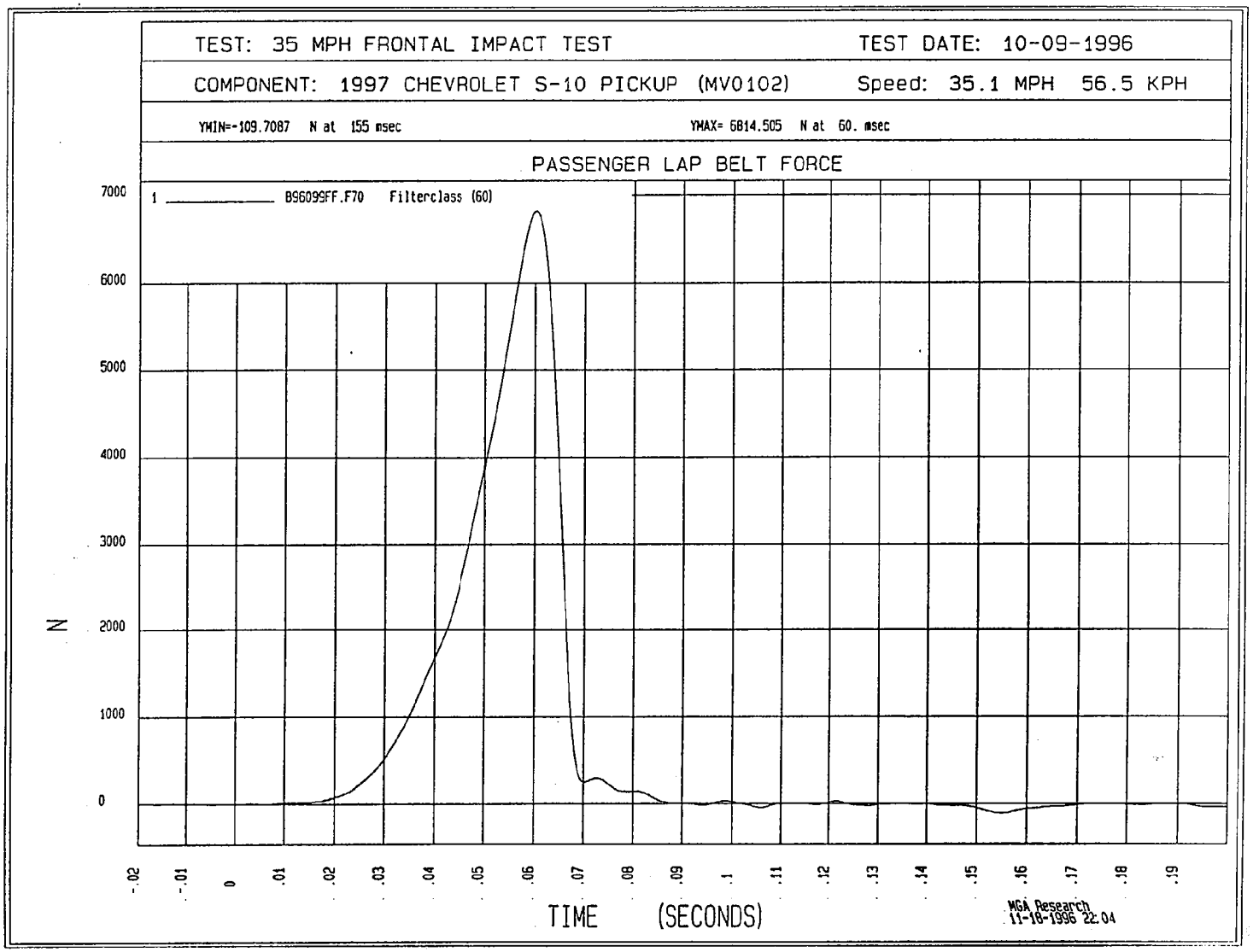
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:03
6.5


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= .0592708 G'S at -4.6 msec
YMAX= 146.8311 G'S at 64. msec
PASSENGER PELVIS RESULTANT ACCELERATION
1 B96099AY.A53 Filterclass (1000)
140
120
100
80
60
40
20
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:04
G's


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= .76180561 KPH at 133 msec
YMAX= 56.64001 KPH at 6.7 msec
PASSENGER PELVIS X VELOCITY
1 ——— 896099AI.V63 Filterclass (180)
KPH
TIME Seconds
MGA Research
11-16-1996 22:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-109.7087 N at 155 msec
YMAX= 6814.505 N at 60. msec
PASSENGER LAP BELT FORCE
1 BS6099FF.F70 Filterclass (60)
7000
6000
5000
4000
3000
2000
1000
0
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
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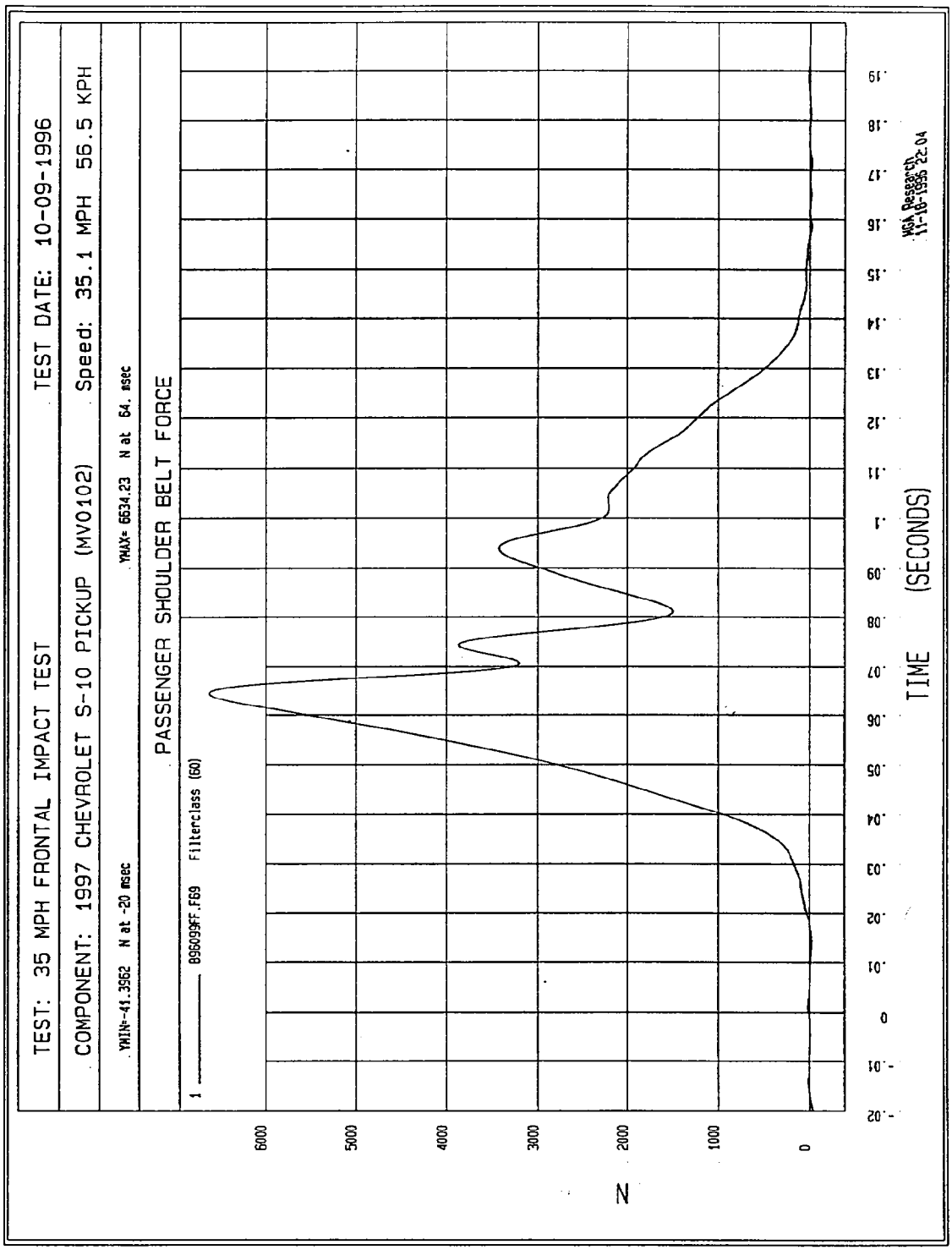
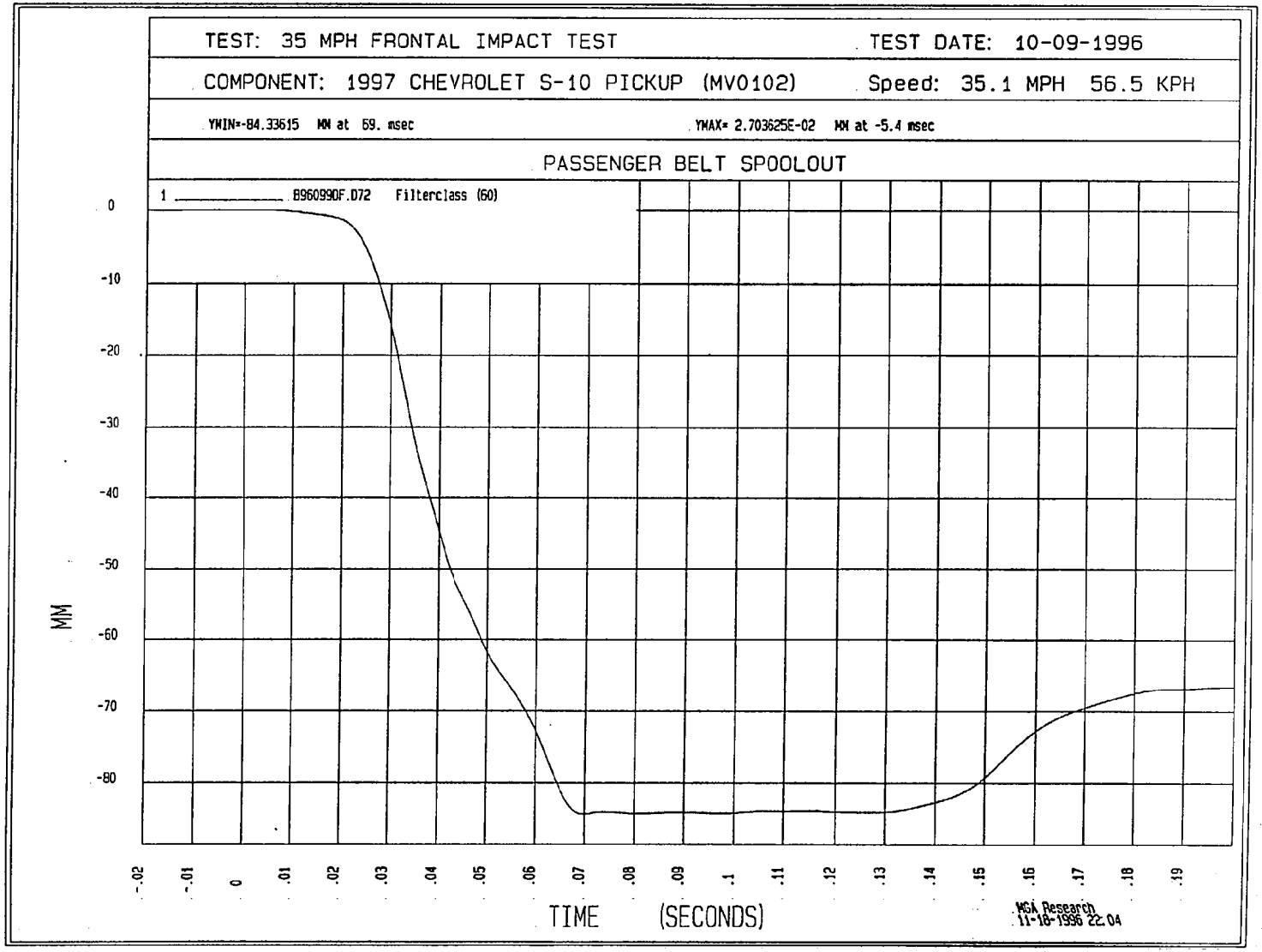
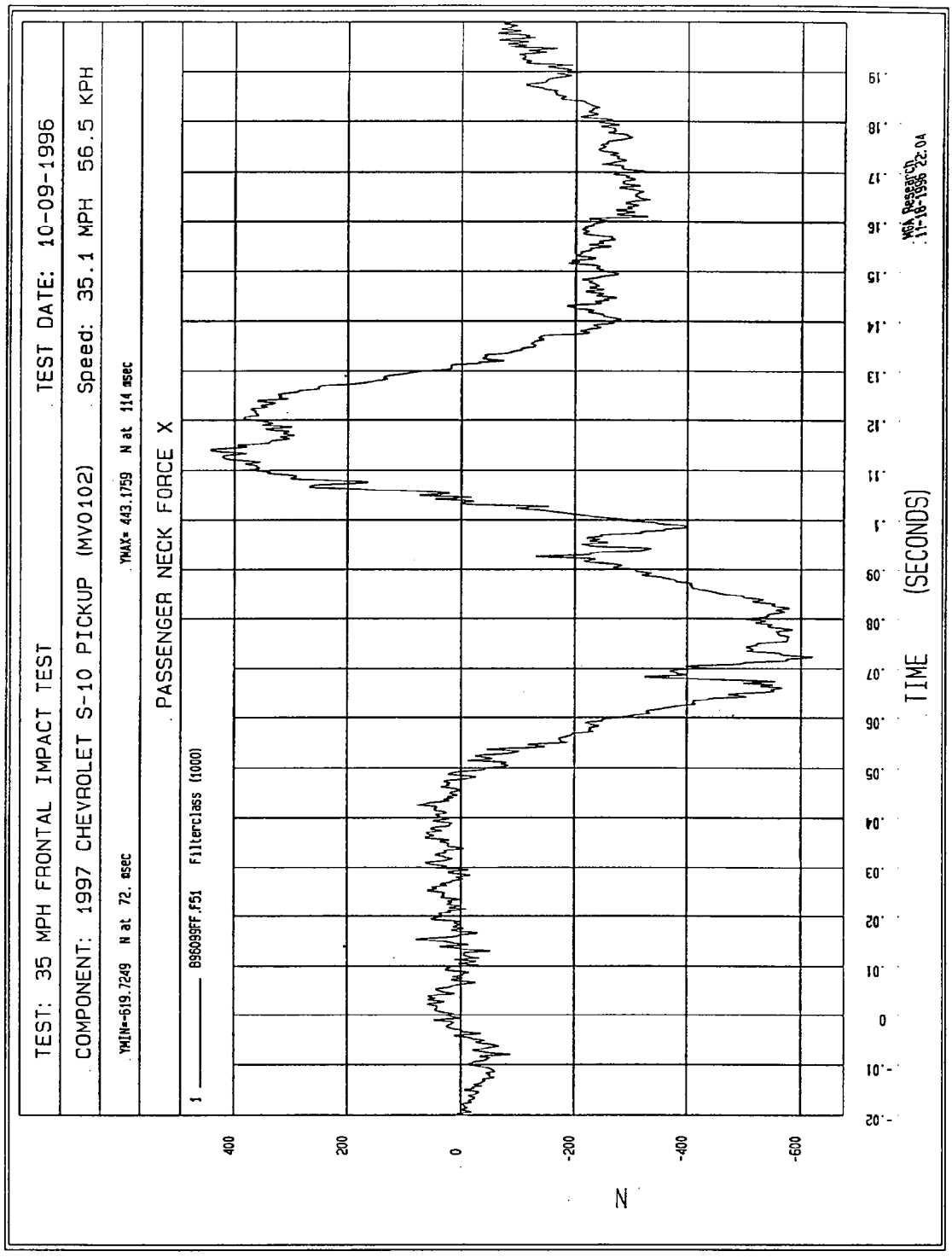
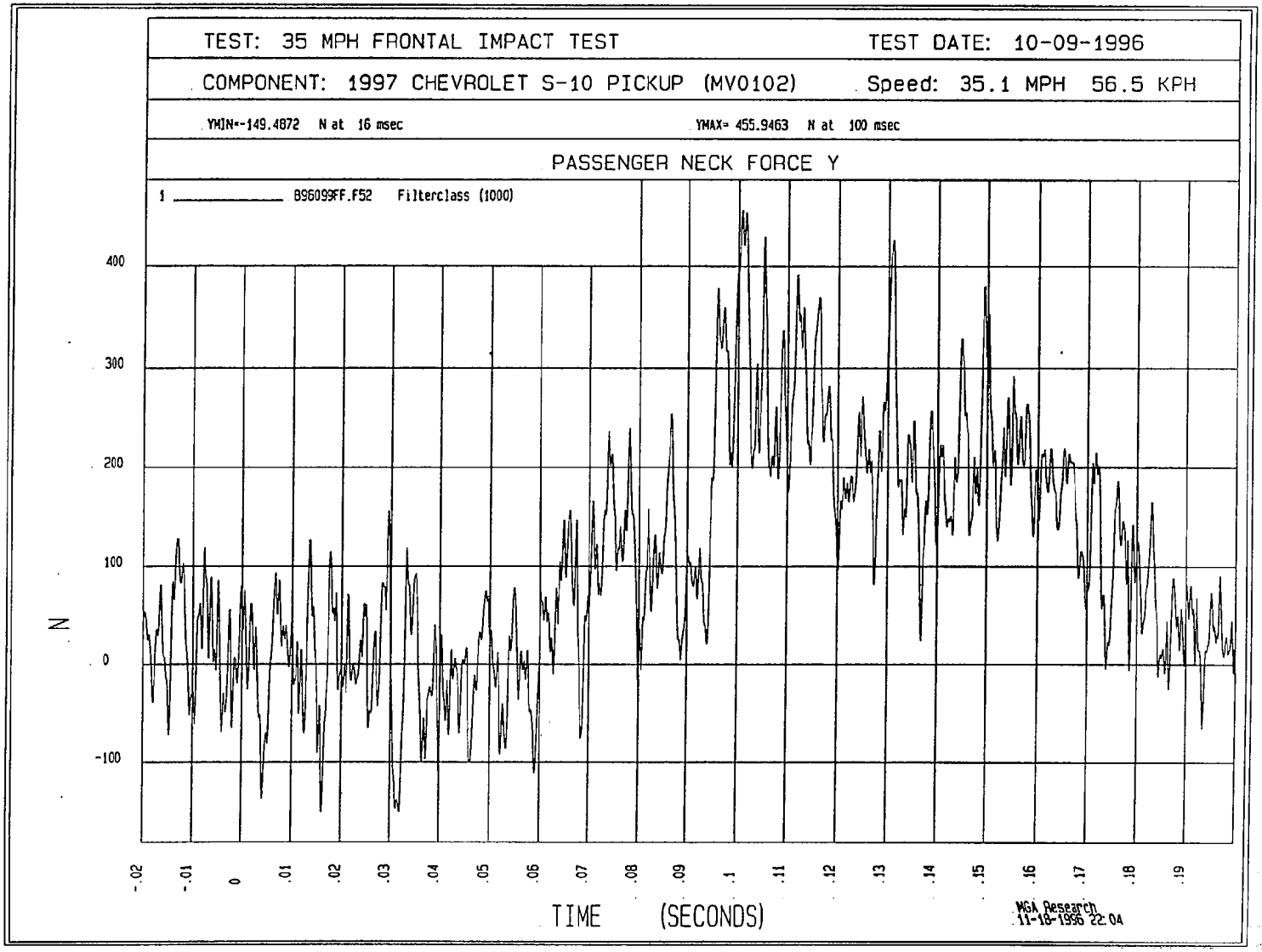
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:04


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-41.3962 N at -20 msec
YMAX= 6634.23 N at 64. msec
PASSENGER SHOULDER BELT FORCE
1 896099FF.F69 Filterclass (60)
N
TIME (SECONDS)
WSA Research
11-16-1995 22:04


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-84.33615 MM at 59. msec
YMAX= 2.703625E-02 MM at -5.4 msec
PASSENGER BELT SPOOLOUT
1 B960990F.D72 Filterclass (60)
0
-10
-20
-30
-40
-50
-60
-70
-80
MM
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:04


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-619.7249 N at 72. msec
YMAX= 443.1759 N at 114 msec
PASSENGER NECK FORCE X
1 896099FF.f51 Filterclass (1000)
400
200
0
-200
-400
-600
N
-20
-10
0
10
02
03
04
05
06
07
08
09
1
11
12
13
14
15
16
17
18
19
TIME (SECONDS)
MGA Research
11-18-1996 22:04


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-149.4872 N at 16 msec
YMAX= 455.9463 N at 100 msec
PASSENGER NECK FORCE Y
1 BS6099FF.F52 Filterclass (1000)
400
300
200
100
0
-100
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
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.16
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.18
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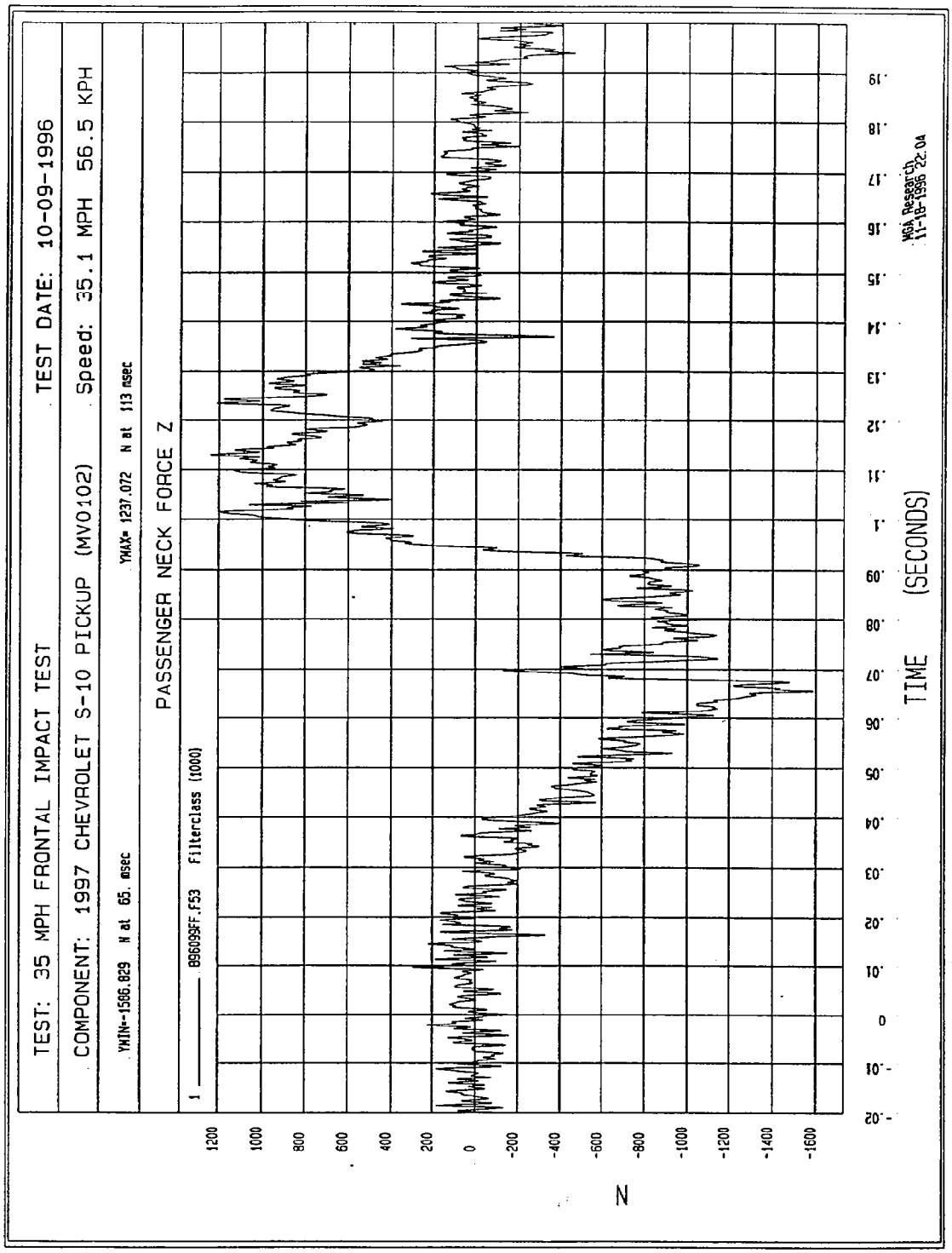
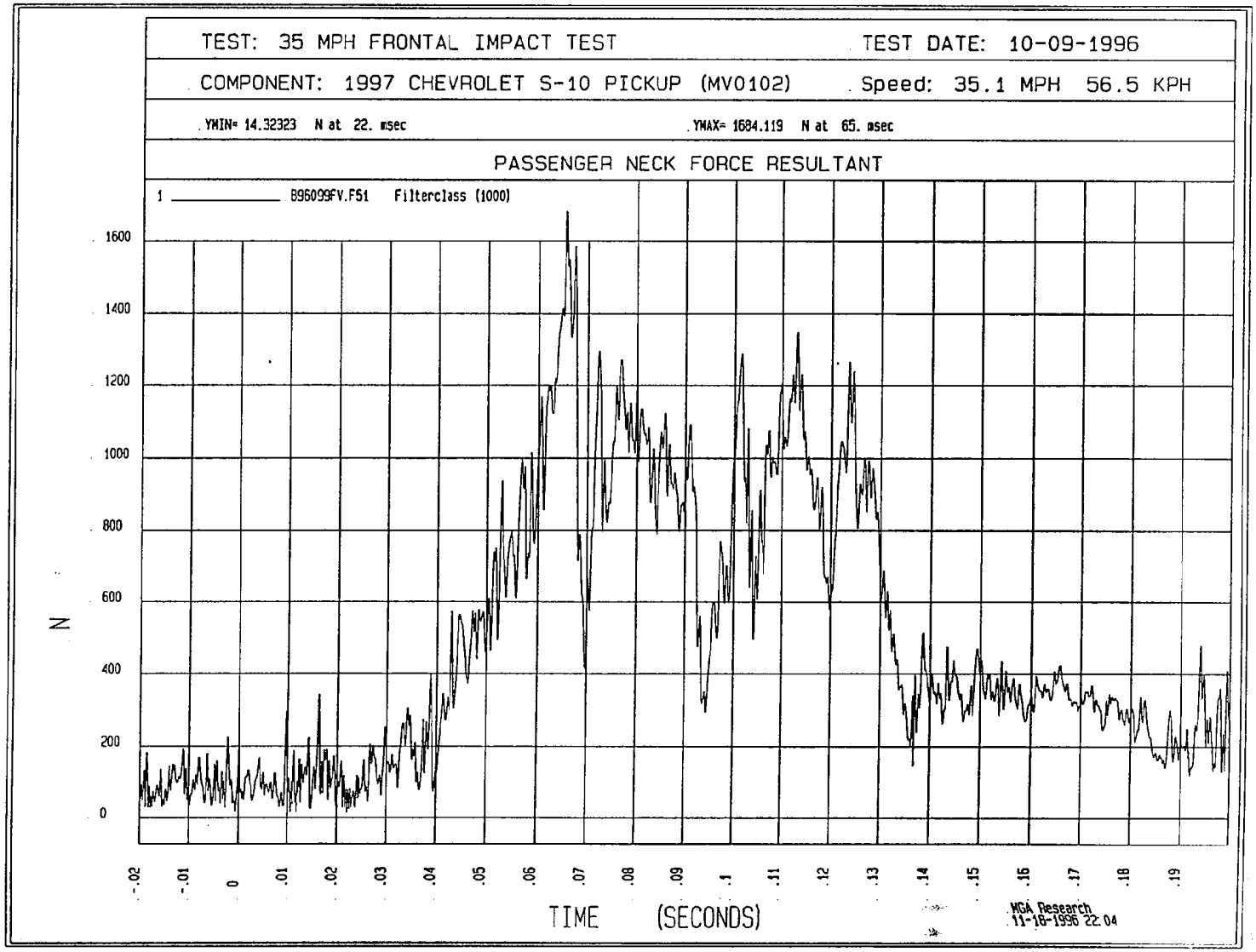
TIME (SECONDS)
MGA Research
11-18-1996 22:04


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-1566.829 N at 65. msec
YMAX= 1237.072 N at 113 msec
PASSENGER NECK FORCE Z
1 B96099FF.F53 Filterclass (1000)
N
TIME (SECONDS)
MGA Research
11-18-1996 22:04


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 14.32323 N at 22. msec
YMAX= 1684.119 N at 65. msec
PASSENGER NECK FORCE RESULTANT
1 B96099FV.FS1 Filterclass (1000)
N
1600
1400
1200
1000
800
600
400
200
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
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.14
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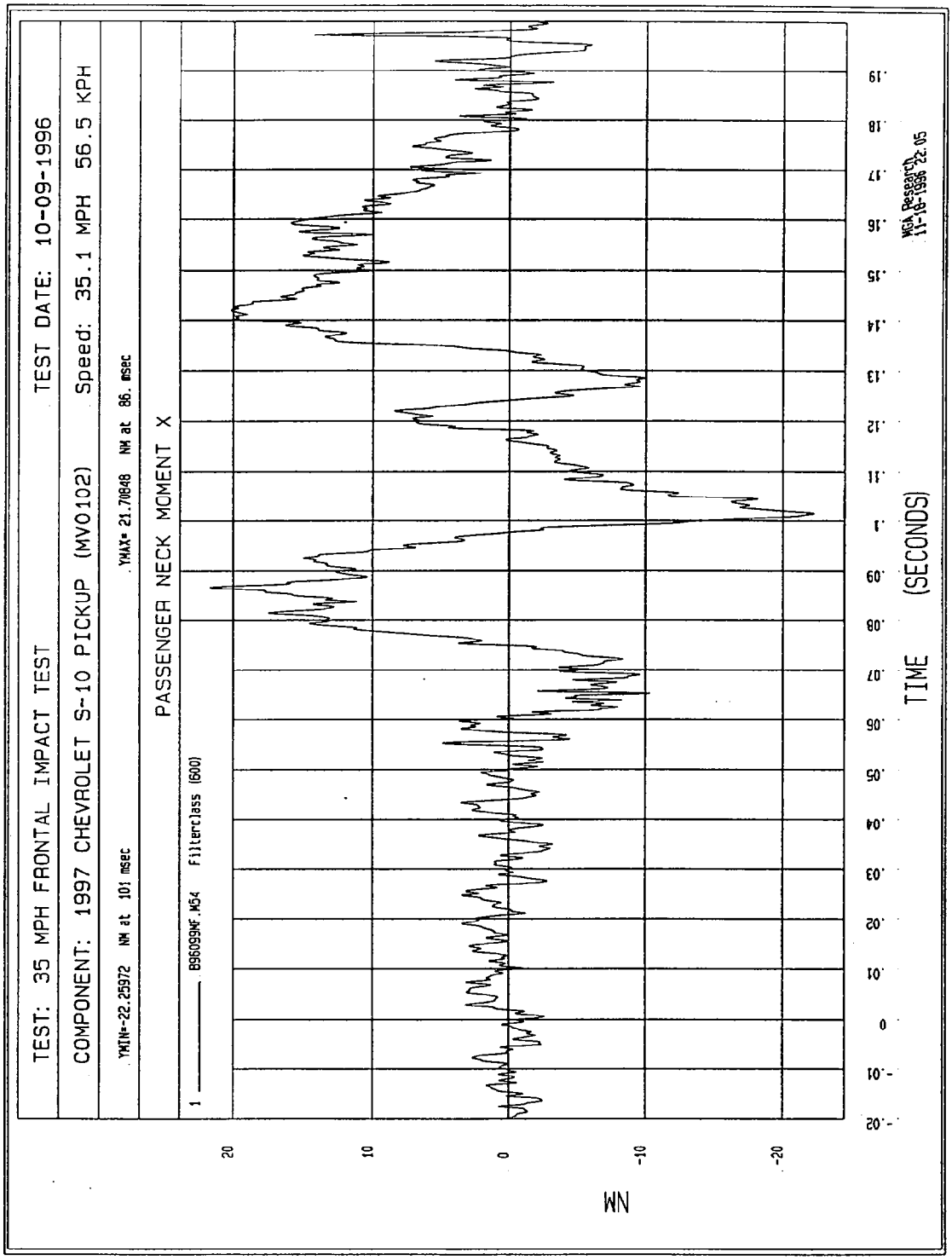
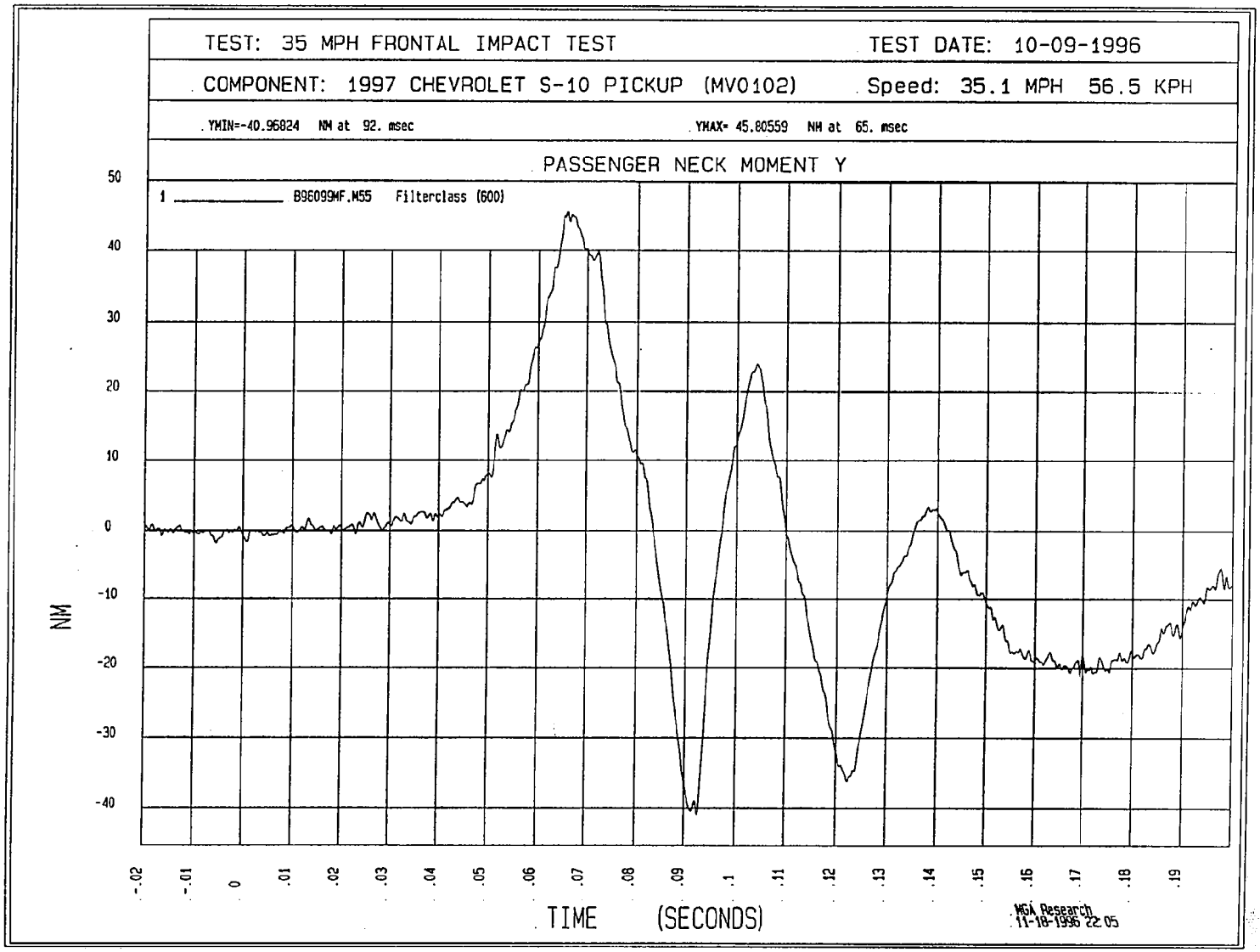
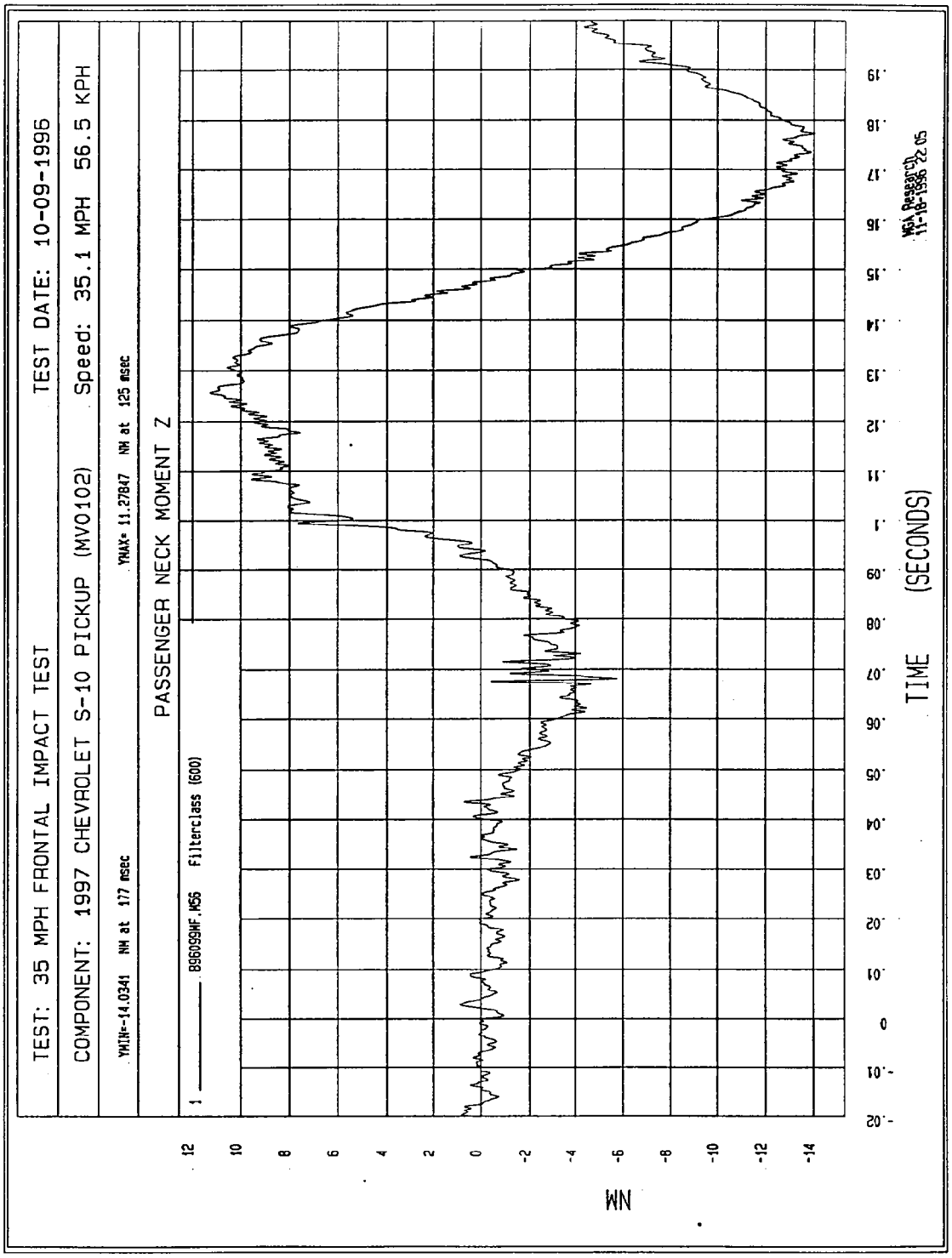
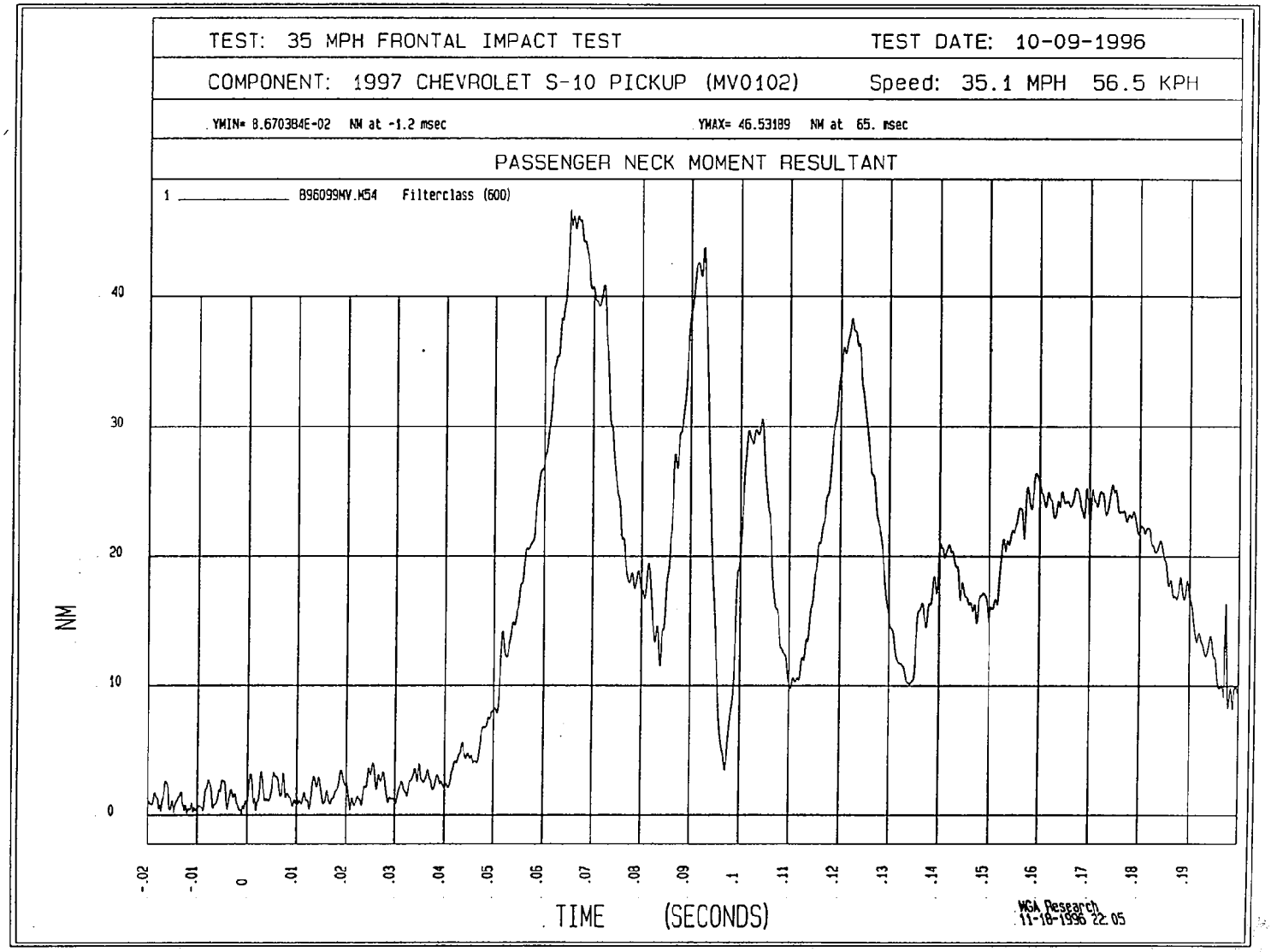
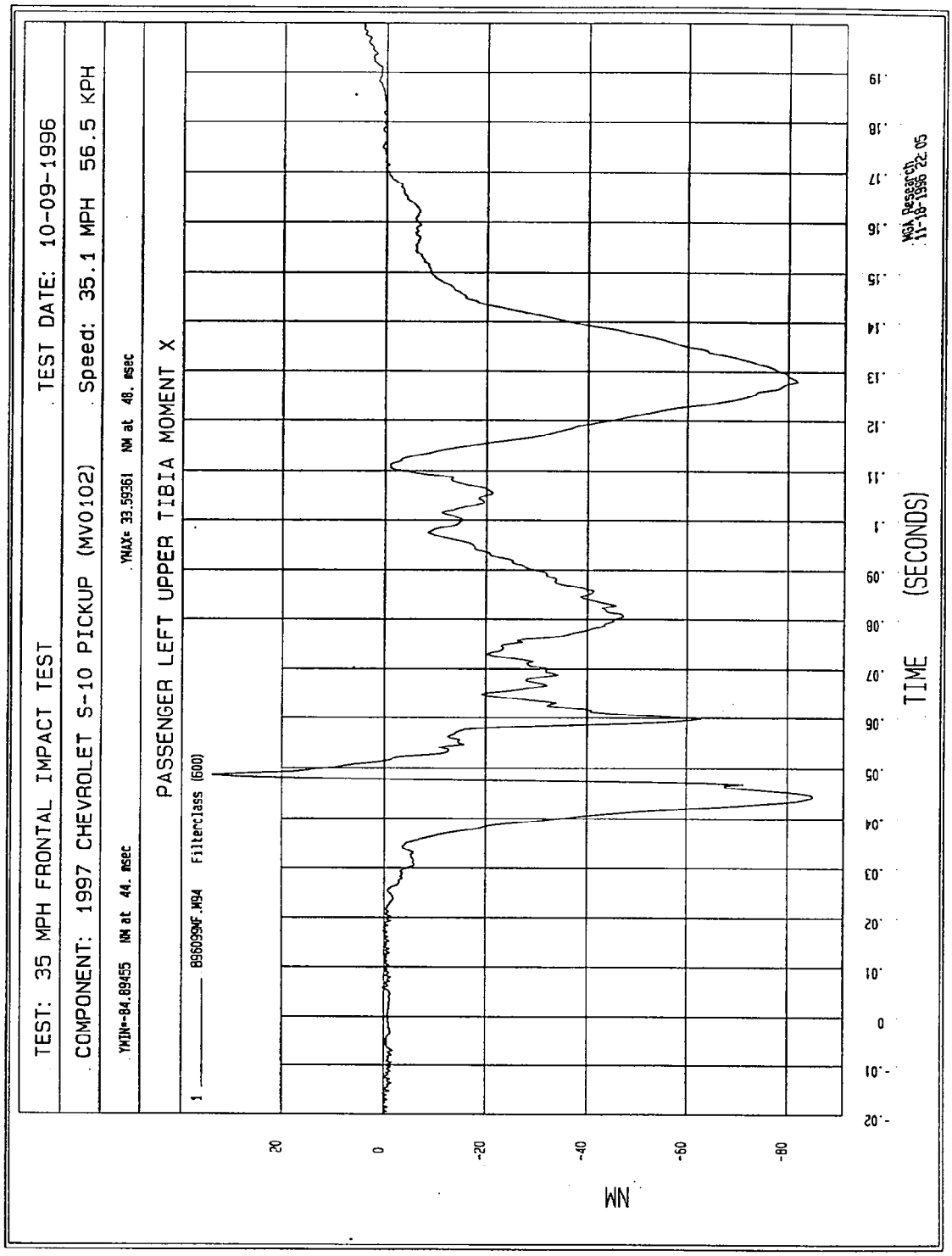
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:04

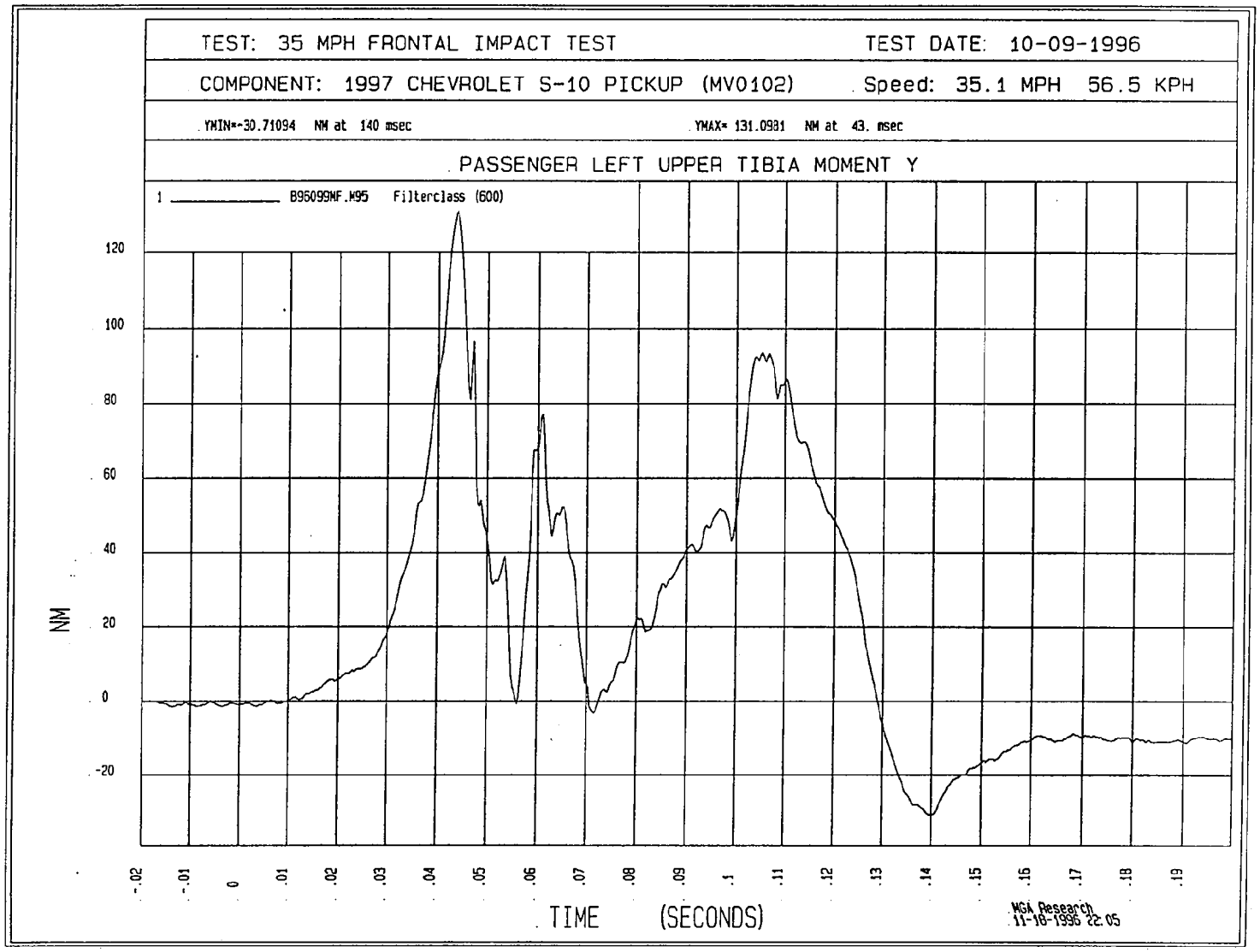

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-22.25972 NM at 101 msec
YMAX= 21.70848 NM at 86. msec
PASSENGER NECK MOMENT X
1 _____ 896099NF.MO4 Filterclass (600)
NM
TIME (SECONDS)
MGA Research
11-18-1996 22:05


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-40.96824 NM at 92. msec
YMAX= 45.80559 NM at 65. msec
PASSENGER NECK MOMENT Y
1 B96099MF.M55 Filterclass (600)
NM
50
40
30
20
10
0
-10
-20
-30
-40
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:05


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-14.0341 NM at 177 msec
YMAX= 11.27847 NM at 125 msec
PASSENGER NECK MOMENT Z
1 B96099HF.M56 Filterclass (600)
NM
TIME (SECONDS)
MGA Research
11-18-1996 22:05


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 8.6703B4E-02 NW at -1.2 msec
YMAX= 46.53189 NW at 65. msec
PASSENGER NECK MOMENT RESULTANT
1 B96099MV.M54 Filterclass (600)
NW
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:05


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-84.89455 NM at 44. msec
YMAX= 33.59361 NM at 48. msec
PASSENGER LEFT UPPER TIBIA MOMENT X
1 _____ B960099F.M94 Filterclass (600)
NM
TIME (SECONDS)
MGA Research
11-18-1996 22:05


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-30.71094 NM at 140 msec
YMAX= 131.0981 NM at 43. msec
PASSENGER LEFT UPPER TIBIA MOMENT Y
1 B96099MF.M95 Filterclass (600)
120
100
80
60
40
20
0
-20
NM
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
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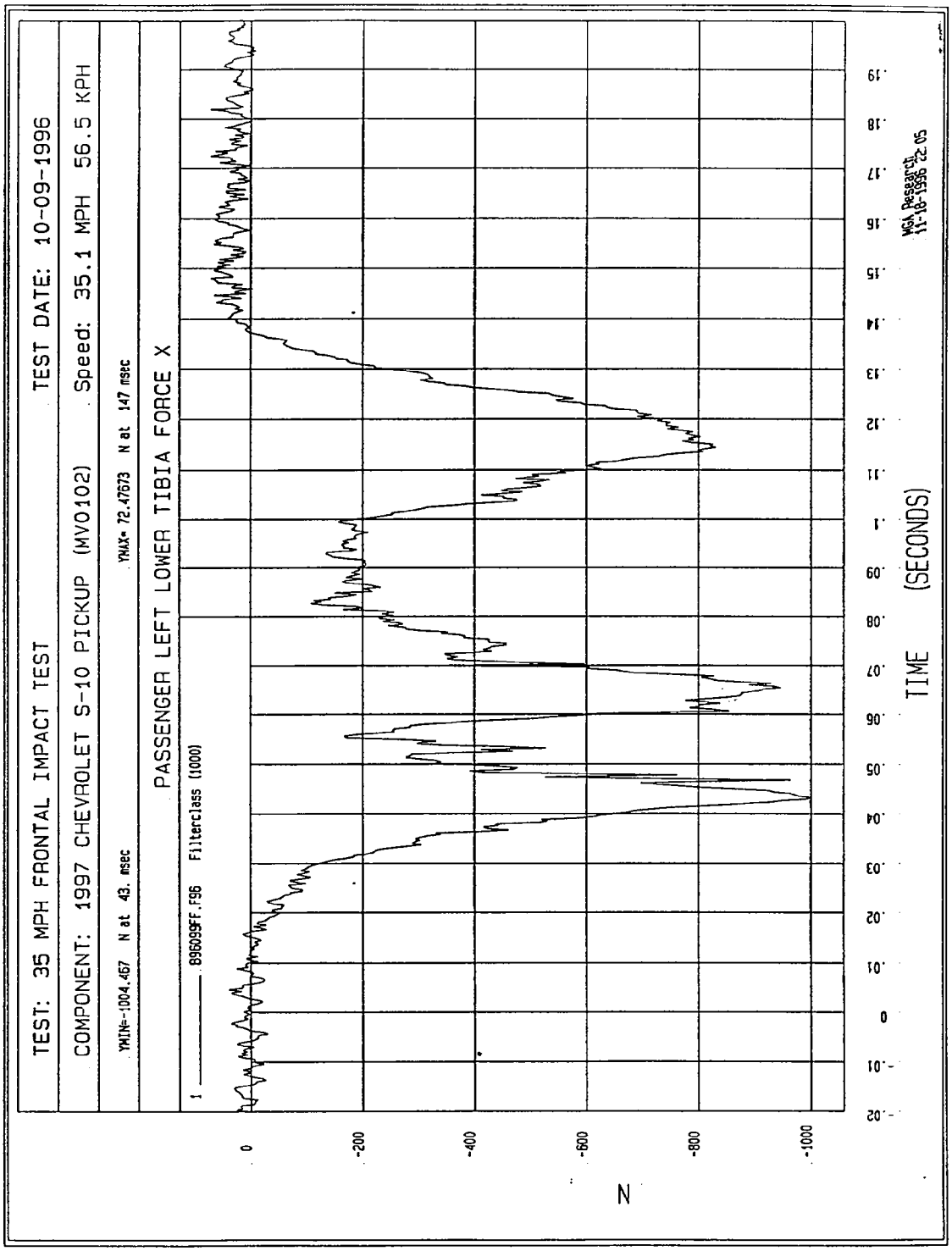
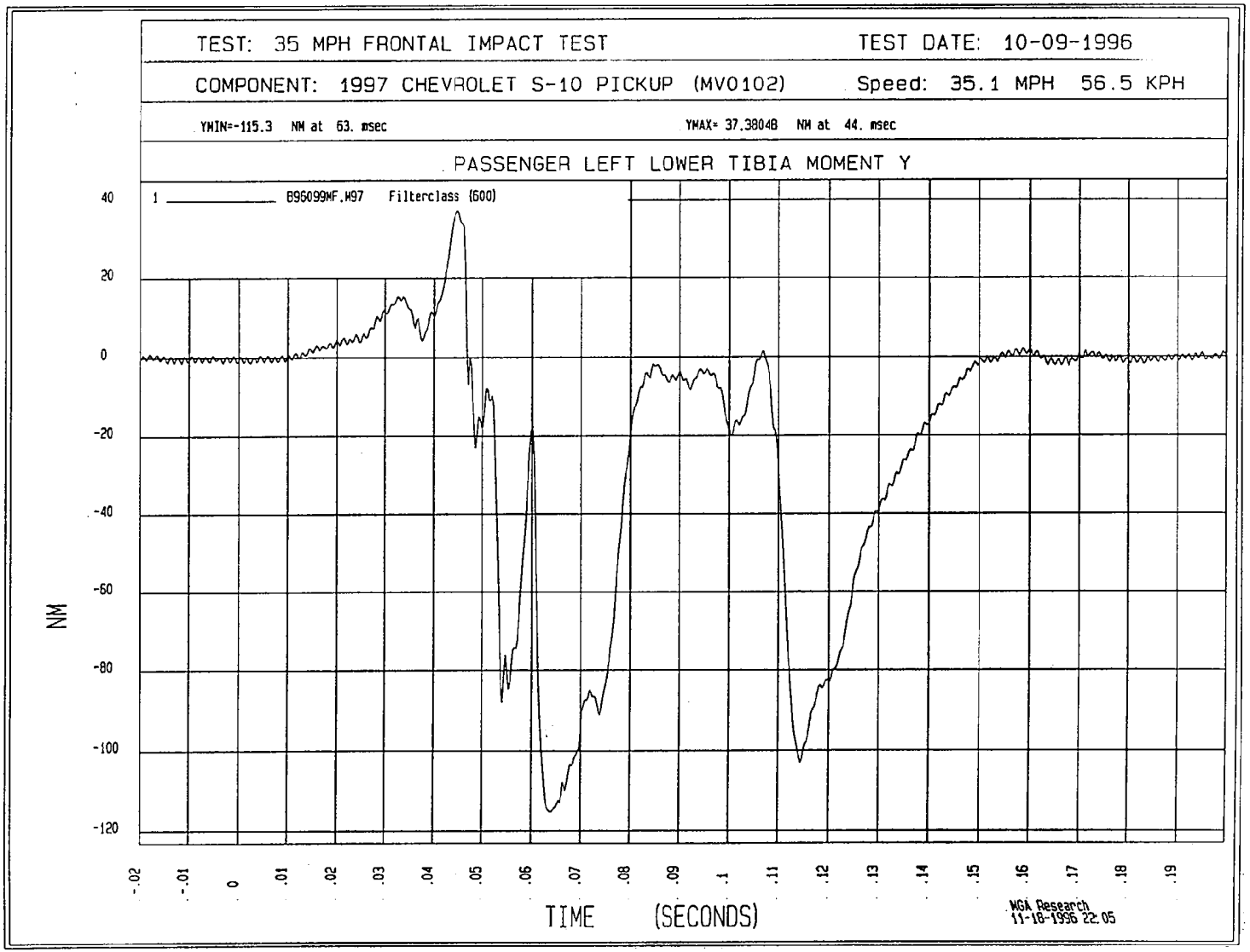
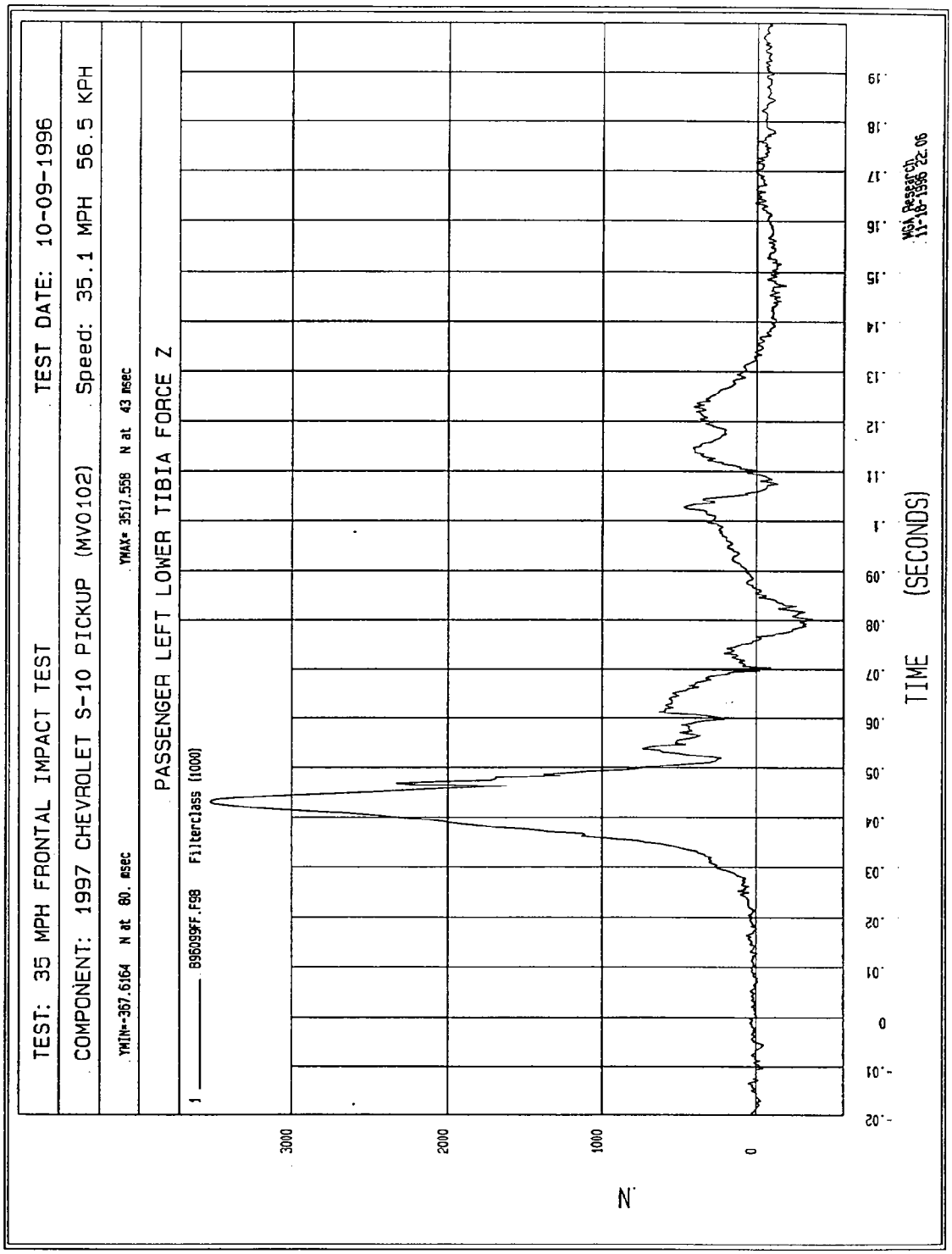
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-10-1996 22:05


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-1004.467 N at 43. msec
YMAX= 72.47673 N at 147 msec
PASSENGER LEFT LOWER TIBIA FORCE X
1 _____ 896099FF.F96 Filterclass (1000)
0
-200
-400
-600
-800
-1000
N
TIME (SECONDS)
MGA Research
11-18-1996 22:05


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-115.3 NM at 63. msec
YMAX= 37.3804B NM at 44. msec
PASSENGER LEFT LOWER TIBIA MOMENT Y
1 B96099MF.M97 Filterclass (600)
NM
TIME (SECONDS)
NGA Research
11-18-1996 22:05


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-367.6164 N at 80. msec
YMAX= 3517.558 N at 43 msec
PASSENGER LEFT LOWER TIBIA FORCE Z
1 B96099FF.F98 Filterclass (1000)
3000
2000
1000
0
N
.02
.01
0
.01
.02
.03
.04
.05
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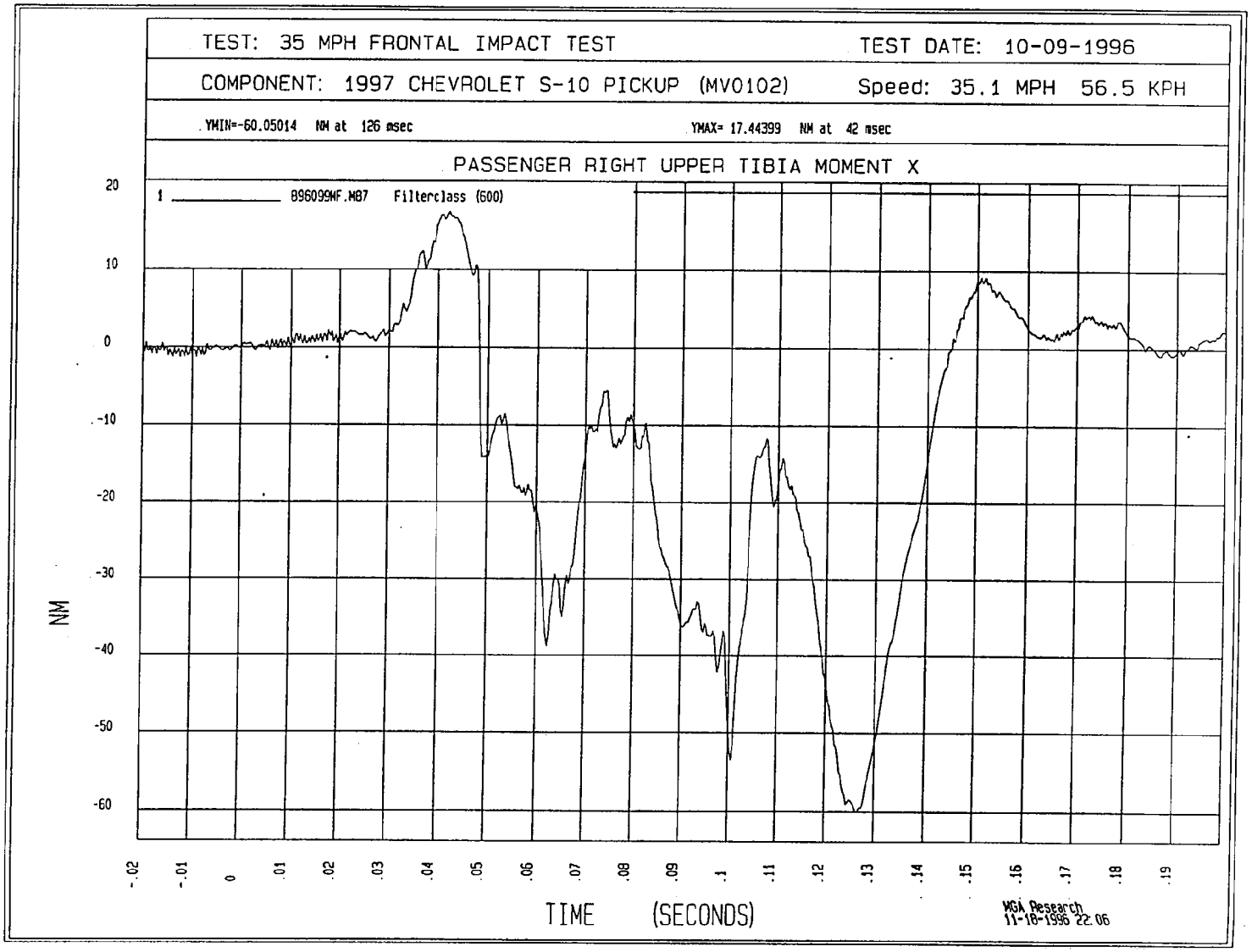
TIME (SECONDS)
MGA Research
11-18-1996 22:06


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-60.05014 NM at 126 msec
YMAX= 17.44399 NM at 42 msec
PASSENGER RIGHT UPPER TIBIA MOMENT X
1 896099MF.MB7 Filterclass (600)
NM
20
10
0
-10
-20
-30
-40
-50
-60
-.02
-.01
0
.01
.02
.03
.04
.05
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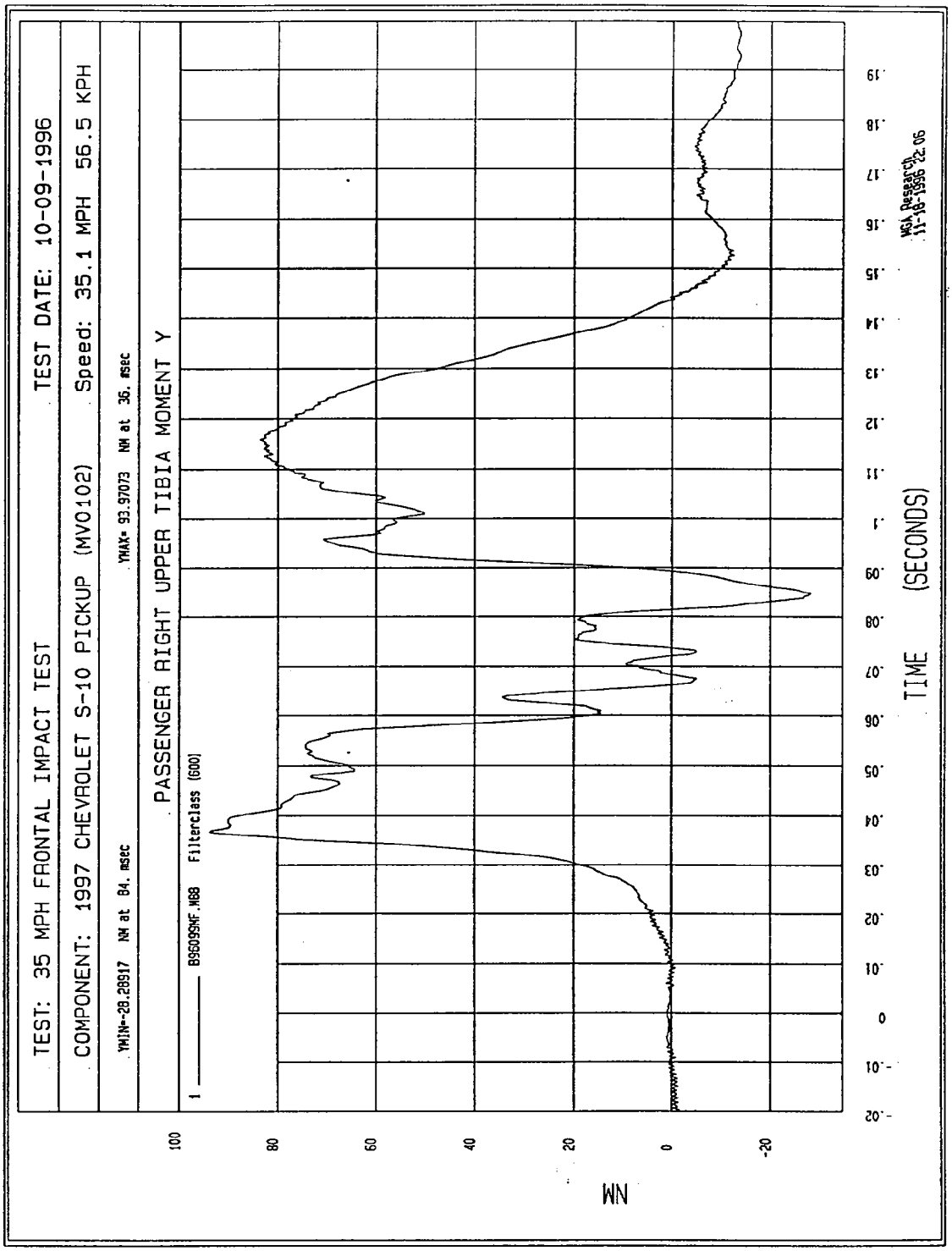
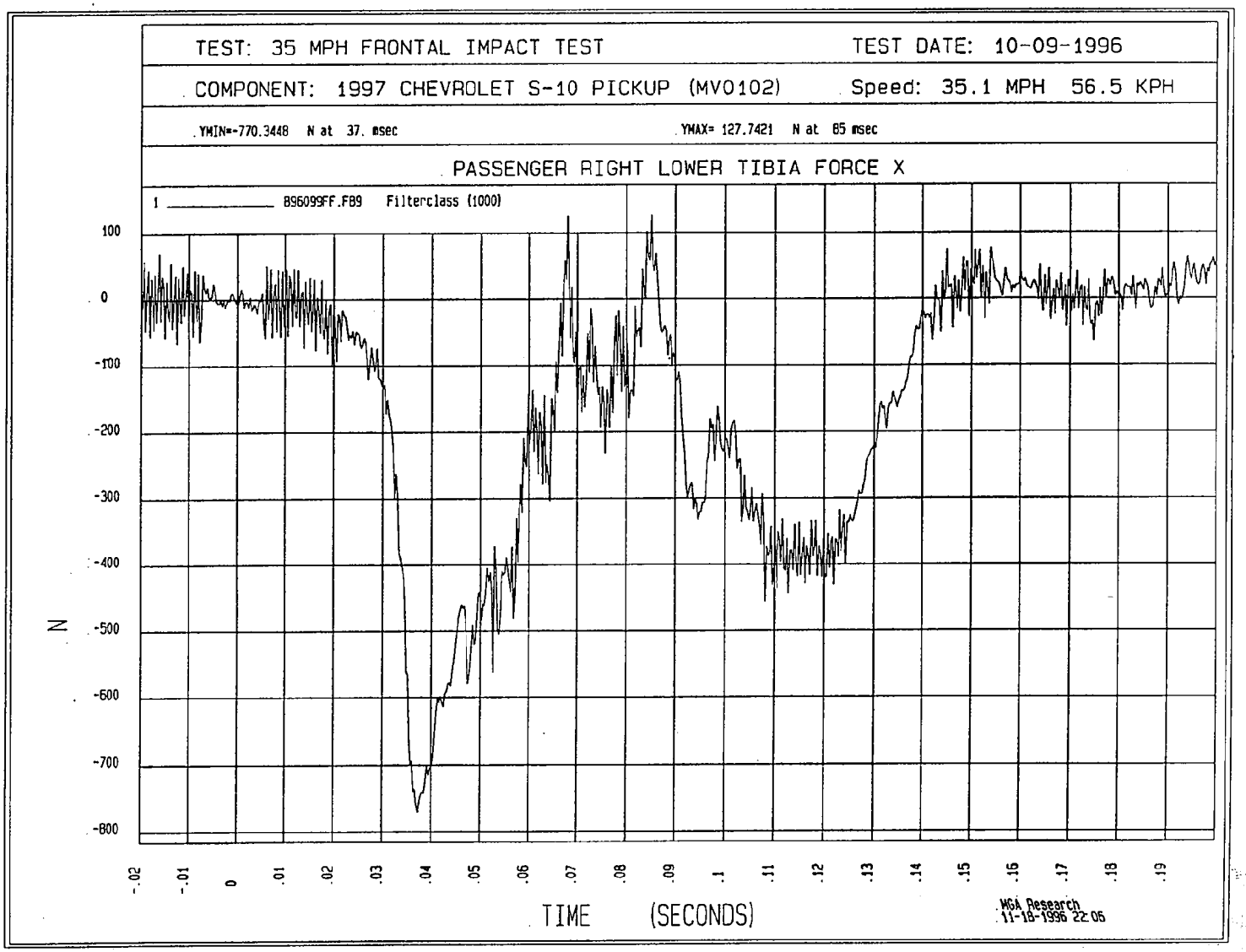
TIME (SECONDS)
MGA Research
11-18-1996 22:06


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-28.28917 NM at 84. msec
YMAX= 93.97073 NM at 36. msec
PASSENGER RIGHT UPPER TIBIA MOMENT Y
1 B96099NF.M6B Filterclass (600)
NM
TIME (SECONDS)
MGA Research
11-18-1996 22:06


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-770.3448 N at 37. msec
YMAX= 127.7421 N at 85 msec
PASSENGER RIGHT LOWER TIBIA FORCE X
1 B96099FF.FB9 Filterclass (1000)
100
0
-100
-200
-300
-400
-500
-600
-700
-800
N
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
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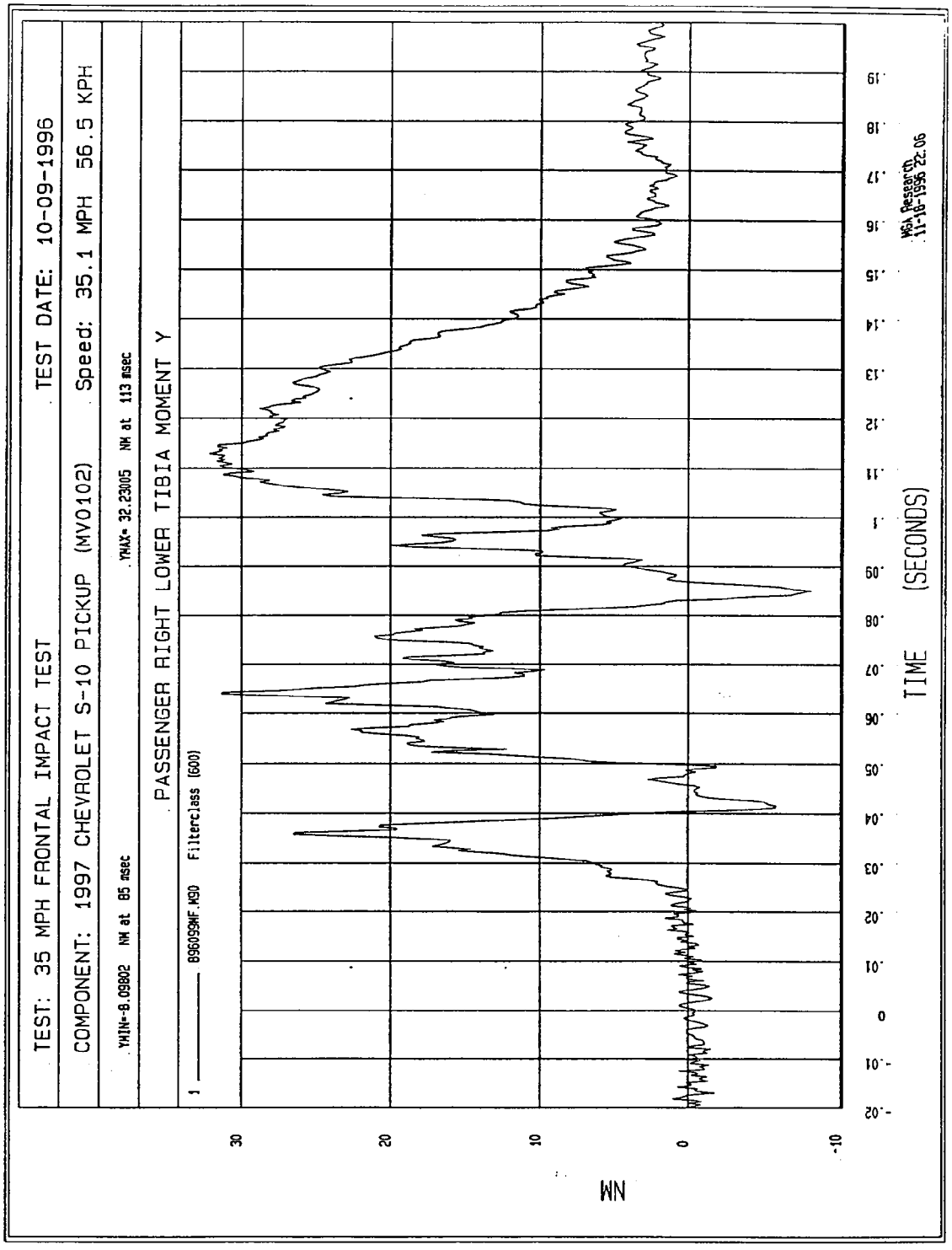
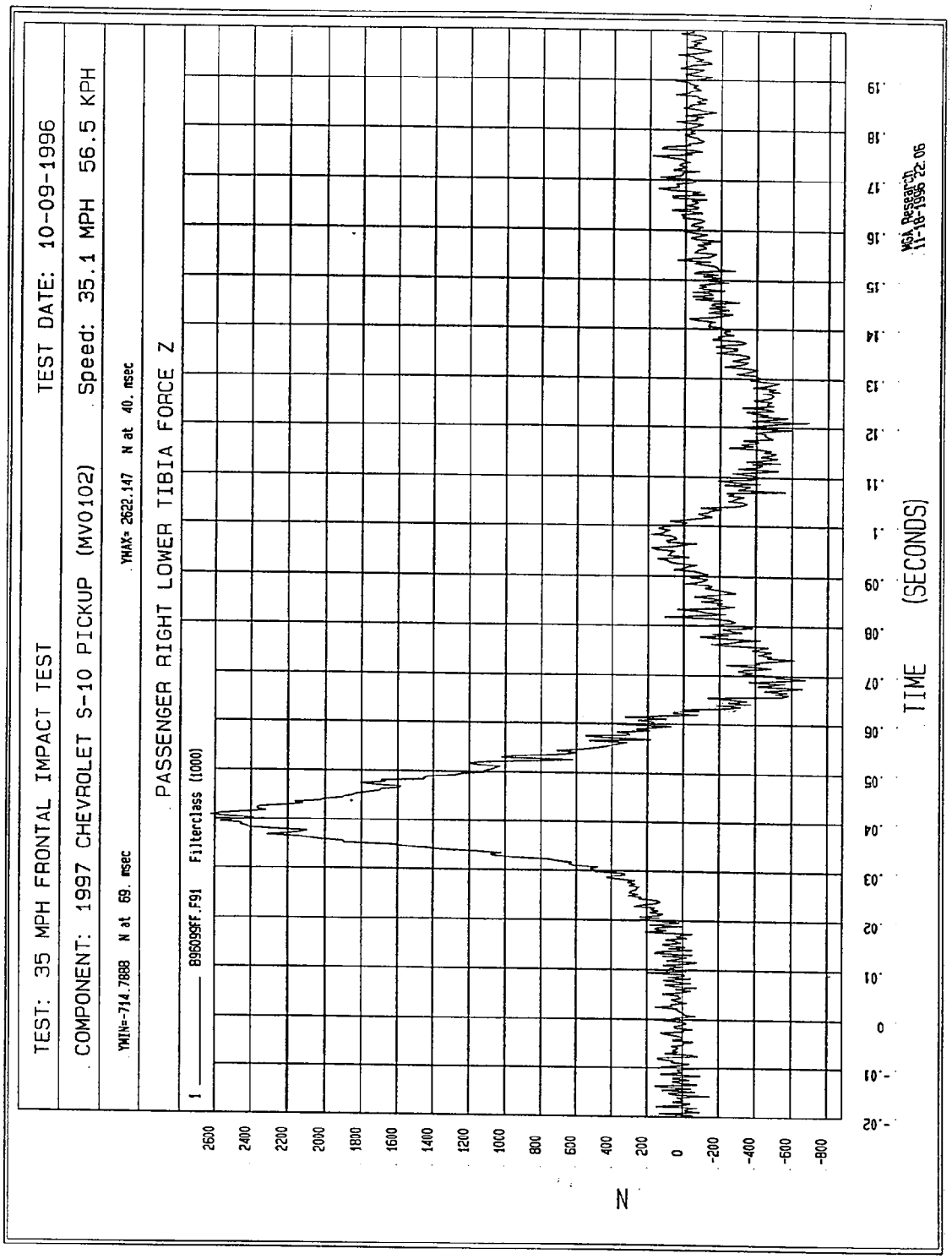
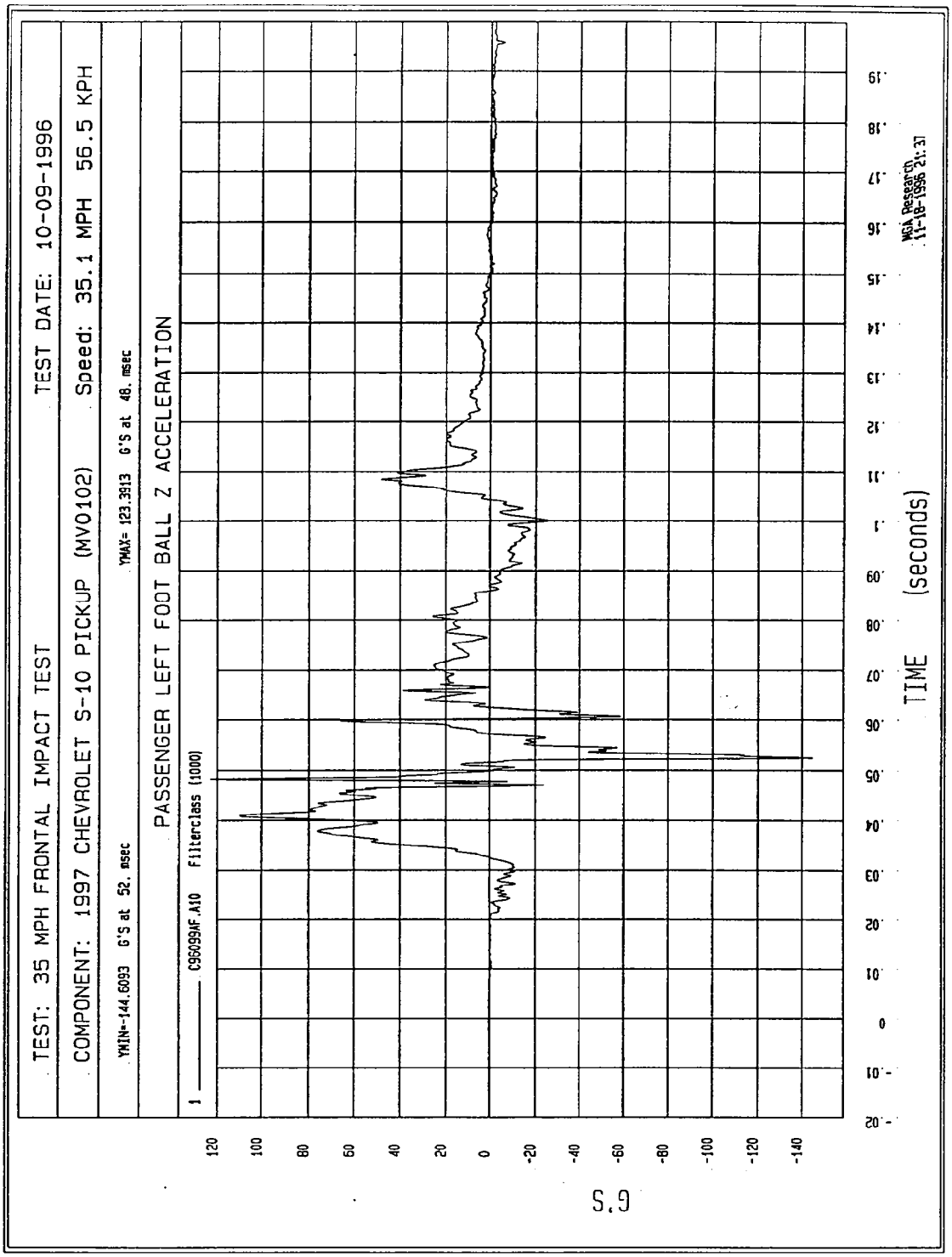
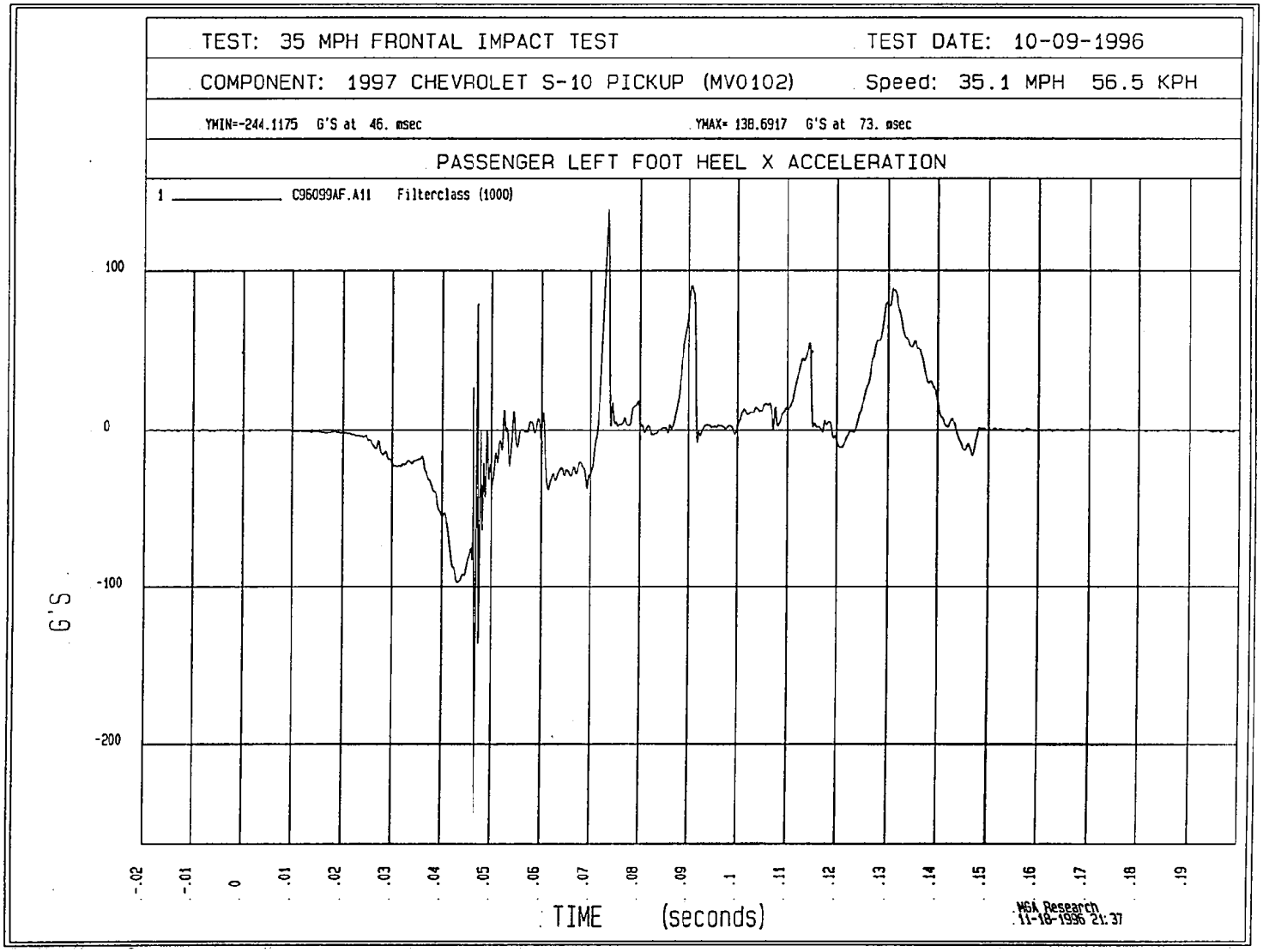
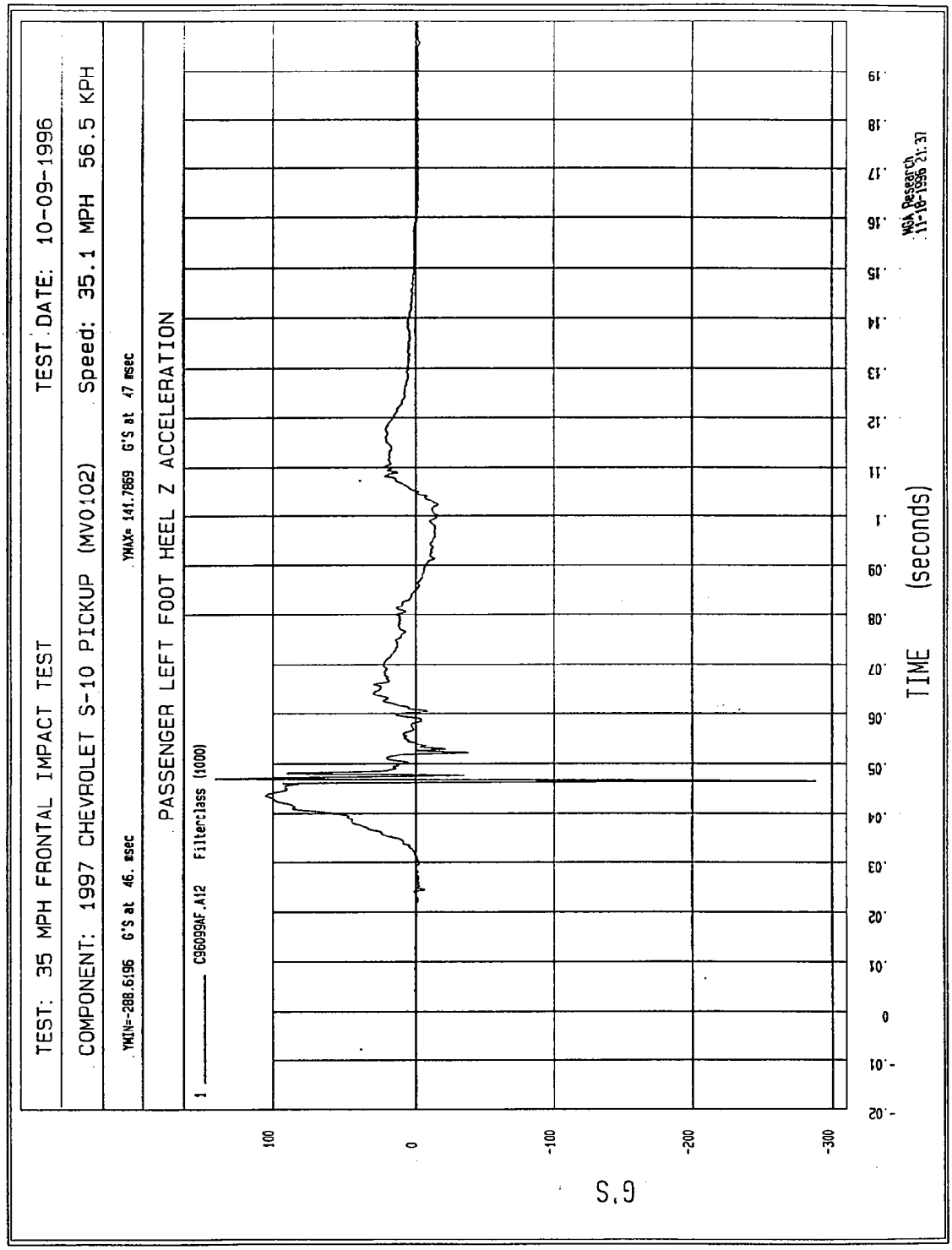
TIME (SECONDS)
MGA Research
11-18-1996 22:06

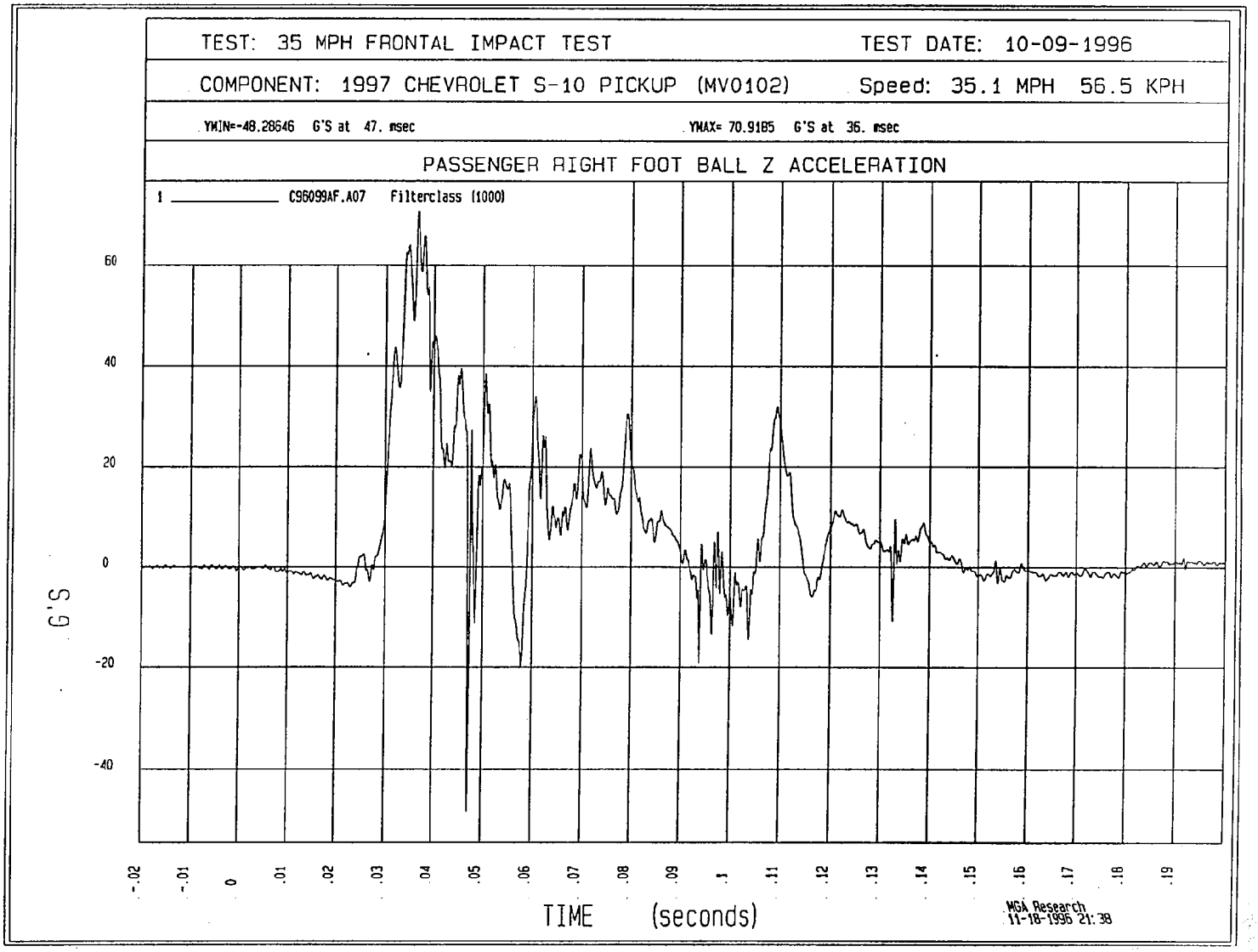

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-8.09802 NM at 85 msec
YMAX= 32.23005 NM at 113 msec
PASSENGER RIGHT LOWER TIBIA MOMENT Y
1 _____ 896099MF.M90 Filterclass (600)
NM
TIME (SECONDS)
MGA Research
11-18-1996 22:06

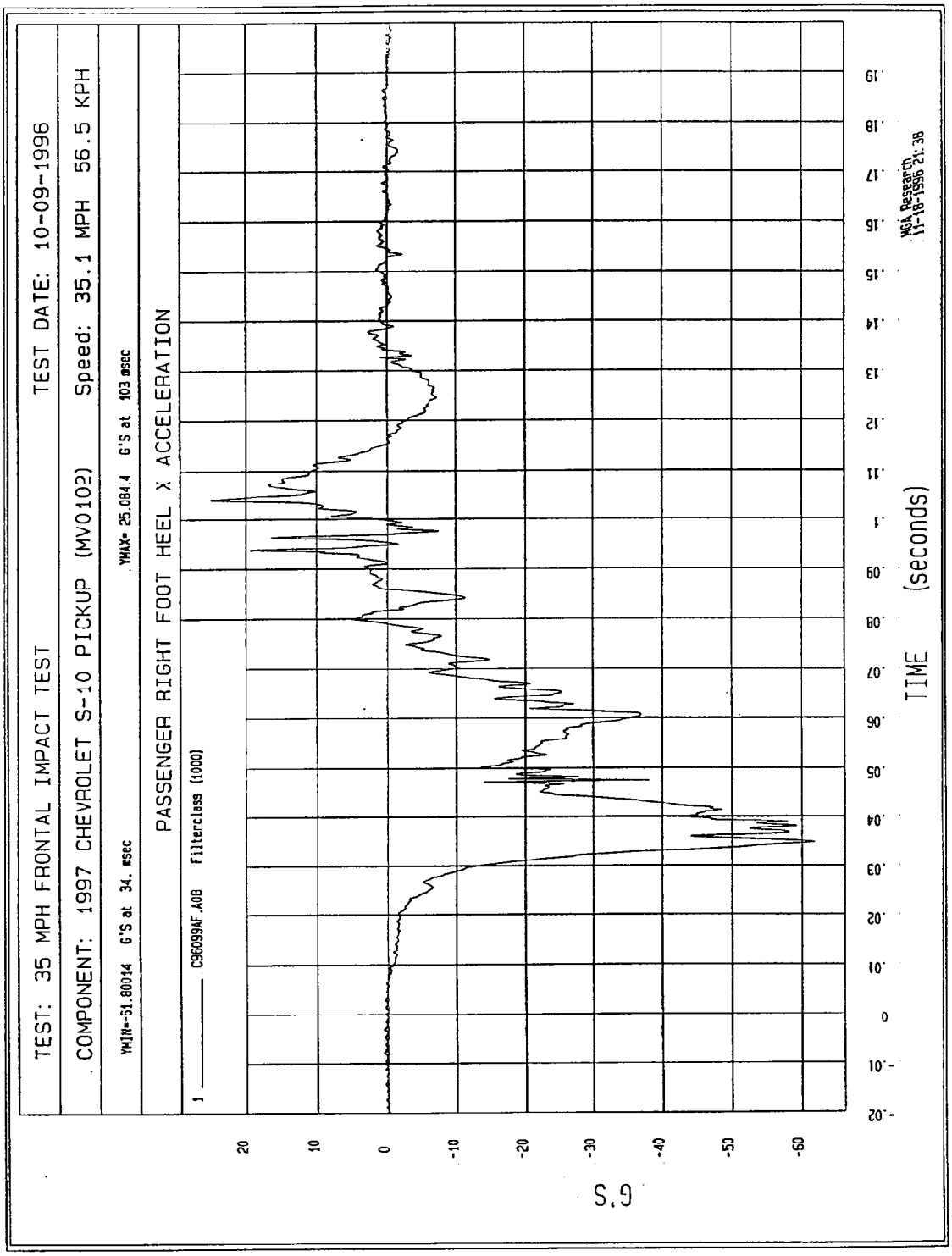

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-714.7888 N at 69. msec
YMAX= 2622.147 N at 40. msec
PASSENGER RIGHT LOWER TIBIA FORCE Z
1 _____ B96099FF.F91 Filterclass (1000)
N
TIME (SECONDS)
MGA Research
11-18-1996 22:06

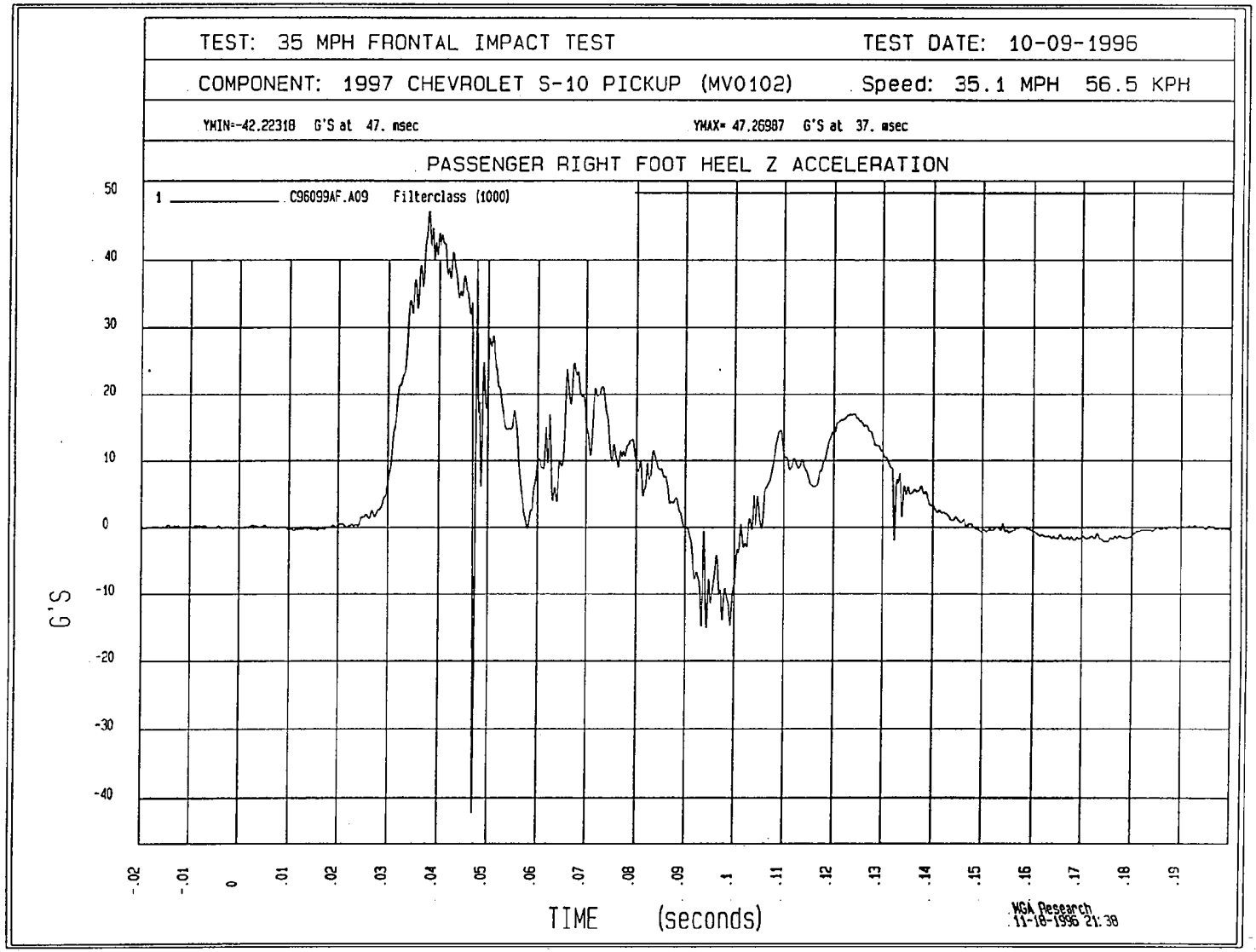

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-144.6093 G'S at 52. msec
YMAX= 123.3913 G'S at 48. msec
PASSENGER LEFT FOOT BALL Z ACCELERATION
1 C96099AF.A10 Filterclass (1000)
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
G's
.19
.18
.17
.16
.15
.14
.13
.12
.11
1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
TIME (seconds)
MGA Research
11-18-1996 21:37

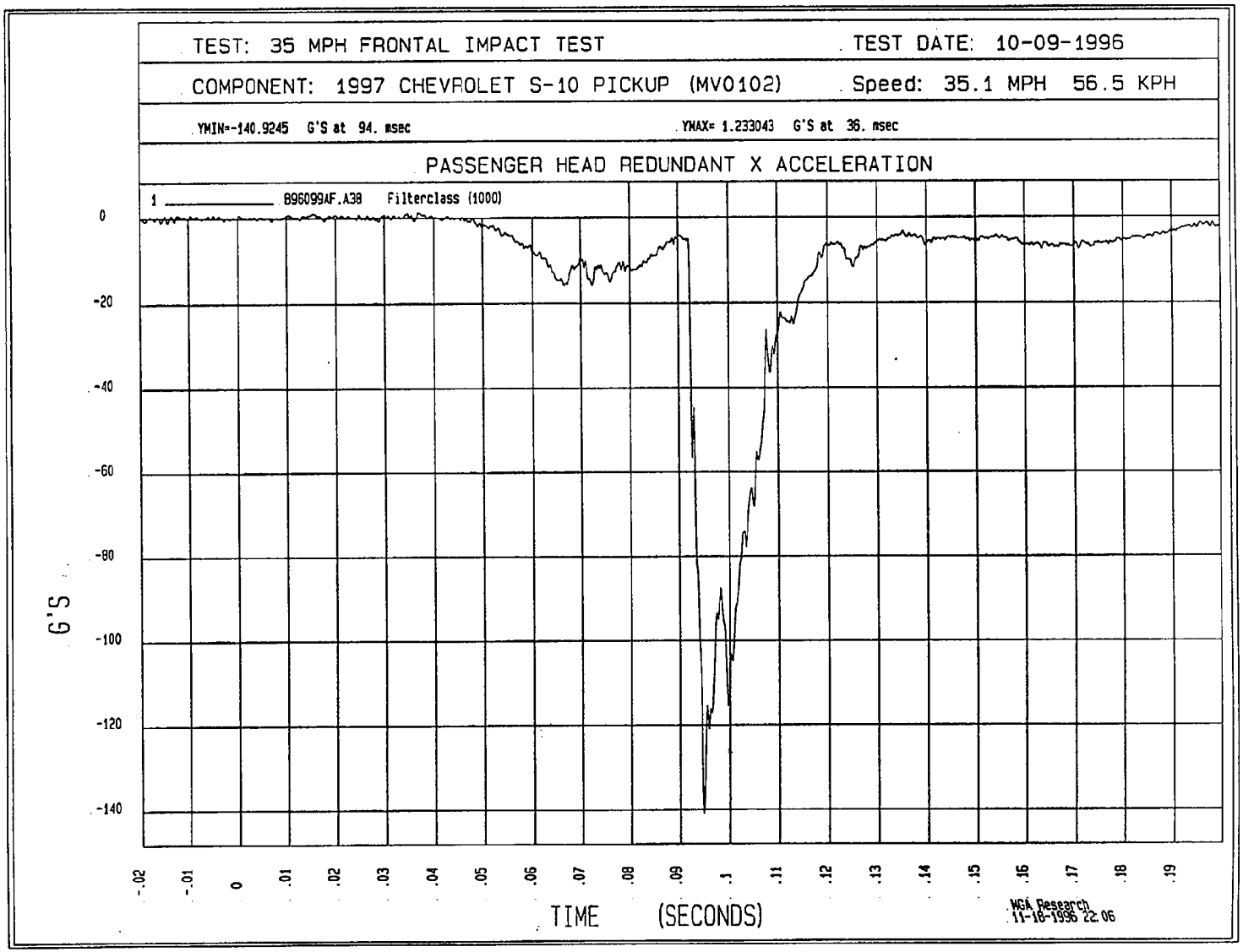

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-244.1175 G'S at 46. msec
YMAX= 138.6917 G'S at 73. msec
PASSENGER LEFT FOOT HEEL X ACCELERATION
1 C96099AF.A11 Filterclass (1000)
100
0
-100
-200
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (seconds)
MGA Research
11-18-1996 21:37

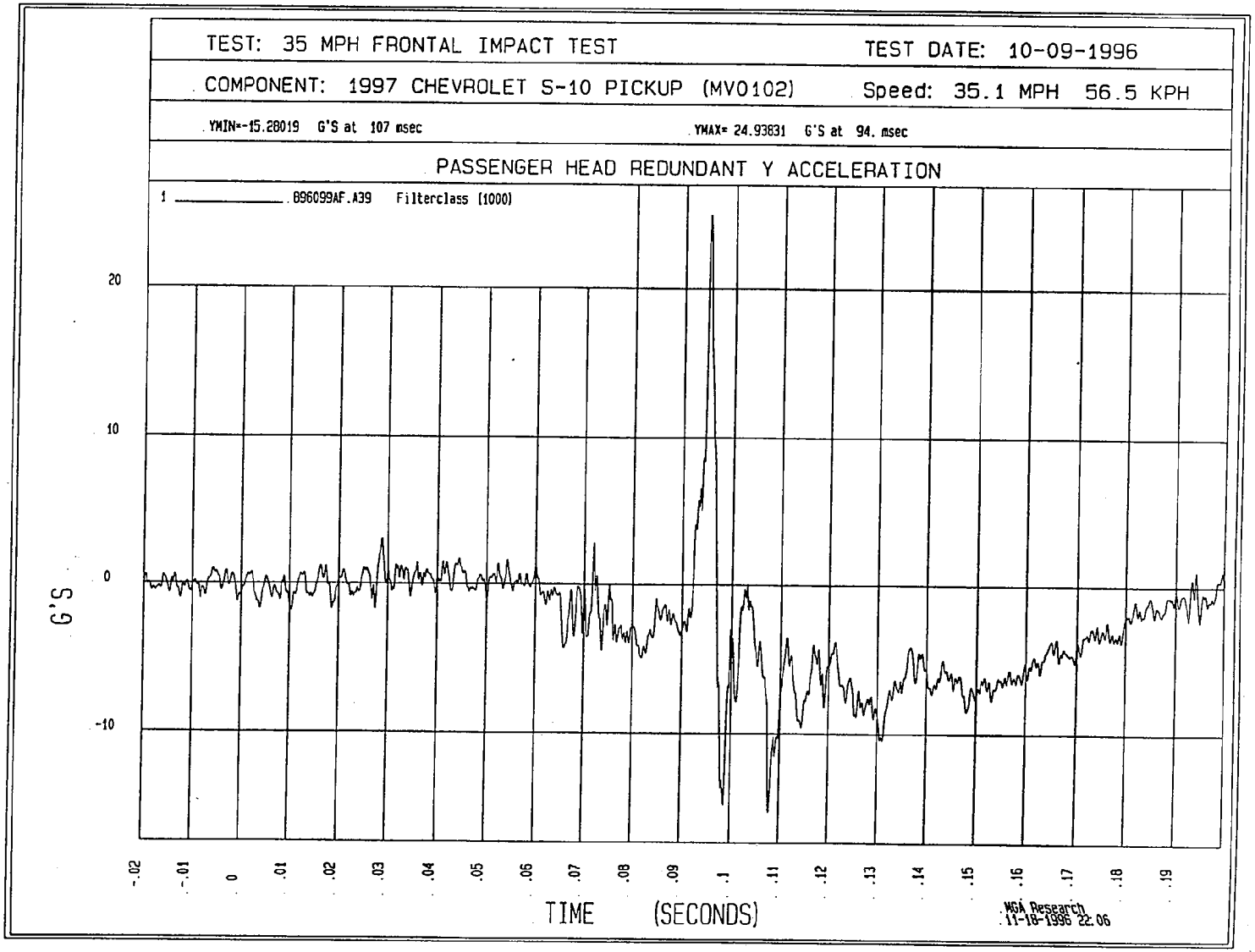

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-288.6196 G'S at 46. msec
YMAX= 141.7869 G'S at 47 msec
PASSENGER LEFT FOOT HEEL Z ACCELERATION
1 C960099AF.A12 Filterclass (1000)
100
0
-100
-200
-300
G'S
.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (seconds)
NGA Research
11-18-1996 21:37

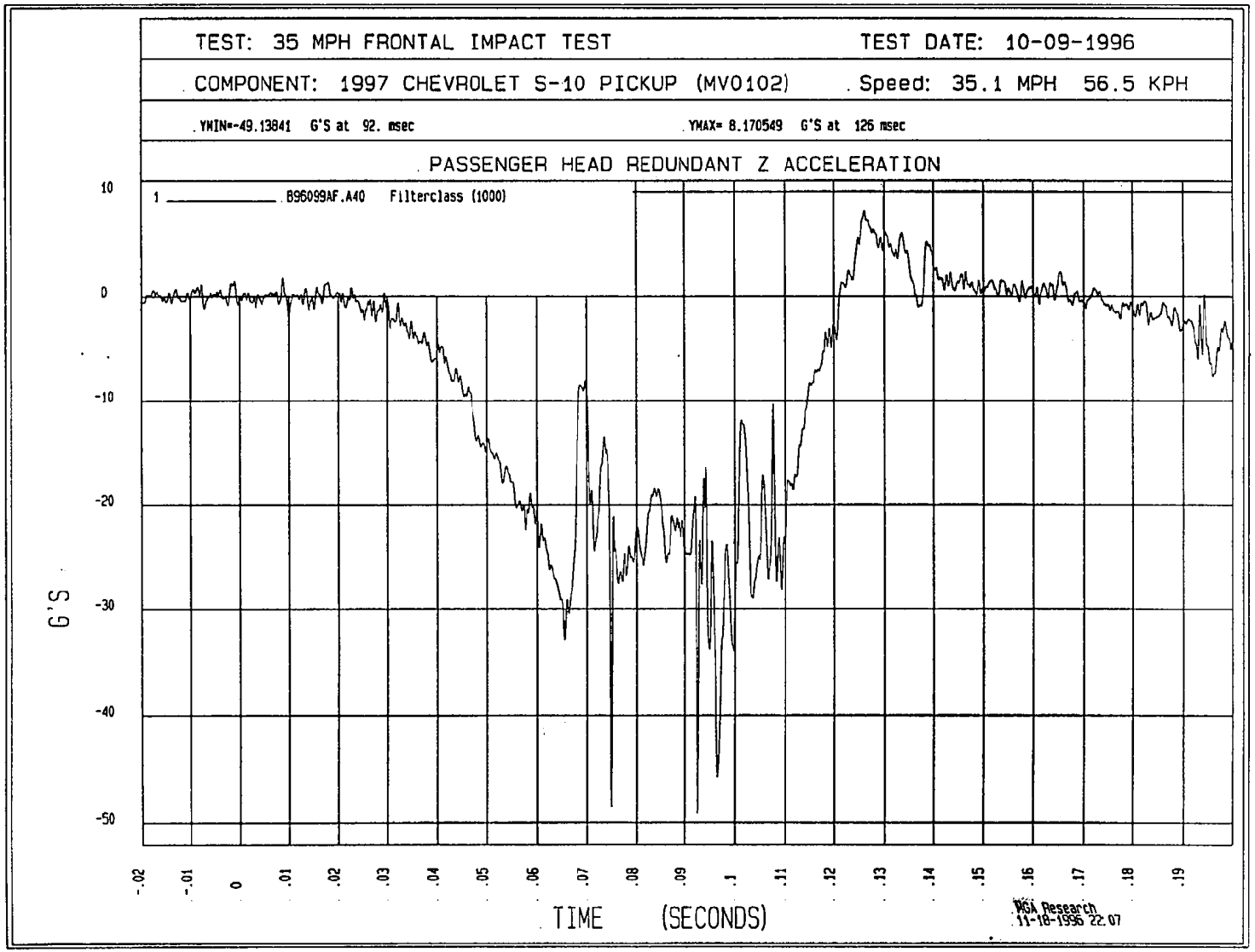

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-48.28646 G'S at 47. msec
YMAX= 70.9185 G'S at 36. msec
PASSENGER RIGHT FOOT BALL Z ACCELERATION
1 C96099AF.A07 Filterclass (1000)
60
40
20
0
-20
-40
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (seconds)
MGA Research
11-18-1996 21:38

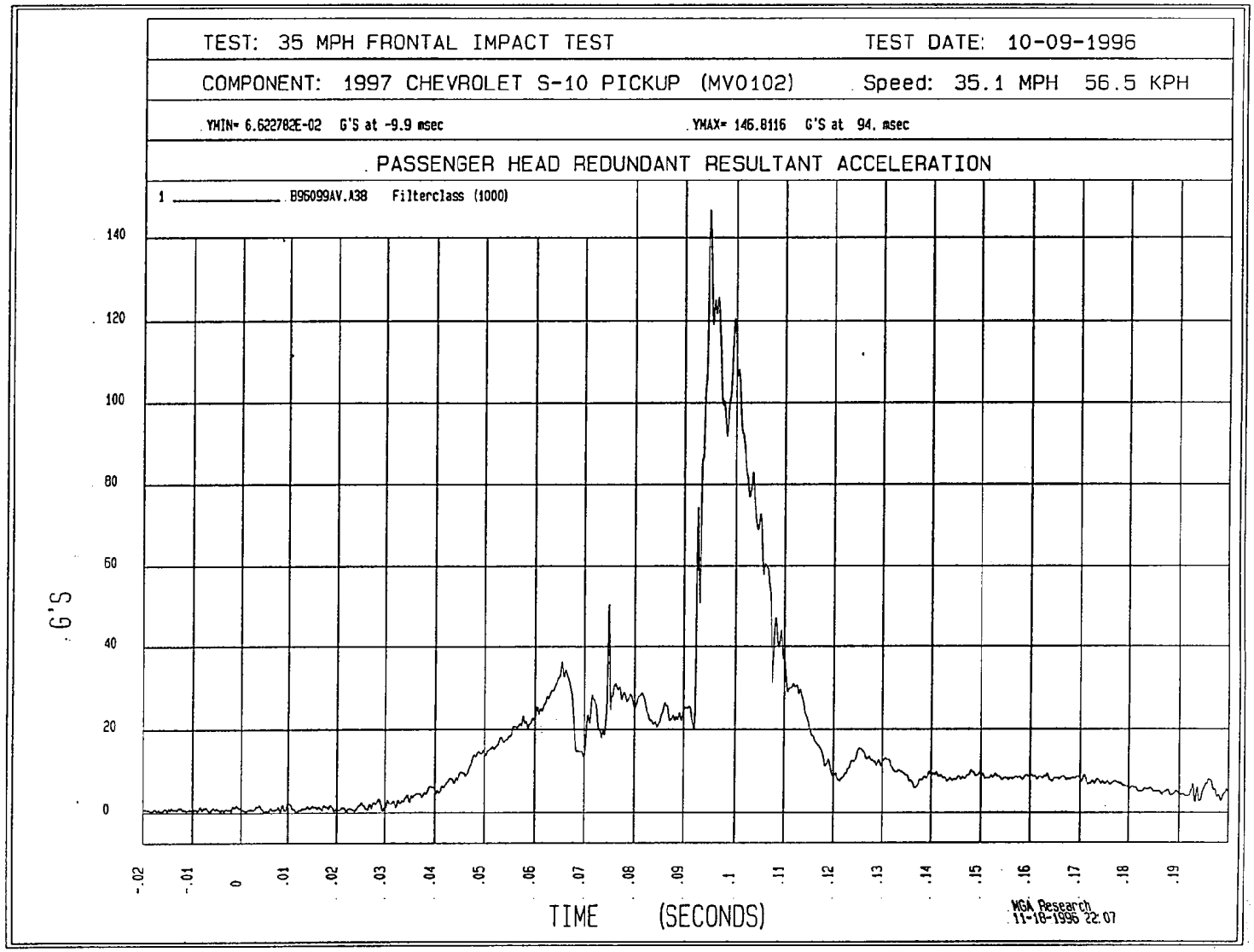

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-51.80014 G'S at 34. msec
YMAX= 25.08414 G'S at 103 msec
PASSENGER RIGHT FOOT HEEL X ACCELERATION
1 C96099AF.A08 Filterclass (1000)
20
10
0
-10
-20
-30
-40
-50
-60
G'S
TIME (seconds)
MGA Research
11-18-1996 21:38

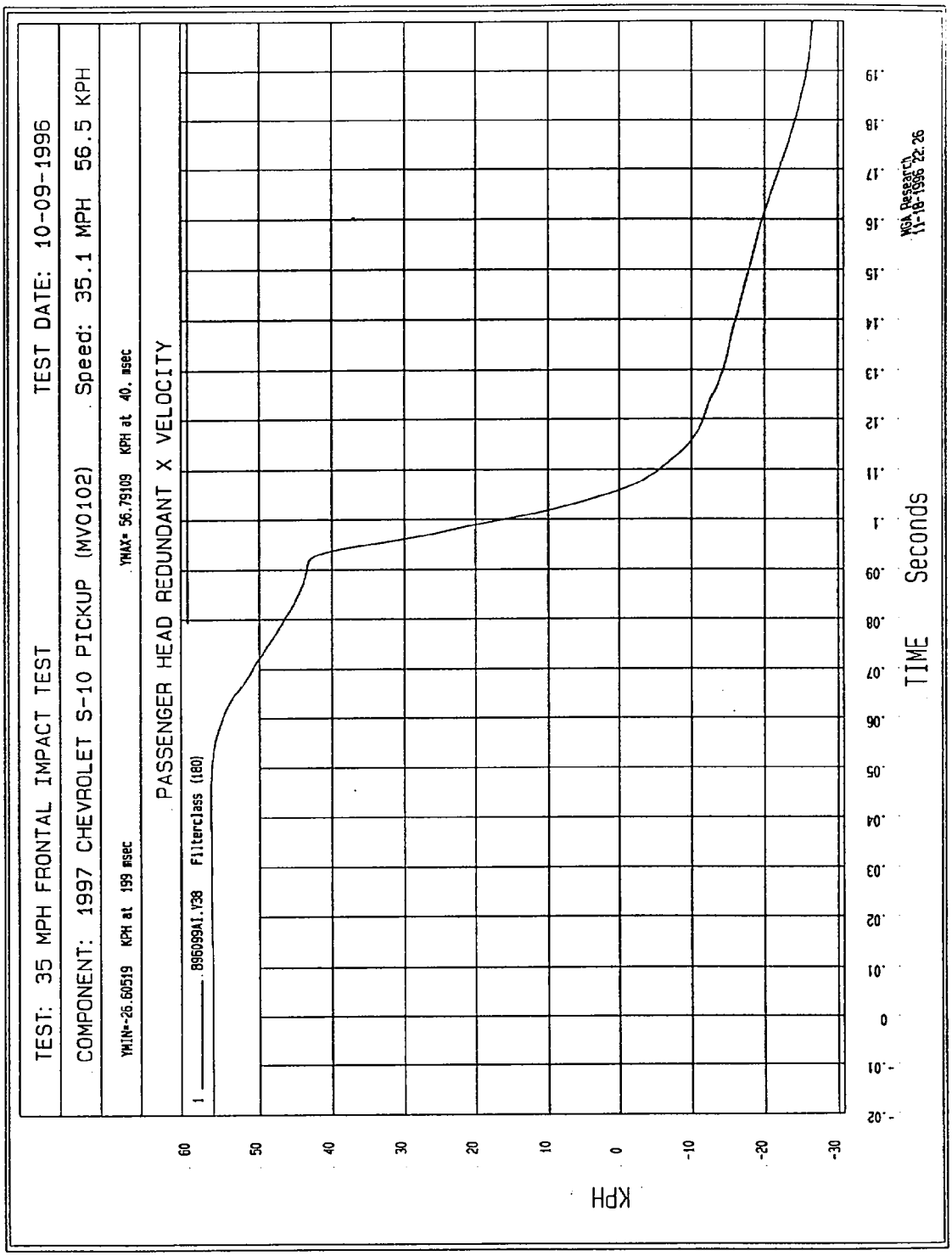

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-42.22318 G'S at 47. msec
YMAX= 47.26987 G'S at 37. msec
PASSENGER RIGHT FOOT HEEL Z ACCELERATION
1 C96099AF.A09 Filterclass (1000)
50
40
30
20
10
0
-10
-20
-30
-40
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (seconds)
MGA Research
11-18-1996 21:38

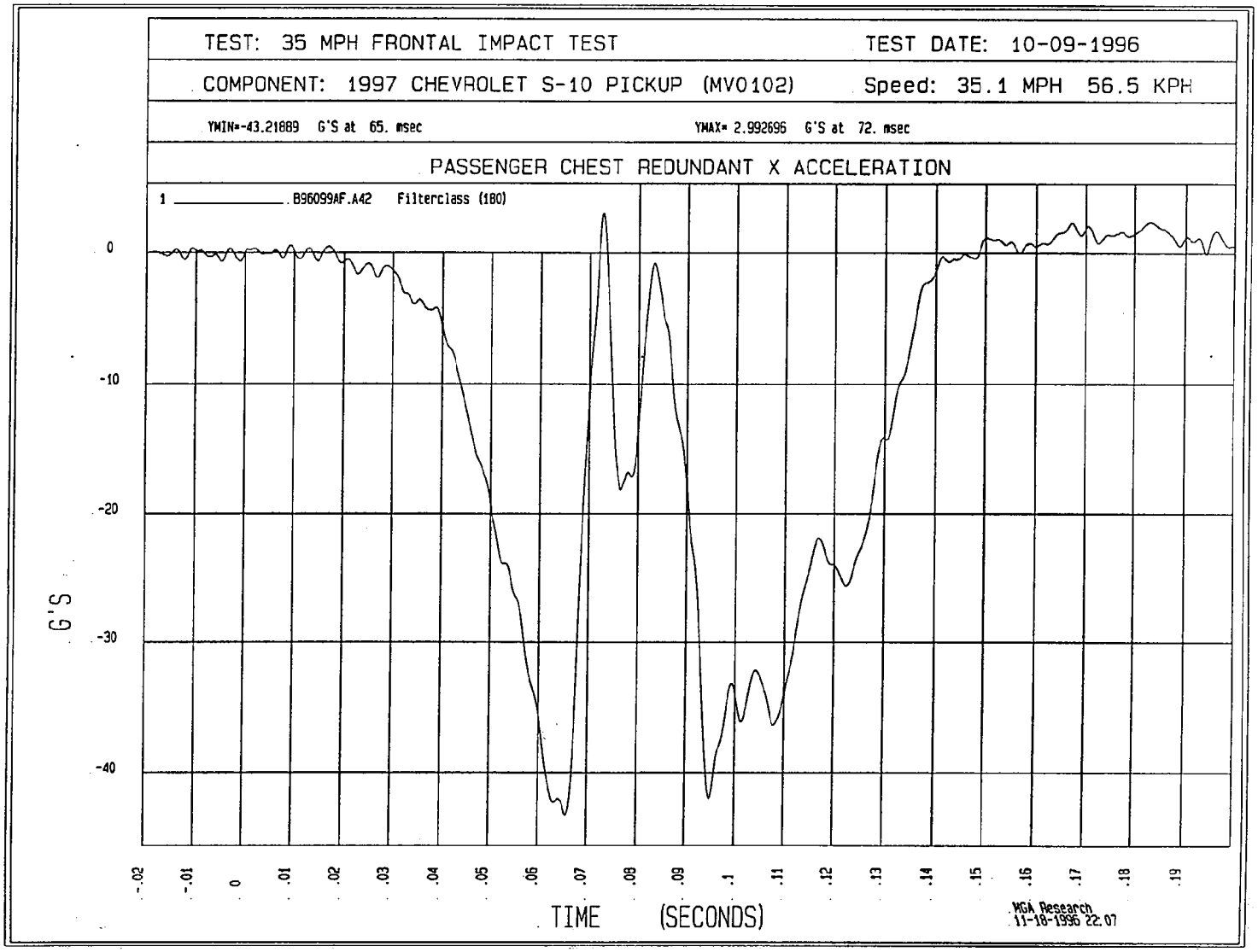

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-140.9245 G'S at 94. msec
YMAX= 1.233043 G'S at 36. msec
PASSENGER HEAD REDUNDANT X ACCELERATION
1 896099AF.A38 Filterclass (1000)
0
-20
-40
-60
-80
-100
-120
-140
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:06

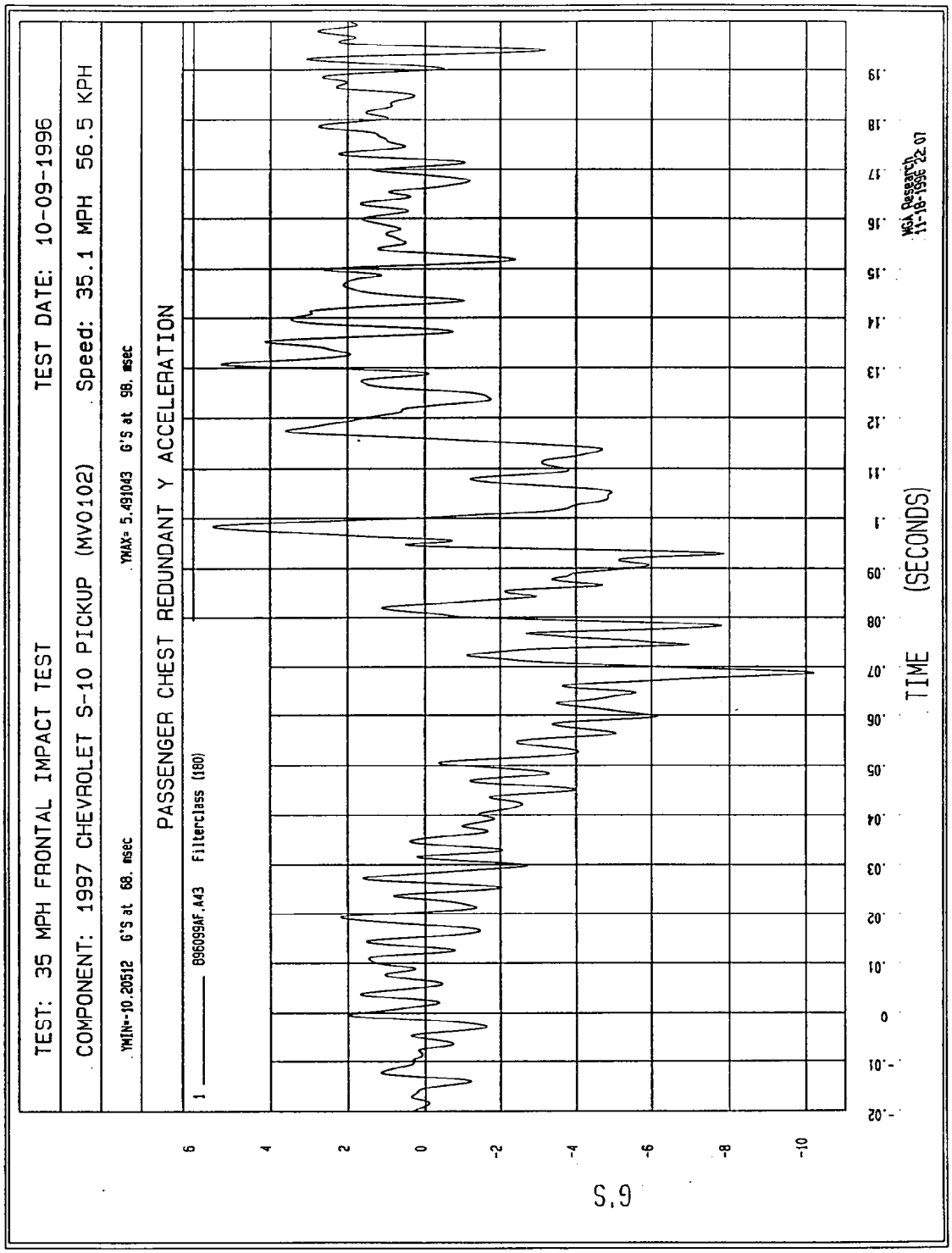

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-15.28019 G'S at 107 msec
YMAX= 24.93831 G'S at 94. msec
PASSENGER HEAD REDUNDANT Y ACCELERATION
1 B96099AF.A39 Filterclass (1000)
20
10
0
-10
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:06

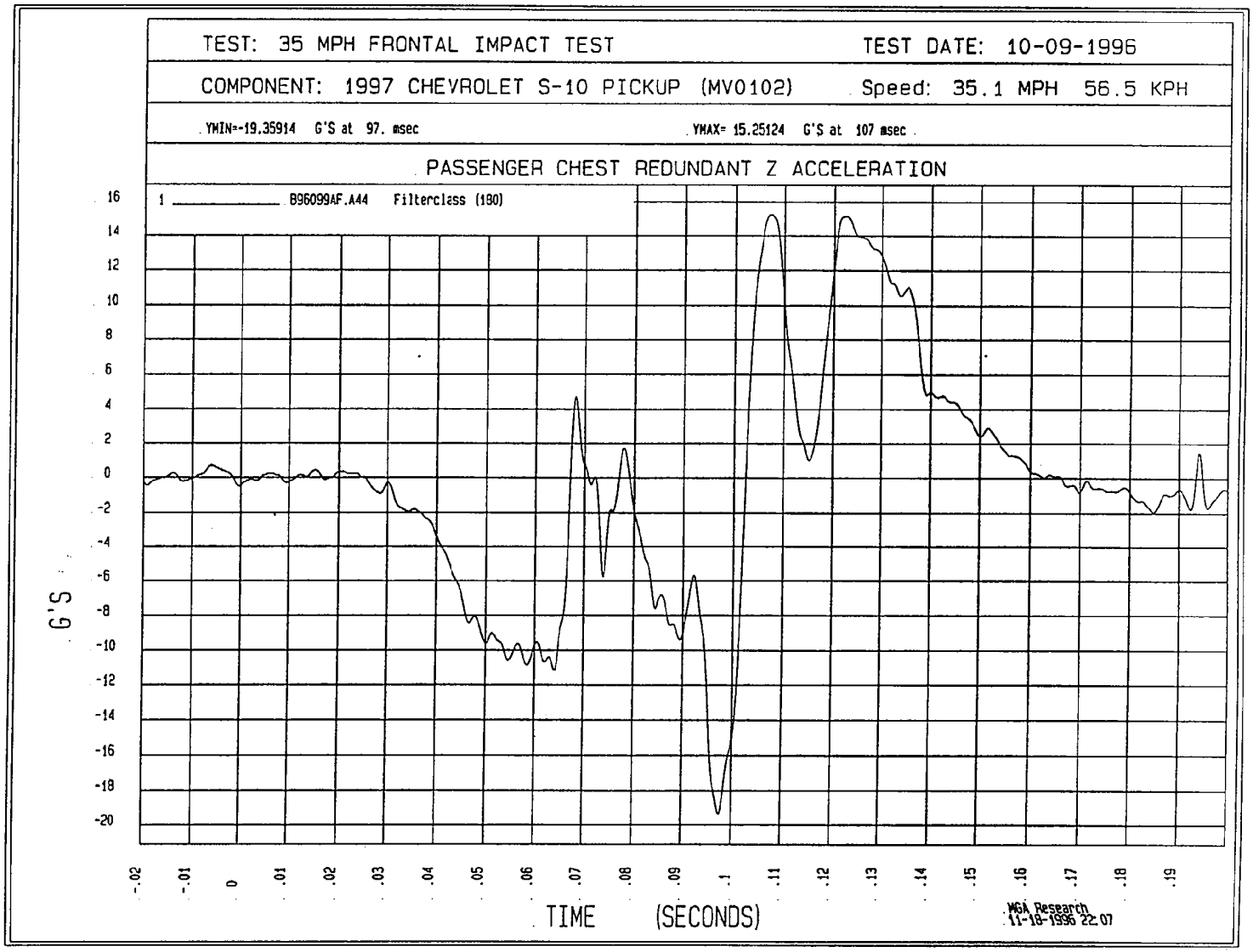

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-49.13841 G'S at 92. msec
YMAX= 8.170549 G'S at 126 msec
PASSENGER HEAD REDUNDANT Z ACCELERATION
1 B96099AF.A40 Filterclass (1000)
10
0
-10
-20
-30
-40
-50
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
DGA Research
11-18-1996 22:07

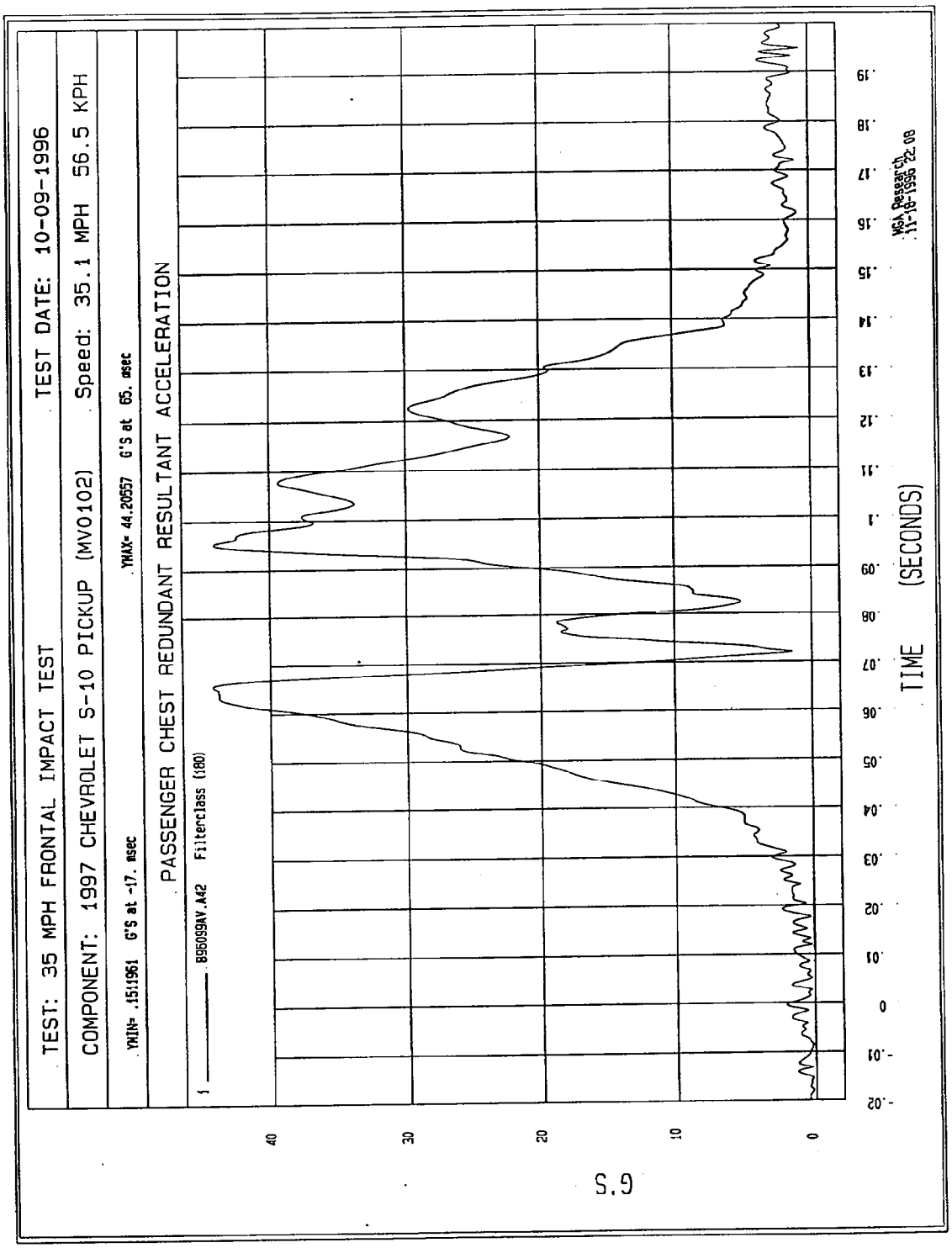

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= 6.622782E-02 G'S at -9.9 msec
YMAX= 146.8116 G'S at 94. msec
PASSENGER HEAD REDUNDANT RESULTANT ACCELERATION
1 B95099AV.A38 Filterclass (1000)
140
120
100
80
60
40
20
0
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-10-1996 22:07

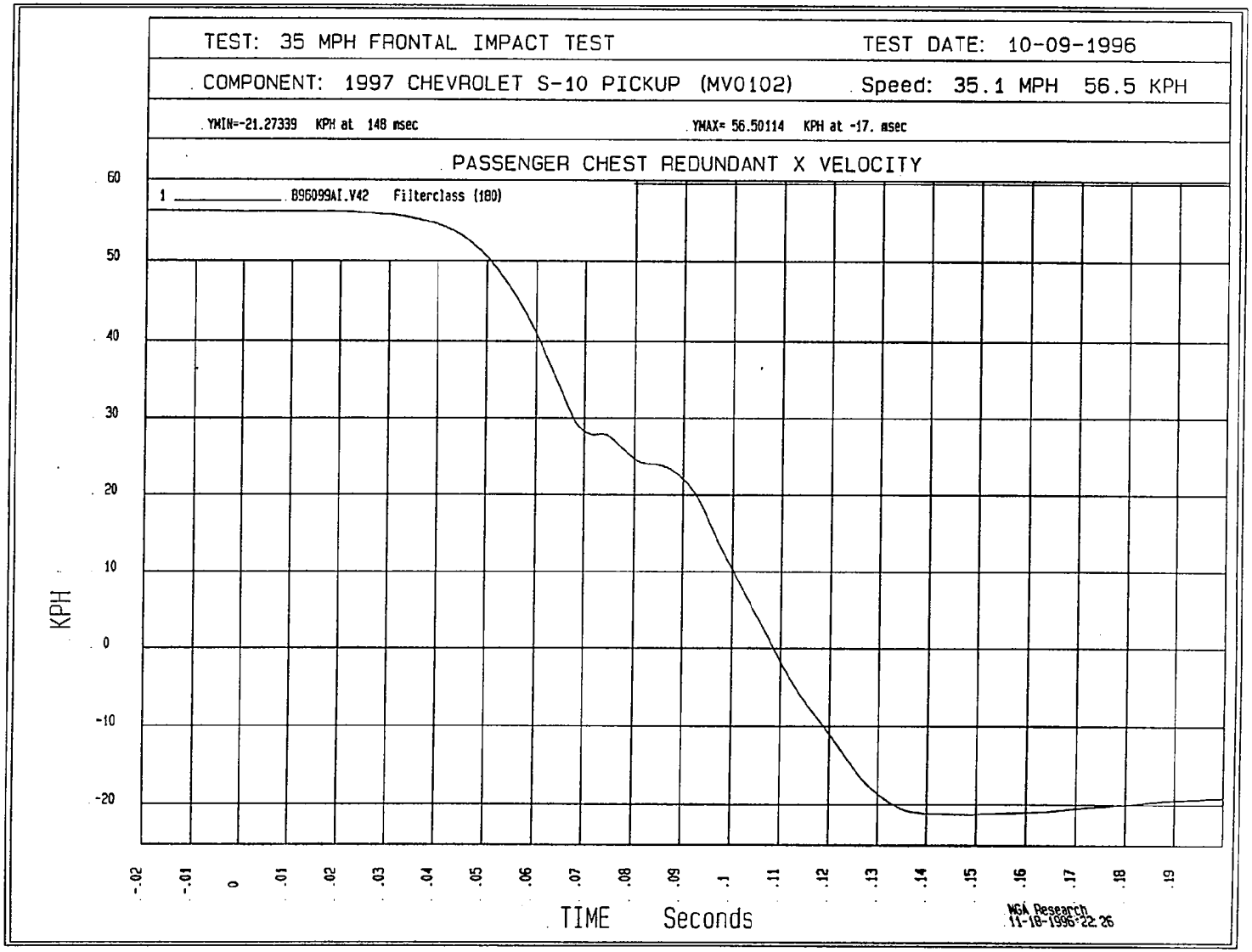

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-26.60519 KPH at 199 msec
YMAX= 56.79109 KPH at 40. msec
PASSENGER HEAD REDUNDANT X VELOCITY
1 _____ 896099AI.V38 Filterclass (180)
KPH
TIME Seconds
60
50
40
30
20
10
0
-10
-20
-30
.19
.18
.17
.16
.15
.14
.13
.12
.11
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
-.01
-.02
MGA Research
11-18-1996 22:26


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-43.21889 G'S at 65. msec
YMAX= 2.992696 G'S at 72. msec
PASSENGER CHEST REDUNDANT X ACCELERATION
1 B96099AF.A42 Filterclass (180)
0
-10
-20
-30
-40
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-10-1996 22:07


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-10.20512 G'S at 68. msec
YMAX= 5.491043 G'S at 98. msec
PASSENGER CHEST REDUNDANT Y ACCELERATION
1 ——— 896099AF.A43 Filterclass (180)
6
4
2
0
-2
-4
-6
-8
-10
G'S
.02
.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:07

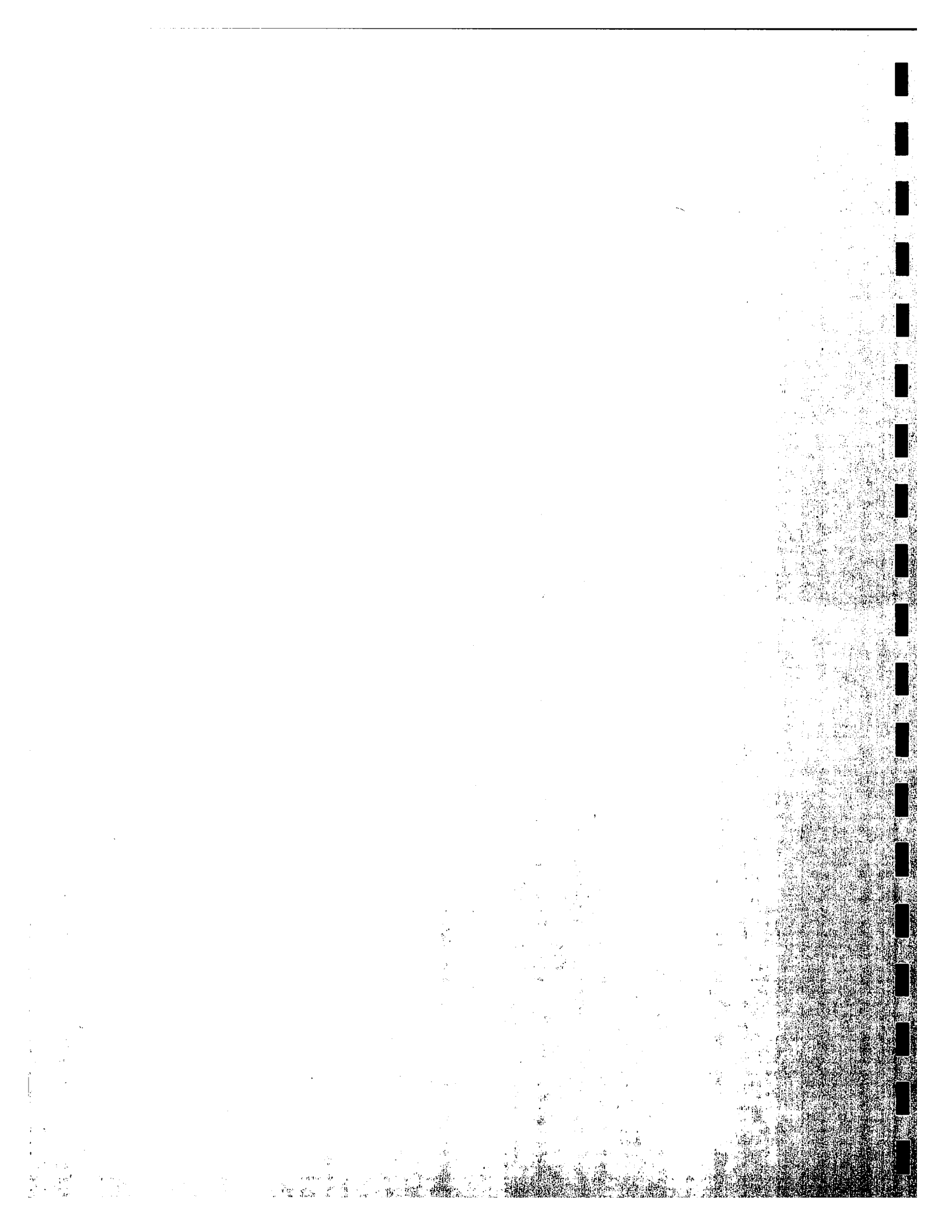

TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-19.35914 G'S at 97. msec
YMAX= 15.25124 G'S at 107 msec
PASSENGER CHEST REDUNDANT Z ACCELERATION
1 B96099AF.A44 Filterclass (180)
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
G'S
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
MGA Research
11-18-1996 22:07


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN= .1511961 G'S at -17. msec
YMAX= 44.20557 G'S at 65. msec
PASSENGER CHEST REDUNDANT RESULTANT ACCELERATION
1 B96099AV.A42 Filterclass (180)
Mga Research
11-18-1996 22:08
40
30
20
10
0
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME (SECONDS)
G's


TEST: 35 MPH FRONTAL IMPACT TEST
TEST DATE: 10-09-1996
COMPONENT: 1997 CHEVROLET S-10 PICKUP (MV0102)
Speed: 35.1 MPH 56.5 KPH
YMIN=-21.27339 KPH at 148 msec
YMAX= 56.50114 KPH at -17. msec
PASSENGER CHEST REDUNDANT X VELOCITY
1 B96099AI.V42 Filterclass (180)
KPH
60
50
40
30
20
10
0
-10
-20
-.02
-.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
.12
.13
.14
.15
.16
.17
.18
.19
TIME Seconds
MGA Research
11-18-1996:22:26

APPENDIX C

Dummy Configuration & Performance Verification Data



HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 037 DUMMY CALIBRATION BY: Al Chalmers

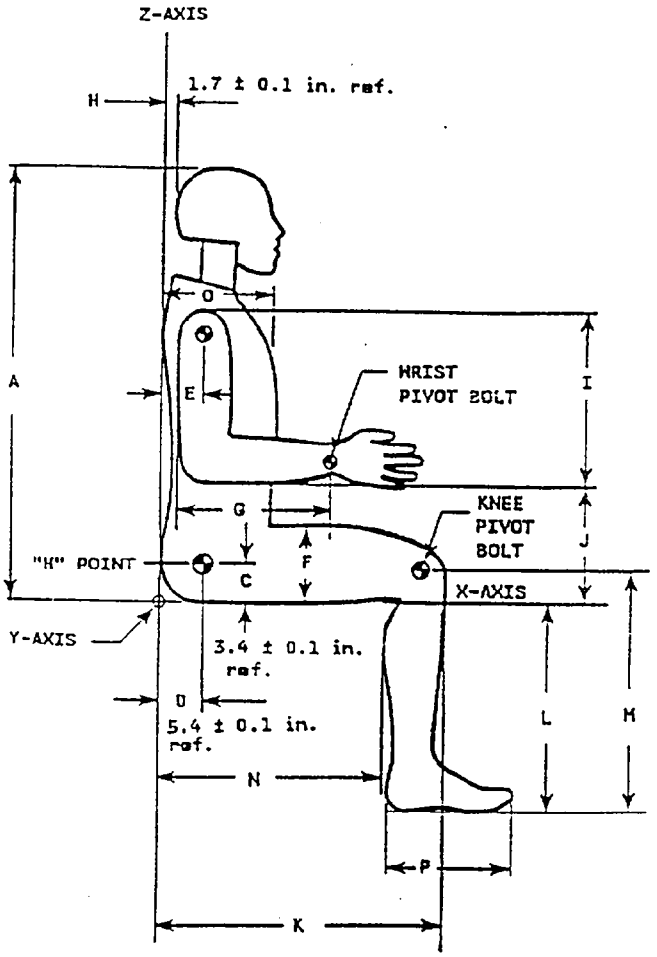
I. CONFIGURATION VERIFICATION DATA

DATE OF VERIFICATION: 5-8-96

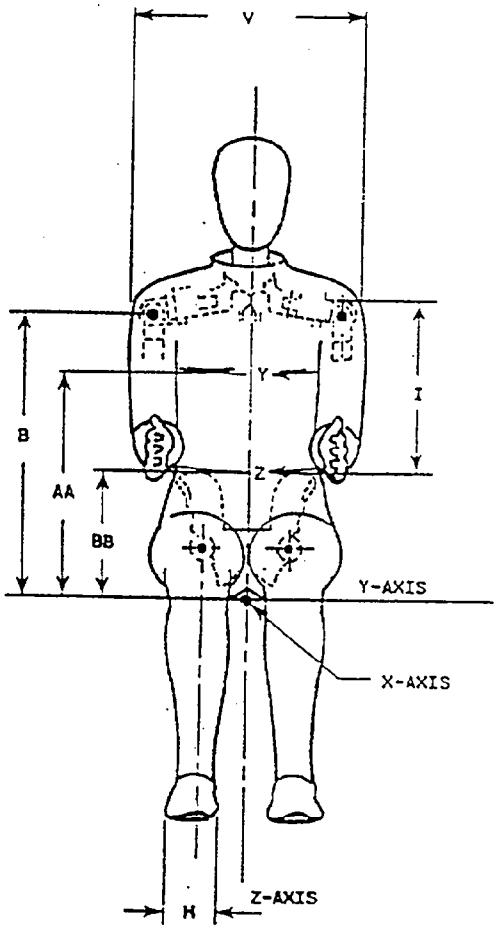
DESCRIPTION	SPECIFICATION (inches)	ACTUAL MEASUREMENT (inches)
A - Total Sitting Height	34.6 - 35.0	34.9
B - Shoulder Pivot Height	19.9 - 20.5	20.5
C - "H" Point Height	3.3 - 3.5	3.5
D - "H" Point from Seat Back	5.3 - 5.5	5.5
E - Shoulder Pivot From Backline	3.3 - 3.7	3.5
F - Thigh Clearance	5.5 - 6.1	6.1
G - Back of Elbow to Wrist Pivot	11.4 - 12.0	11.5
H - Skull Cap Skin to Backline	1.6 - 1.8	1.7
I - Shoulder - Elbow Length	13.0 - 13.6	13.0
J - Elbow Rest Height	7.5 - 8.3	8.0
K - Buttock to Knee Length	22.8 - 23.8	23.5
L - Popliteal Height	16.9 - 17.9	17.0
M - Knee Pivot Height	19.1 - 19.9	19.5
N - Buttock Popliteal Length	17.8 - 18.8	18.5
O - Chest Depth at 3rd Rib	8.4 - 9.0	8.8
P - Foot Length	9.9 - 10.5	10.3
V - Shoulder Breadth	16.6 - 17.2	16.8
W - Foot Breadth	3.6 - 4.2	4.0
Y - Chest Circumference	38.2 - 39.4	39.0
Z - Waist Circumference	32.9 - 34.1	33.5

Note: (See next page for external dimensions)

HYBRID III EXTERNAL DIMENSIONS



SIDE VIEW



FRONT VIEW

Note: Figure is referenced to the erect seated position. The curved lumbar does not allow the hybrid III to be positioned in a perfect erect attitude.

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET

DUMMY NO.: 037 DUMMY CALIBRATION BY: Al Chalmers

VERIFICATION DATE: 9-24-96

VERIFICATION LABORATORY TEMPERATURE (66° - 78°): 70°

1.0 HEAD DROP TEST

	SPECIFICATION	MEASUREMENT
Peak Resultant Acceleration	225 - 275 G	254
Peak Lateral Acceleration	15 G. MAX	6
Is Acceleration Curve Unimodel	within 10% of peak	Yes

2.0 NECK FLEXION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		22.6 - 23.4 FT/SEC	23.0
Pendulum Deceleration	10 MS	22.50 - 27.50 G	23.19
	20 MS	17.60 - 22.60 G	19.58
	30 MS	12.50 - 18.50 G	16.12
Max. Pendulum G Above 30 MS		29.0 G MAX	16.1
Deceleration - Time Curve Decay Time to 5 G		34 - 42 MS	36
D Plane Rotation	MAX	64 - 78 DEG.	77
	TIME	57 - 64 MS	58
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 MS	118
Moment About Occipital Condyle	MIN.	65 - 80 FT.LBS	67
	TIME	47 - 58 MS	48
Positive Moment - Time Curve Decay Time to Zero		97 - 107 MS	103

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

3.0 NECK EXTENSION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		19.50 - 20.30 F/S	20.06
Pendulum Deceleration	10 MS	17.20 - 21.20 G	17.63
	20 MS	14.00 - 19.00 G	16.65
	30 MS	11.00 - 16.00 G	12.78
Max. Pendulum G Above 30 MS		22 G Max	13
Deceleration - Time Curve Decay Time to 5 G		38 - 46 MS	39
D Plane Rotation	MAX	81 - 106 DEG.	102
	TIME	72 - 82 MS	75
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 MS	158
Moment About Occipital Condyle	MIN.	-59.0/-39.0 FT LBS	-51.6
	TIME	65 - 79 MS	71
Positive Moment - Time Curve Decay Time to Zero		120 - 148 MS	143

4.0 CHEST IMPACT TESTS

	SPECIFICATION	MEASUREMENT
Probe Speed	21.6 to 22.4 F/S	22.1
Peak Deflection	2.50 to 2.86 IN.	2.52
Peak Resistive Force	1160 to 1325 LBS.	1315
Internal Hysteresis	69 to 85%	71

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

5.0 KNEE IMPACT TESTS

LEFT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	7.0
Maximum Force	1060 - 1300 LBS.	1204

RIGHT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	7.0
Maximum Force	1060 - 1300 LBS.	1254

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 036 DUMMY CALIBRATION BY: Al Chalmers

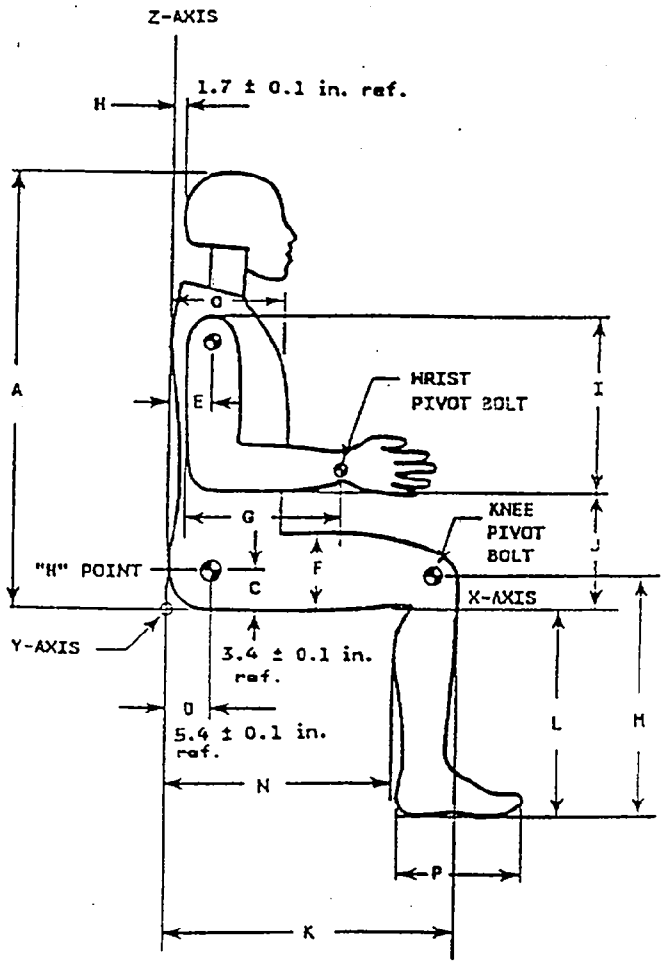
I. CONFIGURATION VERIFICATION DATA

DATE OF VERIFICATION: 5-30-96

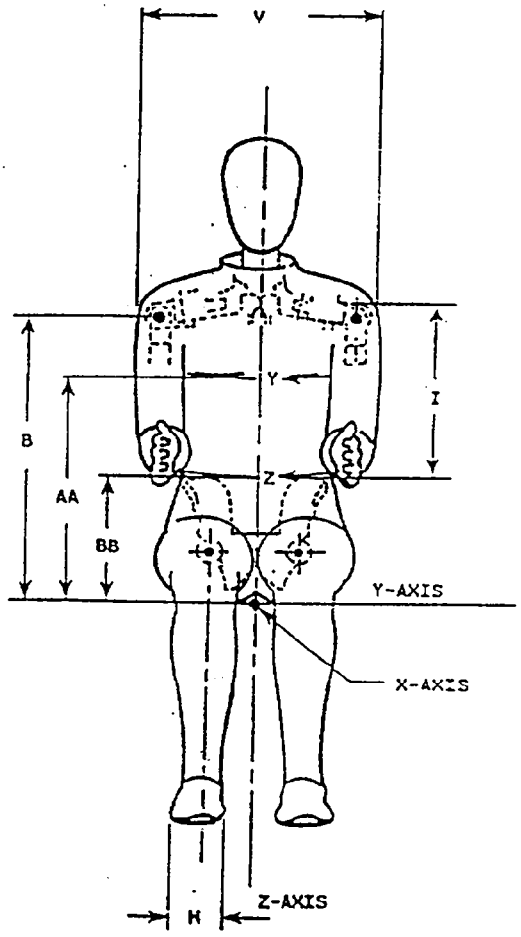
DESCRIPTION	SPECIFICATION (Inches)	ACTUAL MEASUREMENT (inches)
A - Total Sitting Height	34.6 - 35.0	34.8
B - Shoulder Pivot Height	19.9 - 20.5	20.5
C - "H" Point Height	3.3 - 3.5	3.5
D - "H" Point from Seat Back	5.3 - 5.5	5.5
E - Shoulder Pivot From Backline	3.3 - 3.7	3.5
F - Thigh Clearance	5.5 - 6.1	6.1
G - Back of Elbow to Wrist Pivot	11.4 - 12.0	11.5
H - Skull Cap Skin to Backline	1.6 - 1.8	1.7
I - Shoulder Elbow Length	13.0 - 13.6	13.0
J - Elbow Rest Height	7.5 - 8.3	8.0
K - Buttock Knee Length	22.8 - 23.8	23.5
L - Popliteal Height	16.9 - 17.9	17.0
M - Knee Pivot Height	19.1 - 19.9	19.5
N - Buttock Popliteal Length	17.8 - 18.8	18.5
O - Chest Depth at 3rd Rib	8.4 - 9.0	8.8
P - Foot Length	9.9 - 10.5	10.3
V - Shoulder Breadth	16.6 - 17.2	16.8
W - Foot Breadth	3.5 - 4.2	4.0
Y - Chest Circumference	38.2 - 39.4	39.0
Z - Waist Circumference	32.9 - 34.1	33.5

Note: (See next page for external dimensions)

HYBRID III EXTERNAL DIMENSIONS



SIDE VIEW



FRONT VIEW

Note: Figure is referenced to the erect seated position. The curved lumbar does not allow the hybrid III to be positioned in a perfect erect attitude.

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

DUMMY NO.: 036 DUMMY CALIBRATION BY: Al Chalmers

VERIFICATION DATE: 5-30-96

VERIFICATION LABORATORY TEMPERATURE (66° - 78°): 70°

1.0 HEAD DROP TEST

	SPECIFICATION	MEASUREMENT
Peak Resultant Acceleration	225 - 275 G	262
Peak Lateral Acceleration	15 G. MAX	9
Is Acceleration Curve Unimodal	within 10% of peak	Yes

2.0 NECK FLEXION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		22.6 - 23.4 FT/SEC	22.99
Pendulum Deceleration	10 MS	22.50 - 27.50 G	22.78
	20 MS	17.60 - 22.60 G	20.16
	30 MS	12.50 - 18.50 G	16.14
Max. Pendulum G Above 30 MS		29.0 G MAX	16.1
Deceleration - Time Curve Decay Time to 5 G		34 - 42 MS	36
D Plane Rotation	MAX	64 - 78 DEG.	74
	TIME	57 - 64 MS	58
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 MS	113
Moment About Occipital Condyle	MIN.	65 - 80 FT.LBS	73
	TIME	47 - 58 MS	47
Positive Moment - Time Curve Decay Time to Zero		97 - 107 MS	102

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

3.0 NECK EXTENSION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		19.50 - 20.30 F/S	20.04
Pendulum Deceleration	10 MS	17.20 - 21.20 G	18.49
	20 MS	14.00 - 19.00 G	16.25
	30 MS	11.00 - 16.00 G	13.85
Max. Pendulum G Above 30 MS		22 G Max	14
Deceleration - Time Curve Decay Time to 5 G		38 - 46 MS	38
D Plane Rotation	MAX	81 - 106 DEG.	95
	TIME	72 - 82 MS	74
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 MS	157
Moment About Occipital Condyle	MIN.	-59.0/-39.0 FT LBS	-52.8
	TIME	65 - 79 MS	71
Positive Moment - Time Curve Decay Time to Zero		120 - 148 MS	140

4.0 CHEST IMPACT TESTS

	SPECIFICATION	MEASUREMENT
Probe Speed	21.6 to 22.4 F/S	22.0
Peak Deflection	2.50 to 2.86 IN.	2.64
Peak Resistive Force	1160 to 1325 LBS.	1242
Internal Hysteresis	69 to 85%	69

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

5.0 KNEE IMPACT TESTS

LEFT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	7.0
Maximum Force	1060 - 1300 LBS.	1213

RIGHT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	6.8
Maximum Force	1060 - 1300 LBS.	1294

APPENDIX D

Dummy, Vehicle and Laboratory Calibration Data

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 037

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ACCY6	Endevco	6/07/96
Head Y	ACCH1	Endevco	6/07/96
Head Z	AAMW5	Endevco	6/07/96
Head X Redundant	AJ9D2	Endevco	6/07/96
Head Y Redundant	AH1E2	Endevco	6/07/96
Head Z Redundant	AJ7K3	Endevco	6/07/96
Chest X	ACCY1	Endevco	6/06/96
Chest Y	ACCC8	Endevco	6/06/96
Chest Z	ACCT7	Endevco	6/06/96
Chest X Redundant	AJ904	Endevco	6/06/96
Chest Y Redundant	AJ9F3	Endevco	6/06/96
Chest Z Redundant	AJ9D9	Endevco	6/06/96
Right Femur Load Cell	261	Denton	8/28/96
Left Femur Load Cell	262	Denton	8/28/96
Pelvis X	ALDY8	Endevco	6/06/96
Pelvis Y	ALEK9	Endevco	6/06/96
Pelvis Z	ALE80	Endevco	6/06/96

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 037

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Neck Load Cell X	443	Denton	6/18/96
Neck Load Cell Y	443	Denton	6/18/96
Neck Load Cell Z	443	Denton	6/18/96
Neck Moment X	443	Denton	6/18/96
Neck Moment Y	443	Denton	6/18/96
Neck Moment Z	443	Denton	6/18/96
Chest Deflection Gauge	037	Servo	7/10/96
Lap Belt Load Cell	212	GSE	6/18/96
Torso Belt Load Cell	624	LeBow	6/18/96

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 037

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Right Tibia Moment X	436	Denton	6/18/96
Upper Right Tibia Moment Y	436	Denton	6/18/96
Lower Right Tibia Moment Y	424	Denton	6/14/96
Lower Right Tibia Force X	424	Denton	6/14/96
Lower Right Tibia Force Z	424	Denton	6/14/96
Upper Left Tibia Moment X	438	Denton	6/18/96
Upper Left Tibia Moment Y	438	Denton	6/18/96
Lower Left Tibia Moment Y	426	Denton	6/14/96
Lower Left Tibia Force X	426	Denton	6/14/96
Lower Left Tibia Force Z	426	Denton	6/14/96
Right Foot Ball Z	AP120	Endevco	6/06/96
Right Foot Heel X	AP2C4	Endevco	6/06/96
Right Foot Heel Z	AP042	Endevco	6/06/96
Left Foot Ball Z	AN8M6	Endevco	6/06/96
Left Foot Heel X	AHY99	Endevco	6/06/96
Left Foot Heel Z	AP0E1	Endevco	6/06/96

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 036

	PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	AAMN8	Endevco	6/06/96
Head Y	ACC61	Endevco	6/06/96
Head Z	ACCW9	Endevco	6/06/96
Head X Redundant	AJ621	Endevco	6/06/96
Head Y Redundant	AJ619	Endevco	6/06/96
Head Z Redundant	AHY54	Endevco	6/06/96
Chest X	ACC78	Endevco	6/06/96
Chest Y	ACCE6	Endevco	6/06/96
Chest Z	ACCY3	Endevco	6/06/96
Chest X Redundant	AJ9J7	Endevco	6/06/96
Chest Y Redundant	AJ7A2	Endevco	6/06/96
Chest Z Redundant	AJ819	Endevco	6/06/96
Right Femur Load Cell	259	Denton	8/28/96
Left Femur Load Cell	260	Denton	8/28/96
Pelvis X	ALB87	Endevco	6/06/96
Pelvis Y	AGNB3	Endevco	6/06/96
Pelvis Z	AJ834	Endevco	6/06/96

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 036

	PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Neck Load Cell X	442	Denton	6/18/96
Neck Load Cell Y	442	Denton	6/18/96
Neck Load Cell Z	442	Denton	6/18/96
Neck Moment X	442	Denton	6/18/96
Neck Moment Y	442	Denton	6/18/96
Neck Moment Z	442	Denton	6/18/96
Chest Deflection Gauge	036	Servo	5/08/96
Lap Belt Load Cell	657	Lebow	6/18/96
Torso Belt Load Cell	313	Denton	4/18/96

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 036

	PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Right Tibia Moment X	040	Denton	4/16/96
Upper Right Tibia Moment Y	040	Denton	4/16/96
Lower Right Tibia Moment Y	034	Denton	4/17/96
Lower Right Tibia Force X	034	Denton	4/17/96
Lower Right Tibia Force Z	034	Denton	4/17/96
Upper Left Tibia Moment X	023	Denton	4/16/96
Upper Left Tibia Moment Y	023	Denton	4/16/96
Lower Left Tibia Moment Y	019	Denton	4/17/96
Lower Left Tibia Force X	019	Denton	4/17/96
Lower Left Tibia Force Z	019	Denton	4/17/96
Right Foot Ball Z	AP0P6	Endevco	6/06/96
Right Foot Heel X	AP0T3	Endevco	6/06/96
Right Foot Heel Z	AP122	Endevco	6/06/96
Left Foot Ball Z	ACC81	Endevco	6/06/96
Left Foot Heel X	AP1Y1	Endevco	6/06/96
Left Foot Heel Z	AMTB8	Endevco	6/06/96

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	C06-G09	Entran	10/02/96
Right Rear Seat Crossmember X	C25-A01	Entran	5/10/96
Top of Engine Block X	A09-G01	Entran	7/15/96
Bottom of Engine X	H16-X11	Entran	6/04/96
Left Brake Caliper X	J10-E11	Entran	7/10/96
Right Brake Caliper X	D05-R09	Entran	6/04/96
Instrument Panel X	C14-Z08	Entran	7/11/96
Redundant Left Rear Seat Crossmember X	C20-J10	Entran	7/11/96
Redundant Right Rear Seat Crossmember X	B12-G14	Entran	10/02/96

	LABORATORY INSTRUMENTS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Neck Bending Pendulum Accelerometer	AH5N9	Endevco	9/11/96
Neck Bending Head Rotary Potentiometer	018	Spectrol	4/17/96
Neck Bending Pendulum Rotary Potentiometer	019	Spectrol	4/17/96
Chest Probe Accelerometer	AN8A4	Endevco	7/12/96
Knee Impact Accelerometer	MGA001	Entran	6/10/96

APPENDIX E

Vehicle Owner's Occupant Restraint System Instructions

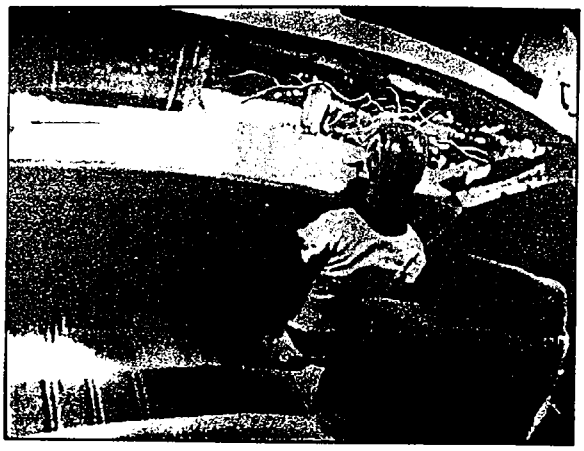
Safety Belts: They're for Everyone

This part of the manual tells you how to use safety belts properly. It also tells you some things you should not do with safety belts.

And it explains the Supplemental Inflatable Restraint (SIR). or air bag system.

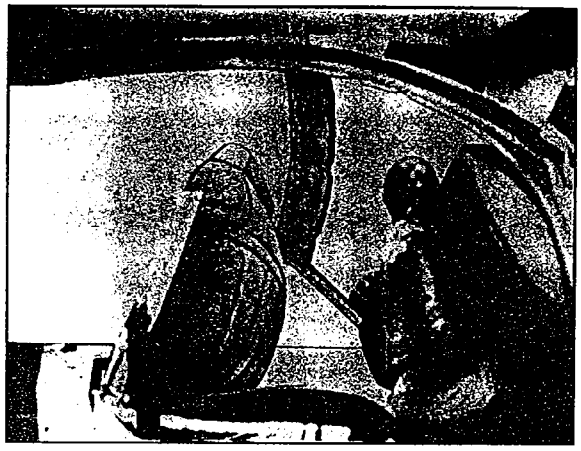
> **⚠ CAUTION:**
>
> **Don't let anyone ride where he or she can't wear a safety belt properly. If you are in a crash and you're not wearing a safety belt, your injuries can be much worse. You can hit things inside the vehicle or be ejected from it. You can be seriously injured or killed. In the same crash, you might not be if you are buckled up. Always fasten your safety belt, and check that your passengers' belts are fastened properly too.**

> **⚠ CAUTION:**
>
> **It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and safety belts. Be sure everyone in your vehicle is in a seat and using a safety belt properly.**



The person keeps going until stopped by something.

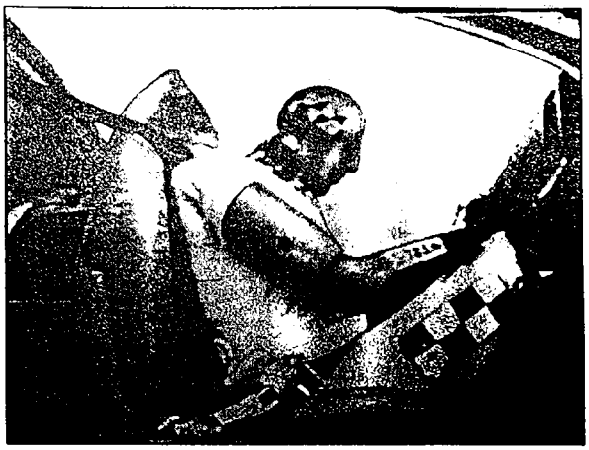
In a real vehicle, it could be the windshield ...



or the instrument panel ...

or the safety belts!

With safety belts, you slow down as the
You get more time to stop. You stop ove
and your strongest bones take the forces
safety belts make such good sense.



or the safety belts!

With safety belts, you slow down as the vehicle does. You get more time to stop. You stop over more distance, and your strongest bones take the forces. That's why safety belts make such good sense.

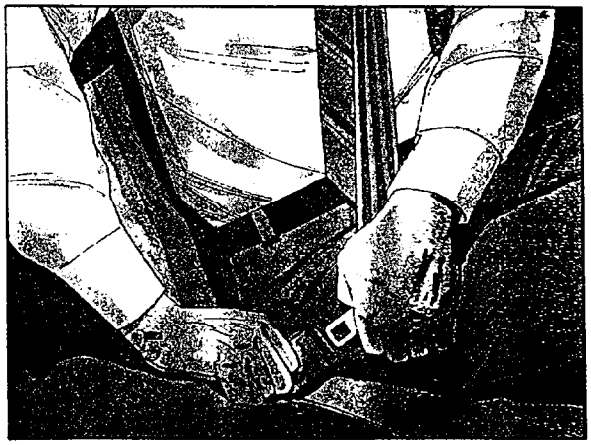
Here Are Questions Many People Ask About Safety Belts -- and the Answers

Q: **Won't I be trapped in the vehicle after an accident if I'm wearing a safety belt?**

A: You *could* be -- whether you're wearing a safety belt or not. But you can unbuckle a safety belt, even if you're upside down. And your chance of being conscious during and after an accident, so you *can* unbuckle and get out, is *much* greater if you are belted.

Q: **If my vehicle has air bags, why should I have to wear safety belts?**

A: Air bags are in many vehicles today and will be in most of them in the future. But they are supplemental systems only; so they work *with* safety belts -- not instead of them. Every air bag system ever offered for sale has required the use of safety belts. Even if you're in a vehicle that has air bags, you still have to buckle up to get the most protection. That's true not only in frontal collisions; but especially in side and other collisions.



3. Pick up the latch plate and pull the belt across you. Don't let it get twisted.
4. Push the latch plate into the buckle until it clicks.

   Pull up on the latch plate to make sure it is secure. If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

   Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.
5. To make the lap part tight, pull down on the buckle end of the belt as you pull up on the shoulder belt.

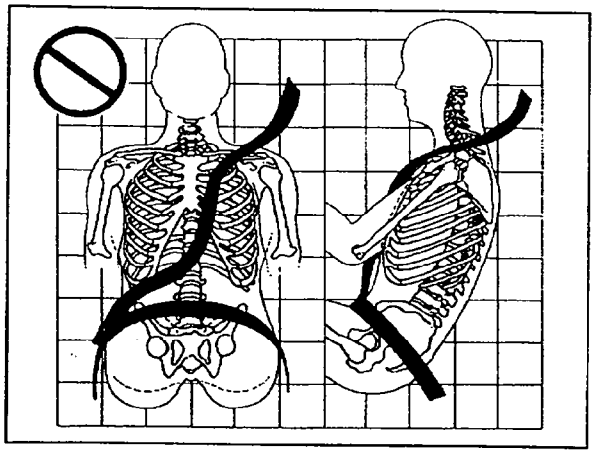
Q: **If I'm a good driver, and I never drive far from home, why should I wear safety belts?**

A: You may be an excellent driver, but if you're in an accident -- even one that isn't your fault -- you and your passengers can be hurt. Being a good driver doesn't protect you from things beyond your control, such as bad drivers.

Most accidents occur within 25 miles (40 km) of home. And the greatest number of serious injuries and deaths occur at speeds of less than 40 mph (65 km/h).

Safety belts are for everyone.

Q: **What's wrong with this?**



A: The shoulder belt is too loose. It won't give nearly as much protection this way.

How to Wear Safety Belts Properly

Adults

This part is only for people of adult size.

Be aware that there are special things to know about safety belts and children. And there are different rules for smaller children and babies. If a child will be ridin in your vehicle, see the part of this manual called "Children." Follow those rules for everyone's protectic

First, you'll want to know which restraint systems yo vehicle has.

We'll start with the driver position.

Driver Position

This part describes the driver's restraint system.

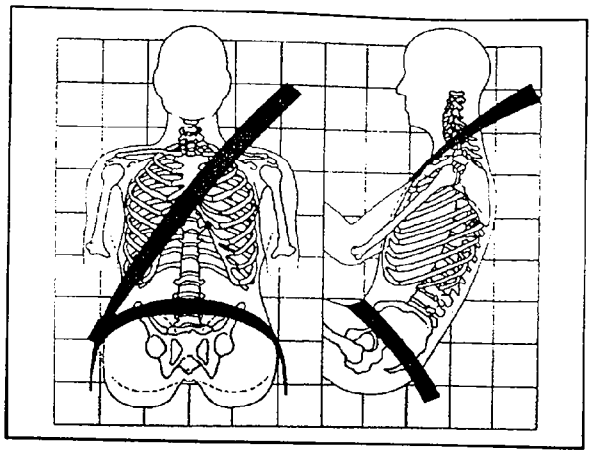
Lap-Shoulder Belt

The driver has a lap-shoulder belt. Here's how to wea it properly.

1. Close and lock the door.
2. Adjust the seat (to see how, see "Seats" in the Inde so you can sit up straight.

⚠ CAUTION:

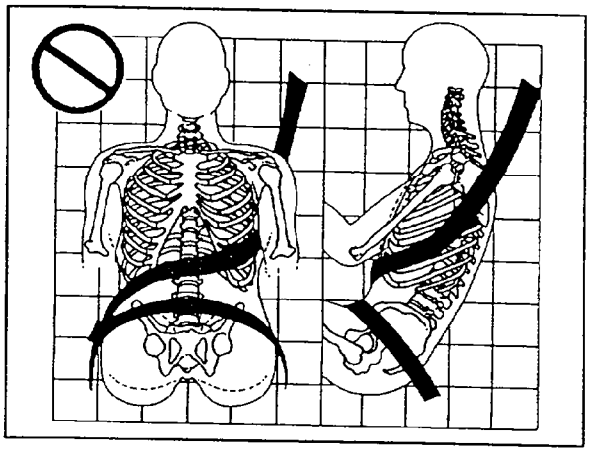
You can be seriously hurt if your shoulder belt is too loose. In a crash, you would move forward too much, which could increase injury. The shoulder belt should fit against your body.



The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or a crash.

Q: **What's wrong with this?**

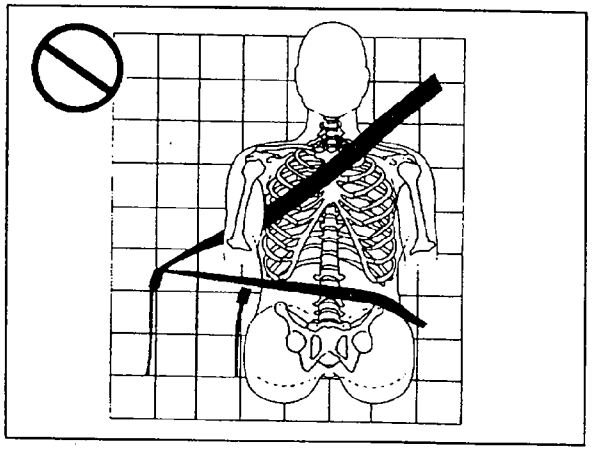


A: The shoulder belt is worn under the arm. It should be worn over the shoulder at all times.

⚠ CAUTION:

You can be seriously injured if you wear the shoulder belt under your arm. In a crash, your body would move too far forward, which would increase the chance of head and neck injury. Also, the belt would apply too much force to the ribs, which aren't as strong as shoulder bones. You could also severely injure internal organs like your liver or spleen.

Q: **What's wrong with this?**



A: The belt is buckled in the wrong place.

⚠ CAUTION:

You can be seriously injured if your belt is buckled in the wrong place like this. In a crash, the belt would go up over your abdomen. The belt forces would be there, not at the pelvic bones. This could cause serious internal injuries. Always buckle your belt into the buckle nearest you.

To unlatch the belt, just push the button on the buckle. The belt should go back out of the way.

Before you close the door, be sure the belt is out of the way. If you slam the door on it, you can damage both the belt and your vehicle.

Supplemental Inflatable Restraint (SIR) System

This part explains the Supplemental Inflatable Restraint (SIR) system or air bag system.

Your vehicle has an air bag for the driver.

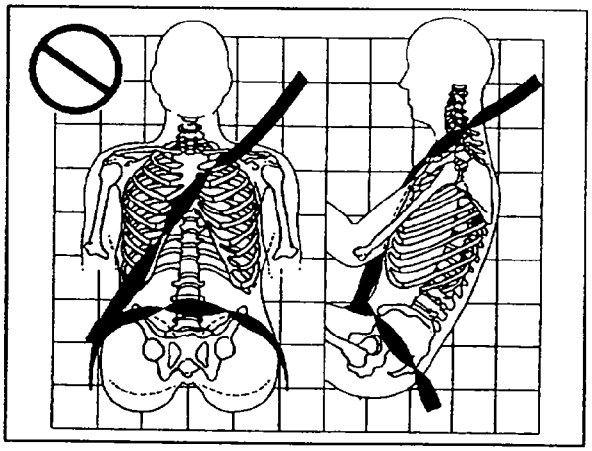
Here are the most important things to know about the air bag system:

⚠ CAUTION:

You can be severely injured or killed in a crash if you aren't wearing your safety belt -- even if you have an air bag. Wearing your safety belt during a crash helps reduce your chance of hitting things inside the vehicle or being ejected from it. Air bags are "supplemental restraints" to the safety belts. All air bags are designed to work with safety belts, but don't replace them. Air bags are designed to work only in moderate to severe crashes where the front of your vehicle hits something. They aren't designed to inflate at all

CAUTION: (Continued)

Q: **What's wrong with this?**



A: The belt is twisted across the body.

⚠ CAUTION:

You can be seriously injured by a twisted belt. In a crash, you wouldn't have the full width of the belt to spread impact forces. If a belt is twisted, make it straight so it can work properly, or ask your dealer to fix it.

How the Air Bag System Works

Where is the air bag?

The driver's air bag is in the middle of the steering wheel.

⚠ CAUTION:

Don't attach anything to, or put anything between an occupant and an air bag. If something is between the driver and the air bag, the bag might not inflate properly or it might force the object into you and cause injury. The path of an inflating air bag must be kept clear, so don't attach or put anything on or near the steering wheel hub.

CAUTION: (Continued)

in rollover, rear, side or low-speed frontal crashes. Everyone in your vehicle should wear a safety belt properly -- whether or not there's an air bag for that person.

⚠ CAUTION:

Air bags inflate with great force, faster than the blink of an eye. If you're too close to an inflating air bag, it could seriously injure you. Safety belts help keep you in position before and during a crash. Always wear your safety belt, even with an air bag, and sit as far back as you can while still maintaining control of your vehicle.

AIR
BAG

There is an air bag readiness light on the instrument panel, which shows AIR BAG.

The system checks the air bag electrical system for malfunctions. The light tells you if there is an electrical problem. See "Air Bag Readiness Light" in the Index for more information.

What will you see after an air bag inflates?

After an air bag inflates, it quickly deflates, so quickly that some people may not even realize the air bag inflated. Some components of the air bag module in the steering wheel hub will be hot for a short time. The parts of the bag that come into contact with you may be warm, but not too hot to touch. There will be some smoke and dust coming from vents in the deflated air bag. Air bag inflation doesn't prevent the driver from seeing or from being able to steer the vehicle, nor does it stop people from leaving the vehicle.

⚠ CAUTION:

When an air bag inflates, there is dust in the air. This dust could cause breathing problems for people with a history of asthma or other breathing trouble. To avoid this, everyone in the vehicle should get out as soon as it is safe to do so. If you have breathing problems but can't get out of the vehicle after an air bag inflates, then get fresh air by opening a window or door.

- The air bag is designed to inflate only once. After it inflates, you'll need some new parts for your air bag system. If you don't get them, the air bag system won't be there to help protect you in another crash. A new system will include the air bag module and possibly other parts. The service manual for your vehicle covers the need to replace other parts.
- Your vehicle is equipped with a diagnostic module, which records information about the air bag system. The module records information about the readiness of the system, when the sensors are activated and driver's safety belt usage at deployment.
- Let only qualified technicians work on your air bag system. Improper service can mean that your air bag system won't work properly. See your dealer for service.

NOTICE:

If you damage the cover for the driver's air bag, the bag may not work properly. You may have to replace the air bag module. Do not open or break the air bag cover.

When should an air bag inflate?

An air bag is designed to inflate in a moderate to severe frontal or near-frontal crash. The air bag will inflate only if the impact speed is above the system's designed "threshold level." If your vehicle goes straight into a wall that doesn't move or deform, the threshold level is about 14 to 18 mph (23 to 29 km/h). The threshold level can vary, however, with specific vehicle design, so that it can be somewhat above or below this range. If your vehicle strikes something that will move or deform, such as a parked car, the threshold level will be higher. The air bag is not designed to inflate in rollovers, side impacts or rear impacts, because inflation would not help the occupant.

In any particular crash, no one can say whether an air bag should have inflated simply because of the damage to a vehicle or because of what the repair costs were. Inflation is determined by the angle of the impact and how quickly the vehicle slows down in frontal and near-frontal impacts.

The air bag system is designed to work properly under a wide range of conditions, including off-road usage. Observe safe driving speeds, especially on rough terrain. As always, wear your safety belt. See "Off-Road Driving" in the Index for more tips on off-road driving.

What makes an air bag inflate?

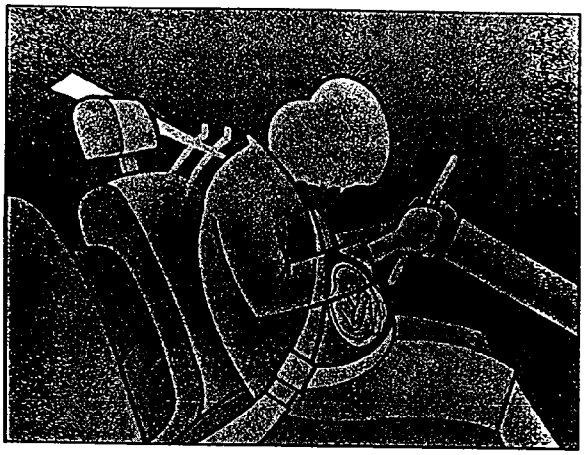
In an impact of sufficient severity, the air bag sensing system detects that the vehicle is in a crash. The sensing system triggers a release of gas from the inflator, which inflates the air bag. The inflator, air bag and related hardware are all part of the air bag module inside the steering wheel.

How does an air bag restrain?

In moderate to severe frontal or near-frontal collisions, even belted occupants can contact the steering wheel. The air bag supplements the protection provided by safety belts. Air bags distribute the force of the impact more evenly over the occupant's upper body, stopping the occupant more gradually. But air bags would not help you in many types of collisions, including rollovers, rear impacts and side impacts, primarily because an occupant's motion is not toward the air bag. Air bags should never be regarded as anything more than a supplement to safety belts, and then only in moderate to severe frontal or near-frontal collisions.

Safety Belt Use During Pregnancy

Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they don't wear safety belts.



A pregnant woman should wear a lap-shoulder belt, and the lap portion should be worn as low as possible, below the rounding, throughout the pregnancy.

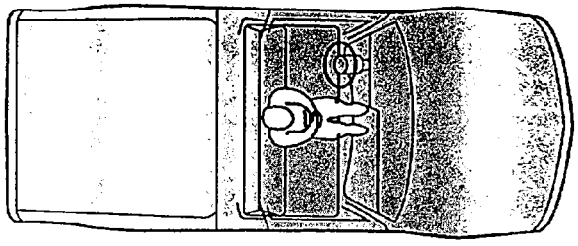
The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it's more likely that the fetus won't be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.

Right Front Passenger Position

The right front passenger's safety belt works the same way as the driver's safety belt. See "Driver Position" earlier in this section.

When the shoulder belt is pulled out all the way, it will lock. If it does, let it go back all the way and start again.

Center Passenger Position



Servicing Your Air Bag-Equipped Vehicle

The air bag affects how your vehicle should be serviced. There are parts of the air bag system in several places around your vehicle. You don't want the system to inflate while someone is working on your vehicle. Your GM dealer and the GM Service Manual have information about servicing your vehicle and the air bag system. To purchase a service manual, see "Service and Owner Publications" in the Index.

⚠ CAUTION:

For up to 10 minutes after the ignition key is turned off and the battery is disconnected, an air bag can still inflate during improper service. You can be injured if you are close to an air bag when it inflates. Avoid wires wrapped with yellow tape, or yellow connectors. They are probably part of the air bag system. Be sure to follow proper service procedures, and make sure the person performing work for you is qualified to do so.

The air bag system does not need regular maintenance.

Adding Equipment to Your Air Bag-Equipped Vehicle

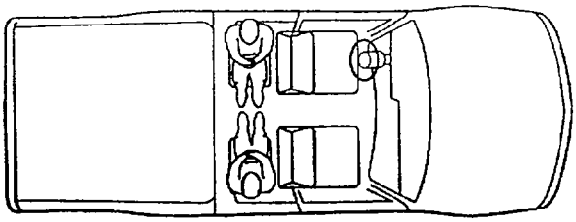
Q: **If I add a push bumper or a bicycle rack to the front of my vehicle, will it keep the air bag from working properly?**

A: As long as the push bumper or bicycle rack is attached to your vehicle so that the vehicle's basic structure isn't changed, it's not likely to keep the air bag from working properly in a crash.

Q: **Is there anything I might add to the front of the vehicle that could keep the air bag from working properly?**

A: Yes. If you add things that change your vehicle's frame, bumper system, front end sheet metal or height, they may keep the air bag system from working properly. Also, the air bag system may not work properly if you relocate any of the air bag sensors. If you have any question about this, you should contact Customer Assistance before you modify your vehicle. (The phone numbers and addresses for Customer Assistance are in Step Two o the Customer Satisfaction Procedure in this manual. See "Customer Satisfaction Procedure" in the Index

Rear Seat Passengers (Extended Cab Jump Seats)



Lap Belt

These are reserve seating positions equipped with lap belts only. (If your extended cab pickup has the optional side access panel, there's only one reserve seating position.)

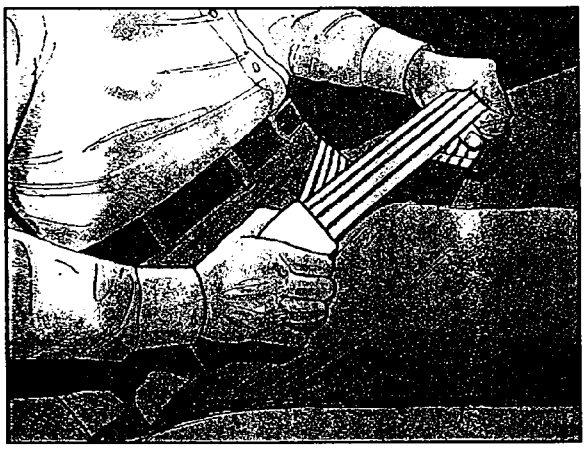
It's very important for rear seat passengers to buckle up! Accident statistics show that unbelted people in the rear seat are hurt more often in crashes than those who are wearing safety belts.

Rear passengers who aren't safety belted can be thrown out of the vehicle in a crash. And they can strike others in the vehicle who are wearing safety belts.

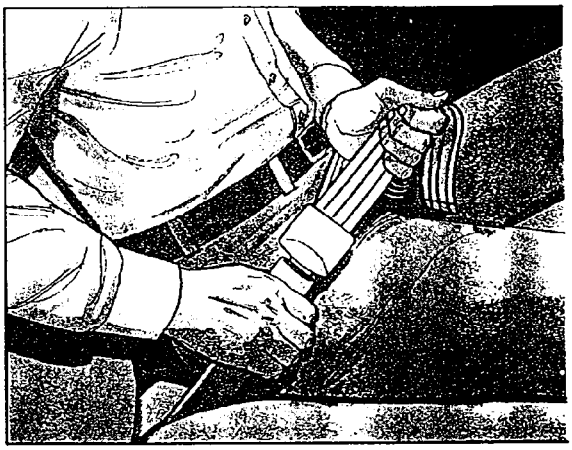
Each jump seat has a lap belt with no retractor. To make the belt longer, tilt the latch plate a little and pull the belt.

Lap Belt

If your vehicle has a bench seat, someone can sit in the center position.



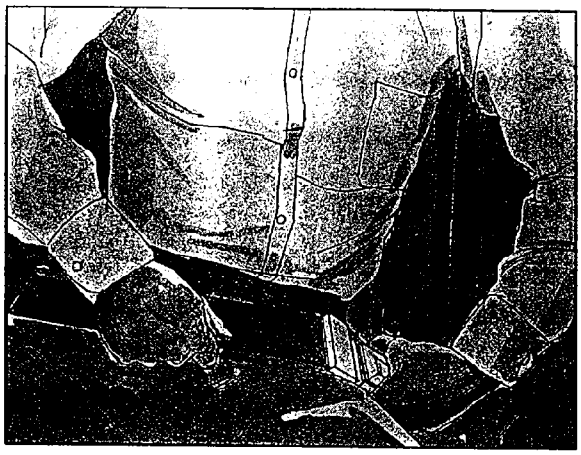
When you sit in a center seating position, you have a lap safety belt, which has no retractor. To make the belt longer, tilt the latch plate and pull it along the belt.



To make the belt shorter, pull its free end as shown until the belt is snug.

Buckle, position and release it the same way as the lap part of a lap-shoulder belt. If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



To make it shorter, pull the belt as shown until it is snug. Buckle and position it the same way as the lap part of the driver's safety belt (see "Driver Position" in the Index). Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to. To unlatch the belt, just push the button on the buckle.

Don't use child restraints on these seats. They won't work properly.