DOT4828

REPORT NO. CAL-85-N16

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

ISUZU MOTORS LIMITED

1985 ISUZU I - MARK

4-DOOR SEDAN

NHTSA NO. CF5701

CALSPAN TEST NO. 7333-17

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

June 21, 1985

FINAL REPORT

Prepared for:

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

OFFICE OF MARKET INCENTIVES

400 SEVENTH STREET, S.W.

ROOM NO. 5313 (NRM-22)

WASHINGTON D.C. 20590

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NHTSA New Car Assessment Program (NCAP) Frontal Barrier Impact Test on 1985 Isuzu I - Mark 4-Door Sedan to Indicant Requirements of FMVSS 212, 219 (Partial), and 301-75	June 21, 1985
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15. Supplementary Notes

16. Abstract

A frontal load cell barrier test of a 1985 Isuzu I - Mark 4-door sedan was performed at the Calspan Corporation, Advanced Technology Center crash test facility in Buffalo, New York, on May 21, 1985.

Impact speed was 34.8 mph, and the ambient temperature at the barrier face at the time of impact was 64°F. The maximum post-test vehicle crush was 22.0 inches.

The test vehicle appeared to comply with the indicant requirements of the following Federal Motor Vehicle Safety Standard.

1. FMVSS No. 212, "Windshield Mounting" (84.3 percent retention)
2. FMVSS No. 219 (Partial), "Windshield Zone Intrusion"
3. FMVSS No. 301-75, "Fuel System Integrity"

Type of Restraint System 3-point continuous webbing manual system at each front outboard seating position.

17. Key Words	18. Distribution Statement
35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP) FMVSS 212 Indicant Testing FMVSS 219 (Partial) Indicant Testing FMVSS 301-75 Indicant Testing	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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PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is part of the Composite FY 85 Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-84-D-01149. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph FMVSS 212/219/301-75 requirements.

The 35 mph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test Procedure. Standards Enforcement Indicant Test Program data for FMVSS No. 212, "Windshield Mounting," FMVSS No. 219 (Partial), "Windshield Zone Intrusion," FMVSS No. 301-75, "Fuel System Integrity," as well as occupant performance data are provided herein.

SECTION 2
SUMMARY OF TEST NUMBER CF5701

A load cell barrier consisting of 36 load cells was impacted by a 1985 Isuzu I - Mark 4-door sedan at a velocity of 34.8 mph. The test was performed at the Calspan Corporation Advanced Technology Center on May 21, 1985. 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 16 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 Indicant Test Procedure.

Both ATDs were fully instrumented with head and chest triaxial accelerometers and right/left femur load cells. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. These ATDs had been certified prior to the test, and certification details along with instrumentation calibration data, are found in Appendix C.

The 67 channels of data were recorded on six 14-channel FM tape recorders. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

The driver's head struck the steering wheel hub and his HIC was 1514. The maximum chest deceleration over 3 milliseconds was 38 g's and femur loads were 365 and 535 pounds.

The right front passenger's head struck his right leg and his HIC was 1543. The maximum chest deceleration over 3 milliseconds was 47 g's and femur loads were 385 and 398 pounds.

Table 1

GENERAL TEST AND VEHICLE DATA

Vehicle Year/Make/Model/Body Style 1985 Isuzu I - Mark 4-door sedan

NHTSA No. CF5701 VIN. JABAT69B4F0801237

Body Color White Date of Manufacture 1-85

Engine: 4 cylinders; 111 C.I.D.; 1.8 Liters; -- CC
X Gas; -- Diesel; -- Turbocharged
-- Longitudinal; -- Transverse

Transmission 5 Speed X Manual -- Automatic -- Overdrive
Final Drive; -- Front Wheel; X Rear Wheel; -- Four Wheel

Date Received 5/2/85 Odometer Reading; 242
-- A/C; -- P/S; X P/B; -- P/wdo.; X Tilt Wheel
-- P/seats; -- Cruise Control

Type of Occupant Restraint 3-Point Continuous Belt System

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 24 psi, Rear 28 psi

Recommended Tire Size: 175/70SR-13

Recommended Cold Tire Pressure: Front 24 psi, Rear 28 psi

Tires on Vehicle: 175/70SR13; Manufacture: B. F. Goodrich

Number of Occupants: 2 Front; 2 Rear; -- 3rd Seat; 4 TOTAL

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

Type of Front Seat Back: -- Fixed; X Adj. With X Lever -- Rot. Knob

Vehicle Capacity Weight (VCW) = 725 lbs. (A)

No. of Occupants x 150 lbs. = 600 lbs. (B)

Rated Cargo and Luggage Weight (RCLW) A-B = 125 lbs.

GVWR 3080 lbs. GAWR: Front 1485 lbs. Rear 1620 lbs.

Table 1
GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS) = UDW

Right Front = 660 lbs. Right Rear = 540 lbs.

Left Front = 630 lbs. Left Rear = 540 lbs.

TOTAL FRONT WEIGHT = 1290 lbs. (54.4 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 1080 lbs. (45.6 % of Total Vehicle Weight)

TOTAL DELIVERY WEIGHT = 2370 lbs.

CALCULATION FOR TARGET TEST WEIGHT

UDW = Unloaded Delivered Weight (2370 lbs.)

VCW = Vehicle Capacity Weight (725 lbs.)

DSC = Designated Seating Capacity (4)

RCLW = VW - 150 (DSC) = 125 lbs.

Target Test Weight = UDW + RCLW + (2 dummies x 164 lbs./dummy)

Target Test Weight = 2823 lbs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 152 POUNDS CARGO

Right Front = 700 lbs. Right Rear = 710 lbs.

Left Front = 740 lbs. Left Rear = 700 lbs.

TOTAL FRONT WEIGHT = 1440 lbs. (50.5 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 1410 lbs. (49.5 % of Total Vehicle Weight)

TOTAL TEST WEIGHT = 2850 lbs.

Weight of ballast secured in vehicle trunk area = 0 lbs.

VEHICLE ATTITUDE (all dimensions in inches)

Delivered Attitude: RF 24.2 LF 24.2 RR 24 LR 24

Test Attitude: RF 23.6 LF 23.5 RR 22.3 LR 22.2

Wheel Base: 94.2 in.; C.G. = 46.6 in. rearward of front wheel C/L

Remarks: None

Table 1
GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

POST-IMPACT DATA

Type of Test Frontal Barrier Impact Angle 0 °

Date of Test 5/21/85 Time of Test 1200 hrs.

Ambient Temperature 64 °F. at impact area

Temperature in Occupant Compartment 71 °F.

Windshield Molding Temperature 67 °F.

Required Impact Velocity Range: 34.5 to 35.5 mph

Impact Velocity: primary = 34.8 mph, secondary 34.8 mph

Distance From Front Bumper to Barrier Face When Entering Speed Trap 52 inches; Exiting Speed Trap 12 inches

VEHICLE REBOUND AND CRUSH (inches)

Vehicle Length: Pre-test = R 168.8 ℄ 170.5 L 168.6

Post-test = R 146.8 ℄ 149.2 L 147.0

Crush = R 22.0 ℄ 21.3 L 21.6

Distance from front of test vehicle to point of impact:

R 11.4 C/L 11.7 L 13.5

VISIBLE DUMMY CONTACT POINTS

	Driver	Passenger
Head	Steering wheel hub	Right leg
Chest	None	None
Abdomen	None	None
Left Knee	Dash Panel	Glove Box Door
Right Knee	Dash Panel	Top of Head & Glove Box Door

Table 1
GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

	Front		Rear	
	Left	Right	Left	Right
Door Opening	Not Operable	Not Operable	Not Operable	Not Operable

Seat Movement	Front Left	Front Right
Seat Back Failure	None	None
Seat Shift (in.)	None	None

Glazing Damage

Backlight/Windshield	Windshield intact

SECTION 3

SUMMARY OF RESULTS OF FMVSS NOS. 212, 219 AND 301-75

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

Figure 1

FMVSS NO. 212, "WINDSHIELD MOUNTING", DATA SHEET

Details of windshield mounting such as retention method, trim type, etc.:

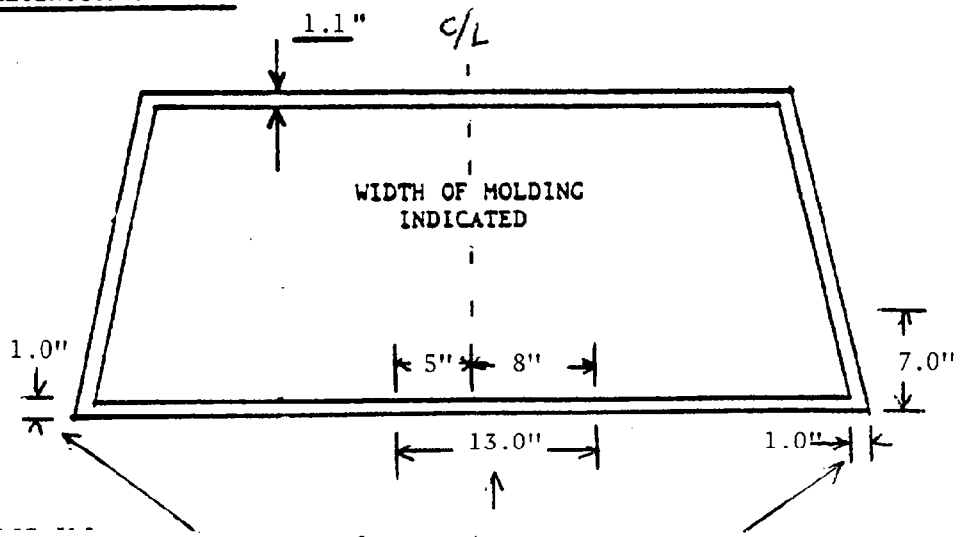
Windshield is held in place by a 1.1 inch rubber molding around the windshield perimeter.

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

FMVSS 212 TEST DATA:

	WINDSHIELD PERIPHERY		
	PRE-TEST (in.)	POST-TEST (in.)	PERCENT RETENTION
RIGHT SIDE	70.0	54	77.1
LEFT SIDE	70.0	64	91.4
TOTAL	140.0	118	84.3

AREA OF RETENTION FAILURE:



Area of Retention Loss
See Figure A

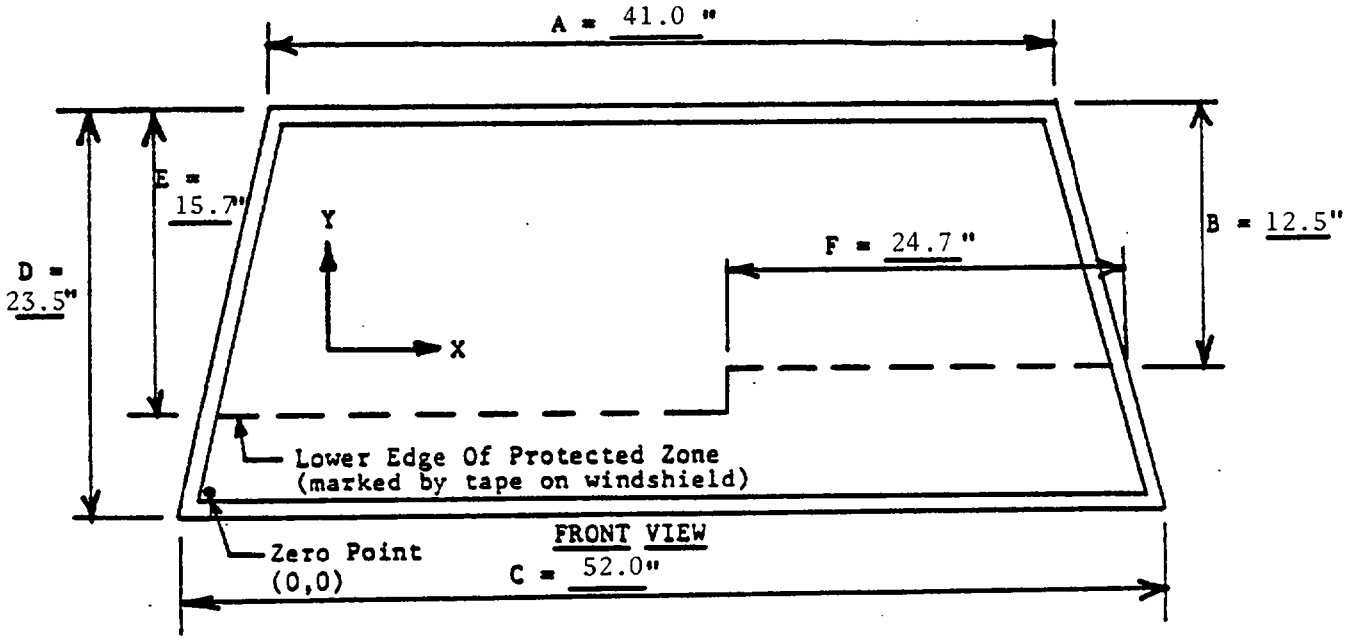
Figure 2

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

FMVSS 219 TEST DATA:



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

None

	COORDINATES	
	X	Y
1.		
2.		
3.		
4.		

Figure 3

FMVSS NO. 301-75, "FUEL SYSTEM INTEGRITY", DATA SHEETS

TEST VEHICLE NHTSA NO.: CF5701 ; TEST DATE: 5/21/85

VEHICLE MAKE/MODEL/BODY STYLE: 1985 Isuzu 4-door sedan

USABLE CAPACITY OF VEHICLE'S FUEL TANK: 13.7 Gallons (figure furnished by vehicle manufacturer)

TEST REQUIREMENTS:

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

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

12.7 Gallons Which is 93 % of the Stated USABLE CAPACITY.

SOLVENT SPILLAGE MEASUREMENT AFTER 35 MPH FRONTAL BARRIER IMPACT TEST:

	Actual	Maximum Allowable
From impact until vehicle motion ceases - - - -	0	1 oz.
For 5 min. period after vehicle motion ceases -	0	5 oz.
For next 25 minutes at barrier face - - - - - -	0	1 oz./1 minute

SOLVENT SPILLAGE DETAILS:

None

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

Time reqd. for machine to rotate 90° = 2 minutes, 57 seconds

FMVSS 301-75 Position Hold Time = 5 minutes, 0 seconds

TOTAL- - - - - - - - = 7 minutes, 57 seconds

Next Whole Minute Interval - - - - - = 8 minutes

Figure 3

FMVSS NO. 301-75 TEST DATA....Continued:

VEHICLE STATIC ROLLOVER DATA:

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

Solvent Spillage Location(s):

None

OMI FINAL DATA

SECTION 4

Occupant and Vehicle Information

I. OMI DATA

1. Dummy Injury Criteria Data Summary
2. Dummy Positioning Data
3. Seat Belt Positioning Data
4. Seat Belt Performance Assessment Data
5. Driver Dummy to Steering Column Dimensions
6. Camera Locations
7. Vehicle Target Locations

II. OVR DATA

1. Load Cell Barrier Data
2. Vehicle Accelerometer Data

III. AID DATA

1. Test Vehicle Measurements
2. Accident Investigation Damage Data Summary

Table 2

DUMMY INJURY CRITERIA VALUES

	MAXIMUM ACCELERATION ("G")							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R *
DUMMY (1)	-141	-21	-90	146	-35	-24	23	38
DUMMY (2)	-109	54	147	183	-15	25	-49	47
DUMMY (3)								
DUMMY (4)								

	MAXIMUM FORCE-FEMUR LOAD (LBS)	
	RIGHT FEMUR	LEFT FEMUR
DUMMY (1)	365	535
DUMMY (2)	385	398
DUMMY (3)		
DUMMY (4)		

	MAXIMUM FORCE-SEAT BELTS LOADS (LBS)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
DUMMY (1)	1715	--	3170
DUMMY (2)	1845	1980	--
DUMMY (3)			
DUMMY (4)			

	HEAD INJURY CRITERIA**			
	HIC	t_1 (SEC)	t_2 (SEC)	AVE. ACC. (g) t_1 TO t_2
DUMMY (1)	1514	.07492	.09765	85
DUMMY (2)	1543	.05947	.12772	55
DUMMY (3)				
DUMMY (4)				

*DEFINED AS EXCEEDING 0.003 SEC. DURATION

**AS DEFINED IN FMVSS NO. 208

Figure 4

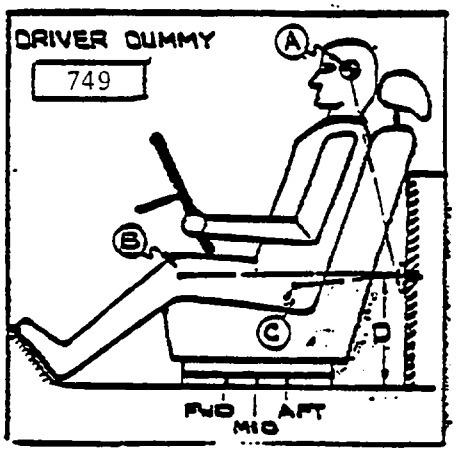
PART 572 DUMMY IN-VEHICLE POSITION

Test No. CF5701 Vehicle 1985 Isuzu 4-door sedan

SEAT TYPE:
____ Bench
_X_ Bucket
____ Split Bench

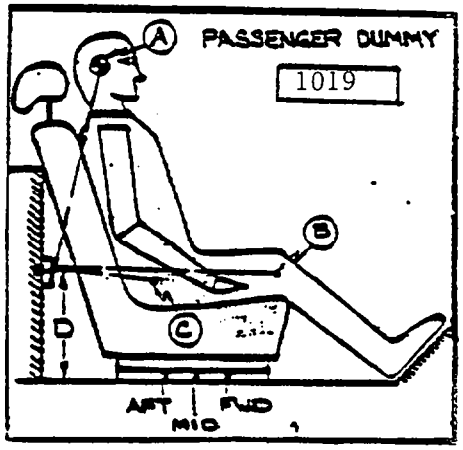
ADJUSTER TYPE:
_X_ Manual
____ Power

BUCKET SEAT BACK TYPE:
____ Fixed
_X_ Adjustable Reclining



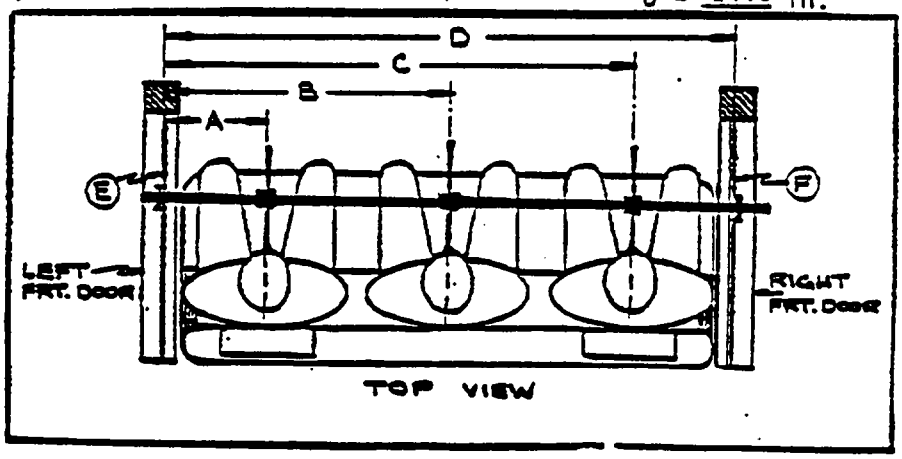
MEASUREMENT LOCATION

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



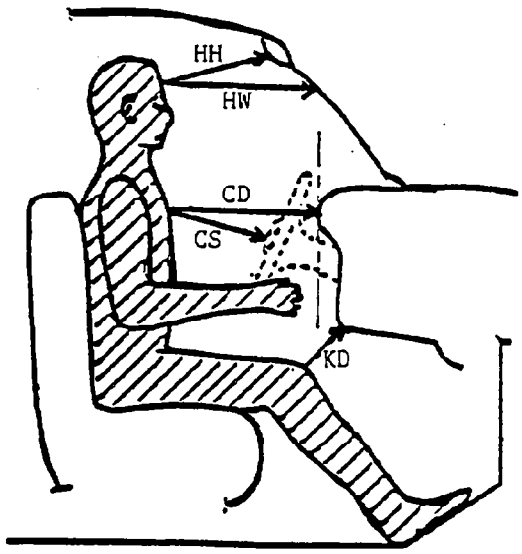
A = 19.7 in. -1 Degrees
B = 21.7 in. 97 Degrees
C = 9.0 in. 137 Degrees
D = 14.5 in.

A = 19.7 in. -1 Degrees
B = 22.6 in. 100 Degrees
C = 9.2 in. 137 Degrees
D = 14.5 in.



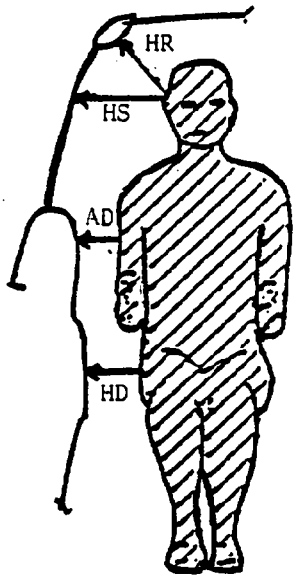
	DUMMY ID 749	DUMMY ID 1019
A = Left Door to Driver Centerline	11.6 in.	
B = Left Door to Center Passenger Centerline	-- in.	
C = Left Door to Right Passenger Centerline	37.1 in.	
D = Left Door to Right Door	48.7 in.	
E, F = Window Glass Height (Right and Left Must be Equal)	10.2 in.	

	DRIVER	PASSENGER
HH	15.0"	15.5"
HW	20.5"	20.7"
CD	22.8"	25.5"
CS	16.0"	--
KDL	7.0"	7.5"
KDR	7.2"	7.5"
SA	23°	23°
TA	25°	25°



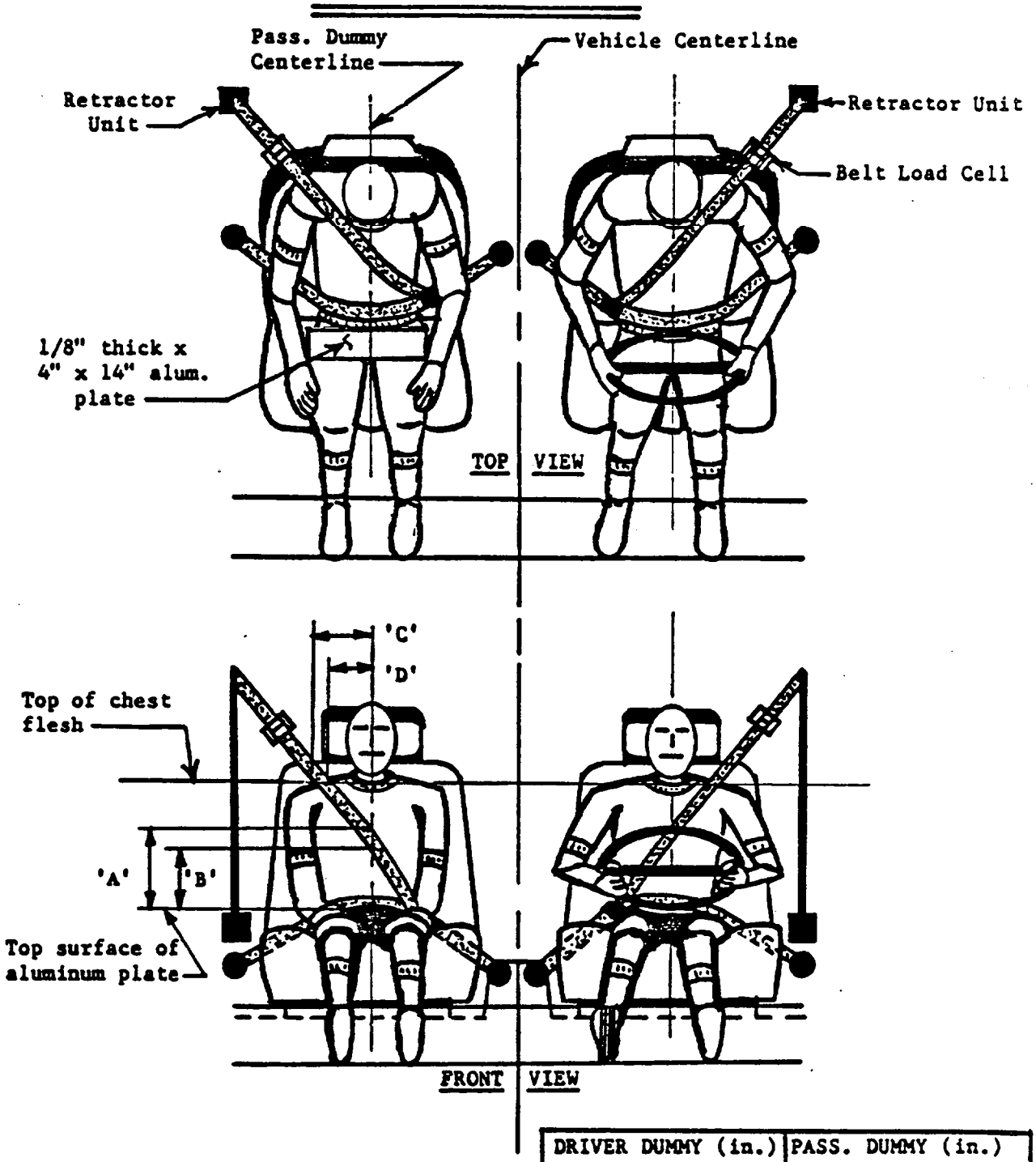
HH = Head to Windshield Header
HW = Head to Windshield
CD = Chest to Dash
CS = Chest to Steering Wheel
KD = Knee to Dash
SA = Seat Back Angle
TA = Torso Angle

HR = Head to Side Roof
HS = Head to Side Window
AD = Arm to Door
HD = Hip to Door



	DRIVER	PASSENGER
HR	6.0"	6.1"
HS	8.0"	8.0"
AD	3.2"	2.7"
HD	4.6"	4.7"

Figure 5 OCCUPANT CLEARANCE DIMENSIONS



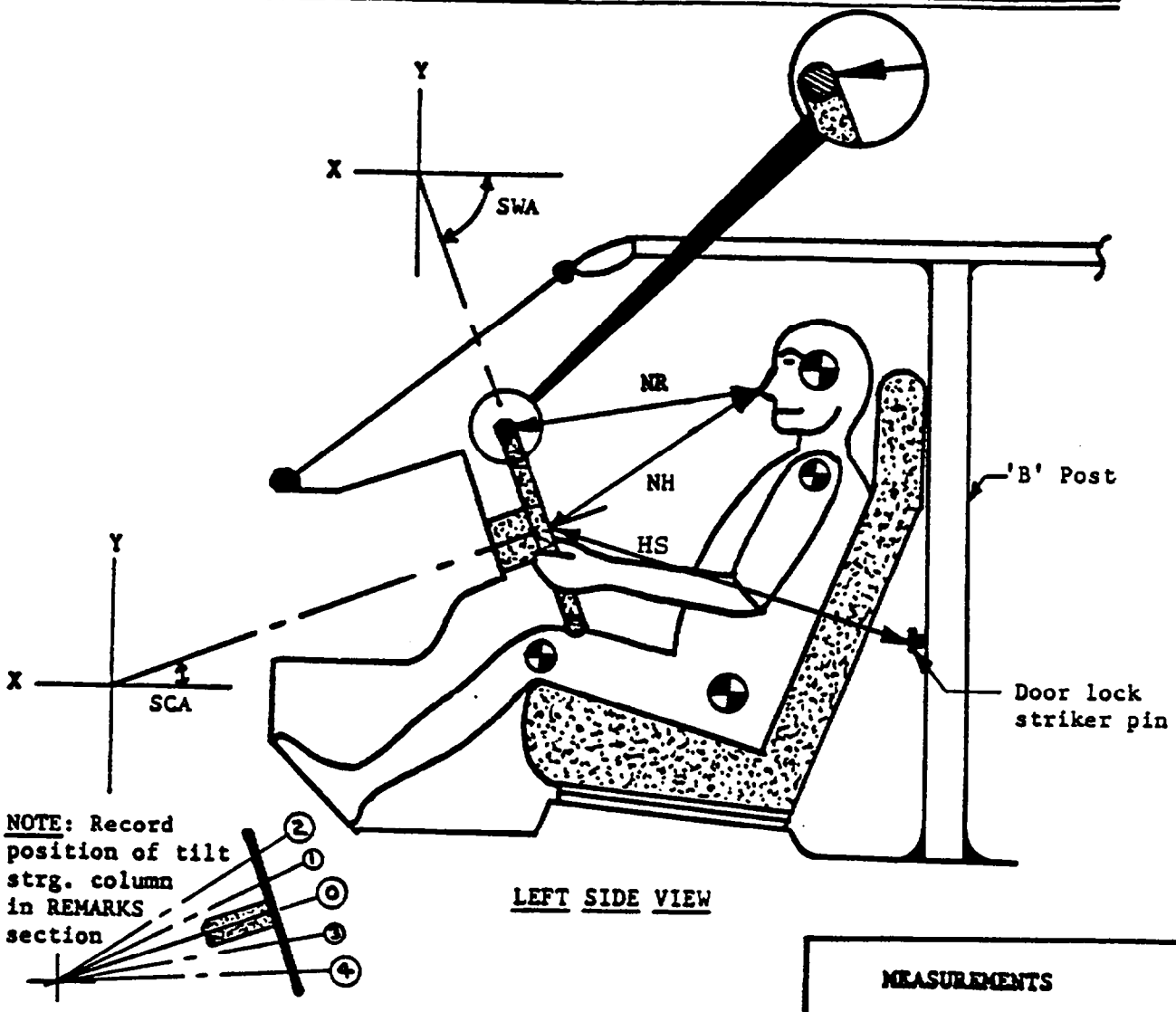
	DRIVER DUMMY (in.)	PASS. DUMMY (in.)
1. Dimension 'A'--alum. plate to belt upper edge on dummy centerline	13.1	13.2
2. Dimension 'B'--alum. plate to belt lower edge on dummy centerline	10.0	10.0
3. Dimension 'C'--dummy centerline to outer edge at chest flesh top	6.7	6.5
4. Dimension 'D'--dummy centerline to inner edge at chest flesh top	4.5	4.2
5. Lap belt tension (lbs.)	--	--
6. Shoulder belt tension (lbs.)	1.5 lbs.	1.5 lbs.

Table 3

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

Belt Length Data:	Driver	Passenger
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	72.5"	71.9"
Shoulder belt length as measured on Part 572 Dummy.	29.5"	28.7"
Lap belt length as measured on Part 572 Dummy.	26.0"	26.0"
Belt Spool-Off Data:		
As determined by film analysis.	3.5"	3.7"
As determined mechanically.	3.5"	3.5"
As determined electronically.	4.4"	4.2"
Belt Stretch Data:		
Measured electronically between retractor and the "D" ring.	.57"/ft.	.8"/ft.
Measured mechanically.	.5"/ft.	.45"/ft.

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	19.7	Inches
NH--Distance from tip of dummy's nose to center of steering column hub	20.1	Inches
HS--Distance from center of steering column hub to the forward surface of the door lock striker pin.	Y = 12.0 X = 27.7	Inches
SCA--Angle of steering column relative to the horizontal X axis	30	Degrees
SWA--Angle of steering wheel relative to the horizontal X axis.	60	Degrees

● REMARKS CONCERNING ADJUSTABLE OR TILT STEERING COLUMN IF VEHICLE IS SO EQUIPPED:

Steering column set to mid-position.

NOTE: Camera Information Shown on Table 4

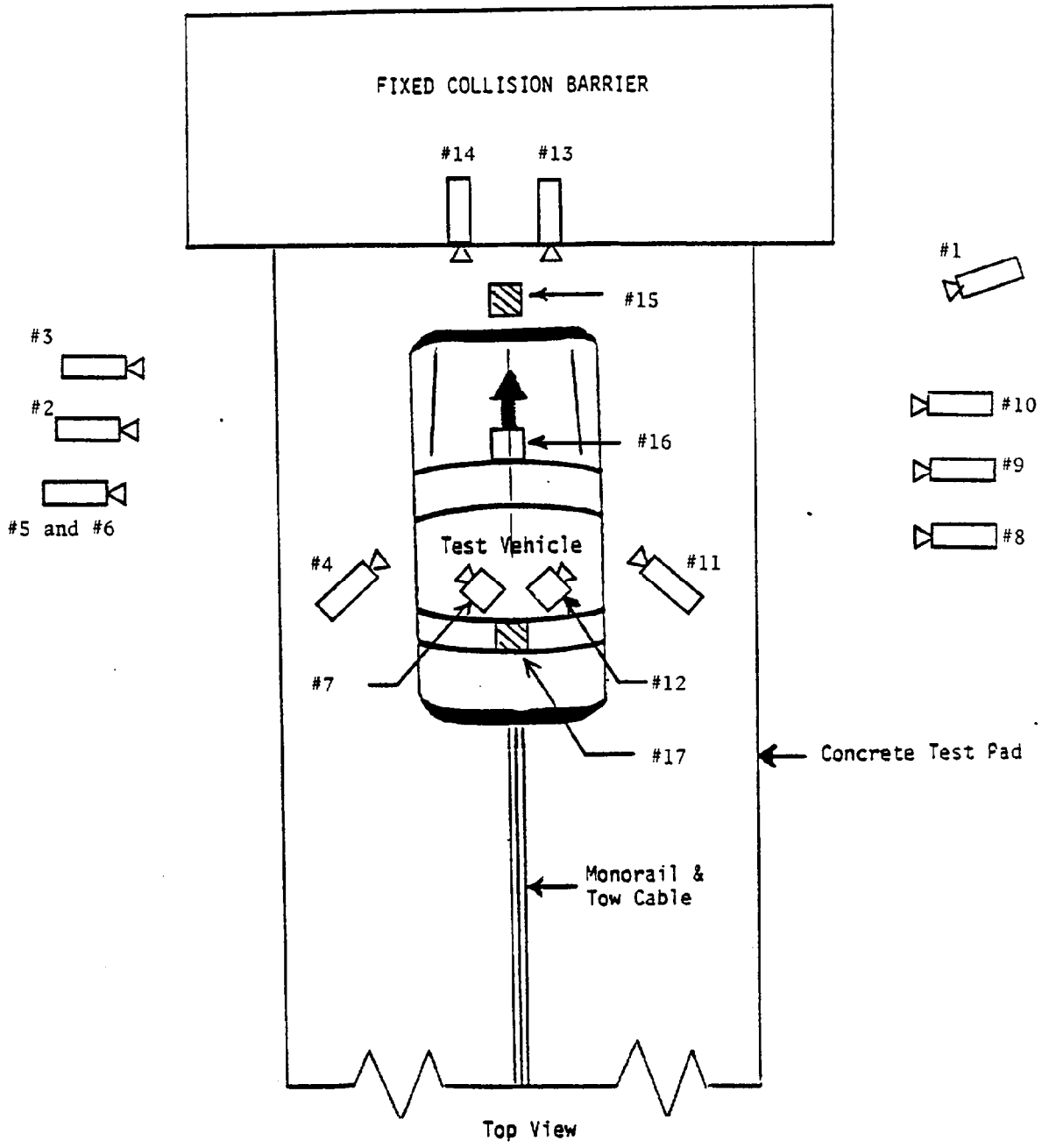


Figure 9 CAMERA POSITION FOR FRONTAL IMPACTS

Table 4
HIGH-SPEED CAMERA LOCATIONS

Test No. CF5701 Vehicle 1985 Isuzu I Mark - 4-door sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (in)* X	Y	Z	ANGLE ** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real Time Camera	--	--	--	--	--	--	24
2	Overall Left Side	260	57	41	-5	--	13	540
3	Left Side View	242	48	48	-4	--	25	530
4	Driver and Interior View	101	124	72	-15	--	25	540
5	Steering Column (Bottom)	284	75	46	-5	268	25	540
6	Steering Column (Top)	284	75	70	-10	268	25	580
7	Left Belt	--	--	--	--	--	8	NO TIMING
8	Overall Right Side	289	91	58	-6	--	13	800
9	Right Side View	265	79	47	-5	--	25	800
10	Right Passenger View	289	67	51	-4	273	35	740
11	Passenger and Interior View	101	124	72	-15	--	25	600
12	Right Belt	--	--	--	--	--	8	NO TIMING
13	Passenger Front View	21	0	72	-33	97	13	540
14	Driver Front View	21	0	72	-33	97	13	620
15	Windshield View	0	0	126	-53	--	13	540
16	Pit View of Engine	0	36	-120	90	--	13	750
17	Pit View of Vehicle Rear	0	85	-120	90	--	13	730

* X = film plane to monorail centerline
Y = film plane to impact location
Z = film plane to ground
** = referenced to horizontal plane

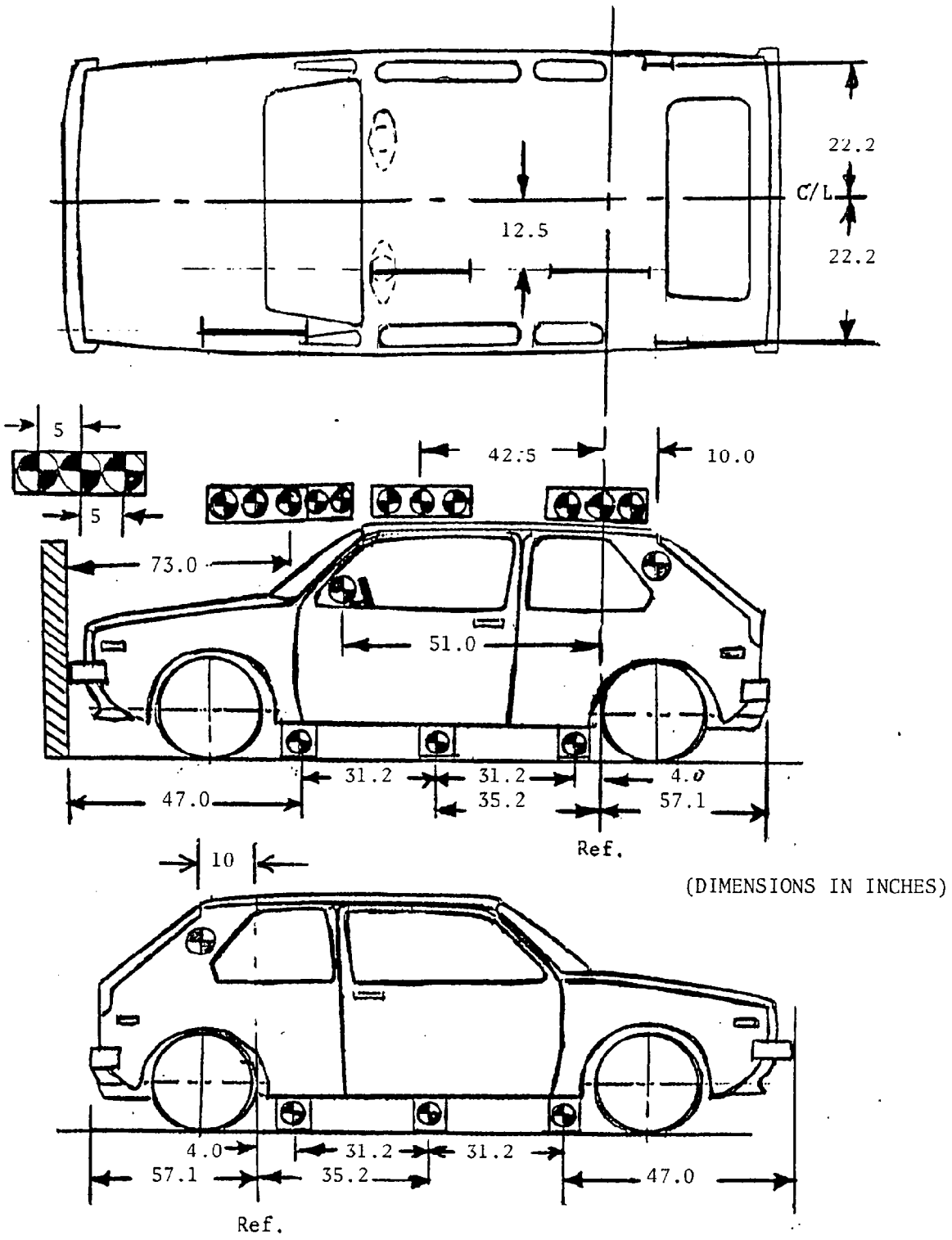
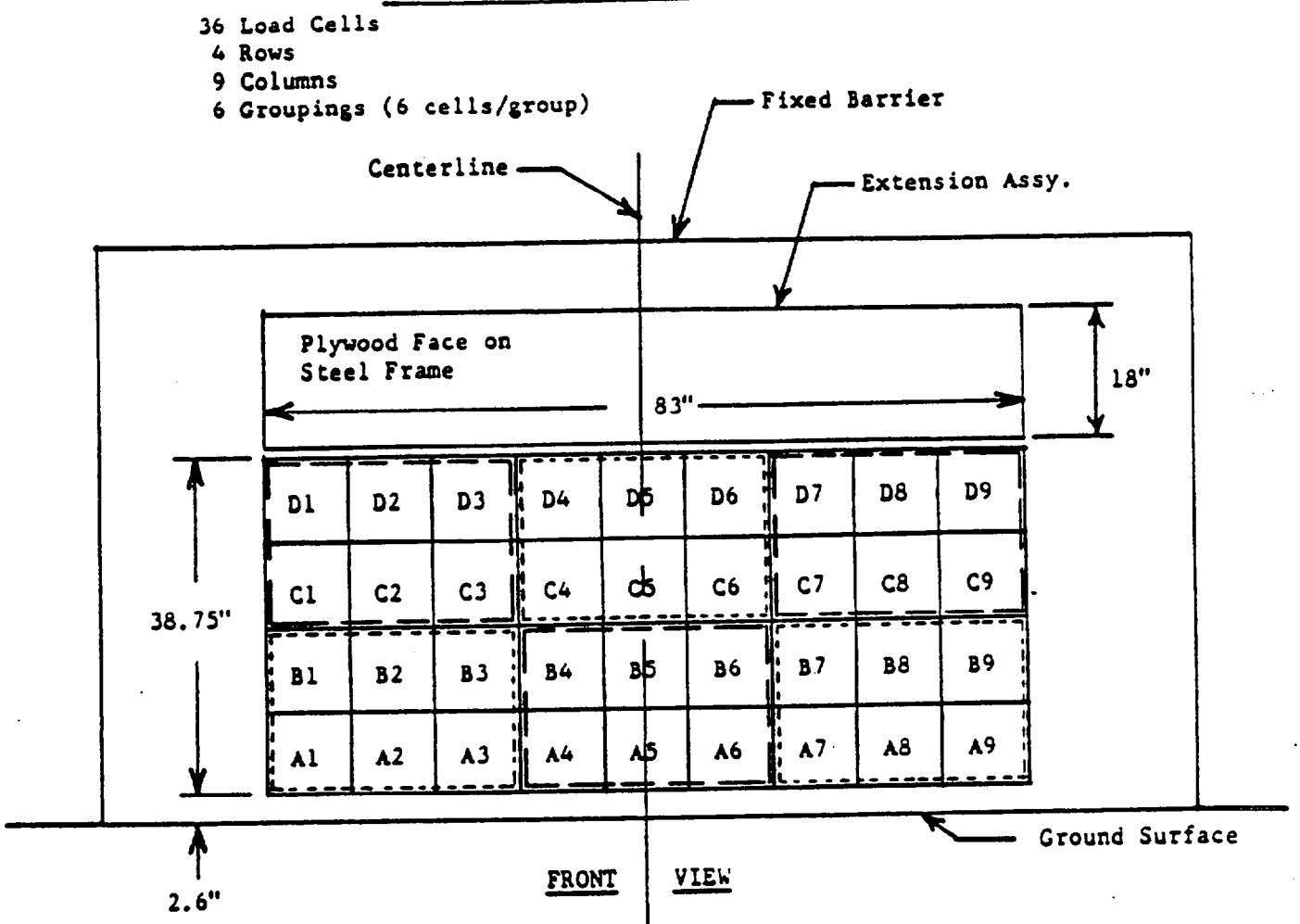


Figure 9 VEHICLE TARGET LOCATIONS

Figure 10

LOAD CELL LOCATIONS ON FIXED BARRIER



6 GROUPINGS OF 6 LOAD CELLS EACH

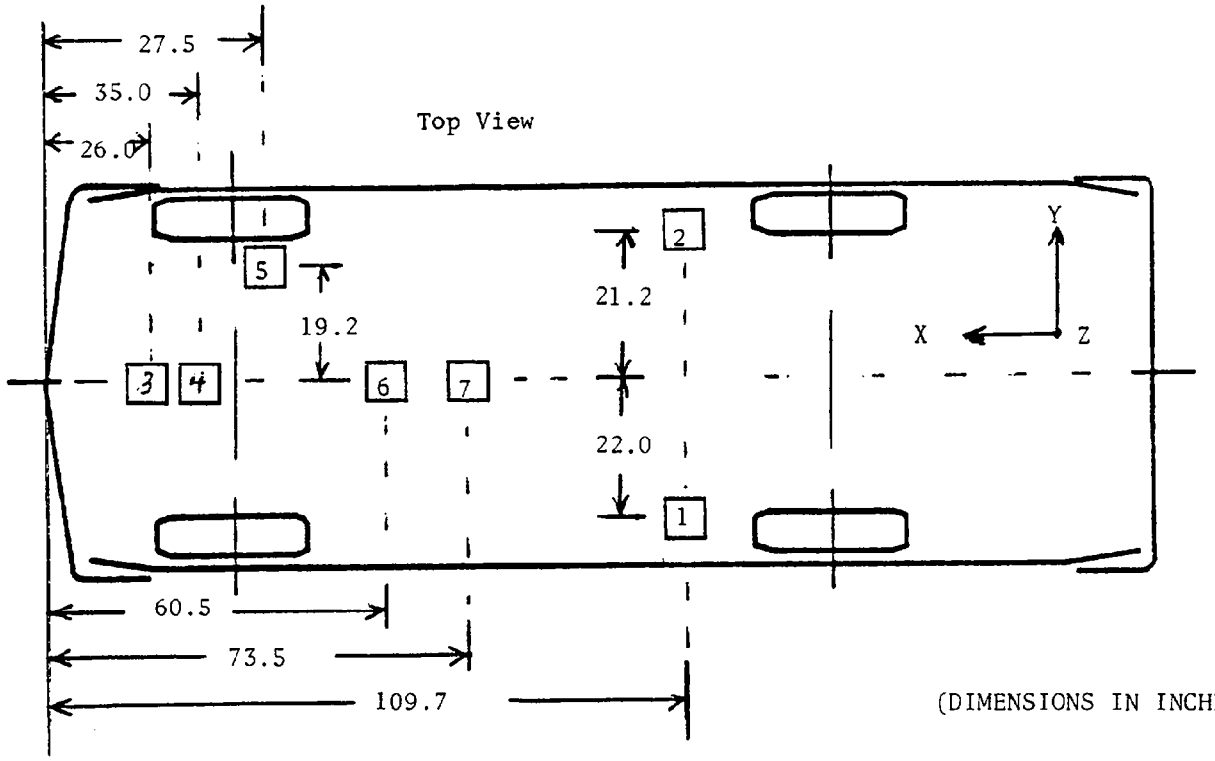
Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

The following data is presented in Appendix B:

(1) Data from 36 individual load cells

(2) Total or Sum of 36 individual load cells

(3) Data from 6 Groupings shown above (6 cells/group)



(DIMENSIONS IN INCHES)

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	Instrument Panel	X		
7	Center of Gravity (C/G)	X		

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

FIGURE 11 VEHICLE ACCELEROMETER LOCATIONS

Figure 12

TEST VEHICLE MEASUREMENTS

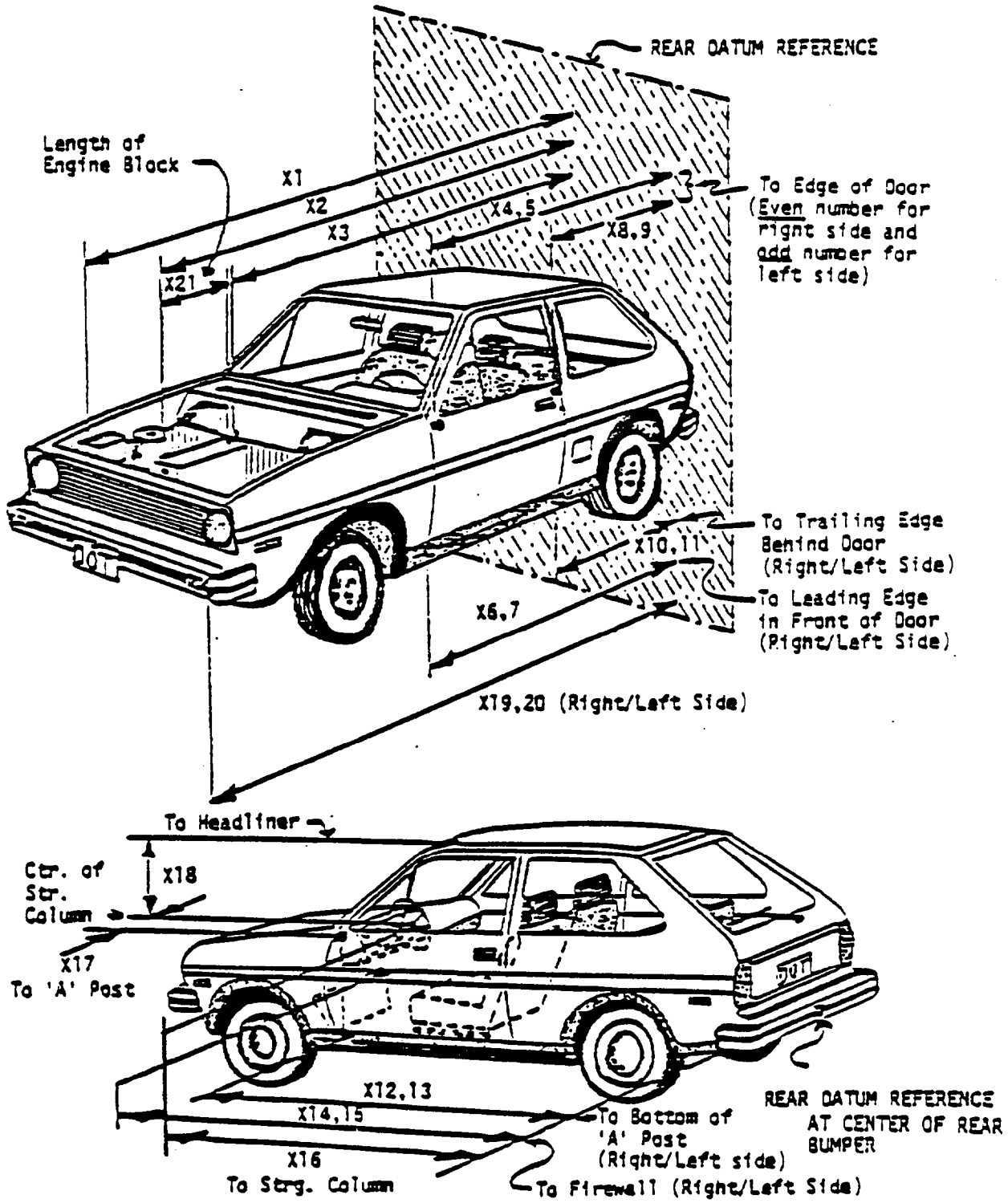


Table 5

VEHICLE MEASUREMENTS

All Dimensions in Inches

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	170.5	149.2	21.3
X2	Rear Surface of Vehicle to Front of Engine	150.1	138.9	11.2
X3	Rear Surface of Vehicle to Firewall	125.0	119.2	5.8
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	115.7	114.8	.9
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	115.7	114.5	1.2
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	117.0	115.3	1.7
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	117.0	115.2	1.8
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	80.1	79.1	1.0
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	80.1	78.9	1.2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	80.7	79.3	1.4
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	80.8	79.0	1.8
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	106.1	104.5	1.6
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	106.1	104.7	1.4
X14	Rear Surface of Vehicle to Firewall, Right Side	129.2	122.5	6.7
X15	Rear Surface of Vehicle to Firewall, Left Side	128.6	122.7	5.9
X16	Rear Surface of Vehicle to Steering Column	102.0	99.3	2.7
X17	Center of Steering Column to "A" Post	4.1	5.4	-1.3
X18	Center of Steering Column to Headliner	18.5	21.4	-2.9
X19	Rear Surface of Vehicle to Right Side of Front Bumper	168.8	146.8	22.0
X20	Rear Surface of Vehicle to Left Side of Front Bumper	168.6	147.0	21.6
X21	Length of Engine Block	19.5	19.5	0

Table 6

ACCIDENT INVESTIGATION DIVISION DATA FOR 35 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: 1985 Isuzu I - Mark 4-door sedan

VEH. NHTSA NO.: CF5701 ; VIN: JABAT69B4F0801237

MODEL YEAR: 1985 ; BUILD DATE: 1-85 ; TEST DATE: 5/21/85

VEH. SIZE CATEGORY: Compact ; TEST WEIGHT: 2850

VEH. WHEELBASE: 94.2 ; FRONT OVERHANG: 31.3 ; OVERALL WIDTH: 61.8

ACCELEROMETER DATA:

LOCATION: 46.6 inches rearward of front wheel C/L

CALIBRATION PROCEDURE: shaker table/least squares

LINEARITY: ± 0.75% ; INTEGRATION ALGORITHM: Hybrid Simpson-Newton 3/8

VEH. IMPACT SPEED: 34.8 mph ; TIME OF SEPARATION: 108.6 milliseconds

VELOCITY CHANGE: 41.3 mph

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE:
F (Frontal) 12FDEW3

CRUSH DEPTH DIMENSIONS:

C1= 23.1 inches

C2= 22.1 inches

C3= 23.6 inches

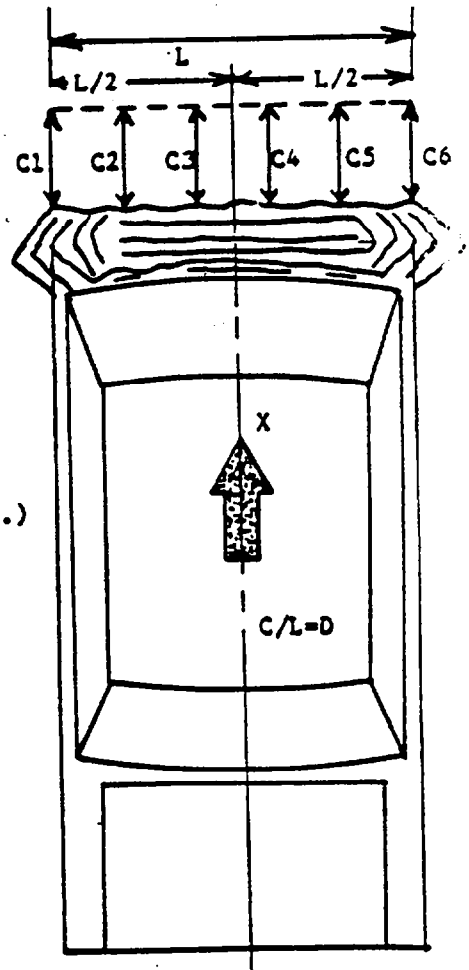
C4= 23.6 inches

C5= 22.7 inches

C6= 23.7 inches

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

LENGTH OF DAMAGED REGION: L = 55.6 inches



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National Accident Sampling System — Continuous Sampling Subsystem: Vehicle Data

FIELD MEASUREMENTS

1985 ISUZU MARK I

NCI

Complete When Applicable	
End Damage	**Side Damage**
Undeformed end width 55.6	Bowing: B1 _____ X1 _____
Corner shift: A1 _____	B2 _____ X2 _____
A2 _____	Bowing constant
End shift at frame (CDC) (check one)	$\frac{X1 + X2}{2}$ = _____
<4 inches _____	
≥4 inches _____	

Note: Measure C1 to C6 from Driver to Passenger side in Front or Rear impacts–
Rear to Front in Side impacts.

12FDEW3

Specific Impact Number	Plane* of C-Measurements	Direct Damage Width** (CDC)	Direct Damage Max*** Crush	Field L**	C_1	C_2	C_3	C_4	C_5	C_6	±D
1	BUMPER	55.6	C6 25.0	55.6	24.4	22.7	24.0	24.0	23.3	25.0	Ø
	FREE/SPACE		-1.3		1.3	.6	.4	.4	.6	1.3	
1	ACTUAL CRUSH	55.6	23.7	55.6	23.1	22.1	23.6	23.6	22.7	23.7	Ø

*Identify the plane at which the C-measurements are taken (e.g., at bumper, above bumper, at sill, above sill, at beltline, etc.) or label adjustments (e.g., free space).

Free space value is defined as the distance between the baseline and the original body contour taken at the individual C locations. This may include the following: bumper lead, bumper taper, side protrusion, side taper, etc. Record the value for each C-measurement and maximum crush.

**Measure and document on the vehicle diagram the beginning or end of the direct damage width and field L (e.g., side damage with respect to undamaged axle.)

***Measure and document on the vehicle diagram the location of the maximum crush.

Note: Use as many lines/columns as necessary to describe each damage profile.

DAMAGE DESCRIPTION

Tire—Wheel Damage

a. Rotation physically restricted		b. Tire deflated	
RF	1	RF	2
LF	1	LF	2
RR	2	RR	2
LR	2	LR	2

(1) Yes, (2) No, (8) NA, (9) Unk.

TYPE OF TRANSMISSION

___Manual ___Automatic

Average Track: 51.4
Maximum Width: 61.8
~~Curb~~ Test Weight:
Overall Length: 170.5
Wheel Base: 94.3
Engine Size: cyl. 4
displ. 1.8L

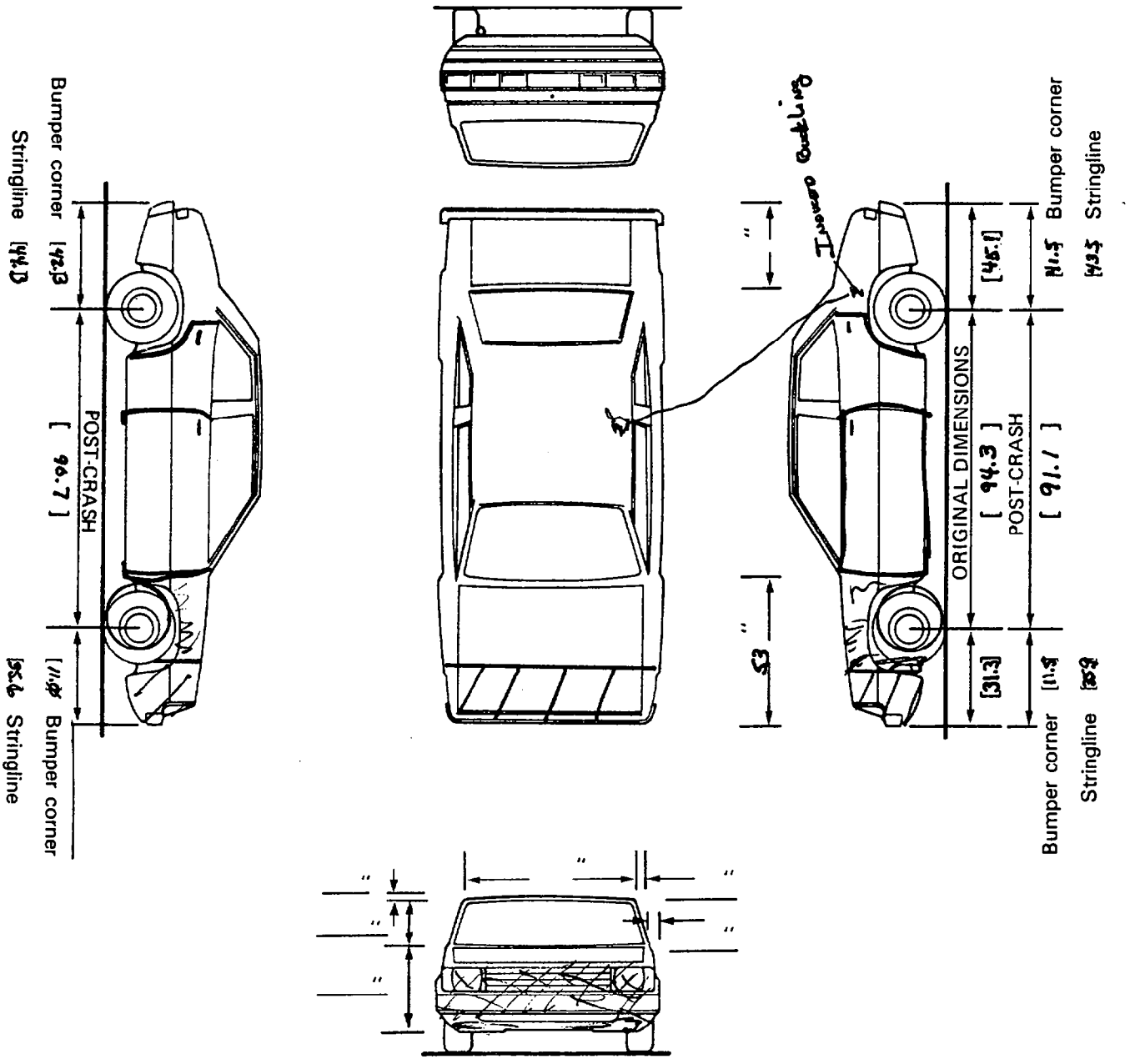
WHEEL STEER ANGLES

(For locked front wheels or displaced rear axles only)

RF +004 °
LF +003 °
RR ± N/A °
LR ± N/A °

Within ± 5 degrees

1985 ISUZU Mark I



Note: Sketch new perimeter and cross hatch direct damage and single hatch induced damage on all views. Annotate observations which might be useful in reconstructing the accident (e.g., grass in tire bead, direction of striations, scuff on sidewall, etc.)
If pulling trailer sketch type of trailer and damage received on the back of this page.
Annotate any damage caused by extrication such as component removal by torching, prying or hydraulic shears.
If the vehicle contacted a pedestrian, complete page 6R.

Figure 13 TEST VEHICLE DAMAGE DETAILS

APPENDIX A

PHOTOGRAPHS

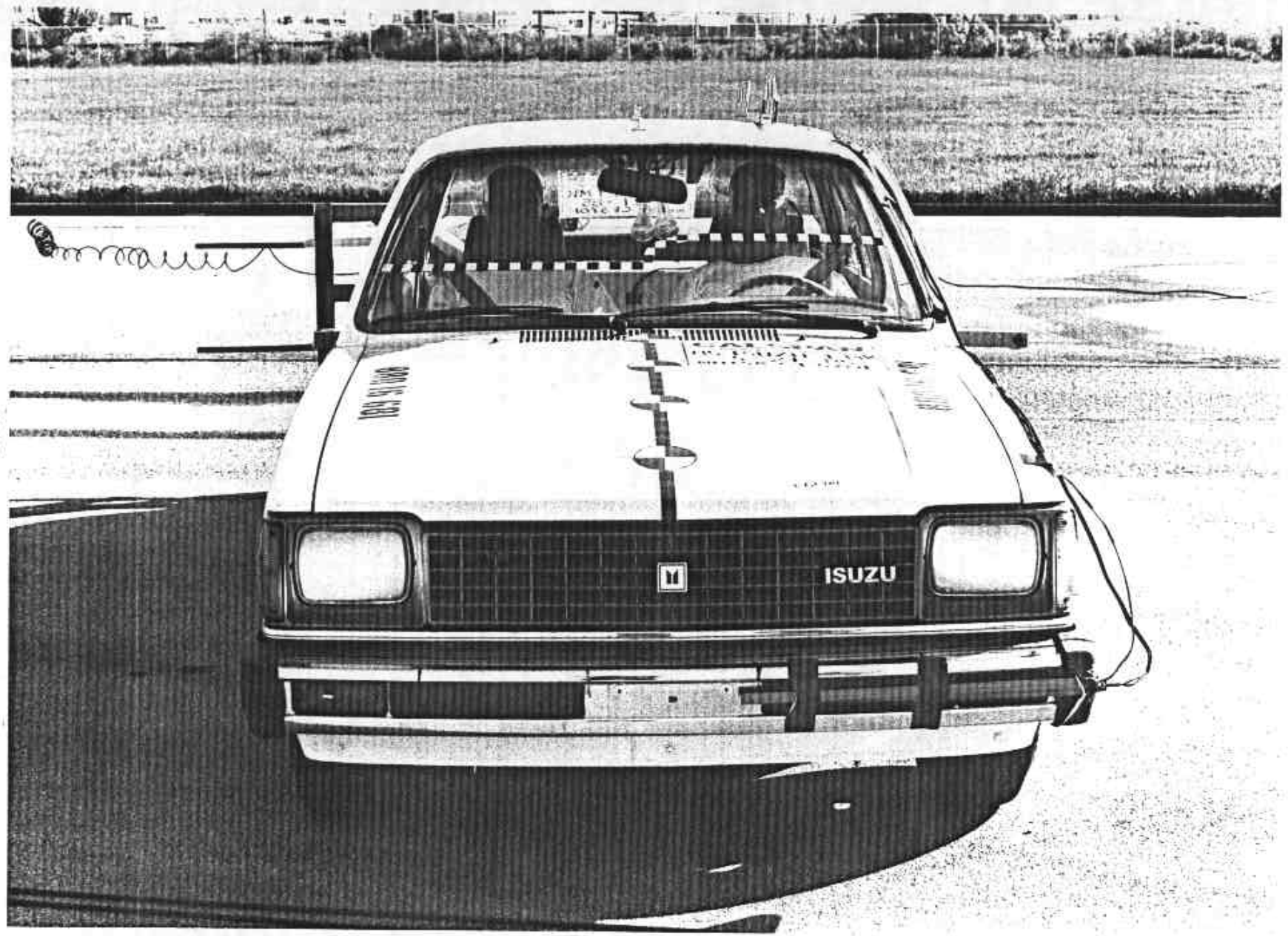


Figure A-1 PRE-TEST FRONT VIEW

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Figure A-2 POST-TEST FRONT VIEW

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Figure A-3 PRE-TEST LEFT SIDE VIEW

Figure A-4 POST-TEST LEFT SIDE VIEW

7333-17

Figure A-5 PRE-TEST RIGHT SIDE VIEW

7333-17

Figure A-6 POST-TEST RIGHT SIDE VIEW

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

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

7333-17

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

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

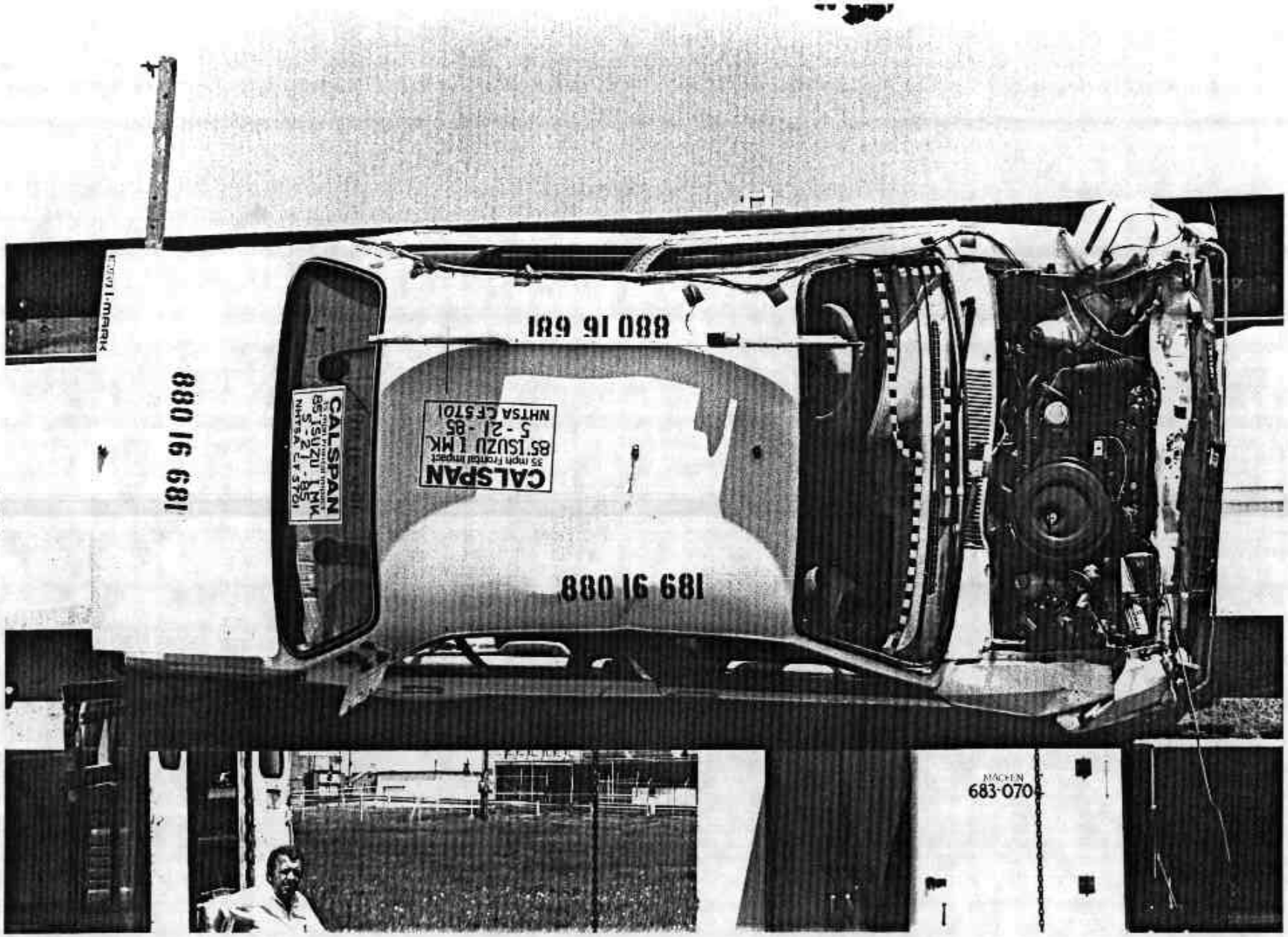


Figure A-11 POST-TEST TOP VIEW

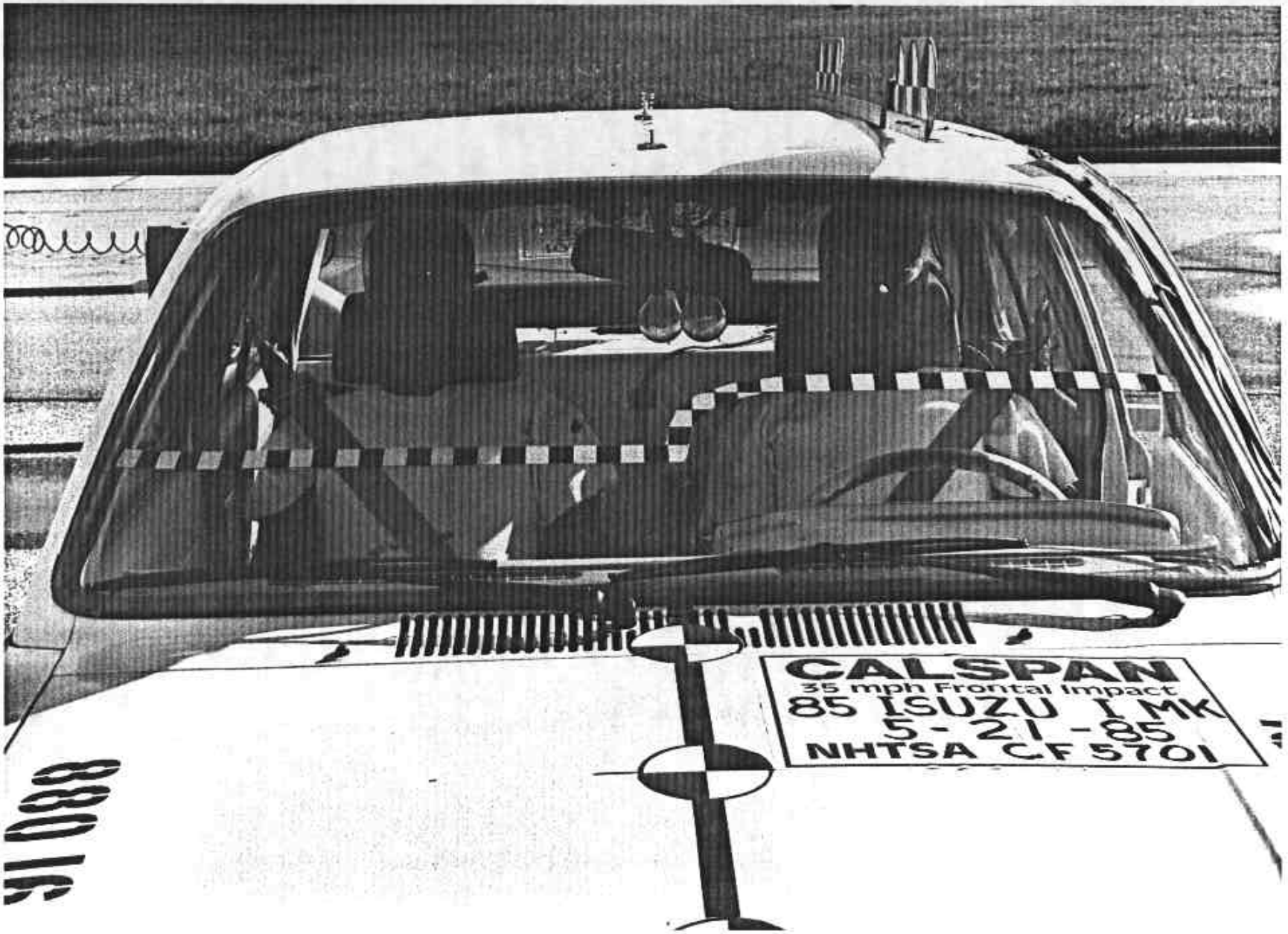


Figure A-12 PRE-TEST WINDSHIELD VIEW

7335-17

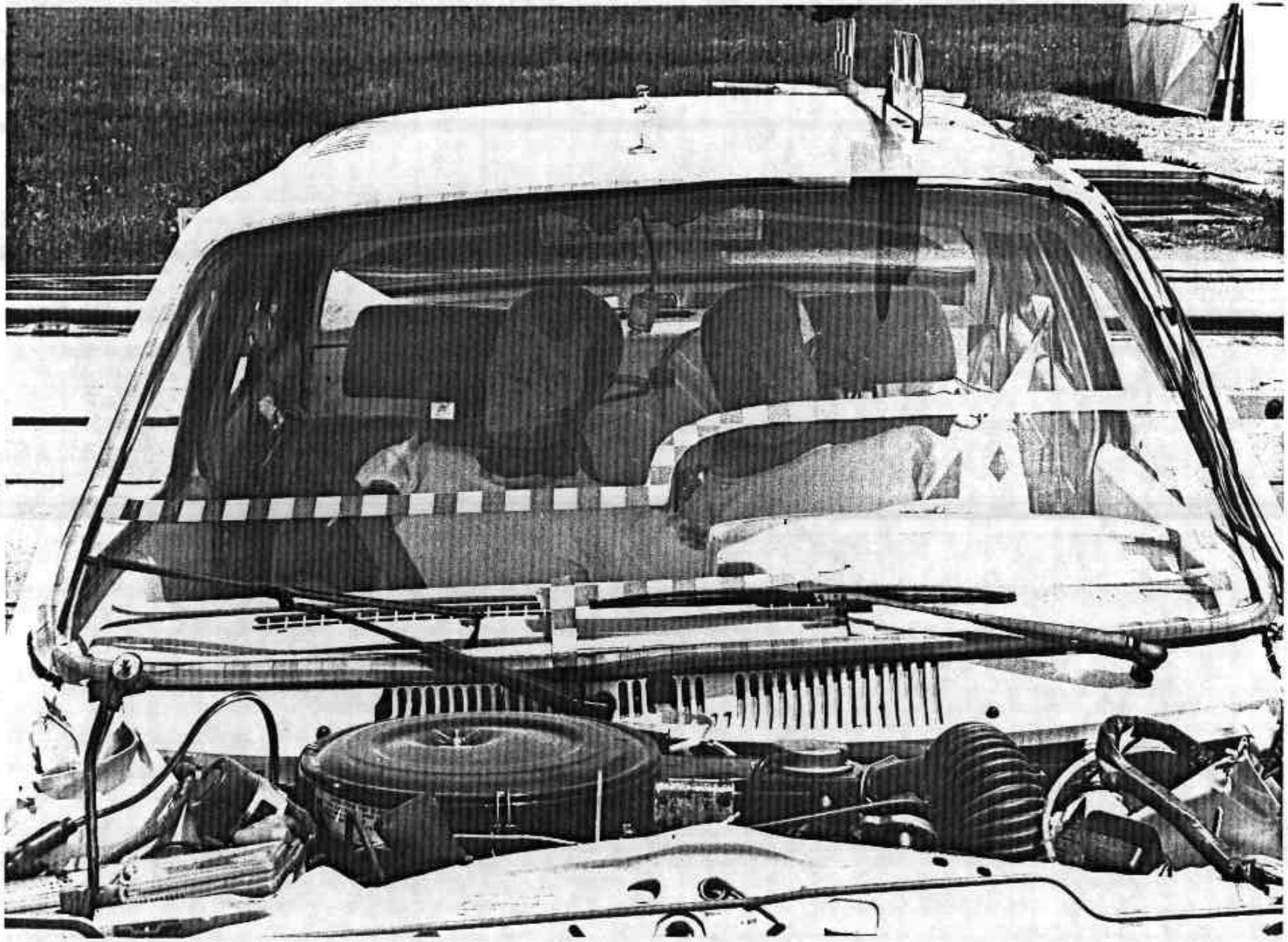
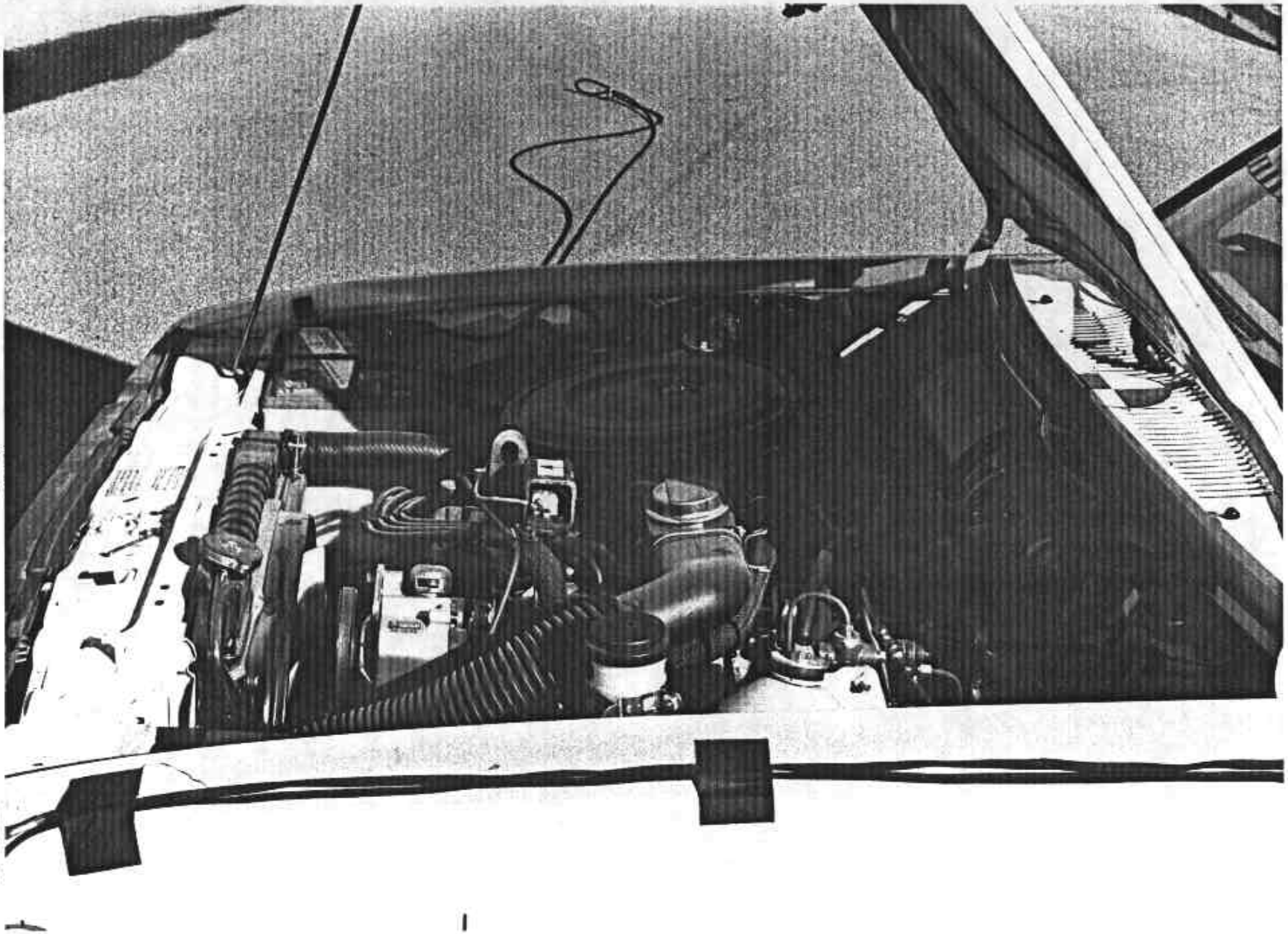


Figure A-13 POST-TEST WINDSHIELD VIEW

7333-17



A-15

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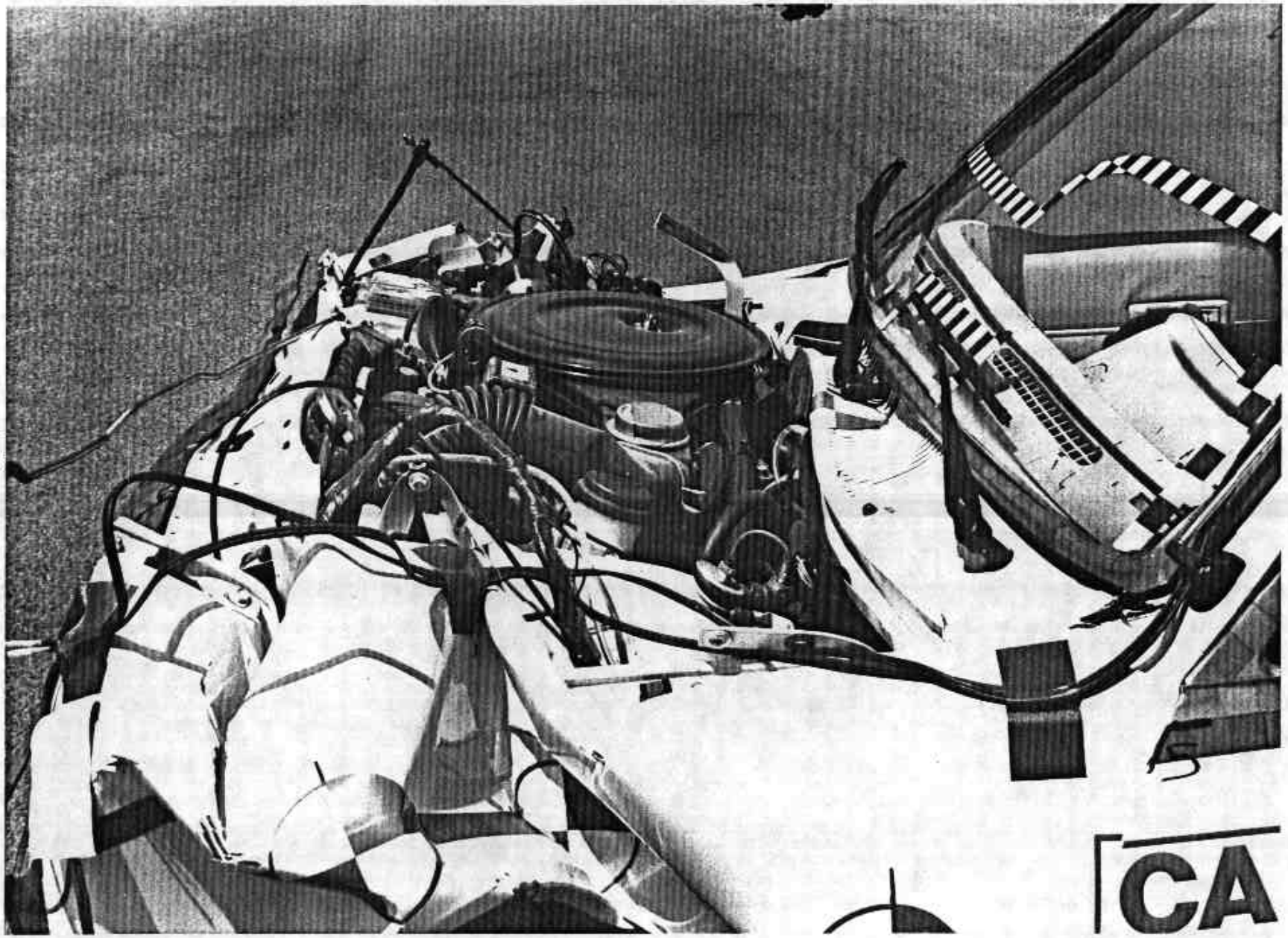
Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW



A-16

7333-17

Figure A-15 POST-TEST ENGINE COMPARTMENT VIEW

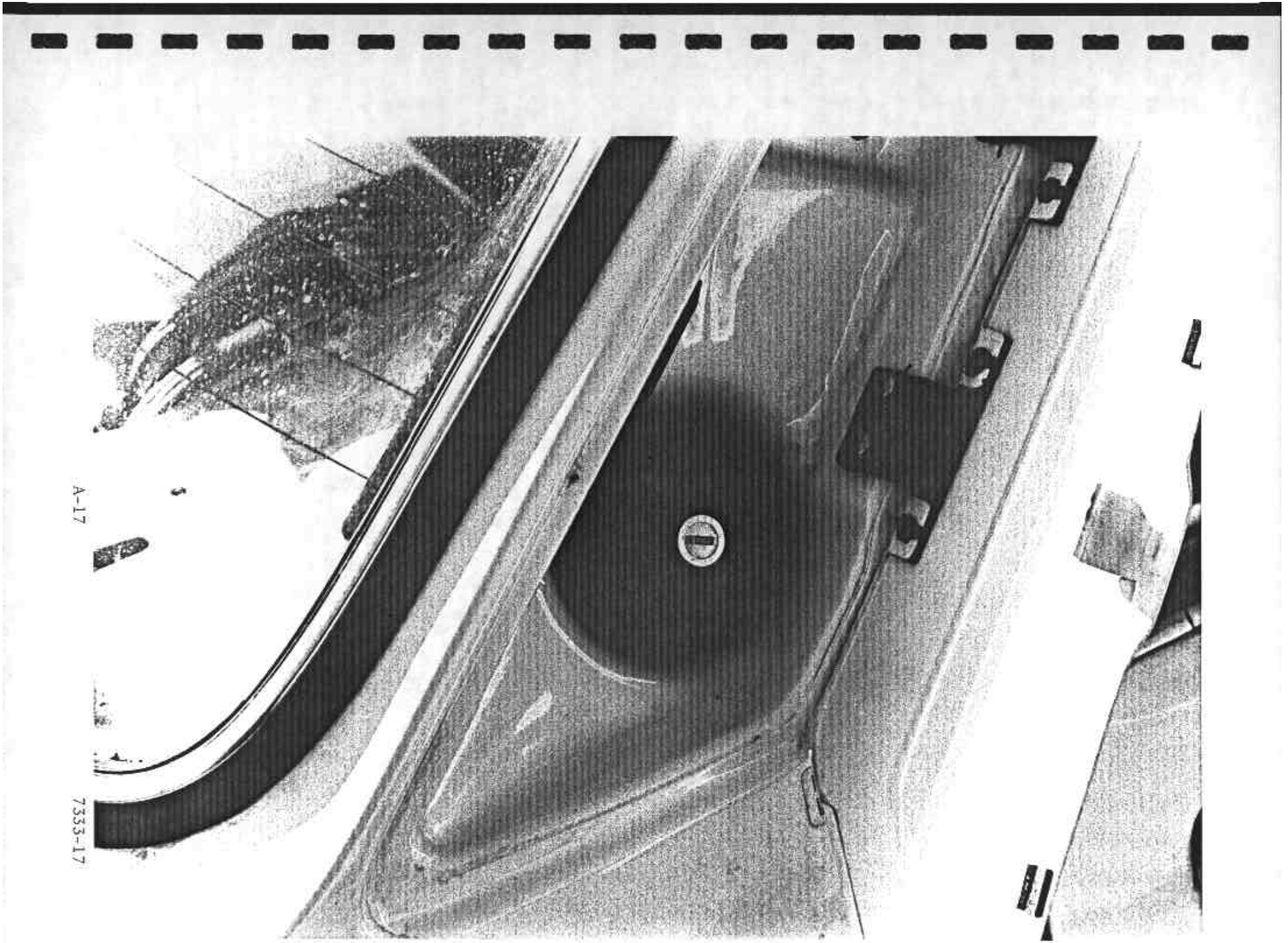


Figure A-16 PRE-TEST FUEL FILLER CAP VIEW

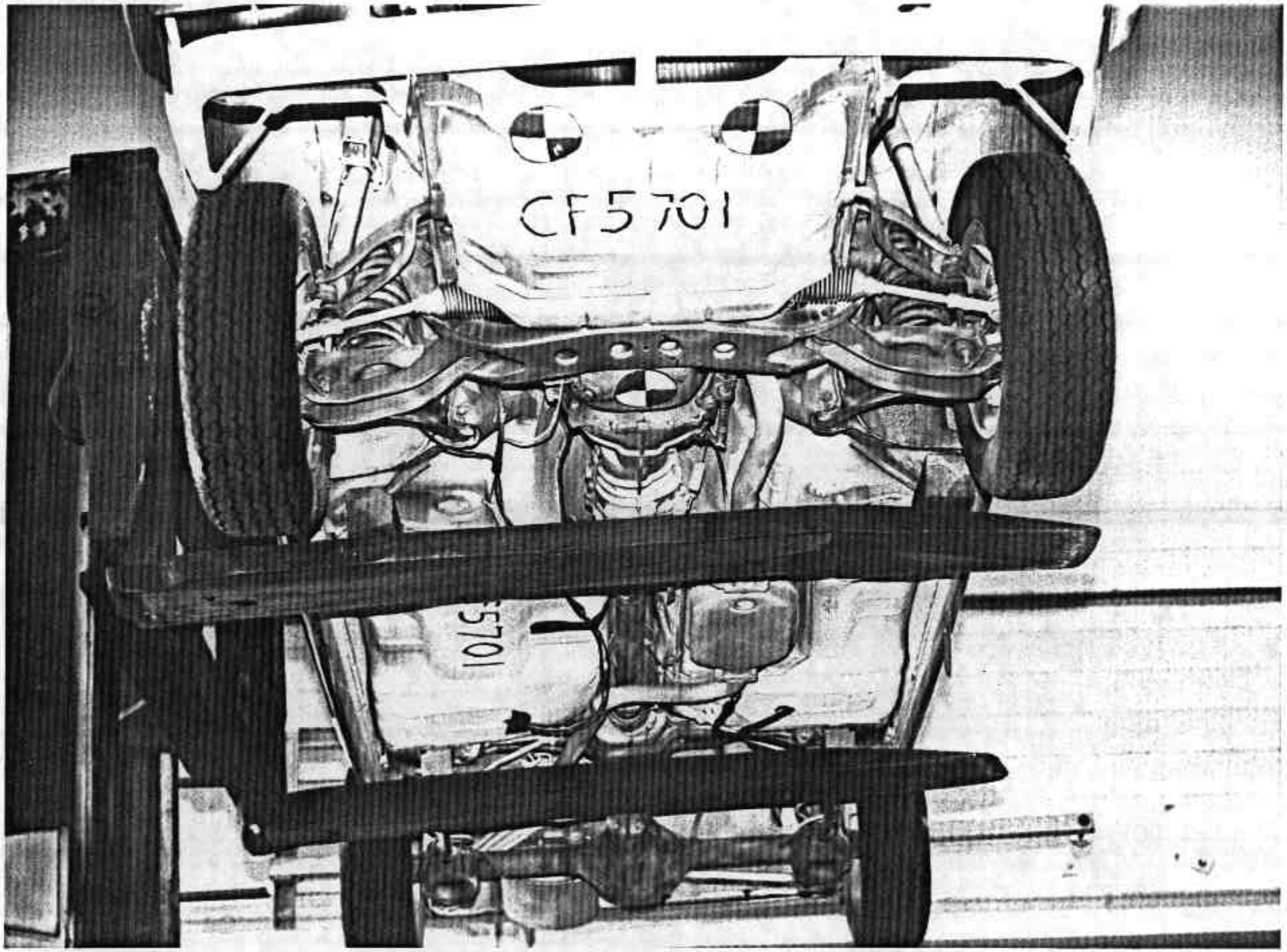
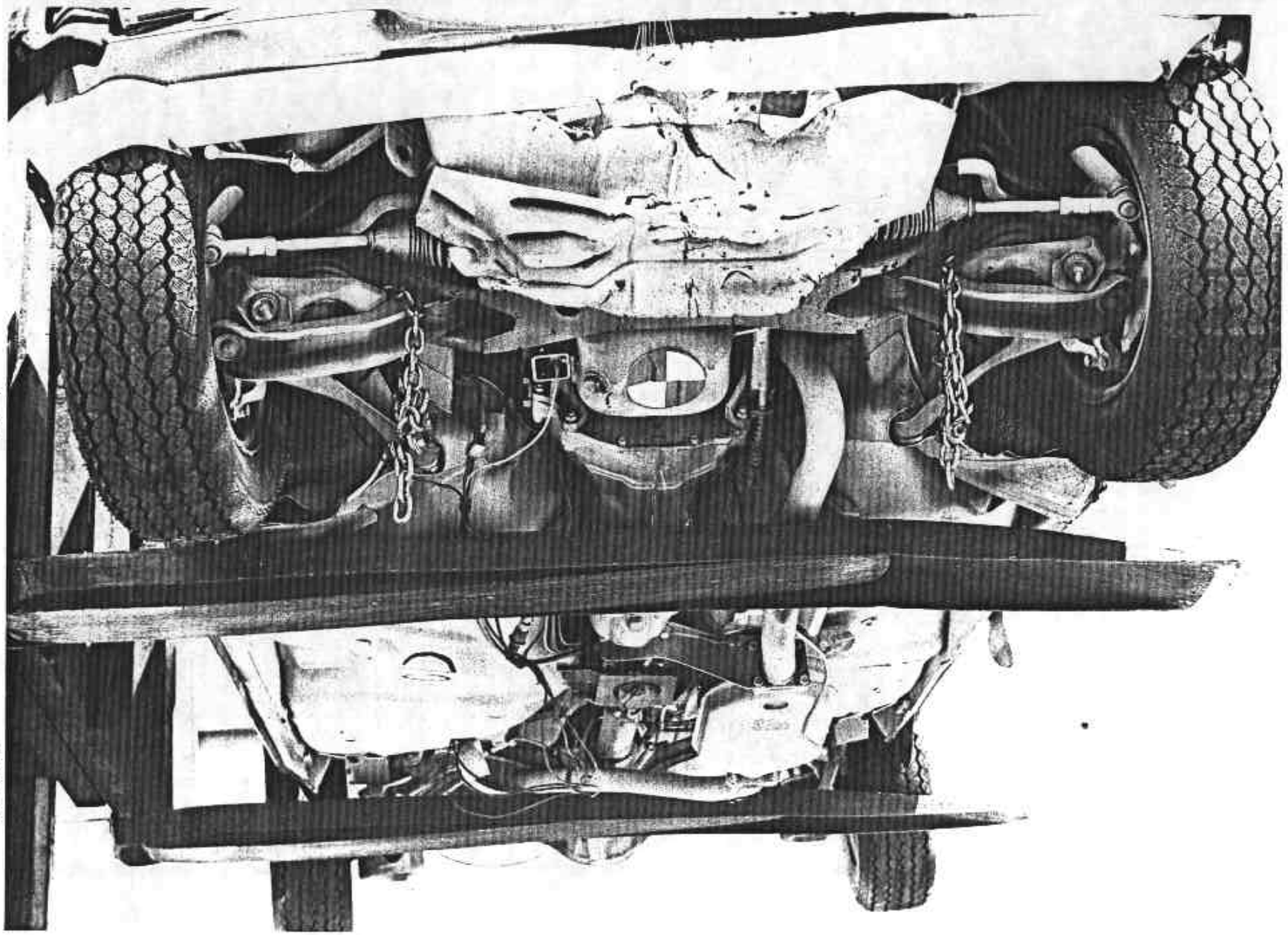


Figure A-17 PRE-TEST FRONT UNDERBODY VIEW

7333-17



A-19

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Figure A-18 POST-TEST FRONT UNDERBODY VIEW

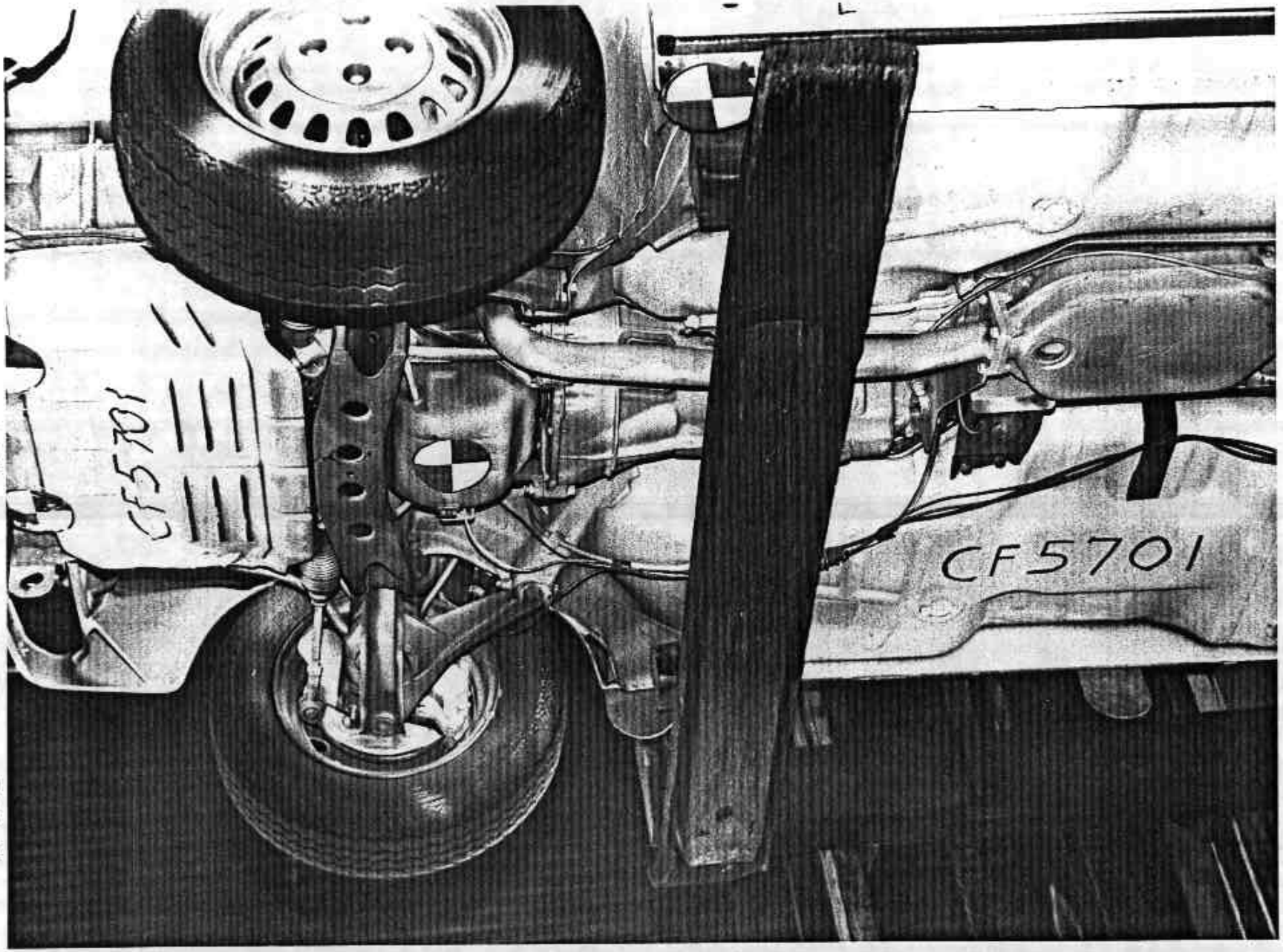

Figure A-19 PRE-TEST FRONT-SIDE UNDERBODY VIEW

7333-17

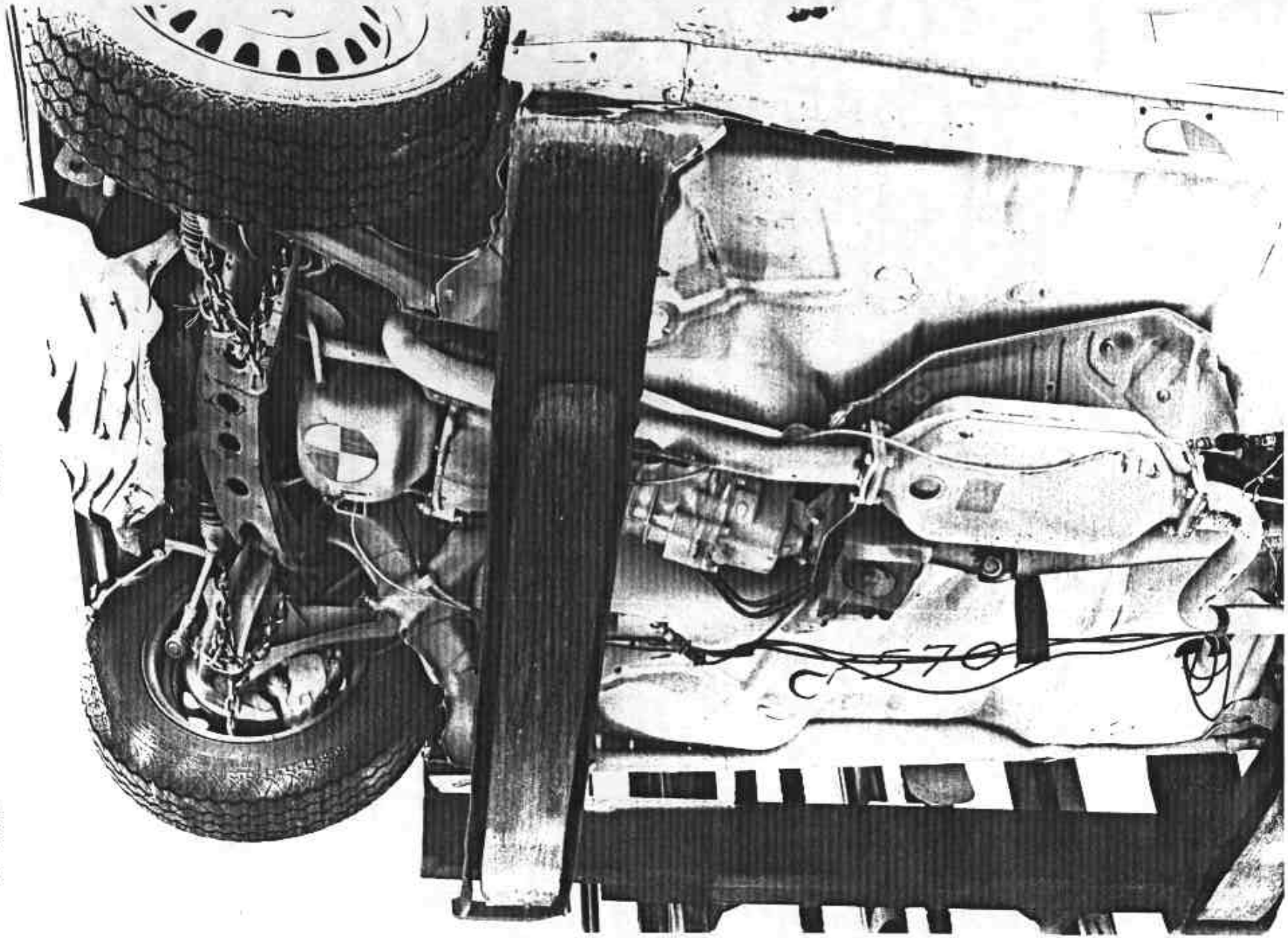

Figure A-20 POST-TEST FRONT-SIDE UNDERBODY VIEW

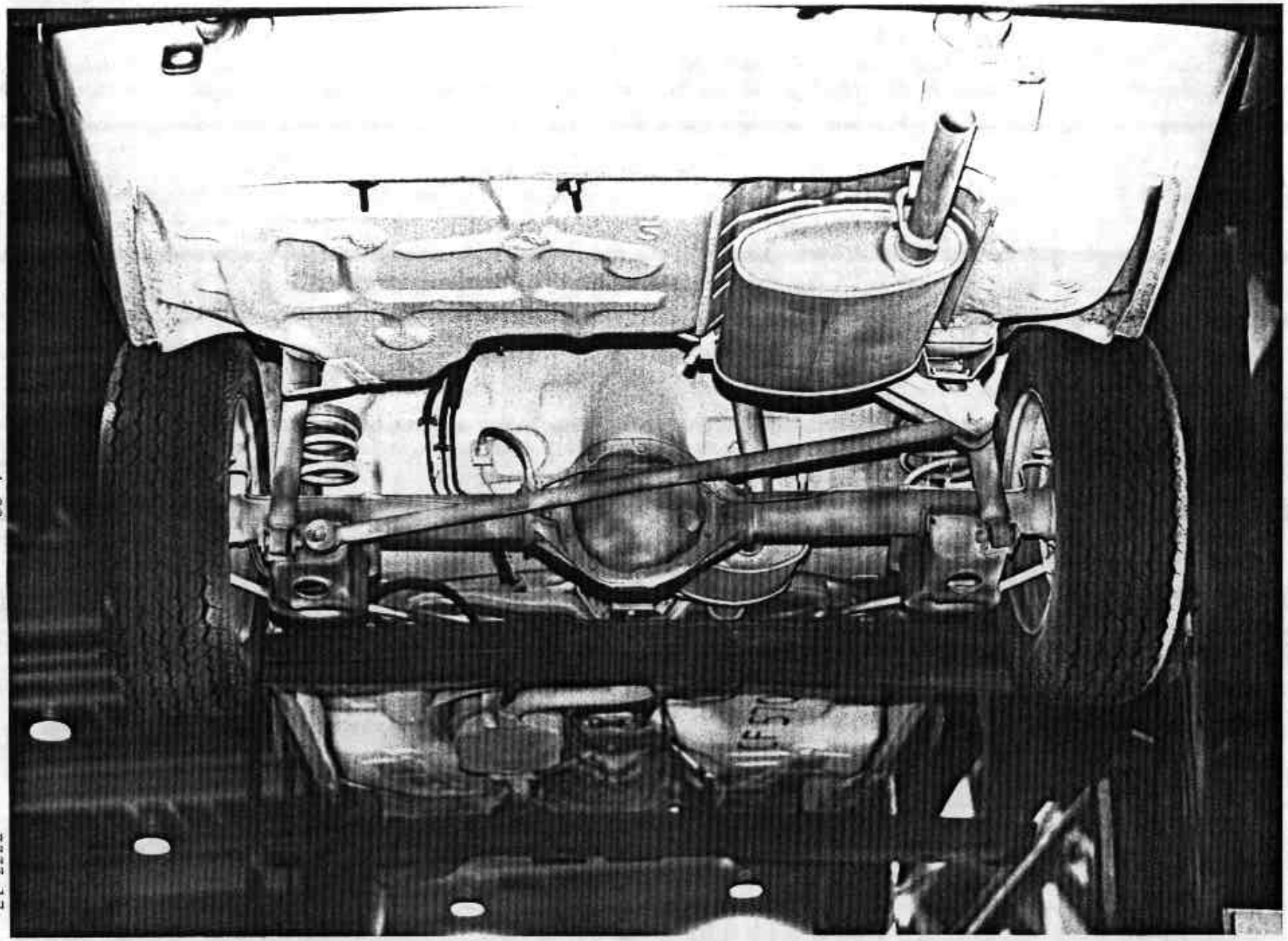

Figure A-21 PRE-TEST REAR UNDERBODY VIEW

7333-17

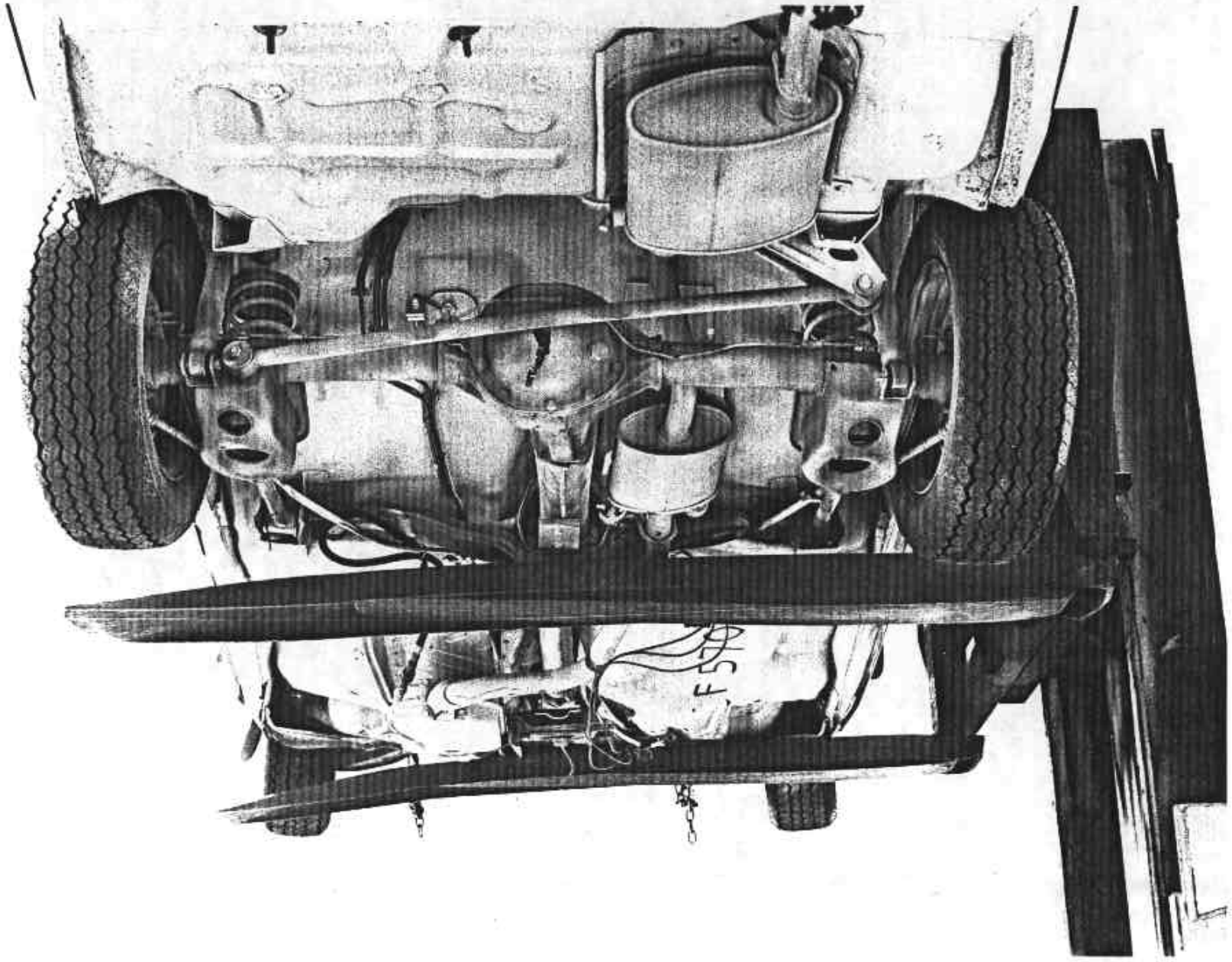

Figure A-22 POST-TEST REAR UNDERBODY VIEW

Figure A-23 PRE-TEST DRIVER POSITION VIEW

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Figure A-24 POST-TEST DRIVER POSITION VIEW

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Figure A-25 PRE-TEST PASSENGER POSITION VIEW

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Figure A-26 POST-TEST PASSENGER POSITION VIEW

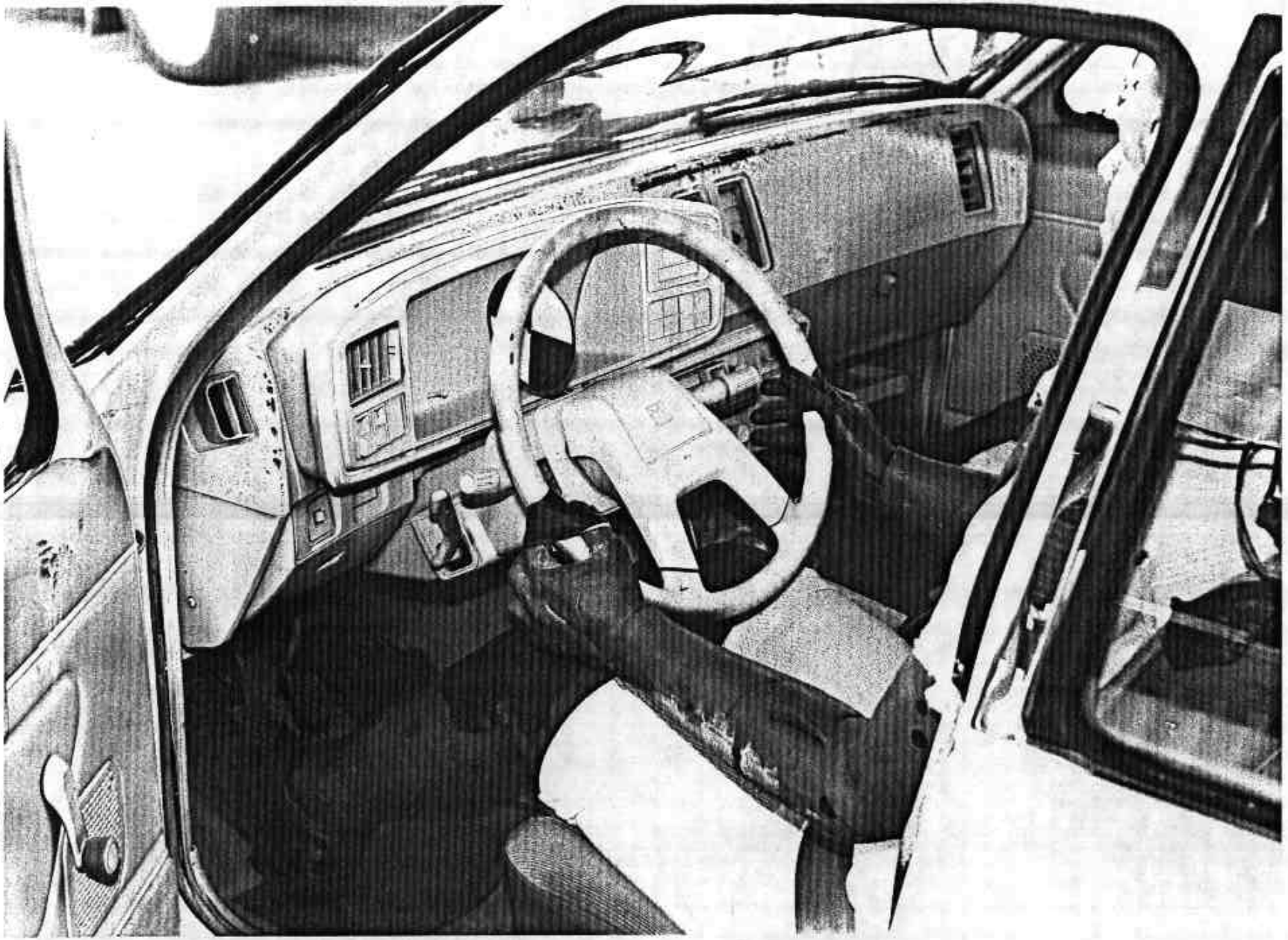

Figure A-27 PRE-TEST DRIVER AND INTERIOR VIEW

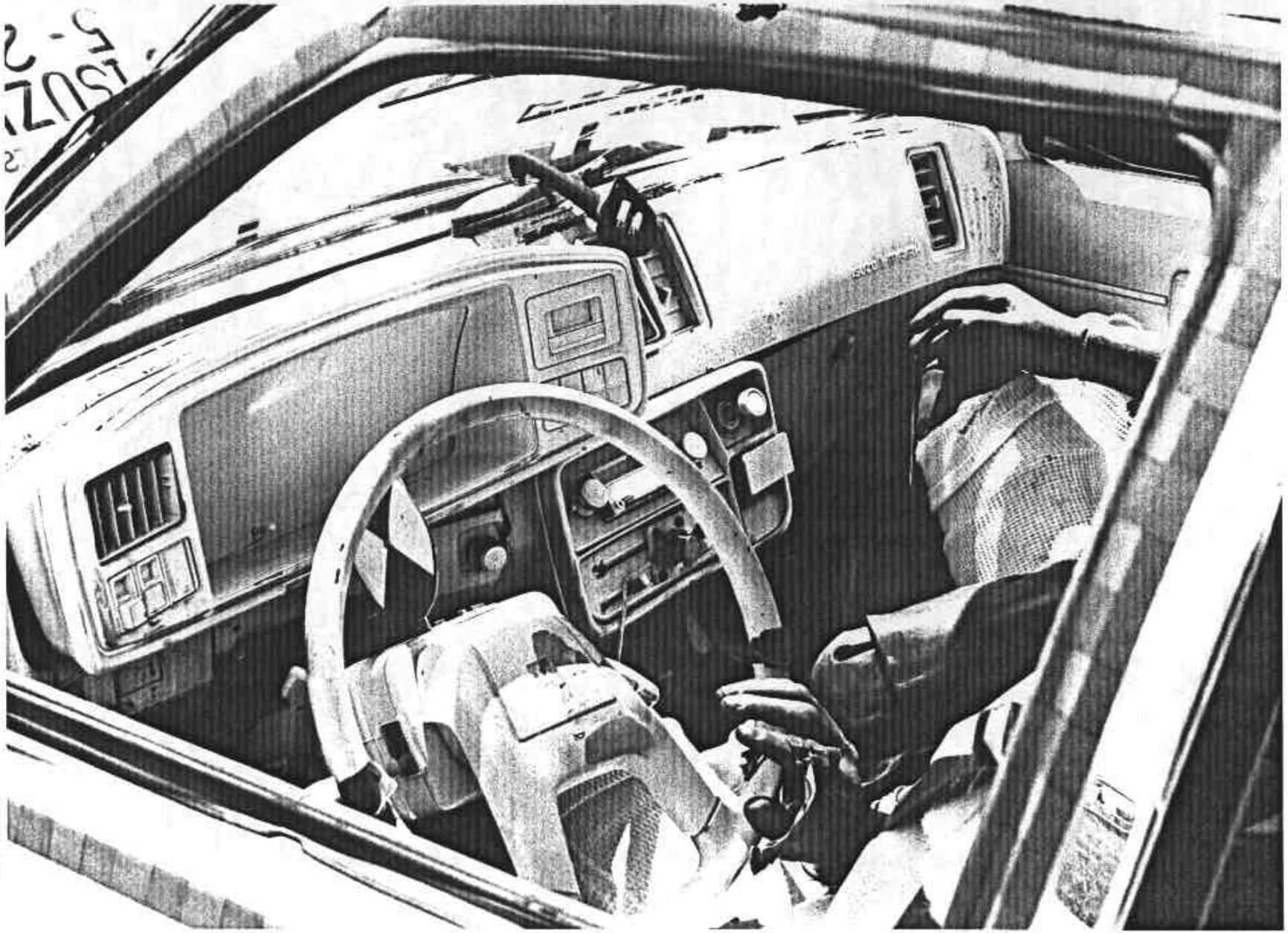

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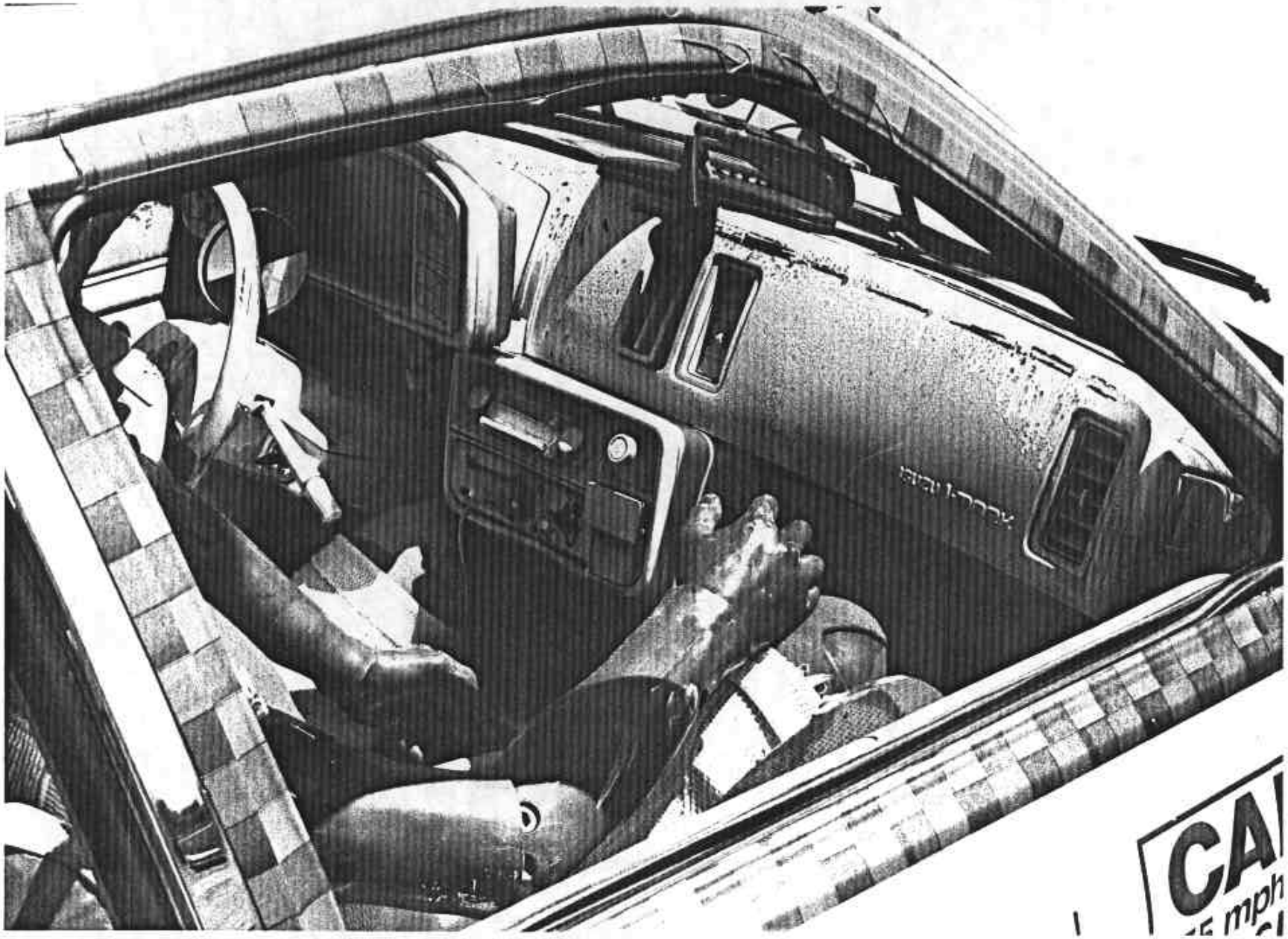
Figure A-28 POST-TEST DRIVER AND INTERIOR VIEW

Figure A-29 PRE-TEST PASSENGER AND INTERIOR VIEW



A-31

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Figure A-30 POST-TEST PASSENGER AND INTERIOR VIEW

APPENDIX B

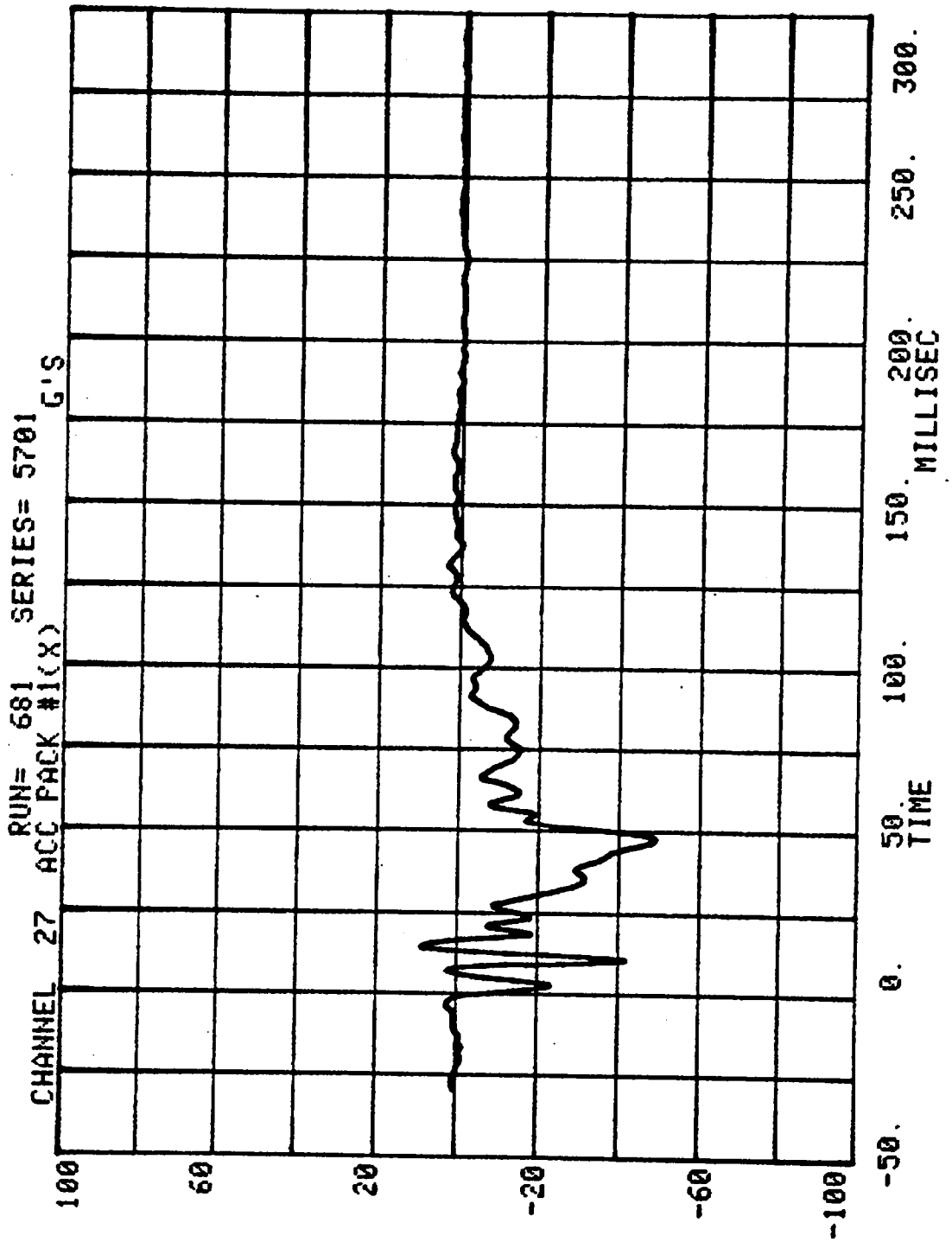
VEHICLE, DUMMY RESPONSE DATA AND LOAD CELL BARRIER DATA

TEST NO. CF5701

VEHICLE DATA

FILTER CHANNEL CLASS

60


CHANNEL 27 ACC PACK #1(X)
RUN= 681 SERIES= 5701
G'S
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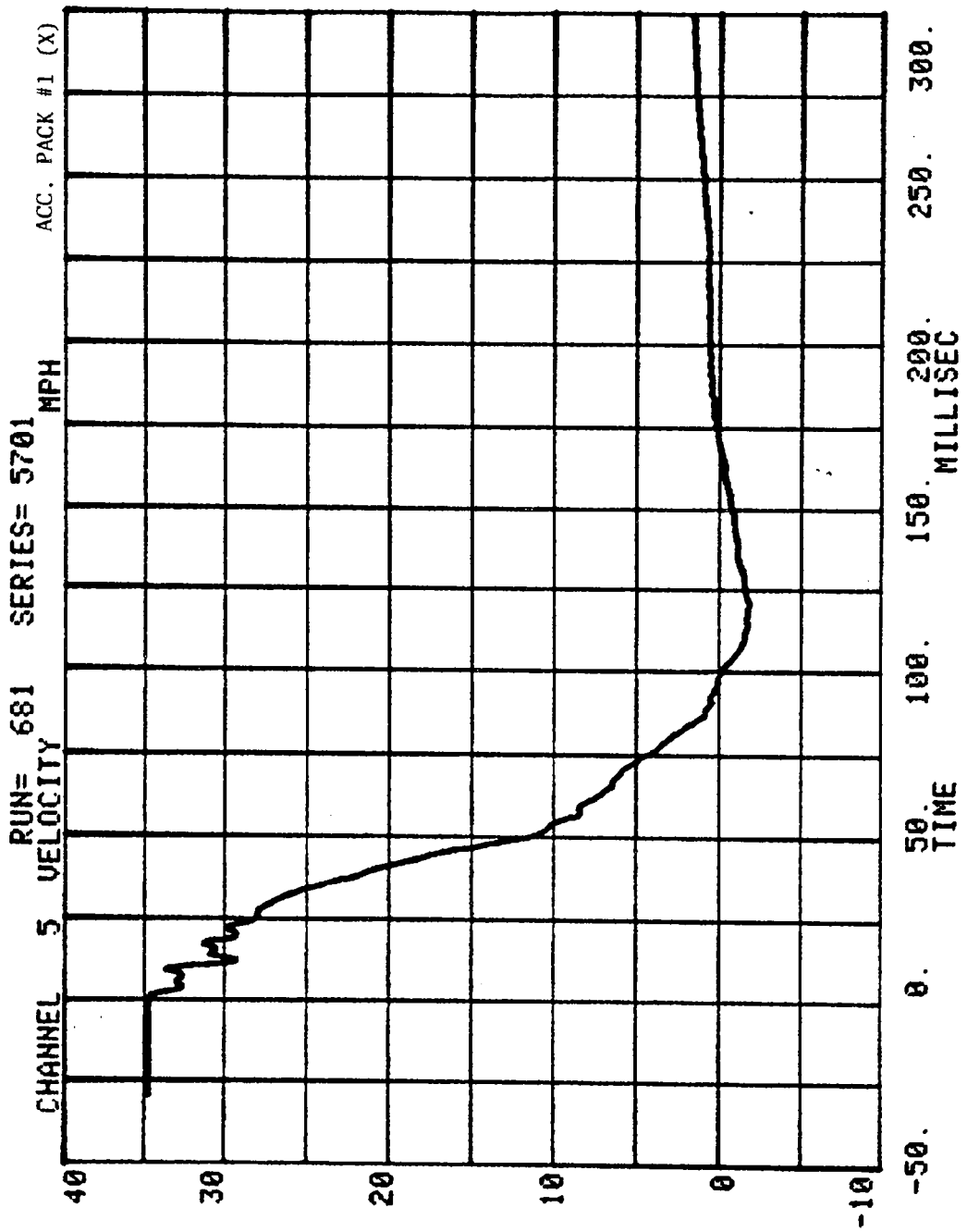
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 5 VELOCITY
RUN= 681 SERIES= 5701
ACC. PACK #1 (X)
MPH
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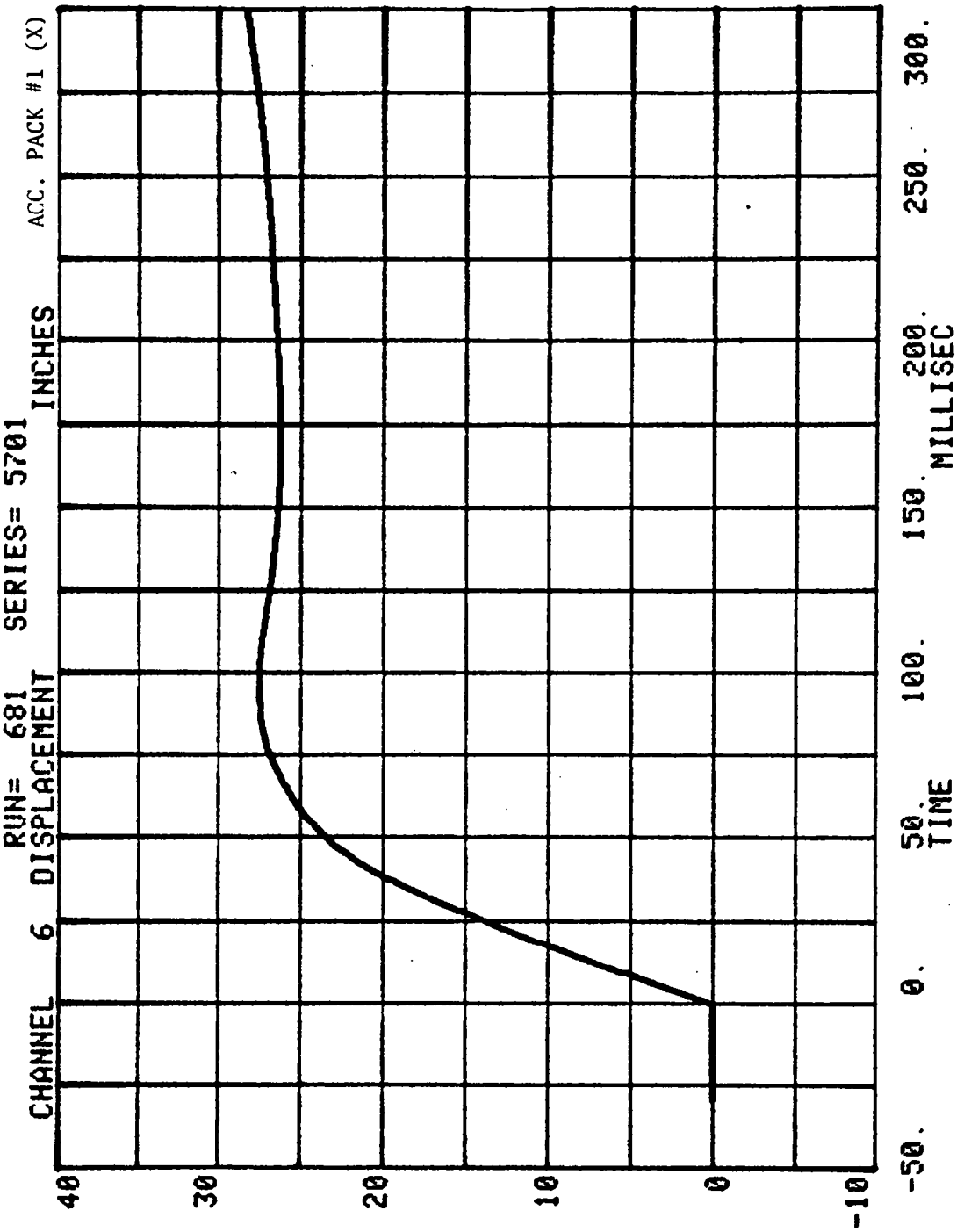
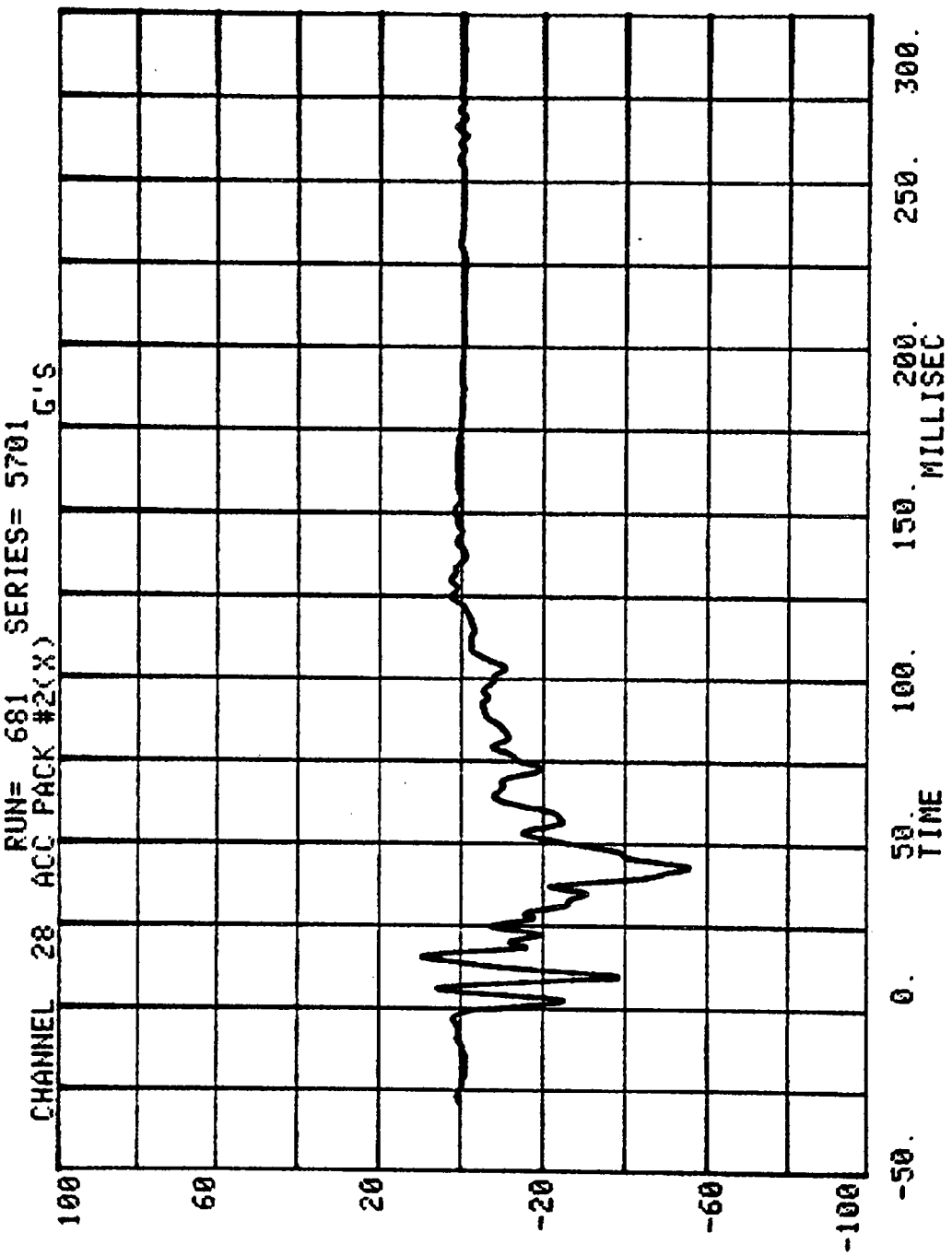
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 6 DISPLACEMENT
RUN= 681 SERIES= 5701
INCHES
ACC. PACK #1 (X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17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G'S
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60
20
-20
-60
-100
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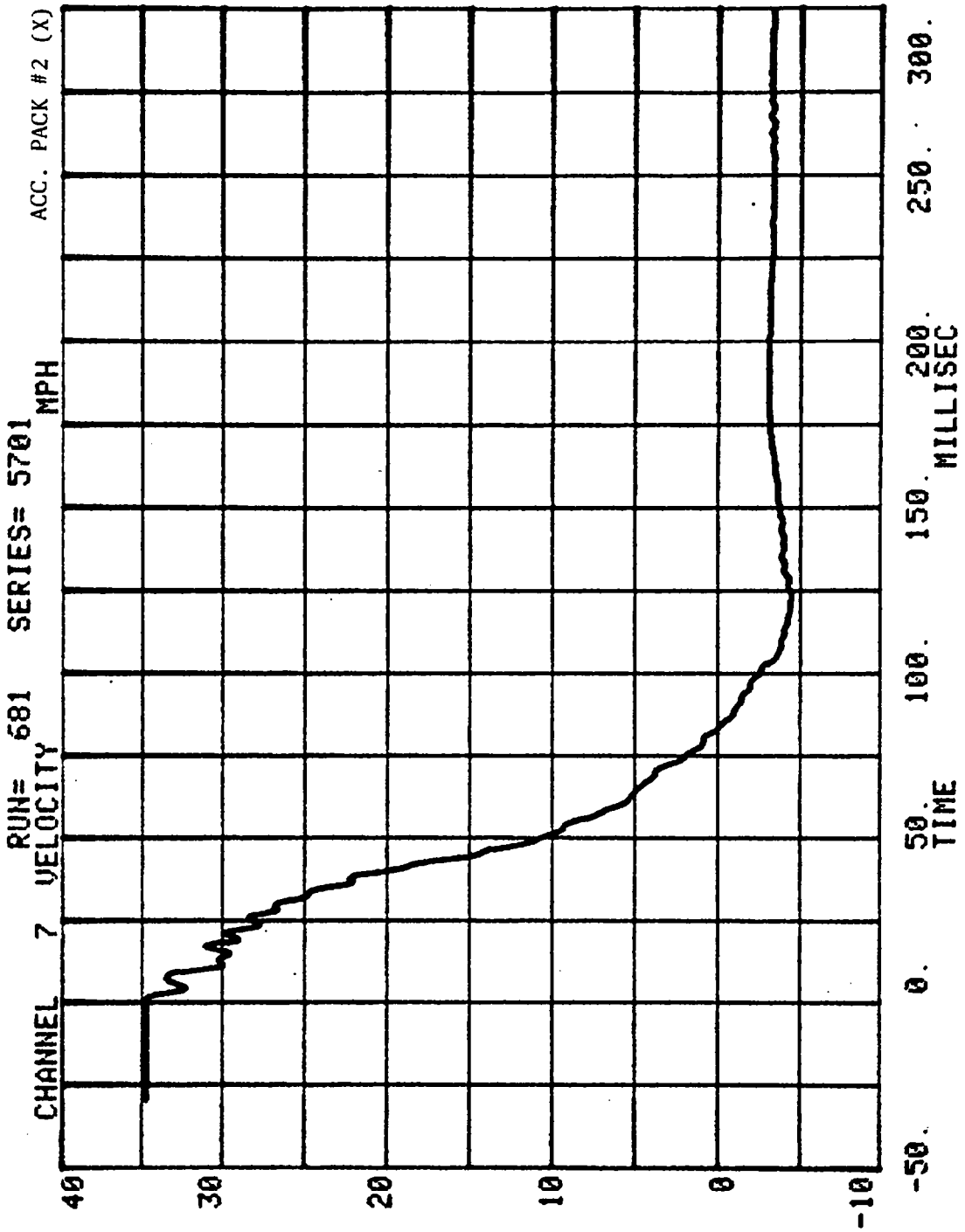
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17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CHANNEL 7 VELOCITY
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MPH
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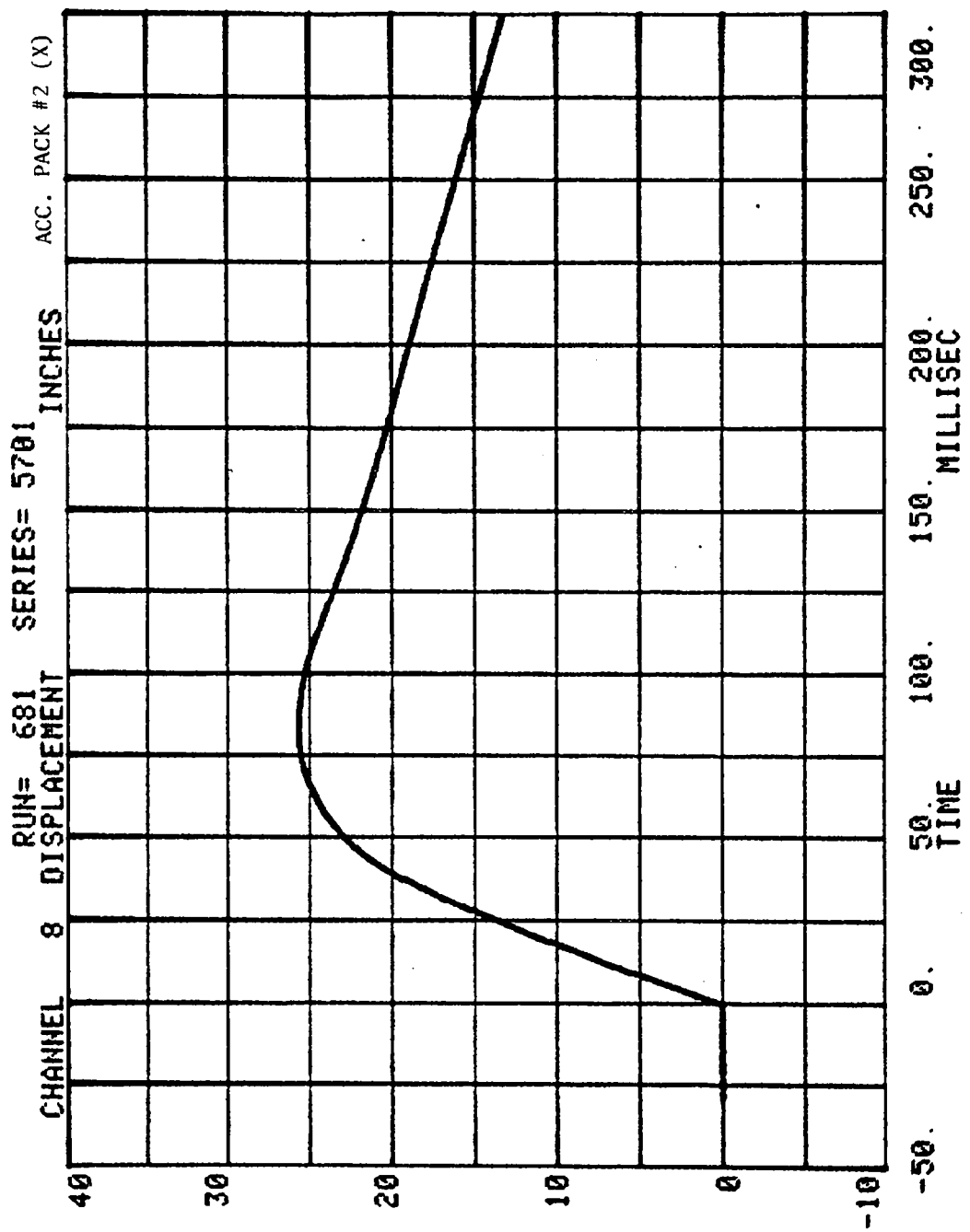
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17


CHANNEL 8 DISPLACEMENT
RUN= 681 SERIES= 5701
INCHES
ACC. PACK #2 (X)
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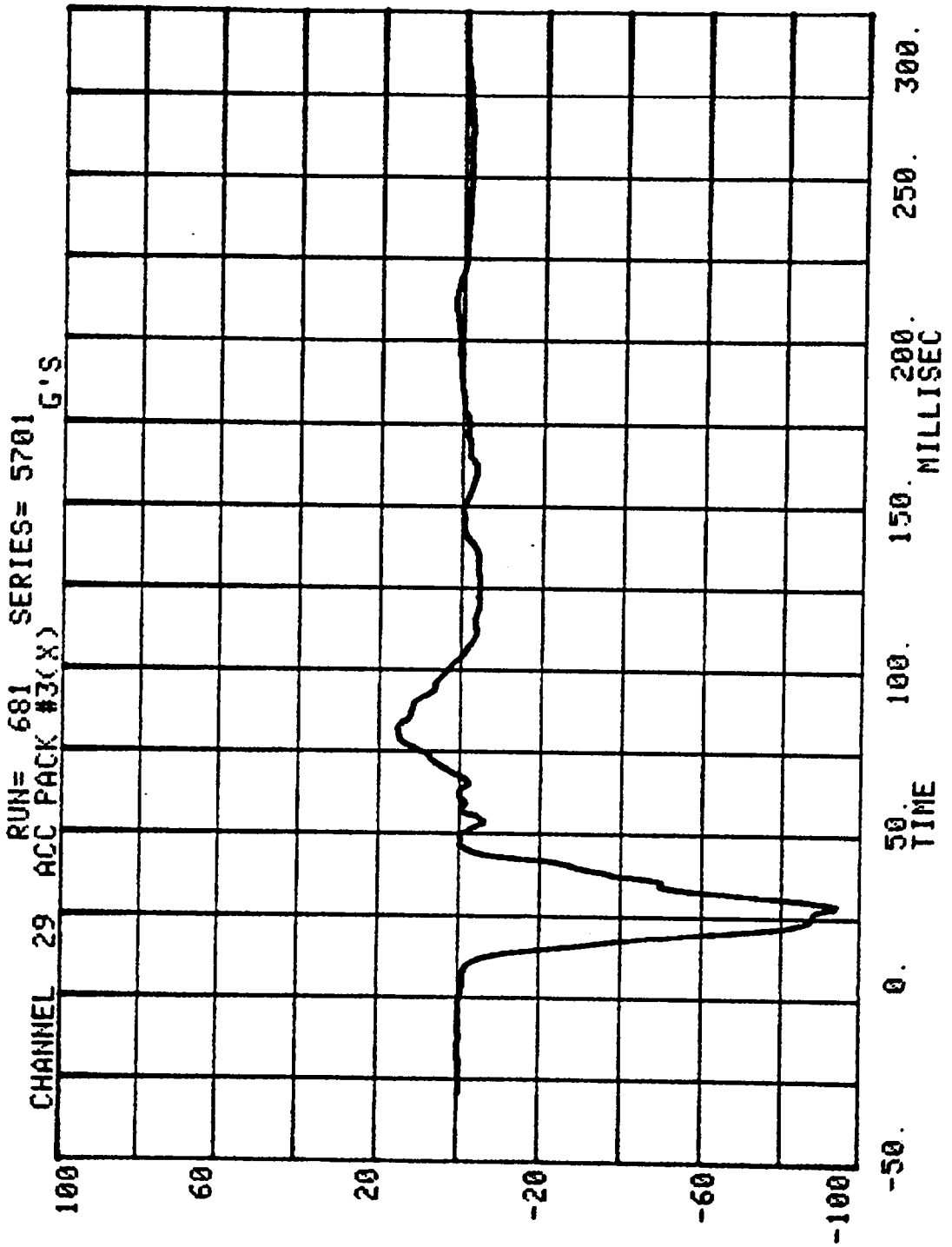
50.
100.
150.
200.
250.
300.
TIME
MILLISEC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RUN= 681 SERIES= 5701
G'S
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-100
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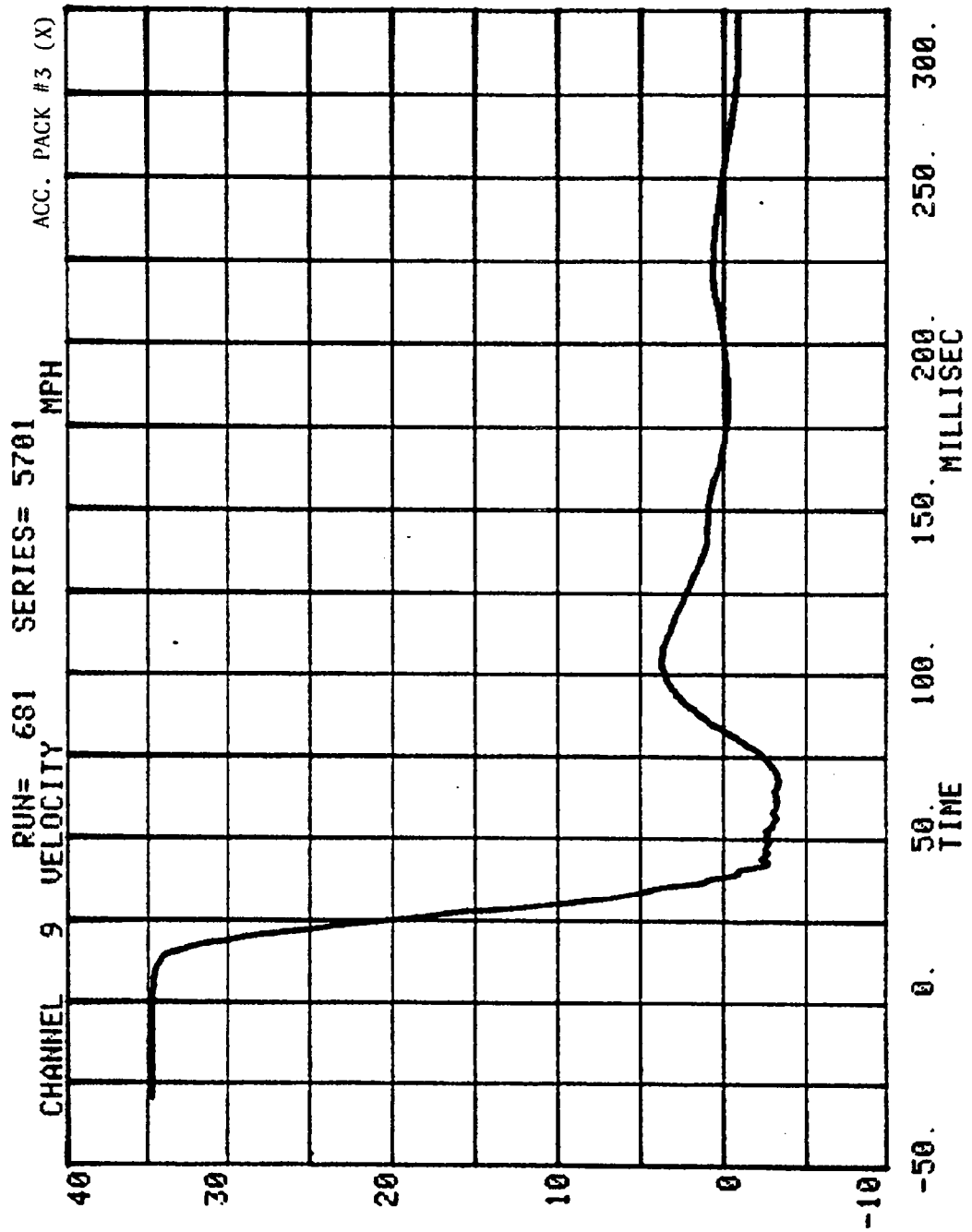
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


ACC. PACK #3 (X)
CHANNEL 9 VELOCITY
RUN= 681 SERIES= 5701
MPH
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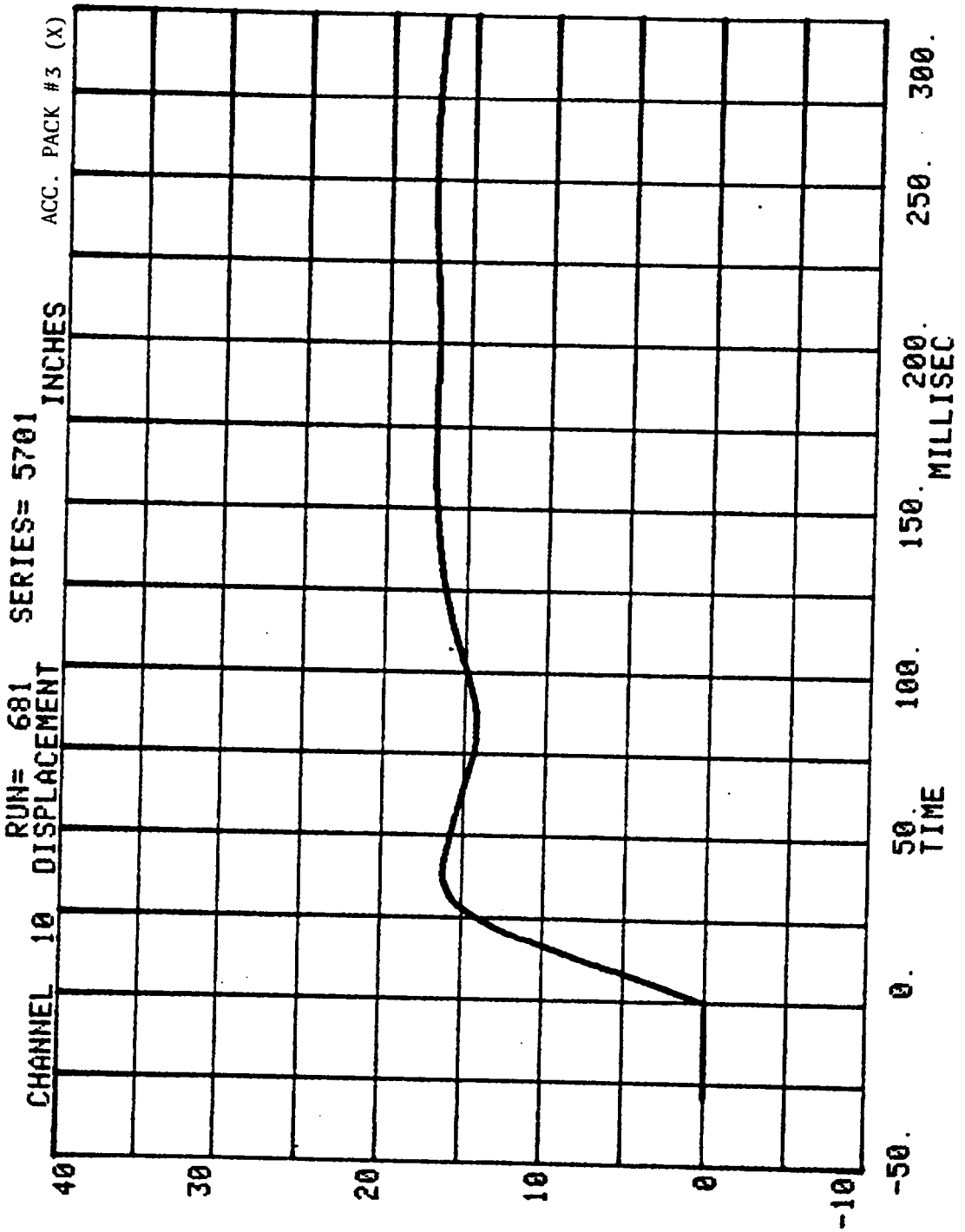
50.
100.
150.
200.
250.
300.
TIME
MILLISEC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INCHES
ACC. PACK #3 (X)
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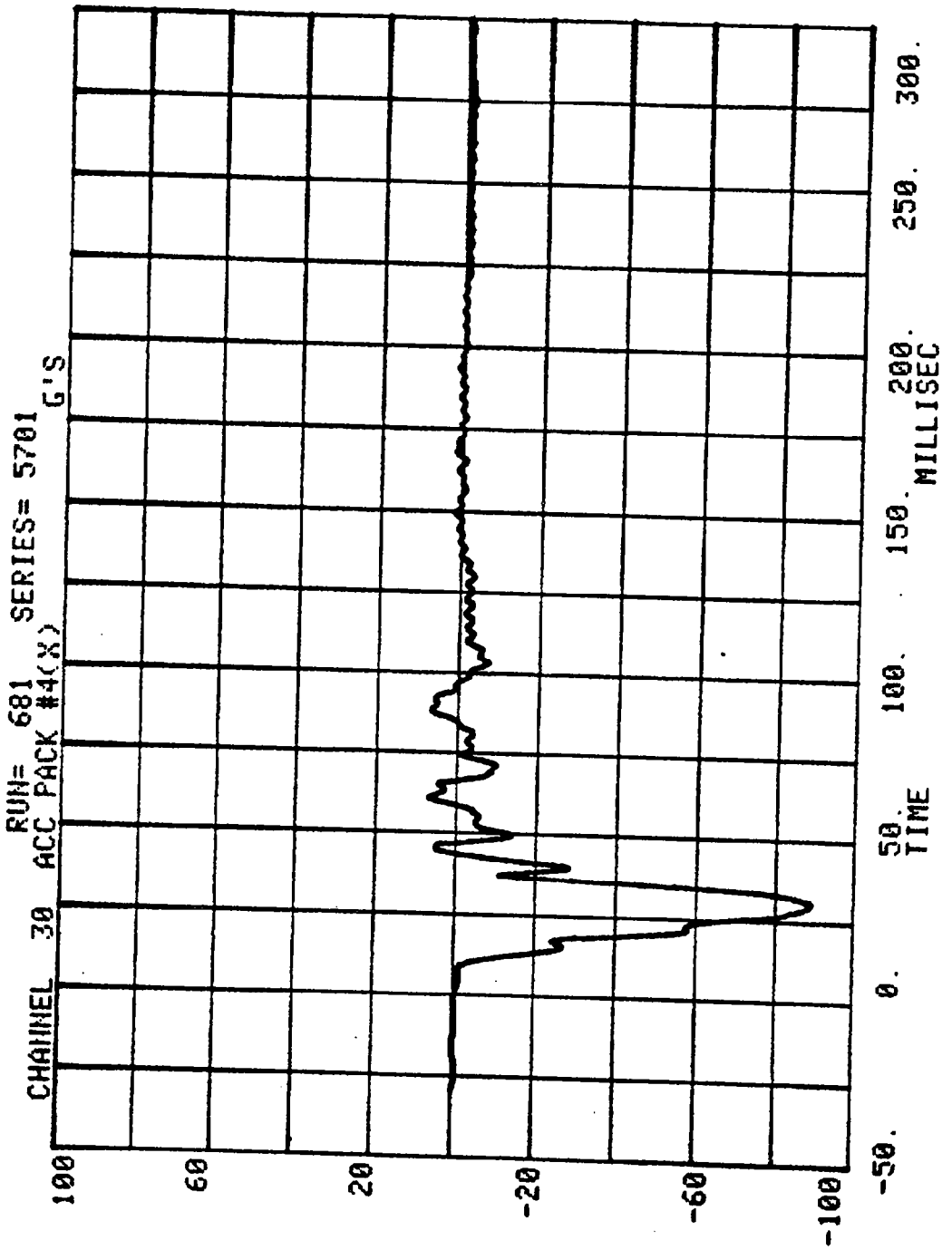
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC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RUN= 681 SERIES= 5701
G'S
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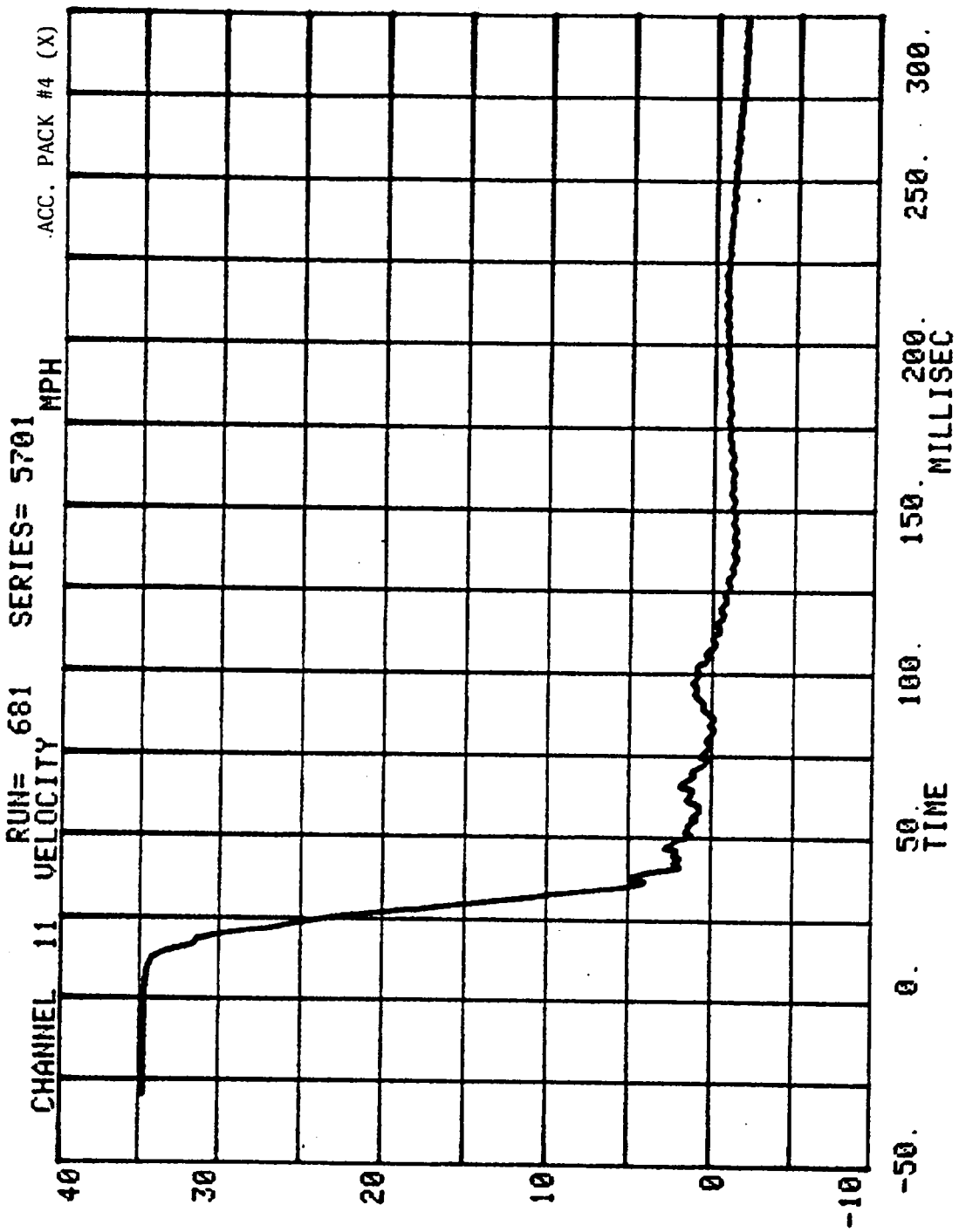
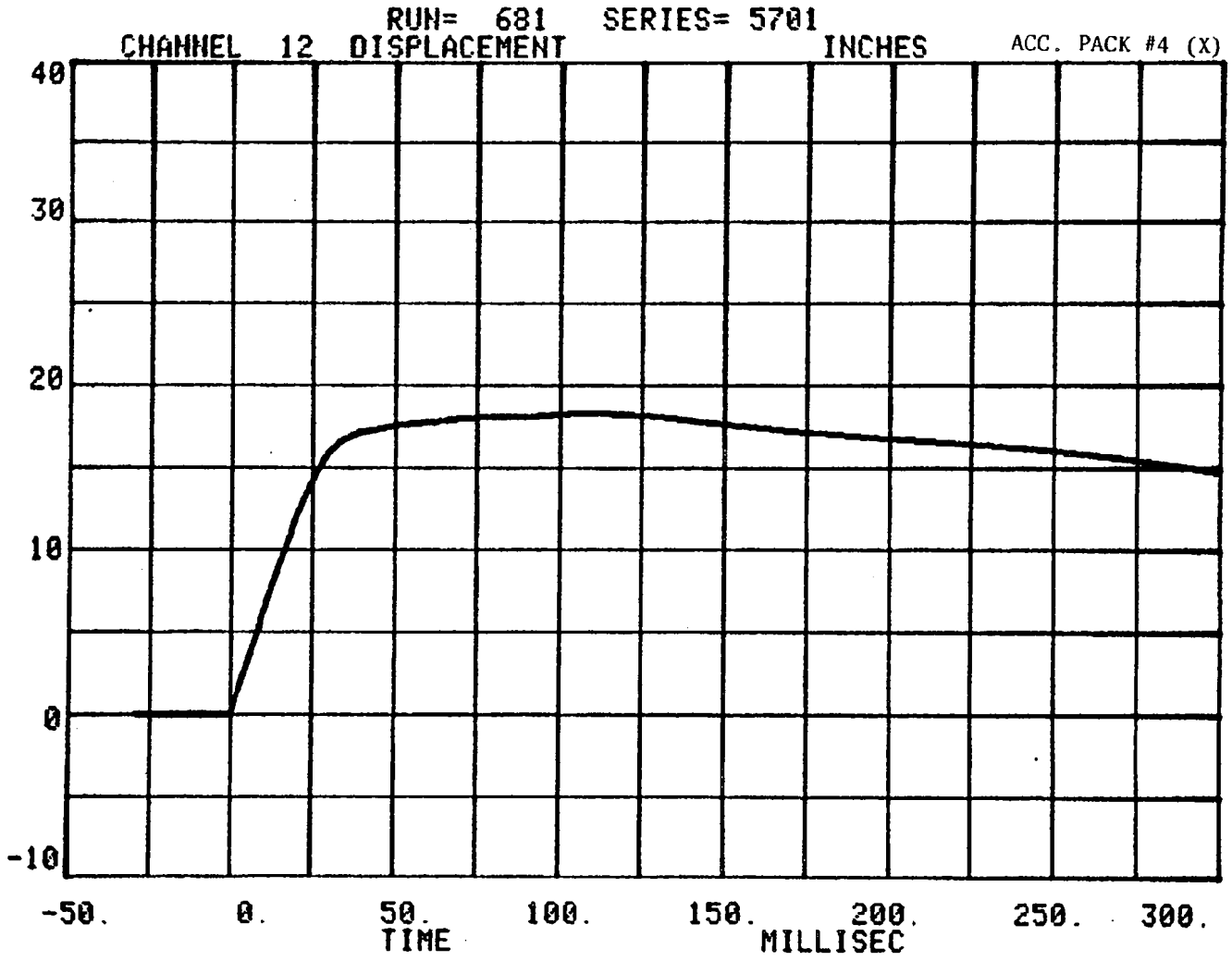
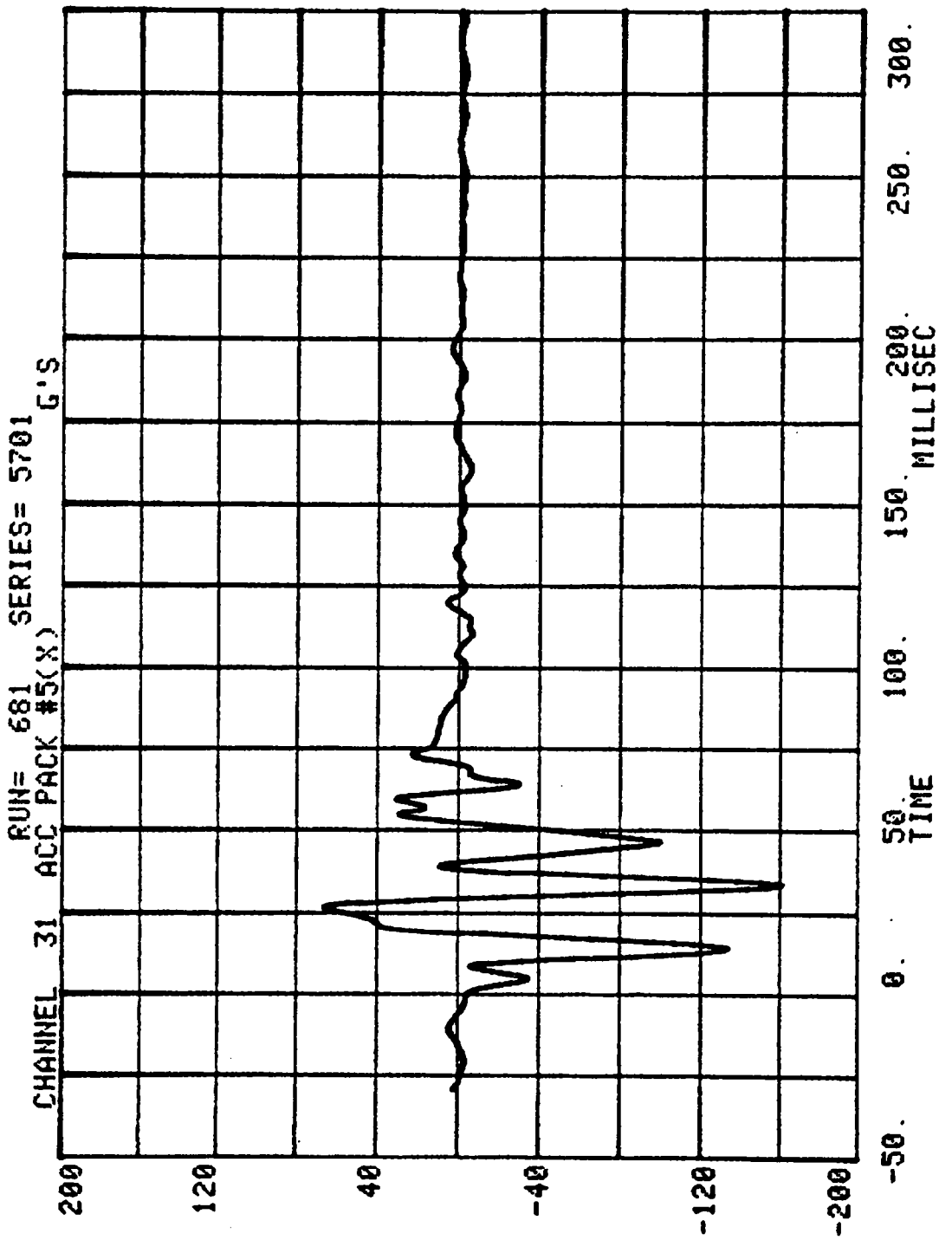
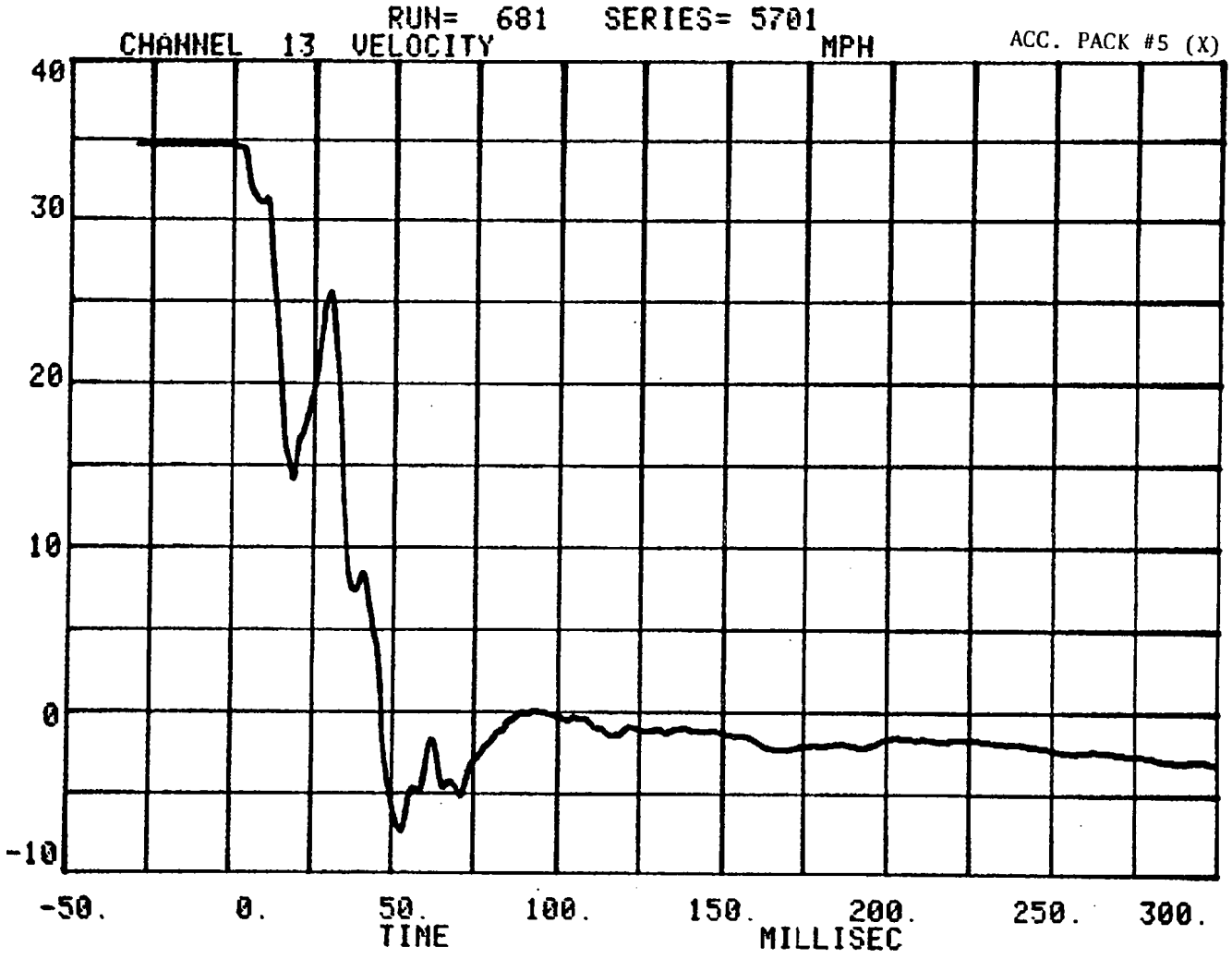
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

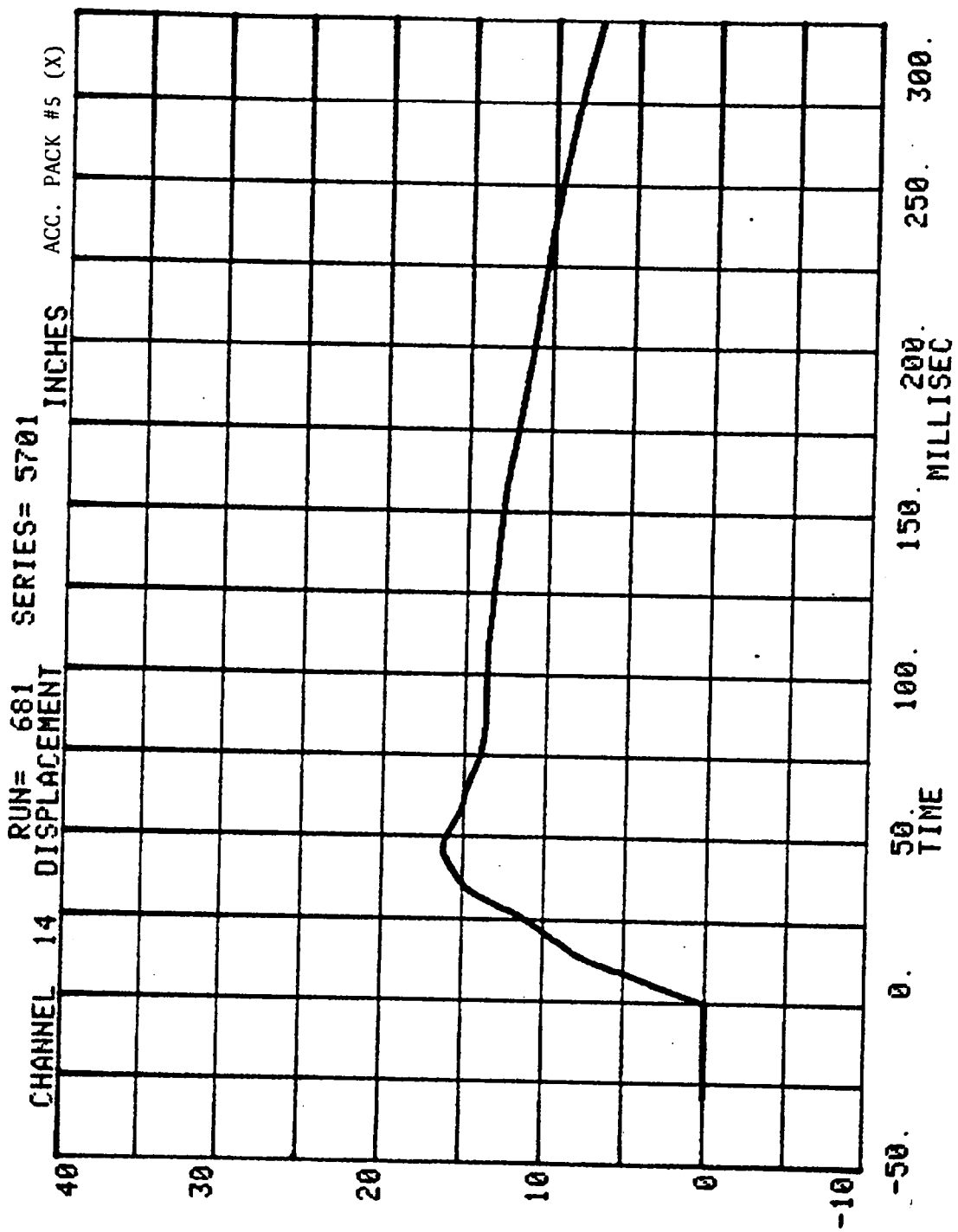
7333-17

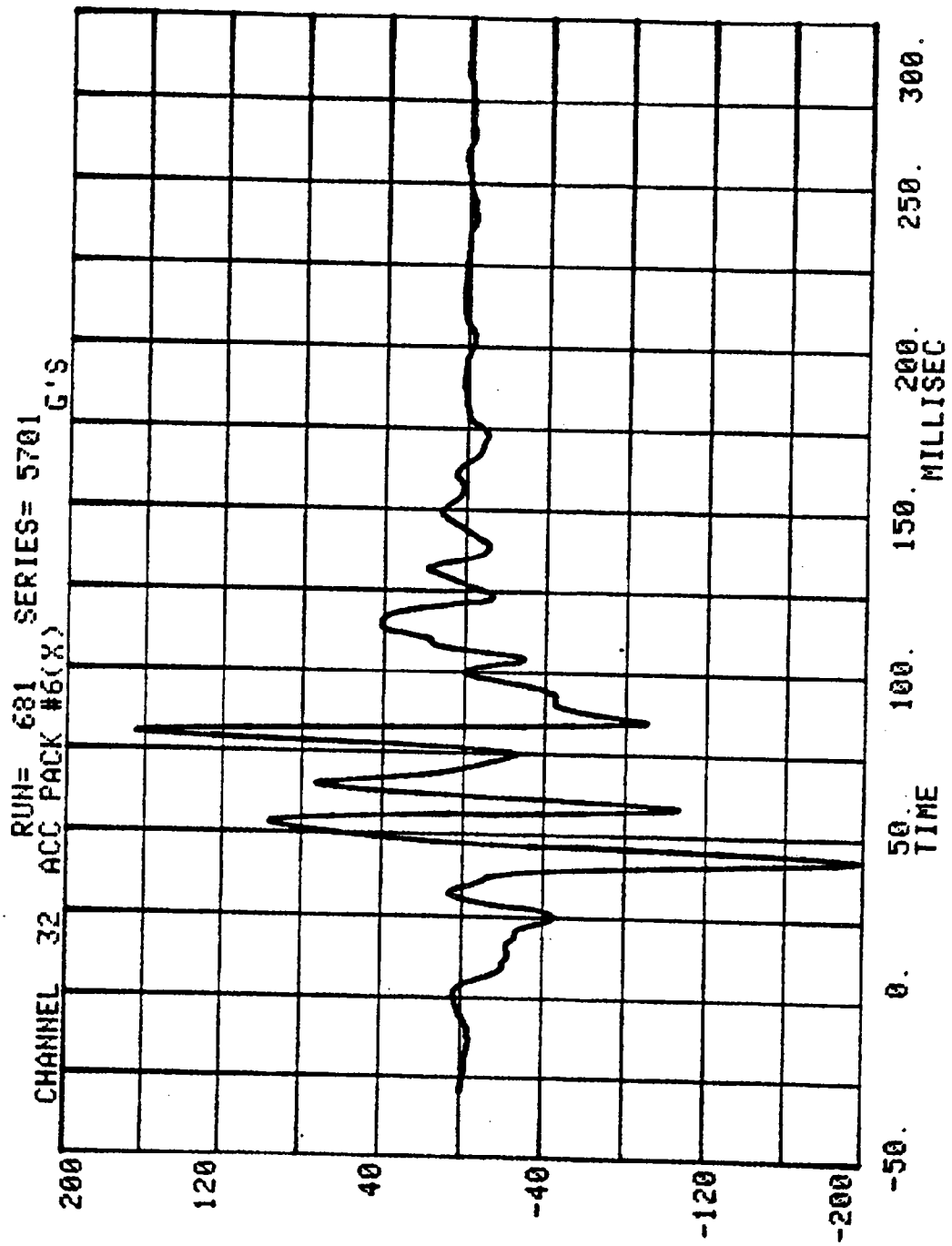

CHANNEL 11 VELOCITY
RUN= 681 SERIES= 5701
MPH
ACC. PACK #4 (X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 681 SERIES= 5701
CHANNEL 12 DISPLACEMENT INCHES
ACC. PACK #4 (X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

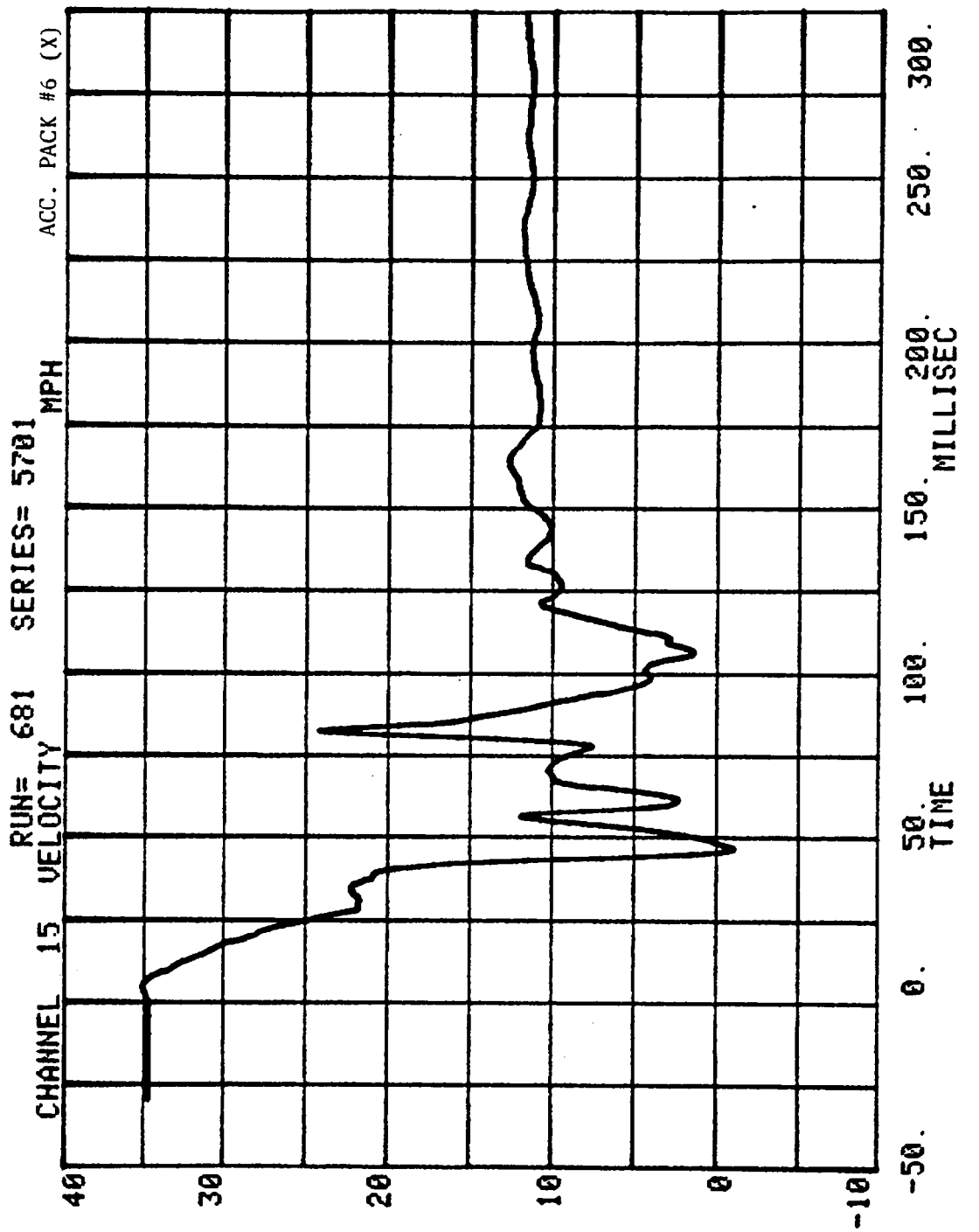

CHANNEL 31 ACC PACK #5(X)
RUN= 681 SERIES= 5701
G'S
200
120
40
-40
-120
-200
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

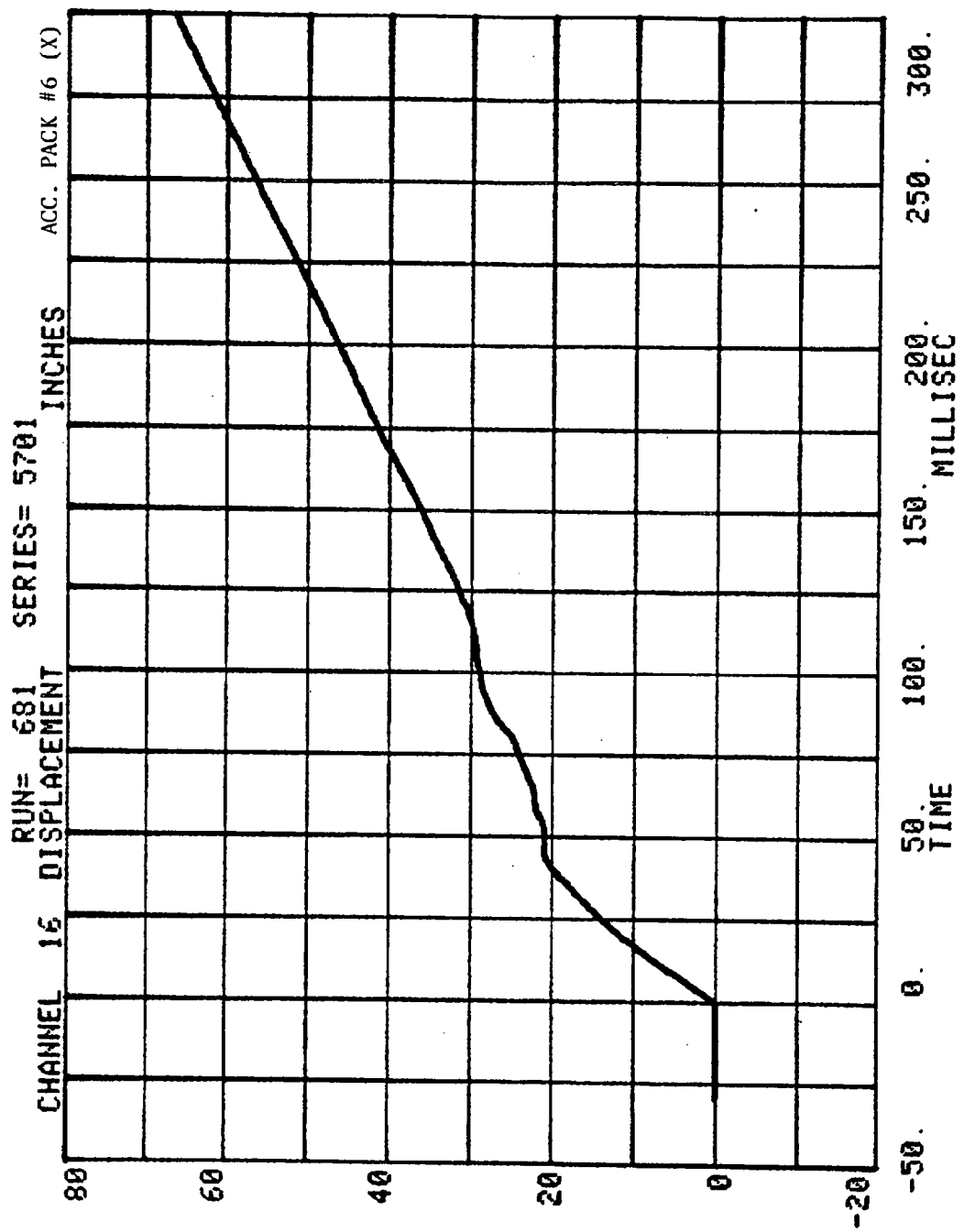

RUN= 681 SERIES= 5701
CHANNEL 13 VELOCITY MPH
ACC. PACK #5 (X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 14 DISPLACEMENT
RUN= 681 SERIES= 5701
INCHES
ACC. PACK #5 (X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

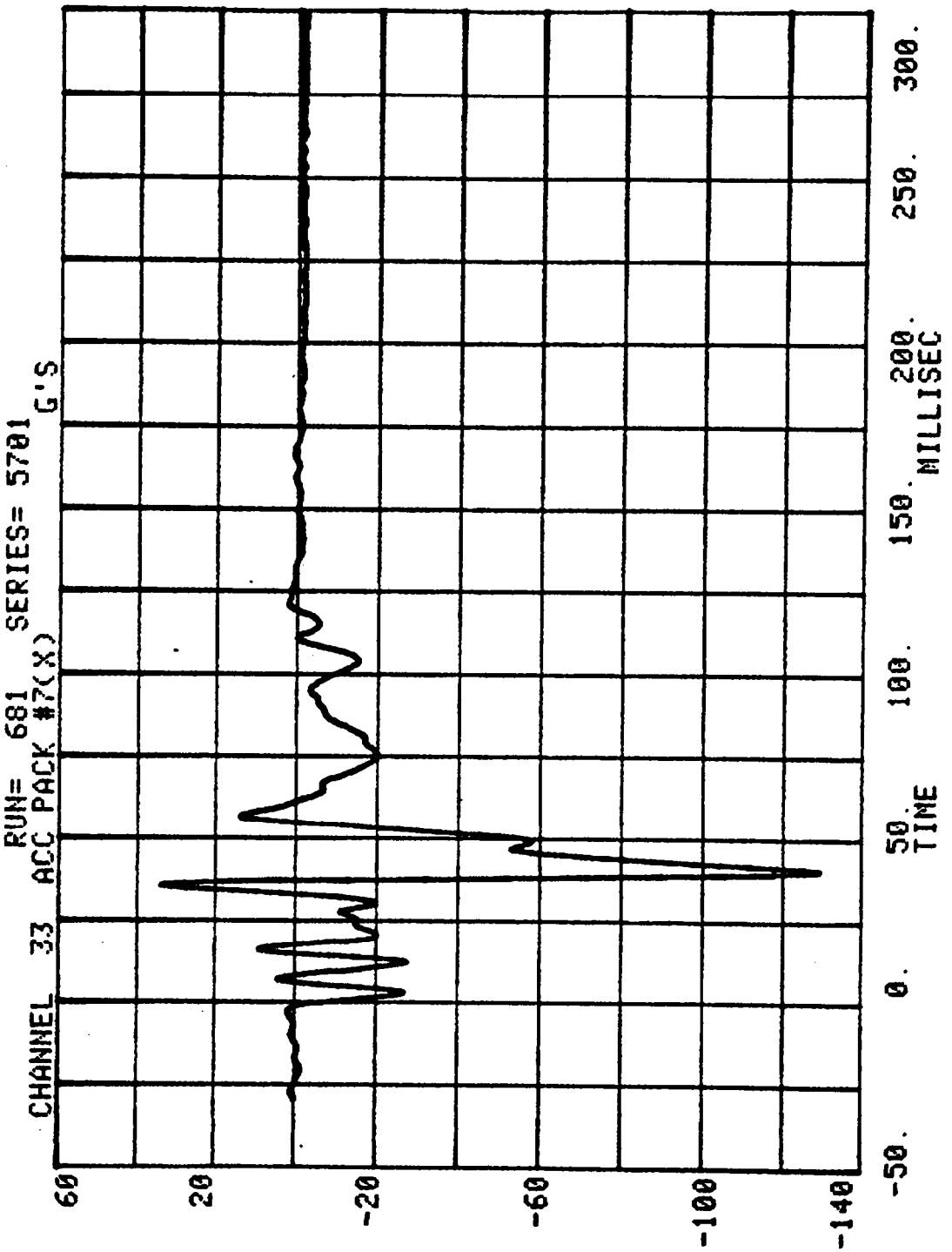

CHANNEL 32 ACC PACK #6(X)
RUN= 681 SERIES= 5701
G'S
200
120
40
-40
-120
-200
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

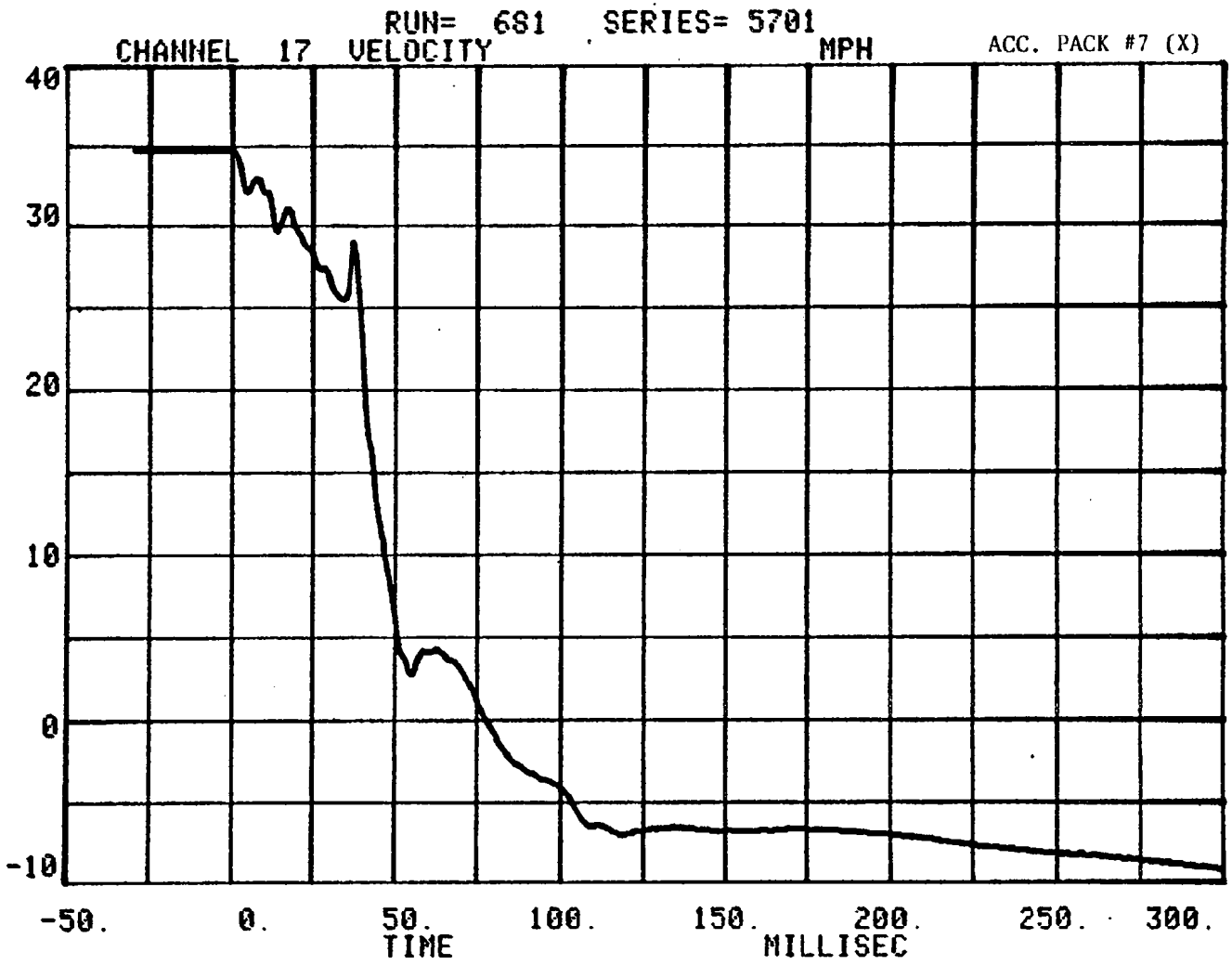
7333-17

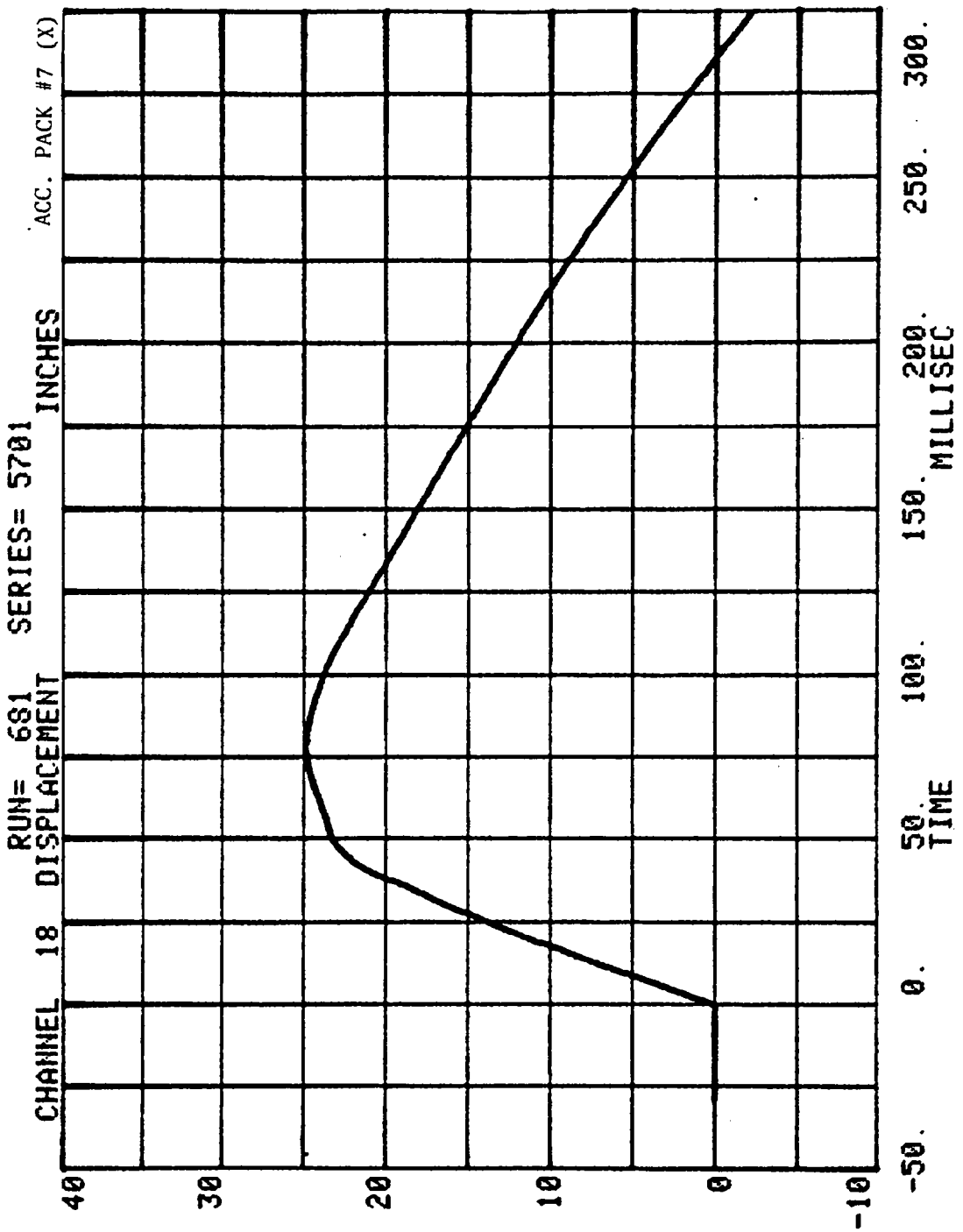

ACC. PACK #6 (X)
CHANNEL 15 VELOCITY
RUN= 681 SERIES= 5701
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 16 DISPLACEMENT
RUN= 681 SERIES= 5701
ACC. PACK #6 (X)
INCHES
80
60
40
20
0
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17


CHANNEL 33 ACC PACK #7(X)
RUN= 681 SERIES= 5701
G'S
60
20
-20
-60
-100
-140
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

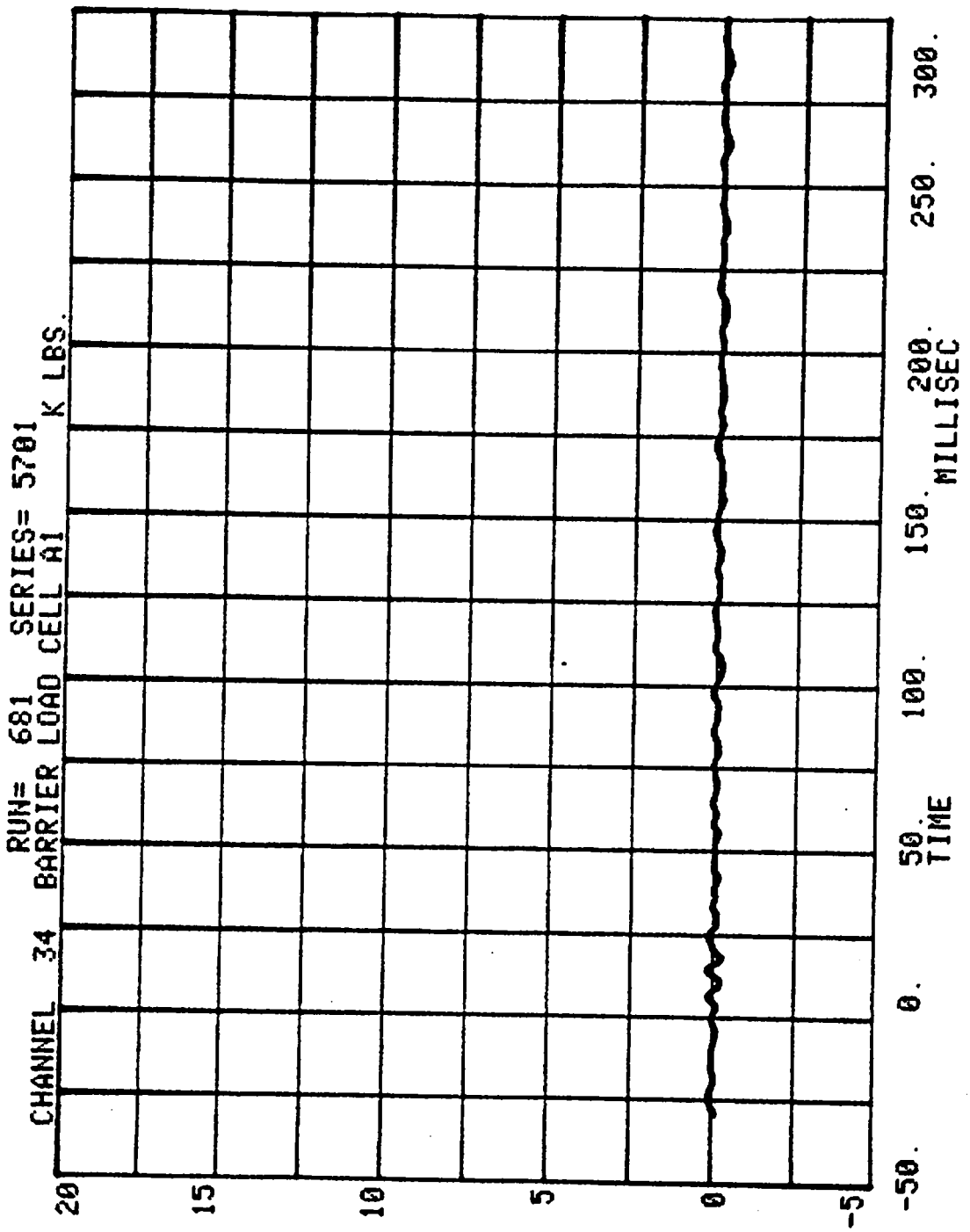

RUN= 681 SERIES= 5701
CHANNEL 17 VELOCITY
MPH
ACC. PACK #7 (X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

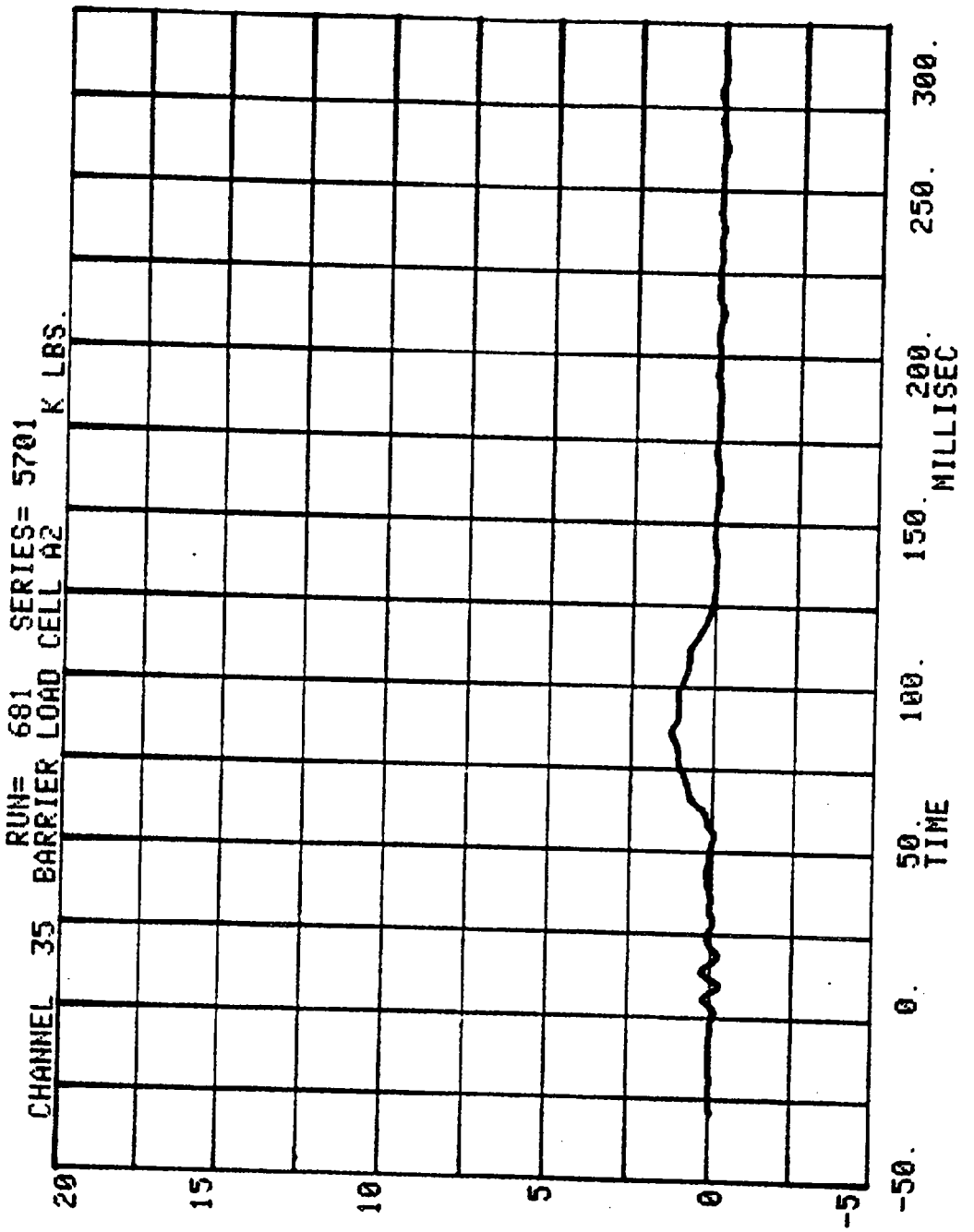

CHANNEL 18 DISPLACEMENT
RUN= 681 SERIES= 5701 INCHES
ACC. PACK #7 (X)
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

TEST NO. CF5701

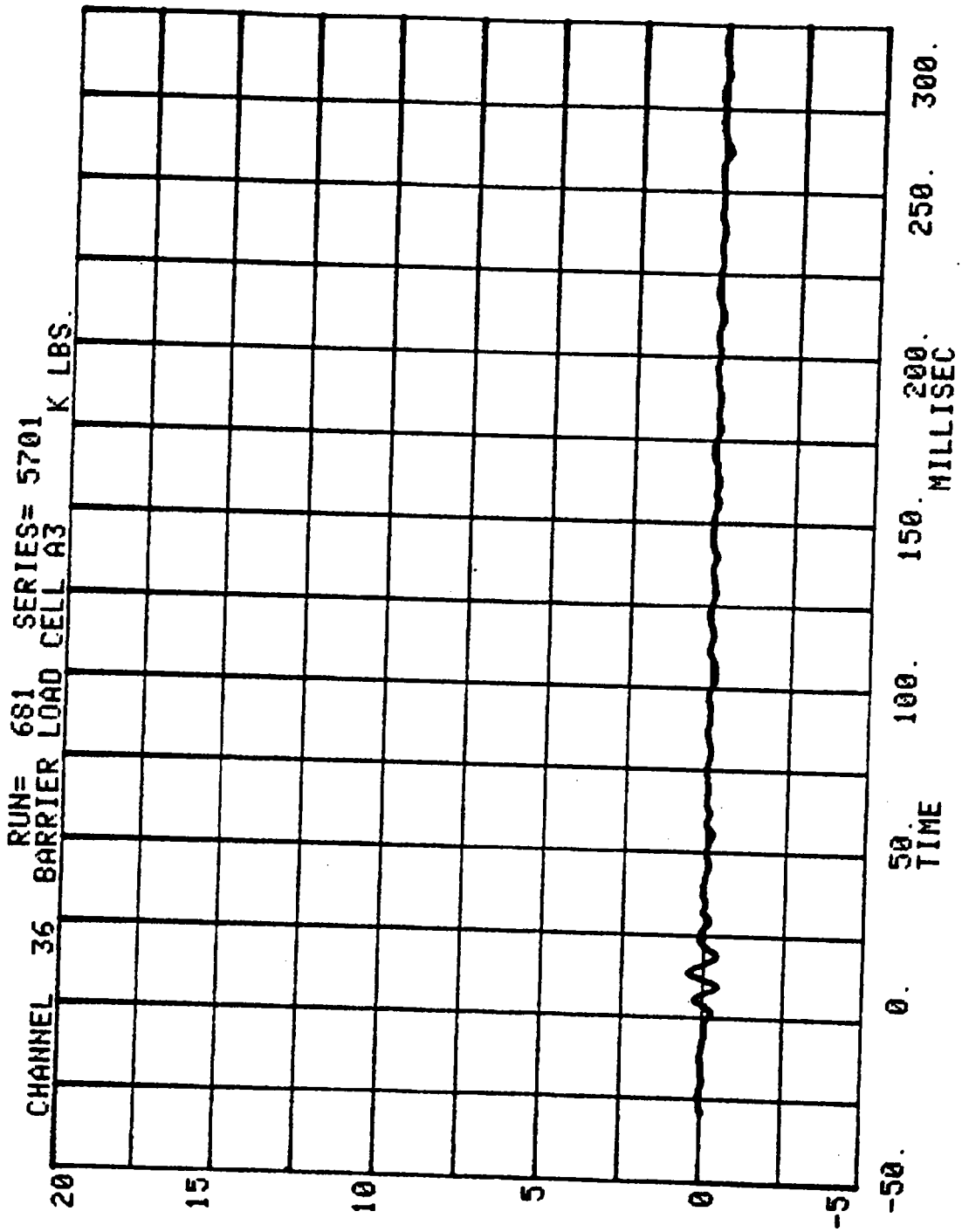
LOAD CELL BARRIER DATA
FILTER CHANNEL CLASS

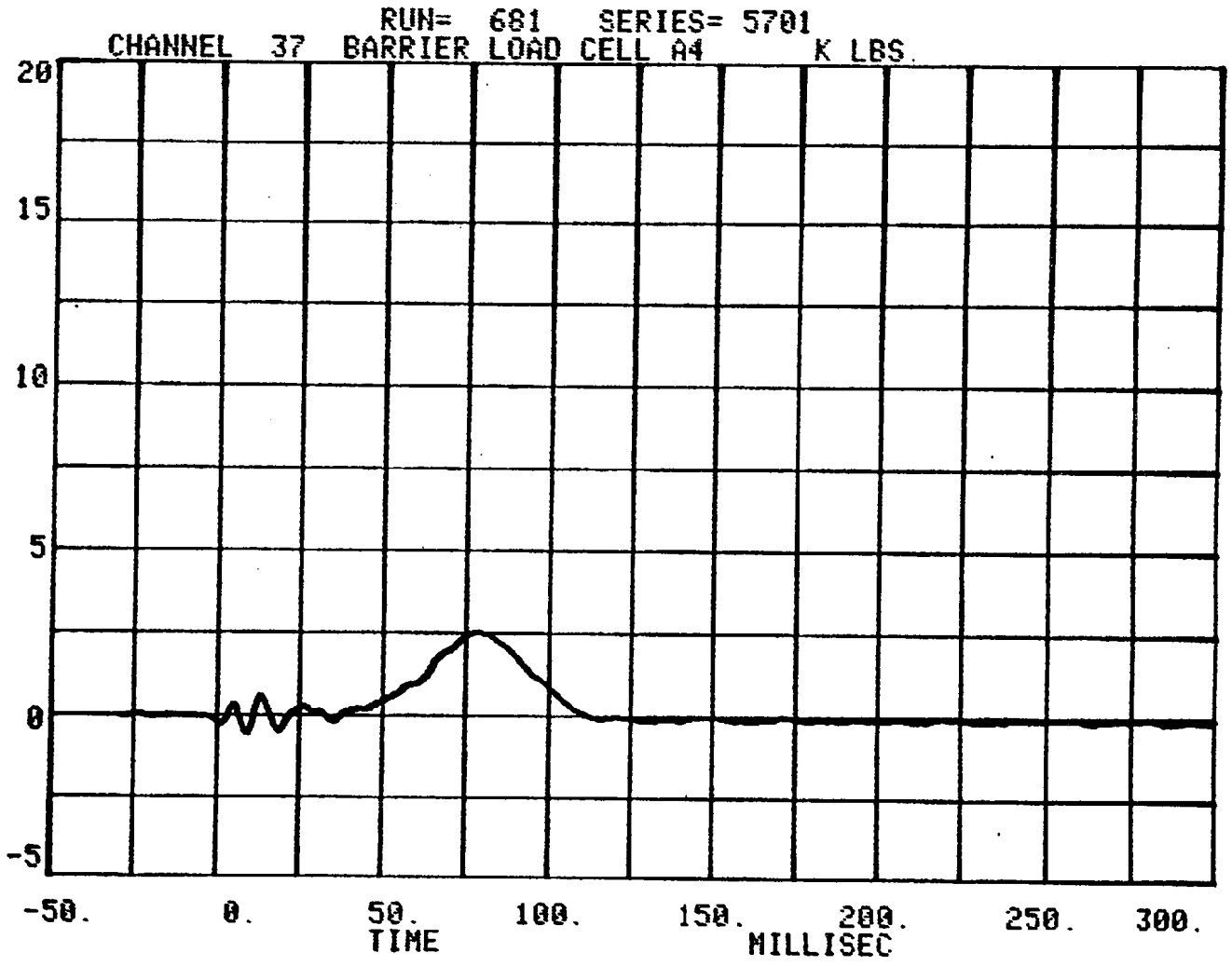
60

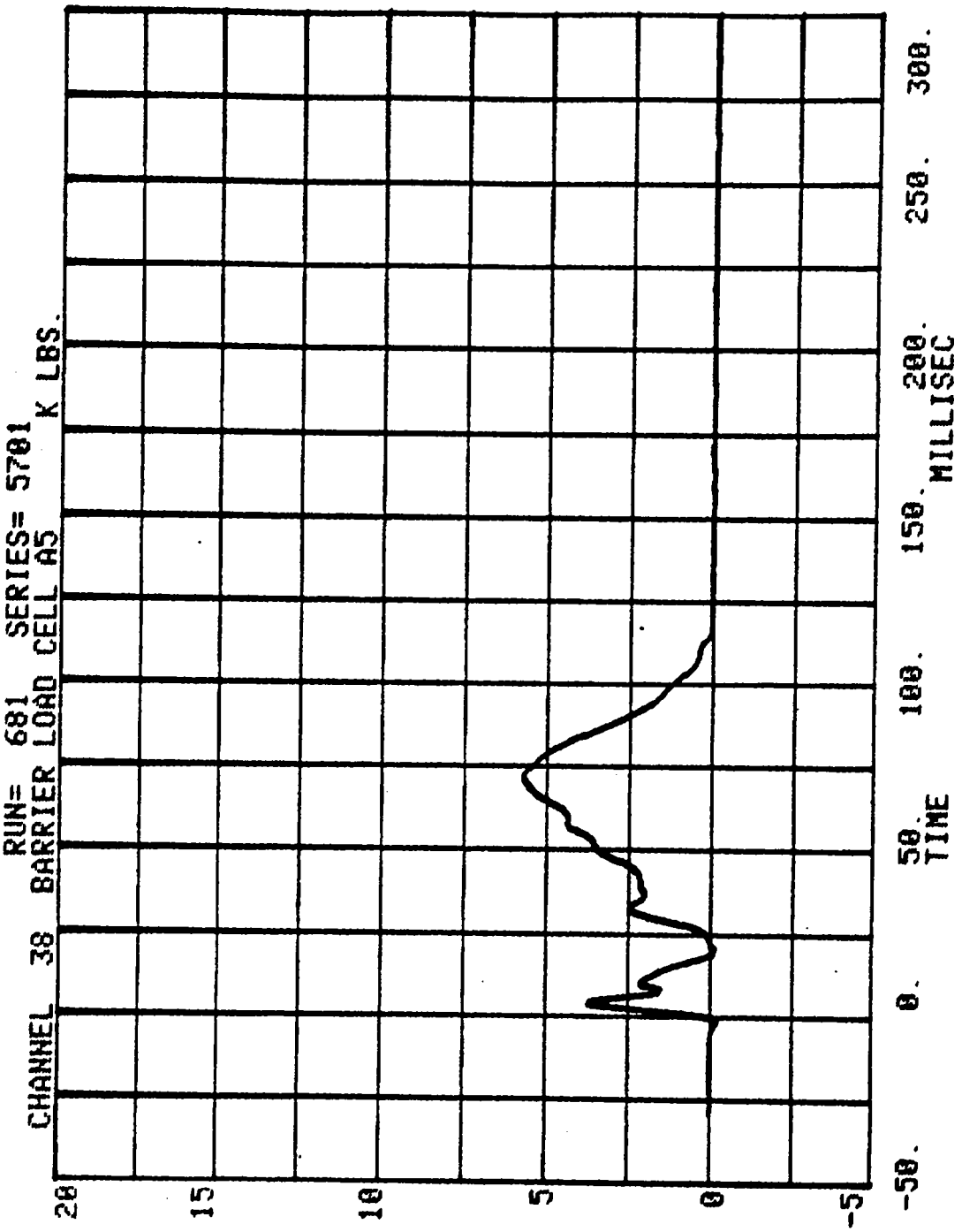

CHANNEL 34 BARRIER LOAD CELL A1
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

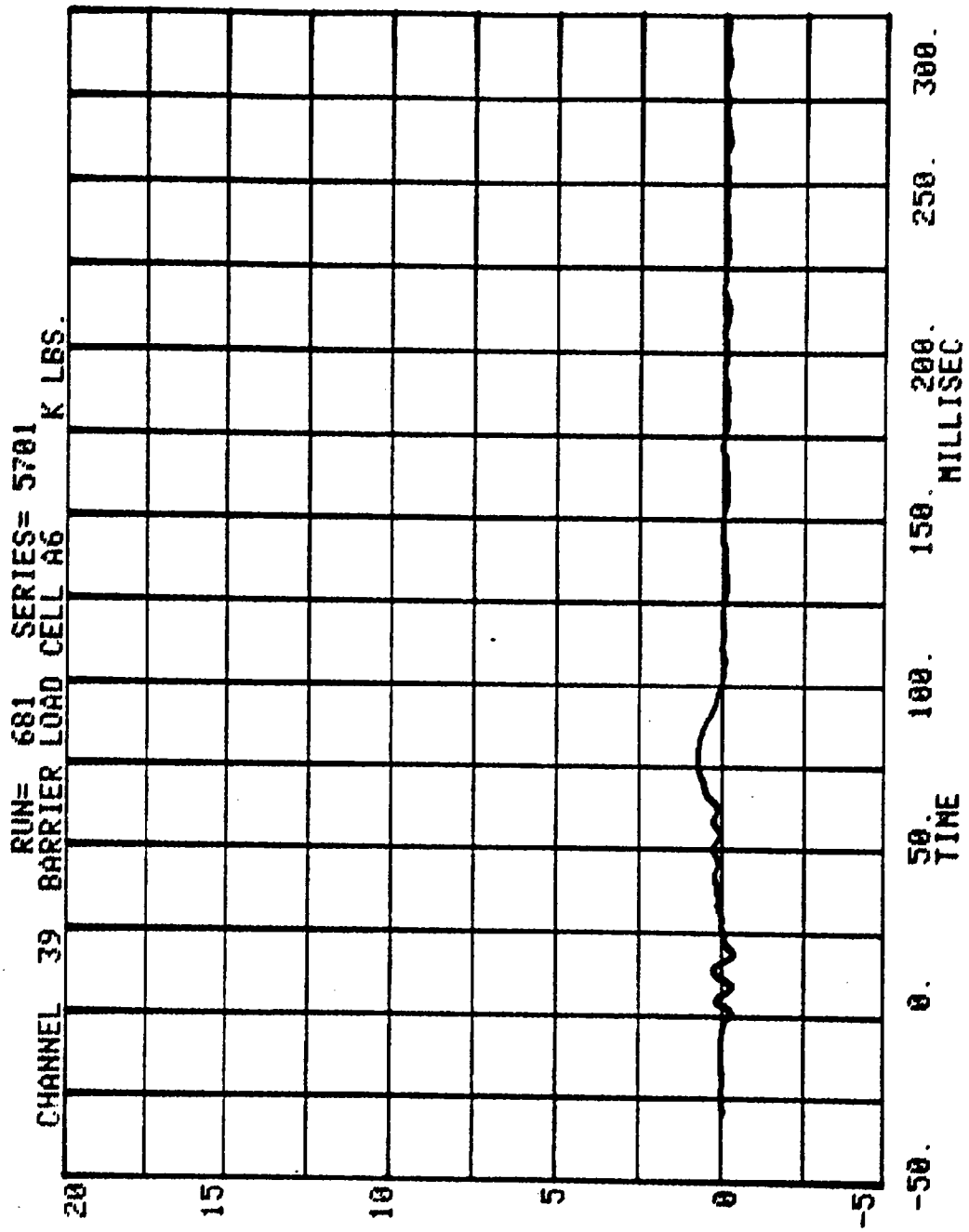

CHANNEL 35 BARRIER LOAD CELL A2
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

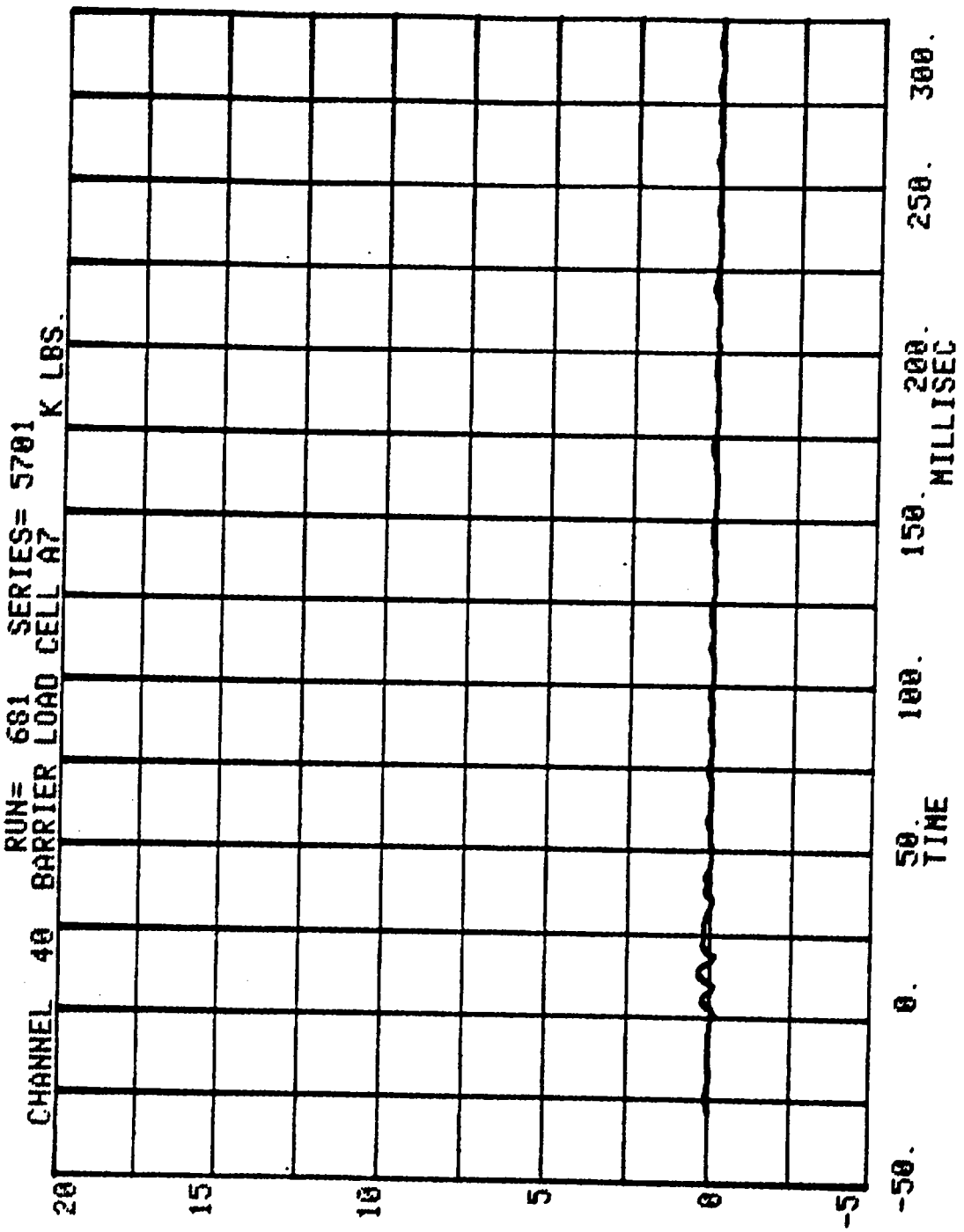

CHANNEL 36 BARRIER LOAD CELL A3
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

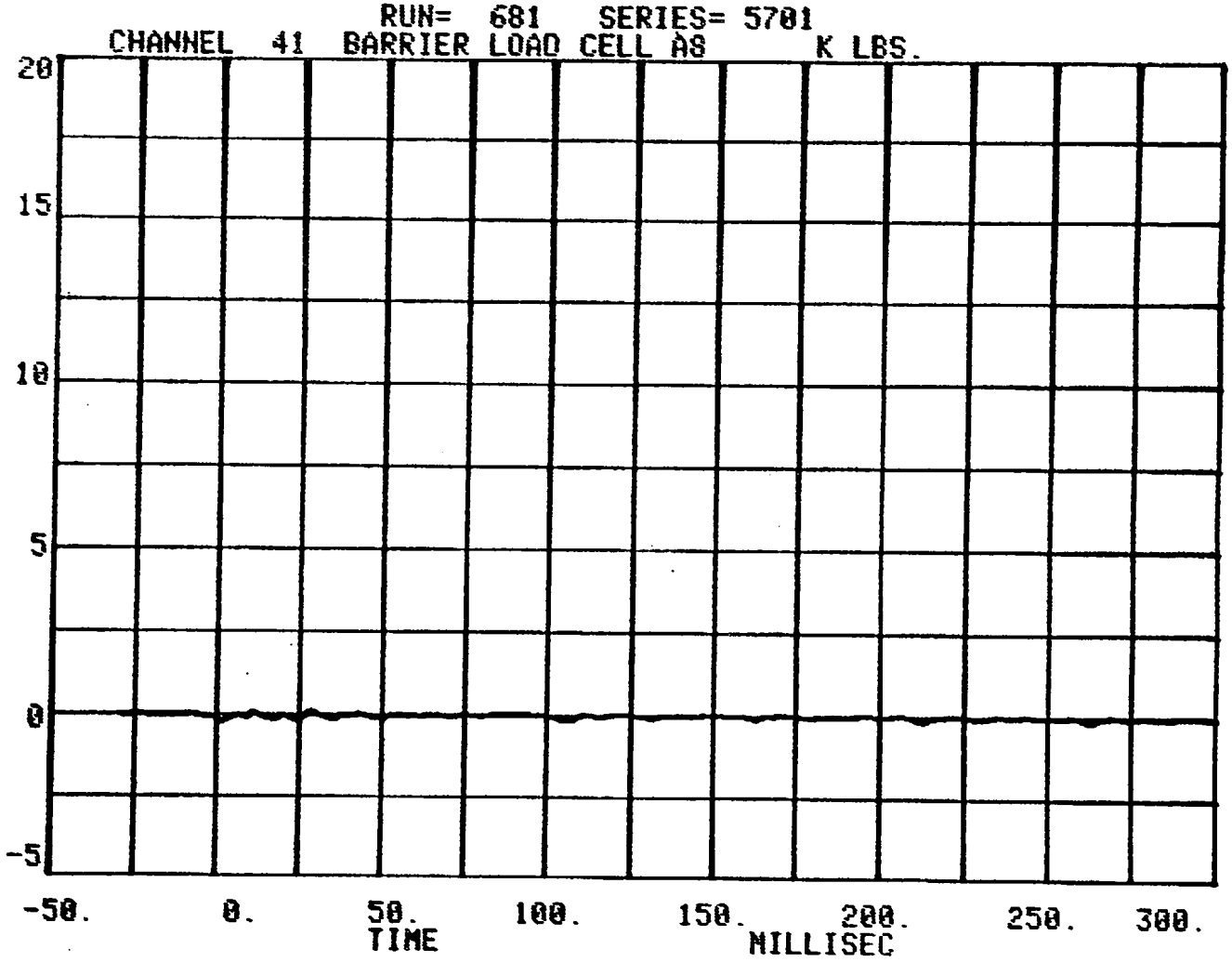

RUN= 681 SERIES= 5701
CHANNEL 37 BARRIER LOAD CELL A4
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

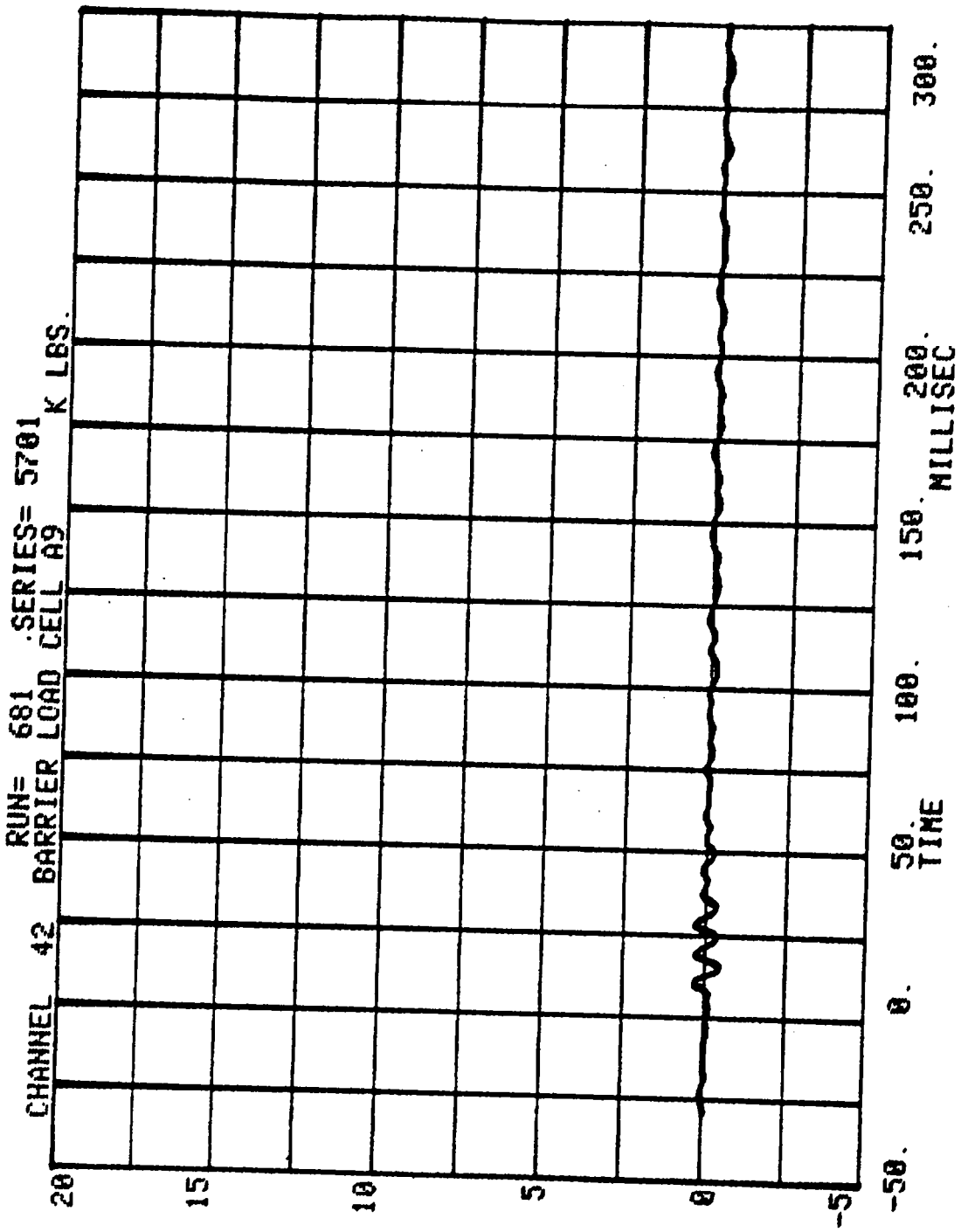

CHANNEL 38 BARRIER LOAD CELL A5
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

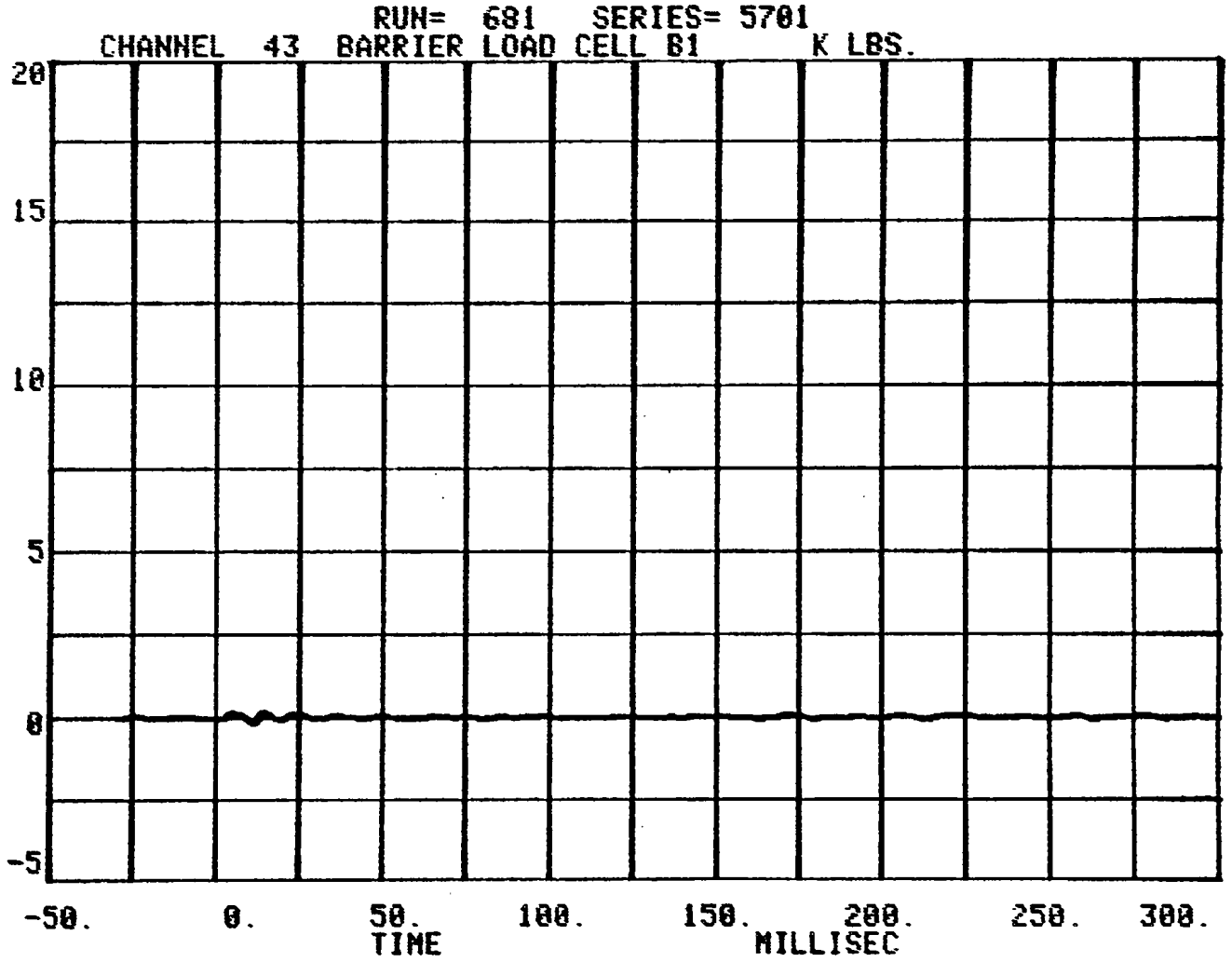

CHANNEL 39 BARRIER LOAD CELL A6
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

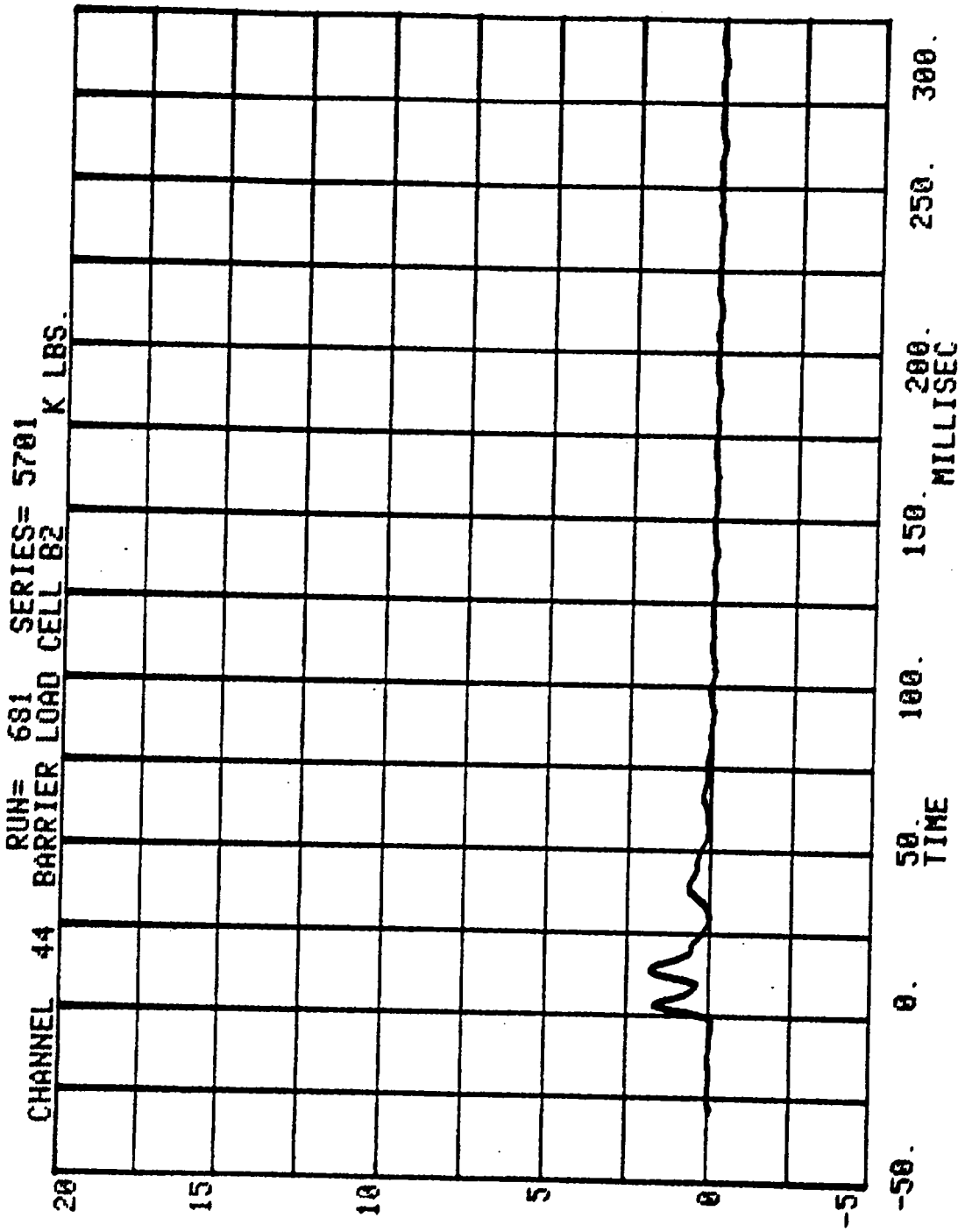
7333-17

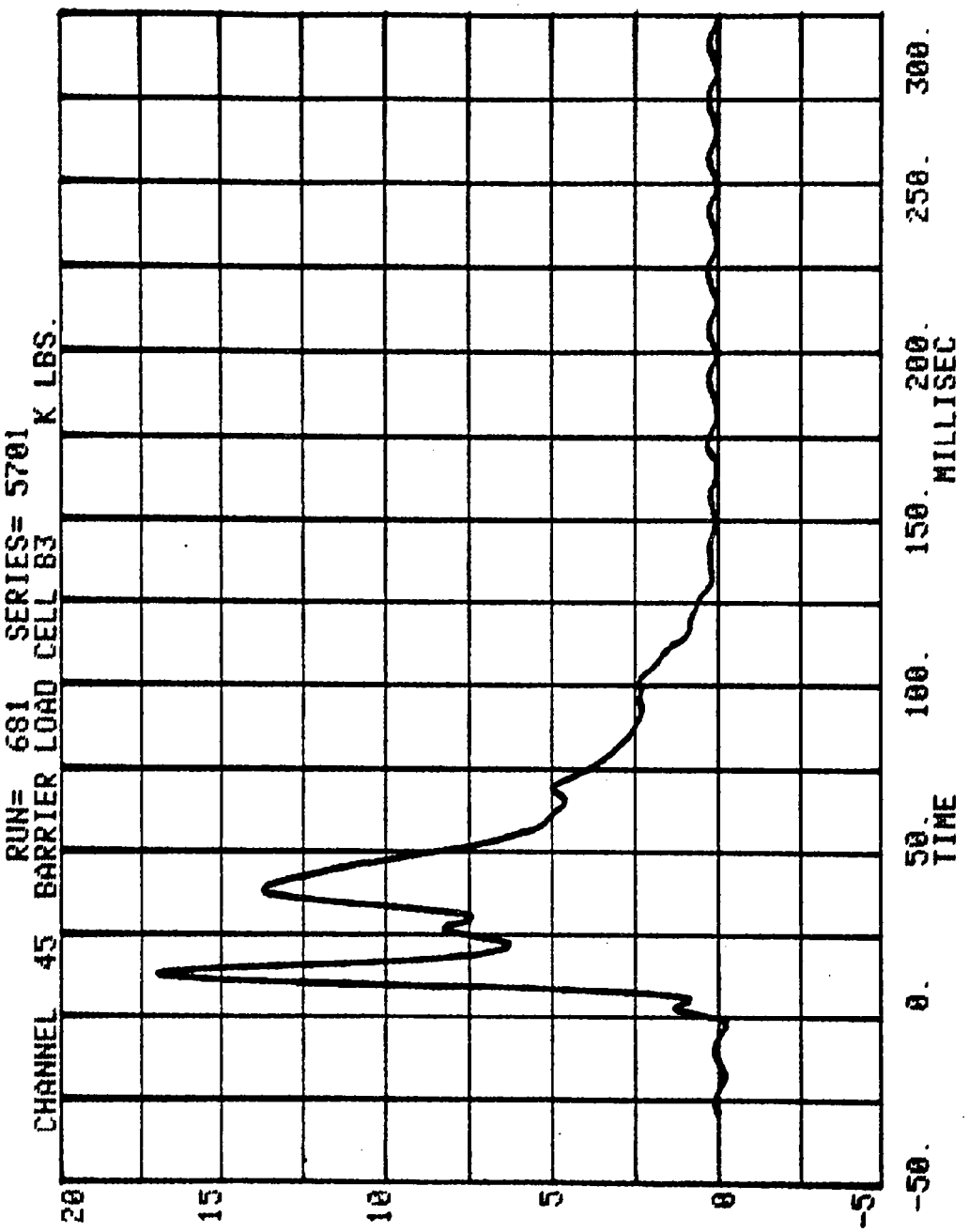

CHANNEL 40 BARRIER LOAD CELL A7
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 681 SERIES= 5701
CHANNEL 41 BARRIER LOAD CELL AS K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
NILLISEC

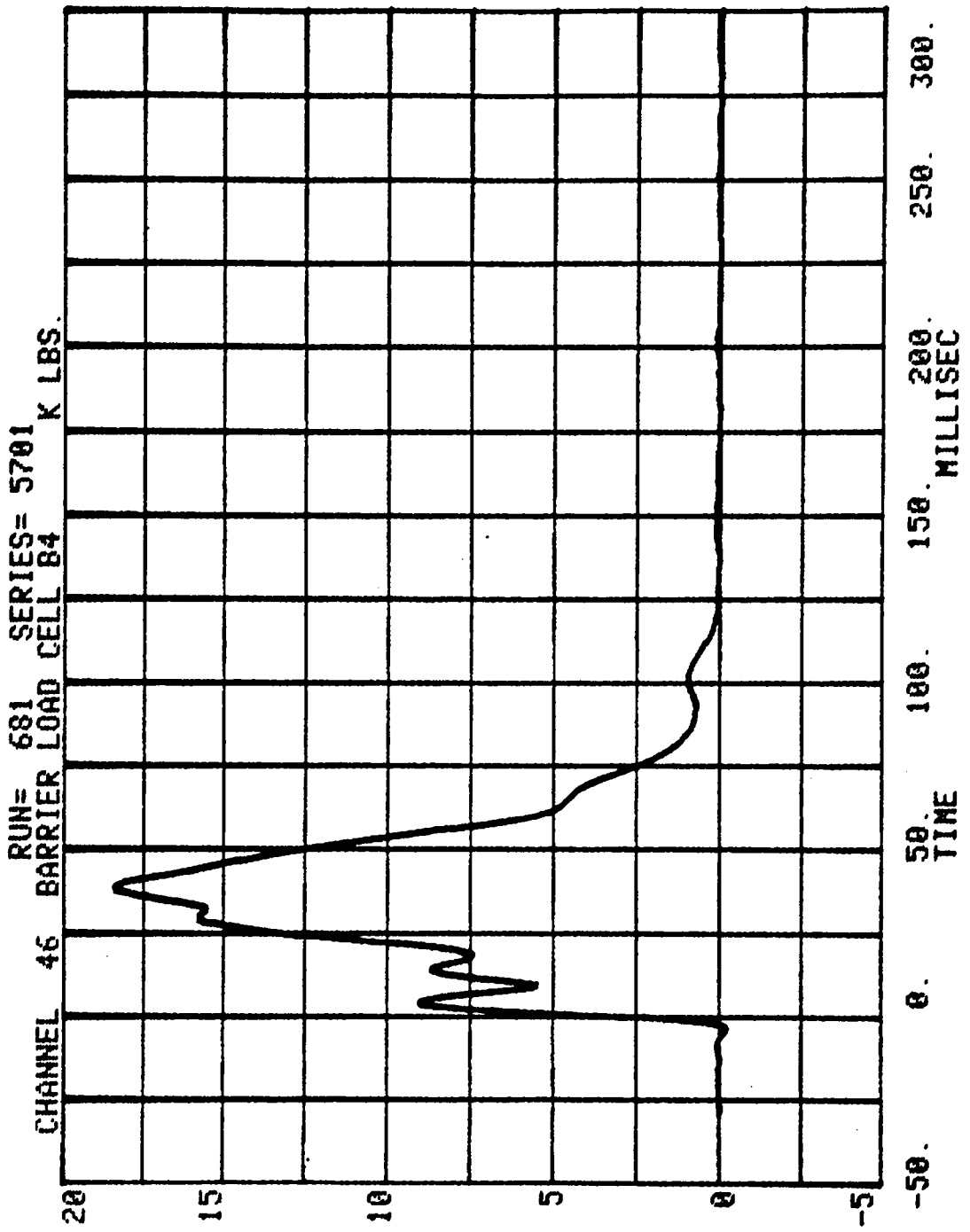

CHANNEL 42 BARRIER LOAD CELL A9
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

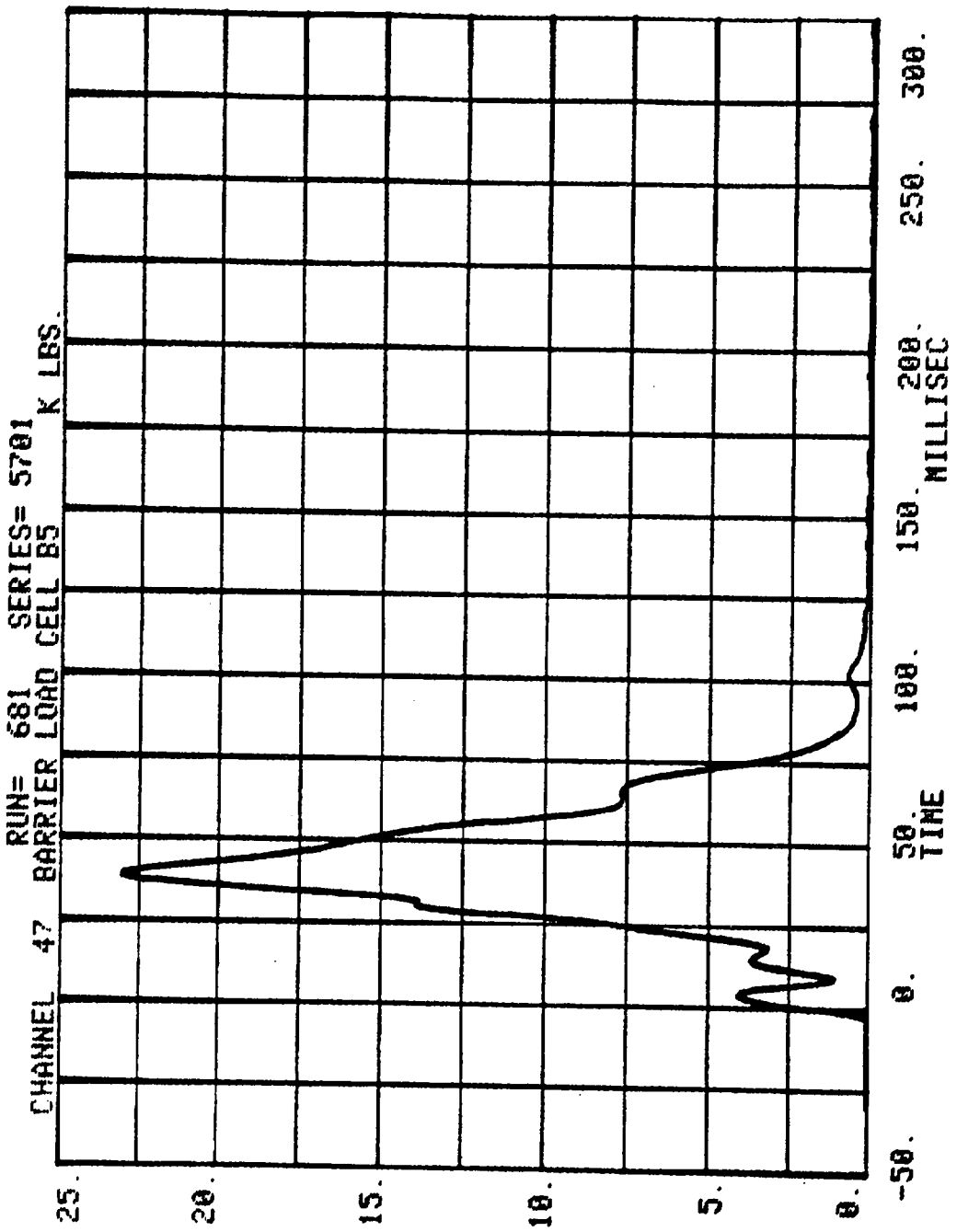

RUN= 681 SERIES= 5701
CHANNEL 43 BARRIER LOAD CELL B1 K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

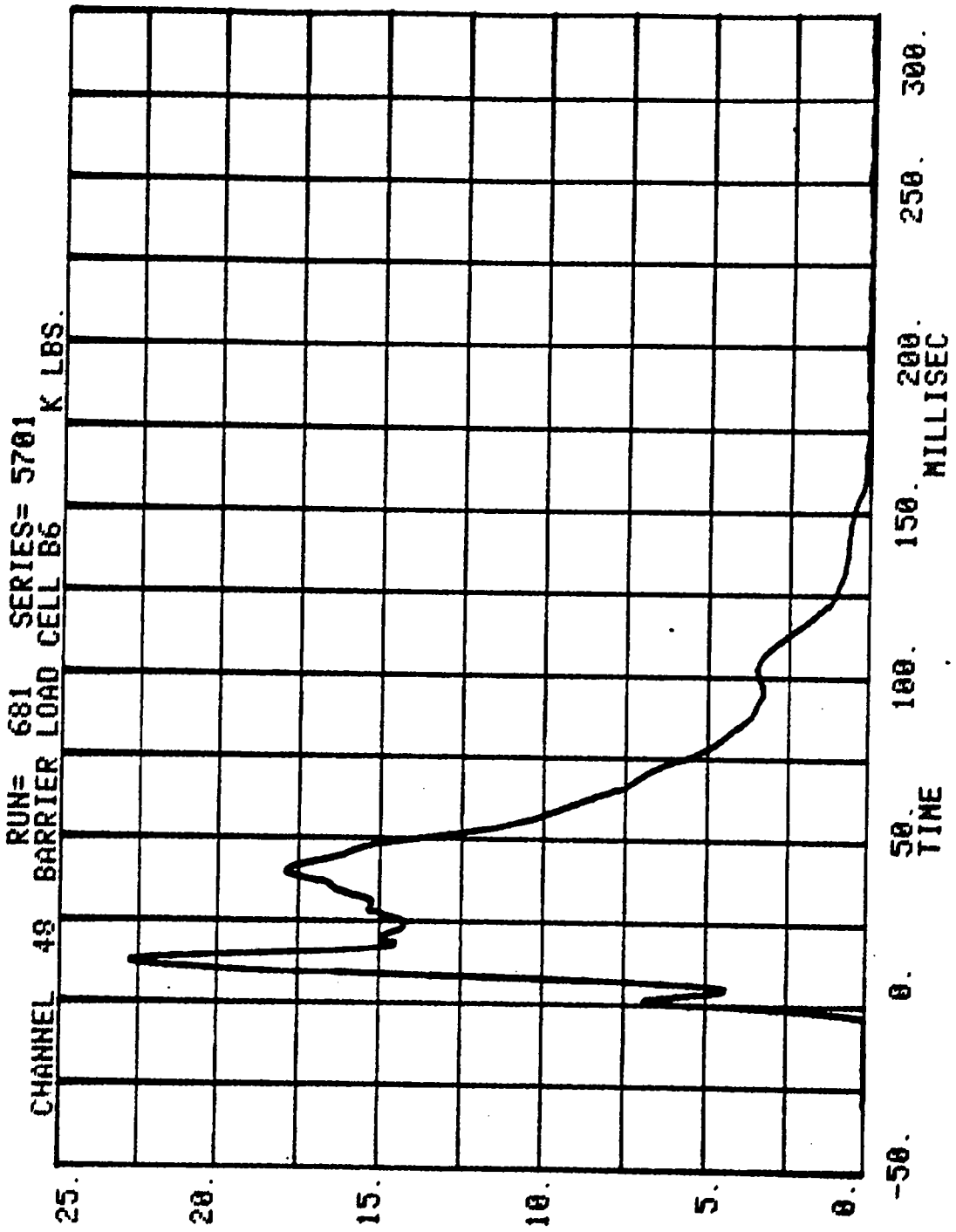

CHANNEL 44 RUN= 681 SERIES= 5701
BARRIER LOAD CELL B2 K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 45 BARRIER LOAD CELL 83
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

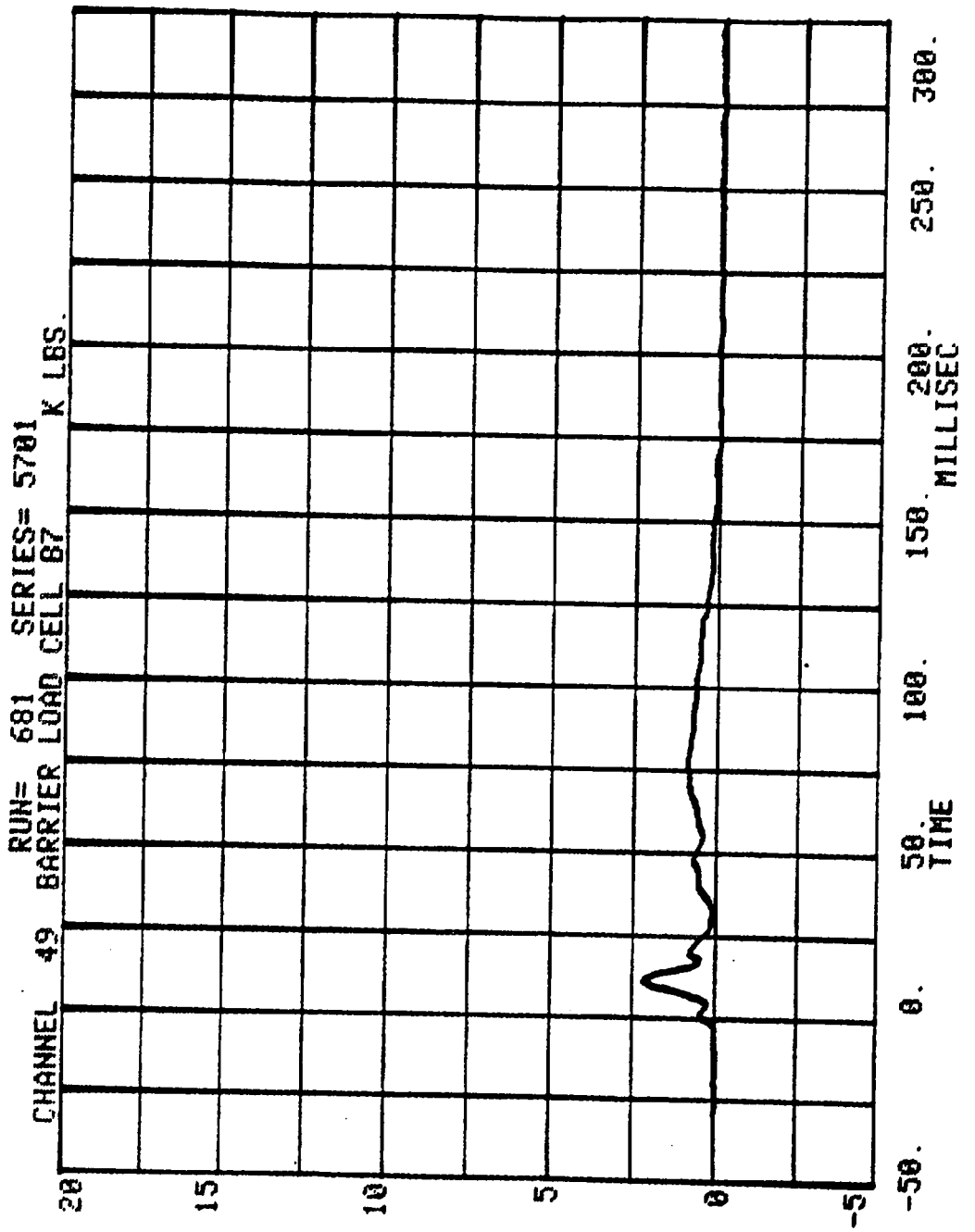
7333-17

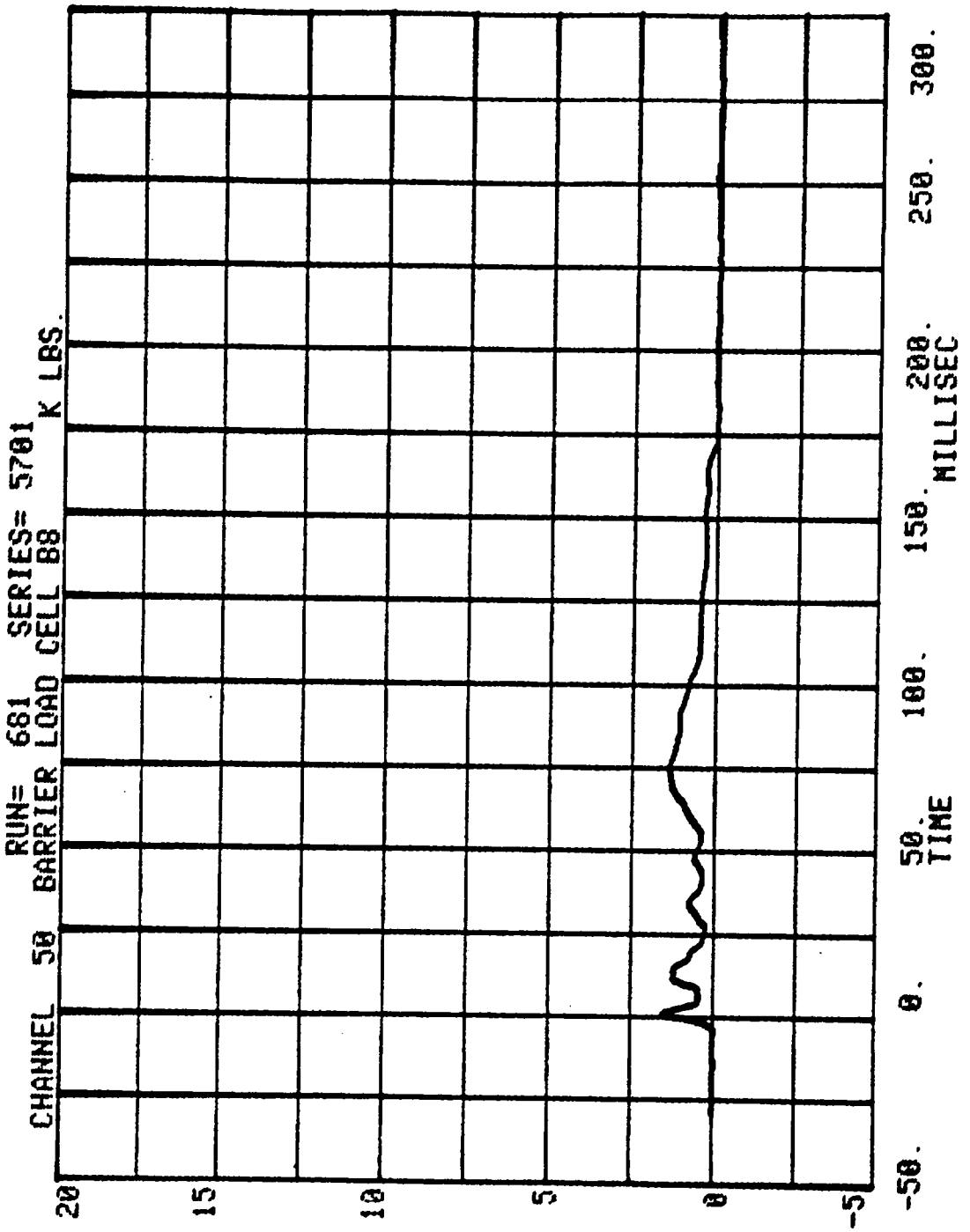

CHANNEL 46 BARRIER LOAD CELL 84
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 47 BARRIER LOAD CELL B5
RUN= 681 SERIES= 5701
K LBS.
25.
20.
15.
10.
5.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

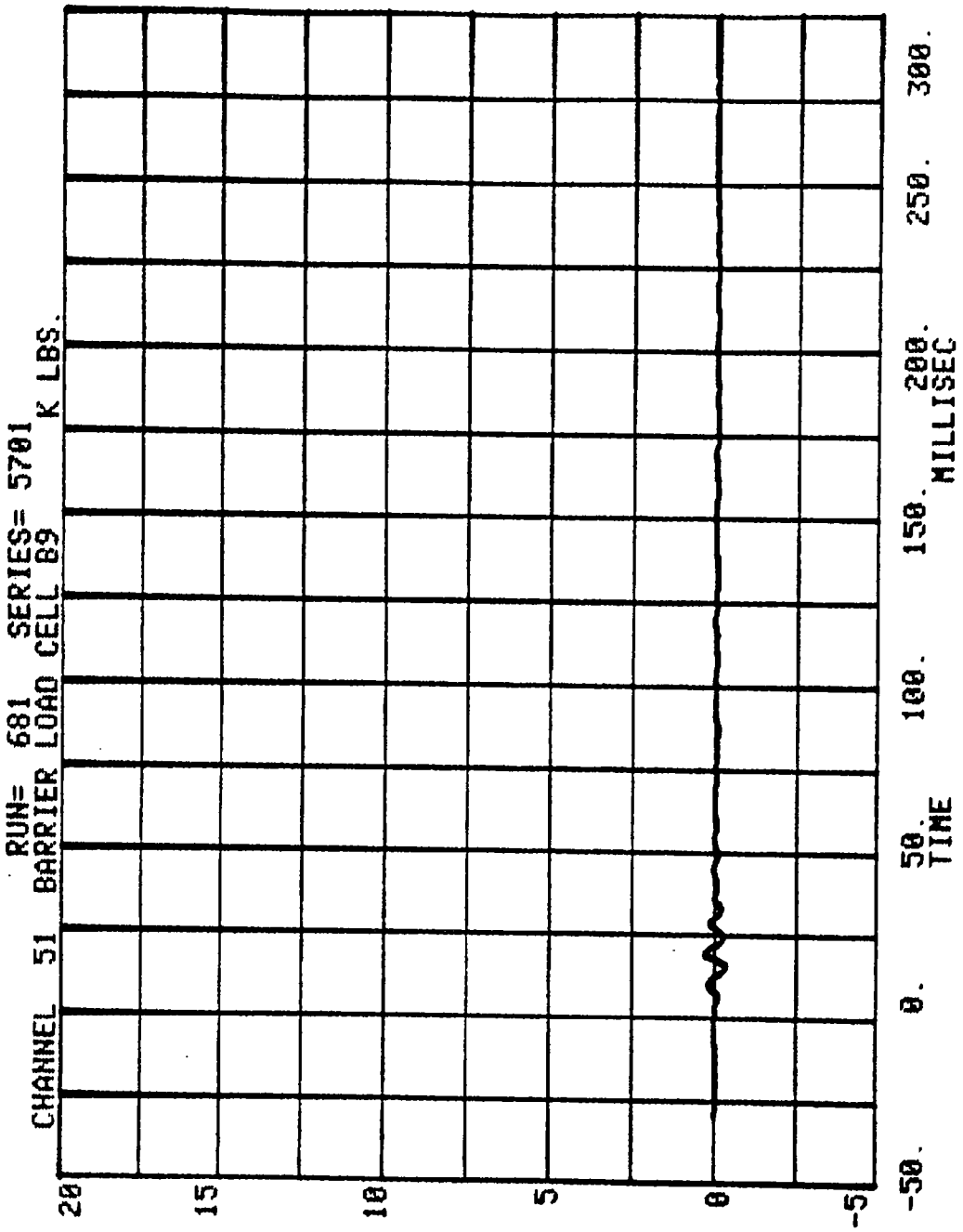

CHANNEL 48 BARRIER LOAD CELL B6
RUN= 681 SERIES= 5701
K LBS.
25.
20.
15.
10.
5.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

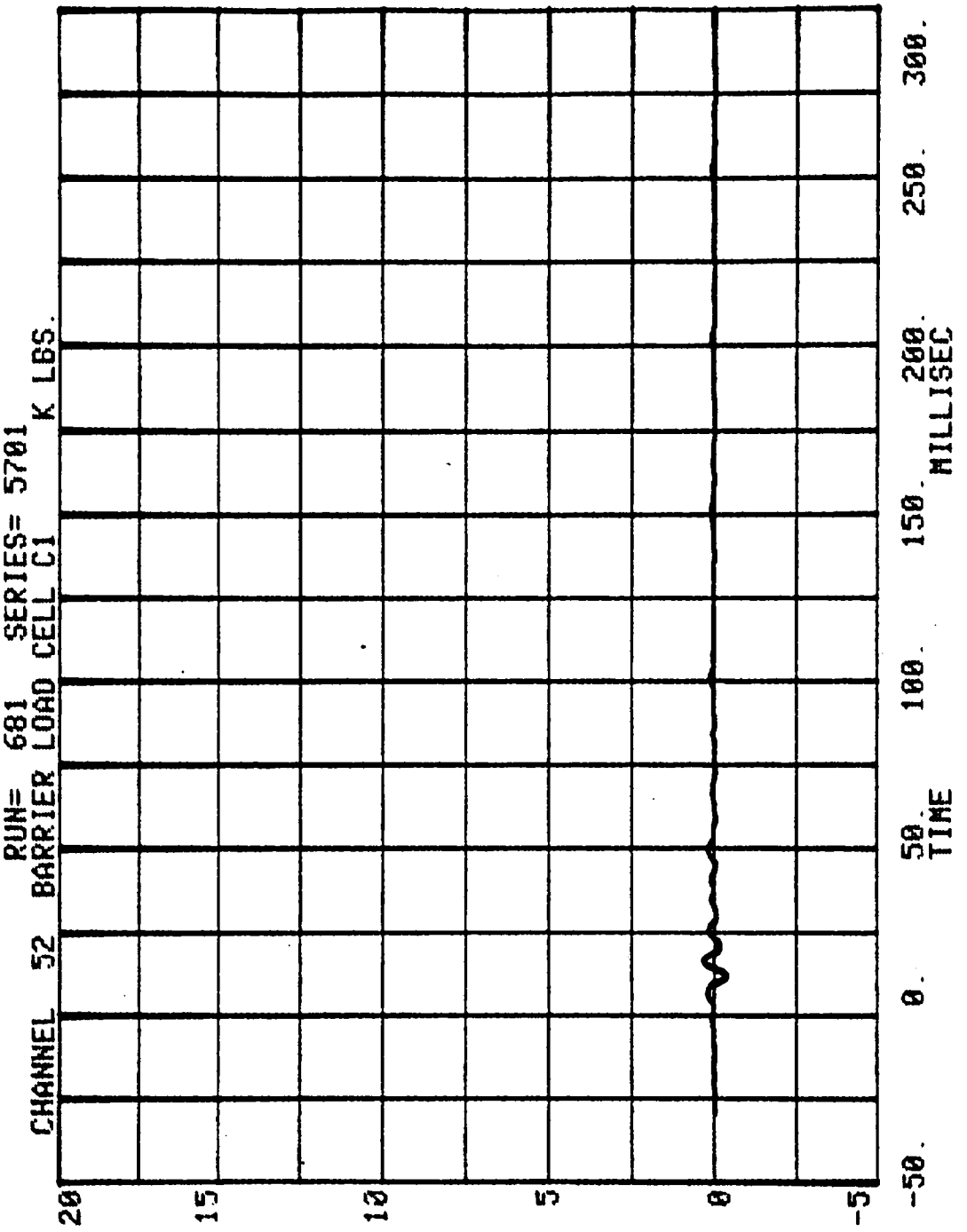

CHANNEL 49 BARRIER LOAD CELL B7
RUN= 681 SERIES= 5701 K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME MILLISEC

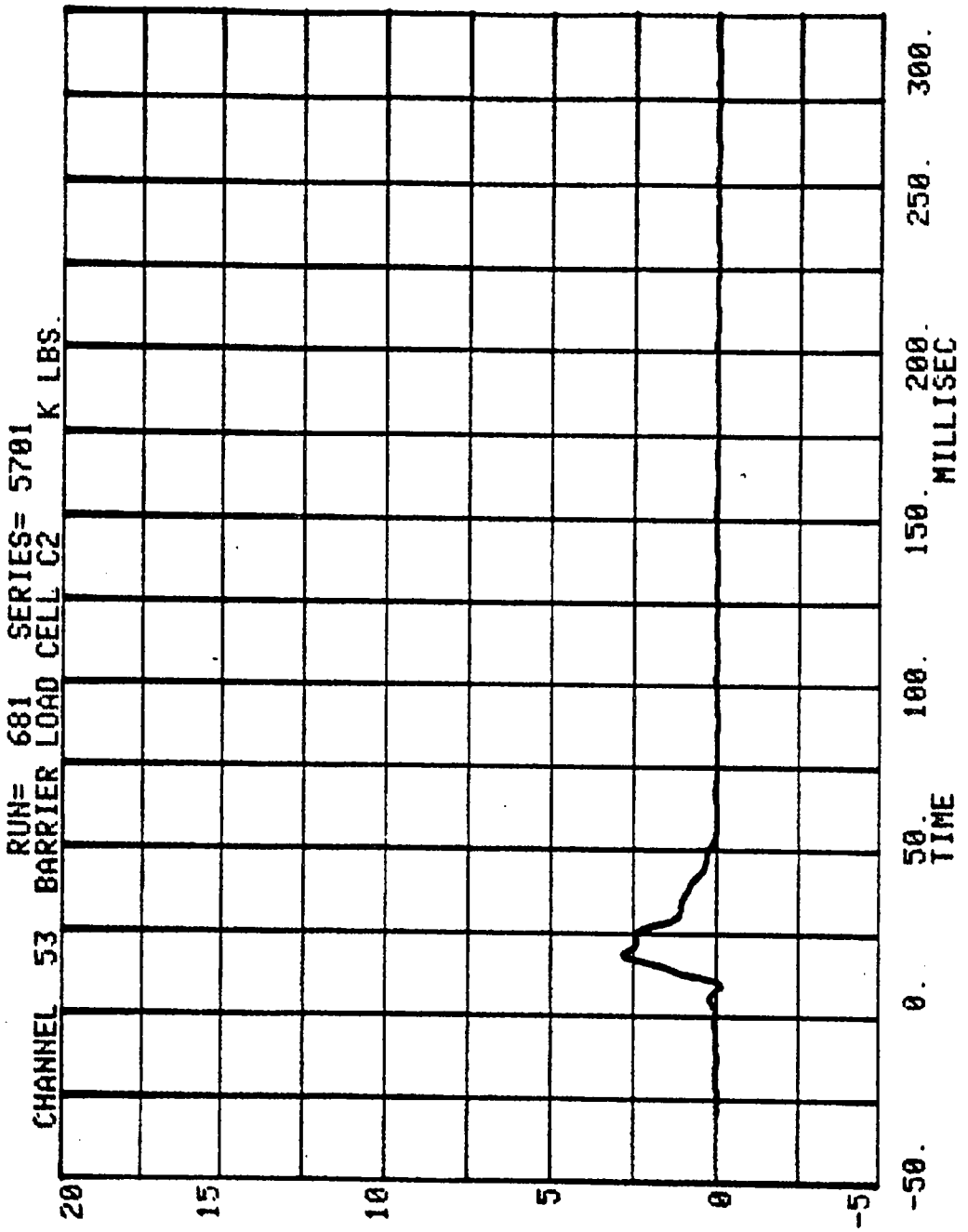

CHANNEL 50 BARRIER LOAD CELL 88
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

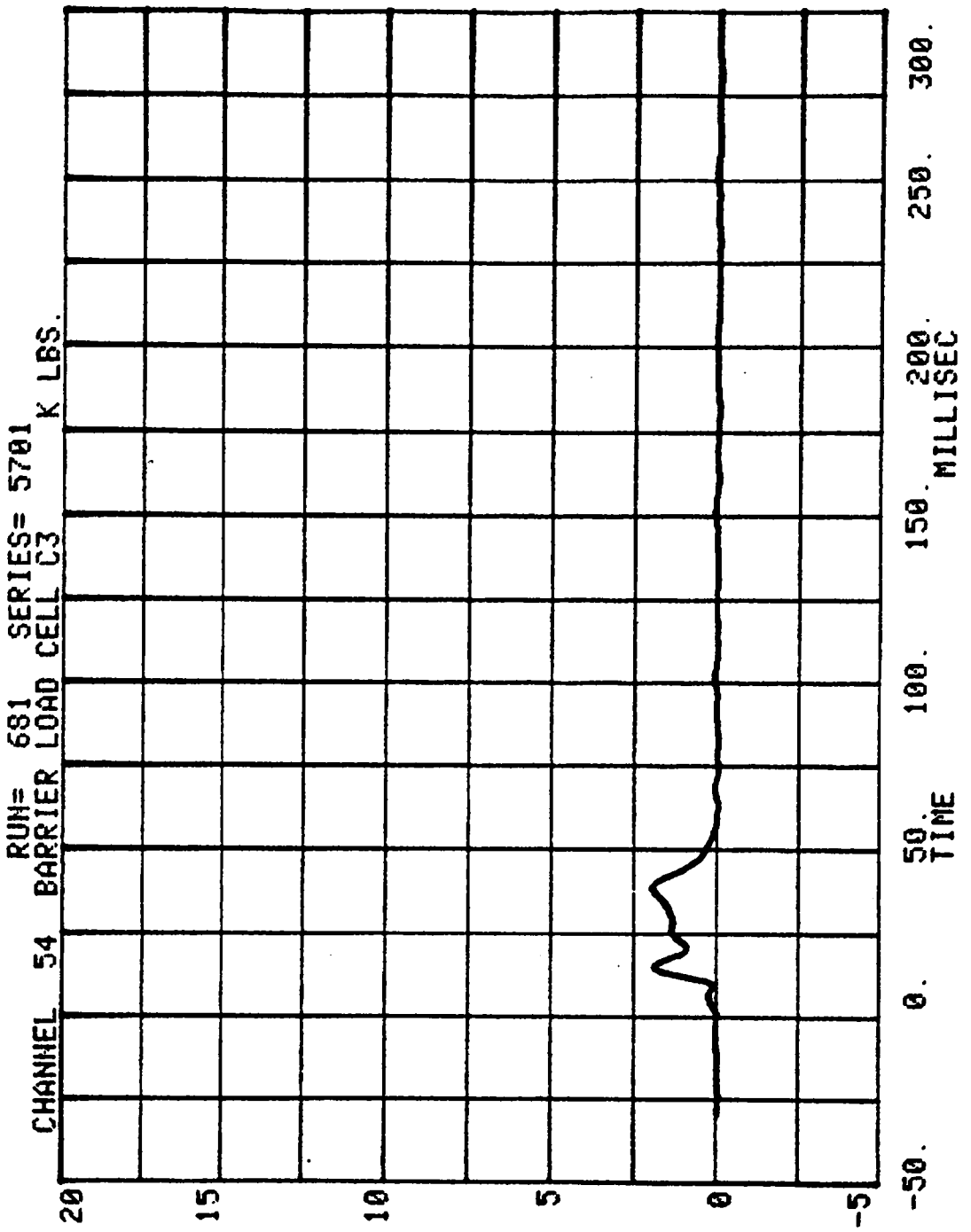

CHANNEL 51 RUN= 681 SERIES= 5701
BARRIER LOAD CELL 89 K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

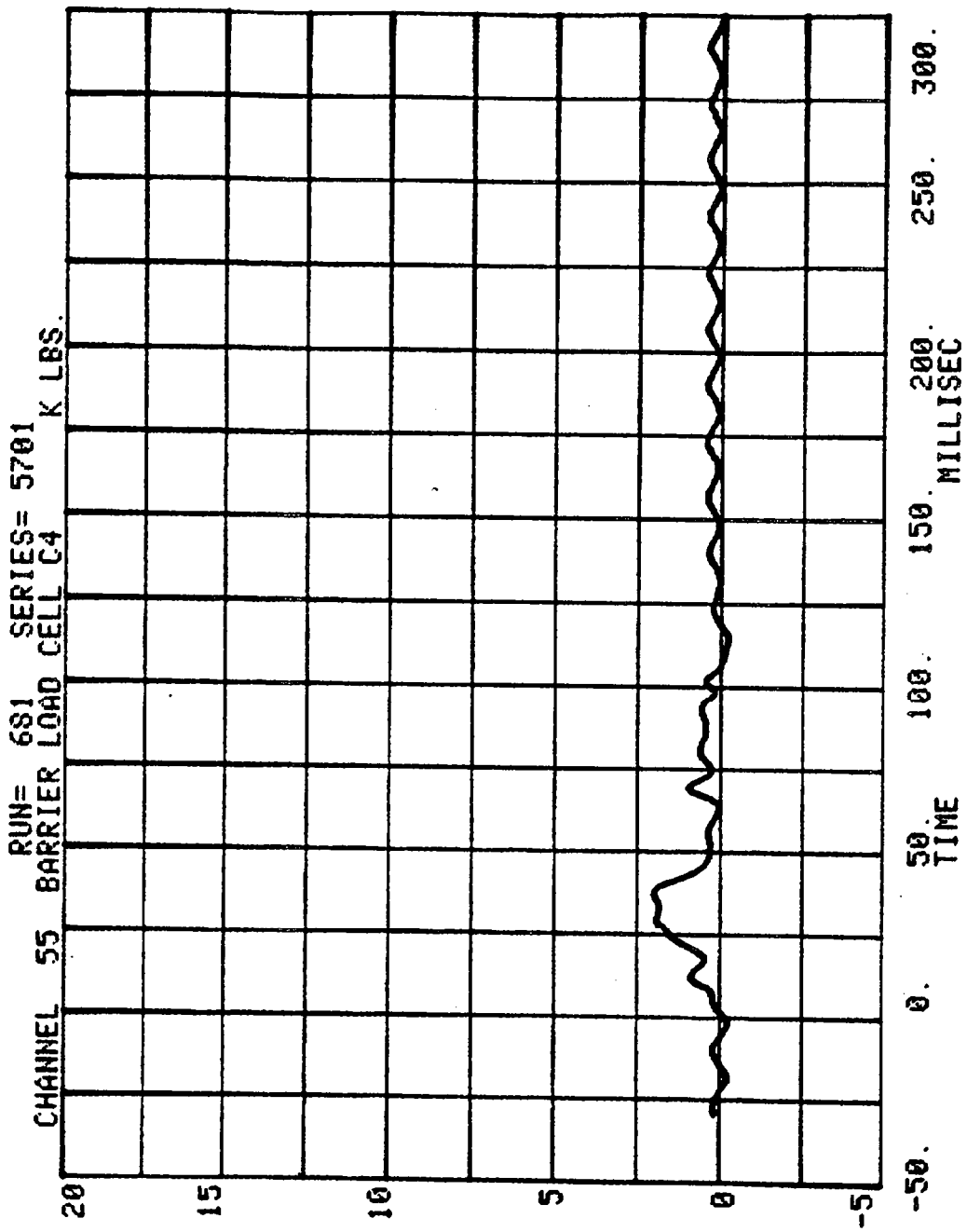
7333-17


CHANNEL 52 BARRIER LOAD CELL C1
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

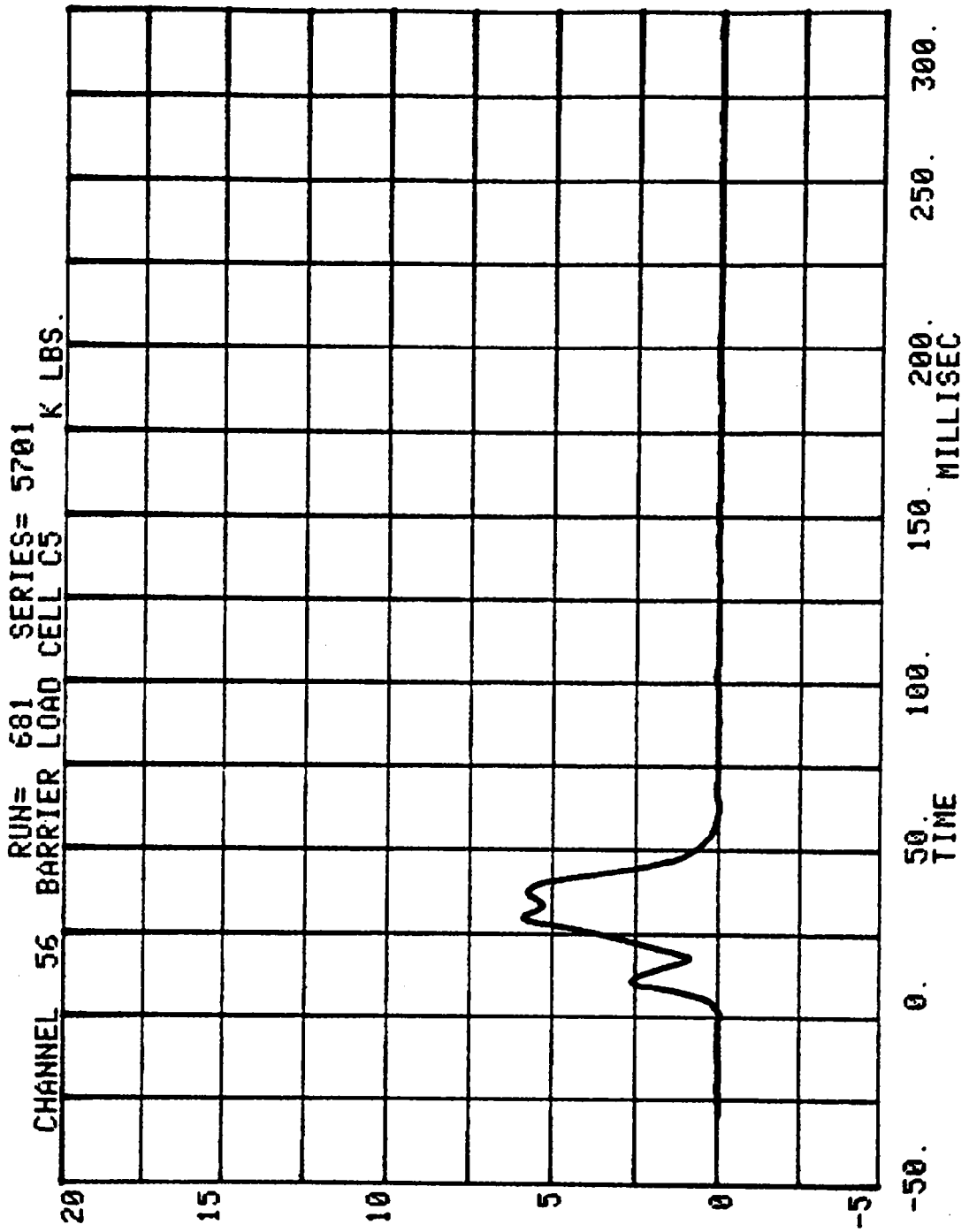

CHANNEL 53 BARRIER LOAD CELL C2
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

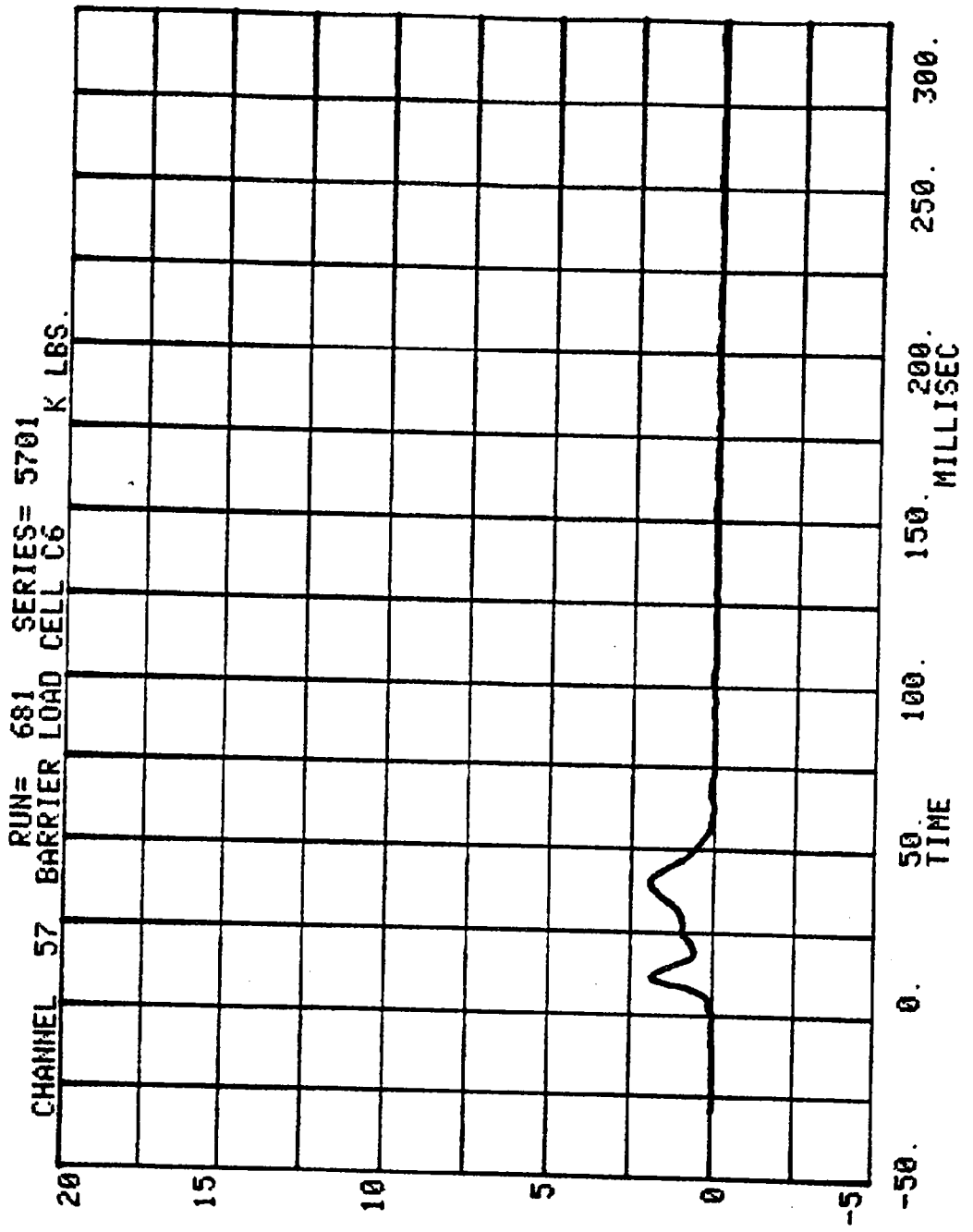
7333-17


CHANNEL 54 BARRIER LOAD CELL C3
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

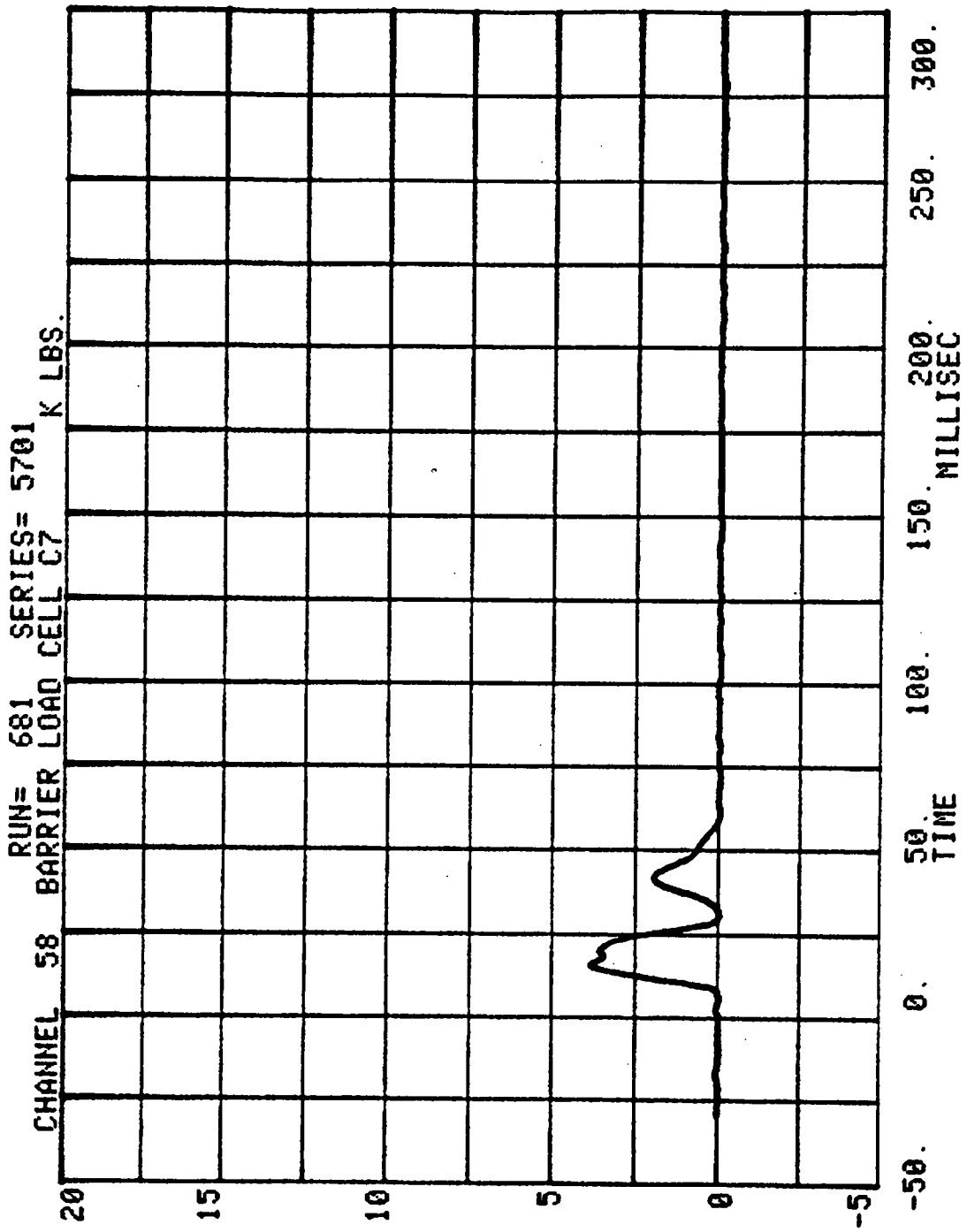

CHANNEL 55 BARRIER LOAD CELL C4
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

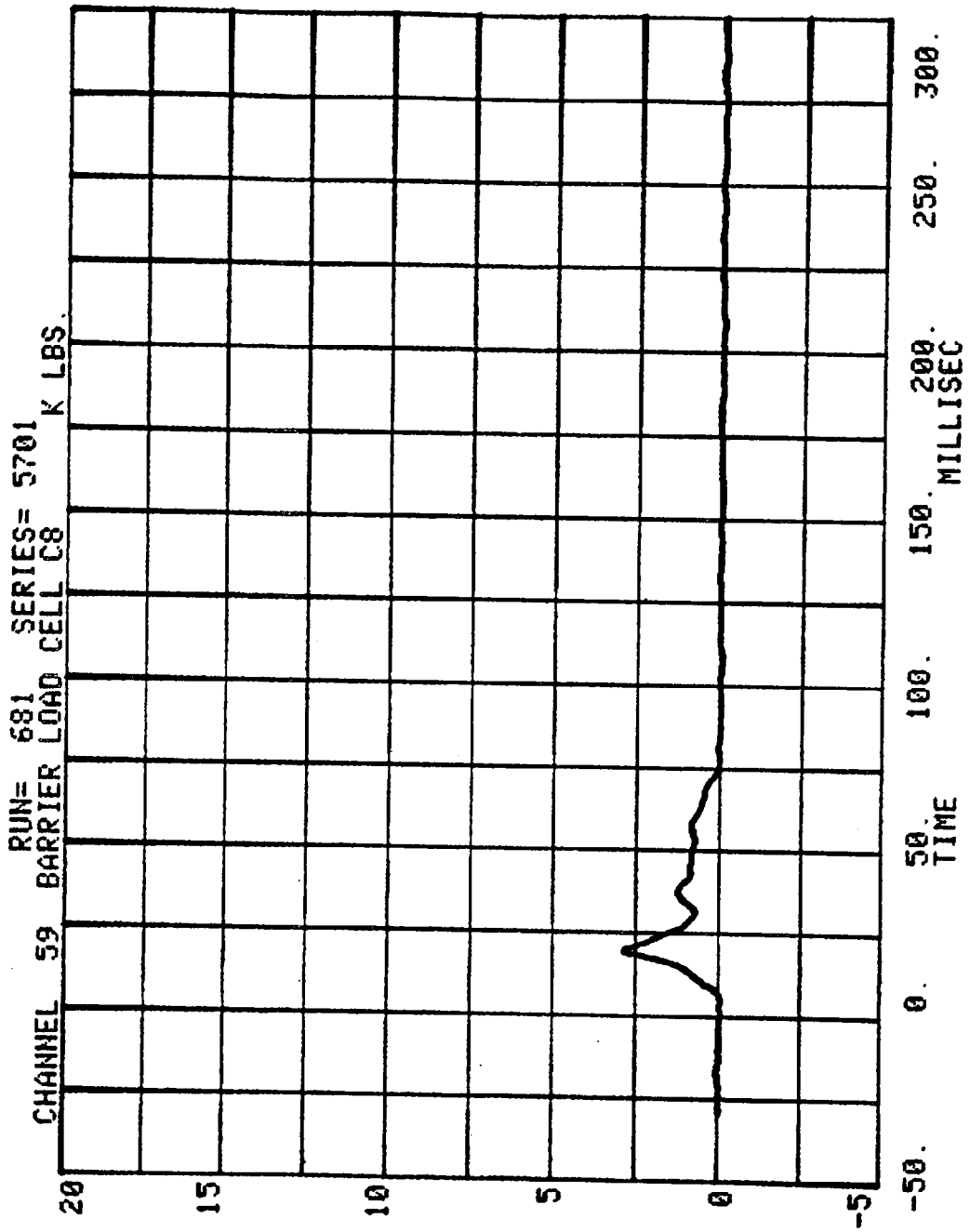
7333-17


CHANNEL 56 BARRIER LOAD CELL C5
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

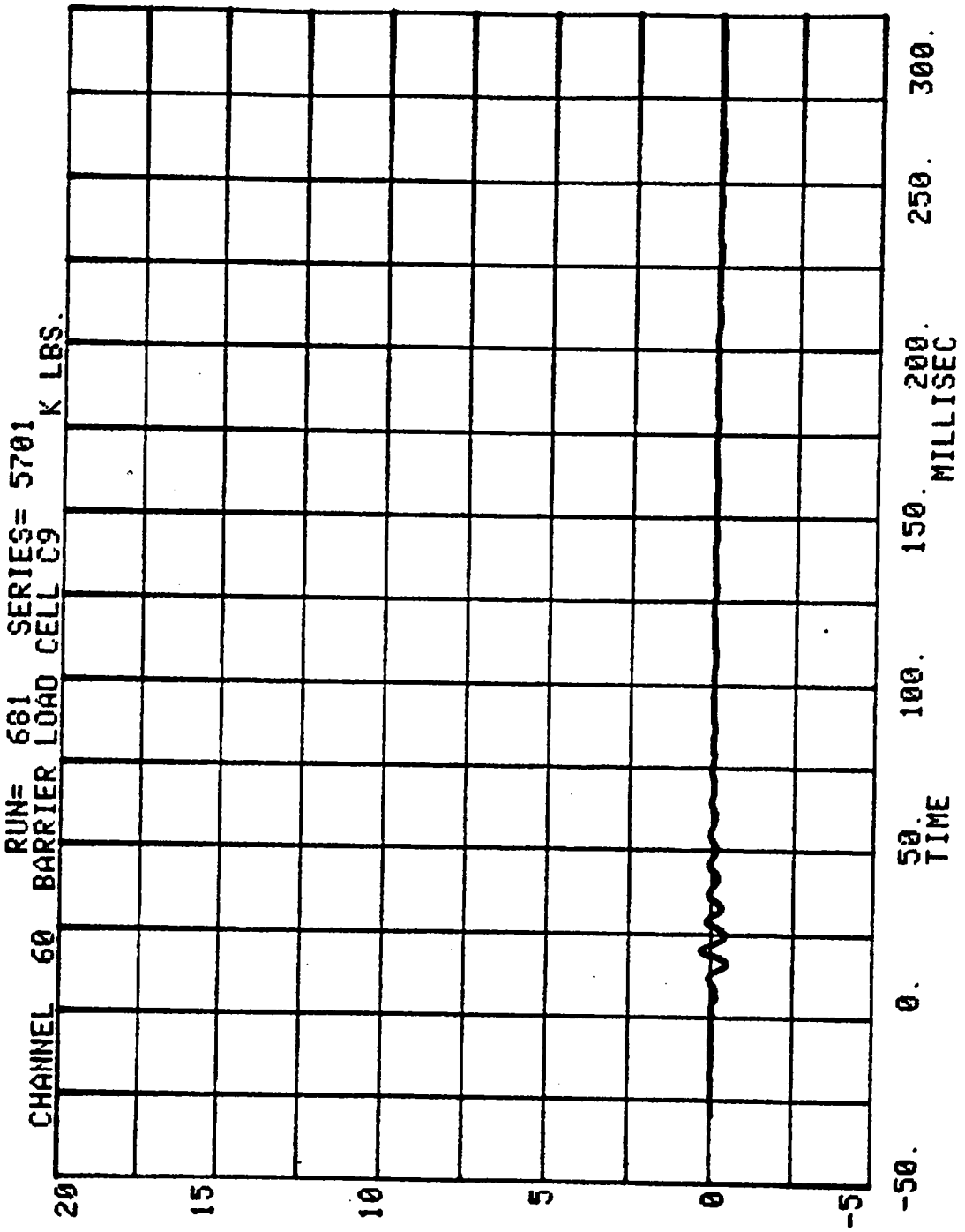

CHANNEL 57
RUN= 681
BARRIER LOAD CELL C6
SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

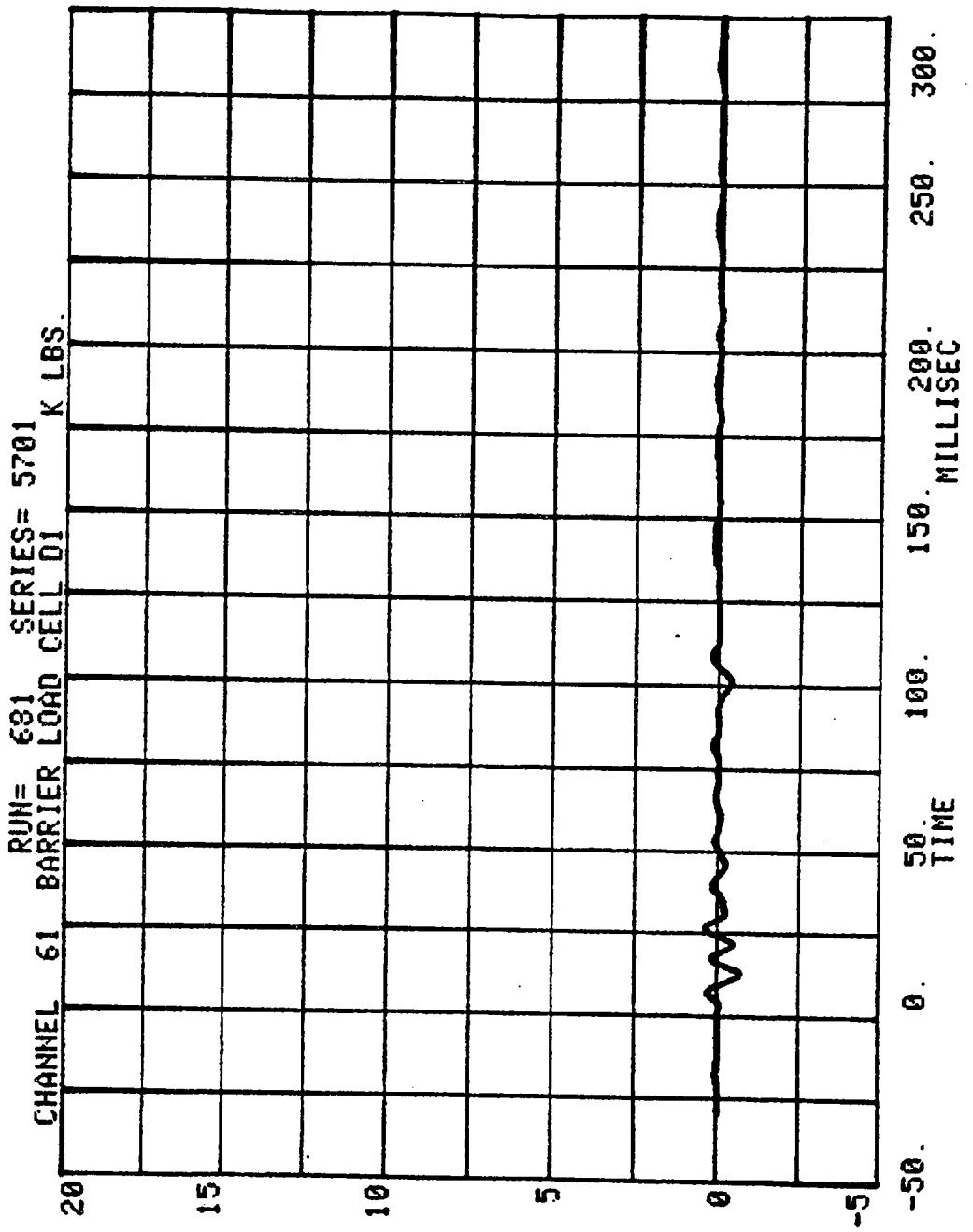

CHANNEL 58 BARRIER LOAD CELL C7
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 59
RUN= 681 SERIES= 5701
BARRIER LOAD CELL C8
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

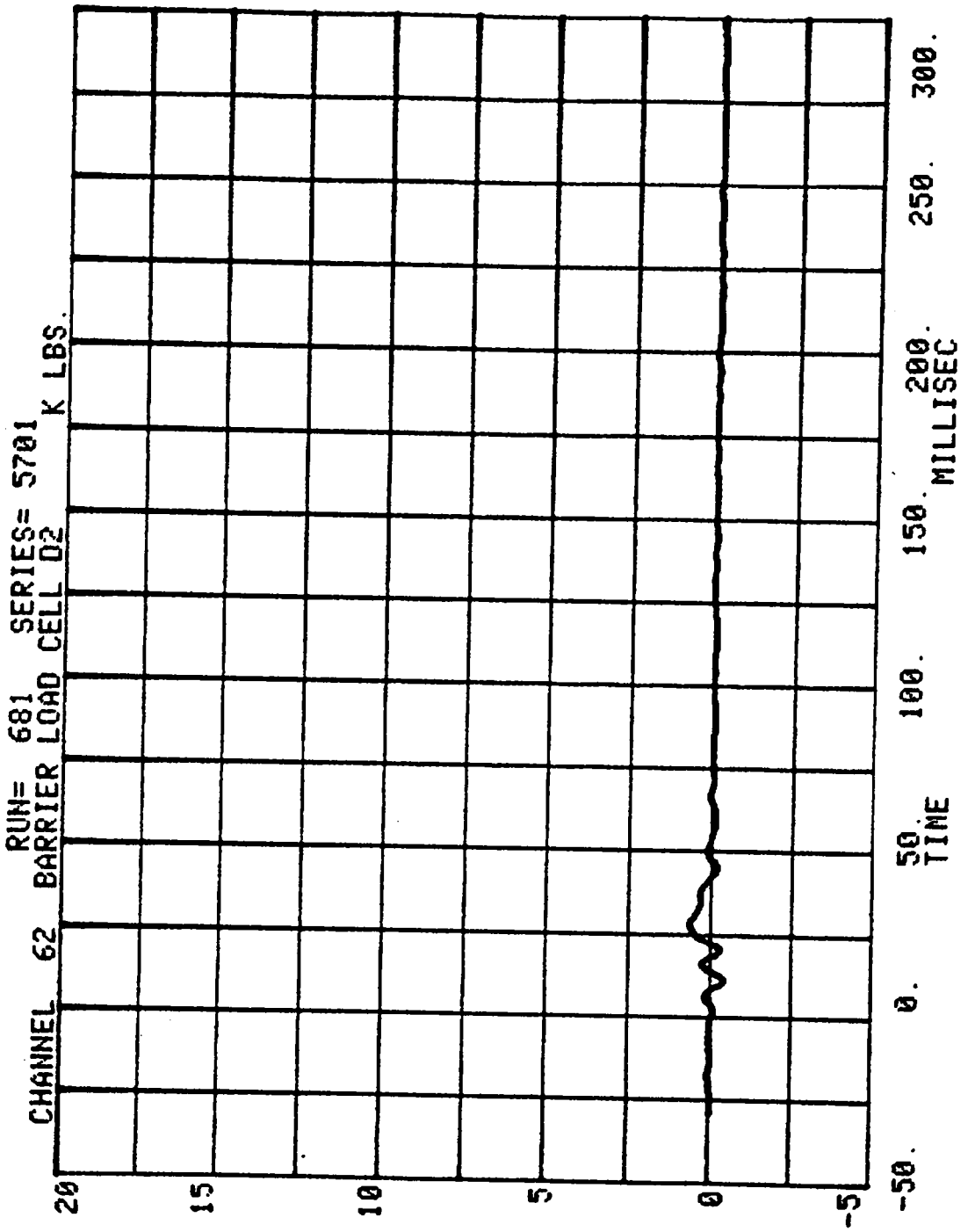
7333-17


RUN= 681 SERIES= 5701
CHANNEL 60 BARRIER LOAD CELL C9
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

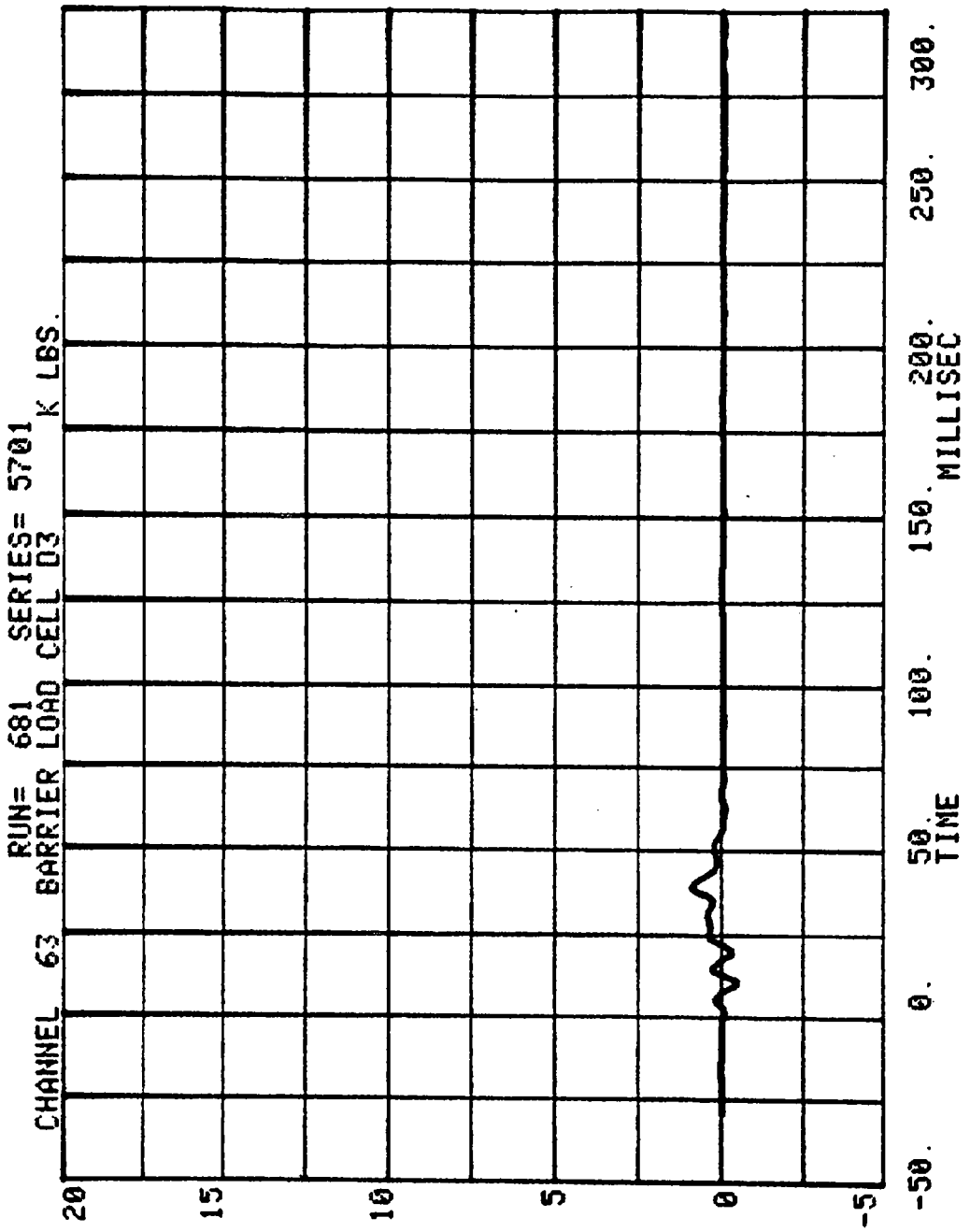
7333-17

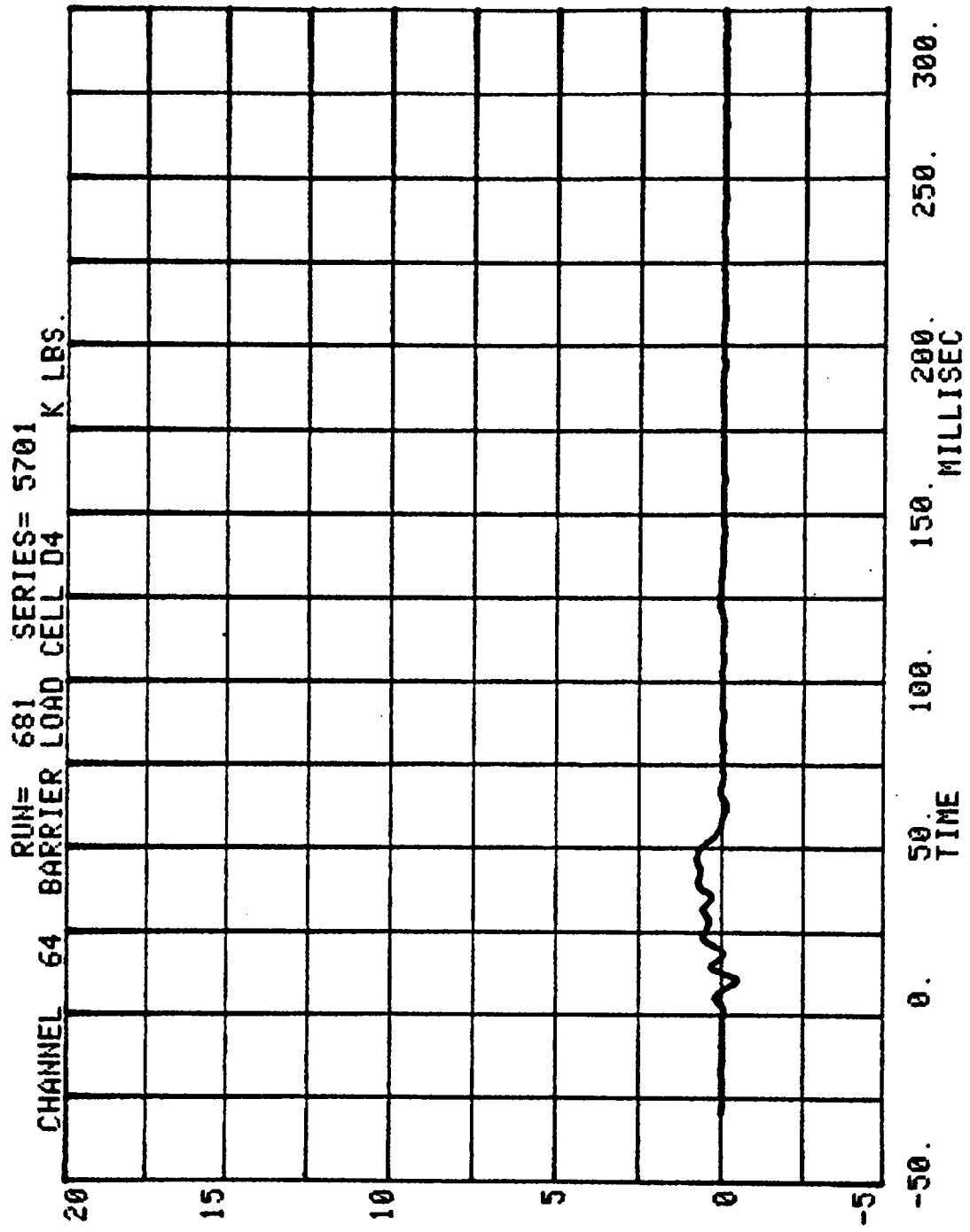

CHANNEL 61 BARRIER LOAD CELL 01
RUN= 631 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

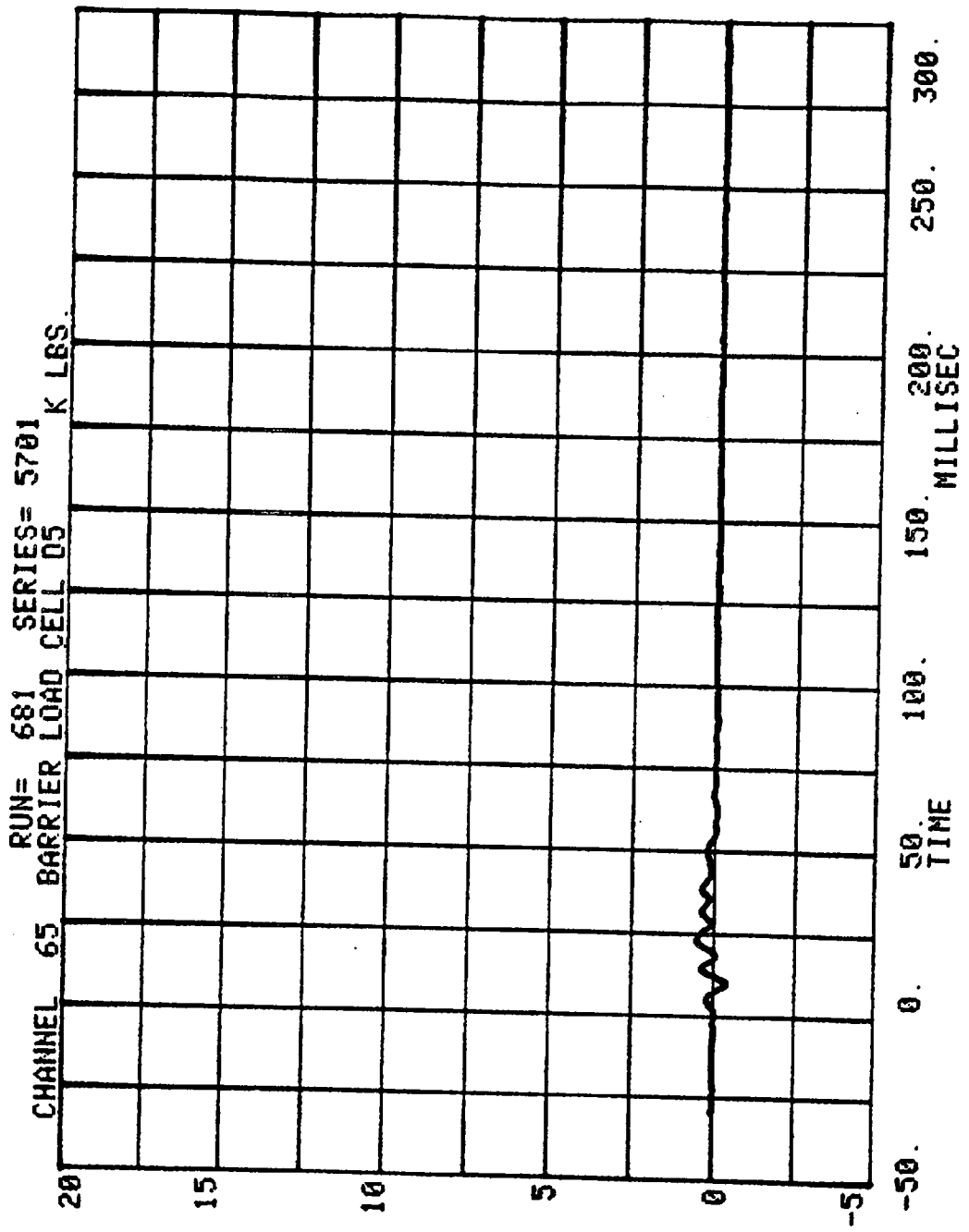

CHANNEL 62 BARRIER LOAD CELL D2
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

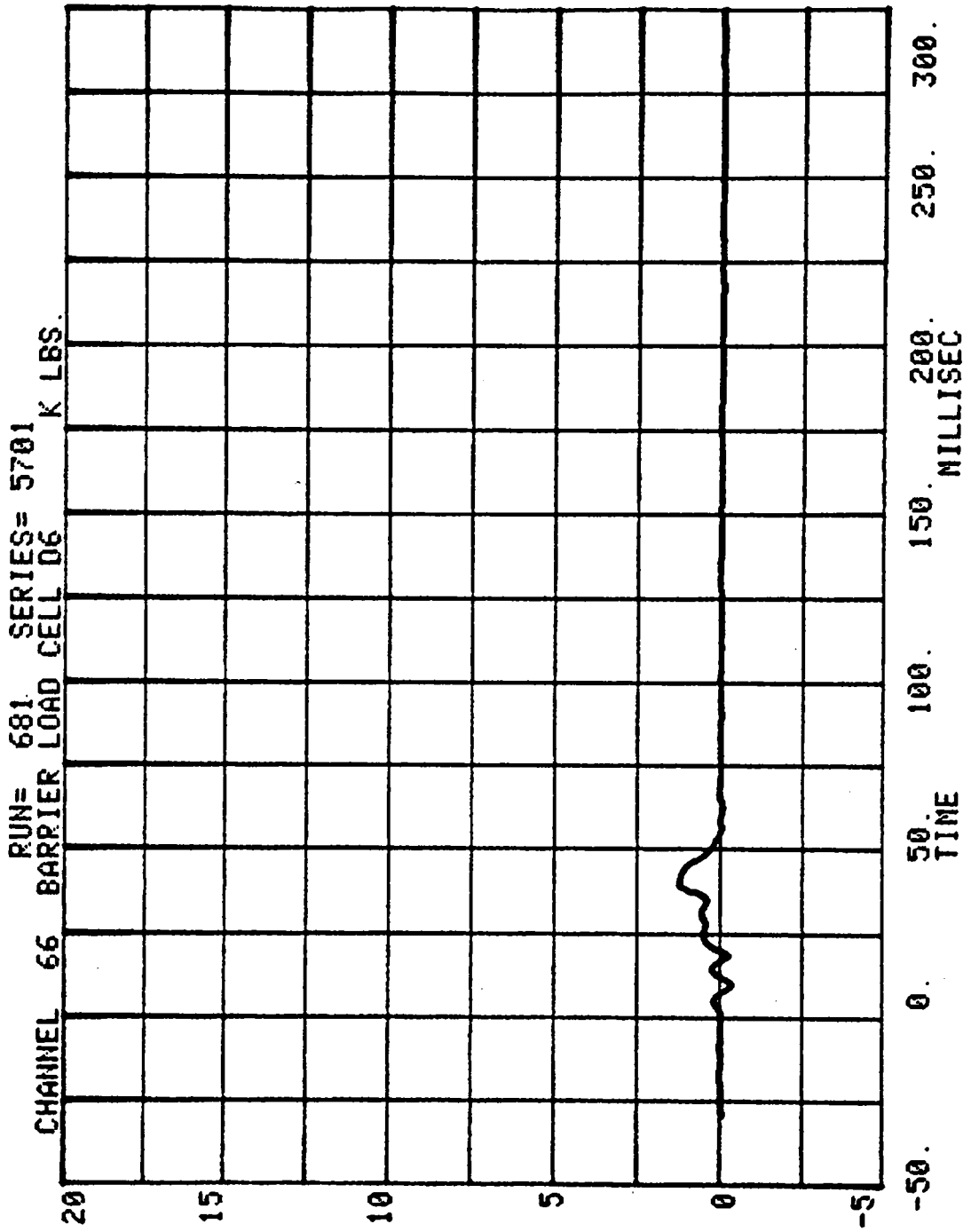

CHANNEL 63 BARRIER LOAD CELL 03
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 64 BARRIER LOAD CELL D4
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

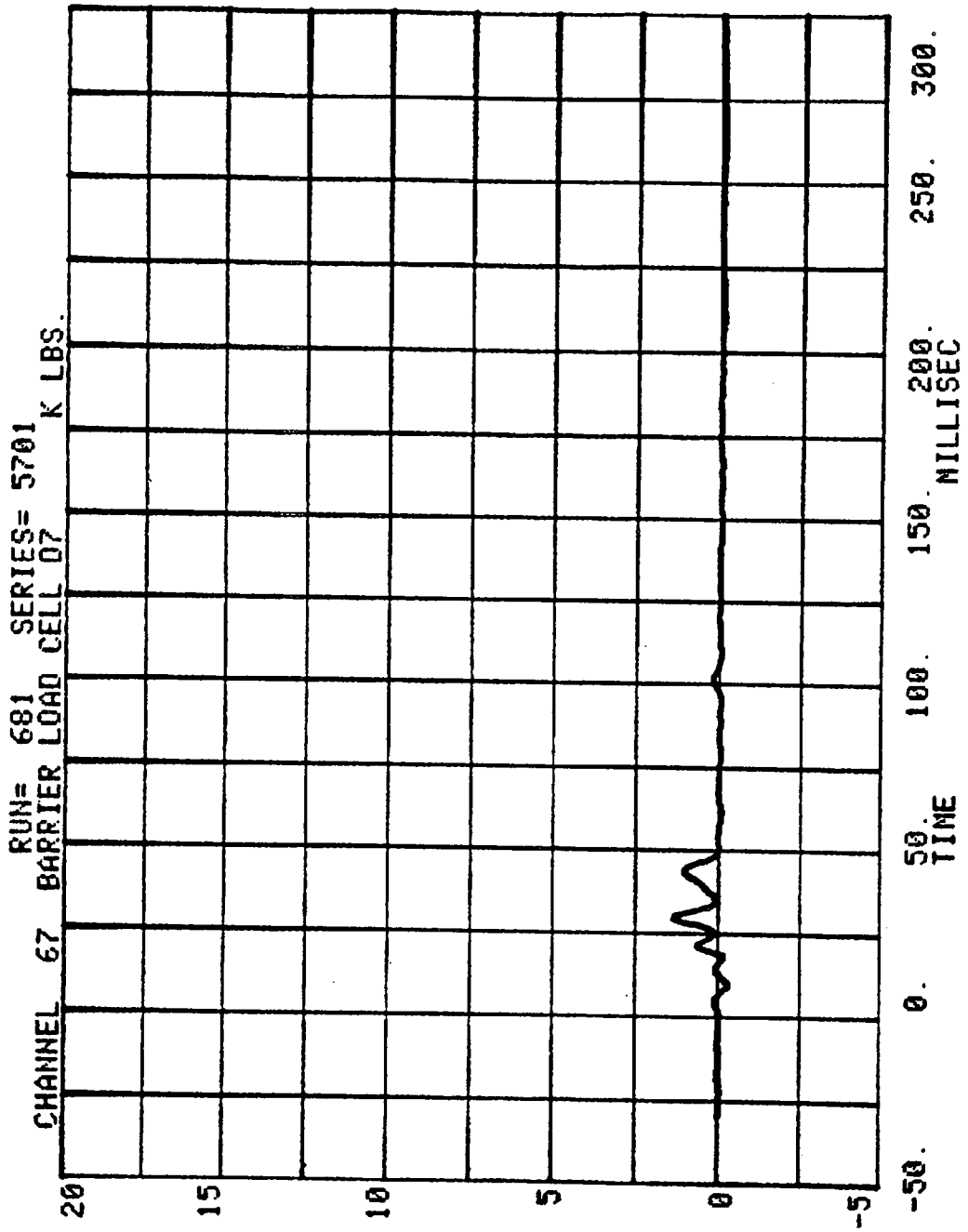
7333-17


CHANNEL 65 BARRIER LOAD CELL 05
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

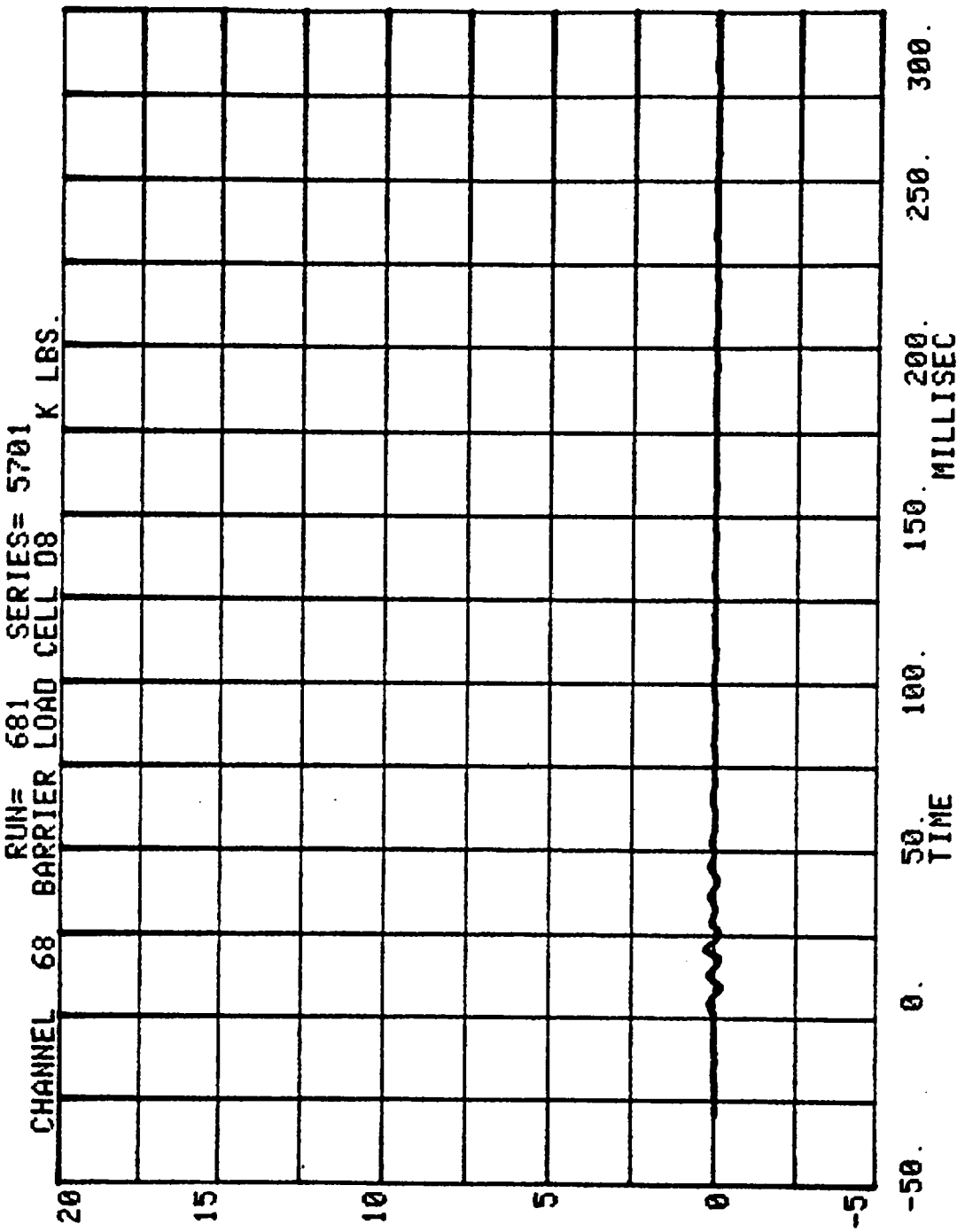
7333-17

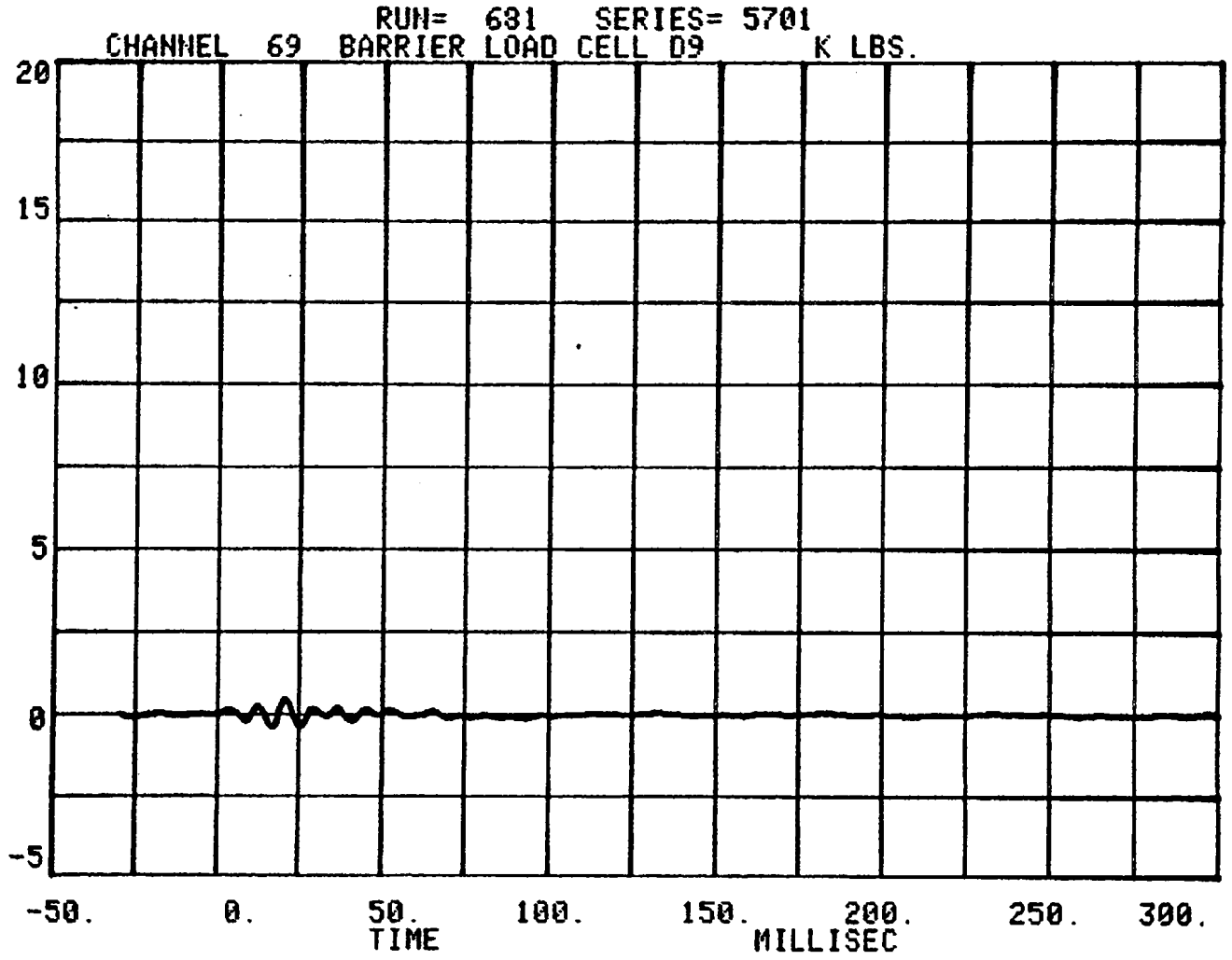

CHANNEL 66 BARRIER LOAD CELL 06
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17


CHANNEL 67 BARRIER LOAD CELL 07
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

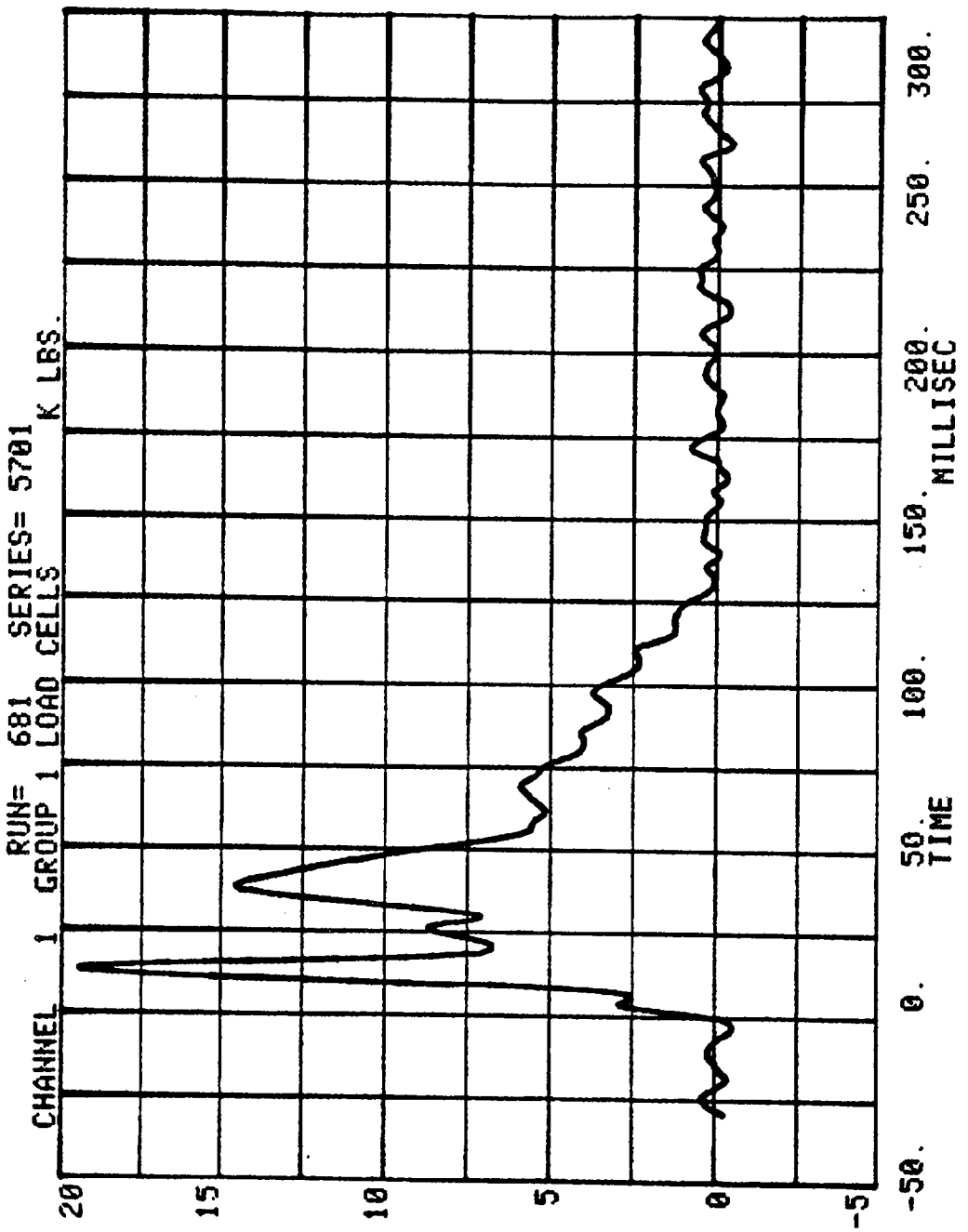

CHANNEL 68 BARRIER LOAD CELL 08
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 631 SERIES= 5701
CHANNEL 69 BARRIER LOAD CELL D9 K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

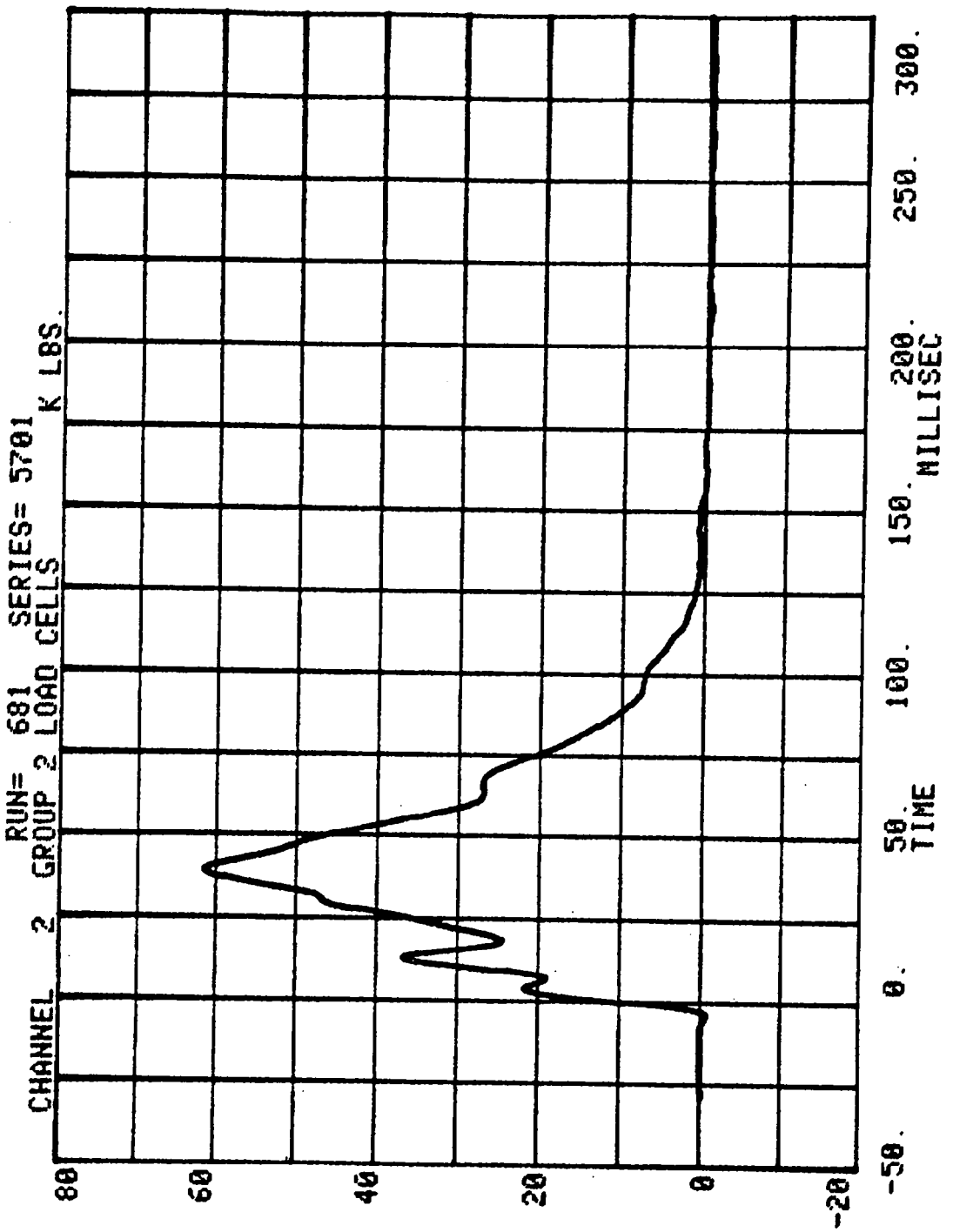
CAR TO LOAD CELL BARRIER

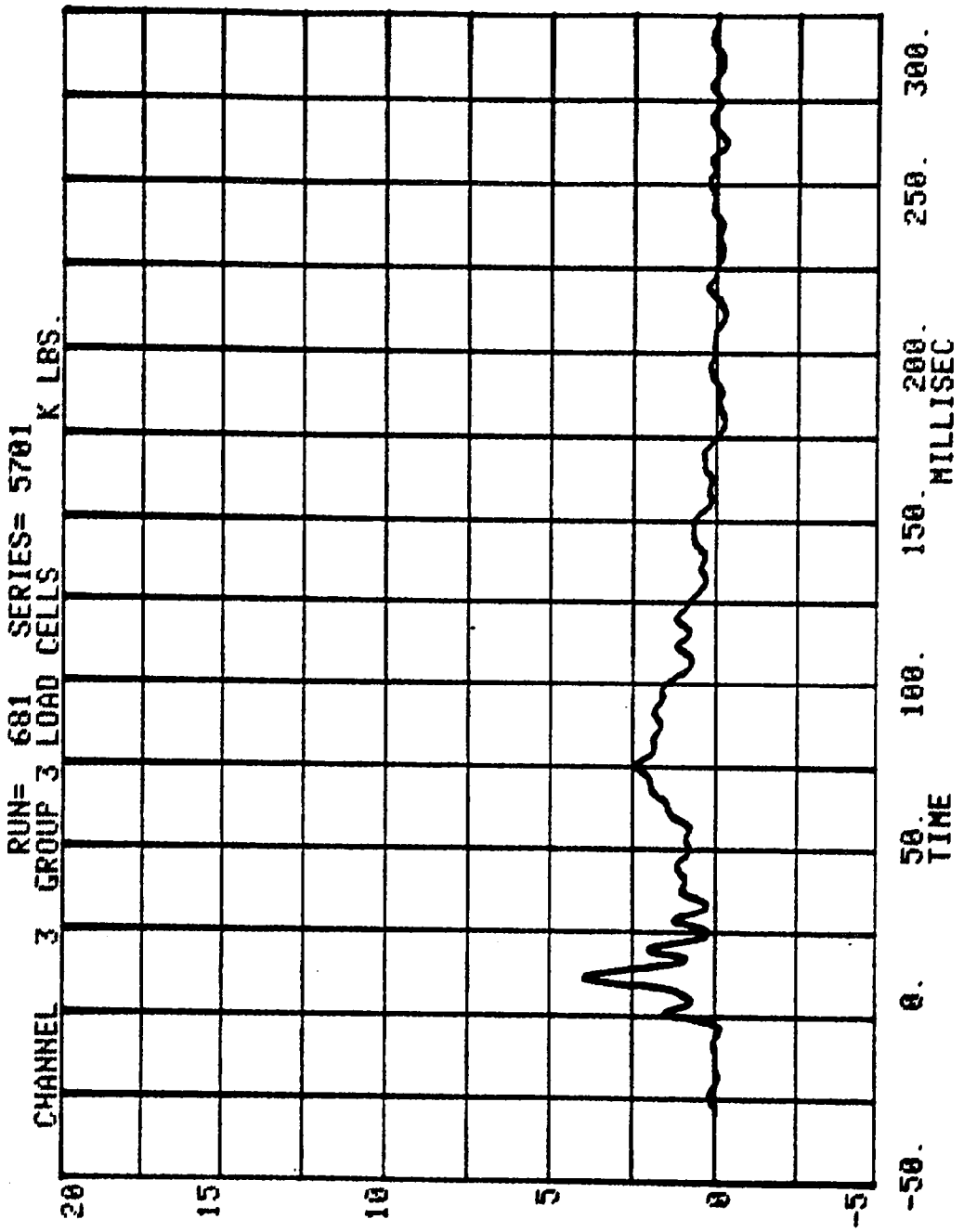
RUN # 681 SERIES # 5701

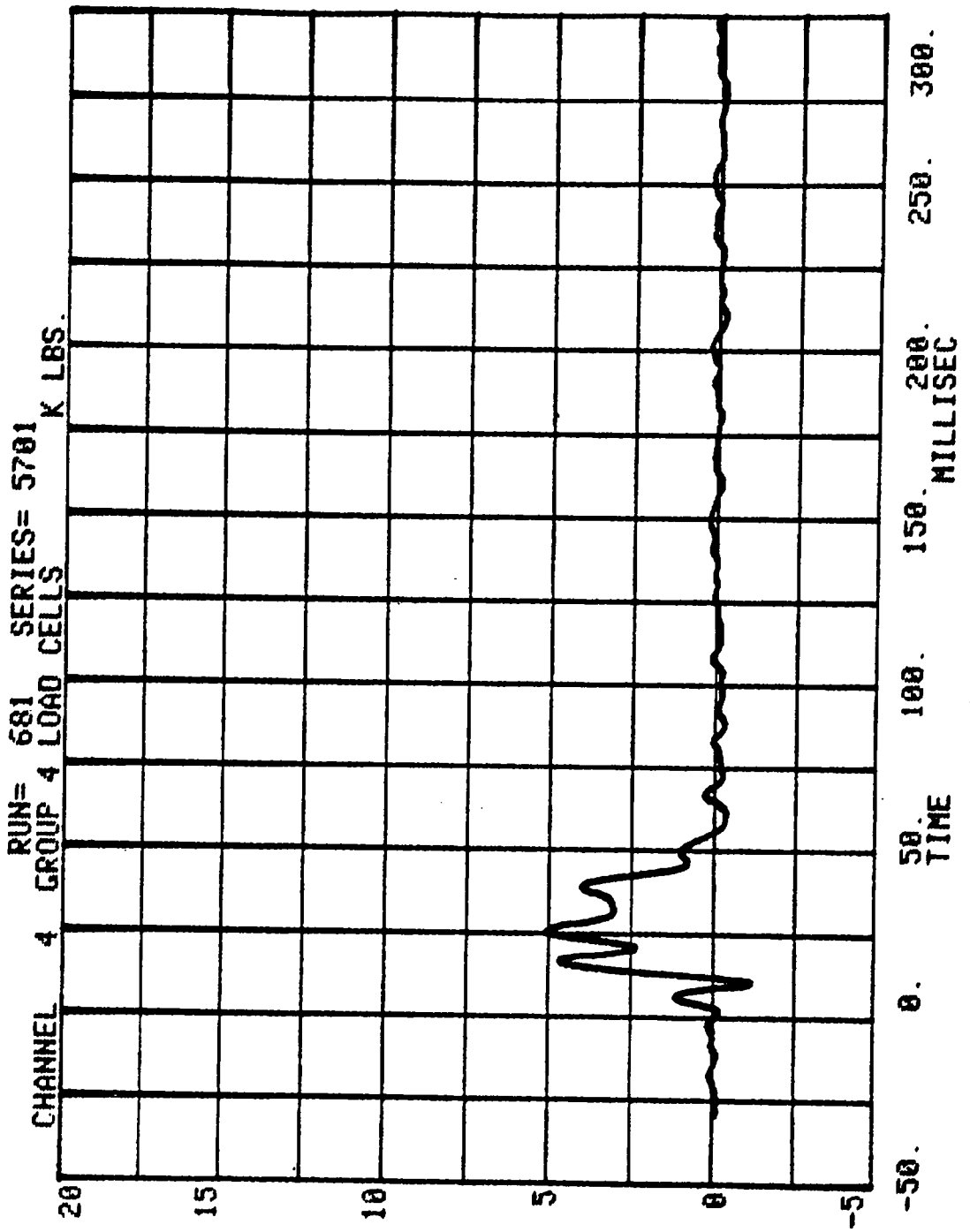
CHAN	TITLE	MINIMUM	MAXIMUM
1	GROUP 1 LOAD CELLS	-.510	19.539 K LBS.
2	GROUP 2 LOAD CELLS	-.580	61.697 K LBS.
3	GROUP 3 LOAD CELLS	-.309	3.986 K LBS.
4	GROUP 4 LOAD CELLS	-1.137	5.101 K LBS.
5	GROUP 5 LOAD CELLS	-.340	11.670 K LBS.
6	GROUP 6 LOAD CELLS	-.373	7.695 K LBS.
7	TOTAL LOAD CELL SUM	-1.303	95.960 K LBS.

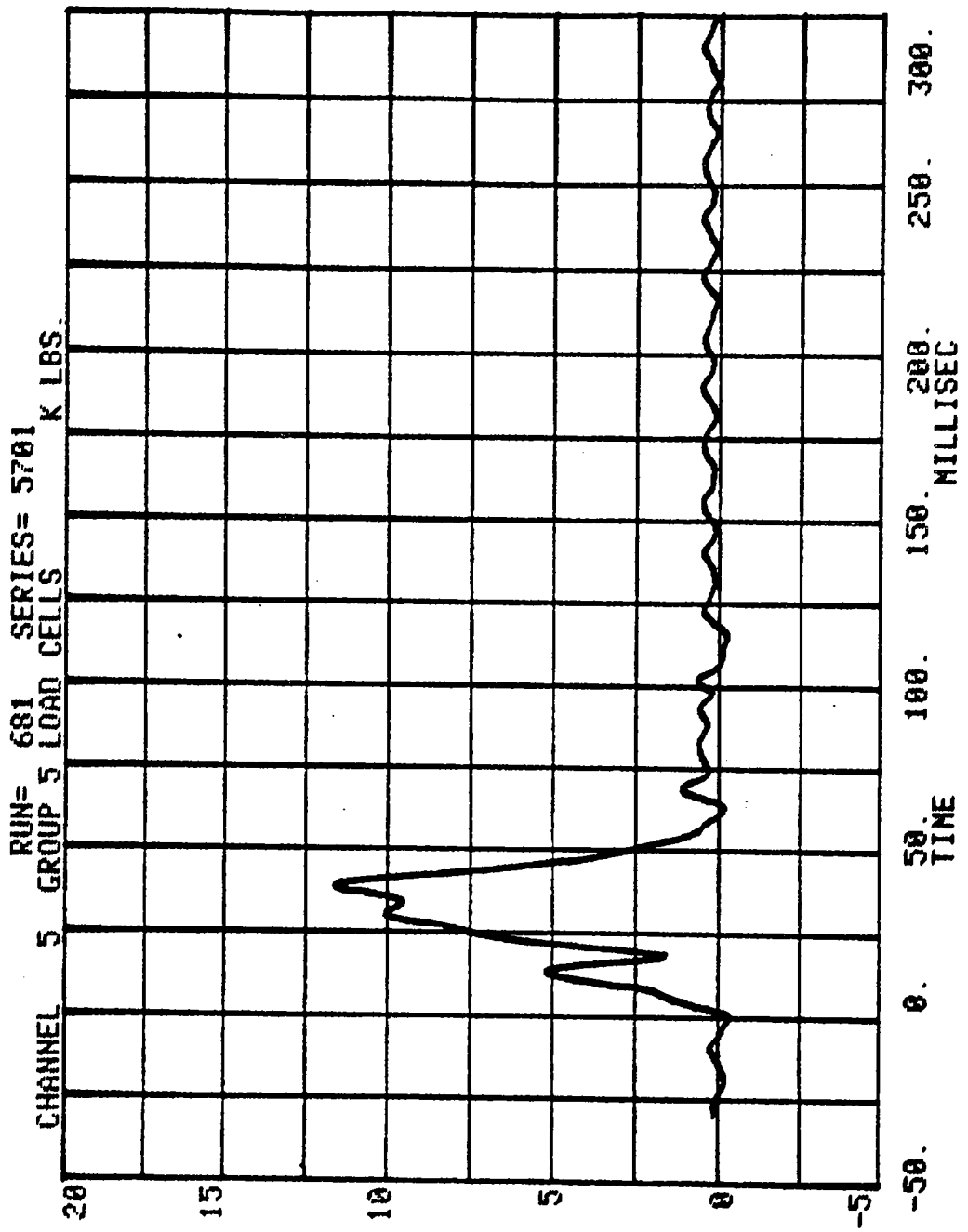

CHANNEL 1 GROUP 1 RUN= 681 SERIES= 5701
LOAD CELLS
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

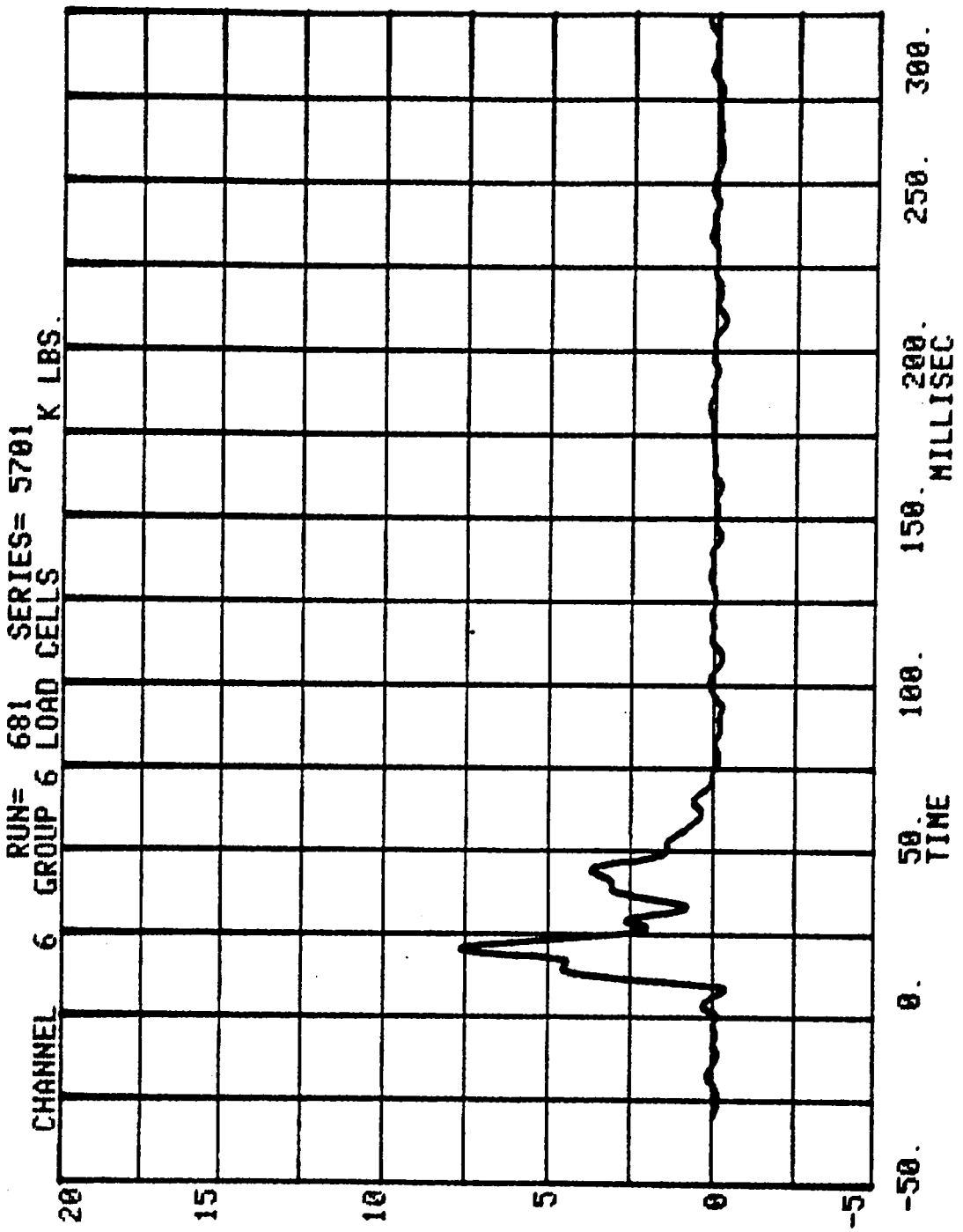

CHANNEL 2 GROUP 2 LOAD CELLS
RUN= 681 SERIES= 5701 K LBS.
80
60
40
20
0
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

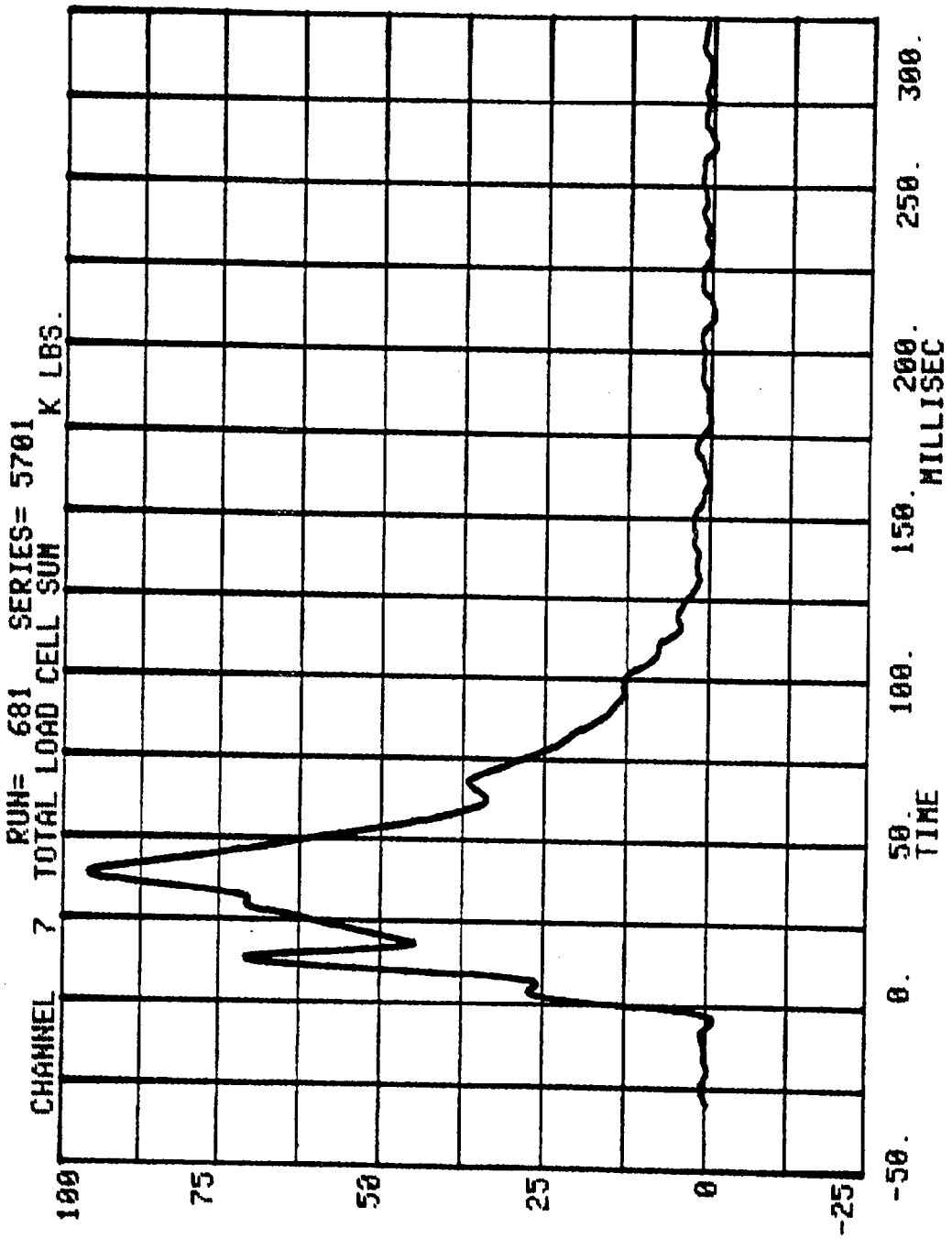

CHANNEL 3 GROUP 3 LOAD CELLS
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 4 GROUP 4 LOAD CELLS
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 5 GROUP 5 LOAD CELLS
RUN= 681 SERIES= 5701
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17


CHANNEL 6 RUN= 681 SERIES= 5701
GROUP 6 LOAD CELLS K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 7 TOTAL LOAD CELL SUM
RUN= 681 SERIES= 5701 K LBS.
100
75
50
25
0
-25
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

TEST NO. CF5701

DUMMY DATA

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

HEAD INJURY CRITERION
HEAD SEVERITY INDEX

CAR TO LOAD CELL BARRIER

RUN= 681

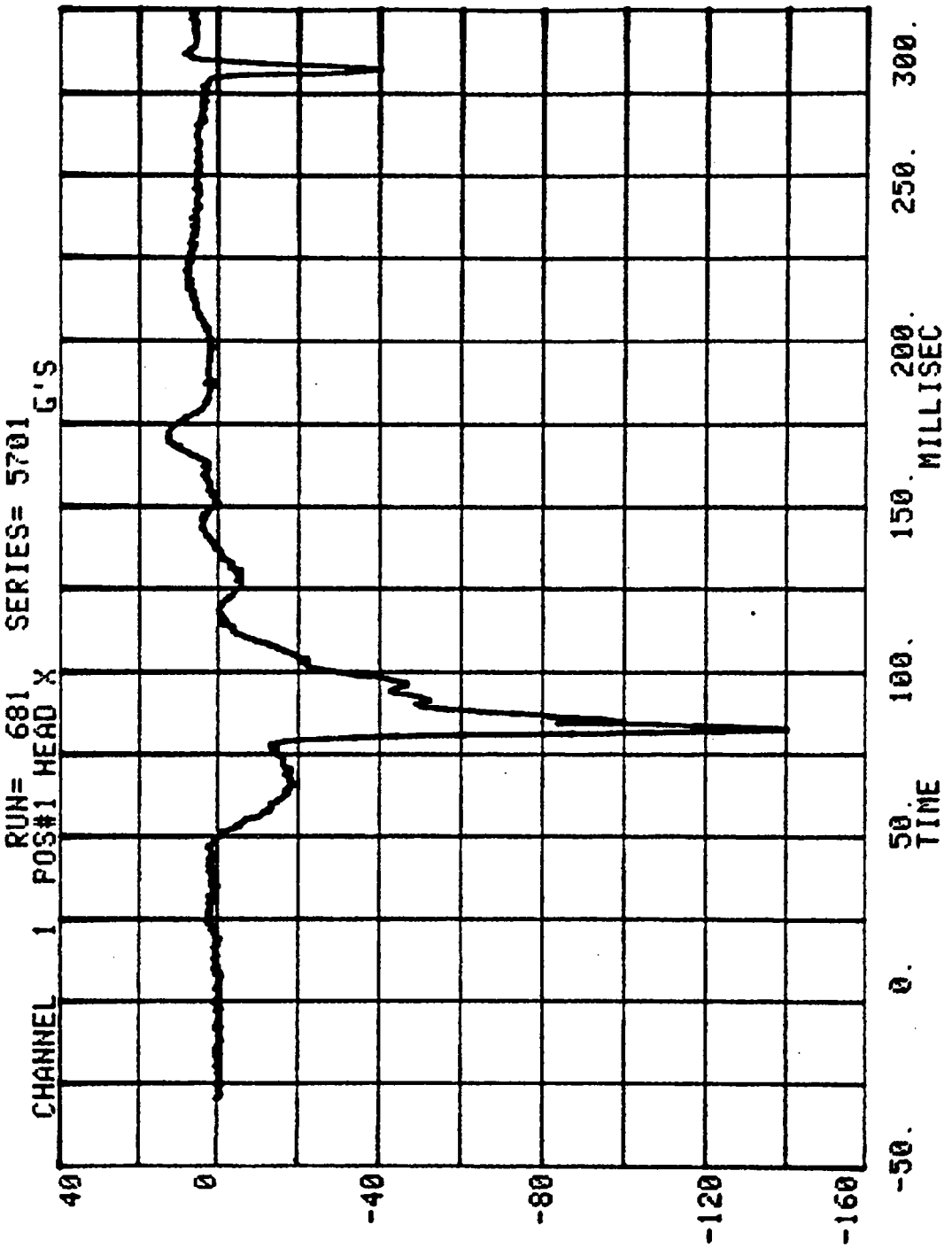
POS#1 HEAD RESULTANT

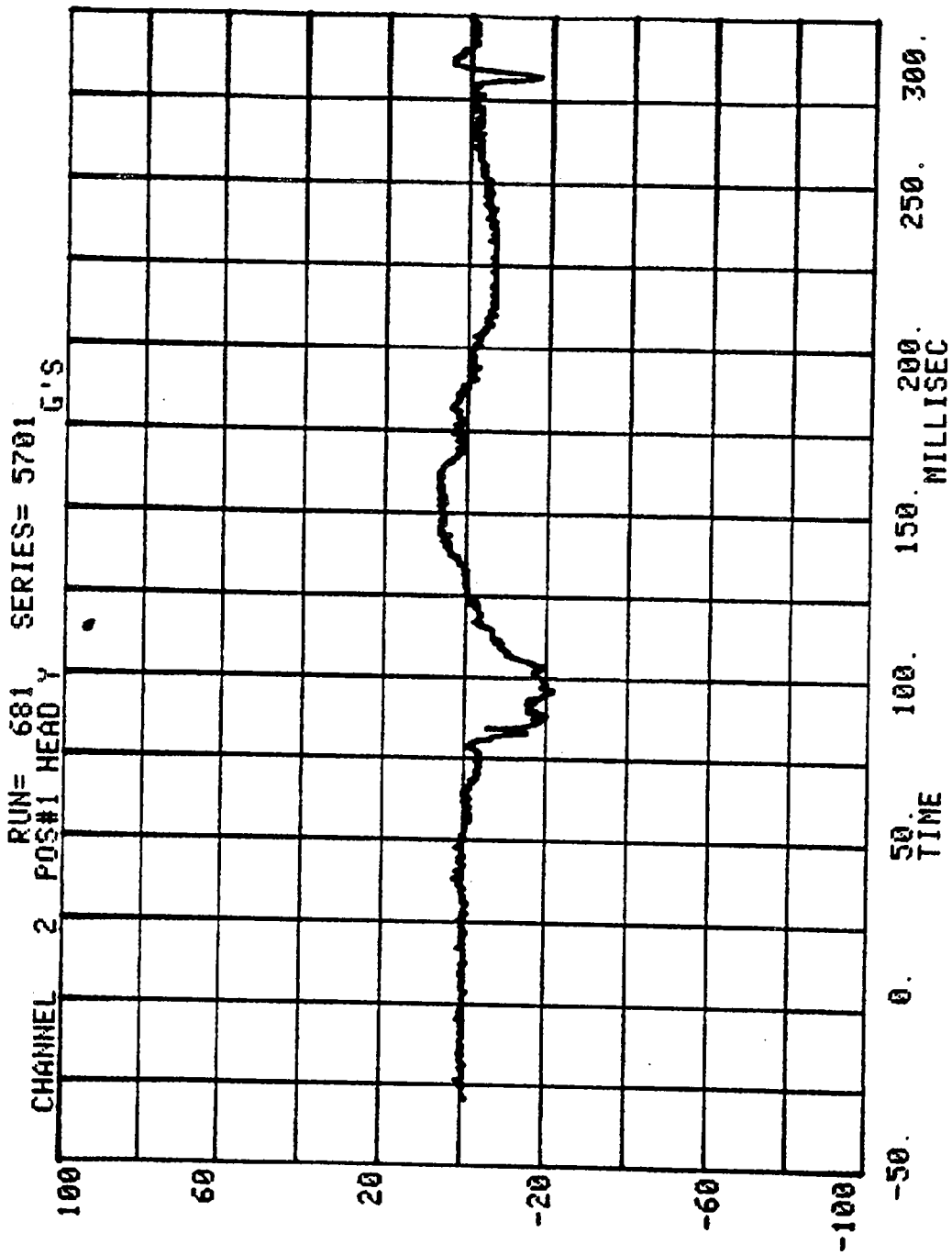
HIC=1513.6 FROM T1= .07492 TO T2= .09765

AVERAGE ACCELERATION BETWEEN T1 AND T2= 85.0G'S

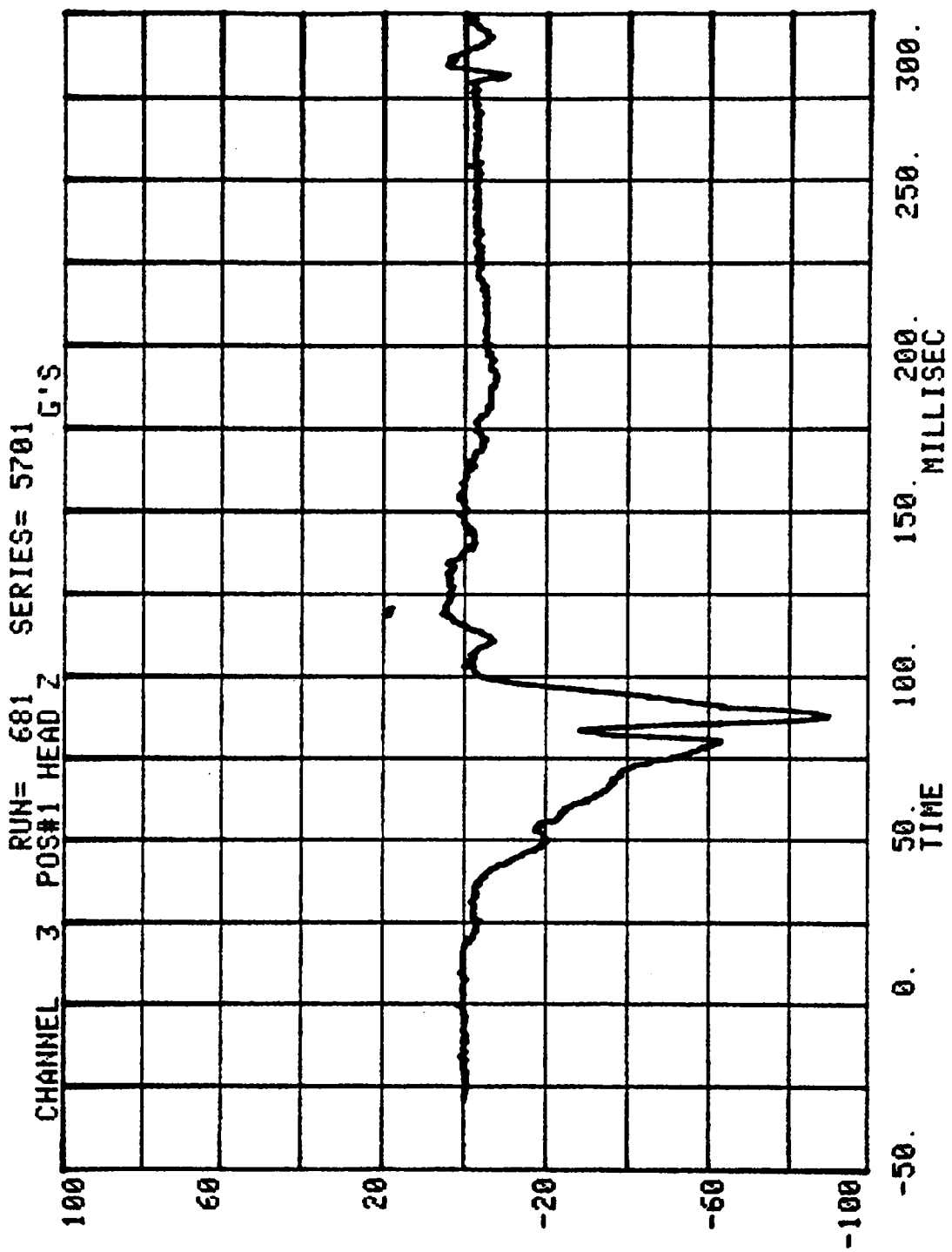
EVENT TIME= 300.0 MSEC

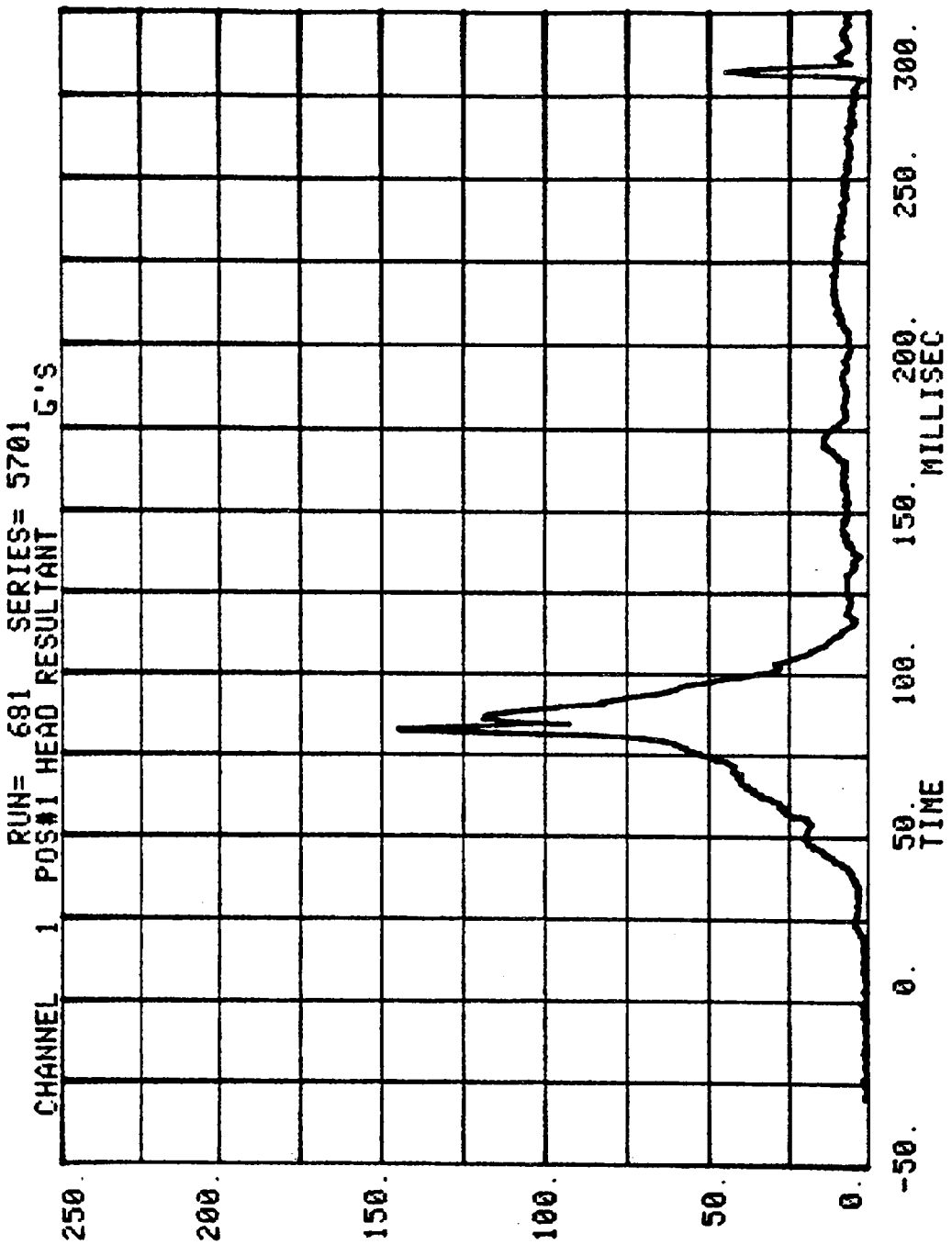
SEVERITY INDEX=2099.1


CHANNEL 1 POS#1 HEAD X
RUN= 681 SERIES= 5701
G'S
40
0
-40
-80
-120
-160
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

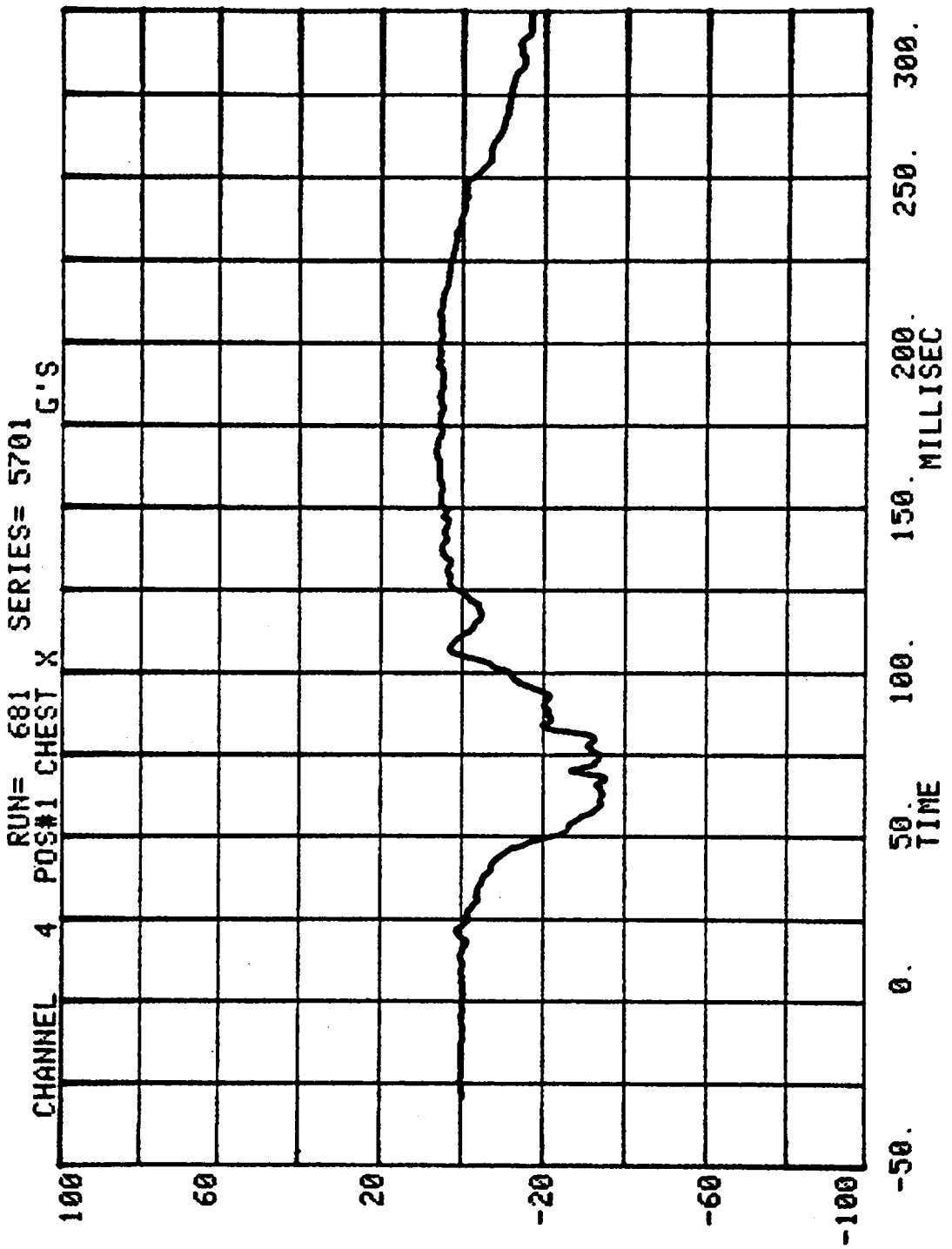

CHANNEL 2 POS#1 HEAD Y
RUN= 681 SERIES= 5701
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

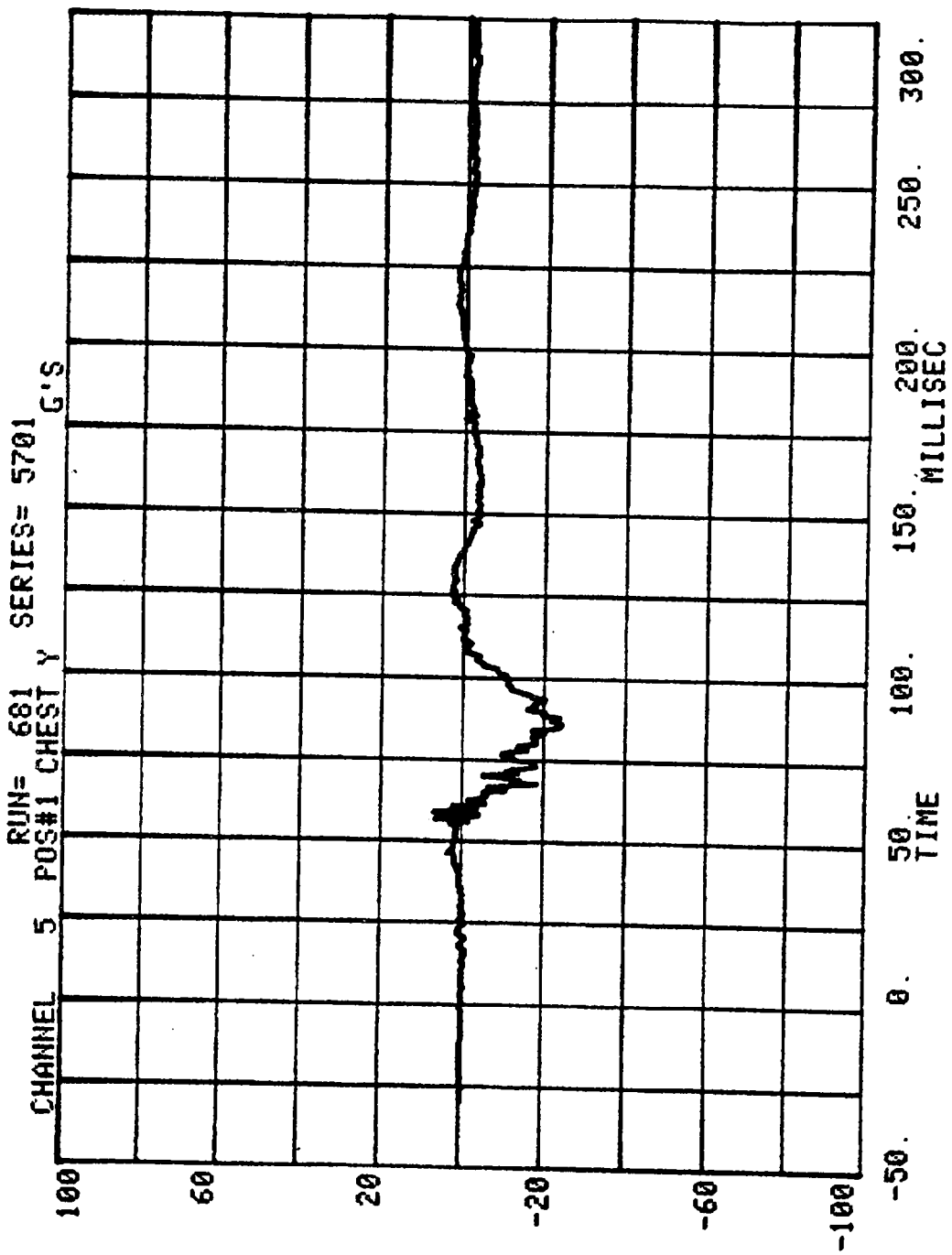

CHANNEL 3 POS#1 HEAD 2
RUN= 681 SERIES= 5701
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

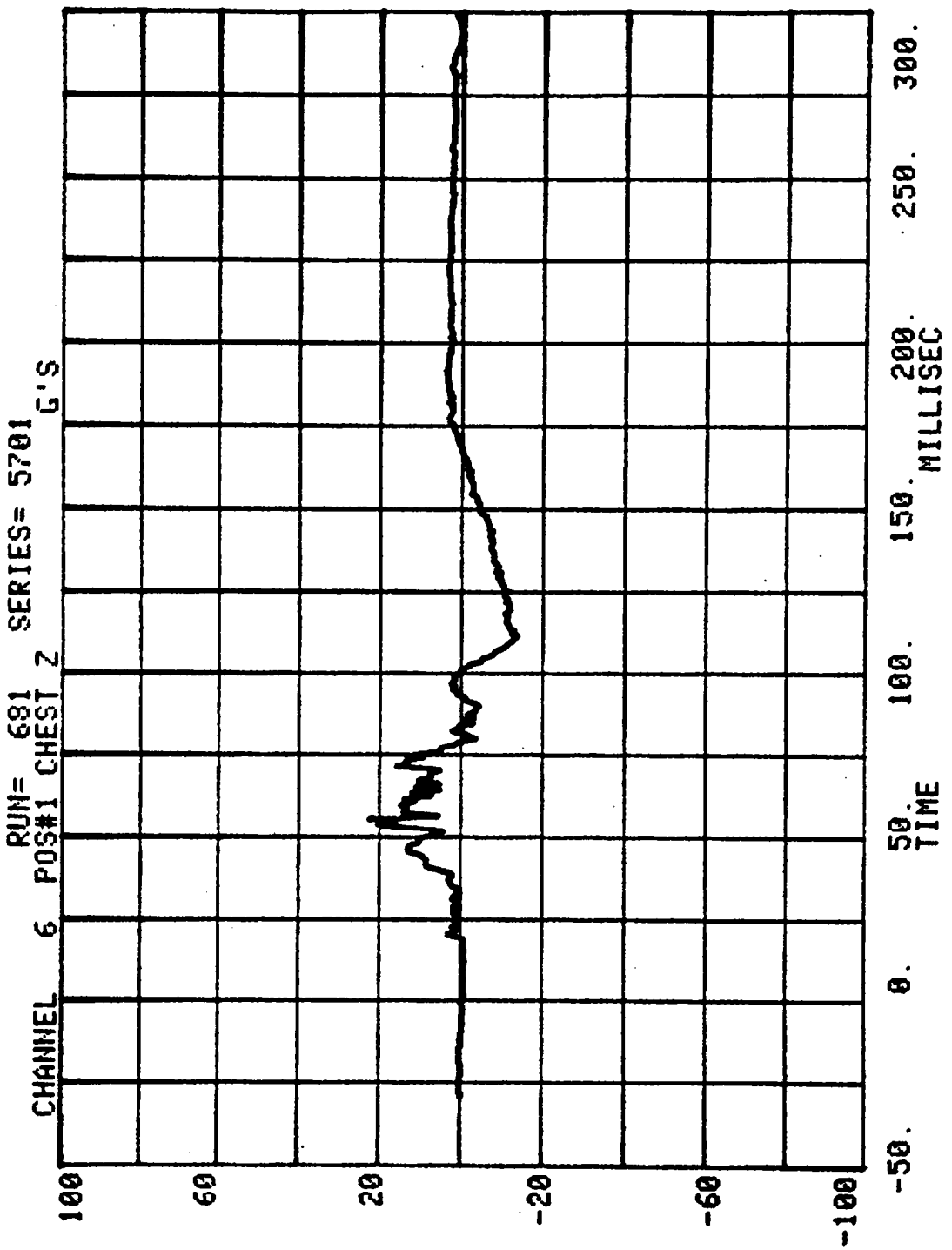

CHANNEL 1 POS#1 HEAD RESULTANT
RUN= 681 SERIES= 5701 G'S
250.
200.
150.
100.
50.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

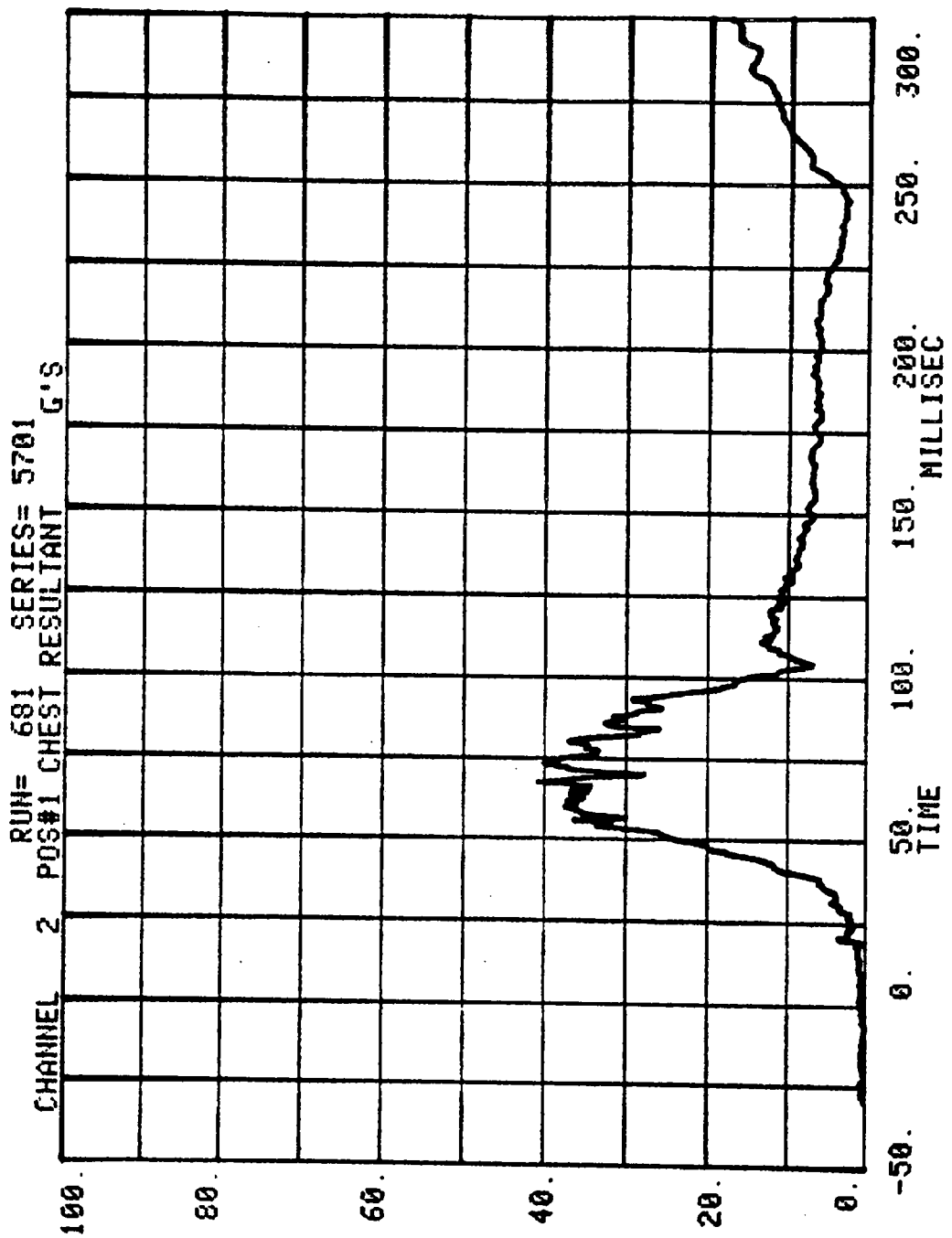
7333-17


CHANNEL 4 RUN= 681 SERIES= 5701
POS#1 CHEST X G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

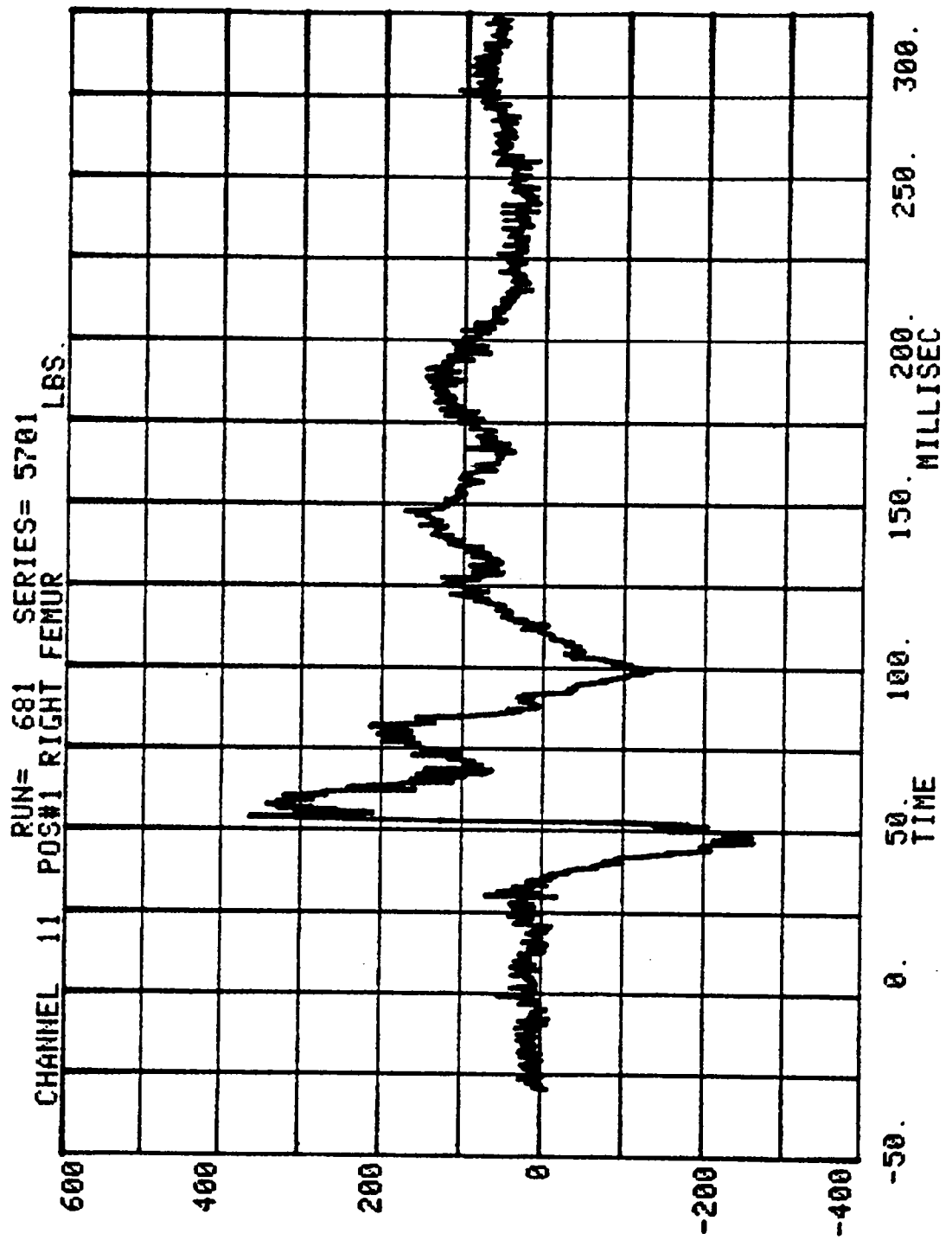
7333-17

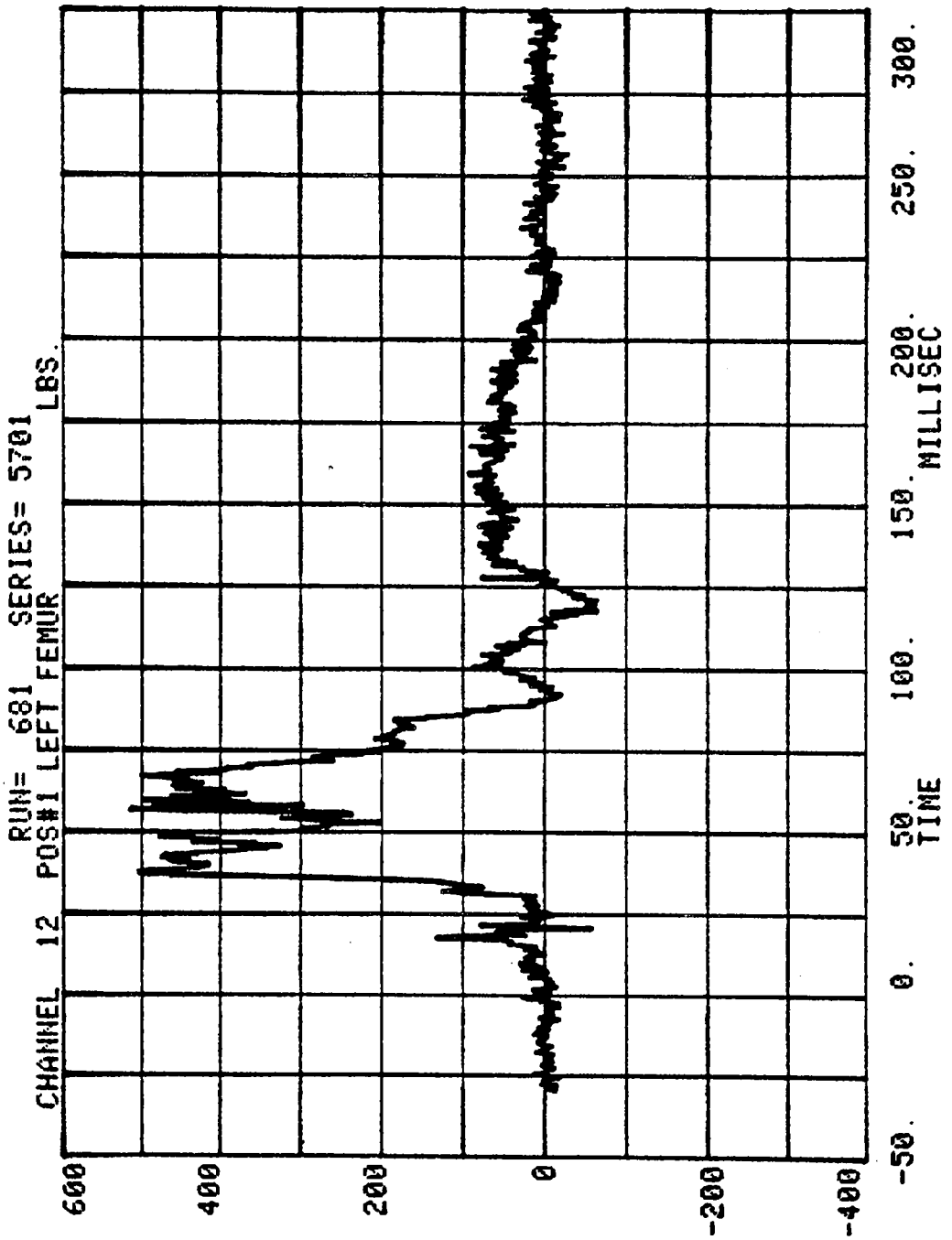

CHANNEL 5 POS#1 CHEST Y
RUN= 681 SERIES= 5701
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 6 POS#1 CHEST Z
RUN= 681 SERIES= 5701
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

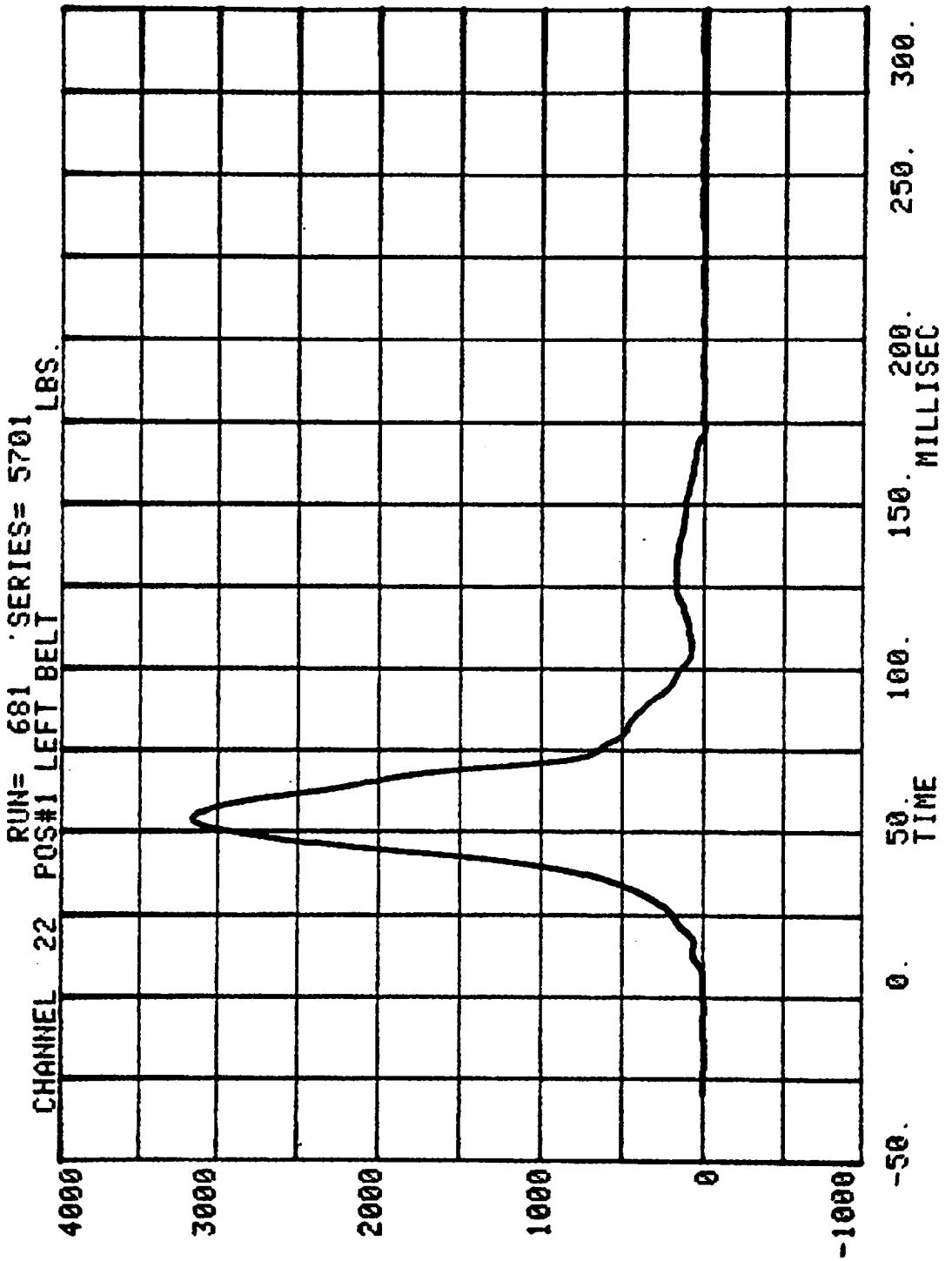

CHANNEL 2 POS#1 CHEST RESULTANT
RUN= 681 SERIES= 5701
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

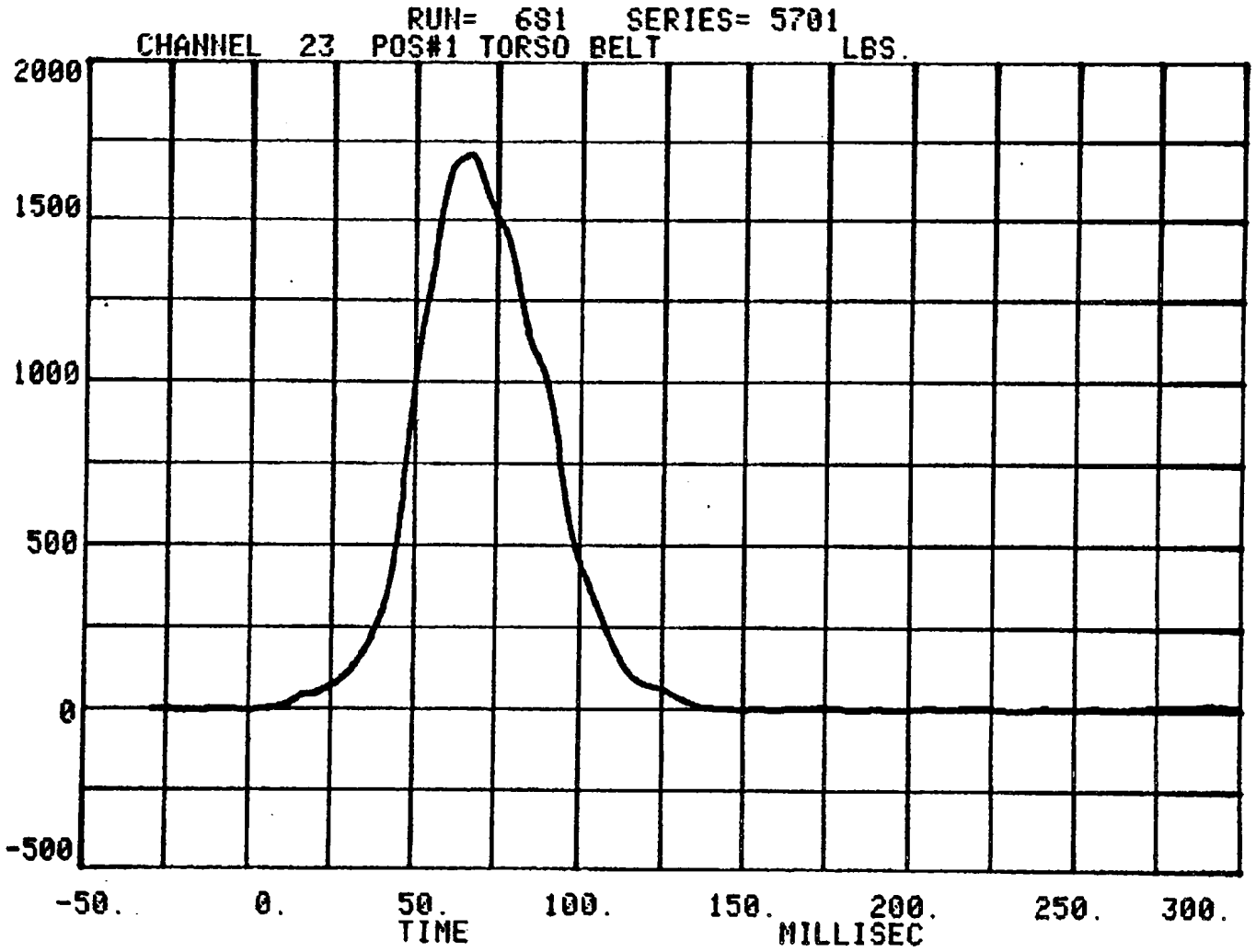

CHANNEL 11 POS#1 RIGHT FEMUR
RUN= 681 SERIES= 5701
LBS.
600
400
200
0
-200
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

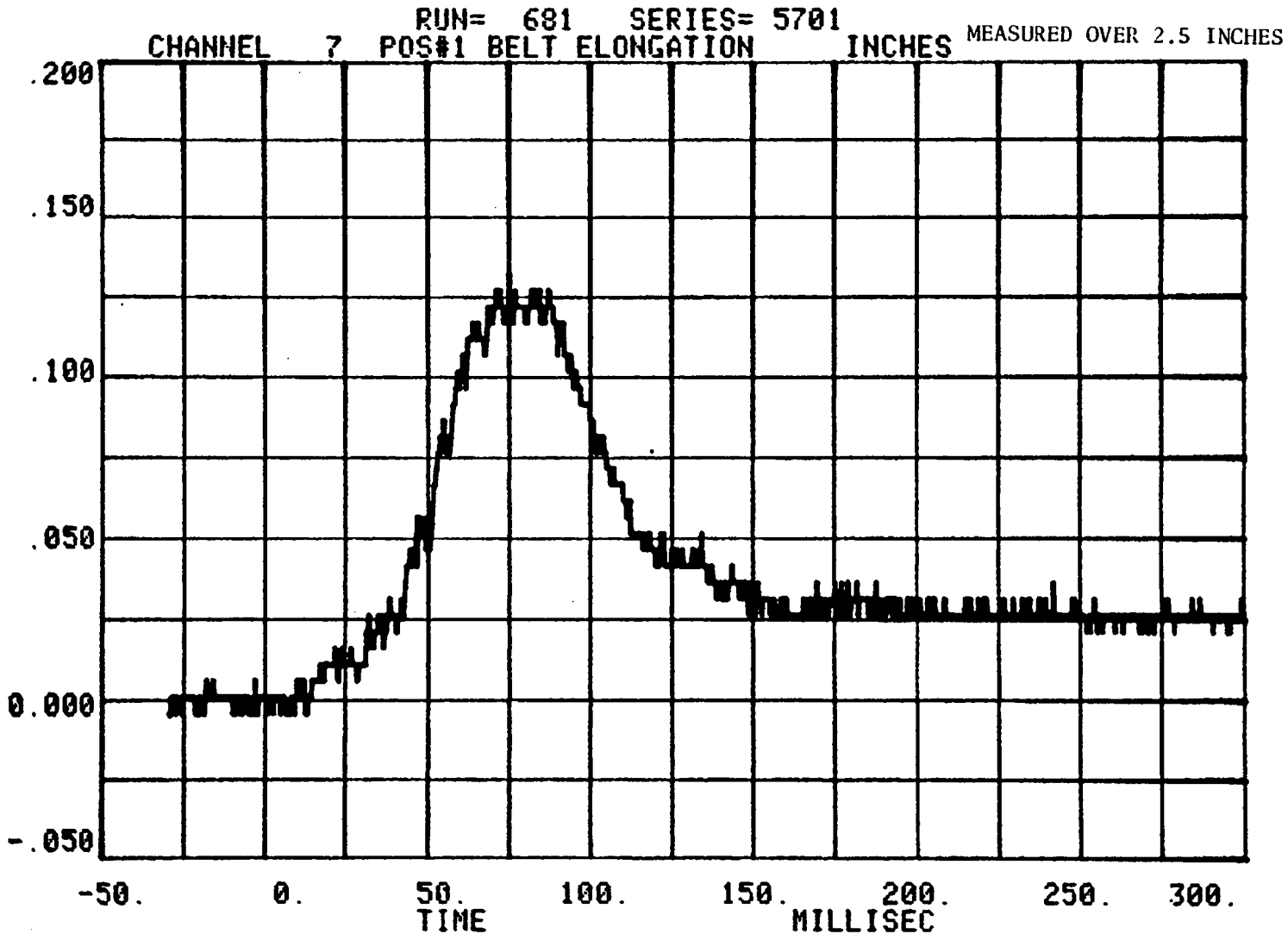

CHANNEL 12 POS#1 LEFT FEMUR
RUN= 681 SERIES= 5701
LBS.
600
400
200
0
-200
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

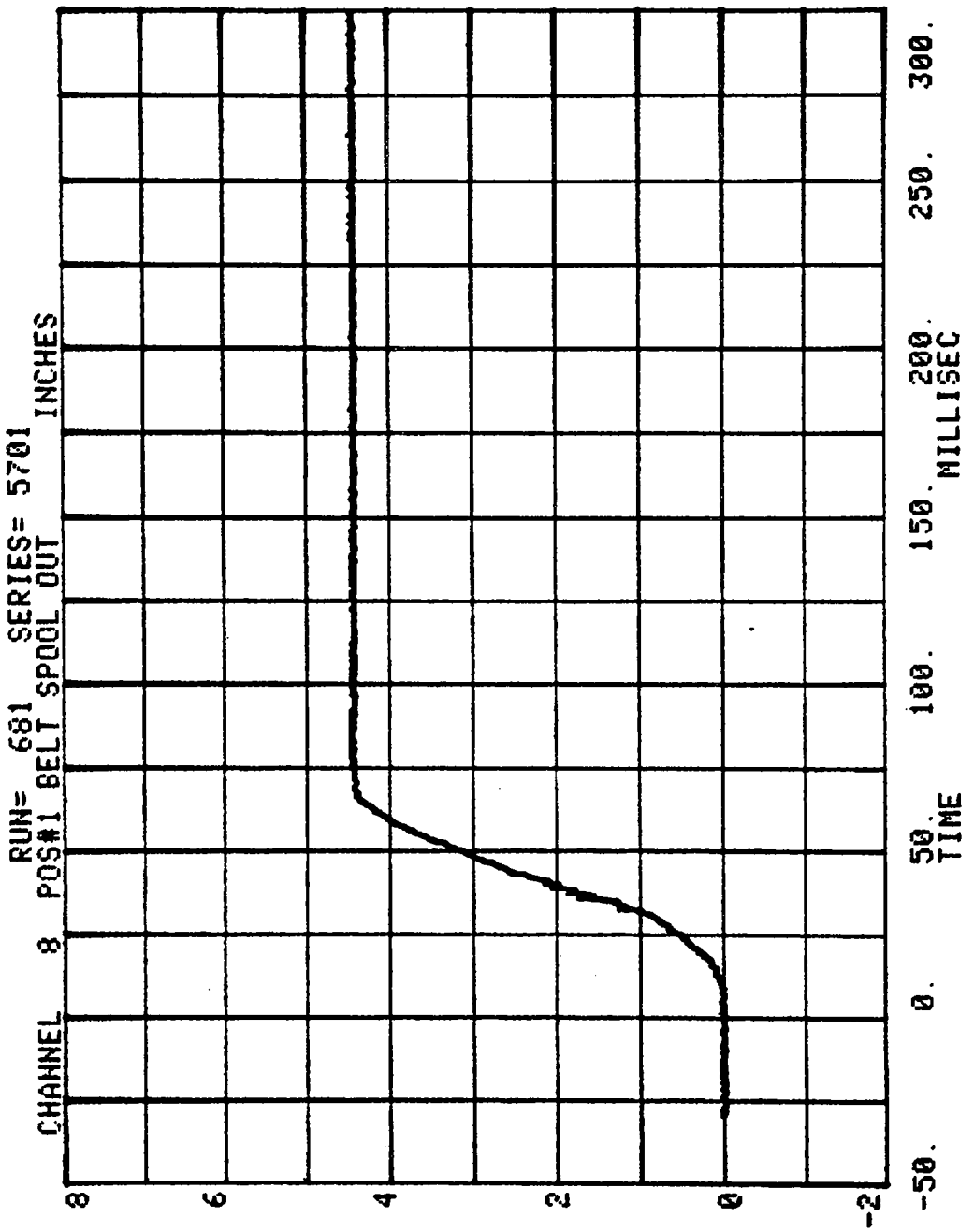
7333-17


CHANNEL 22 POS#1 LEFT BELT
RUN= 681 SERIES= 5701
LBS.
4000
3000
2000
1000
0
-1000
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17


RUN= 681 SERIES= 5701
CHANNEL 23 POS#1 TORSO BELT LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 681 SERIES= 5701
CHANNEL 7 POS#1 BELT ELONGATION INCHES
MEASURED OVER 2.5 INCHES
.200
.150
.100
.050
0.000
-.050
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 8
RUN= 681 SERIES= 5701
POS#1 BELT SPOOL OUT
INCHES
8
6
4
2
0
-2
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

HEAD INJURY CRITERION
HEAD SEVERITY INDEX

CAR TO LOAD CELL BARRIER

RUN= 681

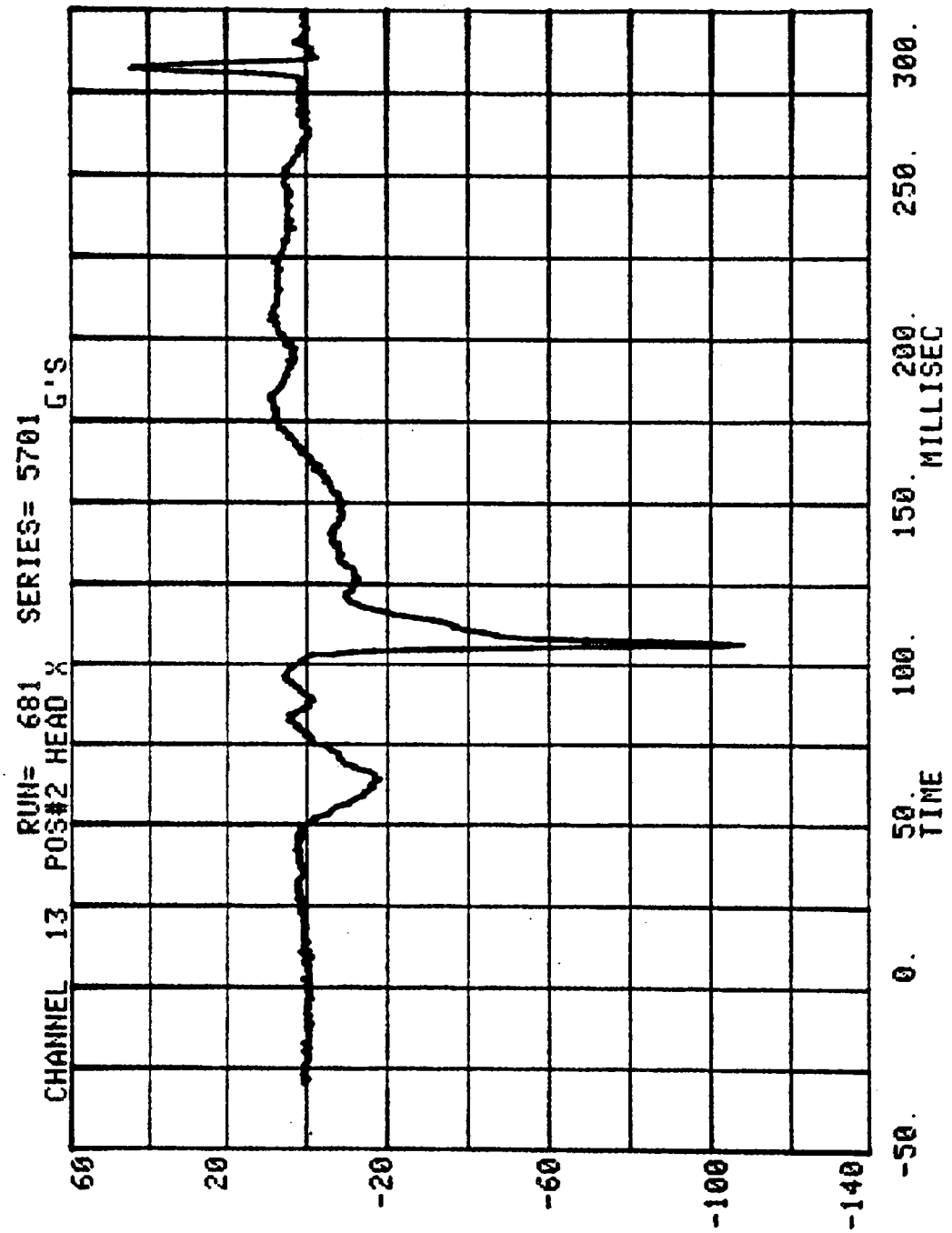
POS#2 HEAD RESULTANT

HIC=1543.5 FROM T1= .05947 TO T2= .12772

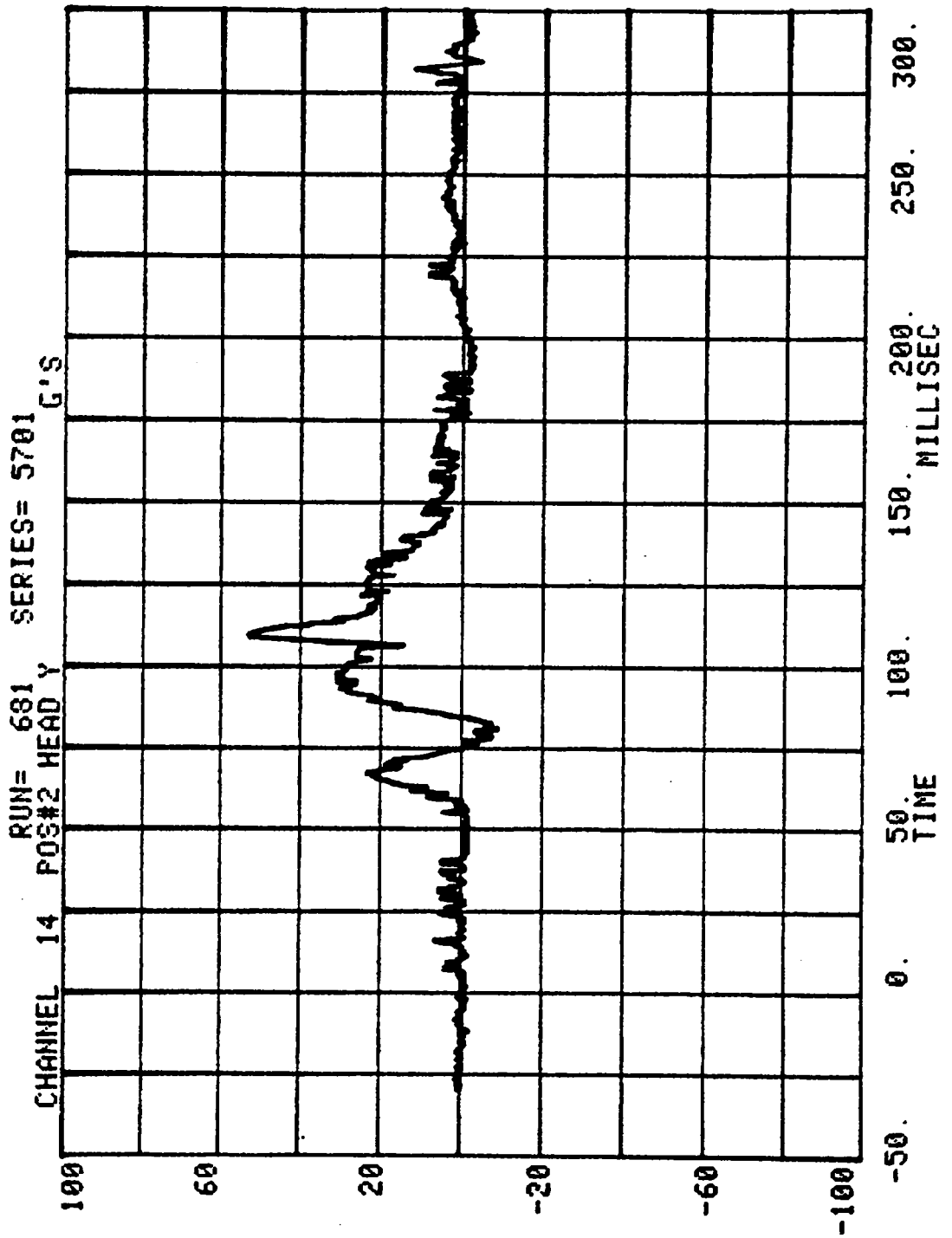
AVERAGE ACCELERATION BETWEEN T1 AND T2= 55.2G'S

EVENT TIME= 300.0 MSEC

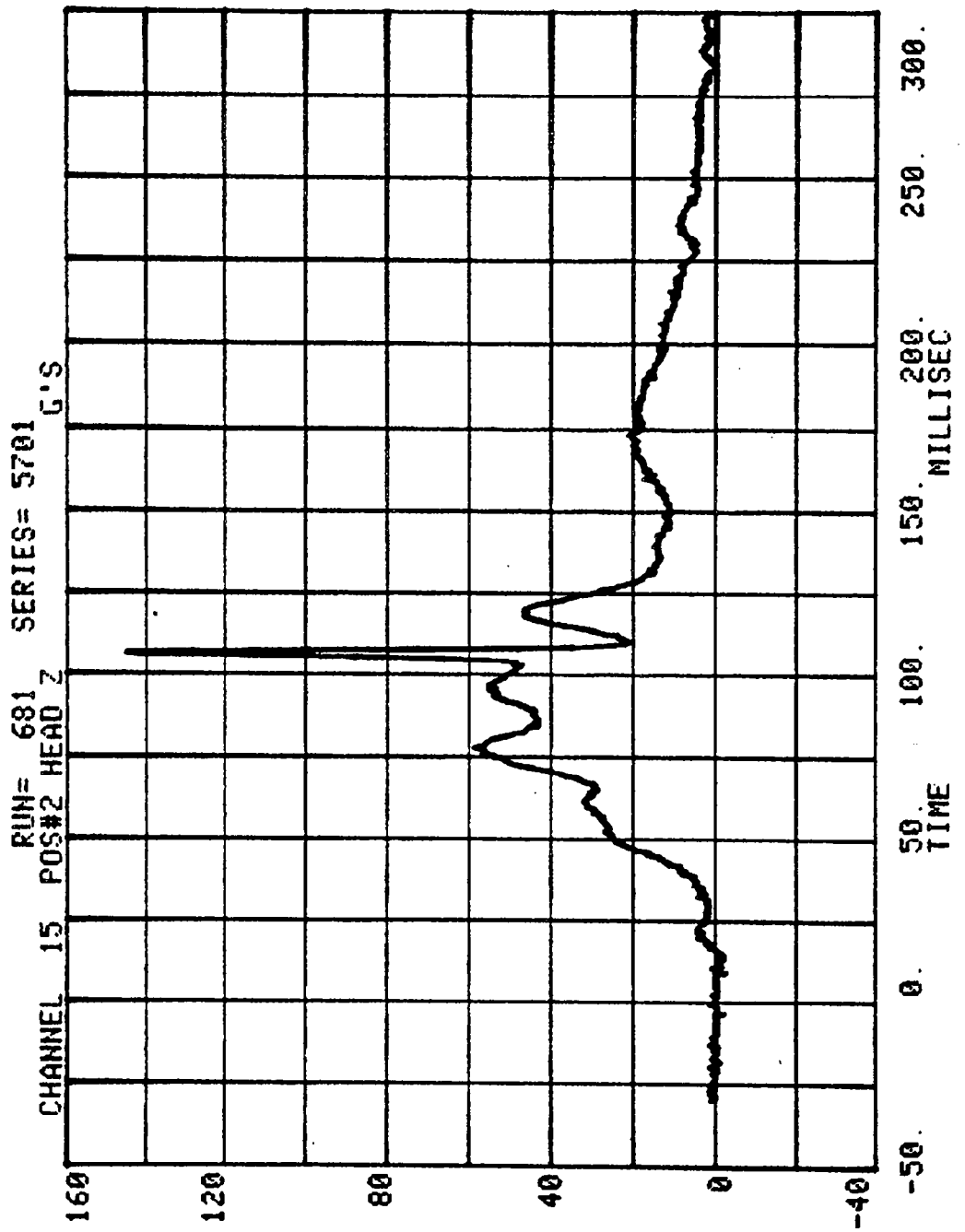
SEVERITY INDEX=2280.7


CHANNEL 13 POS#2 HEAD X
RUN= 681 SERIES= 5701
G'S
60
20
-20
-60
-100
-140
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

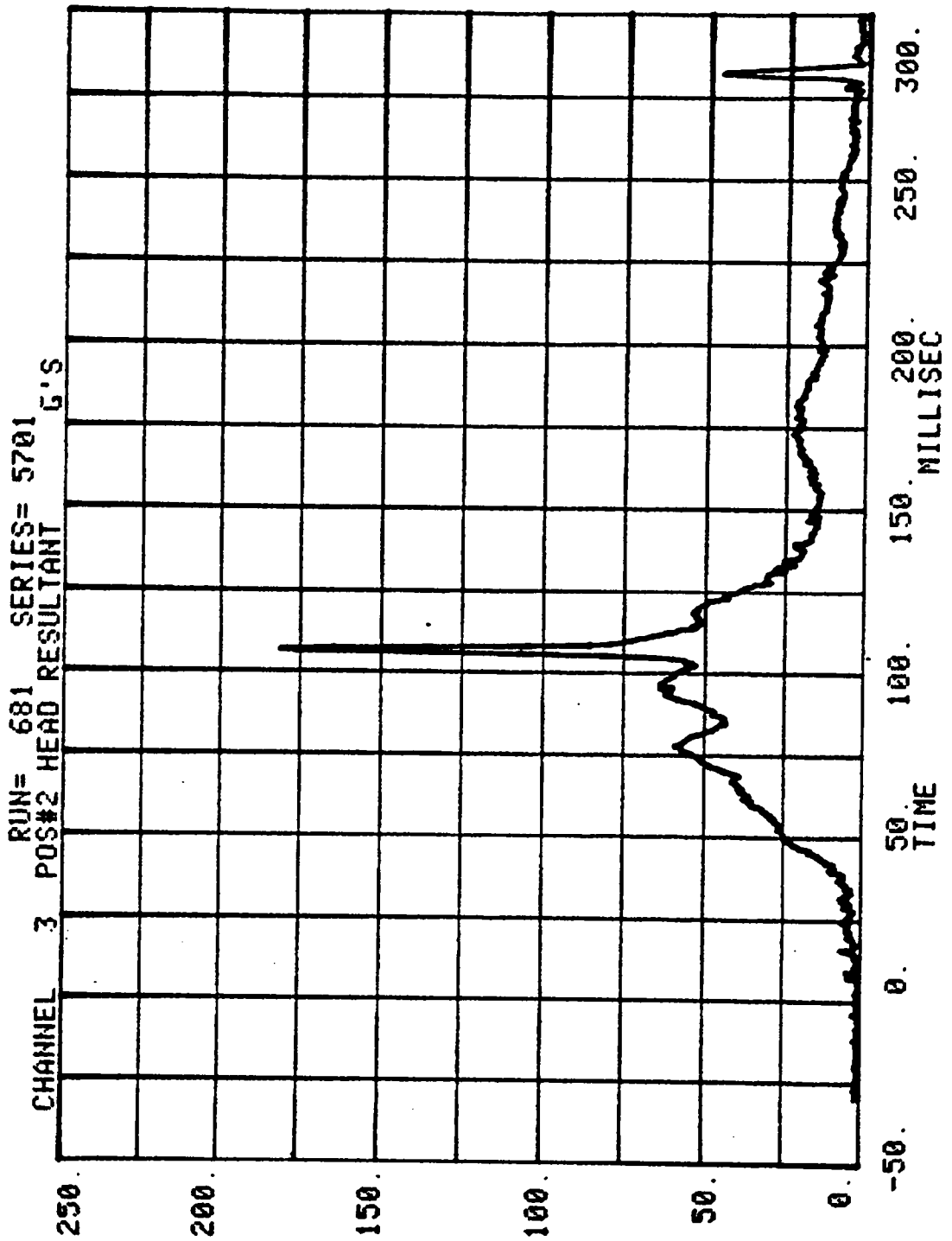
7333-17


CHANNEL 14 POS#2 HEAD Y
RUN= 681 SERIES= 5701
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

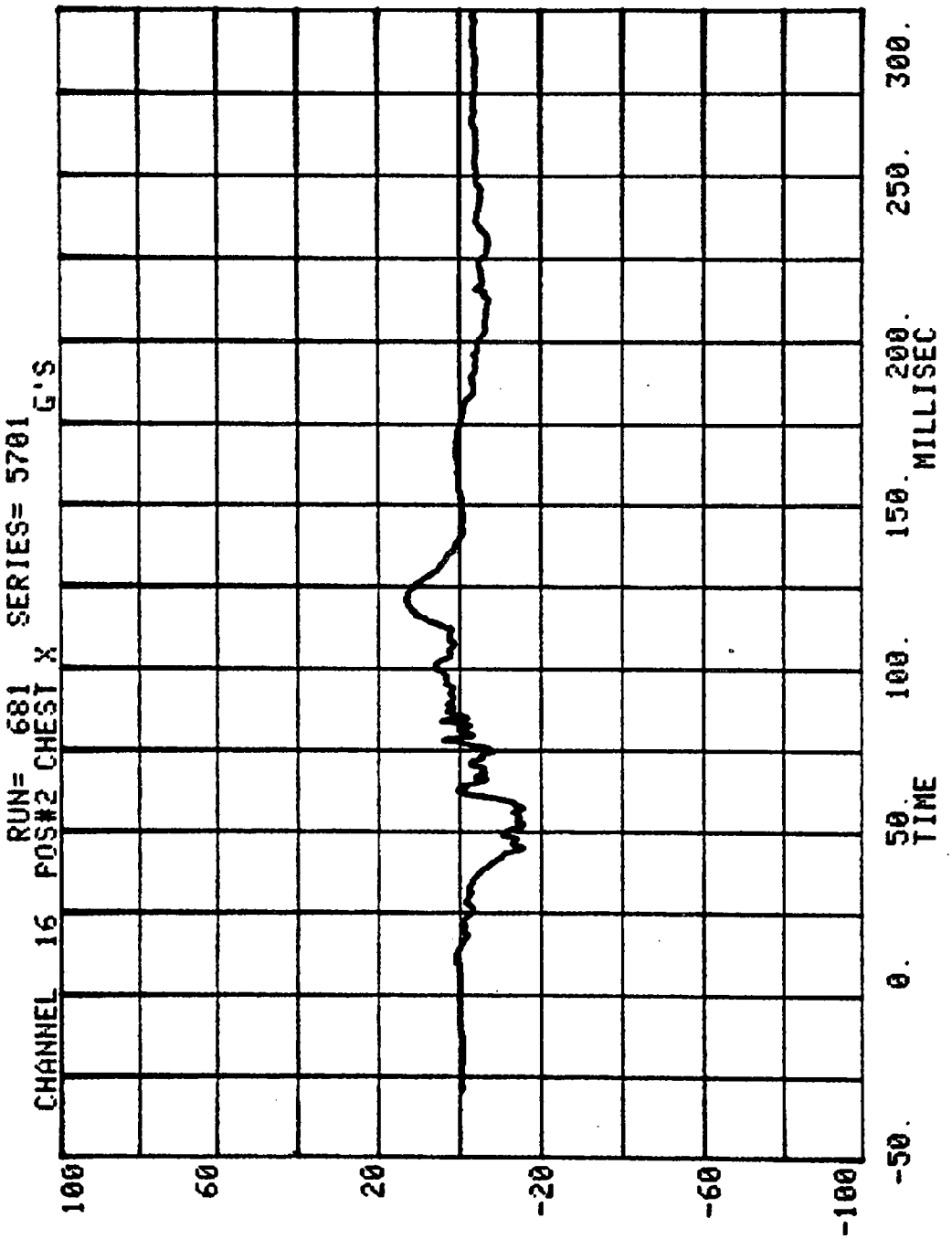
7333-17


CHANNEL 15 RUN= 681 SERIES= 5701
POS#2 HEAD Z G'S
160
120
80
40
0
-40
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

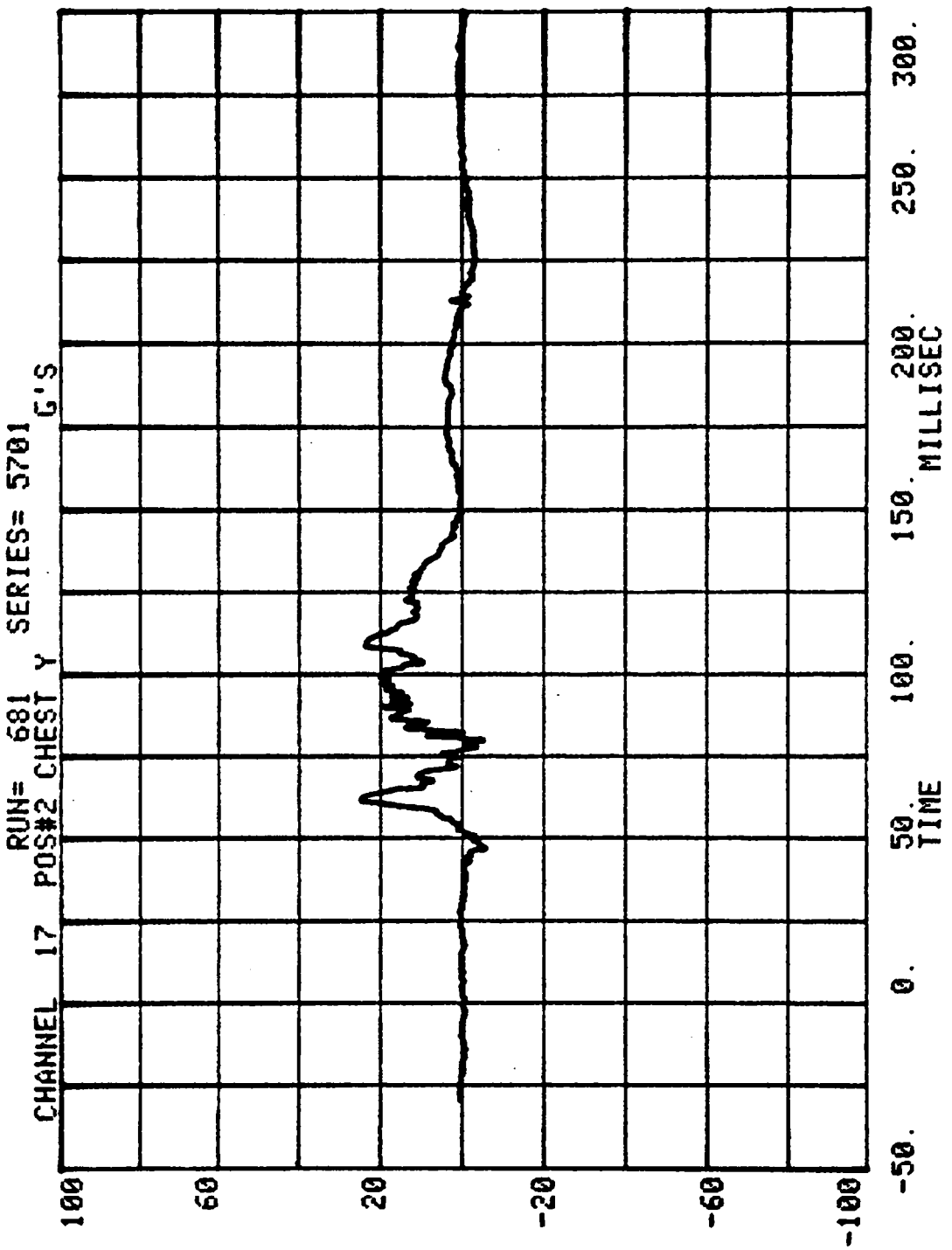
7333-17

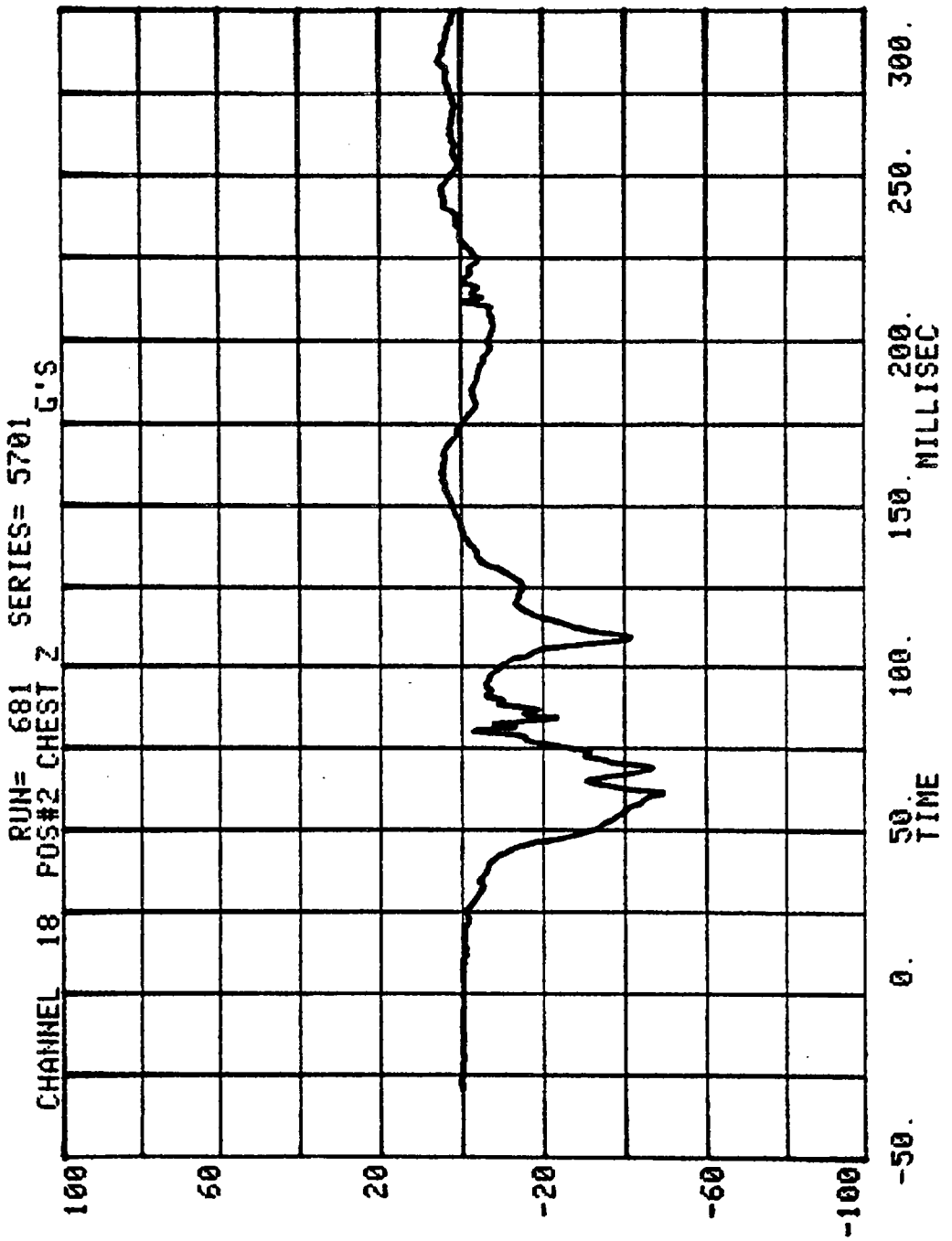

CHANNEL 3 RUN= 681 SERIES= 5701
POS#2 HEAD RESULTANT G'S
250.
200.
150.
100.
50.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

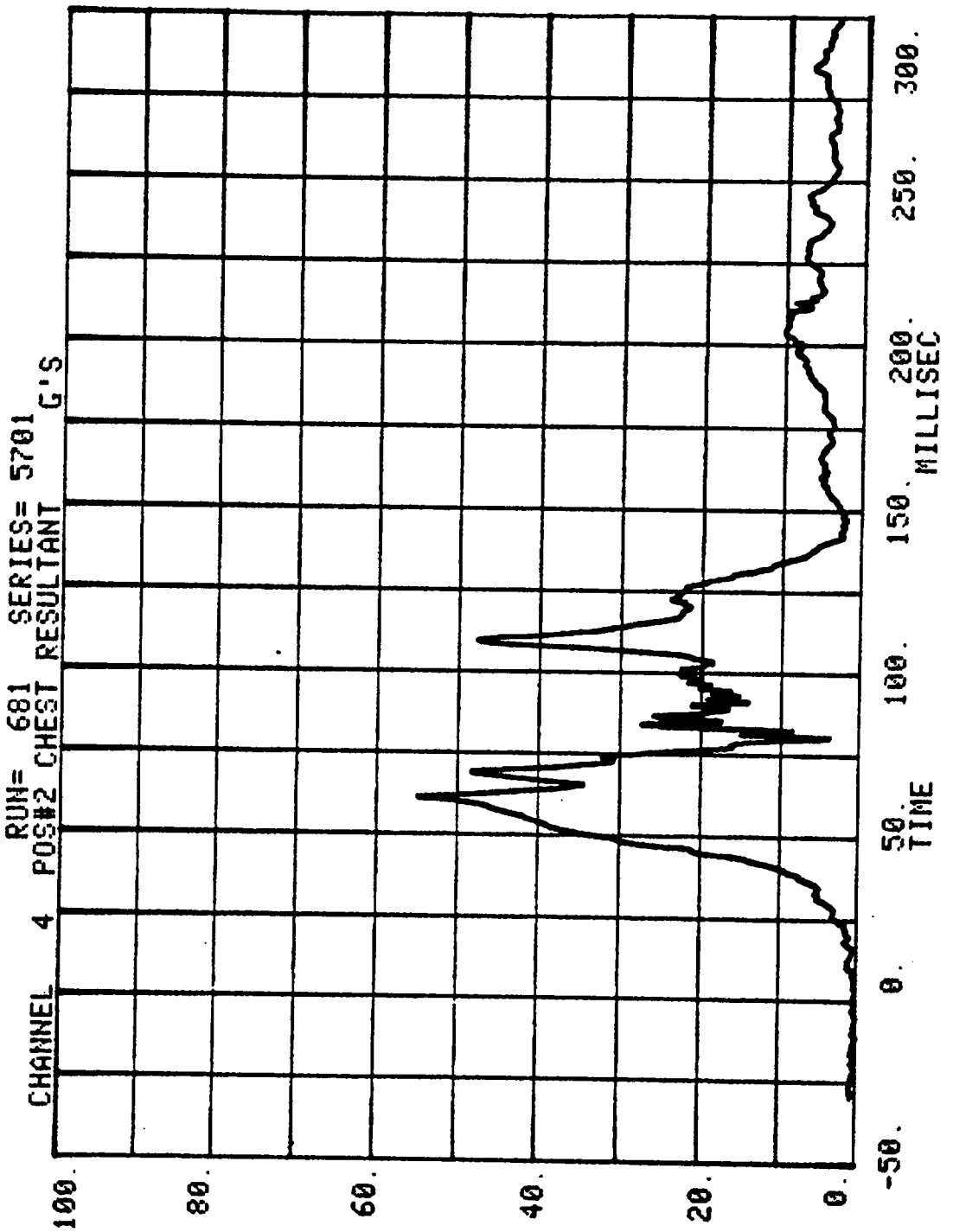

CHANNEL 15 RUN= 681 SERIES= 5701
POS#2 CHEST X G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

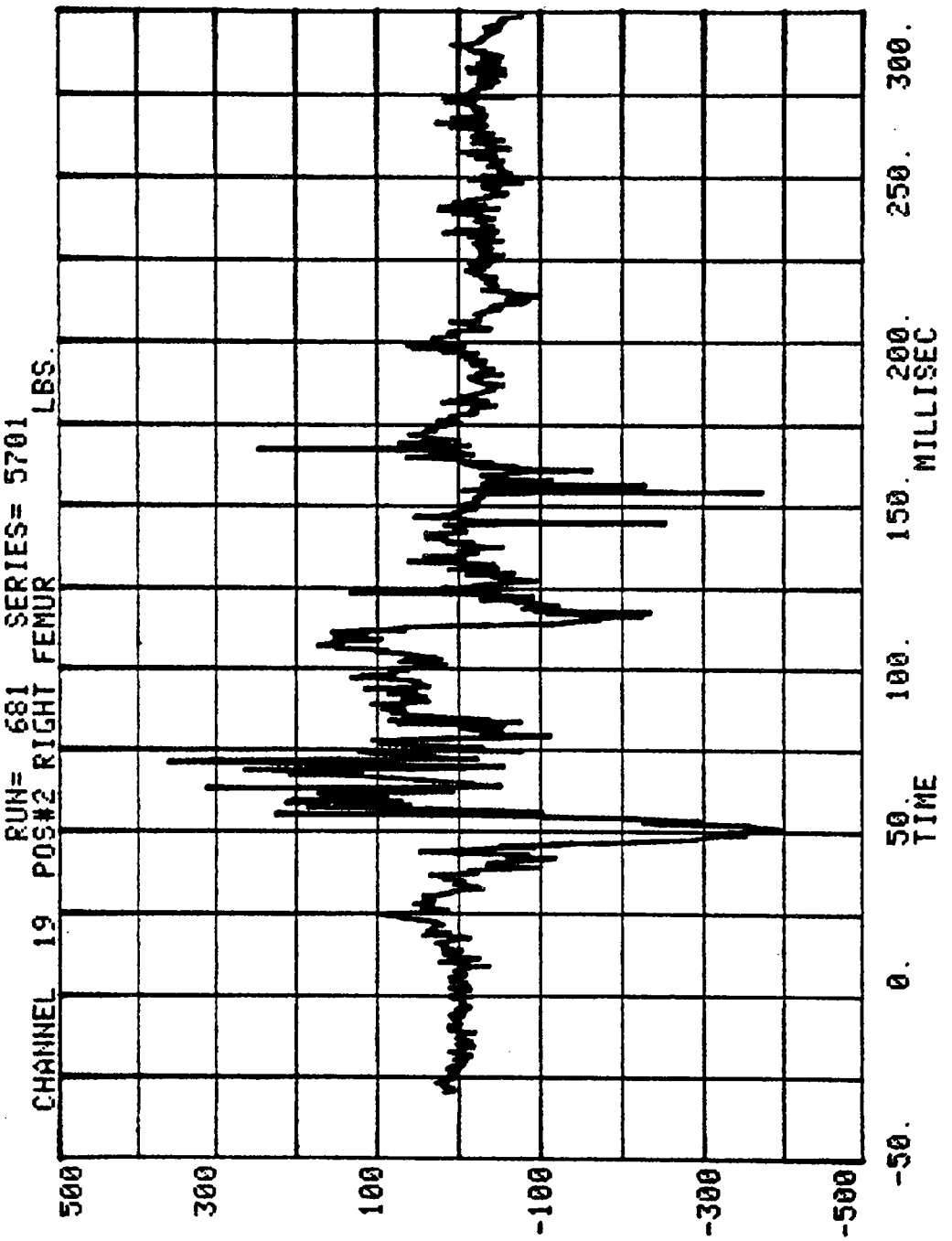
7333-17


CHANNEL 17 POS#2 CHEST Y
RUN= 681 SERIES= 5701
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

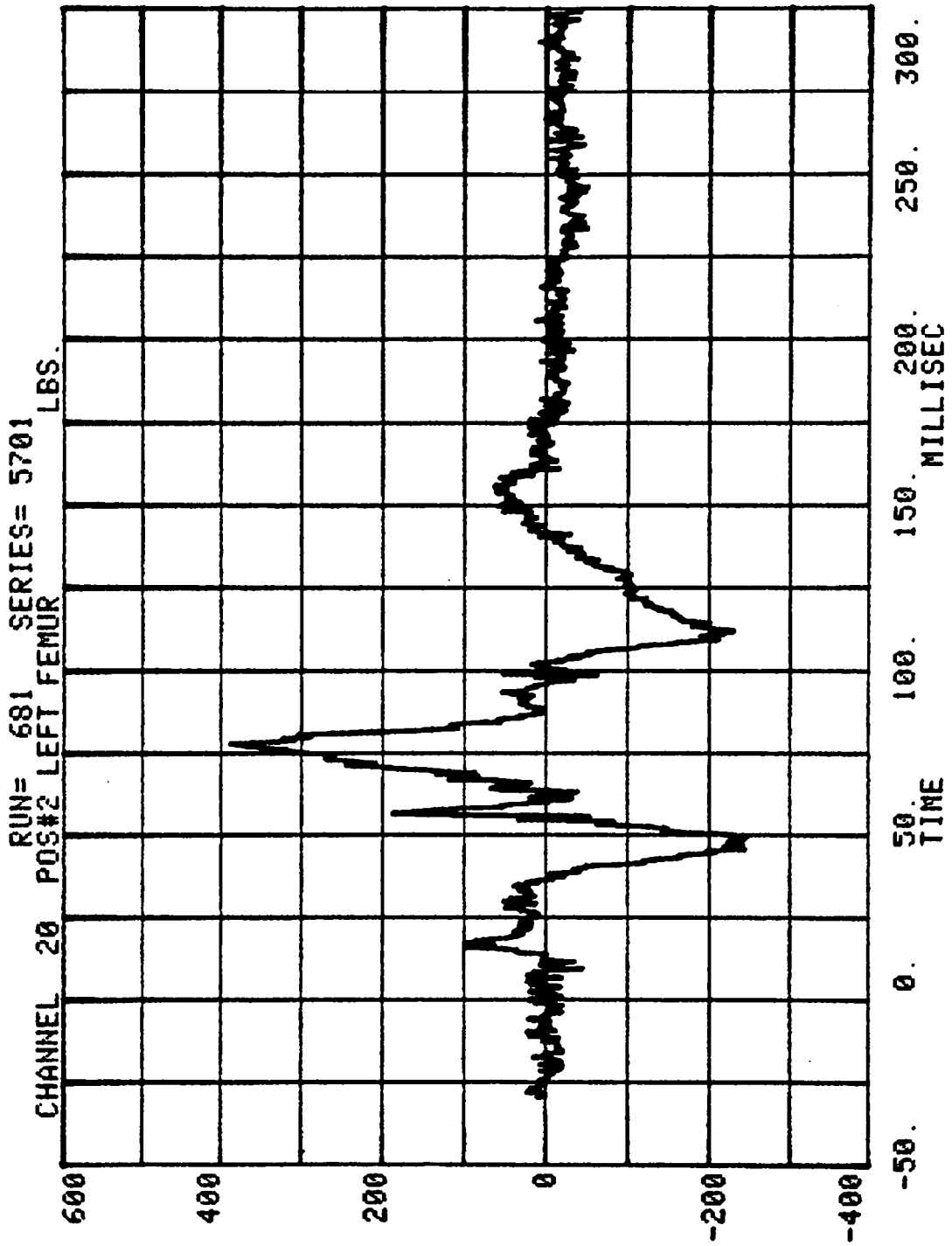

CHANNEL 18 POS#2 CHEST Z
RUN= 681 SERIES= 5701
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

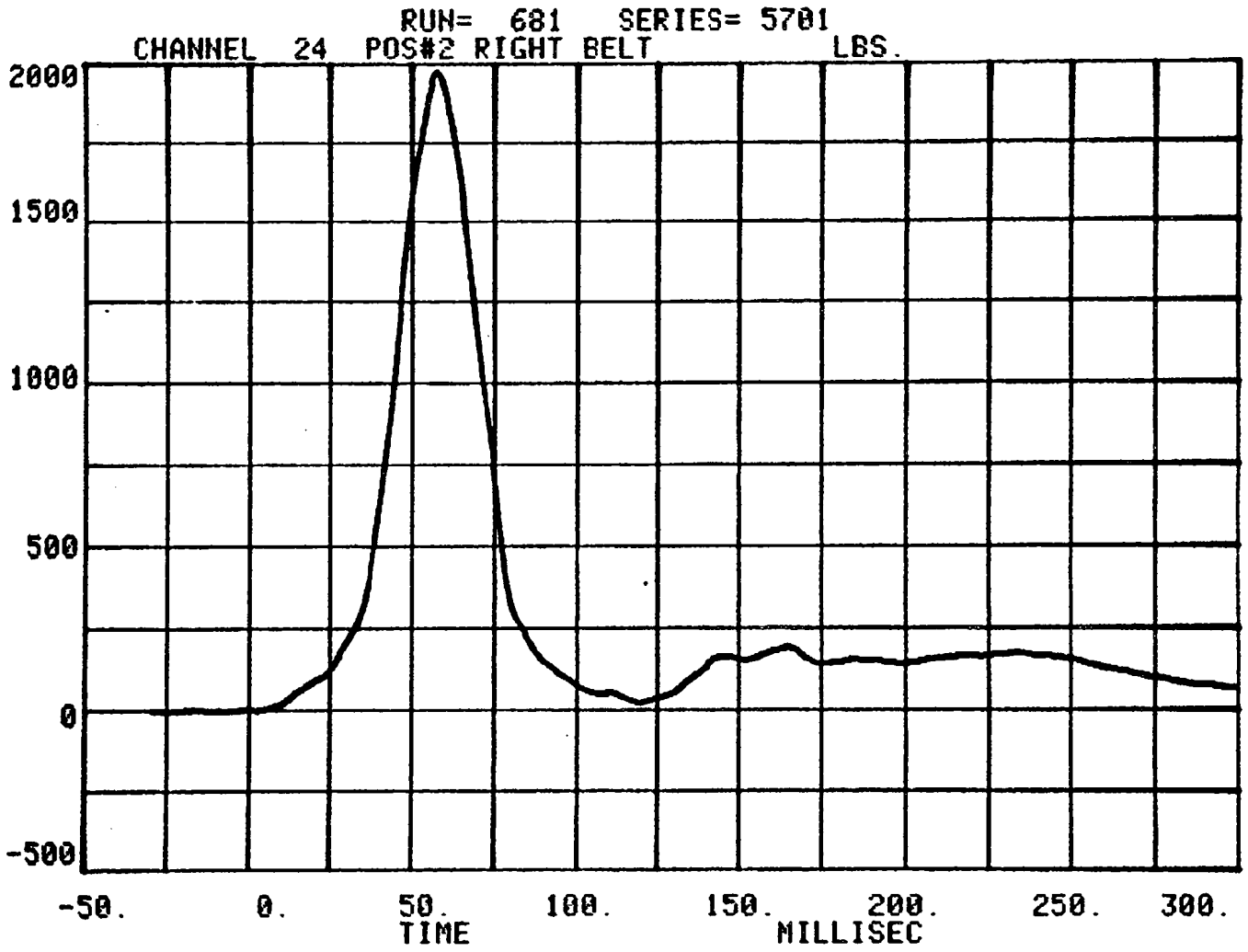
7333-17

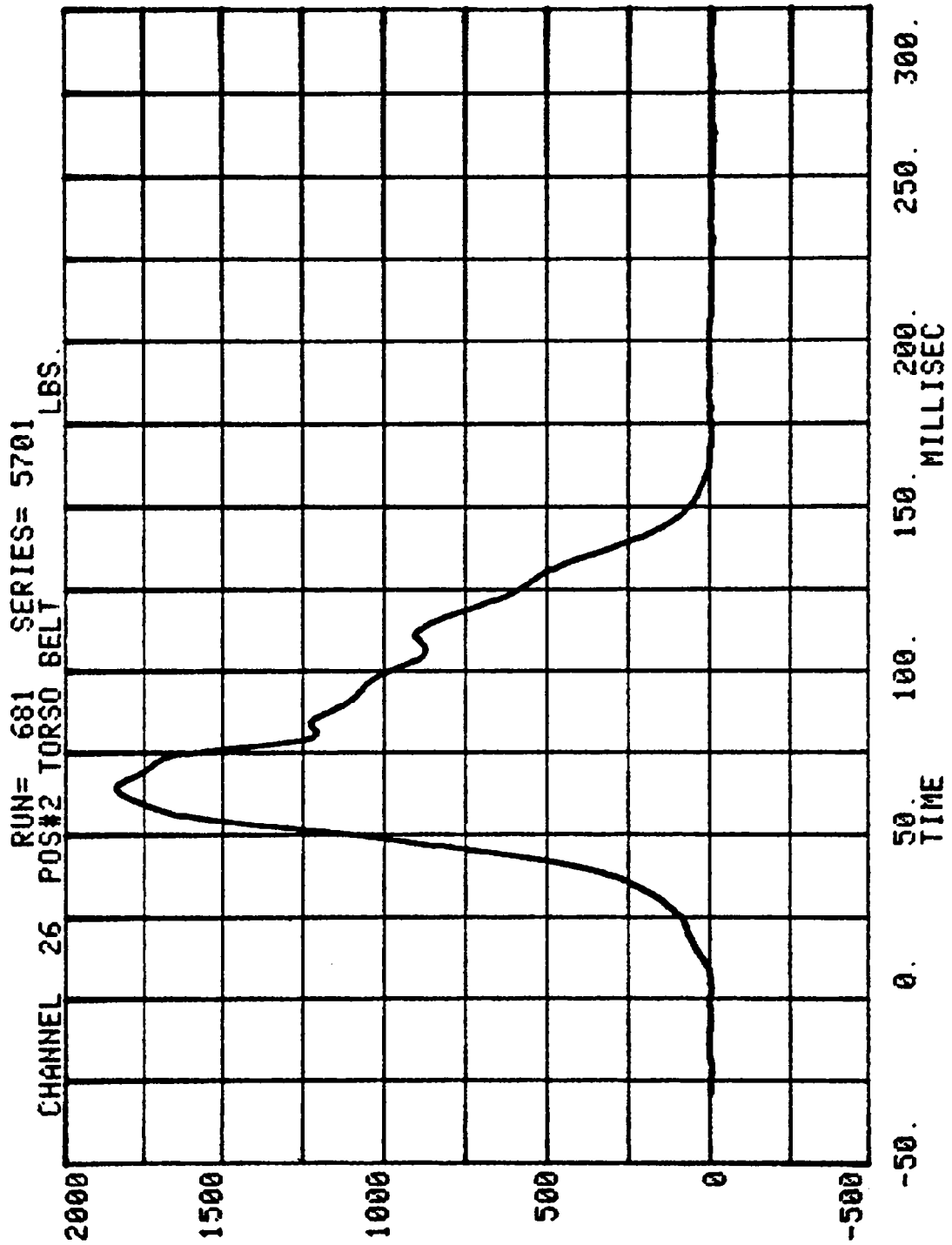

CHANNEL 4 POS#2 CHEST RESULTANT
RUN= 681 SERIES= 5701
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

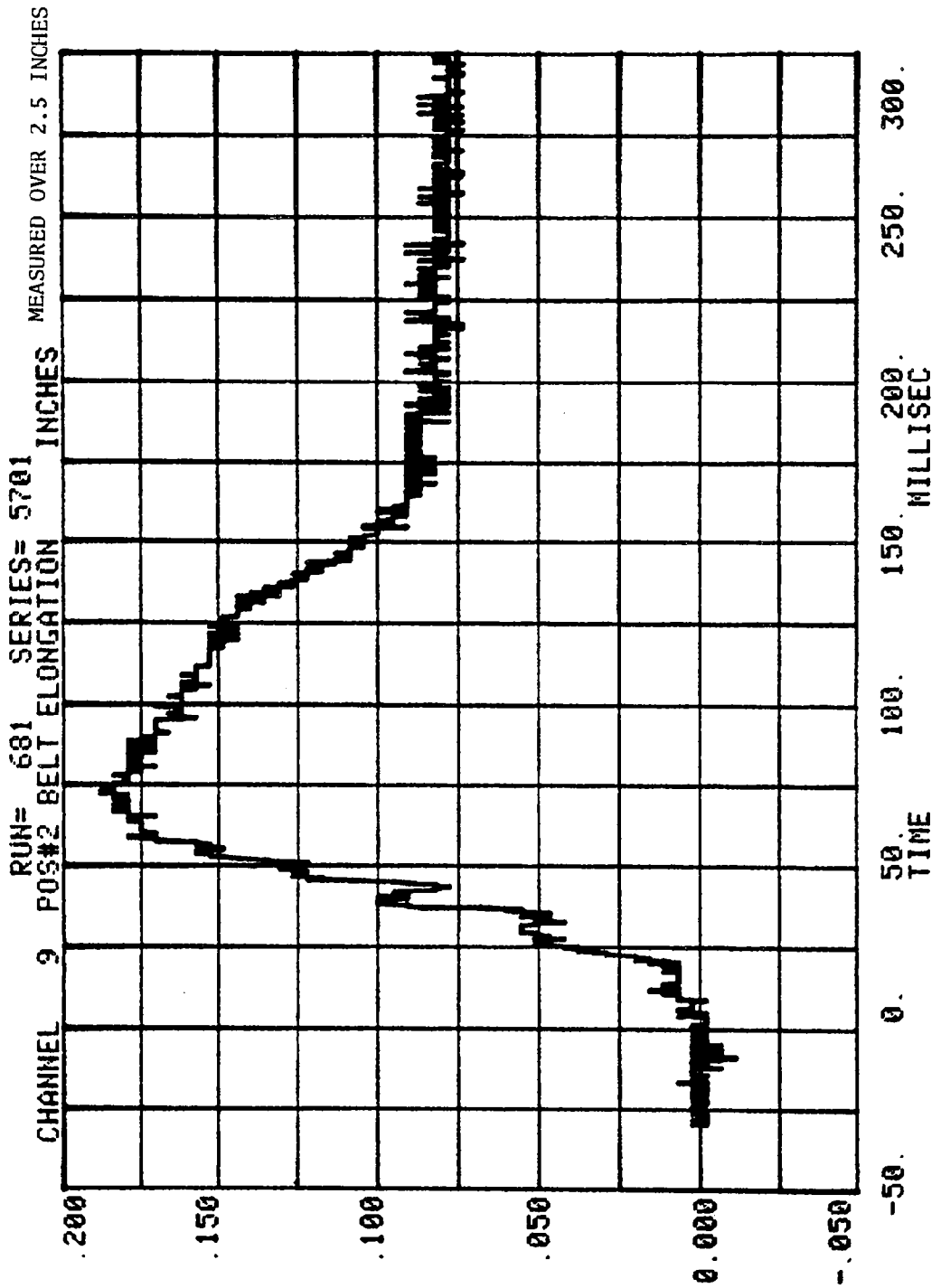

CHANNEL 19 RUN= 681 SERIES= 5701
POS#2 RIGHT FEMUR
LBS.
500
300
100
-100
-300
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

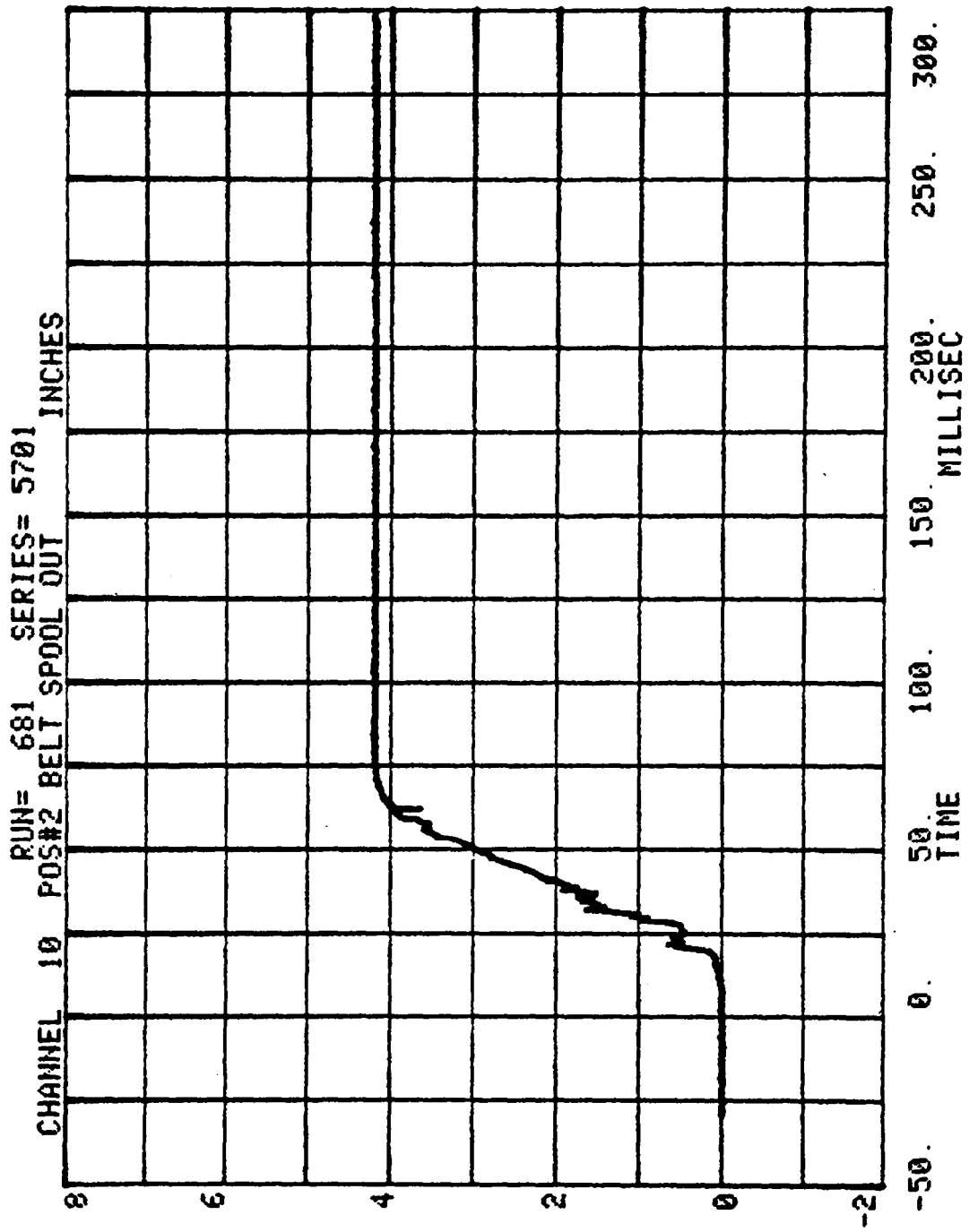

CHANNEL 20 POS#2 LEFT FEMUR
RUN= 681 SERIES= 5701
LBS.
600
400
200
0
-200
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 681 SERIES= 5701
CHANNEL 24 POS#2 RIGHT BELT LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 26 POS#2 TORSO BELT
RUN= 681 SERIES= 5701
LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 9 RUN= 681 SERIES= 5701
POS#2 BELT ELONGATION INCHES MEASURED OVER 2.5 INCHES
.200
.150
.100
.050
0.000
-.050
-50. 0. 50. 100. 150. 200. 250. 300.
TIME MILLISEC

7333-17


CHANNEL 10 POS#2 BELT SPOOL OUT
RUN= 681 SERIES= 5701
INCHES
8
6
4
2
0
-2
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7333-17

APPENDIX C

DUMMY CERTIFICATION TESTS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropometric test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of Calspan Corporation, Advanced Technology Center. A summary of the test results, Part 572 specifications and instrument calibration information is included in this Appendix.

Dummy serial numbers and certification dates are:

Serial No.	Completion Date
749	4/17/85
1019	4/17/85

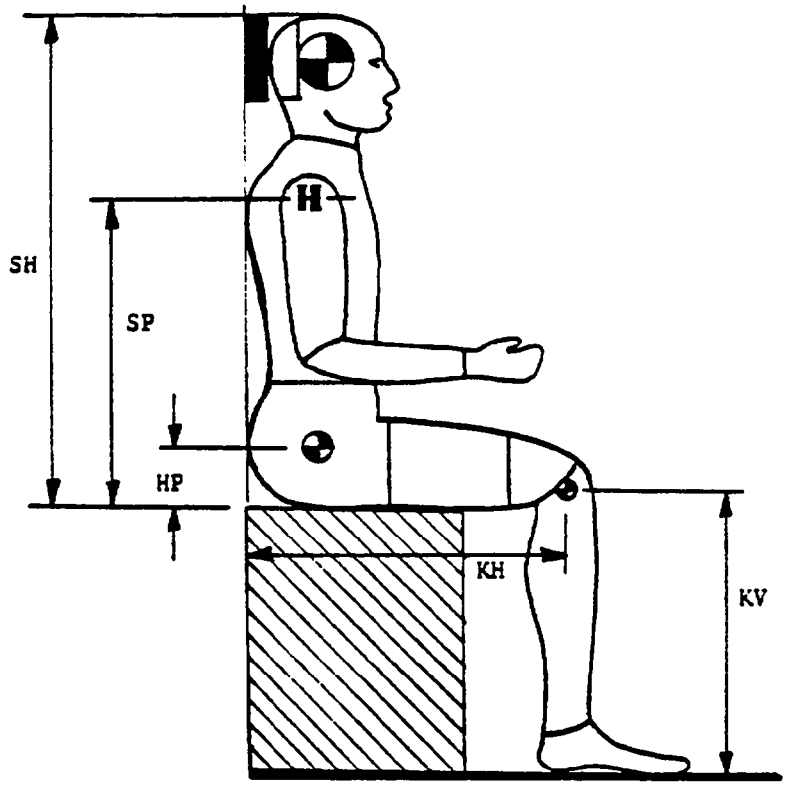
Electronic Test Equipment

The complement of signal conditioning recording and display equipment in conjunction with dummy certification testing can be found in New Car Assessment and Standards Indicant Testing Final Report, Report No. 6525-V-1.

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA DUMMY I.D. NO.: 749

I. CONFIGURATION VERIFICATION DATA:



	P.572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION		4/17/85	
VERIFICATION NUMBER FOR DUMMY*		3	
SH - Seated Height- - - - - - - -	35.6 to 35.8"	35.6"	
SP - Shoulder Pivot Height- - - -	21.8 to 22.4"	21.9"	
HP - Hip Pivot Height - - - - - -	3.9" ref.	3.9"	
KH - Knee Pivot from back line- -	20.1 to 20.7"	20.5"	
KV - Knee Pivot from floor- - - -	19.3 to 19.9"	19.5"	
SW - Shoulder Width - - - - - - -	17.8 to 18.4"	18.0"	
HW - Hip Width- - - - - - - - - -	14.0 to 15.4"	14.7"	

TECHNICIAN'S NAME: Gary Gestwick

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

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: 749

TECHNICIAN'S NAME: Gary Gestwick

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION----------		4/9/85 - 4/17/85	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*------		3	
VERIF. LAB. TEMPERATURE (66 to 78°F Range)-----		68° - 74° °F.	°F.
VERIF. LAB. HUMIDITY (10 to 70% Range)		22% - 34% %	%
TEST PARAMETER		SPECIFICATION	
1. HEAD DROP TEST--			
a. Peak Resultant Accel.-		210 to 260G	230 g.
b. Peak Lateral Accel.- -		≤ - 10G	4 g.
c. Time above 100G- - - -		0.9 to 1.5ms	1.3 ms
2. NECK BENDING TEST--			
a. Pendulum Speed - - - -		21.5 to 25.5 fps	23.0 fps
b. Pend. Avg. Decel. over $t_3 - t_2$		20 to 24G	24 g.
c. Peak Resultant Head Acceleration - - - - -		26G max.	24 g.
d. Pendulum Decel.(t_2-t_1)		≤ - 3ms	2.2 ms
e. Pendulum Decel.(t_3-t_2)		25 to 30 ms	28.1 ms
f. Pendulum Decel.(t_4-t_3)		≤ - 10ms	5.9 ms
g. Max. Head Rotation - -		63 to 73°	66°
h. Chordal Displacement-- Head Rotation Angle-			
0°	Time- -	-2 to 2 ms	0 ms
	Displ.-	-.5 to .5"	0.0"
30°	Time- -	25.6 to 34.4ms	30 ms
	Displ.-	2.1 to 3.1"	2.9"
60°	Time- -	40.3 to 51.7ms	47.5 ms
	Displ.-	4.3 to 5.3"	5.0"
Maximum (66 °)	Time- -	53.2 to 66.8ms	56.5 ms
	Displ.-	5.0 to 6.0"	5.3"

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

II. PERFORMANCE VERIFICATION DATA (Continued) NHTSA DUMMY I.D. NO.: 749

TECHNICIAN'S NAME: Gary Gestwick

TEST PARAMETER		SPECIFICATION	Pre-Test (if required)	Post-Test (if required)
2. NECK BENDING TEST.... Continued:				
h. Chordal Displacement:				
Head Rotation Angle--				
60°	Time	67.0 to 83.0 ms	67 ms	
	Displ.	4.3 to 5.3 in.	4.8"	
30°	Time	85.4 to 104.6 ms	86 ms	
	Displ.	2.1 to 3.1 in.	2.3"	
0°	Time	101.0 to 123.0 ms	101 ms	
	Displ.	-.5 to 0.5 in.	0.0"	
3. ABDOMINAL COMPRESSION TEST:				
(Preload = 10 pounds)				
a. Force @ .5" - - - - -		23 to 36 lbs.	26 lbs.	
b. Force @ .75" - - - - -		36 to 50 lbs.	42 lbs.	
c. Force @ 1.0" - - - - -		50 to 63 lbs.	60 lbs.	
d. Force @ 1.3" - - - - -		73 to 88 lbs.	88 lbs.	
4. LUMBAR FLEXION TEST:				
a. Force @ 20°- - - - - -		22 to 34 lbs.	33 lbs.	
b. Force @ 30°- - - - - -		34 to 46 lbs.	43.5 lbs.	
c. Force @ 40°- - - - - -		46 to 58 lbs.	53 lbs.	
d. Return Angle - - - - -		12° maximum	4°	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed- - -		21.78-22.22 fps	21.90 fps	
(2) Peak Deflection-		1.7" maximum	1.62"	
(3) Peak Resistive Force- - - - - -		2250 lbs. maximum	2020 lbs.	
(4) Internal Hysteresis - - -		50 to 70%	52.3%	
b. Low Speed				
(1) Probe Speed- - -		13.86-14.14 fps	13.99 fps	
(2) Peak Deflection-		1.1" maximum	.98"	
(3) Peak Resistive Force- - - - - -		1450 lbs. maximum	1260 lbs.	
(4) Internal Hyster.		50 to 70%	56.8%	

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA (Continued) NHTSA DUMMY I.D. NO.: 749

TECHNICIAN'S NAME: Gary Gestwick

TEST PARAMETER	SPECIFICATION	Pre-Test (if required)	Post-Test (if required)
6. KNEE IMPACT TESTS:			
a. Right Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.98 fps	
(2) Maximum Force - -	1850 to 2500 lbs.	2350 lbs.	
(3) Time Above 1000#-	1.7 ms minimum	1.7 ms	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.94 fps	
(2) Maximum Force - -	1850 to 2500 lbs.	2250 lbs.	
(3) Time Above 1000#-	1.7 ms minimum	1.9 ms	

REMARKS:

INSTRUMENT CALIBRATION INFORMATION

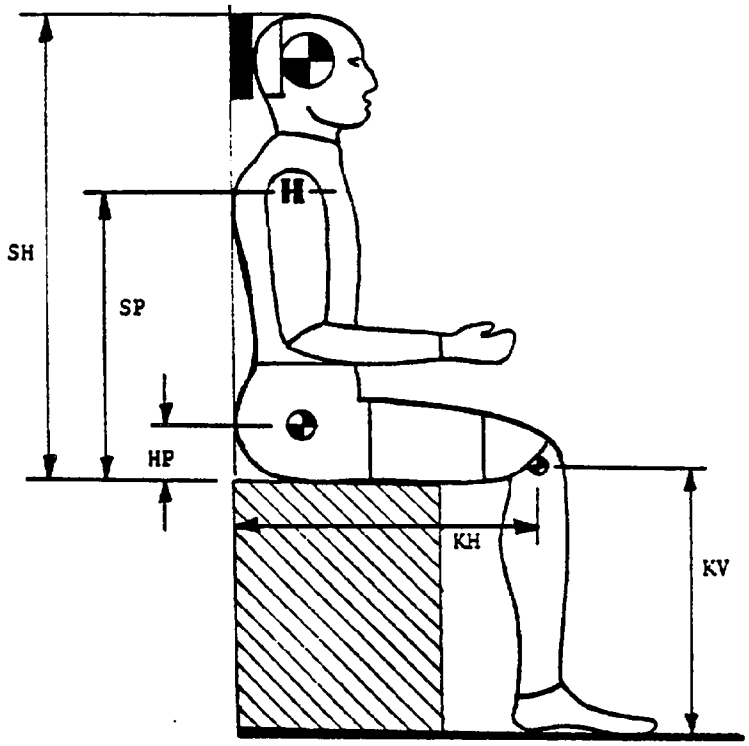
HTSA DUMMY ID NO. 749 CALIB. SEQ. NOS. FOR DUMMY: 3

	MANUFACTURER	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
. DUMMY INSTRUMENTS:				
1. Head Accelerometers --				
a. Triaxial unit - - - - -	Endevco	CK54	4-85	10-85
b. Uniaxial units				
(1) Longitudinal (A_x) -	Endevco	CK78	4-85	10-85
(2) Lateral (A_y) - - -	Endevco	CD75	4-85	10-85
(3) Vertical (A_z) - - -				
2. Chest Accelerometers -- (Vehicle Crash Test Usage)				
a. Triaxial unit - - - - -	CEC	16931	4-85	10-85
b. Uniaxial units				
(1) Longitudinal (A_x) -	Endevco	CLG5	4-85	10-85
(2) Lateral (A_y) - - -	CEC	17547	4-85	10-85
(3) Vertical (A_z) - - -	Ohmite	7915	1-85	7-85
3. Chest Potentiometer - - -	GSE	306	1-85	7-85
4. Femur Load Cells --	GSE	312	1-85	7-85
a. Right Side - - - - - -				
b. Left Side - - - - - -	CEC	19965	1-85	7-85
. CALIB. LAB. INSTRUMENTS:				
1. Pendulum Accelerometer - - -	CEC	25184	1-85	7-85
2. Test Probe Accelerometer - - -	Transducer Inc.	20051	1-85	7-85
3. Lumbar Flexion Test Push Force Gauge - - - - - - - - -	BLH	72952	1-85	7-85
4. Abdominal Compression Test Force Gauge - - - - - - - - -	CIC	567-11	1-85	7-85
5. Abdominal Compression Test Displacement Gauge - - - - -				

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA DUMMY I.D. NO.: 1019

I. CONFIGURATION VERIFICATION DATA:



	P.572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION		4/17/85	
VERIFICATION NUMBER FOR DUMMY*		3	
SH - Seated Height- - - - - - - -	35.6 to 35.8"	35.7"	
SP - Shoulder Pivot Height- - - -	21.8 to 22.4"	22.0"	
HP - Hip Pivot Height - - - - - -	3.9" ref.	3.9"	
KH - Knee Pivot from back line- -	20.1 to 20.7"	20.7"	
KV - Knee Pivot from floor- - - -	19.3 to 19.9"	19.6"	
SW - Shoulder Width - - - - - - -	17.8 to 18.4"	18.0"	
HW - Hip Width- - - - - - - - - -	14.0 to 15.4"	14.8"	

TECHNICIAN'S NAME: Gary Gestwick

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

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: 1019

TECHNICIAN'S NAME: Gary Gestwick

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION----------		4/9/85 - 4/17/85	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*------		3	
VERIF. LAB. TEMPERATURE (66 to 78°F Range)-----		68° - 74° °F.	°F.
VERIF. LAB. HUMIDITY (10 to 70% Range)		22% - 34% %	%
TEST PARAMETER	SPECIFICATION		
1. HEAD DROP TEST--			
a. Peak Resultant Accel.-	210 to 260G	255 g.	
b. Peak Lateral Accel.- -	≤ - 10G	4 g.	
c. Time above 100G- - - -	0.9 to 1.5ms	1.2 ms	
2. NECK BENDING TEST--			
a. Pendulum Speed - - - -	21.5 to 25.5 fps	23.5 fps	
b. Pend. Avg. Decel. over $t_3 - t_2$	20 to 24G	23.5 g	
c. Peak Resultant Head Acceleration - - - - -	26G max.	23 g	
d. Pendulum Decel.(t_2-t_1)	≤ - 3ms	2.2 ms	
e. Pendulum Decel.(t_3-t_2)	25 to 30 ms	27.8 ms	
f. Pendulum Decel.(t_4-t_3)	≤ - 10ms	4.7 ms	
g. Max. Head Rotation - -	63 to 73°	72°	
h. Chordal Displacement--			
Head Rotation Angle-			
0° Time- -	-2 to 2 ms	0 ms	
0° Displ.-	-.5 to .5"	0.0"	
30° Time- -	25.6 to 34.4ms	30 ms	
30° Displ.-	2.1 to 3.1"	3.1"	
60° Time- -	40.3 to 51.7ms	44.5 ms	
60° Displ.-	4.3 to 5.3"	5.0"	
Maximum (72 °) Time- -	53.2 to 66.8ms	61.5 ms	
Maximum (72 °) Displ.-	5.0 to 6.0"	5.8"	

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

II. PERFORMANCE VERIFICATION DATA (Continued) NHTSA DUMMY I.D. NO.: 1019

TECHNICIAN'S NAME: Gary Gestwick

TEST PARAMETER		SPECIFICATION	Pre-Test (if required)	Post-Test (if required)
2. NECK BENDING TEST.... Continued:				
h. Chordal Displacement:				
Head Rotation Angle--				
60°	Time	67.0 to 83.0 ms	78 ms	
	Displ.	4.3 to 5.3 in.	4.8"	
30°	Time	85.4 to 104.6 ms	95 ms	
	Displ.	2.1 to 3.1 in.	2.6"	
0°	Time	101.0 to 123.0 ms	110.5 ms	
	Displ.	-.5 to 0.5 in.	0.0 "	
3. ABDOMINAL COMPRESSION TEST:				
(Preload = 10 pounds)				
a. Force @ .5"		23 to 36 lbs.	30 lbs.	
b. Force @ .75"		36 to 50 lbs.	45 lbs.	
c. Force @ 1.0"		50 to 63 lbs.	60 lbs.	
d. Force @ 1.3"		73 to 88 lbs.	85 lbs.	
4. LUMBAR FLEXION TEST:				
a. Force @ 20°		22 to 34 lbs.	30 lbs.	
b. Force @ 30°		34 to 46 lbs.	39 lbs.	
c. Force @ 40°		46 to 58 lbs.	46.5 lbs.	
d. Return Angle		12° maximum	6°	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed		21.78-22.22 fps	22.02 fps	
(2) Peak Deflection		1.7" maximum	1.56"	
(3) Peak Resistive Force		2250 lbs. maximum	2120 lbs.	
(4) Internal Hysteresis		50 to 70%	52.5%	
b. Low Speed				
(1) Probe Speed		13.86-14.14 fps	14.01 fps	
(2) Peak Deflection		1.1" maximum	.96"	
(3) Peak Resistive Force		1450 lbs. maximum	1240 lbs.	
(4) Internal Hyster.		50 to 70%	52.9%	

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA (Continued) NHTSA DUMMY I.D. NO.: 1019

TECHNICIAN'S NAME: Gary Gestwick

TEST PARAMETER	SPECIFICATION	Pre-Test (if required)	Post-Test (if required)
6. KNEE IMPACT TESTS:			
a. Right Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.00 fps	
(2) Maximum Force - -	1850 to 2500 lbs.	2450 lbs.	
(3) Time Above 1000#-	1.7 ms minimum	1.76 ms	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.03 fps	
(2) Maximum Force - -	1850 to 2500 lbs.	2450 lbs.	
(3) Time Above 1000#-	1.7 ms minimum	1.76 ms	

REMARKS:

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY ID NO. 1019 CALIB. SEQ. NOS. FOR DUMMY: 3

	MANUFACTURER	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
A. DUMMY INSTRUMENTS:				
1. Head Accelerometers --				
a. Triaxial unit - - - - -	Endevco	CS70	4-85	10-85
b. Uniaxial units				
(1) Longitudinal (A_x) -	--	CH35	4-85	10-85
(2) Lateral (A_y) - - -	--	CU88	4-85	10-85
(3) Vertical (A_z) - - -				
2. Chest Accelerometers -- (Vehicle Crash Test Usage)				
a. Triaxial unit - - - - -	CEC	25189	4-85	10-85
b. Uniaxial units				
(1) Longitudinal (A_x) -	Endevco	CY71	4-85	10-85
(2) Lateral (A_y) - - -	CEC	25188	4-85	10-95
(3) Vertical (A_z) - - -				
3. Chest Potentiometer - - -	Ohmite	7915	1-85	7-85
4. Femur Load Cells --				
a. Right Side - - - - - -	GSE	74	4-85	10-85
b. Left Side - - - - - -	GSE	75	4-85	10-85
B. CALIB. LAB. INSTRUMENTS:				
1. Pendulum Accelerometer - - -	CEC	19965	1-85	7-85
2. Test Probe Accelerometer - - -	CEC	25184	1-85	7-85
3. Lumbar Flexion Test Push Force Gauge - - - - - - - - -	Transducer Inc.	20051	1-85	7-85
4. Abdominal Compression Test Force Gauge - - - - - - - - -	BLH	72952	1-85	7-85
5. Abdominal Compression Test Displacement Gauge - - - - -	CIC	567-11	1-85	7-85

APPENDIX D

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

VEHICLE OWNER'S MANUAL WAS NOT DELIVERED WITH VEHICLE.