

Dynamic Science Report No. 212-DYS-82-003
Dynamic Science Report No. 219-DYS-82-003
Dynamic Science Report No. 301-DYS-82-011

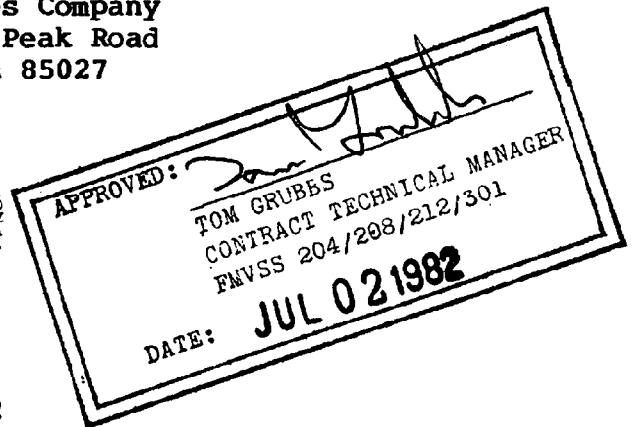
DOT 453

NEW VEHICLE ASSESSMENT AND
STANDARDS ENFORCEMENT INDICANT
TESTING
FMVSS 212, 219, AND 301-75

CHRYSLER CORPORATION
1982 DODGE 400 2-DOOR HARDTOP
NHTSA 820308

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June 1982

FINAL REPORT

Prepared for:

U.S. DEPARTMENT OF TRANSPORTATION
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OFFICE OF VEHICLE SAFETY COMPLIANCE
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Approved by Rod Carr

Date 6-29-82

Report Accepted by:

TOM GRUBBS

Contract Technical Manager
Office of Vehicle Safety Compliance

JUL 02 1982

Date _____

TECHNICAL REPORT STANDARD TITLE PAGE

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16. Abstract The vehicle was tested using test parameter values which are in excess of the current upper limits of the subject FMVSS in order to obtain research and vehicle rating data. This test, therefore, can only be viewed as an "indicant" test by the Office of Vehicle Safety Compliance. The front of the test vehicle impacted the NHTSA fixed load-measuring barrier at a speed of 34.98 mph. The test was conducted at the Dynamic Science, Inc. Deer Valley facility on May 26, 1982, with the following results: a. FMVSS 212 - Loss of windshield periphery was within allowable range. b. FMVSS 219 - No intrusion into windshield protected zone. c. FMVSS 301 - Fuel leakage was within the allowable range.					
17. Key Words FMVSS 212 - Windshield Mounting; FMVSS 219 - Windshield Zone Intrusion; FMVSS301-75 - Fuel System Integrity, Vehicle Assessment, Frontal Impact, Load-Measuring Barrier, Occupant Response				18. Distribution Statement This report is available from the Technical Reference Division, National Highway Traffic Safety Administration, Room 5108, Nassif Building, 400 7th St., S.W., Washington, D.C. 20590	
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons	0.9	metric ton	t
	(2000 lb)			
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
in ³	cubic inches	16	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares	2.5	acres	
	(10 000 m ²)			
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	metric ton	1.1	short tons	
	(1000 kg)			
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
ml	milliliters	0.06	cubic inches	in ³
L	liters	2.1	pints	pt
L	liters	1.06	quarts	qt
L	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	degrees Celsius	9/5 (then add 32)	degrees Fahrenheit	°F

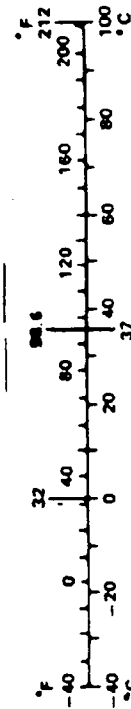


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1.0 PURPOSE AND TEST INTRODUCTION

1.1 PURPOSE

The purpose of the test was to subject a 1982 Dodge 400 2-Door Hardtop to the indicant test requirements of DOT Test Plan TP-212-02, April 4, 1980, Standard Enforcement Indicant Testing for FMVSS 212, "Windshield Mounting," FMVSS No. 219, "Windshield Zone Intrusion," and FMVSS No. 301-75, "Fuel System Integrity." Calibrated Part 572 50th-percentile male dummies were utilized to acquire data relative to FMVSS 208, "Occupant Crash Protection." The vehicle was tested using test parameters which are in excess of the current upper limits of the subject FMVSS in order to obtain research and vehicle rating data. This test, therefore, can only be viewed as an "indicant" test by the Office of Vehicle Safety Compliance (OVSC).

1.2 INTRODUCTION

Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains Compliance Related Data for FMVSS 212, 219, 301-75 Indicant Testing, together with photographs related to these tests. Section 4 contains occupant and vehicle response data. Appendix A contains pre-test and post-test vehicle and dummy photographs. Appendix B contains Calcomp plots. Appendix C contains dummy certification data.

2.0 GENERAL TEST AND VEHICLE PARAMETER DATA

The following data sheets describe the General Test and Vehicle Parameter Data.

GENERAL TEST AND VEHICLE PARAMETER DATA

PRE-IMPACT DATA

Make/Model: Dodge 400
 Body Style: 2-Door Hardtop Model Year 1982
 NHTSA No. 820308 DSI No. 1233 Color: White

DATA FROM CERTIFICATION LABEL

Vehicle Manufacturer: Chrysler Corporation
 Date of Manufacture: 9/81; VIN: 1B3BV51B8CG102585
 GVWR: 3825 lb; GAWR: Front = 2120 lb; Rear = 1755 lb

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL

Vehicle Capacity: FRONT REAR RECOMMENDED LOAD RANGE:
 Tire Pressure: 29 psi 29 psi TIRE SIZE: B
P185-70R14

Designated Seating: 3 Front 3 Rear 6 Total
 Cargo load = 115lb Is Spare Tire: Space Saver? Yes
 TOTAL = 1015lb Standard Equipment? Yes

Engine: 4 Cylinder 135 in.

Transmission: 3 Speed Automatic Front Wheel Drive

Date Vehicle Received by Laboratory: 11/9/81; Odometer 51.4

Dealer Name & Address: Valley Dodge
4240 West Glendale Avenue
Phoenix, Arizona

WEIGHT (LB) OF TEST VEHICLE AS RECEIVED (WITH MAX. FLUIDS) = UDW

Right Front = 836 lb Right Rear = 435 lb
 Left Front = 855 lb Left Rear = 460 lb
 TOTAL FRONT WEIGHT = 1691 lb (65 % of Total Vehicle Weight)
 TOTAL REAR WEIGHT = 895 lb (35 % of Total Vehicle Weight)
 TOTAL DELV. WEIGHT = 2586 lb

TARGET WEIGHT = UDW + Cargo Load + 328 lbs Dummies = 3029 lb

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 115 LB CARGO:

Right Front = 900 lb Right Rear = 633 lb
 Left Front = 871 lb Left Rear = 640 lb
 TOTAL FRONT WEIGHT = 1771 lb (58 % of Total Vehicle Weight)
 TOTAL REAR WEIGHT = 1273 lb (42 % of Total Vehicle Weight)
 TOTAL TEST WEIGHT = 3044 lb

Weight of ballast secured in vehicle trunk area = 0 lb

VEHICLE ATTITUDE: (inches)

Delivered Attitude: RF 30.00 LF 30.00 RR 30.00 LR 30.00
 Test Attitude: RF 29.25 LF 29.25 RR 27.75 LR 28.25

REMARKS: Three-point restraint system.

GENERAL TEST AND VEHICLE PARAMETER DATA (CONT)

POST-IMPACT DATA

Type of Test: Frontal (0°) Impact
 Date of Test: 5/26/82 Time: 1324 Temperature 93 °F
 Required Impact Velocity Range: 34.5 to 35.5 mph
 Impact Velocity: Primary = 34.98 mph Secondary = 35.03 mph

Distance from the vehicle's front bumper to barrier face entering the vehicle velocity measurement device is 5.0 feet and distance exiting the vehicle velocity measurement device is 1.0 foot.

VEHICLE REBOUND AND CRUSH (in.)

Vehicle Length: Pre-test = R 174.9 C 180.3 L 174.8
 Post-test = R 151.9 C 153.7 L 151.2
 Crush = R 23.0 C 26.6 L 23.6
 Distance from front of test vehicle to point of impact:
 R 19.5 C 23.8 L 21.5

VISIBLE DUMMY CONTACT POINTS

	Driver	Passenger
Head	<u>Dash and steering wheel upper rim</u>	<u>Dash panel</u>
Chest	<u>Steering wheel</u>	<u>None</u>
Abdomen	<u>Steering wheel</u>	<u>None</u>
Left Knee	<u>Dash</u>	<u>Dash</u>
Right Knee	<u>Dash</u>	<u>Dash (glove box)</u>

DOOR OPENING

Front		Rear	
Left	Right	Left	Right
<u>Tools</u>	<u>Tools</u>		
<u>Required</u>	<u>Required</u>		

SEAT MOVEMENT

Seatback Failure	<u>None</u>	<u>None</u>
Seat Shift (in.)	<u>None</u>	<u>None</u>

GLAZING DAMAGE

Backlight/Windshield Cracks noted in lower windshield; antenna contacted protected zone (less than 0.25 inch penetration).

OTHER NOTABLE IMPACT EFFECTS: Crush on vehicle fairly symmetrical. Crush evident to "A" pillar on both sides of vehicle binding rotation of both front wheels.

3.0 COMPLIANCE-RELATED DATA FMVSS 212, 219, 301-75 INDICANT TESTING

The following data sheets and photographs document compliance data related to FMVSS 212, 219, and 301-75.

SUMMARY OF FMVSS 212 DATA

PRE-IMPACT DATA

Make/Model: Dodge 400
Body Style: 2-Door Hardtop Model Year: 1982
NHTSA No. 820308 DSI No. 1233 Color: White

DATA FROM CERTIFICATION LABEL

Vehicle Manufacturer: Chrysler Corporation
Date of Manufacture: 9/81; VIN 1B3BV51B8CG102585
GVWR: 3825 lb; GAWR: Front = 2120 lb; Rear 1755 lb

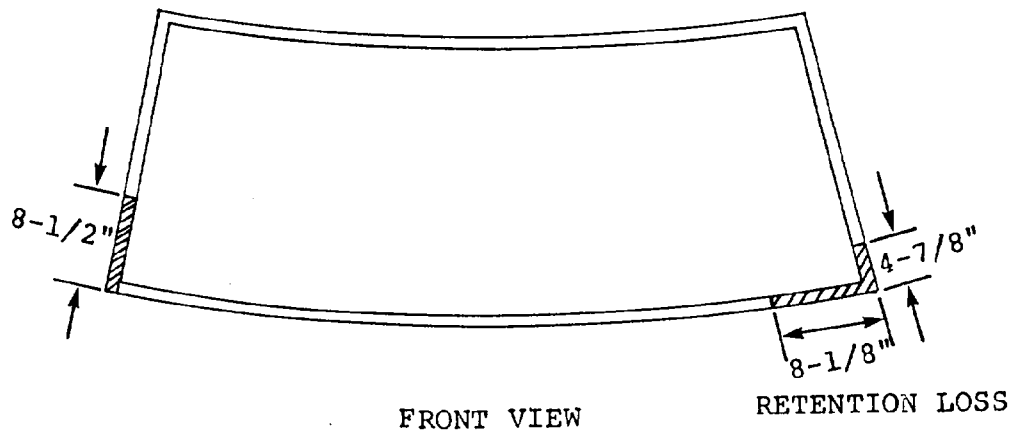
POST-IMPACT DATA

Type of Test: Frontal (0°) Impact
Date of Test: 5/26/82 Time: 1324 Temperature 93 °F
Required Impact Velocity Range: 34.5 to 35.5 mph
Impact Velocity: Primary = 34.98 mph Secondary = 35.03 mph
Test Weight: 3044 lb Static Crush: 20.0 in.
Rebound Distance: 20 in.

DETAILS OF WINDSHIELD MOUNTING: The bottom of the windshield rests on two one-inch wide shelves each 22 inches from the centerline. It is also bonded by a 2-3/4 inch wide band of black cement. The sides are retained by a 1-3/4 inch wide rubber grommet beneath a 1 inch wide metal trim plate. The top is secured by the same grommet as the sides. However, it is covered by a 0.9 inch wide metal trim plate.

	WINDSHIELD PERIPHERY		
	Pre-test	Post-test	Retention
RIGHT SIDE	78-5/8	70-1/8	89%
LEFT SIDE	78	65	83%
TOTAL	156-1/2	135-1/8	86%

The standard requires that POST-TEST be a minimum of 75 percent of the PRE-TEST total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles which are equipped with occupant passive restraints.



AREA OF RETENTION FAILURE: Lower left and lower right corners,
as shown above.

SUMMARY OF FMVSS 219 DATA

PRE-IMPACT DATA

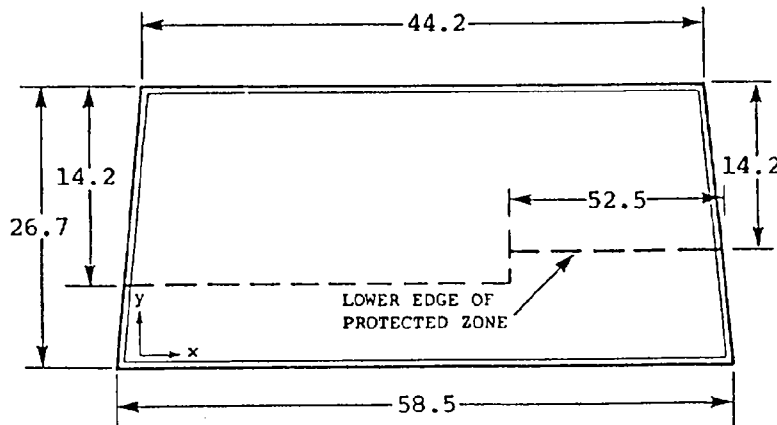
Make/Model: Dodge 400
Body Style: 2-Door Hardtop Model Year: 1982
NHTSA No.: 820308 DSI No. 1233 Color: White

DATA FROM CERTIFICATION LABEL

Vehicle Manufacturer: Chrysler Corporation
Date of Manufacture: 9/81; VIN: 1B3BV51B8CG102585
GVWR: 3825 lb; GAWR: Front = 2120 lb; Rear = 1755 lb

POST-IMPACT DATA

Type of Test: Frontal (0°) Impact
Date of Test: 5/26/82 Time: 1324 Temperature 93 °F
Required Impact Velocity Range: 34.5 to 35.5 mph
Impact Velocity: Primary = 34.98 mph Secondary = 35.03 mph
Test weight 3044 lb Static Crush 20 in. Rebound 20 in.



FRONT VIEW OF WINDSHIELD

- A. The area that the "Protected Zone" template was penetrated more than 0.25 inch by a vehicle component other than one which is normally in contact with the windshield.

Coordinates

<u>X</u>	<u>Y</u>
<u>None</u>	<u>None</u>

SUMMARY OF FMVSS 219 DATA (CONTD)

- B. The area beneath the "Protected Zone" that the inner surface of the windshield was penetrated by a vehicle component.

Coordinates

<u>X</u>	<u>Y</u>
<u>None</u>	<u>None</u>

SUMMARY OF FMVSS 301 DATA

PRE-IMPACT DATA

Make/Model: Dodge 400
Body Style: 2-Door Hardtop Model Year: 1982
NHTSA No.: 820308 DSI No. 1233 Color: White

DATA FROM CERTIFICATION LABEL

Vehicle Manufacturer: Chrysler Corporation
Date of Manufacture: 9/81 ; VIN: 1B3BV51B8CG102585
GVWR: 3825 lb; GAWR: Front = 2120 lb; Rear = 1755 lb

POST-IMPACT DATA

Type of Test: Frontal (0°) Impact
Date of Test: 5/26/82 Time: 1324 Temperature 93 °F
Required Impact Velocity Range: 34.5 to 35.5 mph
Impact Velocity: Primary = 34.98 mph Secondary = 35.03 mph
Test Weight 3044 lb Static Crush 20 in. Rebound 20 in.

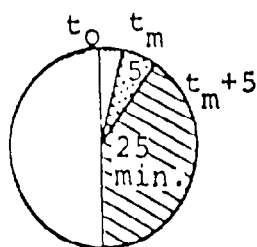
FUEL SYSTEM DATA

Test fluid: Stoddard Solvent Specific Gravity: 0.764
Temperature: 93 °F
Kinematic Viscosity: 0.99 Centistokes Test Volume: 12.1 U.S. gal

Test vehicle fuel tank filled to 93% of "usable" plus "unusable" capacity with Stoddard Solvent and with electric fuel pump operating (if it will operate without engine operation) until start of static roll.

Details of fuel system: Rectangular metal tank, approximately 29 x 20 inches, fastened to vehicle by two 1-inch metal straps 16 inches apart. Filler neck on right rear quarter-panel drops down under wheel well and enters tank in upper right rear corner; plastic threaded cap with ratcheting mechanism. Fuel lines exit tank 4 inches left of center in rear panel, and head right. They run along the lower right edge of the frame forward to the right edge of the firewall. The lines traverse up the firewall and partially around the shock tower. At this point, rubber fuel lines lead to the valve cover. Metal lines traverse the front of the valve cover, then down front of block, then back along front edge of the oil pan where they link to the mechanical fuel pump located below and to the right of the oil filter. One line then traverses same route back to right front of valve cover (through a fuel filter which is vented back to tank) and across valve cover to carburetor.

FUEL SPILLAGE MEASUREMENT



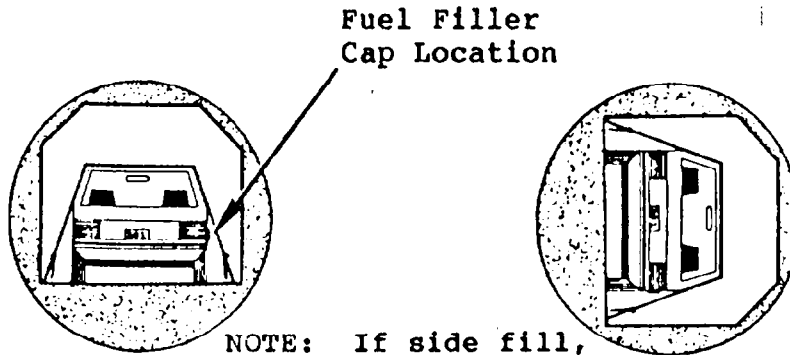
$(t_m + 5) + 25$

	ACTUAL	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases. . . .	0.0	1 oz
2. For 5-minute period after vehicle motion ceases	0.0	5 oz
3. For next 25 minutes. . .	0.0	1 oz/min

SOLVENT SPILLAGE DETAILS: None.

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 0° to 90° VEHICLE NHTSA NO. 820308



NOTE: If side fill, rotate so that filler cap is down.

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time.... = 1 min, 38 sec +
 (Spec. Range = 1 to 3 min)
 FMVSS 301 Position Hold Time..... = 5 min, 0 sec =
 Total..... = 6 min, 38 sec
 Next Whole Minute Interval..... = 7 min

FMVSS 301 REQUIREMENTS AND ACTUAL TEST RESULTS:

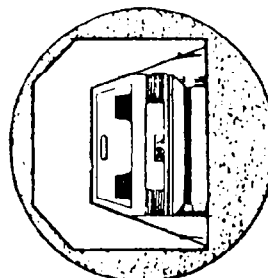
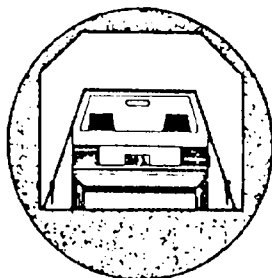
Time Period	First 5 min (from onset)	6th min	7th min	8th min (if req'd)
Maximum Spillage Allowed (oz)	5	1	1	1
Actual Spillage Recorded	0	0	0	---

NOTE: Spillage is recorded in whole minute intervals only - as determined above.

SOLVENT SPILLAGE LOCATION(S): None.

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 90° to 180° VEHICLE NHTSA NO. 820308



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time.... = 1 min, 34 sec +
 (Spec. Range = 1 to 3 min)
 FMVSS 301 Position Hold Time..... = 5 min, 0 sec =
 Total..... = 6 min, 34 sec
 Next Whole Minute Interval..... = 7 min

FMVSS 301 REQUIREMENTS AND ACTUAL TEST RESULTS:

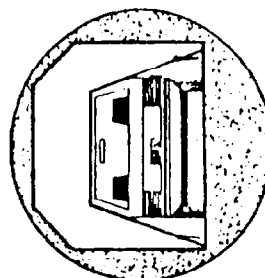
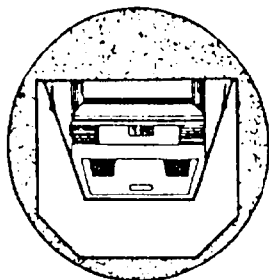
Time Period	First 5 min (from onset)	6th min	7th min	8th min (if req'd)
Maximum Spillage Allowed (oz)	5	1	1	1
Actual Spillage Recorded	0	0	0	---

NOTE: Spillage is recorded in whole minute intervals only - as determined above.

SOLVENT SPILLAGE LOCATION(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 180° to 270° VEHICLE NHTSA NO. 820308



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time.... = 1 min, 35 sec +
 (Spec. Range = 1 to 3 min)
 FMVSS 301 Position Hold Time..... = 5 min, 0 sec =
 Total..... = 6 min, 35 sec
 Next Whole Minute Interval..... = 7 min

FMVSS 301 REQUIREMENTS AND ACTUAL TEST RESULTS:

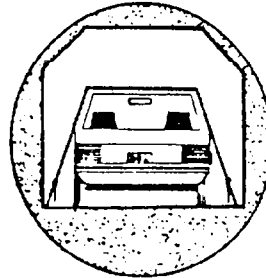
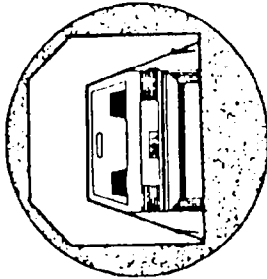
Time Period	First 5 min (from onset)	6th min	7th min	8th min (if req'd)
Maximum Spillage Allowed (oz)	5	1	1	1
Actual Spillage Recorded	Trace	0	0	---

NOTE: Spillage is recorded in whole minute intervals only - as determined above.

SOLVENT SPILLAGE LOCATION(S): Air filter canister

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 270° to 360° VEHICLE NHTSA NO. 820308



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time.... = 1 min, 34 sec +
 (Spec. Range = 1 to 3 min)
 FMVSS 301 Position Hold Time..... = 5 min, 0 sec =
 Total..... = 6 min, 34 sec
 Next Whole Minute Interval..... = 7 min

FMVSS 301 REQUIREMENTS AND ACTUAL TEST RESULTS:

Time Period	First 5 min (from onset)	6th min	7th min	8th min (if req'd)
Maximum Spillage Allowed (oz)	5	1	1	1
Actual Spillage Recorded	0	0	0	---

NOTE: Spillage is recorded in whole minute intervals only - as determined above.

SOLVENT SPILLAGE LOCATION(S): None

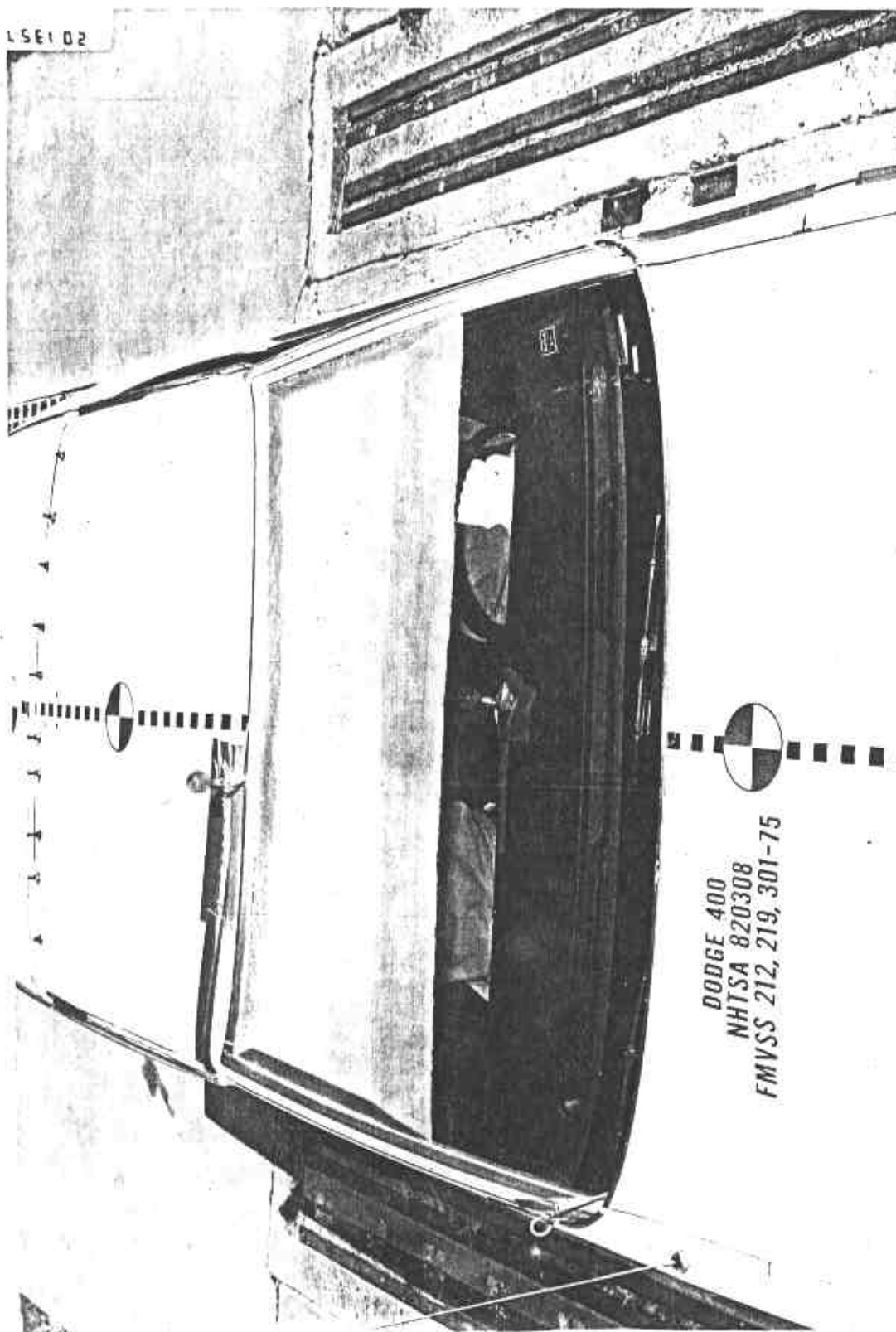


FIGURE 3-1. PRE-TEST VIEW OF WINDSHIELD WITH TEMPLATE - 1982 DODGE 400, NHTSA 820308.

6LE102



3-13

FIGURE 3-2. POST-TEST VIEW OF WINDSHIELD - 1982 DODGE 400, NHTSA 820308.

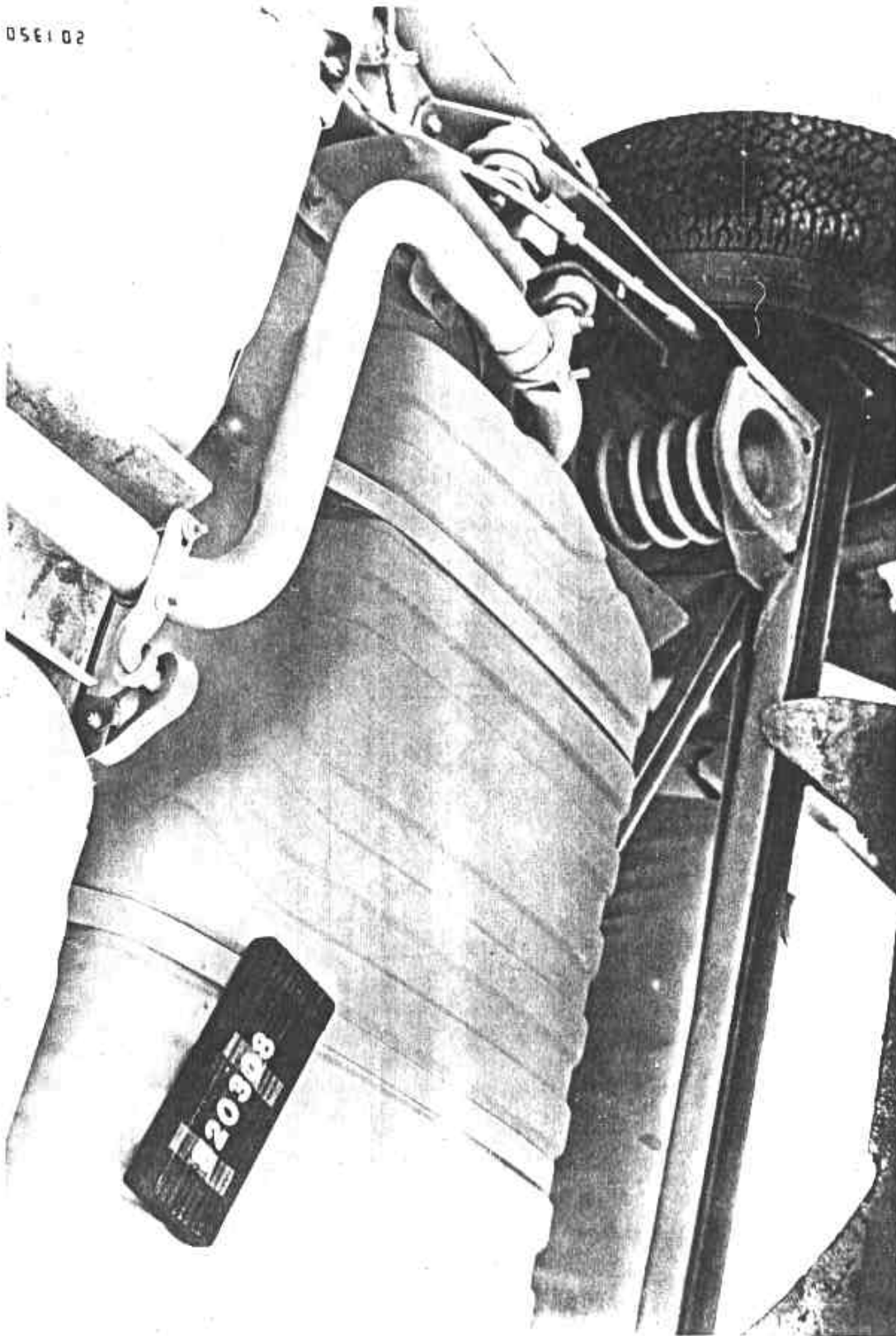


FIGURE 3-3. PRE-TEST VIEW OF FUEL TANK - 1982 DODGE 400, NHTSA 820308.

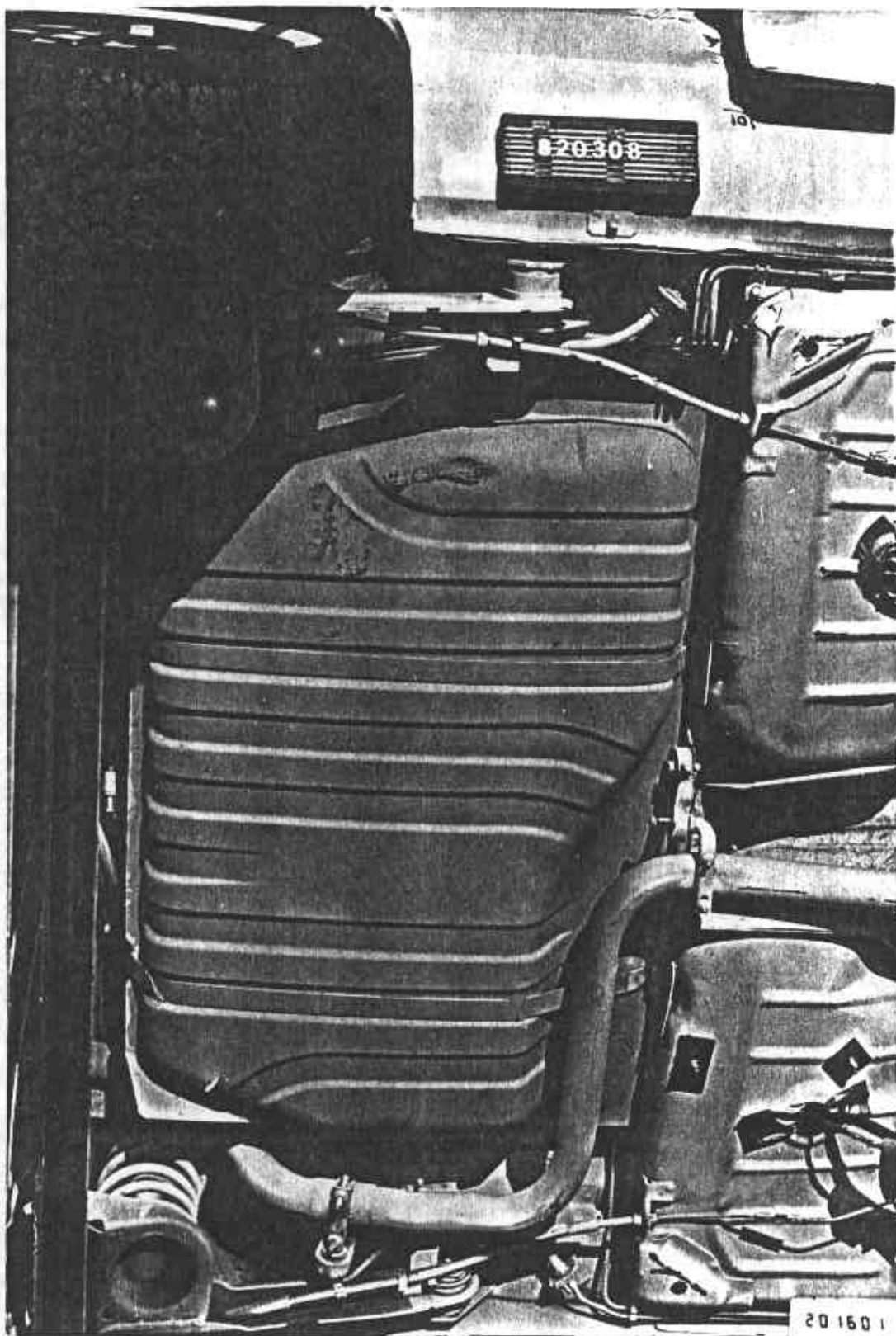


FIGURE 3-4. POST-TEST VIEW OF FUEL TANK - 1982 DODGE 400, NHTSA 820308.

4.0 DATA REQUIRED BY R&D AND OAR

The following pages are included in this section:

1. Dummy positional data
2. Dummy injury summaries
3. Vehicle crush data
4. Accelerometer location and data summary
5. High-speed movie camera location and specification summary

Pertinent photographs are presented in Appendix A. Calcomp plots of dummy and vehicle accelerometer data are presented in Appendix B.

Part 572 DUMMY IN-VEHICLE POSITION RECORDING SHEET

PRE-IMPACT DATA

Make/Model: Dodge 400
 Body Style: 2-Door Hardtop Model Year: 1982
 NHTSA No.: 820308 DSI No. 1233 Color: White

DATA FROM CERTIFICATION LABEL

Vehicle Manufacturer: Chrysler Corporation
 Date of Manufacture: 9/81 ; VIN: 1B3BV51B8CG102585
 GVWR: 3825 lb; GAWR: Front = 2120 lb; Rear = 1755 lb

POST-IMPACT DATA

Type of Test: Frontal (0°) Impact
 Date of Test: 5/26/82 Time: 1324 Temperature 93 °F
 Required Impact Velocity Range: 34.5 to 35.5 mph
 Impact Velocity: Primary = 34.98 mph Secondary = 35.03 mph
 Seat Type: Bucket Adjuster Type: Manual
 Rebound Distance 20.0 in.
 Technicians: M. Rodack, B. Hyden

DRIVER DUMMY# A 0 3		PASSENGER DUMMY # A 0 4	
HEAD TARGET	26.0 " 30 °	26.0 " HEAD TARGET	30 °
KNEE JOINT	39.4 " 90 °	38.7 " KNEE JOINT	90 °
APPROXIMATE "H" POINT	22 " 95 °	21 " APPROXIMATE "H" POINT	94 °

FORE
MIDPOINT
AFT

AFT
MIDPOINT
FORE

OVERALL

58.6

42.1

29.3

16.2

LATERAL BAR

ADJUSTABLE POINTER

LEFT FRONT DOOR

DRIVER DUMMY

A 0 3

16.5

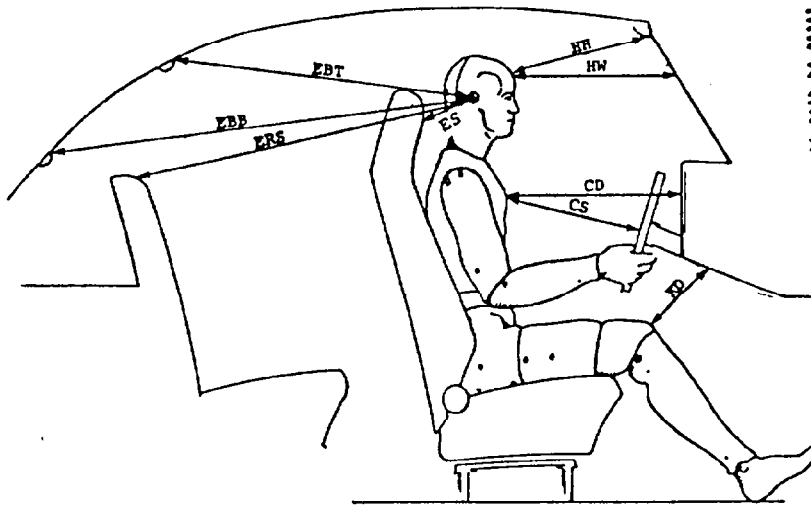
36.0 — DOOR GLASS HEIGHT

PASSENGER DUMMY

RIGHT FRONT DOOR

A 0 4

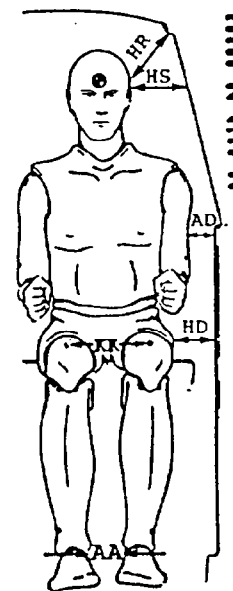
PART 572 DUMMY IN-VEHICLE POSITION RECORDING SHEET



	Driver	Passenger
HH	15.5	13.5
HW	19.2	19.7
CD	21.5	21.3
CS	15.0	N/A
KD L	7.0	7.3
KD R	7.0	7.2
Torso	Torso	
Angle	25°	Angle 25°
Seat Back	Seat Back	
Angle	24°	Angle 24°

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

REMARKS: Dummies positioned ac-
 cording to OVSC recommended
 procedure for positioning Part
 572 dummies in test vehicle.



	Driver	Passenger
HR	6.5	7.2
HS	9.0	9.8
AD	4.2	4.4
HD	6.4	6.3
KK	14.5	13.5
AA	12.0	9.0

DUMMY KINEMATIC SUMMARY

1982 Dodge 400 2-Door Hardtop
NHTSA 820308

Driver Dummy - The occupant remained in contact with the seat back as the seat rocked forward, then aft, until the approximate pre-test position was achieved. The upper abdomen-lower thorax region contacted the lower rim of the steering wheel at 67 ms. His nose contacted the upper steering wheel rim at 76 ms, forehead contacted dash at 99 ms. By 200 ms, the dummy head was back against the headrest and began to rock forward. Motion ceased at 400 ms.

Passenger Dummy - The passenger occupant behaved similar to the driver occupant. His back remained in contact with the seat back. As the seat rocked forward and aft, his head struck the dash at 86 ms and returned to the headrest 200 ms into the event and rocked forward. All motion of dummy was complete 400 ms into the test.

PART 572 DUMMY DATA SUMMARY

	Driver Dummy				Passenger Dummy			
	Positive Direction*		Negative Direction**		Positive Direction*		Negative Direction**	
	Peak (G)	Time (msec)	Peak (G)	Time (msec)	Peak (G)	Time (msec)	Peak (G)	Time (msec)
Head Acceleration								
Longitudinal	30.9	198	104.7	78	7.4	187	86.3	104
Lateral	8.7	196	32.2	77	19.5	97	10.0	185
Vertical	42.7	102	9.8	33	69.5	92	9.4	21
Resultant	108.3	78	-	-	93.0	92	-	-
HIC	520 between 77 and 117 msec,				756 between 84 and 111 msec			
Chest Acceleration								
Longitudinal	1.8	146	42.9	100	2.7	142	40.9	102
Lateral	31.1	74	26.3	75	22.7	193	16.9	124
Vertical	10.2	71	17.6	80	15.9	70	9.4	87
Resultant (Max)	50.5	74	-	-	42.9	104	-	-
Resultant (clip)	44.5	73-76	-	-	41.5	103-106	-	-
TIME > 60 G	0 msec				0 msec			
SEVERITY INDEX	362 @ 200 msec				347 @ 200 msec			
	Peak (lb)	Time (msec)	Peak (lb)	Time (msec)	Peak (lb)	Time (msec)	Peak (lb)	Time (msec)
Femur Loads								
Left	167.1	54	1080.5	80	213.8	33	1011.5	65
Right	165.1	34	879.8	86	165.3	21	914.1	78
Belt Loads								
Lap	1280	70			1087	73		
Torso	1284	74			1999	100		
Belt Stretch/Spoolout Measurements								
	Peak (in.)		Time (msec)		Peak (in.)		Time (msec)	
String Pot	5.2		102		7.0		102	
Extensiometer @ Max Load	Sensors damaged during test.							
Extensiometer	Sensors damaged during test.							
Film Data	4.5		76		6.0		101	
Vehicle Impact Speed (mph): 34.98								
*Longitudinal:	Forward				**Longitudinal:	Rearward		
Lateral:	Rightward				Lateral:	Leftward		
Vertical:	Downward				Vertical:	Upward		

VEHICLE PROFILE DATA SHEET

PRE-IMPACT DATA

Make/Model: Dodge 400
 Body Style: 2-Door Hardtop Model Year: 1982
 NHTSA No.: 820308 DSI No. 1233 Color: White

DATA FROM CERTIFICATION LABEL

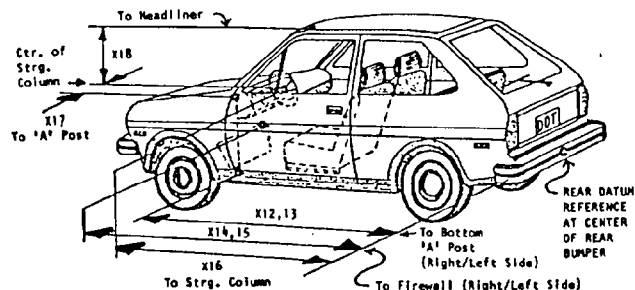
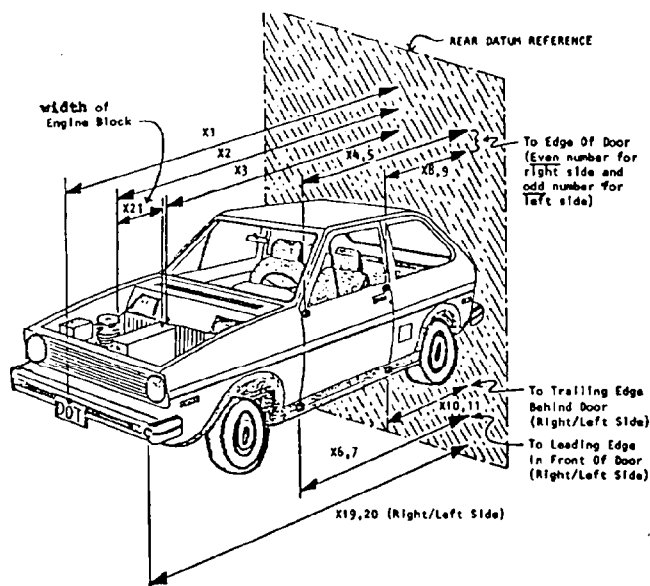
Vehicle Manufacturer: Chrysler Corporation
 Date of Manufacture: 9/81; VIN: 1B3BV51B8CG102585
 GVWR: 3825 lb; GAWR: Front = 2120 lb; Rear = 1755 lb

POST-IMPACT DATA

Type of Test: Frontal (0°) Impact
 Date of Test: 5/26/82 Time: 1324 Temperature 93 °F
 Required Impact Velocity Range: 34.5 to 35.5 mph
 Impact Velocity: Primary = 34.98 mph Secondary = 35.03 mph

Measurements Referenced to Plane 15 Feet Forward of Rear Bumper ℄

Location	Height	Vehicle Left (in.)				Vehicle Right (in.)			
		<u>31.0</u>	<u>18.6</u>	<u>6.2</u>	<u>℄</u>	<u>6.2</u>	<u>18.6</u>	<u>31.0</u>	
		<u>30.4</u>	<u>18.3</u>	<u>6.1</u>	<u>℄</u>	<u>6.1</u>	<u>18.3</u>	<u>30.4</u>	
Pre-test Profile (in.)									
Top of Front Bumper	21.4	5.7	3.2	1.4	0	1.3	3.4	5.0	
Front of Hood	30.2	12.5	11.1	8.3	6.9	8.2	10.7	11.8	
Post-test Profile (in.)									
Top of Front Bumper	20.5	30.4	29.4	27.9	26.7	27.3	28.1	28.4	
Front of Hood	29.7	29.2	32.7	33.5	31.1	32.6	32.2	31.9	
Post-test Static Crush (in.)									
Top of Front Bumper		24.7	26.2	26.5	26.7	26.0	24.7	23.4	
Front of Hood		16.7	21.6	25.2	24.2	24.4	21.5	20.1	



PRE-/POST-TEST STATIC MEASUREMENT DATA

Vehicle: Dodge 400

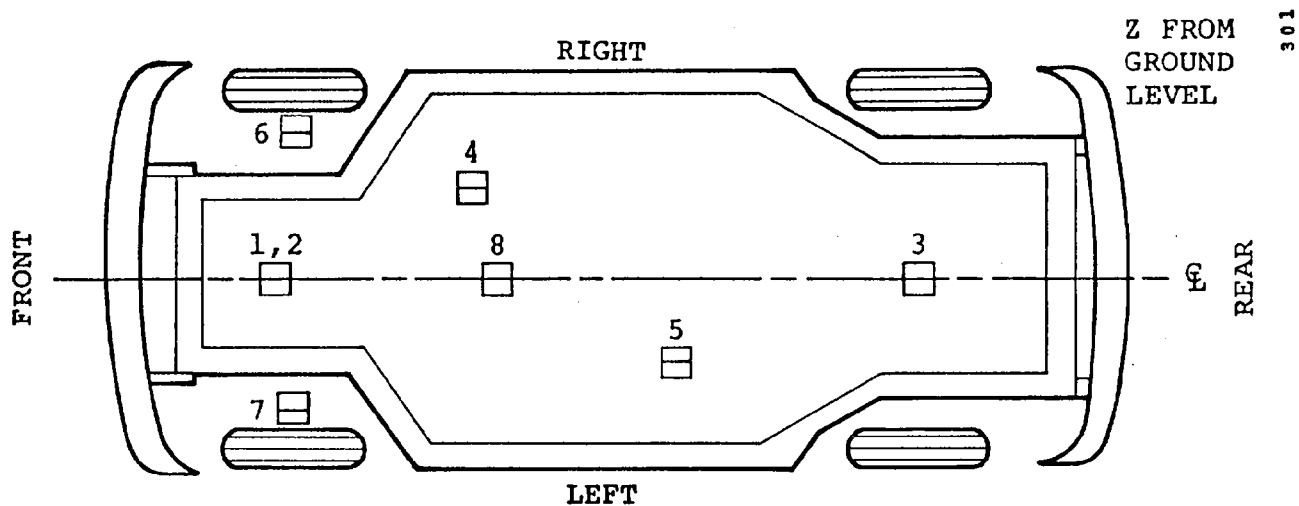
NHTSA No.: 820308

Test Date: 5/26/82

D.S. No.: 1233

Reference Dimension	Pre-test Measurement	Post-test Measurement	Change
X1	180.3	153.7	26.6
X2	148.9	143.6	5.3
X3	133.0	125.6	7.4
X4	116.1	115.9	0.2
X5	115.9	116.2	-0.3
X6	117.4	116.7	0.7
X7	117.3	116.8	0.5
X8	66.4	66.4	0.0
X9	66.2	66.5	-0.3
X10	66.6	66.0	0.6
X11	66.1	65.9	0.2
X12	116.7	115.9	0.8
X13	116.7	115.8	0.9
X14	132.8	128.2	4.6
X15	132.7	129.1	3.6
X16	105.0	101.9	3.1
X17	15.2	11.1	4.1
X18	18.4	19.2	-0.8
X19	174.8	151.2	23.6
X20	174.9	151.9	23.0
X21	13.1	12.0	1.1

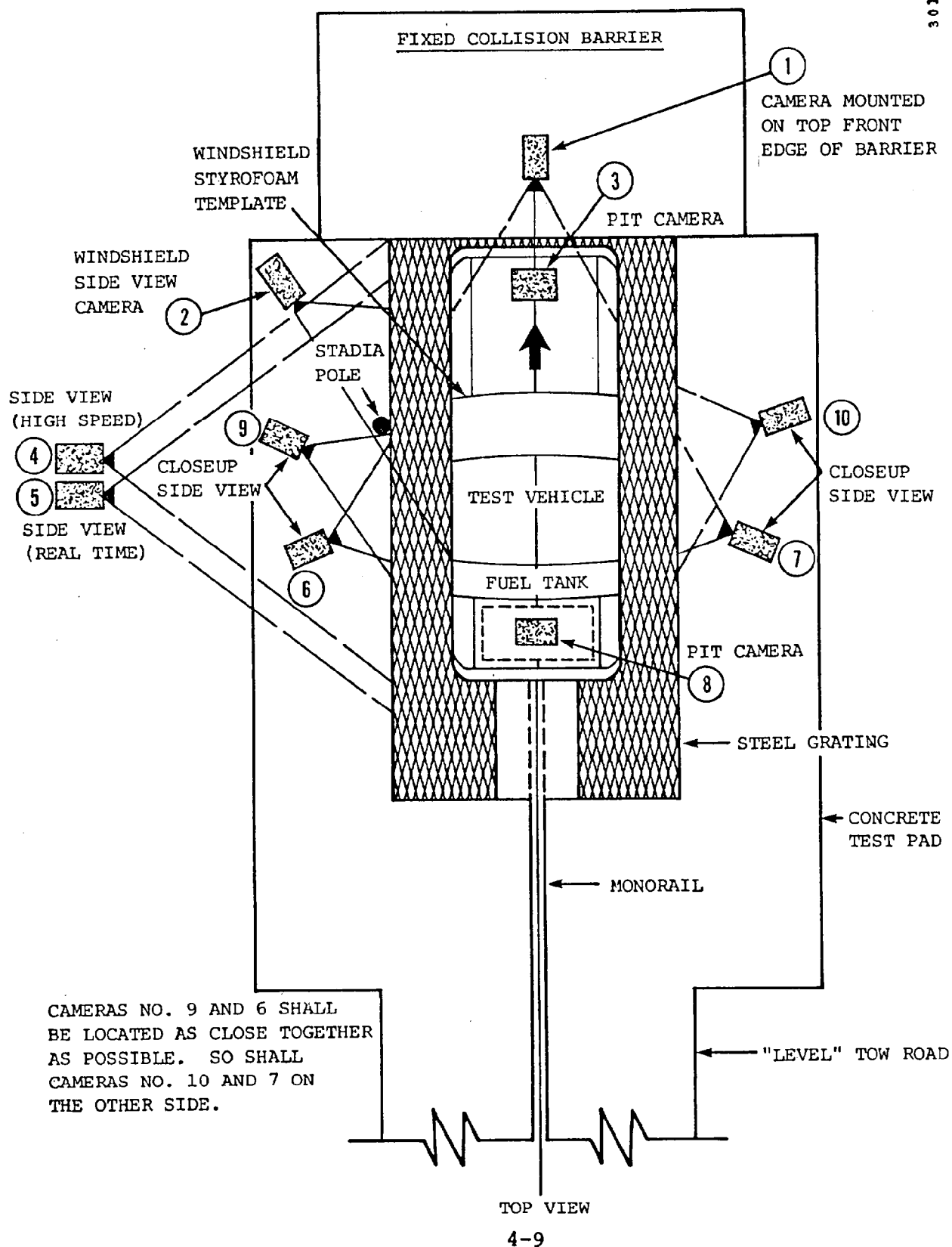
VEHICLE ACCELEROMETER LOCATIONS AND SUMMARY



LINEAR ACCELEROMETERS

 LONGITUDINAL

Vehicle Accelerometer Locations and Coordinates					Maximum Readings			
No.	Description of Location	X	Y	Z	+G's MS	-G's	MS	
1	Top of Engine	145.3	+3.1	32.8	15.0	50	82.8	44
2	Bottom of Engine	140.5	+3.5	9.0	38.7	47	141.5	33
3	Differential Housing	Front Wheel Drive Vehicle						
4	Right Front Floorpan $\Delta V = 38.3$ mph	98.3	+14.0	11.8	11.9	139	48.1	68
5	Left Rear Floorpan $\Delta V = 36.4$ mph	64.1	-12.8	13.2	5.6	188	32.2	63
6	Right Front Brake Caliper	141.5	+28.3	11.0	23.3	74	86.5	56
7	Left Front Brake Caliper	141.5	-28.3	11.0	51.5	65	109.7	45
8	Vehicle C.G. $\Delta V = 39.8$ mph	105.5	0.0	12.0	9.4	29	40.0	62

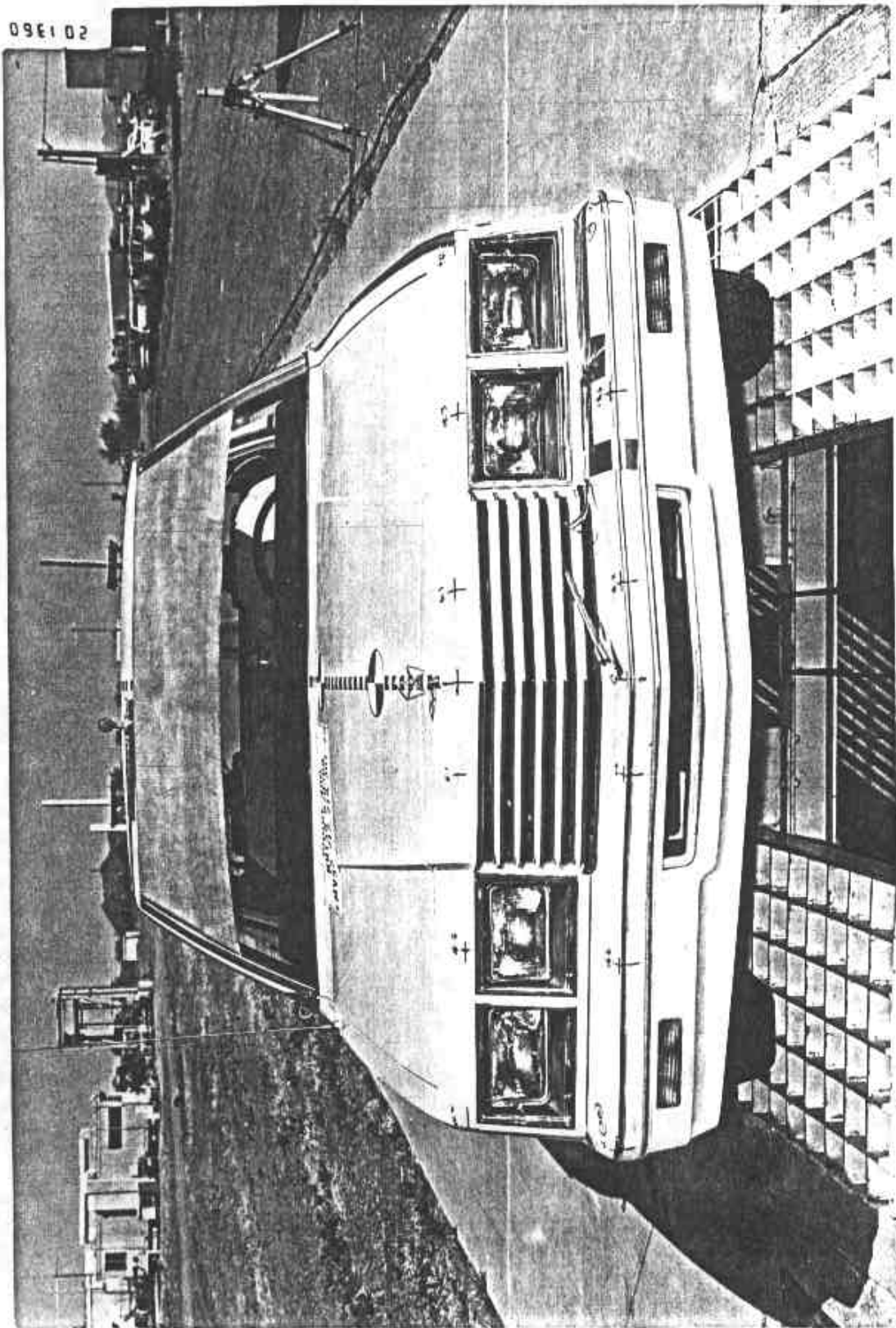


SUMMARY OF CAMERA LOCATIONS AND DESCRIPTIONS

Loc. No.	Location	Field of View	Lens Size	Frame Rate	Timing Speed	Serial Number	Impact Dist-X	Center-line Dist-Y	Camera Height
1	Overhead (Barrier)	Windshield styrofoam up to barrier-vehicle contact if possible	10 mm	410 fps	101 Hz	M3	-1'	0	9'
2	Ground Based (Right)	Windshield	13 mm	384 fps	101 Hz	M7	-1'	11'	66"
3	Pit	Engine underside and fuel pump	13 mm	656 fps	101 Hz	6	4'	0	-8'
4	Ground Based (left)	Views entire left of vehicle	16 mm	407 fps	101 Hz	M9	8'	34'	52"
5	Ground Based (Real Time)	Documentary	Zoom	24 fps	-	Scoopic	-	-	-
6	Ground Based	Driver dummy closeup	16 mm	597 fps	101 Hz	LC 326	9'	16'	52"
7	Ground Based (Right)	Passenger dummy closeup	16 mm	611 fps	101 Hz	LC 327	9'	-12'	52"
8	Pit	Fuel tank	13 mm	543 fps	101 Hz	7	9'	0	-8'
9	Ground Based	Same view as Camera No. 6	15 mm	455 fps	100 Hz	8	8'	16'	52"
10	Ground Based (Right)	Same view as Camera No. 7	15 mm	458 fps	100 Hz	10	8'	12'	54"
11	On-board	Driver retractor	8 mm	375 fps	100 Hz	5	-	-	-
12	On-board	Passenger retractor	8 mm	341 fps	101 Hz	11	-	-	-

APPENDIX A

PHOTOGRAPHS



09E1 02

FIGURE A-1. PRE-TEST FRONT VIEW - 1982 DODGE 400, NHTSA 820308.

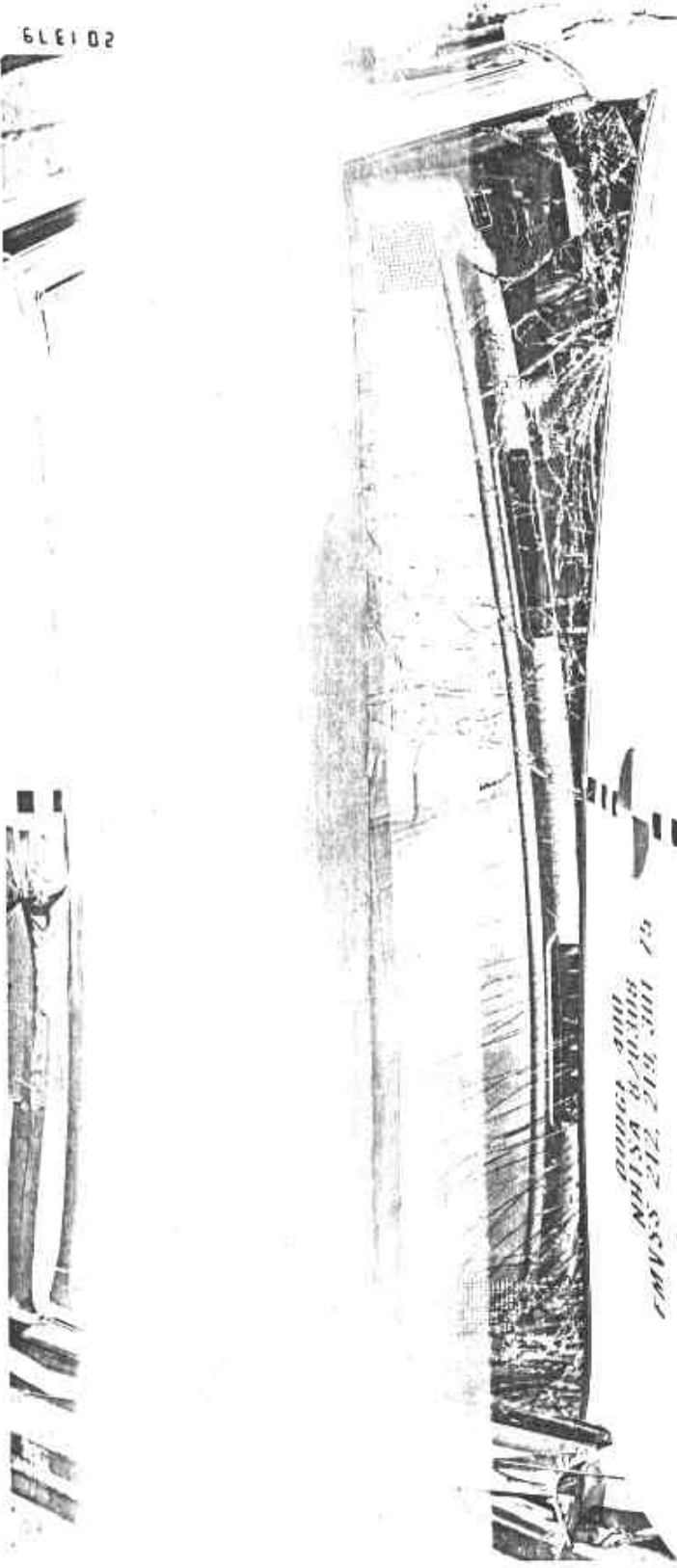
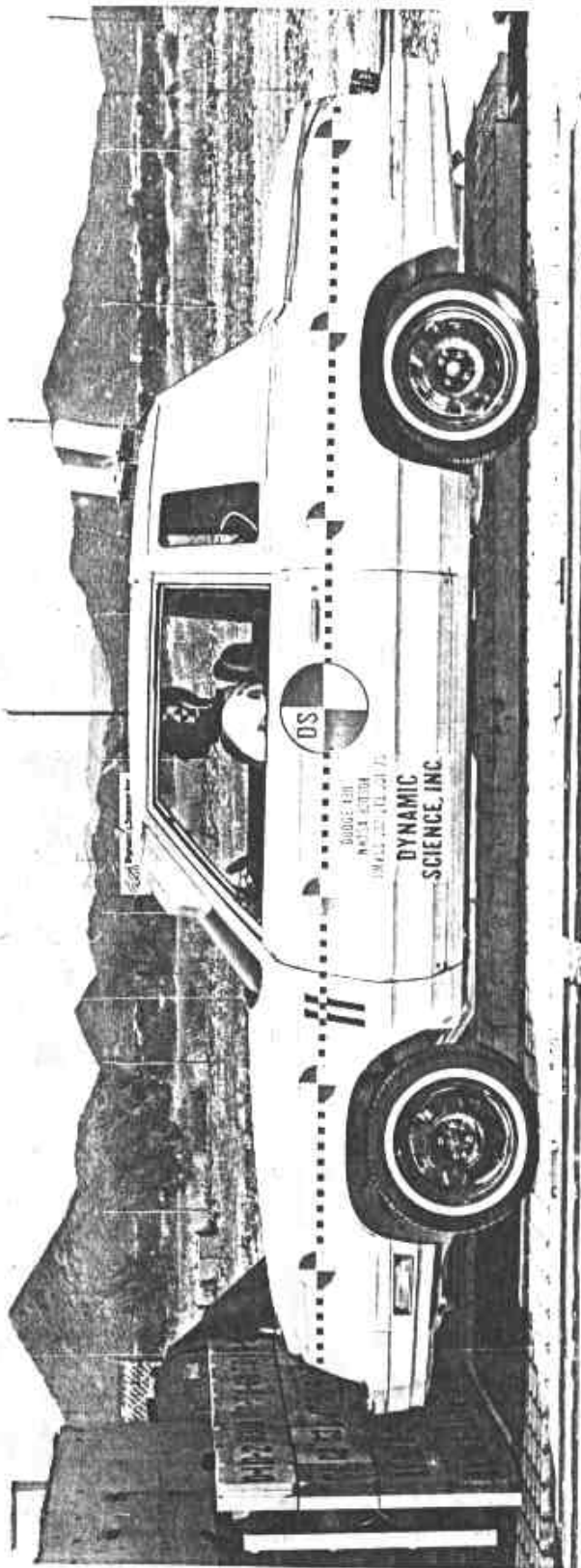


FIGURE A-2. POST-TEST FRONT VIEW - 1982 DODGE 400, NHTSA 820308.

A-3



A-4

FIGURE A-3. PRE-TEST SIDE VIEW - 1982 DODGE 400, NHTSA 820308.

8LE102

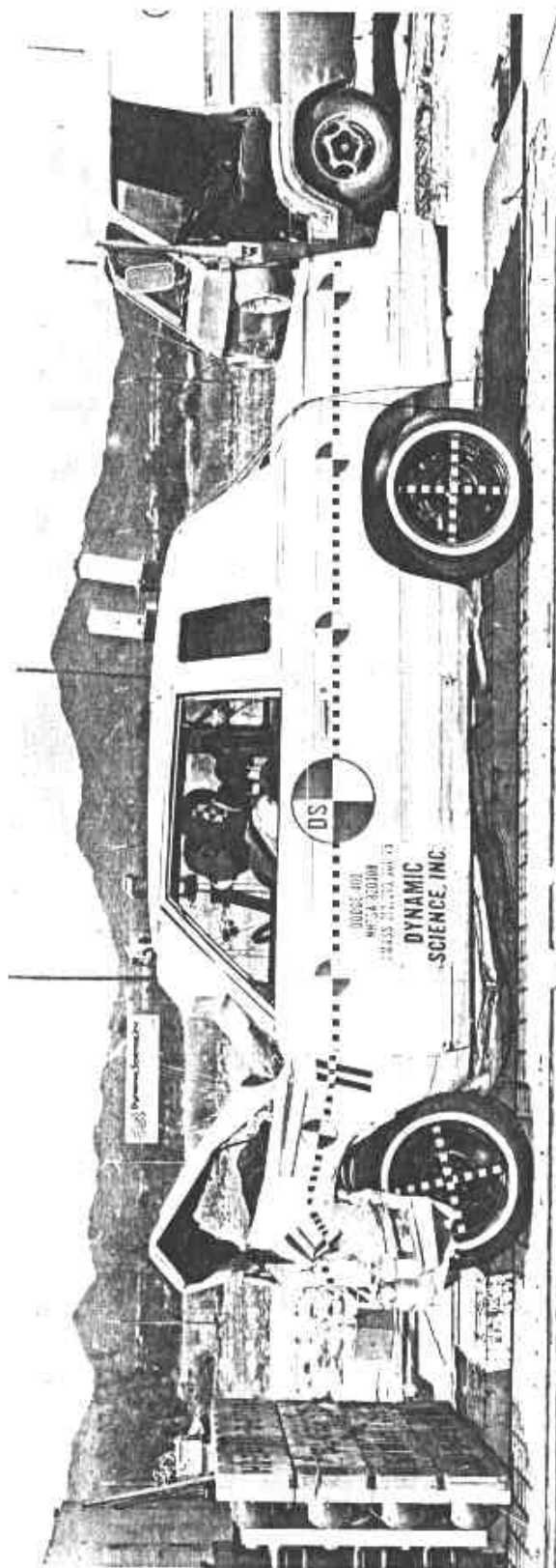


FIGURE A-4. POST-TEST SIDE VIEW - 1982 DODGE 400, NHTSA 820308.



FIGURE A-5. PRE-TEST VIEW OF DRIVER DUMMY - 1982 DODGE 400, NHTSA 820308.

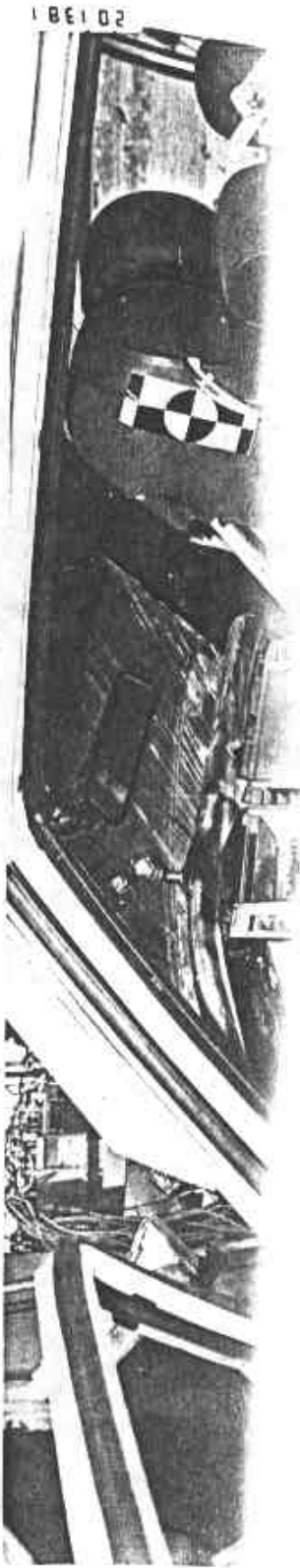


FIGURE A-6. POST-TEST VIEW OF DRIVER DUMMY - 1982 DODGE 400, NHTSA 820308.

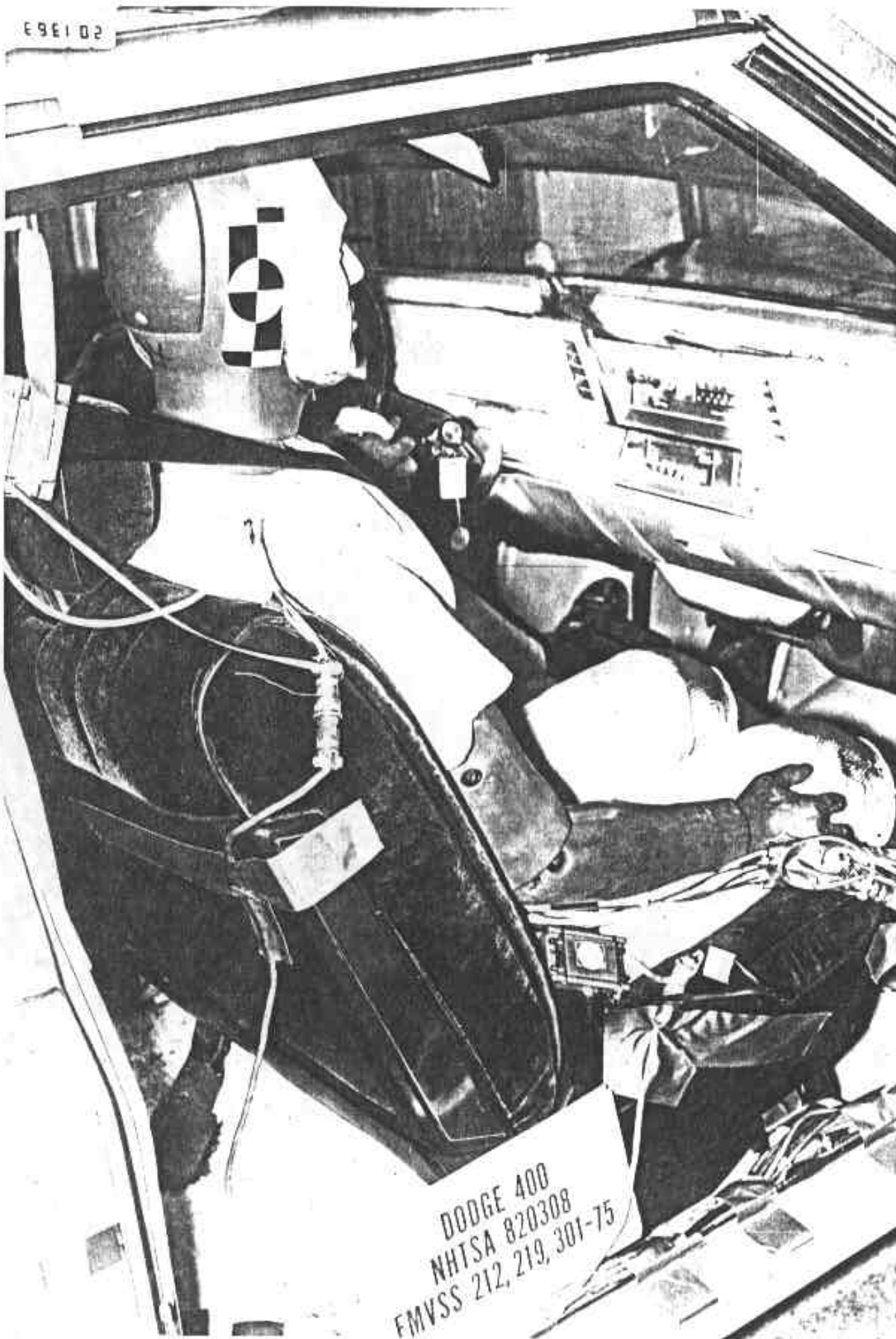


FIGURE A-7. PRE-TEST VIEW OF PASSENGER DUMMY - 1982 DODGE 400, NHTSA 820308.



FIGURE A-8. POST-TEST VIEW OF PASSENGER DUMMY - 1982 DODGE 400, NHTSA 820308.

865102

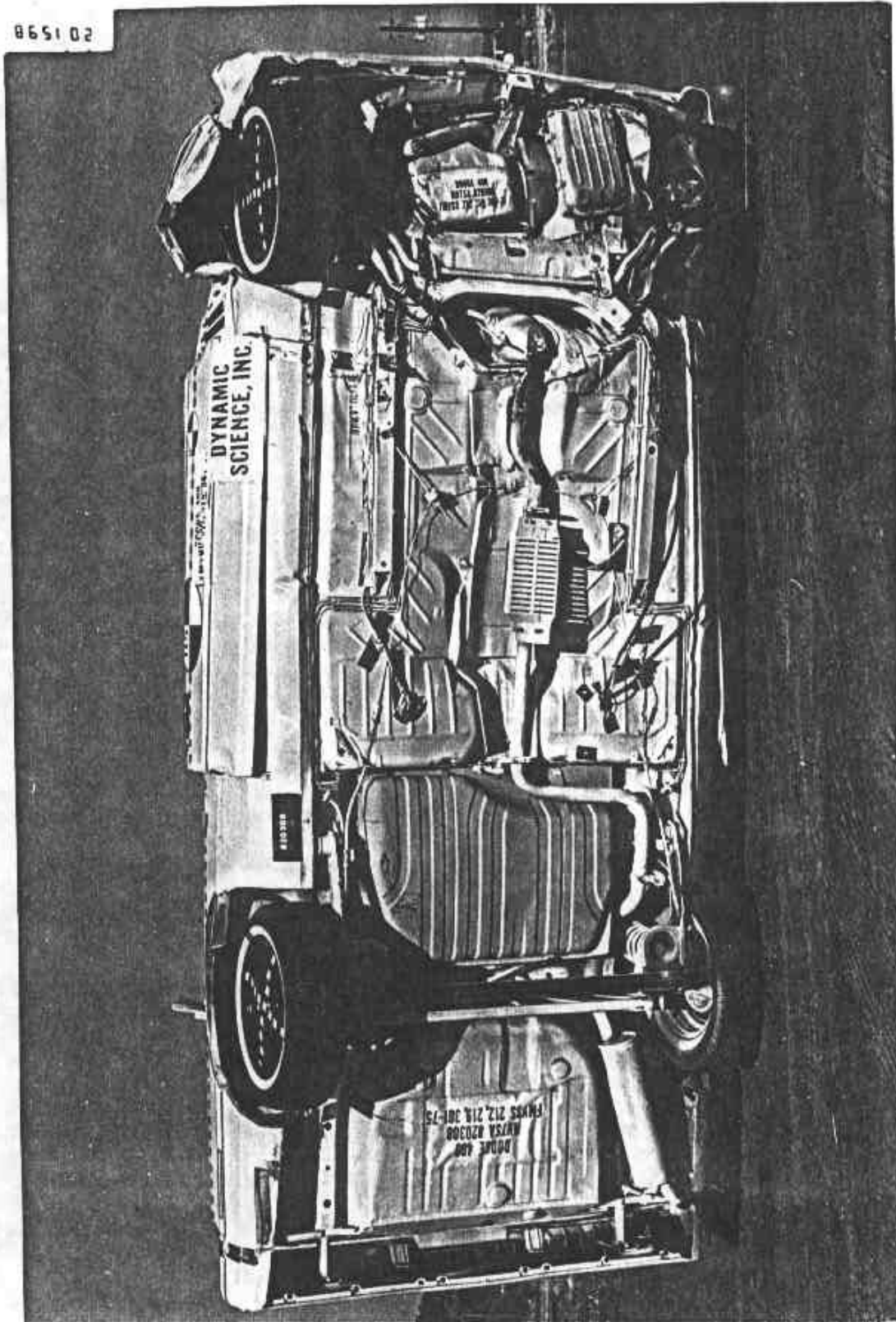


FIGURE A-9. POST-TEST VIEW OF VEHICLE UNDERSIDE - 1982 DODGE 400, NHTSA 820308.

APPENDIX B CALCOMP PLOT PRESENTATION

Calcomp plots generated from the crash test data are presented on the following pages. All data were recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data was filtered according to SAE J211. Plot legends and test anomalies are listed below:

PLOT LEGEND

Dummy Data*

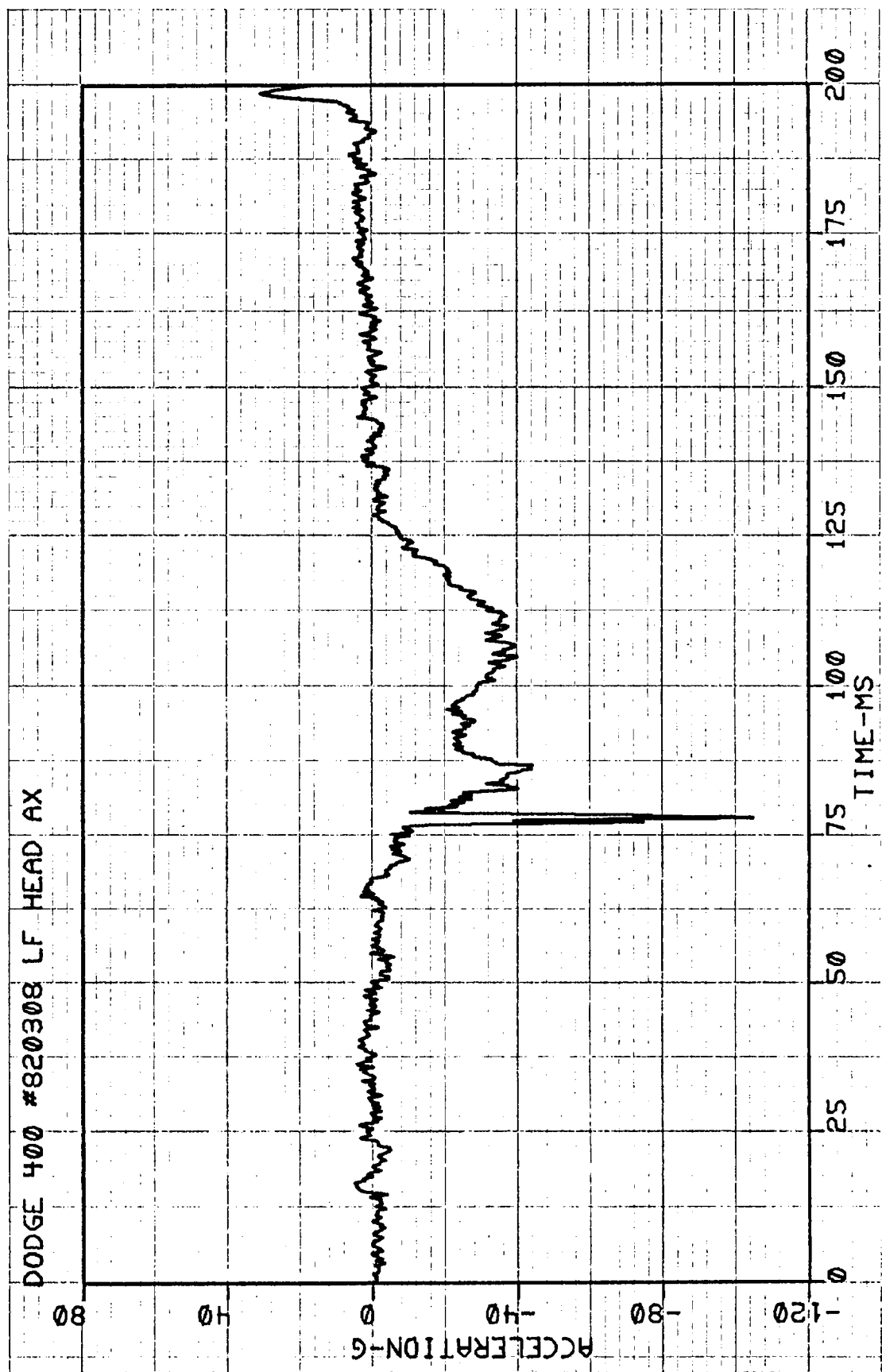
Driver	RF Outboard Passenger	Data Description
LF Head	RF Head	Head Acceleration (g)
LF Chest	RF Chest	Chest Acceleration (g)
LF Femurs	RF Femurs	Femur Loads (lb)
LF Belt Loads	RF Belt Loads	Lap and Torso Belt Loads (lb)
LF Belt Dis- placement	RF Belt Dis- placement	Belt Displacement (in.)
LF Extensio- meter	RF Extensio- meter	Belt Stretch

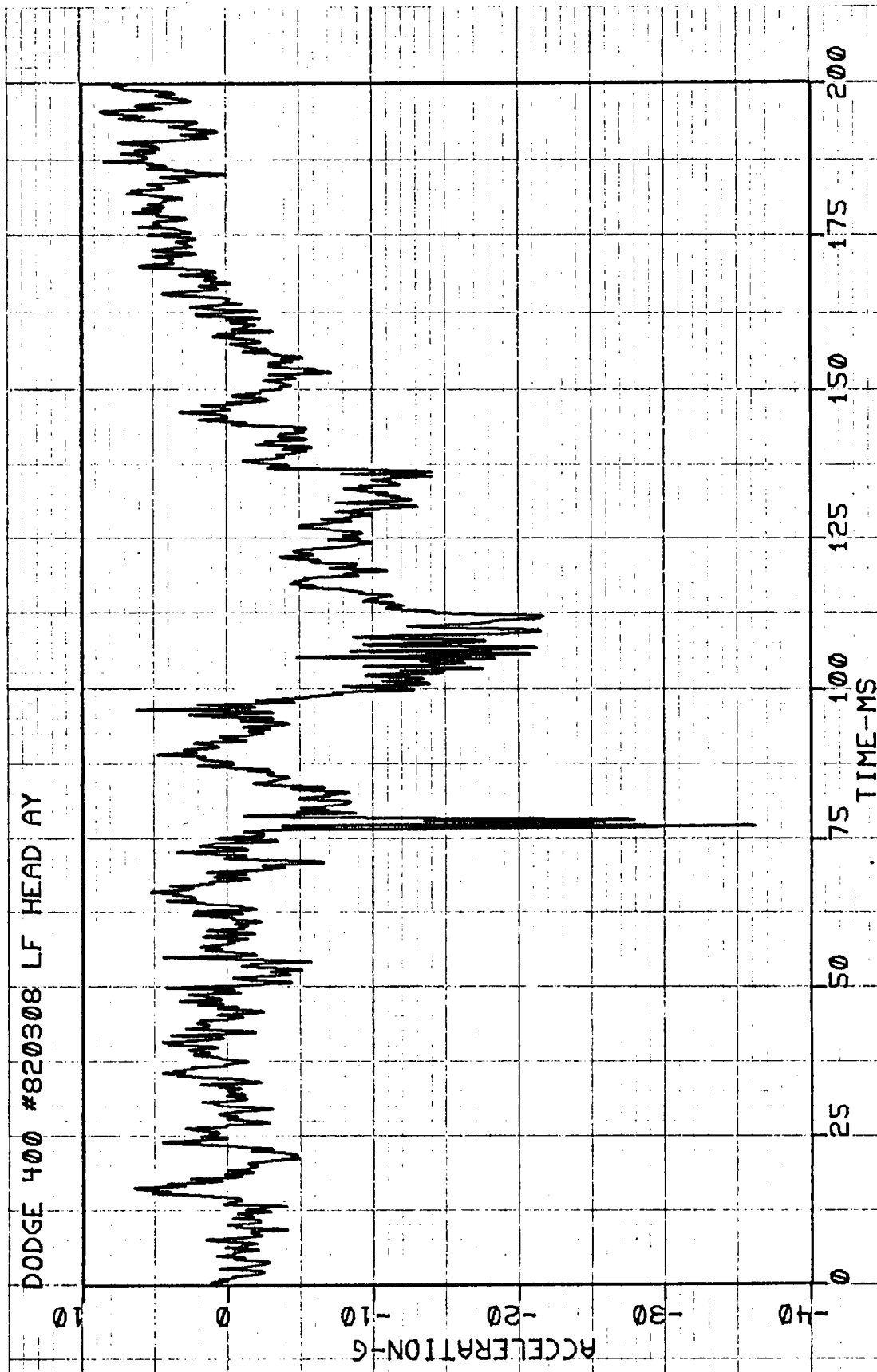
Vehicle Data**

Location	Acceleration (g)
Loc 1	Top of Engine
Loc 2	Bottom of Engine
Loc 3	Differential Housing
Loc 4	Front Seat Area
Loc 5	Rear Seat Area
Loc 6	Right Front Brake Caliper
Loc 7	Left Front Brake Caliper
Loc 8	Vehicle C.G.

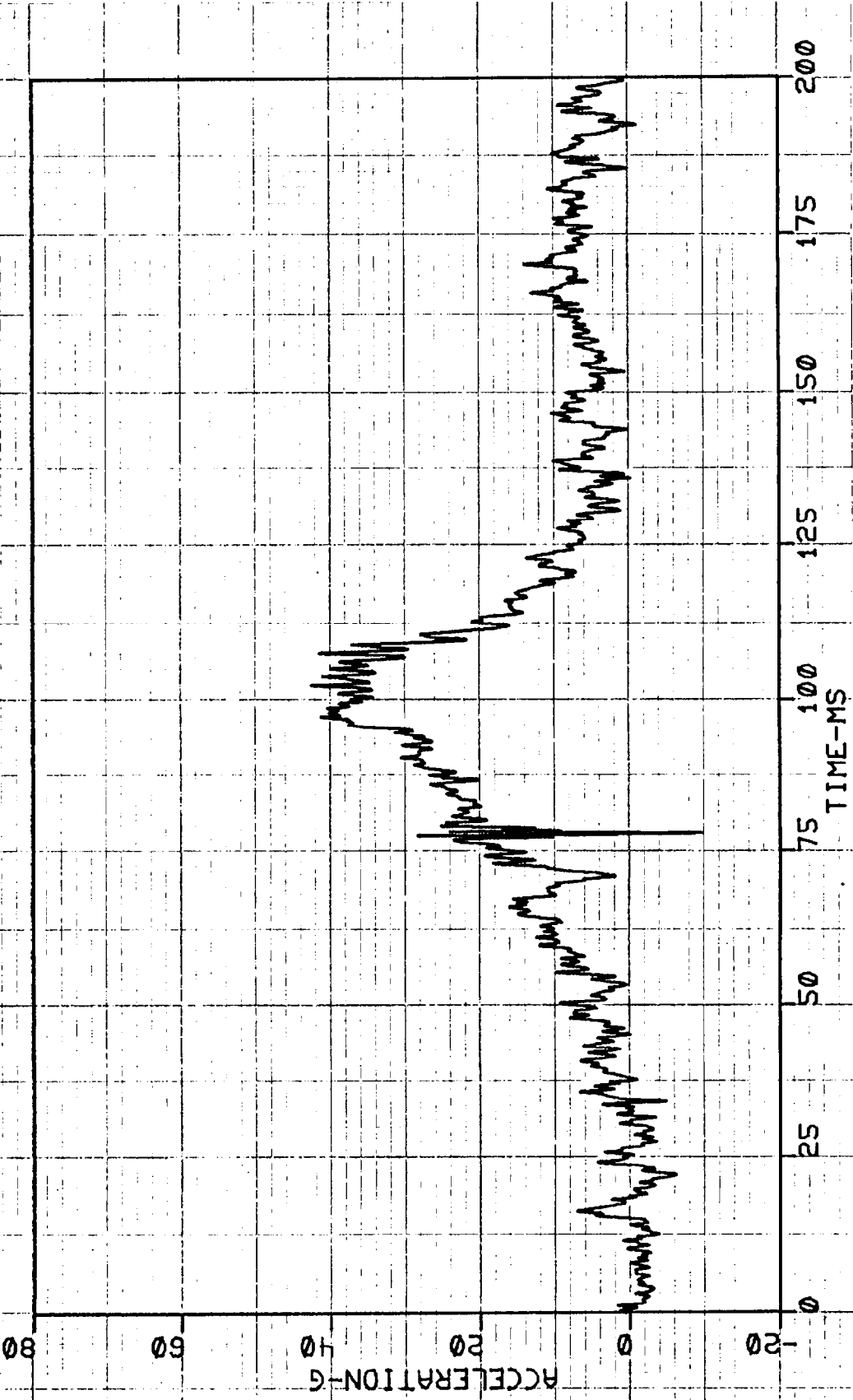
*Dummy Injury Summary presented on pages 4-4 and 4-5.

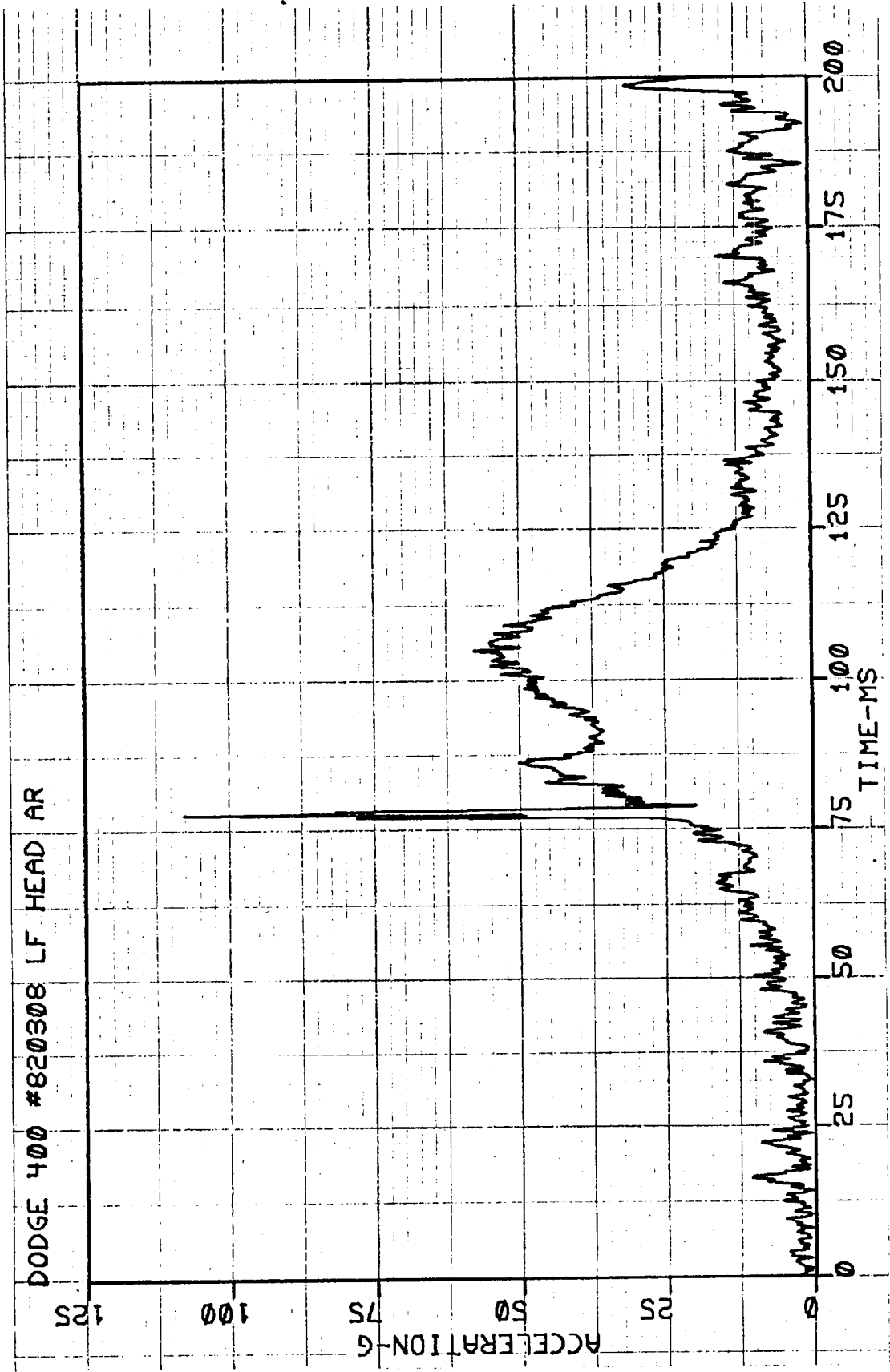
**Vehicle accelerometer locations and data summarized on page 4-8.





DODGE 400 #820308 LF HEAD AZ





DODGE 400 #820308 LF CHEST AX

75

50

25

B-6

ACCELERATION-G

-25

-50

0

25

50

75

100

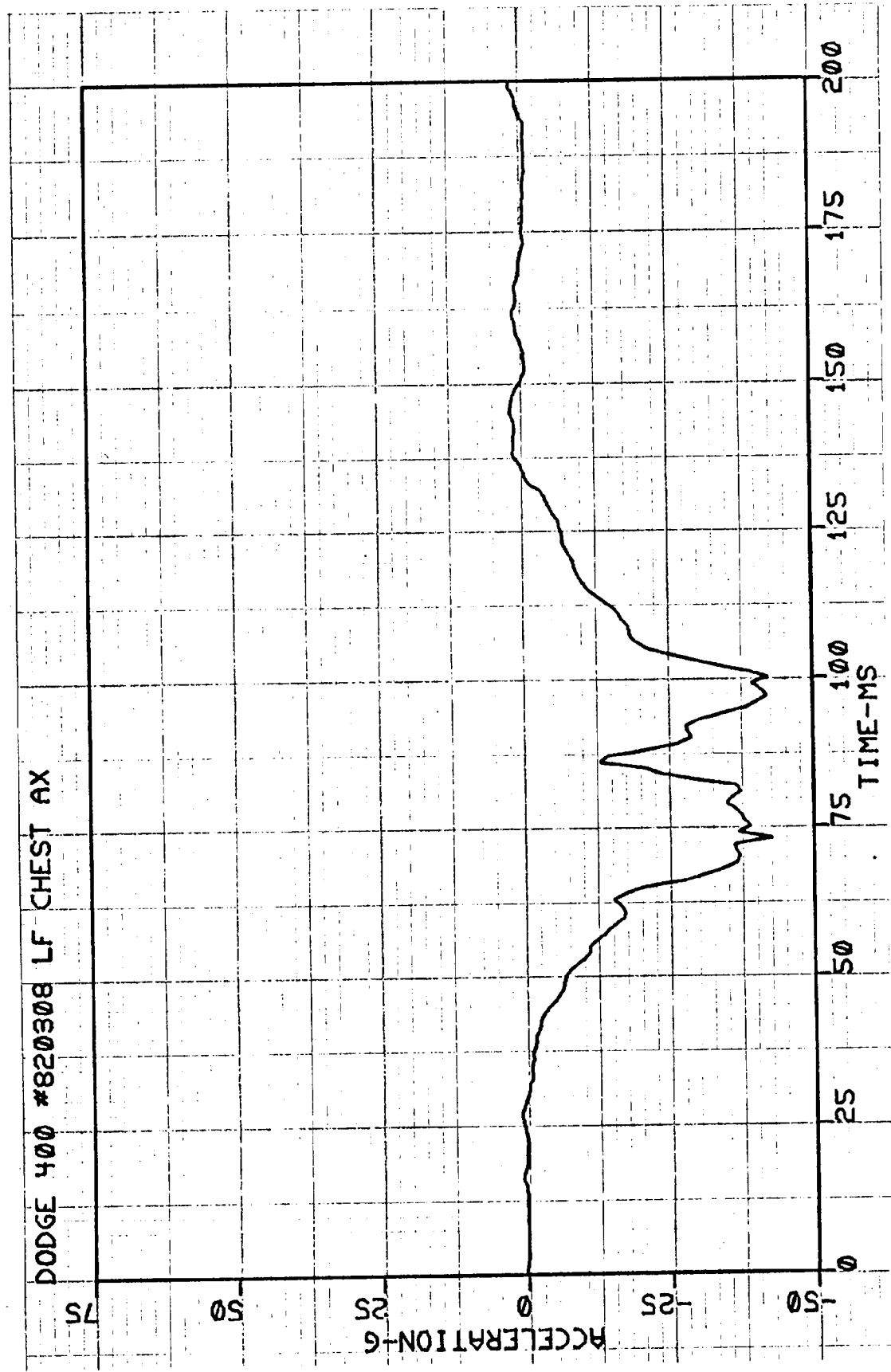
125

150

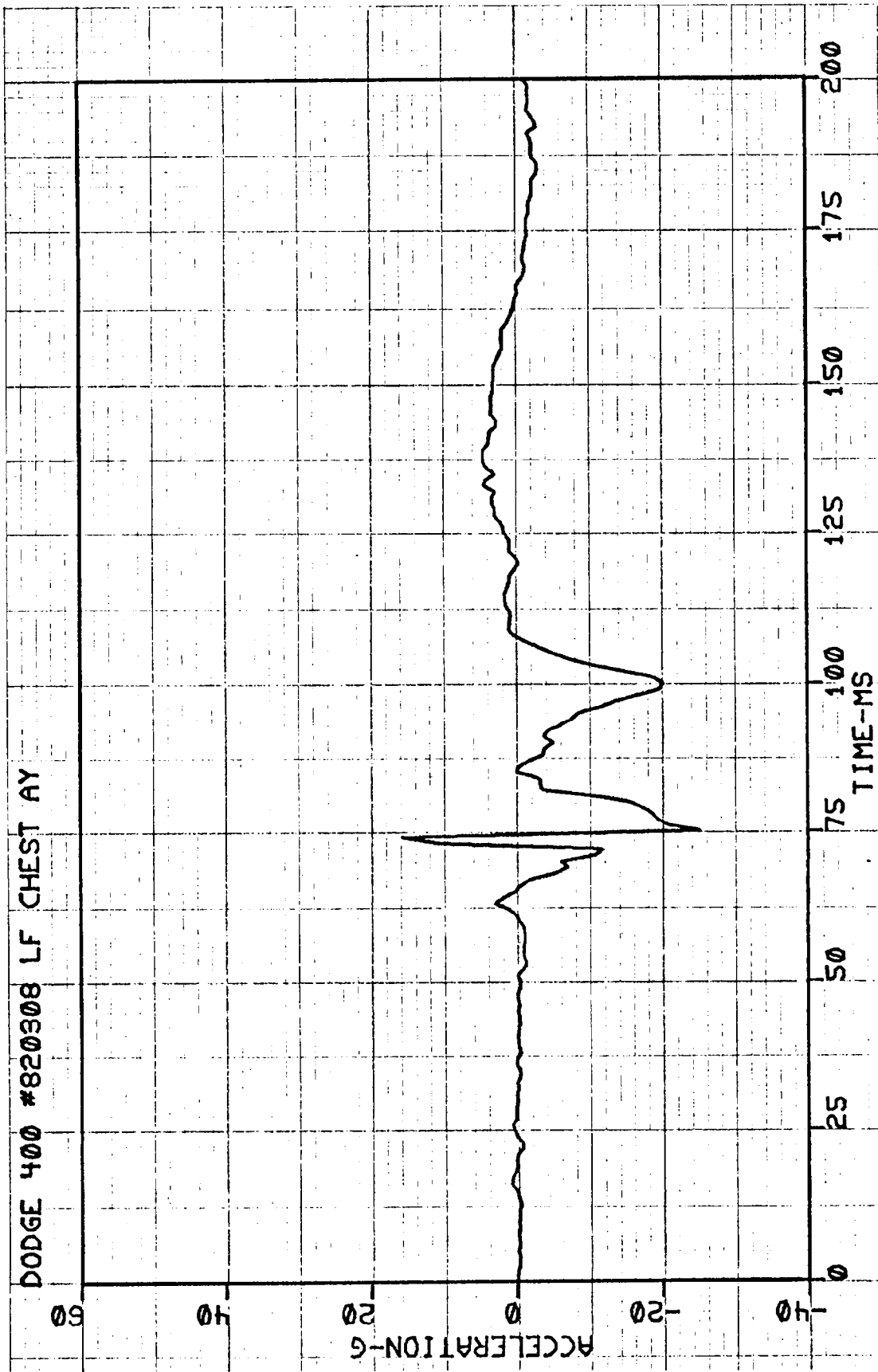
175

200

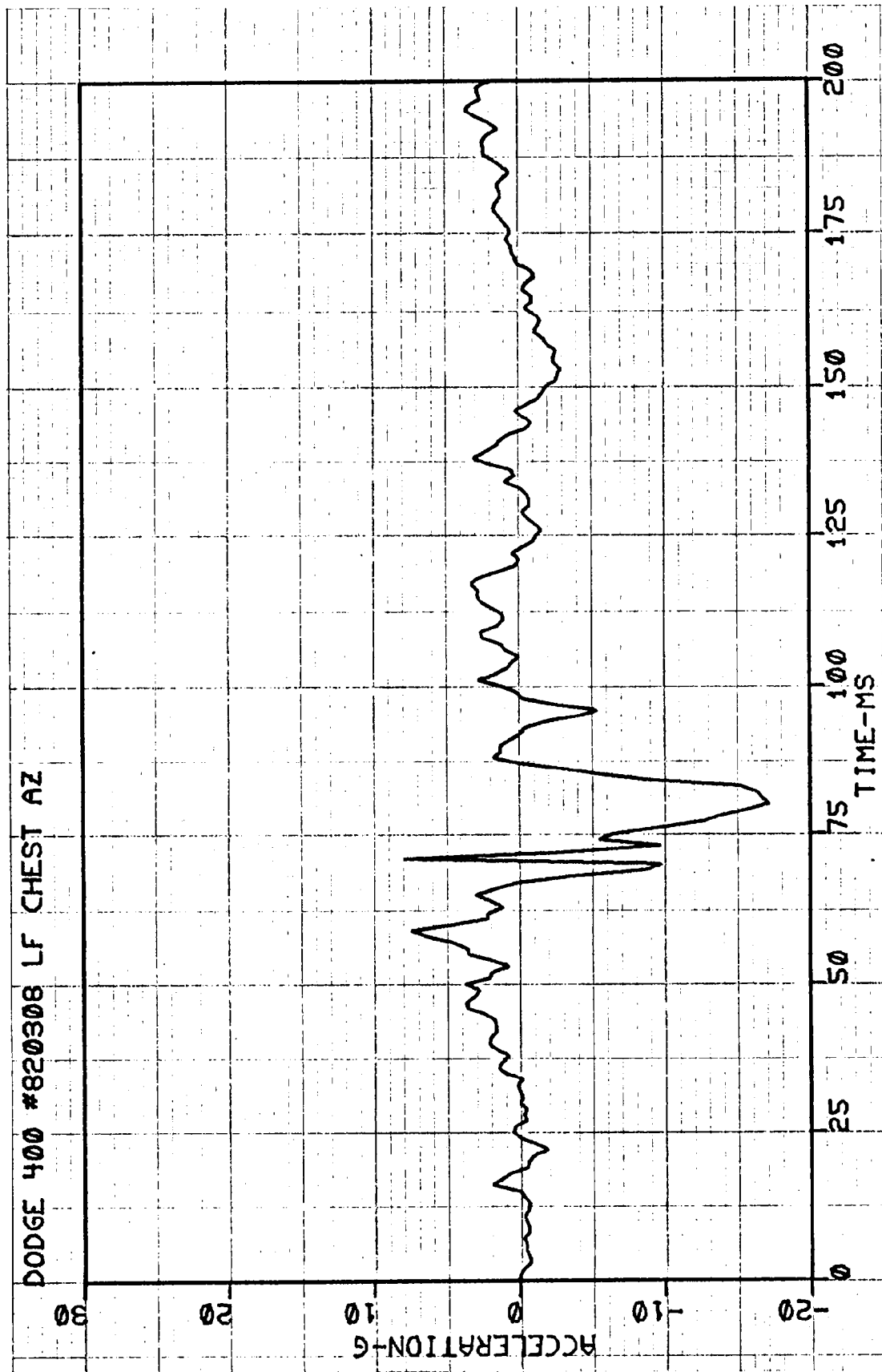
TIME-MS

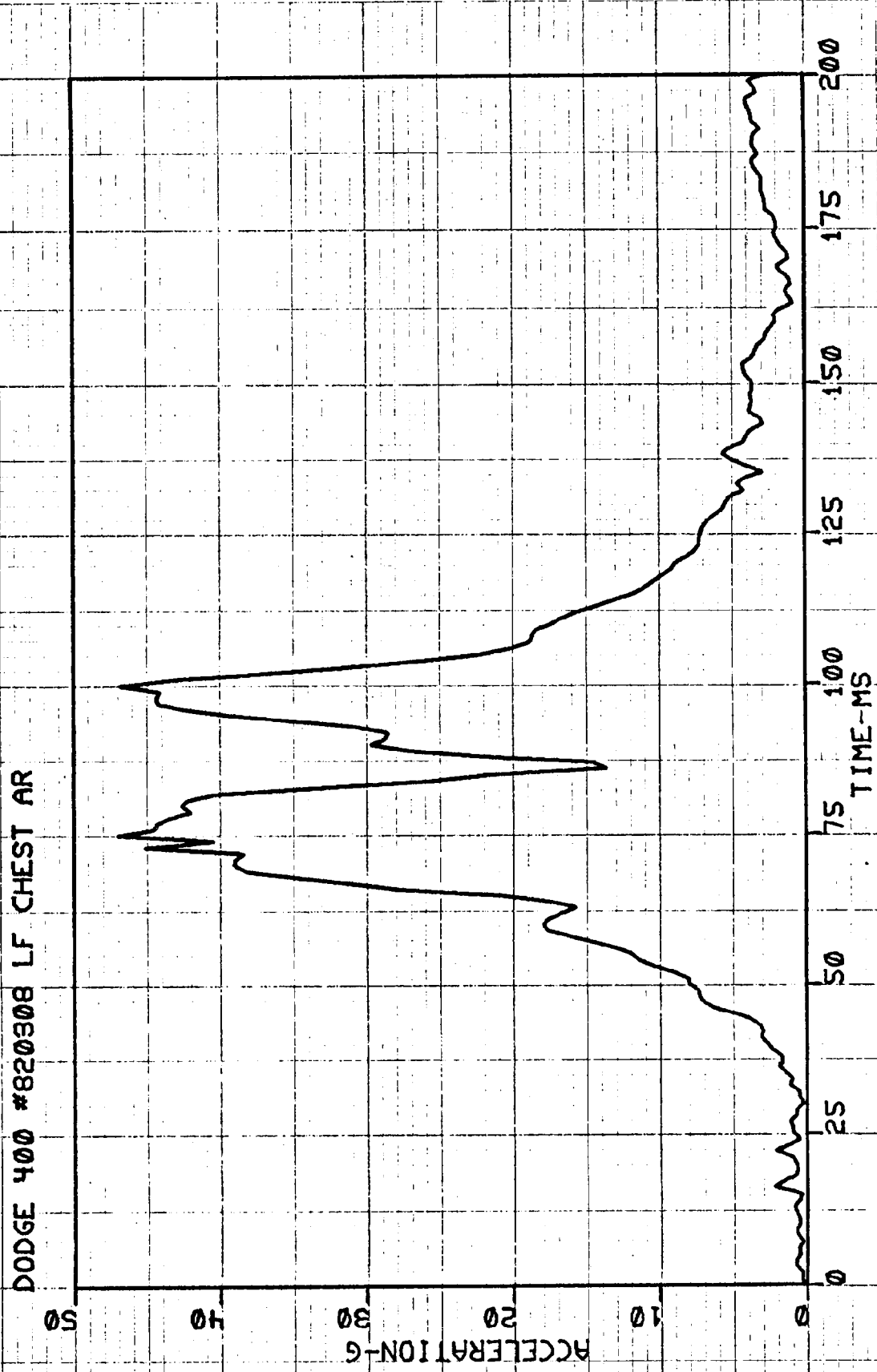


DODGE 400 #820308 LF CHEST AY



DODGE 400 #820308 LF CHEST AZ

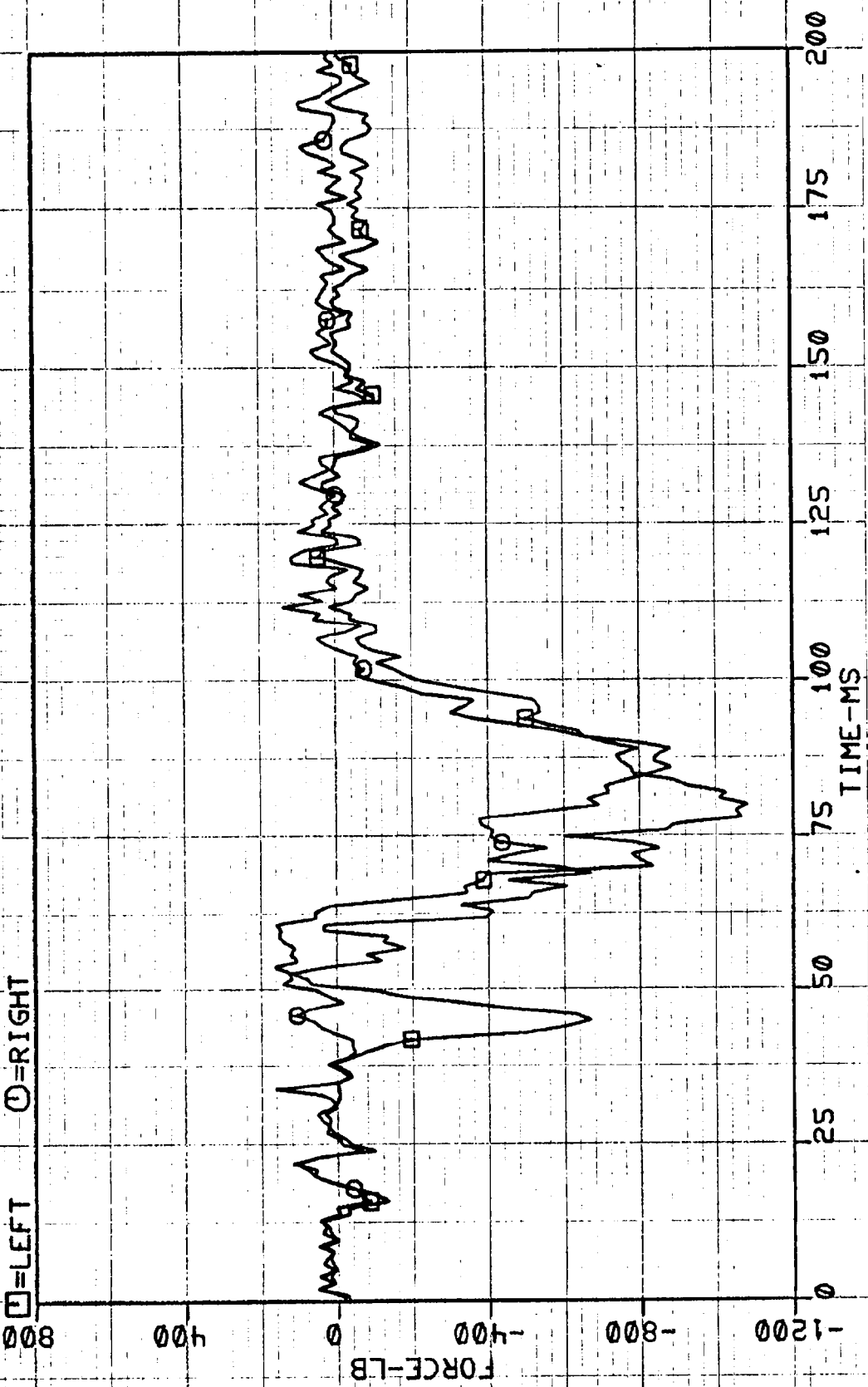


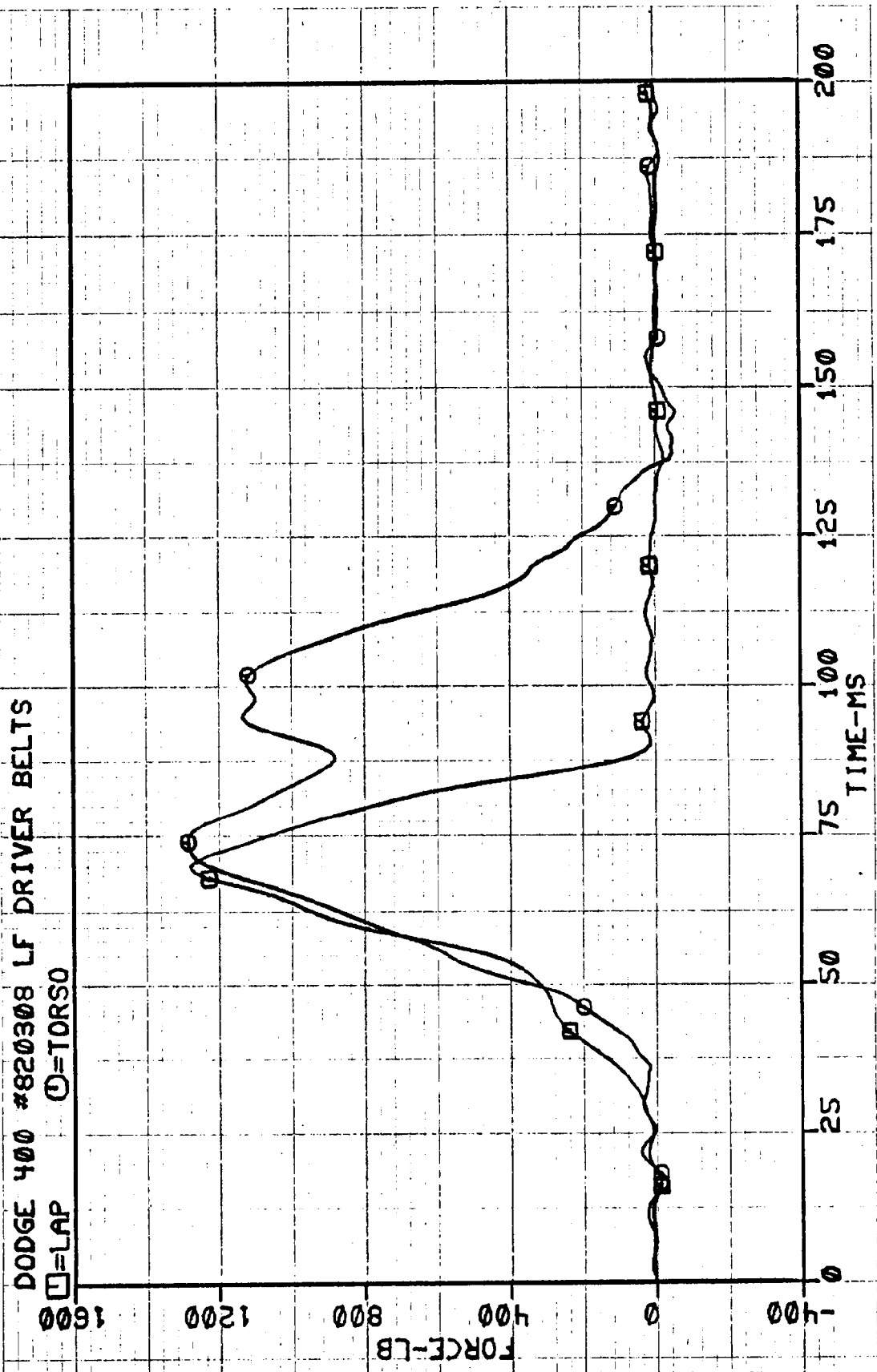


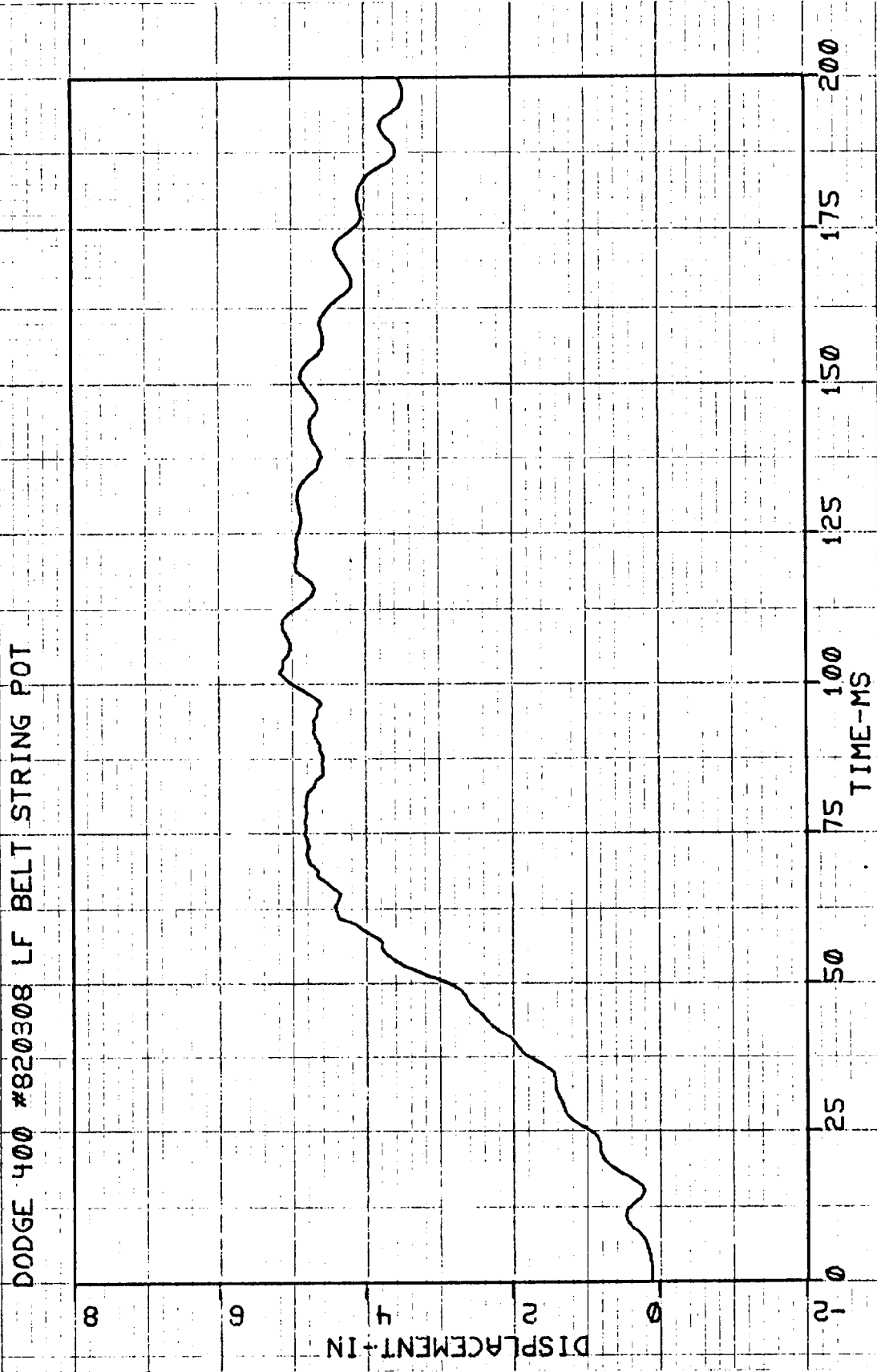
DODGE 400 #820308 LF FEMURS

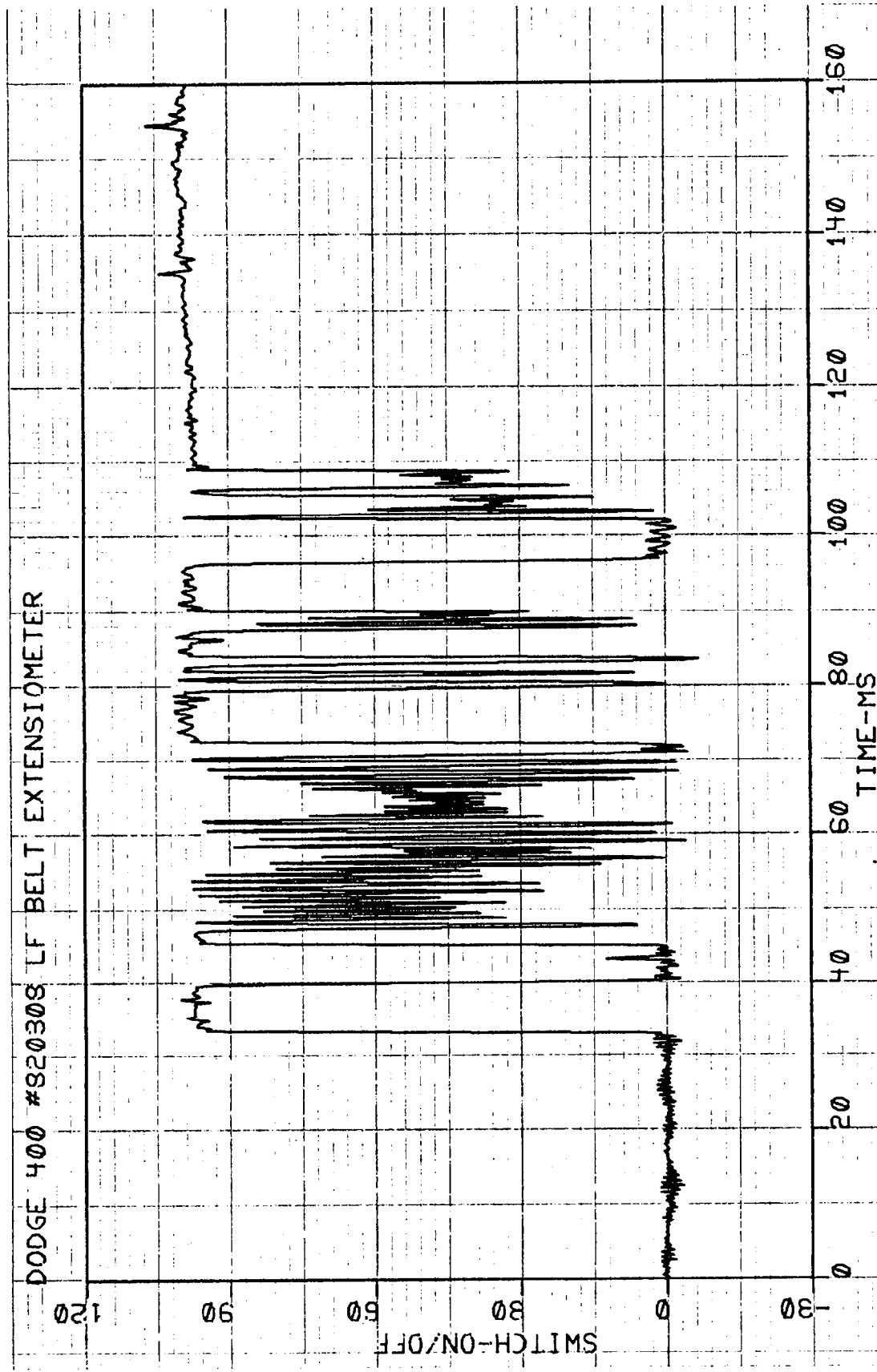
□=LEFT

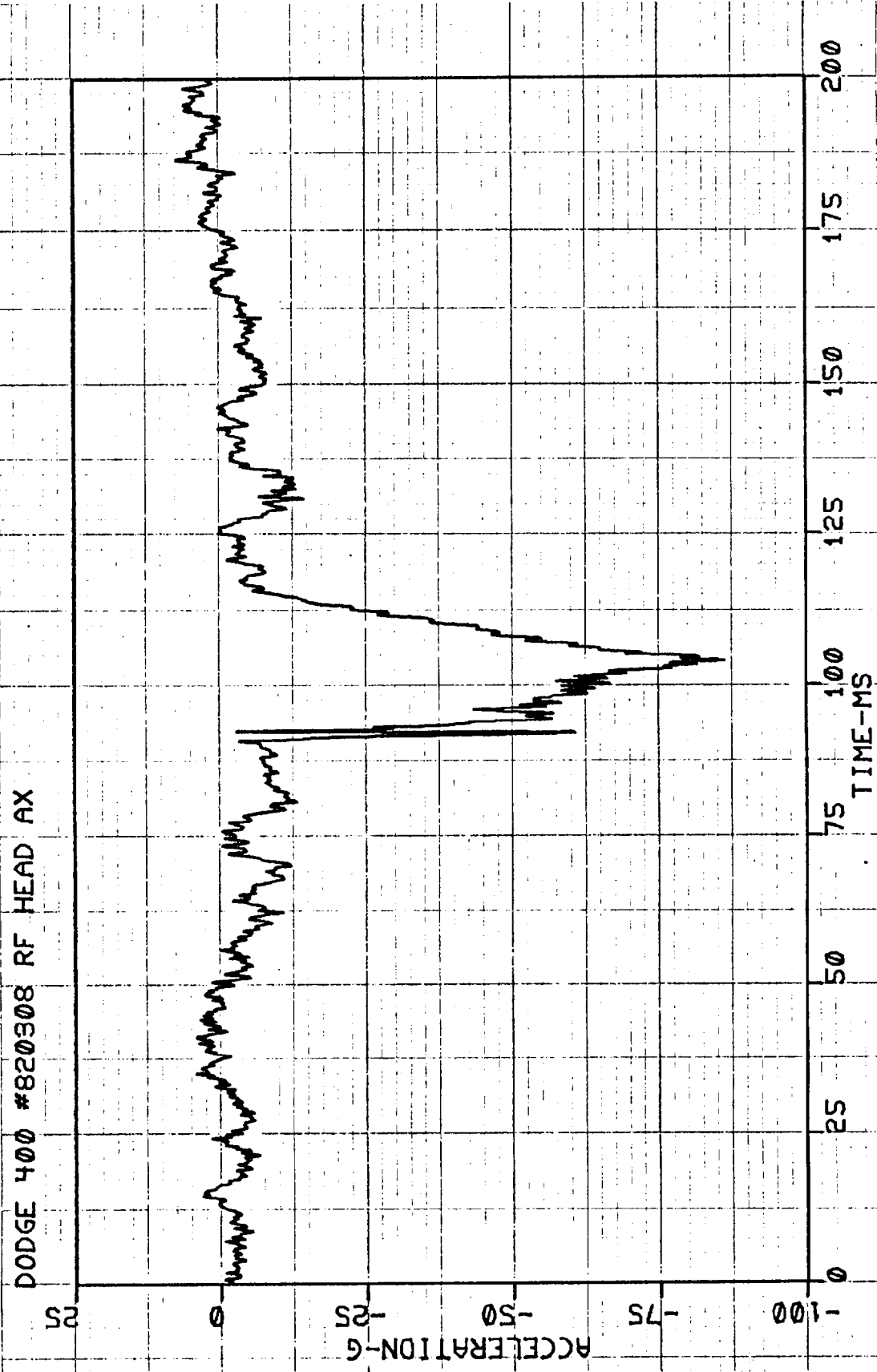
○=RIGHT

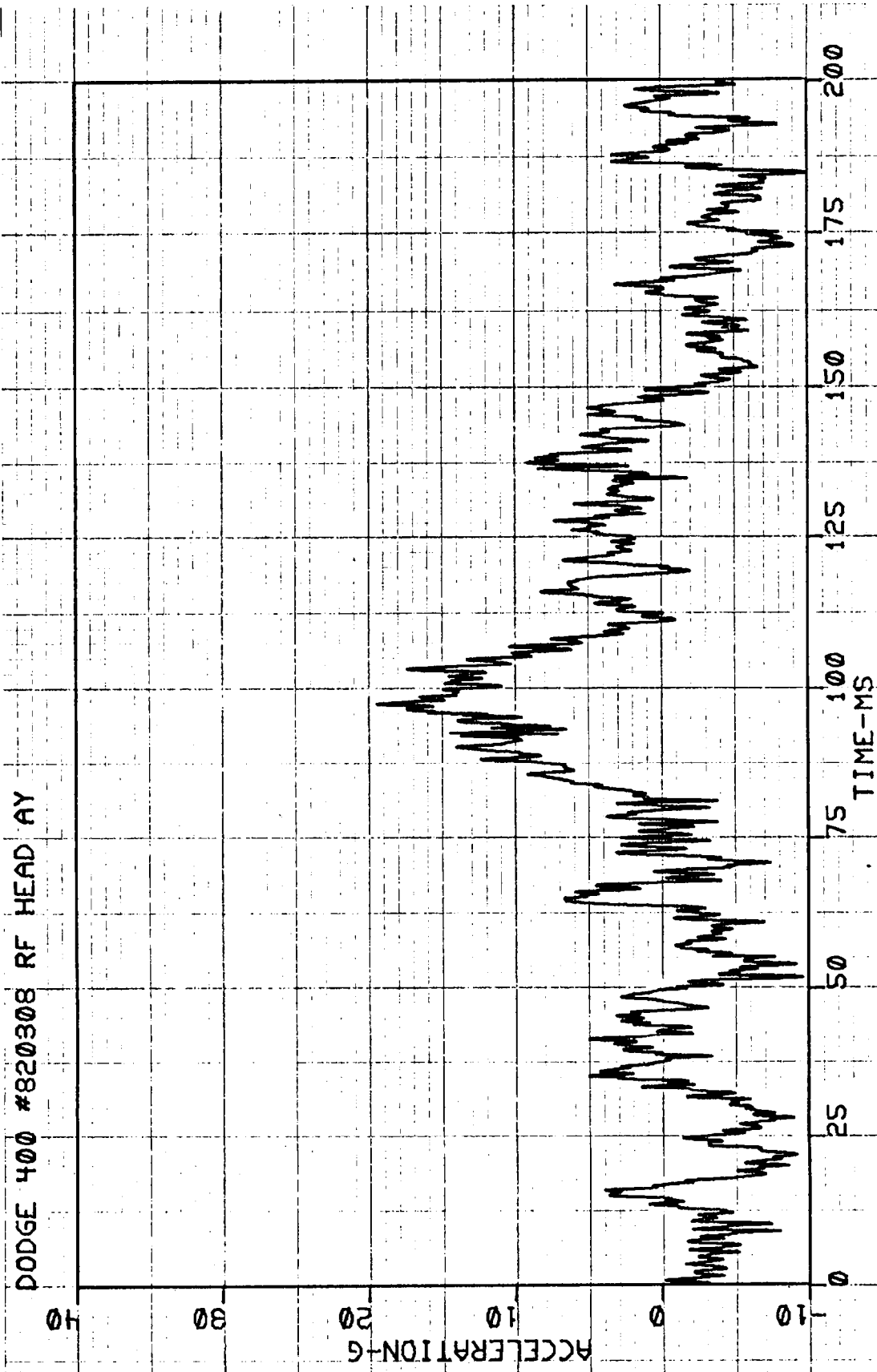


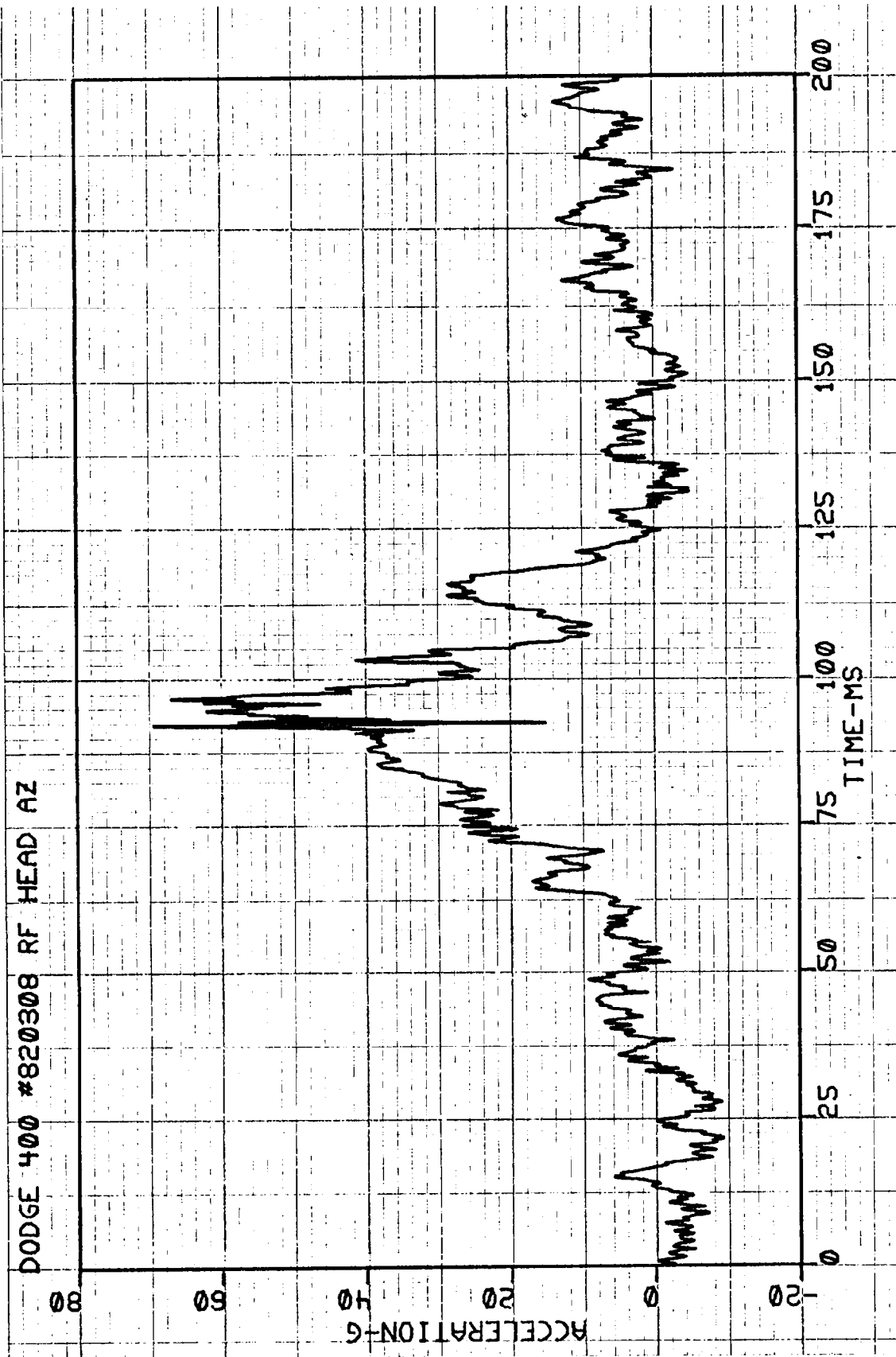




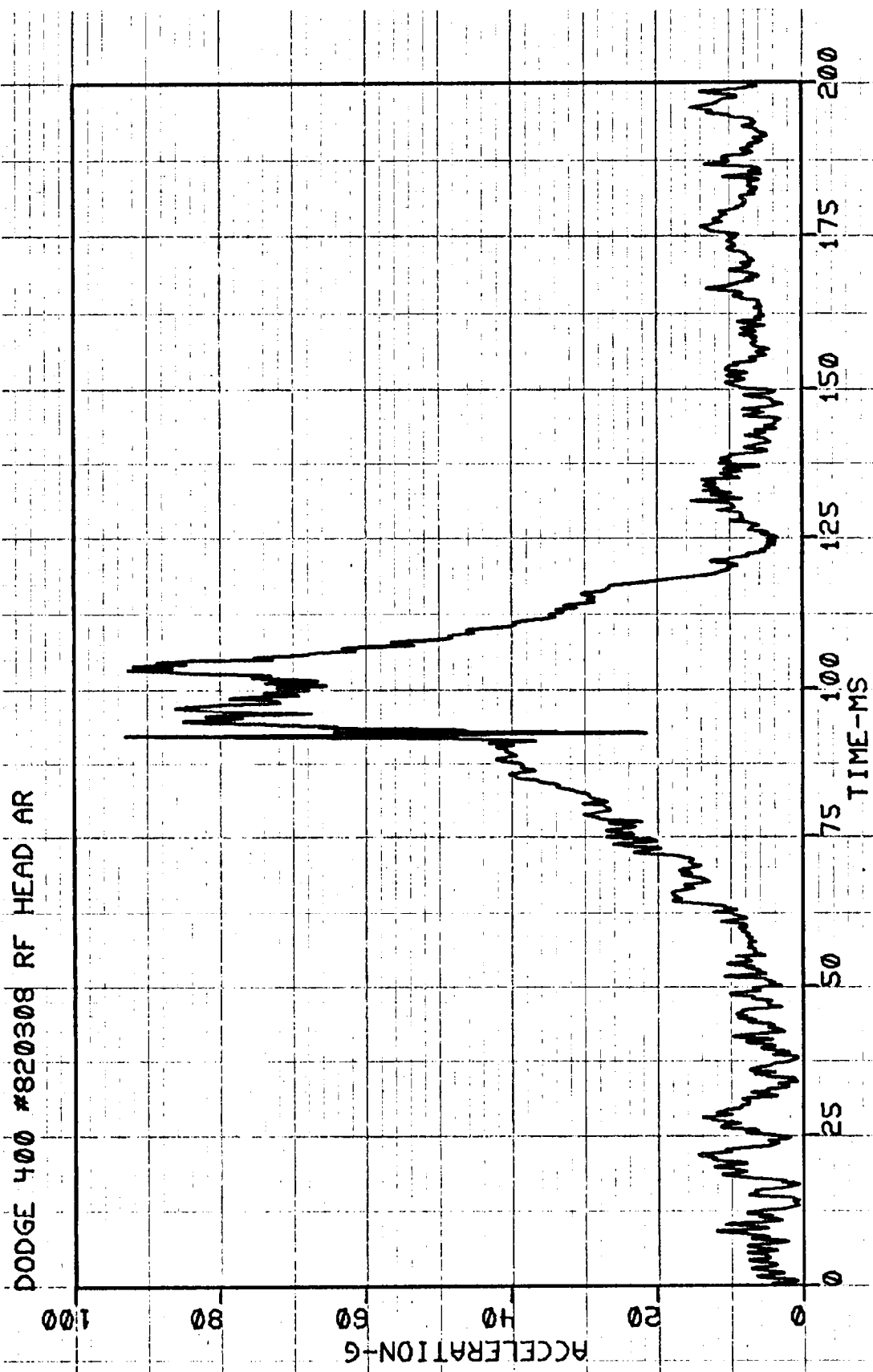




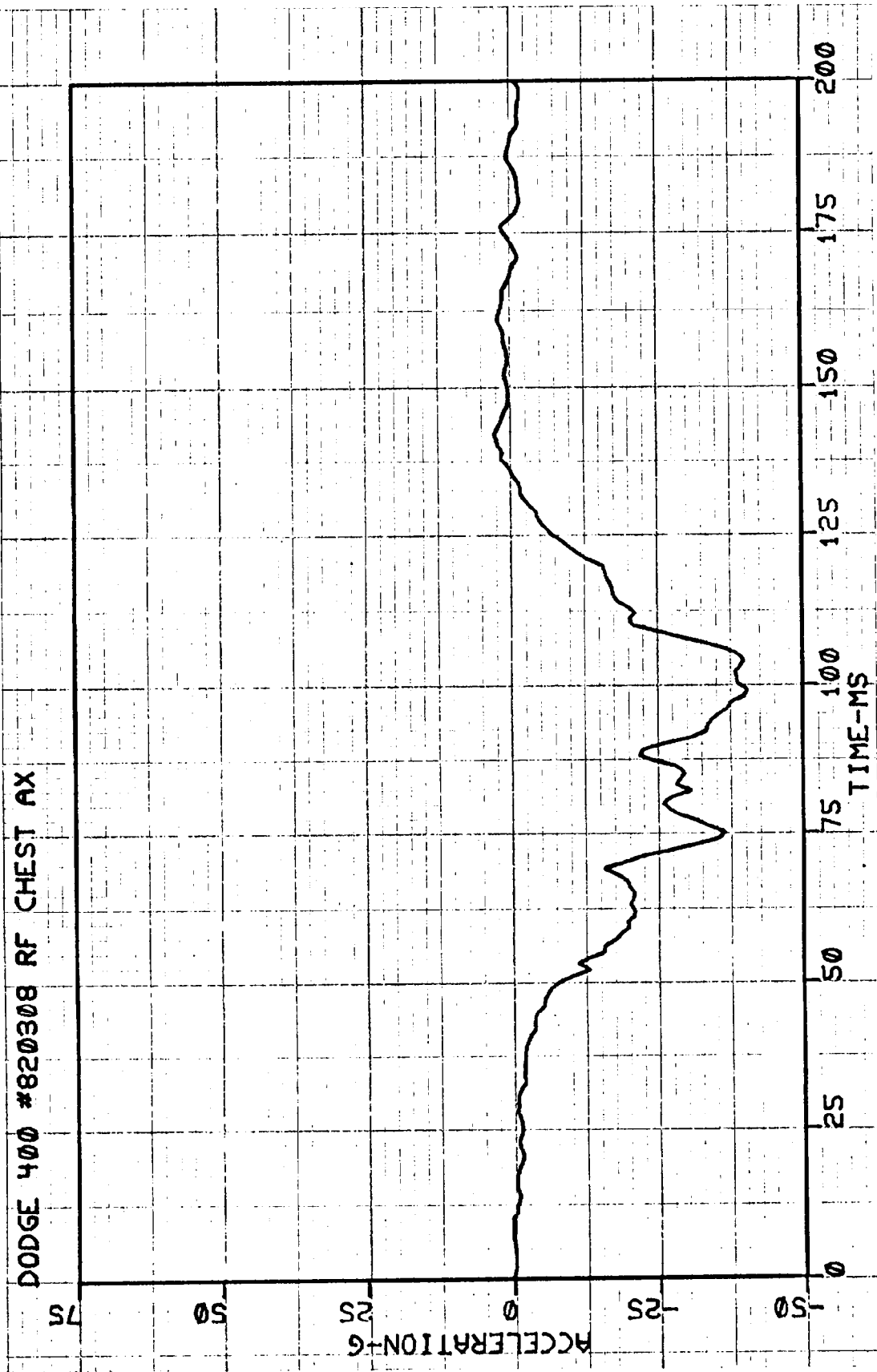


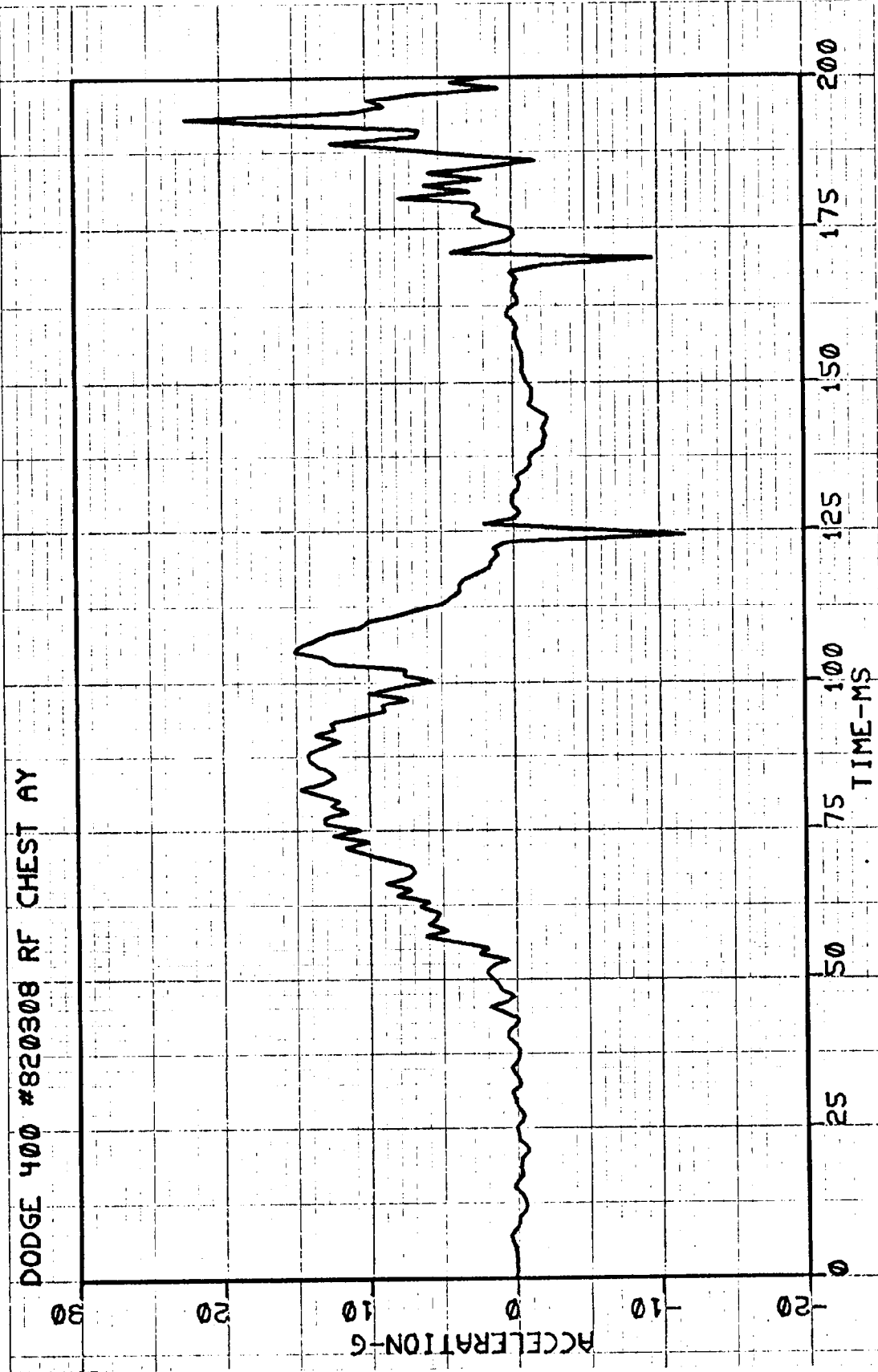


DODGE 400 #820308 RF HEAD AR



DODGE 400 #820308 RF CHEST AX

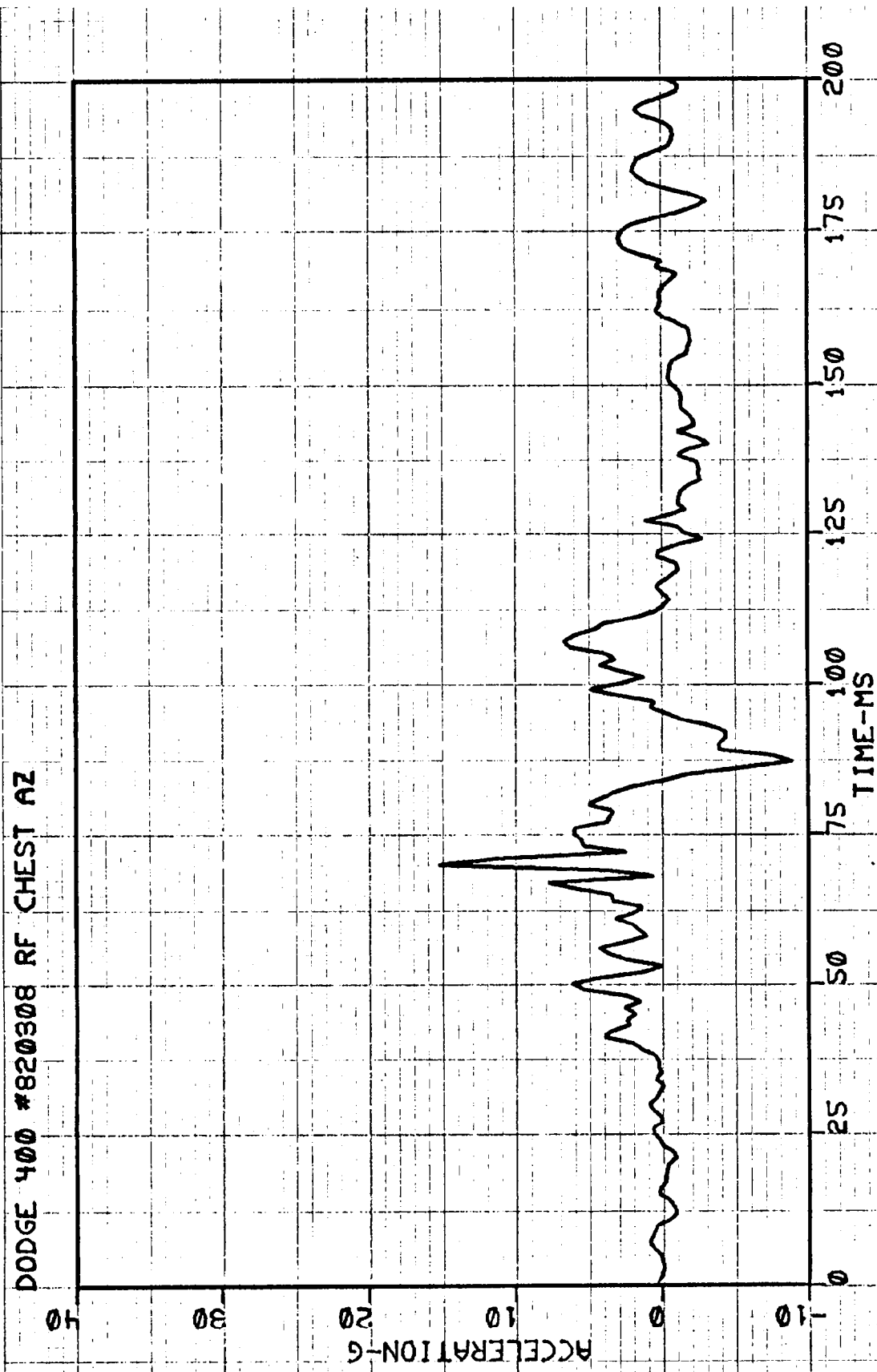




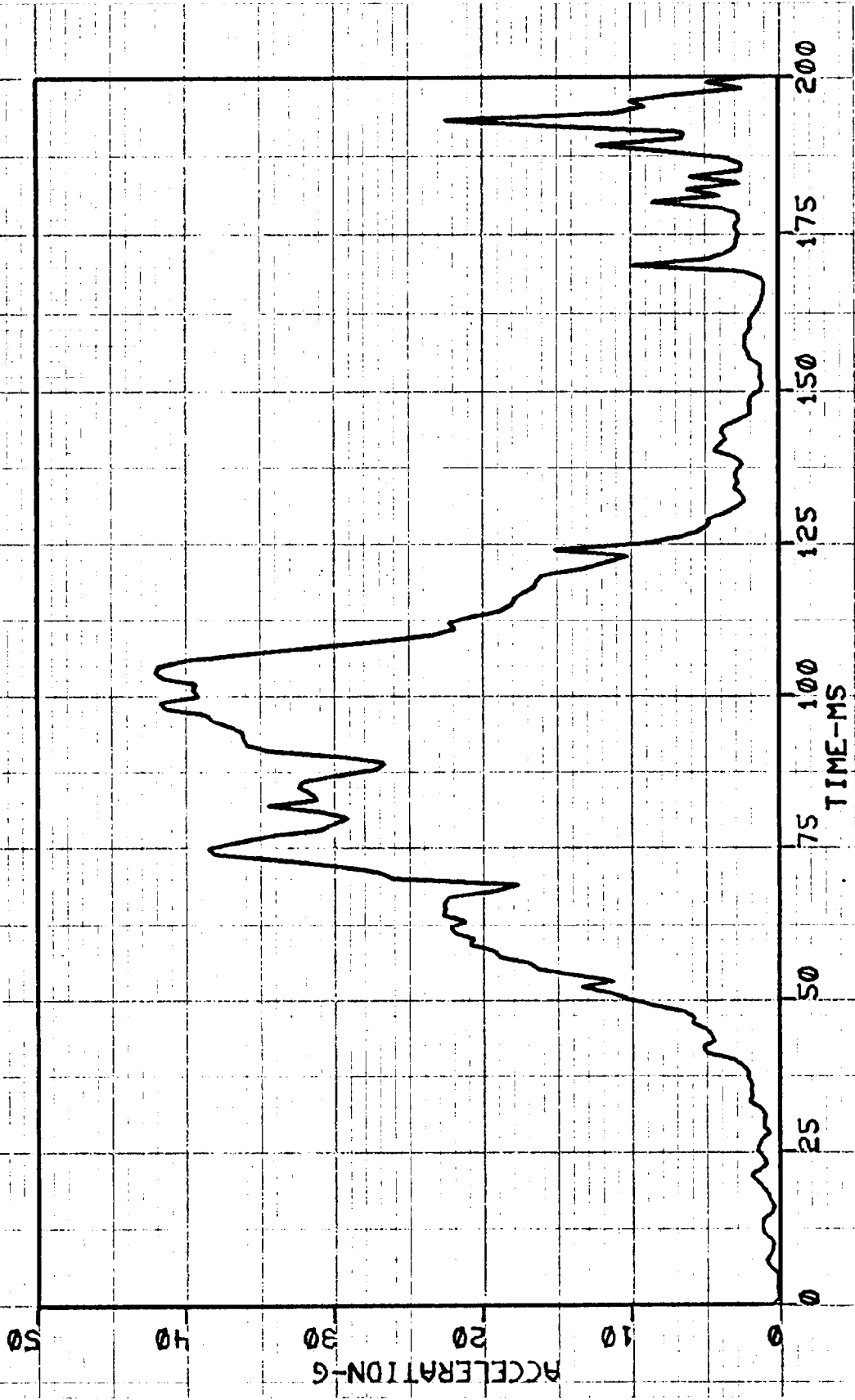
DODGE 400 #820308 RF CHEST AZ

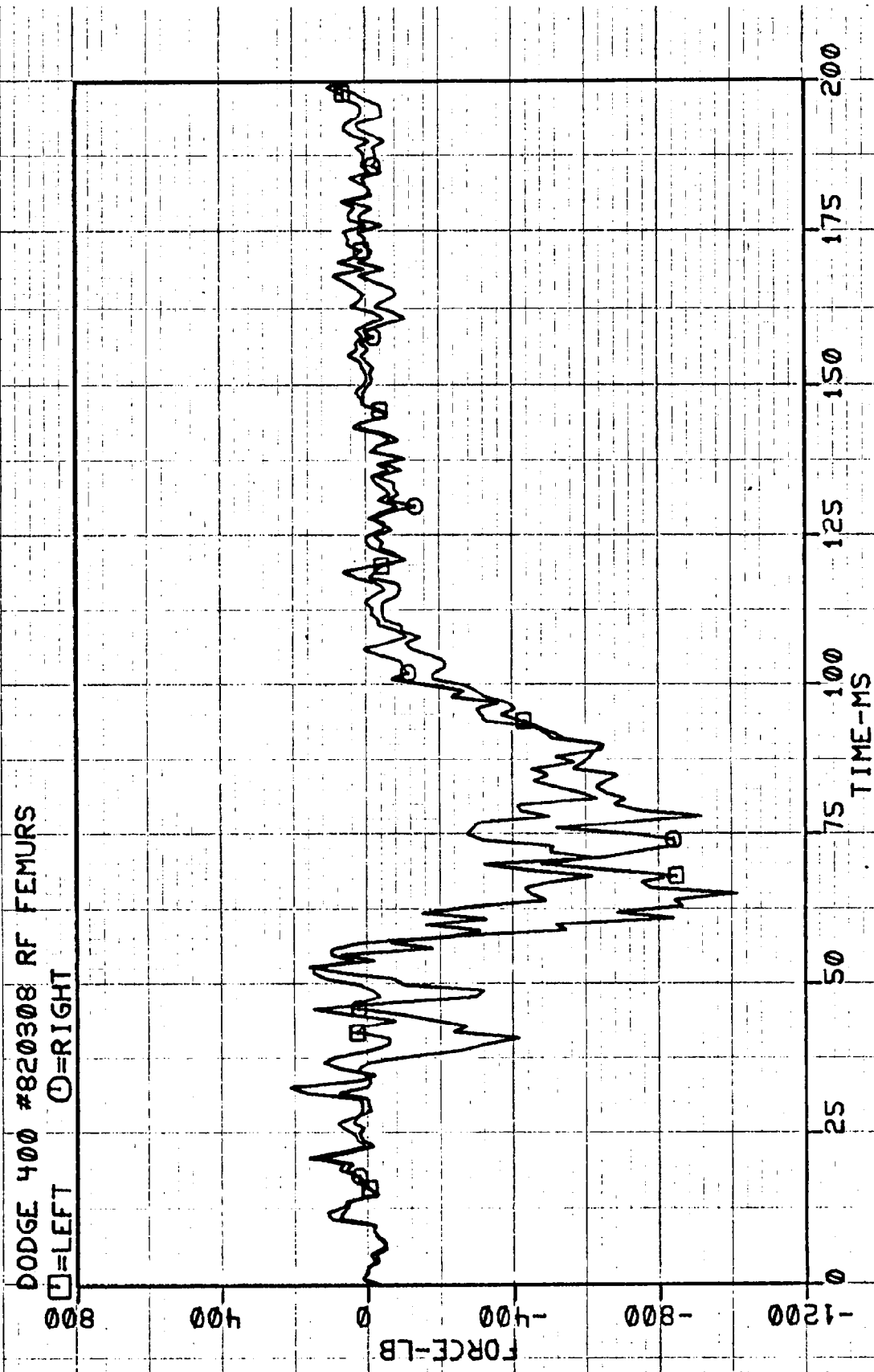
ACCELERATION-G

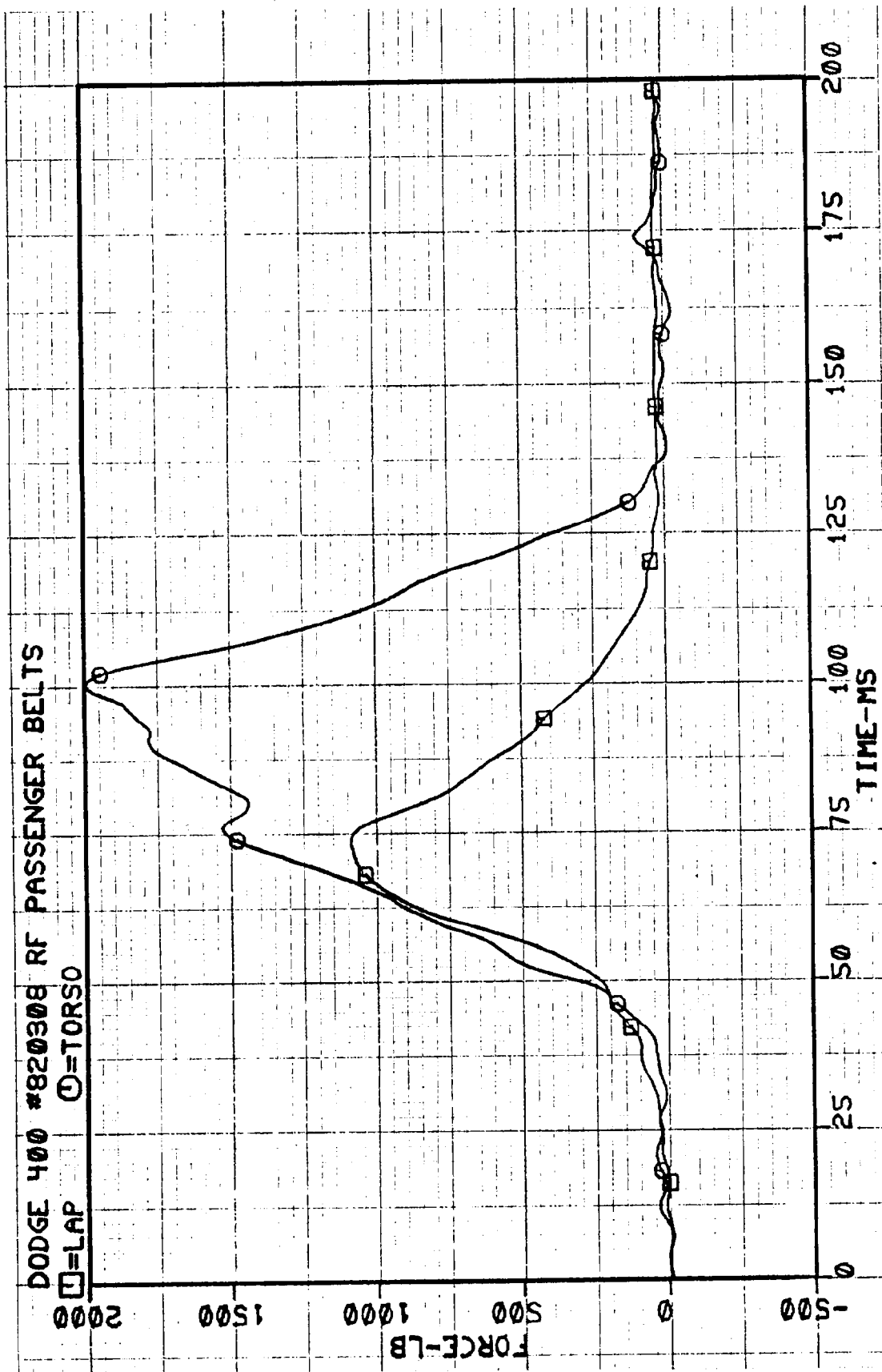
TIME-MS

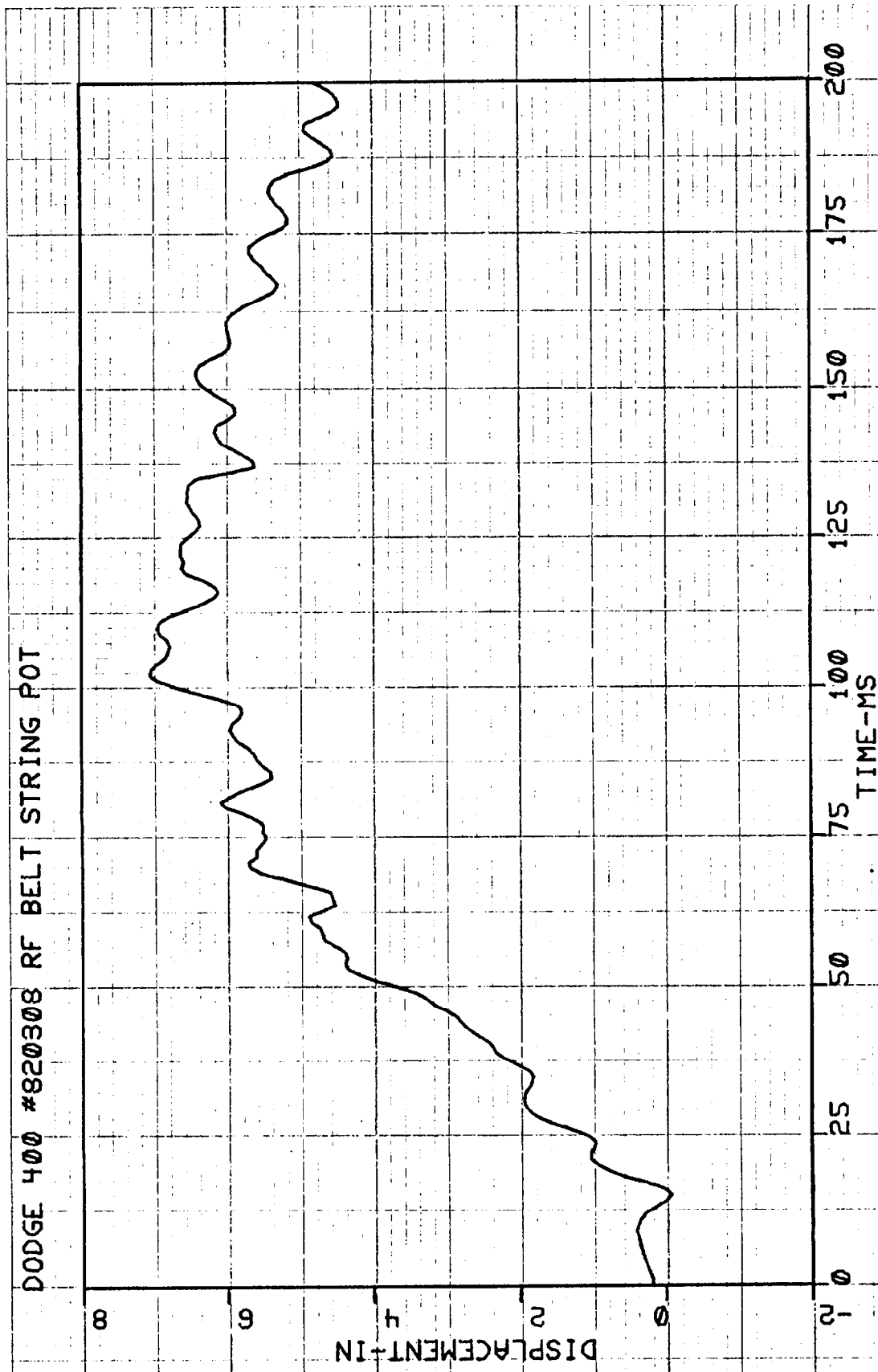


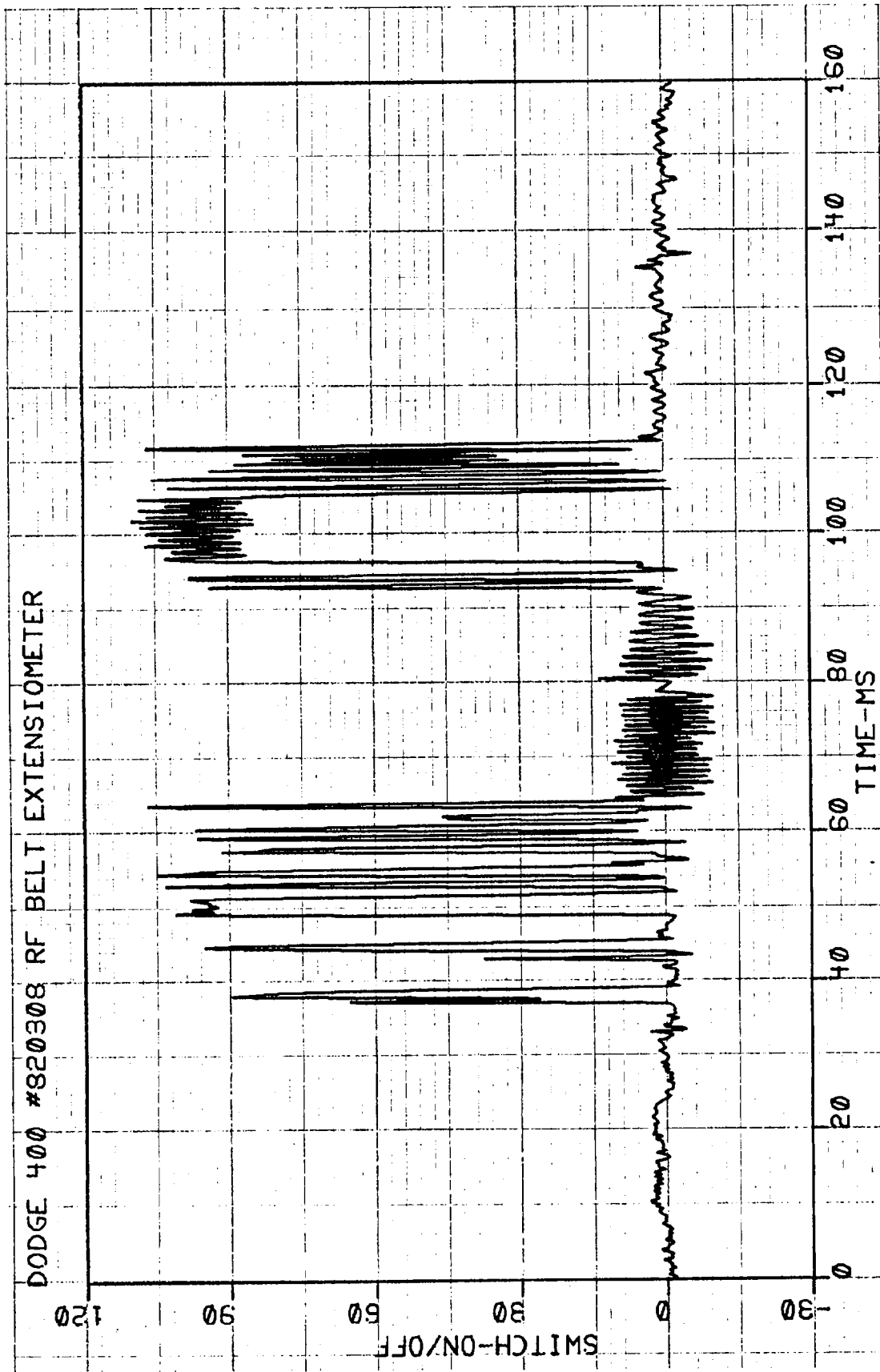
DODGE 400 #820308 RF CHEST AR

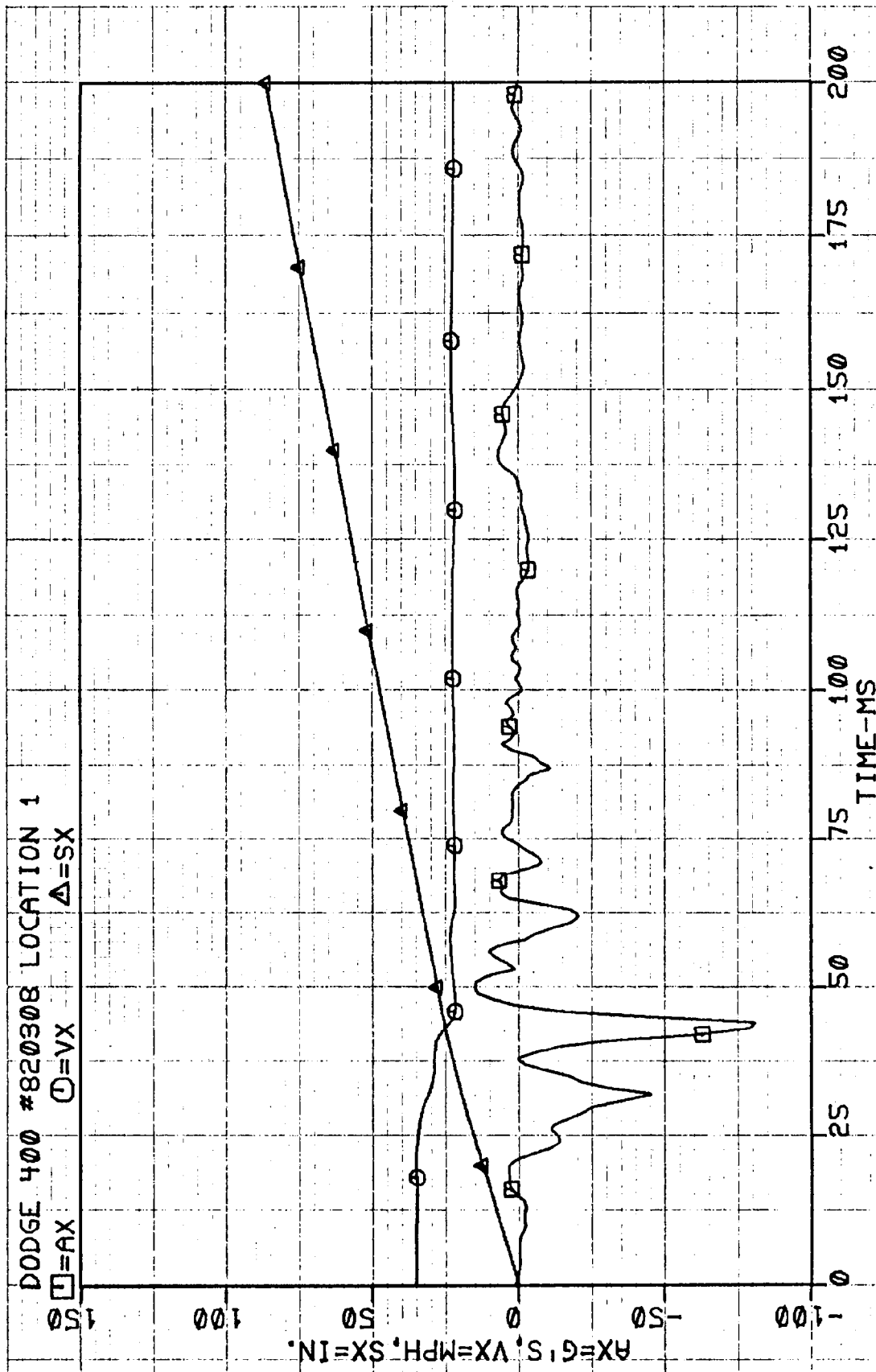


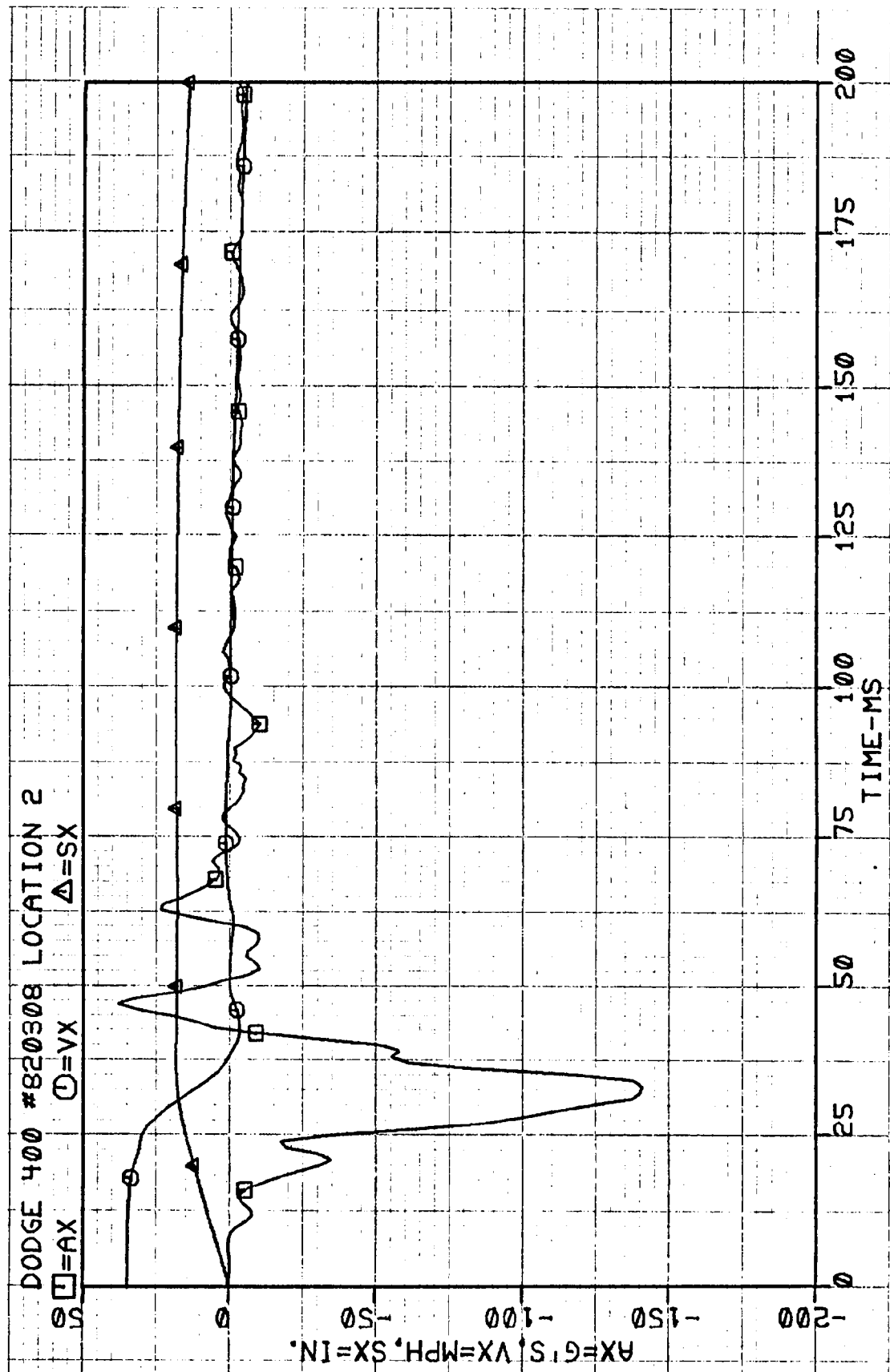


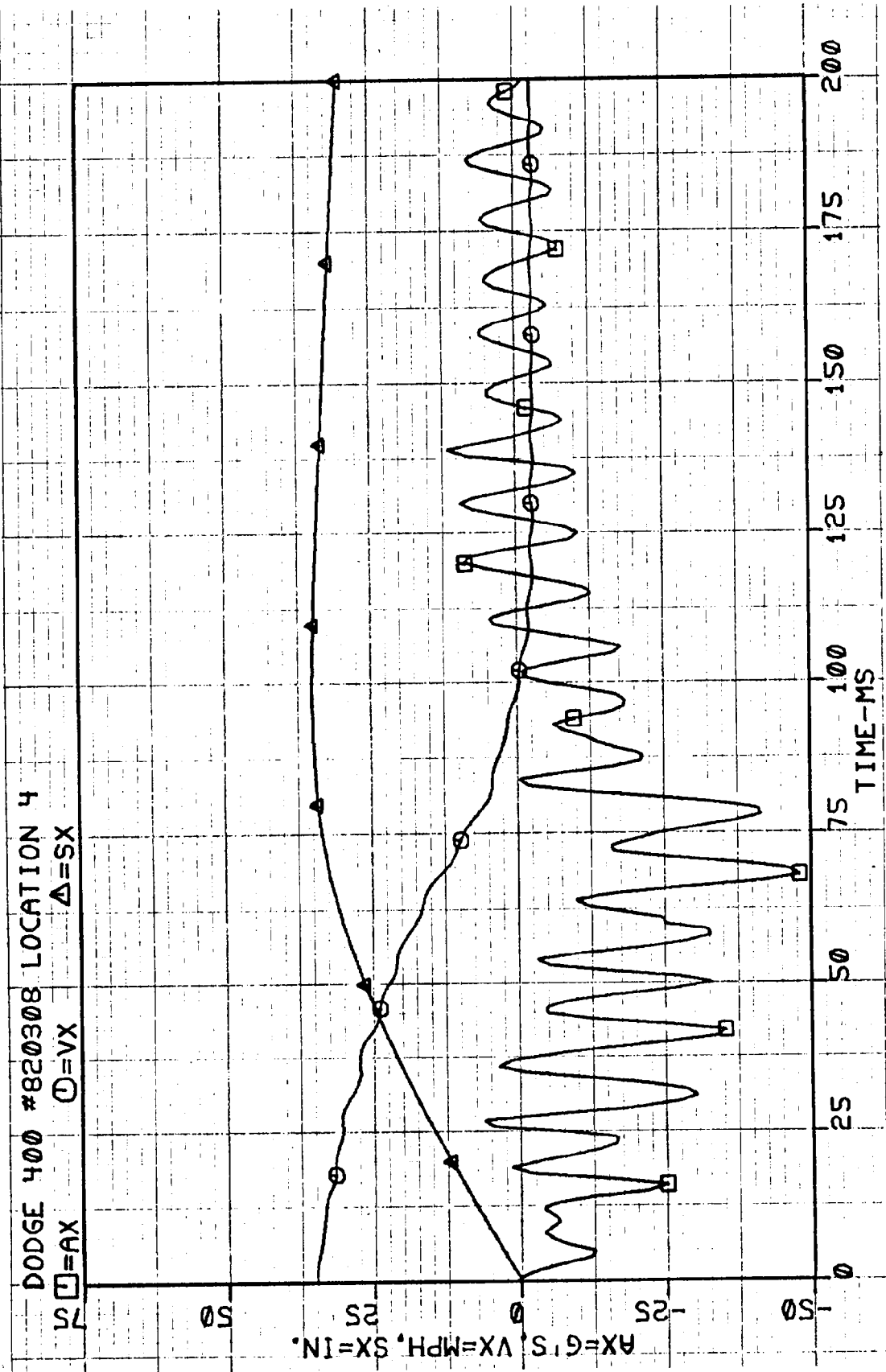


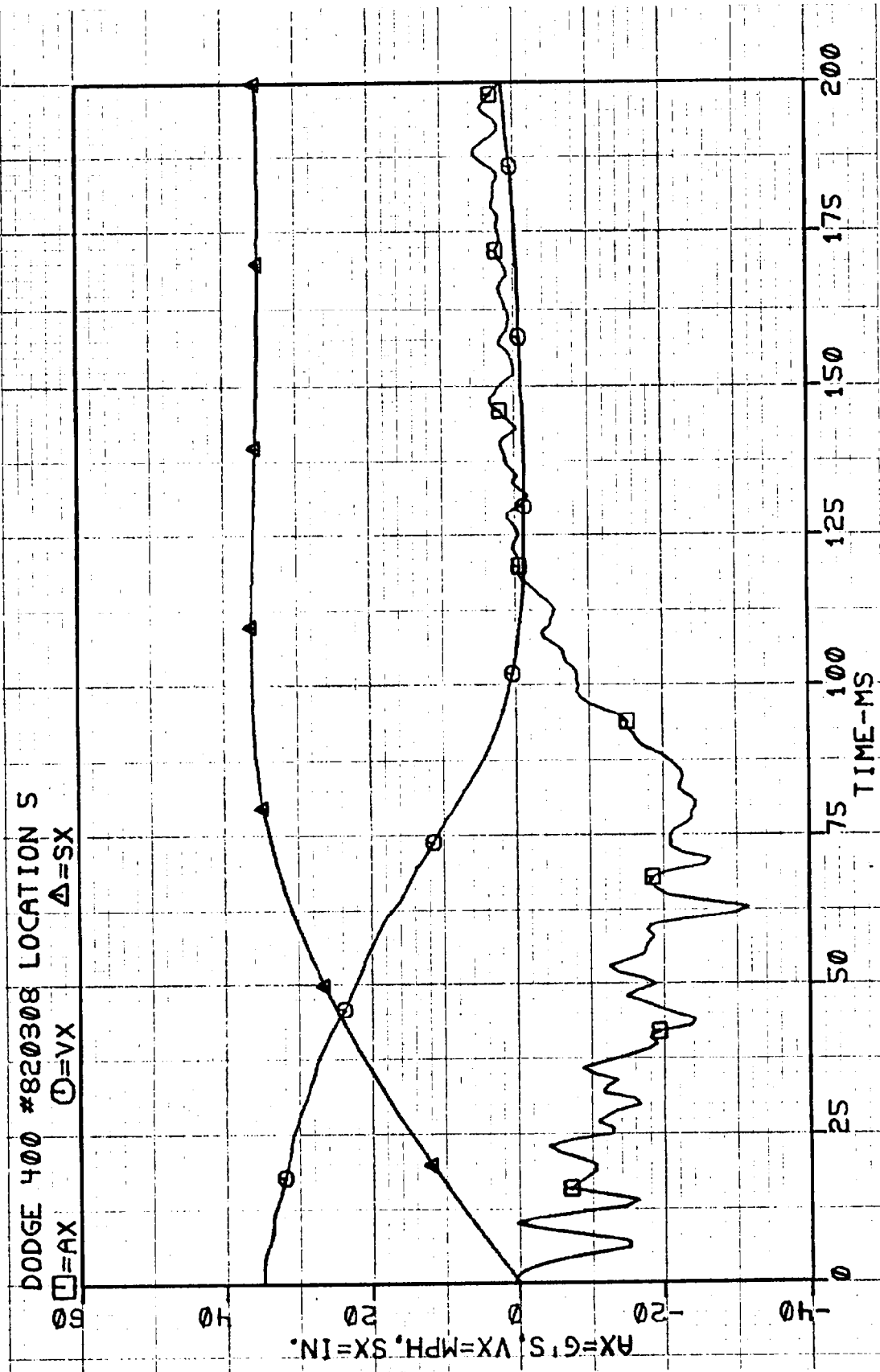


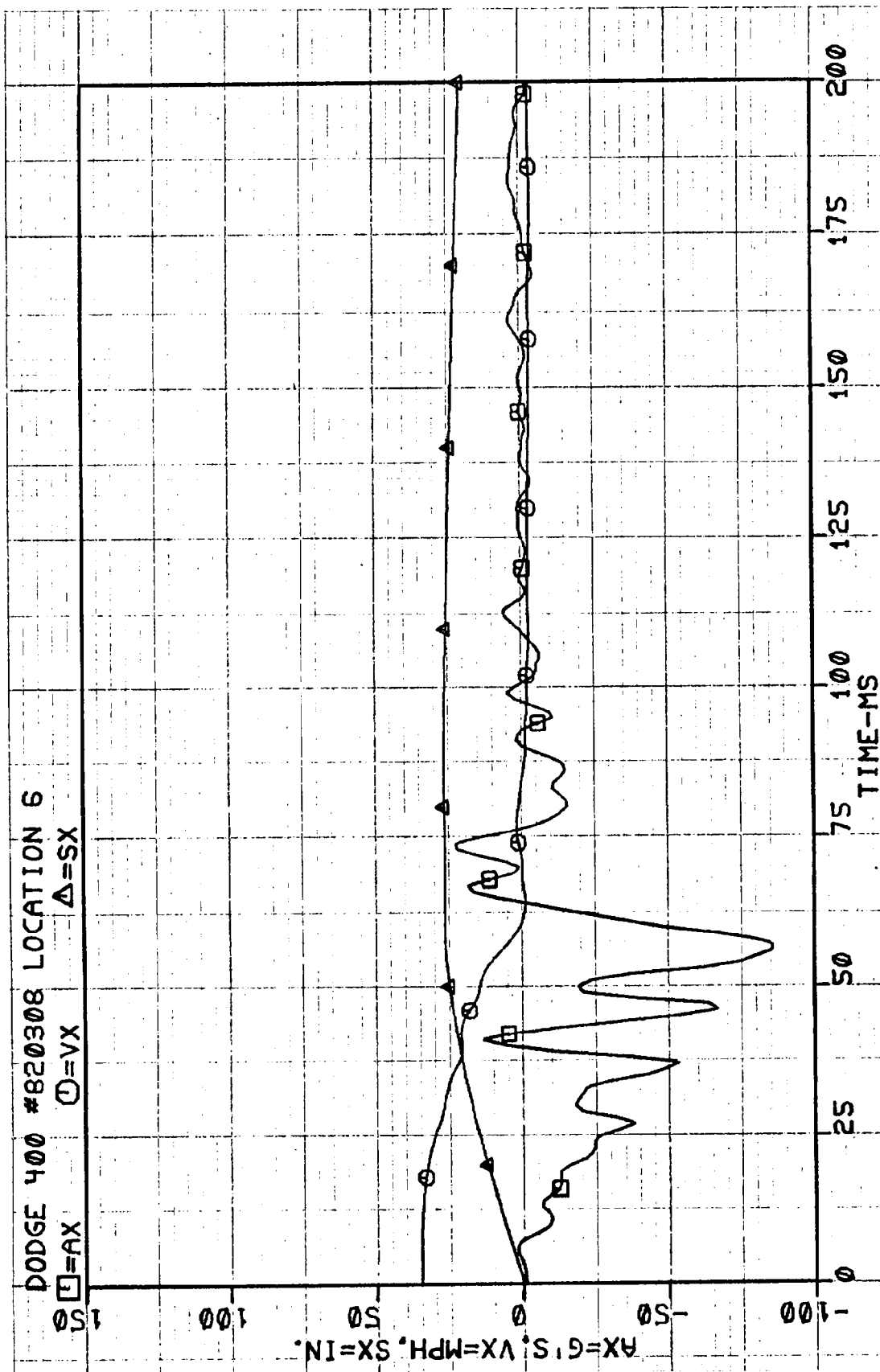


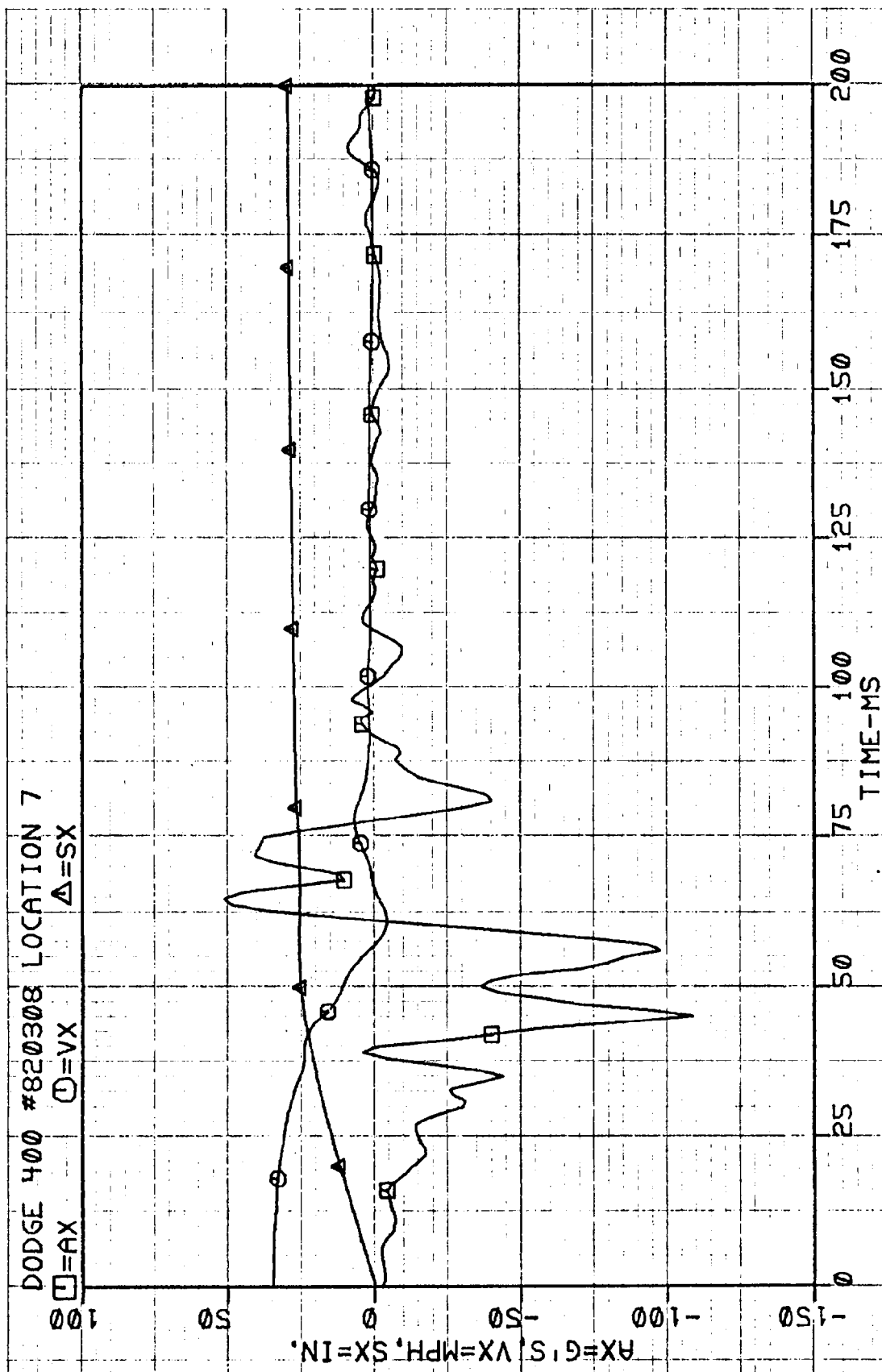


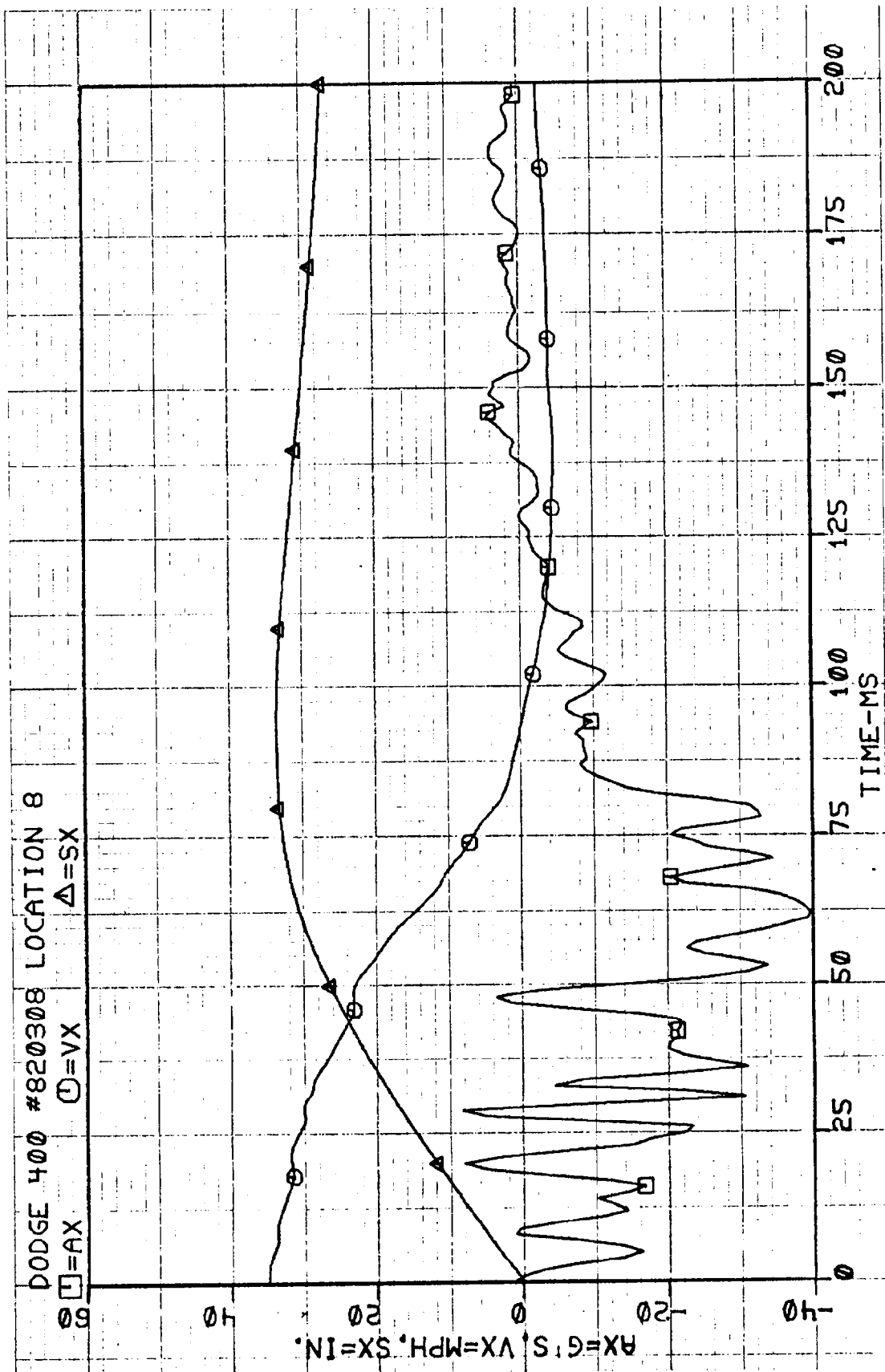


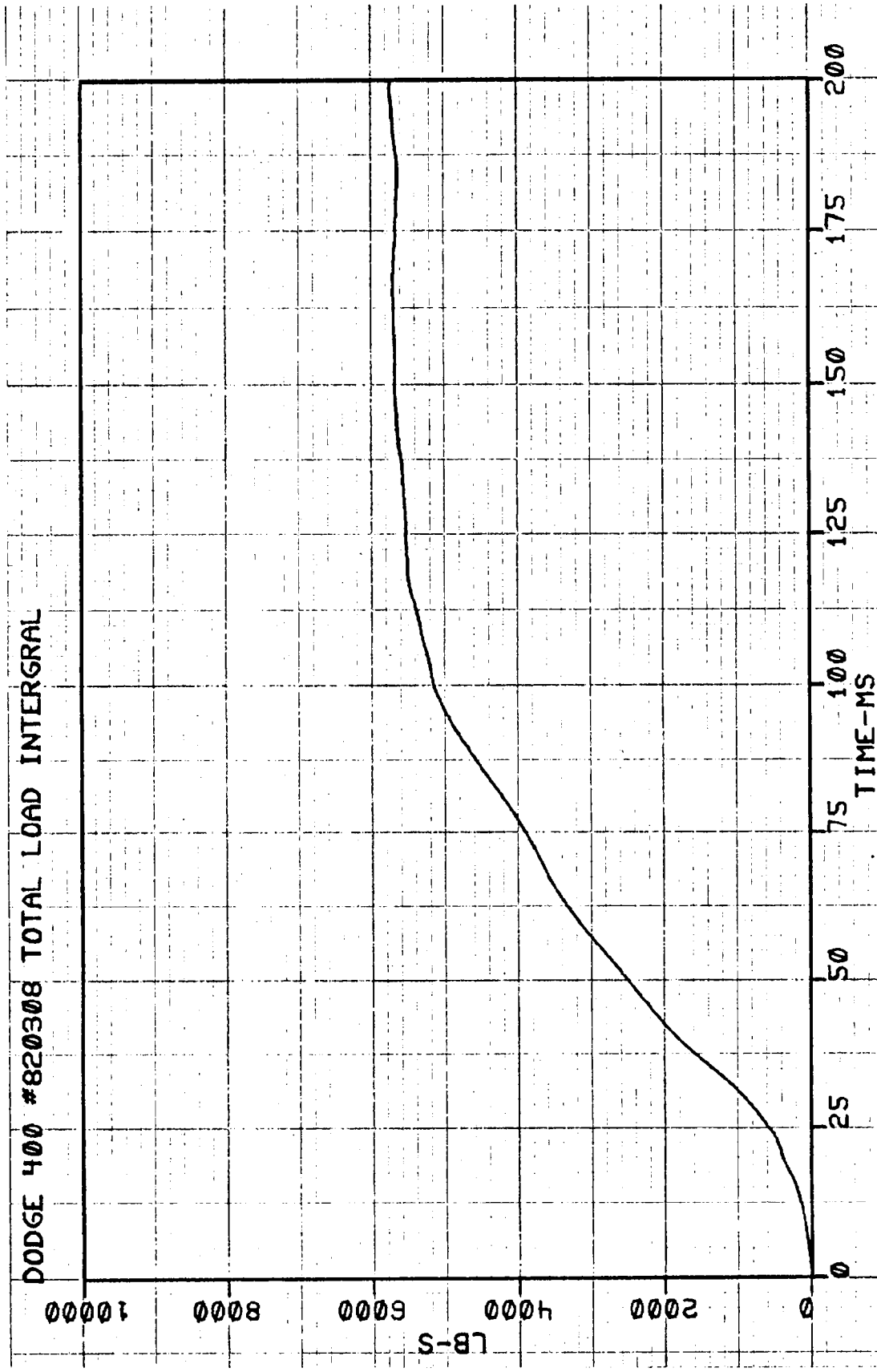


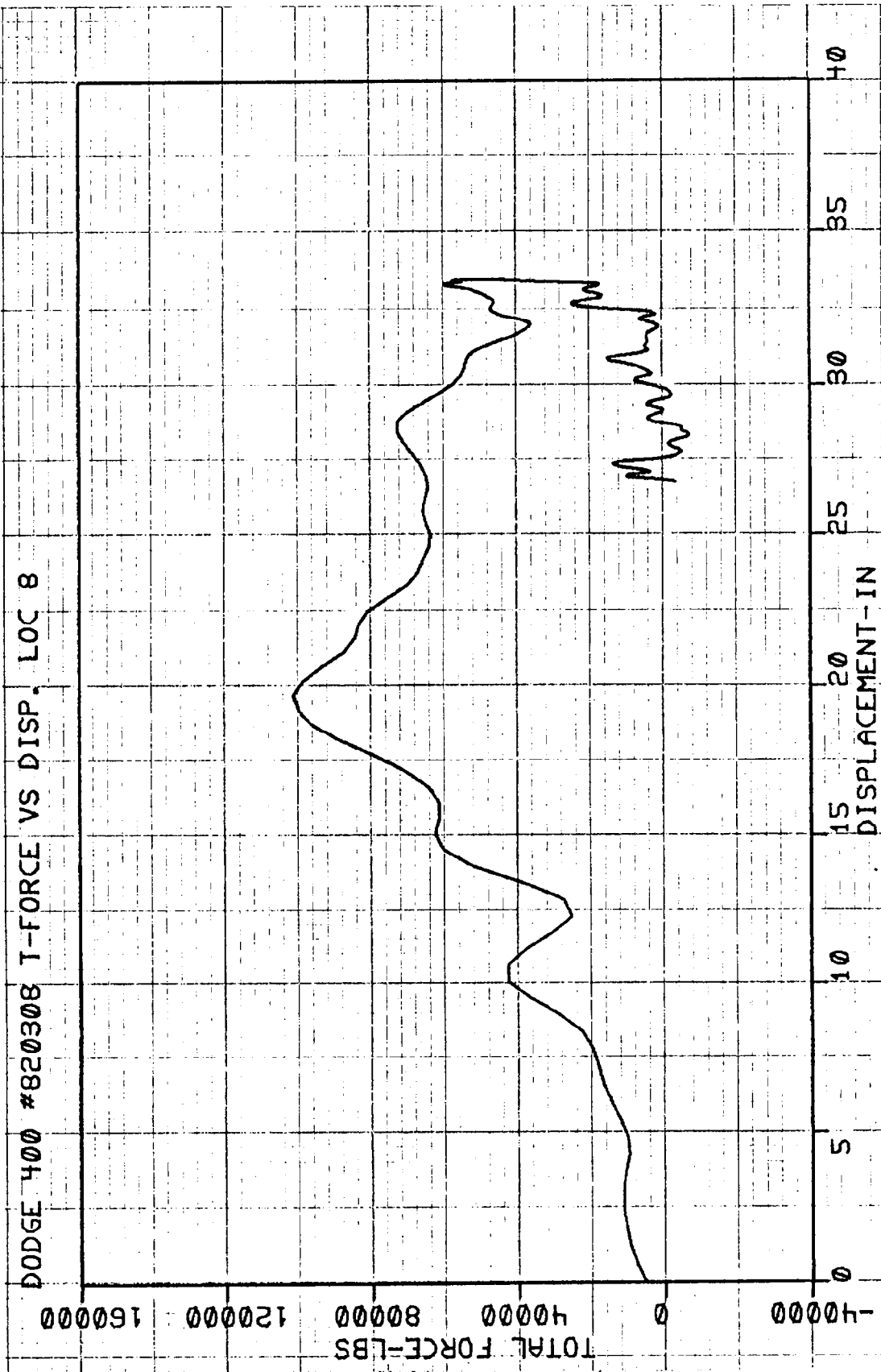












APPENDIX C

DUMMY CALIBRATIONS

PART 572 DUMMY CALIBRATION TEST DATA

NHTSA Dummy I.D. No.: A03

Laboratory Technician: C. Bruggalietta, S. Bacon

Instrumentation Engineer: V. Agnihotri

	Post-Test Calibration	Pre-test Calibration
Date of Dummy Calibration	6/7/82	5/10/82
Calibration Sequential Number for Dummy	28.0	27.0
Temperature in Lab. (Spec. = 66 to 78 °F)	74.0	70.0
Relative Humidity in Lab. (Spec. = 10 to 70%)	40.0	50.0

Test Parameter	Specification		
1. Head Drop Test:			
a. Peak Resultant Accel	210 - 260G	226.0	253.0
b. Peak Lateral Accel	≤ 10G	3.6	2.87
c. Time above 100G (resultant)	0.9 - 1.5 ms	1.1	1.125
2. Neck Bending Test:			
a. Pendulum Speed	21.5 - 25.5 fps	22.18	22.14
b. Pendulum Avg Decel (over t ₃ - t ₂)	20 - 24G	24.0	23.0
c. Peak Resultant Head Acceleration	26G Maximum	21.0	18.0
d. Pendulum Decel (t ₂ - t ₁)	≤ 3 ms	2.3	2.5
e. Pendulum Decel (t ₃ -t ₂)	25 - 30 ms	27.0	29.0
f. Pendulum Decel (t ₄ -t ₃)	≤ 10 ms	3.0	4.0
g. Pendulum Direction Reversal Time	≥ 123 ms	N/A	N/A
h. Maximum Head Rota- tion	63 to 73°	70.9	68.1
i. Chordal Displacement:			

Head Rotation Angle

0°	Time	-2 - 2 ms	0.30	-2.0
	Displ	-0.5 - 0.5 in.	0.03	0.01
30°	Time	25.6 - 34.4 ms	28.0	30.0
	Displ	2.1 - 3.1 in.	2.9	2.8
60°	Time	40.3 - 51.7 ms	44.8	46.5
	Displ	4.3 - 5.3 in.	4.8	4.9
Maximum 73°	Time	53.2 - 66.8 ms	61.0	63.5
	Displ	5.0 - 6.0 in.	5.6	5.4

PART 572 DUMMY CALIBRATION TEST DATA (CONTINUED)

NHTSA Dummy I.D. No.: A03

Test Parameter	Specification	Post-test Calibration	Pre-test Calibration
2. Neck Bending Test: (Continued)			
Head Rotation Angle			
60°	Time	67.0 - 83.0 ms	76.3
	Displ	4.3 - 5.3 in.	4.9
30°	Time	85.4 - 104.6 ms	96.3
	Displ	2.1 - 3.1 in.	2.8
0°	Time	101.0 - 123.0 ms	106.0
	Displ	-0.5 - 0.5 in.	0.5
3. Abdominal Compression Test: (Preload = 10 pounds)			
a. Force at 0.5 in.	14 - 26 lb	22.0	19.0
b. Force at 0.75 in.	27 - 40 lb	34.0	32.0
c. Force at 1.0 in.	40 - 53 lb	49.0	45.0
d. Force at 1.3 in.	63 - 78 lb	73.0	66.0
4. Lumbar Flexion Test:			
a. Force at 20°	22 - 34 lb	26.6	30.8
b. Force at 30°	34 - 46 lb	38.8	42.7
c. Force at 40°	46 - 58 lb	46.0	46.0
d. Return Angle	12° Maximum	3.8	3.1
5. Chest Impact Tests:			
a. High Speed			
1) Probe Speed	21.78-22.22 fps	22.03	22.00
2) Peak Deflection	1.7 in. Maximum	1.70	1.40
3) Peak Resistive Force	2250 lb Maximum	1924.50	2010.70
4) Internal Hysteresis	50 - 70%	25.0	57.0
a. Low Speed			
1) Probe Speed	13.86-14.14 fps	13.99	14.02
2) Peak Deflection	1.1 in. Maximum	0.90	0.90
3) Peak Resistive Force	1450 lb Maximum	1248.00	1249.00
4) Internal Hysteresis	50 - 70%	62.0	55.0

PART 572 DUMMY CALIBRATION TEST DATA (CONTINUED)

NHTSA Dummy I.D. No.: A03

Test Parameter	Specification	Post-test	Pre-test
		Calibration	Calibration

6. Knee Impact Tests:

a. Right Side

1) Probe Speed	6.76 - 7.04 fps	6.91	6.88
2) Maximum Force	1850 - 2500 lb	1930.00	2375.00
3) Time >1000 lb	1.7 ms Minimum	2.30	1.80

b. Left Side

1) Probe Speed	6.76 - 7.04 fps	6.92	6.88
2) Maximum Force	1850 - 2500 lb	2313.00	2391.00
3) Time >1000 lb	1.7 ms Minimum	1.50	1.80

PART 572 DUMMY CALIBRATION TEST DATA

NHTSA Dummy I.D. No.: A04

Laboratory Technician: C. Brugalletta, S. Bacon

Instrumentation Engineer: V. Agnihotri

	Post-Test Calibration	Pre-test Calibration
Date of Dummy Calibration	6/7/82	5/04/82
Calibration Sequential Number for Dummy	30.0	29.0
Temperature in Lab. (Spec. = 66 to 78 °F)	74.0	70.0
Relative Humidity in Lab. (Spec. = 10 to 70%)	40.0	30.0

Test Parameter	Specification		
1. Head Drop Test:			
a. Peak Resultant Accel	210 - 260G	260.0	253.0
b. Peak Lateral Accel	≤ 10G	7.1	3.6
c. Time above 100G (Resultant)	0.9 - 1.5 ms	1.1	1.1
2. Neck Bending Test:			
a. Pendulum Speed	21.5 - 25.5 fps	22.15	22.21
b. Pendulum Avg Decel (over t ₃ - t ₂)	20 - 24G	25.0	23.0
c. Peak Resultant Head Acceleration	26G Maximum	21.0	19.0
d. Pendulum Decel (t ₂ - t ₁)	≤ 3 ms	2.8	2.5
e. Pendulum Decel (t ₃ -t ₂)	25 - 30 ms	26.0	29.0
f. Pendulum Decel (t ₄ -t ₃)	≤ 10 ms	4.0	3.0
g. Pendulum Direction Reversal Time	≥ 123 ms	N/A	N/A
h. Maximum Head Rota- tion	63 to 73°	71.0	70.0
i. Chordal Displacement:			

Head Rotation Angle

0°	Time	-2 - 2 ms	-2.0	0.5
	Displ	-0.5 - 0.5 in.	0.03	0.03
30°	Time	25.6 - 34.4 ms	26.8	28.5
	Displ	2.1 - 3.1 in.	2.8	2.8
60°	Time	40.3 - 51.7 ms	44.3	44.0
	Displ	4.3 - 5.3 in.	4.6	4.7
Maximum 73°	Time	53.2 - 66.8 ms	60.0	62.0
	Displ	5.0 - 6.0 in.	5.5	5.5

PART 572 DUMMY CALIBRATION TEST DATA (CONTINUED)

NHTSA Dummy I.D. No.: A04

Test Parameter	Specification	Post-test Calibration	Pre-test Calibration
2. Neck Bending Test: (Continued)			
Head Rotation Angle			
60°	Time	67.0 - 83.0 ms	75.0
	Displ.	4.3 - 5.3 in.	4.6
30°	Time	85.4 - 104.6 ms	92.3
	Displ.	2.1 - 3.1 in.	2.6
0°	Time	101.0 - 123.0 ms	105.5
	Displ.	-0.5 - 0.5 in.	0.44
3. Abdominal Compression Test: (Preload = 10 pounds)			
a. Force at 0.5 in.	14 - 26 lb	18.0	20.0
b. Force at 0.75 in.	27 - 40 lb	32.0	28.0
c. Force at 1.0 in.	40 - 53 lb	47.0	40.0
d. Force at 1.3 in.	63 - 78 lb	73.0	67.0
4. Lumbar Flexion Test:			
a. Force at 20°	22 - 34 lb	34.0	34.0
b. Force at 30°	34 - 46 lb	44.0	45.0
c. Force at 40°	46 - 58 lb	54.0	57.0
d. Return Angle	12° Maximum	8.0	3.0
5. Chest Impact Tests:			
a. High Speed			
1) Probe Speed	21.78-22.22 fps	22.01	22.04
2) Peak Deflection	1.7 in. Maximum	1.50	1.50
3) Peak Resistive Force	2250 lb Maximum	1886.00	1679.00
4) Internal Hysteresis	50 - 70%	56.0	64.0
b. Low Speed			
1) Probe Speed	13.86-14.14 fps	13.99	13.96
2) Peak Deflection	1.1 in. Maximum	1.00	1.00
3) Peak Resistive Force	1450 lb Maximum	1109.00	1022.00
4) Internal Hysteresis	50 - 70%	60.0	68.0

PART 572 DUMMY CALIBRATION TEST DATA (CONTINUED)

NHTSA Dummy I.D. No.: A04

Test Parameter	Specification	Post-test	Pre-test
		Calibration	Calibration
6. Knee Impact Tests:			
a. Right Side			
1) Probe Speed	6.76 - 7.04 fps	6.90	6.91
2) Maximum Force	1850 - 2500 lb	1812.00	1993.00
3) Time >1000 lb	1.7 ms Minimum	2.00	1.90
b. Left Side			
1) Probe Speed	6.76 - 7.04 fps	6.87	6.94
2) Maximum Force	1850 - 2500 lb	1927.00	1877.00
3) Time >1000 lb	1.7 ms Minimum	2.00	1.80

ADDENDUM

Dynamic Science Report No. 301-DYS-82-011A

BARRIER IMPACT LOAD DATA
CHRYSLER CORPORATION
1982 DODGE 400 2-DOOR HARDTOP
NHTSA 820308

Prepared by:

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1850 West Pinnacle Peak Road
Phoenix, Arizona 85027



Prepared for:

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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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OFFICE OF VEHICLE SAFETY COMPLIANCE
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Approved by Rod Carn

Date 6-29-82

Report Accepted by:

Contract Technical Manager
Office of Vehicle Safety Compliance

Date

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1.0 INTRODUCTION

This report is an addendum to Report No. 301-DYS-82-011 and presents the barrier load measurement data acquired in testing a 1982 Dodge 400 2-Door Hardtop, NHTSA 820308.

Barrier impact speed was 34.98 mph.

Section 2.0 presents information on the load cell barrier and vehicle accelerometers.

Section 3.0 provides general test and vehicle parametric data.

Section 4.0 presents plots of load cell and accelerometer data versus time.

2.0 INSTRUMENTATION DESCRIPTION

2.1 LOAD CELL BARRIER

The load cell barrier face is pictured in Figure 2-1. The barrier consists of a 9 x 4 array of 50 klb load cells each faced with a section of 1-3/4-inch thick plywood. Plywood sections for Rows C and D (upper two rows) each measure 10 inches high and 9 inches wide. Plywood sections for Rows A and B (lower two rows) each measure 9 inches high and 9 inches wide. Overall width of the barrier is 83 inches and overall height is 38-3/4 inches. The lower edge of the barrier is 2-5/8 inches above the surface of the ground.

2.2 PLACEMENT OF VEHICLE ACCELEROMETERS

Eight longitudinal accelerometers were located on the vehicle as schematically illustrated herein. Three instruments (Locations 4, 5, and 8) present occupant compartment accelerations. Two (Locations 1 and 2) represent engine accelerations and two (Locations 6 and 7) represent front wheel accelerations. One additional instrument is included (Location 3) for rear axle drive vehicles mounted on the differential housing.

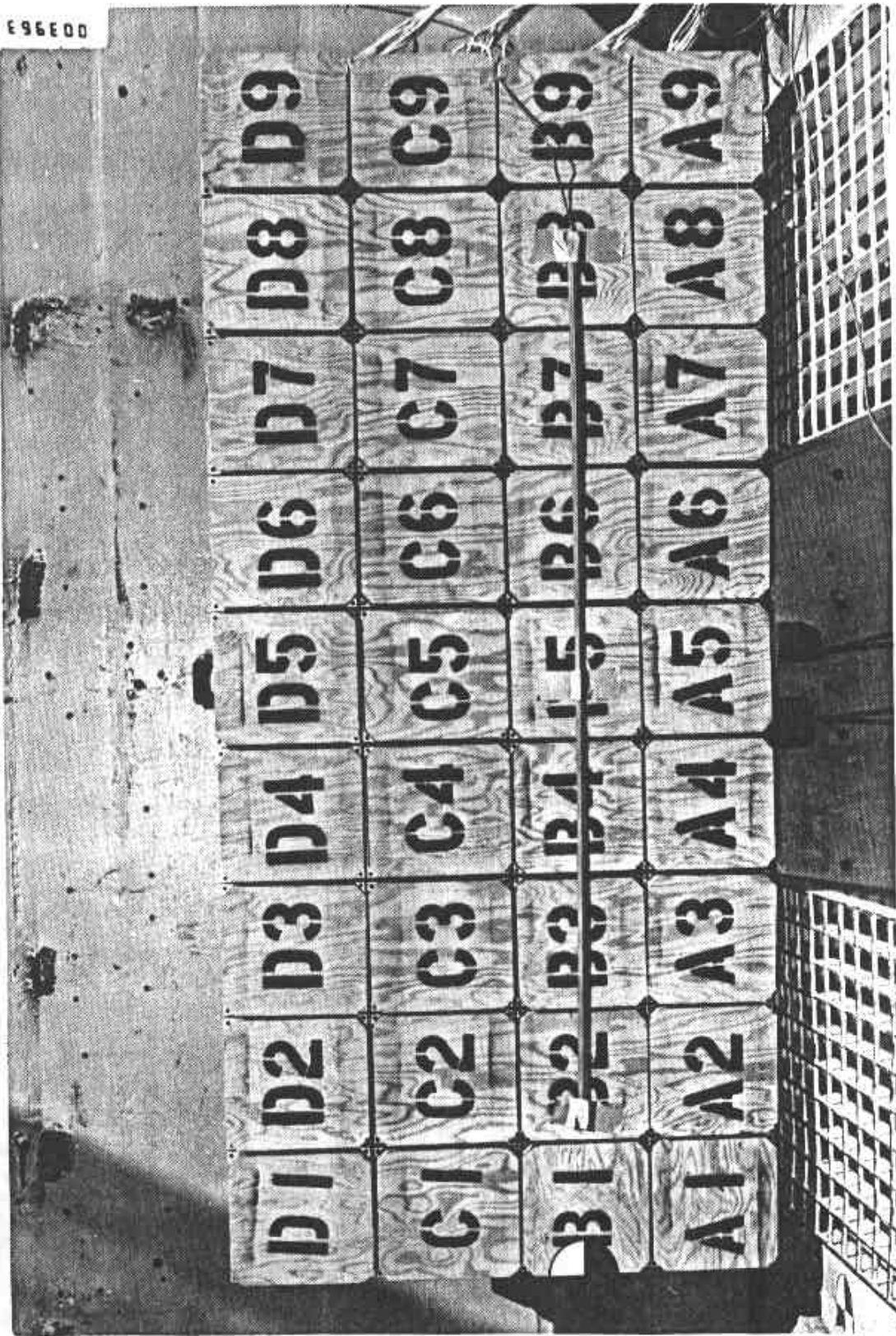
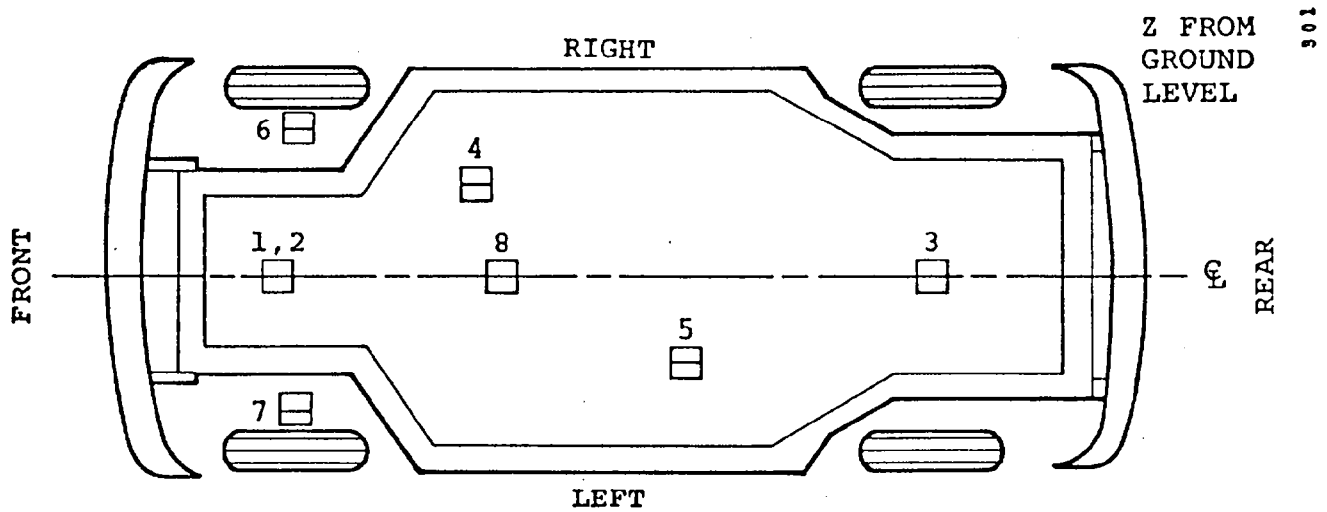


FIGURE 2-1. LOAD CELL BARRIER FACE.

VEHICLE ACCELEROMETER LOCATIONS AND SUMMARY



LINEAR ACCELEROMETERS

□ LONGITUDINAL

Vehicle Accelerometer Locations and Coordinates				Maximum Readings				
No.	Description of Location	X	Y	Z	+G's MS	-G's	MS	
1	Top of Engine	145.3	+3.1	32.8	15.0	50	82.8	44
2	Bottom of Engine	140.5	+3.5	9.0	38.7	47	141.5	33
3	Differential Housing	Front Wheel Drive Vehicle						
4	Right Front Floorpan $\Delta V = 38.3$ mph	98.3	+14.0	11.8	11.9	139	48.1	68
5	Left Rear Floorpan $\Delta V = 36.4$ mph	64.1	-12.8	13.2	5.6	188	32.2	63
6	Right Front Brake Caliper	141.5	+28.3	11.0	23.3	74	86.5	56
7	Left Front Brake Caliper	141.5	-28.3	11.0	51.5	65	109.7	45
8	Vehicle C.G. $\Delta V = 39.8$ mph	105.5	0.0	12.0	9.4	29	40.0	62

3.0 GENERAL TEST AND VEHICLE PARAMETER DATA

This section consists of three tables which document vehicle information, test conditions, and the post-impact crush configuration.

GENERAL TEST AND VEHICLE PARAMETER DATA

PRE-IMPACT DATA

Make/Model: Dodge 400
Body Style: 2-Door Hardtop Model Year 1982
NHTSA No. 820308 DSI No. 1233 Color: White

DATA FROM CERTIFICATION LABEL

Vehicle Manufacturer: Chrysler Corporation
Date of Manufacture: 9/81; VIN: 1B3BV51B8CG102585
GVWR: 3825 lb; GAWR: Front = 2120 lb; Rear = 1755 lb

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL

Vehicle Capacity: FRONT REAR RECOMMENDED LOAD RANGE:
Tire Pressure: 29 psi 29 psi TIRE SIZE: B
P185-70R14

Designated Seating: 3 Front 3 Rear 6 Total
Cargo load = 1151lb Is Spare Tire: Space Saver? Yes
TOTAL = 1015lb Standard Equipment? Yes

Engine: 4 Cylinder 135 in.
Transmission: 3 Speed Automatic Front Wheel Drive
Date Vehicle Received by Laboratory: 11/9/81; Odometer 51.4
Dealer Name & Address: Valley Dodge
4240 West Glendale Avenue
Phoenix, Arizona

WEIGHT (LB) OF TEST VEHICLE AS RECEIVED (WITH MAX. FLUIDS) = UDW

Right Front = 836 lb Right Rear = 435 lb
Left Front = 855 lb Left Rear = 460 lb
TOTAL FRONT WEIGHT = 1691 lb (65 % of Total Vehicle Weight)
TOTAL REAR WEIGHT = 895 lb (35 % of Total Vehicle Weight)
TOTAL DELV. WEIGHT = 2586 lb

TARGET WEIGHT = UDW + Cargo Load + 328 lbs Dummies = 3029 lb

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 115 LB CARGO:

Right Front = 900 lb Right Rear = 633 lb
Left Front = 871 lb Left Rear = 640 lb
TOTAL FRONT WEIGHT = 1771 lb (58 % of Total Vehicle Weight)
TOTAL REAR WEIGHT = 1273 lb (42 % of Total Vehicle Weight)
TOTAL TEST WEIGHT = 3044 lb

Weight of ballast secured in vehicle trunk area = 0 lb

VEHICLE ATTITUDE: (inches)

Delivered Attitude: RF 30.00 LF 30.00 RR 30.00 LR 30.00
Test Attitude: RF 29.25 LF 29.25 RR 27.75 LR 28.25

REMARKS: Three-point restraint system.

GENERAL TEST AND VEHICLE PARAMETER DATA (CONT)

POST-IMPACT DATA

Type of Test: Frontal (0°) Impact
 Date of Test: 5/26/82 Time: 1324 Temperature 93 °F
 Required Impact Velocity Range: 34.5 to 35.5 mph
 Impact Velocity: Primary = 34.98 mph Secondary = 35.03 mph

Distance from the vehicle's front bumper to barrier face entering the vehicle velocity measurement device is 5.0 feet and distance exiting the vehicle velocity measurement device is 1.0 foot.

VEHICLE REBOUND AND CRUSH (in.)

Vehicle Length: Pre-test = R 174.9 C 180.3 L 174.8
 Post-test = R 151.9 C 153.7 L 151.2
 Crush = R 23.0 C 26.6 L 23.6
 Distance from front of test vehicle to point of impact:
 R 19.5 C 23.8 L 21.5

VISIBLE DUMMY CONTACT POINTS

	Driver	Passenger
Head	<u>Dash and steering wheel upper rim</u>	<u>Dash panel</u>
Chest	<u>Steering wheel</u>	<u>None</u>
Abdomen	<u>Steering wheel</u>	<u>None</u>
Left Knee	<u>Dash</u>	<u>Dash</u>
Right Knee	<u>Dash</u>	<u>Dash (glove box)</u>

DOOR OPENING	Front		Rear	
	Left	Right	Left	Right
	<u>Tools</u>	<u>Tools</u>		
	<u>Required</u>	<u>Required</u>		

SEAT MOVEMENT	Left	Right
Seatback Failure	<u>None</u>	<u>None</u>
Seat Shift (in.)	<u>None</u>	<u>None</u>

GLAZING DAMAGE

Backlight/Windshield Cracks noted in lower windshield; antenna contacted protected zone (less than 0.25 inch penetration).

OTHER NOTABLE IMPACT EFFECTS: Crush on vehicle fairly symmetrical. Crush evident to "A" pillar on both sides of vehicle binding rotation of both front wheels.

VEHICLE PROFILE DATA SHEET

PRE-IMPACT DATA

Make/Model: Dodge 400
 Body Style: 2-Door Hardtop Model Year: 1982
 NHTSA No.: 820308 DSI No. 1233 Color: White

DATA FROM CERTIFICATION LABEL

Vehicle Manufacturer: Chrysler Corporation
 Date of Manufacture: 9/81; VIN: 1B3BV51B8CG102585
 GVWR: 3825 lb; GAWR: Front = 2120 lb; Rear = 1755 lb

POST-IMPACT DATA

Type of Test: Frontal (0°) Impact
 Date of Test: 5/26/82 Time: 1324 Temperature 93 °F
 Required Impact Velocity Range: 34.5 to 35.5 mph
 Impact Velocity: Primary = 34.98 mph Secondary = 35.03 mph

Measurements Referenced to Plane 15 Feet Forward of Rear Bumper ℄

Location	Height	Vehicle Left (in.)				Vehicle Right (in.)			
		<u>31.0</u>	<u>18.6</u>	<u>6.2</u>	<u>℄</u>	<u>6.2</u>	<u>18.6</u>	<u>31.0</u>	
		<u>30.4</u>	<u>18.3</u>	<u>6.1</u>	<u>℄</u>	<u>6.1</u>	<u>18.3</u>	<u>30.4</u>	
Pre-test Profile (in.)									
Top of Front Bumper	21.4	5.7	3.2	1.4	0	1.3	3.4	5.0	
Front of Hood	30.2	12.5	11.1	8.3	6.9	8.2	10.7	11.8	
Post-test Profile (in.)									
Top of Front Bumper	20.5	30.4	29.4	27.9	26.7	27.3	28.1	28.4	
Front of Hood	29.7	29.2	32.7	33.5	31.1	32.6	32.2	31.9	
Post-test Static Crush (in.)									
Top of Front Bumper		24.7	26.2	26.5	26.7	26.0	24.7	23.4	
Front of Hood		16.7	21.6	25.2	24.2	24.4	21.5	20.1	

4.0 DATA PRESENTATION

Data plots are presented for each accelerometer and consist of the accelerometer data plus the first integral versus time (velocity) and the second integral versus time (displacement) of the acceleration data.

For the load cells, all data are summed and presented as total load versus time, upper two rows (C and D) summed versus time and lower two rows (A and B) summed versus time. Additional plots are presented for each cell multi-plotted by column. Individual loads may be difficult to discern on some of these plots. Tabular data can be provided if necessary.

