CALSPAN ADVANCED TECHNOLOGY CENTER

IMPROVED LIGHTWEIGHT SUBCOMPACT
SIDE STRUCTURE CRASH TEST REPORT

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and
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Calspan Report No. 6225-V-21

Prepared For:

The Budd Company
Technical Center
Fort Washington, Pennsylvania 19034

Purchase Order No. TC18713

Test: Test No. 18
Type of Test: 30 MPH Car-to-Car Front-to-Side Oblique
Test Date: September 16, 1980

A DIVISION OF CALSPAN CORPORATION
AN AIRUN COMPANY PO BOX 400 BUFFALO NEW YORK 14221

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TEST OBJECTIVE

The objective of the 60° oblique side impact was to obtain performance data on the modified side structure of a 1976 Volkswagen Rabbit. The Budd Co. performed the optimized (approximately 26 pounds per side) side structure modification. This test was a 30 MPH, 60° oblique impact by an unmodified 1978 Chevrolet Impala into the left side of the VW Rabbit at the DOR* point.

A secondary test objective was to obtain baseline data on the Humanoid 873 modified side impact dummy placed in the driver position of the struck vehicle.

This test program is part of the National Highway Traffic Safety Administration (NHTSA) Contract DOT-HS-7-01588 to improve subcompact side structures.

*As defined in SAE J972a.

PRESENTATION OF RESULTS

This test report presents the test results from a car-to-car, front-to-side, 60° oblique impact. Included in this document are still photographs, vehicle and dummy response data in plotted form, vehicle interior and exterior damage sketches, and pre- and post-test measurements for side intrusion and door crush. High-speed motion pictures and color photographs were obtained and submitted to the sponsor under separate cover.

Table 1

CRASH TEST SUMMARY

TEST NO. 18 PROJECT Improved Lightweight Subcompact Side Structure

DATE 9/16/80 TIME 12:22 TEMP. 65°F

TEST CONDITION Car-to-Car, 60° Oblique

VEHICLE NO. 1 1978 Chevrolet Impala

VEHICLE NO. 2 1976 VW Rabbit (modified)

	VEH. NO. 1	VEH. NO. 2
TEST WEIGHT (lbs)	4040	2210
IMPACT ANGLE (deg)*	0°	300°
IMPACT VELOCITY (mph)**	29.83	0
MAX. CRUSH (in)	5.5	19.8" Window sill between columns 3 and 4
MAX. INTRUSION (in)	-	12.1" @ Col. 3 Plane 3

OCCUPANTS	VEH. NO. 1	VEH. NO. 2
TYPE	Hybrid II, Part 572	Side Impact Dummy - S/N 873
LOCATION	LF(1) RF(2)	LF(1)
RESTRAINT	Production 3-Point Belt System	Unrestrained

NUMBER OF DATA CHANNELS 65
NUMBER OF HIGH SPEED CAMERAS 10 + 1 Real Time

*WITH RESPECT TO TOW TRACK CENTERLINE

**SPEED TRAP MEASUREMENT (±0.5% ACCURACY)

Table 1 (Continued)

OBSERVATIONS (VEHICLE NO. 1) - 1978 Chevrolet Impala

GLAZING Undamaged

DOORS Undamaged

SEAT ANCHORAGES Intact

RESTRAINTS Intact

OBSERVATIONS (VEHICLE NO. 2) - 1976 VW Rabbit (modified)

GLAZING Windshield is cracked; driver door window broken (Figure 4), driver side rear (plastic) window is intact

DOORS Driver door is jammed closed; passenger door is undamaged

SEAT ANCHORAGES Intact

RESTRAINTS Not used

GENERAL COMMENTS VW Structure - Door hinges and interlocks held but door separated slightly from sill between the two sets of interlocks (see Figure 5). No rotation of the A-pillar. Roof is nearly undeformed with only slight buckling above the driver side window. Sill is rolled upward between A-pillar and B-pillar only (see Figure 4). There is some local tearing at the B-pillar to sill connection where the sill reinforcement ends. That may be due to corrosion in this older vehicle. B-pillar is buckled approximately nine inches above the sill. On the interior the B-pillar is torn immediately above the gusset connection to the floor cross beam. This crossmember is also buckled slightly. The door is badly deformed with maximum exterior crush occurring at the window sill a few rearward from the vent window post. The floor pan is bent upwards slightly in the area where the sill rolled upwards.

Damage extends from A-pillar to rear wheel well on the struck side. No damage is evident on the far side.

VW Occupant - The driver occupant's head struck and broke the side window and then struck the hood of the Impala. The driver side window was a plastic material that left dangerous shards when broken. The dummy was struck by the intruding door, traveled across the vehicle and came to rest sitting in the passenger seat and facing the struck side. The occupant's head would most likely have struck the passenger side window had it been closed.

Data Quality:

- VW Rabbit driver lower right rib accelerometer is noisy.

Table 2

VEHICLE TEST WEIGHTS - TEST NO. 18

Striking Vehicle #1 - 1978 Chevrolet Impala

Left Front	1150 lbs.	Left Rear	880 lbs.
Right Front	1160 lbs.	Right Rear	850 lbs.
Total Front	2310 lbs.	Total Rear	1730 lbs.

Total Weight = 2310 lbs. + 1730 lbs. = 4040 lbs.

Wheel Base 115.0 in.

Cg_{FW} = $\frac{1730 \text{ lbs.} \quad 115 \text{ in.}}{4040 \text{ lbs.}}$ = 49.24 in.

Struck Vehicle #2 - 1976 Volkswagen Rabbit

Left Front	660 lbs.	Left Rear	440 lbs.
Right Front	680 lbs.	Right Rear	430 lbs.
Total Front	1340 lbs.	Total Rear	870 lbs.

Total Weight = 1340 lbs. + 870 lbs. = 2210 lbs.

Wheel Base 94.8 in.

Cg_{FW} = $\frac{870 \text{ lbs.} \quad 94.8 \text{ in.}}{2210 \text{ lbs.}}$ = 37.31 in.

Figure 1 VEHICLES 1 AND 2 - PRE-TEST IMPACT CONFIGURATION

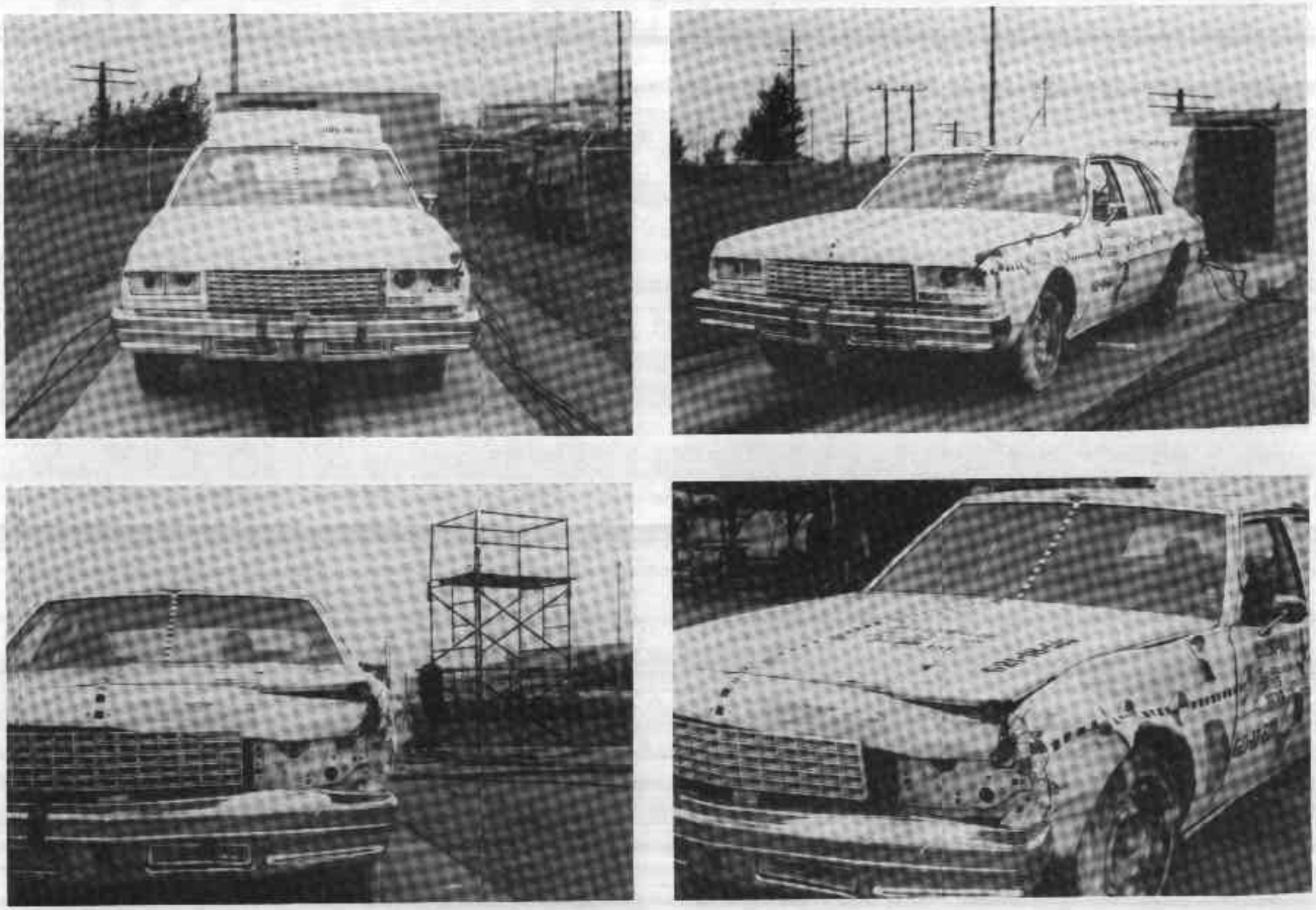

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Figure 2 VEHICLE 1 - PRE- AND POST-FRONT EXTERIOR VIEWS

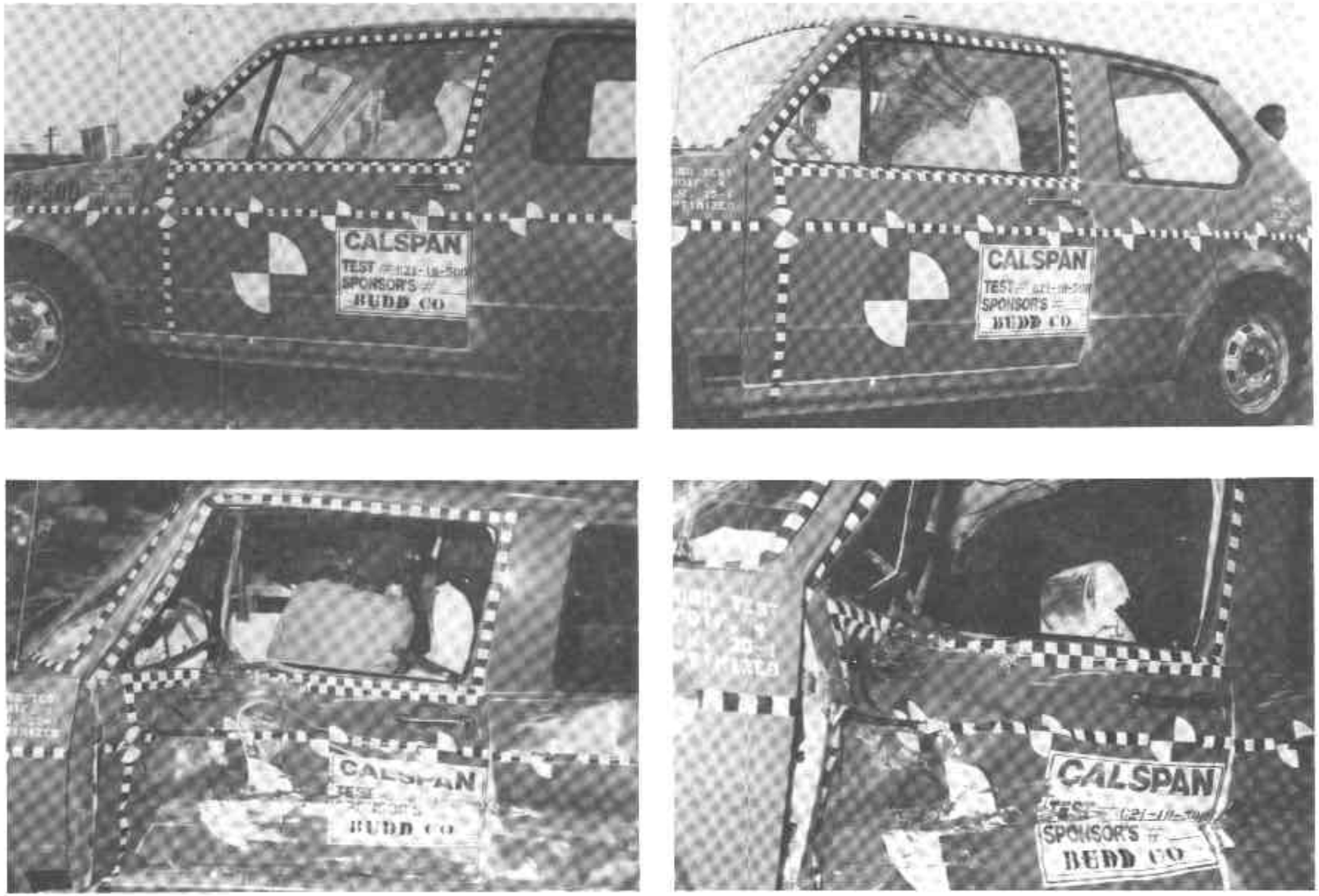

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Figure 3 VEHICLE 2 - PRE- AND POST-TEST VIEWS OF LEFT SIDE EXTERIOR

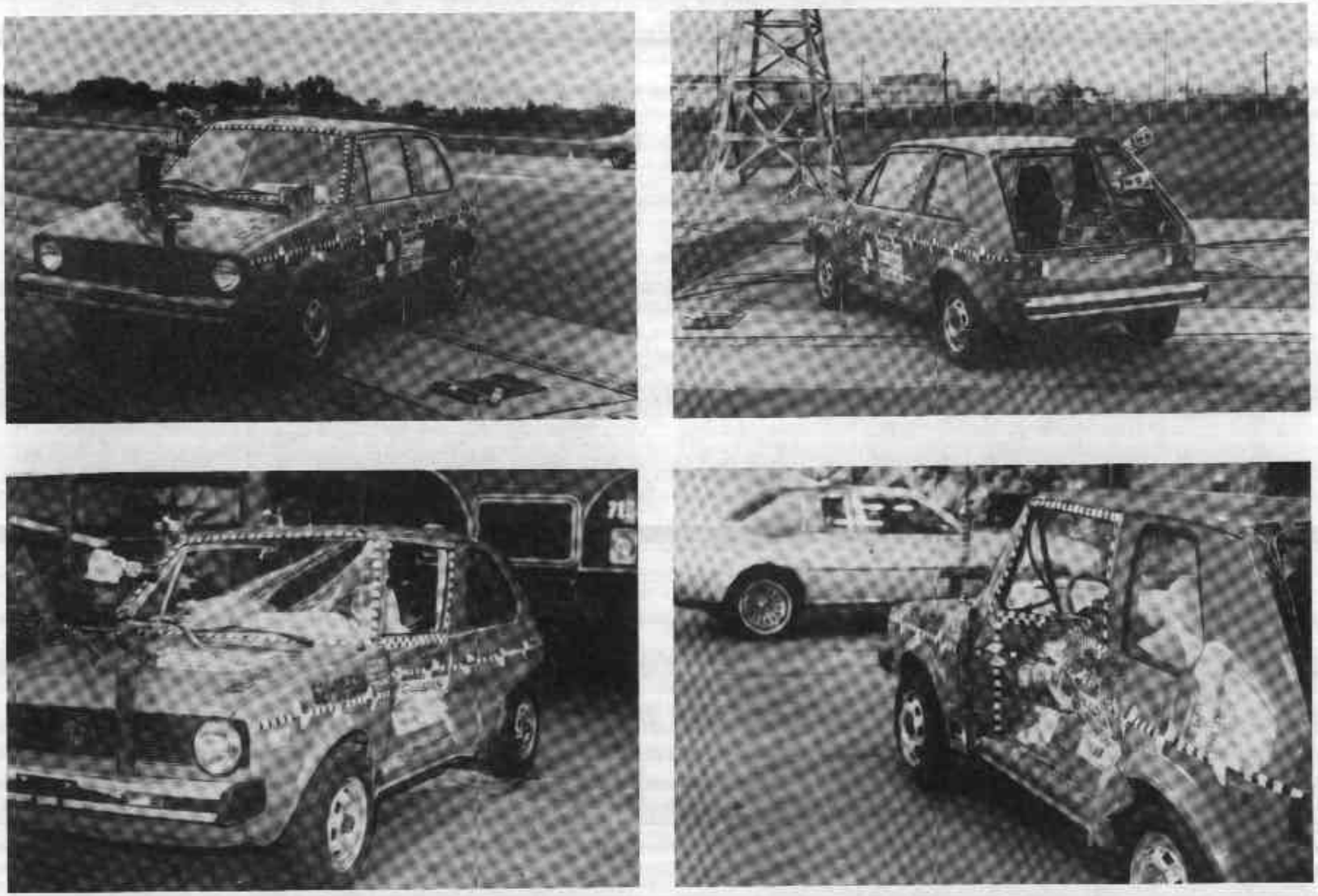

Figure 4 VEHICLE 2 - PRE- AND POST-TEST THREE-QUARTER EXTERIOR VIEWS

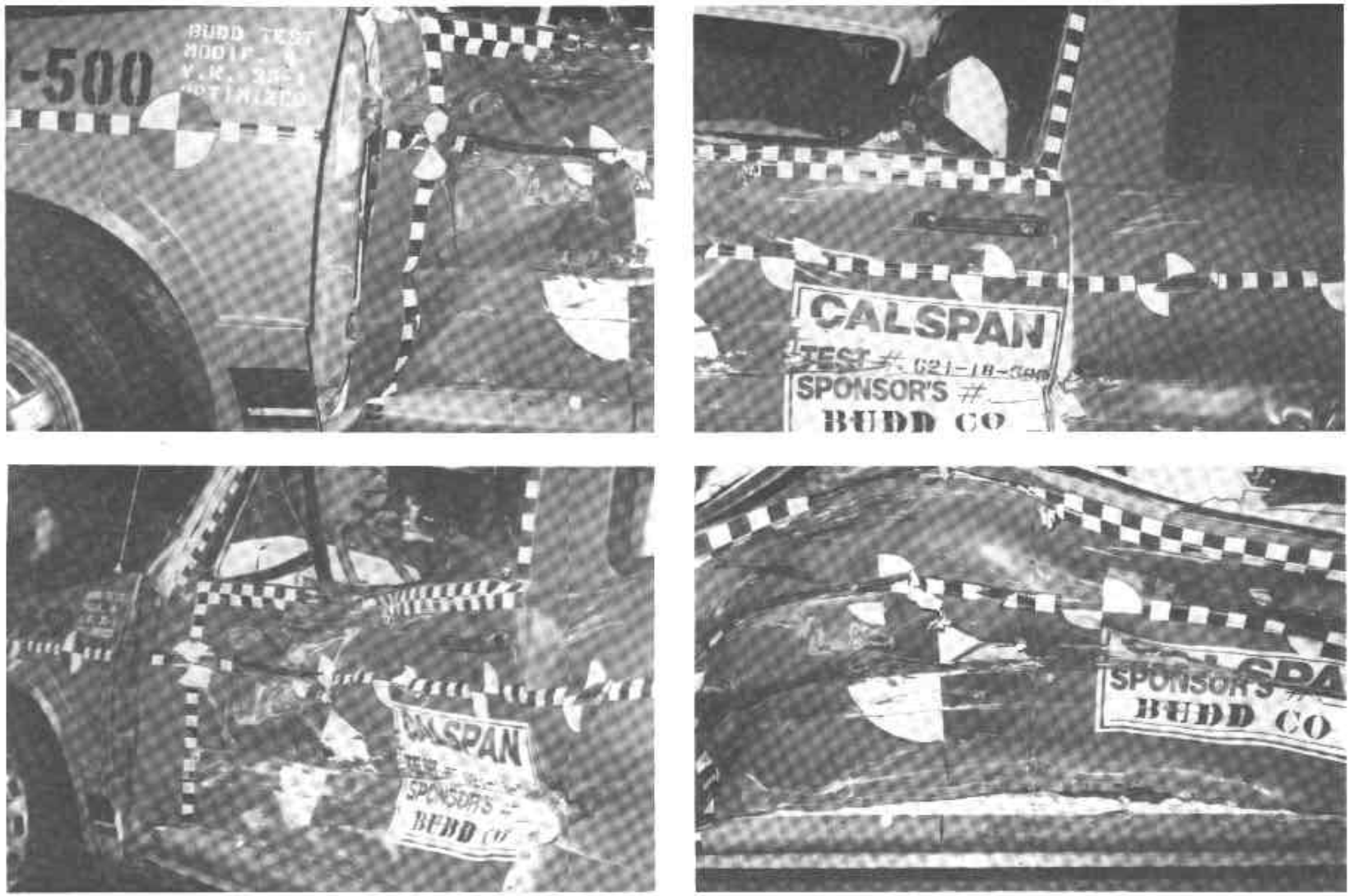

Figure 5 VEHICLE 2 - POST-TEST VIEWS OF DRIVER DOOR

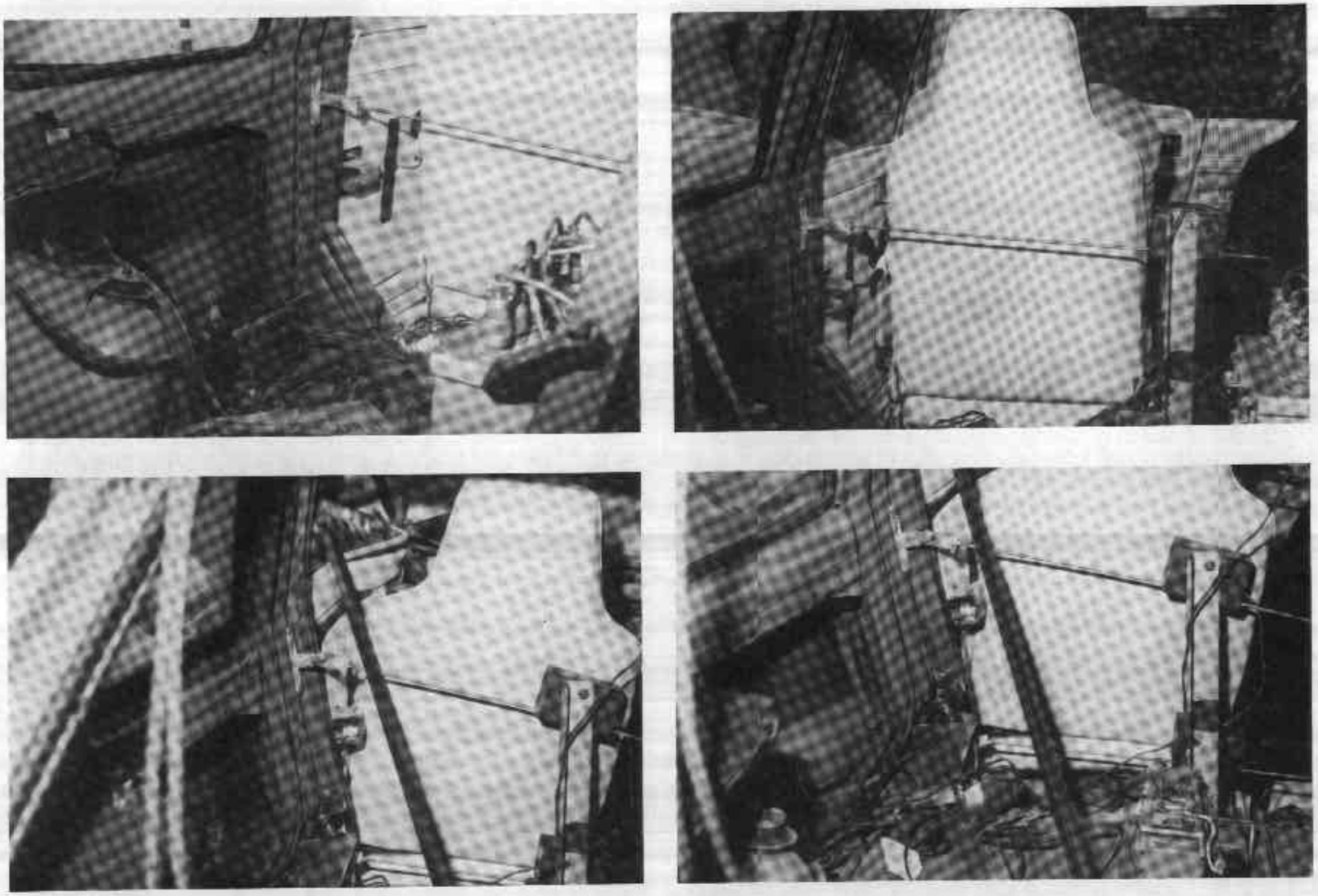

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Figure 6 VEHICLE 2 - PRE- AND POST-TEST VIEWS OF INTERIOR

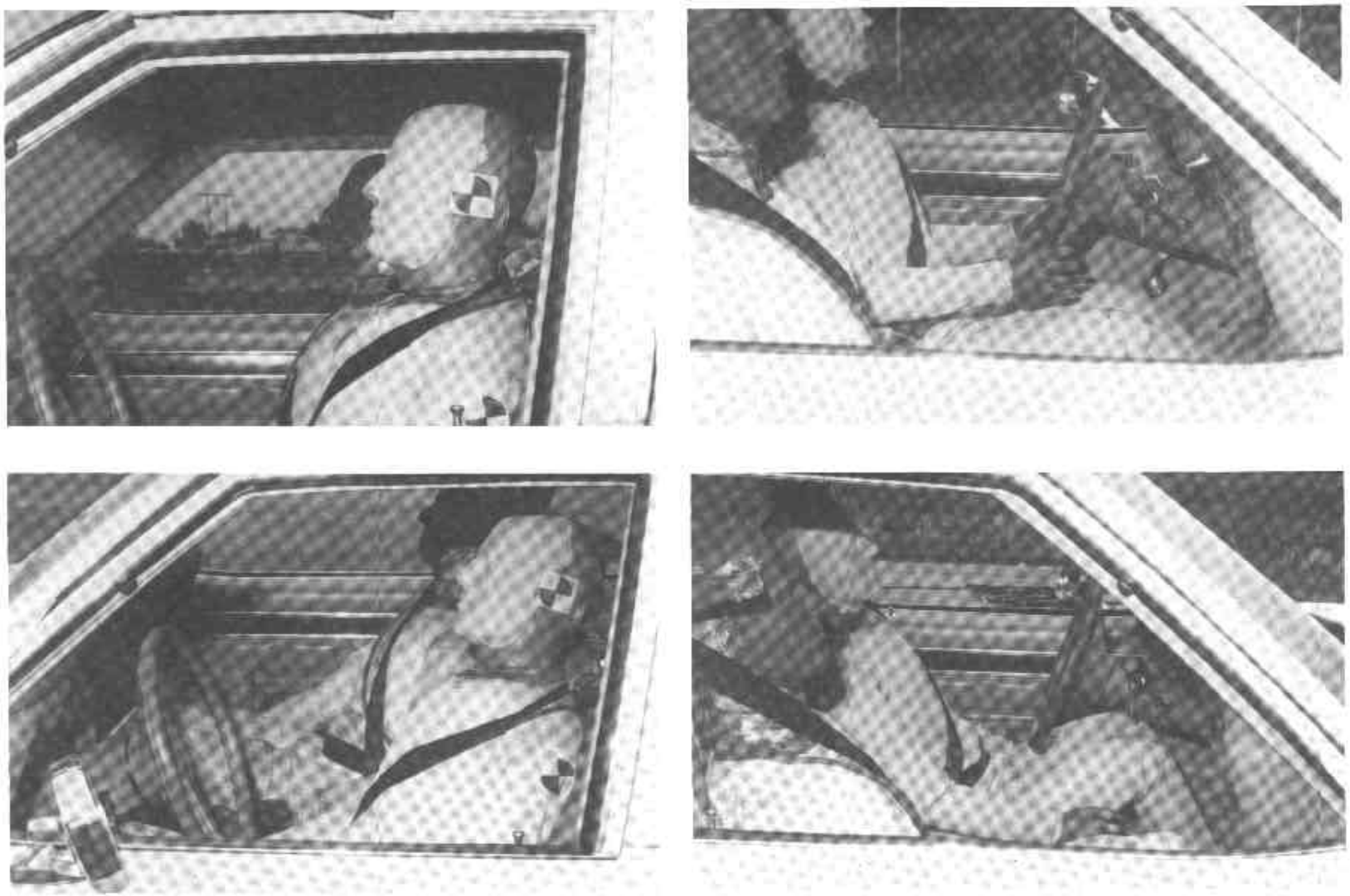

Figure 7 VEHICLE 1 - PRE- AND POST-TEST VIEWS OF DRIVER AND RIGHT FRONT PASSENGER

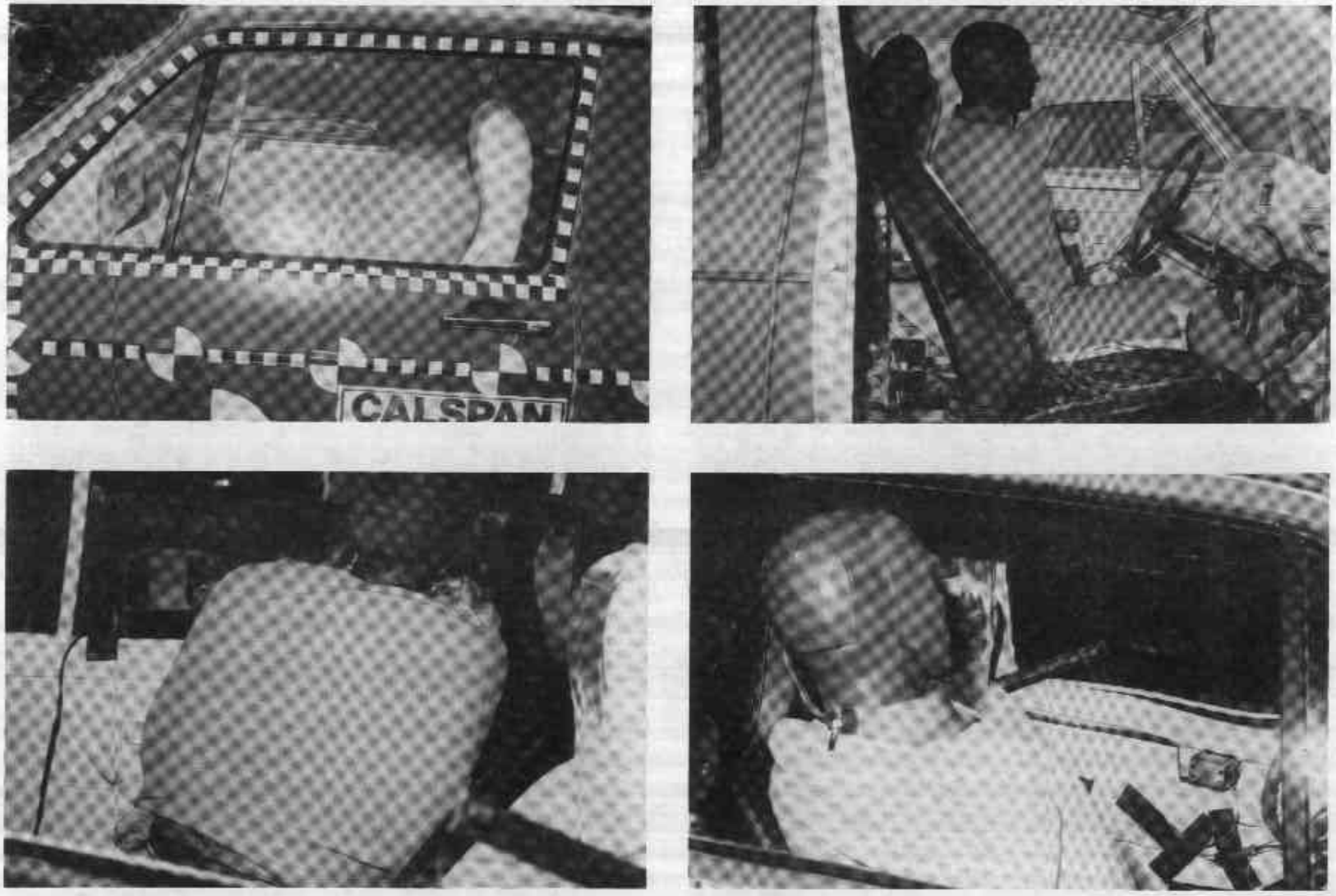

Figure 8 VEHICLE 2 - PRE- AND POST-TEST VIEWS OF DRIVER POSITION

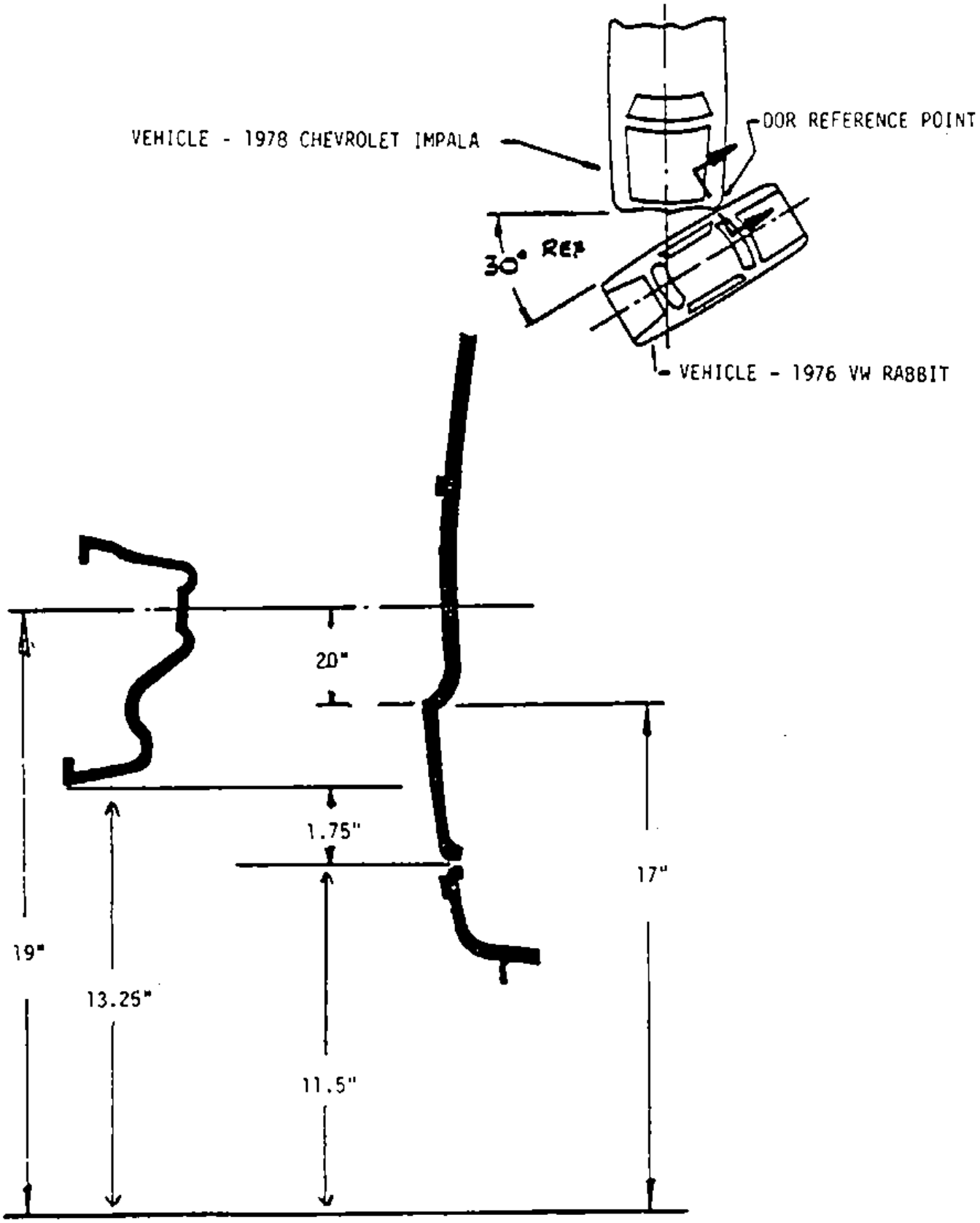

Figure 9 VEHICLE CRASH ATTITUDE

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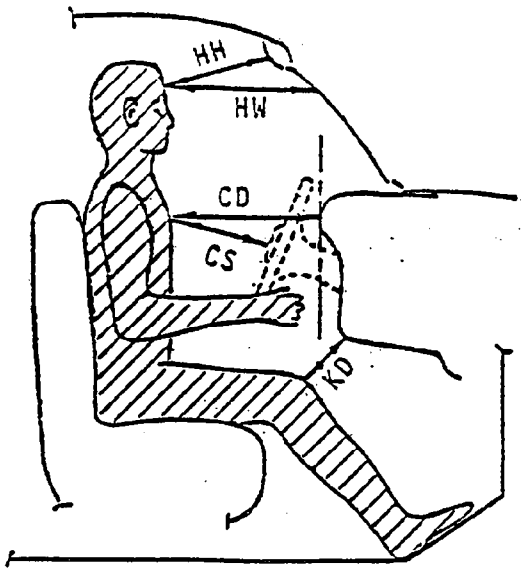
	VW DRIVER	IMPALA DRIVER
HH	17 3/4"	14 1/2"
HW	21 1/2"	21 1/4"
CD	22 3/8"	22 1/4"
CS	14 1/4"	16 3/4"
KDL	7 3/4"	6 3/4"
KDR	7 3/8"	6 3/8"



	VW DRIVER	IMPALA DRIVER
HR	6	7 1/4"
HS	6 7/8"	10
AD	3 1/2"	6.0"
HD	6.0"	7.0"

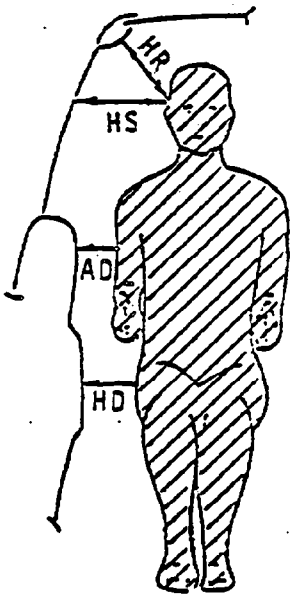


Figure 10 OCCUPANT CLEARANCE DIMENSIONS

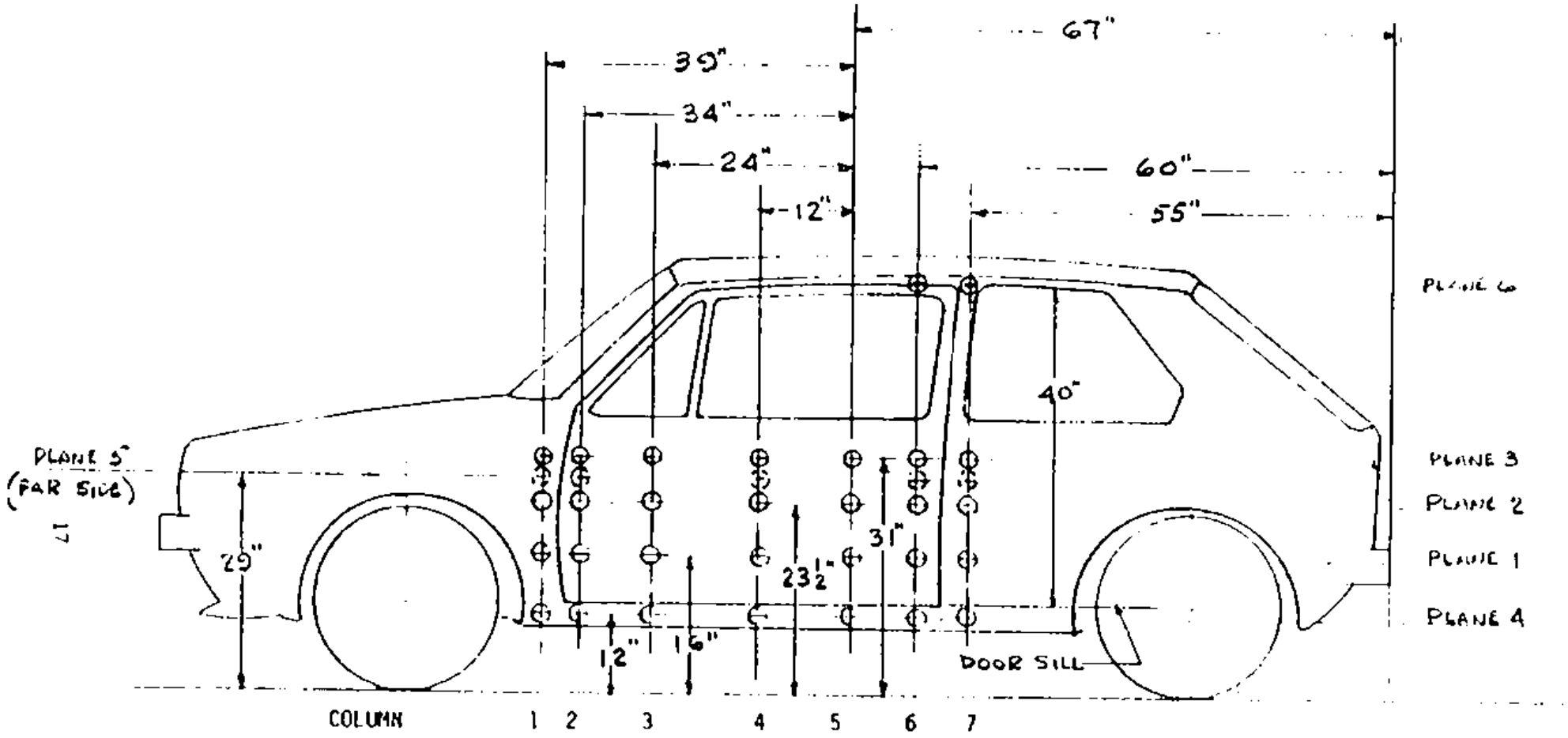


Figure 11 SIDE INTRUSION MEASUREMENT LOCATIONS

Table 3

SIDE INTRUSION MEASUREMENTS

DIMENSIONS LISTED BELOW ARE FROM POINTS SHOWN ON FIG. 11 TO REF. PLANES LOCATED PARALLEL TO AND OUTBOARD FROM ℄ OF VEHICLE (L. SIDE 34" - R. SIDE 34")

DIMENSIONS (INCHES)

PLANE NO.		COLUMNS 1	2	3	4	5	6	7
1	PRE	4.5	4.6	4.5	4.5	4.6	4.6	4.7
	POST	7.3	11.2	14.9	16.4	15.3	13.5	12.3
	DIFF.	2.8	6.6	10.4	11.9	10.7	8.9	7.6
2	PRE	3.7	3.8	3.7	3.6	3.6	3.6	3.8
	POST	6.6	10.6	15.8	17.6	16.2	14.9	13.7
	DIFF.	2.9	6.8	12.1	14.0	12.6	11.3	9.9
3	PRE	4.3	4.25	4.1	4.0	3.9	3.9	4.1
	POST	6.8	10.3	17.4	18.0	15.2	13.2	12.2
	DIFF.	2.5	6.05	13.3	14.0	11.3	9.3	8.1
4	PRE	5.7	5.8	5.8	5.8	5.8	5.8	5.9
	POST	7.7	11.1	11.1	11.9	11.8	11.6	10.4
	DIFF.	2.0	5.3	5.3	6.1	6.0	5.8	4.5
5	PRE	3.7	3.7	3.6	3.6	3.6	3.7	3.8
	POST	2.4	2.3	2.3	2.3	2.5	2.7	2.8
	DIFF.	-1.3	-1.4	-1.3	-1.3	-1.1	-1.0	-1.0
6	PRE						11.5	11.5
	POST						13.3	13.3
	DIFF.						1.8	1.8
7	PRE							
	POST							
	DIFF.							

1976 VW RABBIT

BUDD DYNAMIC TEST NO. 18

Table 4

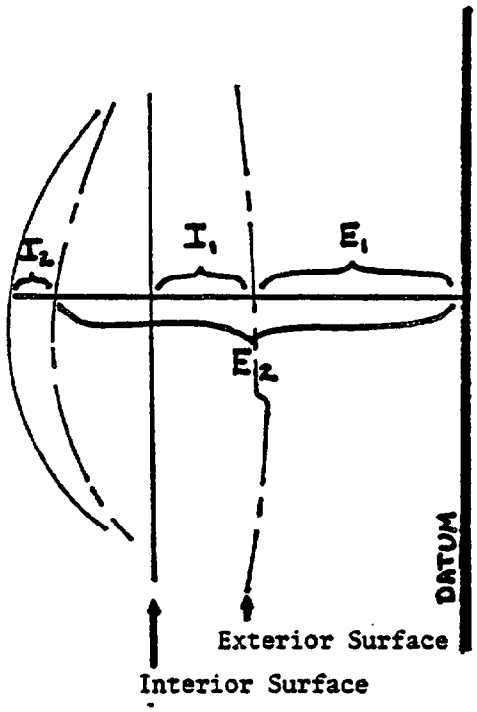
DOOR THICKNESS MEASUREMENTS

DIMENSIONS LISTED BELOW ARE MEASURED WITH A ROD THROUGH A 1/8" HOLE AT EACH LOCATION AS SHOWN IN FIGURE 11

PLANE NO.		THICKNESS (INCHES) COLUMN 2	3	4	5	6
1	PRE	3.4	3.5	3.3	3.2	3.5
	POST	.2	.2	.1	.3	3.3
	DIFF.	-3.2	-3.3	-3.2	-2.9	-0.2
2	PRE	.8	3.8	3.7	3.8	3.8
	POST	.7	2.0	.2	1.8	.3
	DIFF.	-0.1	-1.8	-3.5	-2.0	-3.5
3	PRE	1.5	3.7	3.2	3.2	3.5
	POST	1.0	1.5	1.1	1.4	3.2
	DIFF.	-0.5	-1.2	-2.1	-1.8	-0.3

Table 5

INTRUSION DIMENSIONS



NOTE: All dimensions taken positive from datum toward vehicle interior.

Where: E_1 = pre-test exterior surface (Table 3)
E_2 = post-test exterior surface (Table 3)
I_1 = pre-test door thickness (Table 4)
I_2 = post-test door thickness (Table 4)

$$\text{Intrusion} = (E_2 + I_2) - (E_1 + I_1)$$

$$\therefore \text{Intrusion} = (E_2 - E_1) + (I_2 - I_1)$$

Dimension listed below are for points shown on Figure 11.

	COLUMN NO.			
PLANE NO.	3	4	5	6
1	7.1	8.7	7.8	8.7
2	10.3	10.5	10.6	7.8
3	12.1	11.9	9.5	9.0

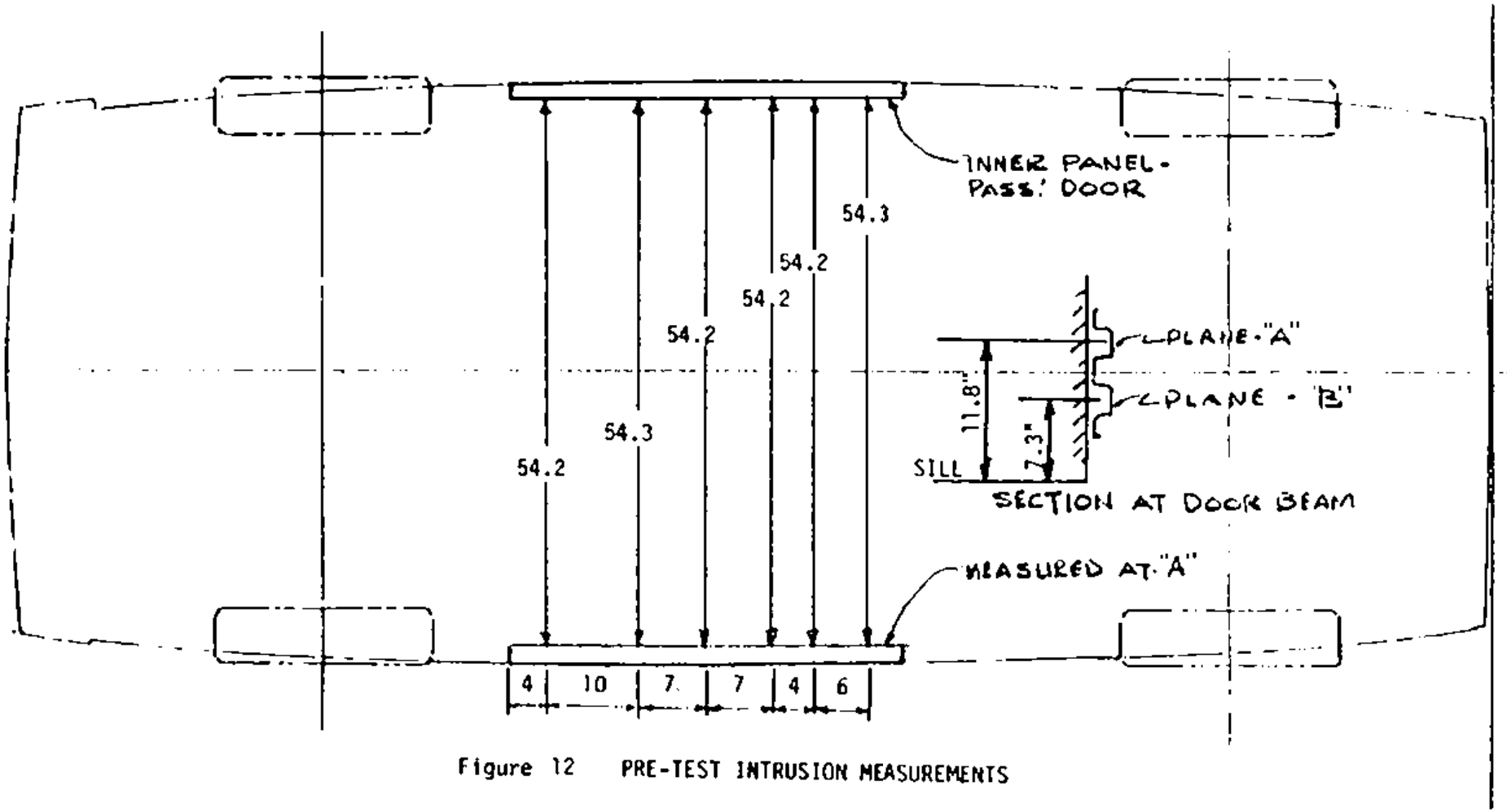


Figure 12 PRE-TEST INTRUSION MEASUREMENTS

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1976 V.W. RABBIT

PLANE "A"
PRE-TEST

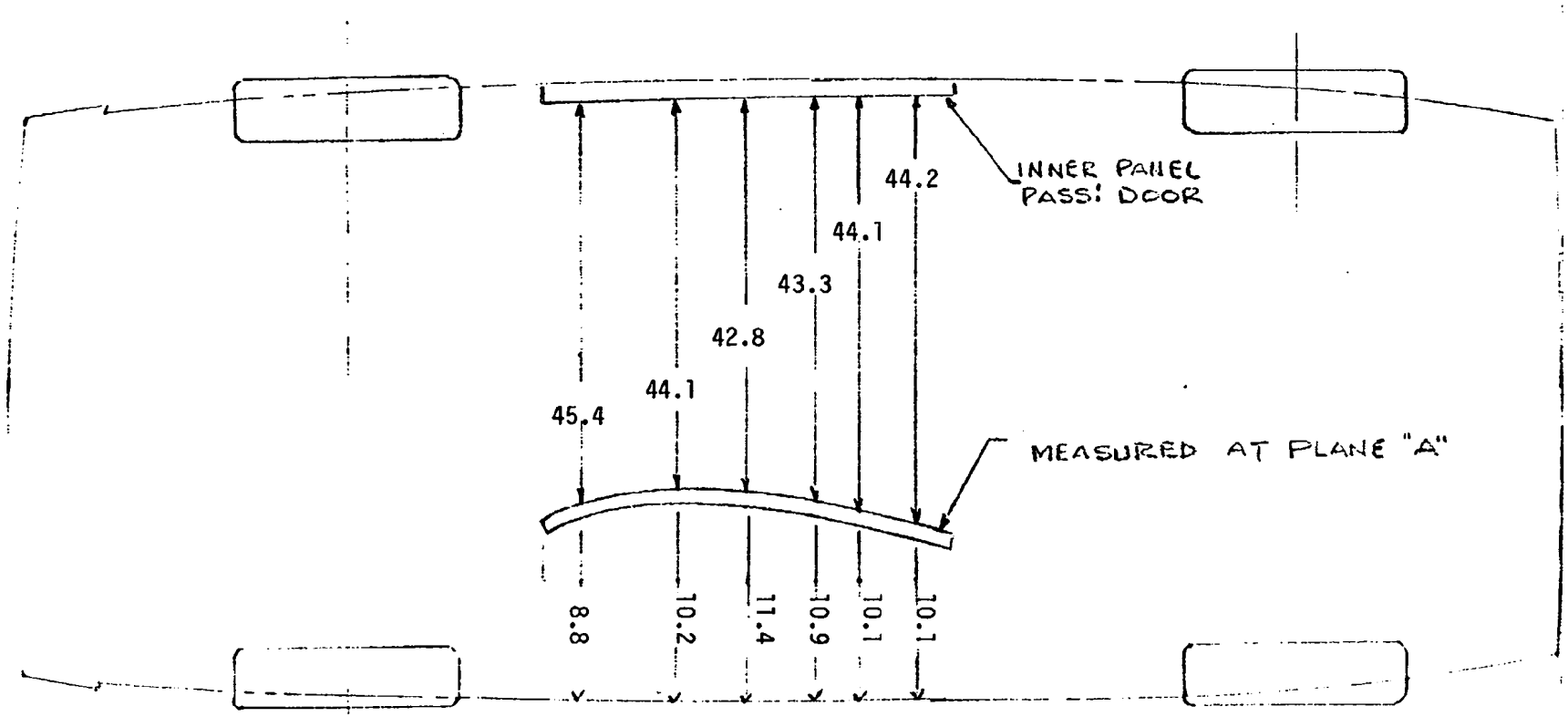


Figure 13 POST-TEST INTRUSION MEASUREMENTS

1976 V.W. RABBIT

PLANE "A"
POST-TEST

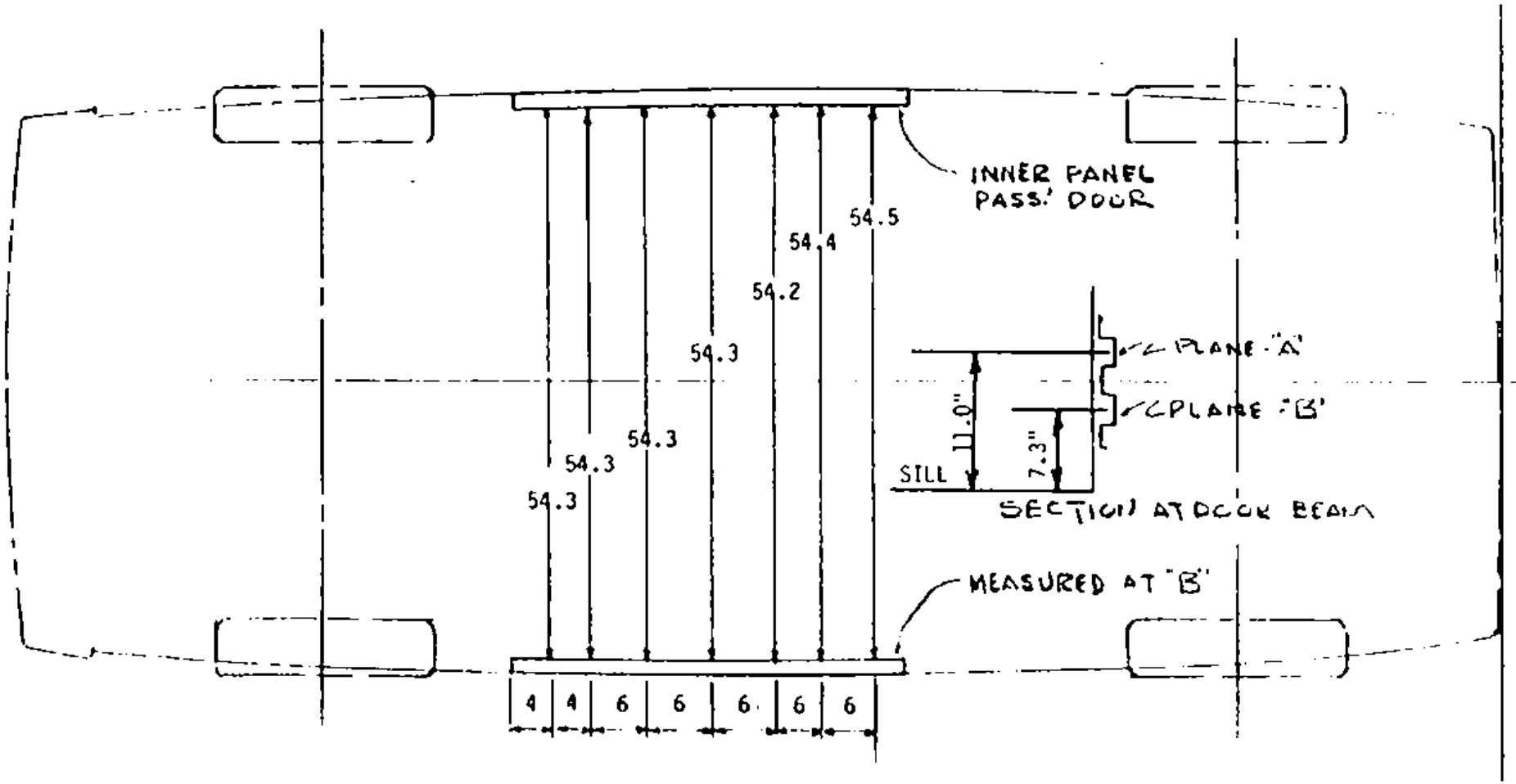


Figure 14 PRE-TEST INTRUSION MEASUREMENTS

1976 V.W. RABBIT

PLANE "B"
PRE-TEST

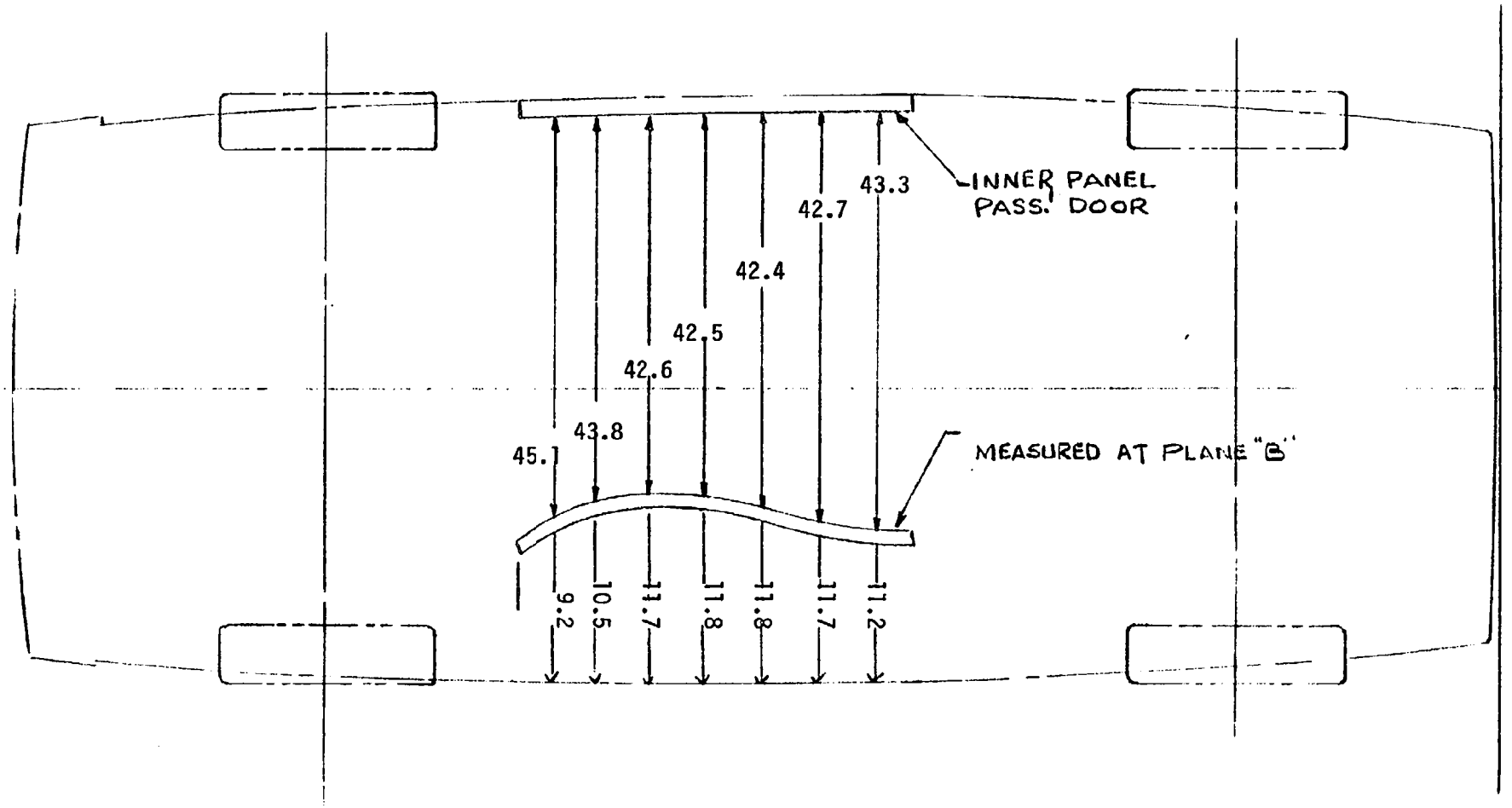


Figure 15 POST-TEST INTRUSION MEASUREMENTS

1976 VW Rabbit

PLANE "B"
POST-TEST

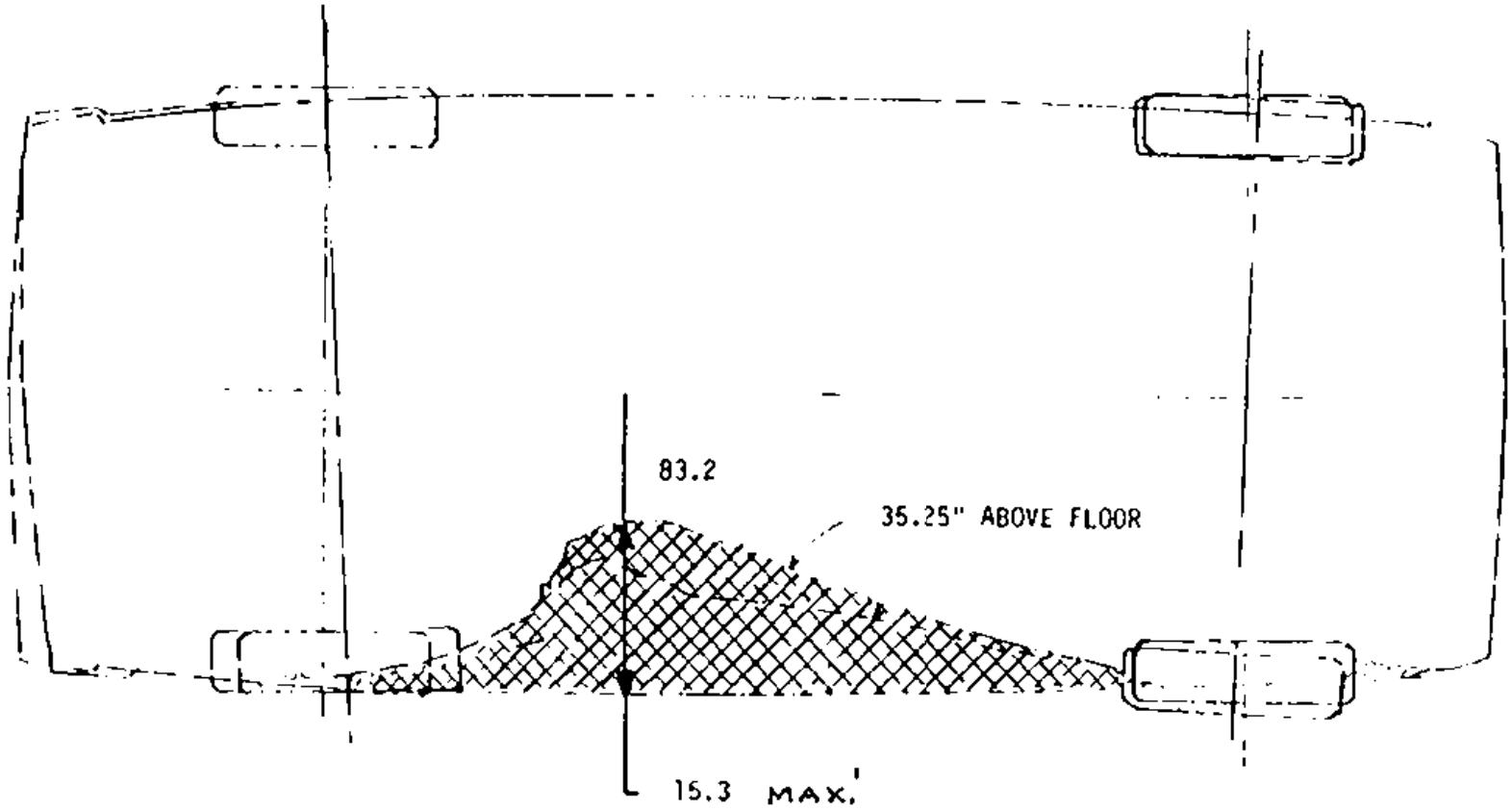


Figure 16 1976 VW RABBIT - EXTERIOR DEFORMATION

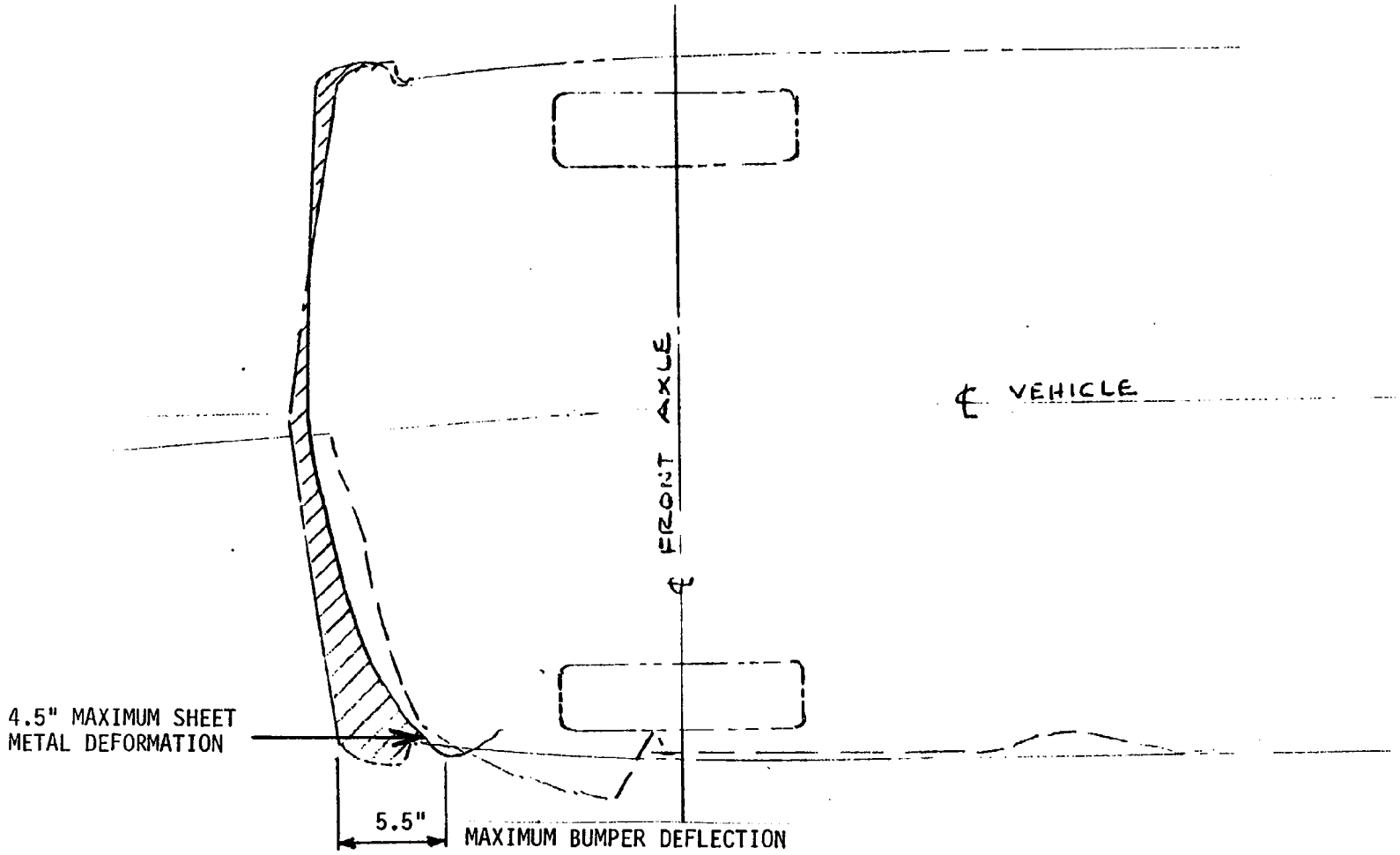


Figure 17 1978 CHEVROLET IMPALA - EXTERIOR DEFORMATION

Table 6

ELECTRONIC INSTRUMENTATION TEST NO. 18

Car 1 - Bullet Vehicle - 1978 Chevrolet Impala

TRANSDUCER DESCRIPTION OR ACCELEROMETER LOCATION *	DIRECTION OF PARAMETER BEING MEASURED	LOCATION ON VEHICLE	DESCRIPTION LISTED ON DATA PLOTS
VEHICLE ACCELEROMETER			
1	X	Left Sill next to Rear Seat	Veh. #1 Acc. Pack #1
2	X	Right sill next to Rear Seat	Veh. #1 Acc. Pack #2
3	X, Y, Z	Deck Over Rear Axle	Veh. #1 Acc. Pack #3
4	X, Y, Z	Firewall	Veh. #1 Acc. Pack #4
5	X	Rear Compartment	Veh. #1 Acc. Pack #5
6	X, Y, Z	Top of Engine, Carburetor	Veh. #1 Acc. Pack #6
7	X	Front Crossmember	Veh. #1 Acc. Pack #7
8	X-Accel.	Bumper (rear face)	Veh. #1 Acc. Pack #8
9	X	Rear Compartment	Veh. #1 Acc. Pack #9
10	Yaw Rate	Centerline Behind Front Seats	Veh. #1 Yaw Rate
DUMMY			
LF Head (Dummy (1))	X, Y, Z	Left Front Seat	Veh. #1 Pos. #1 Head
LF Chest (Dummy (1))	X, Y, Z	Left Front Seat	Veh. #1 Pos. #1 Chest
LF Femurs (Dummy (1))	R, L**	Left Front Seat	Veh. #1 Pos. #1 Femur
LF Belts (Dummy (1))	U, R, L***	Left Front Seat	Veh. #1 Pos. #1 Belts

*See Accelerometer Layout Diagram, Figure 18.

**Right and Left Femur Forces.

***Upper, Lower Right and Lower Left Belt Forces.

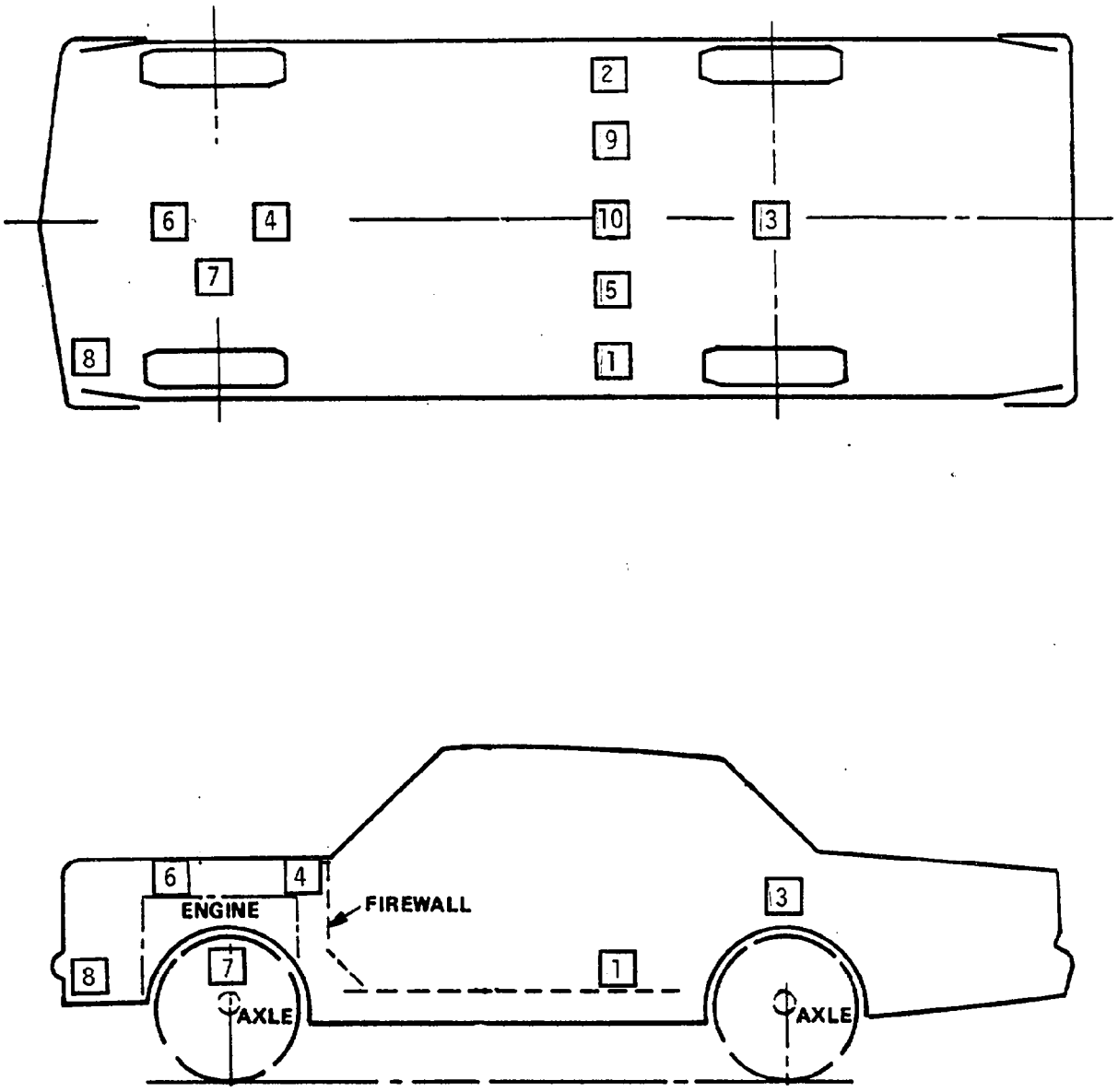


Figure 18 CHEVROLET IMPALA ACCELEROMETER LOCATIONS

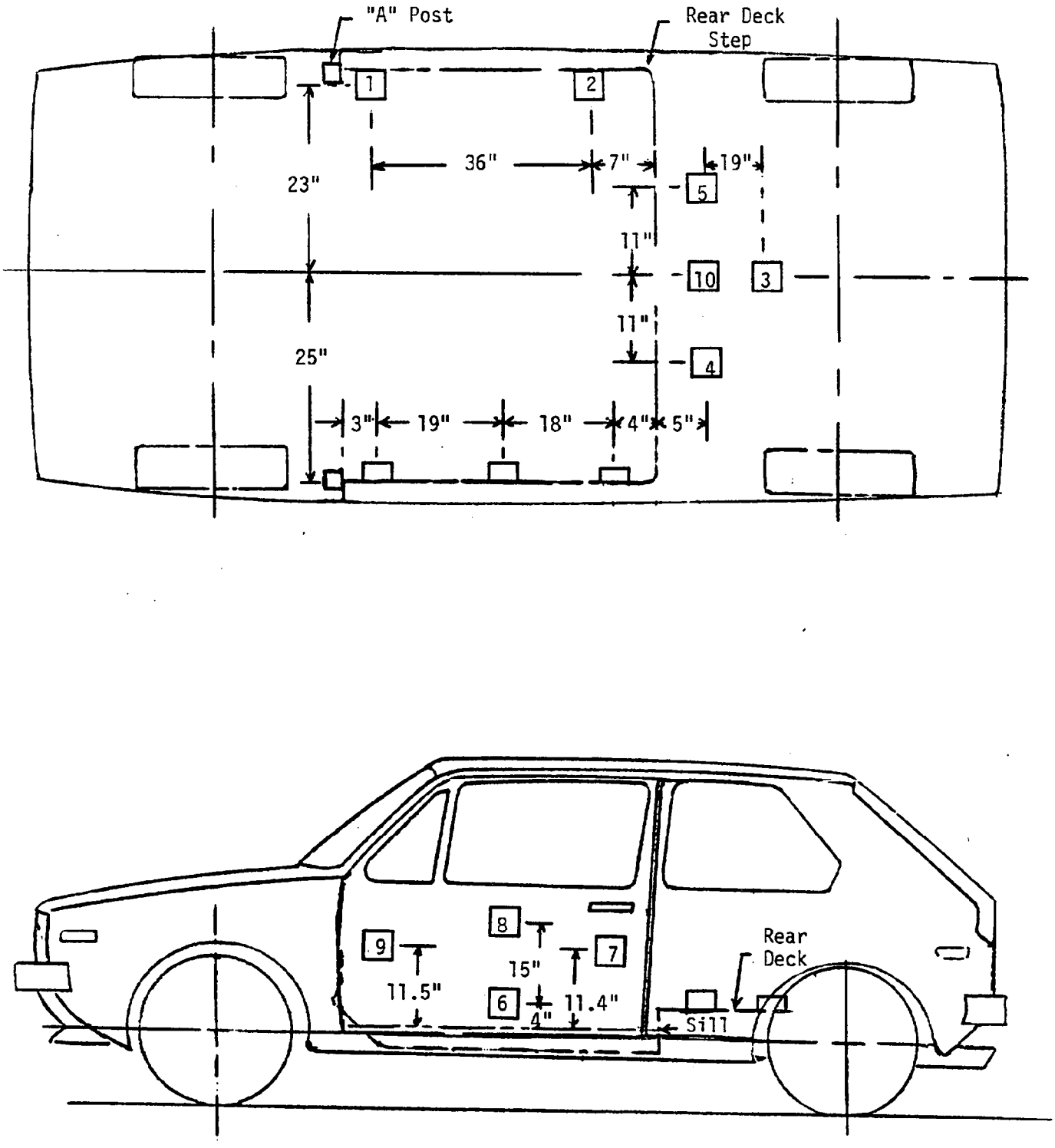
Table 7

ELECTRONIC INSTRUMENTATION TEST NO. 18

Vehicle 2 - 1976 Volkswagen Rabbit

TRANSDUCER DESCRIPTION OR ACCELEROMETER LOCATION*	DIRECTION OF PARAMETER BEING MEASURED	LOCATION ON VEHICLE	DESCRIPTION LISTED ON DATA PLOTS
VEHICLE ACCELEROMETER			
1	X, Y, Z	Right Sill next to Front Seat	Acc. Pack #1
2	X, Y, Z	Right Sill next to Rear Seat	Acc. Pack #2
3	X, Y, Z	Deck over Rear Axle	Acc. Pack #3
4	X	Rear Compartment	Acc. Pack #4
5	X	Rear Compartment	Acc. Pack #5
6	Y	Lower Left Door Centerline	Acc. Pack #6
7	Y	Mid-Rear of Left Door	Acc. Pack #7
8	Y	Upper Left Door Centerline	Acc. Pack #8
9	Y	Mid-Front of Left Door	Acc. Pack #9
DUMMY			
LF Head (Dummy (1))	X, Y, Z	Left Front Seat	Pos. #1 Head
LF Upper Spine (Dummy (1))	X, Y, Z	Left Front Seat	Pos. #1 Upper Spine
LF Lower Spine (Dummy (1))	X, Y, Z	Left Front Seat	Pos. #1 Lower Spine
LF Pelvis (Dummy (1))	X, Y, Z	Left Front Seat	Pos. #1 Pelvic
LF Upper Left Rib (Dummy (1))	Y	Left Front Seat	Pos. #1 Upper L Rib Y
LF Lower Left Rib (Dummy (1))	X	Left Front Seat	Pos. #1 Lower L Rib X
LF Upper Right Rib (Dummy (1))	Y	Left Front Seat	Pos. #1 Upper R Rib Y
LF Upper Sternum (Dummy (1))	X	Left Front Seat	Pos. #1 Upper Front X
LF Lower Sternum (Dummy (1))	X	Left Front Seat	Pos. #1 Lower Front X
LF Lower Right Rib Dummy (1))	X	Left Front Seat	Pos. #1 Lower R Rib X
MISCELLANEOUS			
10	Yaw Rate	Centerline behind Front Seats	Yaw Rate
1-4	Side Intrusion	Side Intrusion (Driver Side)	Pot. #1, 2, 3, 4

*See Accelerometer Layout Diagram, Figure 19.



Vehicle No. 2 - 1976 VW Rabbit

Figure 19 VEHICLE ACCELEROMETER LOCATION

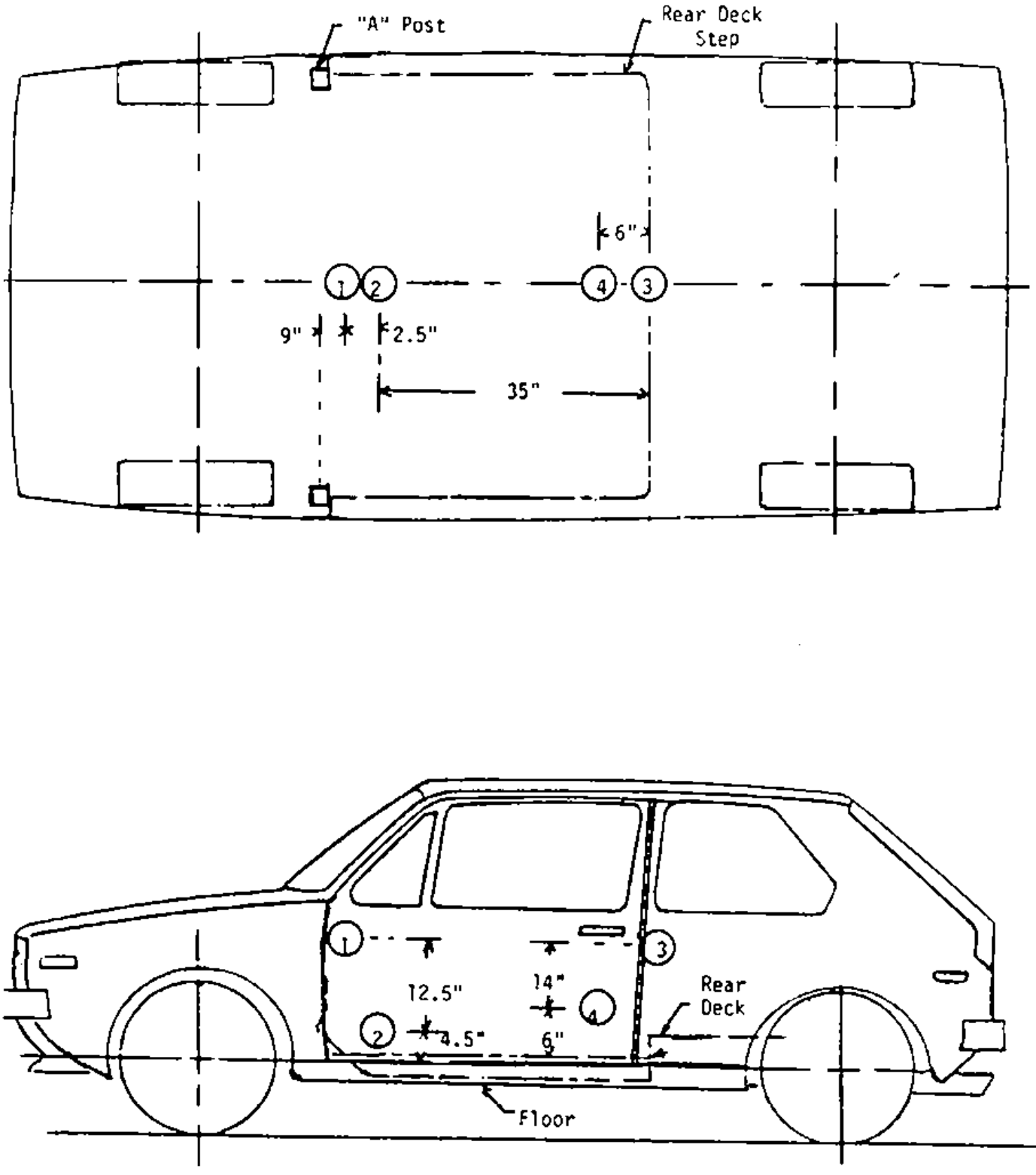


Figure 20 VW RABBIT POTENTIOMETER LOCATION

Note: Camera Information Shown on Table.

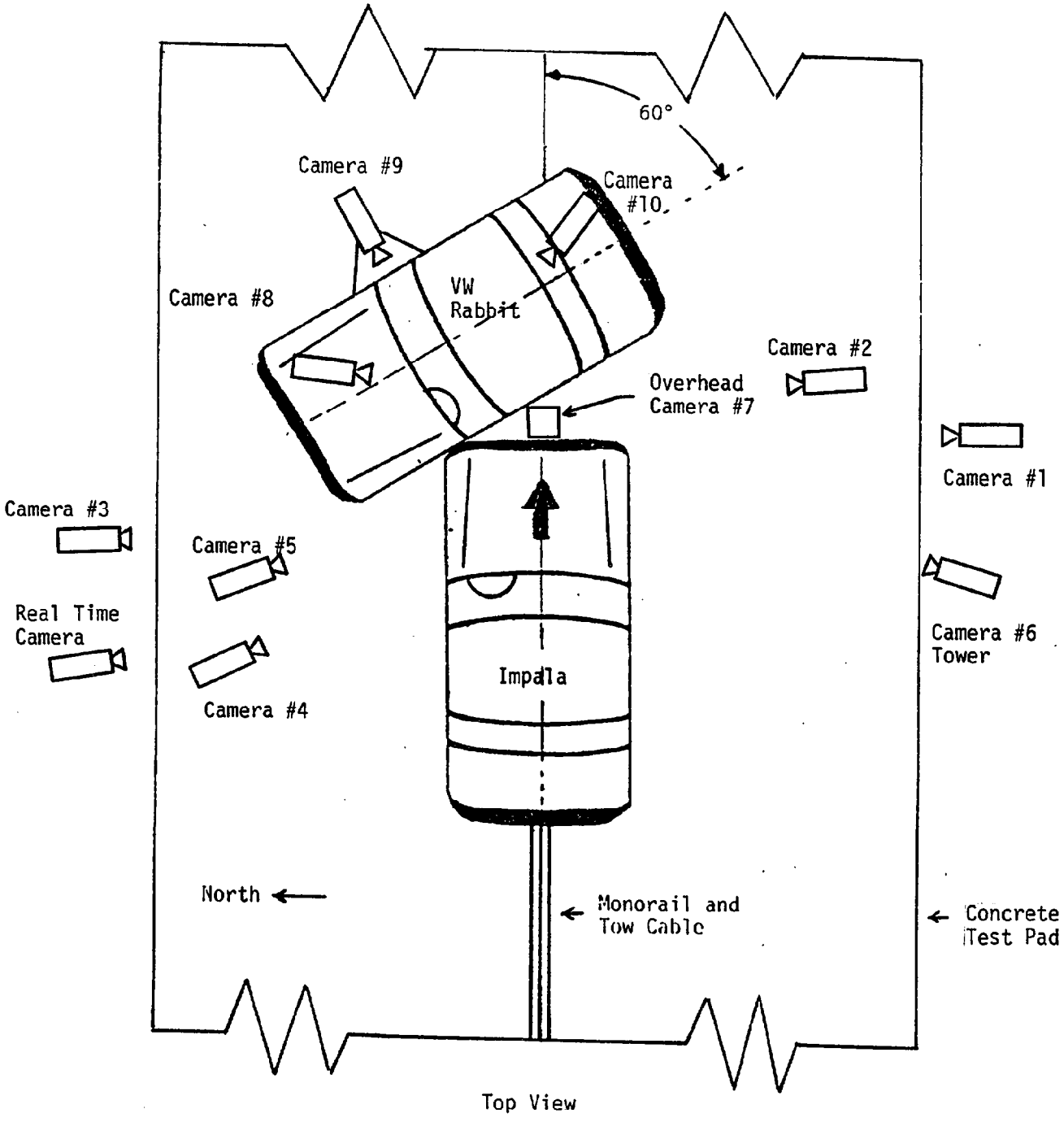


Figure 21 CAMERA LOCATIONS

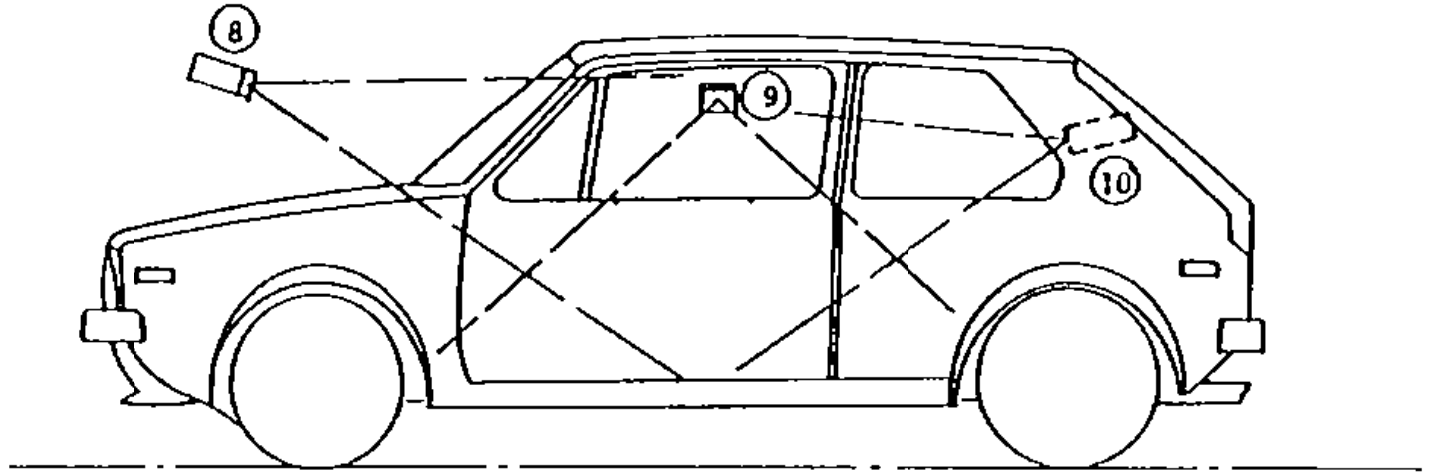


FIGURE 22 ON-BOARD HIGH-SPEED CAMERA LOCATIONS

Table 8

HIGH SPEED CAMERA INFORMATION (TEST NO. 18)

CAMERA NO.	LOCATION	TYPE	SPEED (fps)
1	IMPACT (WIDE)	PHOTOSONIC	900
2	IMPACT (CLOSE)	PHOTOSONIC	900
3	IMPACT (WIDE)	PHOTOSONIC	900
4	IMPACT (CLOSE)	PHOTOSONIC	1000
5	IMPACT (CLOSE)	PHOTOSONIC	900
6	TOWER 45°	PHOTOSONIC	900
7	OVERHEAD	PHOTOSONIC	900
8	ON-BOARD (HOOD)	STALEX	1400
9	ON-BOARD (SIDE)	STALEX	1250
10	ON-BOARD (REAR)	STALEX	1800

NOTE: CAMERAS ARE NUMBERED ACCORDING TO SPLICING SEQUENCE OF FILM.

(24 fps) REAL TIME MOVIE FILM COVERAGE OF PRE-CRASH, POST-CRASH AND CRASH EVENT SPLICED AT START OF FILM.

Table 9

DUMMY INJURY CRITERIA VALUES

Car 1 - Striking Vehicle

1978 Chevrolet Impala

	MAXIMUM ACCELERATION ("G") *											
	HEAD				CHEST				PELVIS			
	X	Y	Z	R	X	Y	Z	R**	X	Y	Z	R**
DUMMY (1)	-14	-1	6	14.3	-13.9	-1	-4	13.8				
DUMMY (2)												
DUMMY (3)												
DUMMY (4)												

	MAXIMUM FORCE-FEMUR LOAD (LBS)	
	RIGHT FEMUR	LEFT FEMUR
DUMMY (1)	50	87.5
DUMMY (2)		
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)	1325	760	200
DUMMY (2)			
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	CHEST
DUMMY (1)	30	.0867	.1542	11.5	43.0	
DUMMY (2)						
DUMMY (3)						
DUMMY (4)						

*Not including secondary impact.

**Defined as exceeding 0.003 sec. duration.

***As defined in FMVSS No. 208.

Table 10

VEHICLE 2 - STRUCK VEHICLE

SIDE IMPACT DUMMY INJURY CRITERIA VALUES
MAXIMUM ACCELERATION ("G")*
1976 VW RABBIT

	X	Y	Z	RESULTANT **
HEAD	-72	58	52	73.8
UPPER SPINE	-16	90	24	86.2
LOWER SPINE	74	80	-74	80.7
PELVIC	-40	118	18	110

UPPER LEFT RIB (Y)		88	
LOWER LEFT RIB (X)	-30		
UPPER RIGHT RIB (Y)		64	
LOWER RIGHT RIB (X)	80***		
UPPER STERNUM (X)	18		
LOWER STERNUM (X)	17		
RIB CAGE DEFLECTION (COMP. +)	-		

HIC	520.2
T1 (Sec)	.0666
T2 (Sec)	.1038
AVE. ACC. (G)	45.5
HEAD SEVERITY	733.6

*NOT INCLUDING SECONDARY IMPACTS.
**DEFINED AS EXCEEDING .003 SEC. DURATION.
***NOISY DATA.

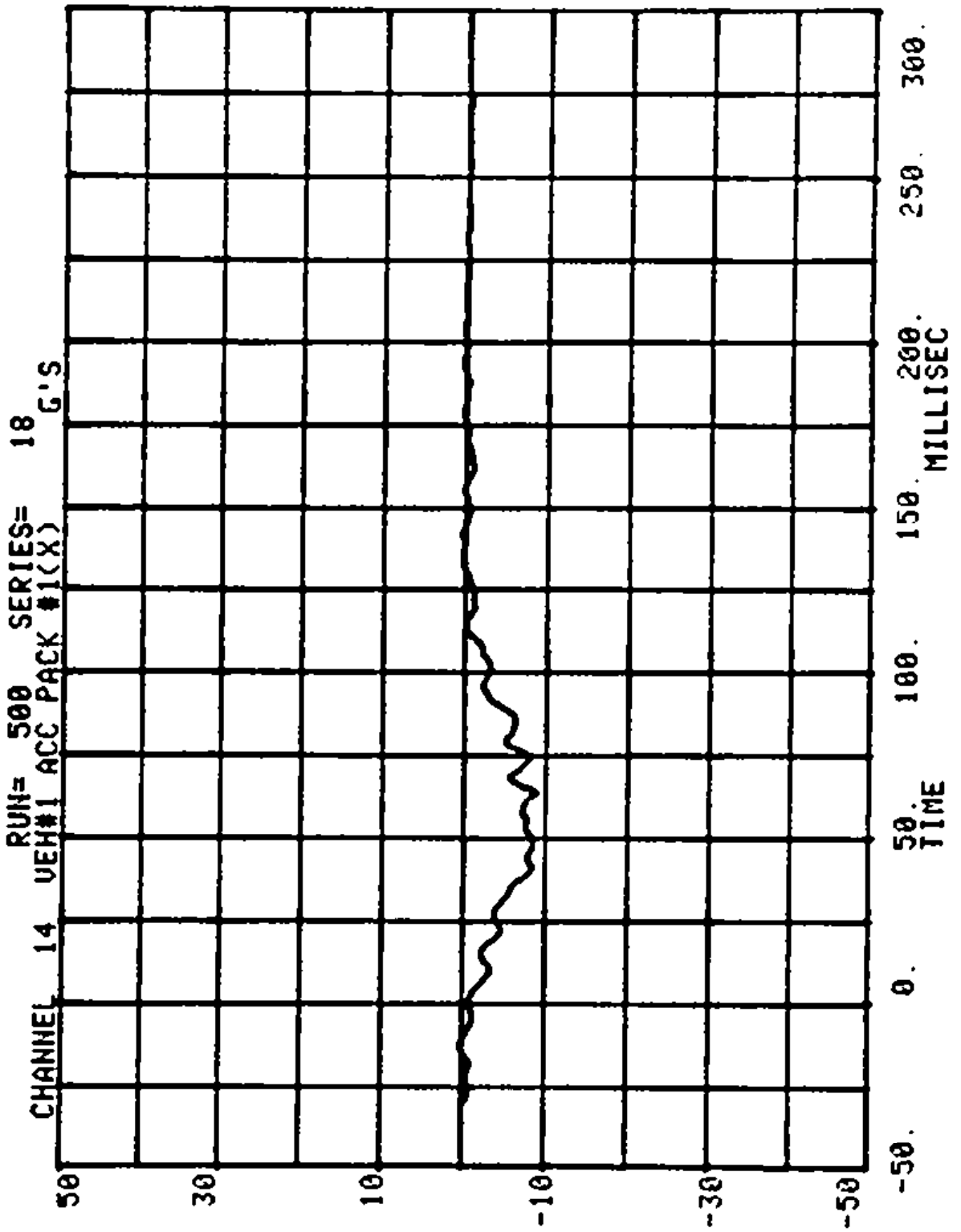
APPENDIX A

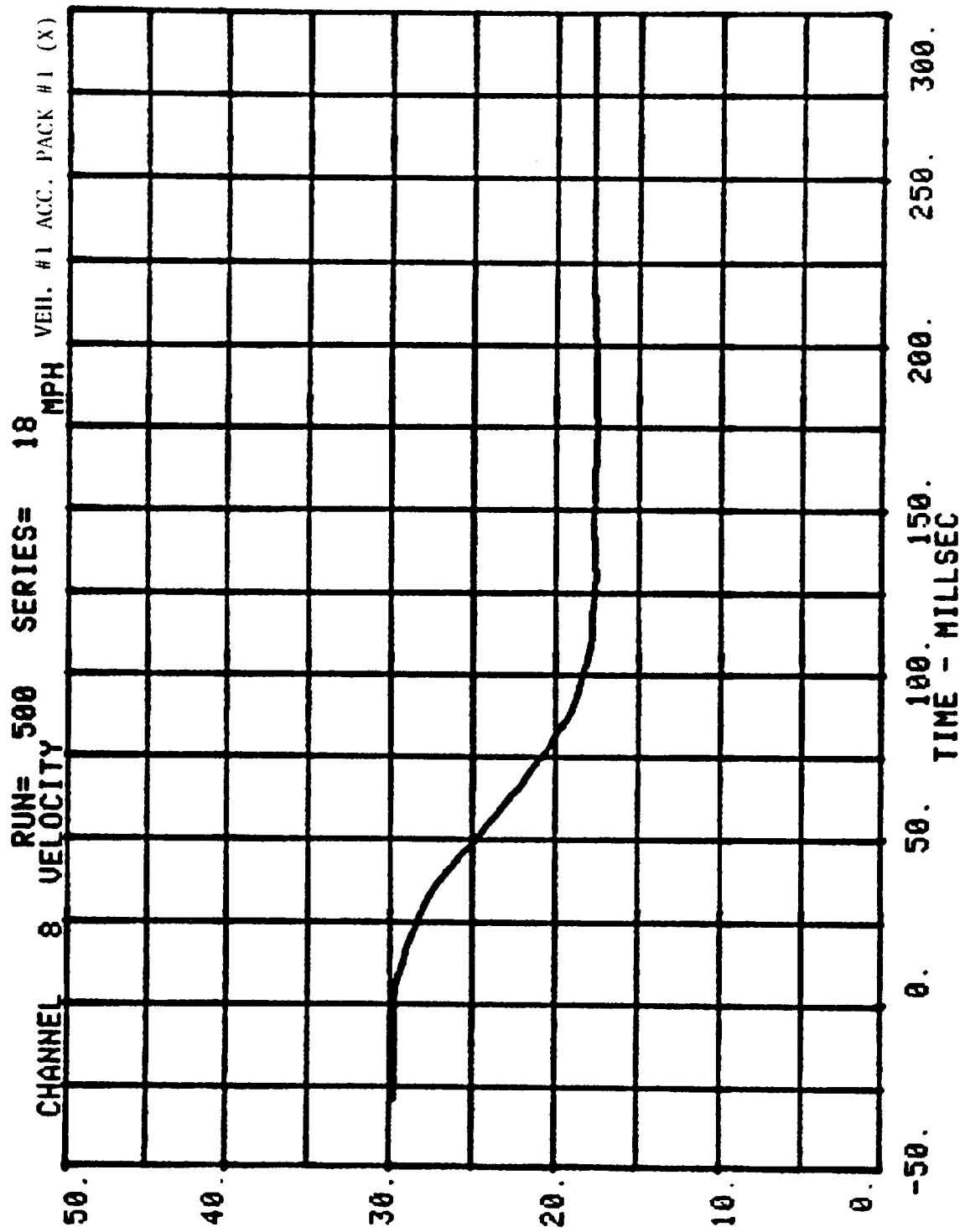
Test No. 18

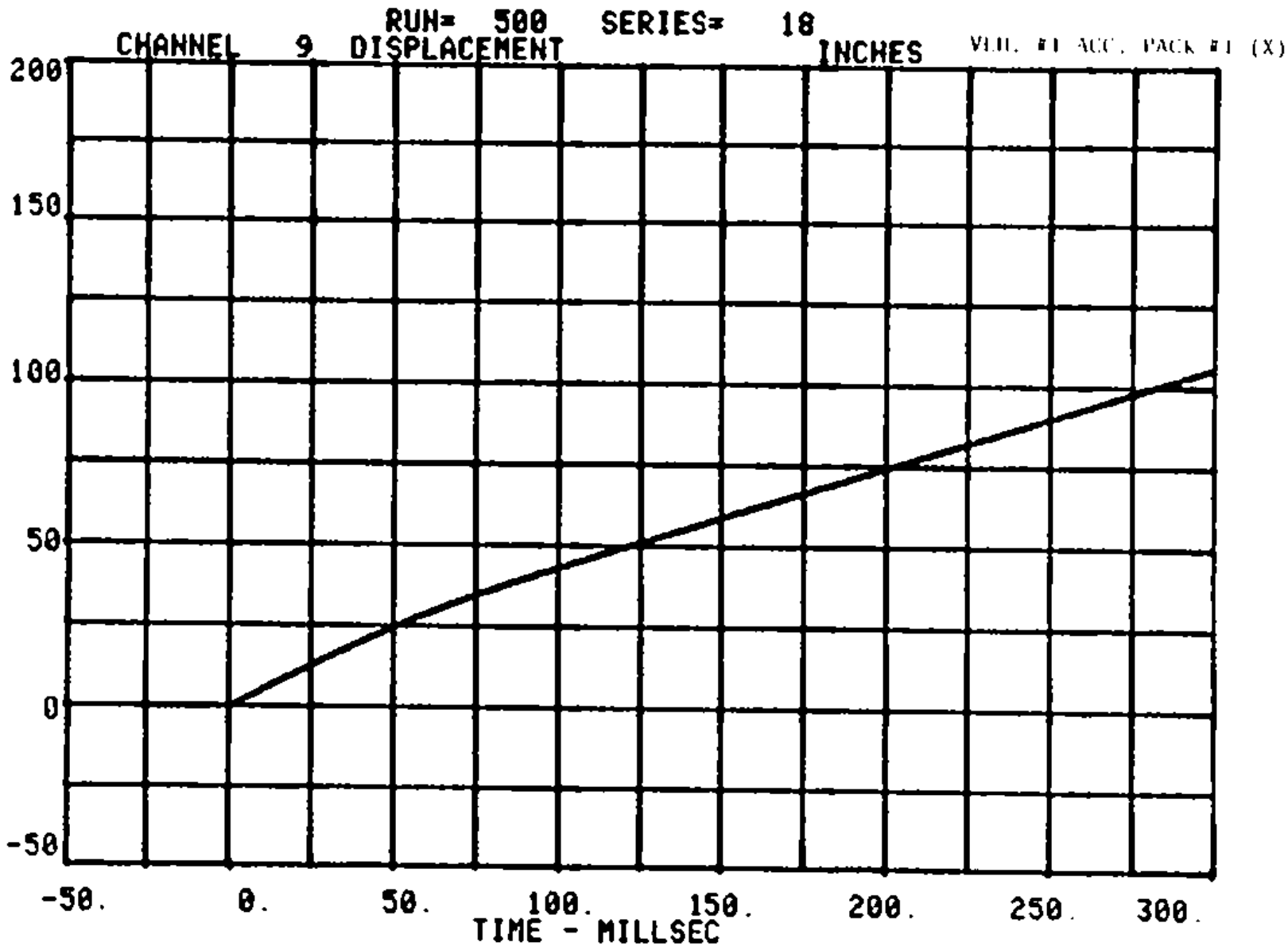
Vehicle 1 - 1978 Chevrolet Impala

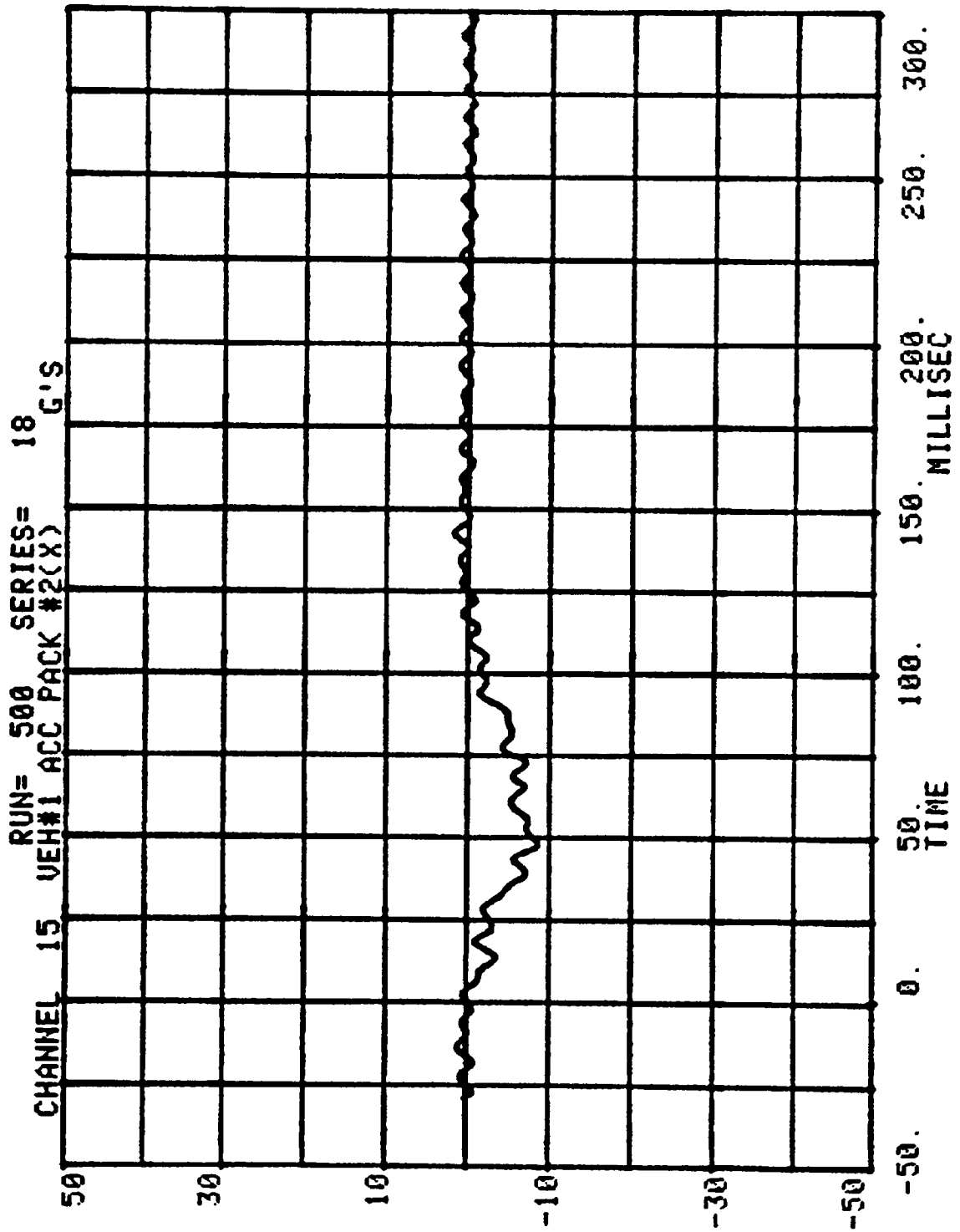
Vehicle Data

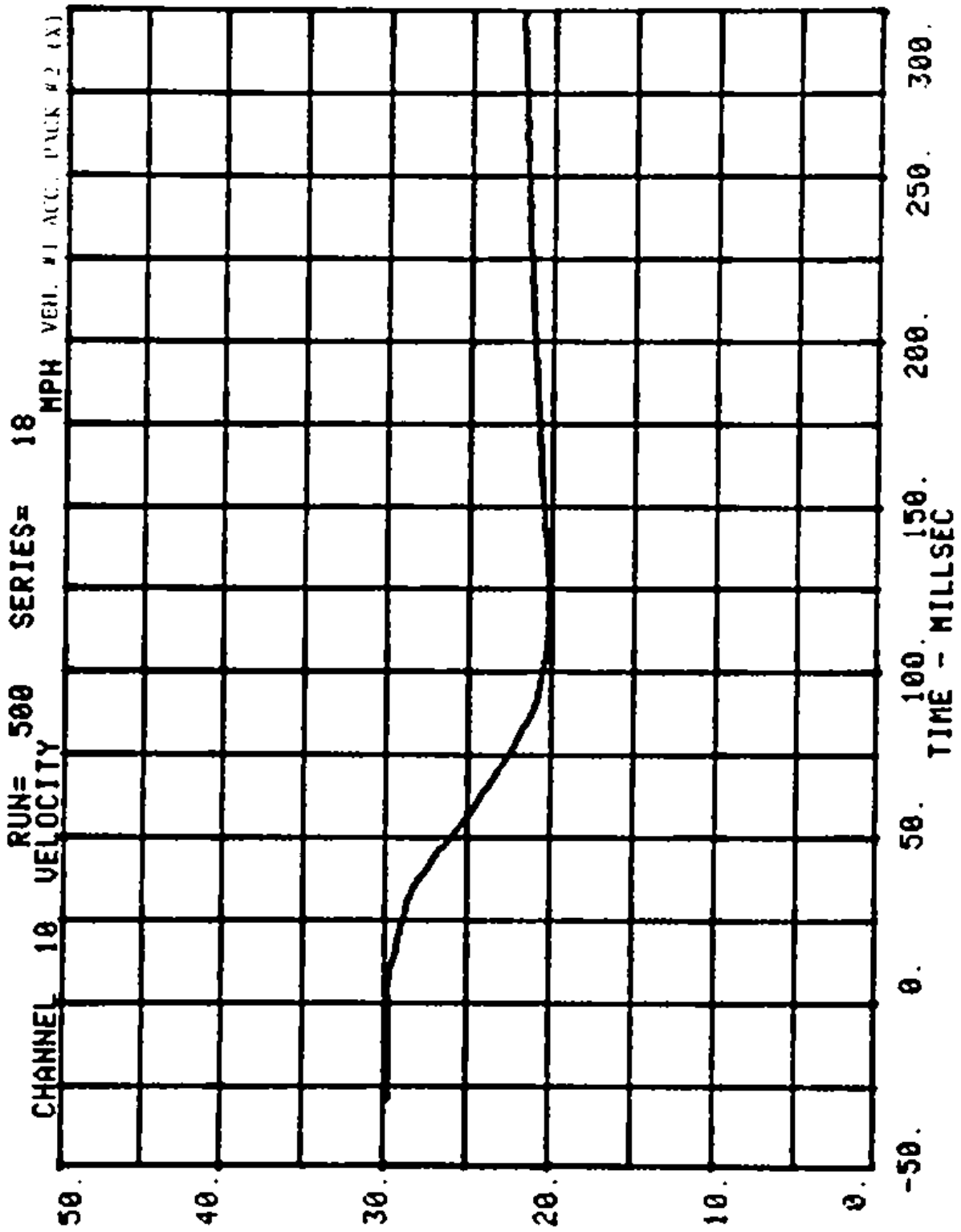
60 Hz Channel Class

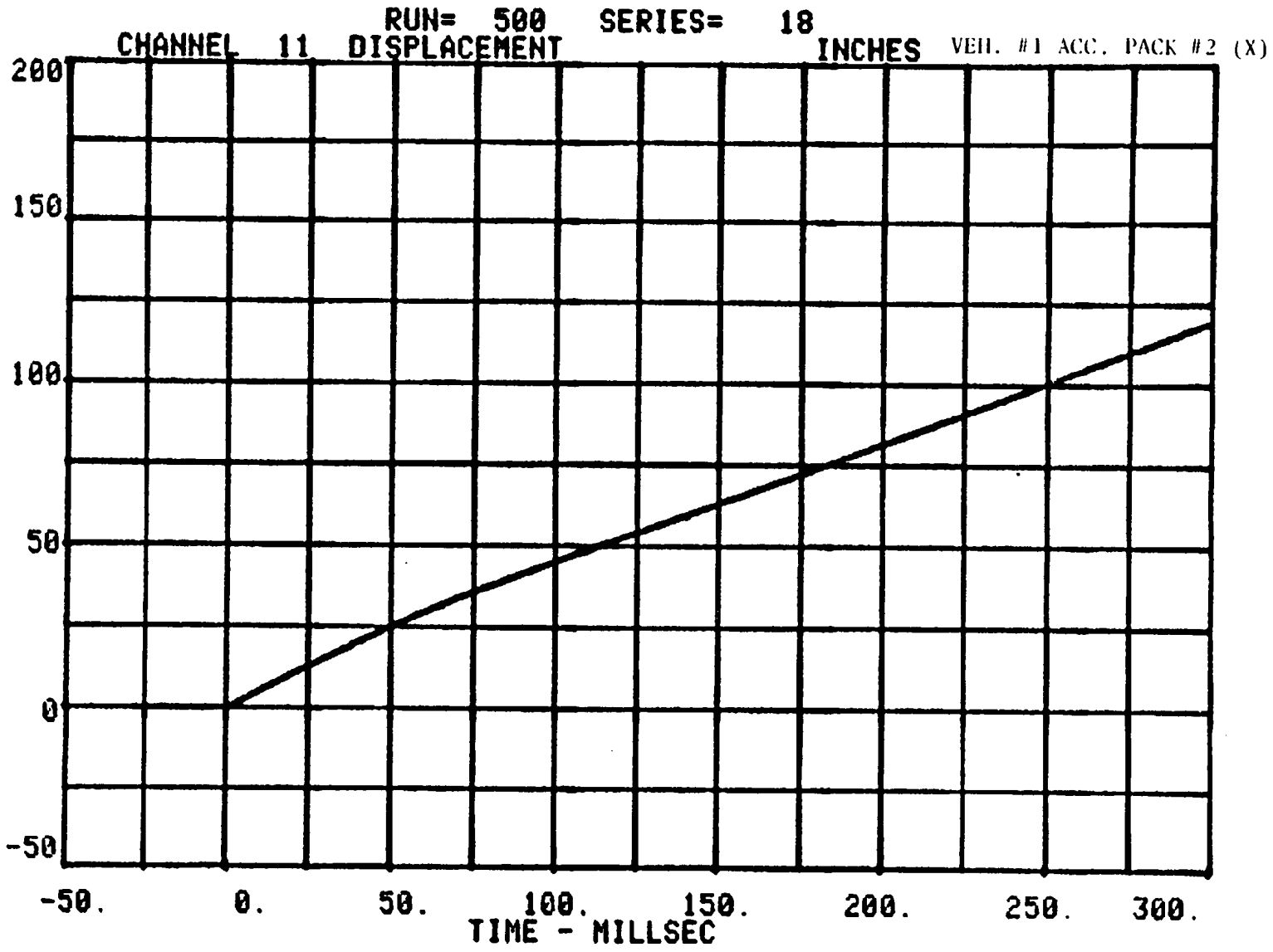

CHANNEL 14 VEH#1 ACC PACK #1(X)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

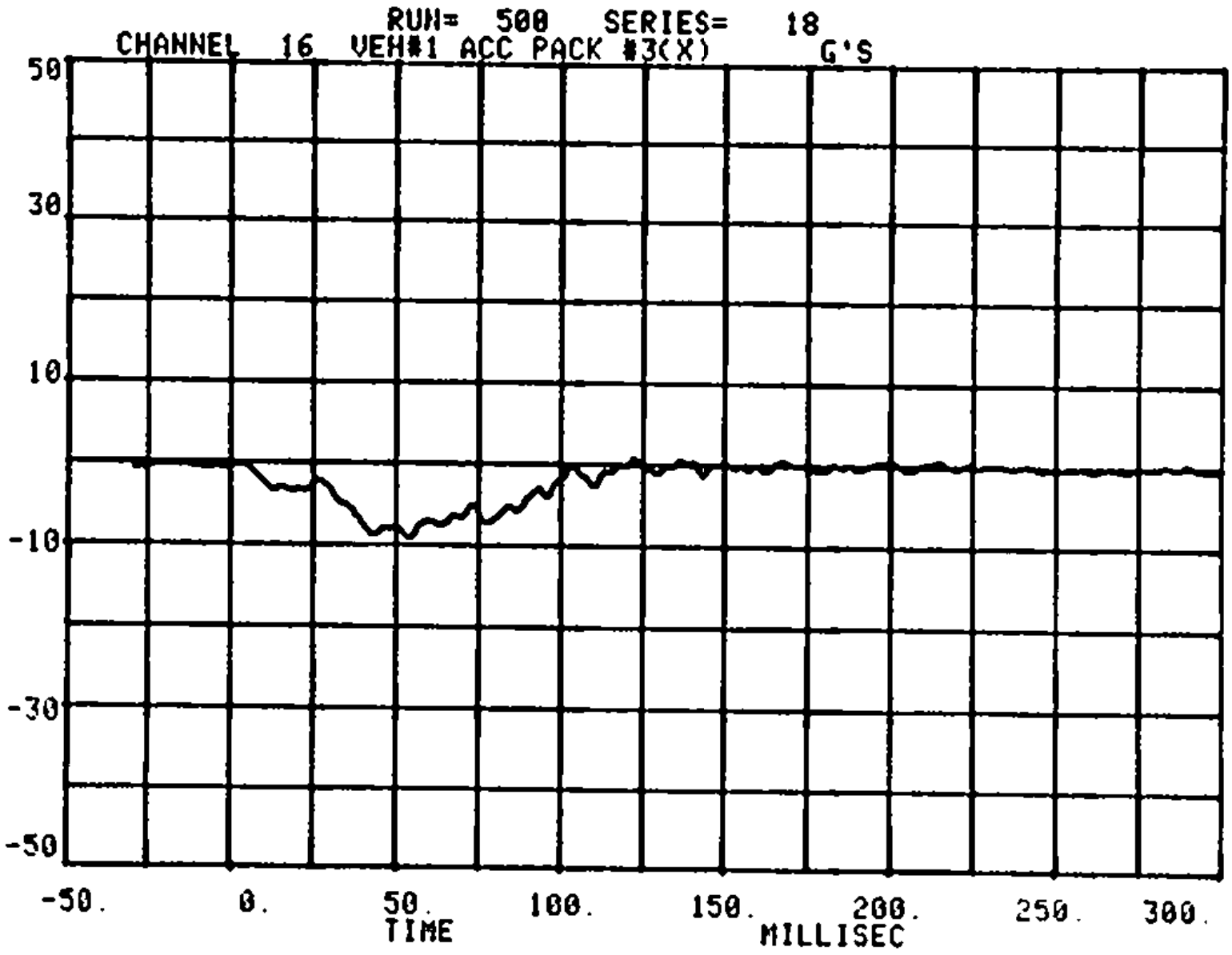

CHANNEL 8 VELOCITY
RUN= 500 SERIES= 18
MPH VEH. #1 ACC. PACK #1 (X)
50.
40.
30.
20.
10.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

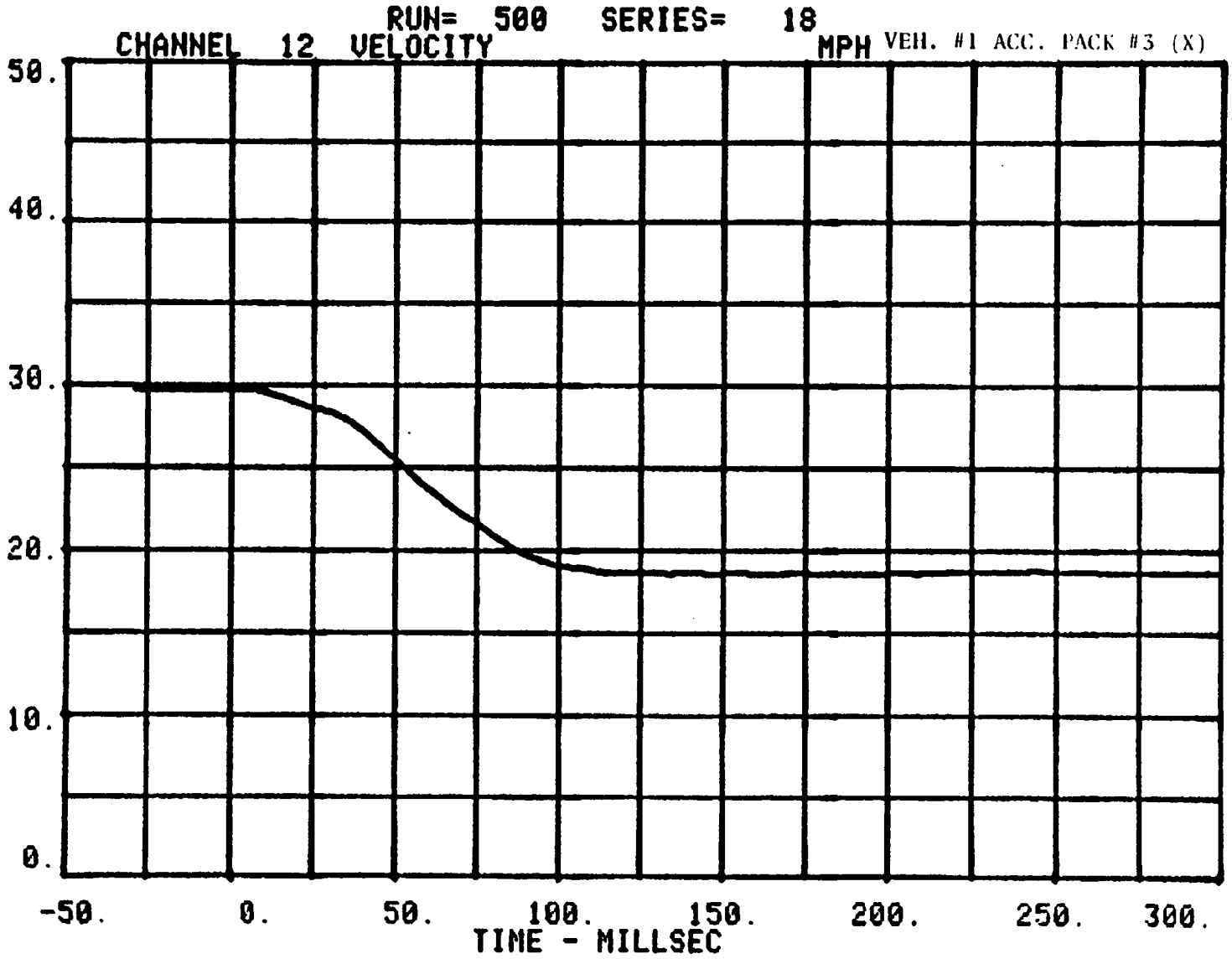

RUN= 500 SERIES= 18
CHANNEL 9 DISPLACEMENT INCHES
VEH. #1 ACC. PACK #1 (X)
200
150
100
50
0
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

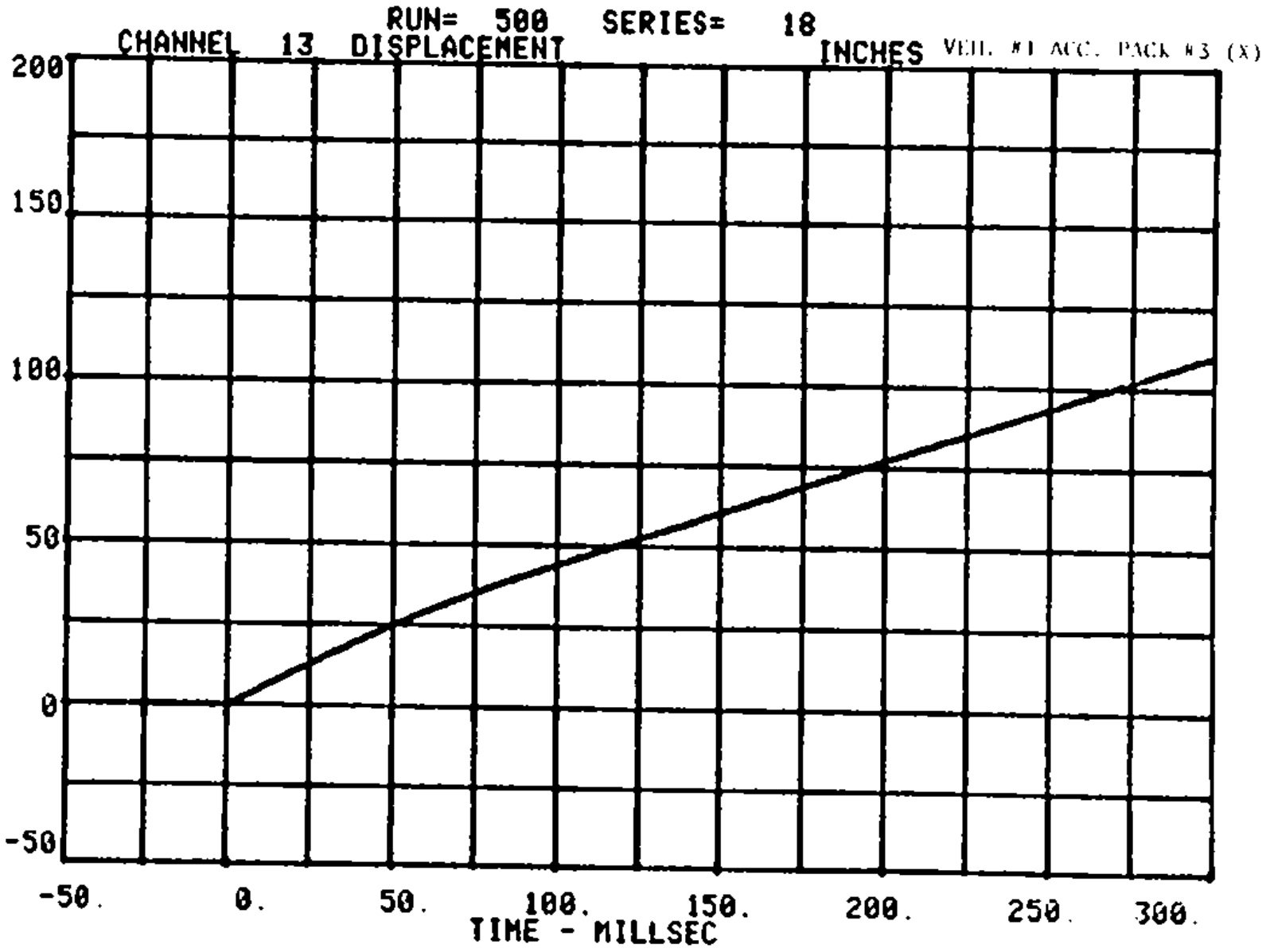

CHANNEL 15 VEH#1 ACC PACK #2(X)
RUN= 500 SERIES= 18 G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

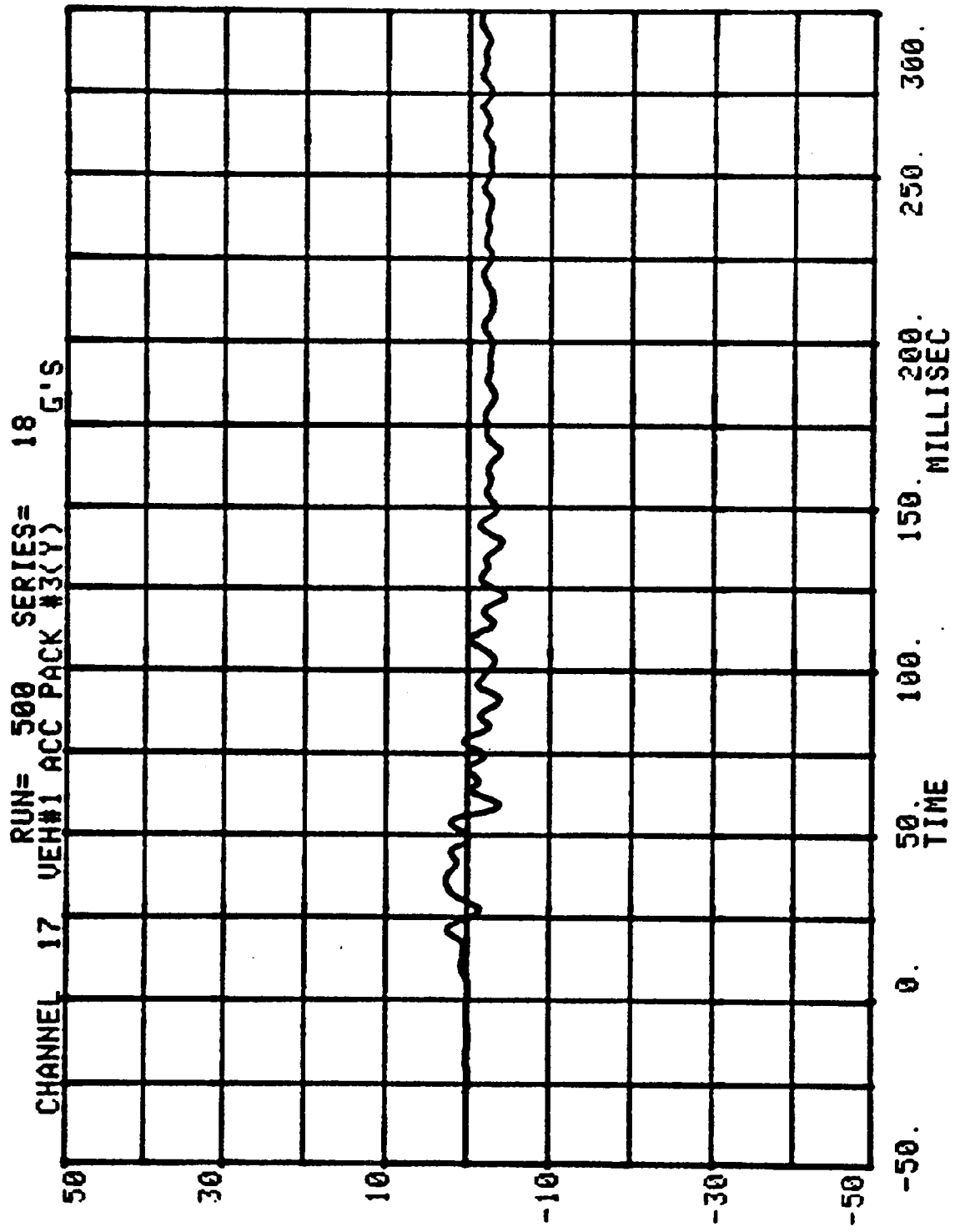

CHANNEL 10 VELOCITY
RUN= 500 SERIES= 18
MPH VEH. #1 ACC. PACK #2 (X)
50.
40.
30.
20.
10.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

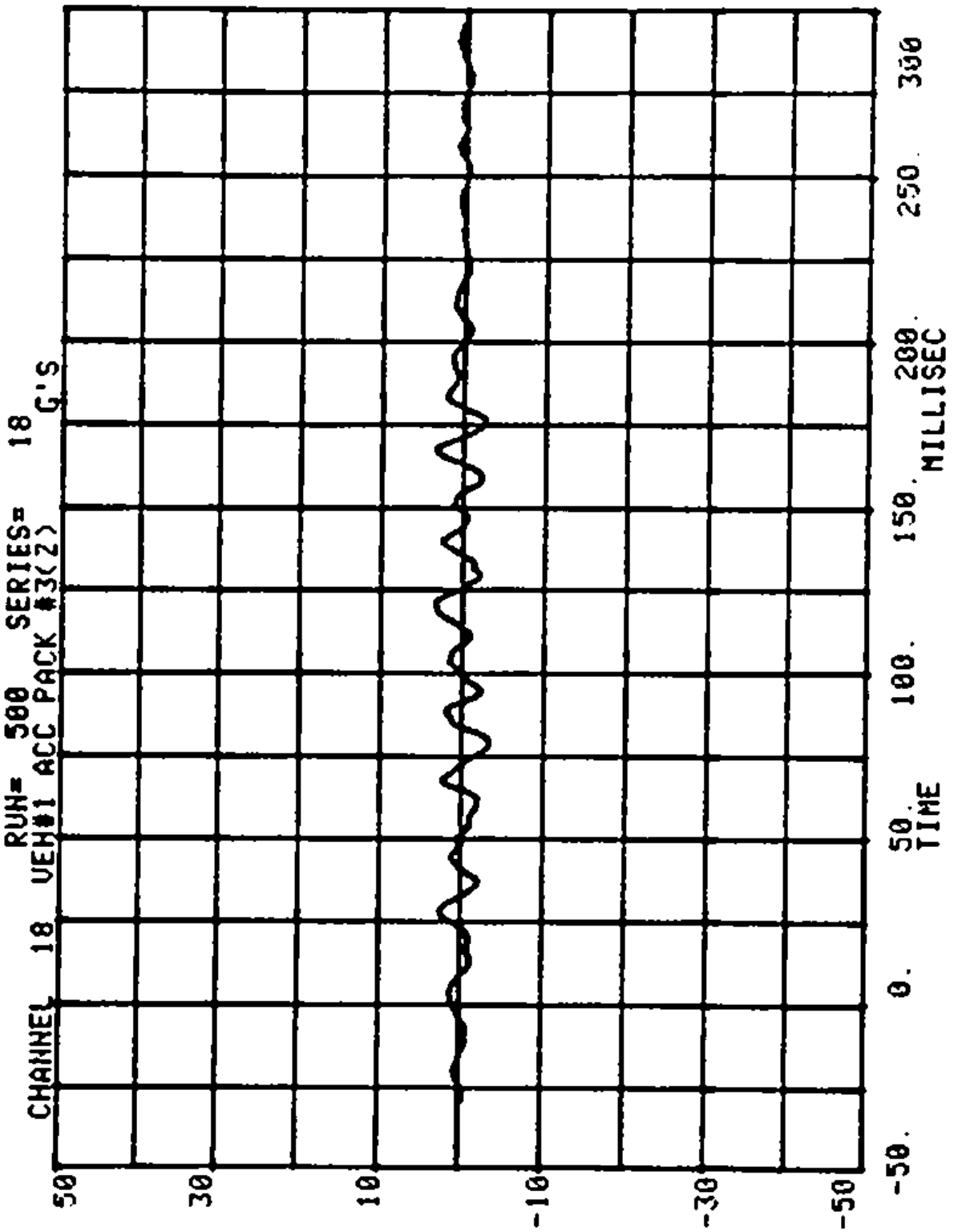

RUN= 500 SERIES= 18
CHANNEL 11 DISPLACEMENT INCHES
VEH. #1 ACC. PACK #2 (X)
200
150
100
50
0
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

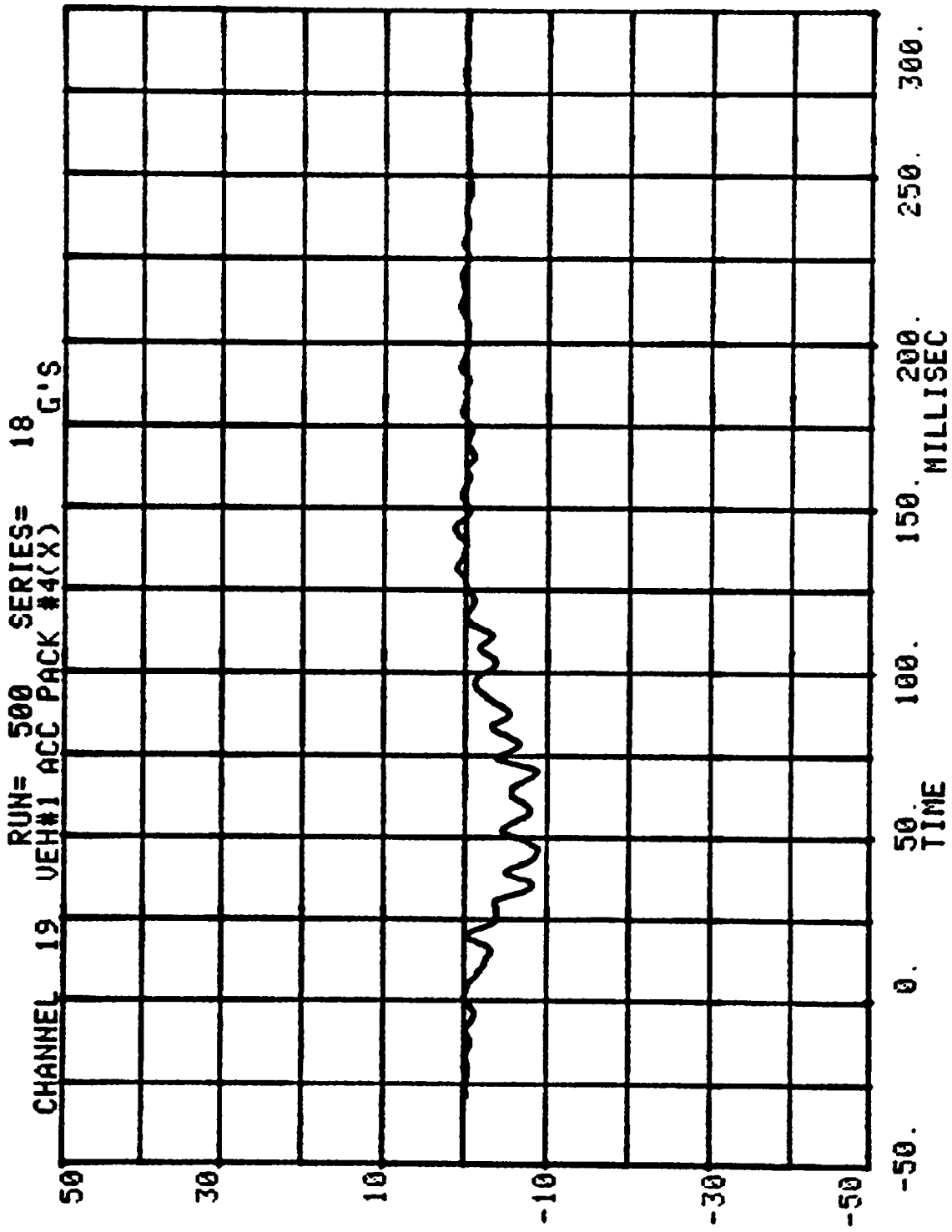

RUN= 500 SERIES= 18
CHANNEL 16 VEH#1 ACC PACK #3(X) G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

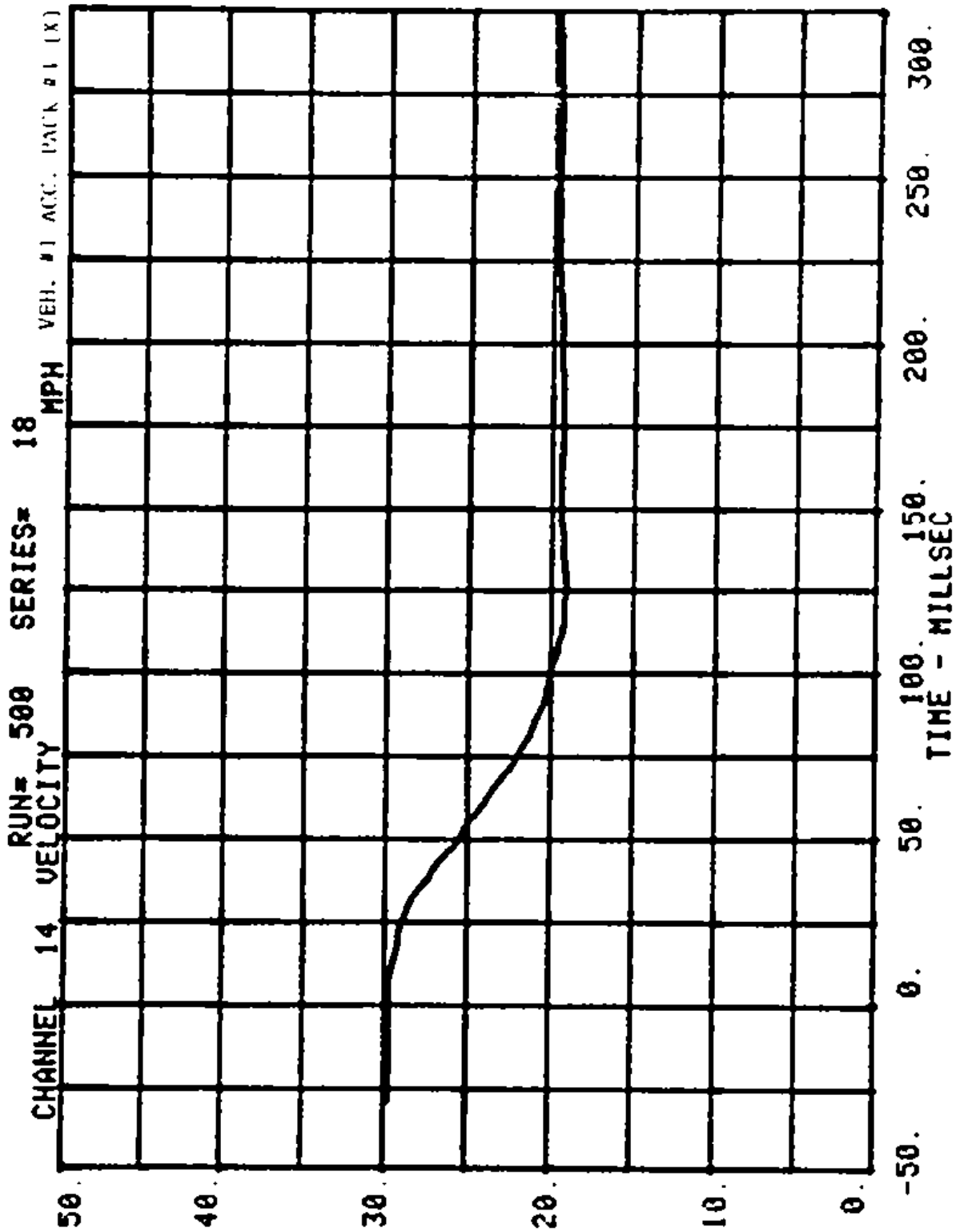

RUN= 500 SERIES= 18
CHANNEL 12 VELOCITY MPH
VEH. #1 ACC. PACK #3 (X)
50.
40.
30.
20.
10.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

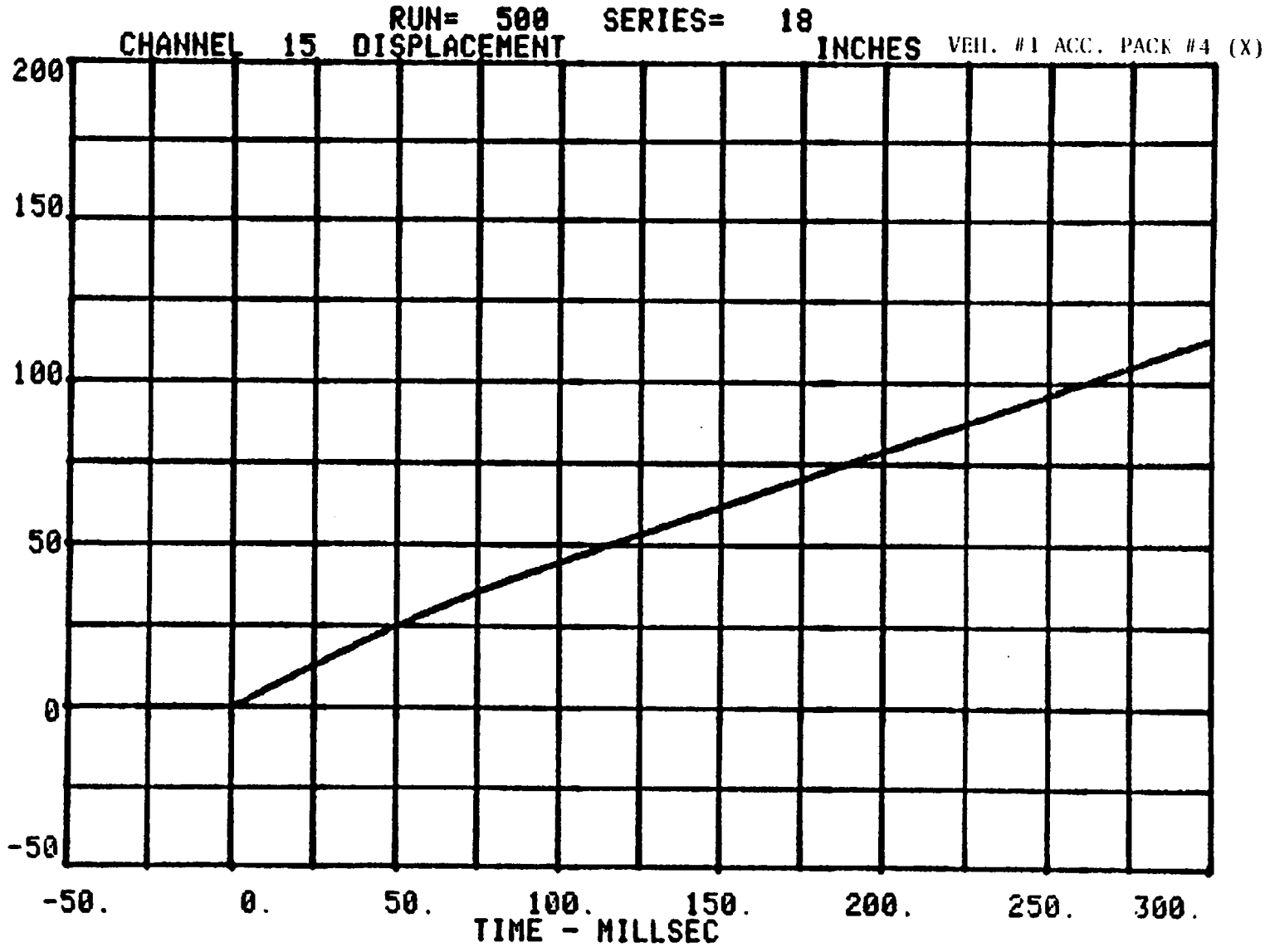

RUN= 500 SERIES= 18
CHANNEL 13 DISPLACEMENT INCHES
VEH. #1 ACC. PACK #3 (X)
200
150
100
50
0
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

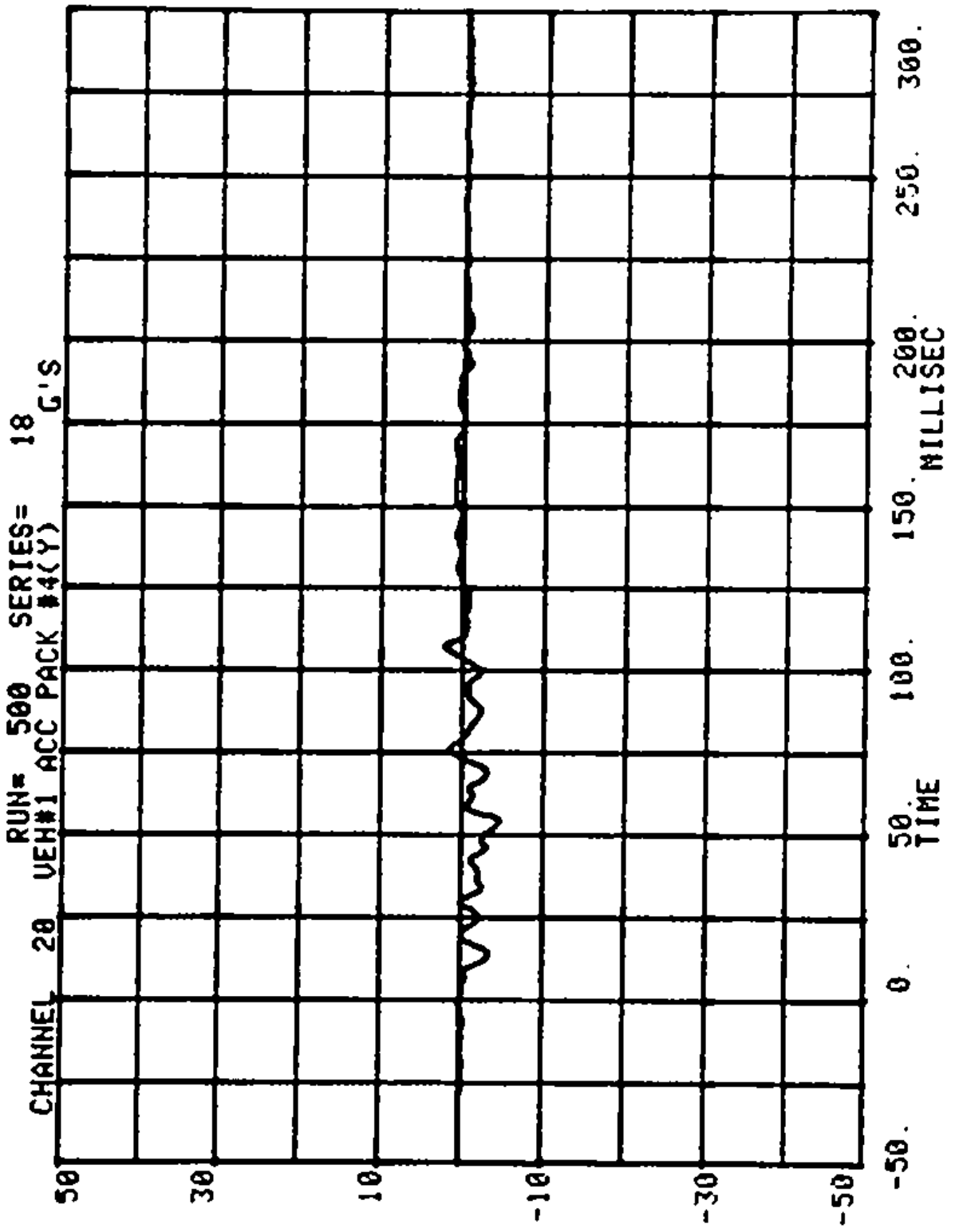

CHANNEL 17 VEH#1 ACC PACK #3(Y)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

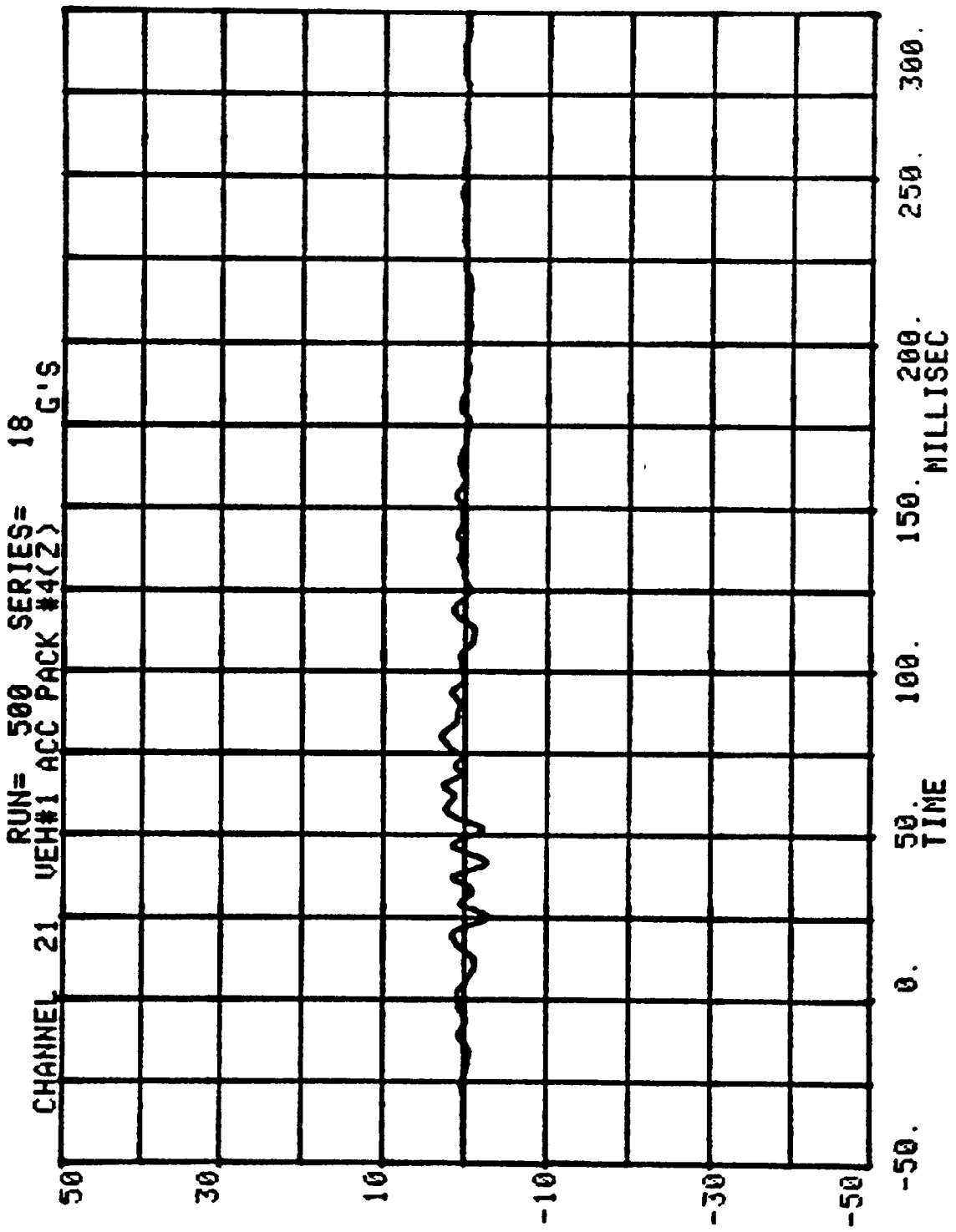

CHANNEL 18
RUN= 500 SERIES= 18
VEH#1 ACC PACK #3(2)
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300
TIME
MILLISEC

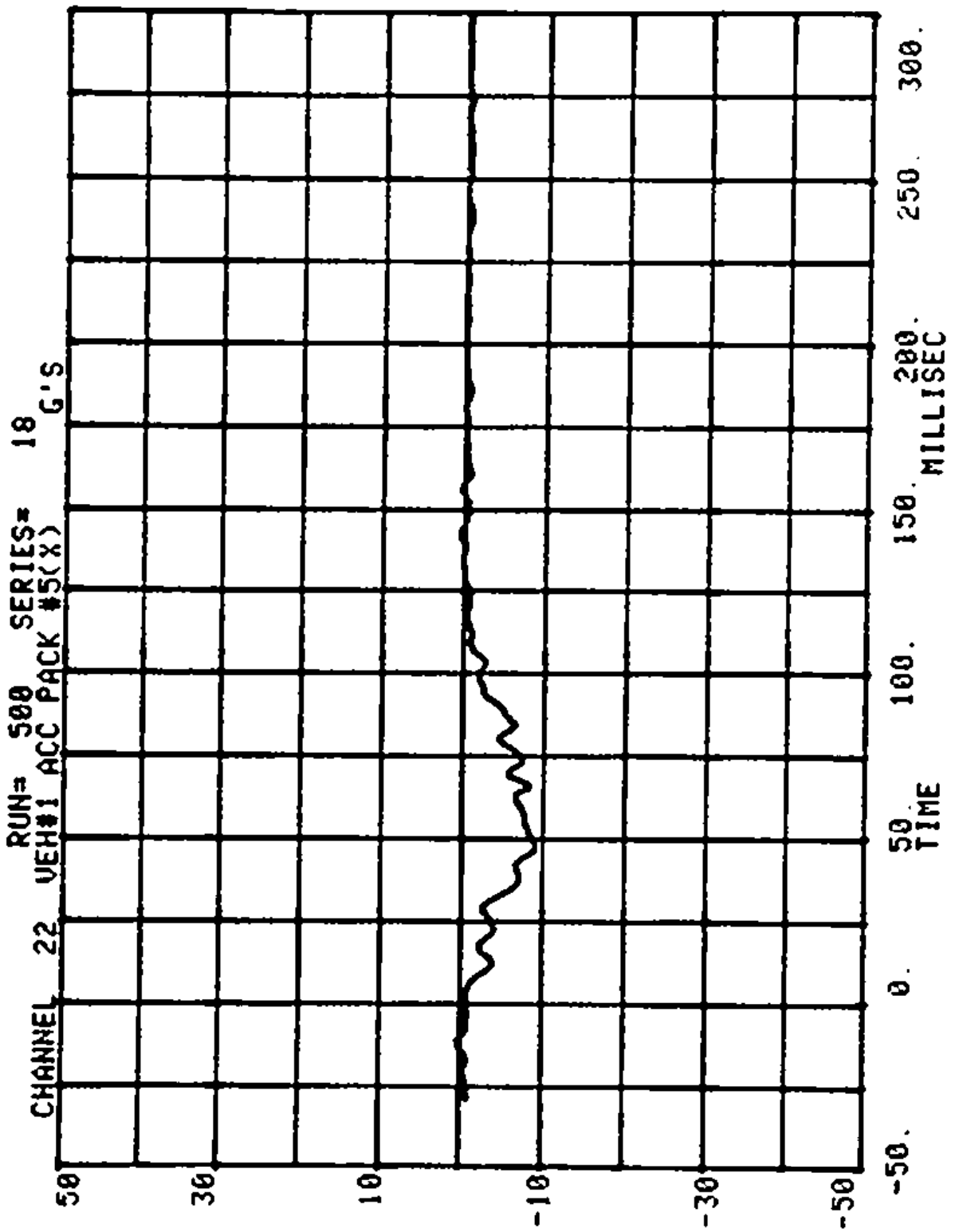

CHANNEL 19 VEH#1 ACC PACK #4(X)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

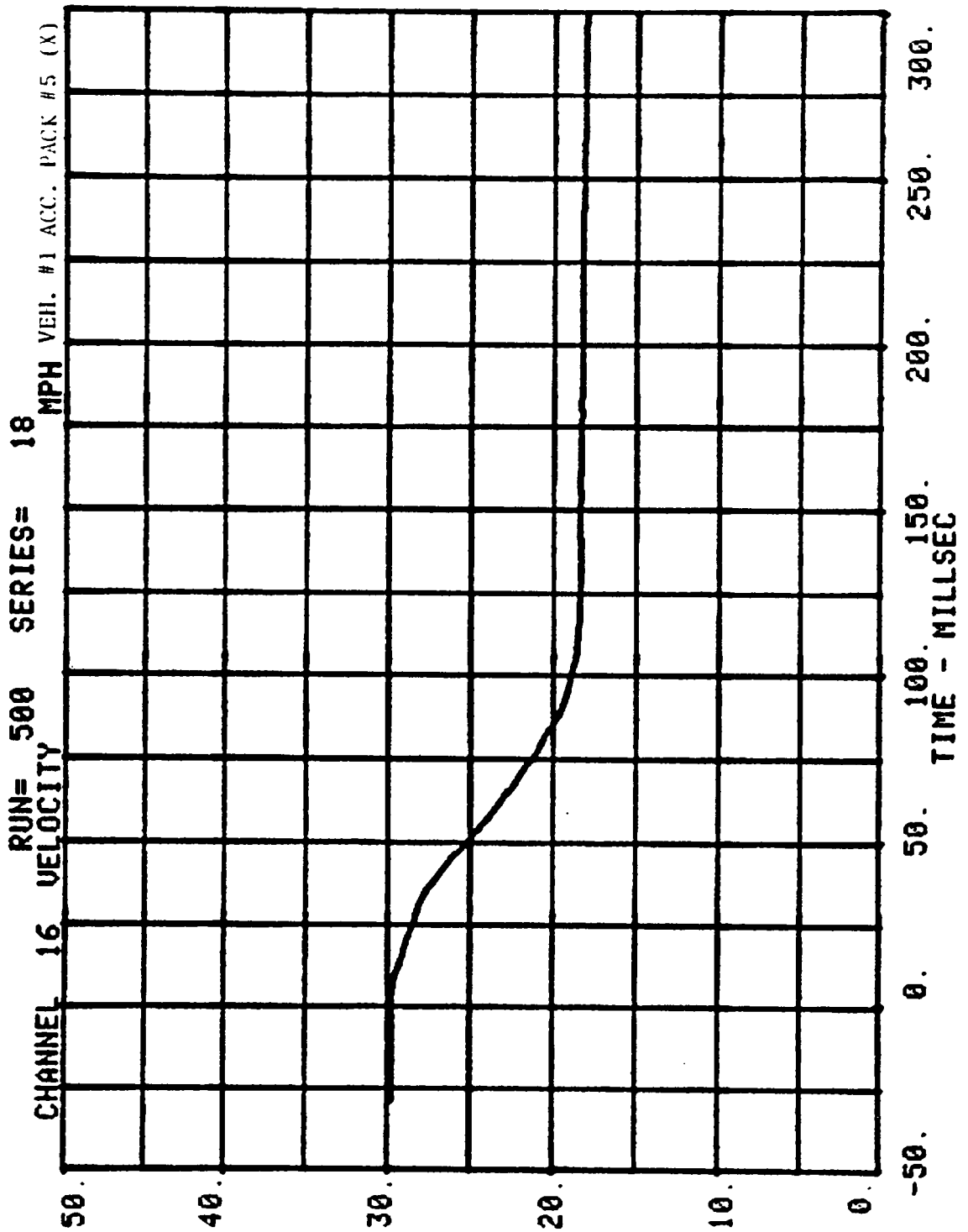

CHANNEL 14 VELOCITY
RUN= 500 SERIES= 18
MPH
VEH. #1 ACC. DATA #1 (X)
50.
40.
30.
20.
10.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

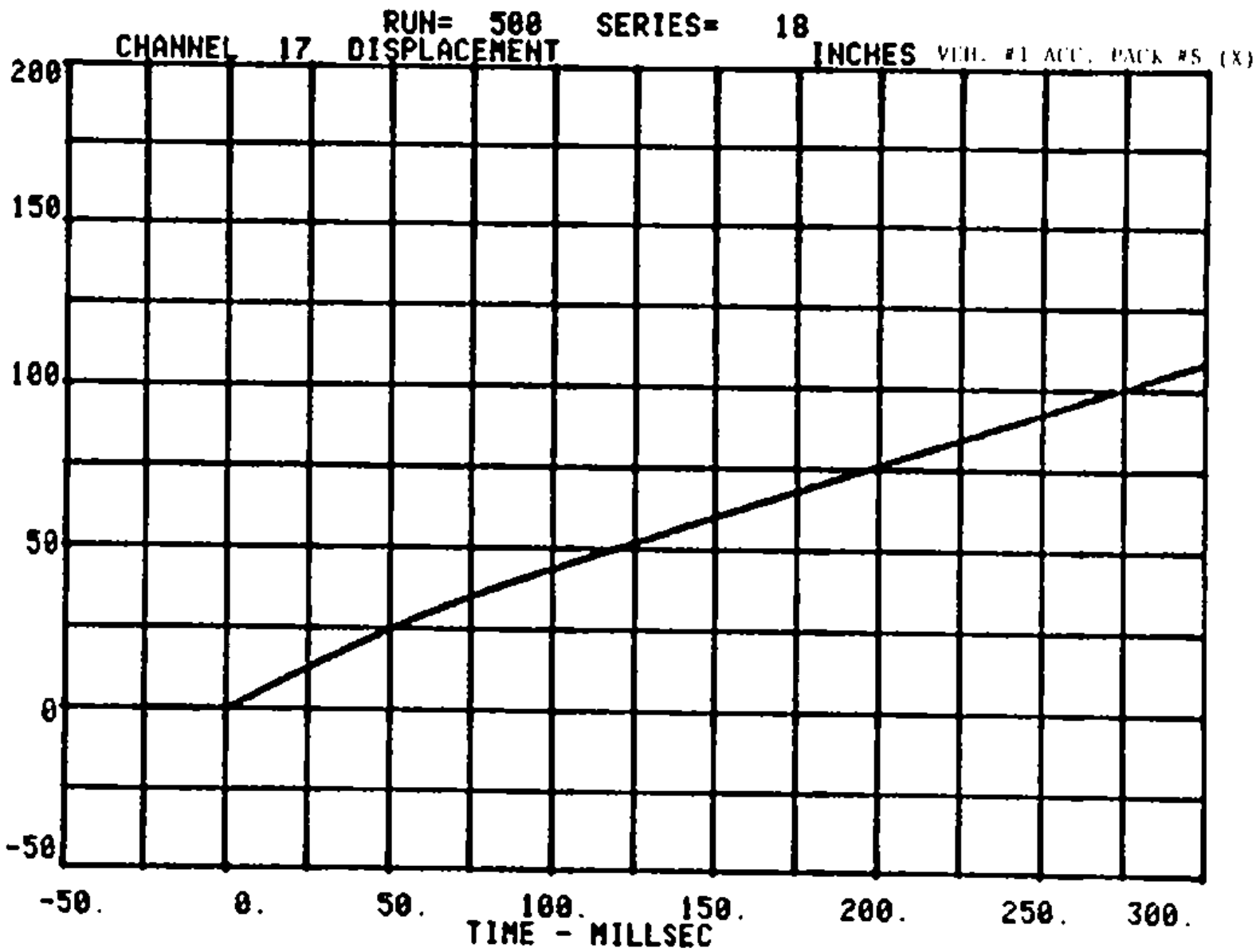

RUN= 500 SERIES= 18
CHANNEL 15 DISPLACEMENT INCHES
VEH. #1 ACC. PACK #4 (X)
200
150
100
50
0
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

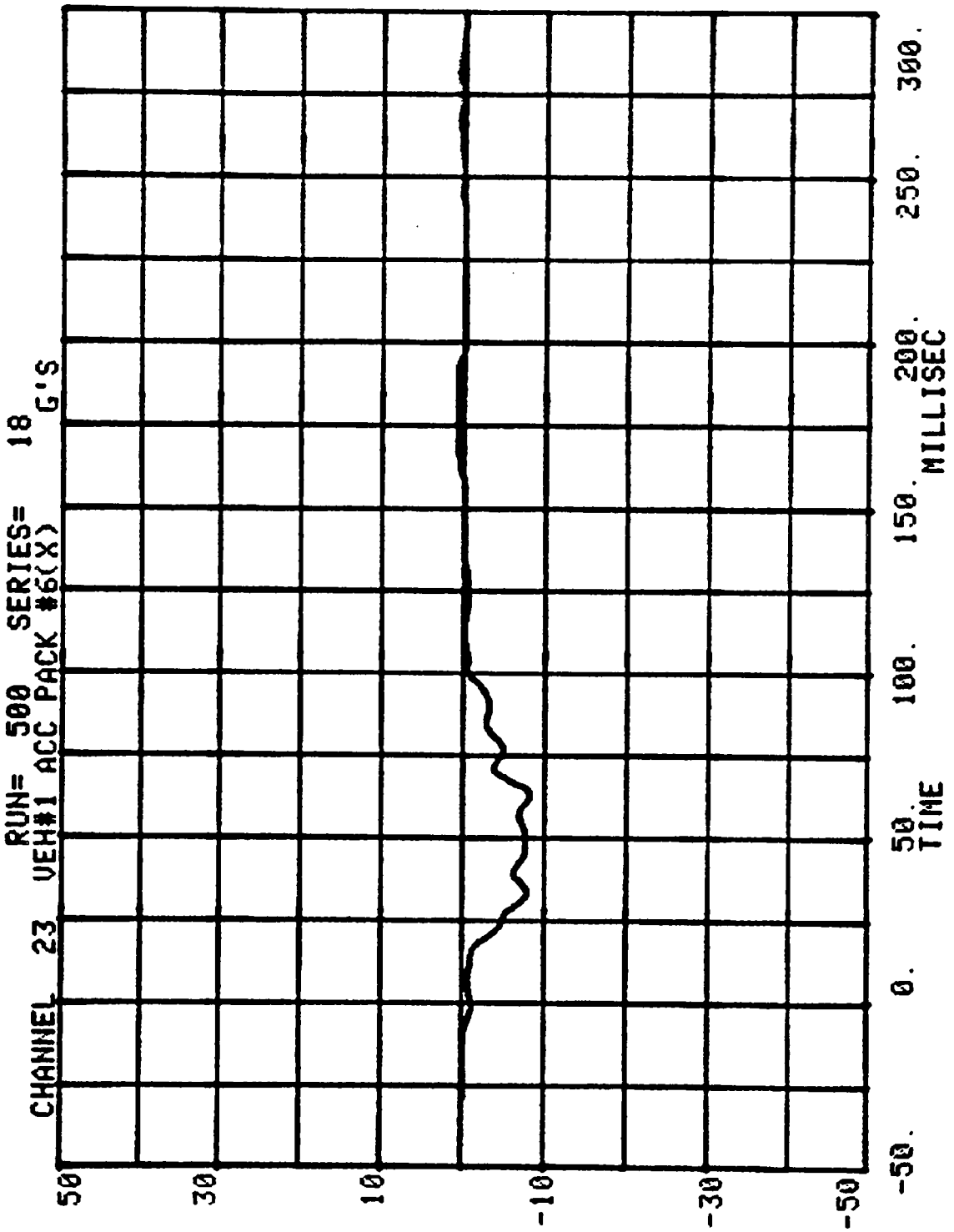

CHANNEL 20 VEH#1 ACC PACK #4(Y)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

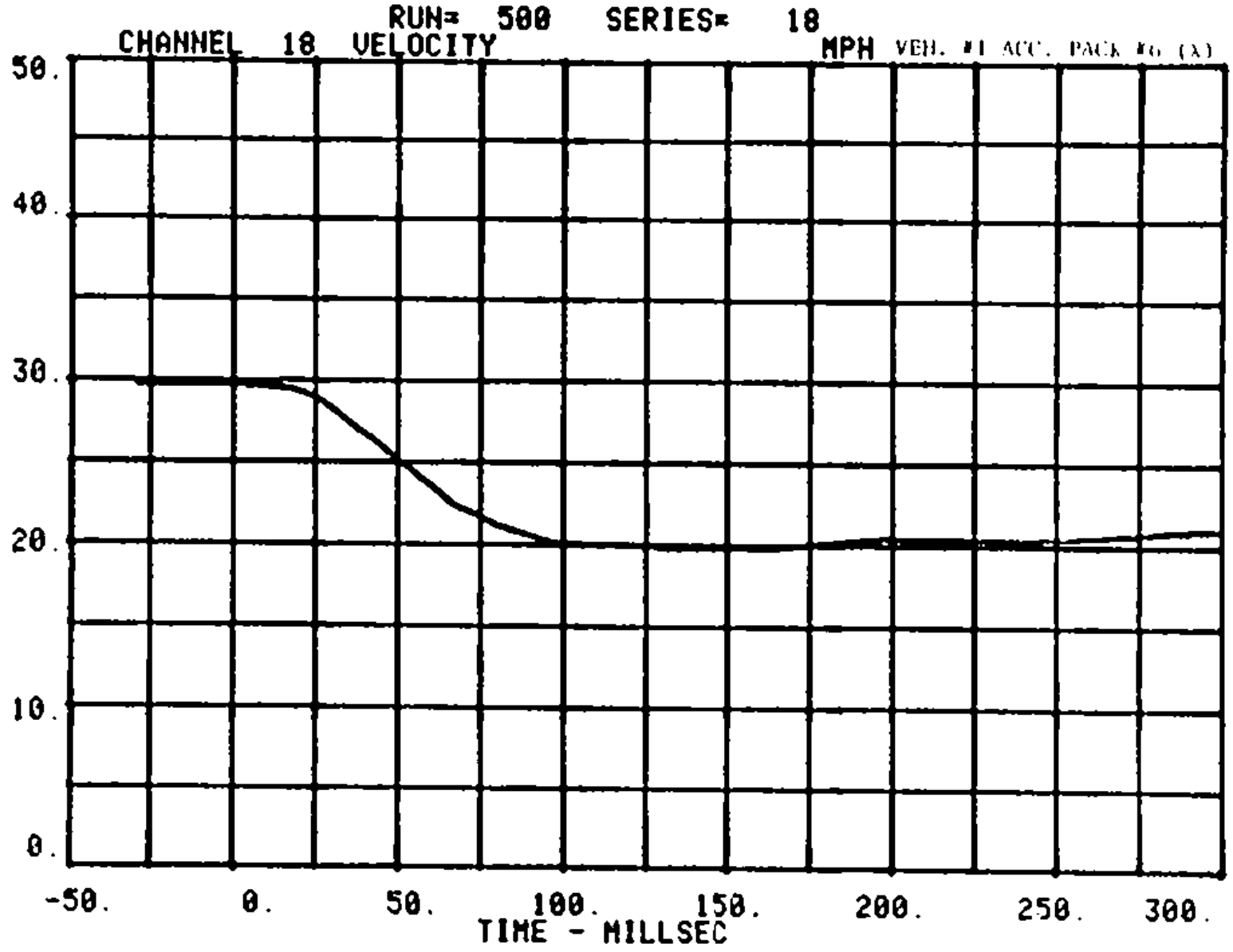

CHANNEL 21 VEH#1 ACC PACK #4(2)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

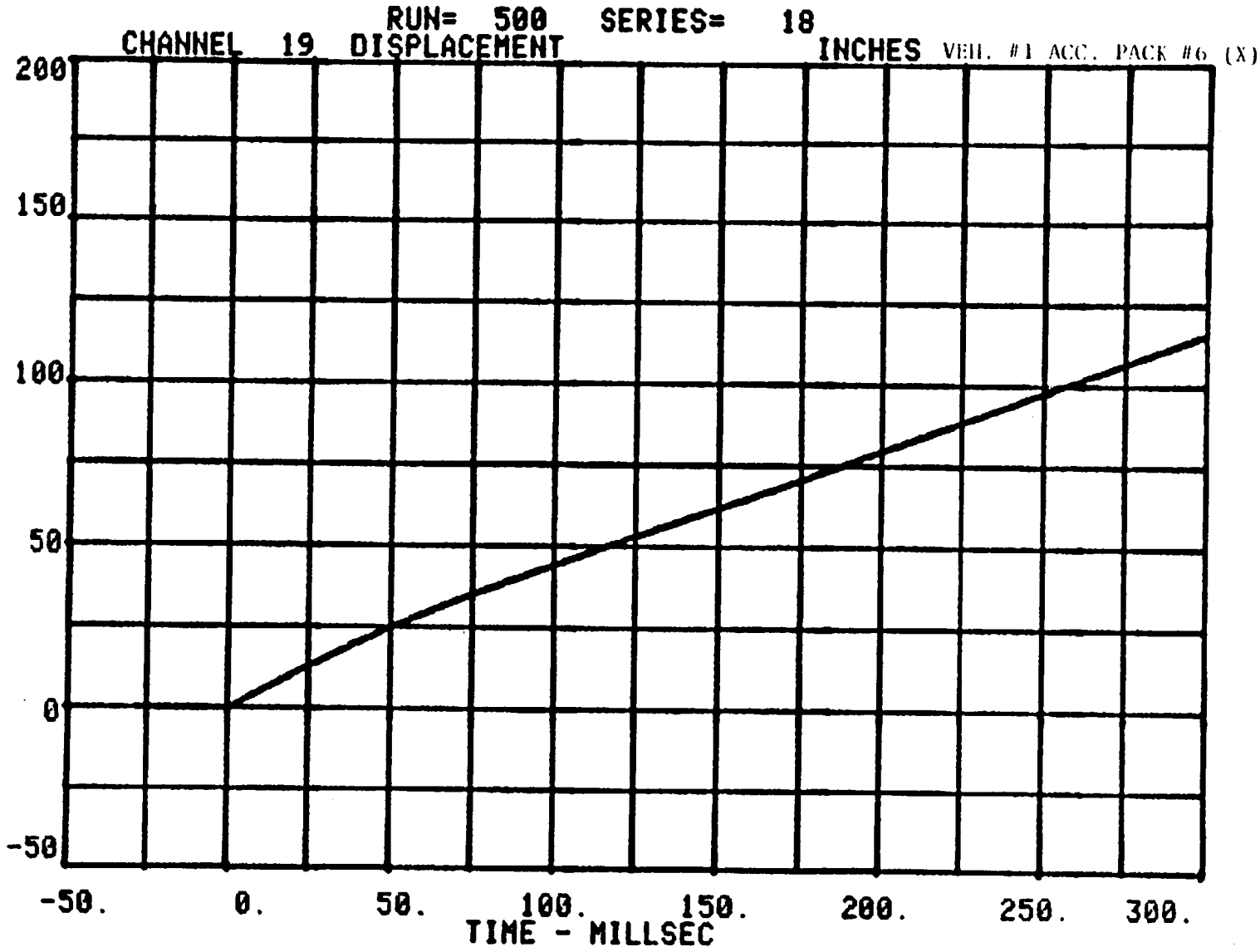

CHANNEL 22
RUN= 500
VEH#1 ACC PACK #5(X)
SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

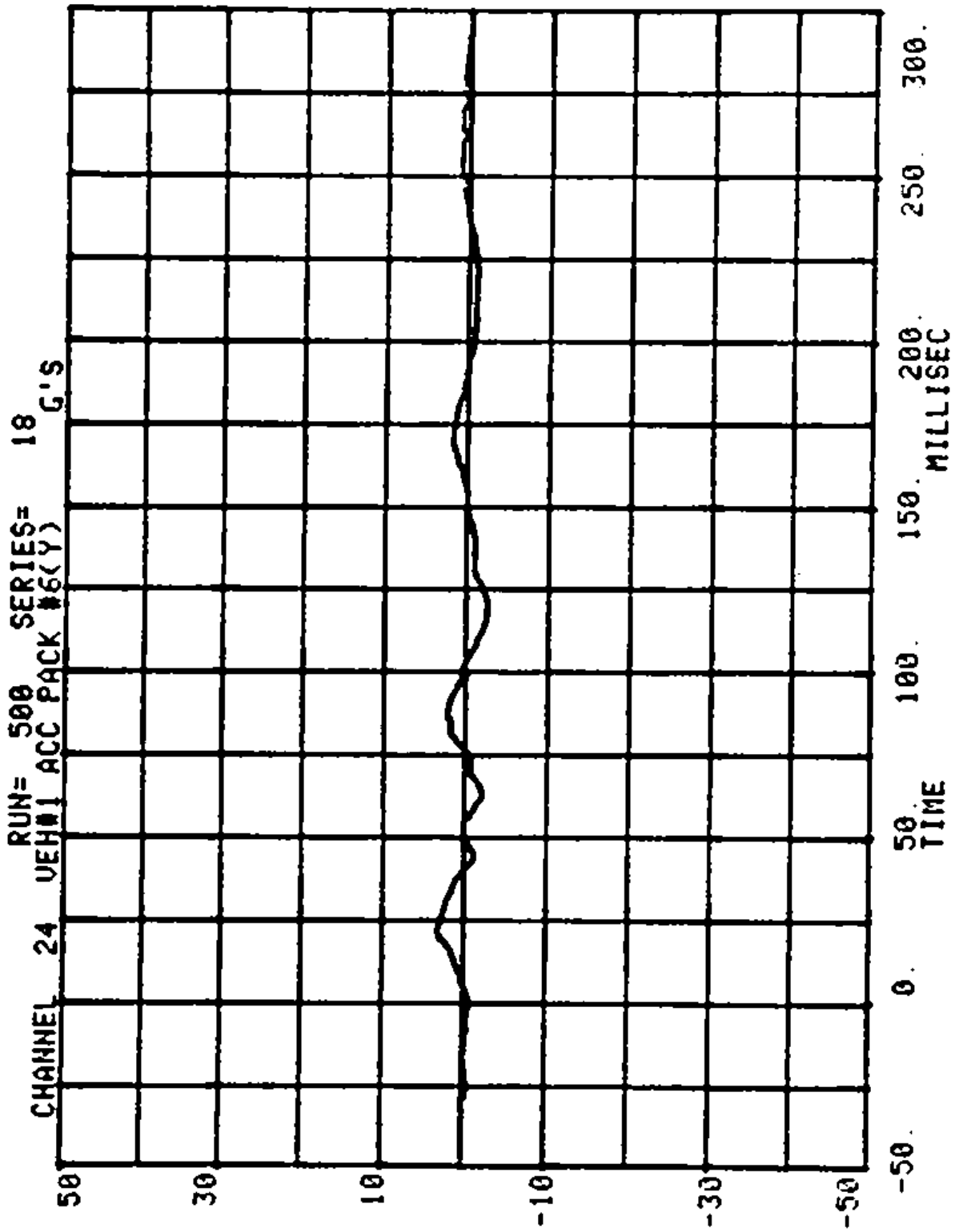

CHANNEL 16 VELOCITY
RUN= 500 SERIES= 18
MPH VEH. #1 ACC. PACK #5 (X)
50.
40.
30.
20.
10.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

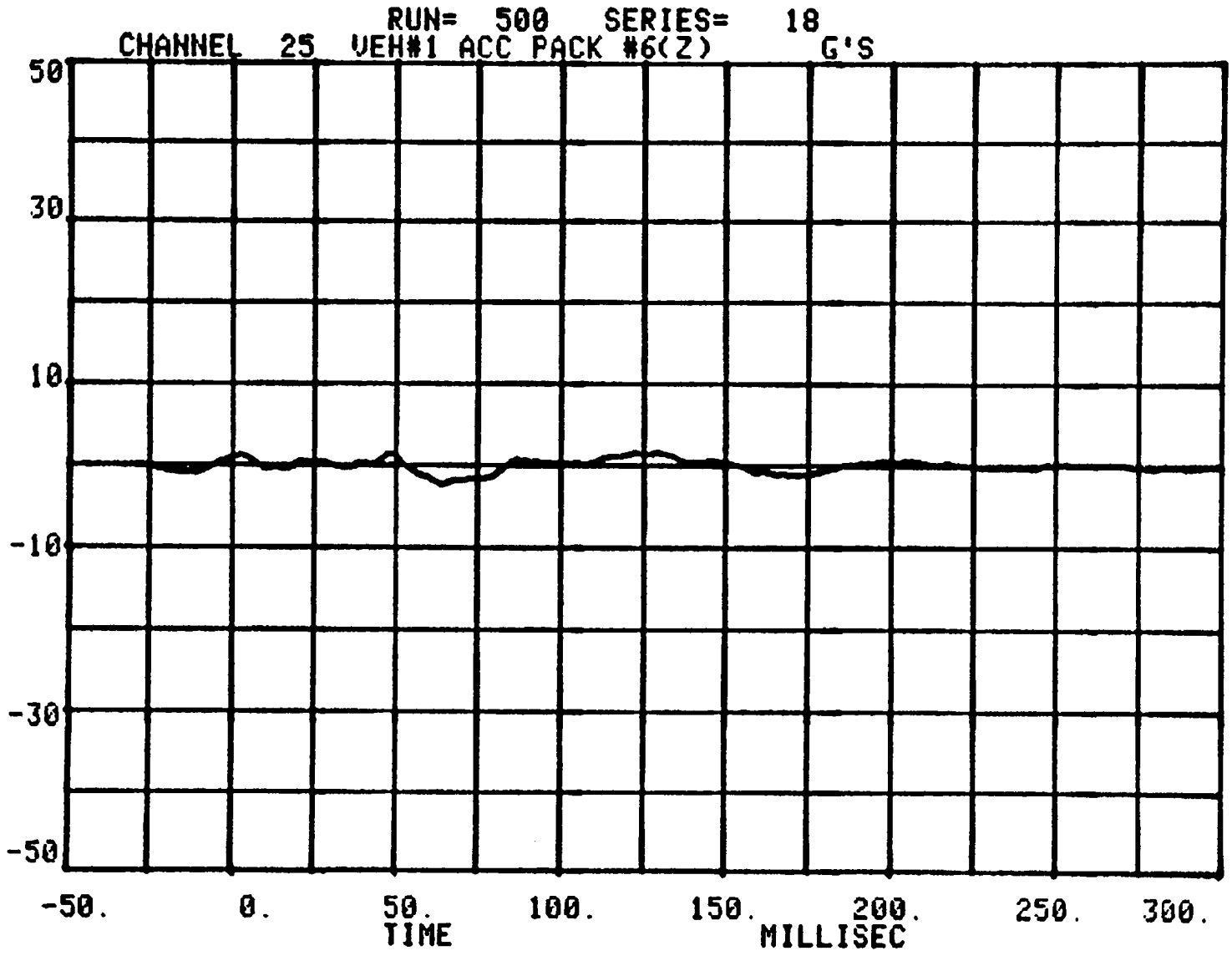

RUN= 500 SERIES= 18
CHANNEL 17 DISPLACEMENT
INCHES
VEH. #1 ACC. PACK #5 (X)
200
150
100
50
0
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

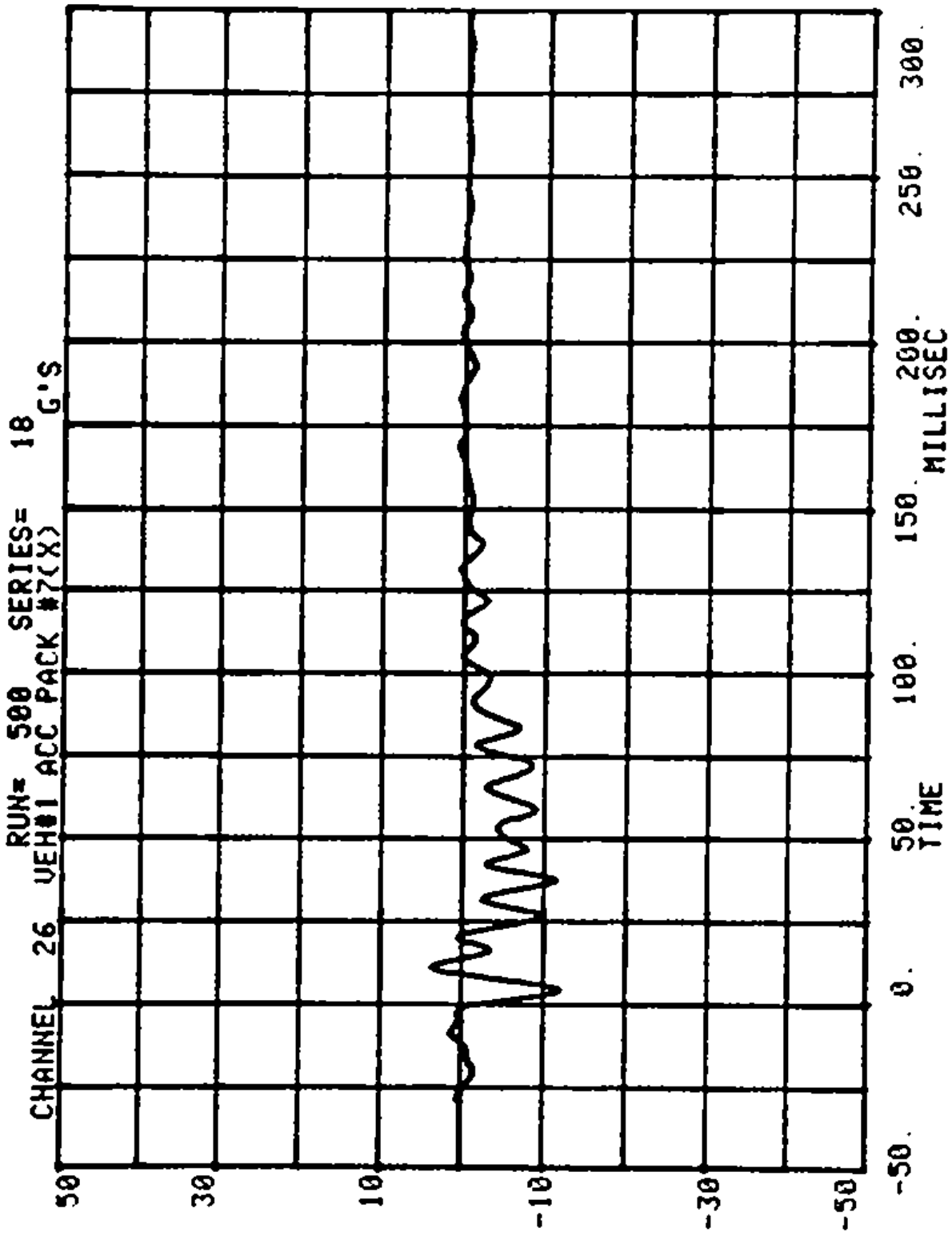

CHANNEL 23 VEH#1 ACC PACK #6(X)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

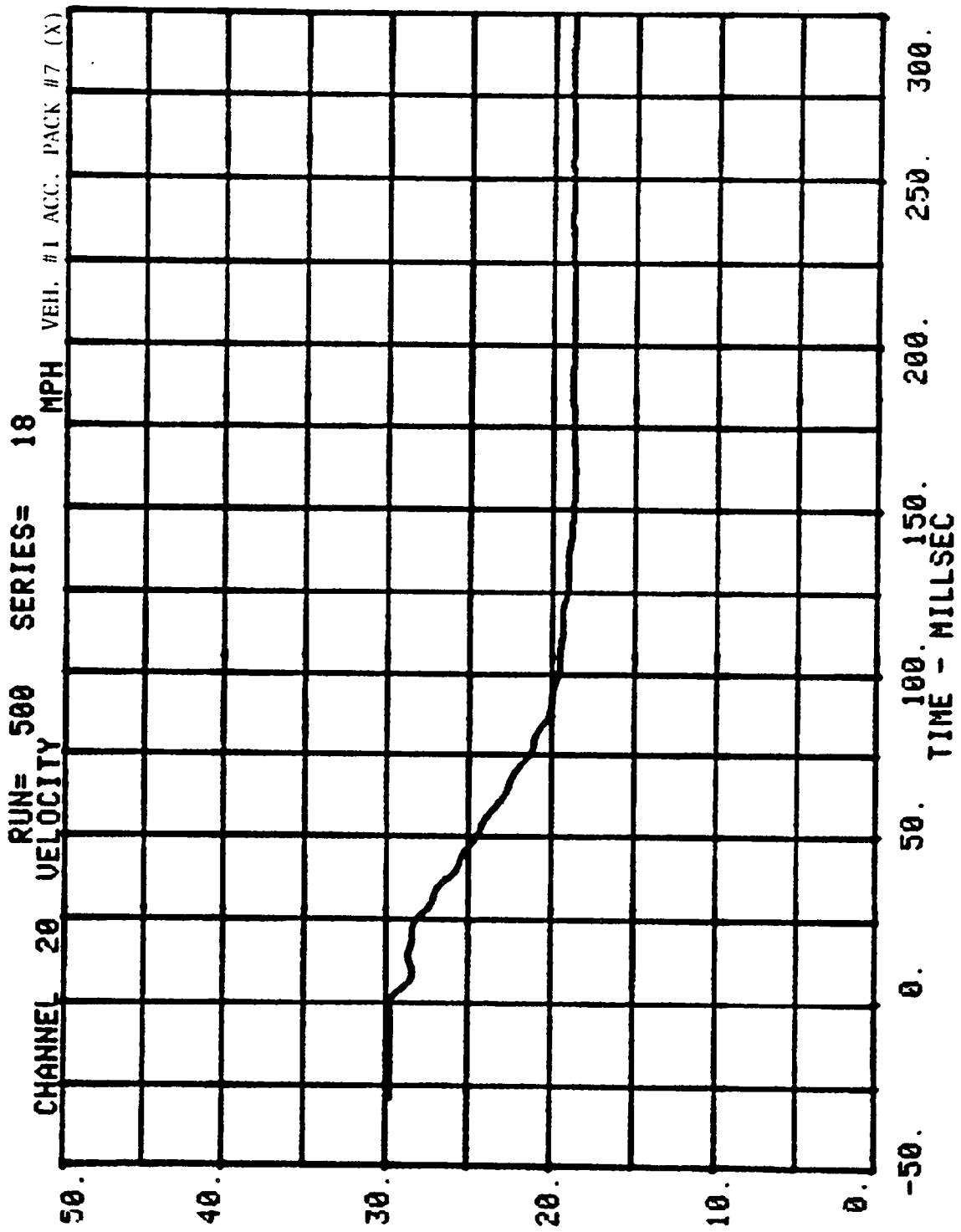

RUN= 500 SERIES= 18
CHANNEL 18 VELOCITY
MPH
VEH. #1 ACC. PACK #6 (X)
50.
40.
30.
20.
10.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

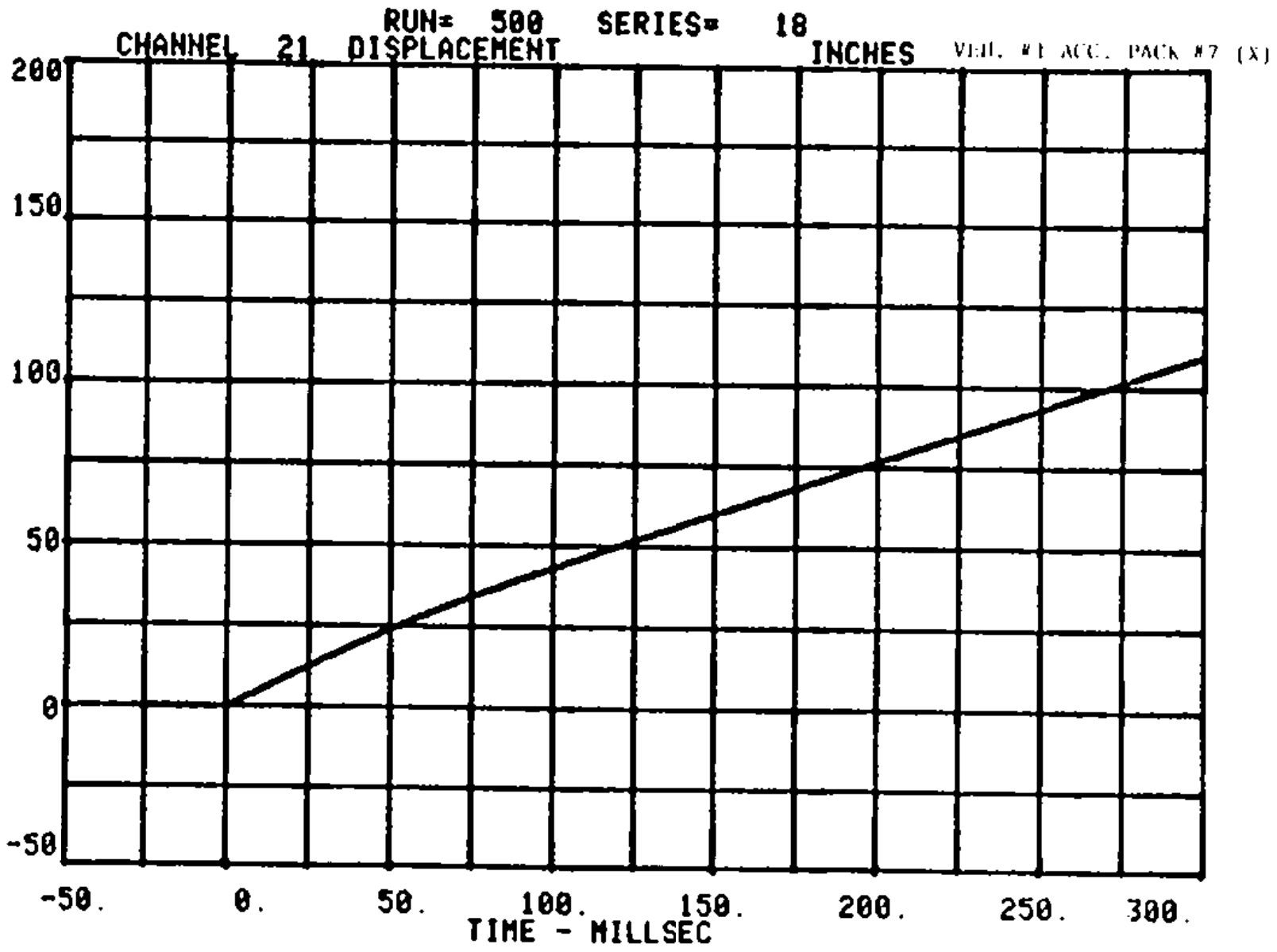

RUN= 500 SERIES= 18
CHANNEL 19 DISPLACEMENT INCHES VEH. #1 ACC. PACK #6 (X)
200
150
100
50
0
-50
-50. 0. 50. 100. 150. 200. 250. 300.
TIME - MILLSEC

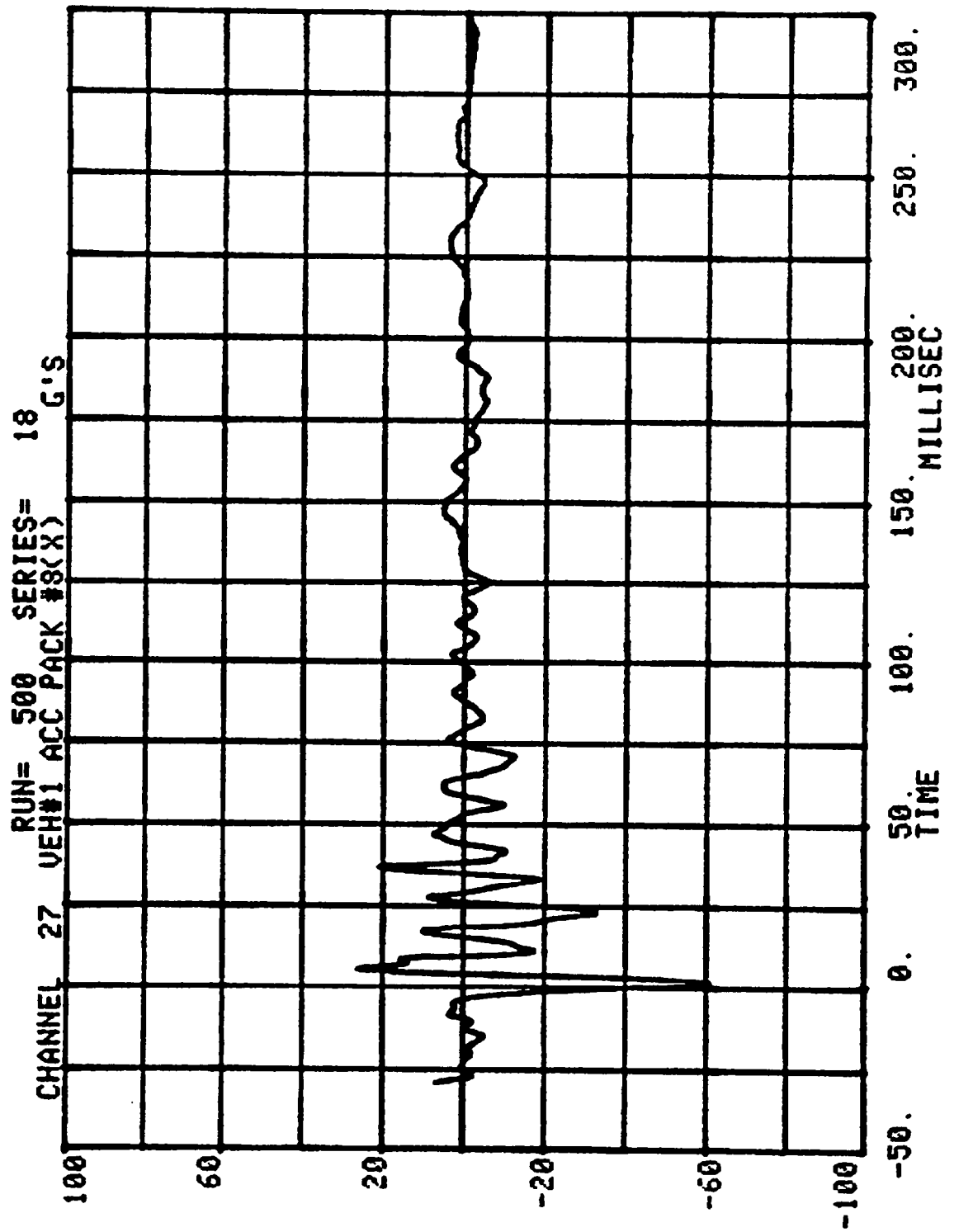

CHANNEL 24 VEH#1 ACC PACK #6(Y)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

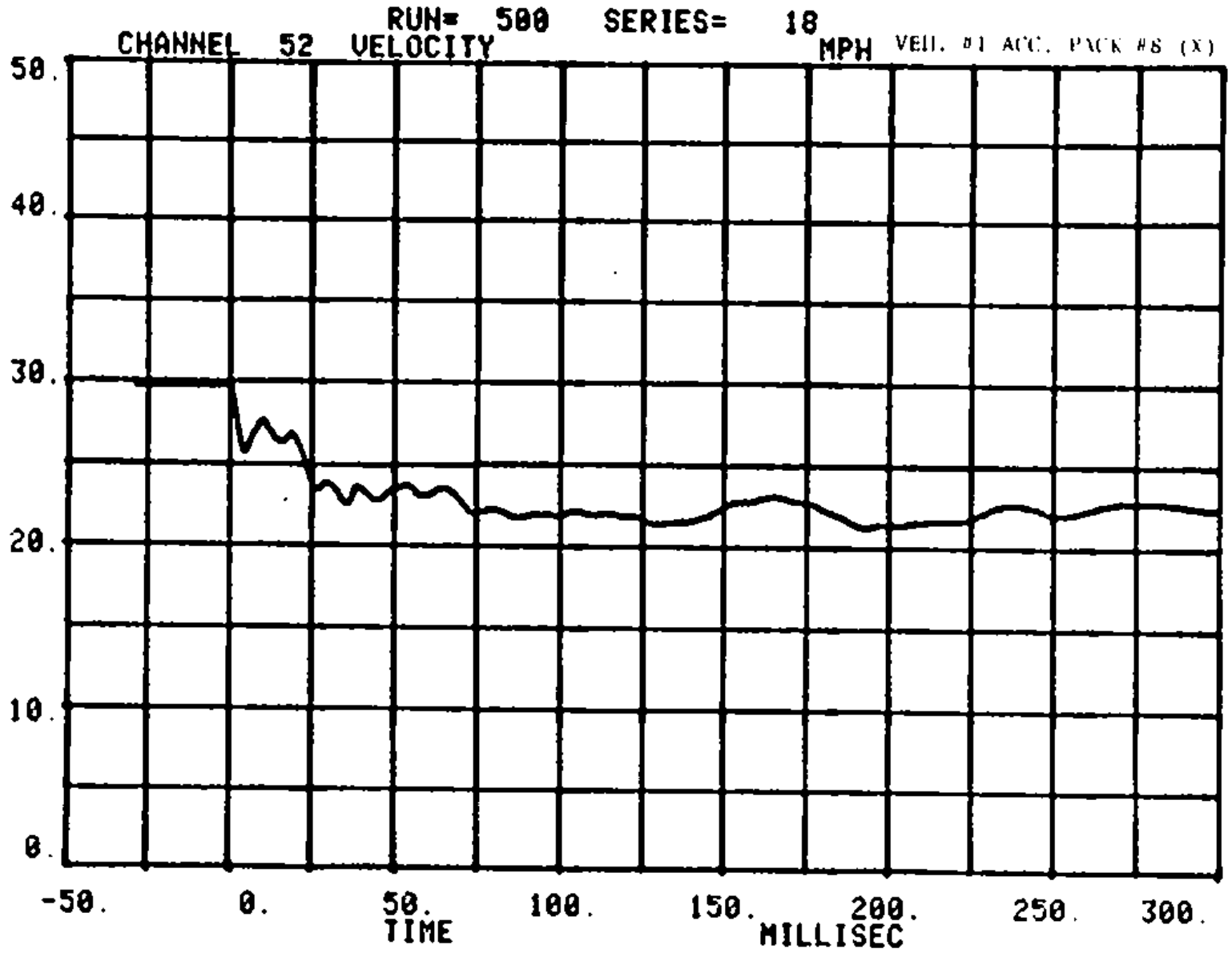

RUN= 500 SERIES= 18
CHANNEL 25 VEH#1 ACC PACK #6(Z) G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

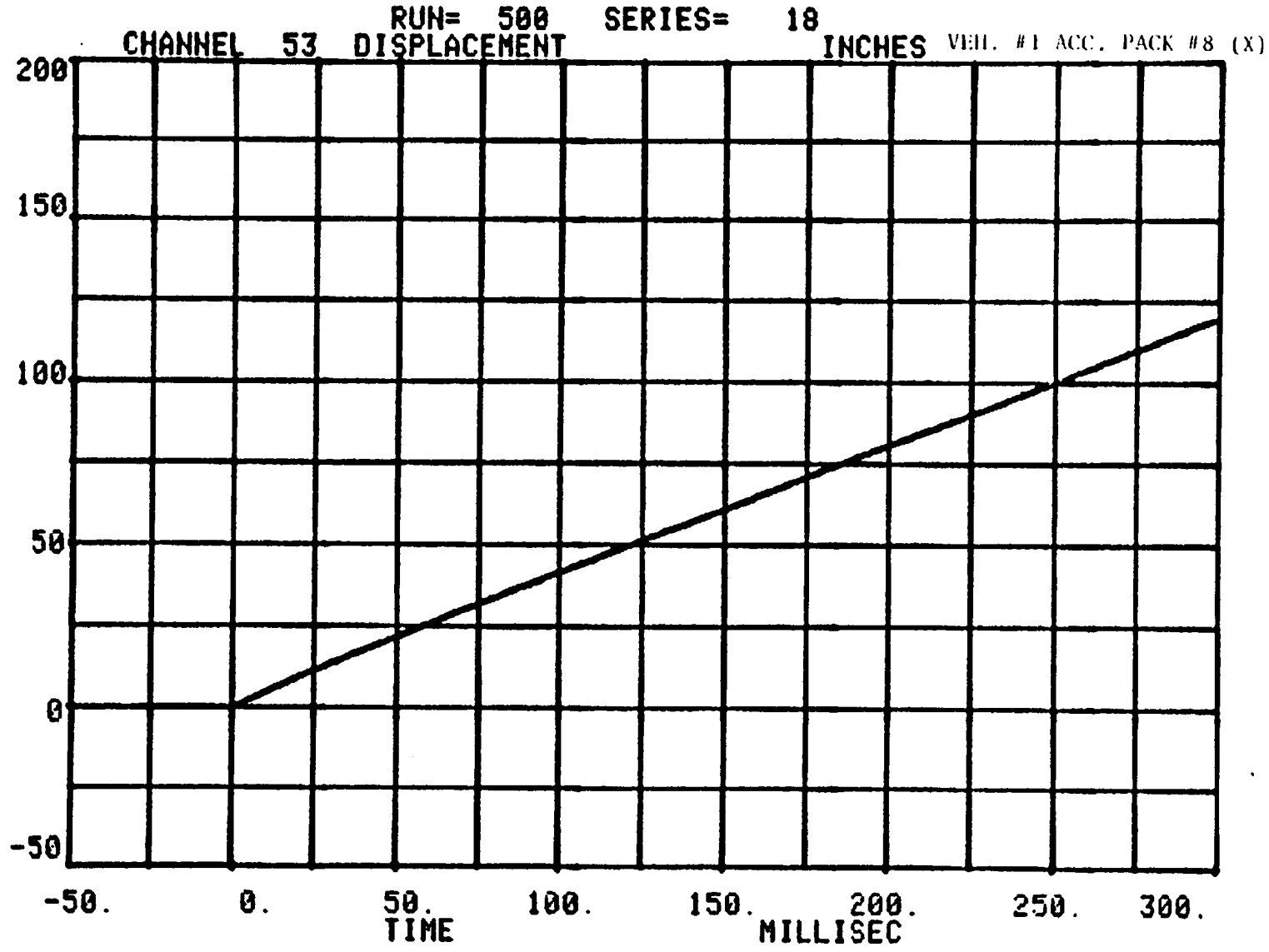

CHANNEL 26 VEH#1 ACC PACK #7(X)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

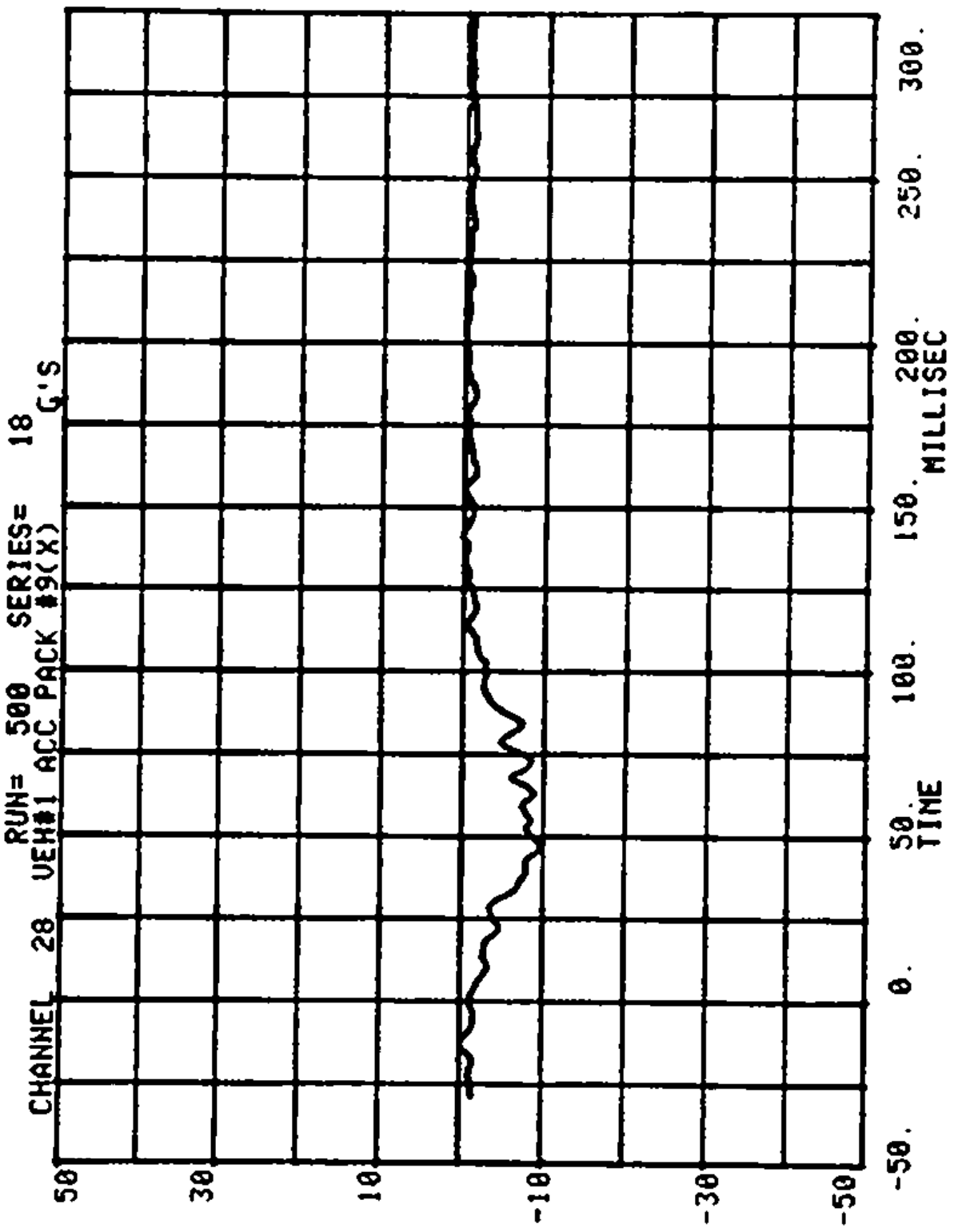

CHANNEL 20 VELOCITY
RUN= 500 SERIES= 18 MPH VEH. #1 ACC. PACK #7 (X)
50.
40.
30.
20.
10.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

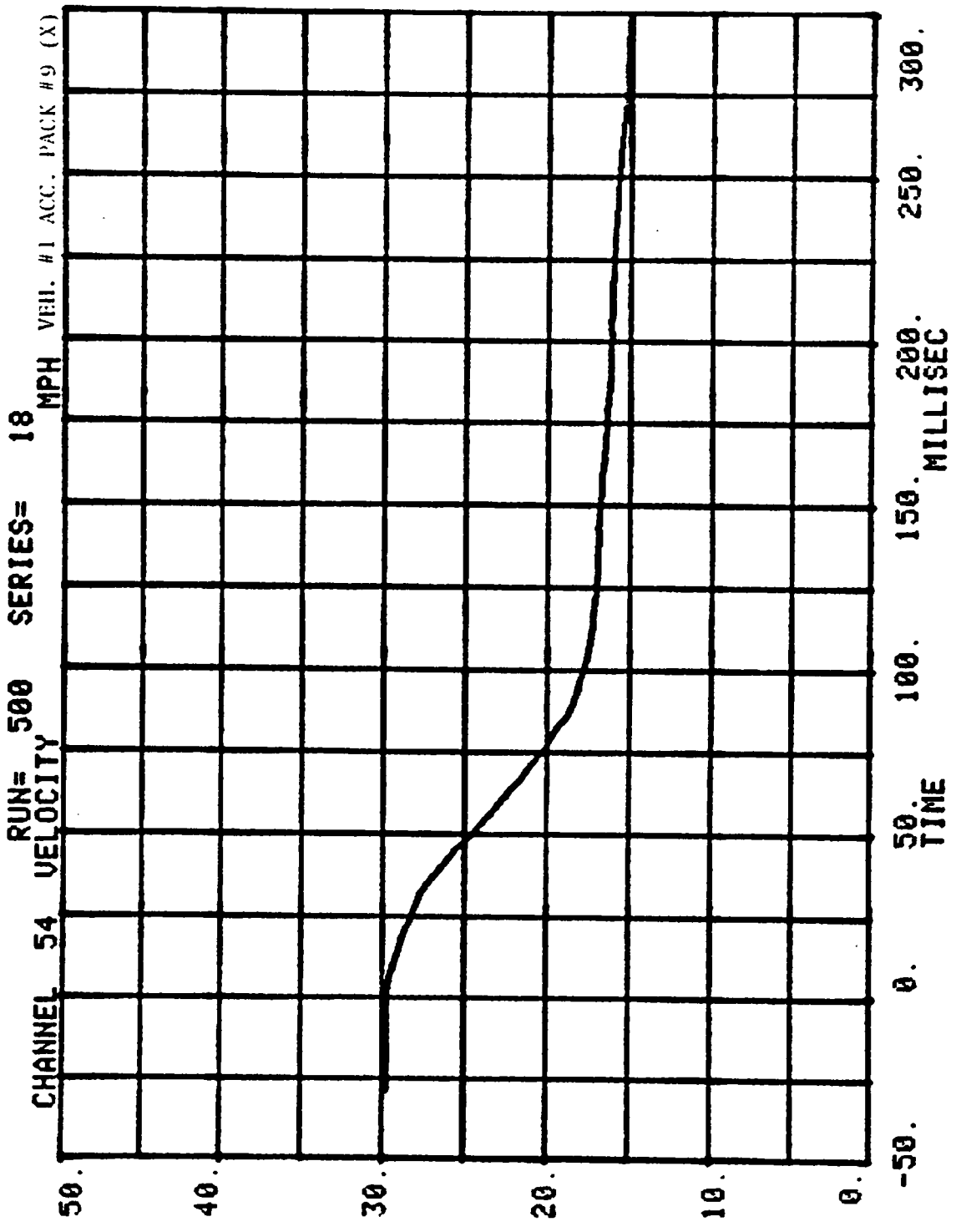

RUN= 500 SERIES= 18
CHANNEL 21 DISPLACEMENT INCHES
VEH. #1 ACC. PACK #7 (X)
200
150
100
50
0
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

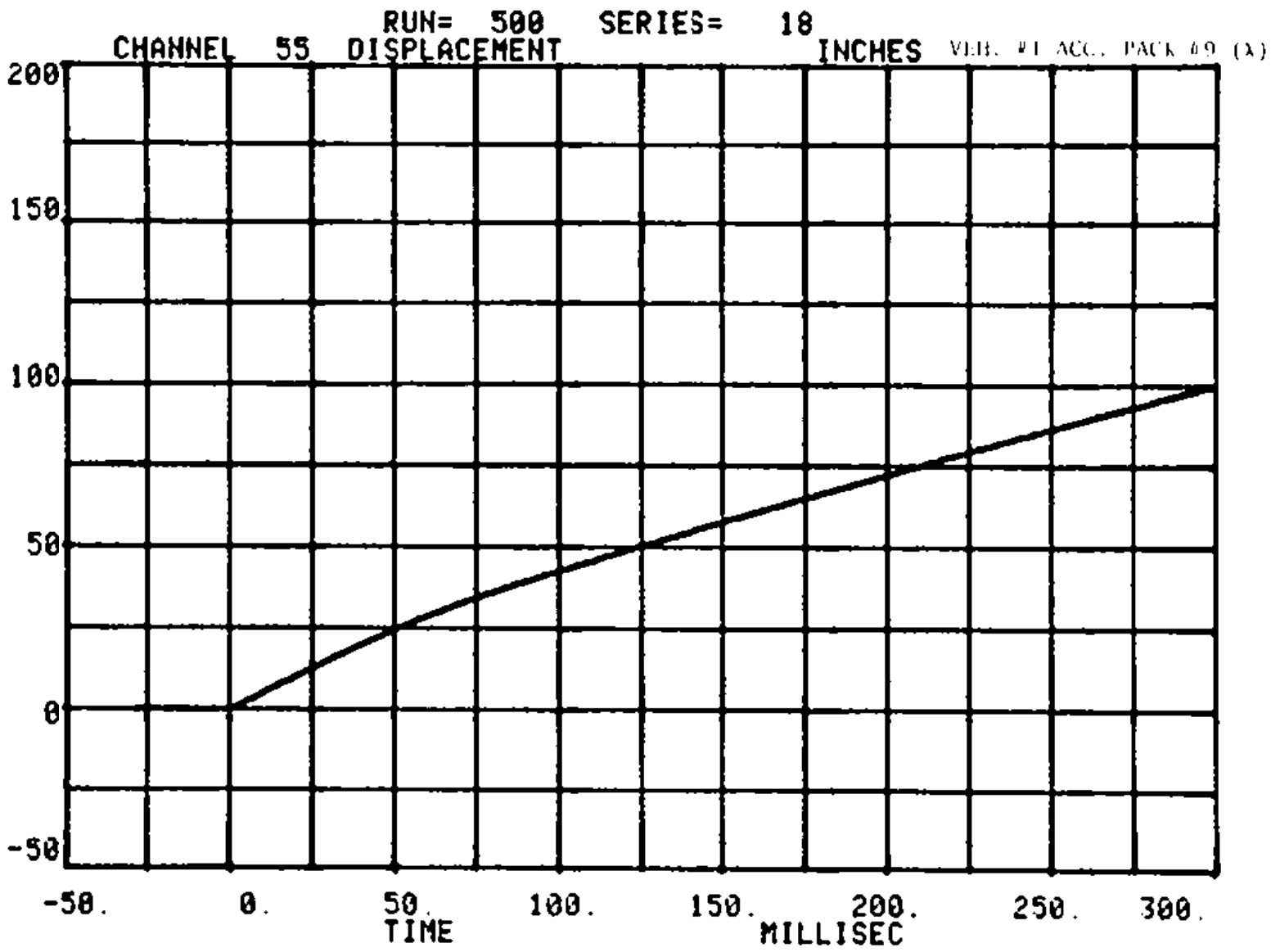

CHANNEL 27 VEH#1 ACC PACK #8(X)
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

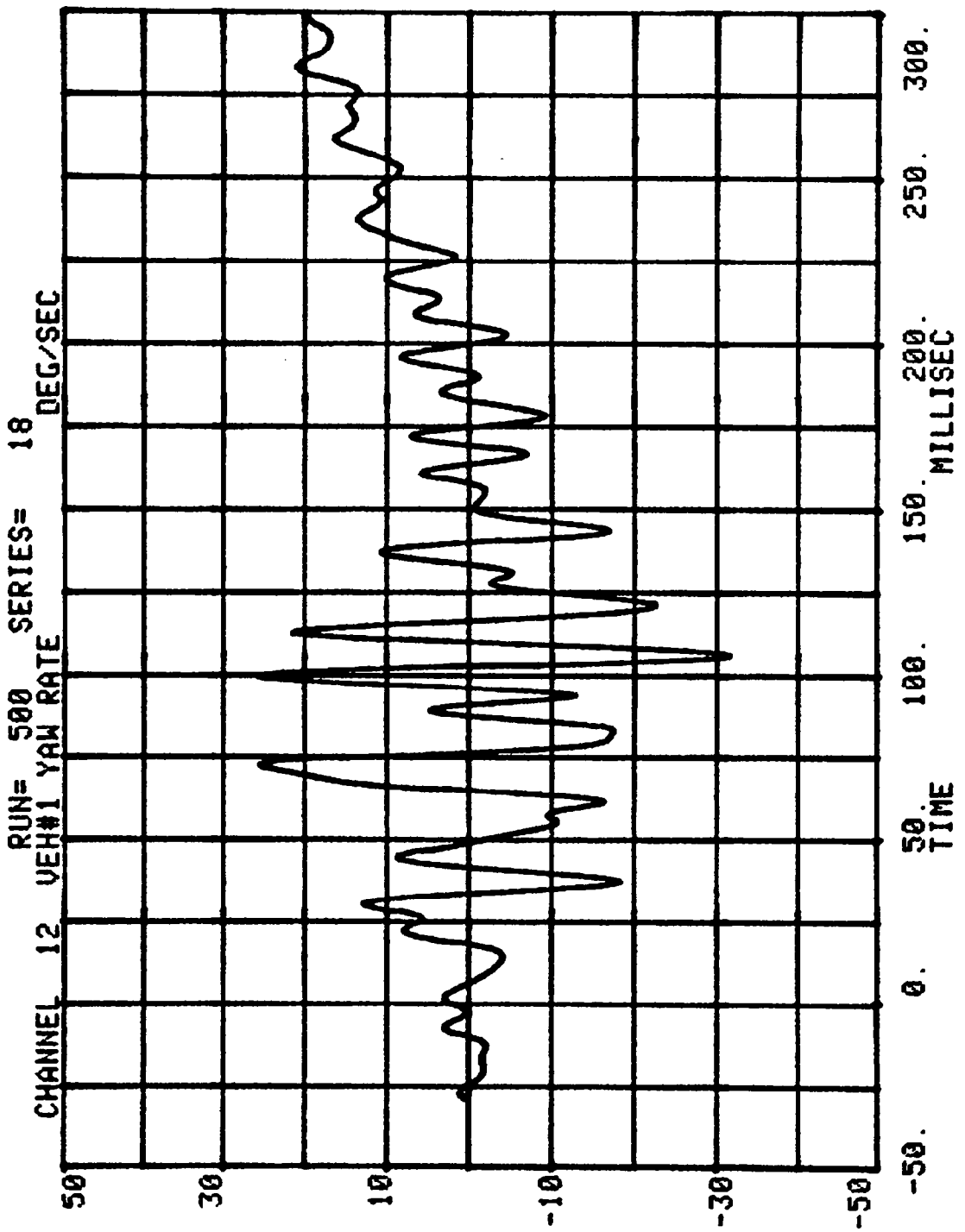

RUN= 500 SERIES= 18
CHANNEL 52 VELOCITY
MPH
VEH. #1 ACC. PACK #8 (X)
50.
40.
30.
20.
10.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

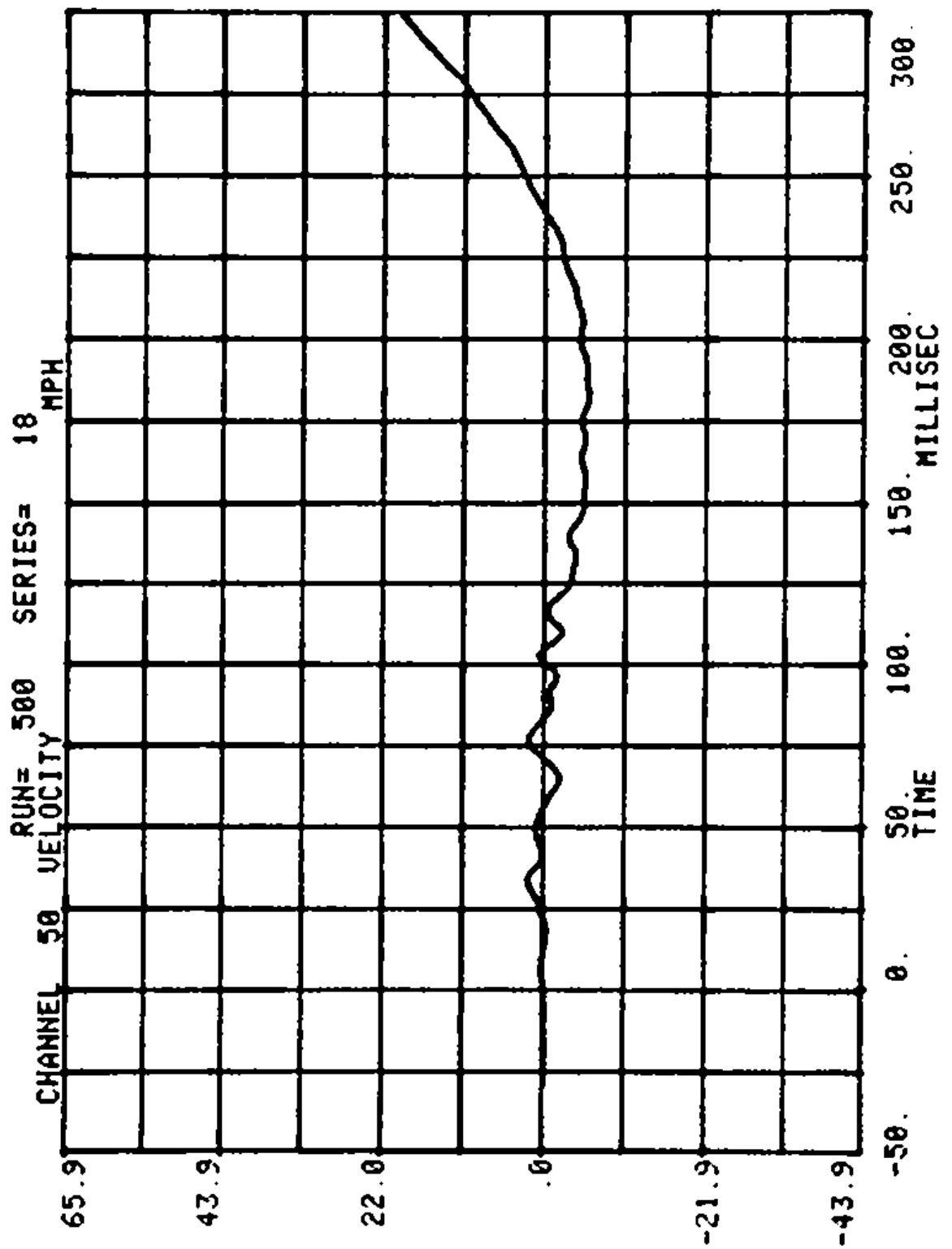

RUN= 500 SERIES= 18
CHANNEL 53 DISPLACEMENT INCHES
VEH. #1 ACC. PACK #8 (X)
200
150
100
50
0
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME MILLISEC


CHANNEL 28
RUN= 500 SERIES= 18
VEH#1 ACC PACK #9(X)
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 54 VELOCITY
RUN= 500 SERIES= 18
MPH VEH. #1 ACC. PACK #9 (X)
50.
40.
30.
20.
10.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 500 SERIES= 18
CHANNEL 55 DISPLACEMENT
INCHES
VERT. #1 ACC., PACK 09 (A)
200
150
100
50
0
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 12 VEH#1 YAW RATE
RUN= 500 SERIES= 18 DEG/SEC
50
30
10
-10
-30
-50
-50. 0. 50. 100. 150. 200. 250. 300.
TIME MILLISEC


CHANNEL 50 VELOCITY
RUN= 500 SERIES= 18 MPH
65.9
43.9
22.0
0.
-21.9
-43.9
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

Test No. 18

Vehicle 1 - 1978 Chevrolet Impala

Dummy Data

	Filter Channel Class
Head Accelerations	1000
Chest Accelerations	180
Femur Loads	600

HEAD INJURY CRITERION
HEAD SEVERITY INDEX

SIDE IMPACT CAR TO CAR BUDD #18

RUN= 500

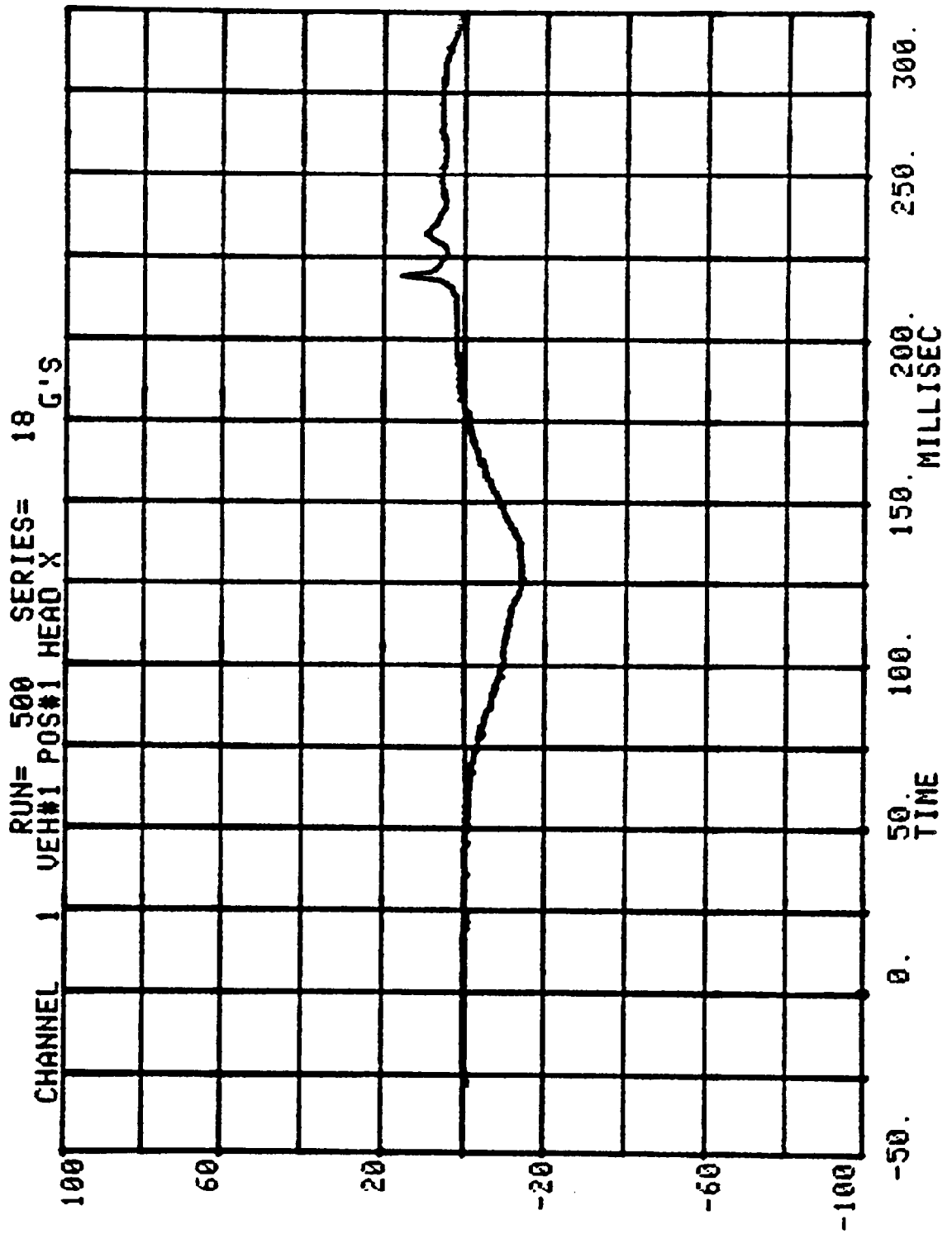
VEH#1 POS#1 HEAD RESULT.

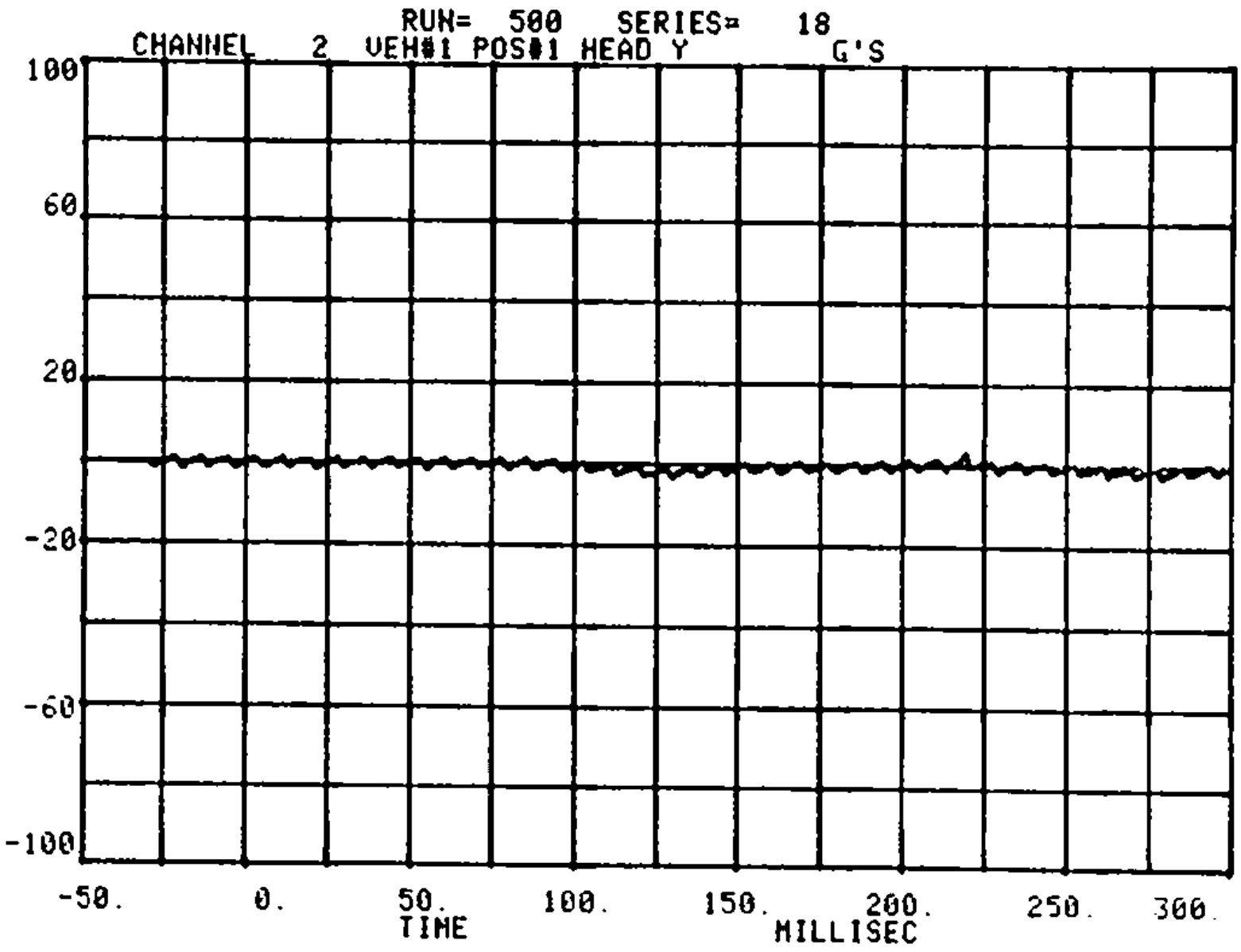
HIC= 30.2 FROM T1= .08670 TO T2= .15420

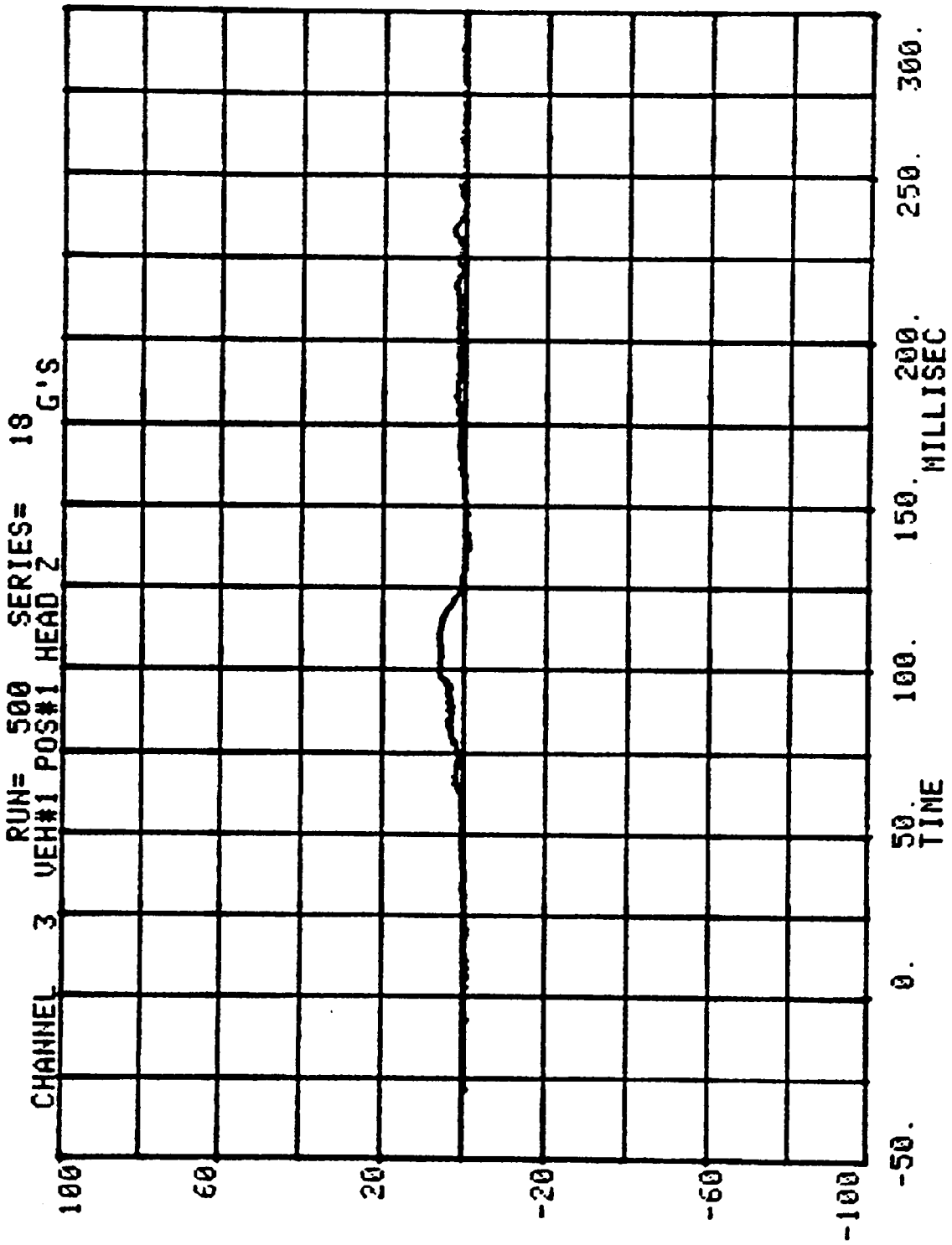
AVERAGE ACCELERATION BETWEEN T1 AND T2= 11.5G'S

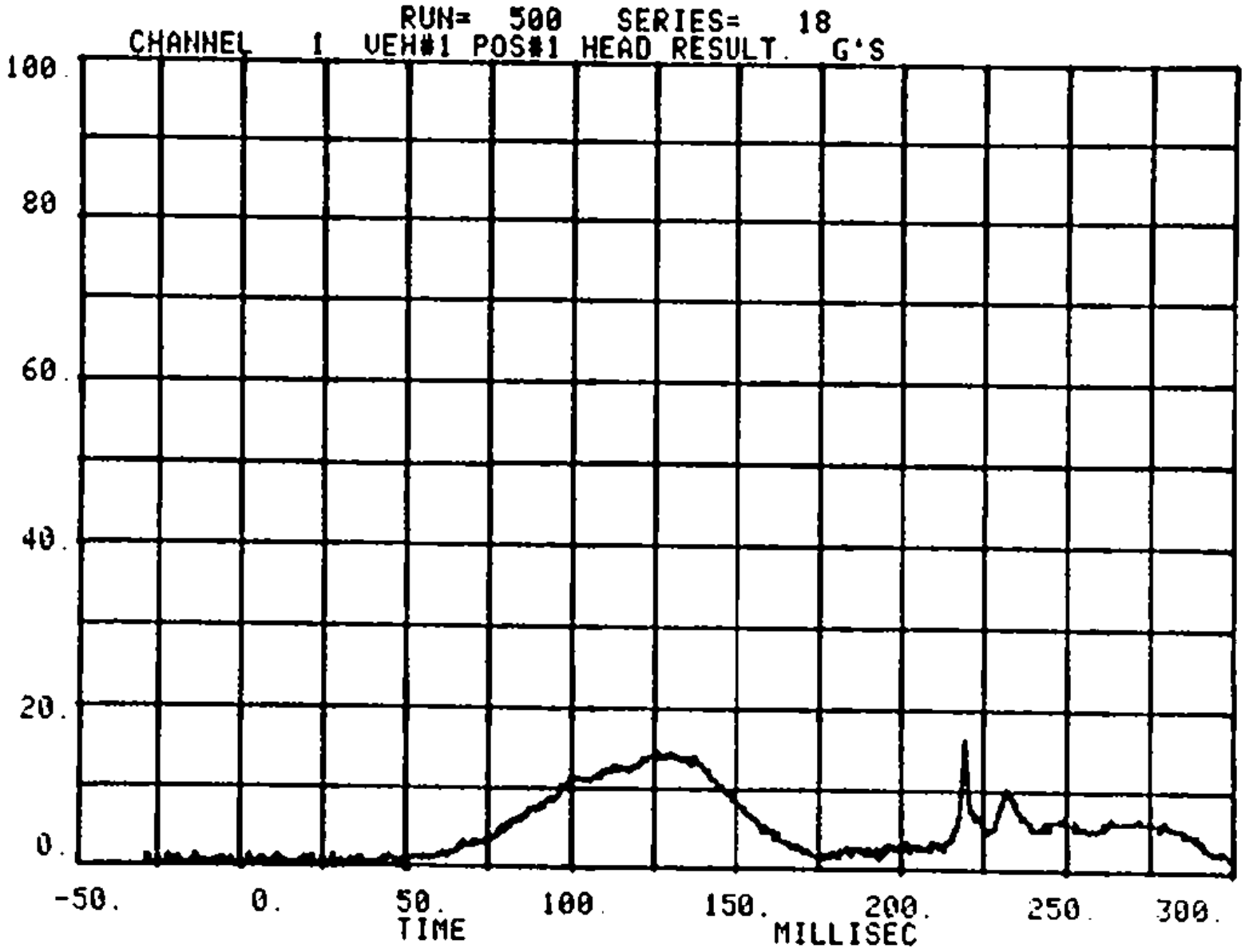
EVENT TIME= 300.0 MSEC

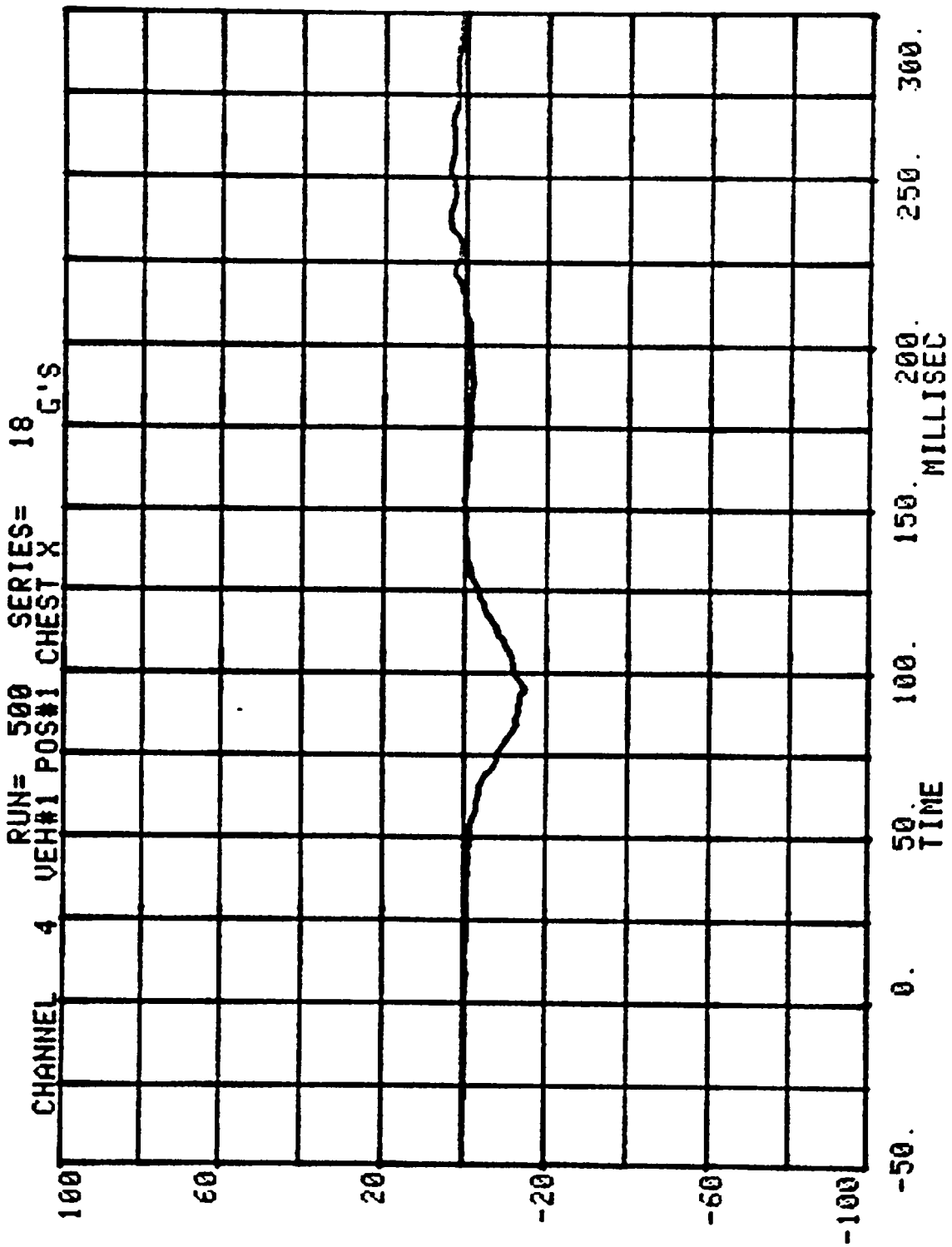
SEVERITY INDEX= 43.0

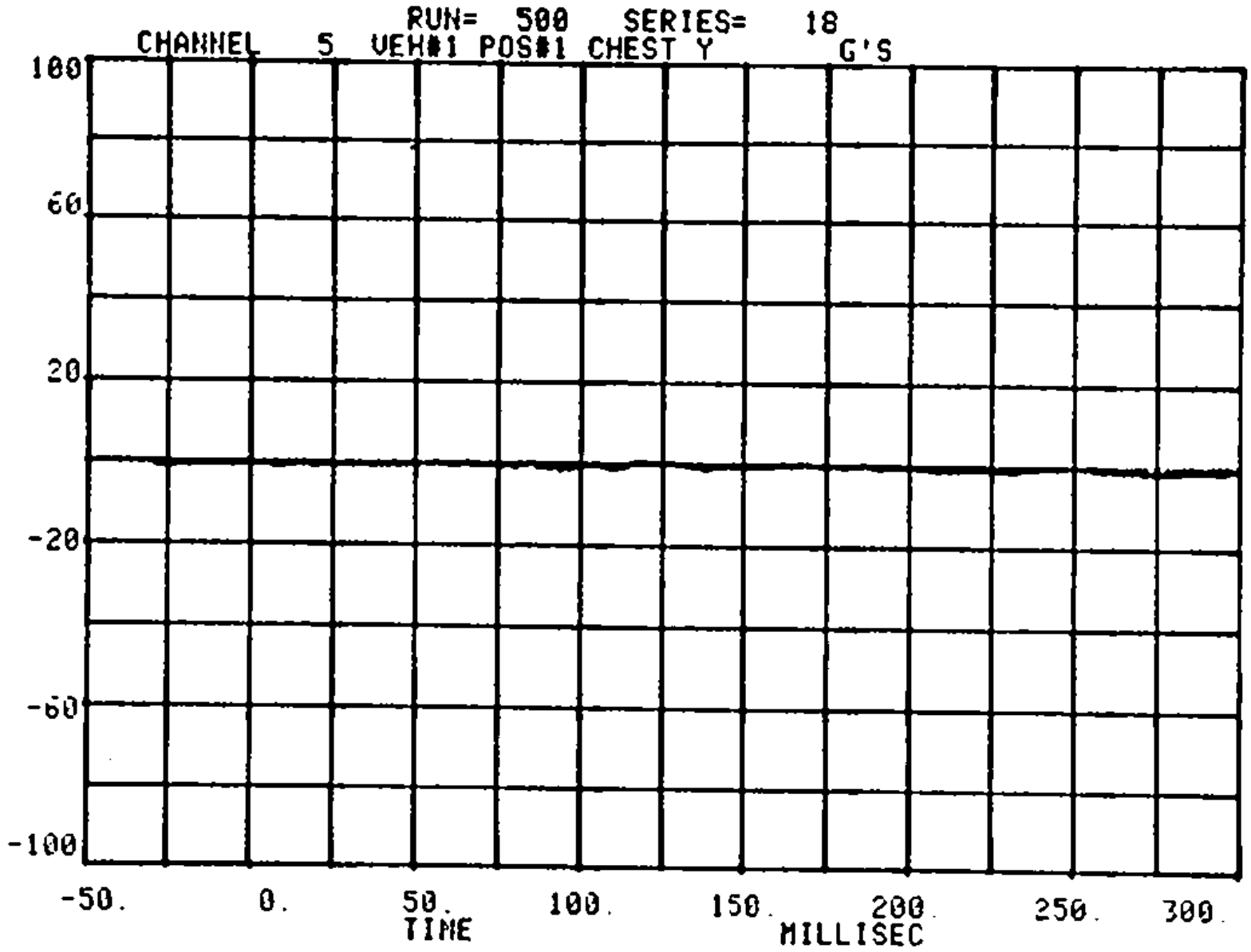

CHANNEL 1 VEH#1 POS#1 HEAD X
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

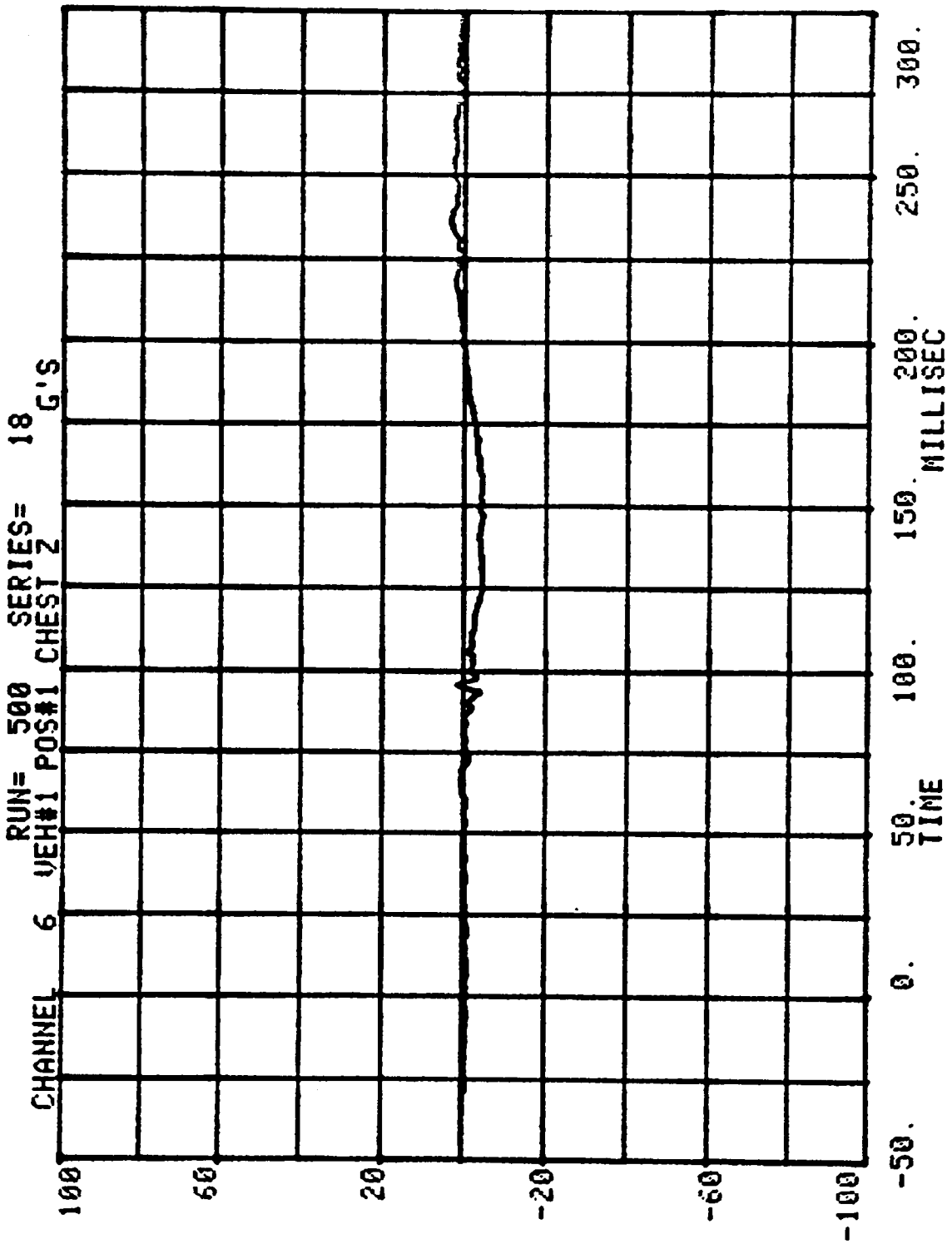

RUN= 500 SERIES= 18
CHANNEL 2 VEH#1 POS#1 HEAD Y G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

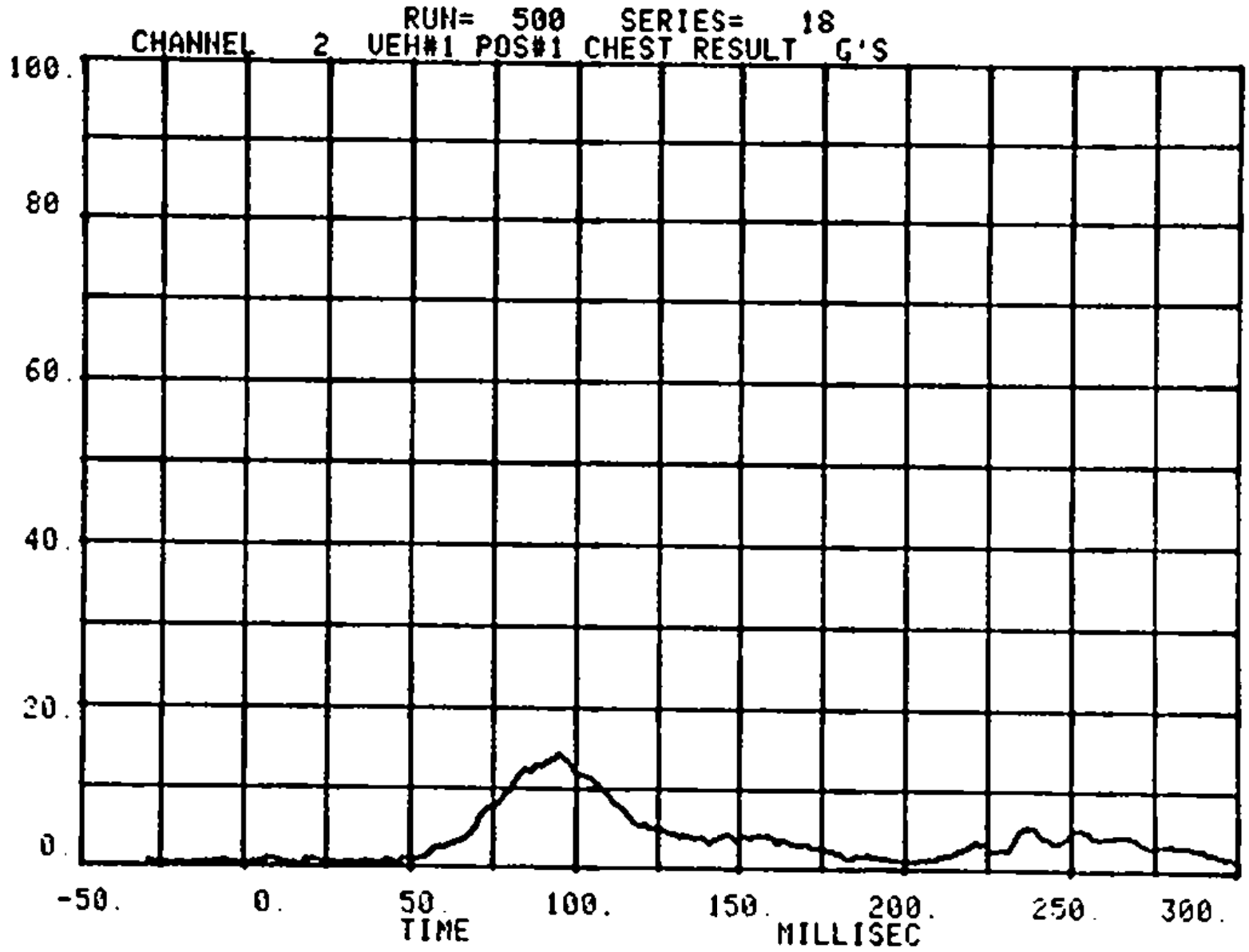

CHANNEL 3 VEH#1 POS#1 HEAD Z
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

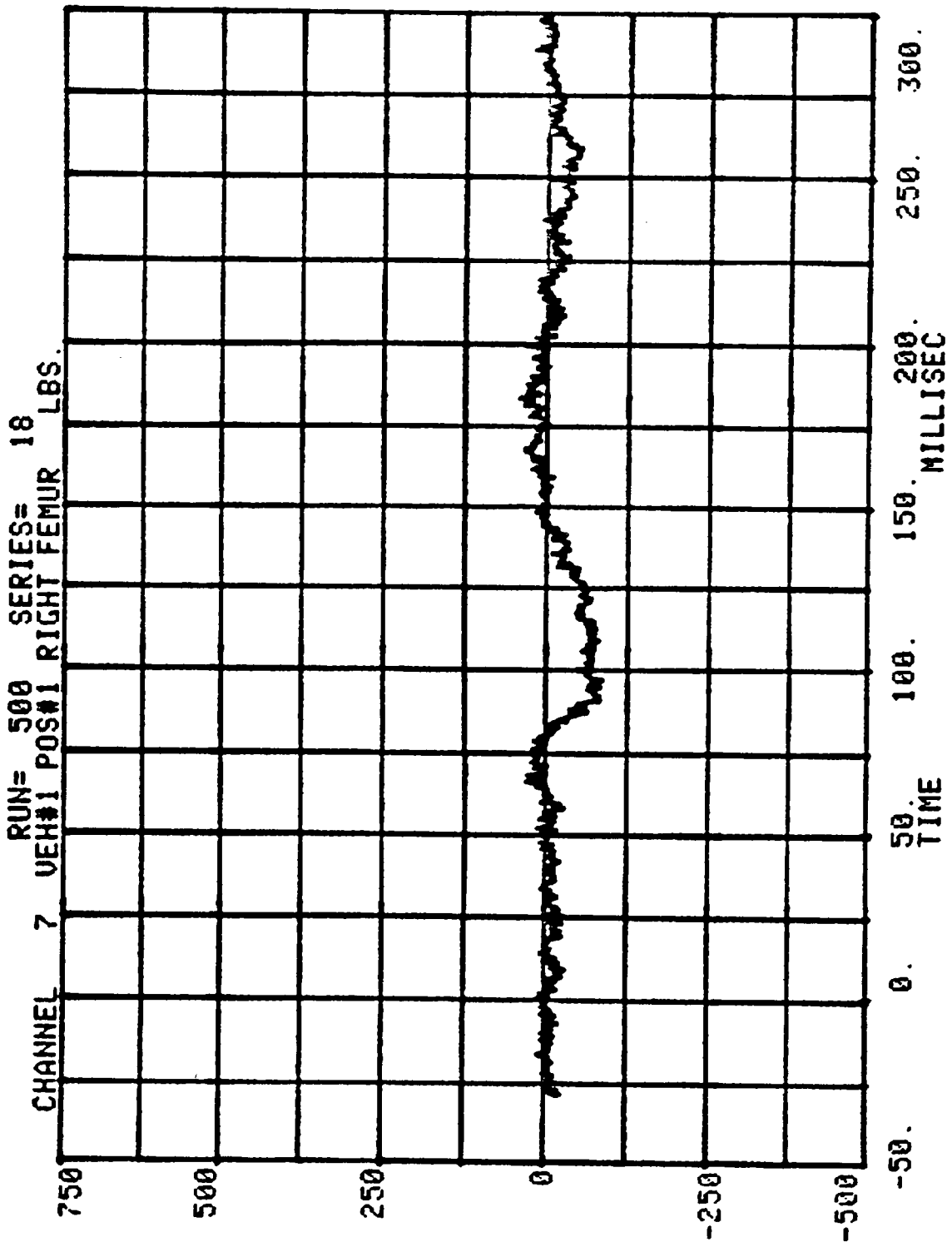

RUN= 500 SERIES= 18
CHANNEL 1 VEH#1 POS#1 HEAD RESULT. G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

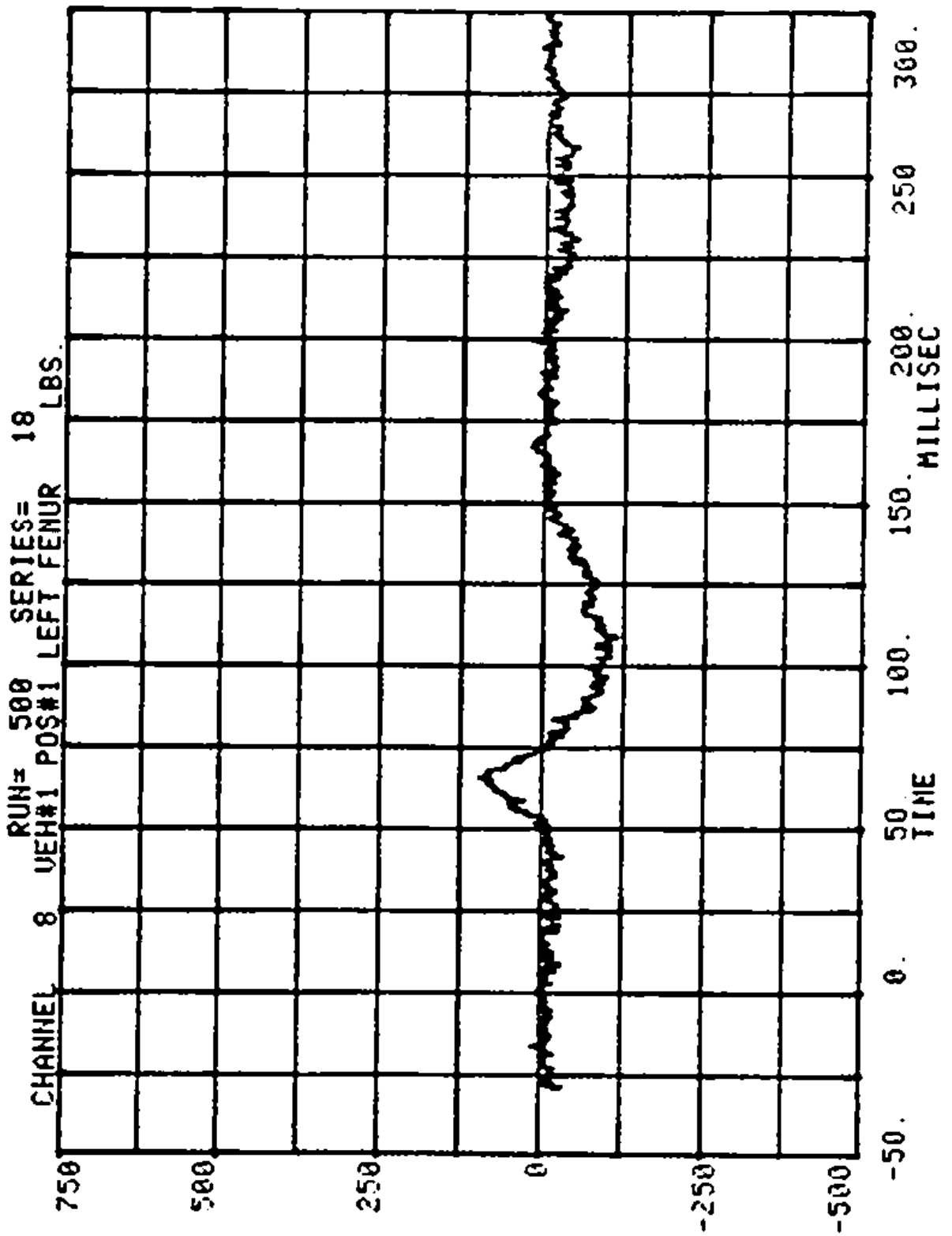

CHANNEL 4 VEH#1 POS#1 CHEST X
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

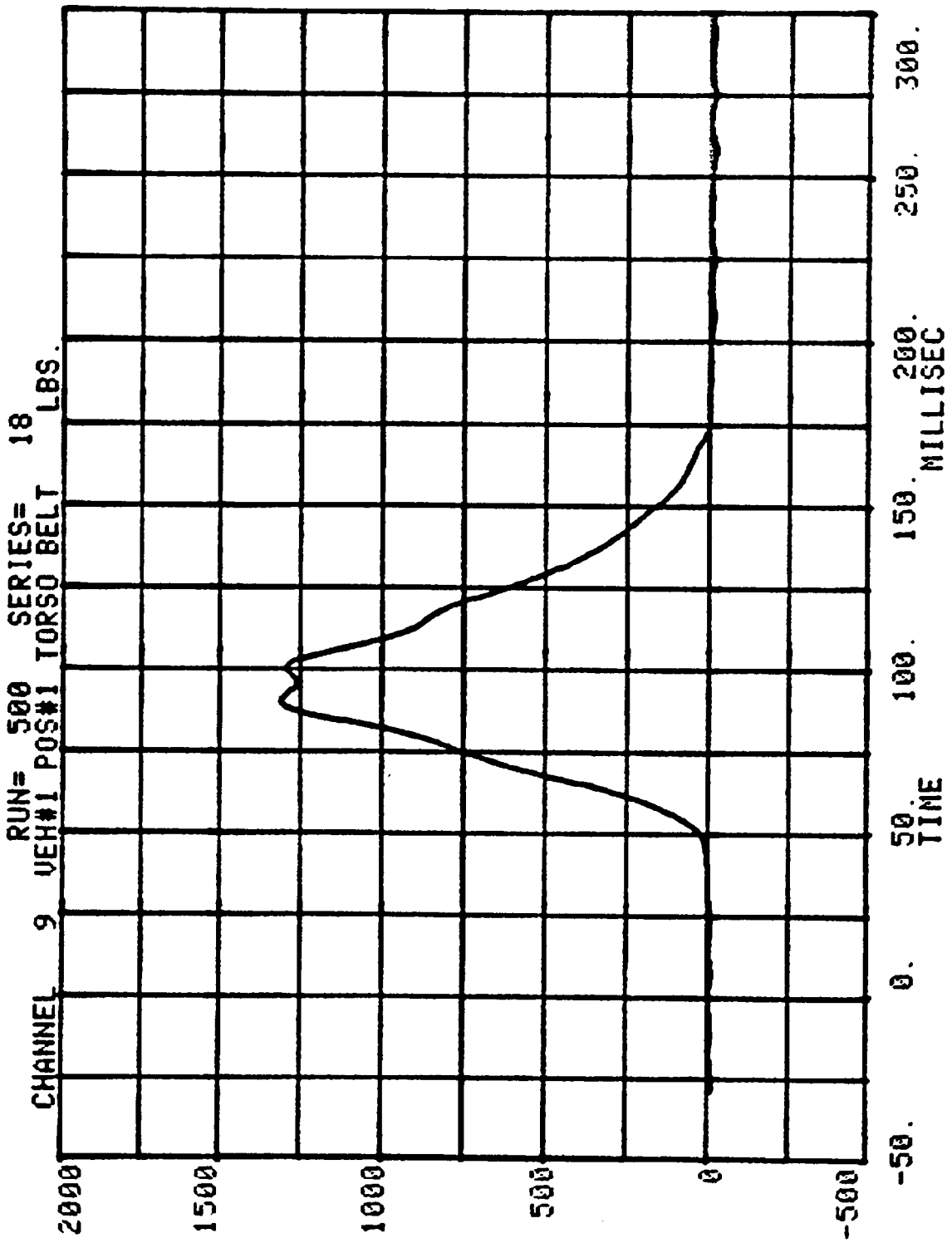

RUN= 500 SERIES= 18
CHANNEL 5 VEH#1 POS#1 CHEST Y G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

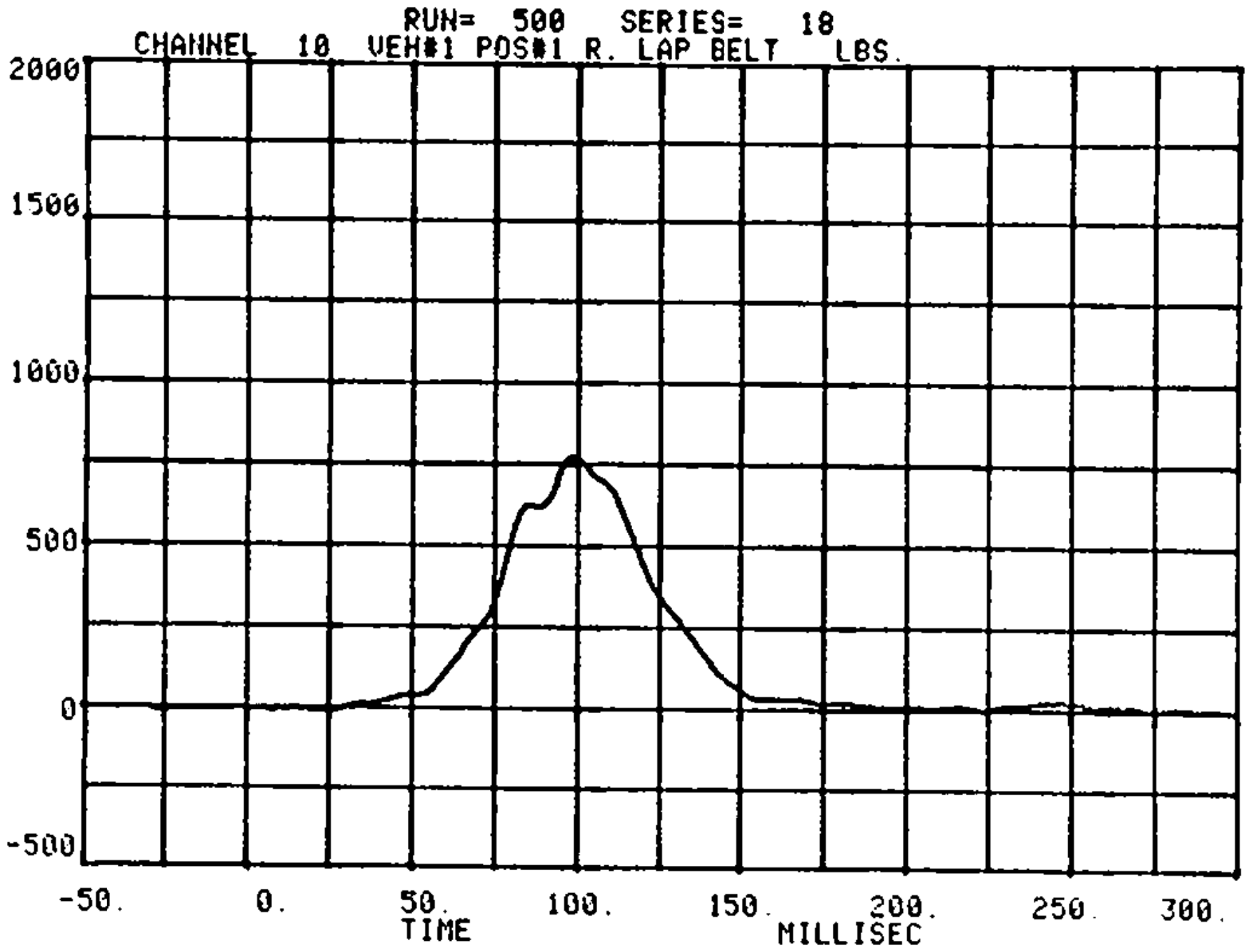

CHANNEL 6 VEH#1 POS#1 CHEST 2
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

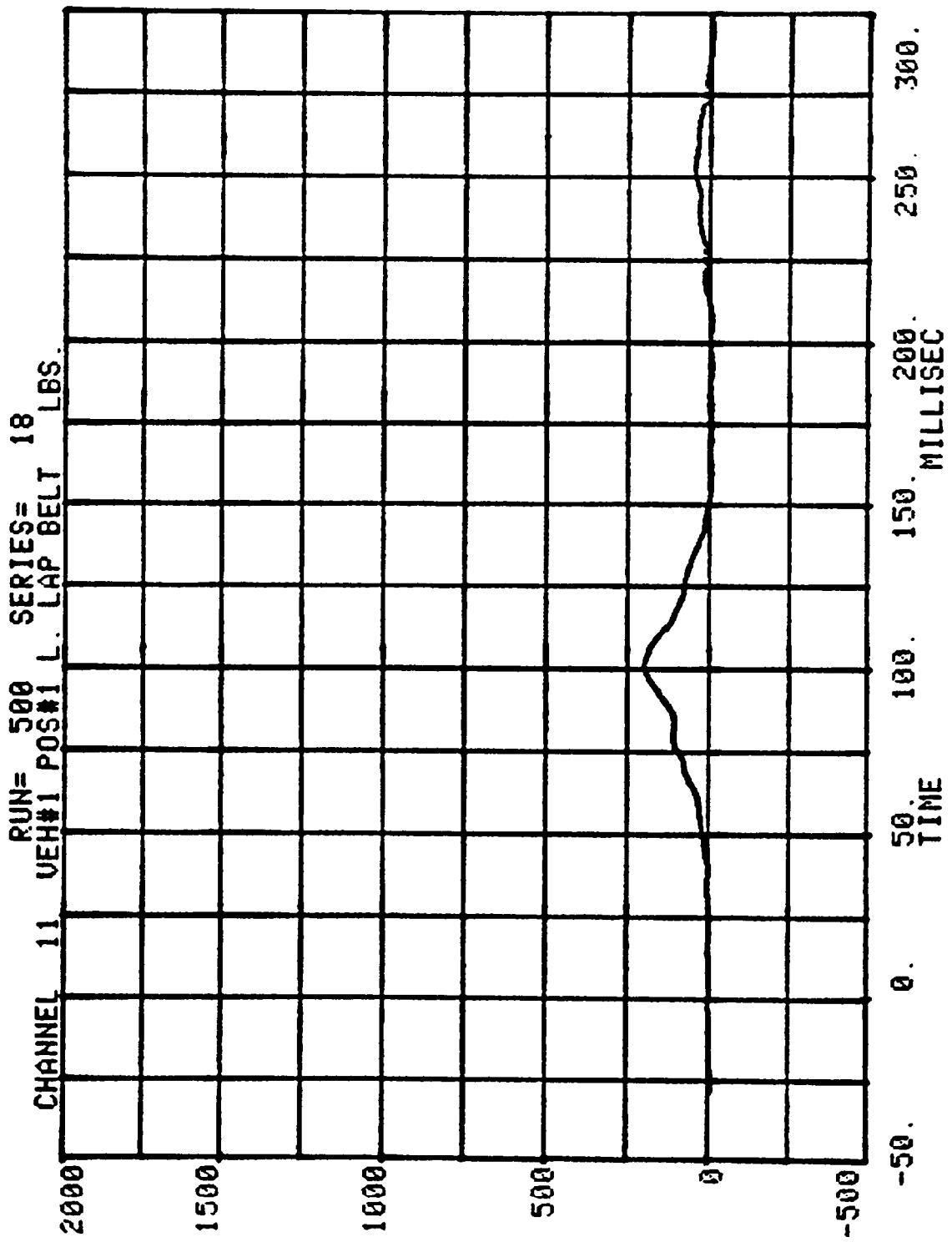

RUN= 500 SERIES= 18
CHANNEL 2 VEH#1 POS#1 CHEST RESULT G'S
100.
80
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 7 VEH#1 POS#1 RIGHT FEMUR
RUN= 500 SERIES= 18
LBS.
750
500
250
0
-250
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 8 RUN= 500 SERIES= 18
VEH#1 POS#1 LEFT FENUR
LBS.
750
500
250
0
-250
-500
-50.
0.
50.
100.
150.
200.
250
300.
TIME
MILLISEC


CHANNEL 9 VEH#1 POS#1 TORSO BELT
RUN= 500 SERIES= 18
LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 500 SERIES= 18
CHANNEL 10 VEH#1 POS#1 R. LAP BELT LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

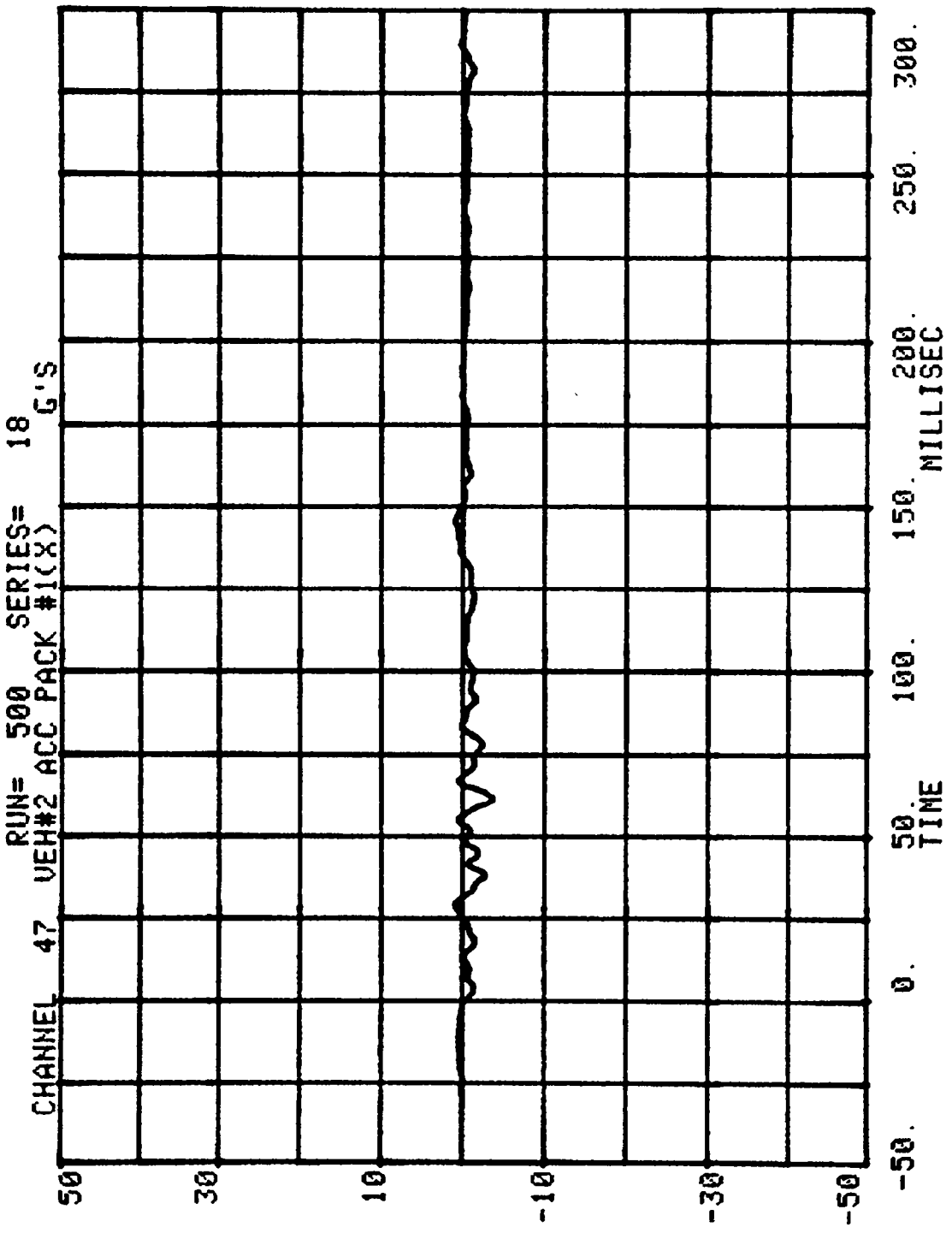

CHANNEL 11 VEH#1 POS#1 L. LAP BELT
RUN= 500 SERIES= 18
LBS.
2000
1500
1000
500
0
-500
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

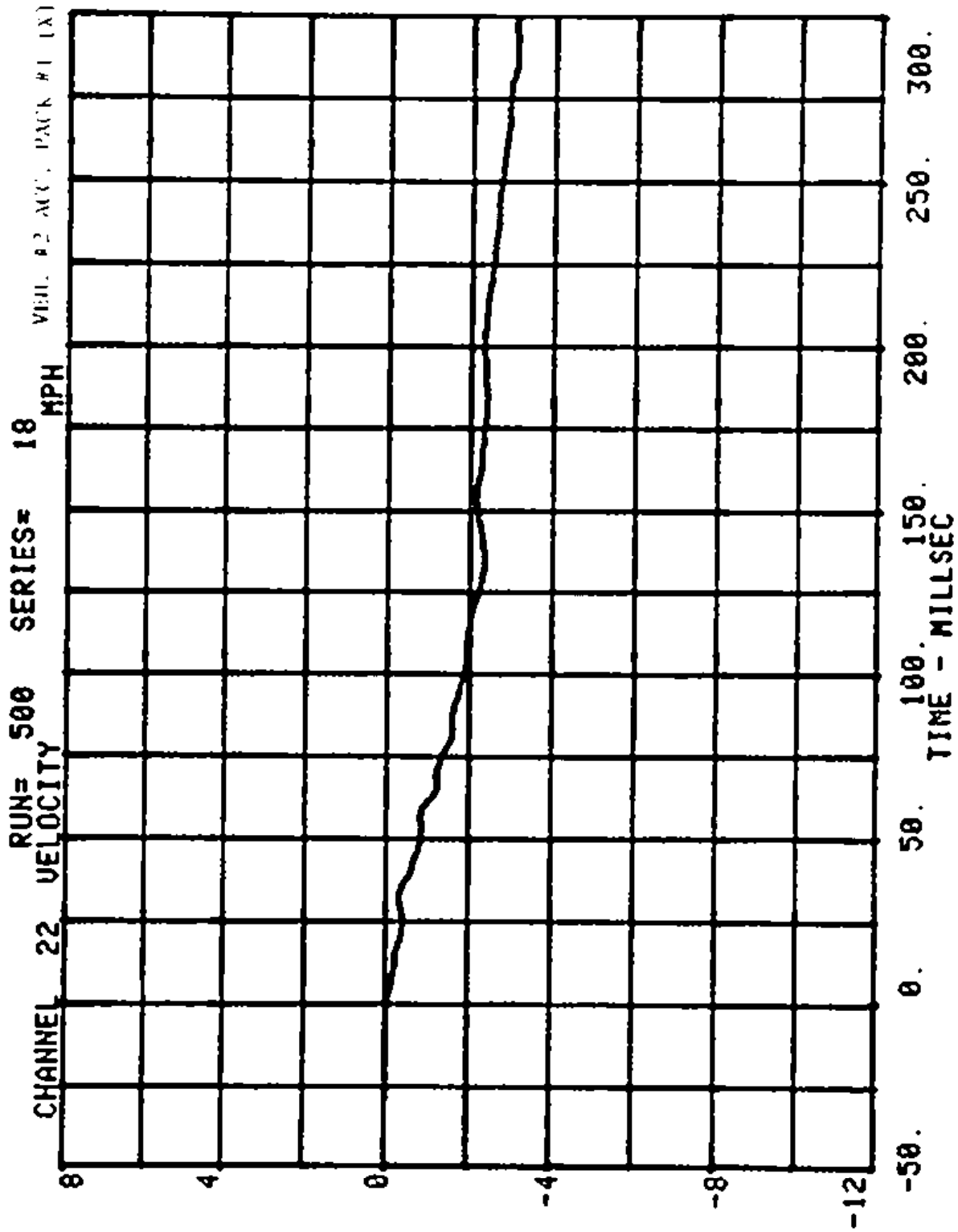
Test No. 18

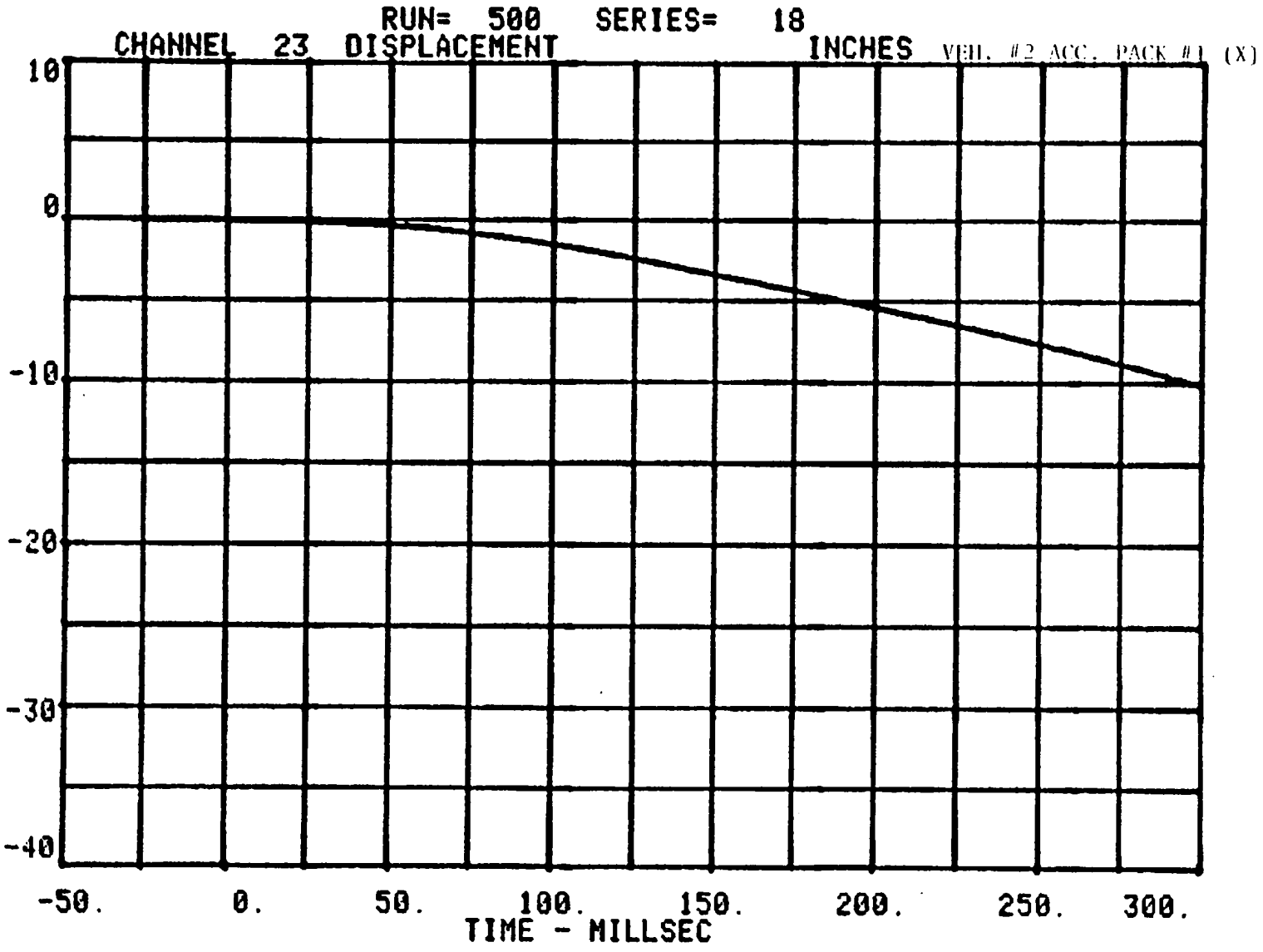
Vehicle 2 - 1976 Volkswagen Rabbit

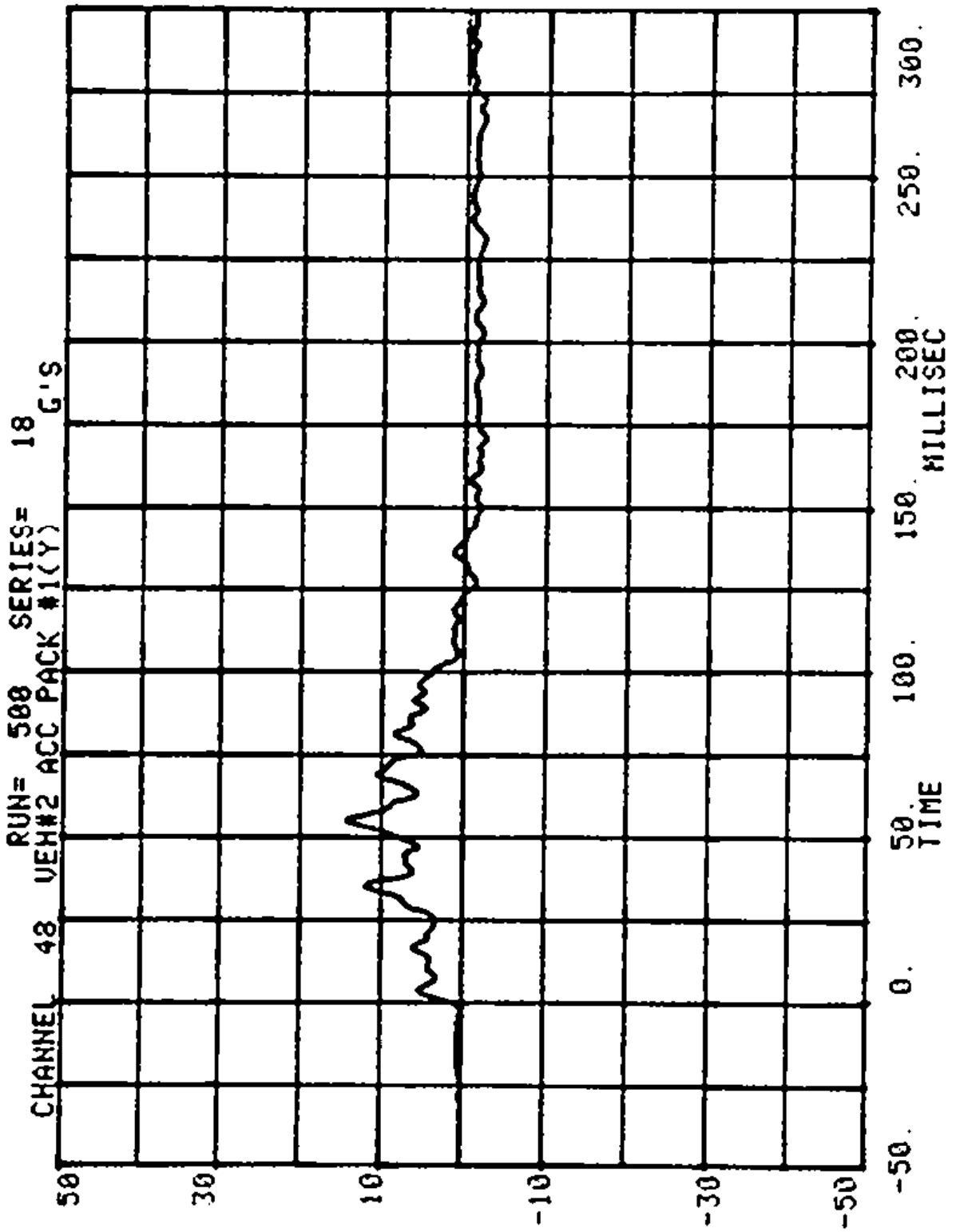
Vehicle Data

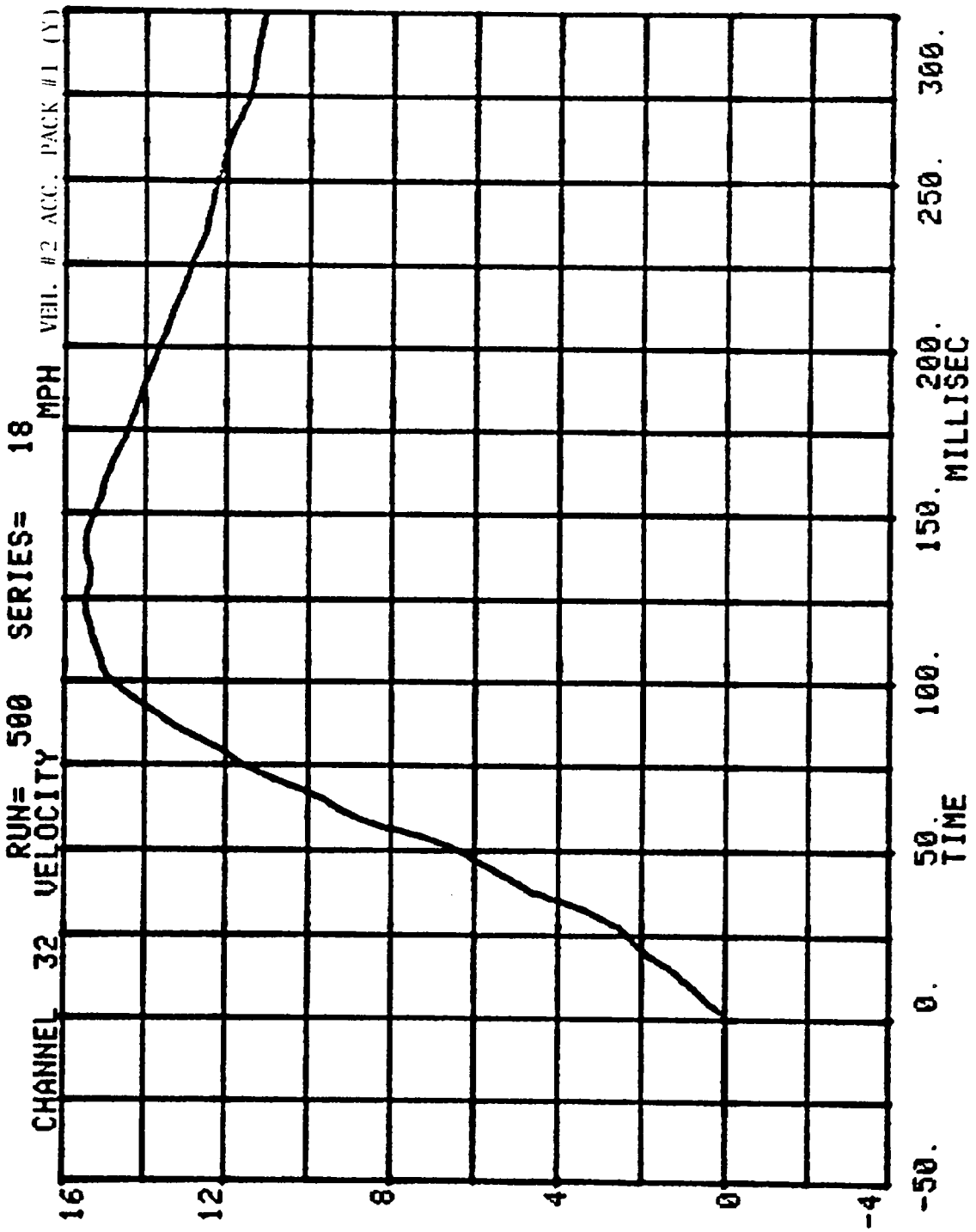
60 Hz Channel Class

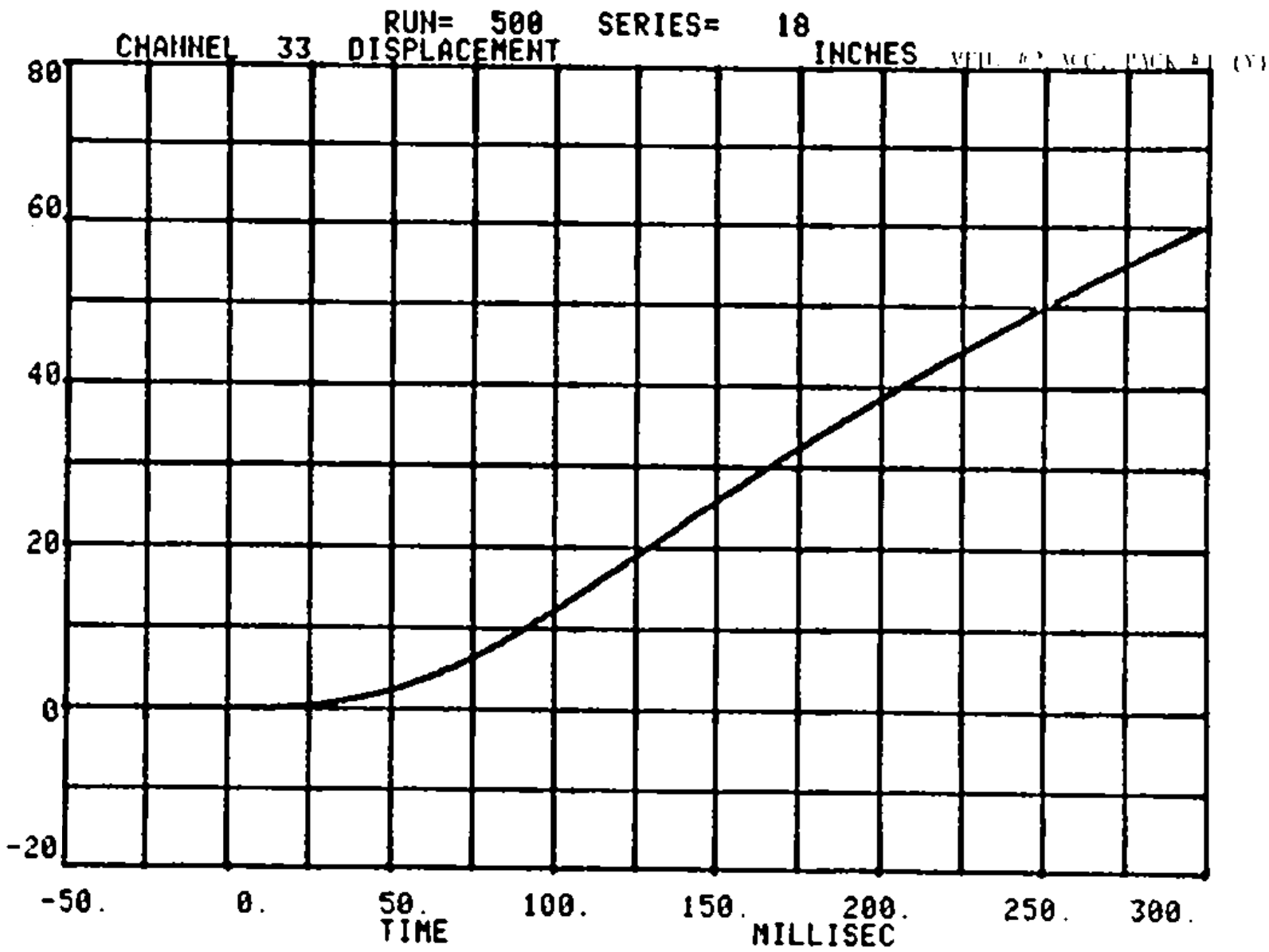

CHANNEL 47
RUN= 500 SERIES= 18
VEH#2 ACC PACK #1(X)
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

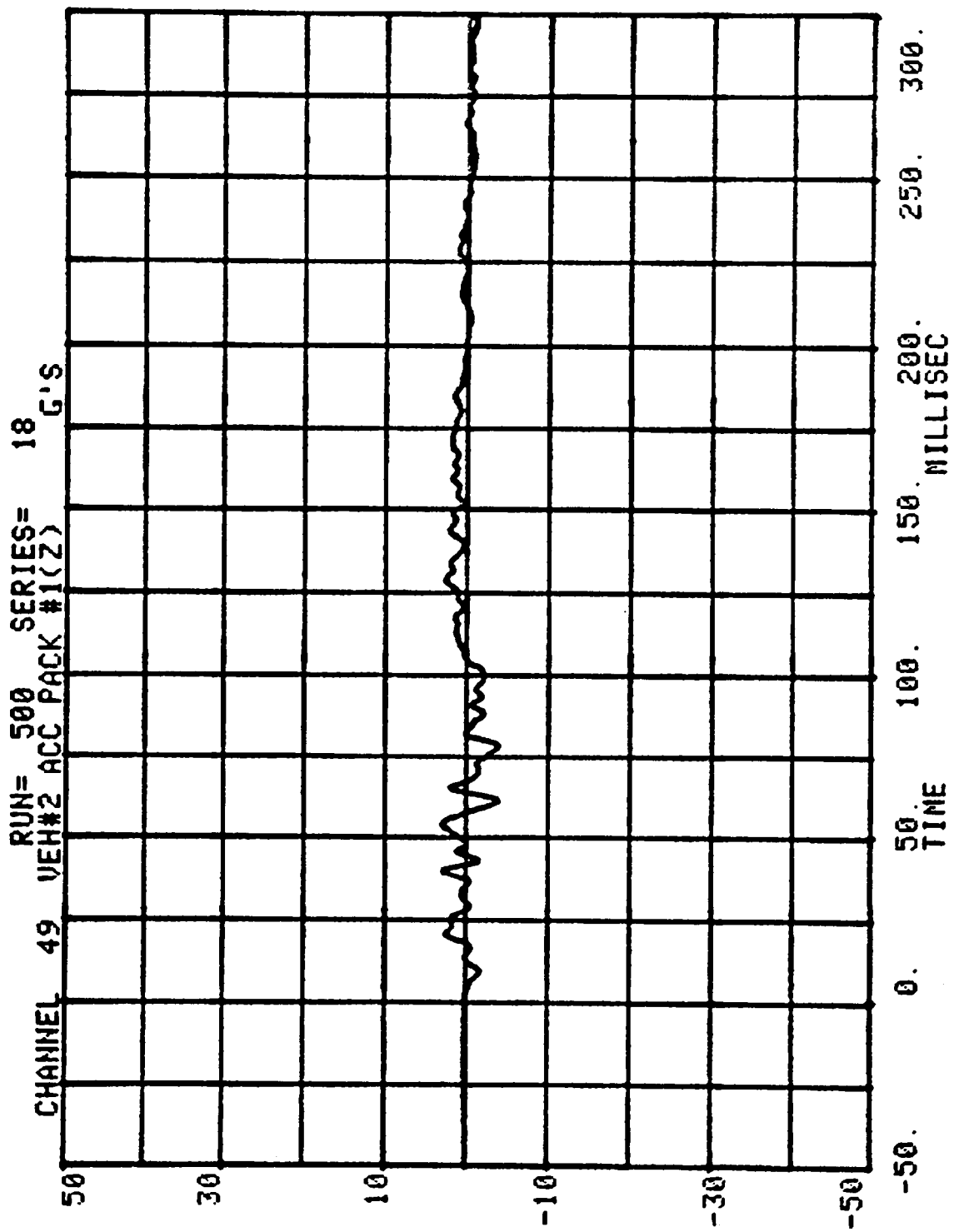

CHANNEL 22 VELOCITY
RUN= 500 SERIES= 18 MPH
8
4
0
-4
-8
-12
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

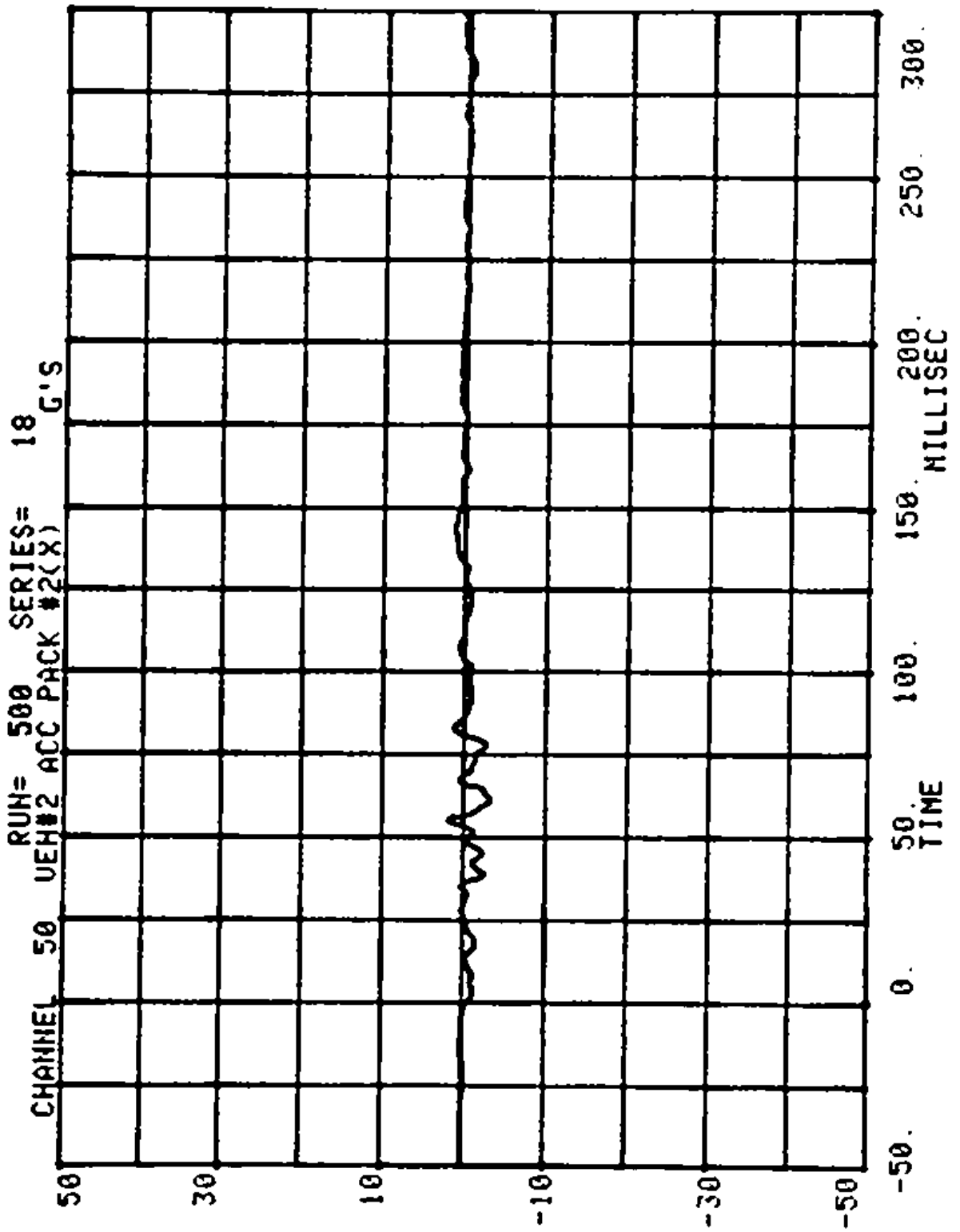

RUN= 500 SERIES= 18
CHANNEL 23 DISPLACEMENT INCHES VEH. #2 ACC. PACK #1 (X)
10
0
-10
-20
-30
-40
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

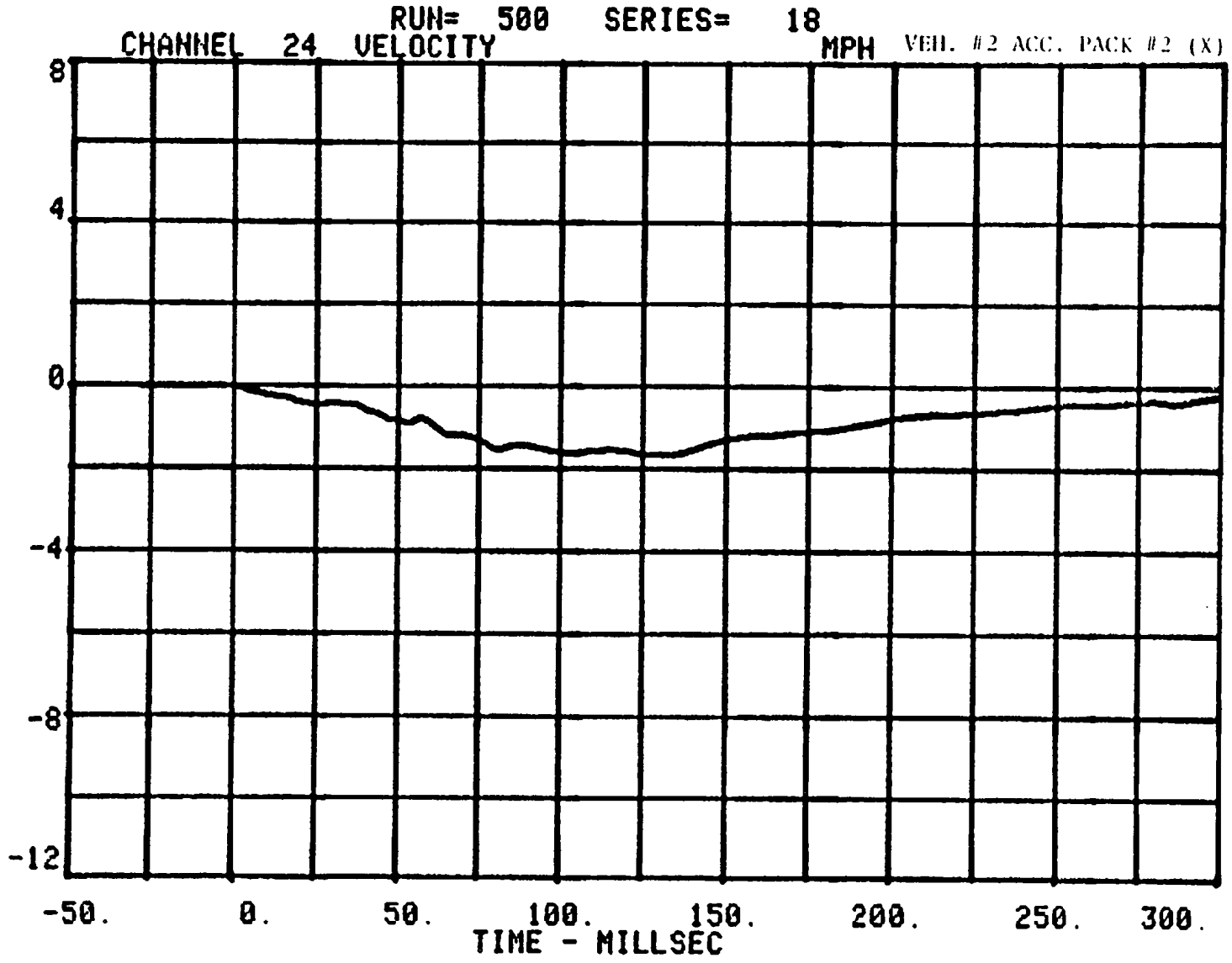

CHANNEL 48 VEH#2 ACC PACK #1(Y)
RUN= 500 SERIES= 18 G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

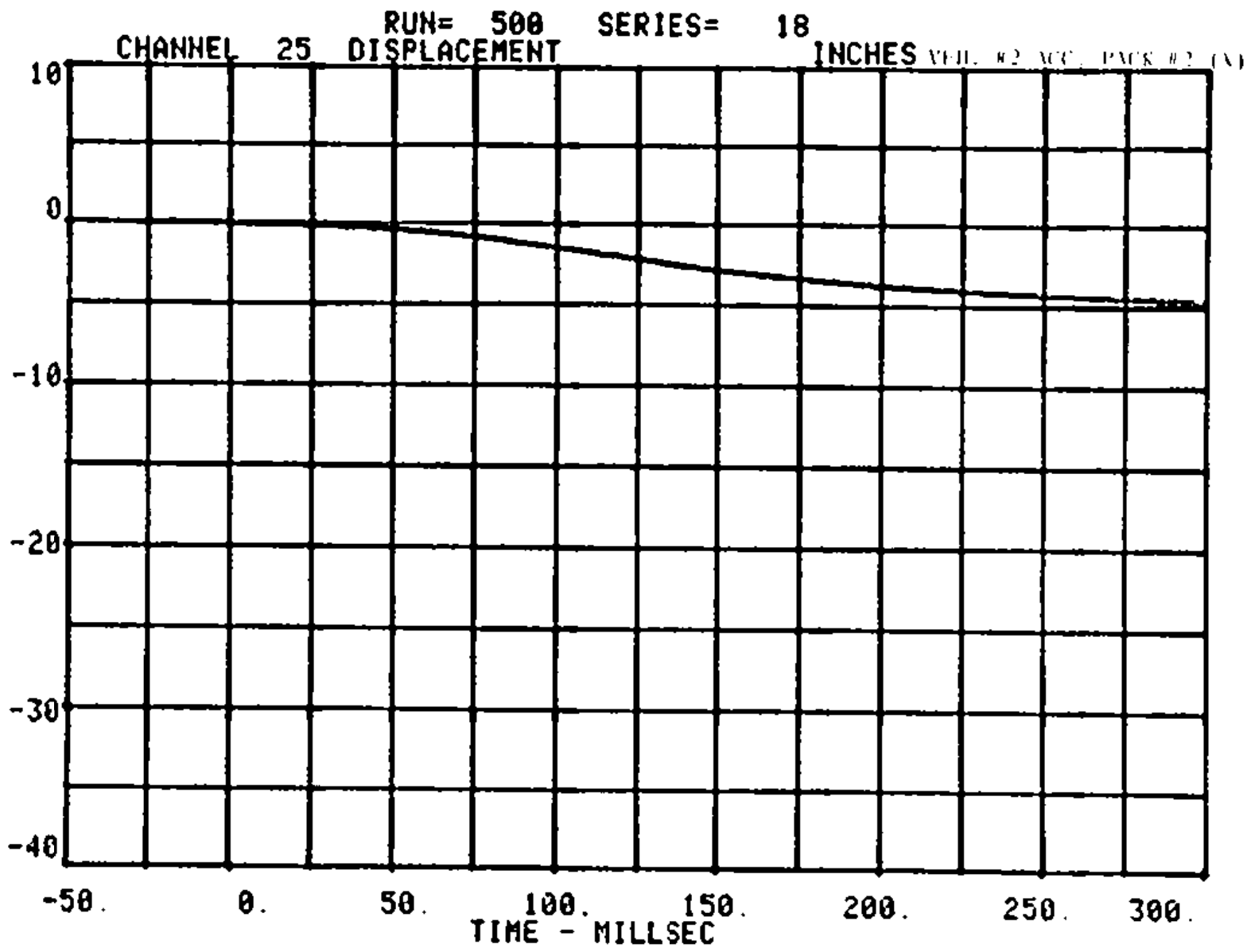

CHANNEL 32 VELOCITY
RUN= 500 SERIES= 18 MPH
VEH. #2 ACC. PACK #1 (Y)
16
12
8
4
0
-4
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

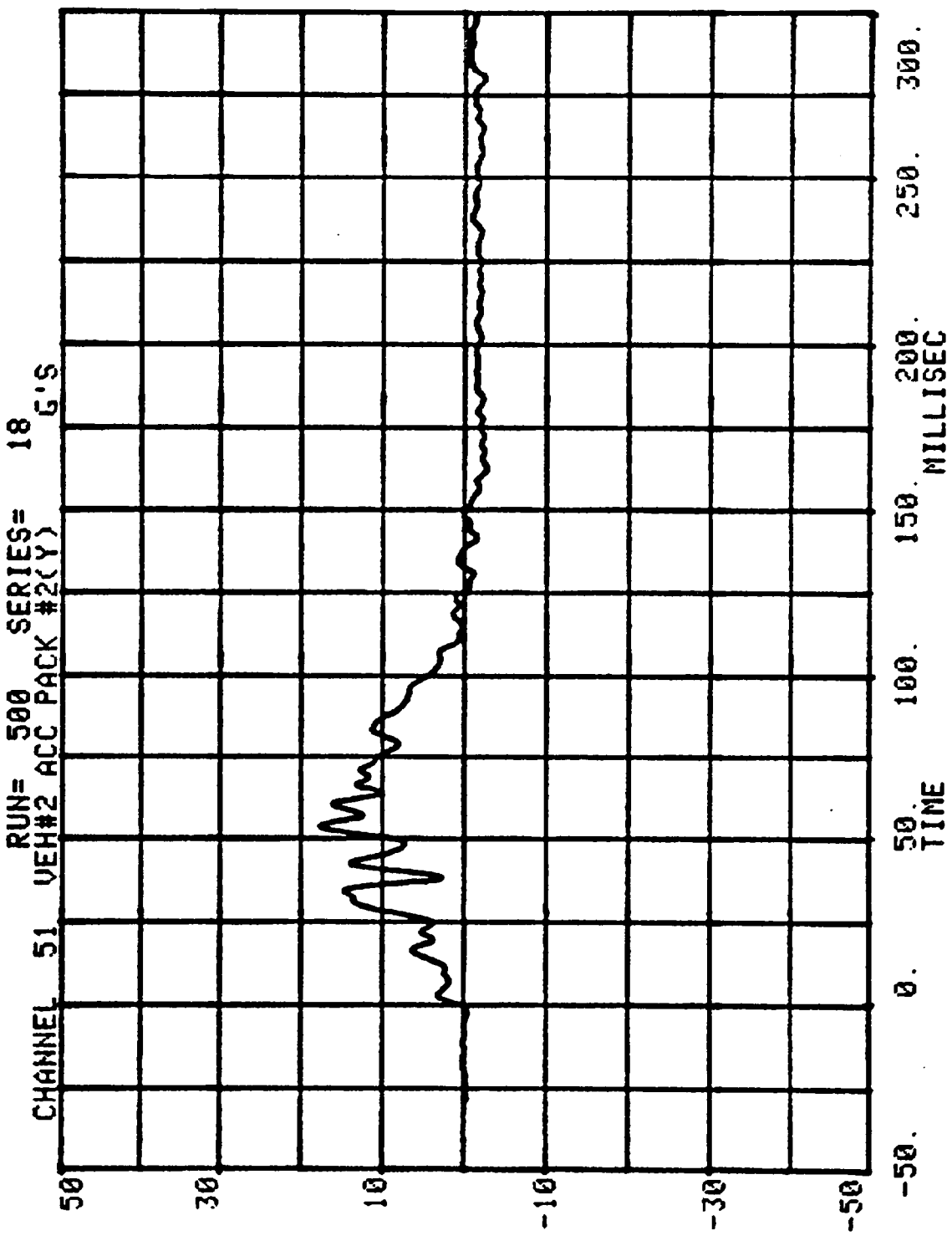

RUN= 500 SERIES= 18
CHANNEL 33 DISPLACEMENT
INCHES
80
60
40
20
0
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

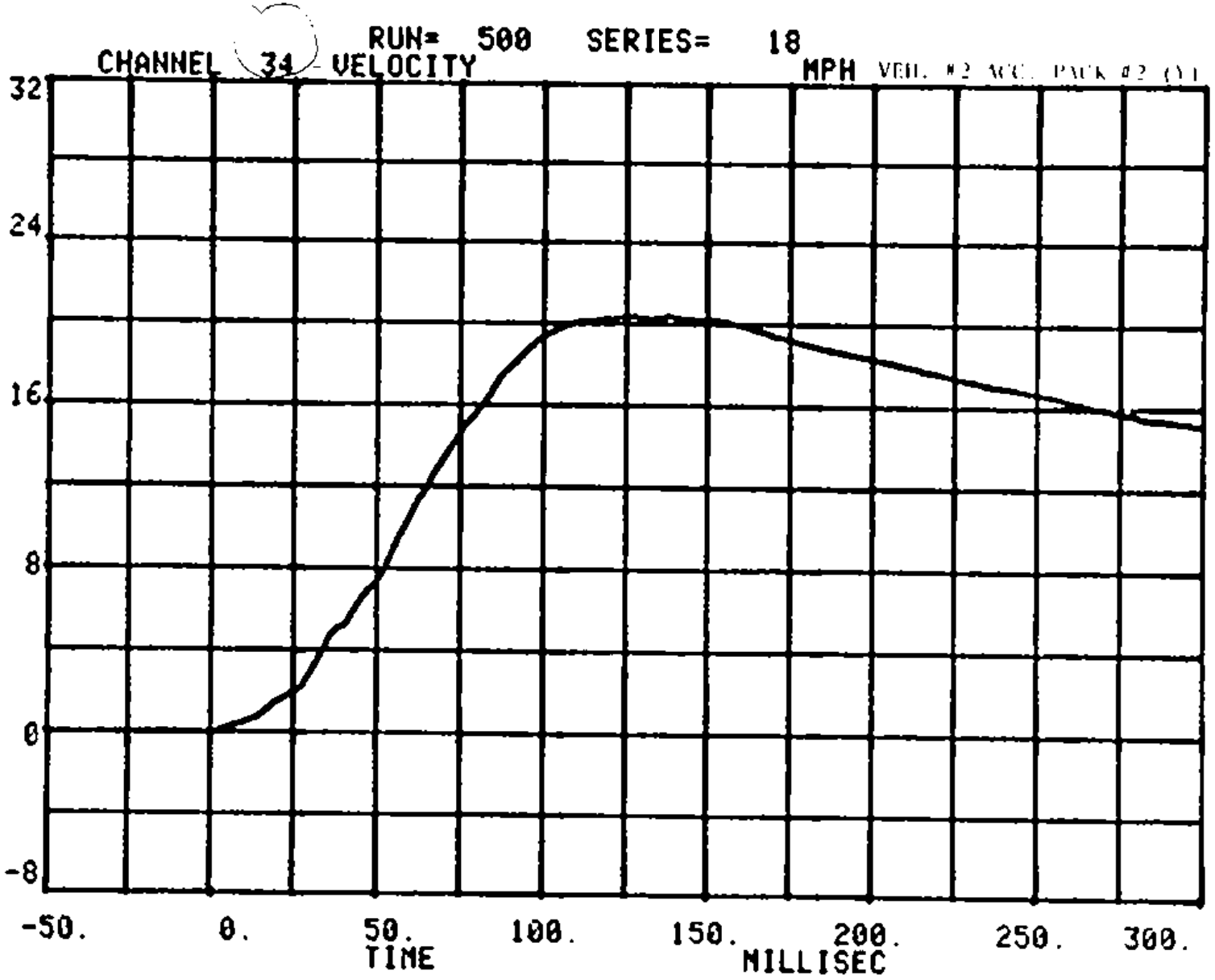

CHANNEL 49 VEH#2 ACC PACK #1(Z)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

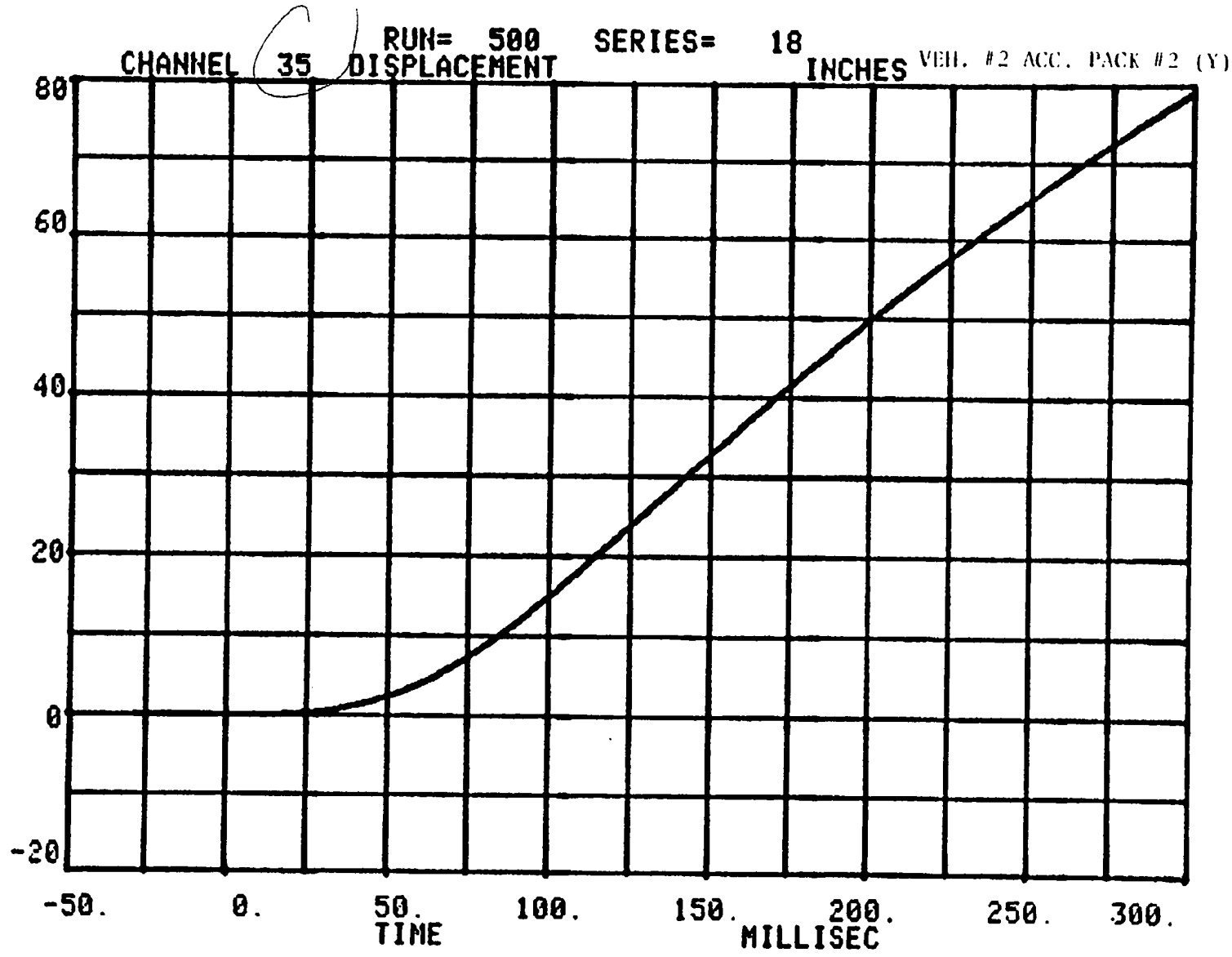

CHANNEL 50 VEH#2 ACC PACK #2(X)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

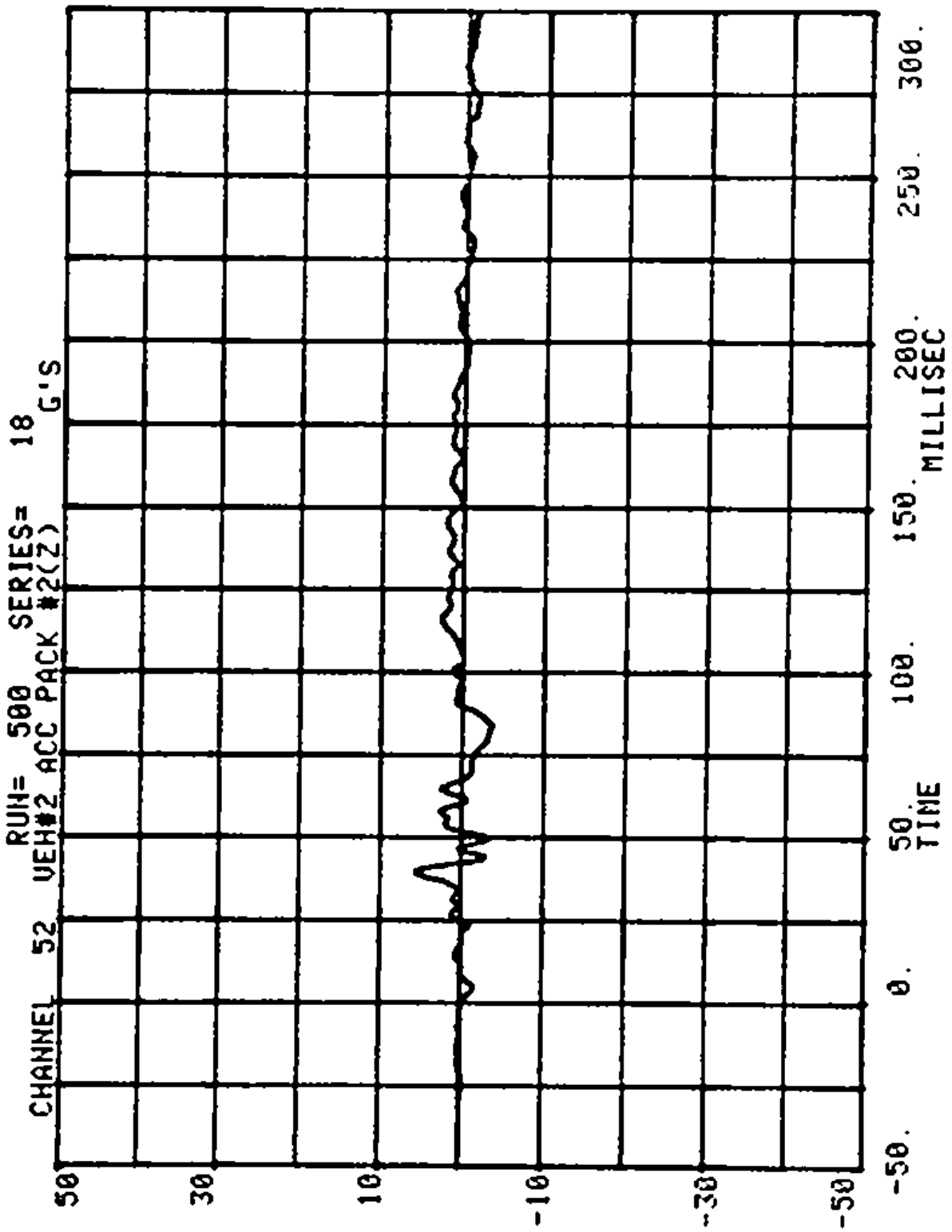

RUN= 500 SERIES= 18
CHANNEL 24 VELOCITY MPH
VEH. #2 ACC. PACK #2 (X)
8
4
0
-4
-8
-12
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

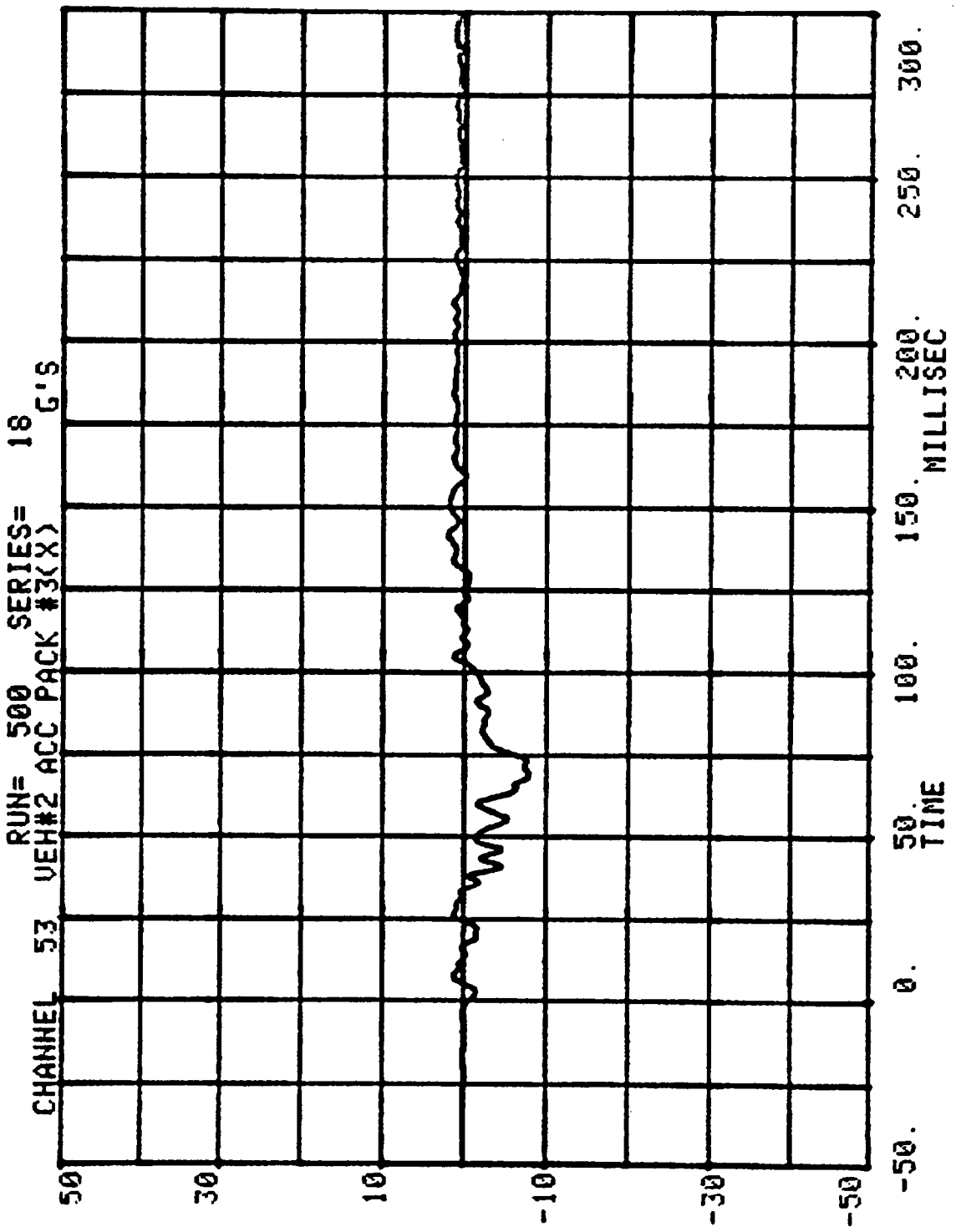

RUN= 500 SERIES= 18
CHANNEL 25 DISPLACEMENT
INCHES
10
0
-10
-20
-30
-40
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

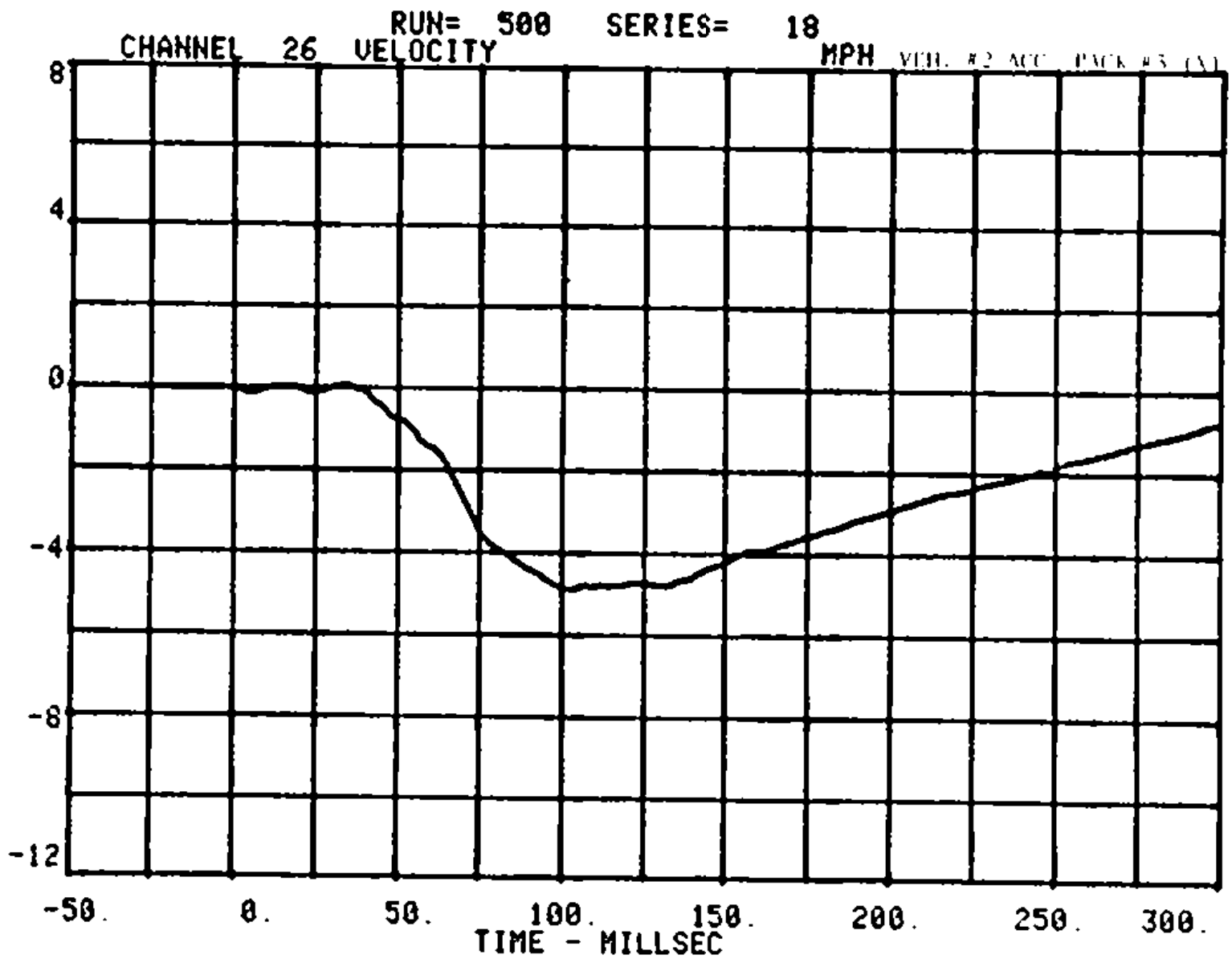

CHANNEL 51 VEH#2 ACC PACK #2(Y)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

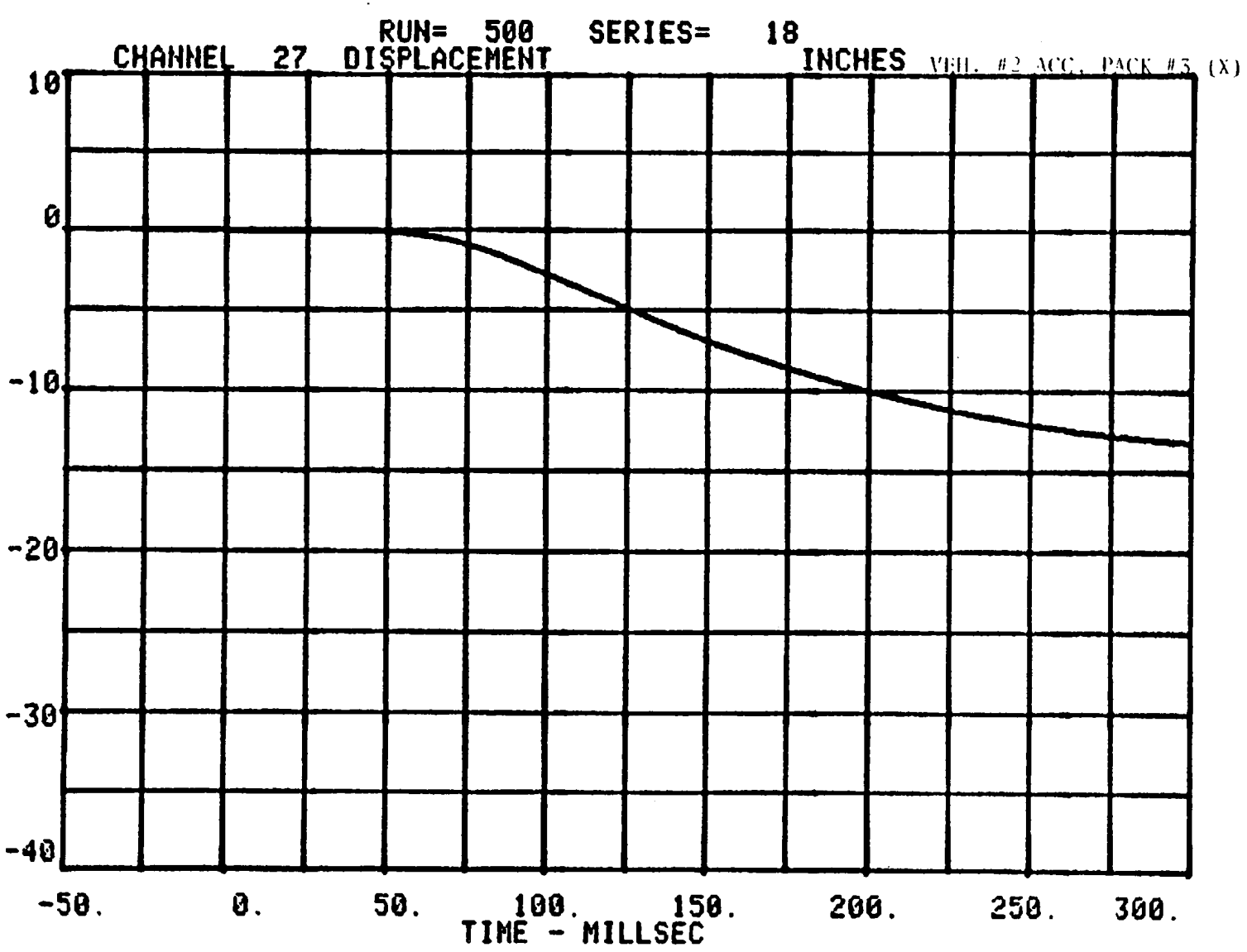

RUN= 500 SERIES= 18
CHANNEL 34 - VELOCITY
MPH
VEH. #2 ACC. PACK #2 (X)
32
24
16
8
0
-8
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

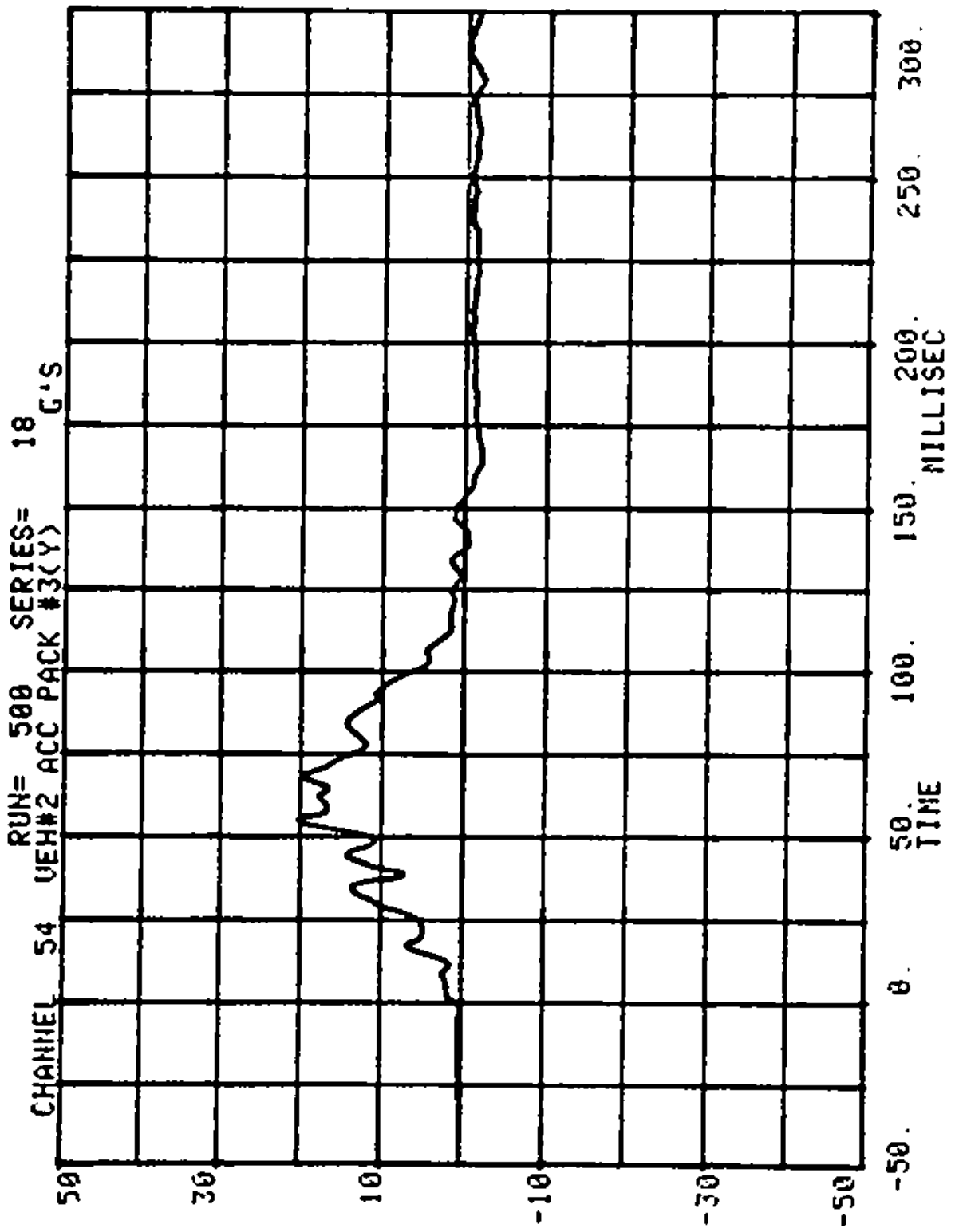

RUN= 500 SERIES= 18
CHANNEL 35 DISPLACEMENT INCHES
VEH. #2 ACC. PACK #2 (Y)
80
60
40
20
0
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

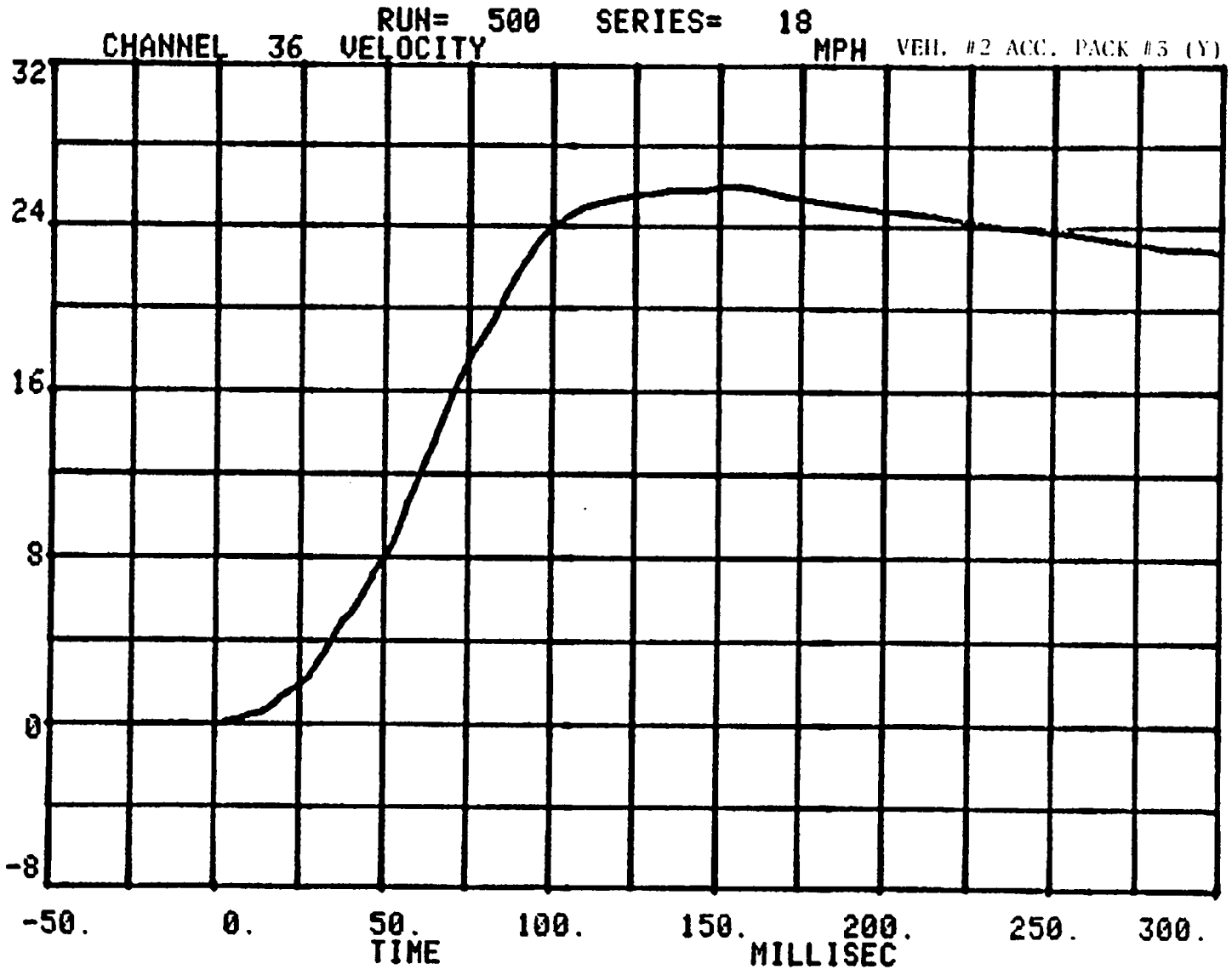

CHANNEL 52 VEH#2 ACC PACK #2(Z)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

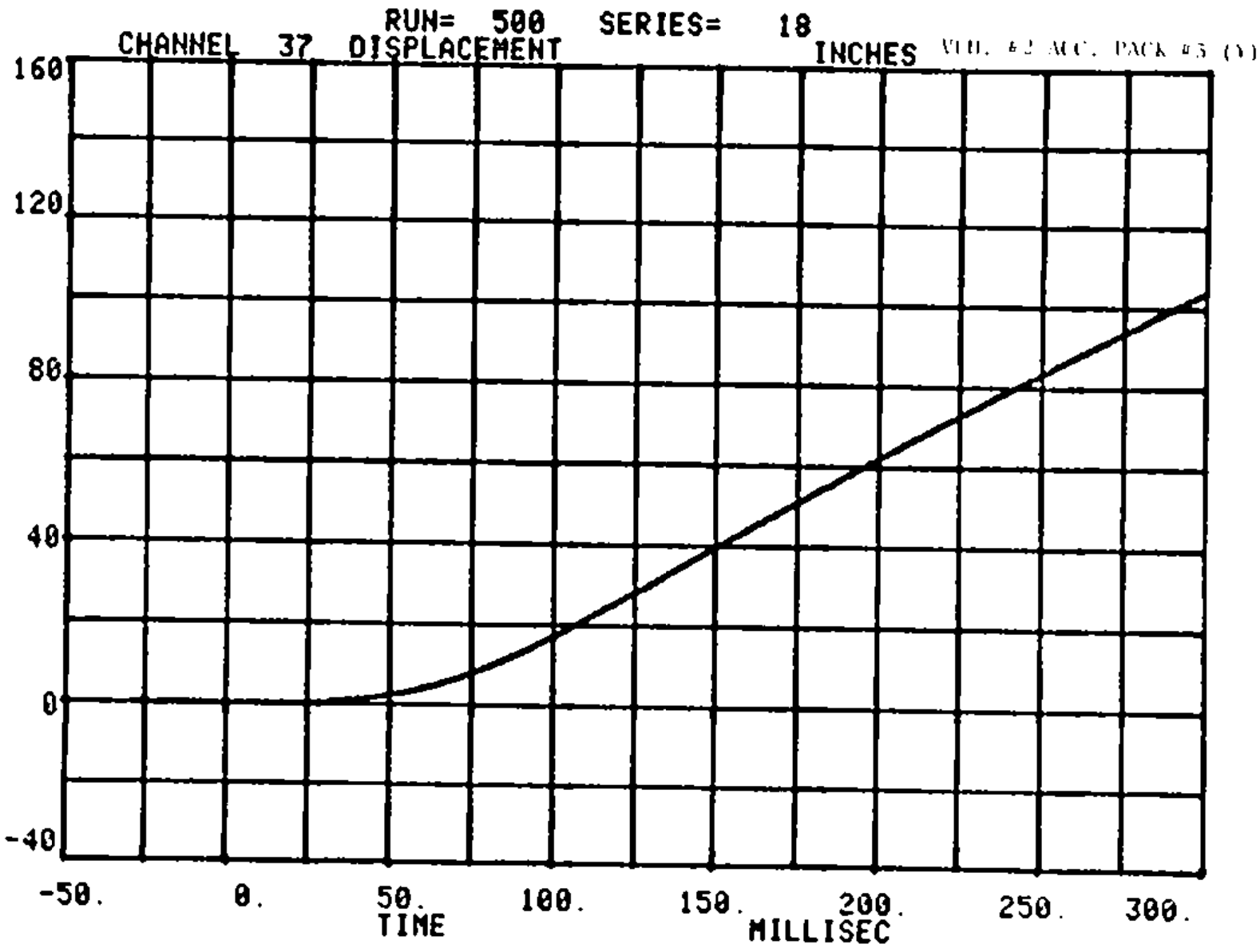

CHANNEL 53 RUN= 500 SERIES= 18
VEH#2 ACC PACK #3(X)
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 500 SERIES= 18
CHANNEL 26 VELOCITY
MPH
VEH. #2 ACC PACK #3 (X)
8
4
0
-4
-8
-12
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

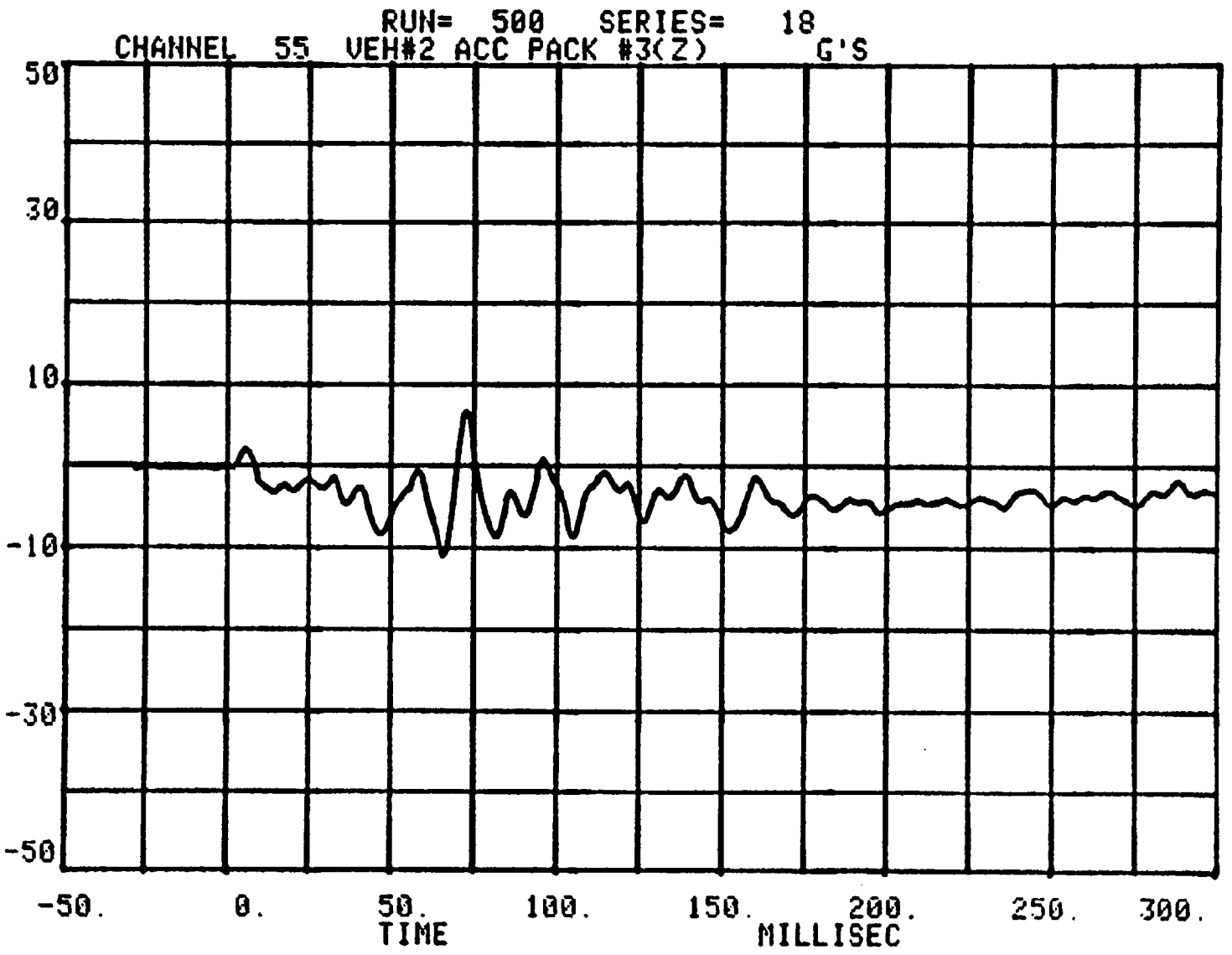

RUN= 500 SERIES= 18
CHANNEL 27 DISPLACEMENT INCHES
VEH. #2 ACC. PACK #3 (X)
10
0
-10
-20
-30
-40
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

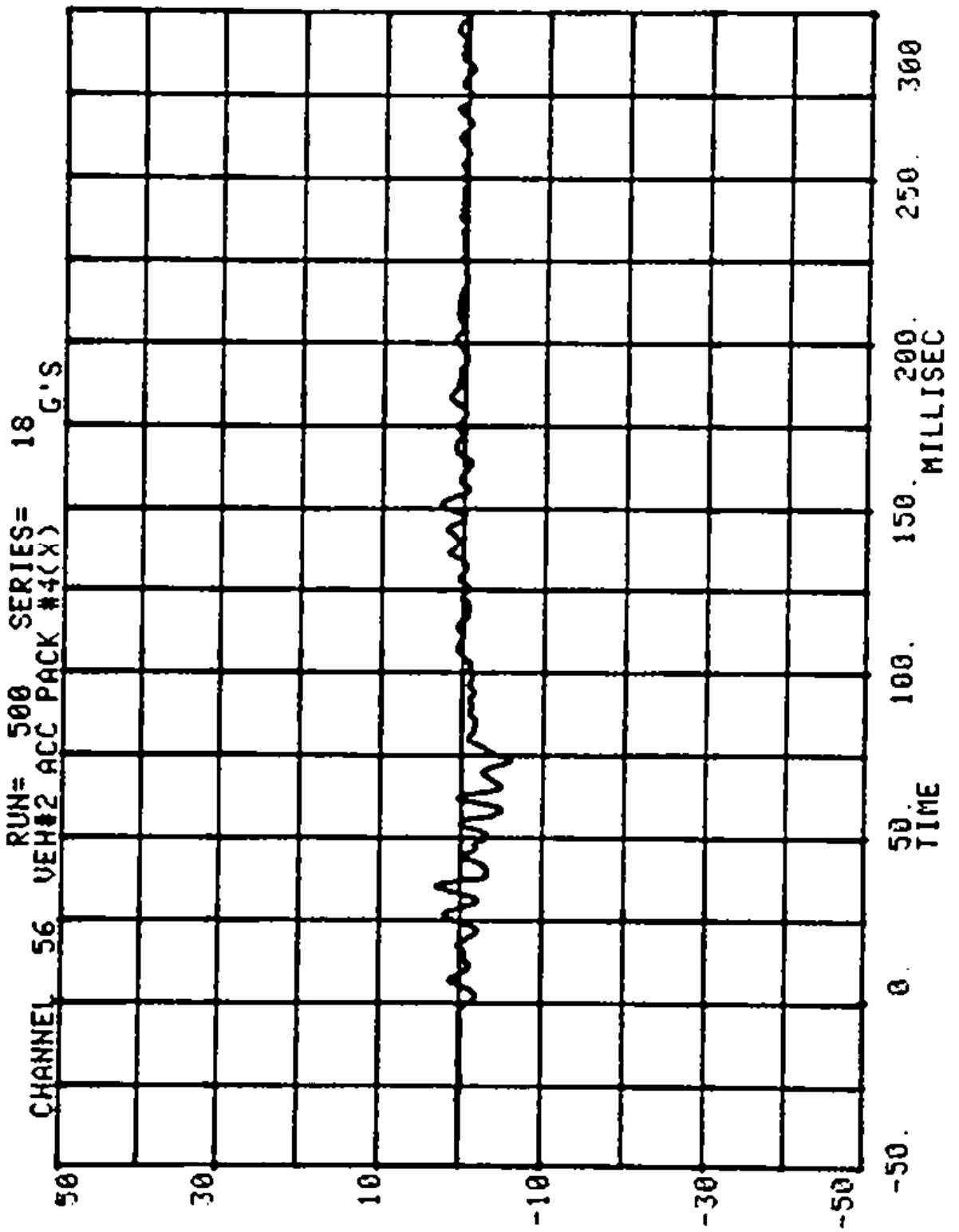

CHANNEL 54 VEH#2 ACC PACK #3(Y)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

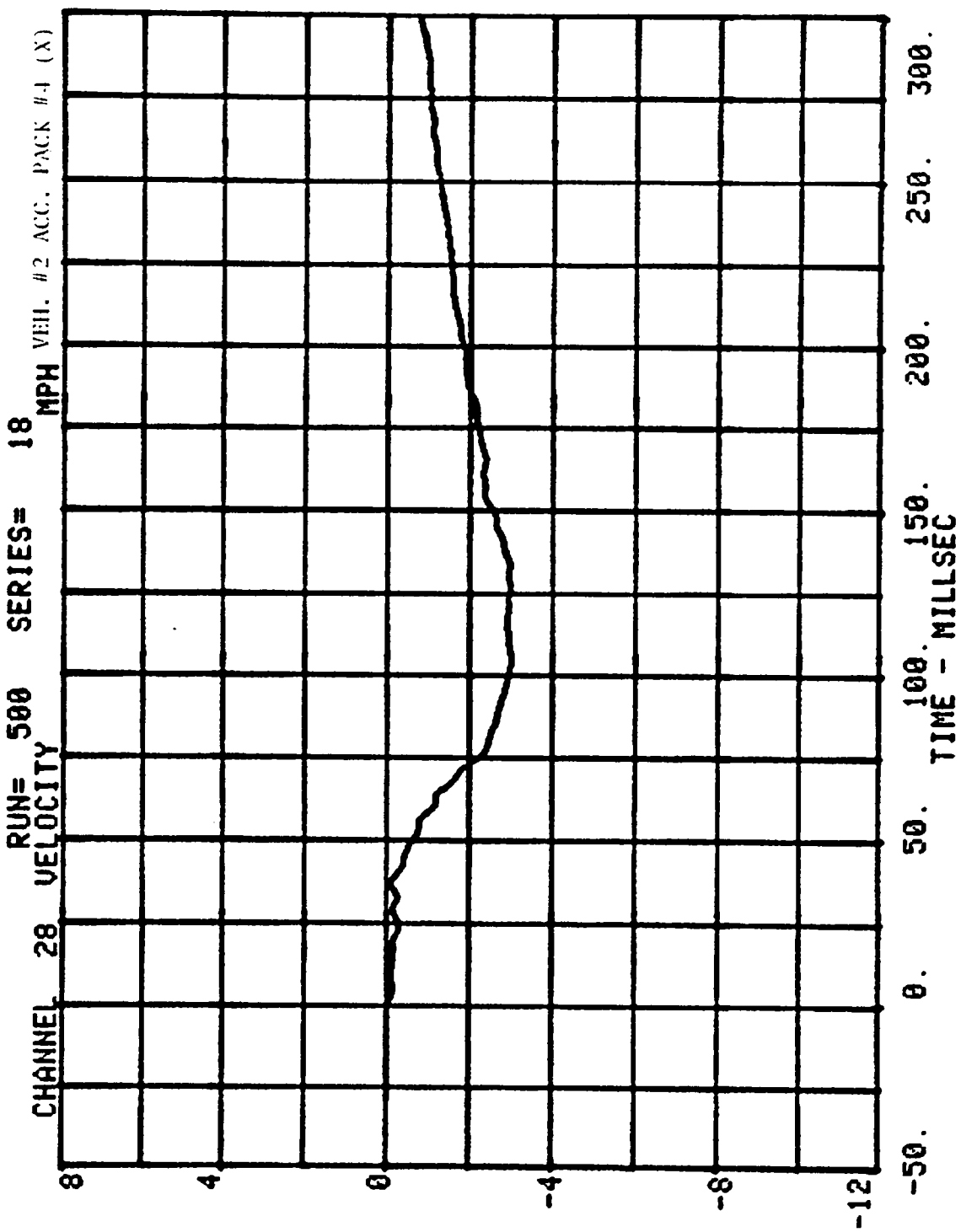

RUN= 500 SERIES= 18
CHANNEL 36 VELOCITY
MPH
VEH. #2 ACC. PACK #3 (Y)
32
24
16
8
0
-8
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC



VOL. #2 ACC. PACK #5 (V)


RUN= 500 SERIES= 18
CHANNEL 55 VEH#2 ACC PACK #3(Z) G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 56 VEH#2 ACC PACK #4(X)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 28 VELOCITY
RUN= 500 SERIES= 18
MPH VEH. #2 ACC. PACK #1 (X)
8
4
0
-4
-8
-12
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

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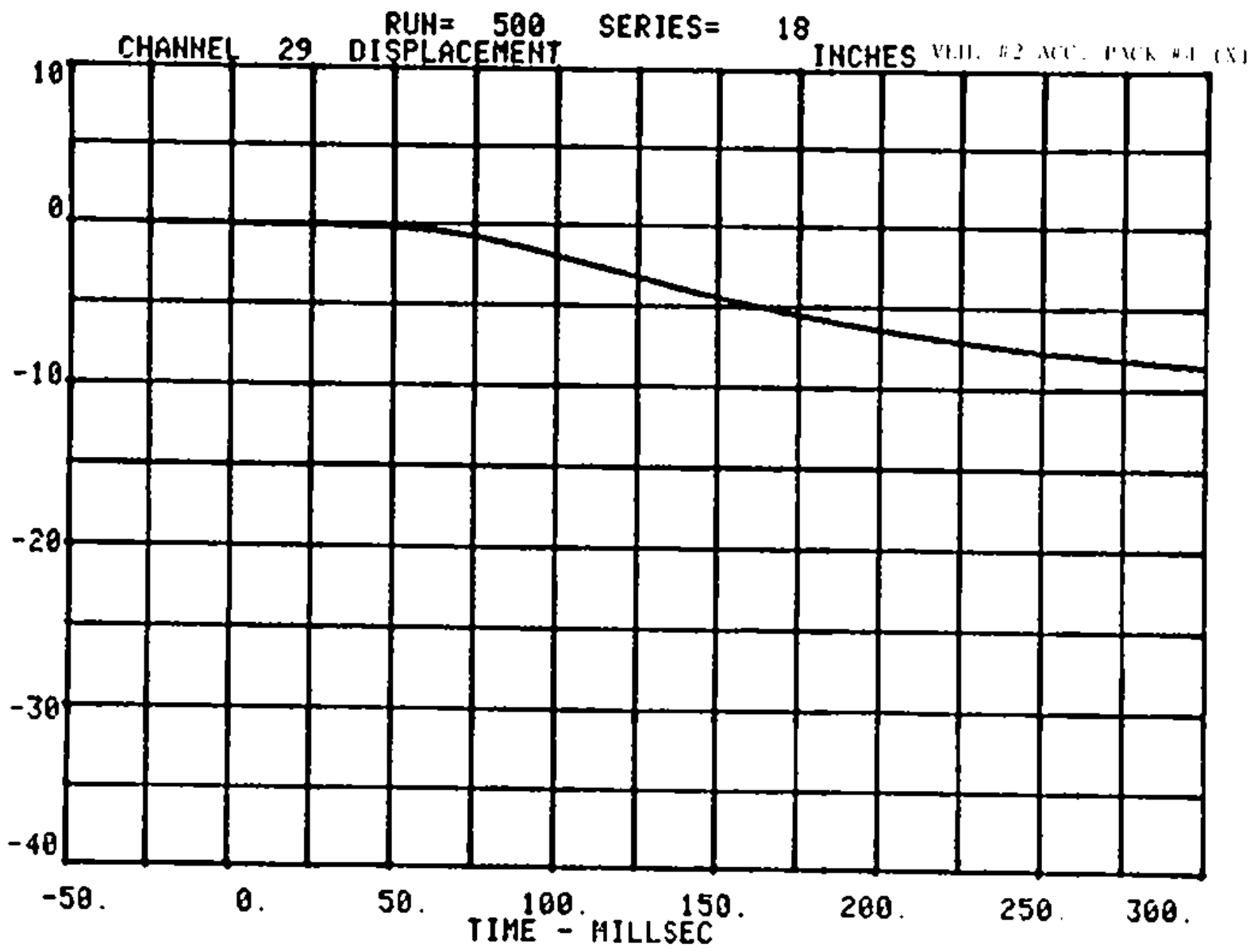
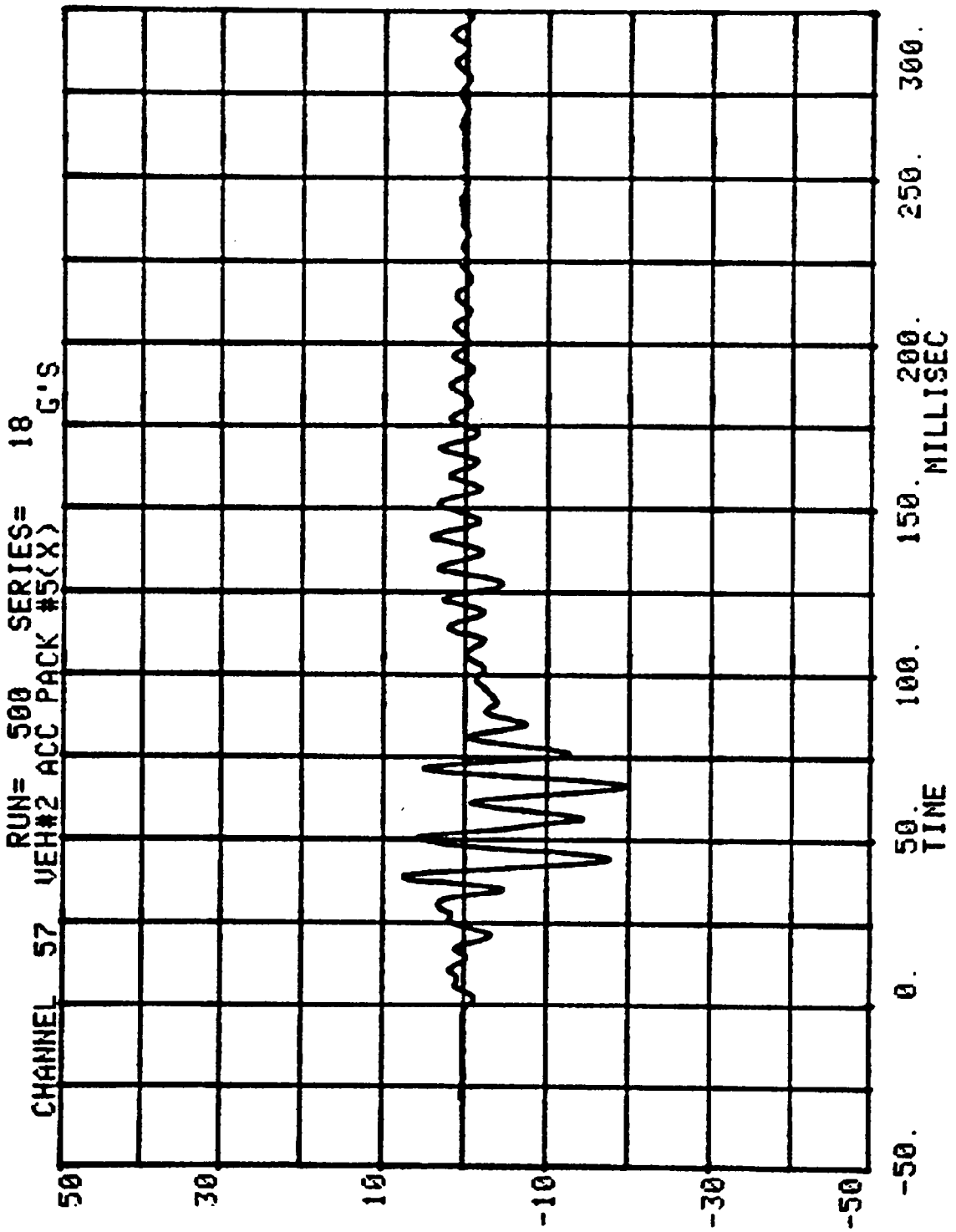
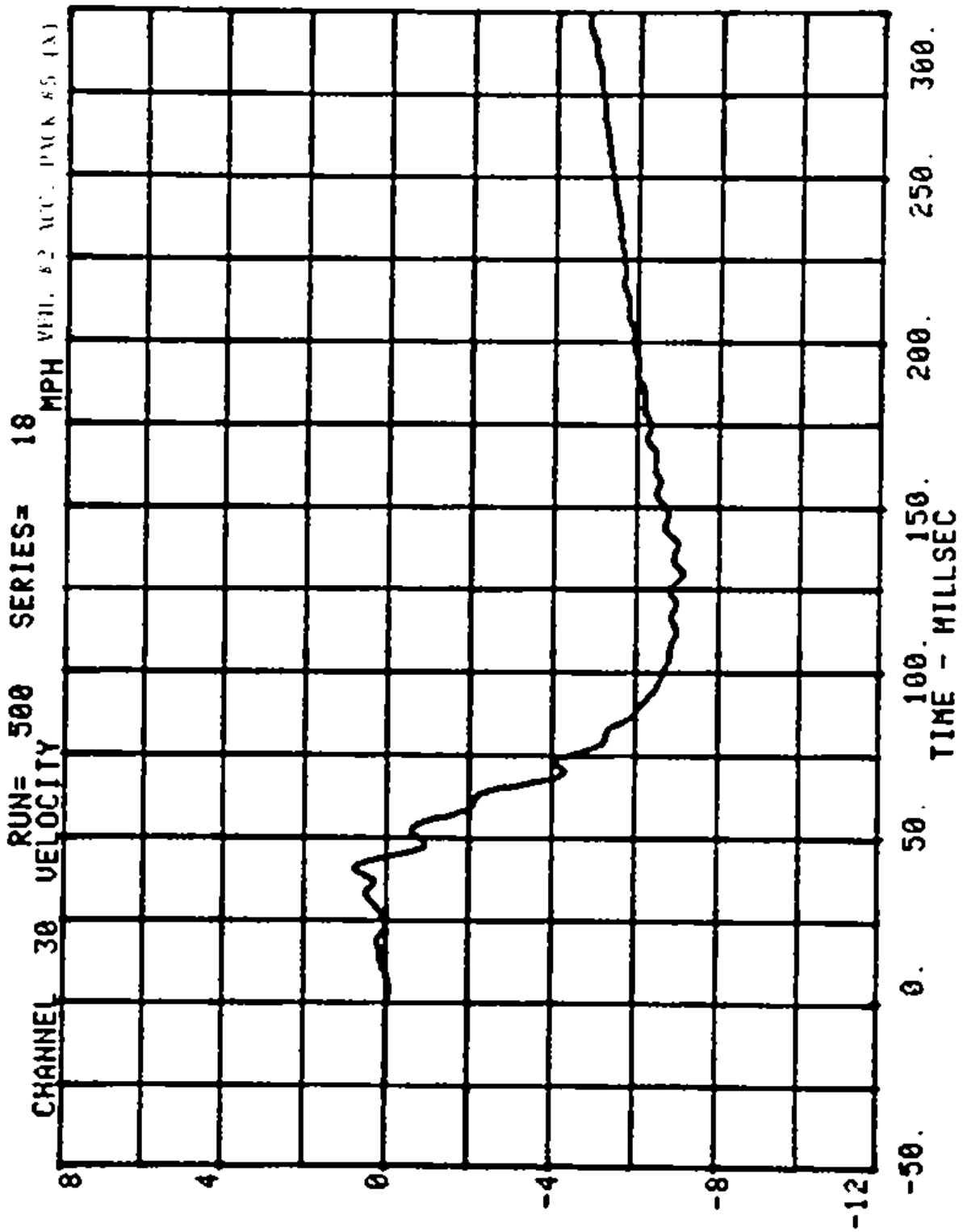
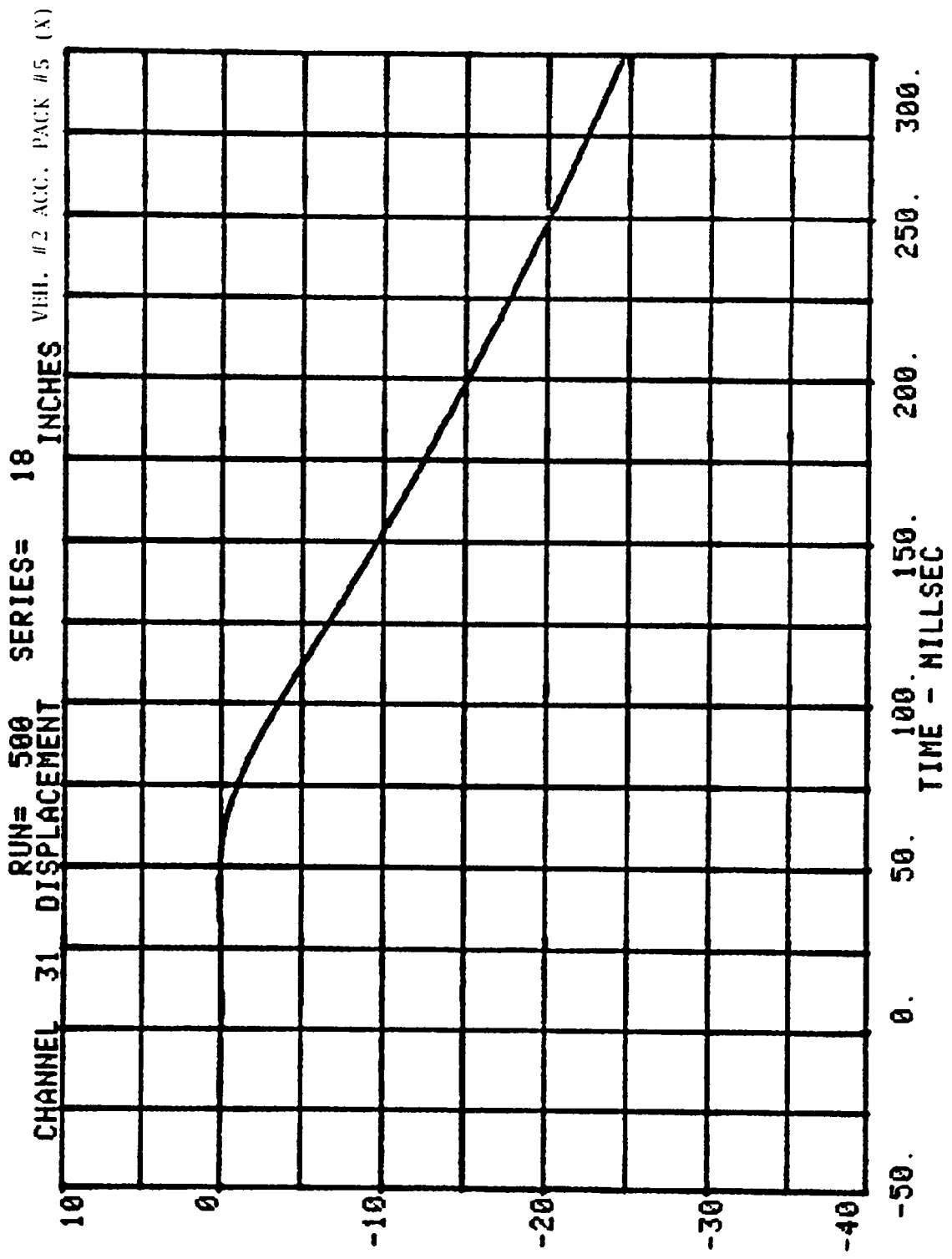
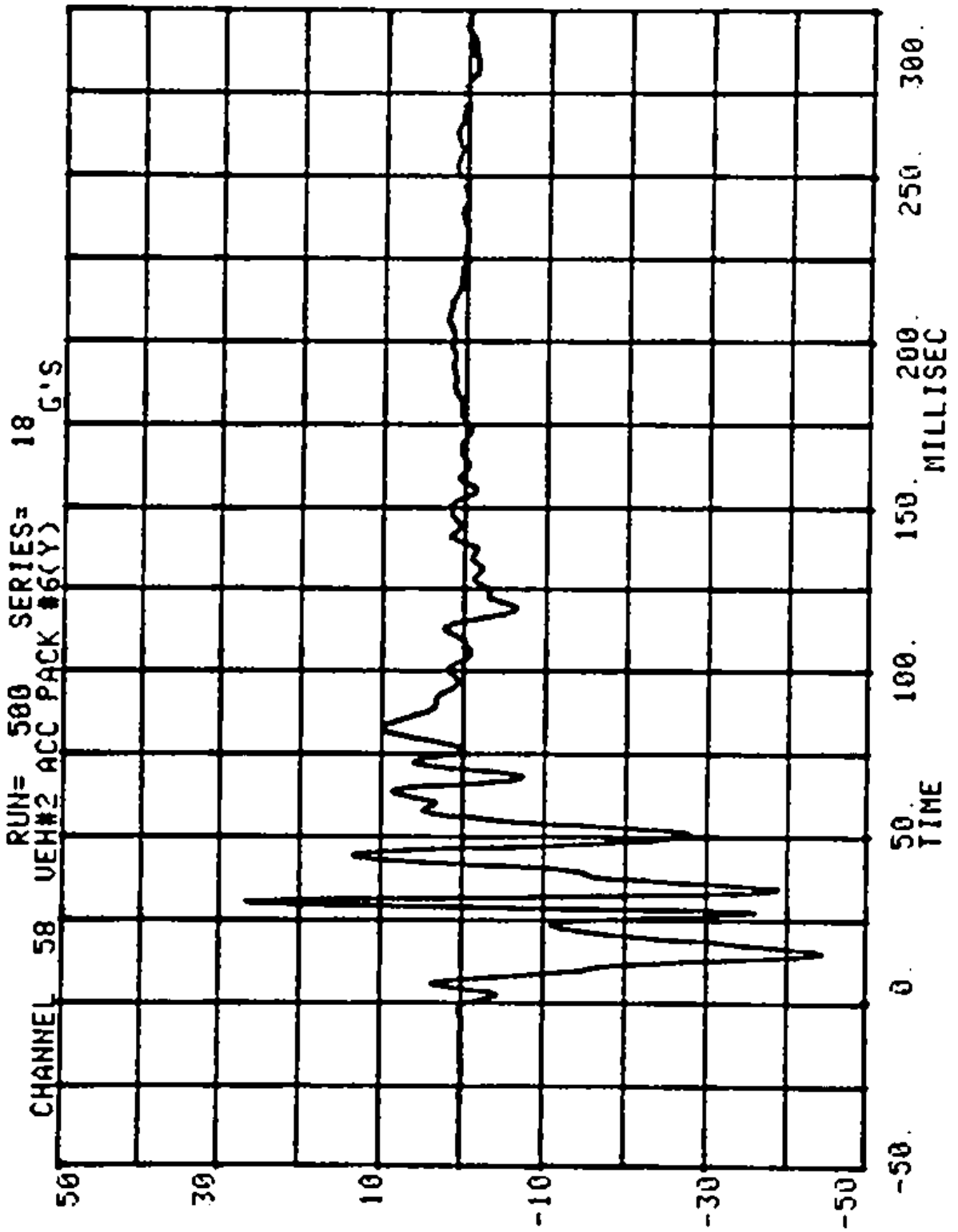
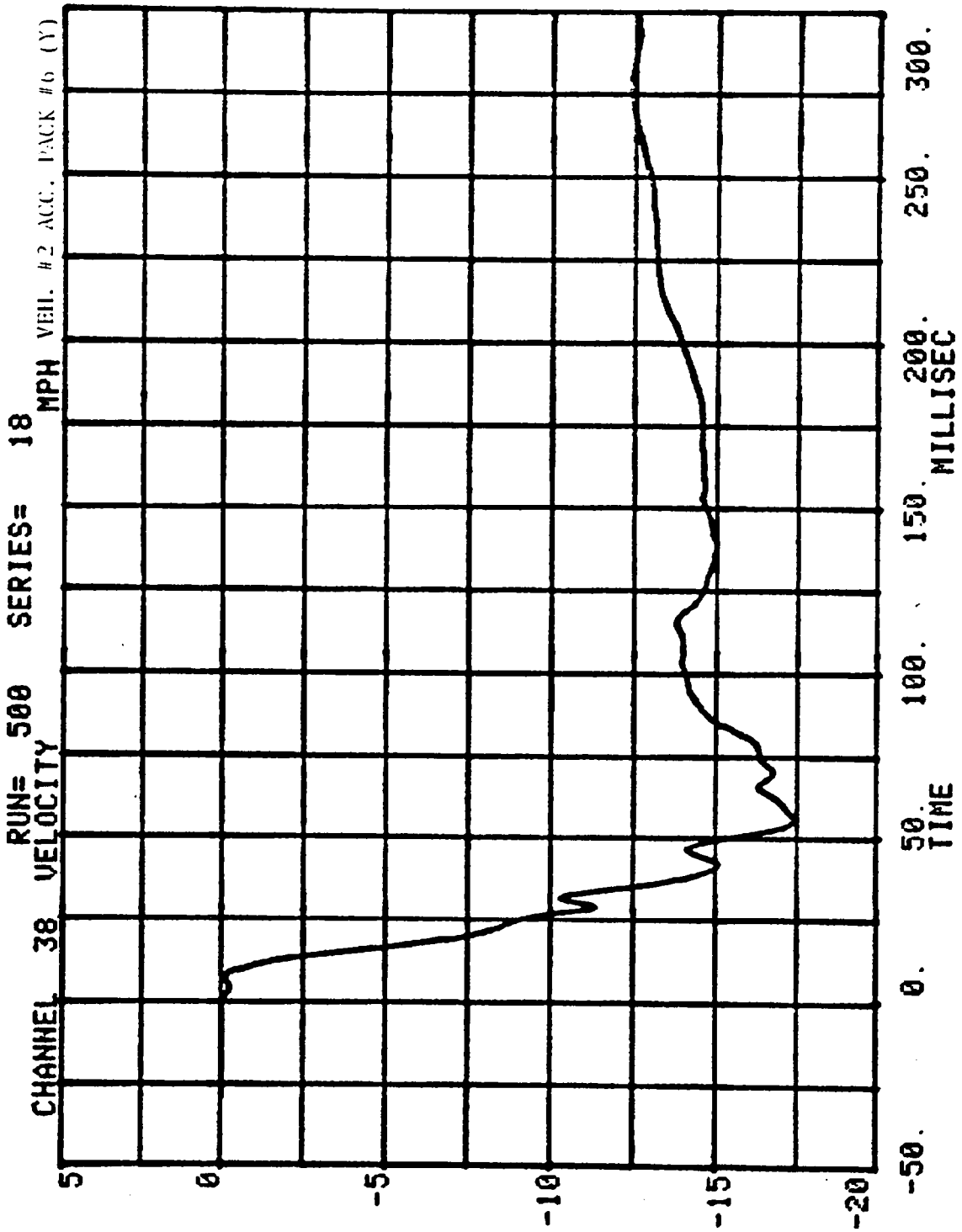

RUN= 500 SERIES= 18
CHANNEL 29 DISPLACEMENT
INCHES
10
0
-10
-20
-30
-40
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

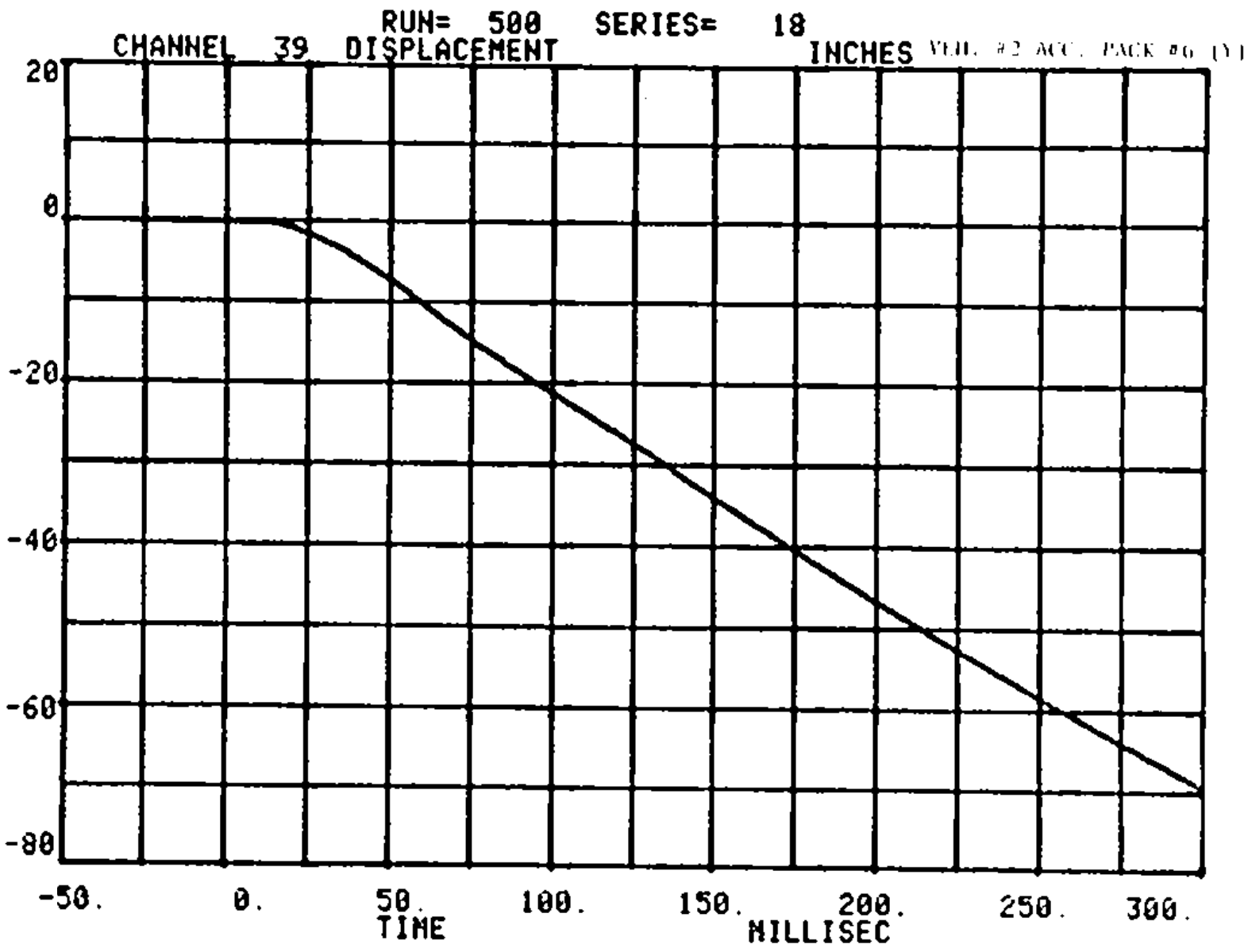

CHANNEL 57 VEH#2 ACC PACK #5(X)
RUN= 500 SERIES= 18
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

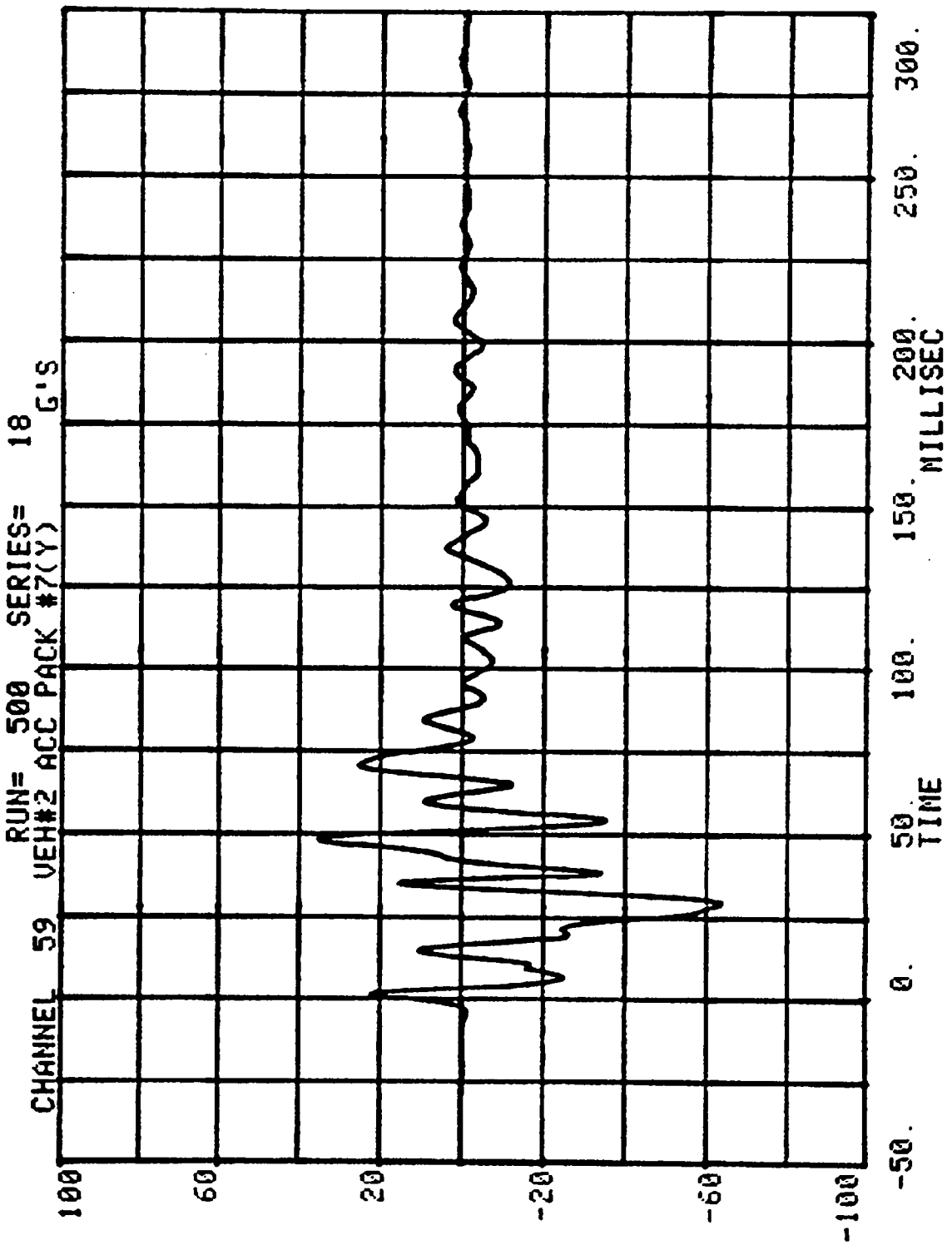

CHANNEL 30 VELOCITY
RUN= 500 SERIES= 18
MPH
8
4
0
-4
-8
-12
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

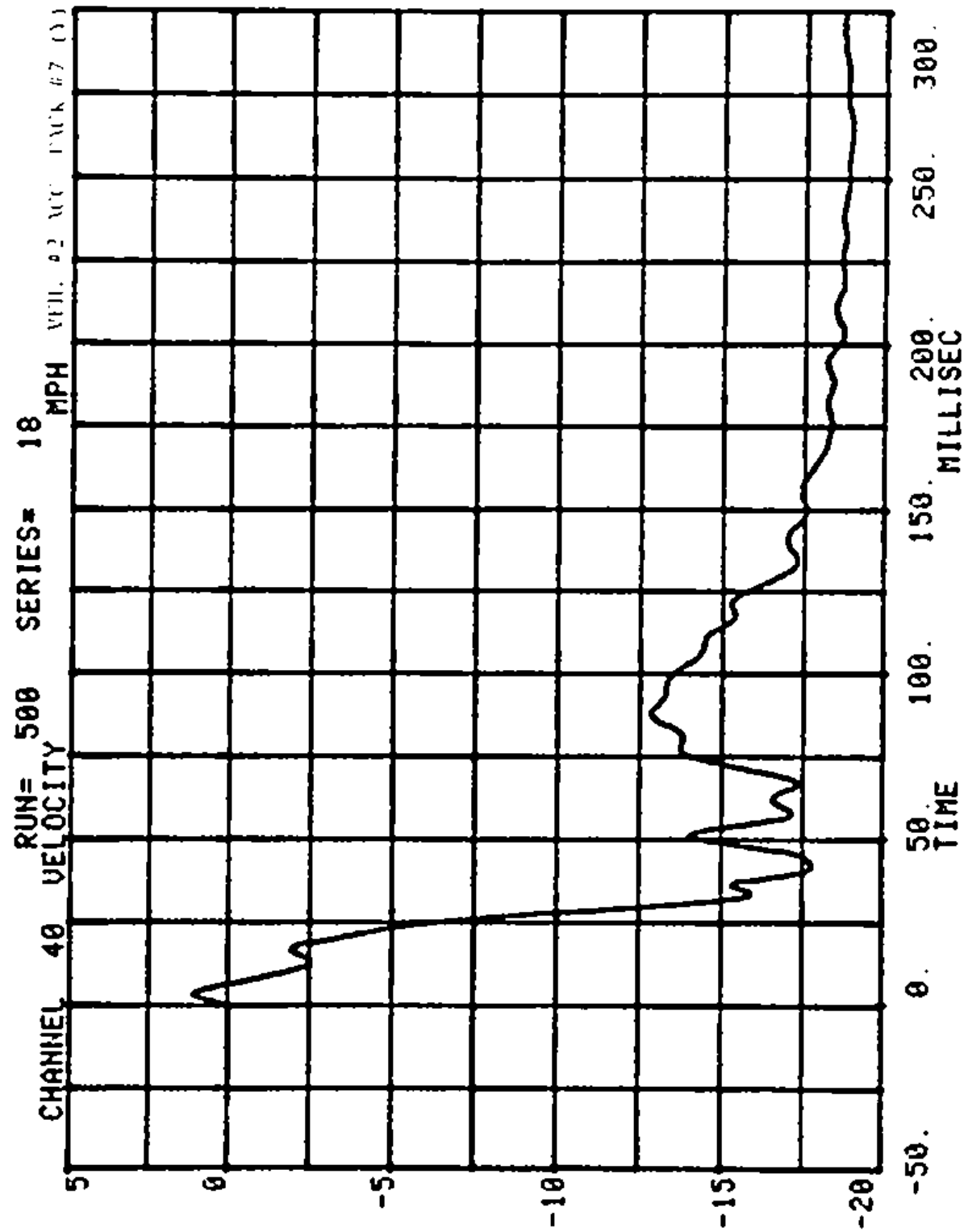

CHANNEL 31 DISPLACEMENT
RUN= 500 SERIES= 18
INCHES
VEH. #2 ACC. PACK #5 (X)
10
0
-10
-20
-30
-40
-50.
0.
50.
100.
150.
200.
250.
300.
TIME - MILLSEC

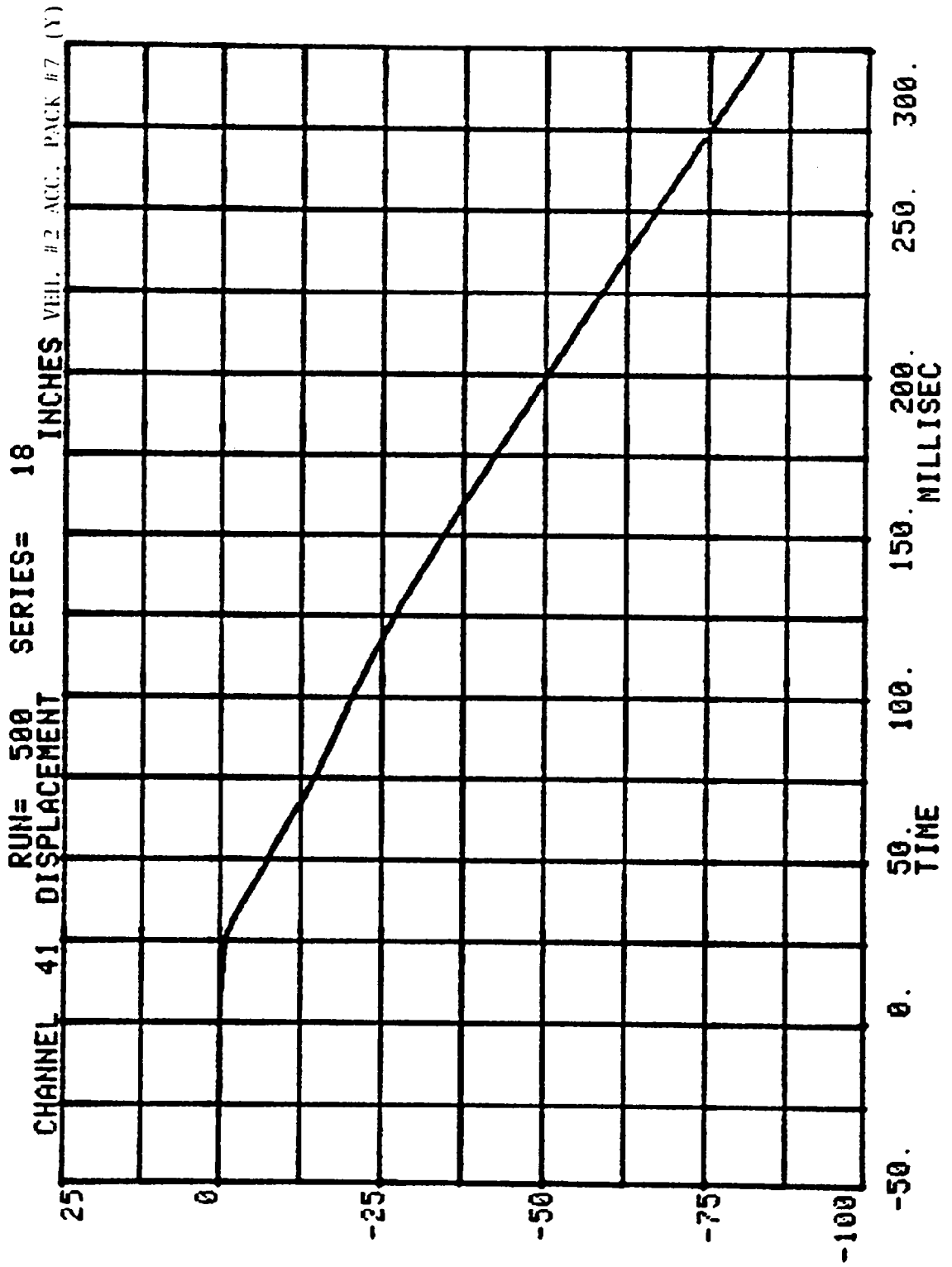

CHANNEL 58 RUN= 500 SERIES= 18
VEH#2 ACC PACK #6(Y)
G'S
50
30
10
-10
-30
-50
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 38 VELOCITY
RUN= 500 SERIES= 18
MPH
VEH. #2 ACC. PACK #6 (Y)
5
0
-5
-10
-15
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 500 SERIES= 18
CHANNEL 39 DISPLACEMENT INCHES VEH. #2 ACC. PACK #6 (Y)
20
0
-20
-40
-60
-80
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 59 VEH#2 ACC PACK #7(Y)
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 40 VELOCITY
RUN= 500 SERIES= 18 MPH
5
0
-5
-10
-15
-20
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 41 DISPLACEMENT
RUN= 500 SERIES= 18
INCHES VEH. #2 ACC. PACK #7 (Y)
25
0
-25
-50
-75
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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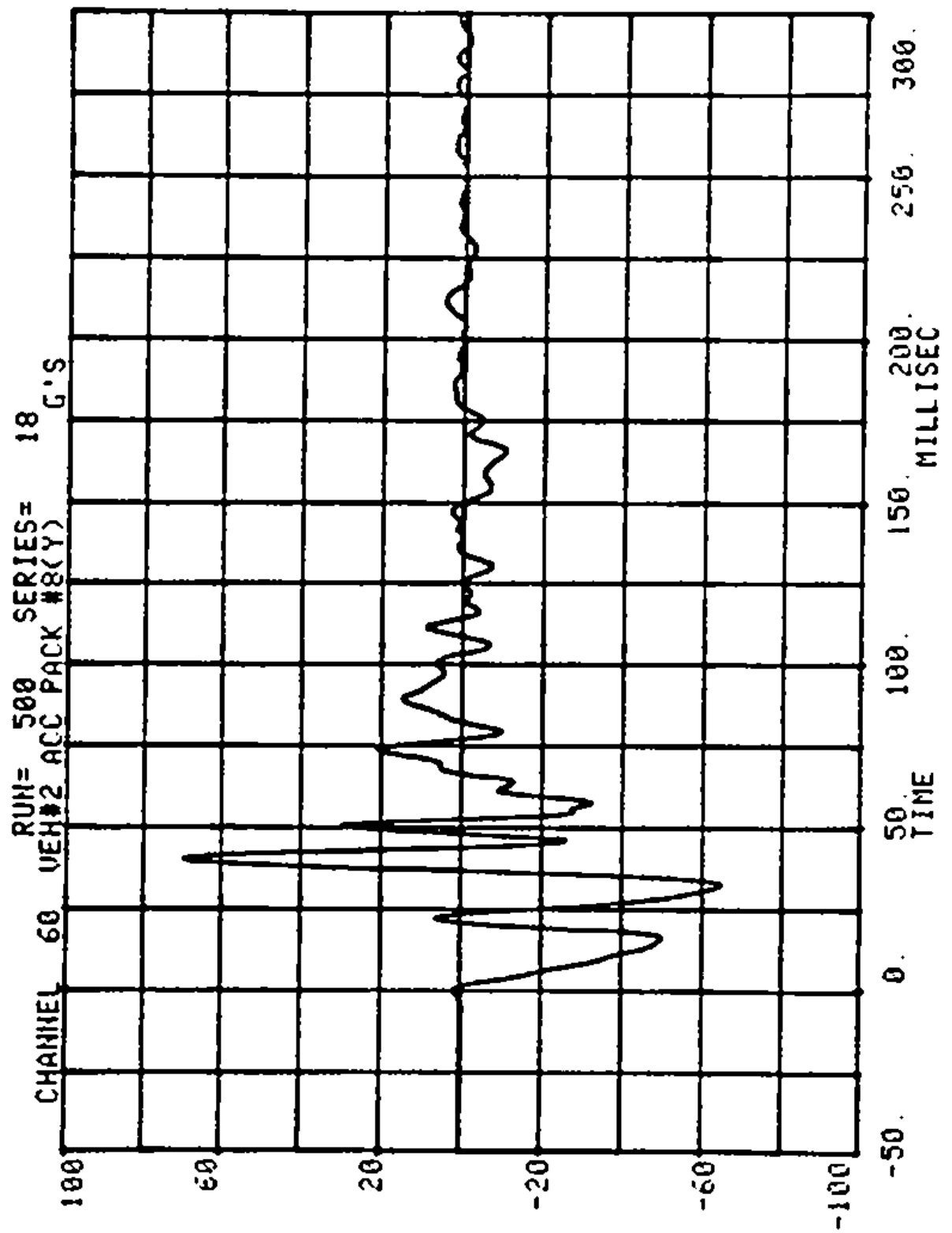
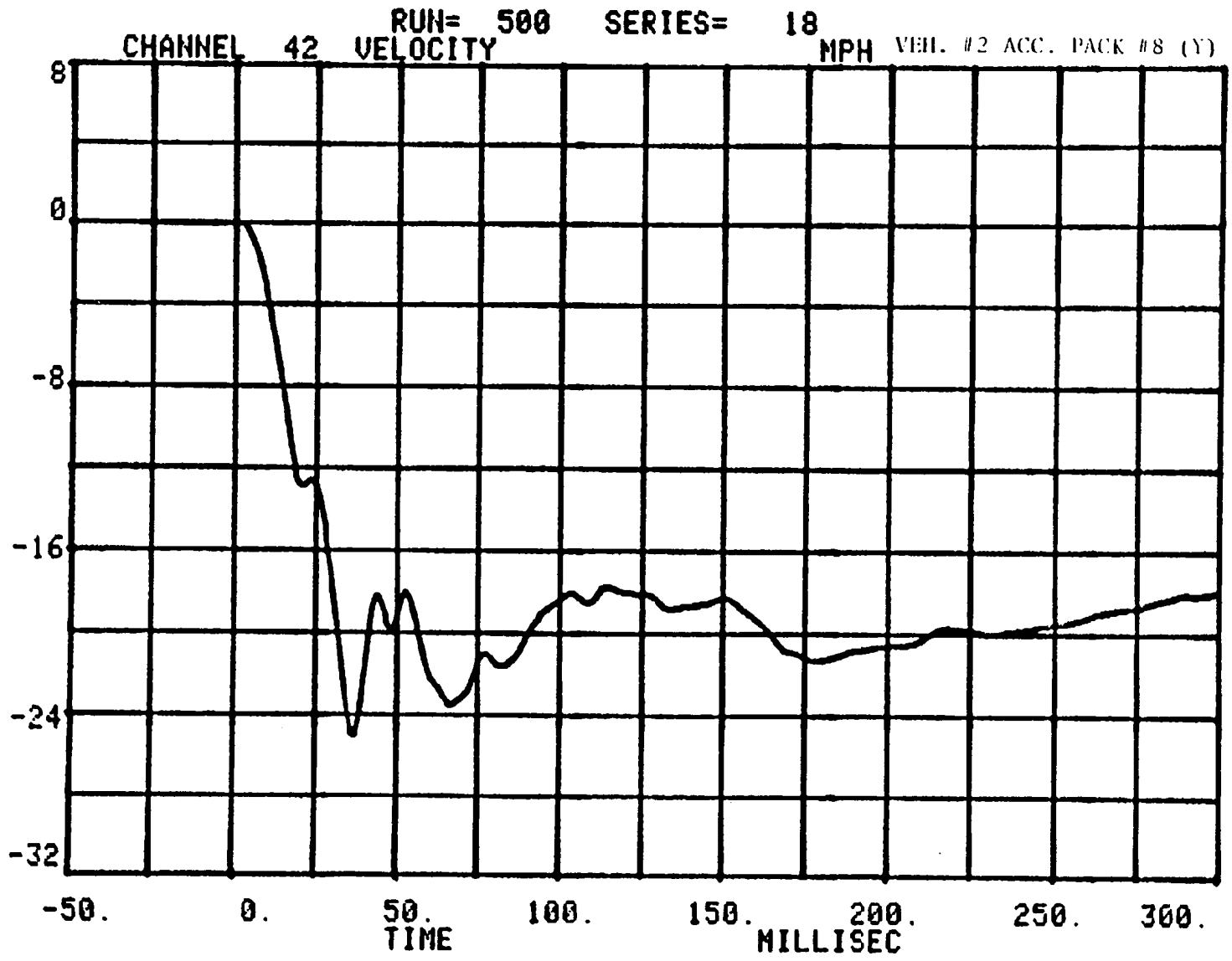
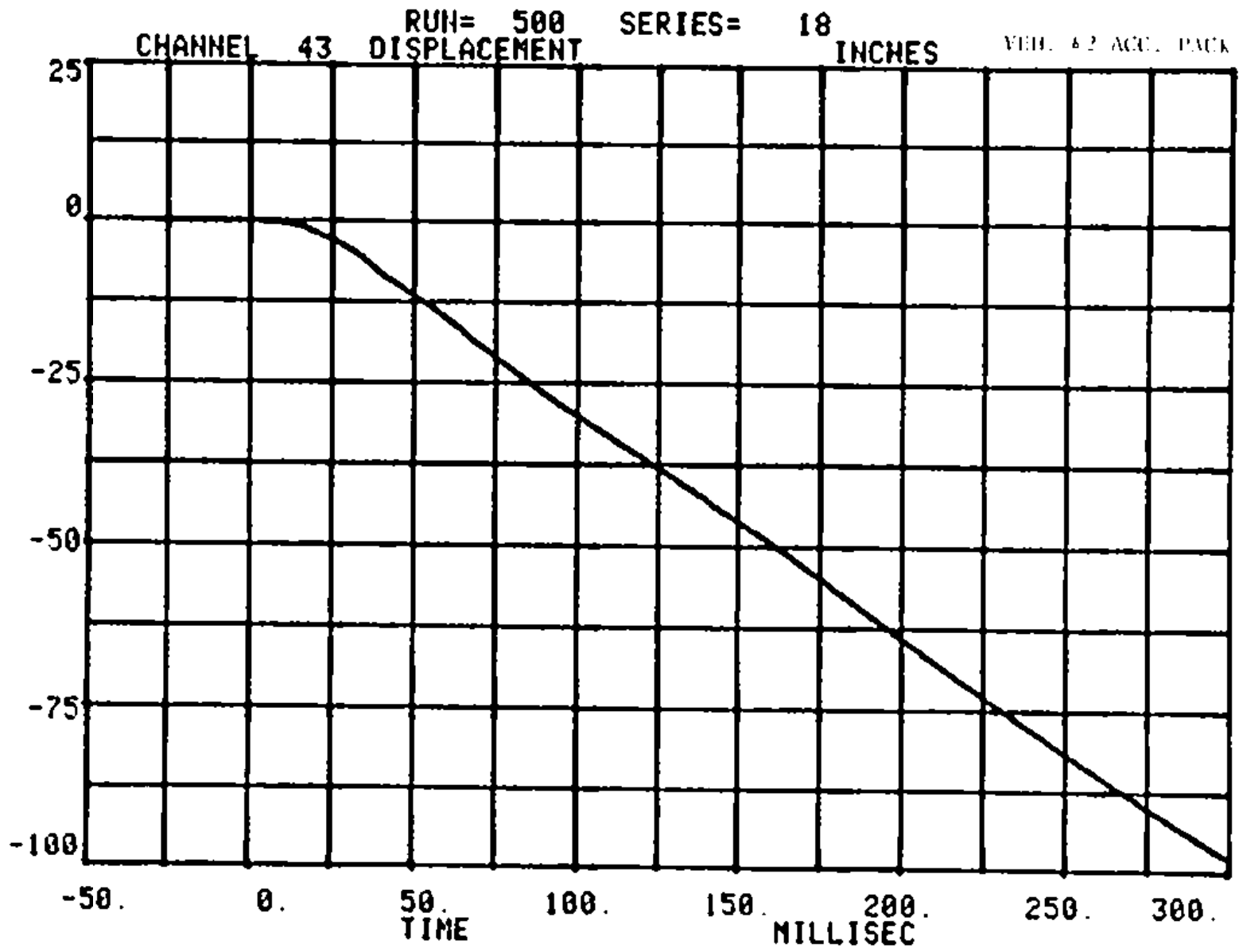
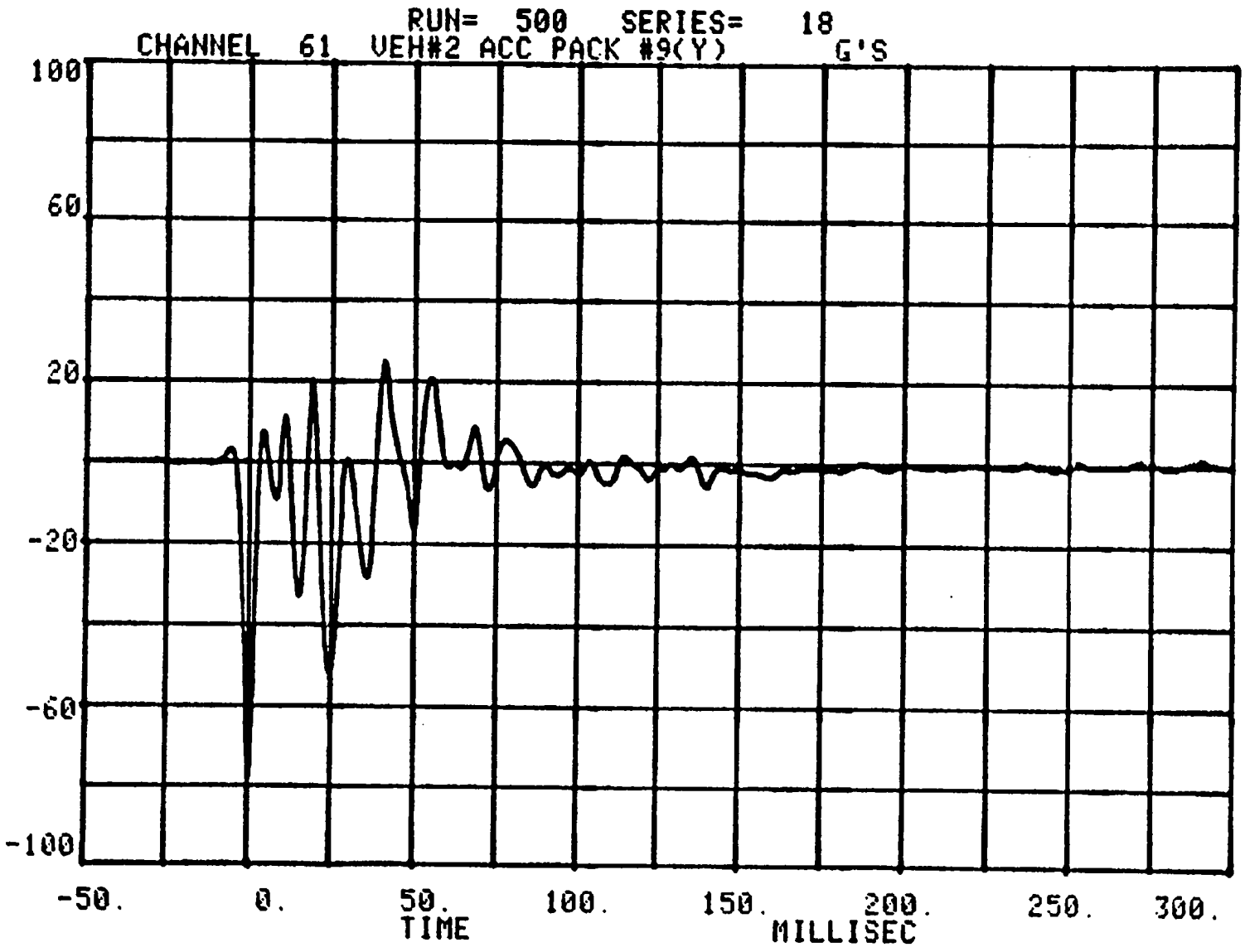
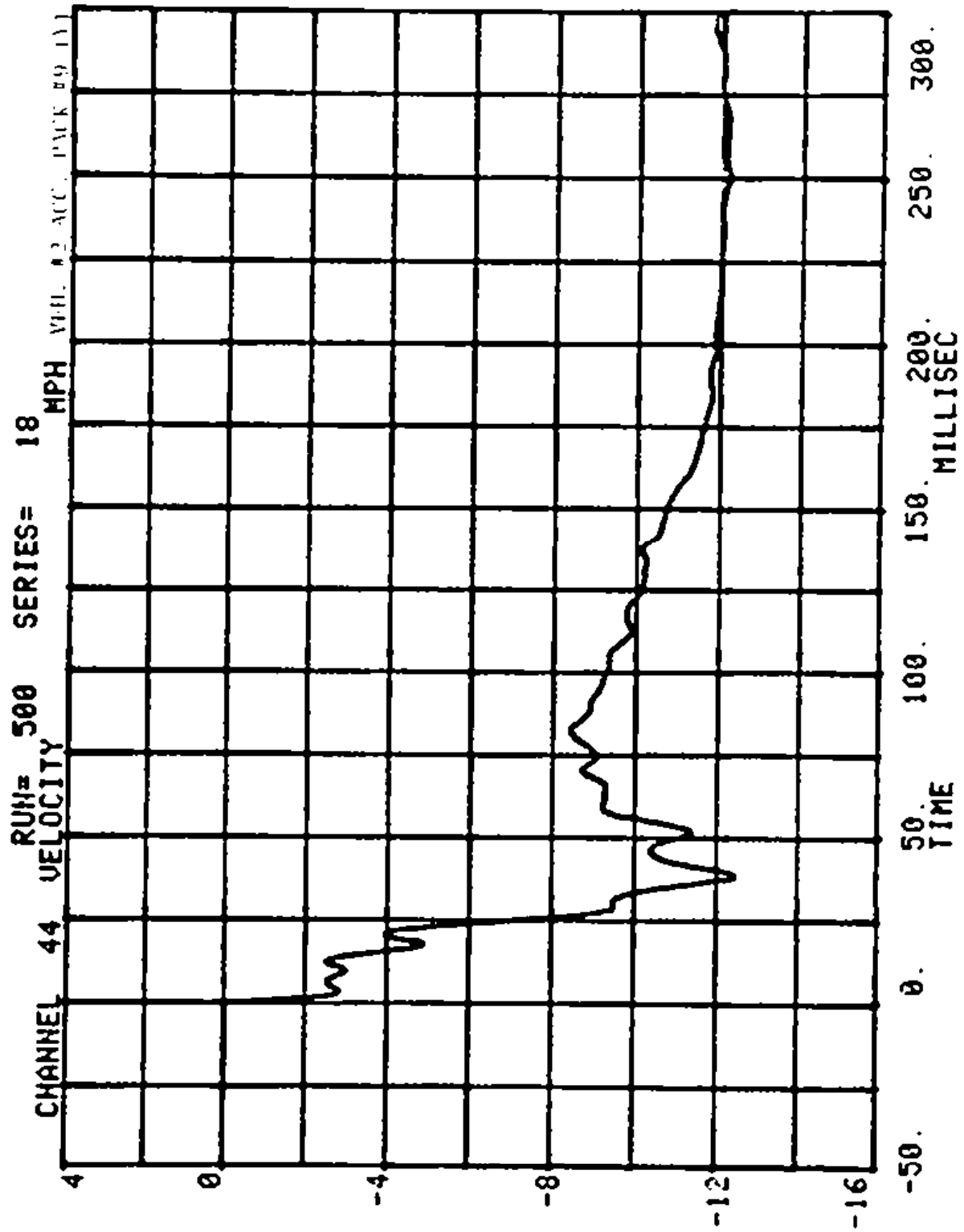
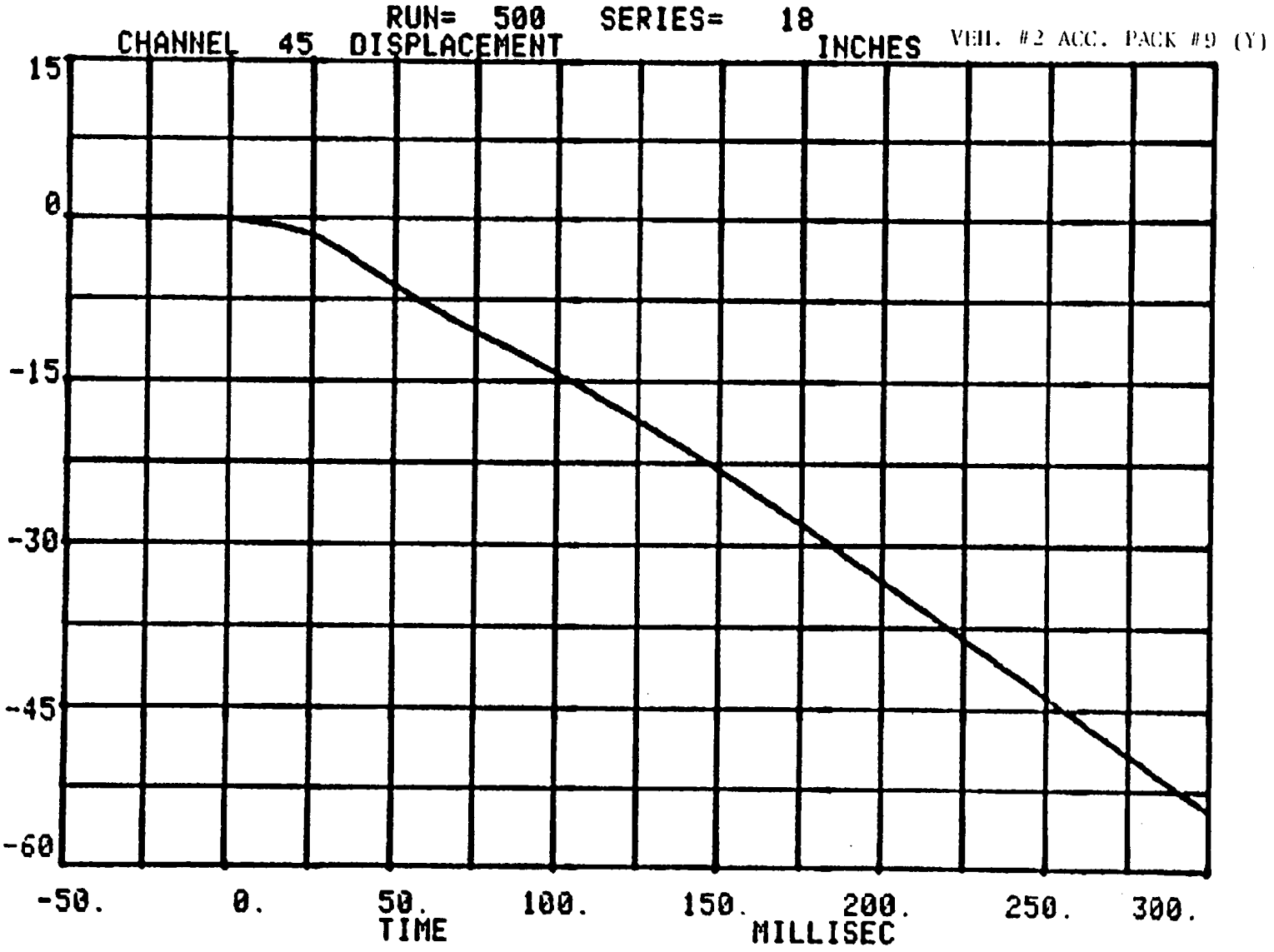

CHANNEL 60 VEH#2 ACC PACK #8(Y)
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

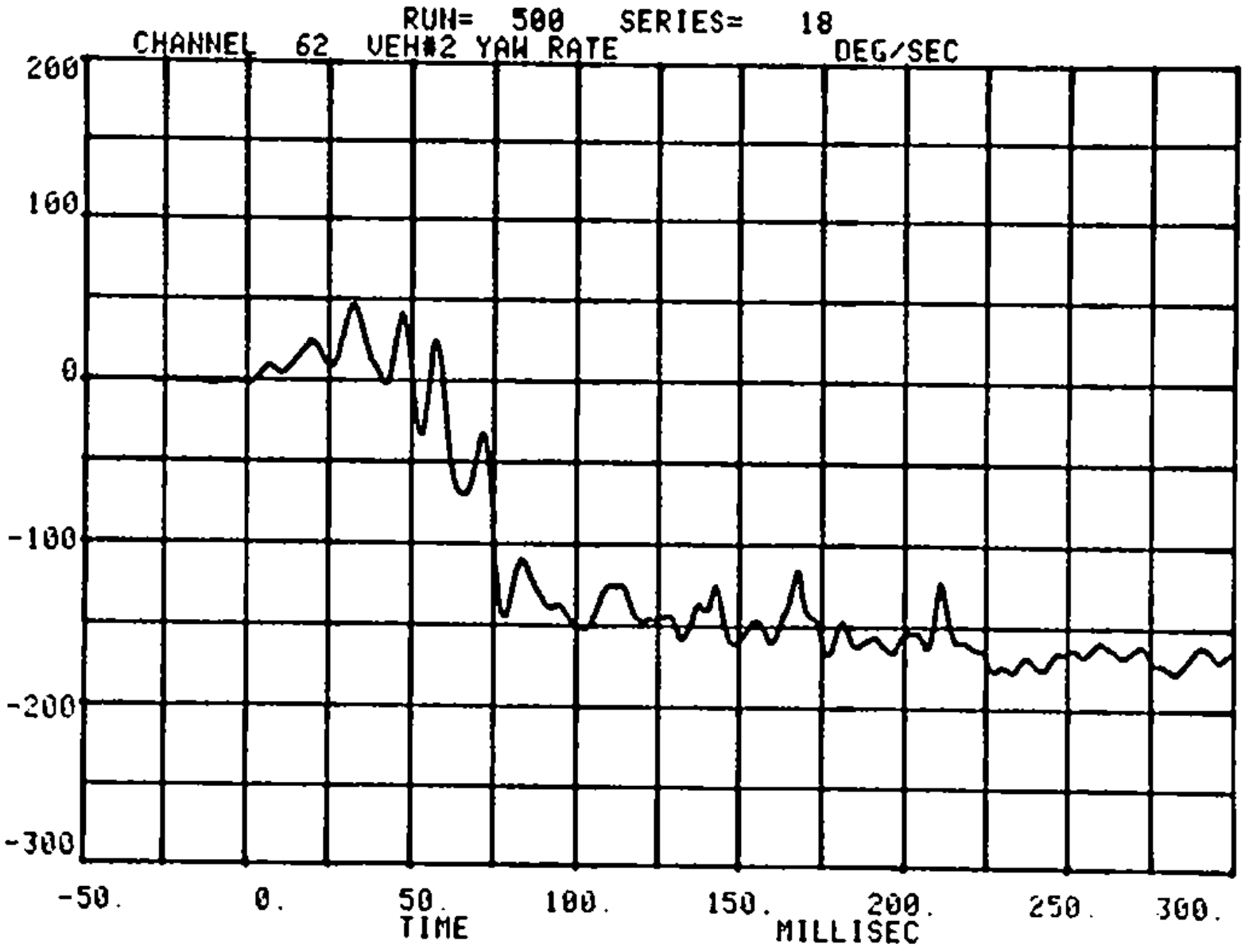

RUN= 500 SERIES= 18
CHANNEL 42 VELOCITY
MPH
VEH. #2 ACC. PACK #8 (Y)
8
0
-8
-16
-24
-32
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

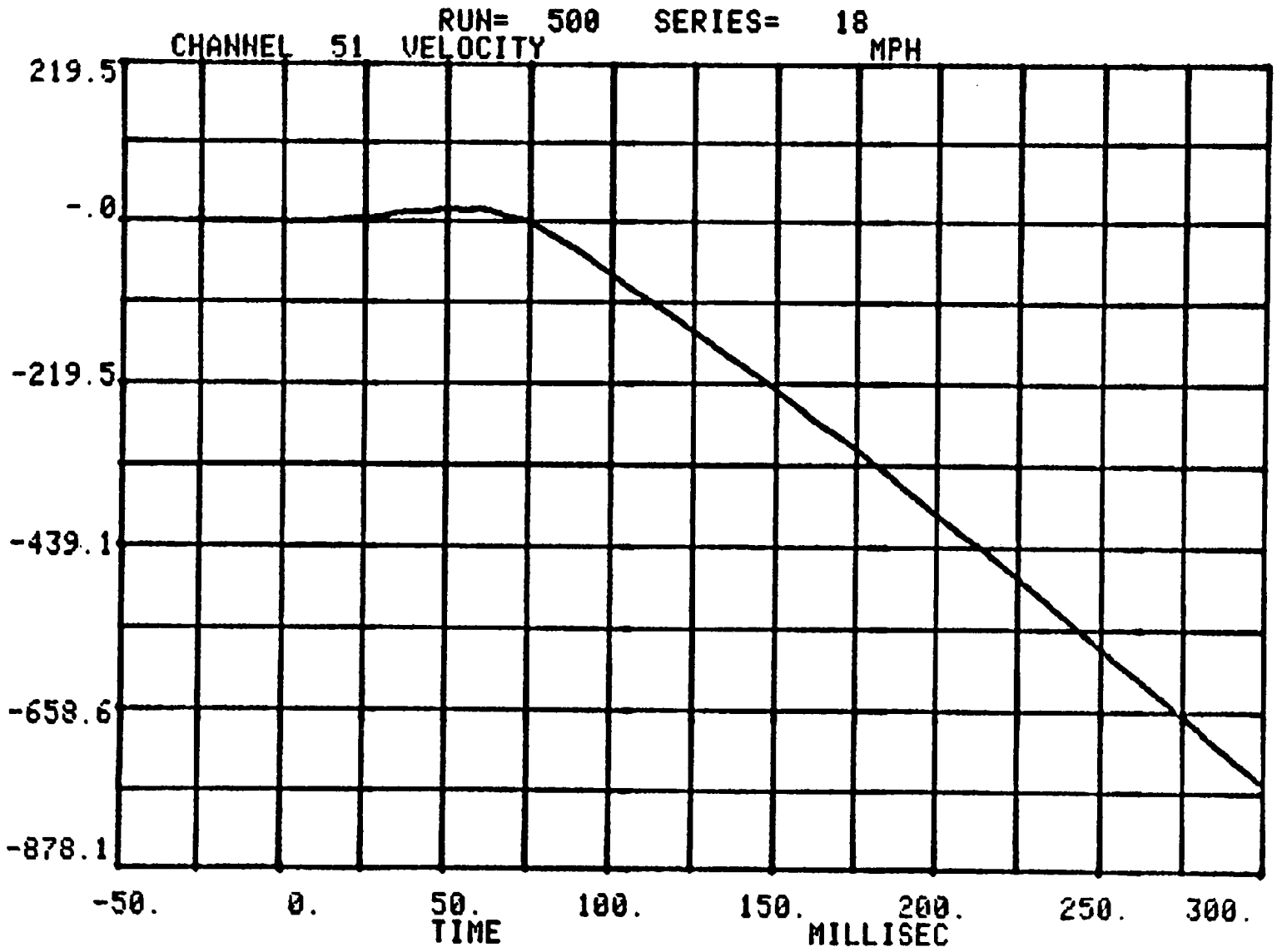

RUN= 500 SERIES= 18
CHANNEL 43 DISPLACEMENT INCHES
VEH. #2 ACC. PACK #8 (Y)
25
0
-25
-50
-75
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME MILLISEC

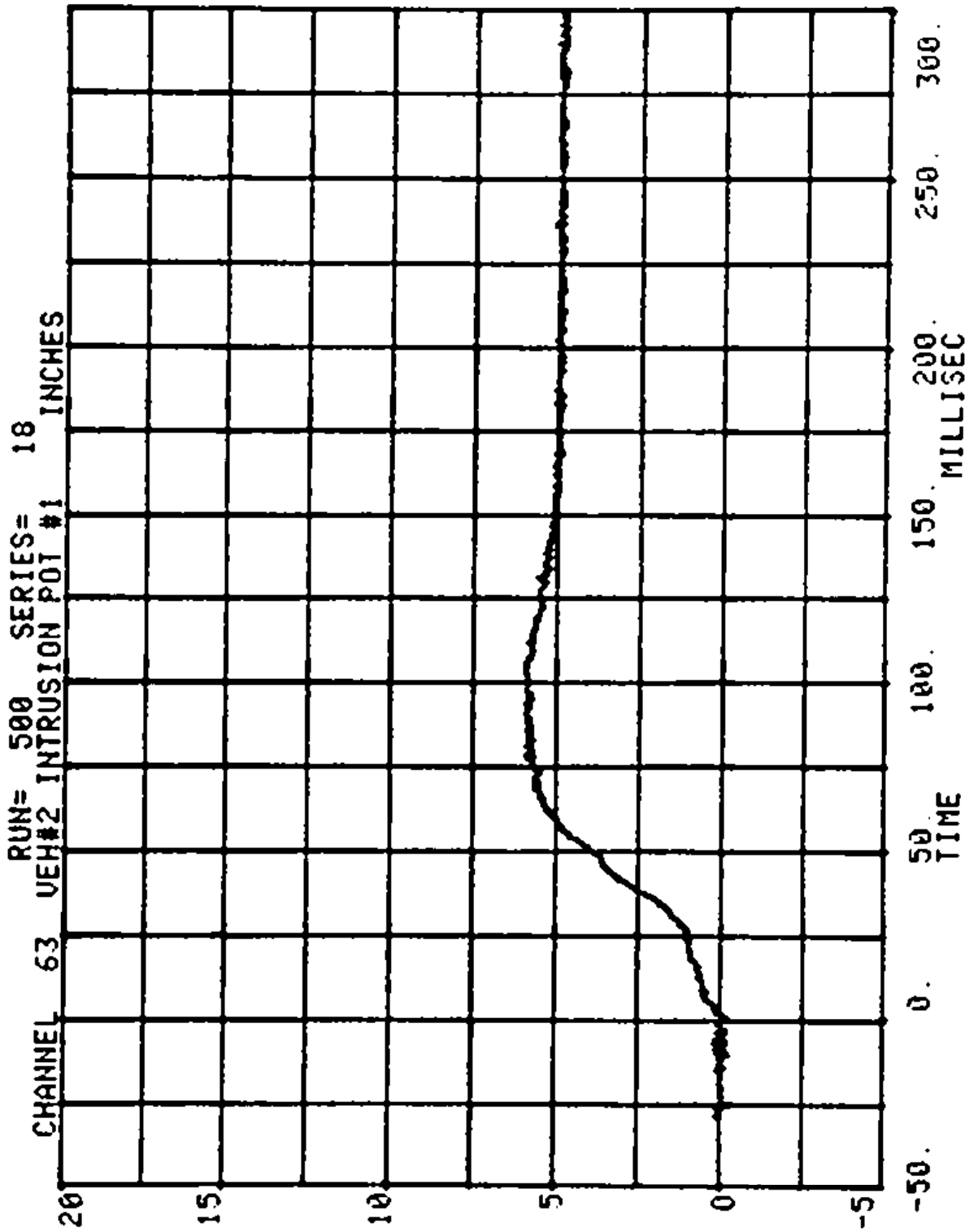

RUN= 500 SERIES= 18
CHANNEL 61 VEH#2 ACC PACK #9(Y) G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

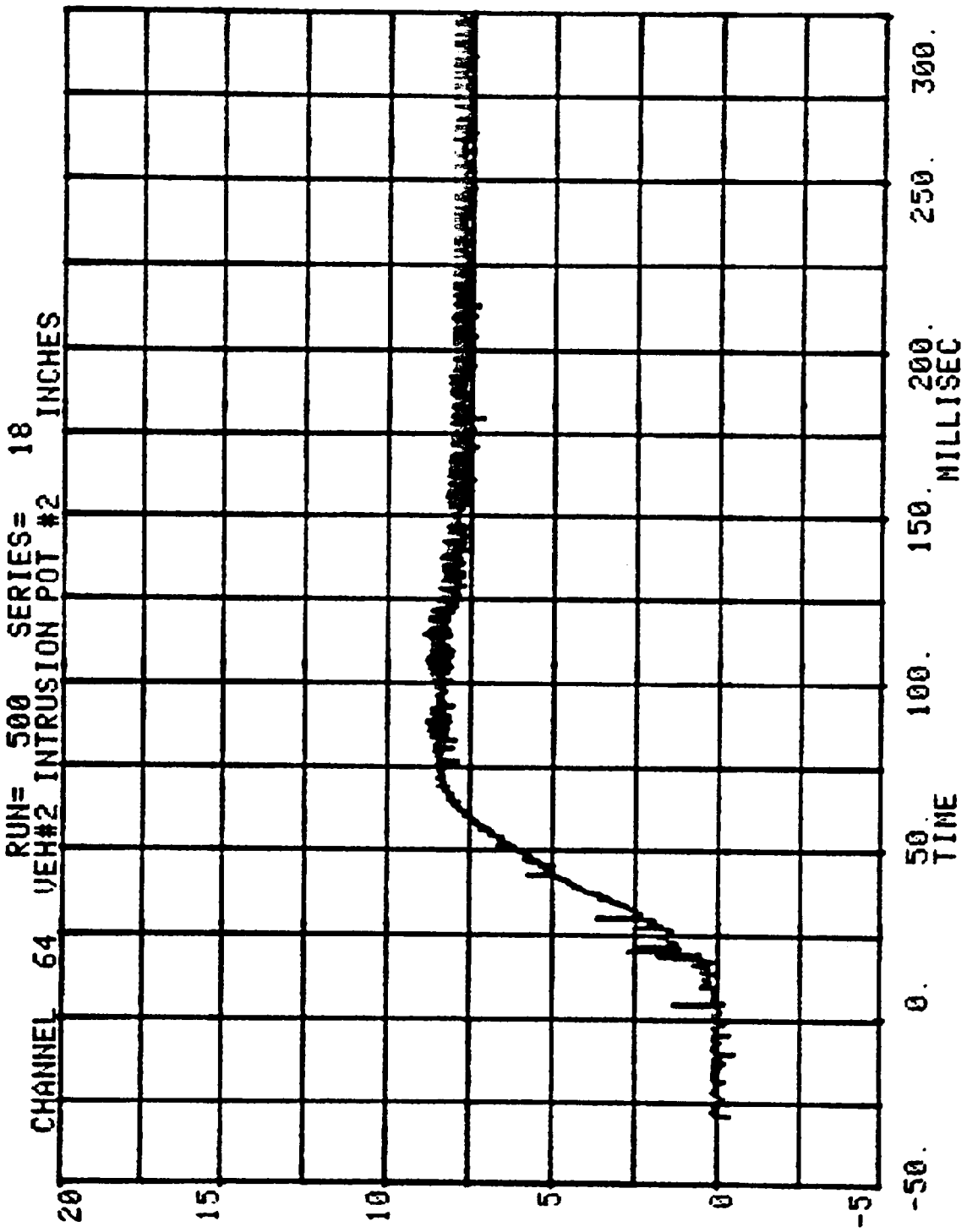

CHANNEL 44 RUN= 500 SERIES= 18
VELOCITY MPH
4
0
-4
-8
-12
-16
-50.
0.
50.
100.
150.
200.
250.
300.
TIME MILLISEC

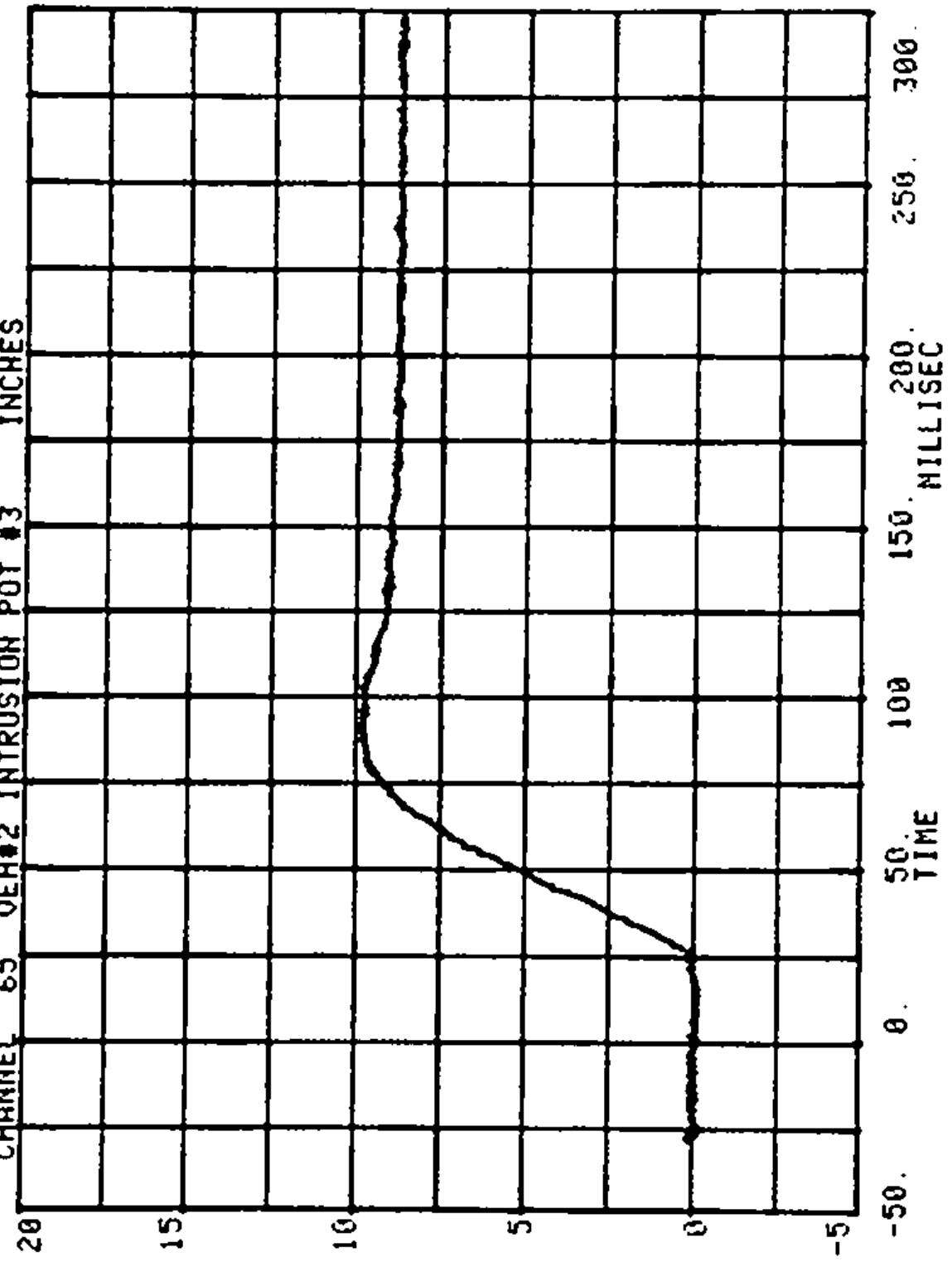

RUN= 500 SERIES= 18
CHANNEL 45 DISPLACEMENT INCHES
VEH. #2 ACC. PACK #9 (Y)
15
0
-15
-30
-45
-60
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

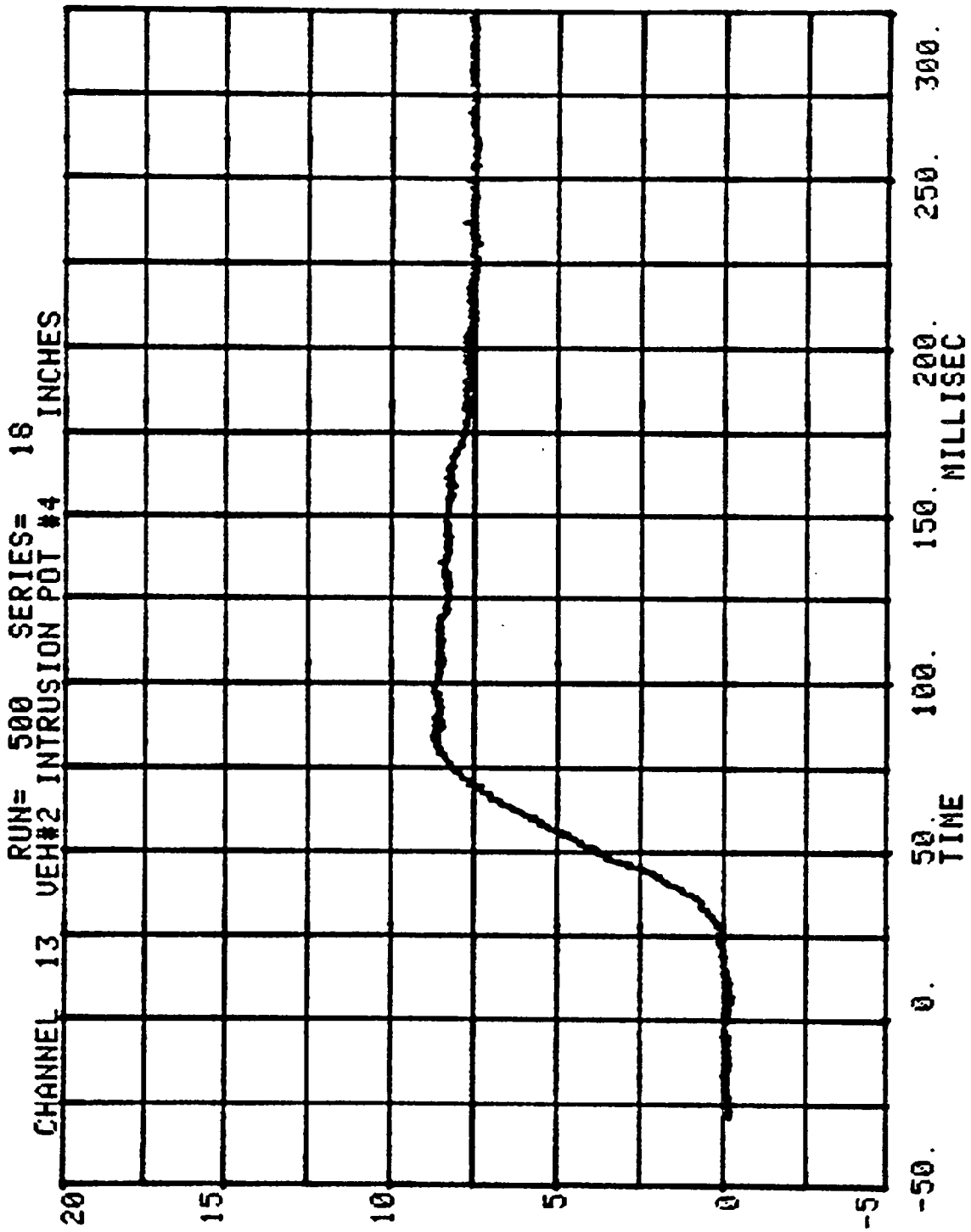

RUN= 500 SERIES= 18
CHANNEL 62 VEH#2 YAW RATE DEG/SEC
200
100
0
-100
-200
-300
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


RUN= 500 SERIES= 18
CHANNEL 51 VELOCITY
MPH
219.5
-.0
-219.5
-439.1
-658.6
-878.1
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 63 VEH#2 INTRUSION POT #1
RUN= 500 SERIES= 18 INCHES
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 64 VEH#2 INTRUSION POT #2
RUN= 500 SERIES= 18 INCHES
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 65 VEH#2 INTRUSION POT #3
RUN= 500 SERIES= 18 INCHES
20
15
10
5
0
-5
-50.
0.
50.
100
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 13 VEH#2 INTRUSION POT #4
RUN= 500 SERIES= 18 INCHES
20
15
10
5
0
-5
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

Test No. 18

Vehicle 2 - 1976 Volkswagen Rabbit

Dummy Data

	Filter Channel Class
Head Accelerations	1000
Chest Accelerations	180
Pelvic Accelerations	180

HEAD INJURY CRITERION
HEAD SEVERITY INDEX

SIDE IMPACT CAR TO CAR BUDD #18

RUN= 500

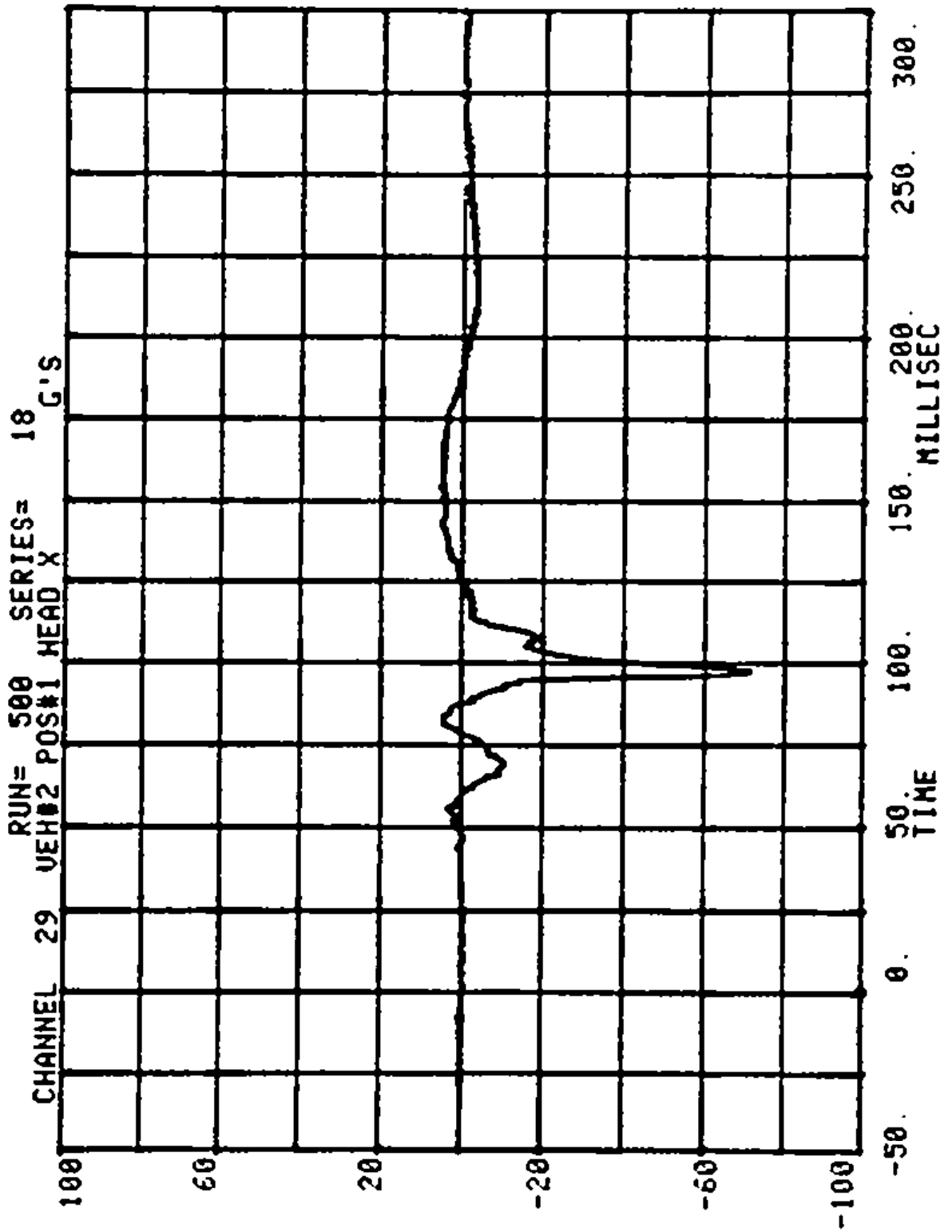
VEH#2 POS#1 HEAD RESULT.

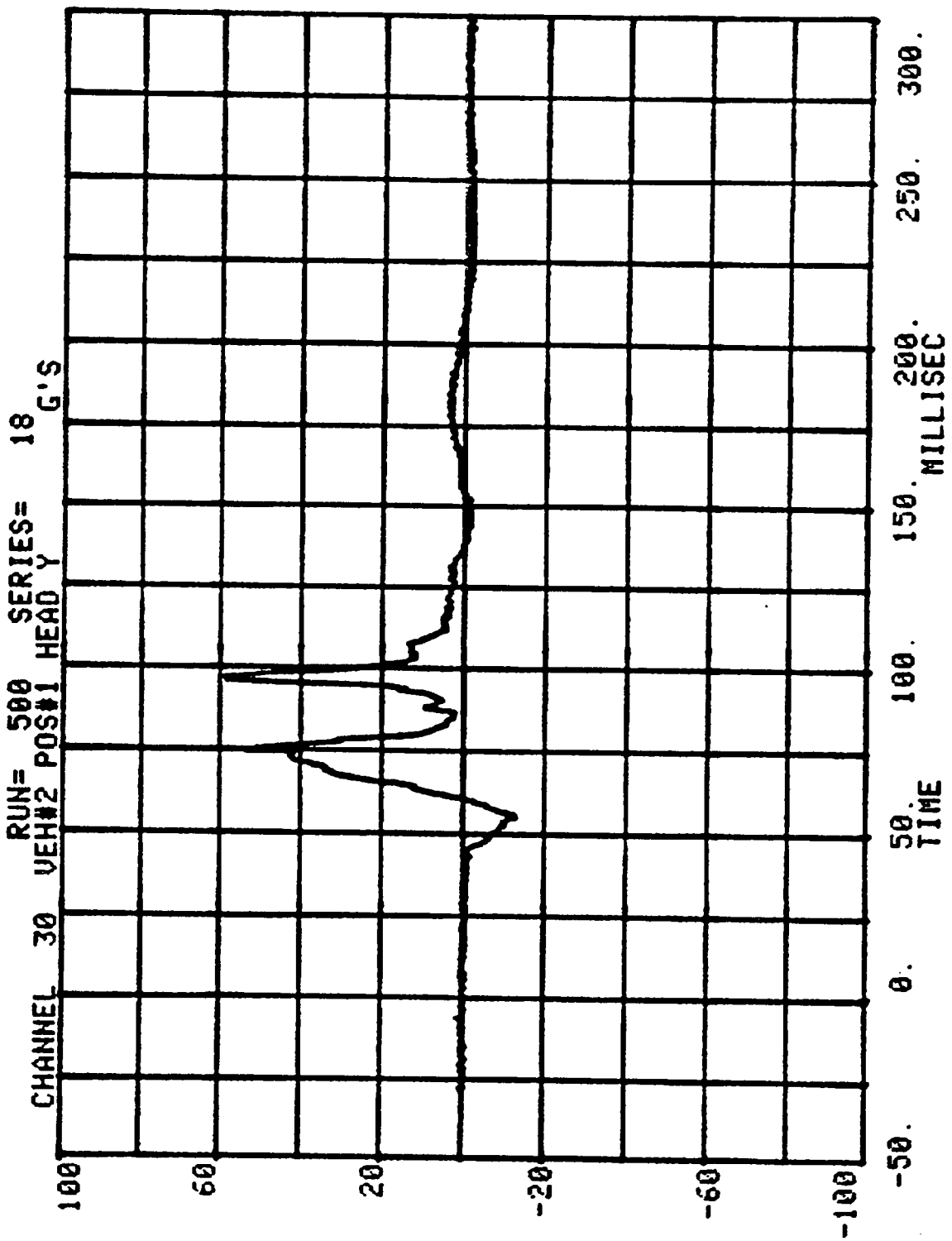
HIC= 520.2 FROM T1= .06660 TO T2= .10380

AVERAGE ACCELERATION BETWEEN T1 AND T2= 45.5G'S

EVENT TIME= 300.0 MSEC

SEVERITY INDEX= 733.6


CHANNEL 29 VEH#2 POS#1 HEAD X
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 30 VEH#2 POS#1 HEAD Y
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

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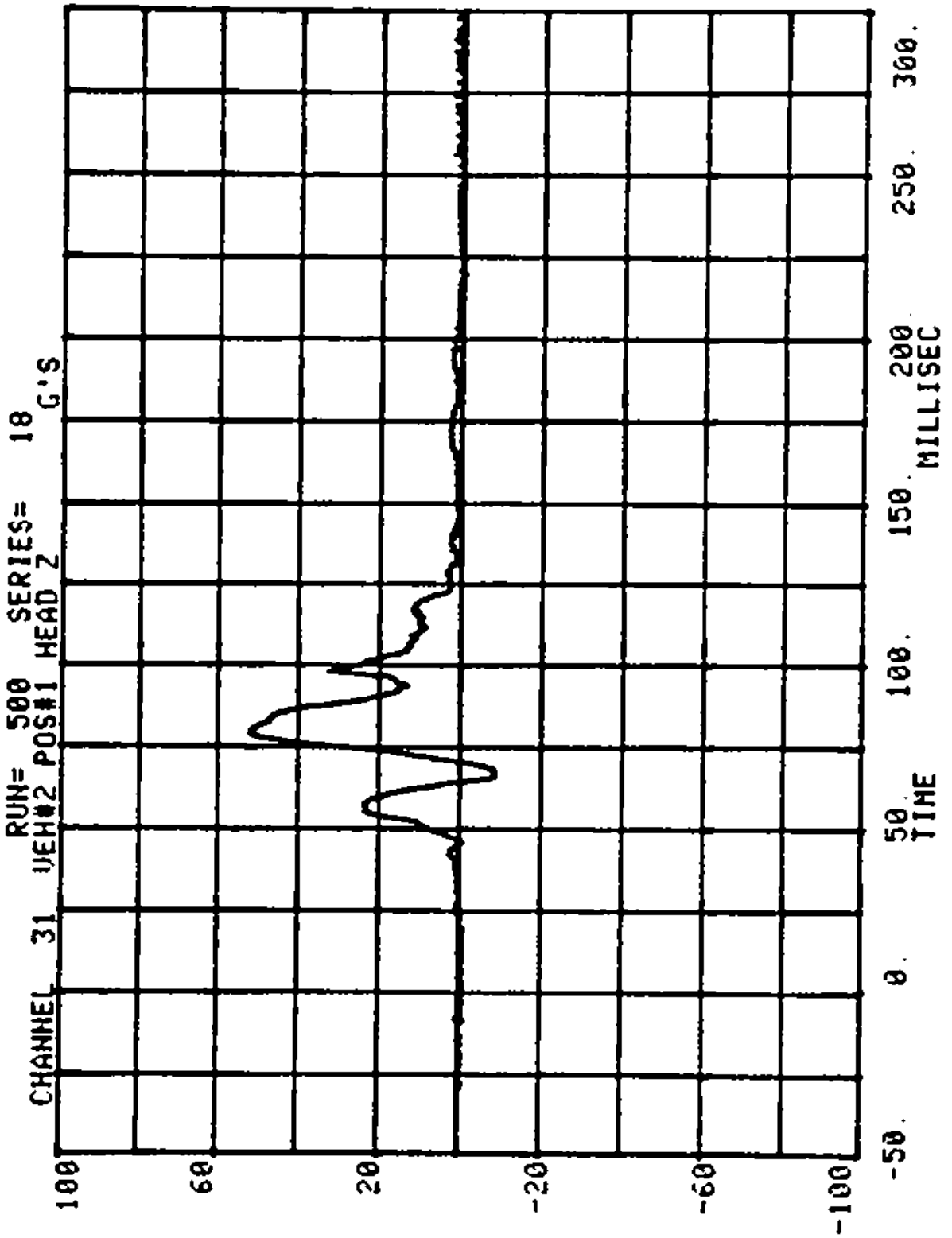
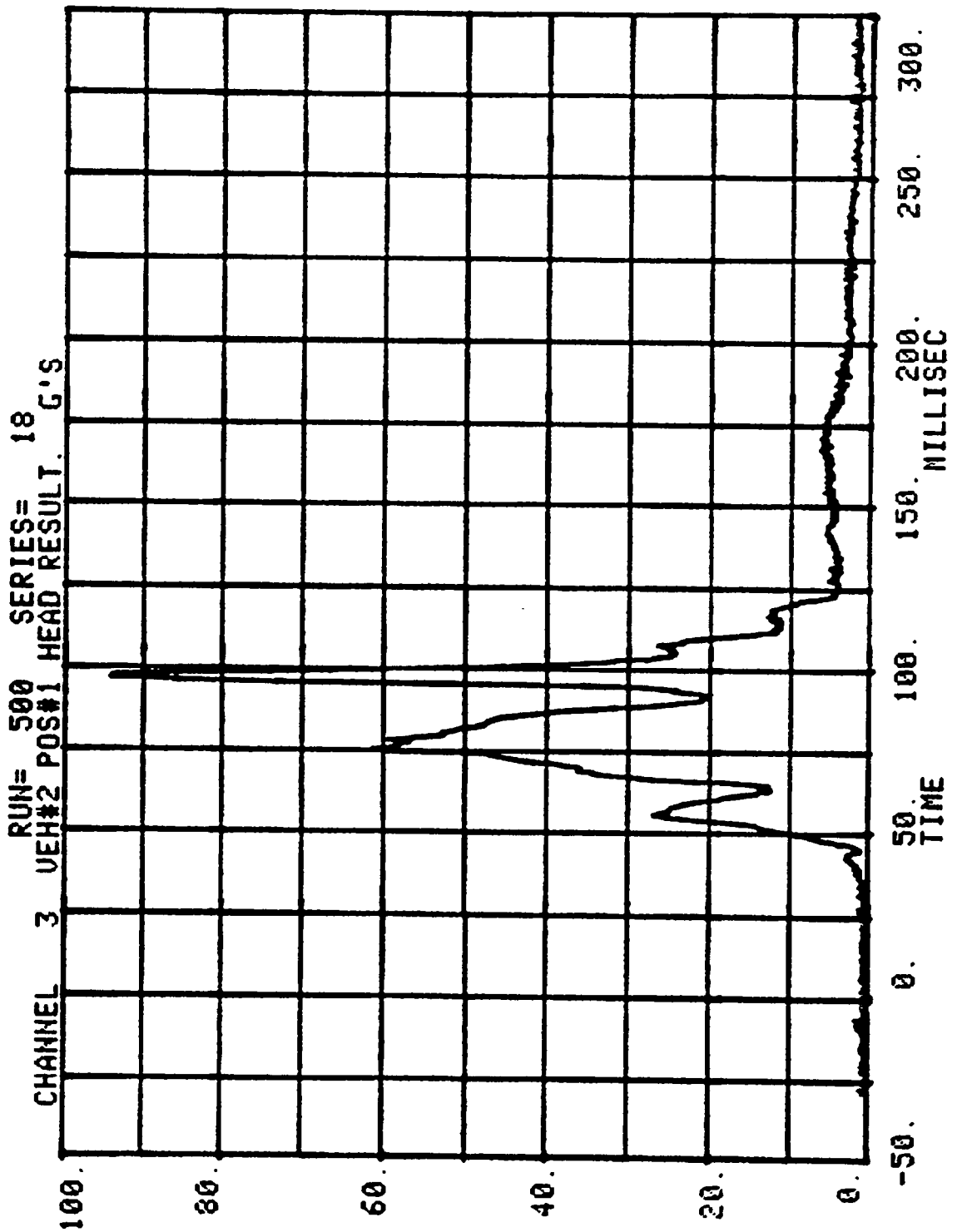
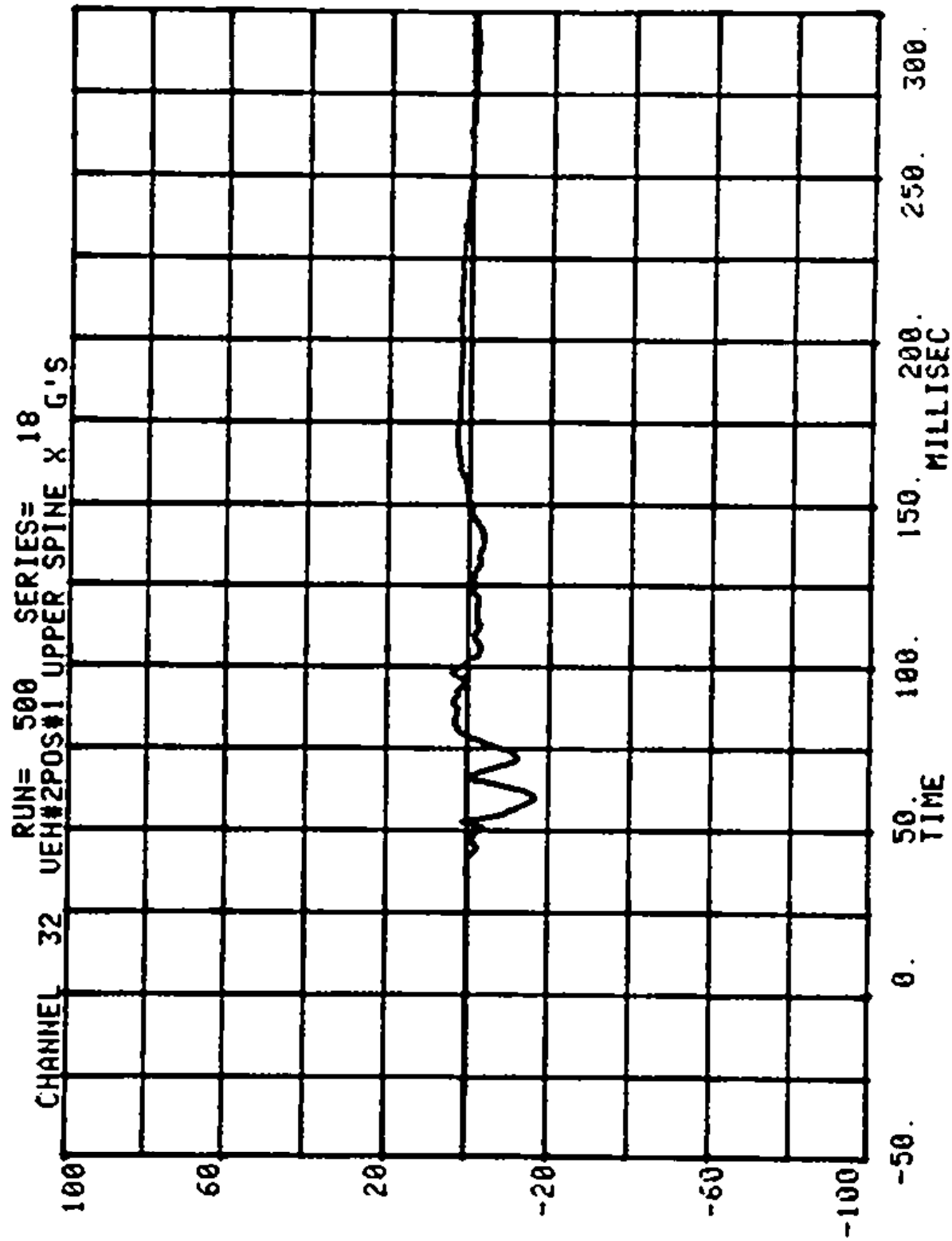
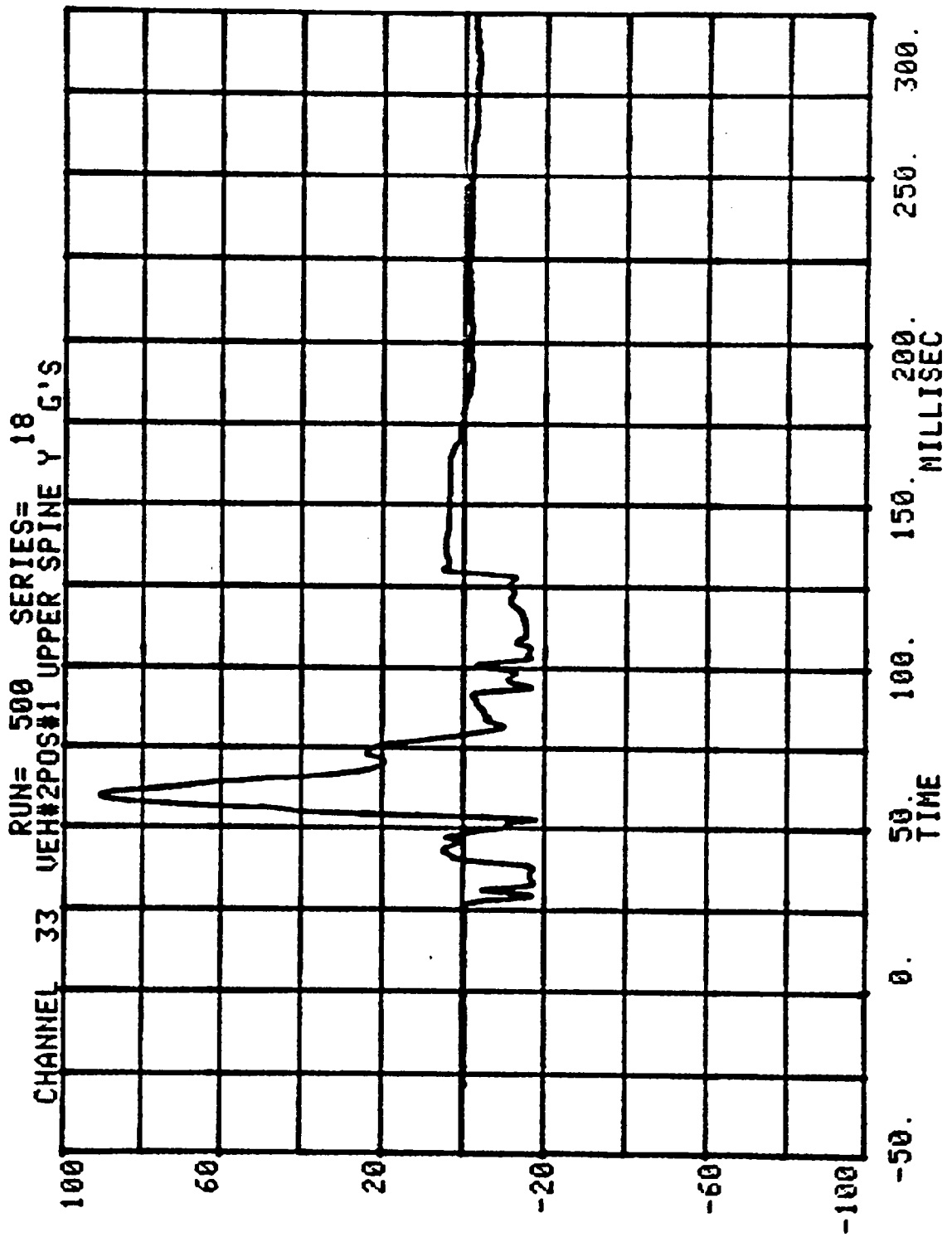
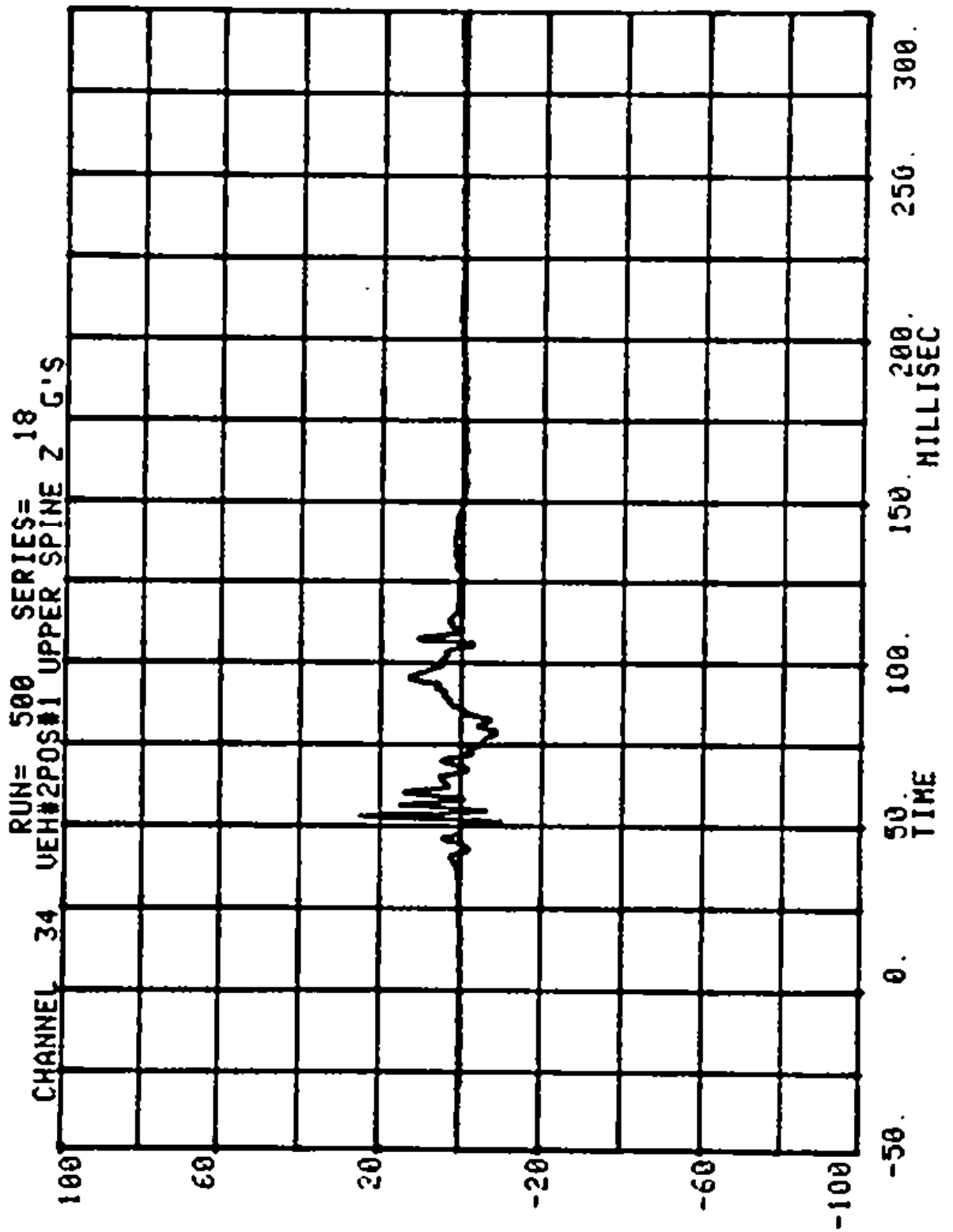
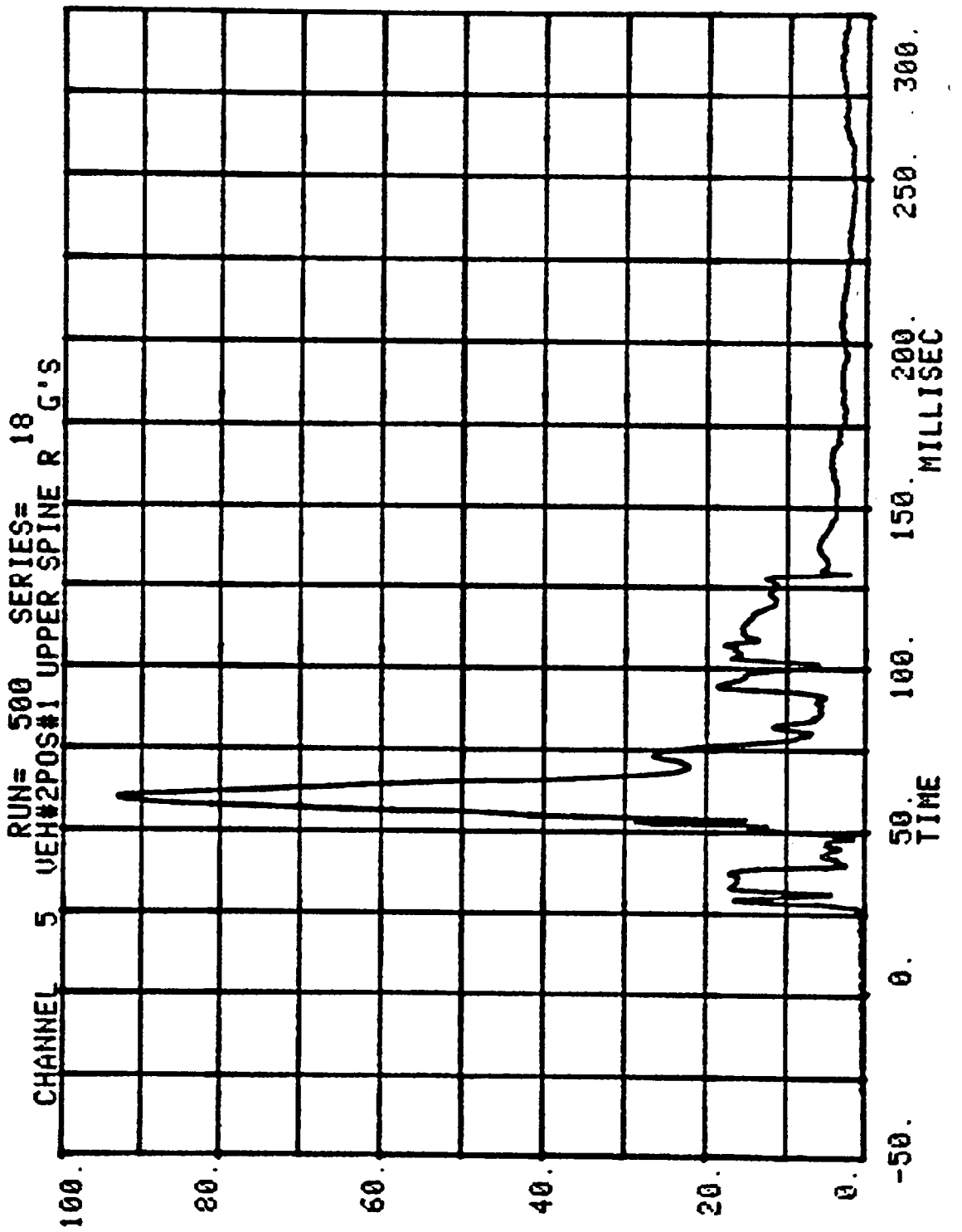

CHANNEL 31 VEH#2 POS#1 HEAD Z
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

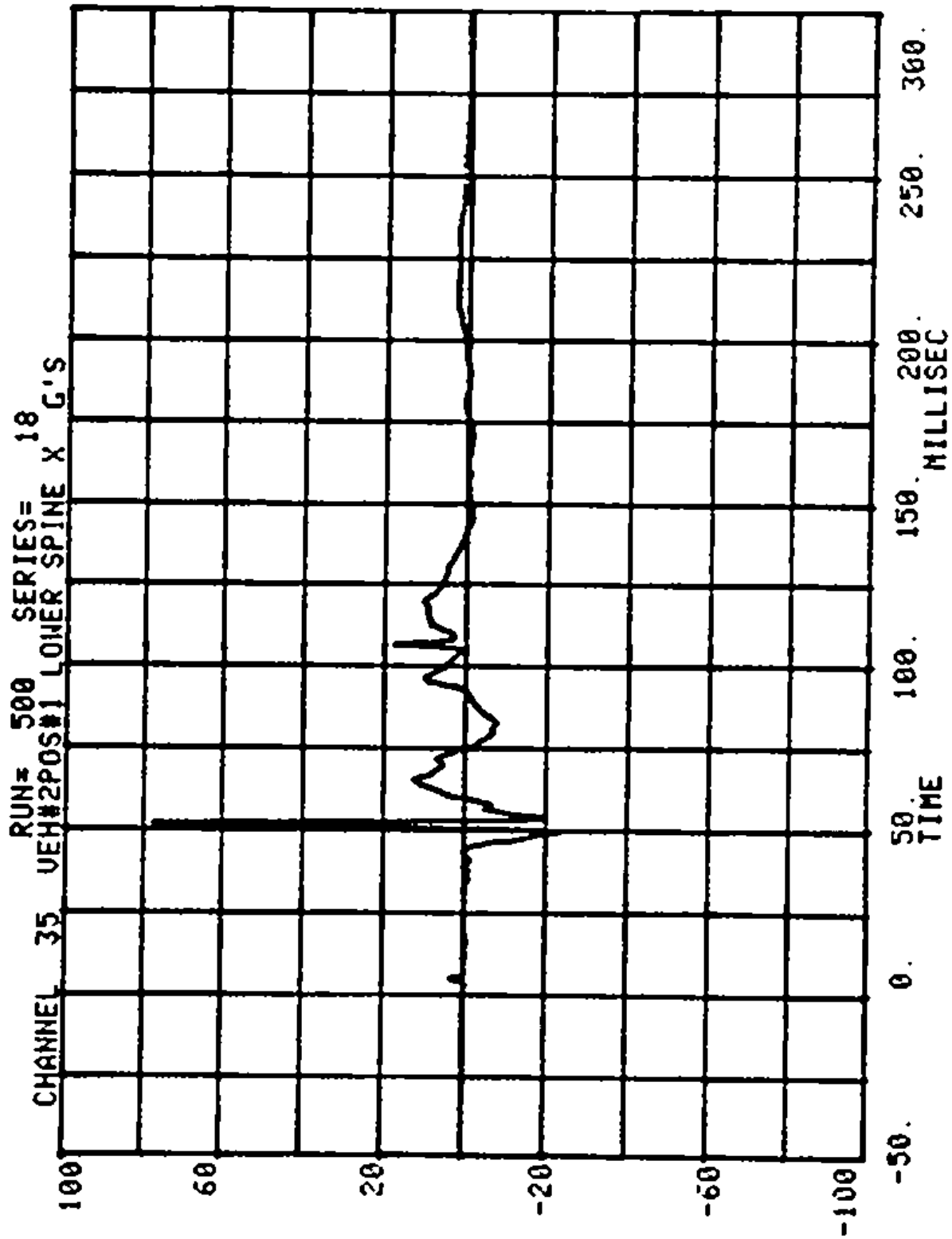

CHANNEL 3 RUN= 500 SERIES= 18
VEH#2 POS#1 HEAD RESULT. G'S
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

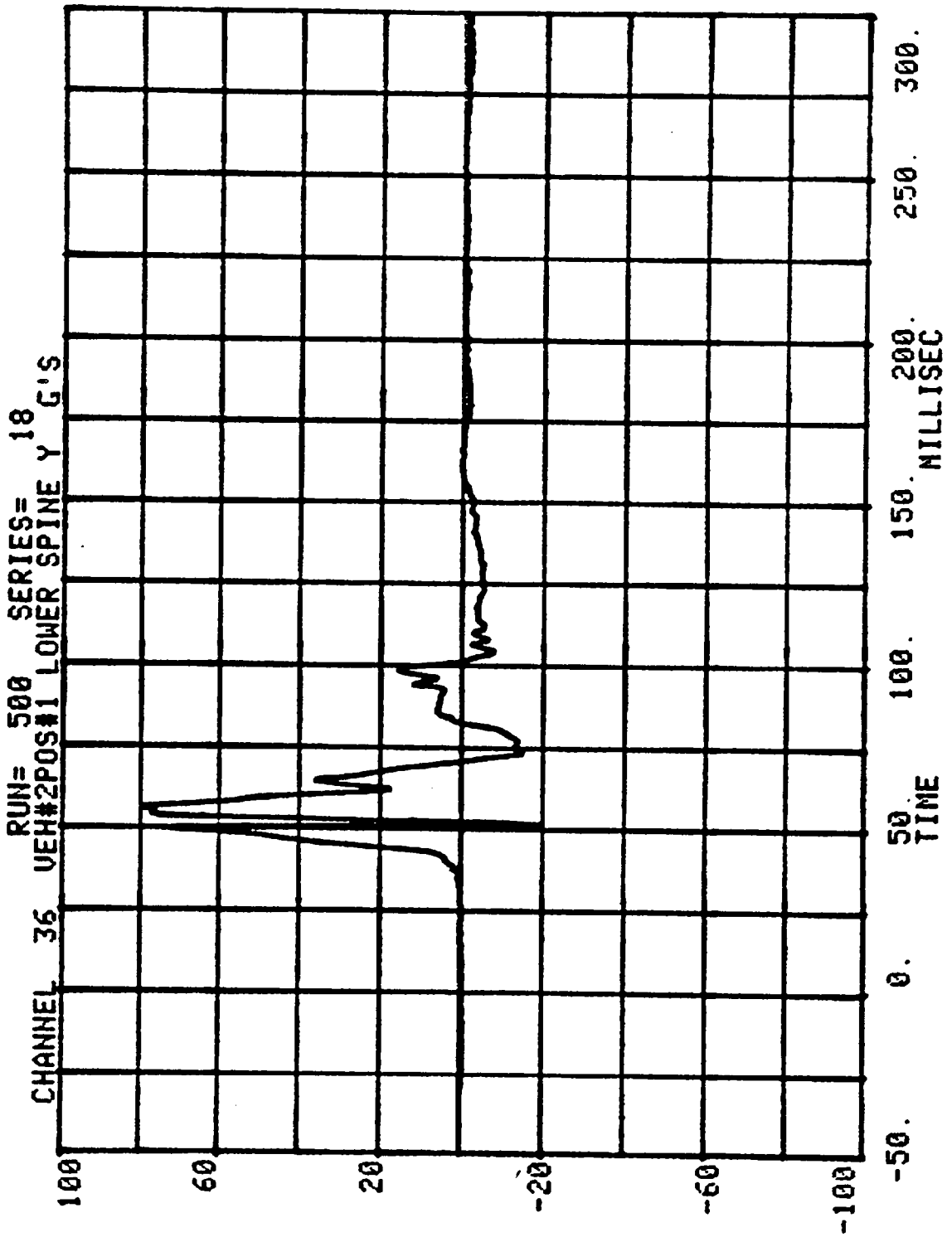

CHANNEL 32 VEH#2POS#1 UPPER SPINE X G'S
RUN= 500 SERIES= 18
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

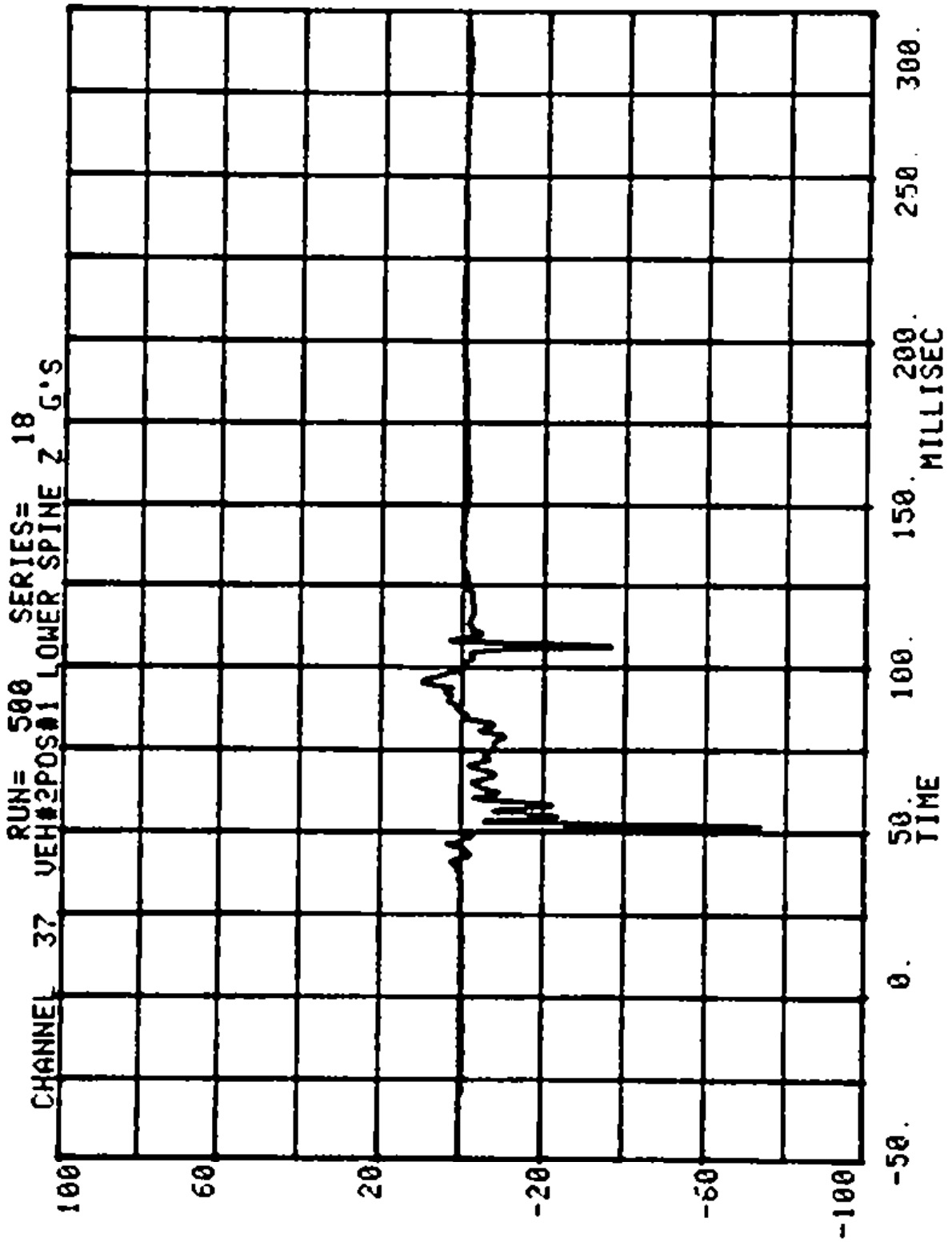

CHANNEL 33 VEH#2POS#1 UPPER SPINE Y
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

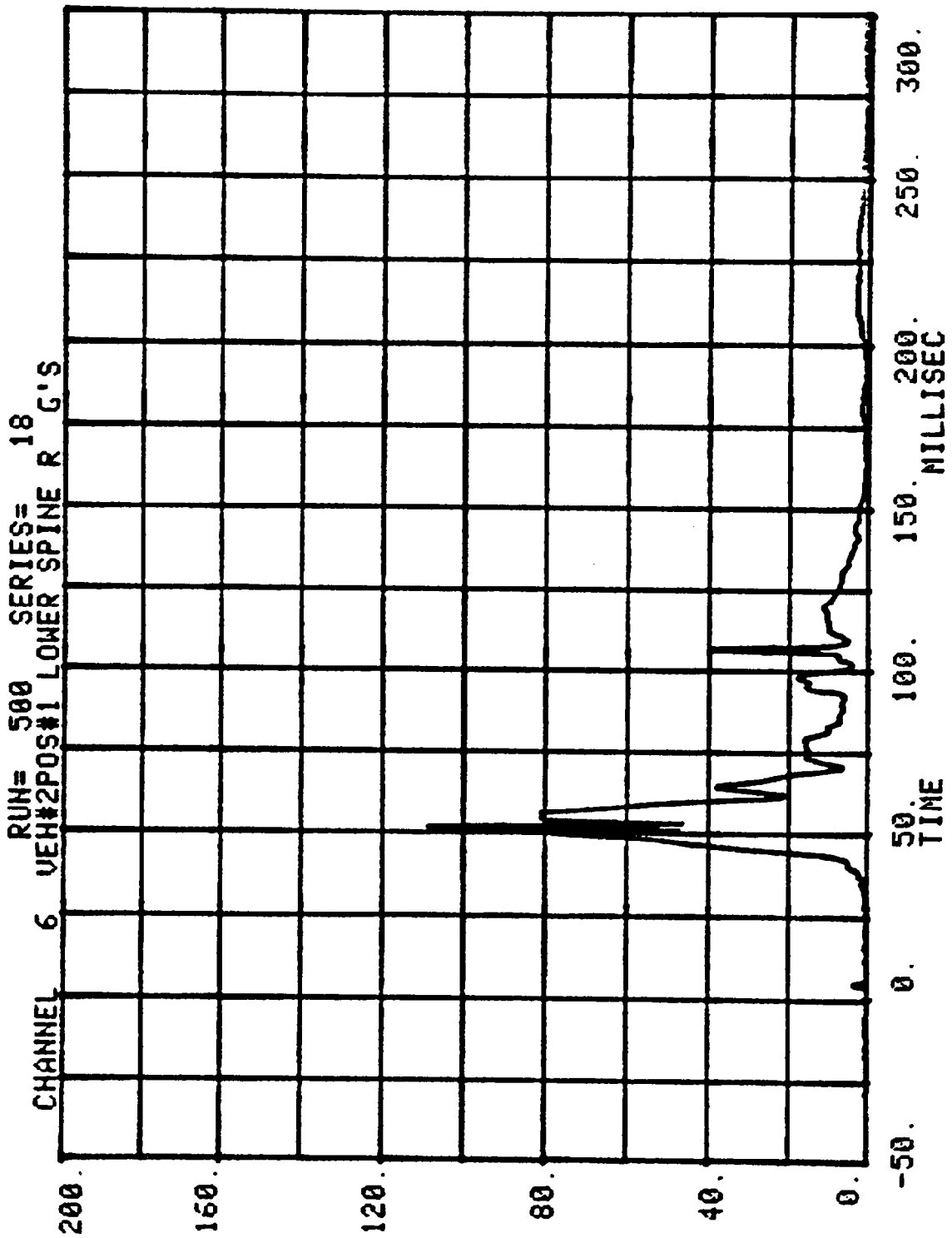

CHANNEL 34 VEH#2POS#1 UPPER SPINE Z
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

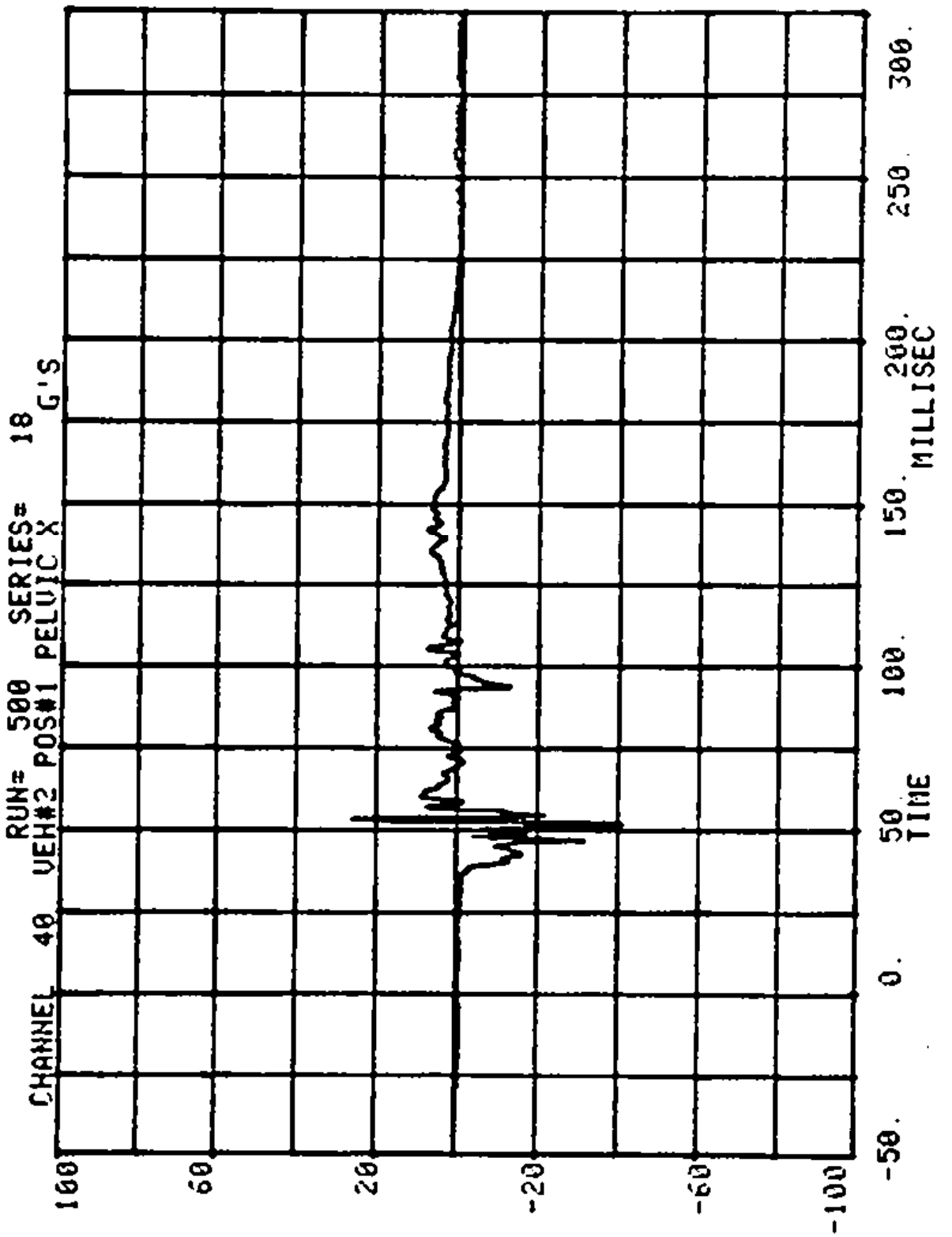

CHANNEL 5 VEH#2POS#1 UPPER SPINE R G'S
RUN= 500 SERIES= 18
100.
80.
60.
40.
20.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

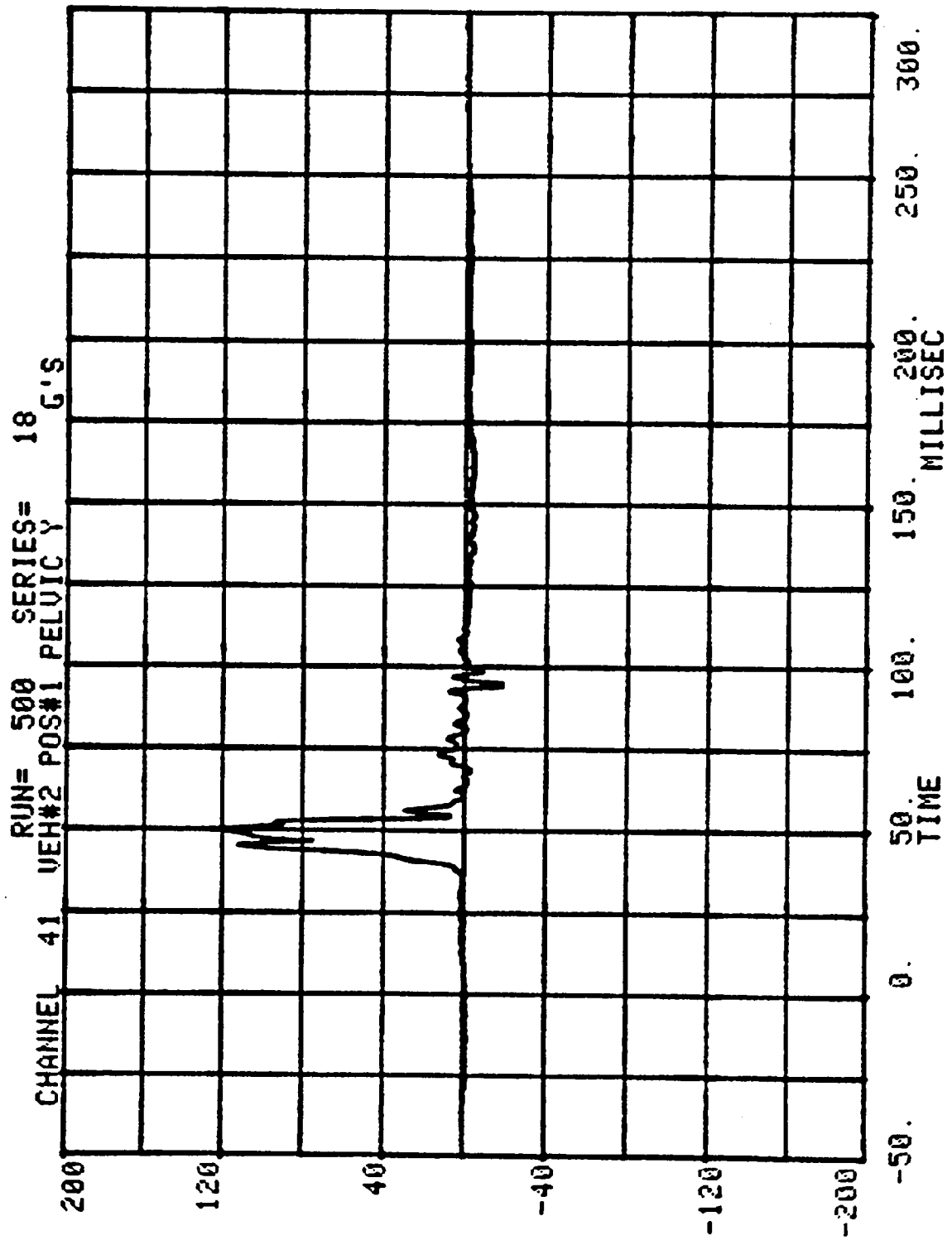

CHANNEL 35 VEH#2POS#1 LOWER SPINE X
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

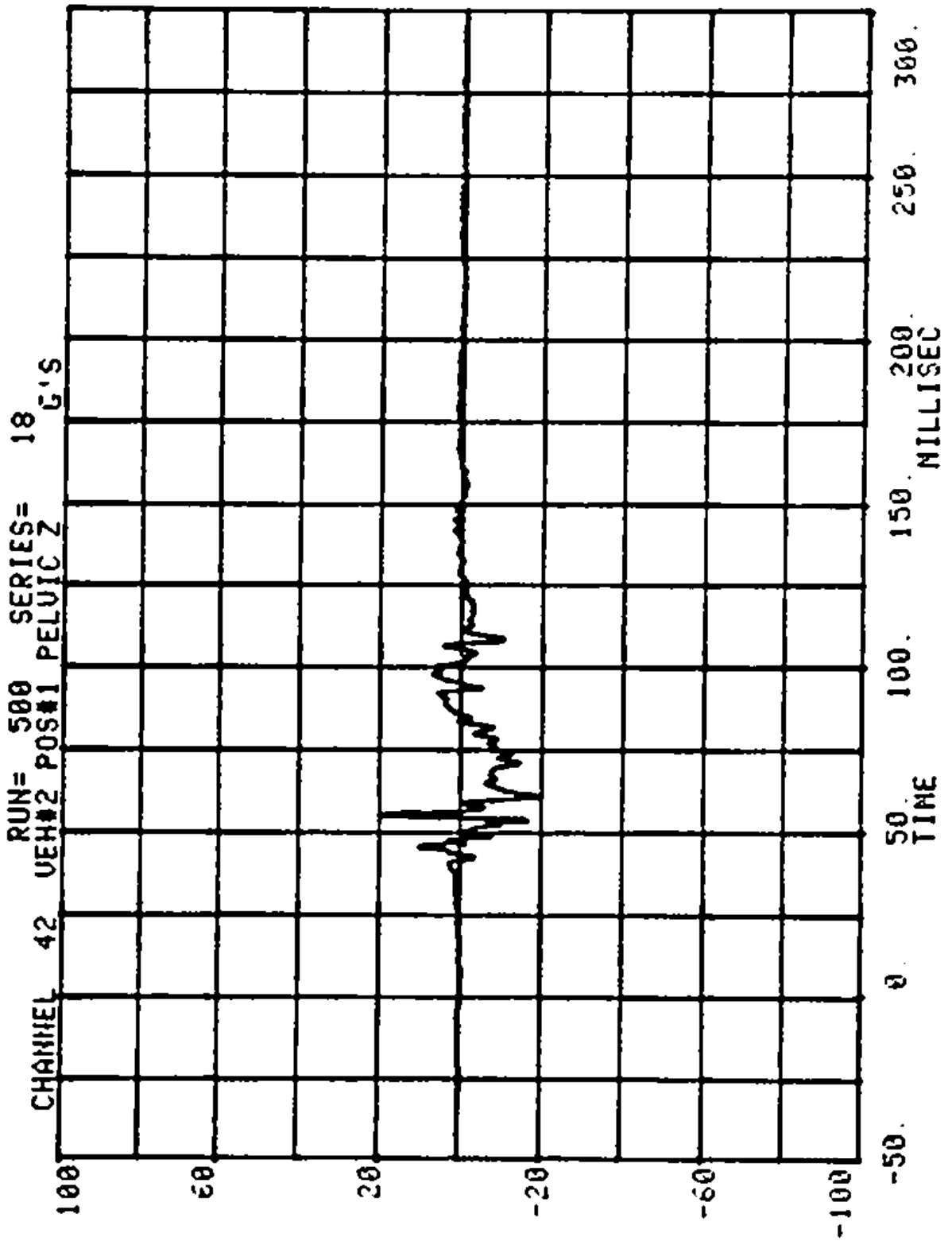

CHANNEL 36 VEH#2POS#1 LOWER SPINE Y
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

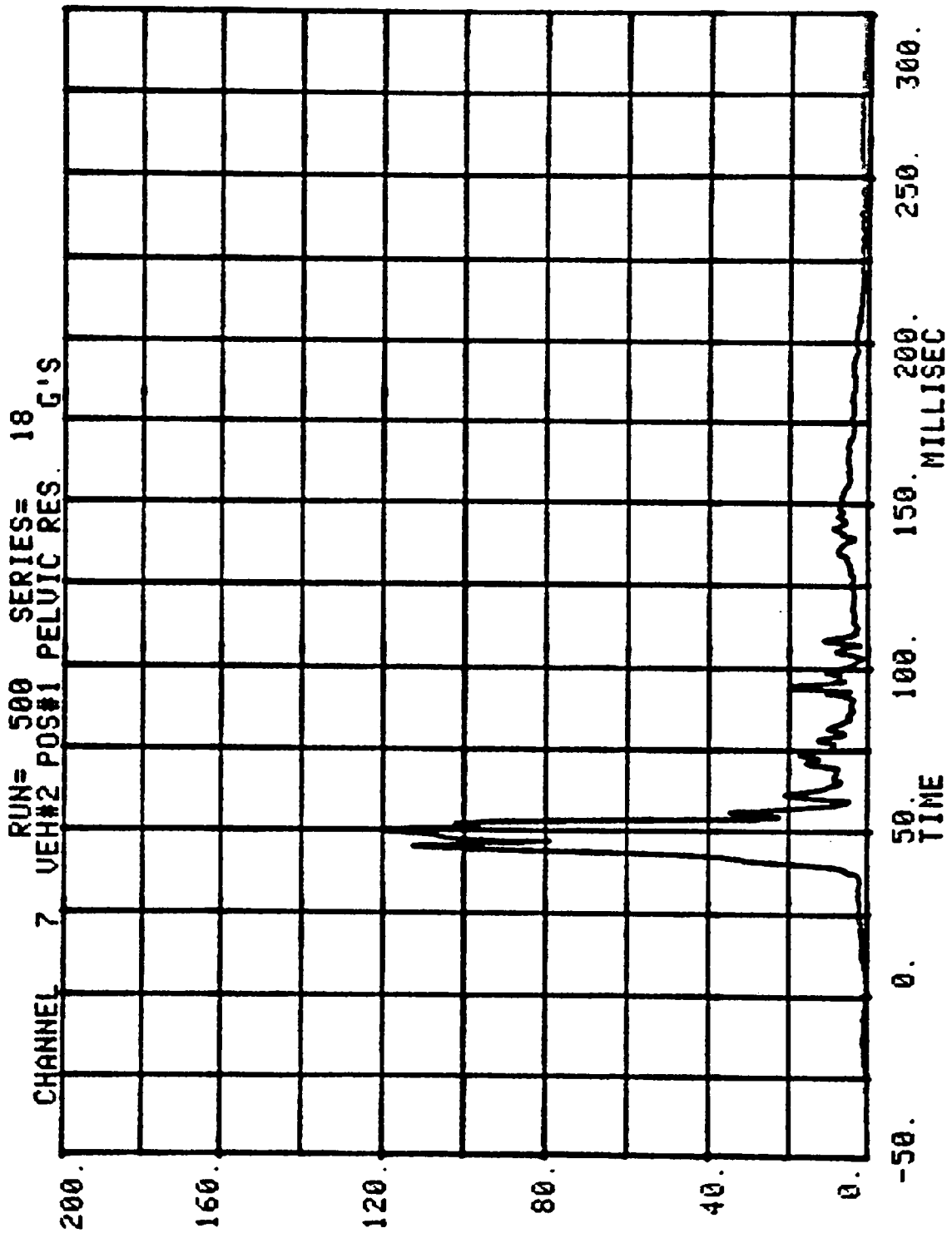

CHANNEL 37 VEH#2POS#1 LOWER SPINE Z
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

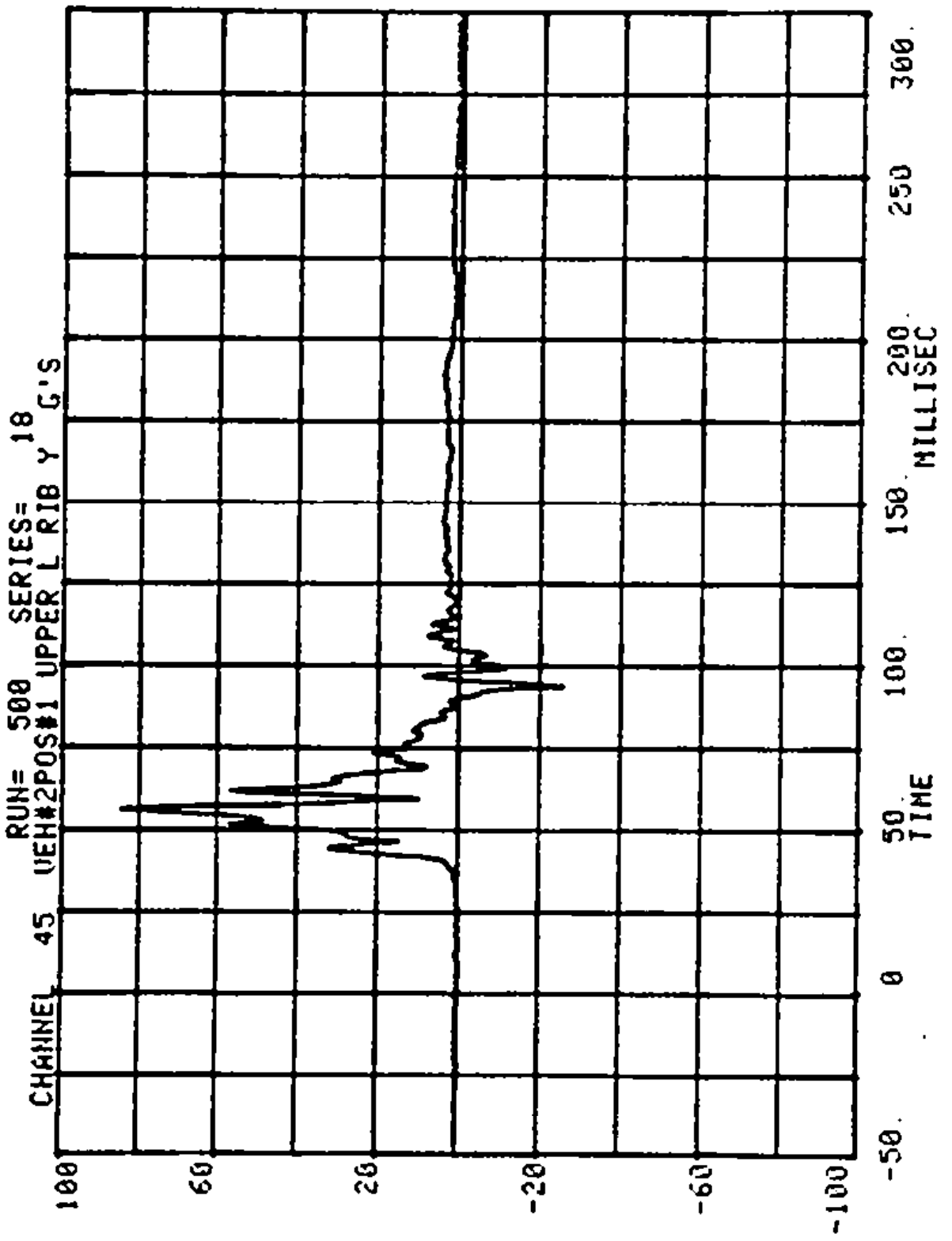

CHANNEL 6 VEH#2POS#1 LOWER SPINE R
RUN= 500 SERIES= 18
G'S
200.
160.
120.
80.
40.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

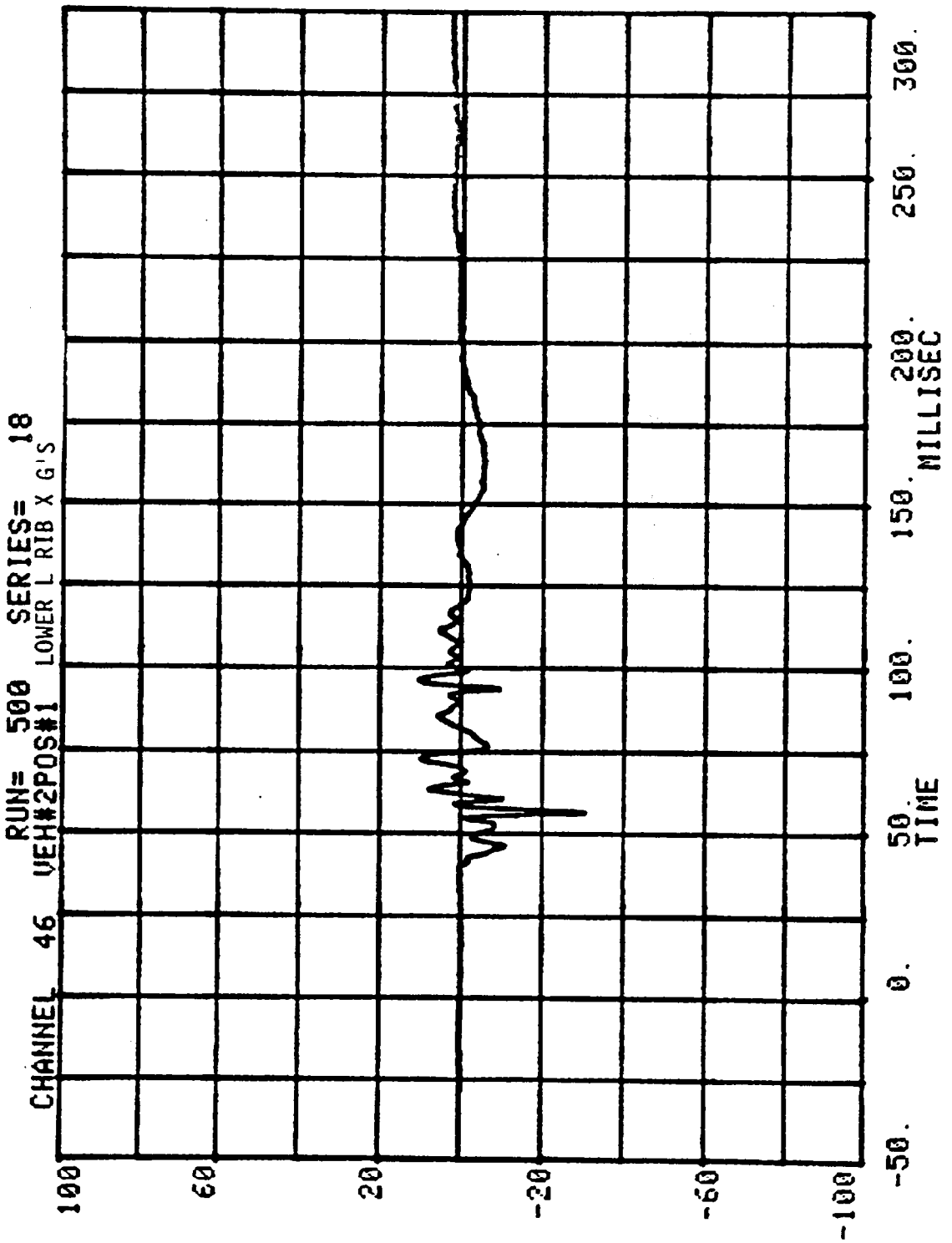

CHANNEL 40 VEH#2 POS#1 PELVIC X
RUN= 500 SERIES= 18
G'S
160
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

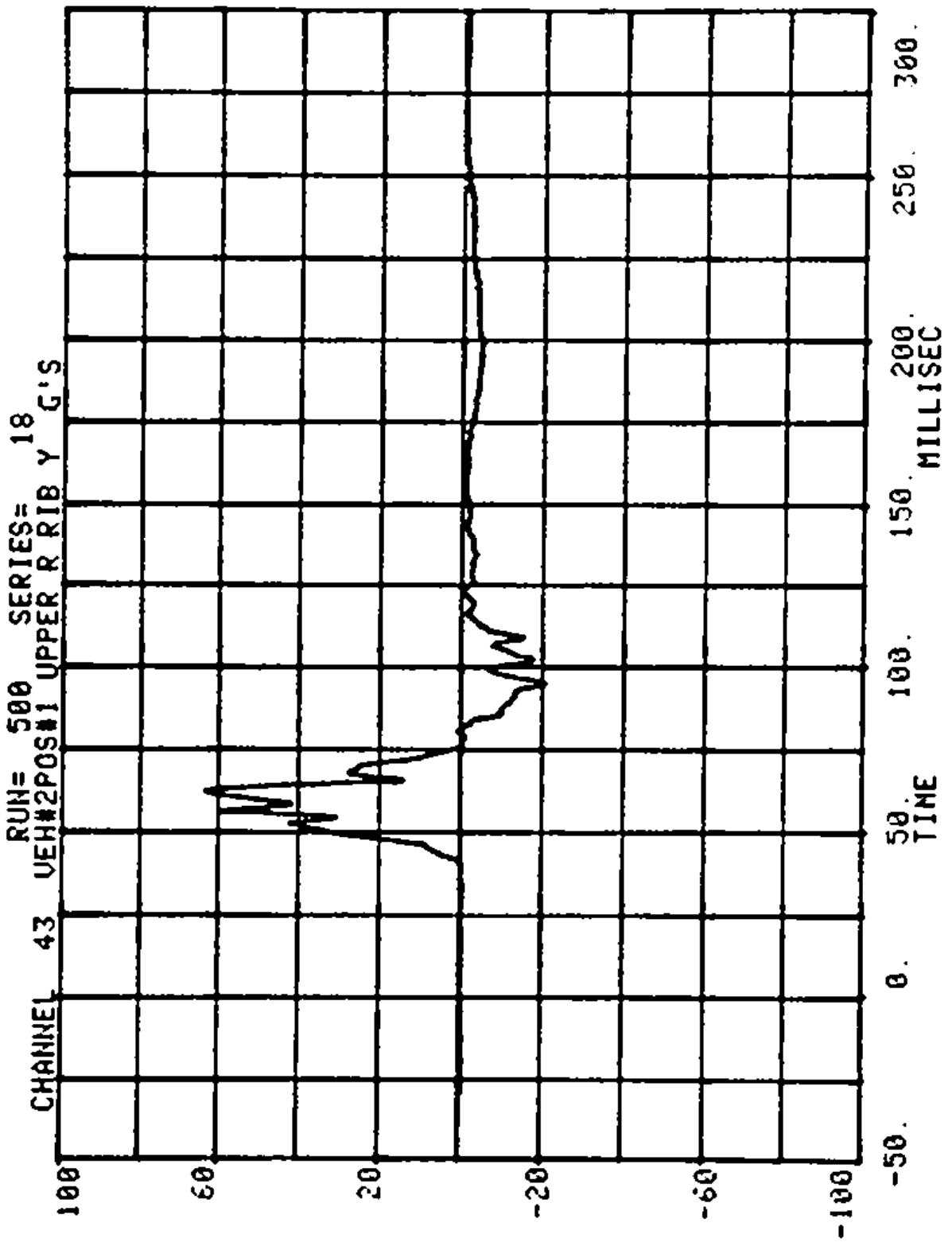

CHANNEL 41 VEH#2 POS#1 PELVIC Y
RUN= 500 SERIES= 18
G'S
200
120
40
-40
-120
-200
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

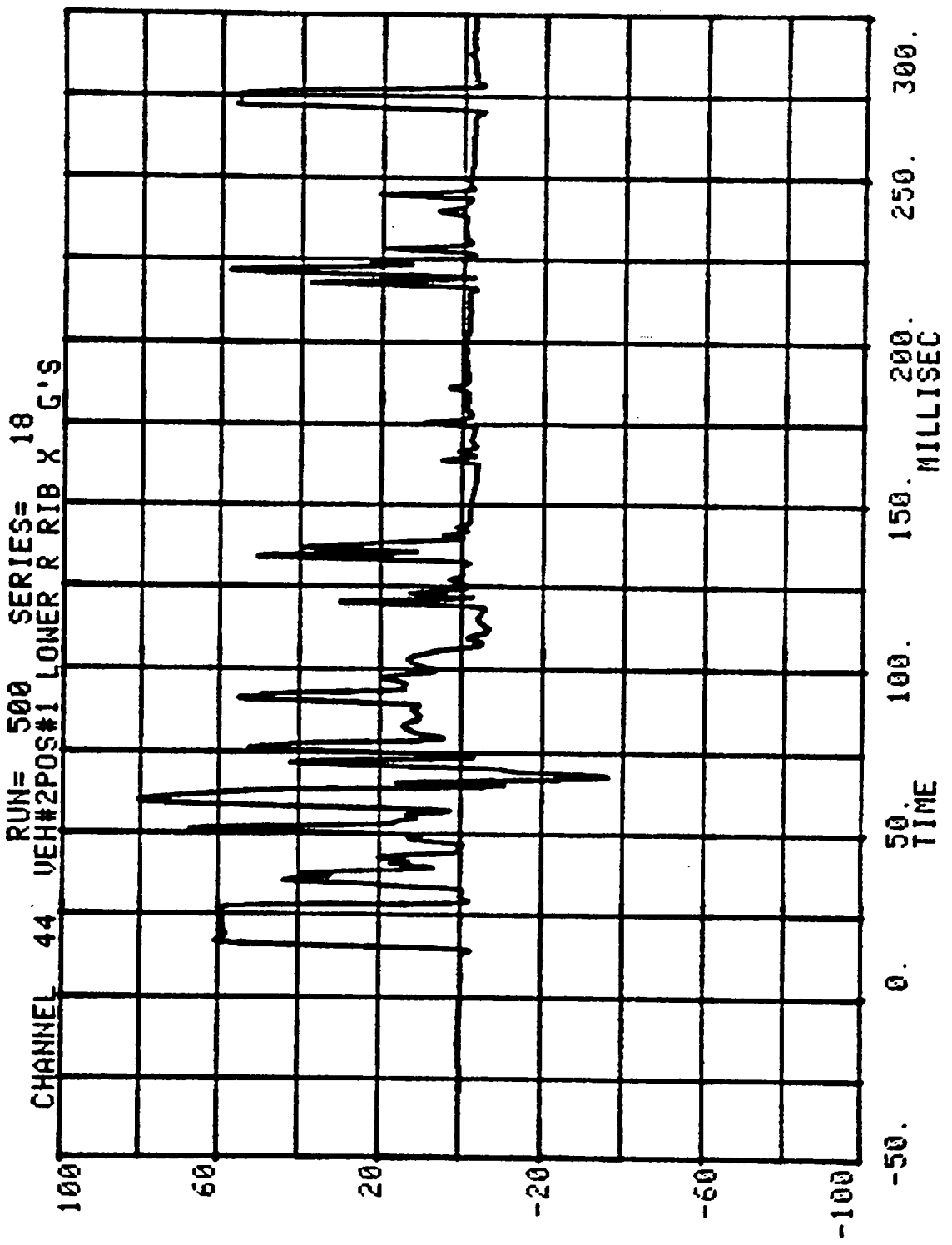

CHANNEL 42
RUN= 500 SERIES= 18
VEH#2 POS#1 PELVIC Z
G'S
100
60
20
-20
-60
-100
-50.
0
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

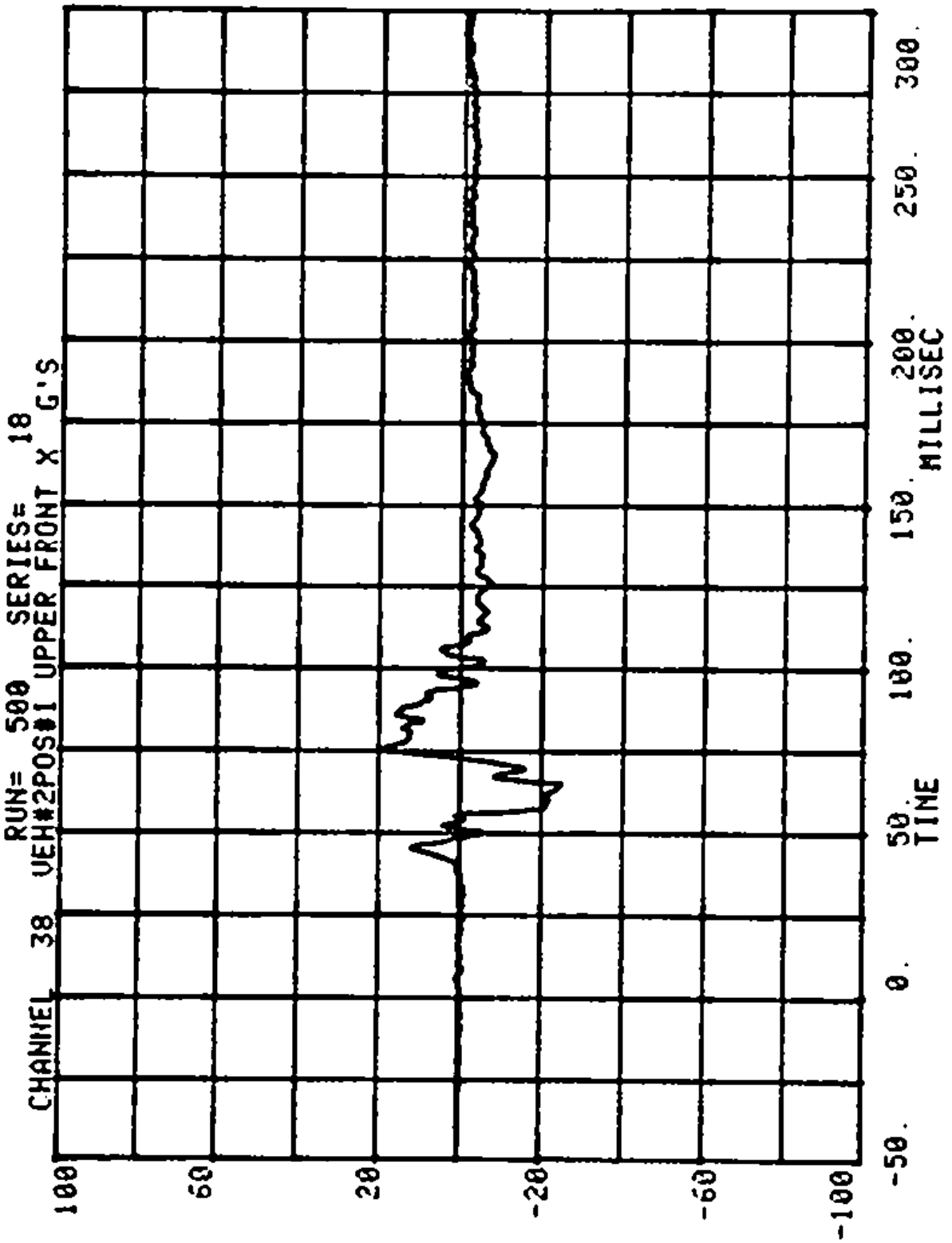

CHANNEL 7 VEH#2 POS#1 PELVIC RES.
RUN= 500 SERIES= 18 G'S
200.
160.
120.
80.
40.
0.
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC

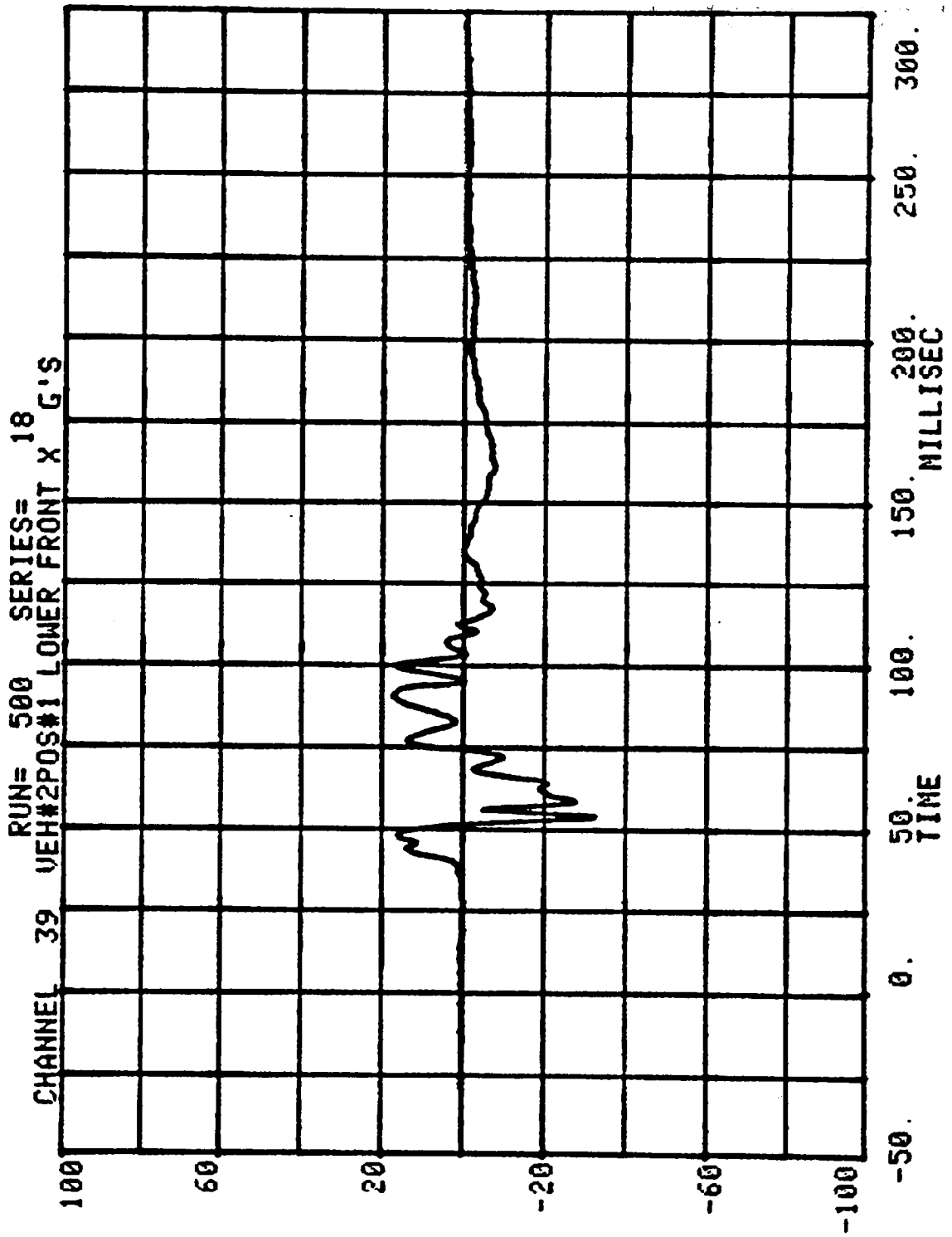

CHANNEL 45 VEH#2POS#1 UPPER L RIB Y G'S
RUN= 500 SERIES= 18
100
60
20
-20
-60
-100
-50.
0
50.
100.
150.
200.
250
300.
TIME
MILLISEC


CHANNEL 46 VEH#2POS#1 LOWER L RIB X G'S
RUN= 500 SERIES= 18
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 43 VEH#2POS#1 UPPER R RIB Y
RUN= 500 SERIES= 18
G'S
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 44 VEH#2POS#1 LOWER R RIB X G'S
RUN= 500 SERIES= 18
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 38 VEH#2POS#1 UPPER FRONT X G'S
RUN= 500 SERIES= 18
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC


CHANNEL 39 VEH#2POS#1 LOWER FRONT X G'S
RUN= 500 SERIES= 18
100
60
20
-20
-60
-100
-50.
0.
50.
100.
150.
200.
250.
300.
TIME
MILLISEC