REPORT NOS. 208-CAL-88-08
212-CAL-88-08
301-CAL-88-08

VEHICLE SAFETY COMPLIANCE TESTING FOR OCCUPANT CRASH PROTECTION, WINDSHIELD MOUNTING, WINDSHIELD ZONE INTRUSION (PARTIAL) AND FUEL SYSTEM INTEGRITY

FORD MOTOR COMPANY

1988 FORD TEMPO GL

4-DOOR SEDAN

NHTSA NO. CJ0208

CALSPAN TEST NO. 7669-9

SEPTEMBER 27, 1988

CALSPAN CORPORATION
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FINAL REPORT

Prepared for:

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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF VEHICLE SAFETY COMPLIANCE
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WASHINGTON, DC 20590

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Final Report of FMVSS Nos. 208, 212, 219 (partial) and 301 Compliance Testing of 1988 Ford Tempo GL 4-Door Sedan	**September 27, 1988**
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15. Supplementary Notes	

16. Abstract

A 30 mph vehicle safety compliance test was conducted on a 1988 Ford Tempo GL 4-Door Sedan. This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on September 27, 1988.

The purpose of this test was to determine compliance with the performance requirements of the following Federal Motor Vehicle Safety Standards (FMVSS):

1. **FMVSS No. 208, "Occupant Crash Protection"**
2. **FMVSS No. 212, "Windshield Mounting"**
3. **FMVSS No. 219 (partial), "Windshield Zone Intrusion"**
4. **FMVSS No. 301, "Fuel System Integrity"**

The test mode was perpendicular (0°) and the impact velocity was 29.7 mph. The ambient temperature at the impact face was 69°F.

The subject test vehicle appears to comply with the requirements of FMVSS Nos. 208, 212, 219 (partial) and 301.

Type of Restraint System: The driver position was equipped with an airbag restraint. The passenger was restrained with a 3-point belt system.

17. Key Words	18. Distribution Statement
30 mph Vehicle Safety Compliance Testing FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Mounting" FMVSS 219, "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity" Frontal Impact	Copies of this report are available from: Technical Reference Division National Highway Traffic Safety Admin. Nassif Building, Room 5108 400 Seventh St., S.W., Washington, DC 20590

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Section 1
PURPOSE AND TEST PROCEDURE

This 30 mph frontal barrier impact test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 208, 212, 219 (partial) and 301 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by Calspan Advanced Technology Center under Contract No. DTNH22-88-C-01038. The purpose of this test was to determine if the subject vehicle, a 1988 Ford Tempo GL 4-Door Sedan, meets the performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS No. 212, "Windshield Mounting"; FMVSS No. 219 (partial), "Windshield Zone Intrusion"; and FMVSS No. 301, "Fuel System Integrity". This compliance test was conducted using the requirements found in the OVSC Laboratory Test Procedure No. TP-208-07.

Section 2

SUMMARY OF TEST NUMBER CJ0208

A frontal barrier was impacted by a 1988 Ford Tempo GL 4-Door Sedan at a velocity of 29.7 mph. The test was performed at the Calspan Corporation Advanced Technology Center on September 27, 1988. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by one real-time camera and 14 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

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

Both ATDs were fully instrumented with head and chest triaxial accelerometers and right/left femur load cells. These ATDs had been certified prior to the test.

The 23 channels of data were recorded on two 14-channel FM tape recorders. Appendix B contains the vehicle and dummy response data traces. Accelerometer #3 failed to record.

The driver's head struck the airbag and his HIC was 318. The maximum chest deceleration over 3 milliseconds was 47 g's and femur loads were 1560 and 1464 pounds.

The right-front passenger's head struck the sun visor and his HIC was 327. The maximum chest deceleration over 3 milliseconds was 41 g's and femur loads were 612 and 661 pounds.

TABLE 1

CRASH TEST SUMMARY

VEHICLE NHTSA NO.: CJ0208 TEST MODE: 30 mph Frontal Barrier

TEST DATE: 9/27/88 TIME: 11:45 TEMP: 69° F

VEHICLE MAKE/MODEL/BODY STYLE: 1988 Ford Tempo GL 4-Door Sedan

VEHICLE TEST WEIGHT: 3100 lbs

VEHICLE/BARRIER IMPACT ANGLE: 0°

IMPACT VELOCITY: 29.7 mph

MAXIMUM STATIC CRUSH: 15.3"

VEHICLE REBOUND: 9.1"

DUMMIES:	DRIVER	PASSENGER
TYPE	Part 572 (S/N 1019)	Part 572 (S/N 1022)
RESTRAINT SYSTEM	Airbag	3-point belt system

NUMBER OF DATA CHANNELS: 22

NUMBER OF CAMERAS: 1 Real Time

14 High Speed

DOOR OPENING DATA: operable - Left Front

operable - Right Front

FRONT SEAT(S) DATA:	DRIVER	PASSENGER
Seat Track Failure -	None	Forward one notch inches of shift
Seat Back Failure -	None	None

VISIBLE DUMMY CONTACT POINTS:	DRIVER	PASSENGER
Head	Airbag, windshield, and sun visor	Sun visor
Chest	Airbag	None
Knees	Dash	Dash

TABLE 2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1988 Ford Tempo GL 4-Door Sedan

NHTSA No. CJ0208 ; VIN 1FACP36X2JK187722 ; Color: Gray

Engine Data: 4 cylinders; - CID; 2.3 Litres; 2300 cc

Placement - Longitudinal or In-Line; X Transverse or lateral

Transmission Data: 3 speeds; - Manual; X Automatic; - Overdrive

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

Major Options: X A/C; X Pwr Strg. X Pwr. Brakes - Pwr Windows

X Power Door Locks;

Date Received: 9/15/88 ; Odometer Reading - 17.6 miles

Selling Dealer: Colonial Ford, Inc.

& address 100 Niagara Street Tonawanda, NY 14150

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Ford Motor Company

Data of Manufacture: 3/88 ; VIN 1FACP36X2JK187722

GVWR: 3682 lbs; GAWR: 1999 lbs FRONT

1812 lbs REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load 30 psi Front

30 psi Rear

Recommended Tire Size P185/70R14 Load Range Standard

Recommended Cold Tire Pressure 30 psi Front 30 psi Rear

Size of Tires on Test Vehicle P185/70R14

Type of Spare Tire: X Space Saver; - Regular

Vehicle Capacity Data:

Type of Front Seats - Bench X Bucket - Split Bench

Number of Occupants 2 Front 3 Rear 5 Total

Vehicle Capacity Weight (VCW) = 850 lbs.

No. of Occupants x 150 lbs = 750 lbs.

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

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

Right Front =	830	lbs	Right Rear =	470	lbs
Left Front =	850	lbs	Left Rear =	530	lbs
TOTAL FRONT =	1680	lbs	TOTAL REAR =	1000	lbs
% of Total Weight =	63	%	% of Total Weight =	37	%

TOTAL DELIVERED WEIGHT = 2680 lbs.

TABLE 2

GENERAL TEST & VEHICLE PARAMETER DATA (cont.)

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight	=	2680	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	100	lbs.
Weight of 2 P.572 Dummies @ 164 ea.	=	328	lbs.
TARGET TEST WEIGHT	=	3108	lbs. (sum)

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 92 LBS OF CARGO WEIGHT:

Right Front = 910 lbs. Right Rear = 620 lbs.

Left Front = 930 lbs. Left Rear = 640 lbs.

TOTAL FRONT = 1840 lbs. TOTAL REAR = 1260 lbs.

% of Total Weight = 59 % % of Total Weight = 41 %

TOTAL TEST WEIGHT = 3100 lbs.

Weight of Ballast secured in vehicle's cargo area = 0.0 lbs.

Vehicle Components Removed for Weight Reduction None

TEST VEHICLE ATTITUDE: (all dimensions in inches)

AS DELIVERED RF 25.3 ; LF 25.3 ; RR 25.7 ; LR 25.4

FULLY LOADED RF 24.8 ; LF 24.8 ; RR 24.4 ; LR 24.2

AS TESTED RF 24.8 ; LF 25.0 ; RR 24.4 ; LR 24.3

Vehicle's Wheelbase = 100 inches

Location of Vehicle's C.G. = 40.6 inches rearward of front wheel centerline (if required)

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 15.4 gallons

Usable Capacity Figure Furnished by COTR = 15.4 gallons

Test Volume Range (92 to 94% of Usable Capacity) = 14.2 to 14.5 gallons

ACTUAL TEST VOLUME = 14.3 gallons (with entire fuel system filled)

Test Fluid Type: Stoddard Solution ; Spec. Grav. 0.764

Kinematic Viscosity = 0.96 centistokes; Color = Purple

Type of Fuel Pump: X Electric; - Manual/Mechanical

Does Electric Pump operate with ign. sw. "ON" & engine "OFF"? No (yes/no)

TABLE 3

POST-IMPACT DATA

TYPE OF TEST: X Frontal (0°) Impact; - Oblique (30°) Impact- - Left/ - Right

- Rear; - Lateral/Side - - Left/ - Right

TEST DATE: Sept. 27, 1988 TIME: 11:45 TEMP: 69 °F

VEHICLE NHTSA NO.: CJ0208 ; VIN 1FACP36X2JK187722

REQUIRED IMPACT VELOCITY RANGE: 28.9 to 29.9 mph

BARRIER IMPACT VELOCITY: (speed traps within 5 feet of impact plane)

Trap No. 1 = 29.7 mph; Trap No. 2 = 29.7 mph

Distance from vehicle to barrier (1) entering trap = 52 inches

(2) exiting trap = 12 inches

VEHICLE STATIC CRUSH: (for Frontal and Rear Impacts Only)

Vehicle Length: Pre-Test Right = 174.7 "; C/L= 176.5 "; Left = 174.4 "

Post-Test Right = 159.4 "; C/L = 161.7 "; Left = 161.2 "

CRUSH Right = 15.3 "; C/L = 14.8 "; Left = 13.2 "

AVERAGE = 14.4 inches

VEHICLE REBOUND: (from rigid barrier only)

Distance from front of test vehicle to impact point:

Right = 9.8 "; C/L = 8.0 "; Left = 9.4 "

AVERAGE = 9.1 inches

DOOR OPENING:	Left	Right
Front	operable	operable
Rear	operable	operable
SEAT MOVEMENT:	**Seat Back Failure**	**Seat Shift**
Front	None	1 notch forward

TABLE 3

POST-IMPACT DATA (cont)

GLAZING DAMAGE: Windshield remained intact

OTHER NOTABLE IMPACT FEATURES: Head hit windshield 3" from top molding and 9" from left side molding.

Section 3
OCCUPANT AND VEHICLE DATA

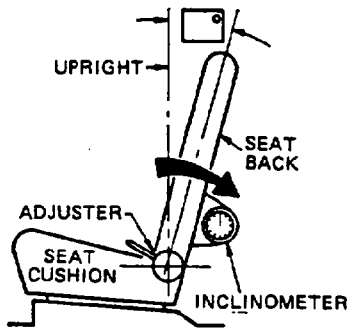
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model year: 1988 Vehicle Model: Ford Tempo GL Body Style: 4-Door Sedan

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.



LEFT SIDE VIEW

Seat back angle for driver's seat 20.75°

Measurement instructions: See Figure 2.

Seat back angle for passenger's seat 20.75°

Measurement instructions: See Figure 2.

2. Seat Fore and Aft Positioning
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: Center position

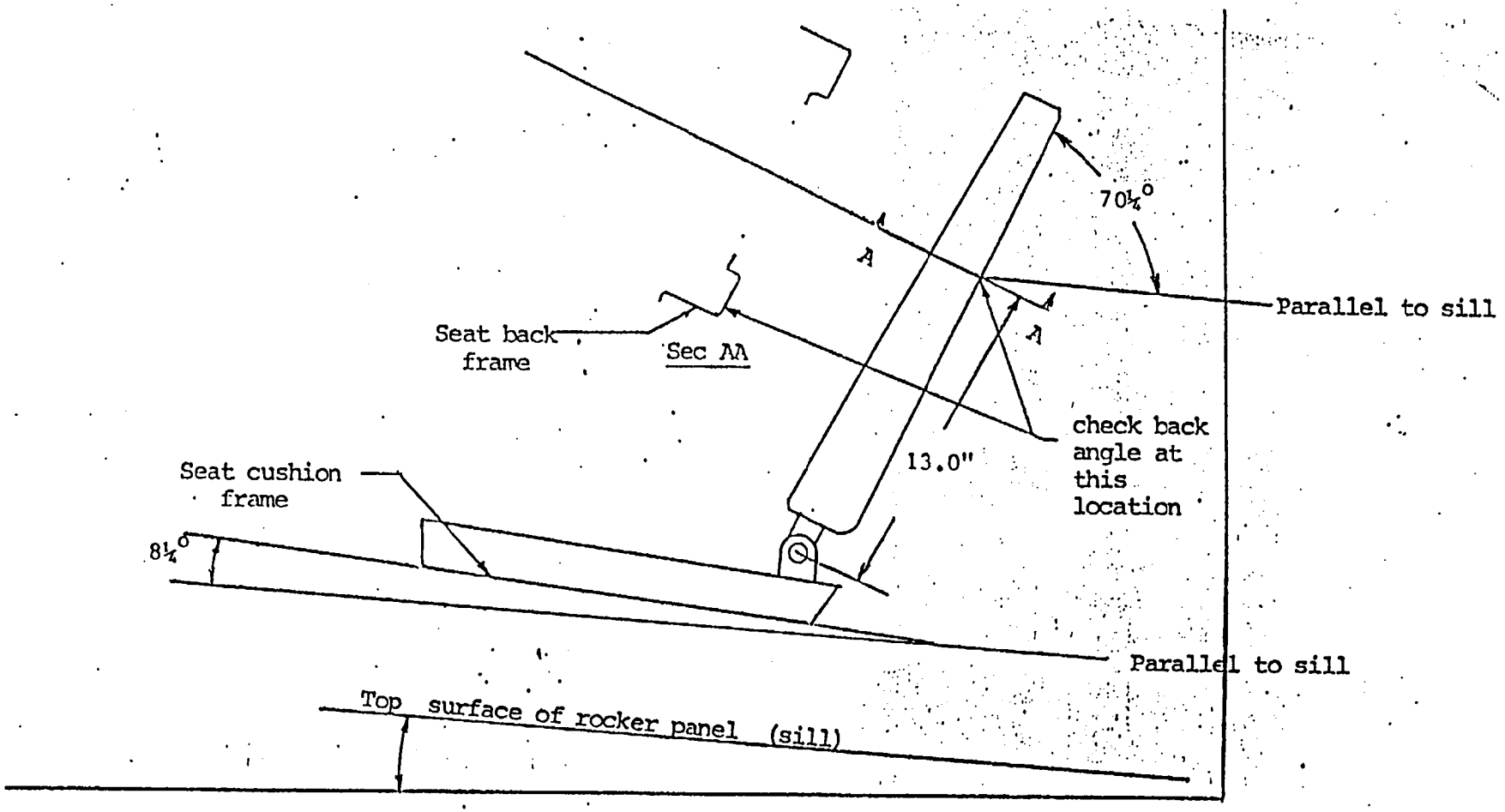
Positioning of the passenger's seat (if applicable): Center position

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 15.4 gallons.

B. "Usable Capacity" of the optional equipment fuel tank is None gallons.

Additional Instructions: None



FRONT SEAT ANGLES

1988 TEMPO 4-DOOR SEDAN

Note: The above sketch is applicable to all seats and all seat tracks. Ford procedure uses an inclinometer attached to a small fixture which contacts the back of the seat back frame at a specified location using pins which penetrate the seat pads and trim. Using this procedure and the angle data shown on the sketch, the seat back can be adjusted to assure that it is in the design riding position.

Figure 2 SEAT POSITIONING INSTRUCTIONS

Figure 3

PART 572 DUMMY IN-VEHICLE POSITION

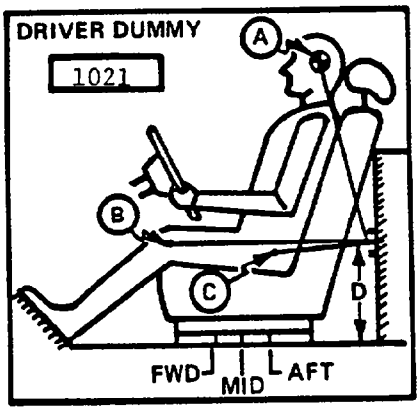
TEST NO.: CJ0208

VEHICLE: 1988 Ford Tempo GL 4-Door Sedan

SEAT TYPE:
- ____ Bench
- X Bucket
- ____ Split Bench

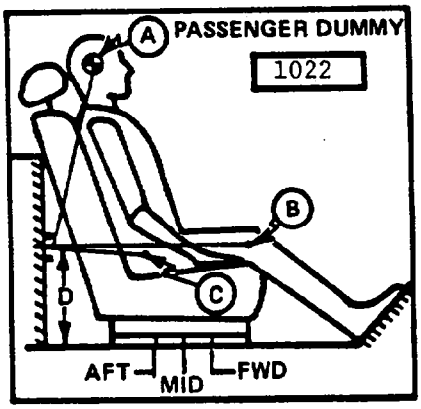
ADJUSTER TYPE:
- X Manual
- ____ Power

BUCKET SEAT BACK TYPE:
- ____ Fixed
- X Adjustable Reclining



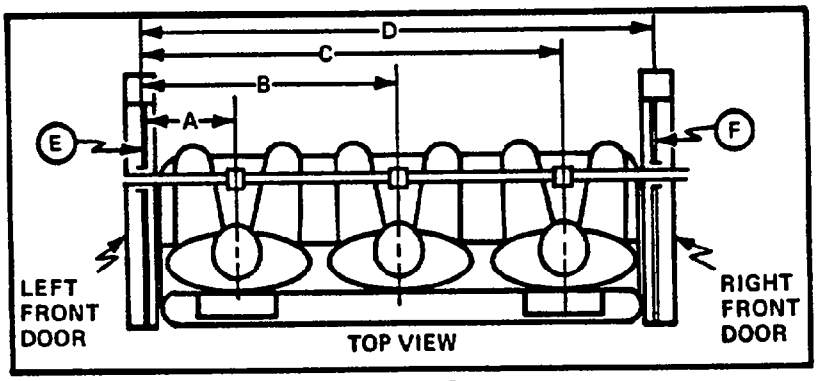
MEASUREMENT LOCATION

A - Head Target
B - Knee Joint
C - Approximate 'H' Point
D - Sill to Reference Point



A =	21.8	in.	4°	Degrees
B =	20.5	in.	97°	Degrees
C =	7.0	in.	144°	Degrees
D =	14.8	in.		

A =	22.5	in.	1°	Degrees
B =	20.3	in.	99°	Degrees
C =	6.4	in.	145°	Degrees
D =	14.7	in.		

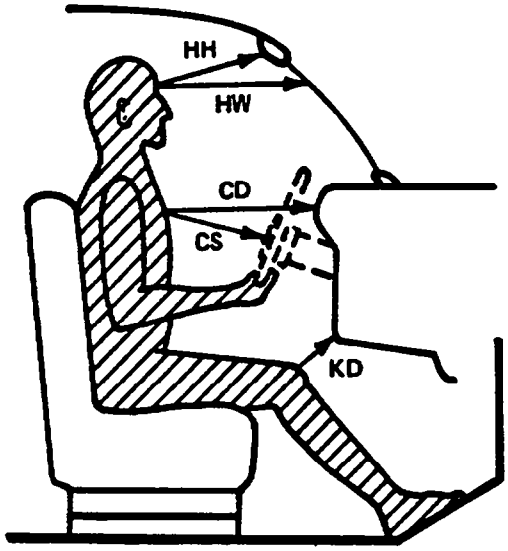


		DUMMY ID 1021	DUMMY ID 1022
A	= Left Door to Driver Centerline	10.5 in.	
B	= Left Door to Center Passenger Centerline	- in.	
C	= Left Door to Right Passenger Centerline	37.4 in.	
D	= Left Door to Right Door	47.8 in.	
E, F	= Window Glass Height (Right and Left Must Be Equal)	13.5 in.	

Figure 4

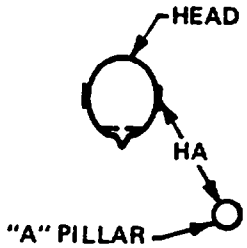
OCCUPANT CLEARANCE DIMENSIONS

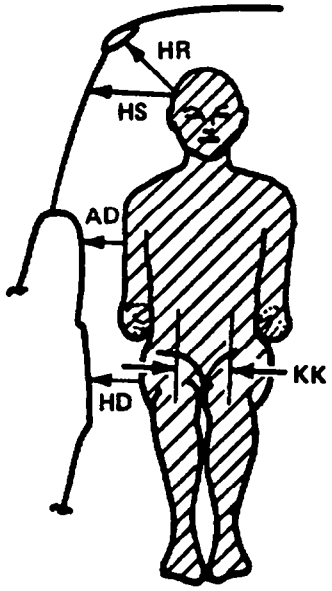
	DRIVER	PASSENGER
HH	10.7	11.8
HW	14.0	14.2
CD	21.1	21.5
CS	11.5	--
KDL	3.4	4.7
KDR	3.5	4.4
SA	20°	20°
TA	15°	15°



HH = Head to Windshield Header
HW = Head to Windshield
CD = Chest to Dash
CS = Chest to Steering Wheel
KD(L/R)= Knee to Dash (Left/Right)
SA = Seat Back Angle
TA = Torso Angle

HA = Head Target to "A" Pillar
HR = Head to Side Roof
HS = Head to Side Window
AD = Arm to Door
HD = Hip to Door
KK = Knee to Knee
AA = Ankle to Ankle

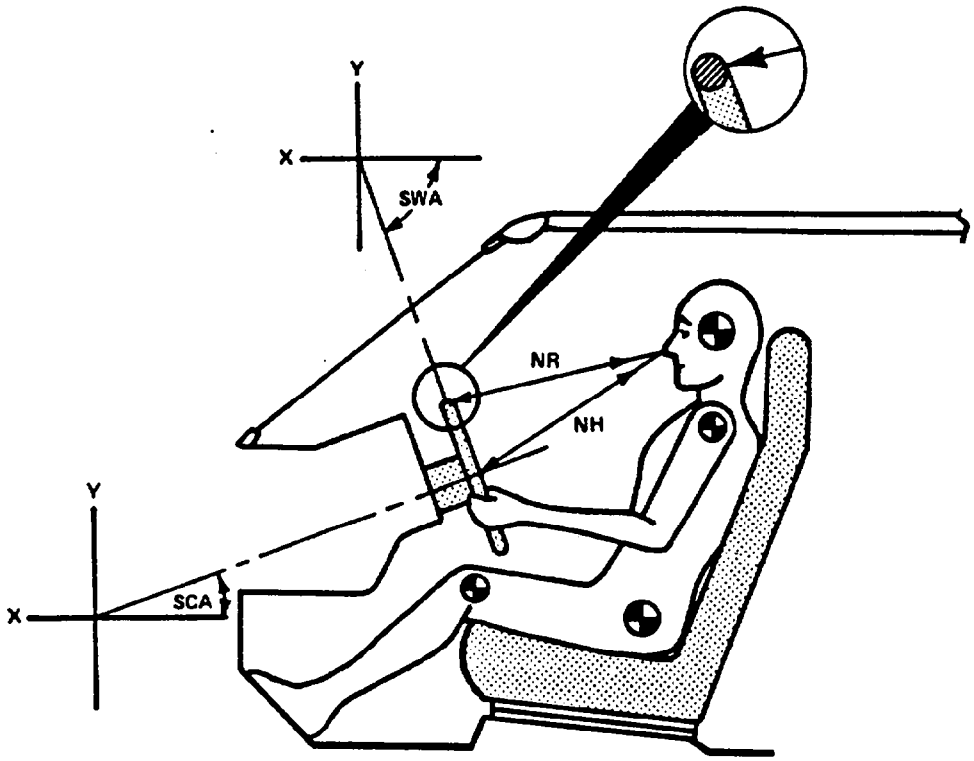




	DRIVER	PASSENGER
HR	3.7	3.7
HS	7.3	7.2
AD	3.5	4.5
HD	4.2	4.7
KK	8.7	7.3
HA	11.7	12.3
AA	9.0	7.3

Figure 5

DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSY. REFERENCE DIMENSIONS

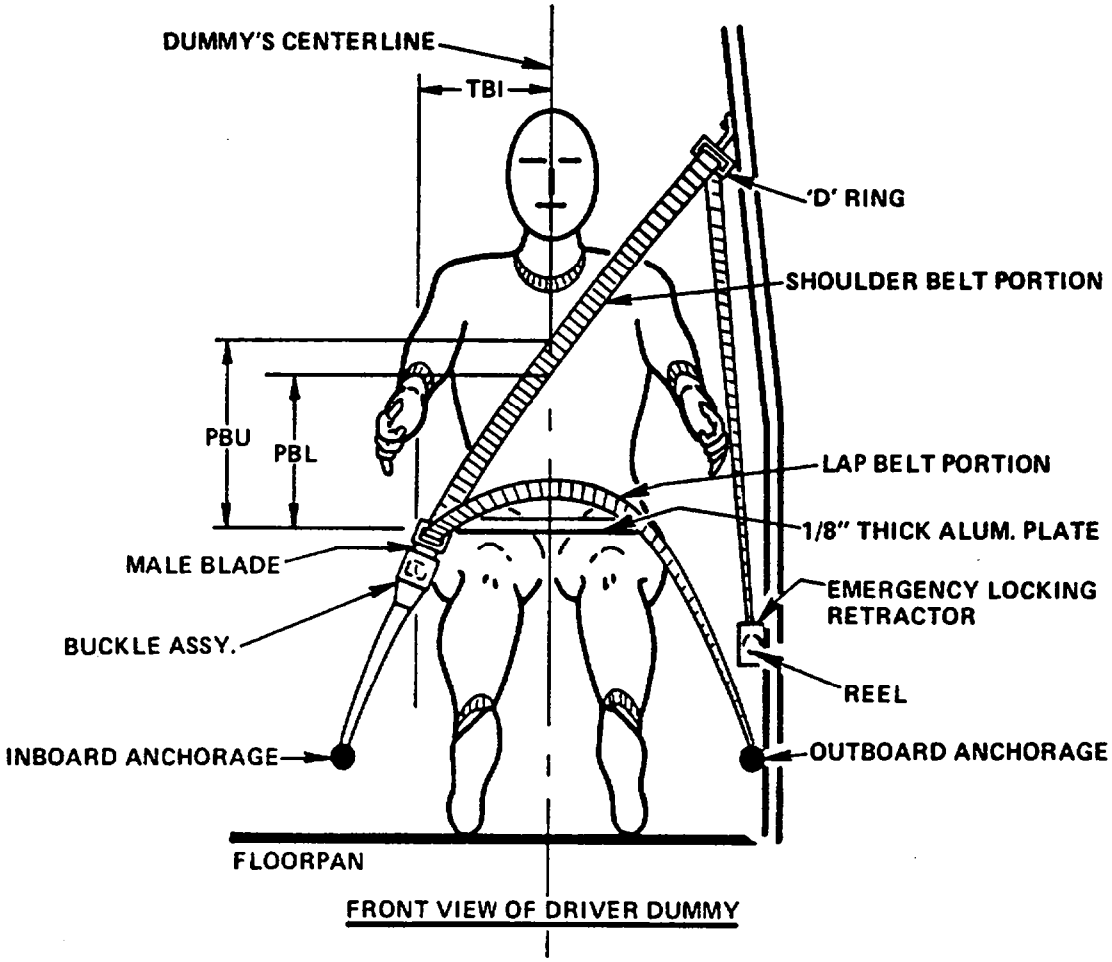


LEFT SIDE VIEW

	MEASUREMENTS	
NR -- Distance from tip of dummy's nose to Top Rear surface of steering wheel rim	15.3	Inches
NH -- Distance from tip of dummy's nose to center of steering column hub	16.5	Inches
SCA -- Angle of steering column relative to the horizontal X axis	25	Degrees
SWA -- Angle of steering wheel relative to the horizontal X axis	-65	Degrees

Figure 6

SEAT BELT POSITIONING DATA

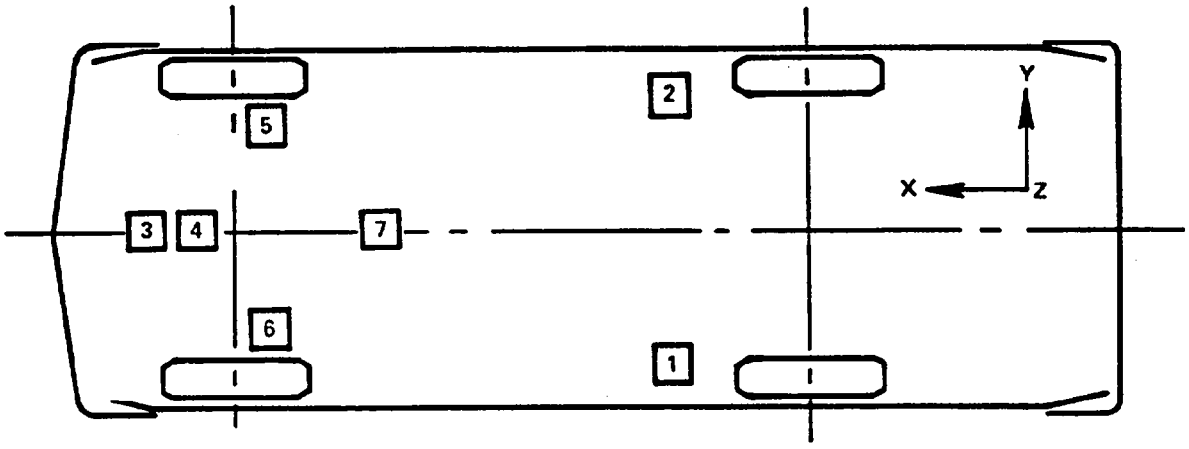


	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
PBU -- Top surface of alum. plate to upper edge	N/A	13.5
PBL -- Top surface of alum. plate to belt lower edge	N/A	10.3
TBI -- distance from Torso centerline to buckle	N/A	7.5
SHOULDER BELT TENSION	N/A	2 lbs
LAP BELT TENSION	N/A	-

Figure 7

VEHICLE ACCELEROMETER LOCATIONS

TOP VIEW



ACCELEROMETER NUMBER*	ACCELEROMETER LOCATION	DIRECTION		
		X	Y	Z
1	Left Rear Seat Crossmember	x		
2	Right Rear Seat Crossmember	x		
3	Top of Engine	x		
4	Bottom of Engine	x		
5	Right Disc Brake Caliper	x		
6	Left Disc Brake Caliper	x		
7	Instrument Panel	x		

*The accelerometer pack number can be correlated with the vehicle response data traces found in Appendix B.

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

NO.	LOCATION		X*	Y*	Z*	POSITIVE DIRECTION** MAX (g)	POSITIVE DIRECTION** TIME (msec)	NEGATIVE DIRECTION** MAX (g)	NEGATIVE DIRECTION** TIME (msec)
1	REAR SEAT X-MEMBER AT LEFT SIDE	PRE:	66.5	21.5	13.0				
		POST:	70.5	21.4	13.1				
	LONGITUDINAL FORCE					1	136	-37	37
2	REAR SEAT X-MEMBER AT RIGHT SIDE	PRE:	66.5	-21.5	13.0				
		POST:	70.7	-21.9	15.0				
	LONGITUDINAL FORCE					2	112	-40	38
3	TOP OF ENGINE BLOCK	PRE:	149.7	0.0	34.0				
		POST:	144.4	-2.8	31.9				
	LONGITUDINAL FORCE					1	88	-2	130
4	BOTTOM OF ENGINE BLOCK	PRE:	141.0	0.0	9.0				
		POST:	138.0	6.5	10.8				
	LONGITUDINAL FORCE					22	38	-132	31
5	BRAKE CALIPER AT RIGHT SIDE	PRE:	140.0	-22.0	21.0				
		POST:	138.8	-22.3	18.8				
	LONGITUDINAL FORCE					13	59	-64	34
6	BRAKE CALIPER AT LEFT SIDE	PRE:	140.0	22.0	21.0				
		POST:	139.5	22.3	18.4				
	LONGITUDINAL FORCE					39	57	-84	42
7	DASH PANEL	PRE:	136.5	0.0	29.0				
		POST:	114.5	-1.0	30.0				
	LONGITUDINAL FORCE					58	85	-88	91

**	POSITIVE	NEGATIVE
LONGITUDINAL:	FORWARD	REARWARD
LATERAL:	LEFTWARD	RIGHTWARD
VERTICAL:	UPWARD	DOWNWARD

*X + Forward from rear bumper
Y + Left from vehicle centerline
Z + Up from ground

DISTANCE MEASUREMENTS IN INCHES

Figure 8

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 5

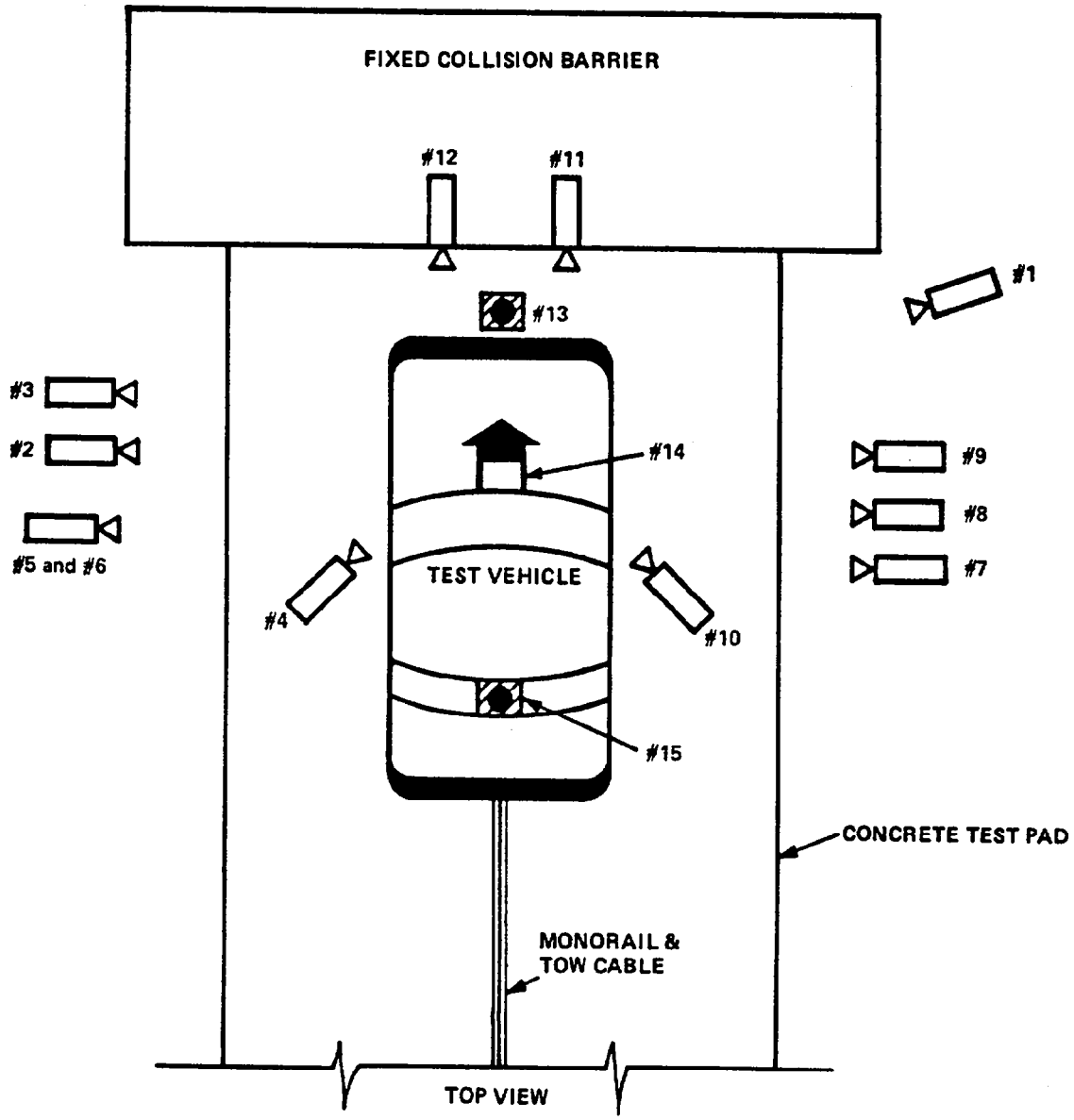


TABLE 5
HIGH-SPEED CAMERA LOCATIONS

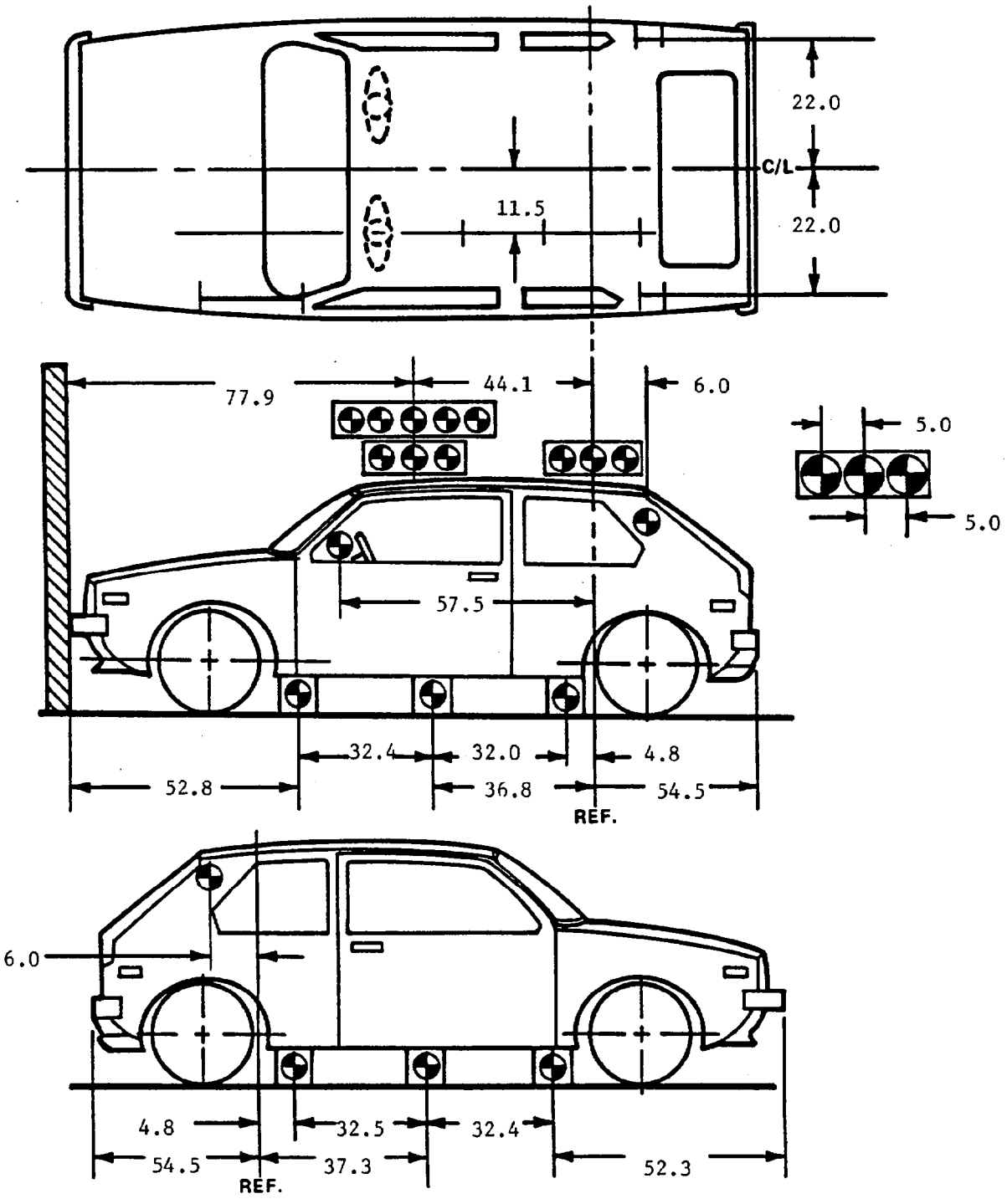
Test No. CJ0208 Vehicle 1988 Ford Tempo GL 4-Door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (in)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	237	67	41.5	-5	220.5	13	540
3	Left Side View	293	35	41.5	-4	276.5	25	520
4	Driver and Interior View	108	105	71.5	-17	-	13	750
5	Steering Column (bottom)	291	92	46.5	-4	274.5	25	545
6	Steering Column (top)	291	92	70.5	-10	274.5	25	550
7	Overall Right Side	242	75.5	42.0	-3	225.5	13	800
8	Right Side View	285	46.0	41.0	-1	268.5	35	780
9	Right Passenger View	301	72.0	57.5	-3	284.5	25	720
10	Passenger and Interior View	98	110.0	73.0	-18	-	25	600
11	Passenger Front View	46	13	73.5	-24	-	13	550
12	Driver Front View	56	16	66.0	-19	-	13	545
13	Windshield View	0	0	126.0	-52	-	13	540
14	Pit View of Engine	0	36	-120.0	90	-	13	820
15	Pit View of Fuel Tank	0	130	-120.0	90	-	13	800

* X = Film plane to monorail centerline
Y = Film plane to impact location
Z = Film Plane to ground
** = Referenced to horizontal plane

Figure 9

VEHICLE TARGET LOCATIONS



(DIMENSIONS IN INCHES)

7669-9

Figure 10

TEST VEHICLE MEASUREMENTS

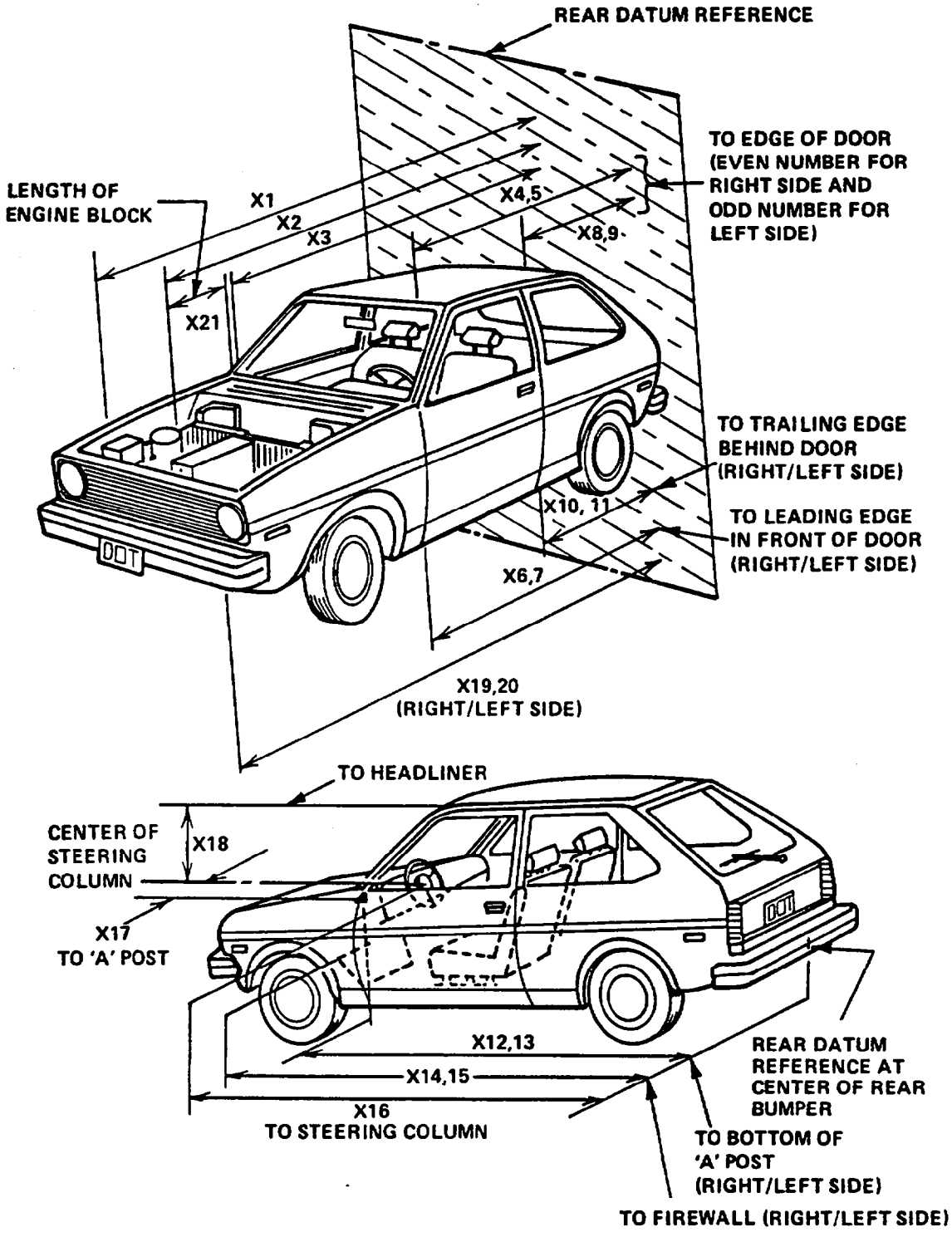


TABLE 6

VEHICLE MEASUREMENTS

No.		All Dimensions in Inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	176.5	161.7	14.8
X2	Rear Surface of Vehicle to Front of Engine	154.1	147.9	6.2
X3	Rear Surface of Vehicle to Firewall	134.8	132.8	2.0
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	123.4	123.0	0.4
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	123.0	123.7	-0.7
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	121.1	120.6	0.5
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	120.5	121.0	-0.5
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	83.3	83.1	0.2
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	83.0	83.9	-0.9
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	83.5	83.1	0.4
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	83.3	83.6	-0.3
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	120.7	120.4	0.3
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	120.3	121.5	-1.2
X14	Rear Surface of Vehicle to Firewall, Right Side	137.0	135.3	1.7
X15	Rear Surface of Vehicle to Firewall, Left Side	135.4	134.9	0.5
X16	Rear Surface of Vehicle to Steering Column	104.1	105.5	-1.4 *
X17	Center of Steering Column to "A" Post	15.5	16.1	-0.6
X18	Center of Steering Column to Headliner	16.6	16.0	0.6
X19	Rear Surface of Vehicle to Right Side of Front Bumper	174.7	159.4	15.3
X20	Rear Surface of Vehicle to Left Side of Front Bumper	174.4	161.2	13.2
X21	Length of Engine Block	12.0	12.0	0.0

(* AFTER AIRBAG WAS DEPLOYED)

Section 4

SUMMARY OF RESULTS OF FMVSS NOS. 208, 212, 219(P) AND 301-75

- "Occupant Crash Protection," FMVSS No. 208 Data
- "Windshield Mounting," FMVSS No. 212 Data
- "Windshield Zone Intrusion," FMVSS No. 219 (Partial) Data
- "Fuel System Integrity," FMVSS No. 301-75

TABLE 7

DUMMY INJURY CRITERIA VALUES

	MAXIMUM ACCELERATION ("G")							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DUMMY (1)	-67	-24	-62	71	-47	4	9	47
DUMMY (2)	-15	33	42	47	-41	30	26	41

	MAXIMUM FORCE - FEMUR LOAD (LBS)	
	Right Femur	Left Femur
DUMMY (1)	1560	1464
DUMMY (2)	612	661

	HEAD INJURY CRITERIA **			
		36 millisecond Maximum		AVE. ACC. (g)
	HIC	t_1 (SEC)	t_2 (SEC)	t_1 TO t_2
DUMMY (1)	318	.05647	.09247	37.9
DUMMY (2)	327	.07177	.10777	38.3

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

TABLE 8

FMVSS NO. 208 - SEAT BELT WARNING SYSTEM CHECK

With occupant in driver's position, the lap belt in stowed position, and ignition switch placed in "Start/On" position:

Log time duration of audible warning signal = 6.0 sec.

Log time duration of reminder light operation = 6.0 sec.

With occupant in driver's position, lap belt in use, and the ignition switch placed in "Start/On" position:

Log time duration of audible warning signal = 0.0 sec.
(audible warning should not operate)

Log time duration of reminder light operation = 6.0 sec.

Note wording of visual warning:

Fasten seat belt _____

Fasten Belt _____

Symbol 101-80 X

TABLE 9

FMVSS NO. 208 - LABELING AND DRIVER'S MANUAL INFORMATION

Locate label which describes manufacturers maintenance or replacement schedule for crash-deployed occupant protection system.

Describe location: Right Side Glove Box.

The manufacturer's recommended schedule is the replace or repair this system:

Regular Maintenance Not Required.

Were appropriate instructions concerning maintenance and/or replacement of this system provided? YES X NO ____

Was a description of the functional operation of the system provided? YES X NO ____

Is there a reference to the instructions and description of the system on the label? YES X NO ____

Was an owner's manual provided? YES X NO ____

Did the owner's manual contain appropriate information concerning maintenance and/or replacement and a description of the functional operation of the systems? YES X NO ____

TABLE 10
FMVSS NO 208 - READINESS INDICATOR

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.

Is the system totally mechanical? YES ____ NO X

Describe the location of the readiness indicator:

Lower Left Side of Instrument Panel.

Is the readiness indicator clearly visible to the driver?

YES X NO ____

Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided?

YES ____ NO X

TABLE 11
FMVSS NO. 208 - COMFORT AND CONVENIENCE TEST SUMMARY

Test Vehicle NHTSA No.:	CJ0208
Make/Model:	1988 Ford Tempo GL
Date of Comfort/Convenience Check:	9-23-88
Technician Performing Check:	RFH, Jr.
GVWR:	3682

Seat belt comfort and convenience requirements cover vehicles manufactured on or after September 1, 1986, which have a gross vehicle weight rating of 10,000 pounds or less. Exemptions to this rule are belts installed in a walk-in, van-type vehicle and manual Type 2 belt systems installed in the front outboard seating positions of passenger automobiles. On or after September 1, 1989, the exemption of the Type 2 manual seat belts installed in the front outboard seating positions of passenger automobiles will change depending on the states' enactment of mandatory usage laws.

Was vehicle built after or on September 1, 1986, and is it equipped with:

1. Automatic seat belts YES _____ NO X

If yes, go to requirements D1, D2 and D3

TABLE 11 (continued)

D1
CONVENIENCE HOOKS

A convenience hook or other device is provided to stow seat belt webbing to facilitate entering or exiting the vehicle.

YES _____ NO X

D2
WEBBING TENSION - RELIEVING DEVICE

The seat belt assembly installed in the outboard designated seating position has either manual or automatic tension relieving devices permitting the introduction of slack in the webbing of the should belt ("comfort clips" or "window shade" devices).

YES _____ NO X

D3
BELT CONTACT FORCE

1. Do not measure the belt contact force if the manual or automatic seat belt assemblies in this vehicle incorporate a webbing tension relieving device.

   YES _____ NO X

2. Seats are adjusted according to instructions in Appendix B.

   YES X NO _____

3. The test dummies are positioned according to dummy position placement instructions in Appendix B and Appendix C.

   YES X NO _____

4. Close the vehicle's adjacent door, 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. Then fasten the latch. 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. Measure the contact force exerted by the belt webbing on the dummy's chest. The contact force is 0.3 pounds. Contact the COTR if the contact force exceeds 0.7 pounds.

Figure 11

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

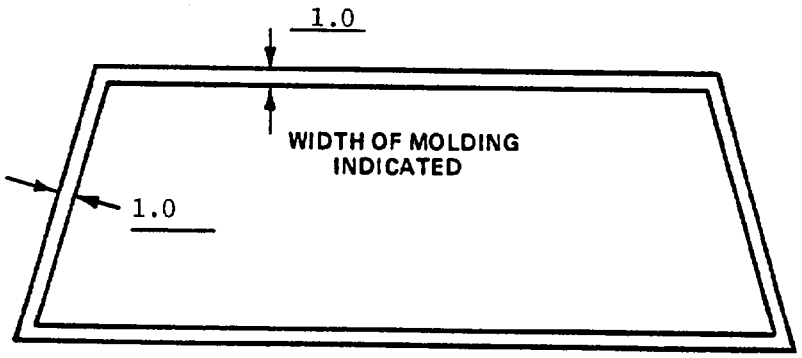
Windshield is bonded in place. Top and side edges are covered with 1.0 inch molding. Bottom of windshield is covered with a plastic cowl.

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

FMVSS 212 TEST DATA:

	WINDSHIELD PREIPHERY		
	PRE-TEST (in.)	POST-TEST (in.)	PERCENT RETENTION
RIGHT SIDE	77.6	77.6	100%
LEFT SIDE	77.6	77.6	100%
TOTAL	155.2	155.2	100%

AREA OF RETENTION FAILURE:



FRONT VIEW

FAILURE DETAILS:

NONE

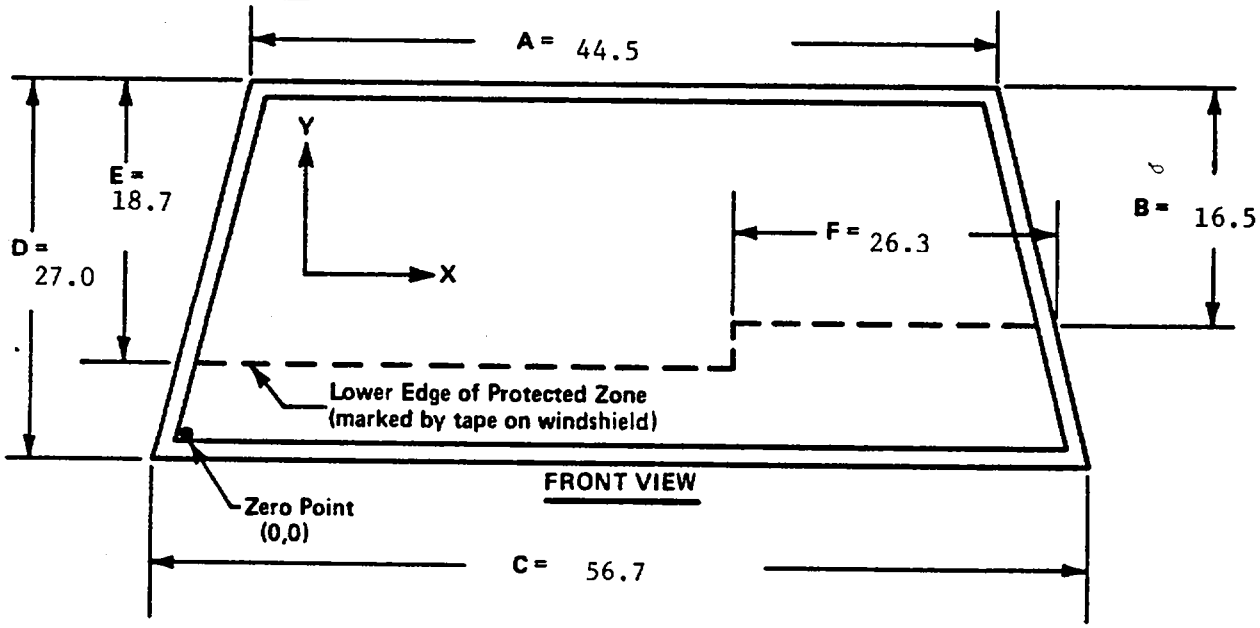
Figure 12

FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA SHEET

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5" dia. rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. The locus of points is drawn on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 1/2" distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield.

FMVSS 219 TEST DATA:



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

NONE

	COORDINATES	
	X	Y
1.		
2.		
3.		
4.		

TABLE 12

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: | C | J | 0 | 2 | 0 | 8 | TEST DATE: 9/27/88

Vehicle Mfr/Make/Model: 1988 Ford Tempo GL 4-Door Sedan

Test vehicle fuel tank filled to 92% to 94% of manufacturer's "useable" capacity and with electric fuel pump operating (if it will operate without engine operation) Part 572 test dummies located at each front designated seating position.

* *

TEST VEHICLE IMPACT TYPE

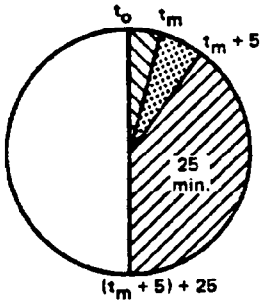
__X__ Frontal (30 mph)

_____ Oblique (30 mph) with ___° barrier face first contacting _____ (driver/passenger) side

_____ Rear Moving Barrier (30 mph)

_____ Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT



	ACTUAL	MAX ALLOWED
1. From impact until vehicle motion ceases	0	1 oz
2. For 5 minute period after vehicle motion ceases	0	5 oz
3. For next 25 minutes	0	1 oz/1 min

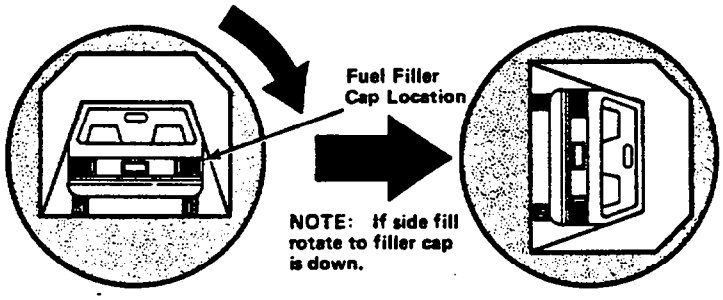
SOLVENT SPILLAGE DETAILS

NONE

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
CJ0208

TEST PHASE: 0° 90°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	3 minutes	00 seconds
FMVSS 301 Position Hold Time +	05 minutes	00 seconds
TOTAL	8 minutes	00 seconds
Next whole minute interval	8 minutes	

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

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

IV. SOLVENT SPILLAGE LOCATION(S):

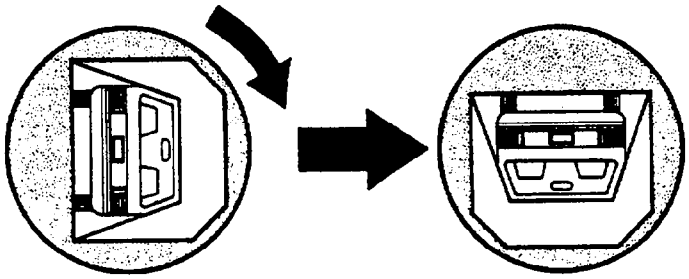
NONE

TABLE 13 (continued)

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.: CJ0208

TEST PHASE: 90° 180°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	3 minutes	00 seconds
FMVSS 301 Position Hold Time +	05 minutes	00 seconds
TOTAL	8 minutes	00 seconds
Next whole minute interval	8 minutes	

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

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

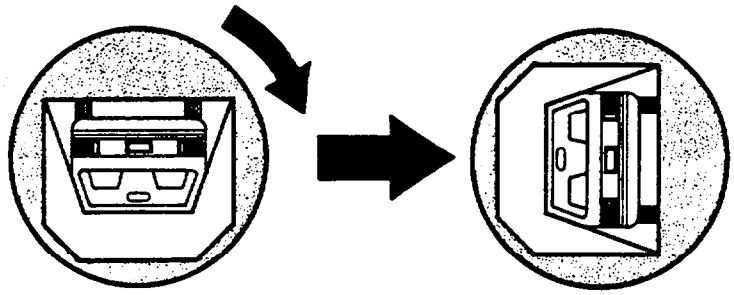
IV. SOLVENT SPILLAGE LOCATION(S):

NONE

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
CJ0208

TEST PHASE: 180° 270°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	3 minutes	00 seconds
FMVSS 301 Position Hold Time +	05 minutes	00 seconds
TOTAL	8 minutes	00 seconds
Next whole minute interval	8 minutes	

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

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

IV. SOLVENT SPILLAGE LOCATION(S):

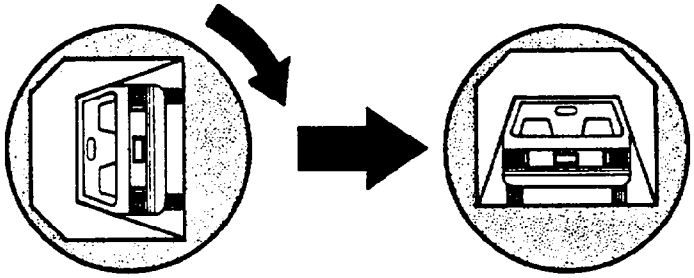
NONE

TABLE 13 (continued)

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.: CJ0208

TEST PHASE: 270° 360°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	3 minutes	00 seconds
FMVSS 301 Position Hold Time +	05 minutes	00 seconds
TOTAL	8 minutes	00 seconds
Next whole minute interval	8 minutes	

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

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

IV. SOLVENT SPILLAGE LOCATION(S):

NONE

TABLE 14

TEST VEHICLE NONCOMPLIANCE NOTICE

NHTSA CONTRACT LAB: Calspan Advanced Technology Center

LAB. PROJECT MANAGER & TELEPHONE NO.: Walter E. Levan (716) 632-7500

DATE OF TEST: September 27, 1988 VEH. NHTSA No. CJ0208

VEHICLE MANUFACTURER: Ford Motor Company

Model Year 1988 VIN: 1FACP36X2JK187722

Body Style: 4-door Sedan Build Date: 3/88

DUMMY STABILIZED TEMPERATURE AT TIME OF TEST: 68 °F (Spec. = 66-78°F)

IMPACT VELOCITY: 29.7 mph TIME OF TEST: 11:45

TYPE OF AUTOMATIC RESTRAINT SYSTEM: Driver Airbag and Passenger 3-point restraint

FAILURE DETAILS: Vehicle appears to comply with the requirement of FMVSS Nos 208, 212, 219 (partial) and 301.

Appendix A

PHOTOGRAPHS

Figure A-1 POST-TEST FRONT VIEW

Figure A-2 POST-TEST RIGHT FRONT THREE-QUARTER VIEW

Figure A-3 POST-TEST RIGHT VIEW

Figure A-4 POST-TEST LEFT REAR THREE-QUARTER VIEW

Figure A-5 POST-TEST LEFT VIEW

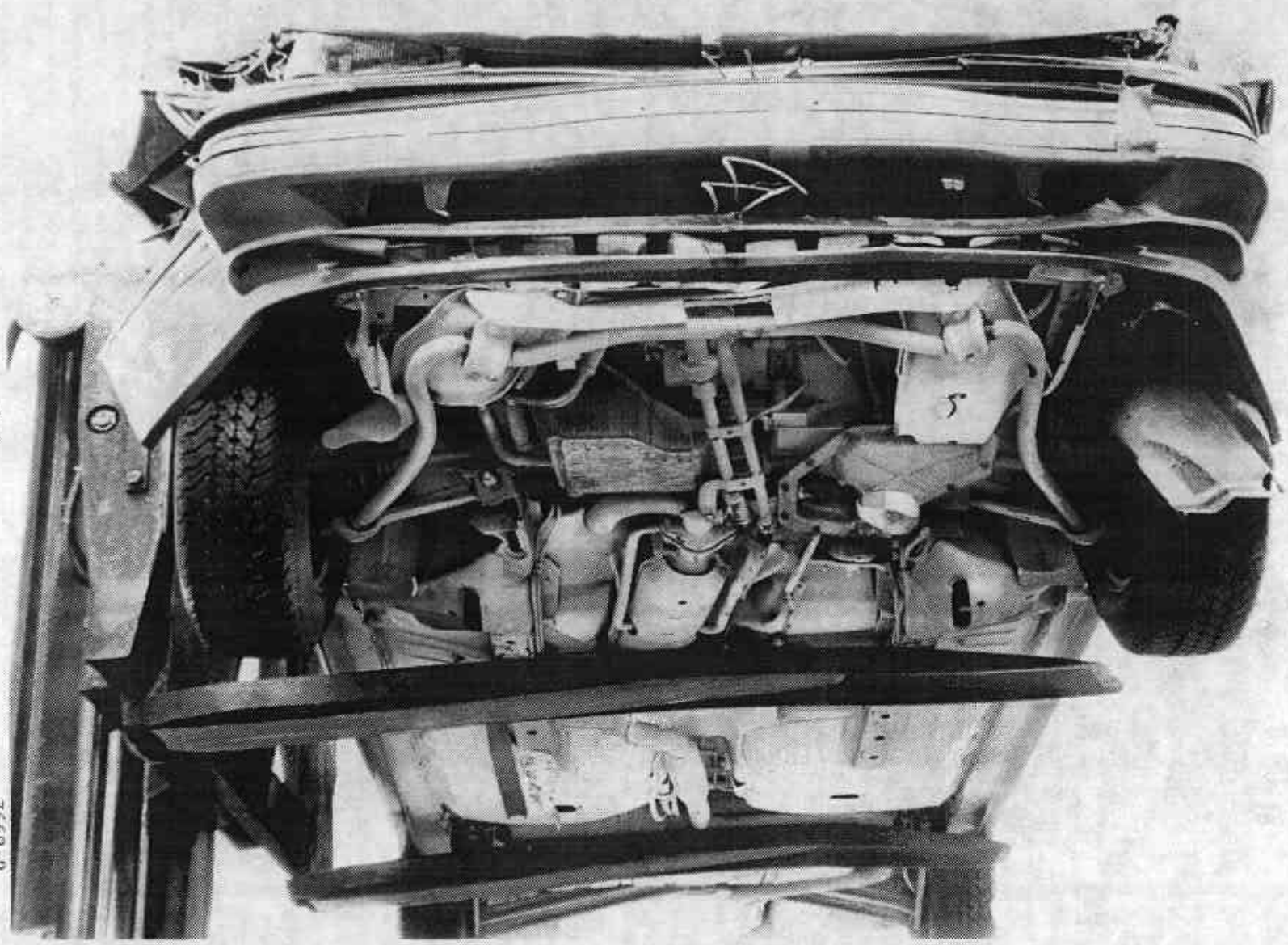


Figure A-6 POST-TEST FRONT UNDERBODY VIEW

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Figure A-7 POST-TEST FRONT SIDE UNDERBODY VIEW

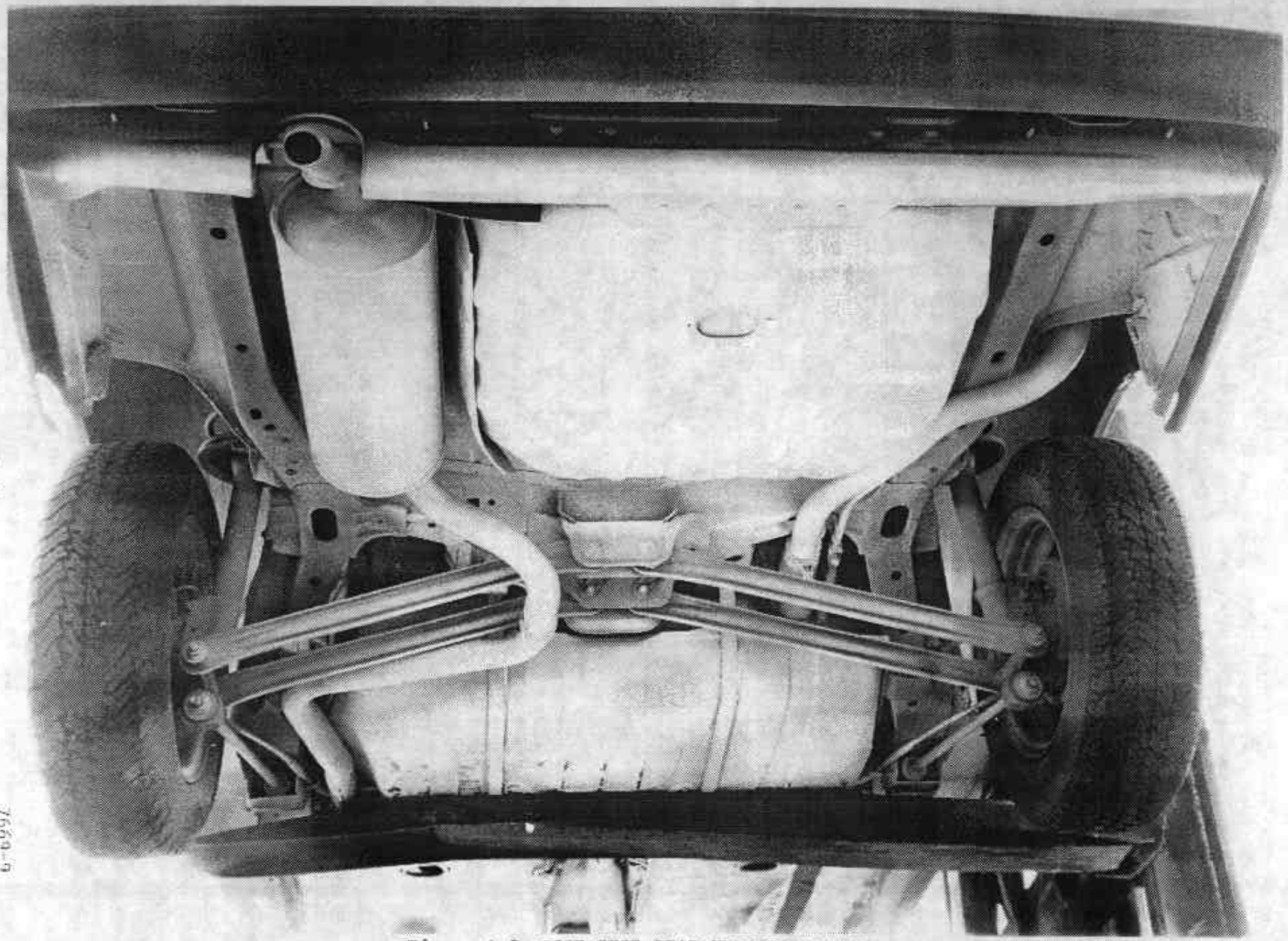


Figure A-8 POST-TEST REAR UNDERBODY VIEW

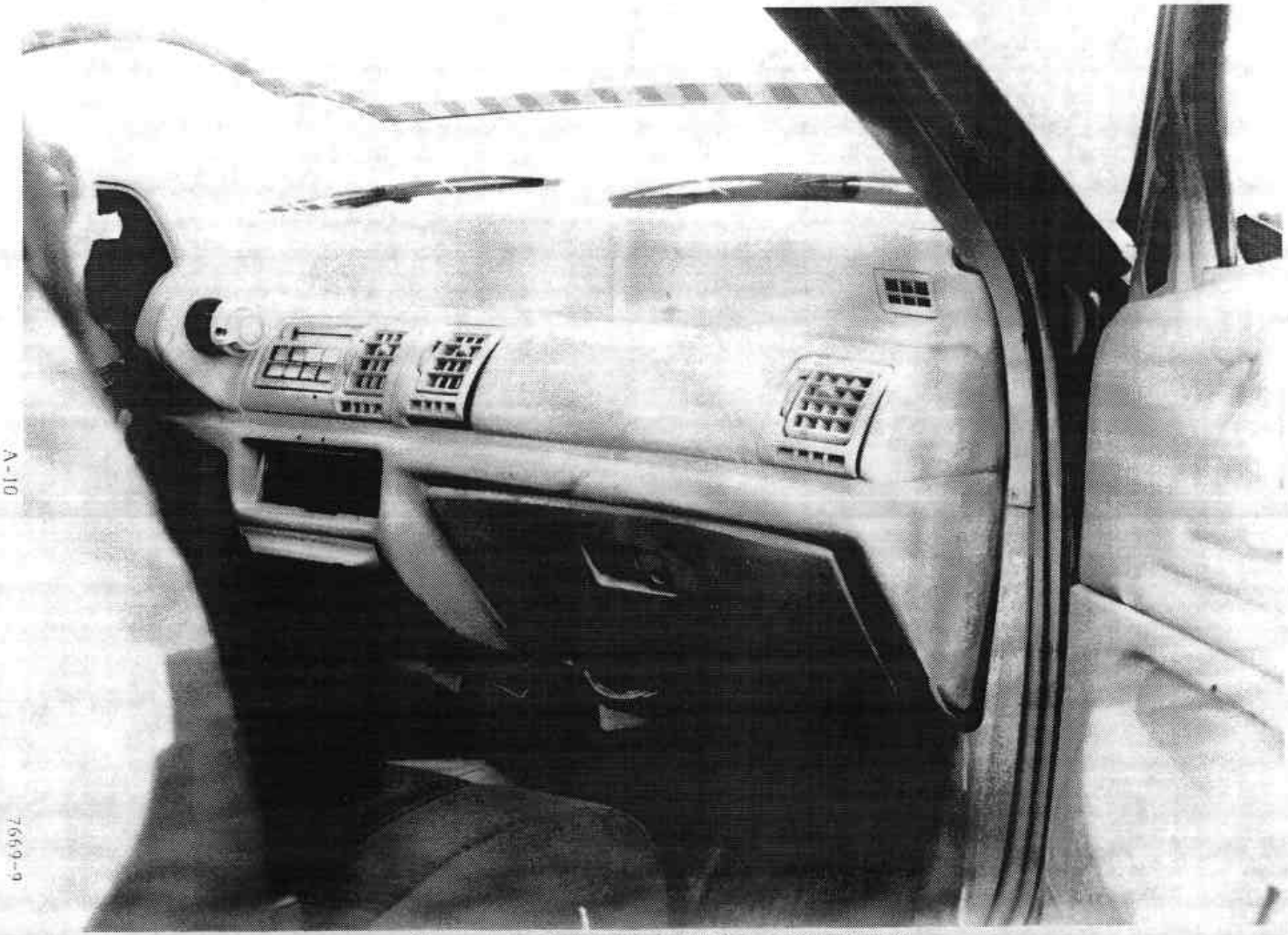


Figure A-9 POST-TEST PASSENGER INTERIOR VIEW

Figure A-10 POST-TEST DRIVER INTERIOR VIEW

Figure A-11 POST-TEST AIRBAG VIEW

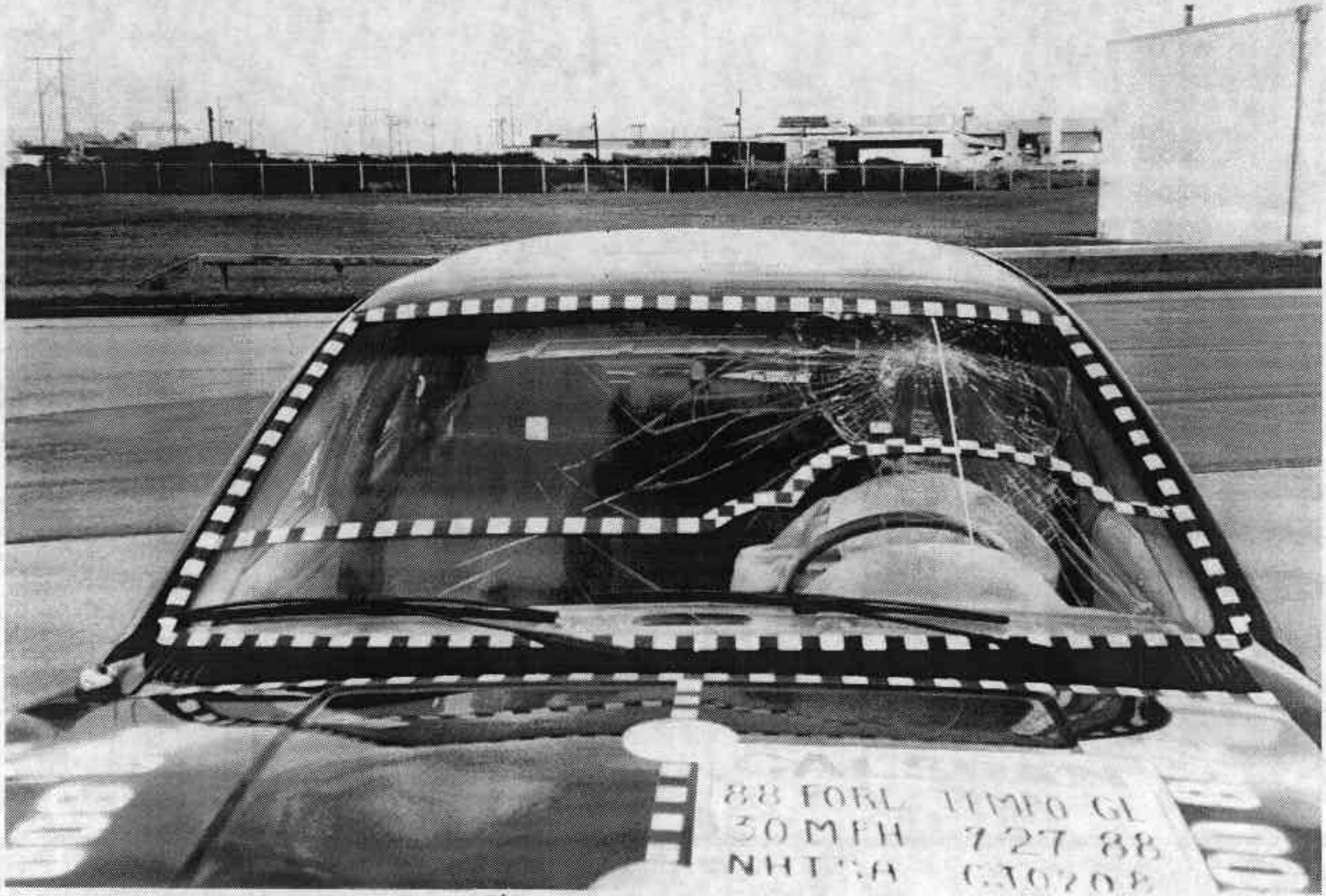
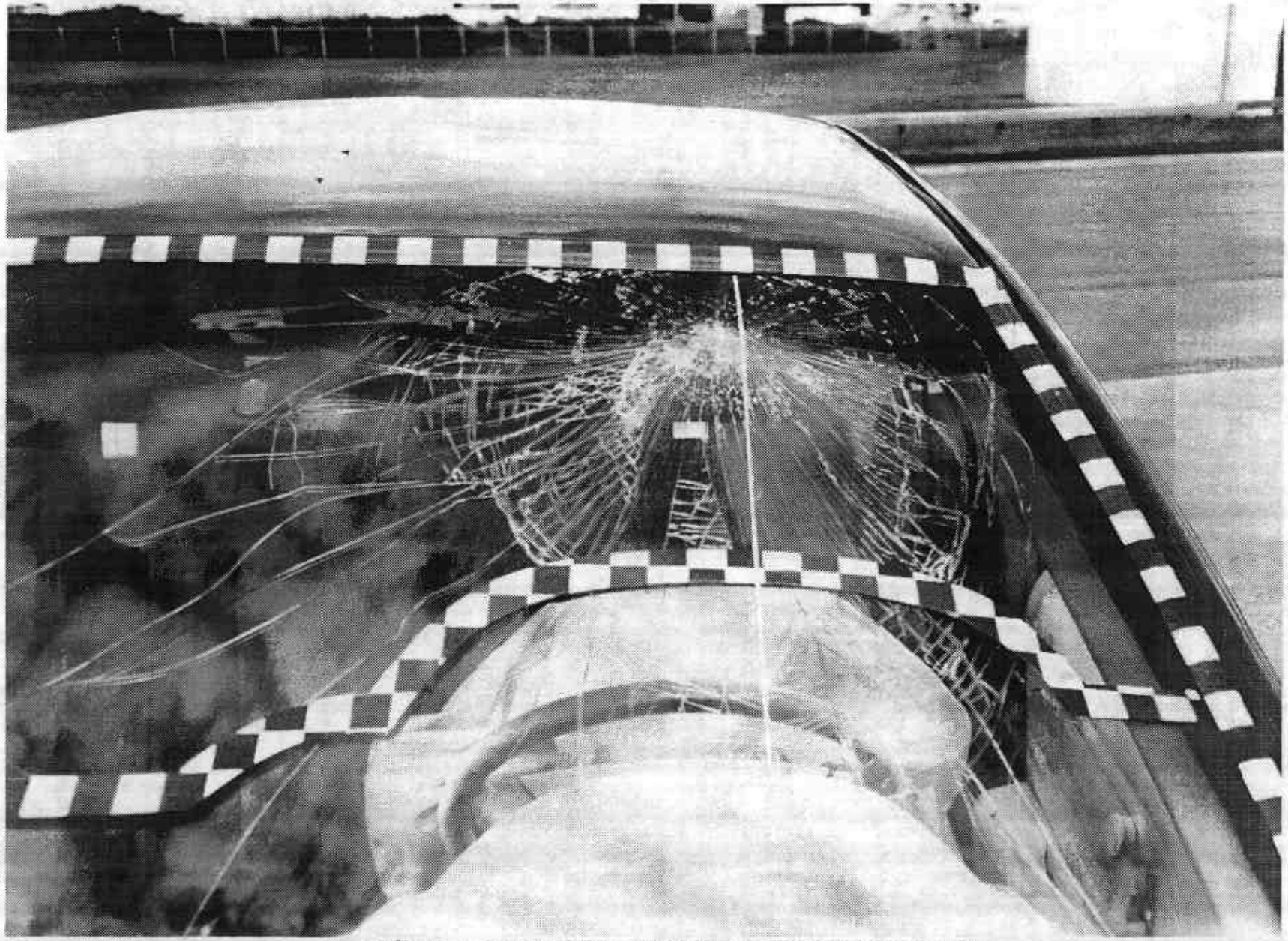


Figure A-12 POST-TEST WINDSHIELD VIEW

7669-9



A-19

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Figure A-13 POST-TEST WINDSHIELD - DRIVER'S SIDE VIEW

Appendix B

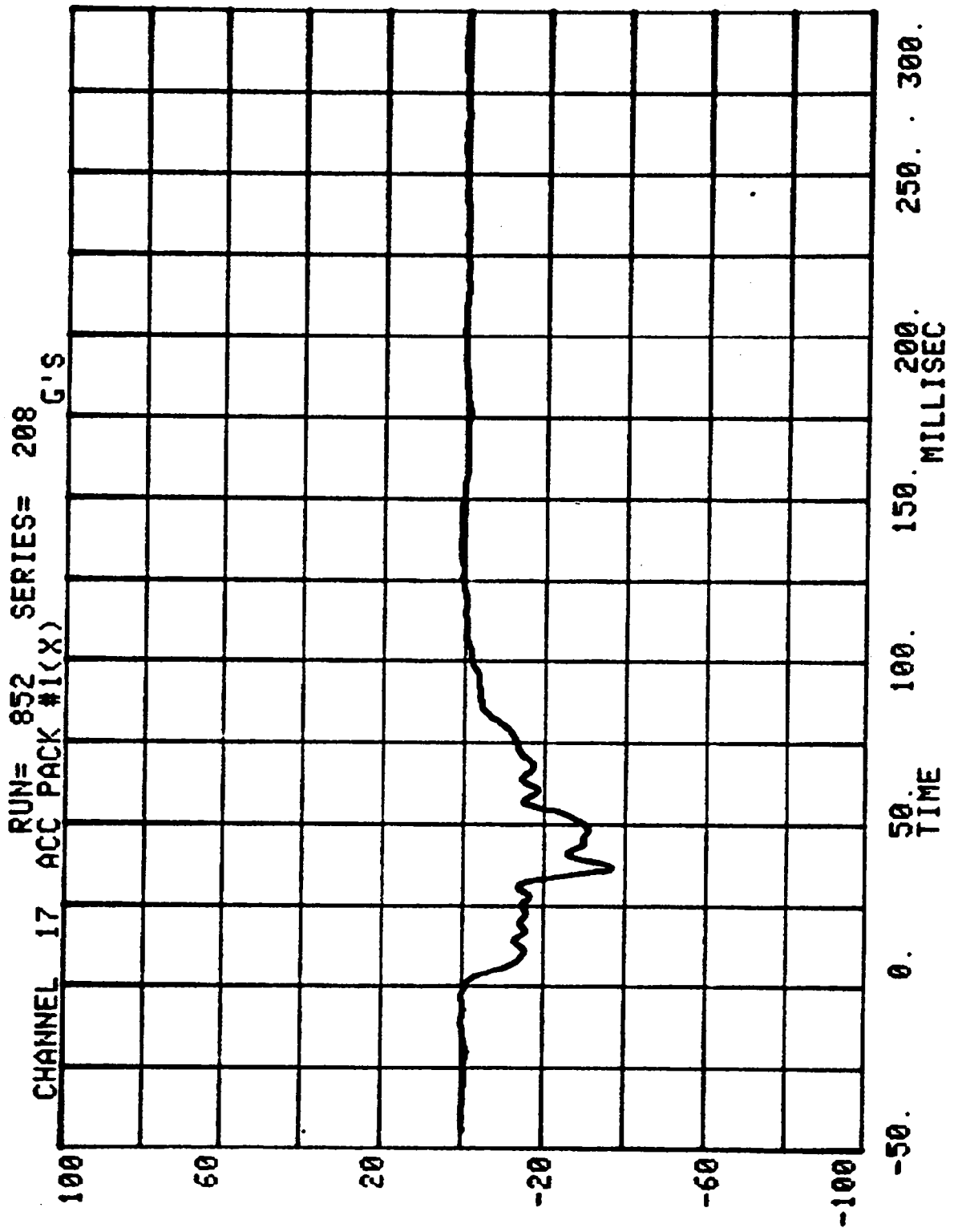
VEHICLE AND DUMMY RESPONSE DATA

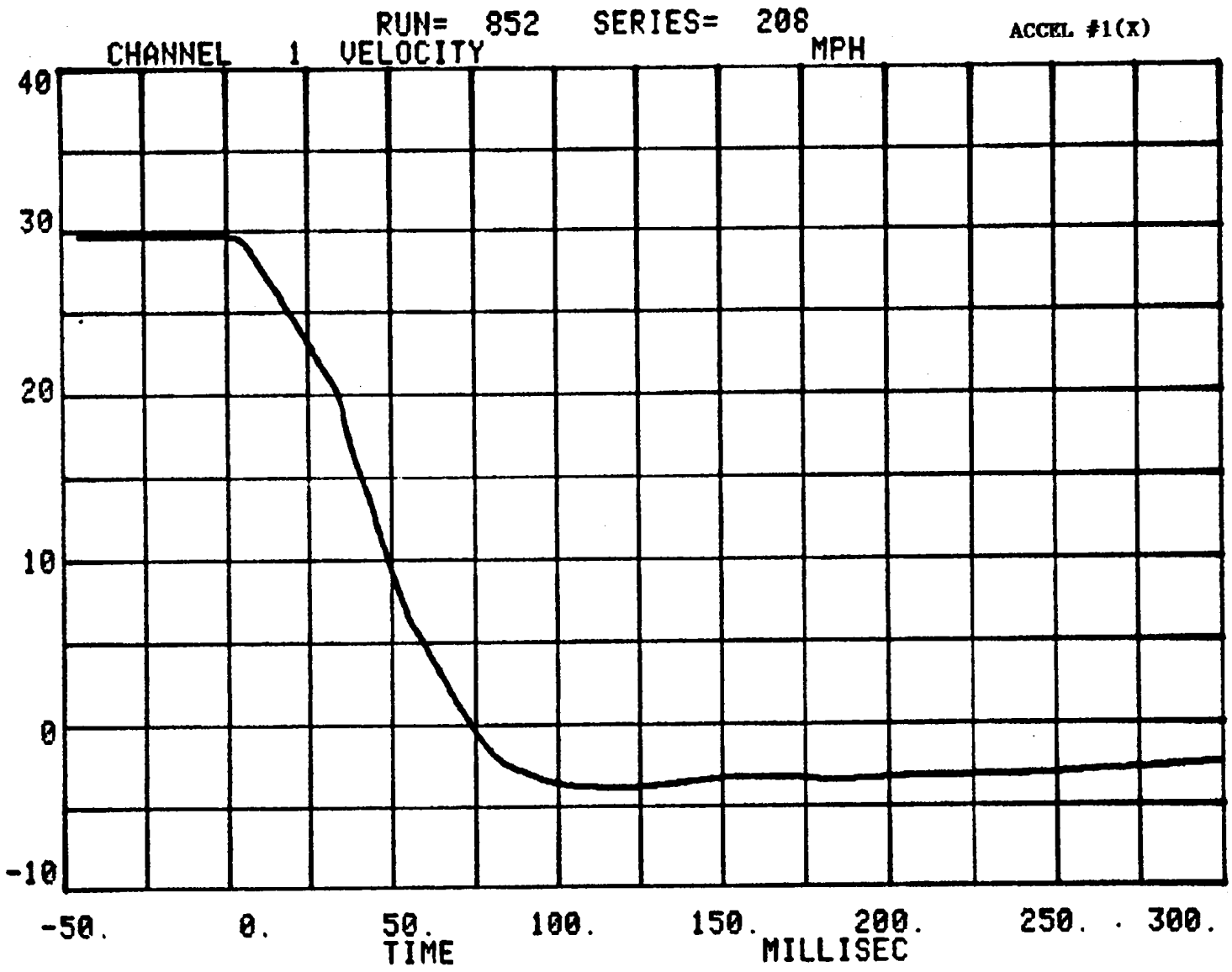
TEST NO. CJ0208

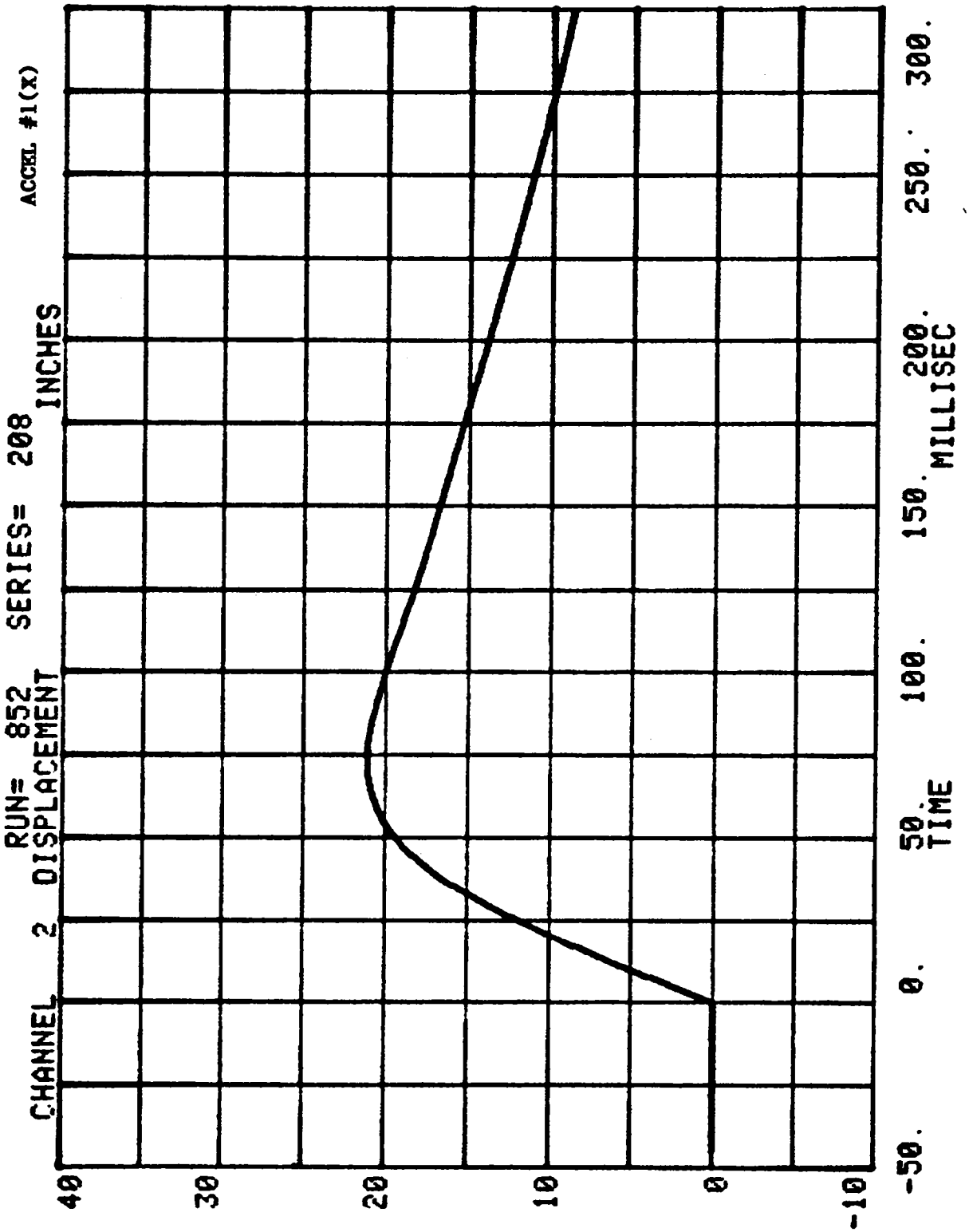
VEHICLE DATA

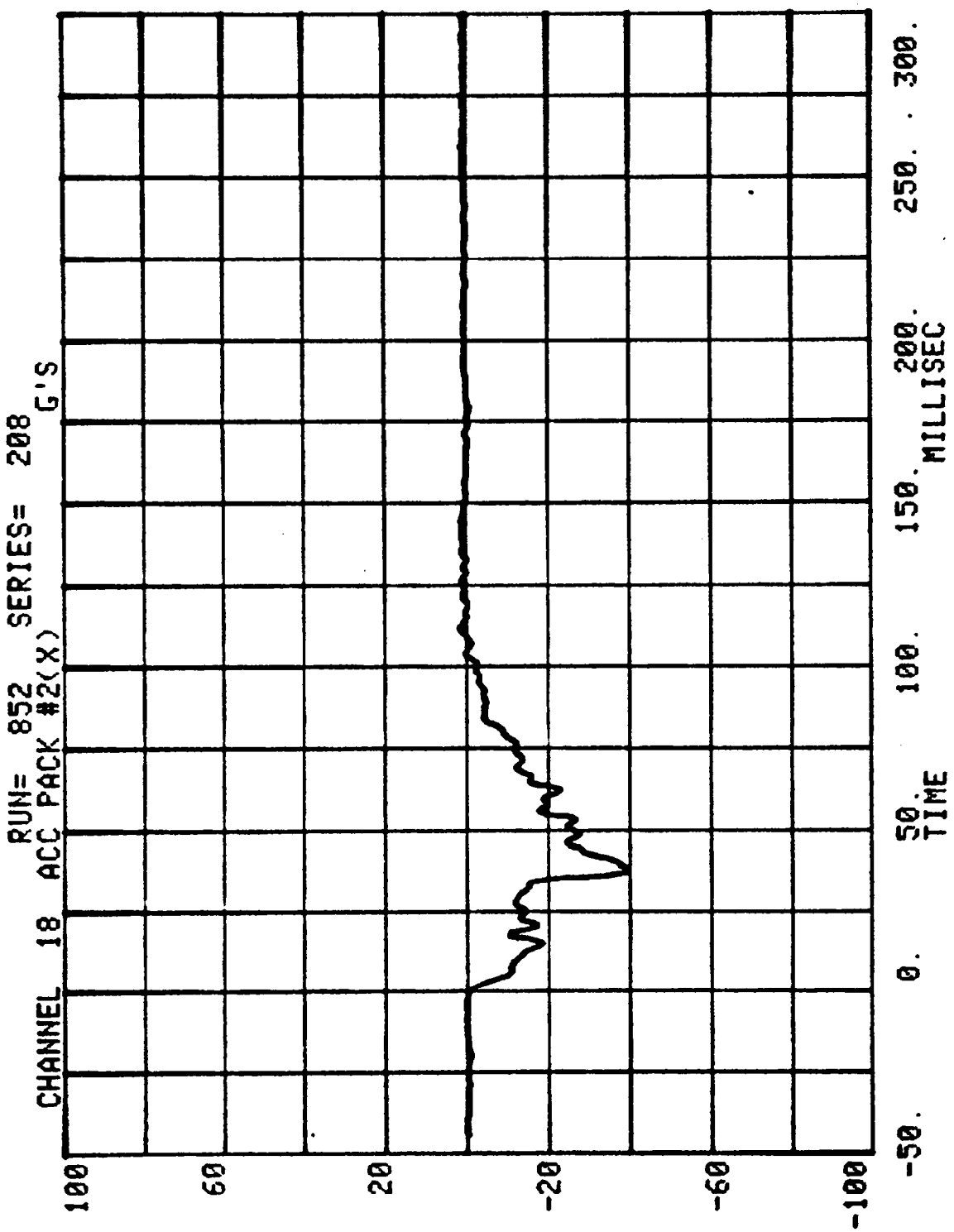
FILTER CHANNEL CLASS

60

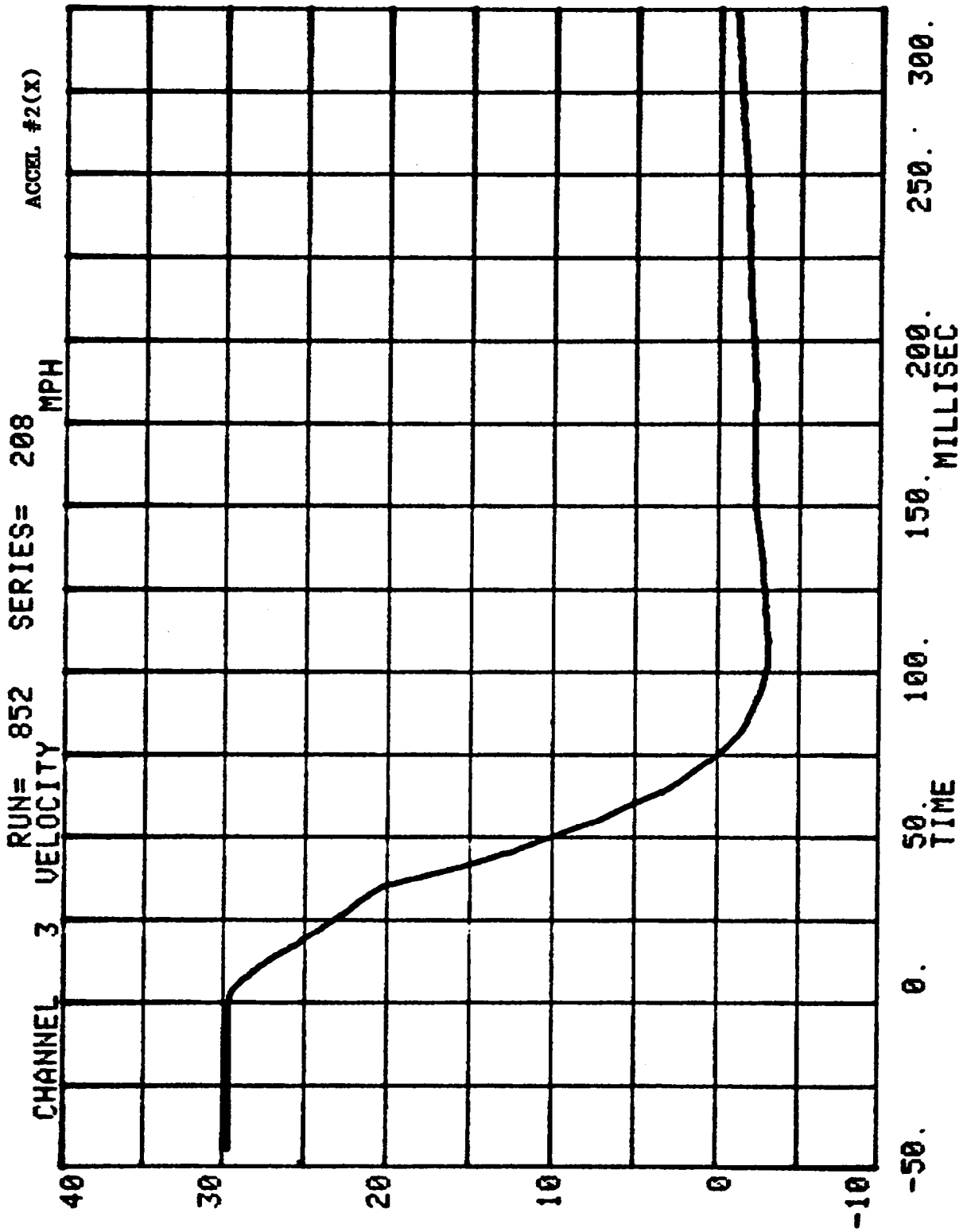

CHANNEL 17 ACC PACK #1(X)
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 852 SERIES= 208
ACCEL #1(X)
CHANNEL 1 VELOCITY
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

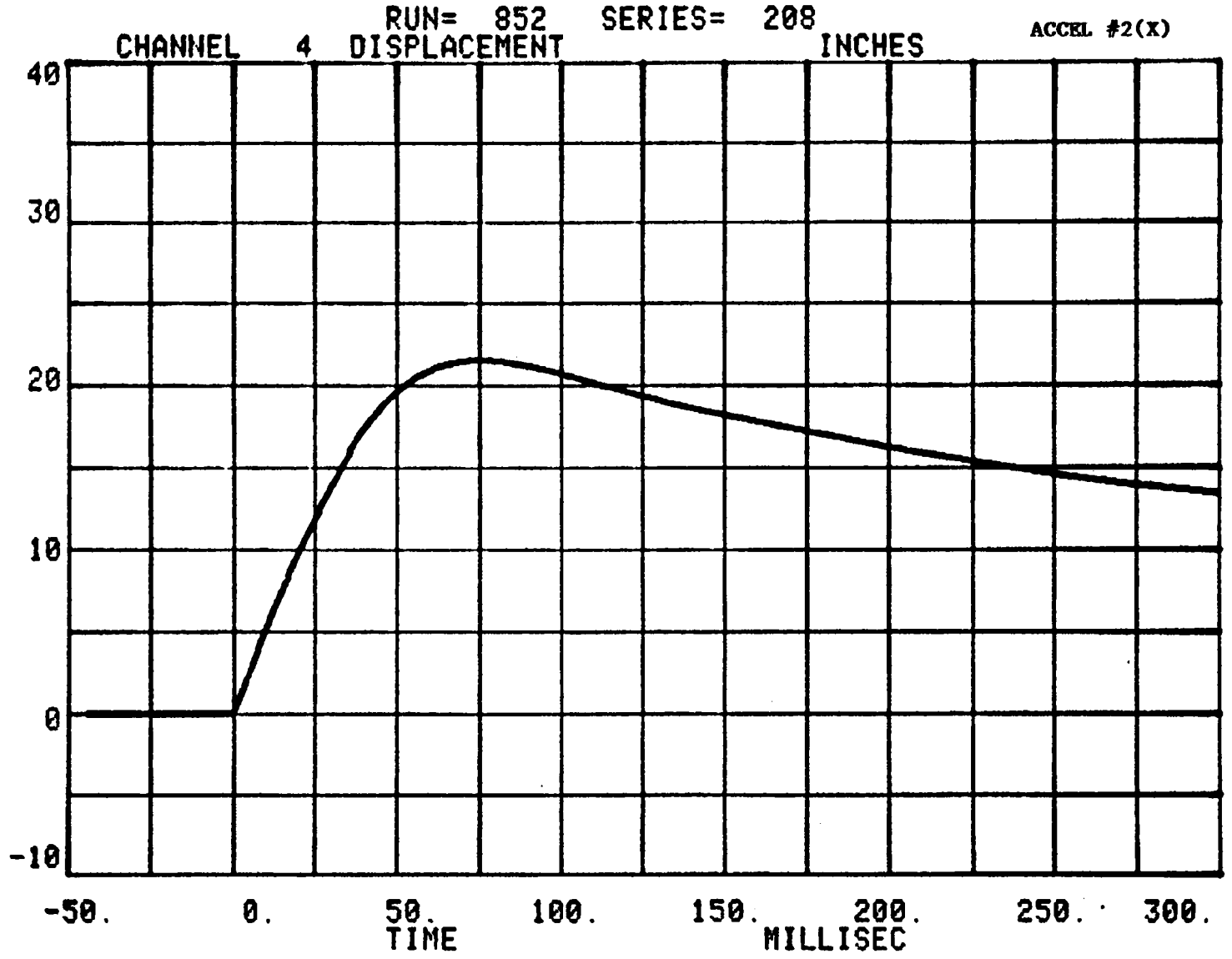

ACCEL #1(X)
CHANNEL 2 DISPLACEMENT
RUN= 852 SERIES= 208
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

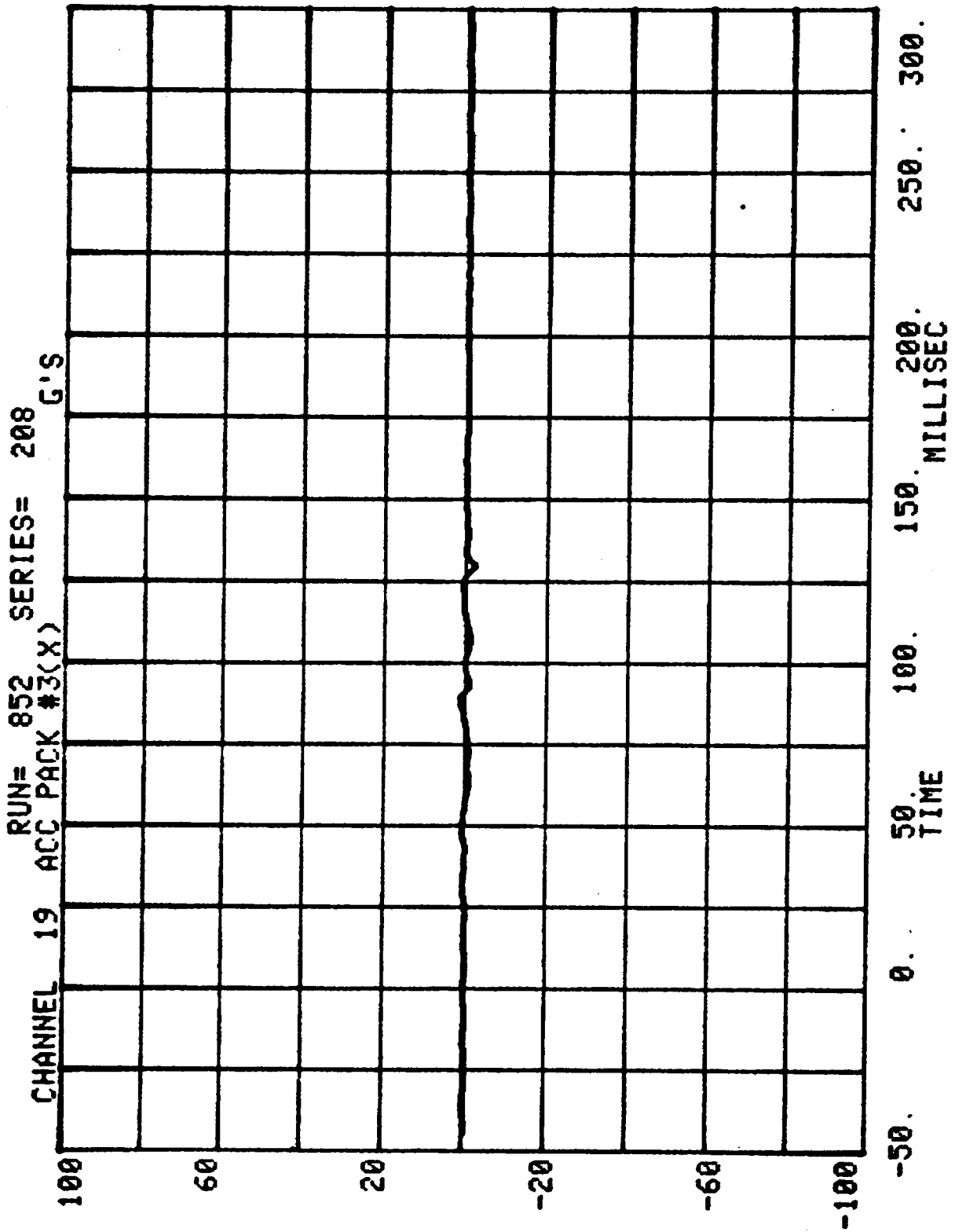

CHANNEL 18 ACC PACK #2(X)
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-9

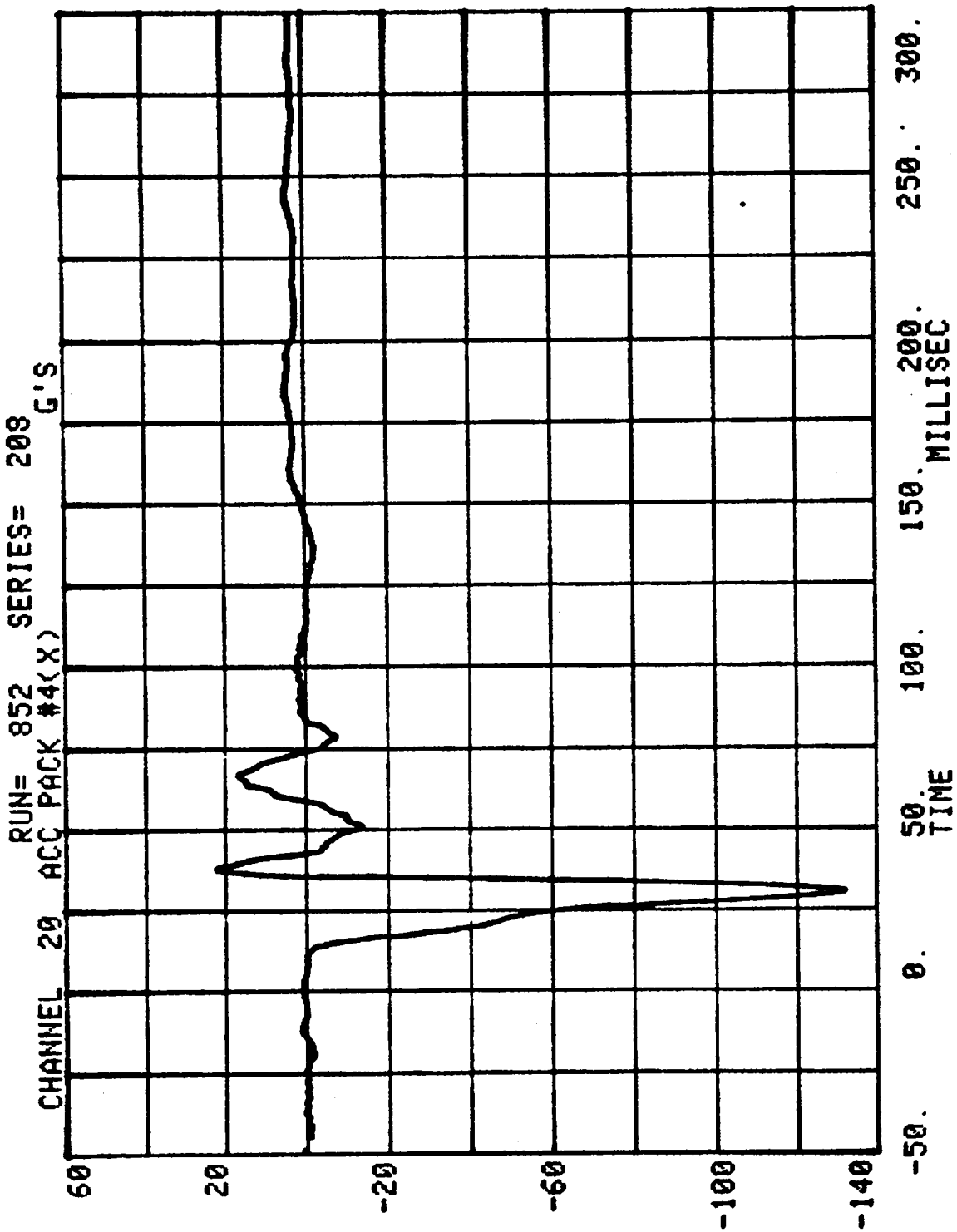

CHANNEL 3 VELOCITY
RUN= 852 SERIES= 208 MPH
ACCEL #2(X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

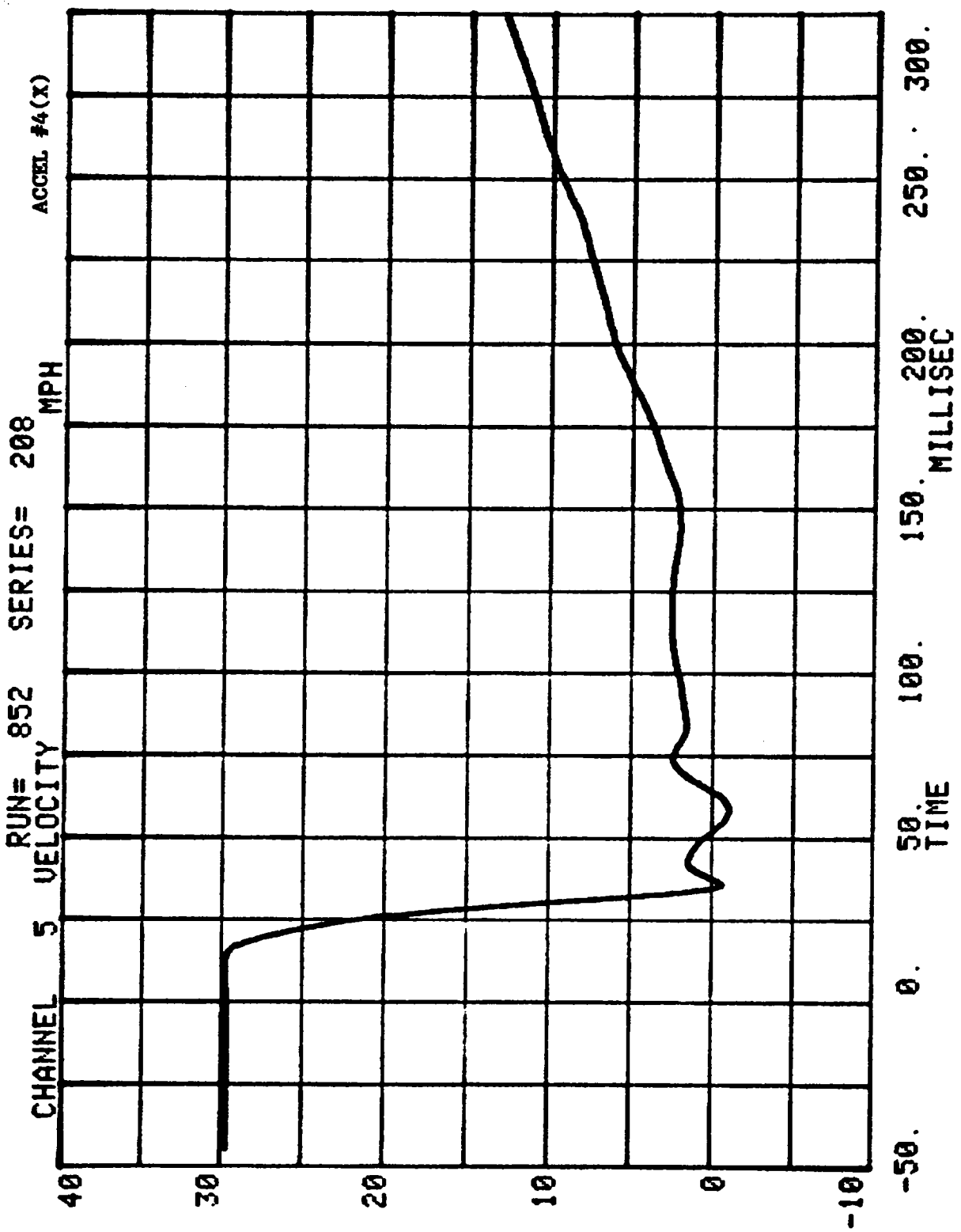
7669-9

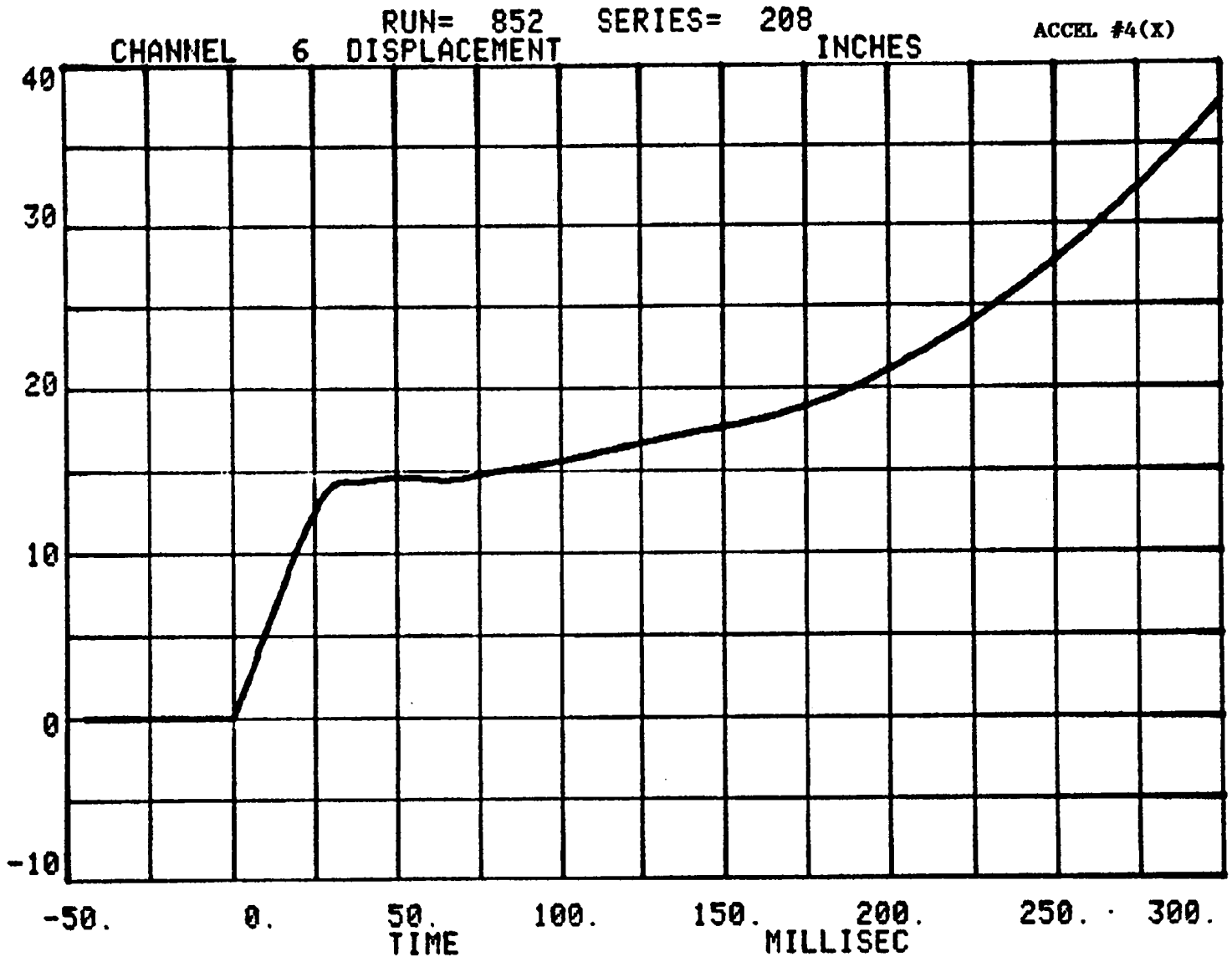

RUN= 852 SERIES= 208
CHANNEL 4 DISPLACEMENT INCHES
ACCEL #2(X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME MILLISEC

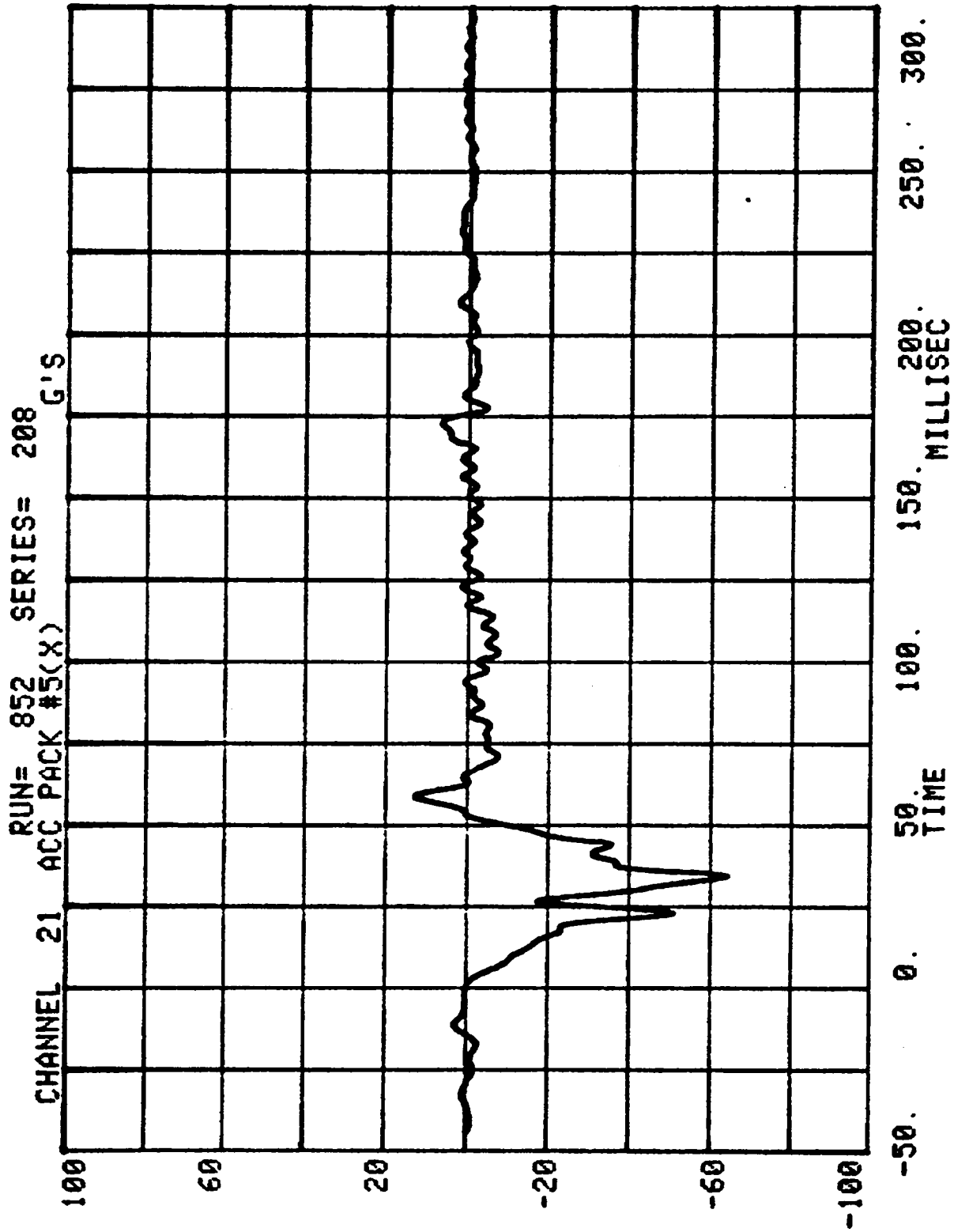

CHANNEL 19 ACC PACK #3(X)
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

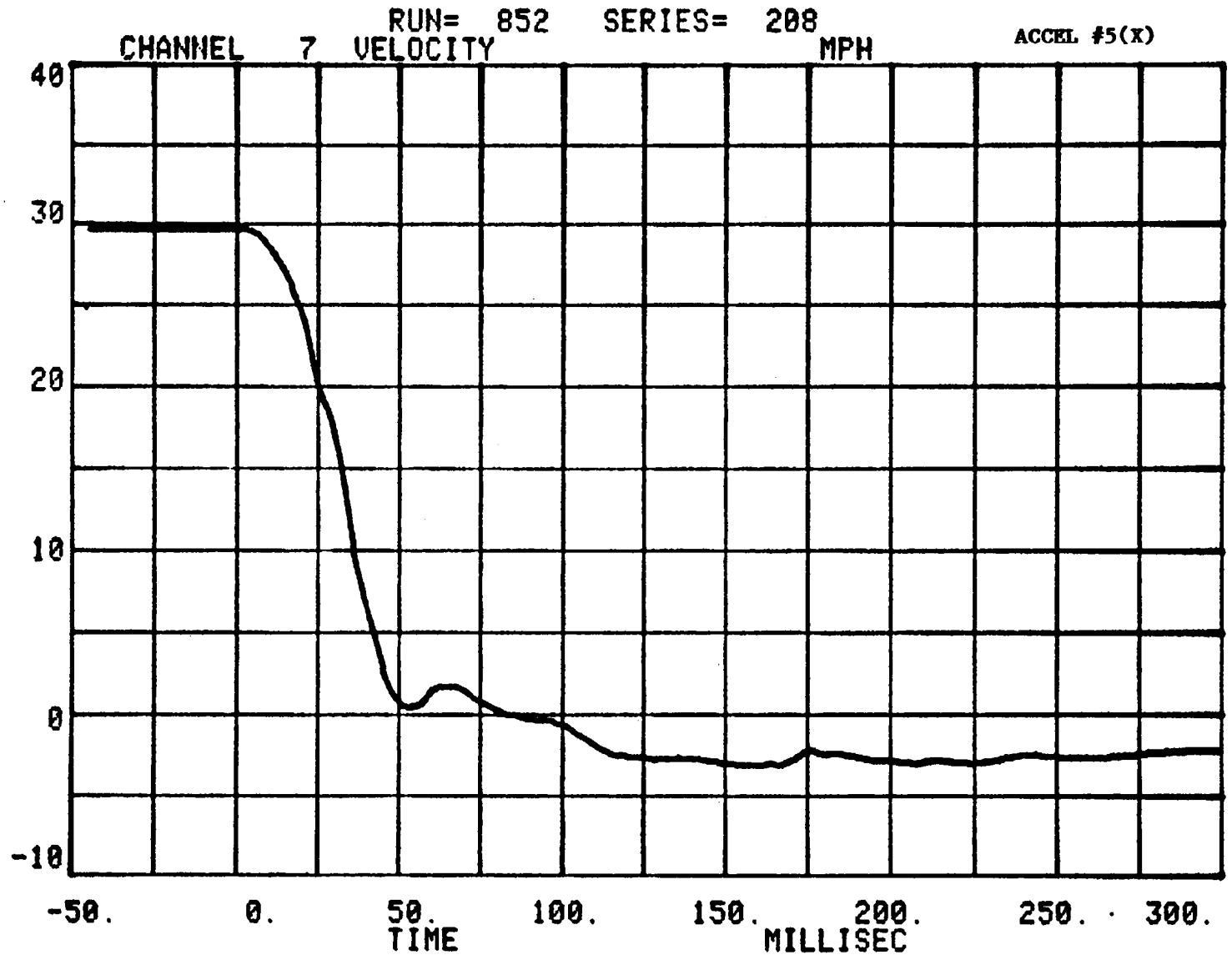
7669-9

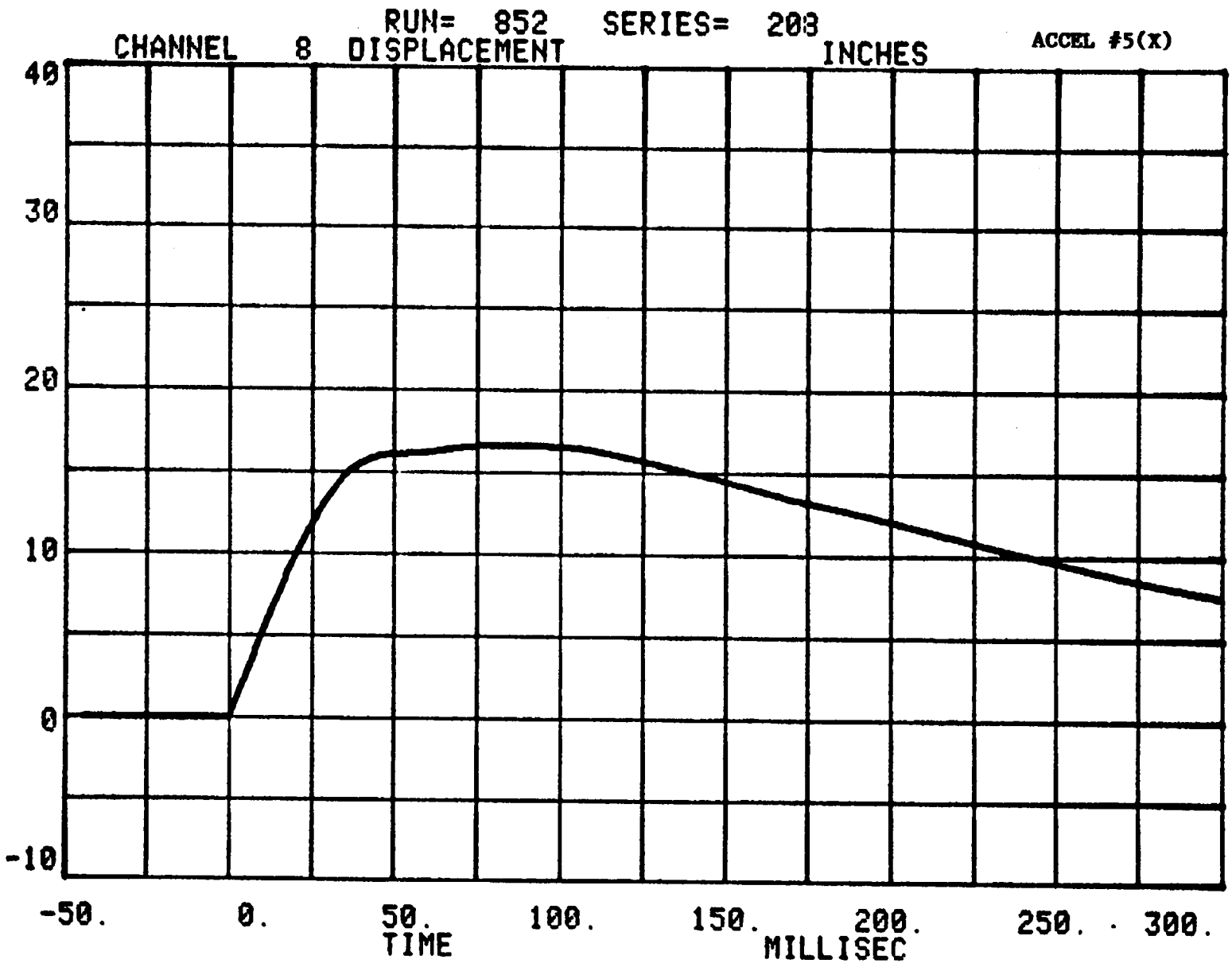

CHANNEL 20 ACC PACK #4(X)
RUN= 852 SERIES= 203
G'S
60
20
-20
-60
-100
-140
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

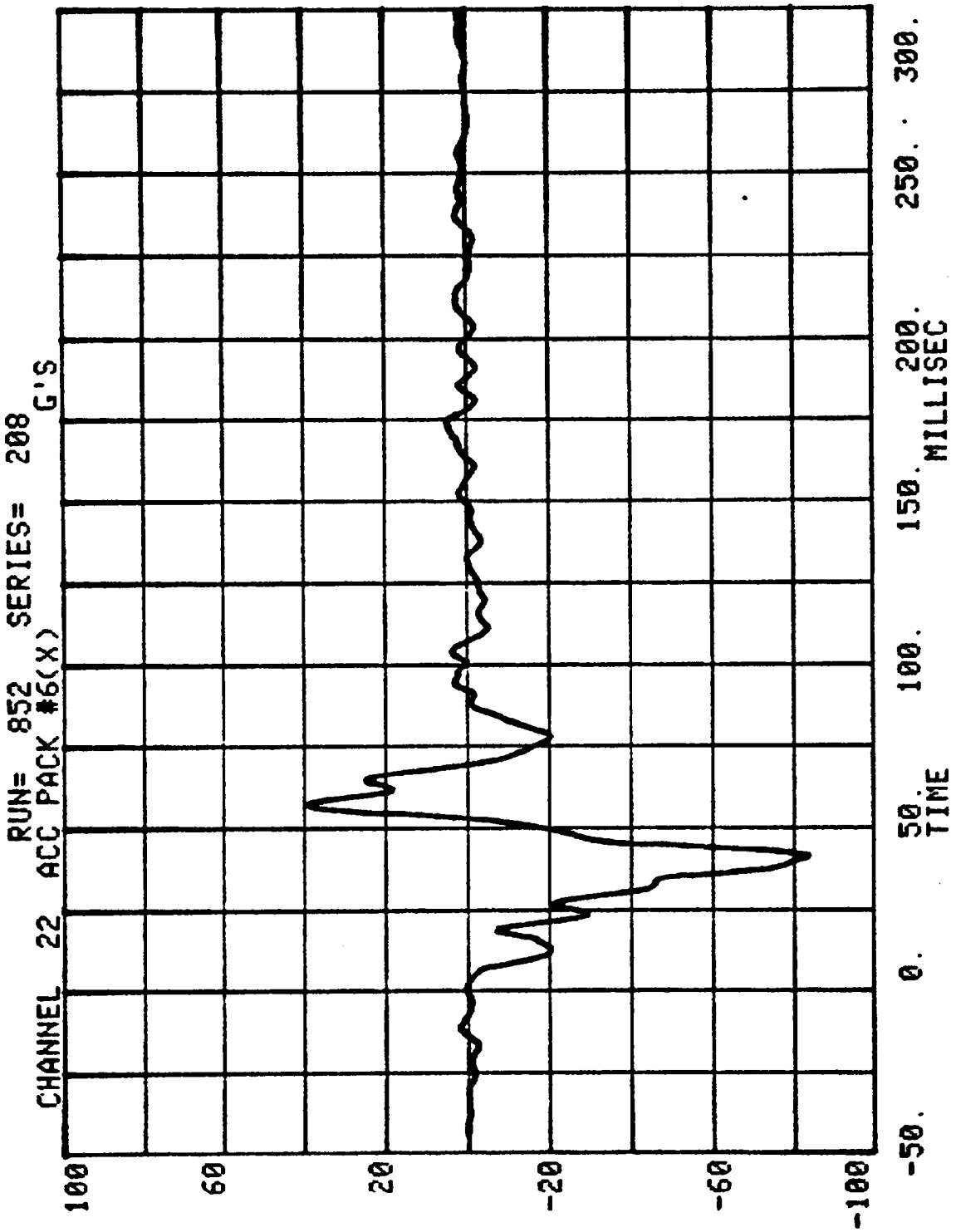

ACCEL #4(X)
CHANNEL 5 VELOCITY
RUN= 852 SERIES= 208
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 852 SERIES= 208
CHANNEL 6 DISPLACEMENT
INCHES
ACCEL #4(X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

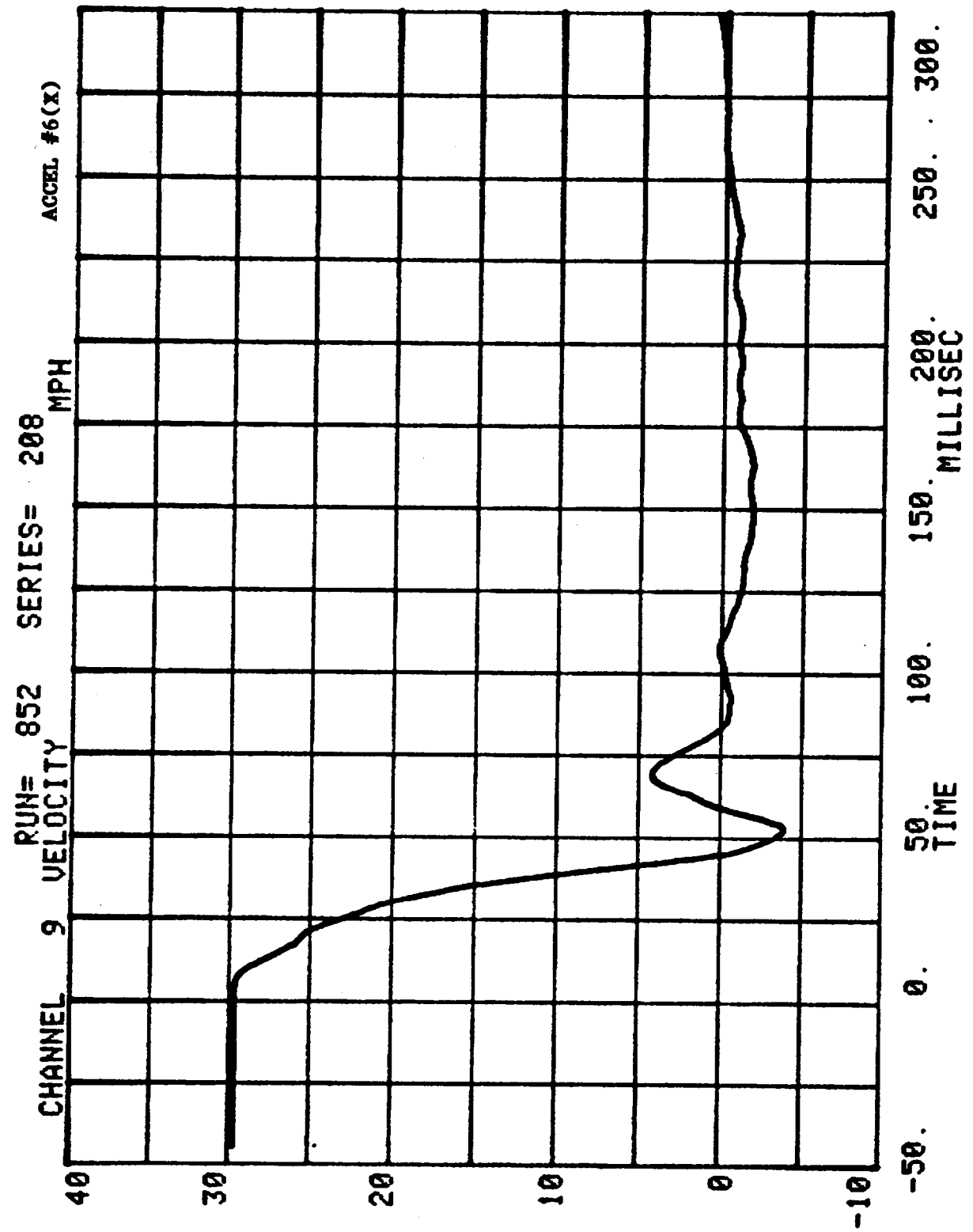

CHANNEL 21 ACC PACK #5(X)
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 852 SERIES= 208
CHANNEL 7 VELOCITY MPH
ACCEL #5(X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

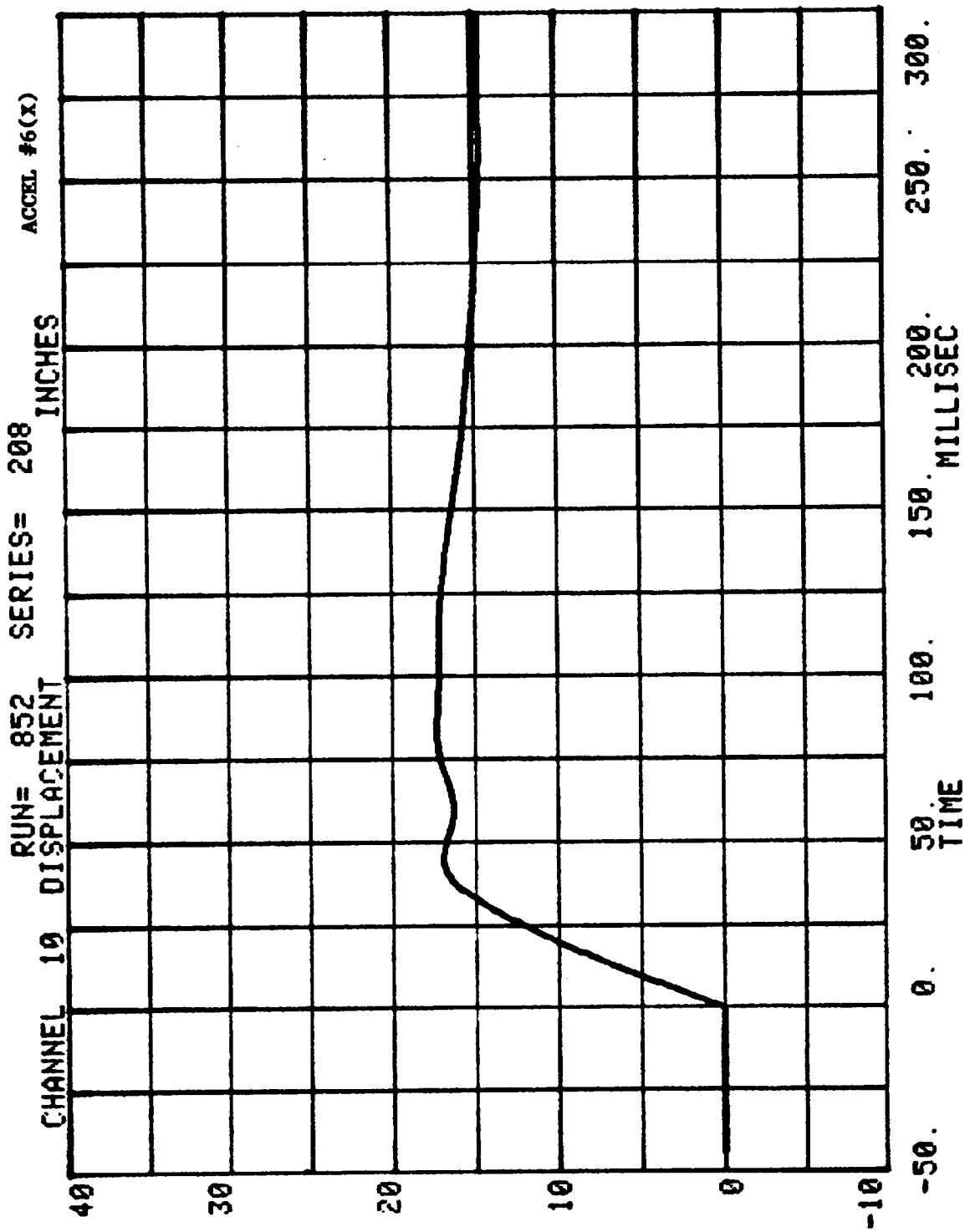

RUN= 852 SERIES= 203
CHANNEL 8 DISPLACEMENT
INCHES
ACCEL #5(X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

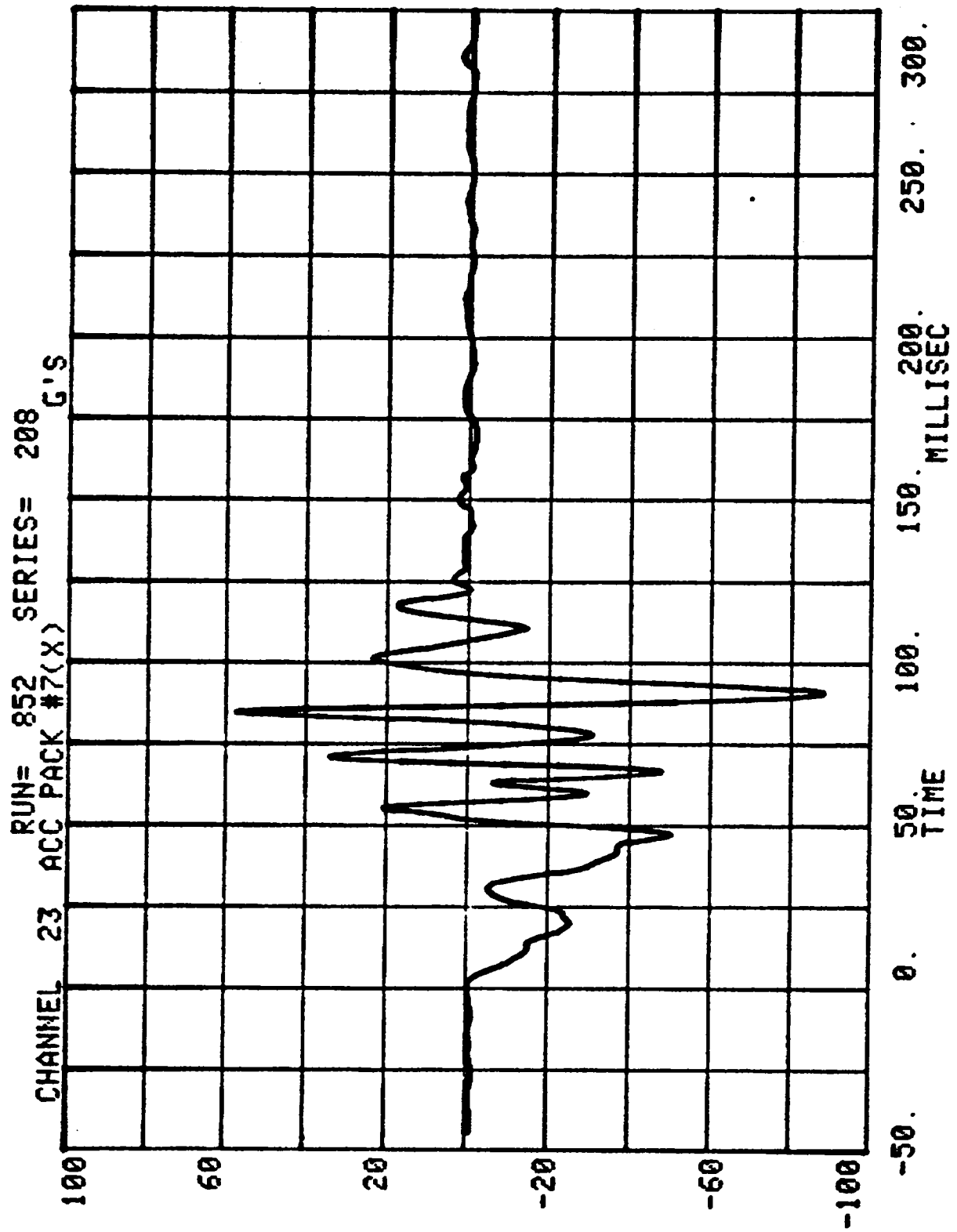

CHANNEL 22 ACC PACK #6(X)
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

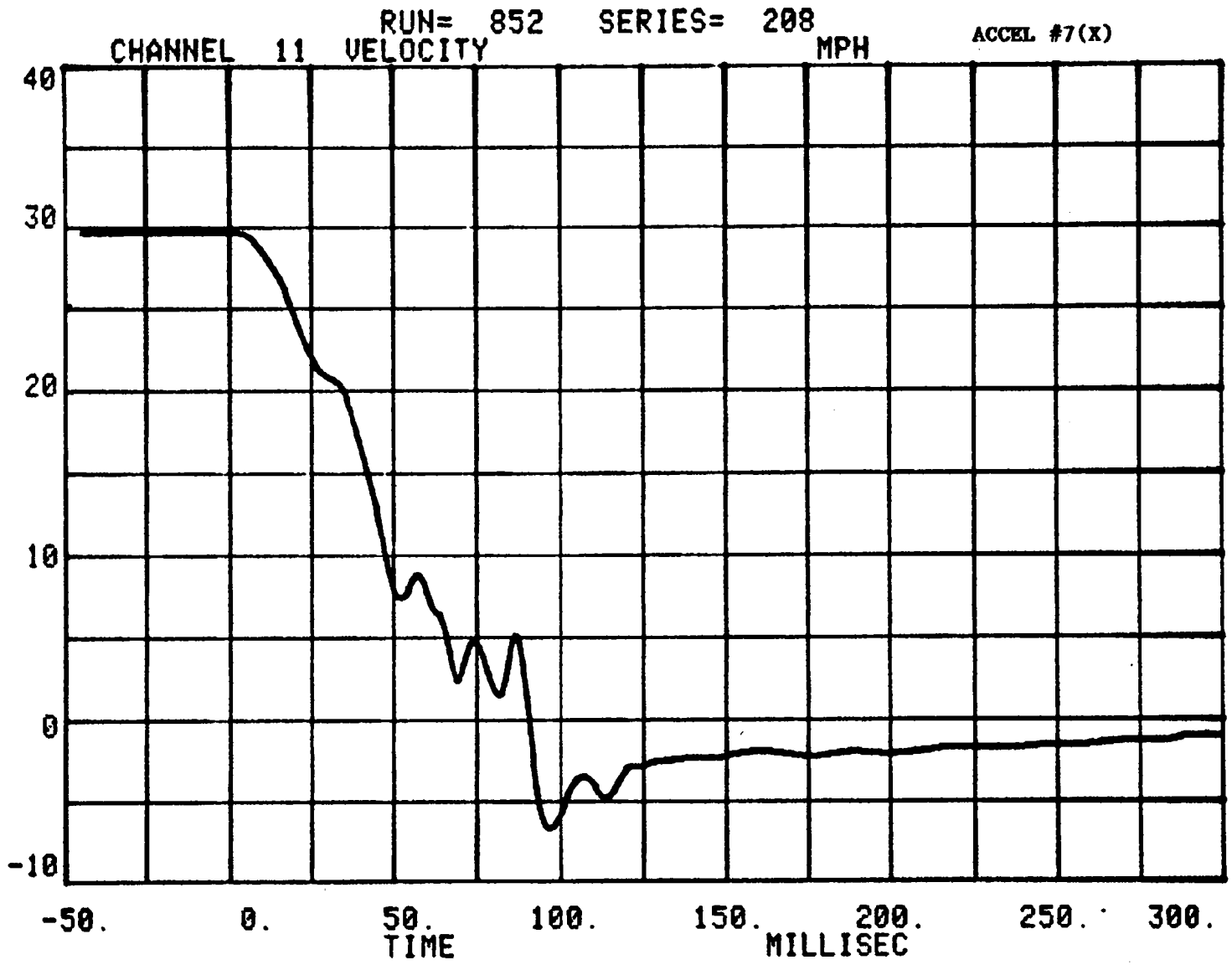
7669-9

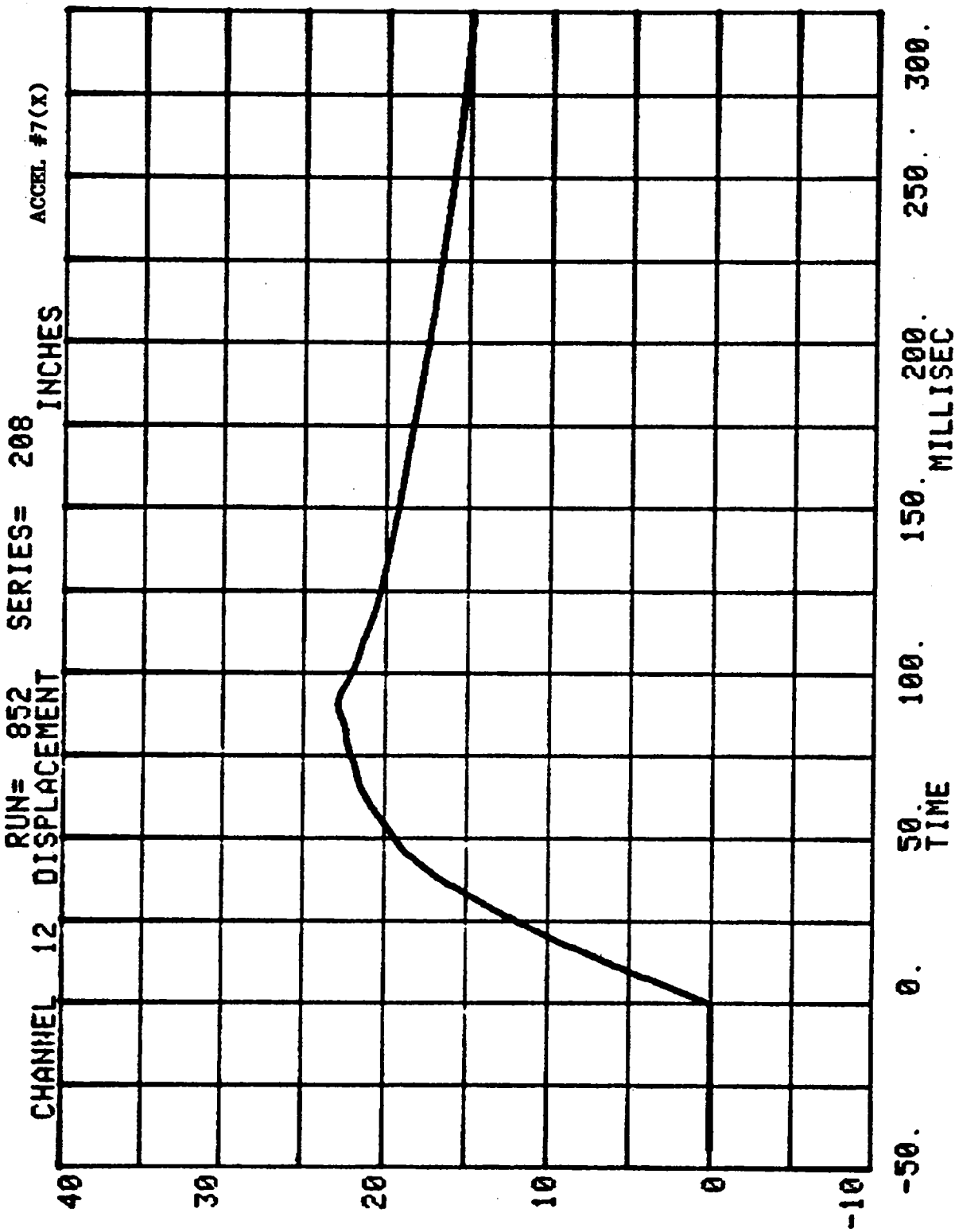

ACCEL #6(X)
CHANNEL 9 VELOCITY
RUN= 852 SERIES= 208 MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-9


ACCEL #6(X)
RUN= 852 SERIES= 208
CHANNEL 10 DISPLACEMENT
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 23 ACC PACK #7(X)
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 852 SERIES= 208
CHANNEL 11 VELOCITY MPH
ACCEL #7(X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME MILLISEC


CHANNEL 12 DISPLACEMENT
RUN= 852 SERIES= 208
INCHES
ACCEL #7(X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

TEST NO. CJ0208

DUMMY DATA

	FILTER CHANNEL CLASS
HEAD ACCELERATIONS	1000
CHEST ACCELERATIONS	180
FEMUR FORCES	600
BELT LOADS	60

HEAD INJURY CRITERION
HEAD SEVERITY INDEX
36MS. MAXIMUM DURATION

NHTSA CRASH TEST - PROC.208

RUN= 852

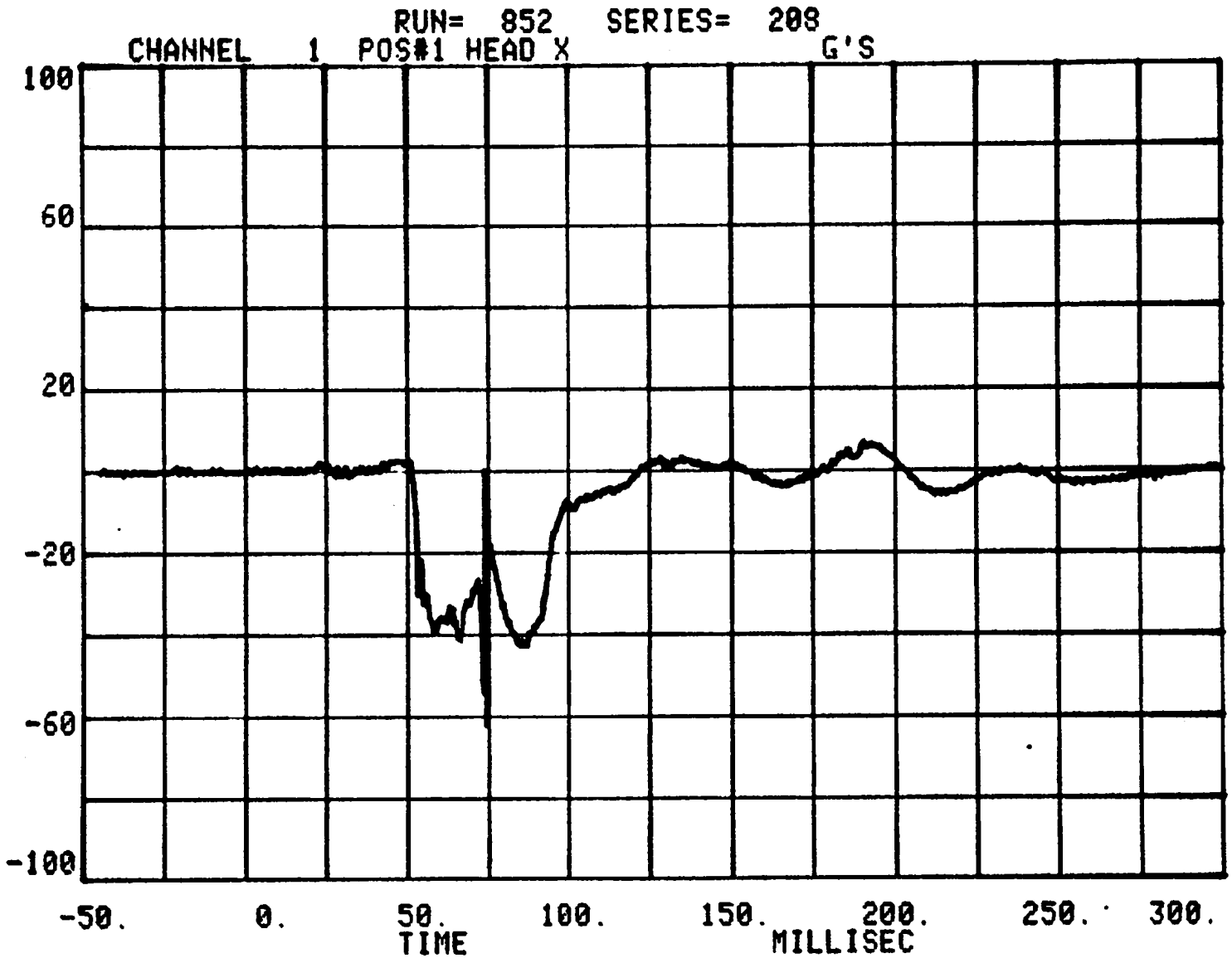
POS#1 HEAD R

HIC= 317.7 FROM T1= .05647 TO T2= .09247

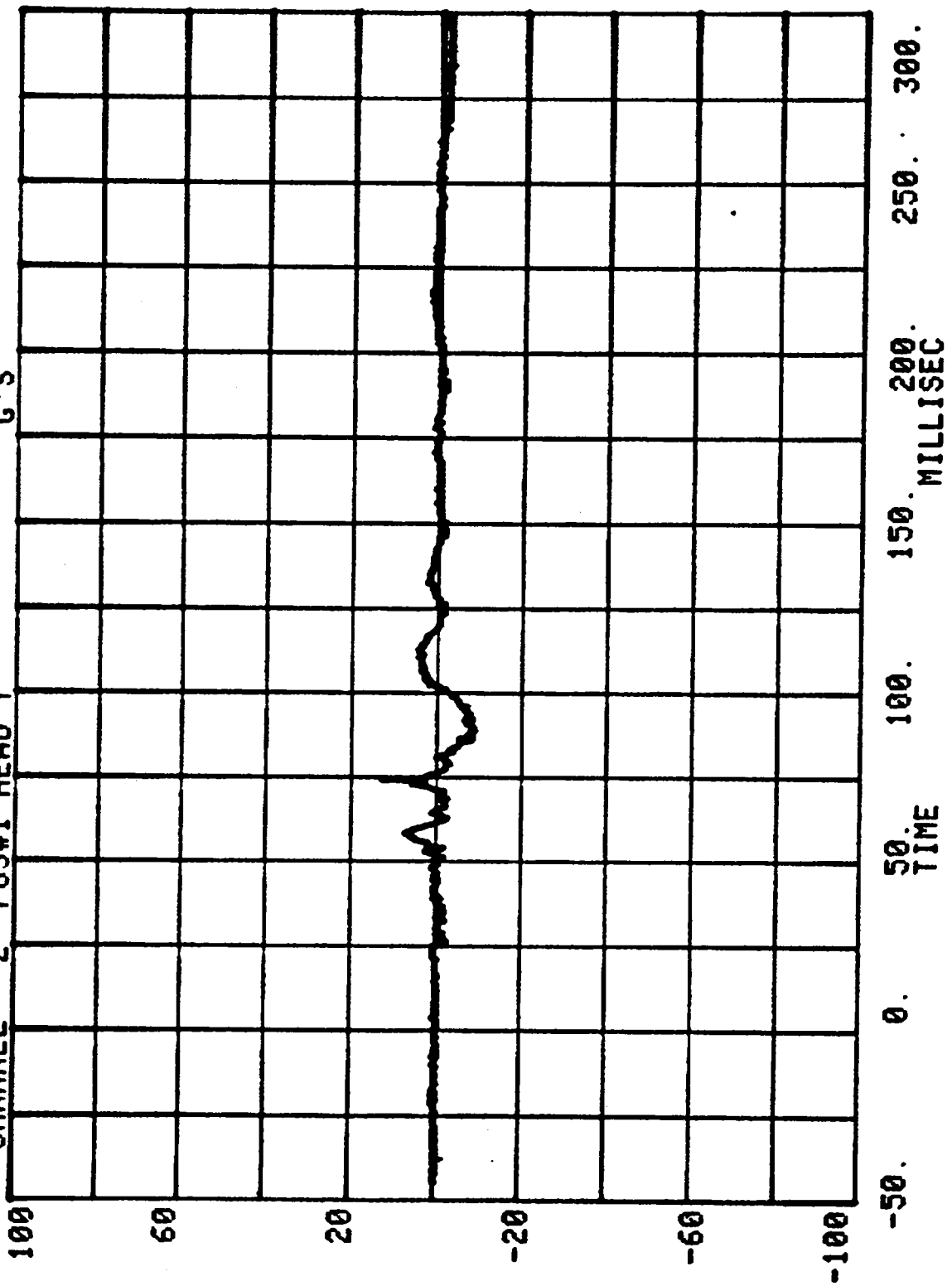
AVERAGE ACCELERATION BETWEEN T1 AND T2= 37.9G'S

EVENT TIME= 300.0 MSEC

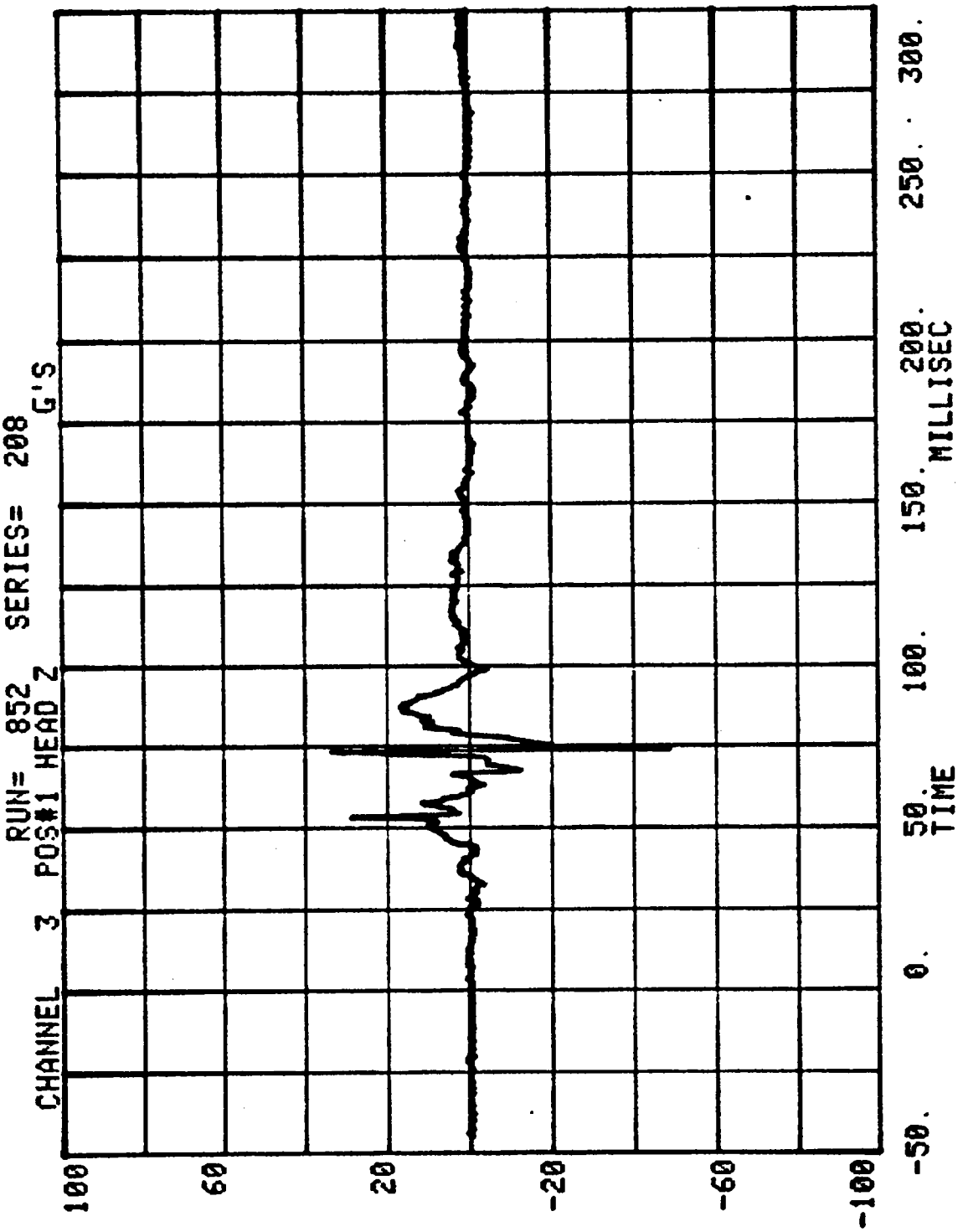
SEVERITY INDEX= 380.0

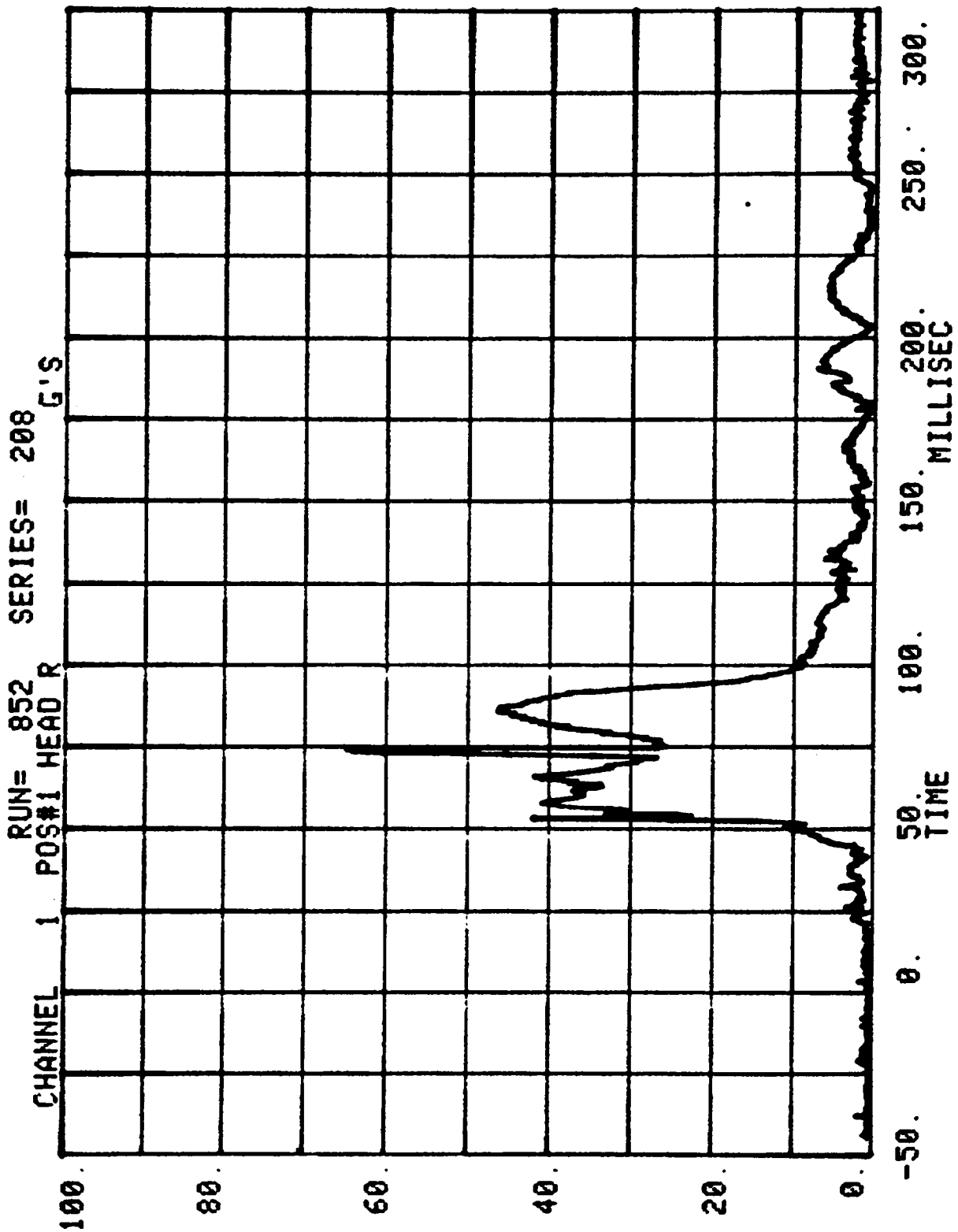

RUN= 852 SERIES= 208
CHANNEL 1 POS#1 HEAD X
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-9

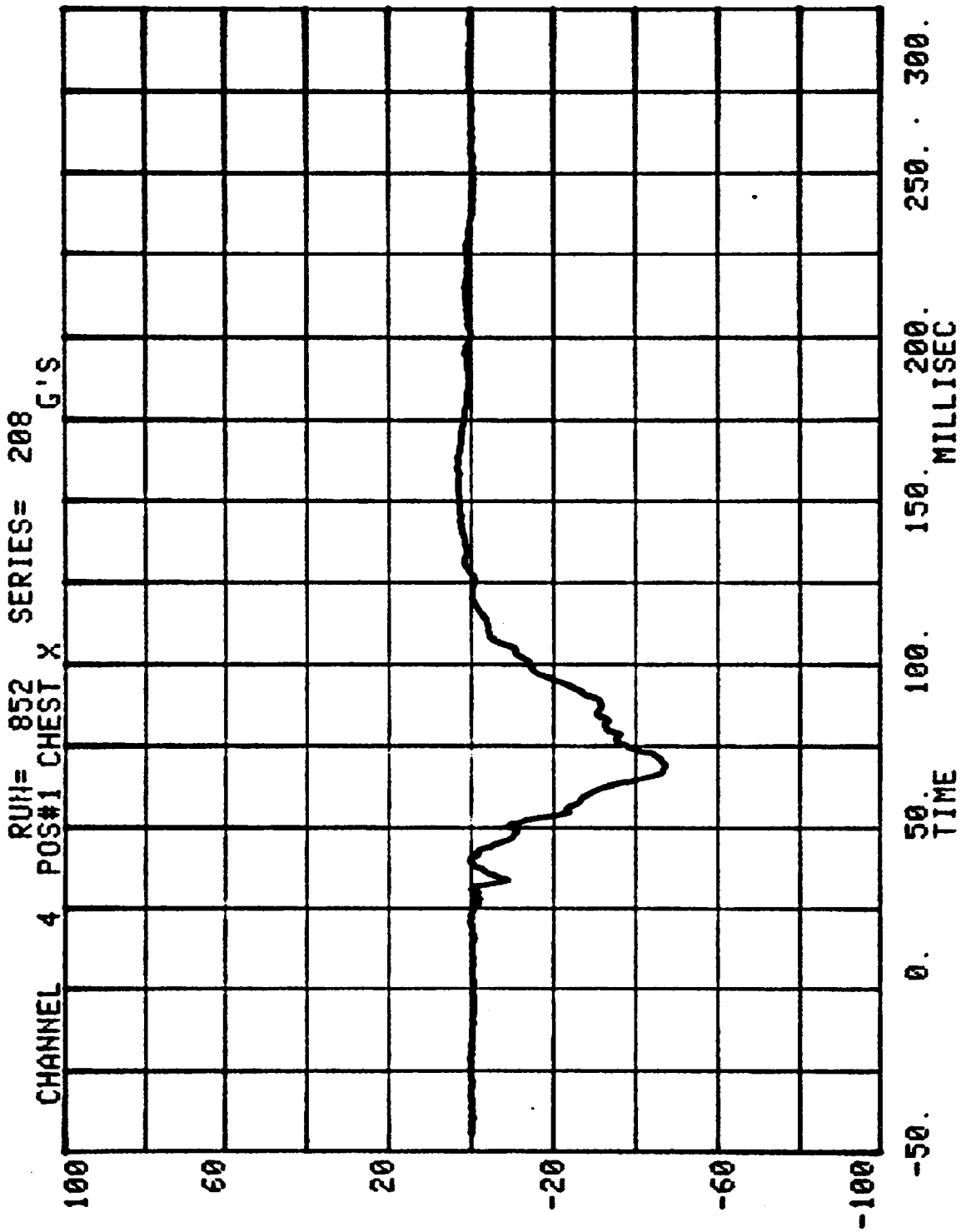

CHANNEL 2 POS#1 HEAD Y
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

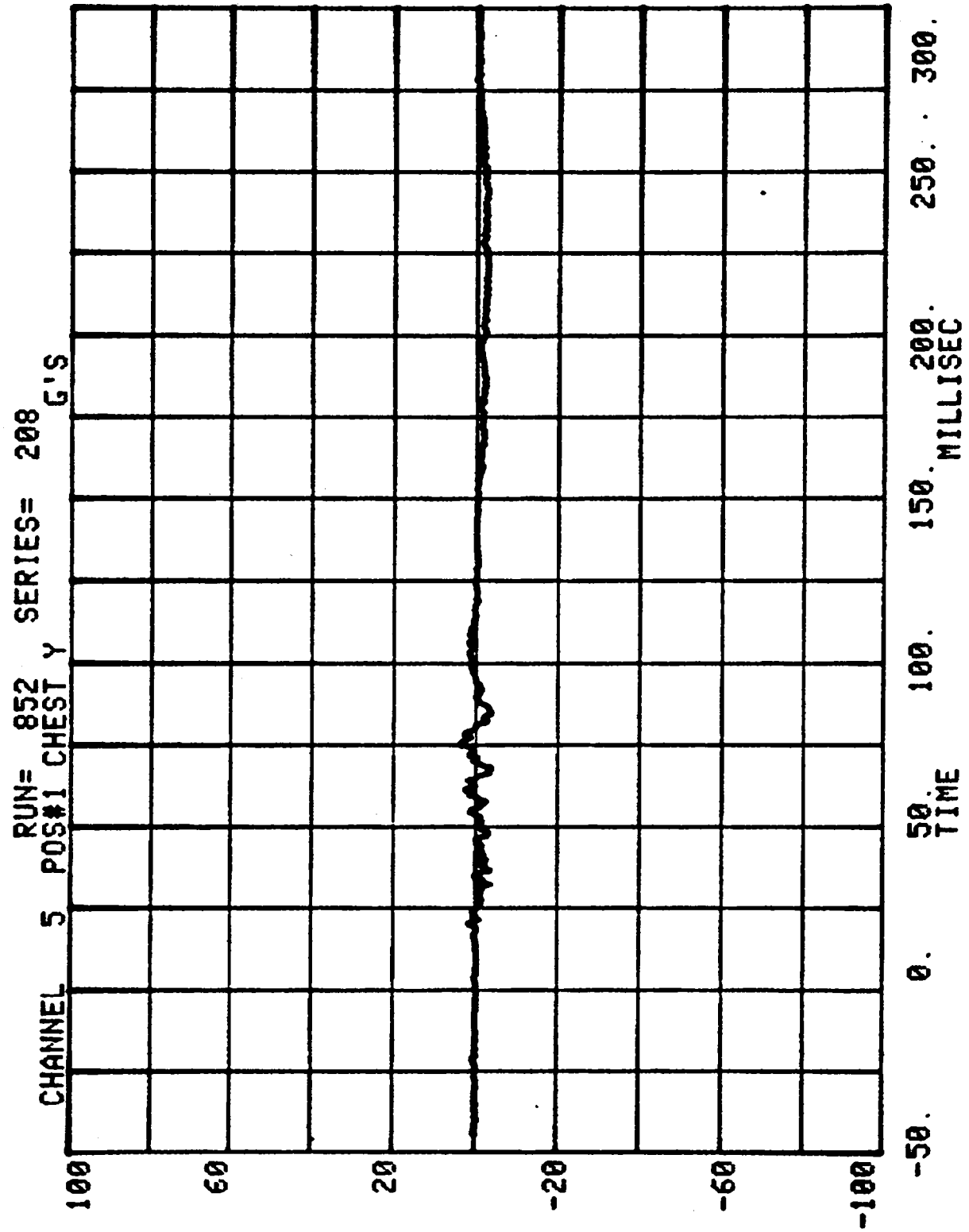
7669-9

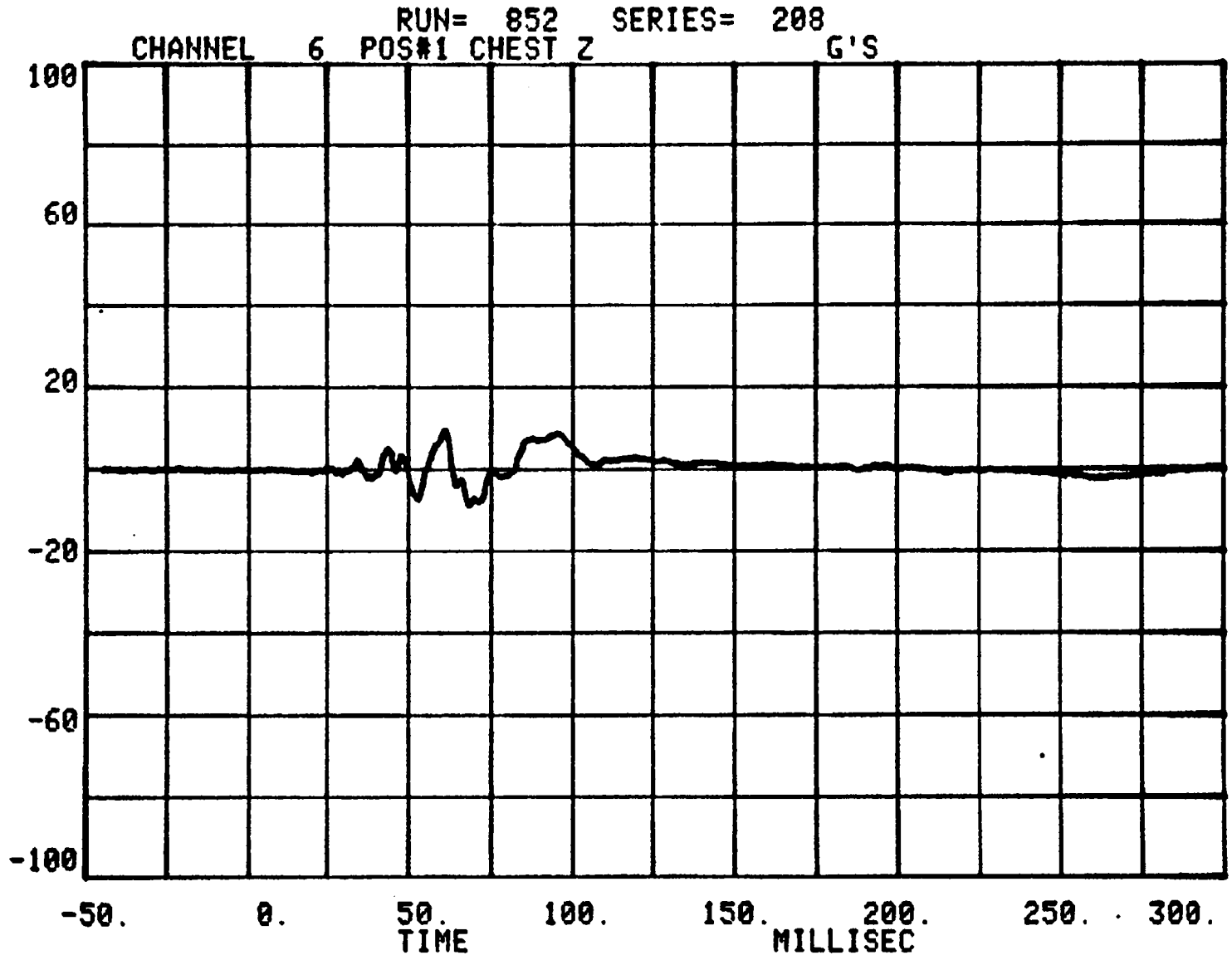

CHANNEL 3 POS#1 HEAD 2
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

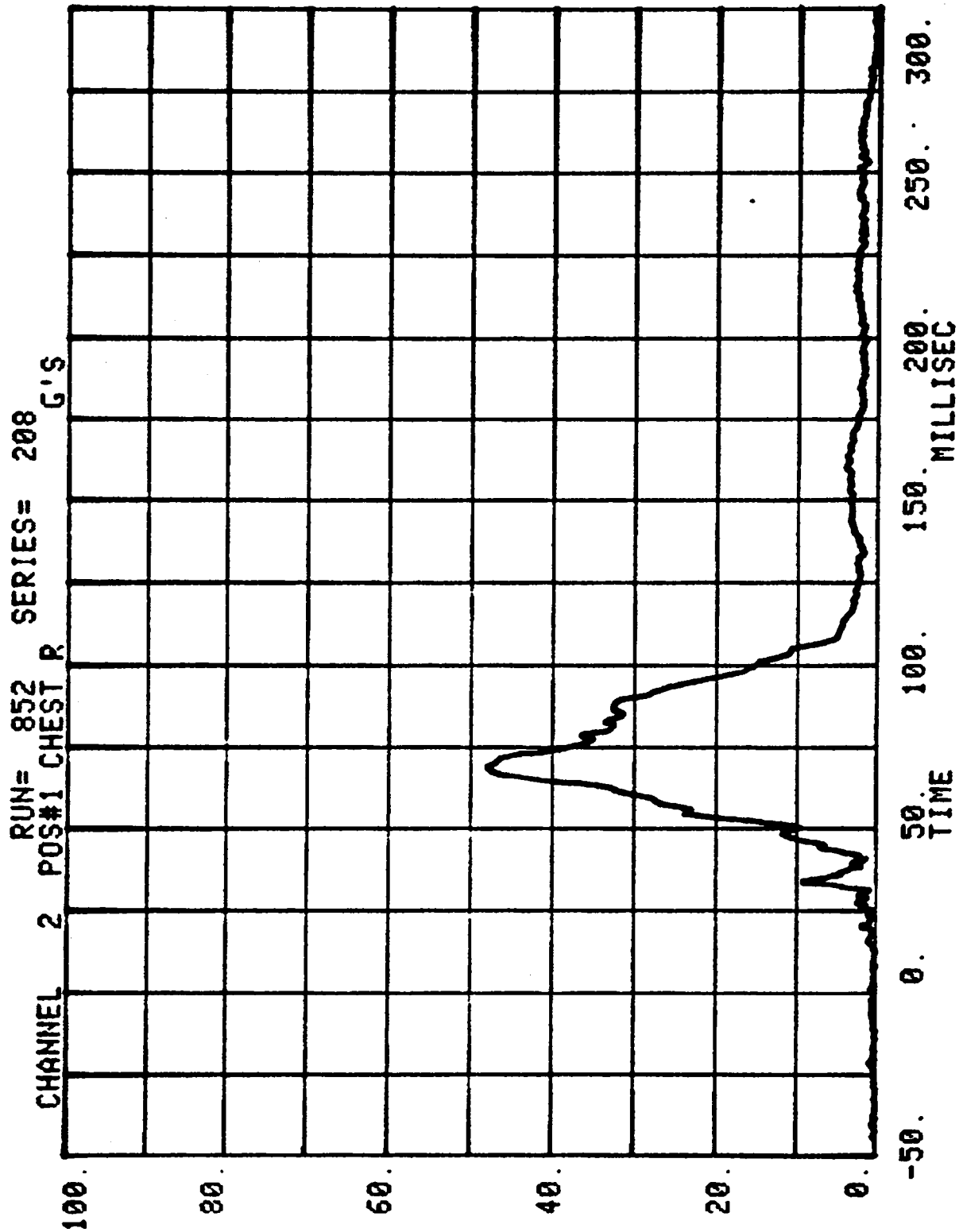

CHANNEL 1 POS#1 HEAD R
RUN= 852 SERIES= 208
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

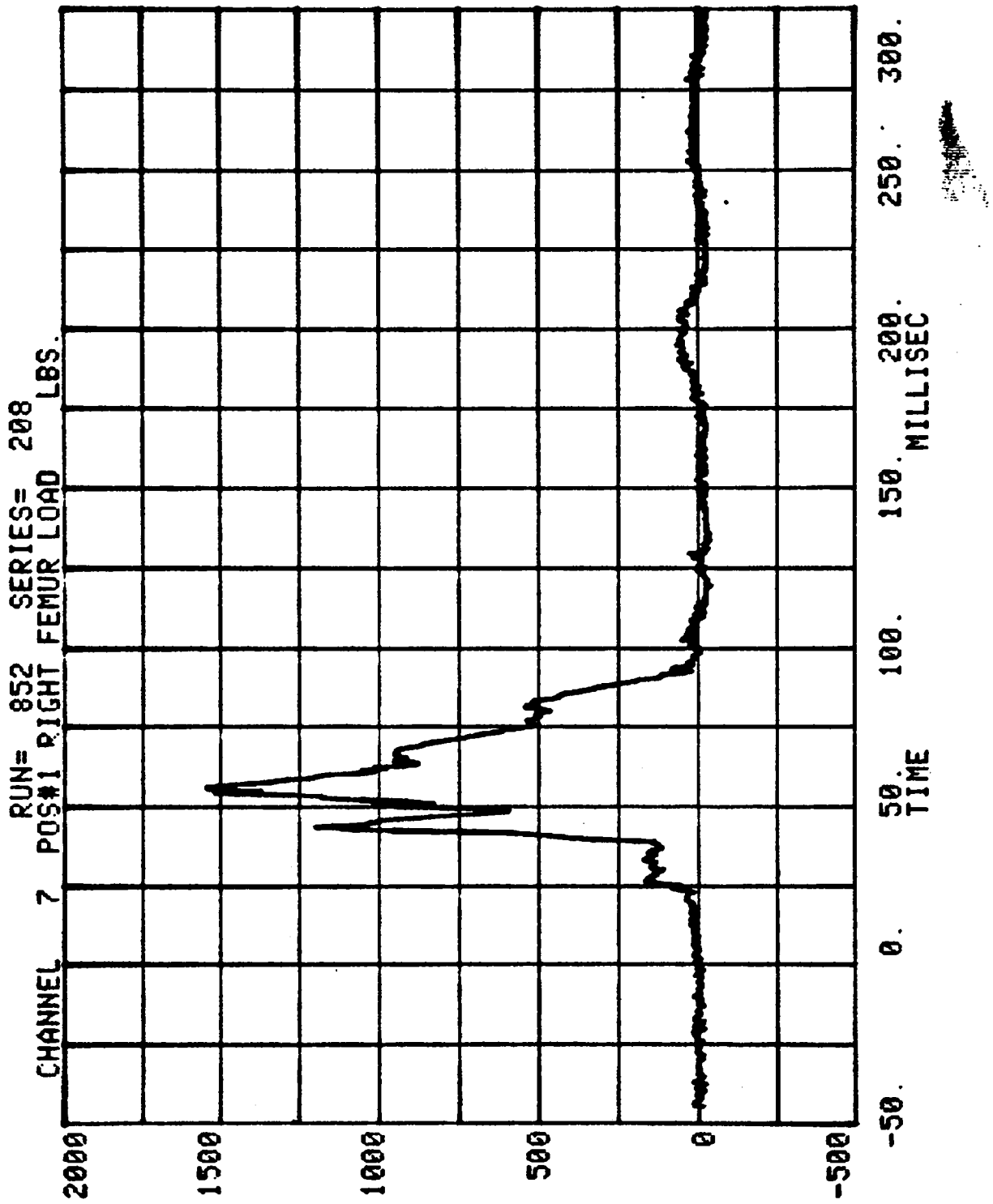
7669-9

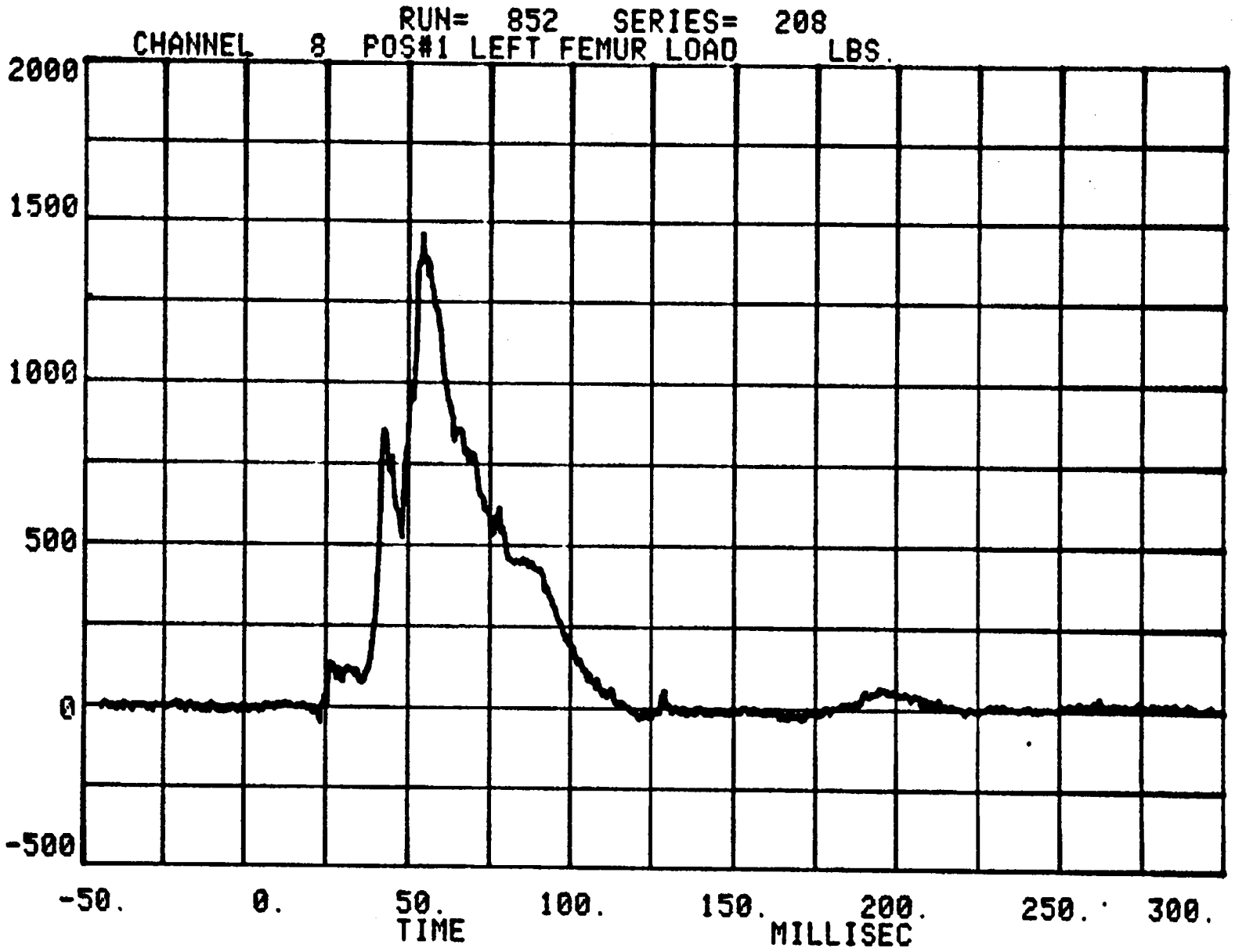

CHANNEL 4 POS#1 CHEST X
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 5 POS#1 CHEST Y
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 852 SERIES= 208
CHANNEL 6 POS#1 CHEST Z G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME MILLISEC


CHANNEL 2 POS#1 CHEST R
RUN= 852 SERIES= 208
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 7 POS#1 RIGHT FEMUR LOAD
RUN= 852 SERIES= 208
LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 852 SERIES= 208
CHANNEL 8 POS#1 LEFT FEMUR LOAD LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

HEAD INJURY CRITERION
HEAD SEVERITY INDEX
36MS. MAXIMUM DURATION

NHTSA CRASH TEST - PROC.208

RUN= 852

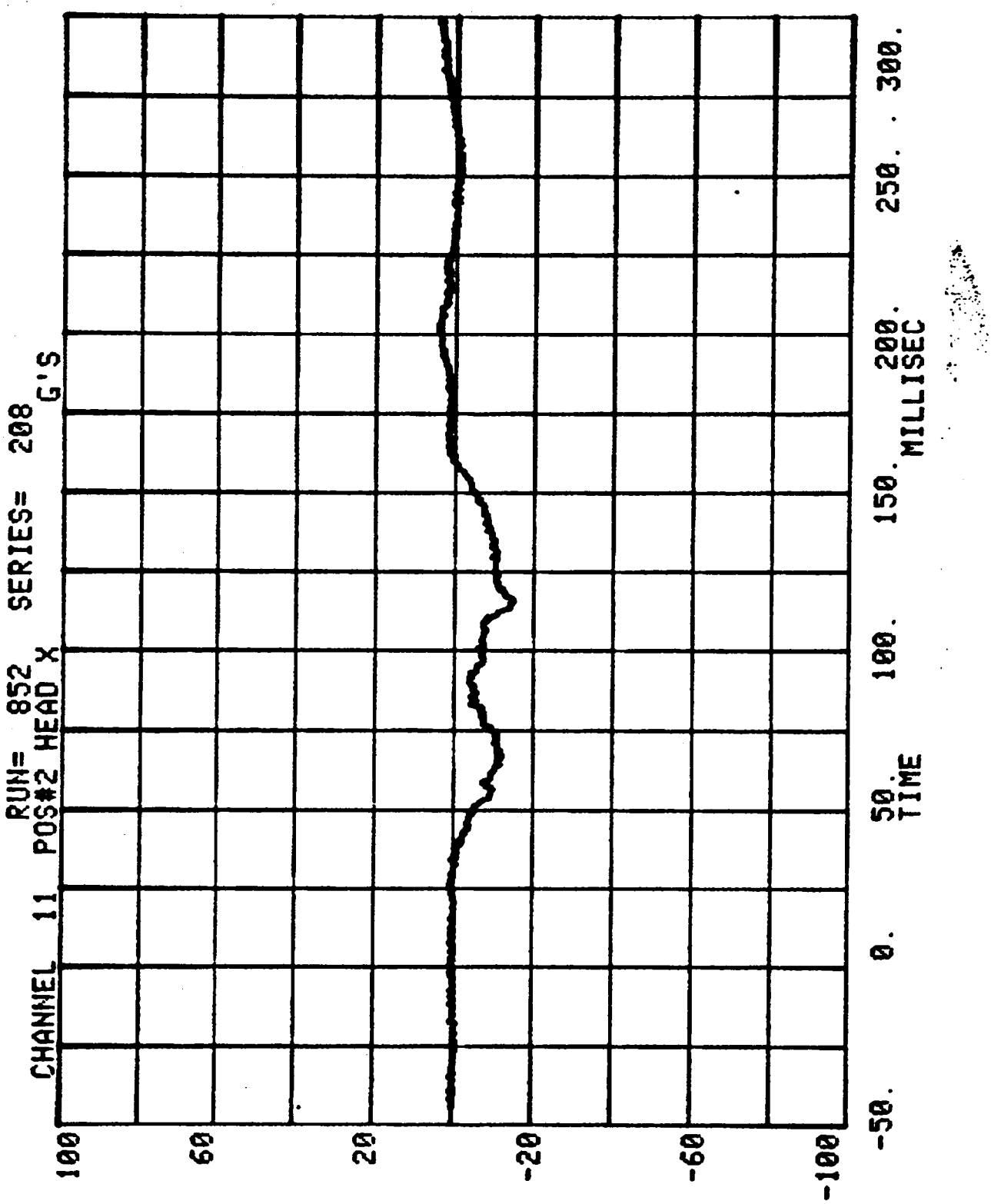
POS#2 HEAD R

HIC= 327.4 FROM T1= .07177 TO T2= .10777

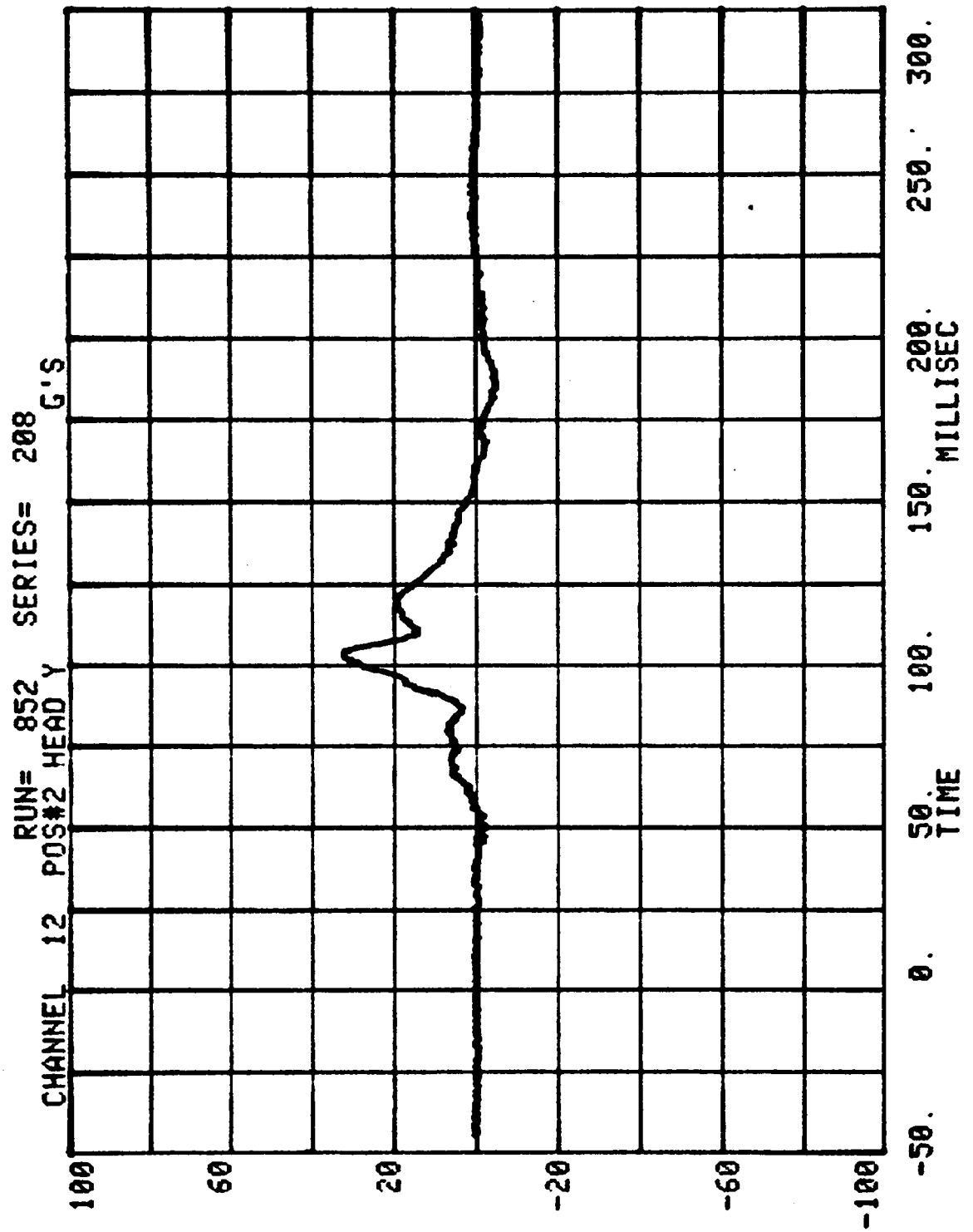
AVERAGE ACCELERATION BETWEEN T1 AND T2= 38.3G'S

EVENT TIME= 300.0 MSEC

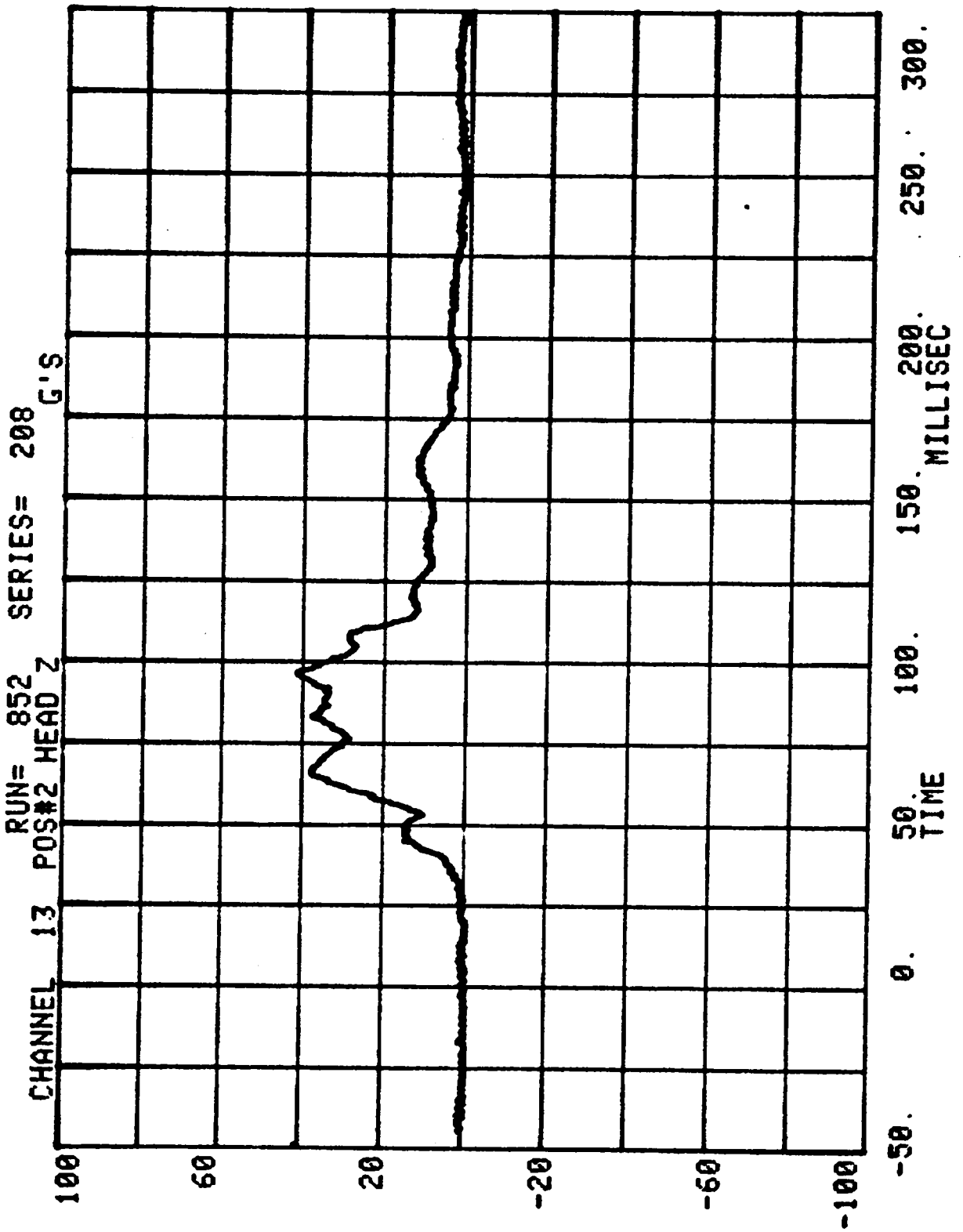
SEVERITY INDEX= 557.0

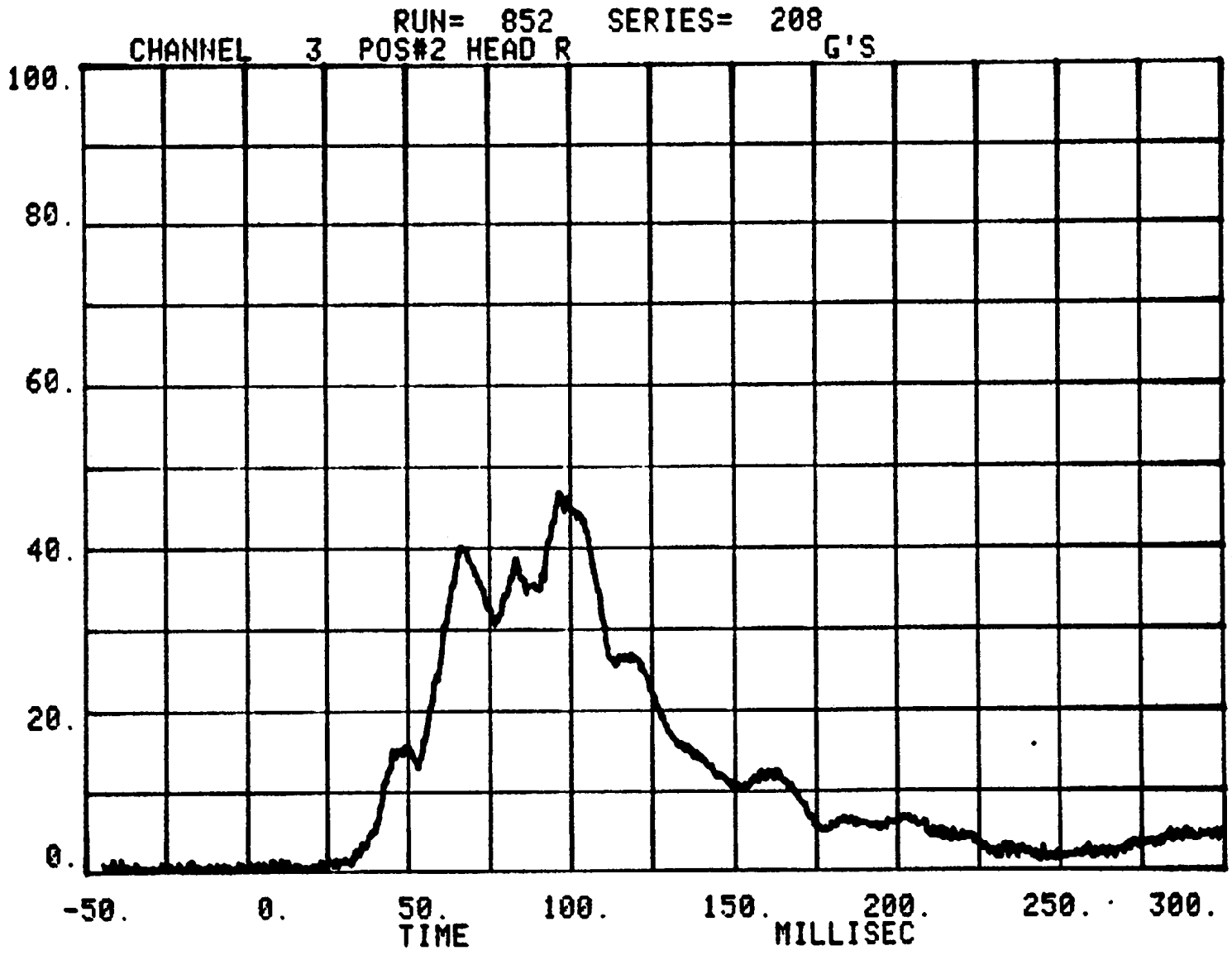

CHANNEL 11 POS#2 HEAD X
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-9

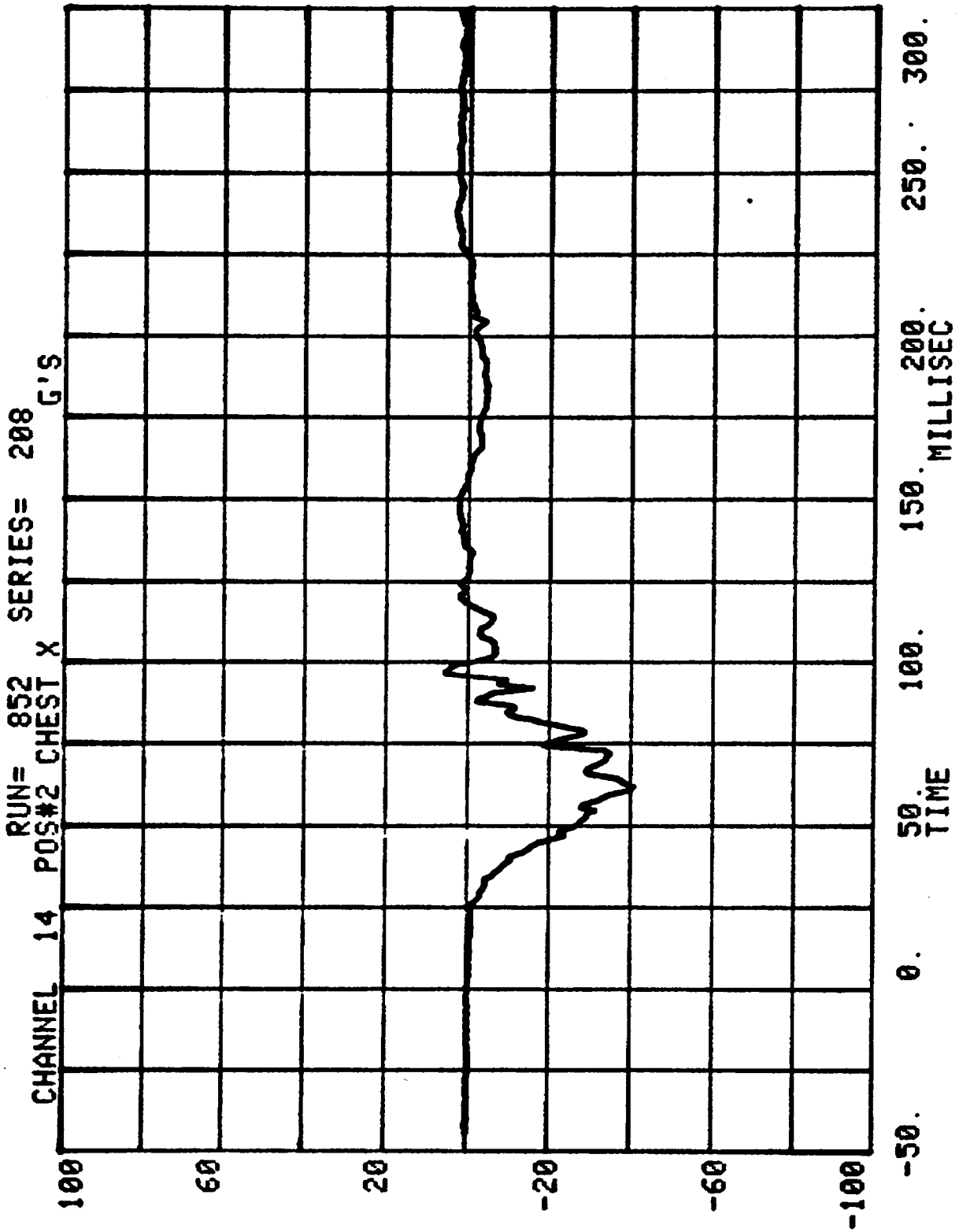

CHANNEL 12 POS#2 HEAD Y
RUN= 852 SERIES= 208 G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

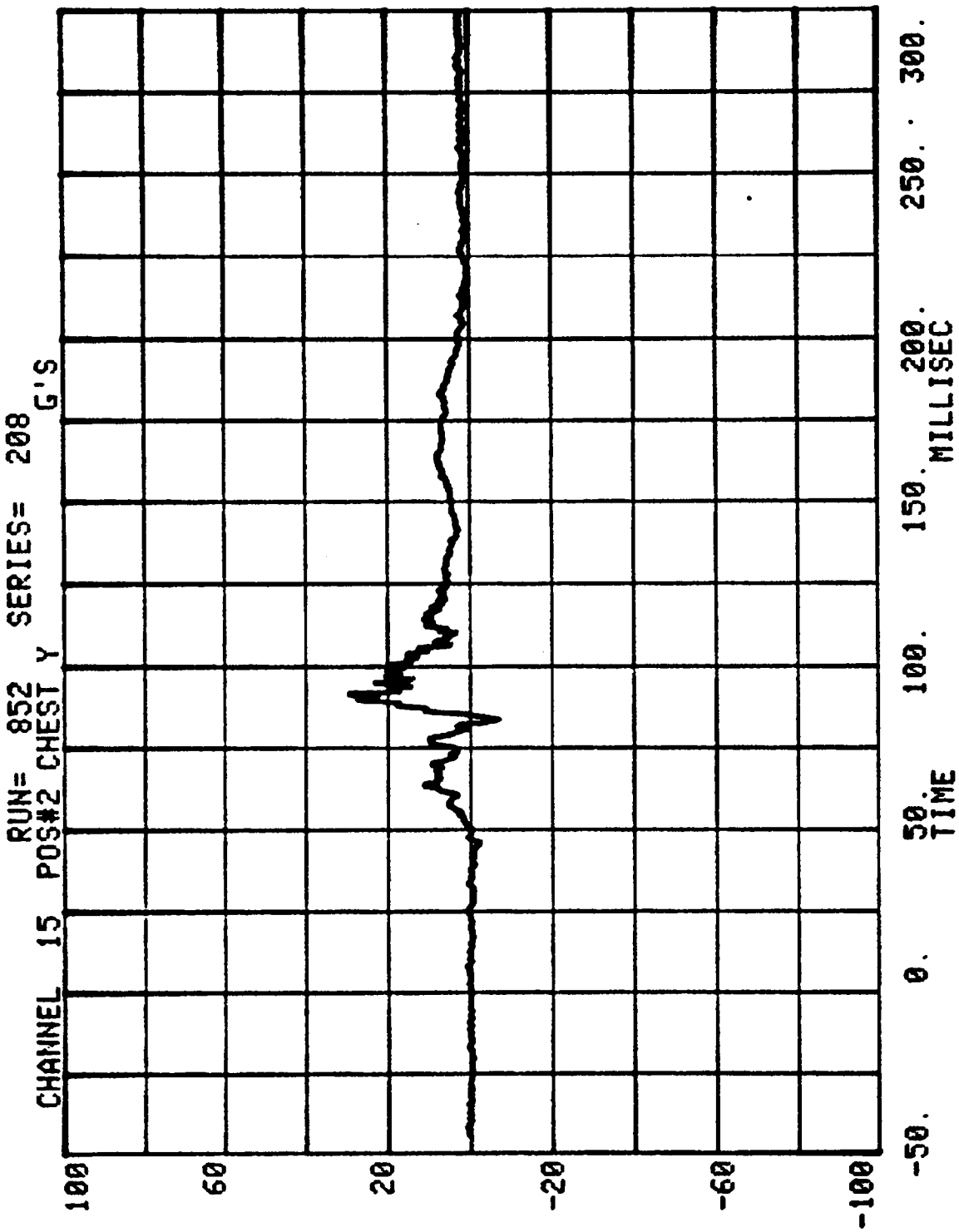
7669-9

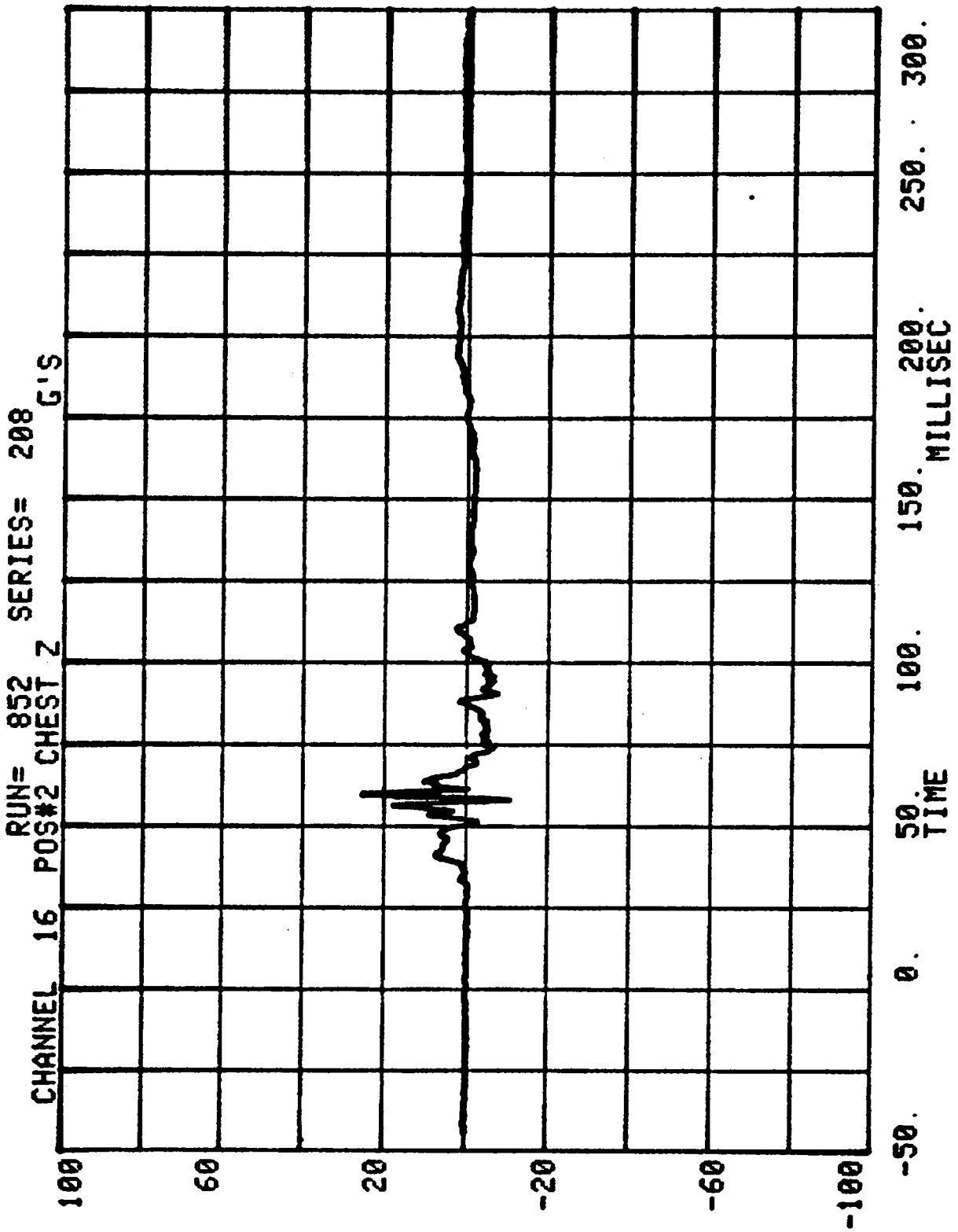

CHANNEL 13 POS#2 HEAD Z
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 852 SERIES= 208
CHANNEL 3 POS#2 HEAD R
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

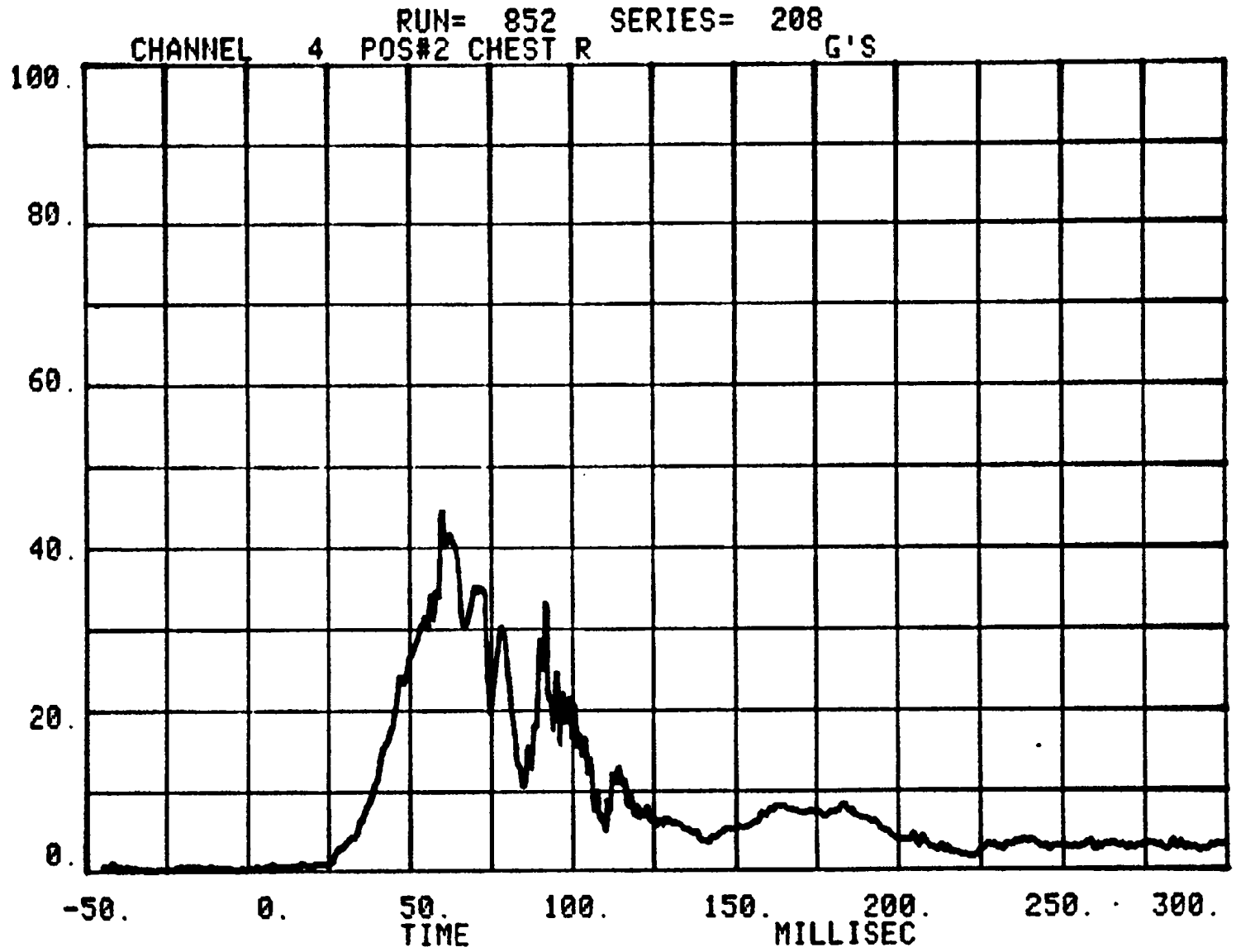
7669-9


CHANNEL 14 POS#2 CHEST X
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

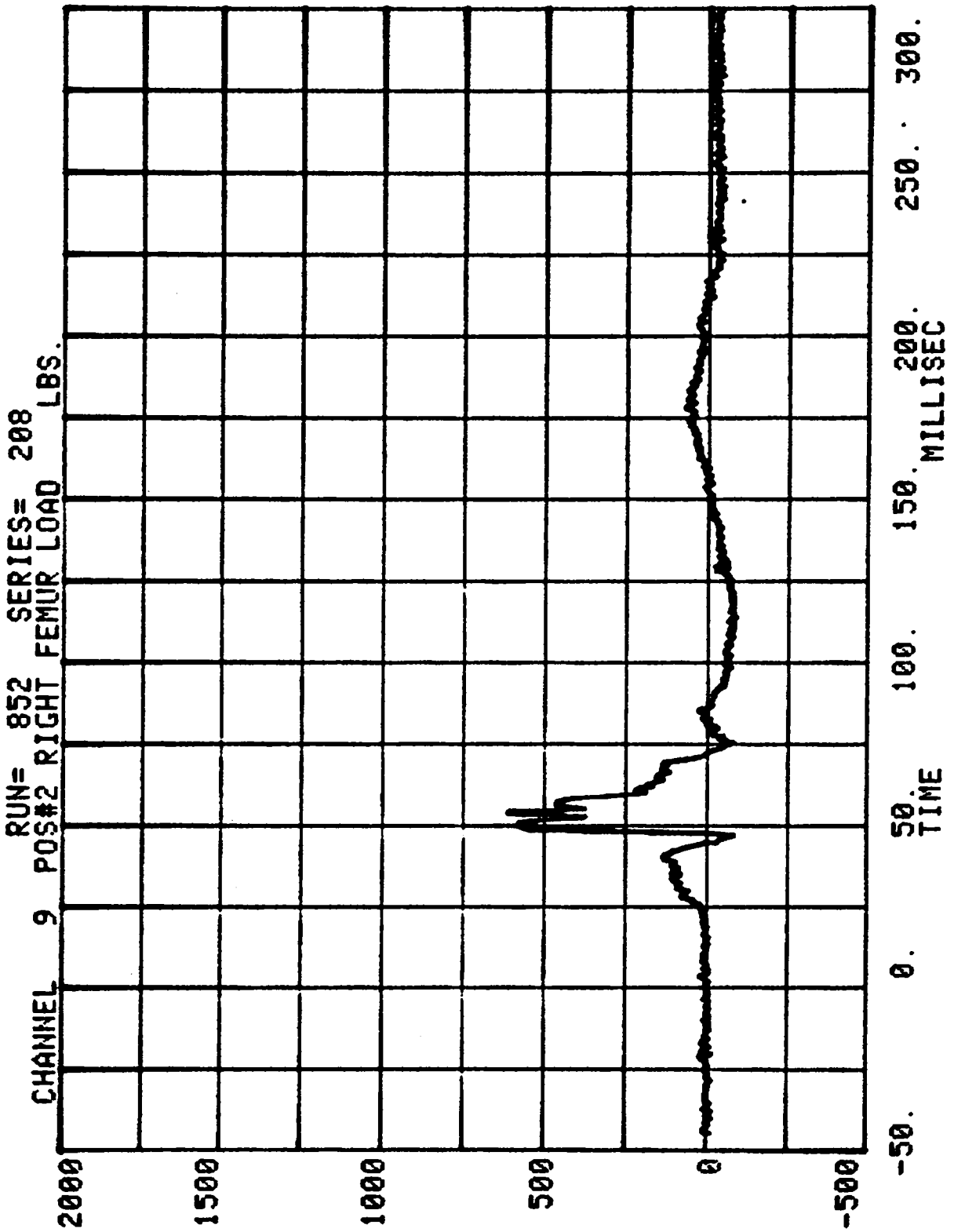

CHANNEL 15 POS#2 CHEST Y
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 16 POS#2 CHEST Z
RUN= 852 SERIES= 208
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

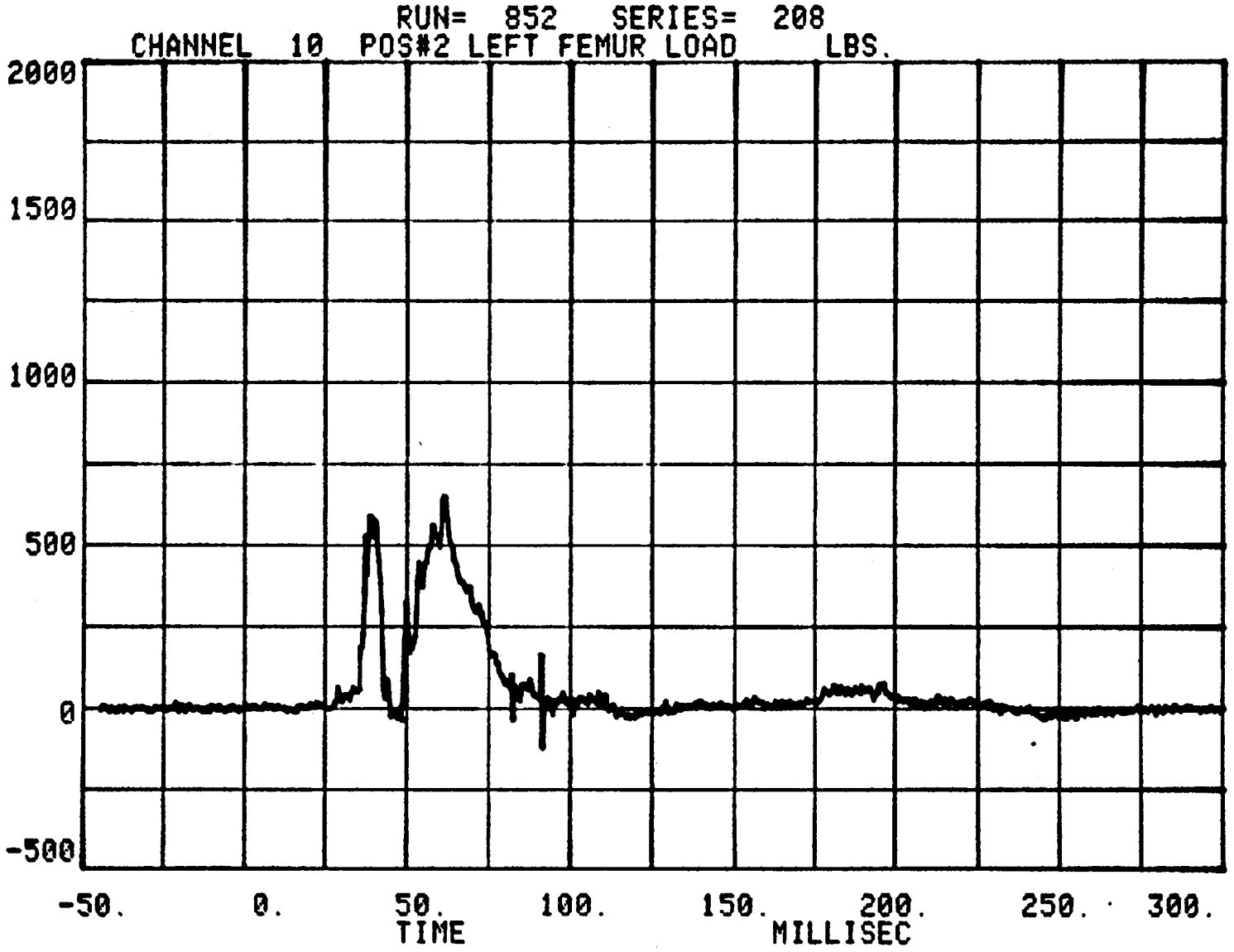
7669-9


RUN= 852 SERIES= 208
CHANNEL 4 POS#2 CHEST R G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-9


CHANNEL 9 RUN= 852 SERIES= 208
POS#2 RIGHT FEMUR LOAD LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-9


RUN= 852 SERIES= 208
CHANNEL 10 POS#2 LEFT FEMUR LOAD LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

OCCUPANT RESTRAINT SYSTEMS

WARNING — Be sure to LOCK ALL DOORS before driving away. Locking the doors, along with using the safety belts provided, will minimize the risk of injury or ejection in an accident.

Ford Motor Company recommends that you always **BUCKLE UP.** In some areas restraint system use is required by law.

WARNING — All vehicle occupants, including pregnant women, should wear their safety belts for maximum protection in the event of a collision. All vehicle occupants, including pregnant women, should be sure the lap belt, or lap belt portion of the lap-shoulder belt, is fitted snugly and as low as possible around the hips, not the waist. Shoulder belts should also be properly adjusted for minimum slack. Failure to properly utilize the safety belts may increase the chance and/or severity of injury in the event of a collision.

According to accident statistics, properly restrained children are safer in the rear seat than in the front seat. For young children, infant and child restraints should be obtained and used in accordance with the instructions provided by the manufacturer of the infant and child restraint. See Infant and Child Restraints in this section. Child restraint use is required by law.

SUPPLEMENTAL DRIVER AIR BAG RESTRAINT SYSTEM (DRIVER SIDE)

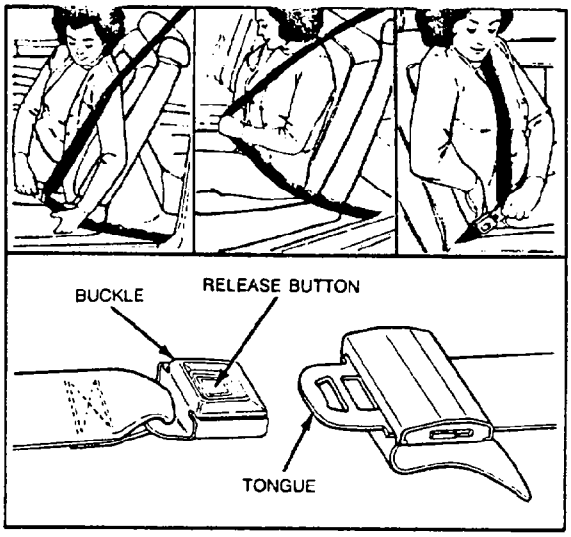
For owner of vehicles equipped with the SUPPLEMENTAL DRIVER AIR BAG RESTRAINT SYSTEM, be sure to read the Owner Guide Air Bag Supplement for information on the system.

BEFORE DRIVING YOUR VEHICLE

MANUAL FRONT LAP-SHOULDER BELTS (Available Only on Canadian Vehicles and Vehicles Equipped with Supplemental Driver Air Bag Restraint System)

The belt system allows freedom of movement, locking tight only on hard braking or impacts of approximately 5 mph (8 km/h) or more. The system cannot be made to lock by jerking on the belt.

After entering your vehicle, close the door and adjust the front seat to obtain the best position for your driving comfort, access to controls, and visibility. Then pull the lap-shoulder belt from the retractor so the shoulder portion of the belt crosses your shoulder and chest and insert the belt tongue into the proper buckle until you hear a snap and feel it latch.



Pull up on the shoulder portion of the belt to tighten the lap portion to a snug fit. Be sure the belt is as low on your hips as possible. If the shoulder belt is uncomfortably tight, a comfort regulator is provided in the shoulder belt retractor to reduce belt pressure against your chest. The shoulder belt can be adjusted much like a window shade to maintain a small amount of slack in the belt. The adjacent door must be closed to use this comfort regulator feature.

Adjustment Procedure

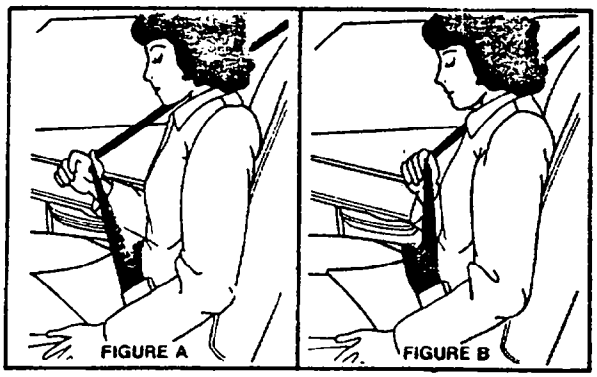
To set the comfort regulator, the shoulder belt initially should be positioned snugly against the chest. If the belt is not positioned snugly, the comfort regulator may already be engaged. Disengagement is accomplished by the following procedure:

Figure A — Pull the shoulder belt outward 4 or 5 inches (10 to 13 cm), then release it and allow belt to fully retract. Repeat procedure if belt is not snug to the chest.

Figure B — Now the belt tension may be adjusted by pulling down **slightly** on the shoulder belt and releasing. The **least amount of slack** needed to relieve tension, but not more than 1 1/2 inches (3.8 cm), should be pulled out when using the comfort regulator system.

- If the desired setting is not achieved or excess slack develops as you change seat position, repeat the above procedure.

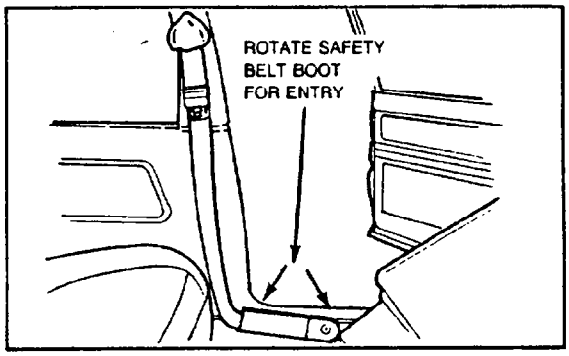
BEFORE DRIVING YOUR VEHICLE



- When the door is opened, the comfort regulator will release automatically, permitting the lap-shoulder belt to retract. After unbuckling the belt it is recommended that you guide the tongue during retraction to prevent it from striking you or the vehicle.

WARNING — Never allow more than 1 1/2 inches (3.8 cm) of slack to be introduced into your safety belt system because the belt locks upon impact where it is positioned. Wearing the belt too loosely will negate any real safety protection. Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around your neck over the inside shoulder. Never use a single belt for more than one person. Be sure the lap portion of the belt is fitted snugly and as low as possible around the hips, not on the waist. Failure to follow these precautions could increase the chance and/or severity of injury in an accident.

Rear Seat Entry (2-Door Models)



The rotating boot on the lap belt system is designed to facilitate both rear seat entry/exit and access to front seat passengers. To enter rear seat:

- Rotate safety belt boot rearward.
- Enter rear seat in front of safety belts.
- Return rotating safety belt boot to forward position to facilitate use by front seat passengers.

MOTORIZED SHOULDER BELT PASSIVE RESTRAINT SYSTEM (Not Available on Models Equipped with the Supplemental Driver Air Bag Restraint System)

The Passive Restraint System operates electrically. The system restrains the driver and front seat passenger in the vehicle through the use of an automatic shoulder belt, the manual lap belt, and knee bolsters. THE SAFETY LAP BELT IS TO BE MANUALLY CONNECTED BY THE DRIVER/PASSENGER AND SHOULD ALWAYS BE WORN WITH THE SHOULDER BELT. BE SURE THE LAP BELT IS ON YOUR HIPS AS LOW AS POSSIBLE.

BEFORE DRIVING YOUR VEHICLE

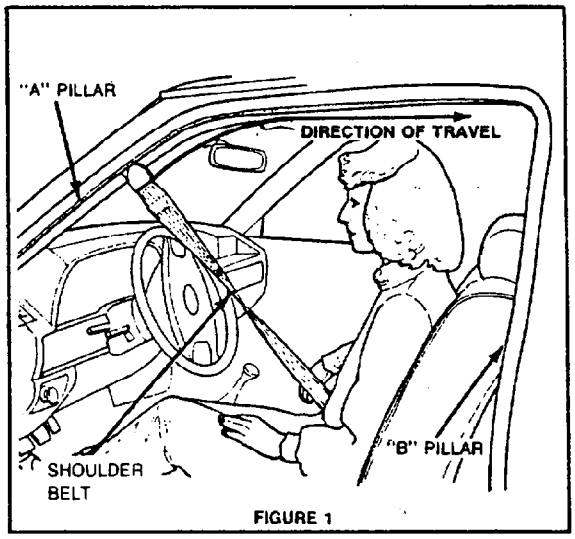


FIGURE 1

After entering the vehicle and closing the door, insert the key into the ignition and turn to the ON position. A motor will cause the shoulder belt to slide along its track (Figure 1) starting at the Front Body "A" Pillar and moving rearward to its locked position in the center body "B" Pillar (Figures 2 and 3). The shoulder belt warning indicator lamp in the instrument cluster will illuminate four to eight seconds. In the unlikely event the shoulder belt should stall before it reaches the "B" Pillar, the indicator lamp will begin to flash after nine (9) seconds and will continue flashing until the shoulder belt is in its locked position in the "B" Pillar. If the indicator lamp continues flashing refer to the Manual Override System in this section before driving the vehicle. The shoulder belt will automatically adjust itself to allow for comfortable wear and freedom of movement by the occupant. It will lock tight only on extremely hard braking, or impacts of approximately 5 mph (8 km/h) or more.

When the vehicle ignition is turned to the OFF position and the door is opened, the shoulder belt will move forward to the "A" Pillar. This will allow ample room for exit from the vehicle by the driver or passenger. DO NOT USE the belt as an assist handle when entering or exiting the vehicle.

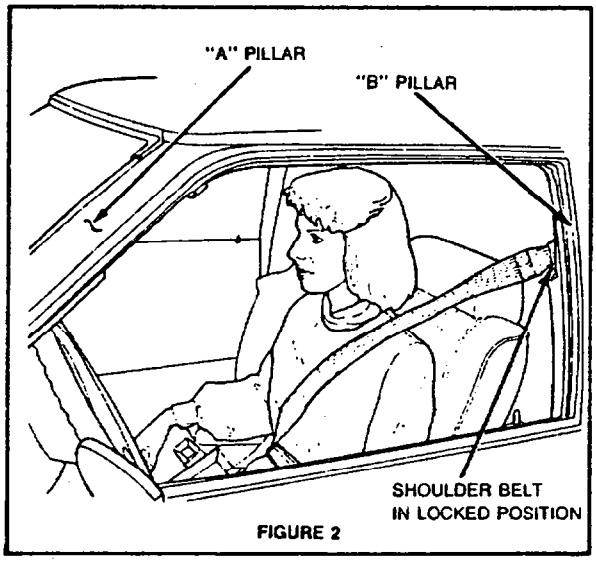


FIGURE 2

BEFORE DRIVING YOUR VEHICLE

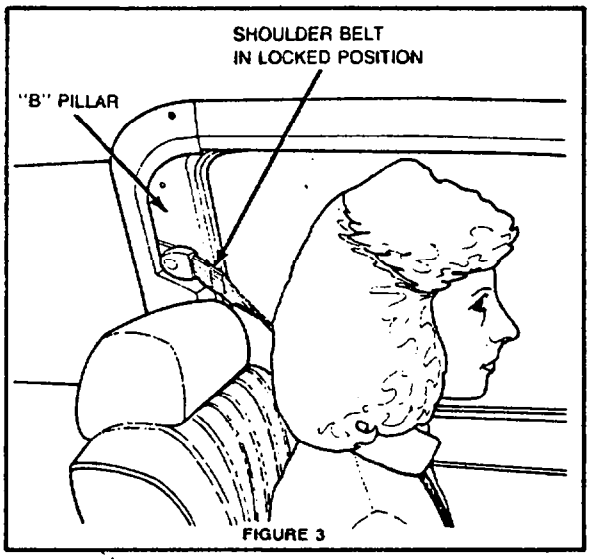


FIGURE 3

IMPORTANT FOR YOUR SAFETY

Before driving the vehicle, read the label on the back of the sun visor (Figures 4 and 5).