REPORT NOS. 212-CAL-83-001
219-CAL-83-001
301-[redacted]-CAL-83-001

NHTSA NEW VEHICLE ASSESSMENT AND STANDARDS ENFORCEMENT INDICANT TESTING

FMVSS 212, 219, 301-75

CHRYSLER CORPORATION

1983 DODGE 600

4-DOOR SEDAN

NHTSA NO. CD0301

CALSPAN TEST NO. 7103-V-2

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ADVANCED TECHNOLOGY CENTER
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FEBRUARY 1983

FINAL REPORT

Prepared for:

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

A frontal load cell barrier test of a 1983 Dodge 600, 4-door sedan, NHTSA No. CD0301, VIN 183-BE46C3DC-122876, was performed at Calspan Corporation, Advanced Technology Center, Transportation Research Department facility. This test was performed as part of the New Car Assessment and Standards Enforcement Indicant Testing of FMVSS 212 - Windshield Mounting; FMVSS 219 - Windshield Zone Intrusion; FMVSS 301-75 - Fuel System Integrity for the Office of Vehicle Safety Compliance, the Office of Automotive Rating, and Research and Development.

Impact speed was 35.22 mph in the frontal (0°) mode. The test date was January 12, 1983, and the ambient temperature was 28°F.

The test vehicle appeared to comply with the following vehicle performance standards:

FMVSS 212 - Windshield Retention
FMVSS 219 - Windshield Intrusion
FMVSS 301-75 - Fuel System Integrity

With regard to occupant restraint performance (FMVSS 208 - Injury Criteria) the Driver met all the criteria. The Right Front Passenger did not meet the head critiera: HIC No. 1009.6.

17. Key Words	18. Distribution Statement
Load Cell Barrier Frontal Impact FMVSS Compliance Testing FMVSS 212 FMVSS 219 FMVSS 301-75	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 frontal barrier test is part of the Composite FY-83 Vehicle Barrier Impact Testing program, sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract DTNH22-82-C-01140. The purpose of this test was to obtain vehicle crashworthiness, occupant restraint performance, and indicant standards enforcement data for impact speeds in excess of the current FMVSS requirements.

The test was performed in accordance with the Office of Automotive Ratings Laboratory Procedure No. IP-212-02 dated April 4, 1980. Indicant test data for FMVSS 212, "Windshield Mounting;" FMVSS 219, "Windshield Zone Intrusion;" and FMVSS 301-75, "Fuel System Integrity," as well as occupant performance data for a nominally 35 mph impact is provided herein.

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IMPACT PHOTOGRAPH

SECTION 2

SUMMARY OF TEST NUMBER CD0301

A load cell barrier consisting of 36 load cells (Figure 6) was impacted by a 1983 Dodge 600 at a velocity of 35.22 mph. The test was performed at the Calspan Corporation Advanced Technology Center on January 12, 1983. Pre- and post-test photographs of the vehicle and occupants can be found in Appendix A. Table 1 presents pertinent crash test information.

Two Part 572, 50th percentile male anthropomorphic test devices (ATD's) were placed in the driver and right-front passenger seating positions, according to dummy placement procedures specified in Laboratory Procedure for Vehicle Assessment IP-212-02.

Both ATDs were fully instrumented with femur load cells and triaxial accelerometers in the head and chest areas. These ATDs had been certified prior to the test, and certification details, along with instrumentation calibration data, are found in Appendix C.

The crash event was recorded by one real time camera and 12 high-speed cameras. Both pit cameras were lost due to film breakage in the camera magazine. The failure may have been caused by moisture freeze-up in the magazine. To prevent this from recurring, heaters have been installed in the pit. Camera locations and other pertinent camera information are found in Section 4 of this report.

The 69 channels of data were recorded on six 14-channel FM tape recorders. There were no data losses experienced during the test. Appendix B contains the vehicle and dummy response data traces. The Injury Criteria Values are presented in summary form in Table 10.

General Comments

The 1983 Dodge 600, 4-door sedan was equipped with a 135 cubic inch, 4-cylinder engine, three-speed automatic transmission, power brakes, power steering and air conditioner. The total test weight with two 50th percentile male dummies, instrumentation and cameras was 3110 pounds.

The 1983 Dodge 600 which was involved in a frontal load cell barrier crash at a velocity of 35.22 mph appears to comply with FMVSS No. 212 - Windshield Mounting; 219 - Windshield Zone Intrusion; and 301-75 - Fuel System Integrity. There was 100 percent windshield retention, no intrusion into the protected or unprotected zone, and no fuel leakage after impact or during any phase of the rollover test.

The vehicle sustained 26.3 inches of static crush and approximately 35.6 inches of dynamic crush. Maximum post-test firewall intrusion into the occupant compartment was 10.1 inches. The maximum load cell barrier forces measured at the 36 load cells was 86,250 pounds at 33.7 milliseconds.

After impact the driver door and the right-front passenger door were inoperable and tools were required to open them. Both rear doors were operable. The windshield had stress cracks, and all other vehicle glazing remained intact.

The driver's head struck the steering wheel rim and hub. The femurs contacted the underside of the dash panel. The driver met all FMVSS 208 - Injury Criteria with a HIC of 946.5, maximum chest deceleration over 3 milliseconds of 46.2 g's, and femur loads of 510 and 1180 pounds. Belt spool-out was 4.1 inches as measured by the belt transducer and film analysis. Belt stretch was .24 inches per foot as measured between the "D" ring and retractor.

The right-front passenger head struck the dash panel and thus did not meet the FMVSS 208 - Head Injury Criteria (HIC was 1009.6) but did meet all the other criteria. A maximum chest deceleration over 3 milliseconds of

47.8 g's and femur loads of 580 and 650 pounds were recorded. The belt spool-out measured by the belt transducer measured 4.9 inches while film analysis indicated 4.5 inches of spool-out. Belt stretch as measured between the "D" ring and retractor was .4 inches per foot.

Table 1

CRASH TEST SUMMARY

TEST NO. CD0301 PROJECT: FY-83 New Car Assessment Program FMVSS No. 208/212/219/301-75

DATE: 1/12/83 TIME: 1352 TEMP: 28°F

VEHICLE	1983 Dodge 600 4-door sedan
TEST WEIGHT (lbs)	3110
IMPACT ANGLE (deg)*	0
IMPACT VELOCITY (mph)**	35.22
MAX. CRUSH (in)	26.3
MAX. INTRUSION (in)	10.1

DUMMIES

TYPE	Hybrid II Part 572 50th percentile male	Hybrid II Part 572 50th percentile male
LOCATION	LF(1), Ser. #1019	RF(2), Ser. #1021
RESTRAINT	production 3-point belt system	production 3-point belt system

NUMBER OF DATA CHANNELS 69

NUMBER OF HIGH SPEED CAMERAS 12 + 1 real time

*With respect to tow track Centerline

**Speed trap measurement (± .05% accuracy)

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION

Make/Model Dodge 600 Body Style 4-door sedan

Model Year 1983 NHTSA No. CD0301 Color White

Engine Data: 4 cylinders, 135 cubic inches

Transmission Data: 3 speed, ( ) manual (X) automatic

Date Rec'd 11/16/82 Air Cond. yes Pw. Str. yes Pw. Brks. yes

Dealer's Name & Address Rosenthal Dodge, Arlington, VA 22203

Odometer Reading 00015

DATA FROM CERTIFICATION LABEL ON LEFT DOOR REAR FACE OR "B" POST

Vehicle Manufactured by: Chrysler Corp.

Date of Manufacture 9/82 VIN 183-BE46C3DC-122876

GVRW 3900 lbs., GAWR: front 2120 lbs., rear 1830 lbs.

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR, POST, GLOVE BOX, ETC.

Vehicle Load (up to capacity): front 32 psi

rear 32 psi

Recommended Tire Size P185-70R14 Load Range X B ___ C ___ D

Recommended Cold Tire Pressure: front 26 psi, rear 26 psi

Tires on Vehicle P185-70R14

Is Spare Tire a "Space Saver?" X yes ___ no

Is Spare Tire Standard Equipment? X yes ___ no

Vehicle Capacity: Types of Seats: ___ bench, ___ bucket, X split bench

Number of Occupants (Designated Seating Capacity): 2 front

3 rear

5 TOTAL

Cargo Load: 115 lbs.

TOTAL = 865 lbs.

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

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

Right Front = 840 lbs. Right Rear = 490 lbs.
Left Front = 860 lbs. Left Rear = 470 lbs.
TOTAL FRONT WEIGHT = 1700 lbs. (63.9 % of Total Vehicle Weight)
TOTAL REAR WEIGHT = 960 lbs. (36.1 % of Total Vehicle Weight)
TOTAL DELIVERY WEIGHT = 2660 lbs.

CALCULATION FOR TARGET TEST WEIGHT

RCLW = Rated Cargo and Luggage Weight
UDW = Unloaded Delivered Weight (2660 lbs.)
VCW = Vehicle Capacity Weight (865 lbs.)
DSC = Designated Seating Capacity (5)
RCLW = VCW - 150 (DSC) = 115 lbs.
Target Test Weight = UDW + RCLW + (2 dummies X 164 lbs./dummy)
Target Test Weight = 3103 lbs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 122 POUNDS CARGO

Right Front = 910 lbs. Right Rear = 640 lbs.
Left Front = 960 lbs. Left Rear = 600 lbs.
TOTAL FRONT WEIGHT = 1870 lbs. (60.1 % of Total Vehicle Weight)
TOTAL REAR WEIGHT = 1240 lbs. (39.9 % of Total Vehicle Weight)
TOTAL TEST WEIGHT = 3110 lbs.
Weight of ballast secured in vehicle trunk area = 0 lbs.

VEHICLE ATTITUDE (all dimensions in inches)

Delivered Attitude: RF 26.2 LF 26.5 RR 25.1 LR 24.7
Test Attitude: RF 25.4 LF 25.5 RR 23.4 LR 23.4
Remarks: Wheelbase - 103 inches
Vehicle C/G as tested was 41.1 inches rearward of front wheel ℄

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

POST-IMPACT DATA

Type of Test frontal impact Impact Angle 0 °

Date of Test 1/12/83 Time of Test 1352 hrs.

Ambient Temperature 28 °F at impact area

Temperature in Occupant Compartment 69 °F

Windshield Molding Temperature 28 °F

Required Impact Velocity Range: 34.5 to 35.5 mph

Impact Velocity: primary = 35.27 mph, secondary 35.17 mph

VEHICLE REBOUND AND CRUSH (inches)

Vehicle Length: Pre-test =	R	181.2	℄	186.2	L	181.0
Post-test =	R	161.0	℄	159.9	L	158.4
Crush =	R	20.2	℄	26.3	L	22.6

Distance from front of test vehicle to point of impact:

R 22.0 C/L 21.5 L 22.5

VISIBLE DUMMY CONTACT POINTS

	Driver	Passenger
Head	steering wheel rim and hub	dash panel
Chest	---	---
Abdomen	---	---
Left Knee	dash panel	dash panel
Right Knee	dash panel	dash panel

	Front		Rear	
	Left	Right	Left	Right
Door Opening	not operable	not operable	operable	operable
	tools	tools		
	required	required		

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

	Front		Rear	
Seat Movement	Left	Right	Left	Right
Seat Back Failure	---	---		
Seat Shift (in.)	1.2 inches forward	---		

Glazing Damage

Backlight/Windshield: windshield shattered

Other notable impact effects: ---

Speed Trap - Time Measured Over 40 Inches

SECTION 3

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

- Summary of FMVSS 212, 219, and 301 Data
- Post-Impact Data for FMVSS Nos. 212, 219, and 301-75
- Windshield Retention, FMVSS No. 212 Data
- Protected Zone for FMVSS No. 219
- Windshield Zone Intrusion, FMVSS No. 219 Data
- Fuel System Integrity, FMVSS No. 301-75 Data

Table 3

SUMMARY OF FMVSS 212, 219 AND 301 DATA

PRE-IMPACT DATA

Make/Model: 1983 Dodge 600

Body Style: 4-door sedan Model Year: 1983

NHTSA No.: CD0301 Color: white

DATA FROM CERTIFICATION LABEL

Vehicle Manufacturer: Chrysler Corp.

Date of Manufacture: 9/82 VIN: 183-BE46C2DC-122876

GVWR: 3900 lbs., GAWR: Front 2120 lbs., Rear 1830 lbs.

POST-IMPACT DATA

Type of Test: Load Cell Barrier - Frontal Impact

Date of Test: 1/12/83 Time: 1352 hrs. Temp.: 28 °F

Required Impact Velocity Range: 34.5 to 35.5 mph

Impact Velocity: Primary = 35.27 mph, Secondary = 35.17 mph

Test Weight 3110 lbs., Static Crush 26.3 in. avg. Rebound 22 in. avg.

FUEL SYSTEM DATA

Test Fluid Type: Red Stoddard Solvent #2 , Spec. Grav.: 0.764

Kinematic Viscosity 0.96 Centistokes

Useable Fuel System Capacity* 13 gal.

Test Volume 12.09 gal. (93% of useable capacity)

Fuel System Capacity (data from Owner's Manual) 13 gal.

Electric Fuel Pump? ___ yes X no, Fuel Injection? ___ yes X no

Does electric fuel pump operate with ignition switch "on" and the engine not operating? ___ yes X no

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

*with entire fuel system filled from fuel tank through carburetor bowl.

SUMMARY OF FMVSS 212, 219, AND 301 DATA (cont'd)

Details of fuel system: Engine-operated fuel pump. The fuel tank is located forward of the rear wheels and held in place by two tank straps. The fuel filler tube is on the left side of vehicle and sealed by a screw-type cap which is concealed by a hinged door.

Table 4

POST-IMPACT DATA - FMVSS NOS. 212, 219, AND 301-75

DATA SHEET

TYPE OF TEST __X__ Frontal (0°) Impact

_____ Oblique (____ °) Impact on _____ Left (Driver's) Side

_____ Right Side

_____ Lateral or Side Impact on _____ Left (Driver's) Side

_____ Right Side

_____ Rear Impact

DATE OF TEST 1/12/83 TIME 1352 hrs. TEMP 28 °F

VEHICLE NHTSA NO. CD0301 VIN 183-BE46C3CD-122876

REQUIRED VEHICLE VELOCITY RANGE 34.5 to 35.5 mph

IMPACT VELOCITY (traps within 5 feet of impact event)

Trap No. 1 = 35.27 mph Trap No. 2 = 35.17 mph

Distance from the vehicle's front bumper to the barrier face entering the vehicle velocity measurement device = 58 inches

exiting the vehicle velocity measurement device = 18 inches

VEHICLE STATIC CRUSH (for frontal and rear impacts only)

Driver's Side = 22.6 in Passenger's Side = 20.2 in

C/L = 26.3 in. Average = 23.0 in.

Crush Details:

VEHICLE STATIC CRUSH (for side impacts only)

Amount of Crush = --- inches on --- side

Crush Details:

VEHICLE REBOUND (from rigid barrier only)

Driver's Side = 22.5 in Passenger's Side = 22.0 in

C/L = 21.5 in. Average = 22.0 in.

REMARKS

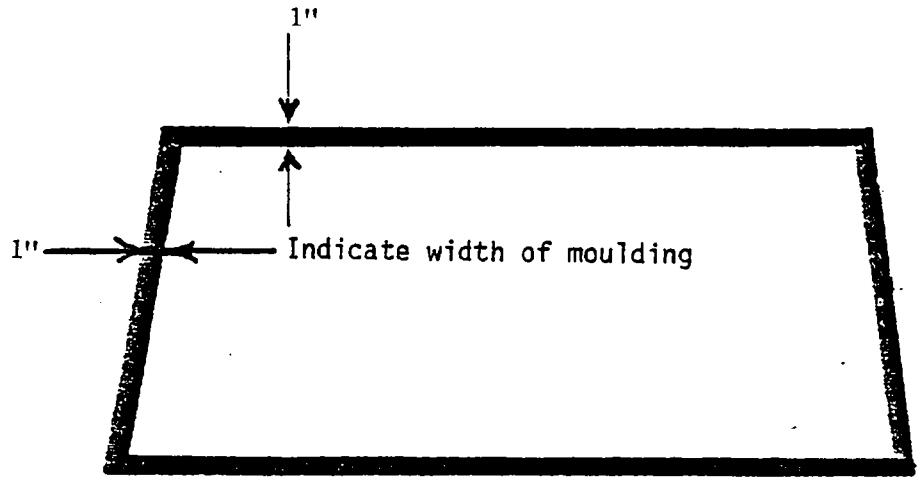
Details of windshield mounting (method of retention, type of trim, etc.):

Windshield is bonded in place and has a one-inch chrome strip along the top and sides.

	Windshield Periphery		
	Pre-Test	Post-Test	Retention %
Right Side	80.5	80.5	100
Left Side	80.5	80.5	100
TOTAL	161.0	161.0	100

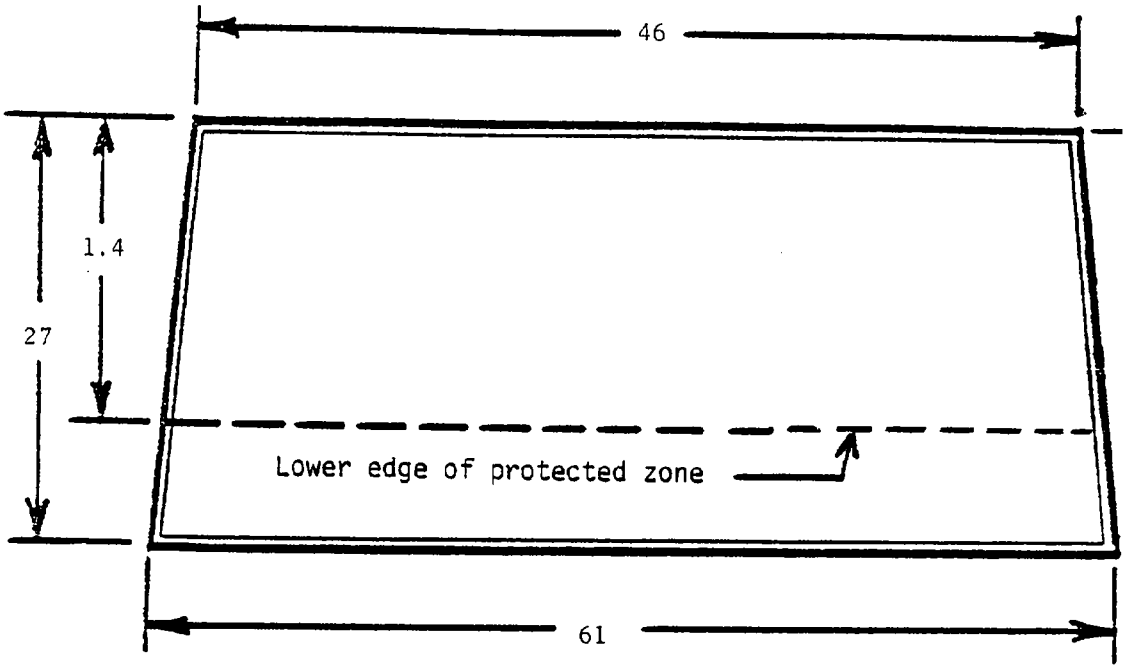
The standard requires that Post-Test be a minimum of 75 percent of the Pre-Test total periphery measurement for vehicle not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles which are equipped with occupant passive restraints.

AREA OF RETENTION FAILURE



FRONT VIEW

Figure 1 WINDSHIELD RETENTION, FMVSS NO. 212 DATA



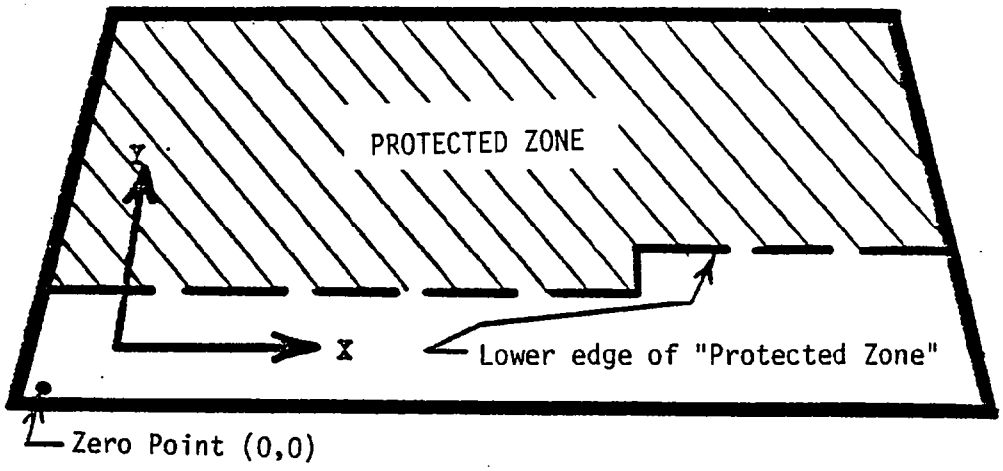
FRONT VIEW OF WINDSHIELD

Provide all dimensions necessary to reproduce the protected zone.

Method of adhering styrofoam to the windshield:

Silicone rubber sealant adhesive was applied to windshield surface and to backside of styrofoam. The styrofoam was then clamped in place until dry.

Figure 2 PROTECTED ZONE FOR FMVSS 219



FRONT VIEW

With the zero coordinate for the X-Y grid located at the lower right corner (passenger side) of the windshield, record the following positions:

(1) The area that the "Protected Zone" template was penetrated more than .25 inches by a vehicle component other than one which is normally in contact with the windshield.

NONE

Coordinates	
X	Y

(2) The area beneath the "Protected Zone" that the inner surface of the windshield was penetrated by a vehicle component.

NONE

Coordinates	
X	Y

(3) Record any windshield retention clips or brackets used to insure that the windshield would not disengage from the body.

Figure 3 WINDSHIELD ZONE INTRUSION, FMVSS 219 DATA

Table 5

"FUEL SYSTEM INTEGRITY" POST-IMPACT TEST DATA

FMVSS No. 301-75

TEST VEHICLE NHTSA NO. CD0301 Test Date 1/12/83

Vehicle Manufacture/Make/Model 1983 Chrysler Dodge 600

Test vehicle fuel tank filled to 90-91% of capacity with Stoddard Solvent 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

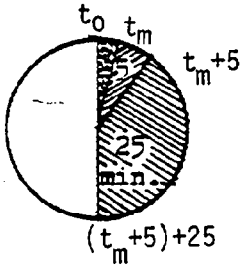
X Frontal (35 mph)

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

_____ Rear Moving Barrier (35 mph)

_____ Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT



	Actual	Max. Allow.
From impact until vehicle motion ceases	0	1 oz
For 5 min. period after vehicle motion ceases	0	5 oz
For next 25 min.	0	1 oz/1 min

SOLVENT SPILLAGE DETAILS

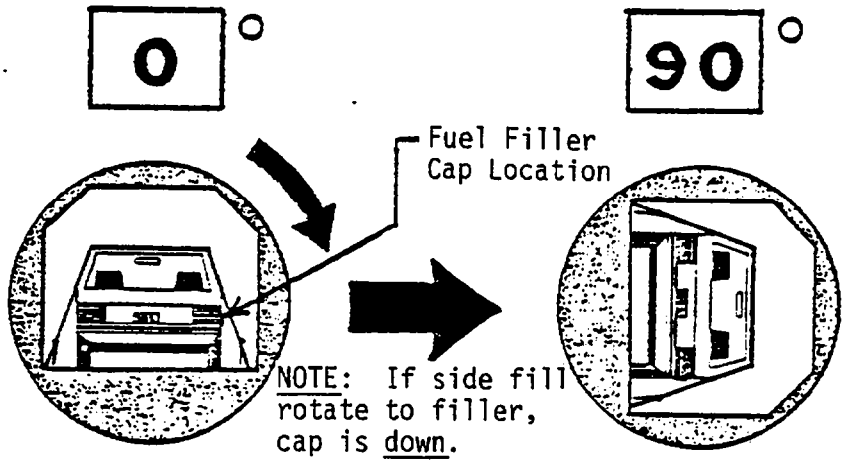
None

VEHICLE NHTSA ID NO. CD0301

Table 6

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 min.)	=	2	minutes	42 seconds
FMVSS 301-75 Position Hold Time	=	5	minutes	00 seconds
TOTAL	=	7	minutes	42 seconds
Next Whole Minute Interval	=	8	minutes	

FMVSS 301-75 REQUIREMENTS

Time Period

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

Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

ACTUAL TEST VEHICLE SOLVENT SPILLAGE

0 ounces	0 ounces	0 ounces	0 ounces

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

SOLVENT SPILLAGE LOCATION(S)

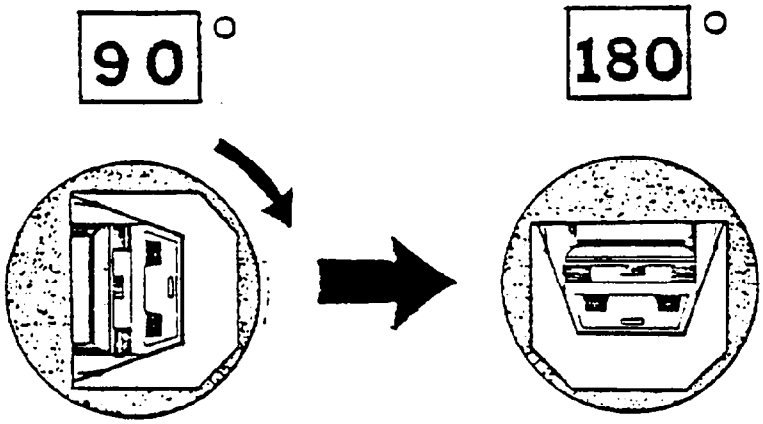
None

VEHICLE NHTSA ID NO. CD0301

Table 6 (cont'd)

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 min.)	=	2 minutes	47	seconds
FMVSS 301-75 Position Hold Time	=	5 minutes	00	seconds
TOTAL	=	7 minutes	47	seconds
Next Whole Minute Interval	=	8 minutes		

FMVSS 301-75 REQUIREMENTS

Time Period

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

Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

ACTUAL TEST VEHICLE SOLVENT SPILLAGE

0 ounces	0 ounces	0 ounces	0 ounces

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

SOLVENT SPILLAGE LOCATION(S)

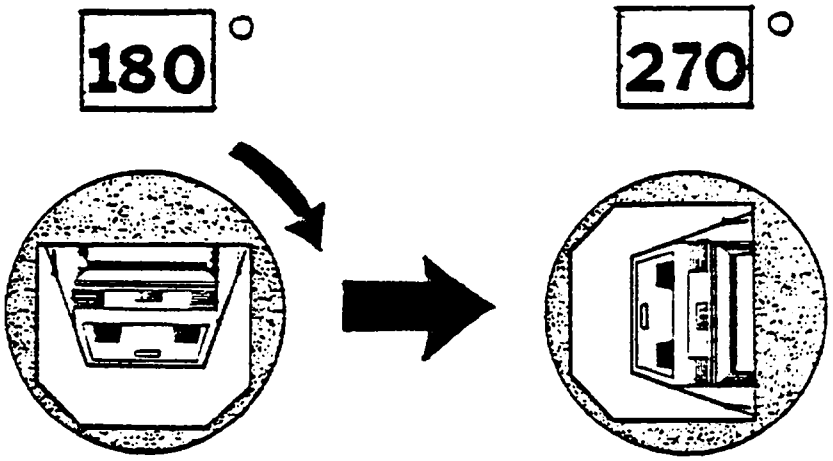
None

VEHICLE NHTSA ID NO. CD0301

Table 6 (cont'd)

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 min.)	=	2	minutes	51 seconds
FMVSS 301-75 Position Hold Time	=	5	minutes	00 seconds
TOTAL	=	7	minutes	51 seconds
Next Whole Minute Interval	=	8	minutes	

FMVSS 301-75 REQUIREMENTS

Time Period

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

Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

ACTUAL TEST VEHICLE SOLVENT SPILLAGE

0 ounces	0 ounces	0 ounces	0 ounces

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

SOLVENT SPILLAGE LOCATION(S)

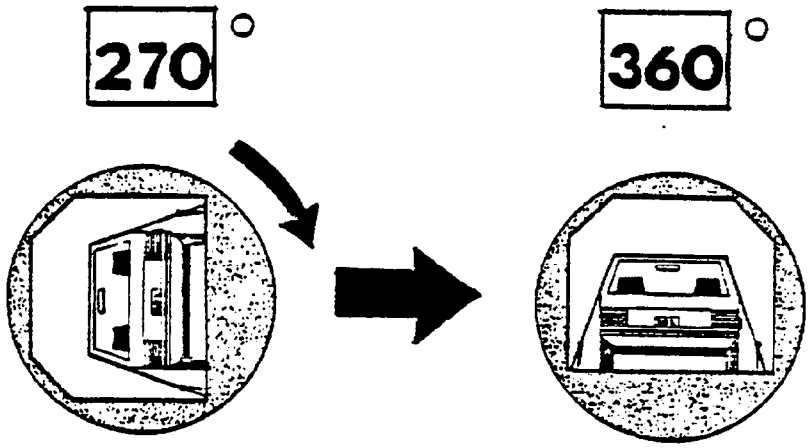
None

VEHICLE NHTSA ID NO. CD0301

Table 6 (cont'd)

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 min.)	=	2	minutes	55 seconds
FMVSS 301-75 Position Hold Time	=	5	minutes	00 seconds
TOTAL	=	7	minutes	55 seconds
Next Whole Minute Interval	=	8	minutes	

FMVSS 301-75 REQUIREMENTS

Time Period

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

Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

ACTUAL TEST VEHICLE SOLVENT SPILLAGE

0 ounces	0 ounces	0 ounces	0 ounces

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

SOLVENT SPILLAGE LOCATION(S)

None

SECTION 4

OCCUPANT AND VEHICLE INFORMATION (OMI AND AID DATA)

- Vehicle Measurements
- Vehicle Accelerometer Locations
- Load Cell Barrier-Load Cells Locations
- AID Data Summary
- Camera Positions and Locations
- Owner's Manual Seat Belt Instructions
- Dummy In-Vehicle Positioning
- Dummy Injury Criteria Values

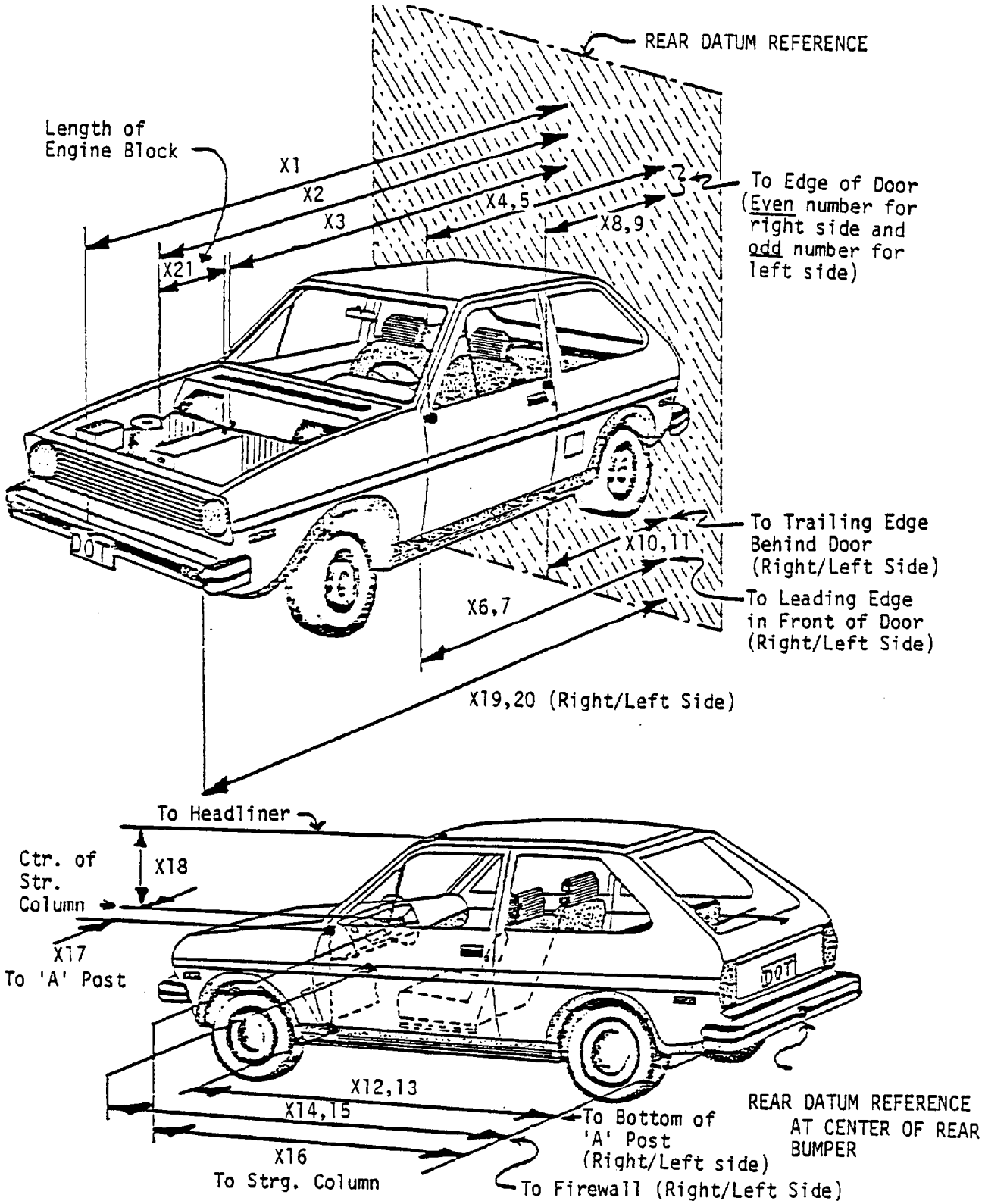


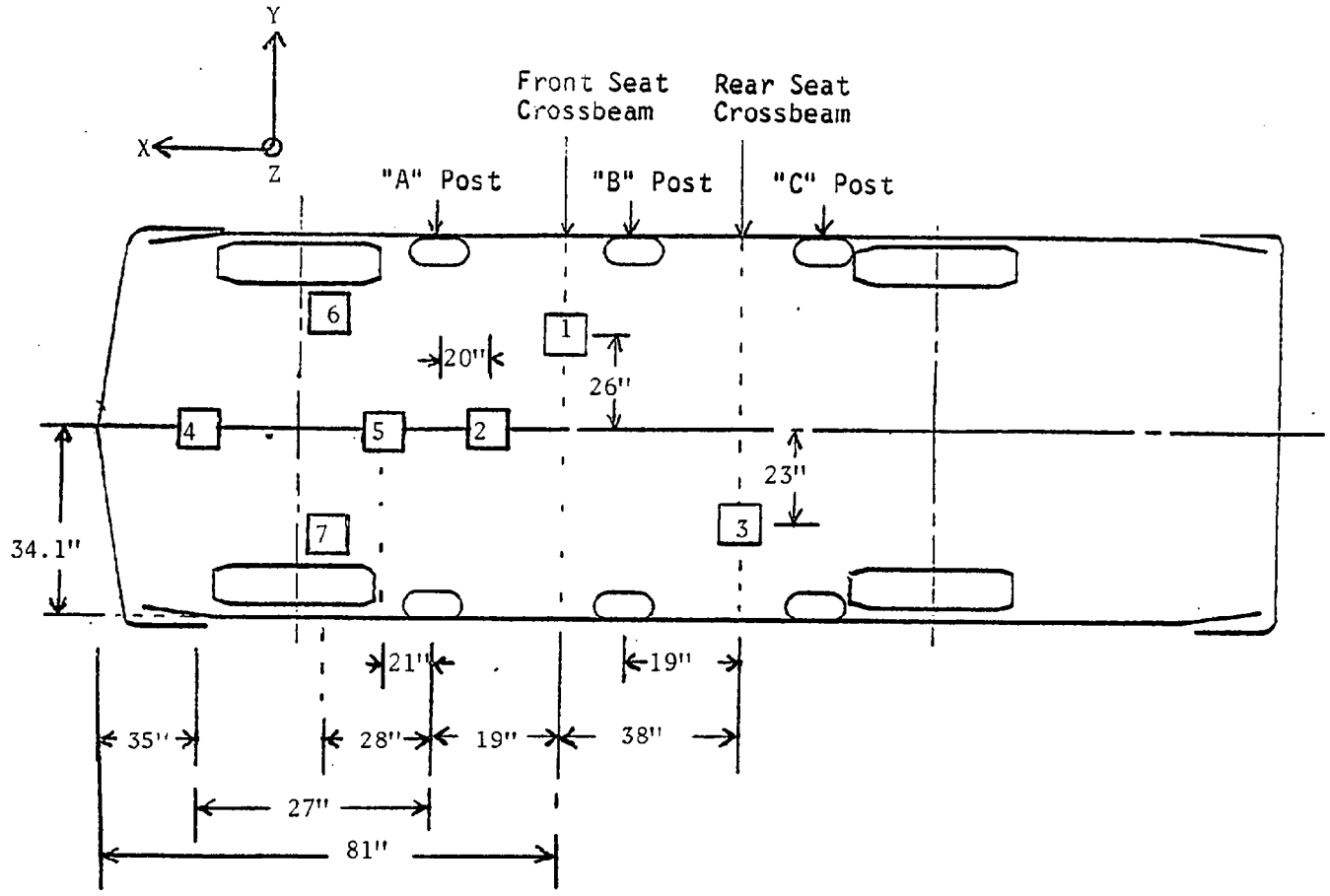
Figure 4 PRE- AND POST-TEST MEASUREMENT POINTS

Table 7

VEHICLE MEASUREMENTS

All Dimensions in Inches

No.	1983 Dodge 600	Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	186.2	159.9	26.3
X2	Rear Surface of Vehicle to Front of Engine	156.3	145.3	11.0
X3	Rear Surface of Vehicle to Firewall	138.7	128.6	10.1
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	120.4	120.2	-0.2
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	120.3	120.0	0.3
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	123.5	123.3	0.2
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	123.4	123.1	0.3
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	84.2	84.0	0.2
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	84.0	83.8	0.2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	84.4	84.3	0.1
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	84.4	84.2	0.2
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	123.5	123.3	0.2
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	123.4	123.1	0.3
X14	Rear Surface of Vehicle to Firewall, Right Side	131.8	124.9	6.9
X15	Rear Surface of Vehicle to Firewall, Left Side	133.8	127.6	6.2
X16	Rear Surface of Vehicle to Steering Column	109.8	106.2	3.6
X17	Center of Steering Column to "A" Post	13.6	16.9	-3.0
X18	Center of Steering Column to Headliner	18.2	16.3	1.9
X19	Rear Surface of Vehicle to Right Side of Front Bumper	181.2	161.0	20.2
X20	Rear Surface of Vehicle to Left Side of Front Bumper	181.0	158.4	22.6
X21	Length of Engine Block	8.5	8.5	0.0



ACCELEROMETER NUMBER*	ACCELEROMETER LOCATION	DIRECTION		
		X	Y	Z
1	Front Seat Crossmember	x		
2	Vehicle C.G.	x		
3	Rear Seat Crossmember	x		
4	Top of Engine	x		
5	Bottom of Engine	x		
6	Right Front Brake Caliper	x		
7	Left Front Brake Caliper	x		

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

FIGURE 5 VEHICLE ACCELEROMETER LOCATIONS

36 LOAD CELLS
4 ROWS
9 COLUMNS

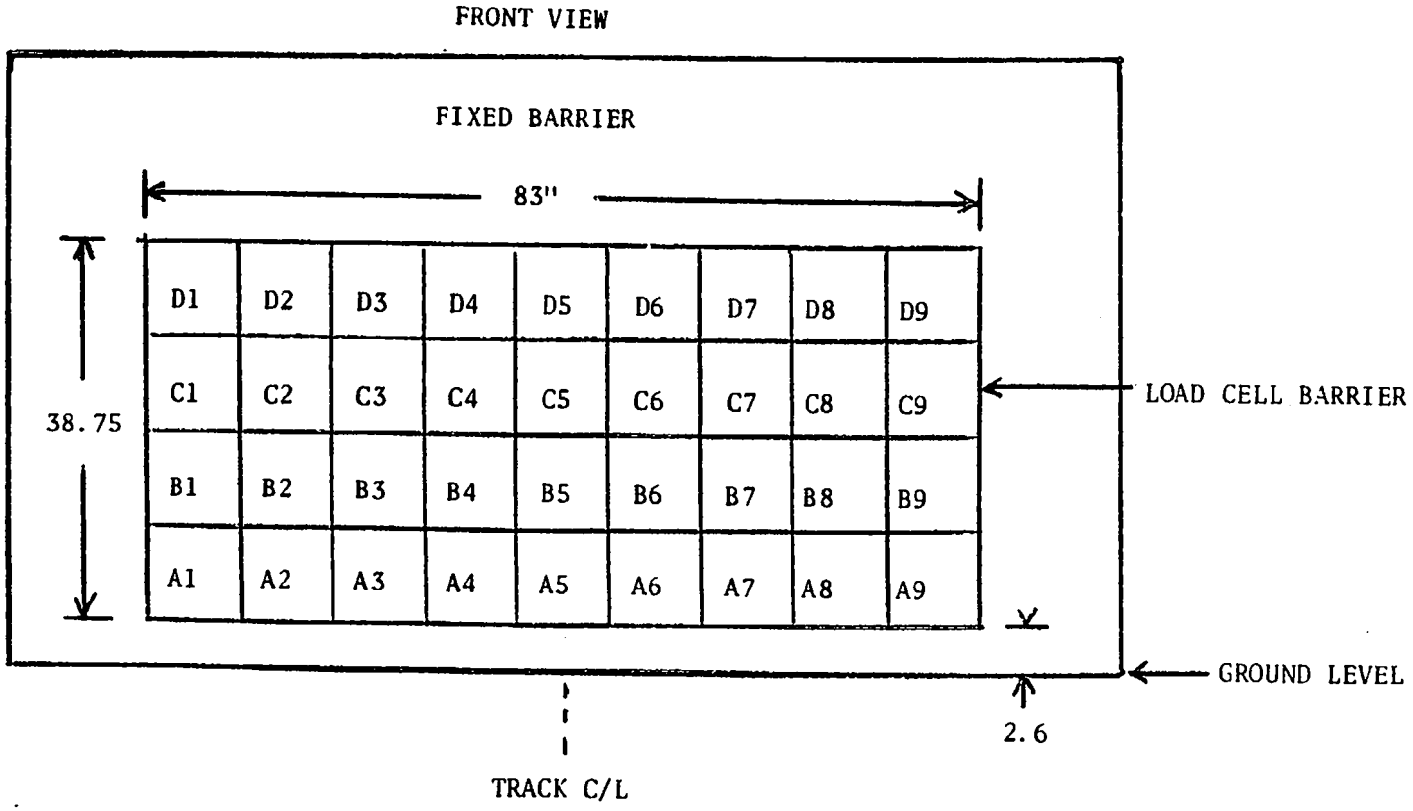


Figure 6 FIXED LOAD CELL BARRIER-LOAD CELL LOCATIONS

Table 8

ACCIDENT INVESTIGATION DIVISION

Data Summary

Test No. CD0301

Date 1/12/83

		Vehicle No. 1
Impact Description		frontal - load cell barrier
Make		1983 Dodge 600
Model		4-door sedan
Year		1983
Size Category		mid size
Test Weight		3110 pounds
Wheelbase		103 inches
Front Overhang		40.75 inches
Overall Width		68.3 inches
Accelerometer Location		41.1 in. aft of front wheel ℄
Calibration Procedure		shaker table/least squares
Accelerometer Linearity		±0.75%
Integration Algorithm		Hybrid Simpson-Newton 3/8
Impact Speed		35.22 mph
Time of Separation		280.8 msec.
Velocity Change		-39.22
CDC		12FDEW3
Damage Length	L:	61.5
Crush Dimensions	C1:	23.25
	C2:	25.2
	C3:	26.5
	C4:	25.65
	C5:	23.2
	C6:	21.5
Midpoint of Damage	D:	0

National Accident Sampling System — Continuous Sampling Subsystem: Vehicle Data

FIELD MEASUREMENTS

ST Test FMVSS #212 219301 75 CD 0301 1983 Dodge 600 4DR

Complete When Applicable VIN 1B3BE46C3DC172876

End Damage	Side Damage
Undeformed end width 61.5" 12.3" zones	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.

CDC = 12 FDEW3

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
ONE			AT C_3								
CARRIER	BUMPER	61.5	26.5	61.5	28.5	28.5	27.75	26.9	26.5	26.75	0
	FREE/SPACE				5.25	3.3	1.25	1.25	3.3	5.25	
	RESULTANT ACTUAL CRUSH			61.5	23.25	25.2	26.5	25.65	23.2	21.5	

*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.

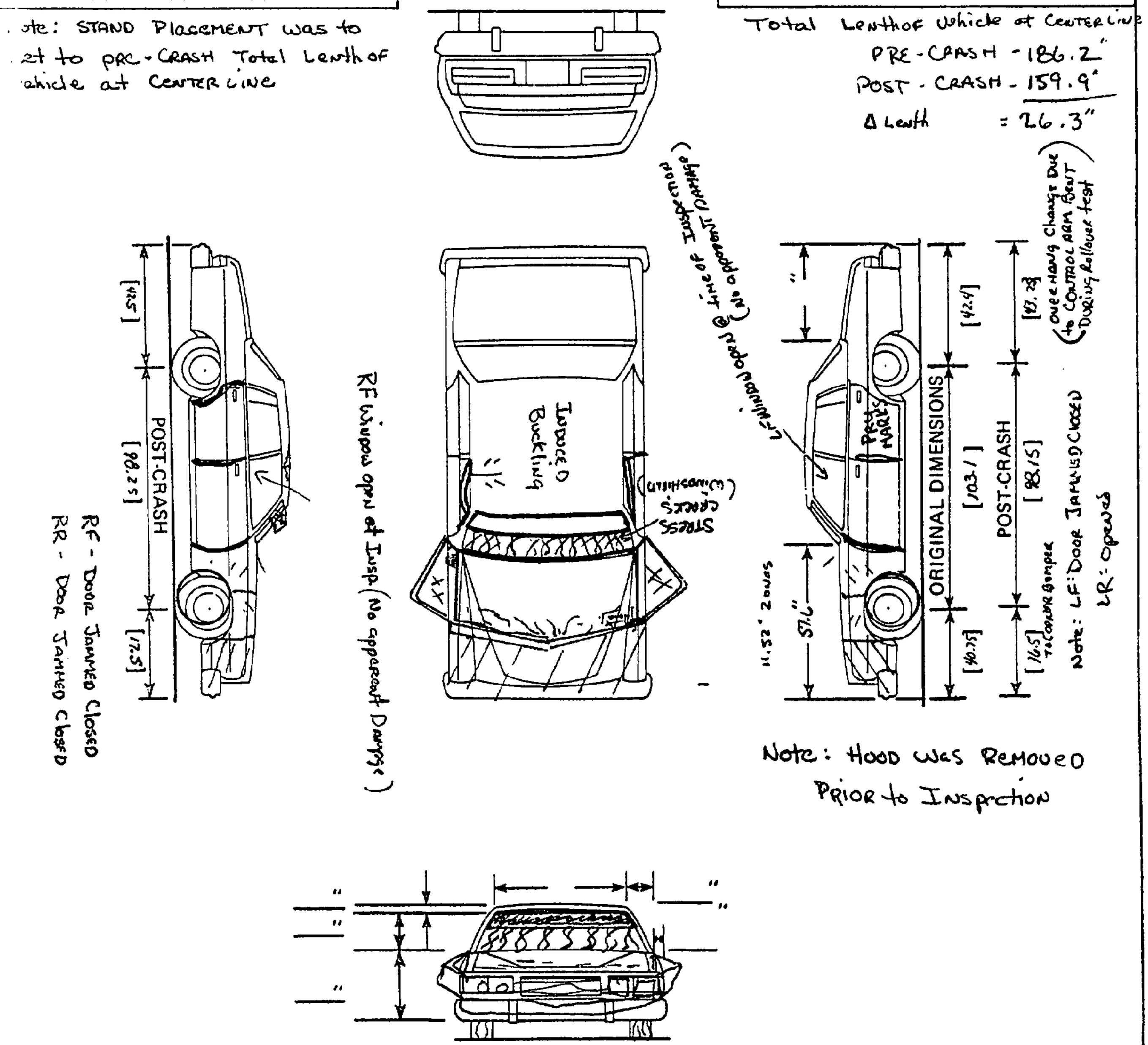
FIGURE 7

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Page 3A

.TIONAL ACCIDENT SAMPLING SYSTEM—CONTINUOUS SAMPLING SUBSYSTEM: VEHICLE 1983 Dodge 600

..AMAGE DESCRIPTION	TYPE OF TRANSMISSION	WHEEL STEER ANGLES
.ire—Wheel Damage ... Rotation physically restricted: RF 1, LF 1, RR 2, LR 2 b. Tire deflated: RF 2, LF 2, RR 2, LR 2 ..) Yes, (2) No, (8) NA, (9) Unk.	___ Manual ✓ Automatic Average Track: 57.3 Maximum Width: 68.3 Measured Curb Weight: 3110.0 Measured Overall Length: 186.2	(For locked front wheels or displaced rear axles only) RF ± 00° < 5° LF ± 00° < 5° RR ± ——° LR ± ——° Within ± 5 degrees



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 reverse side.

Annotate any damage caused by extrication such as component removal by torching, prying or hydraulic shears.

NOTE: Camera Information Shown on Table 9.

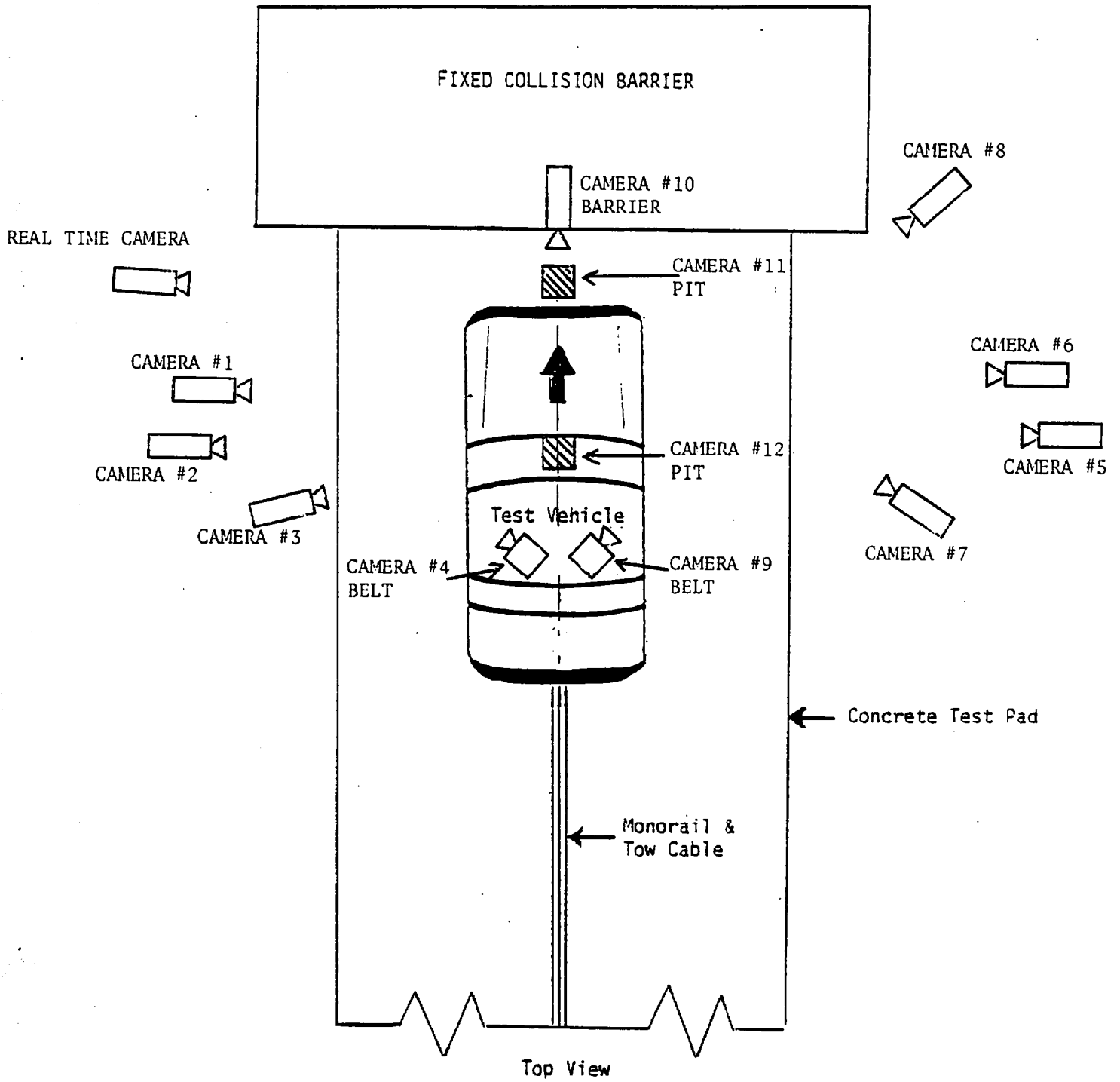


Figure 8 CAMERA POSITION FOR FRONTAL IMPACTS

Table 9

HIGH-SPEED CAMERA LOCATIONS

Test No. CD0301 Vehicle 1983 Dodge 600 4-door sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (in)* X	Y	Z	ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Vehicle Left Side	281	78	42	0	---	13	900
2	Driver	322	108	59	-2	305	50	900
3	Driver	172	134	72	-9	---	25	900
4	Left Belt Retractor	---	---	--	--	---	8	800
5	Vehicle Right Side	286	96	59	-3	---	13	no timing
6	Passenger	282	66	43	0	265	50	500
7	Passenger	178	146	77	-10	---	25	875
8	Windshield	180	-48	43	0	---	13	900
9	Right Belt Retractor	---	---	--	--	---	8	800
10	Barrier	0	0	120	-39	---	8	no timing
11	Pit (engine)***							
12	Pit (fuel tank)***							

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

Seats, Seat Belts, Mirrors

Seat Belts
Always use the seat belts. The chance of a serious injury is greatly reduced when the seat belts are properly used.

Seat belts provide protection against being thrown from the vehicle as well as reducing the risk of an injury caused by striking the interior of the vehicle.

The following pages contain the recommended procedures for fastening, adjusting and wearing the belts for maximum comfort and safety.

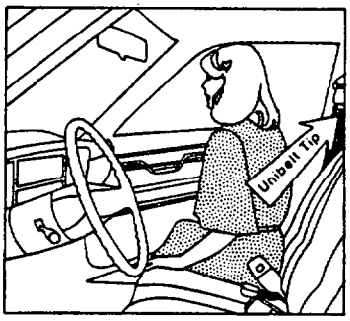
Front Seats
The "UNIBELT" or single continuous-belt restraint system, is installed for the driver and front seat passenger. This system incorporates a vehicle sensitive shoulder belt retractor, designed to lock (i.e., restrict belt travel) **only during very sudden stops or impacts.** This feature allows the shoulder belt to move freely with the wearer. It will not lock by jerking or pulling the webbing.

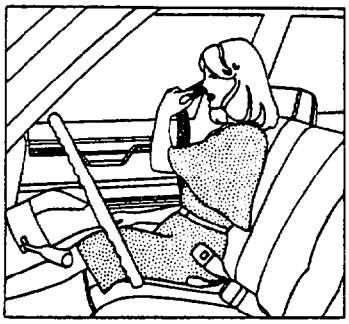
Front Center and Rear Lap Belts (If so equipped)
The center front and all rear seating positions are equipped with lap belts only. The lap belts should be worn with the upper edge of the belt drawn across the thighs and snug against the hips. To reduce the risk of sliding under the belt in a collision, it should be adjusted as tight as comfort will allow WHILE SITTING WELL BACK AND ERECT IN THE SEAT.

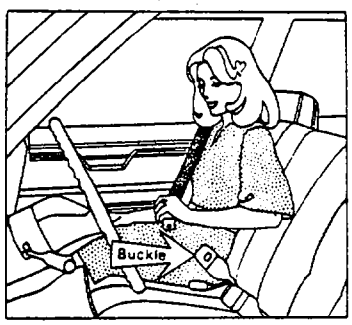
The center front and center rear seat belts are lengthened by tilting the tip (latch plate) relative to the webbing and pulling. To shorten the belt, pull the loose end of the webbing.

The outboard rear seat positions are equipped with automatic locking retractors. Withdraw the belt from the retractor in a continuous motion, forward and upward away from the seat, until the belt is extended as far as possible. Bring the belt across the body and insert the latch plate in the buckle until a "click" is heard. Tighten the belt by pulling the webbing back toward and into the retractor until the belt fits snugly on the hips.

Never use the same lap belt on more than one person at a time.







UNIBELT OPERATING INSTRUCTIONS

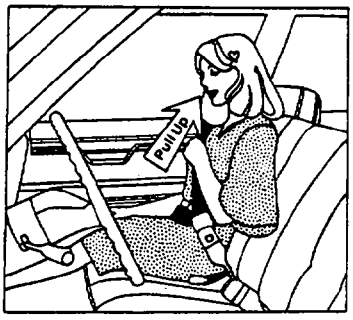
1. Enter the vehicle and adjust the seat. Note the metal tip of the unibelt in its stowed position.

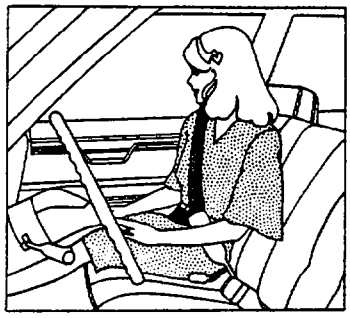
CLOSE DOOR

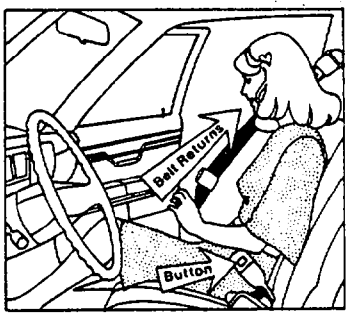
2. Grasp the metal tip and slide it up the webbing as far as necessary to go around your lap as you pull out the webbing. A couple of tries and this will become an automatic one handed operation.

3. As you pull the webbing, move the metal tip toward the buckle. This system will not lock up if you stop or hesitate, so relax and continue to "buckle up".

Insert the tip into the buckle until a "click" is heard.







4. Slack will automatically be removed due to tension created by the retractor. If a snug fit in the lap belt portion is desired, pull up on the shoulder belt as shown.

5. If the shoulder belt feels snug, move your shoulder forward slightly, or give a slight tug on the belt, such that you withdraw an inch or so of webbing.

The belt will retain the small amount of slack necessary for comfort when you return to your normal seating position. If the belt is still too tight, pull out 6 to 8 inches of webbing, let it return to your chest and repeat the above motion.

Note: The door must be closed to achieve belt tension relief.

The shoulder belt will allow unrestricted movement of the upper body under normal conditions. Extreme movements will probably require resetting the slack in the shoulder belt. The belt will lock in the event of an accident.

6. To release the belt, push the button on the buckle. The belt will automatically retract to its stowed position when the door is opened.

Figure 9 Owner's Manual Seat Belt Instructions

Figure 10

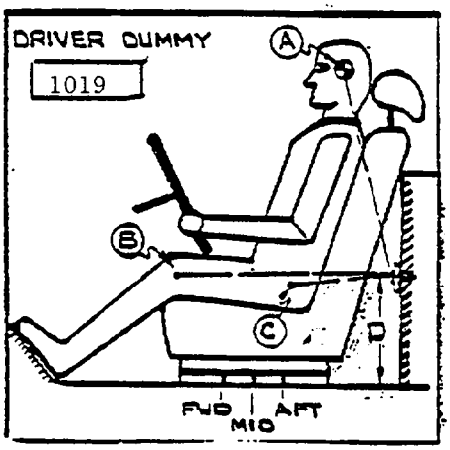
PART 572 DUMMY IN-VEHICLE POSITION

Test No. CD0301 Vehicle 1983 Dodge 600

SEAT TYPE:
____ Bench
____ Bucket
_X_ Split Bench

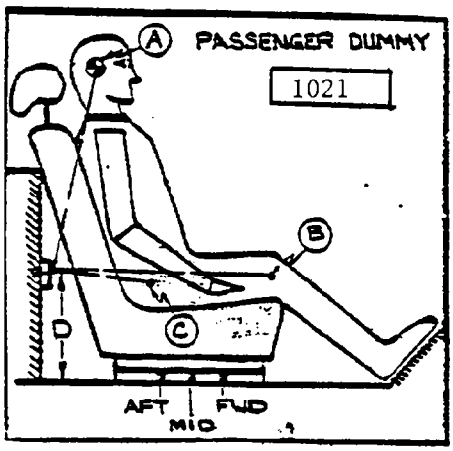
ADJUSTER TYPE:
_X_ Manual
____ Power

BUCKET SEAT BACK TYPE:
_X_ Fixed
____ Adjustable Reclining



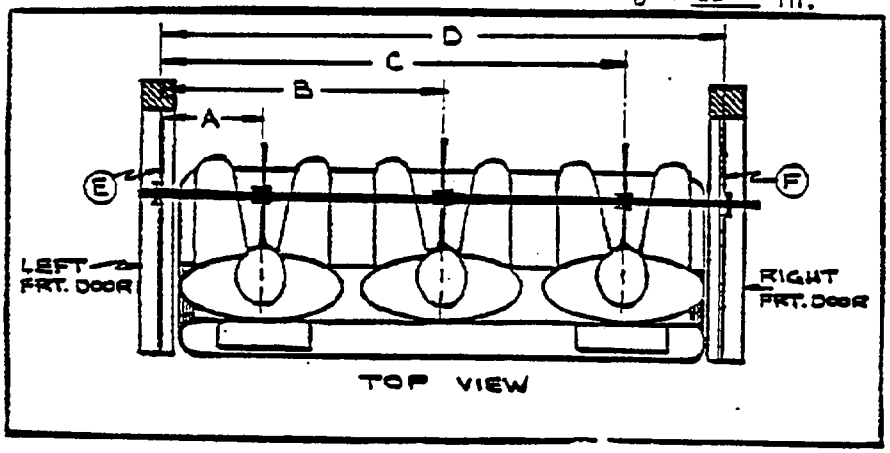
MEASUREMENT LOCATION

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



A = 23.2 in. 4 Degrees
B = 24.7 in. 92 Degrees
C = 9.9 in. 109 Degrees
D = 12 in.

A = 23.5 in. 5 Degrees
B = 25.7 in. 94 Degrees
C = 10.0 in. 108 Degrees
D = 12 in.

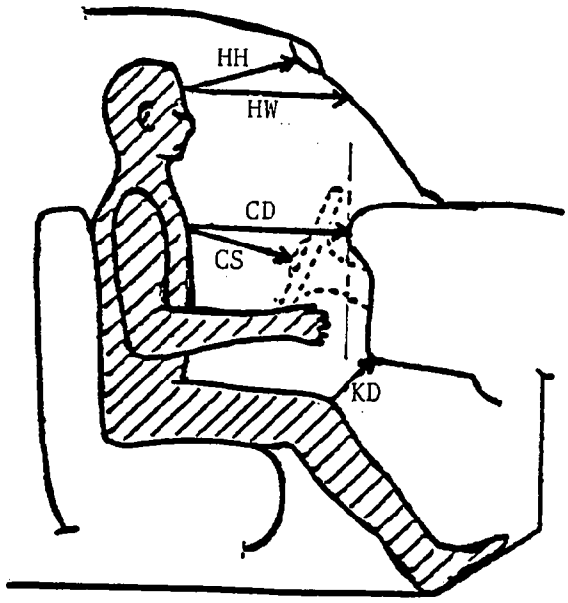


DUMMY ID

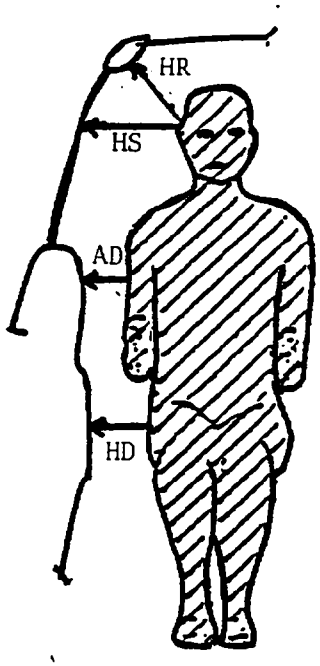
	1019	--	1021	
A =	Left Door to Driver Centerline			11.8 in.
B =	Left Door to Center Passenger Centerline			38.7 in.
C =	Left Door to Right Passenger Centerline			-- in.
D =	Left Door to Right Door			50.7 in.
E, F =	Window Glass Height (Right and Left Must be Equal)			12.5 in.

	DRIVER	PASSENGER
HH	13.5	13.3
HW	19.0	18.6
CD	21.5	21.3
CS	15.5	--
KDL	6.5	6.5
KDR	7.7	6.5
SA	23°	23°
TA	22°	23°

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	5.6	5.7
HS	8.5	8.5
AD	5.0	5.2
HD	5.8	5.7

Figure 11 OCCUPANT CLEARANCE DIMENSIONS

Table 10

DUMMY INJURY CRITERIA VALUES

	MAXIMUM ACCELERATION ("G")							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R *
DUMMY (1)	-226	-46	89	246	-43	-20	-13	46.2
DUMMY (2)	-47	63	94	120	-28	39	10	47.8
DUMMY (3)								
DUMMY (4)								

	MAXIMUM FORCE-FEMUR LOAD (LBS)	
	RIGHT FEMUR	LEFT FEMUR
DUMMY (1)	510	1180
DUMMY (2)	580	650
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)	1180	950	900
DUMMY (2)	2325	1080	1630
DUMMY (3)			
DUMMY (4)			

	HEAD INJURY CRITERIA**				SEVERITY INDEX
	HIC	t_1 (SEC)	t_2 (SEC)	AVE. ACC. (g) t_1 TO t_2	HEAD
DUMMY (1)	946.5	.07837	.10200	69.4	1665.6
DUMMY (2)	100916	.10155	.11842	81.4	1411.7
DUMMY (3)					
DUMMY (4)					

*DEFINED AS EXCEEDING 0.003 SEC. DURATION

**AS DEFINED IN FMVSS NO. 208

APPENDIX A

PHOTOGRAPHS

Figure A-1 PRE-TEST FRONT VIEW

7103-V-2

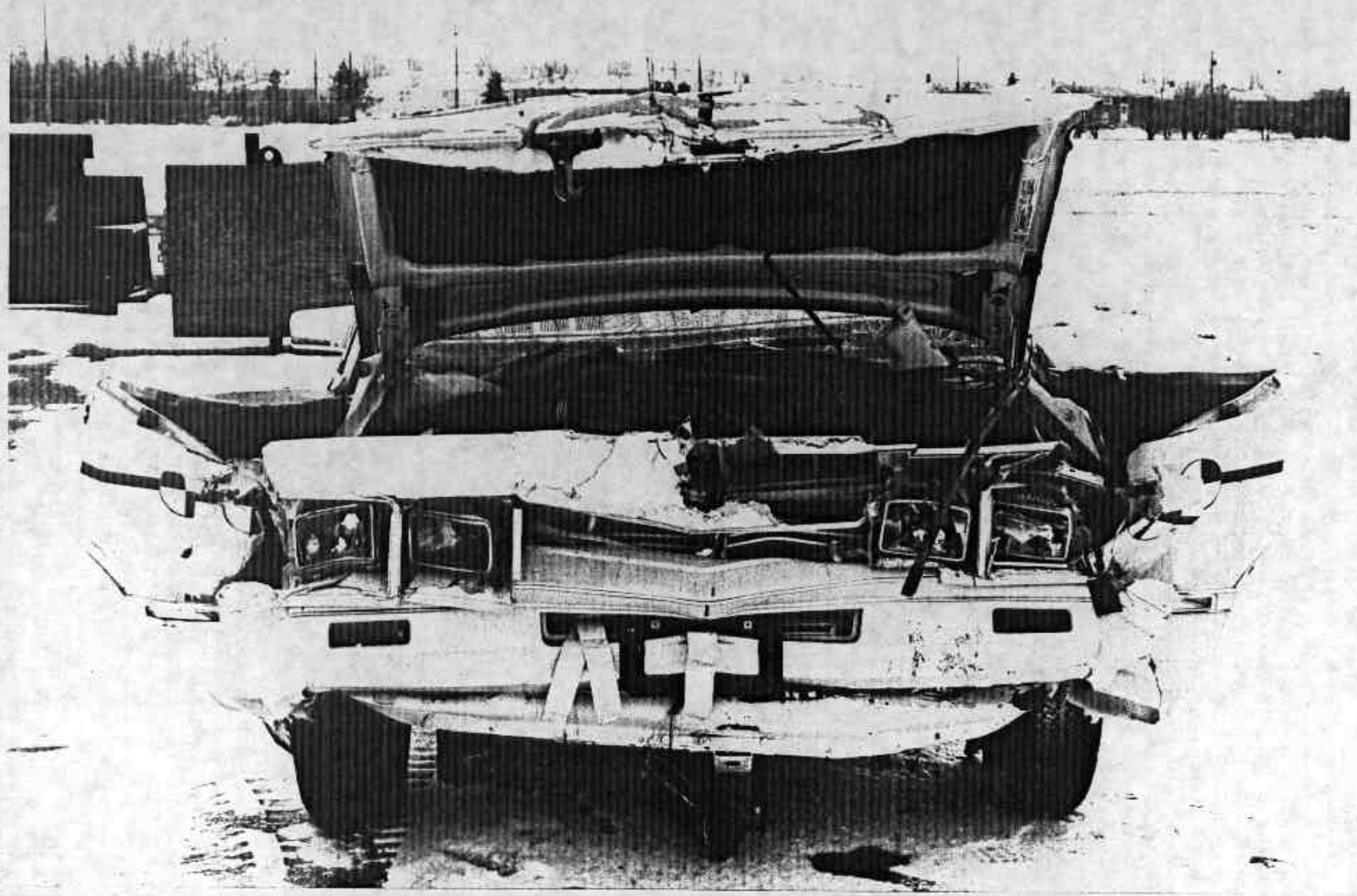


Figure A-2 POST-TEST FRONT VIEW

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 FRONT THREE-QUARTER VIEW

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

A-10

7103-V-2

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

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

Figure A-11 POST-TEST TOP VIEW

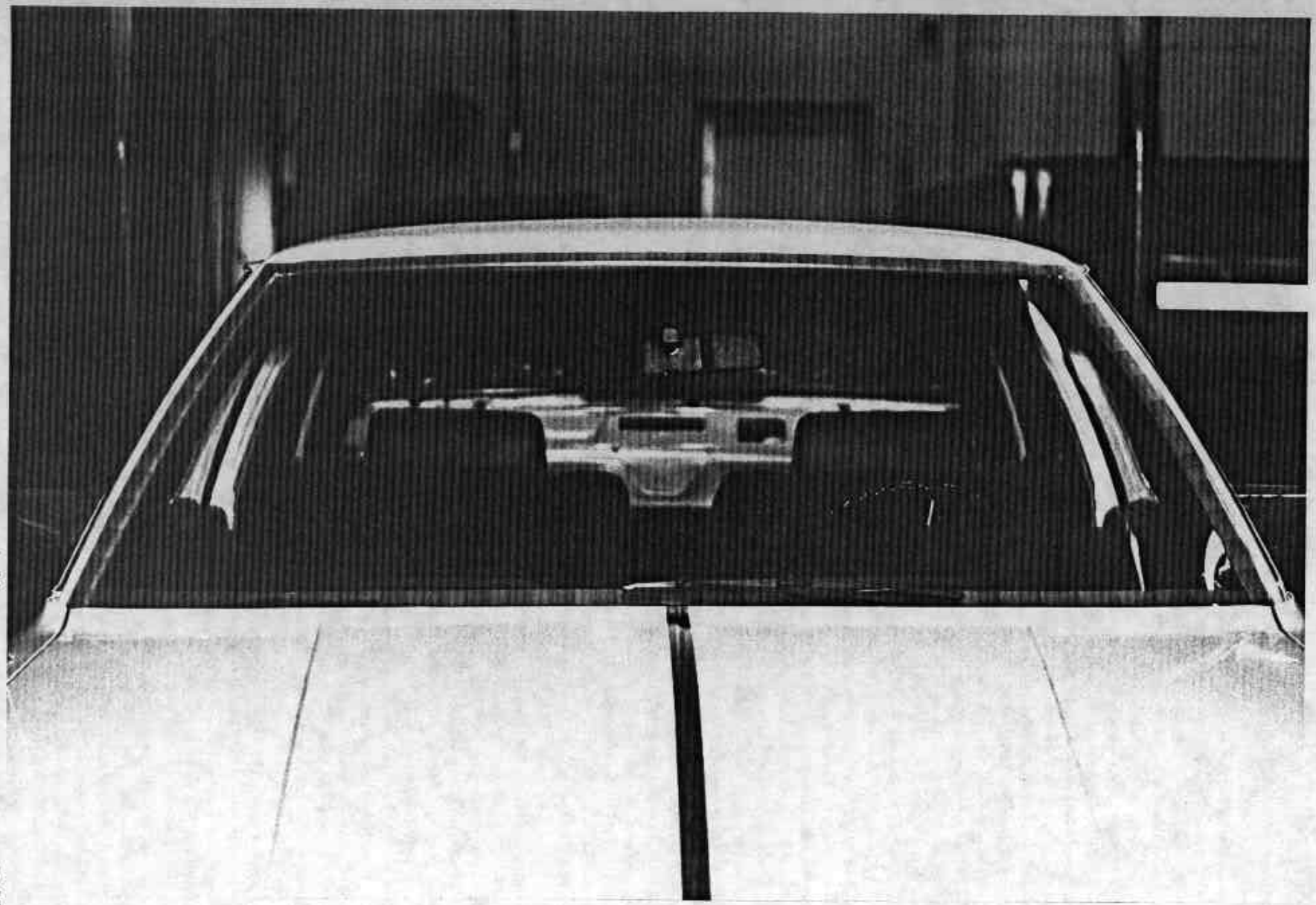
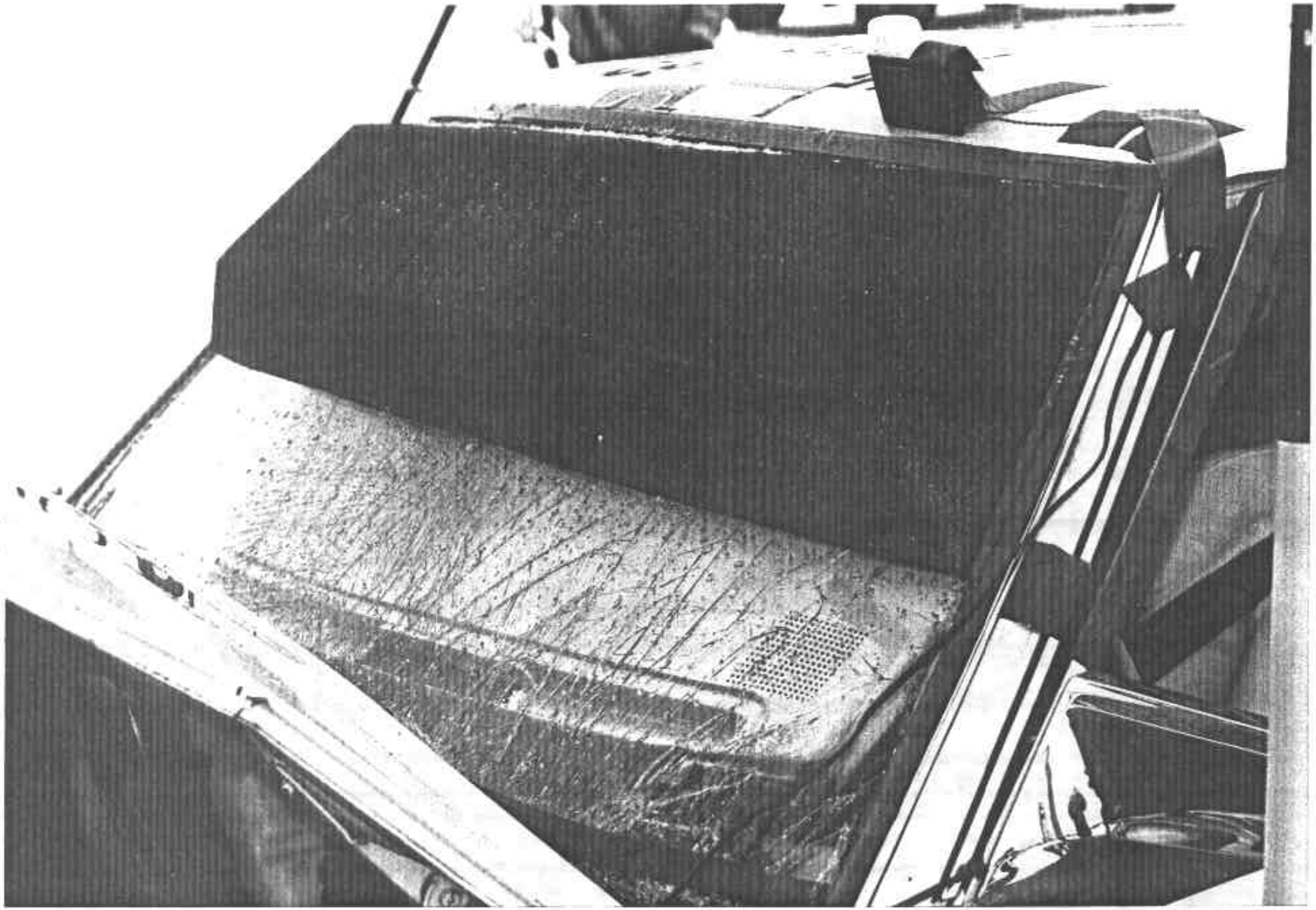
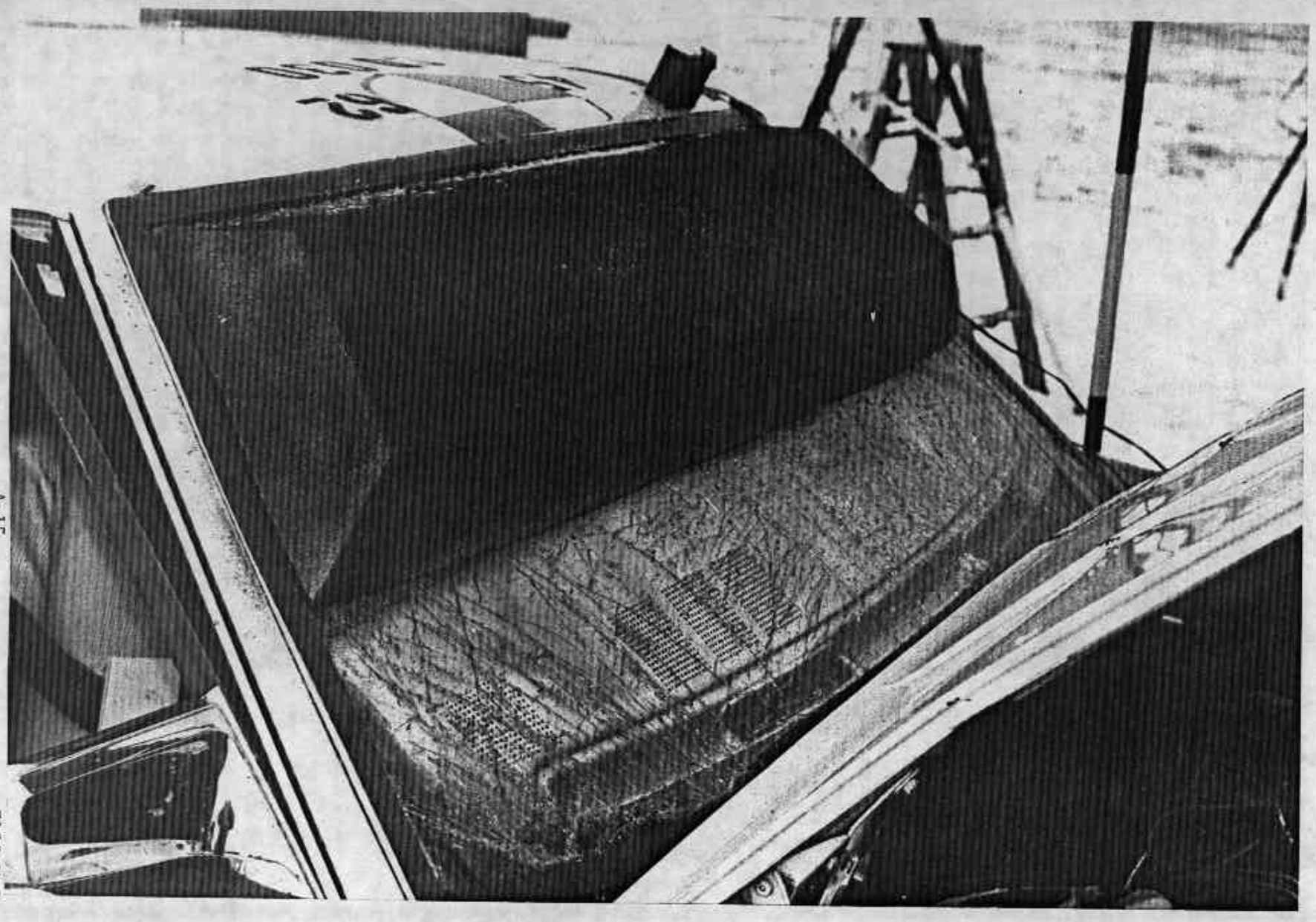


Figure A-12 PRE-TEST VIEW OF WINDSHIELD



7103-V-2

Figure A-13 POST-TEST VIEW OF WINDSHIELD LEFT SIDE



A-15

7103-V-2

Figure A-14 POST-TEST VIEW OF WINDSHIELD RIGHT SIDE

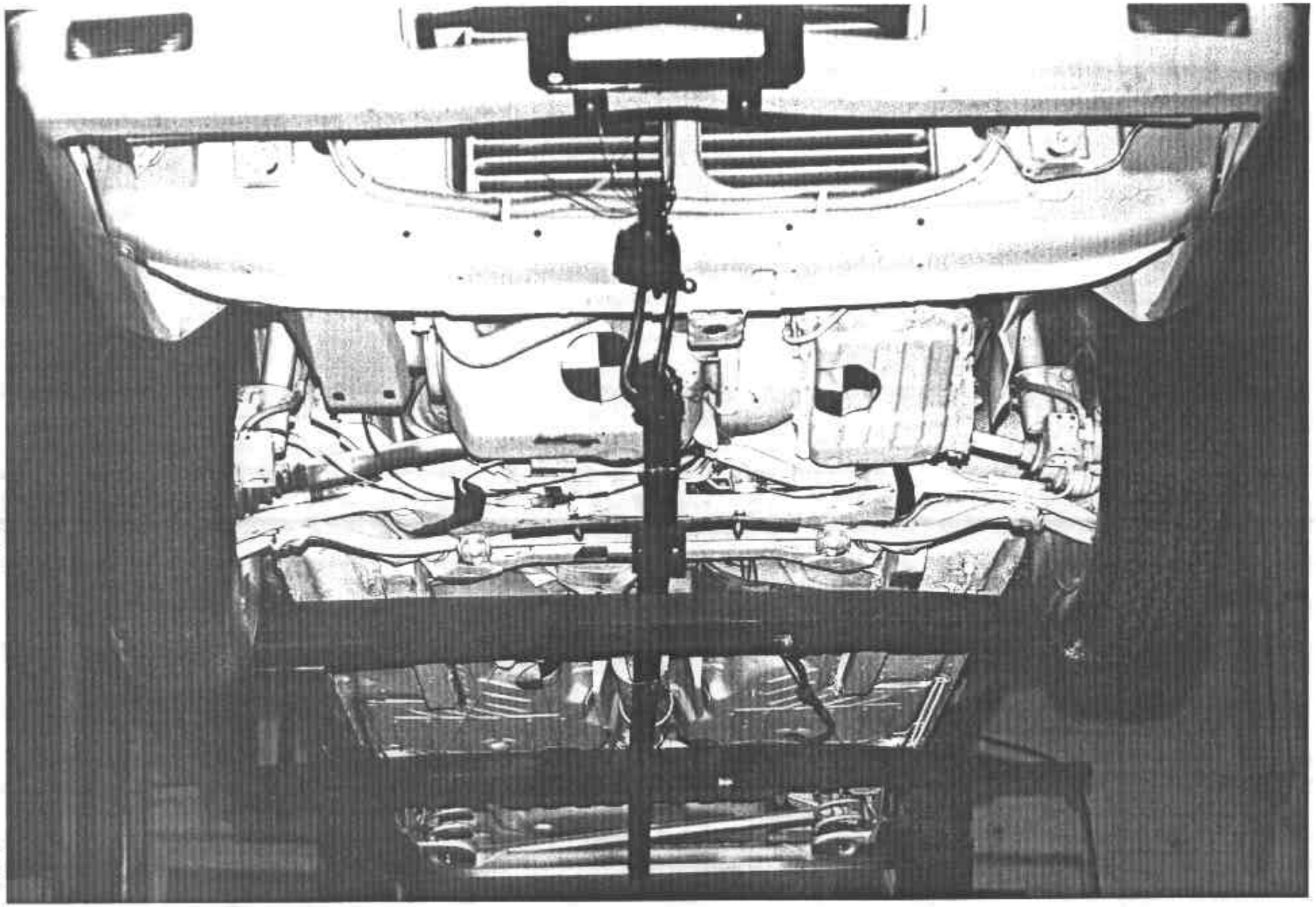


Figure A-15 PRE-TEST VIEW OF FRONT UNDERBODY

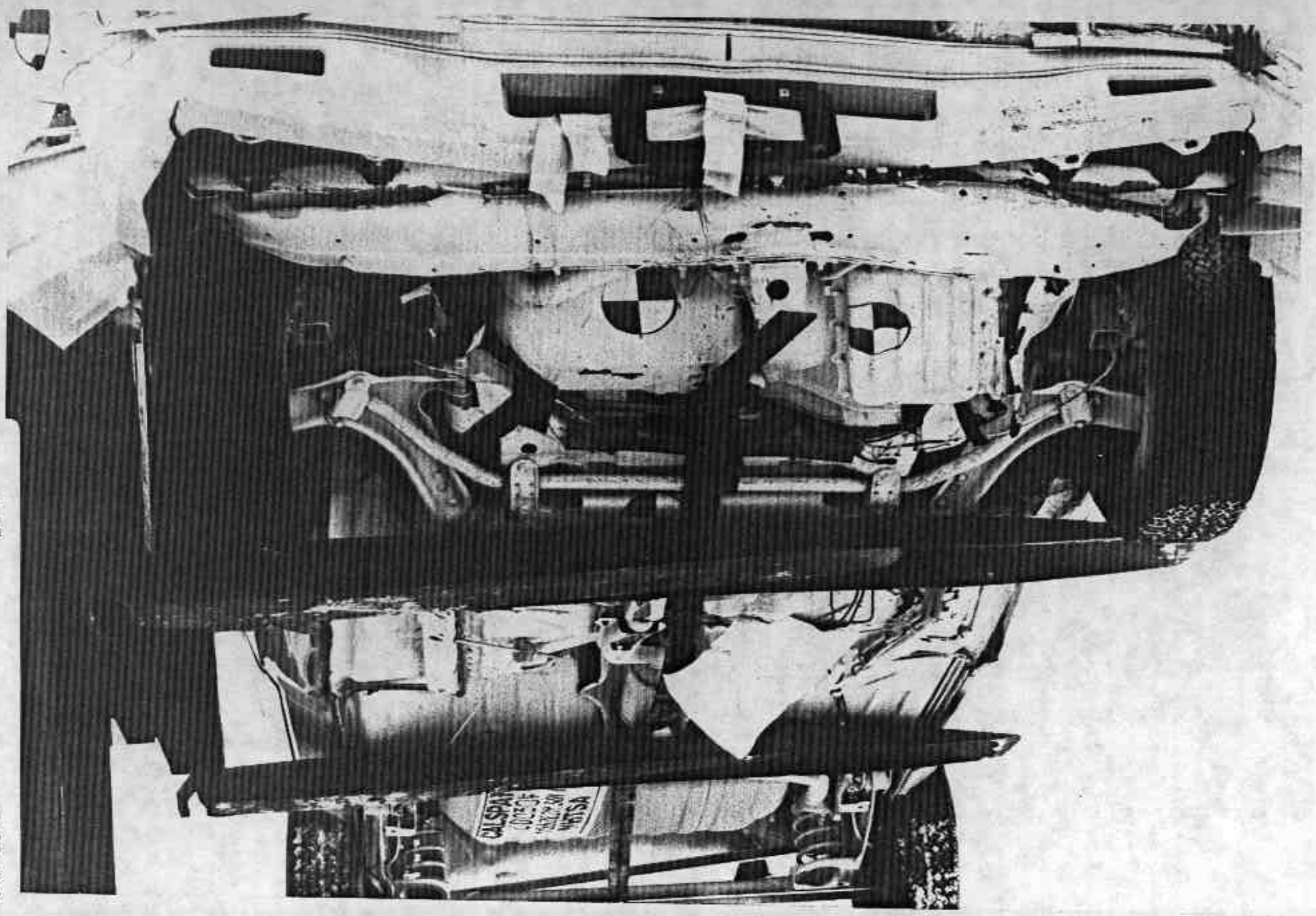


Figure A-16 POST-TEST VIEW OF FRONT UNDERBODY

7103-V-2

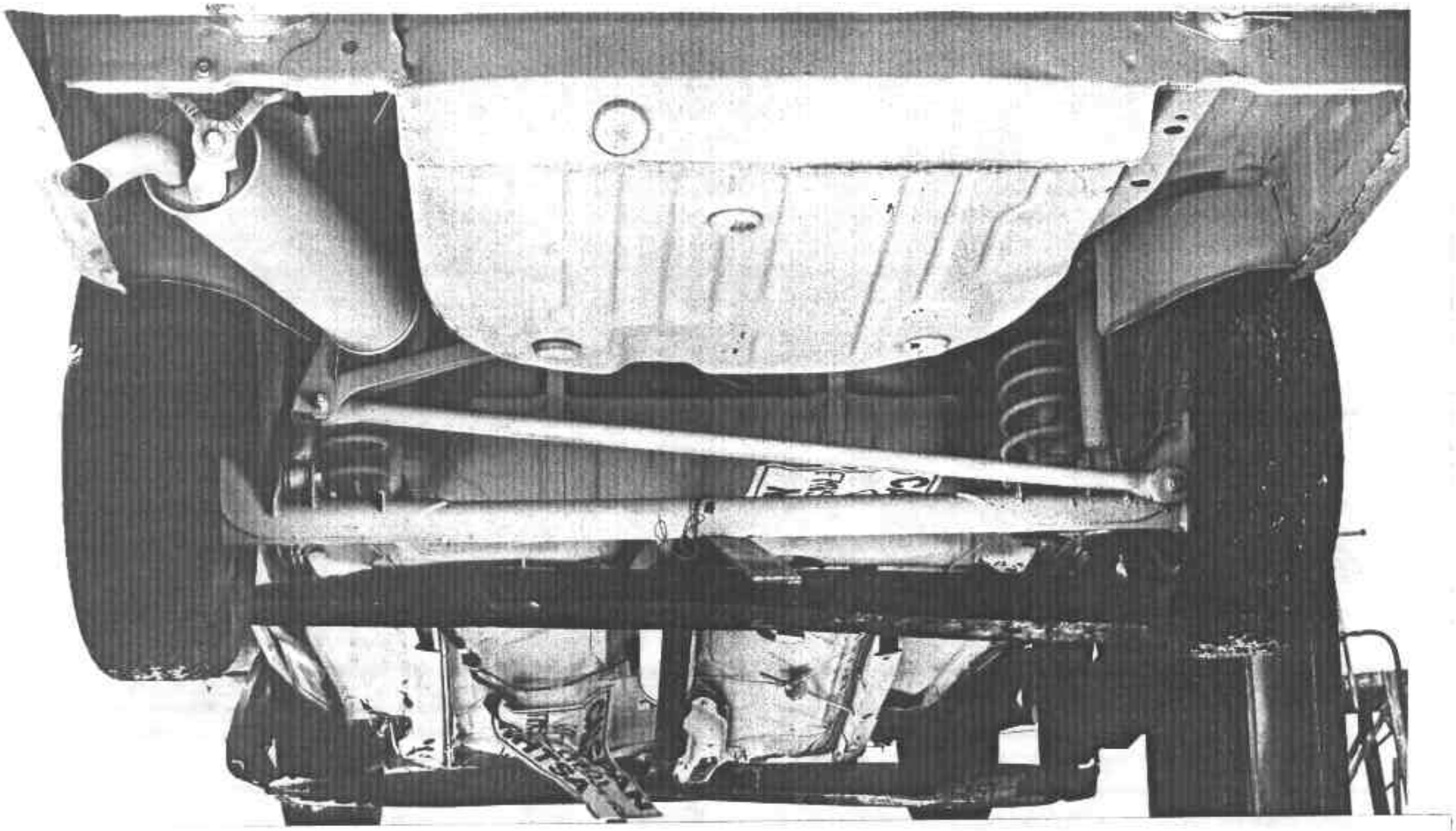


Figure A-17 POST-TEST VIEW OF REAR UNDERBODY

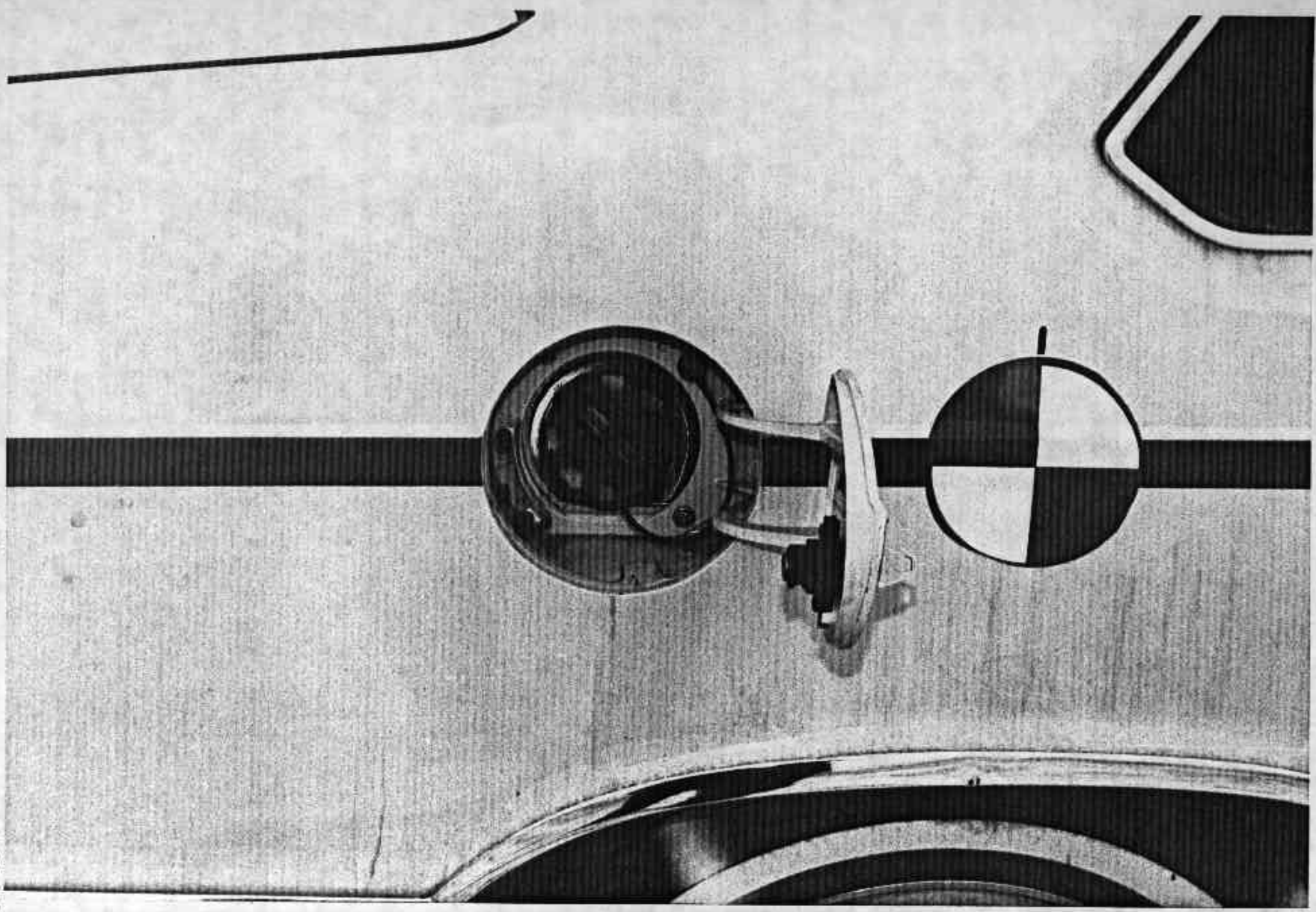
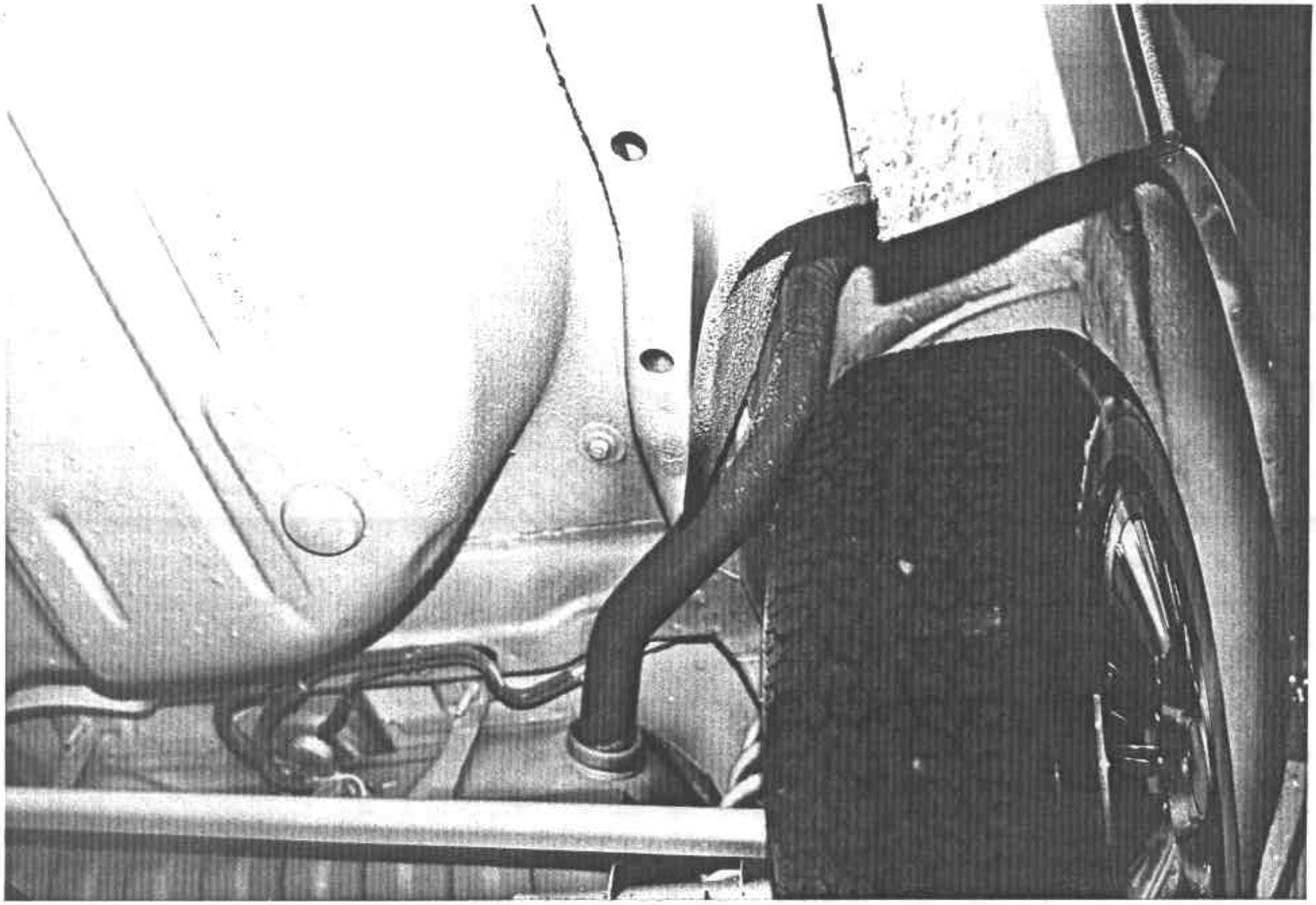


Figure A-18 VIEW OF FILLER CAP



7103-V-2

Figure A-19 VIEW OF FUEL TANK AND FUEL LINES

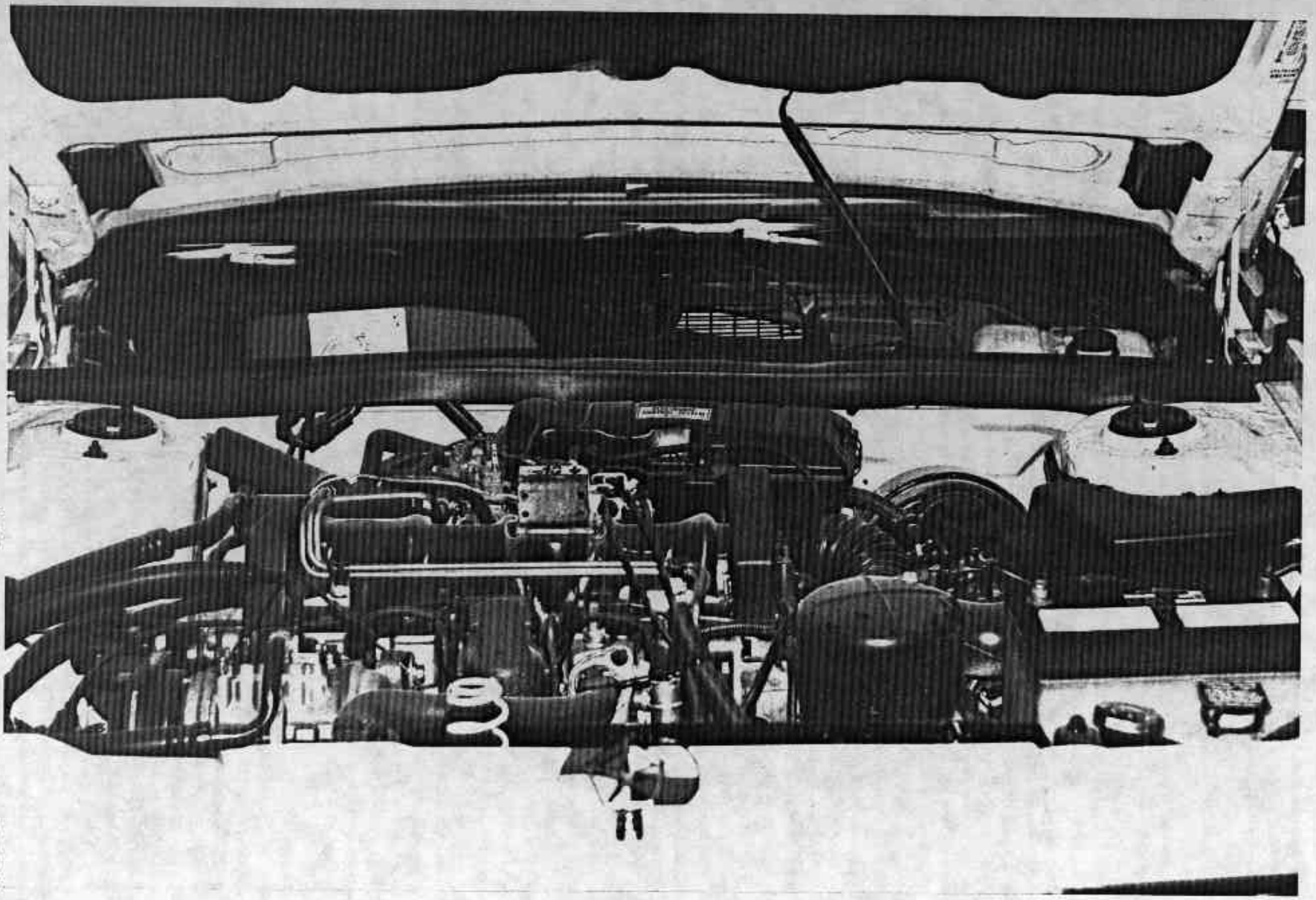


Figure A-20 PRE-TEST ENGINE COMPARTMENT VIEW

A-22

7103-V-2

Figure A-21 PRE-TEST DRIVER POSITION VIEW

Figure A-22 POST-TEST DRIVER POSITION VIEW

7103-V-2

Figure A-23 PRE-TEST DRIVER AND INTERIOR VIEW

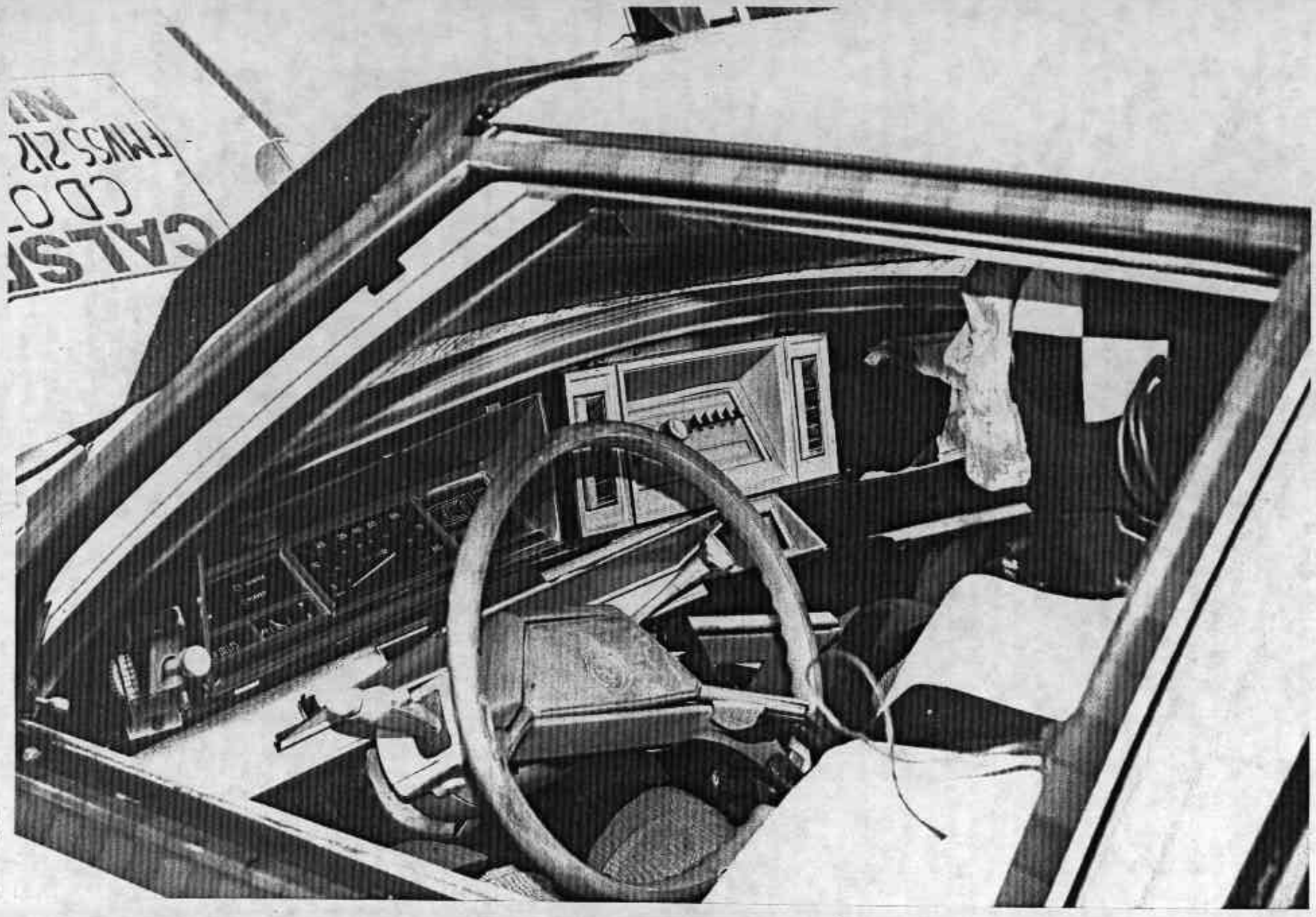


Figure A-24 POST-TEST DRIVER AND INTERIOR VIEW

A-26

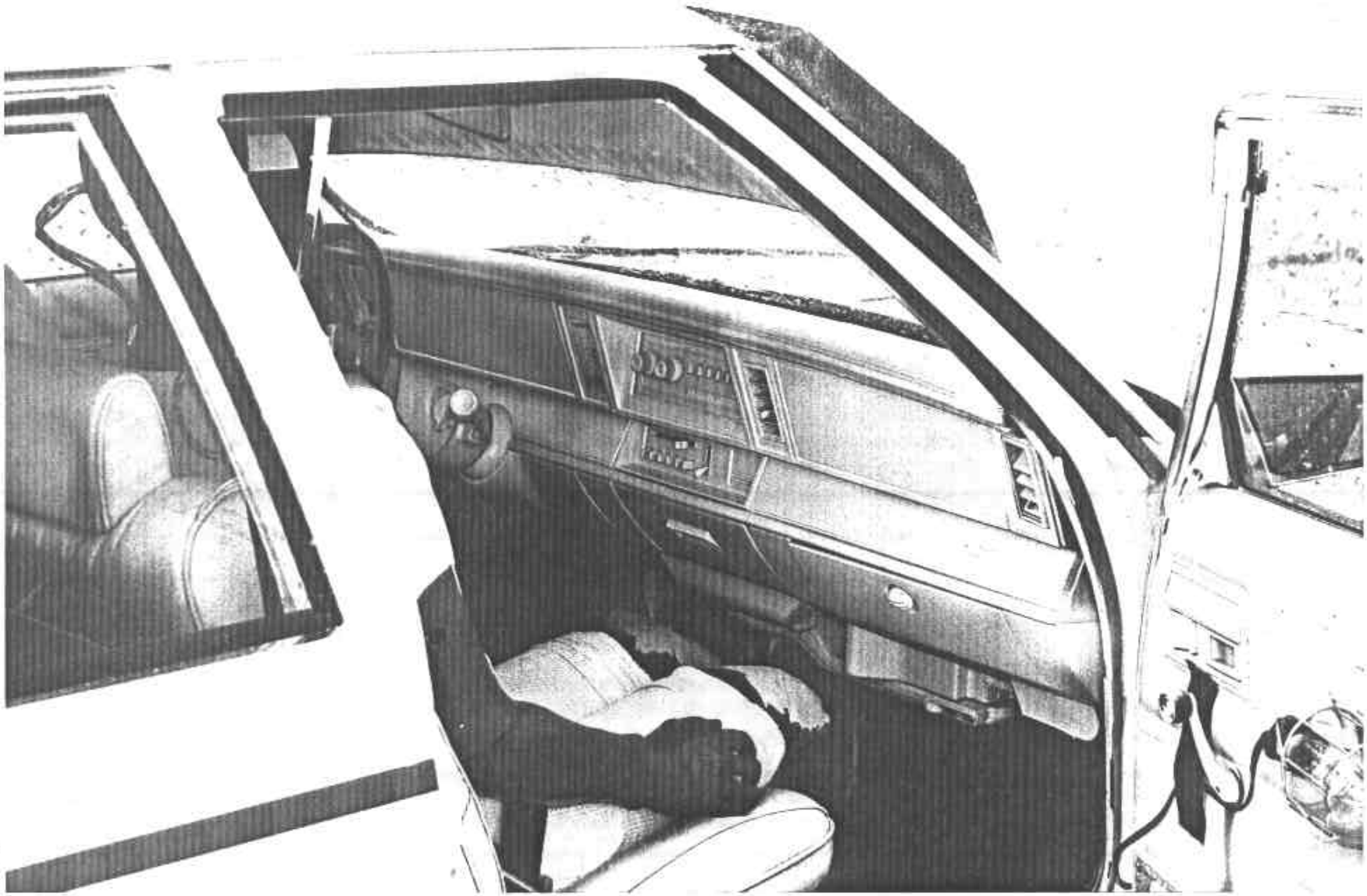
7103-V-2

Figure A-25 PRE-TEST RIGHT FRONT PASSENGER VIEW

A-27

7103-V-2

Figure A-26 POST-TEST RIGHT FRONT PASSENGER VIEW



A-28

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Figure A-27 PRE-TEST RIGHT FRONT PASSENGER AND INTERIOR VIEW

A-29

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Figure A-28 POST-TEST RIGHT FRONT PASSENGER AND INTERIOR VIEW

APPENDIX B

VEHICLE AND DUMMY RESPONSE DATA

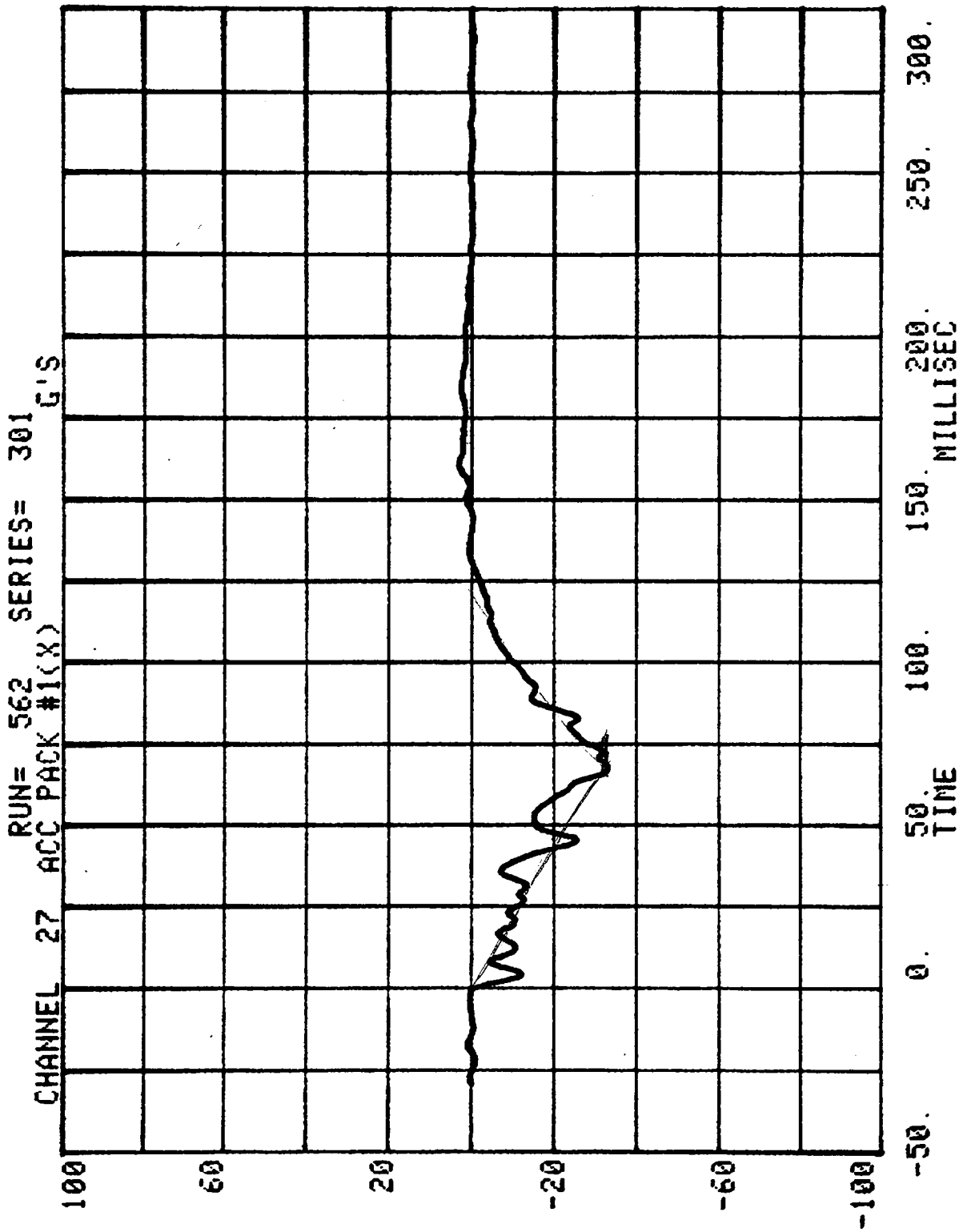
TEST NO. CD0301

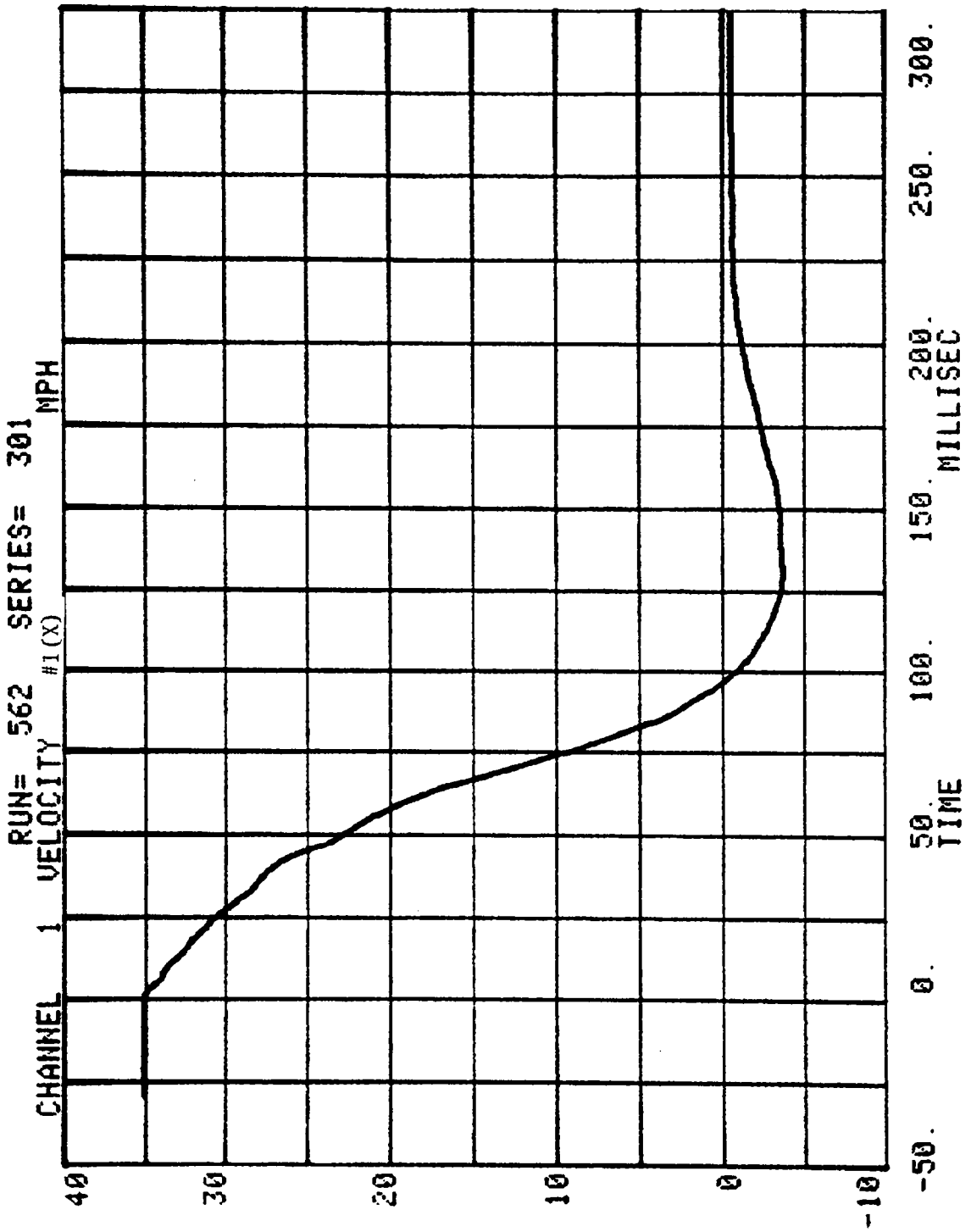
1983 DODGE 600

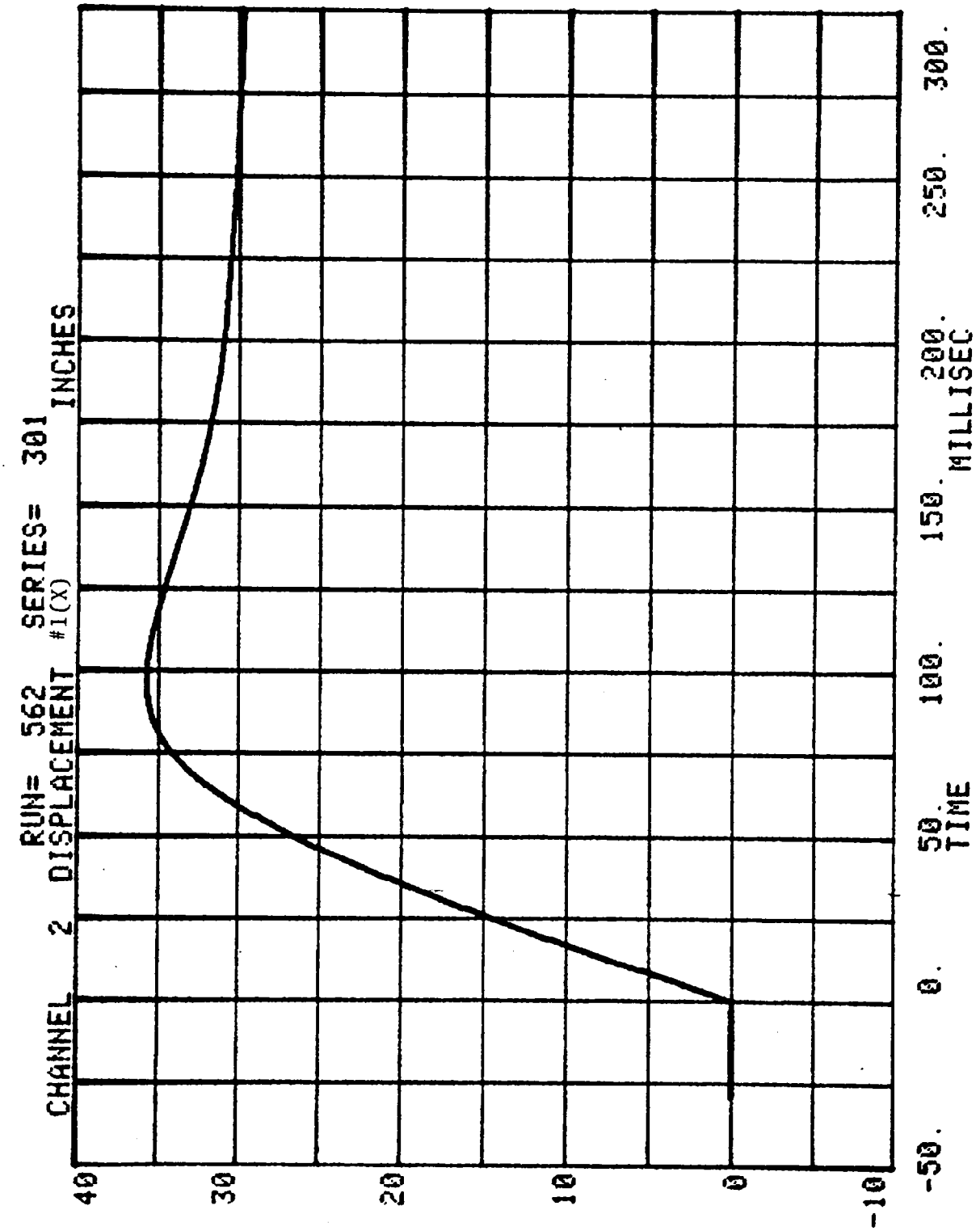
VEHICLE DATA

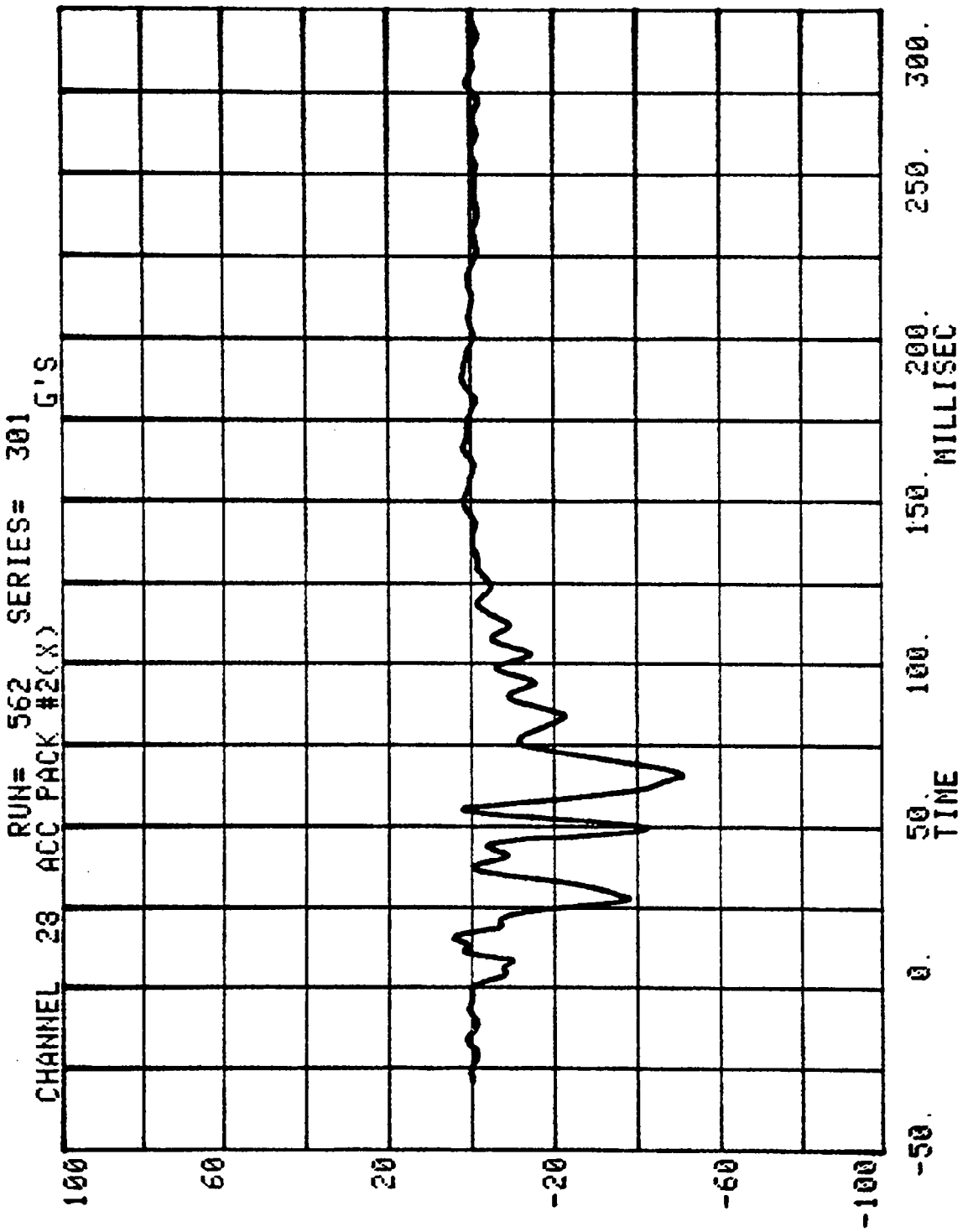
FILTER CHANNEL CLASS

60


CHANNEL 27 ACC PACK #1(X)
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 1 VELOCITY #1(X)
RUN= 562 SERIES= 301
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 2 DISPLACEMENT
RUN= 562 SERIES= 301
#1(X)
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 562 SERIES= 301
CHANNEL 28 ACC PACK #2(X)
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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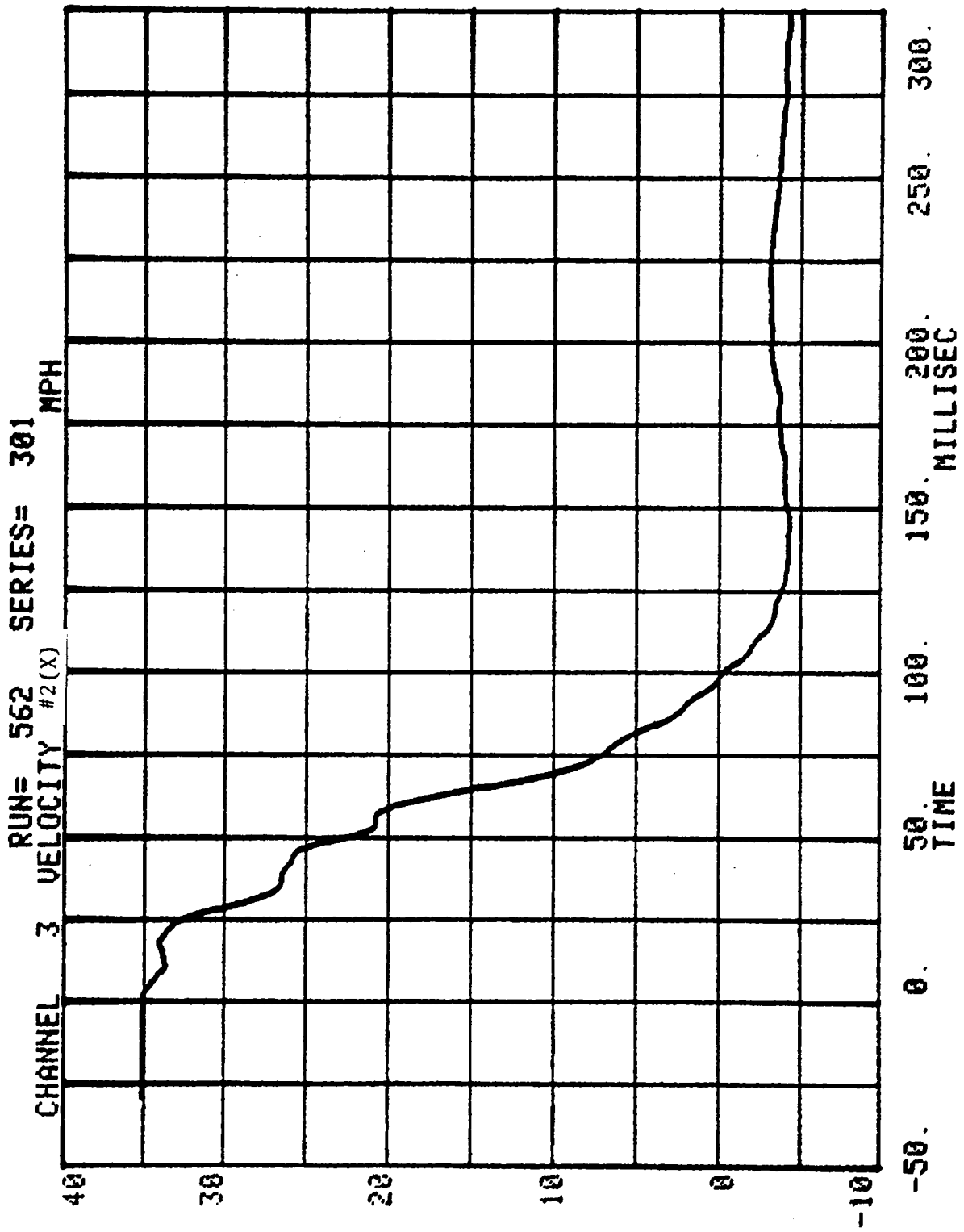
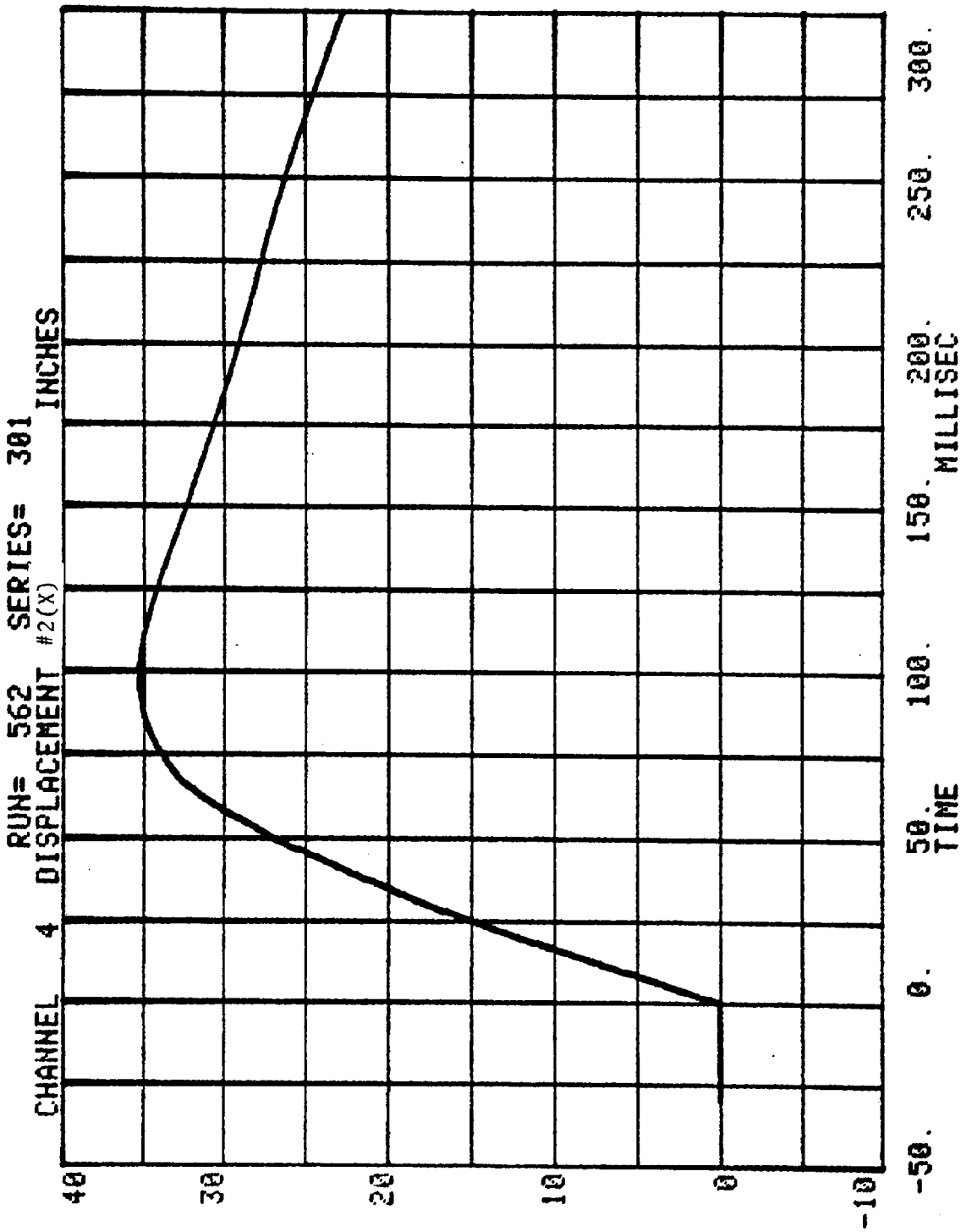
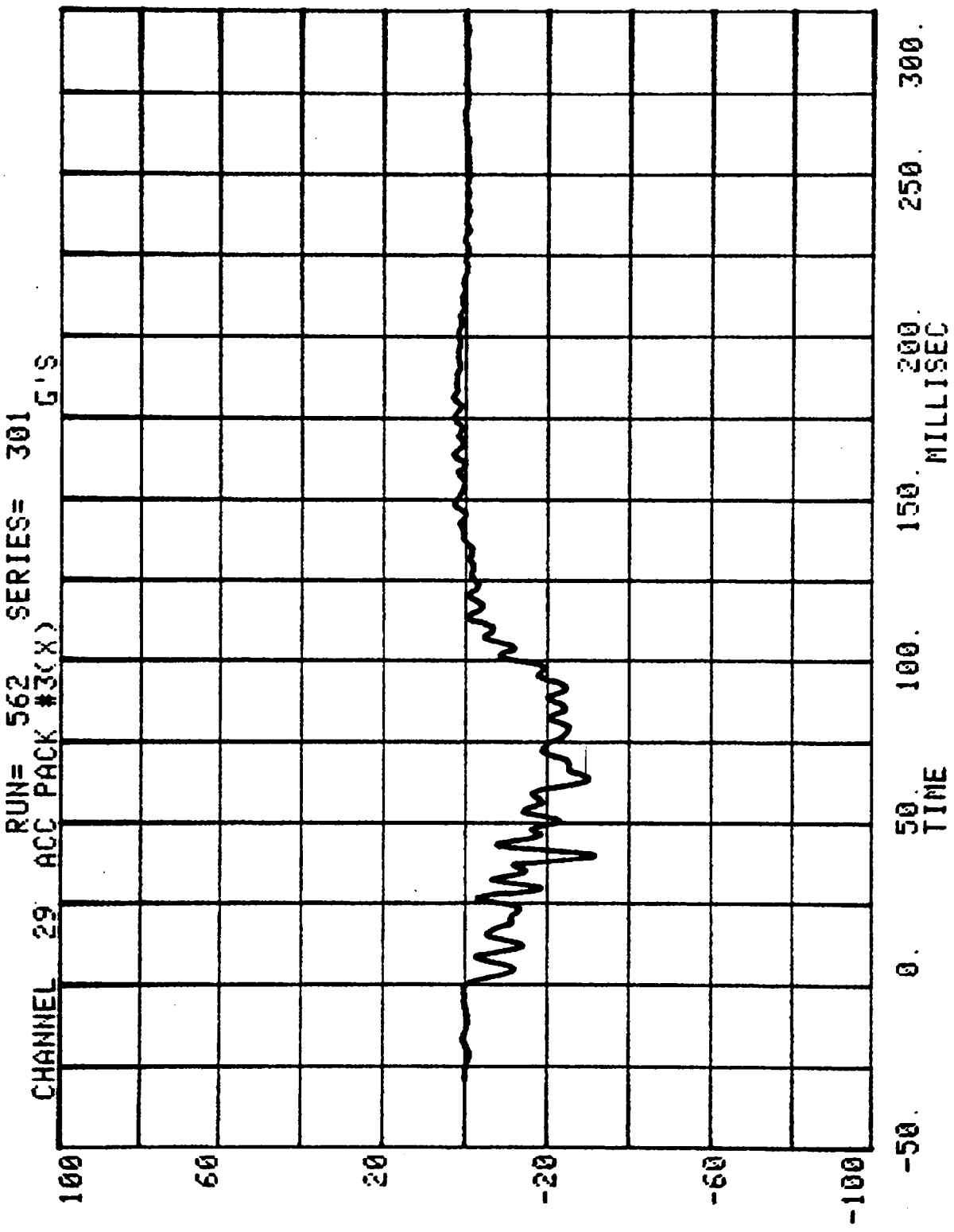
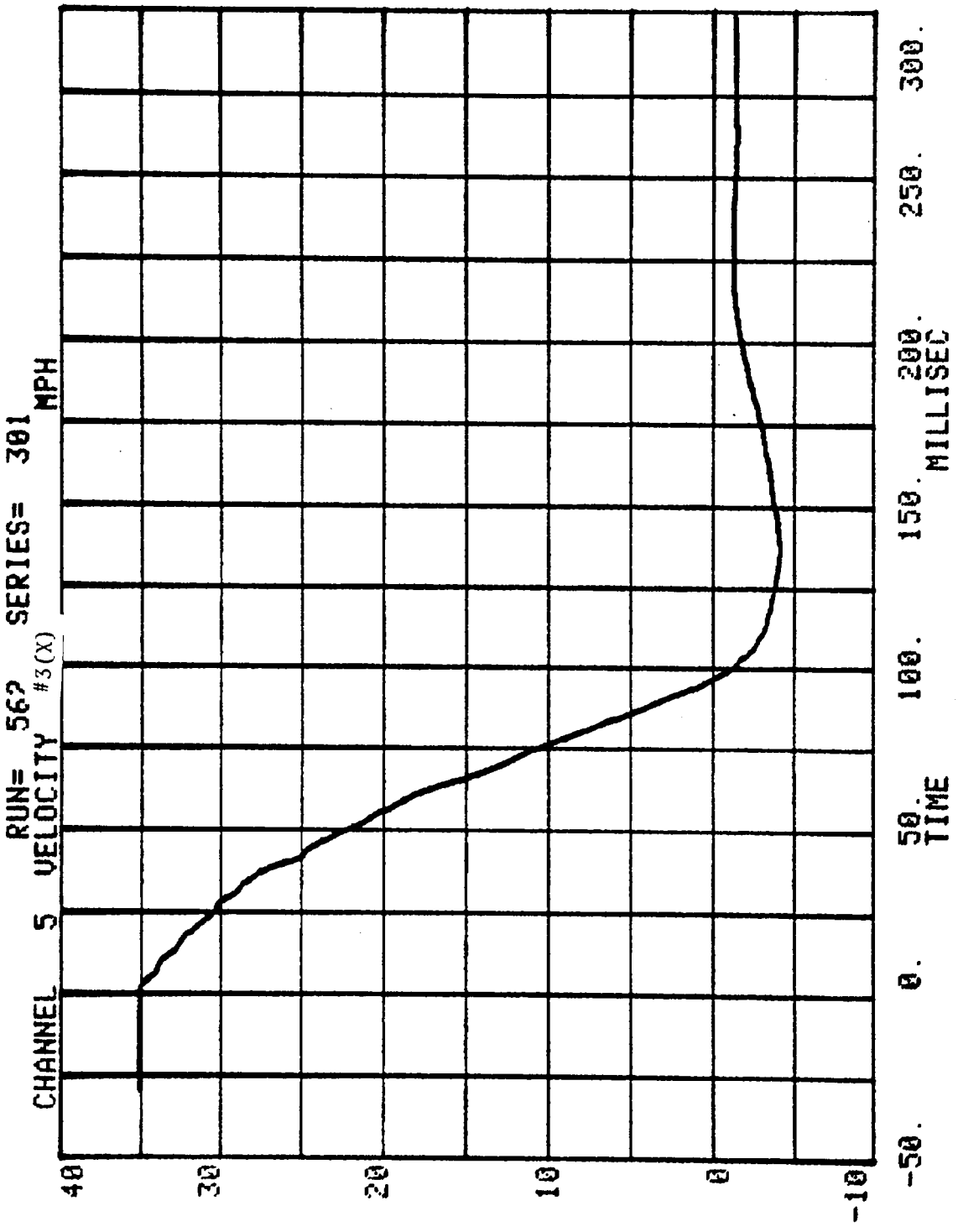
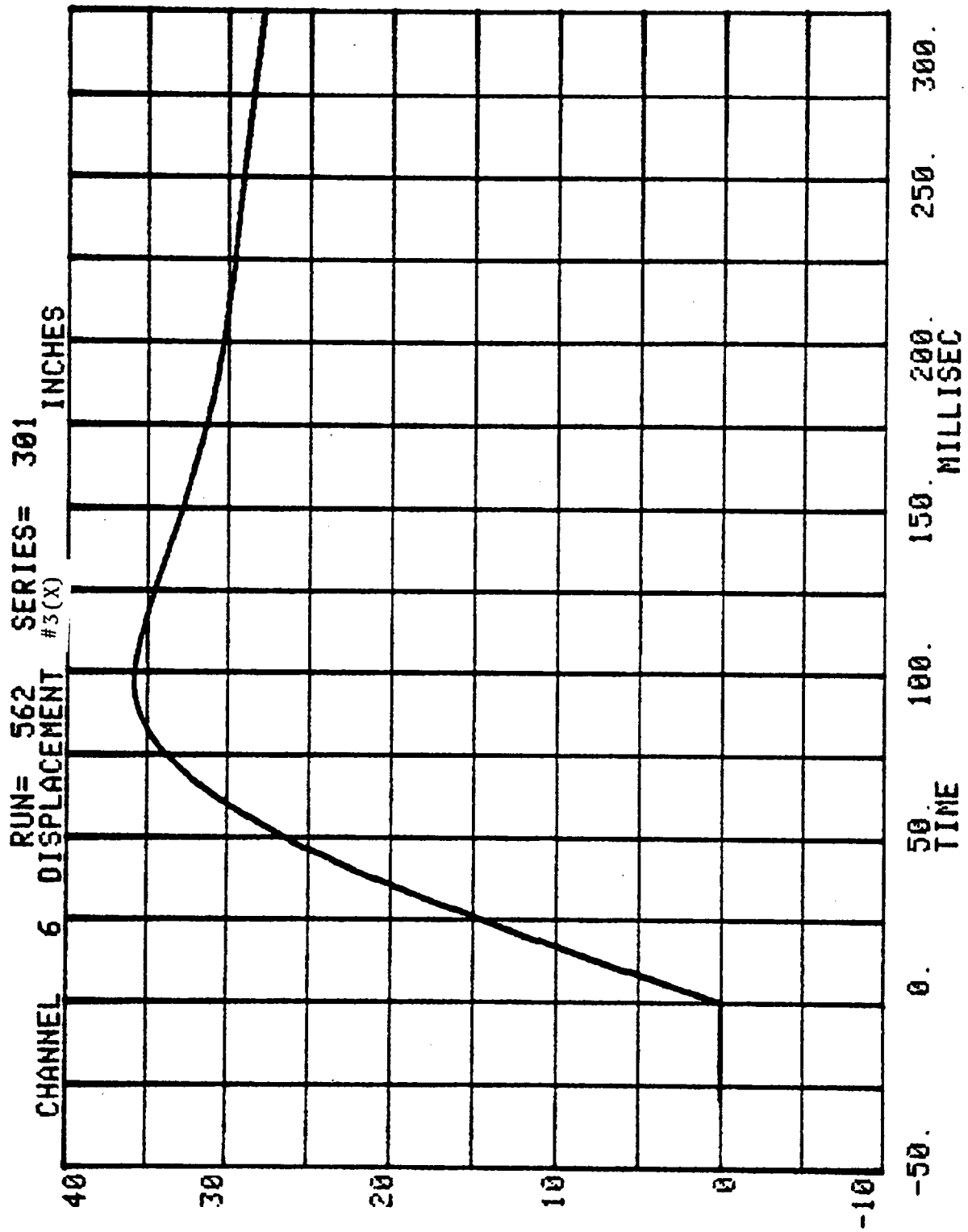

CHANNEL 3 VELOCITY #2(X)
RUN= 562 SERIES= 301
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

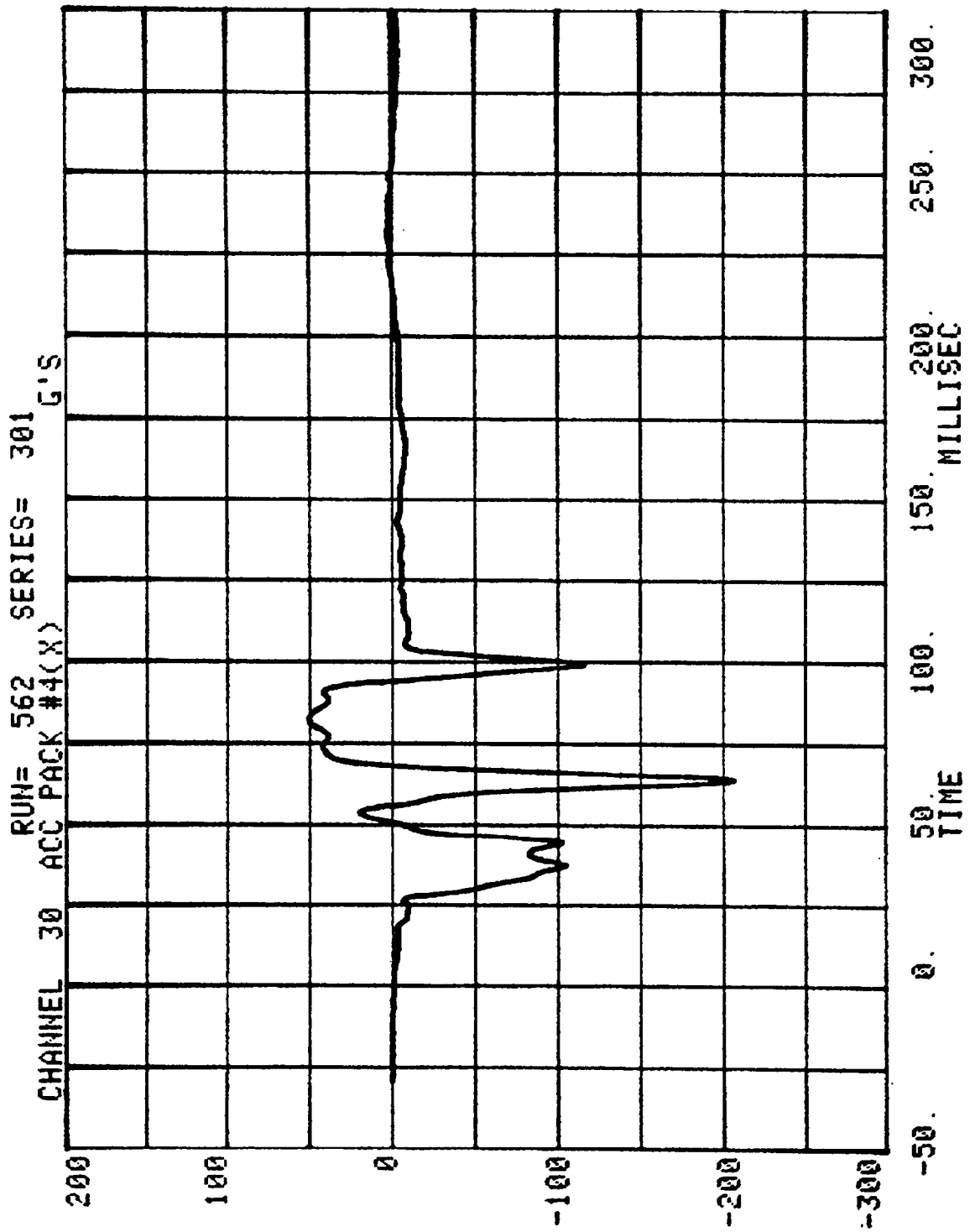

CHANNEL 4 DISPLACEMENT #2(X)
RUN= 562 SERIES= 301
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

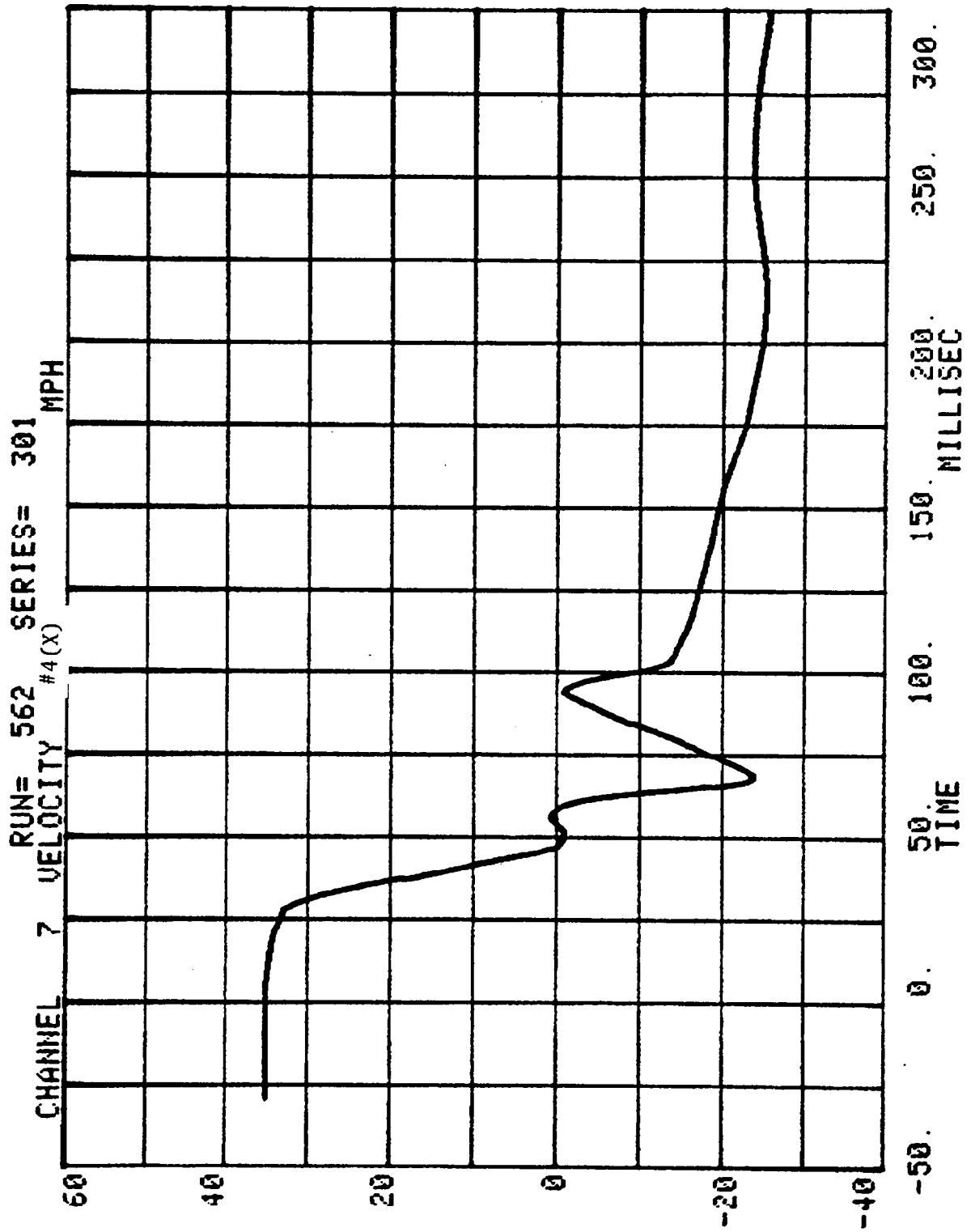
7103-V-2

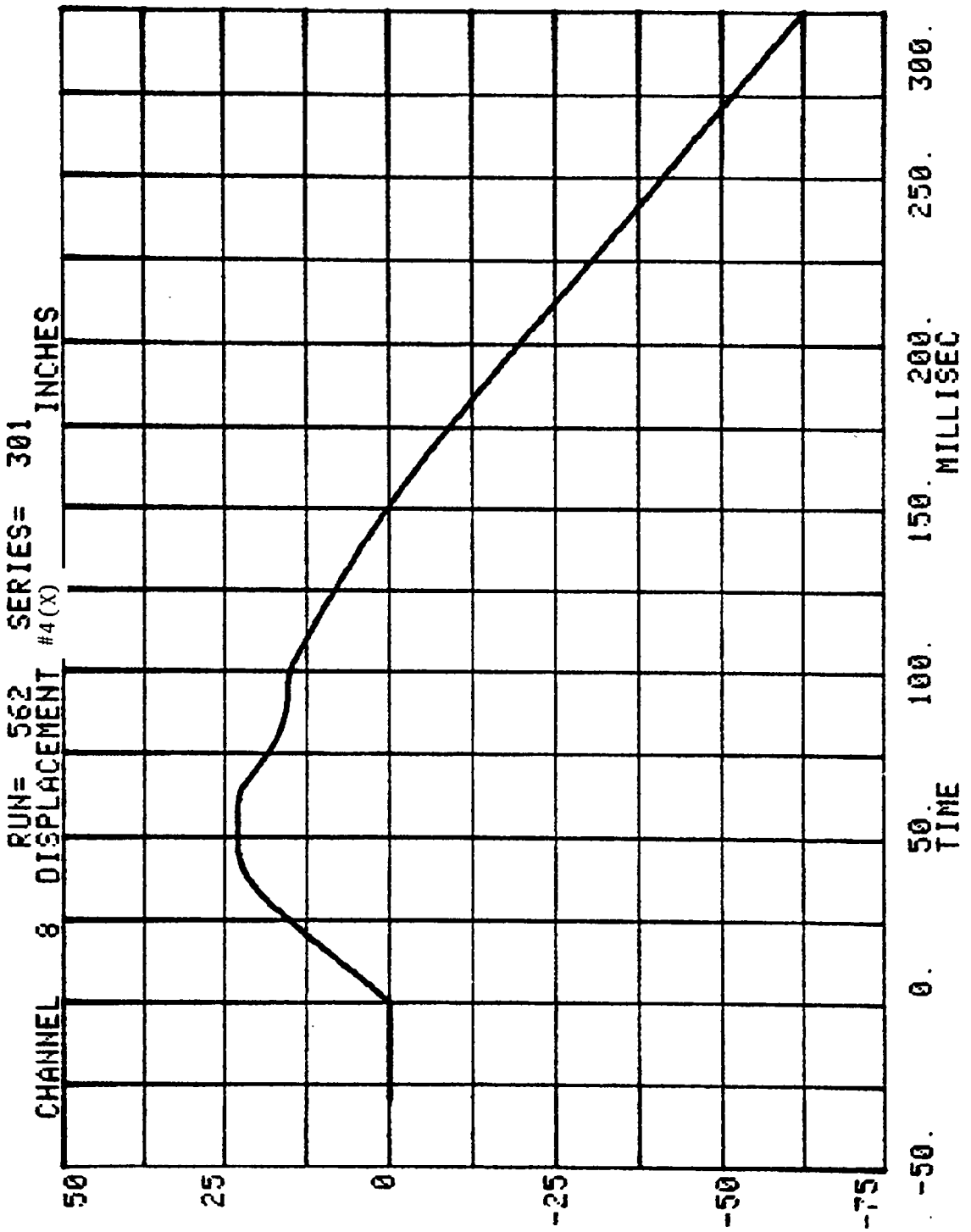

RUN= 562 SERIES= 301
CHANNEL 29 ACC PACK #3(X)
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

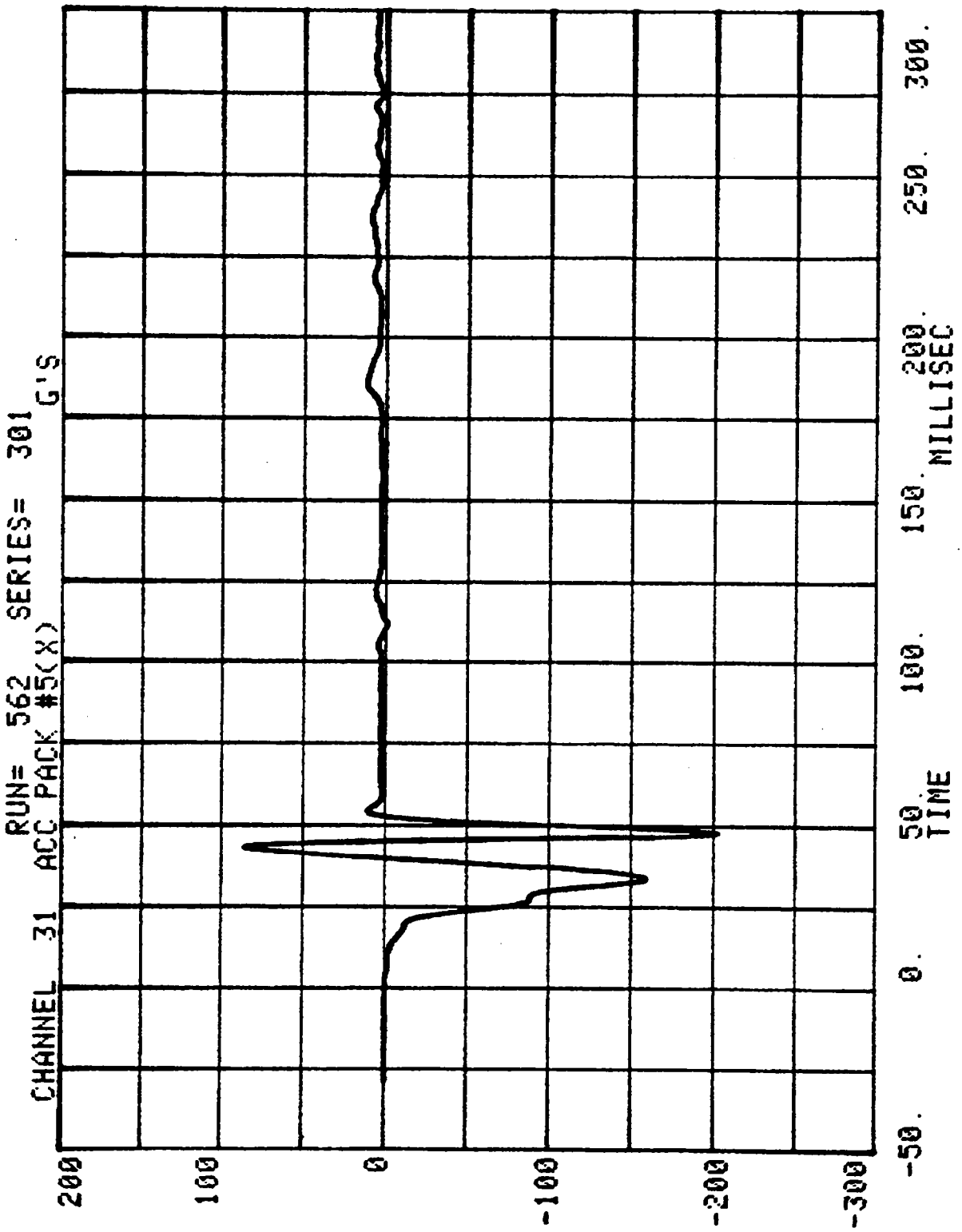

CHANNEL 5 VELOCITY #3(X)
RUN= 562 SERIES= 301
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

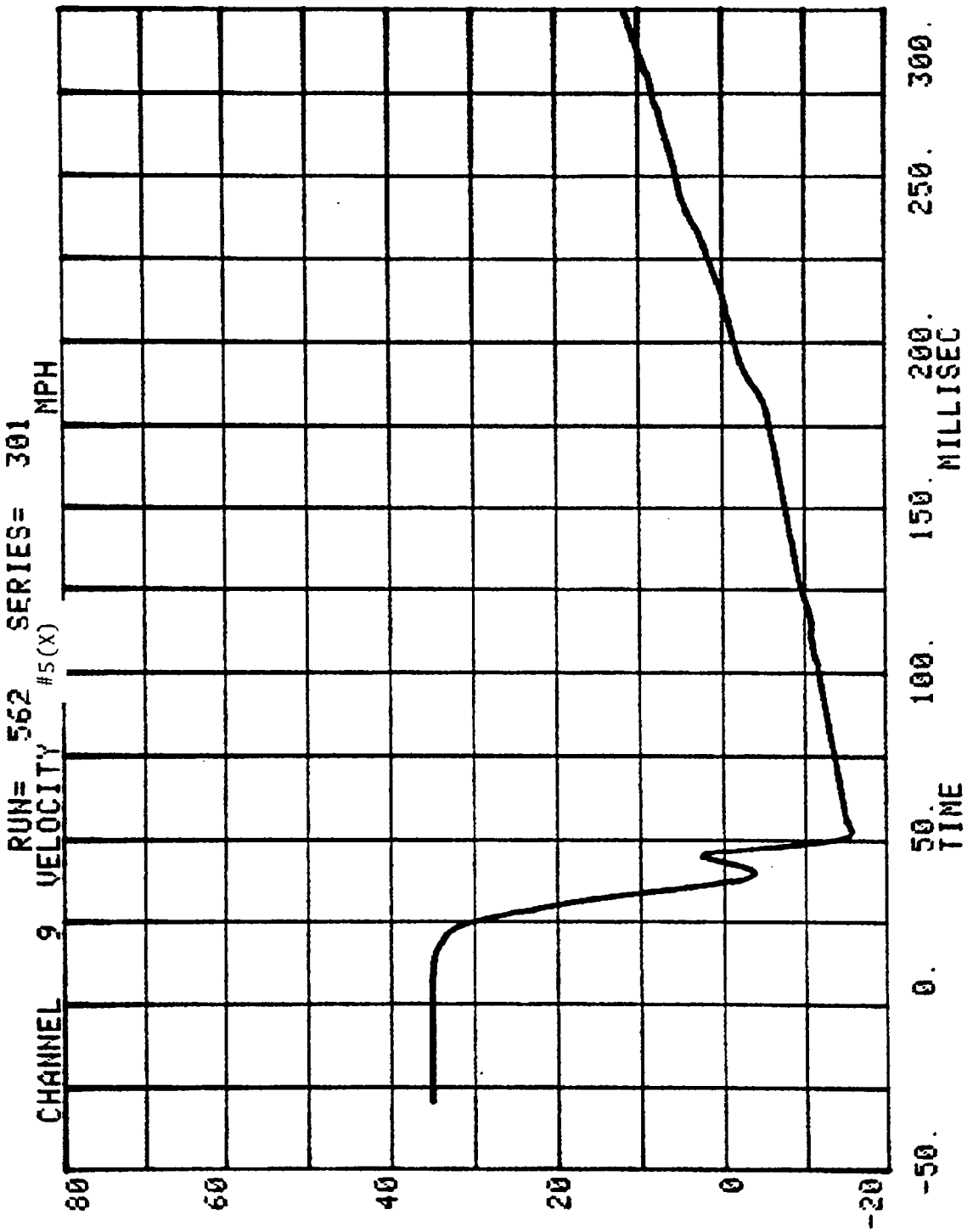

CHANNEL 6 DISPLACEMENT #3(X)
RUN= 562 SERIES= 301
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

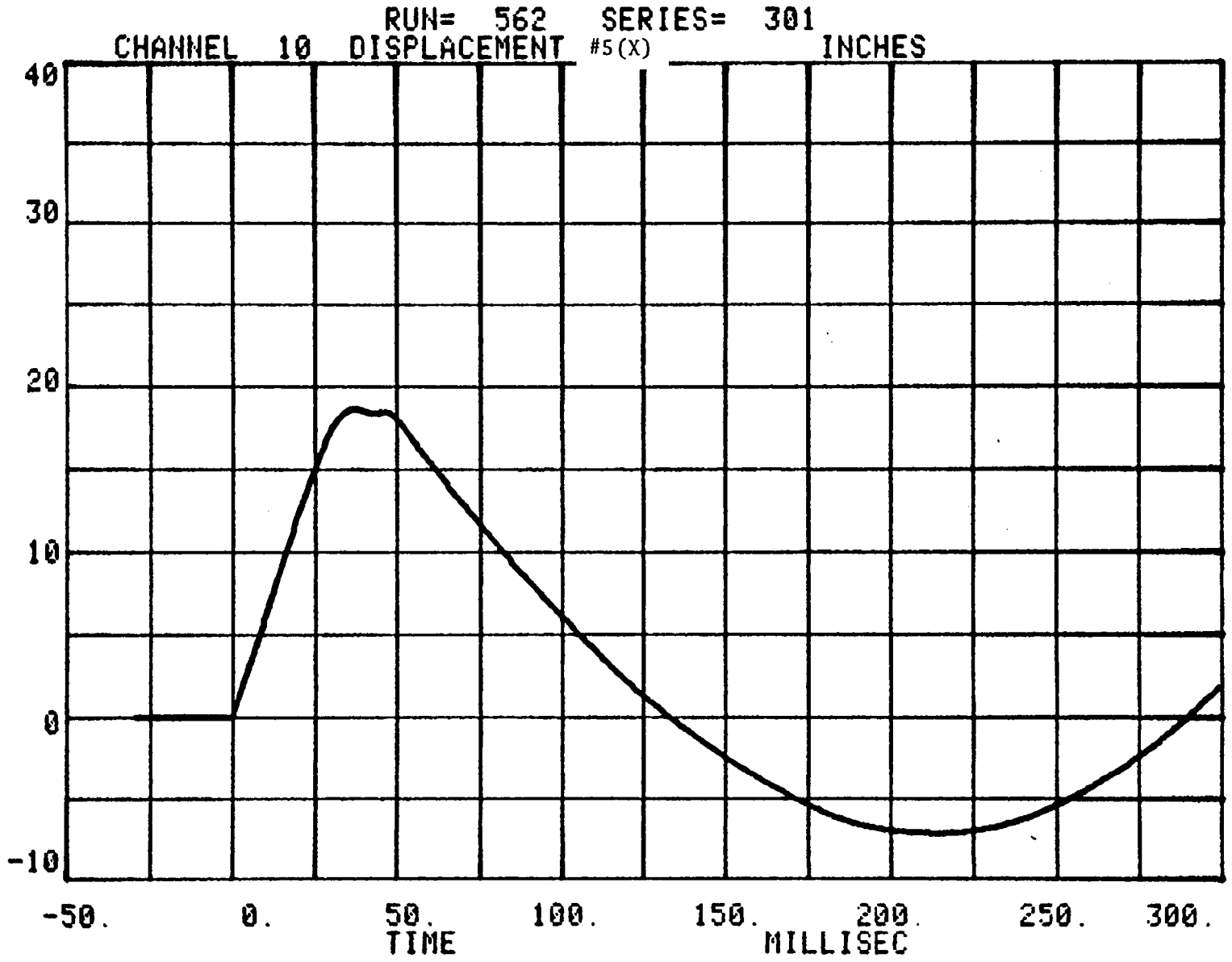

CHANNEL 30 ACC PACK #4(X)
RUN= 562 SERIES= 301
G'S
200
100
0
-100
-200
-300
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

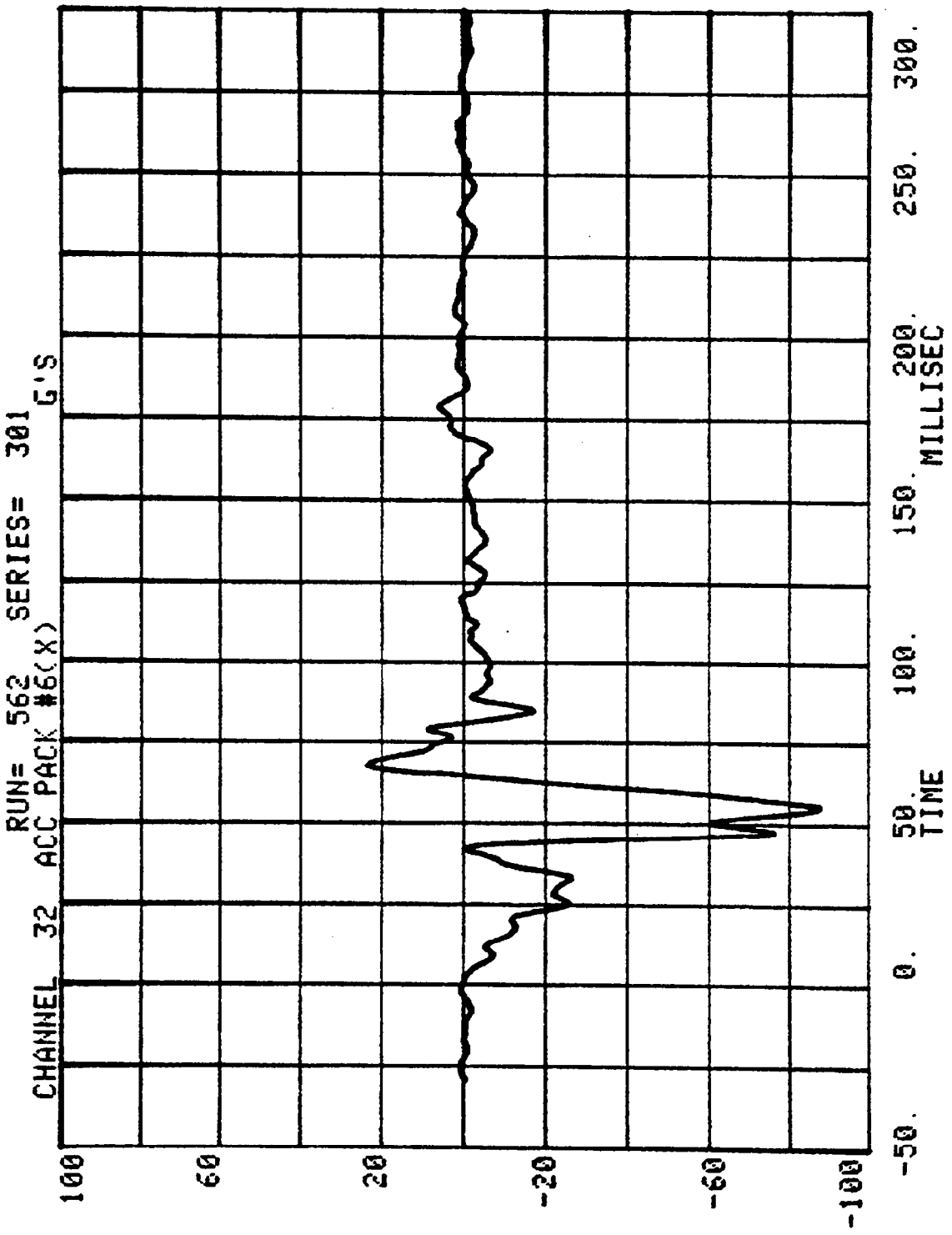

CHANNEL 7 VELOCITY
RUN= 562 #4(X)
SERIES= 301
MPH
60
40
20
0
-20
-40
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 8 DISPLACEMENT #4(X)
RUN= 562 SERIES= 301
INCHES
50
25
0
-25
-50
-75
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 31 ACC PACK #5(X)
RUN= 562 SERIES= 301
G'S
200
100
0
-100
-200
-300
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 9 VELOCITY #5(X)
RUN= 562 SERIES= 301
MPH
80
60
40
20
0
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 562 SERIES= 301
CHANNEL 10 DISPLACEMENT #5(X) INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME MILLISEC


CHANNEL 32 ACC PACK #6(X)
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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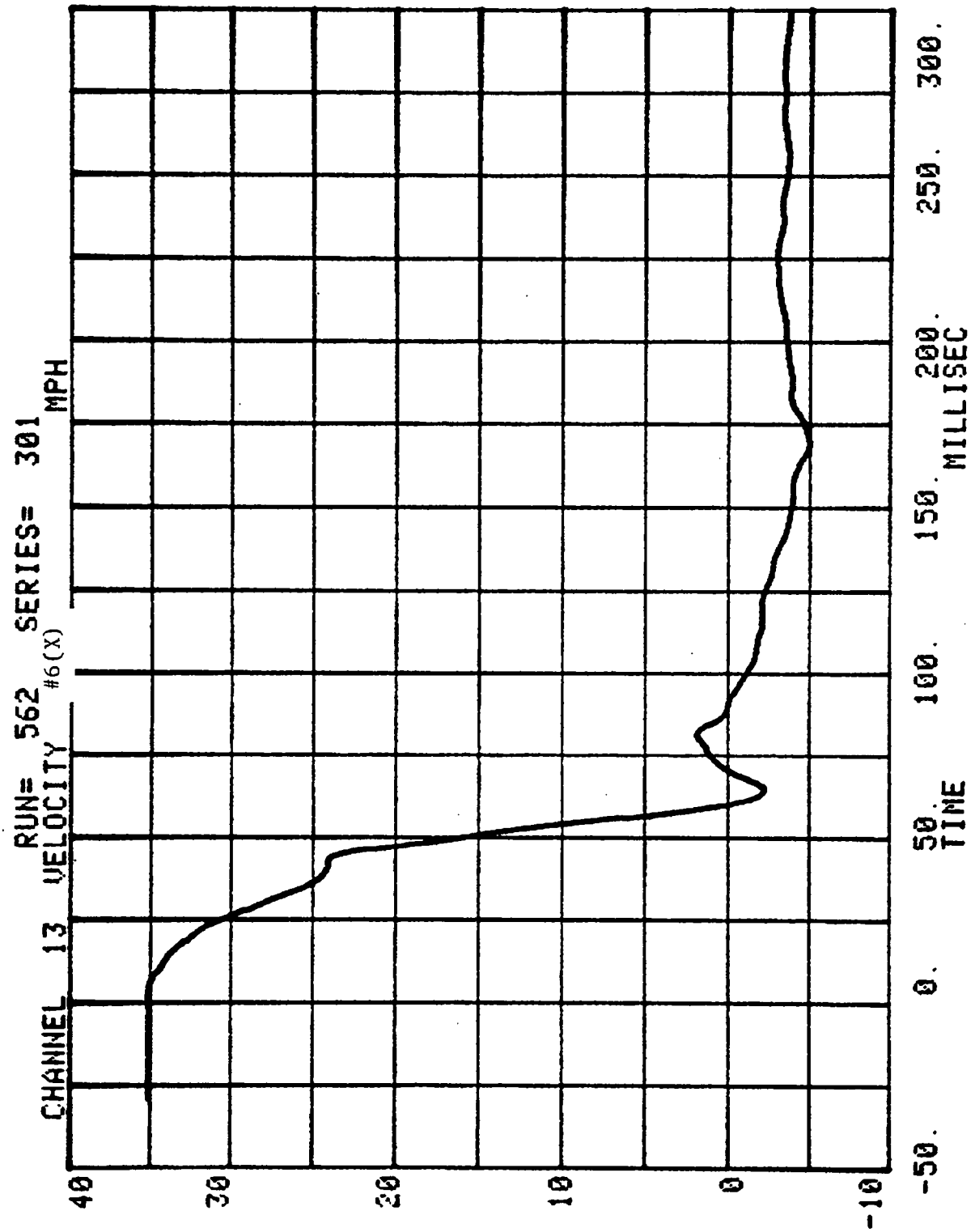
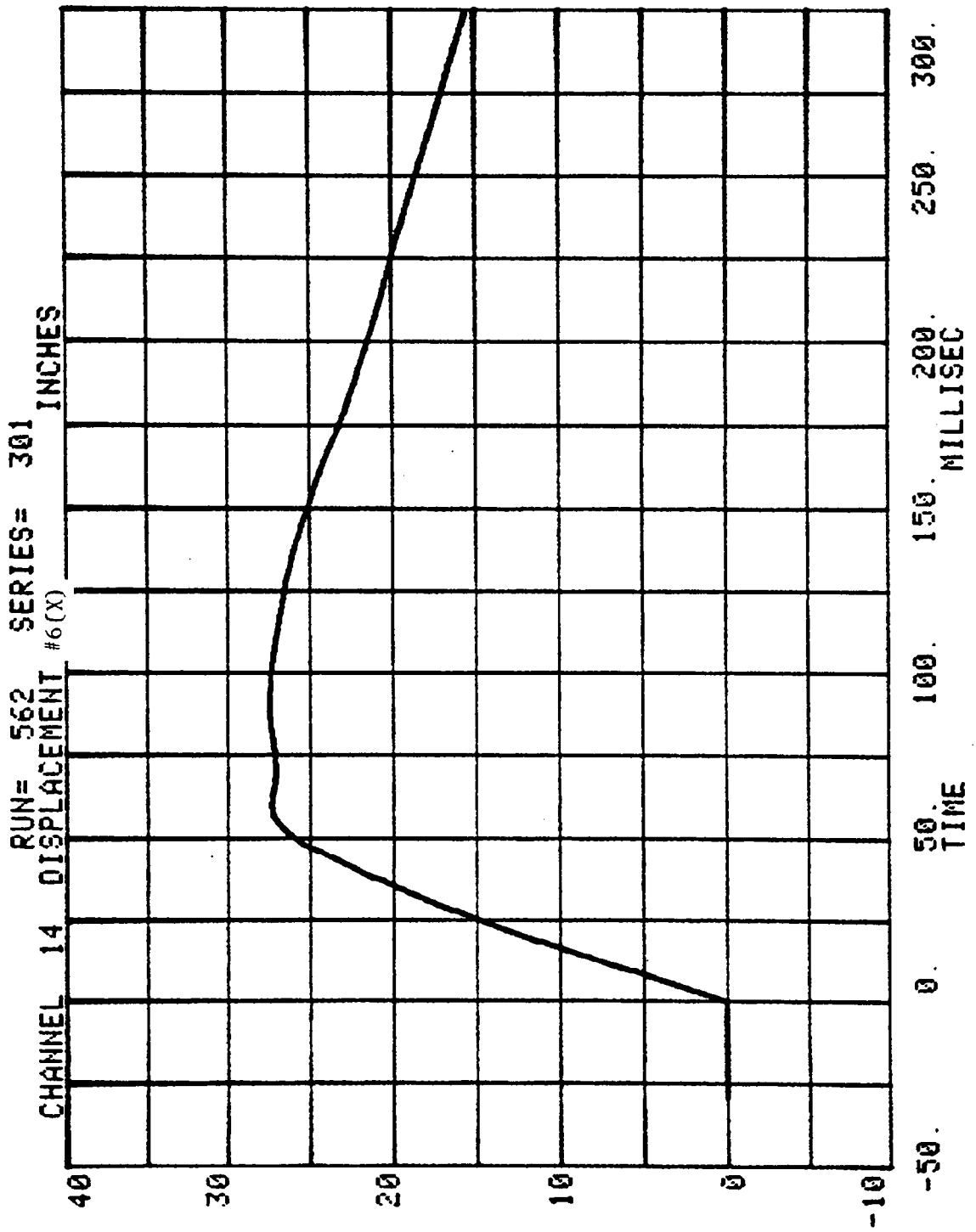
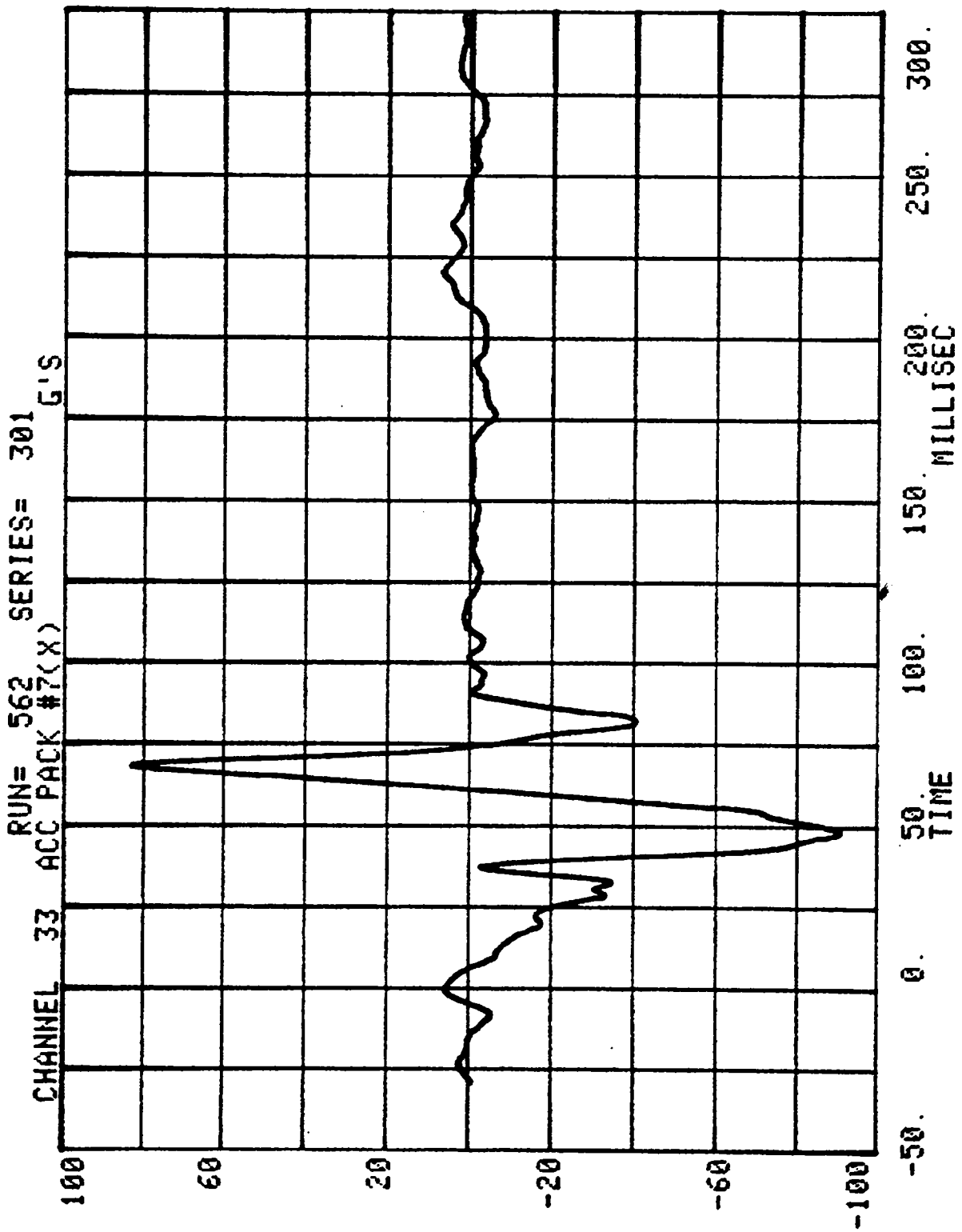
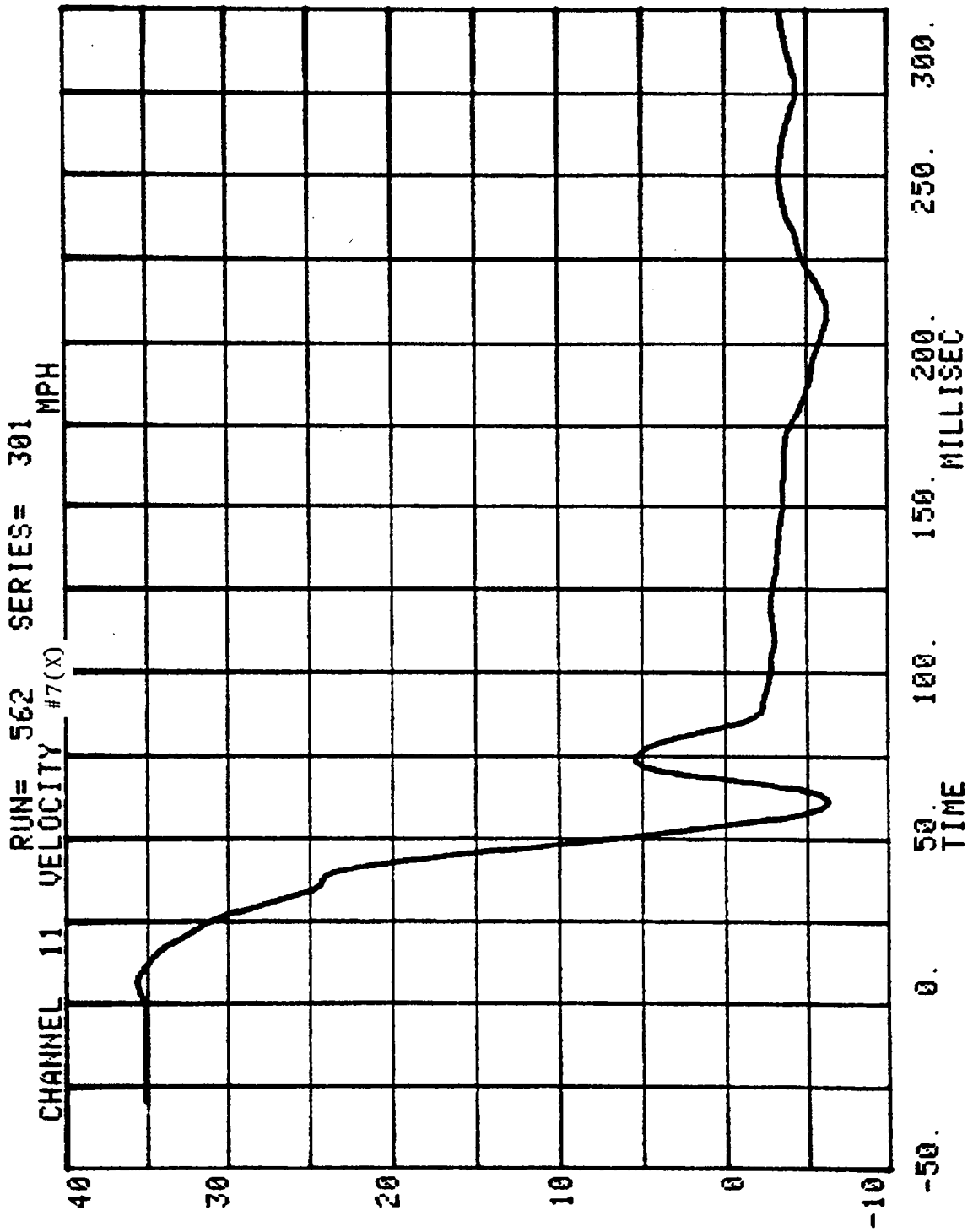
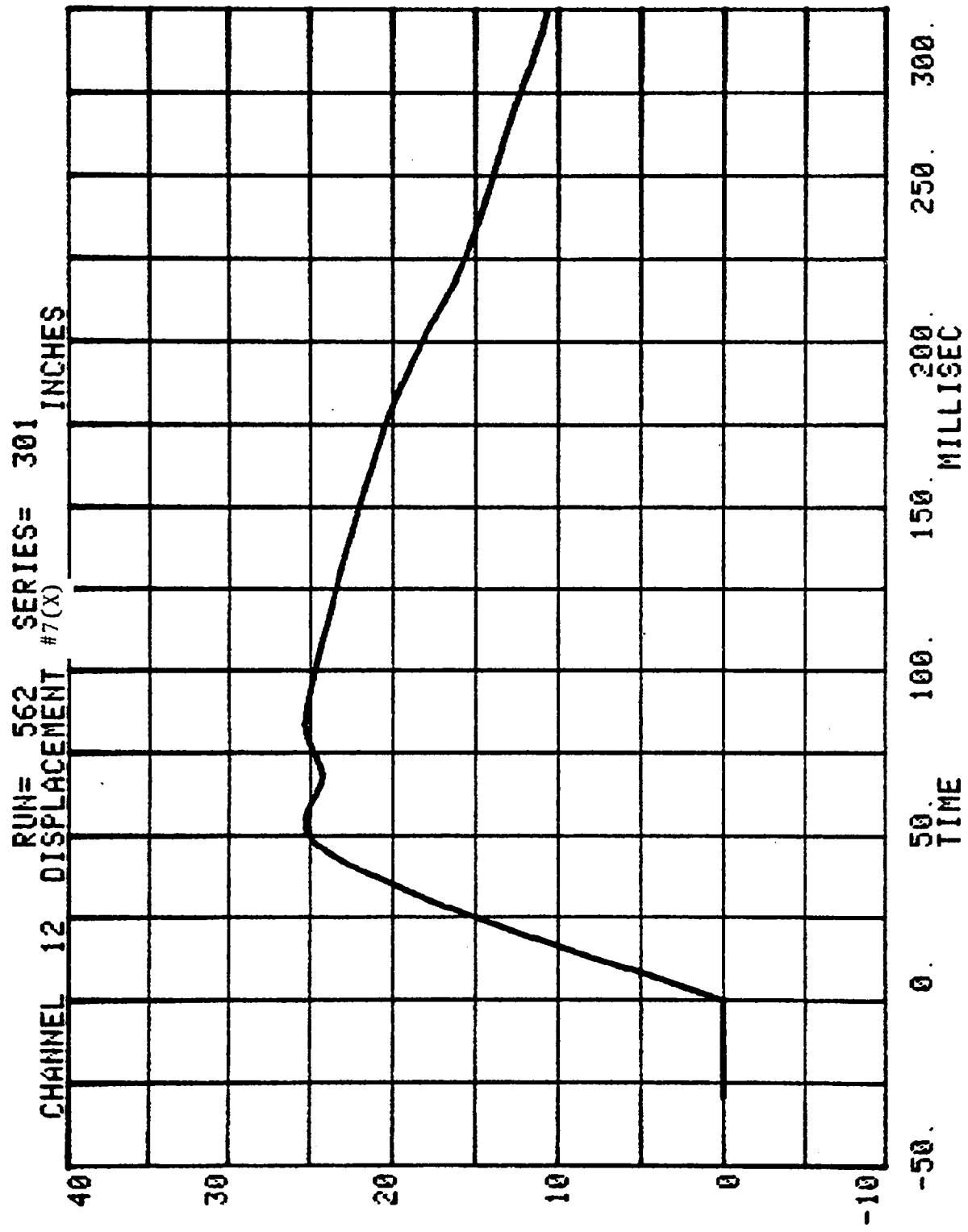

CHANNEL 13 VELOCITY #6(X)
RUN= 562 SERIES= 301
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 14 DISPLACEMENT #6(X)
RUN= 562 SERIES= 301
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 33 ACC PACK #7(X)
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

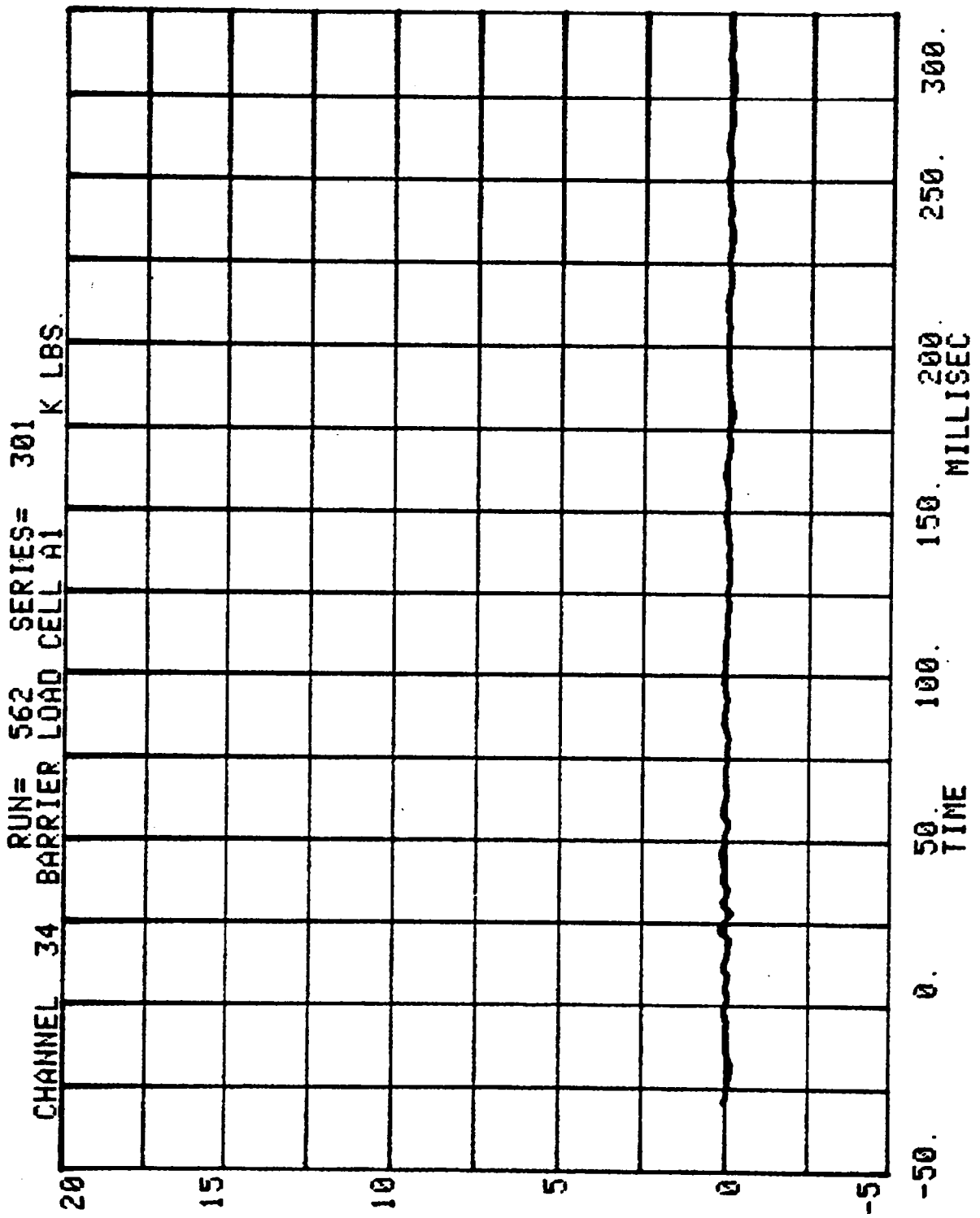

RUN= 562 SERIES= 301
CHANNEL 11 VELOCITY #7(X)
MPH
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

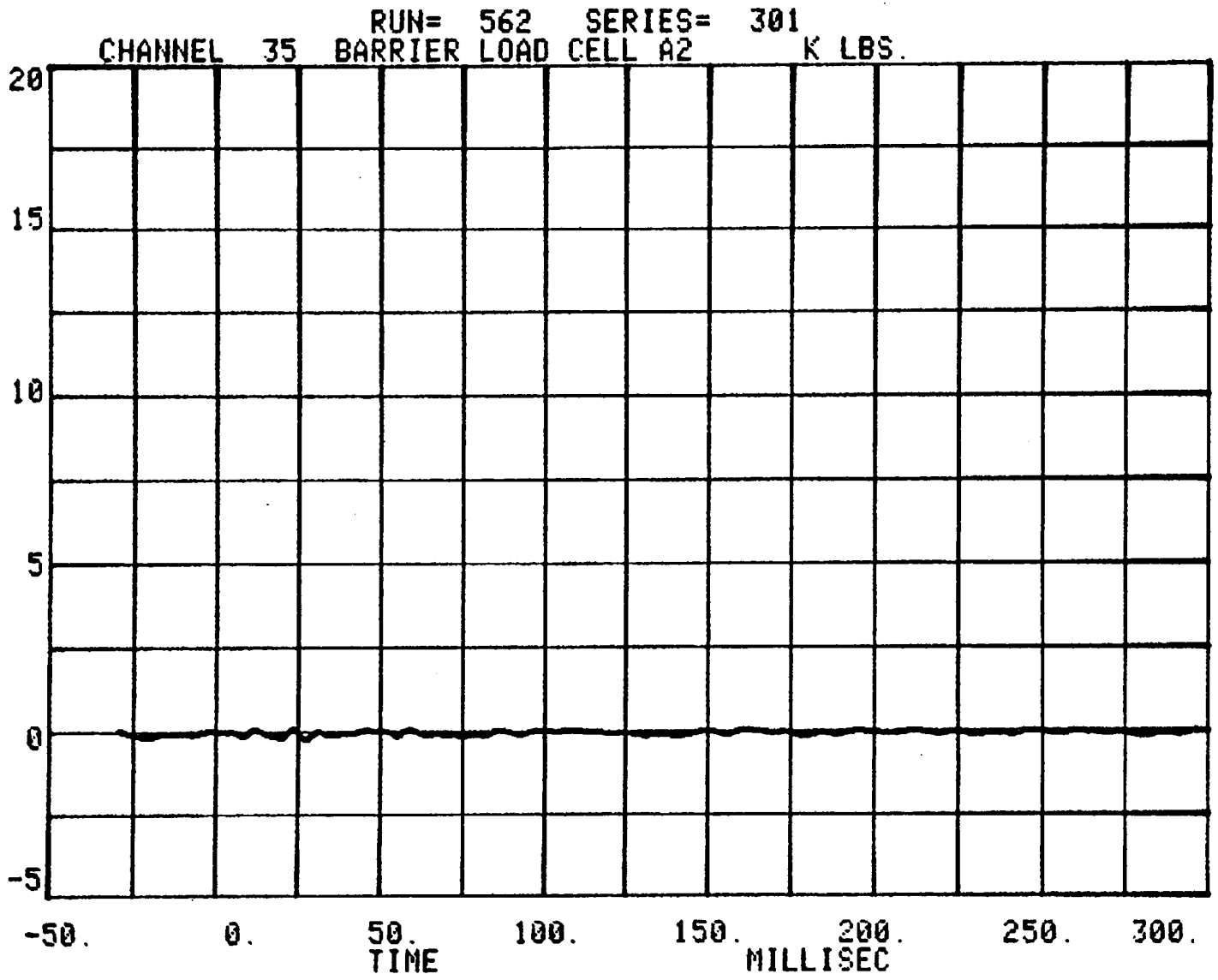

CHANNEL 12 DISPLACEMENT
RUN= 562 SERIES= 301
#7(X)
INCHES
40
30
20
10
0
-10
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

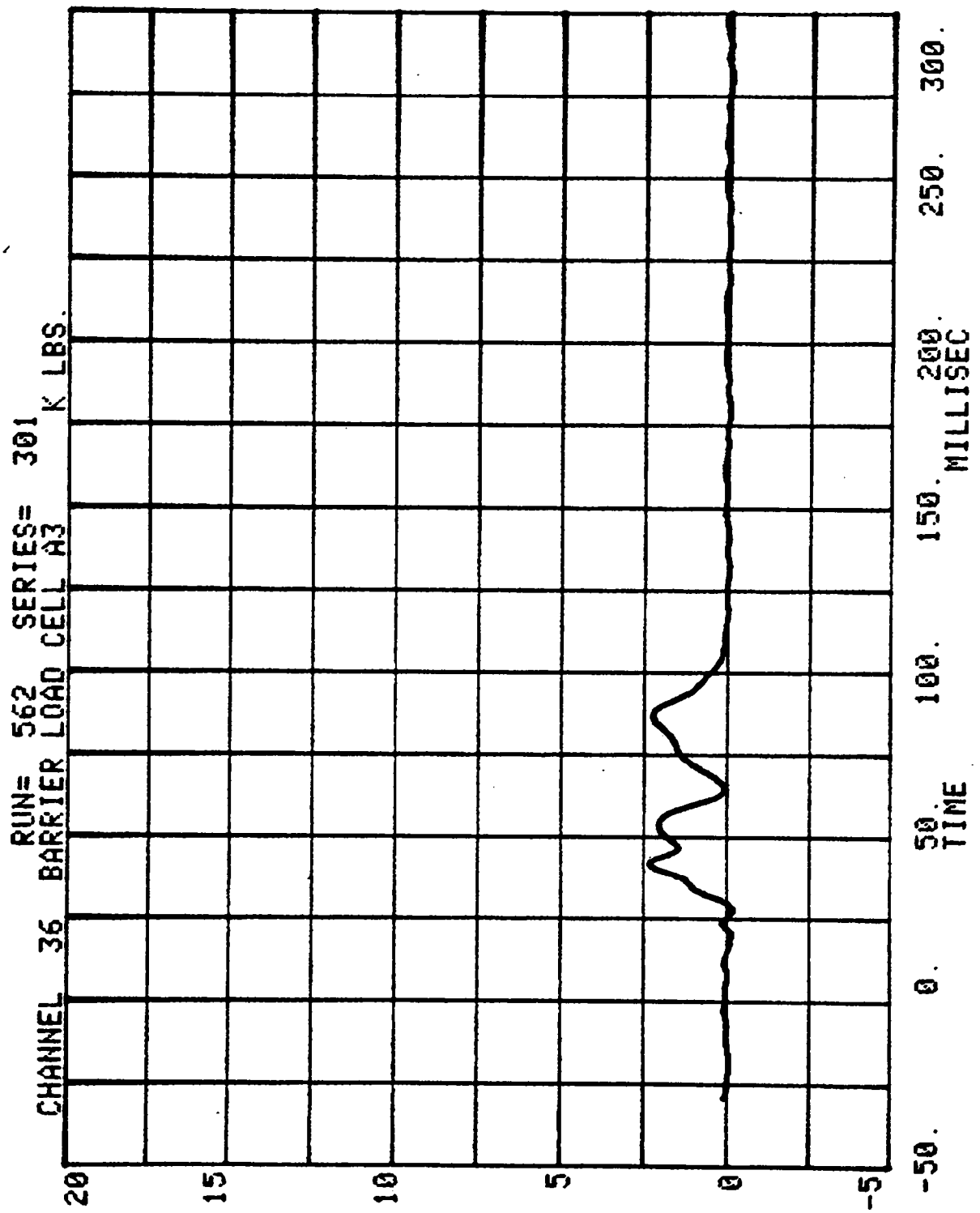
TEST NO. CD0301

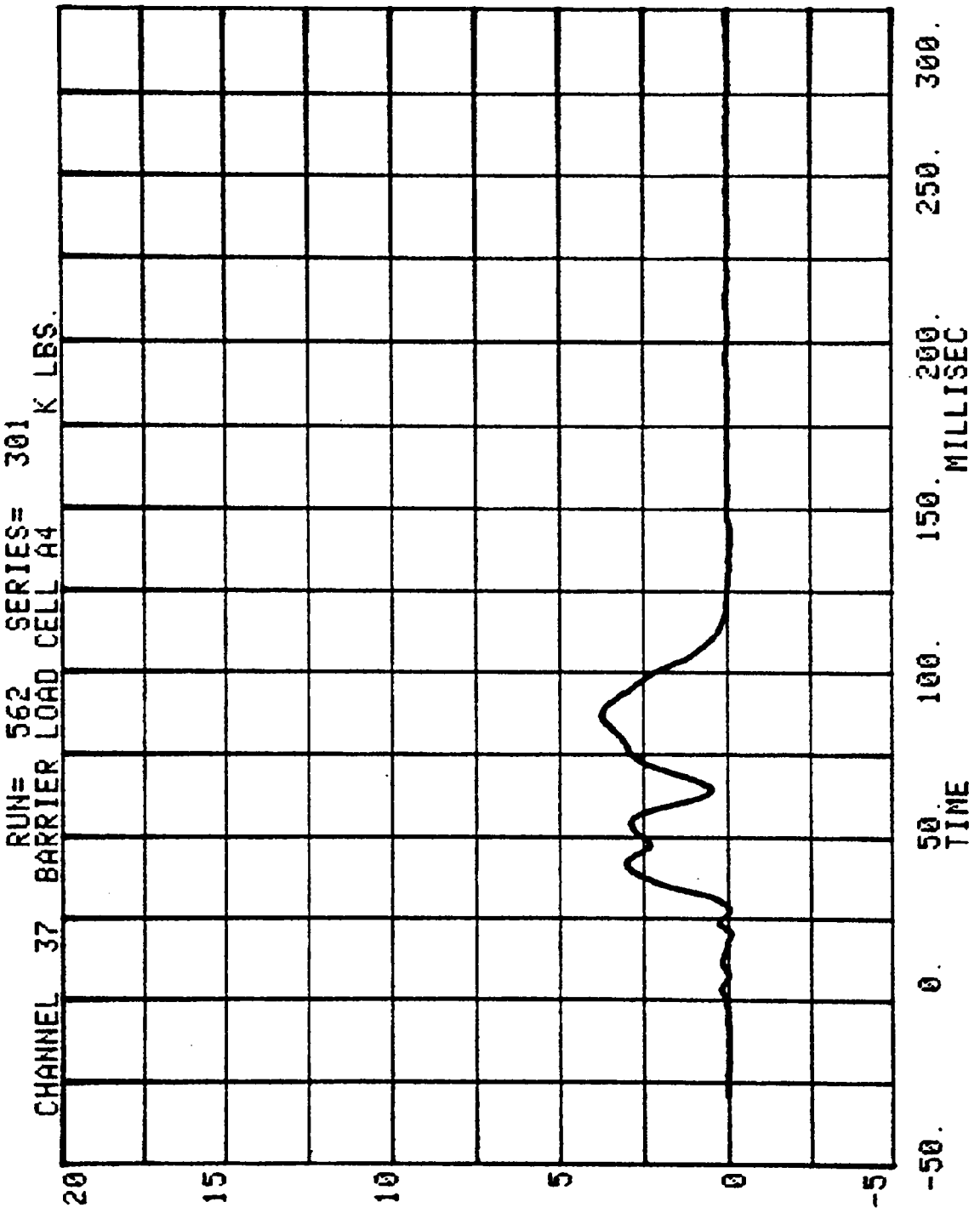
LOAD CELL BARRIER DATA
FILTER CHANNEL CLASS

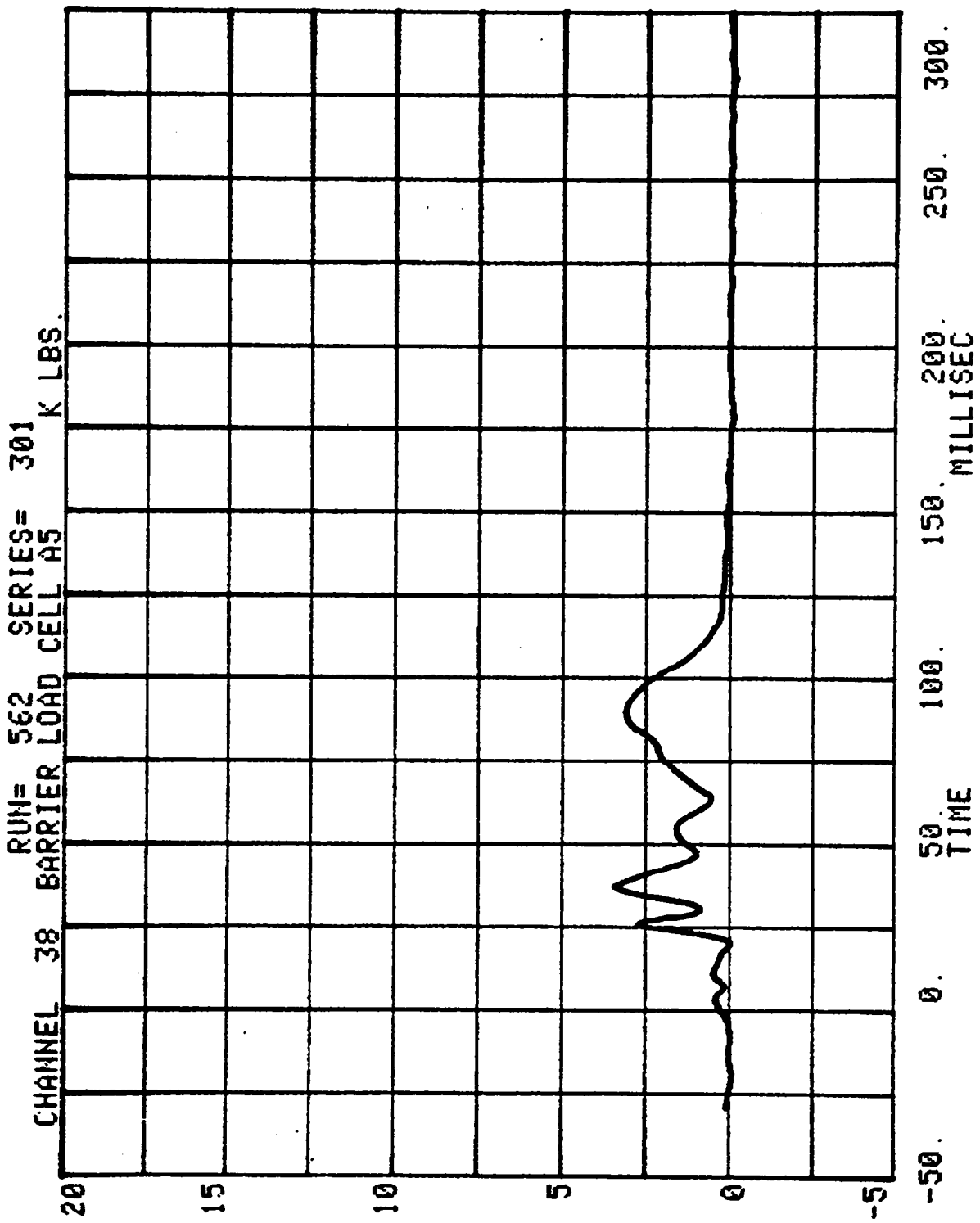
60

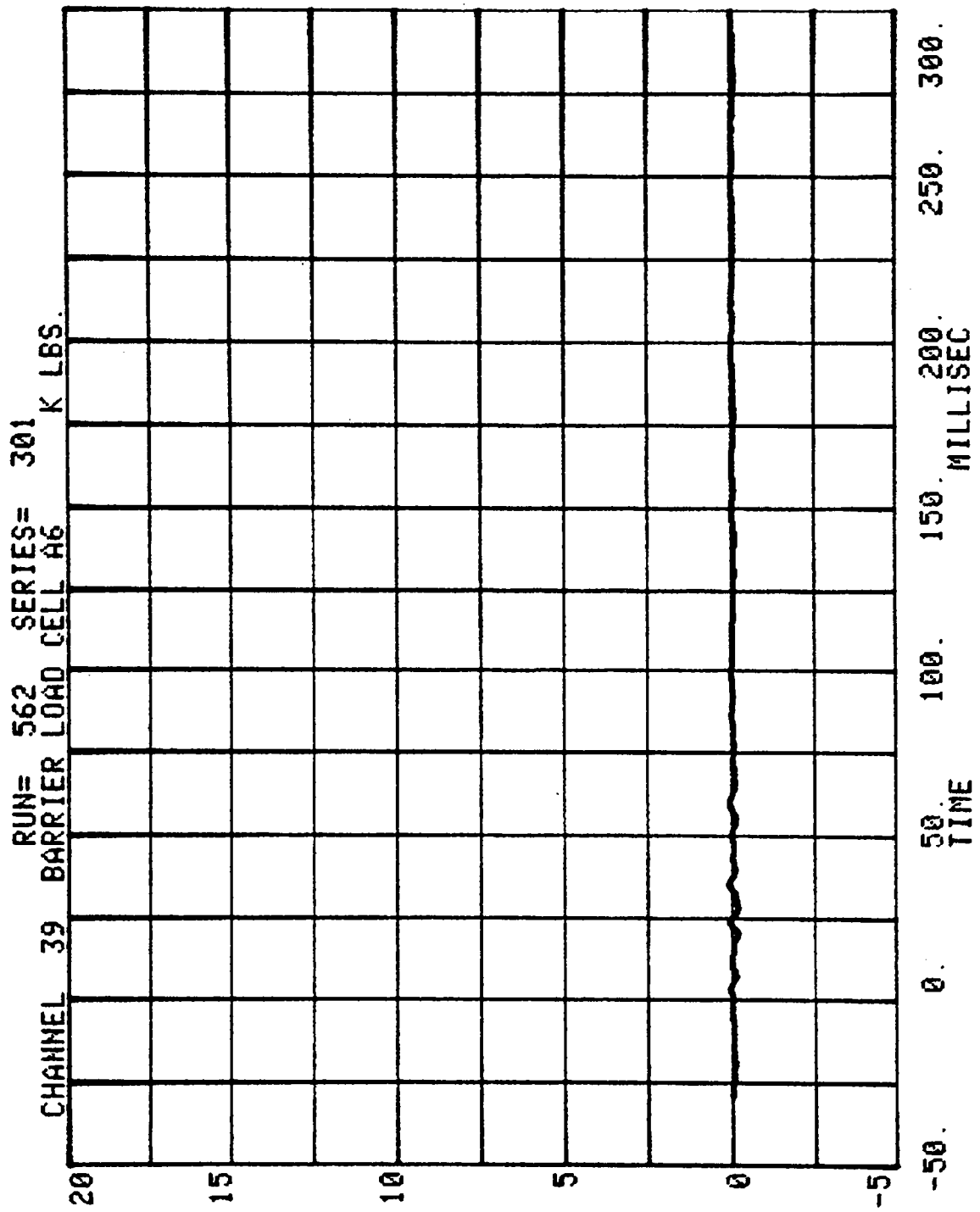

CHANNEL 34 BARRIER LOAD CELL A1
RUN= 562 SERIES= 301
K LBS
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

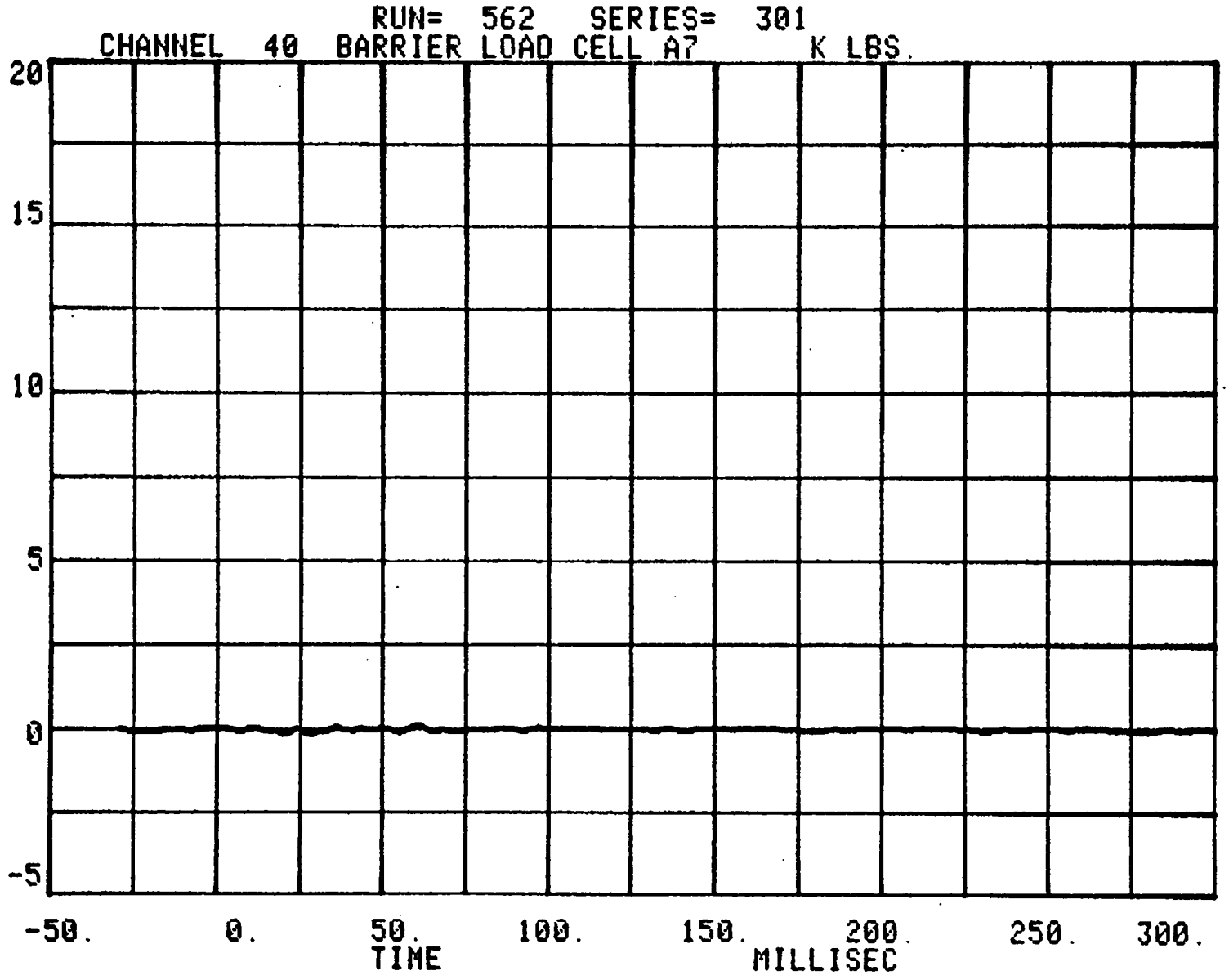

RUN= 562 SERIES= 301
CHANNEL 35 BARRIER LOAD CELL A2
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

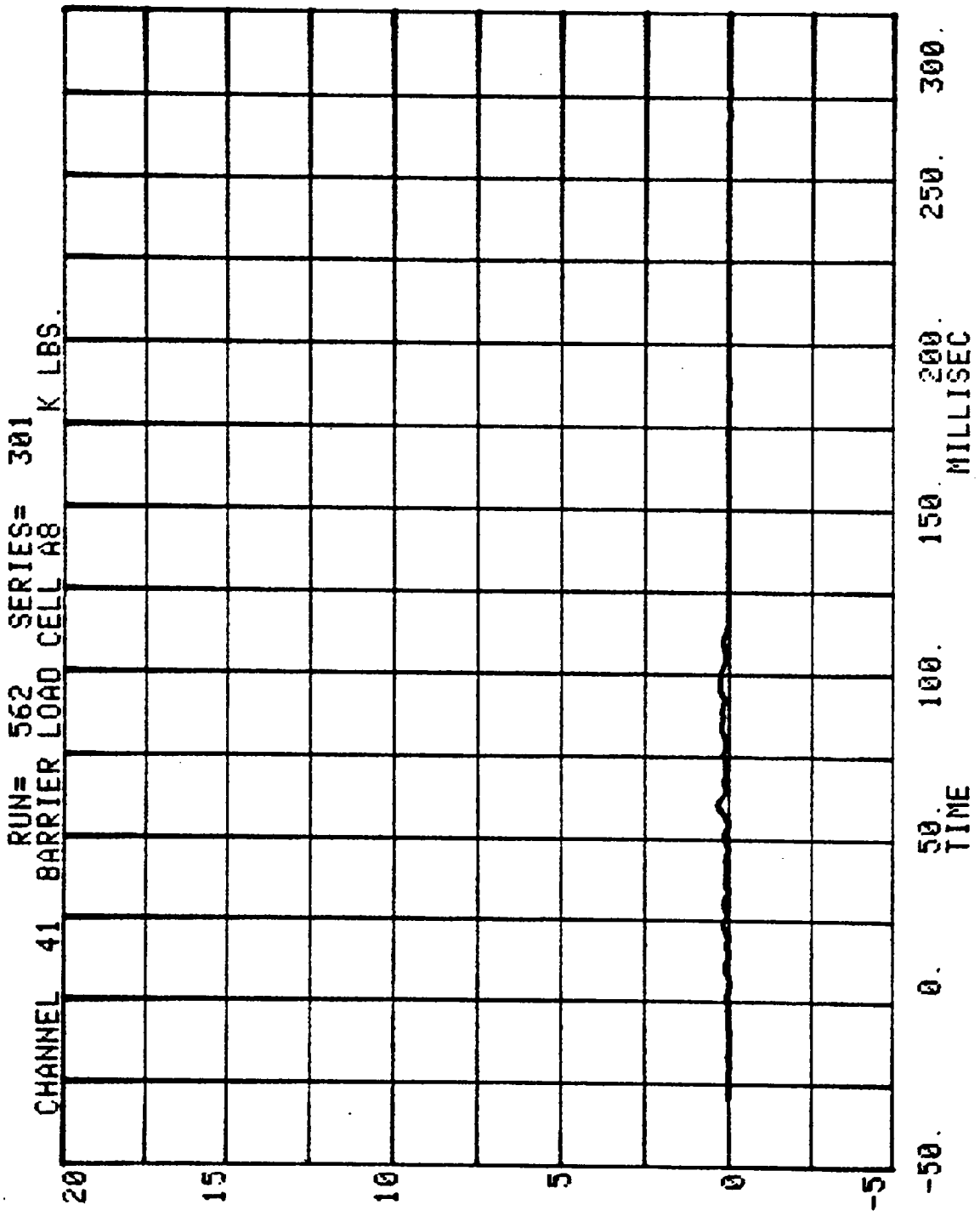

CHANNEL 36 BARRIER LOAD CELL A3
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

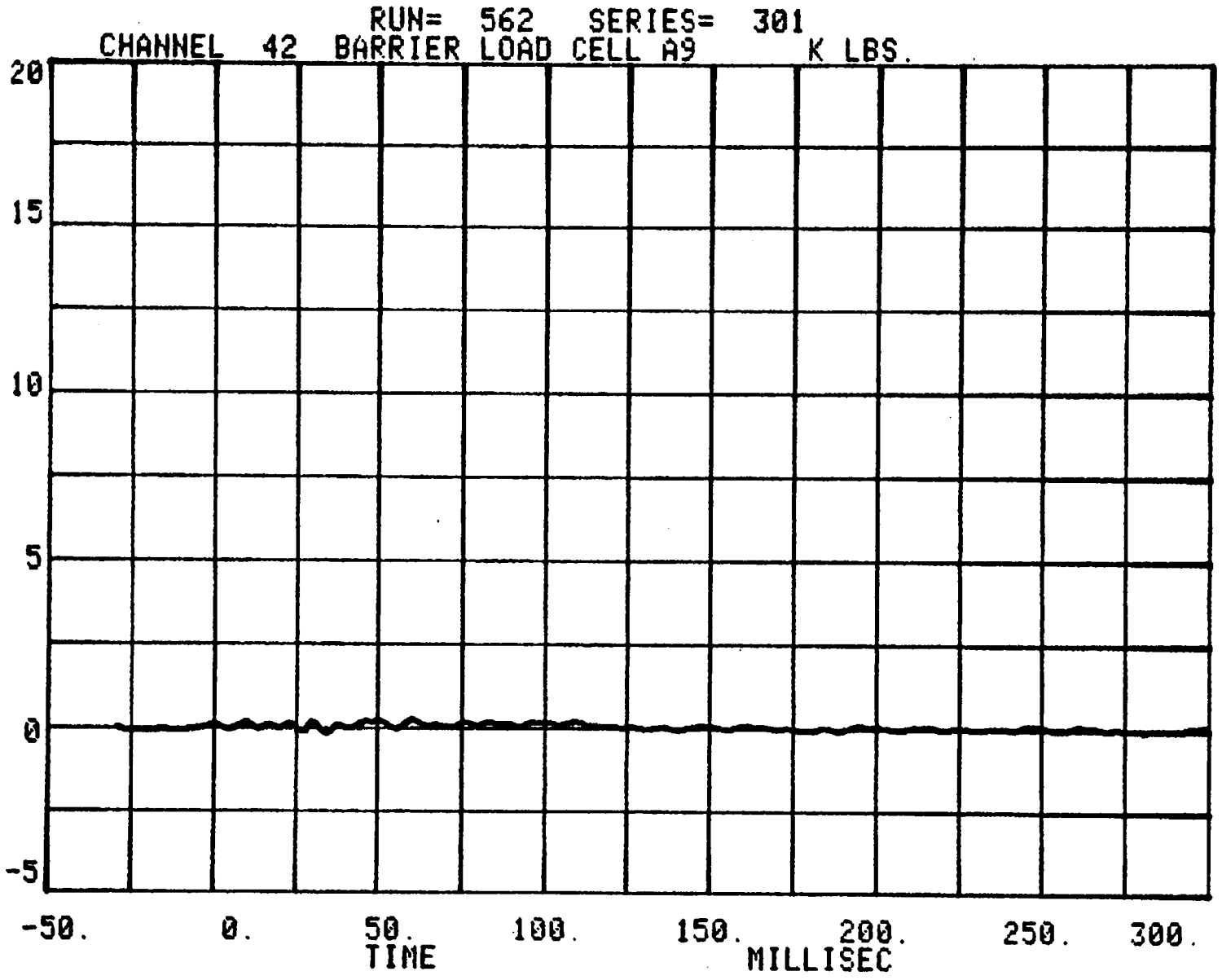

CHANNEL 37 BARRIER LOAD CELL A4
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

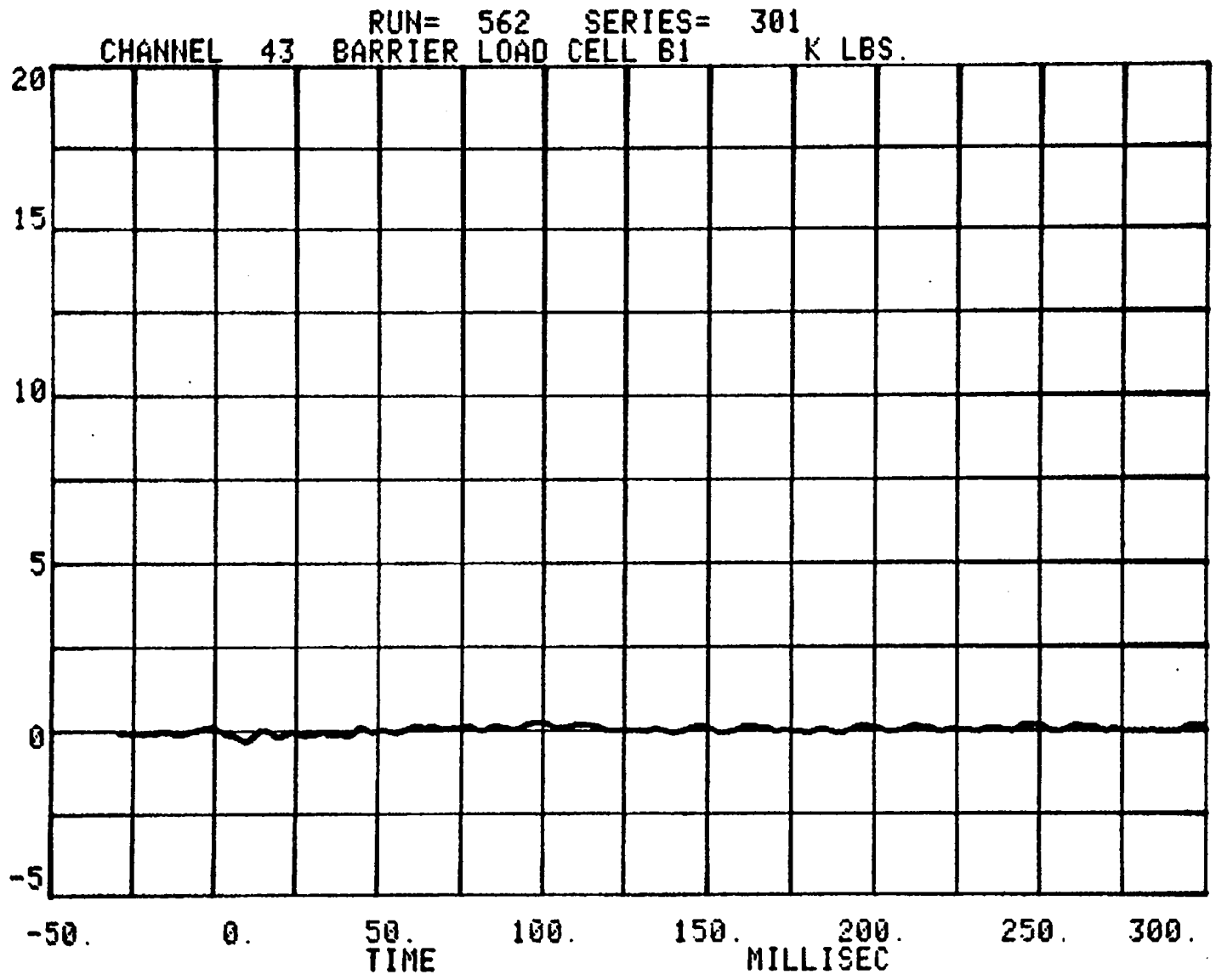

RUN= 562 SERIES= 301
CHANNEL 38 BARRIER LOAD CELL A5 K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

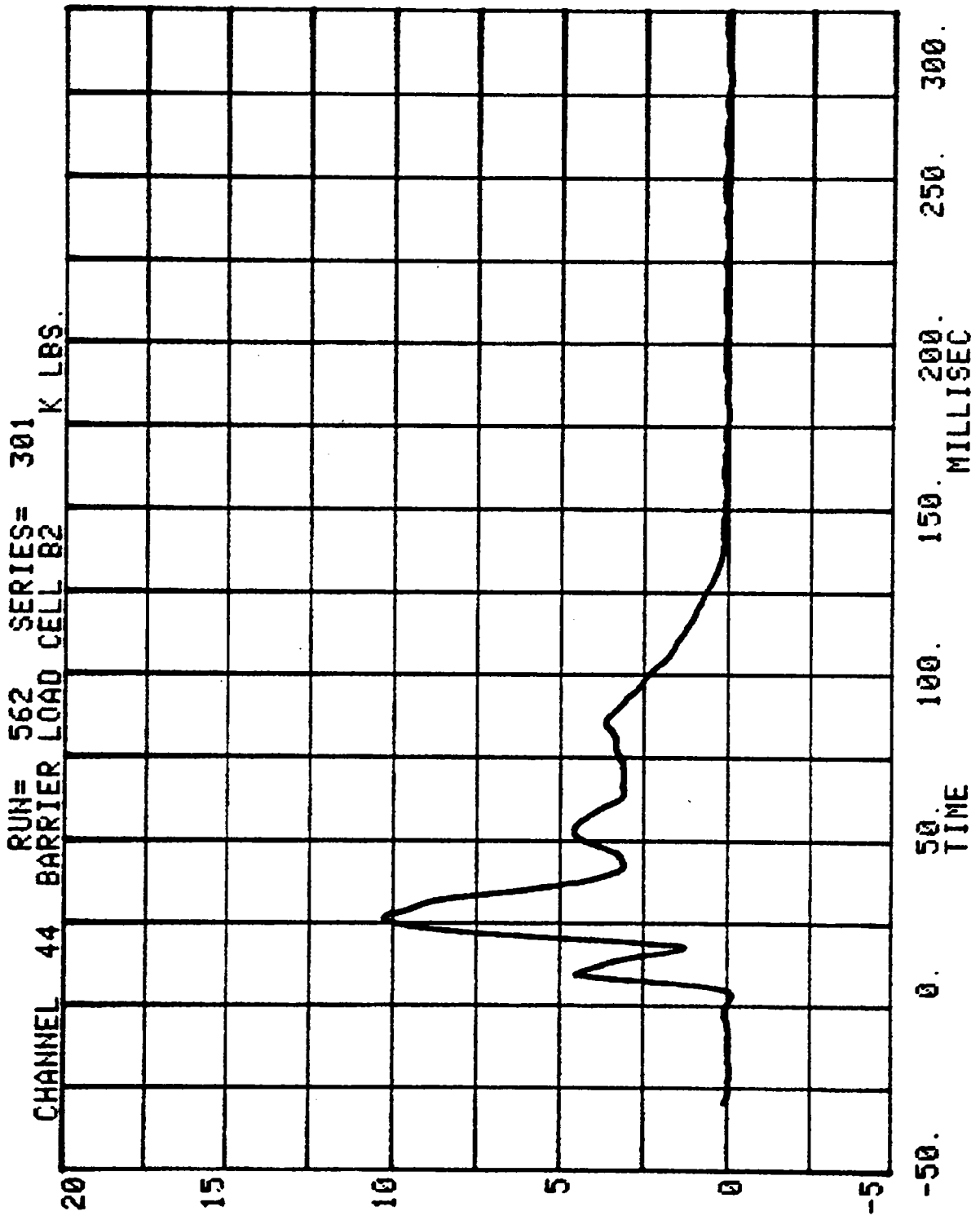

CHANNEL 39 BARRIER LOAD CELL A6
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 562 SERIES= 301
CHANNEL 40 BARRIER LOAD CELL A7
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 41 BARRIER LOAD CELL A8
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 562 SERIES= 301
CHANNEL 42 BARRIER LOAD CELL A9
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 562 SERIES= 301
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 BARRIER LOAD CELL B2
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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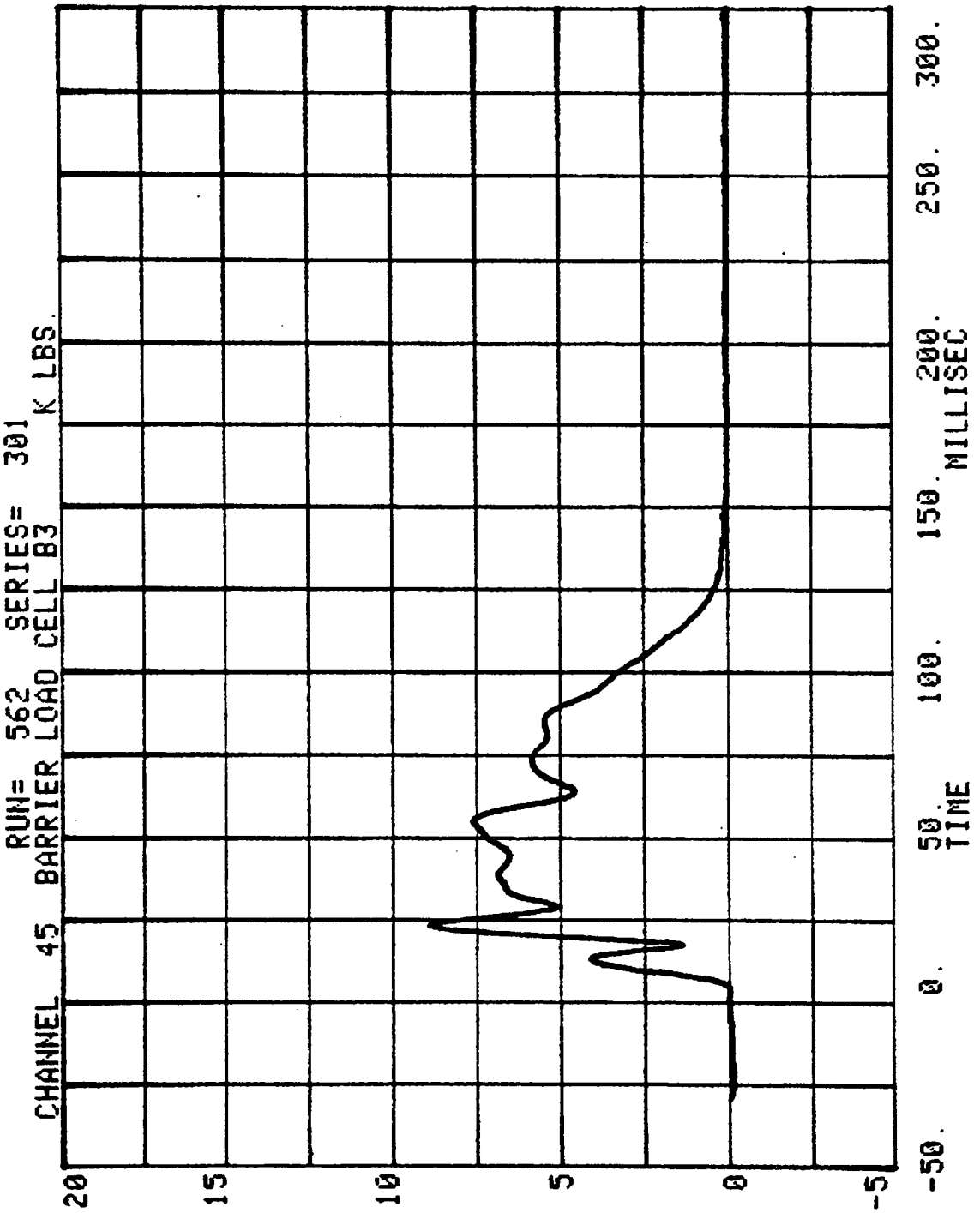
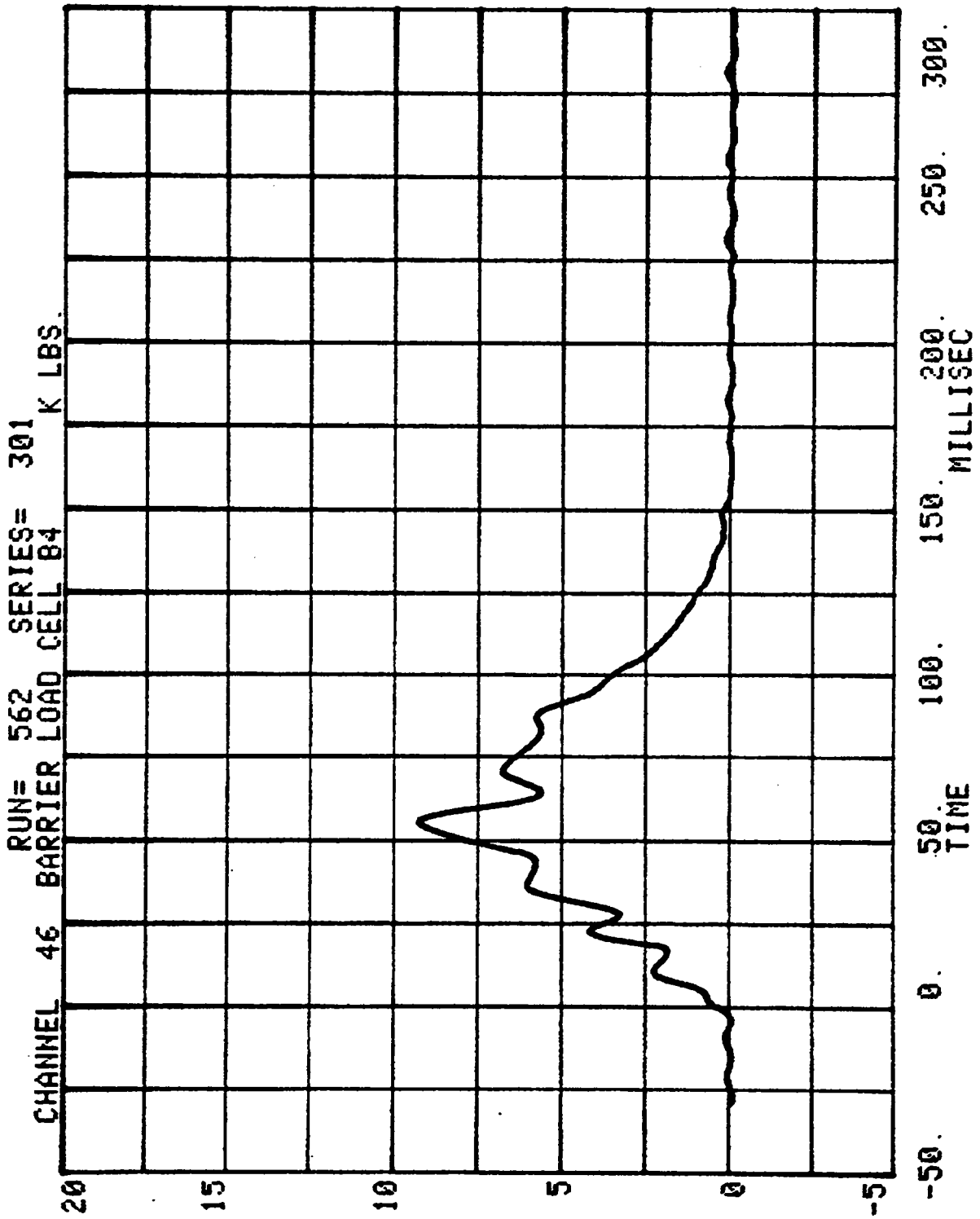
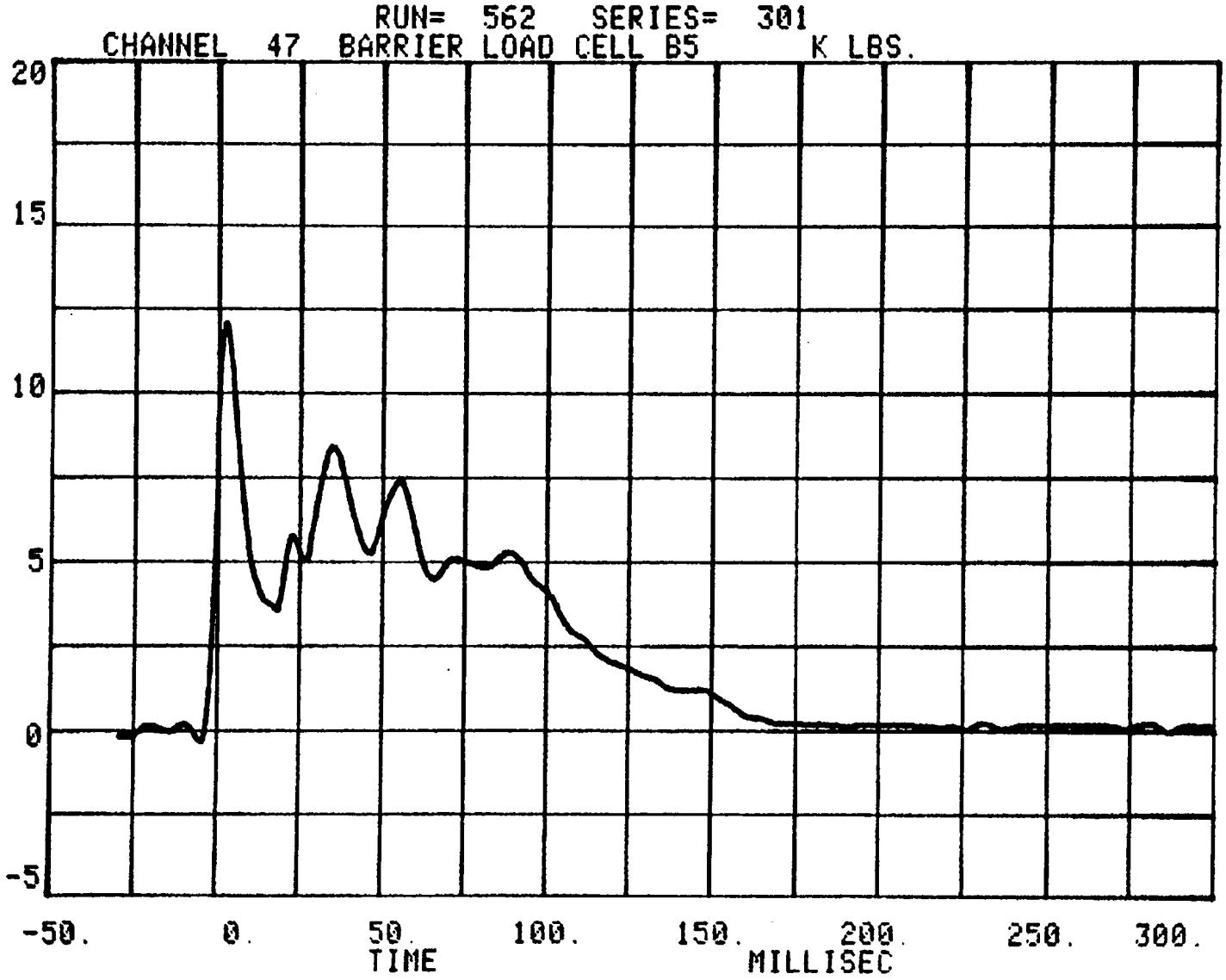
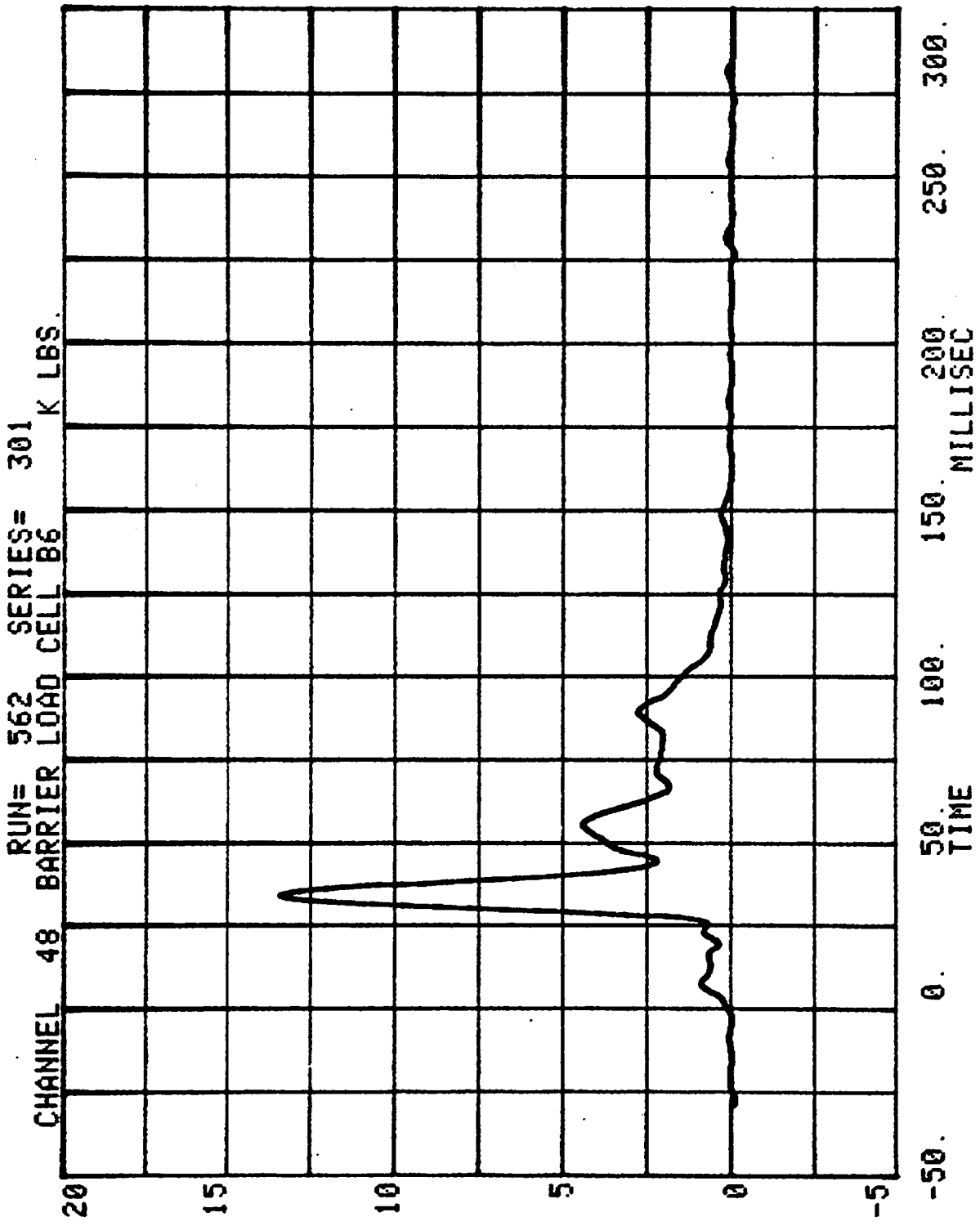

CHANNEL 45 BARRIER LOAD CELL B3
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 46 BARRIER LOAD CELL B4
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 562 SERIES= 301
CHANNEL 47 BARRIER LOAD CELL B5 K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 48 BARRIER LOAD CELL B6
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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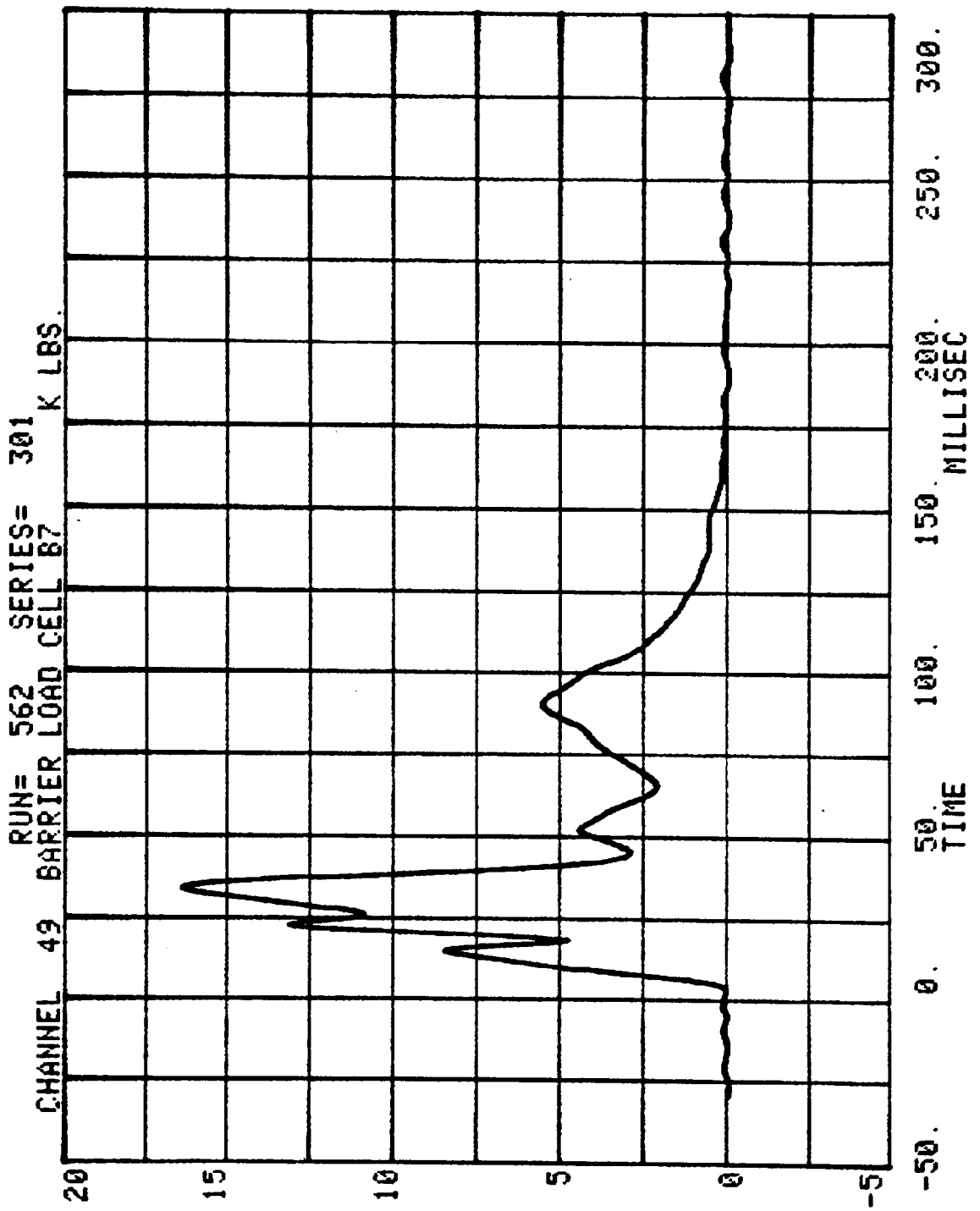
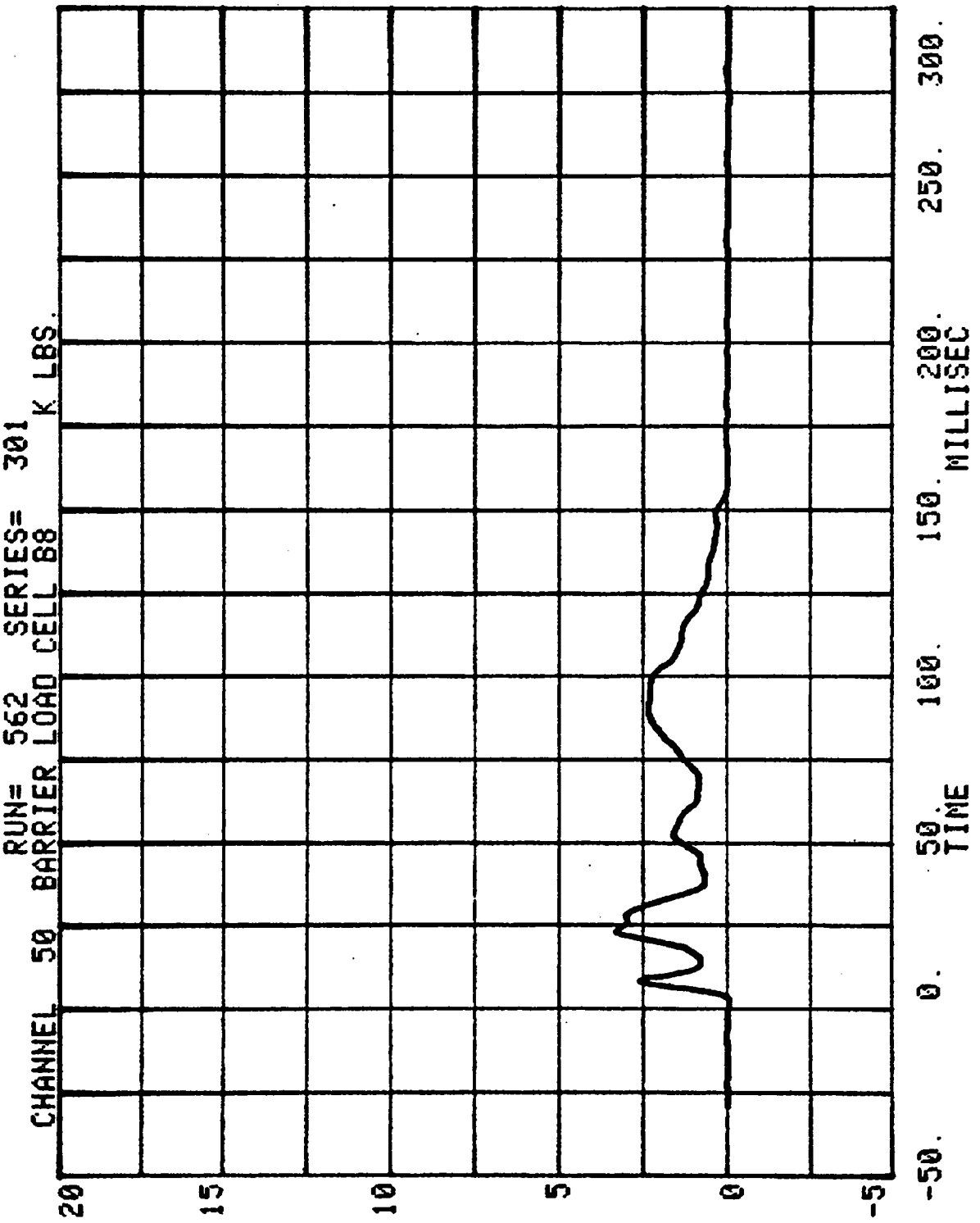
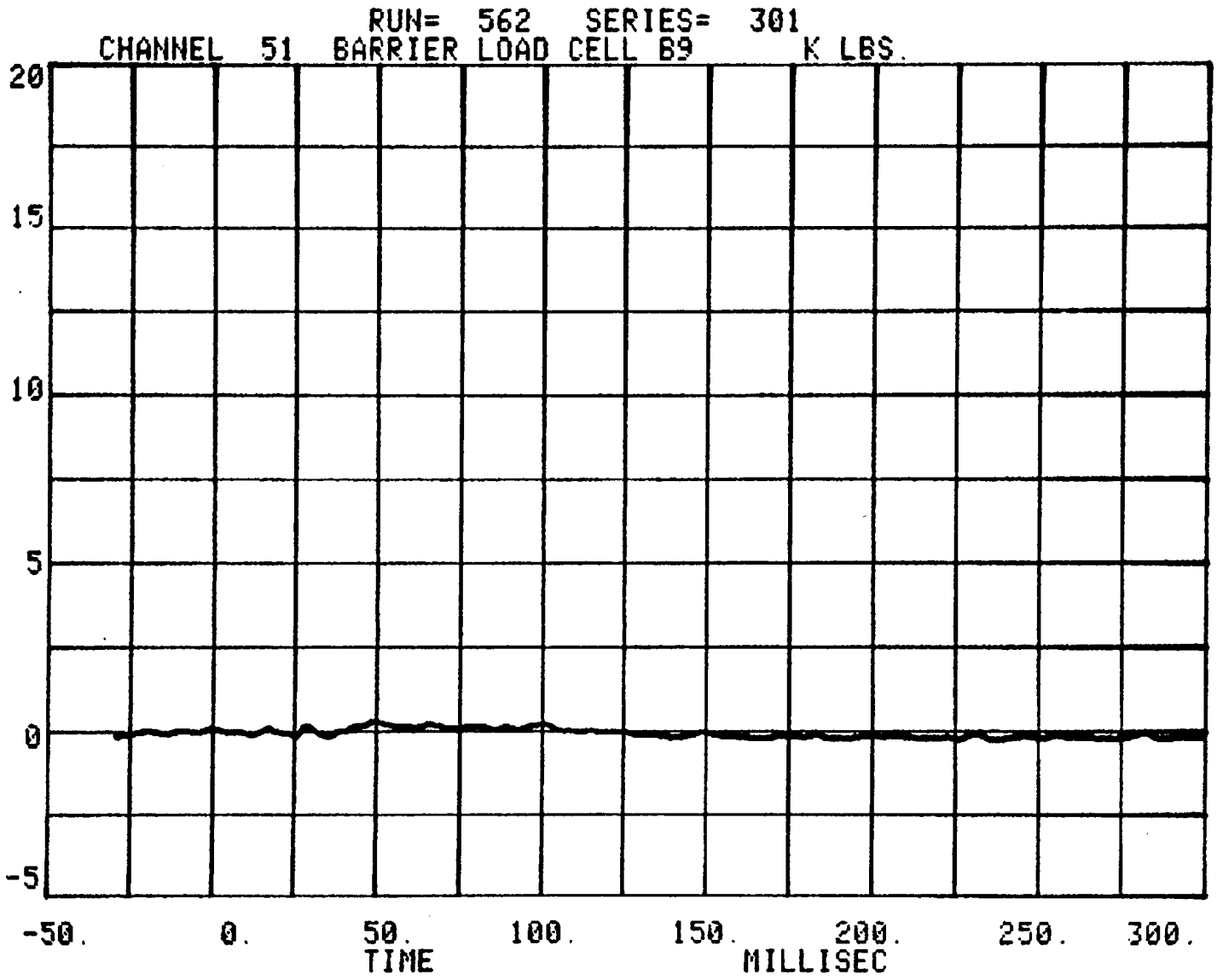
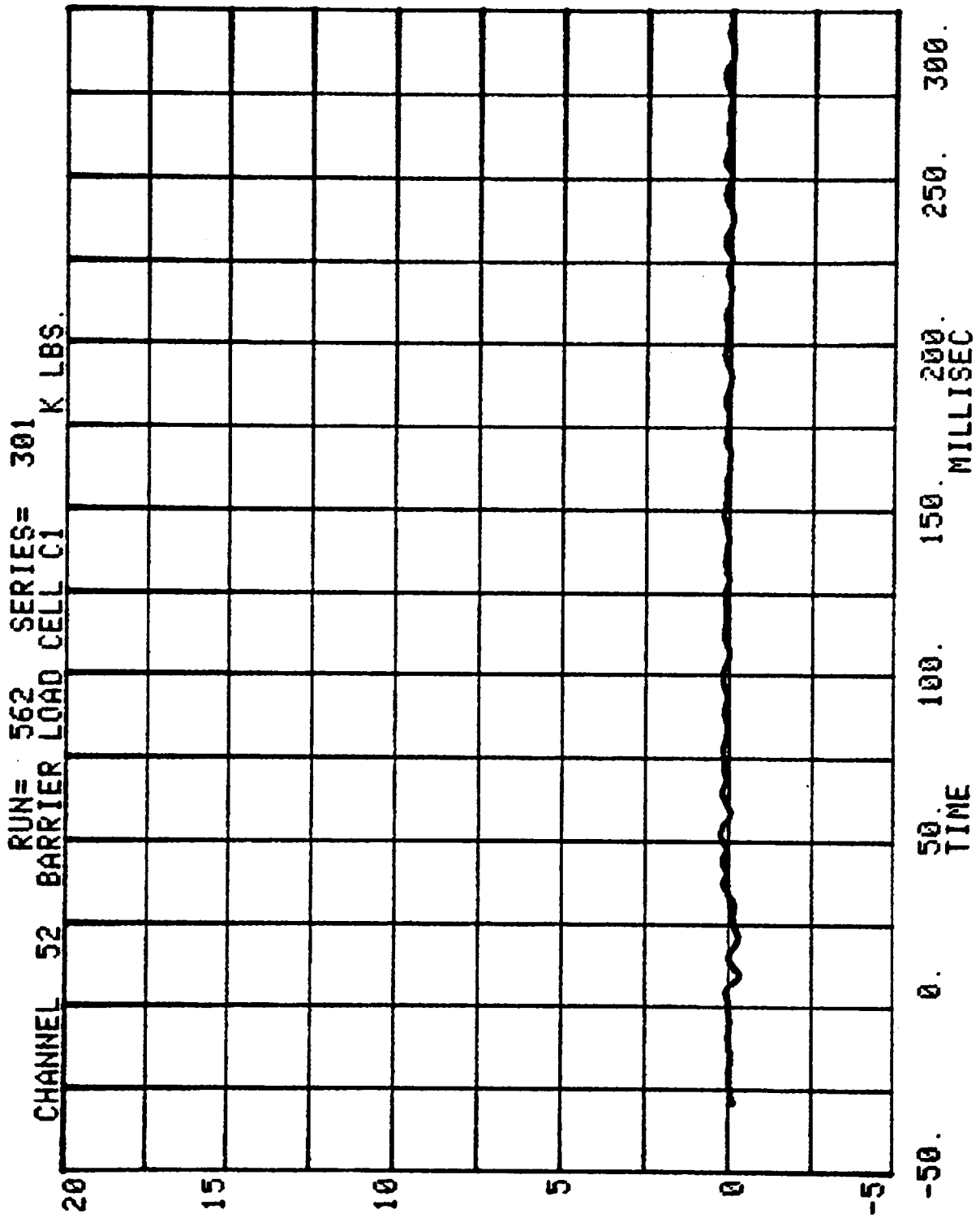
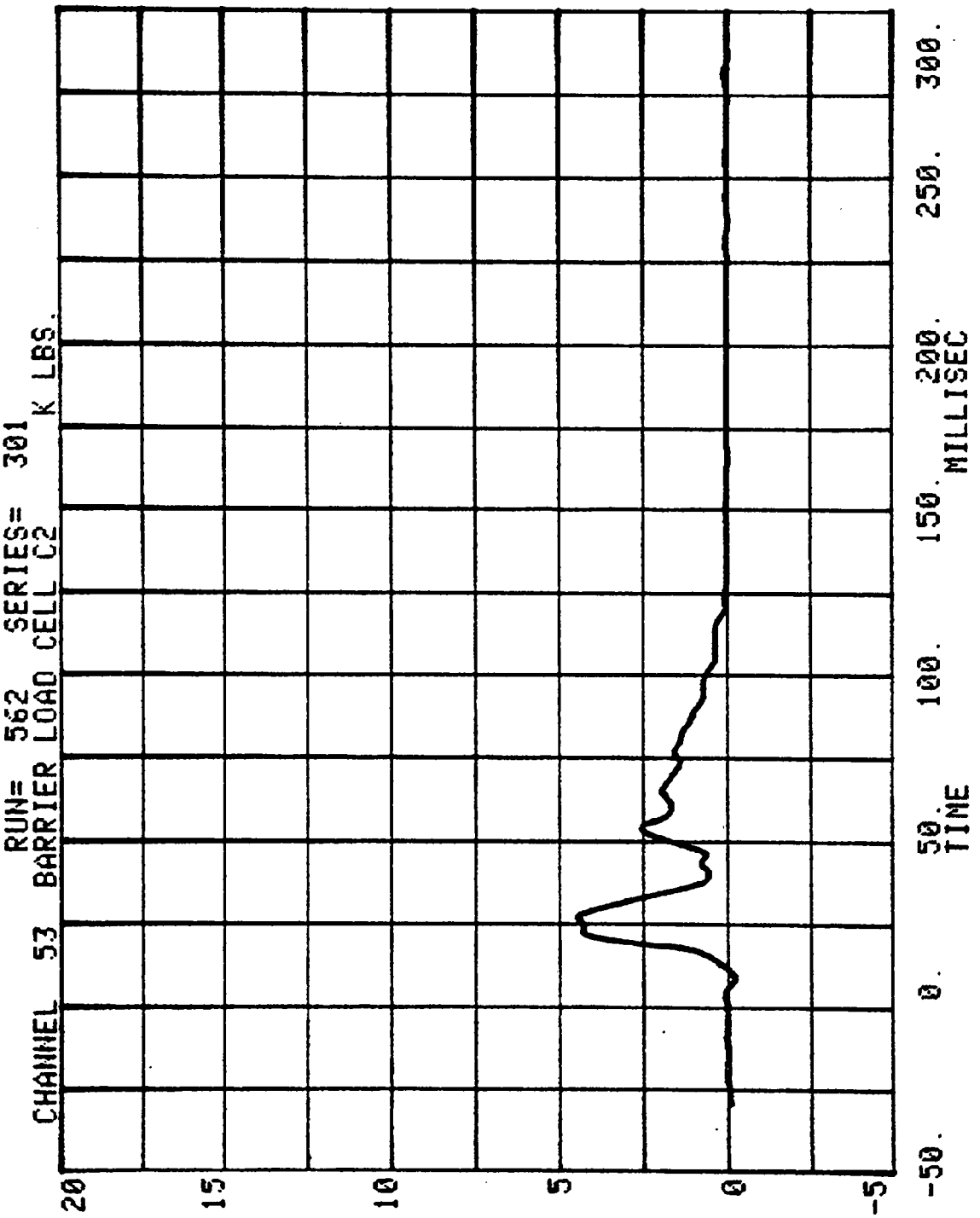
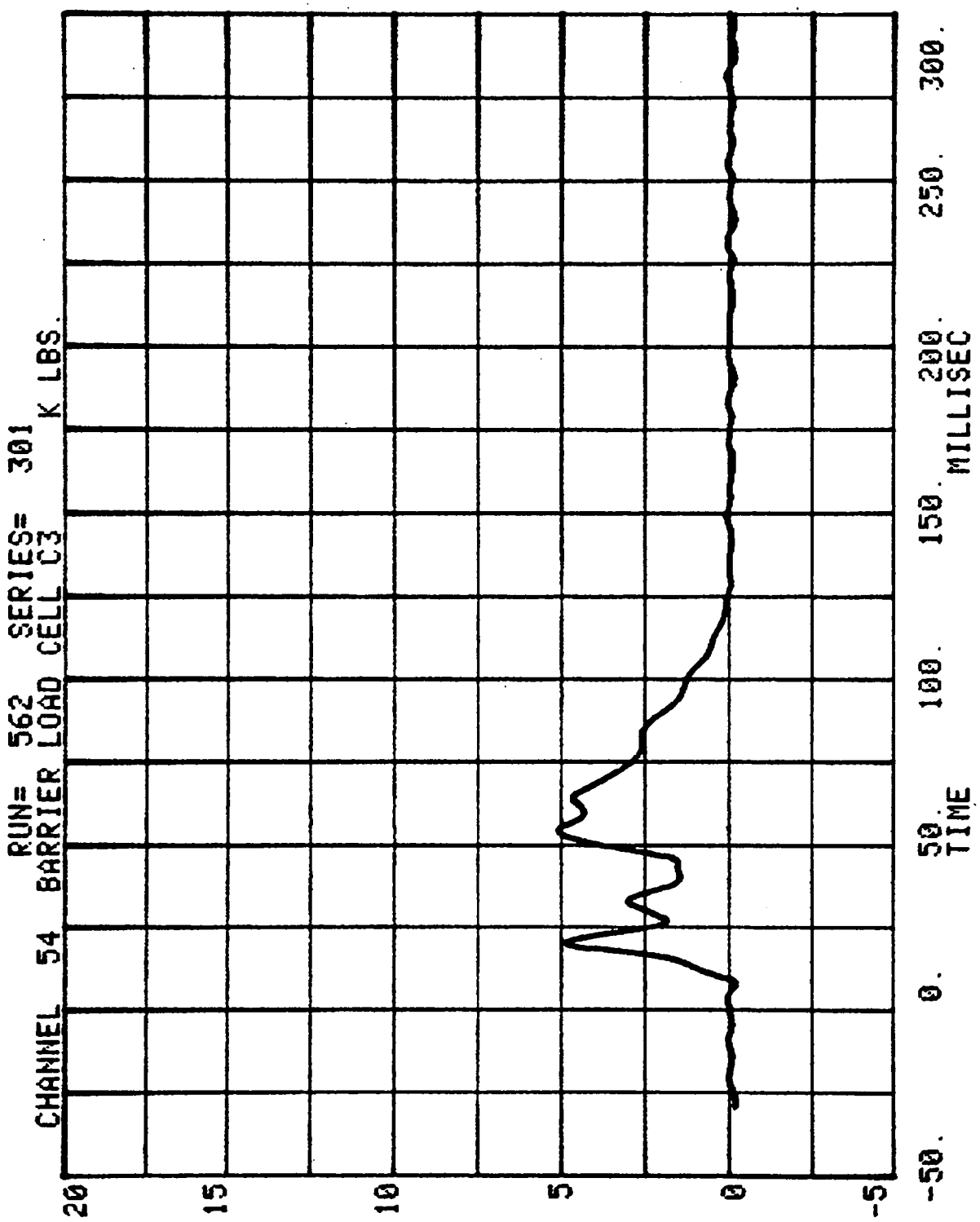

CHANNEL 49 BARRIER LOAD CELL 87
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

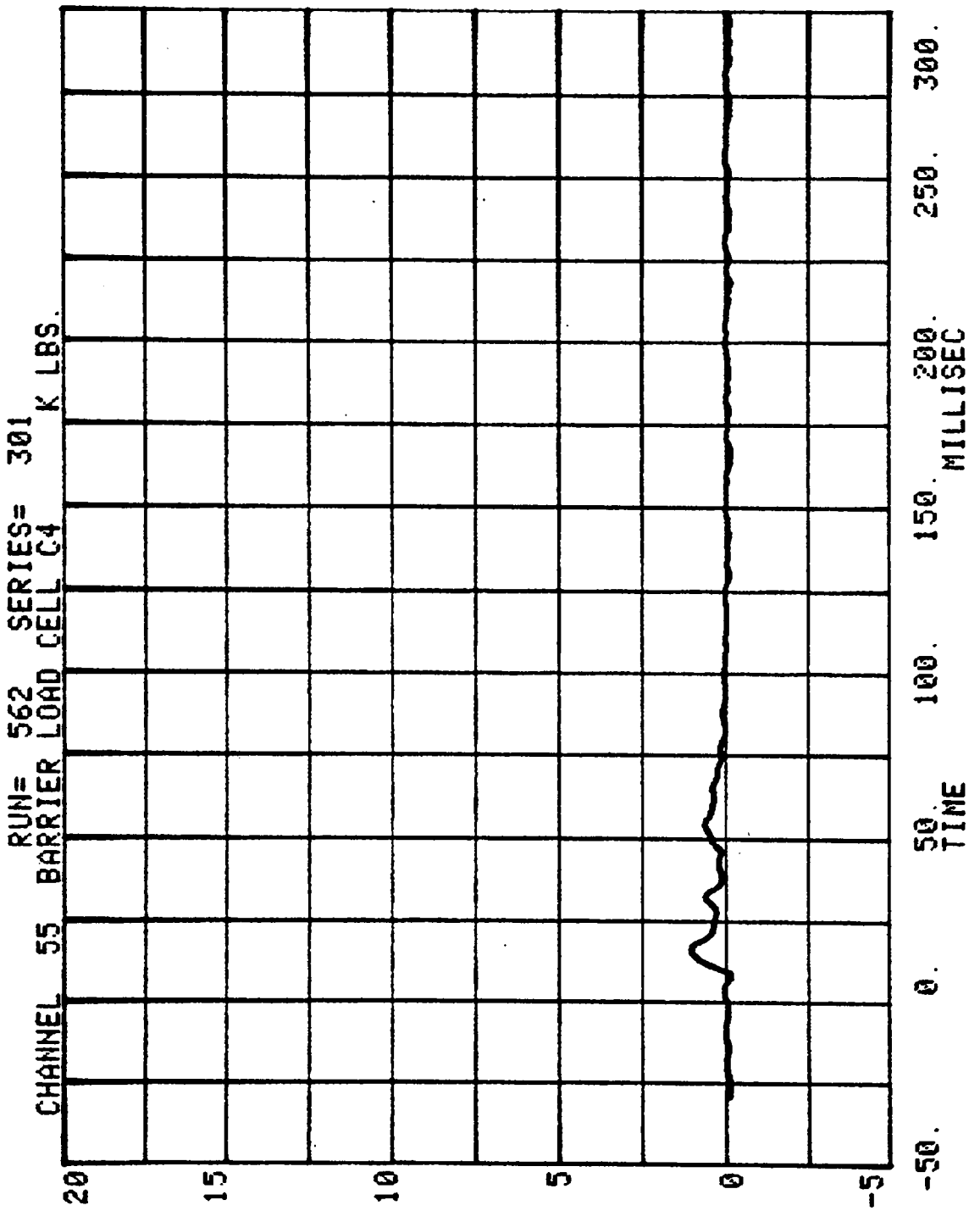

CHANNEL 50 BARRIER LOAD CELL 88
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

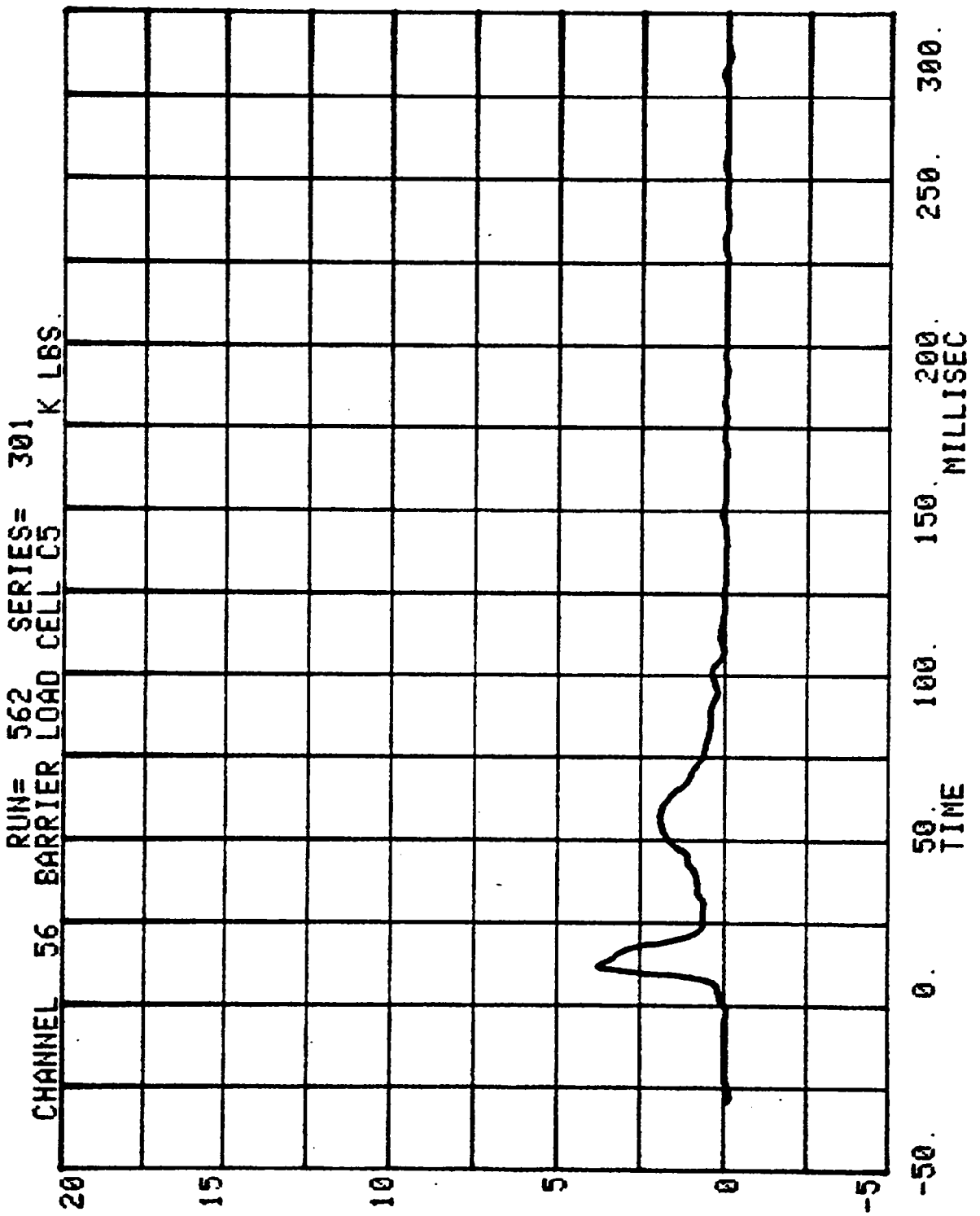

RUN= 562 SERIES= 301
CHANNEL 51 BARRIER LOAD CELL 89 K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

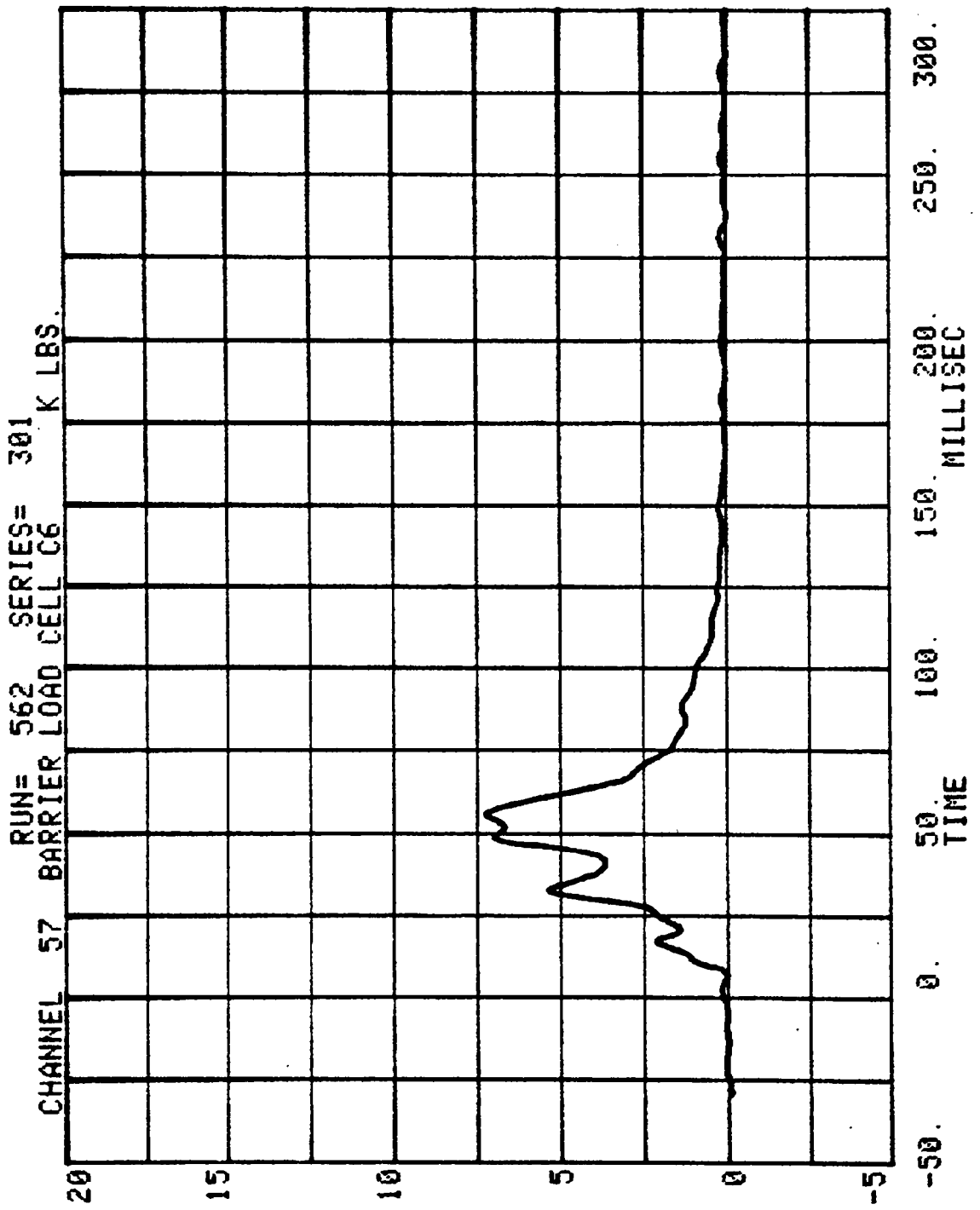

CHANNEL 52 BARRIER LOAD CELL C1
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

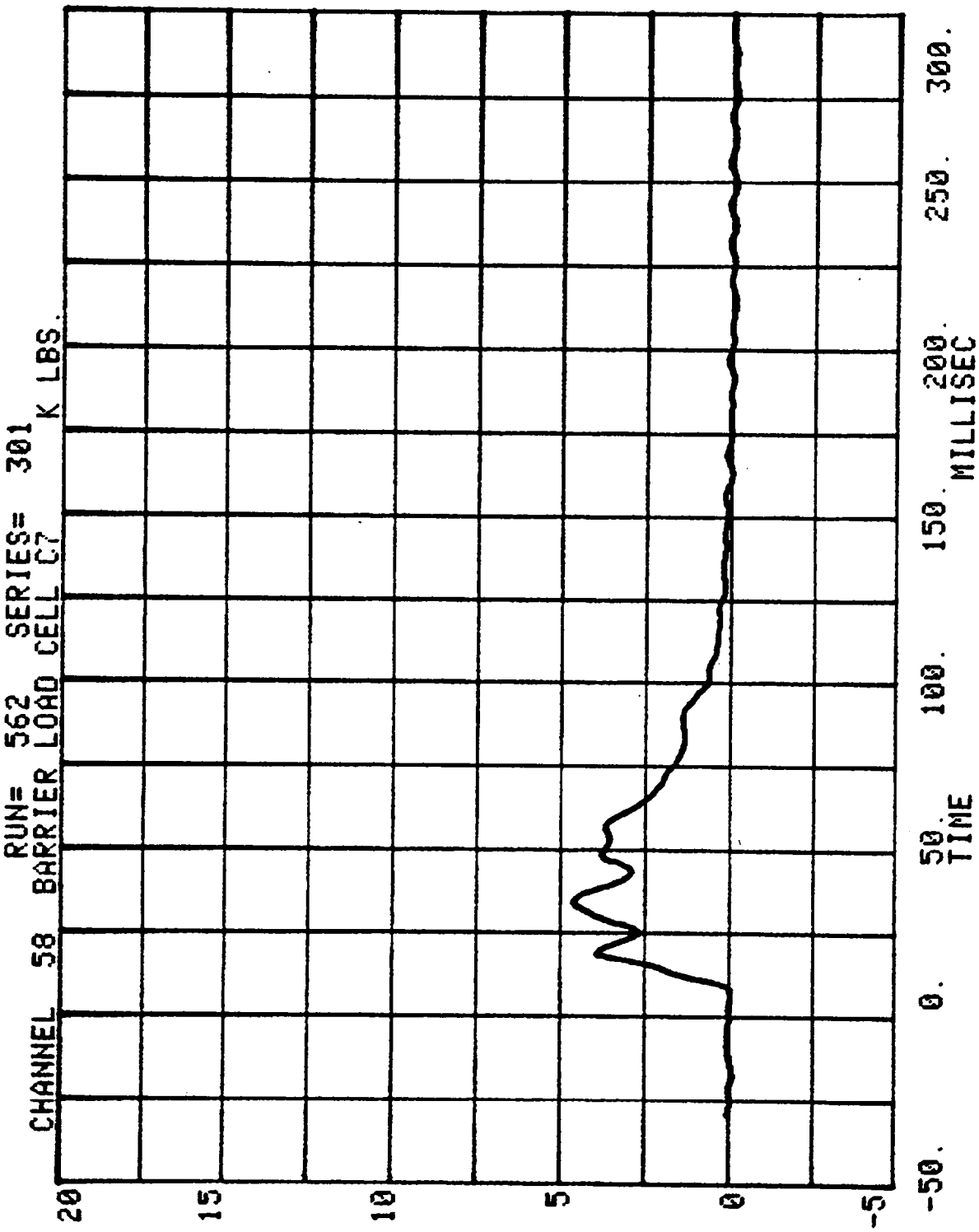

CHANNEL 53 BARRIER LOAD CELL C2
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

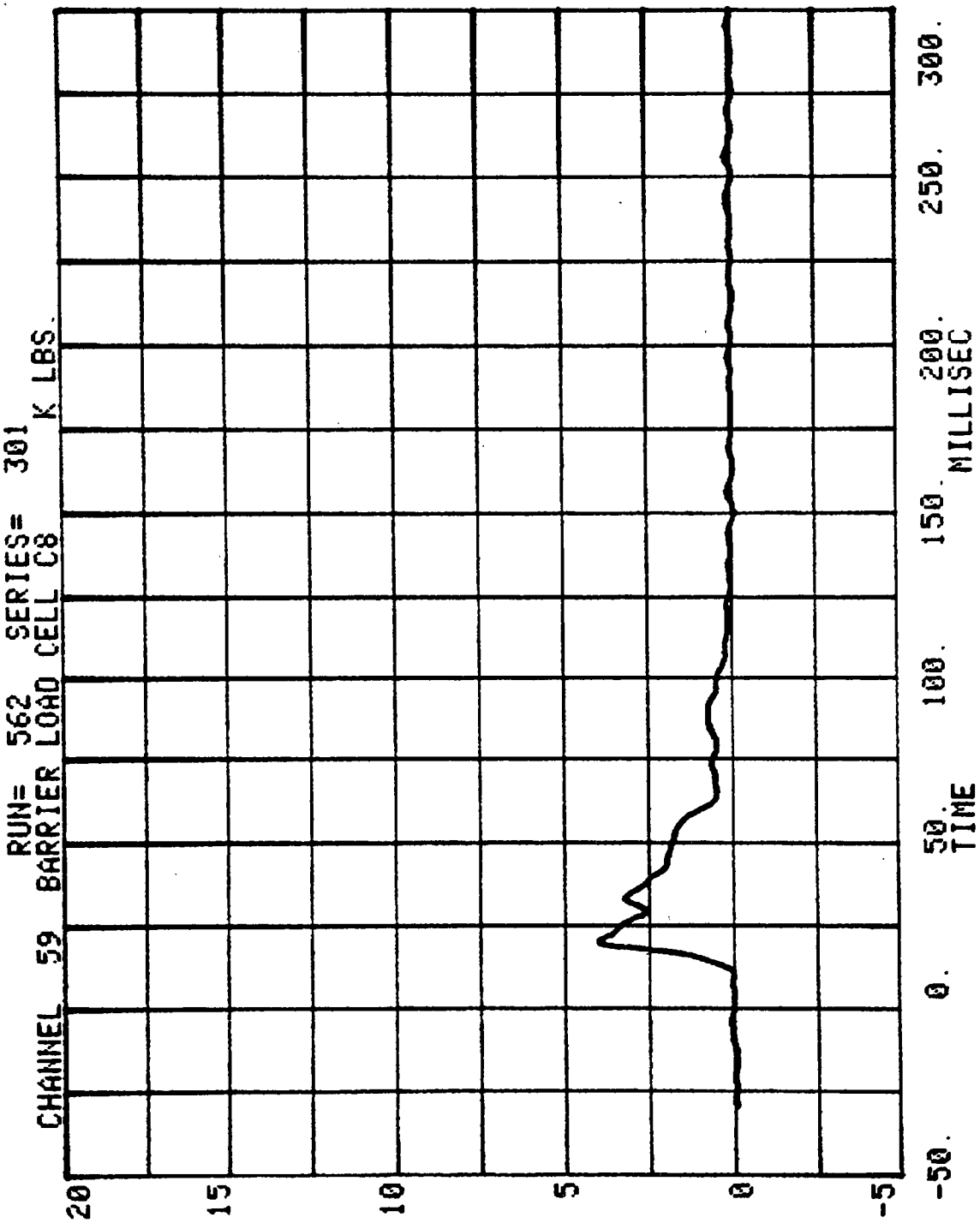

CHANNEL 54 BARRIER LOAD CELL C3
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

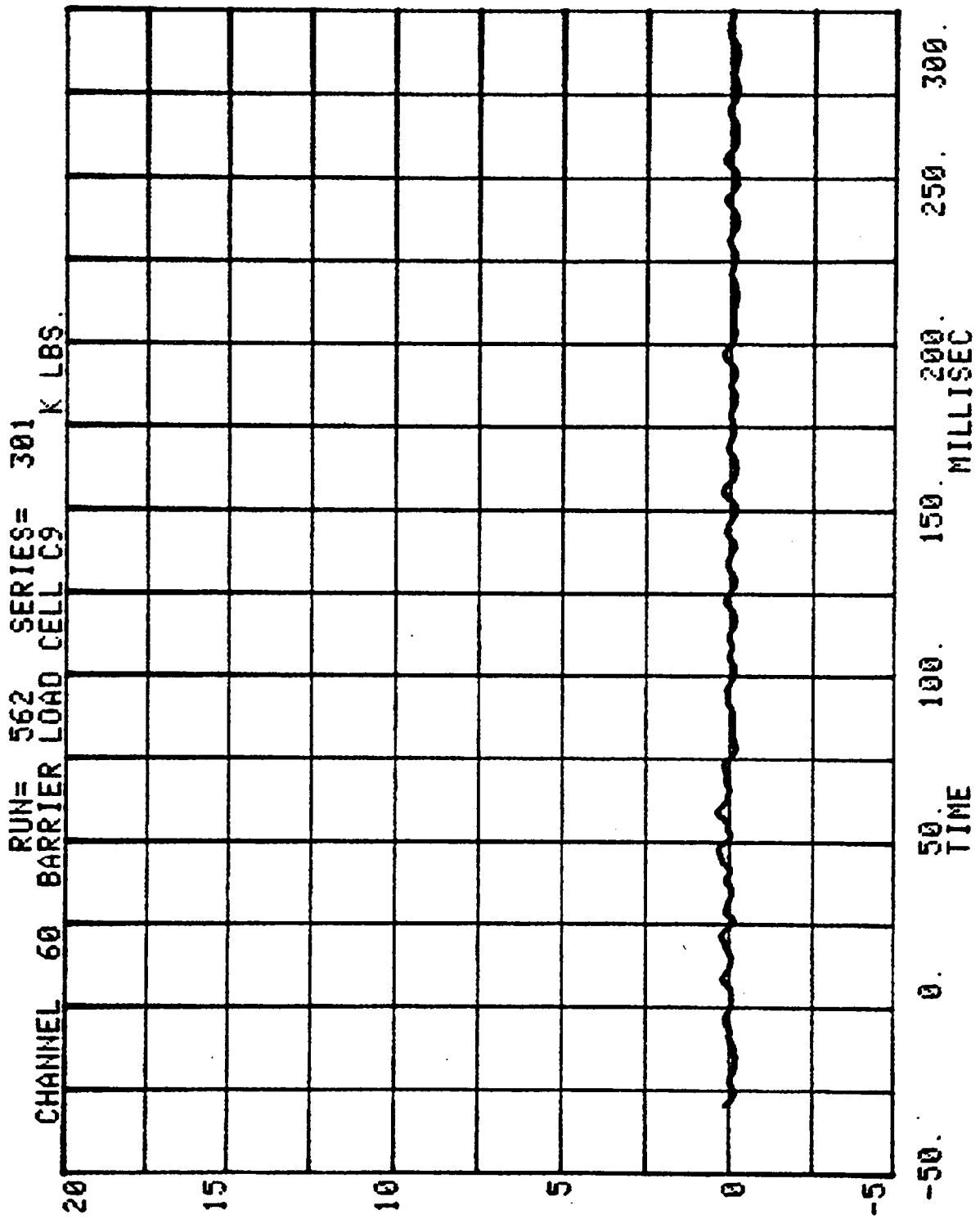

CHANNEL 55 BARRIER LOAD CELL C4
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

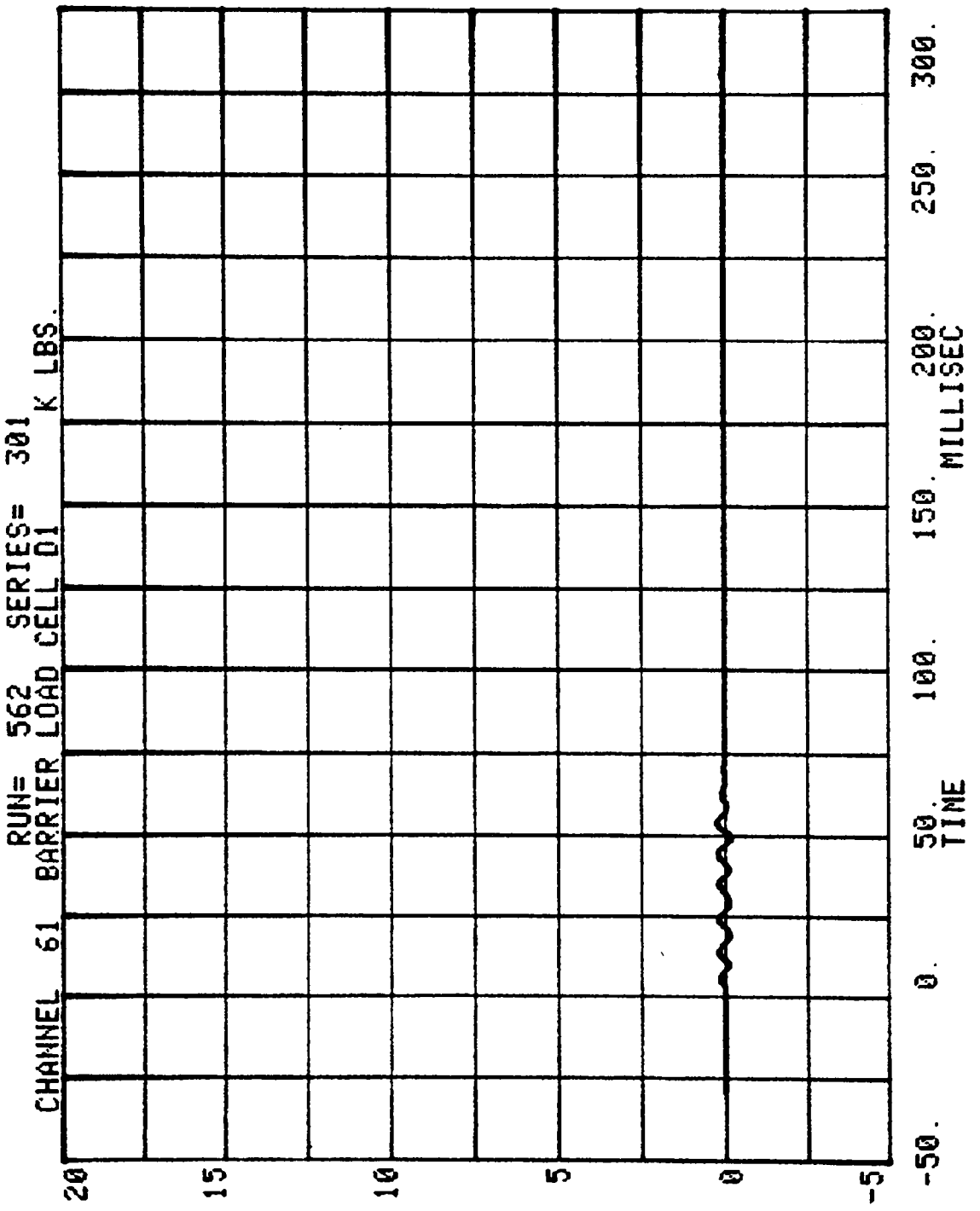

CHANNEL 56 BARRIER LOAD CELL C5
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

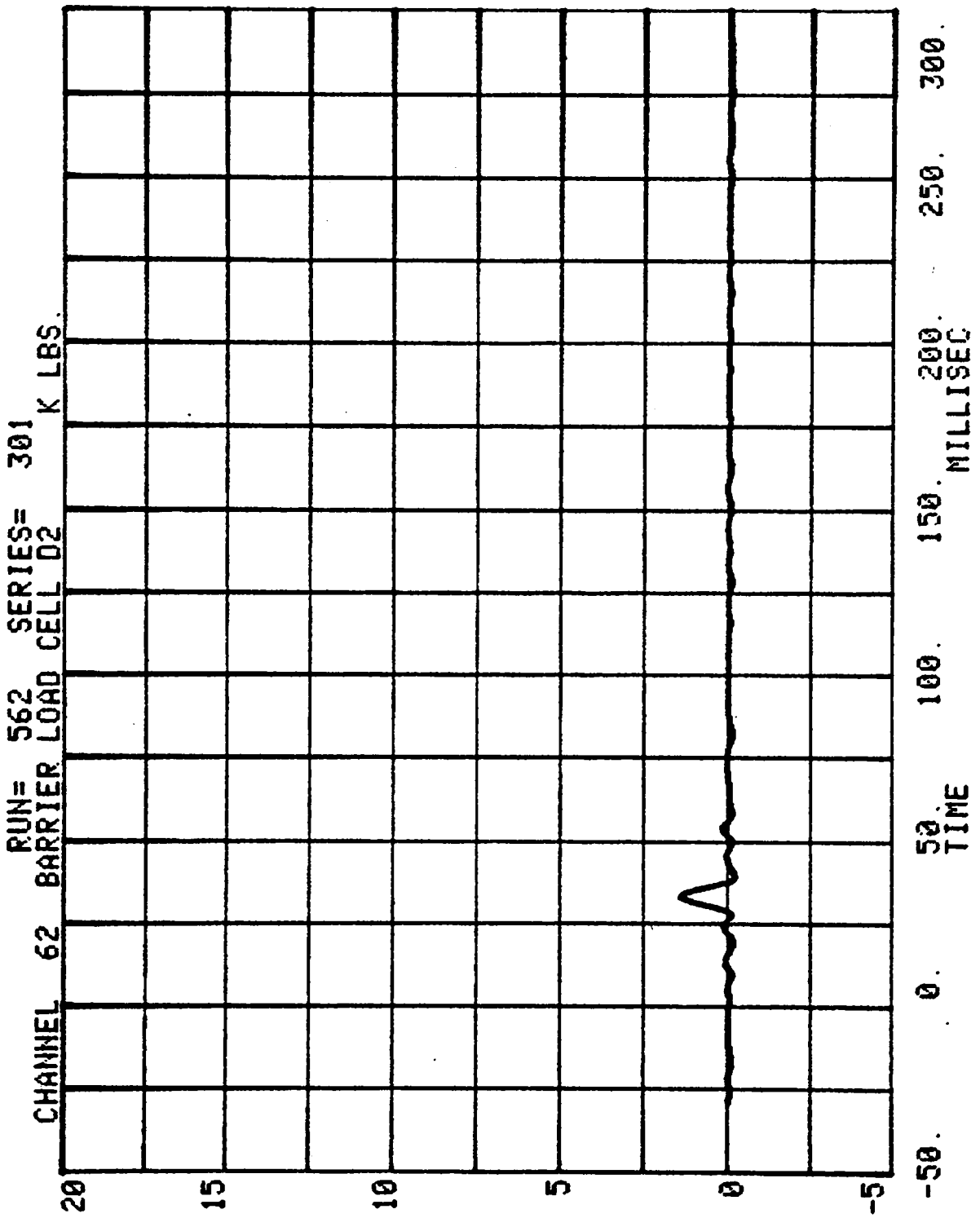

CHANNEL 57 BARRIER LOAD CELL C6
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

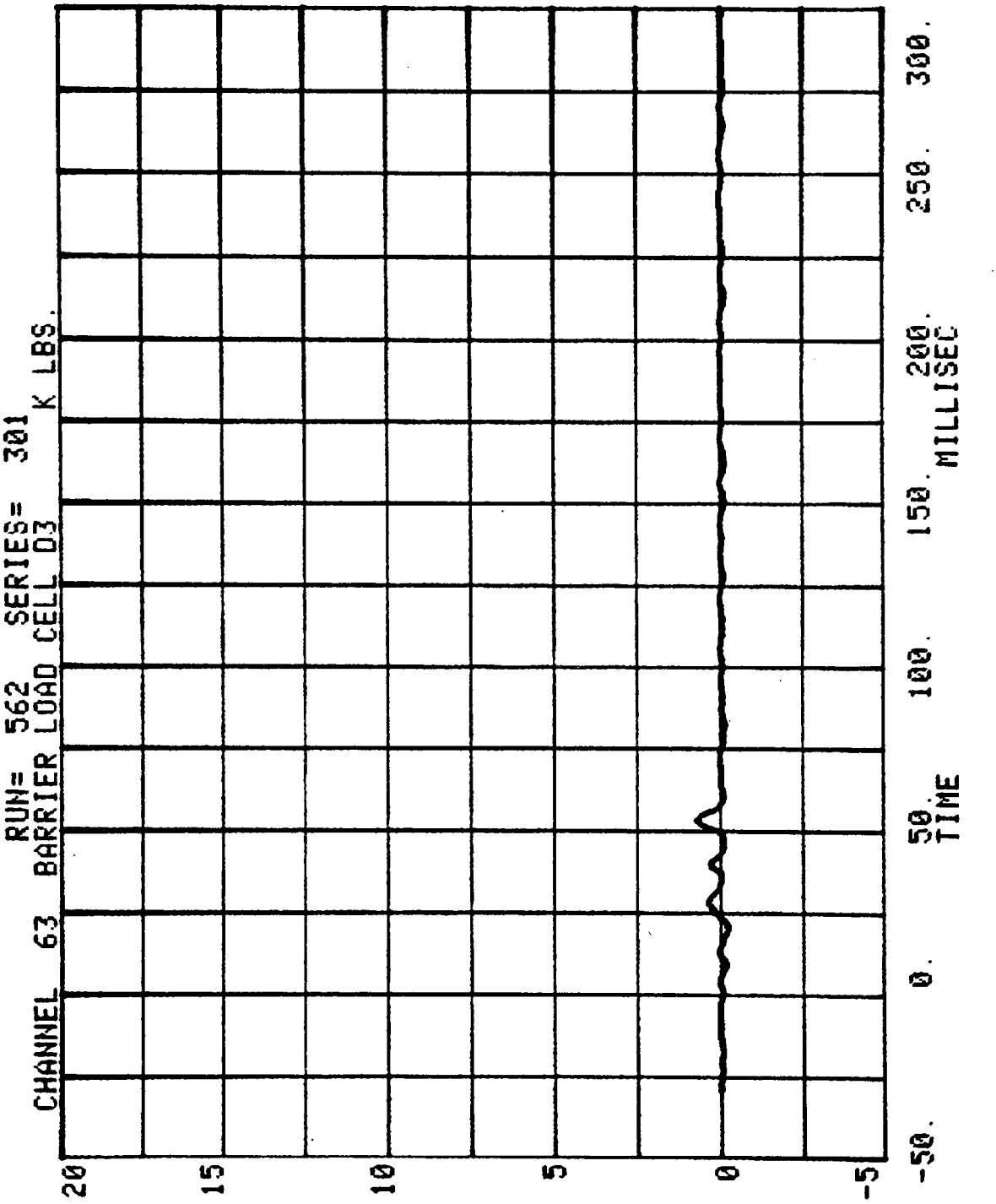

CHANNEL 58 BARRIER LOAD CELL C7
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 59 BARRIER LOAD CELL C8
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

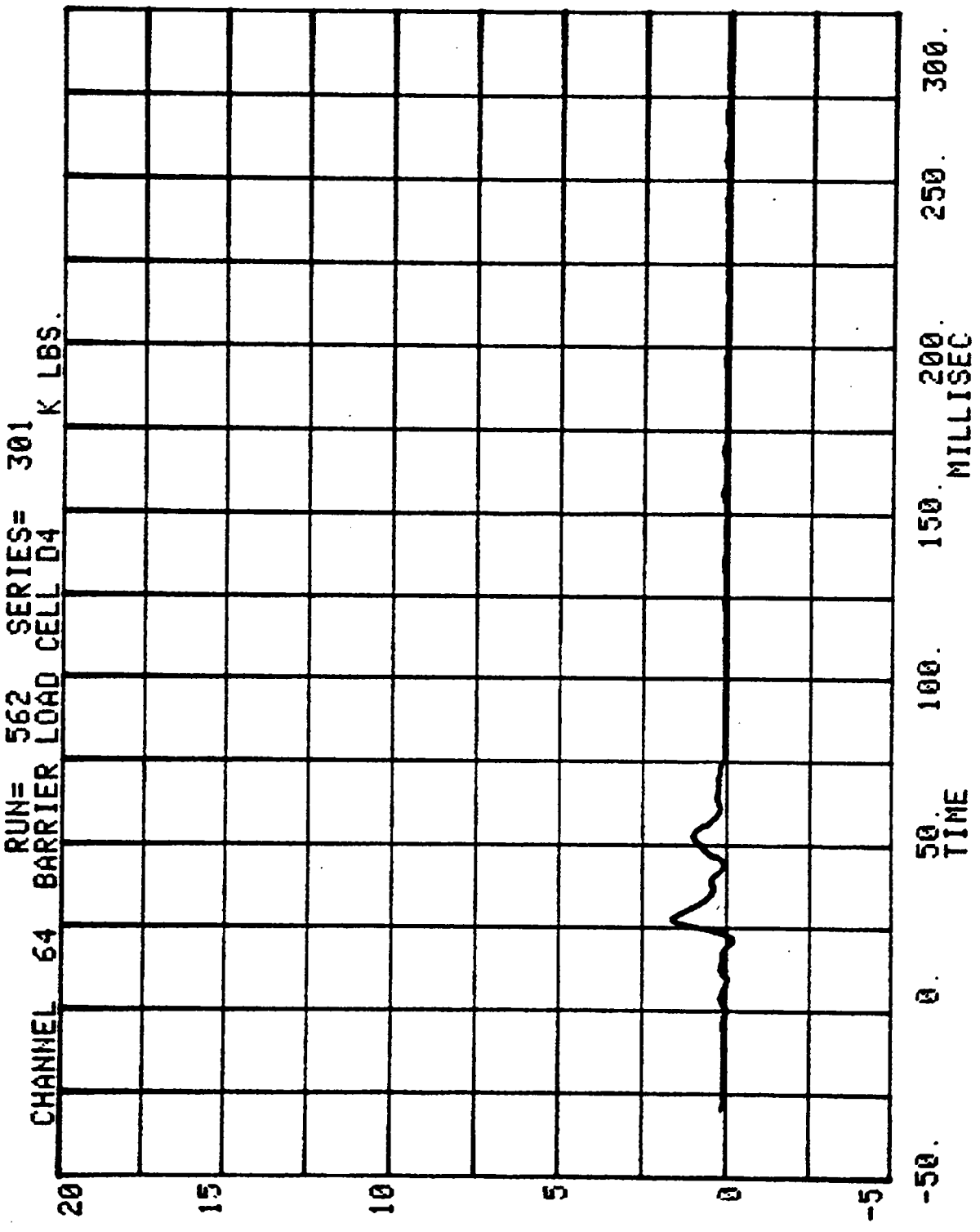

CHANNEL 60 BARRIER LOAD CELL C9
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

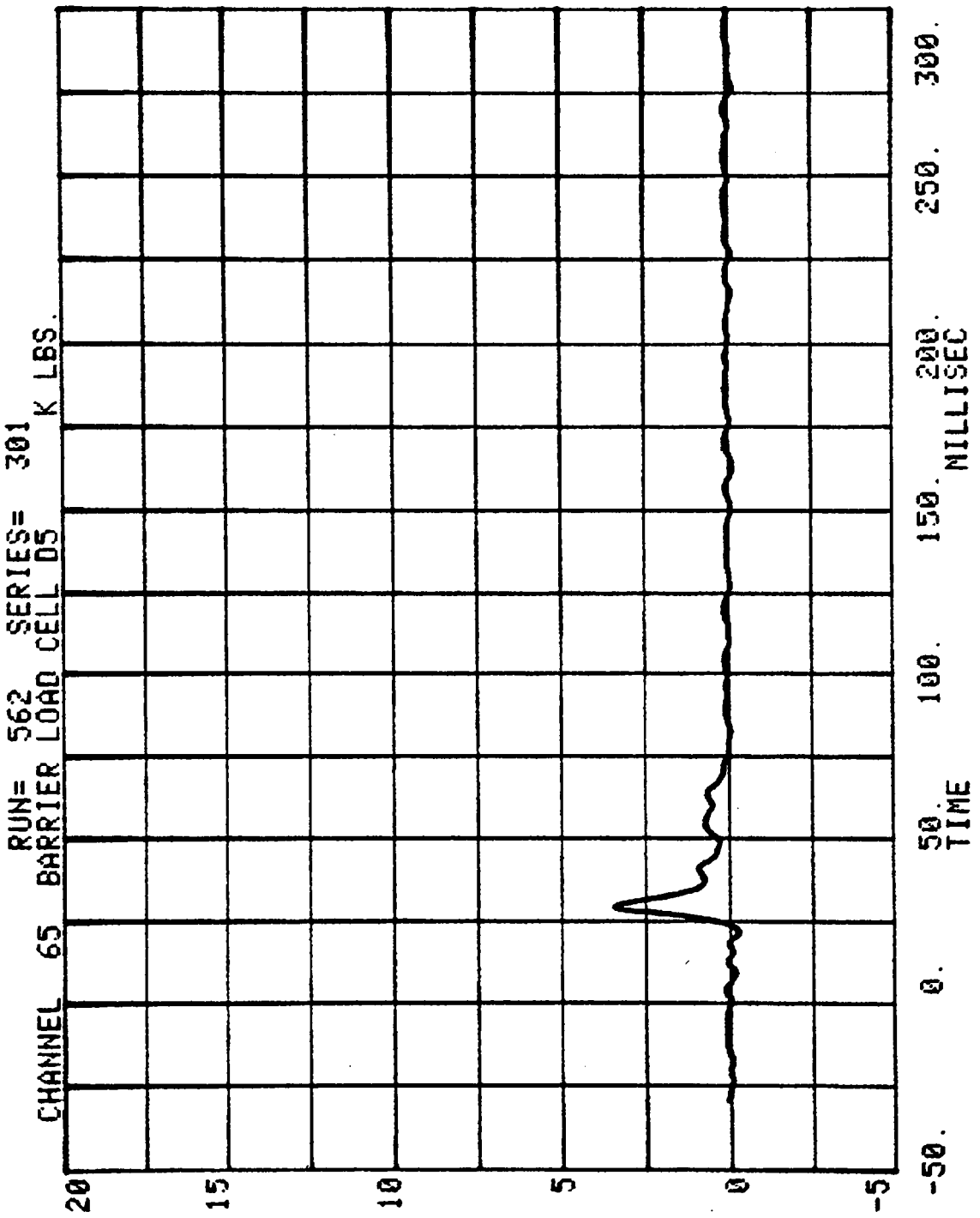

CHANNEL 61 BARRIER LOAD CELL 01
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

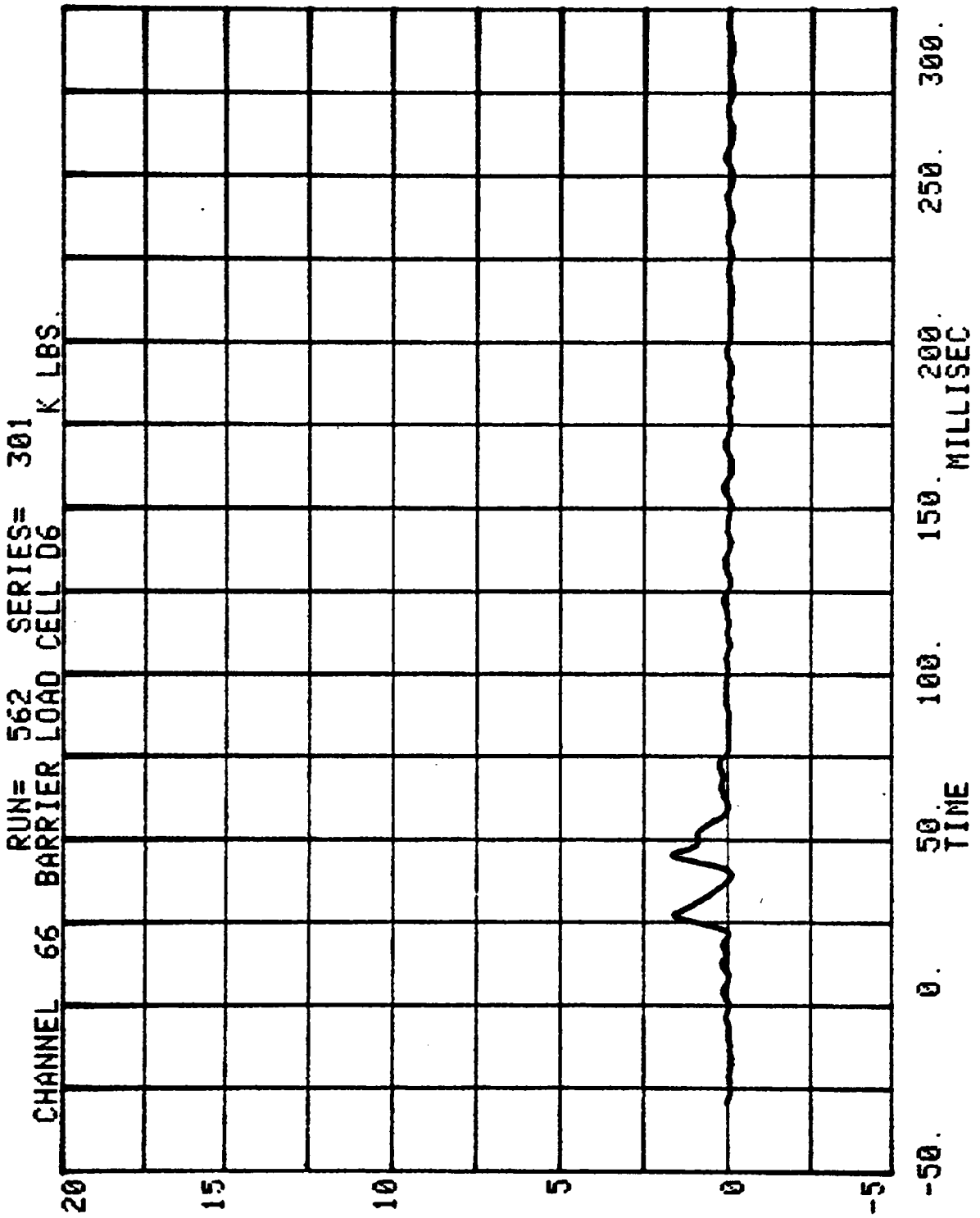

CHANNEL 62 BARRIER LOAD CELL D2
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

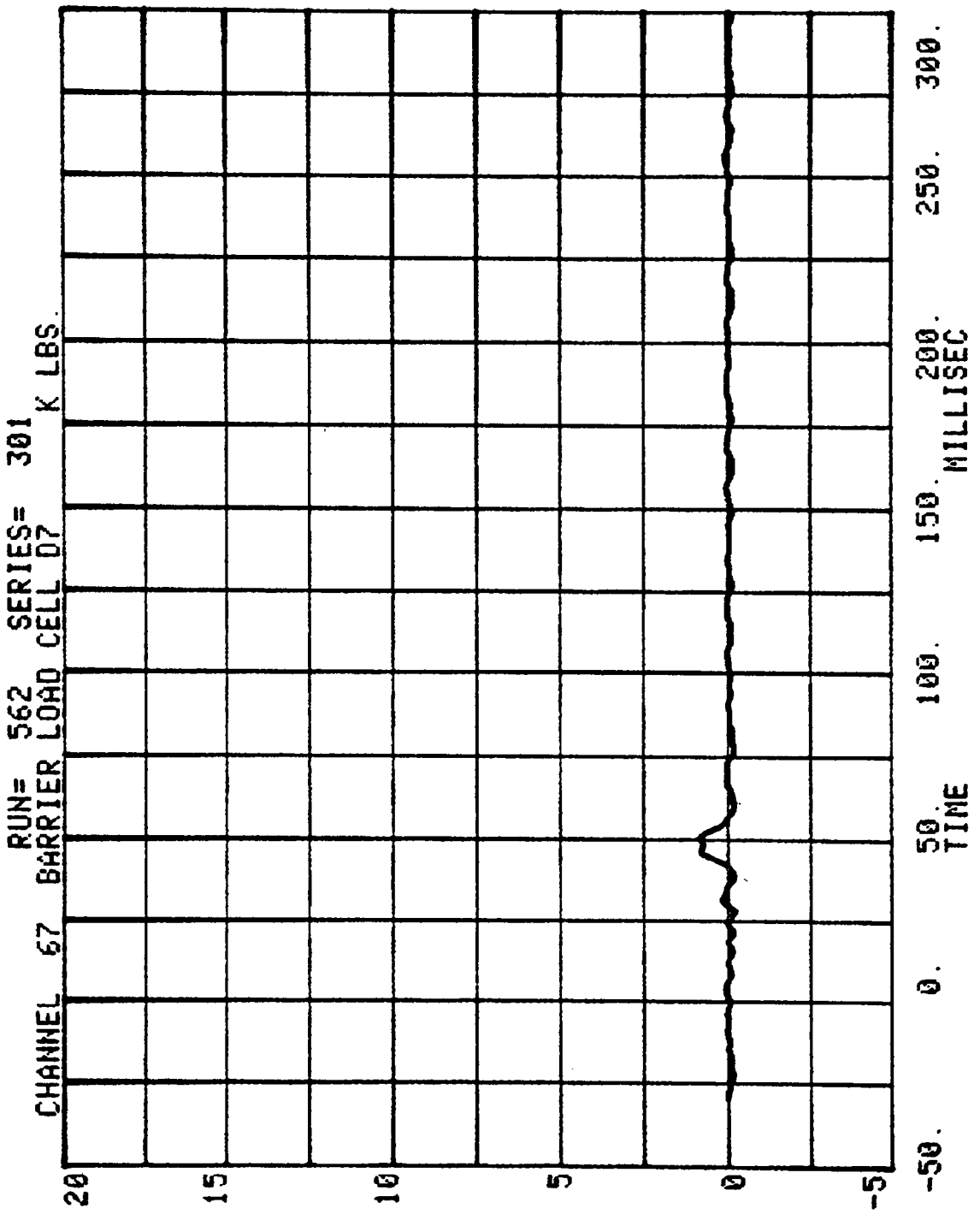

CHANNEL 63
RUN= 562 SERIES= 301
BARRIER LOAD CELL 03
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

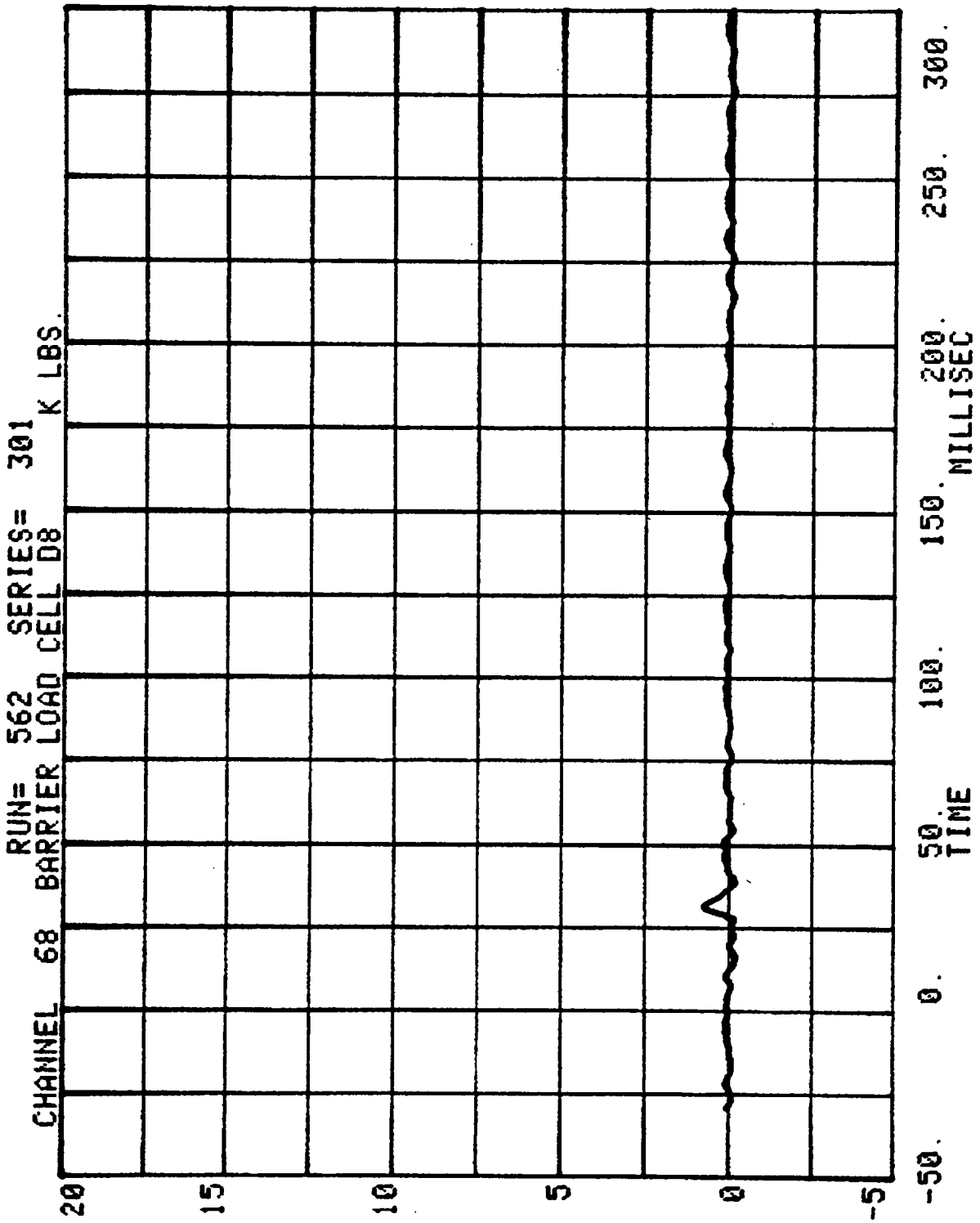
7103-V-2

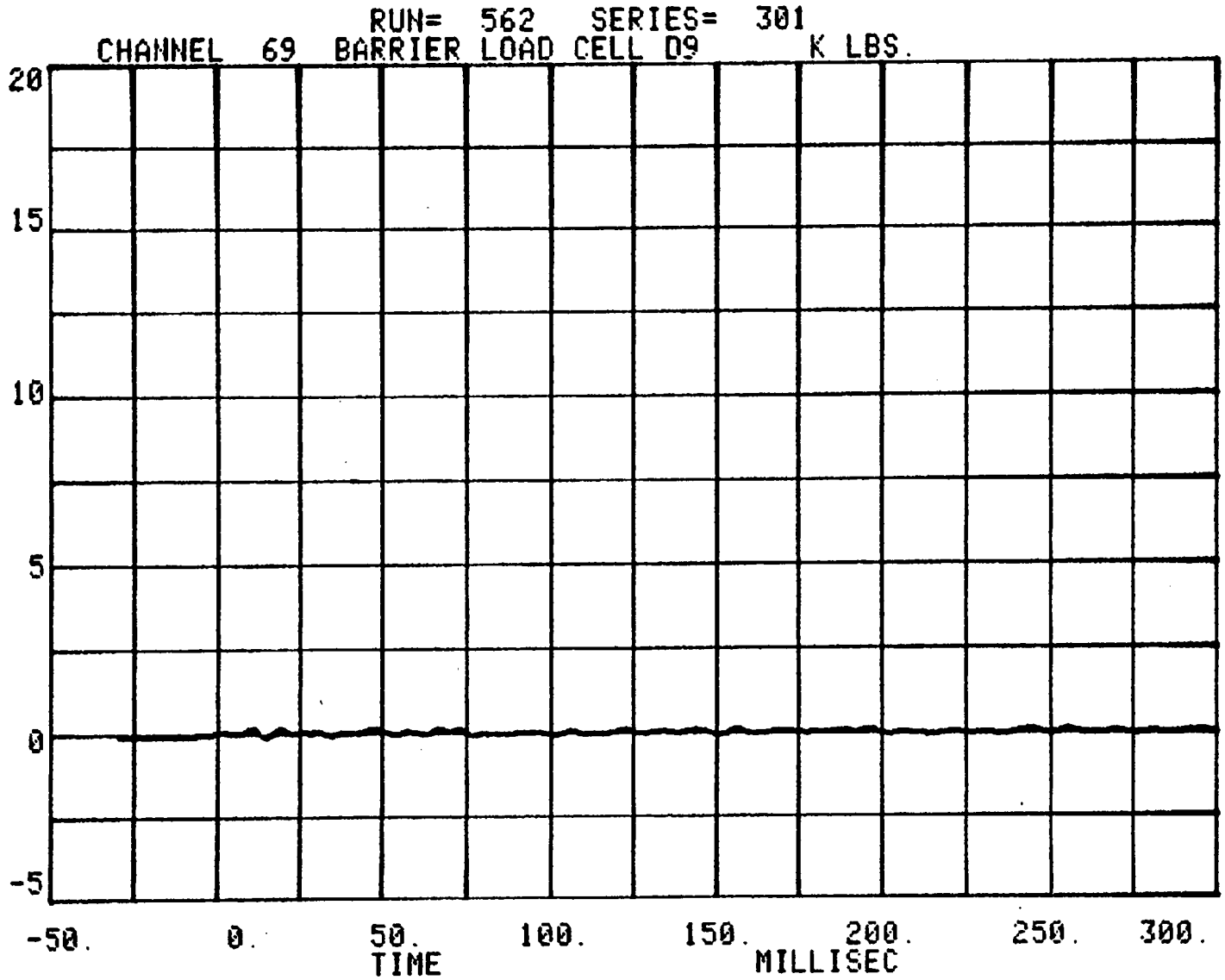

RUN= 562 SERIES= 301
BARRIER LOAD CELL D4
CHANNEL 64
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

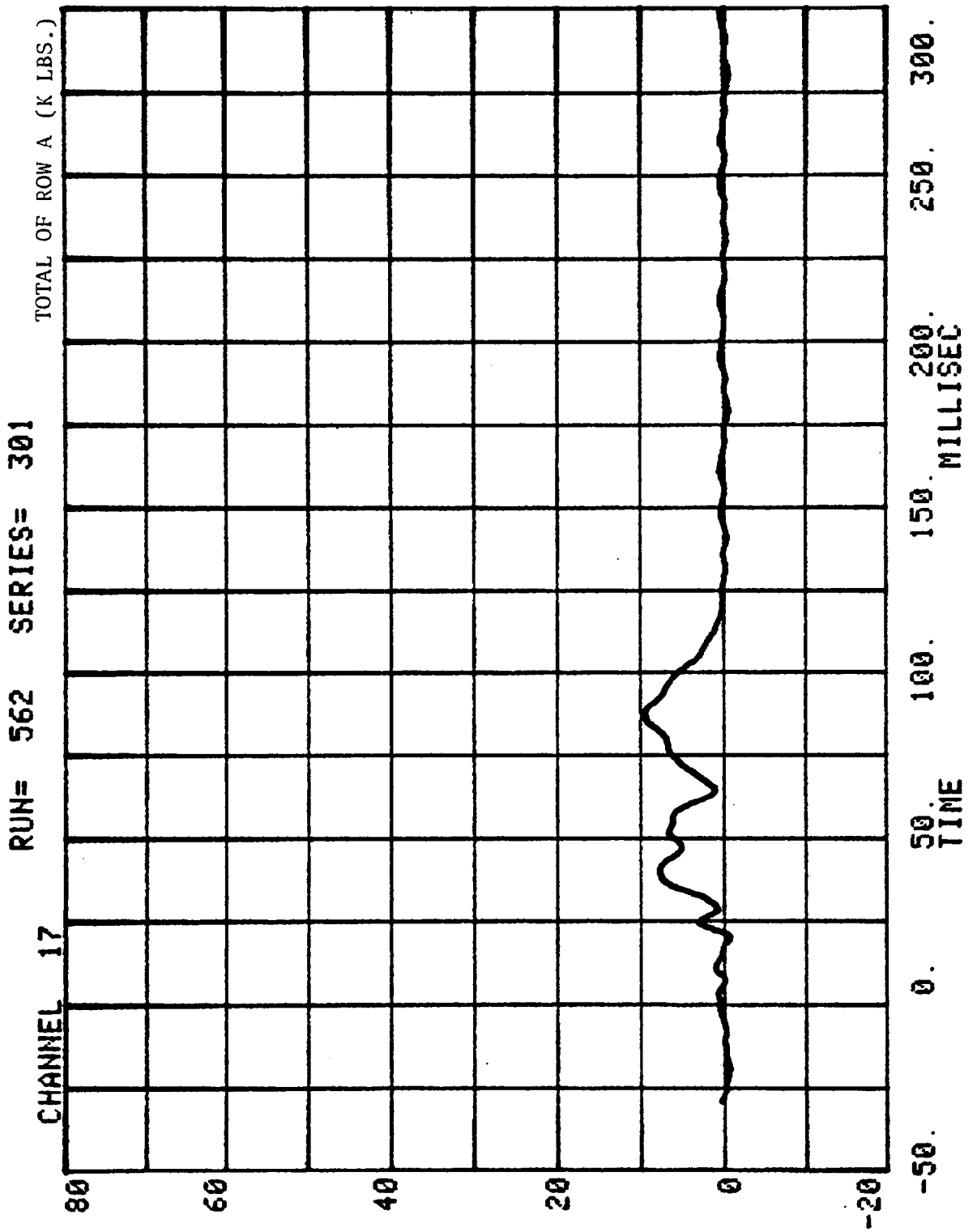

CHANNEL 65 BARRIER LOAD CELL 05
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

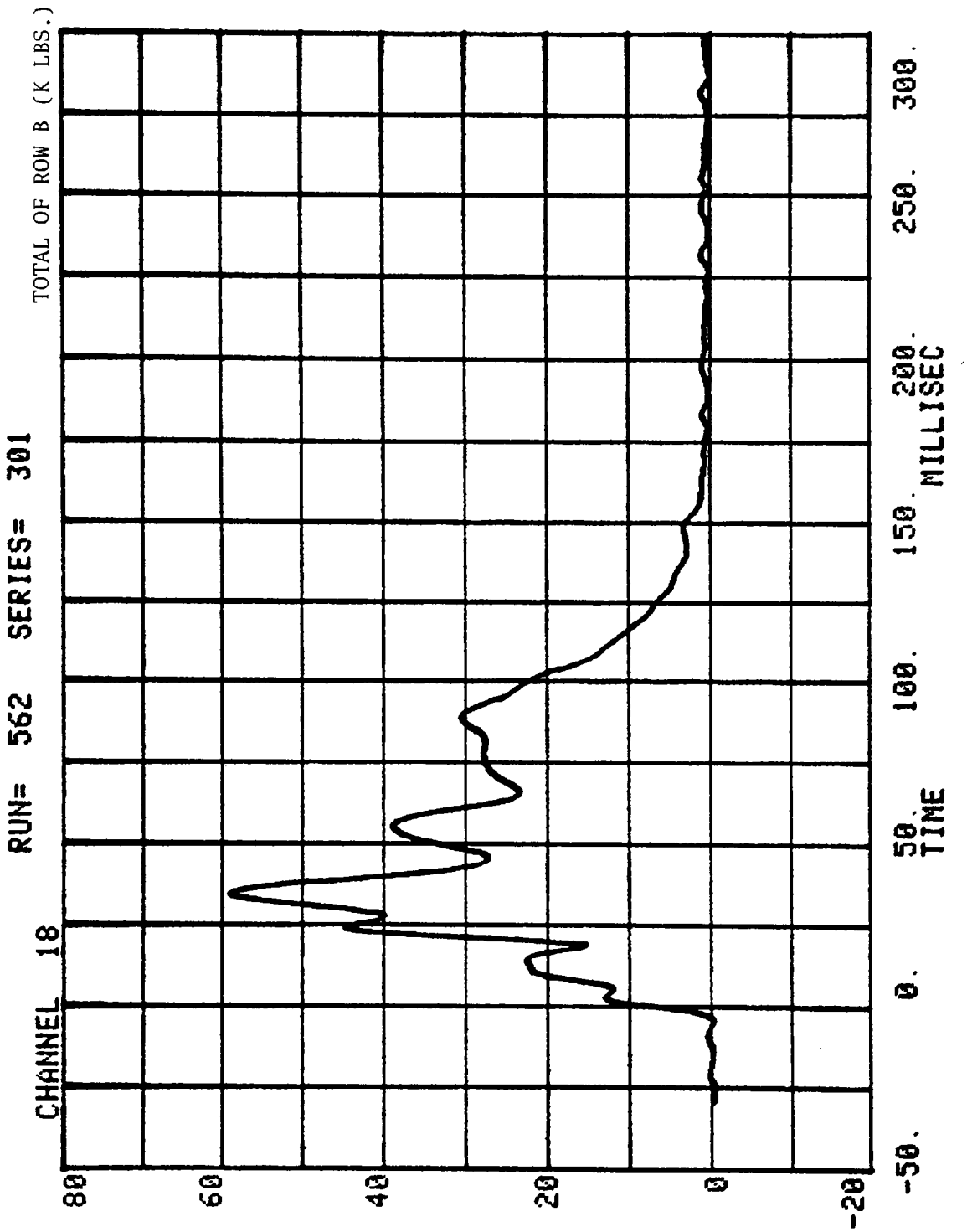

CHANNEL 66 BARRIER LOAD CELL D6
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

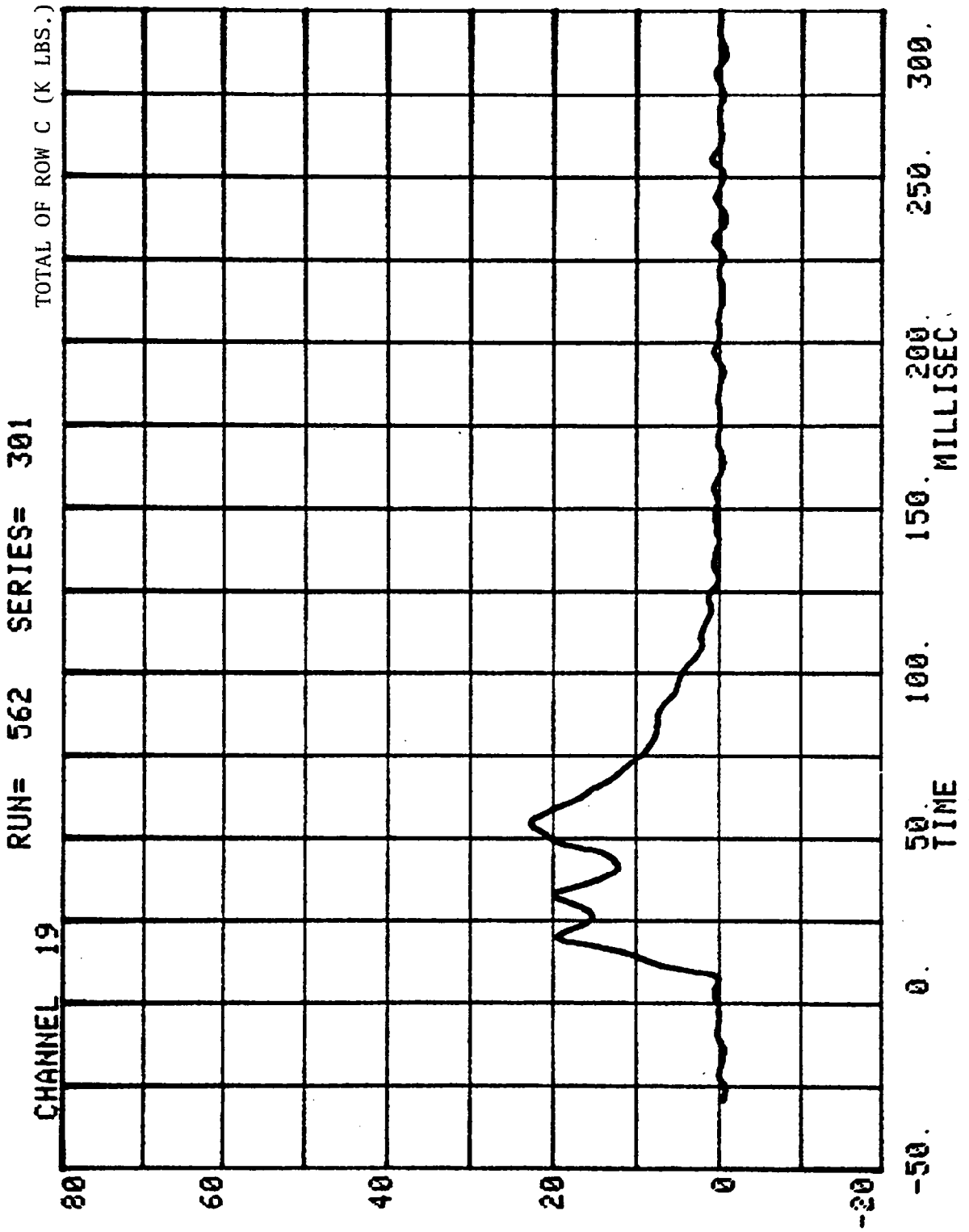

CHANNEL 67 BARRIER LOAD CELL 07
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

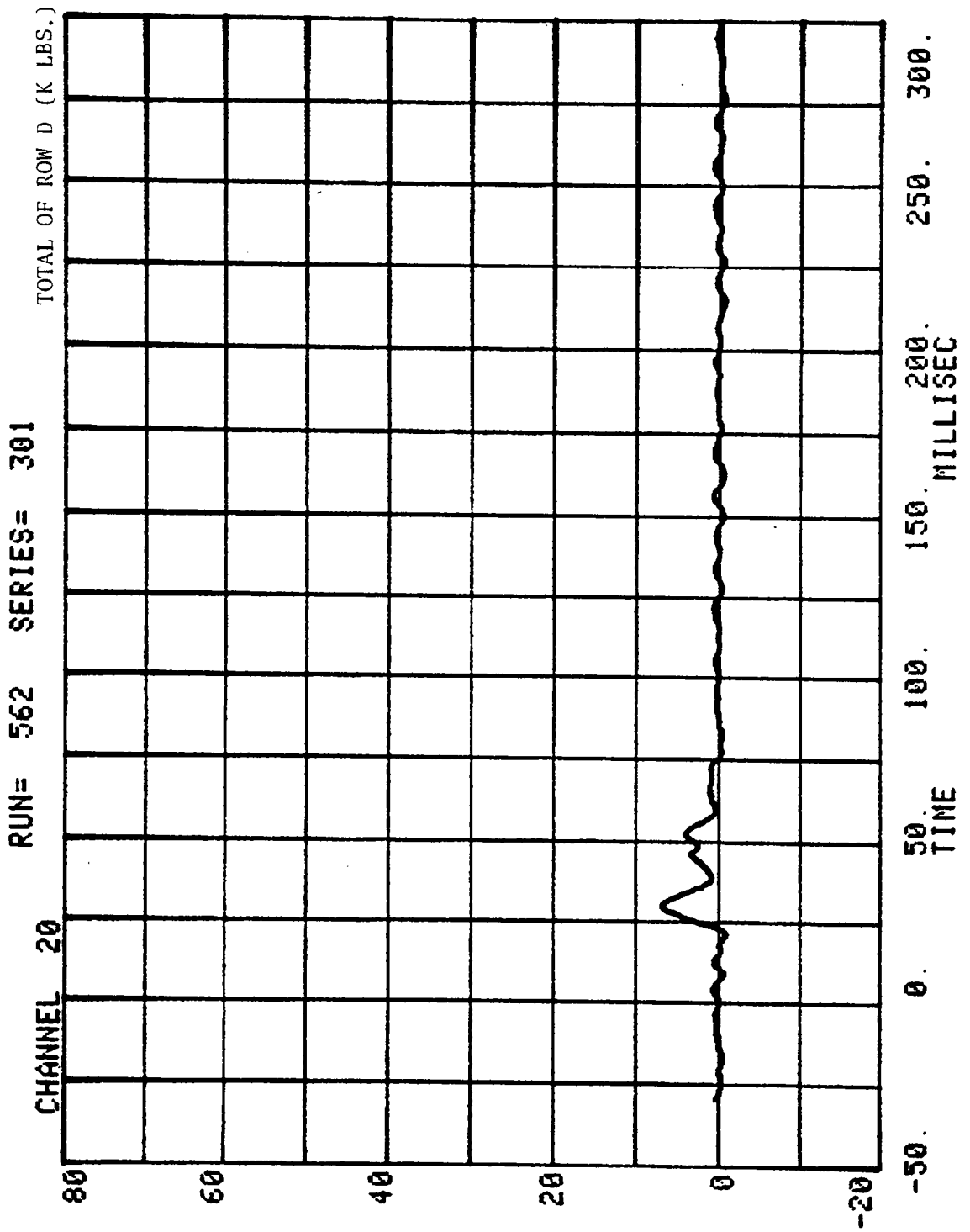

CHANNEL 68 BARRIER LOAD CELL D8
RUN= 562 SERIES= 301
K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

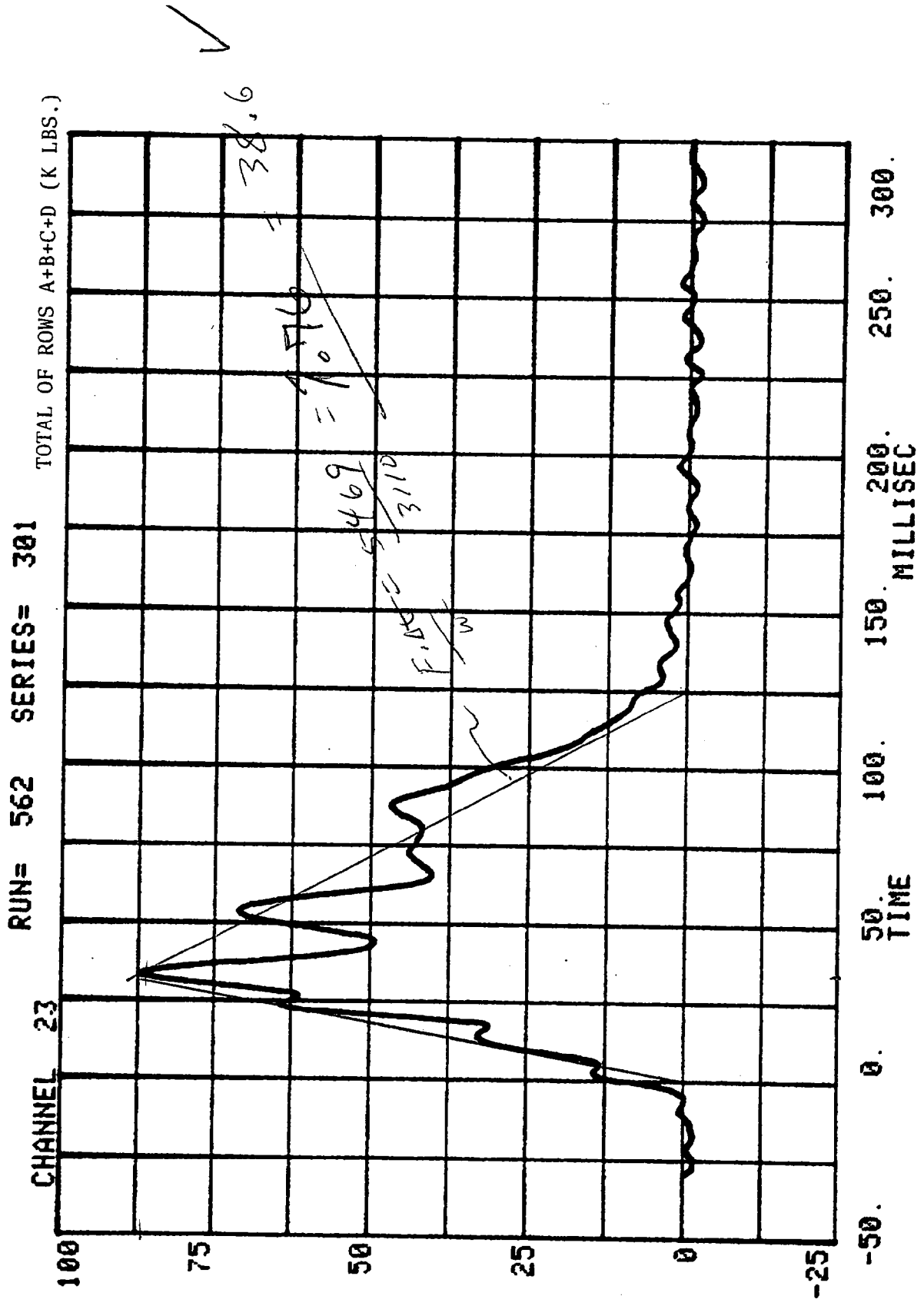

RUN= 562 SERIES= 301
CHANNEL 69 BARRIER LOAD CELL D9 K LBS.
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 17
RUN= 562 SERIES= 301
TOTAL OF ROW A (K LBS.)
80
60
40
20
0
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 18
RUN= 562 SERIES= 301
TOTAL OF ROW B (K LBS.)
80
60
40
20
0
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 19
RUN= 562 SERIES= 301
TOTAL OF ROW C (K LBS.)
80
60
40
20
0
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 20
RUN= 562 SERIES= 301
TOTAL OF ROW D (K LBS.)
80
60
40
20
0
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 562 SERIES= 301
CHANNEL 23
TOTAL OF ROWS A+B+C+D (K LBS.)
100
75
50
25
0
-25
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

TEST NO. CD0301

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= 562

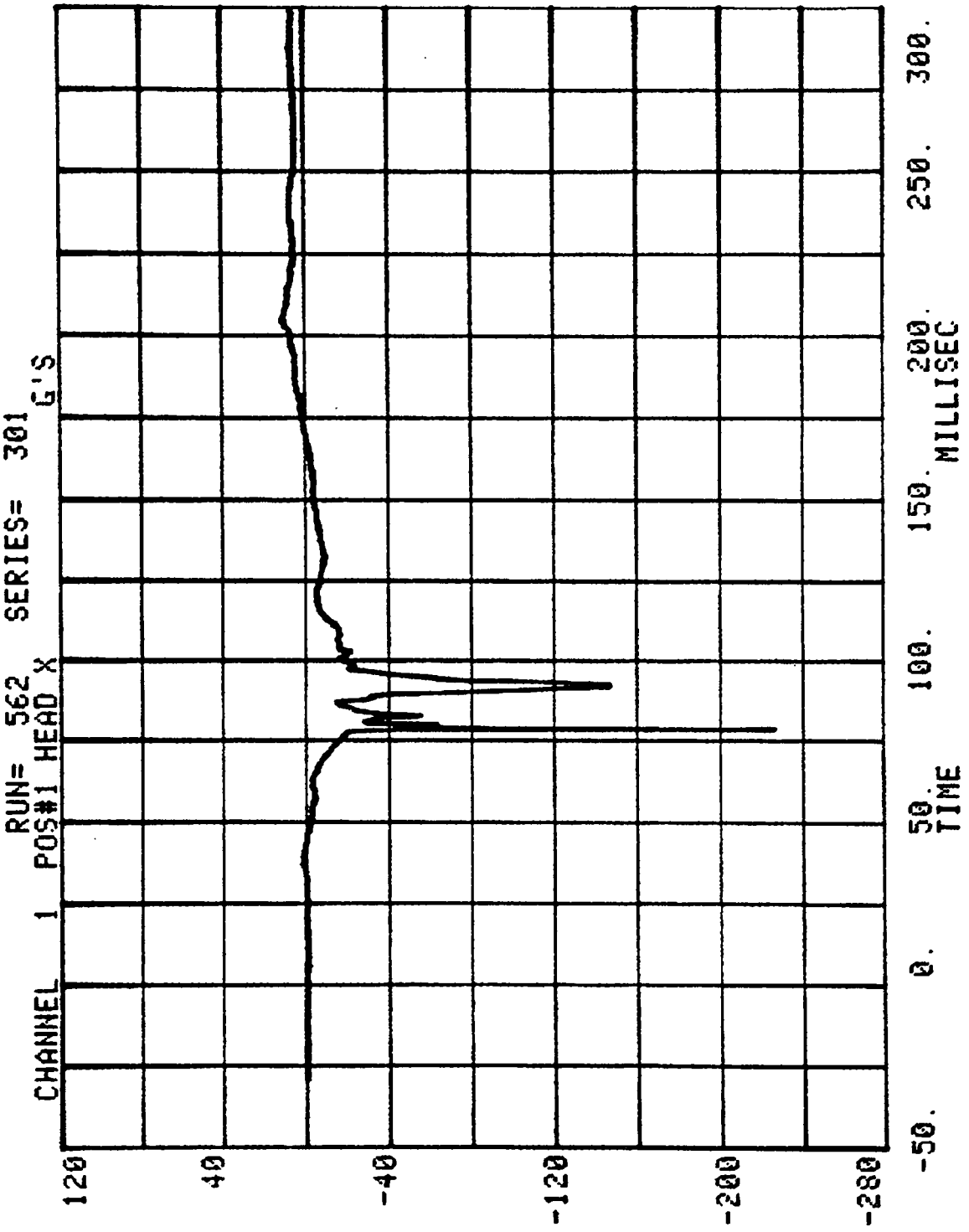
DRIVER POS#1 HEAD RESULTANT

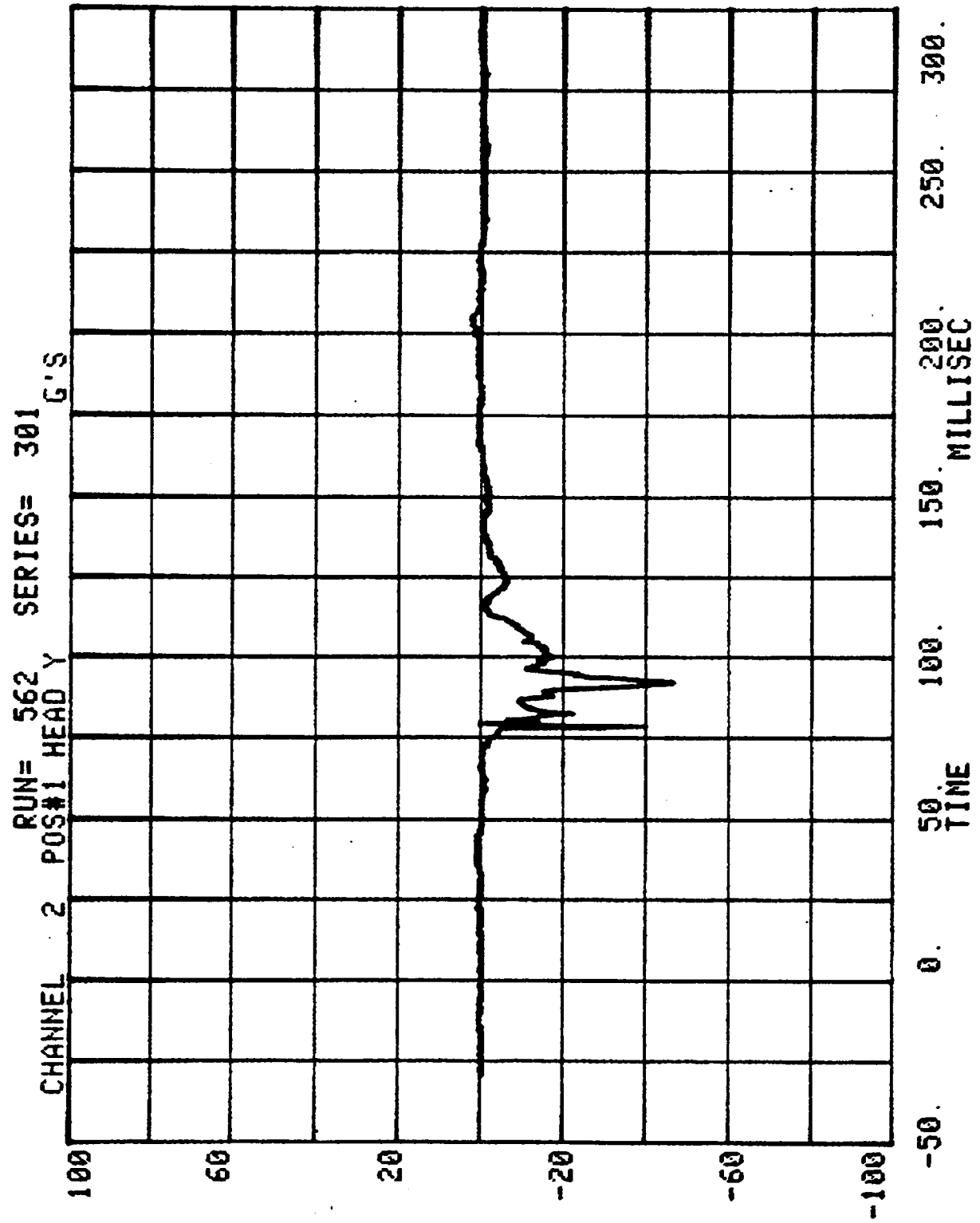
HIC= 946.5 FROM T1= .07837 TO T2= .10200

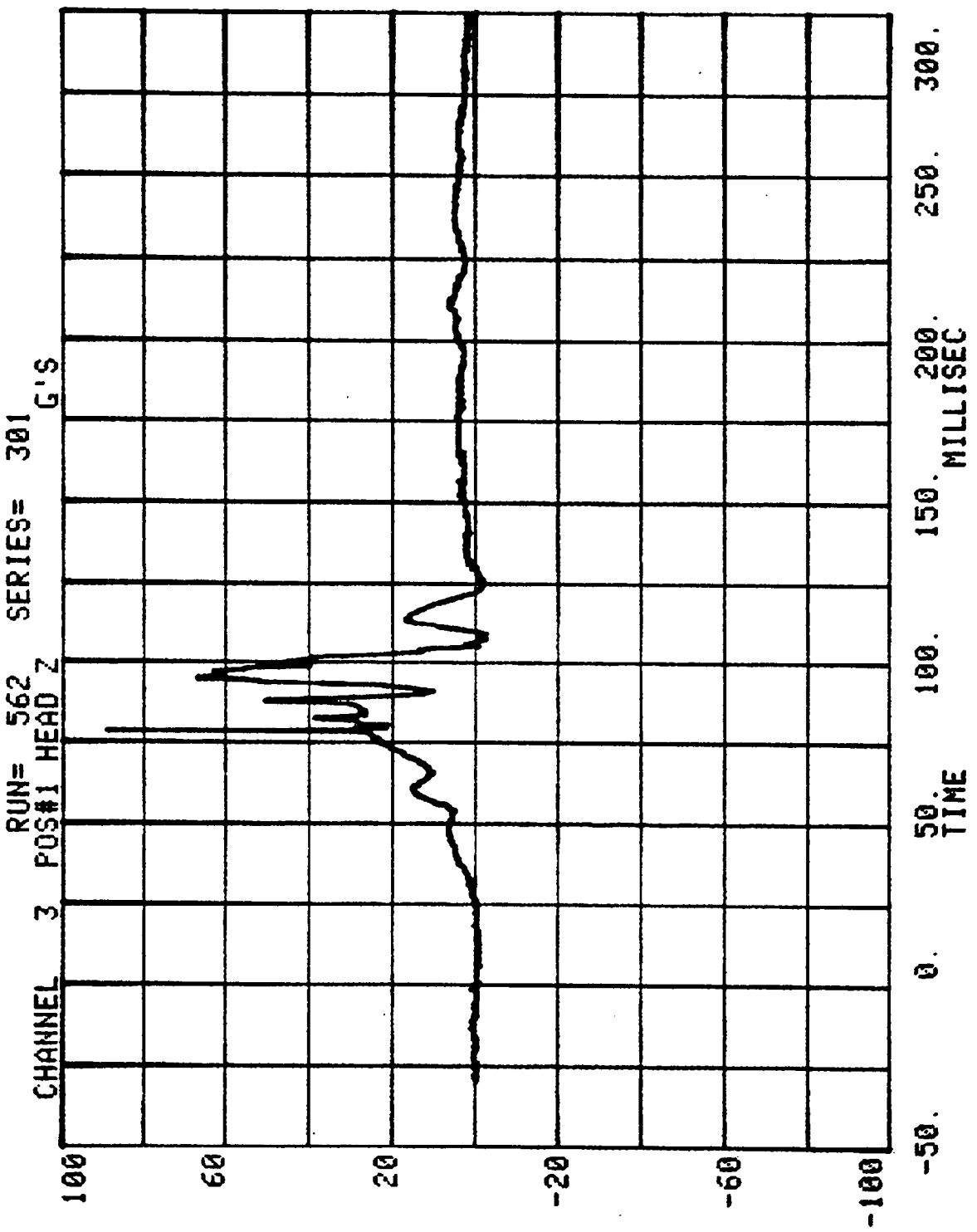
AVERAGE ACCELERATION BETWEEN T1 AND T2= 69.4G'S

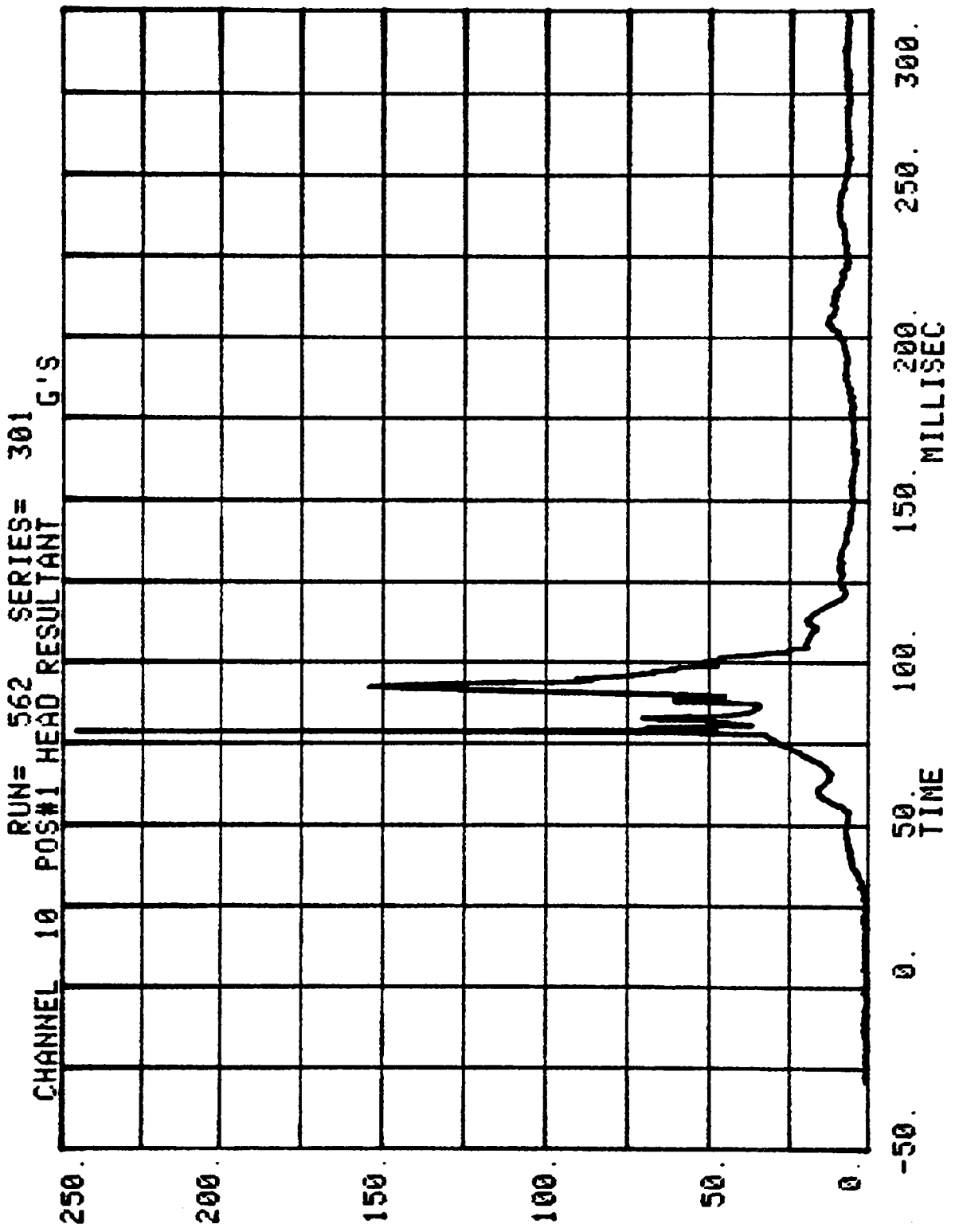
EVENT TIME= 300.0 MSEC

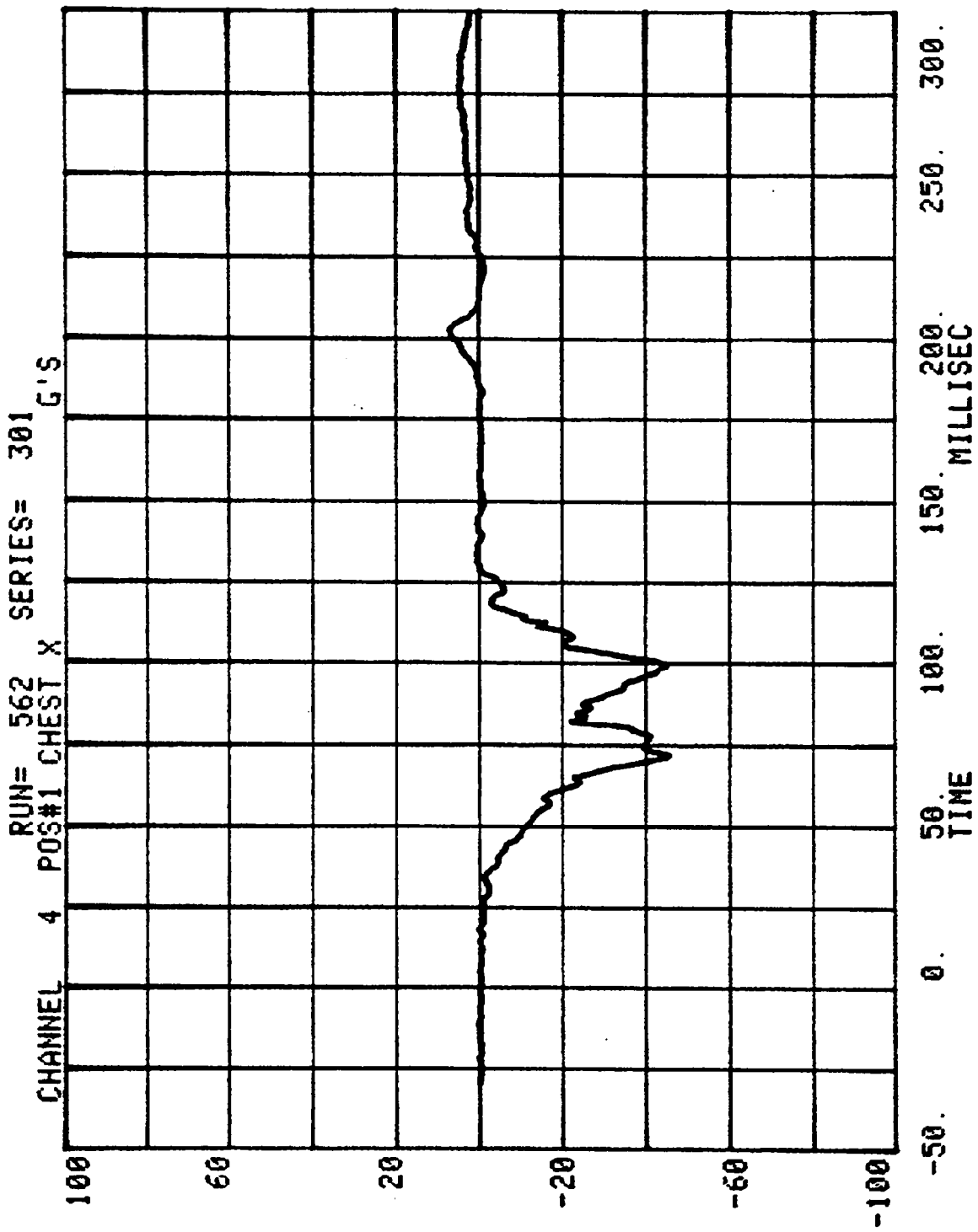
SEVERITY INDEX=1665.6

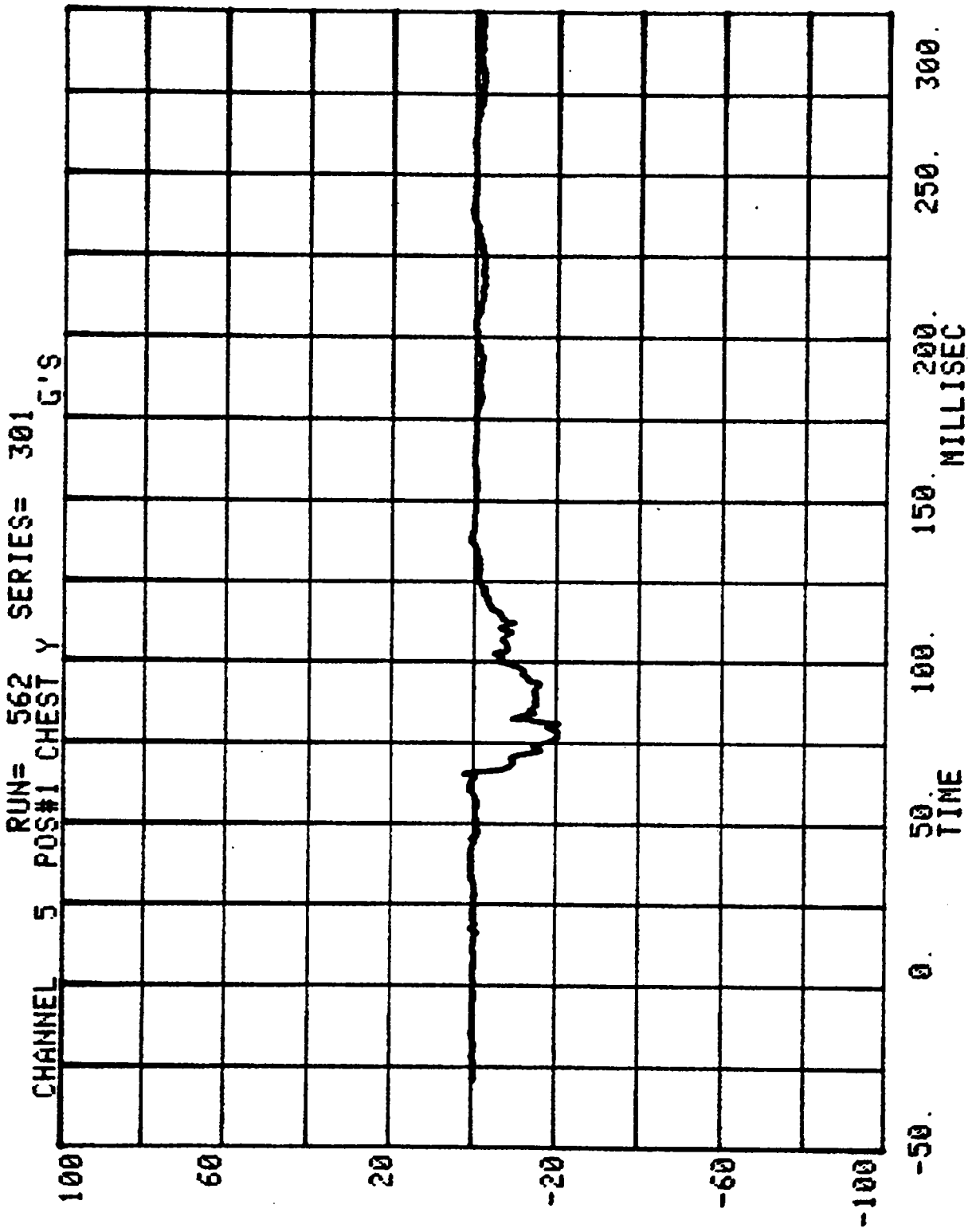

CHANNEL 1 POS#1 HEAD X
RUN= 562 SERIES= 301
G'S
120
40
-40
-120
-200
-280
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

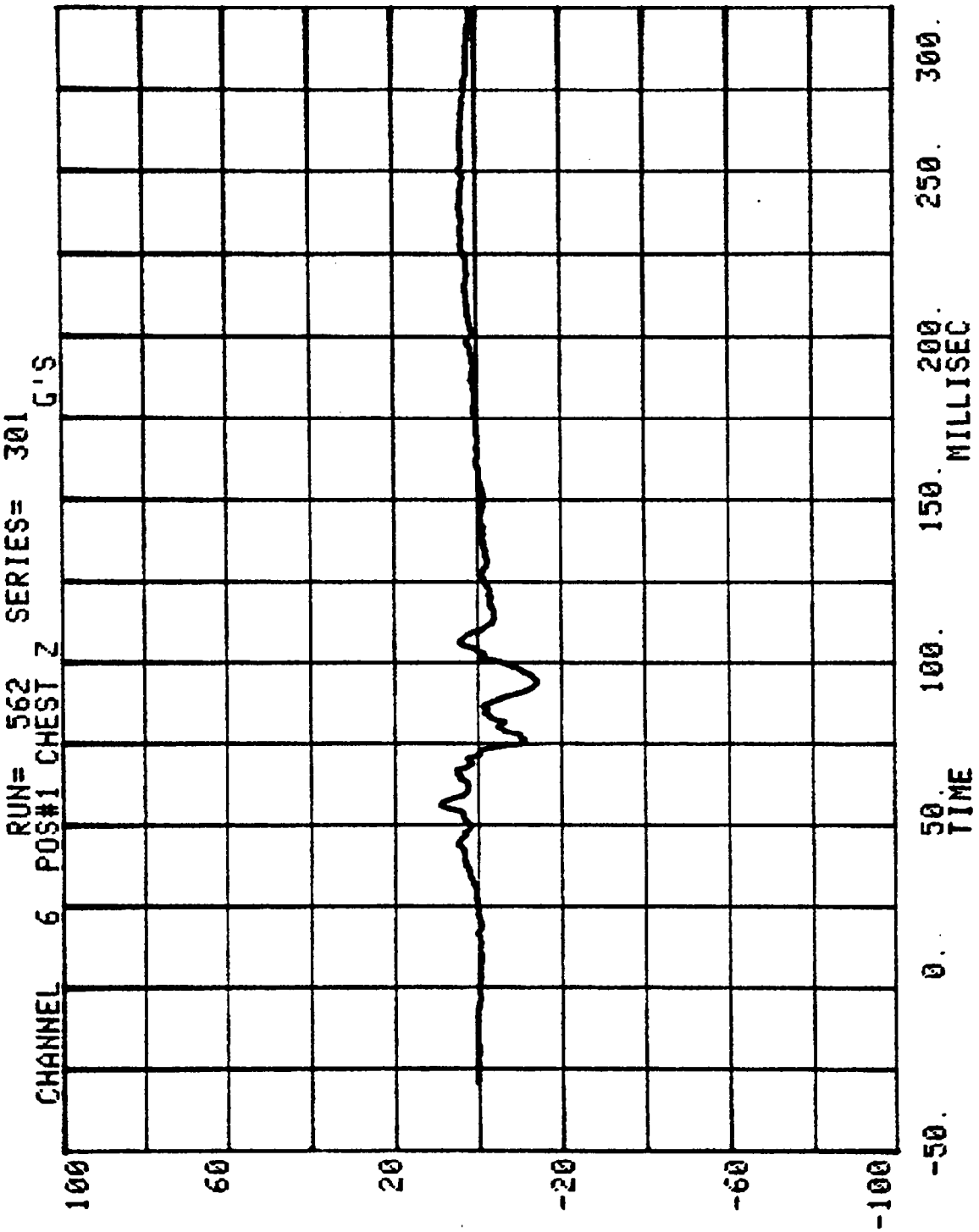

CHANNEL 2 POS#1 HEAD Y
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 3 POS#1 HEAD Z
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

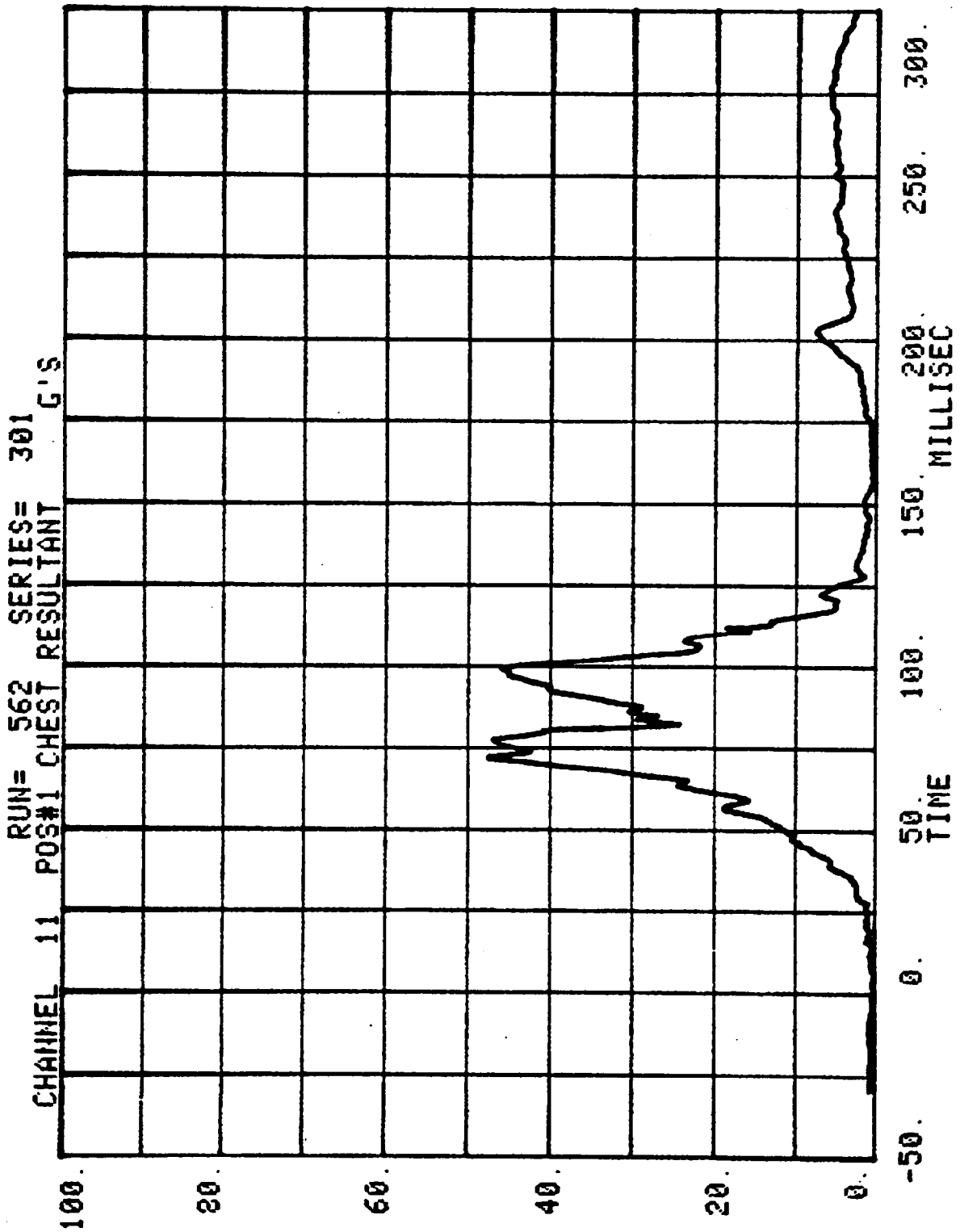

CHANNEL 10 POS#1 HEAD RESULTANT
RUN= 562 SERIES= 301
G'S
250.
200.
150.
100.
50.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 4 RUN= 562 SERIES= 301
POS#1 CHEST X
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

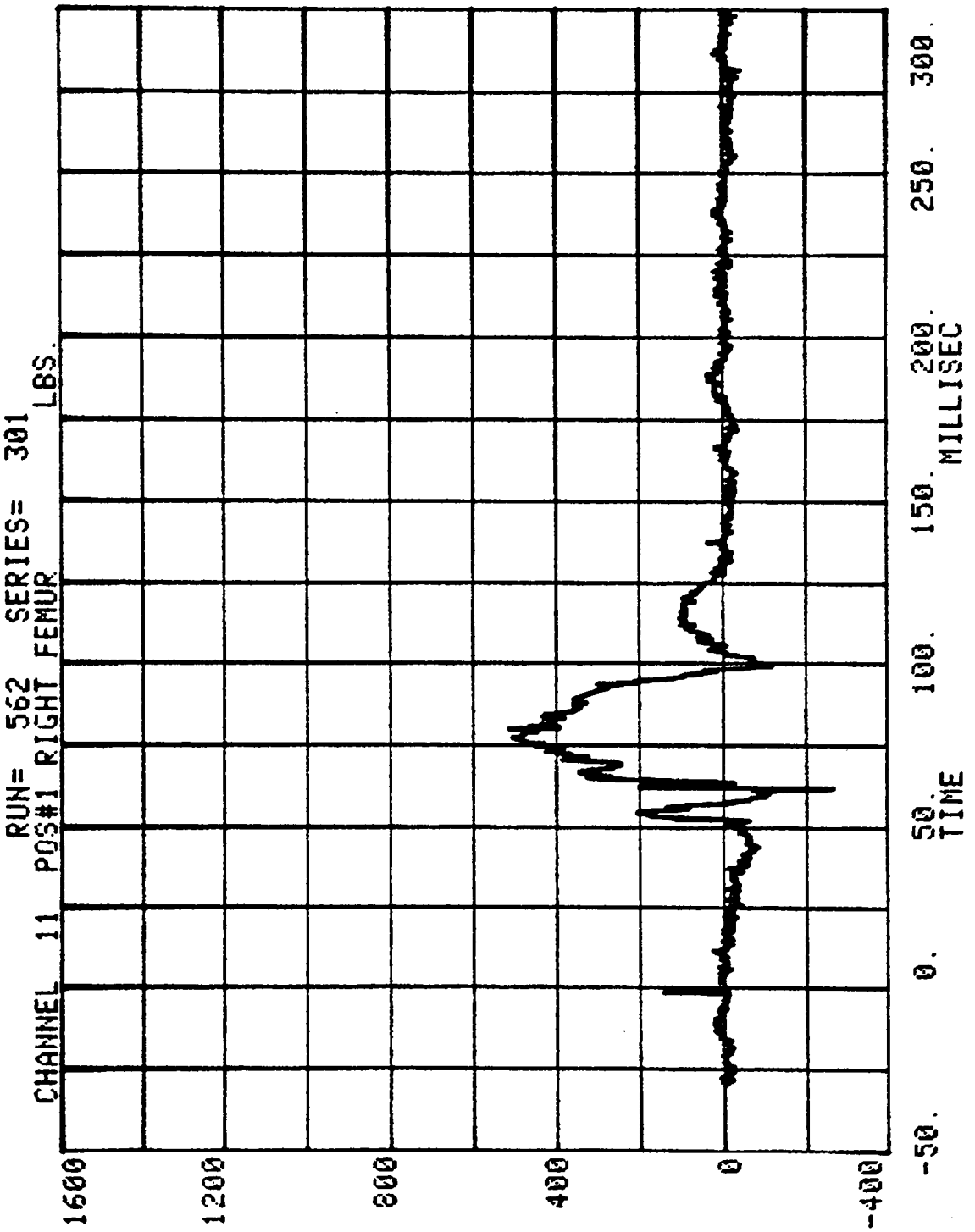

CHANNEL 5 POS#1 CHEST Y
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

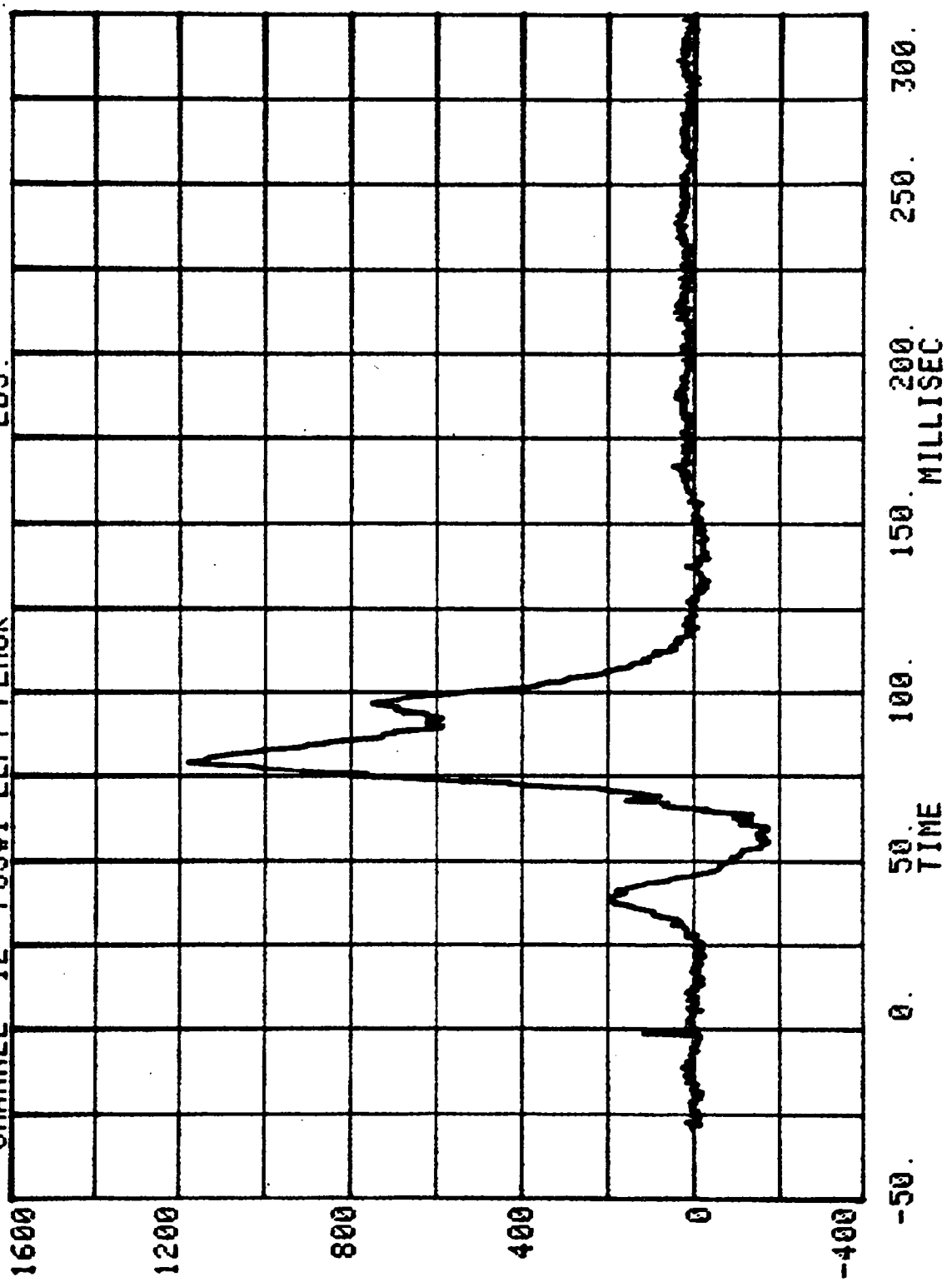

CHANNEL 6 POS#1 CHEST Z
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

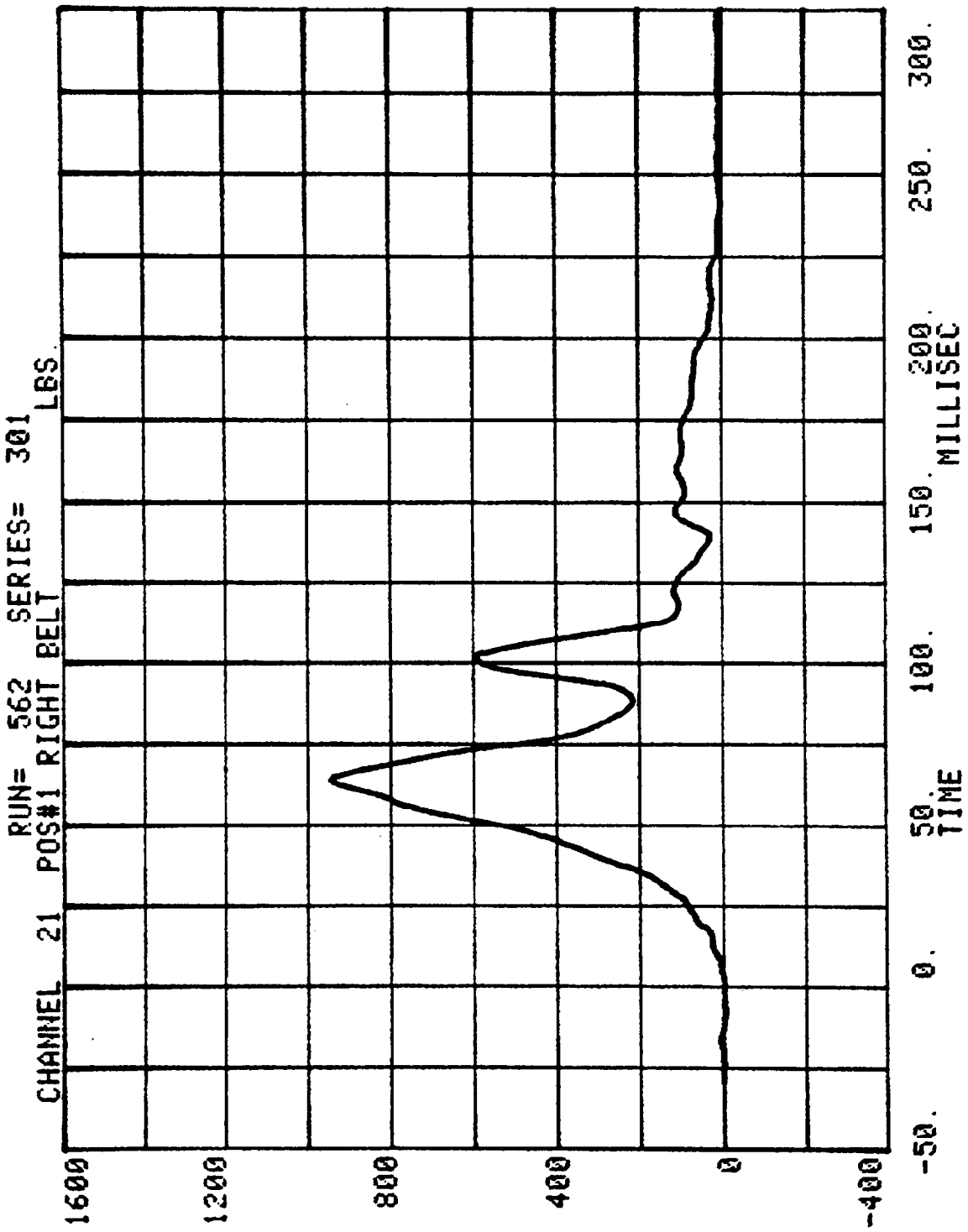
7103-V-2

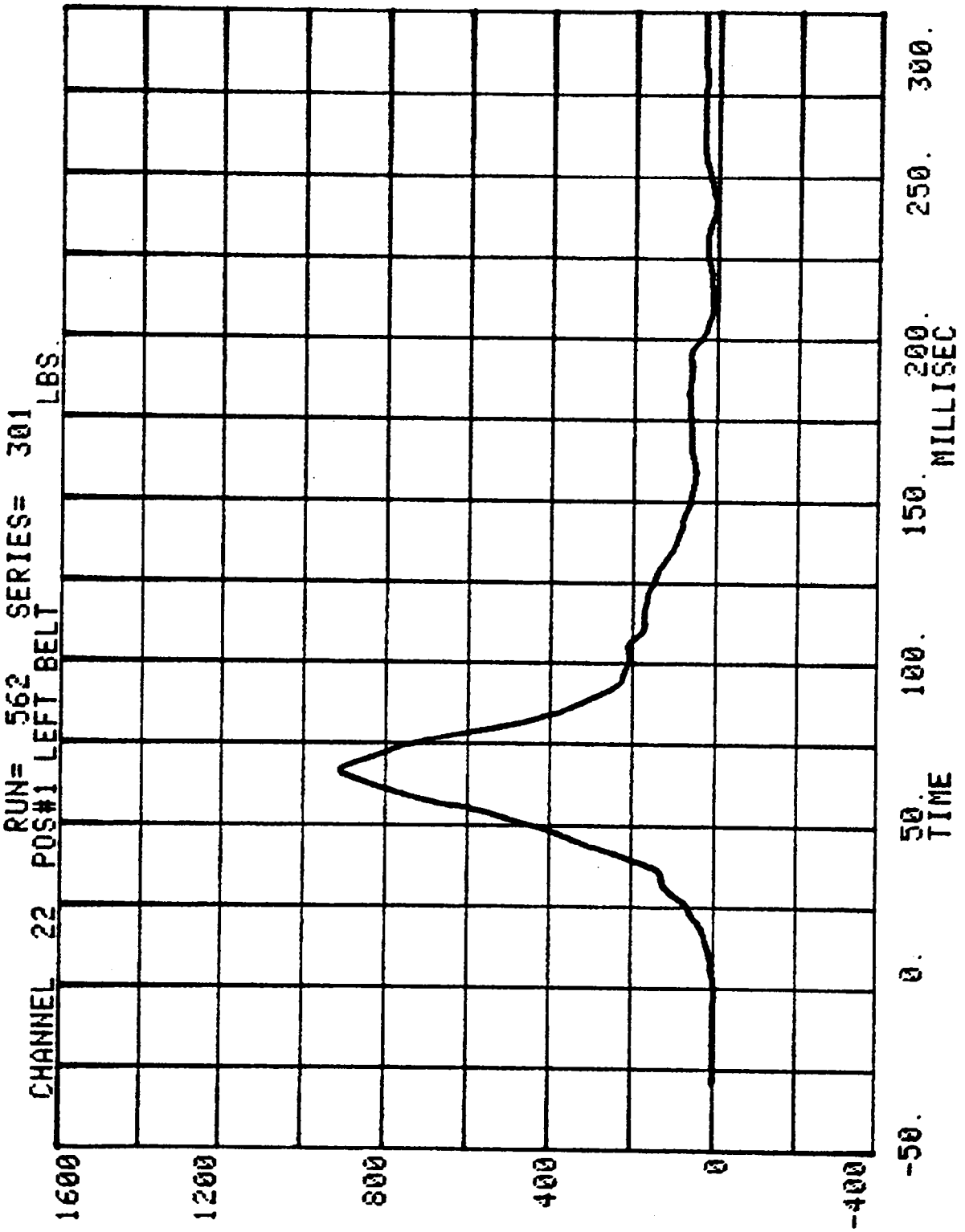

CHANNEL 11 POS#1 CHEST RESULTANT
RUN= 562 SERIES= 301
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

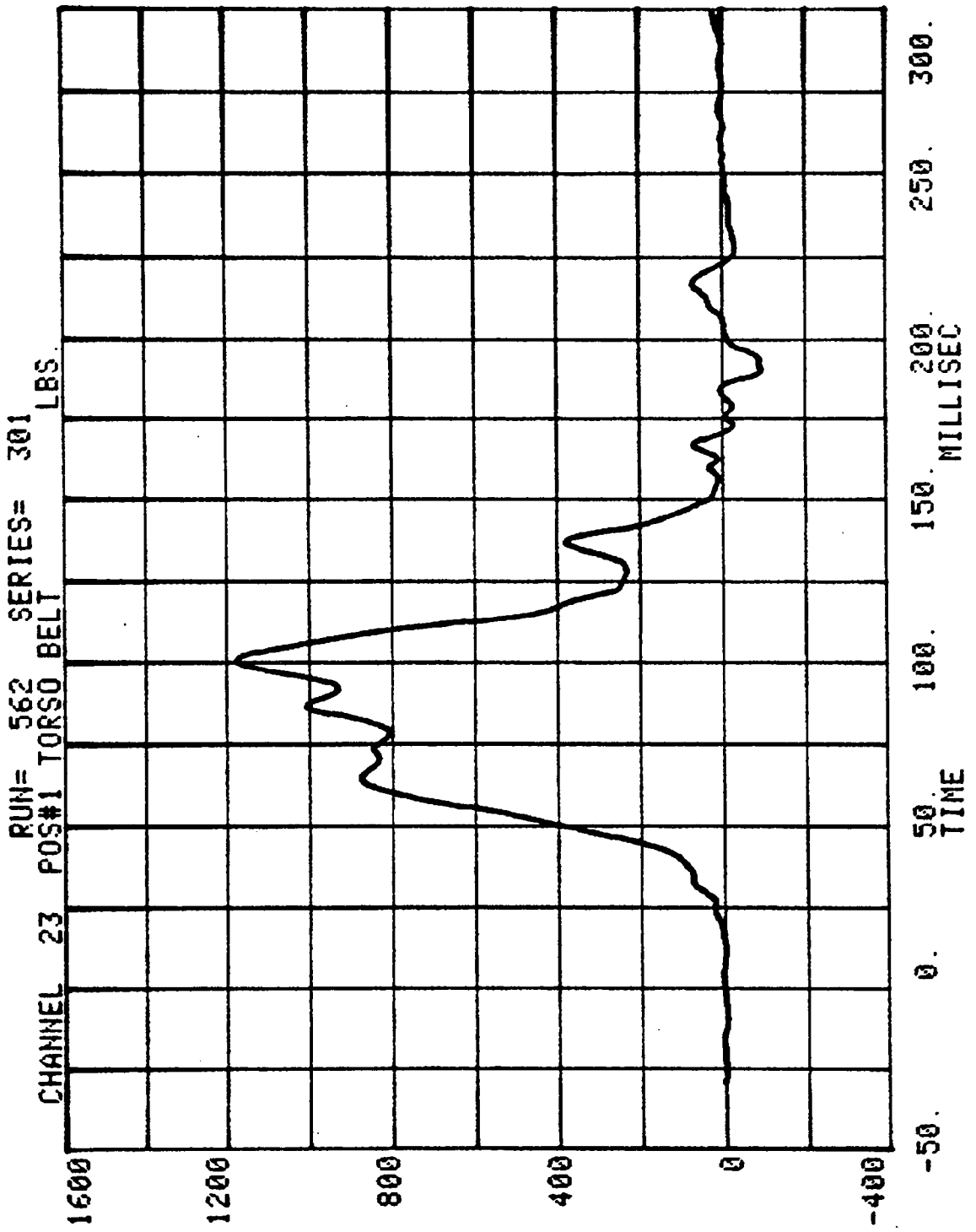
7103-V-2

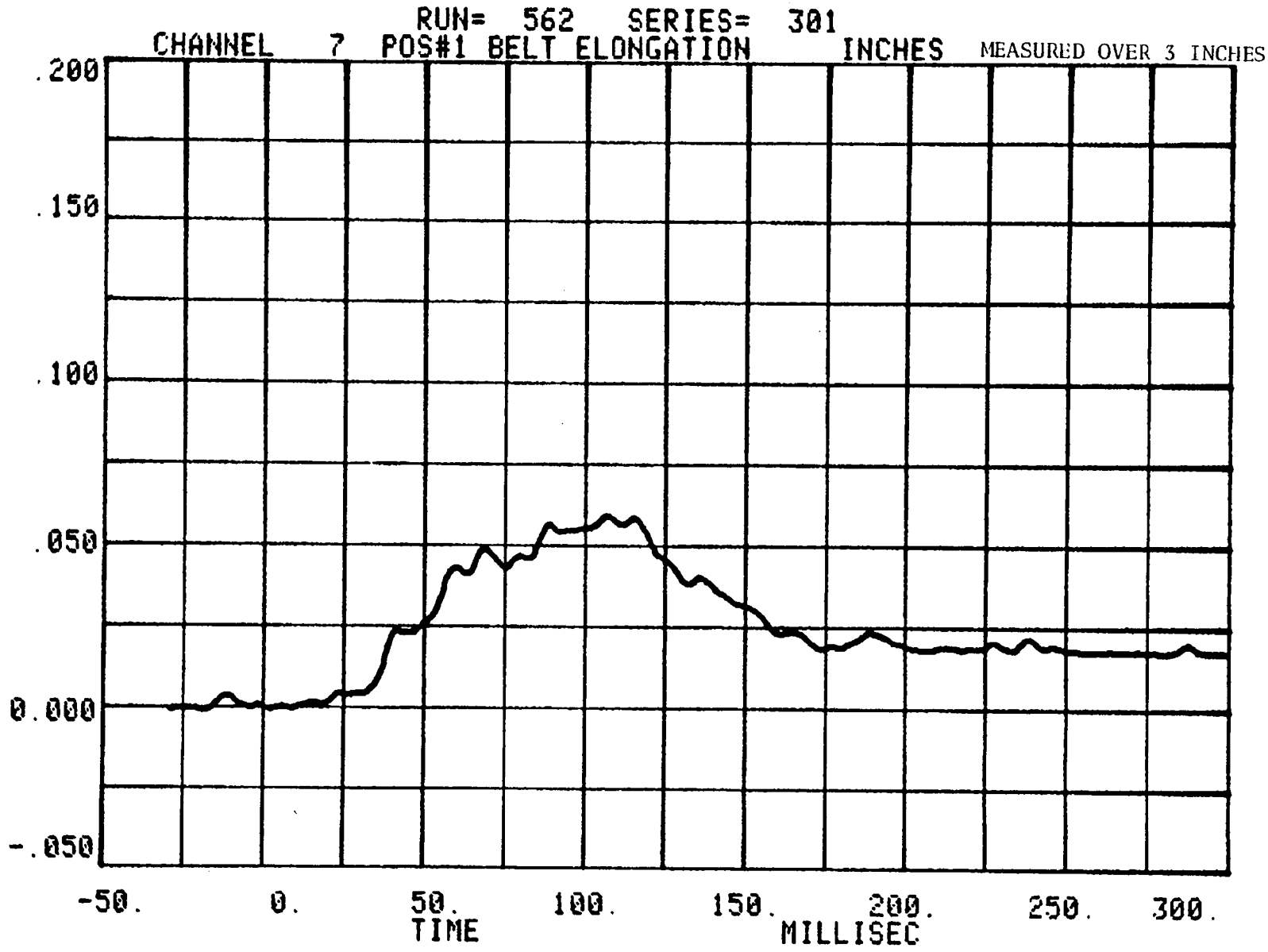

CHANNEL 11 POS#1 RIGHT FEMUR
RUN= 562 SERIES= 301
LBS.
1600
1200
800
400
0
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

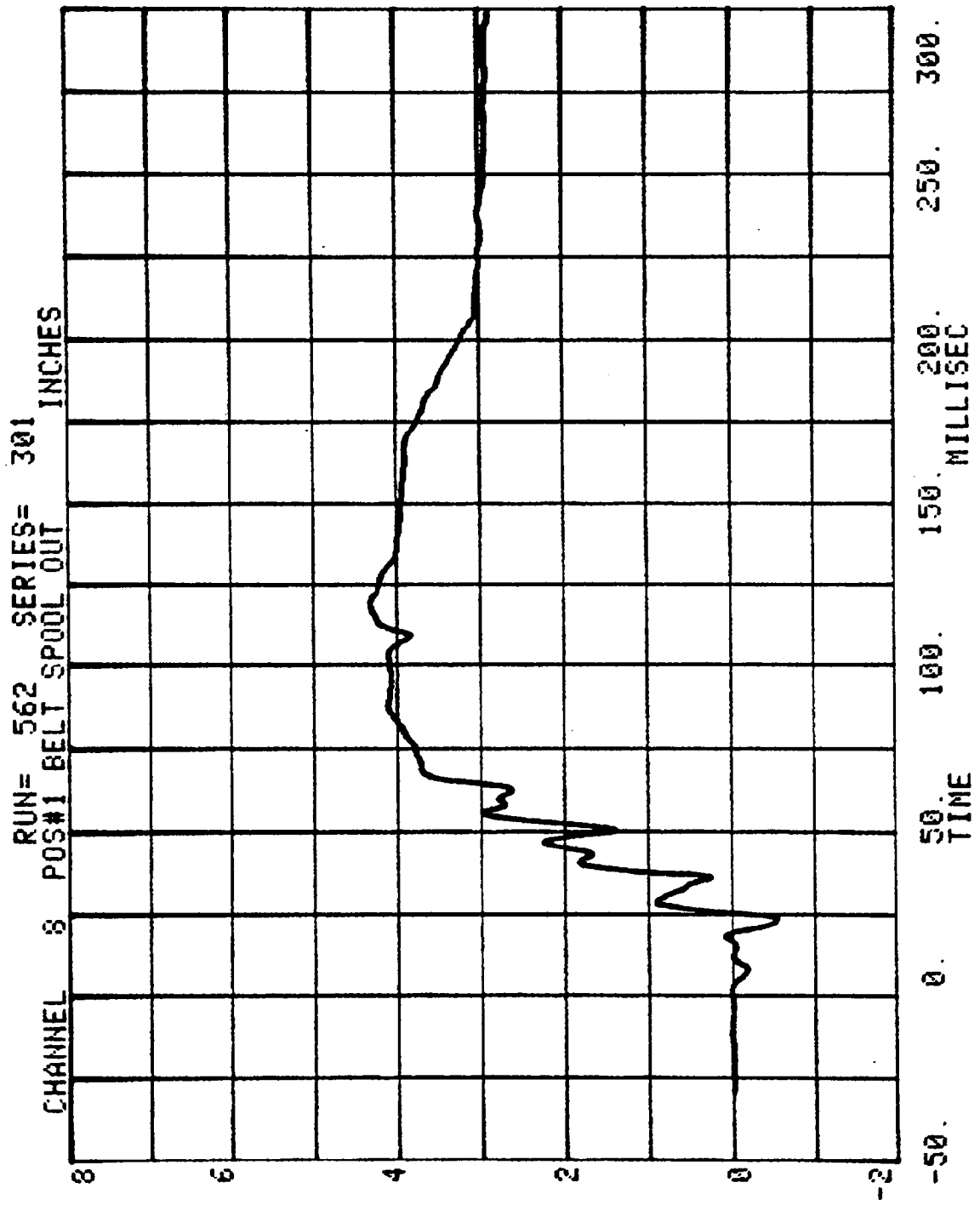

CHANNEL 12 RUN= 562 SERIES= 301
POS#1 LEFT FEMUR
LBS.
1600
1200
800
400
0
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 21 POS#1 RIGHT BELT
RUN= 562 SERIES= 301
LBS.
1600
1200
800
400
0
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 22 POS#1 LEFT BELT
RUN= 562 SERIES= 301
LBS.
1600
1200
800
400
0
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 23 POS#1 TORSO BELT
RUN= 562 SERIES= 301
LBS.
1600
1200
800
400
0
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 562 SERIES= 301
CHANNEL 7 POS#1 BELT ELONGATION INCHES
MEASURED OVER 3 INCHES
.200
.150
.100
.050
0.000
-.050
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 8 POS#1 BELT SPOOL OUT
RUN= 562 SERIES= 301
INCHES
8
6
4
2
0
-2
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

HEAD INJURY CRITERION
HEAD SEVERITY INDEX

CAR TO LOAD CELL BARRIER

RUN= 562

PASSENGER

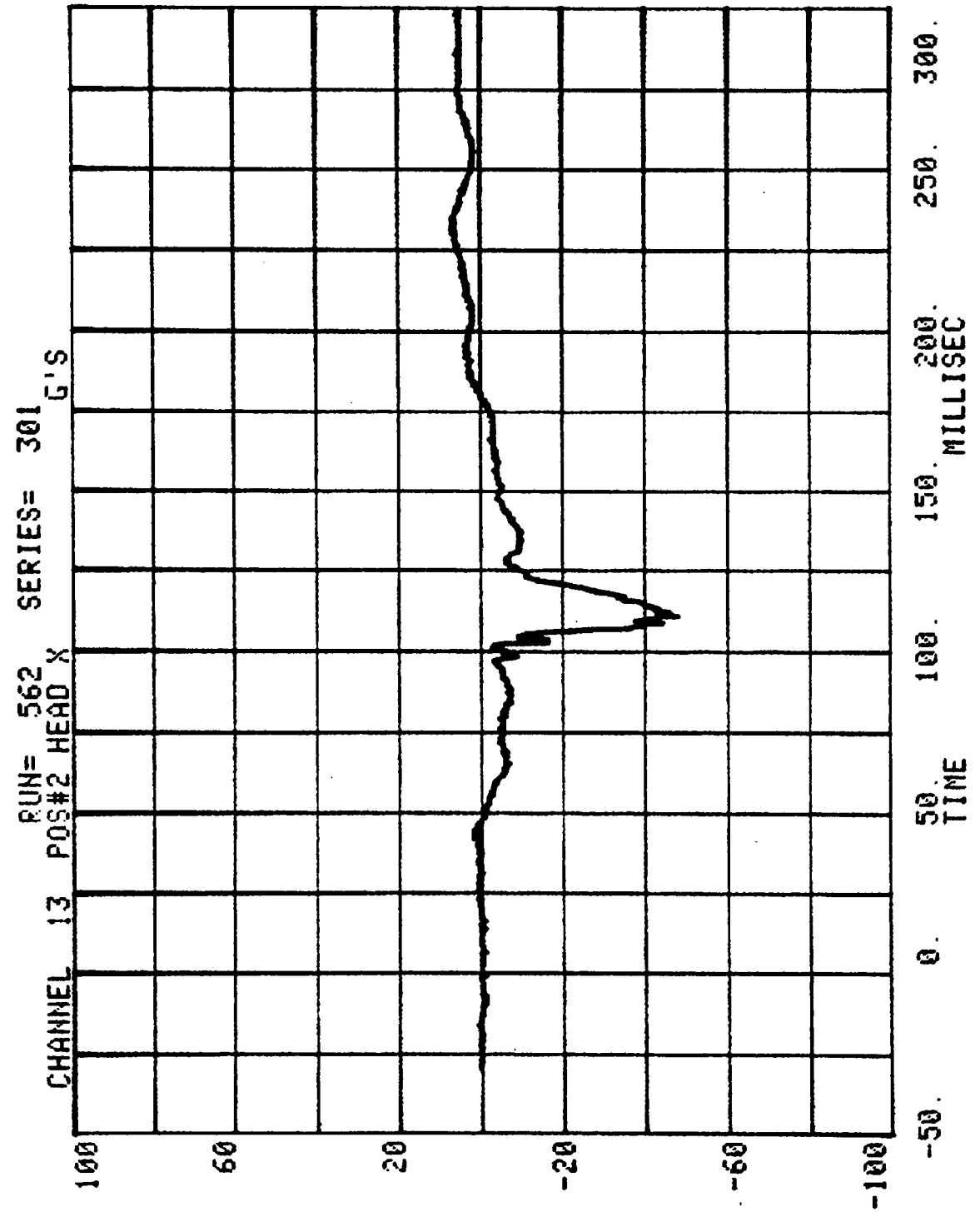
POS#2 HEAD RESULTANT

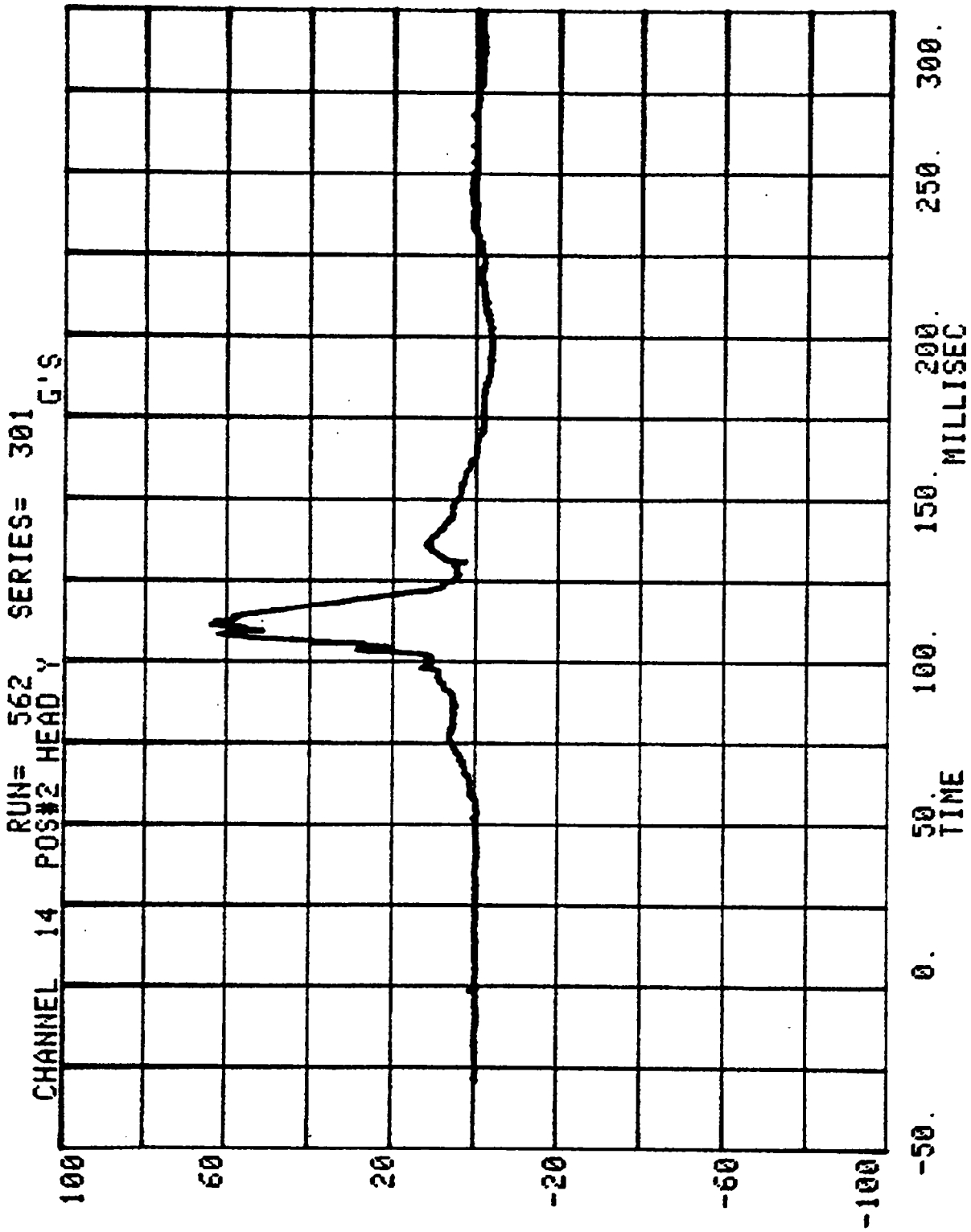
HIC=1009.6 FROM T1= .10155 TO T2= .11842

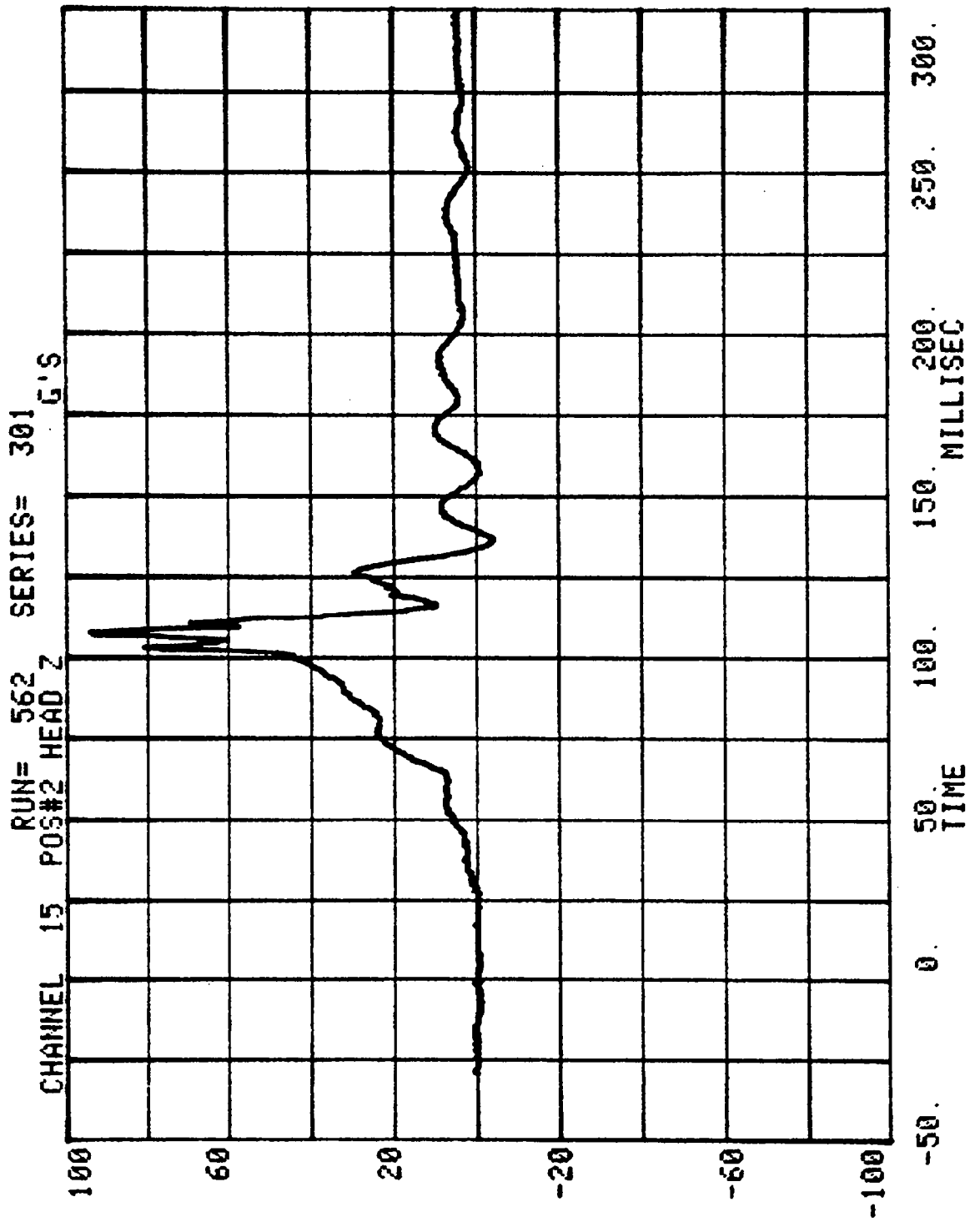
AVERAGE ACCELERATION BETWEEN T1 AND T2= 81.4G'S

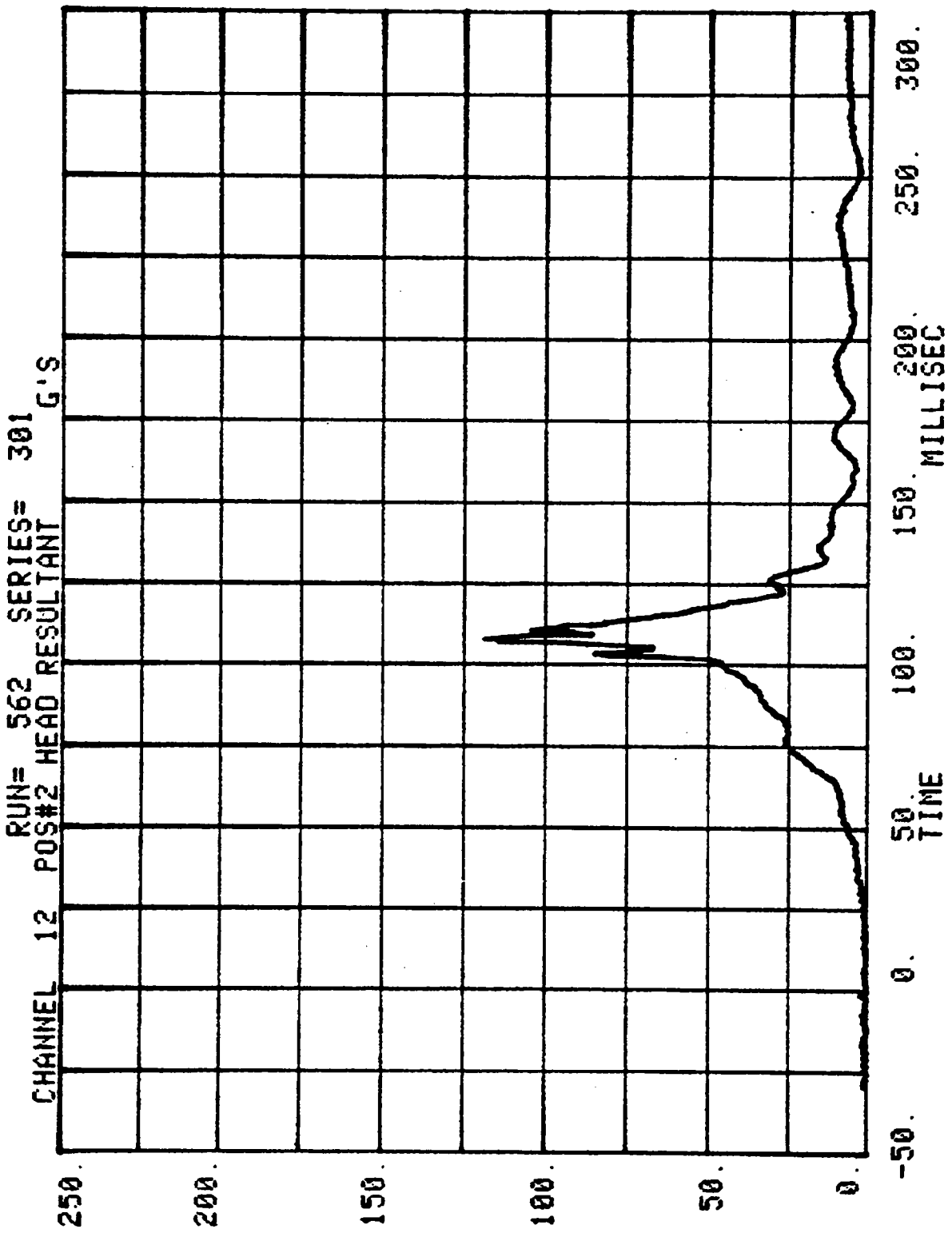
EVENT TIME= 300.0 MSEC

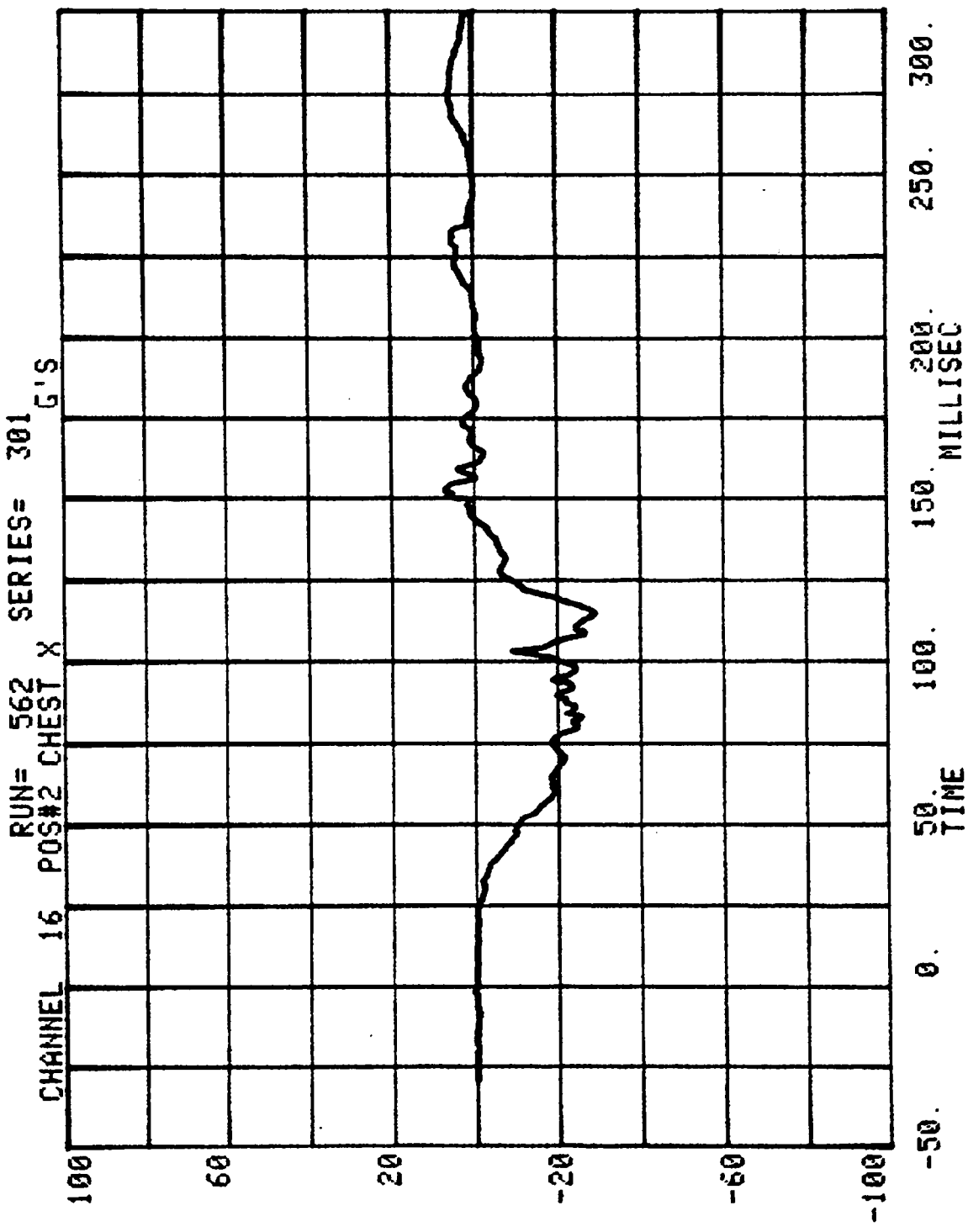
SEVERITY INDEX=1411.7

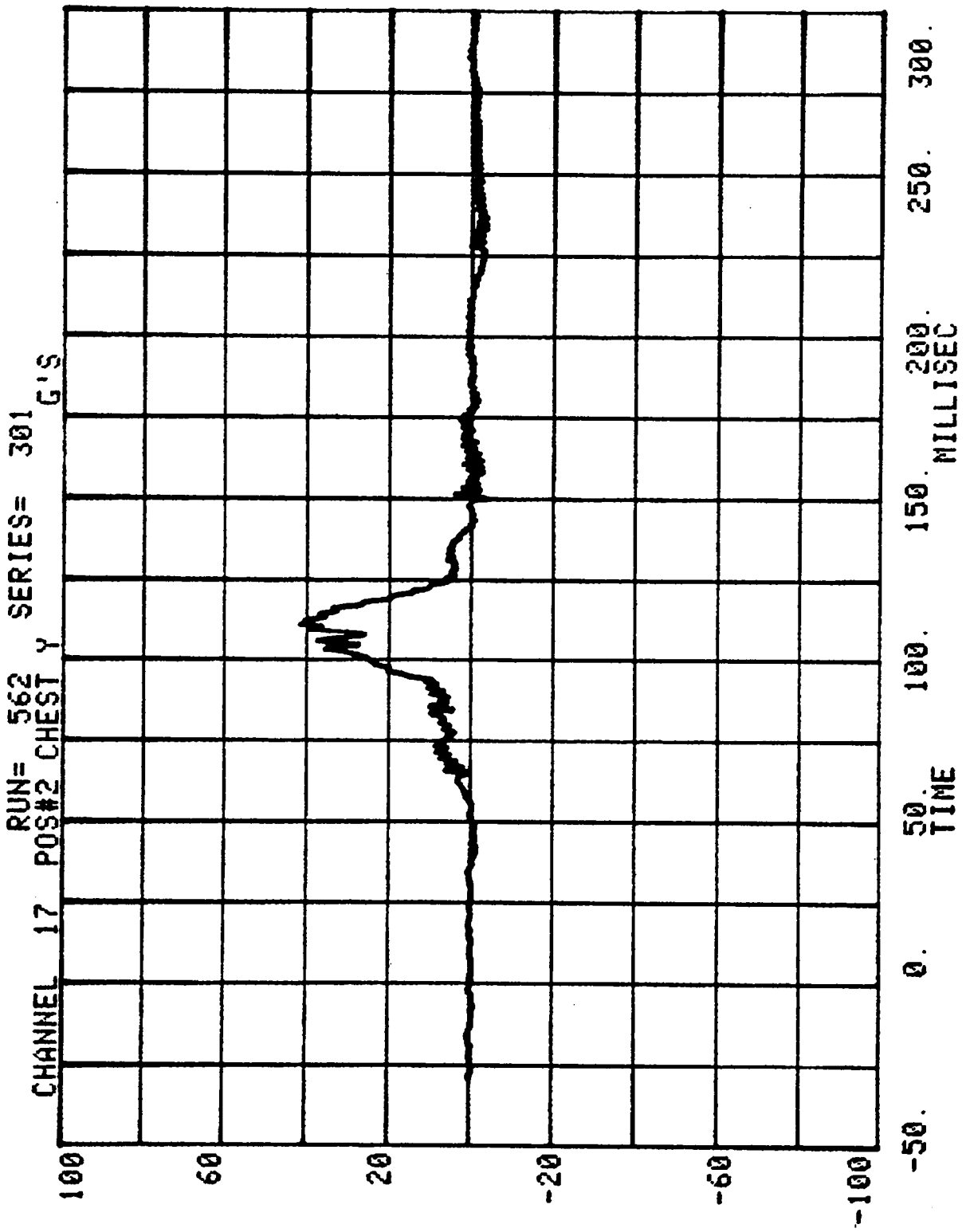

CHANNEL 13 POS#2 HEAD X
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

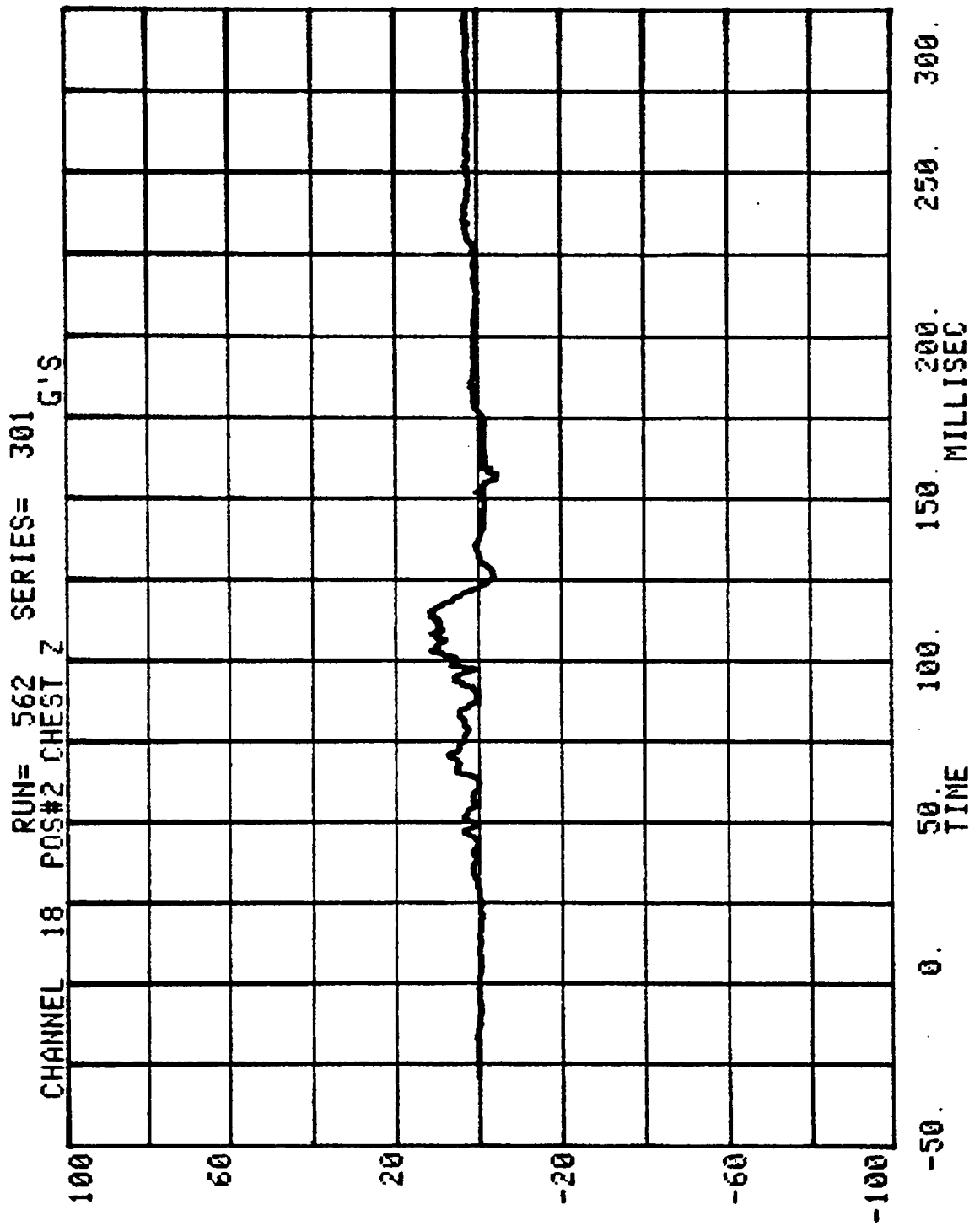

CHANNEL 14 POS#2 HEAD Y
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

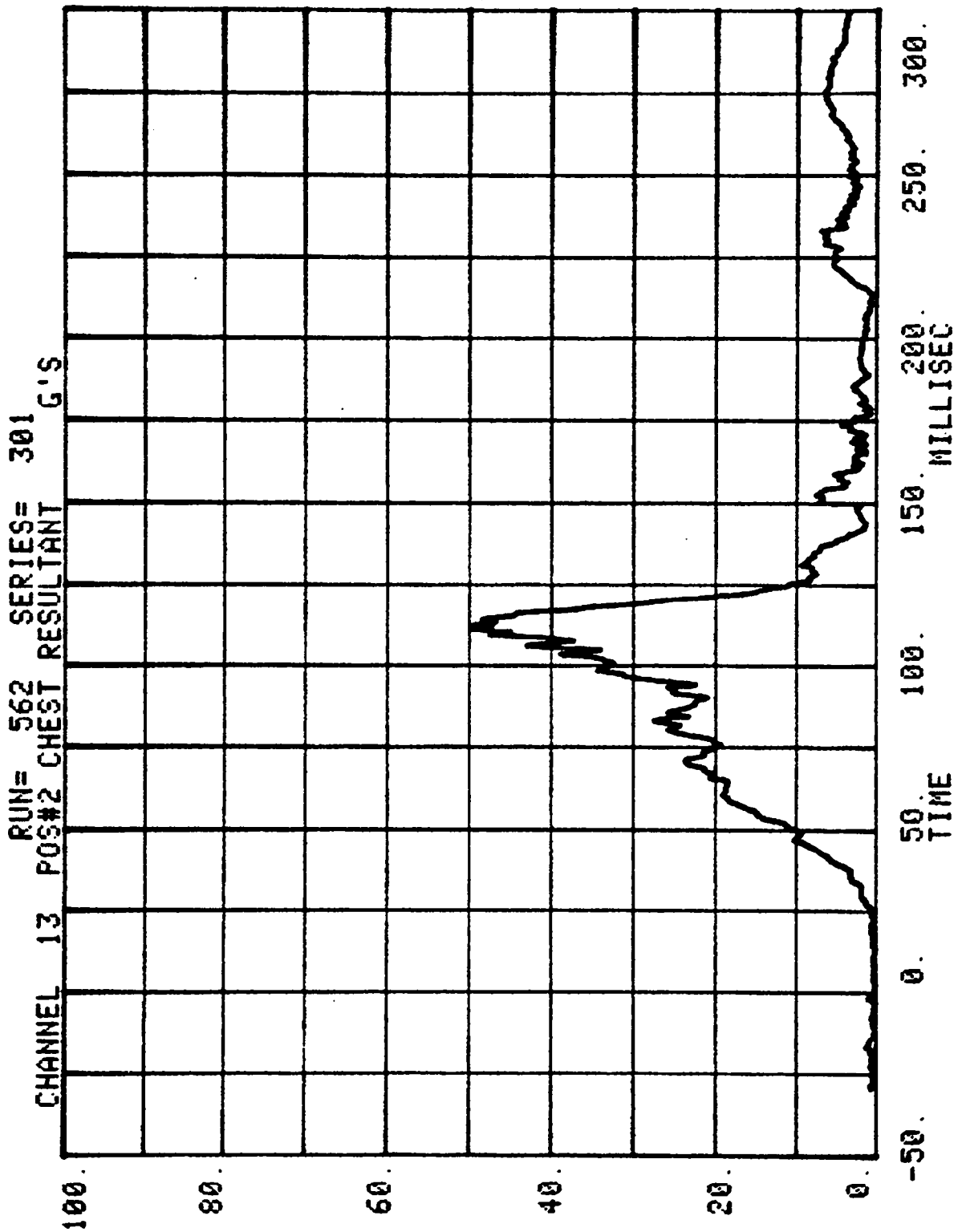

CHANNEL 15 POS#2 HEAD 2
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

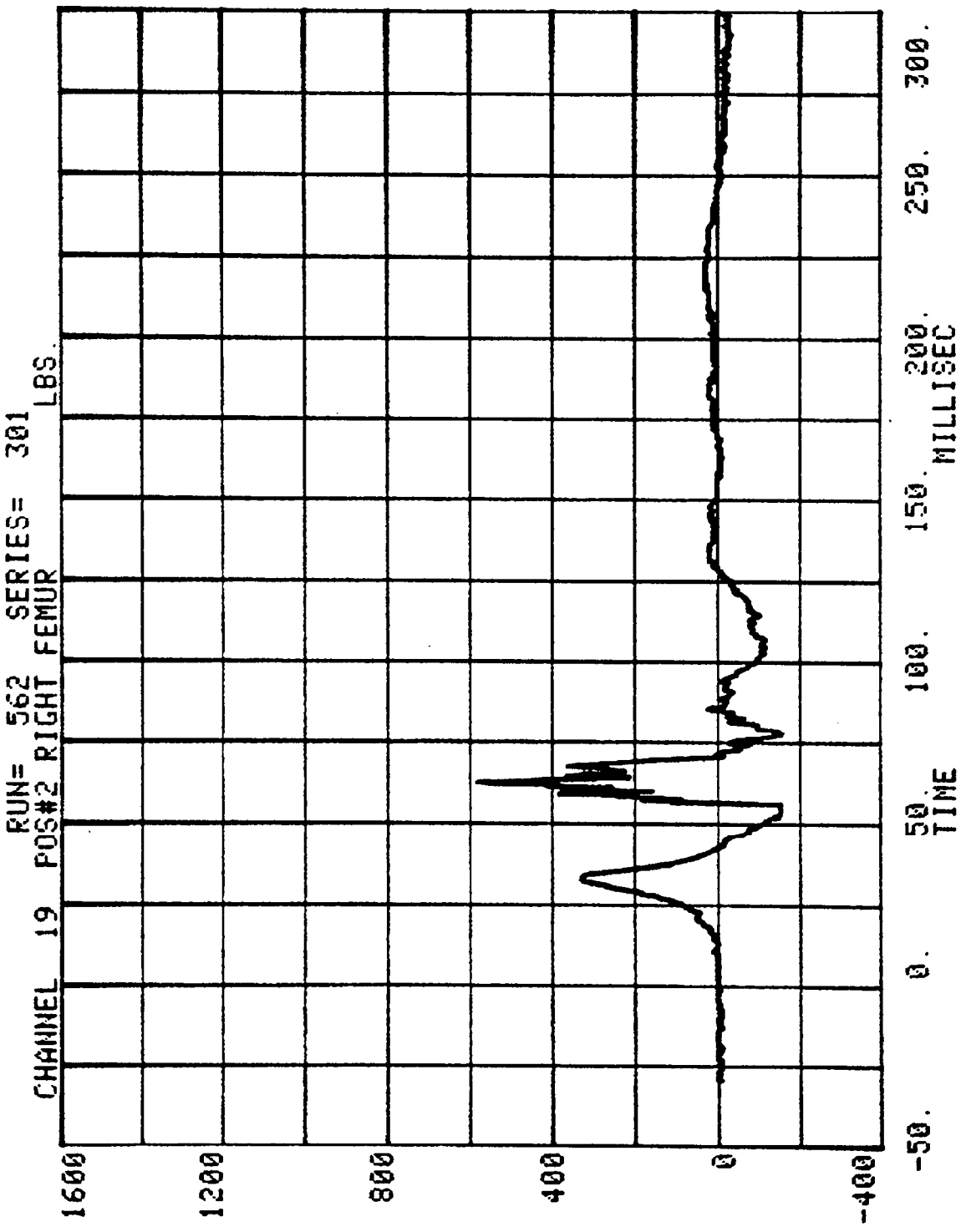

CHANNEL 12 POS#2 HEAD RESULTANT
RUN= 562 SERIES= 301
G'S
250.
200.
150.
100.
50.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

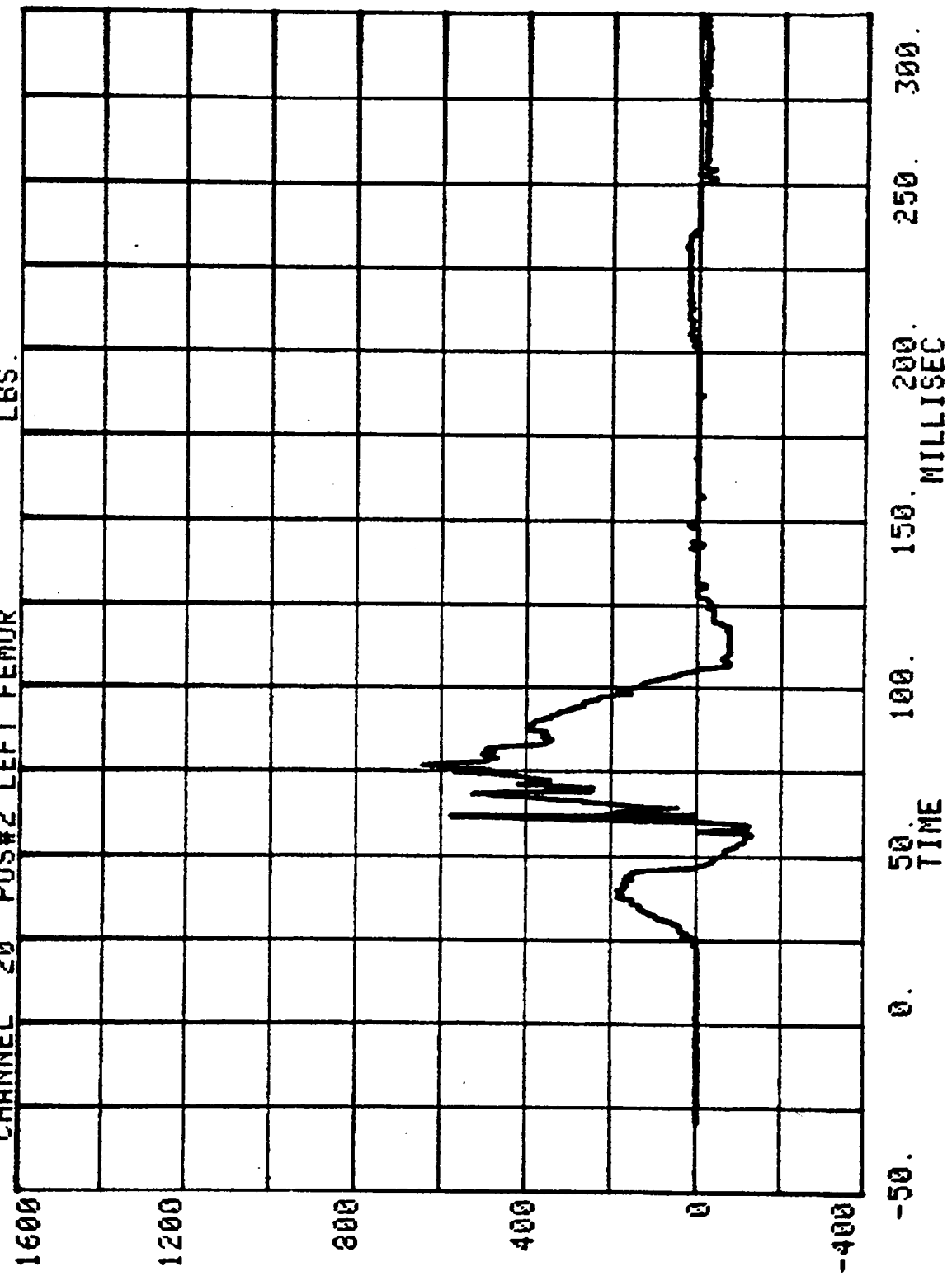

CHANNEL 16 POS#2 CHEST X
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

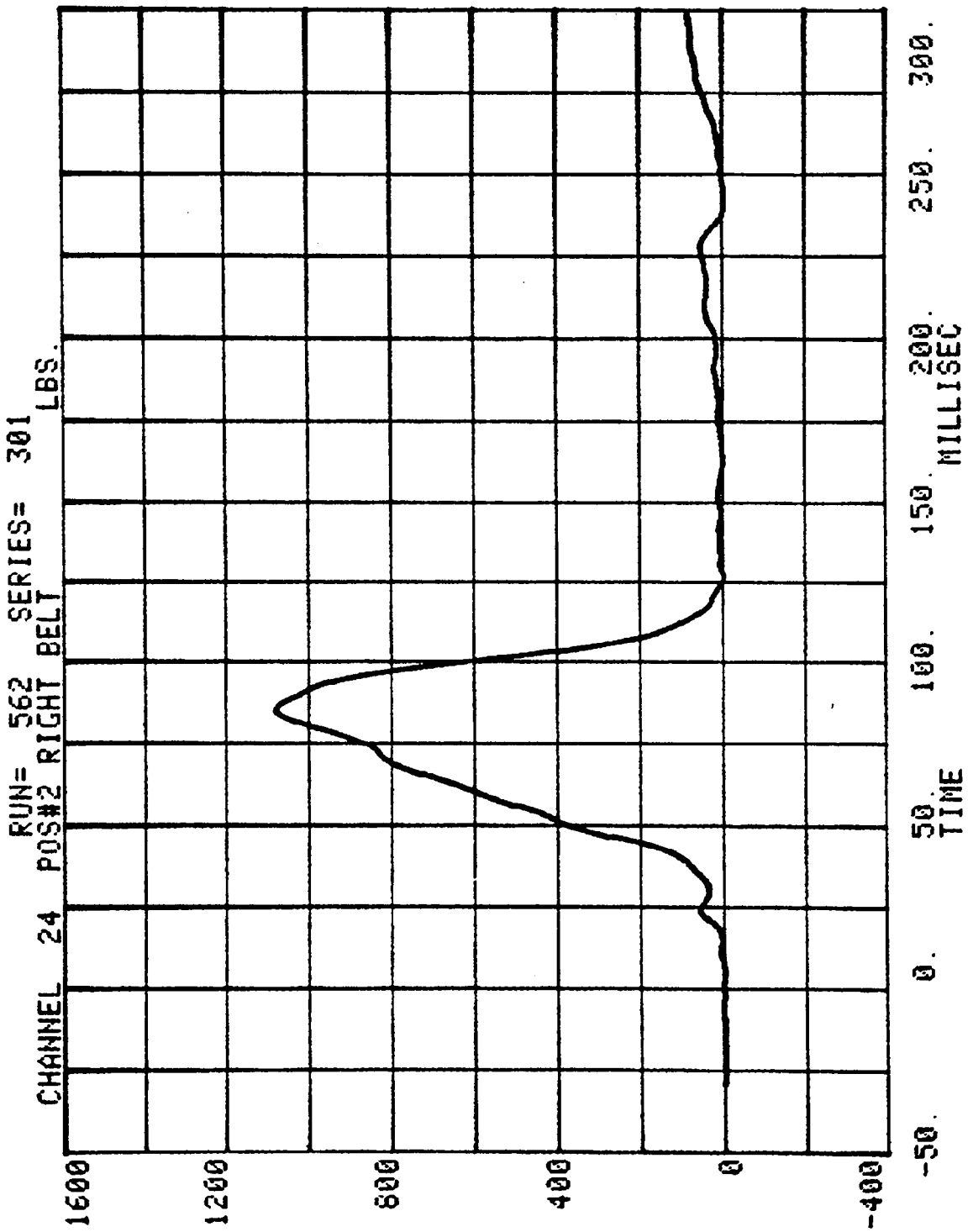

CHANNEL 17 POS#2 CHEST Y
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 18 POS#2 CHEST Z
RUN= 562 SERIES= 301
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

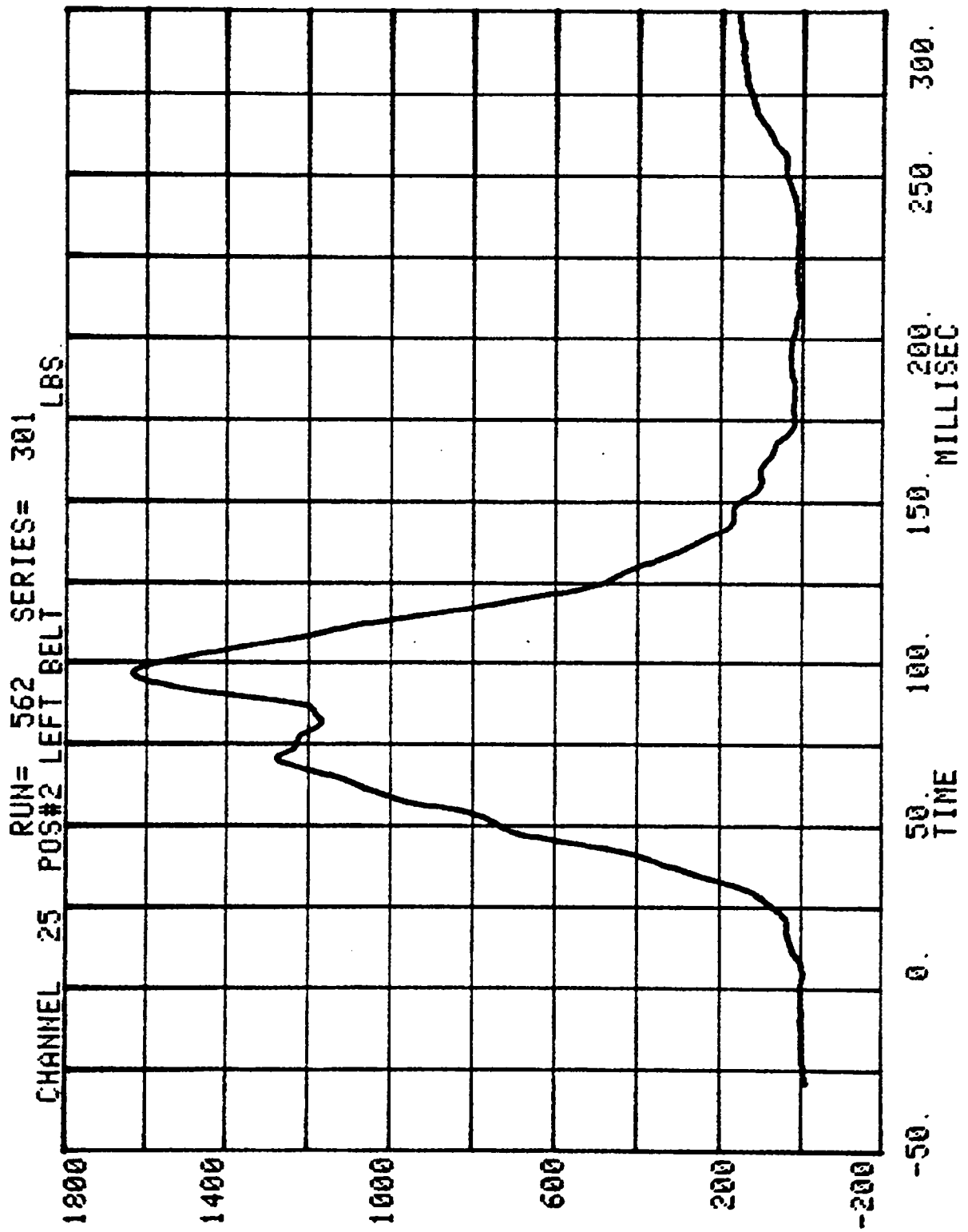

CHANNEL 13 POS#2 CHEST RESULTANT
RUN= 562 SERIES= 301
G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

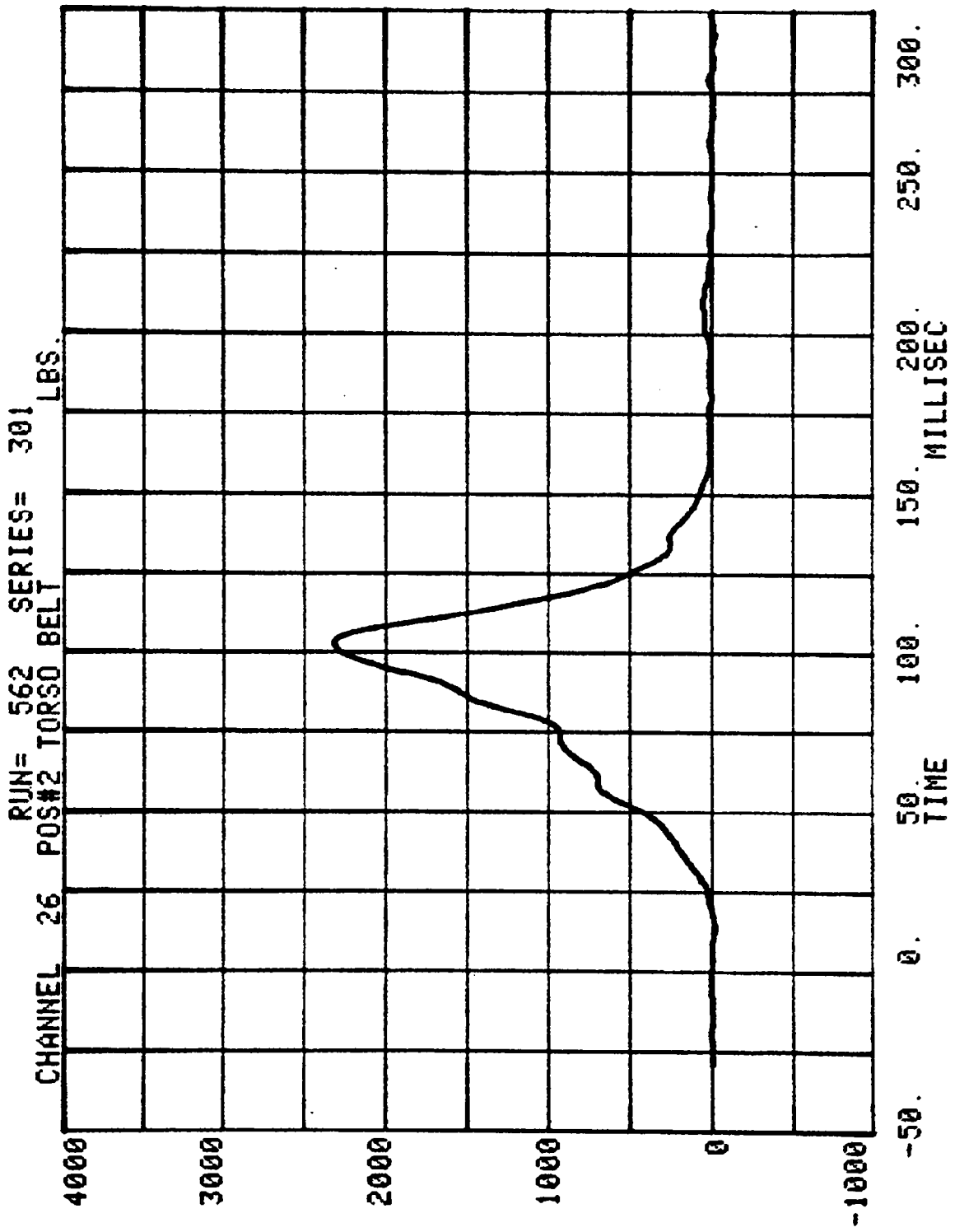

CHANNEL 19 POS#2 RIGHT FEMUR
RUN= 562 SERIES= 301
LBS.
1600
1200
800
400
0
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

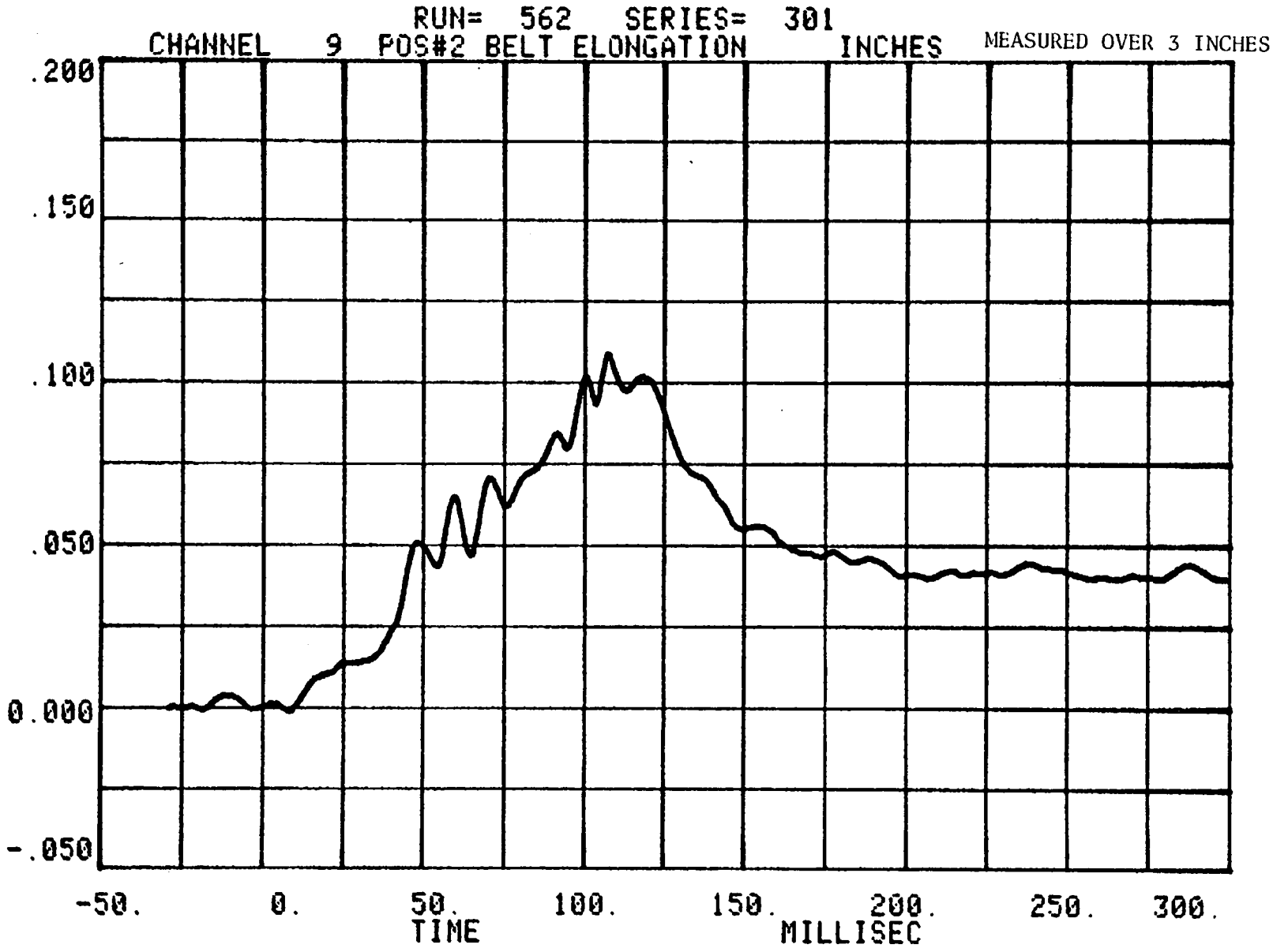

CHANNEL 20 POS#2 LEFT FEMUR
RUN= 562 SERIES= 301
LBS.
1600
1200
800
400
0
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

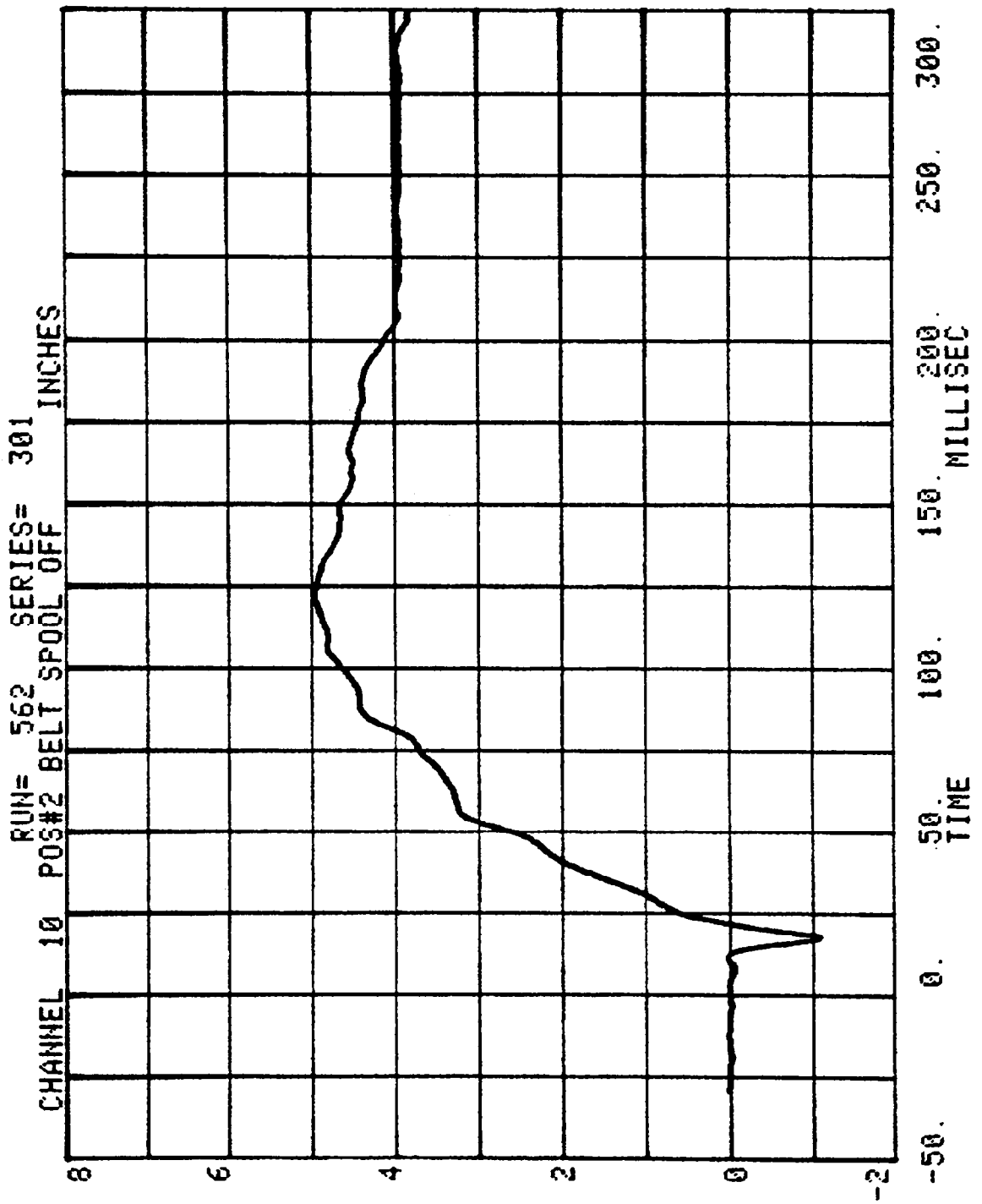

CHANNEL 24
RUN= 562
POS#2 RIGHT BELT
SERIES= 301
LBS.
1600
1200
800
400
0
-400
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

7103-V-2


CHANNEL 25 POS#2 LEFT BELT
RUN= 562 SERIES= 301
LBS
1800
1400
1000
600
200
-200
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 26 POS#2 TORSO BELT
RUN= 562 SERIES= 301
LBS.
4000
3000
2000
1000
0
-1000
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 562 SERIES= 301
CHANNEL 9 POS#2 BELT ELONGATION INCHES
MEASURED OVER 3 INCHES
.200
.150
.100
.050
0.000
-.050
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 10 POS#2 BELT SPOOL OFF
RUN= 562 SERIES= 301 INCHES
8
6
4
2
0
-2
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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
1019	12/23/82
1021	12/23/82

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.

P.572 DUMMY CALIBRATION TEST DATA

NHTSA DUMMY ID NO. 1019

LABORATORY TECHNICIAN: Gary Gestwick

APPROVED BY: D. Alionello

		Pre-Test Calibration	Post-Test Calibration
Date of Dummy Calibration - - - - - - - - - - - -		12/14/82-12/23/82	
Calibration Sequential Number for Dummy - - - -		1	
Temperature in Lab. (Spec. = 66 to 78°F)- - - -		68° to 70°	
Relative Humidity in Lab. (Spec. = 10 to 70%) -		22% to 32%	
TEST PARAMETER		**SPECIFICATION**	
1. HEAD DROP TEST:			
a. Peak Resultant Accel. -		210 to 260G	215 g
b. Peak Lateral Accel. - -		≤10G	4 g
c. Time above 100G - - - -		0.9 to 1.5 ms	1.2 ms
2. NECK BENDING TEST:			
a. Pendulum Speed - - - -		21.5 to 25.5 fps	23.2 fps
b. Pendulum Avg. Decel. (over $t_3 - t_2$) - - - -		20 to 24G	23.5 g
c. Peak Resultant Head Acceleration - - - -		26G maximum	25.5 g
d. Pendulum Decel. (t_2-t_1)		≤3 ms	2.9 ms
e. Pendulum Decel. (t_3-t_2)		25 to 30 ms	26.5 ms
f. Pendulum Decel. (t_4-t_3)		≤10 ms	6.2 ms
g. Pendulum Direction Reversal Time - - - -			114 ms
h. Max. Head Rotation - -		63 to 73°	73°
i. Chordal Displacement:			
Head Rotation Angle - -			
0°	Time	-2 to 2 ms	0 ms
	Displ.	-.5 to .5 in	0.0 in
30°	Time	25.6 to 34.4 ms	29.5 ms
	Displ.	2.1 to 3.1 in.	2.9 in
60°	Time	40.3 to 51.7 ms	44 ms
	Displ.	4.3 to 5.3 in.	4.9 in
Maximum (°)	Time	53.2 to 66.8 ms	62 ms
	Displ.	5.0 to 6.0 in.	5.7 in

Continued

P. 572 DUMMY CALIBRATION TEST DATA .... Continued:

NHTSA DUMMY ID NO. 1019

TEST PARAMETER		SPECIFICATION	Pre-Test Calibration	Post-Test Calibration
2. NECK BENDING TEST .... Continued				
i. Chordal Displacement:				
Head Rotation Angle --				
60°	Time	67.0 to 83.0 ms	78.5 ms	
	Displ.	4.3 to 5.3 in.	4.8 in	
30°	Time	85.4 to 104.6 ms	96 ms	
	Displ.	2.1 to 3.1 in.	2.4 in	
0°	Time	101.0 to 123.0 ms	110.5 ms	
	Displ.	-.5 to 0.5 in.	0.1 in	
3. ABDOMINAL COMPRESSION TEST:				
(Preload = 10 pounds)				
a. Force @ 1" - - - - -		50 to 63 lbs.	60 lbs	
b. Force @ 1.3" - - - -		73 to 88 lbs.	81 lbs	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - -		22 to 34 lbs.	32 lbs	
b. Force @ 30° - - - -		34 to 46 lbs.	39.5 lbs	
c. Force @ 40° - - - -		46 to 58 lbs.	49.5 lbs	
d. Return Angle - - -		12° maximum	6°	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - -		21.78-22.22 fps	22.11 fps	
(2) Peak Delfection -		1.7" maximum	1.52 in	
(3) Peak Resistive Force - - - - - -		2250 lbs. maximum	1920 lbs	
(4) Internal Hysteresis - - - -		50 to 70%	56.4%	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	14.08 fps	
(2) Peak Deflection -		1.1" maximum	0.96 in	
(3) Peak Resistive Force - - - - - -		1450 lbs. maximum	1220 lbs	
(4) Internal Hysteresis- - - -		50 to 70%	62.2%	

P.572 DUMMY CALIBRATION TEST DATA .....Continued:

NHTSA DUMMY ID NO. 1019

TEST PARAMETER	SPECIFICATION	Pre-Test Calibration	Post-Test Calibration
6. KNEE IMPACT TESTS:			
a. Right Side --			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.99 fps	
(2) Maximum Force - -	1850 to 2500 lbs	2050 lbs	
(3) Time Above 1000#	1.7 ms minimum	1.75 ms	
b. Left Side --			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.99 fps	
(2) Maximum Force - -	1850 to 2500 lbs.	2025 lbs	
(3) Time Above 1000#	1.7 ms minimum	1.79 ms	

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY ID NO. 1019 CALIB. SEQ. NOS. FOR DUMMY: 1 & _____

	MANUFACTURER	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
A. DUMMY INSTRUMENTS:				
1. Head Accelerometers--				
a. Triaxial unit - - - - -				
b. Uniaxial units				
(1) Longitudinal (A_x) -	ENDEVCO	DB47	6/82	1/83
(2) Lateral (A_y) - - -	ENDEVCO	CX05	6/82	1/83
(3) Vertical (A_z) - - -	ENDEVCO	CJ54	6/82	1/83
2. Chest Accelerometers-- (Vehicle Crash Test Usage)				
a. Triaxial unit - - - - -				
b. Uniaxial units				
(1) Longitudinal (A_x) -				
(2) Lateral (A_y) - - -				
(3) Vertical (A_z) - - -				
3. Chest Potentiometer - - -				
4. Femur Load Cells--				
a. Right Side - - - - - -	GSE	312	6/82	1/83
b. Left Side	GSE	311	6/82	1/83
B. CALIB. LAB. INSTRUMENTS:				
1. Pendulum Accelerometer - -	CEC	22707	6/82	1/83
2. Test Probe Accelerometer -	CEC	22958	6/82	1/83
3. Lumbar Flexion Test Push Force Gauge - - - - - - -	TRANSDUCER INC.	20051	6/82	1/83
4. Abdominal Compression Test Force Gauge - - - - - - -	BLH	72952	6/82	1/83
5. Abdominal Compression Test Displacement Gauge - - - -	CIC	567-11	6/82	1/83

P.572 DUMMY CALIBRATION TEST DATA

NHTSA DUMMY ID NO. 1021

LABORATORY TECHNICIAN: Gary Gestwick

APPROVED BY: D. Alianello

			Pre-Test Calibration	Post-Test Calibration
Date of Dummy Calibration - - - - - - - - - - - -			12/14/82-12/23/82	
Calibration Sequential Number for Dummy - - - -			1	
Temperature in Lab. (Spec. = 66 to 78°F)- - - -			68° to 70°	
Relative Humidity in Lab. (Spec. = 10 to 70%) -			22% to 32%	
TEST PARAMETER			SPECIFICATION	
1. HEAD DROP TEST:				
a. Peak Resultant Accel. -			210 to 260G	210 g
b. Peak Lateral Accel. - -			≤10G	4 g
c. Time above 100G - - - -			0.9 to 1.5 ms	1.05 ms
2. NECK BENDING TEST:				
a. Pendulum Speed - - - -			21.5 to 25.5 fps	22.7 fps
b. Pendulum Avg. Decel. (over $t_3 - t_2$) - - - -			20 to 24G	23.5 g
c. Peak Resultant Head Acceleration - - - -			26G maximum	23.5 g
d. Pendulum Decel. (t_2-t_1)			≤3 ms	2.5 ms
e. Pendulum Decel. (t_3-t_2)			25 to 30 ms	27.2 ms
f. Pendulum Decel. (t_4-t_3)			≤10 ms	4.4 ms
g. Pendulum Direction Reversal Time - - - -				113 ms
h. Max. Head Rotation - -			63 to 73°	72°
i. Chordal Displacement:				
Head Rotation Angle - -				
0°	Time		-2 to 2 ms	0 ms
	Displ.		-.5 to .5 in	0.0 in
30°	Time		25.6 to 34.4 ms	28.5 ms
	Displ.		2.1 to 3.1 in.	2.8 in
60°	Time		40.3 to 51.7 ms	4.4 ms
	Displ.		4.3 to 5.3 in.	4.8 in
Maximum (°)	Time		53.2 to 66.8 ms	60.5 ms
	Displ.		5.0 to 6.0 in.	5.6 in

Continued

P. 572 DUMMY CALIBRATION TEST DATA .... Continued:

NHTSA DUMMY ID NO. 1021

TEST PARAMETER		SPECIFICATION	Pre-Test Calibration	Post-Test Calibration
2. NECK BENDING TEST .... Continued				
i. Chordal Displacement:				
Head Rotation Angle --				
60°	Time	67.0 to 83.0 ms	77 ms	
	Displ.	4.3 to 5.3 in.	4.6 in	
30°	Time	85.4 to 104.6 ms	95 ms	
	Displ.	2.1 to 3.1 in.	2.4 in	
0°	Time	101.0 to 123.0 ms	110 ms	
	Displ.	-.5 to 0.5 in.	0.0 in	
3. ABDOMINAL COMPRESSION TEST:				
(Preload = 10 pounds)				
a. Force @ 1" - - - - -		50 to 63 lbs.	61 lbs	
b. Force @ 1.3" - - - -		73 to 88 lbs.	87 lbs	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - -		22 to 34 lbs.	32 lbs	
b. Force @ 30° - - - -		34 to 46 lbs.	43.5 lbs	
c. Force @ 40° - - - -		46 to 58 lbs.	52.5 lbs	
d. Return Angle - - -		12° maximum	8°	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - -		21.78-22.22 fps	21.82 fps	
(2) Peak Delfection -		1.7" maximum	1.46 in	
(3) Peak Resistive Force - - - - - -		2250 lbs. maximum	1920 lbs	
(4) Internal Hysteresis - - - -		50 to 70%	59.3%	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	14.10 fps	
(2) Peak Deflection -		1.1" maximum	1.0 in	
(3) Peak Resistive Force - - - - - -		1450 lbs. maximum	1245 lbs	
(4) Internal Hysteresis- - - -		50 to 70%	59.8%	

P.572 DUMMY CALIBRATION TEST DATA .....Continued:

NHTSA DUMMY ID NO. 1021

TEST PARAMETER	SPECIFICATION	Pre-Test Calibration	Post-Test Calibration
6. KNEE IMPACT TESTS:			
a. Right Side --			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.02 fps	
(2) Maximum Force - -	1850 to 2500 lbs	1925 lbs	
(3) Time Above 1000#	1.7 ms minimum	1.95 ms	
b. Left Side --			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.02 fps	
(2) Maximum Force - -	1850 to 2500 lbs.	2100 lbs	
(3) Time Above 1000#	1.7 ms minimum	1.85 ms	

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY ID NO. 1021 CALIB. SEQ. NOS. FOR DUMMY: 1 & _____

	MANUFACTURER	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
A. DUMMY INSTRUMENTS:				
1. Head Accelerometers--				
a. Triaxial unit - - - - -				
b. Uniaxial units				
(1) Longitudinal (A_x) -	ENDEVCO	DB47	6/82	1/83
(2) Lateral (A_y) - - -	ENDEVCO	CX05	6/82	1/83
(3) Vertical (A_z) - - -	ENDEVCO	CJ54	6/82	1/83
2. Chest Accelerometers-- (Vehicle Crash Test Usage)				
a. Triaxial unit - - - - -				
b. Uniaxial units				
(1) Longitudinal (A_x) -				
(2) Lateral (A_y) - - -				
(3) Vertical (A_z) - - -				
3. Chest Potentiometer - - -				
4. Femur Load Cells--				
a. Right Side - - - - - -	GSE	312	6/82	1/83
b. Left Side	GSE	311	6/82	1/83
B. CALIB. LAB. INSTRUMENTS:				
1. Pendulum Accelerometer - -	CEC	22707	6/82	1/83
2. Test Probe Accelerometer -	CEC	22958	6/82	1/83
3. Lumbar Flexion Test Push Force Gauge - - - - - - -	TRANSDUCER INC.	20051	6/82	1/83
4. Abdominal Compression Test Force Gauge - - - - - - -	BLH	72952	6/82	1/83
5. Abdominal Compression Test Displacement Gauge - - - -	CIC	567-11	6/82	1/83