

636774
V4661

REPORT NO. 208-MGA-2003-006

SAFETY COMPLIANCE SLED TESTING FOR FMVSS 208
OCCUPANT CRASH PROTECTION

Mazda Motor Corporation
2003 Mazda Protege 4 Door
NHTSA NO. C35404

MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: May 30, 2003

Report Date: June 10, 2003

FINAL REPORT

Prepared For:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NVS-221
400 SEVENTH STREET, S.W., ROOM 6115
WASHINGTON, D.C. 20590

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

PREPARED BY: Chad Gadberry
Chad Gadberry, Project Engineer
MGA Research Corporation

DATE: 6/19/03

APPROVED BY: David Winkelbauer
David Winkelbauer, Facility Director
MGA Research Corporation

DATE: 6/19/03

Technicians: Randall Boals
Tammy Brausch
James Carney
Rick Dodge
Tim Michnay
Doug Miller
Chris Novak
David Wilcox

Secretary: Donna M. Janovicz

FINAL REPORT ACCEPTED BY:

Robert K. Case
Contracting Officer's Technical Representative (COTR)
NHTSA, Office of Vehicle Safety Compliance

8/28/03
Date of Report Acceptance

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 208-MGA-2003-006		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report for FMVSS 208 Compliance Sled Testing of a 2003 Mazda Protege 4 Door NHTSA No. C35404				5. Report Date June 10, 2003	
				6. Performing Organization Code MGA	
7. Author(s) Chad Gadberry				8. Performing Organization Report No. MGA-DOT-208-006	
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105				10. Work Unit No.	
				11. Contract or Grant No. DTNH22-98-D-11055	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance 400 Seventh St., S.W., Room 6115 Washington, D.C. 20590				13. Type of Report and Period Covered Final Report May 30 - June 10, 2003	
				14. Sponsoring Agency Code NVS-221	
15. Supplementary Notes					
16. Abstract A compliance test (sled test) was conducted on the subject 2003 Mazda Protege 4 Door in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP208S-01 for the determination of FMVSS 208 compliance. Test failures identified were as follows: NONE					
17. Key Words Compliance Testing Safety Engineering FMVSS 208S Sled Test				18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division, Room 5108, (NPO-230) 400 Seventh Street, S.W. Washington, D.C. 20590 Telephone No. (202) 366-4946	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 154		22. Price	

TABLE OF CONTENTS

<u>DESCRIPTION</u>	<u>PAGE NO.</u>
Purpose	1
Test Procedure	2
Test Results Summary	3
Sled Test Summary	5
General Test and Vehicle Parameter Data	6
Post Test Data	9
Seat and Steering Column Positioning Data	10
Dummy Positioning Measurement Table	11
Vehicle Targeting Measurements	16
Vehicle Accelerometer Placement and Data Summary	17
Vehicle Accelerometer Location Measurements and Data Summary	18
Camera Positions	19
Camera Location Measurements	20
Occupant Injury Data	21
Seat Belt Warning System Data	23
Readiness Indicator	24
Airbag Labels Data	25
Rear Outboard Seating Position Seat Belt Data	32
Lap Belt Lockability Data	33
Seat Belt Comfort and Convenience Data	45
 Appendix A - Photographs	
 Appendix B - Data Plots	
 Appendix C - Manufacturer Provided Test Information	

Purpose

This FMVSS 208 compliance sled test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 208 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by MGA Research Corporation (MGA) under Contract No. DTNH22-98-D-11055. The purpose of this test was to determine if the subject vehicle, a 2003 Mazda Protege 4 Door, NHTSA No. C35404, meets the performance requirements of FMVSS 208, "Occupant Crash Protection," in the impact simulation sled test mode.

Test Procedure

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-208S-01 dated January 15, 1998. Data was obtained relative to FMVSS 208, "Occupant Crash Protection," performance.

The test vehicle was instrumented with four (4) accelerometers to measure longitudinal axis accelerations.

The test vehicle contained two (2) Part 572 E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard seating positions according to the dummy placement procedures specified in Appendix B of the Laboratory Test Procedure. The dummies were not restrained by seat belts.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations; chest deflection potentiometers; left and right femur load cells to measure axial forces; and upper neck load cells to measure longitudinal, lateral, and vertical forces and moments.

The thirty-seven (37) data channels were digitally sampled at 10,000 samples per second and processed per Sections 11.7 through 11.9 of the Laboratory Test Procedure.

The crash event was recorded by six (6) high-speed motion picture cameras. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.

Test Results Summary

This FMVSS 208 compliance sled test was conducted at MGA Research Corporation on May 30, 2003.

The test vehicle, a 2003 Mazda Protege 4 Door, NHTSA No. C35404, appeared to comply with the performance requirements of FMVSS 208 in the impact simulation sled test mode as measured by Hybrid III 50th percentile male dummies.

	FMVSS 208 Max. Allowable Injury Assessment Values	Driver (Serial #340)	Passenger (Serial #312)
HIC	1000	166	197
Chest g	60 g	33.5 g	36.3 g
Chest displacement	3 in.	0.6 in.	0.5 in.
Left Femur	2250 lb	1163 lb	1242 lb
Right Femur	2250 lb	1103 lb	786 lb
Neck Extension	57 Nm	23.9 Nm	5.3 Nm
Neck Flexion	190 Nm	17.9 Nm	37.5 Nm
Neck Tension	3300 N	1486 N	731 N
Neck Compression	4000 N	1363 N	569 N
Neck Shear	3100 N	580 N	968 N

The vehicle also appears to meet the other FMVSS 208 requirements for which it was tested. These results are shown in the data sheets that are included in this report.

The test vehicle was equipped with air bags at the driver and passenger seating positions. The dummies were not restrained by seat belts. The sled carriage was accelerated to 17.2 g with an integrated velocity change of 28.3 mph. After filtering the acceleration signal to Channel Class 60, the airbag system was triggered 21.6 milliseconds after 0.5 g acceleration.

INCLUDE DISCUSSION OF LOST CHANNELS OR OTHER TEST ISSUES.

- None noted

Sled Test Summary

Vehicle NHTSA No.: C35404 Test Mode: FMVSS 208 SLED TEST

Vehicle Yr/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Test Date: May 30, 2003 Time: 12:00 p.m. Temp: 71°F

Vehicle Test Weight: 3126 lbs.

DUMMY INFO.

DRIVER

PASSENGER

Dummy Type

Part 572E

Part 572E

Serial Number

340

312

Restraint System

Frontal airbag

Frontal airbag

No. Data Channels

15

15

Number of Cameras:

1 Real Time

6 High Speed

Door Opening Data:

yes Left Front

yes Right Front

FRONT SEAT(S) DATA

DRIVER

PASSENGER

Seat Track Failure -

0.0 inches shift;

0.0 inches shift

Seat Back Failure -

no

no

VISIBLE DUMMY

CONTACT POINTS:

DRIVER

PASSENGER

Head

Airbag/windshield

Airbag/rear-view mirror

Chest

Airbag

Airbag

Left Knee

Knee bolster

Glove box/airbag

Right Knee

Knee bolster

Glove box/airbag

General Test And Vehicle Parameter Data

Vehicle Yr/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Vehicle NHTSA No.: C35404 VIN: JM1BJ225430169520 Color: Gold

Engine Data:

No. Cylinders: 4; CID: ; Liters: 2.0; CCs:

Placement: Longitudinal/Inline: ; Transverse/Lateral: X

Transmission Data:

Speeds: 4; Manual: ; Automatic: X; Overdrive: X

Final Drive:

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

Major Options:

A/C: X; Pwr. Strg.: X; Pwr. Brakes: X; Pwr. Windows:

Pwr. Dr. Locks: ; Other: Rear defogger

Date Received: 4/28/03; Odometer Reading: 70 miles

Selling Dealer: Frank Boucher Mazda, 9601 Washington Avenue, Racine, WI 53406

REMARKS: None

General Test And Vehicle Parameter Data (Cont.)

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Mazda Motor Corporation

Date of Manufacture: 01/03 ; VIN: JM1BJ225430169520

GVWR: 3644 lbs; GAWR Front: 1947 lbs.

GAWR Rear: 1720 lbs.

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 32 psi REAR: 32 psi

Recommended Tire Size: P195/55R15 84V

Recommended Cold Tire Pressure:

FRONT: 32 psi REAR: 32 psi

Size of Tires on Test Vehicle: P195/55R15 84V

Type of Spare Tire: T125/70D14 ; Space Saver: X ; Standard:

Vehicle Capacity Data:

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

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

REMARKS: None

VEHICLE CAPACITY WEIGHT (VCW) = 850 lbs.

No. Of Occupants x 150 lbs = 750 lbs.

Rated Cargo/Luggage Weight (RCLW) = 100 lbs. (Difference)

General Test And Vehicle Parameter Data (Cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED AT LABORATORY: (with maximum fluids)

Right Front =	<u>826</u> lbs.	Right Rear =	<u>501</u> lbs.
Left Front =	<u>823</u> lbs.	Left Rear =	<u>520</u> lbs.
TOTAL FRONT =	<u>1649</u> lbs.	TOTAL REAR =	<u>1021</u> lbs.
% Total Weight =	<u>61.8</u> %	% Total Weight =	<u>38.2</u> %
TOTAL DELIVERED WEIGHT = <u>2670</u> lbs.			

WEIGHT OF FULLY LOADED TEST VEHICLE WITH TWO DUMMIES (344 LB) AND 100 POUNDS OF CARGO WEIGHT:

Right Front =	<u>903</u> lbs.	Right Rear =	<u>648</u> lbs.
Left Front =	<u>900</u> lbs.	Left Rear =	<u>675</u> lbs.
TOTAL FRONT =	<u>1803</u> lbs.	TOTAL REAR =	<u>1323</u> lbs.
% Total Weight =	<u>57.7</u> %	% Total Weight =	<u>42.3</u> %
TOTAL WEIGHT = <u>3126</u> lbs.*			

TEST VEHICLE ATTITUDE: (all measurements in degrees)

AS DELIVERED DOOR SILL ANGLE:	<u>0.9° nose down</u>
AS TESTED DOOR SILL ANGLE:	<u>0.7° nose down</u>
FULLY LOADED DOOR SILL ANGLE:	<u>0.3° nose down</u>

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 14.5 gallons
Usable Capacity Figure Furnished by COTR = 14.5 gallons

REMARKS: * UDW plus two dummies (344 lbs) plus 61 pounds of cargo weight should have been 3114, but the actual test weight was 3126 lbs.

Post-Impact Data

Test number: HT03053001
NHTSA number: C35404
Test date: May 30, 2003
Test time: 12:00 p.m.
Test type: FMVSS 208 Compliance Sled Test
Impact angle: 0°
Ambient Temperature
at Impact Area: 71°F
Temperature in
Occupant Compartment: 71°F

Impact Velocity:

Integrated velocity from the integration of the entire sled acceleration: 28.3 mph
Specified integrated velocity range: 28 to 30 mph

Sled Carriage Acceleration:

Acceleration: 17.2 g
Specified Acceleration Range: 16.0 - 18.2 g

Sled Carriage Acceleration Duration:

Time from T-0 (-0.5 g) to 0.0 g: 121.8 msec
Specified Acceleration Duration: 120.0 to 130.0 msec

The sled acceleration corridor was achieved.

Seat and Steering Column Positioning Data

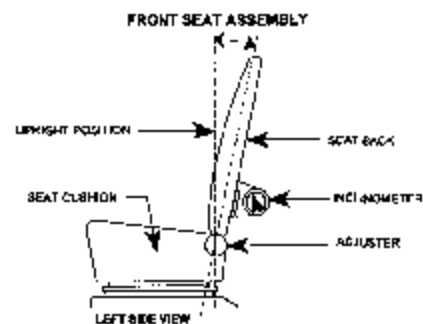
Vehicle Yr/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Vehicle NHTSA No.: C35404 Test Date: May 30, 2003

NOMINAL DESIGN RIDING POSITION:

Driver Seat: Seat Back Angle = 13.7°

Passenger Seat: Seat Back Angle = 13.7°



SEAT FORE AND AFT POSITIONS:

Driver Seat: The seat track had a total position movement of 17 notches and was positioned 8 notches rearward from the foremost position with the forward most locking position as zero.

Passenger Seat: The seat track had a total position movement of 17 notches and was positioned 8 notches rearward from the foremost position with the forward most locking position as zero.

STEERING COLUMN ADJUSTMENTS:

The steering column was placed in the mid position (70.8°) of its angular adjustment range (67.5° to 74.1°)

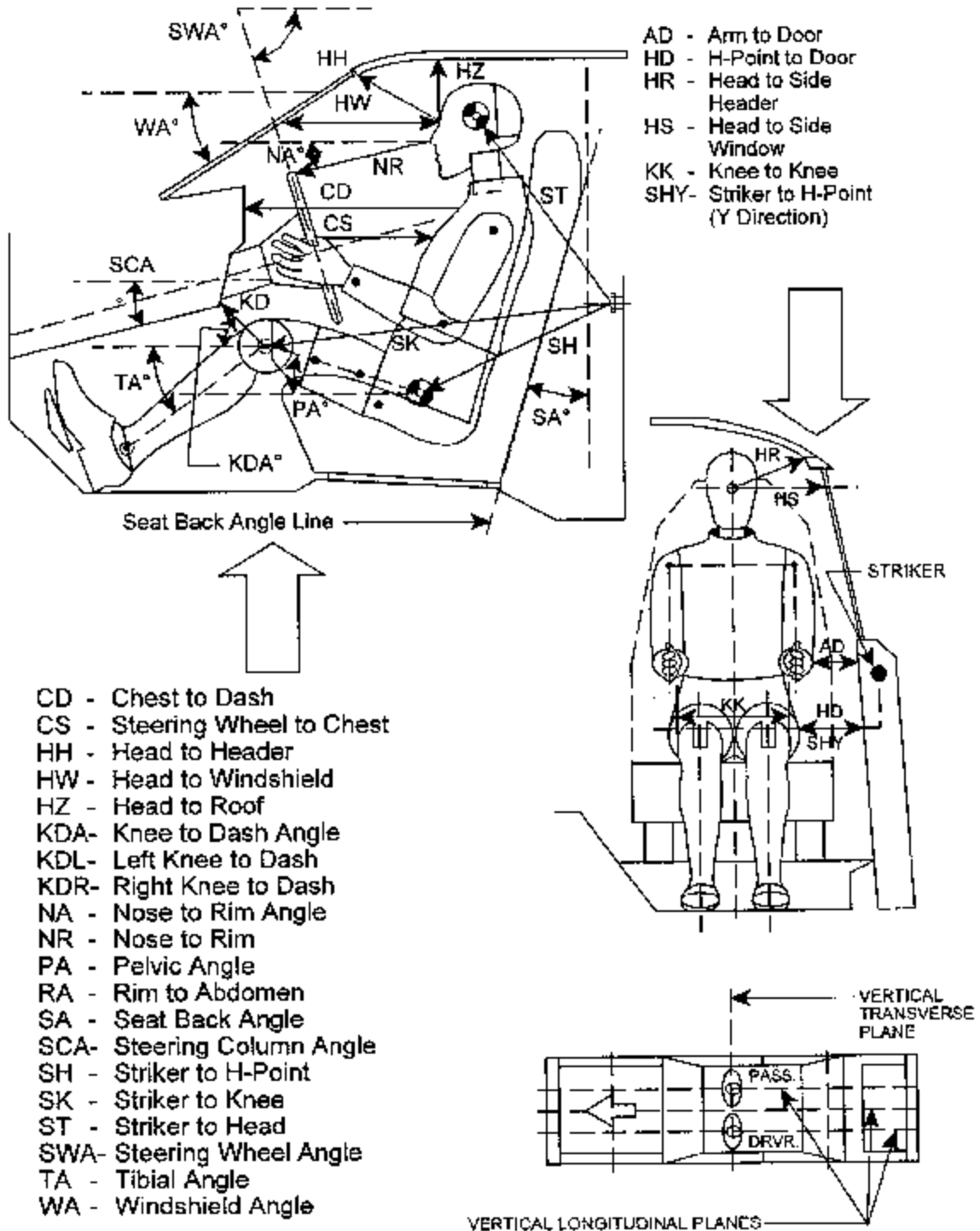
Dummy Positioning Measurement Table

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Vehicle NHTSA No.: C35404 Test Date: May 30, 2003

	DRIVER (Serial #340)	PASSENGER (Serial #312)
WA°	29.6°	
SWA°	70.8°	
SCA°	22.9°	
SA°	13.7°	13.7°
HZ	6.9	7.1
HH	11.1	11.9
HW	20.6	22.0
HR	8.1	8.0
NR	13.7 Angle (NA°) 16.5°	
CD	19.7	20.2
CS	11.1	
RA	6.9	
KDL	7.4 Angle (KDA°) 0.0°	6.5
KDR	7.4	7.3 Angle (KDA°) 0.0°
PA°	23.4°	24.1°
TA°	43.2°	42.7°
KK	13.3	10.6
ST	21.3 Angle 11.6°	20.4 Angle 11.7°
SK	22.8 Angle 92.0°	23.4 Angle 91.6°
SH	8.9 Angle 122.5°	9.5 Angle 119.6°
SHY	7.7	9.2
HS	12.4	12.4
HD	5.4	5.3
AD	4.3	4.3

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



Description of Dummy Measurements

When a level is to be used, it is to ensure that the line containing the two points described is either parallel or perpendicular to the ground. If a measurement to be made is less than 10 inches ignore the directions to use a level and approximate a level measurement. Also, when a measurement is to be taken to or from the center of a bolt on the dummy, take the measurement from the center of the bolt hole if the bolt is recessed.

The following measurements are to be made within a vertical longitudinal plane.

- * HH Head to Header, taken from the point where the dummy's nose meets his forehead (between his eyes) to the furthest point forward on the header.
- * HW Head to Windshield, taken from the point where the dummy's nose meets his forehead (between his eyes) to a point on the windshield. Use a level.
- HZ Head to Roof, taken from the point where the dummy's nose meets his forehead (between his eyes) to the point on the roof directly above it. Use a level.
- * CS Steering Wheel to Chest, taken from the center of the steering wheel hub to the dummy's chest. Use a level.
- * CD Chest to Dash, place a tape measure on the tip of the dummy's chin and rotate five inches of it downward toward the dummy to the point of contact on the transverse center of the dummy's chest. Then measure from this point to the closest point on the dashboard either between the upper part of the steering wheel between the hub and the rim, or measure to the dashboard placing the tape measure above the rim, whichever is a shorter measurement. See photograph.
- RA Steering Wheel Rim to Abdomen, taken from the bottommost point of the steering wheel rim horizontally rearward to the dummy. Use a level.
- NR Nose to Rim, taken from the tip of the dummy's nose to the closest point on the top of the steering wheel rim. Also indicate the angle this line makes with respect to the horizontal (NA).
- *¹ KDL, KDR Left and Right Knees to Dashboard, taken from the center of the knee pivot bolt's outer surface to the closest point forward acquired by swinging the tape measure in continually larger arcs until it contacts the dashboard. Also reference the angle of this measurement with respect to the horizontal for the outboard knee (KDA). See photograph.

* Measurement used in Data Tape Reference Guide

¹ Only outboard measurement is referenced in Data Tape Reference Guide

Description of Dummy Measurements (Cont.)

SH, SK, ST Striker to Hip, Knee, and Head, these measurements are to be taken in the X-Z plane measured from the forward most center point on the striker to the center of the H-point, outer knee bolt, and head target. When taking this measurement a firm device that can be rigidly connected to the striker should be used. Use a level. The angles of these measurements with respect to the horizontal should also be recorded. The measurement in the Y (transverse) direction from the striker to the H-point should also be taken (SHY). See photograph.

The following measurements are to be made within a vertical transverse plane.

- | | |
|------|---|
| HS | Head to Side Window, taken from the point where the dummy's nose meets his forehead (between his eyes) to the outside of the side window. In order to make this measurement, roll the window down to the exact height which allows a level measurement. Use a level. See photograph. |
| * AD | Arm to Door, taken from the outer surface of the elbow pivot bolt on a Hybrid II dummy to the first point it hits on the door. In the case of a Hybrid III dummy, measure from the bolt on the outer biceps. When a SID is used make the measurement from the center of the bottom of the arm segment where it meets the dummy's torso. |
| * HD | H-point to Door, taken from the H-point on the dummy to the closest point on the door. Use a level. |
| * HR | Head to Side Header, measure the shortest distance from the point where the dummy's nose meets his forehead (between his eyes) to the side edge of the header just above the window frame, directly adjacent to the dummy. |
| SHY | Striker to H-point, taken from a rod rigidly connected to the forward most center point on the striker to the H-point. Use a level. See photograph. |
| KK | Knee to Knee, for Hybrid II dummies measure the distance between knee pivot bolt head outer surfaces. For Hybrid III dummies measure the distance between the outboard knee clevis flange surfaces. (This measurement may not be exactly transverse) |

* Measurement used in Data Tape Reference Guide

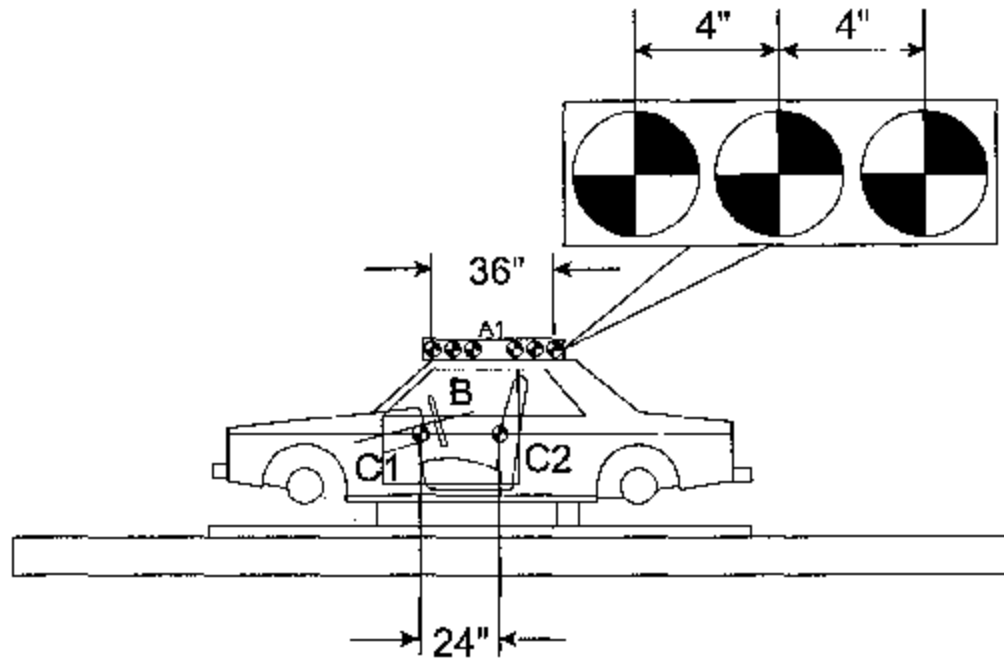
Description of Dummy Measurements (Cont.)

Angles

SA	Seat Back Angle, find this angle using the instructions provided by the manufacturer. If the manufacturer doesn't provide clear instructions contact the COTR.
PA	Pelvic or Femur Angle, taken by inserting the pelvic angle gauge into the H-point gauging hole on the SID or the Hybrid III dummies and taking this angle with respect to the horizontal. Measure the angle of the line connecting the H-point hole and the outer knee pivot bolt hole on a Hybrid II dummy with respect to the horizontal, to find the femur angle.
SWA	Steering Wheel Angle, find this by placing a straight edge against the steering wheel rim along the longitudinal plane. Then measure the acute angle of the straight edge with respect to the horizontal.
SCA	Steering Column Angle, measured with respect to the horizontal by placing an inclinometer on the center of the underside of the steering column.
NA	Measure the angle made when taking the measurement NR with respect to the horizontal.
KDA	Knee to Dash Angle, the angle that the measurement KD is taken at with respect to the horizontal. Only get this angle for the outboard knee. See photograph.
WA	Windshield Angle, place an inclinometer along the transverse center of the windshield exterior (measurement is made with respect to horizontal).
TA	Tibial Angle, use a straight edge to connect the dummy's knee and ankle bolts. Then place an inclinometer on the straight edge and measure the angle with respect to the horizontal.

Vehicle Targeting Measurements

REFERENCE PHOTO TARGETS

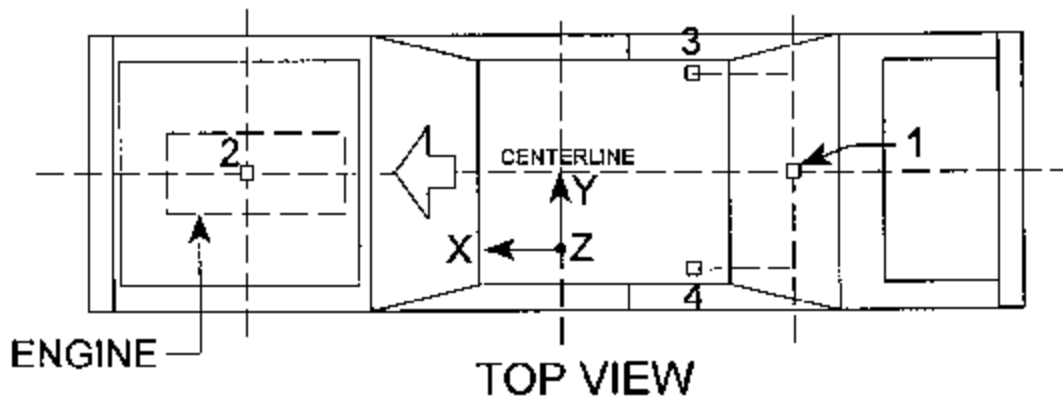


LEFT SIDE VIEW

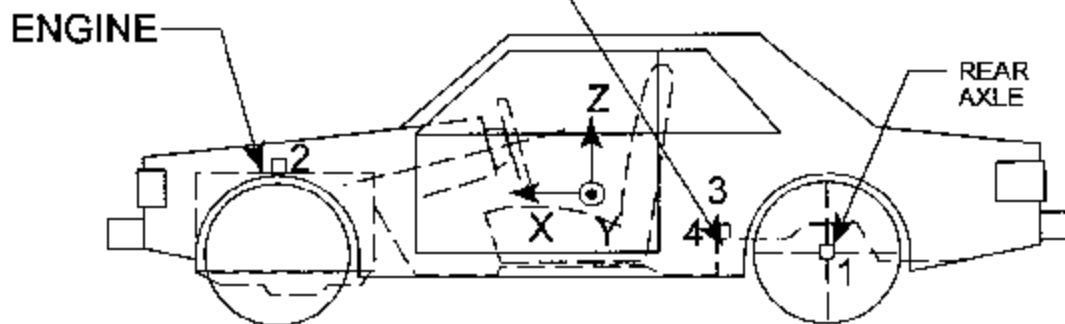
Vehicle Accelerometer Placement and Data Summary

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Vehicle NHTSA No.: C35404 Test Date: May 30, 2003



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



LEFT SIDE VIEW

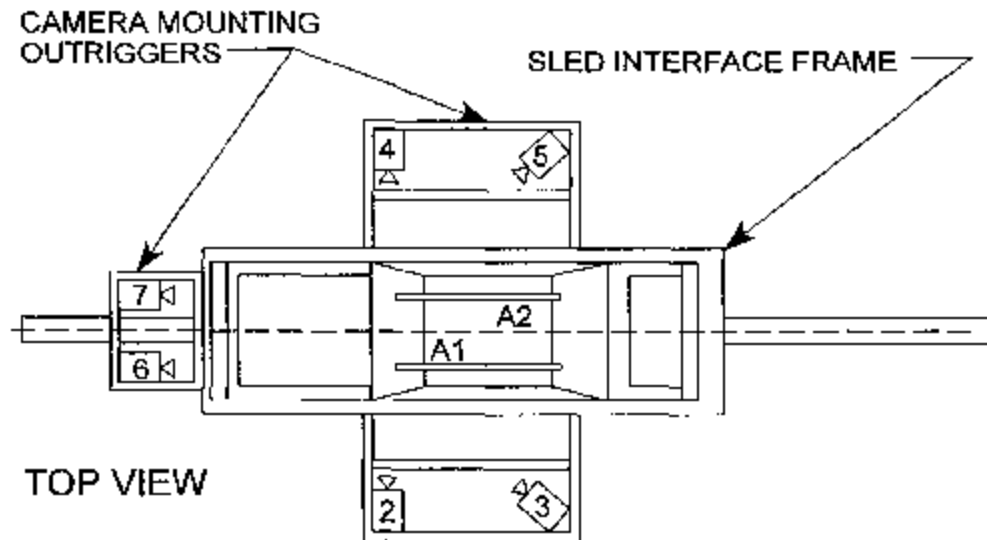
Vehicle Accelerometer Location Measurements and Data Summary

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Vehicle NHTSA No.: C35404 Test Date: May 30, 2003

No.	Location	X (in)	Y (in)	Positive Direction		Negative Direction	
				Value	Time (msec)	Value	Time (msec)
	Sled Primary Longitudinal	67.0	0	17.2 g	60	-1.3 g	125
	Sled Redundant Longitudinal	67.0	4.0	17.4 g	60	-1.1 g	125
	Sled Velocity Measured Integrated	67.0	0	28.3 mph	120	--	--
1	Rear Axle Longitudinal	30.0	0	17.0 g	58	-1.5 g	124
2	Top Engine Longitudinal	145.0	0	21.9 g	62	-5.0 g	170
3	Right Rear Seat Member Longitudinal	62.0	14.0	22.0 g	48	-1.8 g	124
4	Left Rear Seat Member Longitudinal	62.0	14.0	21.1 g	49	-1.8 g	167

Camera Positions



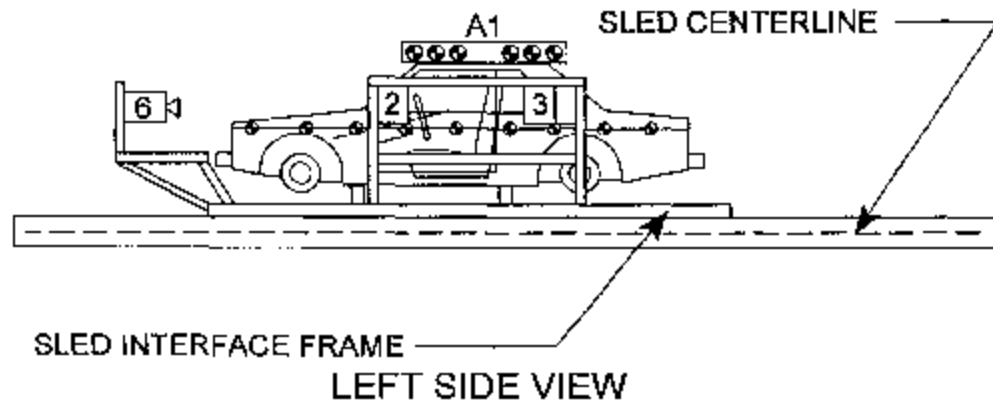
CAMERA FRAME RATES:

#1 = 24 fps

All Others = 1,000 fps



REAL TIME CAMERA



Camera Location Measurements

Camera No.	VIEW	Camera Positions (inches)*			Angle (deg)	Film Plane To Head Target	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real-Time (Pre and Post)						10	24
2	Onboard Driver	70.6	88.6	38.4	90	72.4	13	1005
3	Onboard Driver Angle	150.9	91.1	47.8			13	980
4	Onboard Passenger	71.8	89.6	38.5	90	71.1	13	1005
5	Onboard Passenger Angle	146.7	88.5	47.9			13	791
6	Onboard Windshield Driver	18.3	14.1	42.9			13	1005
7	Onboard Windshield Passenger	18.3	13.9	42.9			13	962

Reference* X = Front of sled carriage
Y = Center of sled carriage
Z = Top of sled carriage

Occupant Injury Data

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Vehicle NHTSA No.: C35404 Test Date: May 30, 2003

MAXIMUM ACCELERATION VALUES: (g's)	DRIVER DUMMY #340	PASSENGER DUMMY #312
Head Channel X	-53.3	-35.8
Head Channel Y	17.8	-23.7
Head Channel Z	-27.2	28.8
HEAD RESULTANT	56.4	40.6
Chest Channel X	-32.5	-33.8
Chest Channel Y	-3.1	6.1
Chest Channel Z	14.7	19.7
CHEST RESULTANT	34.8	37.0

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	166	197
t_1 = (msec)	90.0	82.6
t_2 = (msec)	126.0	118.6

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

CHEST INJURY CRITERIA (CLIP) VALUES: (g's)

CLIP	33.5	36.3
t_1 = (msec)	104.1	95.4
t_2 = (msec)	107.1	98.4
CHEST DEFLECTION (in)	0.6	0.5

Occupant Injury Data (Cont.)

MAX. COMPRESSIVE FEMUR FORCES:	DRIVER DUMMY #340	PASSENGER DUMMY #312
Left Side (lbs)	1163	1242
Right Side (lbs)	1103	786

NECK INJURY CRITERIA:

Peak Flexion Bending Moment about the Occipital Condyle (N-m)	17.9	37.5
Peak Extension Bending Moment about the Occipital Condyle (N-m)	23.9	5.3
Peak Axial Tension (N)	1486	731
Peak Axial Compression (N)	1363	569
Peak Fore Shear (N)	580	968
Peak Aft Shear (N)	182	221

Seat Belt Warning System Data

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

NHTSA No.: C35404 ; Technician: Chad Gadberry ; Date: May 13, 2003

Complete the following to determine which seat belt warning system option (S7.3(a)(1) or S7.3(a)(2)) is used. (Manufacturers may use either option.)

- A. With occupant in driver's position and lap belt in stowed position and ignition switch placed in "Start/On" position:

A.1 S7.3(a)(1)

Time duration of audible warning signal = 6 seconds
(4 to 8 seconds)

Time duration of reminder light operation = >60 seconds
(no less than 60 seconds)

A.2 S7.3(a)(2)

Time duration of audible warning signal = _____ seconds
(4 to 8 seconds)(see 49 USCS @ 30124)

Time duration of reminder light operation = _____ seconds
(4 to 8 seconds)

- B. With occupant in driver's position and lap belt in use and ignition switch placed in "Start/On" position:

B.1 S7.3(a)(1)

Time duration of audible warning signal = 0 seconds
(audible warning not required)

Time duration of reminder light operation = 0 seconds
(reminder light not required)

B.2 S7.3(a)(2)

Time duration of audible warning signal = _____ seconds
(audible warning not required)

Time duration of reminder light operation = _____ seconds
(4 to 8 seconds)

- C. Note wording of visual warning:

Fasten seat belt	_____
Fasten Belt	_____
Symbol 101	_____ X _____

Readiness Indicator

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

NHTSA No.: C35404 ; Technician: Chad Gadberry ; Date: May 13, 2003

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement. (11/8/94 legal interpretation)

1. Is the system totally mechanical? ☐ Yes ☒ No
(If YES this Data Sheet is complete.)
2. Describe the location of the readiness indicator: lower right of instrument panel

3. Is the readiness indicator clearly visible to the driver?
☒ Yes-Pass ☐ No-FAIL
4. Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided?
☒ Yes-Pass ☐ No-FAIL

Air Bag Labels Data

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

NHTSA No.: C35404 ; Technician: Chad Gadberry ; Date: May 13, 2003

1. Air bag maintenance label and owner's manual instructions (S4.5.1(a)):
 - 1.1. Does the manufacturer recommend periodic maintenance or replacement of the airbag?
() Yes, go to 1.2 (X) No, go to 2
 - 1.2. Does the vehicle have a maintenance or replacement label?
() Yes-Pass () No-FAIL
 - 1.3. Does the label contain one of the following?
() Yes-Pass () No-FAIL
() Schedule on label specifies month and year (Date: _____)
() Schedule on label specifies vehicle mileage (Mileage: _____)
() Schedule on label specifies interval measured from date on certification label (Date: _____)
 - 1.4. Is the label permanently affixed within the passenger compartment?
() Yes-Pass () No-FAIL
 - 1.5. Is the label lettered in English?
() Yes-Pass () No-FAIL
 - 1.6. Is the label in block capitals and numerals?
() Yes-Pass () No-FAIL
 - 1.7. Are the letters and numerals at least 3/32 inches high?
() Yes-Pass () No-FAIL
 - 1.8. Does the owner's manual set forth the recommended schedule for maintenance or replacement?
() Yes-Pass () No-FAIL
2. Does the owner's manual (S4.5.1(f)):
 - 2.1. Include a description of the vehicle's airbag system in an easily understandable format?
(X) Yes-Pass () No-FAIL
 - 2.2. Include a statement that the vehicle is equipped with an airbag and a lap/shoulder belt at the front outboard seating positions?
(X) Yes-Pass () No-FAIL

Air Bag Labels Data (Cont.)

- 2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating positions?
(X)Yes-Pass () No-FAIL
- 2.4 Emphasize that all occupants, including the driver, should always wear their seat belts whether or not an airbag is also provided at their seating positions to minimize the risk of severe injury or death in the event of a crash?
(X)Yes-Pass () No-FAIL
- 2.5 Provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to insure maximum safety protection for those occupants?
(X)Yes-Pass () No-FAIL
- 2.6 Explain that no objects should be placed over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate?
(X)Yes-Pass () No-FAIL
3. Does the vehicle:
- 3.1. Provide an automatic means to ensure that the airbag does not deploy when a child seat or child with a total mass of 30 kg or less is present on the front outboard passenger?
() Yes (X) No
- 3.2. Incorporate sensors, other than or in addition to weight sensors, which automatically prevent the passenger air bag from deploying in situations in which it might have an adverse effect on infants in rear-facing child seats, and unbelted or improperly belted children?
() Yes (X) No
- 3.3. Have a passenger air bag designed to deploy in a manner that does not create a risk of serious injury to infants in rear-facing child seats, and unbelted or improperly belted children?
() Yes (X) No

If yes to 3.1, or 3.2, or 3.3, the vehicle is not required to have a sunvisor warning label (S4.5.1(6)), an airbag alert label (S4.5.1(c)) or a label on the dash (S4.5.2(e)) and this check sheet is complete (S4.5.1). If no to 3.1, 3.2, and 3.3, go to 4.

4. Sun Visor Warning Label

- 4.1. Is the label permanently affixed (may be permanent marking or molding) to either side of the sunvisor at each front outboard seating position with an airbag?
(S4.5.1(b)(2))
- | | | |
|------------------|---------------------|-------------|
| Driver Side - | (X)Yes-Pass | () No-FAIL |
| Passenger Side - | () N/A (X)Yes-Pass | () No-FAIL |

Air Bag Labels Data (Cont.)

- 4.2. Does the label conform in content (vehicles without back seats may omit the statement: "The back seat is the safest place for children.") (S4.5.1(b)(2)(v))) to either label shown on the next page as appropriate at each front outboard seating position with an air bag? (S4.5.1(b)(2))

4.2.1 **Dual air bags:** ☐ Not Applicable
Driver Side - ☒ Yes-Pass ☐ No-FAIL
Passenger Side - ☒ Yes-Pass ☐ No-FAIL

4.2.2 **Vehicle with driver air bag ONLY - either 4.2.2.1 or 4.2.2.2 is applicable, not both.** (S4.5.1(b)(2)(iv))

4.2.2.1 Does the label conform in content to either label shown on the following page as appropriate?
☒ Not Applicable
Driver Side - ☐ Yes-Pass ☐ No-FAIL

4.2.2.2 Does the label conform in content to the first label shown on the following page where the label can be modified to omit the pictogram and the message text may read:

DEATH or SERIOUS INJURY can occur.

- Sit as far back as possible from the air bag.
- ALWAYS use SEAT BELTS and CHILD RESTRAINTS
- The BACK SEAT is the SAFEST place for children.

☒ Not Applicable
Driver Side - ☐ Yes-Pass ☐ No-FAIL

Air Bag Labels Data (Cont.)

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN DOWN POSITION

LABEL OUTLINE, VERTICAL AND HORIZONTAL LINE BLACK

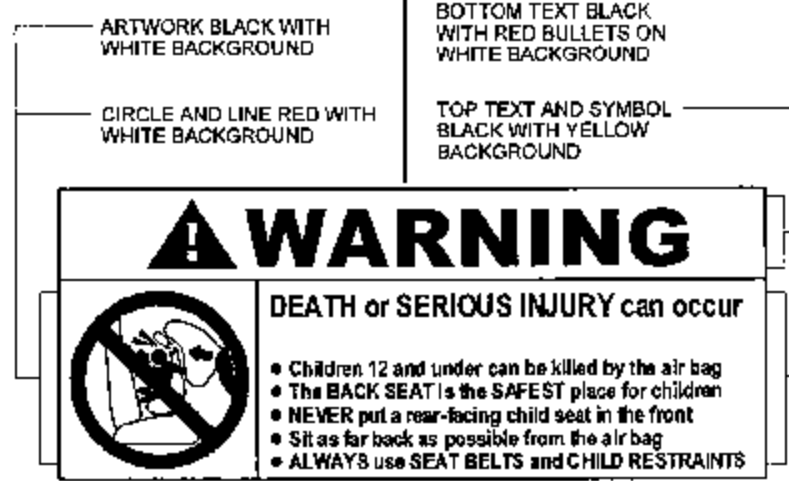


Figure 6a (S4.5.1(b)(2))

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN DOWN POSITION

LABEL OUTLINE, VERTICAL AND HORIZONTAL LINE BLACK

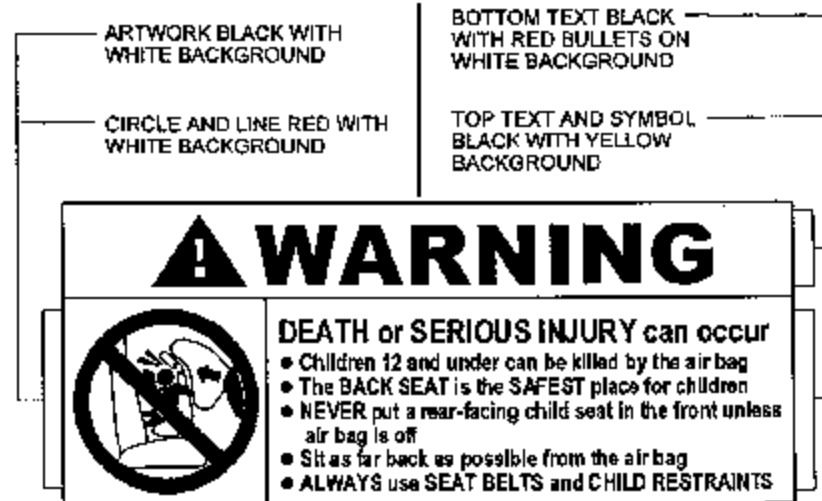


Figure 6b (S4.5.1(b)(2))

- 4.3 Is the label heading area yellow with the word "warning" and the alert symbol in black? (S4.5.1(b)(2)(i))
- | | | |
|------------------|--|---|
| Driver Side - | ☒ Yes-Pass | ☐ No-FAIL |
| Passenger Side - | ☐ No air bag | ☒ Yes-Pass ☐ No-FAIL |
-
- 4.4 Is the message white with black text? (S4.5.1(b)(2)(ii))
- | | | |
|------------------|--|---|
| Driver Side - | ☒ Yes-Pass | ☐ No-FAIL |
| Passenger Side - | ☐ No air bag | ☒ Yes-Pass ☐ No-FAIL |

Air Bag Labels Data (Cont.)

- 4.5 Is the message area at least 30 cm²? (S4.5.1(b)(2)(ii))
Actual message area: 32.8 cm²
- | | | |
|---------------------------------|-------------|-------------|
| Driver Side - | (X)Yes-Pass | () No-FAIL |
| Passenger Side - () No air bag | (X)Yes-Pass | () No-FAIL |
- 4.6 Is the pictogram black with a red circle and slash on a white background?
(S4.5.1(b)(2)(iii) & (S4.5.1(b)(2)(iv))
- | | | |
|--|--------------------|-------------|
| For vehicles with driver side air bag ONLY | () Not Applicable | |
| Driver Side - | (X)Yes-Pass | () No-FAIL |
| Passenger Side - () No air bag | (X)Yes-Pass | () No-FAIL |
- 4.7 Is the pictogram at least 30 mm in diameter? (S4.5.1(b)(2)(iii))
Actual diameter: 30 mm
- | | | |
|--|--------------------|-------------|
| For vehicles with driver side air bag ONLY | () Not Applicable | |
| Driver Side - | (X)Yes-Pass | () No-FAIL |
| Passenger Side - () No air bag | (X)Yes-Pass | () No-FAIL |
- 4.8 Is the same side of the sun visor to which the sun visor label is affixed free of other information with the exception of an air bag maintenance label?
(S4.5.1(b)(3))
- | | | |
|---------------------------------|-------------|-------------|
| Driver Side - | (X)Yes-Pass | () No-FAIL |
| Passenger Side - () No air bag | (X)Yes-Pass | () No-FAIL |
- 4.9 Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label or the utility vehicle label?
(S4.5.1(b)(3))
- | | | |
|---------------------------------|-------------|-------------|
| Driver Side - | (X)Yes-Pass | () No-FAIL |
| Passenger Side - () No air bag | (X)Yes-Pass | () No-FAIL |
5. Air Bag Alert Label
- 5.1 Is the Sun Visor Warning Label visible when the sunvisor is in the stowed position?
- | | | |
|---------------------------------|-----------------|--------|
| Driver Side - | (X)Yes, go to 6 | () No |
| Passenger Side - () No air bag | (X)Yes | () No |
- 5.2 Does the label conform in content to the label shown below? (S4.5.1(c)(2))
- | | | |
|---------------------------------|--------------|-------------|
| Driver Side - | () Yes-Pass | () No-FAIL |
| Passenger Side - () No air bag | () Yes-Pass | () No-FAIL |
- 5.3 Is the message area black with yellow text? (S4.5.1(c)(2)(i))
- | | | |
|---------------------------------|--------------|-------------|
| Driver Side - | () Yes-Pass | () No-FAIL |
| Passenger Side - () No air bag | () Yes-Pass | () No-FAIL |

Air Bag Labels Data (Cont.)

- 5.4 Is the message area at least 20 cm²? (S4.5.1(c)(2)(i))
Actual message area: _____ cm²
Driver Side - () Yes-Pass () No-FAIL
Passenger Side - () No air bag () Yes-Pass () No-FAIL
- 5.5 Is the pictogram black with a red circle and slash on a white background?
(S4.5.1(c)(2)(ii))
For vehicles with driver side air bag ONLY () Not Applicable
() Yes-Pass () No-FAIL
- 5.6 Is the pictogram at least 20 mm in diameter? (S4.5.1(c)(2)(ii))
Actual diameter _____ mm
For vehicles with driver side air bag ONLY () Not Applicable
() Yes-Pass () No-FAIL

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN UP POSITION



Figure 6c (S4.5.1(c)(2))

6. Label On the Dash
- 6.1 Does the vehicle have a passenger side air bag?
(X) Yes () No, check sheet is complete.
- 6.2 Does the vehicle have a label on the dash or steering wheel hub? (S4.5.1(e))
(X) Yes-Pass () No-FAIL
- 6.3 Does the label conform in content (vehicles without back seats may omit the statement: "The back seat is the safest place for children 12 and under." (S4.5.1(e)(iii)) to the label shown below. (S4.5.1(e))
(X) Yes-Pass () No-FAIL

Air Bag Labels Data (Cont.)

- 6.4 Is the heading area yellow with the word "warning" and the alert symbol in black?
(S4.5.1(e)(i)) (X)Yes-Pass () No-FAIL
- 6.5 Is the message white with black text? (S4.5.1(e)(ii))
(X)Yes-Pass () No-FAIL
- 6.6 Is the message area at least 30 cm²? (S4.5.1(e)(ii))
Actual message area: 32.6 cm²
(X)Yes-Pass () No-FAIL

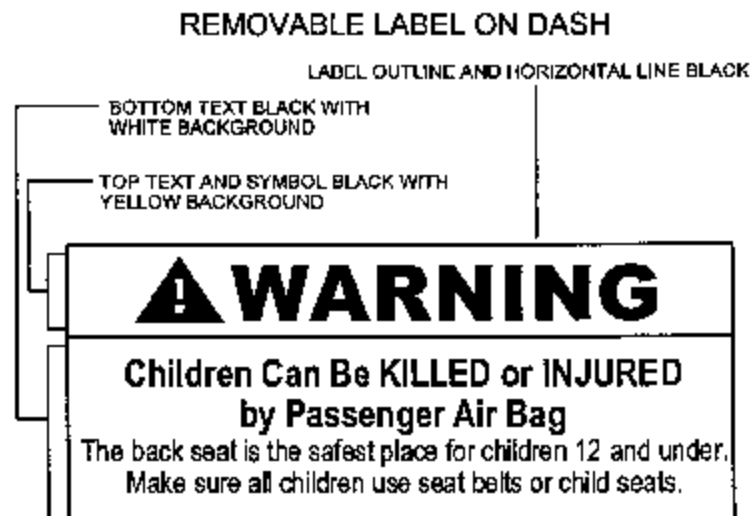


Figure 7 (S4.5.1(e))

Rear Outboard Seating Position Seat Belt Data

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

NHTSA No.: C35404 ; Technician: Chad Gadberry ; Date: May 13, 2003

Do all rear outboard seating positions have type 2 seat belts?

☒ Yes

☐ No

If NO, describe the seat belt installed, the seat location, and any other information about the seat that would explain why a type 2 belt was not installed.

Lap Belt Lockability Data

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

NHTSA No.: C35404 ; Technician: Chad Gadberry ; Date: May 13, 2003

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for **each** designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing **and** that has seat belt retractors that are not automatic locking retractors. (S7.1.1.5(c))

Designated Seating Position (DSP): Right Front

1. Record the seating position. Fully rearward
(S7.1.1.5(c)(1))
(Any position is acceptable.)
2. Buckle the seat belt. (S7.1.1.5(c)(1))
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a))

(X)Yes-Pass () No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7.1.1.5(a))

(X)Yes-Pass () No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing? (X)Yes, go to 6.1 () No, go to 7.
 - 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))

(X)Yes-Pass () No-FAIL
7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

Lap Belt Lockability Data (Cont.)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))

Measured distance between A and B is 64.4 inches.

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

The measured force application angle = 10 (spec. 5-15 degrees)

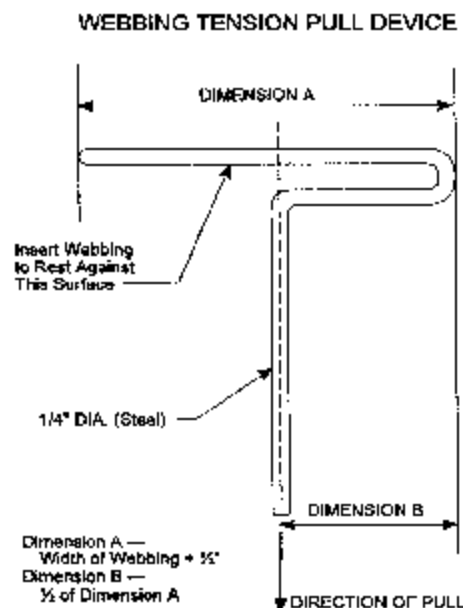


Figure 5 (S7.1.1.5(c)(4))

Lap Belt Lockability Data (Cont.)

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

Measured distance between A and B is 36.0 inches.

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

Record onset rate: 10 lb/sec (Spec. 10 to 50 lb/sec)

Measure distance between points A and B 36.0 inches (S7.1.1.5(c)(6))

15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? (S7.1.1.5(c)(7))

14-13 = 0.0 inches

(X)Yes-Pass

() No-FAIL

16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more?

10-14 = 28.4 inches

(X)Yes-Pass

() No-FAIL

REMARKS: None

Lap Belt Lockability Data (Cont.)

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

NHTSA No.: C35404 ; Technician: Chad Gadberry ; Date: May 13, 2003

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for **each** designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing and that has seat belt retractors that are not automatic locking retractors. (S7.1.1.5(c))

Designated Seating Position (DSP): Left Rear

1. Record the seating position. Non-adjustable
(S7.1.1.5(c)(1))
(Any position is acceptable.)
2. Buckle the seat belt. (S7.1.1.5(c)(1))
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a))

(X)Yes-Pass () No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7.1.1.5(a))

(X)Yes-Pass () No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing? (X)Yes, go to 6.1 () No, go to 7.
 - 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))

(X)Yes-Pass () No-FAIL
7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

Lap Belt Lockability Data (Cont.)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))

Measured distance between A and B is 65.1 inches.

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

The measured force application angle = 10 (spec. 5-15 degrees)

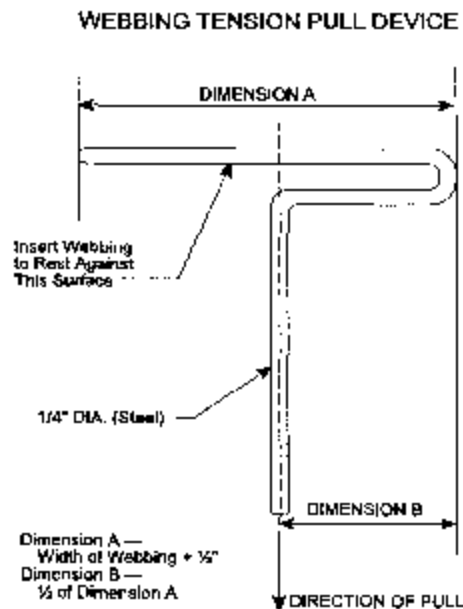


Figure 5 (S7.1.1.5(c)(4))

Lap Belt Lockability Data (Cont.)

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

Measured distance between A and B is 30.6 inches.

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

Record onset rate: 10 lb/sec (Spec. 10 to 50 lb/sec)

Measure distance between points A and B 30.8 inches (S7.1.1.5(c)(6))

15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? (S7.1.1.5(c)(7))

14-13 = 0.2 inches

(X)Yes-Pass

() No-FAIL

16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more?

10-14 = 34.3 inches

(X)Yes-Pass

() No-FAIL

REMARKS: None

Lap Belt Lockability Data (Cont.)

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

NHTSA No.: C35404 ; Technician: Chad Gadberry ; Date: May 13, 2003

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for **each** designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing and that has seat belt retractors that are not automatic locking retractors. (S7.1.1.5(c))

Designated Seating Position (DSP): Center Rear

1. Record the seating position. Non-adjustable
(S7.1.1.5(c)(1))
(Any position is acceptable.)
2. Buckle the seat belt. (S7.1.1.5(c)(1))
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a))

(X)Yes-Pass () No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7.1.1.5(a))

(X)Yes-Pass () No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing? (X)Yes, go to 6.1 () No, go to 7.
 - 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))

(X)Yes-Pass () No-FAIL
7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

Lap Belt Lockability Data (Cont.)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))

Measured distance between A and B is 64.4 inches.

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

The measured force application angle = 10 (spec. 5-15 degrees)

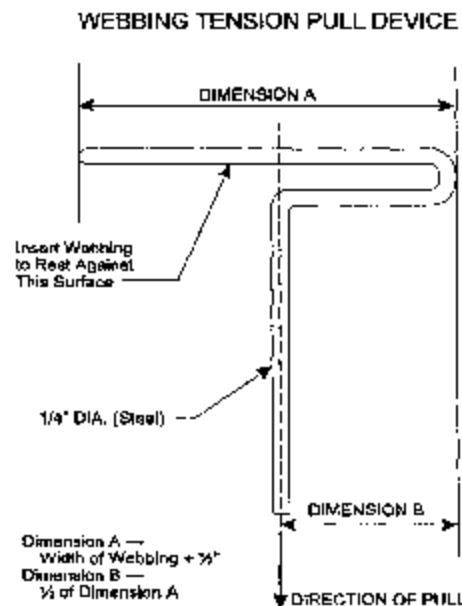


Figure 5 (S7.1.1.5(c)(4))

Lap Belt Lockability Data (Cont.)

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

Measured distance between A and B is 25.3 inches.

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

Record onset rate: 10 lb/sec (Spec. 10 to 50 lb/sec)

Measure distance between points A and B 25.7 inches (S7.1.1.5(c)(6))

15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? (S7.1.1.5(c)(7))

14-13 = 0.4 inches

(X)Yes-Pass

() No-FAIL

16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more?

10-14 = 38.7 inches

(X)Yes-Pass

() No-FAIL

REMARKS: None

Lap Belt Lockability Data (Cont.)

Vehicle Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

NHTSA No.: C35404 ; Technician: Chad Gadberry ; Date: May 13, 2003

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for **each** designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing and that has seat belt retractors that are not automatic locking retractors. (S7.1.1.5(c))

Designated Seating Position (DSP): Right Rear

1. Record the seating position. Non-adjustable
(S7.1.1.5(c)(1))
(Any position is acceptable.)
2. Buckle the seat belt. (S7.1.1.5(c)(1))
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a))

(X)Yes-Pass () No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7.1.1.5(a))

(X)Yes-Pass () No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing? (X)Yes, go to 6.1 () No, go to 7.
 - 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))

(X)Yes-Pass () No-FAIL
7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

Lap Belt Lockability Data (Cont.)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))

Measured distance between A and B is 65.1 inches.

11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

The measured force application angle = 10 (spec. 5-15 degrees)

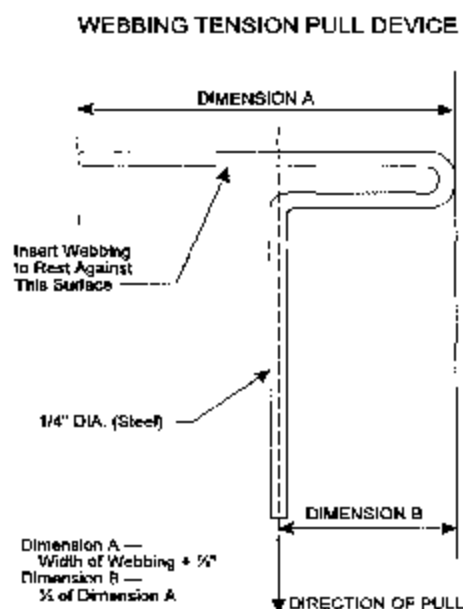


Figure 5 (S7.1.1.5(c)(4))

Lap Belt Lockability Data (Cont.)

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

Measured distance between A and B is 36.2 inches.

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

Record onset rate: 10 lb/sec (Spec. 10 to 50 lb/sec)

Measure distance between points A and B 36.2 inches (S7.1.1.5(c)(6))

15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? (S7.1.1.5(c)(7))

14-13 = 0.0 inches

(X)Yes-Pass

() No-FAIL

16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more?

10-14 = 28.9 inches

(X)Yes-Pass

() No-FAIL

REMARKS: None

Seat Belt Comfort and Convenience Data

1. BELT CONTACT FORCE (S7.4.3)

Test Vehicle NHTSA No.: C35404

Vehicle Model Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Designated Seating Position Tested: Left Rear

Date of Comfort/Convenience Check: May 13, 2003

Technician Performing Check: Chad Gadberry

GVWR: 3644 lb

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 1.1 Does the vehicle incorporate a webbing tension-relieving device?
() Yes - go to latchplate access
(X) No - continue with this check sheet
- 1.2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)
() Check
(X) N/A
- 1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.
() Check
(X) N/A
- 1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.
() Check
(X) N/A
- 1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.
() Check
(X) N/A
- 1.6 Place each adjustable head restraint in its highest adjustment position.
() Check
(X) N/A

Seat Belt Comfort and Convenience Data (Cont.)

- 1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)
☐ Check
☒ N/A
- 1.8 Position the test dummies according to dummy position placement instructions in Appendix B.
☒ Check
- 1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.
Contact Force 0.6 lb. ☒ 0.0 to 0.7 pounds - Pass
☐ greater than 0.7 pounds - FAIL*
- * If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

Seat Belt Comfort and Convenience Data (Cont.)

1. BELT CONTACT FORCE (S7.4.3)

Test Vehicle NHTSA No.: C35404

Vehicle Model Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Designated Seating Position Tested: Center Rear

Date of Comfort/Convenience Check: May 13, 2003

Technician Performing Check: Chad Gadberry

GVWR: 3644 lb

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 1.1 Does the vehicle incorporate a webbing tension-relieving device?
() Yes - go to latchplate access
(X) No - continue with this check sheet
- 1.2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)
() Check
(X) N/A
- 1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.
() Check
(X) N/A
- 1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.
() Check
(X) N/A
- 1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.
() Check
(X) N/A
- 1.6 Place each adjustable head restraint in its highest adjustment position.
() Check
(X) N/A

Seat Belt Comfort and Convenience Data (Cont.)

- 1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)
☐ Check
☒ N/A
- 1.8 Position the test dummies according to dummy position placement instructions in Appendix B.
☒ Check
- 1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.
Contact Force 0.6 lb. ☒ 0.0 to 0.7 pounds - Pass
☐ greater than 0.7 pounds - FAIL*
- * If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

Seat Belt Comfort and Convenience Data (Cont.)

1. BELT CONTACT FORCE (S7.4.3)

Test Vehicle NHTSA No.: C35404

Vehicle Model Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Designated Seating Position Tested: Right Rear

Date of Comfort/Convenience Check: May 13, 2003

Technician Performing Check: Chad Gadberry

GVWR: 3644 lb

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 1.1 Does the vehicle incorporate a webbing tension-relieving device?
() Yes - go to latchplate access
(X) No - continue with this check sheet
- 1.2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)
() Check
(X) N/A
- 1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.
() Check
(X) N/A
- 1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.
() Check
(X) N/A
- 1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.
() Check
(X) N/A
- 1.6 Place each adjustable head restraint in its highest adjustment position.
() Check
(X) N/A

Seat Belt Comfort and Convenience Data (Cont.)

- 1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)
☐ Check
☒ N/A
- 1.8 Position the test dummies according to dummy position placement instructions in Appendix B.
☒ Check
- 1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.
Contact Force 0.5 lb. ☒ 0.0 to 0.7 pounds - Pass
☐ greater than 0.7 pounds - FAIL*
- * If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

Seat Belt Comfort and Convenience Data (Cont.)

2. **LATCHPLATE ACCESS (S7.4.4)**

Test Vehicle NHTSA No.: C35404

Vehicle Model Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Designated Seating Position Tested: Not applicable - passenger car

Date of Comfort/Convenience Check: _____

Technician Performing Check: _____

GVWR: _____

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 2.1 Position the seat in its forward most adjustment position.
() Check
- 2.2 Position the test dummy using the procedures in Appendix B. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position.)
() Check
- 2.3 Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant.
() Check
- 2.4 Attach the inboard and outboard reach string following the instructions on Figure 1C.
() Check
- 2.5 Place the latch plate in the stowed position.
() Check
- 2.6 Extend each line backward and outboard to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?
() Yes-Pass () No-FAIL
- 2.7 Using the clearance test block, specified in Figure 2C, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?
() Yes-Pass () No-FAIL

Seat Belt Comfort and Convenience Data (Cont.)

3. RETRACTION (S7.4.5)

Test Vehicle NHTSA No.: C35404

Vehicle Model Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Designated Seating Position Tested: Not applicable - passenger car

Date of Comfort/Convenience Check: _____

Technician Performing Check: _____

GVWR: _____

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 3.1 Is the vehicle a passenger car or walk-in van-type vehicle?
() Yes If yes, go to seat belt guides and hardware.
() No
- 3.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)
() Check
- 3.3 If separately adjustable in a vertical direction, the seats are at the lowest position.
() Check
- 3.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.
() Check
- 3.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.
() Check
- 3.6 Place each adjustable head restraint in its highest adjustment position.
() Check
- 3.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position (S8.1.3)
() Check

Seat Belt Comfort and Convenience Data (Cont.)

- 3.8 Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B.
() Check
- 3.9 Restrain the dummies using the belt systems for the position being tested.
() Check
- 3.10 Stow outboard armrests which are capable of being stowed.
() Check
- 3.11 Check the statement that applies to this test vehicle:
- (A) The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.
() Pass
- (B) The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released.
() Pass
- (C) Neither A or B apply.
() **FAIL**
- 3.12 With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
() Yes - Pass
() **No - FAIL**
- 3.13 If this test vehicle has an open body (without doors) and has a seat belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?
() N/A
() Yes - Pass
() **No - FAIL**

Seat Belt Comfort and Convenience Data (Cont.)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle NHTSA No.: C35404

Vehicle Model Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Designated Seating Position Tested: Left Rear

Date of Comfort/Convenience Check: May 13, 2003

Technician Performing Check: Chad Gadberry

GVWR: 3644 lb

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable.
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

If the seats in this vehicle are different than the criteria above determine the following:

- 4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?
 - () Yes - Go to 4.2.
 - (X) No - this form is complete
- 4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?
 - () Yes - Pass
 - () No - **FAIL**
- 4.3 Are the remaining two seat belt parts accessible under normal conditions?
 - () Yes - Pass
 - () No - **FAIL**

Seat Belt Comfort and Convenience Data (Cont.)

- 4.4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:
- (A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. ☐ Check
 - (B) The seat is moved to any position to which it is designed to be adjusted. ☐ Check
 - (C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position. ☐ Check
- ☐ Yes - Pass
☐ No - FAIL
- 4.5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?
- ☐ Yes - Pass
☐ No - FAIL

Seat Belt Comfort and Convenience Data (Cont.)

4. **SEAT BELT GUIDES AND HARDWARE (S7.4.6)**

Test Vehicle NHTSA No.: C35404

Vehicle Model Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Designated Seating Position Tested: Center Rear

Date of Comfort/Convenience Check: May 13, 2003

Technician Performing Check: Chad Gadberry

GVWR: 3644 lb

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable.
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

If the seats in this vehicle are different than the criteria above determine the following:

- 4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?
 - ☐ Yes - Go to 4.2.
 - ☒ No - this form is complete
- 4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?
 - ☐ Yes - Pass
 - ☐ No - FAIL
- 4.3 Are the remaining two seat belt parts accessible under normal conditions?
 - ☐ Yes - Pass
 - ☐ No - FAIL

Seat Belt Comfort and Convenience Data (Cont.)

- 4.4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:
- (A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. ☐ Check
 - (B) The seat is moved to any position to which it is designed to be adjusted. ☐ Check
 - (C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position. ☐ Check
- ☐ Yes - Pass
☐ No - **FAIL**
- 4.5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?
- ☐ Yes - Pass
☐ No - **FAIL**

Seat Belt Comfort and Convenience Data (Cont.)

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle NHTSA No.: C35404

Vehicle Model Year/Make/Model/Body Style: 2003/Mazda/Protege/4 Door

Designated Seating Position Tested: Right Rear

Date of Comfort/Convenience Check: May 13, 2003

Technician Performing Check: Chad Gadberry

GVWR: 3644 lb

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable.
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

If the seats in this vehicle are different than the criteria above determine the following:

- 4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

☐ Yes - Go to 4.2.
☒ No - this form is complete
- 4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

☐ Yes - Pass
☐ No - FAIL
- 4.3 Are the remaining two seat belt parts accessible under normal conditions?

☐ Yes - Pass
☐ No - FAIL

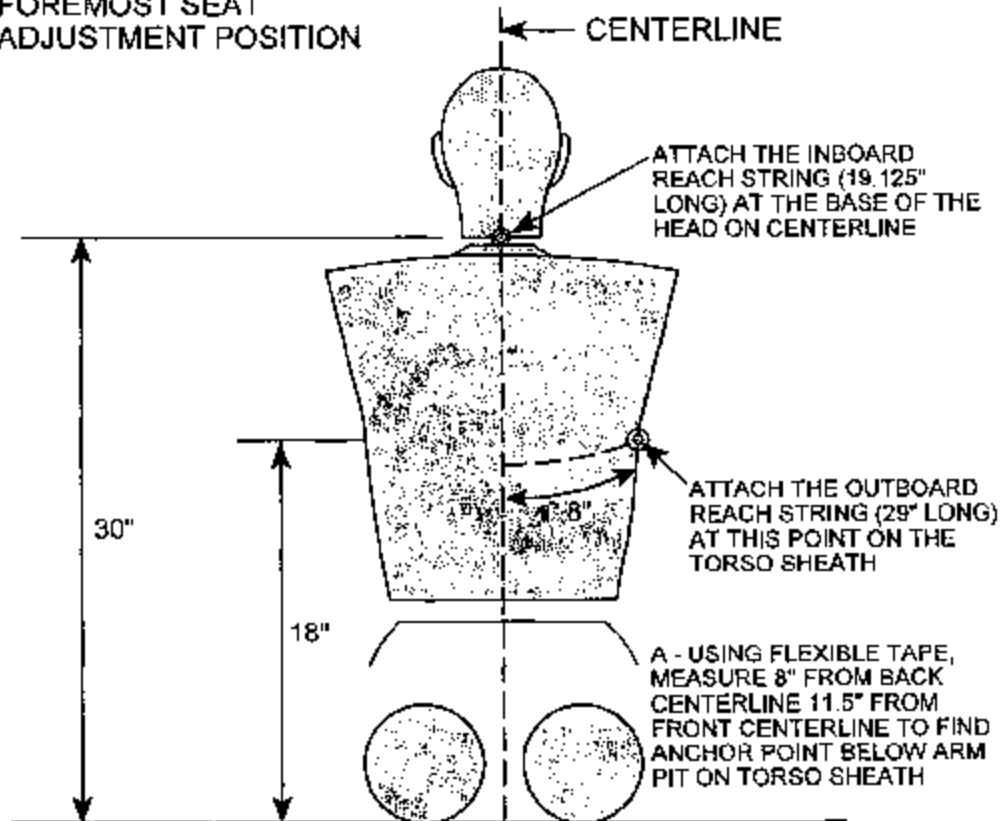
Seat Belt Comfort and Convenience Data (Cont.)

- 4.4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:
- (A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. ☐ Check
 - (B) The seat is moved to any position to which it is designed to be adjusted. ☐ Check
 - (C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position. ☐ Check
- ☐ Yes - Pass
☐ No - **FAIL**
- 4.5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?
- ☐ Yes - Pass
☐ No - **FAIL**

**LOCATION OF ANCHORING POINTS FOR
LATCHPLATE REACH LIMITING CHAINS OR STRINGS
TO TEST FOR LATCHPLATE ACCESSIBILITY**

PART 572E DUMMY

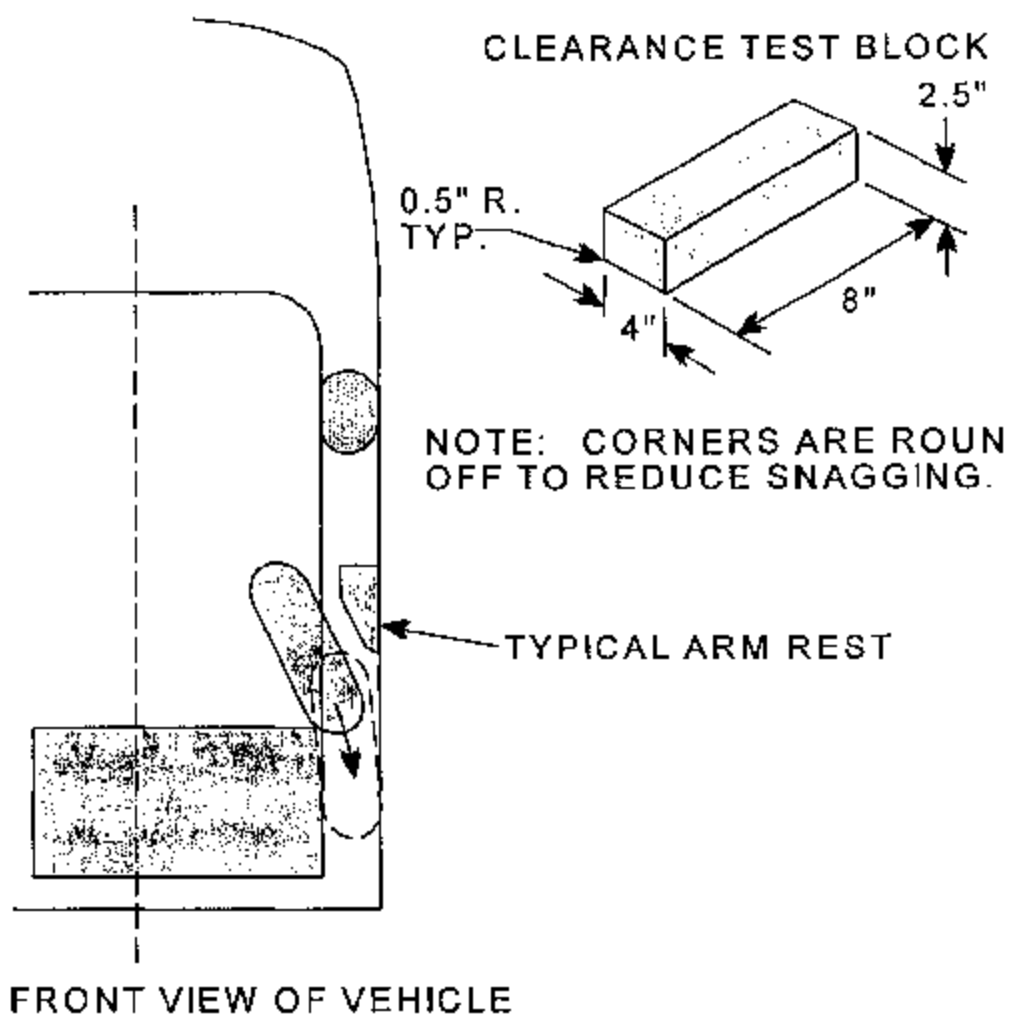
50TH PERCENTILE
DUMMY SEATED IN
FOREMOST SEAT
ADJUSTMENT POSITION



SEAT PLANE IS 90 DEGREES TO THE TORSO LINE

REAR VIEW

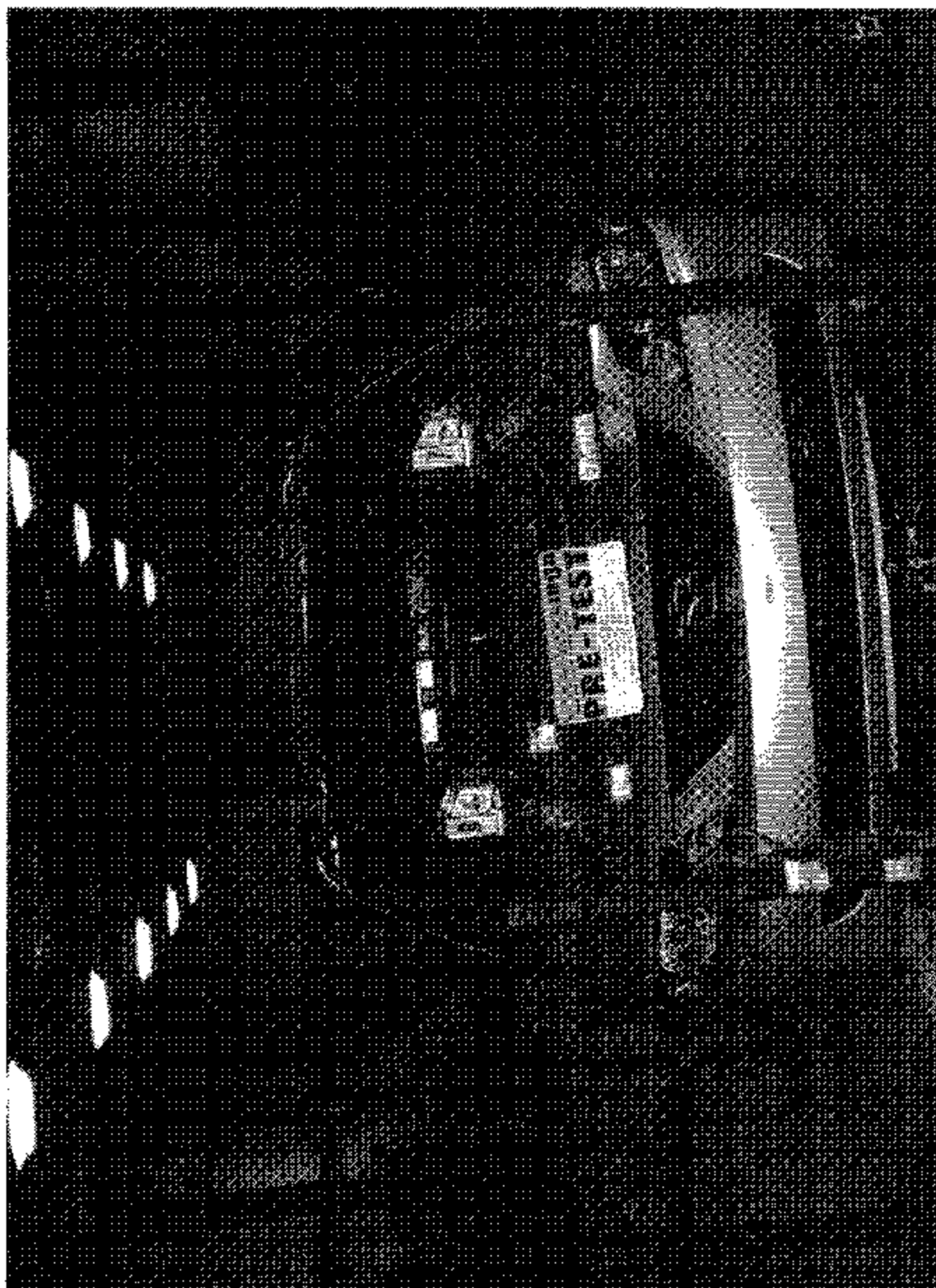
USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS



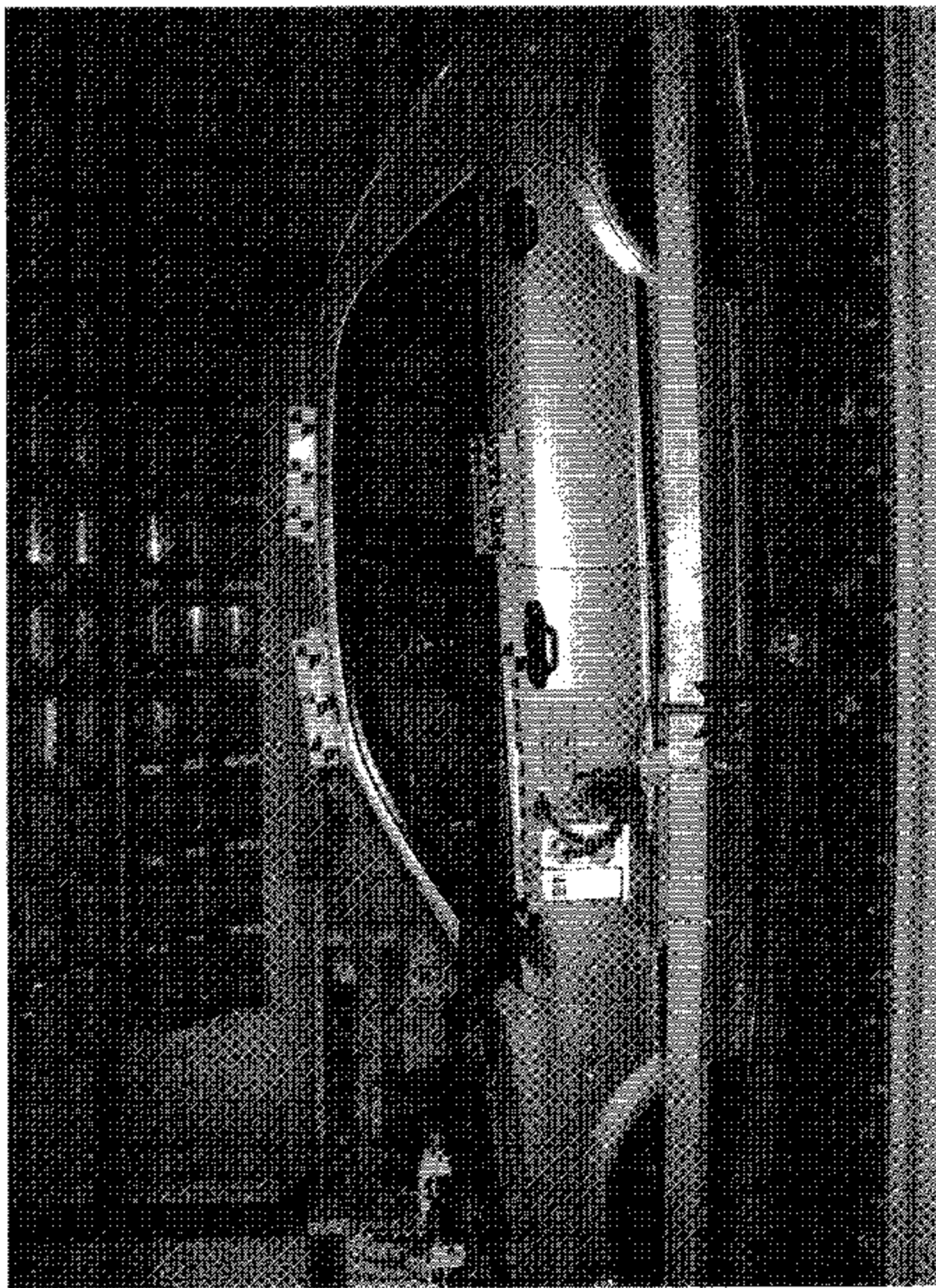
APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

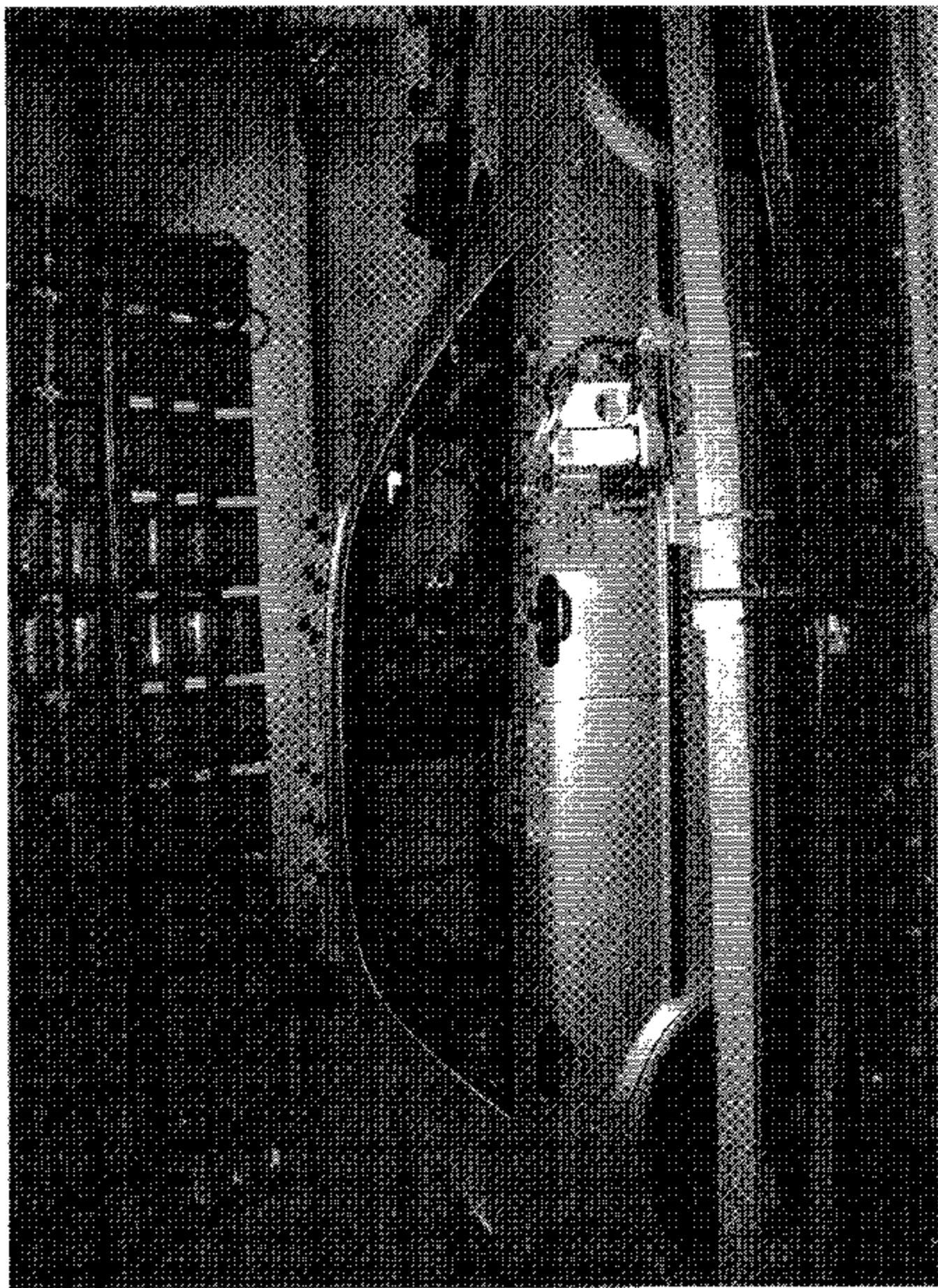
<u>Description</u>	<u>Page No.</u>
Photo No. A-1 - Pre-Test Frontal View	A-1
Photo No. A-2 - Pre-Test Left Side View	A-2
Photo No. A-3 - Pre-Test Right Side View	A-3
Photo No. A-4 - Pre-Test Windshield View	A-4
Photo No. A-5 - Post-Test Windshield View	A-5
Photo No. A-6 - Pre-Test Driver Dummy Position View (Door Open)	A-6
Photo No. A-7 - Post-Test Driver Dummy Position View (Door Open)	A-7
Photo No. A-8 - Pre-Test Driver Dummy Position View	A-8
Photo No. A-9 - Post-Test Driver Dummy Position View	A-9
Photo No. A-10 - Pre-Test Passenger Dummy Position View (Door Open)	A-10
Photo No. A-11 - Post-Test Passenger Dummy Position View (Door Open)	A-11
Photo No. A-12 - Pre-Test Passenger Dummy Position View	A-12
Photo No. A-13 - Post-Test Passenger Dummy Position View	A-13
Photo No. A-14 - Post-Test Driver Dummy Airbag View	A-14
Photo No. A-15 - Post-Test Driver Dummy Head Contact View (windshield)	A-15
Photo No. A-16 - Post-Test Passenger Dummy Airbag View	A-16
Photo No. A-17 - Post-Test Passenger Dummy Airbag Knee Contact View	A-17
Photo No. A-18 - Post-Test Passenger Dummy Head Contact View (mirror)	A-18
Photo No. A-19 - Post-Test Passenger Dummy Head Contact View (visor)	A-19
Photo No. A-20 - Pre-Test Driver Knee Bolster View	A-20
Photo No. A-21 - Post-Test Driver Knee Bolster View	A-21
Photo No. A-22 - Pre-Test Passenger Knee Bolster View	A-22
Photo No. A-23 - Post-Test Passenger Knee Bolster View	A-23
Photo No. A-24 - Pre-Test Driver Seat Position View	A-24
Photo No. A-25 - Post-Test Driver Seat Position View	A-25
Photo No. A-26 - Pre-Test Passenger Seat Position View	A-26
Photo No. A-27 - Post-Test Passenger Seat Position View	A-27
Photo No. A-28 - Vehicle Certification Label	A-28
Photo No. A-29 - FMVSS 110 Label	A-29



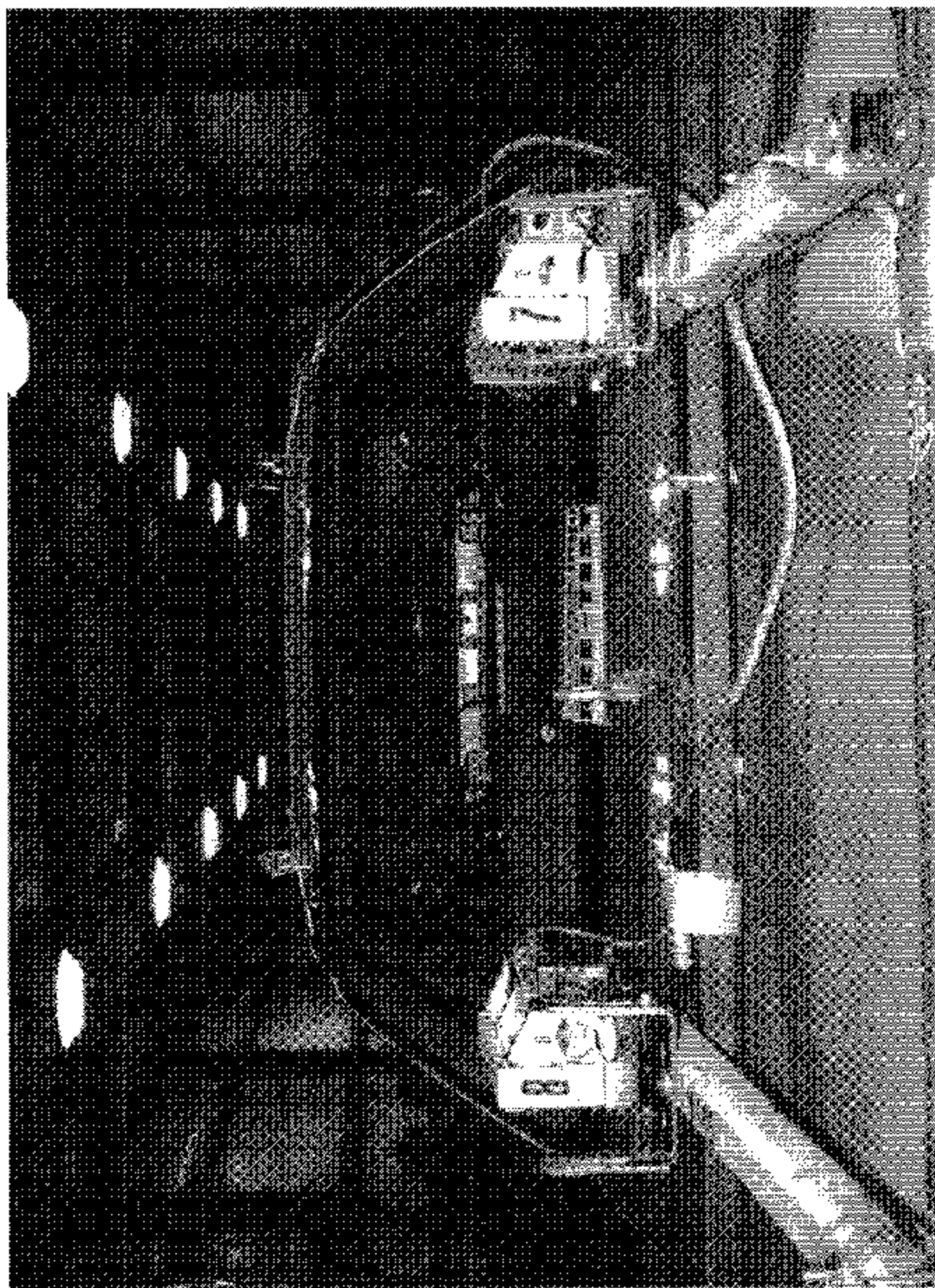
Pre-Test Frontal View



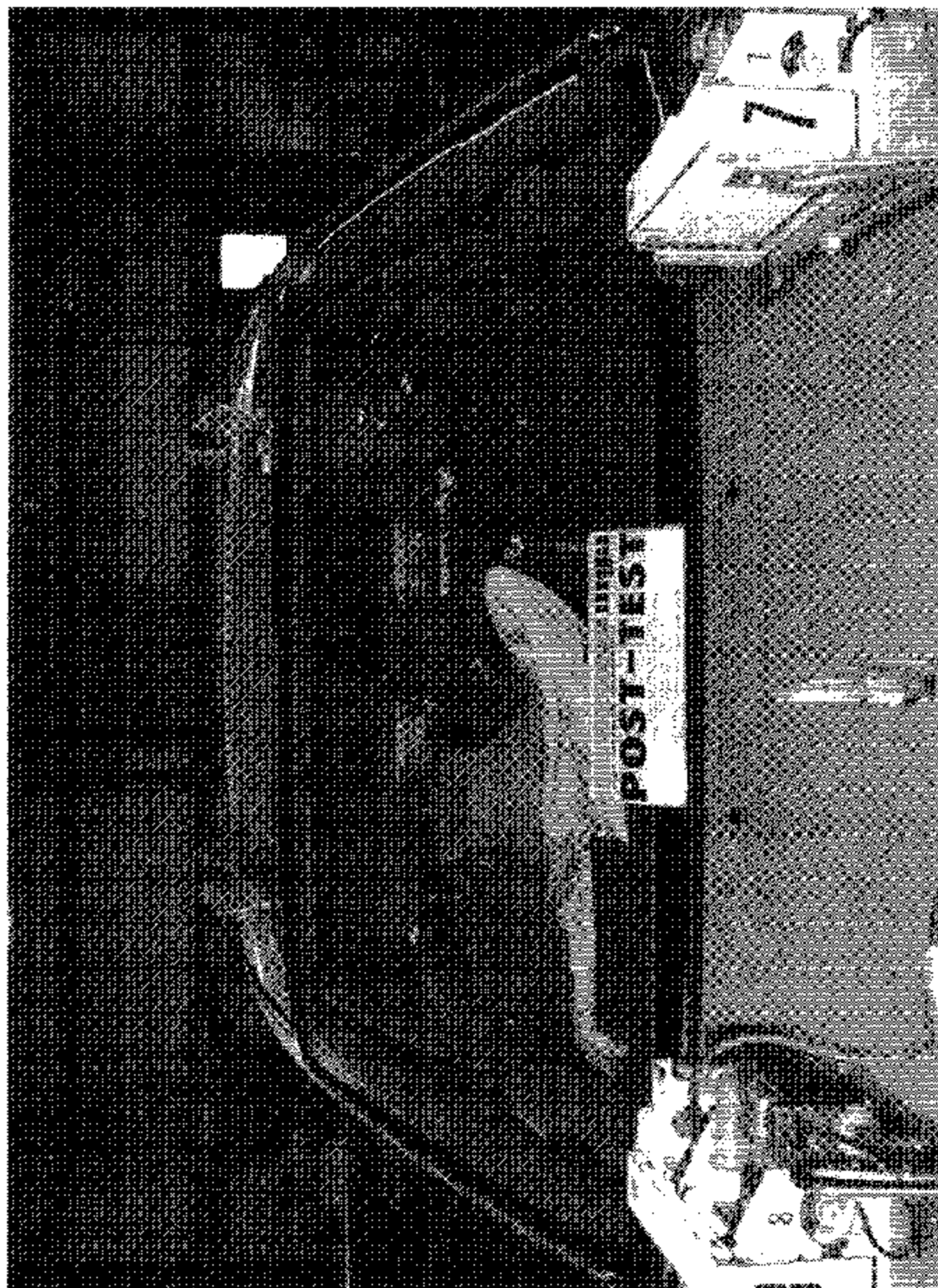
Pre-Test Left Side View



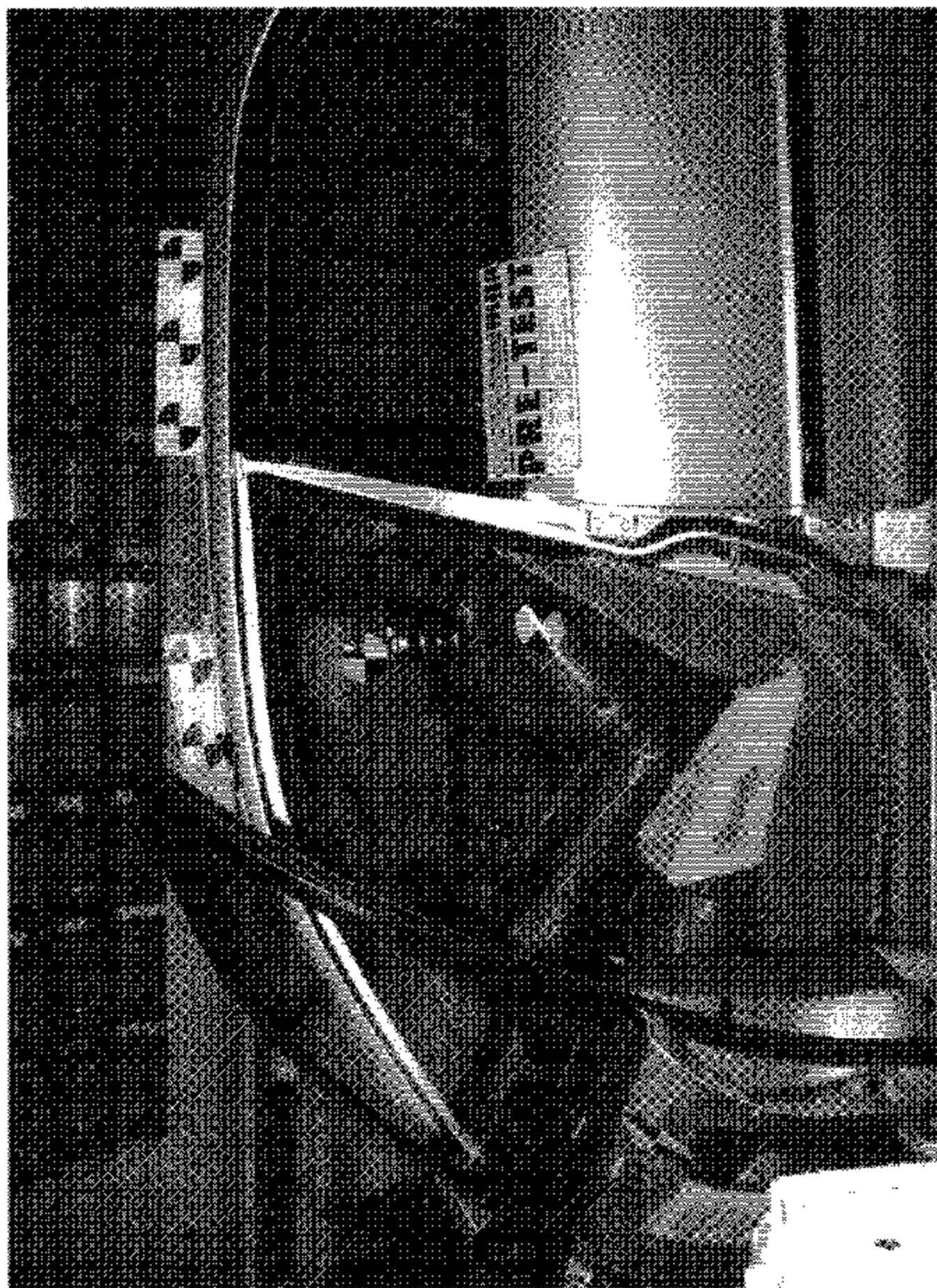
Pre-Test Right Side View



Pre-Test Windshield View



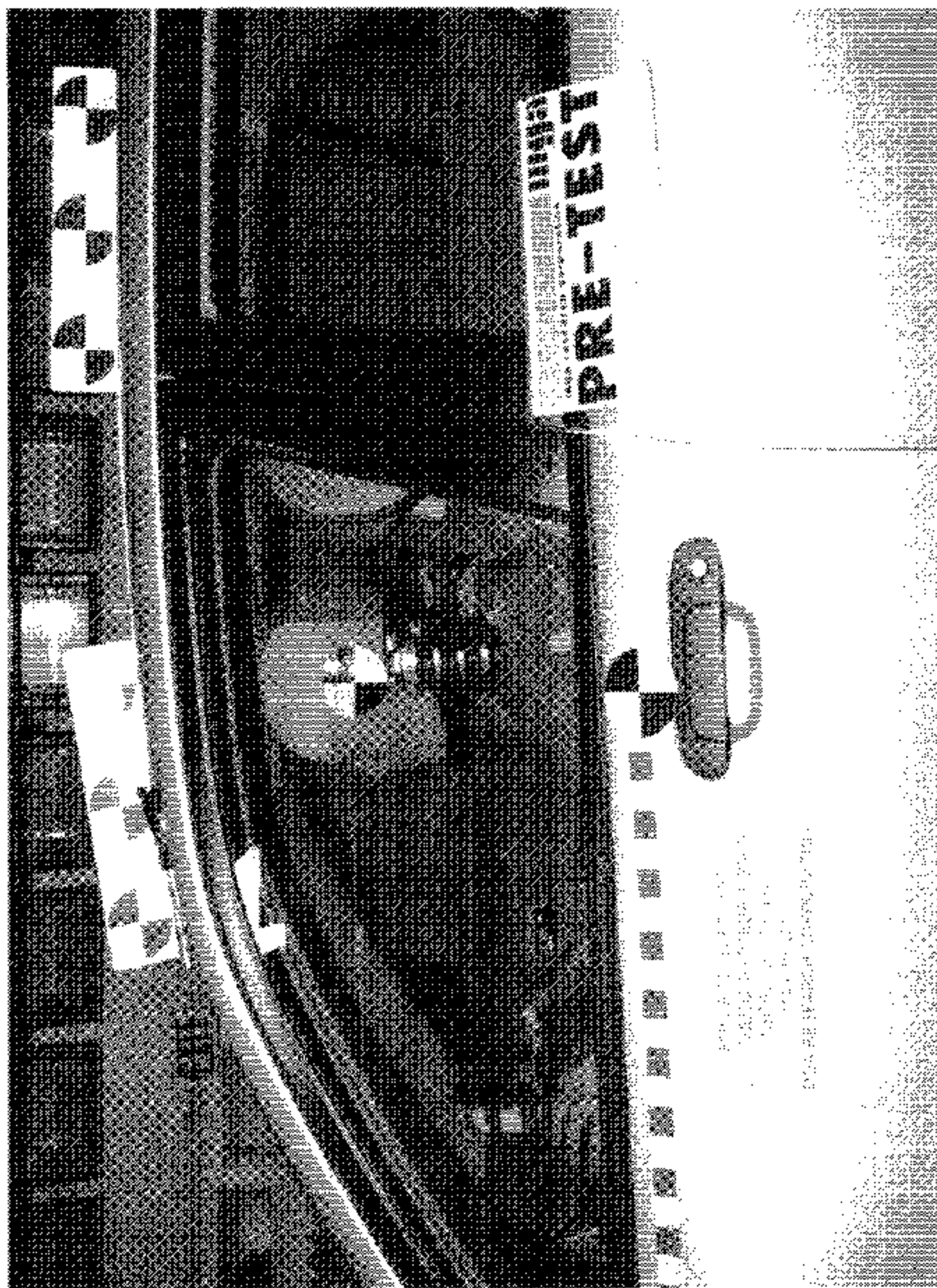
Post-Test Windshield View



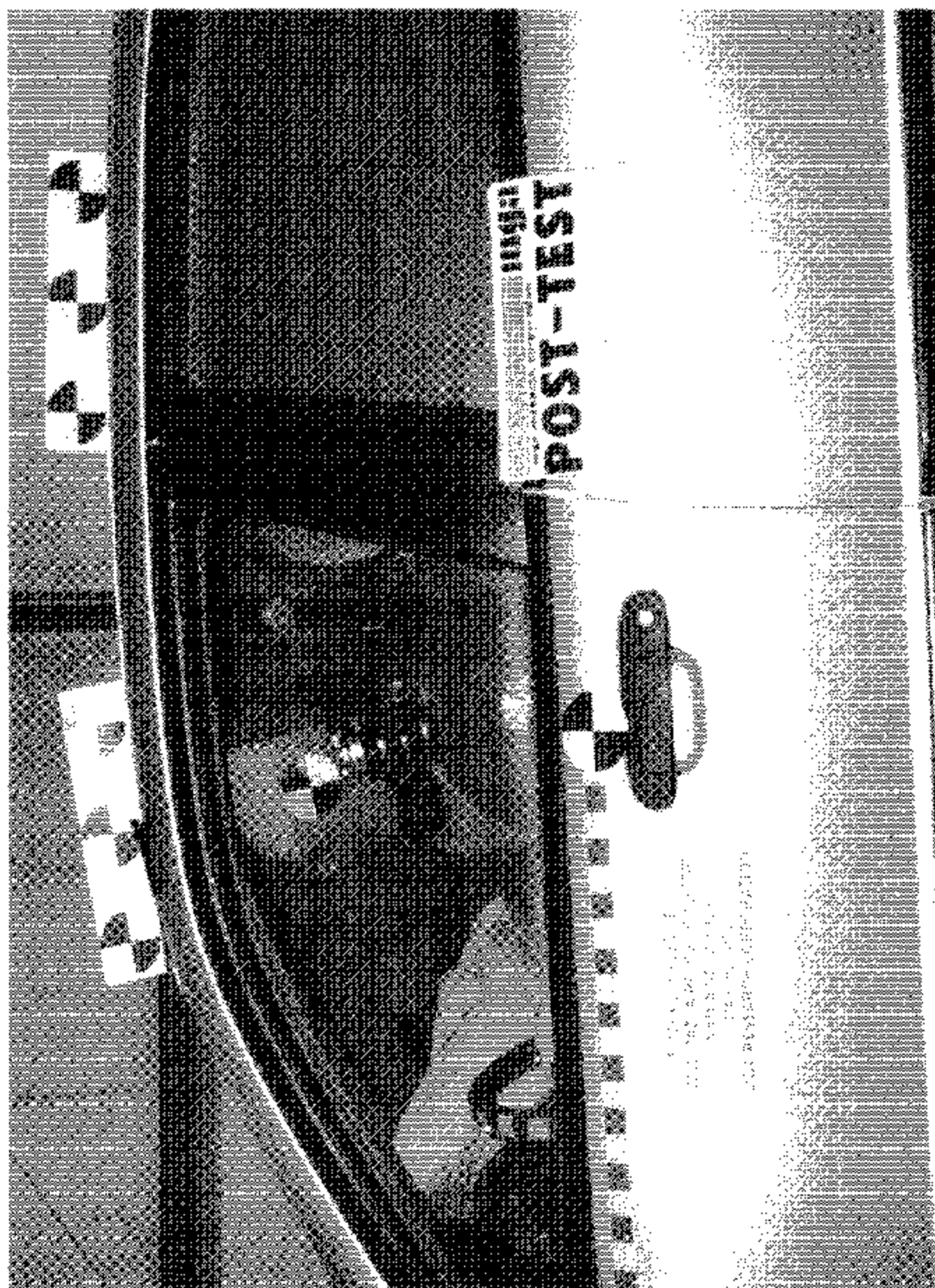
Pre-Test Driver Dummy Position View (Door Open)



Post-Test Driver Dummy Position View (Door Open)



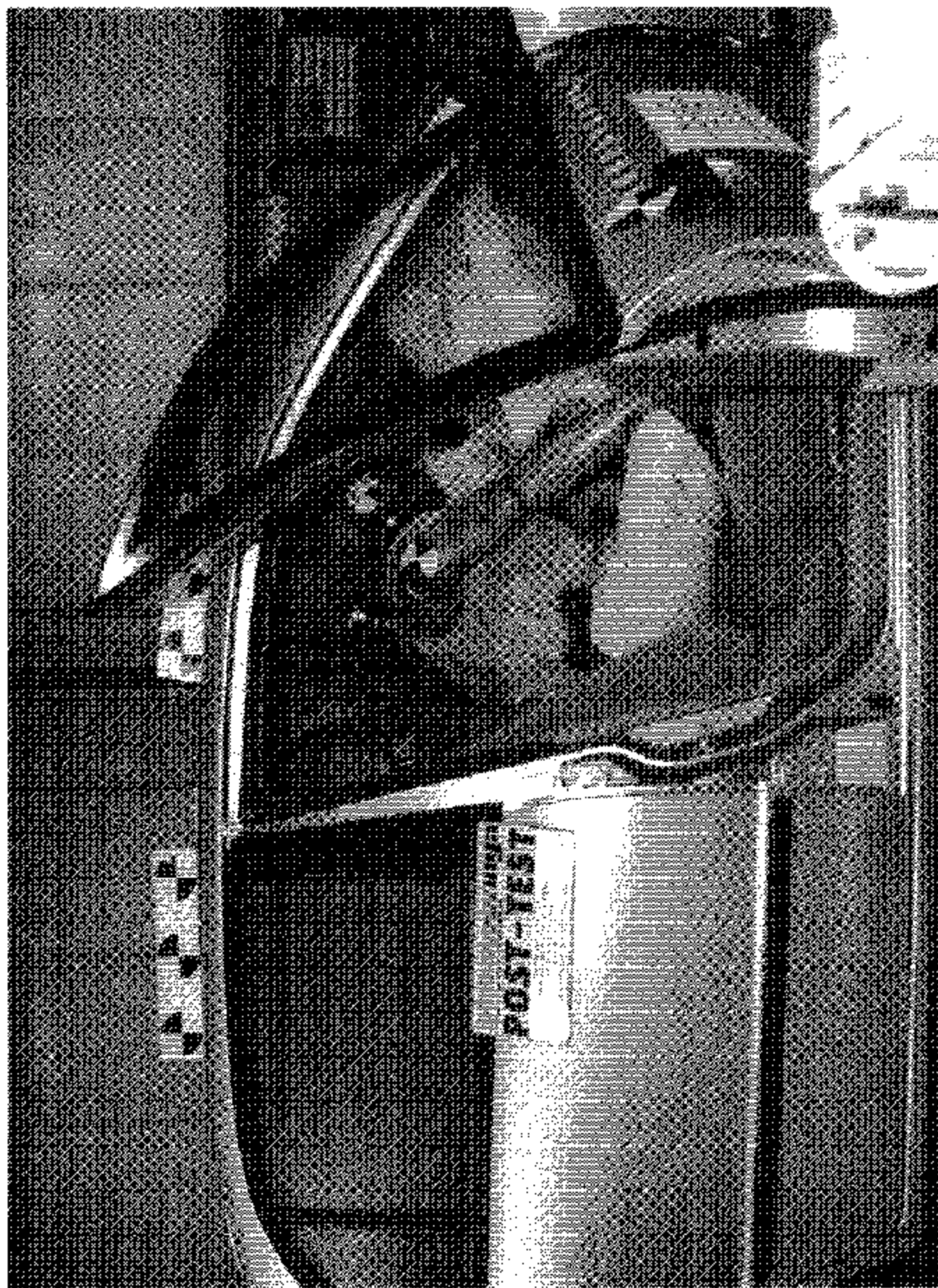
Pre-Test Driver Dummy Position View



Post-Test Driver Dummy Position View



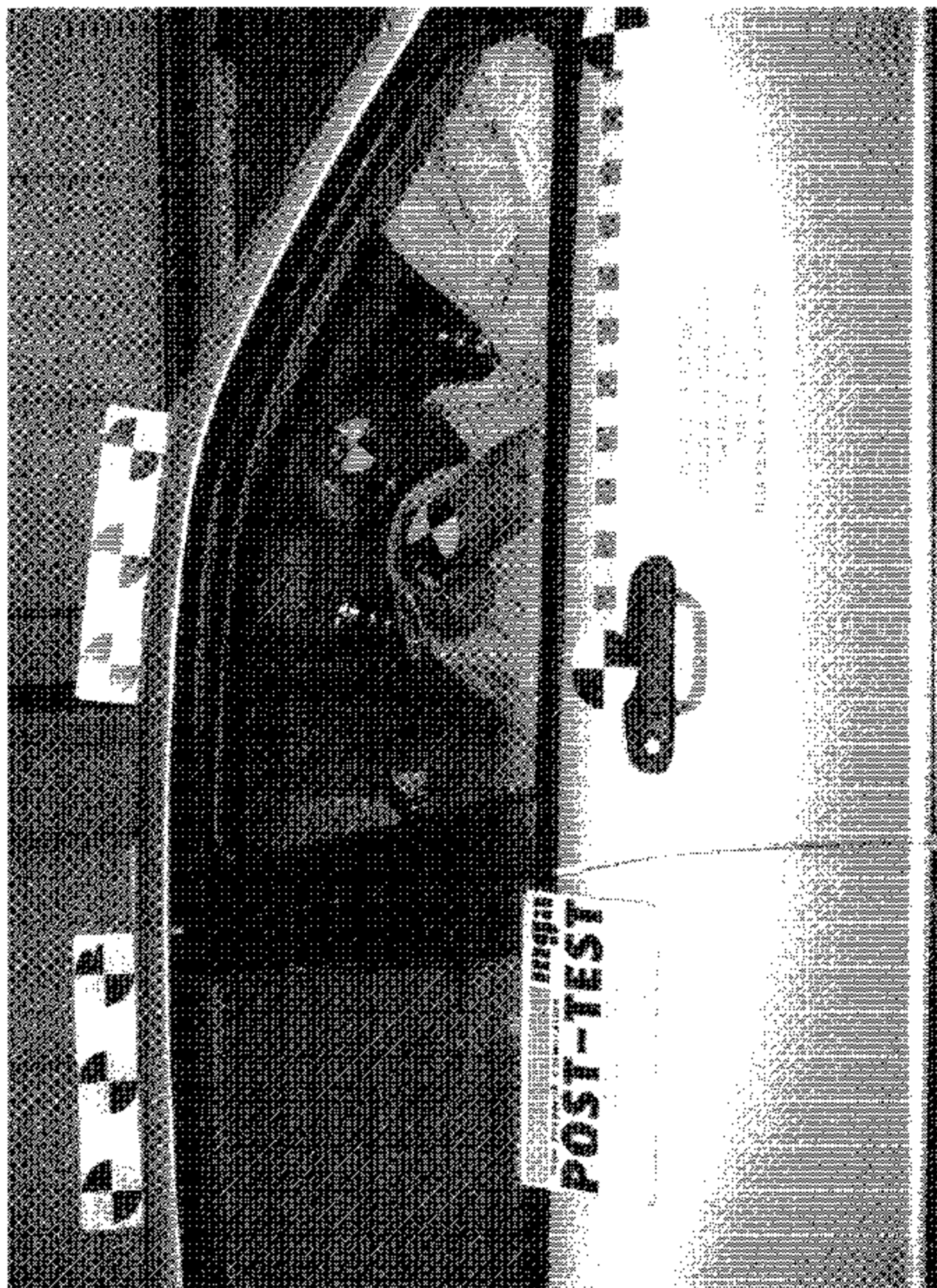
Pre-Test Passenger Dummy Position View (Door Open)



Post-Test Passenger Dummy Position View (Door Open)



Pre-Test Passenger Dummy Position View



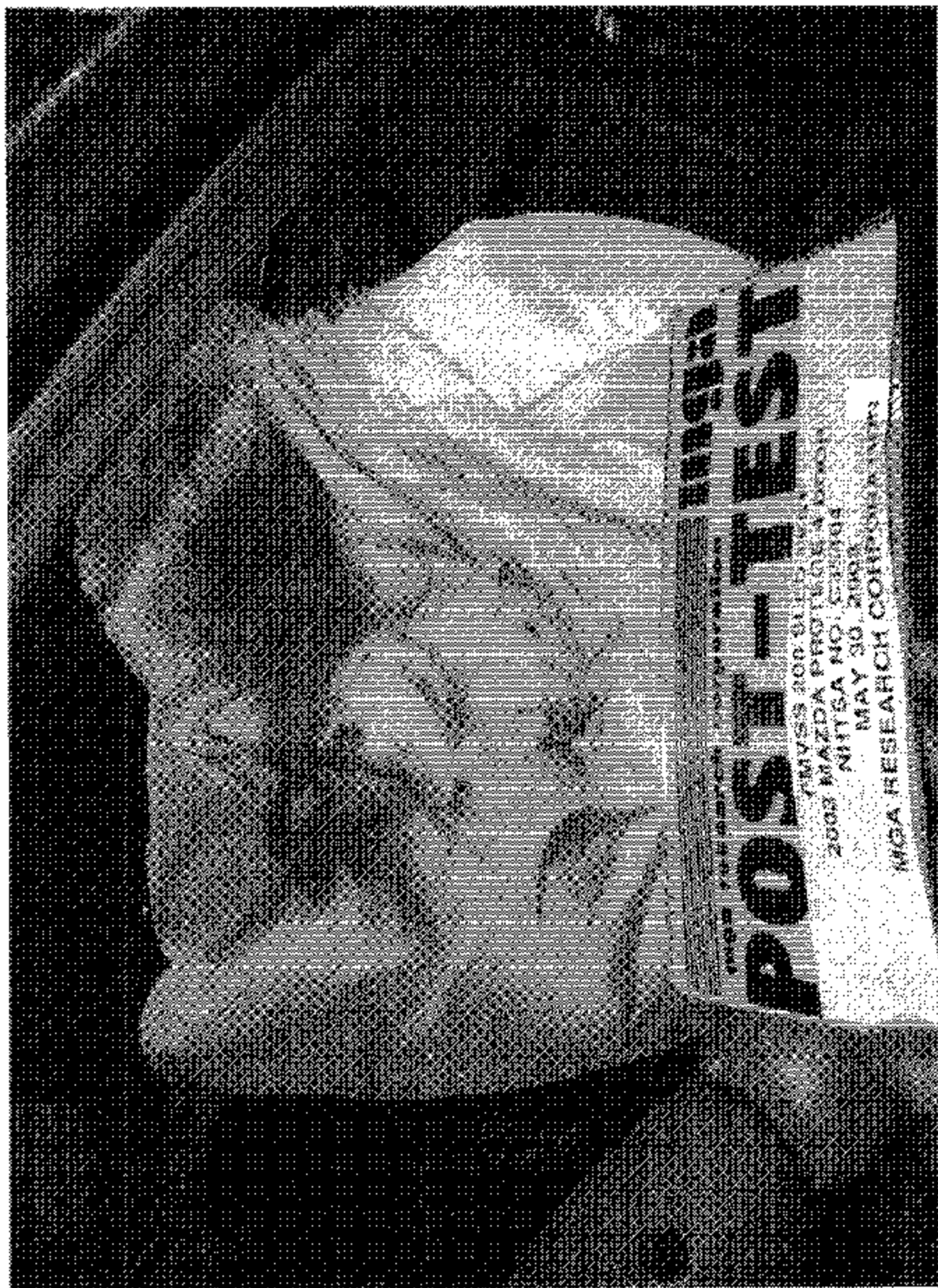
Post-Test Passenger Dummy Position View



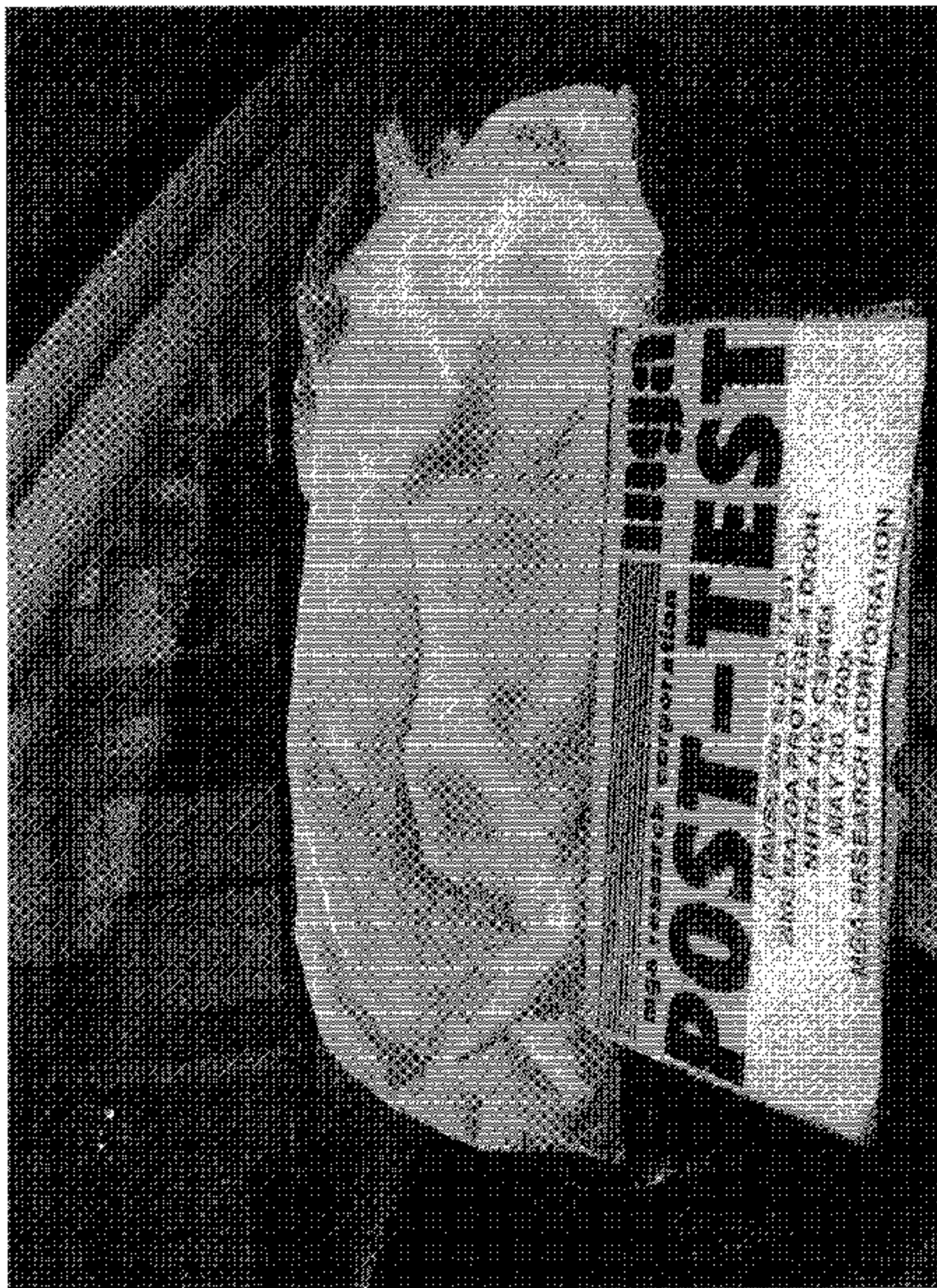
Post-Test Driver Dummy Airbag View



Post-Test Driver Dummy Head Contact View (windshield)



Post-Test Passenger Dummy Airbag View



Post-Test Passenger Dummy Airbag Knee Contact View

Initial

mgm research corporation

POST-TEST

FMVSS 208 SLED TEST

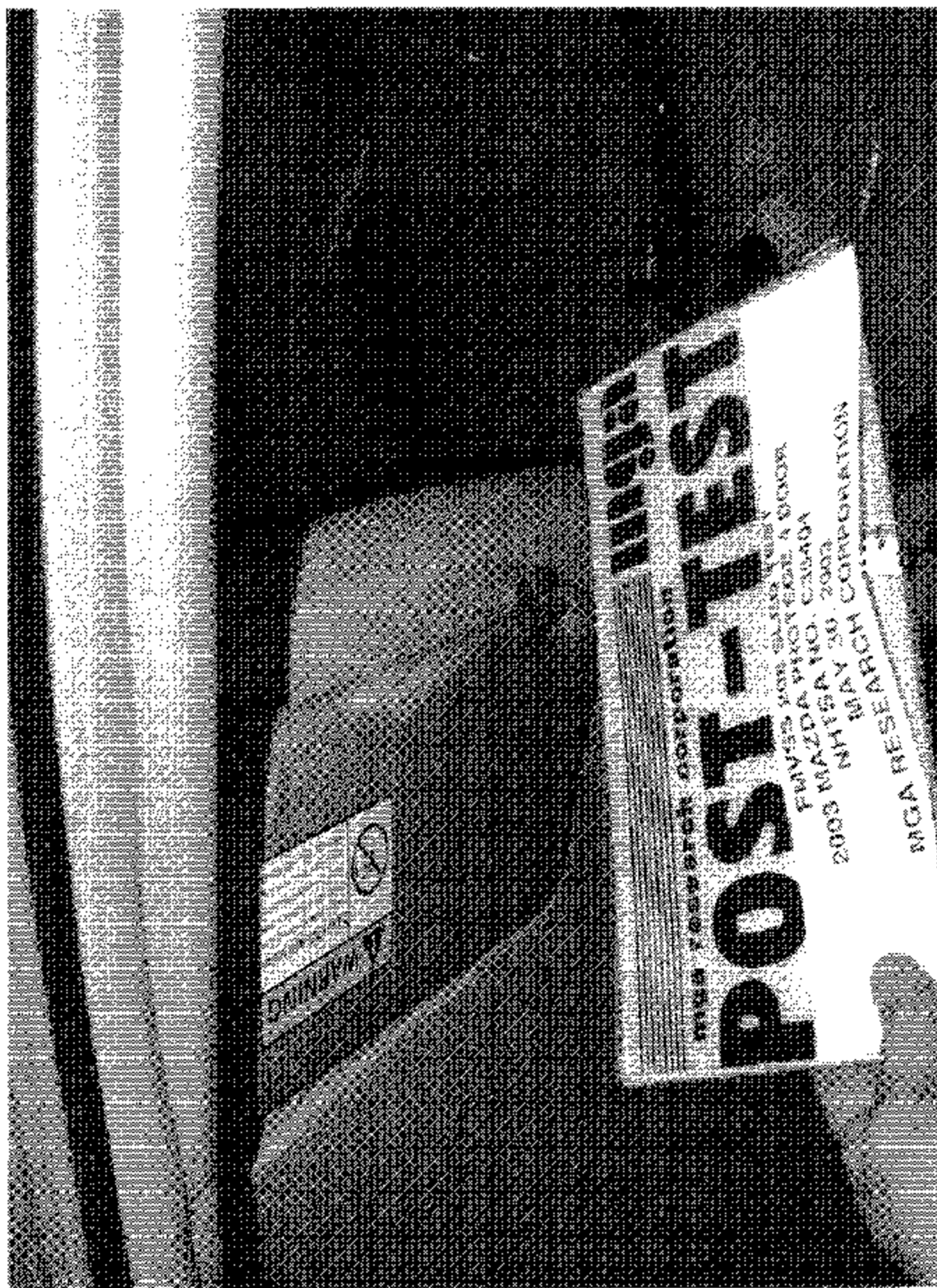
2003 MAZDA PROTEGE 4000R

NHTSA NO. C35404

MAY 03, 2003

MGA RESEARCH CORPORATION

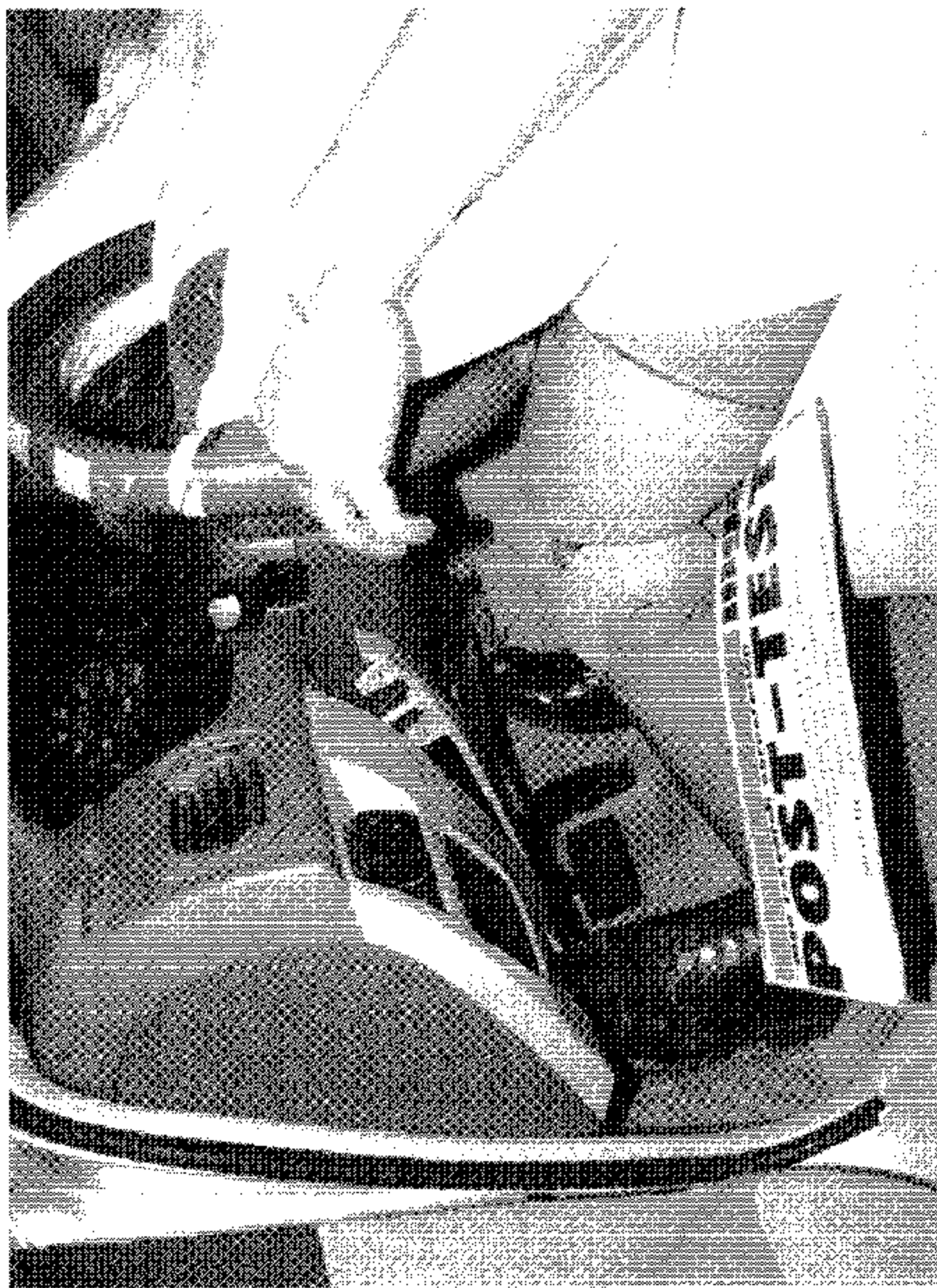
Post-Test Passenger Dummy Head Contact View (mirror)



Post-Test Passenger Dummy Head Contact View (visor)



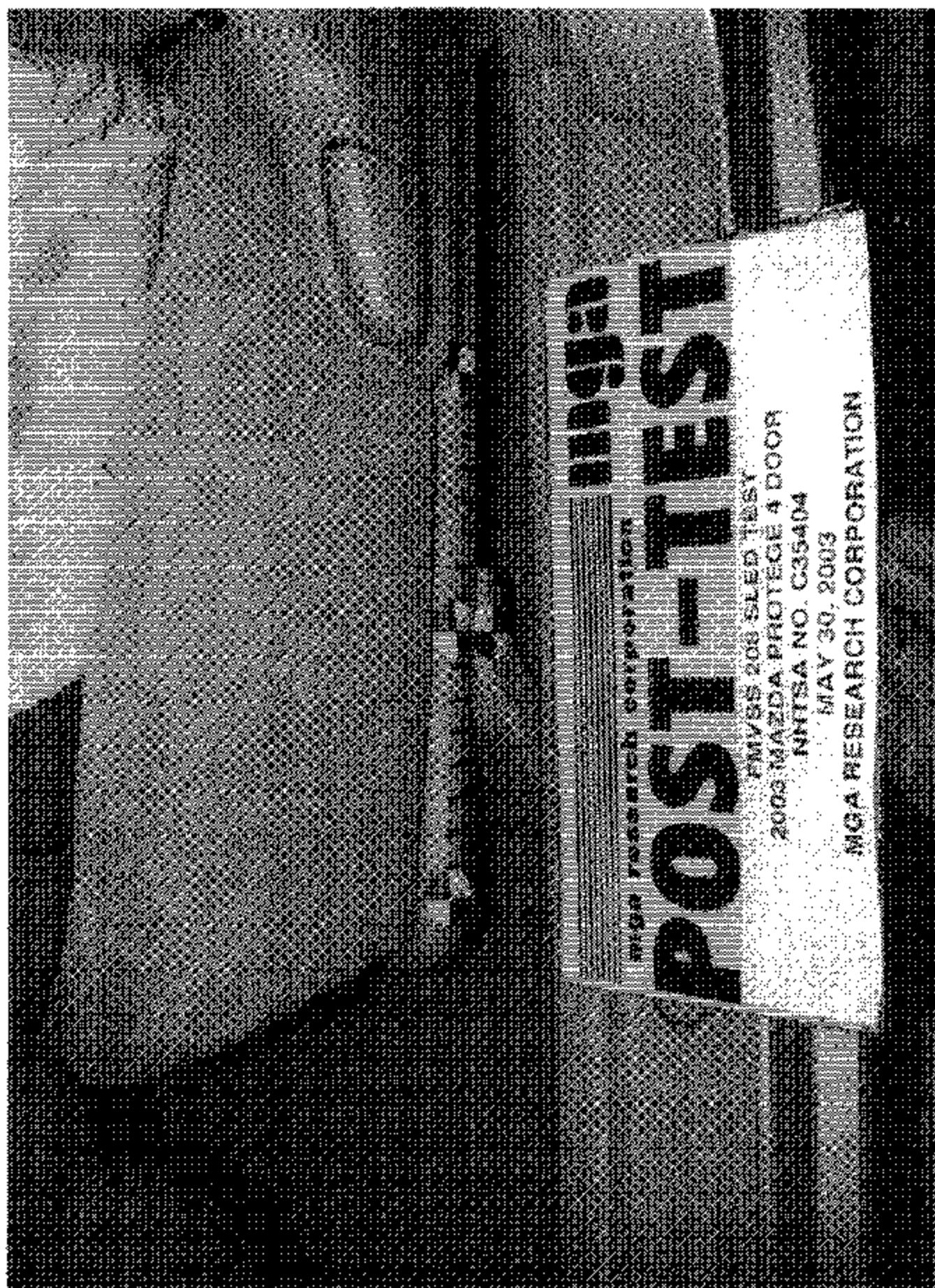
Pre-Test Driver Knee Bolster View



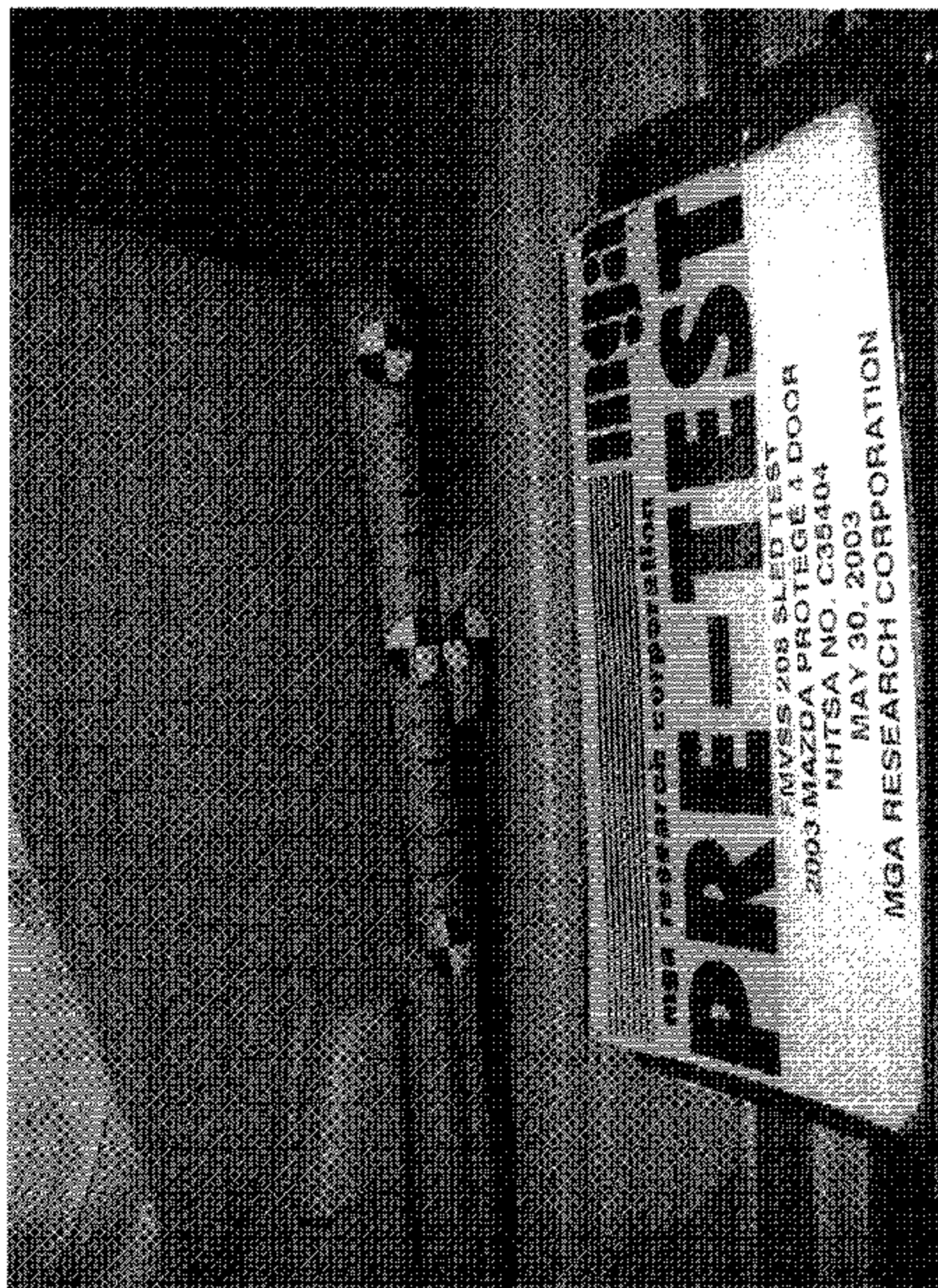
Post-Test Driver Dummy Knee Bolster View



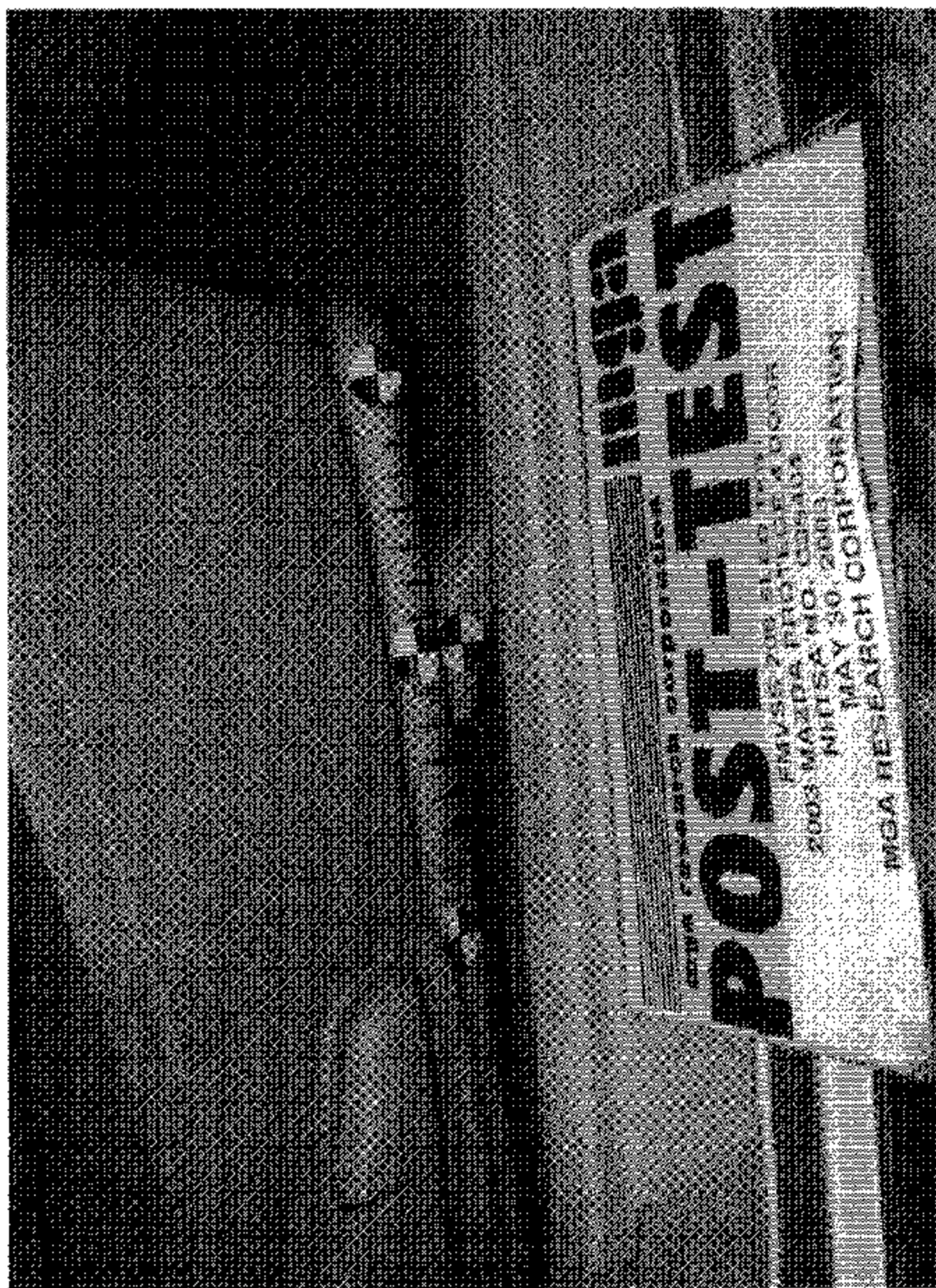
Pre-Test Driver Seat Position View



Post-Test Driver Seat Position View



Pre-Test Passenger Seat Position View



Post-Test Passenger Seat Position View

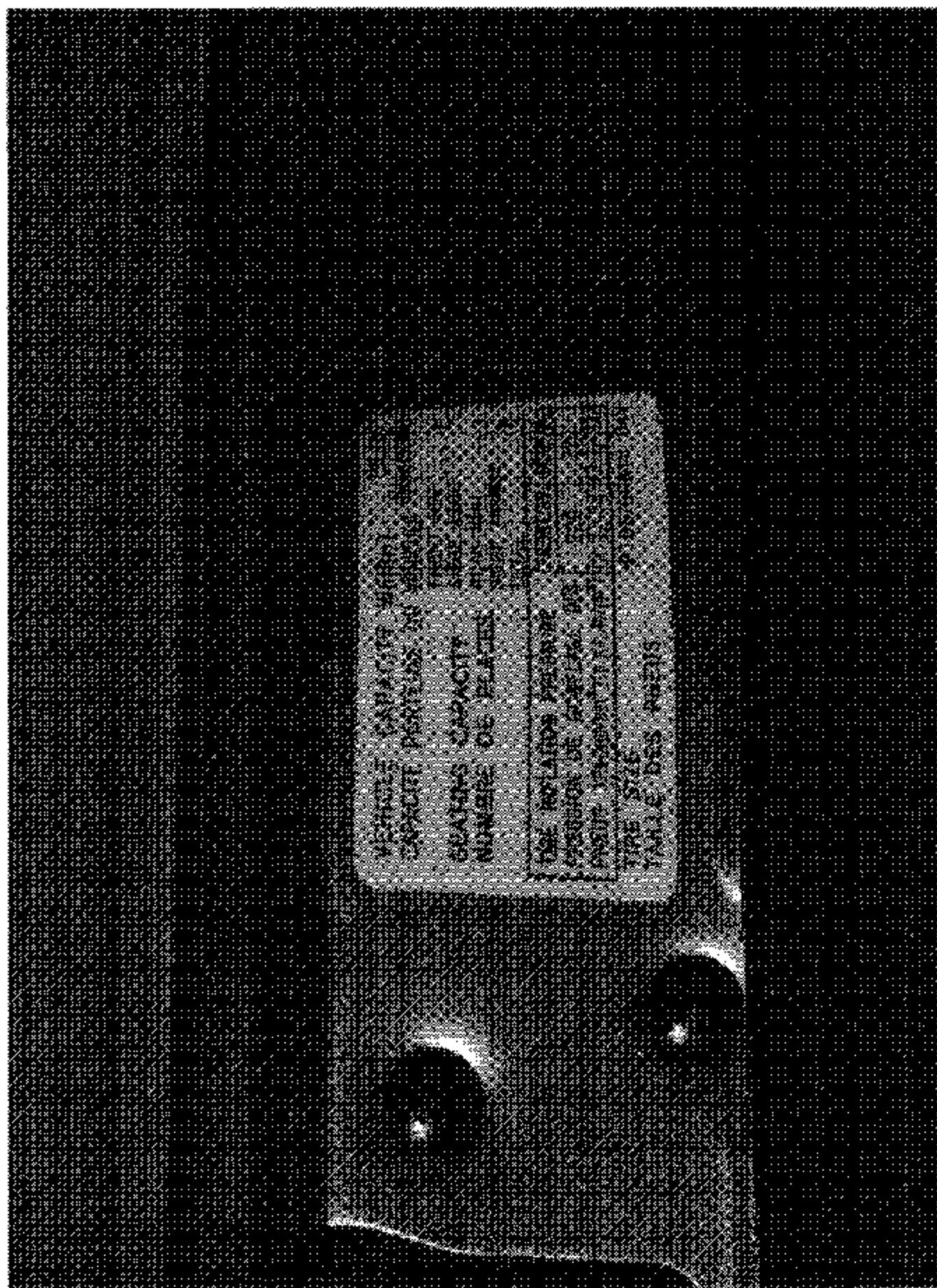
TOYOTA MOTOR CORPORATION

TYPE: 4E1
DISPLACEMENT: 1720 cc
GROSS WEIGHT: 720 kg
NET WEIGHT: 720 kg
GROSS CUBIC CAPACITY: 0.109570 m³
PASSENGER SEATING CAPACITY: 5
VEHICLE IDENTIFICATION NUMBER: 109570
MADE IN JAPAN

VEHICLE IDENTIFICATION NUMBER: 109570



VEHICLE IDENTIFICATION NUMBER: 109570



FMVSS 110

APPENDIX B

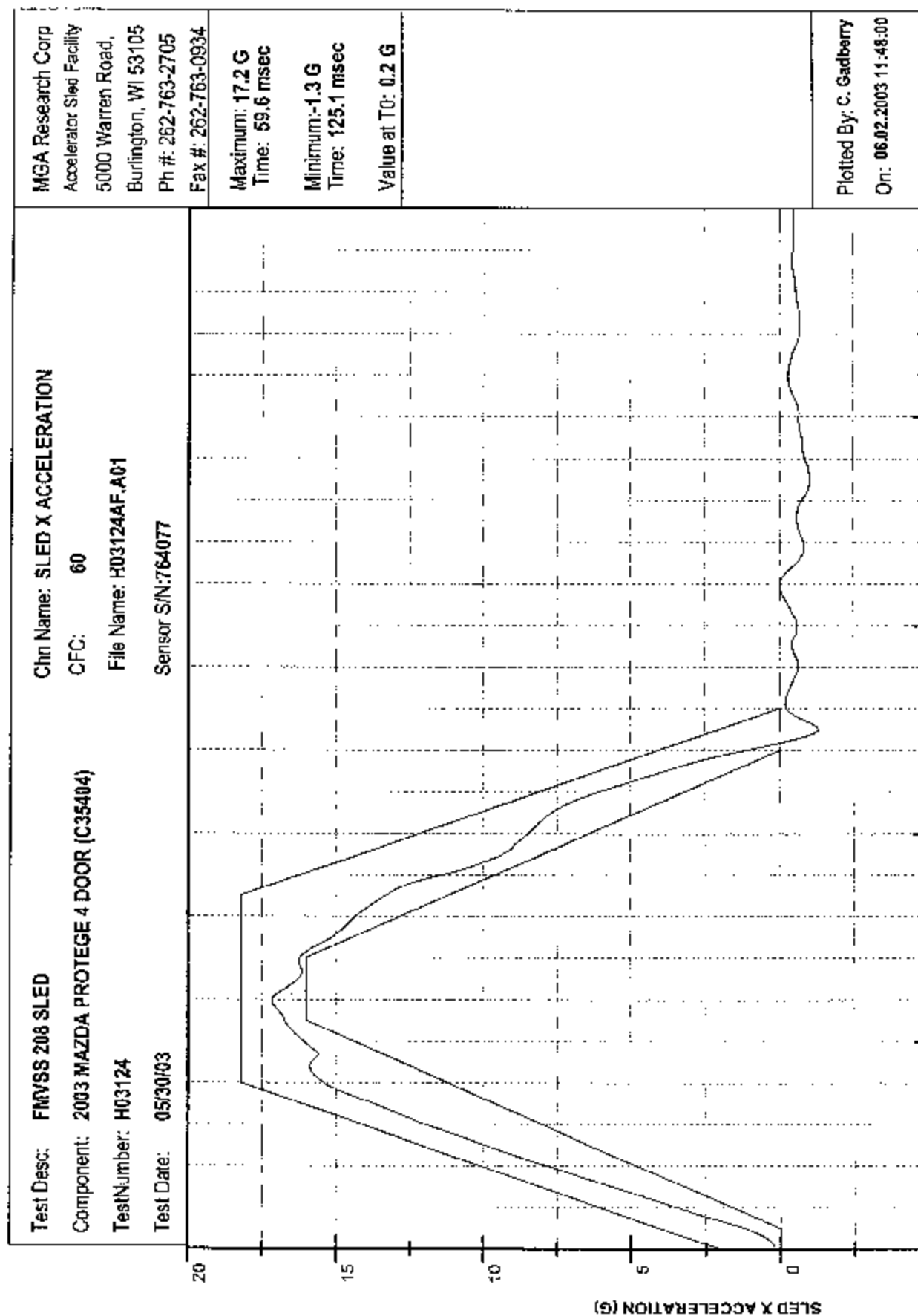
DATA PLOTS

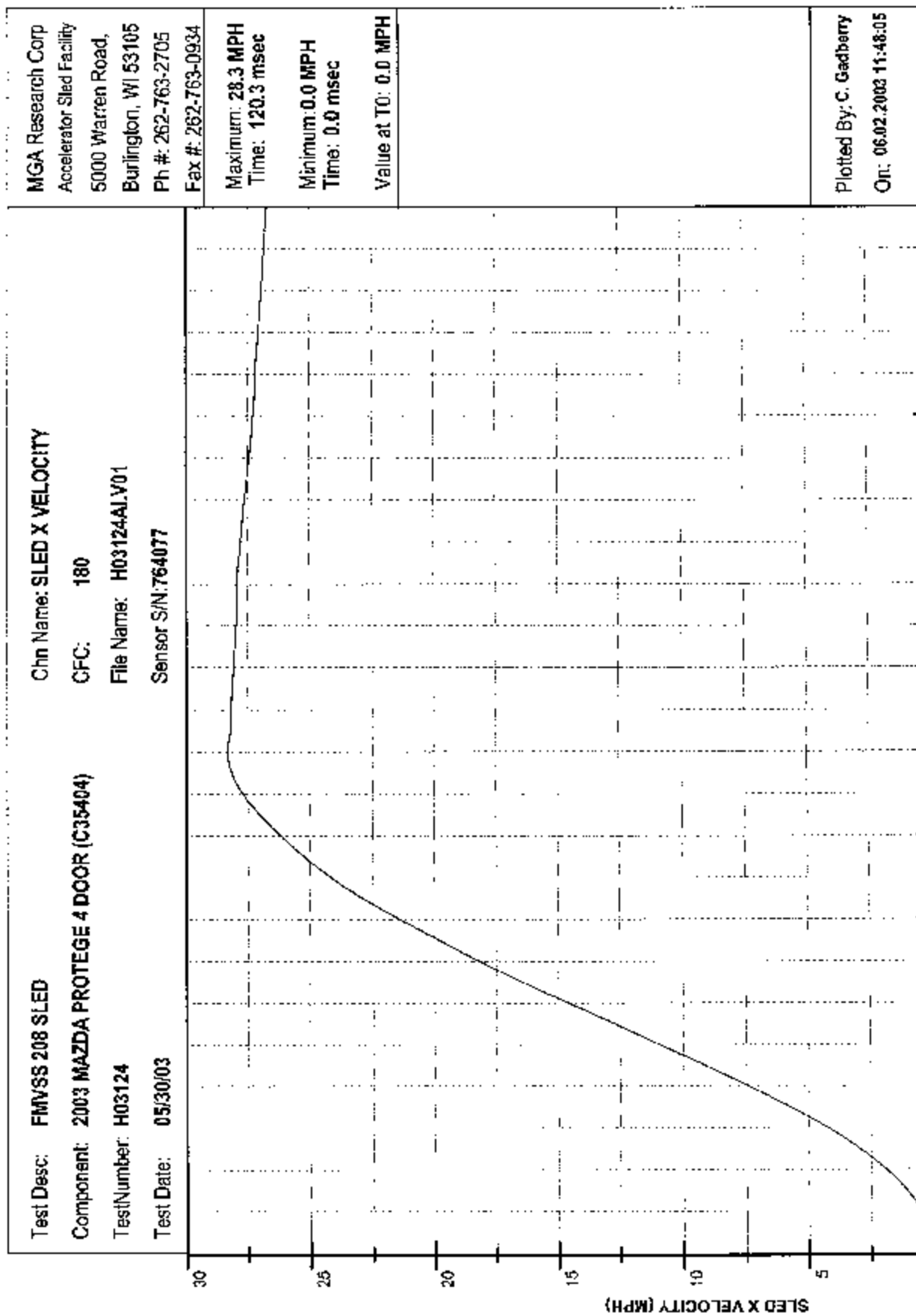
TABLE OF DATA PLOTS

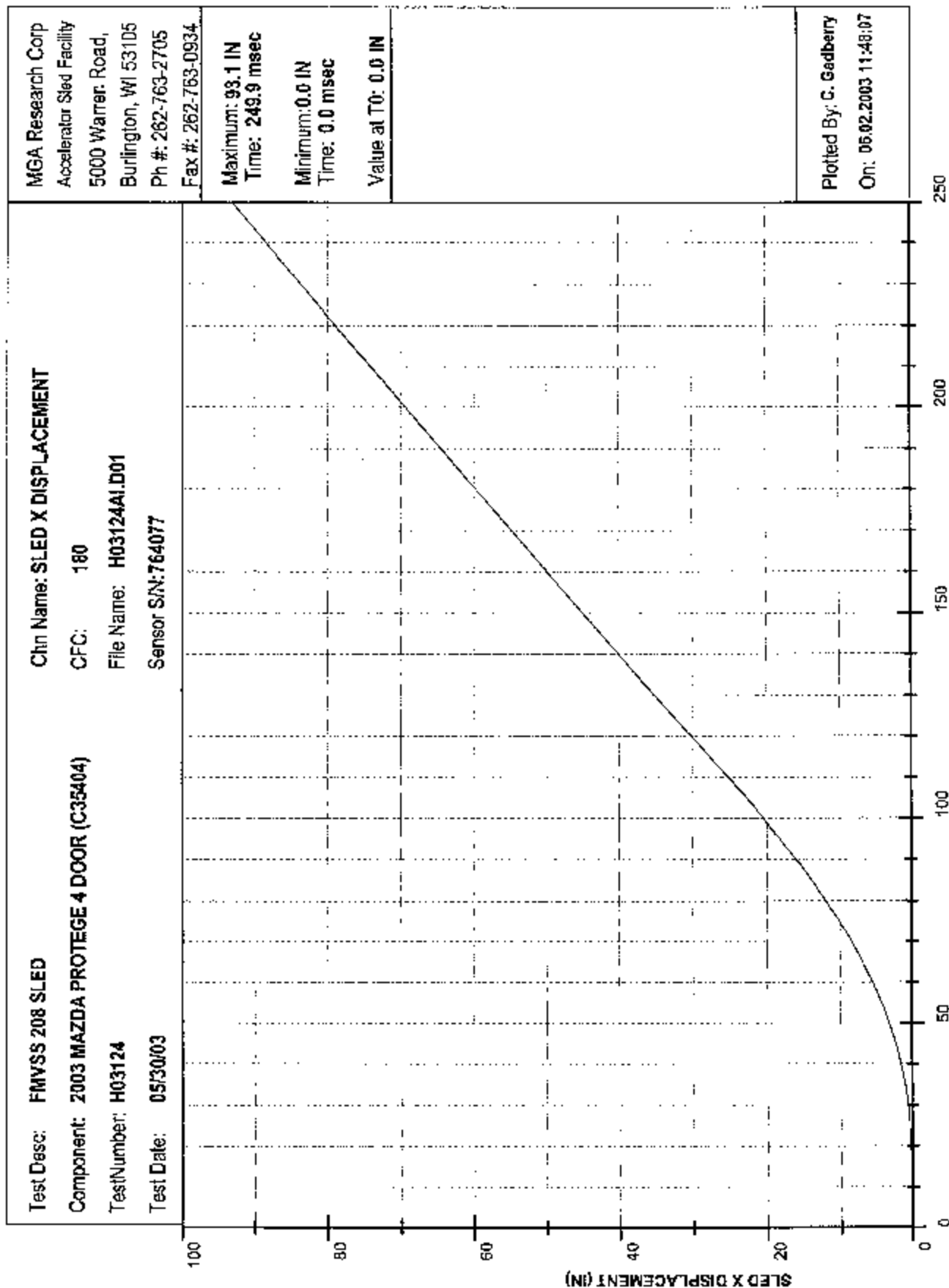
<u>Description</u>	<u>Page No.</u>
Figure B-1 - Sled X Acceleration vs. Time	B-1
Figure B-2 - Sled X Velocity vs. Time	B-2
Figure B-3 - Sled X Displacement vs. Time	B-3
Figure B-4 - 1 Meter Sled Displacement	B-4
Figure B-5 - Airbag Timing vs. Time	B-5
Figure B-6 - Left Rear Seat Crossmember X Acceleration vs. Time	B-6
Figure B-7 - Right Rear Seat Crossmember X Acceleration vs. Time	B-7
Figure B-8 - Top of Engine X Acceleration vs. Time	B-8
Figure B-9 - Rear Axle X Acceleration vs. Time	B-9
Figure B-10 - Driver Head X Acceleration vs. Time	B-10
Figure B-11 - Driver Head Y Acceleration vs. Time	B-11
Figure B-12 - Driver Head Z Acceleration vs. Time	B-12
Figure B-13 - Driver Head Resultant Acceleration vs. Time	B-13
Figure B-14 - Driver Neck Force X vs. Time	B-14
Figure B-15 - Driver Neck Force Y vs. Time	B-15
Figure B-16 - Driver Neck Force Z vs. Time	B-16
Figure B-17 - Driver Neck Moment X vs. Time	B-17
Figure B-18 - Driver Neck Moment Y vs. Time	B-18
Figure B-19 - Driver Neck Moment Z vs. Time	B-19
Figure B-20 - Driver Occipital Condyle Moment Y vs. Time	B-20
Figure B-21 - Driver Chest X Acceleration vs. Time	B-21
Figure B-22 - Driver Chest Y Acceleration vs. Time	B-22
Figure B-23 - Driver Chest Z Acceleration vs. Time	B-23
Figure B-24 - Driver Chest Resultant Acceleration vs. Time	B-24
Figure B-25 - Driver Chest Compression vs. Time	B-25
Figure B-26 - Driver Left Femur Force vs. Time	B-26
Figure B-27 - Driver Right Femur Force vs. Time	B-27
Figure B-28 - Passenger Head X Acceleration vs. Time	B-28
Figure B-29 - Passenger Head Y Acceleration vs. Time	B-29
Figure B-30 - Passenger Head Z Acceleration vs. Time	B-30

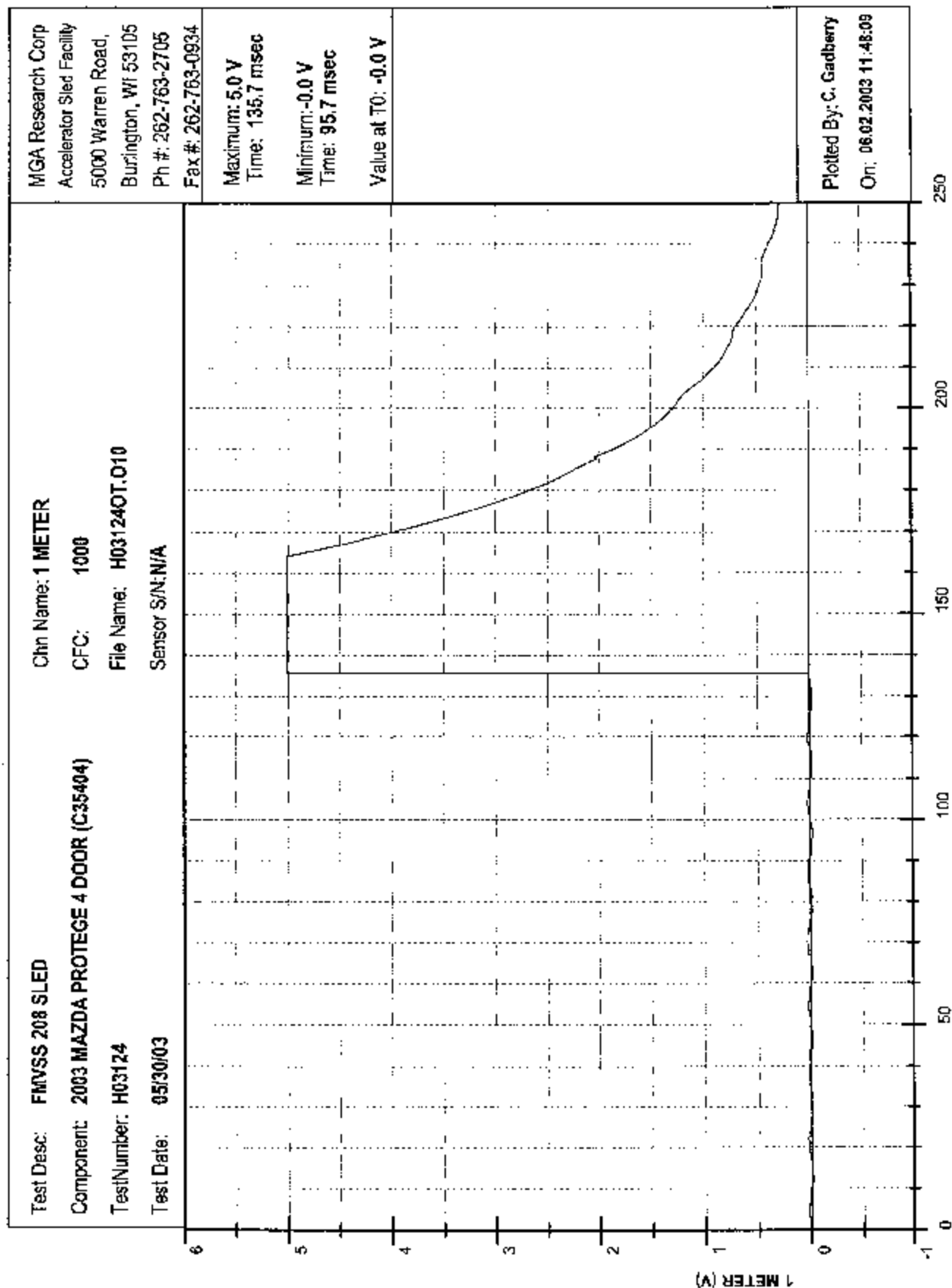
TABLE OF DATA PLOTS (Cont.)

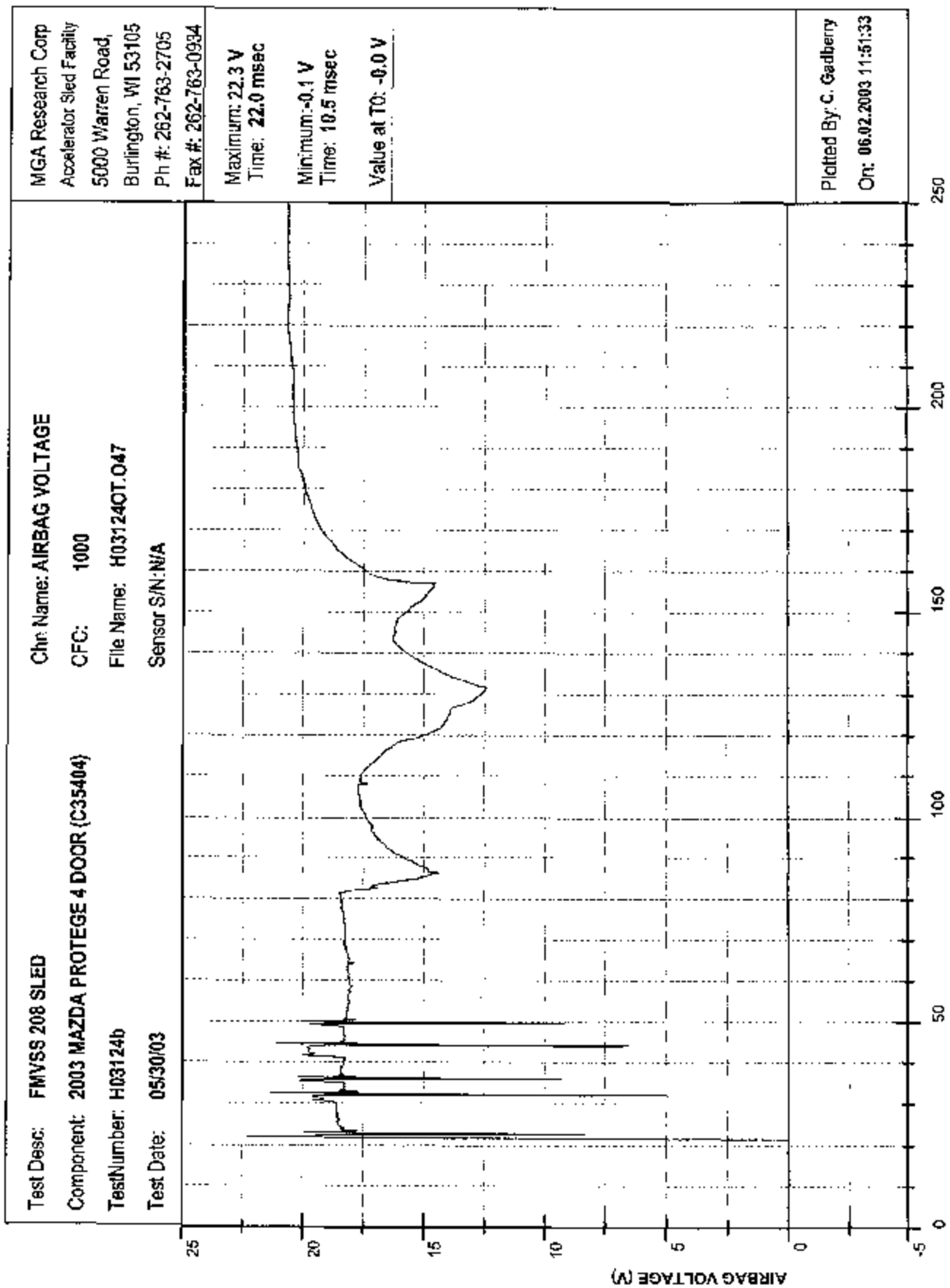
<u>Description</u>	<u>Page No.</u>
Figure B-31 - Passenger Head Resultant Acceleration vs. Time	B-31
Figure B-32 - Passenger Neck Force X vs. Time	B-32
Figure B-33 - Passenger Neck Force Y vs. Time	B-33
Figure B-34 - Passenger Neck Force Z vs. Time	B-34
Figure B-35 - Passenger Neck Moment X vs. Time	B-35
Figure B-36 - Passenger Neck Moment Y vs. Time	B-36
Figure B-37 - Passenger Neck Moment Z vs. Time	B-37
Figure B-38 - Passenger Occipital Condyle Moment Y vs. Time	B-38
Figure B-39 - Passenger Chest X Acceleration vs. Time	B-39
Figure B-40 - Passenger Chest Y Acceleration vs. Time	B-40
Figure B-41 - Passenger Chest Z Acceleration vs. Time	B-41
Figure B-42 - Passenger Chest Resultant Acceleration vs. Time	B-42
Figure B-43 - Passenger Chest Compression vs. Time	B-43
Figure B-44 - Passenger Left Femur Force vs. Time	B-44
Figure B-45 - Passenger Right Femur Force vs. Time	B-45

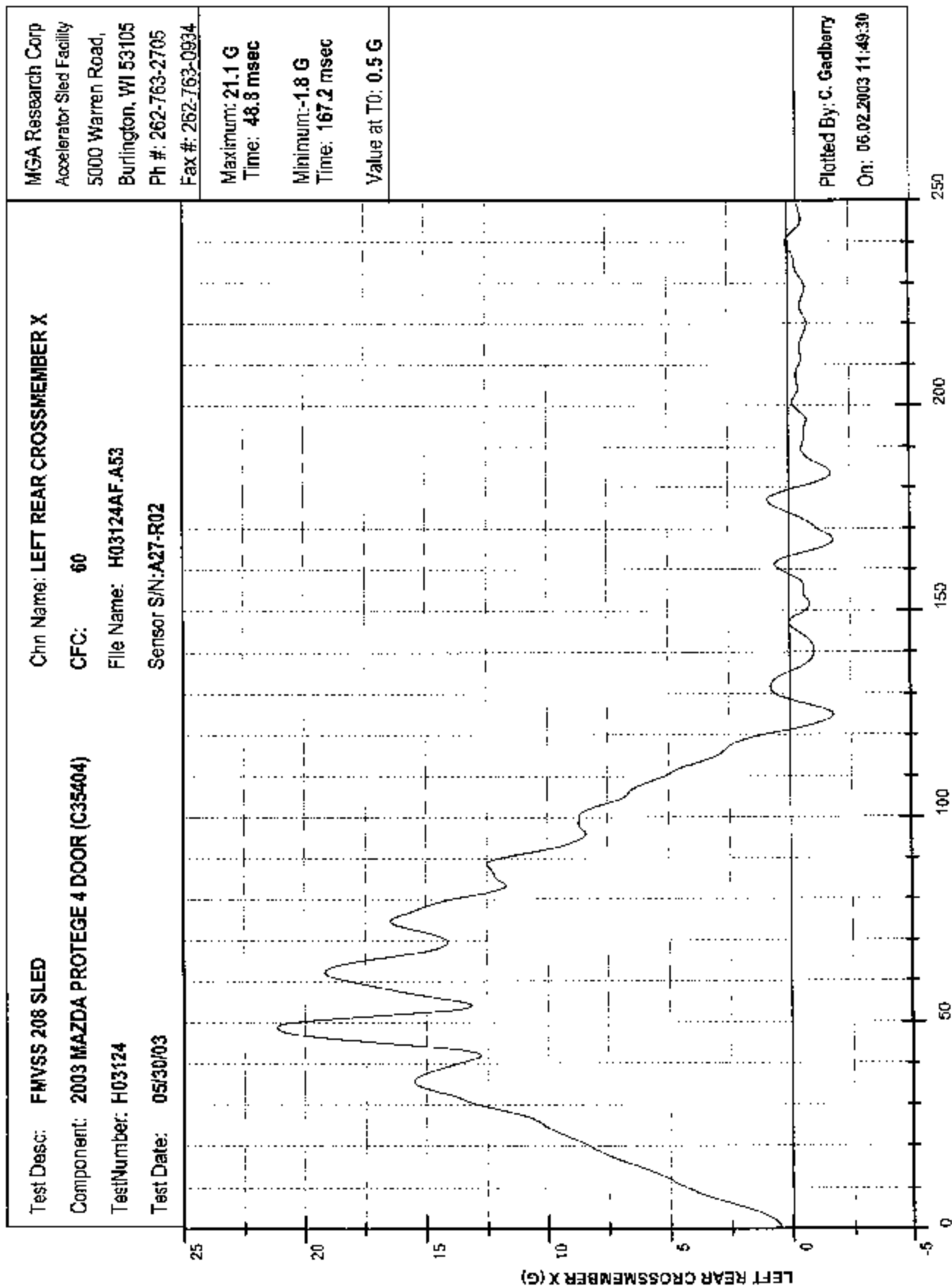


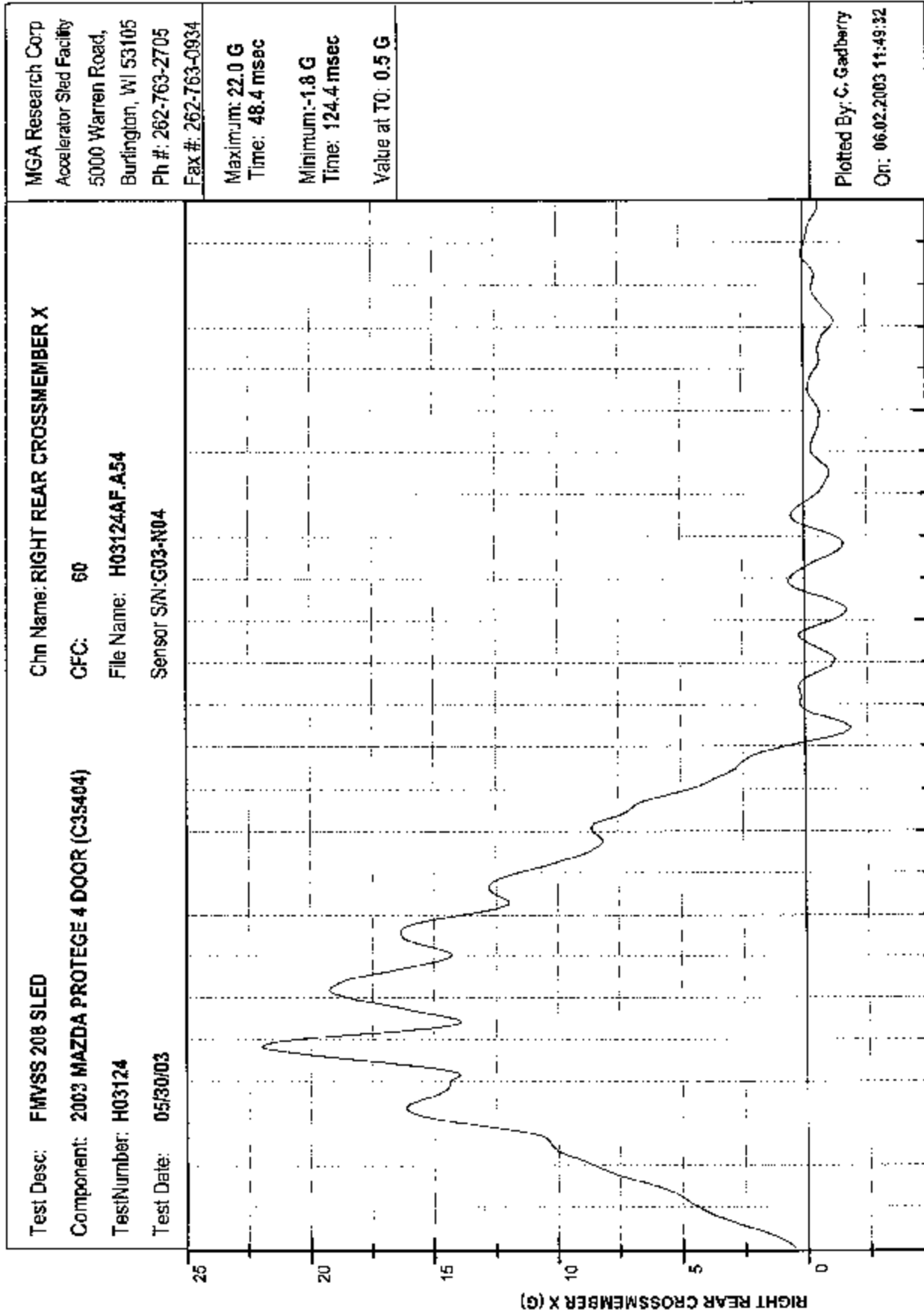


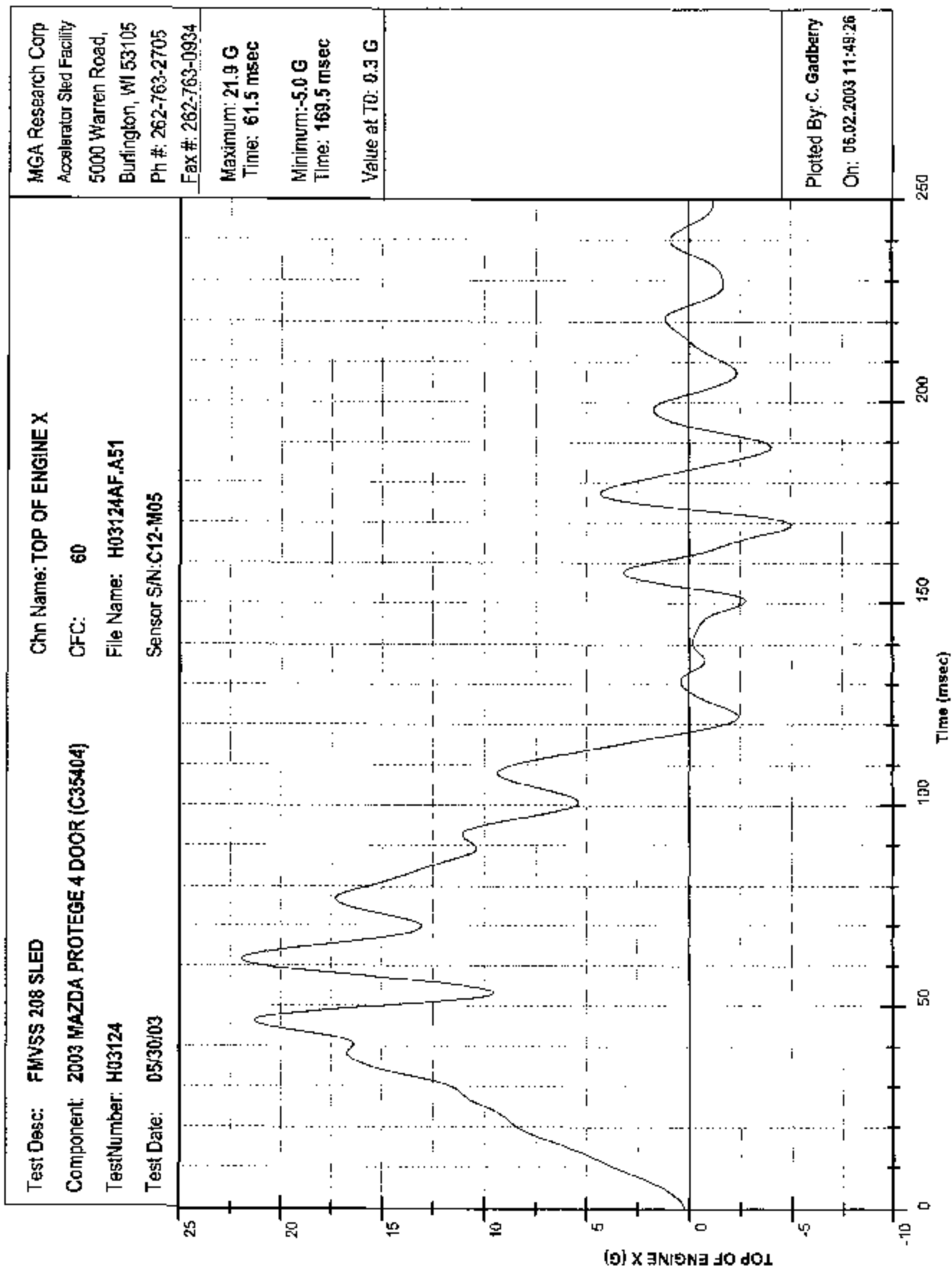


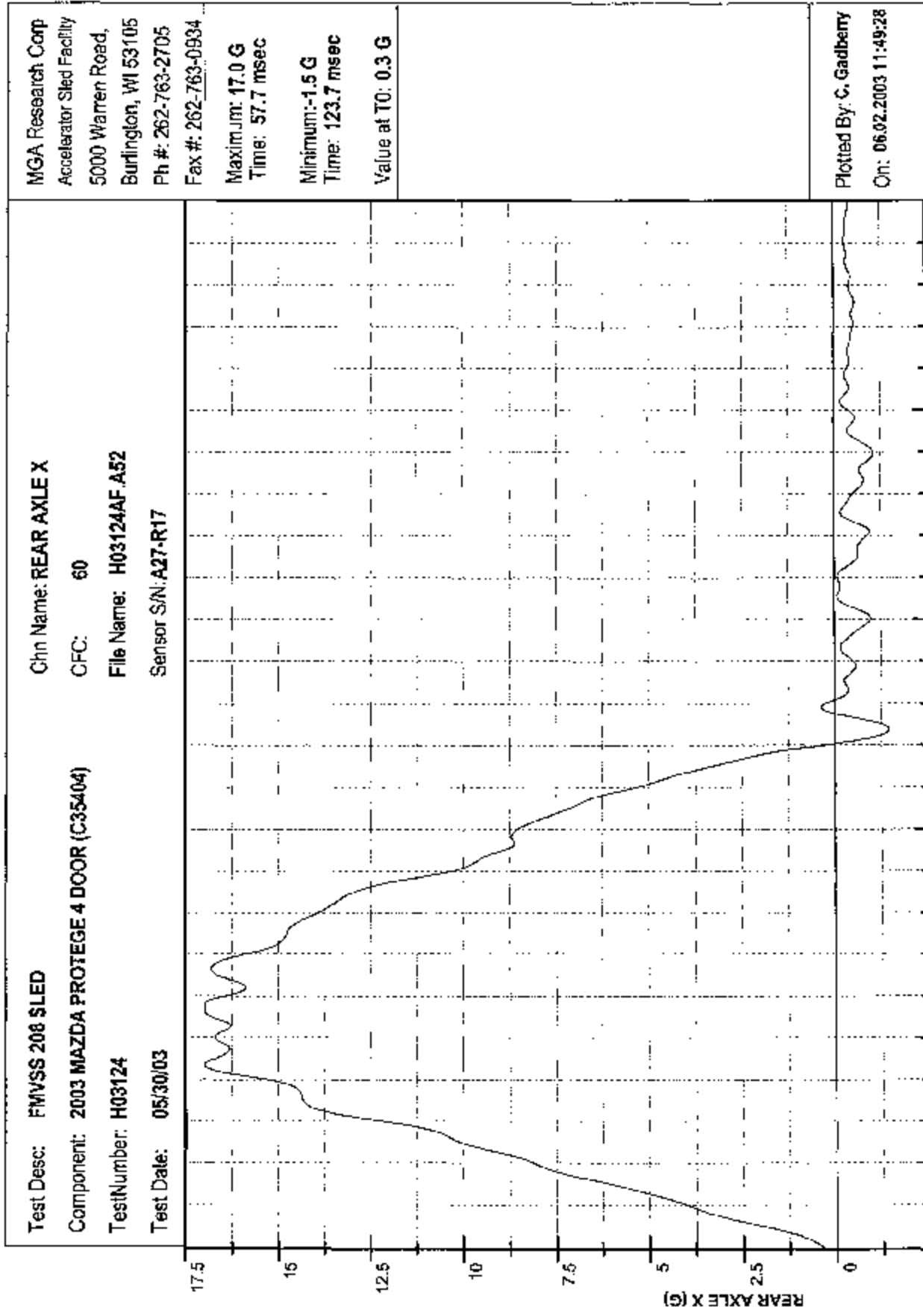


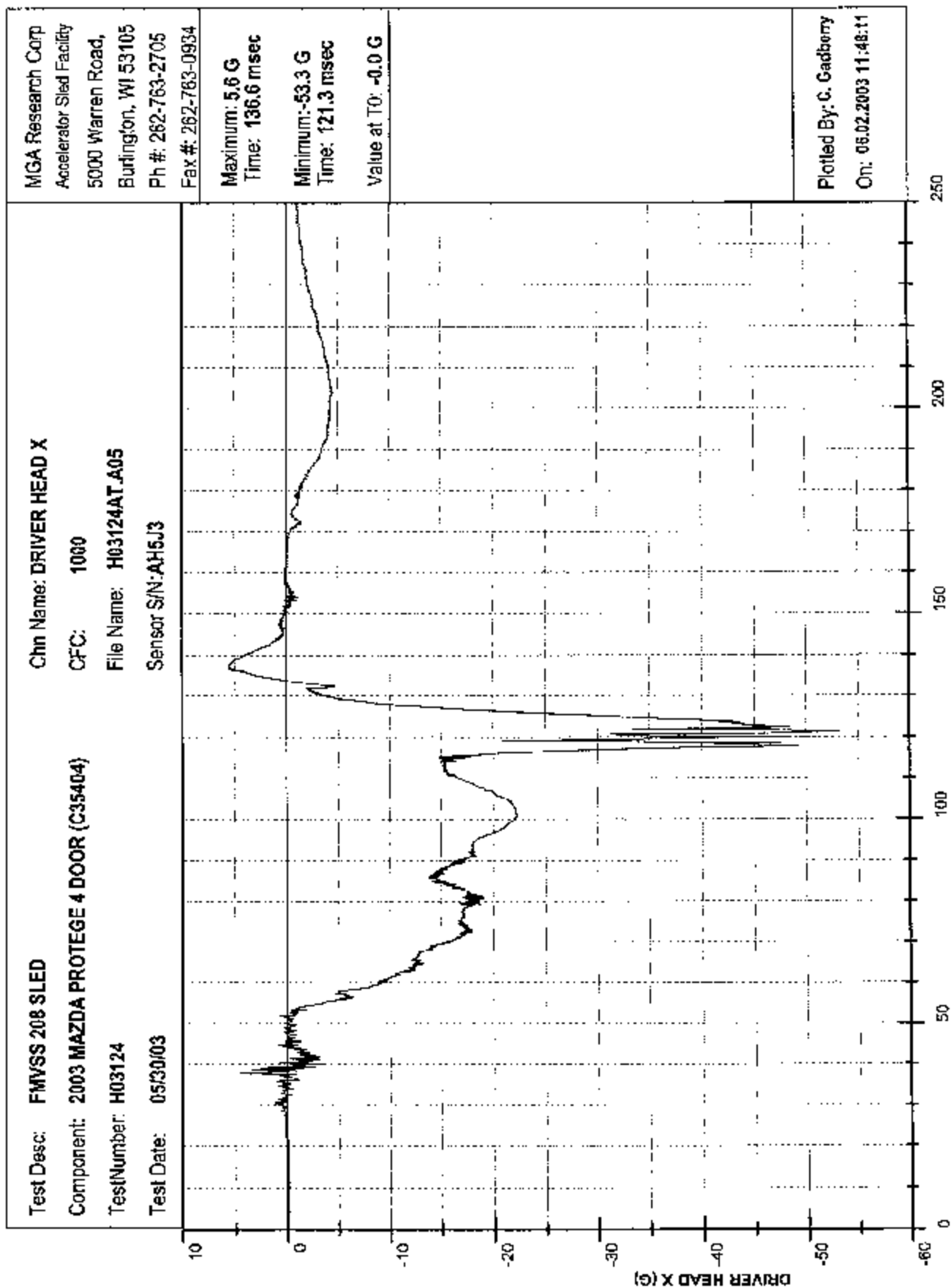


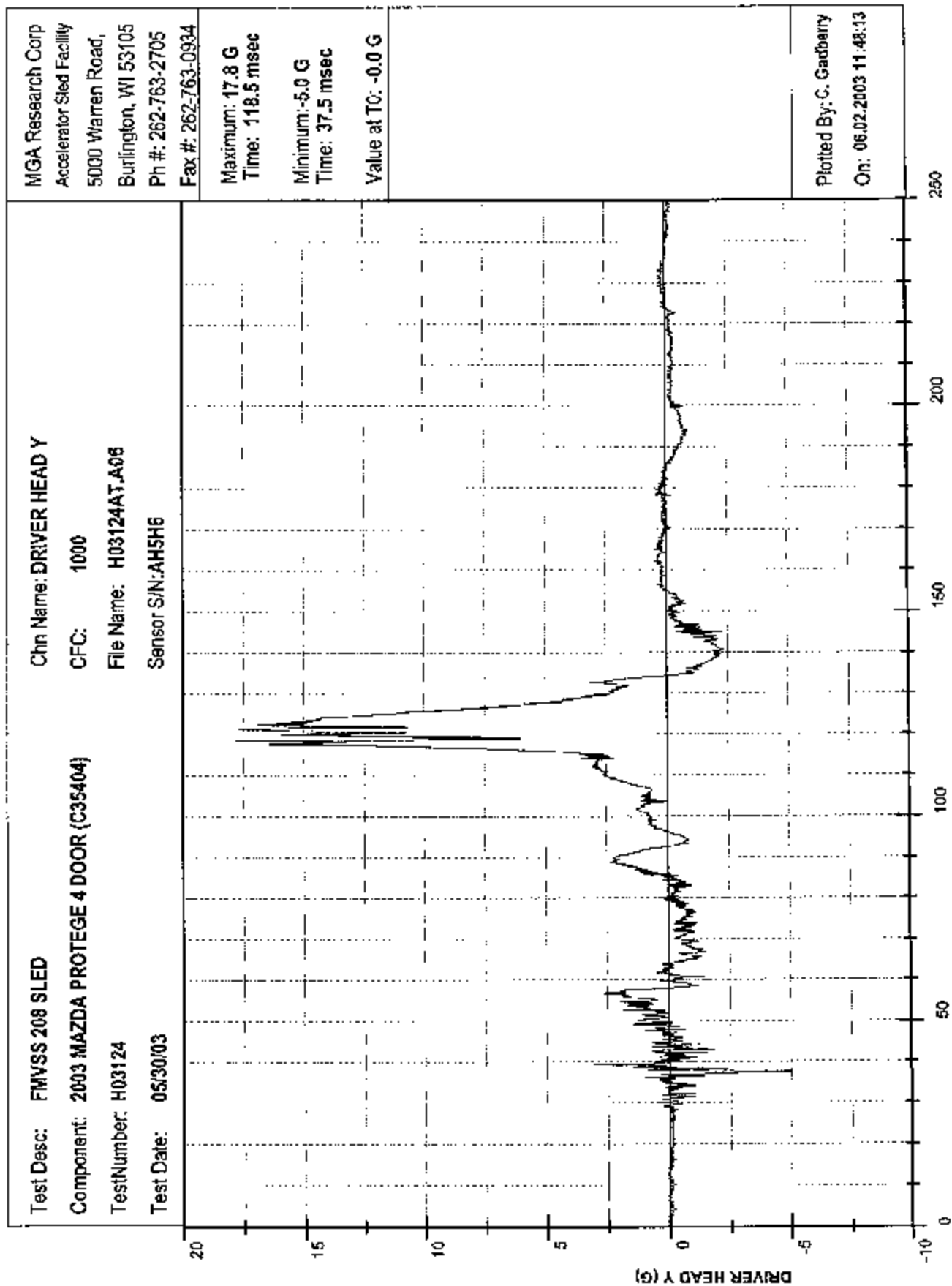


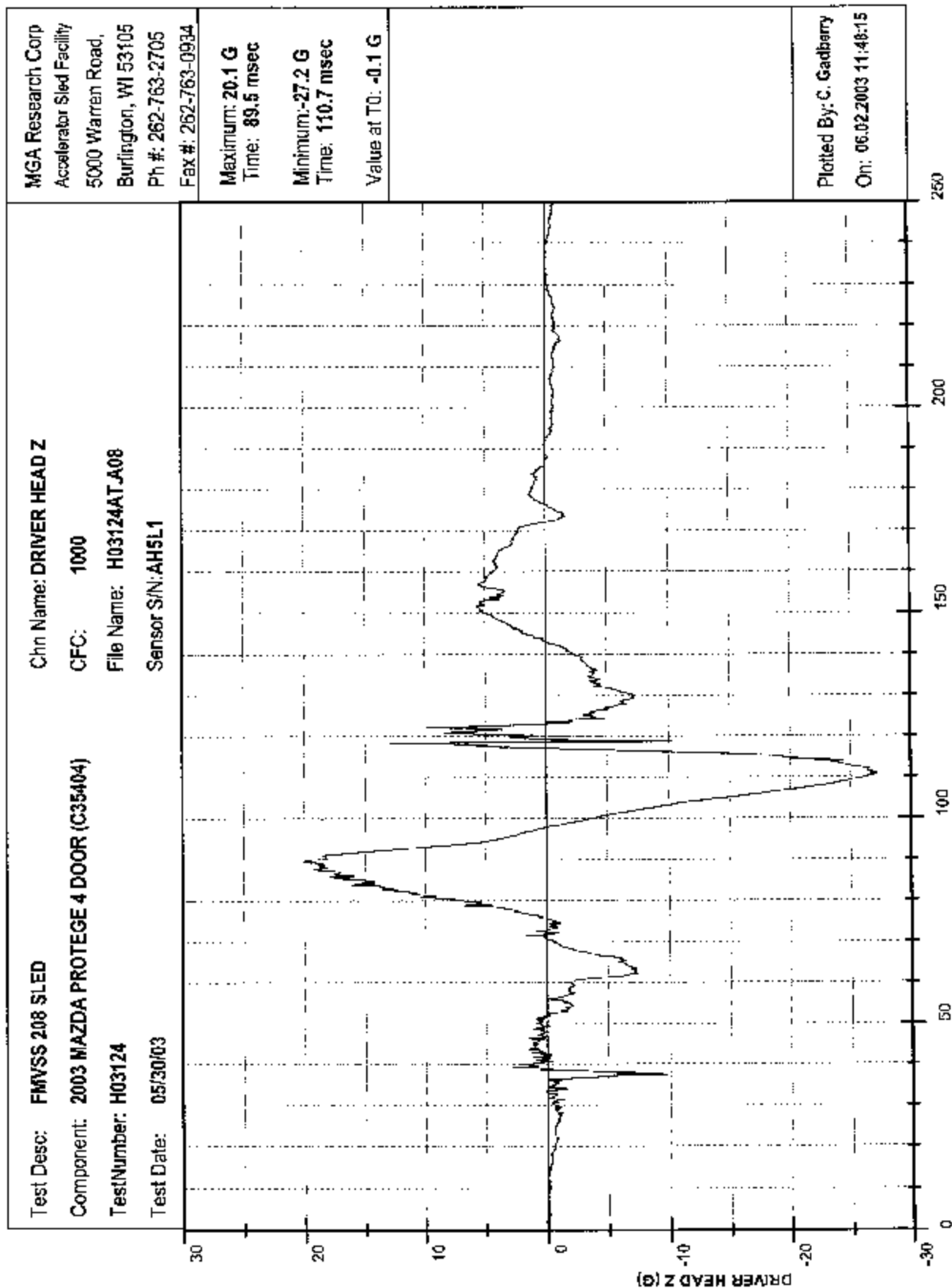


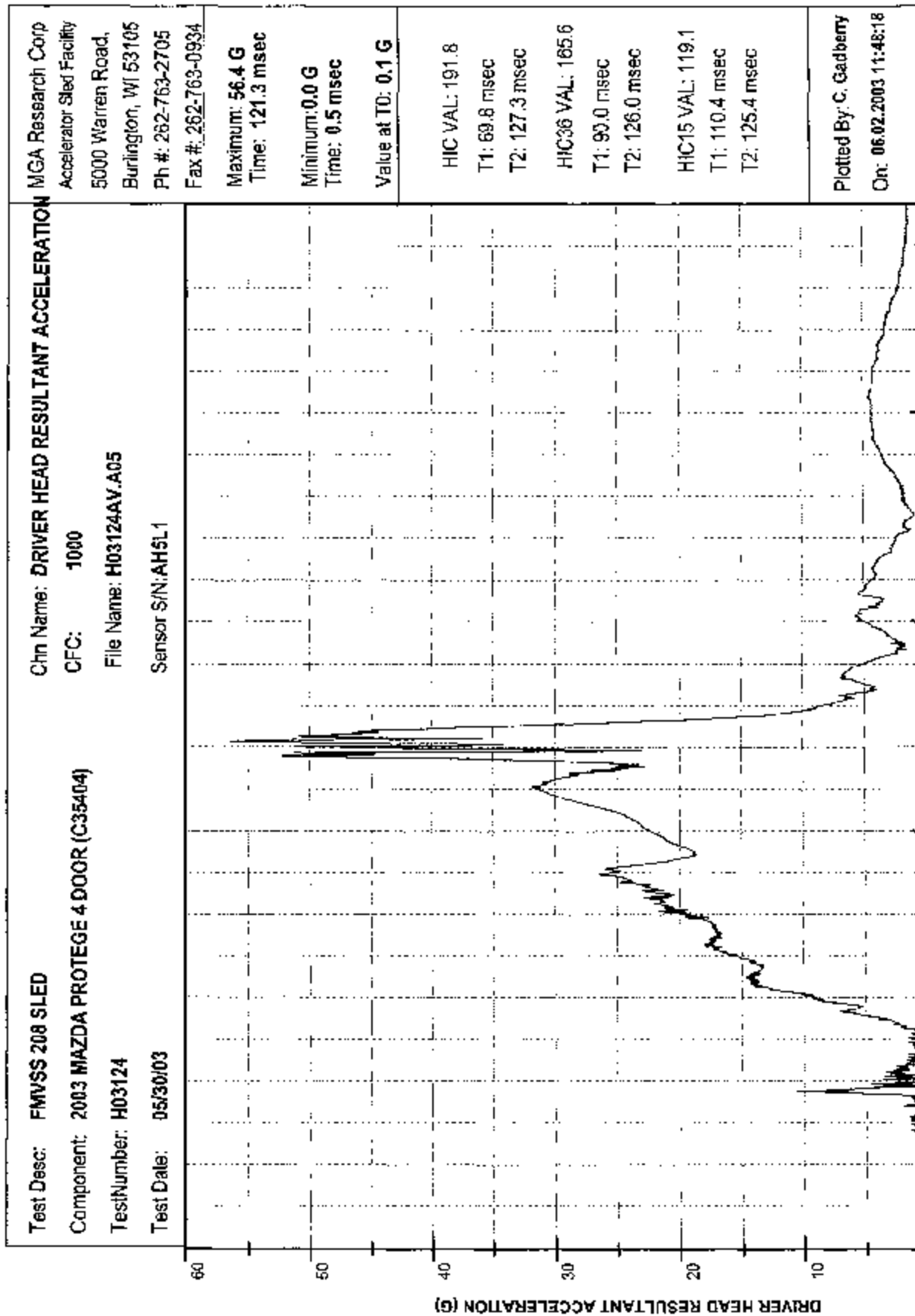


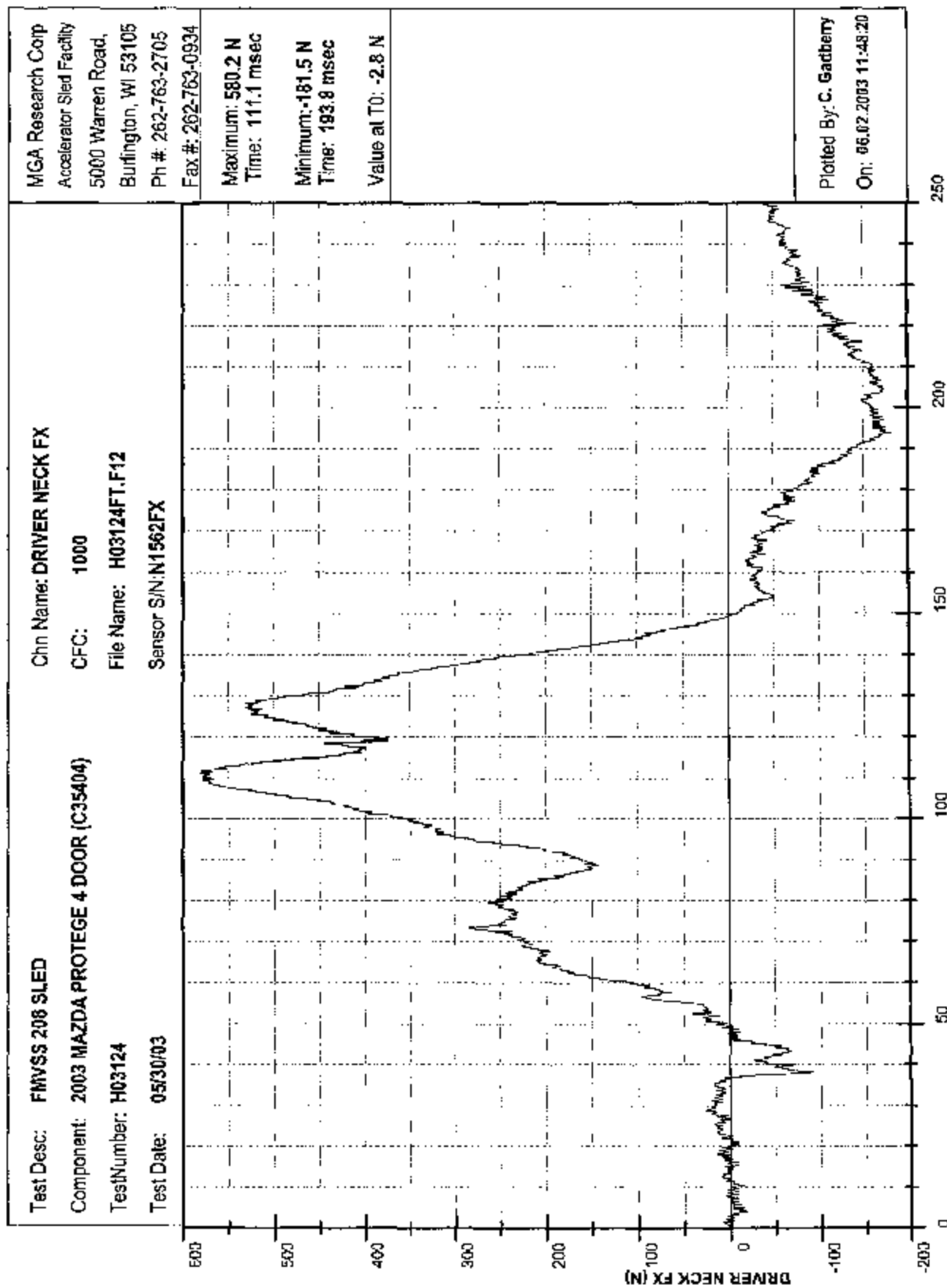


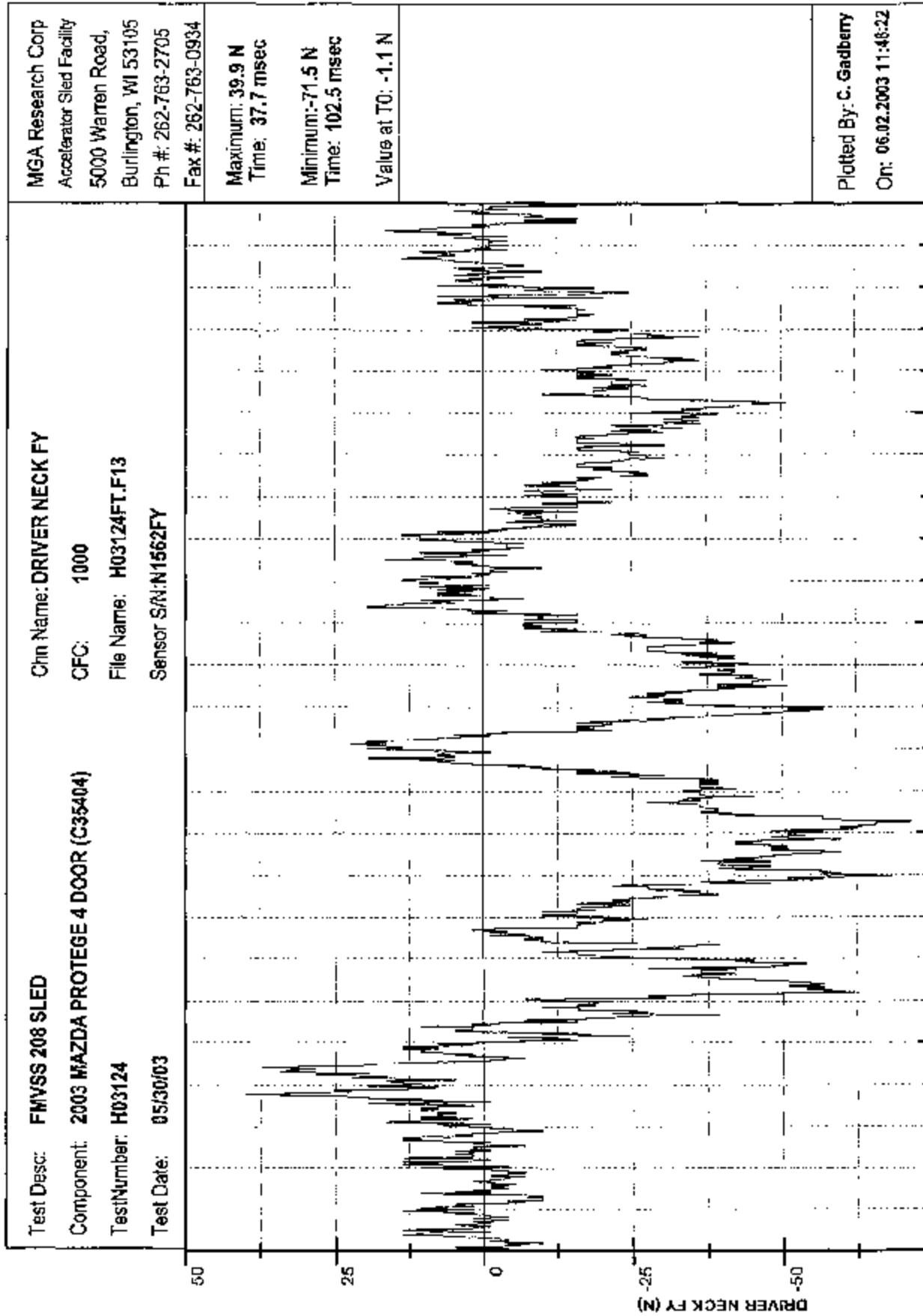


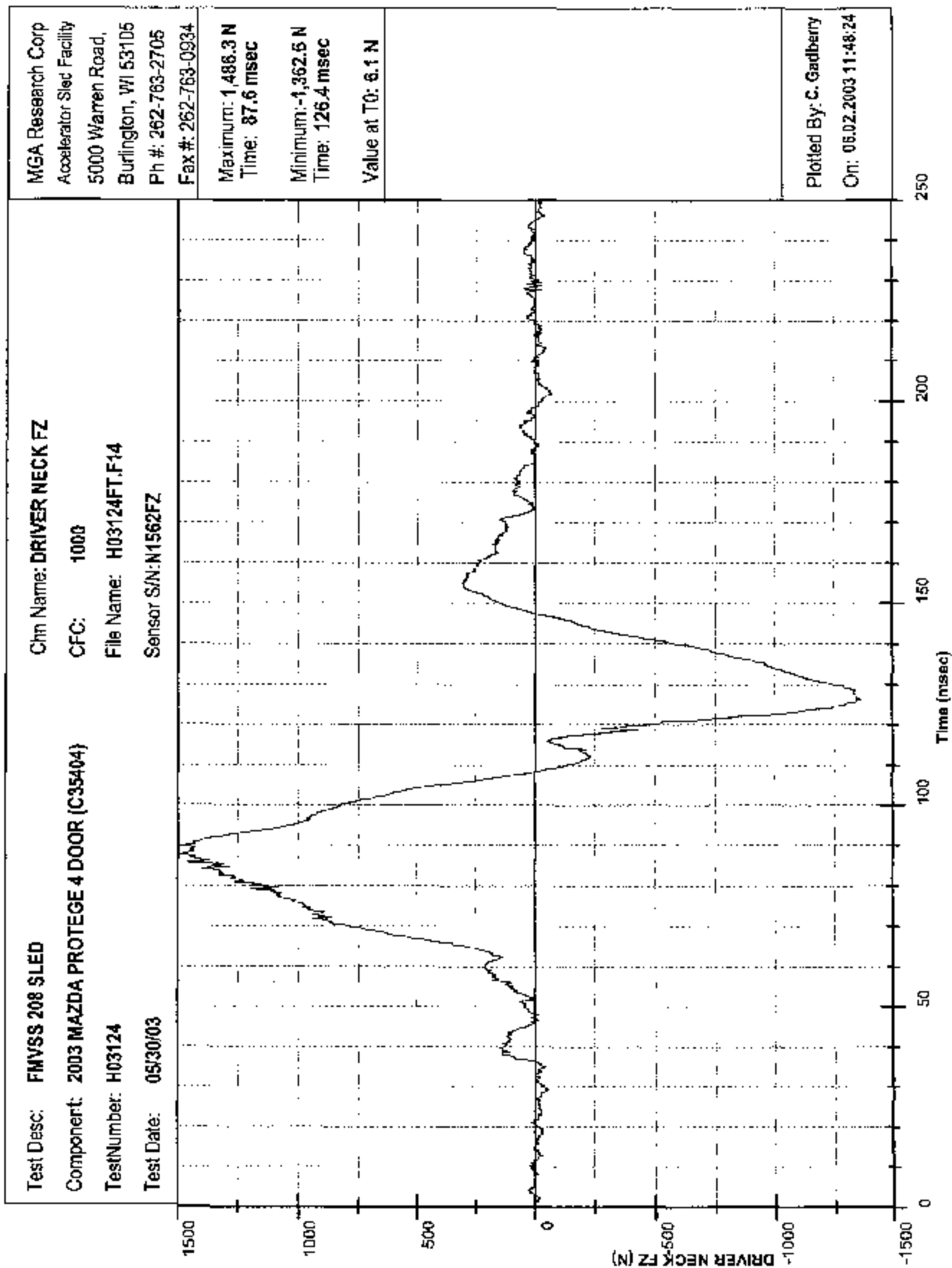


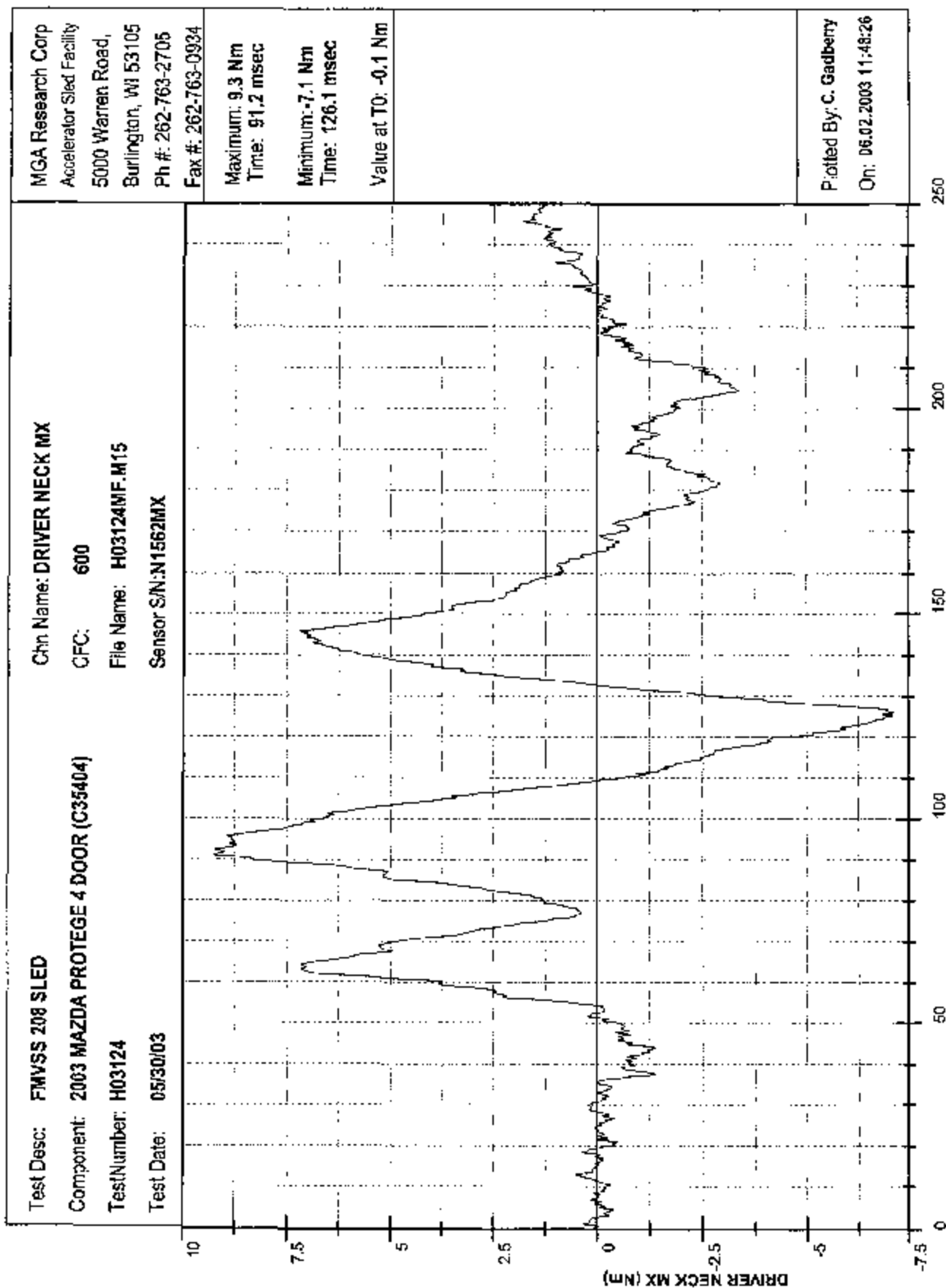


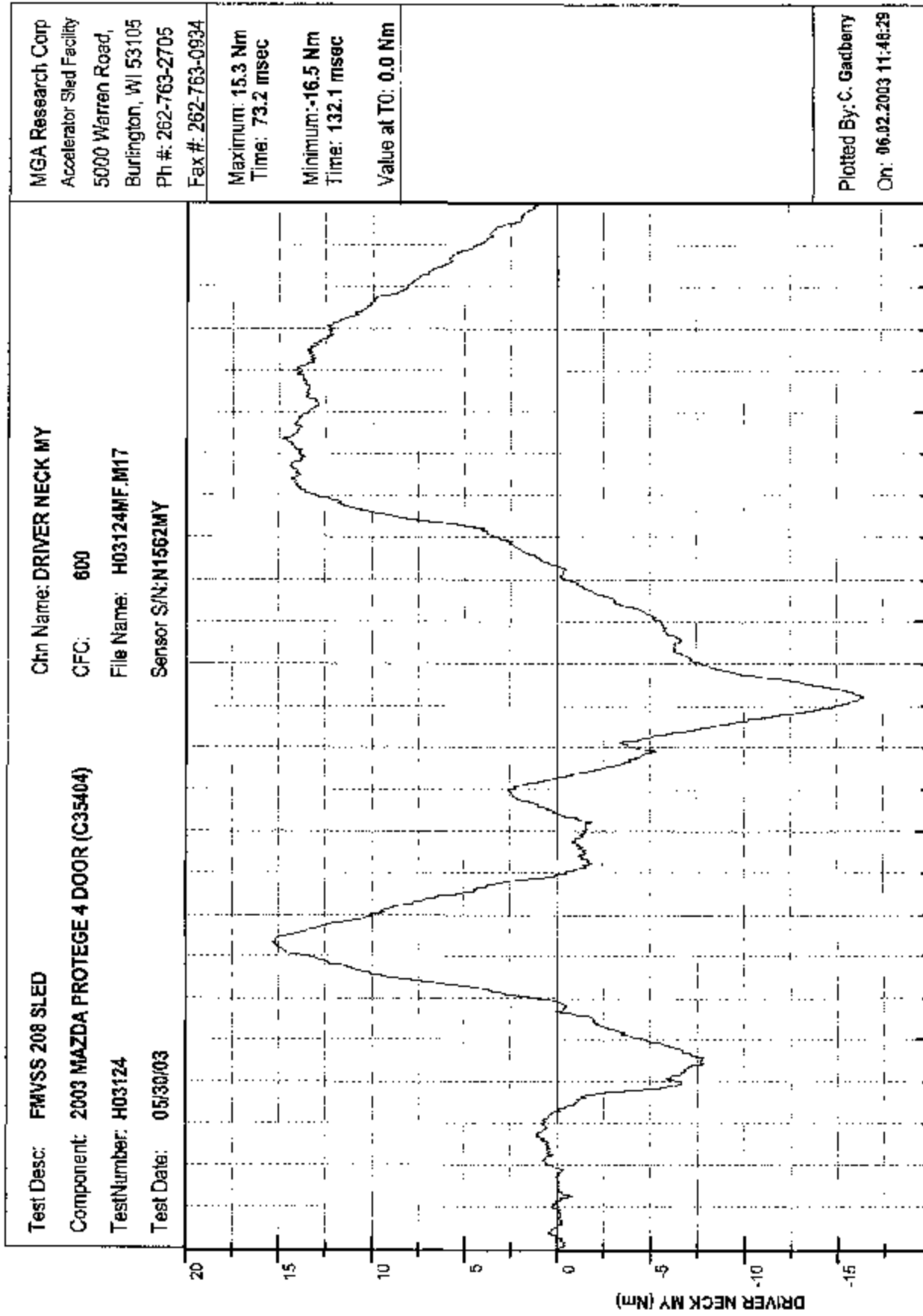


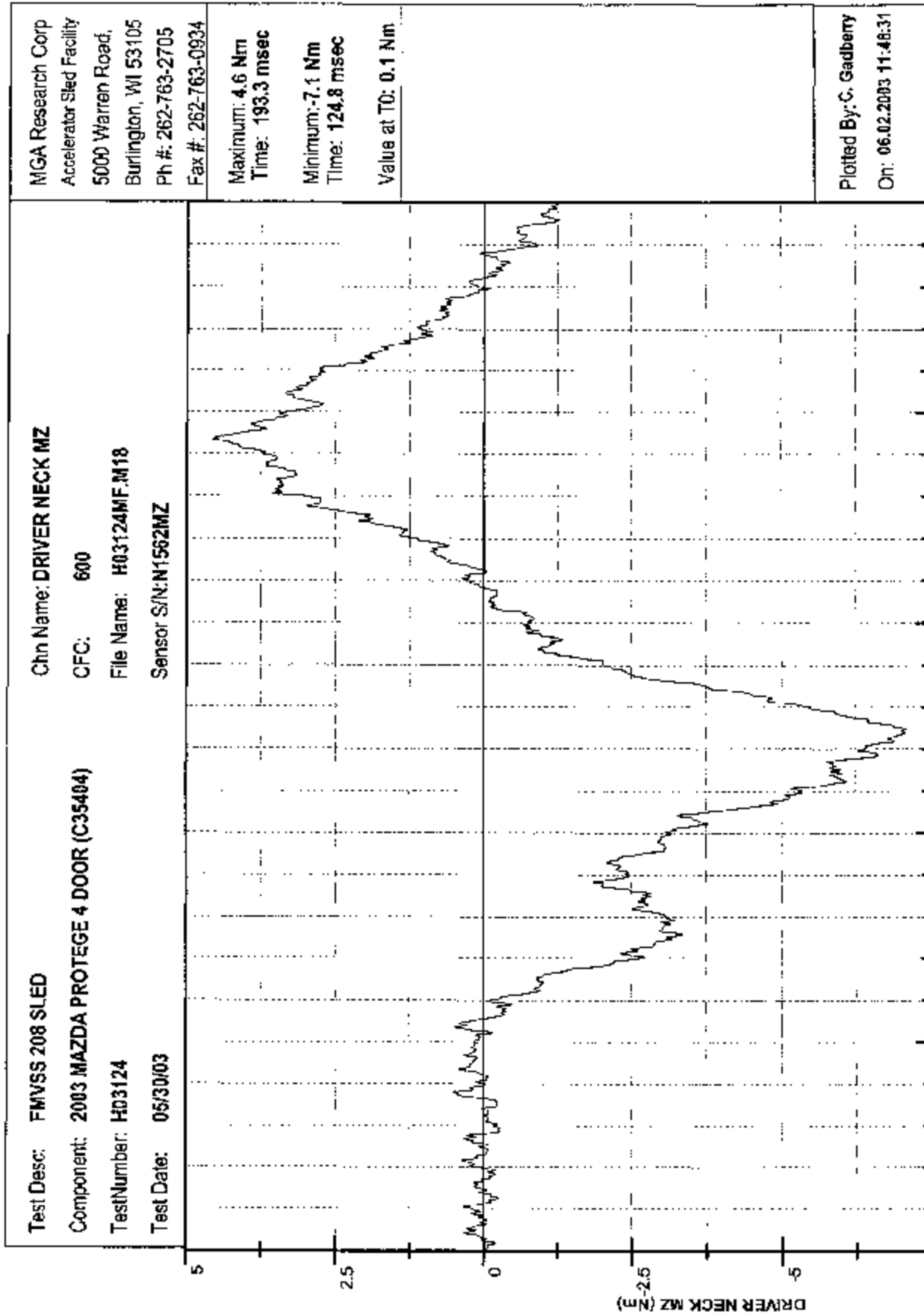


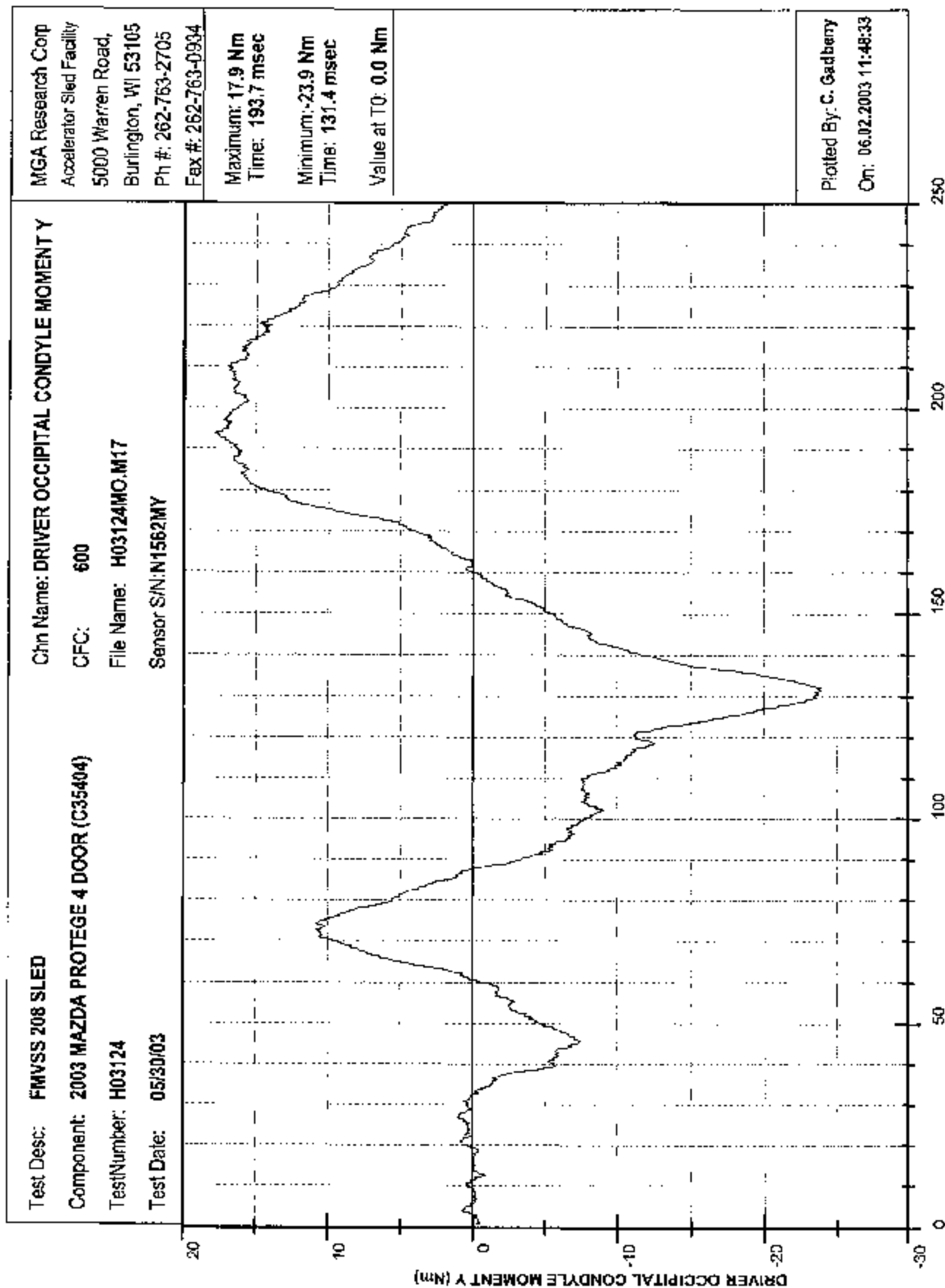


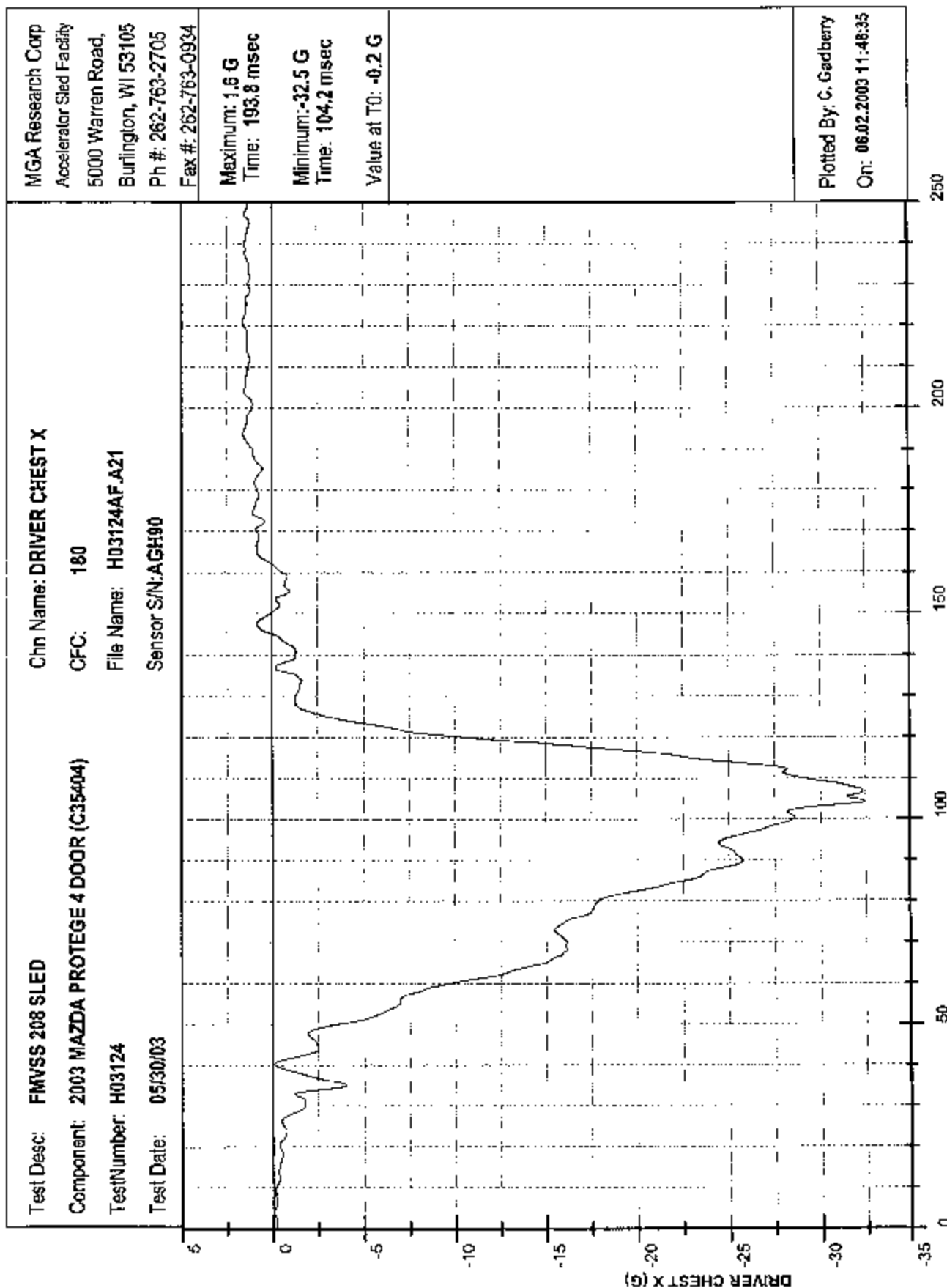


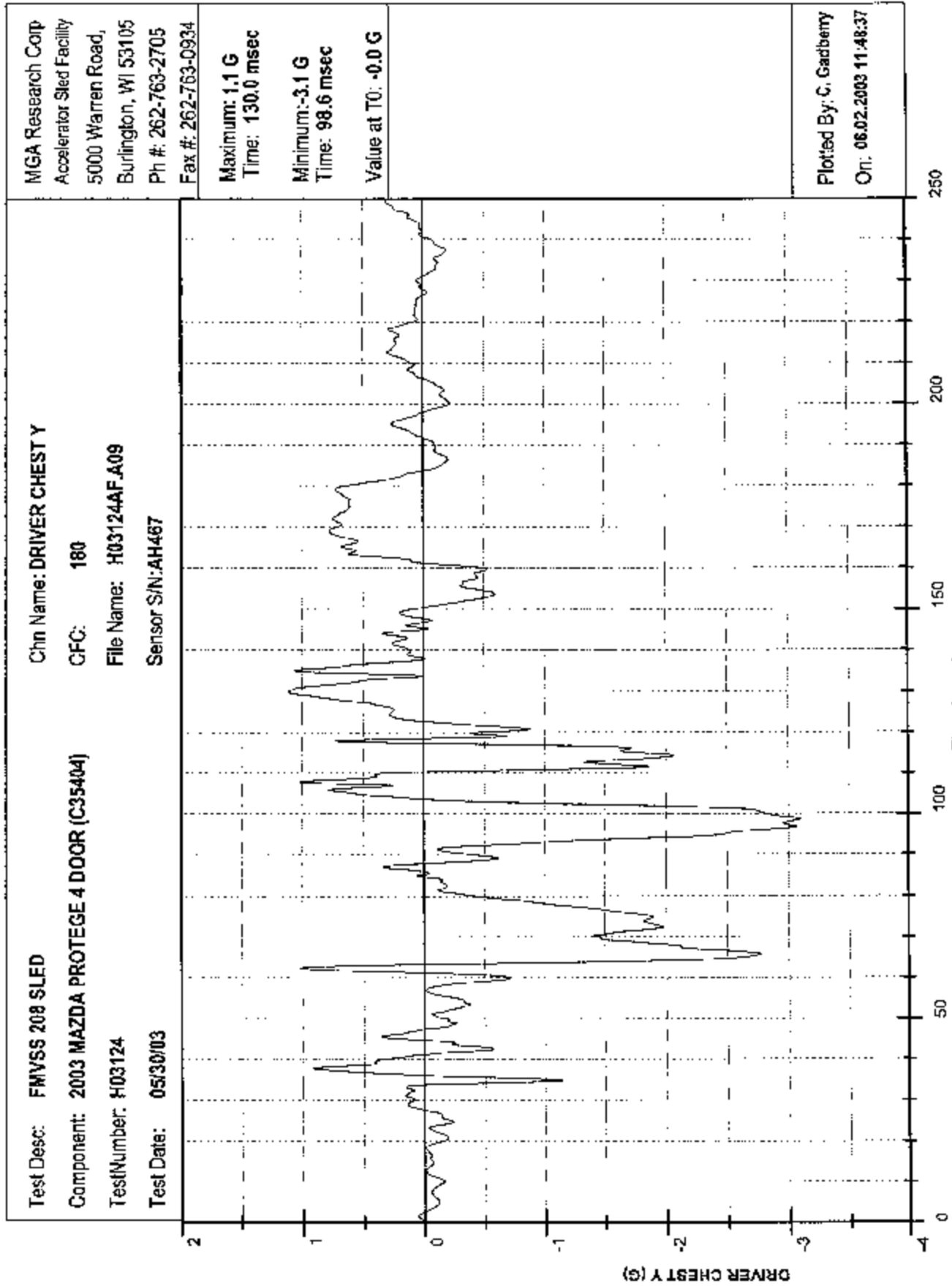


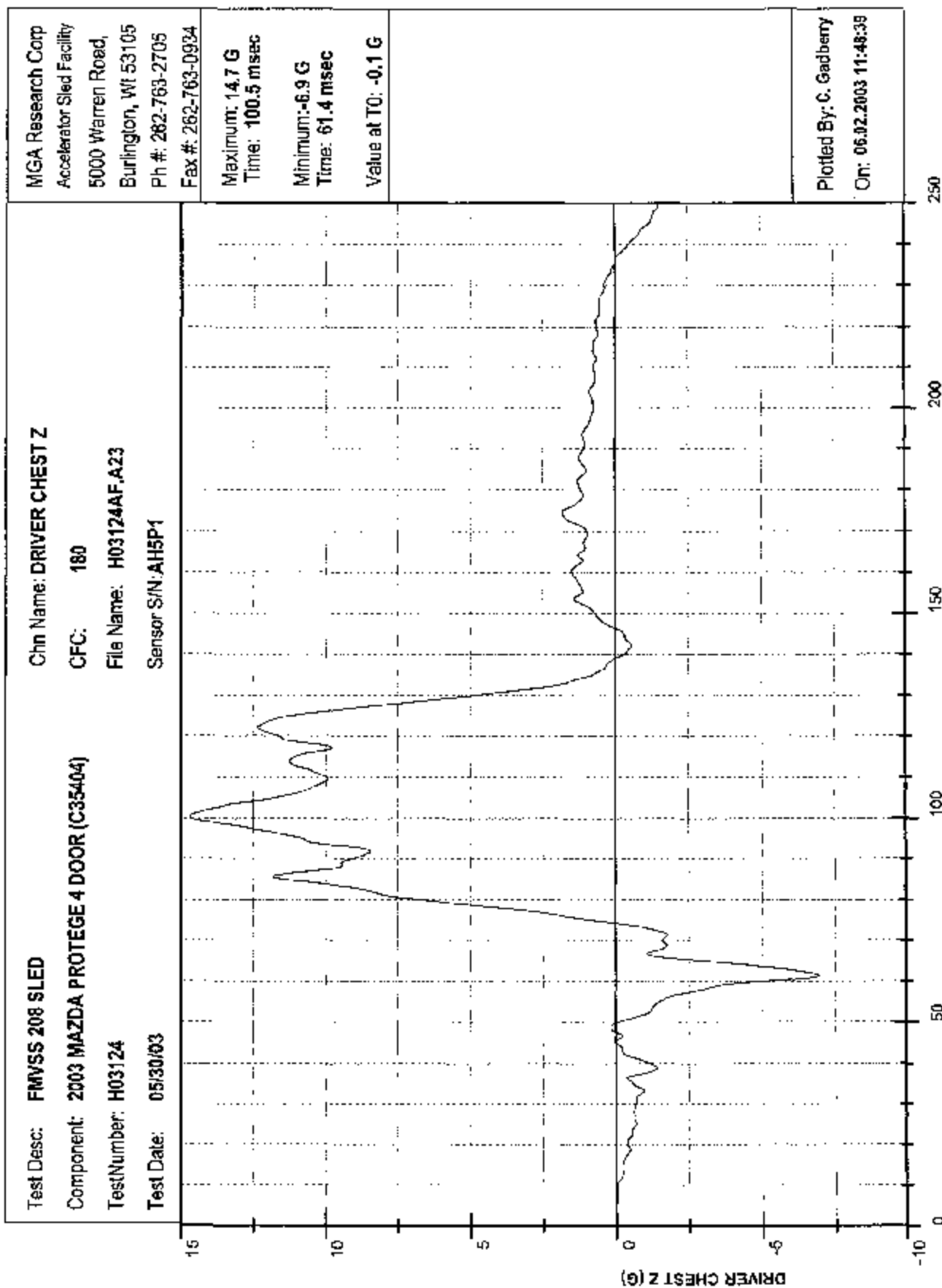


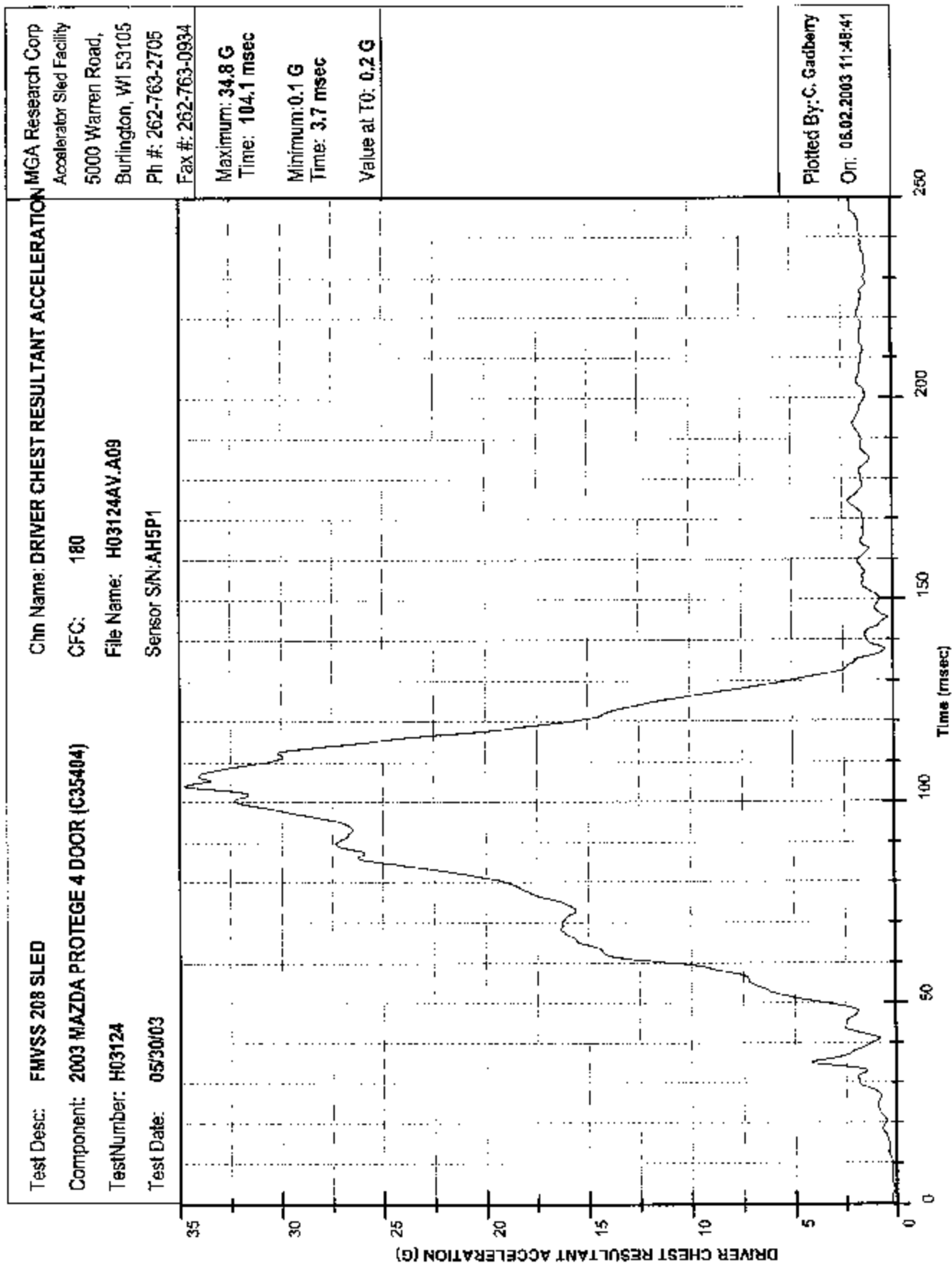


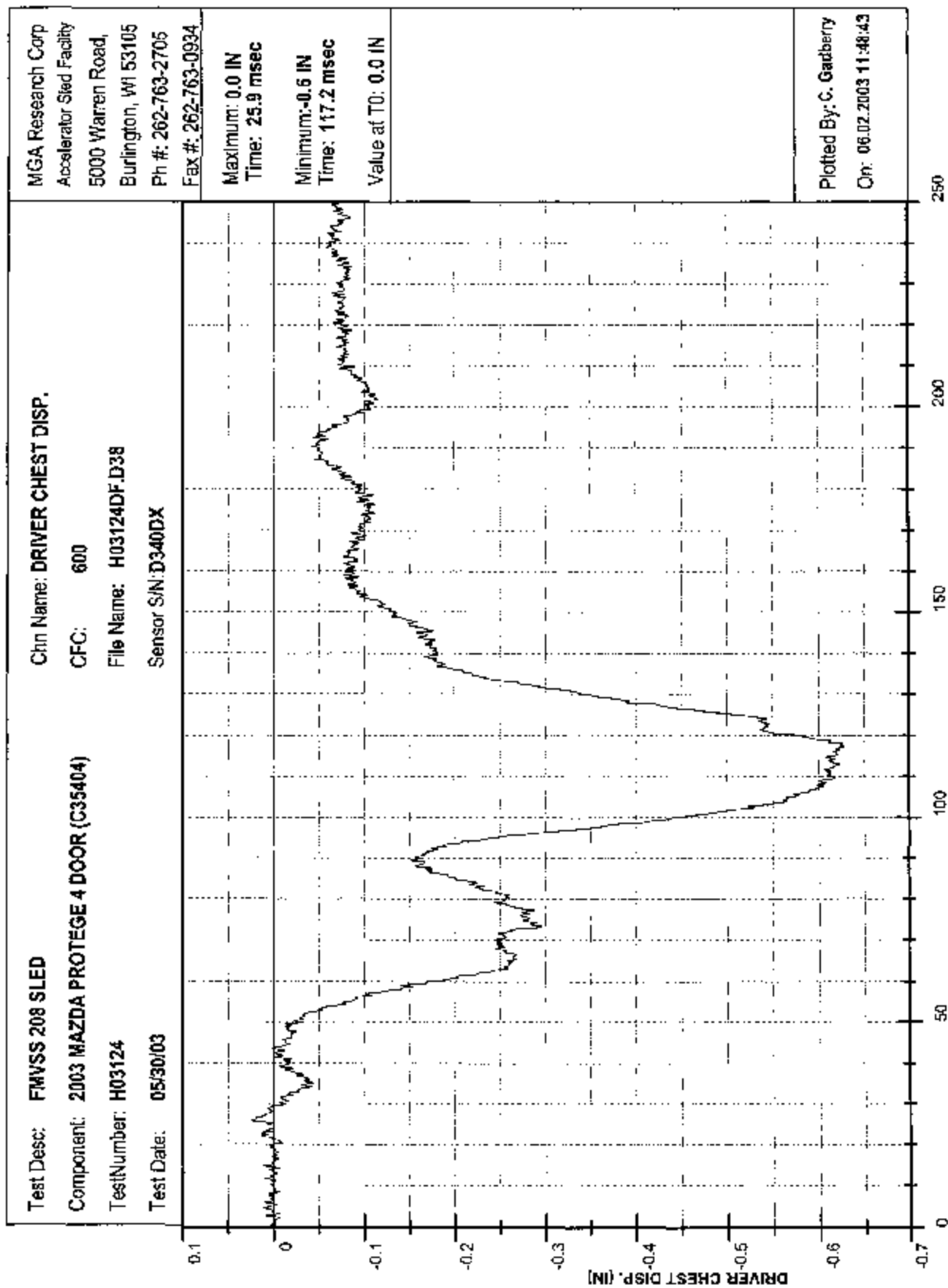


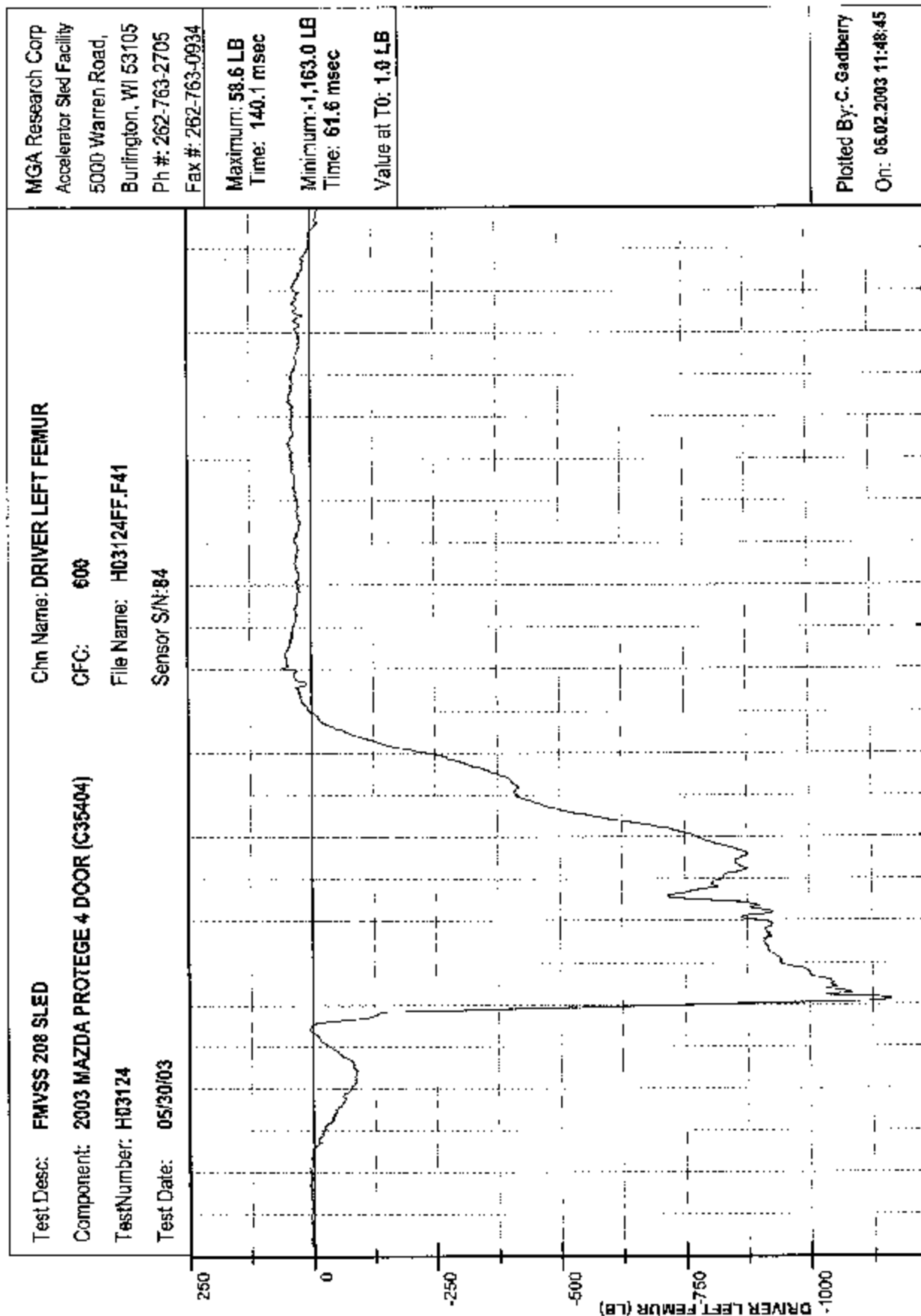


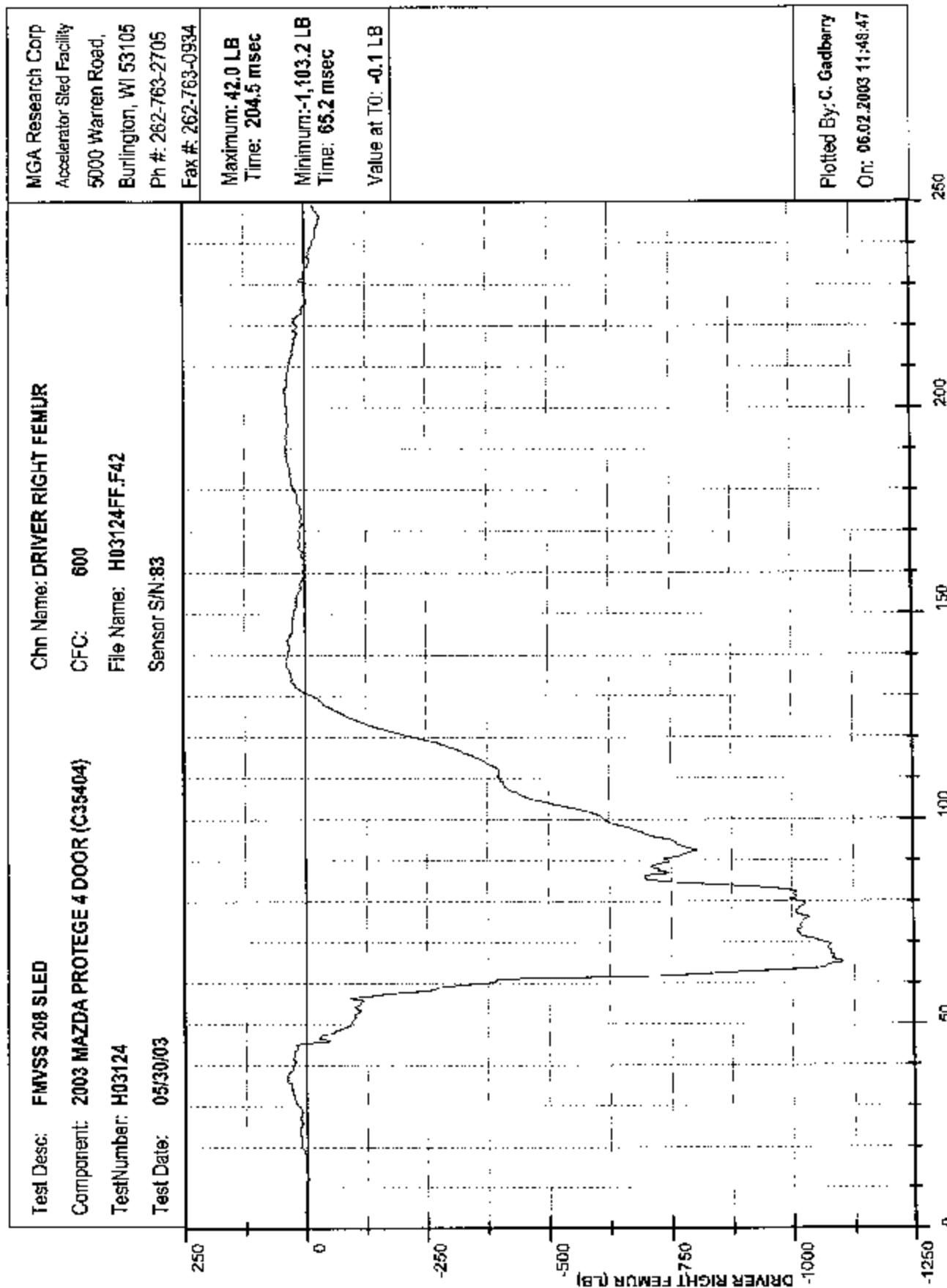


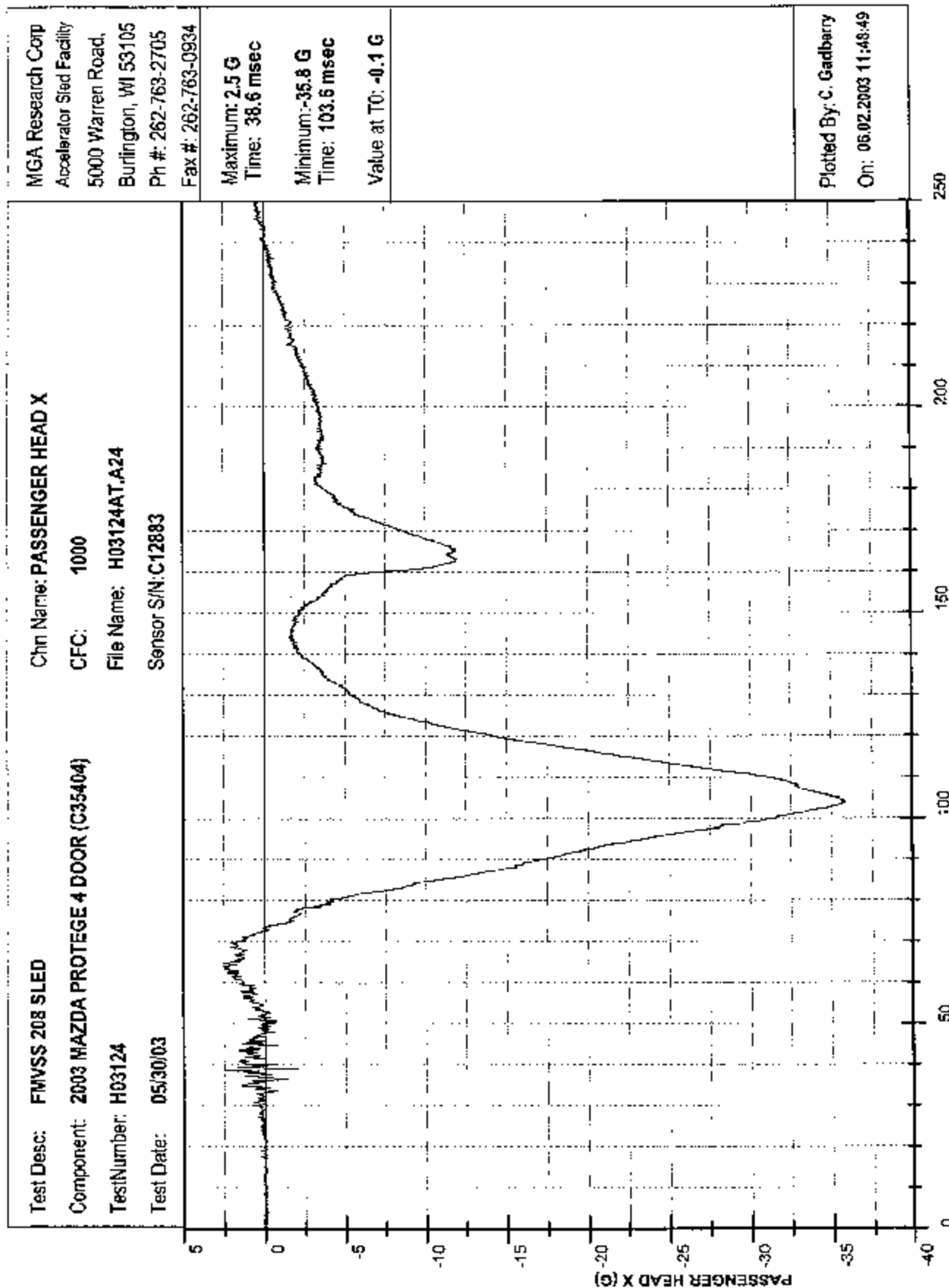


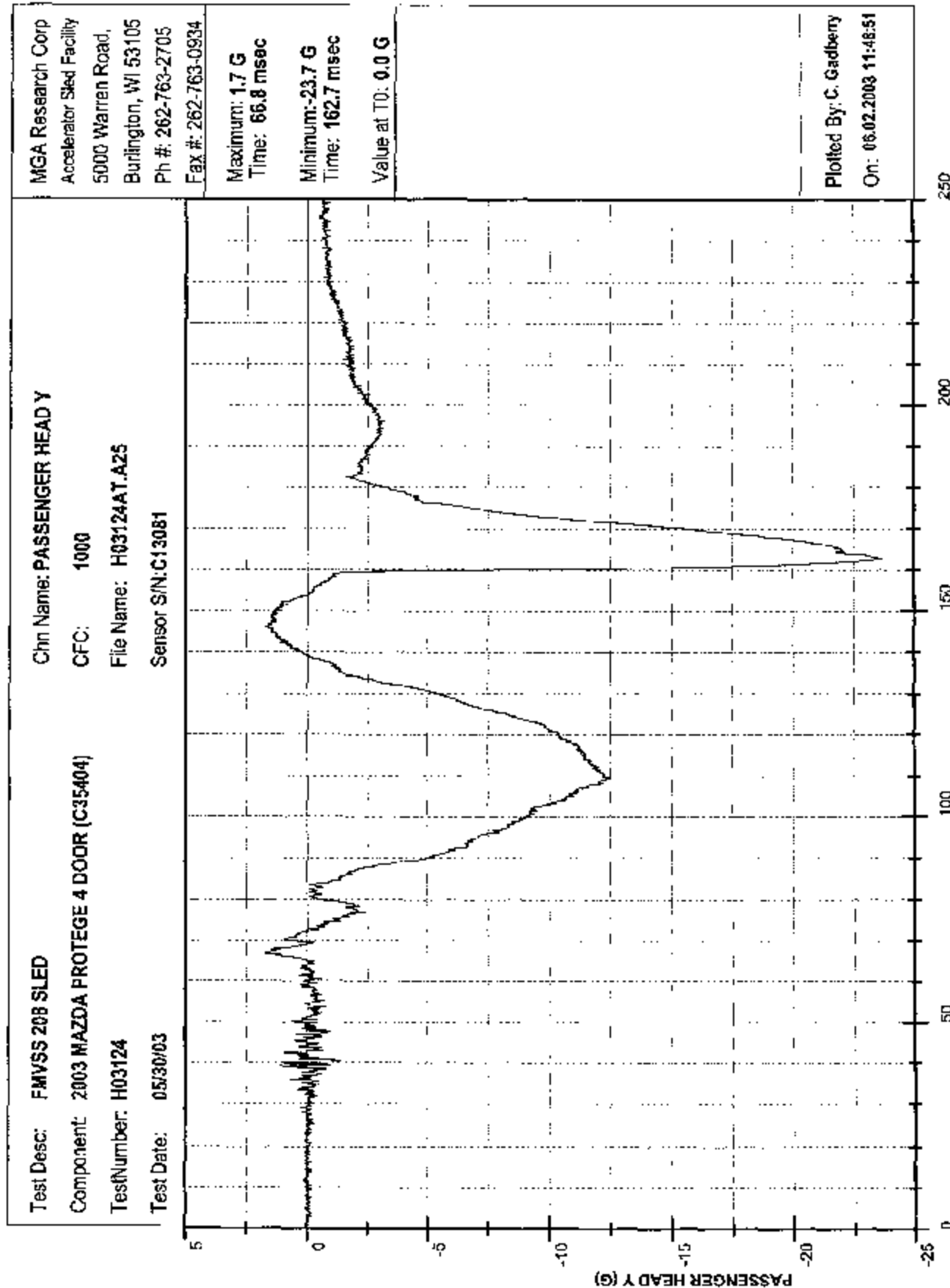


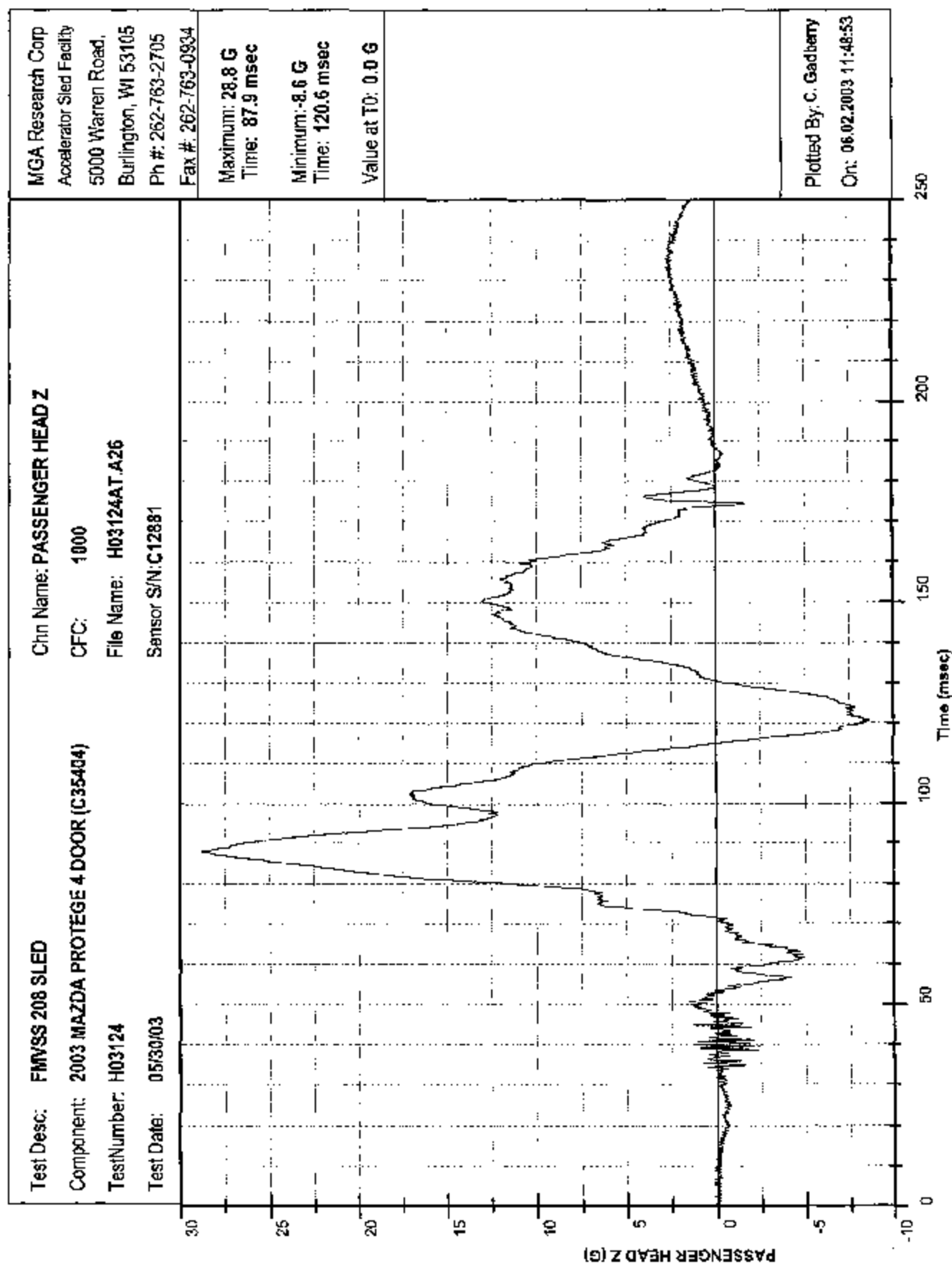


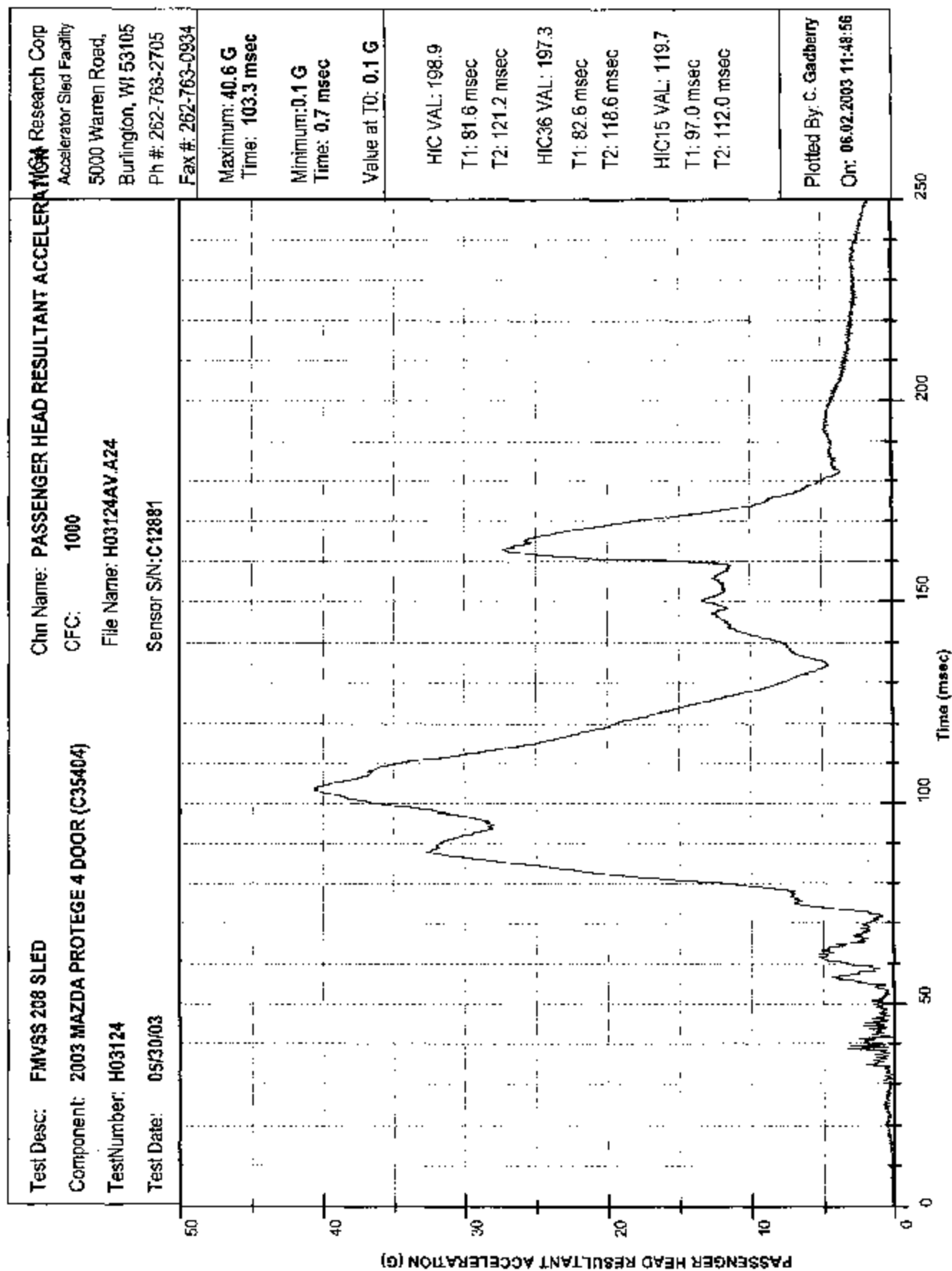


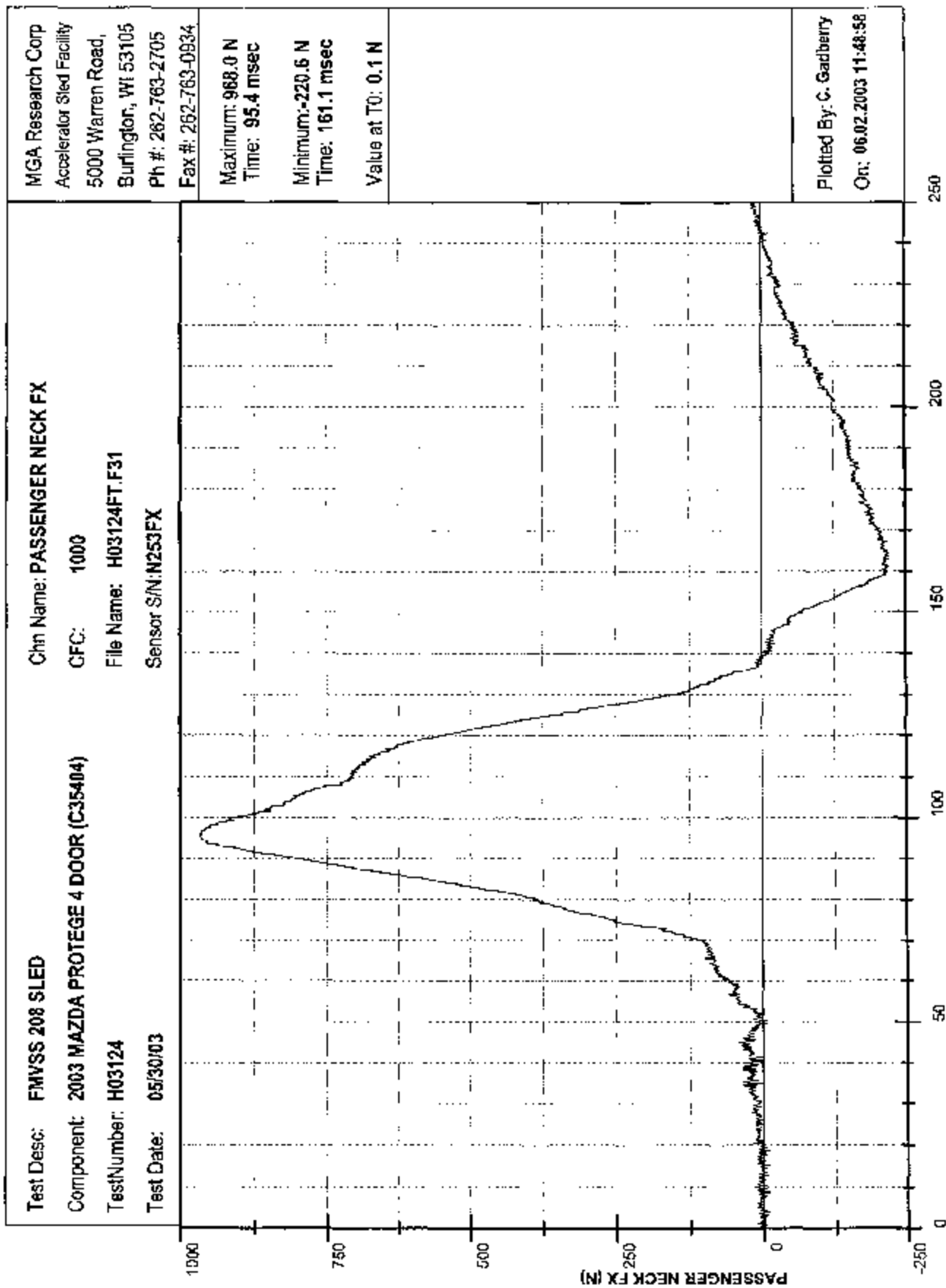


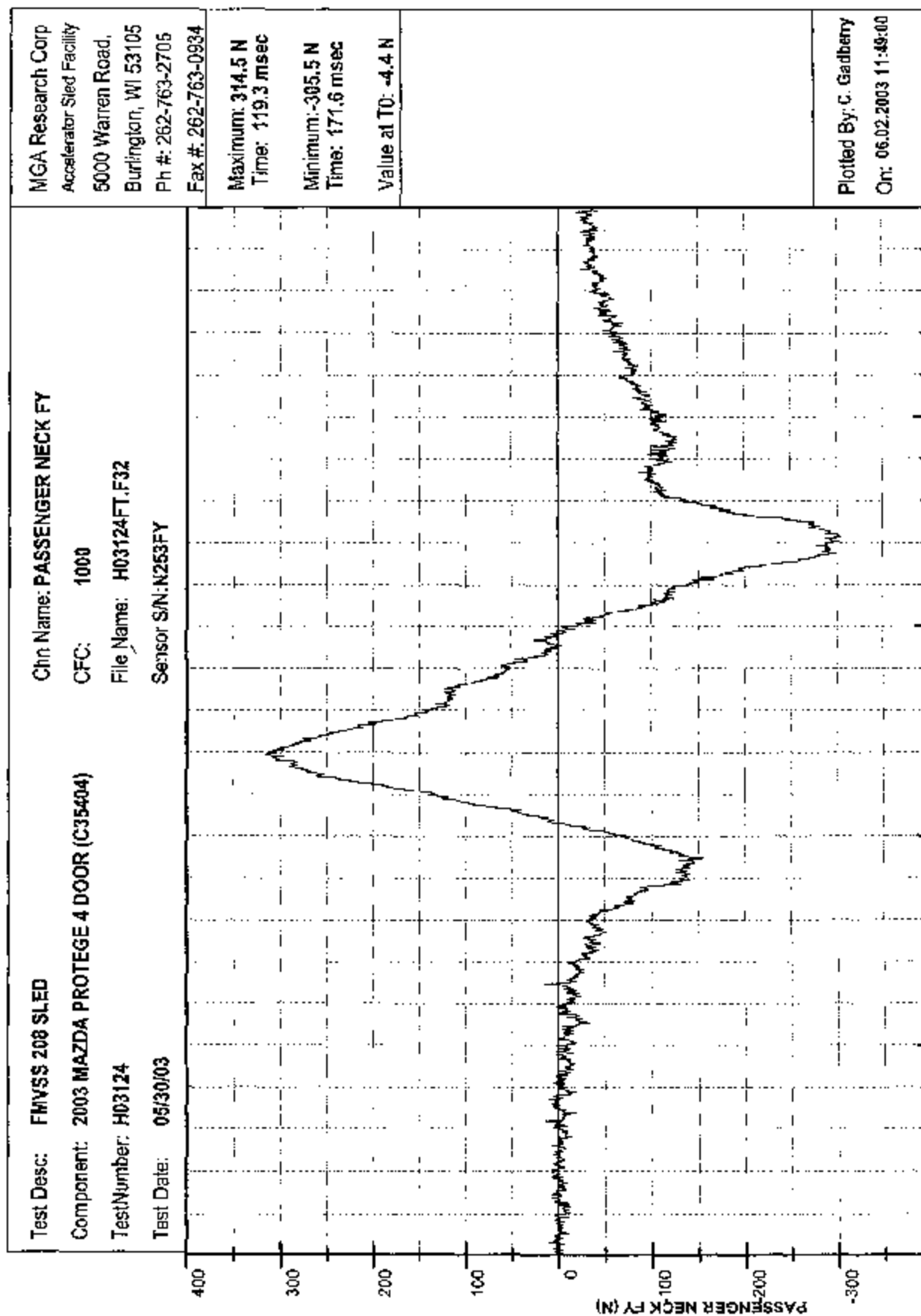


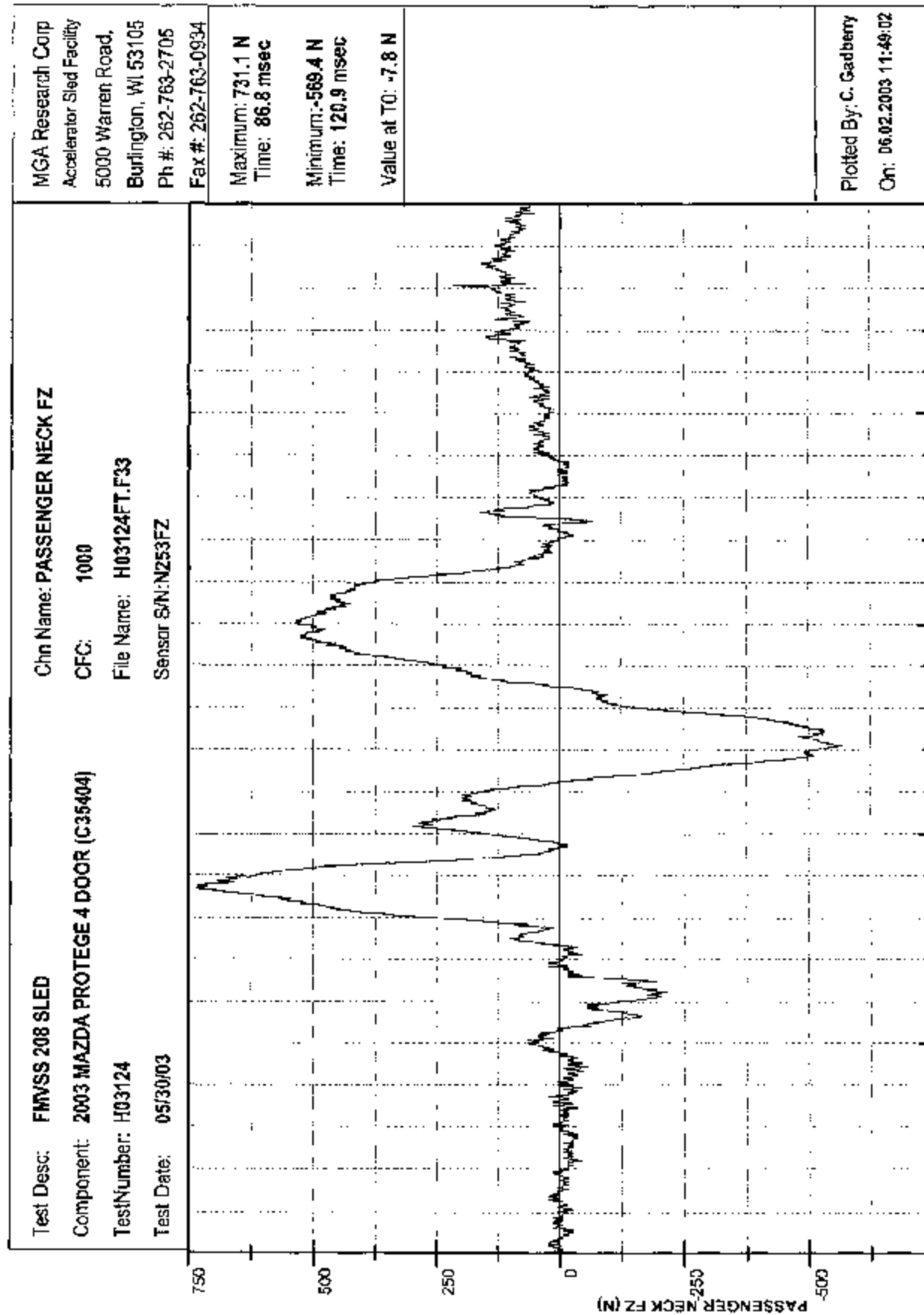


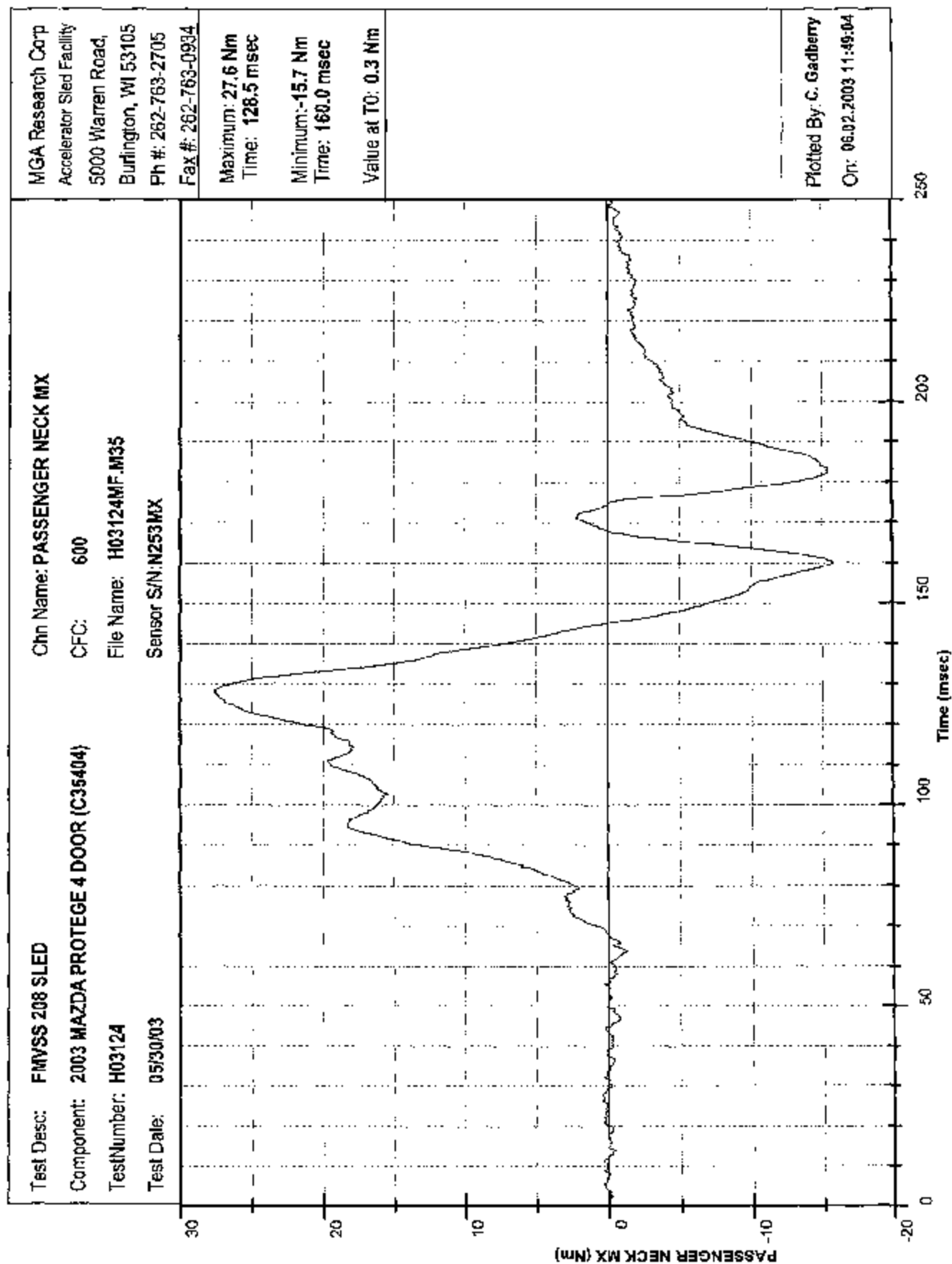


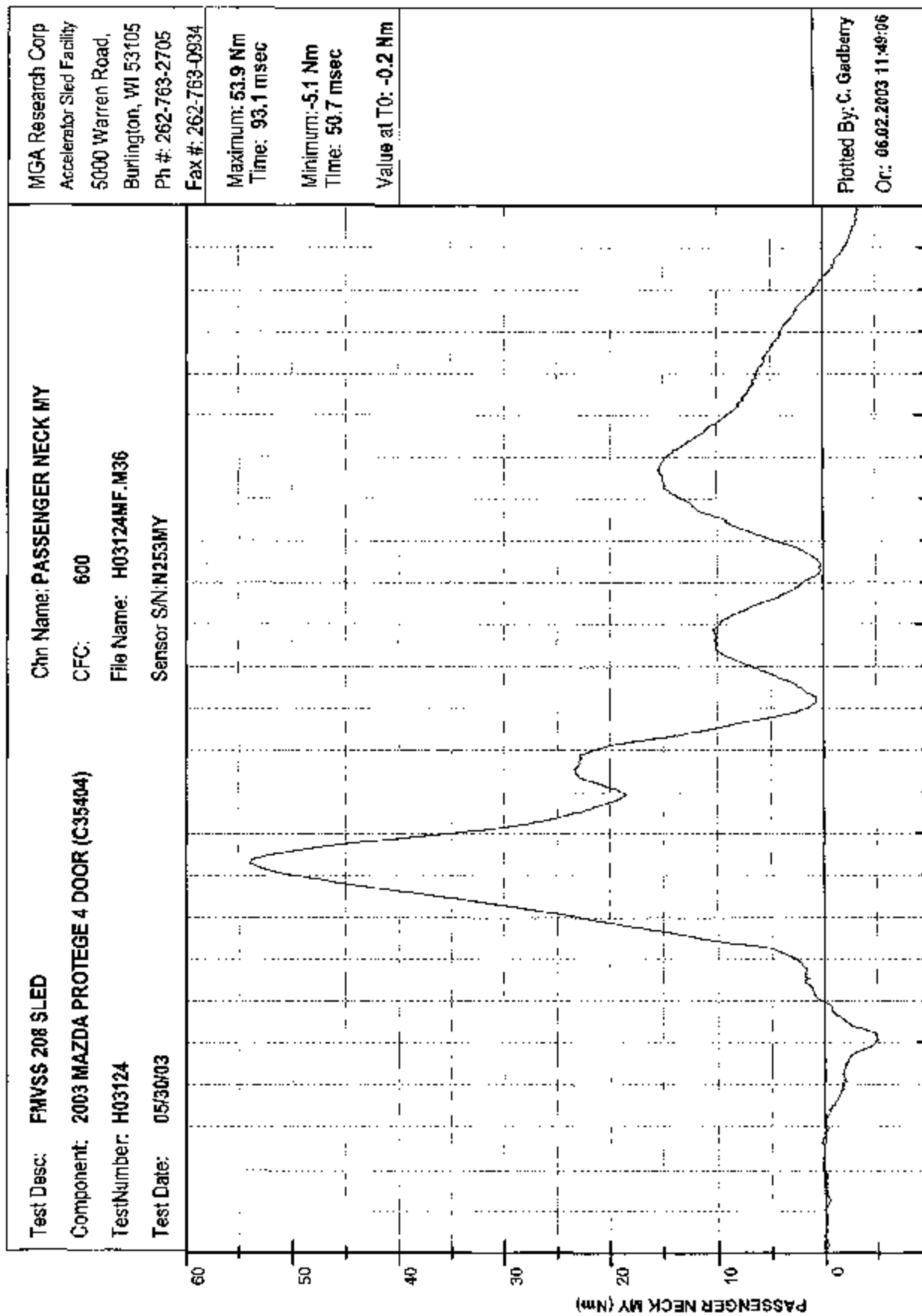


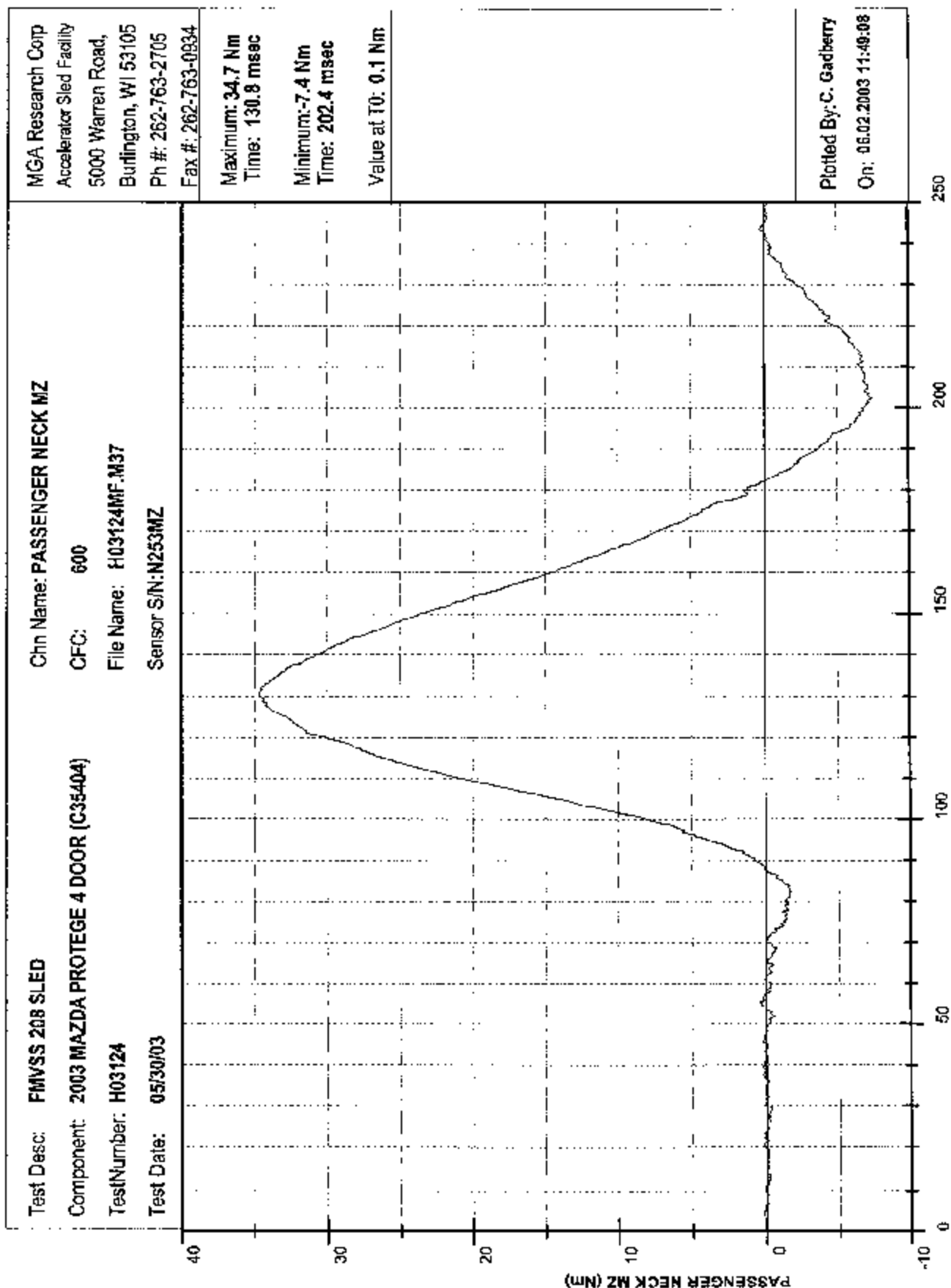


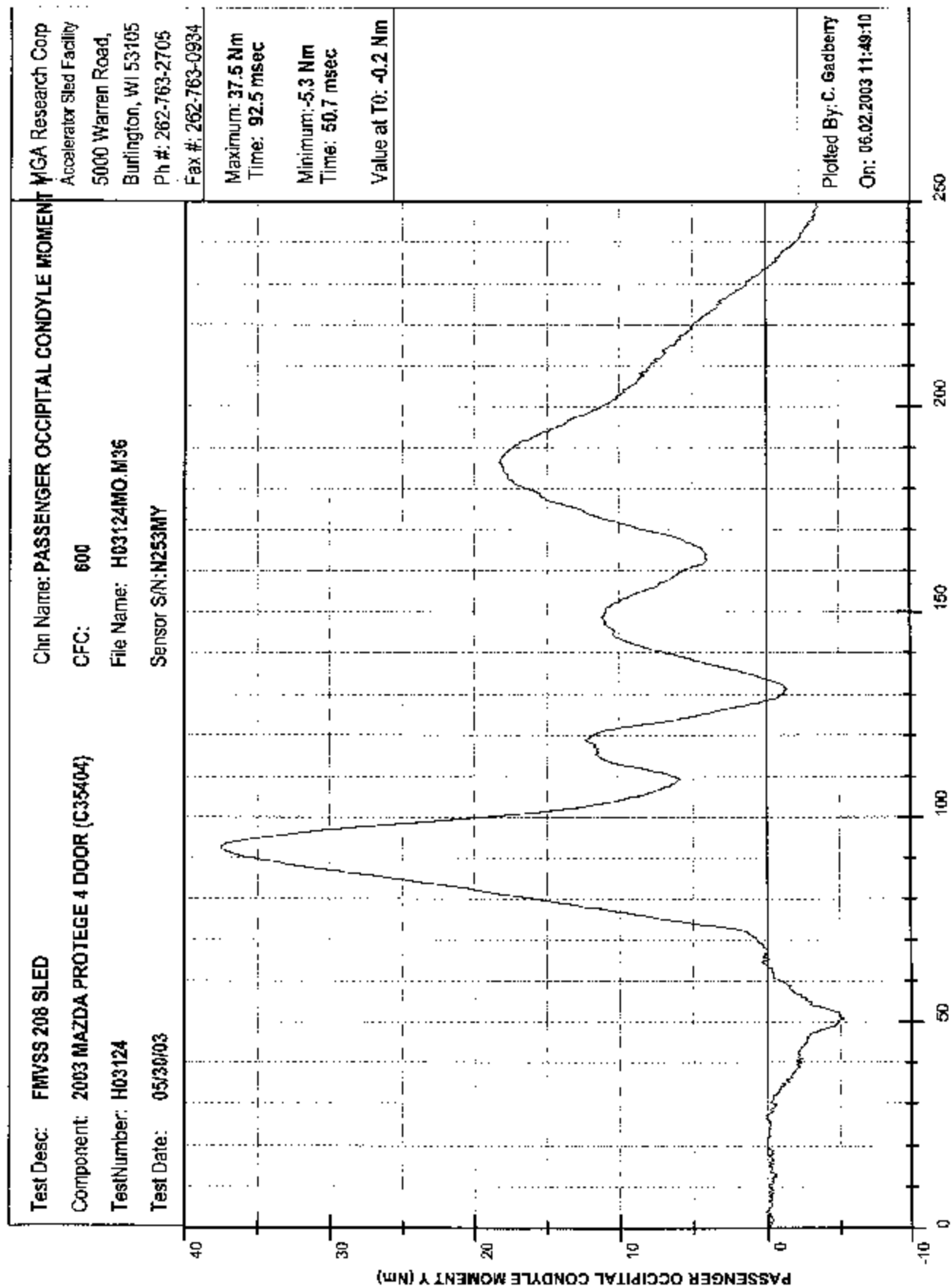


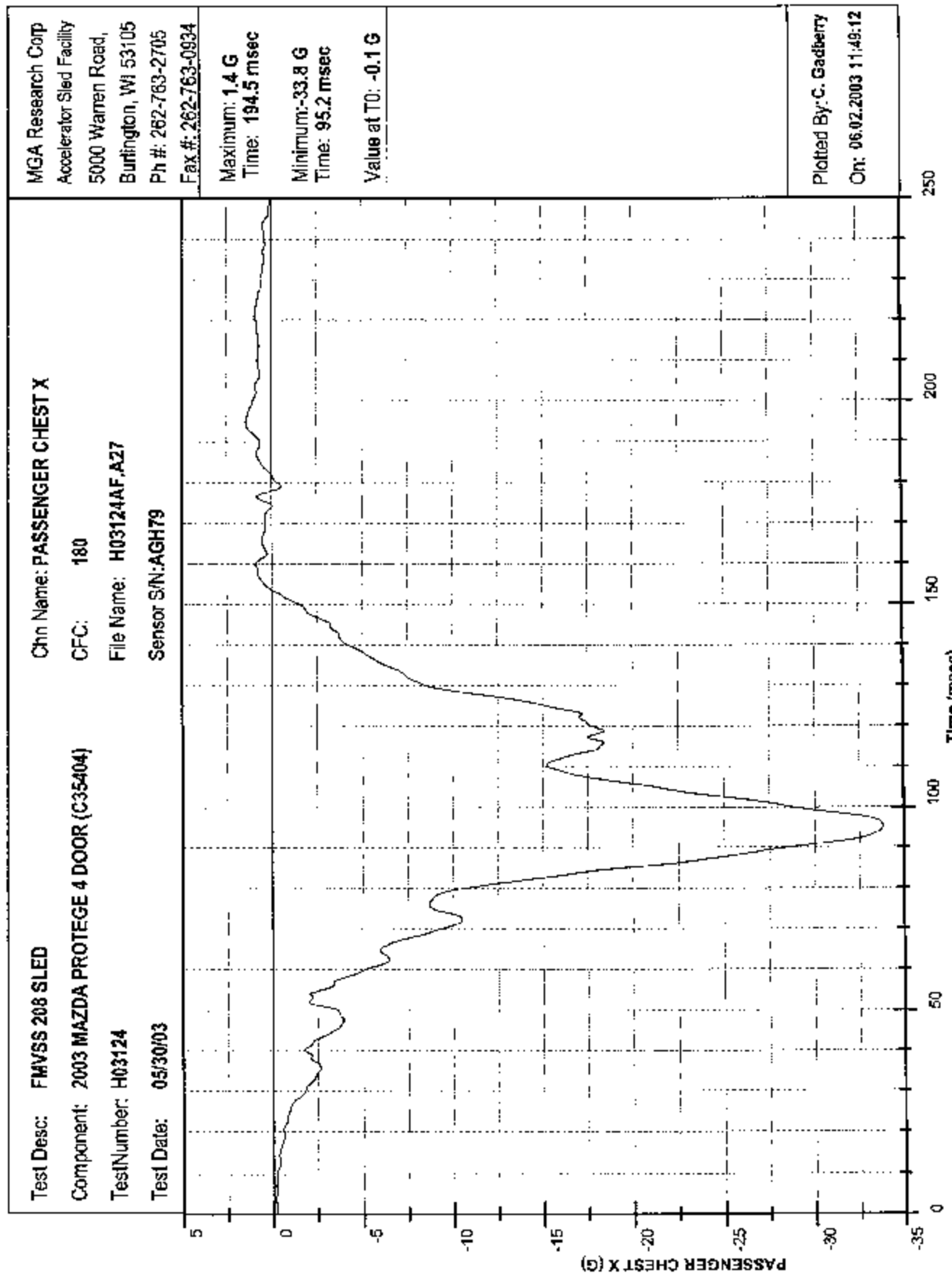


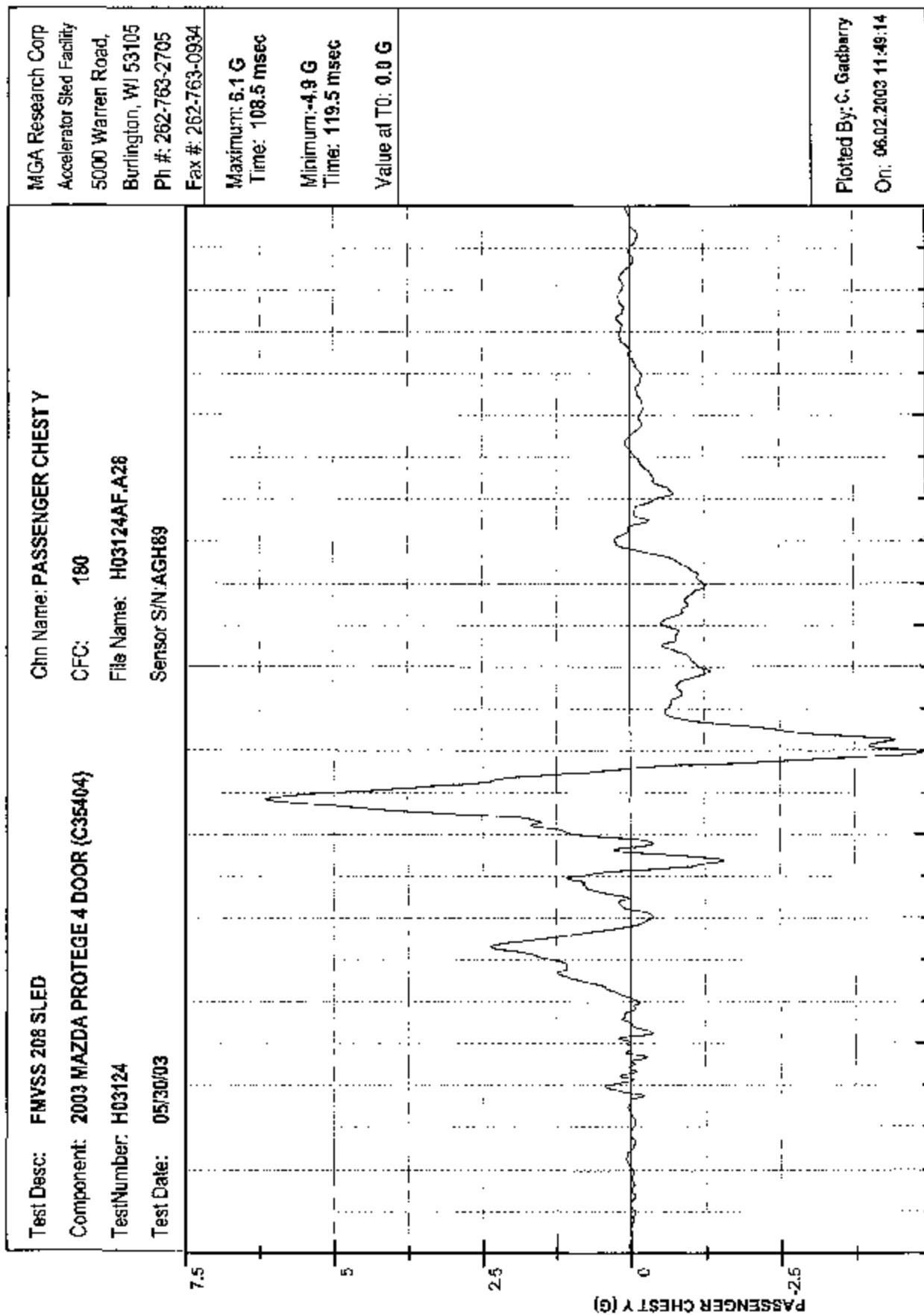


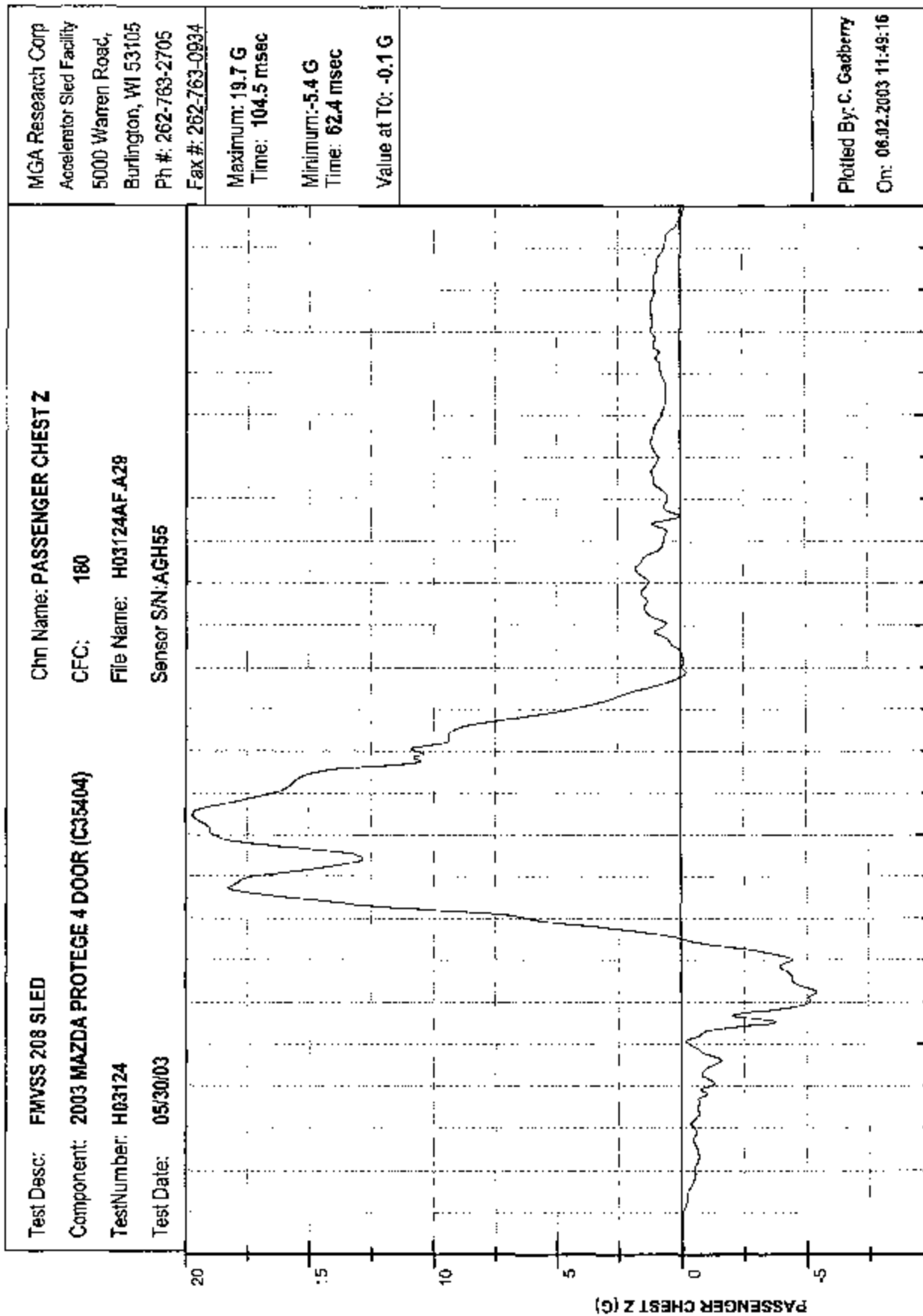


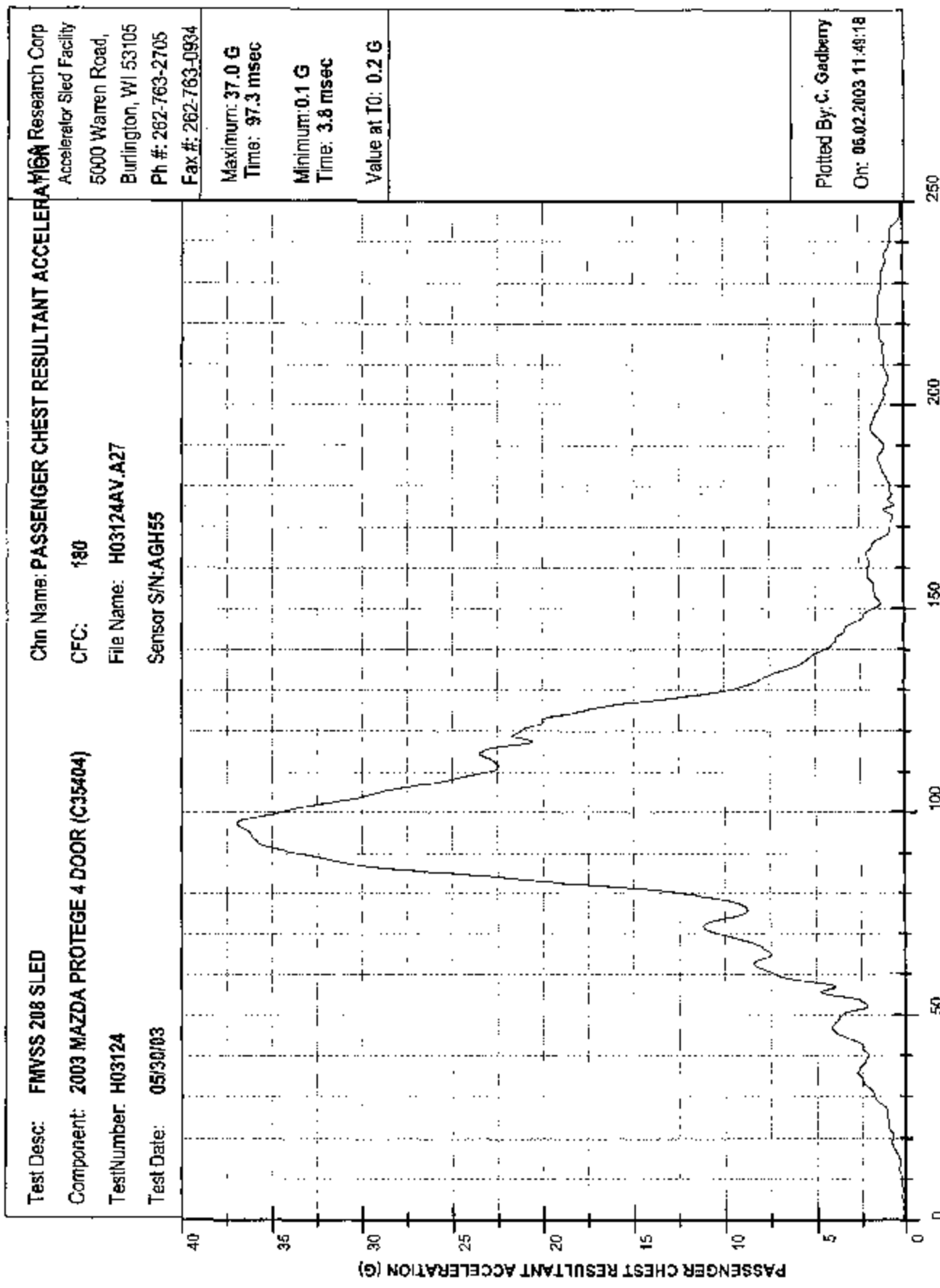


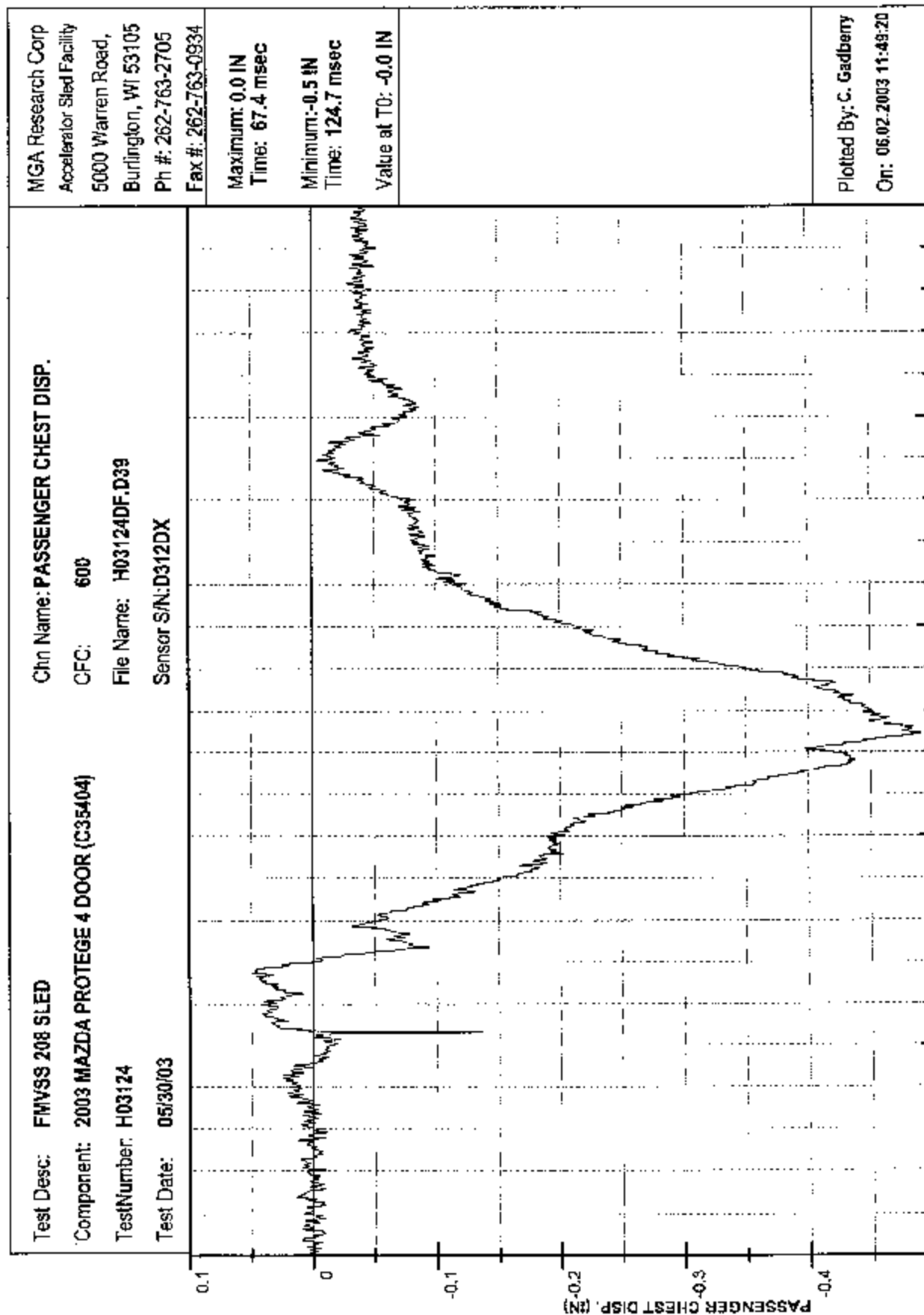


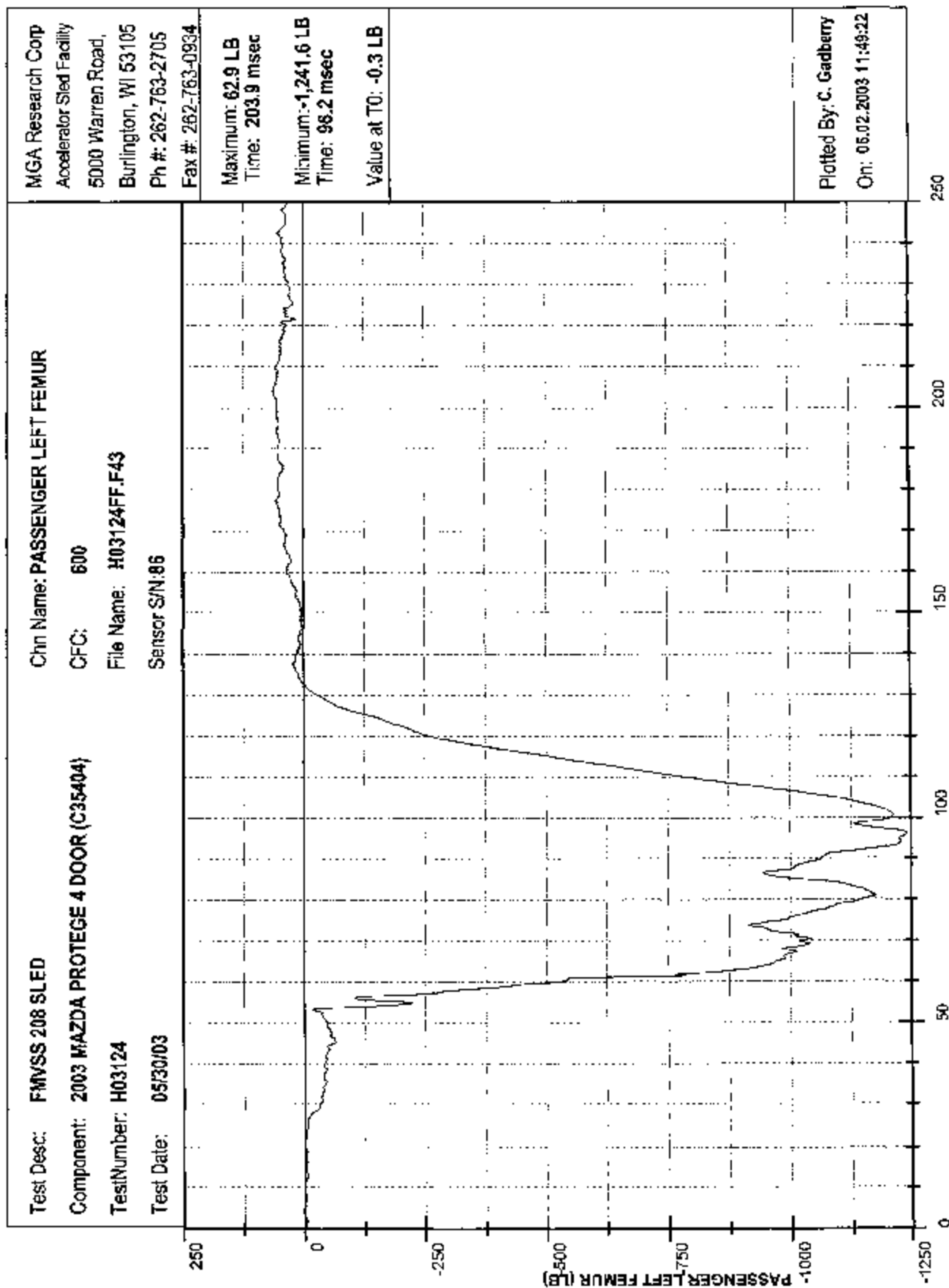




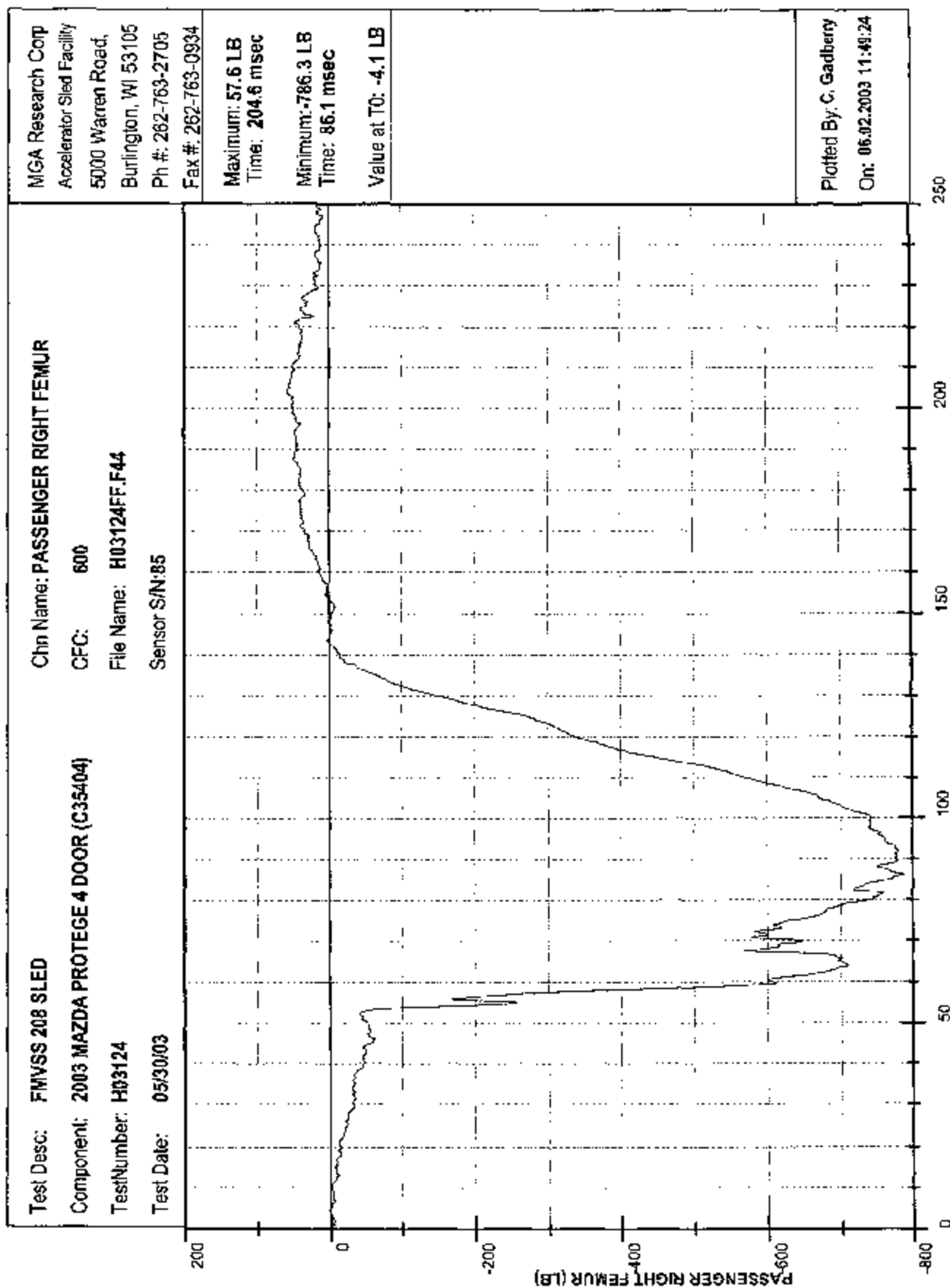








Plotted By: C. Gadberry
On: 05.02.2003 11:49:22



APPENDIX C
MANUFACTURER'S VEHICLE INFORMATION

NVS-221CCa / OA-208-020916-L
 INFORMATION on the 2003 MY Mazda Protege and Protege5

1. Many options are available for certification to FMVSS 208. Please identify the sections of FMVSS 208 to which the subject vehicles are certified. Provide a copy of the certification test reports for all the applicable impact tests and sled tests with respect to these sections. If the subject vehicles are certified to the low risk deployment requirements of S14, provide a copy of the certification tests. In addition, provide the test reports and any analysis used to determine the air bag inflator stages to trigger for the low risk deployment tests.

The 2003 MY Mazda Protege and Protege5 are certified to S5.1.1(a) and S13, not to S14. Please see the Attachment 1 for the test report.

2. Provide the following: (1) describe the difference between the MY 2003 air bag system and the MY 2002 air bag system, (2) explain what other restraint changes have been made, (3) explain what other vehicle changes have been made that may affect FMVSS 208 performance, and (4) describe any features that may affect occupant protection performance with respect to children and out of position occupants.

(1) The inflator type of driver air bag has been changed. The diameter of vent hole has also been changed to make air bag pressure characteristics the same as old type. Therefore, the change of the inflator type will not affect FMVSS 208 performance.

(2) No restraint changes have been made.

(3) No vehicle changes have been made that may affect FMVSS 208 performance.

(4) There are no features that may affect performance with respect to children and out of position occupants.

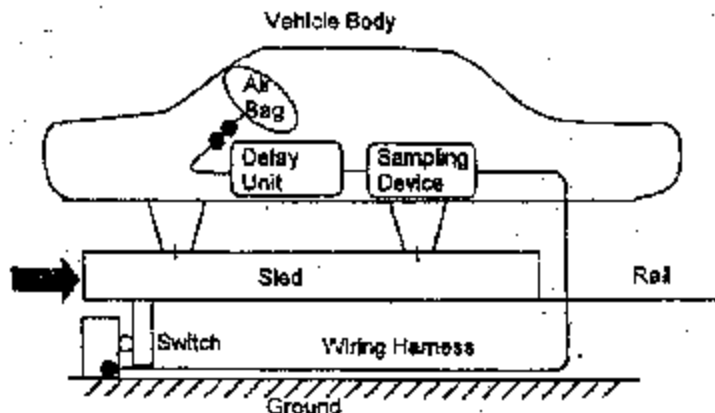
3. If the subject vehicles were certified with unrestrained dummies to meet the requirements of S13, describe how to disconnect the air bags from the vehicle sensors and connect them to the triggering mechanism used in the sled test. Describe the method used in certification to determine when to trigger the air bag and the system used to trigger the air bag.

I. Disconnect the battery terminal.

II. Disconnect the coupler connected to the airbag inflator.

III. Connect the inflator to the system described below.

IV. Air bag is triggered 20.0 ms after vehicle acceleration reaches 0.5G.



For air bags with dual stage or multistage inflators describe when the stages are triggered and provide data to show that this is similar to what would occur in a crash of similar severity.

The 2003 MY Mazda Protege and ProtegeS do not have air bags with dual stage or multistage inflators.

4. For the subject vehicles certified to the advanced air bag requirements, describe how to disconnect the air bags and trigger the appropriate inflator stages for the low risk deployment tests.

The 2003 MY Mazda Protege and ProtegeS are not certified to the advanced air bag requirements.

5. State for any safety belt system in the subject vehicles whether or not it is equipped with a tension-relieving device. Provide a copy of the information furnished in accordance with S7.4.2 if the tension-relieving device is used.

The 2003 Mazda Protege and ProtegeS do not have the tension-relieving device.

6. State for each crash test (frontal, angular, and offset) that the subject vehicles are certified as meeting whether the moveable windows and vents were opened or closed.

Windows were opened and vents were closed for frontal crash test. Windows and vents were closed for sled and angular tests.

7. Submit dummy placement measurements, including diagrams or photographs that show exactly where each measurement was taken. For the subject vehicles certified to the advanced air bag requirements provide measurements for both the 50th percentile male and the 5th percentile female. Enclosed is a diagram of some of OVSC's dummy measurements. Where possible, use each dimension shown in the diagram to provide the individual dummy placement measurements.

Please see the Attachment 2.

8. For the subject vehicles certified to the advanced air bag requirements, provide the width of the vehicle as defined in S18.2.4, the location at which the maximum dimension was measured, and other information and measurements used to position the vehicle for the certification offset crash test at 40 percent overlap.

Not applicable

9. For the subject vehicles certified to the advanced air bag suppression requirements, describe the test procedure to determine air bag activation and deactivation. State whether humans or dummies were used for the suppression tests. If humans were used, provide the method to deactivate the air bag during suppression tests, identify any parts or equipment necessary for deactivation, and provide the method to assure that the same test results would be obtained if the air bag were not deactivated.

Not applicable

10. State whether the subject vehicles have a footrest for the driver.

The 2003 Mazda Protege and ProtegeS have a foot rest for the driver.

11. Provide the seat positioning, steering column positioning, and fuel tank data on the enclosed form. If more than one front seating configuration, steering column or fuel tank configuration are available on this vehicle, provide separate information for each. For certification tests using the 5th percentile female, provide the seat fore-aft position, seat height, and seat back angle used in the certification test. In addition, provide the seating reference point for each seat for the lockable seat belt requirement in S7.1.1.5.

Please see the Attachment 3 for the seat positioning, steering column positioning, and fuel tank data. Please see the Attachment 4 for the seating reference point.

12. For the subject vehicles certified to the low risk deployment sections of the advanced air bag requirements, provide the location of the "geometric center of the opening through which the air bag deploys into the occupant compartment."

Not applicable

13. If the subject vehicles are equipped with adjustable seat belt anchorages, provide the manufacturer's nominal design position for a 50th percentile adult male occupant and, if certified to the advanced air bag requirements, the position for the 5th percentile female.

The nominal design position for the 50th percentile adult male is the 1st latch position from the highest position (D).

14. For all tests that are performed to certify the subject vehicles to injury assessment performance requirements, provide a summary of the injury results. In addition, for crash tests, provide the measured test speed.

Please see the Attachment 1.

15. When vehicle components must be removed to obtain the proper test weight for crash tests, what components do you recommend for removal, and in what priority order do you recommend removal?

1. *Rear bumper face*
2. *Rear bumper reinforcement*
3. *Rear combination lamp*
4. *Rear seat cushion*
5. *Rear seat back*
6. *Rear seat belt*
7. *Rear speaker*
8. *Rear door glass*
9. *Spare tire*
10. *Jack*
11. *Jack handle*
12. *Tool set*
13. *Trunk lid or Backdoor*
14. *Main silencer*

16. If the subject vehicles use a pressure vessel to inflate the air bag, provide a copy of the test reports or engineering analysis to demonstrate that it meets all the requirements of S9.1.

Driver's airbag: Not applicable.

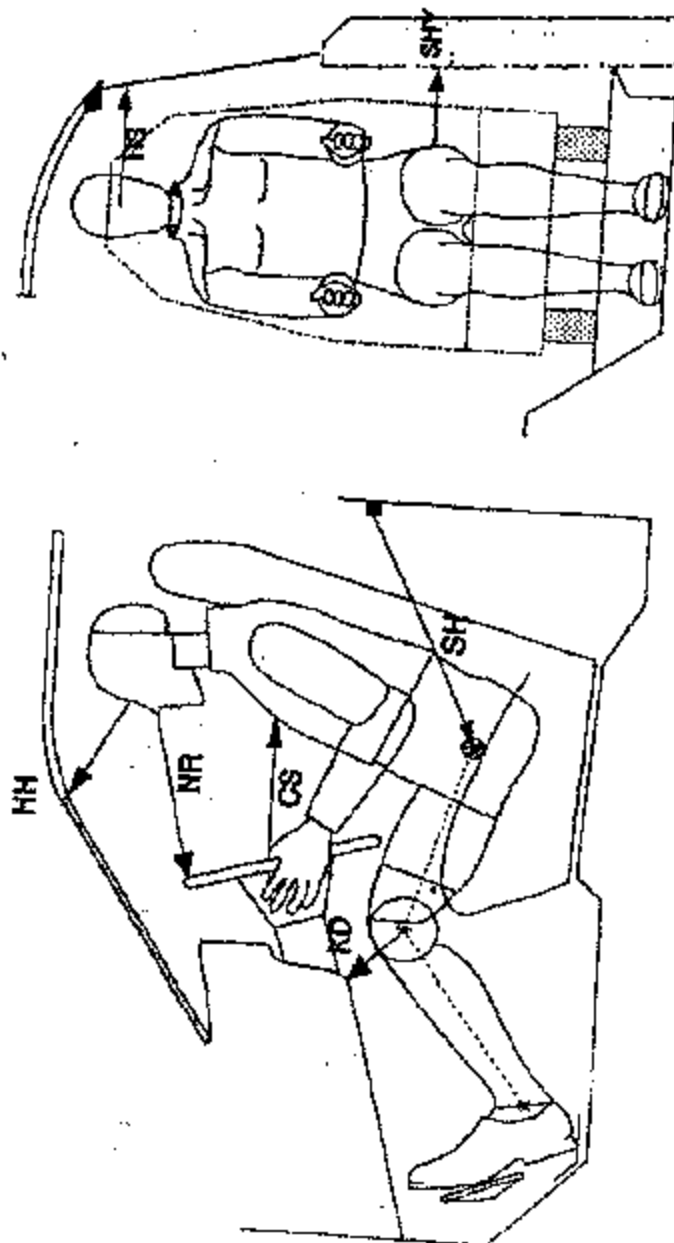
Passenger's airbag: Please see the Attachment 6.

17. If the subject vehicles use an explosive device to inflate the air bag, provide a copy of the test report or engineering analysis to demonstrate that it meets all the requirements of S9.2.

Driver's airbag: Please see the Attachment 5.

Passenger's airbag: Please see the Attachment 6.

DUMMY MEASUREMENTS FOR FRONT SEAT PASSENGERS



	Driver	Passenger
HH: Head to Header	290 mm	285 mm
NR: Nose to Rim	350 mm	---
CS: Steering Wheel to Chest	270 mm	---
KDL/KDR: Knee to Dash	175 mm/No data	No data/157 mm
SH: Striker to H-Point	251 mm	245 mm

NOTE: - Place the driver's left foot on the footrest.

- Angles were measured maintaining the vehicle horizontally (side sill = 0 degree).

- HH was measured within a vertical longitudinal plane passing through dummy center.

- Adjust the neck bracket to the 3rd latch position from the most forward position (0) for both driver and passenger.

	Driver	Passenger
SHY: Striker to H-Point (Y Dir.)	227 mm	226 mm
HS: Head to Side Window	340 mm	338 mm

TEST VEHICLE INFORMATION

Vehicle Model Year & Make : 2003MY Mazda
 Vehicle Model & Body Style : Protege and Protege5

Note: Seat back angle is taken from Vertical Line. (Not "Upright Position")

1. NOMINAL DESIGN RIDING POSITION - -

For adjustable driver and passenger seat backs.
 Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent if applicable.

Seat back angle for driver's seat = 14 degrees.

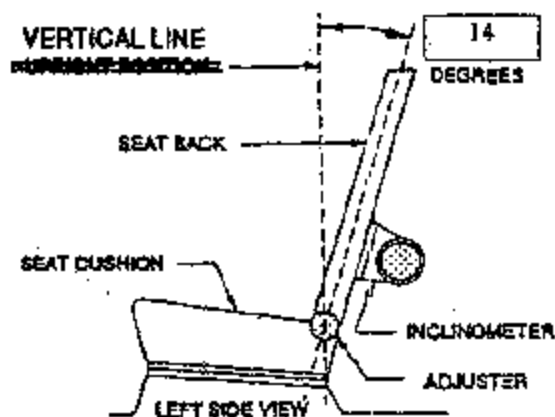
Measurement Instructions:

Seat back angle is measured along rear edge of outer seat back frame. Adjust the seat back to the 3th latch from the first detent (0).

Seat back angle for passenger's seat = 14 degrees.

Measurement Instructions:

Seat back angle is measured along rear edge of outer seat back frame. Adjust the seat back to the 3th latch from the first detent (0).



2. SEAT FORE & AFT POSITIONS

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, provide information to locate the detent in which the seat track is to be locked.

Positioning of the driver's seat:

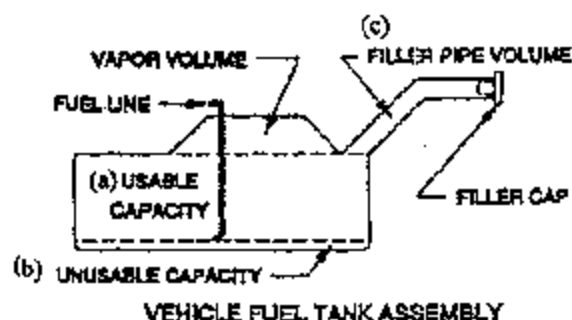
Adjust the seat slider to the 8th latch position from the most forward position (0).

Positioning the passenger's seat. (If applicable)

Adjust the seat slider to the 8th latch position from the most forward position (0).

3. FUEL TANK CAPACITY DATA - -

- 3.1 A. "Usable Capacity" of standard equipment fuel tank = 55 liters
 B. "Usable Capacity" of optional equipment fuel tank = NA gallons.
 C. Capacity used when certification testing to requirements of FMVSS 301 = 52.25 liters



(*) Note: This is "Fuel Tank Capacity" defined by Mazda.
 "Fuel Tank Capacity" = (a) + (b) + (c)

3.2. Amount of Stoddard solvent added to vehicle for certification test = 52.25 liters

3.3 Is vehicle equipped with electric fuel pump? X Yes No
 If YES, does pump normally operate when vehicle's electrical system is activated? Yes X No
The fuel pump operates when starter or engine is activated.

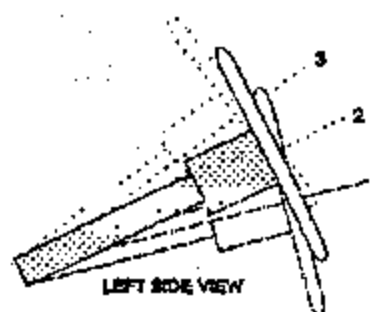
4. **STEERING COLUMN ADJUSTMENTS - -**

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions.

If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center?

Operational Instructions:

No specific procedure.



STEERING COLUMN ASSEMBLY

22.5°
 15-9°
 mid pt. 19.2°

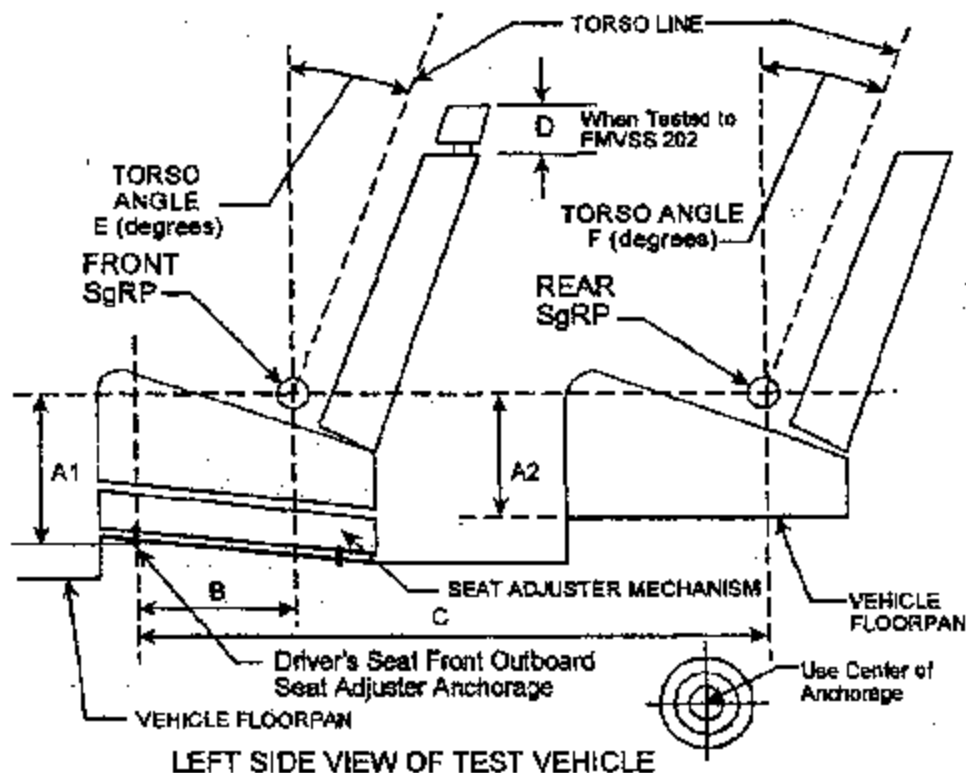
5. Adjustable Seat Belt Anchorage Position

Driver's seat: 1st latch position from the highest position (0)

Passenger's seat: 1st latch position from the highest position (0)

**SEAT REFERENCE POINT (SRP) AND TORSO ANGLE DATA
FOR FMVSS 208**

Model Year: 2003MY; Make: Mazda; Model: Protege and Protege5
 Body Style: 4-door Sedan (Protege) and 5-door Hatchback (Protege5)
 Seat Style: Front - Bucket / Rear - Contoured



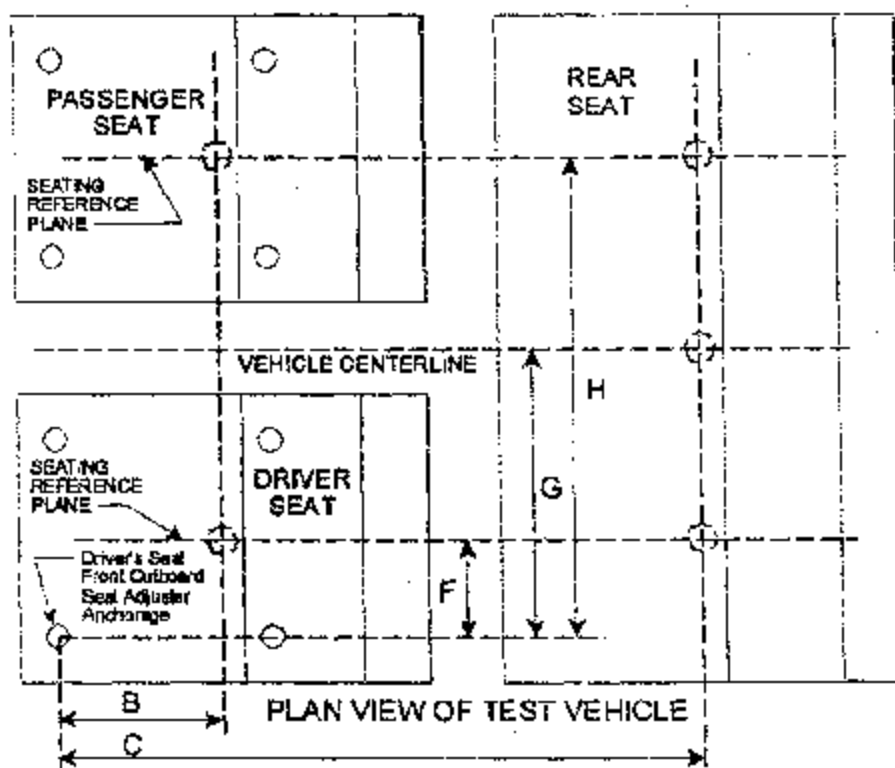
DIMENSION	FRONT	REAR
A	231.3 mm (A1)	*1
B	369 mm	---
C	---	*1
D	261 mm	---
E	18 degrees	---
F	---	*1

*1: Please let Mazda know if you need these dimensions (not applicable to impact tests).

FORM 4
Page 2 of 2

SEATING REFERENCE POINT (SRP) AND TORSO ANGLE DATA
FOR FMVSS 208
 (All dimensions in inches)

Model Year: 2003MY; Make: Mazda; Model: Protege and Protege5
 Body Style: 4-door Sedan (Protege) and 5-door Hatchback (Protege5)
 Seat Style: Front – Bucket / Rear – Contoured



B	369 mm
C	*1
F	Front seat: 246 mm, Rear seat: *1
G	Front seat: 591 mm, Rear seat: *1
H	Front seat: 936 mm, Rear seat: *1

*1: Please let Mazda know if you need these dimensions (not applicable to impact tests).