

DOT 952

NEW CAR ASSESSMENT PROGRAM (NCAP)

FRONTAL BARRIER IMPACT TEST

FUJI HEAVY IND. LTD., JAPAN
1986 SUBARU GL 4 DOOR

NHTSA NO. MG5501

MOBILITY SYSTEMS AND EQUIPMENT COMPANY
6151 West Century Boulevard Suite 912
Los Angeles, California 90045



JULY 1986

FINAL REPORT

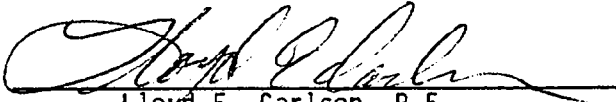
Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
400 Seventh Street, S. W.
Room No. 5313 (NRM-22)
Washington, D.C. 20590

This Final Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration under Contract No. DTNH22-84-D-21149. This document is disseminated under the sponsorship of the U.S. Department of transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

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AUG 1 1986

Date of Report Acceptance

R5077-05

1. Report No. MSE-86-No. 05	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle New Car Assessment Program (NCAP) Frontal Barrier Impact Test 1986 Subaru GL 4 Door		5. Report Date July 1986	
		6. Performing Organization Case	
7. Author(s) Lloyd E. Carlson, Paul Leonard		8. Performing Organization Report No. R5077-05	
9. Performing Organization Name and Address MOBILITY SYSTEMS AND EQUIPMENT COMPANY 6151 West Century Boulevard, Suite 912 Los Angeles, California 90045-5373		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTNH22-84-D-21149	
12. Sponsoring Agency Name and Address DEPARTMENT OF TRANSPORTATION National Highway Traffic Safety Administration 400 Seventh Street, SW Washington, DC 20590		13. Type of Report and Period Covered FINAL REPORT JULY 1986	
		14. Sponsoring Agency Code DOT/HNTSA/RM/OMI	
15. Supplementary Notes			
16. Abstract A 35 mph frontal barrier impact test using a load cell barrier was conducted on a 1986 Subaru GL 4 Door at the Mobility Systems and Equipment Company (MSE) crash test facility in Mira Loma, CA on 12 June 1986. The barrier impact velocity was 35.12 mph and the ambient temperature at the barrier face at the time of impact was 95° F. The posttest vehicle crush maximum was 26.4 in. The test vehicle appears to comply with the indicant requirements of the following Federal Motor Vehicle Safety Standards: 1. FMVSS No. 219 (Partial), "Windshield Zone Intrusion" 2. FMVSS No. 301-75 "Fuel System Integrity" 3. FMVSS No. 212 "Windshield Mounting" With regard to the FMVSS 208 "Occupant Crash Protection", injury criteria, the driver dummy appeared to exceed the head injury criteria (HIC) maximum allowable index of 1,000, but did satisfy the chest G's of not more than 60 for a time interval greater than 3 milliseconds and the femur requirements of 2,250 lb or less. The passenger dummy appeared to satisfy the head, chest, and femur requirements. TYPE OF RESTRAINT SYSTEM: 3-point continuous webbing system at each front outboard seating position.			
17. Key Words 35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP) FMVSS 212 Indicant Testing FMVSS 219 (Partial) Indicant Testing FMVSS301-75 Indicant Testing		18. Distribution Statement COPIES OF THIS REPORT ARE AVAILABLE FROM: DEPARTMENT OF TRANSPORTATION National Highway Traffic Safety Administration Technical Reference Division, Room 5108 400 Seventh Street, SW Washington, DC 20590	
19. Security Classif. of this report UNCLASSIFIED	20. Security Classif. for this page UNCLASSIFIED	21. No. of Pages	22. Price

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SECTION I

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is part of the Composite FY'86 Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-84-D-21149. 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 30 mph FMVSS 212/219/301-75 requirements.

This 35 mph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test Procedure. Standards Enforcement Indicant Test Program 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 TESTS

A load cell barrier consisting of 36 cell units was impacted by a 1986 Subaru GL, 4 door, NHTSA No. MG5501, at a velocity of 35.12 mph. The frontal impact test was conducted by Mobility Systems and Equipment Company (MSE) on 12 June 1986. The general test and vehicle description information are presented in Tables 1 and 2. Pretest and posttest photographs of the test vehicle and dummies are shown in Appendix A.

Two (2) Part 572 50th percentile adult male Anthropomorphic Test Devices (ATD's) were placed in the driver and right front passenger designated seating positions (DSP's) according to the NHTSA test requirements.

The ATD's were instrumented with head and chest triaxial accelerometers and right/left femur load cells. In addition, load cells were placed on the driver's and passenger's lap and shoulder belts to measure dummy upper torso and pelvic section belt loading. A summary of dummy configuration and performance verification test data is presented in Appendix C.

The frontal impact event was documented by one (1) real time camera and sixteen (16) high-speed cameras. The camera location data are presented in Table 11.

Sixty-seven (67) channels of crash parameters were recorded using three (3) FM tape recorders and four (4) direct analog to digital acquisition units. Time history plots of all recorded channels are presented in Appendix B.

2.1 GENERAL COMMENTS

The 1986 Subaru GL, 4 door was equipped with a 109 cubic inch 4 cylinder engine and 5 speed manual transmission. The test weight of the Subaru GL with two (2) 50th percentile male dummies, instrumentation, and cameras was 2,712 pounds.

The Subaru GL was involved in a frontal load cell barrier crash at a velocity of 35.12 mph. The vehicle appears to comply with FMVSS No. 301-75, "Fuel System Integrity" requirement. There was no solvent leakage from the fuel system after impact or during the subsequent rollover test.

The Subaru GL appears to comply with FMVSS No. 212, "Windshield Mounting" requirement. The windshield periphery retention was 100 percent for the right half, 100 percent for the left half, and 100 percent overall.

The Subaru GL appears comply with the FMVSS No. 219, "Windshield Zone Intrusion" requirement.

The maximum static crush for the vehicle of 26.4 inches occurred on the right side of the front bumper. The windshield was cracked but the vehicle glazing remained intact. Both the driver's and passenger's front doors were jammed and required tools to open them. Both of the vehicle rear doors were opened without the aid of tools.

The driver ATD's head hit the steering wheel rim and the center hub. The driver's left and right knees hit the dash panel. The driver ATD had a HIC value of 1,728 the maximum chest acceleration (resultant clipped) was 51.4 g; and the maximum femur loads were 838 (left) and 376 (right) pounds.

The passenger ATD's head did not contact anything. Both of his knees hit the dash panel. The HIC value for the passenger ATD was 898 the maximum chest acceleration (resultant clipped) was 31.7 g; and the maximum femur loads were 456 (left) and 402 (right) pounds.

Seat belt spoolout, measured by high speed film analysis was 1.2 inches for the driver and 1.7 inches for the passenger belts.

Data Table No. 1 Test Vehicle Data

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1986/SUBARU/GL/4 DOOR

VEHICLE NHTSA NO.: M G 5 5 0 1 VIN: J F 1 A C 4 3 B 9 G B 2 1 0 8 6 1

VEHICLE BODY COLOR: WHITE ; MONTH & YEAR OF MANUFACTURE: 10/85

ENGINE: 4 Cylinders; 109 C.I.D.; LITERS; CC

X Gas; Diesel; Turbocharged

Placement— X Longitudinal; Transverse (Lateral)

TRANSMISSION: 5 speed; X Manual; Automatic; Overdrive

FINAL DRIVE: ☒ FRONT WHEEL DRIVE; ☐ REAR WHEEL DRIVE; ☐ Four Wheel Drive

DATE VEHICLE AVAILABLE FOR 35 MPH CRASH TESTING: 04/10/86

ODOMETER READING: 209 miles; OPTIONS: ☐ A/C; ☐ P/S; ☐ P/WDO.; ☐

☒ Tilt Whl.; ☐ Cruise Control

TYPE OF OCCUPANT RESTRAINT SYSTEM FOR FRONT OUTBOARD SEATING POSITIONS: Three-
point continuous webbing manual system.

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): 28 psi Front; 28 psi Rear

Recommended Tire Size: 175/70 SR13

Tires On Vehicle: 175/70 R13 ; Manufacturer: BRIDGESTONE

Number Of Occupants: 2 Front; 3 Rear; 3rd Seat; ☐ 5 TOTAL

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

Type of Front Seat Back; Fixed; X Adjustable With ☒ Lever/ ☐ Rotating Knob

Vehicle Maximum Capacity Loading = 810 lbs. (A)

No. Of Occupants x 150 lbs. - - - = 750 lbs. (B)

Cargo Capacity (A - B) - - - - - = 60 lbs.

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front = 631 lbs.

Left Front = 705 lbs.

Right Rear = 460 lbs.

Left Rear = 421 lbs.

TOTAL WEIGHT = 2,217 lbs.

— TOTAL FRONT = 1,336 lbs. (60.3 % of TOTAL)

— TOTAL REAR = 881 lbs. (39.7 % of TOTAL)

Data Table No. 1 (Cont'd) Test Vehicle Data

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total test Vehicle Delivered Weight With Maximum Fluids =	<u>2,217</u>	lbs.
Maximum Cargo Carrying Capacity Of Test Vehicle - - - - -	<u>60</u>	lbs.
Weight Of Two P.572 Dummies (2 x 164 lbs.) - - - - -	<u>328</u>	lbs.
TEST VEHICLE TARGET WEIGHT - - - - -	<u>2,605</u>	lbs.

*300 lbs. for light trucks and MPVs

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front =	<u>768</u>	lbs.	
Left Front =	<u>720</u>	lbs.	TOTAL FRONT = <u>1,488</u> lbs (54.9% of TOTAL)
Right Rear =	<u>606</u>	lbs.	
Left Rear =	<u>618</u>	lbs.	TOTAL REAR = <u>1,224</u> lbs (45.1% of TOTAL)
TOTAL WEIGHT= <u>2,712</u> LBS. (which includes <u>0</u> lbs. of cargo ballast weight placed in the cargo/luggage area)			

VEHICLE COMPONENTS REMOVED TO MEET TARGET WEIGHT:

- | | |
|--|---|
| 1. ☐ Spare Tire, Jack, Jack Stand | 3. ☒ Tail lamp hsg. ☐ Rt. Side ☒ Left Side |
| 2. ☐ Rear Bumper Assembly | 4. _____ |

TEST VEHICLE ATTITUDE:

<u>As Delivered</u> —Right Front = <u>25.0</u> inches;	<u>Ready For Test</u> —Right Front= <u>24.1</u> in.
Left Front = <u>24.8</u> inches;	Left Front = <u>24.0</u> in.
Right Rear = <u>24.2</u> inches;	Right Rear = <u>22.4</u> in.
Left Rear = <u>24.2</u> inches;	Left Rear = <u>22.5</u> in.

Test Vehicle Wheelbase: 97.1 inches; C.g. = 43.8 inches rearward of front wheel centerline

Total Vehicle Length:

Right Side = 170.9 inches;
 Left Side = 170.9 inches;
 Centerline = 172.1 inches;

6

Total Vehicle Width:

Across Front Fenders 65.4 in.
 Across Center 66.6 in.
 Across Rear Fender 65.1 in.
 Maximum 66.6 in.

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Data Table No. 2 Post Crash Test Data

DATE OF 35 MPH FRONTAL BARRIER IMPACT RATINGS TEST: 06/12/86

TIME OF TEST: 2:45 PM; AMBIENT TEMPERATURE AT BARRIER FACE: 95 °F.

VEHICLE'S OCCUPANT COMPARTMENT TEMPERATURE: 72 °F. (Spec. Range + 66 to 78° F.)

VEHICLE'S WINDSHIELD MOLDING TEMPERATURE: 72 °F.

VEHICLE IMPACT VELOCITY: Primary Speed Trap = 35.12 mph

Secondary Speed Trap = NAV mph

(Specified Range = 34.5 to 35.5 mph)

Distance from vehicles's front bumper forwardmost surface to barrier face when—

(a) entering the speed trap = 5 ft

(b) existing the speed trap = 1 ft

VEHICLE STATIC CRUSH: (All measurements in inches)

Vehicle Pre-test Length— Right Side= 170.9; C/Line= 172.1; Left Side= 170.9

Vehicle Post-test Length —Right Side= 144.5; C/Line= 146.4; Left Side= 147.4

VEHICLE STATIC CRUSH ---- Right Side= 26.4; C/Line= 25.7; Left Side= 23.5

VEHICLE REBOUND FROM BARRIER FACE:

Vehicle Right Side = 20.1 inches

Vehicle Centerline = 20.8 inches

Vehicle Left Side = 21.5 inches

VISIBLE DUMMY CONTACT POINTS:

	DRIVER (I.D. No. <u>464</u>)			PASSENGER (I.D. No. <u>466</u>)		
	Strg. Col. Hub	Strg. Wheel	Instru. Panel	Instru. Panel	Knee Assv.	Glove Box Door
HEAD - - - - -	YES	YES	NO	NO	NO	NO
RIGHT KNEE - - - - -			YES	NO		YES
LEFT KNEE - - - - -			YES	NO		YES

VEHICLE DOOR OPENING INFORMATION:

	RIGHT SIDE		LEFT SIDE	
	OPENED	JAMMED	OPENED	JAMMED
FRONT DOORS - - - - -	NO	YES	NO	YES
REAR DOORS - - - - -	YES	NO	YES	NO

Data Table No. 2 (Cont'd) Post Crash Data

VEHICLE'S FRONT SEAT MOVEMENT DURING CRASH EVENT:

	RIGHT SIDE	LEFT SIDE
Seat Cushion Shift - - -	<u>0.0</u> forward;	<u>0.0</u> forward
Seat Adjuster Failure- -	<u>No</u> ;	<u>No</u>

Details Of Any Failure: NONE

OTHER NOTABLE IMPACT EFFECTS: NONE

SECTION 3

SUMMARY OF RESULTS FOR

FMVSS 212, "Windshield Mounting"

FMVSS 219, (Partial), "Windshield Zone Intrusion"

FMVSS 301-75, "Fuel System Integrity"

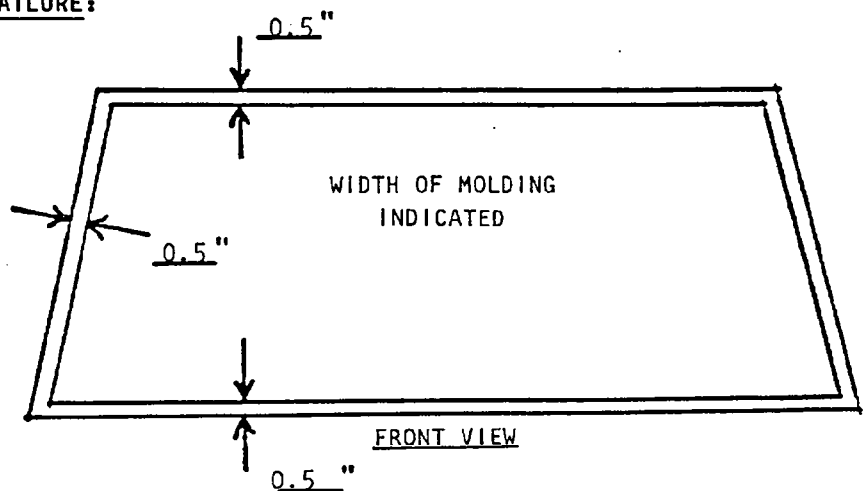
Data Table No. 3 FMVSS 212 Windshield Mounting Data

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 (in.)	POST-TEST (in.)	PERCENT RETENTION
RIGHT SIDE	79.0	79.0	100%
LEFT SIDE	79.0	79.0	100%
TOTAL	158.0	158.0	100%

AREA OF RETENTION FAILURE:

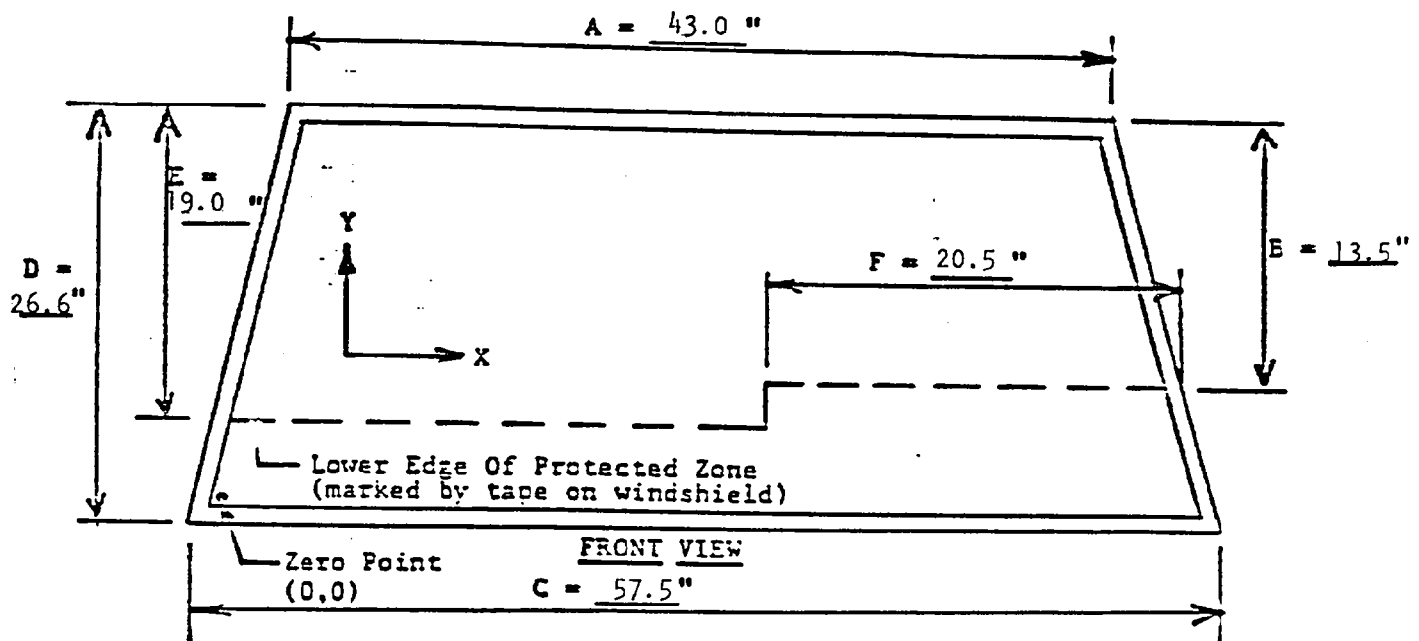


FAILURE DETAILS: NONE

Data Table No. 4 FMVSS 219 Windshield Zone Intrusion

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 top surface of the instrument panel including padding. Draw the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 1/2" distant from the locus line. The LOWER EDGE OF THE PROTECT ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

FMVSS 219 TEST DATA:



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

COORDINATES	
	X Y
1.	N/A N/A
2.	N/A N/A
3.	N/A N/A
4.	N/A N/A

Data Table No. 5 FMVSS 301-75 Fuel System Integrity

TEST VEHICLE NHTSA NO.: MG5501; TEST DATE: 06/12/86

VEHICLE MAKE/MODEL/BODY STYLE: SUBARU/GL/4 DOOR

USABLE CAPACITY OF VEHICLE'S FRONT FUEL TANK: 15.9 Gallons (figure furnished by
vehicle manufacturer)

USABLE CAPACITY OF VEHICLE'S REAR FUEL TANK: N/A Gallons

TEST REQUIREMENTS:

Test vehicle's engine operated to "run dry" condition, and then a small amount of Stoddard solvent which has been dyed RED shall be added to the vehicle's fuel tank. Operate the fuel pump enough to completely fill the fuel system ahead of the fuel tank, and add 92 to 94% of the stated USABLE CAPACITY to the fuel tank.

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

Front Tank 14.8 Gallons which is 93.1 % of the Stated USABLE CAPACITY

Rear Tank N/A Gallons which is N/A % of the Stated USABLE CAPACITY

SOLVENT SPILLAGE MEASUREMENT AFTER 35 MPH FRONTAL BARRIER IMPACT TEST:

From impact until vehicle motion ceases - - - -	<u>NONE</u>	1 oz.
For 5 min. period after vehicle motion ceases -	<u>NONE</u>	5 oz.
For next 25 minutes at barrier face - - - - -	<u>NONE</u>	1 oz./1 minute)

SOLVENT SPILLAGE DETAILS:

STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1 to 3 minutes)

Time reqd. for machine to rotate 90° =	<u>1</u> minutes,	<u>30</u> seconds
FMVSS 301-75 Position Hold Time =	<u>5</u> minutes,	<u>0</u> seconds
TOTAL - - - - -	<u>6</u> minutes,	<u>30</u> seconds
Next Whole Minute Interval - - - - -	<u>7</u> minutes	

Data Table No. 5 (Cont'd) FMVSS 301-75 Fuel System Integrity

VEHICLE STATIC ROLLOVER DATA:

	First 5 Minutes FROM ONSET OF ROTATION	6th Minute	7th Minute	8th Minute
Maximum Allowable Solvent Spillage --	5 oz.	1 oz.	1 oz.	1 oz.
0 to 90° (filler cap down) - - - - -	0.0	0.0	0.0	N/A
90 to 180° - - - - -	0.0	0.0	0.0	N/A
180 to 270° - - - - -	0.0	0.0	0.0	N/A
270 to 360° - - - - -	0.0	0.0	0.0	N/A

Solvent Spillage Location(s): NONE

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

I. OMI DATA

- Dummy Injury Criteria Data Summary
- Dummy Positioning Data
- Seat Belt Positioning Data
- Seat Belt Performance Assessment Data
- Driver Dummy to Steering Column Dimensions
- Camera Locations

II. OVR DATA

- Load Cell Barrier Data
- Vehicle Accelerometer Data

III. AID DATA

- Test Vehicle Measurements
- Accident Investigation Damage Data Summary

Data Table No. 6 FMVSS No. 208 Occupant Crash Protection Data Sheet

VEH. YR./MAKE/MODEL/BODY STYLE: 1986/SUBARU/GL/4 DOOR

VEH. NHTSA NO.: MG5501; TEST DATE: 06/12/86

MAXIMUM ACCELERATION VALUES:

		DRIVER DUMMY # 464	PASSENGER DUMMY # 466
Head Channel X	HEAD X	-144.73	-37.97
Head Channel Y	Y	- 25.36	- 6.70
Head Channel Z	Z	59.65	67.55
HEAD RESULTANT	R	155.03	69.14
Chest Channel X	CHEST X	- 58.85	-30.00
Chest Channel Y	Y	13.34	-14.98
Chest Channel Z	Z	- 13.15	- 9.78
CHEST RESULTANT	R	51.42	31.66
(3msec Clip)			
TIME INTERVAL	(seconds)	0.0565-0.0595	0.0935-0.0965

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	HIC	1728.18	897.64
t_1 (seconds)		0.06725	0.06200
t_2 (seconds)		0.07887	0.12325
Avg. Accel. t_1 to t_2		117.96	46.44

MAXIMUM FEMUR FORCES: (Compressive)

Right Side (lbs.)	FR	376	402
Left Side (lbs.)	FL	838	456

MAXIMUM SEAT BELT FORCES:

Lap Belt	LAP SHLDR	1,260	974		
Shoulder Belt		1,482	1,395		
		PHOTOGRAPHIC	ELECTRONIC	PHOTOGRAPHIC	ELECTRONIC
MAXIMUM SEAT BELT WEBBING SPOOL-OUT:		1.2	1.99	1.7	1.01
Belt Stretch (inches per foot)		N/A	1.20	N/A	0.96

BARRIER LOAD CELLS:

Total Load	CELLS	134,631 lb
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Data Table No. 7 Test Dummy Positioning Data

PRE-IMPACT DATA:

Make/Model: SUBARU/GL
 Body Style: 4 DOOR Model Year: 1986
 NHTSA No.: MG5501 Color: WHITE

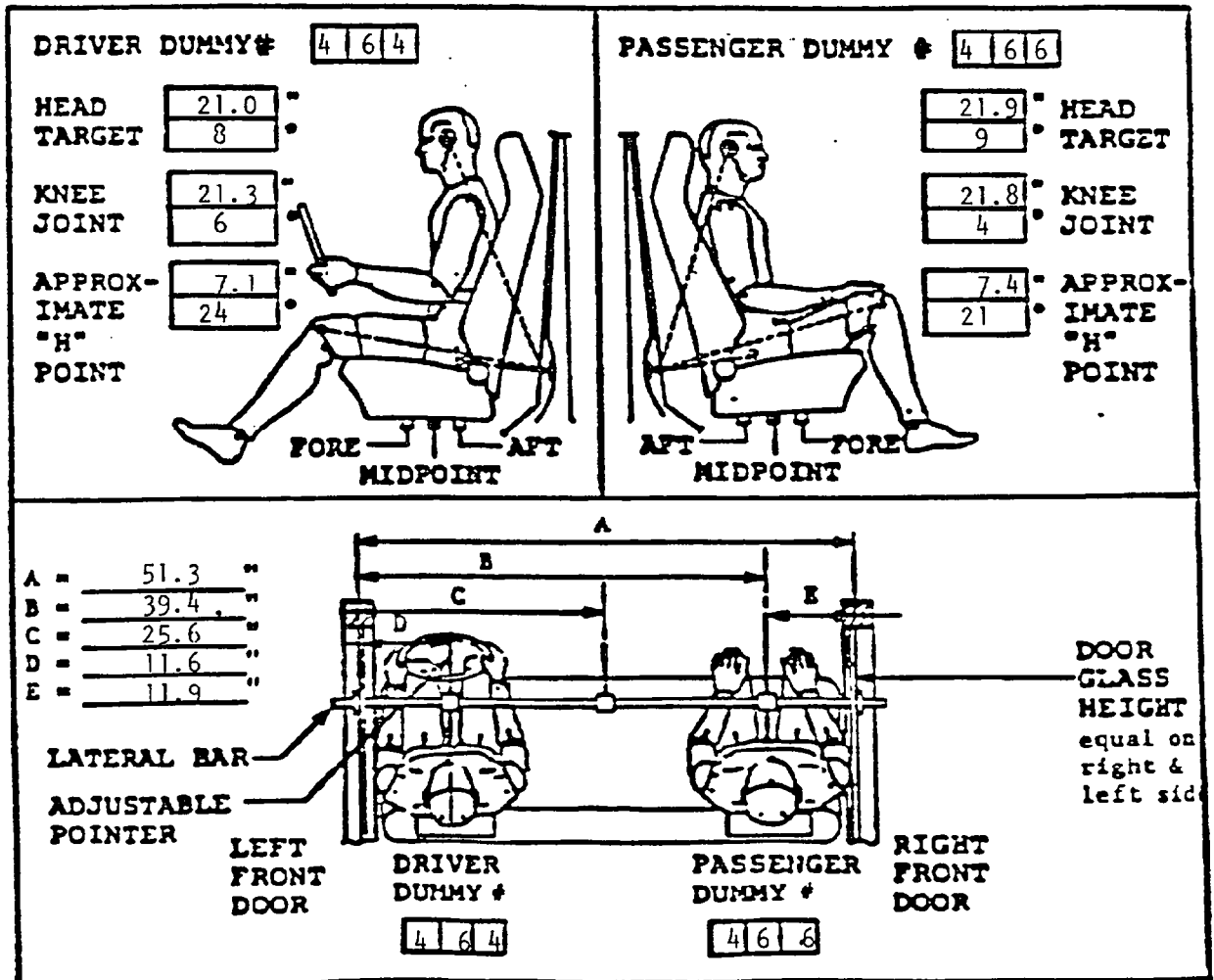
DATA FROM CERTIFICATION LABEL:

Vehicle Manufacturer: FUJI HEAVY IND. LTD., JAPAN
 Date of Manufacture: 10/85 VIN: JF1AC43B9GB210861
 GVWR: 3,430 lb; GAWR: Front = 1,860 lb; Rear = 1,570 lb

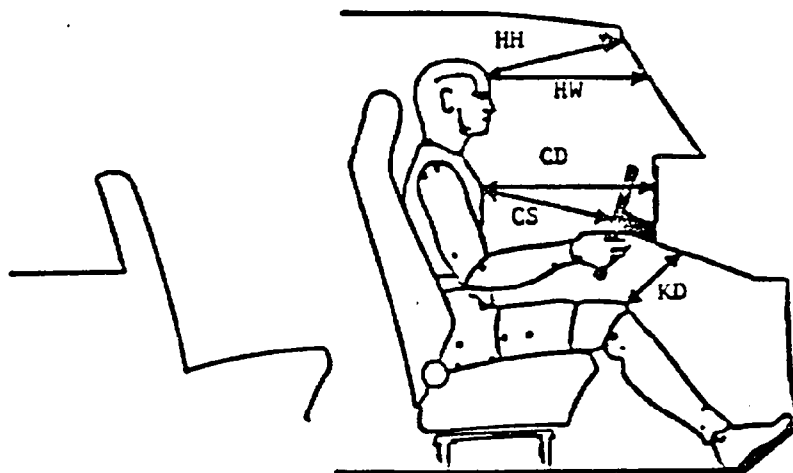
POST-IMPACT DATA:

Date of Test: 06/12/86 Time: 2:45 PM Temperature 95 °F
 Required Impact Velocity Range: 34.5 to 35.5 mph
 Impact Velocity: Primary = 35.12 mph Secondary = NAV mph
 Seat Type: BUCKET Adjuster Type: MANUAL
 Bucket Seat Back Type: LOW BACK WITH HEAD REST

Technicians:



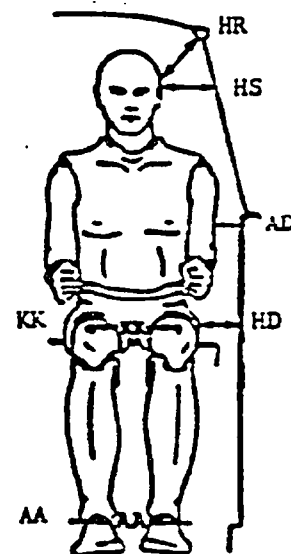
Data Table No. 7 (Cont'd) Test Dummy Positioning Data



	Driver	Passenger
HH	17.0	17.0
HW	22.5	22.4
CD	22.0	21.5
CS	13.3	N/A
KD L-	4.0	L- 2.5
KD R-	4.5	R- 3.2
Torso Angle	23	Torso Angle 23
Seat Back Angle	25	Seat Back Angle 25
HSW	N/A	N/A

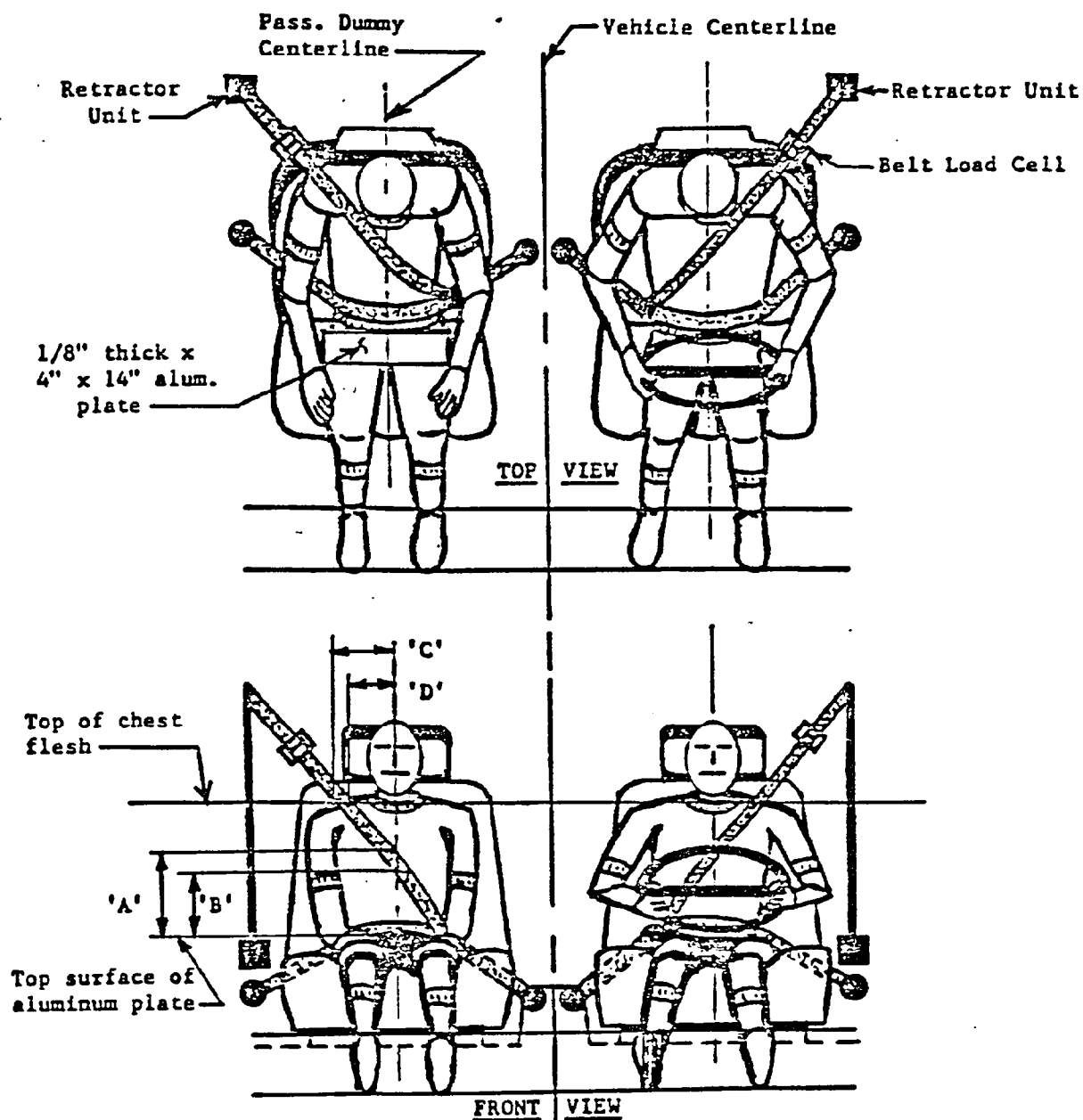
HH = Head to Windshield Header
 HW = Head to Windshield
 CD = Chest to Dash
 CS = Chest to Steering Wheel
 KD = Knees to Dash
 HR = Head to Side Roof
 HS = Head to Side Window
 AD = Arm to Door
 HD = Hip to Door
 KK = Knee to Knee
 Torso and seat back angles
 are relative to vertical.

REMARKS:



	Driver	Passenger
HR	4.3	4.5
HS	6.2	7.3
AD	3.5	4.3
HD	8.0	8.0
KK	14.5	13.0
AA	13.5	9.5

Data Table No. 8 Seat Belt Positioning Data



	DRIVER DUMMY (in.)	PASS. DUMMY (in.)
1. Dimension 'A'--alum. plate to belt upper edge on dummy centerline	13.9	14.5
2. Dimension 'B'--alum. plate to belt lower edge on dummy centerline	10.8	11.3
3. Dimension 'C'--dummy centerline to outer edge at chest flesh top	3.8	3.8
4. Dimension 'D'--dummy centerline to inner edge at chest flesh top	1.5	1.0
5. Lap belt tension (lbs.)	4.0	3.5
6. Shoulder belt tension (lbs.)	3.5	3.0

Data Table No. 9: Seat Belt Performance Assessment Test Data

BELT LENGTH DATA:

Total Belt Length from 'D' Post trim panel to "male blade"

Shoulder belt length measured from the 'D' ring to the male blade across the dummy

Lap belt length measured from the outboard side sill anchor bolt to the male blade across dummy

PRE-TEST	
DRIVER	PASSENGER
43.5	44.8
29.5	31.0
27.5	29.5

BELT SPOOL-OUT DATA:

As determined by film analysis

As determined electronically

As determined mechanically

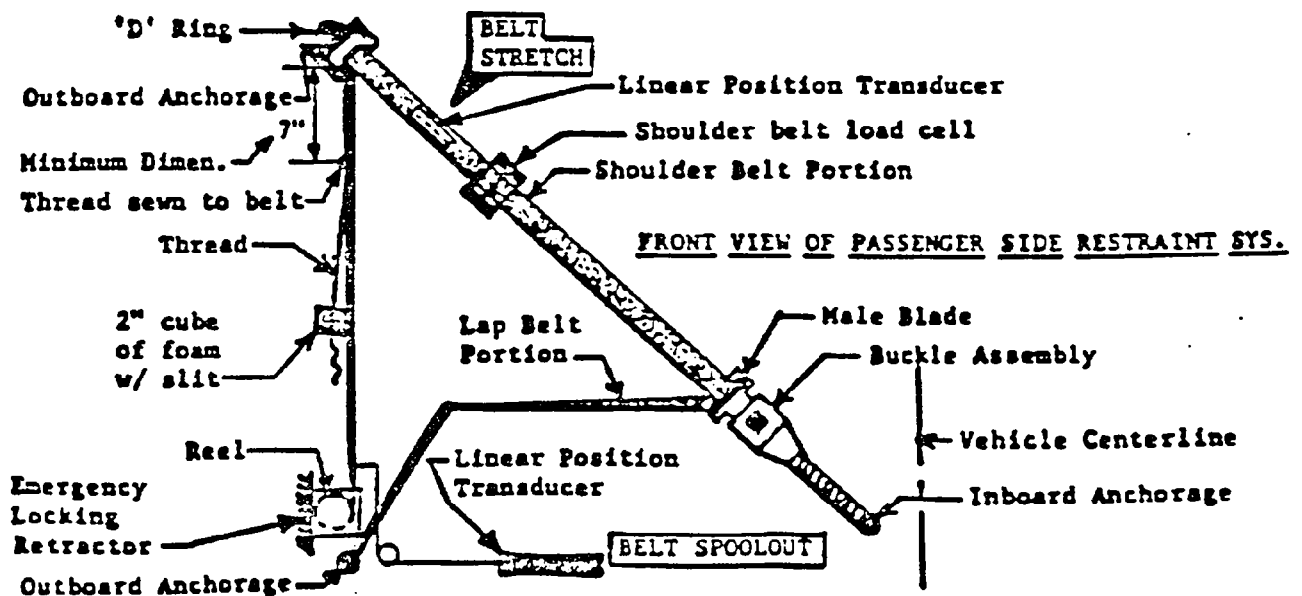
DRIVER SIDE	PASSENGER SIDE
1.2	1.7
1.99	1.01
2.3	2.0

BELT STRETCH DATA:

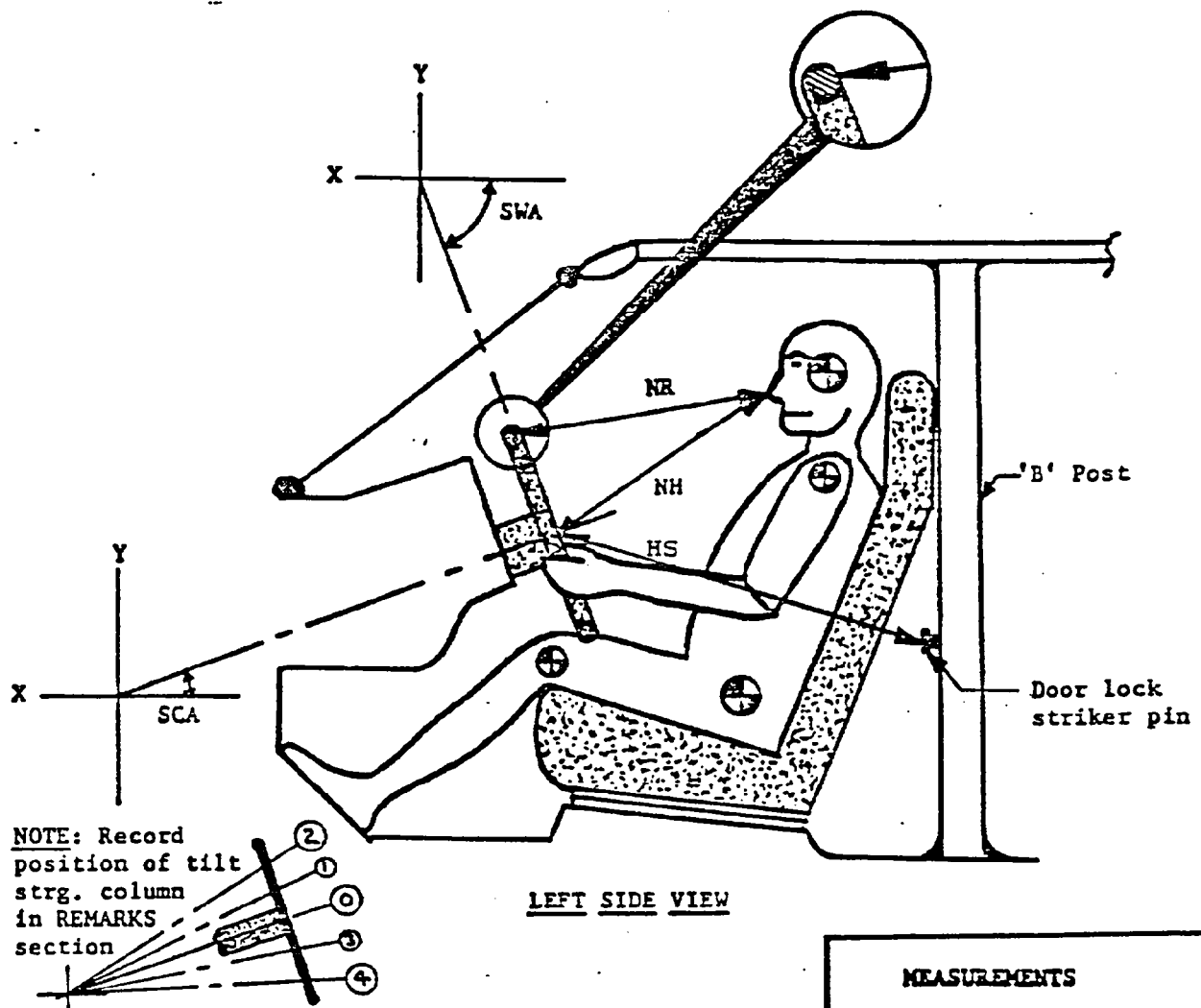
(1) Determined electronically with linear position transducer in inches per foot.

(2) Determined with 2" marked section of belt across dummy's chest (inches per foot)

Maximum Load 1,482		Maximum Load 1,395	
Elong. 1.20		Elong. 0.96	
PRE-TEST	POST-TEST	PRE-TEST	POST-TEST
2"	2" Elong. 0	2"	2" Elong. 0



Data Table No. 10 Driver Dummy to Steering Wheel Position



MEASUREMENTS		
<u>NR</u> --Distance from tip of dummy's nose to Top Rear surface of steering wheel rim	19.2	Inches
<u>NH</u> --Distance from tip of dummy's nose to center of steering column hub	19.5	Inches
<u>HS</u> --Distance from center of steering column hub to the forward surface of the door lock striker pin.	21.2	Inches
<u>SCA</u> --Angle of steering column relative to the horizontal X axis	21	Degrees
<u>SWA</u> --Angle of steering wheel relative to the horizontal X axis.	70	Degrees

REMARKS CONCERNING ADJUSTABLE OR TILT STEERING COLUMN IF VEHICLE IS SO EQUIPPED:
Tilt steering column was placed in the middle position.

Data Table No. 11 Camera Location Data

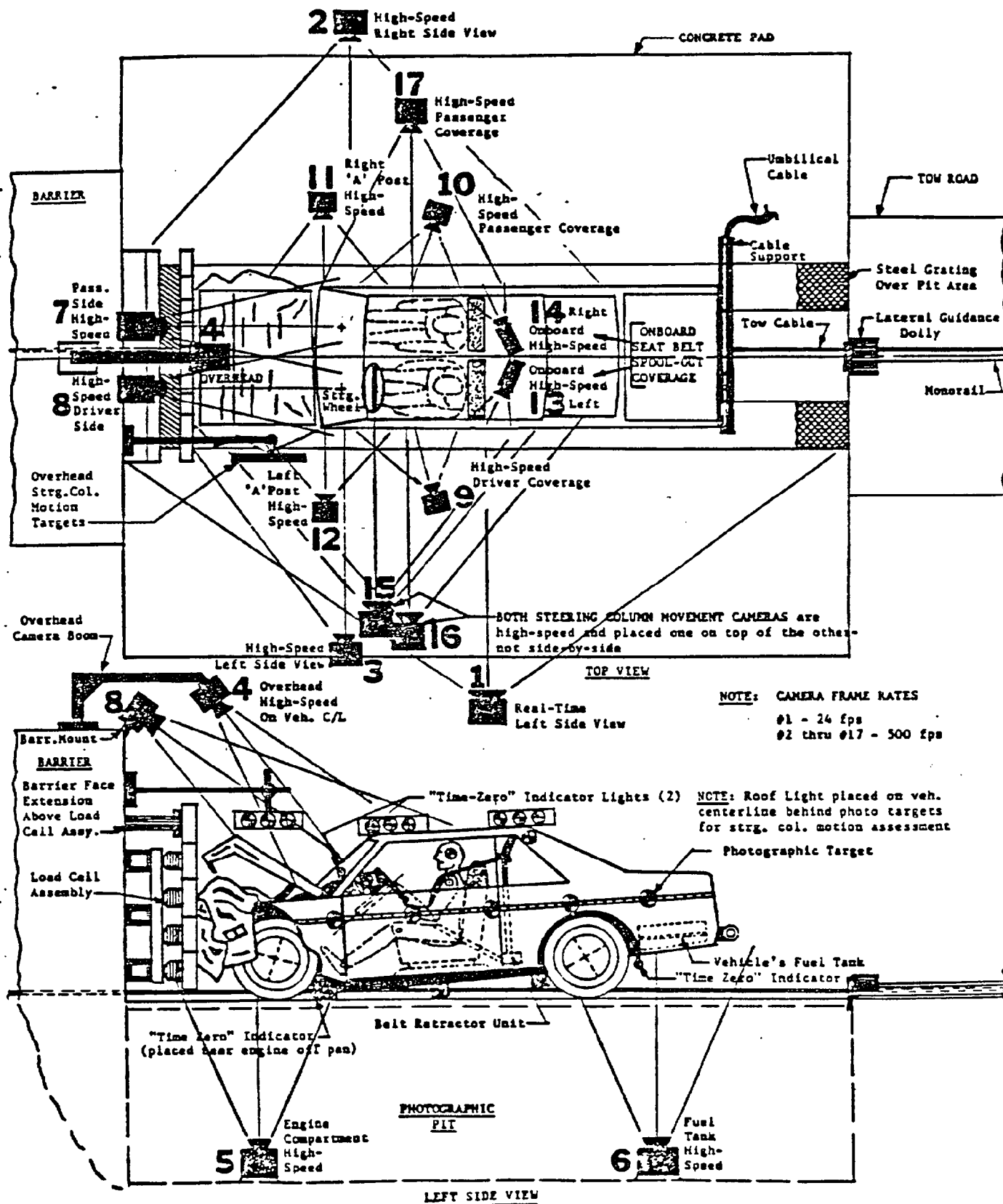
VEH. NHTSA NO.: MG5501; TEST DATE: 06/12/86; TIME: 2:45 PM
 VEH. YEAR/MAKE/MODEL/BODY STYLE: 1986/SUBARU/GL/4 DOOR

CAMERA NO.	VIEW	CAMERA POSITIONS (in.)*			ANGLE (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Left Side View	785.0	29.00	51.5	2	791.4	12/50	24
2	Right Side View	-252.6	58.0	51.2	3	236.0	16	565
3	Left Side View	962.6	55.0	41.0	1	944.3	50	560
4	Overhead	0.0	25.2	126.1	10	106.9	13	480
5	Pit-Engine	0.0	36.3	58.2	33	N/A	13	490
6	Pit-Fuel Tank	1.4	66.0	51.0	40	N/A	13	465
7	Front-Passenger	-12.0	-16.0	101.2	58	121.5	13	600
8	Front-Driver	10.0	-16.0	101.3	52	121.7	25	490
9	Left Side-Driver	83.5	118.1	62.0	15	72.2	28	600
10	Right Side-Passenger	93.2	132.0	60.0	10	86.3	45	595
11	Right Side-'A' Post	-174.6	56.1	51.5	1	159.6	35	500
12	Left Side-'A' Post	344.0	-19.3	47.8	1	343.2	50	540
13	Onboard-Left Side	3.0	113.0	22.5	9	30.5	13	NAV
14	Onboard-Right Side	-1.9	113.0	22.5	9	30.5	13	NAV
15	Left Side-Steering Col.	425.1	39.4	130.7	15	418.4	50	600
16	Left Side-Steering Col.	426.4	39.4	110.7	16	416.0	50	595
17	Right Side-Passenger	-154.2	73.2	61.2	9	137.4	13	660

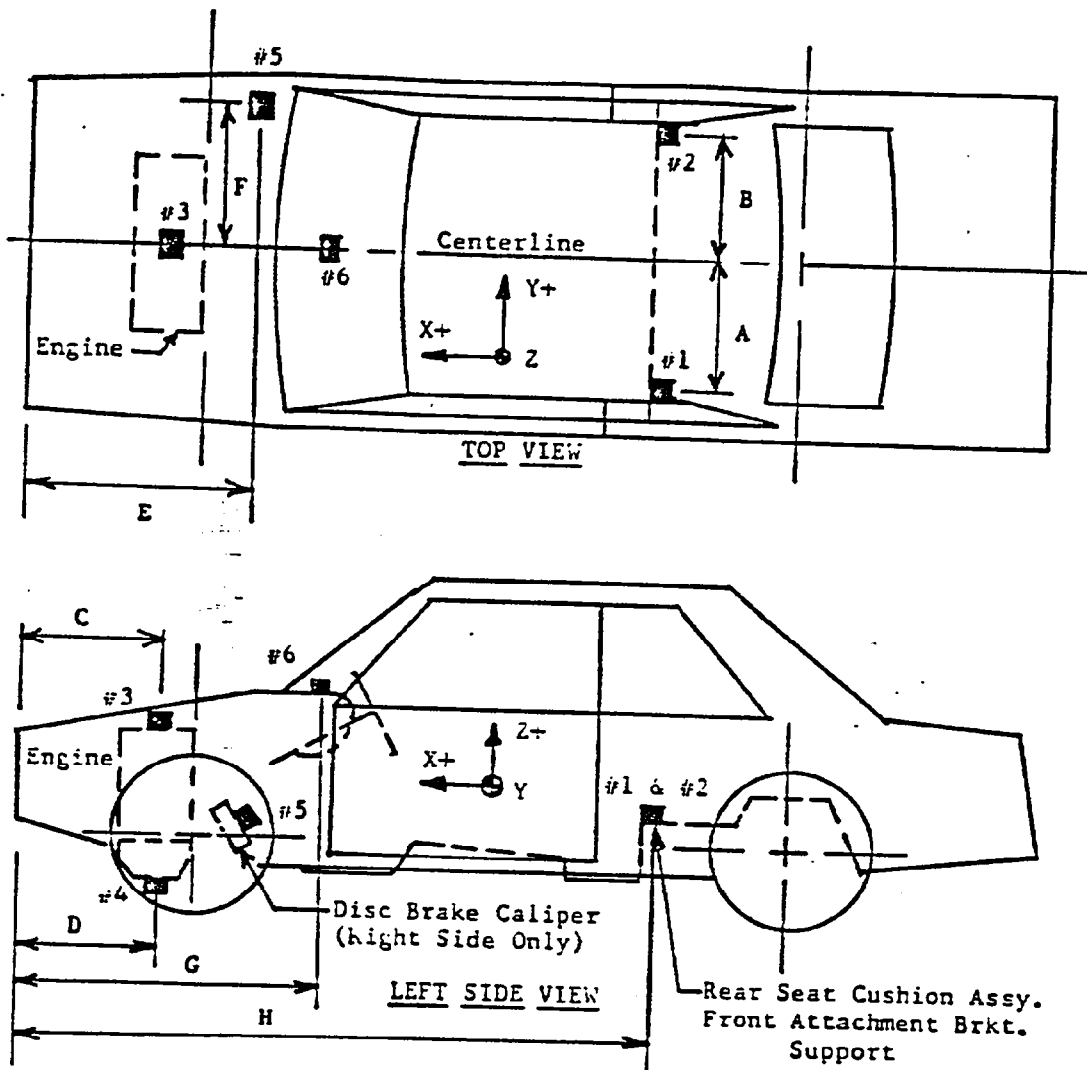
* X = film plane to monorail centerline
 Y = film plane to barrier face
 Z = film plane to ground

Data Table No. 11 (Cont'd) Camera Location Data

CAMERA REQUIREMENTS FOR 35 MPH FRONTAL BARRIER IMPACT ASSESSMENT PROGRAM TEST



Data Table No. 12 Vehicle Accelerometer Location and Data Summary



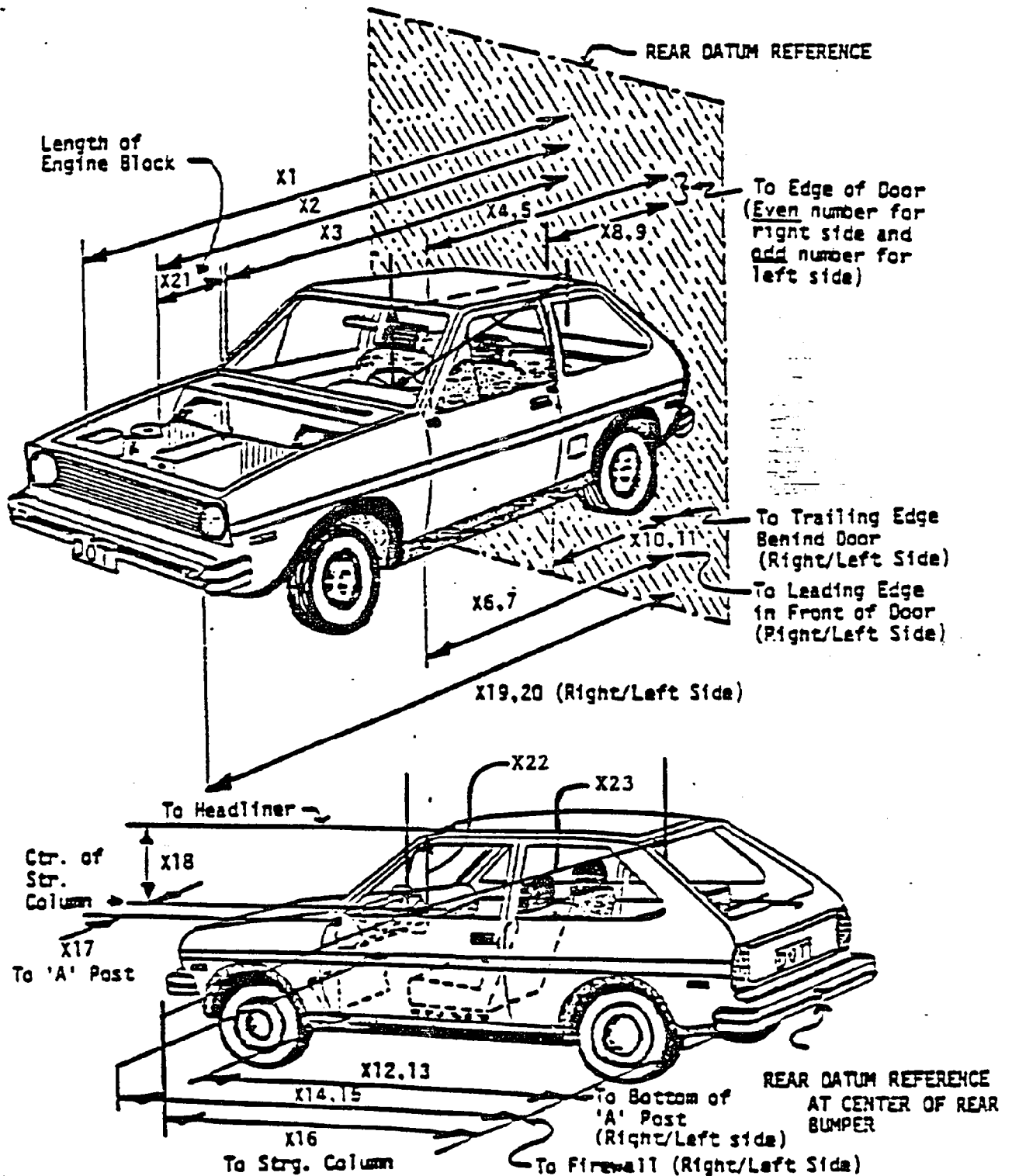
Dimension	Length (in.)
A	19.5
B	19.5
C	37.0
D	21.2
E	41.0
F	25.3
G	59.7
H	107.1

Loc. No.	Description	Maximum Value			
		X-	msec.	X+	msec.
1	Rear seat X-member @ Left Side	-32.43	28	4.45	134
2	Rear seat X-member @ Right Side	-33.61	42	3.67	134
3	Top of Engine Block	-163.27	24	53.38	33
4	Bottom of Engine	-161.13	24	46.91	33
5	Disc Brake Caliper @ Right Side	-85.32	40	34.47	67
6	Instrument Panel	-85.84	40	32.19	47

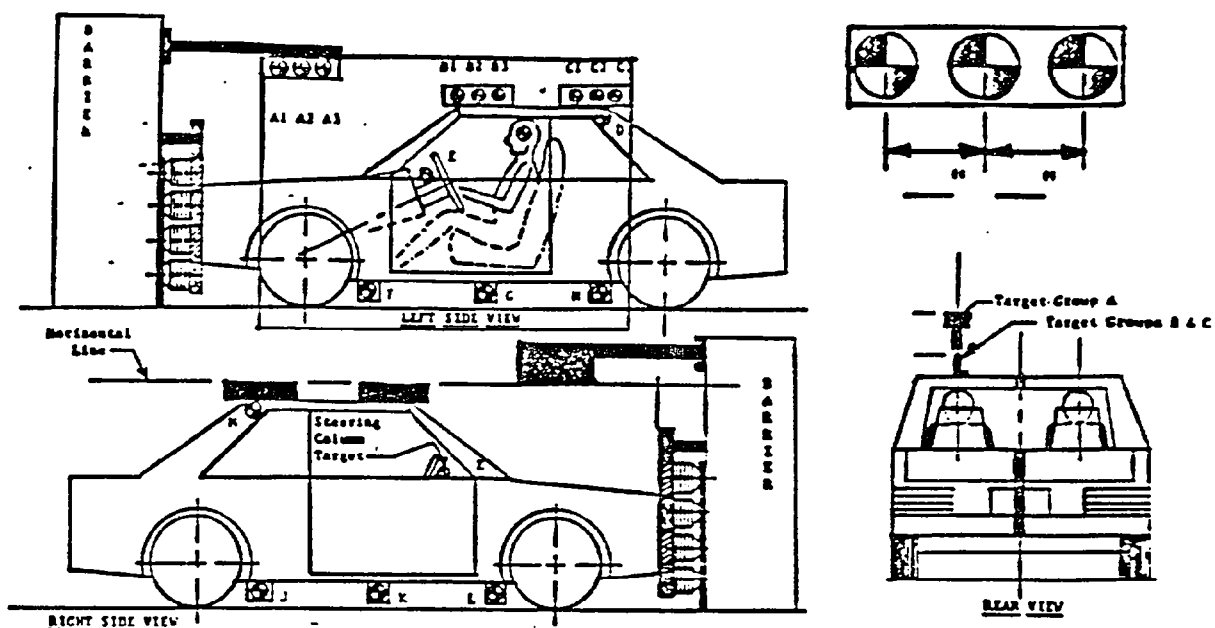
Data Table No. 13 Test Vehicle Measurements

NO.	MEASUREMENT DESCRIPTION:	Pre-Test (in.)	Post-Test (in.)	Diff. (in.)
X1	Total Length of Test Vehicle at Centerline	172.1	146.4	25.7
X2	Rear Surface of Vehicle to Front of Engine	155.5	142.6	12.9
X3	Rear Surface of Vehicle to Firewall	132.5	122.0	10.5
X4	Rear Surface to Upr. Leading Edge of Right Door	118.7	118.5	0.2
X5	Rear Surface to Upr. Leading Edge of Left Door	118.7	118.3	0.4
X6	Rear Surface to Lwr. Leading Edge of Right Door	119.0	118.0	1.0
X7	Rear Surface to Lwr. Leading Edge of Left Door	119.0	119.0	0.0
X8	Rear Surface to Upr. Trailing Edge of Right Door	80.5	79.8	0.7
X9	Rear Surface to Upr. Trailing Edge of Left Door	80.5	80.0	0.5
X10	Rear Surface to Lwr. Trailing Edge of Right Door	81.1	80.5	0.6
X11	Rear Surface to Lwr. Trailing Edge of Left Door	81.1	81.0	0.1
X12	Rear Surface to Bottom of 'A' Post on Right Side	118.2	117.3	0.9
X13	Rear Surface to Bottom of 'A' Post on Left Side	118.2	118.2	0.0
X14	Rear Surface to Firewall on Right Side	131.5	124.0	7.5
X15	Rear Surface to Firewall on Left Side	132.0	123.6	8.4
X16	Rear Surface to Steering Column	101.8	97.0	4.8
X17	Center of Steering Column to 'A' Post	12.8	14.5	-1.7
X18	Center of Steering Column to Headlining	17.1	14.8	2.3
X19	Rear Surface to Right Side of Front Bumper	170.9	144.5	26.4
X20	Rear Surface to Left Side of Front Bumper	170.9	147.4	23.5
X21	Length of Engine Block	12.0	12.0	0.0
X22	Strg. Whl. Hub C/L to W/Shld. Header Interior Trim Moulding	16.6	14.1	2.5
X23	Strg. Whl. Hub C/L to Rr. Wdo. Upper Interior Trim Moulding	57.0	52.3	4.7

Data Table No. 13 (Cont'd) Test Vehicle Measurements



Data Table No. 14 Pre-Test Vehicle Target Locations



BARRIER TARGETS	'X' From Imag. Barrier Face Vertical Plane	'Y' From Monorail C/L	'Z' Above Ground
A1	39.6	20.1	64.5
A2	43.6	20.1	64.5
A3	47.6	20.1	64.5

VEHICLE TARGETS	'X' From Imag. Barrier Face Vertical Plane	'Y' From Vehicle C/L	'Z' Above Ground
B1	77.3	12.7	55.7
B2	81.3	12.7	55.7
B3	85.3	12.7	55.7
C1	113.0	12.8	55.9
C2	117.0	12.8	55.9
C3	121.0	12.8	55.9
D	119.1	21.0	49.5
E	65.1	14.0	36.0
F	56.0	26.0	6.1
G	85.5	26.2	6.0
H	114.6	26.1	6.1
J	114.7	26.1	6.0
K	85.5	26.2	6.0
L	56.0	26.0	6.0
M	119.2	21.1	49.1

NOTE: Diameter of all phot targets is 4".

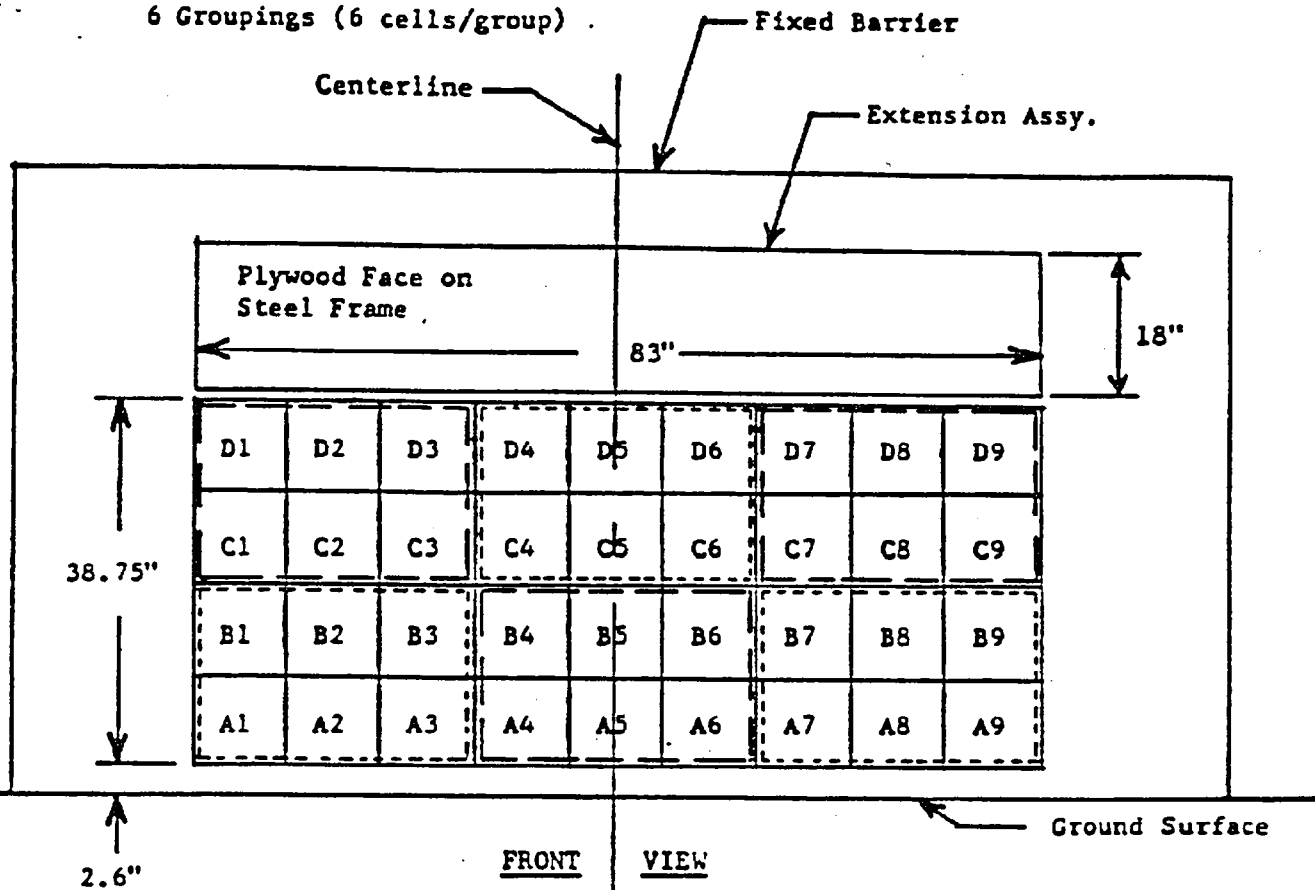
Data Table No. 15 Load Cell Locations on Fixed Barrier

36 Load Cells

4 Rows

9 Columns

6 Groupings (6 cells/group)



6 GROUPINGS OF 6 LOAD CELLS EACH

C1 thru D3	C4 thru D6	C7 thru D9
A1 thru B3	A4 thru B6	A7 thru B9

- DATA REQUIREMENTS:
- (1) Data from 36 individual load cells
 - (2) Total or Sum of 36 individual load cells
 - (3) Data from 6 Groupings shown above (6 cells/group)

Data Table No. 16 Accident Investigation Division Data

VEHICLE MAKE/MODEL/BODY STYLE: SUBARU/GL/4 DOOR

VEH. NHTSA NO.: MG5501; VIN: JF1AC43B9GB210861

MODEL YEAR: 1986; BUILD DATE: 10/85; TEST DATE: 06/12/86

VEH. SIZE CATEGORY: COMPACT; TEST WEIGHT: 2,712 lb

VEH. WHEELBASE: 97.1; FRONT OVERHANG: 34.6; OVERALL WIDTH: 66.6

ACCELEROMETER DATA:

LOCATION: LEFT REAR FLOOR PAN

CALIBRATION PROCEDURE: VOLTAGE INSERTION

LINEARITY: 3%; INTEGRATION ALGORITHM: AREA SUMMATION

VEH. IMPACT SPEED: 35.12 mph; TIME OF SEPARATION: 148 msec

VELOCITY CHANGE: 41.25 mph

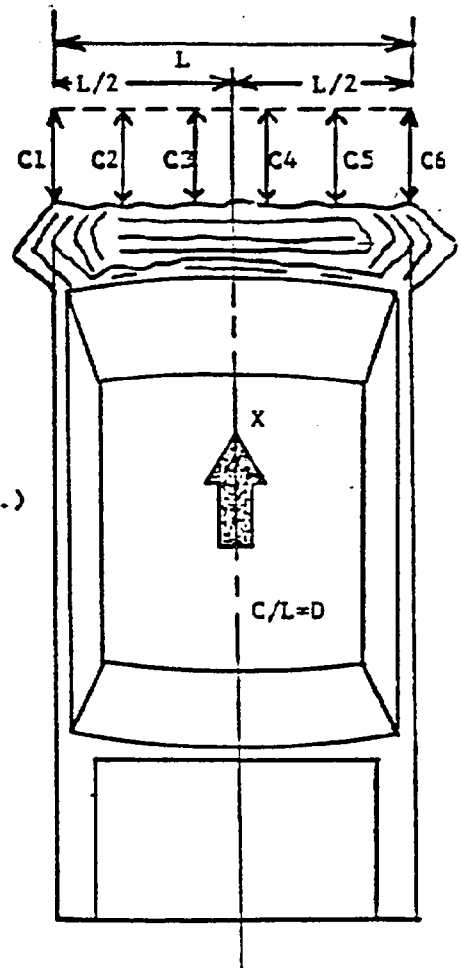
☒ COLLISION DEFORMATION CLASSIFICATION (CDC) CODE:

F (Frontal) 12FDEW5

CRUSH DEPTH	C1=	<u>23.5</u>	<u>inches</u>
DIMENSIONS:	C2=	<u>23.9</u>	<u>inches</u>
	C3=	<u>25.0</u>	<u>inches</u>
	C4=	<u>26.0</u>	<u>inches</u>
	C5=	<u>26.0</u>	<u>inches</u>
	C6=	<u>26.4</u>	<u>inches</u>

MIDPOINT OF DAMAGE: D = Vehicle Centerline (Longitud.)

LENGTH OF DAMAGED REGION: L = 60.5 inches

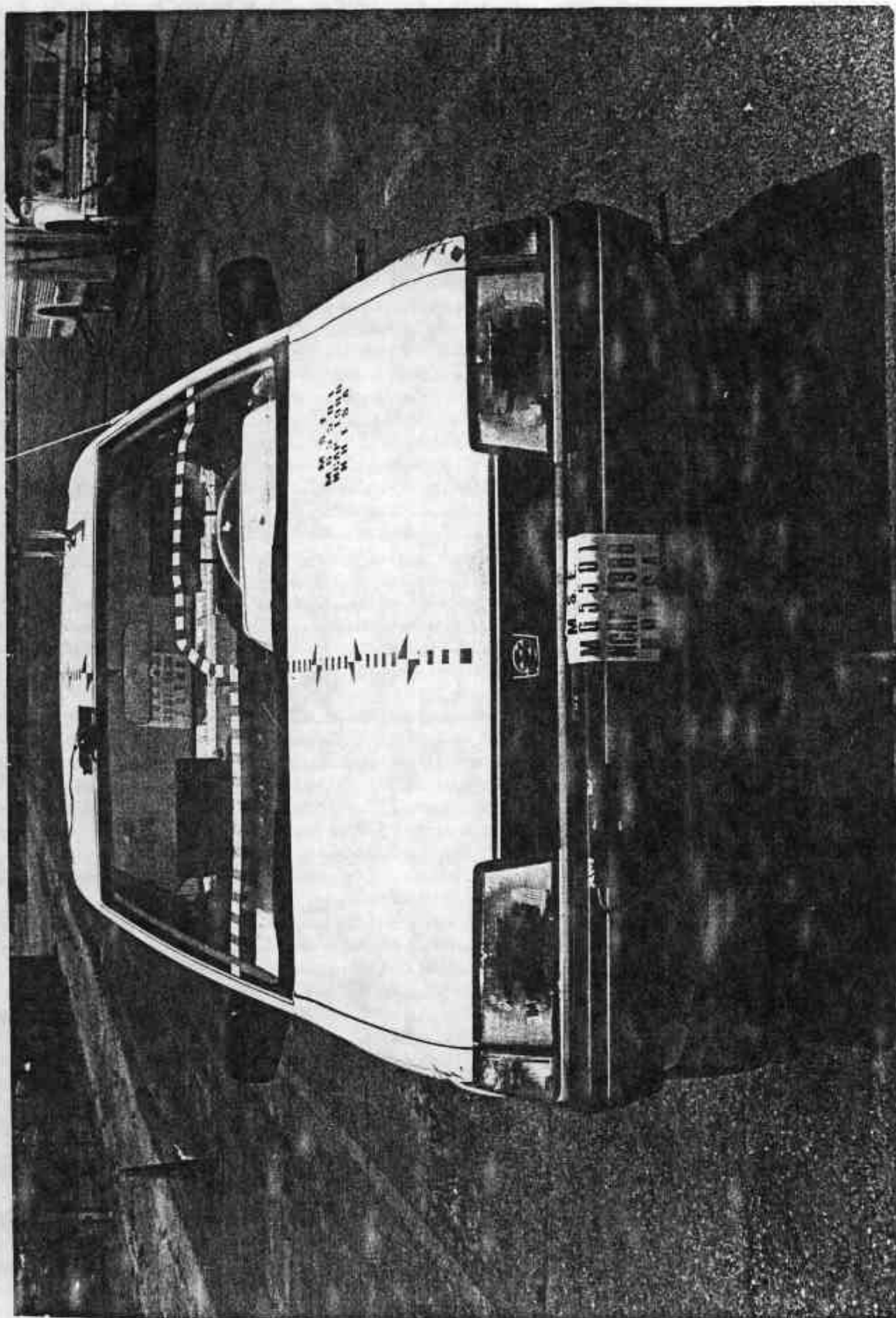


APPENDIX A

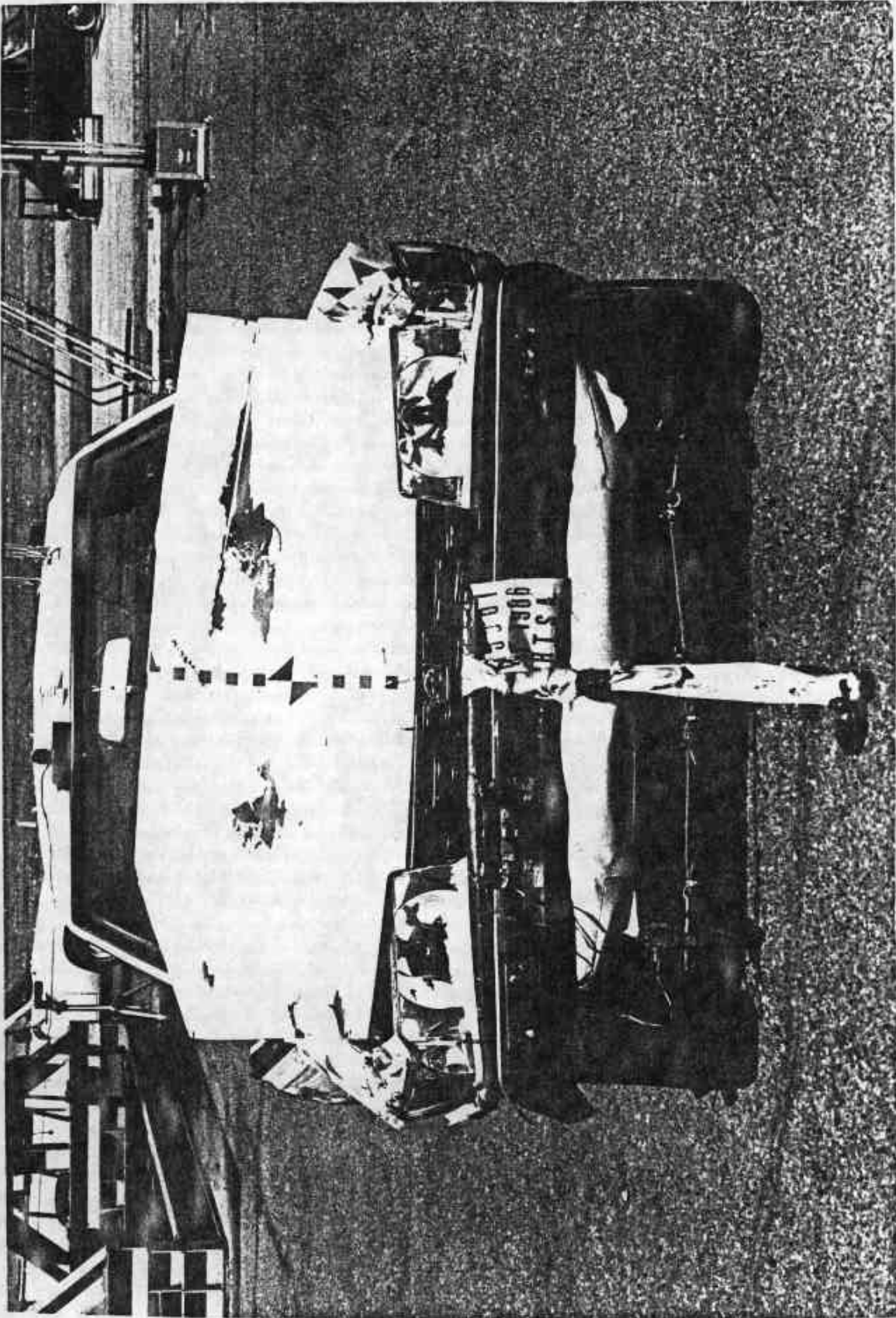
PHOTOGRAPHS

PRETEST FRONT VIEW
POSTTEST FRONT VIEW
PRETEST LEFT SIDE VIEW
POSTTEST LEFT SIDE VIEW
PRETEST RIGHT SIDE VIEW
POSTTEST RIGHT SIDE VIEW
PRETEST RIGHT FRONT 3/4 VIEW
POSTTEST RIGHT FRONT 3/4 VIEW
PRETEST LEFT REAR 3/4 VIEW
POSTTEST LEFT REAR 3/4 VIEW
POSTTEST TOP VIEW (Vehicle on Rollover Machine)
PRETEST WINDSHIELD VIEW
POSTTEST WINDSHIELD VIEW
PRETEST ENGINE COMPARTMENT VIEW
POSTTEST ENGINE COMPARTMENT VIEW
PRETEST FUEL FILLER CAP VIEW
PRETEST FRONT UNDERBODY VIEW
POSTTEST FRONT UNDERBODY VIEW
PRETEST REAR UNDERBODY VIEW
POSTTEST REAR UNDERBODY VIEW
PRETEST DRIVER DUMMY POSITION VIEW
POSTTEST DRIVER DUMMY POSITION VIEW
PRETEST PASSENGER DUMMY POSITION VIEW
POSTTEST PASSENGER DUMMY POSITION VIEW
PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
PRETEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

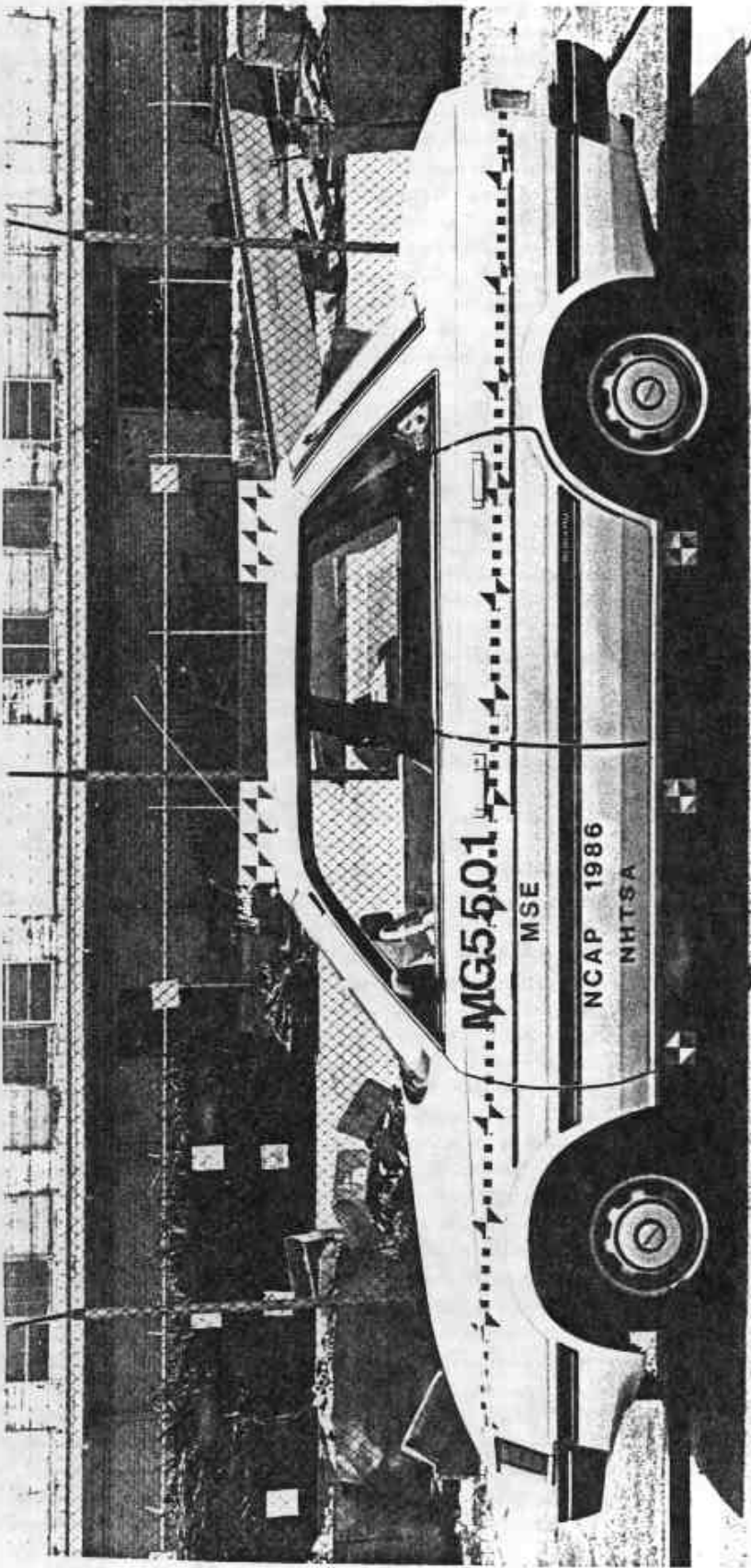
POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST DRIVER DUMMY HEAD/KNEE CONTACT AREA
POSTTEST STEERING COLUMN HUB/RIM CONTACT BY DUMMY DRIVER
POSTTEST PASSENGER DUMMY KNEE CONTACT



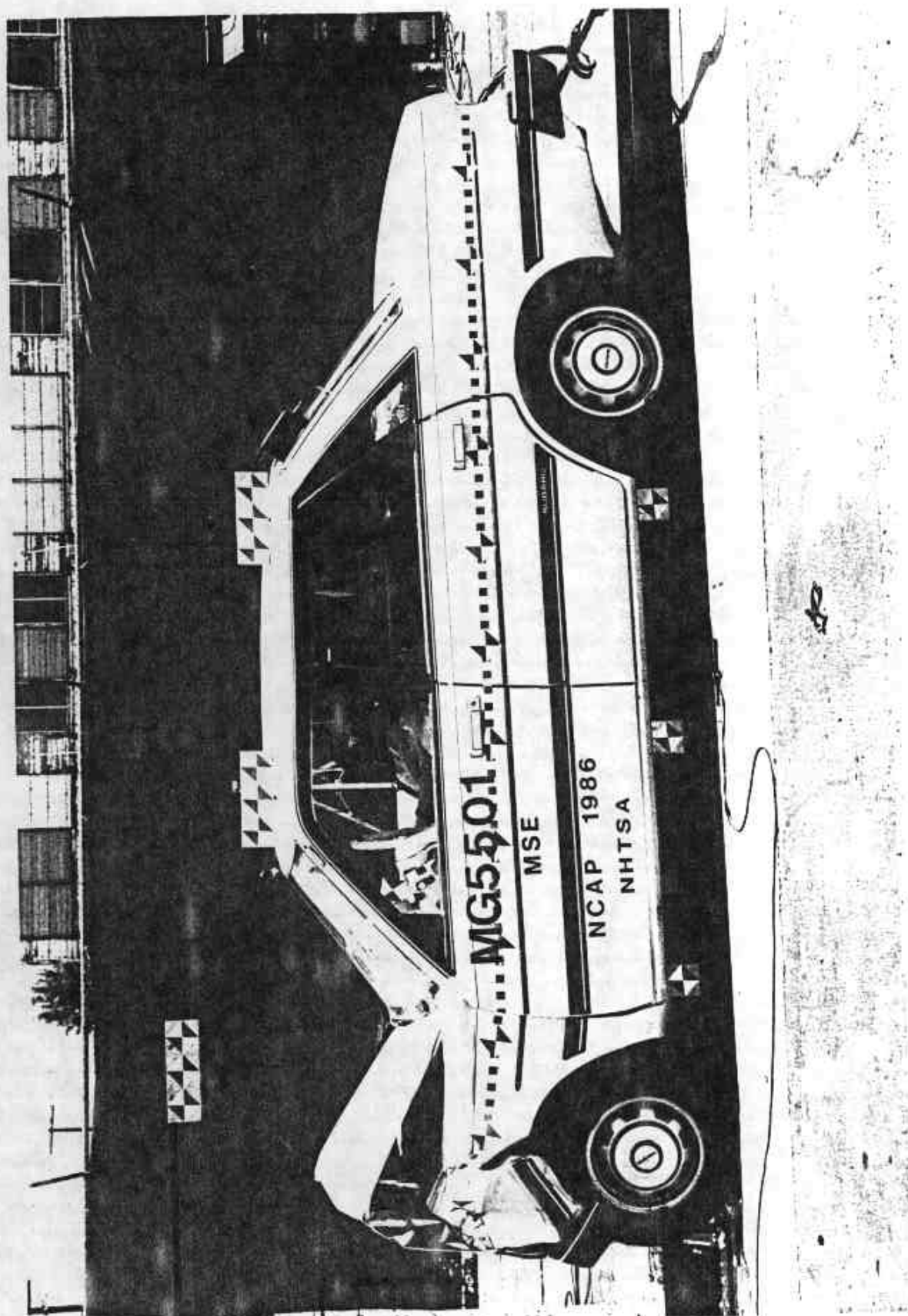
PRETEST FRONT VIEW



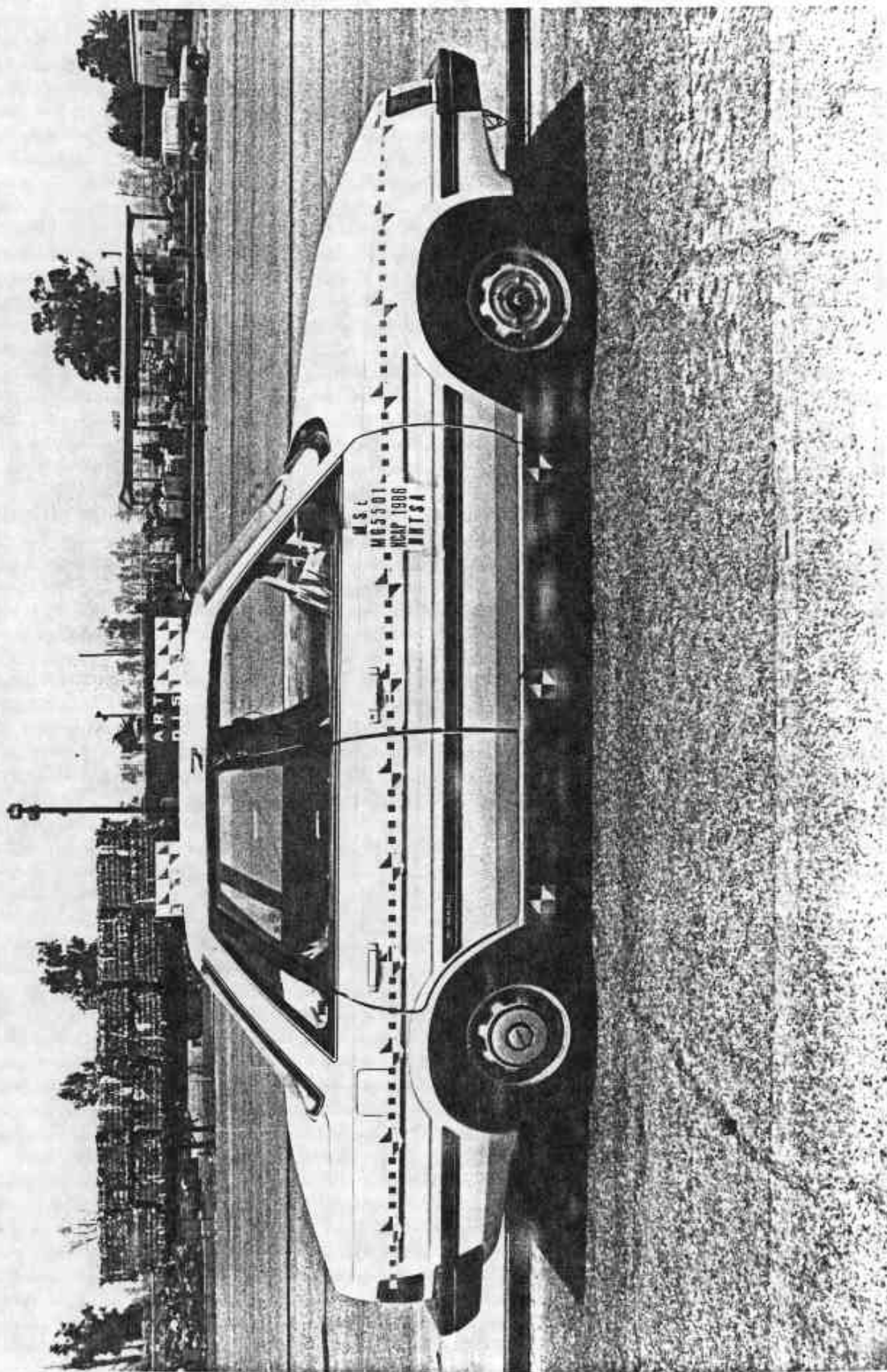
POSTTEST FRONT VIEW



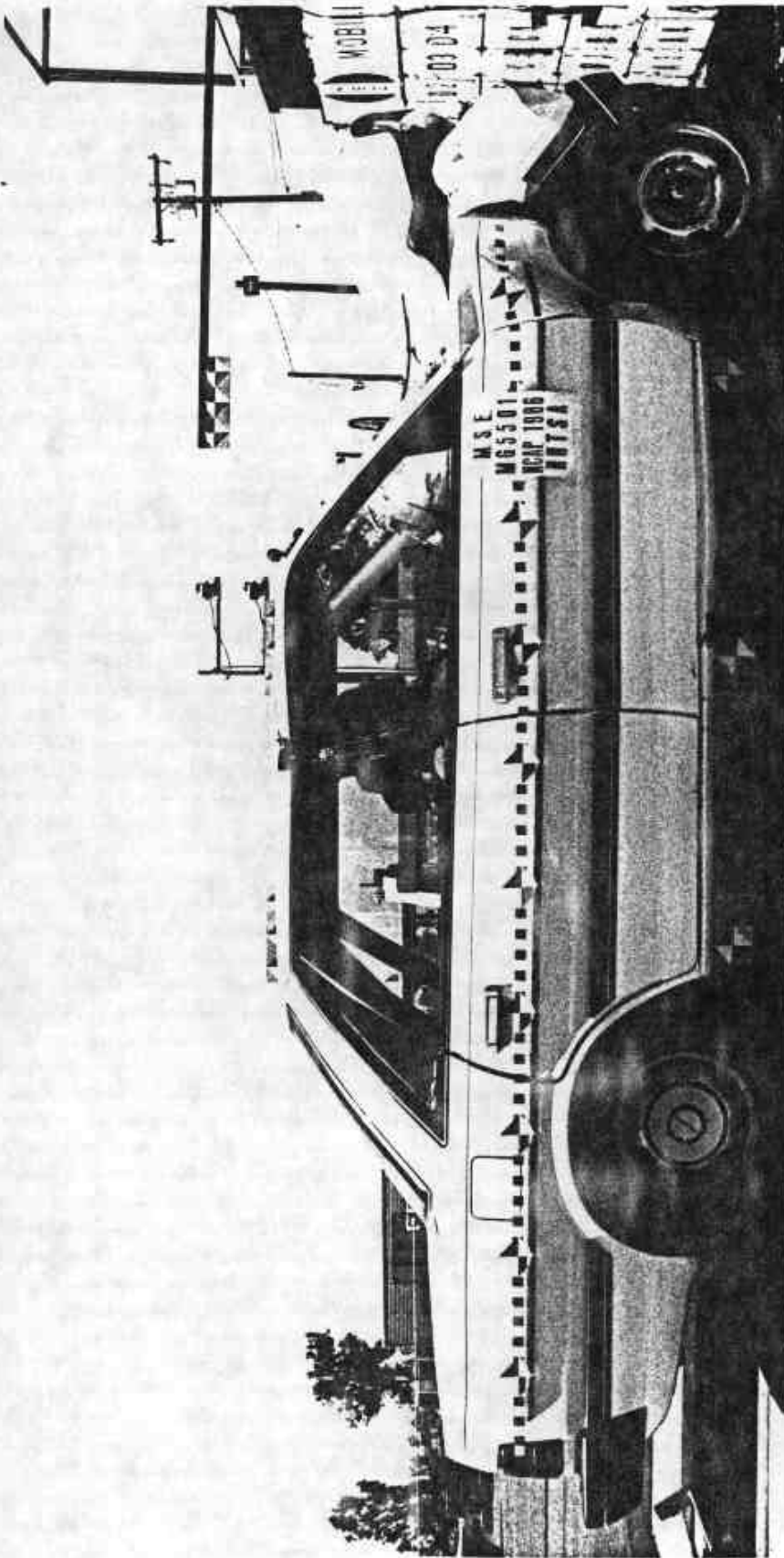
PRETEST LEFT SIDE VIEW



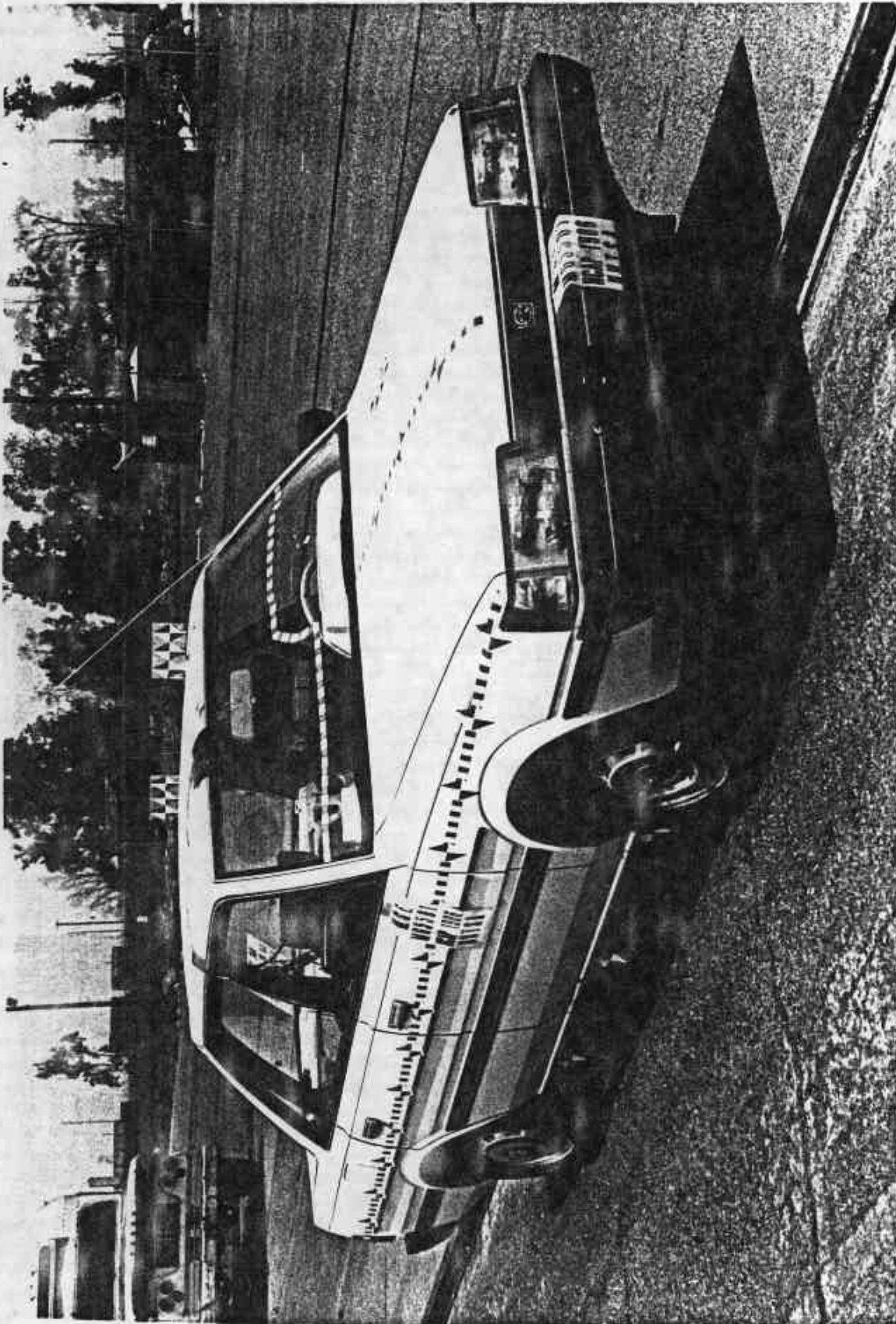
POSTTEST LEFT SIDE VIEW



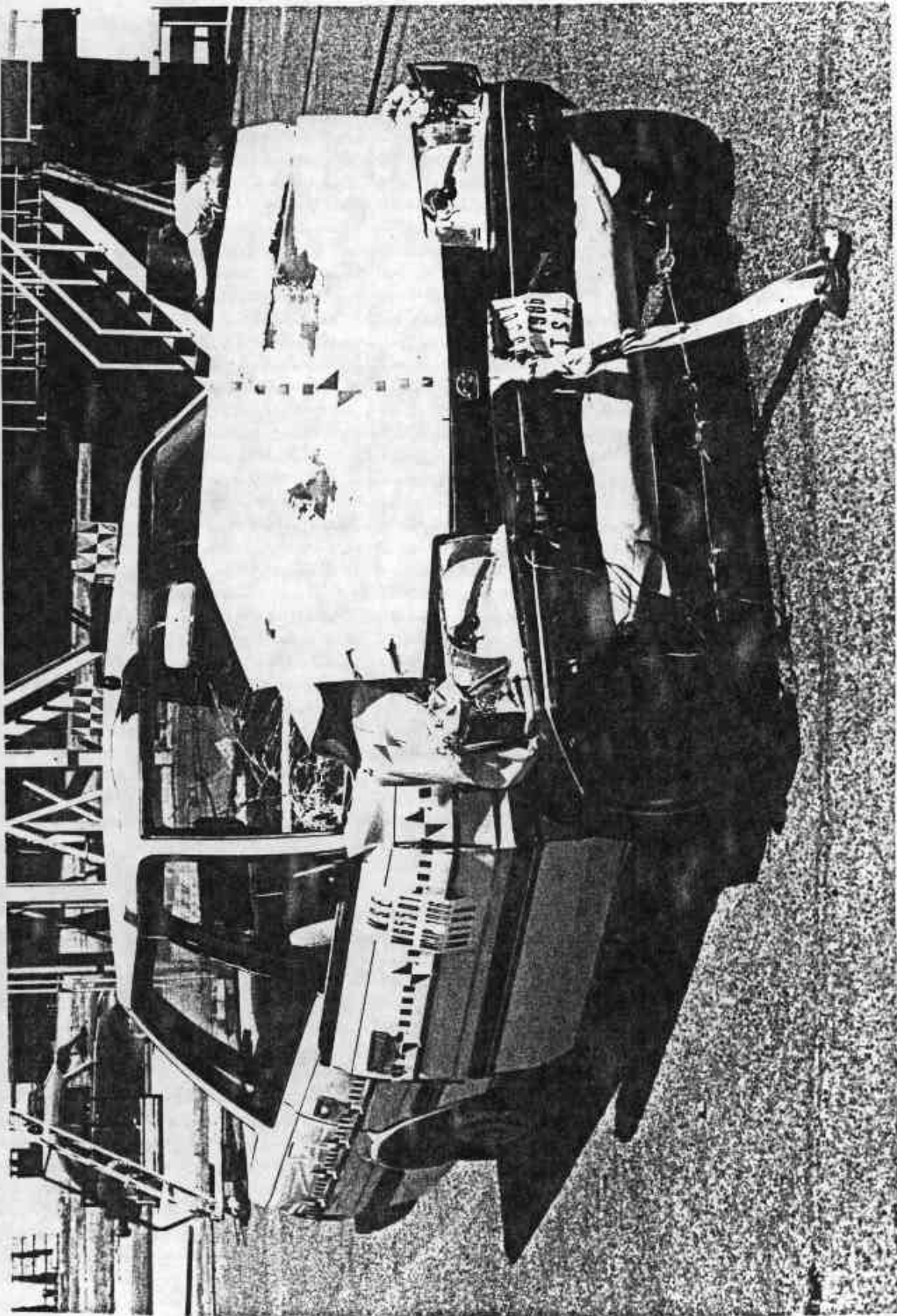
PRETEST RIGHT SIDE VIEW



POSTTEST RIGHT SIDE VIEW



PRETEST RIGHT FRONT 3/4 VIEW



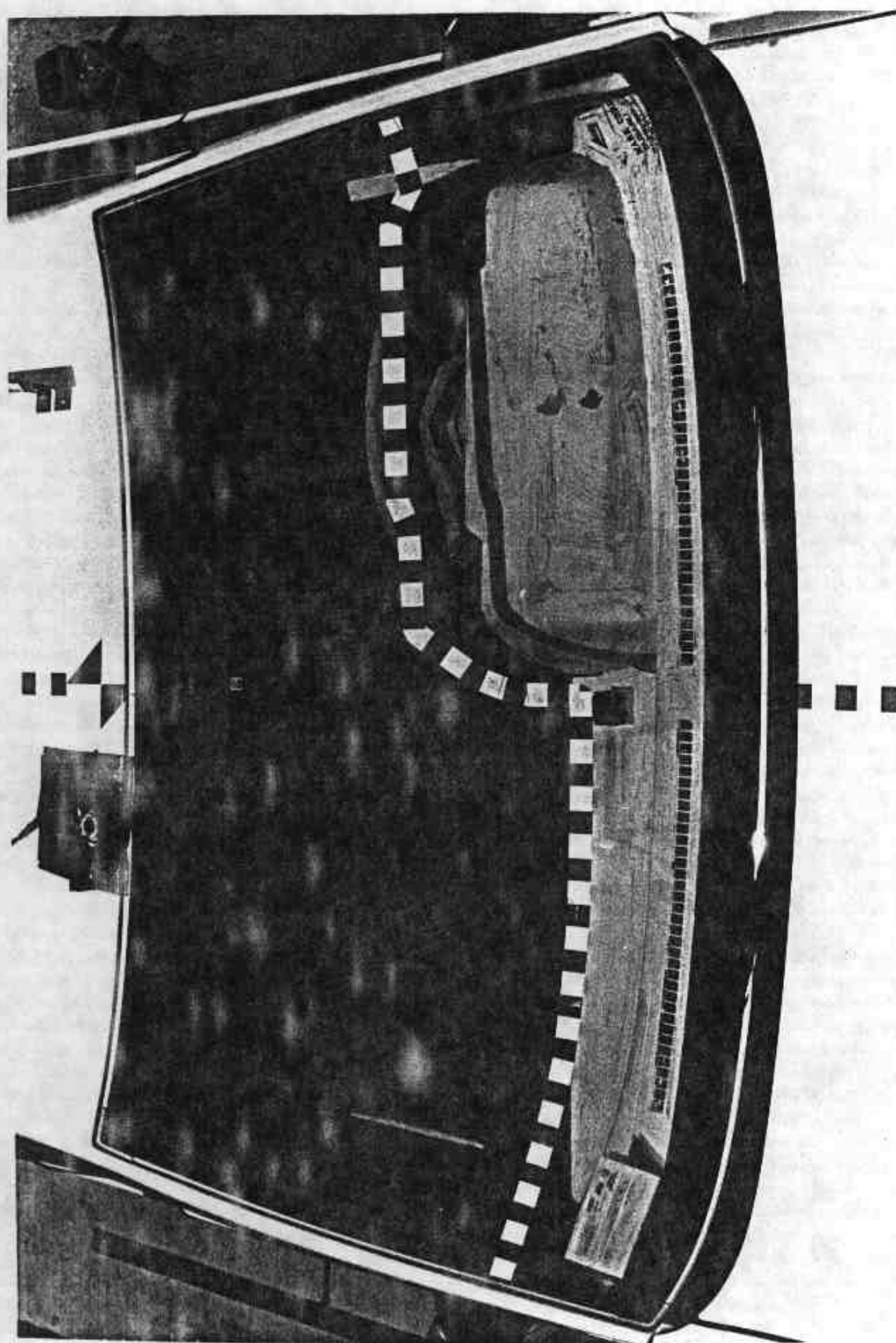
POSTTEST RIGHT FRONT 3/4 VIEW



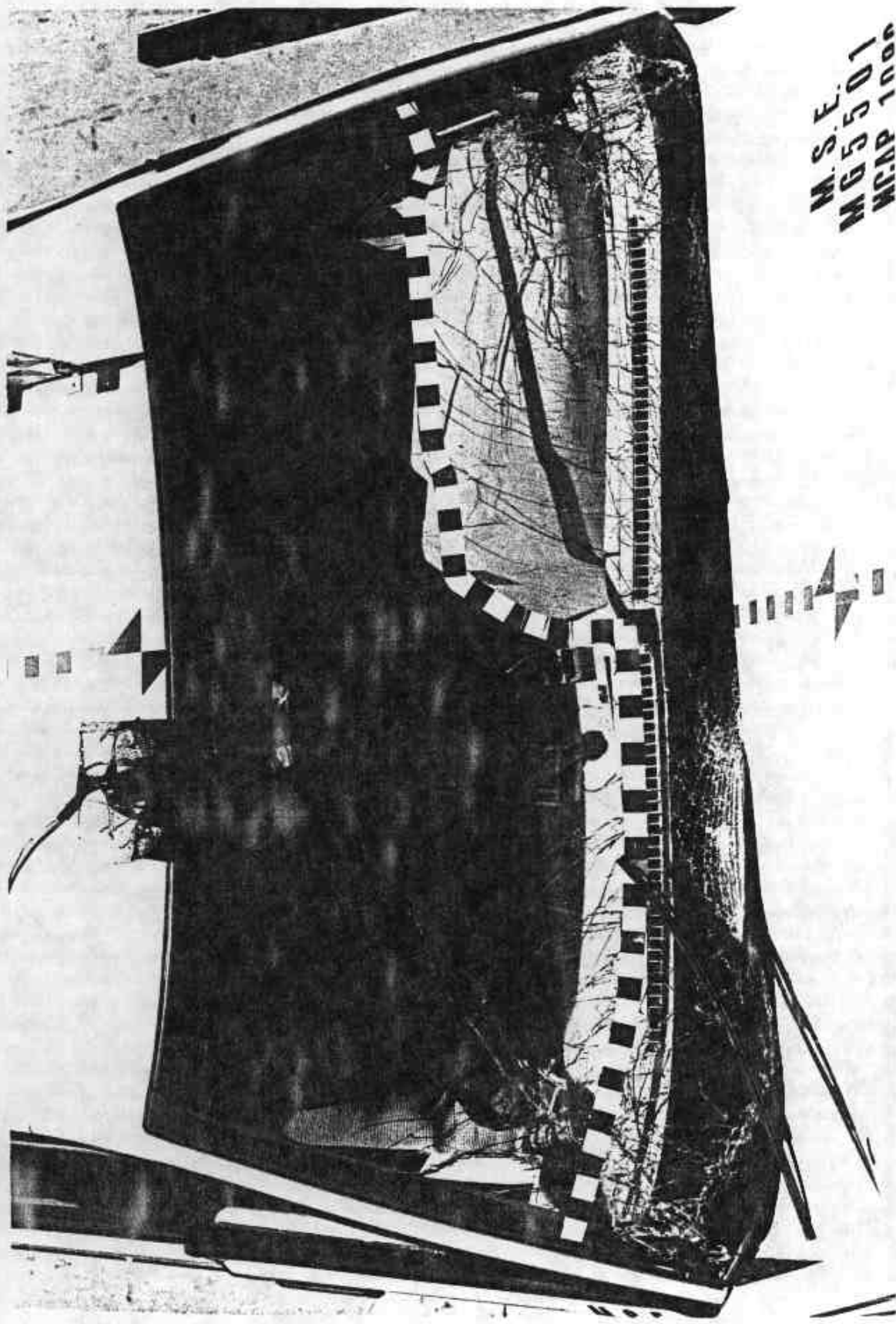
PRETEST LEFT REAR 3/4 VIEW



POSTTEST LEFT REAR 3/4 VIEW

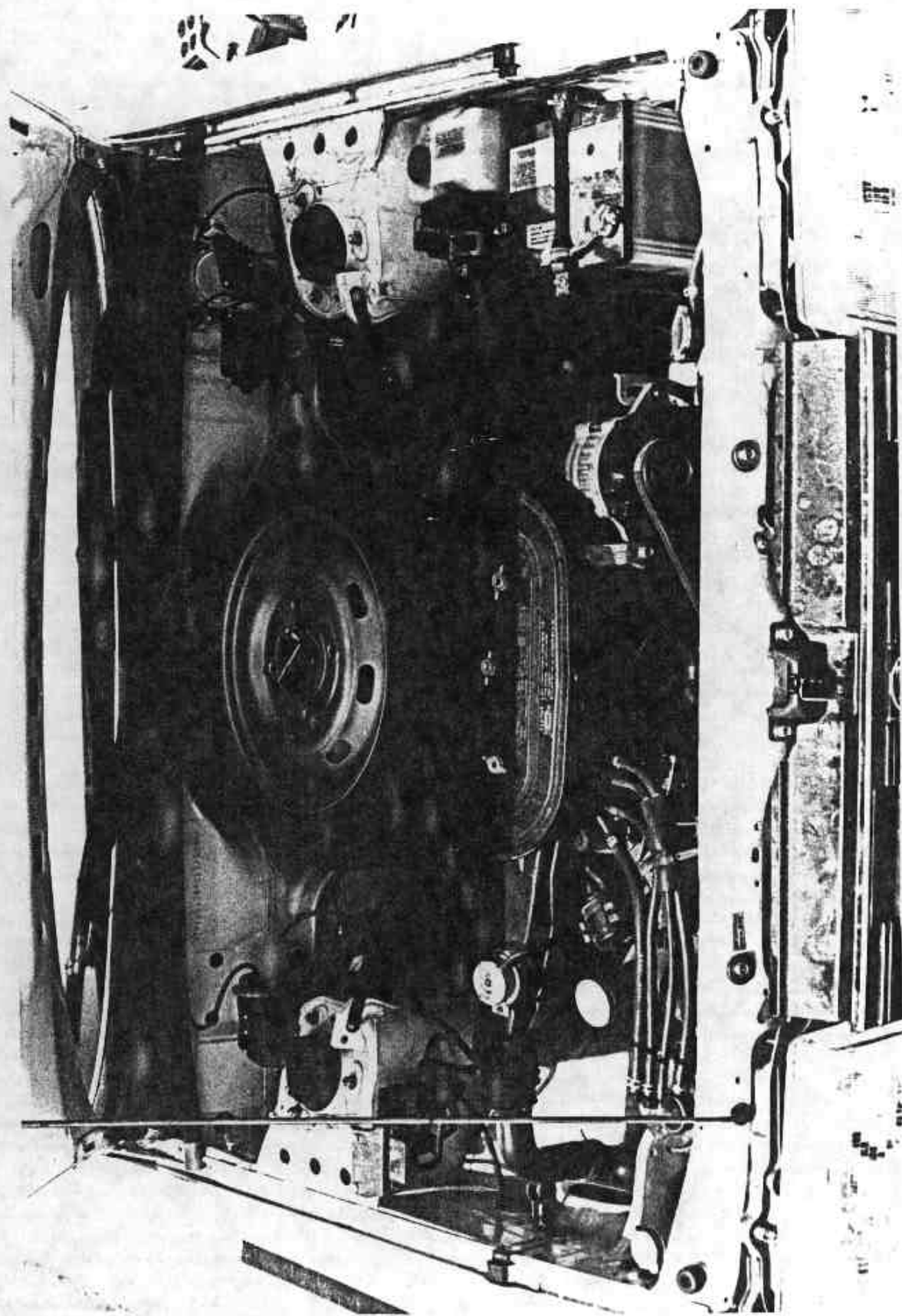


PRETEST WINDSHIELD VIEW

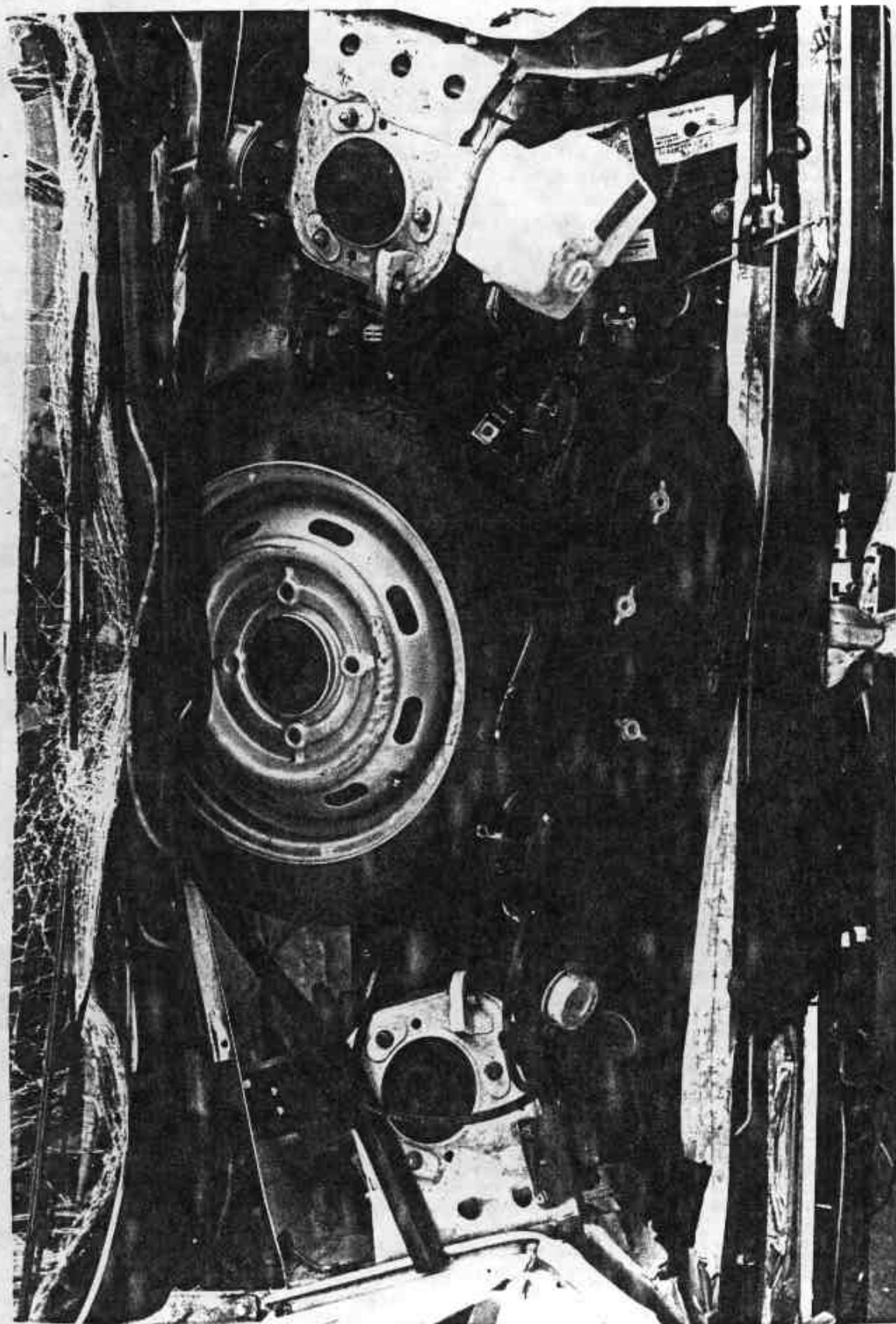


M.S.E.
MG 5501
WCP 1006

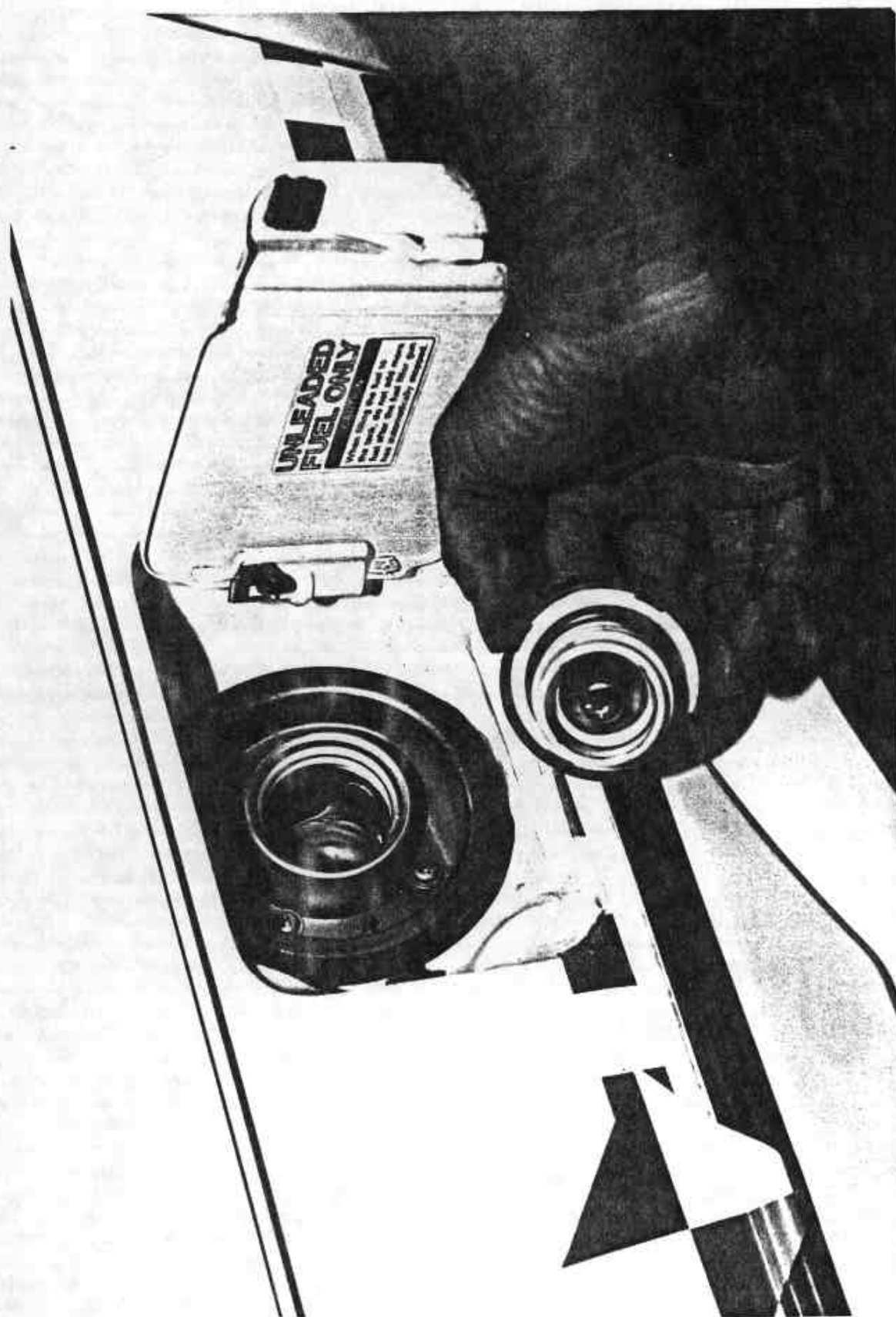
POSTTEST WINDSHIELD VIEW



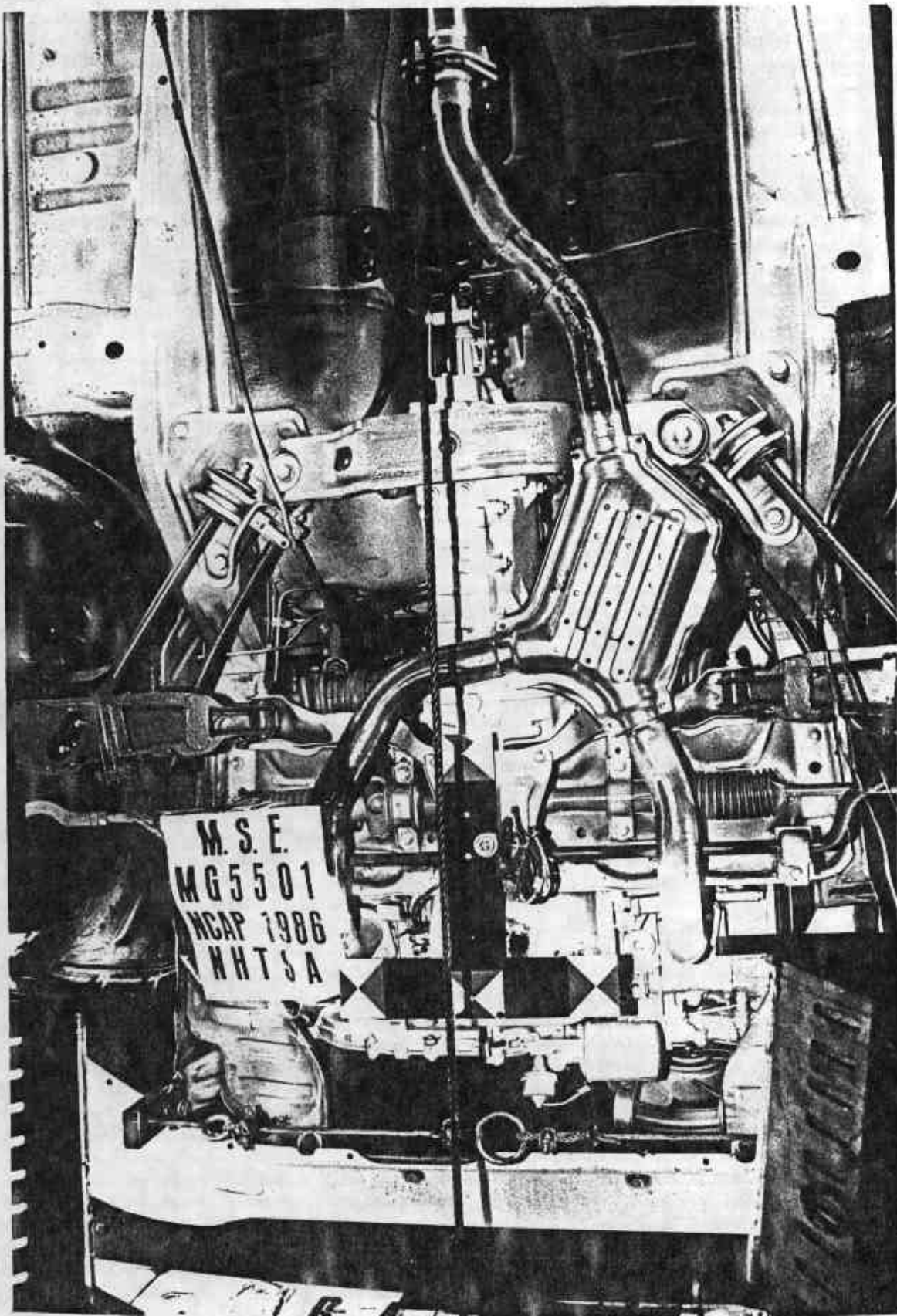
PRETEST ENGINE COMPARTMENT VIEW



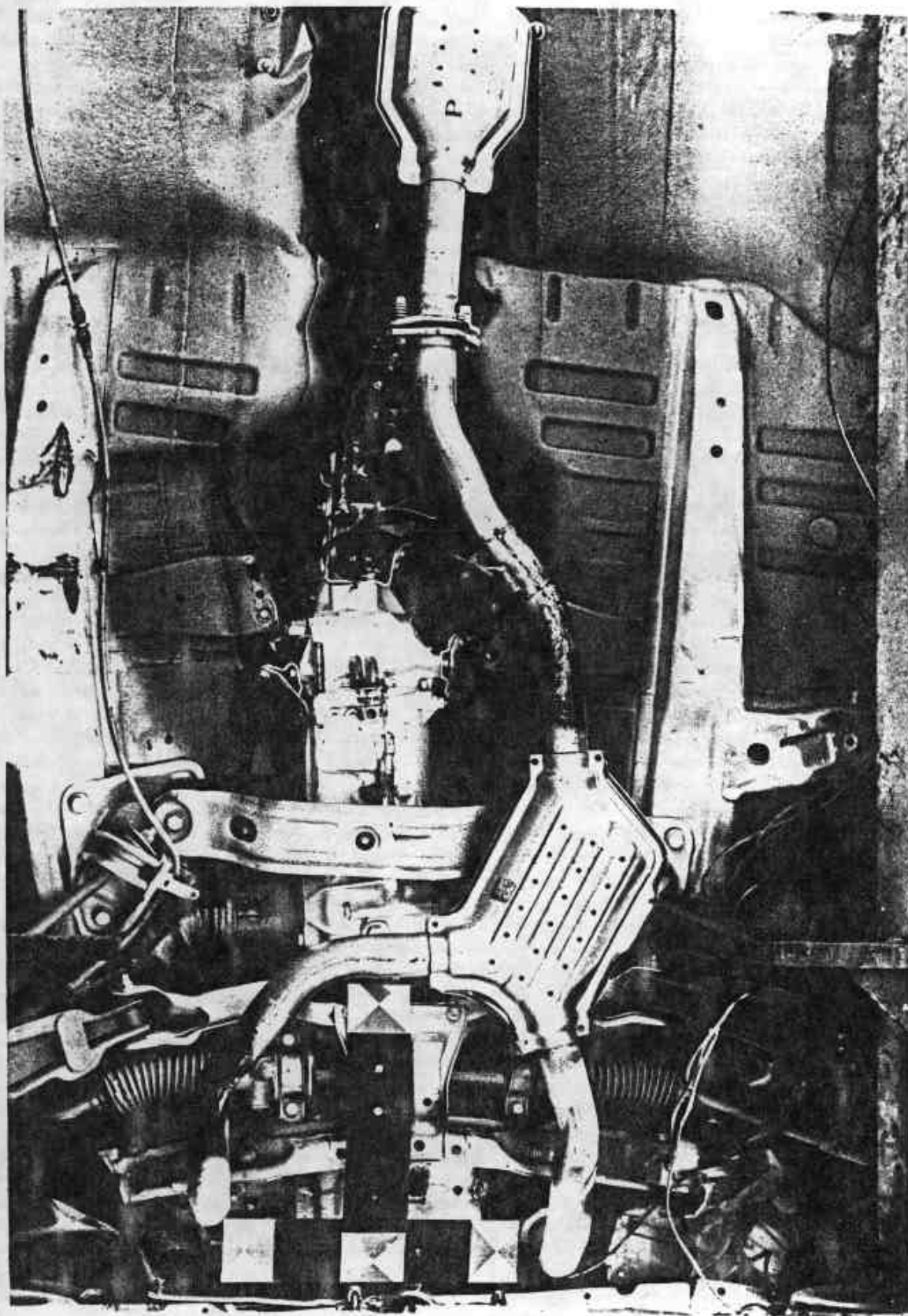
POSTTEST ENGINE COMPARTMENT VIEW



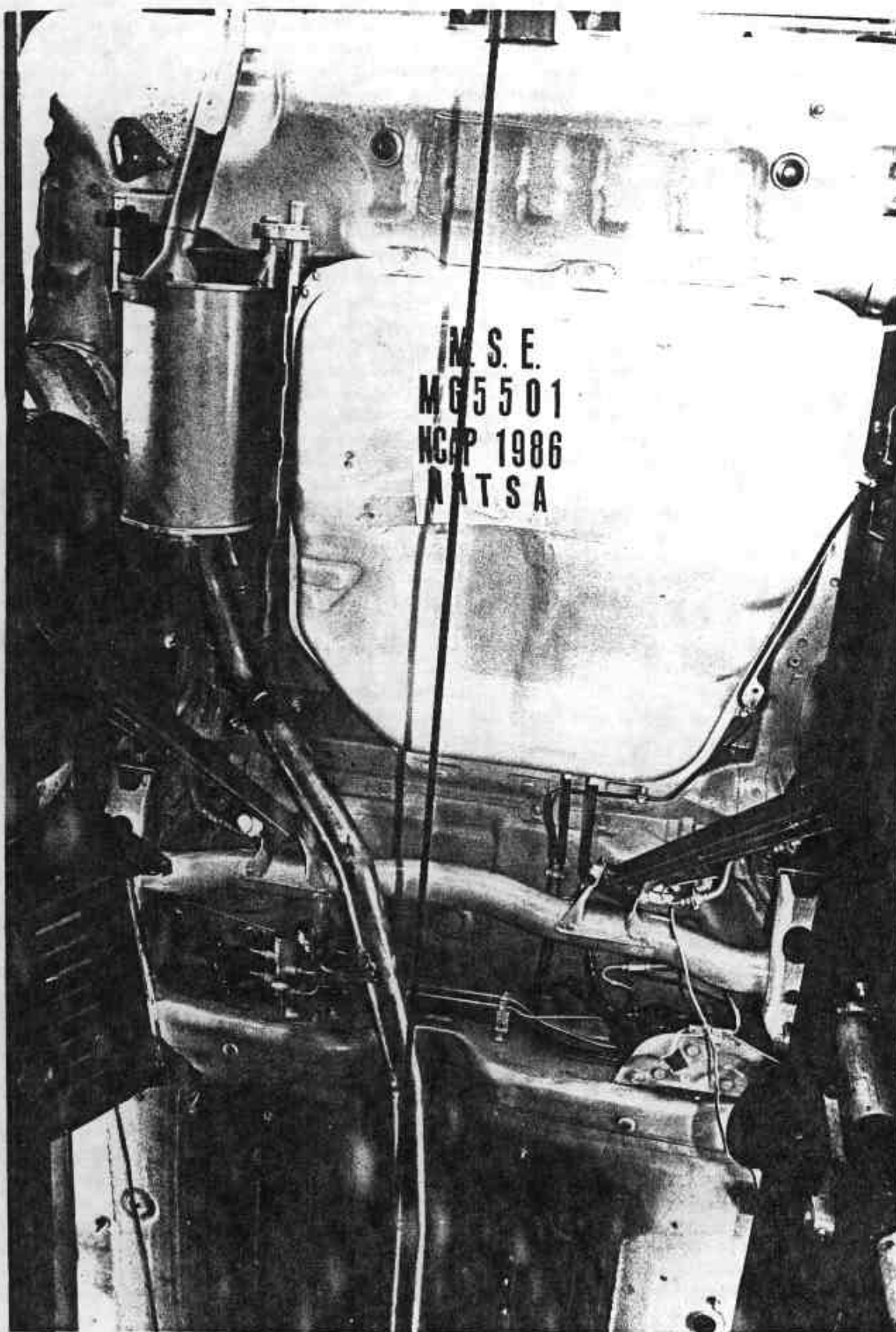
PRETEST FUEL FILLER CAP VIEW



PRETEST FRONT UNDERBODY VIEW



POSTTEST FRONT UNDERBODY VIEW



PRETEST REAR UNDERBODY VIEW



POSTTEST REAR UNDERBODY VIEW



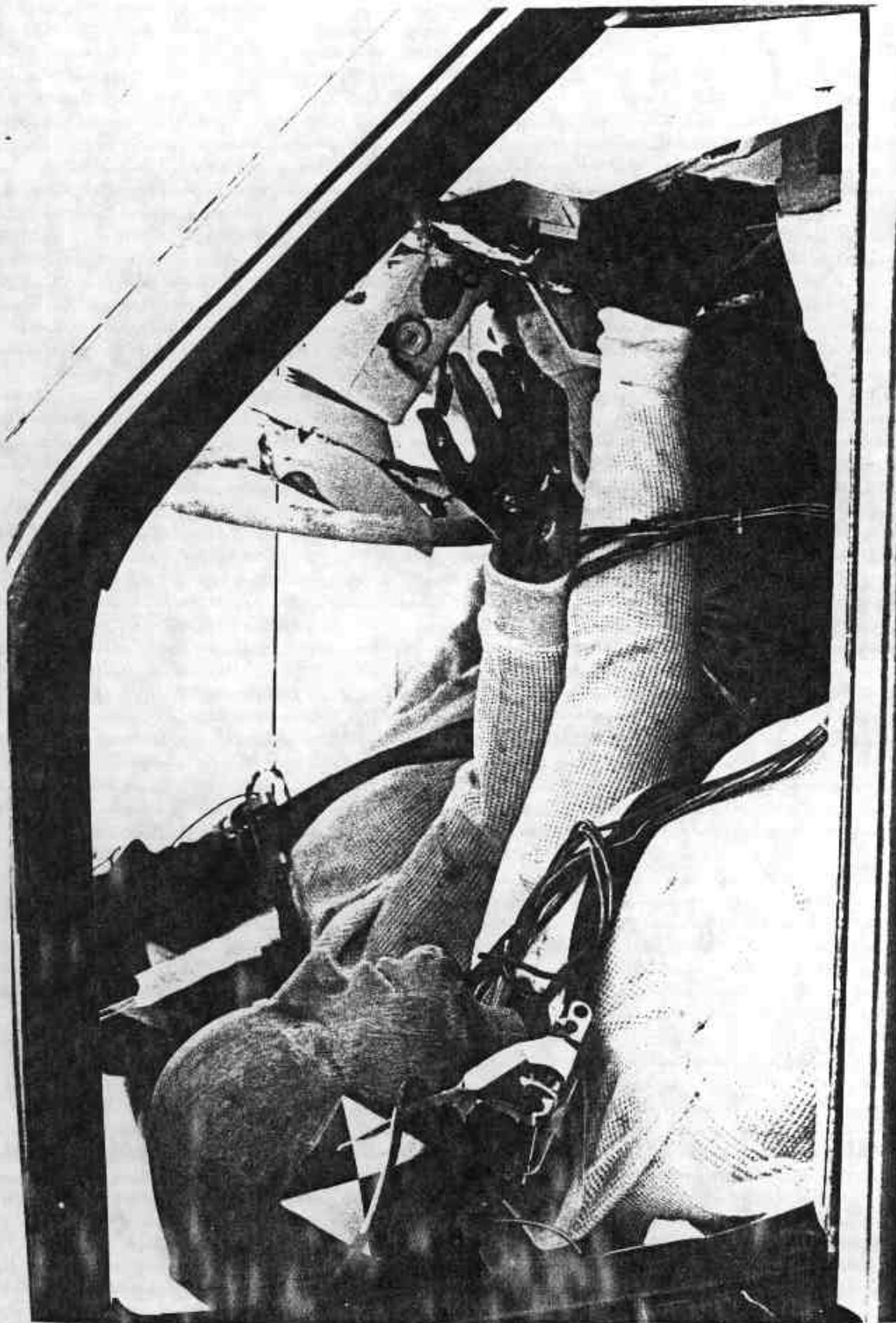
PRETEST DRIVER DUMMY POSITION VIEW



POSTTEST DRIVER DUMMY POSITION VIEW



PRETEST PASSENGER DUMMY POSITION VIEW



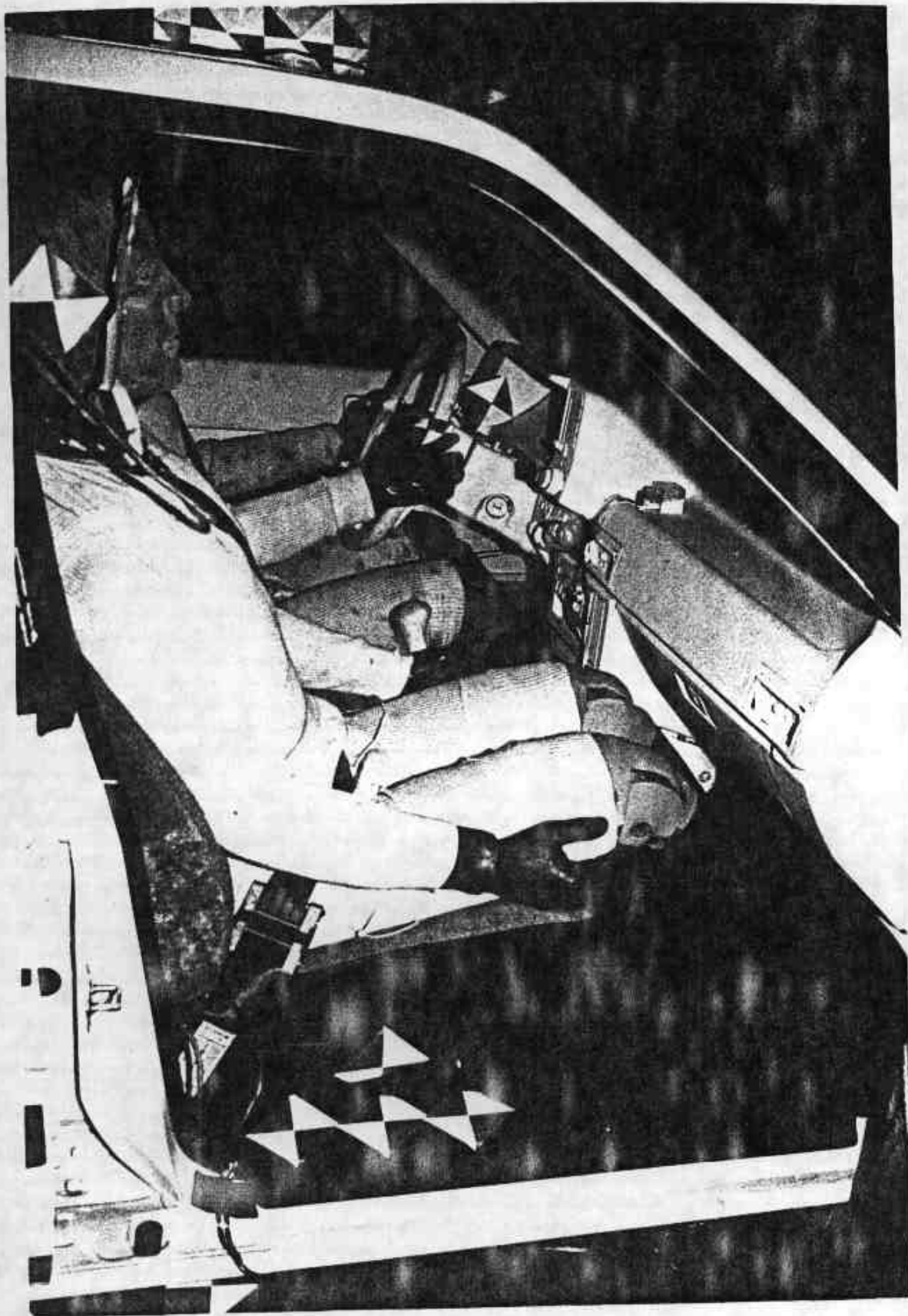
POSTTEST PASSENGER DUMMY POSITION VIEW



PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)



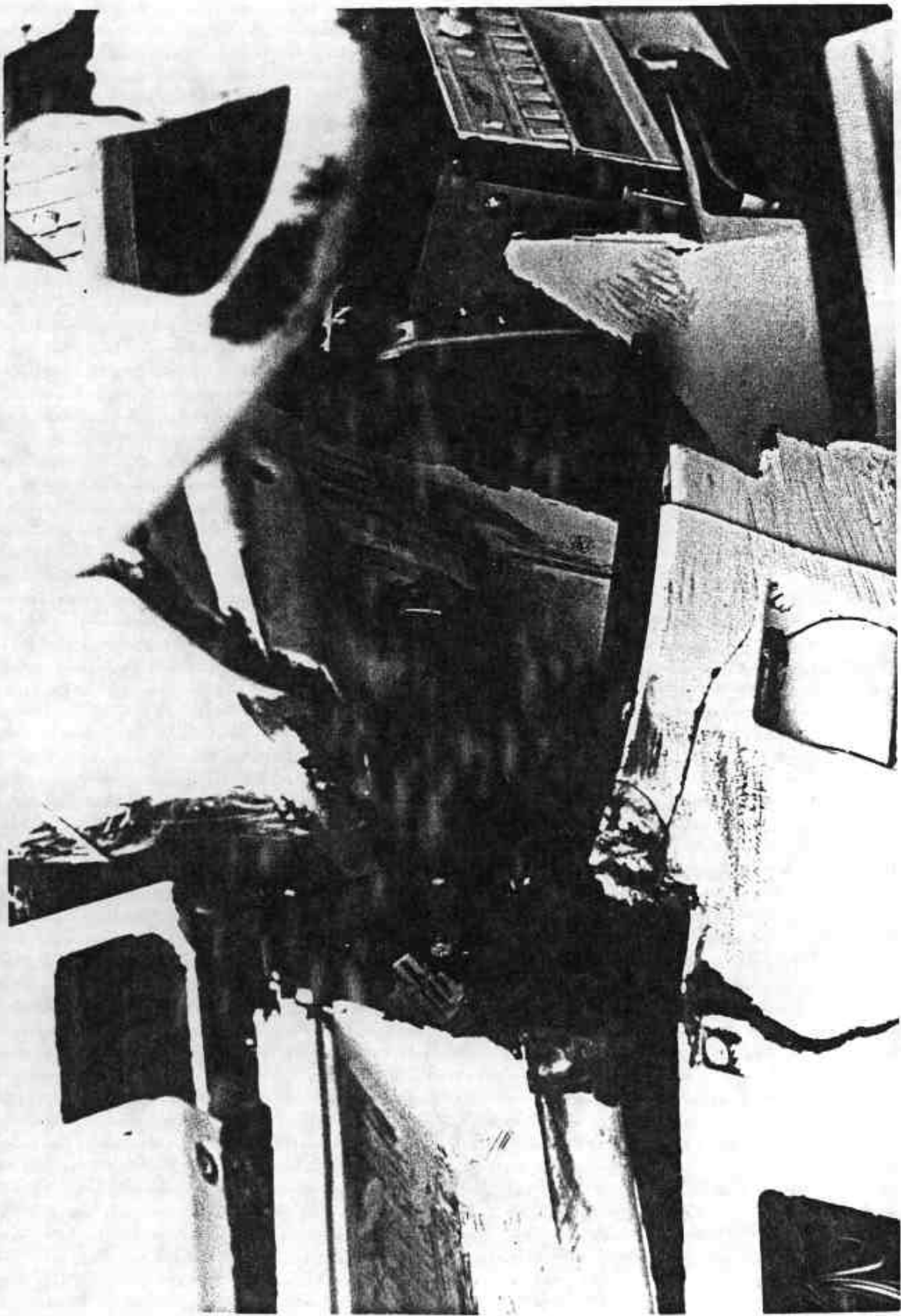
POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)



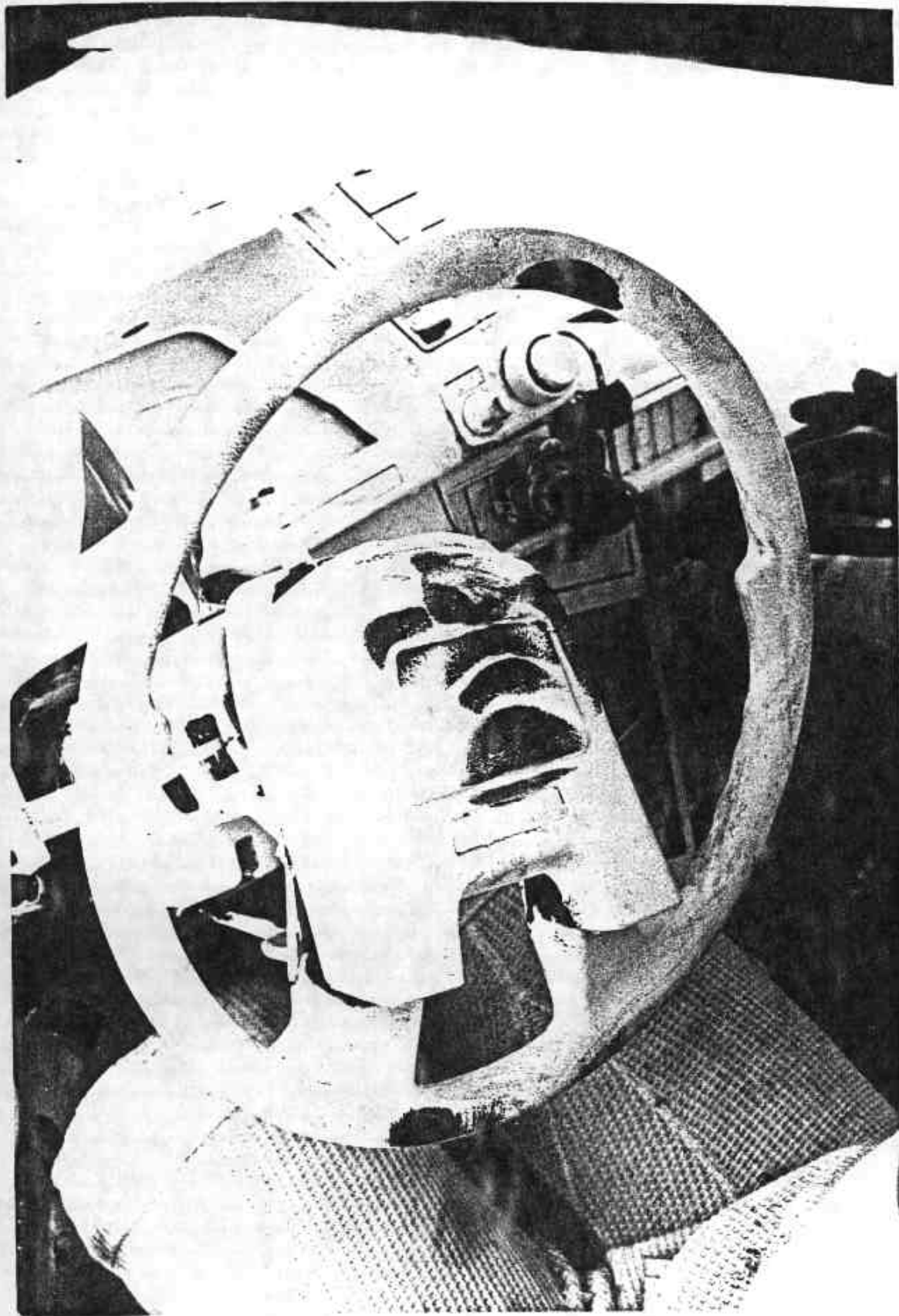
PRETEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)



POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

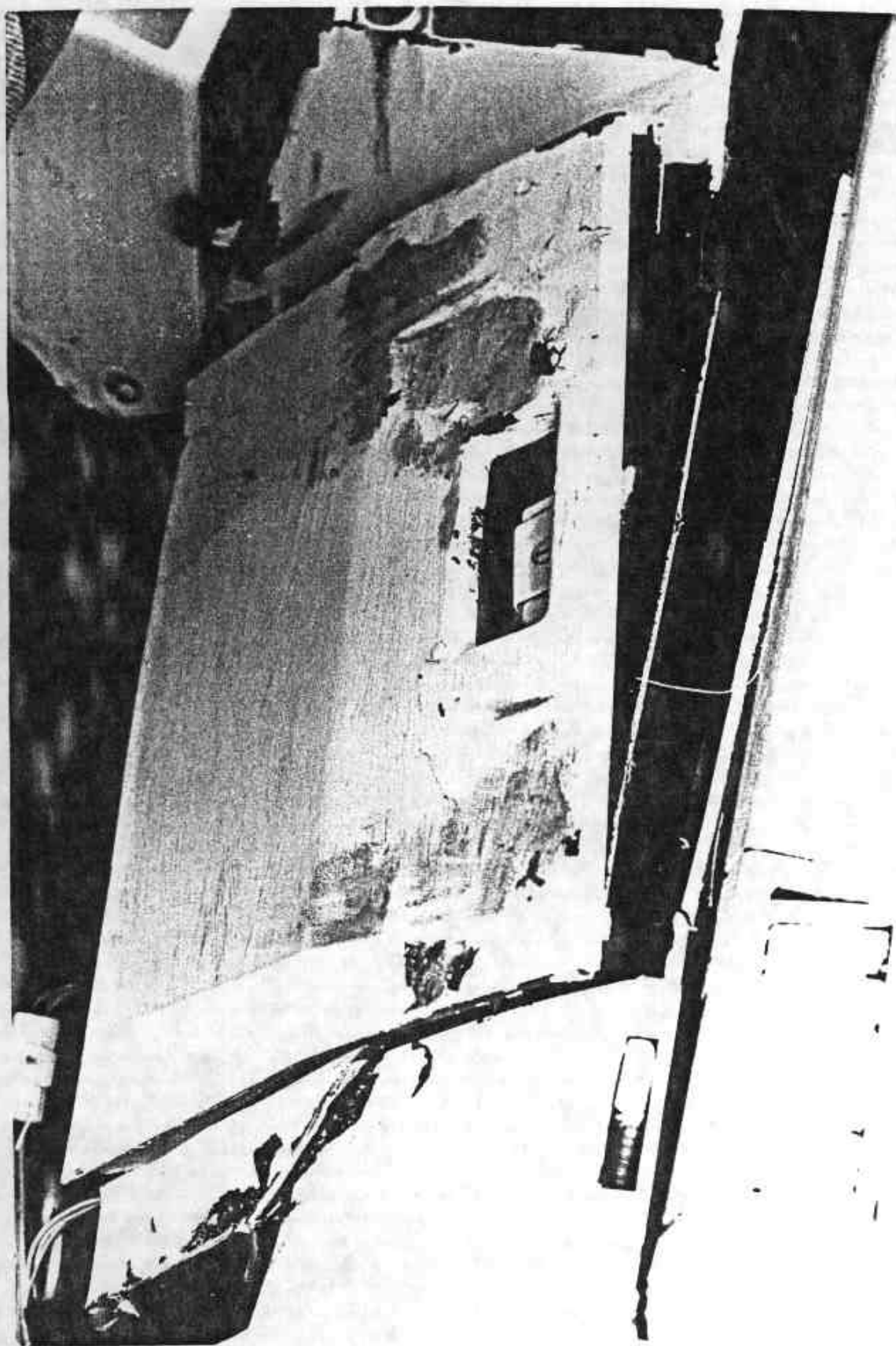


POSTTEST DRIVER DUMMY HEAD/KNEE CONTACT AREA



POSTTEST STEERING COLUMN HUB/RIM CONTACT BY DRIVER DUMMY R5077-05

POSTTEST PASSENGER DUMMY KNEE CONTACT



APPENDIX B-1

VEHICLE AND DUMMY RESPONSE DATA

DATA FILTERING:

ATD Head Channels	- Class 1000
ATD Chest Channels	- Class 180
ATD Femur Channels	- Class 600
Vehicle Channels	- Class 60

1FY 86 35MPH NCAP FRONTAL 06/12/86SEDTHH2294D21149N26056 ACQUIRE NCAP DATA PLUS EVALUATE COMPLIANCE TO FMVSS 212,219.

301-75 & 203NCAVSB 35.100000.0999.9CONDY 95FTUMSENG

212602264-ILF 109 CI MF4D2712 97.1172.166.643.9SOTHPNONE

35.100000012FDEH5999 60.523.523.925.026.026.026.4 0.026.4

3LCB 00 R

411CD 050M HUMANOID SYSTEMS 464 2ND IMP AFTER CAL17.022.5 4.3 6.222.913.3 3.5 8.0 4.33PTSTONASHN00P

412CD 050M HUMANOID SYSTEMS 466 1ST IMP AFTER CAL17.022.4 4.5 7.321.999.9 4.3 8.0 2.93PTSTONANON00P

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502AC011HED 6000 1650 0.72360 360000125G'SY00.00000

503AC011HED 6000 1650 0.72360 360000125G'SZ00.00000

504AC011CST 6000 1650 0.72360 360000125G'SX35.10000

505AC011CST 2800 1650 0.72360 360000125G'SY00.00000

506AC011CST 6000 1650 0.72360 360000125G'SZ00.00000

507AC012HED 6000 1650 0.72360 360000125G'SX35.10000

508AC012HED 6000 1650 0.72360 360000125G'SY00.00000

509AC012HED 6000 1650 0.72360 360000125G'SZ00.00000

510AC012CST 6000 1650 0.72360 360000125G'SX35.10000

511AC012CST 2800 1650 0.72360 360000125G'SY00.00000

512AC012CST 6000 1650 0.72360 360000125G'SZ00.00000

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521DT011SHB 9999 1650999.92360 360000125INCO G000

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526AC01NRRF 2800 1650 0.72360 360000125G'SX35.10000

527AC01NENG 2800 1650 0.72360 360000125G'SX35.10000

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529AC01NBOC 2800 1650 0.72360 360000125G'SX35.10000

530AC01NDFC 2800 1650 0.72360 360000125G'SX35.10000

531AC01NVCG 2800 1650 0.72360 360000125G'SX35.10000

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542LCBANBB2 9999 1650999.92300 360000125LBS0 G000

543LCBANBB3 9999 1650999.92300 360000125LBS0 G000

544LCBANBB4 9999 1650999.92300 360000125LBS0 G000

545LCBANBB5 9999 1650999.92300 360000125LBS0 G000

546LCBANBB6	9999	1650999.92300	360000125LBS0	GOOD
547LCBANBB7	9999	1650999.92300	360000125LBS0	GOOD
548LCBANBB8	9999	1650999.92300	360000125LBS0	GOOD
549LCBANBB9	9999	1650999.92300	360000125LBS0	GOOD
550LCBANBC1	9999	1650999.92300	360000125LBS0	GOOD
551LCBANBC2	9999	1650999.92300	360000125LBS0	GOOD
552LCBANBC3	9999	1650999.92300	360000125LBS0	GOOD
553LCBANBC4	9999	1650999.92300	360000125LBS0	GOOD
554LCBANBC5	9999	1650999.92300	360000125LBS0	GOOD
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556LCBANBC7	9999	1650999.92300	360000125LBS0	GOOD
557LCBANBC8	9999	1650999.92300	360000125LBS0	GOOD
558LCBANBC9	9999	1650999.92300	360000125LBS0	GOOD
559LCBANBD1	9999	1650999.92300	360000125LBS0	GOOD
560LCBANBD2	9999	1650999.92300	360000125LBS0	GOOD
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563LCBANBD5	9999	1650999.92300	360000125LBS0	GOOD
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565LCBANBD7	9999	1650999.92300	360000125LBS0	GOOD
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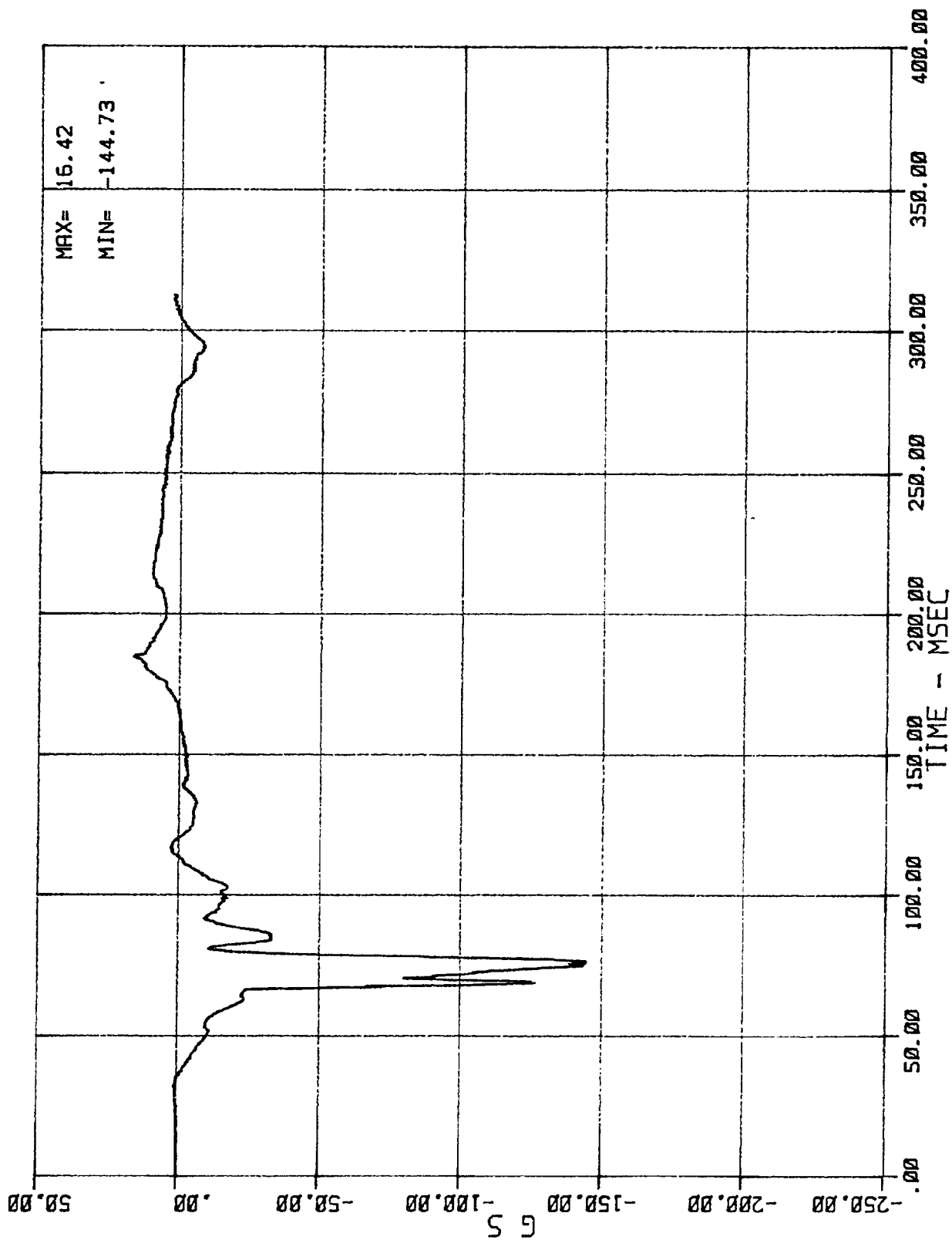
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411CD
 050M HUMANOID SYSTEMS 464 2ND IMP AFTER CAL17.022.5 4.3 6.222.013.3 3.5 3.0 4
 .33PTSTONASANDP412CD 050M HUMANOID SYSTEMS 464 1ST IMP AFTER CAL17.022.4
 4.5 7.321.999.9 4.3 3.8 2.93PTSTONANONDP501AC011HED 6000 1650 0.72360 36000012
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 'SY00.0G000 503AC011HED 6000 1650 0.72360 360000125G'S
 200.0G000 504AC011CST 6000 1650 0.72360 360000125G'SX3
 5.1G000 505AC011CST 2800 1650 0.72360 360000125G'SY00.
 0G000 506AC011CST 6000 1650 0.72360 360000125G'SZ00.0G
 000 507AC012HED 6000 1650 0.72360 360000125G'SX35.1G00
 D 508AC012HED 6000 1650 0.72360 360000125G'SY00.0G000
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 800 360000125LBS0 GOOD 536LCBANBA5 9999 1650999.9230
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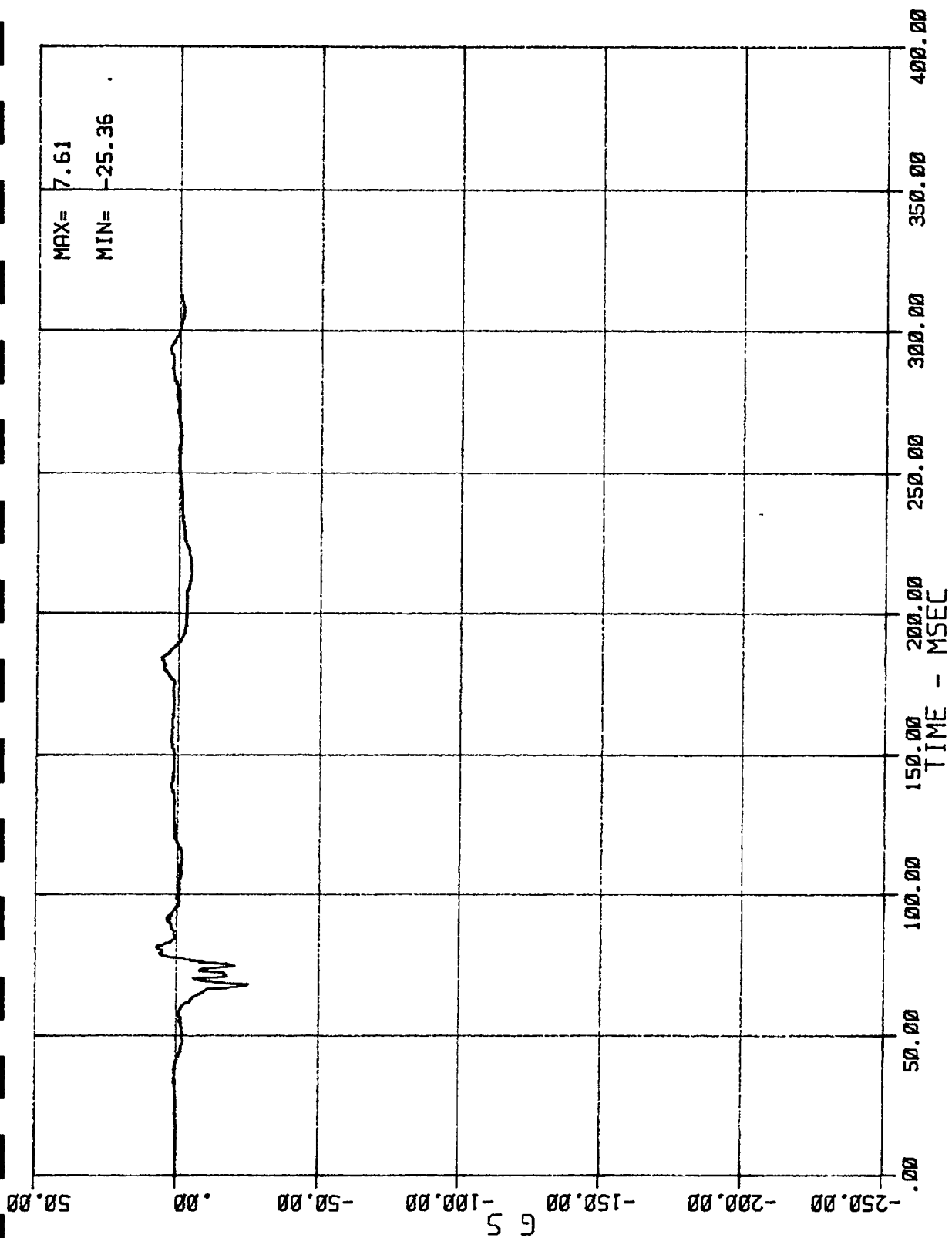
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GOOD	546LCBANBB6 9999 1650999.92300 360000125LBS0	G
000	547LCBANBB7 9999 1650999.92300 360000125LBS0	600
0	548LCBANBB8 9999 1650999.92300 360000125LBS0	GOOD
	549LCBANBB9 9999 1650999.92300 360000125LBS0	GOOD
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	554LCBANBC5 9999 1650999.92300 360000125LBS0	GOOD
	555LCBANBC6 9999 1650999.92300 360000125LBS0	GOOD
	556LCBANBC7 9999 1650999.92300 360000125LBS0	GOOD
	557LCBANBC8 9999 1650999.92300 360000125LBS0	GOOD
	558LCBANBC9 9999 1650999.92300 360000125LBS0	GOOD
	559LCBANBD1 9999 1650999.92300 360000125LBS0	GOOD
	560LCBANBD2 9999 1650999.92300 360000125LBS0	GOOD
	561LCBANBD3 9999 1650999.92300 360000125LBS0	GOOD
	62LCBANBD4 9999 1650999.92300 360000125LBS0	GOOD
	LCBANBD5 9999 1650999.92300 360000125LBS0	GOOD
	BANBD6 9999 1650999.92300 360000125LBS0	GOOD
	NBD7 9999 1650999.92300 360000125LBS0	GOOD
	D8 9999 1650999.92300 360000125LBS0	GOOD
	9999 1650999.92300 360000125LBS0	GOOD

5
563
564LC
565LCBA
566LCBANB
567LCBANBD9



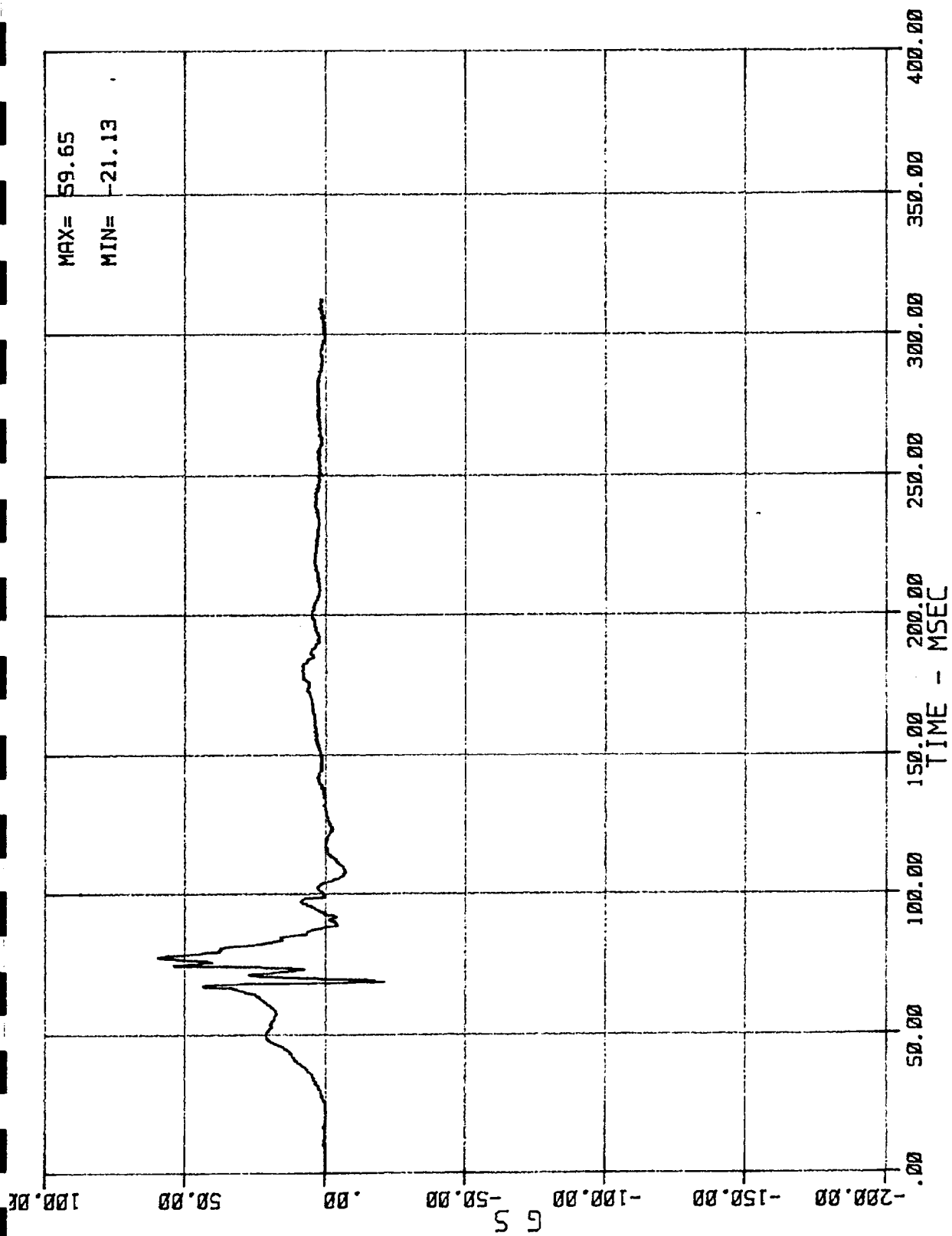
01 AC 01 1 HED X (DRIVER HEAD ACCEL. -- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



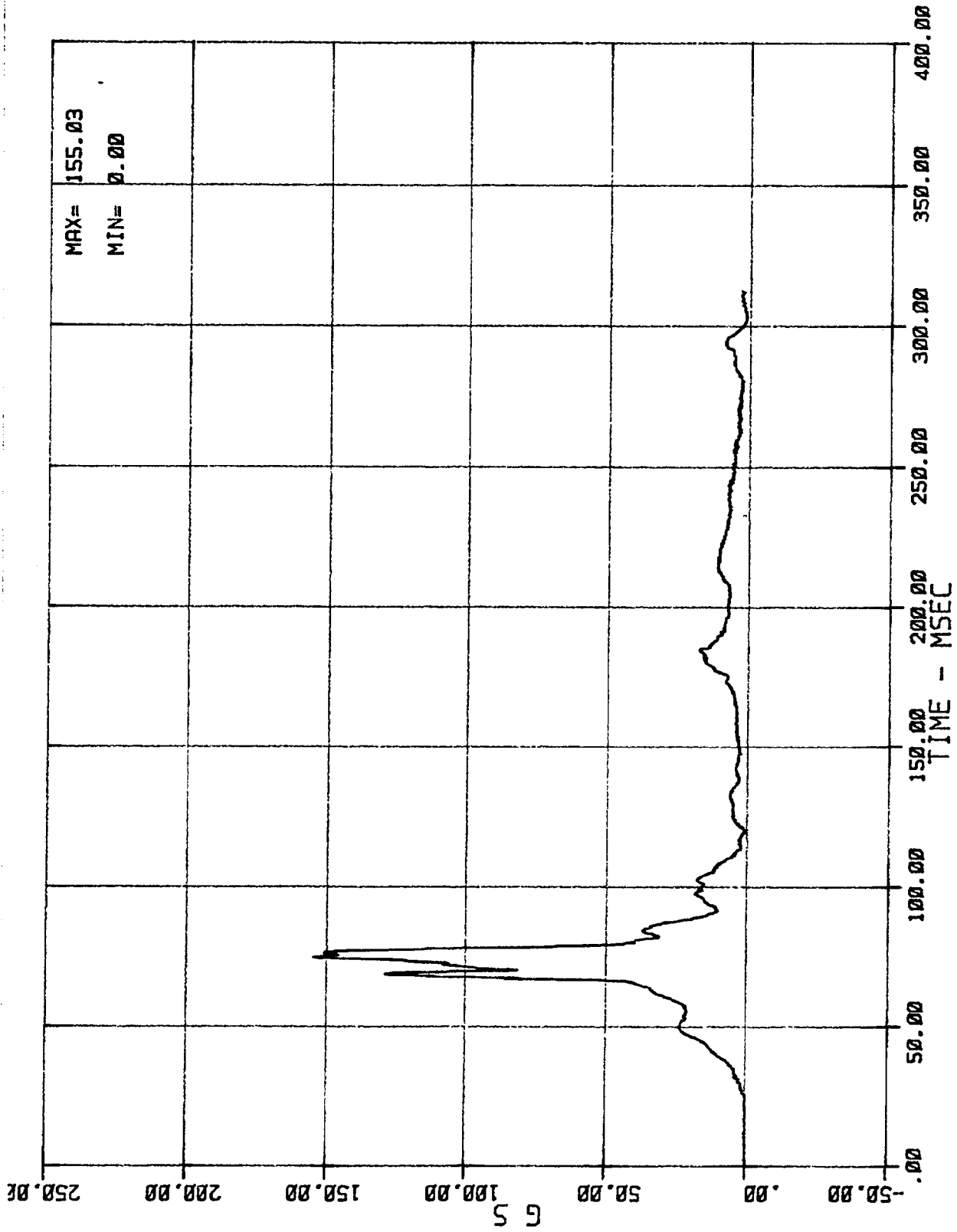
02 AC 01 1 HED Y (DRIVER HEAD ACCEL. -- Y AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



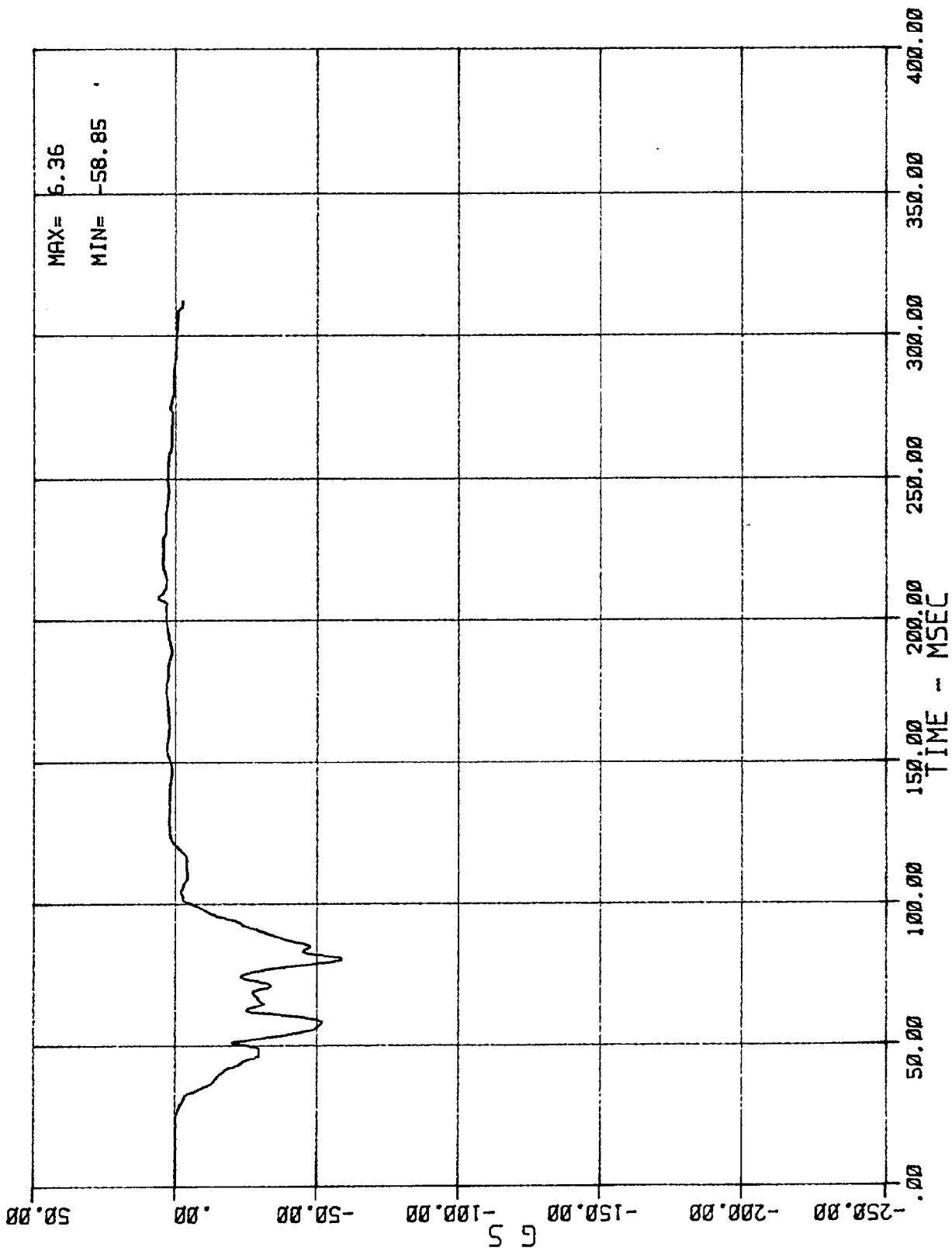
03 AC 01 1 HED Z (DRIVER HEAD ACCEL. -- Z AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



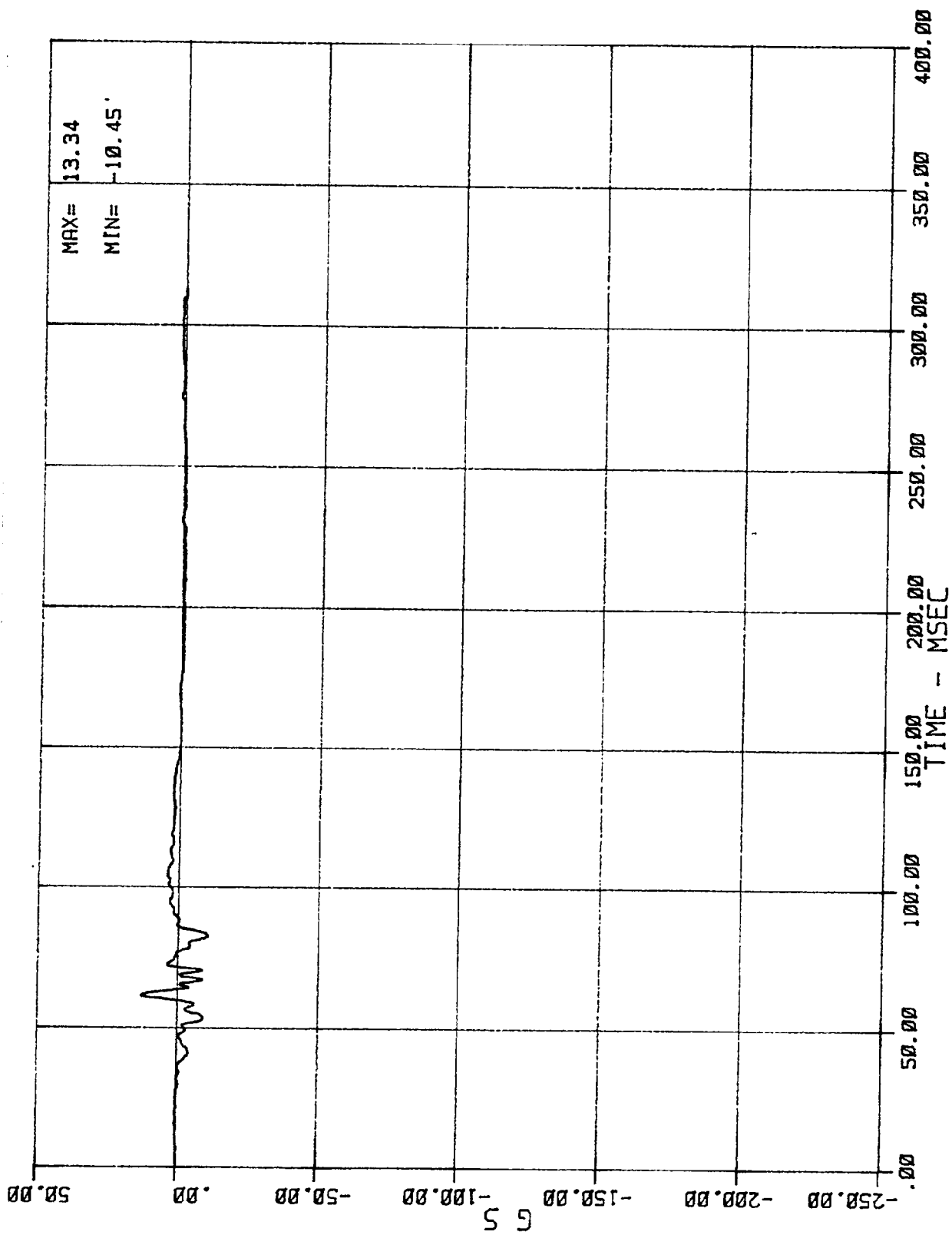
DRIVER HEAD RESULTANT ACCELERATION
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



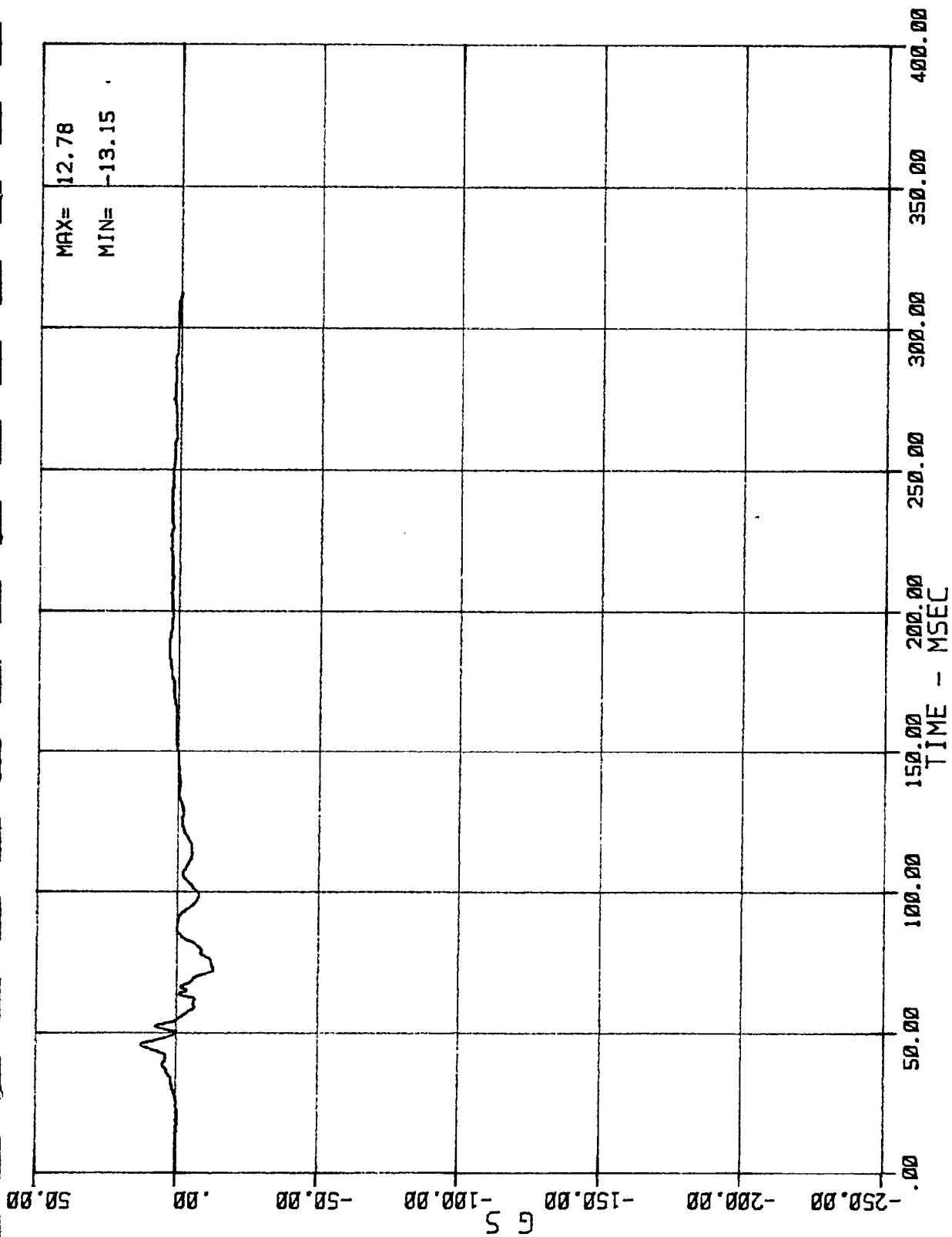
04 AC 01 1 CST X (DRIVER CHEST ACCEL. -- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



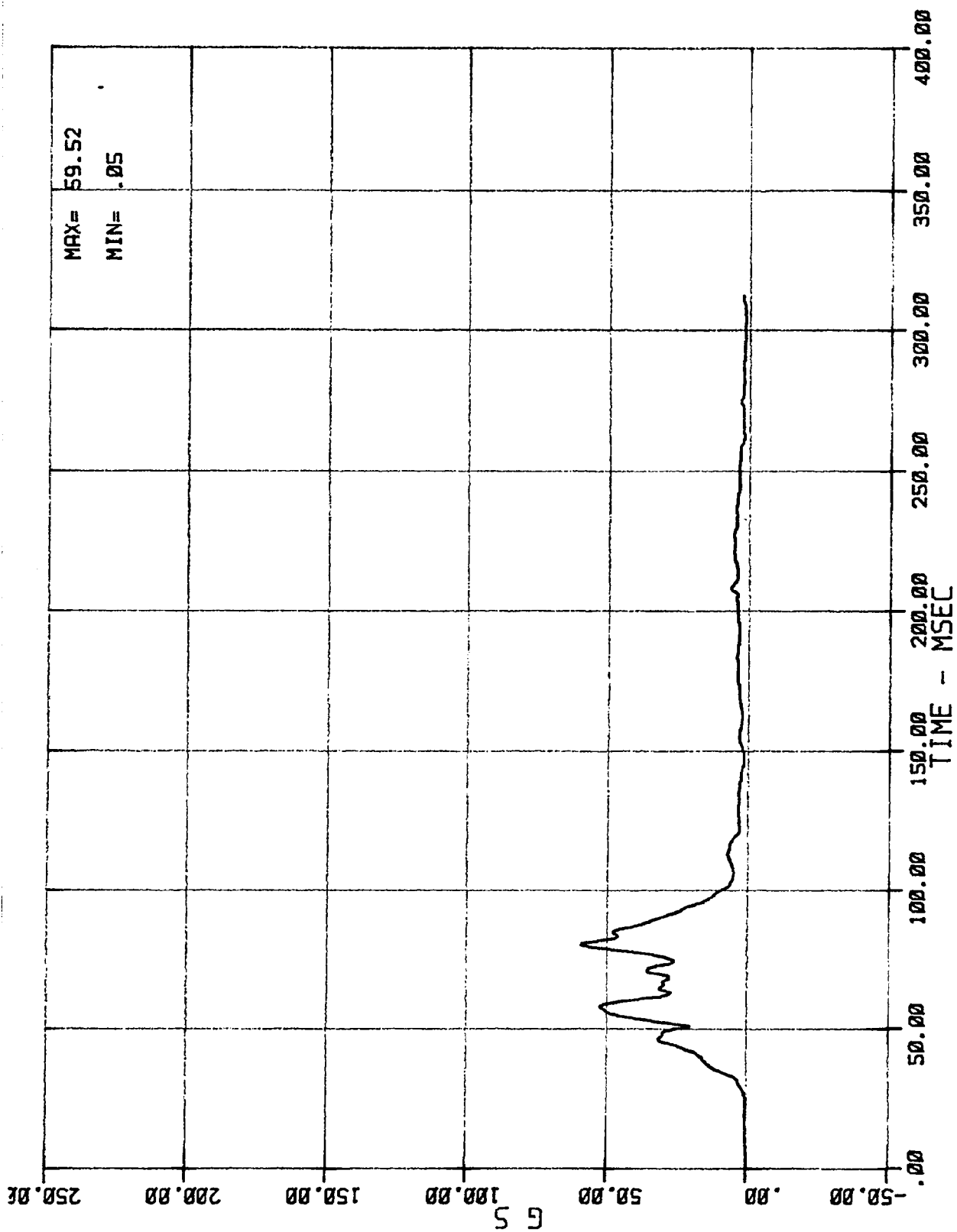
05 AC 01 1 CST Y (DRIVER CHEST ACCEL. -- Y AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



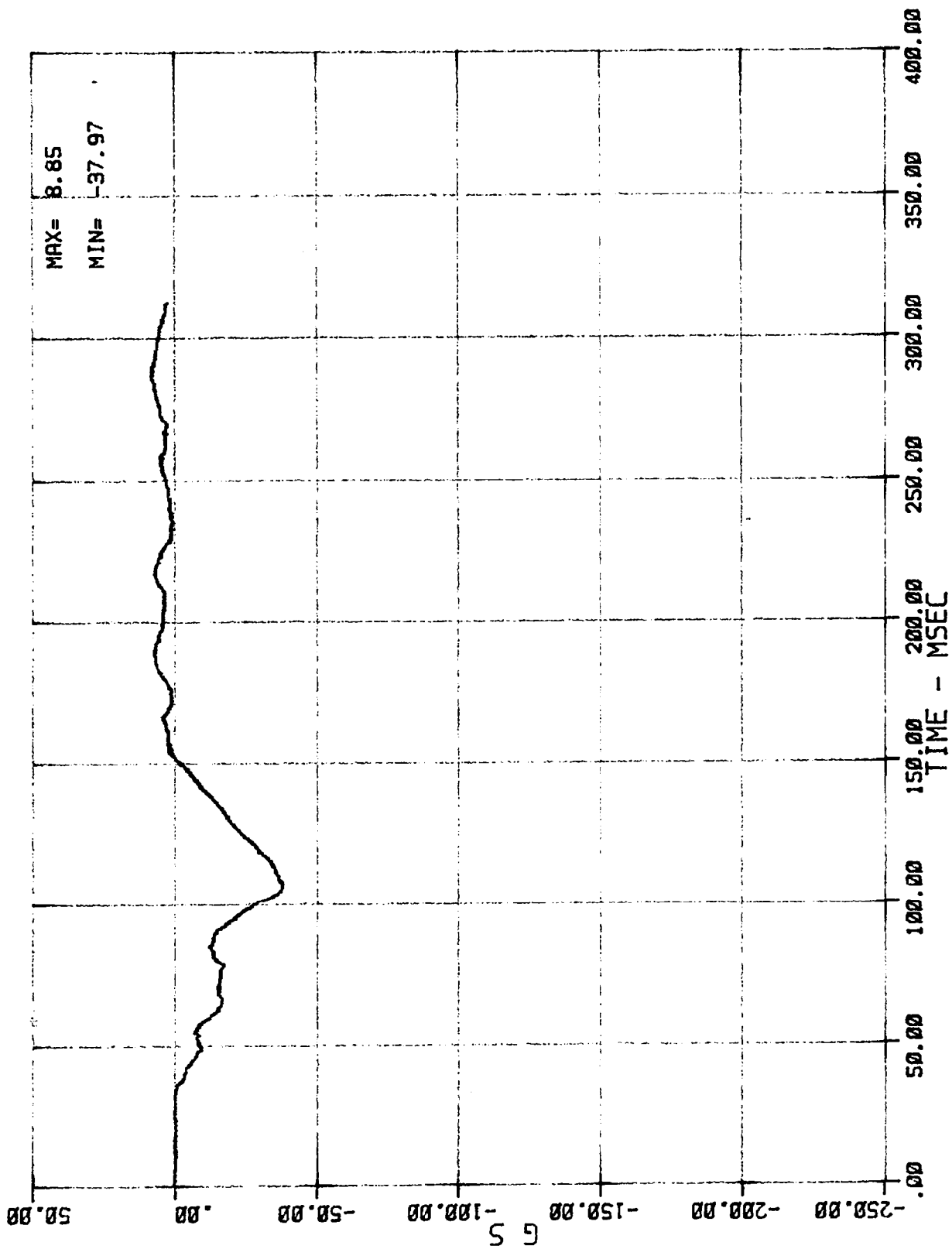
06 AC 01 1 CST Z (DRIVER CHEST ACCEL. -- Z AXIS)
HSE N26056 1986 SUBARU GL SEDAN

06/12/86



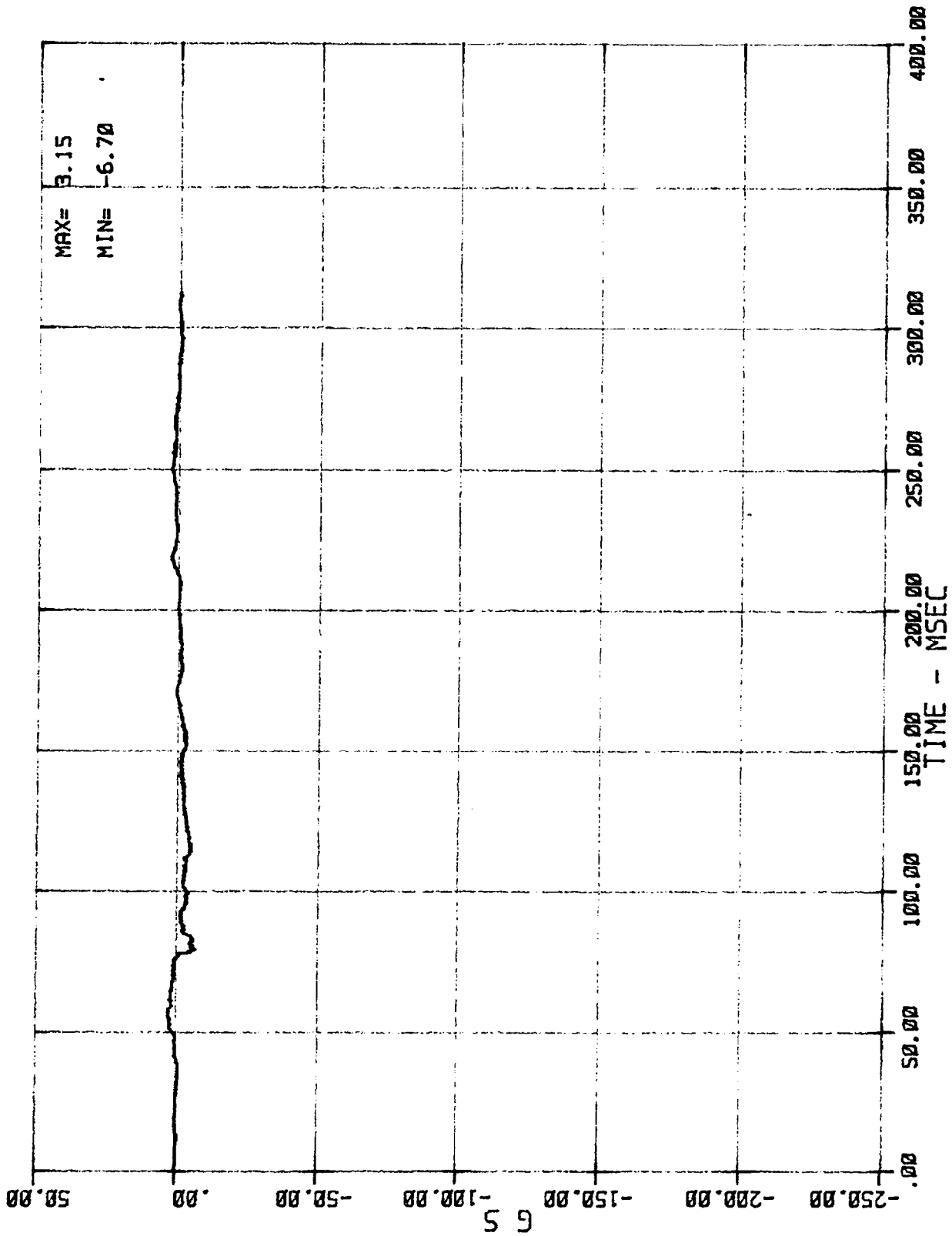
DRIVER CHEST RESULTANT ACCELERATION
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



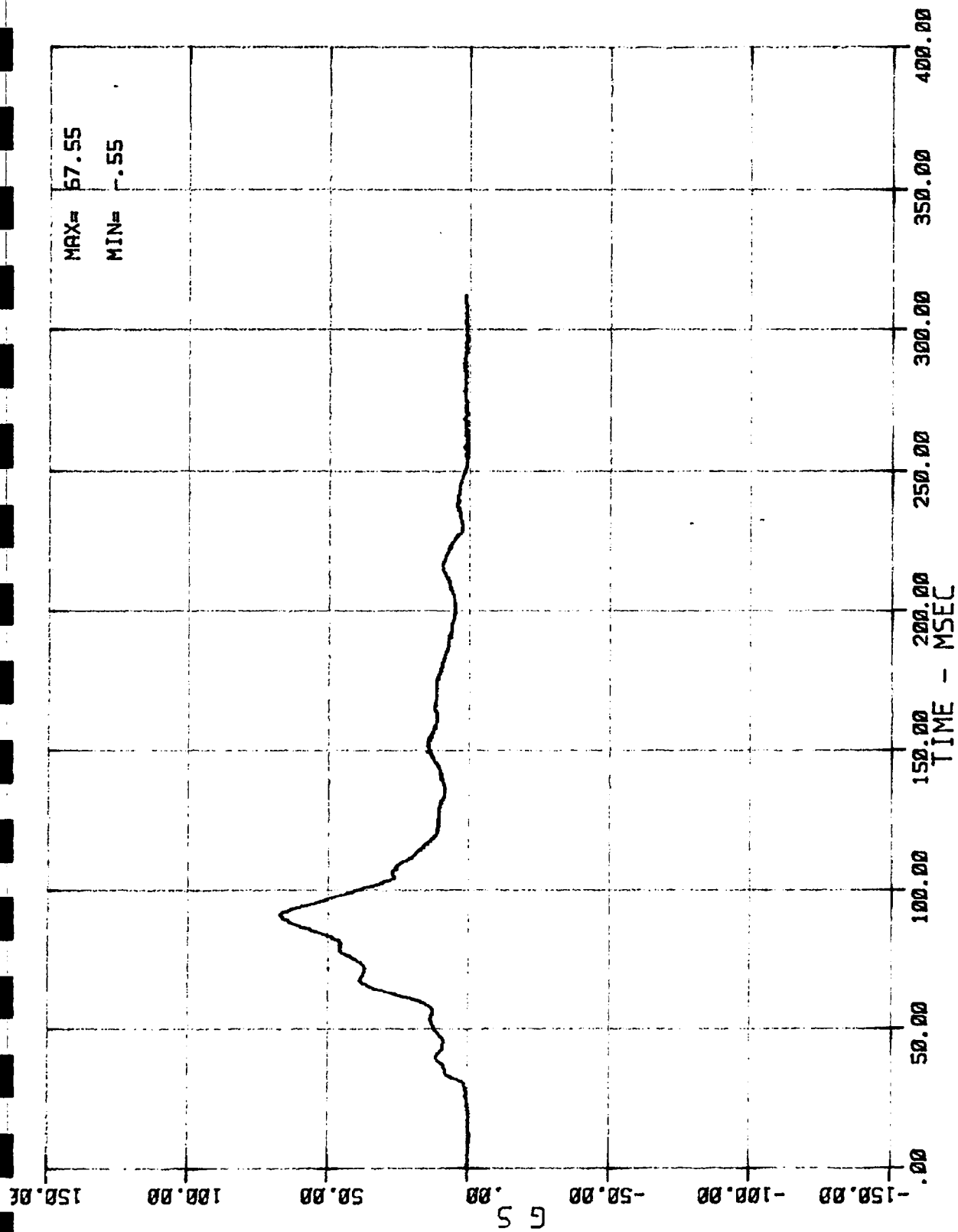
07 01 2 HED X (PASSENGER HEAD ACCEL. -- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

05/12/86



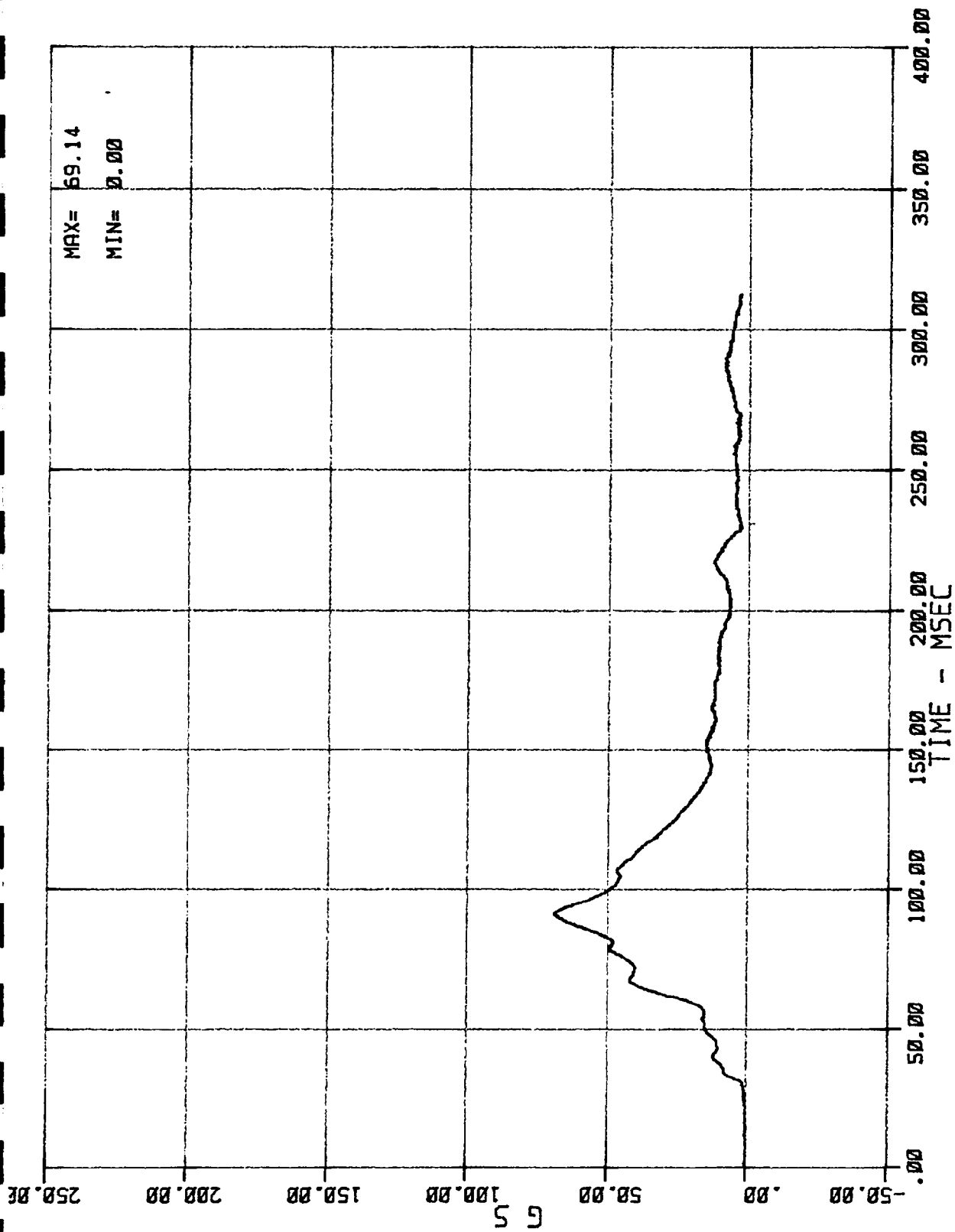
08 AC 01 2 HED Y (PASSENGER HEAD ACCEL. -- Y AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



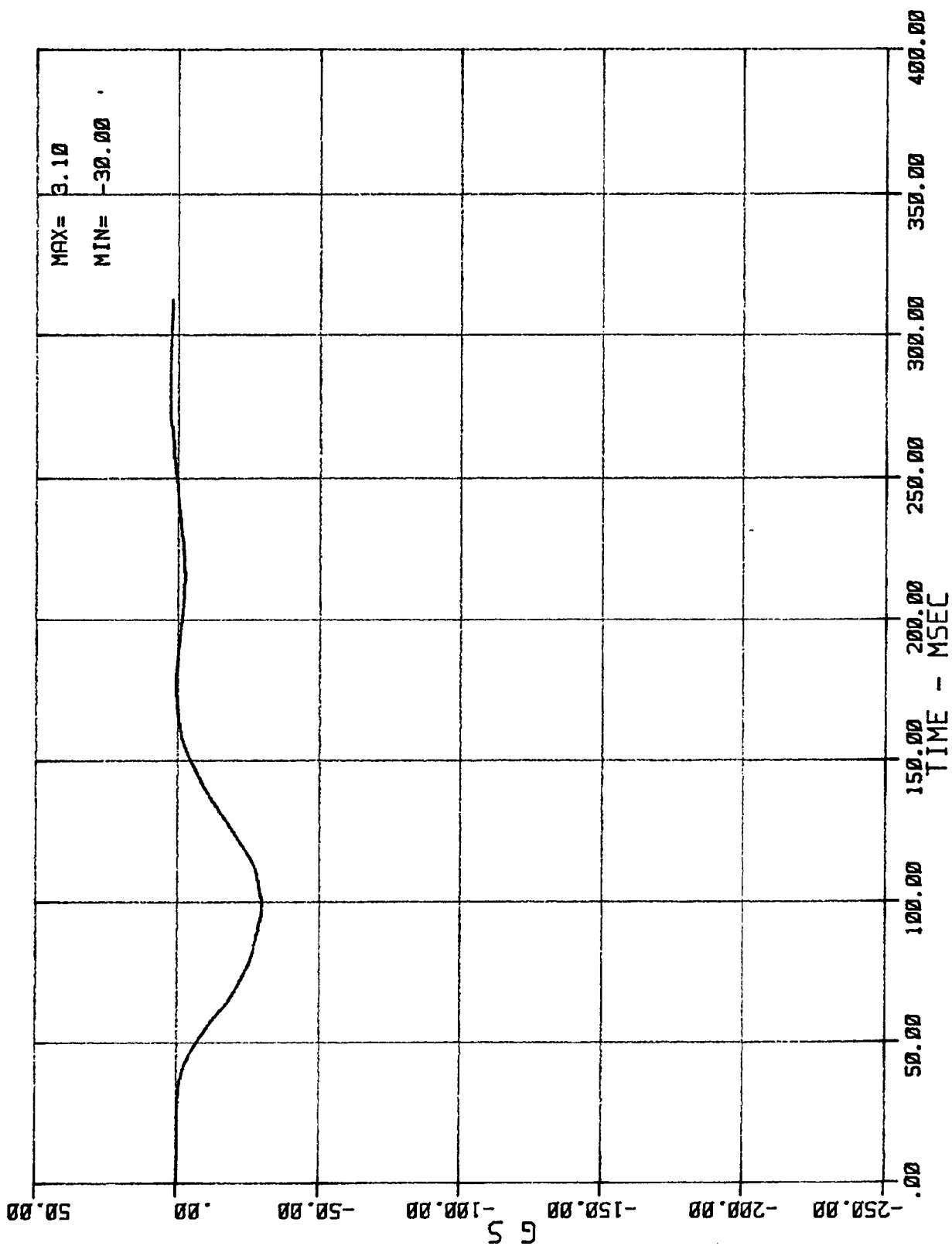
09 AC 01 2 HED Z (PASSENGER HEAD ACCEL. -- Z AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



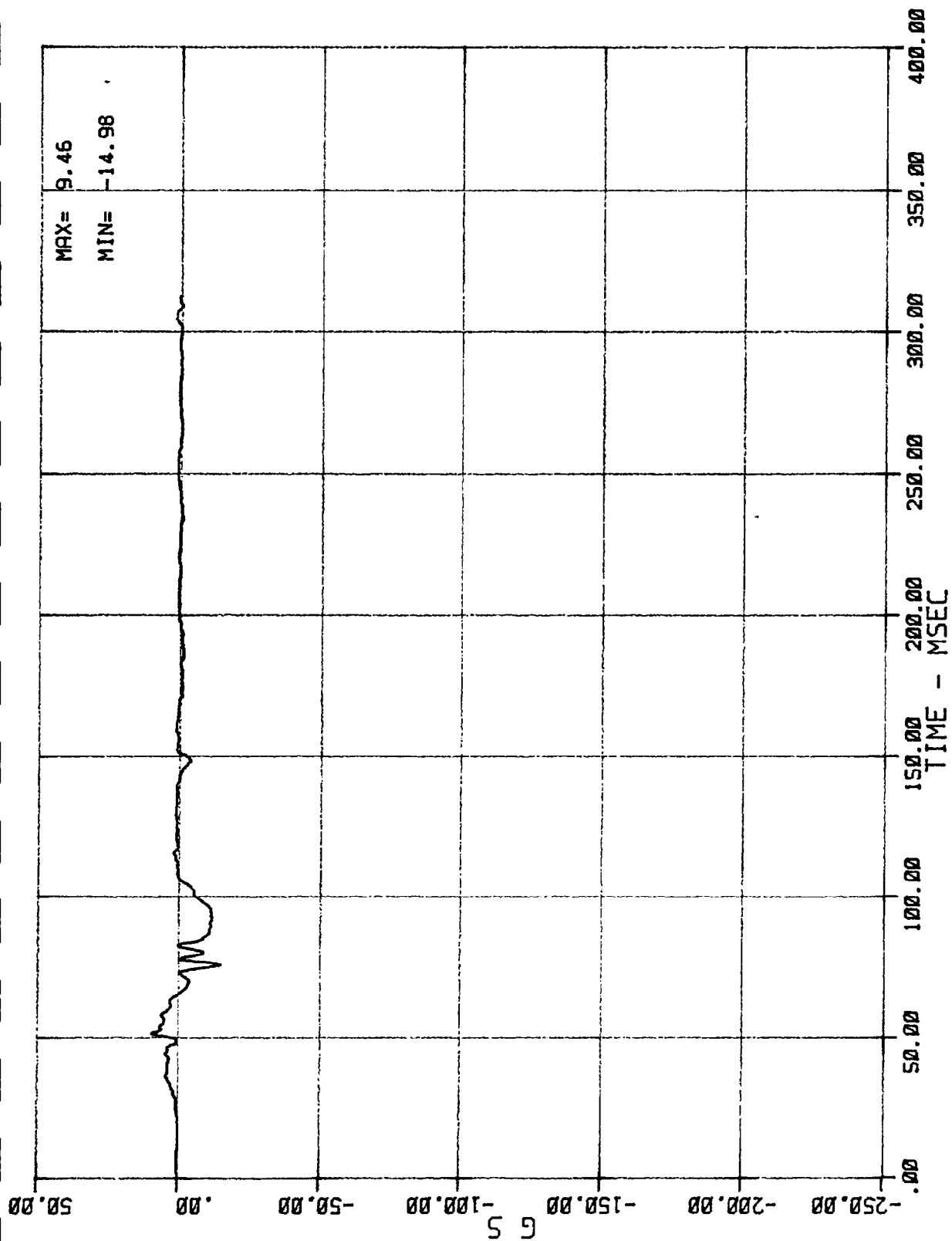
PASSENGER HEAD RESULTANT ACCELERATION
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



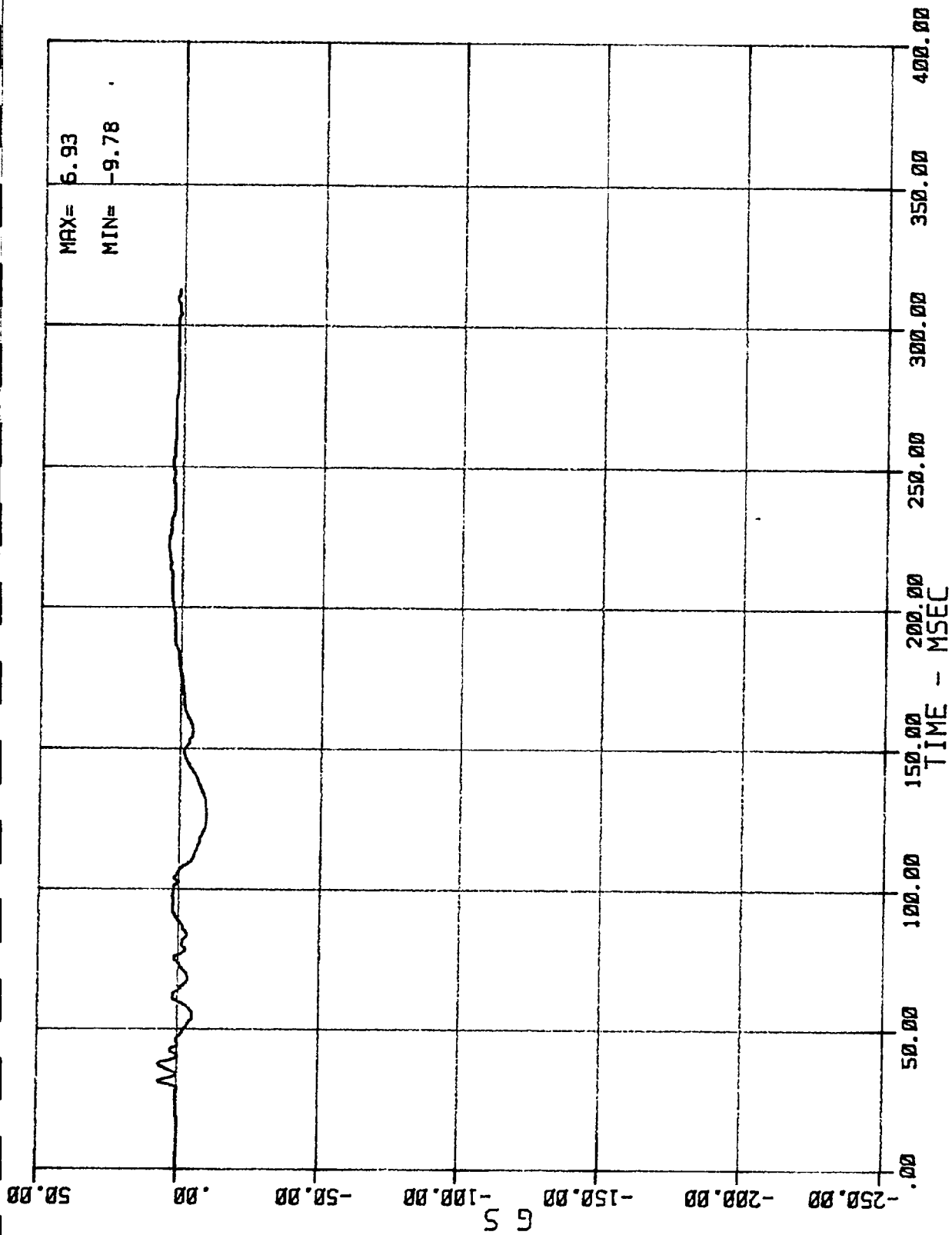
10 AC 01 2 CST X (PASSENGER CHEST ACCEL. --- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



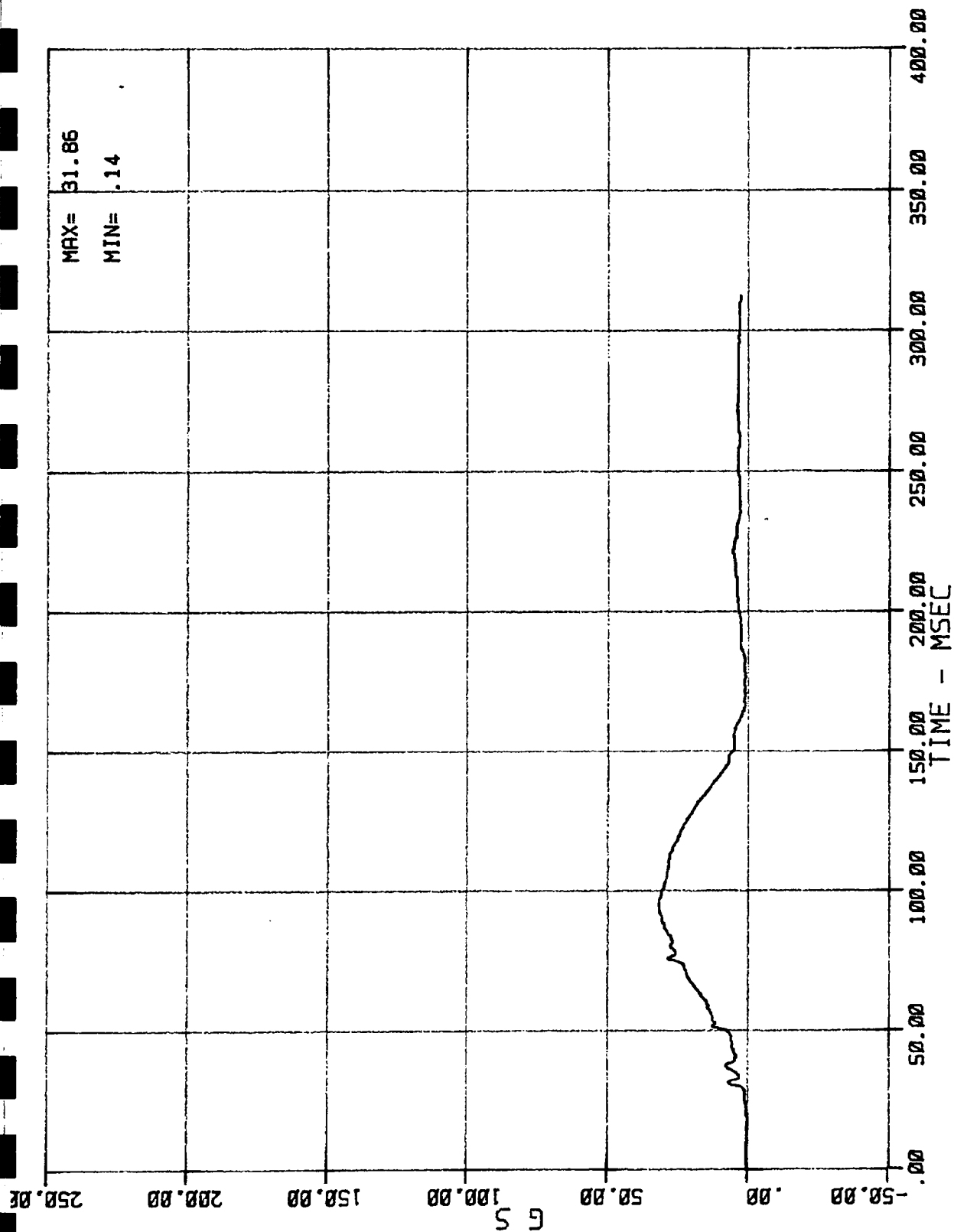
11 AC 01 2 CST Y (PASSENGER CHEST ACCEL. -- Y AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



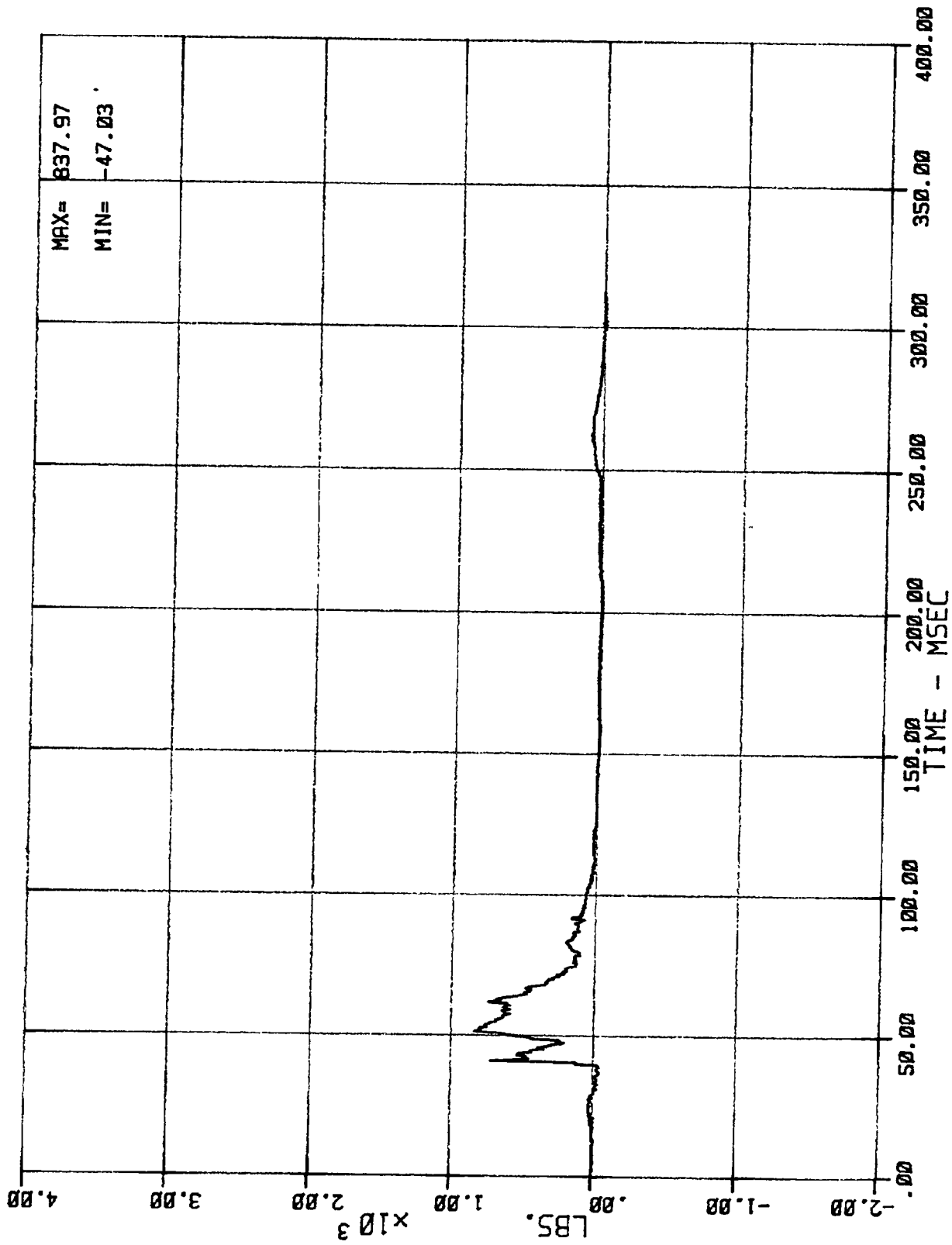
12 AC 01 2 CST Z (PASSENGER CHEST ACCEL. --- Z AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



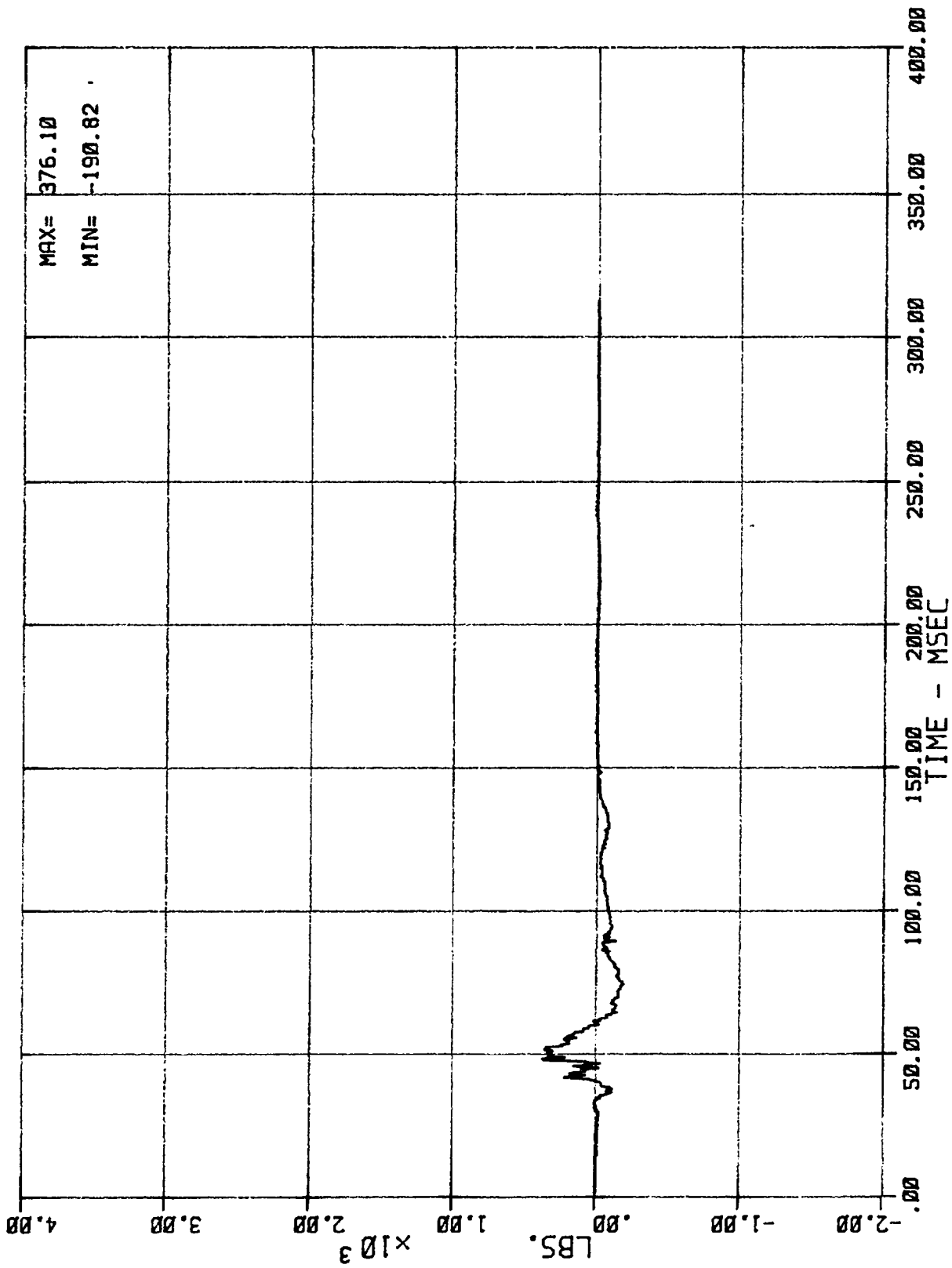
PASSENGER CHEST RESULTANT ACCELERATION
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



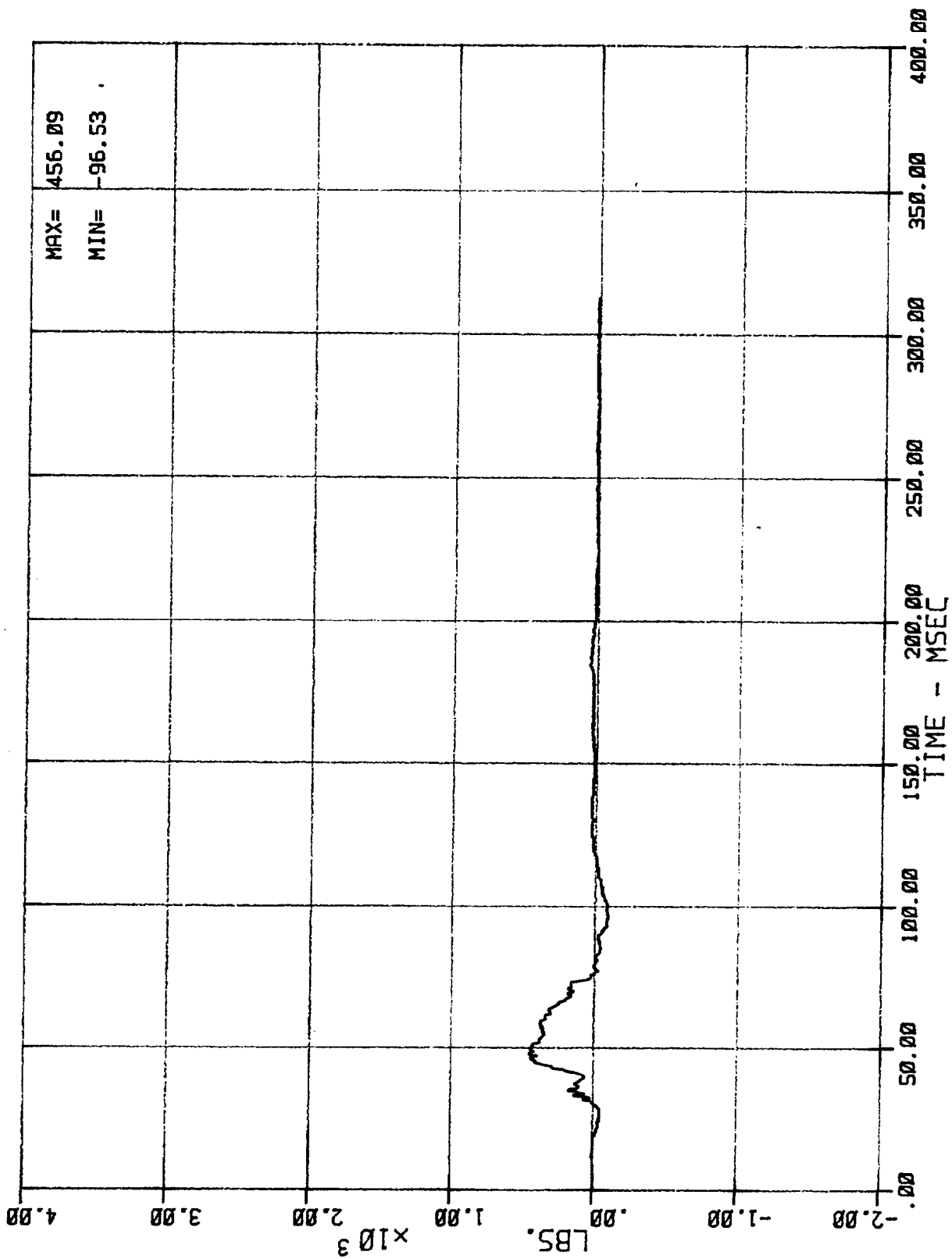
13 LC 01 1 LFM (DRIVER LEFT FEMUR FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



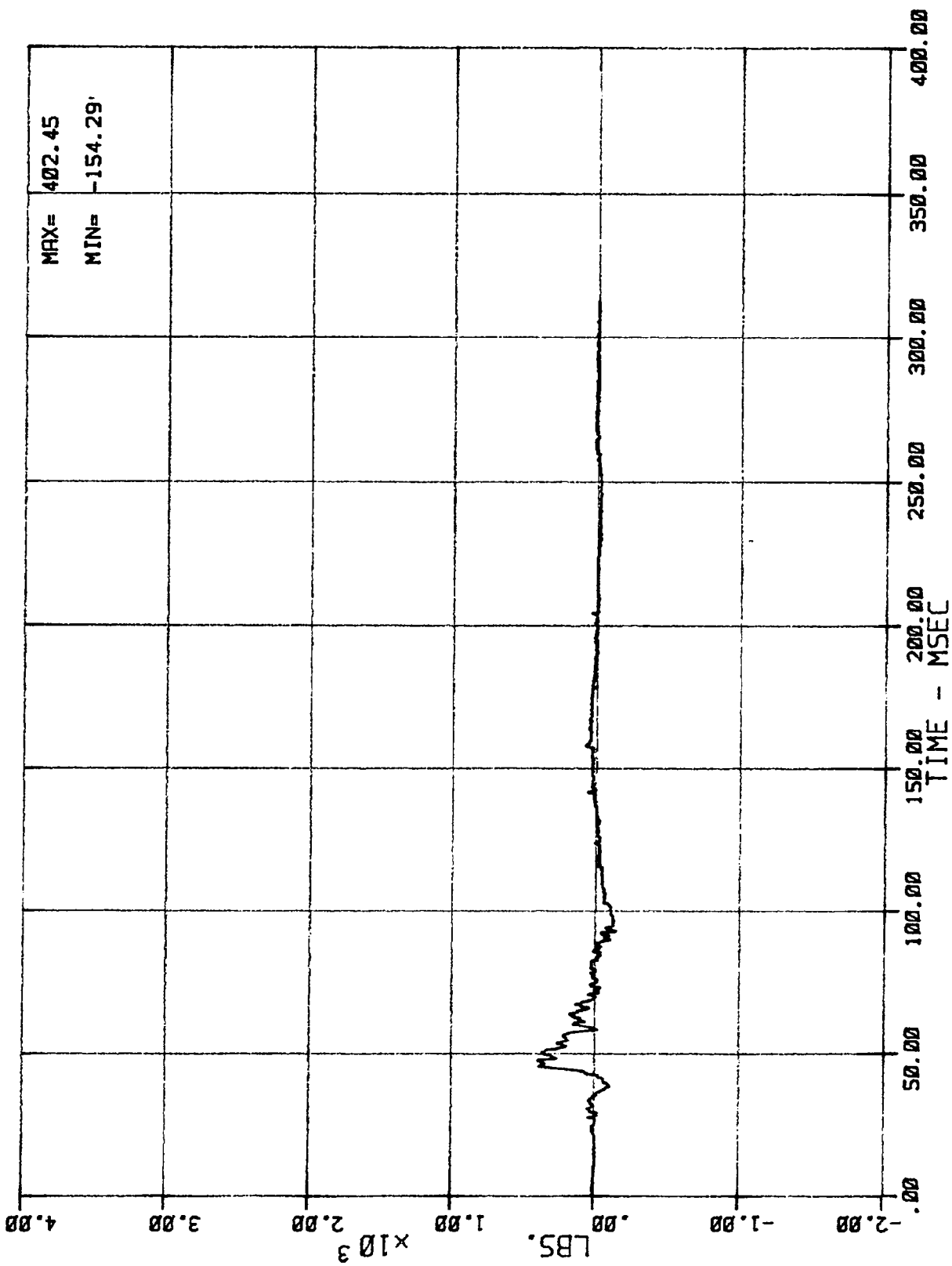
14 LC 01 1 RFM (DRIVER RIGHT FEMUR FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



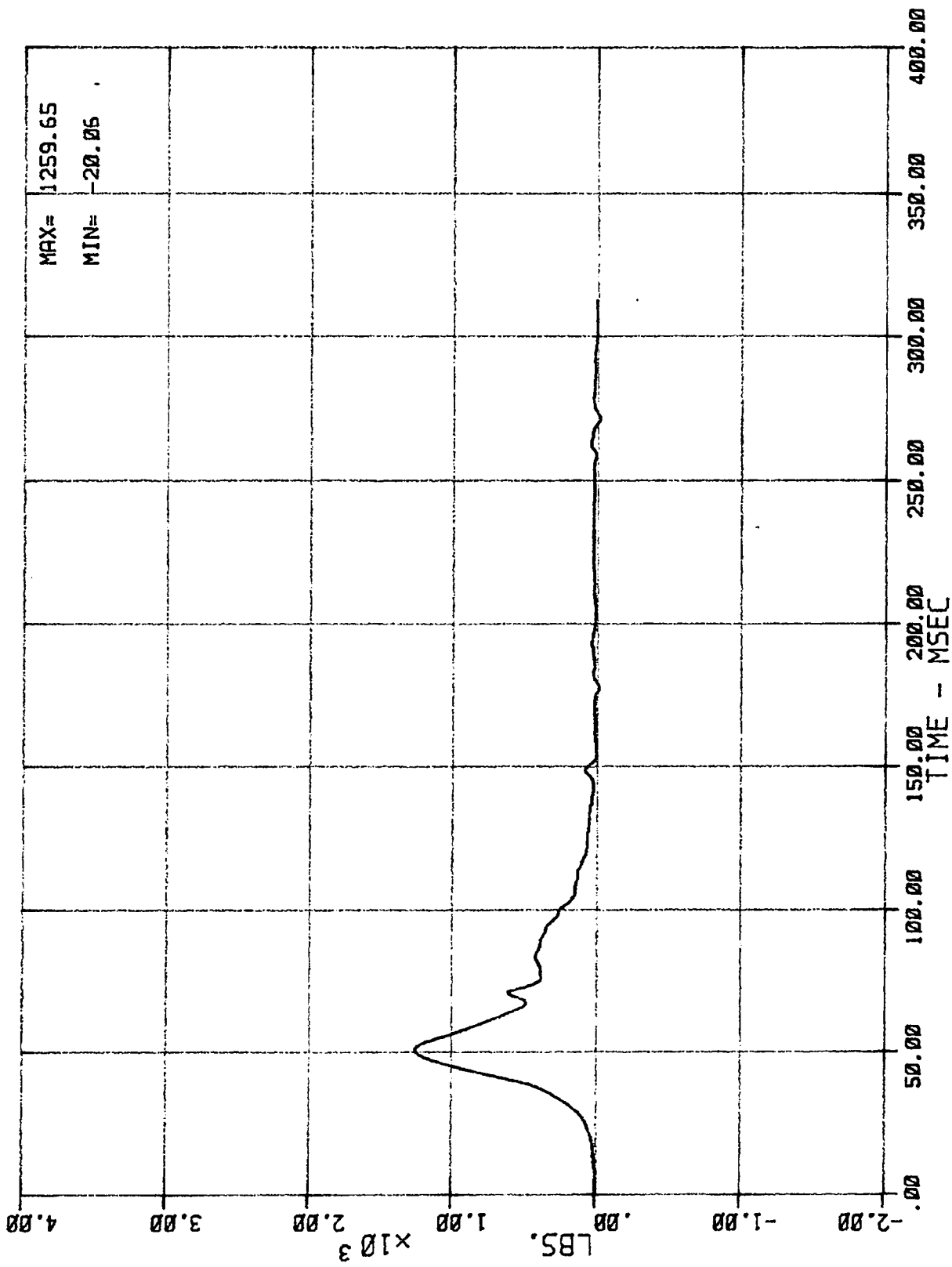
15 LC 01 2 LFM (PASSENGER LEFT FEMUR FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86

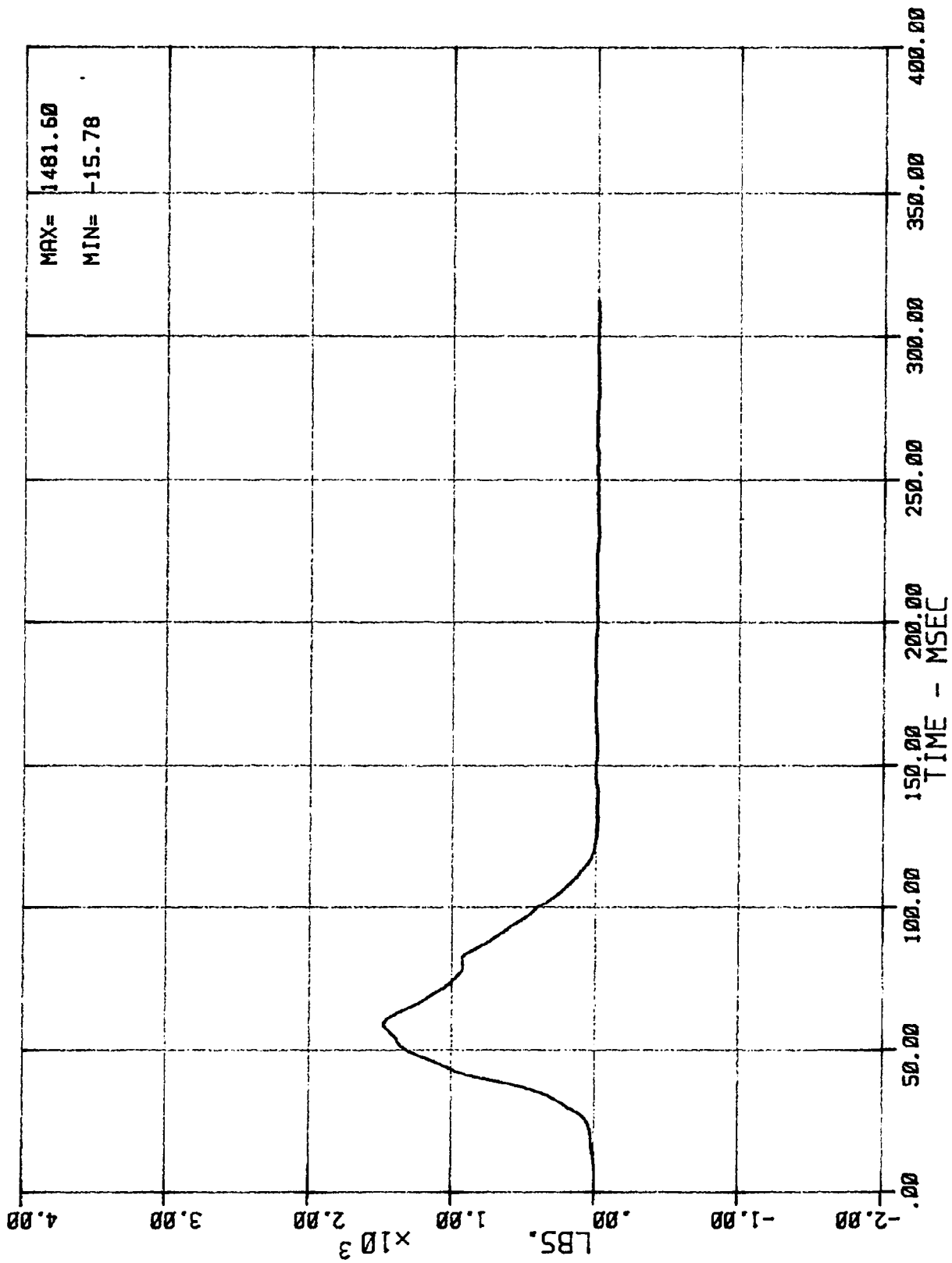


16 LC 01 2 RFM (PASSENGER RIGHT FEMUR FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86

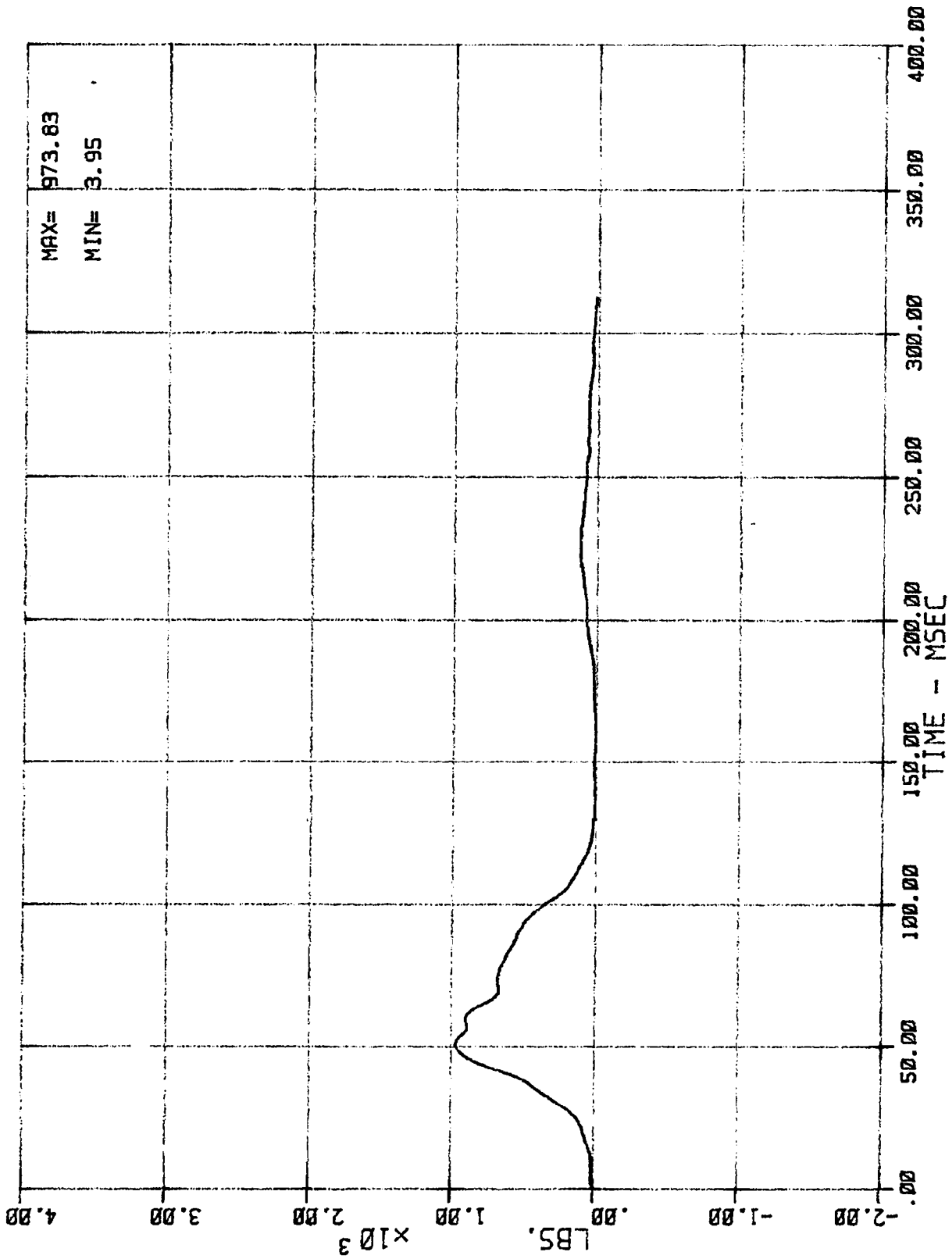


17 LC 01 1 LBO (DRIVER LAP BELT FORCE)
MSE N26056 1986 SUBARU GL SEDAN
06/12/86



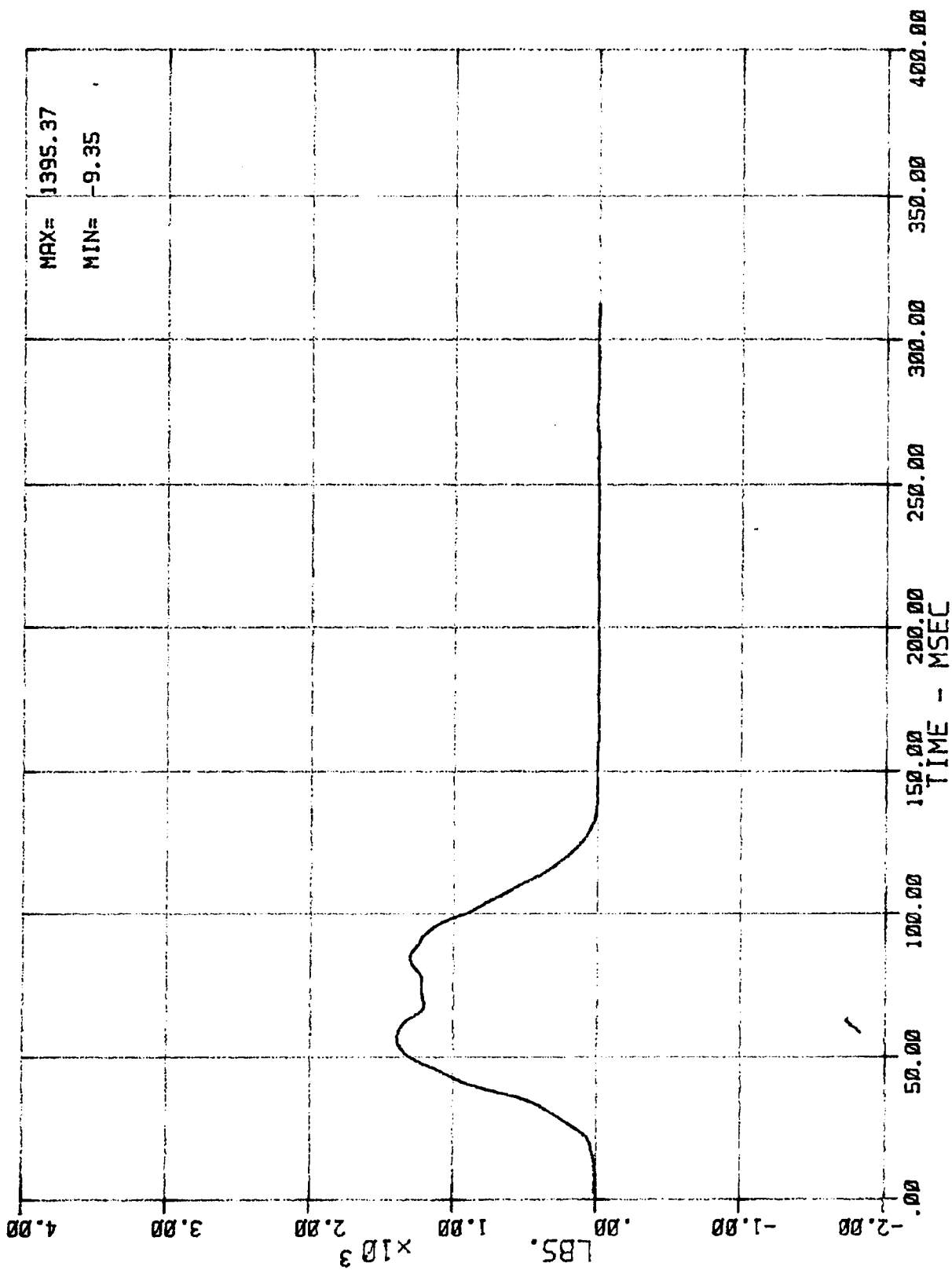
18 LC 01 1 SHB (DRIVER SHOULDER BELT FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



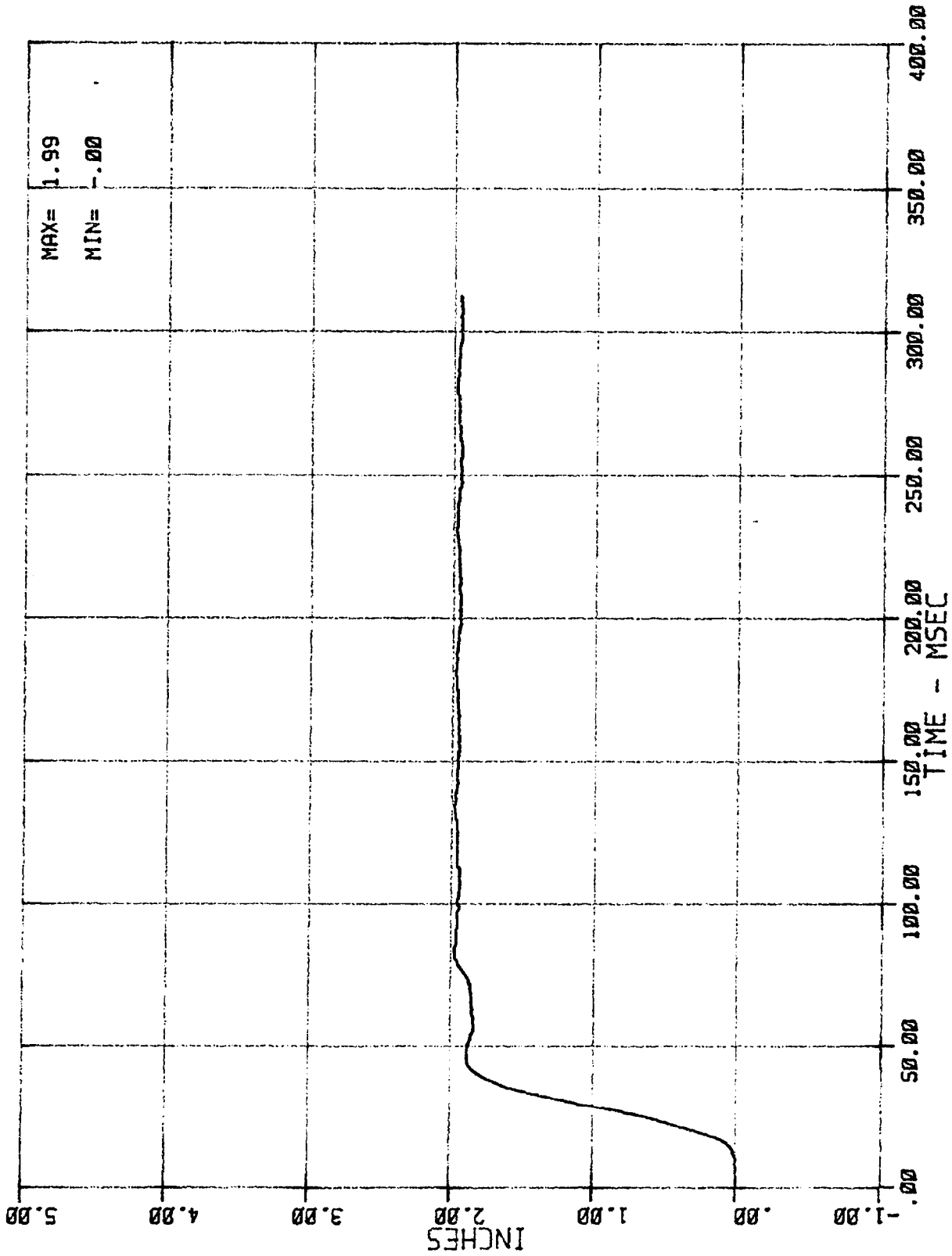
19 LC 01 2 LBO (PASSENGER LAP BELT FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



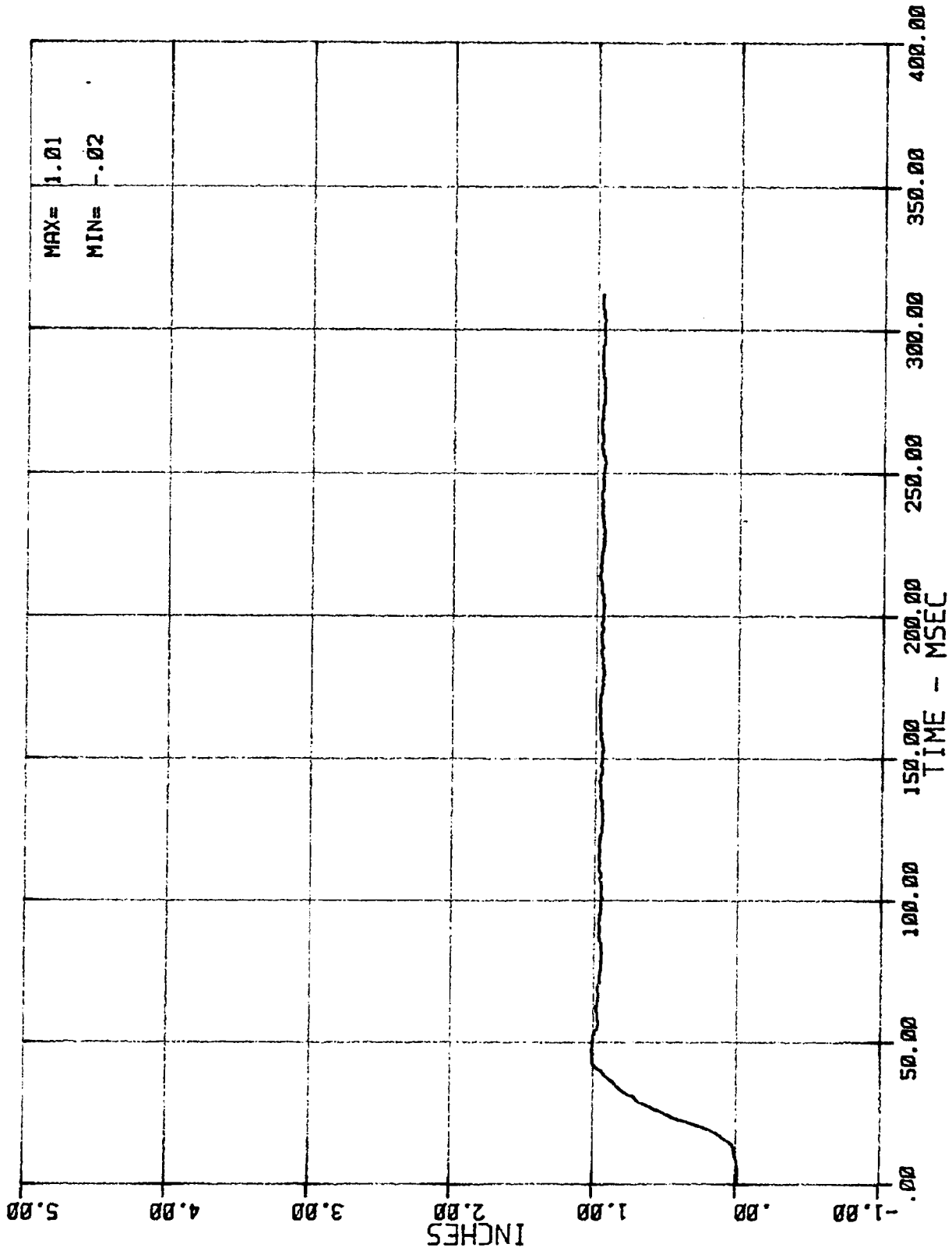
20 LC 01 2 SHB (PASSENGER SHOULDER BELT FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



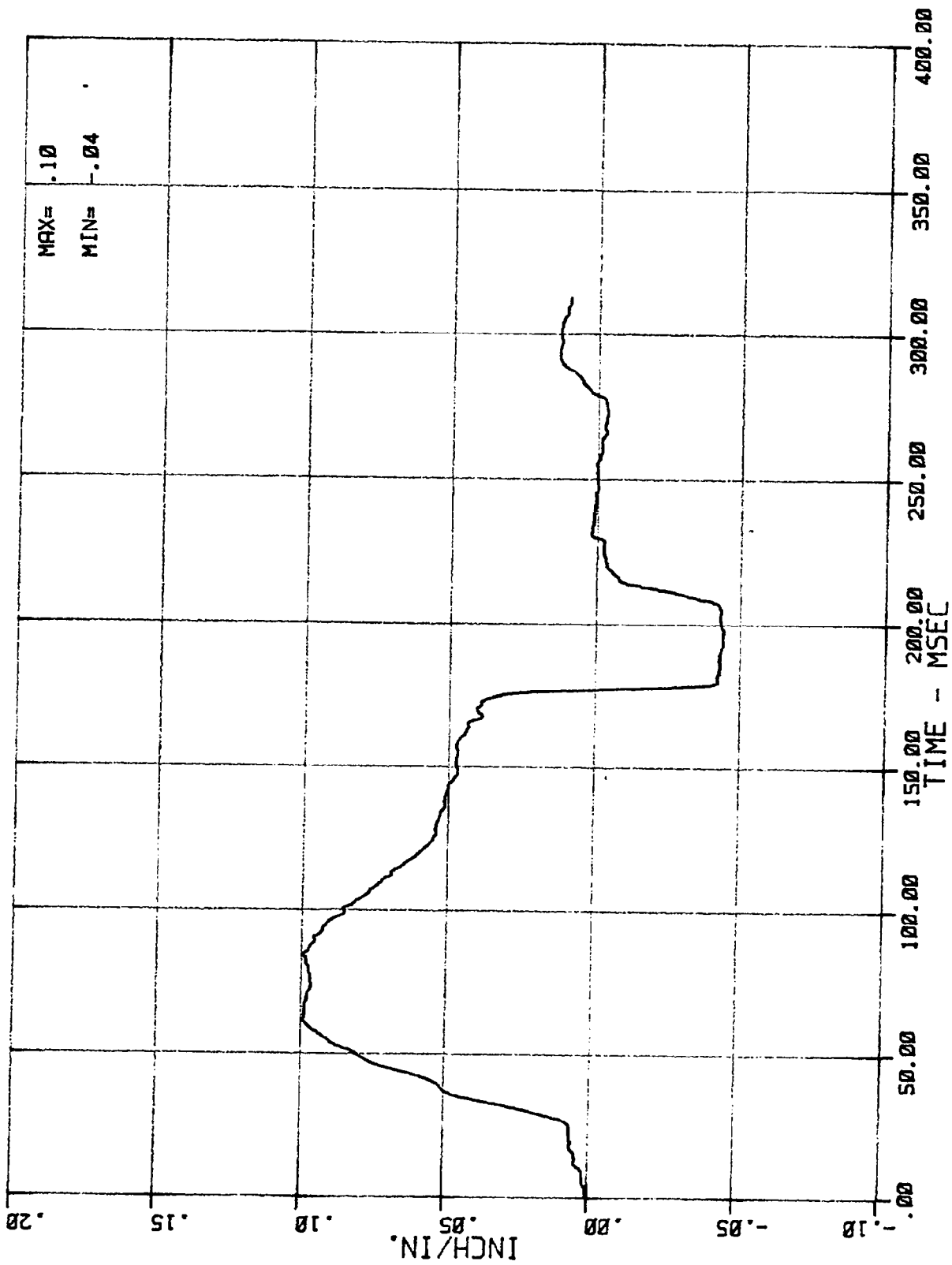
21 DT 01 1 SHB (DRIVER SHOULDER BELT PULLOUT)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



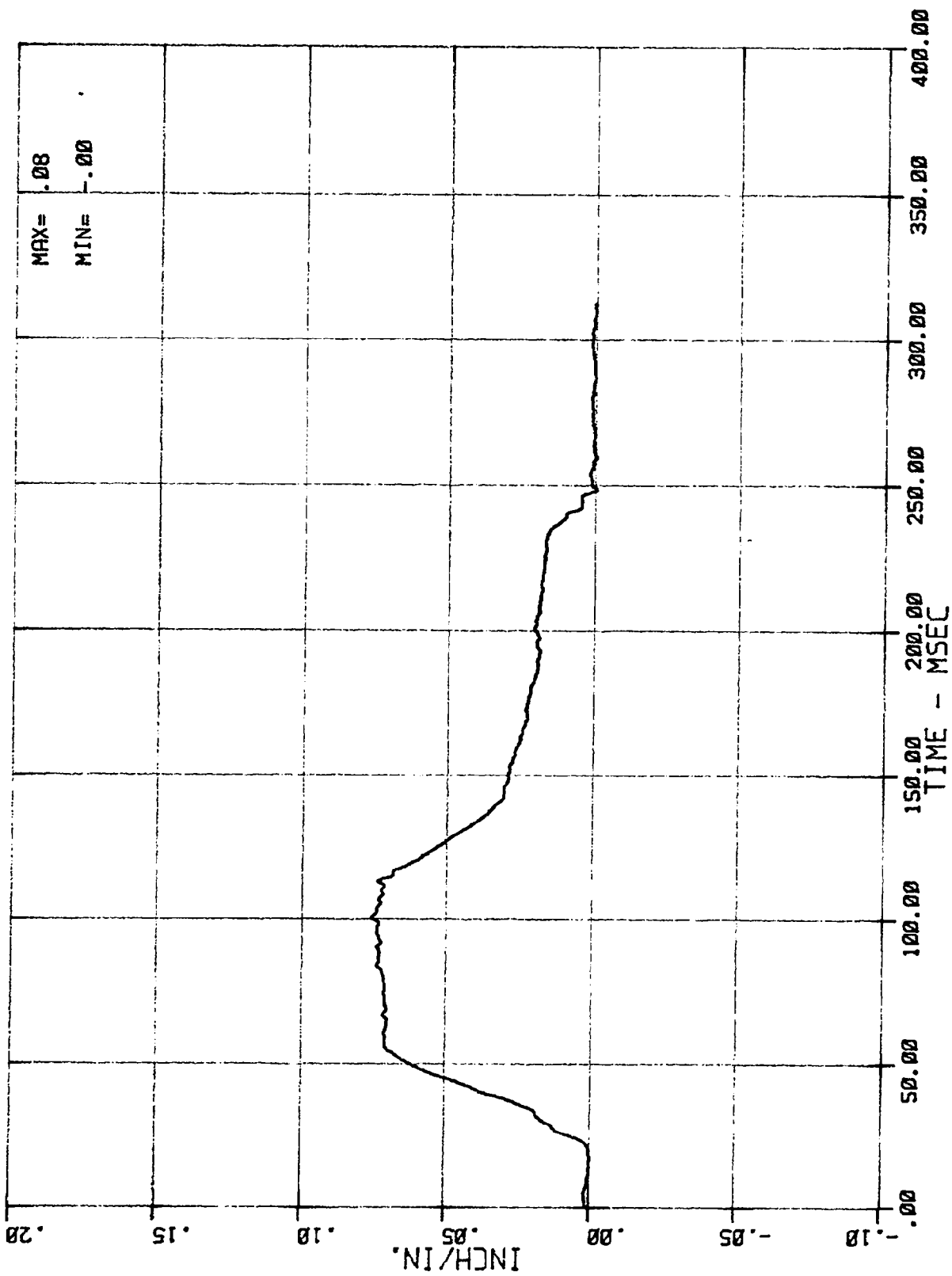
22 DT 01 2 SHB (PASSENGER SHOULDER BELT PULLOUT)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



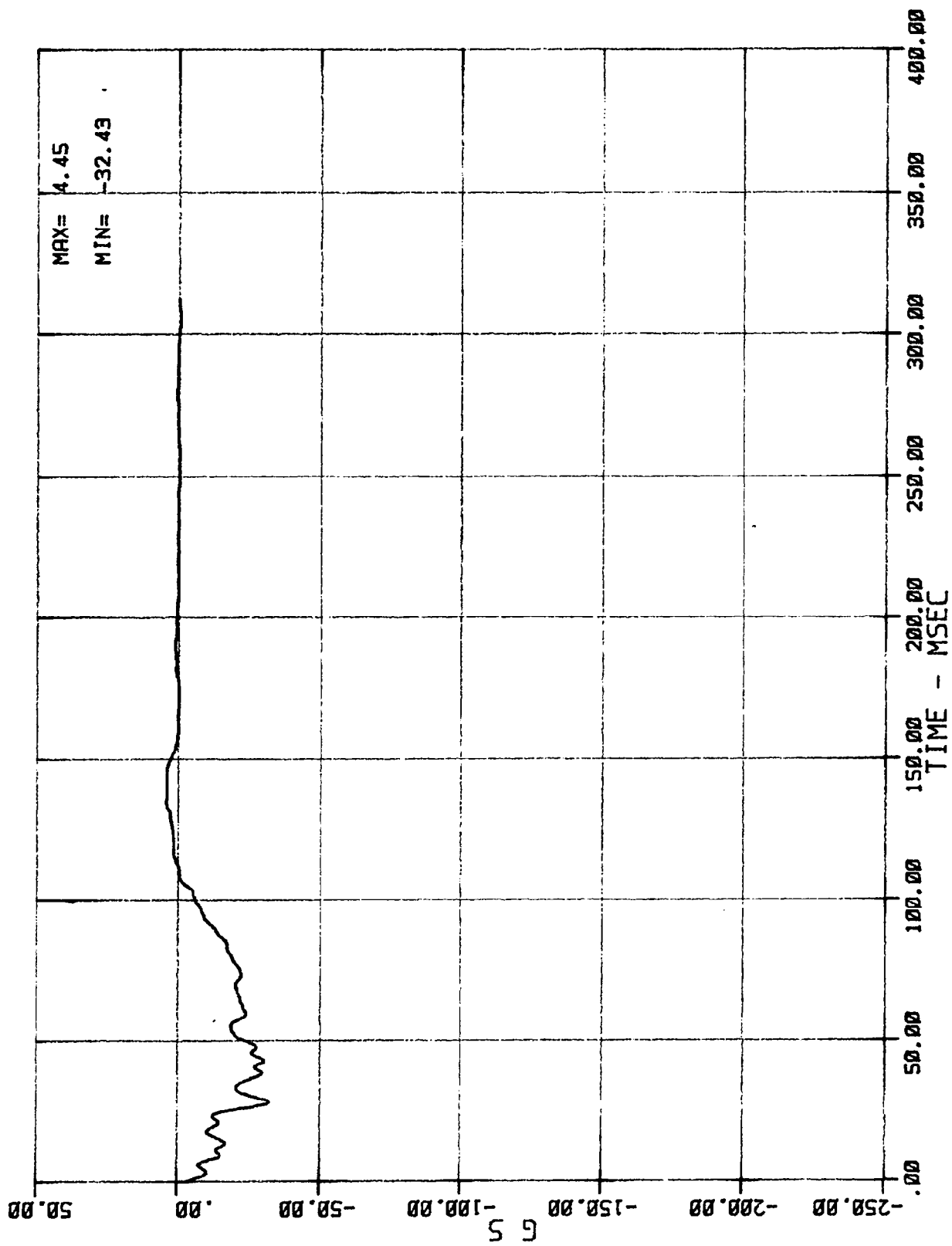
23 DT 01 1 SHB (DRIVER SHOULDER BELT STRETCH)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



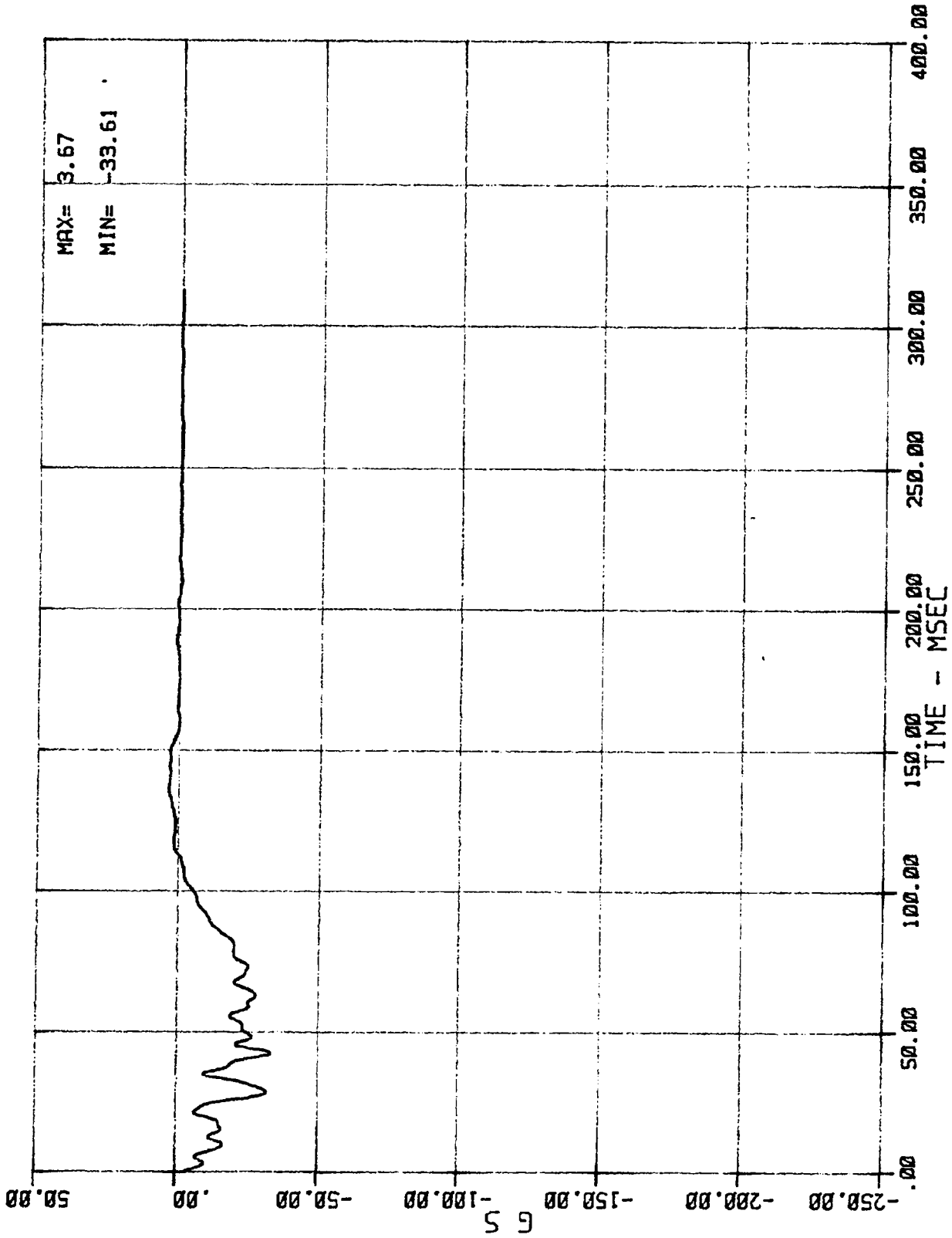
24 DT 01 2 SHB (PASSENGER SHOULDER BELT STRETCH)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



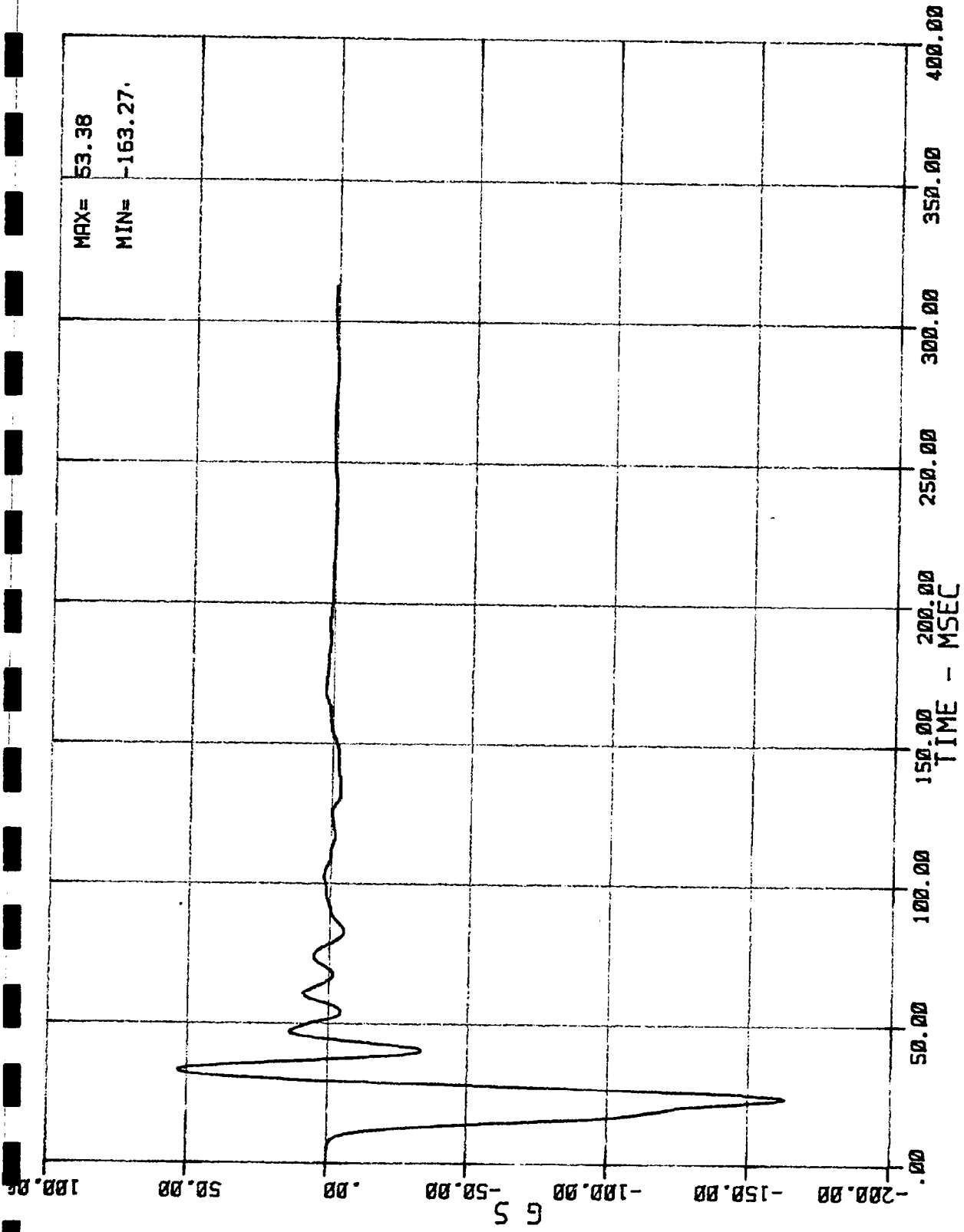
25 AC 01 N LRF (LEFT REAR FLOOR ACCEL. --- X AXIS)
NSE N26056 1986 SUBARU GL SEDAN

06/12/86



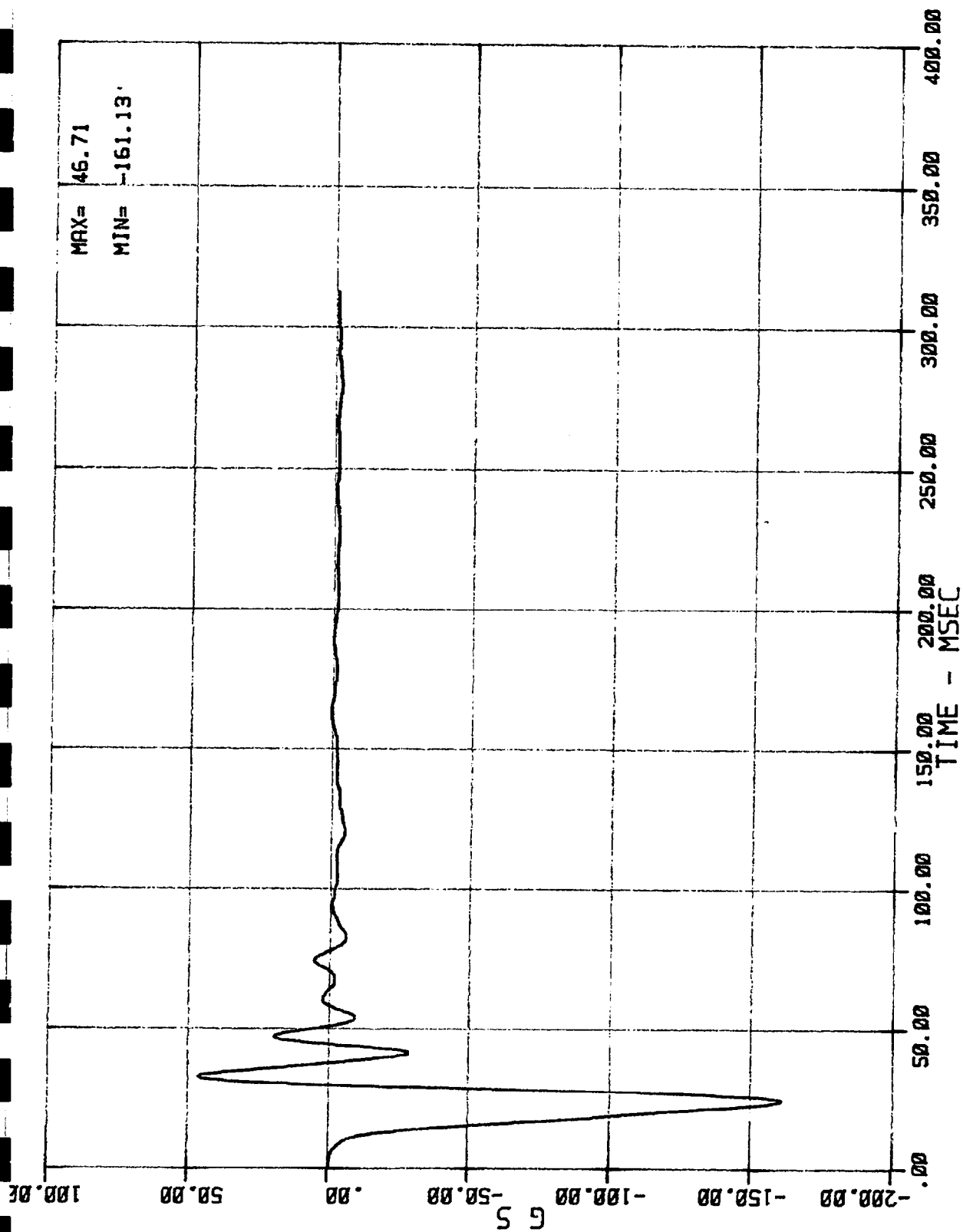
26 AC 01 N RRF X (RIGHT REAR FLOOR ACCEL. -- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



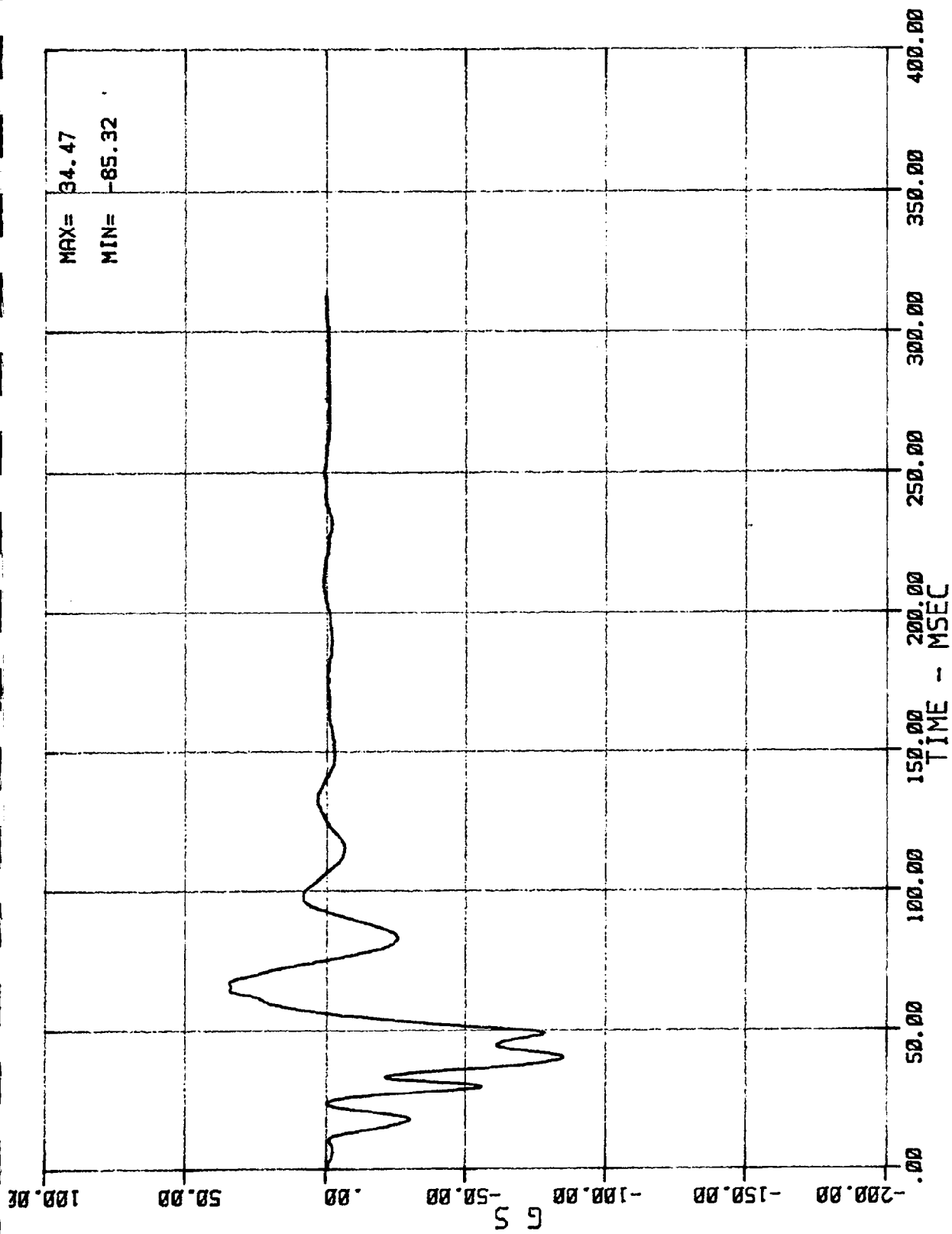
27 AC 01 N ENG X (TOP OF ENGINE ACCEL. -- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

05/12/86



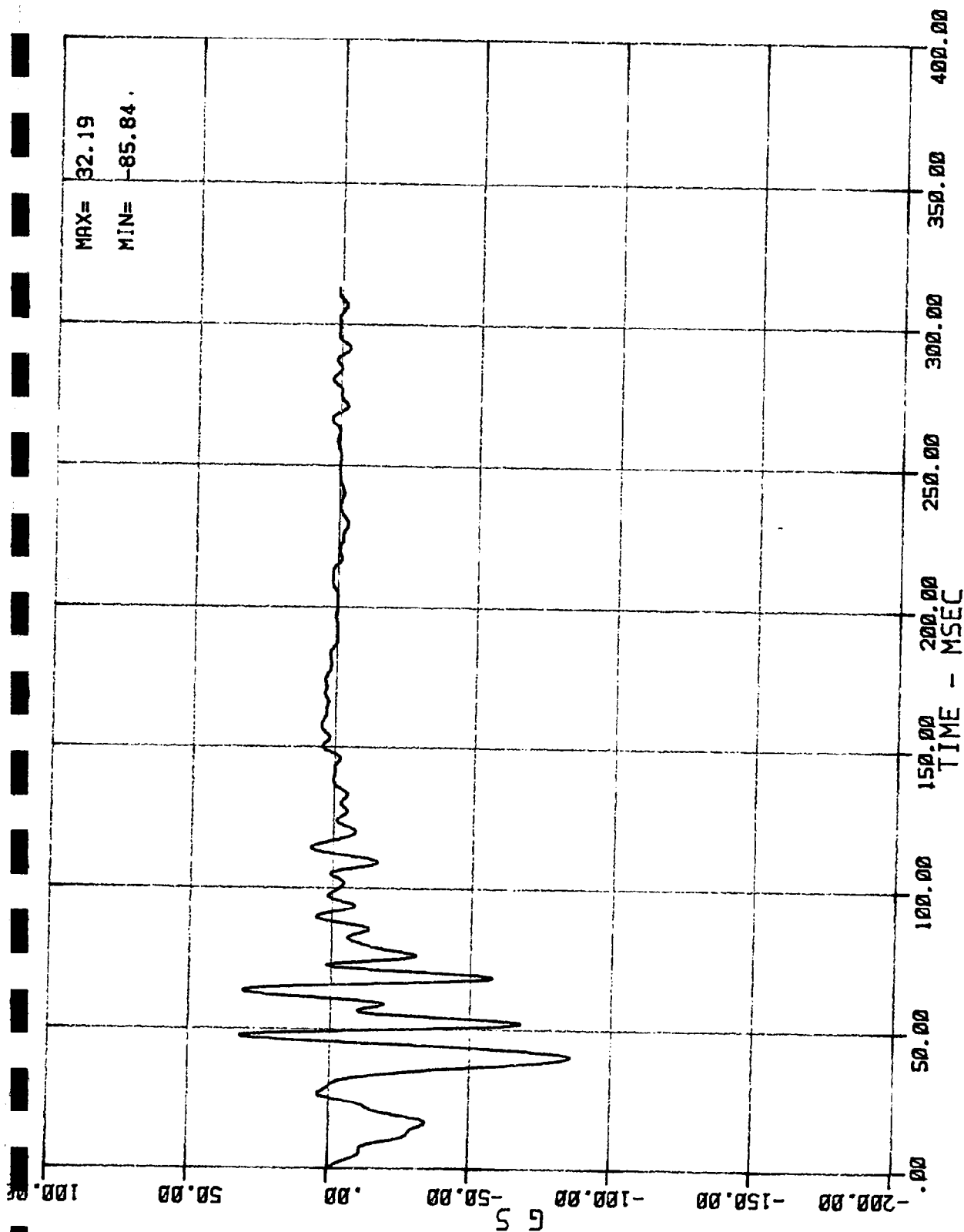
28 AC 01 N ENG X (BOTTOM OF ENGINE ACCEL. --- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



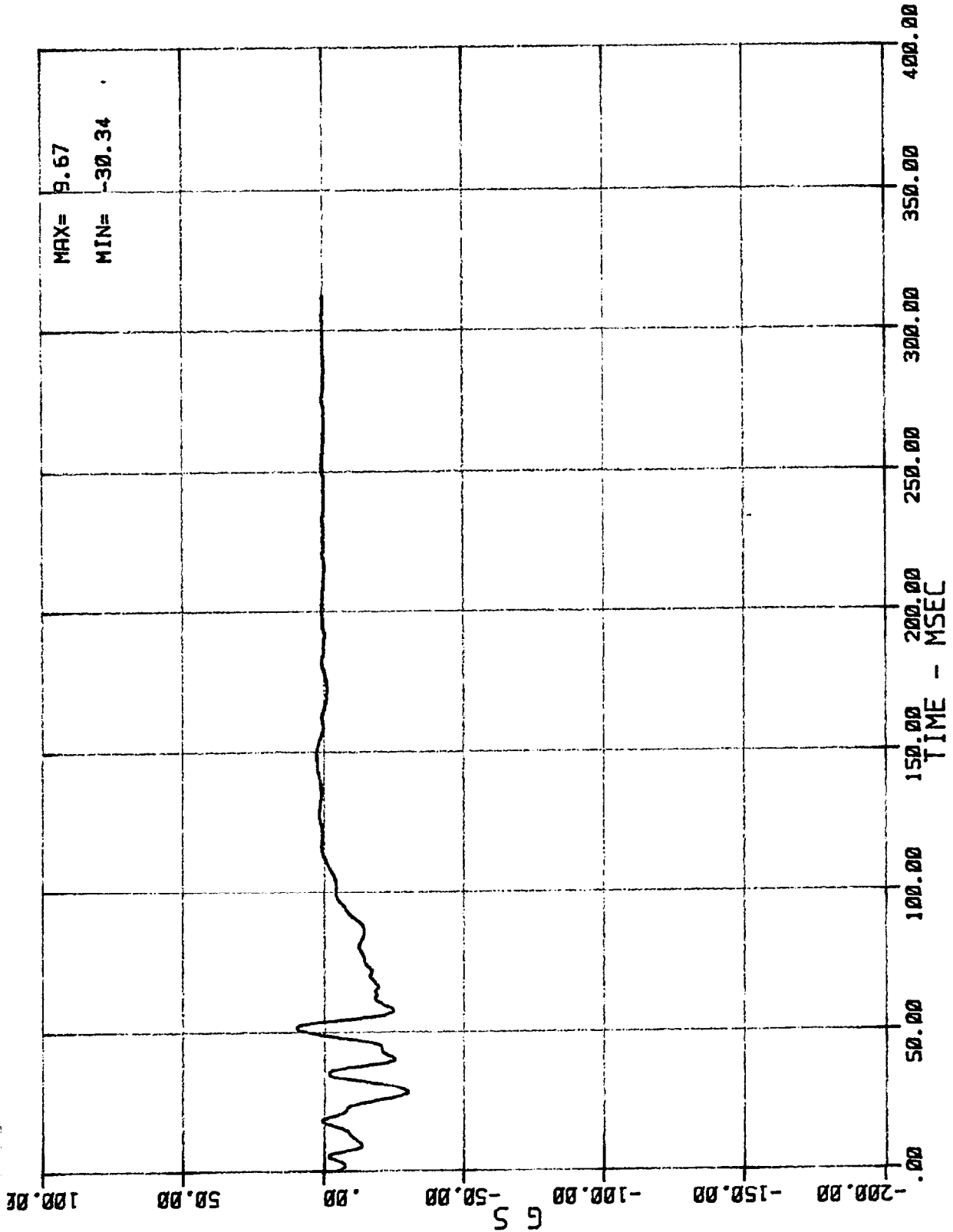
29 AC 01 N BCR X (RIGHT FRONT WHEEL ACCEL, -- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



30 AC 01 N DPC X (CENTER OF DASH ACCEL. -- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86

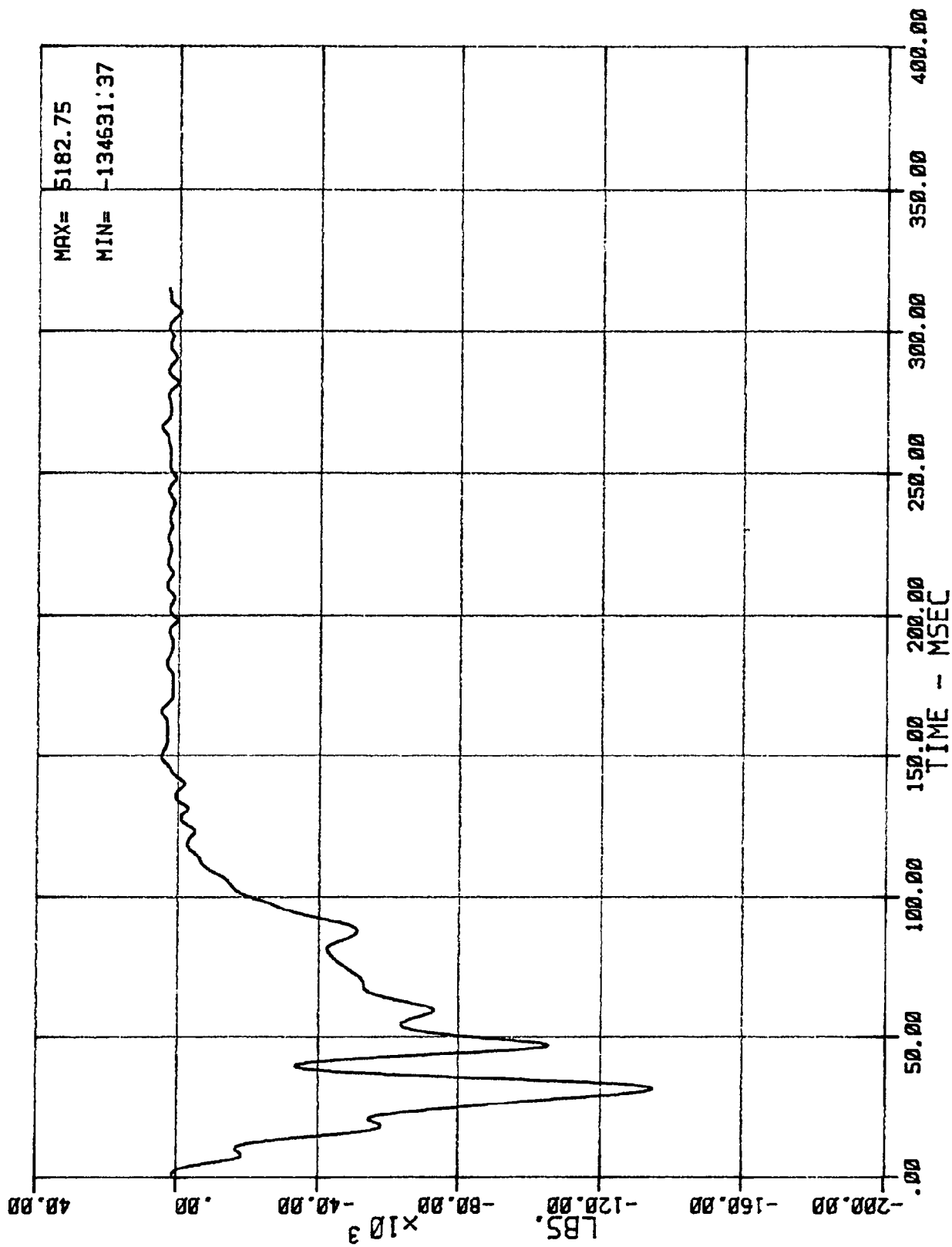


31 AC 01 N VCG X (VEHICLE C.G. ACCEL. -- X AXIS)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86

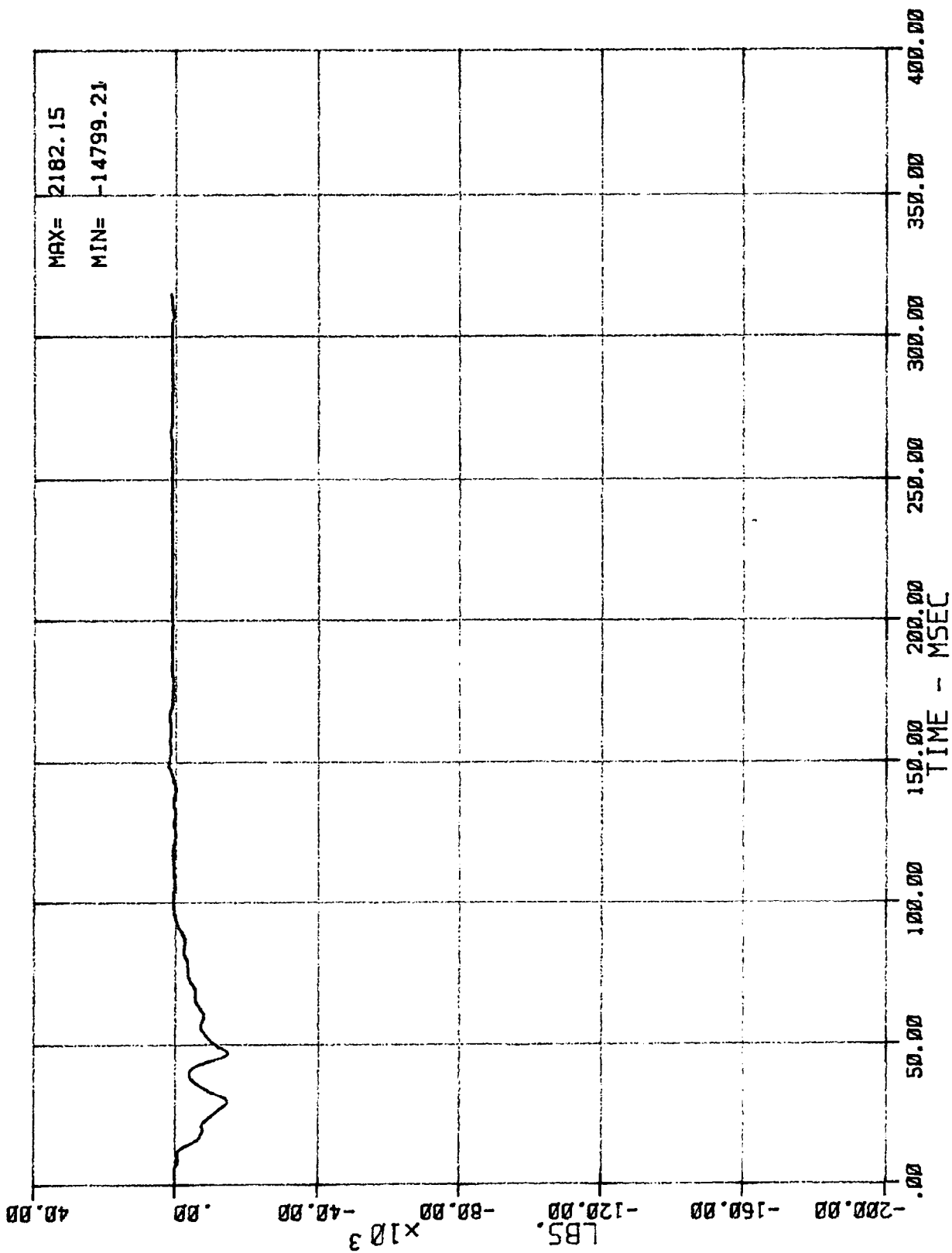
APPENDIX B-2

LOAD CELL BARRIER
DATA



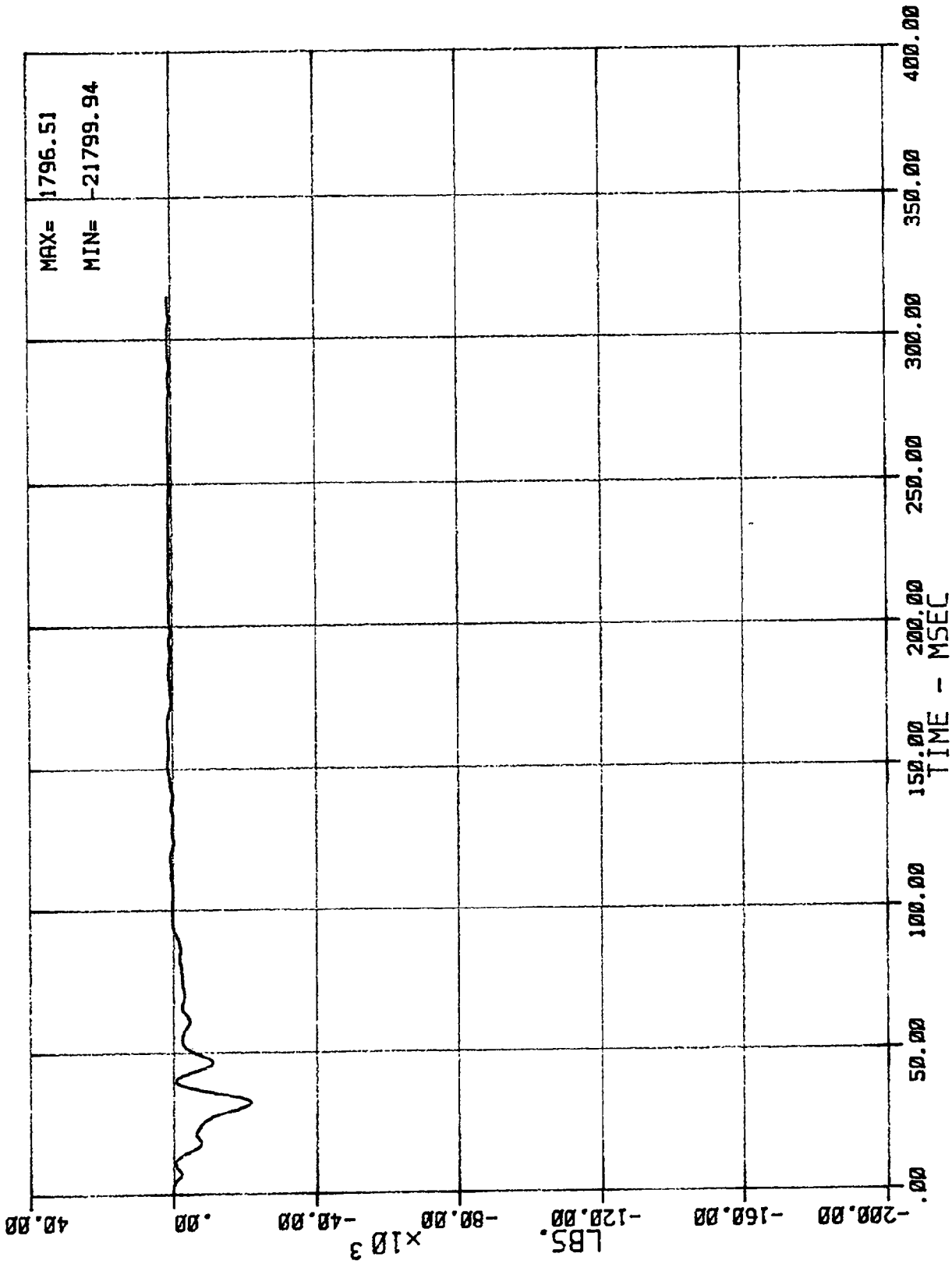
TOTAL SUM, LOAD CELL BARRIER FORCE
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



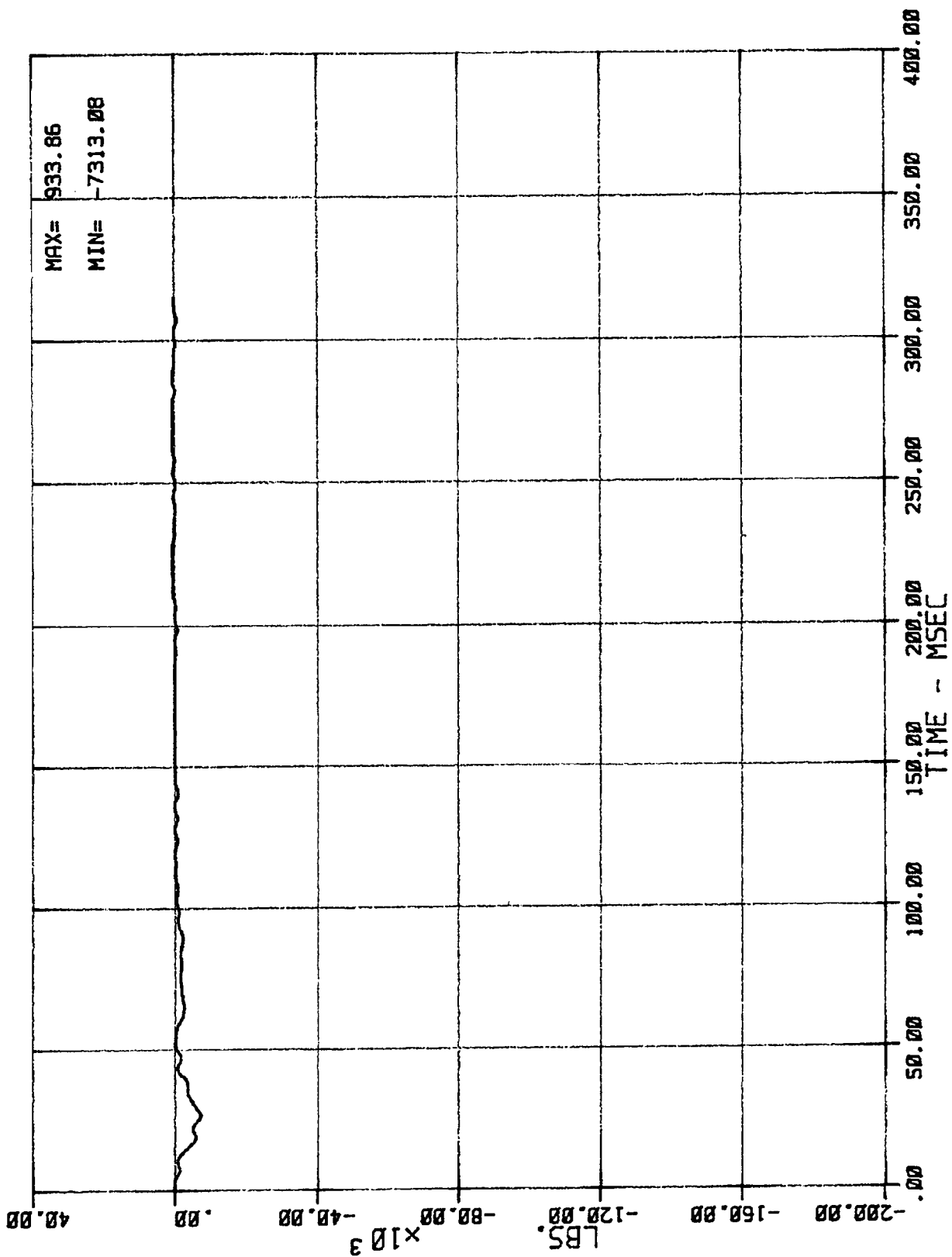
GROUP 1 SUM (C1,C2,C3,D1,D2,D3) LOAD CELL BARRIER FORCE
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



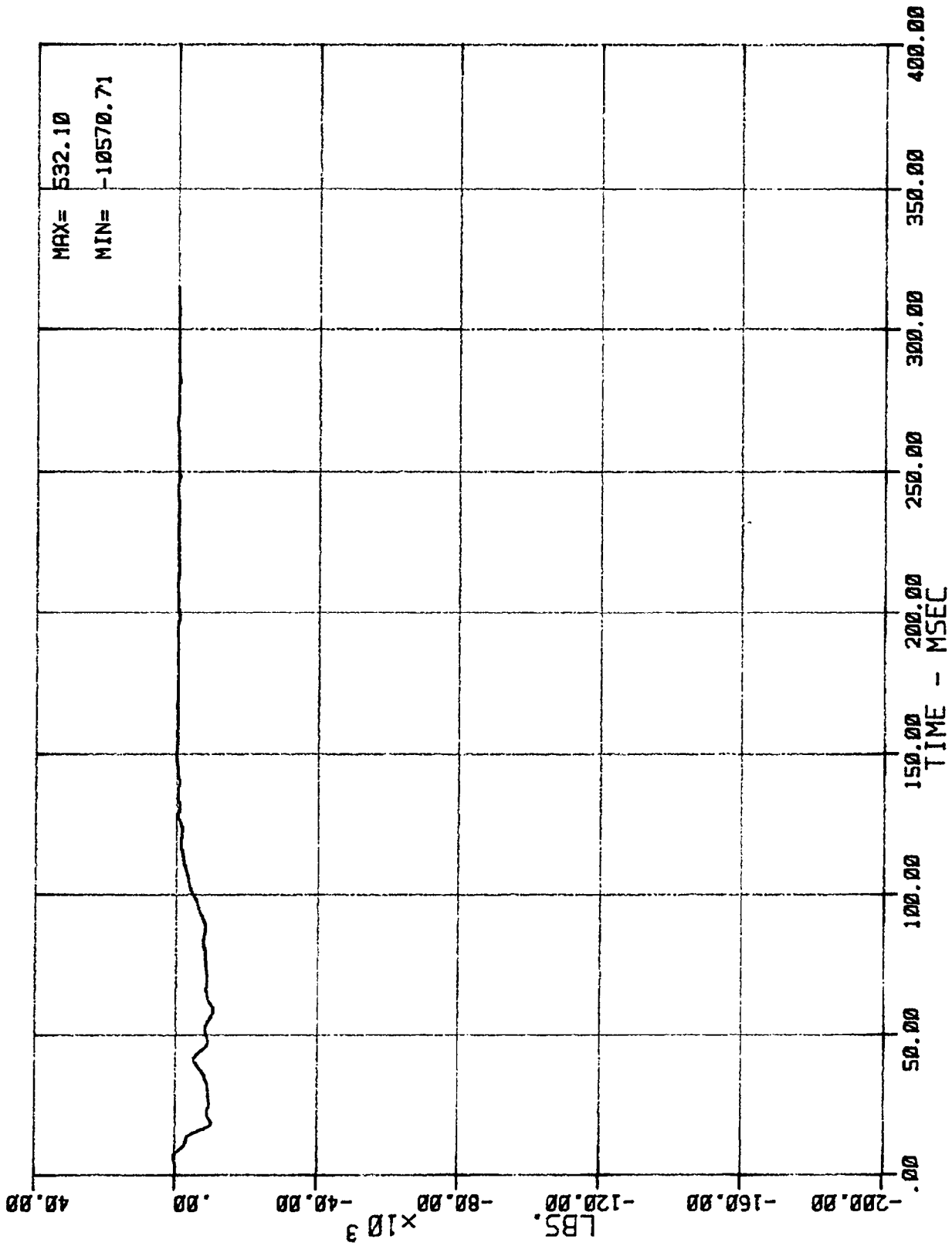
GROUP 2 SUM (C4,C5,C6,D4,D5,D6) LOAD CELL BARRIER FORCE
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



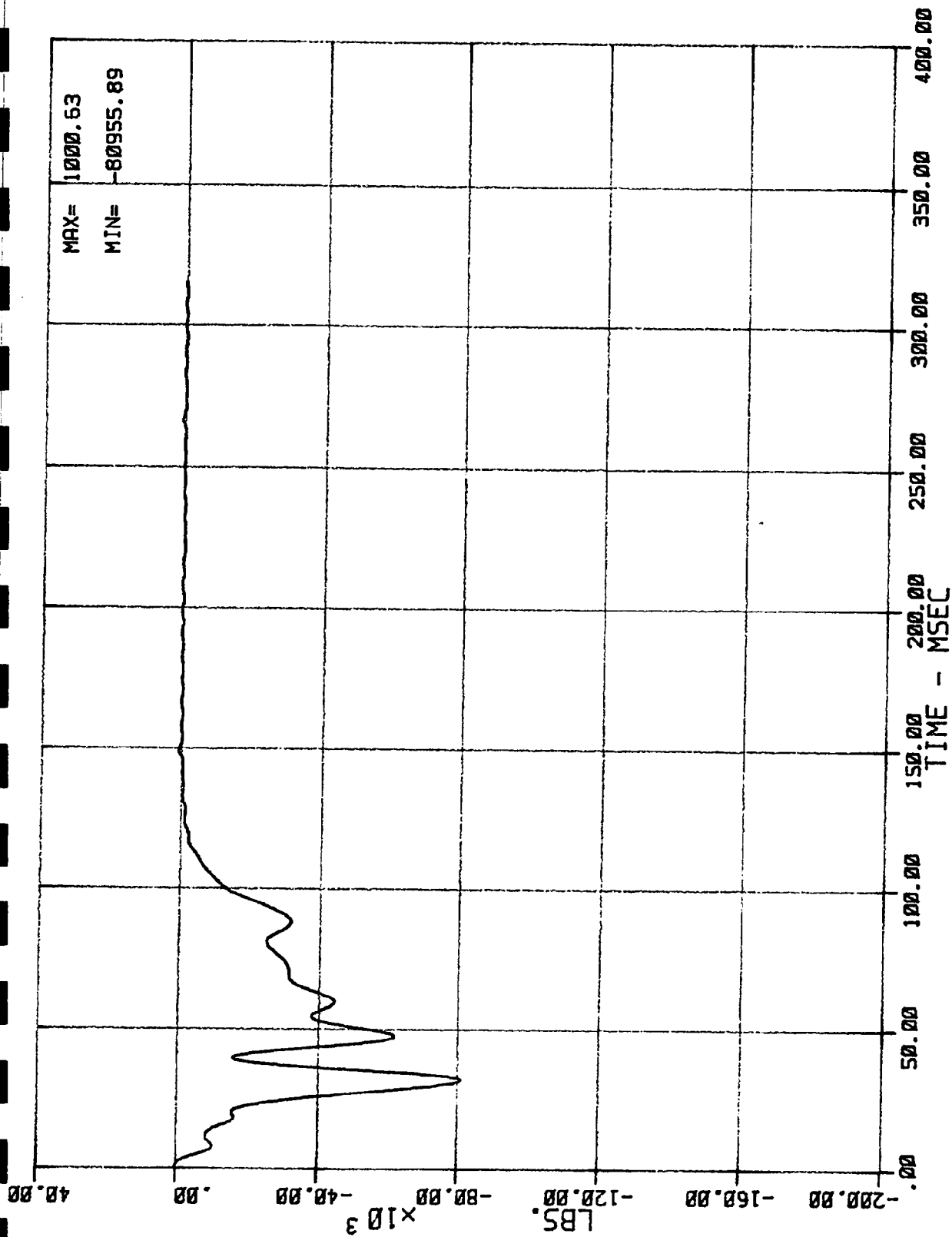
GROUP 3 SUM (C7,C8,C9,D7,D8,D9) LOAD CELL BARRIER FORCE
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



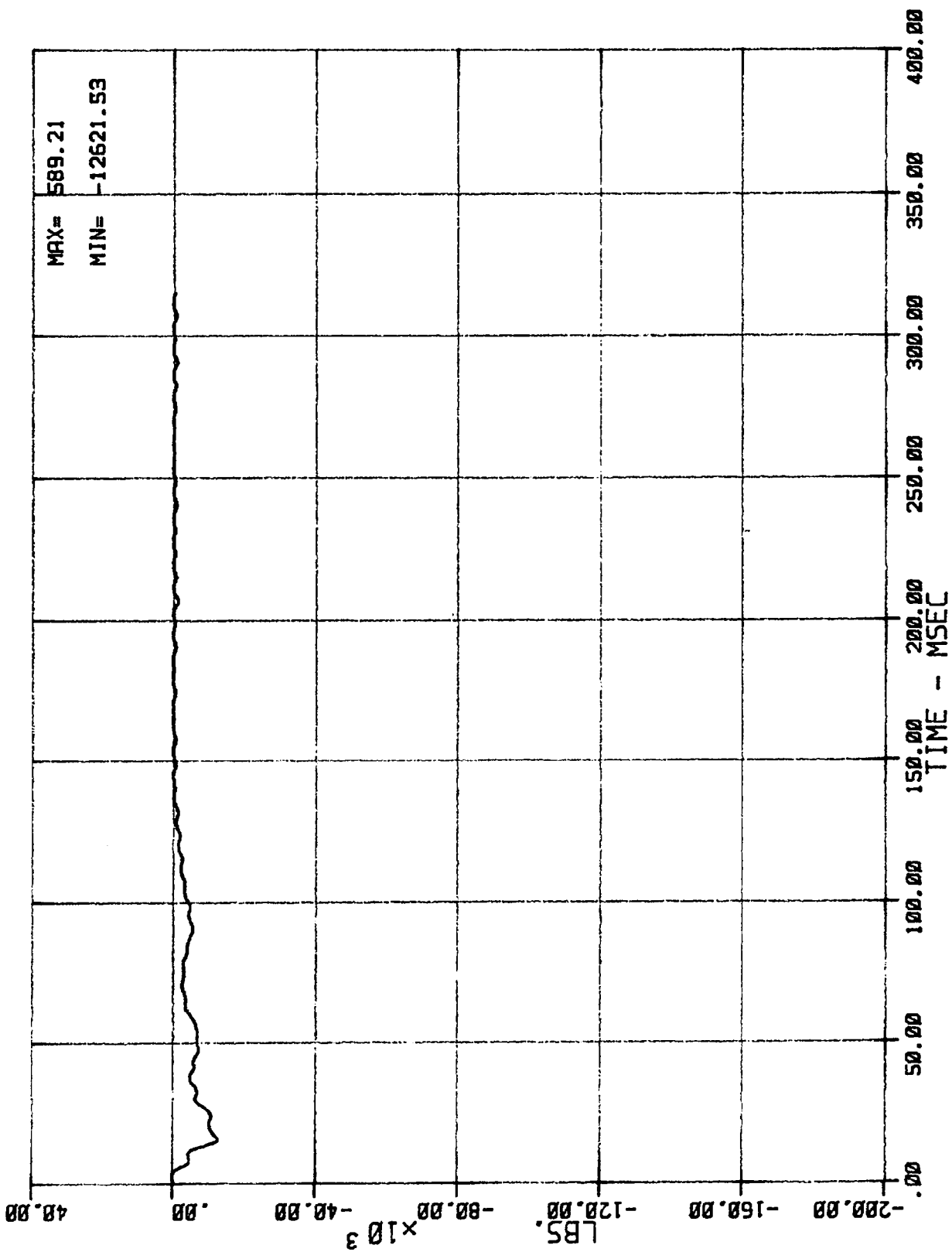
GROUP 4 SUM (A1,A2,A3,B1,B2,B3) LOAD CELL BARRIER FORCE
NSE N26056 1986 SUBARU GL SEDAN

06/12/86



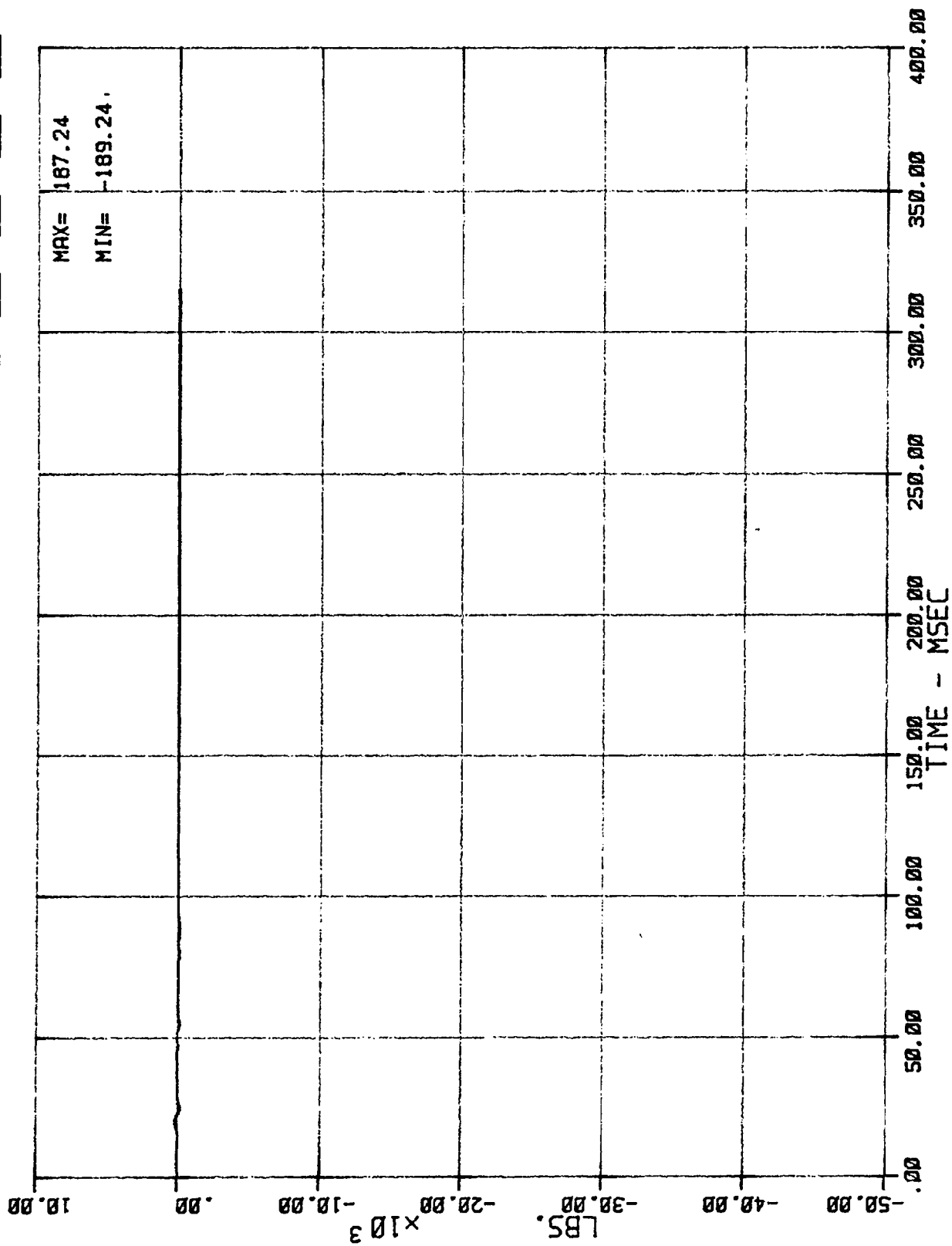
GROUP 5 SUM (A4,A5,A6,B4,B5,B6) LOAD CELL BARRIER FORCE
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



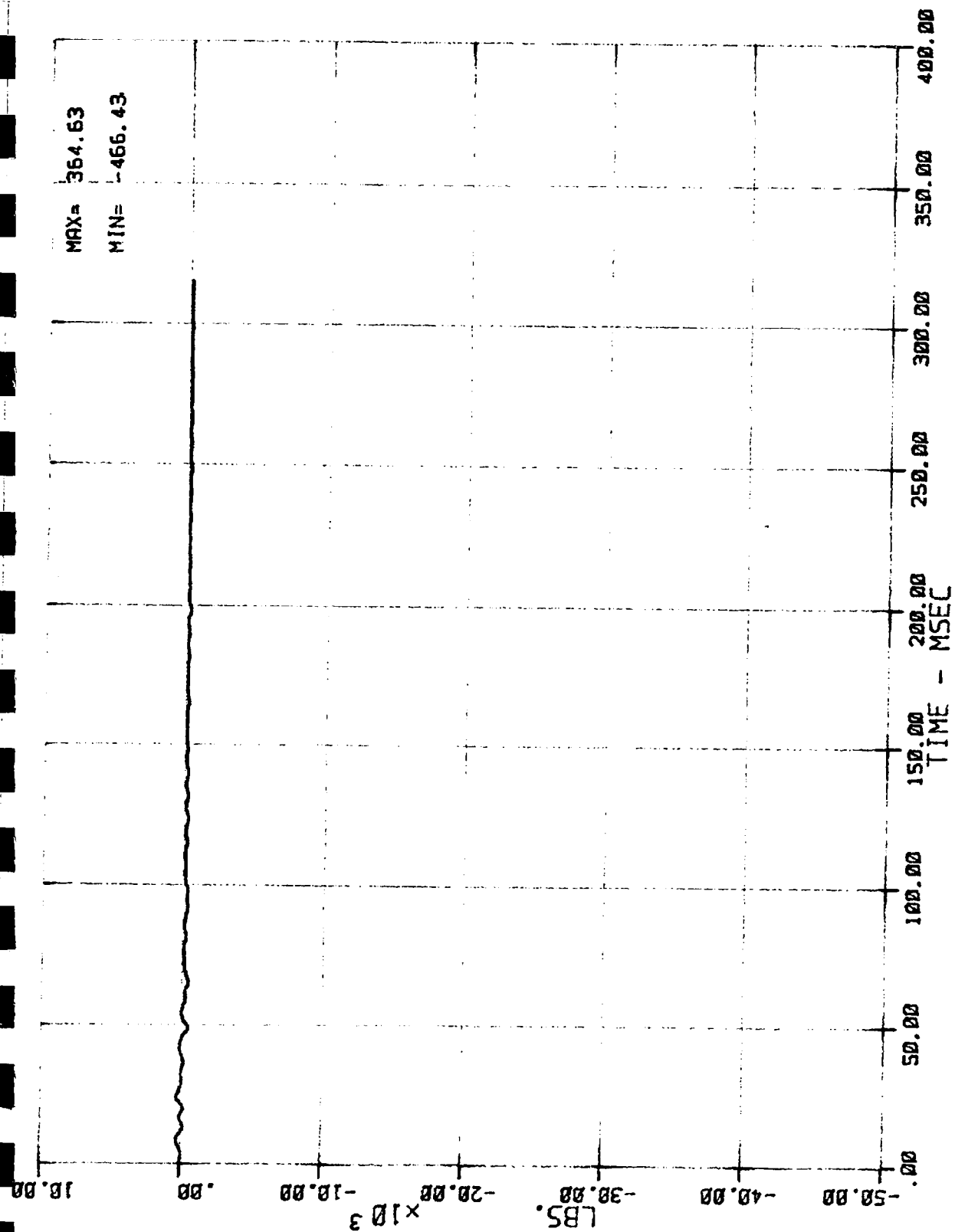
GROUP 6 SUM (A7,A8,A9,B7,B8,B9) LOAD CELL BARRIER FORCE
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



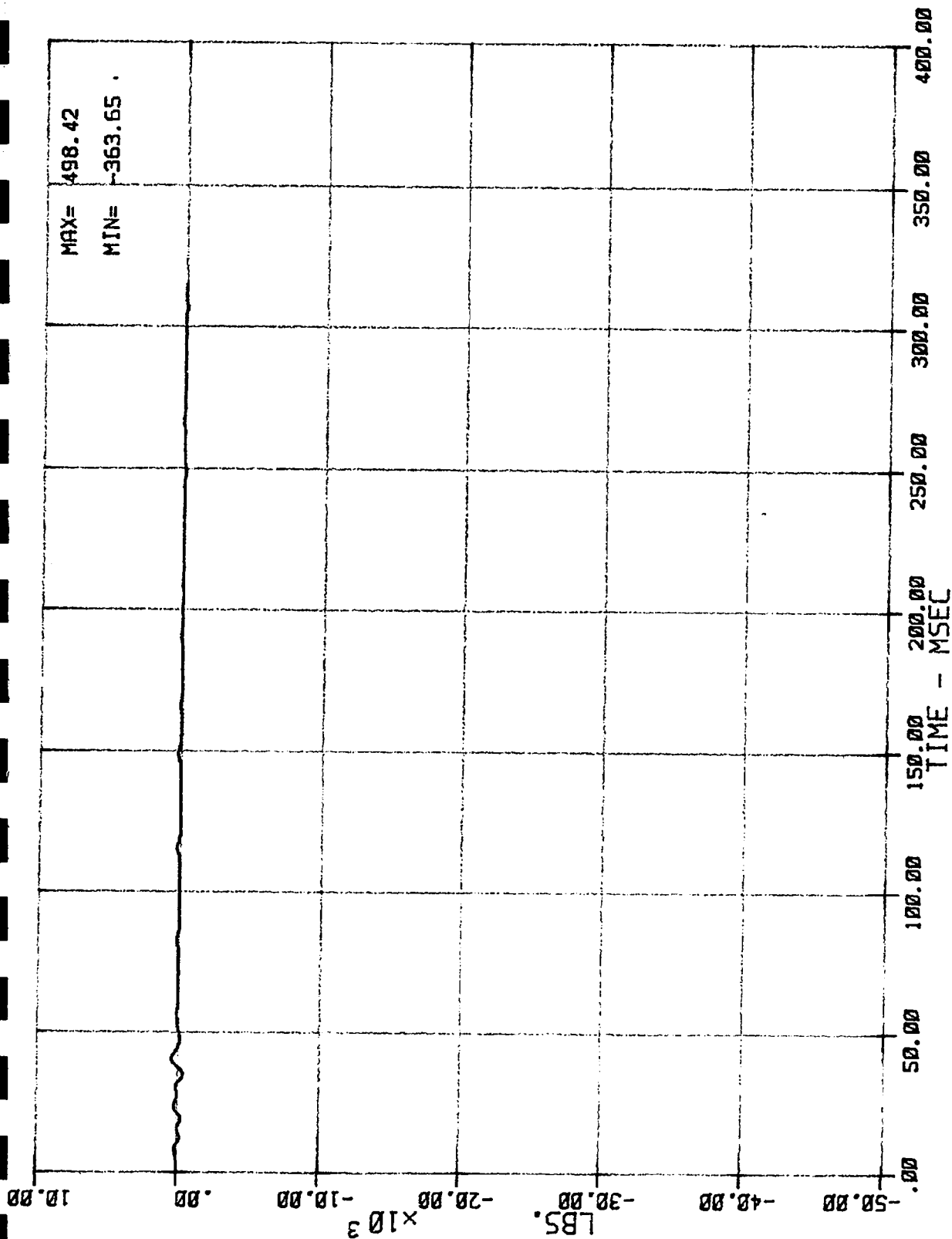
32 LC BA N BA1 (BARRIER LOAD CELL A1 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



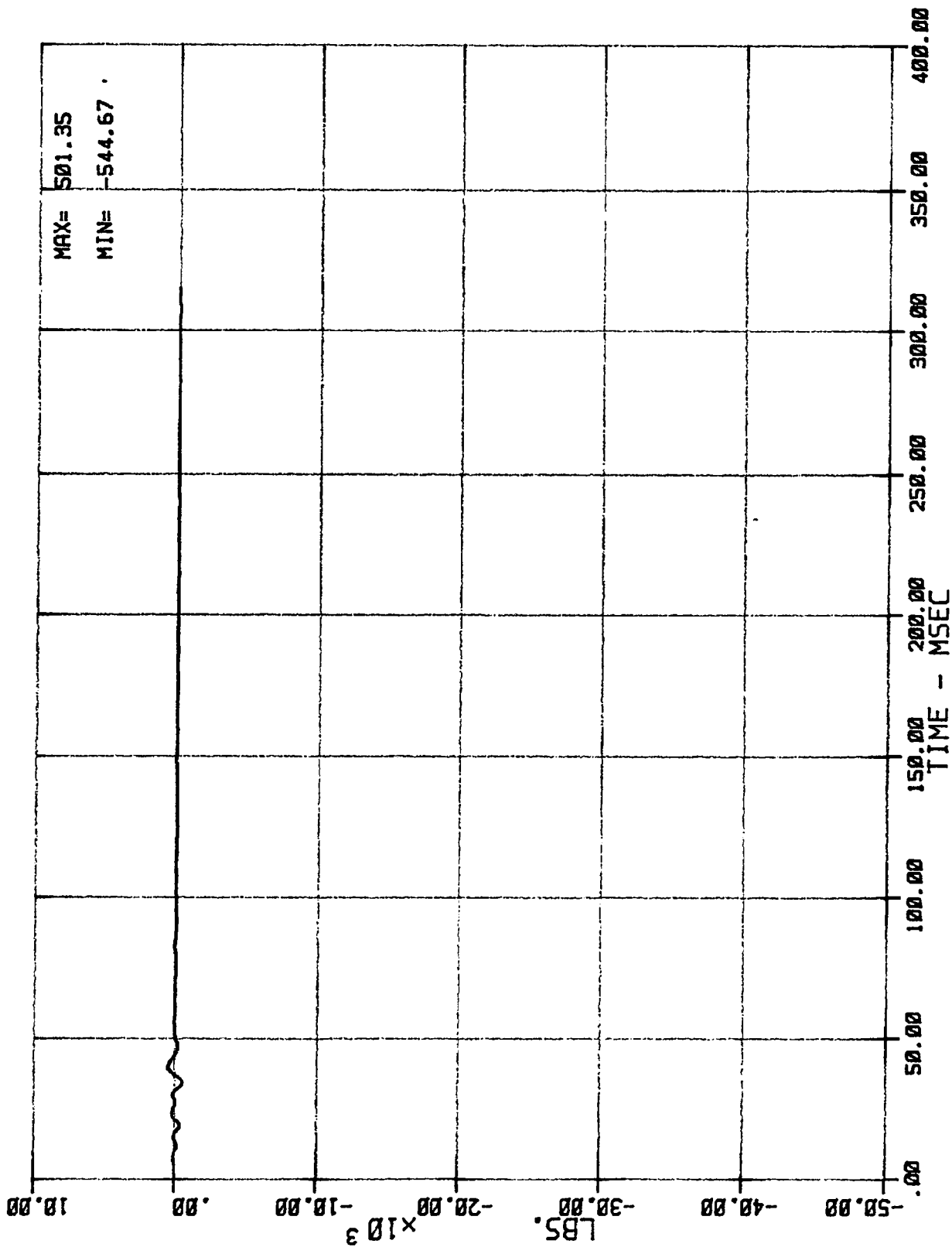
33 LC BA N BA2 (BARRIER LOAD CELL A2 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



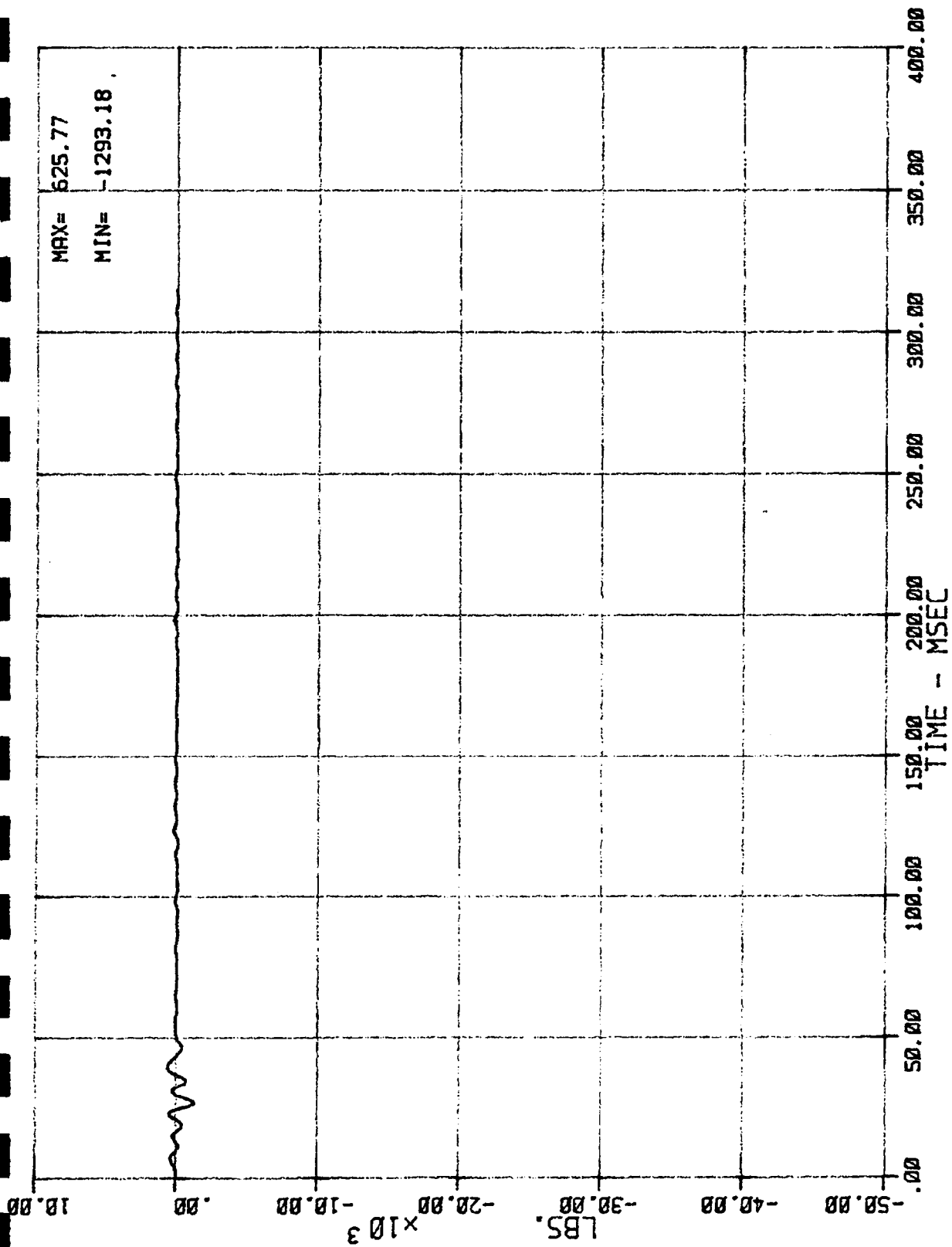
34 LC BA N BA3 (BARRIER LOAD CELL A3 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



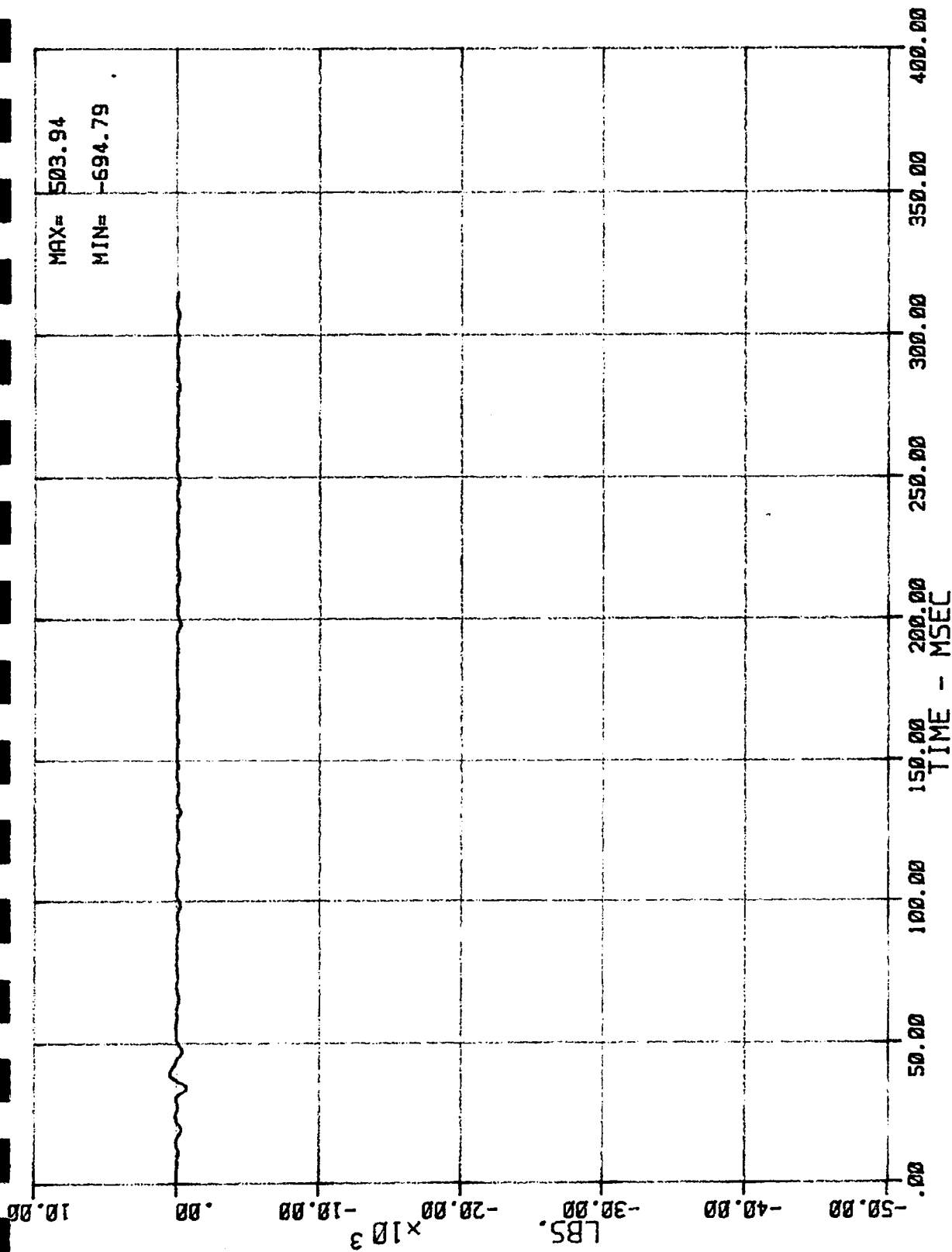
35 LC BA BA4 (BARRIER LOAD CELL A4 FORCE)
 MSE N25056 1986 SUBARU GL SEDAN

06/12/86



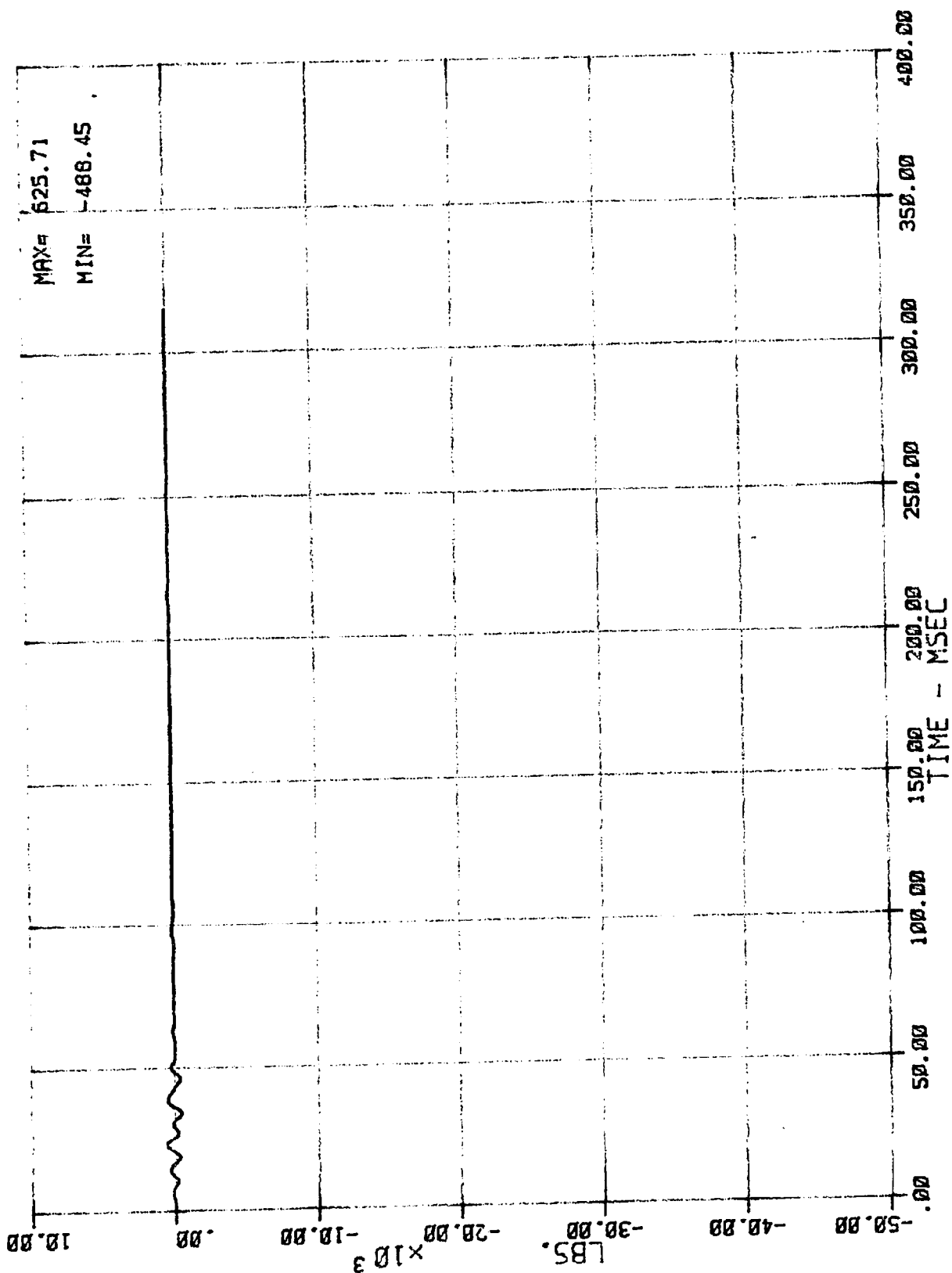
36 LC BA N BAS (BARRIER LOAD CELL AS FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



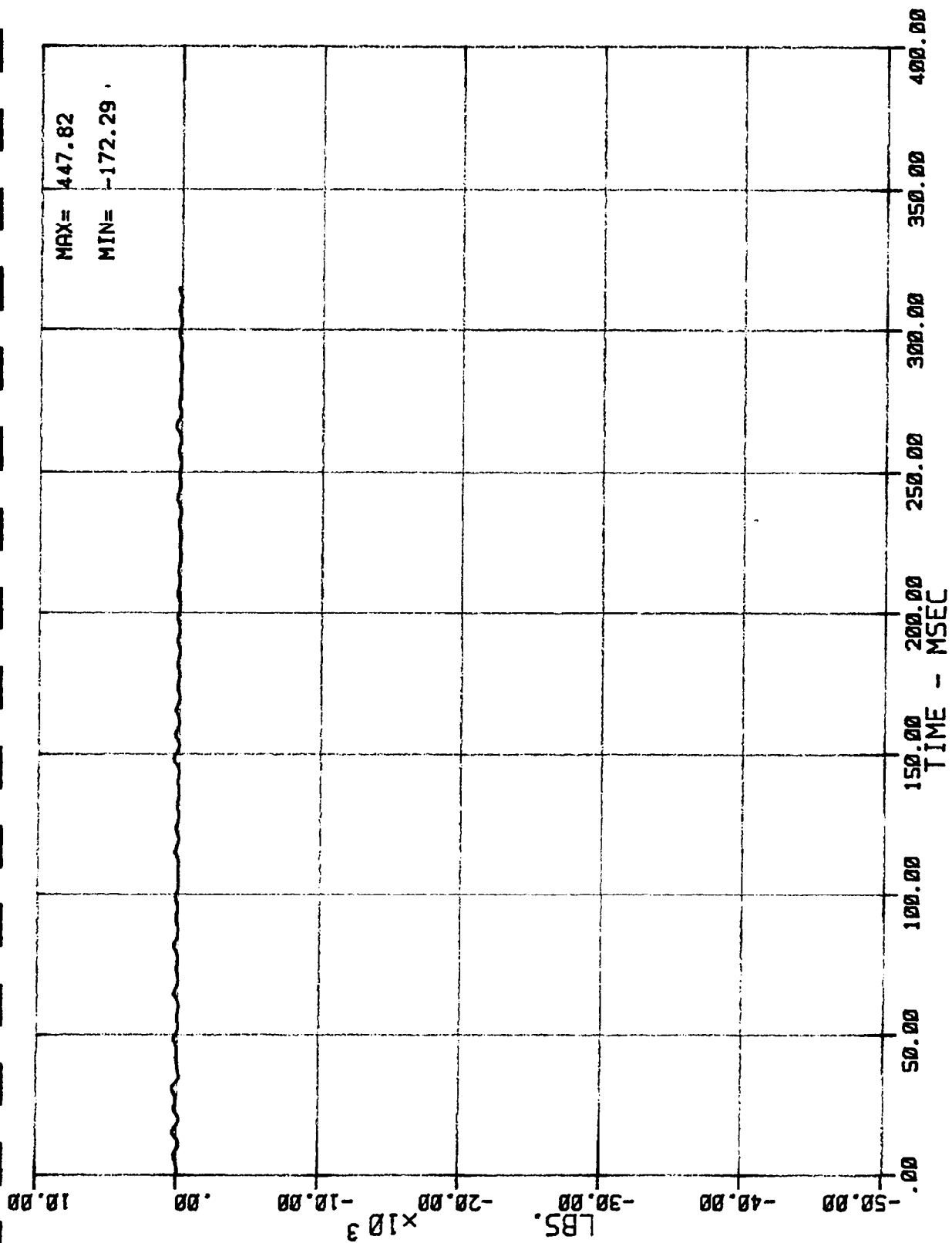
37 LC BA N BA6 (BARRIER LOAD CELL A6 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



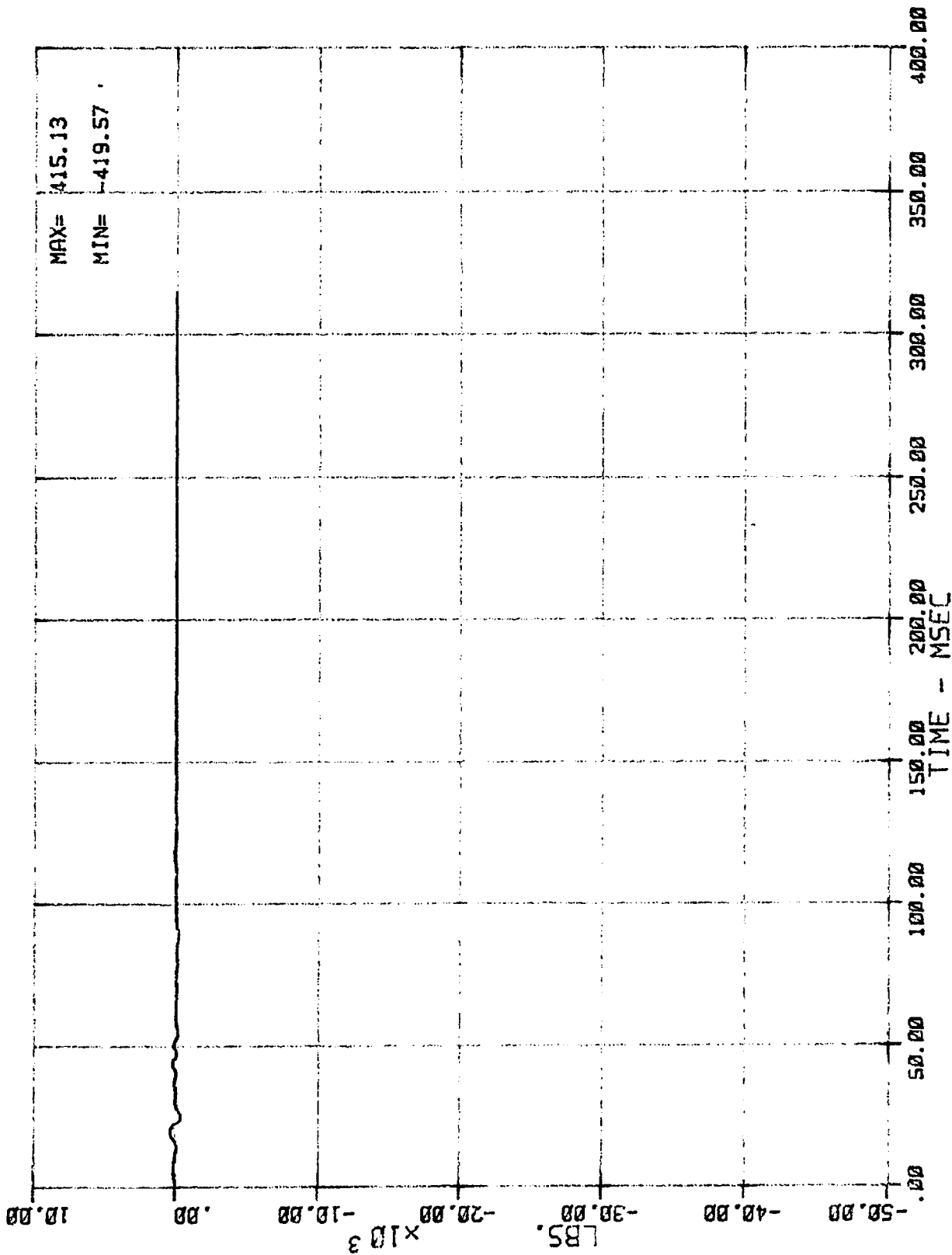
38 LC BA BA7 (BARRIER LOAD CELL A7 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



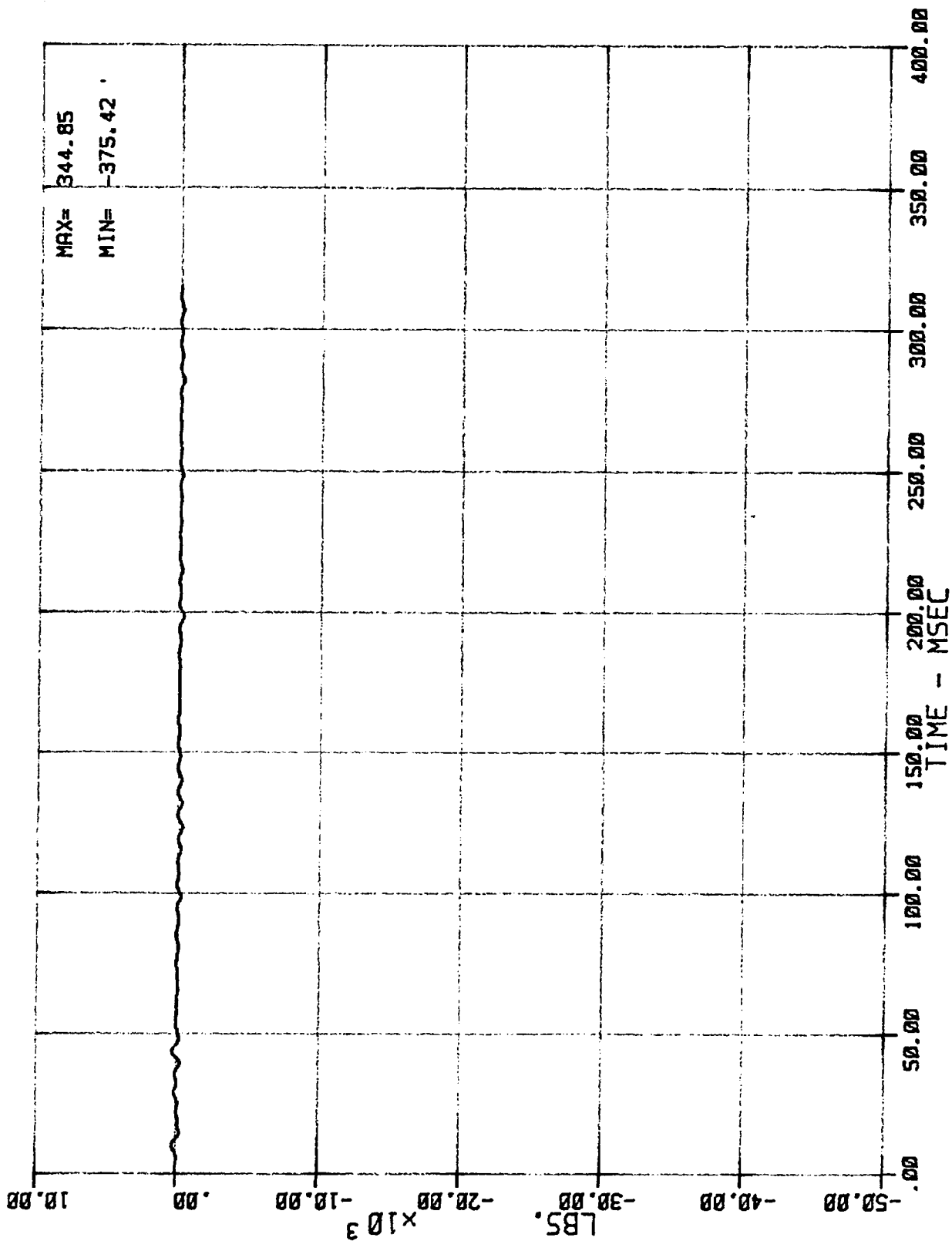
39 LC BA N BAB (BARRIER LOAD CELL AB FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



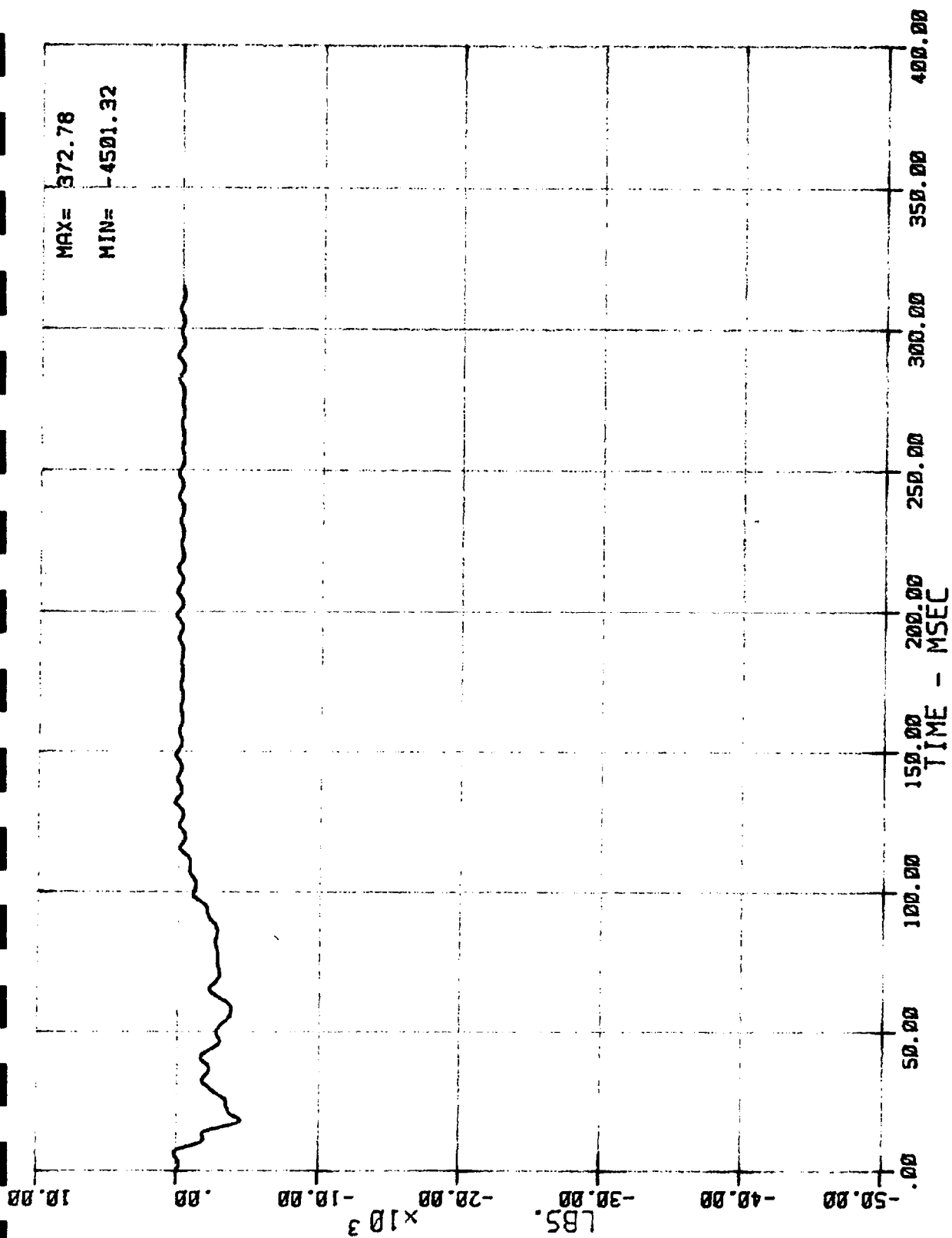
40 LC BA N BA9 (BARRIER LOAD CELL A9 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



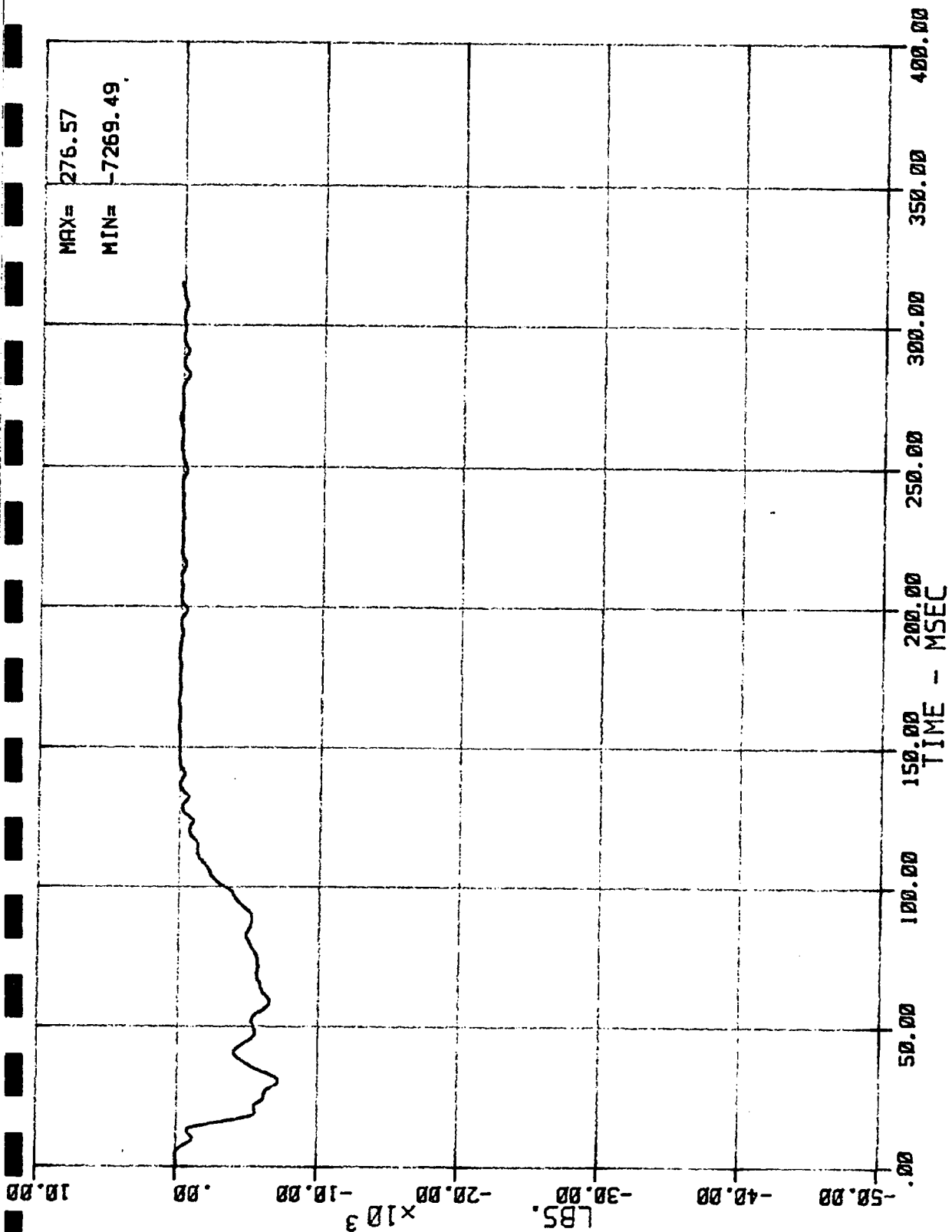
41 LC BR N BB1 (BARRIER LOAD CELL B1 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



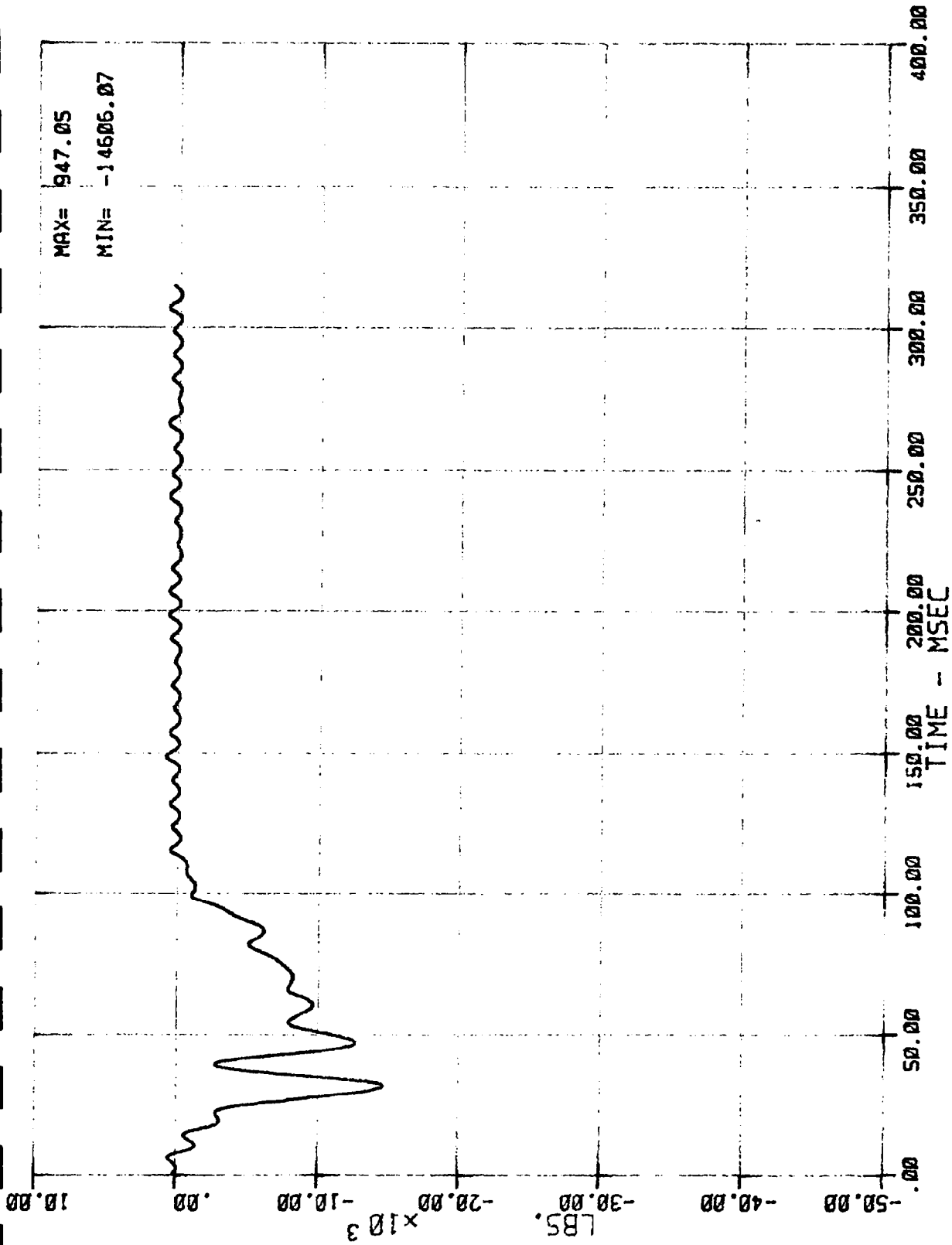
42 LC BB N BB2 (BARRIER LOAD CELL B2 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



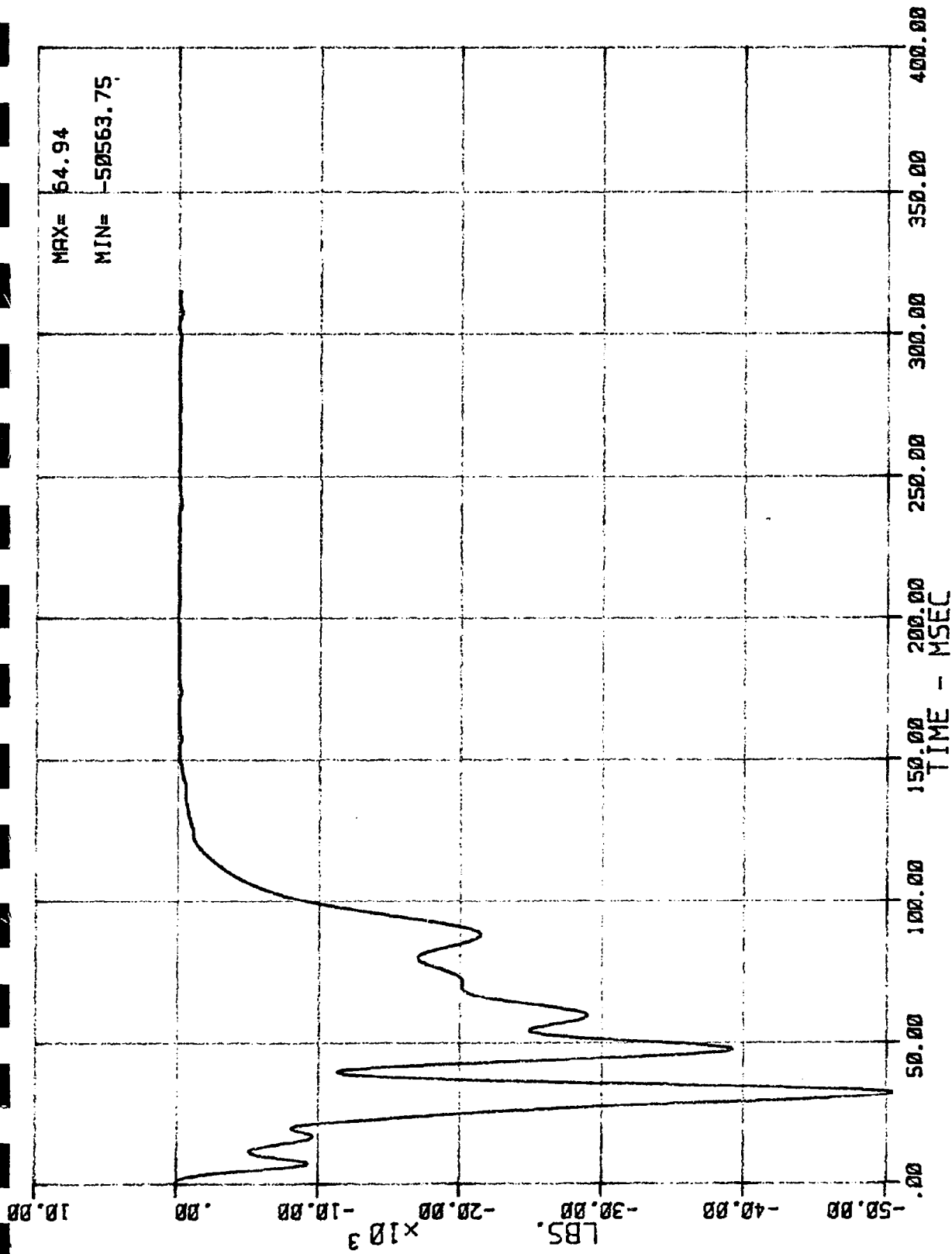
43 LC 88 N 883 (BARRIER LOAD CELL B3 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



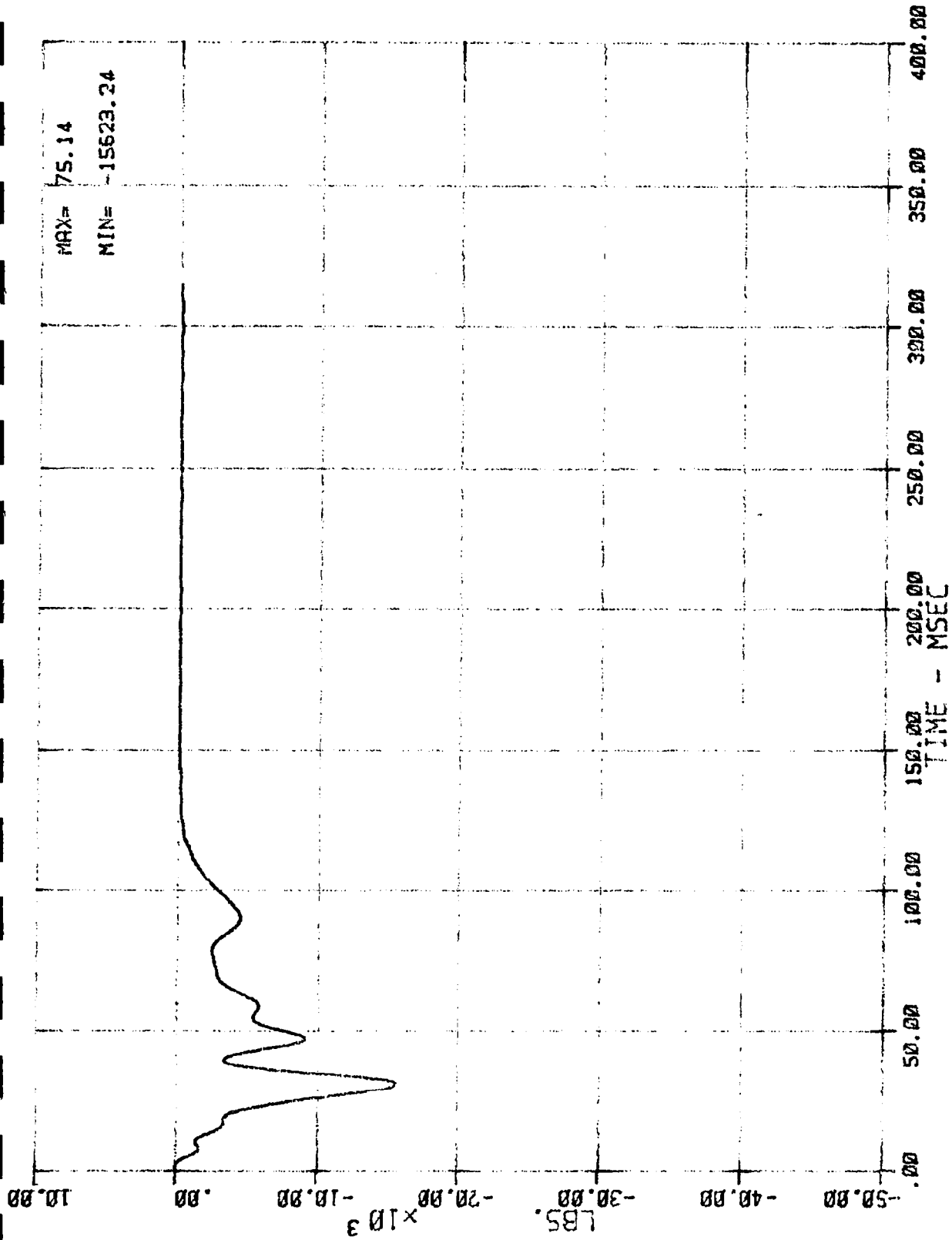
44 LC BB N BB4 (BARRIER LOAD CELL B4 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



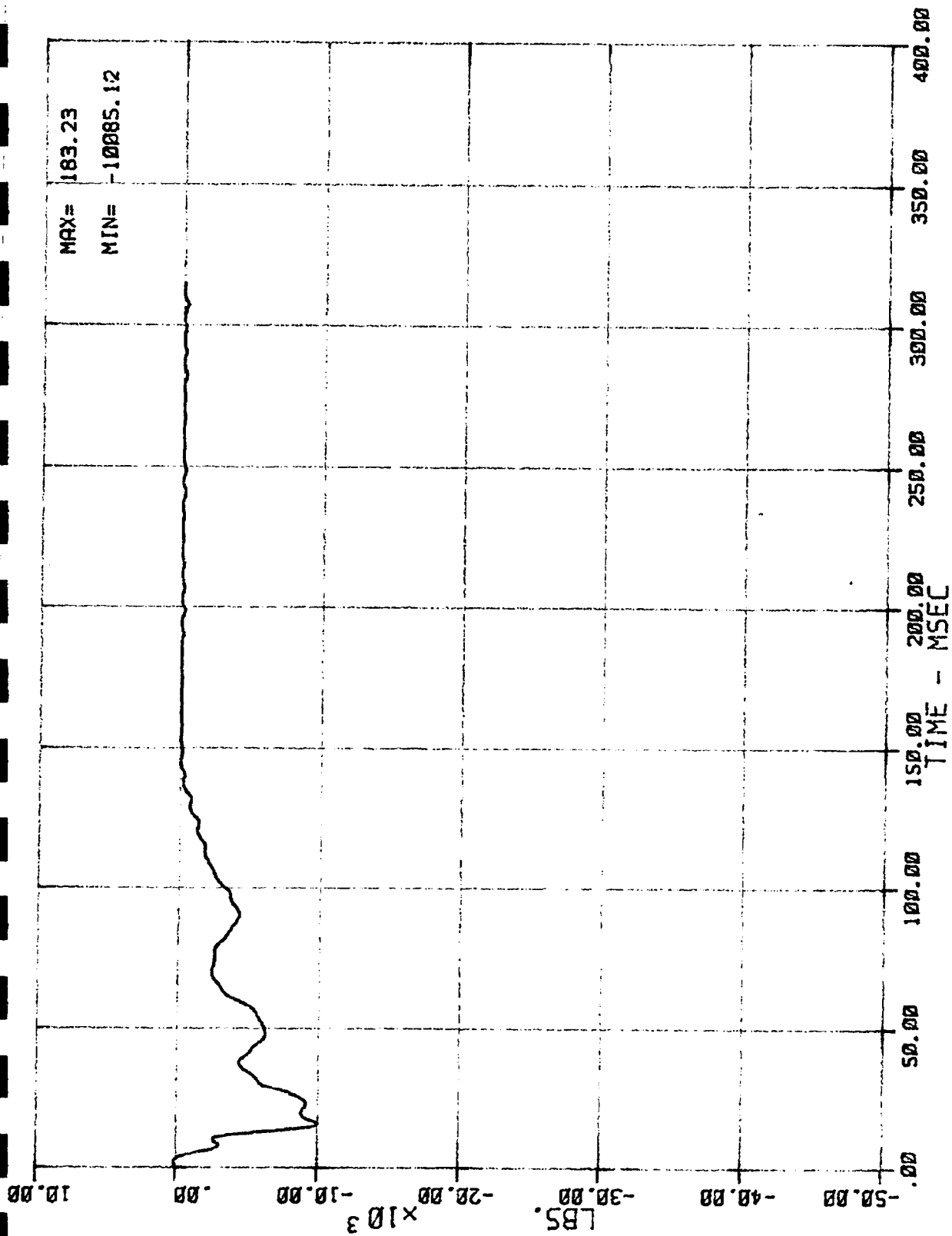
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MSE N26056 1986 SUBARU GL SEDAN

06/12/86



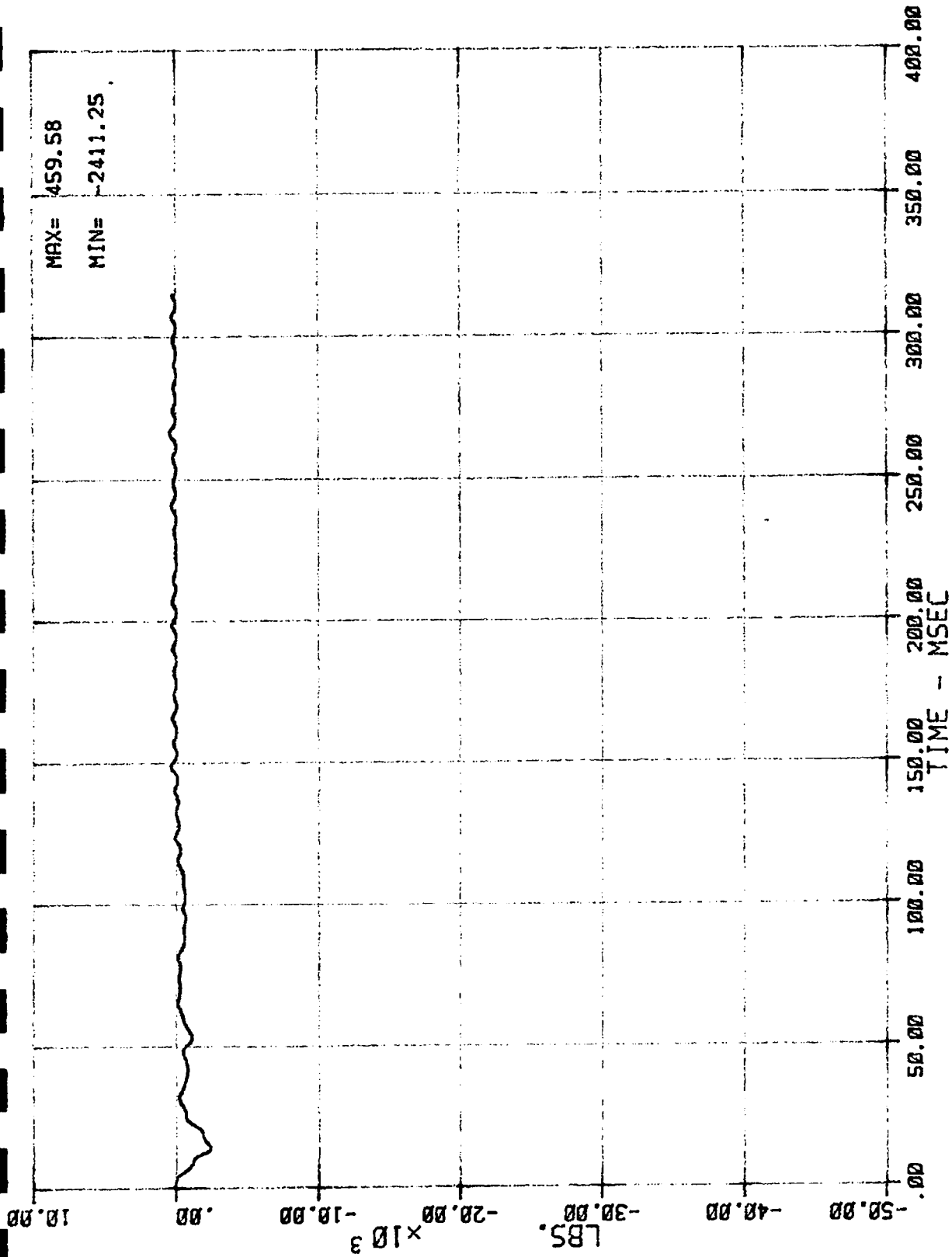
45 LC BA N BB6 (BARRIER LOAD CELL B6 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



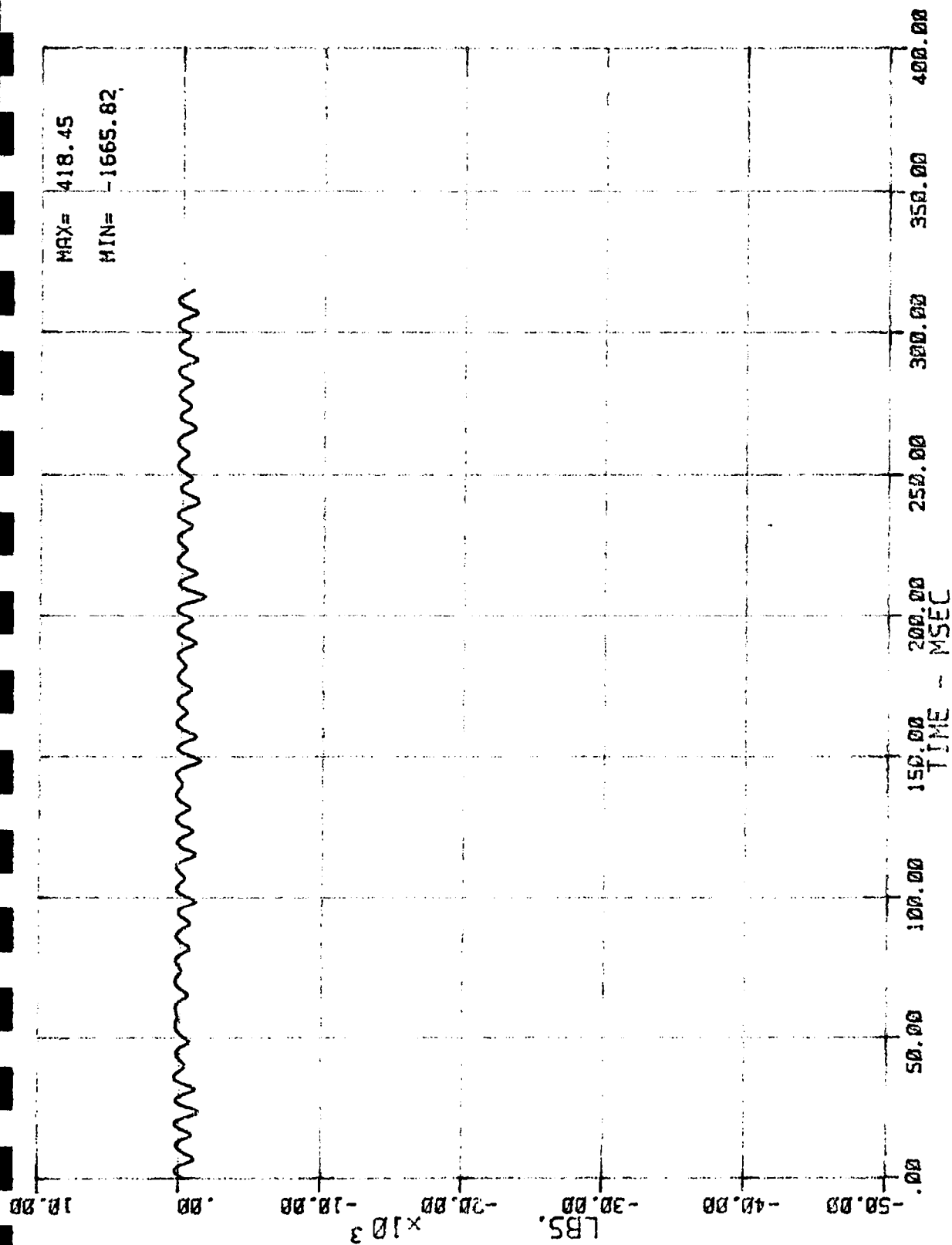
47 LC BA N 887 (BARRIER LOAD CELL B7 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



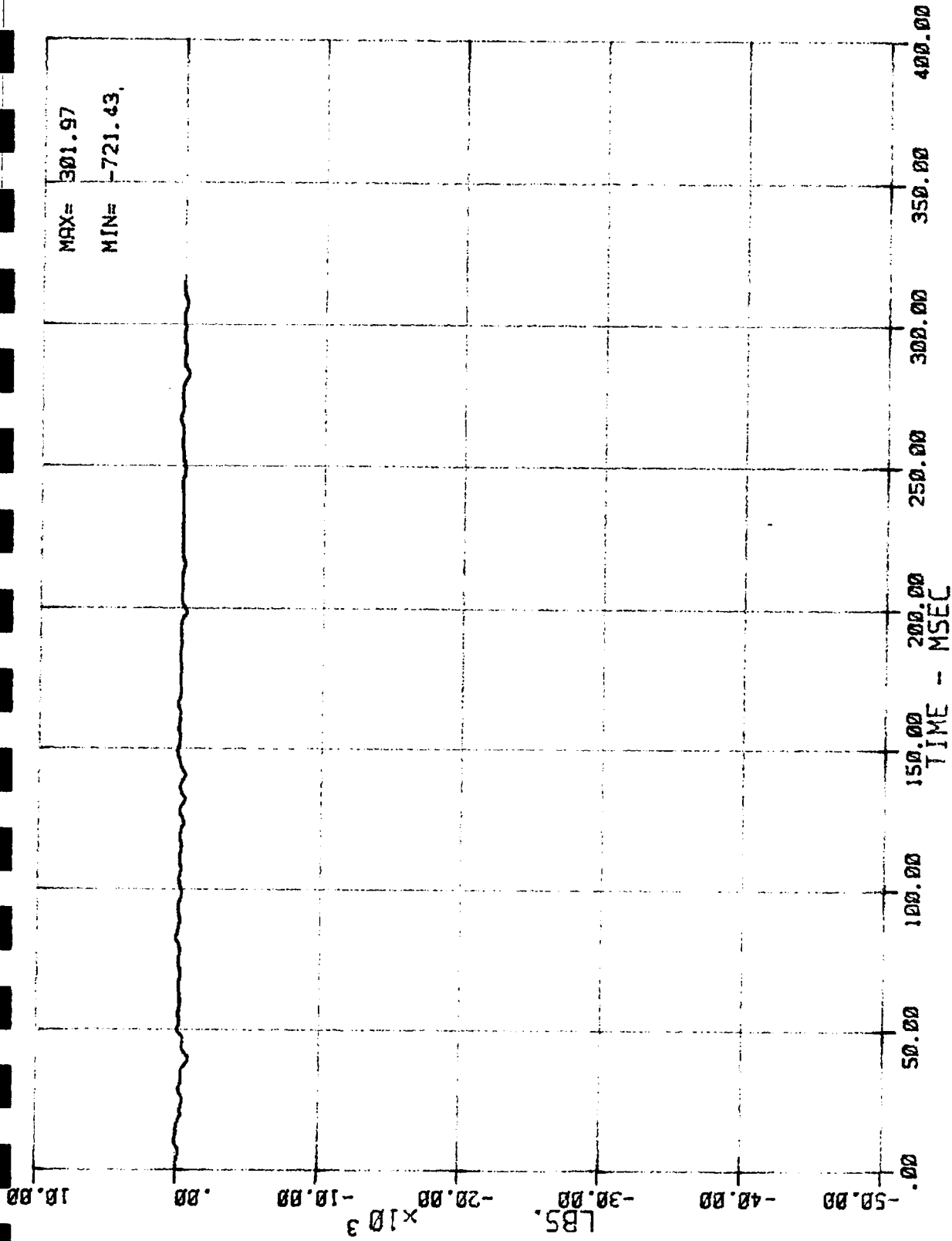
48 LC BA N 888 (BARRIER LOAD CELL 88 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



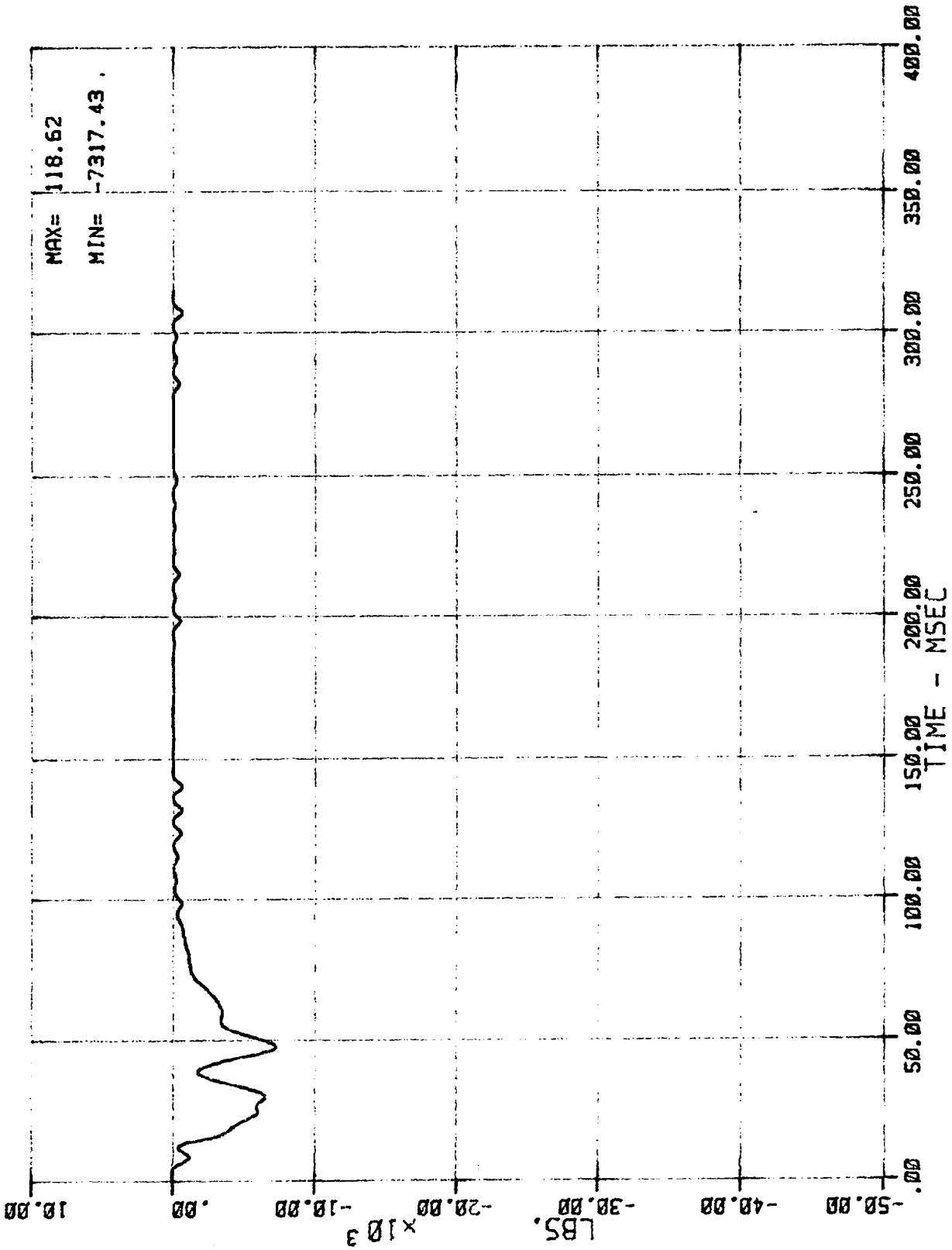
49 LC BA N (BARRIER LOAD CELL B9 FORCE)
NSE N26056 1986 SUZUKI GL SEDAN

06/12/86



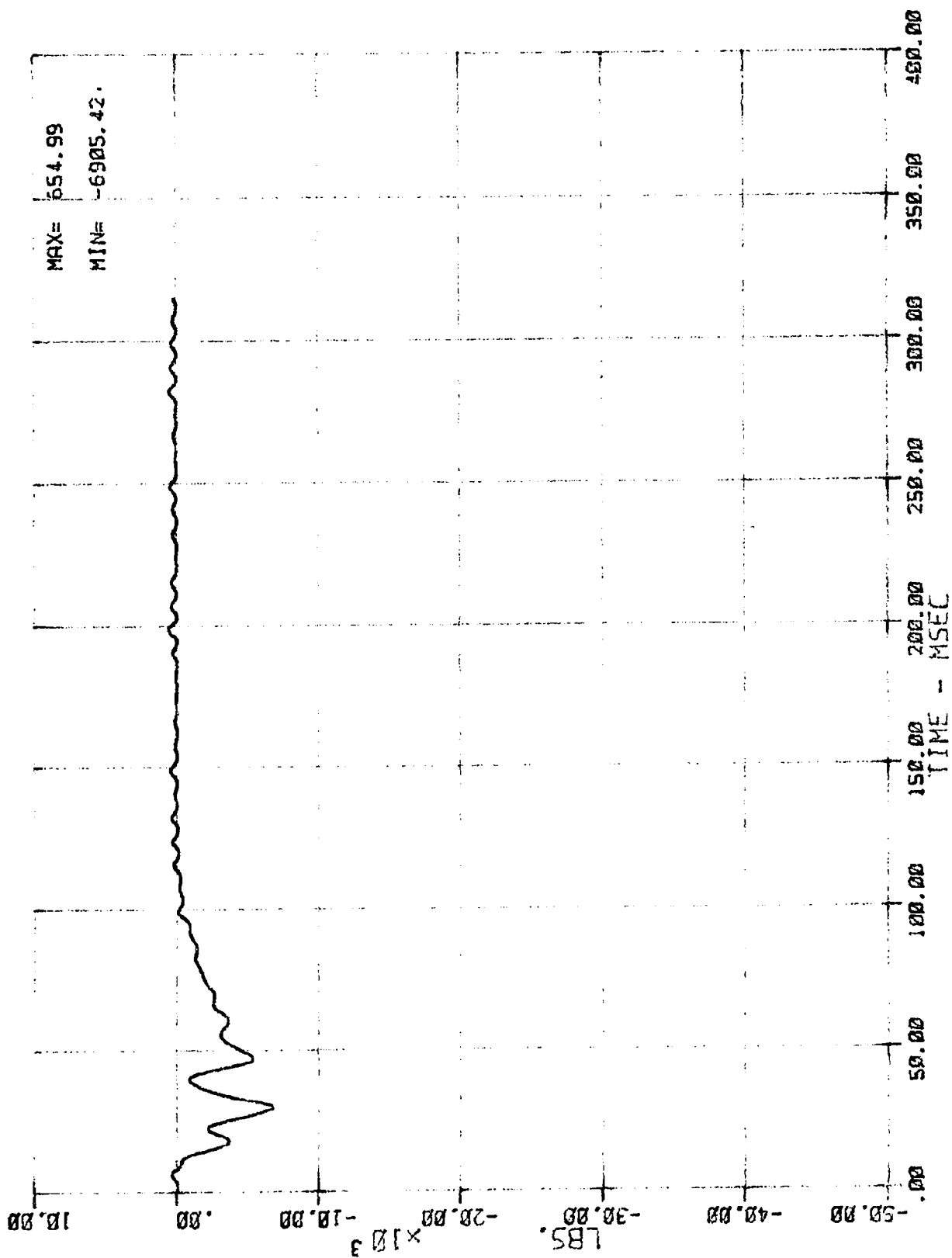
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MSE N26056 1986 SUBARU GL SEDAN

06/12/86



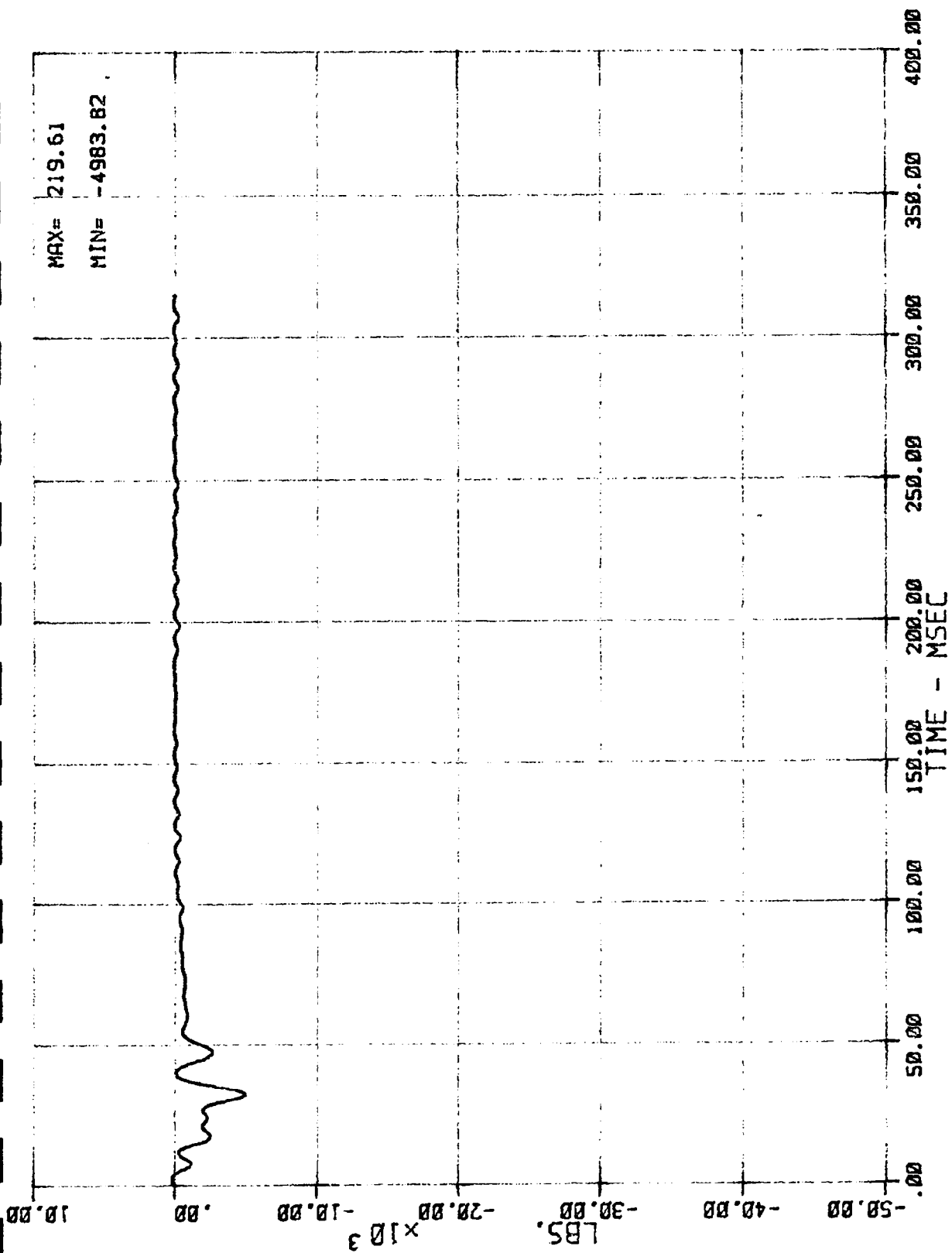
51 LC BA BC2 (BARRIER LOAD CELL C2 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



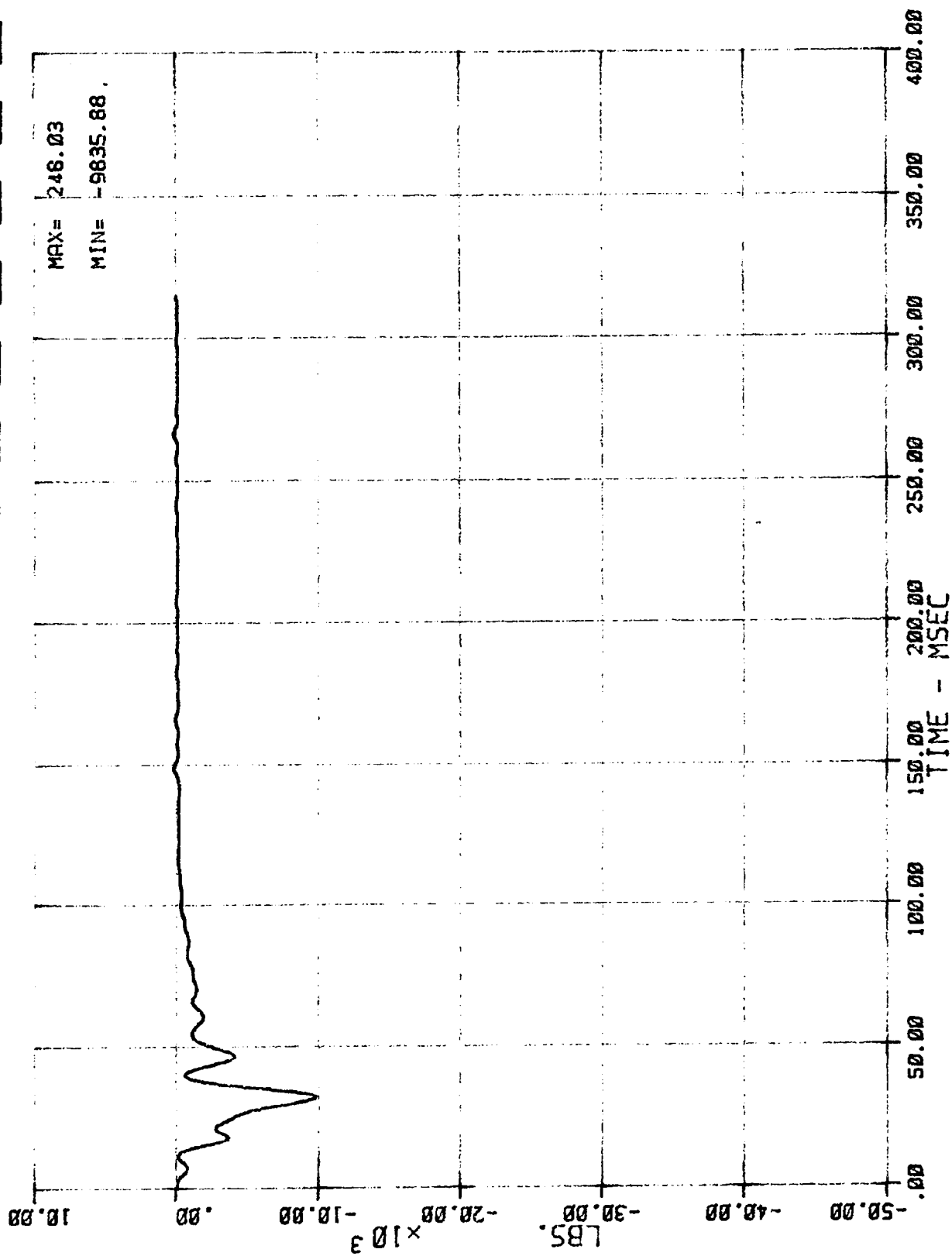
52 LC BA N BC3 (BARRIER LOAD CELL C3 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



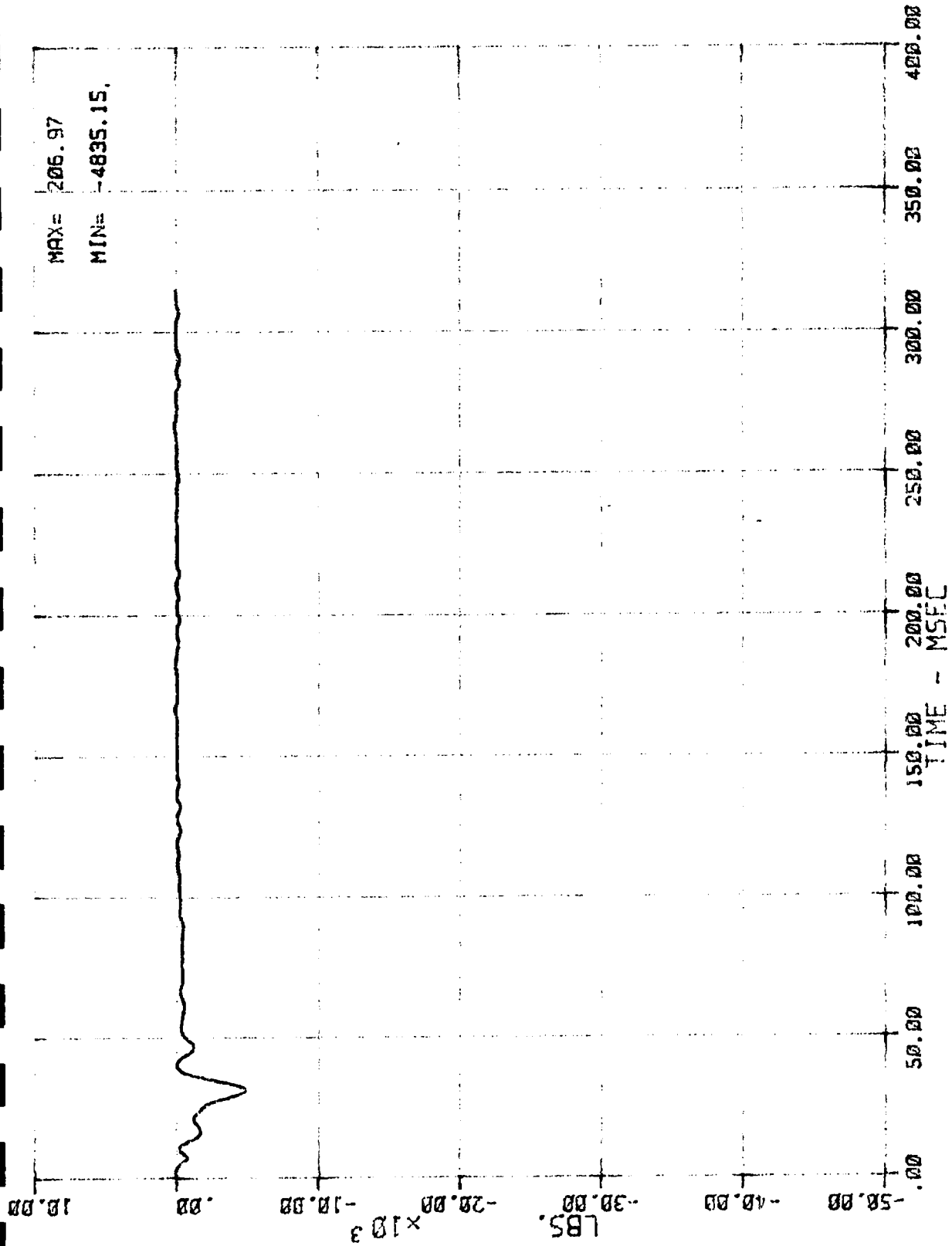
S3 LC BA N BC4 (BARRIER LOAD CELL C4 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



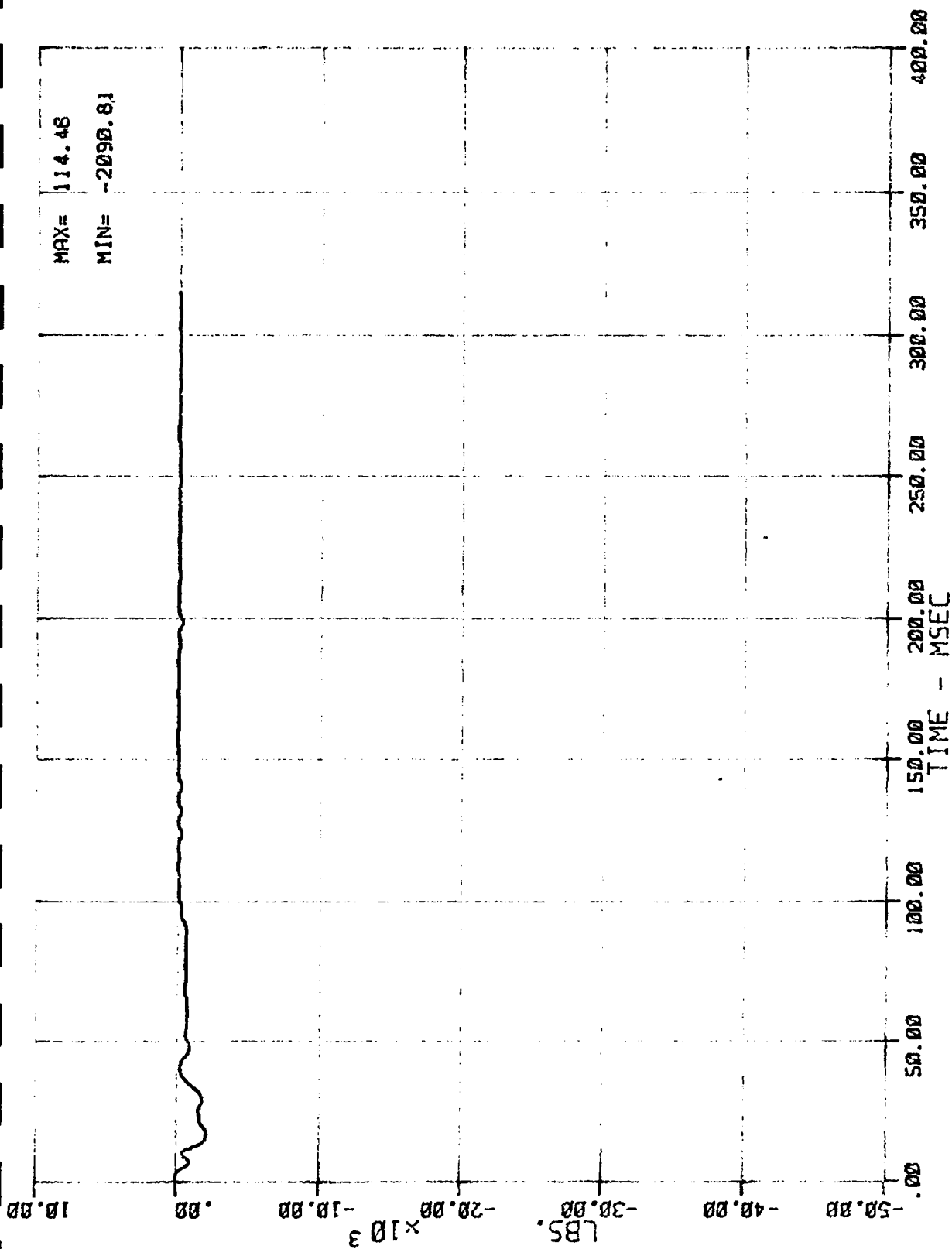
S4 LC BA N BCS (BARRIER LOAD CELL CS FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



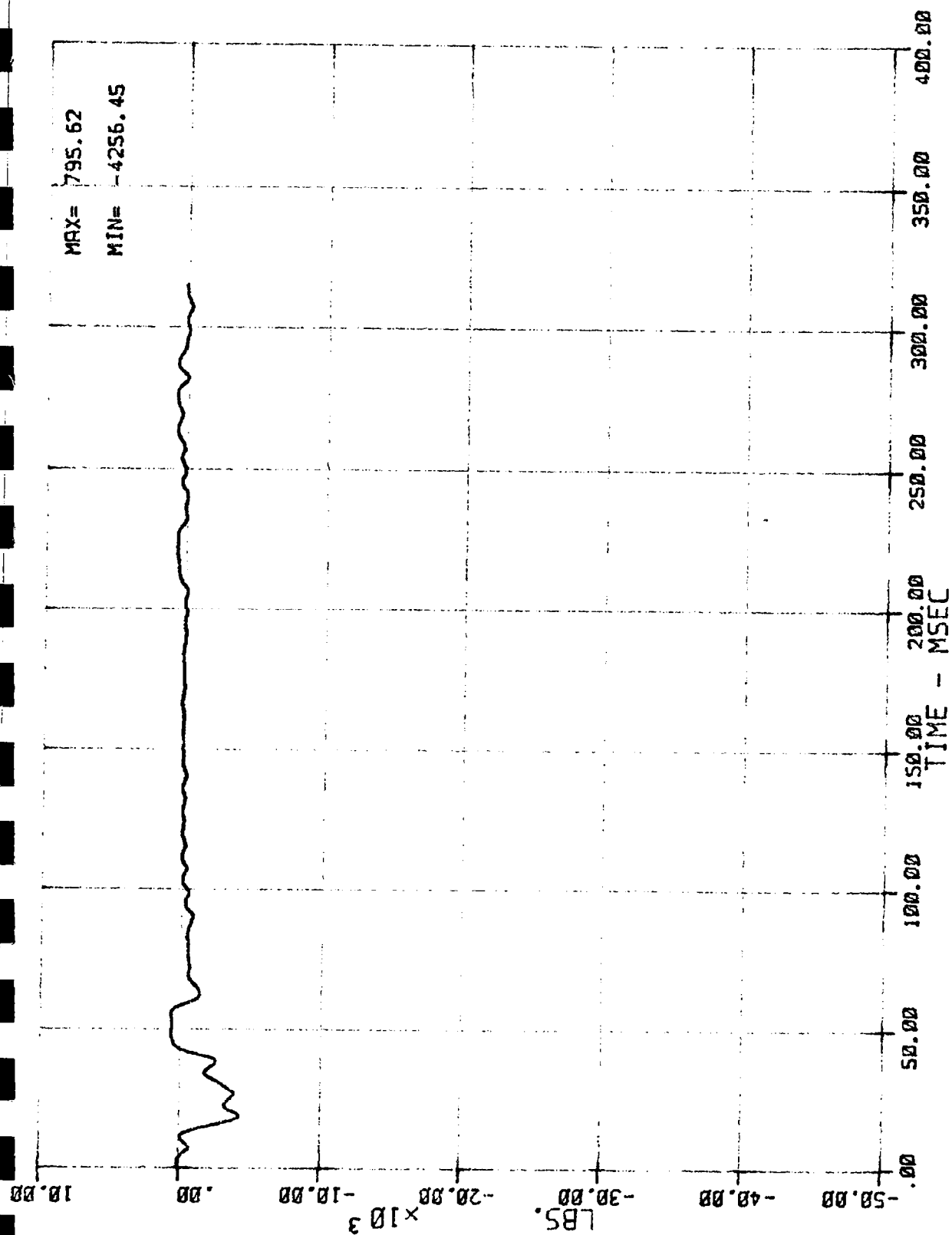
SS LC BA N BC6 (BARRIER LOAD CELL C6 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



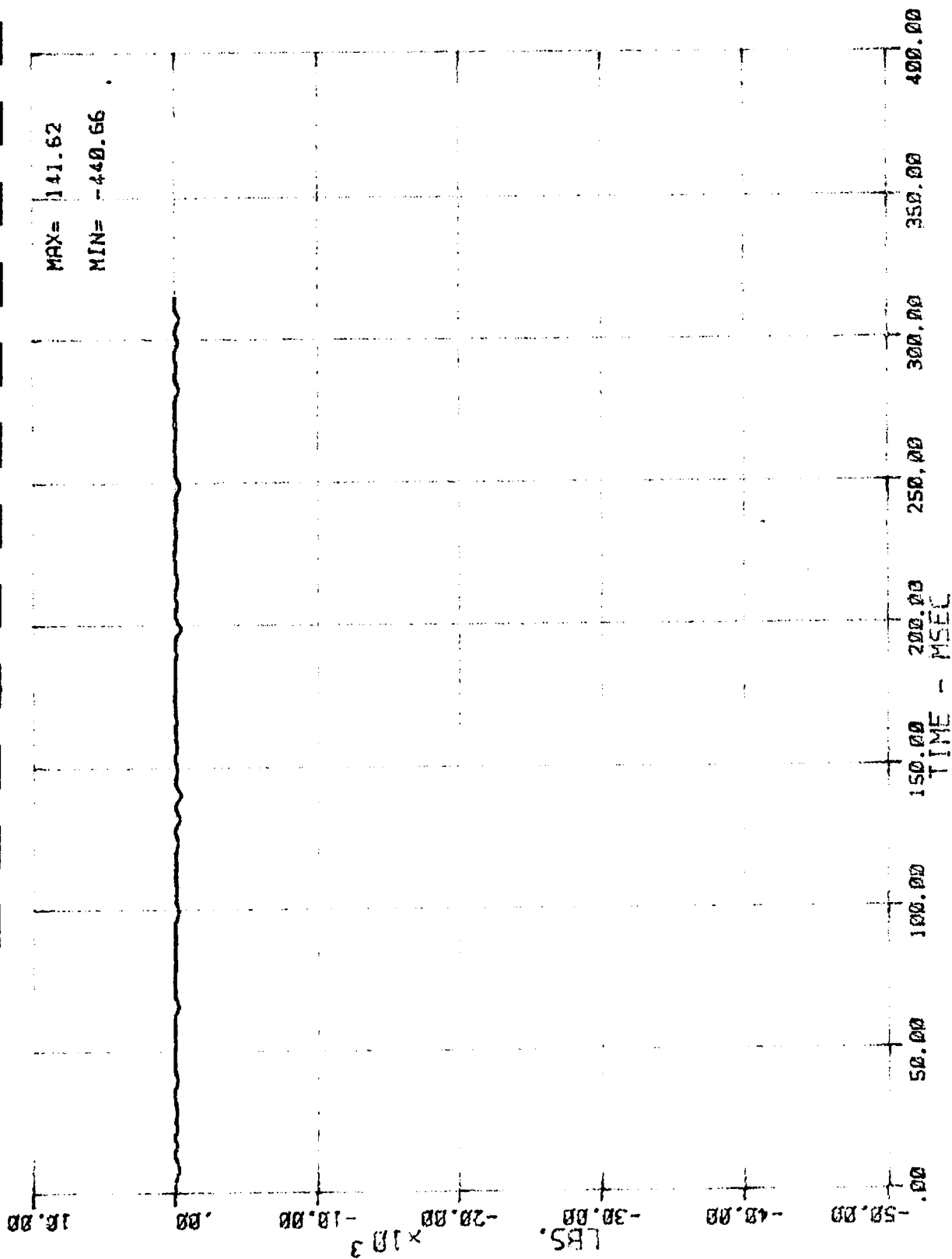
56 LC BA N BC7 (BARRIER LOAD CELL C7 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



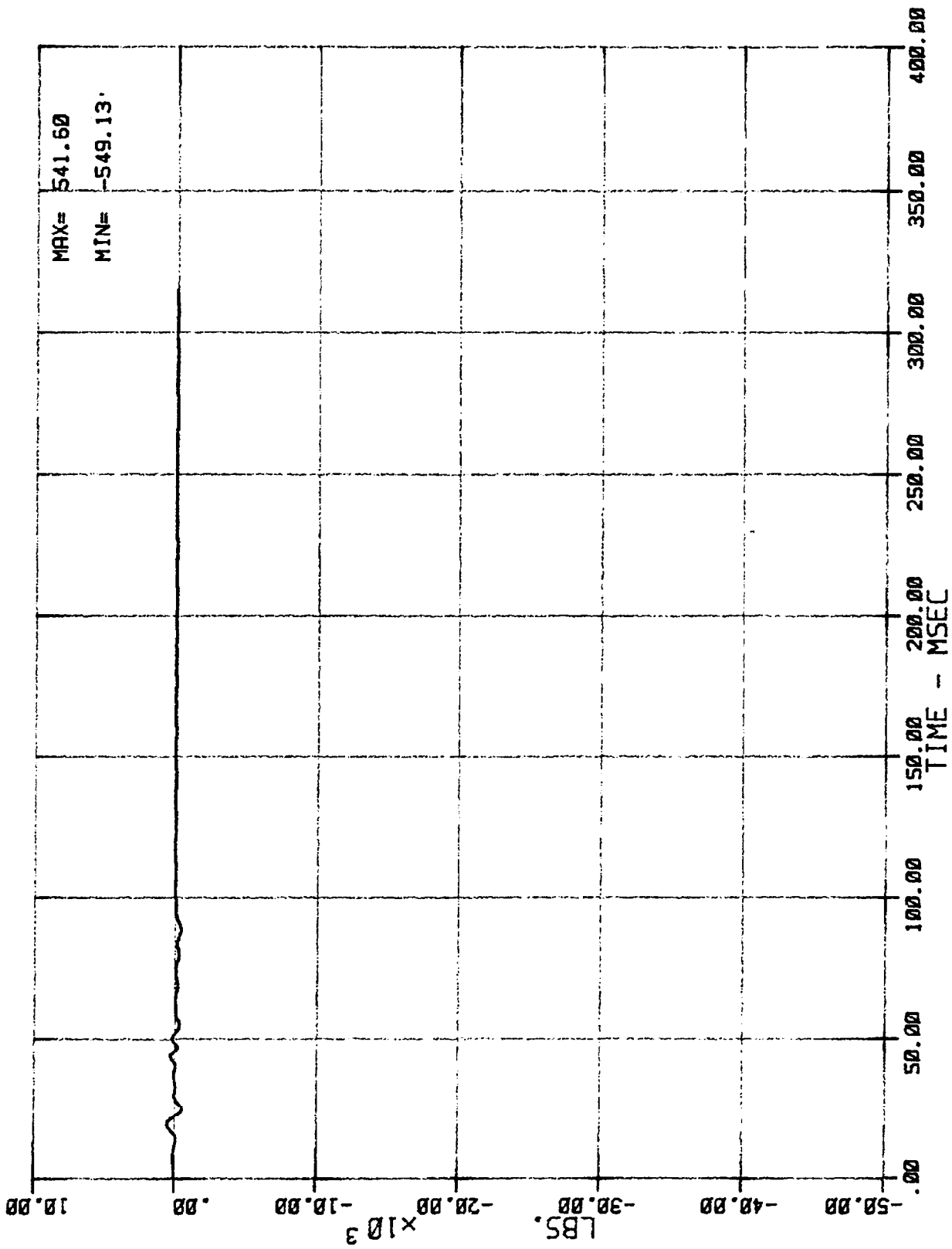
S7 LC BA N BCB (BARRIER LOAD CELL C8 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

05/12/86



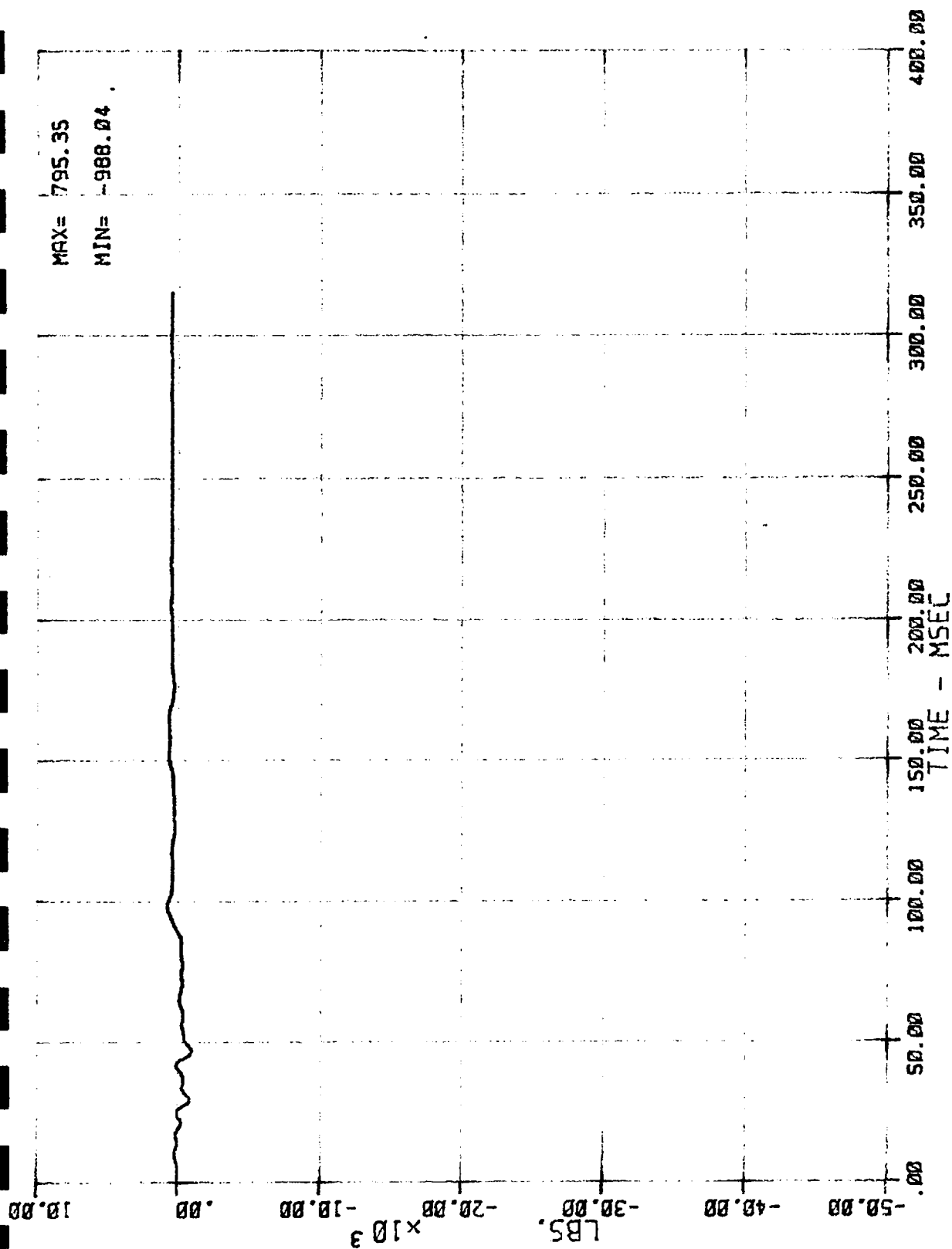
58 LC BA N BC9 (BARRIER LOAD CELL C9 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



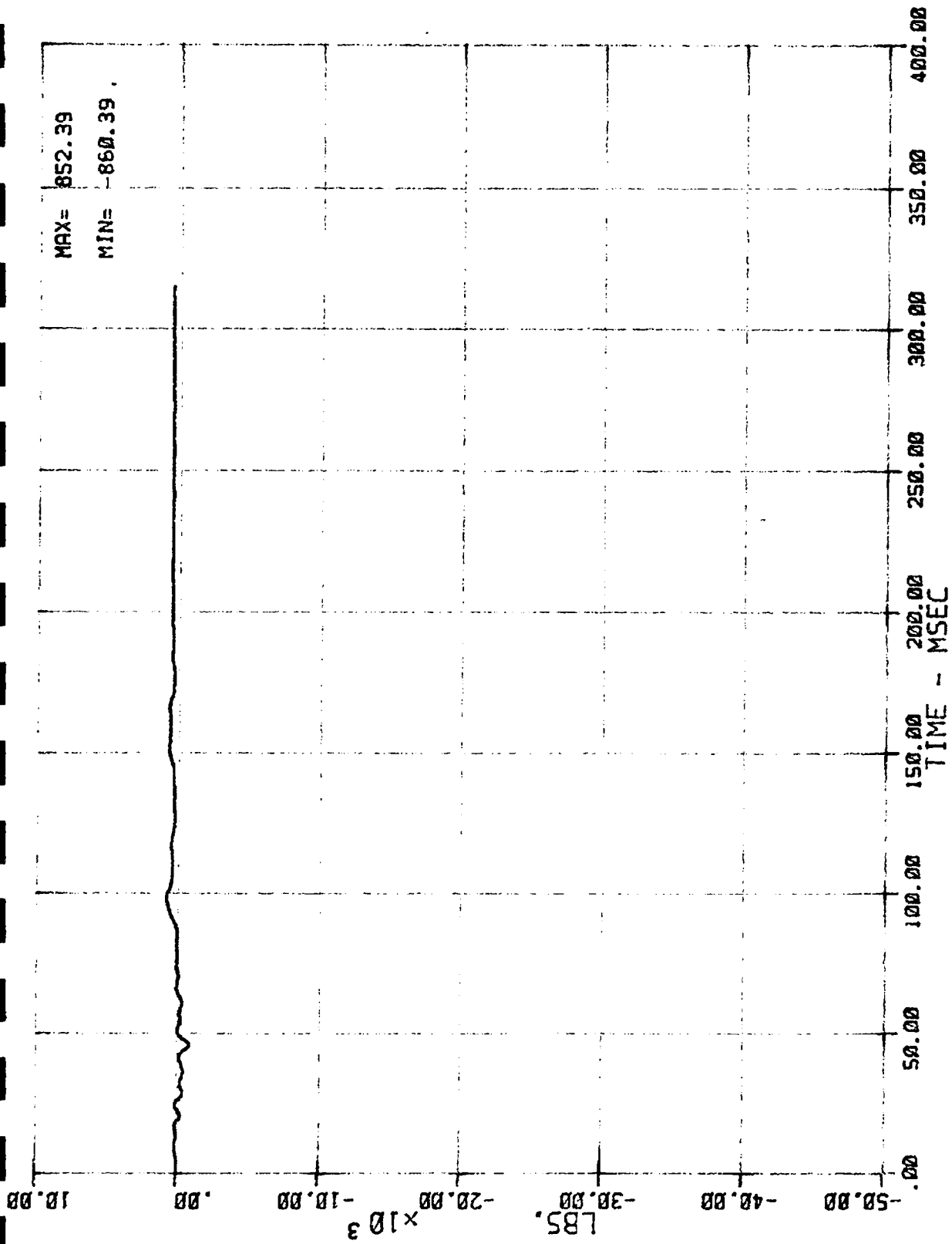
59 LC BA N BD1 (BARRIER LOAD CELL 01 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



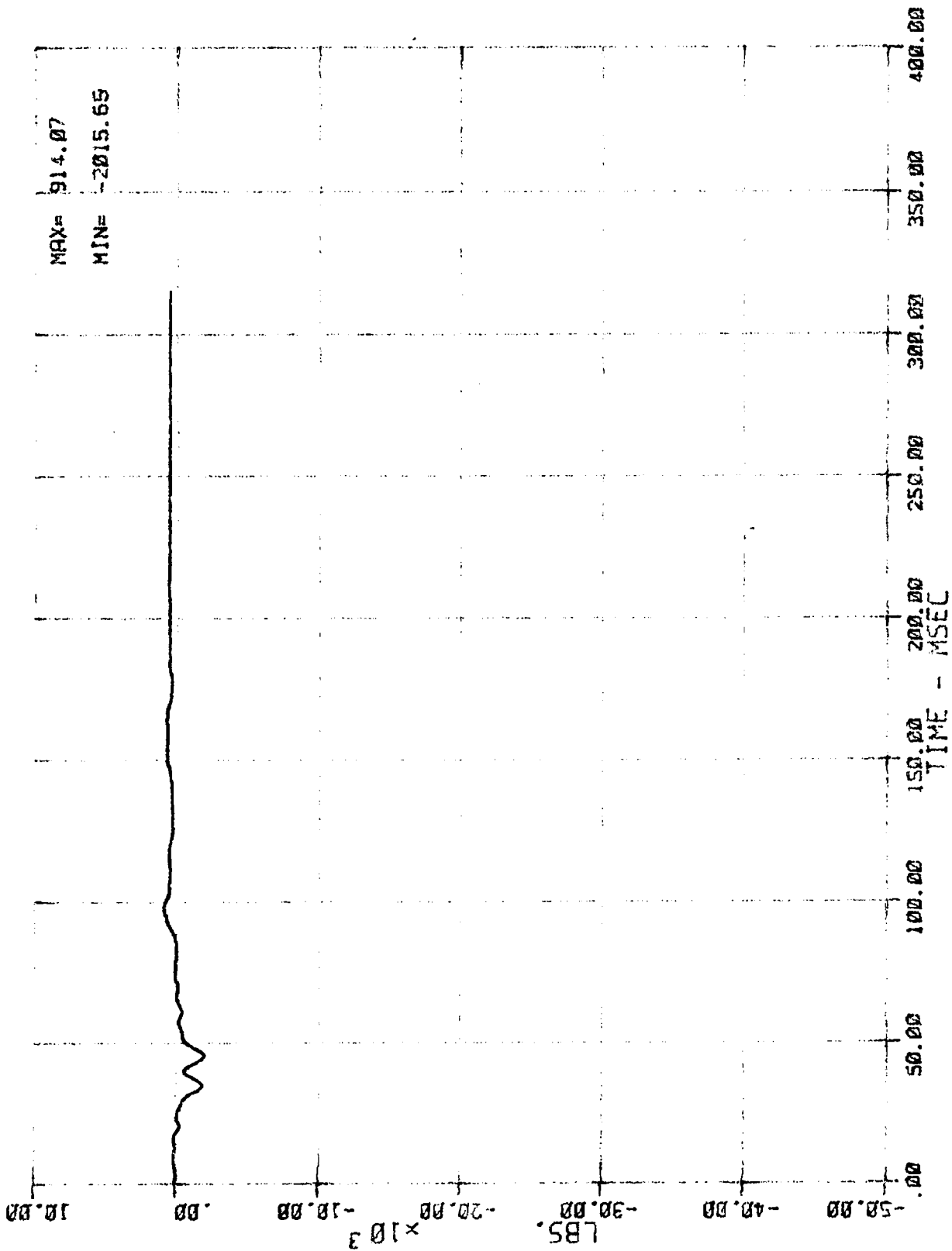
60 LC BA N 802 (BARRIER LOAD CELL D2 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



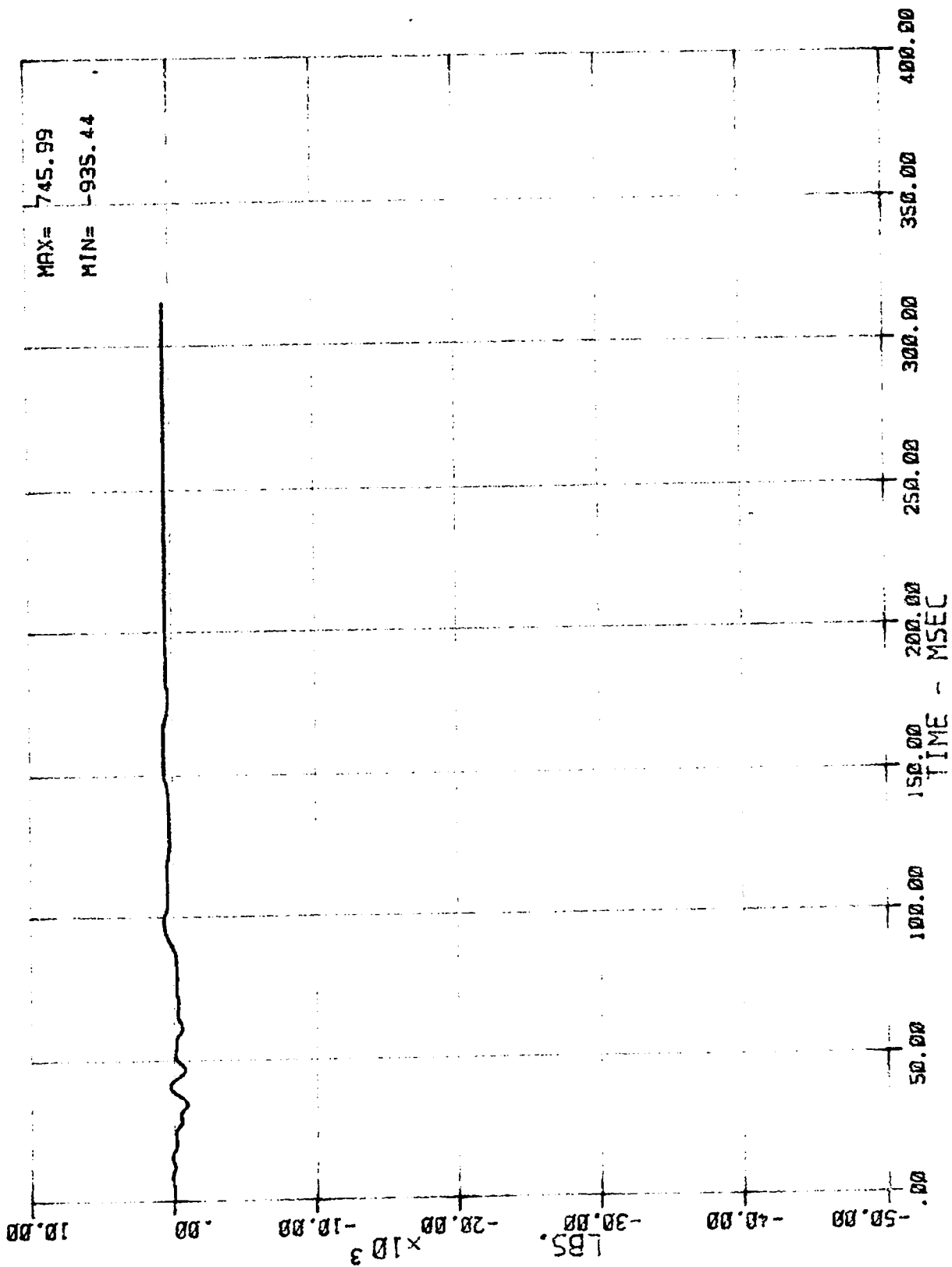
61 LC BA N BD3 (BARRIER LOAD CELL D3 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



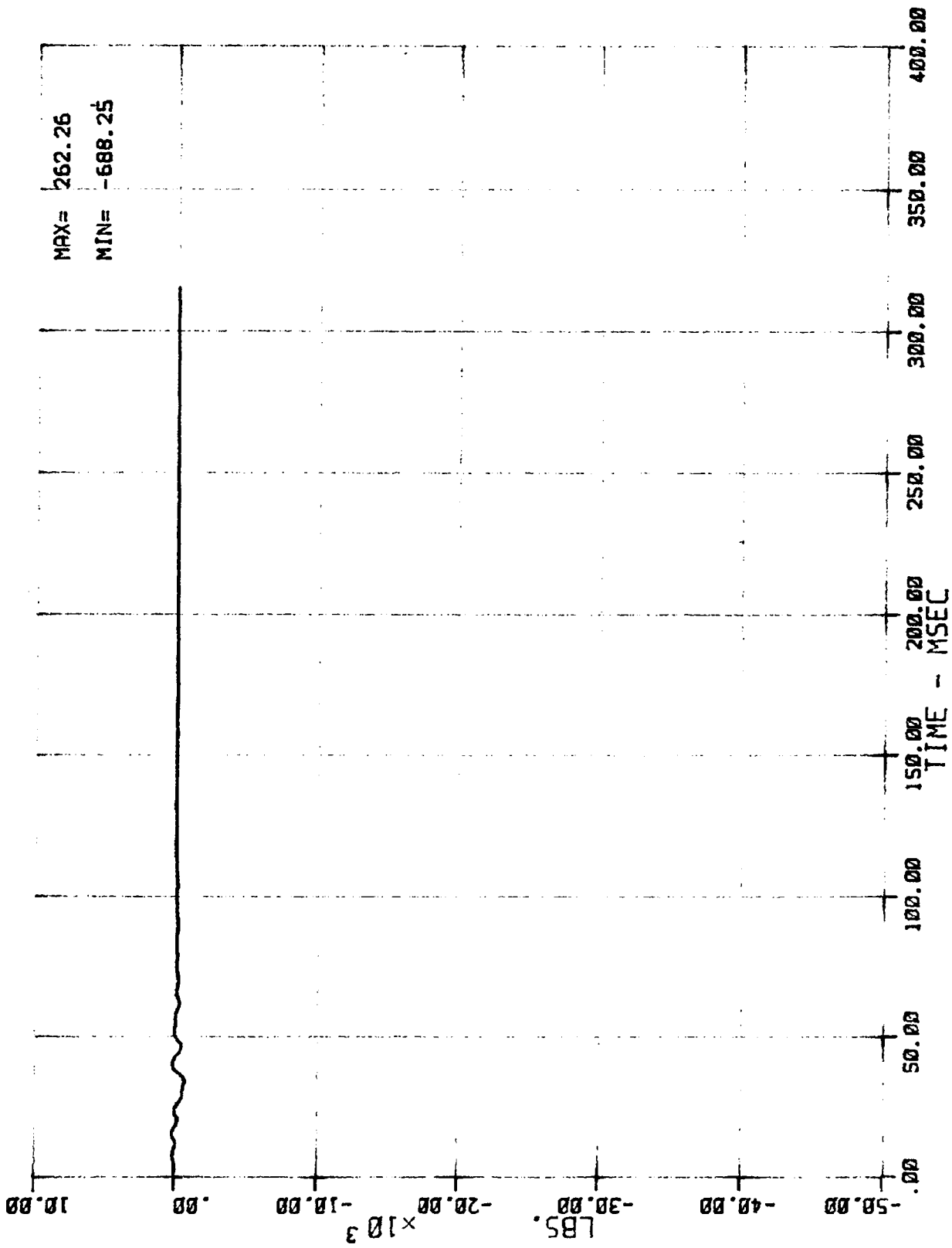
62 LC BA N B04 (BARRIER LOAD CELL D4 FORCE)
NSE N26056 1986 SUBARU GL SEDAN

06/12/86



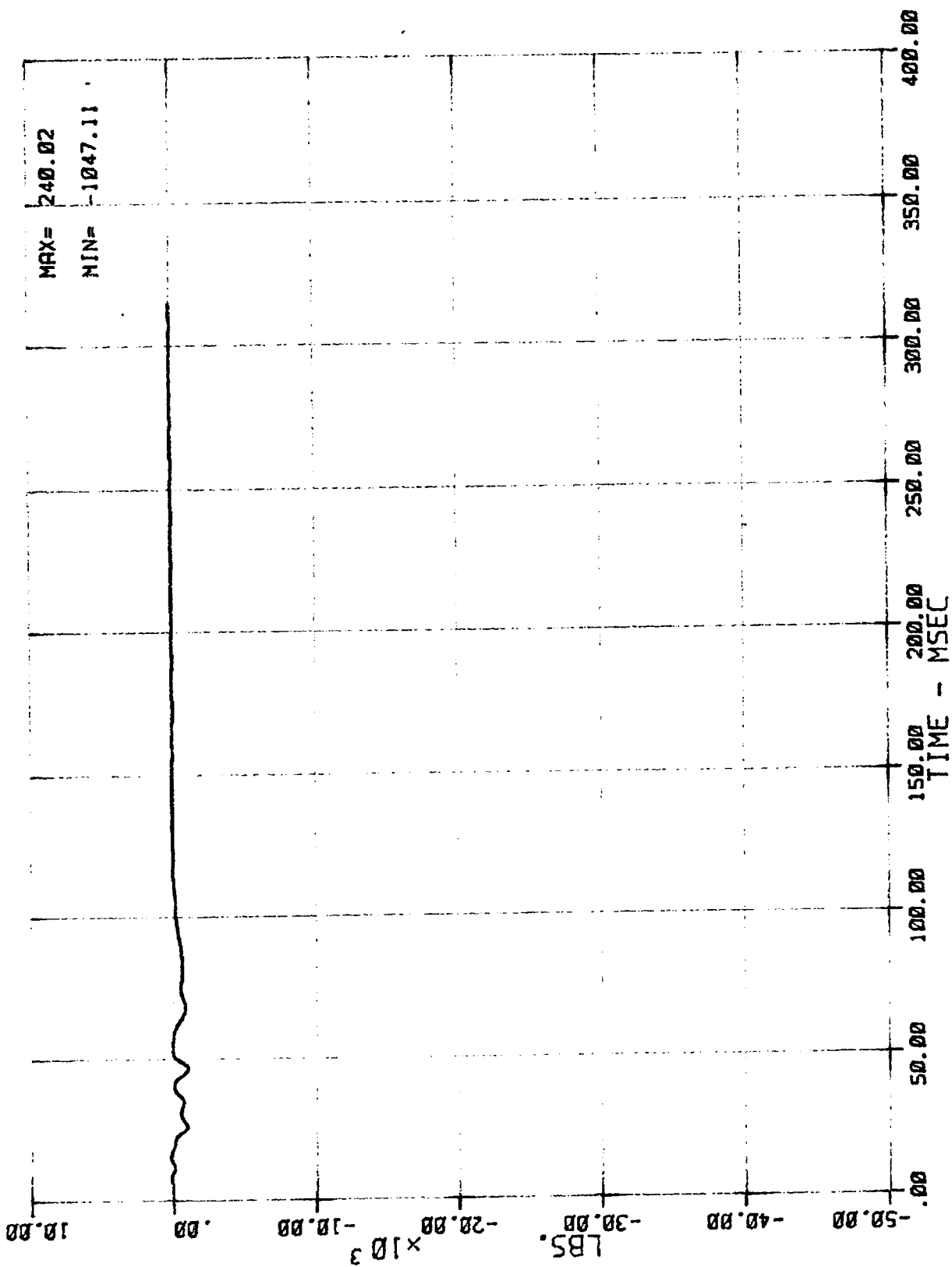
63 LC BA N BDS (BARRIER LOAD CELL DS FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



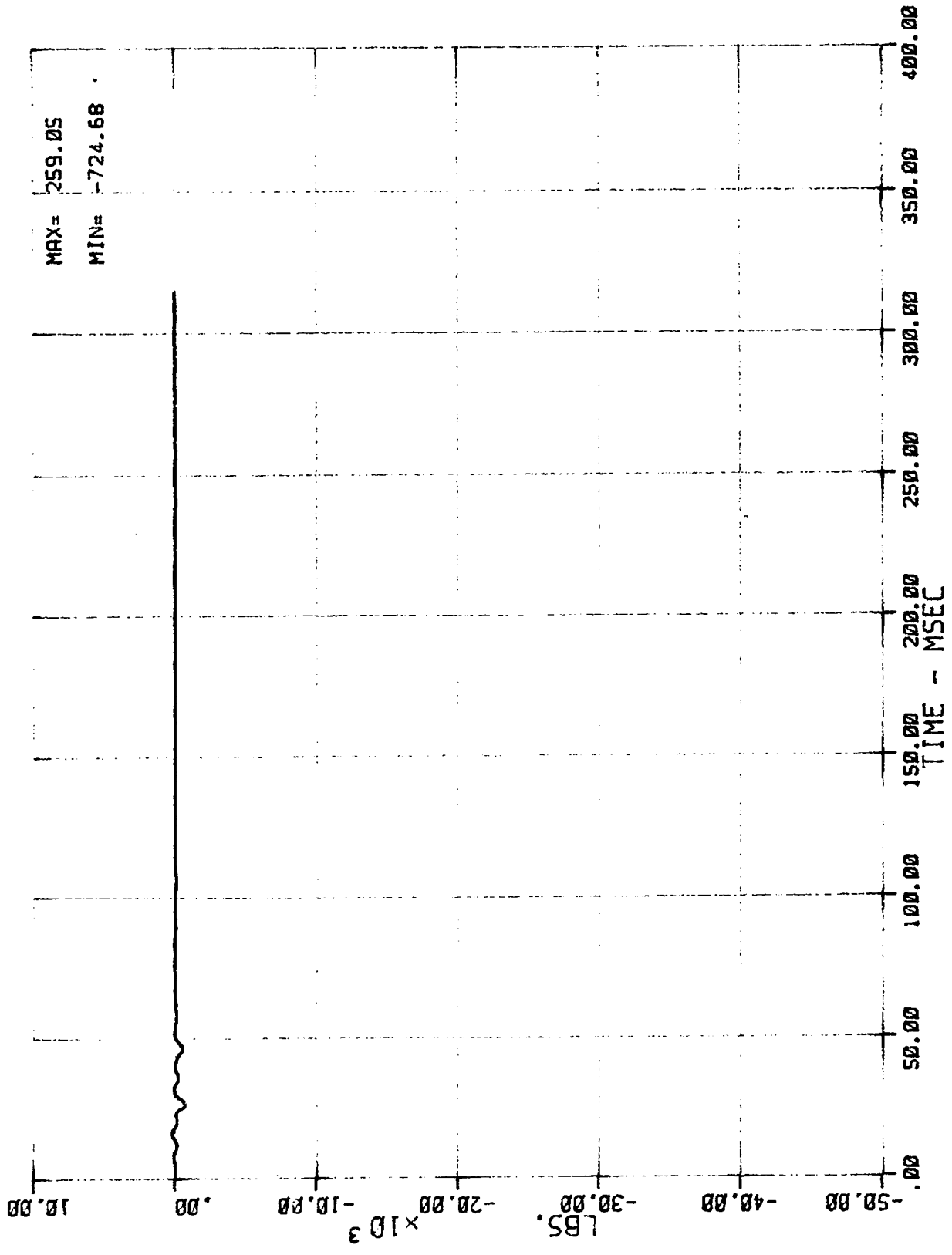
64 LC BA N BD6 (BARRIER LOAD CELL D6 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



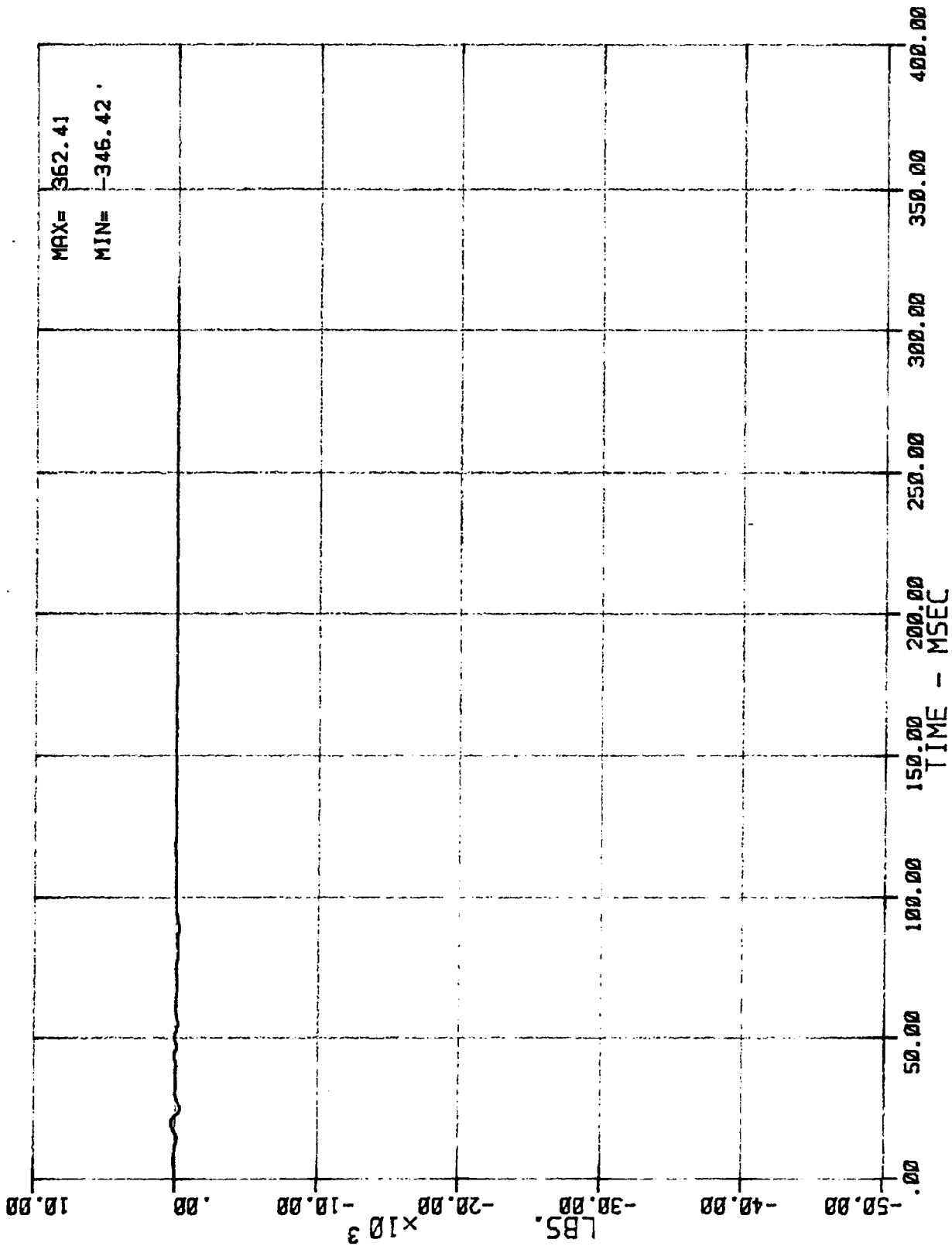
65 LC BA N 807 (BARRIER LOAD CELL D7 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



66 LC BA N B08 (BARRIER LOAD CELL D8 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86



67 LC BA N BD9 (BARRIER LOAD CELL D9 FORCE)
MSE N26056 1986 SUBARU GL SEDAN

06/12/86

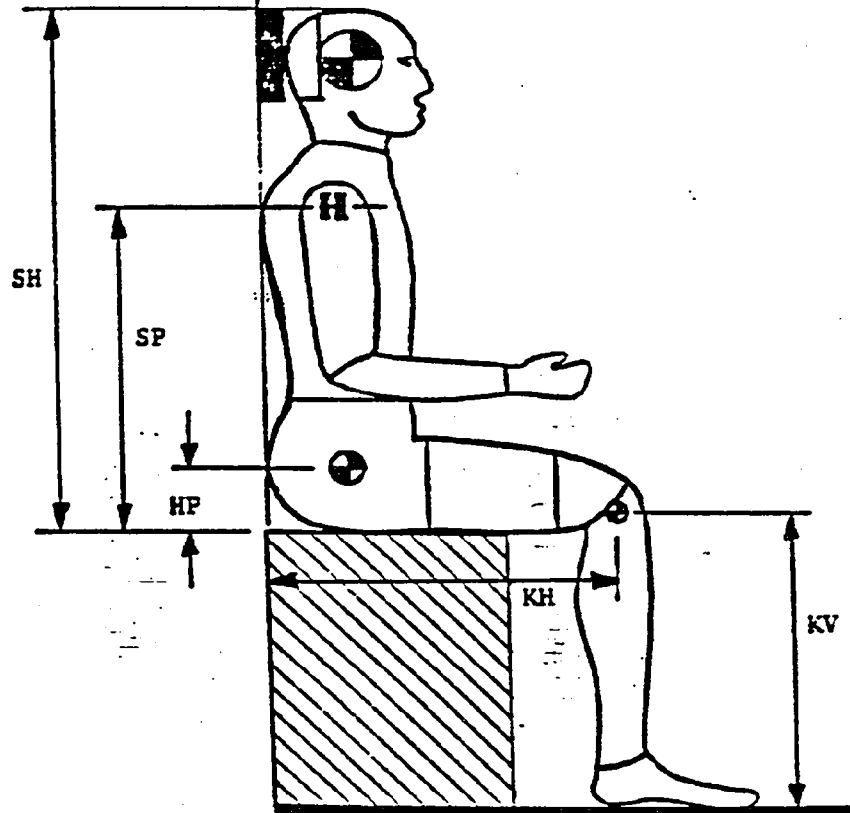
APPENDIX C

PART 572 DUMMY CONFIGURATION AND
PERFORMANCE VERIFICATION TESTS

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA DUMMY I.D. NO.: 4 6 4

1. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION		06/04/86	
VERIFICATION NUMBER FOR DUMMY*		2	
SH - Seated Height- - - - -	35.6 to 35.8"	35.7	
SP - Shoulder Pivot Height- - -	21.8 to 22.4"	22.0	
HP - Hip Pivot Height - - - - -	3.9" ref.	3.9	
KH - Knee Pivot from back line- -	20.1 to 20.7"	20.5	
KV - Knee Pivot from floor- - -	19.3 to 19.9"	19.4	
SW - Shoulder Width - - - - -	17.8 to 18.4"	18.1	
HW - Hip Width- - - - -	14.0 to 15.4"	14.8	

TECHNICIAN'S NAME: P. Leonard

* Sequential number beginning with "1" at the start of each fiscal year's crash test program

TABLE - PART 572 ATD CERTIFICATION TEST DATA, SUMMARY

NHTSA ATD I.D. NO.: 464

LABORATORY TECHNICIAN: Paul Leonard

Sheet 1 of 3		Pre-Test Calibration	Post-Test Calibration
Date of ATD Calibration - - - - -		06/02-06/04/86	
Calibration Sequential Number For Dummy - - -		2	
Temperature In Lab. (Spec. = 66 to 78° F) - -		70-74	
Relative Humidity In Lab. (Spec. = 10 to 70%)		54-60	
TEST PARAMETER	SPECIFICATION		
1. HEAD DROP TEST:			
a. Peak Resultant Accel. -	210 to 260G	22.1	
b. Peak Lateral Accel. -	≤10G	2.9	
c. Time above 100G - - -	0.9 to 1.5 ms	1.3	
2. NECK BENDING TEST:			
a. Pendulum Speed - - - -	21.5 to 25.5 fps	22.1	
b. Pendulum Avg. Decel. (over $t_3 - t_2$) - - - -	20 to 24G	23.3	
c. Peak Resultant Head Acceleration - - - - -	26G maximum	21.7	
d. Pendulum Decel. ($t_2 - t_1$)	≤3 ms	2.8	
e. Pendulum Decel. ($t_3 - t_2$)	25 to 30 ms	27.6	
f. Pendulum Decel. ($t_4 - t_3$)	≤ 10 ms	10.0	
g. Pendulum Direction Reversal Time - - - - -	≥123 ms	N/A	
h. Max. Head Rotation - -	63 to 73°	63.4	
i. Chordal Displacement: Head Rotation Angle - -			
0°	Time	-2 to 2 ms	0.0
	Displ.	-.5 to .5 in.	0.00
30°	Time	25.6 to 34.4 ms	32.0
	Displ.	2.1 to 3.1 in.	2.71
60°	Time	40.3 to 51.7 ms	50.1
	Displ.	4.3 to 5.3 in.	5.21
Maximum (63°)	Time	53.2 to 66.8 ms	63.0
	Displ.	5.0 to 6.0 in.	5.47

TABLE - PART 572 ATD CERTIFICATION TEST DATA, SUMMARY (CONT'D)

NHTSA ATD I.D. NO.: 464

Sheet 2 of 3			Pre-Test Calibration	Post-Test Calibration
TEST PARAMETER		SPECIFICATION		
2. <u>NECK BENDING TEST</u>				
<u>Continued:</u>				
i. Chordal Displacement:				
Head Rotation Angle -				
60°	Time	67.0 to 83.0 ms	71.2	
	Disp.	4.3 to 5.3 in.	5.17	
30°	Time	85.4 to 104.6 ms	89.4	
	Displ.	2.1 to 3.1 in.	2.44	
0°	Time	101.0 to 123.0 ms	101.2	
	Displ.	-.5 to 0.5 in.	0.12	
3. <u>ABDOMINAL COMPRESSION TEST:</u>				
(Preload = 10 pounds)				
a. Force @ .5" - - - - -		23 - 36	27.0	
b. Force @ .75" - - - - -		36 - 50	40.5	
c. Force @ 1.0" - - - - -		50 - 63	56.0	
d. Force @ 1.3" - - - - -		73 - 88	84.5	
4. <u>LUMBAR FLEXION TEST:</u>				
a. Force @ 20° - - - - -		22 to 34 lbs.	32.2	
b. Force @ 30° - - - - -		34 to 46 lbs.	43.3	
d. Force @ 40° - - - - -		46 to 58 lbs.	49.1	
e. Return Angle - - - - -		12° maximum	11°	
5. <u>CHEST IMPACT TESTS:</u>				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	21.90	
(2) Peak Deflection -		1.7" maximum	1.67	
(3) Peak Resistive Force - - - - -		2250 lbs. maximum	2.063	
(4) Internal Hysteresis - - -		50 to 70%	65.7	

TABLE - PART 572 ATD CERTIFICATION TEST DATA, SUMMARY (CONT'D)

NHTSA ATD I.D. NO.: 464

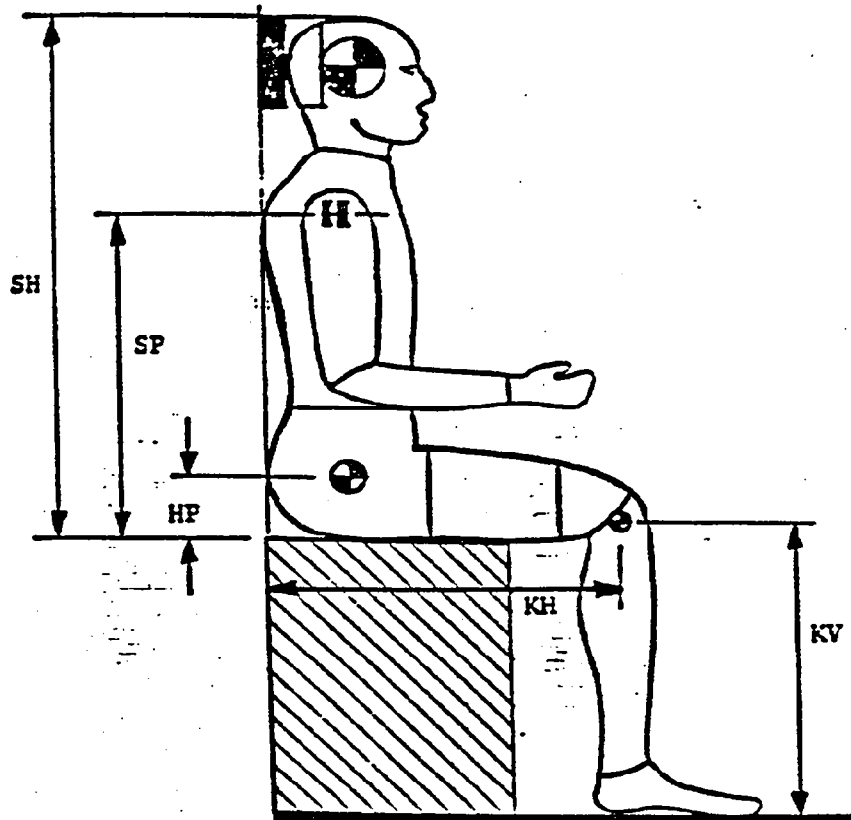
Sheet 3 of 3		Pre-Test Calibration	Post-Test Calibration
TEST PARAMETER	SPECIFICATION		
5. CHEST IMPACT TESTS: <u>Continued:</u>			
b. Low Speed			
(1) Probe Speed - - -	13.86-14.14 fps	13.95	
(2) Peak Deflection -	1.1" maximum	0.93	
(3) Peak Resistive Force - - - - -	1450 lbs. maximum	1336	
(4) Internal Hysteresis - - -	50 to 70%	68.9	
6. KNEE IMPACT TESTS:			
a. Right Side			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.90	
(2) Maximum Force - -	1850 to 2500 lbs.	2205	
(3) Time Above 1000#-	1.7 ms minimum	1.8	
b. Left Side			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.91	
(2) Maximum Force - -	1850 to 2500 lbs.	1873	
(3) Time Above 1000#-	1.7 ms. minimum	1.7	

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA DUMMY I.D. NO.:

4	6	6
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I. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION		06/11/86	
VERIFICATION NUMBER FOR DUMMY*		2	
SH - Seated Height- - - - -	35.6 to 35.8"	35.6	
SP - Shoulder Pivot Height- - -	21.8 to 22.4"	22.0	
HP - Hip Pivot Height - - - - -	3.9" ref.	3.9	
KH - Knee Pivot from back line- -	20.1 to 20.7"	20.5	
KV - Knee Pivot from floor- - -	19.3 to 19.9"	19.3	
SW - Shoulder Width - - - - -	17.8 to 18.4"	18.2	
HW - Hip Width- - - - -	14.0 to 15.4"	14.1	

TECHNICIAN'S NAME: P. Leonard

* Sequential number beginning with "1" at the start of each fiscal year's crash test program

TABLE - PART 572 ATD CERTIFICATION TEST DATA, SUMMARY

NHTSA ATD I.D. NO.: 466

LABORATORY TECHNICIAN: Paul Leonard

Sheet 1 of 3		Pre-Test Calibration	Post-Test Calibration
Date of ATD Calibration - - - - -		06/02-06/10/86	
Calibration Sequential Number For Dummy - - -		2	
Temperature in Lab. (Spec. = 66 to 78° F) - -		71-74	
Relative Humidity in Lab. (Spec. = 10 to 70%)		54-64	
TEST PARAMETER	SPECIFICATION		
1. HEAD DROP TEST:			
a. Peak Resultant Accel. -	210 to 260G	222	
b. Peak Lateral Accel. -	≤10G	7.7	
c. Time above 100G - - -	0.9 to 1.5 ms	1.3	
2. NECK BENDING TEST:			
a. Pendulum Speed - - - -	21.5 to 25.5 fps	22.1	
b. Pendulum Avg. Decel. (over $t_3 - t_2$) - - - -	20 to 24G	23.8	
c. Peak Resultant Head Acceleration - - - -	26G maximum	21.3	
d. Pendulum Decel. ($t_2 - t_1$)	≤3 ms	3.0	
e. Pendulum Decel. ($t_3 - t_2$)	25 to 30 ms	29.6	
f. Pendulum Decel. ($t_4 - t_3$)	≤10 ms	8.0	
g. Pendulum Direction Reversal Time - - - -	≥123 ms	N/A	
h. Max. Head Rotation - -	63 to 73°	64.0	
i. Chordal Displacement: Head Rotation Angle - -			
0°	Time	-2 to 2 ms	0.0
	Displ.	-.5 to .5 in.	0.00
30°	Time	25.6 to 34.4 ms	33.8
	Displ.	2.1 to 3.1 in.	2.72
60°	Time	40.3 to 51.7 ms	51.2
	Displ.	4.3 to 5.3 in.	5.12
Maximum (64°)	Time	53.2 to 66.8 ms	59.8
	Displ.	5.0 to 6.0 in.	5.35

TABLE - PART 572 ATD CERTIFICATION TEST DATA, SUMMARY (CONT'D)

NHTSA ATD I.D. NO.: 466

Sheet 2 of 3			Pre-Test Calibration	Post-Test Calibration
TEST PARAMETER		SPECIFICATION		
2. NECK BENDING TEST <u>Continued:</u>				
I. Chordal Displacement:				
Head Rotation Angle -				
60°	Time	67.0 to 83.0 ms	69.4	
	Displ.	4.3 to 5.3 in.	4.96	
30°	Time	85.4 to 104.6 ms	88.4	
	Displ.	2.1 to 3.1 in.	2.15	
0°	Time	101.0 to 123.0 ms	101.0	
	Displ.	-.5 to 0.5 in.	0.30	
3. ABDOMINAL COMPRESSION TEST: (Preload = 10 pounds)				
a. Force @ .5" - - - - -		23 - 36	26.0	
b. Force @ .75" - - - - -		36 - 50	38.0	
c. Force @ 1.0" - - - - -		50 - 63	56.0	
d. Force @ 1.3" - - - - -		73 - 88	81.0	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - - -		22 to 34 lbs.	32.1	
b. Force @ 30° - - - - -		34 to 46 lbs.	42.2	
d. Force @ 40° - - - - -		46 to 58 lbs.	47.2	
e. Return Angle - - - - -		12° maximum	11°	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	21.89	
(2) Peak Deflection -		1.7" maximum	1.50	
(3) Peak Resistive Force - - - - -		2250 lbs. maximum	2061	
(4) Internal Hysteresis - - -		50 to 70%	50.5	

TABLE - PART 572 ATD CERTIFICATION TEST DATA, SUMMARY (CONT'D)

NHTSA ATD I.D. NO.: 466

Sheet 3 of 3		Pre-Test Calibration	Post-Test Calibration
TEST PARAMETER	SPECIFICATION		
5. CHEST IMPACT TESTS: <u>Continued:</u>			
b. Low Speed			
(1) Probe Speed - - -	13.86-14.14 fps	13.91	
(2) Peak Deflection -	1.1" maximum	1.02	
(3) Peak Resistive, Force - - - - -	1450 lbs. maximum	1008	
(4) Internal Hysteresis - - -	50 to 70%	51.4	
6. KNEE IMPACT TESTS:			
a. Right Side			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.91	
(2) Maximum Force - -	1850 to 2500 lbs.	1862	
(3) Time Above 1000#-	1.7 ms minimum	1.9	
b. Left Side			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.90	
(2) Maximum Force - -	1850 to 2500 lbs.	2413	
(3) Time Above 1000#-	1.7 ms. minimum	1.8	

APPENDIX D
VEHICLE'S OWNER MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

Child safety lock

Child safety locks are fitted on both rear doors for safety when children are seated in the rear.

Set the child safety lock lever to "LOCK" and close the door. The rear door cannot be opened from inside the vehicle, even though the red mark on the lock lever is visible. It can be opened only from the outside.

Front seats

Seat fore-and-aft adjustment

To move the seat back and forward, pull the adjuster lever up, slide the seat to the desired position, then release the lever.

After adjusting the seat, always try to slide it back and forth to check that it is properly locked in place.

CAUTION:

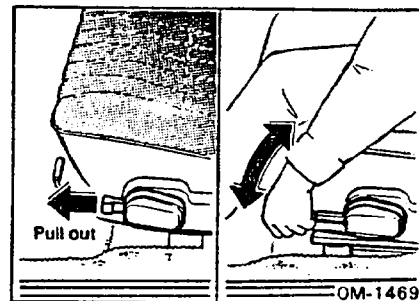
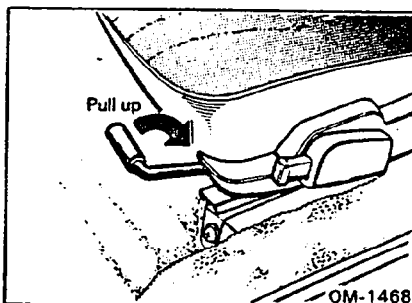
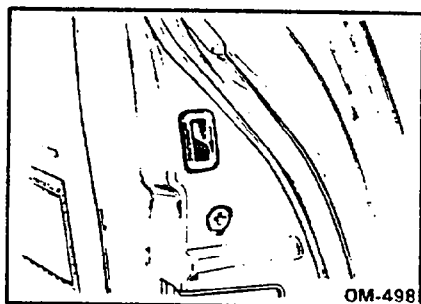
For safety, never adjust the seat while driving.

Seat up-and-down adjustment (if equipped)

Seat position can be adjusted up or down steplessly. To raise the seat, pull out the lever and pull it up, then when the seat cushion is at the desired height, release the lever. To lower the seat, pull out the lever and push it down. Release the lever when the seat cushion is at the desired height. Operate the lever while you are seated, otherwise more force is required to lower it.

CAUTION:

• **Never adjust seat position while driving.**



• Before operating the lever, always check that hands and feet of rear seat passengers are away from the lift mechanism or not under the seat cushion.

Reclining seat back

To recline the front seat back, pull the reclining lever up, then adjust the seat back to the desired position and release the lever.

After adjustment, be sure seat is securely locked.

CAUTION:

- For safety, never adjust the seat while driving.
- Never ride in a moving vehicle with the seat back in the reclining position. Seat belts operate most effectively when the wearer is in a fully upright position.

Lumbar support

Lumbar support pressure is adjusted by the adjuster lever. Set it at the most comfortable position.

Head restraint up-and-down adjustment

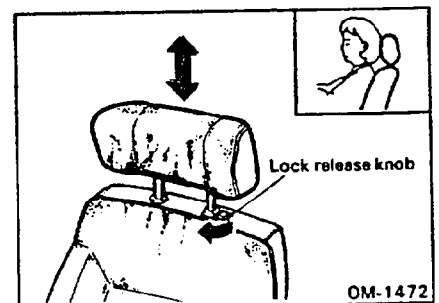
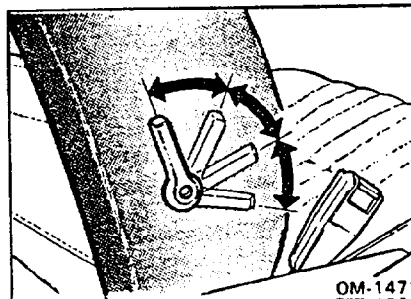
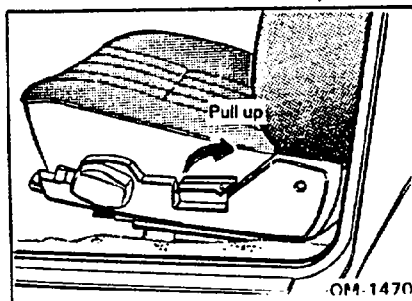
To raise the head restraint, pull it up. To lower, push it down while holding the lock release knob.

Adjust the head restraint to the best position which is just above (or level with) the top of the ears.

Never set it behind the neck.

CAUTION:

Never remove the head restraints since they are designed to reduce risk of serious neck injury if the vehicle is struck from the rear.



- To prevent illegal entry into the trunk, insert the key, then turn it.

Then the seat back and panel are locked. Make sure that the operation of the trunk lid opener is cancelled.

Station Wagon

The rear seat is designed to fold allowing more loading area in the rear compartment.

- Folding the seat back

To lower the seat back, first unlock by pulling up the lock release knobs, then fold the seat back forward and down. To raise, lift the seat back and push it firmly into place.

Pull back-and-forward on the seat back to check that it is properly locked in position.

- Changing seat to flat position

• On models equipped with head restraints, remove them before folding down the seat. Set the head restraints in the folded down seat back as illustrated.

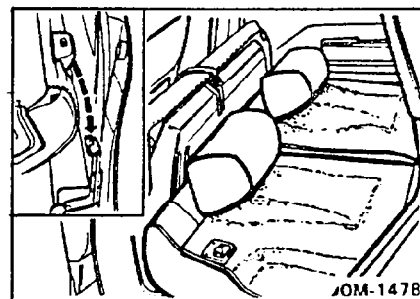
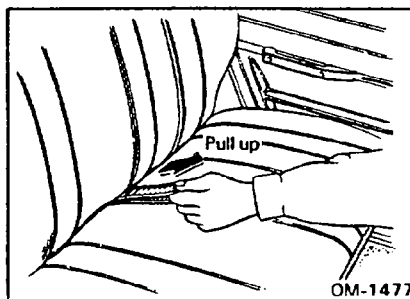
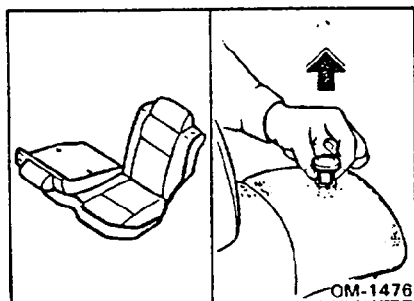
• Before folding the seat, slide the front seat forward.

The rear seat is converted as follows:

1. Pull up the strap at the rear edge of the rear seat cushion to raise the cushion.
2. Pull up the lock release knobs to unlock the seat back.
3. Then fold it forward and down to make the floor.
4. Set the hooks at the top of the seat back onto the pins attached to the bottom of the rear cushion.

CAUTION:

- For safety of all passengers, never stack luggage or other cargo higher than the top of the seat back.
- Fix skis or other long items securely in position to prevent them from shooting forward at sudden braking.
- For safety, never allow anyone to ride in the cargo area of the station wagon. This area is designed only for carrying luggage and miscellaneous items. It should never be used by passengers.
- Do not place luggage or other articles on the floor under the seat cushion.



- To prevent illegal entry into the trunk, insert the key, then turn it.

Then the seat back and panel are locked. Make sure that the operation of the trunk lid opener is cancelled.

Station Wagon

The rear seat is designed to fold allowing more loading area in the rear compartment.

• Folding the seat back

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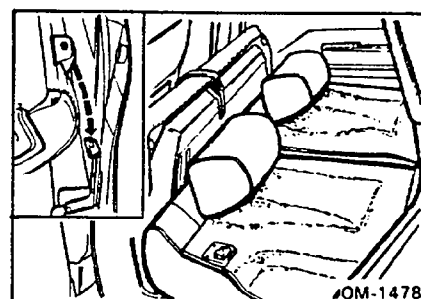
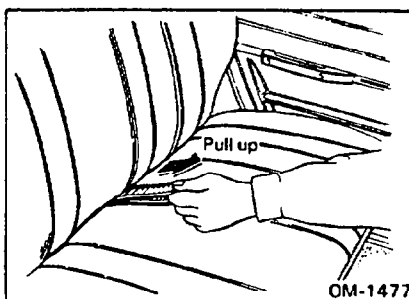
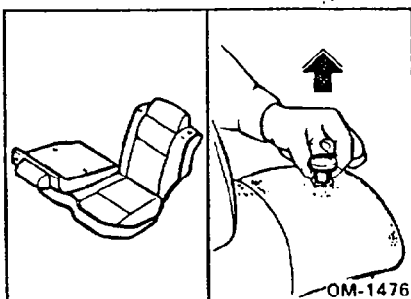
- Changing seat to flat position
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4. Set the hooks at the top of the seat back onto the pins attached to the bottom of the rear cushion.

CAUTION:

- For safety of all passengers, never stack luggage or other cargo higher than the top of the seat back.
- Fix skis or other long items securely in position to prevent them from shooting forward at sudden braking.
- For safety, never allow anyone to ride in the cargo area of the station wagon. This area is designed only for carrying luggage and miscellaneous items. It should never be used by passengers.
- Do not place luggage or other articles on the floor under the seat cushion.



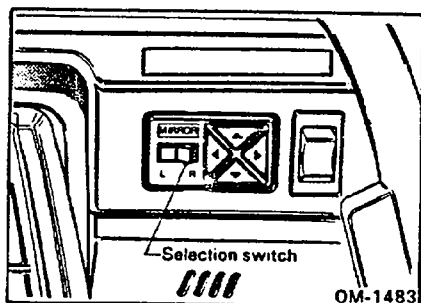
Remote control mirrors (if equipped)

First select either the right or left mirror by the selection switch. Then by pressing the desired direction button, adjust the mirror to the best position.

- Each mirror can also be adjusted with the hand by pushing the mirror itself.

CAUTION:

Never press the button longer than necessary, as damage to the mirror adjusting mechanism may result.



Front seat belts

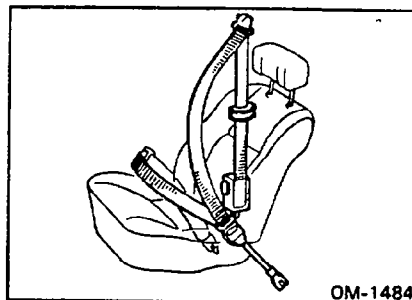
The front seat belts are the three-point type with an emergency locking retractor. During sharp deceleration as when the vehicle suddenly stops, turns sharply, or strikes another object in an accident, the seat belt retractor automatically locks the belts. The belt is not locked if it is suddenly pulled out of the retractor by hand, but this is not a break down.

To fasten the front seat belt, pull the belt out of the retractor, then insert the tongue into the buckle until it snaps.

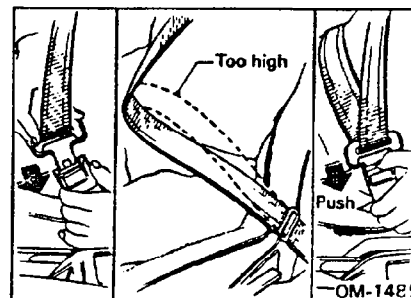
To unfasten the belt, push the button on the buckle.

CAUTION:

- Never use a belt while twisted or reversed.



- Never wear the shoulder belt under the arm. If an accident occurs, this can increase the risk or severity of injury.



Rear seat belts

The three rear seat belts are a two-point type.

The belts for the two outside passengers have automatic locking retractors. The center belt is a manually adjusted type and belt length is adjusted at the tongue plate.

To fasten the rear seat belt, pull it out continuously from the retractor, then insert the tongue into the buckle until it snaps.

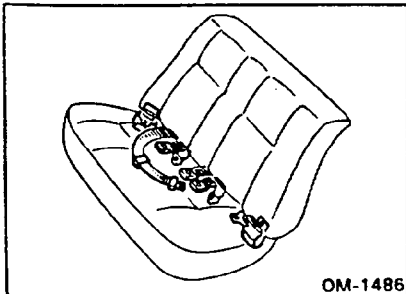
To unfasten the belt, push the button on the buckle.

If the belt is allowed to stop and return slightly, the belt will lock. If this happens and further adjustment is required, first return the belt to the retracted position, then pull it out again.

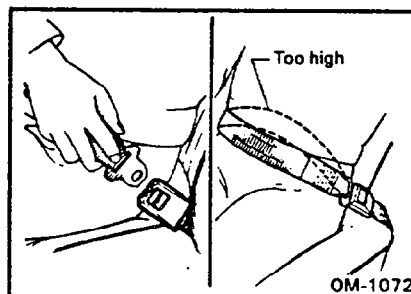
To unfasten the belt, push the button on the buckle.

CAUTION:

Never use a belt that is twisted or reversed.



OM-1486



OM-1072

Seat belt tips

- To help reduce the risk or severity of injury in accidents or sudden stops, all persons riding in the vehicle should always protect themselves by using the seat belts provided.

- Make it a rule to have everyone, including the driver, fasten their seat belts before starting the vehicle.

- Never use one belt for more than one person at a time.

- Position the lap belt across your lap as low as possible on your hips.

This is necessary to help reduce the risk or severity of injury in an accident. This spreads the force of the lap belt over the strong hip bones instead of across the soft abdomen.

- Never let any foreign object enter the buckle or retractor. Anything inside may prevent them from working properly.

- When fastening the front seat belt, to take up the slack in the belt, pull the shoulder strap through the tongue until the belt fits snugly. Then return the shoulder belt to its retractor until the shoulder strap also fits snugly.

- **Children.** It is recommended that they sit in the rear seat and be restrained with the seat belts. If sitting in front, never allow a child to stand up or kneel on the seat. Children especially should be restrained by seat belts at all times.

- **Baby or small child.** Use a child safety seating system which fits your vehicle. Before installing, always read the manufacturer's instructions carefully.

- **Expectant mother.** Seat belt use is recommended. Ask your doctor for specific recommendations. The lap belt should be worn securely and as low as possible over the hips and not on the waist.

Seat belt maintenance

- Keep sharp edges or damaging objects away from belts and other parts of the restraint system.

- Use care to keep the webbing free of polishes, oils and chemicals, and particularly battery acid.

- Never attempt to modify or make changes that will prevent the seat belt adjustment from operating properly.

- To clean the webbing, use a mild soap solution and water. Never attempt to bleach or redye the webbing since this could seriously affect its strength.

- Inspect the seat belts and attachments periodically for cracks, damage, loose bolts or worn webbing. Replace the seat belt as necessary.

- Replace seat belt assemblies after use in any serious accident.

Fasten seat-belt warning light and chime

Your vehicle is equipped with a seat-belt warning device at the driver's seat as required by current safety standards.

This device causes the seatbelt warning light on the instrument panel to light for about six seconds when the ignition switch is turned "ON".

If the driver has not fastened his seat belt, the warning chime sounds at the same time.