REPORT NOS. 208-CAL-88-05
212-CAL-88-05
301-CAL-88-05

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

MITSUBISHI MOTORS CORPORATION

1988 MITSUBISHI STARION

2-Door Hatchback

NHTSA NO. CJ5601

CALSPAN TEST NO. 7669-6

AUGUST 18, 1988

CALSPAN CORPORATION
ADVANCED TECHNOLOGY CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225

FINAL REPORT

Prepared for:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF VEHICLE SAFETY COMPLIANCE
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16. Abstract

A 30 mph vehicle safety compliance test was conducted on a 1988 Mitsubishi Starion 2-Door Hatchback. This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on August 18, 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 29.8 mph. The ambient temperature at the impact face was 71°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 test vehicle was equipped with a 2-point automatic torso belt for both the driver and passenger positions.

17. Key Words 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	18. Distribution Statement 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 Mitsubishi Starion 2-Door Hatchback, 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 FRONTAL BARRIER IMPACT TEST CJ5601

A frontal barrier was impacted by a 1988 Mitsubishi Starion 2-Door Hatchback at a velocity of 29.8 mph. The test was performed at the Calspan Corportion Advanced Technology Center on August 18, 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 test vehicle was equipped with 5 restraint systems.

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

The driver's head struck the steering hub and his HIC was 320. The maximum chest deceleration over 3 milliseconds was 48 g's and femur loads were 1686 and 1819 pounds.

The right-front passenger's head struck the dash panel and his HIC was 710. The maximum chest deceleration over 3 milliseconds was 57 g's and femur loads were 1360 and 1172 pounds.

TABLE I

CRASH TEST SUMMARY

VEHICLE NHTSA NO.: CJ5601 TEST MODE: 30 mph Frontal Barrier

TEST DATE: 8/16/88 TIME: 11:35 TEMP: 79° F

VEHICLE MAKE/MODEL/BODY STYLE: 1988 Mitsubishi Starion 2-Door Hatchback

VEHICLE TEST WEIGHT: 3350 lbs

VEHICLE/BARRIER IMPACT ANGLE: 0°

IMPACT VELOCITY: 29.4 mph

MAXIMUM STATIC CRUSH: 19.3"

VEHICLE REBOUND: 7.6"

DUMMIES:	DRIVER	PASSENGER
TYPE	Part 572 (S/N 1021)	Part 572 (S/N 1022)
RESTRAINT SYSTEM	Automatic Torso Belt	Automatic Torso Belt

NUMBER OF DATA CHANNELS: 23

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 inches of shift	None
Seat Back Failure -	None	None

VISIBLE DUMMY CONTACT POINTS:	DRIVER	PASSENGER
Head	Steering Hub	No contact
Chest	No contact	No contact
Knees	Dash	Dash

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1988 Mitsubishi Starion 2-Door Hatchback

NHTSA No. CJ5601 ; VIN JA3CC54N2JJ032550 ; Color: Summit White

Engine Data: 4 cylinders; - CID; - Litres; 2555 cc

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

Transmission Data: 5 speeds; X Manual; - Automatic; - Overdrive

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

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

X Power Door Locks; Intercooled Turbo

Date Received: 7-20-88 ; Odometer Reading - 29 miles

Selling Dealer: Kline Mitsubishi

& address 5800 Edsall Road, Alexandria, VA 22304

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Mitsubishi Motors Corporation

Data of Manufacture: 2/88 ; VIN JA3CC54N2JJ032550

GVWR: 4057 lbs; GAWR: 1984 lbs FRONT

2205 lbs REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load 27 psi Front

27 psi Rear

Recommended Tire Size 225/50VR16 Load Range Standard

Recommended Cold Tire Pressure 27 psi Front 27 psi Rear

Size of Tires on Test Vehicle 225/50VR16

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) = 827 lbs.

No. of Occupants x 150 lbs = 750 lbs.

Rated Cargo/Luggage Weight (RCLW)= 77 lbs. (Difference)

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

Right Front =	810	lbs	Right Rear =	660	lbs
Left Front =	840	lbs	Left Rear =	770	lbs
TOTAL FRONT =	1650	lbs	TOTAL REAR =	1430	lbs
% of Total Weight =	54 %		% of Total Weight =	46 %	

TOTAL DELIVERED WEIGHT = 3070 lbs.

TABLE 2

GENERAL TEST & VEHICLE PARAMETER DATA (cont.)

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight	=	3070	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	77	lbs.
Weight of 2 P.572 Dummies @ 164 ea.	=	328	lbs.
TARGET TEST WEIGHT	=	3475	lbs. (sum)

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 62 LBS OF CARGO WEIGHT:

Right Front = 860 lbs. Right Rear = 870 lbs.

Left Front = 860 lbs. Left Rear = 870 lbs.

TOTAL FRONT = 1720 lbs. TOTAL REAR = 1740 lbs.

% of Total Weight = 50 % % of Total Weight = 50 %

TOTAL TEST WEIGHT = 3460 lbs.

Weight of Ballast secured in vehicle's cargo area = 0 lbs.

Vehicle Components Removed for Weight Reduction None

TEST VEHICLE ATTITUDE: (all dimensions in inches)

AS DELIVERED	RF	26.6 ;	LF	26.6 ;	RR	25.9 ;	LR 25.7
FULLY LOADED	RF	26.2 ;	LF	26.0 ;	RR	24.9 ;	LR 24.6
AS TESTED	RF	26.4 ;	LF	26.4 ;	RR	25.2 ;	LR 24.9

Vehicle's Wheelbase = 95.9 inches

Location of Vehicle's C.G. = 48.2 inches rearward of front wheel centerline (if required)

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 19.8 gallons

Usable Capacity Figure Furnished by COTR = 19.35 gallons

Test Volume Range (92 to 94% of Usable Capacity) = 17.8 to 18.2 gallons

ACTUAL TEST VOLUME = 18.0 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: August 18, 1988 TIME: 11:40 TEMP: 71 °F

VEHICLE NHTSA NO.: CJ5601 ; VIN JA3CC54N2JJ032550

REQUIRED IMPACT VELOCITY RANGE: 28.9 to 29.9 mph

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

Trap No. 1 = 29.8 mph; Trap No. 2 = 29.8 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 = 170.3 "; C/L= 173.1 "; Left = 170.3 "

Post-Test Right = 152.7 "; C/L = 153.2 "; Left = 153.5 "

CRUSH Right = 17.6 "; C/L = 19.9 "; Left = 16.8 "

AVERAGE = 18.1 inches

VEHICLE REBOUND: (from rigid barrier only)

Distance from front of test vehicle to impact point:

Right = 1.0 "; C/L = 1.0 "; Left = 1.5 "

AVERAGE = 1.2 inches

DOOR OPENING:	Left	Right
Front	operable	operable
SEAT MOVEMENT:	Seat Back Failure	Seat Shift
Front	None	None

TABLE 3

POST-IMPACT DATA (cont)

GLAZING DAMAGE: Windshield remained intact

Section 3

OCCUPANT AND VEHICLE DATA

Figure 1

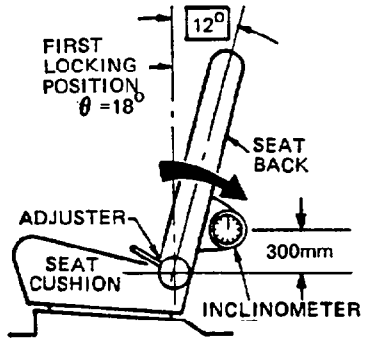
TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model year: 1988 Vehicle Model: Mitsubishi Starion Body Style: 2-Dr Hatchback

1. Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.

   Seat back angle is measured along back panel on seat centerline as shown in sketch.



LEFT SIDE VIEW

Seat back angle for driver's seat 18°+12°=30°
Measurement instructions: Position can be located with back adjusted to the 6th step from the first locking position. (first locking position = 0 step)

Seat back angle for passenger's seat 30°
Measurement instructions: Same as driver's seat.

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: 1 notch rearward of mid position

   Positioning of the passenger's seat (if applicable): 1 notch rearward of mid position

3. Fuel Tank Capacity Data

   A. "Usable Capacity" of the standard equipment fuel tank is 19.35 gallons.

   B. "Usable Capacity" of the optional equipment fuel tank is N/A gallons.

   Additional Instructions: None

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION

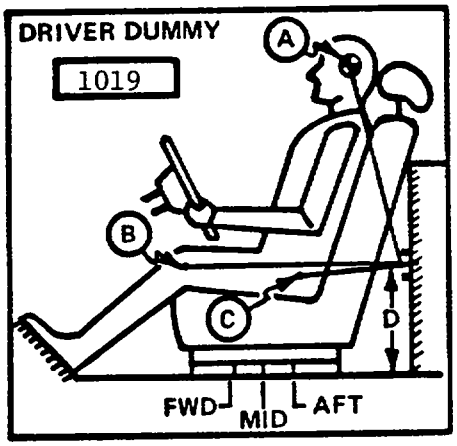
TEST NO.: CJ5601

VEHICLE: 1988 Mitsubishi Starion

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

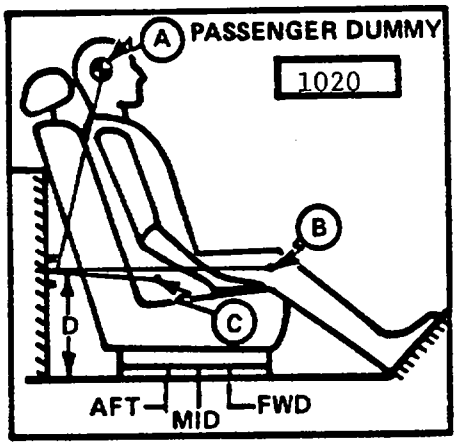
ADJUSTER TYPE:
- X Manual
- ____ Power

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



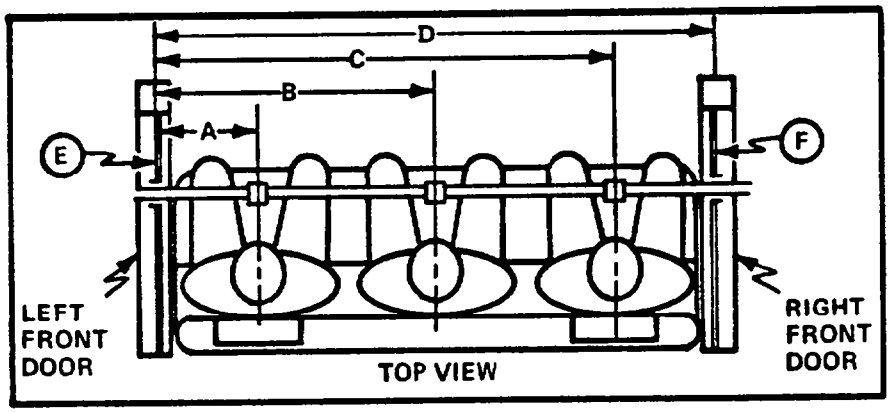
MEASUREMENT LOCATION

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



A =	21.6	in.	24	Degrees
B =	32.3	in.	98	Degrees
C =	17.2	in.	115	Degrees
D =	14.6	in.		

A =	21.6	in.	25	Degrees
B =	33.7	in.	98	Degrees
C =	18.3	in.	112	Degrees
D =	14.6	in.		

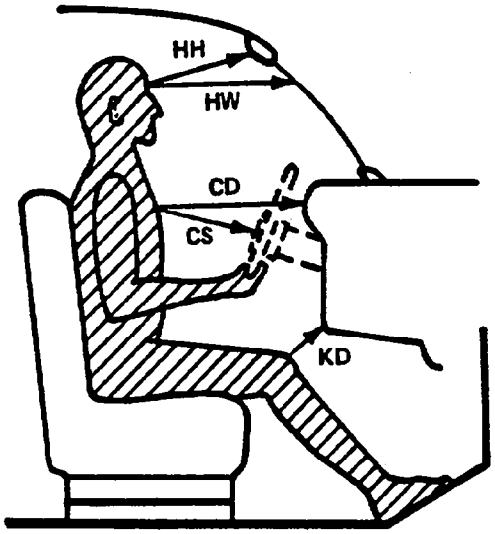


		DUMMY ID 1019	DUMMY ID 1020
A	= Left Door to Driver Centerline	10.7 in.	
B	= Left Door to Center Passenger Centerline	- in.	
C	= Left Door to Right Passenger Centerline	37.1 in.	
D	= Left Door to Right Door	47.2 in.	
E, F	= Window Glass Height (Right and Left Must Be Equal)	10.5 in.	

Figure 3

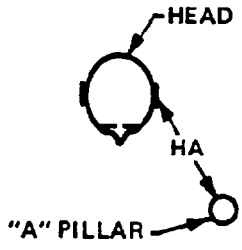
OCCUPANT CLEARANCE DIMENSIONS

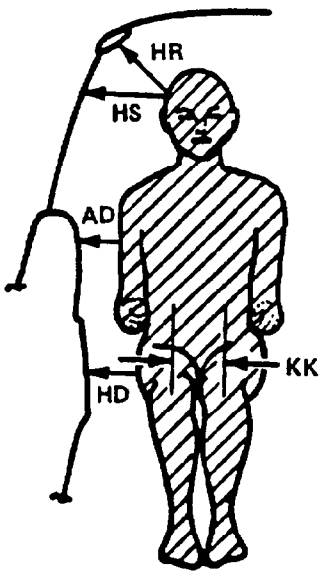
	DRIVER	PASSENGER
HH	16.6	15.2
HW	20.0	19.9
CD	22.5	21.2
CS	15.9	--
KDL	5.0	5.4
KDR	4.1	5.8
SA	30°*	30°*
TA	26°	25°



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



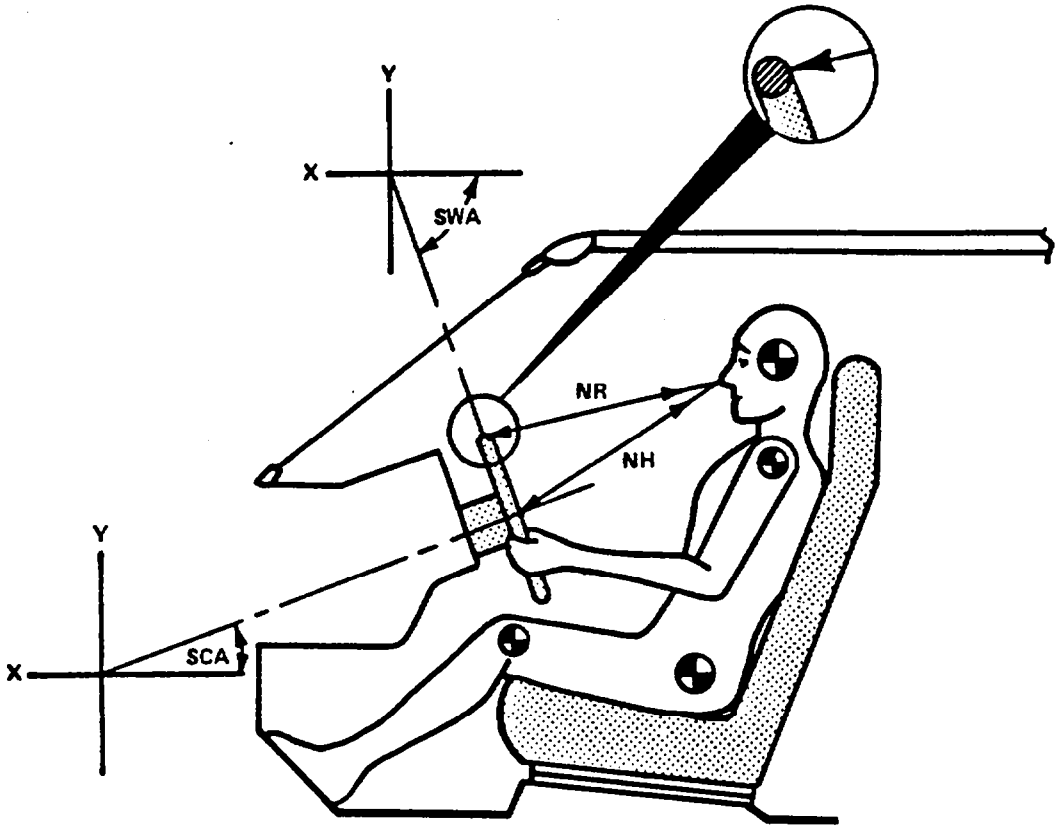


	DRIVER	PASSENGER
HR	3.4	3.5
HS	7.7	7.0
AD	4.0	3.3
HD	5.3	5.2
KK	9.8	6.5
HA	22.5	21.4

*Seat back adjusted using information supplied by manufacturer. See Figure 1.

Figure 4

DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSY. REFERENCE DIMENSIONS

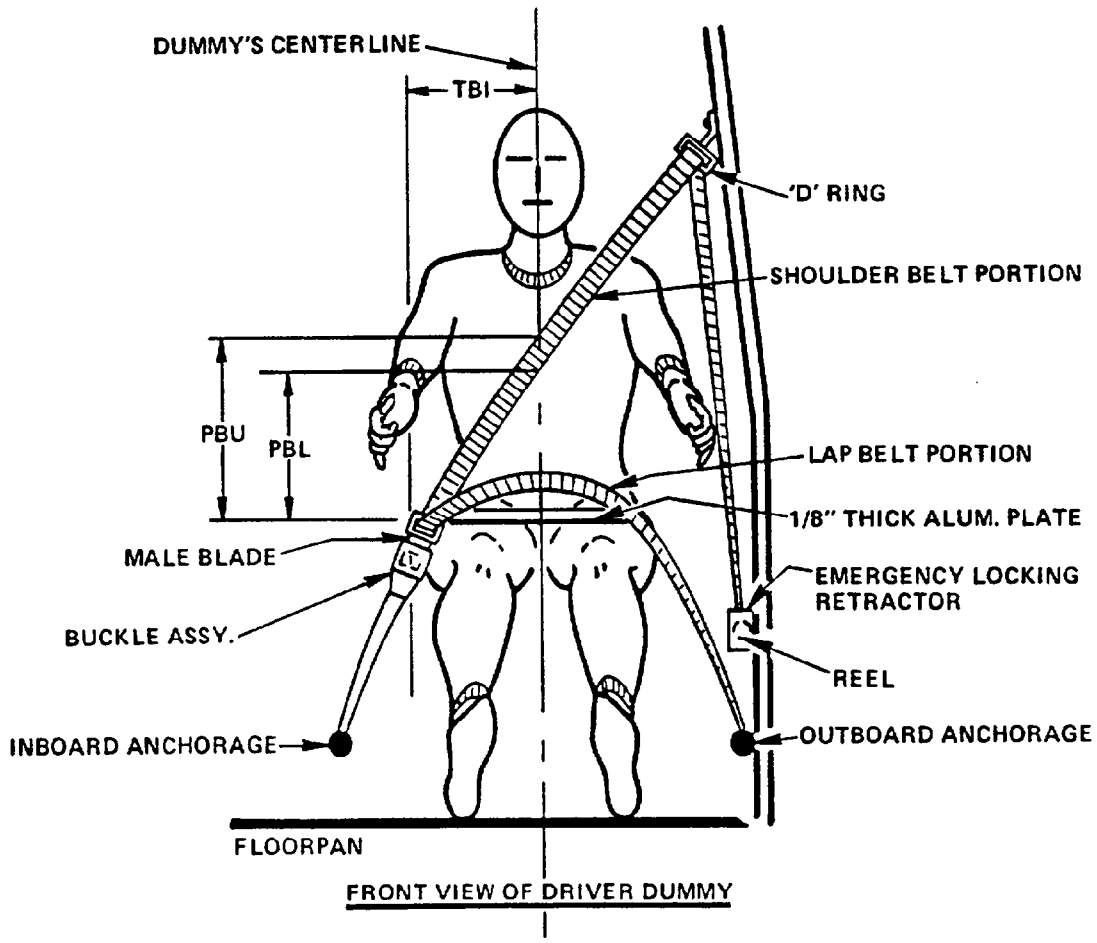


LEFT SIDE VIEW

	MEASUREMENTS	
NR -- Distance from tip of dummy's nose to Top Rear surface of steering wheel rim	20.2	Inches
NH -- Distance from tip of dummy's nose to center of steering column hub	21.7	Inches
SCA -- Angle of steering column relative to the horizontal X axis	21	Degrees
SWA -- Angle of steering wheel relative to the horizontal X axis	-69	Degrees

Figure 5

SEAT BELT POSITIONING DATA

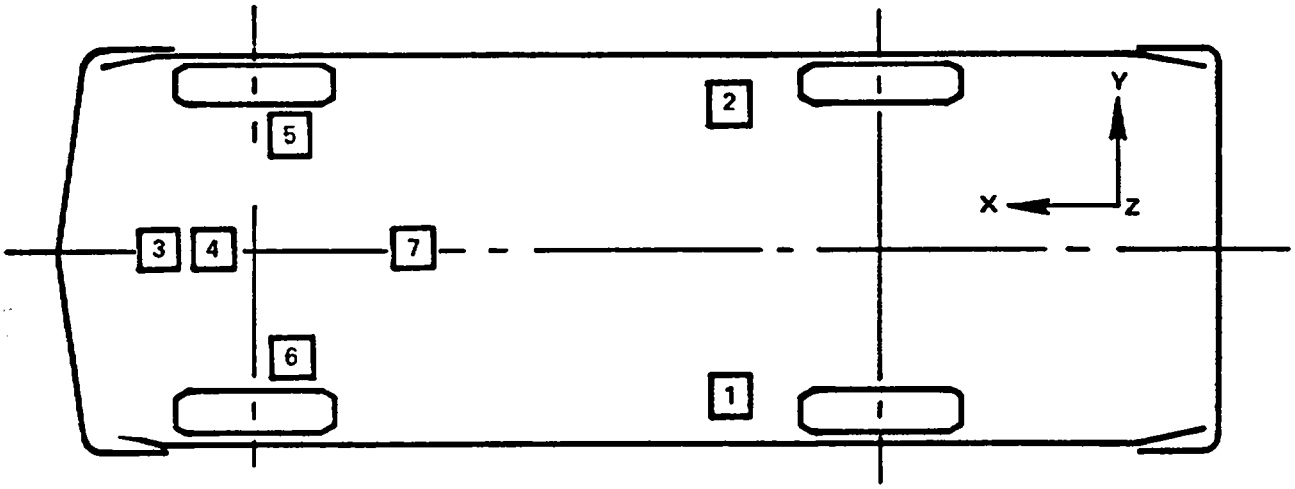


	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
PBU -- Top surface of alum. plate to upper edge	17.0	16.7
PBL -- Top surface of alum. plate to belt lower edge	14.0	13.7
TBI -- distance from Torso centerline to buckle	N/A	N/A

Figure 6

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:	63.1	17.5	15.0				
	POST:	64.5	17.8	15.5				
	LONGITUDINAL FORCE				3	26	-43	51
2	REAR SEAT X-MEMBER AT RIGHT SIDE PRE:	63.1	-17.5	15.0				
	POST:	64.5	-17.3	15.3				
	LONGITUDINAL FORCE				3	150	-40	48
3	TOP OF ENGINE BLOCK PRE:	137.5	0.0	33.0				
	POST:	131.2	0.0	32.2				
	LONGITUDINAL FORCE				18	56	-89	39
4	BOTTOM OF ENGINE BLOCK PRE:	128.1	0.0	9.0				
	POST:	125.5	1.0	13.0				
	LONGITUDINAL FORCE				19	53	-81	39
5	BRAKE CALIPER AT RIGHT SIDE PRE:	130.0	-24.0	20.0				
	POST:	129.1	-20.3	20.4				
	LONGITUDINAL FORCE				21	80	-77	55
6	BRAKE CALIPER AT LEFT SIDE PRE:	130.0	24.0	20.0				
	POST:	130.0	-21.5	19.8				
	LONGITUDINAL FORCE				20	80	-90	54
7	DASH PANEL PRE:	101.1	0.0	32.0				
	POST:	101.5	0.0	33.1				
	LONGITUDINAL FORCE				25	63	-67	72

**	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 7

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 5

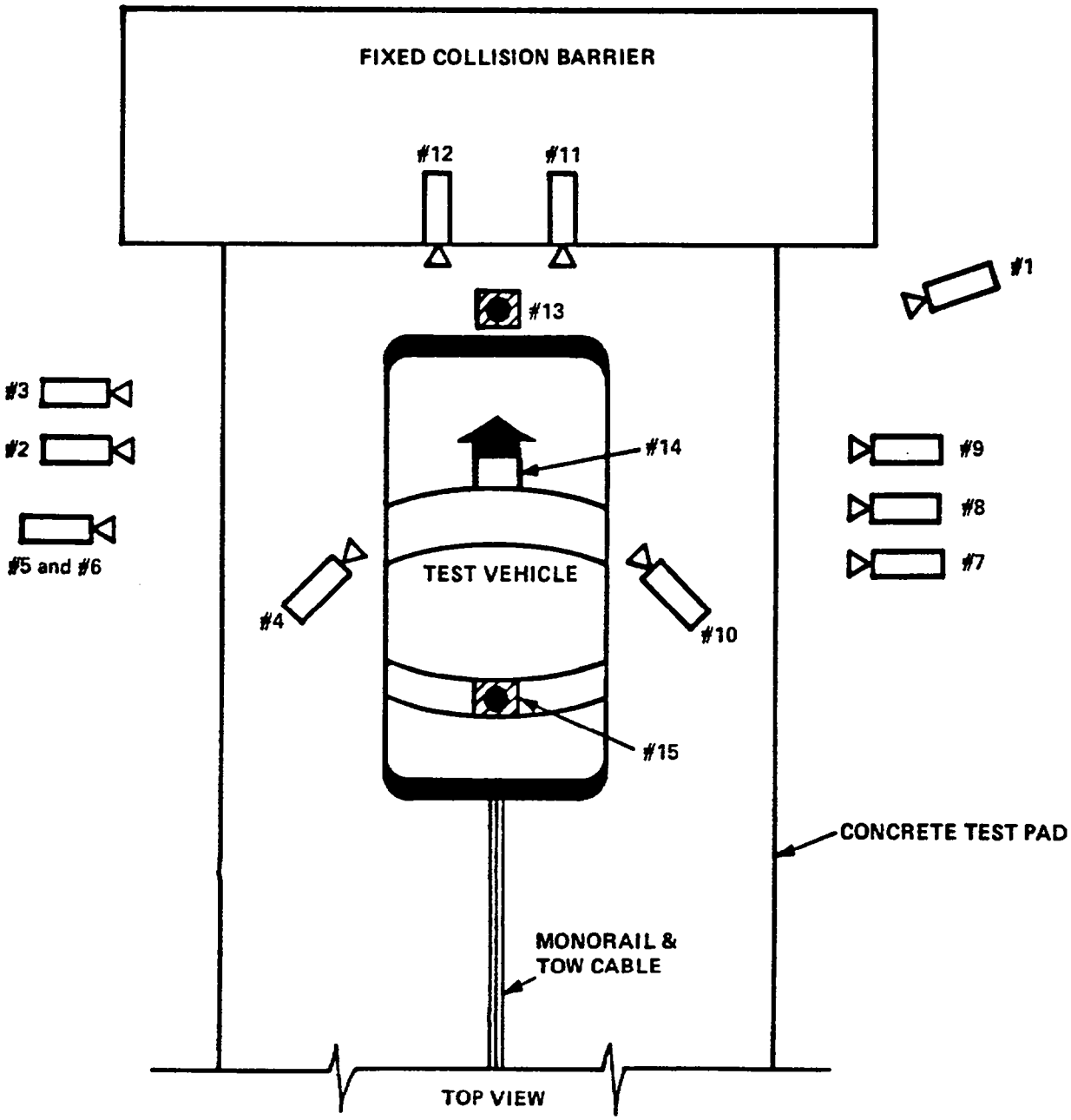


TABLE 5
HIGH-SPEED CAMERA LOCATIONS

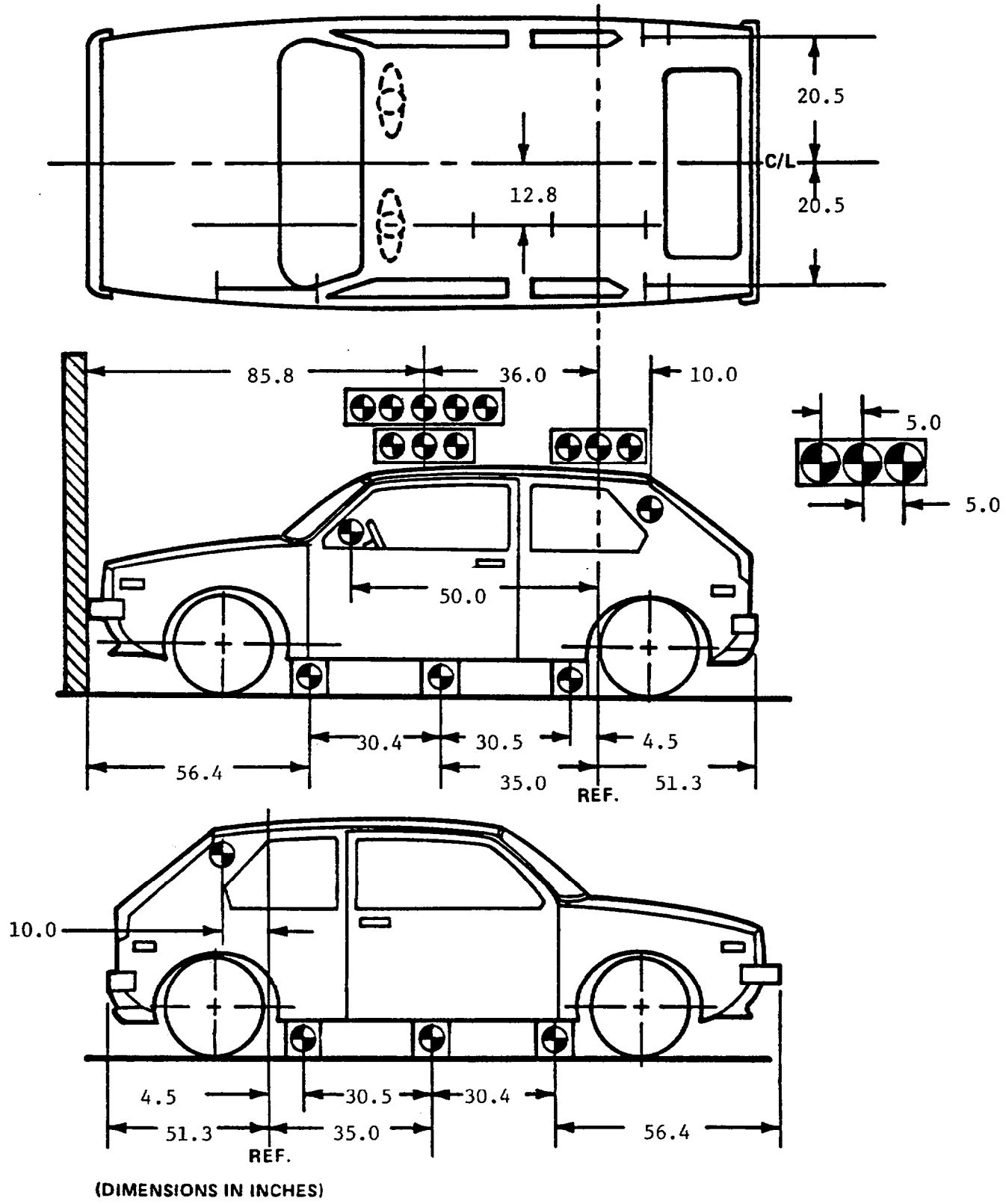
Test No. CJ5601 Vehicle 1988 Mitsubishi Starion 2-Door Sedan

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	230	64	40	-4	214	13	530
3	Left Side View	301	44	41	-4	285	25	530
4	Driver and Interior View	96	109	72	-17	-	13	750
5	Steering Column (bottom)	319	92	45	-4	303	25	540
6	Steering Column (top)	319	92	69	-9	303	25	550
7	Overall Right Side	242	79	41	-3	226	13	790
8	Right Side View	292	72	43	-4	276	25	780
9	Right Passenger View	262	57	40	-1	246	35	745
10	Passenger and Interior View	88	118	72	-21	-	25	600
11	Passenger Front View	22	18	75	-49	-	13	550
12	Driver Front View	22	18	75	-45	-	13	540
13	Windshield View	0	0	120	-60	-	13	540
14	Pit View of Engine	0	24	85	90	-	13	840
15	Pit View of Fuel Tank	0	93	86	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 8

VEHICLE TARGET LOCATIONS



(DIMENSIONS IN INCHES)

Figure 9

TEST VEHICLE MEASUREMENTS

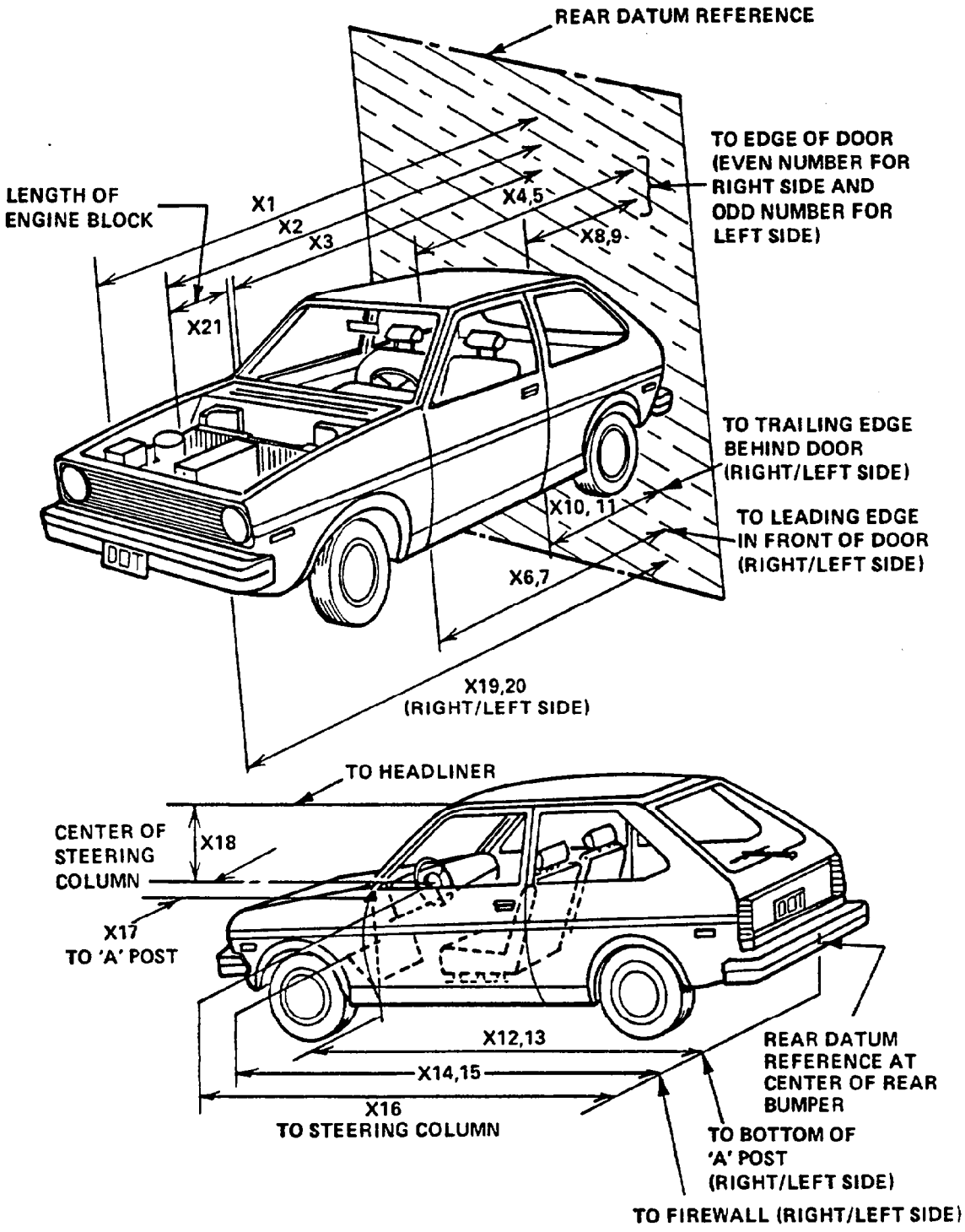


TABLE 6

VEHICLE MEASUREMENTS

No.		All Dimensions in Inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	173.1	153.2	19.9
X2	Rear Surface of Vehicle to Front of Engine	145.8	139.4	6.4
X3	Rear Surface of Vehicle to Firewall	122.8	119.9	2.9
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	110.7	110.9	-0.2
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	111.3	110.8	0.5
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	110.5	109.8	0.7
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	110.1	109.9	0.2
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	58.1	57.5	0.6
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	58.9	58.6	0.3
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	67.8	67.1	0.7
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	67.4	67.2	0.2
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	110.6	110.5	0.1
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	110.4	110.3	0.1
X14	Rear Surface of Vehicle to Firewall, Right Side	121.6	120.9	0.7
X15	Rear Surface of Vehicle to Firewall, Left Side	121.7	121.1	0.6
X16	Rear Surface of Vehicle to Steering Column	96.4	94.5	1.9
X17	Center of Steering Column to "A" Post	13.1	13.8	-0.7
X18 *	Center of Steering Column to Headliner	16.5	15.0	1.5
X19	Rear Surface of Vehicle to Right Side of Front Bumper	170.3	152.7	17.6
X20	Rear Surface of Vehicle to Left Side of Front Bumper	170.3	153.5	16.8
X21	Length of Engine Block	20.0	20.0	0.0

*Column Tilted Fully Upward.

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)	-44	-6	61	61	-49	-7	-22	48
DUMMY (2)	-48	-12	81	83	-68	-13	17	57

	MAXIMUM FORCE - FEMUR LOAD (LBS)	
	Right Femur	Left Femur
DUMMY (1)	1686	1819
DUMMY (2)	1360	1172

	HEAD INJURY CRITERIA **			
		36 millisecond Maximum		AVE. ACC. (g)
	HIC	t_1 (SEC)	t_2 (SEC)	t_1 TO t_2
DUMMY (1)	320	.06660	.08872	46.1
DUMMY (2)	710	.07560	.11160	52.2

*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: Not Applicable

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 __X__ NO _____

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

Test Vehicle NHTSA No.:	CJ5601
Make/Model:	Mitsubishi Starion
Date of Comfort/Convenience Check:	8-1-88
Technician Performing Check:	RFH, Jr.
GVWR:	4057 lbs

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 ___X___ NO _____

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 toros 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 10

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

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

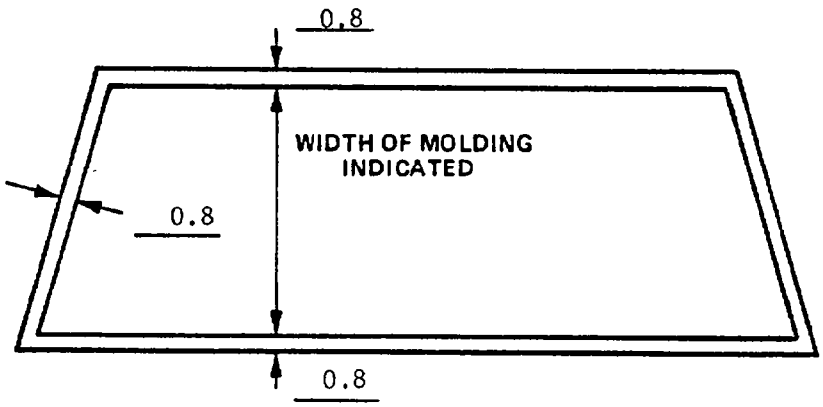
Windshield is bonded in place and covered with an 0.8 inch molding.

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	76.8	76.8	100%
LEFT SIDE	76.8	76.8	100%
TOTAL	153.6	153.6	100%

AREA OF RETENTION FAILURE:



FRONT VIEW

FAILURE DETAILS:

NONE.

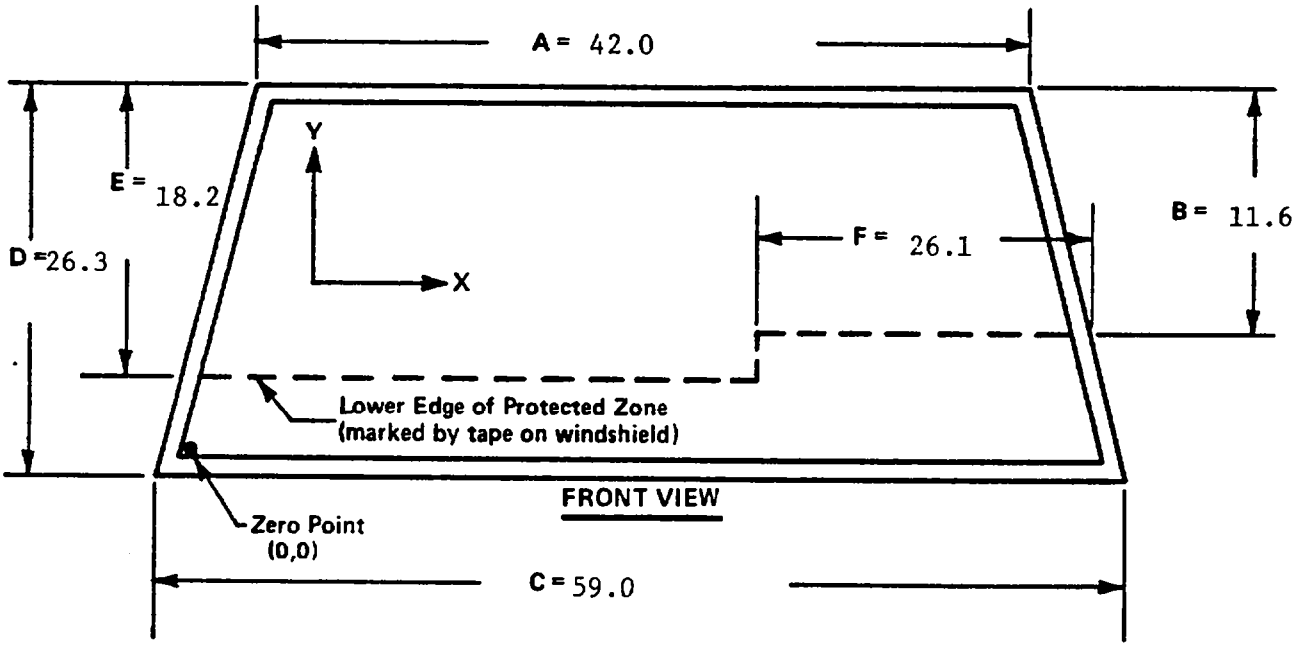
Figure 11

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.		

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TABLE 12

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: | C | J | 5 | 6 | 0 | 1 | TEST DATE: August 18, 1988

Vehicle Mfr/Make/Model: 1988 Mitsubishi Starion

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

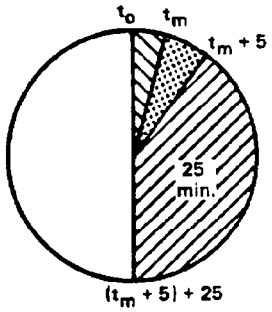
X Frontal (30 mph)

_____ 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

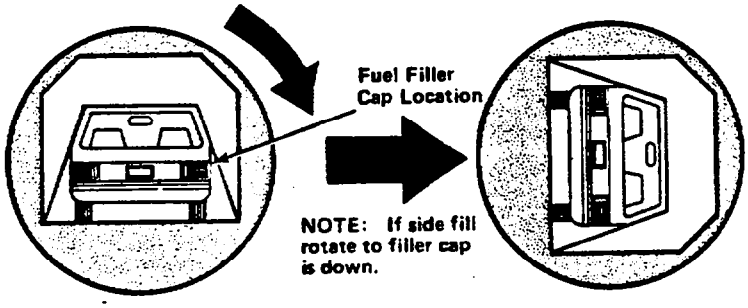
SOLVENT SPILLAGE DETAILS

NONE.

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
CJ5601

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):

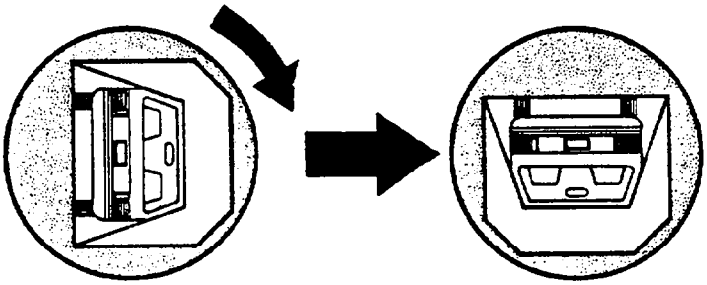
NONE.

TABLE 13 (continued)

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
CJ5601

TEST PHASE: 90° 180°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	03 minutes	00 seconds
FMVSS 301 Position Hold Time +	05 minutes	00 seconds
TOTAL	08 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.

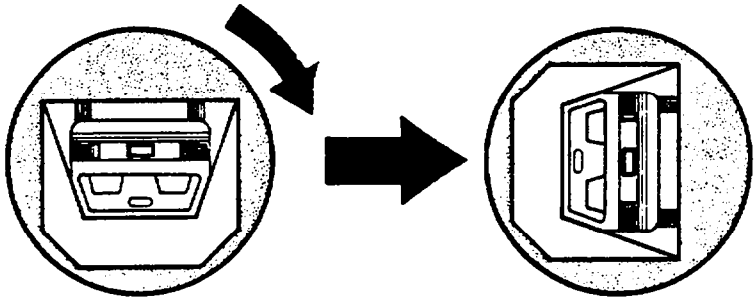
IV. SOLVENT SPILLAGE LOCATION(S):

NONE.

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
CJ5601

TEST PHASE: 180° 270°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	03 minutes	00 seconds
FMVSS 301 Position Hold Time +	05 minutes	00 seconds
TOTAL	08 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):

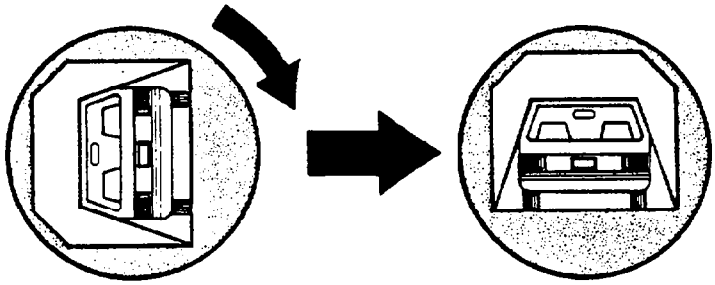
NONE.

TABLE 13 (continued)

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.: CJ5601

TEST PHASE: 270° 360°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	03 minutes	00 seconds
FMVSS 301 Position Hold Time +	05 minutes	00 seconds
TOTAL	08 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: August 18, 1988 VEH. NHTSA No. CJ5601

VEHICLE MANUFACTURER: Mitsubishi Motors Corporation

Model Year 1988 VIN: JA3CC54N2JJ032550

Body Style: Starion Build Date: 2/88

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

IMPACT VELOCITY: 29.8 mph TIME OF TEST: 11:40

TYPE OF AUTOMATIC RESTRAINT SYSTEM: 2-point automatic torso belt

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

Appendix A

PHOTOGRAPHS

Figure A-1 PRE-TEST FRONT VIEW

Figure A-2 POST-TEST FRONT VIEW

Figure A-3 PRE-TEST LEFT SIDE VIEW

Figure A-4 POST-TEST LEFT SIDE VIEW

Figure A-5 PRE-TEST RIGHT SIDE VIEW

Figure A-6 POST-TEST RIGHT SIDE VIEW

Figure A-7 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

Figure A-8 POST-TEST RIGHT FRONT THREE-QUARTER VIEW

Figure A-9 PRE-TEST LEFT REAR THREE-QUARTER VIEW

Figure A-10 POST-TEST LEFT REAR THREE-QUARTER VIEW

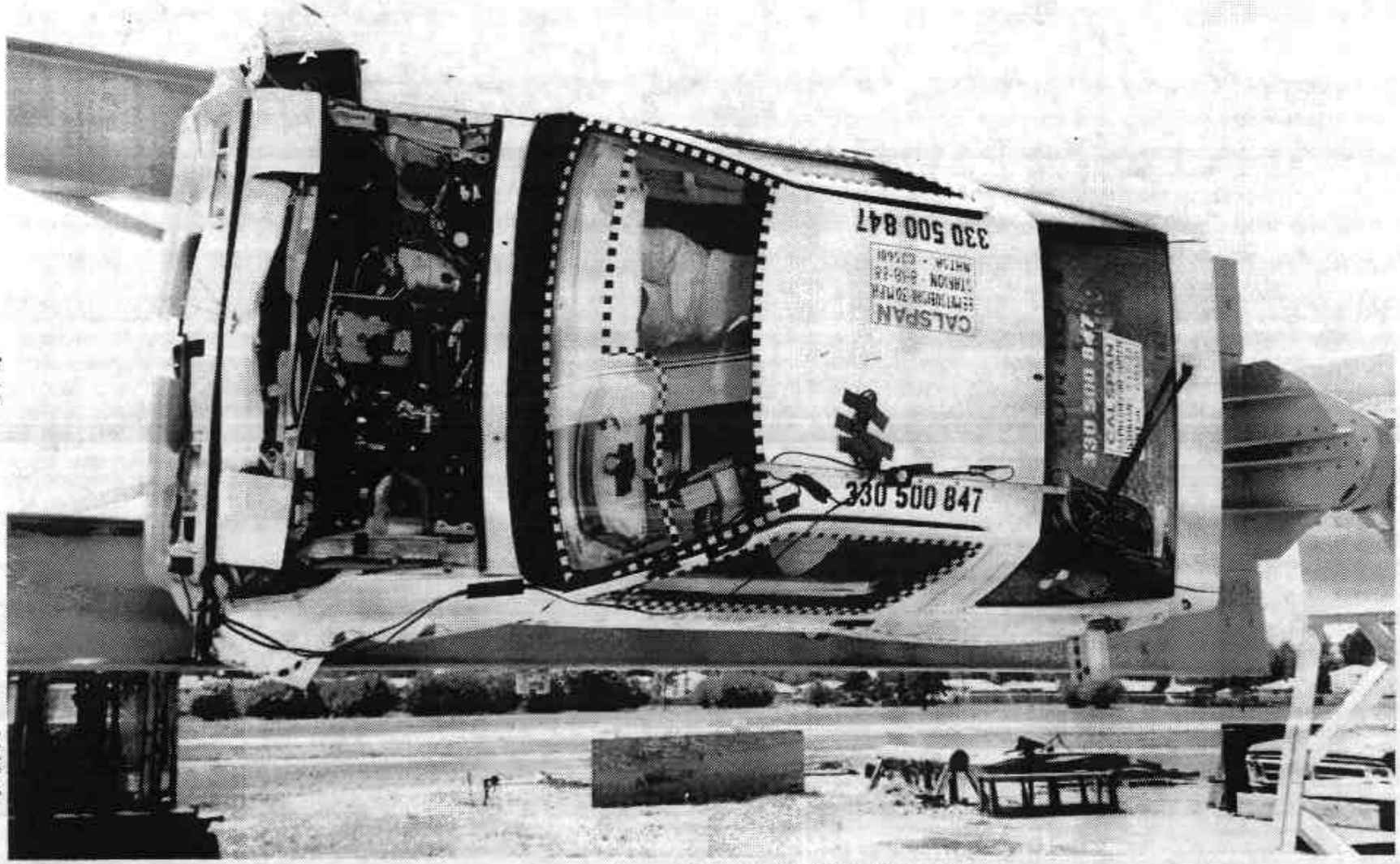


Figure A-11 POST-TEST TOP VIEW

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Figure A-12 PRE-TEST WINDSHIELD VIEW

Figure A-13 POST-TEST WINDSHIELD VIEW

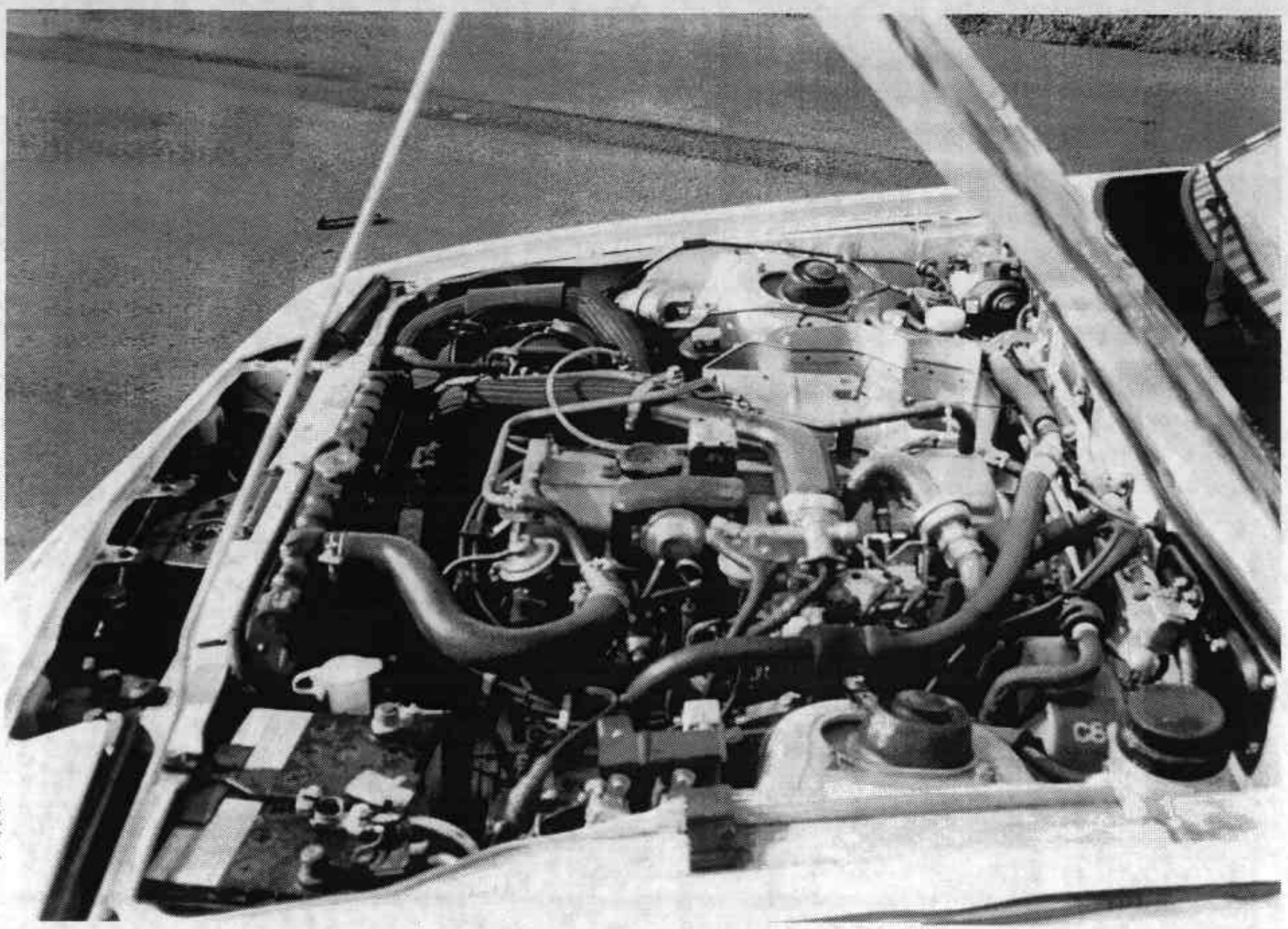

Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

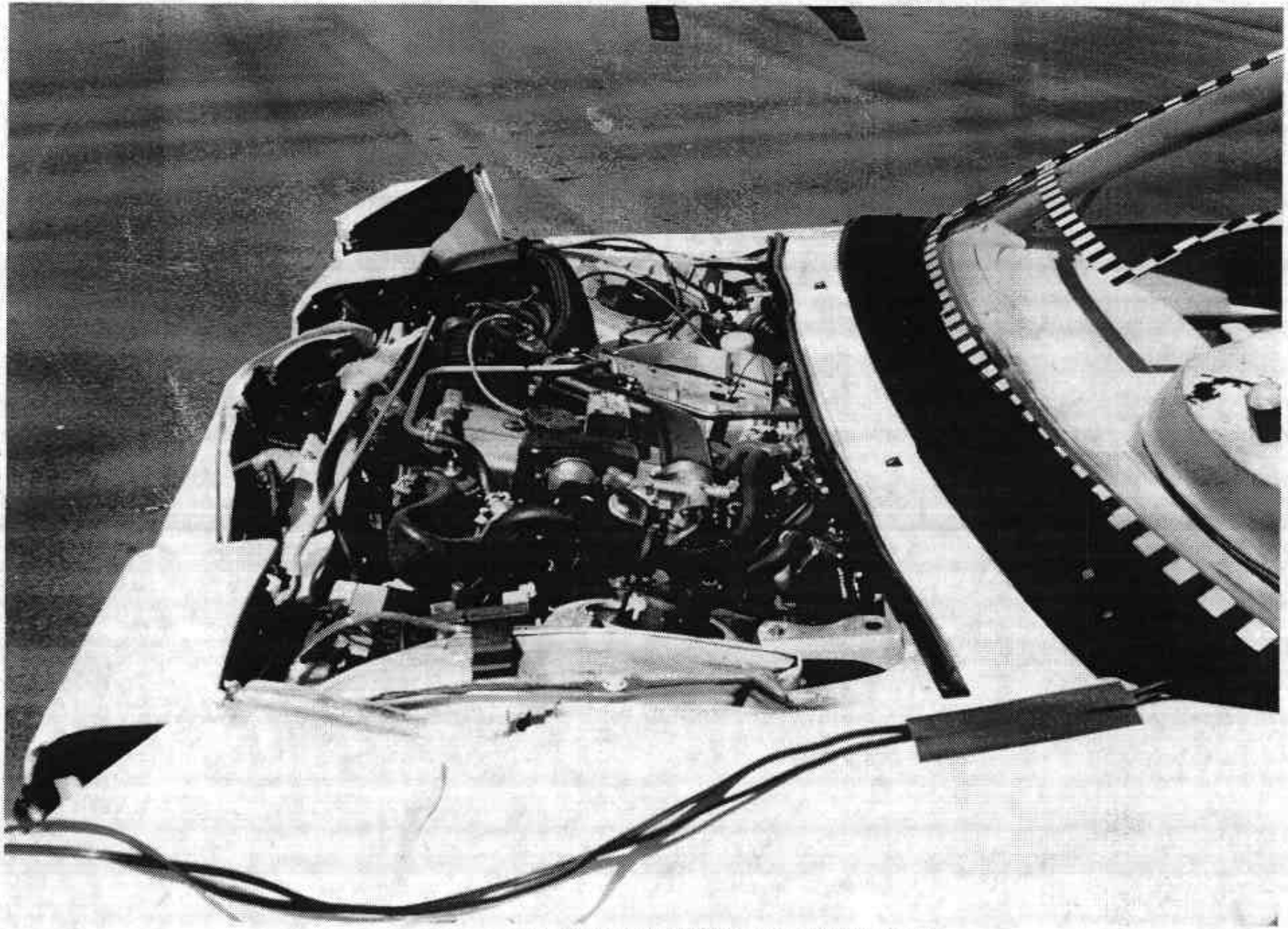

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Figure A-15 POST-TEST ENGINE COMPARTMENT VIEW

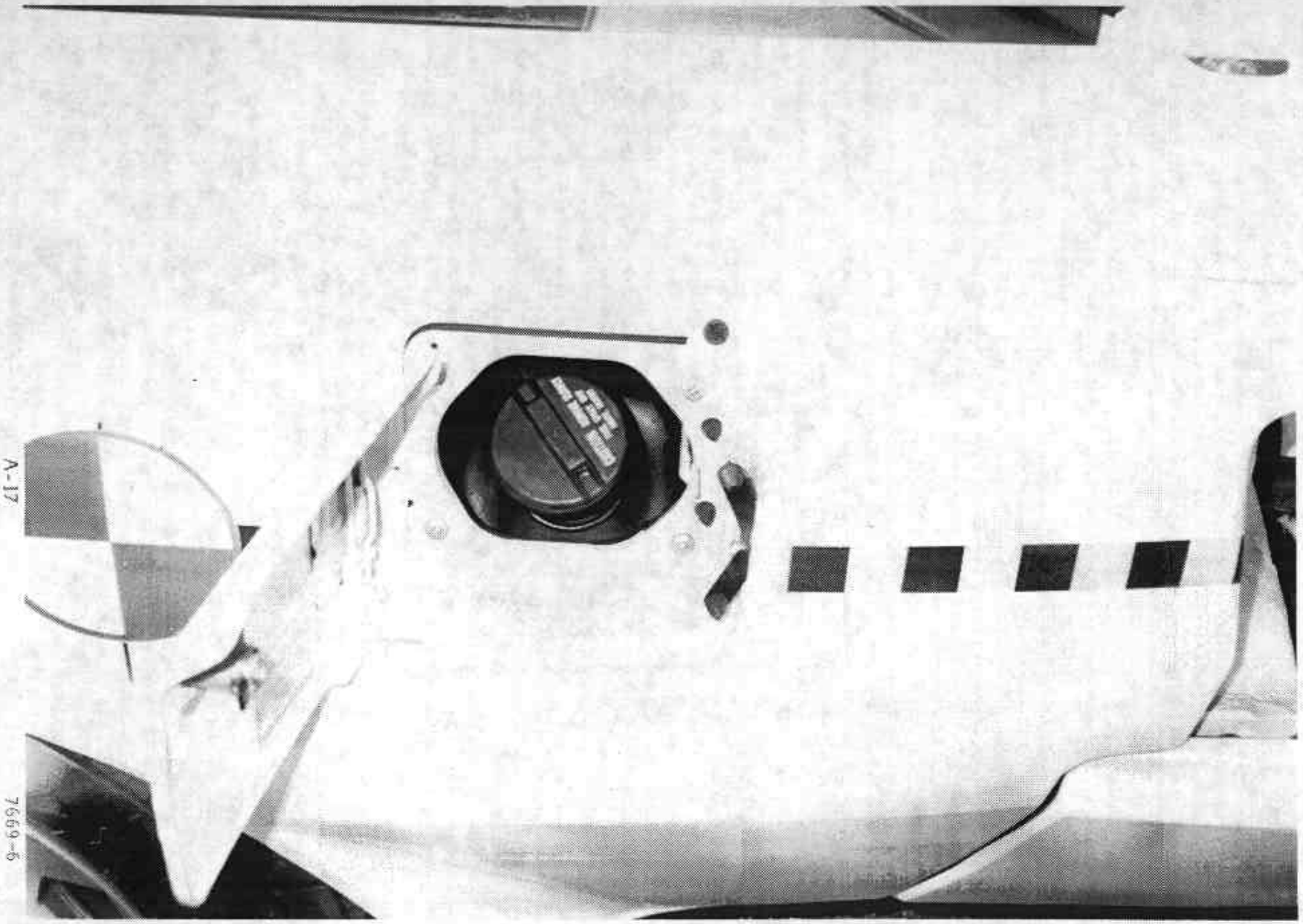

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Figure A-16 PRE-TEST FUEL FILLER CAP VIEW

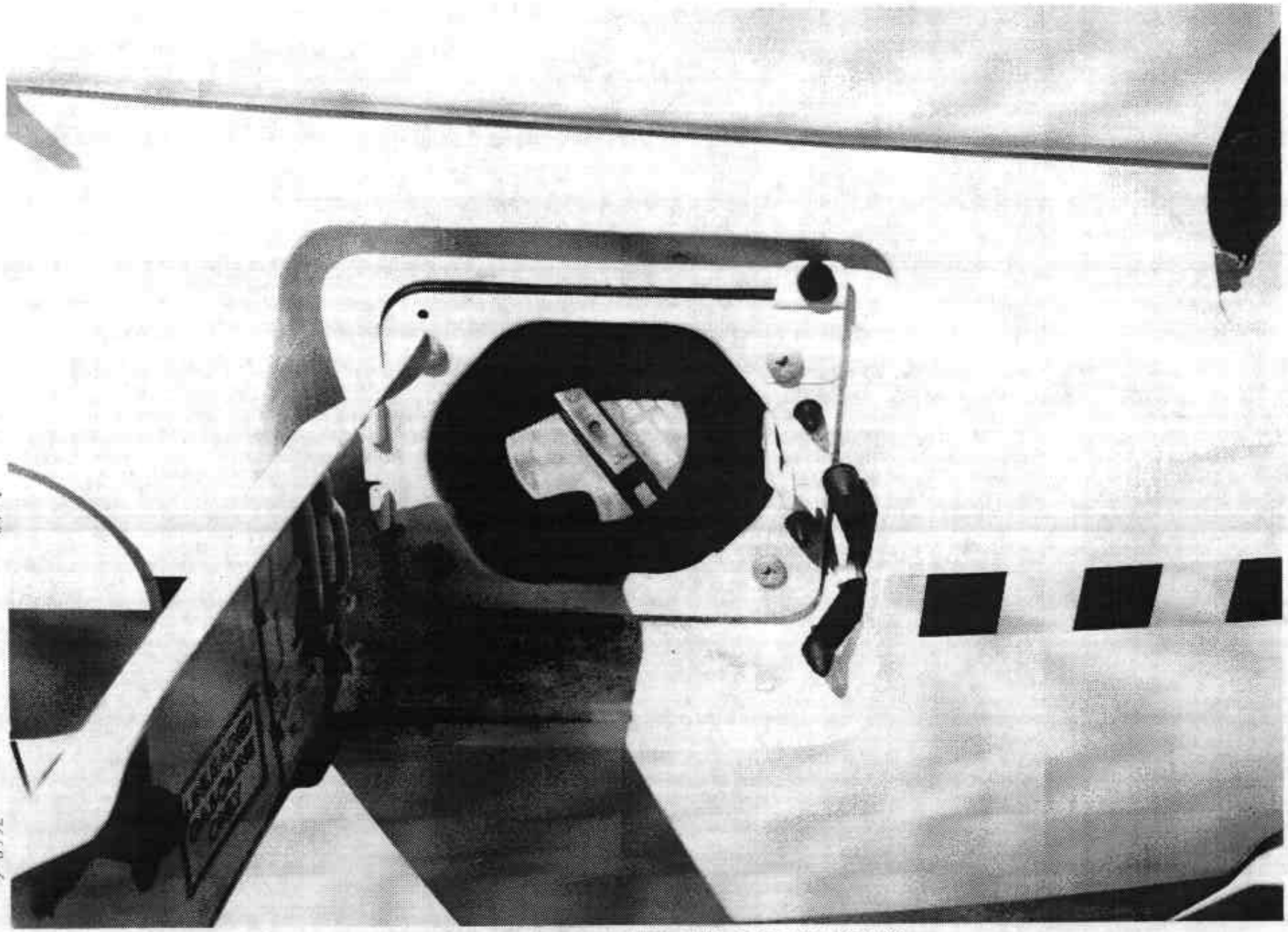

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Figure A-17 POST-TEST FUEL FILLER CAP VIEW

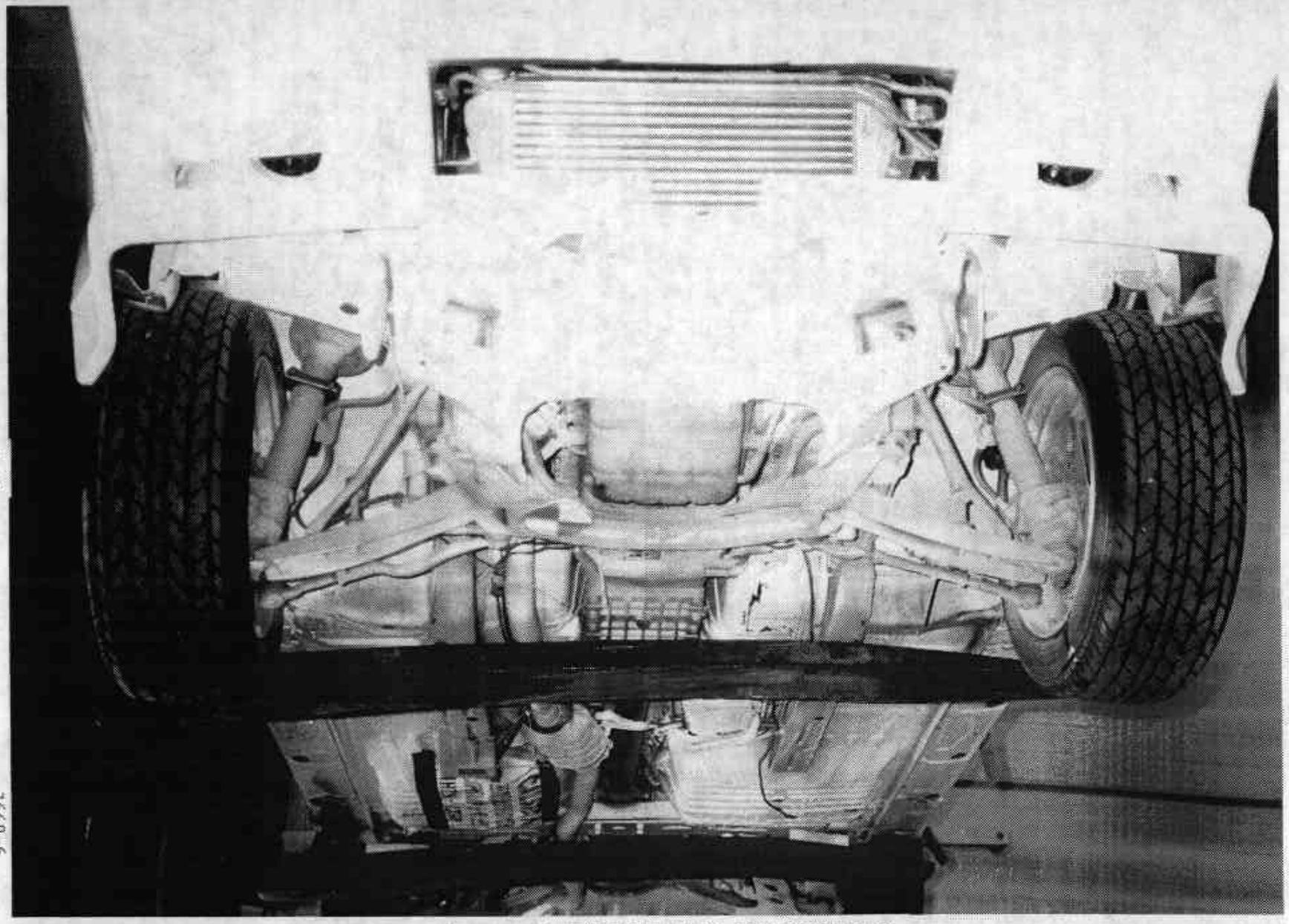

Figure A-18 PRE-TEST FRONT UNDERBODY VIEW

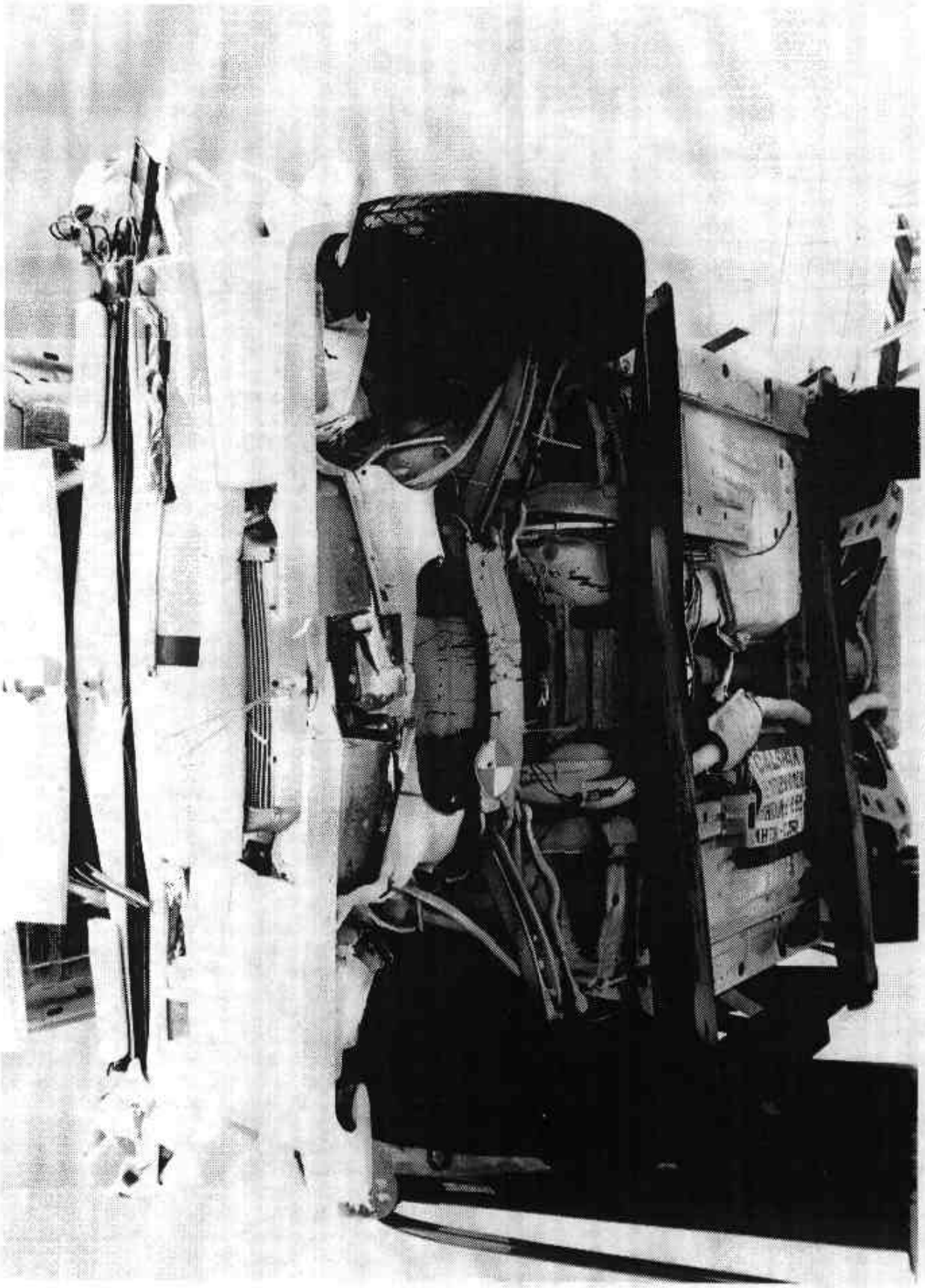

Figure A-19 POST-TEST FRONT UNDERBODY VIEW

Figure A-20 PRE-TEST FRONT SIDE UNDERBODY VIEW

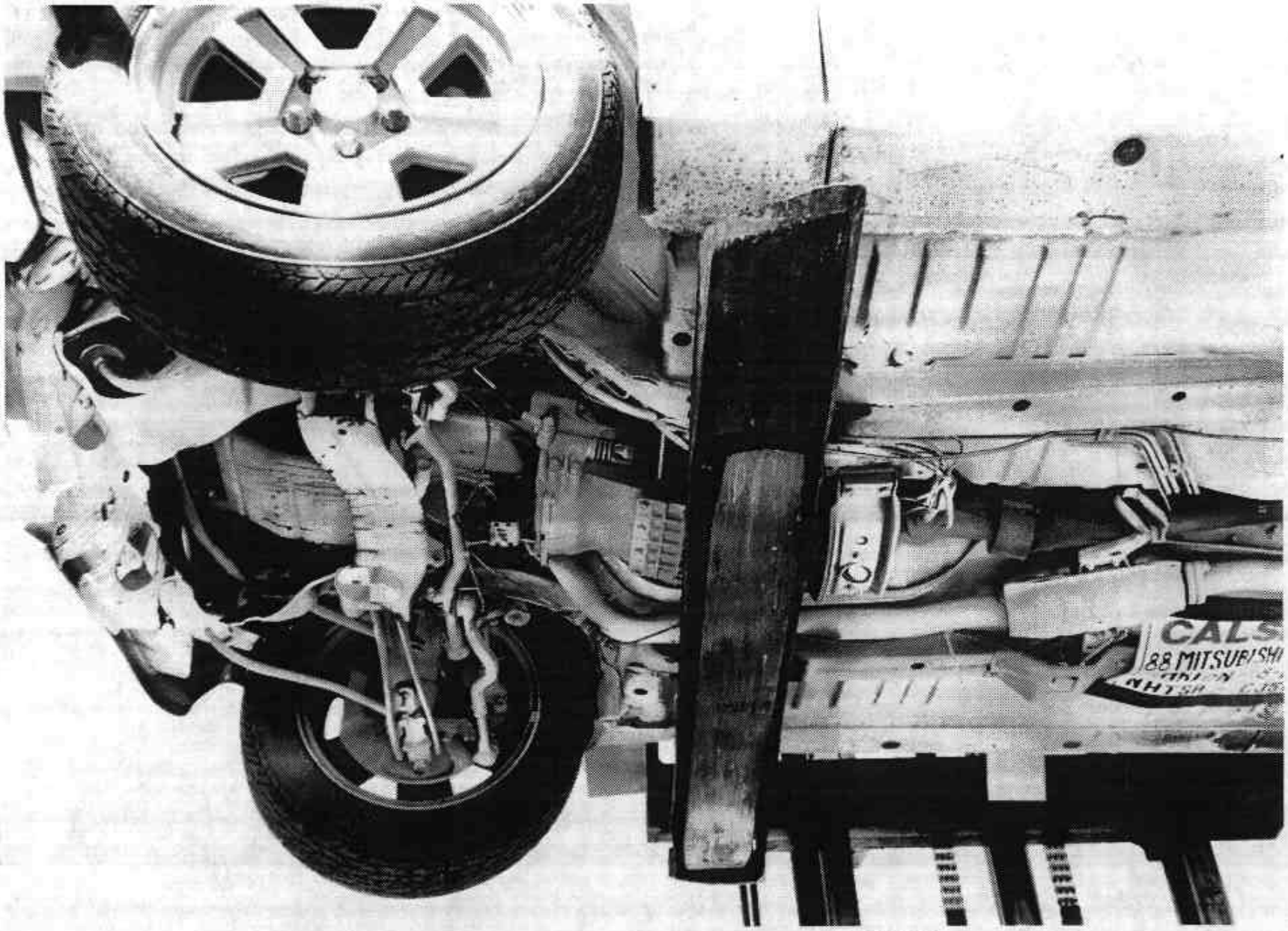

Figure A-21 POST-TEST FRONT SIDE UNDERBODY VIEW

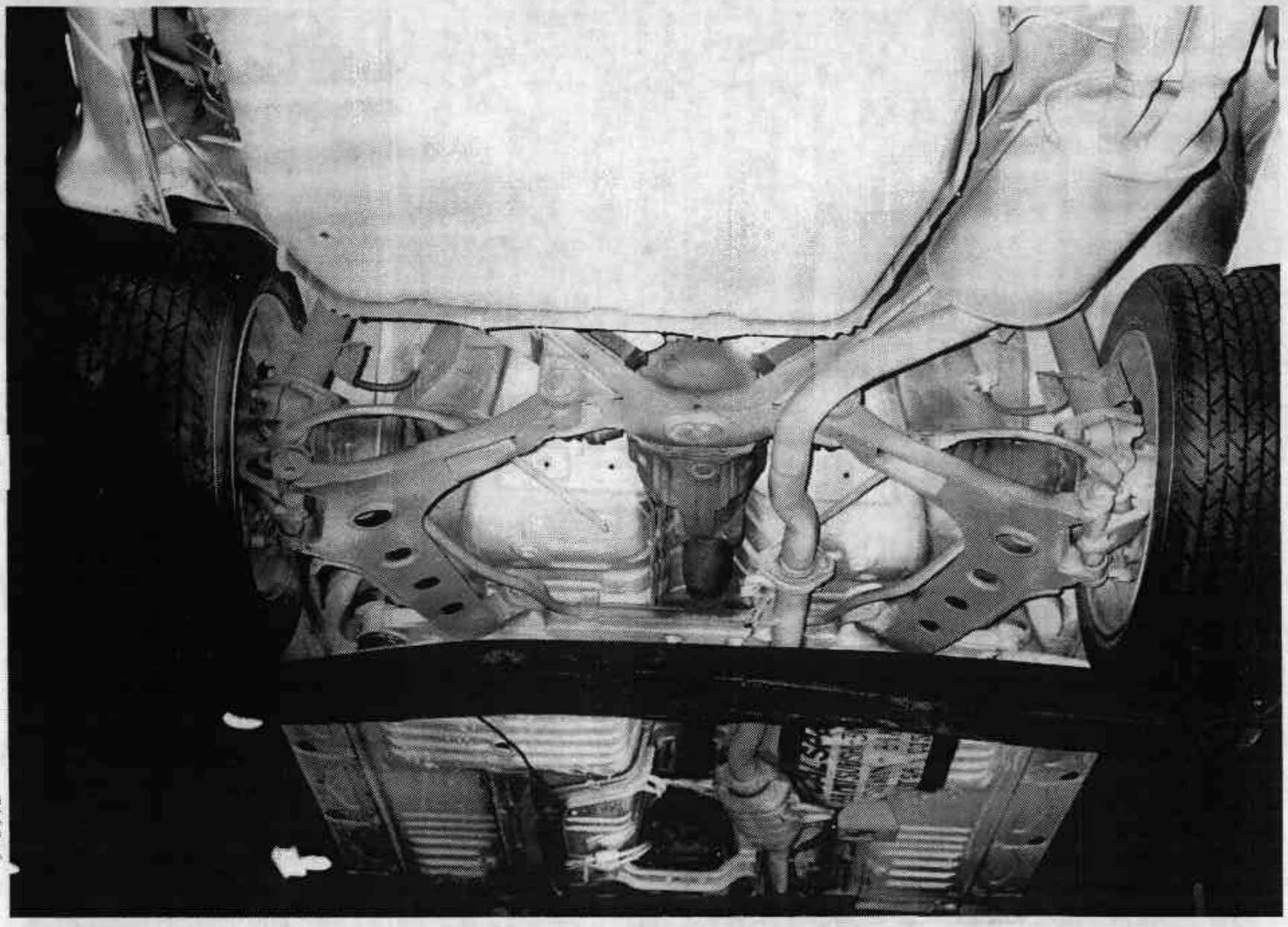

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Figure A-22 PRE-TEST REAR UNDERBODY VIEW

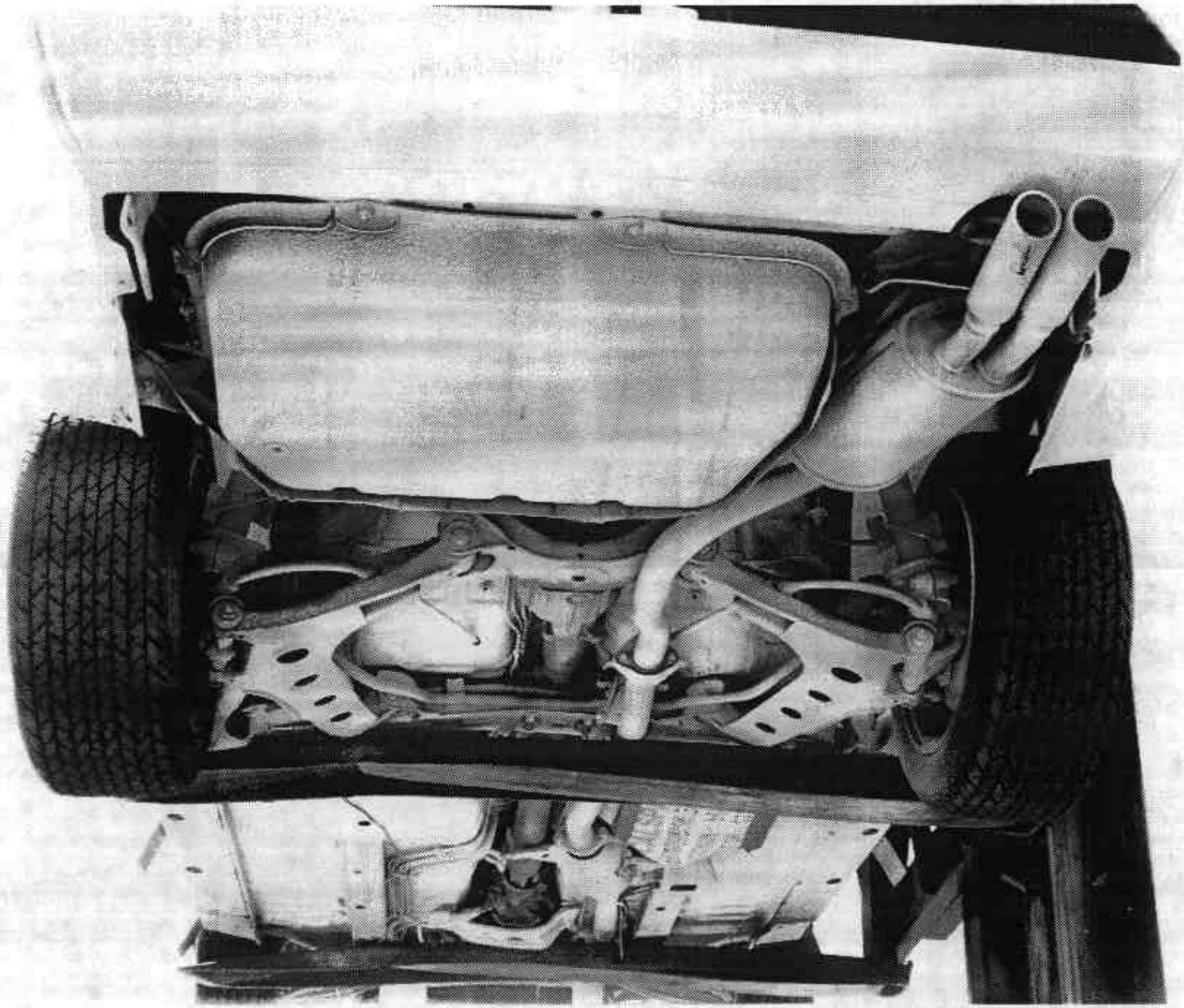

Figure A-23 POST-TEST REAR UNDERBODY VIEW

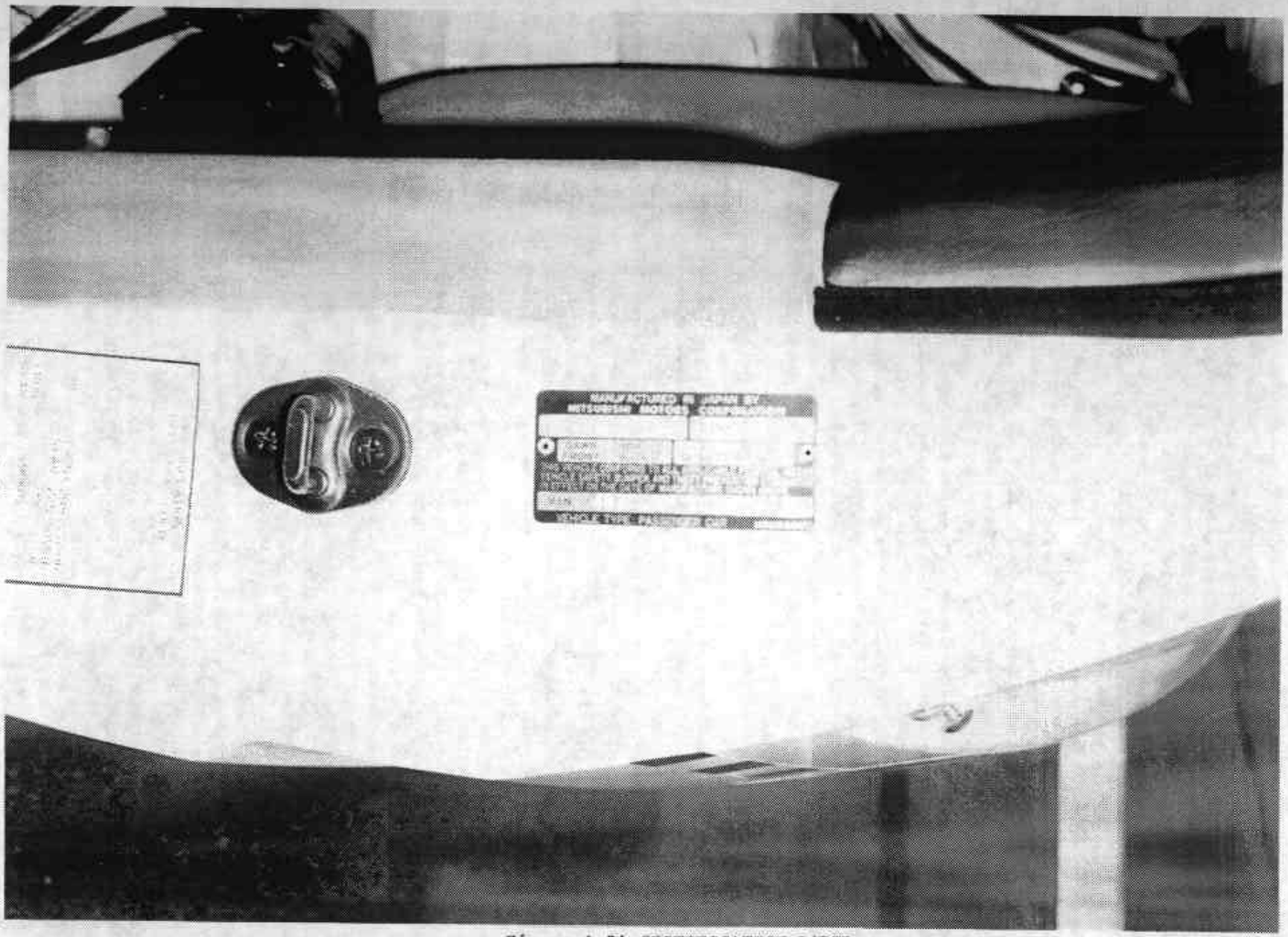

Figure A-24 CERTIFICATION LABEL

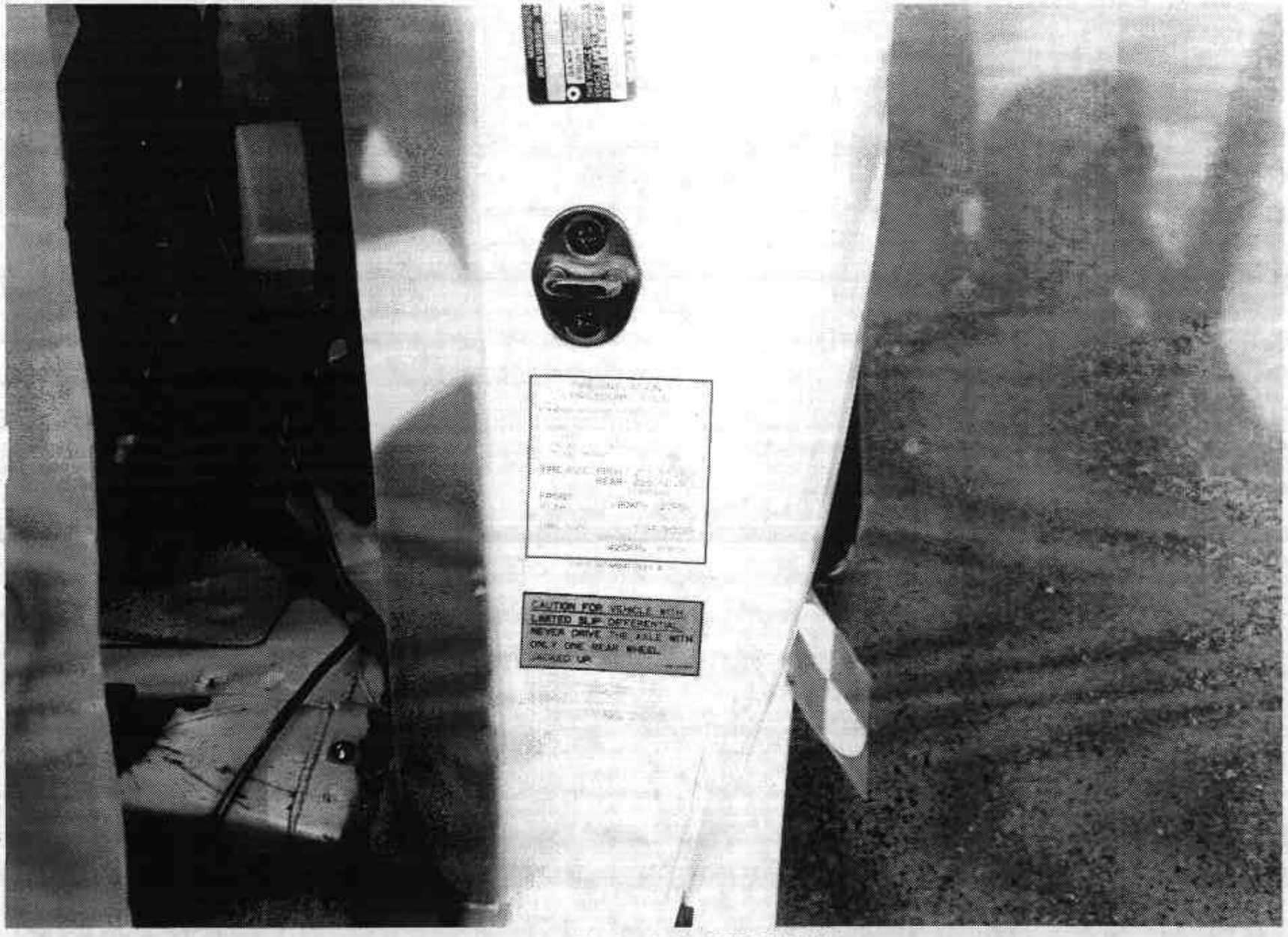

Figure A-25 TIRE PLACARD

Figure A-26 PRE-TEST DRIVER DUMMY POSITION

Figure A-27 POST-TEST DRIVER DUMMY POSITION

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Figure A-28 PRE-TEST PASSENGER DUMMY POSITION

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Figure A-29 POST-TEST PASSENGER DUMMY POSITION

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Figure A-30 PRE-TEST DRIVER DUMMY AND INTERIOR VIEW

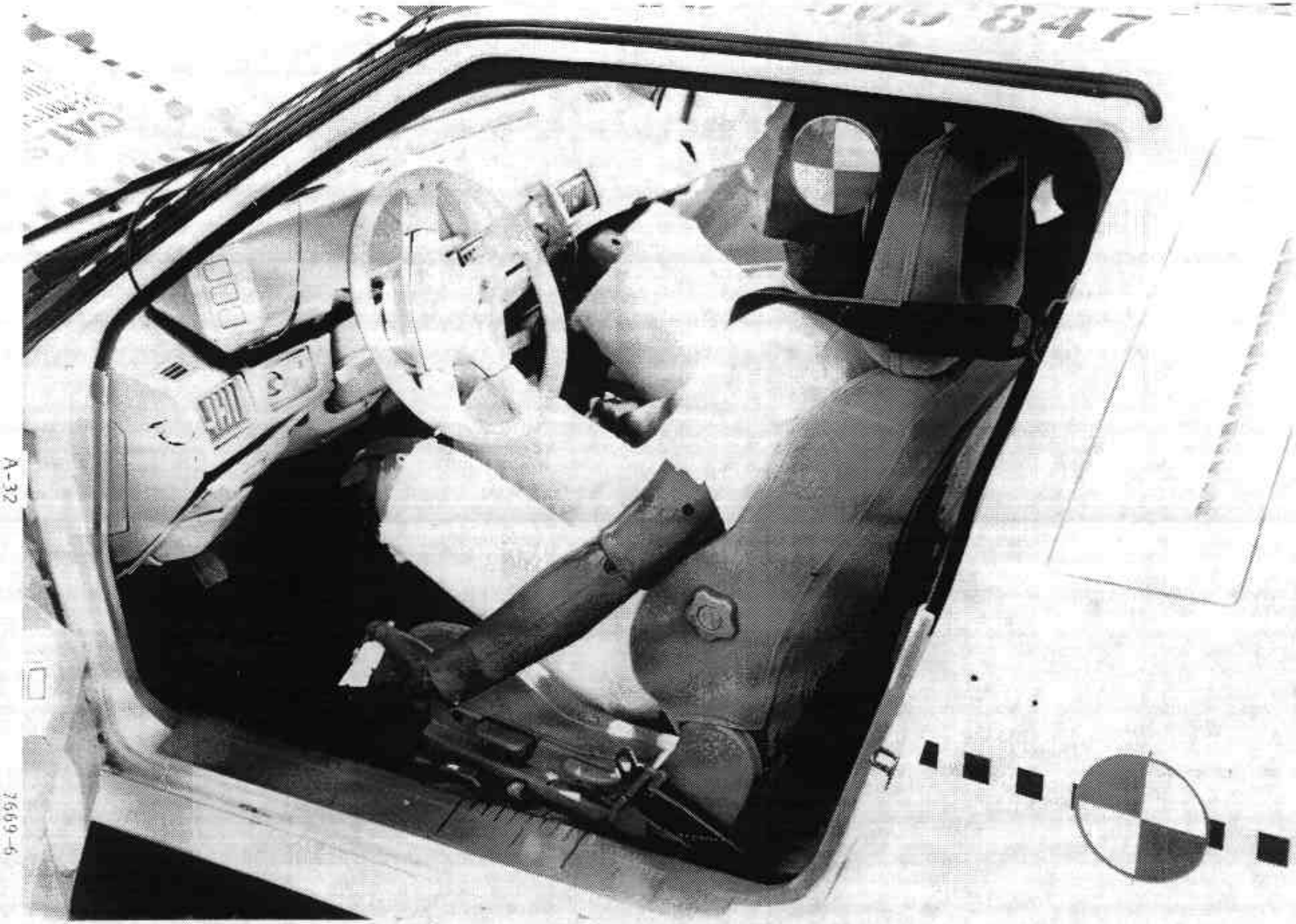


Figure A-31 POST-TEST DRIVER DUMMY AND INTERIOR VIEW

Figure A-32 PRE-TEST PASSENGER DUMMY AND INTERIOR VIEW

7669-9

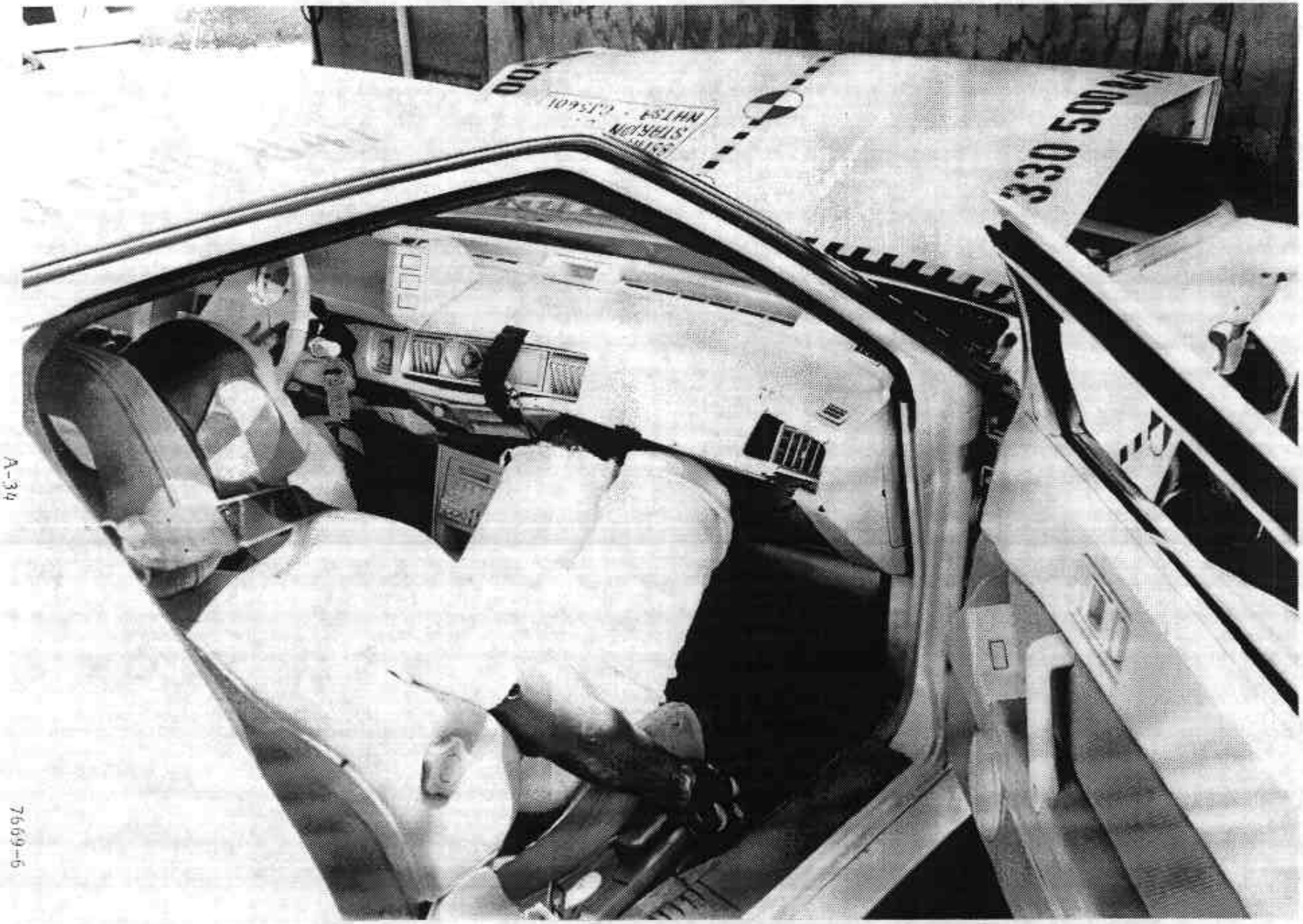


Figure A-33 POST-TEST PASSENGER DUMMY AND INTERIOR VIEW

Appendix B

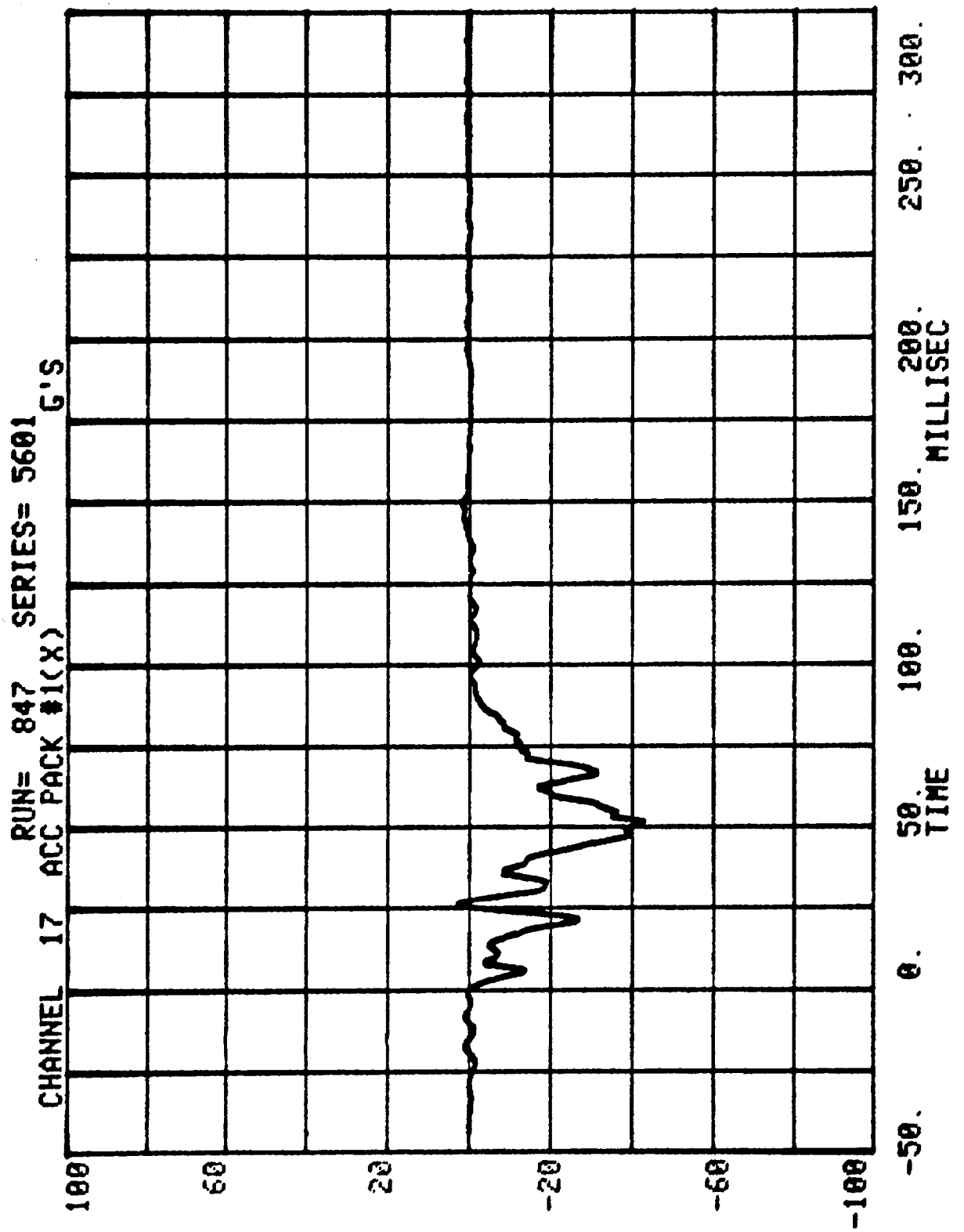
VEHICLE AND DUMMY RESPONSE DATA

TEST NO. CJ5601

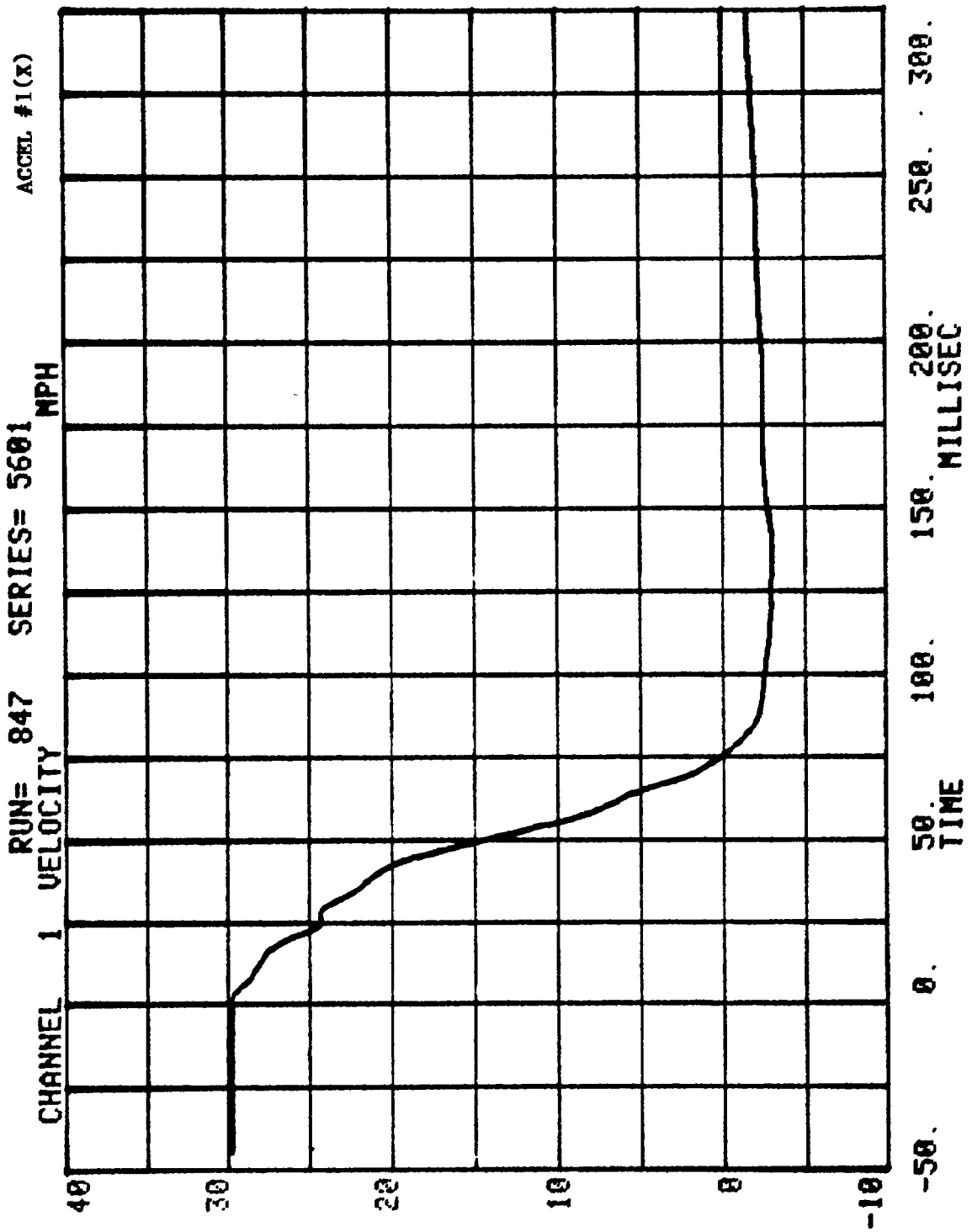
VEHICLE DATA

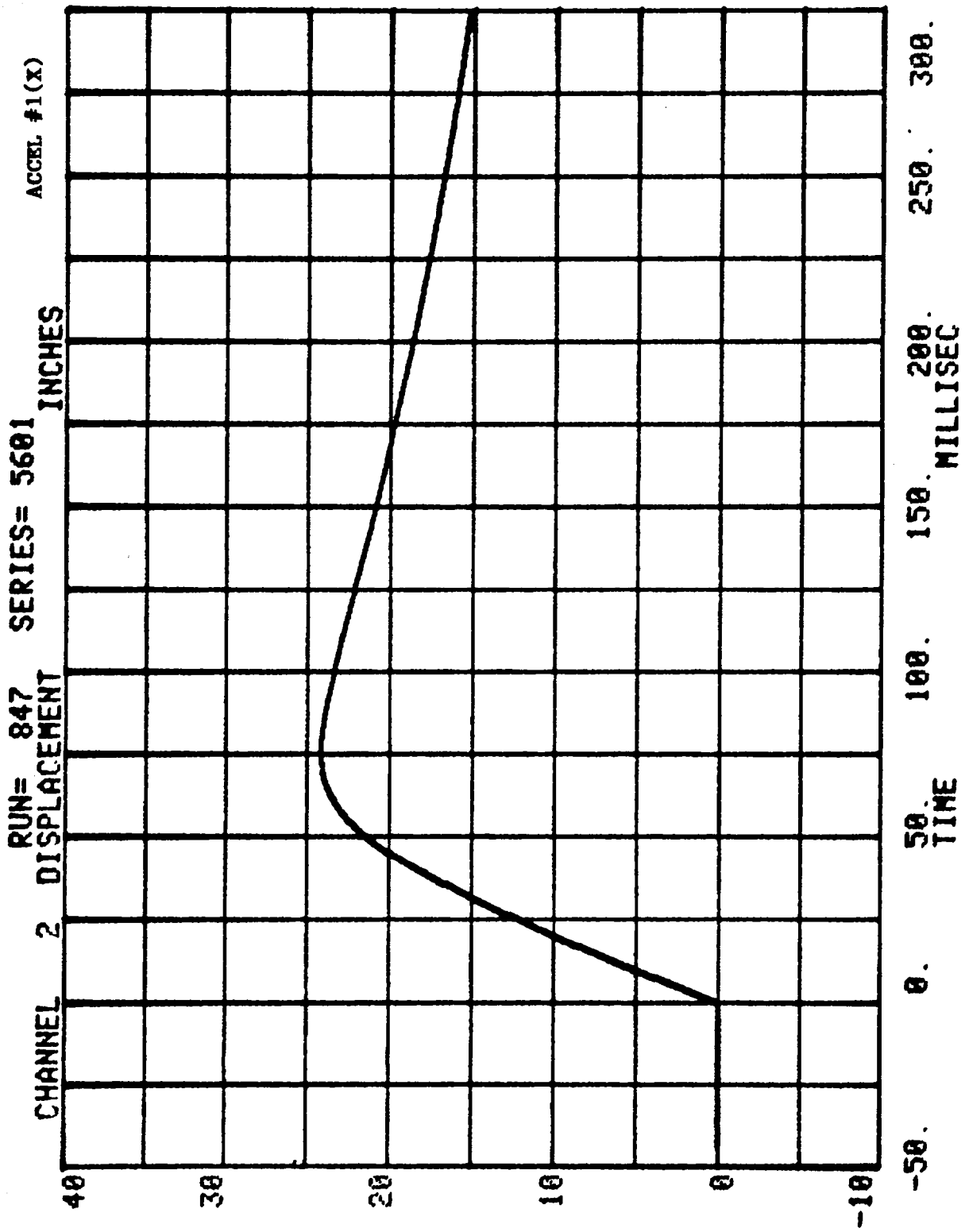
FILTER CHANNEL CLASS

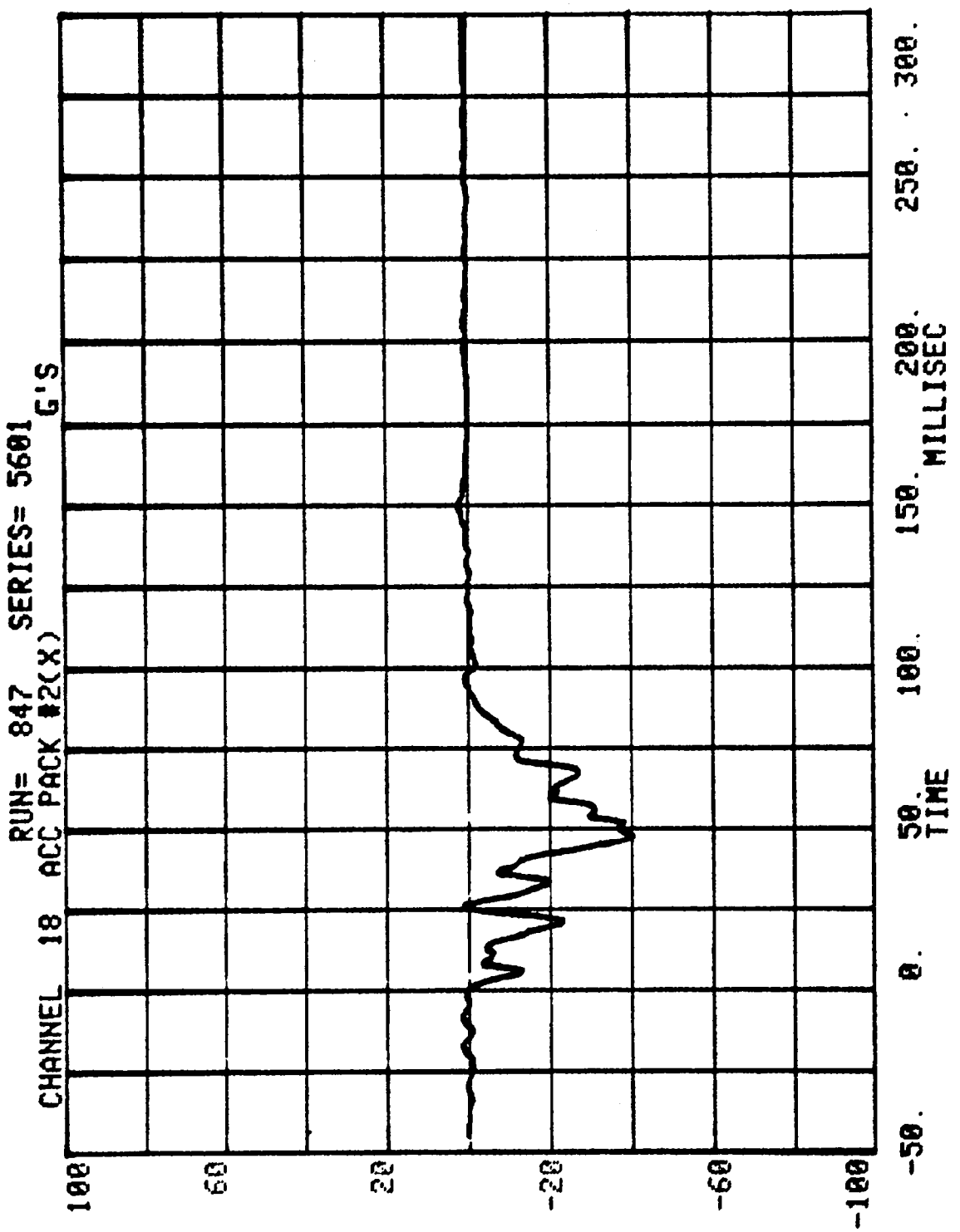
60


CHANNEL 17 ACC PACK #1(X)
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-6


ACCEL #1(X)
CHANNEL 1 VELOCITY
RUN= 847 SERIES= 5601
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


ACCEL #1(X)
RUN= 847 SERIES= 5601
CHANNEL 2 DISPLACEMENT INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME MILLISEC


CHANNEL 18 ACC PACK #2(X)
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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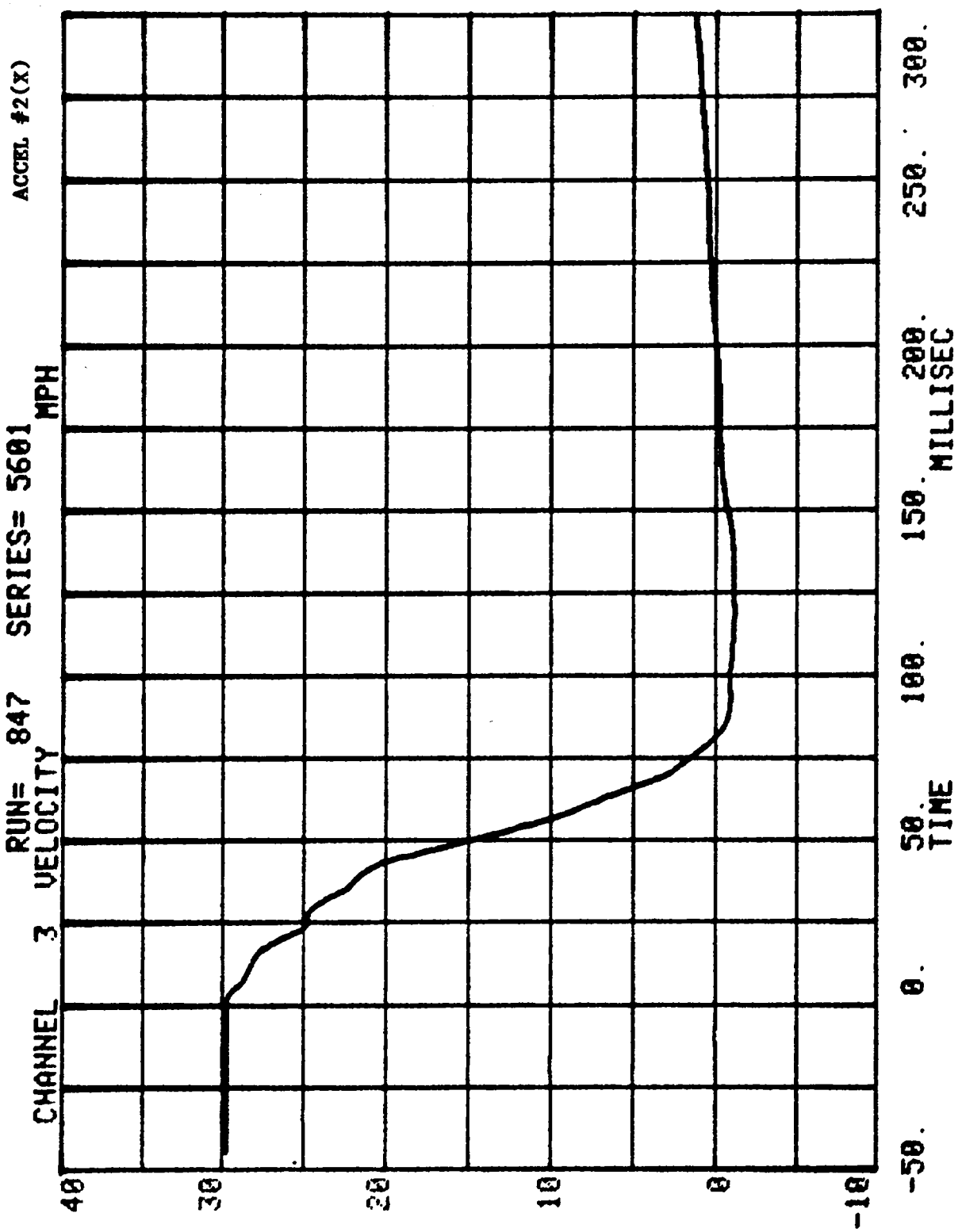
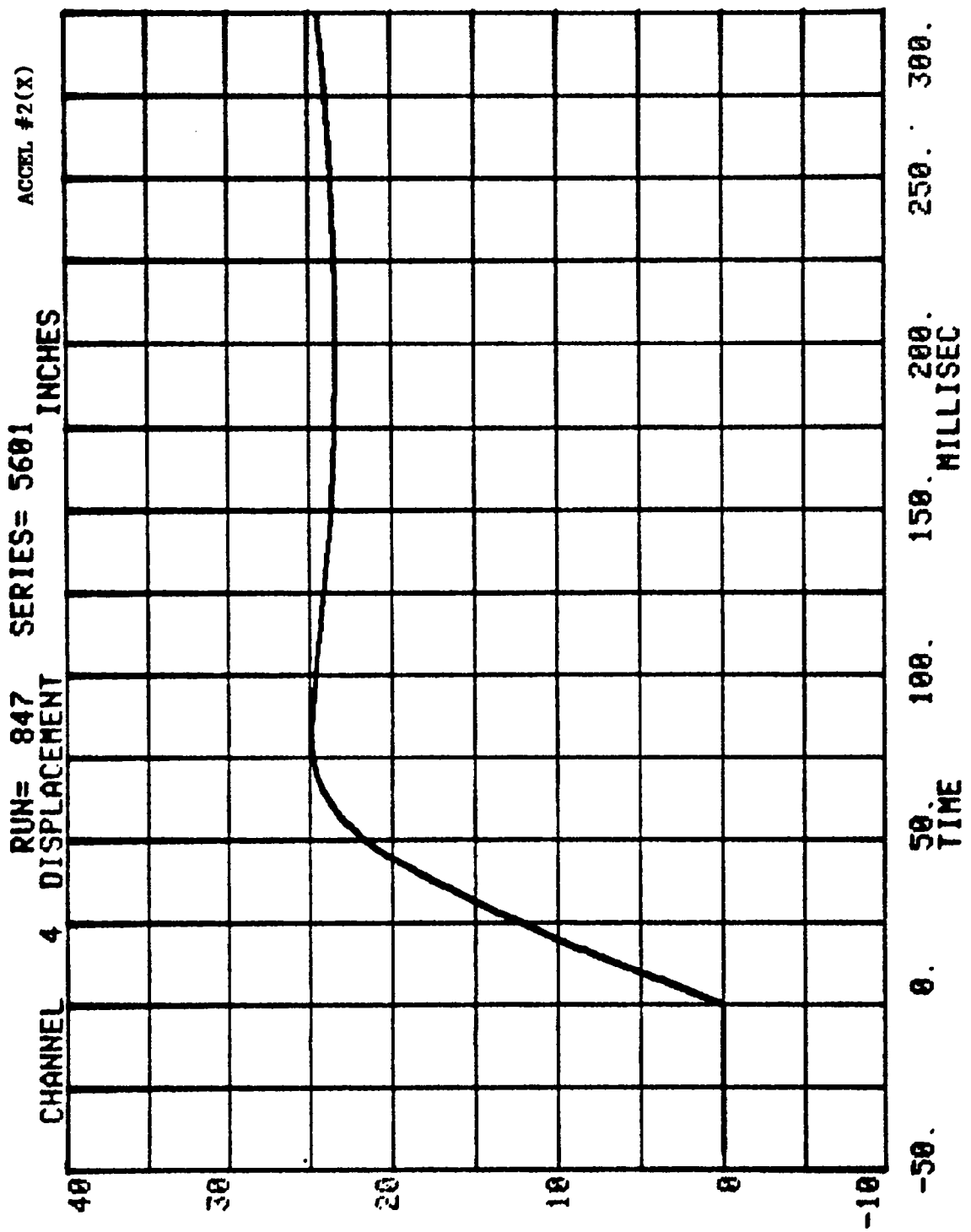
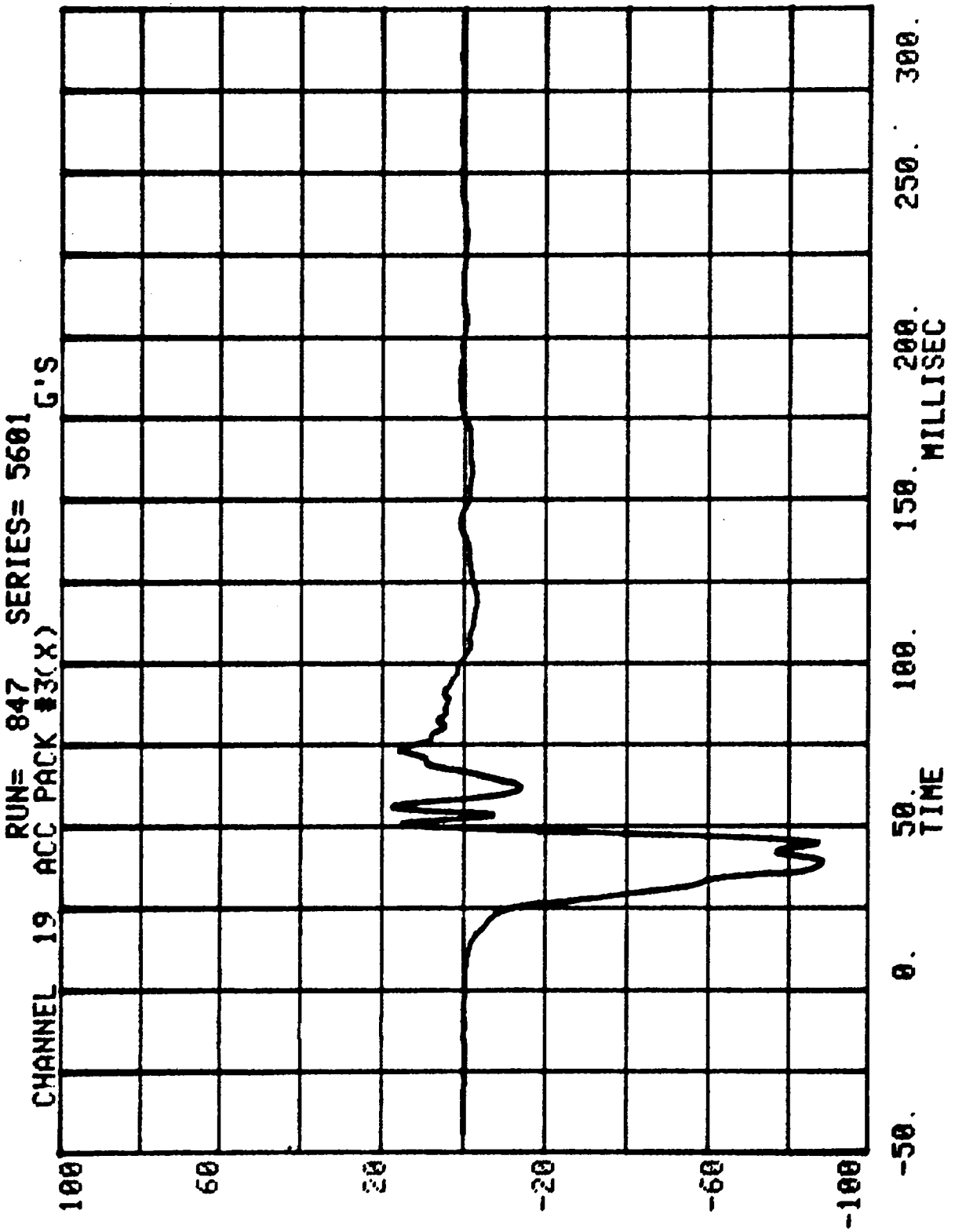
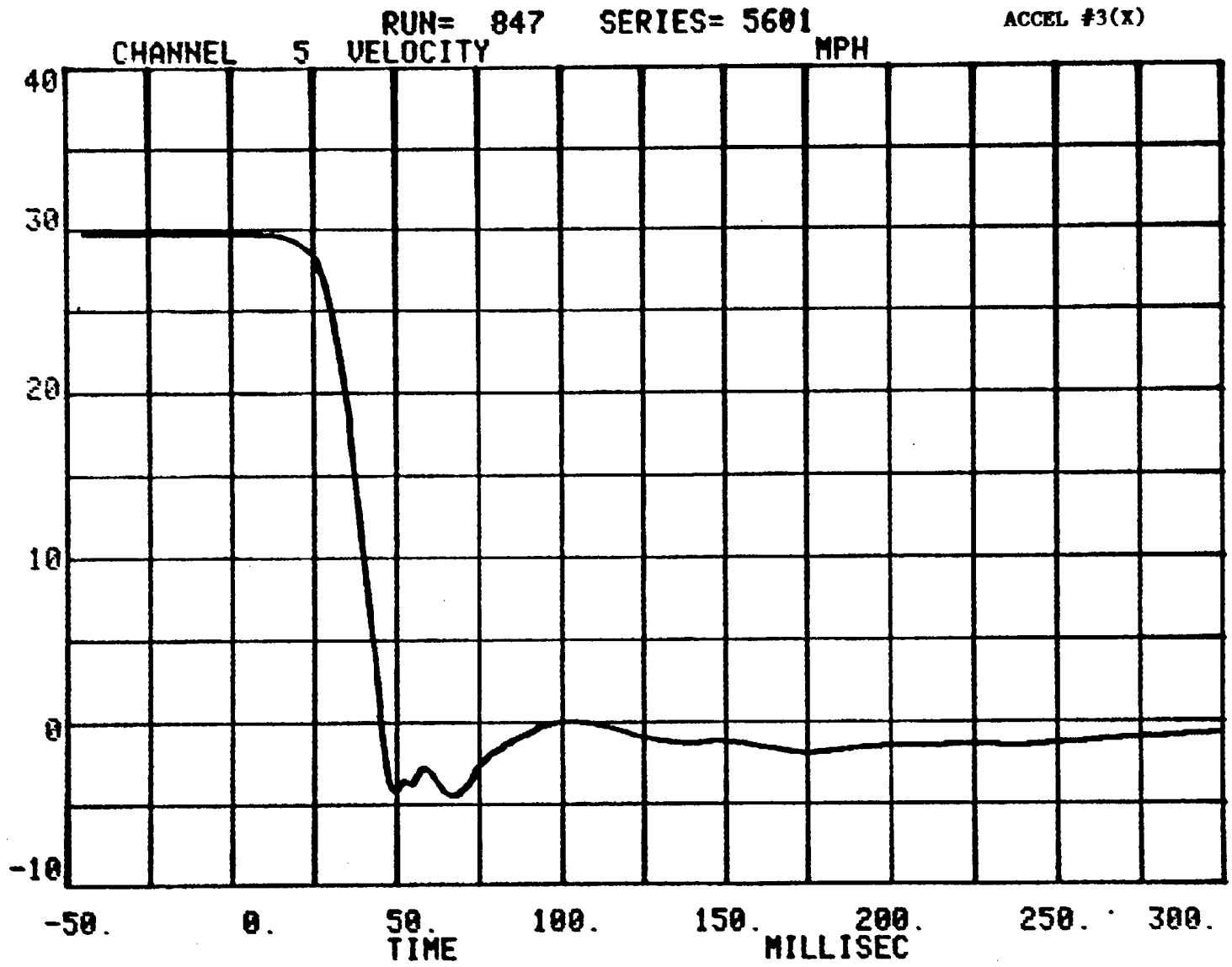
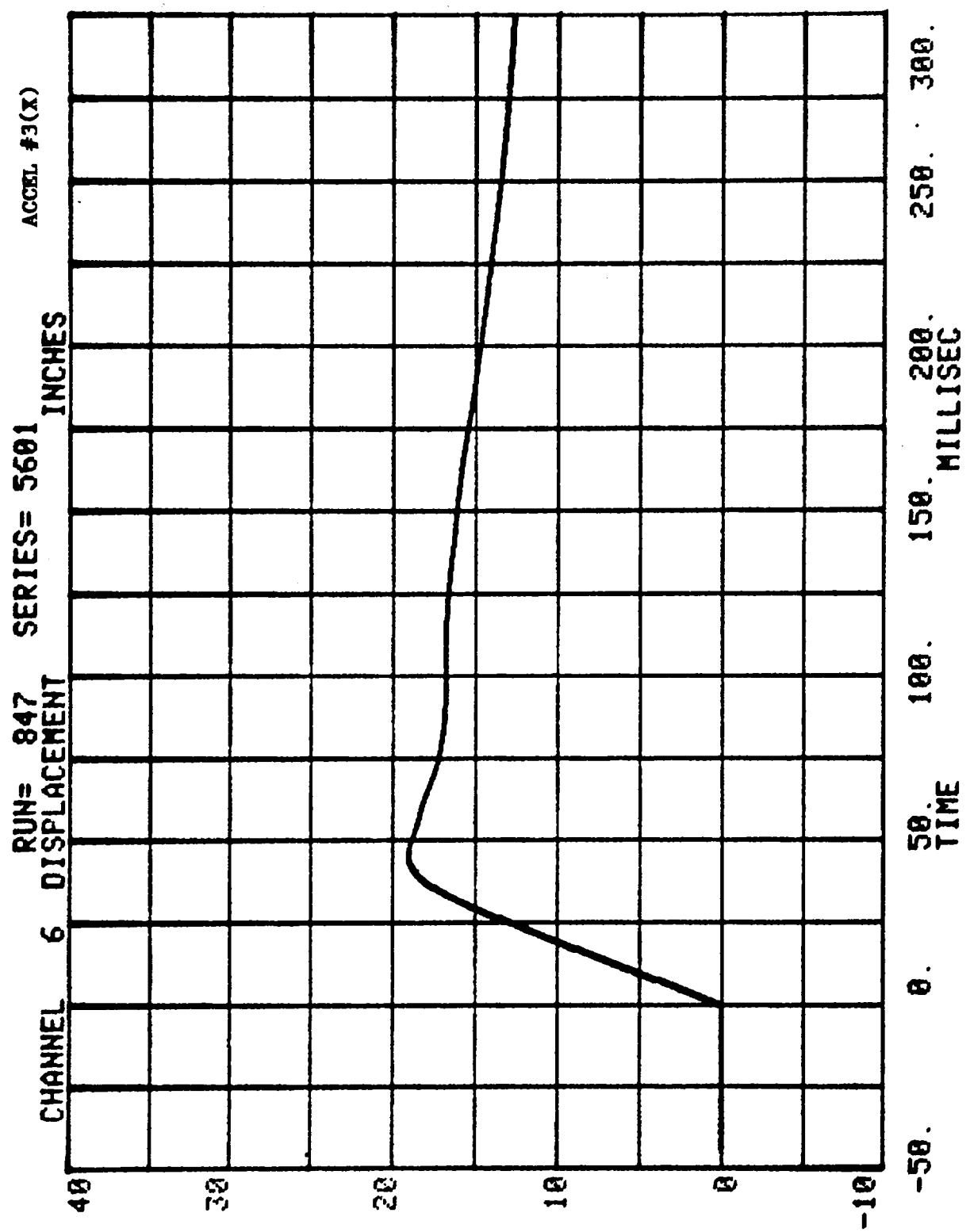
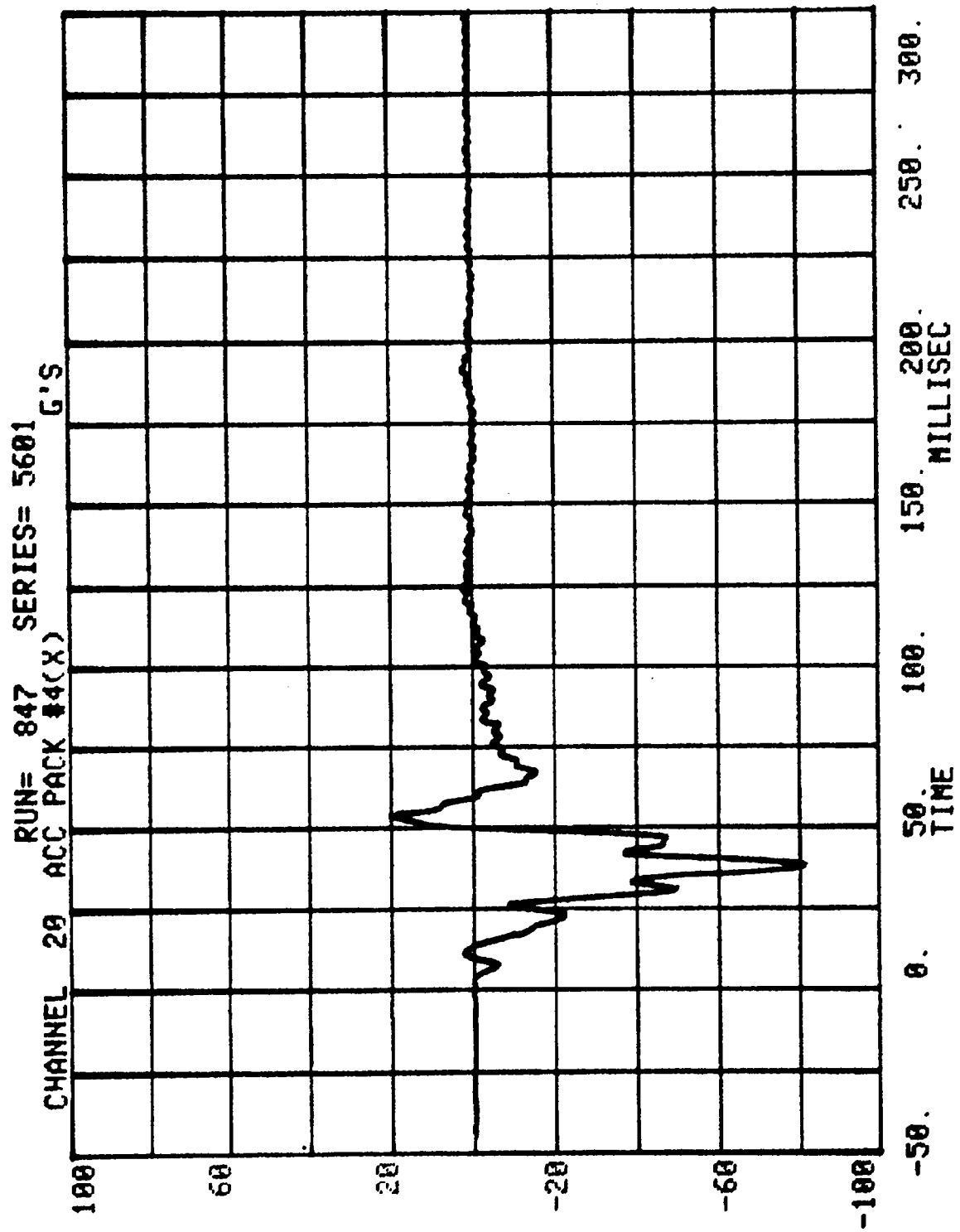

ACCEL #2(X)
CHANNEL 3 VELOCITY
RUN= 847 SERIES= 5601
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

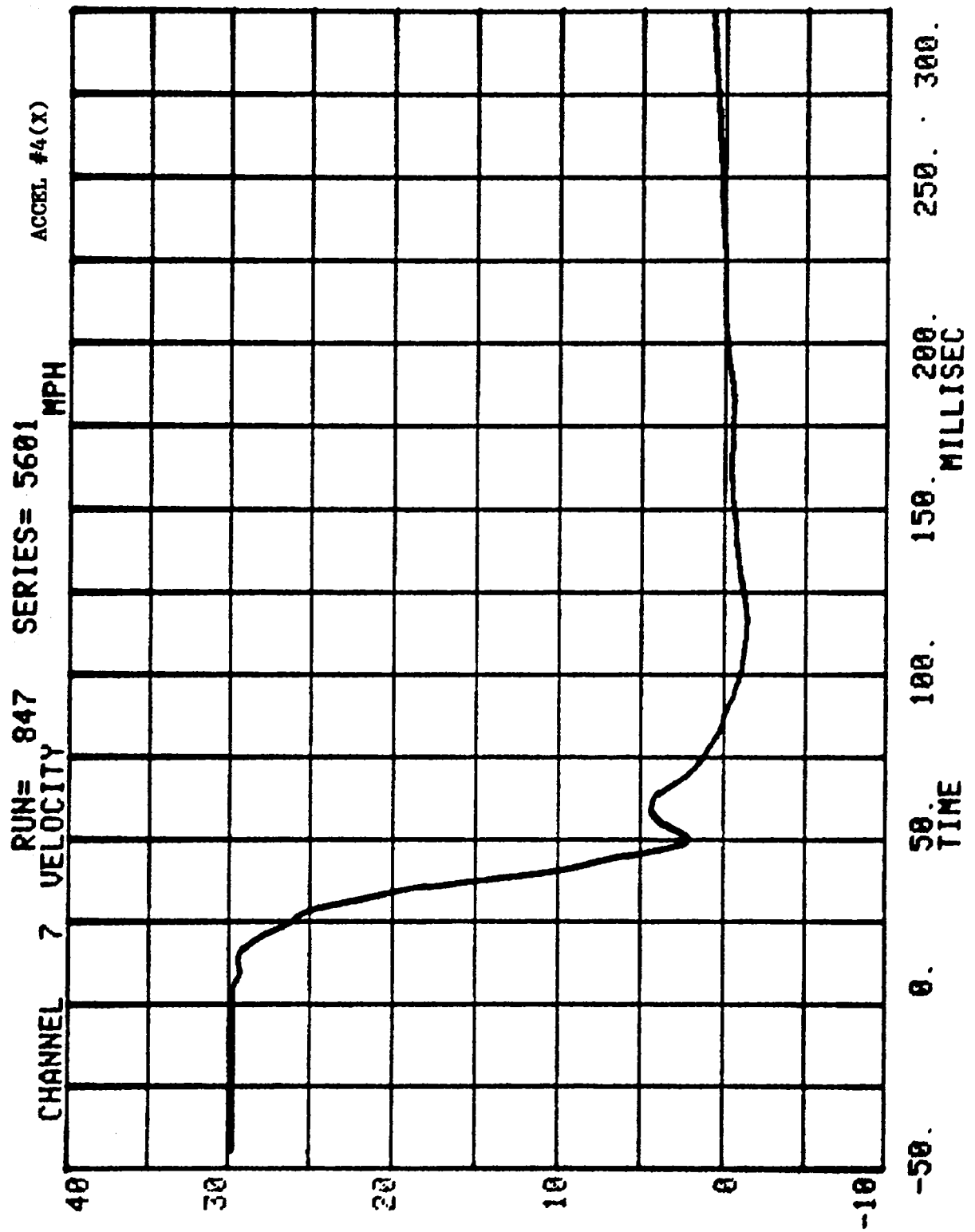

ACCEL #2(X)
RUN= 847 SERIES= 5601
CHANNEL 4 DISPLACEMENT
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

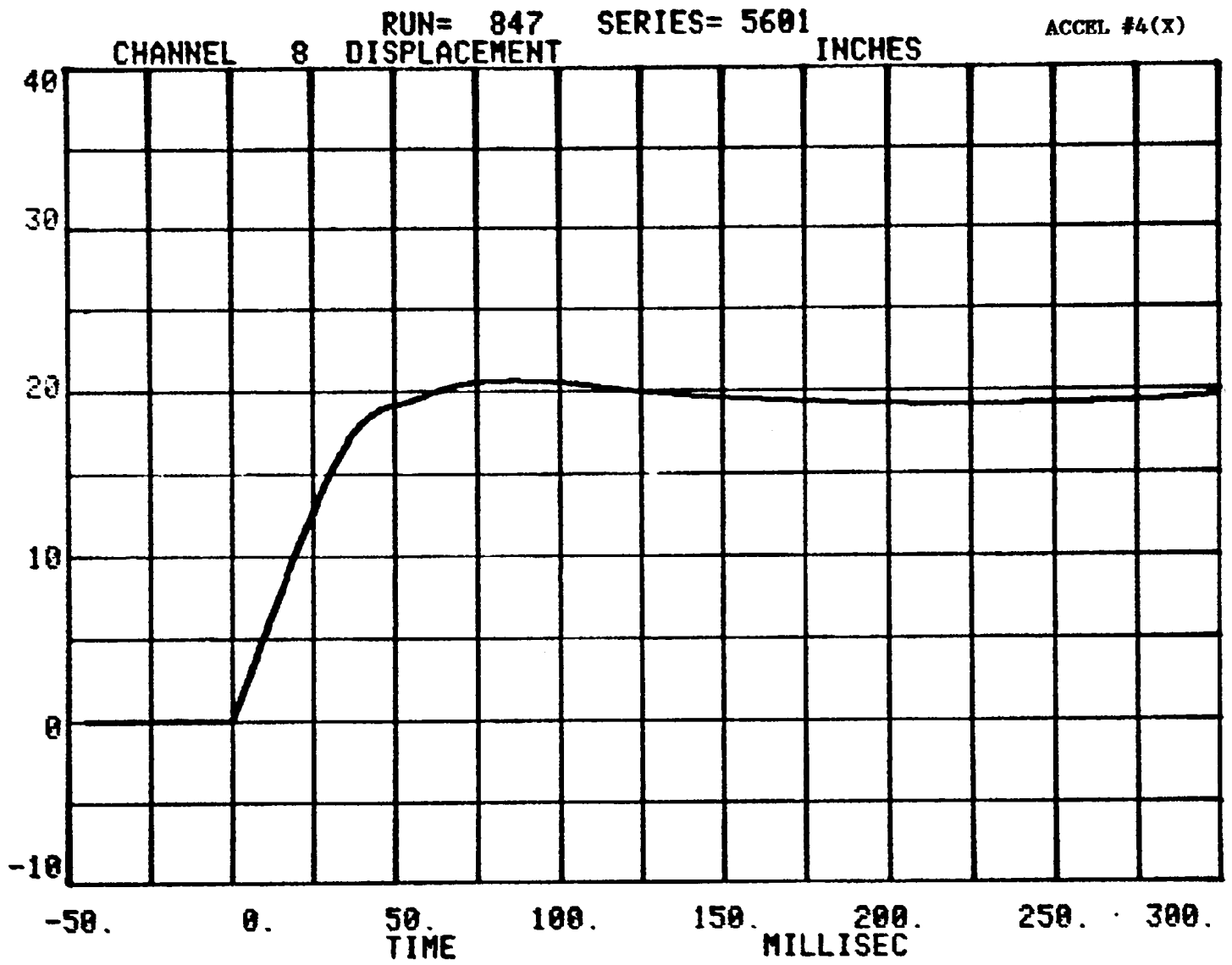

RUN= 847 SERIES= 5601
CHANNEL 19 ACC PACK #3(X)
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

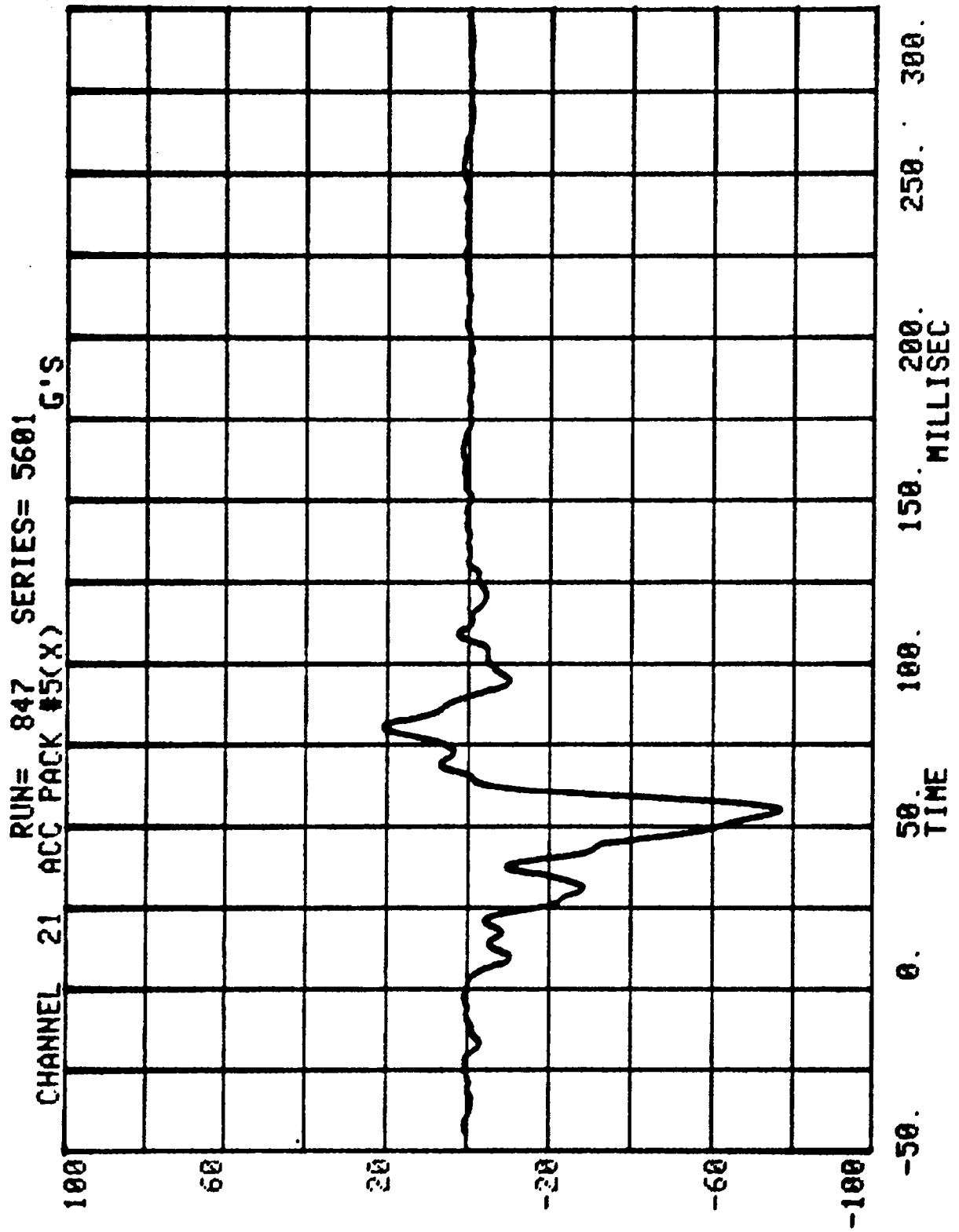

RUN= 847 SERIES= 5601
ACCEL #3(X)
CHANNEL 5 VELOCITY
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


ACCEL #3(X)
CHANNEL 6 DISPLACEMENT
RUN= 847 SERIES= 5601
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 847 SERIES= 5601
CHANNEL 20 ACC PACK #4(X)
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


ACCEL #4(X)
RUN= 847 SERIES= 5601
CHANNEL 7 VELOCITY
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 847 SERIES= 5601
ACCEL #4(X)
CHANNEL 8 DISPLACEMENT
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 847 SERIES= 5601
CHANNEL 21 ACC PACK #5(X)
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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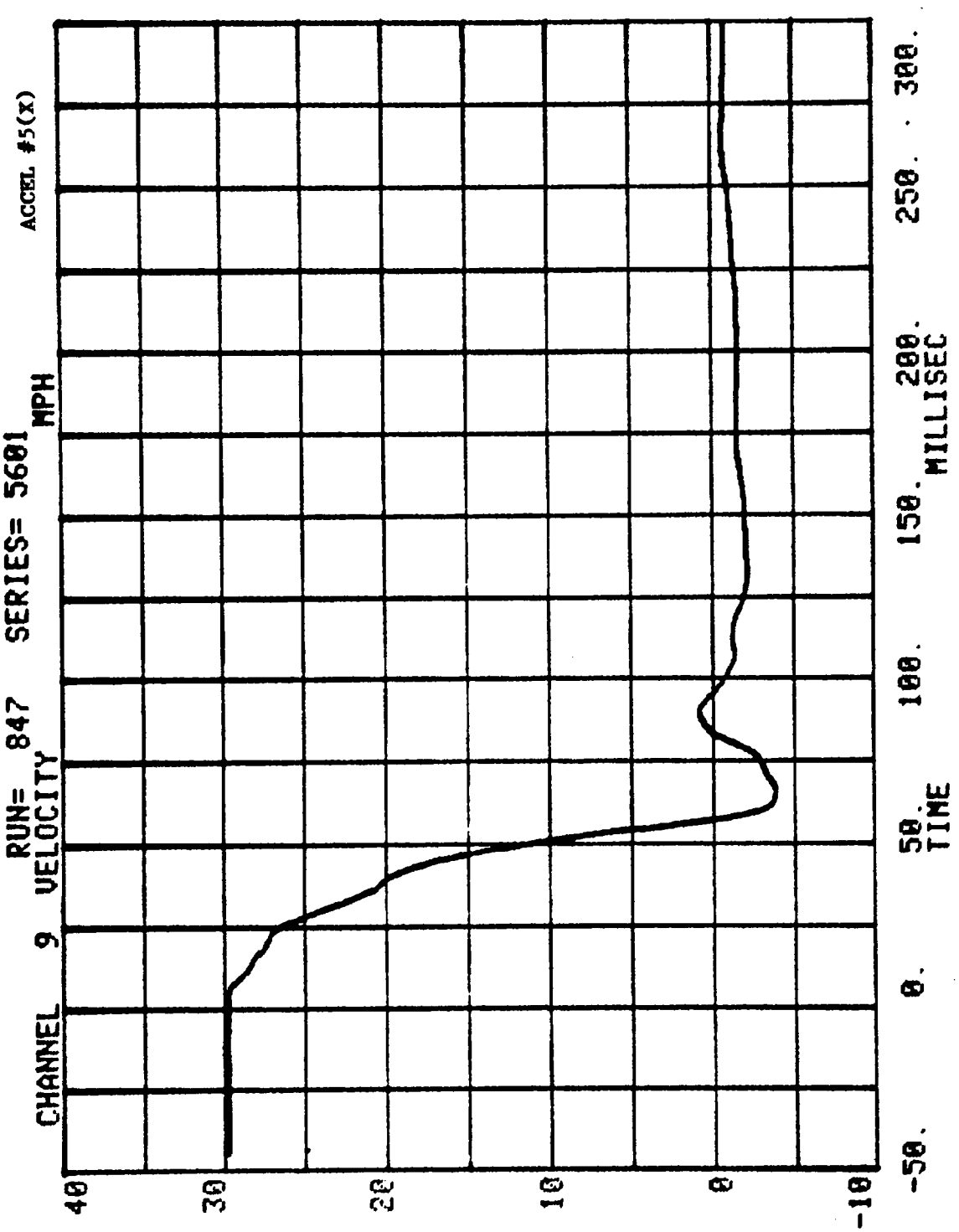
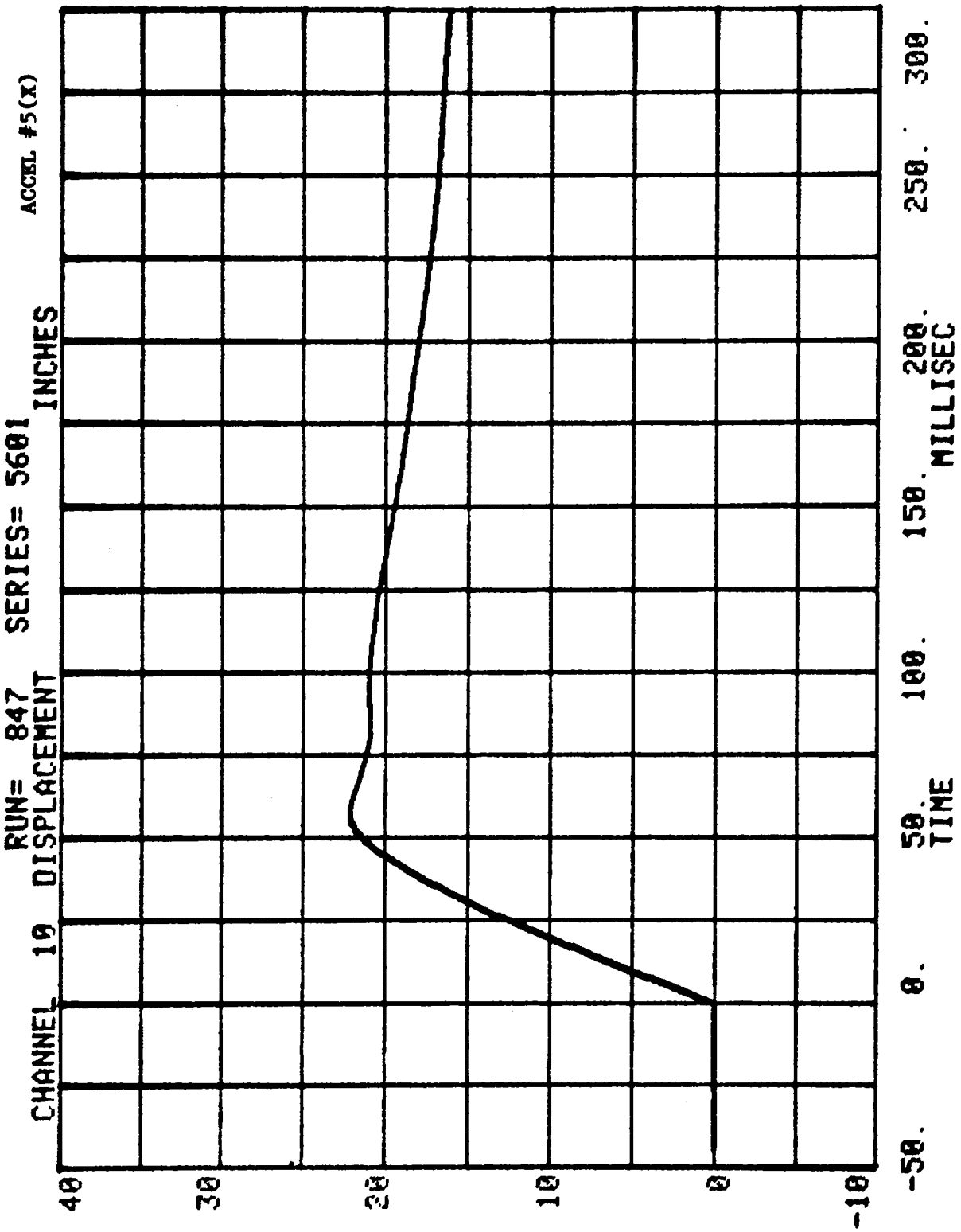
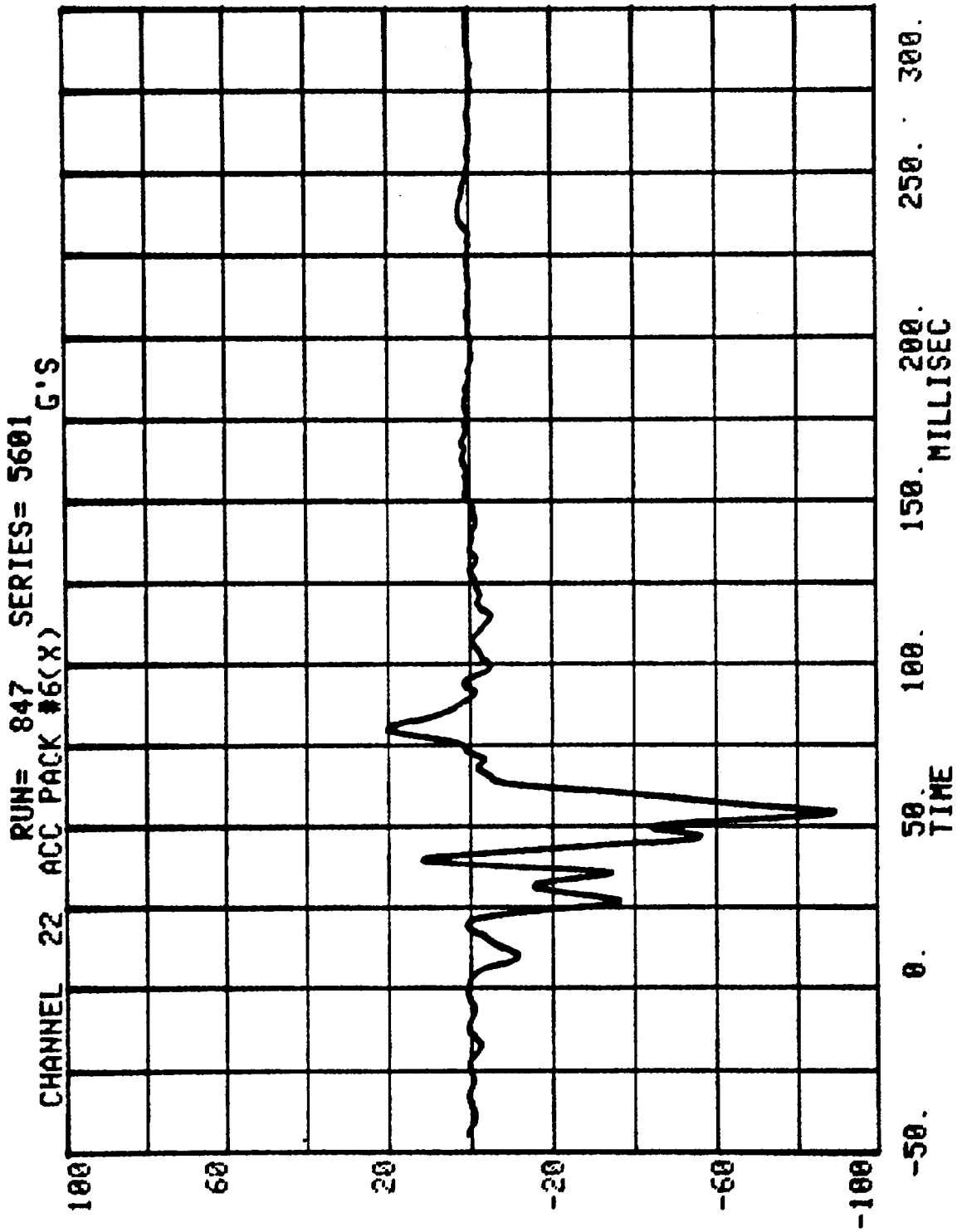
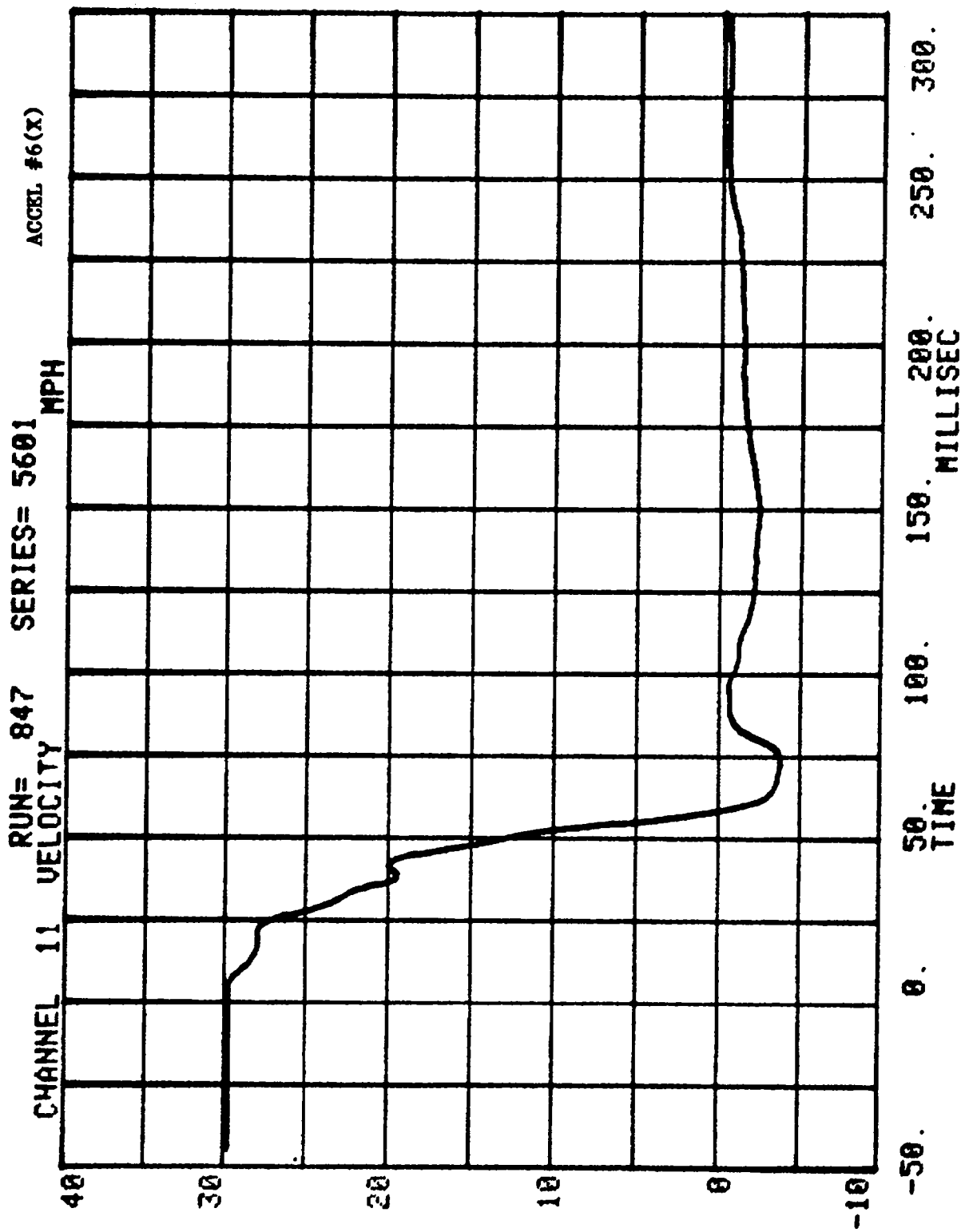
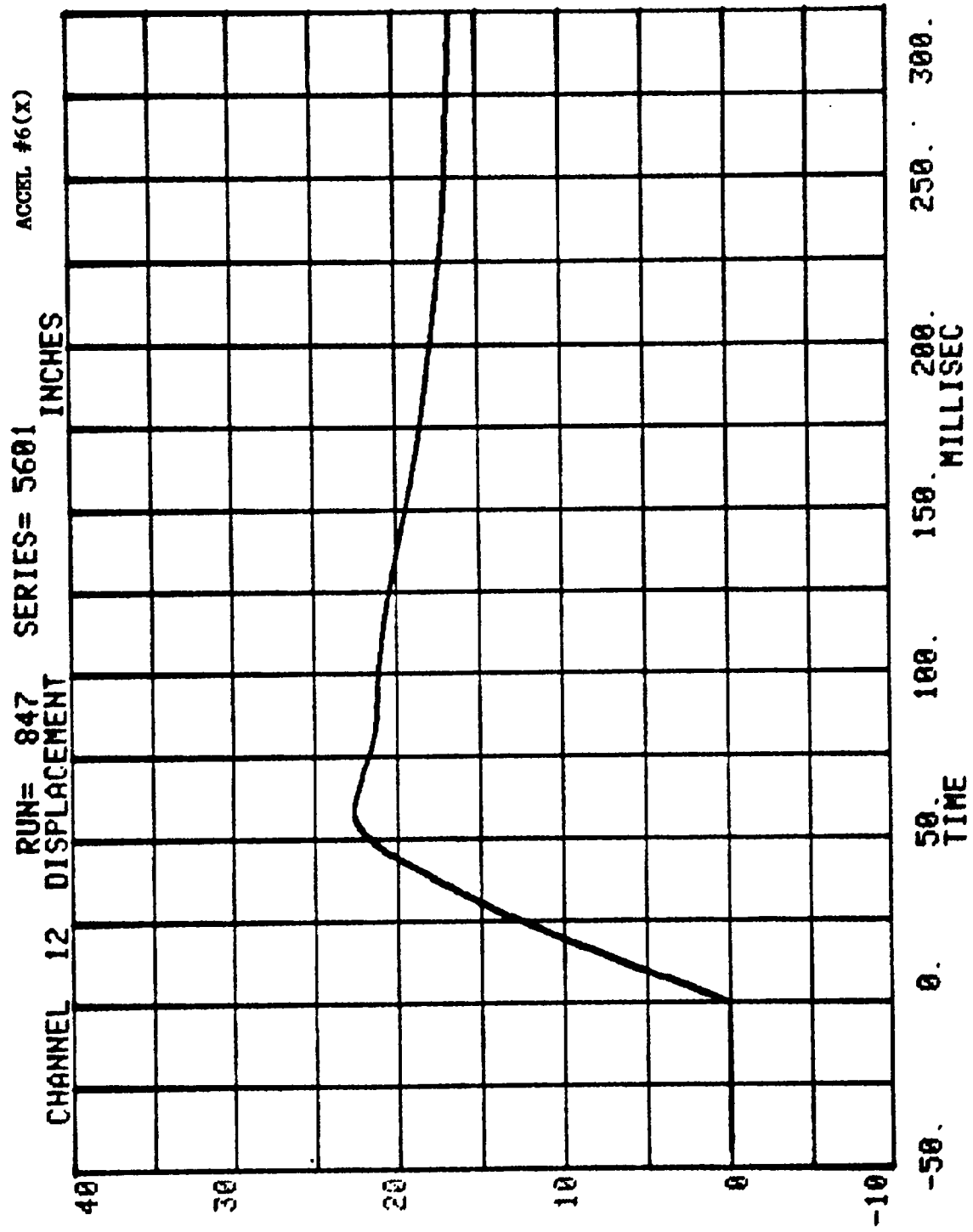

CHANNEL 9 VELOCITY
RUN= 847 SERIES= 5601
MPH
ACCEL #5(X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

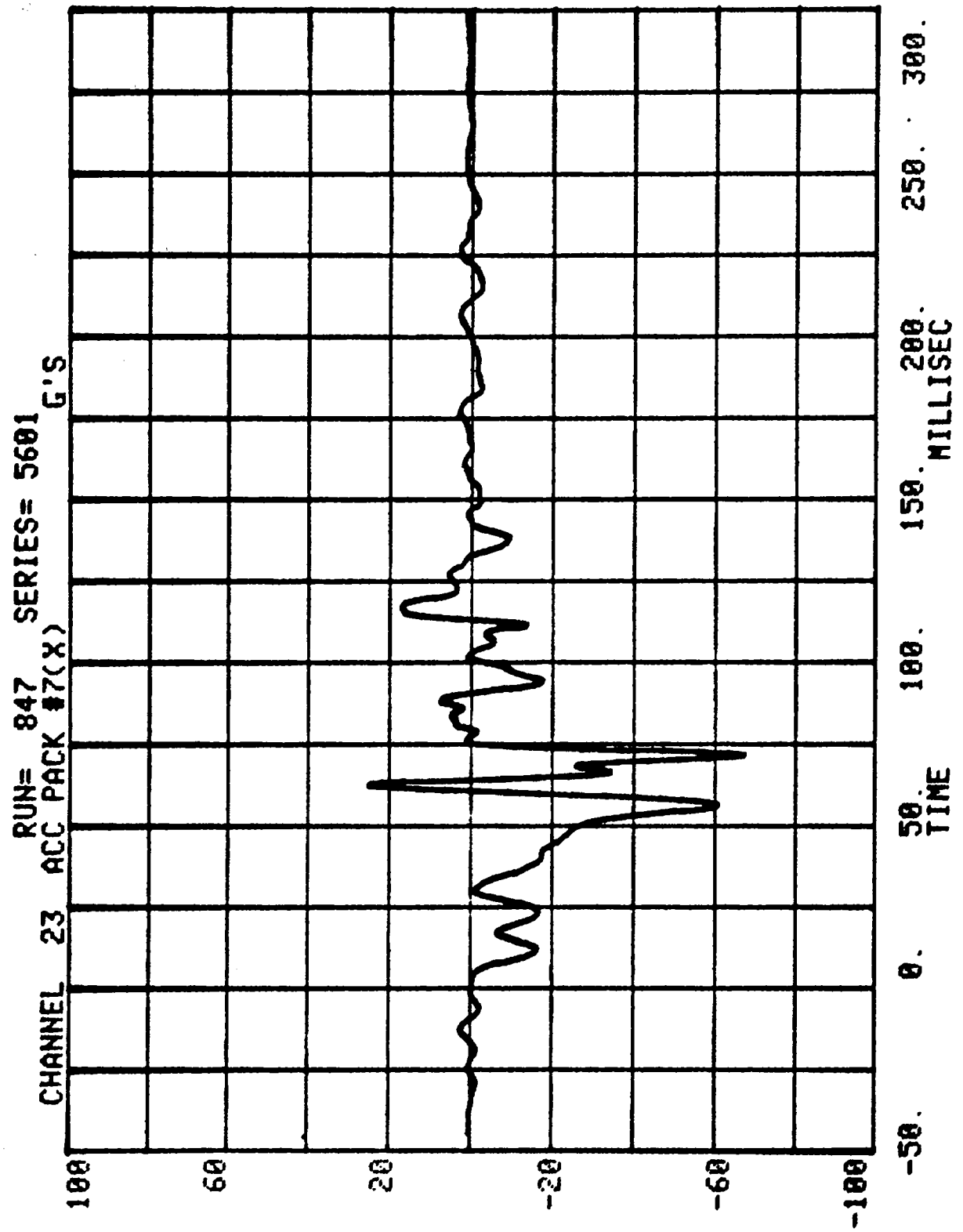

CHANNEL 10 DISPLACEMENT
RUN= 847 SERIES= 5601
INCHES
ACCEL #5(X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

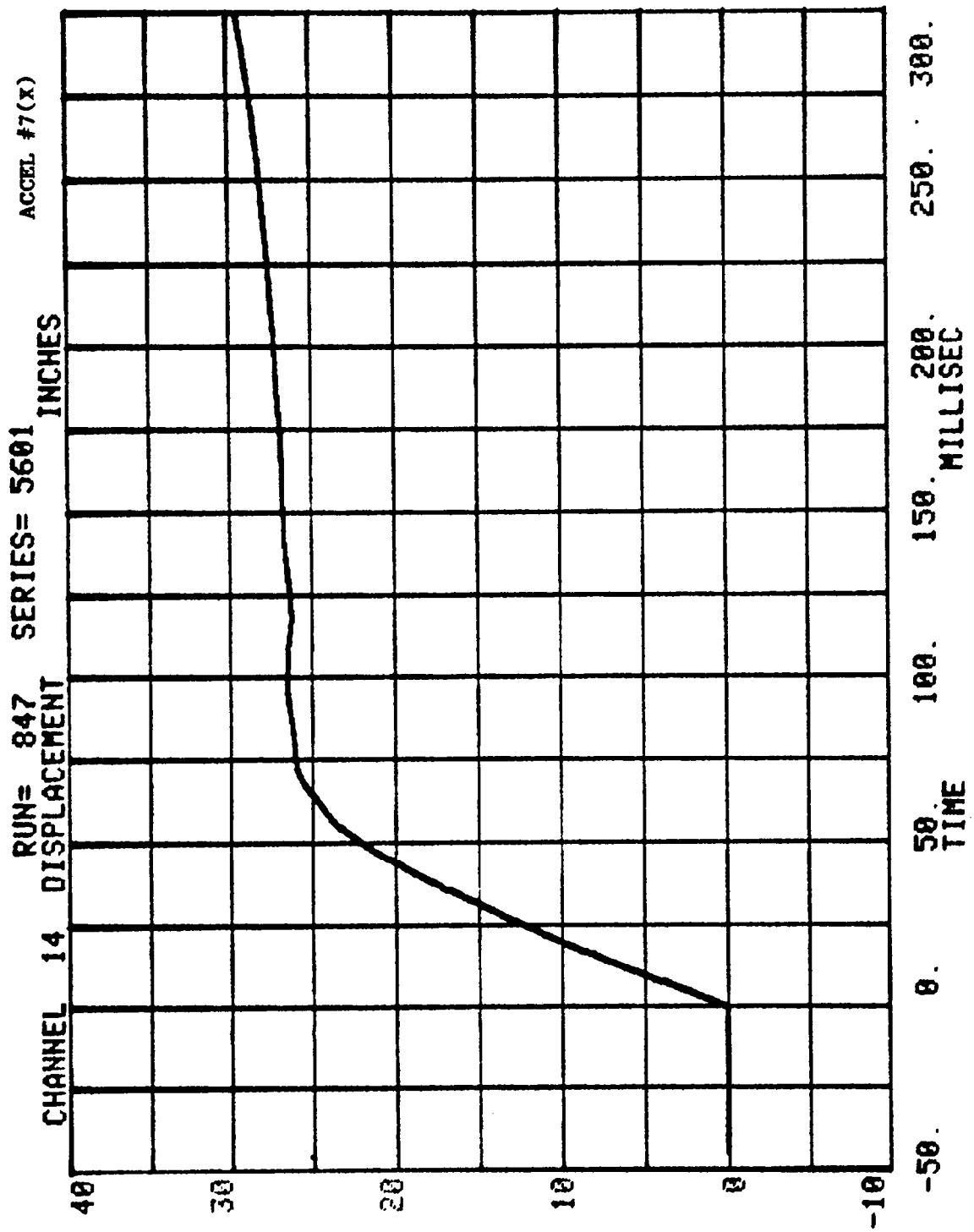

RUN= 847 SERIES= 5601
CHANNEL 22 ACC PACK #6(X)
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

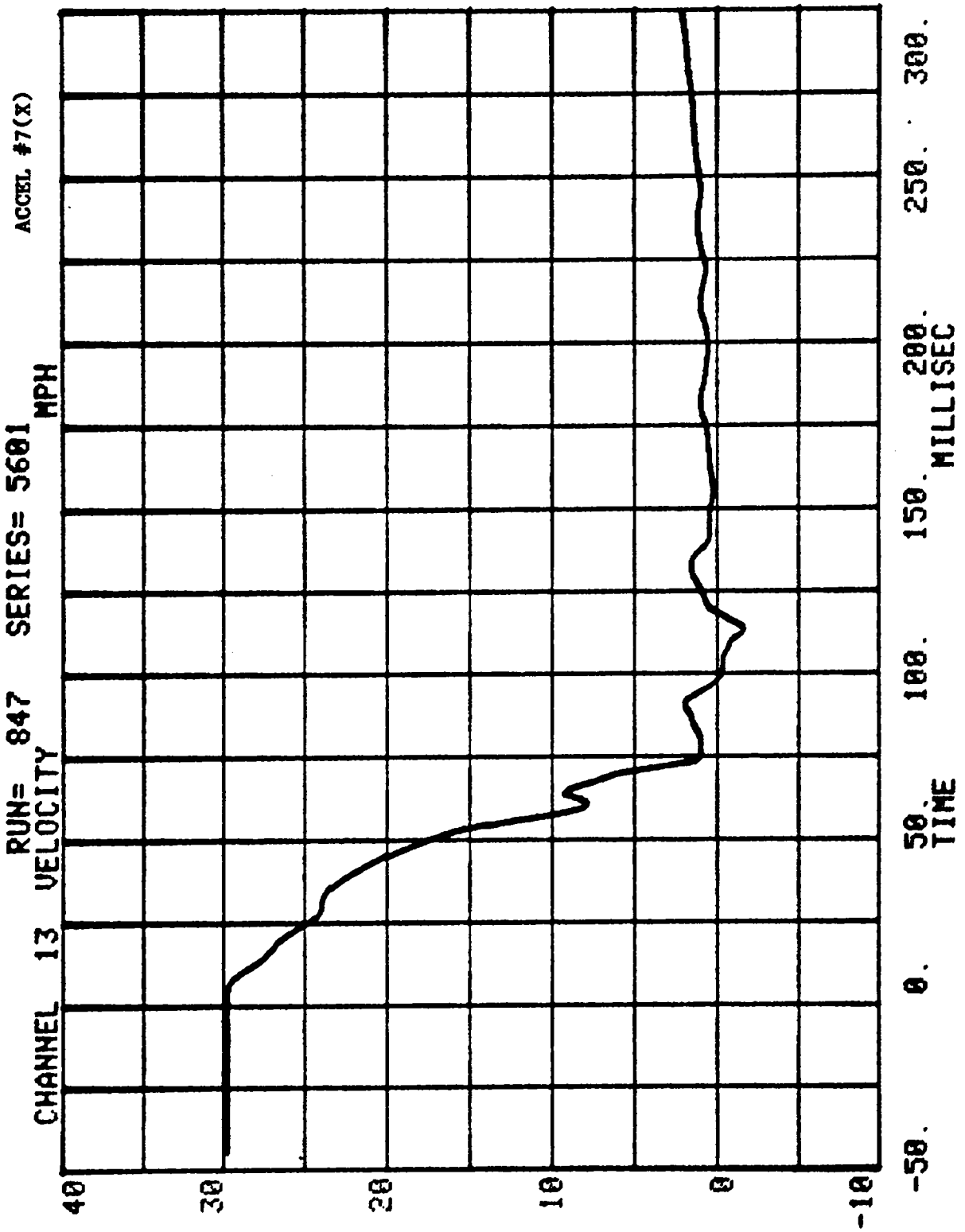
7669-6


CHANNEL 11 VELOCITY
RUN= 847 SERIES= 5601
ACCEL #6(X)
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


ACCEL #6(X)
RUN= 847 SERIES= 5601
CHANNEL 12 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= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


ACCEL #7(X)
CHANNEL 14 DISPLACEMENT
RUN= 847 SERIES= 5601
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


ACCEL #7(X)
RUN= 847 SERIES= 5601
CHANNEL 13 VELOCITY
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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TEST NO. CJ5601

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= 347

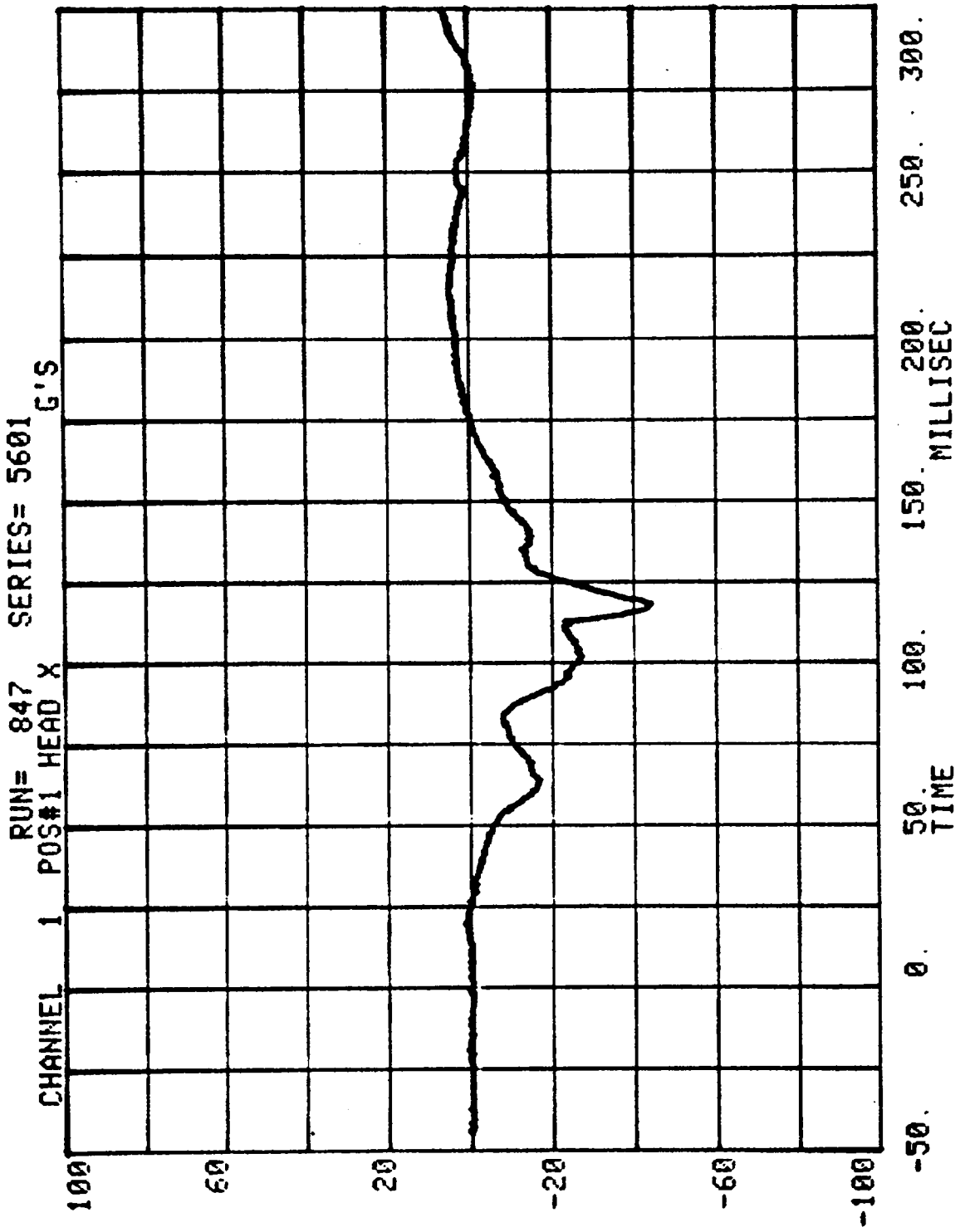
POS#1 HEAD R

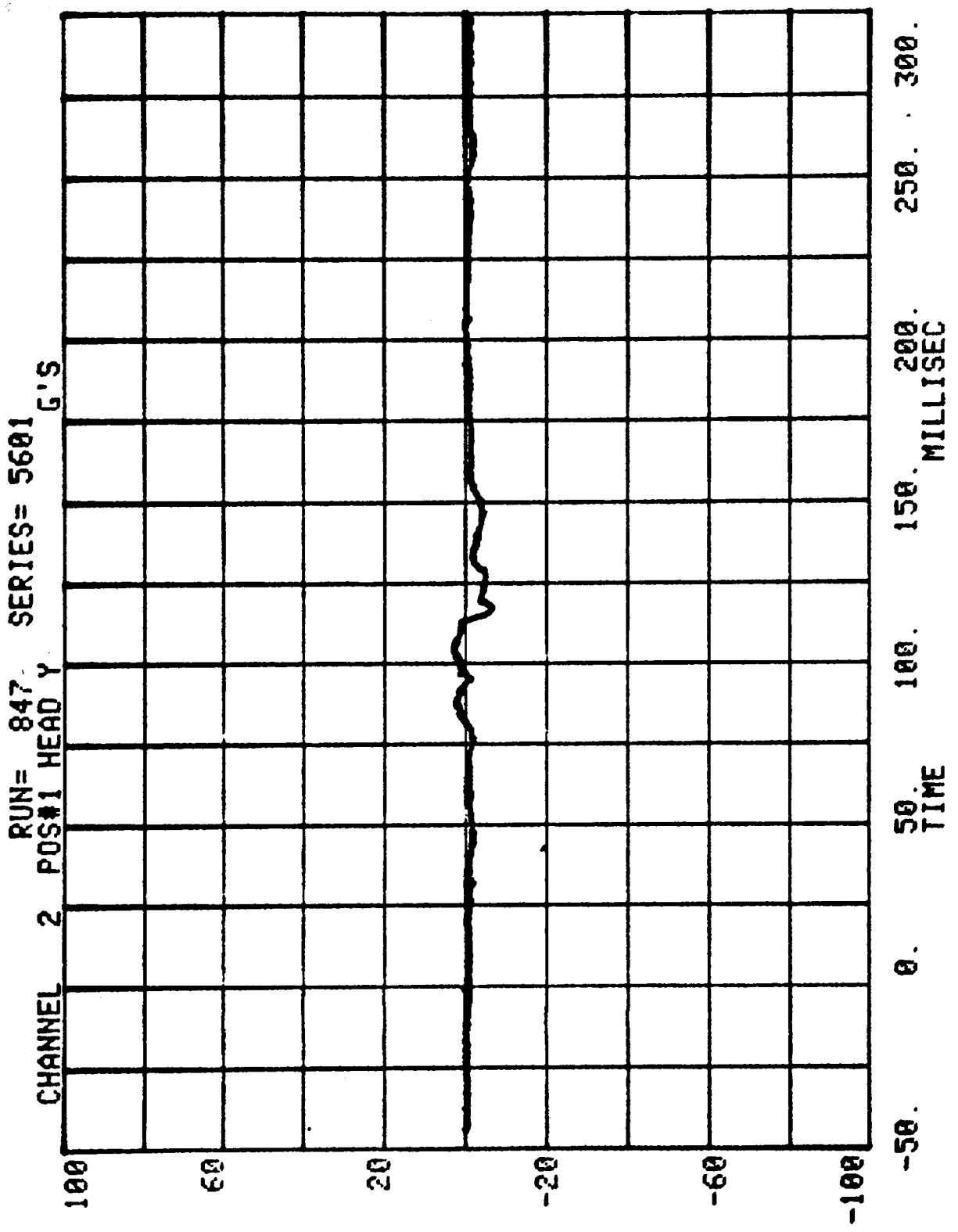
HIC= 319.9 FROM T1= .06660 TO T2= .08872

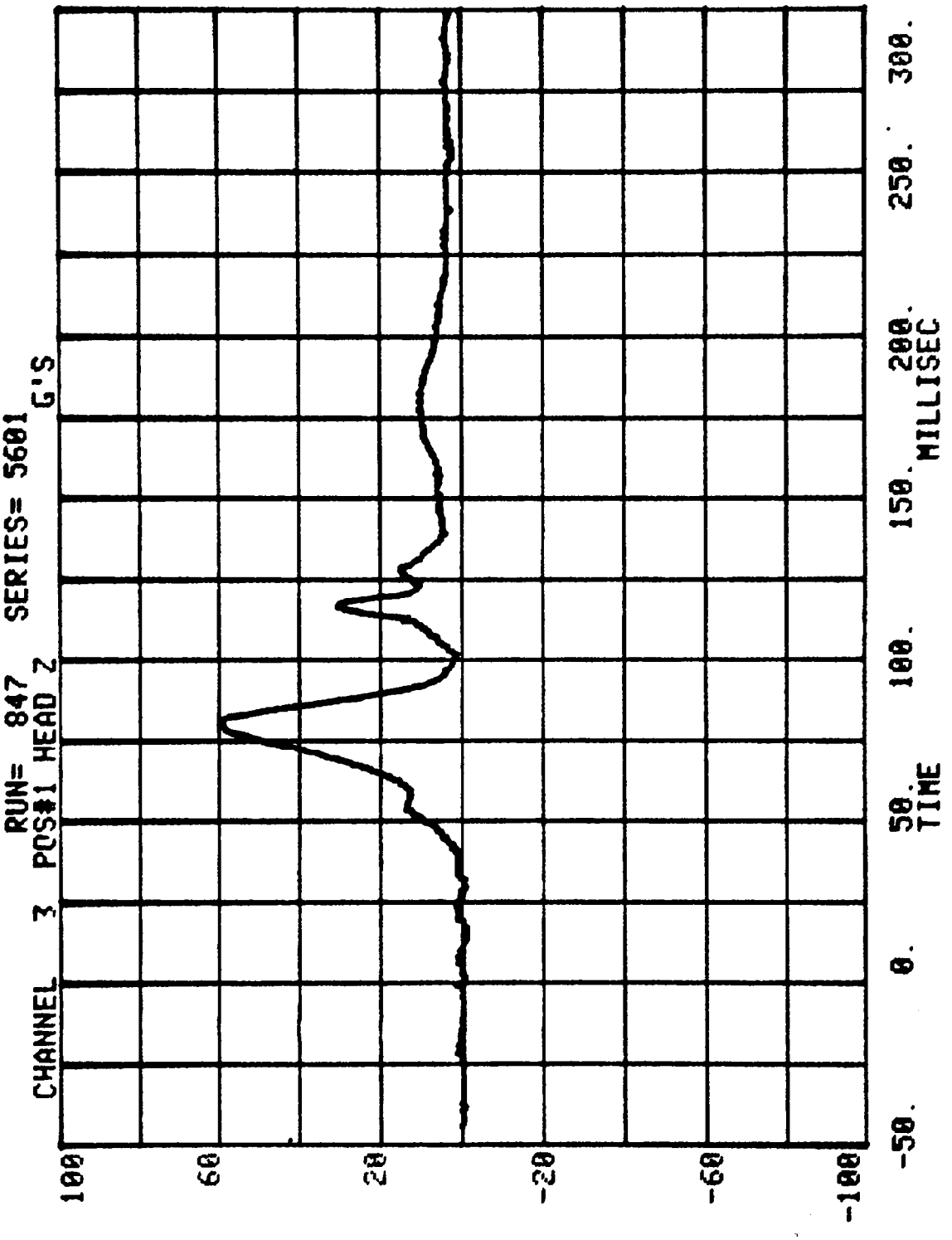
AVERAGE ACCELERATION BETWEEN T1 AND T2= 46.1G'S

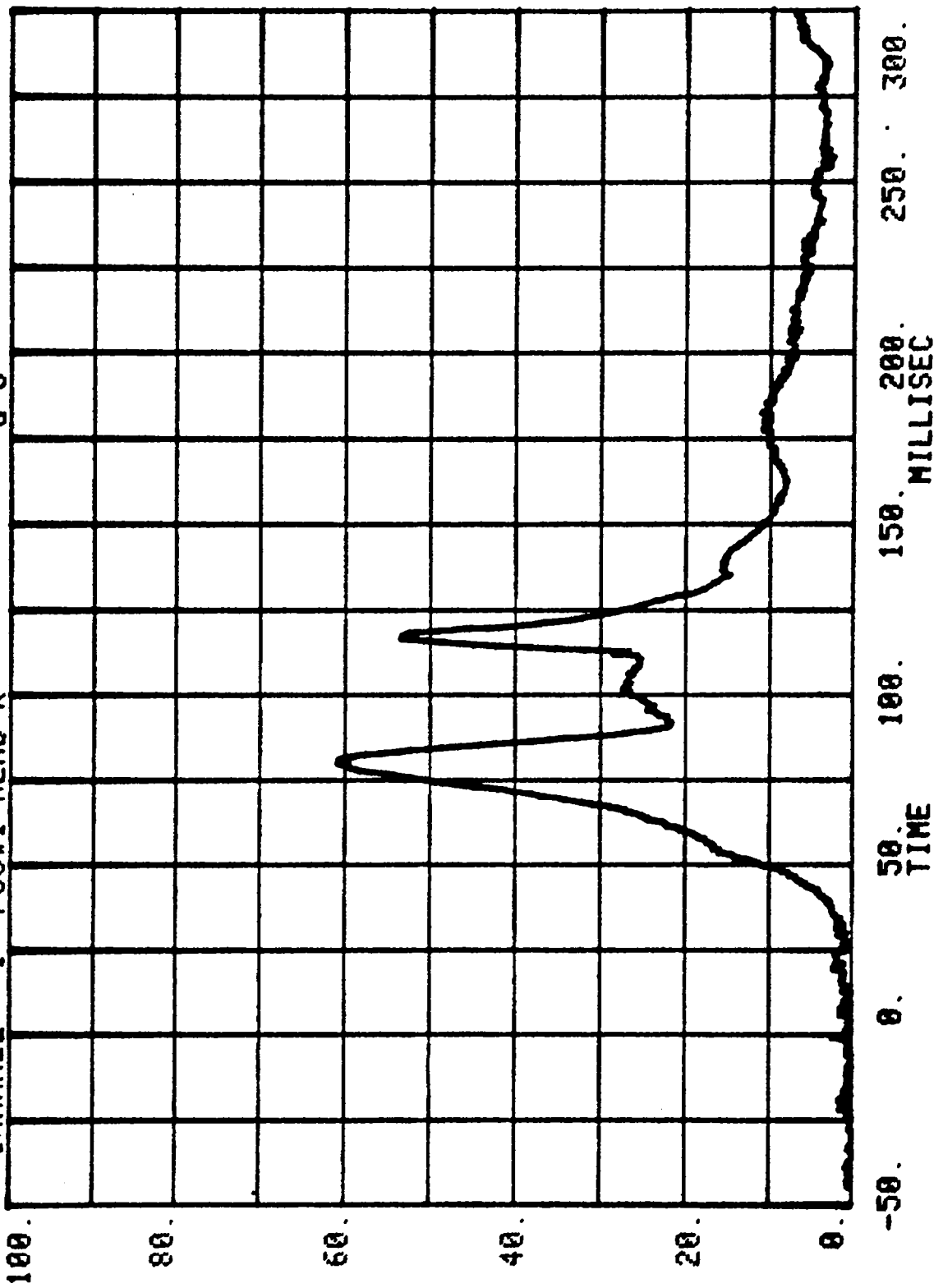
EVENT TIME= 300.0 MSEC

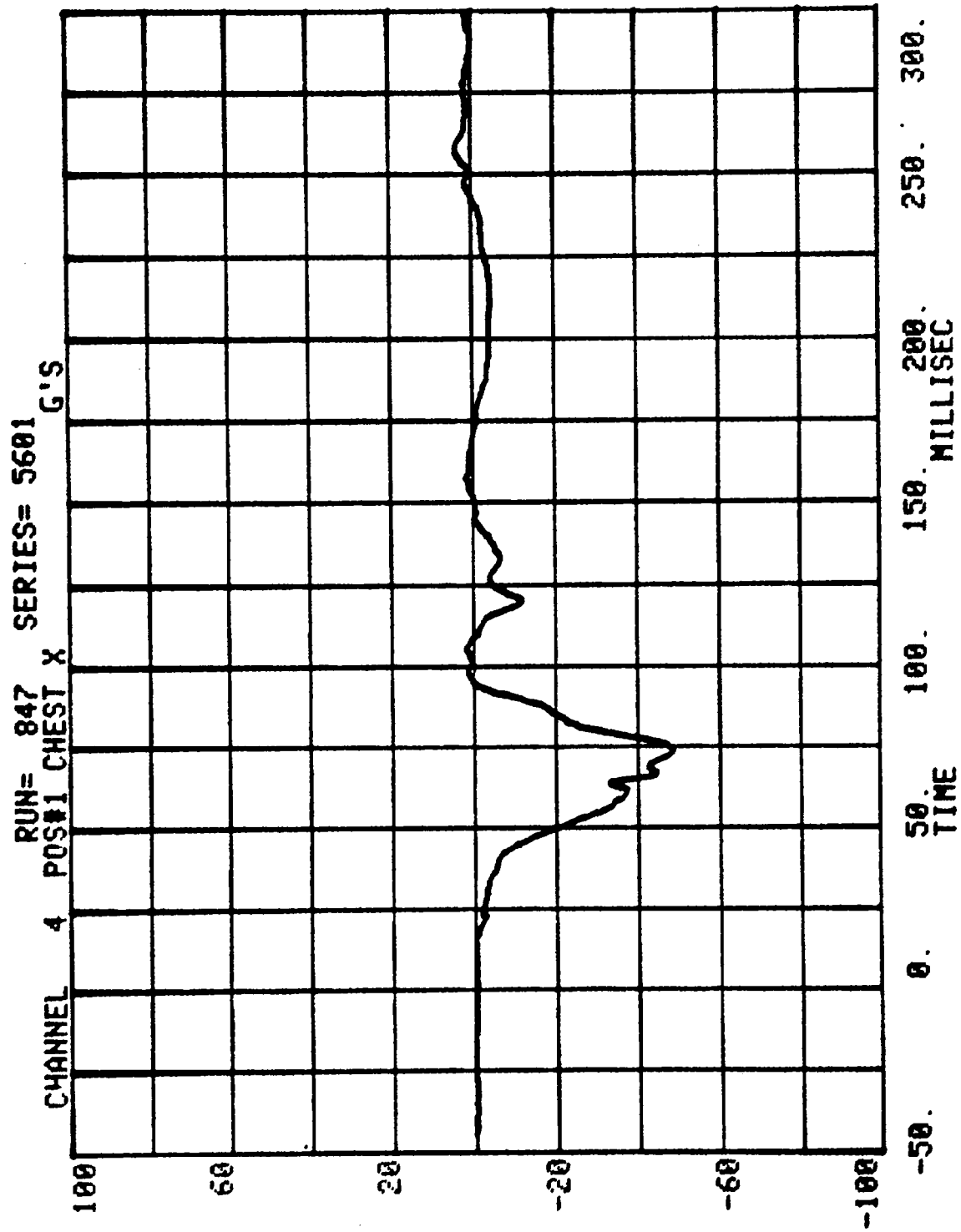
SEVERITY INDEX= 648.1


CHANNEL 1 POS#1 HEAD X
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 2 POS#1 HEAD Y
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 3 POS#1 HEAD Z
RUN= 847 SERIES= 5601
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= 847 SERIES= 5601
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 4 POS#1 CHEST X
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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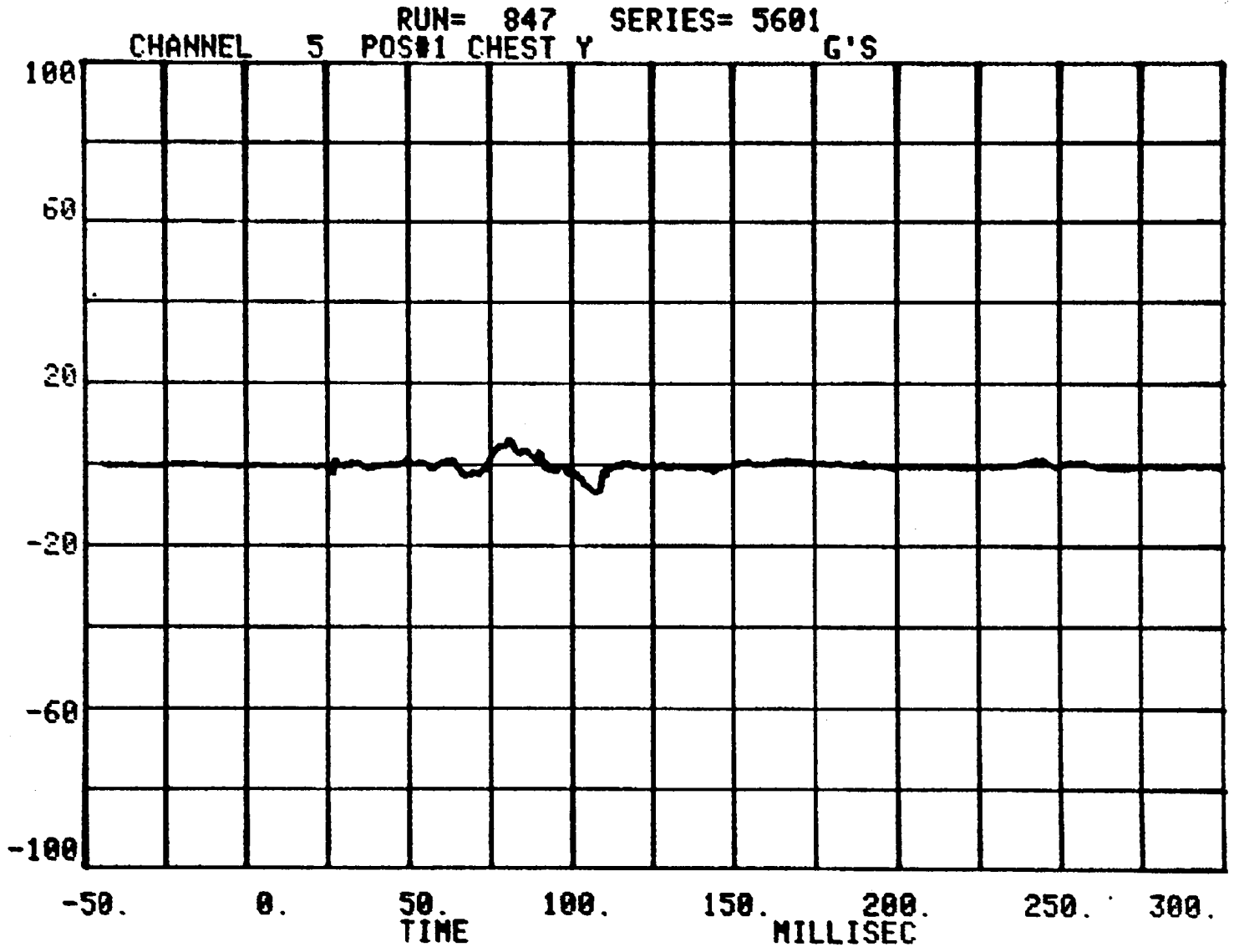
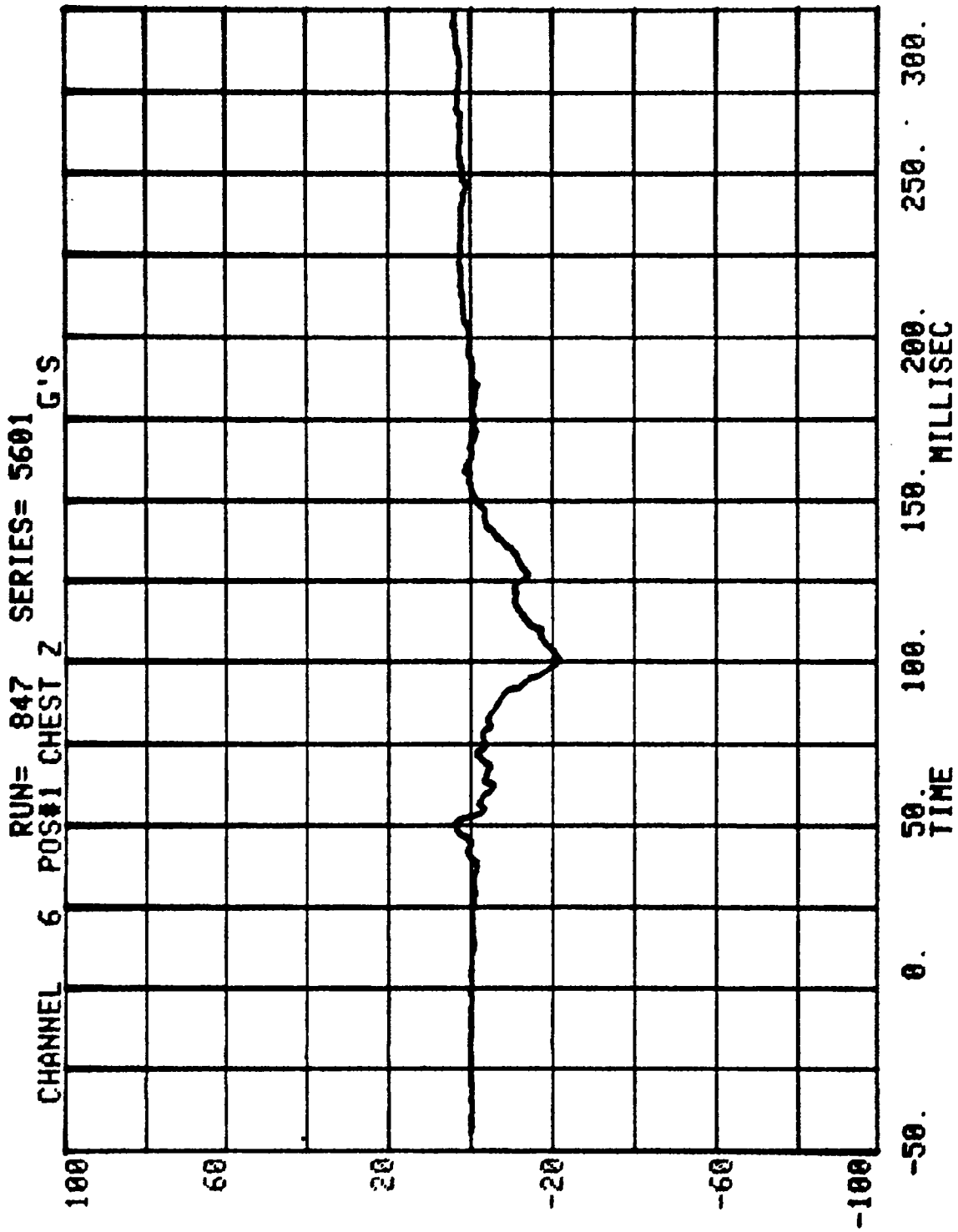
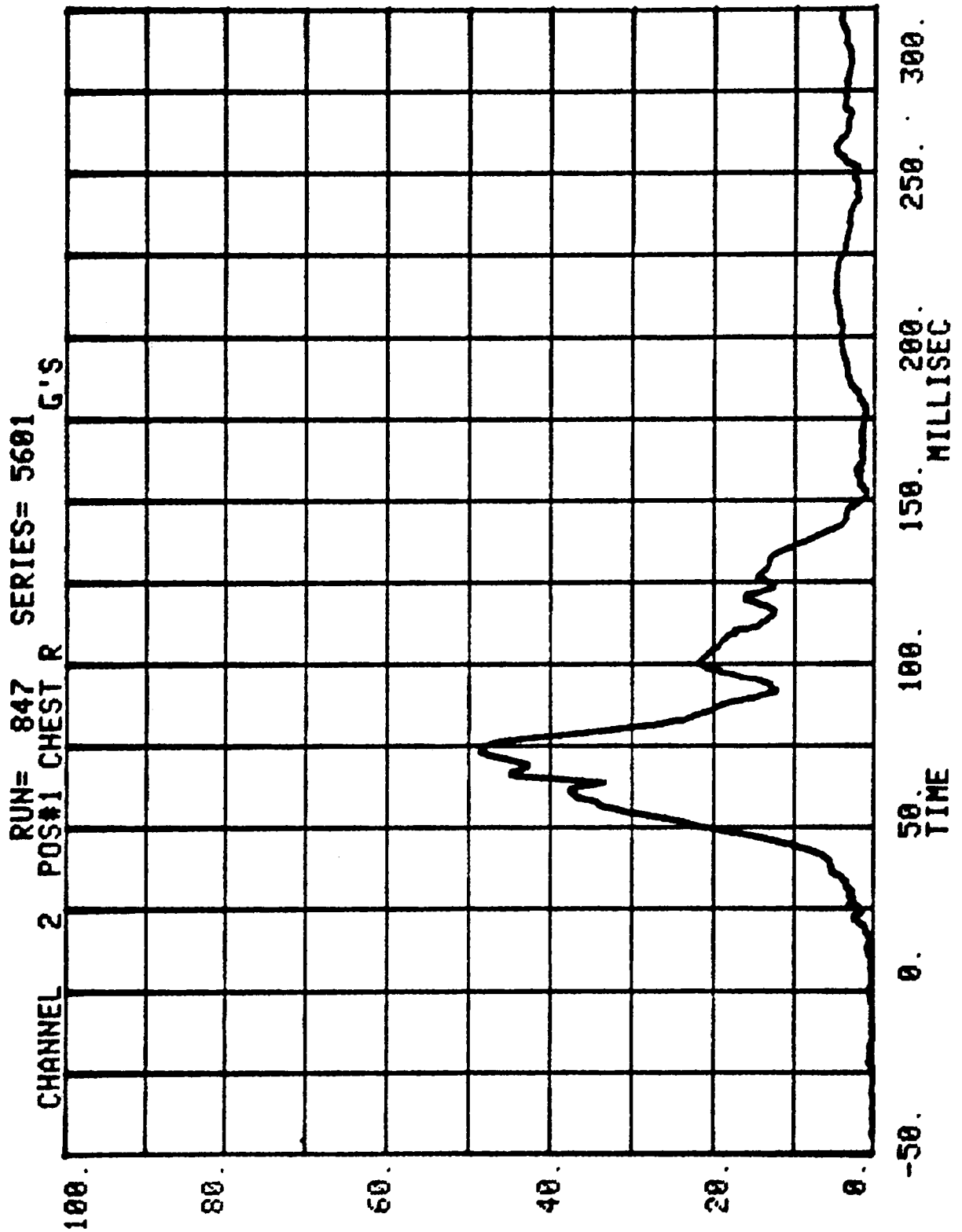
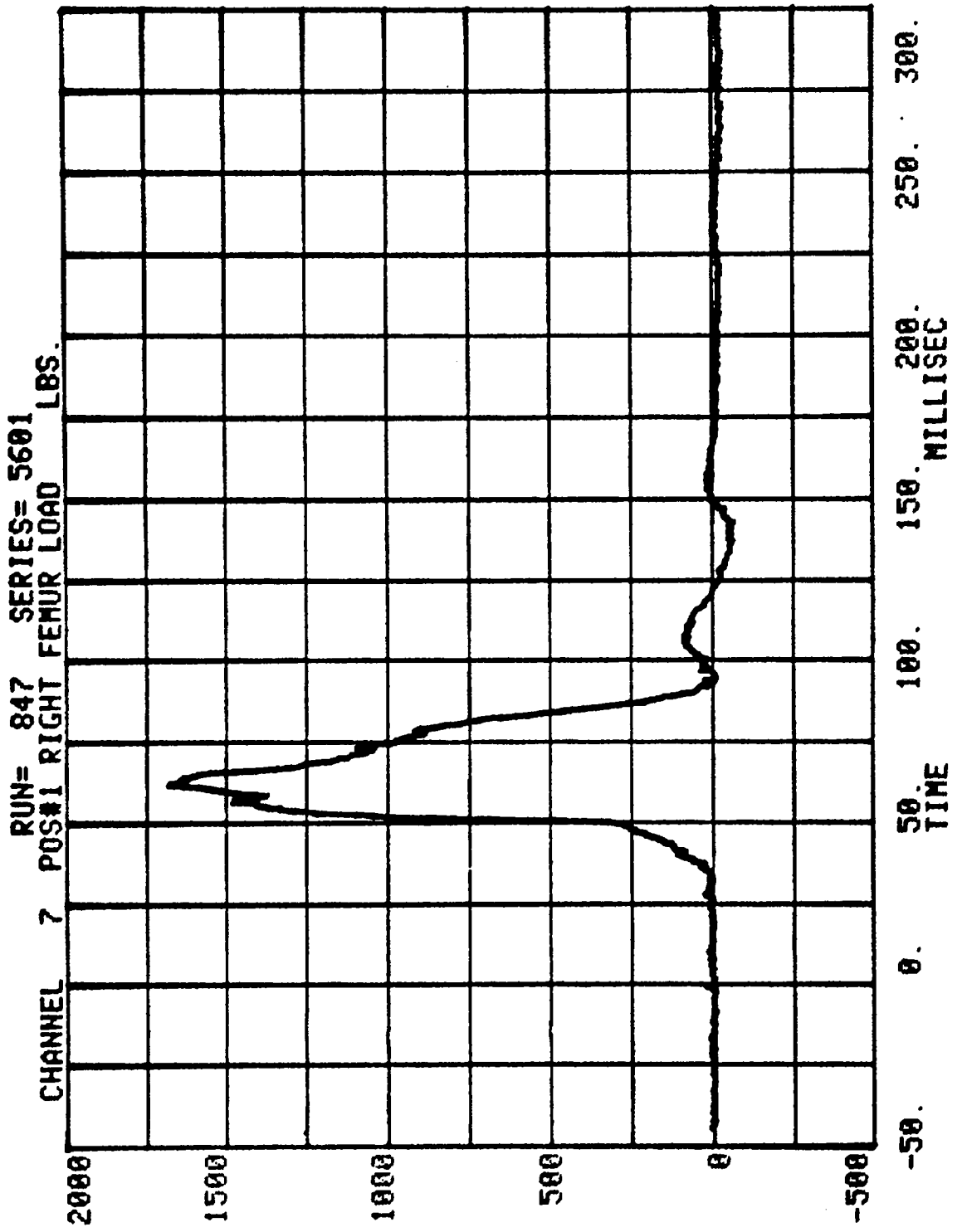
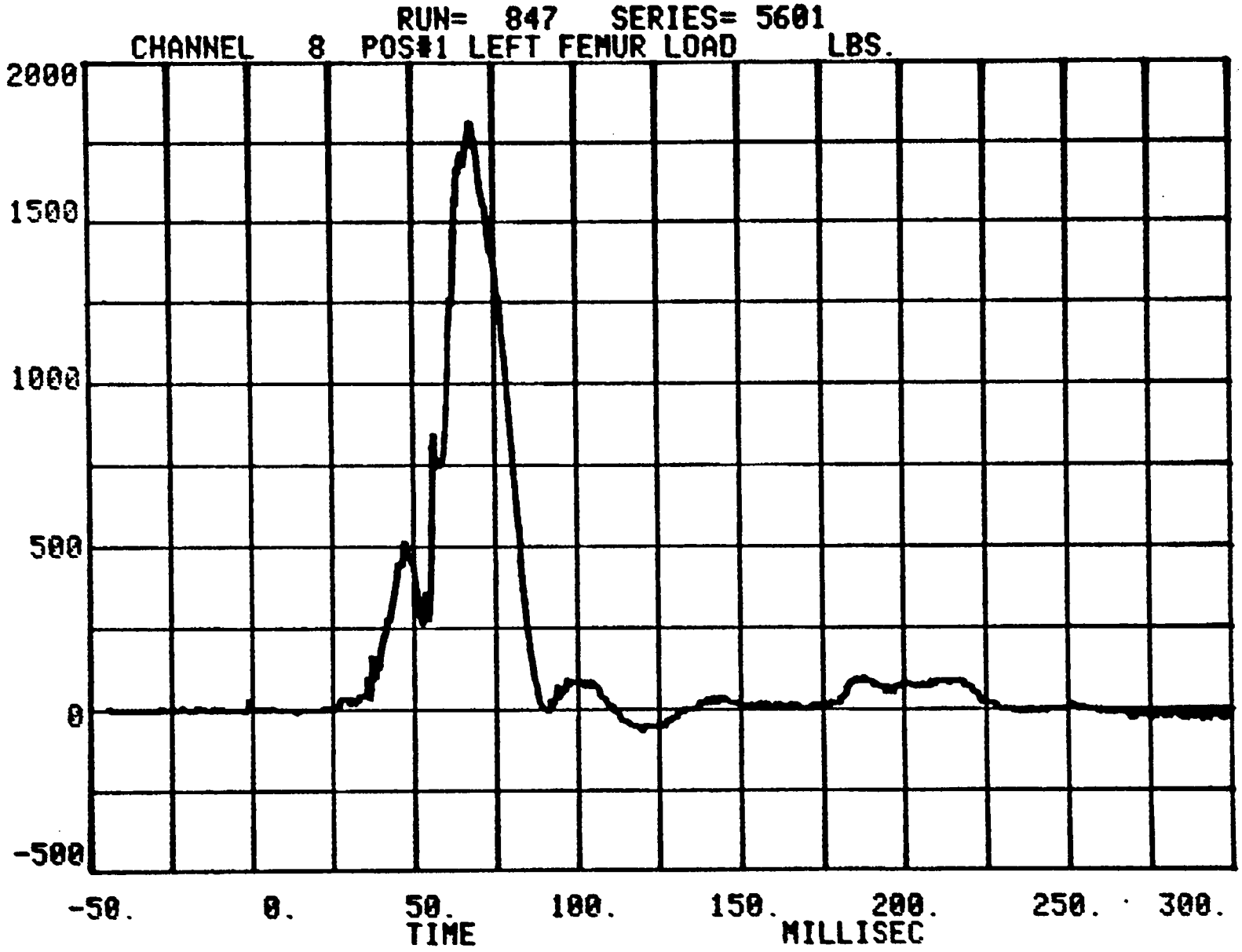

RUN= 847 SERIES= 5601
CHANNEL 5 POS#1 CHEST Y G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-6


CHANNEL 6 POS#1 CHEST Z
RUN= 847 SERIES= 5601
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= 847 SERIES= 5601
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 7 RUN= 847 SERIES= 5601
POS#1 RIGHT FEMUR LOAD LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 847 SERIES= 5601
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= 847

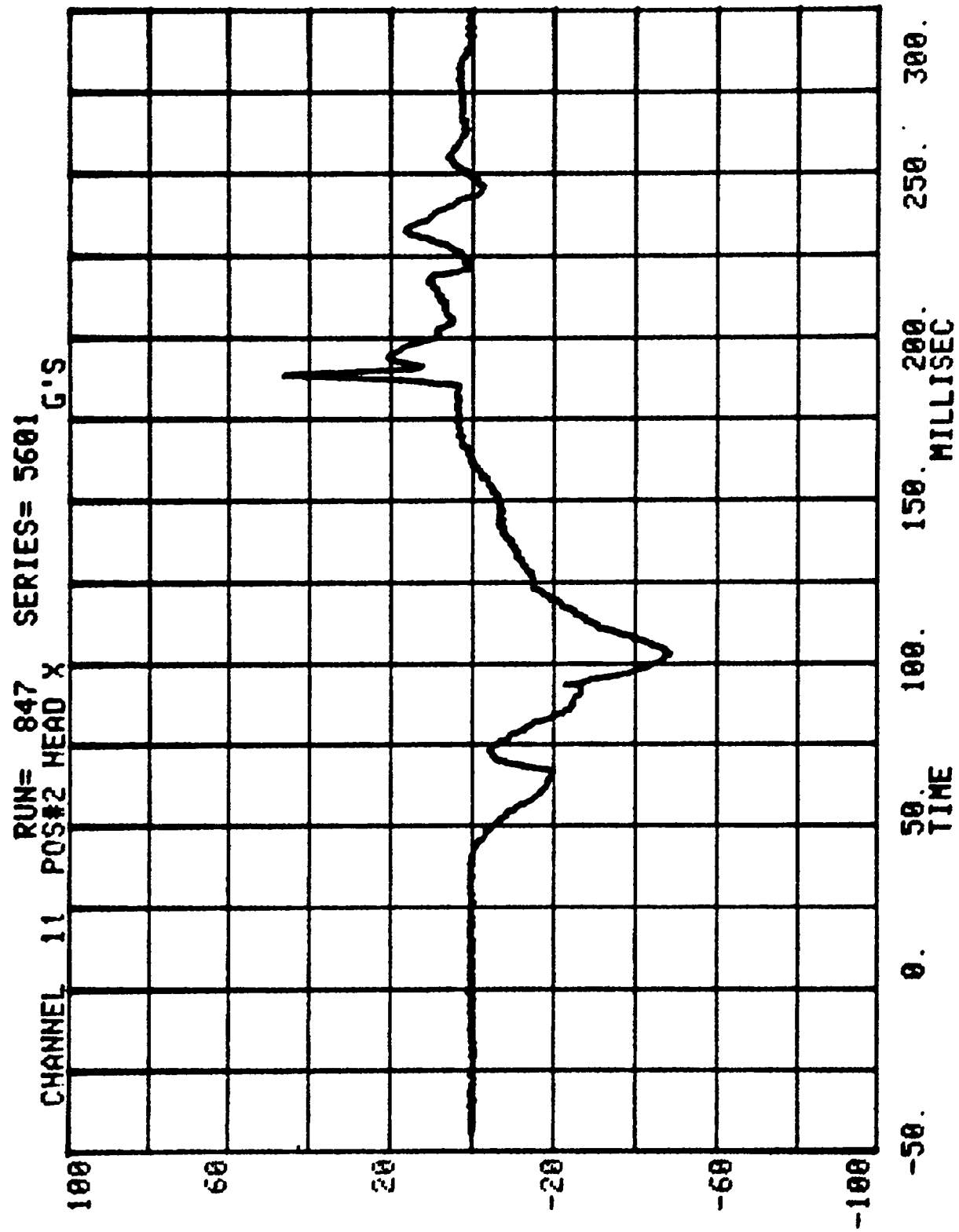
POS#2 HEAD R

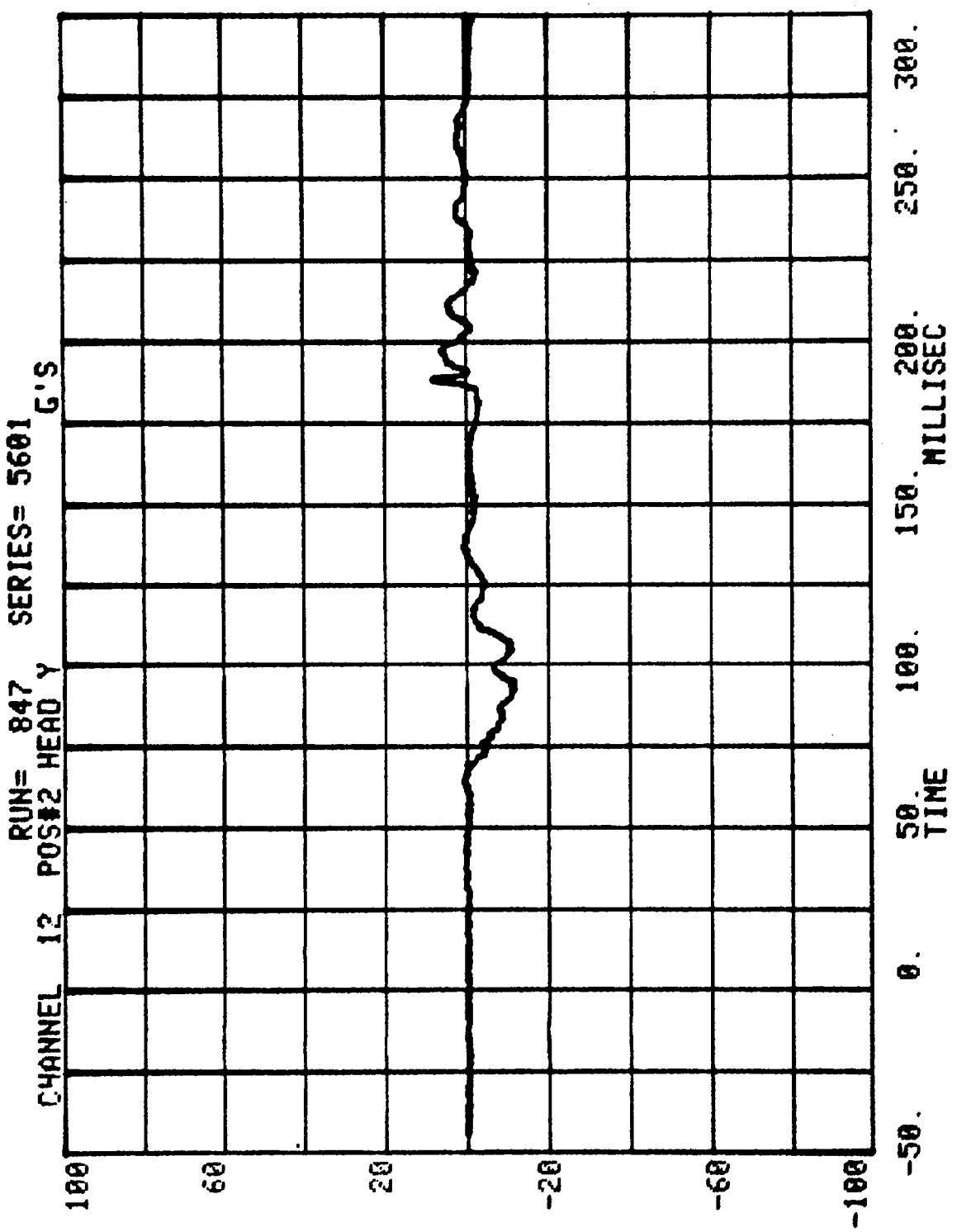
HIC= 709.7 FROM T1= .07560 TO T2= .11160

AVERAGE ACCELERATION BETWEEN T1 AND T2= 52.2G'S

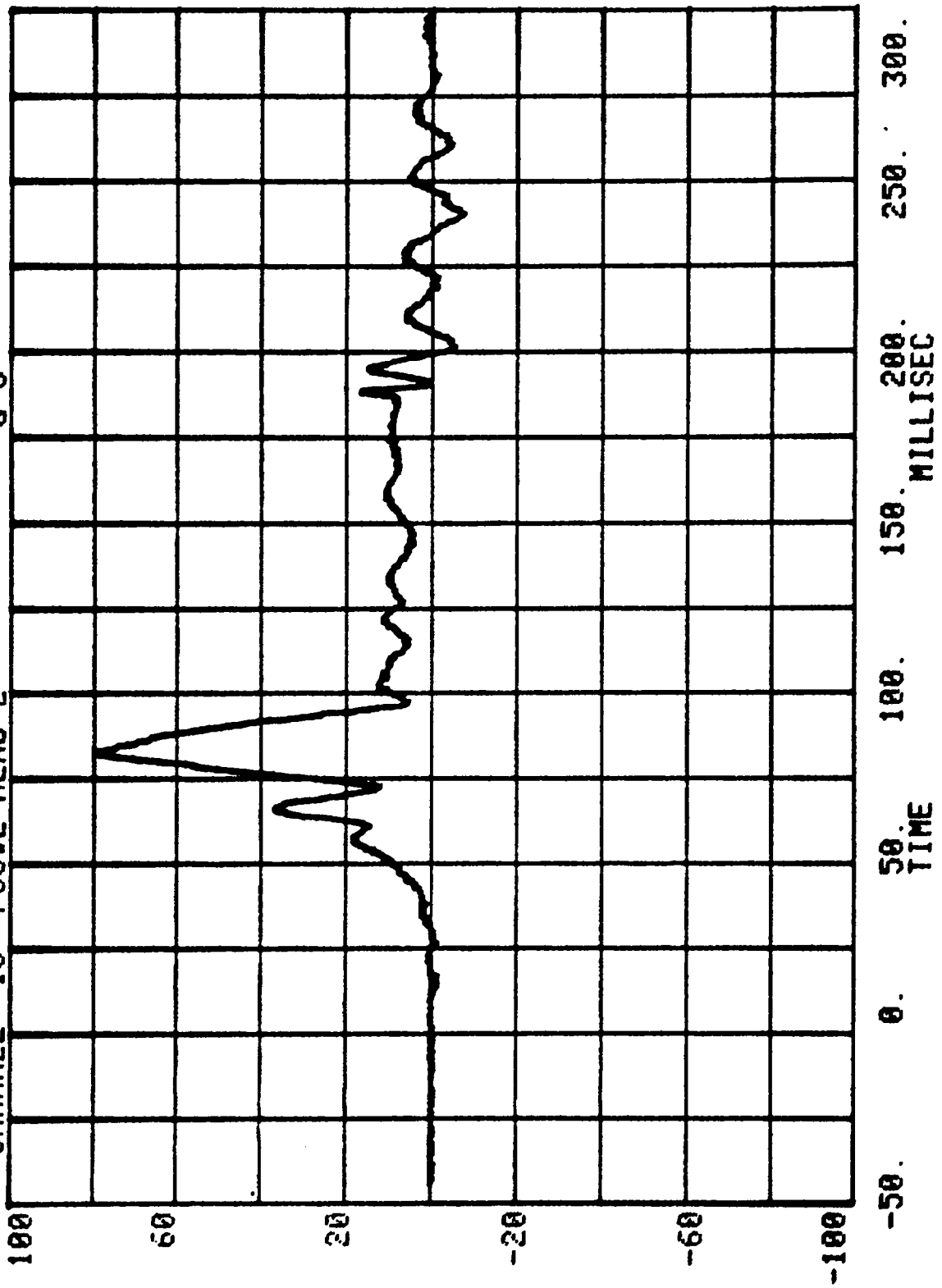
EVENT TIME= 300.0 MSEC

SEVERITY INDEX=1033.2

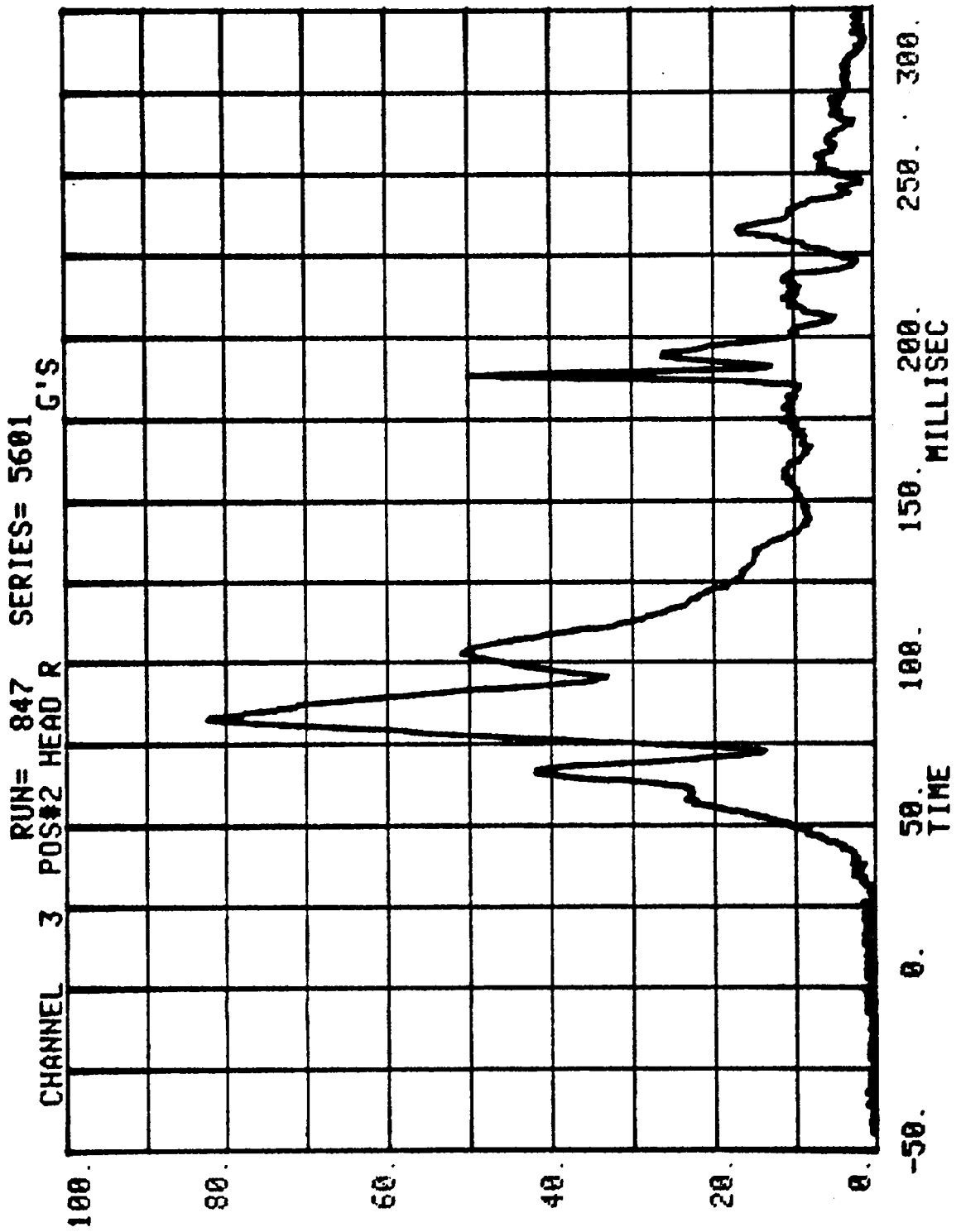

CHANNEL 11 POS#2 HEAD X
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 12 POS#2 HEAD Y
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

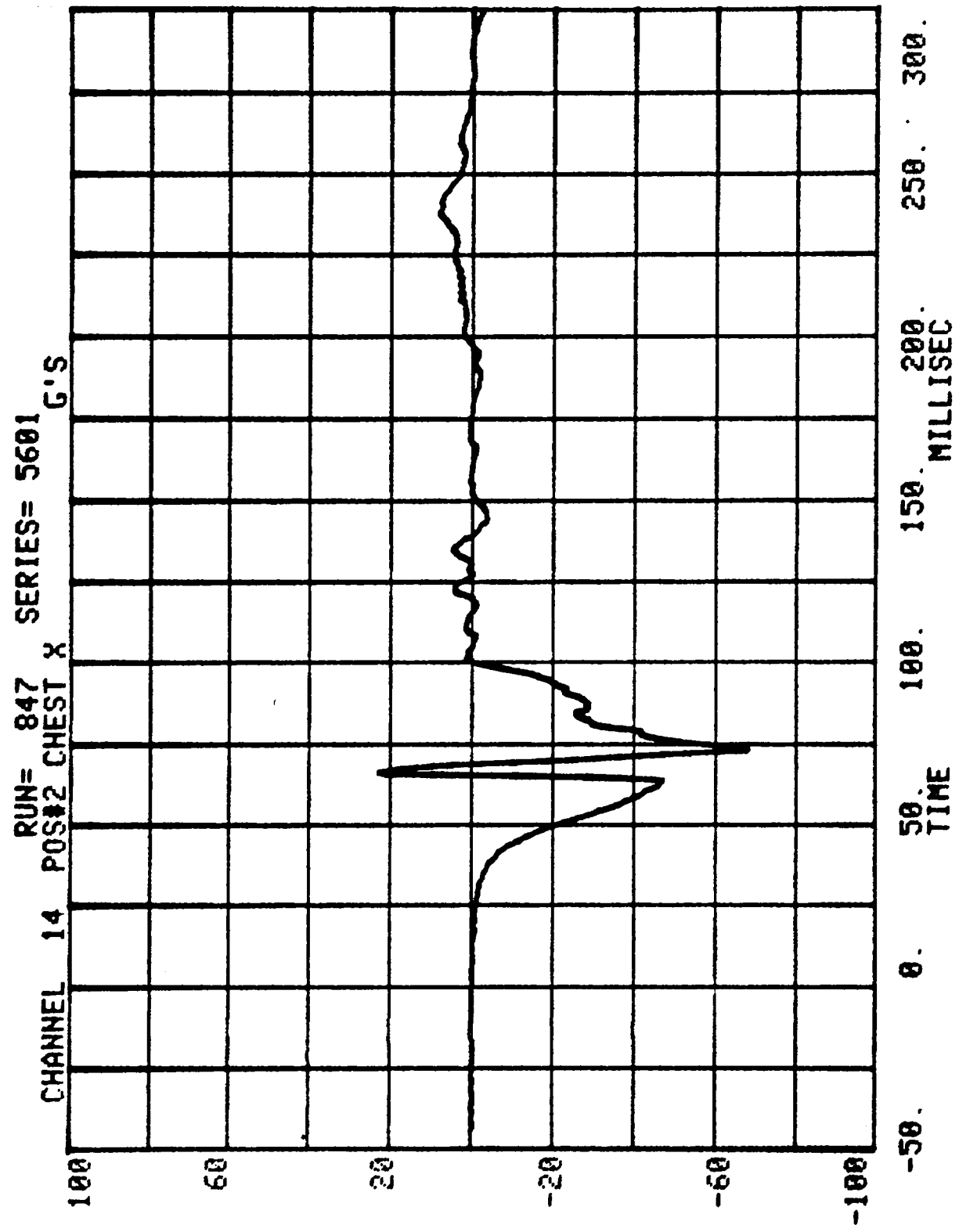
7669-6


CHANNEL 13 POS#2 HEAD Z
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

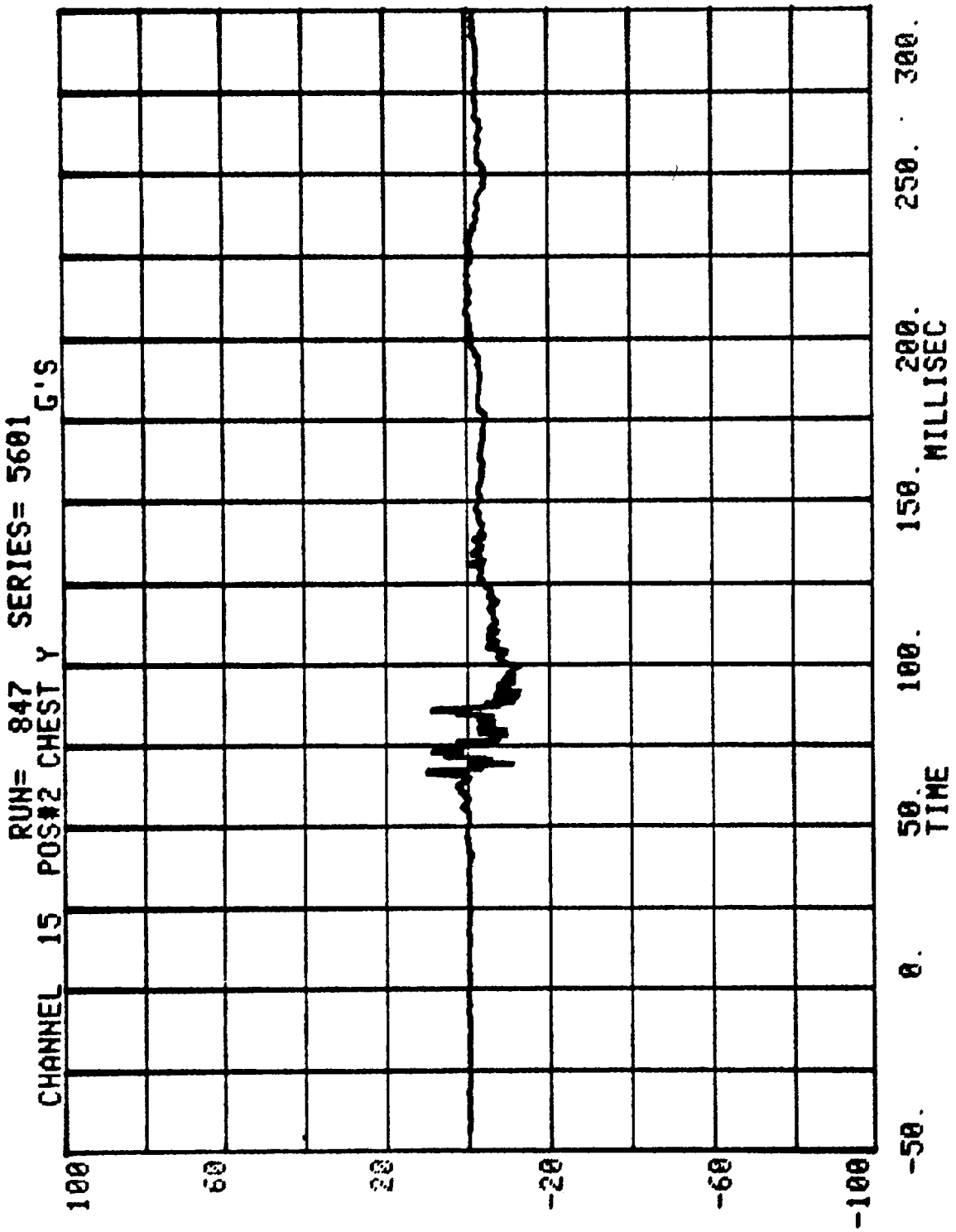
7669-6


CHANNEL 3 POS#2 HEAD R
RUN= 847 SERIES= 5601
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

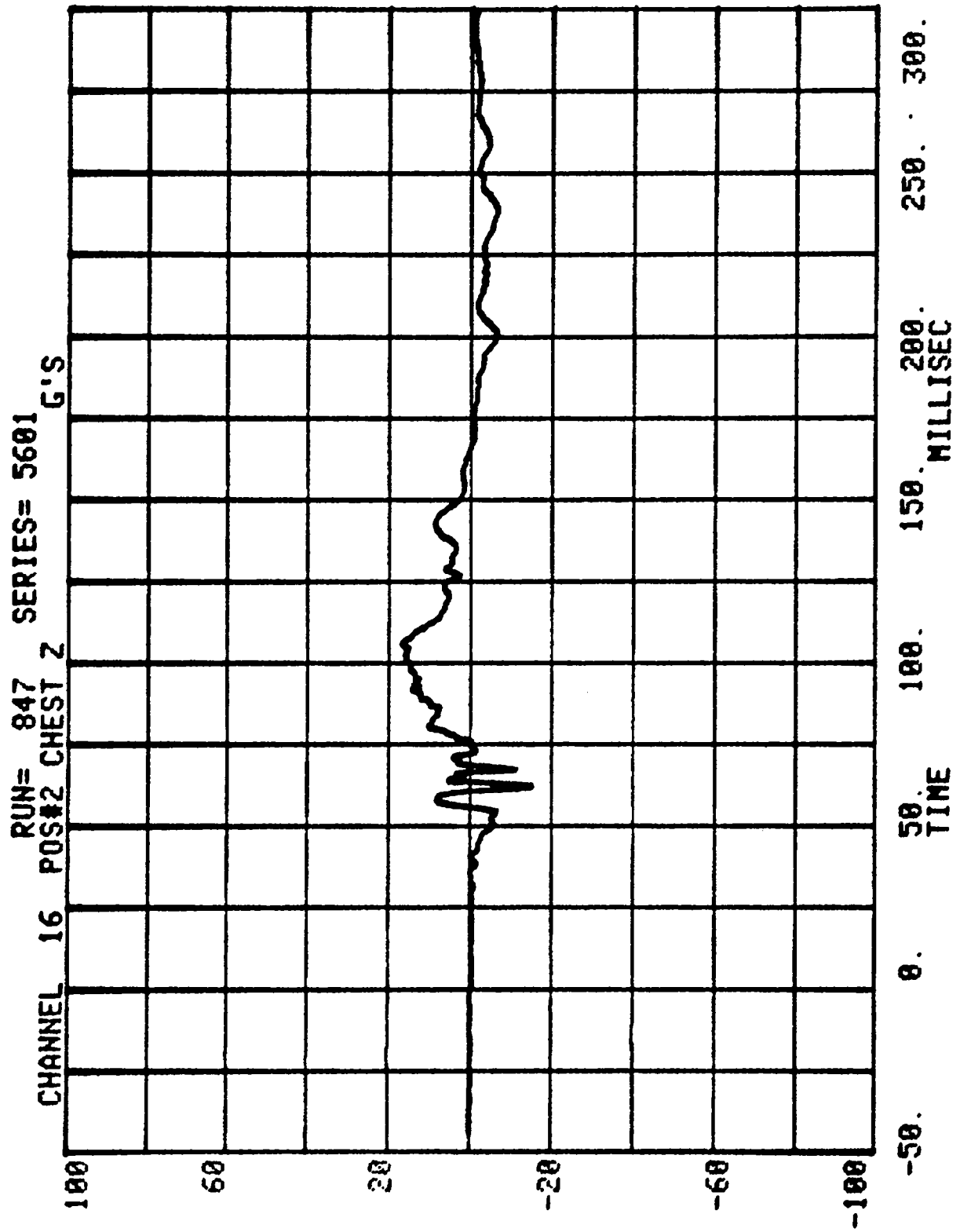
7669-6


CHANNEL 14 POS#2 CHEST X
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

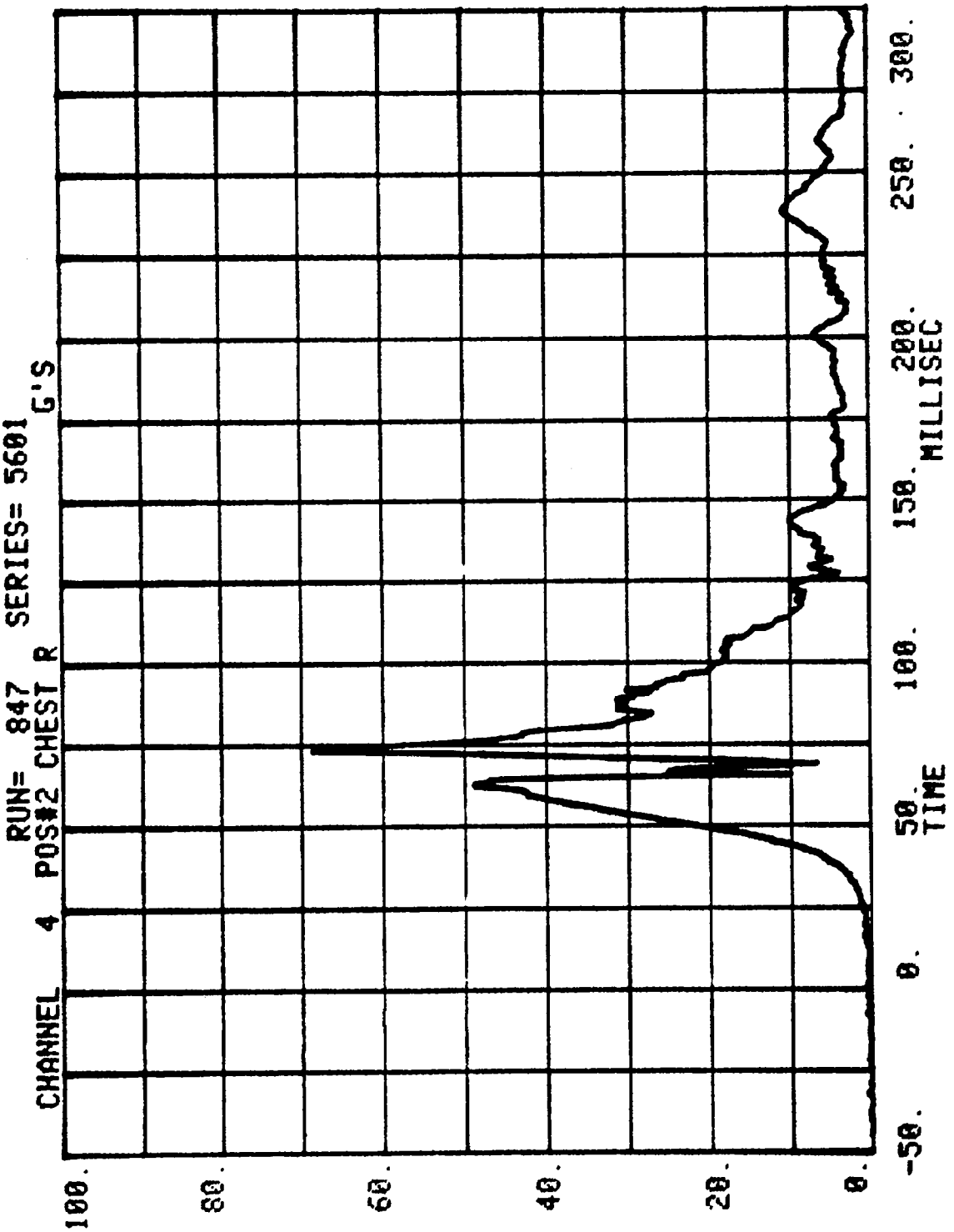
7669-6


RUN= 847 SERIES= 5601
CHANNEL 15 POS#2 CHEST Y
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-6


CHANNEL 16 POS#2 CHEST Z
RUN= 847 SERIES= 5601
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7669-6


CHANNEL 4 POS#2 CHEST R
RUN= 847 SERIES= 5601
G'S
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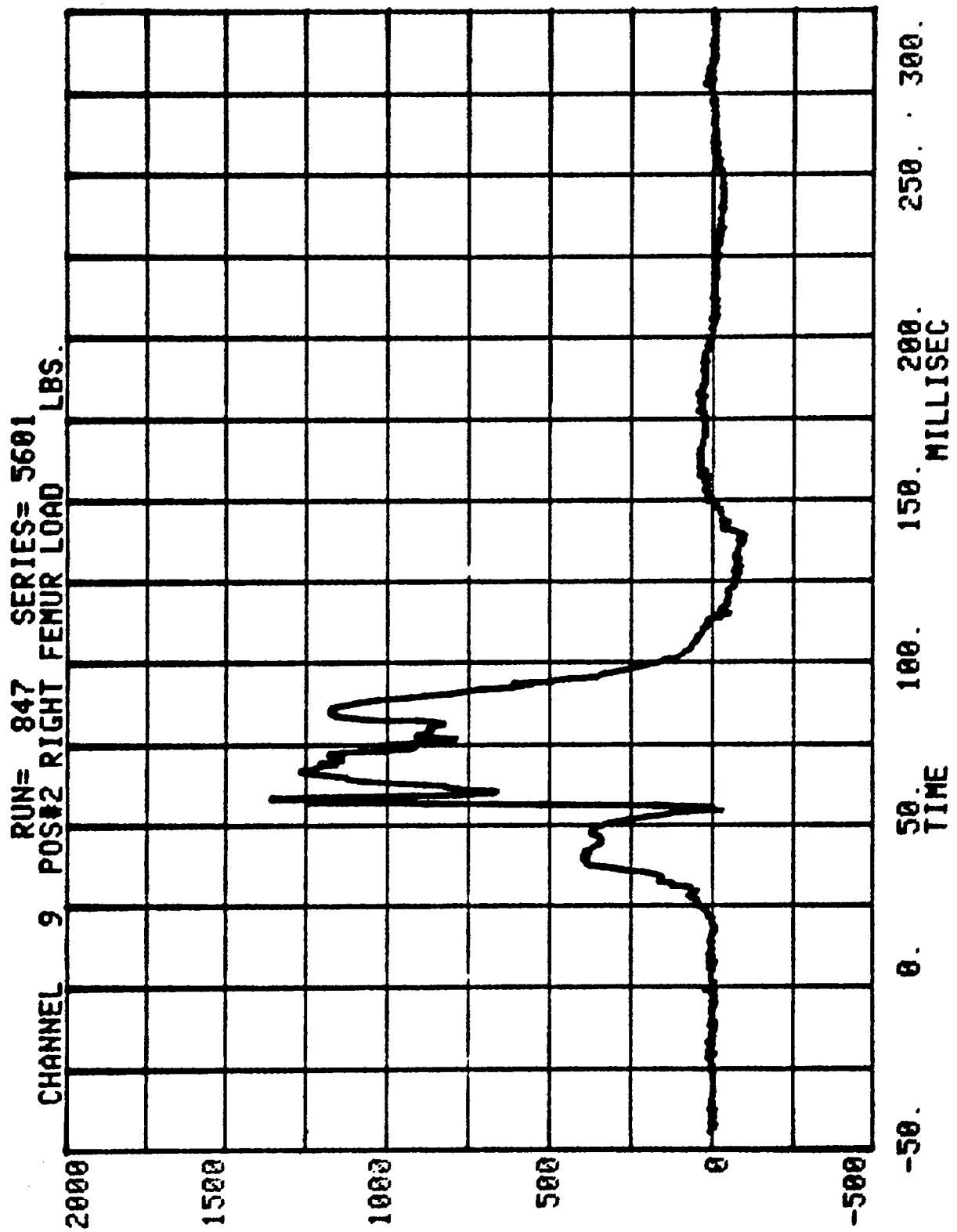
RUN= 847 SERIES= 5601
CHANNEL 9 POS#2 RIGHT FEMUR LOAD LBS.
2000
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TIME
MILLISEC

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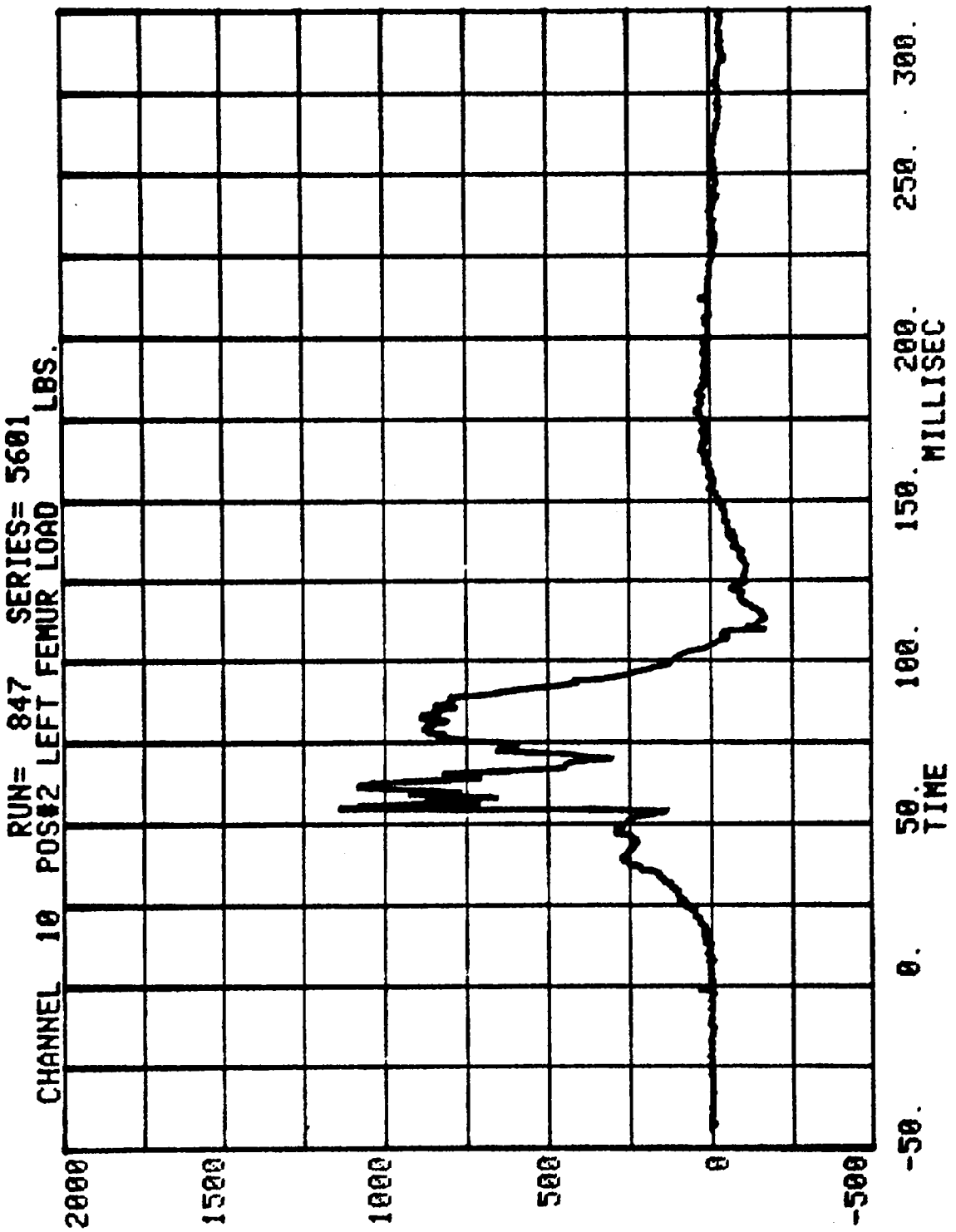
CHANNEL 10 POS#2 LEFT FEMUR LOAD
RUN= 847 SERIES= 5601
LBS.
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TIME
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Appendix C

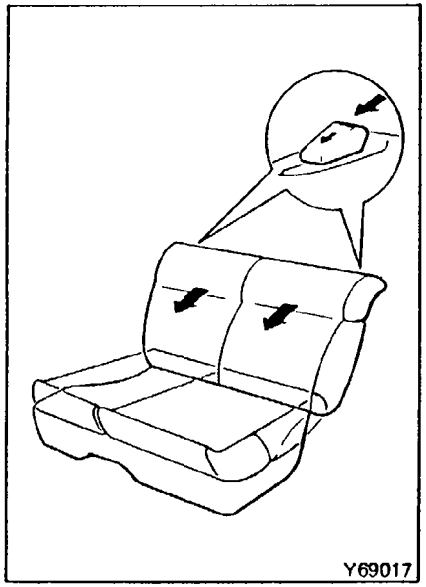
VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

To remove the head restraints, press the lock knobs in the direction indicated by the arrows and pull up on the restraints. To remount the head restraints, first confirm that they are facing the correct direction, and then insert them into the seatback and push down until they lock. Confirm that the lock knobs are correct as shown in the illustration, and also pull up on the head restraints to confirm that they do not come out of the seatback.

CAUTION

(1) **Driving with the head restraints removed is dangerous; always have them mounted when operating the car.**
(2) **The lock knobs should only be used to remove the head restraints. Do not use the knobs to adjust the height of the restraints.**

Fold Down Rear Seatbacks



The rear seatbacks can be folded forward to provide additional cargo area. Pull the left and/or right release levers forward, and fold the seatbacks forward. The release levers are located on top of the seatbacks.
To return the seatback to the original position, make sure that the release lever is in its locking position.

CAUTION

This cargo area in the rear of the car should not be used as a play area by children when the car is in motion.
Children should be seated and seat belts fastened.

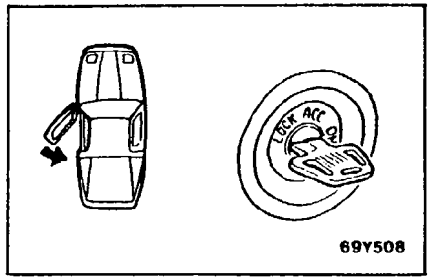
Seat Belts

Seat belts are installed in your car for the protection of the driver and passengers. Use the seat belts. In the event of an accident, injury to the driver and passengers may be reduced if seat belts are properly used.
The following pages contain the recommended procedure for fastening, adjusting, and wearing the belts for comfort and safety.

Front Seat Belt Restraint System

The front seat belt restraint system consists of the automatic shoulder belt and the manual lap belt. This system is designed to provide comfort and safety by automatic fastening and unfastening of the shoulder belt as well as automatic retraction of the belts during normal vehicle operation.
Sensing devices inside the belt retractors (for shoulder and lap belts) are designed to lock the retractors in the event of an abrupt change in vehicle motion.

Automatic Shoulder Belt



The shoulder belt moves automatically to the set position (fasten) when the ignition key is turned to the "ON" position and a door is closed. The shoulder belt moves automatically to the set-off position (unfasten) when the door is opened.

Seat Belt Reminder Light/Warning Light and Buzzer
The seat belt reminder light/warning light will illuminate or blink on and off in the following instances, and the buzzer will sound.

(1) LAP BELT REMINDER LIGHT AND BUZZER
When the ignition key is turned to the "ON" position, the reminder light in the instrument cluster will illuminate for six seconds. If the driver does not fasten his/her lap belt, the buzzer will also sound for six seconds. The buzzer will immediately stop sounding, however, when the lap belt is fastened.

(2) SHOULDER BELT RELEASE LEVER WARNING LIGHT AND BUZZER
If the driver's or front passenger's release lever is accidentally pulled up, the warning light in the floor console will blink on and off and the buzzer will sound intermittently, and the warning light in the instrument cluster will also blink on and off. If this happens, push the lever down.

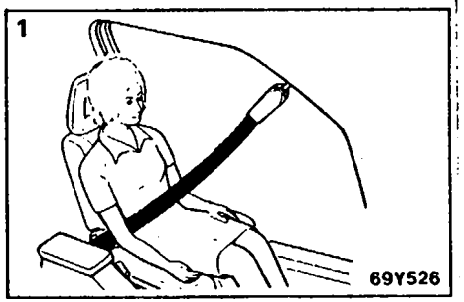
(3) SHOULDER BELT FAILURE WARNING LIGHT
If the sliding anchor of the shoulder belt does not slide to the normal position and this condition continues for six seconds or more, the warning light in the instrument cluster will blink on and off. If this happens, open the door (with the ignition key at the "ON" position), and unfasten the shoulder belt. Then close the door and fasten the shoulder belt once again. If the warning light does not blink on and off at that time, the belt is installed correctly.
If, however, the warning light continues to blink on and off, there is a malfunction of the shoulder belt and it should be reattached. (See "Automatic Shoulder Belt Reattachment" on page 16.)

(4) SHOULDER BELT EMERGENCY STOP WARNING BUZZER
If the seat belt's sliding anchor or anchor cover contacts the head or shoulder and stops temporarily when the door is opened and the shoulder belt is released, the warning buzzer will sound during that time.

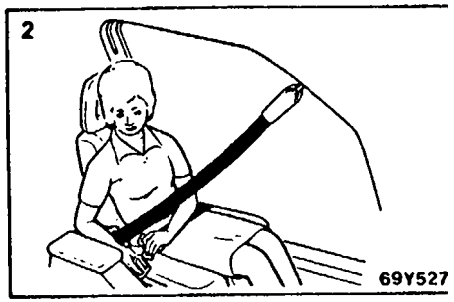
(5) SHOULDER BELT RELEASE REMINDER BUZZER
When the shoulder belt is released when the door is opened and the sliding anchor begins to move, the buzzer sounds for about one second.

(6) SHOULDER BELT RELEASE LEVER CHECK LIGHT
When the ignition key is turned to the "ON" position, the release lever check light illuminates for about 1.5 second, and then will stop illumination. If the light does not illuminate, request a nearby authorized dealer to check the bulb.

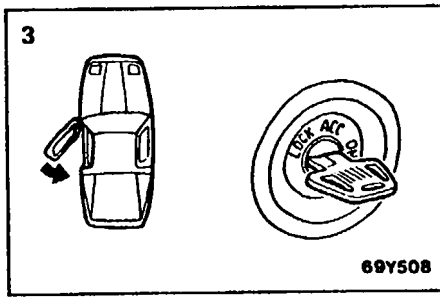
Front Seat Belt Instructions



1. Get in the car and adjust the seat position.



2. Grasp the lap belt latch plate an slide it up the webbing as far a necessary so that it will be eas to pull across your thighs.
After a couple of tries you can d this with one hand.



3. Close the door and turn the ignitio key to the "ON" position; th shoulder belt will move automaticall to the set position (fasten).

SHOULDER BELT RELEASE LEVER CHECK LIGHT

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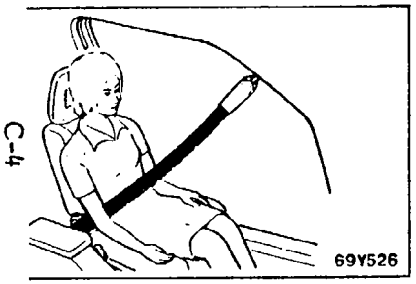

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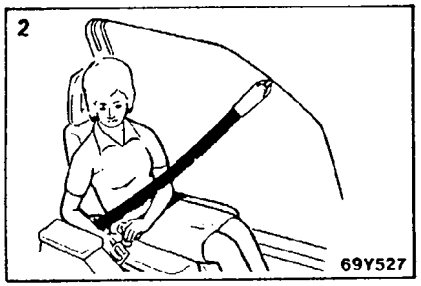

2. Grasp the lap belt latch plate and slide it up the webbing as far as necessary so that it will be easy to pull across your thighs.
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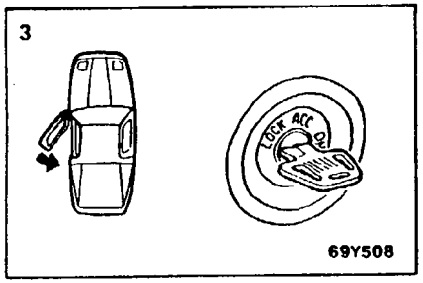
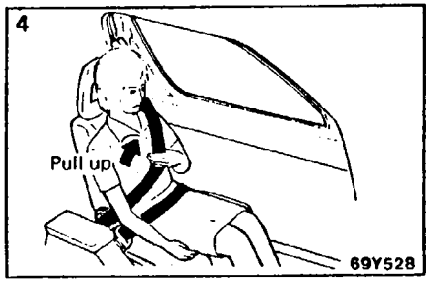


3. Close the door and turn the ignition key to the "ON" position; the shoulder belt will move automatically to the set position (fasten).

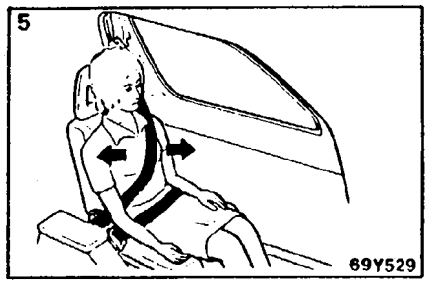
CAUTION

Be careful that the driver's or a passenger's finger is not caught and pinched by the shoulder belt sliding anchor while it is moving.

Be careful that the shoulder and lap belts do not cross. If they do, the lap belt could injure the abdomen in the event of sudden braking or a collision.

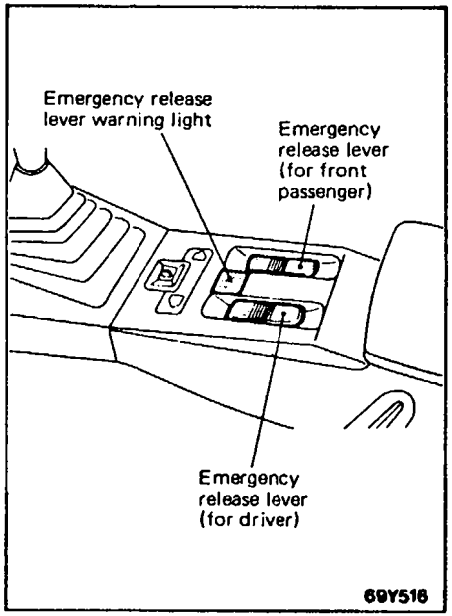


4. Pull up on the shoulder belt and lap belt to be sure that there is no excess slack or tightness in the belts.
   Check the belt looseness. The belts will retain a small amount of looseness necessary for comfort during driving. If a belt is too tight, pull up slightly and let it return. The belts will not tighten during normal use; therefore you can set them right now for safe, comfortable snugness.



5. The belts will allow unrestricted movement under normal conditions. The belts will lock in the event of an accident.
   To release the shoulder belt, open the door. To release the lap belt, press the button in the buckle and allow the belt to retract.

Emergency Release Lever



If the shoulder belt is locked in an emergency, pull the emergency release lever to unlock and release the shoulder belt locking mechanism. Use this lever only when the shoulder belt prevents you from leaving the car in an accident. If the emergency release lever is accidentally pulled up, both the reminder light (in the instrument cluster) and the emergency release lever warning light (in the floor console) will blink on and off, and the buzzer will also sound to remind you. If this happens, push the lever down.

CAUTION

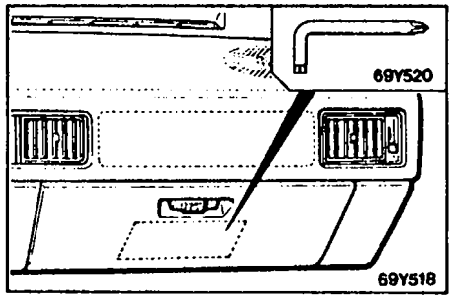
Always keep the emergency release lever down in order to maintain the normal shoulder belt restraint.

SHOULDER BELT EMERGENCY STOP

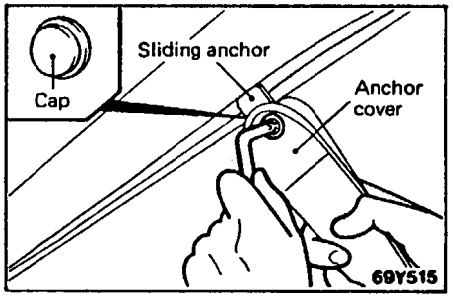
If, when the shoulder belt is released, the anchor cover or the sliding anchor of the shoulder belt contacts the head or shoulder, the belt will stop moving temporarily and the buzzer will sound; the belt will then begin moving again.

Automatic Shoulder Belt Reattachment

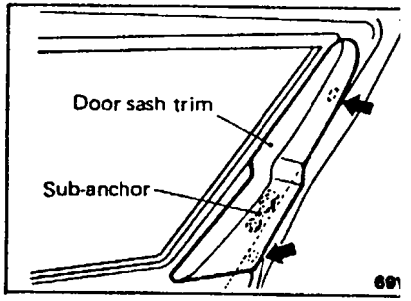
If, because of a malfunction, the shoulder belt will not move, reattach the belt to the front door's sub-anchor as described below; take the car to the nearest authorized dealer and have the system checked as soon as possible.



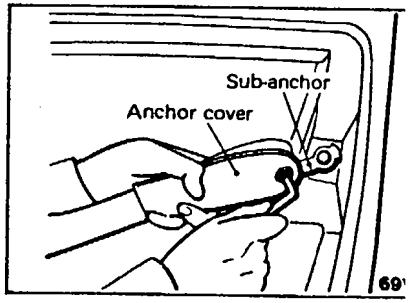
1. Take out the seat belt tool (L-shaped wrench) from the inside of the glove compartment lid.



2. Remove the cap from the seat anchor cover, and use the L-sh wrench to disconnect the s anchor and seat belt anchor cov



3. Use the cross-tip (+) screwdrive of the provided L-shaped wr screwdriver to remove the scre the places (at the rear end o door sash trim) shown by the ar in the figure, and then remov trim.



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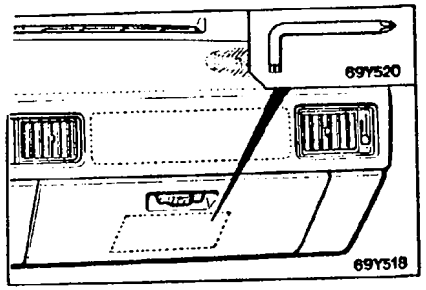

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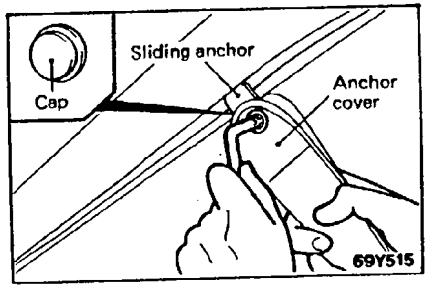
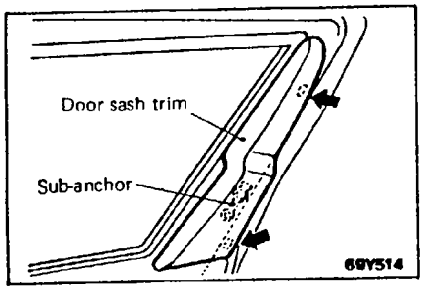
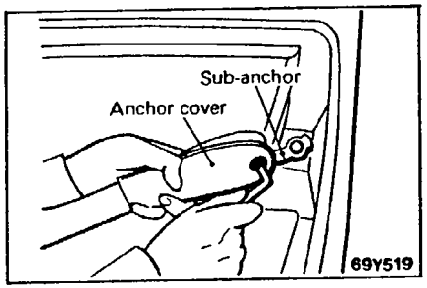


2. Remove the cap from the seat belt anchor cover, and use the L-shaped wrench to disconnect the sliding anchor and seat belt anchor cover.



3. Use the cross-tip (+) screwdriver end of the provided L-shaped wrench/ screwdriver to remove the screws at the places (at the rear end of the door sash trim) shown by the arrows in the figure, and then remove the trim.



4. Use the bolt (removed in step 2) to attach the removed seat belt anchor cover to the front door's sub-anchor.
5. Attach the cap (removed in step 2) to the anchor cover.

CAUTION

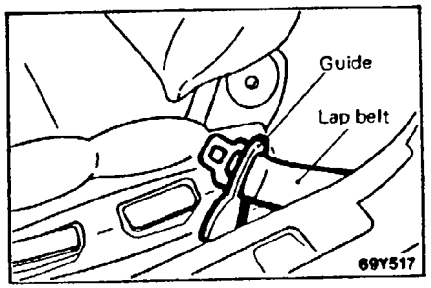
When reattaching the seat belt anchor cover to the front door, be sure that the seat belt is not twisted.

6. Install the door sash trim.

NOTE

(1) If the movement of the sliding anchor of the shoulder belt is not smooth (if, for example, dirt or other foreign material increases the sliding resistance of the sliding anchor, etc.), request an authorized dealer to check the belt; if the problem cannot be resolved, the shoulder belt must be replaced as a complete assembly.

(2) If the outside air temperature is low, the time required for the operation of the sliding anchor becomes longer; this is not a malfunction, however, if that time becomes shorter when the temperature increases.



(3) In order to maintain smooth operation of the lap belt, be sure to use it after first passing the webbing through the guide shown in the figure.

(4) If the shoulder belt and/or lap belt become scarred or otherwise damaged, replace the belts as a complete assembly.

Rear Seat Lap Belts