

2014572

EVALUATION OF NHTSA MODIFIED
VOLKSWAGEN RABBITS

MDB-TO-CAR SIDE IMPACT TEST OF
A 19⁰ CRABBED MOVING DEFORMABLE BARRIER
TO A 1976 VOLKSWAGEN RABBIT
AT 34.3 MPH

PREPARED BY:
VEHICLE RESEARCH AND TEST CENTER
ST. RT. 33 LOGAN COUNTY
EAST LIBERTY, OHIO 43319



FINAL REPORT
SEPTEMBER 1983

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
400 SEVENTH STREET, S.W.
WASHINGTON, D.C. 20590

Prepared By: John C. Stultz
J. C. Stultz
Project Engineer
Transportation Research Center of Ohio

Approved By: Richard W. Runyon
R. W. Runyon
Project Manager
Transportation Research Center of Ohio

Report Accepted By: Michael Monk
M. W. Monk
Project Engineer
Vehicle Research & Test Center

Report Accepted By: _____
T. MacLaughlin
Project Manager
Vehicle Research & Test Center

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle EVALUATION OF NHTSA MODIFIED VOLKSWAGEN RABBITS MDB-TO-CAR SIDE IMPACT TEST OF A 19° CRABBED MOVING DEFORMABLE BARRIER TO A 1976 VOLKSWAGEN RABBIT AT 34.3 MPH		5. Report Date SEPTEMBER 1983	
		6. Performing Organization Code	
		8. Performing Organization Report No. 830830	
7. Author(s) J. Stultz, Project Engineer, TRCO		10. Work Unit No. (TRAIS)	
9. Performing Organization Name and Address Vehicle Research and Test Center St. Rt. 33, Logan County East Liberty, Ohio 43319		11. Contract or Grant No. DTNH22-82-A-08401	
		13. Type of Report and Period Covered FINAL REPORT August 1983	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration 400 Seventh Street, S.W. Washington, DC 20590		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract This test report documents one of a series of twelve crash tests to evaluate the NHTSA's Modified Volkswagen Rabbits. Testing was conducted on a 1976 Volkswagen Rabbit 2-door hatchback with structural modification designated as Heavy Weight at the TRCO Crash Test Facility, East Liberty, Ohio. The test vehicle was impacted on the left side by a moving deformable barrier, crabbed to 19°, at 34.3 mph. Occupant responses of two side impact dummies were measured. One dummy was located in the driver's designated seating position and one was located in the left rear seating position. The test date was August 30, 1983 and the ambient temperature was 92°F.			
17. Key Words Occupant Response Moving Barrier Crash Testing		18. Distribution Statement Available from: Technical Reference Division, National Highway Traffic Safety Administration Room 5108, Nassif Building 400 Seventh Street, S.W. Washington, DC 20590	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 179	22. Price

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
acres	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons	0.9	metric ton	t
	(2000 lb)			
VOLUME				
tsp	teaspoons	5	milliliters	ml.
Tbsp	tablespoons	15	milliliters	ml.
in ³	cubic inches	16	milliliters	ml.
fl oz	fluid ounces	30	milliliters	ml.
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares	2.5	acres	
	(10 000 m ²)			
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	metric ton	1.1	short tons	
	(1000 kg)			
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
ml	milliliters	0.06	cubic inches	in ³
L	liters	2.1	pints	pt
L	liters	1.06	quarts	qt
L	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	degrees Celsius	9/5 (then add 32)	degrees Fahrenheit	°F

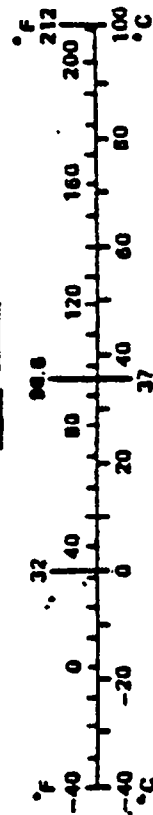


TABLE OF CONTENTS

	<u>Page</u>
1.0 PURPOSE AND INTRODUCTION	1-1
2.0 GENERAL TEST AND VEHICLE PARAMETER DATA	2-1
3.0 DATA REQUIRED BY R&D	3-1
APPENDIX A PHOTOGRAPHS	A-1
APPENDIX B DATA PLOT PRESENTATION	B-1
APPENDIX C DUMMY CERTIFICATION	C-1

LIST OF PHOTOGRAPHS

<u>Figure</u>	<u>Page</u>
A-1. PRE-TEST OVERALL - VIEW 1	A-2
A-2. PRE-TEST OVERALL - VIEW 2	A-2
A-3. PRE-TEST OVERALL - VIEW 3	A-3
A-4. PRE-TEST OVERALL - VIEW 4	A-3
A-5. PRE-TEST CLOSEUP - VIEW 1	A-4
A-6. PRE-TEST CLOSEUP - VIEW 2	A-4
A-7. PRE-TEST CLOSEUP - VIEW 3	A-5
A-8. PRE-TEST DRIVER DUMMY - VIEW 1	A-5
A-9. PRE-TEST DRIVER DUMMY - VIEW 2	A-6
A-10. PRE-TEST PASSENGER DUMMY - VIEW 1	A-6
A-11. PRE-TEST PASSENGER DUMMY - VIEW 2	A-7
A-12. CRASH EVENT PHOTOGRAPH	A-7
A-13. POST-TEST OVERALL - VIEW 1	A-8
A-14. POST-TEST OVERALL - VIEW 2	A-8
A-15. POST-TEST OVERALL - VIEW 3	A-9
A-16. POST-TEST OVERALL - VIEW 4	A-9
A-17. POST-TEST CLOSEUP - VIEW 1	A-10
A-18. POST-TEST CLOSEUP - VIEW 2	A-10
A-19. POST-TEST CLOSEUP - VIEW 3	A-11
A-20. POST-TEST DRIVER DUMMY - VIEW 1	A-11
A-21. POST-TEST DRIVER DUMMY - VIEW 2	A-12
A-22. POST-TEST PASSENGER DUMMY - VIEW 1	A-12
A-23. POST-TEST PASSENGER DUMMY - VIEW 2	A-13
A-24. POST-TEST VEHICLE DAMAGE - VIEW 1	A-13
A-25. POST-TEST VEHICLE DAMAGE - VIEW 2	A-14

LIST OF PHOTOGRAPHS CONT'D

<u>Figure</u>	<u>Page</u>
A-26. PRE-TEST MDB FACE - VIEW 1	A-14
A-27. PRE-TEST MDB FACE - VIEW 2	A-15
A-28. POST-TEST MDB FACE - VIEW 1	A-15
A-29. POST-TEST MDB FACE - VIEW 2	A-16
A-30. POST-TEST PADDING CONDITION	A-16
A-31. INSTRUMENTATION SETUP	A-17
A-32. VEHICLE INITIAL RUSTED CONDITION - VIEW 1	A-17
A-33. VEHICLE INITIAL RUSTED CONDITION - VIEW 2	A-18
A-34. VEHICLE INITIAL RUSTED CONDITION - VIEW 3	A-18
A-35. VEHICLE INITIAL RUSTED CONDITION - VIEW 4	A-19

SECTION 1.0
PURPOSE AND INTRODUCTION

PURPOSE

The main purpose of this test was to evaluate the NHTSA fleet of modified Volkswagen Rabbits with and without padding. The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

INTRODUCTION

A stationary 1976 Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on August 30, 1983. The test was to simulate an intersection collision with the striking vehicle traveling at 26 mph and the struck vehicle traveling at 13 mph. The orientation angle of the striking vehicle was 60° counterclockwise with respect to the longitudinal axis of the struck vehicle. The impact point was to be 37 inches forward of the vehicle center of gravity which is defined by accident investigation to be the midpoint of the wheelbase.

To simulate this collision, the MDB was to be towed into the stationary Volkswagen Rabbit at 34.4 mph with the MDB's wheels crabbed clockwise to 19°. The actual test speed was 34.3 mph and the actual impact point was 37 inches forward of the midpoint of the Volkswagen Rabbit's wheelbase.

The vehicle was structurally modified to the level designated "Heavy Weight". The driver door and left rear occupant wall contained three inches of padding.

Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains data required by R & D. Appendix A contains pre-test and post-test vehicle and dummy photographs. Appendix B contains Data Plots. Appendix C contains Dummy Certification Data.

SECTION 2.0
GENERAL TEST AND VEHICLE PARAMETER DATA

The following data sheets and photographs describe the General Test and Vehicle Parameter Data.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Volkswagenwerk AG

MAKE/MODEL: Volkswagen Rabbit VIN: 1763260800

BODY STYLE: 2-Door Hatchback MODEL YEAR: 1976

NHTSA NO.: R & D COLOR: Blue

ENGINE DATA: TYPE: Transverse CYLINDERS: 4 DISPLACEMENT 97 CID

TRANSMISSION DATA: 4 Speed Manual

DATE VEHICLE RECEIVED: 8/8/83 ODOMETER READING: 61650

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	No
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	No	ANTI-SKID BRAKE	No
CLOCK	No	REAR WINDOW DEFROSTER	Yes
OTHER			

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? No, structurally optimized.
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? Yes*
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? Yes
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

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

VEHICLE MANUFACTURED BY: Volkswagenwerk AG

DATE OF MANUFACTURE: 3/76

GVWR: 2777 LBS.,

GAWR: FRONT 1609 LBS., REAR 1278 LBS.

*Upper right portion of grill is pushed in; chrome trim is missing from left rear quarter panel and from rocker panel on left side.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 27 psi; REAR 27 psi

TIRES ON VEHICLE (MFGR. & LINE, SIZE): Front - Sears Sport Radial 155SR13
Rear - Michelin ZX Radial 155SR13

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 3

IS SPARE TIRE "SPACE SAVER"? No

IS SPARE TIRE STANDARD EQUIPMENT? Yes

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

RIGHT FRONT 620 LBS. RIGHT REAR 350 LBS.

LEFT FRONT 650 LBS. LEFT REAR 370 LBS.

TOTAL FRONT WEIGHT 1270 LBS. (63.8 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 720 LBS. (36.2 % OF TOTAL VEHICLE WEIGHT)

TOTAL DELIVERED WEIGHT 1990 LBS.

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE: RF 26 1/16 ;LF 25 3/16 ;RR 25 3/8 ;LR 24 13/16

PRE-TEST ATTITUDE: RF 24 1/4 ;LF 23 7/8 ;RR 22 3/4 ;LR 22 7/16

POST-TEST ATTITUDE: RF 22 7/16 ;LF 24 3/4 ;RR 21 1/2 ;LR 24 1/8

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 162 LBS. CARGO:

RIGHT FRONT 670 LBS. RIGHT REAR 545 LBS.

LEFT FRONT 710 LBS. LEFT REAR 575 LBS.

TOTAL FRONT WEIGHT 1380 LBS. (55.2 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 1120 LBS. (44.8 % OF TOTAL VEHICLE WEIGHT)

TOTAL TEST WEIGHT 2500 LBS.

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 0 LBS.

TEST FLUID DATA

TEST FLUID TYPE: RED STODDARD SOLVENT #2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY*: 11.3 GALLONS

TEST VOLUME: 2.0 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 10.0 GALLONS

DETAILS OF FUEL SYSTEM: DNA

ELECTRIC FUEL PUMP: No

FUEL INJECTION: No

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING?

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

VEHICLE LOAD (UP TO CAPACITY): FRONT 27 psi; REAR 27 psi

RECOMMENDED TIRE SIZE: 155 SR 13 LOAD RANGE X B, C,

VEHICLE CAPACITY: TYPES OF SEATS: Front - Bucket
Rear - Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 2 FRONT

2 REAR

CARGO LOAD 142 LBS.

4 TOTAL

TOTAL 642 LBS.

*WITH ENTIRE FUEL SYSTEM FILLED WITH FUEL TANK THROUGH CARBURETOR BOWL.

TEST CONDITIONS

TEST NUMBER: 830830

DATE OF TEST: August 30, 1983

TIME OF TEST: 13:20

WIND VELOCITY: 3-6 234° SW

HUMIDITY: 40%

AMBIENT TEMPERATURE AT IMPACT AREA: 92° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 78° F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2500	2480
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	34.3	34.4
IMPACT POINT (INCHES)**	37.	37

DUMMIES

	<u>DRIVER</u>	<u>MIDDLE PASSENGER</u>	<u>RT. FRONT PASSENGER</u>	<u>LEFT REAR PASSENGER</u>	<u>RT. REAR PASSENGER</u>
TYPE:	SID			SID	
SERIAL NO.:	06			U02	
INSTRUMENTATION:					
HEAD ACCEL.:	Yes			Yes	
CHEST ACCEL.:	Yes (Upper/Lower)			Yes (Upper/Lower)	
FEMUR L.C.'S:	No			No	
OTHER:	Pelvis/Ribs			Pelvis/Ribs	

RESTRAINT SYSTEM: Both dummies were unrestrained

* As measured over final one foot of travel.

** As measured forward of the midpoint of the Volkswagen's wheelbase.

GENERAL TEST AND VEHICLE PARAMETER DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER # 06	PASSENGER # U02
Head	<u>Left Side Window</u>	<u>Left Side Header</u>
Chest	<u>Padding</u>	<u>Padding</u>
Abdomen	<u>Padding</u>	<u>Padding</u>
Left Knee	<u>Padding</u>	<u>Left Quarter Panel</u>
Right Knee	<u>Left Knee</u>	<u>Left Knee</u>

DOOR OPENING:

	LEFT	RIGHT
Front	<u>Tools Required</u>	<u>Easy</u>
Rear	<u>DNA</u>	<u>DNA</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>No</u>	<u>No</u>
Rear	<u>No</u>	<u>No</u>

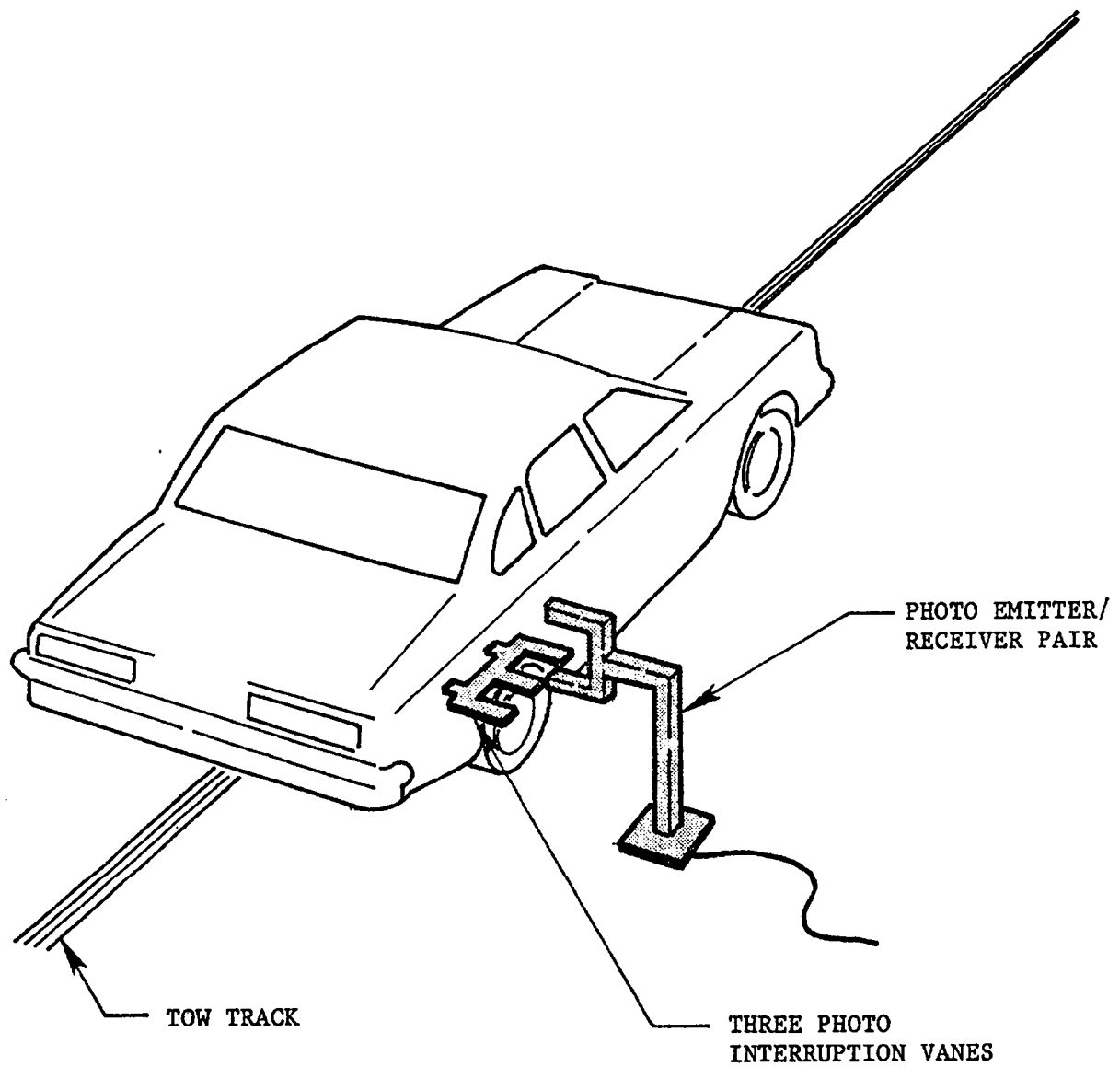
GLAZING DAMAGE:

Windshield cracked, driver window shattered.
left rear side window separated intact, no
backlight damage.

OTHER NOTABLE IMPACT EFFECTS:

Door sill deformed upward.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane is located two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned}\text{Test Weight} &= \text{Unloaded Delivered Weight} + \\ &\quad \text{Number of Dummies} \times 174 \text{ lbs.} + \\ &\quad \text{Cargo Weight} \\ &= 1990 + 2 \times 174 + 142 \text{ lbs.} \\ &= 2480 \text{ lbs.}\end{aligned}$$

To achieve test weight, 2 gallons of Stoddard Solvent was added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a Loadmeter Corporation Hiway Loadometer.

TEST ANOMALIES

The film in high speed camera #8, located in the front passenger window viewing driver kinematics, broke on start-up. The mechanical components of the camera were checked post-test, but no faults were found.

SECTION 3.0
DATA REQUIRED BY R&D

The following pages are included in this section:

1. Dummy temperature control and positioning data
2. Dummy kinematic summary
3. Vehicle crush data
4. Dummy and vehicle accelerometer location and data summary
5. High speed camera information
6. Transducer information

DUMMY TEMPERATURE CONTROL AND POSITIONING

The vehicle was kept inside the temperature controlled crash test building until approximately 2 hours prior to the test. Temperature inside the vehicle and ambient temperature at the crash area were recorded. Dummy temperature while outside the crash test building was maintained portably until approximately 1 minute prior to the test.

The following table summarizes the steps taken to position the instrumented, calibrated dummies in the test vehicle.

DUMMY PLACEMENT AND POSITIONING

SIDE IMPACT

DUMMY*

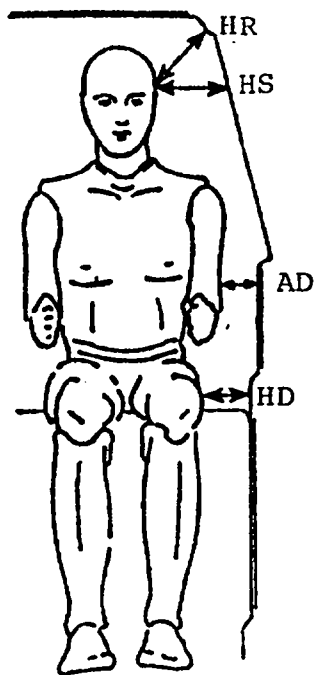
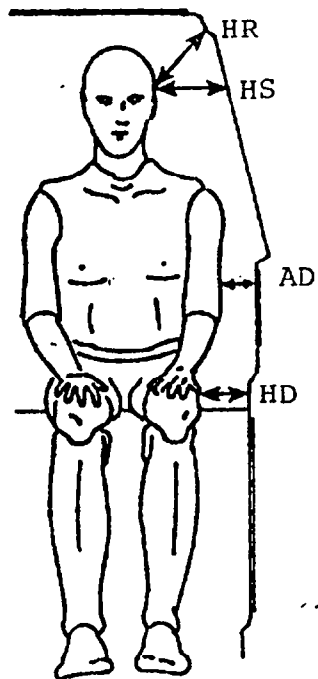
DRIVER DSP

REAR PASSENGER DSP

HEAD	Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.	Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.
UPPER TORSO	Placed against seat back. Midsagittal plane is vertical and centered on bucket seat.	Placed against seat back. Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.
LOWER TORSO	Midsagittal plane is vertical and centered on bucket seat.	Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.
UPPER LEGS (thighs or femurs)	Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.	Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.
KNEES	Knees set 14.5" apart between pivot bolt head outer surfaces. Outer surface of right knee pivot bolt is 8.6" from midsagittal plane of dummy. Outer surface of left knee pivot bolt is 5.9" from midsagittal plane of dummy.	Located so that planes defined by femur and tibia centerlines are as close as possible to vertical.
LOWER LEGS	Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.	Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.
RIGHT FOOT	Placed on undepressed accelerator pedal -- rearmost point of heel on floorplan in plane of pedal.	Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.
LEFT FOOT**	Placed on toeboard -- rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan. Centerline falls in vertical longitudinal plane.	Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.

*NOTE: THE SIDE IMPACT DUMMY DOES NOT INCLUDE ARMS.

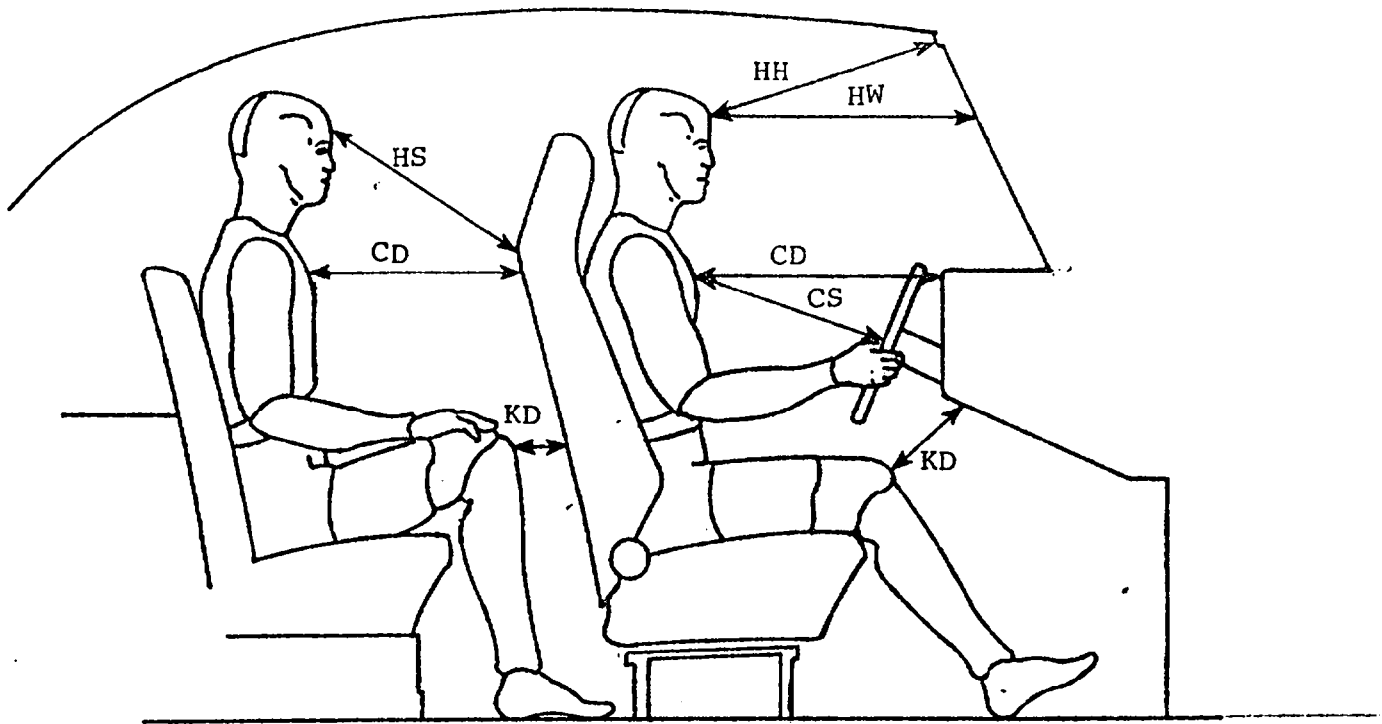
** Due to structural modifications, the left foot was turned inward.



	06 DRIVER	U02 PASSENGER
HR	5 1/8	7 3/16
HS	7 1/2	9 3/16
AD	0	7/8
HD	2 1/4	2 1/2

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



	06 DRIVER	U02 PASSENGER
HH	10 3/4	DNA
HW	18 3/4	DNA
HS	DNA	21 1/2
CD	20	18
CS	11 5/8	DNA
KDL	4 1/8	4
KDR	4 7/8	4 3/16

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the dummy's torso contacted the padded driver's door and the head contacted the driver's window and may have contacted the top of the deformable barrier although no clear physical evidence of barrier contact exists. The dummy rebounded from the driver's door and its buttocks passed through the passenger's side window. The dummy came to rest sitting upright across the front bucket seats facing the driver's side.

PASSENGER

During impact, the dummy's torso contacted the padded left rear occupant side wall and the head contacted the side window and side header. The dummy rebounded and struck the right rear occupant side wall with the left shoulder passing partially through the right rear passenger window. The dummy came to rest laying across the rear bench seat with its head laying on the right rear window sill.

VEHICLE EXTERIOR PROFILES AND STATIC CRUSH
ZERO DISTANCE AT PROJECTED IMPACT POINT*

LOCATION	HEIGHT (in)	6	0	6	12	18	24	30	36	42	48	54	60	66	72	78
		PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)														
Axle Height	8.6	X	X	18.1	18.8	18.8	18.8	18.9	19.0	19.0	19.1	19.1	19.1	19.3	X	X
H-Point	16.3	X	X	16.8	16.7	16.7	16.6	16.7	16.8	16.8	17.0	17.1	17.3	X	X	X
Mid Door	22.7	15.8	16.7	16.6	16.6	16.6	16.5	16.5	16.5	16.5	16.6	16.7	16.8	16.8	17.1	X
Window Sill	33.3	X	18.8	18.8	18.5	18.3	18.1	18.0	18.0	18.0	18.0	18.0	18.2	18.1	18.2	18.2
Window Top	51.9	X	X	X	X	X	26.5	26.1	26.0	25.9	25.7	25.8	25.8	25.9	26.3	26.7

POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)

Axle Height	8.6	X	X	21.3	23.0	23.1	23.4	24.0	22.9	22.5	22.0	21.6	20.7	20.6	X	X
H-Point	16.3	X	X	23.5	25.0	26.9	27.8	27.9	27.0	25.0	23.0	22.4	20.4	X	X	X
Mid Door	22.7	21.3	22.4	21.9	24.7	26.5	27.8	27.4	26.3	24.5	23.0	22.0	20.1	19.1	18.5	X
Window Sill	33.3	X	21.2	23.4	25.6	27.7	27.2	25.3	23.1	21.8	22.9	21.0	20.4	20.1	19.8	20.3
Window Top	51.9	X	X	X	X	X	28.6	28.0	27.7	27.5	27.4	27.4	27.4	27.4	27.5	27.8

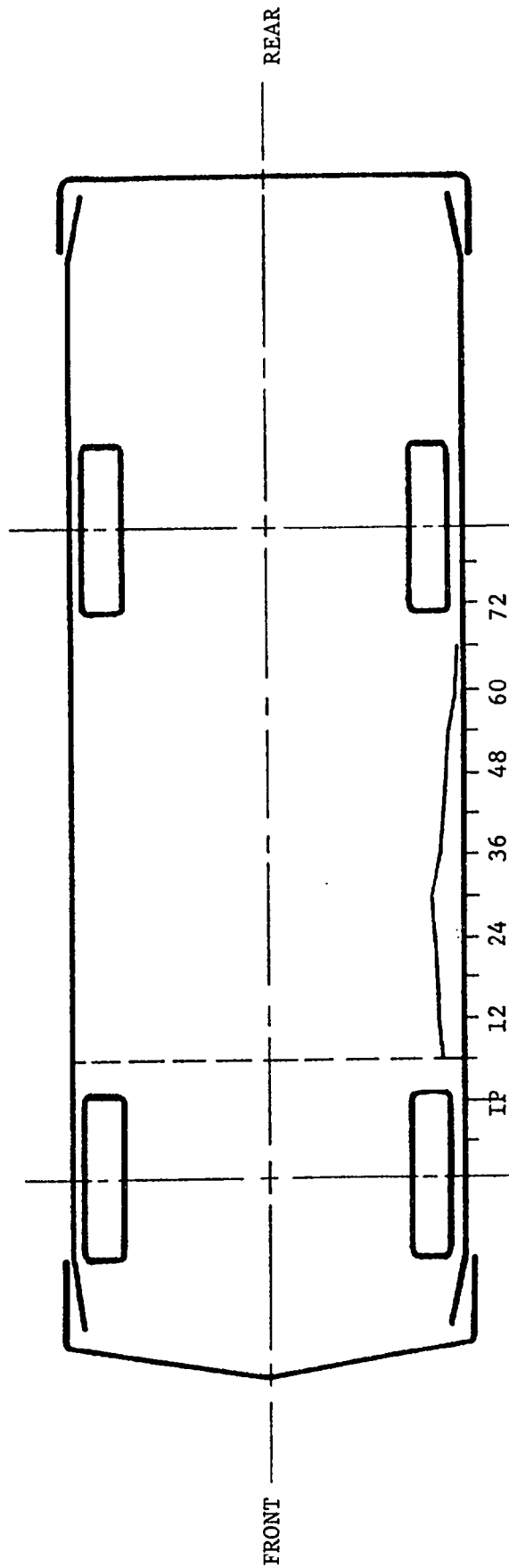
STATIC CRUSH (IN)

Axle Height	8.6	X	X	3.2	4.2	4.3	4.6	5.1	3.9	3.5	2.9	2.5	1.6	1.3	X	X
H-Point	16.3	X	X	6.7	8.3	10.2	11.2	11.2	10.2	8.2	6.0	5.3	3.1	X	X	X
Mid Door	22.7	5.5	5.7	5.3	8.1	9.9	11.3	10.9	9.8	8.0	6.4	5.3	3.3	2.3	1.4	X
Window Sill	33.3	X	2.4	4.6	7.1	9.4	9.1	7.3	5.1	3.8	4.9	3.0	2.2	2.0	1.6	2.1
Window Top	51.9	X	X	X	X	X	2.1	1.9	1.7	1.6	1.7	1.6	1.6	1.5	1.2	1.1

* Projected impact point is 37 inches forward of driver's side wheelbase midpoint. Column readings are front to rear from left to right.

** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

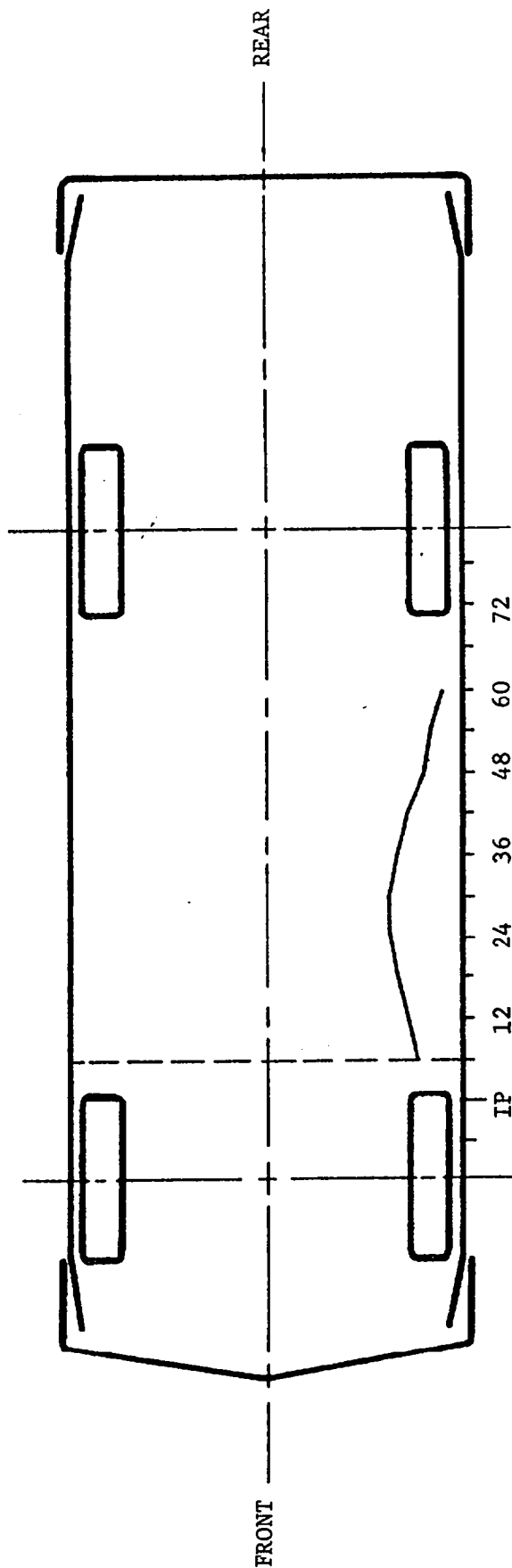
VEHICLE EXTERIOR STATIC CRUSH PROFILE



Profile level equals axle height.

IP equals projected impact point.

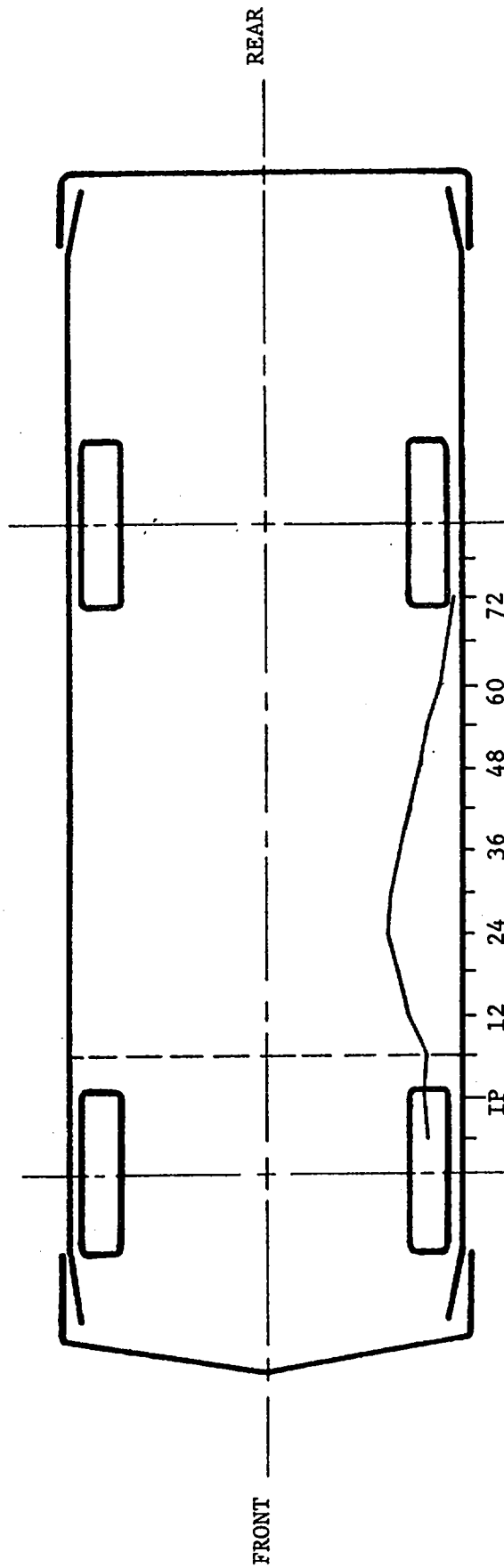
VEHICLE EXTERIOR STATIC CRUSH PROFILE



Profile level equals H-Point height.

IP equals projected impact point.

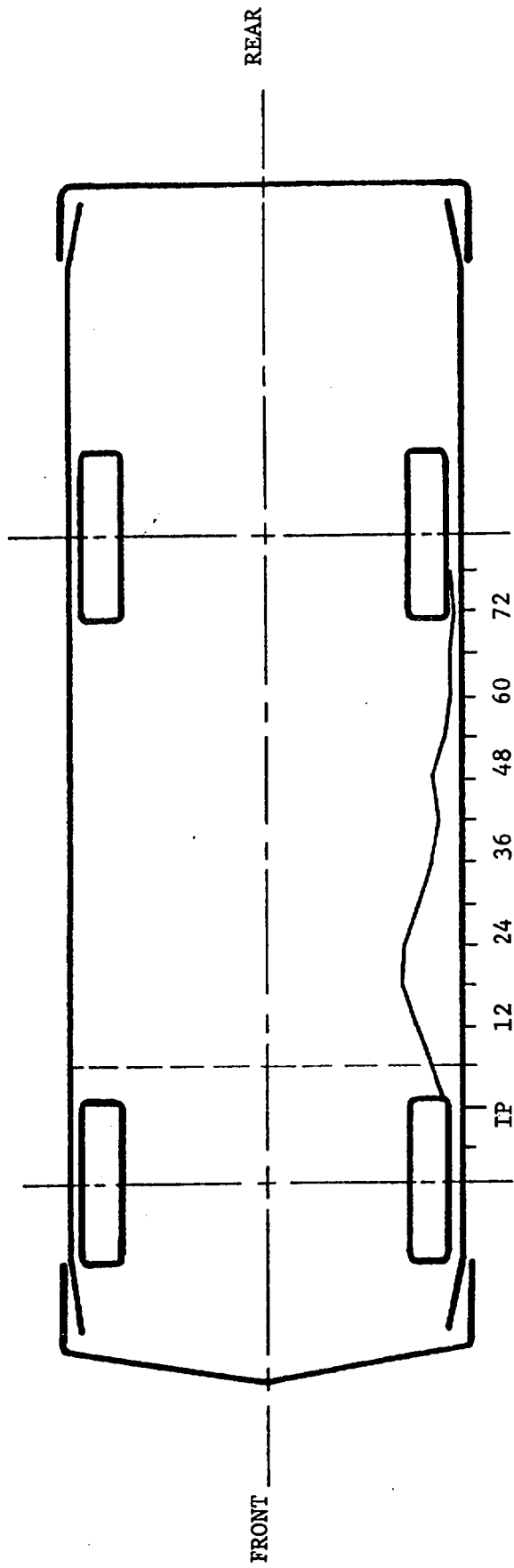
VEHICLE EXTERIOR STATIC CRUSH PROFILE



Profile level equals mid-door height.

IP equals projected impact point.

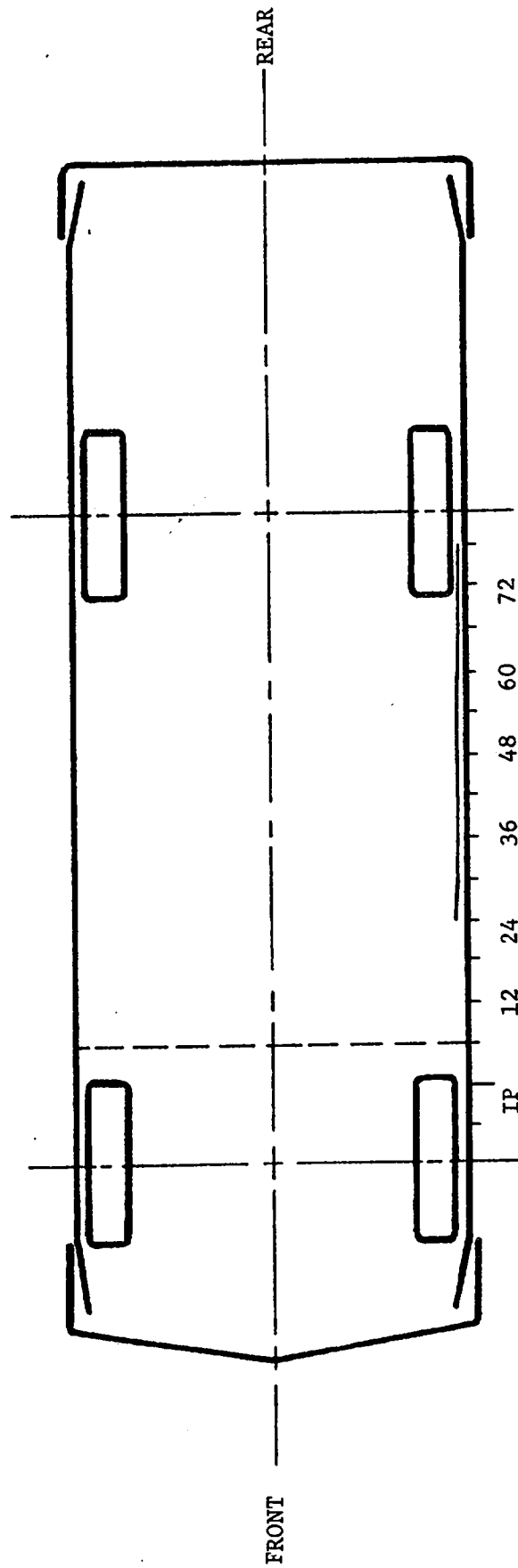
VEHICLE EXTERIOR STATIC CRUSH PROFILE



Profile level equals window sill height.

IP equals projected impact point.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



Profile level equals window top height.

IP equals projected impact point.

SIDE IMPACT DUMMY DATA SUMMARY

	DRIVER DUMMY				PASSENGER DUMMY				
	POSITIVE		NEGATIVE		POSITIVE		NEGATIVE		
	DIRECTION*		DIRECTION**		DIRECTION*		DIRECTION**		
	MAX	TIME	MAX	TIME	MAX	TIME	MAX	TIME	
	(g)	(msec)	(g)	(msec)	(g)	(msec)	(g)	(msec)	
HEAD ACCELERATION									
LONGITUDINAL	11.79	161.88	63.93	114.88	6.77	310.50	25.37	82.38	
LATERAL	38.16	114.88	11.15	190.13	68.03	81.38	9.73	167.13	
VERTICAL	5.55	47.63	47.43	90.75	29.93	115.25	18.99	83.88	
RESULTANT		78.49 @	114.88			72.85 @	81.38		
HIC	309.12	from 70.75 to 119.38				238.26	from 77.50 to 86.13		
CHEST ACCELERATION									
UPPER SPINE									
LONGITUDINAL	10.66	93.75	13.31	79.38	4.76	340.00	16.91	96.88	
LATERAL (P)***	63.55	72.50	9.67	91.87	25.95	101.25	8.10	338.75	
LATERAL (R)***	64.60	72.50	9.18	91.25	26.36	101.88	7.54	338.75	
VERTICAL	3.44	48.13	10.60	70.00	6.32	77.50	7.05	114.37	
RESULTANT (P)		65.23 @	72.50			30.33 @	100.63		
RESULTANT (R)		66.25 @	72.50			30.62 @	100.63		
DELTA V (MPH)****		20.6 @	82.50 (P)			18.6 @	123.75 (P)		
		20.1 @	83.13 (R)			18.8 @	123.13 (R)		
LOWER SPINE									
LONGITUDINAL	33.76	59.38	16.50	85.00	6.20	218.13	22.85	101.25	
LATERAL (P)	58.61	61.87	23.15	84.38	32.56	100.63	5.64	119.38	
LATERAL (R)	58.81	63.13	22.92	85.00	32.92	100.63	5.42	119.38	
VERTICAL	8.64	65.00	3.39	100.63	9.70	95.63	4.37	135.62	
RESULTANT (P)		64.52 @	60.00			40.02 @	100.63		
RESULTANT (R)		60.13 @	60.62			40.31 @	100.63		
DELTA V (MPH)		27.9 @	77.50 (P)			21.7 @	113.13 (P)		
		27.7 @	77.50 (R)			22.2 @	113.13 (R)		
LEFT UPPER RIB									
LATERAL (P)	54.66	66.87	12.64	94.38	42.42	160.00	14.90	165.00	
LATERAL (R)	53.69	66.25	15.19	94.38	42.88	160.00	16.44	165.62	
DELTA V (MPH)		23.2 @	91.25 (P)			22.7 @	130.00 (P)		
		23.2 @	91.88 (R)			21.8 @	127.50 (R)		
LEFT LOWER RIB									
LATERAL (P)	60.17	56.87	25.67	89.38	35.33	160.00	17.94	165.62	
LATERAL (R)	61.90	56.87	23.60	89.38	35.34	160.00	18.59	165.00	
DELTA V (MPH)		24.3 @	86.25 (P)			22.3 @	121.88 (P)		
		24.9 @	85.63 (R)			20.4 @	121.88 (R)		
PELVIS ACCELERATION									
LONGITUDINAL	7.29	76.00	16.22	65.63	4.91	132.50	25.97	91.75	
LATERAL	64.42	53.38	8.62	102.50	57.57	80.75°	5.06	206.88	
VERTICAL	10.95	60.88	6.97	54.75	11.38	101.38	4.92	132.13	
RESULTANT		64.82 @	53.63			59.36 @	80.63°		
DELTA V (MPH)		27.3 @	84.88			22.7 @	128.25°		

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	<u>DRIVER DUMMY</u>				<u>PASSENGER DUMMY</u>			
	<u>POSITIVE</u>		<u>NEGATIVE</u>		<u>POSITIVE</u>		<u>NEGATIVE</u>	
	<u>DIRECTION*</u>		<u>DIRECTION**</u>		<u>DIRECTION*</u>		<u>DIRECTION**</u>	
	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>
	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>
RIB DEFLECTION †	0.06	277.88	1.90	132.13	0.10	164.25	1.90	116.88

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

*** (P) = Primary Sensor, (R) = Redundant Sensor

**** For dummy channels, Delta V is the velocity change at the approximate time of separation from the contact area.

† Compression: Negative

o The CTM has judged that intermittent rattling may have occurred in this channel and therefore the peak values reported are questionable as are applicable resultants and Delta V's.

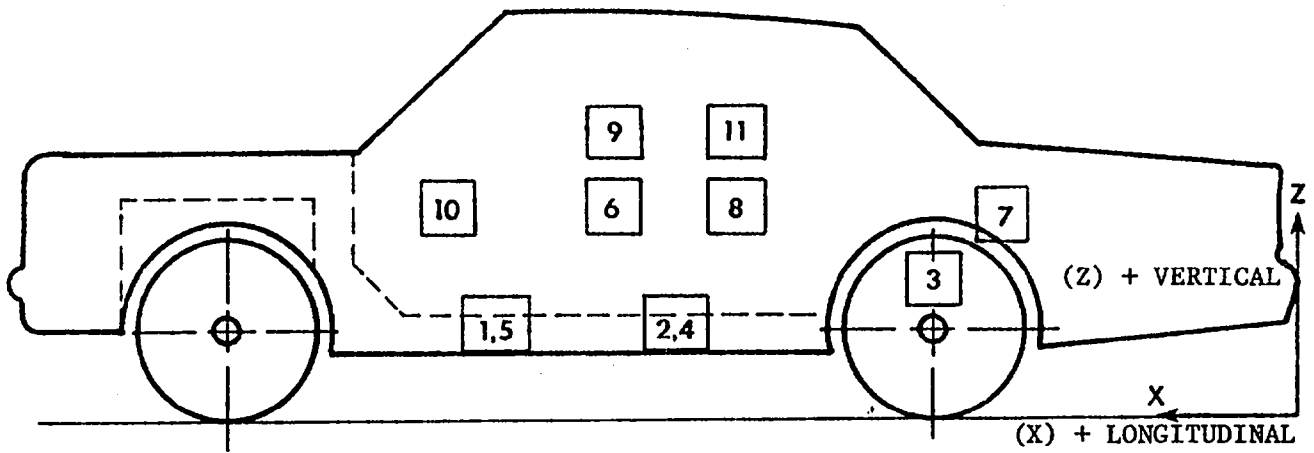
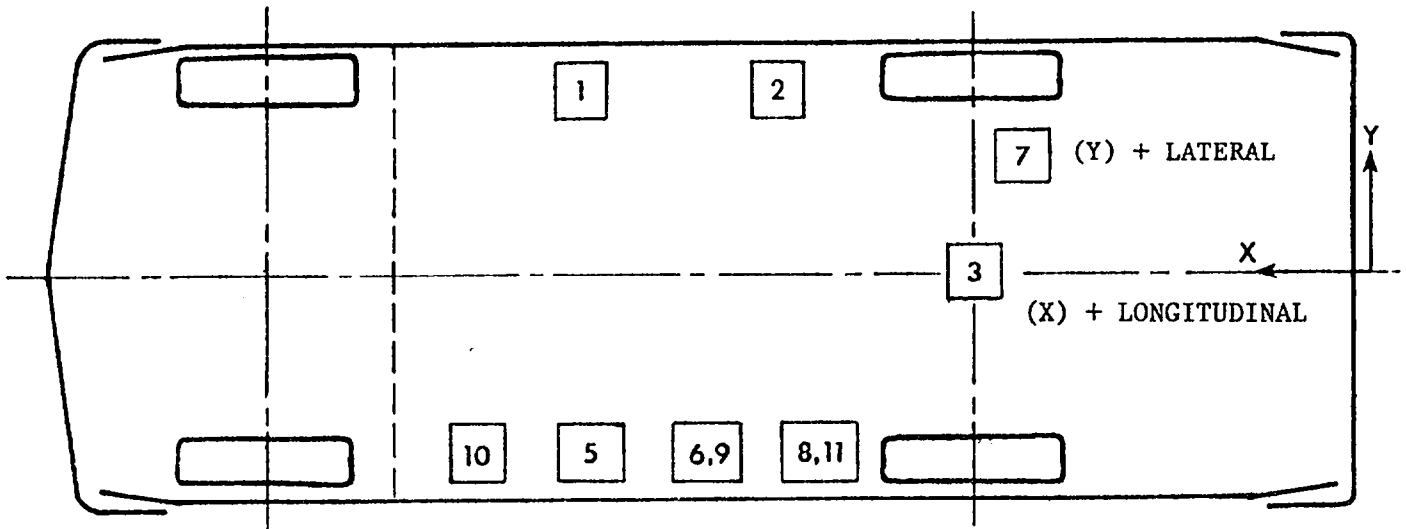
VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT SILL AT FRONT SEAT (LONGITUDINAL)	83.7	23.6	9.8	1.05	33.38	6.92	16.88
	(LATERAL)				10.64	62.50	2.01	155.88
	(VERTICAL)				3.45	86.00	2.92	54.75
	(RESULTANT)					11.51 @ 15.63		
2	RIGHT SILL AT REAR SEAT (LONGITUDINAL)	61.4	23.6	8.1	1.69	33.38	6.77	17.00
	(LATERAL)				13.31	62.38	2.44	137.35
	(VERTICAL)				2.75	62.63	4.18	39.63
	(RESULTANT)					13.72 @ 62.38		
3	REAR DECK OVER AXLE (LONGITUDINAL)	31.7	0.0	7.4	2.42	163.88	7.72	75.25
	(LATERAL)				14.68	71.50	3.45	120.13
	(VERTICAL)				3.53	164.25	5.22	92.13
	(RESULTANT)					15.99 @ 74.50		
4	LEFT SILL AT REAR SEAT (LATERAL)	61.1	-23.7	8.2	15.56	62.13	2.10	136.50
5	LEFT SILL AT FRONT SEAT (LATERAL)	83.6	-23.7	10.1	19.00	65.63	20.98	72.13
6	LEFT FRONT DOOR CENTERLINE (LATERAL)	81.0	-25.9	24.4	87.13	34.63	37.78	51.88
7	RIGHT REAR COMPARTMENT (LONGITUDINAL)	31.6	15.5	14.2	1.94	33.25	7.16	17.00
8	MIDREAR OF LEFT FRONT DOOR (LATERAL)	60.6	-25.9	25.1	76.42	61.13	23.72	83.75
9	UPPER LEFT FRONT DOOR CENTERLINE (LATERAL)	82.0	-25.6	33.5	124.96	42.38	150.41	52.38
10	MIDFRONT OF LEFT FRONT DOOR (LATERAL)	99.6	-25.9	23.0	63.44	13.25	51.85	38.25
11	UPPER REAR OF LEFT FRONT DOOR (LATERAL)	70.8	-25.6	33.9	67.38	61.13	45.05	51.25

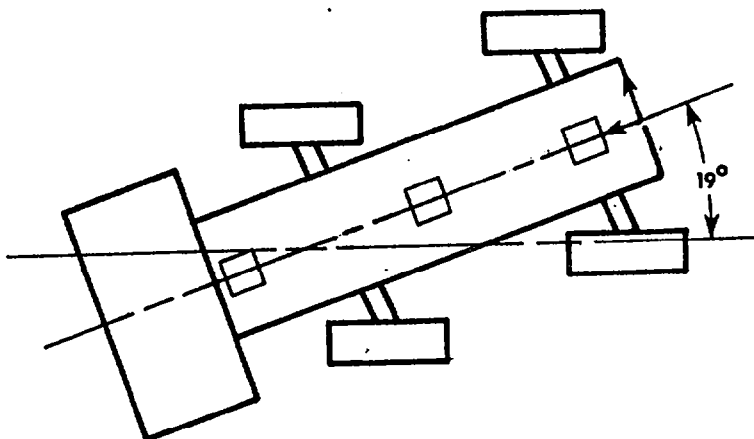
* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right),
Z - Ground Level (+ Up)

All measurements of accelerometer locations in inches.

VEHICLE ACCELEROMETER LOCATIONS



MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY



NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	CENTER OF GRAVITY	74.5	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -15.1 \text{ mph @ } 135.00 \text{ msec}$			0.55	214.88	10.98	63.50
	(LATERAL)	$\Delta V = 0.4 \text{ mph @ } 135.00 \text{ msec}$			1.56	102.88	2.06	39.75
	(VERTICAL)				6.91	81.63	5.59	51.38
	(RESULTANT)					12.73 @ 63.38		
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	$\Delta V = -14.4 \text{ mph @ } 135.00 \text{ msec}$			0.55	235.50	10.67	64.13
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -14.6 \text{ mph @ } 135.00 \text{ msec}$			0.69	289.38	10.44	63.25

* Reference: X - Rear Most Point of Frame (+ To Forward), Y - Barrier Centerline (+ To Right), Z - Ground Level (+ To Up)

All measurements of accelerometer locations in inches.

HIGH SPEED CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Overhead	Photosonics 1B	8	775	Vehicle Dynamics
2	Overhead	Photosonics 1B	25	812	Close-up of Impact Point
3	Onboard MDB	Stalex	25	500	Close-up of Impact Point
4	Onboard MDB	Photosonics 1B	13	780	Driver Kinematics
5	Ground Level - Right Side	Hycam	25	770	Overall View
6	Ground Level - Left Side	Photosonics 1B	17	825	Overall View
7	Onboard Vehicle	Photosonics 1B	8	822	Driver Kinematics - Front View
8	Onboard Vehicle	Photosonics 1B	8		Driver Kinematics
9	Onboard Vehicle	Photosonics 1B	8	795	Passenger Kinematics

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 AND END OF FILM.

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	-57"	23'
2	0	-57"	23'
5	+26'4"	+60'	45"
6	-19'7"	-11'3"	45"

Origin of Coordinate System is Point of Impact

+X = Forward with Respect to Striking Vehicle's Velocity Vector
+Y = Rightward with Respect to Striking Vehicle's Velocity Vector
+Z = Upward with Respect to Striking Vehicle's Velocity Vector

NON-GOVERNMENT FURNISHED TRANSDUCER INFORMATION

PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NUMBER	SERIAL NUMBER	MFGR.	DATE OF LAST CALIBRATION	SENSITIVITY	DESIRED FULL SCALE (ENGR. UNITS)
BCGXG	Accel	4-202-0001	18845	Bell Howell	8/9/83	.236 MV/G	50 G
BCGYG	Accel	4-202-0001	18858	Bell Howell	8/9/83	.2385 MV/G	50 G
BCGZG	Accel	4-202-0001	18857	Bell Howell	8/9/83	.2385 MV/G	50 G
BFCXG	Accel	4-202-0001	18240	Bell Howell	8/9/83	.2385 MV/G	50 G
BRCXG	Accel	4-202-0001	19022	Bell Howell	8/9/83	.221 MV/G	50 G

All dummy and struck vehicle accelerometers were Government Furnished Equipment and were Endevco 2264 Accelerometers.

APPENDIX A
PHOTOGRAPHS

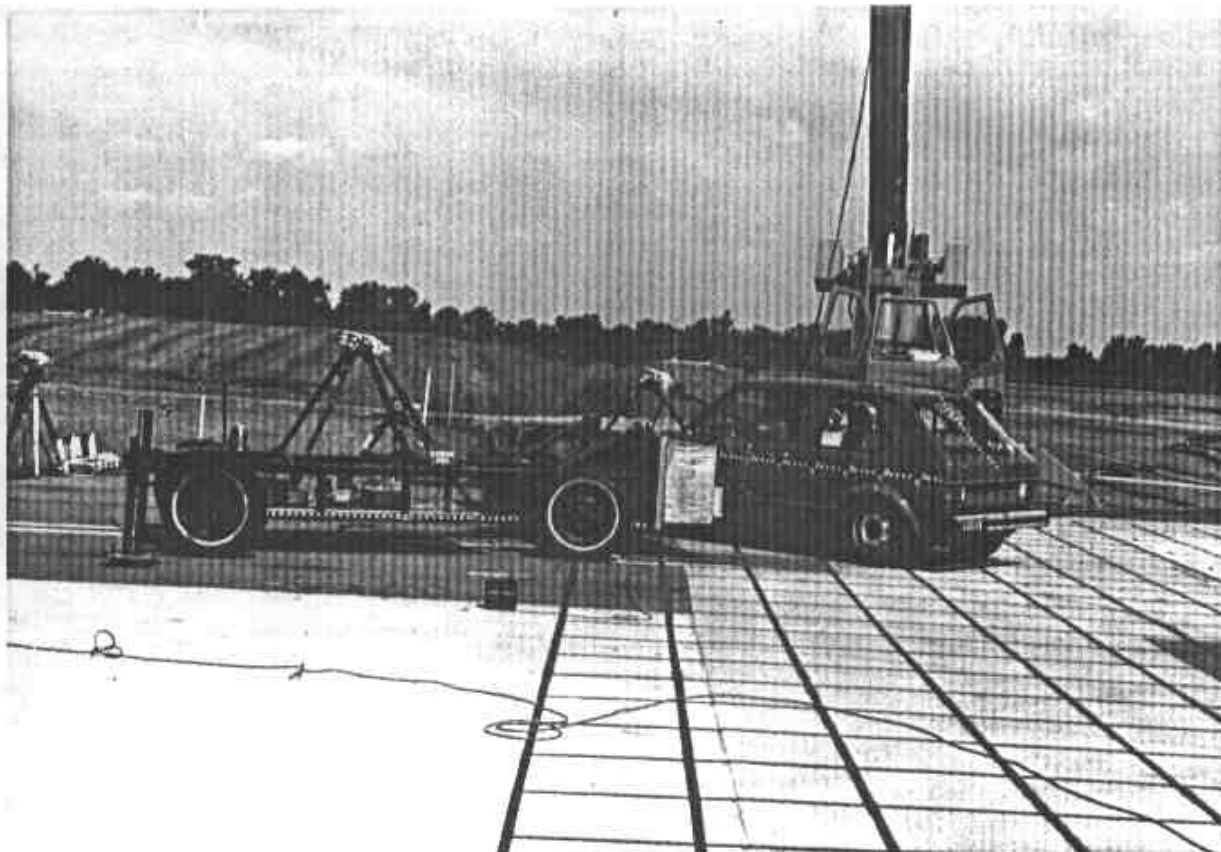


Figure A-1. PRE-TEST OVERALL - VIEW 1



Figure A-2. PRE-TEST OVERALL - VIEW 2
A-2

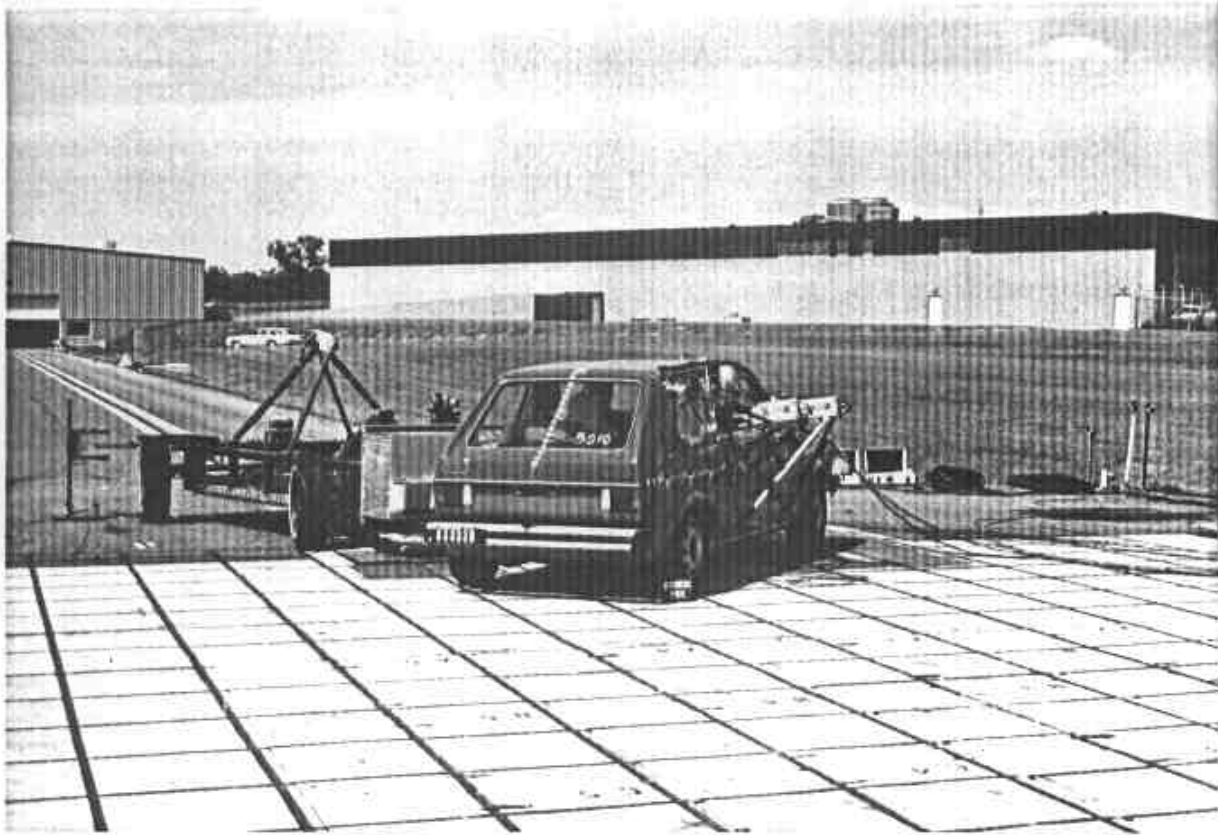


Figure A-3. PRE-TEST OVERALL - VIEW 3



Figure A-4. PRE-TEST OVERALL - VIEW 4
A-3



Figure A-5. PRE-TEST CLOSEUP - VIEW 1

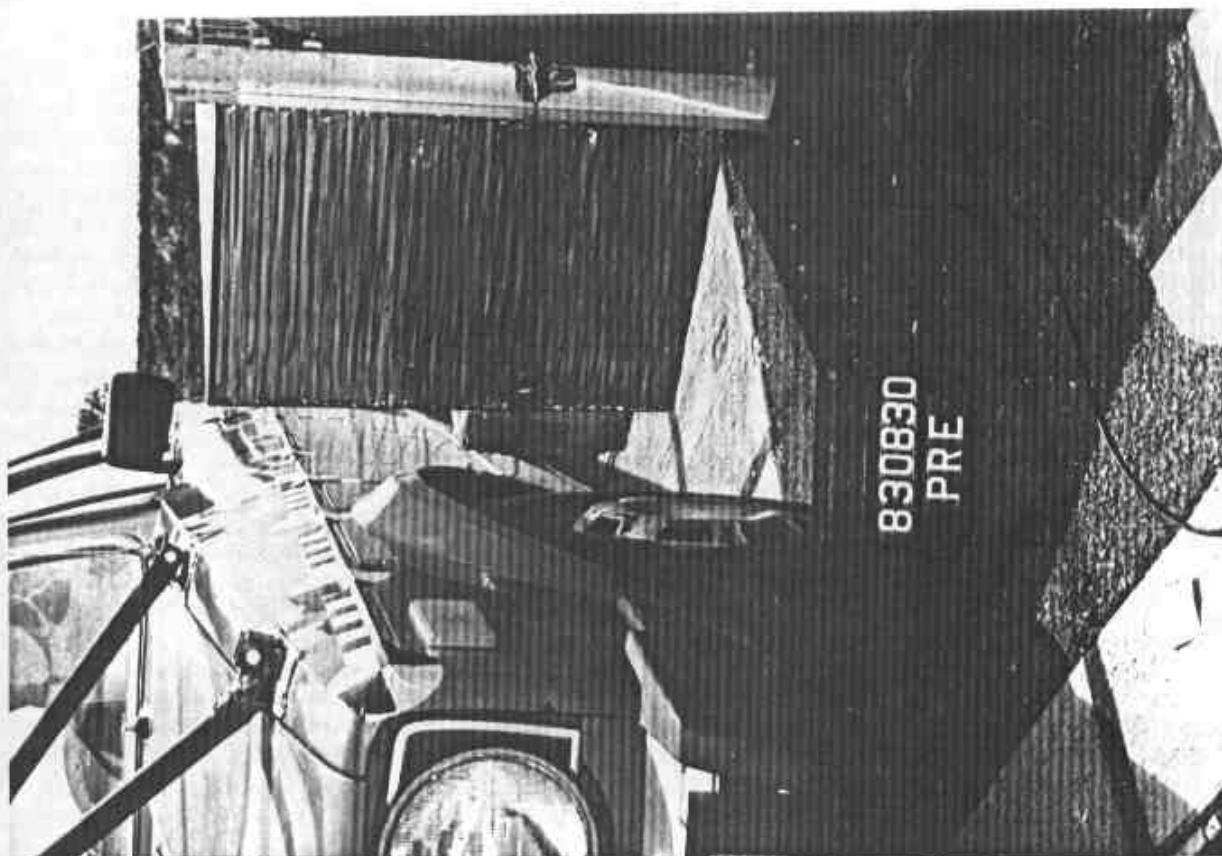


Figure A-6. PRE-TEST CLOSEUP - VIEW 2



Figure A-7. PRE-TEST CLOSEUP - VIEW 3

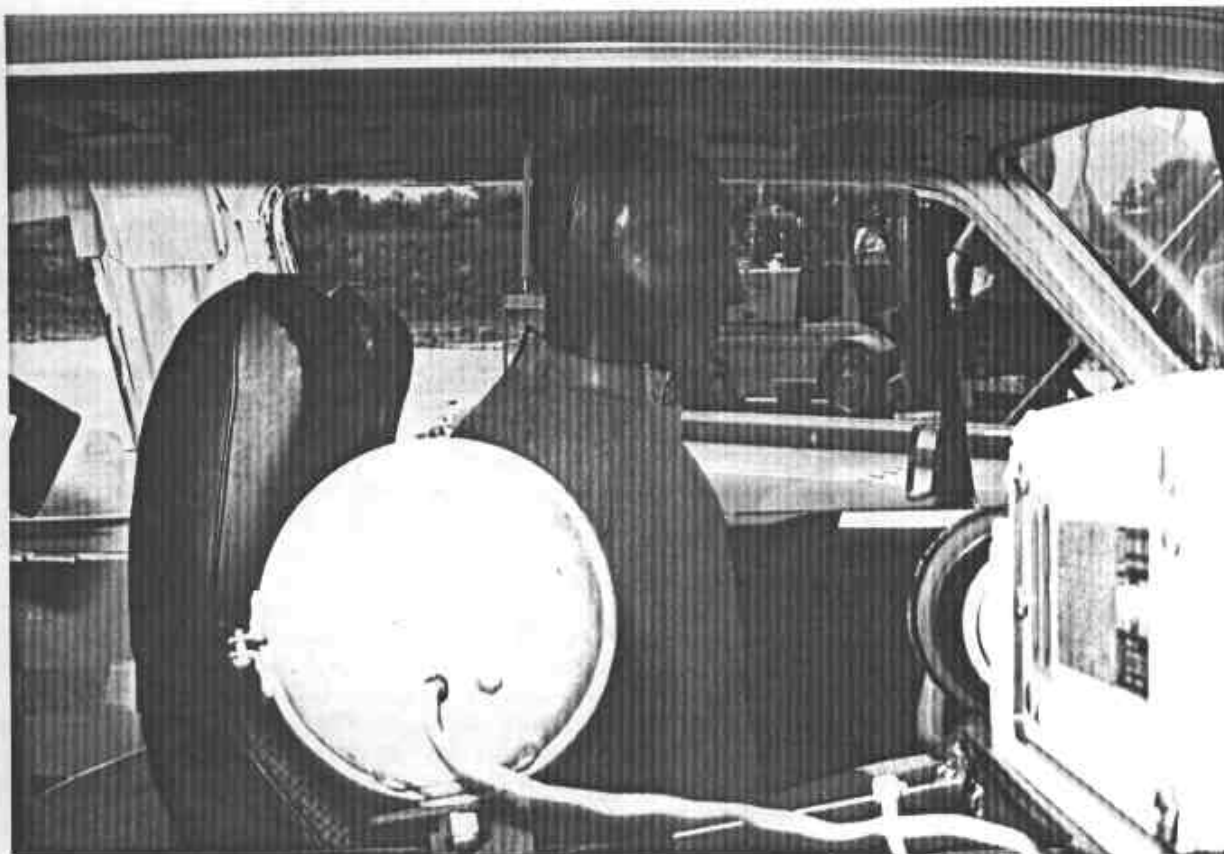


Figure A-8. PRE-TEST DRIVER DUMMY - VIEW 1



Figure A-9. PRE-TEST DRIVER DUMMY - VIEW 2



Figure A-10. PRE-TEST PASSENGER DUMMY - VIEW 1
A-6

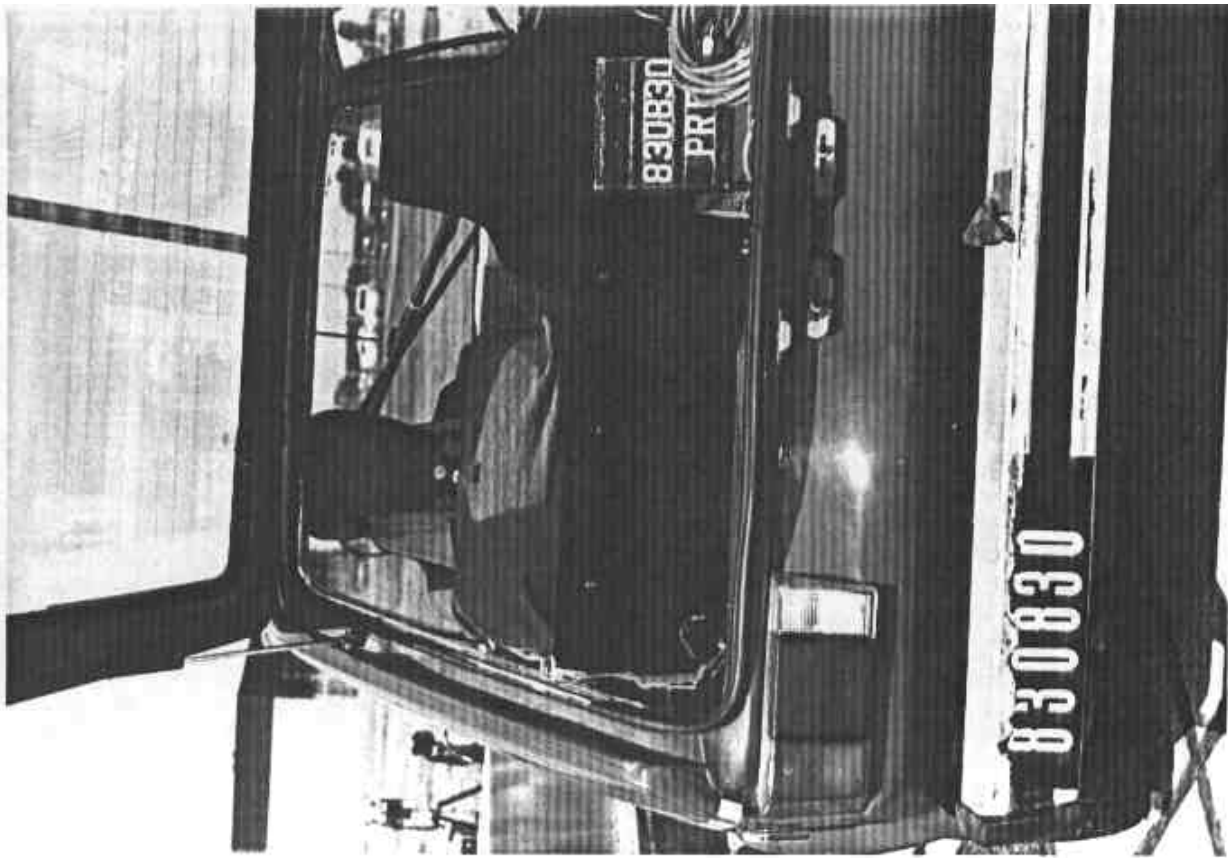


Figure A-11. PRE-TEST PASSENGER DUMMY - VIEW 2



Figure A-12. CRASH EVENT PHOTOGRAPH
A-7

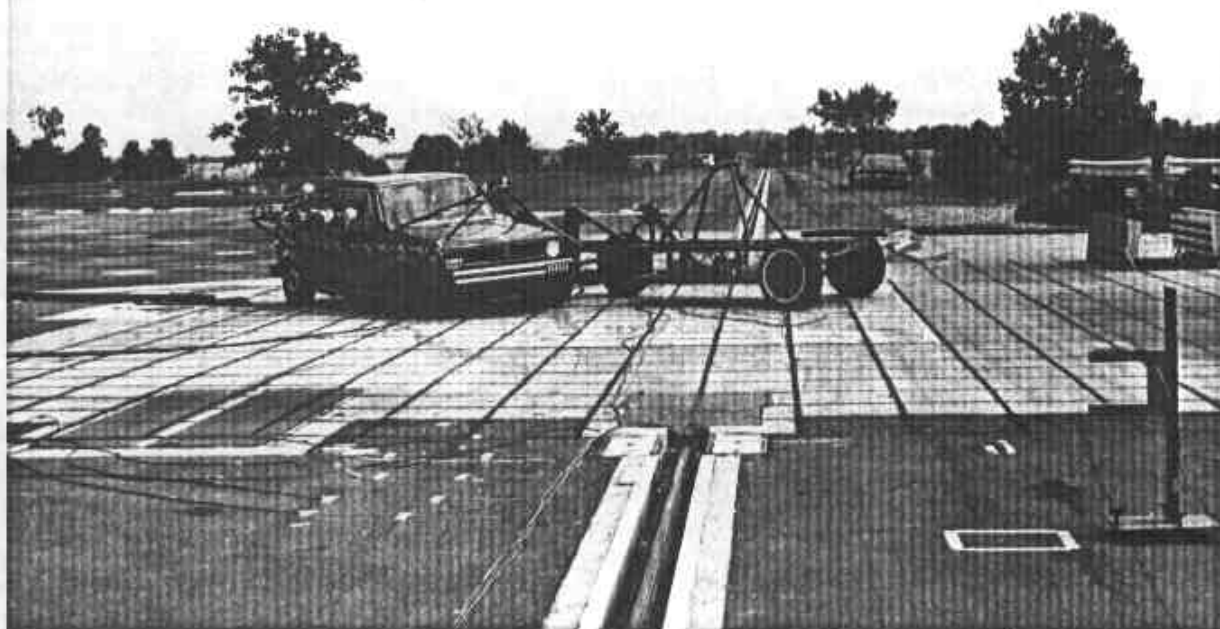


Figure A-13. POST-TEST OVERALL - VIEW 1

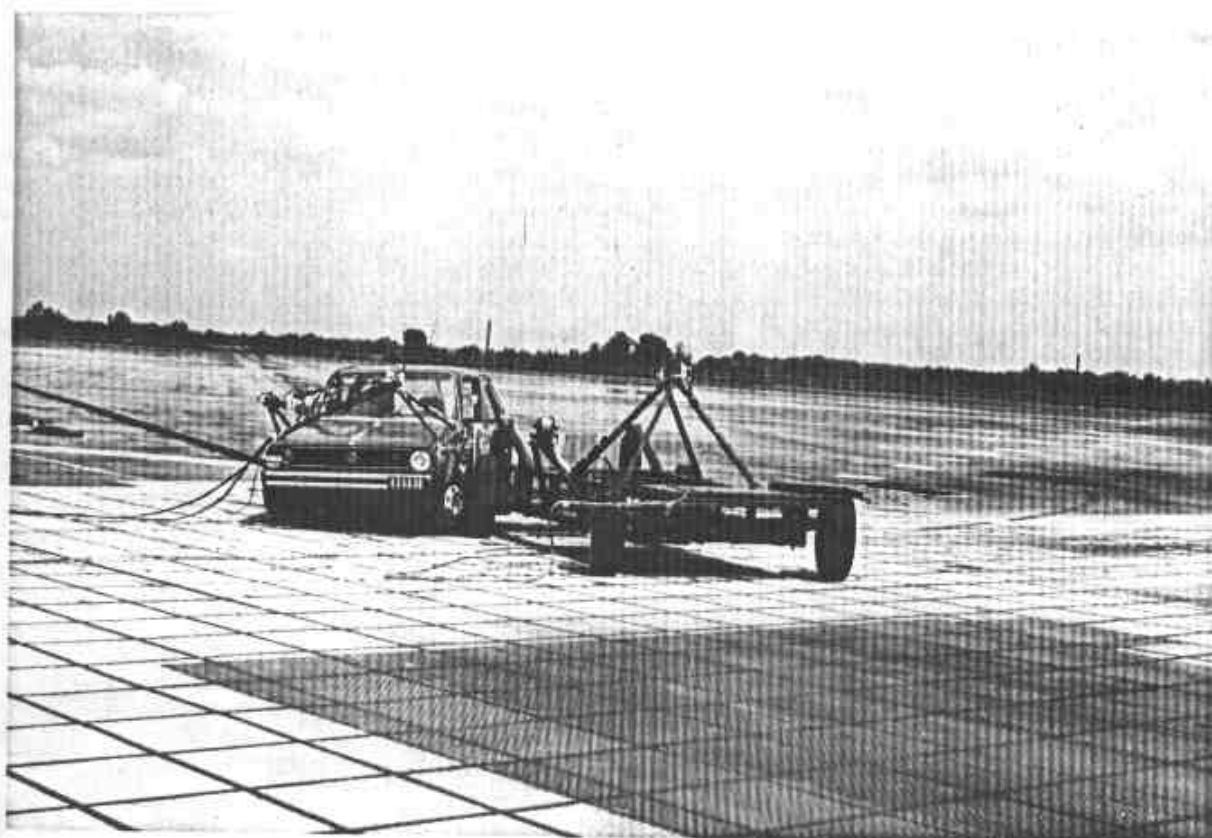


Figure A-14. POST-TEST OVERALL - VIEW 2
A-8

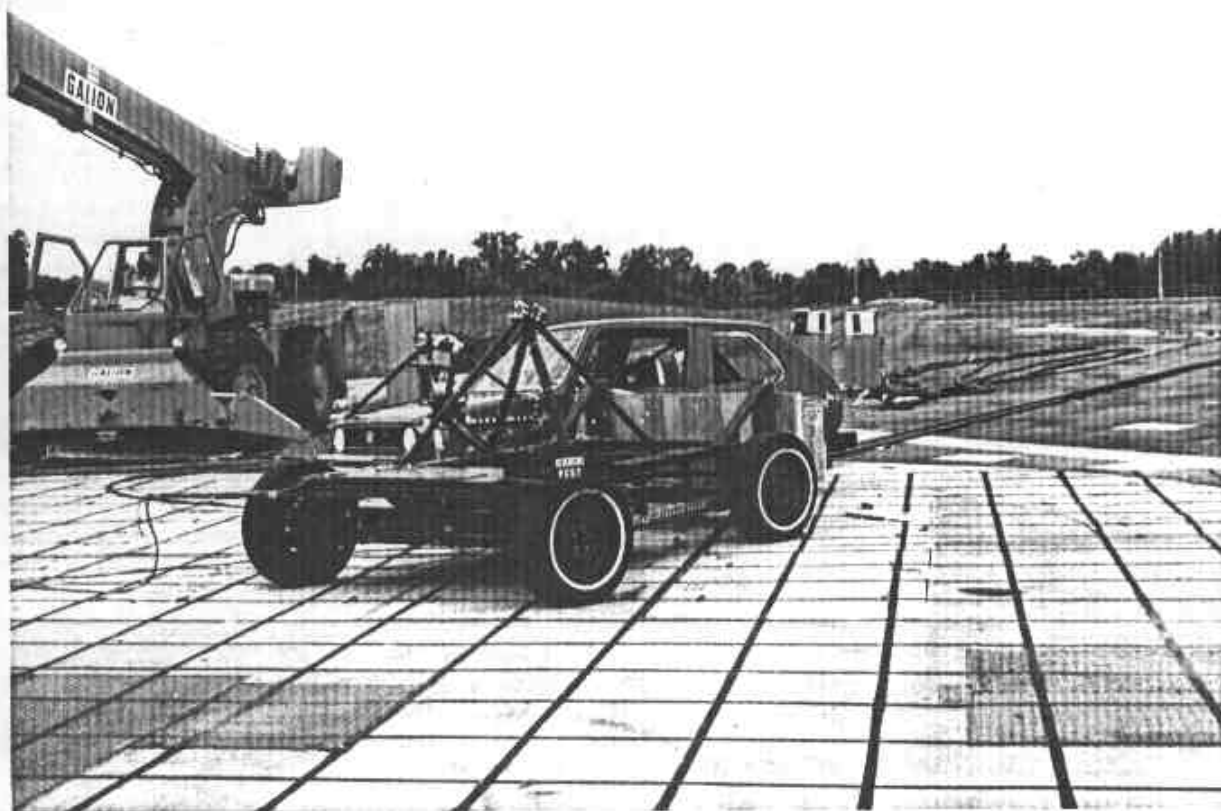


Figure A-15. POST-TEST OVERALL - VIEW 3



Figure A-16. POST-TEST OVERALL - VIEW 4



Figure A-17. POST-TEST CLOSEUP - VIEW 1



Figure A-18. POST-TEST CLOSEUP - VIEW 2

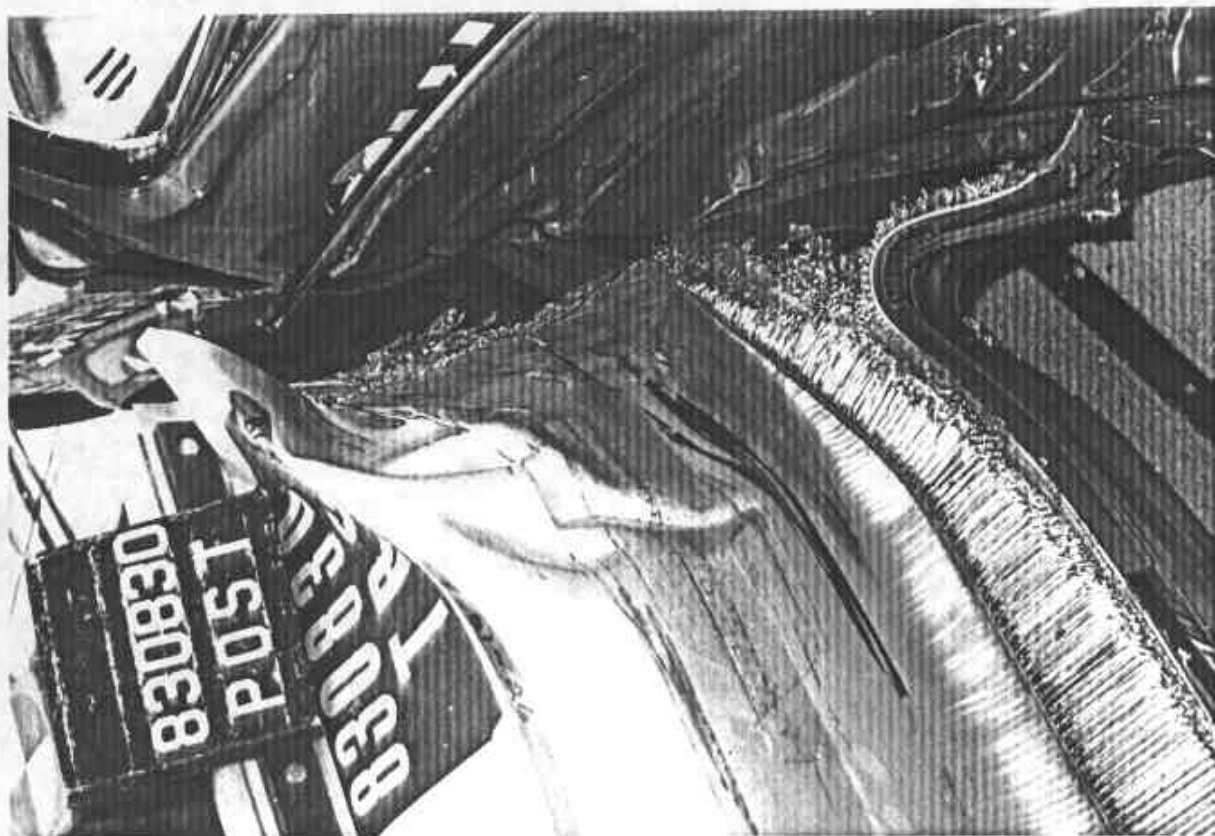


Figure A-19. POST-TEST CLOSEUP - VIEW 3



Figure A-20. POST-TEST DRIVER DUMMY - VIEW 1



Figure A-21. POST-TEST DRIVER DUMMY - VIEW 2

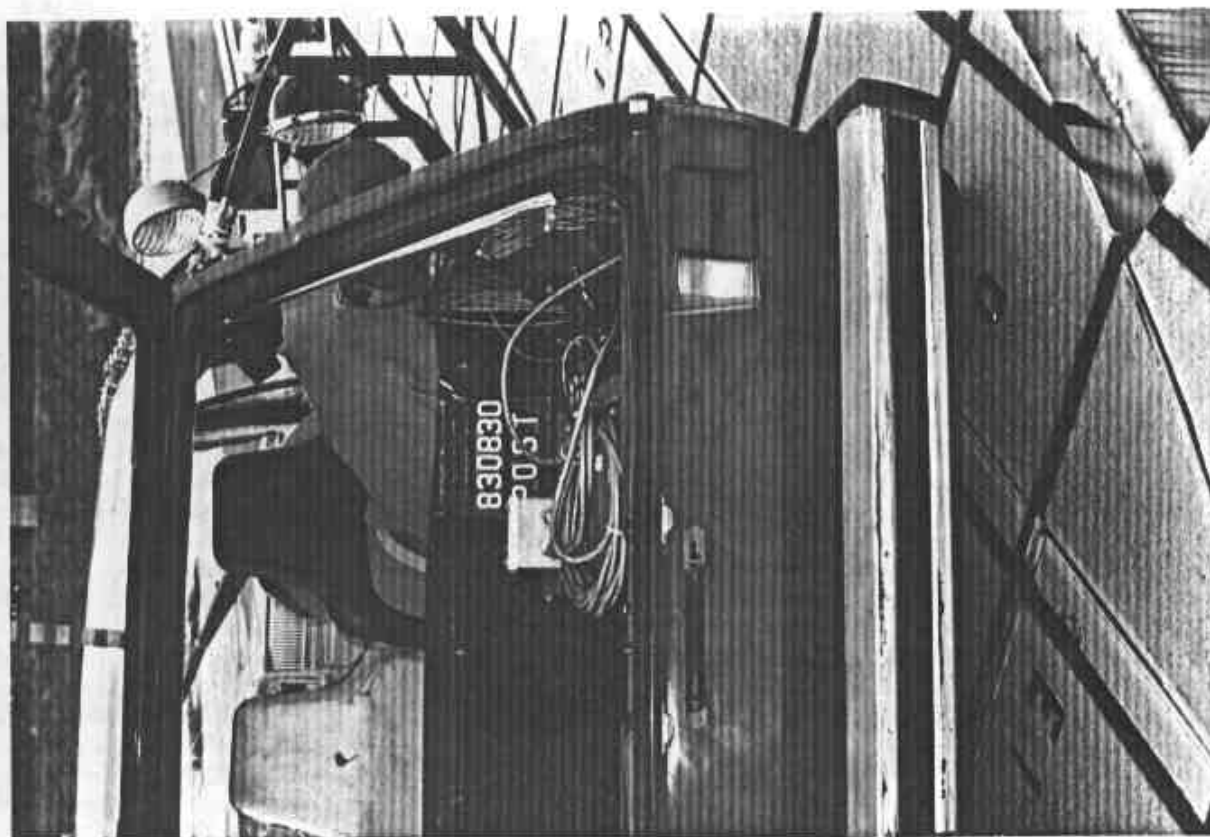


Figure A-22. POST-TEST PASSENGER DUMMY - VIEW 1

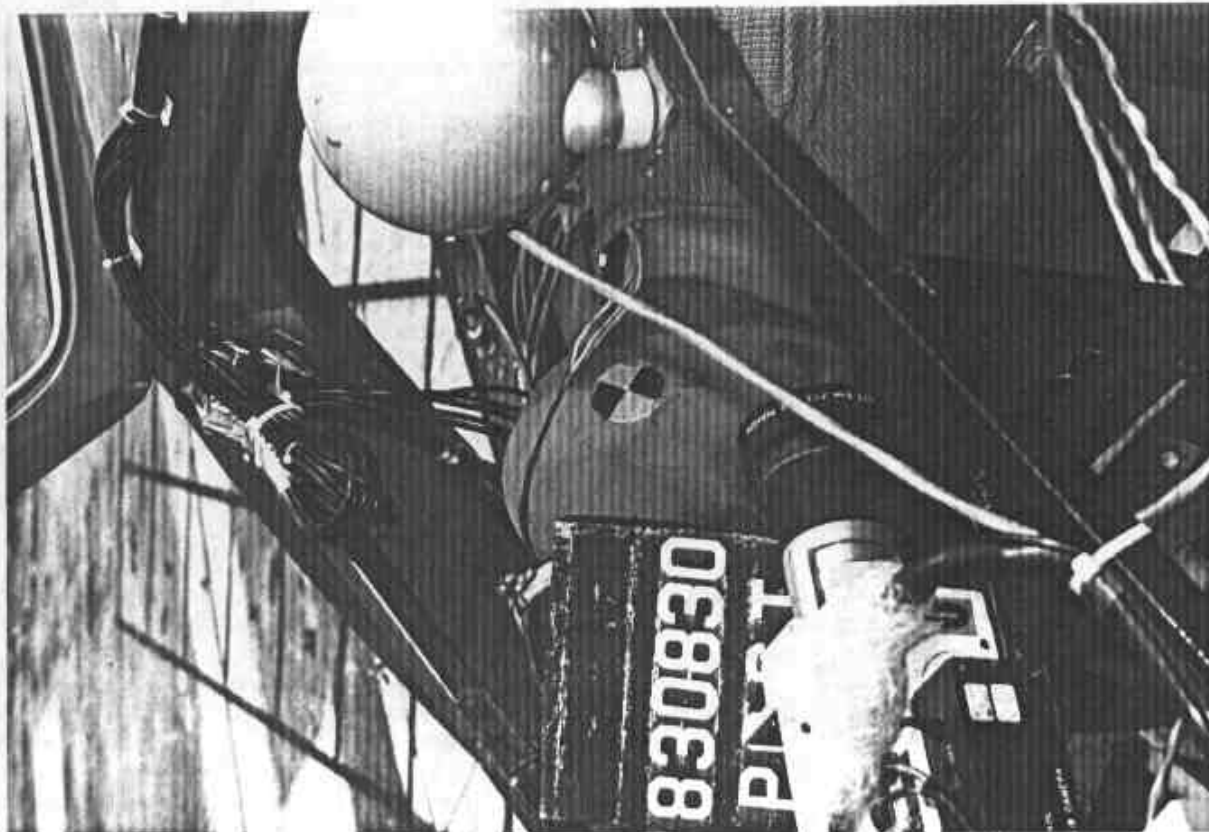


Figure A-23. POST-TEST PASSENGER DUMMY - VIEW 2

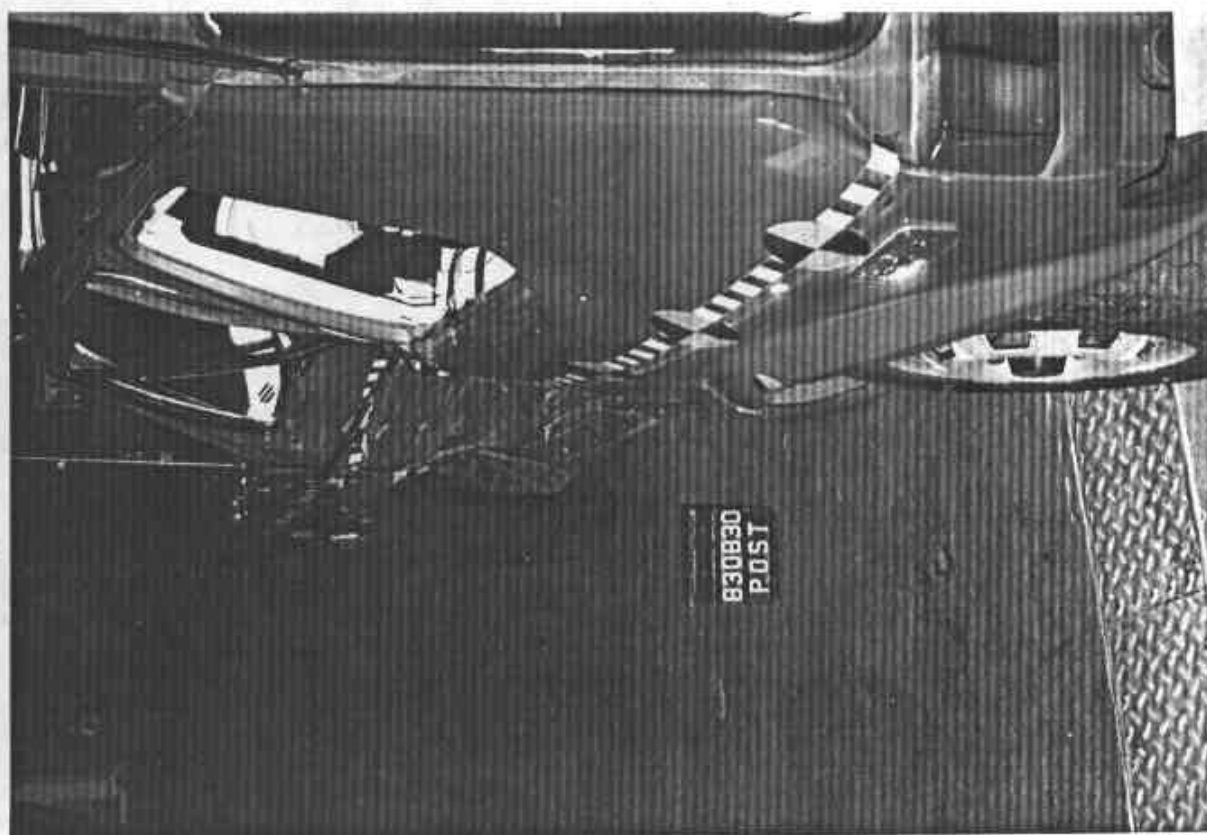


Figure A-24. POST-TEST VEHICLE DAMAGE - VIEW 1
A-13



Figure A-25. POST-TEST VEHICLE DAMAGE - VIEW 2

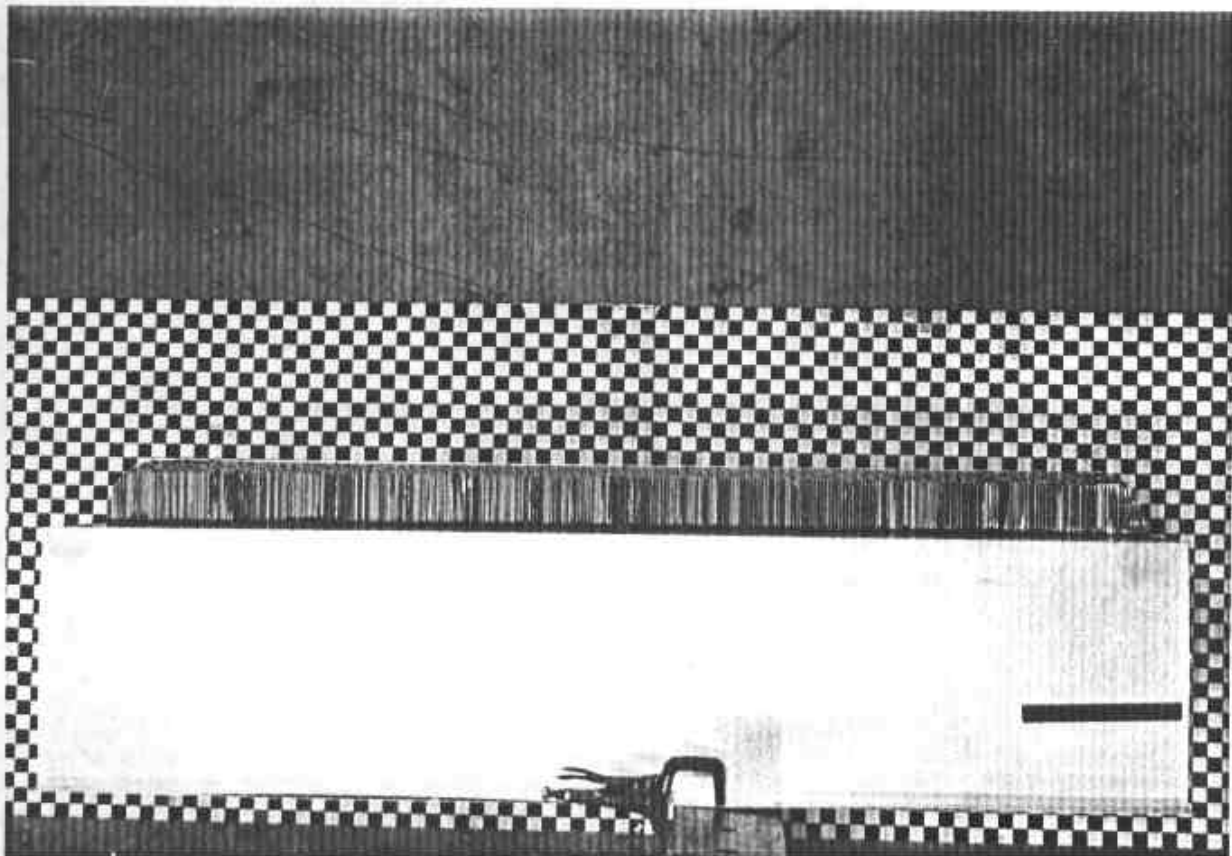


Figure A-26. PRE-TEST MDB FACE - VIEW 1
A-14

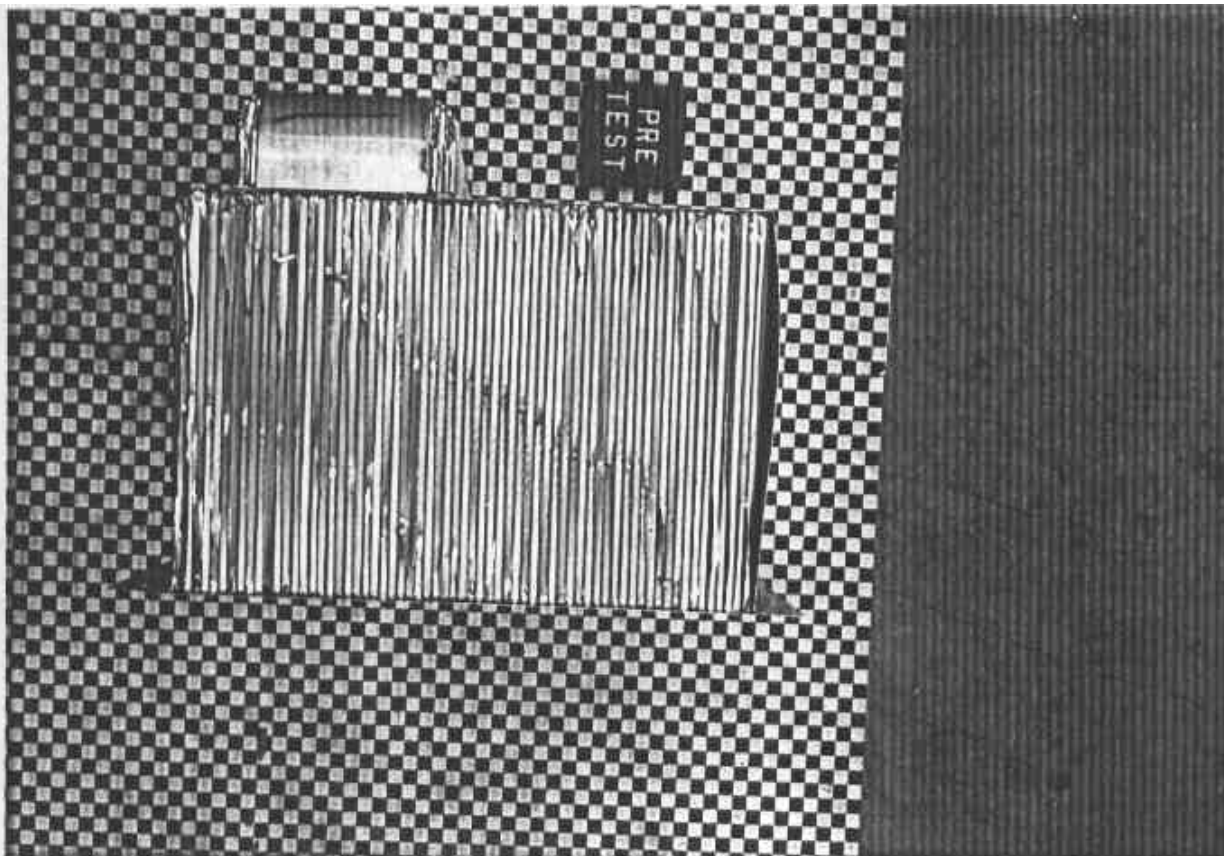


Figure A-27. PRE-TEST MDB FACE - VIEW 2

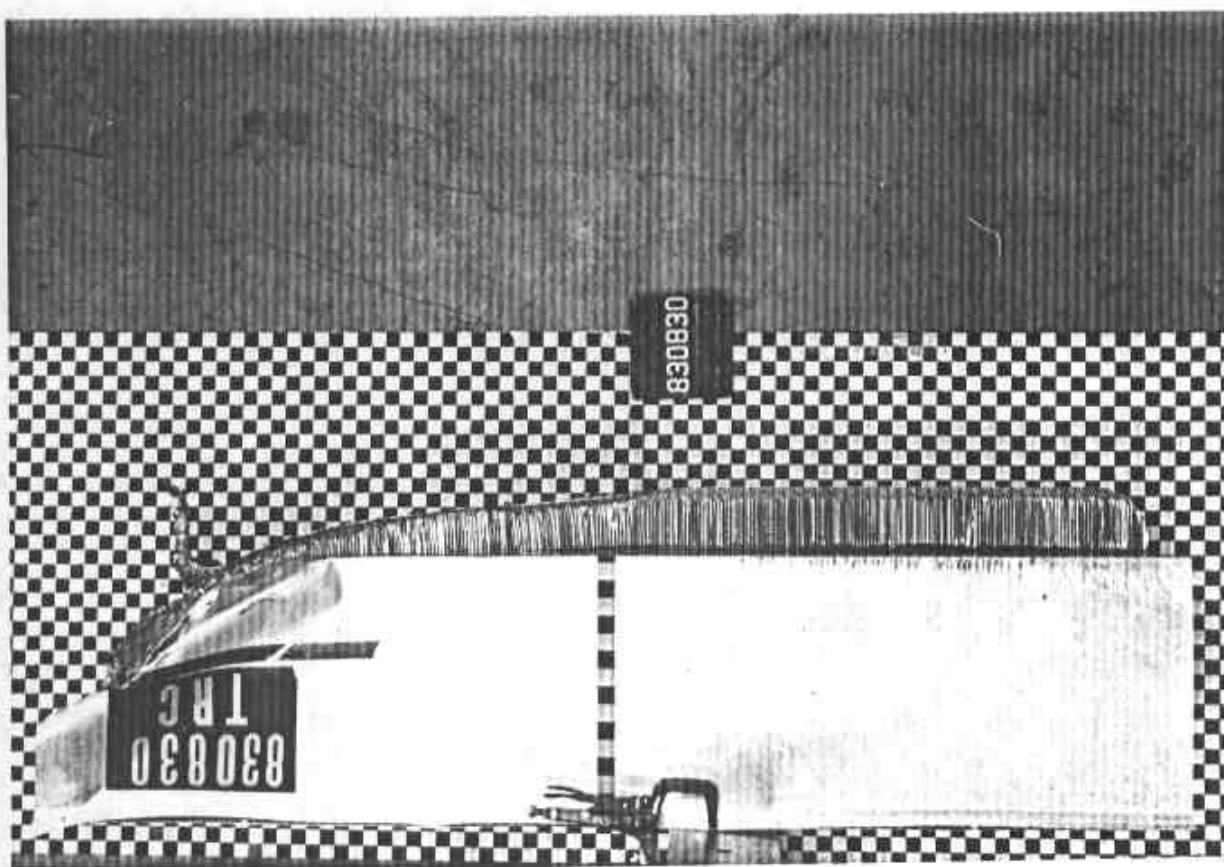


Figure A-28. POST-TEST MDB FACE - VIEW 1

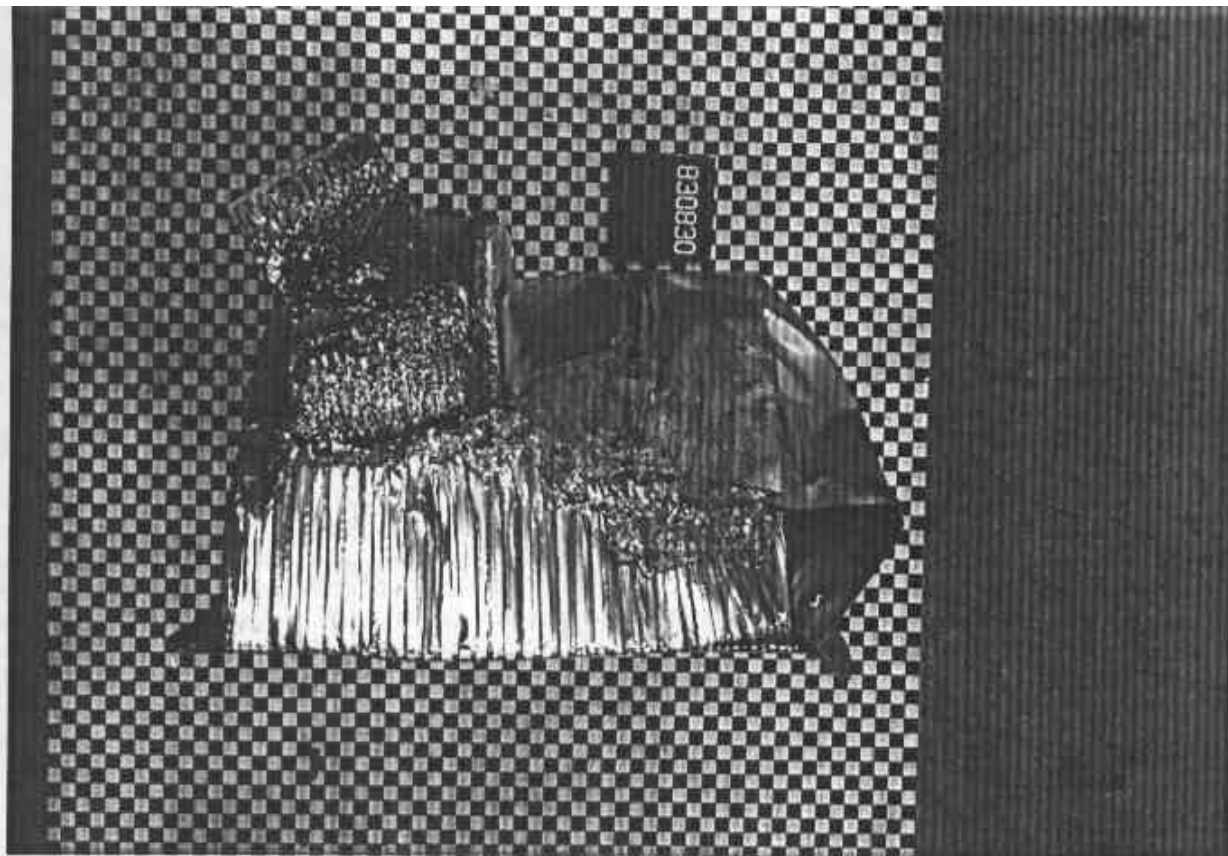


Figure A-29. POST-TEST MDB FACE - VIEW 2

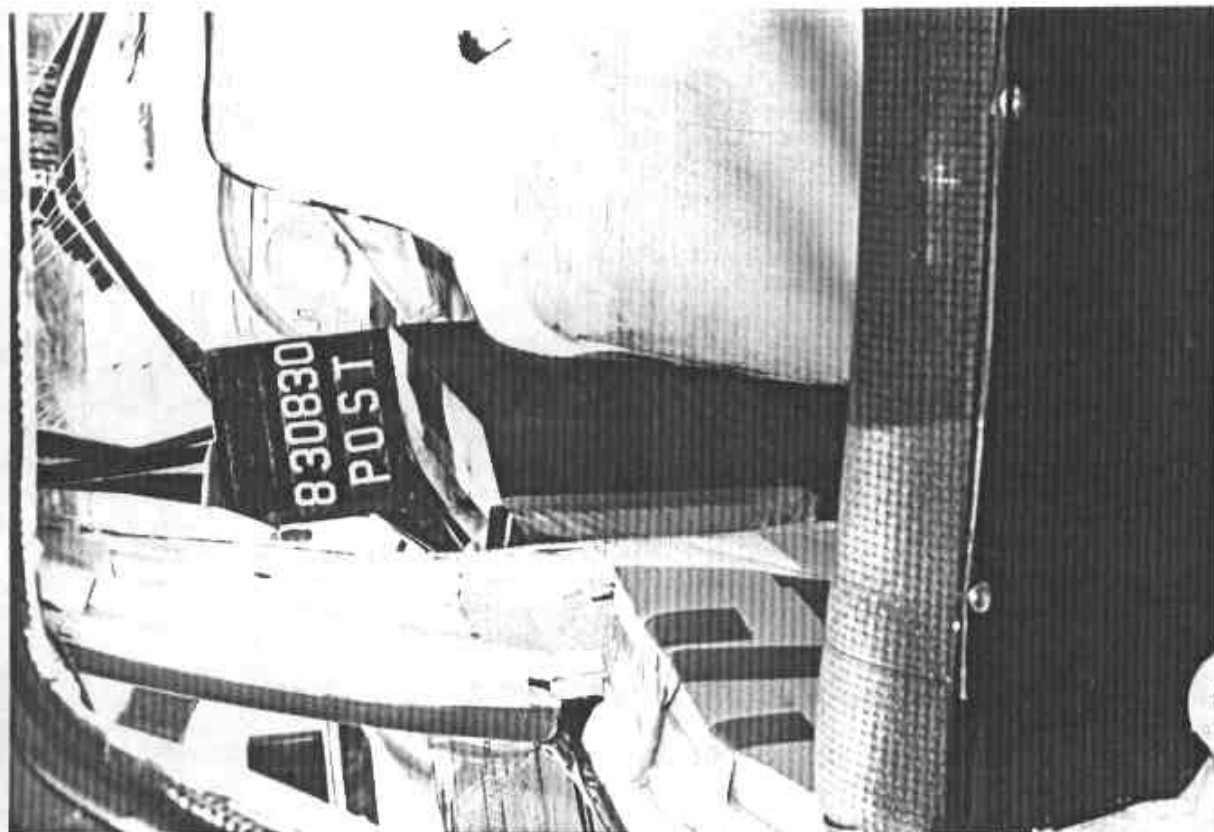


Figure A-30. POST-TEST PADDING CONDITION
A-16

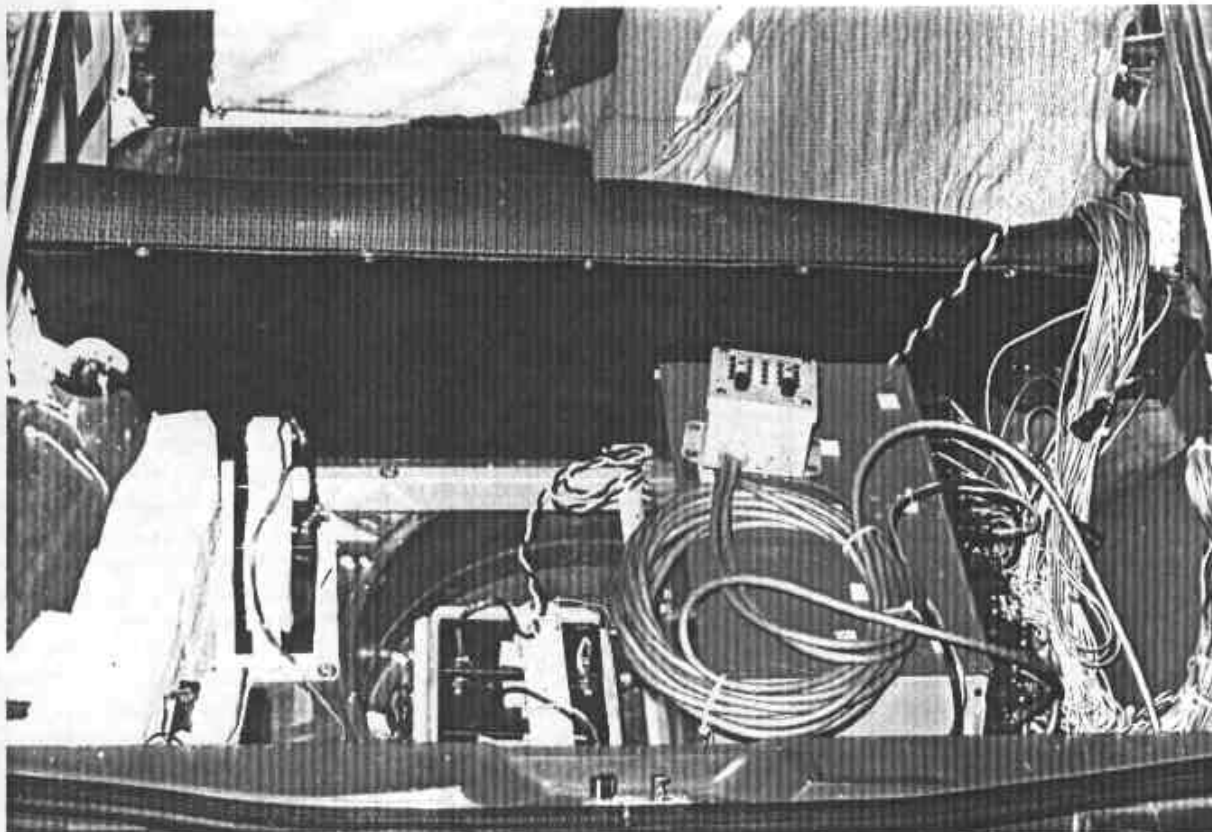


Figure A-31. INSTRUMENTATION SETUP

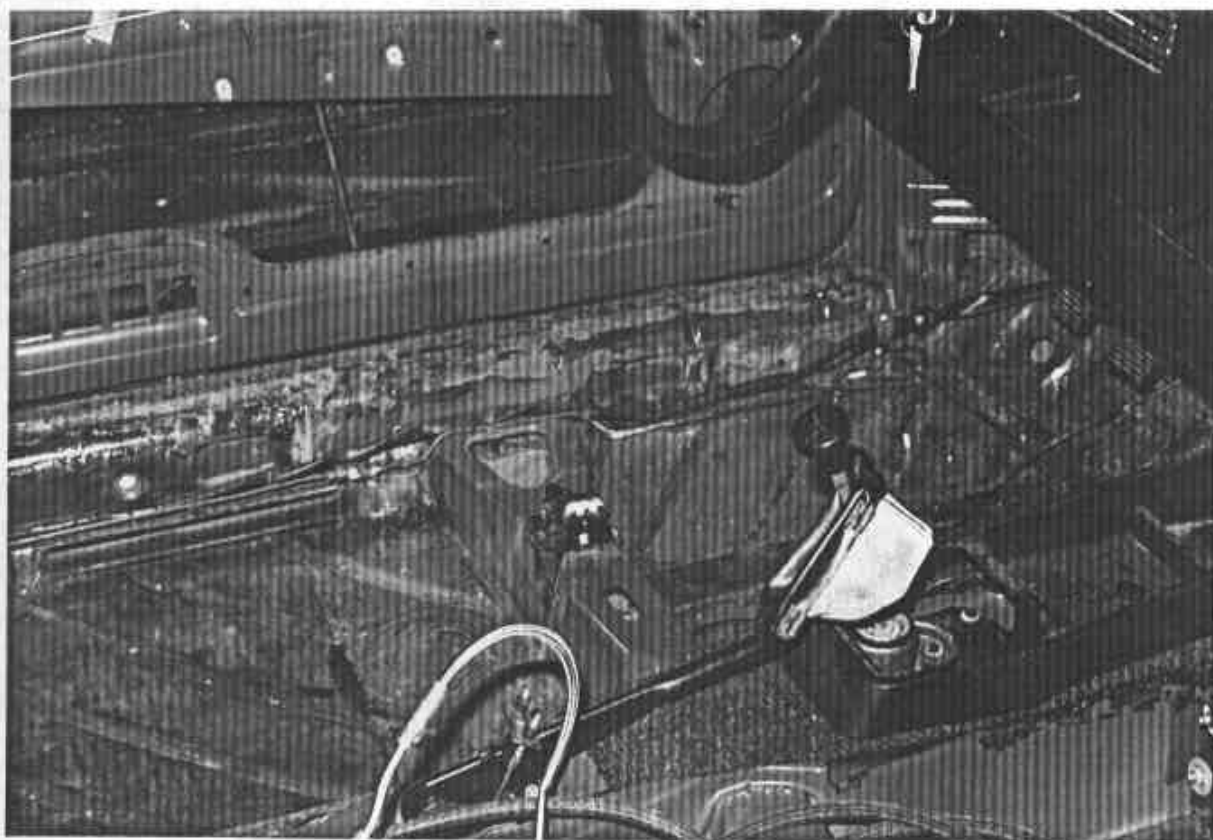


Figure A-32. VEHICLE INITIAL RUSTED CONDITION - VIEW 1
A-17

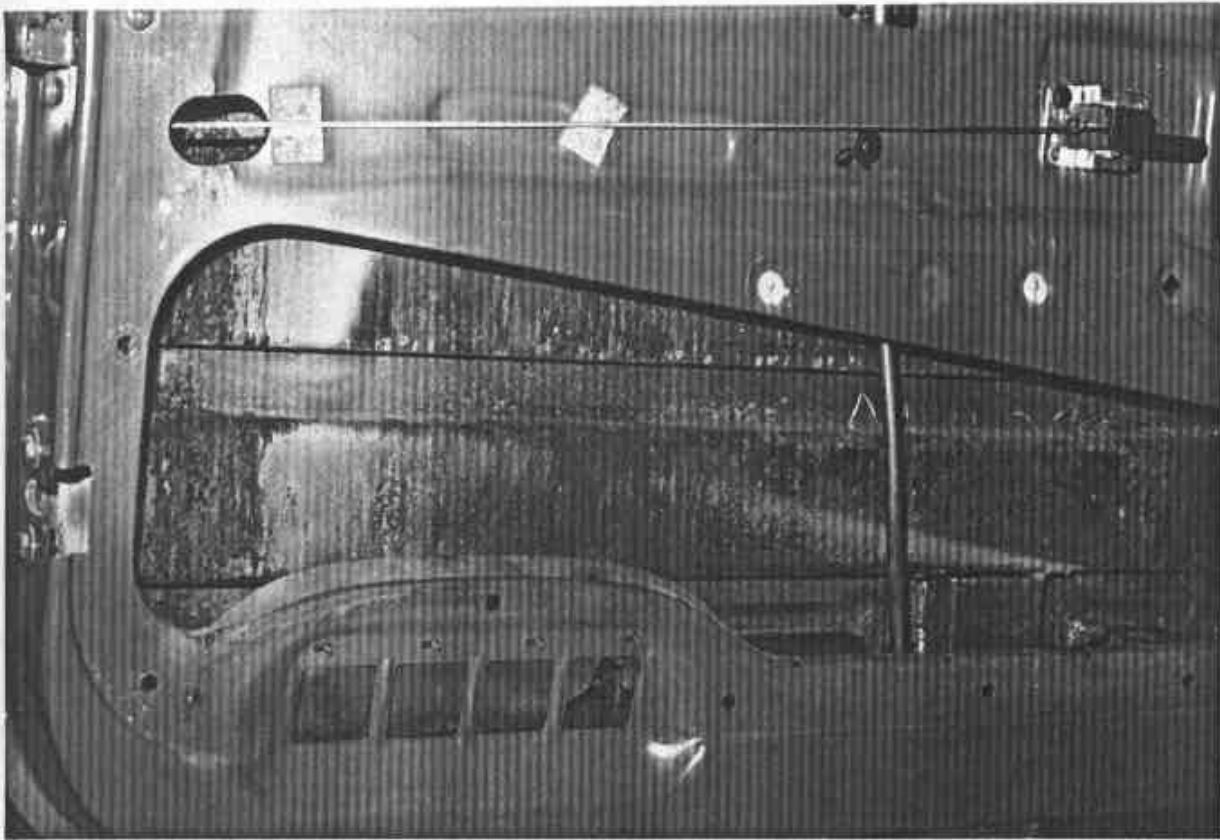


Figure A-33. VEHICLE INITIAL RUSTED CONDITION - VIEW 2

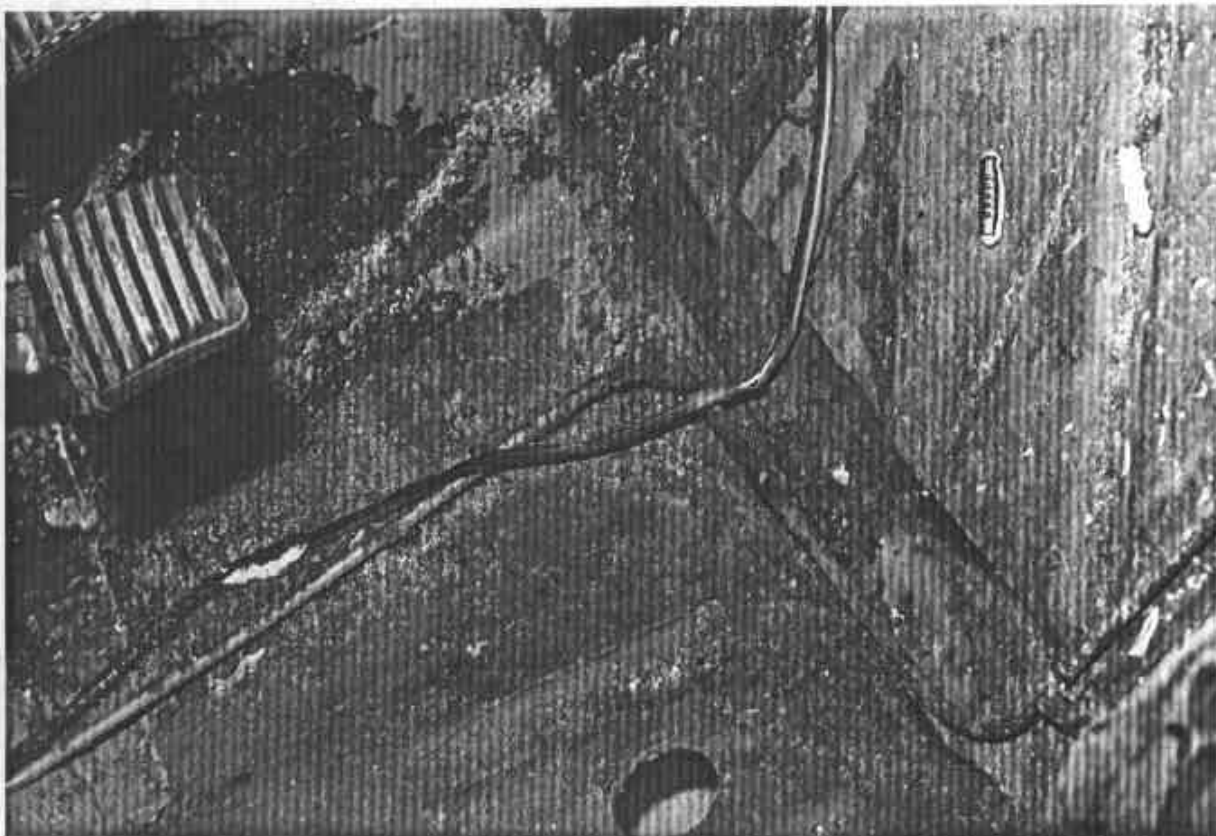


Figure A-34. VEHICLE INITIAL RUSTED CONDITION - VIEW 3

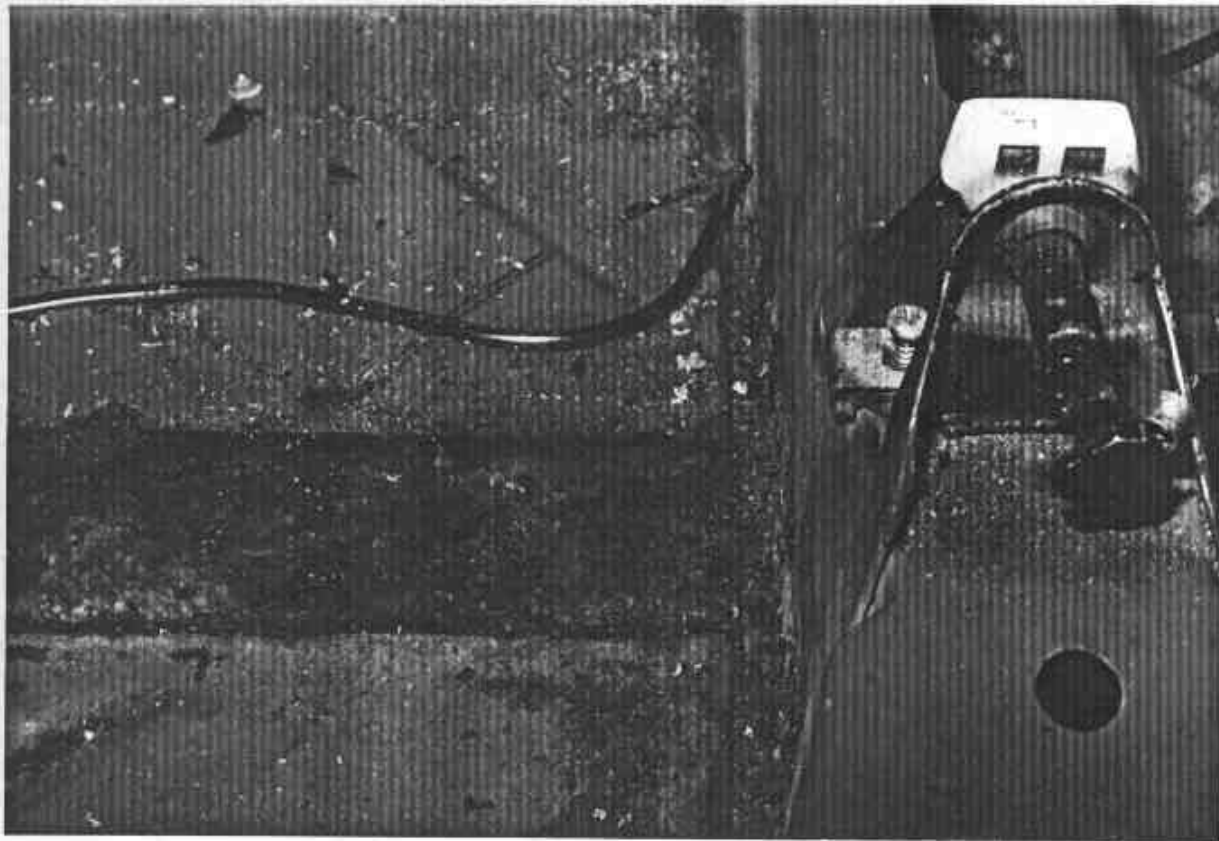


Figure A-32. VEHICLE INITIAL RUSTED CONDITION - VIEW 4

APPENDIX B
DATA PLOT PRESENTATION

Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data were filtered according to SAE J211, except that dummy thorax data were filtered using the HSRI filter.

TRC 830830 PLOT DATE 2-SEP-83 14:57:33

EVALUATION OF MOD YW FLEET

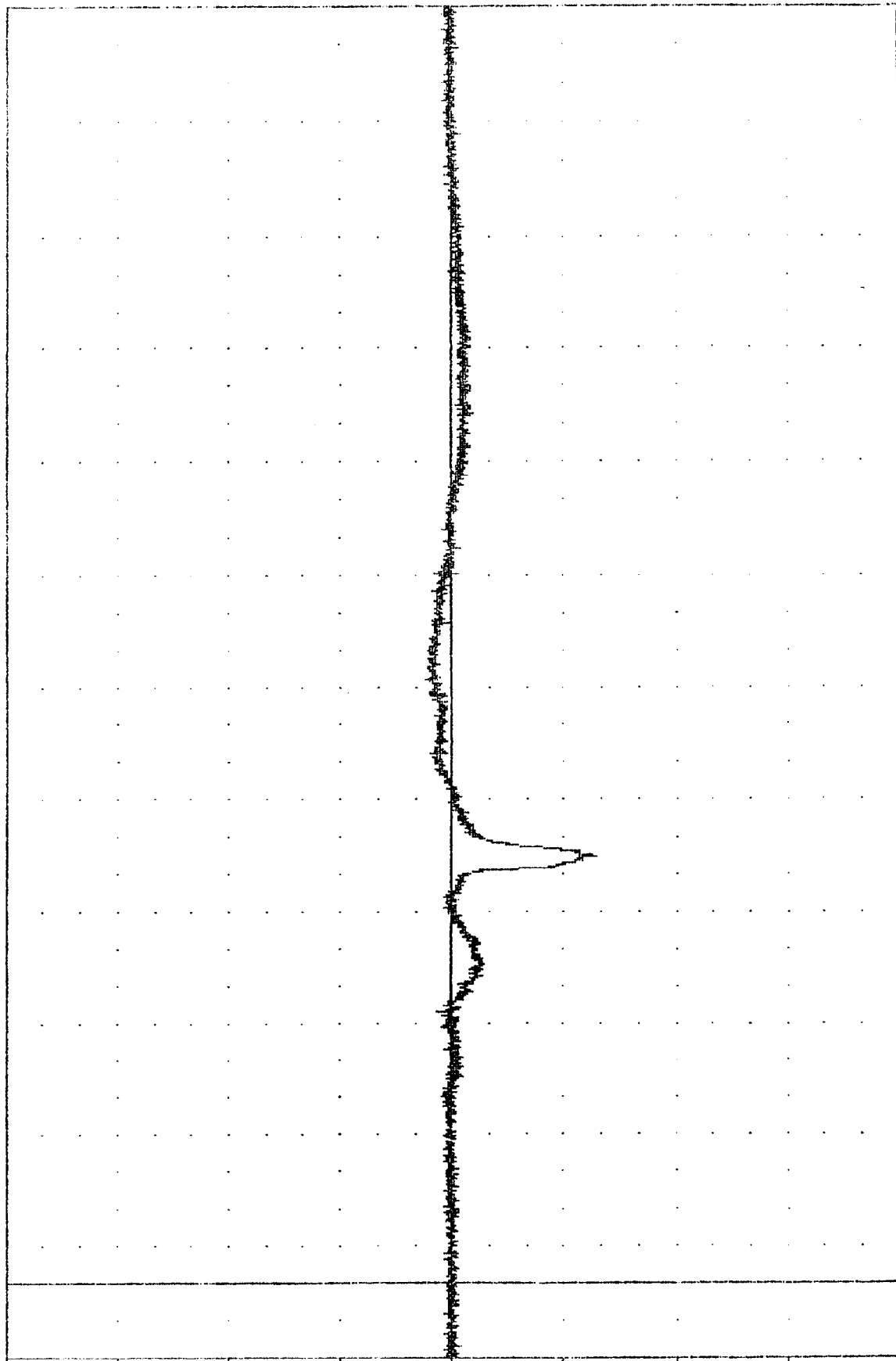
83242000000

HEDXG1

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -63.93e 114.88, 11.79 e 161.88

ACCELERATION [G]



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

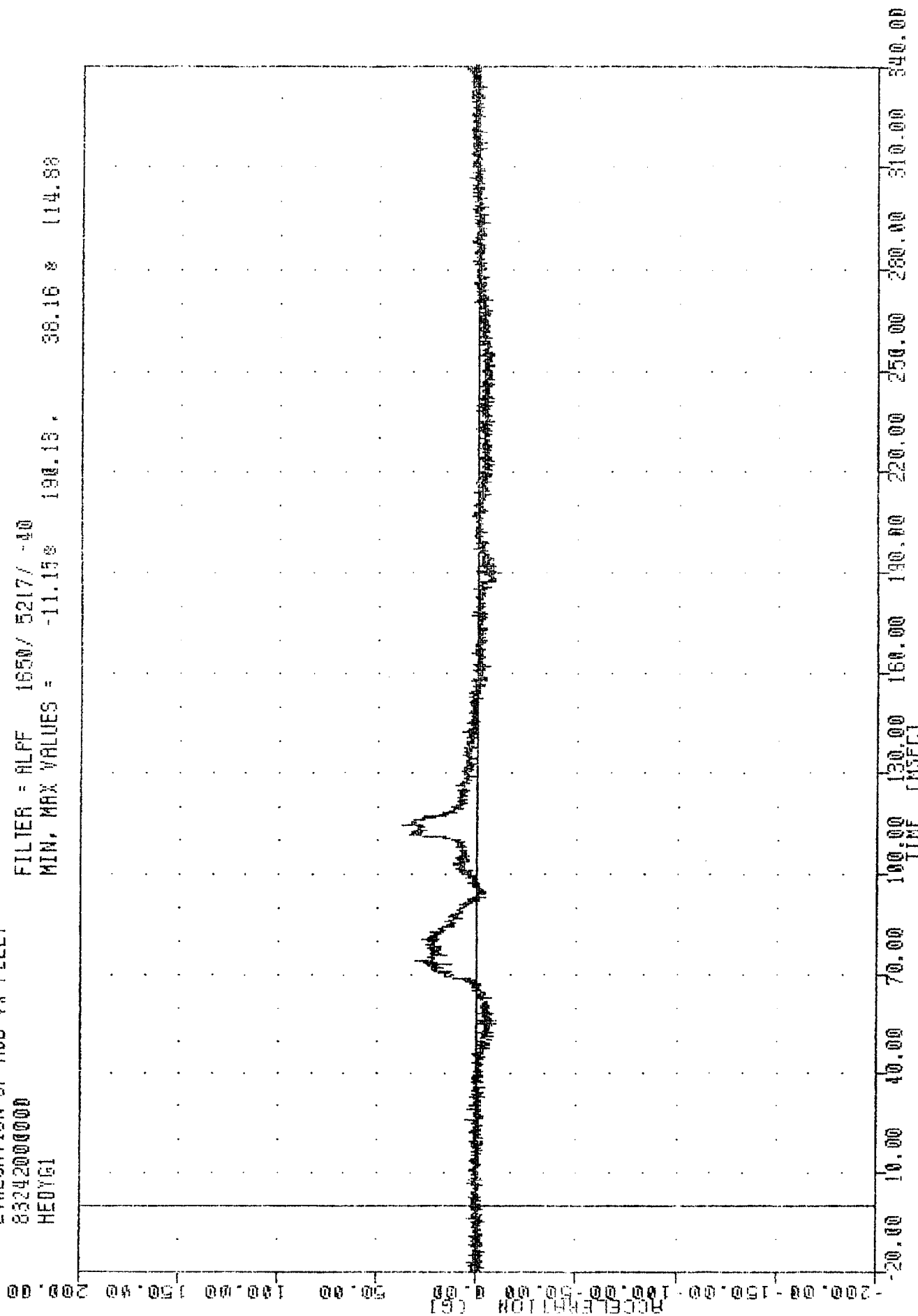
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION X AXIS

TRC 830830
 EVALUATION OF MOD VN FLEET
 83242000000
 HEDY61

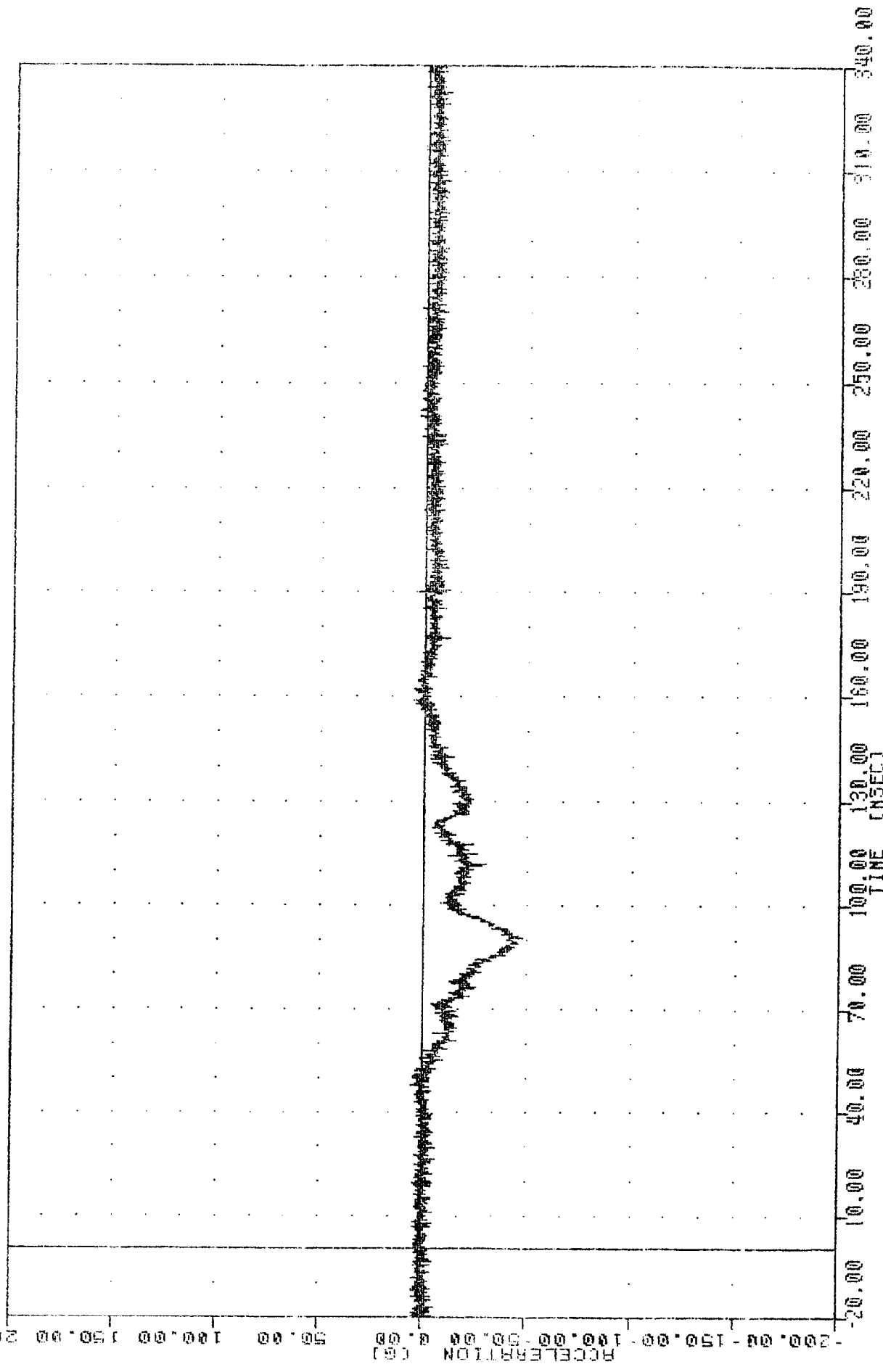
PLOT DATE 2-SEP-83 14:07:38

FILTER = ALPF 1650/ 5217/ -10
 MIN, MAX VALUES = -11.15% 190.13, 38.16 * 114.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD ACCELERATION Y AXIS

TAC 630630
 EVALUATION OF MOD VW FLEET
 83242000000
 HEDZ61
 PLOT DATE 2-SEP-83 14:57:33
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -47.43e 90.75, 5.55 e 47.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD ACCELERATION Z AXIS

TRC 830830 2-SEP-83 14:57:33

EVALUATION OF MDD VW FLEET

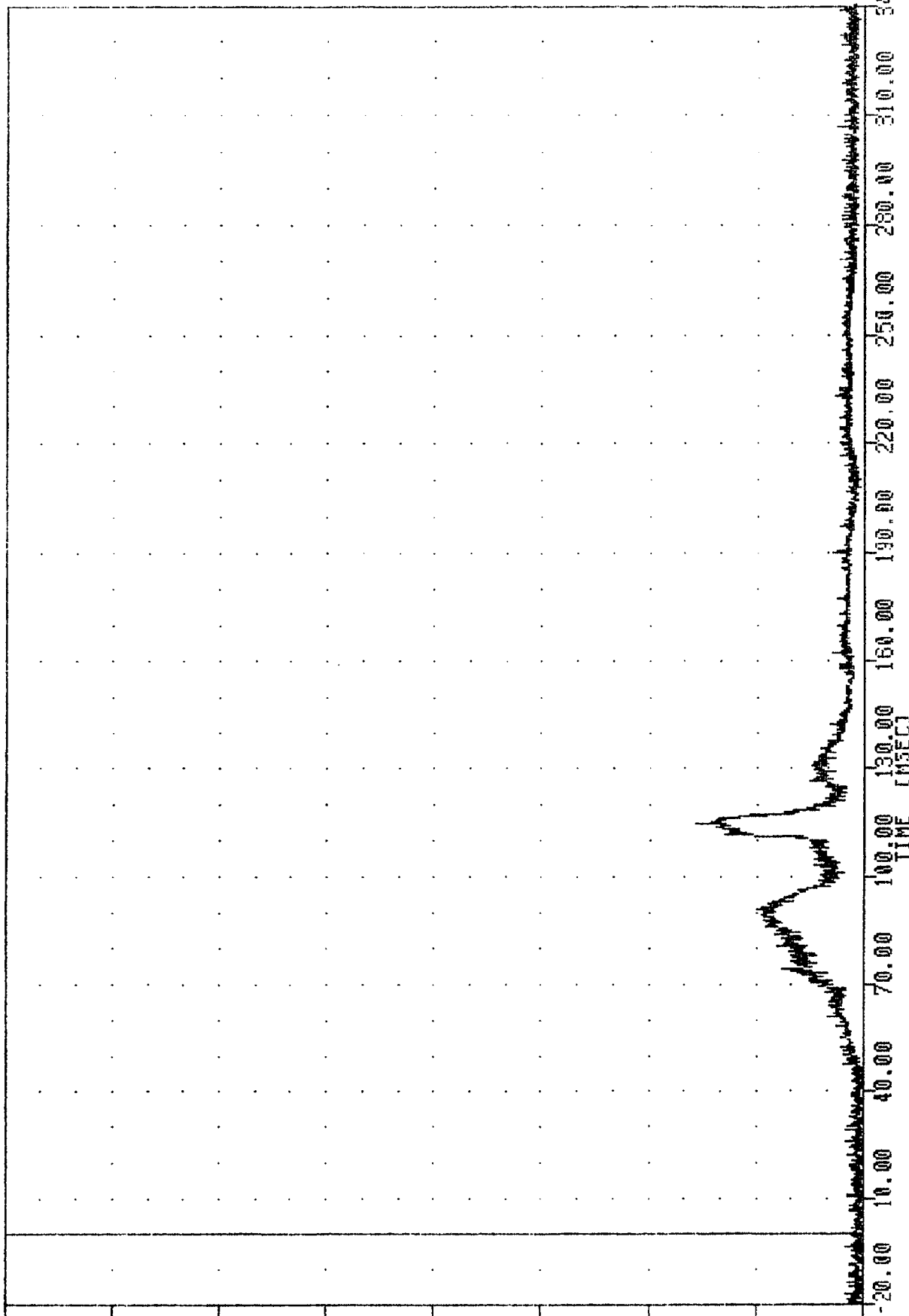
83242000000

HEADG1

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = 0.120 6.63 , 78.49 114.68

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD RESULTANT

TRC 830830 PLOT DATE 2-SEP-83 15:46:27

EVALUATION OF MOD YW FLEET

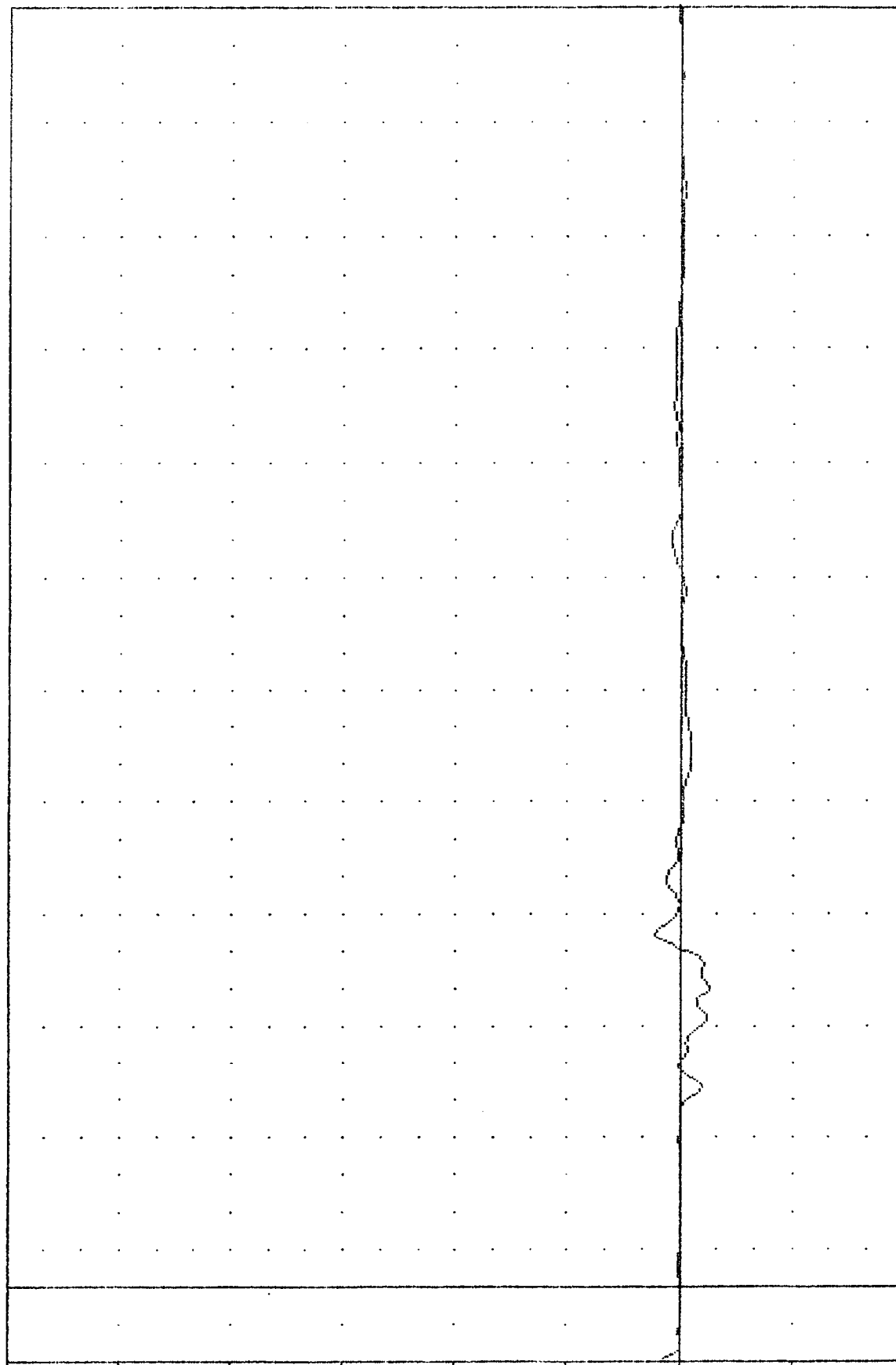
83242000000

T01XG1

FILTER = HSRL 136/ 189/ -50

MIN, MAX VALUES = -13.31g 79.38, 10.66 g 93.75

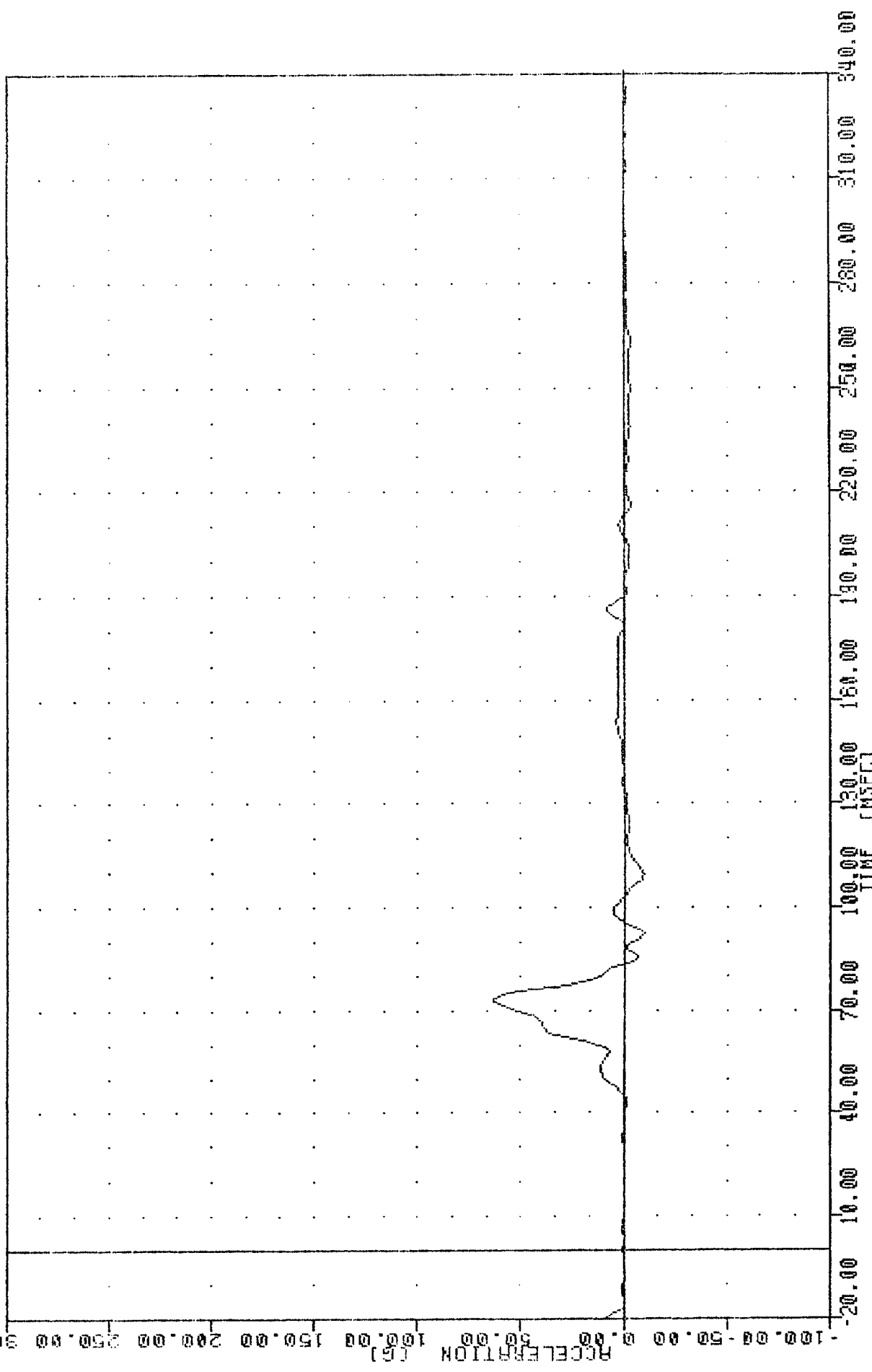
ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION X AXIS

IRC 830830 2-SEP-83 15:45:27
 EVALUATION OF MOD VV FLEET
 83242000000
 T01YG1
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -9.67% 91.87, 63.55% 72.50



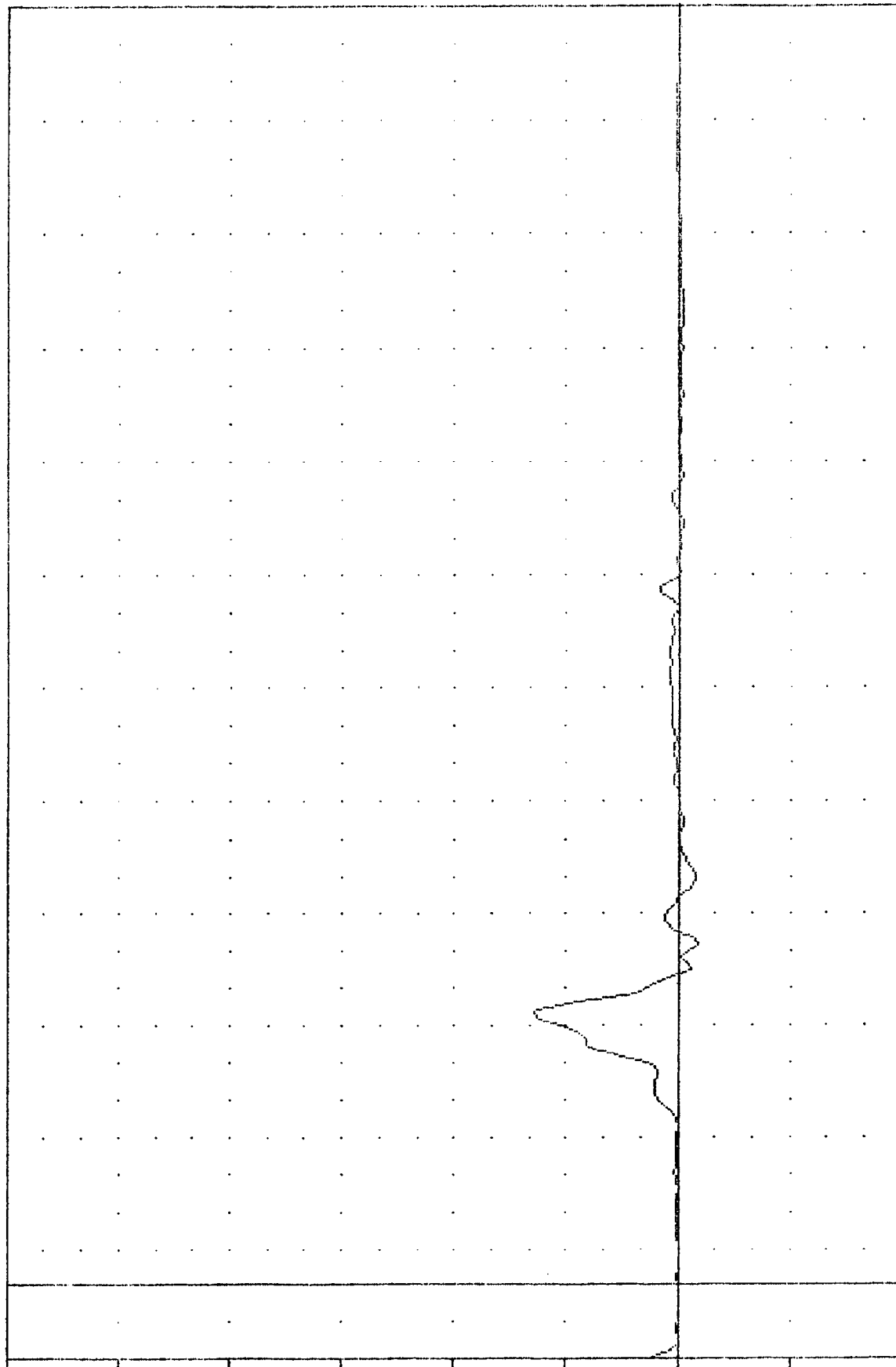
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE ACCELERATION Y AXIS

TAC 830000
 EVALUATION OF MOD VV FLEET
 83242000000
 T01Y6H

PLOT DATE 2-SEP-83 15:40:27

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -9.16e 91.25, 64.60 e 72.50

ACCELERATION (G)
 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00 250.00 300.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE ACCELERATION -2 Y AXIS

TRC 830830 PLOT DATE 2-SEP-83 15:46:27

EVALUATION OF MOD VW FLEET

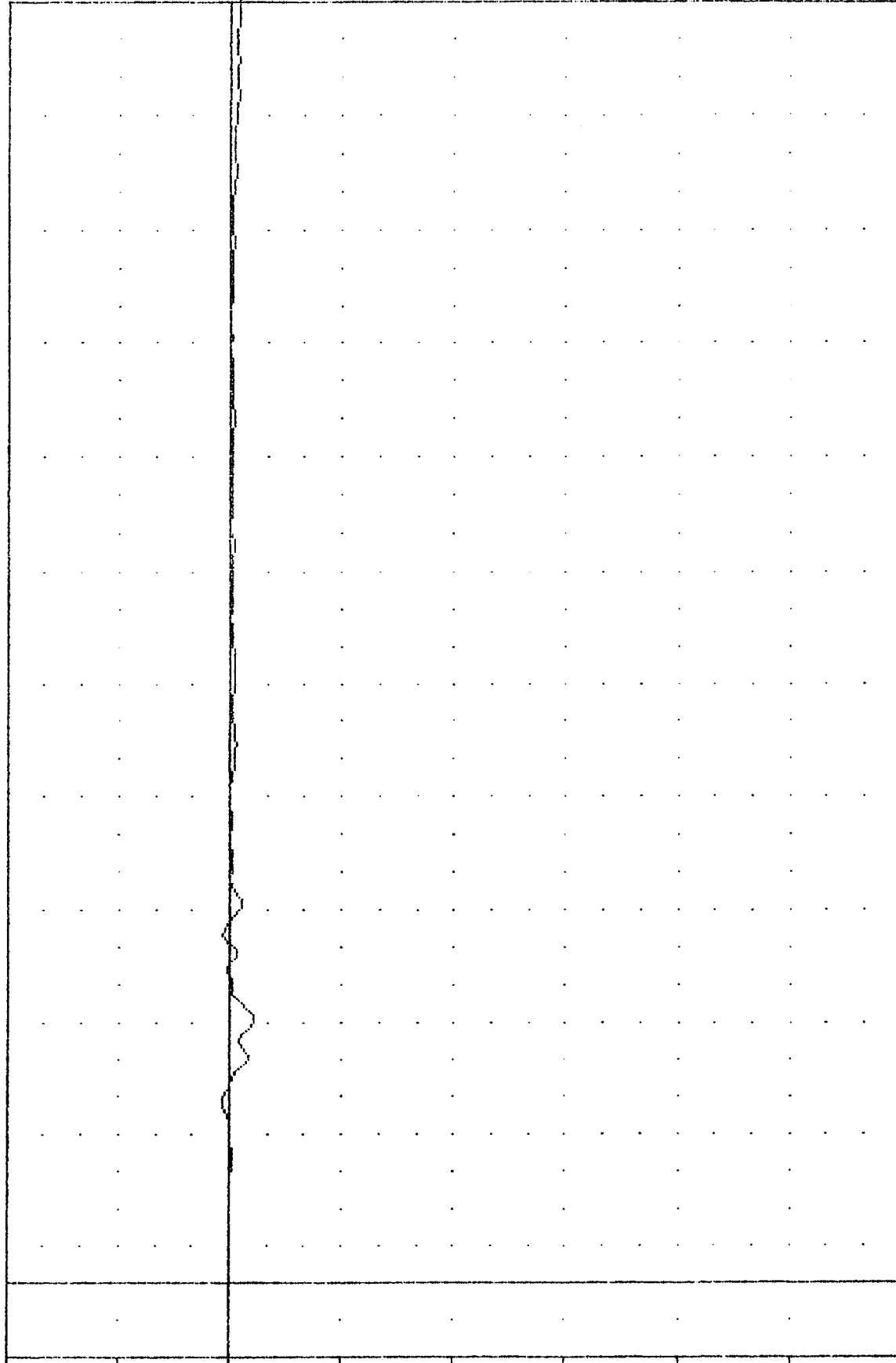
83242000000

701761

FILTER = HSRI 136/ 133/ -50

MIN, MAX VALUES = -10.60g 70.00, 3.44 g 48.13

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION Z AXIS

TRC 830830 6-SEP-83 09:23:37

EVALUATION OF MOD VW FLEET

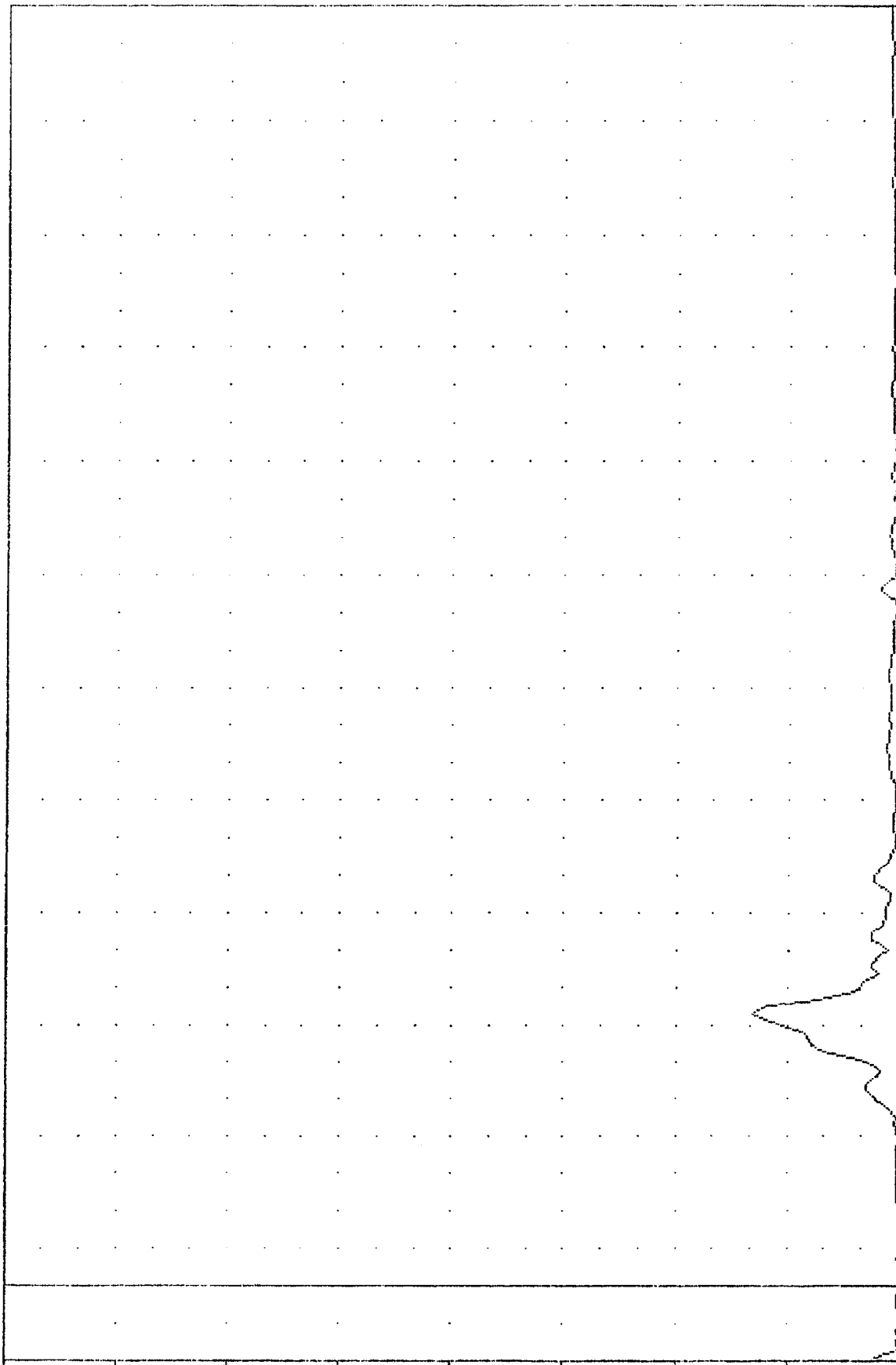
83242000000

T01RG1

FILTER = HSRI 135/ 189/ -50

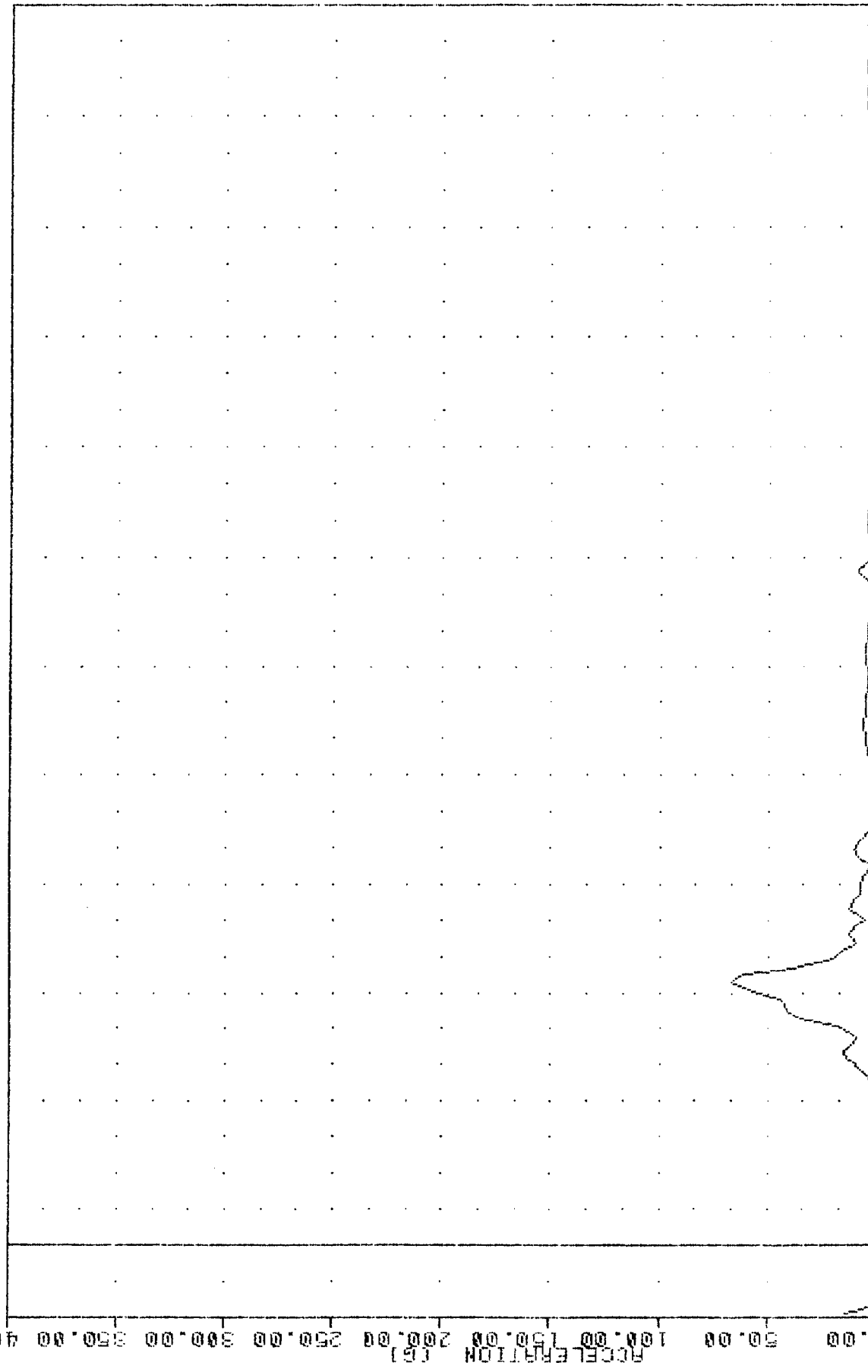
MIN. MAX VALUES = 0.012 19.38 65.23 72.50

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESULTANT

ARC
 EVALUATION OF MOD YW FLEET
 83242000000
 T01R61
 FILTER = HSRI
 MIN. MAX VALUES = 0.070 10.63 86.25 72.50
 PLOT DATE 8 SEP 83 15:13:06

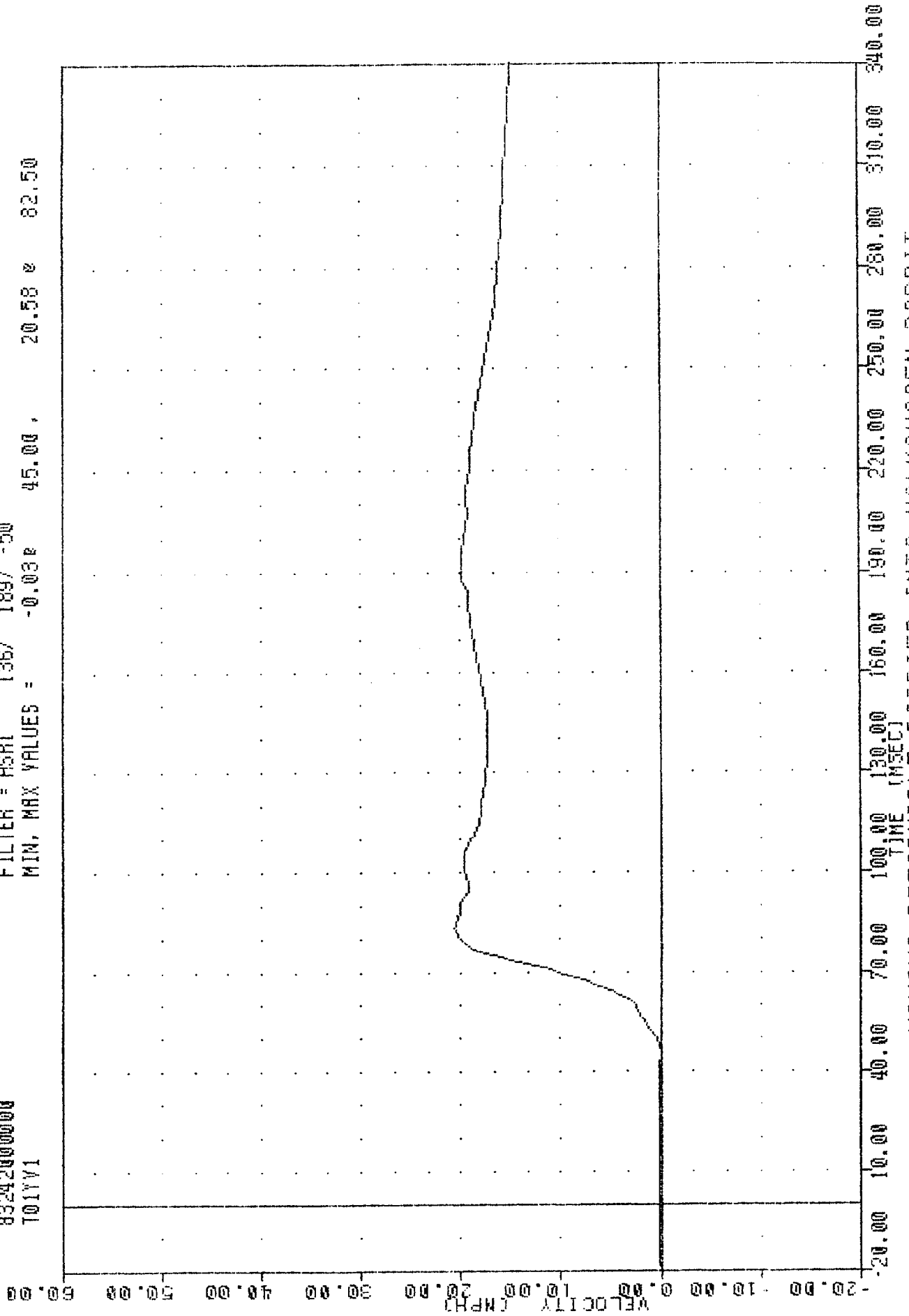


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (msec)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE RESULTANT USING T01YGA

TRC , 830830
 EVALUATION OF MOD YW FLEET
 83242000000
 T01YV1

PLOT DATE 6-SEP-83 15:06:46

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.038 45.00 , 20.58 82.50

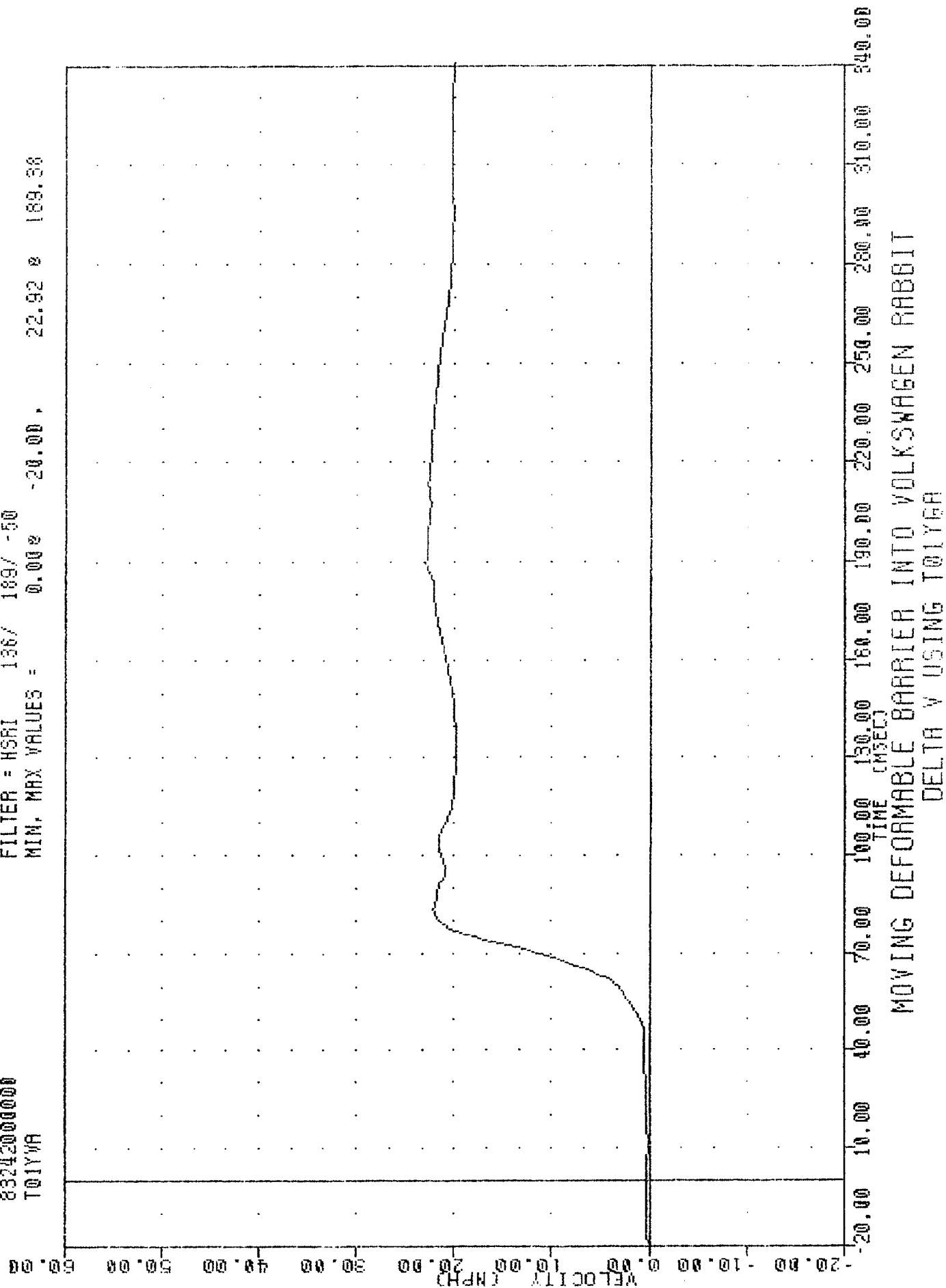


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01YV1

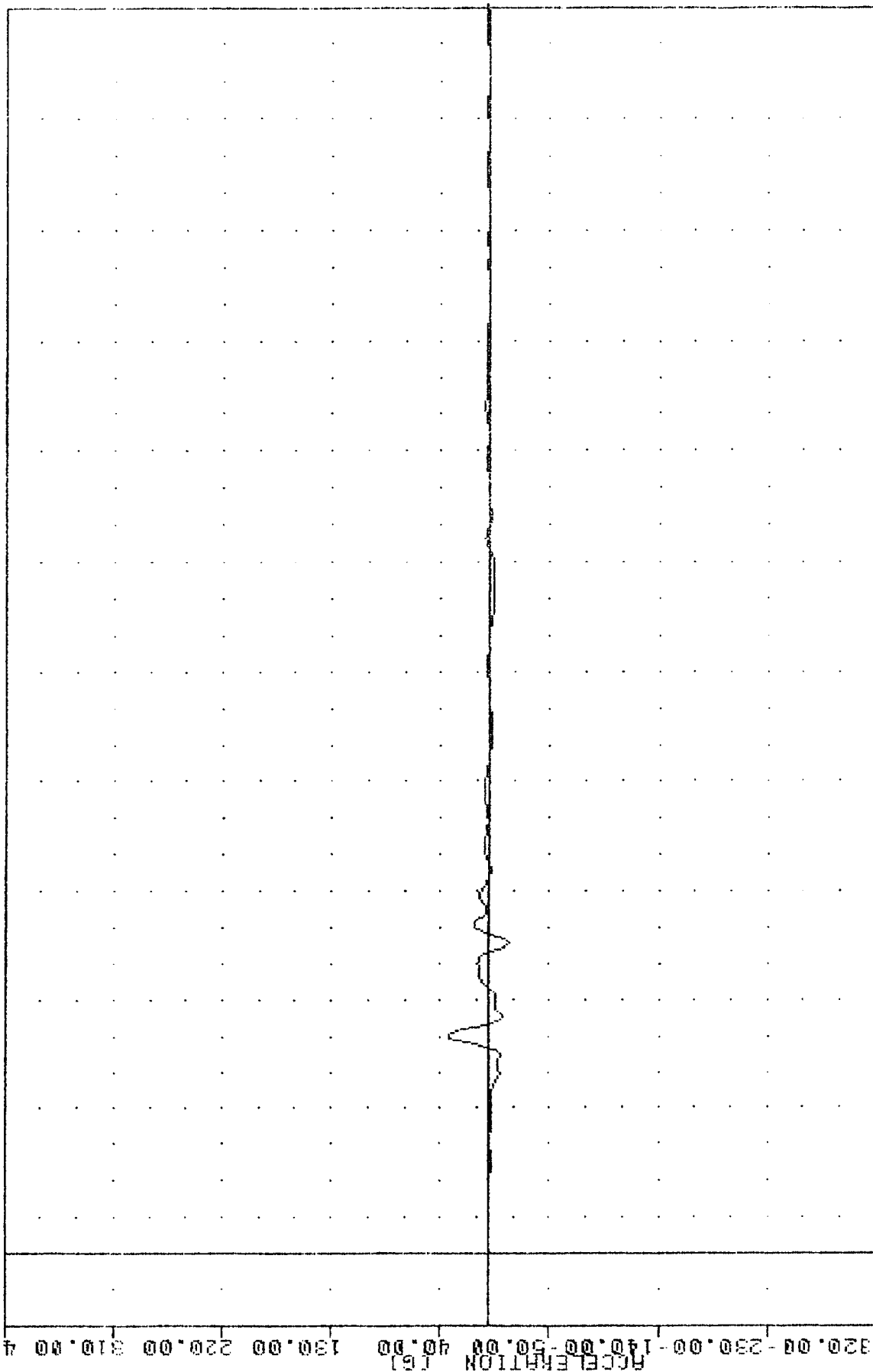
TRC 830830
 EVALUATION OF MOD VW FLEET
 83242000000
 T01YVA

PLOT DATE 8-SEP-83 15:05:48

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = 0.00% -20.00, 22.92 0 189.38

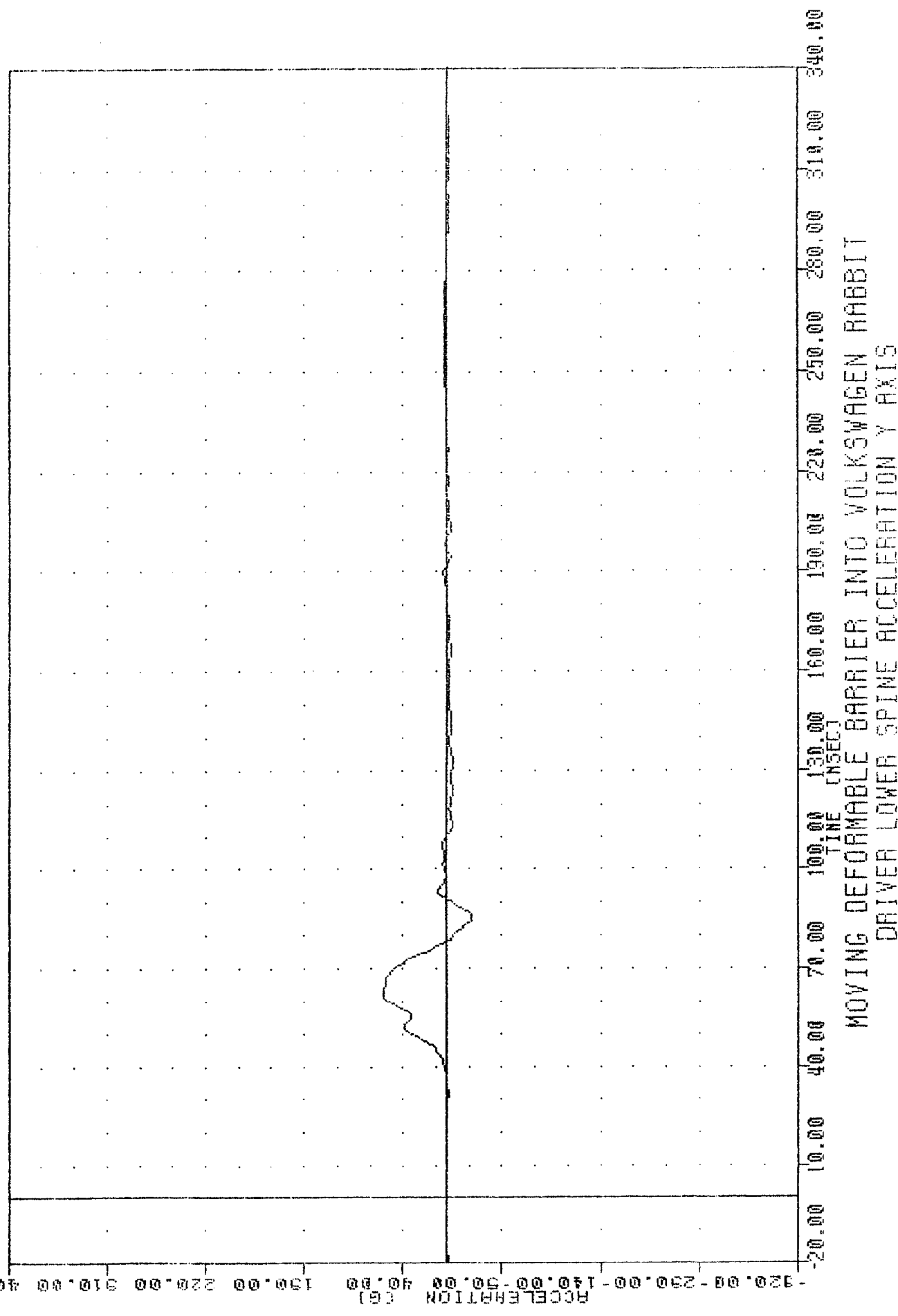


TRC
 EVALUATION OF MDD VW FLEET
 83242000000
 T12XG1
 830830
 2-SEP-83 15:46:27
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -16.50g 85.00, 33.76 g 59.38

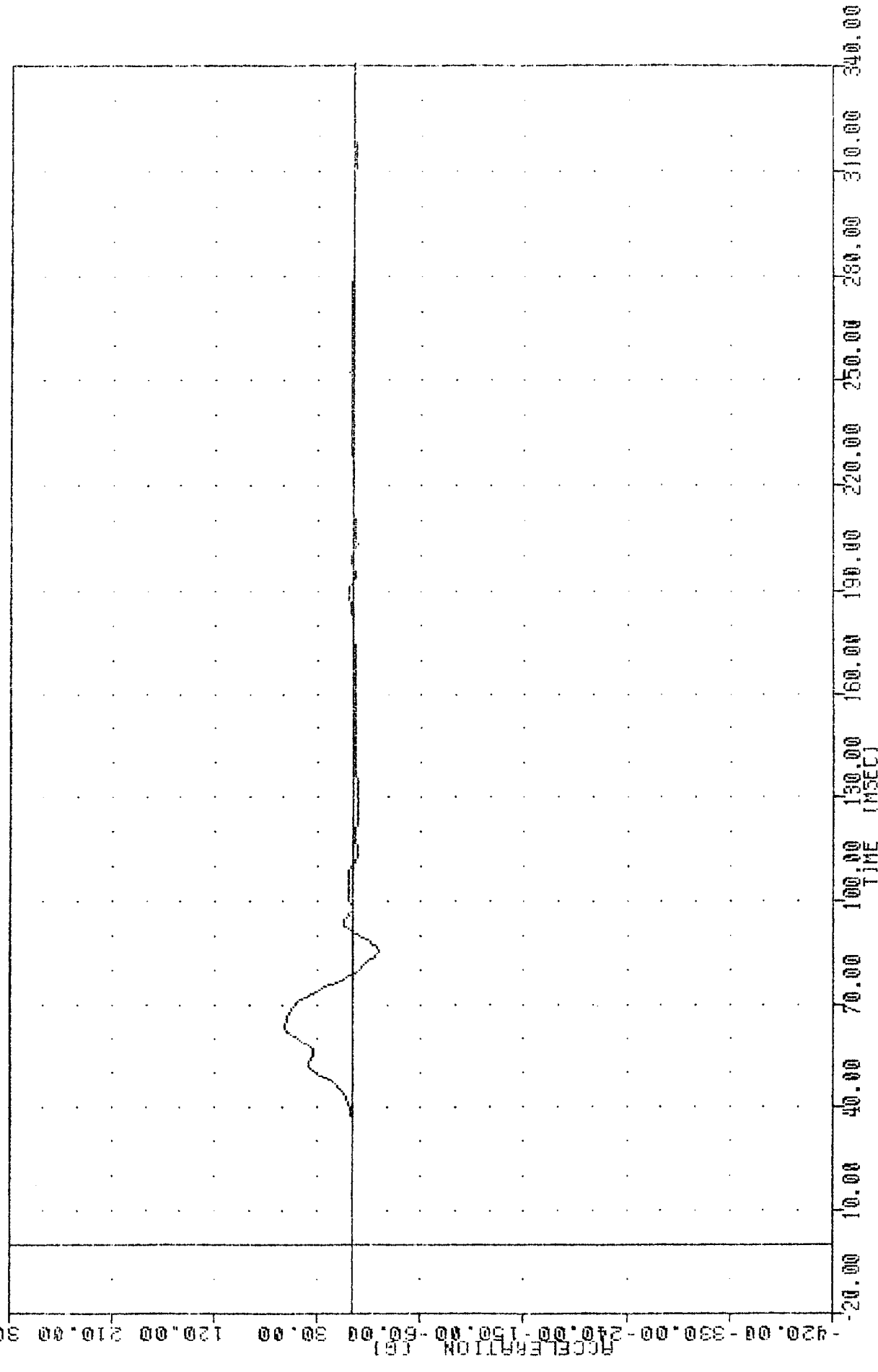


-320.00 -280.00 -240.00 -200.00 -160.00 -120.00 -80.00 -40.00 0.00 40.00 80.00 120.00 160.00 200.00 240.00 280.00 320.00 340.00
 TIME (MSEC)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE ACCELERATION X AXIS

TAC 83W630
 EVALUATION OF MOD VV FLEET
 83242000000
 T12Y61
 FILTER = HSRI 136/ 169/ -50
 MIN, MAX VALUES = -23.15% 84.38, 58.61 & 61.87
 PLOT DATE 2-SEP-83 15:46:27



TRC
 EVALUATION OF MCD YW FLEET
 832420000000
 112Y6R
 FILTER = HSRI 138/ 189/ -50
 MIN. MAX VALUES = -22.92% 85.00, 58.81 @ 63.13
 PLOT DATE 2-SEP-83 15:46:27



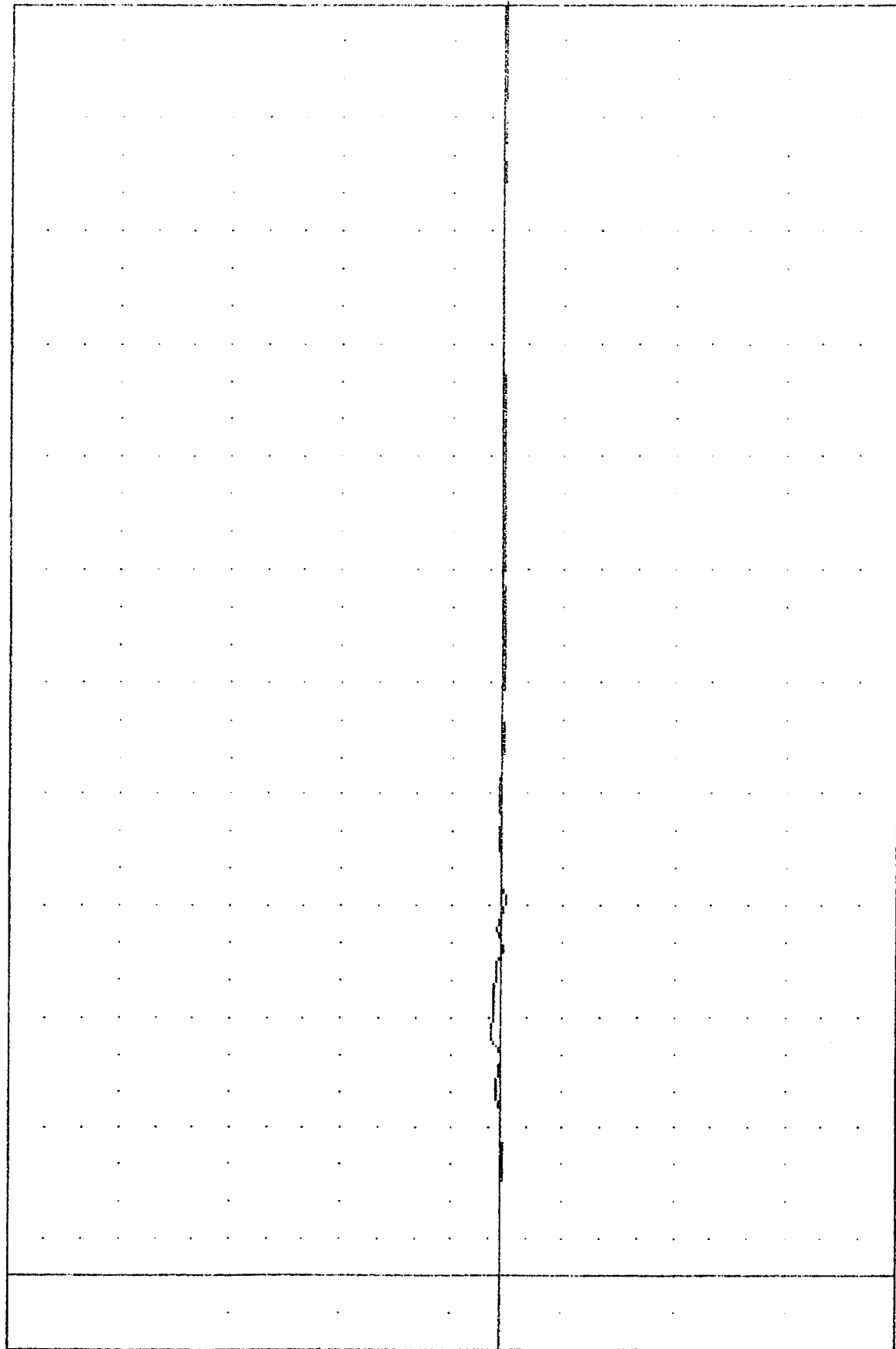
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE ACCELERATION #2 Y AXIS

TRC
 EVALUATION OF MDD VW FLEET
 83242000000
 T12761

PLOT DATE 2-SEP-83 15:46.27

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -3.39e 100.63, 8.54 e 65.00

ACCELERATION (G)

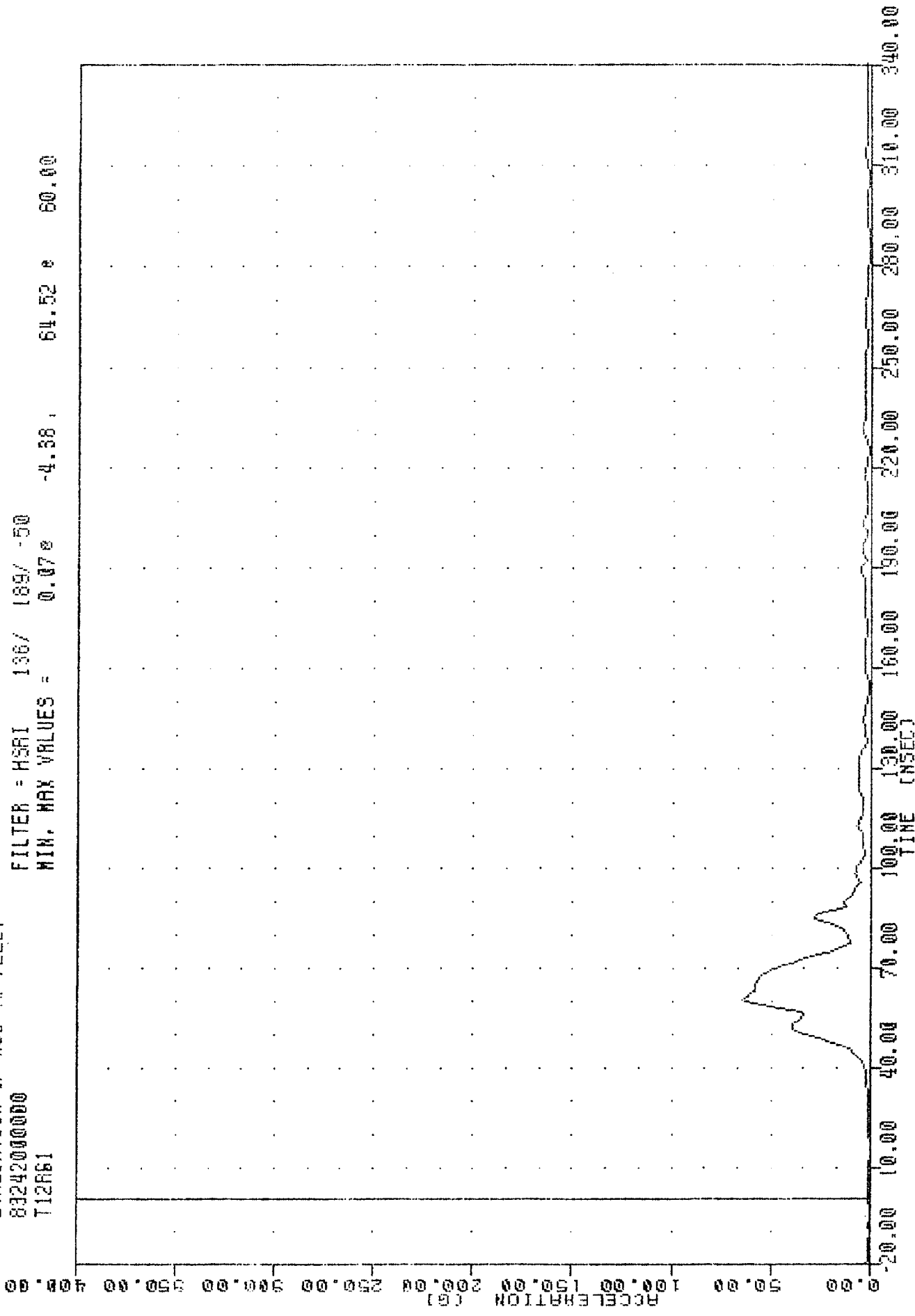


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE ACCELERATION Z AXIS

FAC 830630
 EVALUATION OF MOD VN FLEET
 83242000000
 T12661

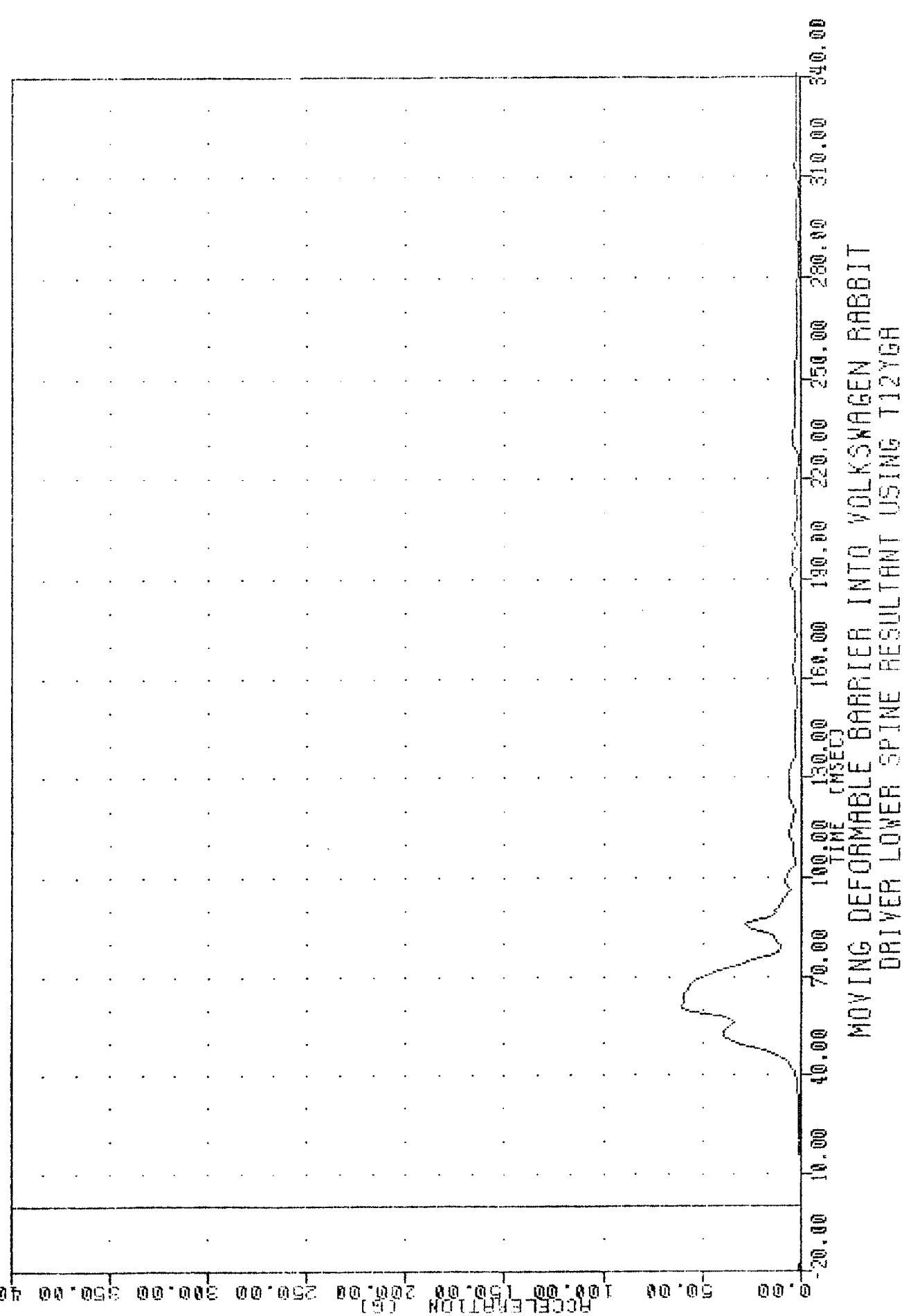
PLOT DATE 8-SEP-83 09:23:37

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = 0.070 -4.58 64.52 60.00



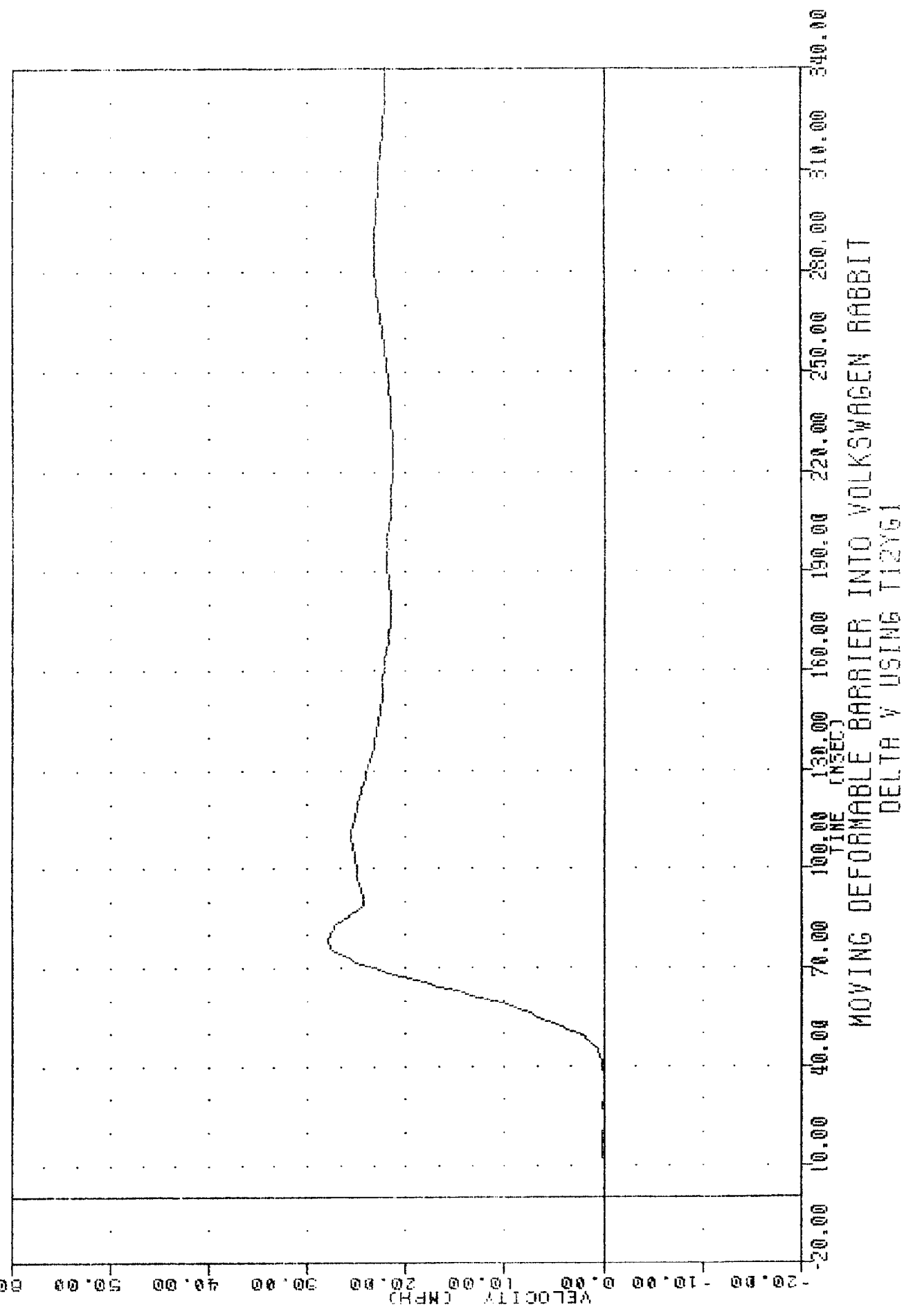
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE RESULTANT

TAC 830030
 EVALUATION OF MOD YW FLEET
 83242000000
 T12R61
 FILTER = HSRI 138/ 189/ -50
 MIN. MAX VALUES = 0.078 0.63 60.13 60.62
 PLOT DATE 8-SEP-83 15:13:46



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE RESULTANT USING T12YGA

TRC 830030 6-SEP-83 15:00:46
 EVALUATION OF MOD VN FLEET
 83242000000
 T12YV1
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.14 27.86 77.50
 -4.36



TRC

830830

PLOT DATE

6-SEP-83

15:06:46

EVALUATION OF MOD YW FLEET

83242000000

FILTER = HSRI

136/ 189/ -50

T12YVR

MIN. MAX VALUES =

-0.03e

-17.50,

27.73 e

77.50

VELOCITY (MPH)

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

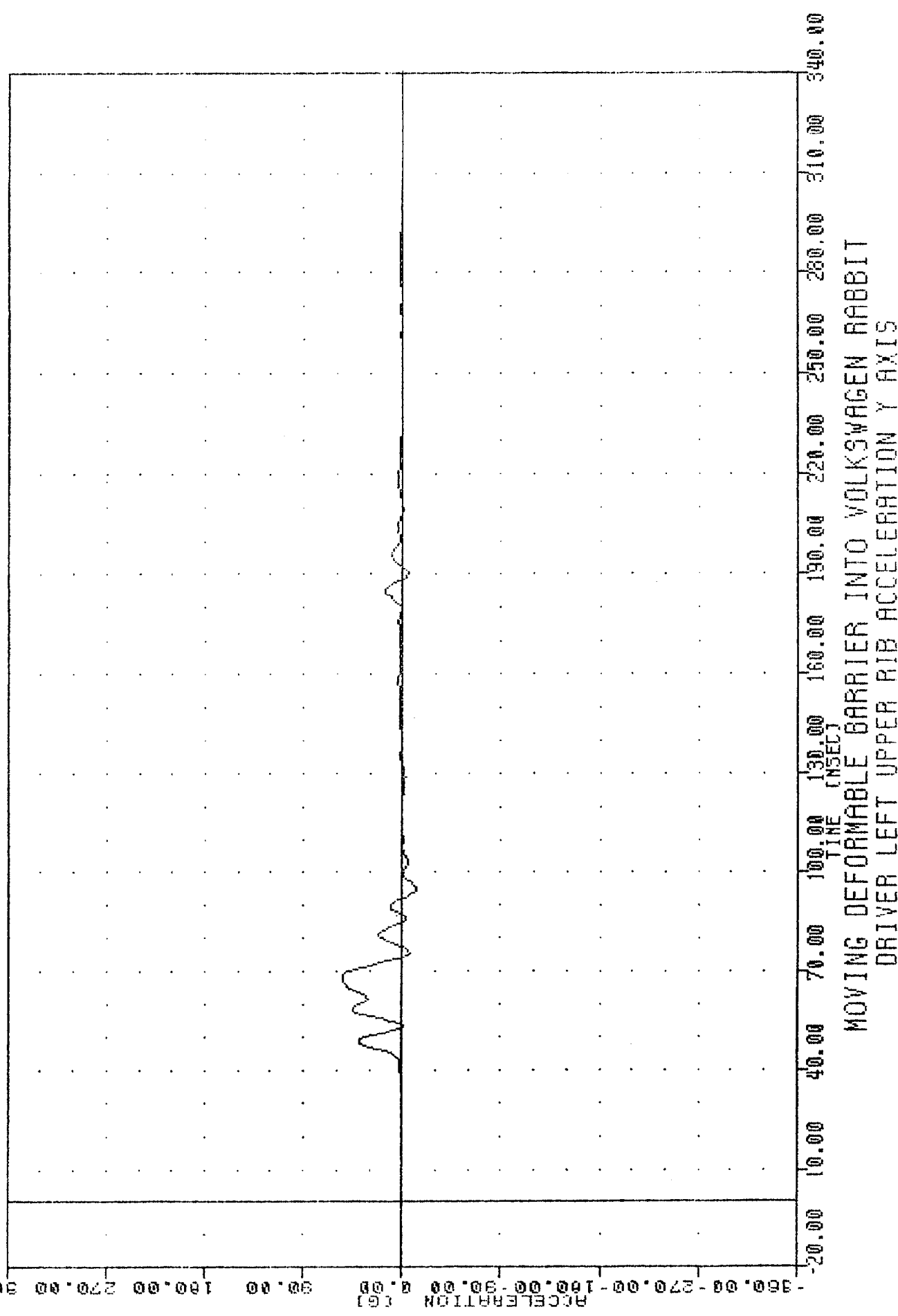
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

TIME (MSEC)

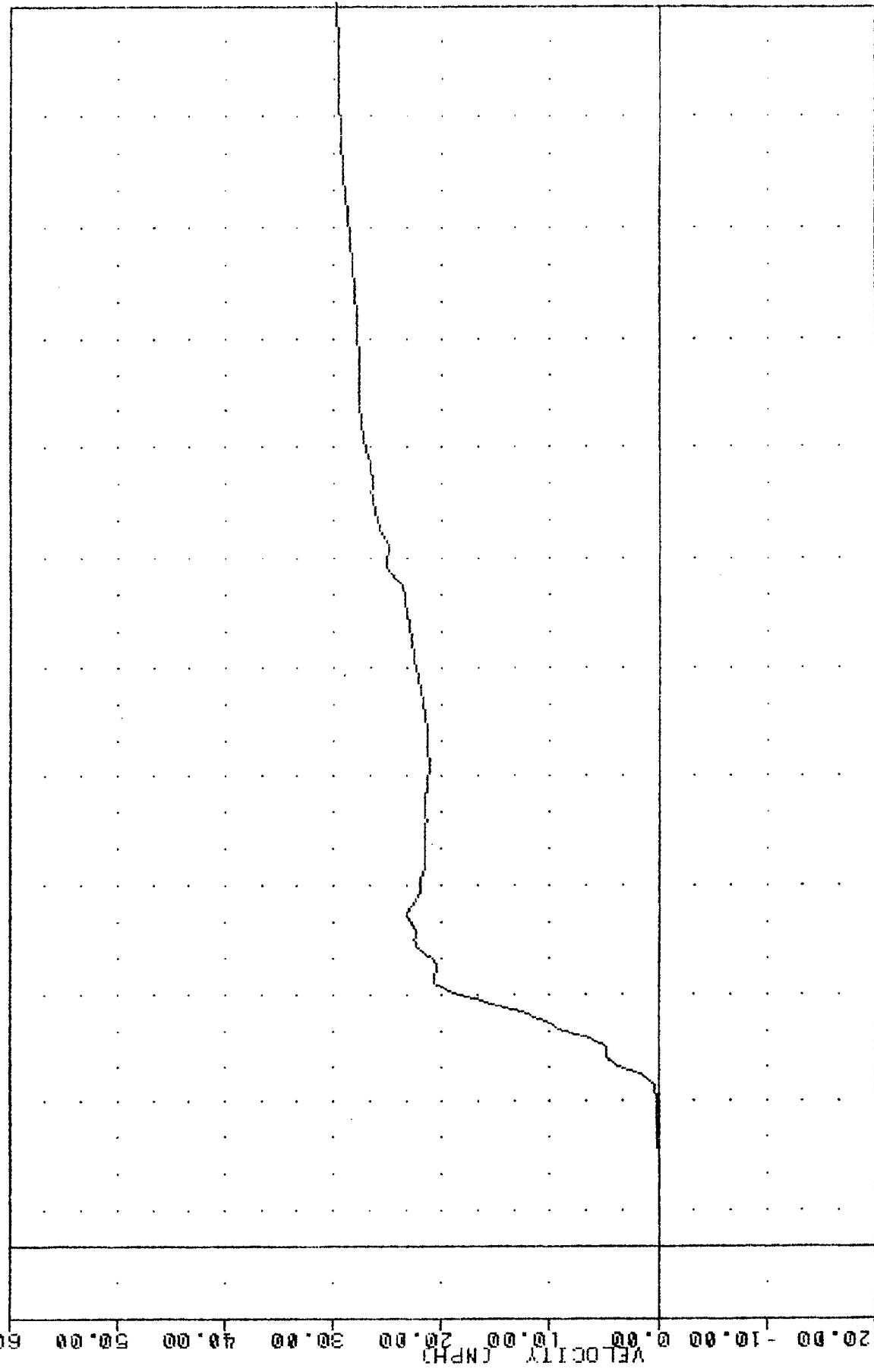
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING T12YVR

IAC 850630
 EVALUATION OF MOD VW FLEET
 83242000000
 LURY61
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -12.84 94.38 54.66 66.87
 PLOT DATE 2-SEP-88 15:45:27



TRC
 EVALUATION OF MDD VW FLEET
 832420000000
 LURYV1
 PLOT DATE 8-SEP-83 15.00.46
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.040 7.50, 29.73 & 340.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURY61

TRC 830830 PLOT DATE 2-SEP-83 15:46:27

EVALUATION OF MOD YW FLEET

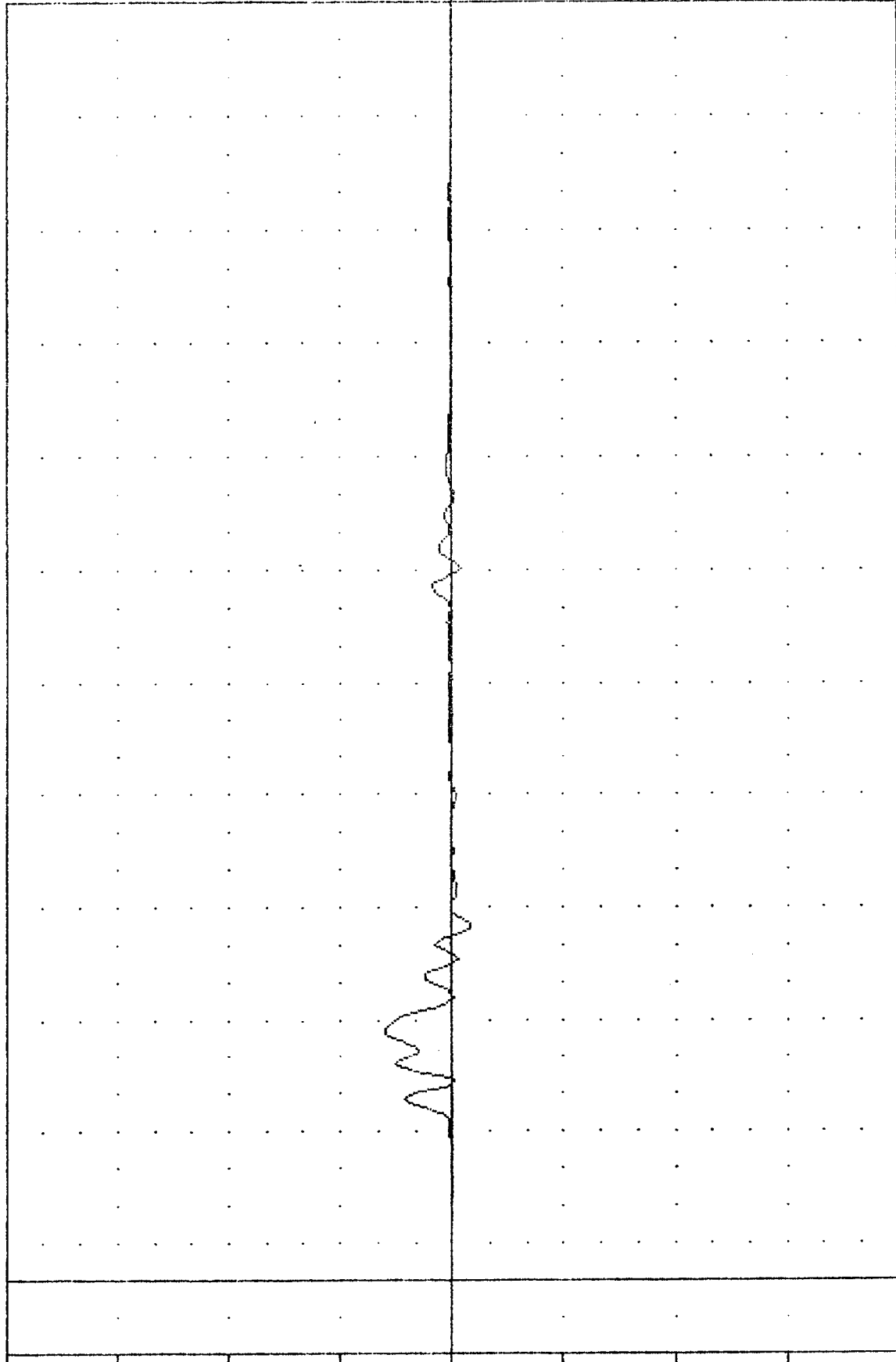
832420000000

LURYGA

FILTER = HSRL 136/ 189/ -50

MIN. MAX VALUES = -15.19 94.38 53.69 66.25

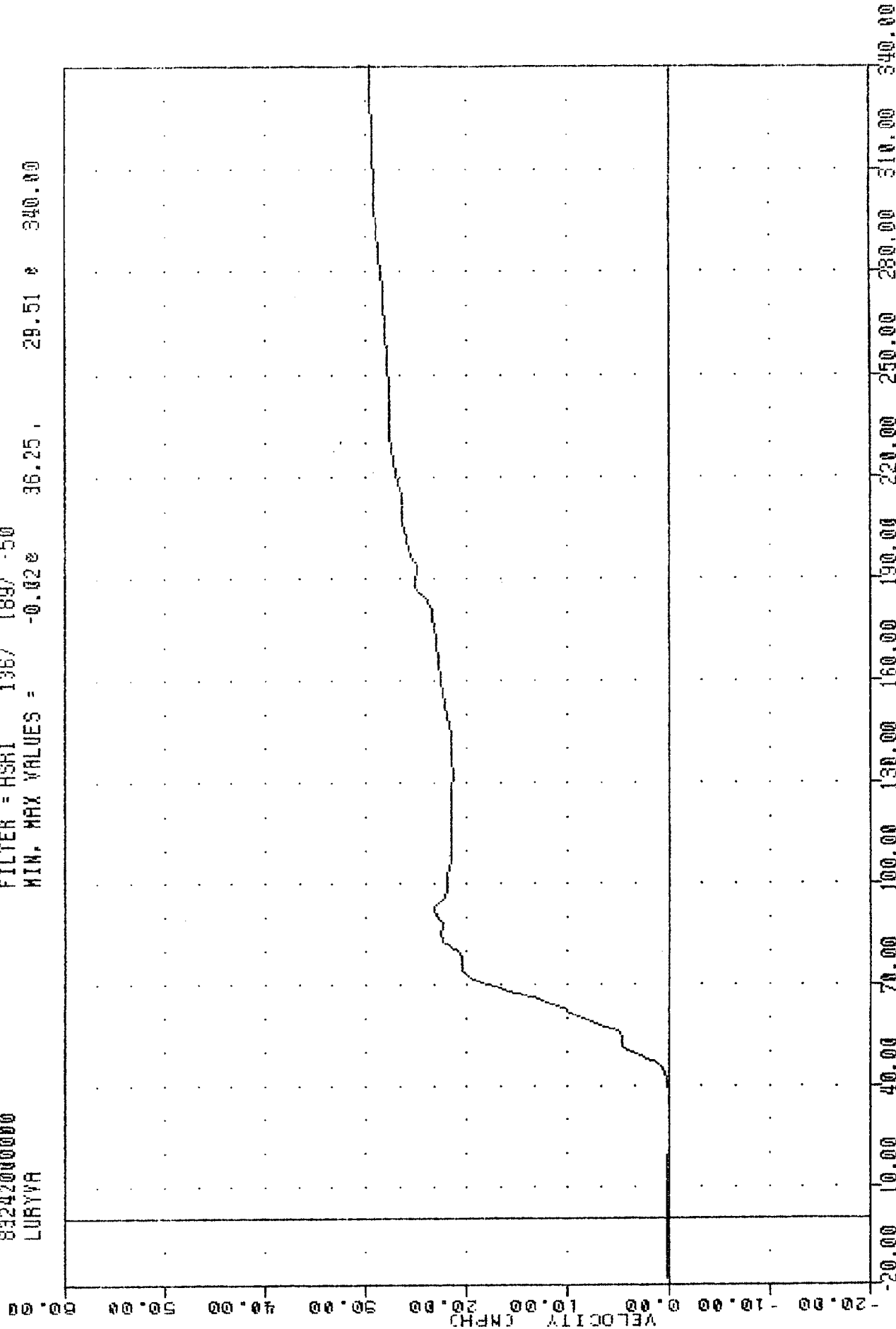
ACCELERATION (G)



TAC
EVALUATION OF MOD VW FLEET
83242000000
LURYVA

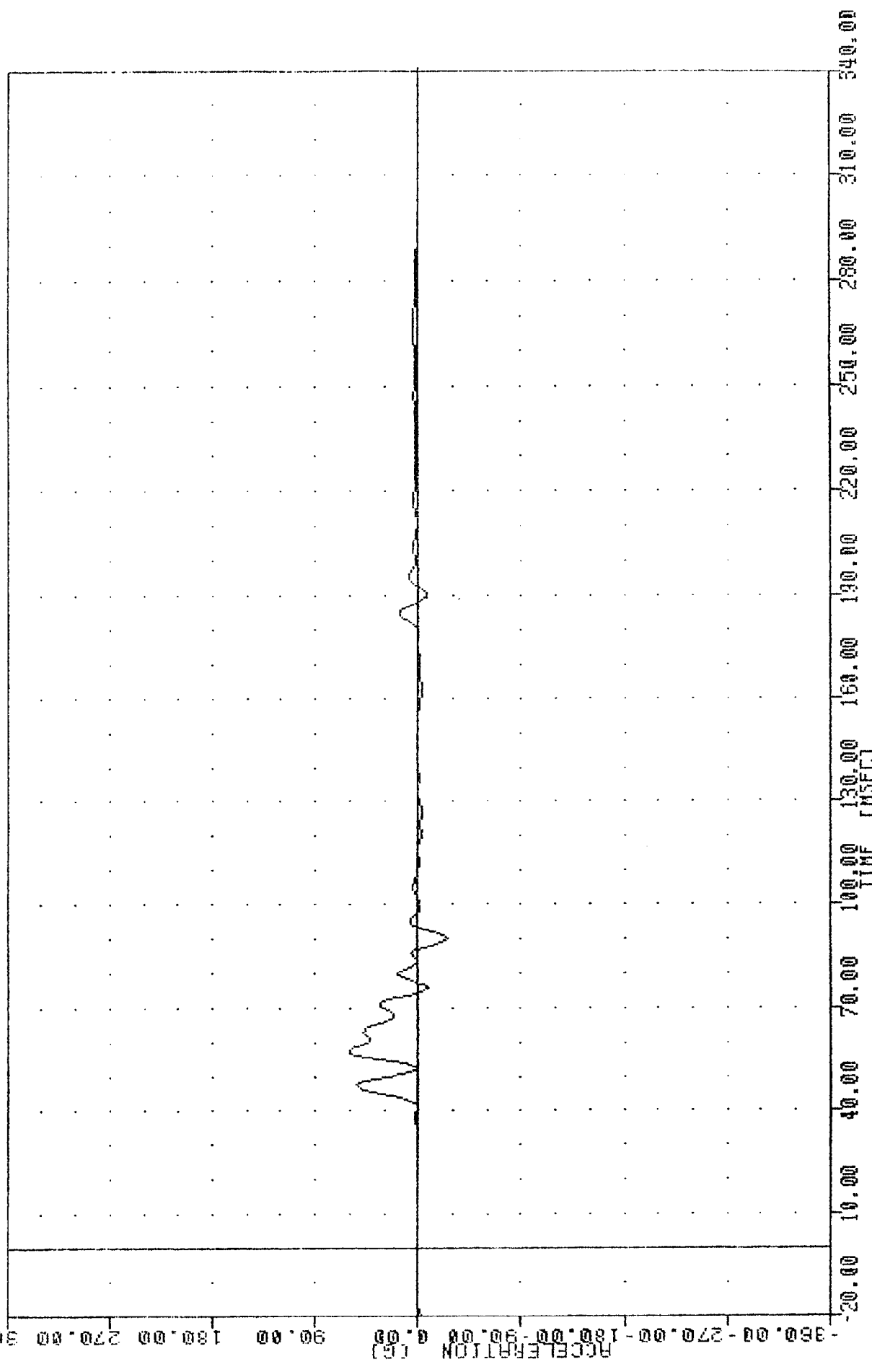
PLOT DATE 6-SEP-83 15:06:46

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -0.02 36.25 29.51 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYVA

TRC 830630 2-SEP-83 15:40:27
 EVALUATION OF MOD VN FLEET
 83242000000
 LLAY61
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -25.678 89.36 60.17 56.87

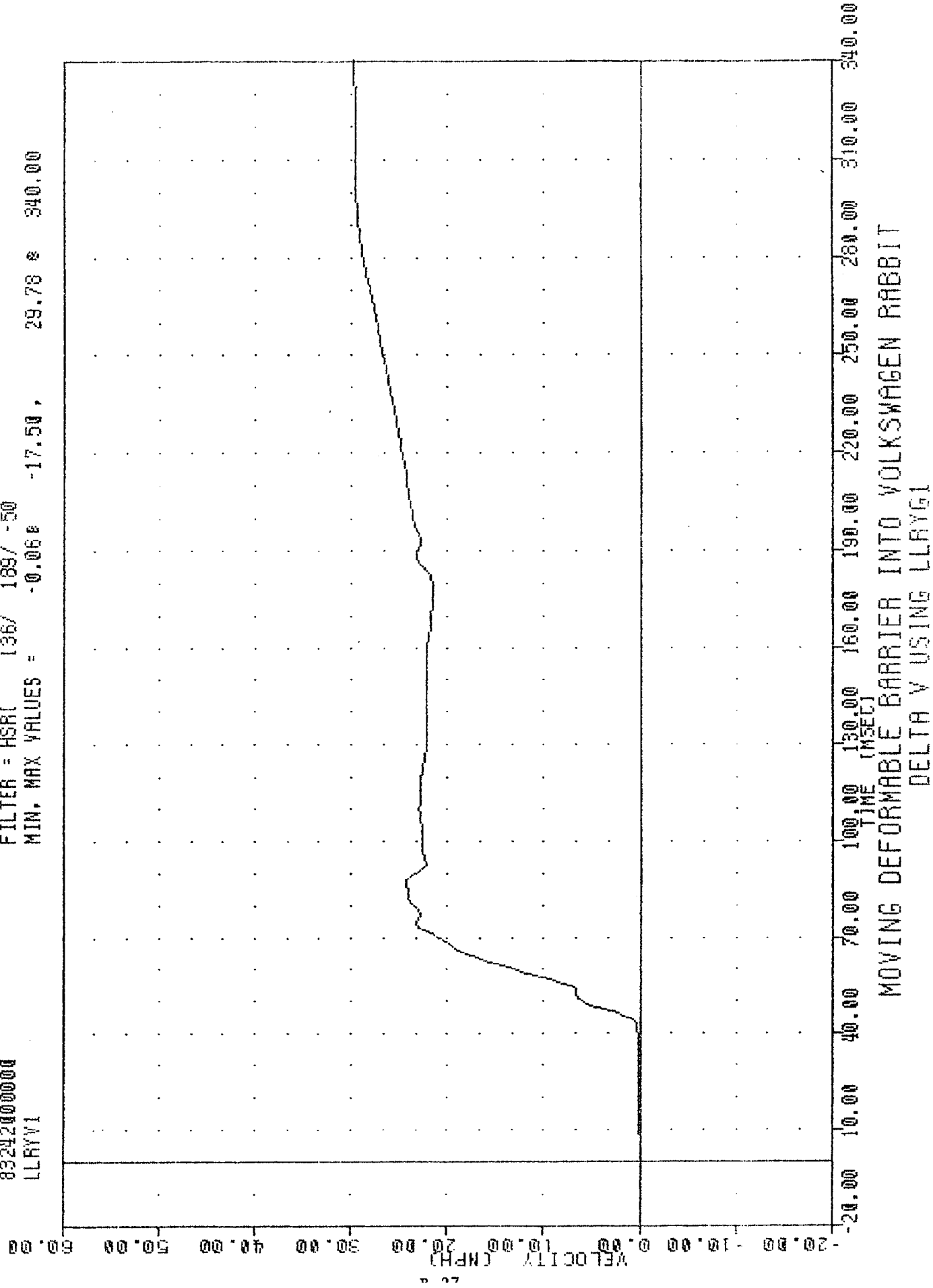


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT LOWER RIB ACCELERATION Y AXIS

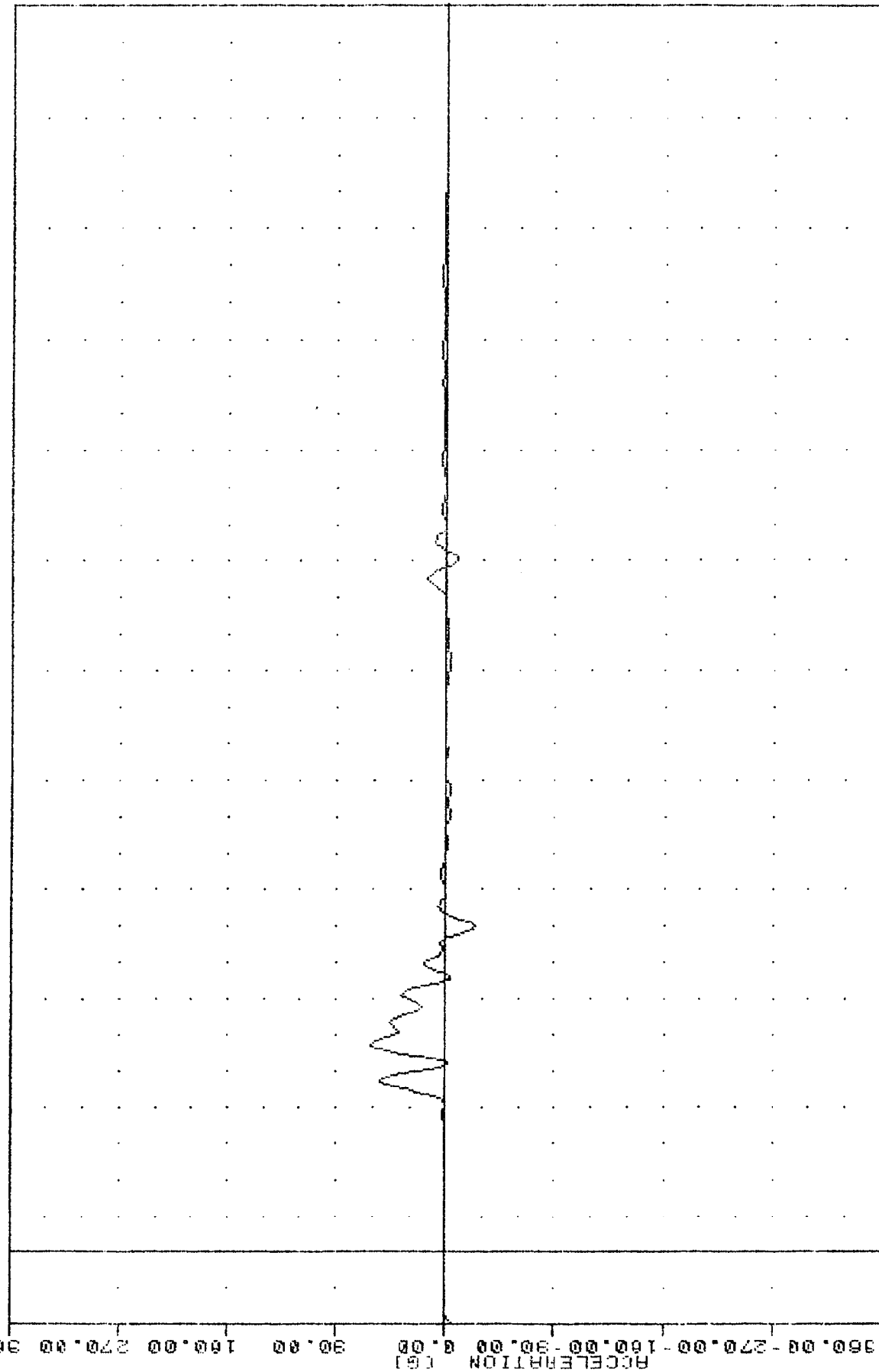
TRC
EVALUATION OF MOD YW FLEET
83242000000
LLRYV1

830830
8-SEP-83 09:42:44

FILTER = HSR(136/ 189/ -50
MIN. MAX VALUES = -0.06e -17.50, 29.78 e 340.00

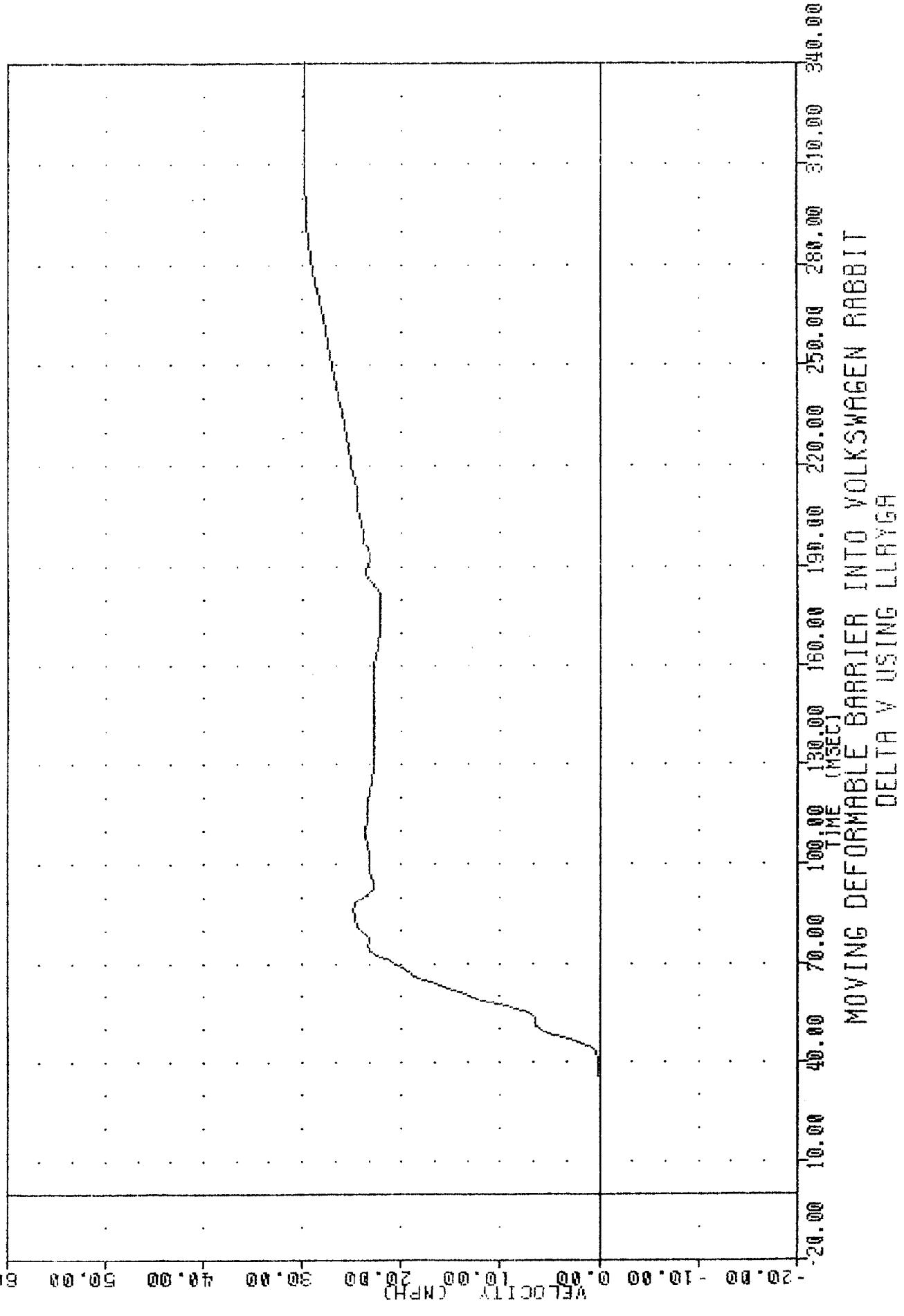


TAC 830830, 830830
 EVALUATION OF MOD VW FLEET
 83242000000
 LRLY6A
 PLOT DATE 2-SEP-83 15:46:27
 FILTER = H3R1 136/ 189/ -50
 MIN, MAX VALUES = -23.600 89.38, 61.90 56.87



-350.00 -270.00 -190.00 -110.00 -30.00 0.00 90.00 170.00 250.00 330.00
 ACCELERATION (G)
 -20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (msec)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT LOWER RIB ACCELERATION -2 Y AXIS

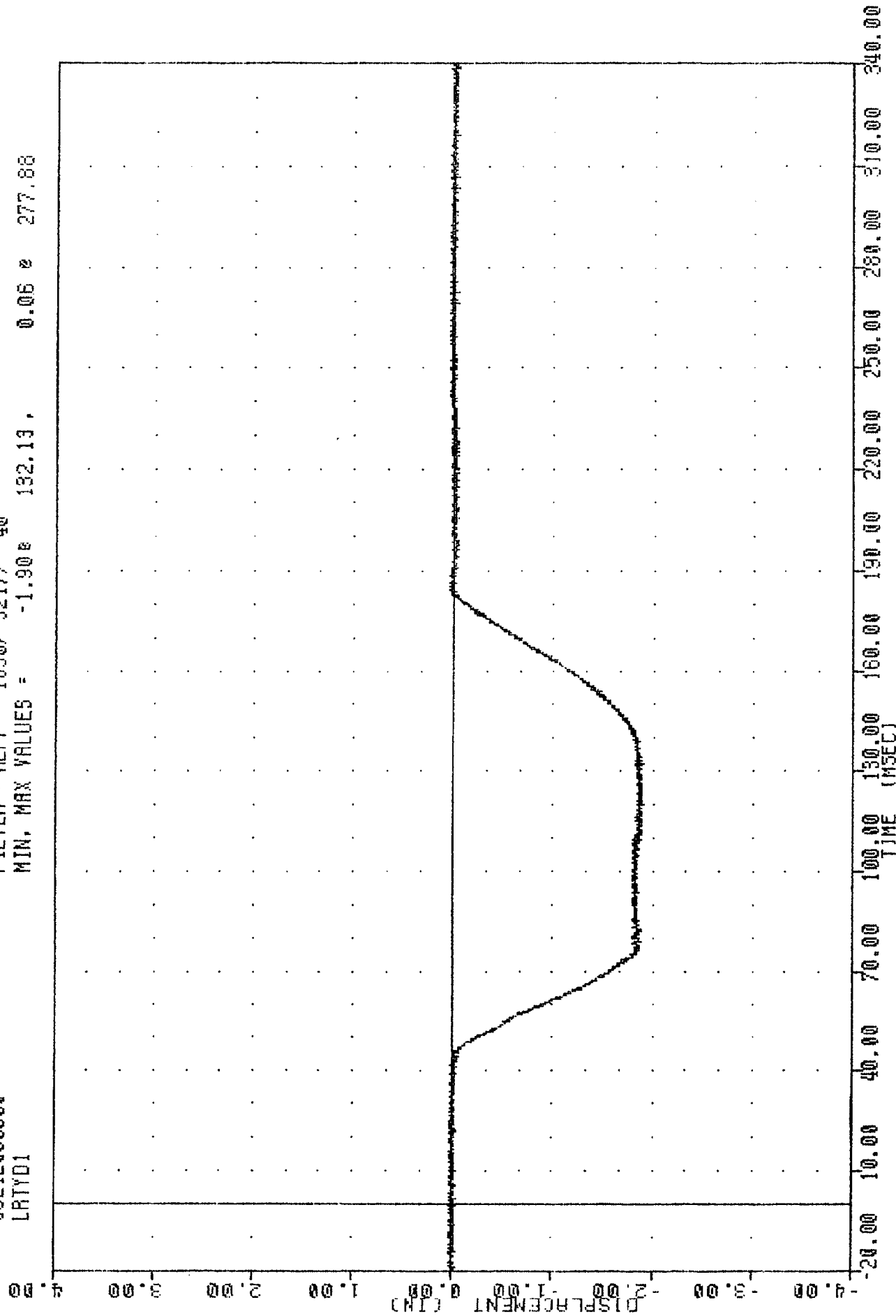
TRC 8300300
 EVALUATION OF MOD VW FLEET
 83242000000
 LLYVH
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.14e -17.50 , 29.87 e 340.00
 PLOT DATE 8-JUL-83 15.00.46



TRC 830830
 EVALUATION OF MOD VN FLEET
 83242000000
 LRTYD1

PLOT DATE 2-SEP-83 14:07:33

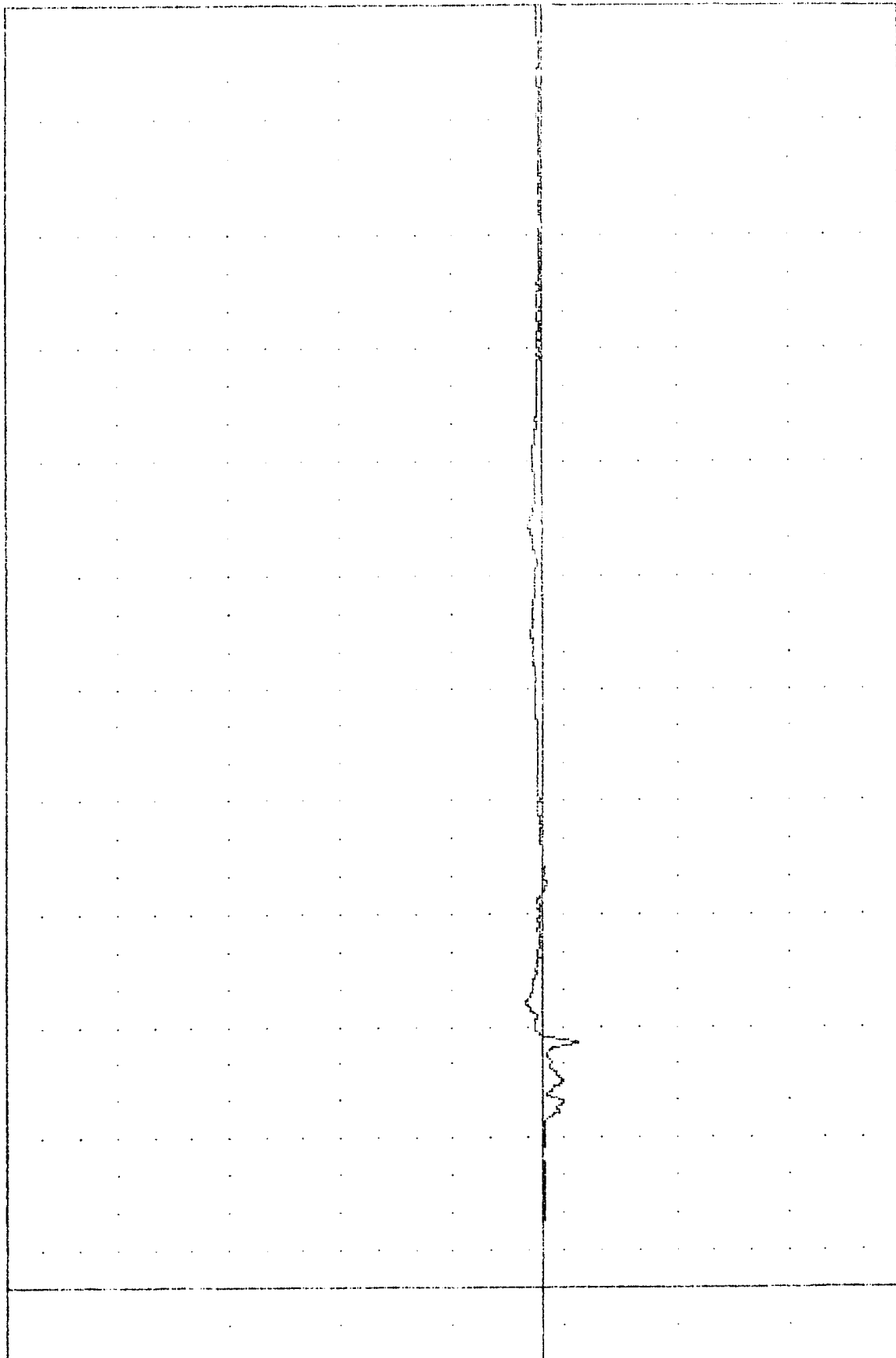
FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -1.908 132.13, 0.06 277.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT RIB TO SPINE DISPLACEMENT INCHES

TRC 830830 2-SEP-83 14:07:33
 EVALUATION OF MOD VW FLEET
 83242000000
 PEVXG1
 FILTER = BLFF 300/ 949/ -40
 MIN. MAX VALUES = -16.22% 65.63, 7.29 0 76.00

ACCELERATION (G)
 -160.00 -110.00 -60.00 -10.00 40.00 90.00 140.00 190.00 240.00

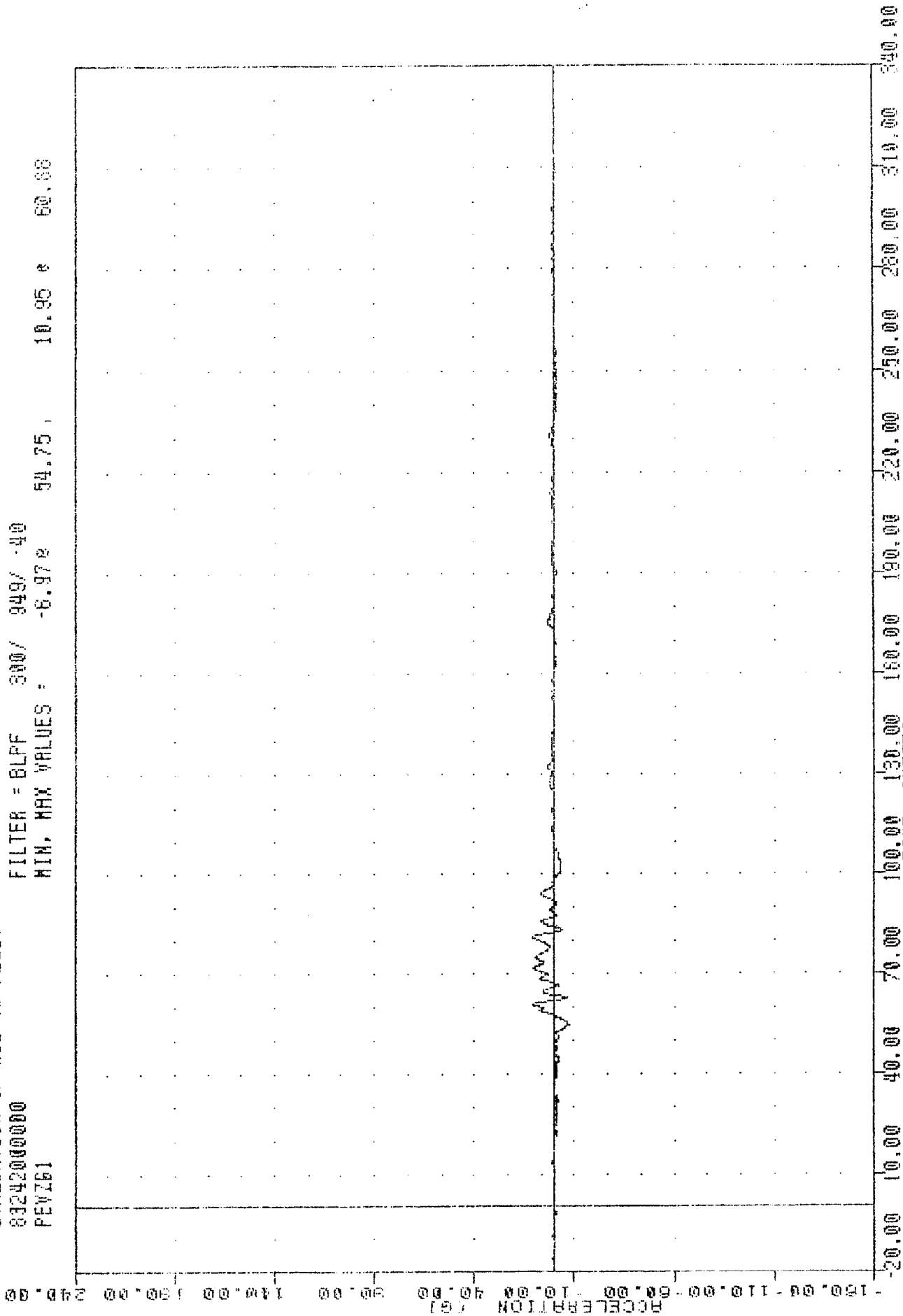


TIME (MSEC)
 -20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS ACCELERATION X AXIS

IRC
 EVALUATION OF MOD VN FLEET
 832420000000
 PEVZ61

PLOT DATE 2-SEP-83 14:57:33

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -6.972 54.75 10.95 60.88



TRC 830830 PLOT DATE 2-SEP-83 14:07:33

EVALUATION OF MOD YW FLEET

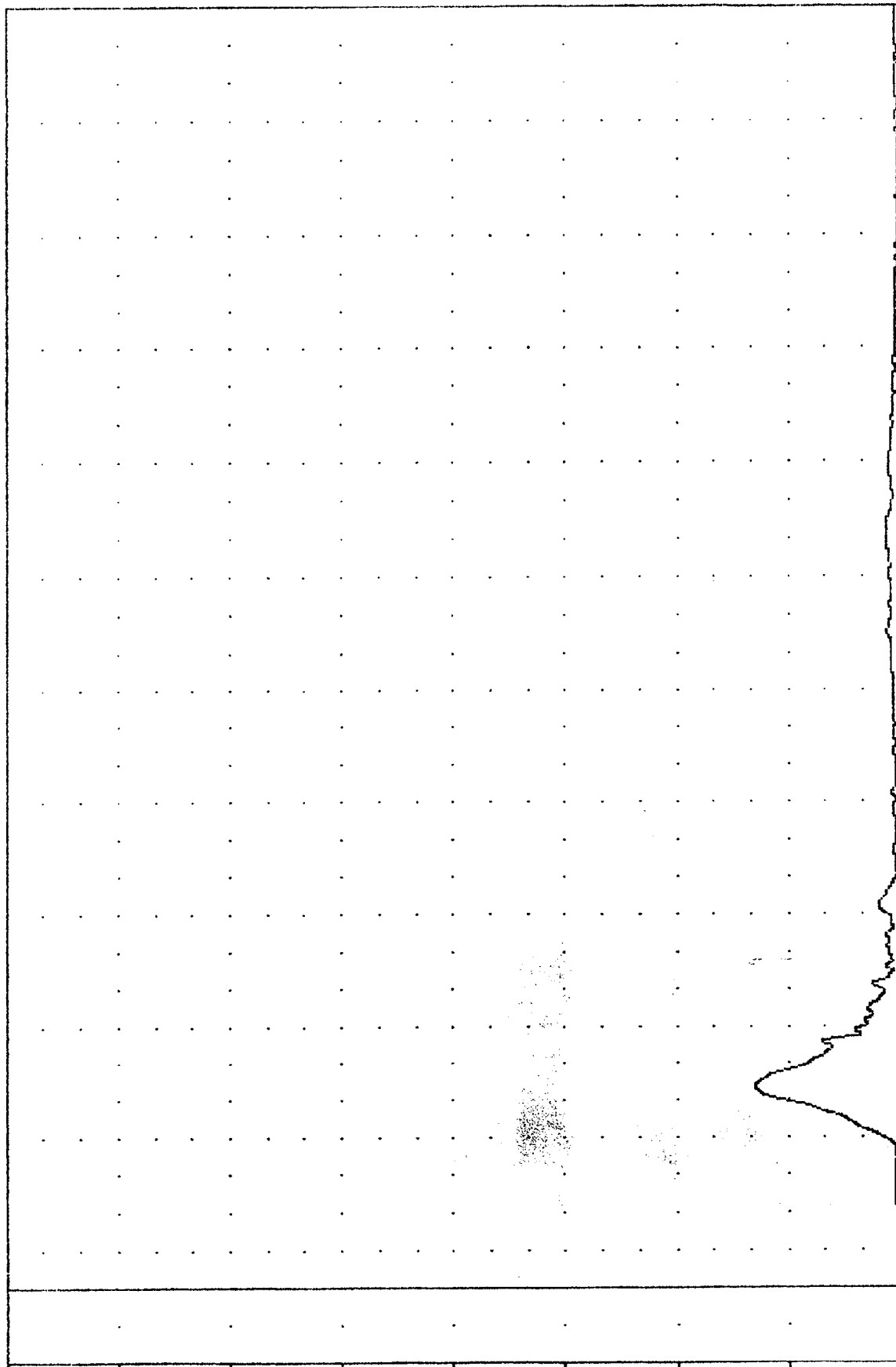
83242000000

PEVRG1

FILTER = 6LPF 300/ 949/ -40

MIN, MAX VALUES = 0.078 14.63, 84.82 53.63

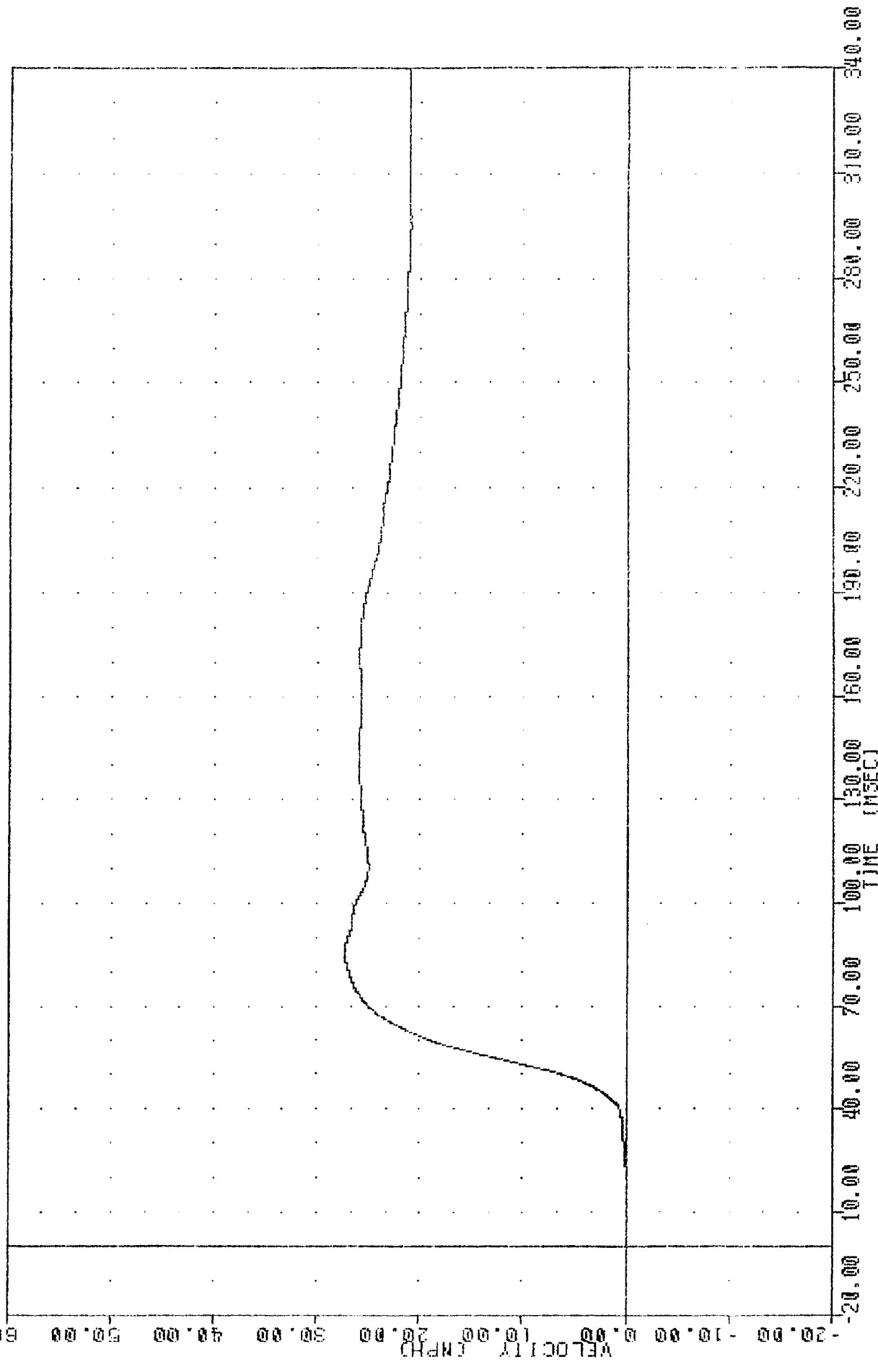
ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

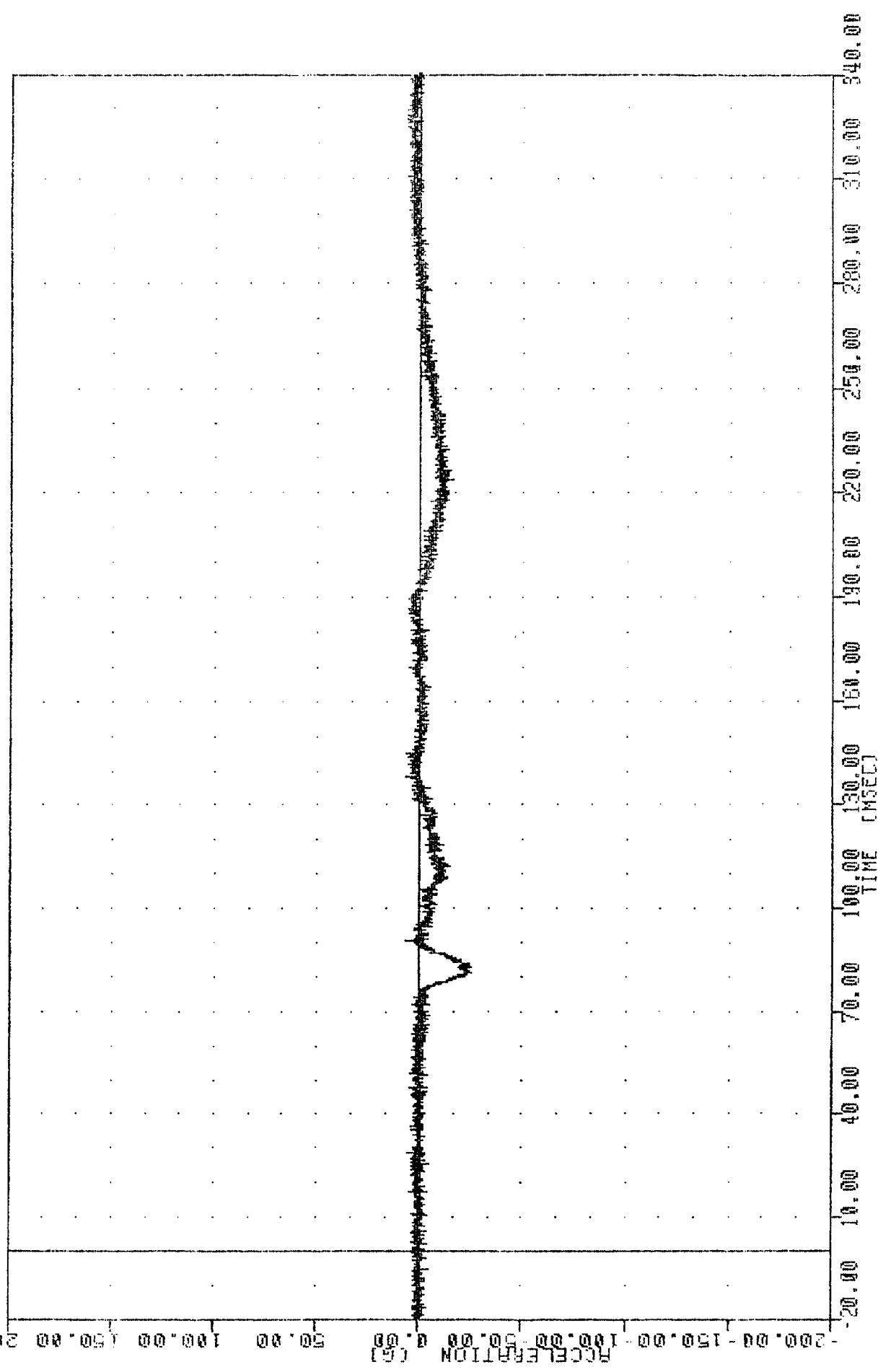
DRIVER PELVIS RESULTANT

TRC
 EVALUATION OF MOD VW FLEET
 83242000000
 PEVYV1
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -0.078 18.38, 27.29 8 84.88
 PLOT DATE 8-SEP-83 14.45.22



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING PFVY61

TRC
 EVALUATION OF MOD VW FLEET
 832420000000
 HEDX63
 PLOT DATE 2-SEP-83 14:37:33
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -25.37 82.38, 6.77 310.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION X AXIS

TRC 830820 2-SEP-83 14:57:33

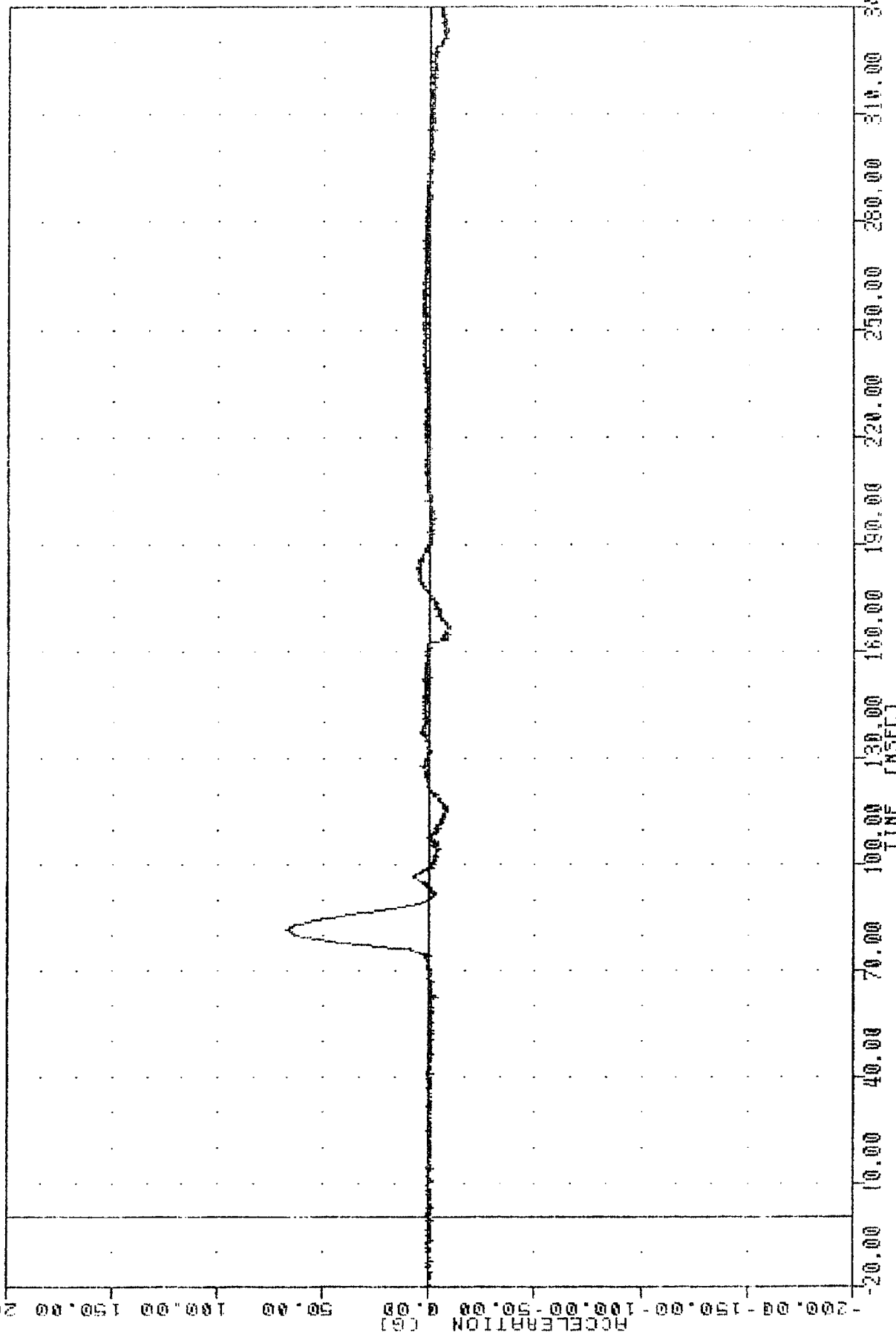
EVALUATION OF MOD VN FLEET

83242000000

HEDY63

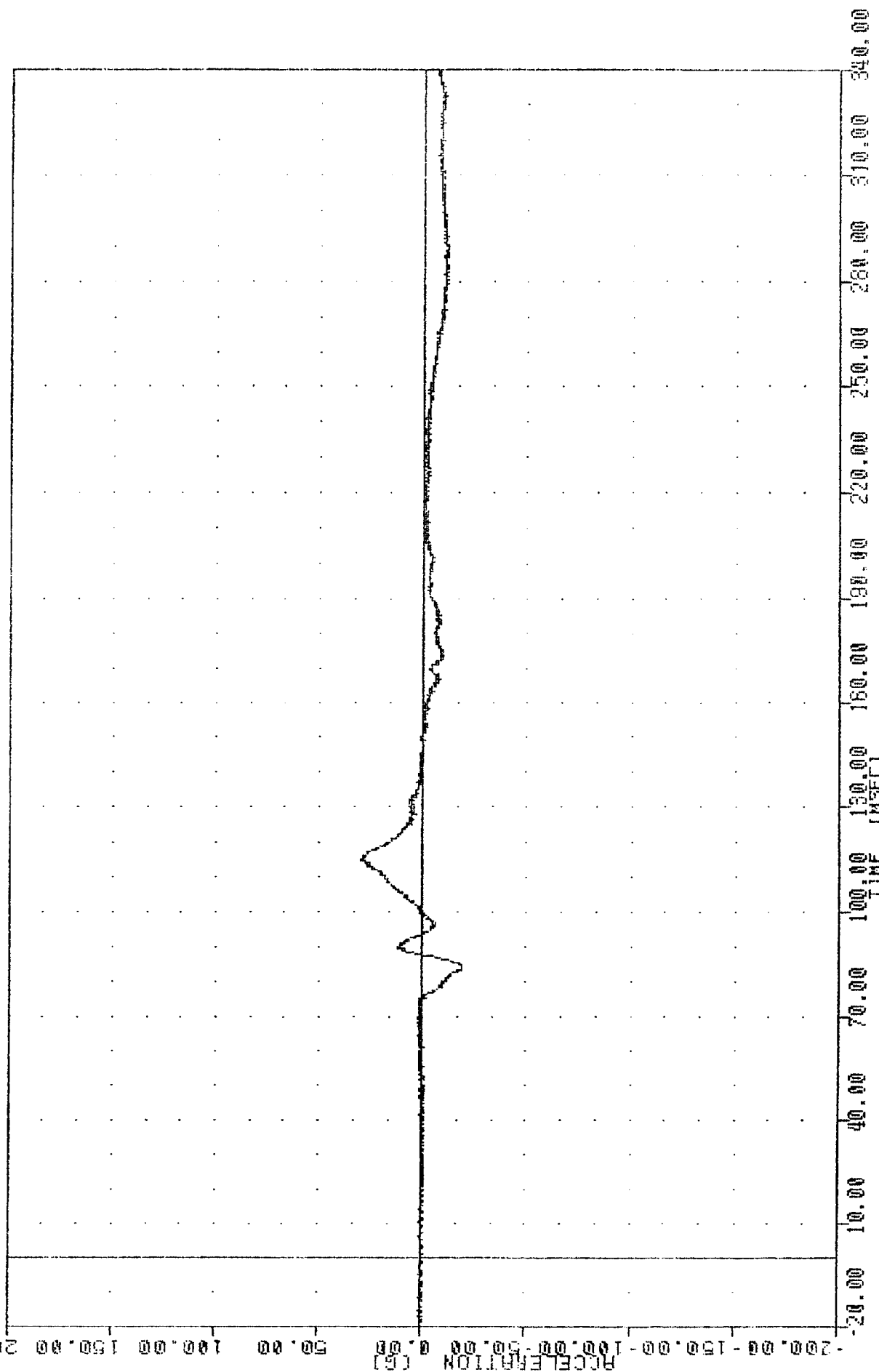
FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -9.730 167.131 68.030 81.38



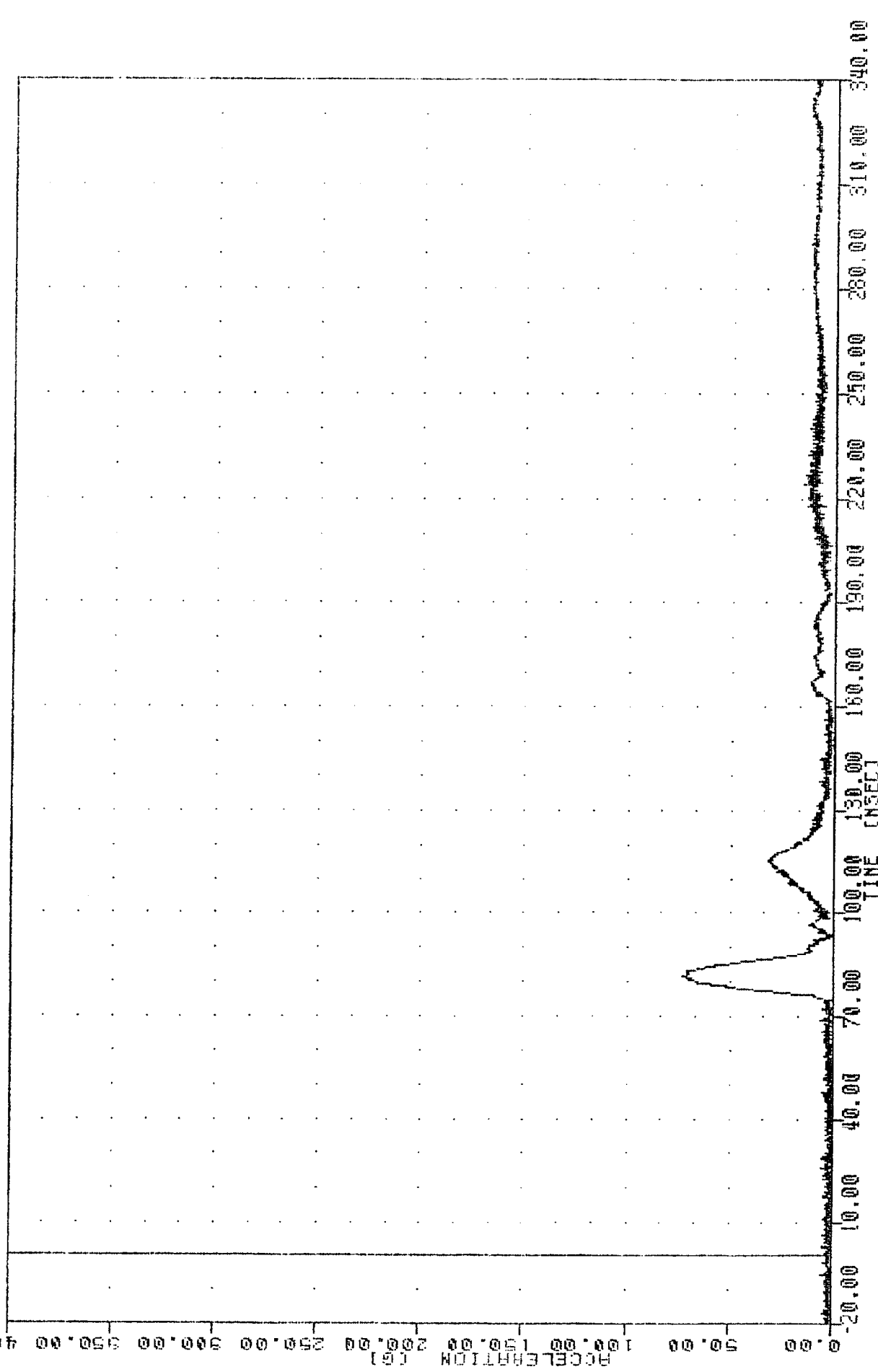
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Y AXIS

IRC 830830 PLOT DATE 2-SEP-83 14:57:33
 EVALUATION OF MOD YW FLEET
 83242000000
 HE0763
 FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -18.99 83.88 29.93 115.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION Z AXIS

IAC
 EVALUATION OF MOD VW FLEET
 83242000000
 HEAD63
 830630
 2-SEP-83 14:57:33
 FILTER = ALFF 1650/ 5217/ .40
 MIN. MAX VALUES = 0.17% 19.63, 72.85 e 81.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD RESULTANT

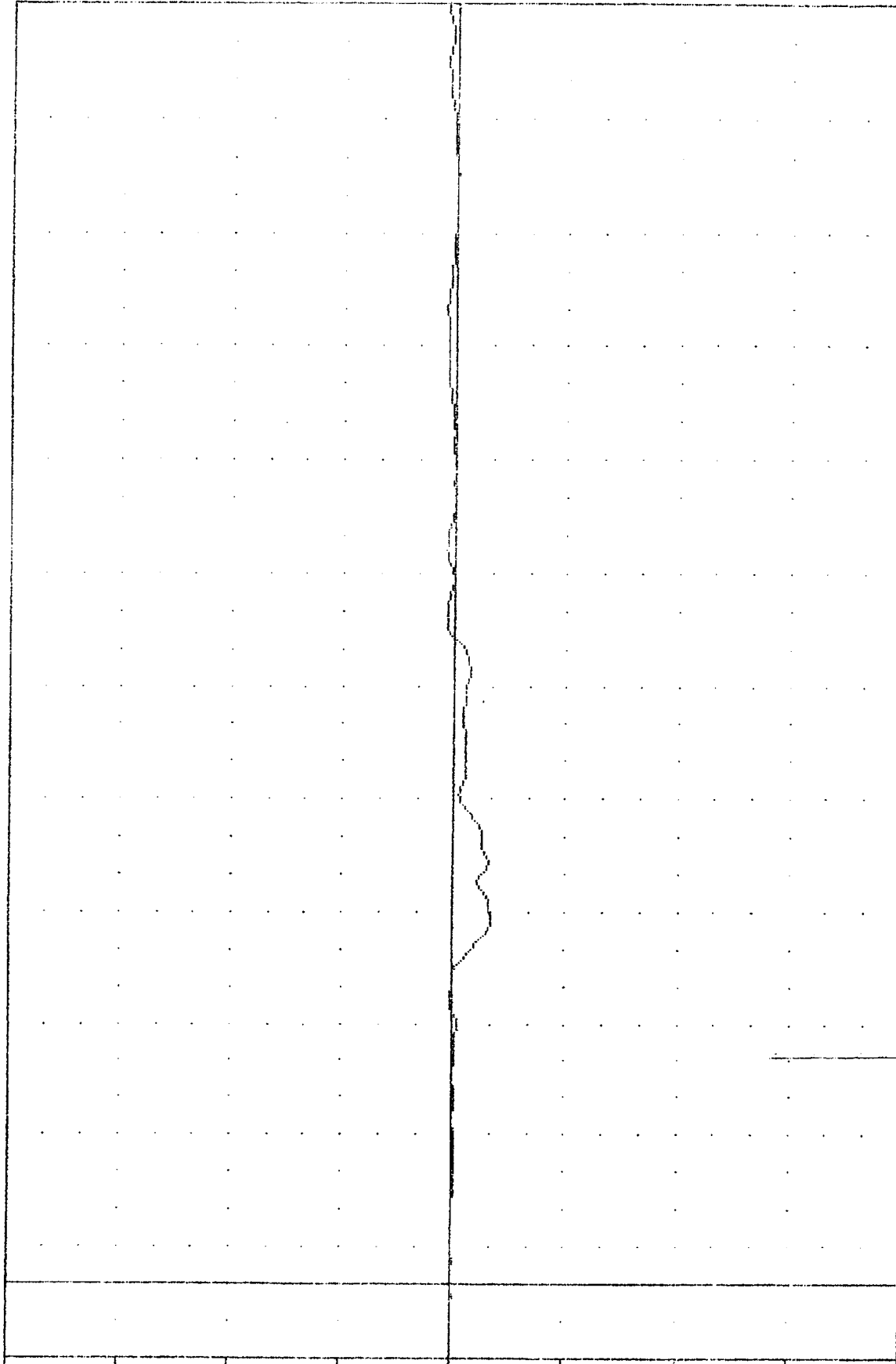
TRC , 830830
EVALUATION OF MOD YW FLEET
83242000000
T01X63

PLOT DATE 2-SEP-83 15:48:27

FILTER = HSR1 136/ 189/ -50

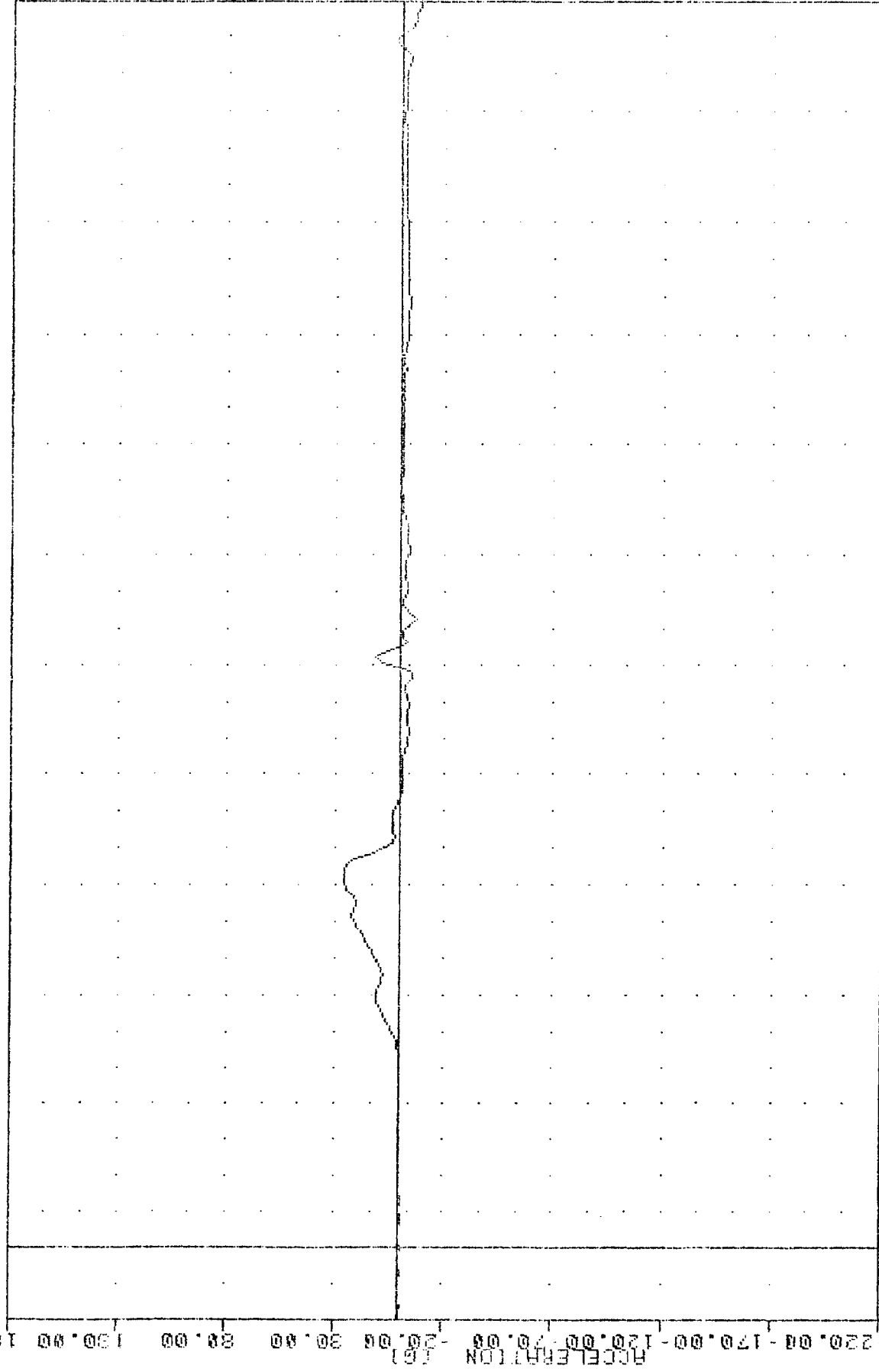
MIN. MAX VALUES = -16.91% 96.88 , 4.76 s 340.00

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

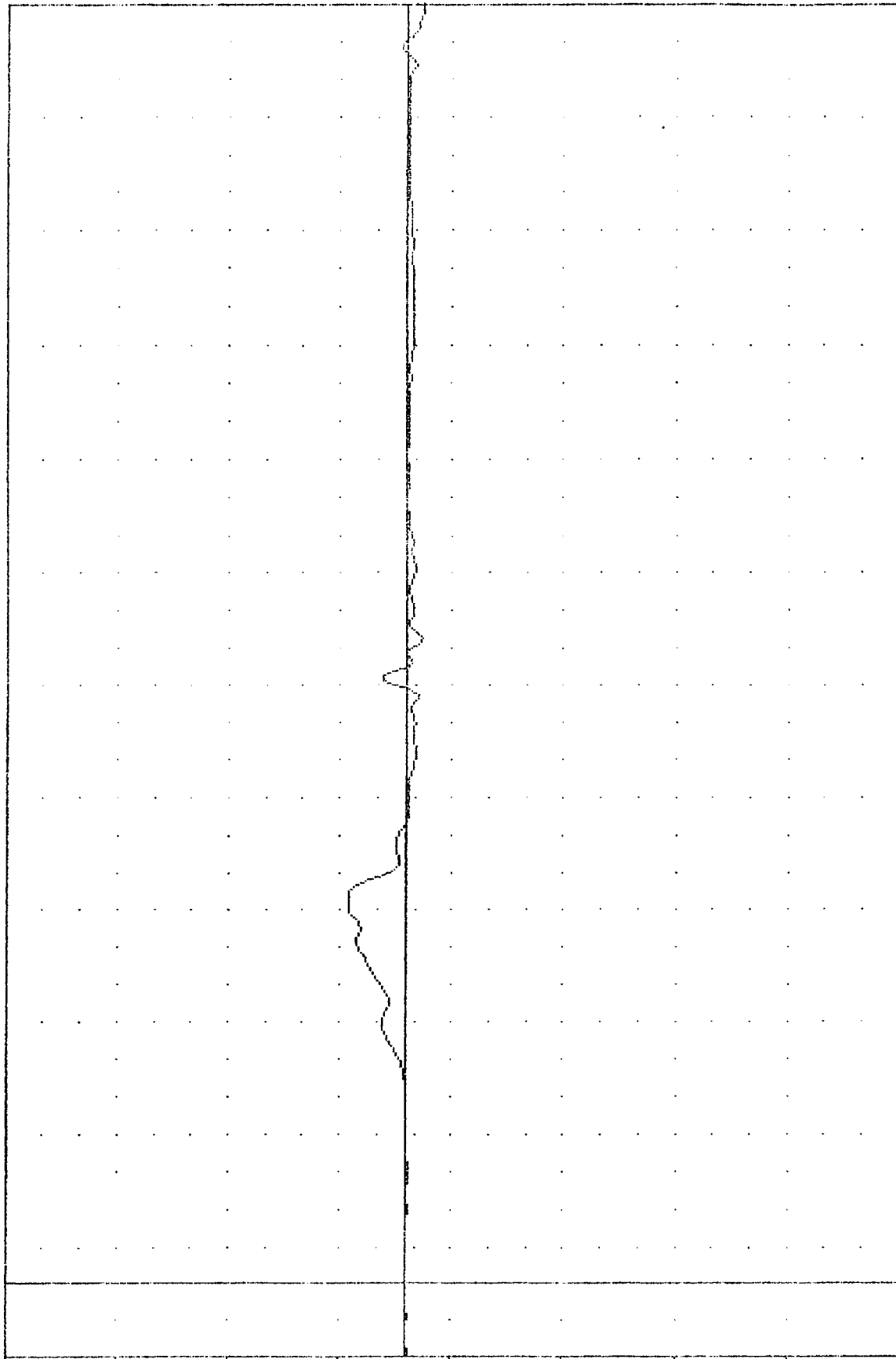
TRC
 EVALUATION OF MDD VW FLEET
 83242000000
 T01Y63
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -8.10e 338.75, 25.95 e 101.25
 PLOT DATE 2-SEP-83 15:45:27



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE ACCELERATION Y AXIS

TAC
 EVALUATION OF MCD VW FLEET
 83242000000
 TQ1Y6C
 PLOT DATE 2-SEP-83 15:46:27
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -7.548 338.75 26.36 101.88

ACCELERATION (G)
 -220.00 -170.00 -120.00 -70.00 -20.00 0.00 50.00 100.00 150.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE ACCELERATION -Z Y AXIS

TRC 830830 2-SEP-83 15:46:27

EVALUATION OF MOD VV FLEET

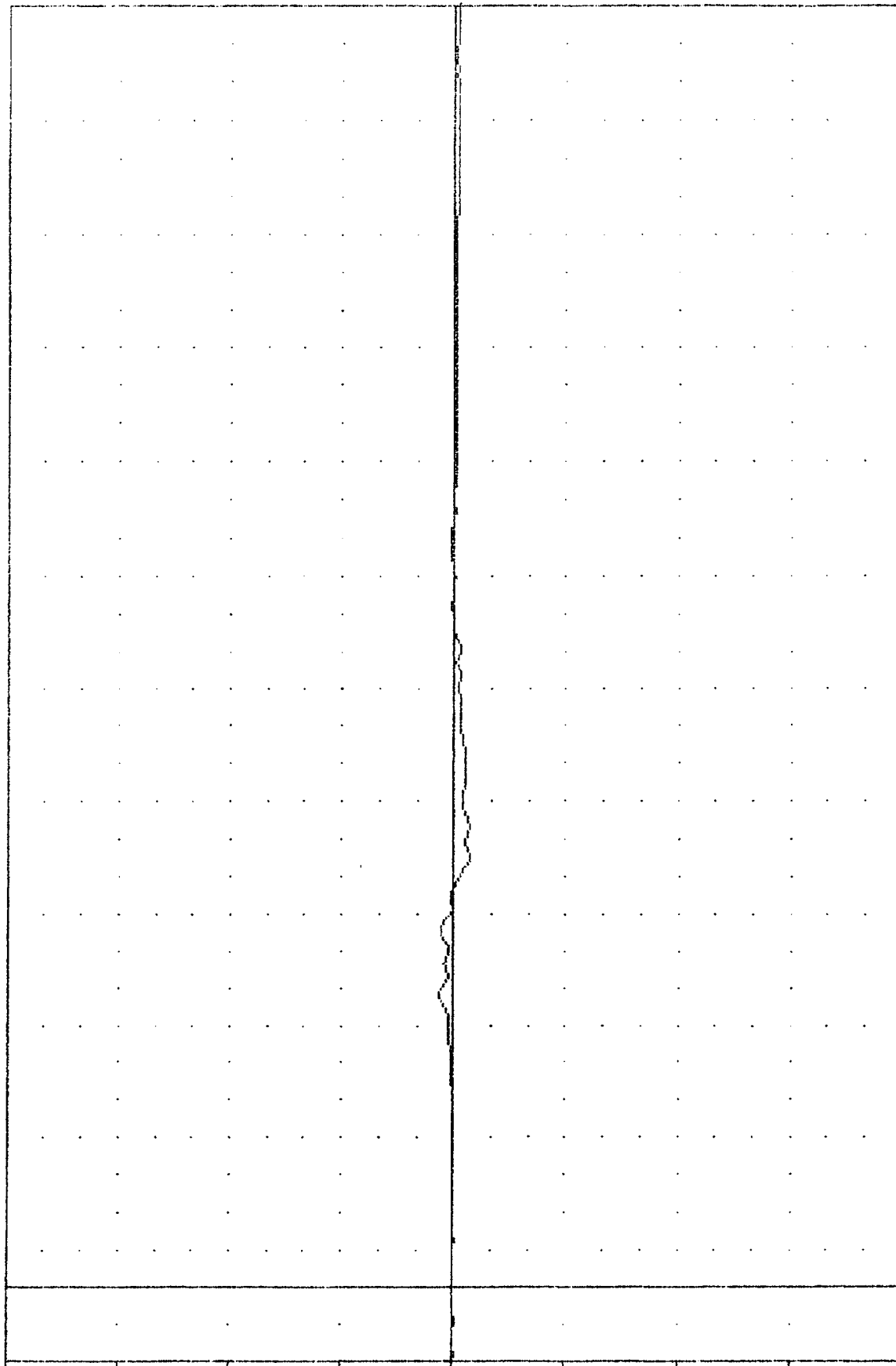
83242000000

101163

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -7.05e 114.37, 6.32 e 77.50

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 150.00 180.00 200.00 250.00 280.00 310.00 340.00

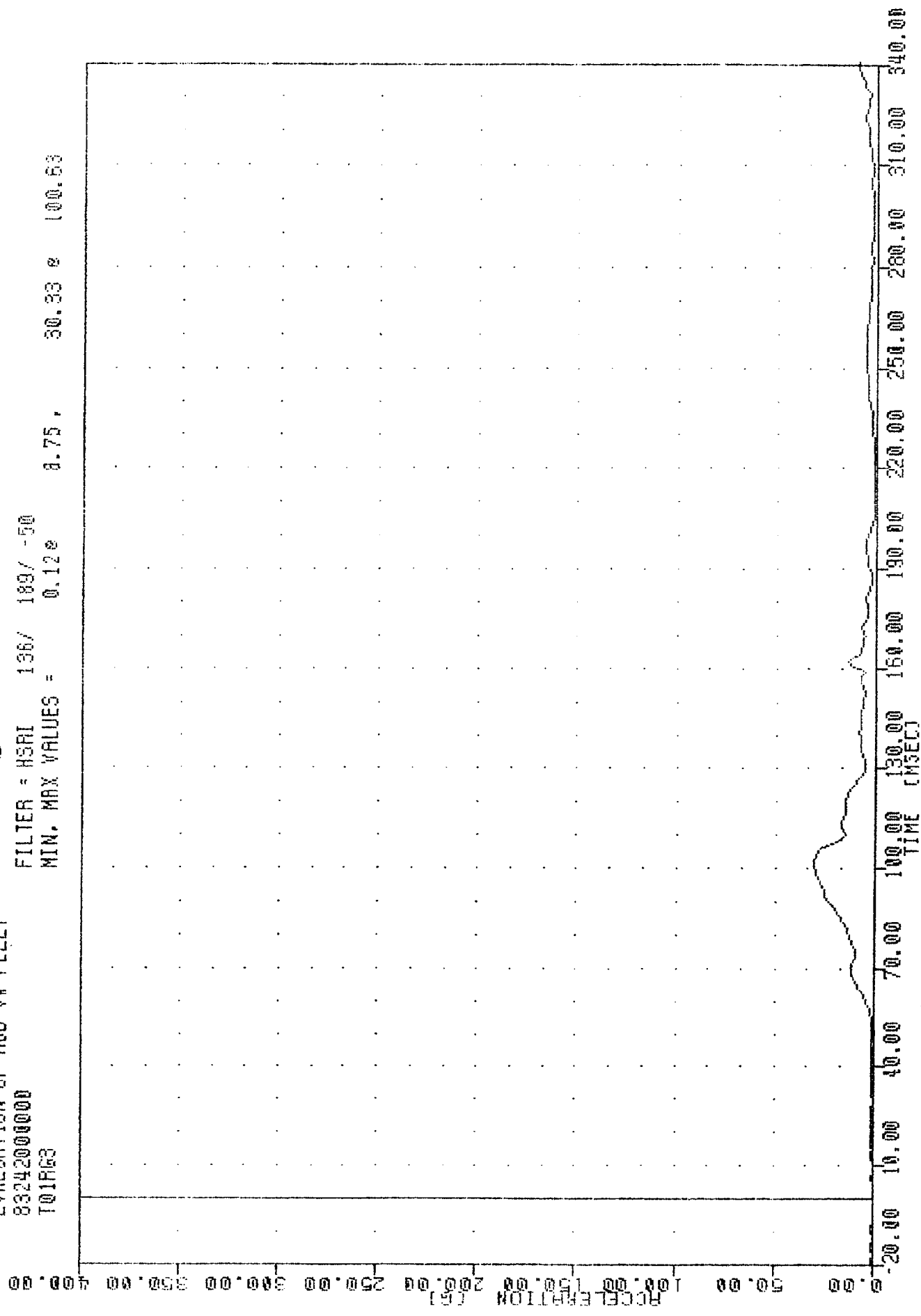
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE ACCELERATION Z AXIS

IRC 830030
 EVALUATION OF MOD VN FLEET
 83242000000
 T01RG3

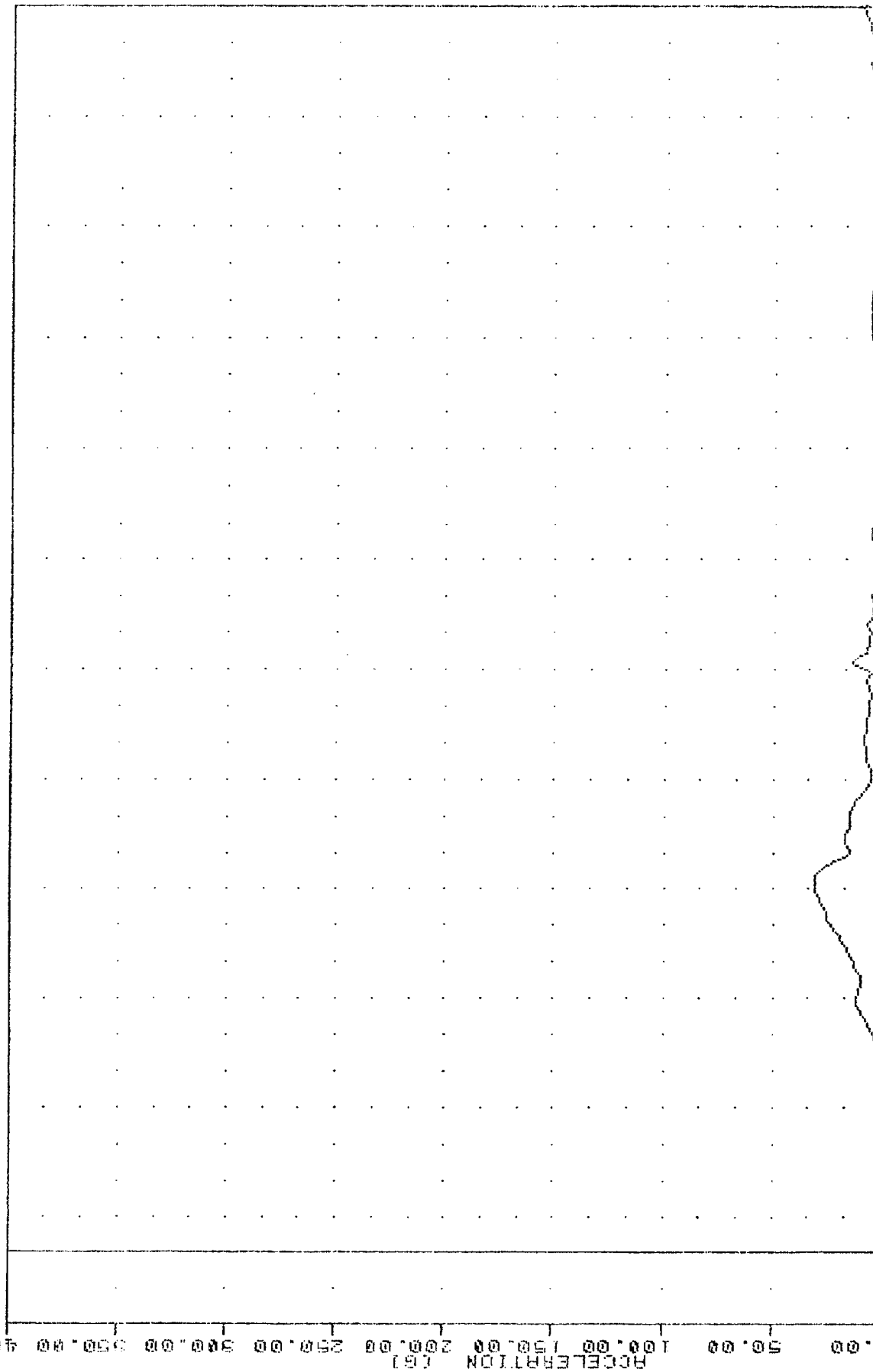
PLOT DATE 6-SEP-83 09:23:37

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = 0.120 0.75, 30.33 100.53



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE RESULTANT

TAC 830630
 EVALUATION OF MOD VW FLEET
 83242000000
 T01R63
 FILTER = H3RI 136/ 189/ 50
 MIN. MAX VALUES = 0.070 -17.50 30.62 * 100.63
 8-SEP-83 15:13:06

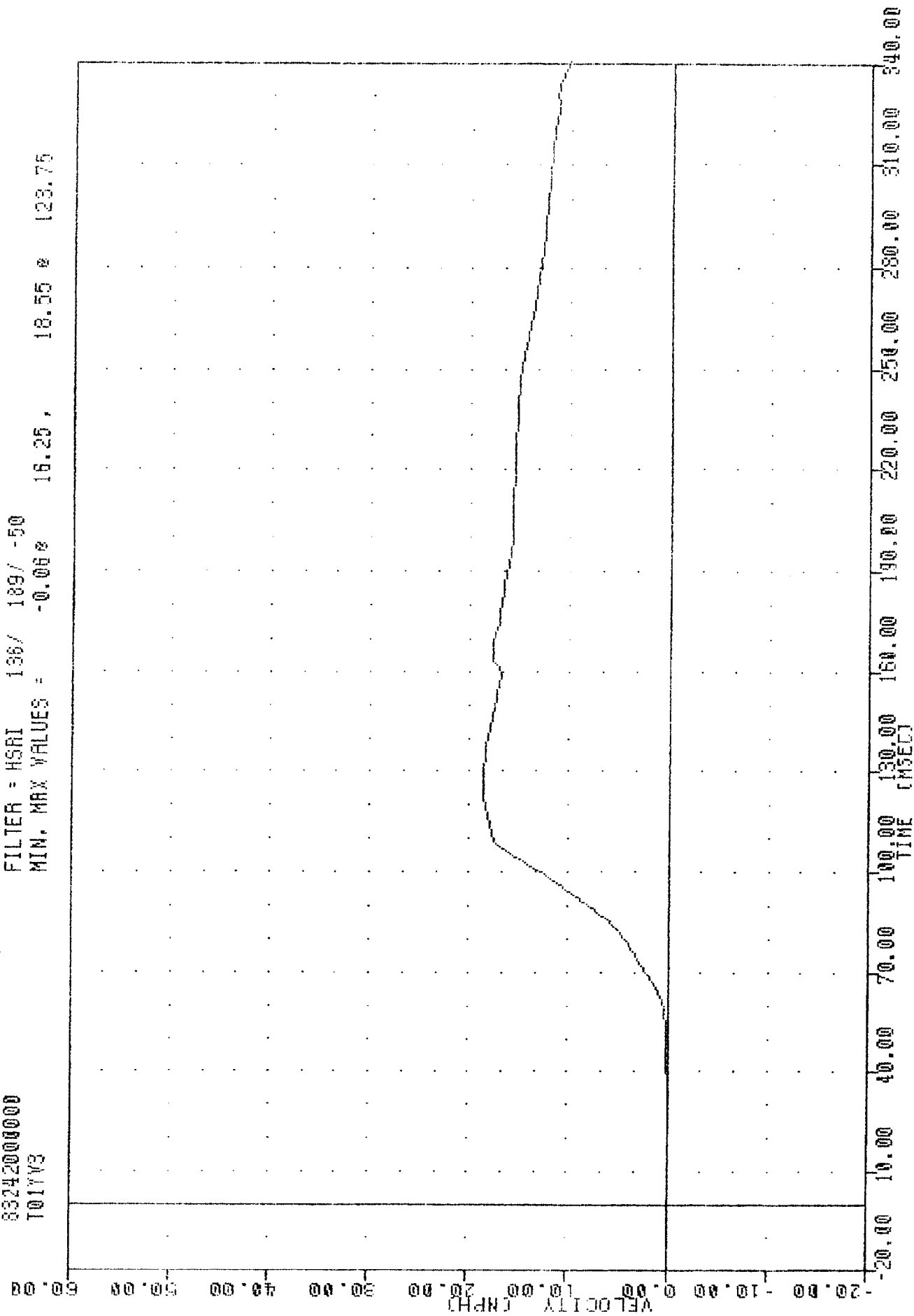


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE RESULTANT T01Y6C

TRC
 EVALUATION OF MOD VW FLEET
 83242000000
 T01YV3

PLOT DATE 6-SEP-83 15:06:46

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.060 16.25, 18.55 @ 123.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01Y63

TRC 830830 6-SEP-83 15:06:48

EVALUATION OF MOD VN FLEET

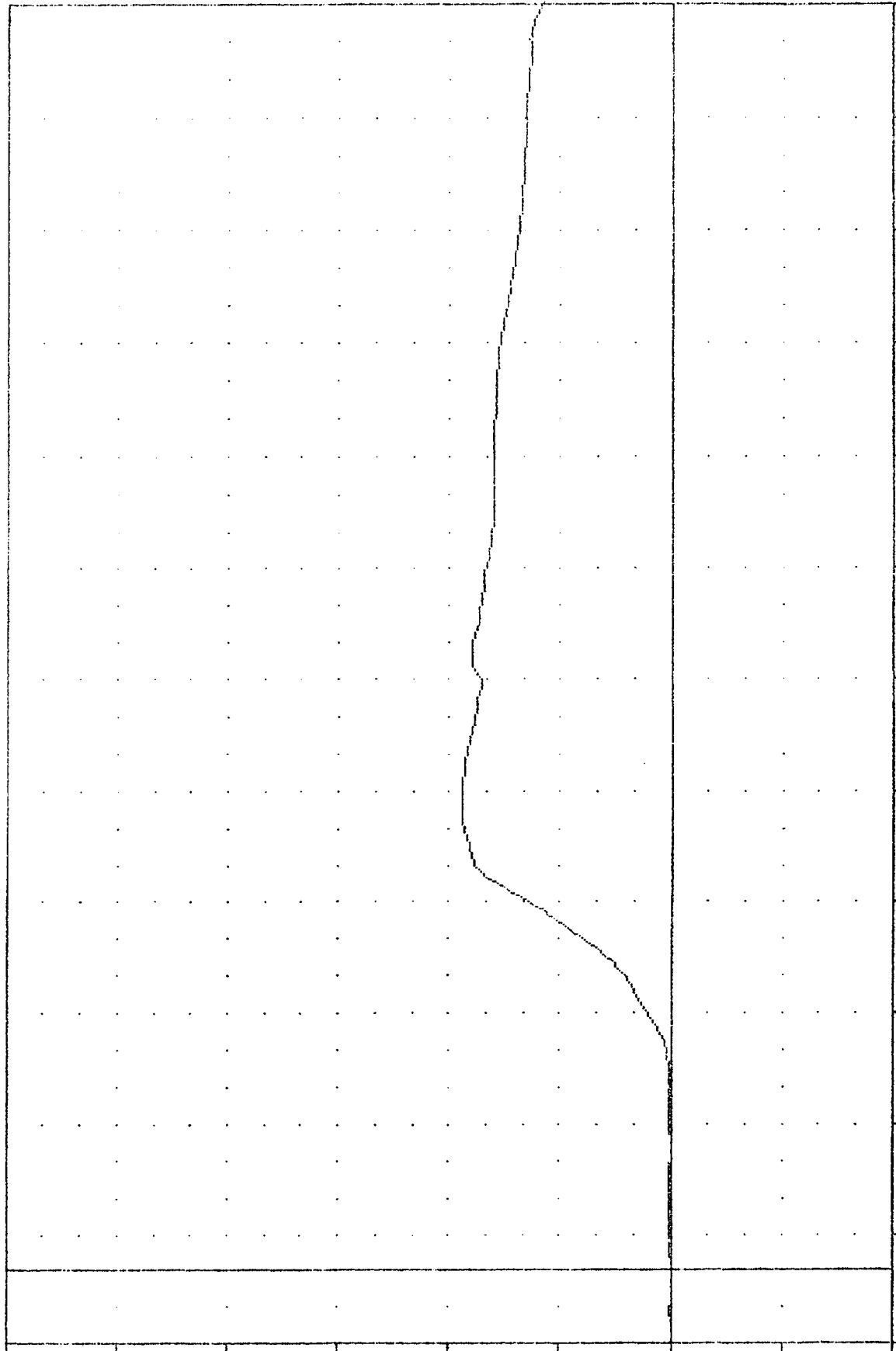
83242000000

T01YVC

FILTER = HSRI 136/ 189/ -50

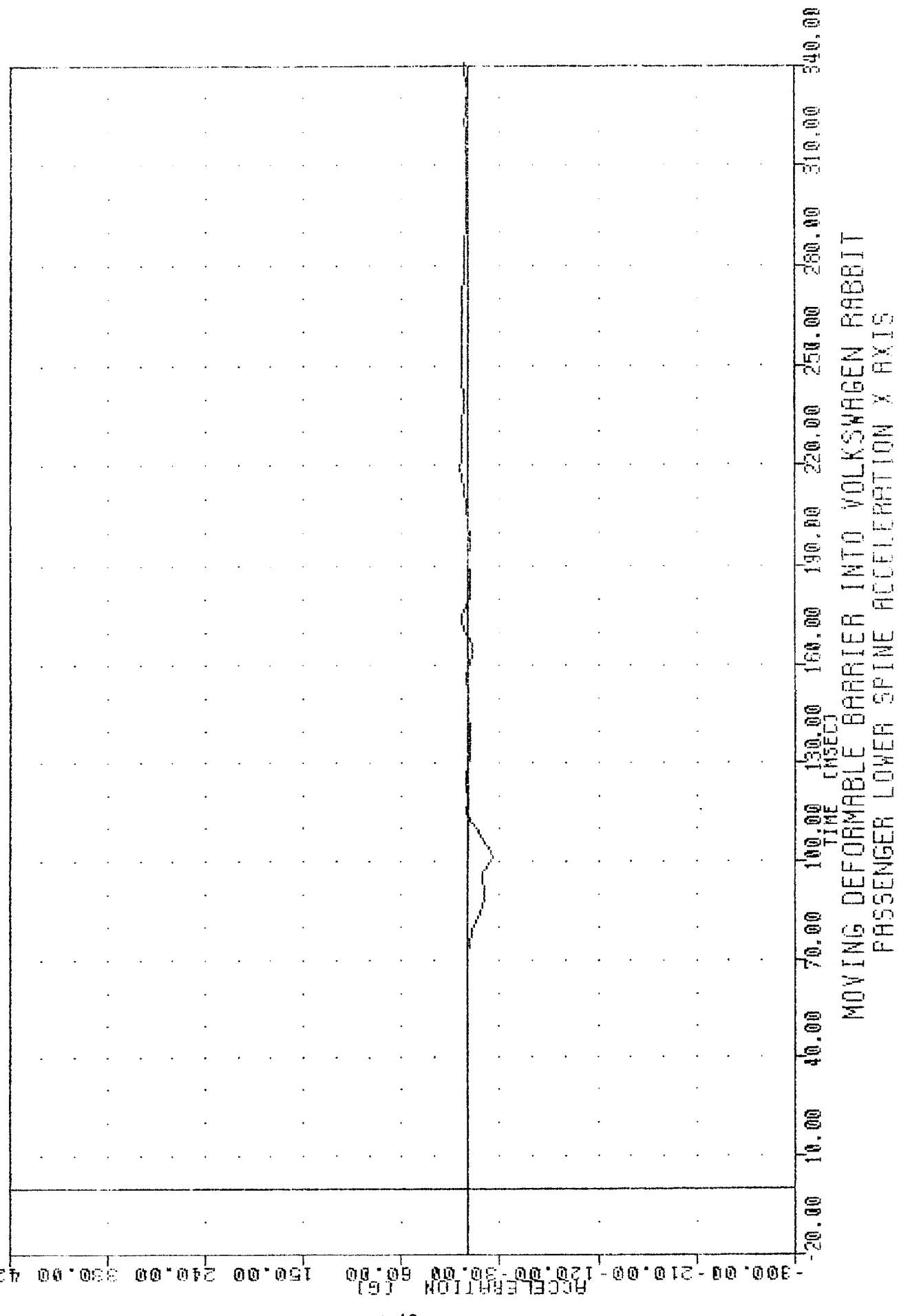
MIN, MAX VALUES = -0.01e -17.50 , 18.78 e 123.12

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YVC

TRC 830830 83242000000 T12XG3
 EVALUATION OF MOD VW FLEET
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -22.85e 101.25, 6.20 e 218.13
 PLOT DATE 2-SEP-83 15:45:27



ARC 850830 2-SEP-83 15:46:27

EVALUATION OF MOD VN FLEET

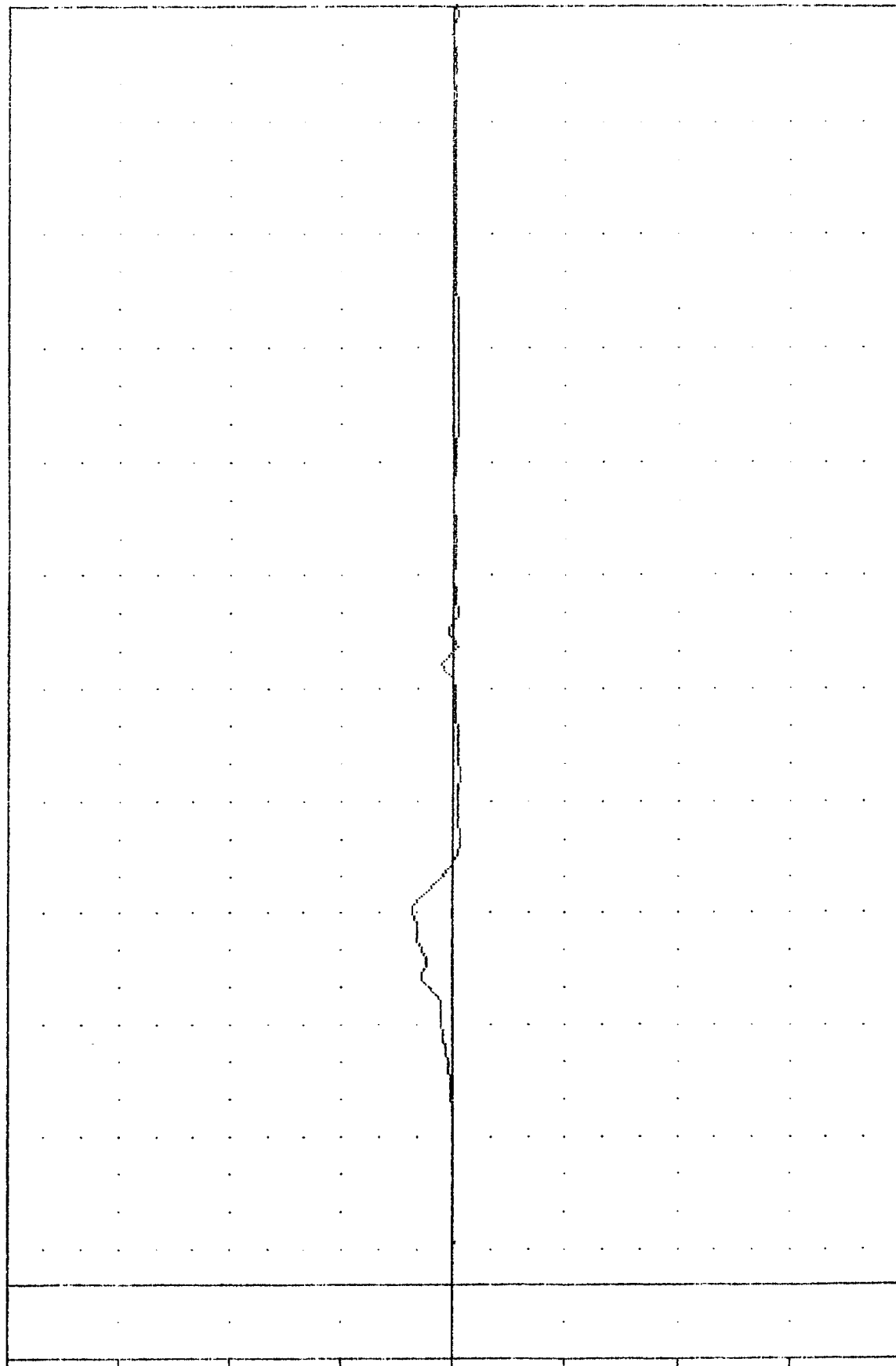
83242000000

T12Y63

FILTER = HSRI 136/ 189/ -50

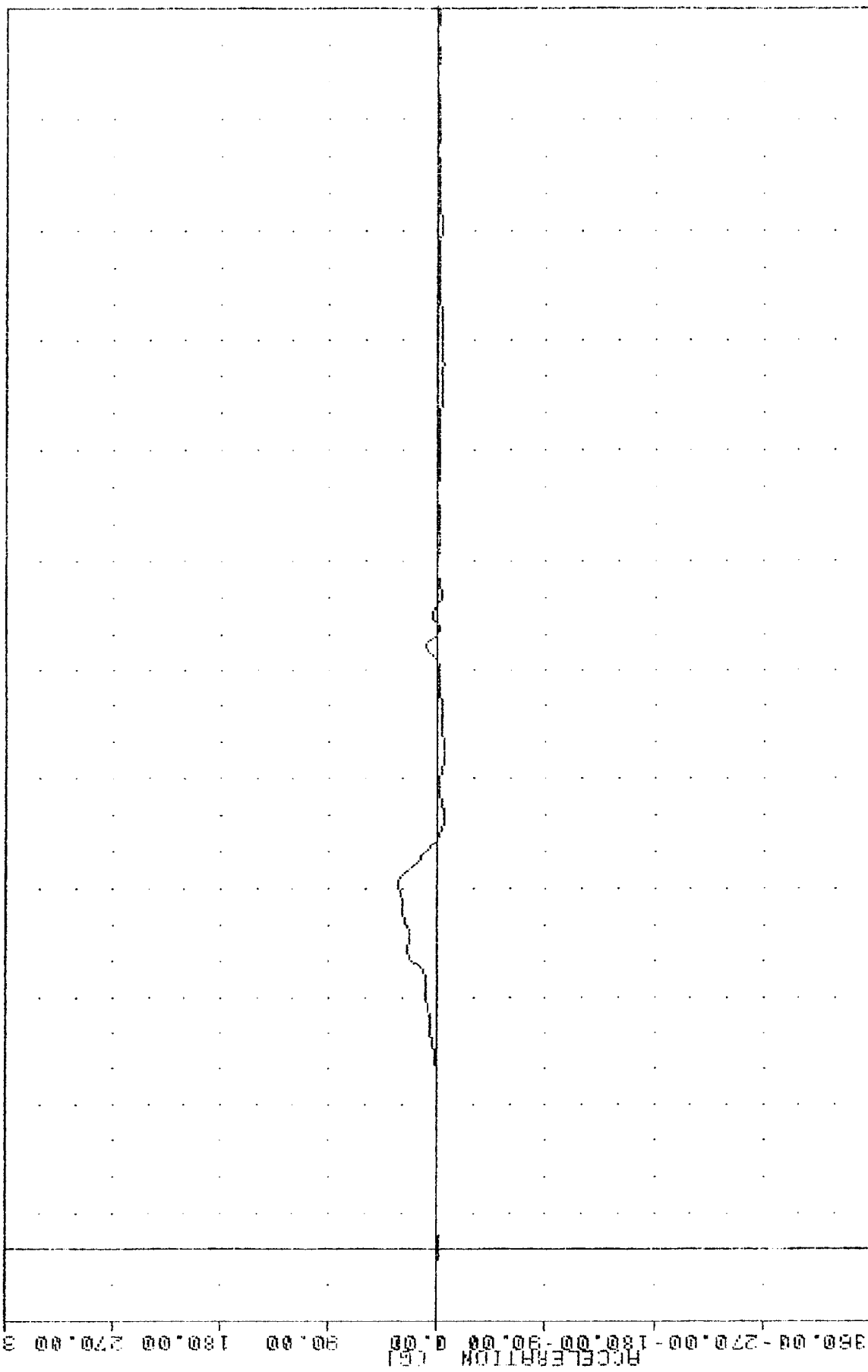
MIN. MAX VALUES = -5.64e 119.38 , 32.56 e 100.63

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION Y AXIS

TRC
 EVALUATION OF MOD VW FLEET
 83242000000
 712YGC
 PLOT DATE 2-SEP-83 15:46:27
 FILTER = HSRI 135/ 189/ -50
 MIN. MAX VALUES = -5.420 119.38, 32.92 & 100.63



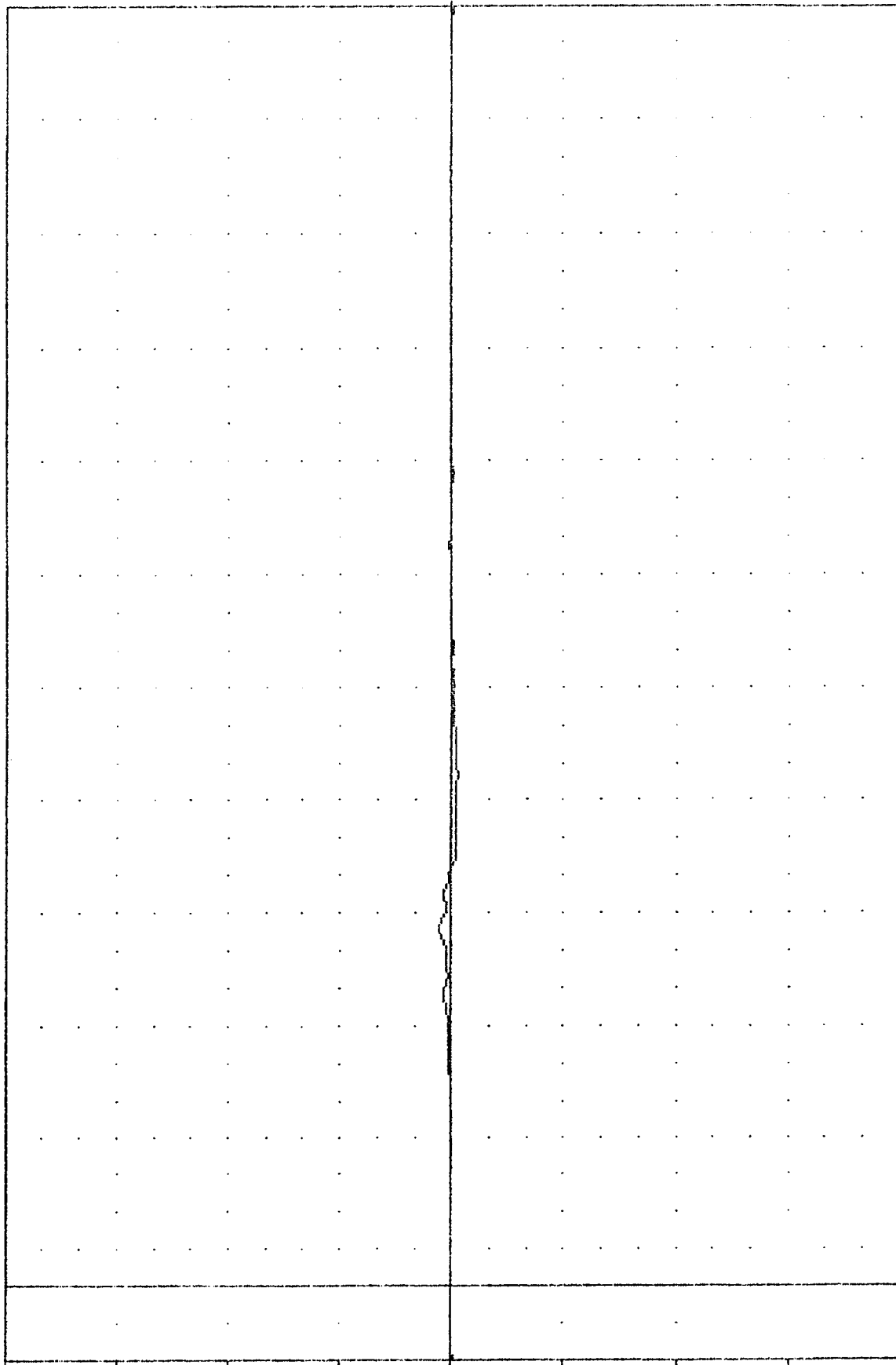
-350.00 -270.00 -180.00 -90.00 0.00 90.00 180.00 270.00 350.00
 ACCELERATION (G)
 -20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (msec)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE ACCELERATION -2 Y AXIS

TRC 830830
 EVALUATION OF MDD VN FLEET
 83242000000
 T12Z63

PLOT DATE 2-SEP-83 15:45:27

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -4.37e 135.62, 9.70 e 95.63

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

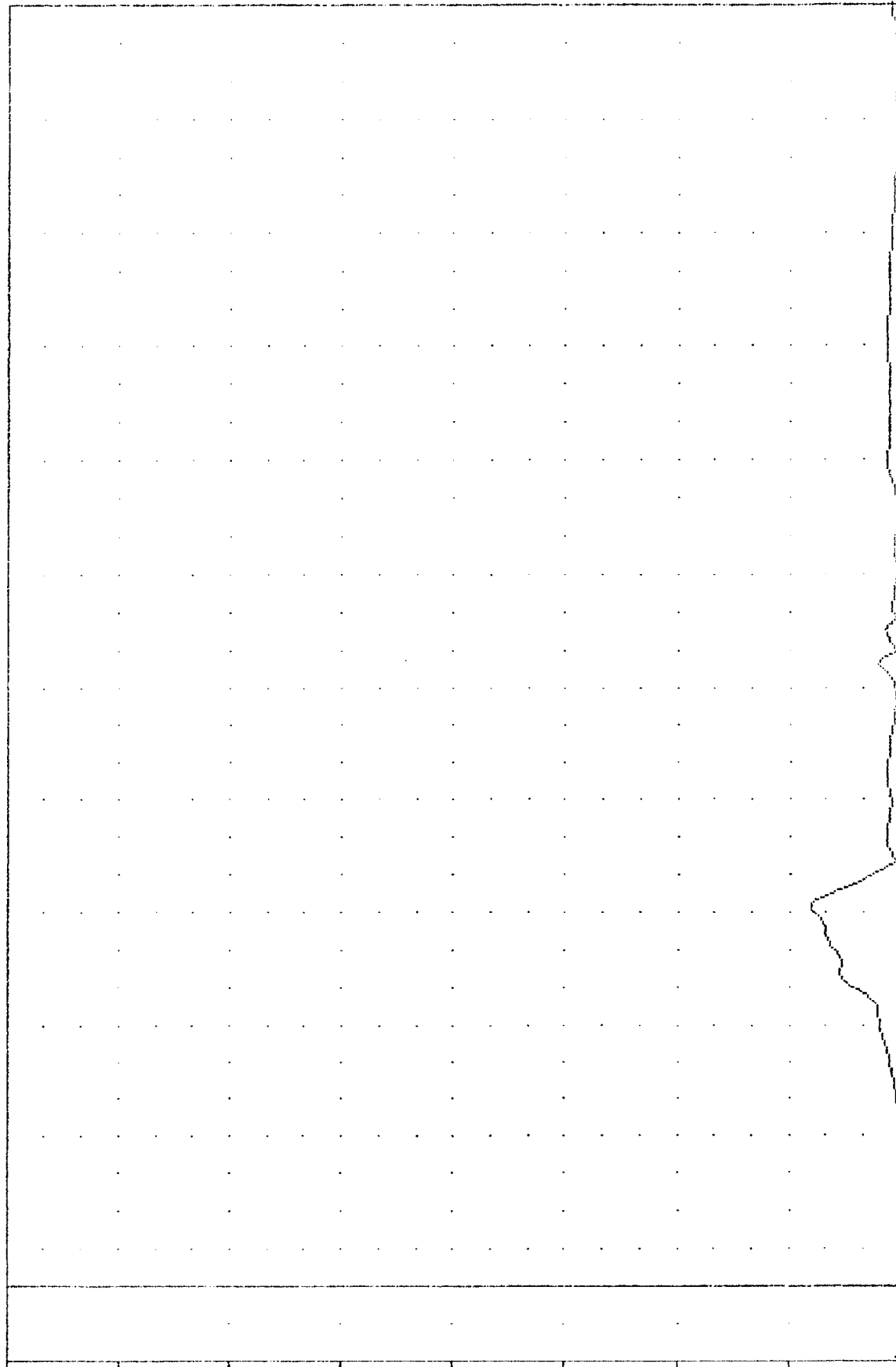
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE ACCELERATION Z AXIS

TRC 830830
 EVALUATION OF MOD YW FLEET
 832420000000
 112RG3

PLOT DATE 6-SEP-83 09:23:37

FILTER = HSRI 135/ 189/ -50
 MIN. MAX VALUES = 0.10e 13.75, 40.02 e 100.63

ACCELERATION (G)



TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE RESULTANT

TRC 830830 8-SEP-83 15:13:06

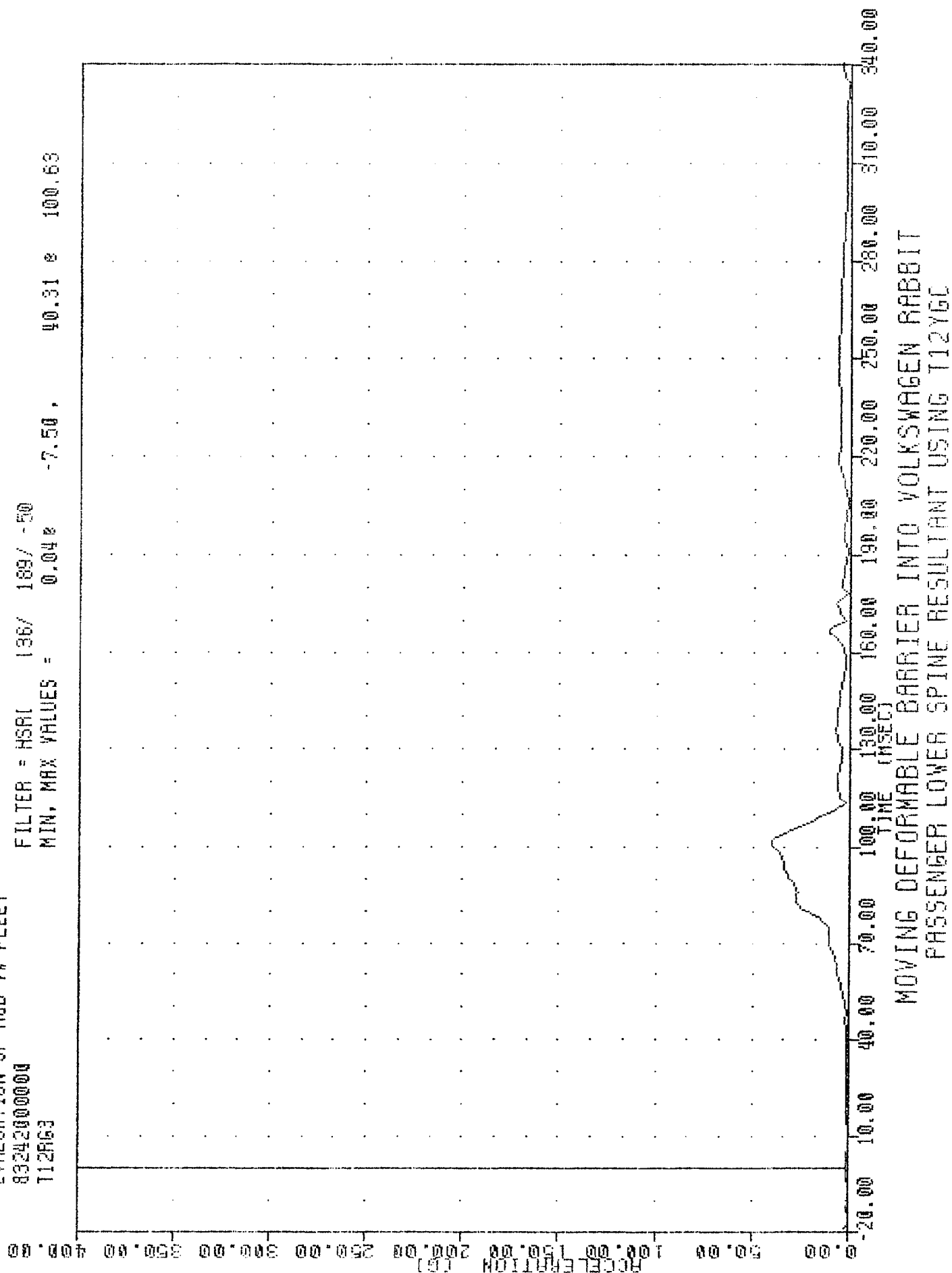
EVALUATION OF MOD YW FLEET

83242000000

T12R63

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.04% -7.50, 40.31% 100.63



TRC 830830 PLOT DATE 8-SEP-83 15:06:46

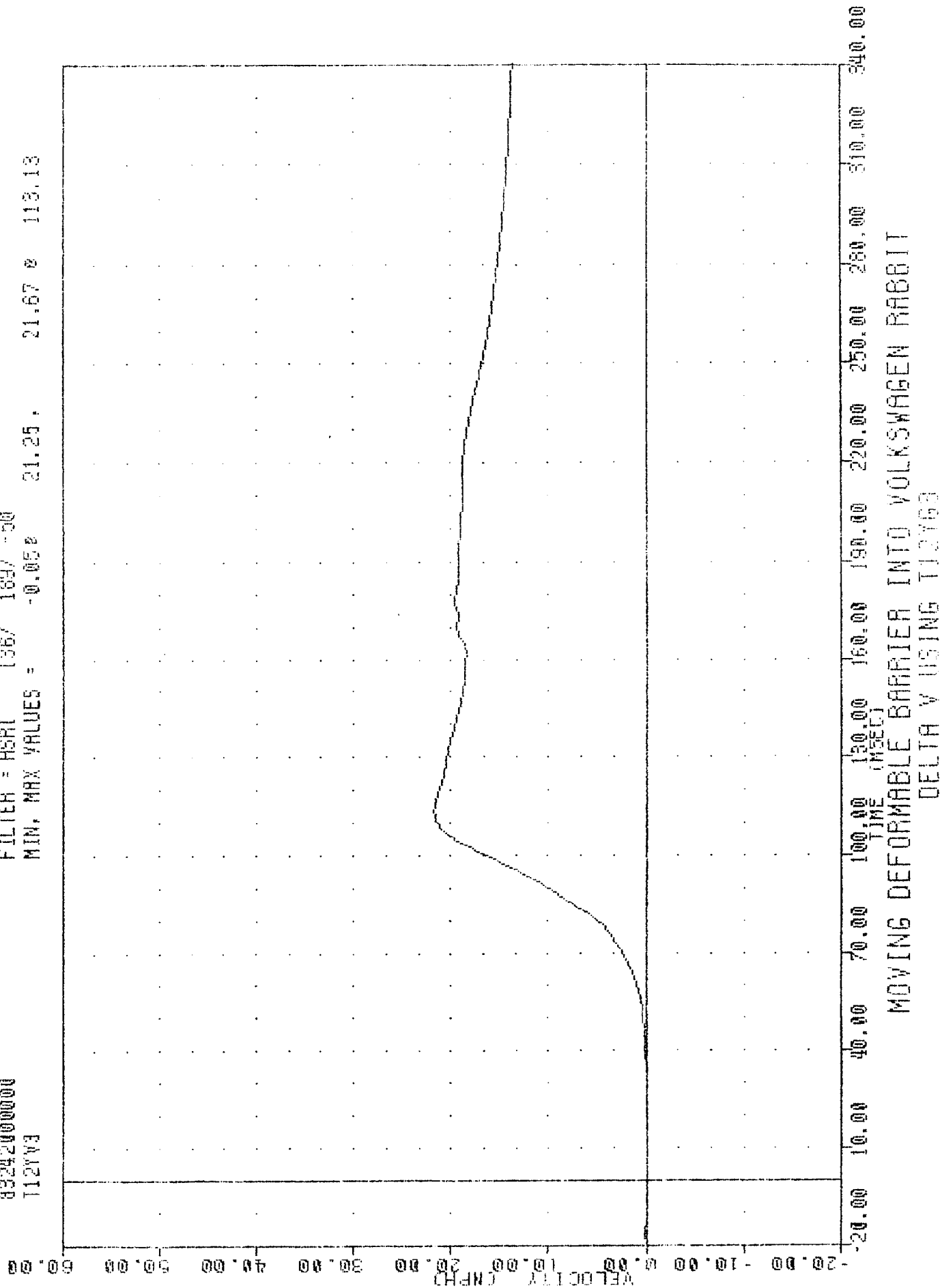
EVALUATION OF MOD VW FLEET

83242000000

T12YV3

FILTER = HSRI 136/ 189/ -50

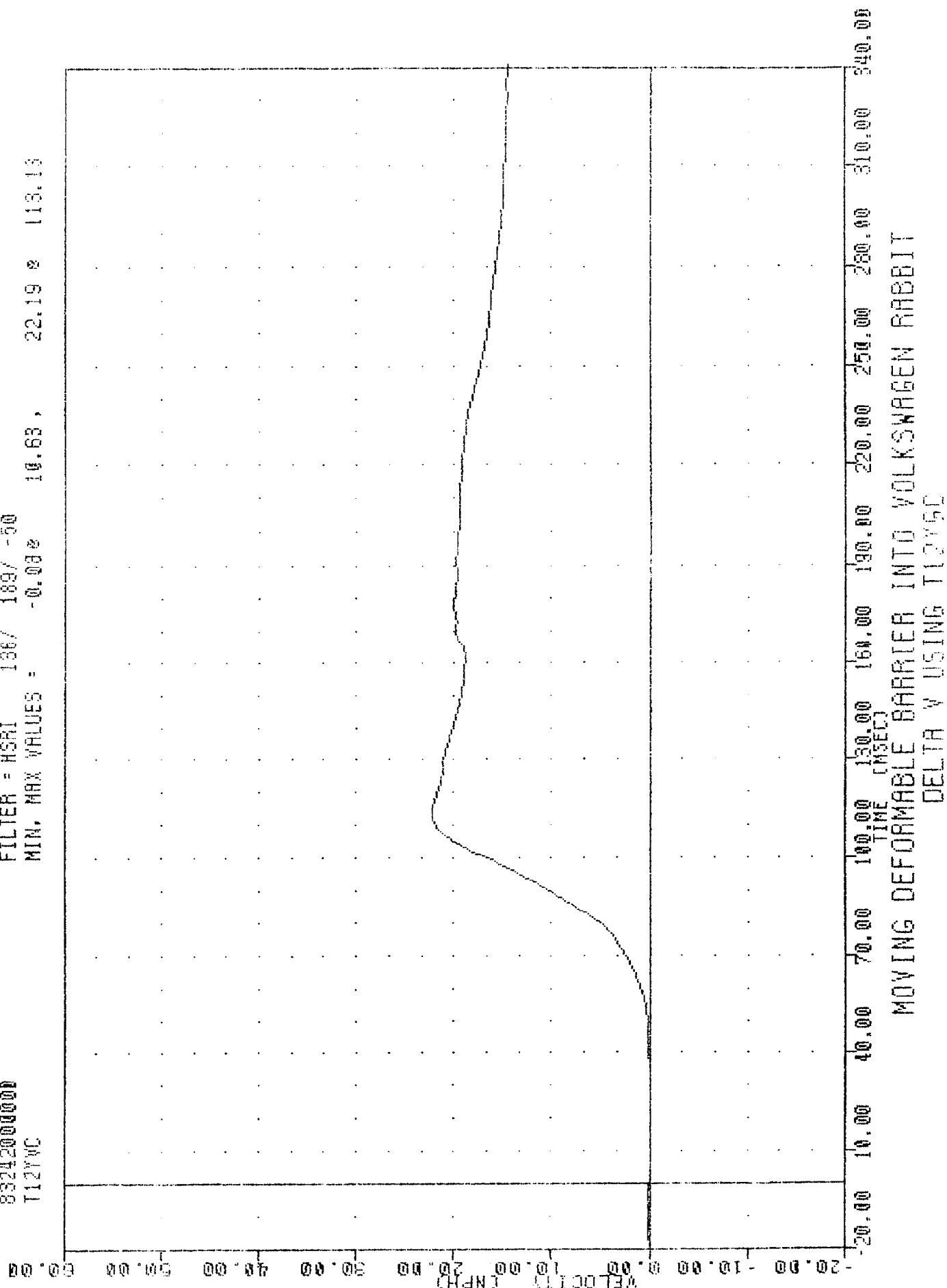
MIN. MAX VALUES = -0.050 21.25, 21.67 0 113.13



TRC
EVALUATION OF MOD VW FLEET
83242000000
T12YVC

PLOT DATE 6-SEP-83 15:05:46

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -0.000 10.63, 22.19 113.13



TAC 830830 PLOT DATE 2-SEP-83 15:46:27

EVALUATION OF MOD YR FLEET

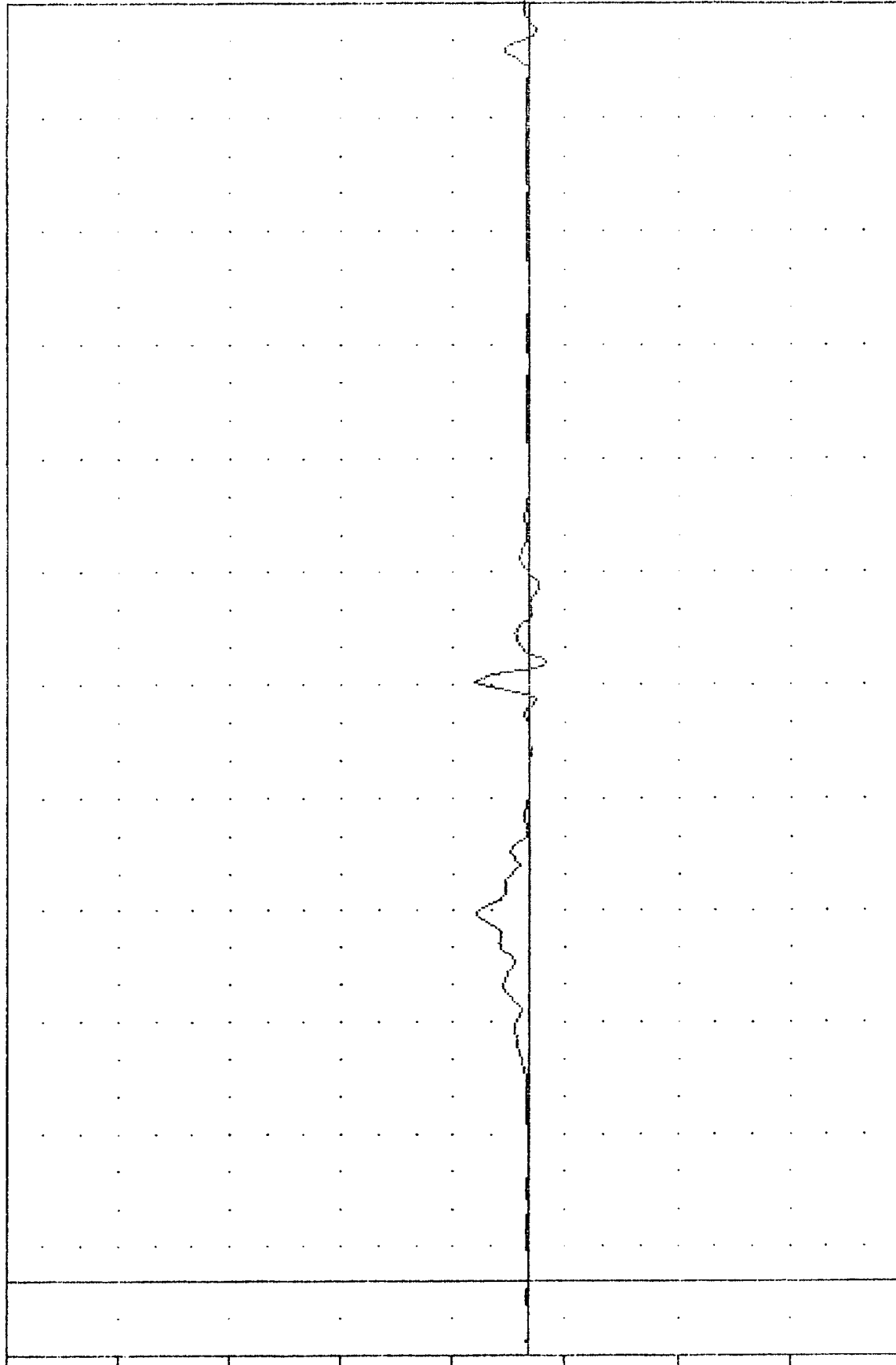
832420000000

LURIES

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -14.90 165.00 42.42 180.00

ACCELERATION (G)



TIME (MSEC)

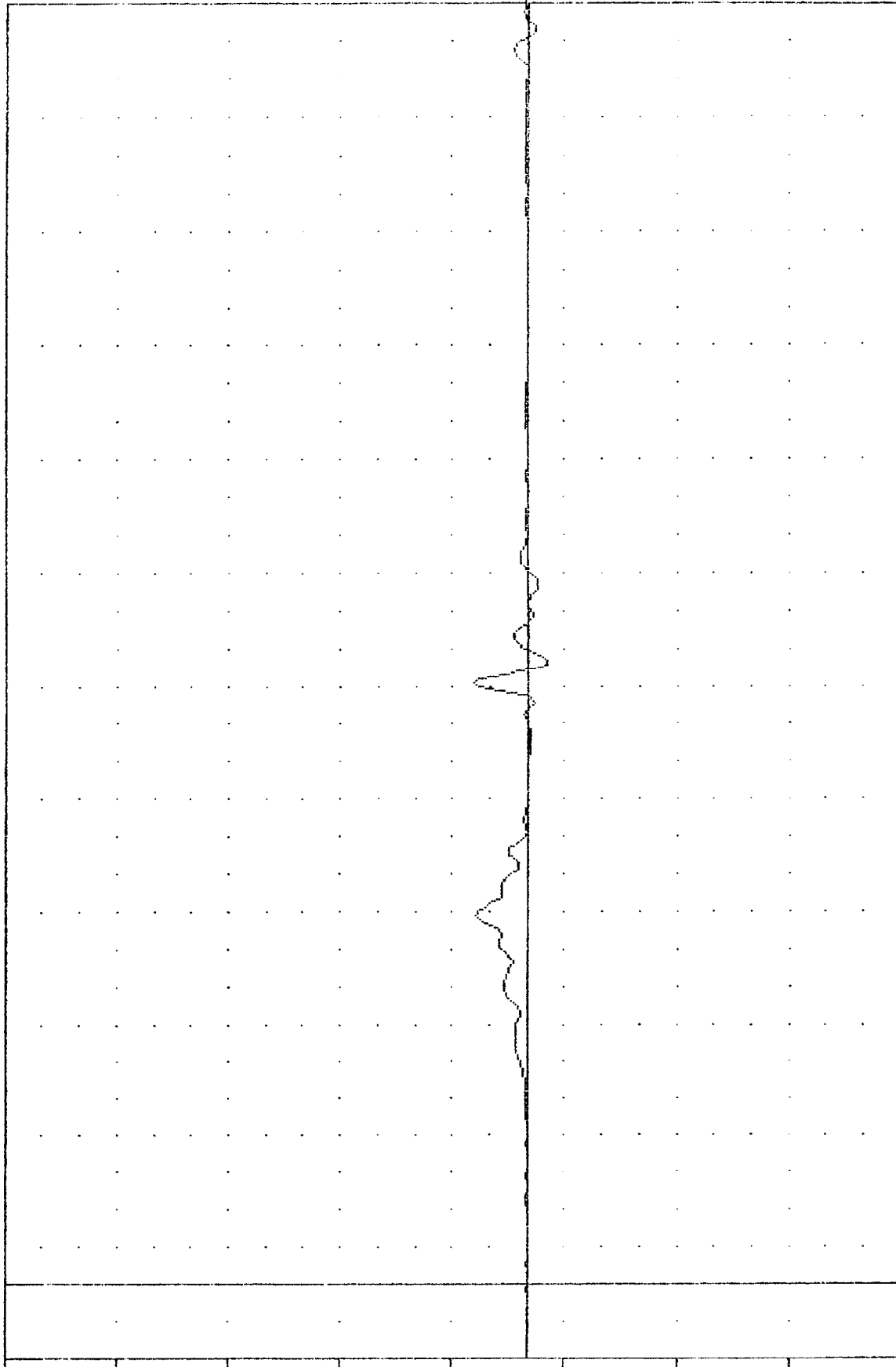
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT UPPER RIB ACCELERATION Y AXIS

TRC 830830
EVALUATION OF MOD YW FLEET
83242000000
LURYGC

PLOT DATE 2-SEP-83 15:46:27

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -16.448 165.62, 42.88 160.00

ACCELERATION (G)



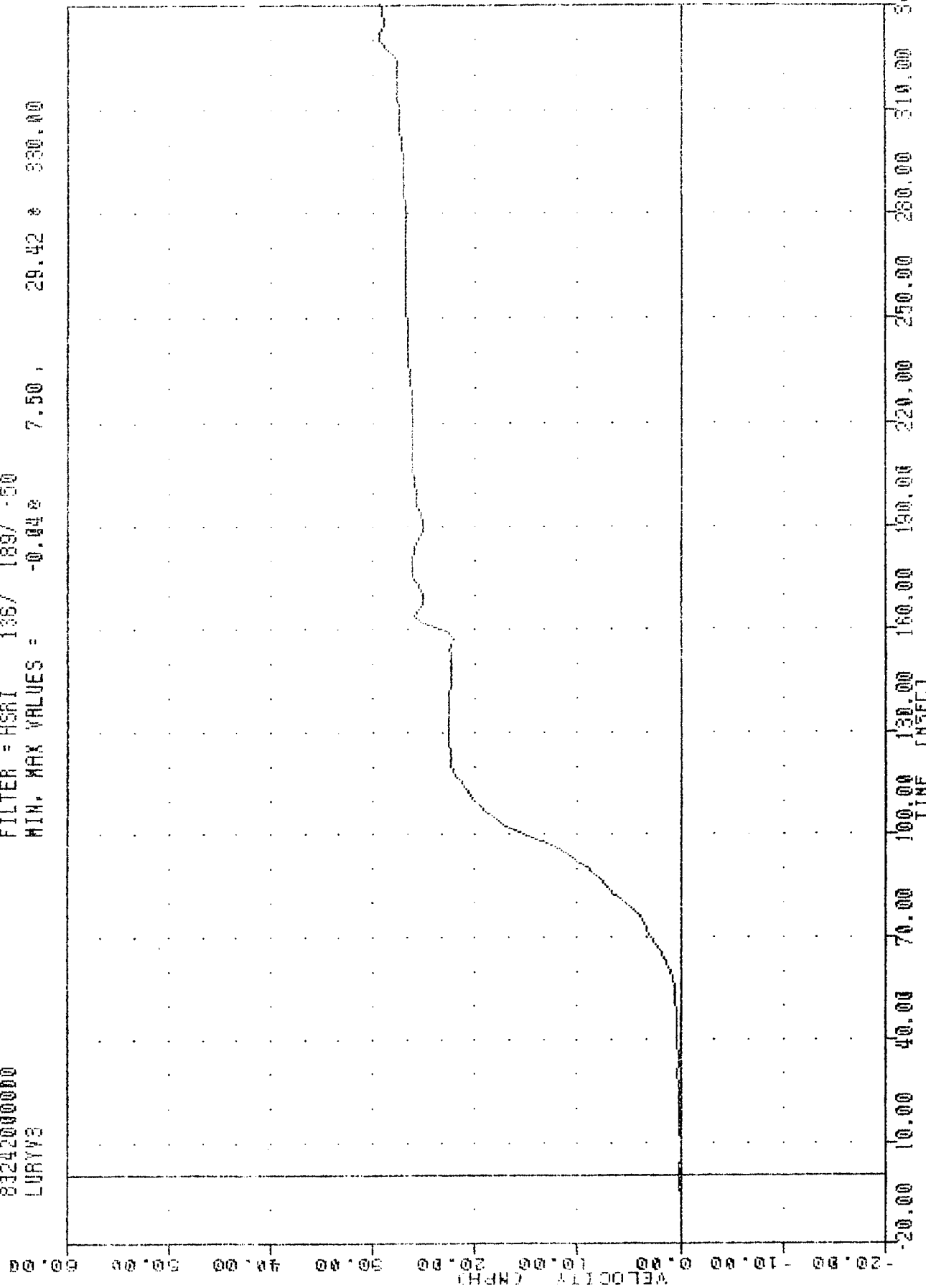
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT UPPER RIB ACCELERATION -2 Y AXIS

TAC 830830
 EVALUATION OF MOD VW FLEET
 832420000000
 LURYV3

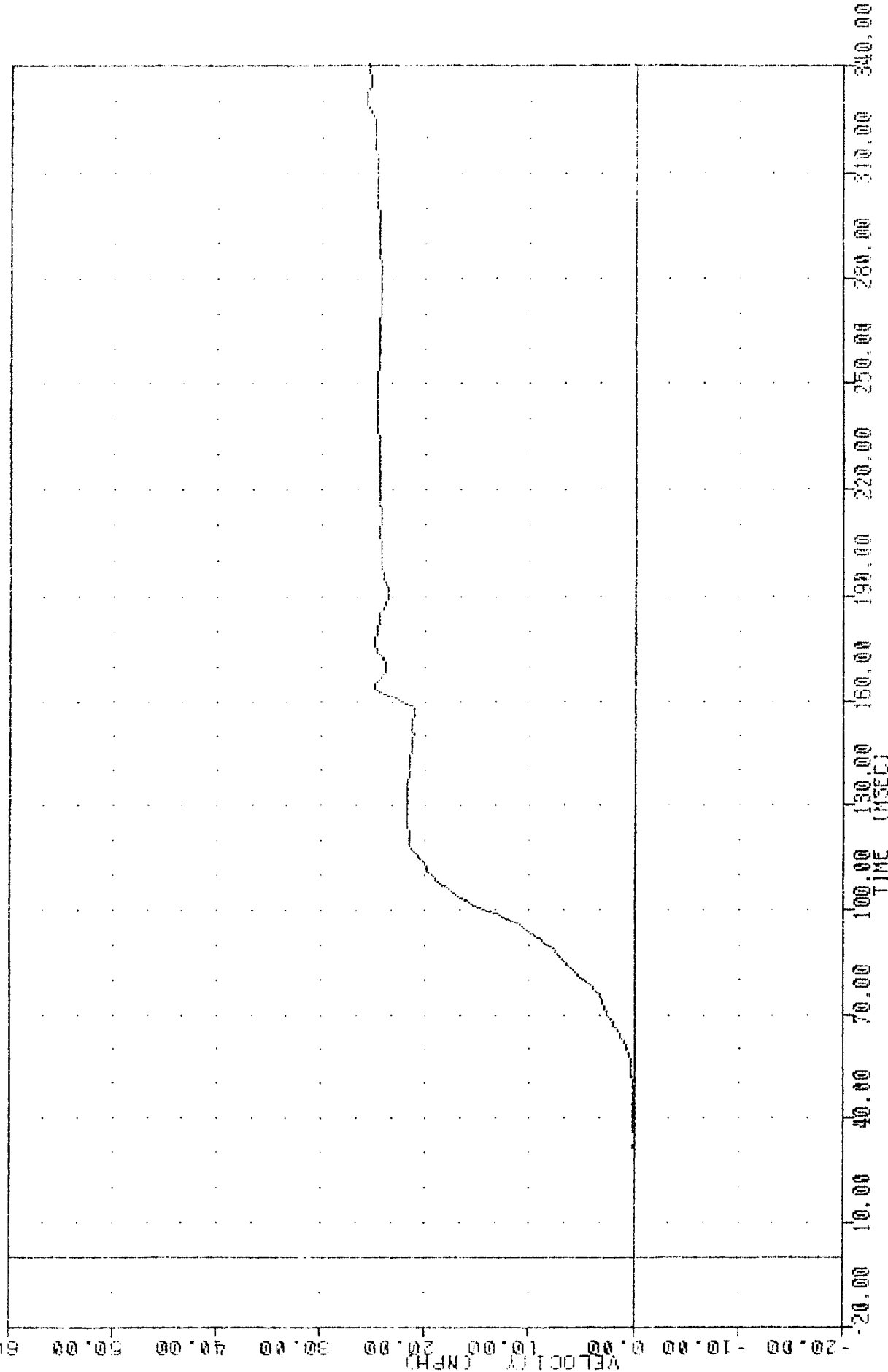
PLOT DATE 6-SEP-83 15:06:46

FILTER = HSRI 135/ 189/ -50
 MIN. MAX VALUES = -0.042 7.50 29.42 * 330.00



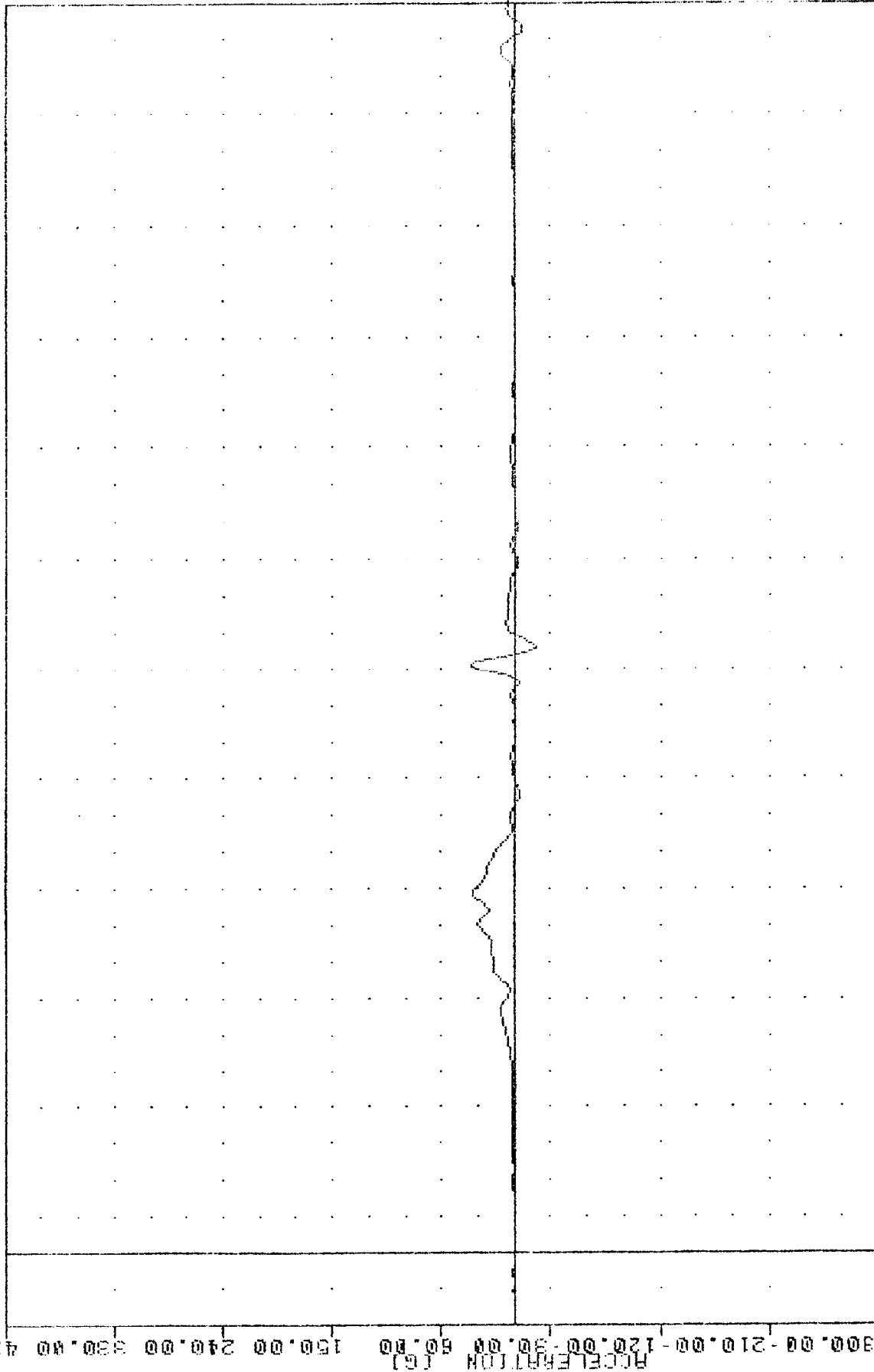
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURYV3

TRC 030030 PLOT DATE 8-SEP-83 15:05:48
 EVALUATION OF MOD VW FLEET
 03242000000
 LURYVC
 FILTER = HSRI 189/ 189/ -50
 MIN. MAX VALUES = -0.068 -4.38 25.86 330.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA W USING LURVGT

TRC
 EVALUATION OF MDD VW FLEET
 832420000000
 LLAG63
 PLOT DATE 2-SEP-83 15:48:27
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -17.940 165.62, 35.33 & 160.00

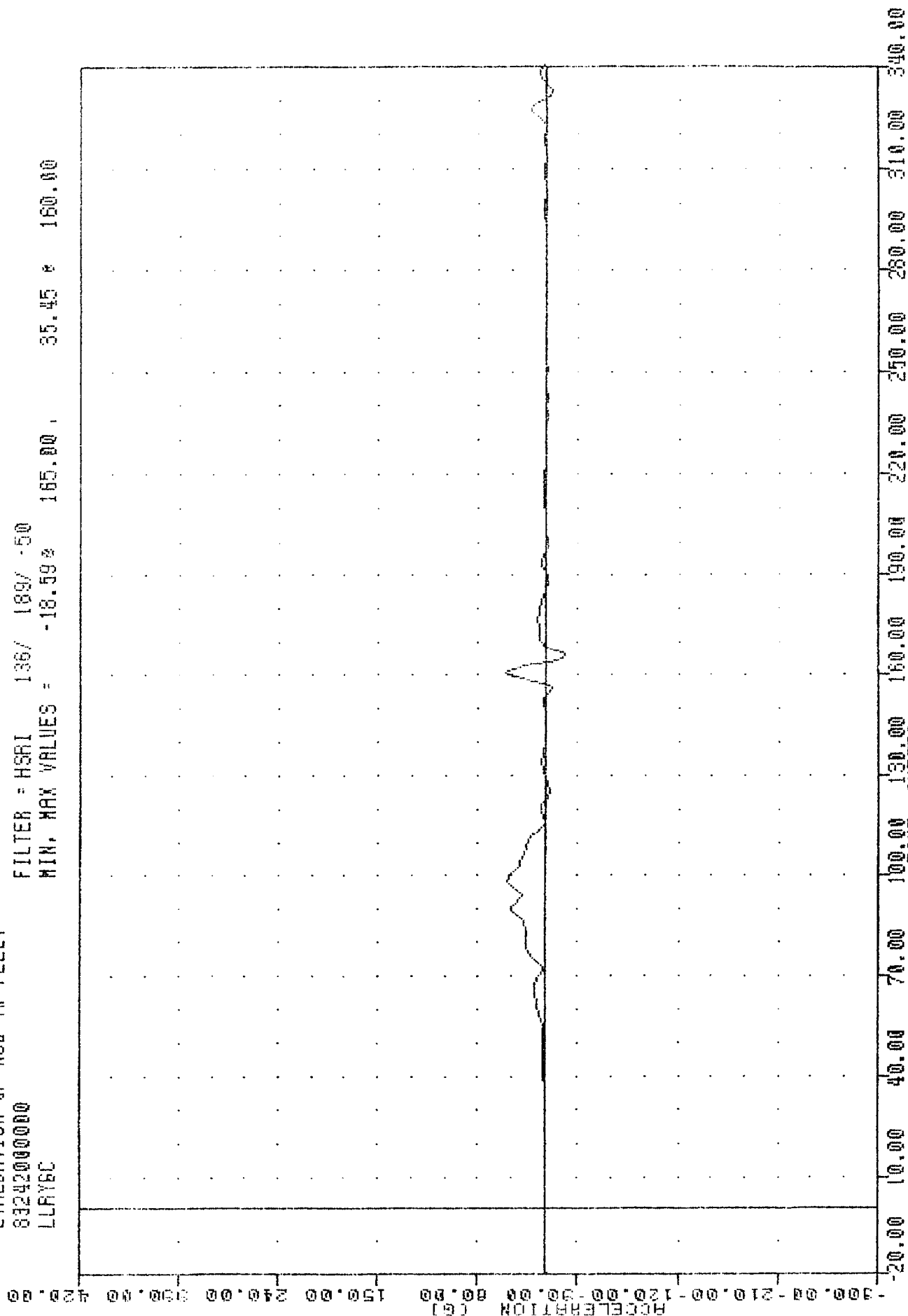


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

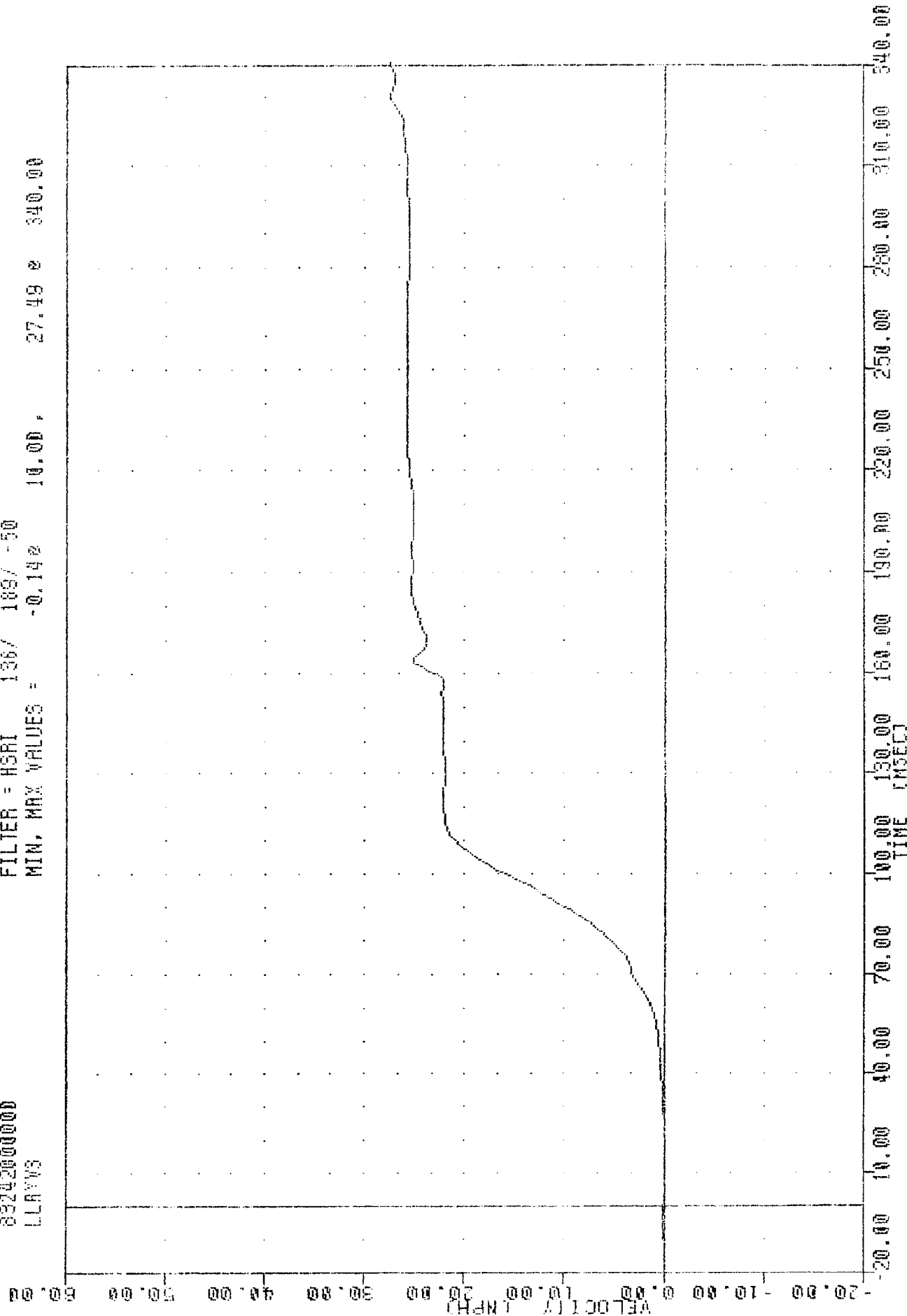
FAC 800030
 EVALUATION OF MOD VN FLEET
 832420000000
 LRYBC

PLOT DATE 2-SEP-88 15:40:27

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -18.59% 165.00 , 35.45 % 160.00

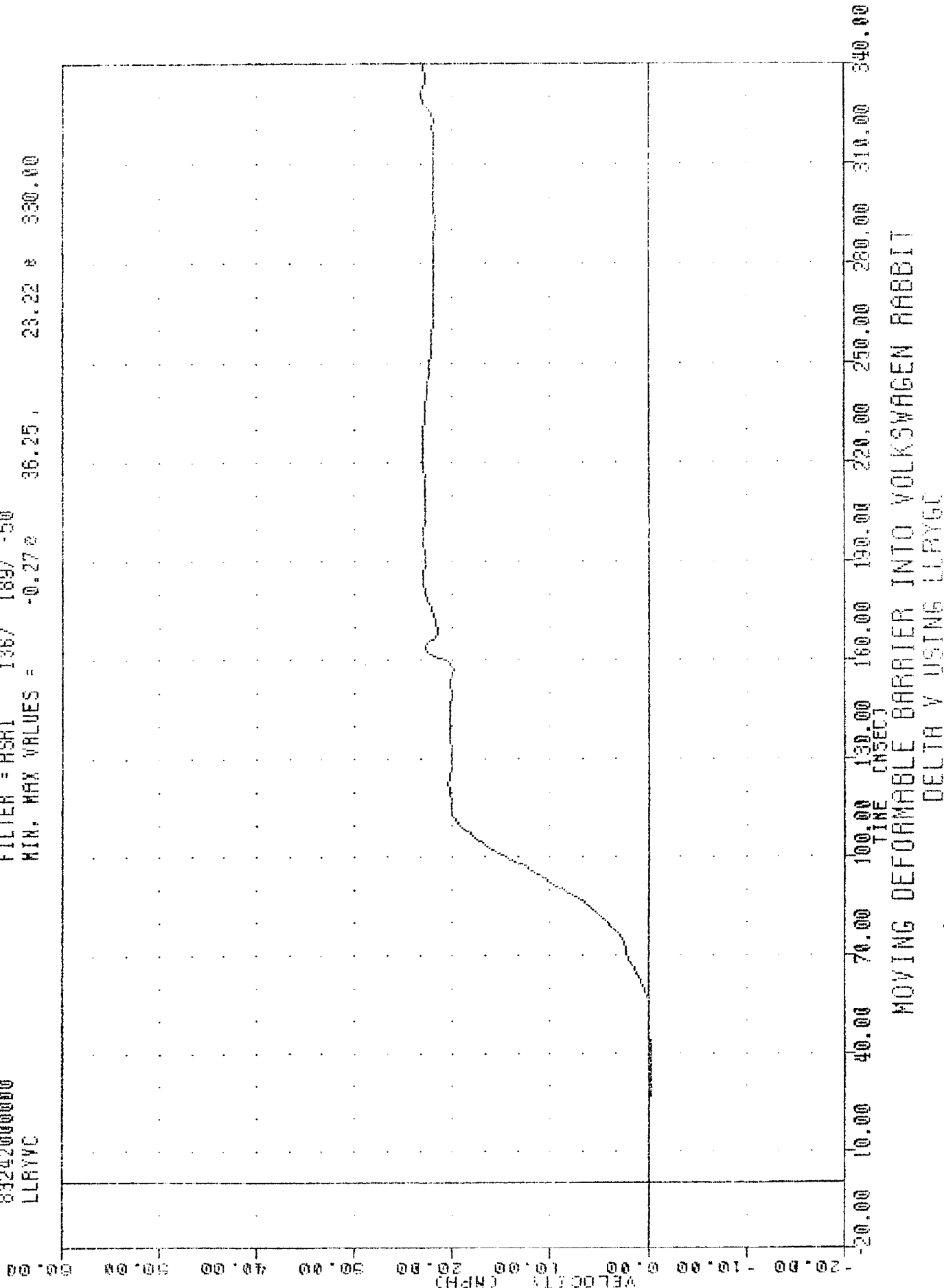


TRC
 EVALUATION OF MOD VW FLEET
 89242000000
 LLAY03
 PLOT DATE 6-SEP-88 15:05:46
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.142 10.00, 27.49 @ 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLAY03

TAC
 EVALUATION OF MOD VW FLEET
 83242000000
 LRAYC
 PLOT DATE 6-SEP-83 15:05:46
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.272 36.25 23.22 330.00



TRC 830830 6-SEP-83 09:56:23

EVALUATION OF MQD YW FLEET

83242000000

LATYD3

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -1.90e 116.88, 0.10 e 164.25

4.00

3.00

2.00

1.00

0.00

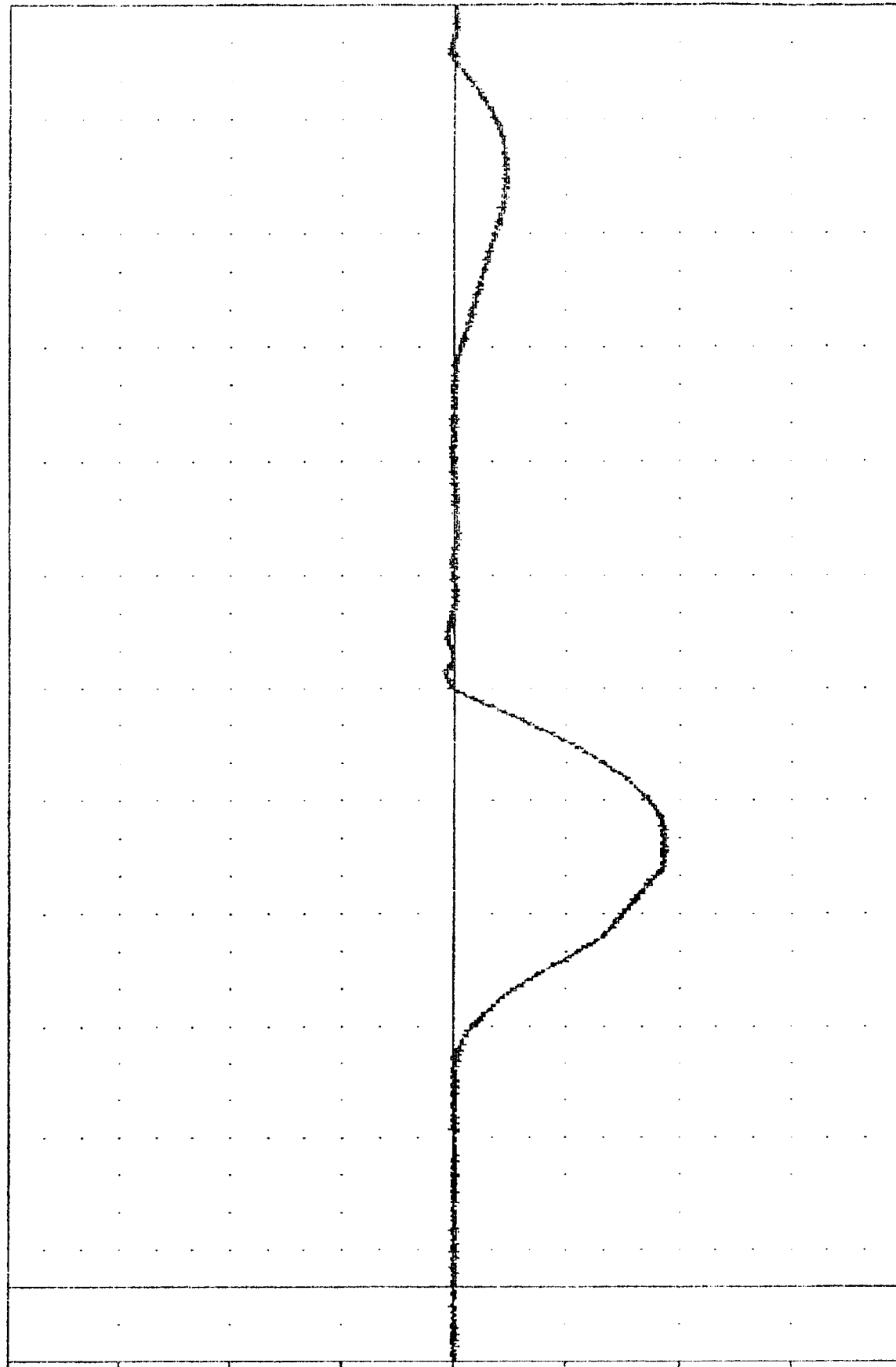
-1.00

-2.00

-3.00

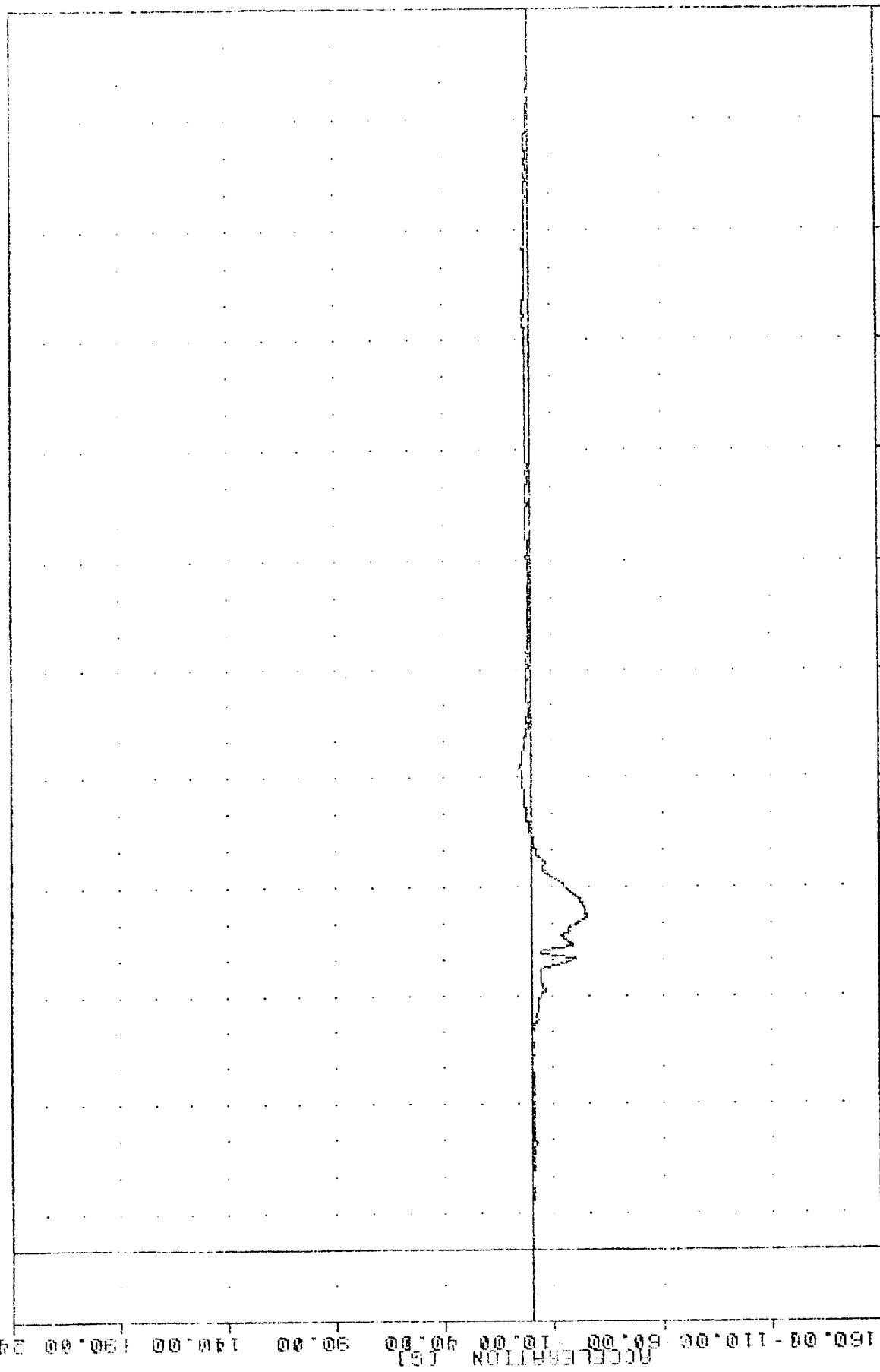
-4.00

DISPLACEMENT (IN)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT RIB TO SPINE DISPLACEMENT INCHES

TRC 830830 6-SEP-83 09:06.23
 EVALUATION OF MOD YW FLEET
 83242000000
 PEVXG3
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -25.97% 91.75, 4.91 & 132.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION X AXIS

TRC 830830 6-SEP-83 10:56:56

EVALUATION OF MOD YW FLEET

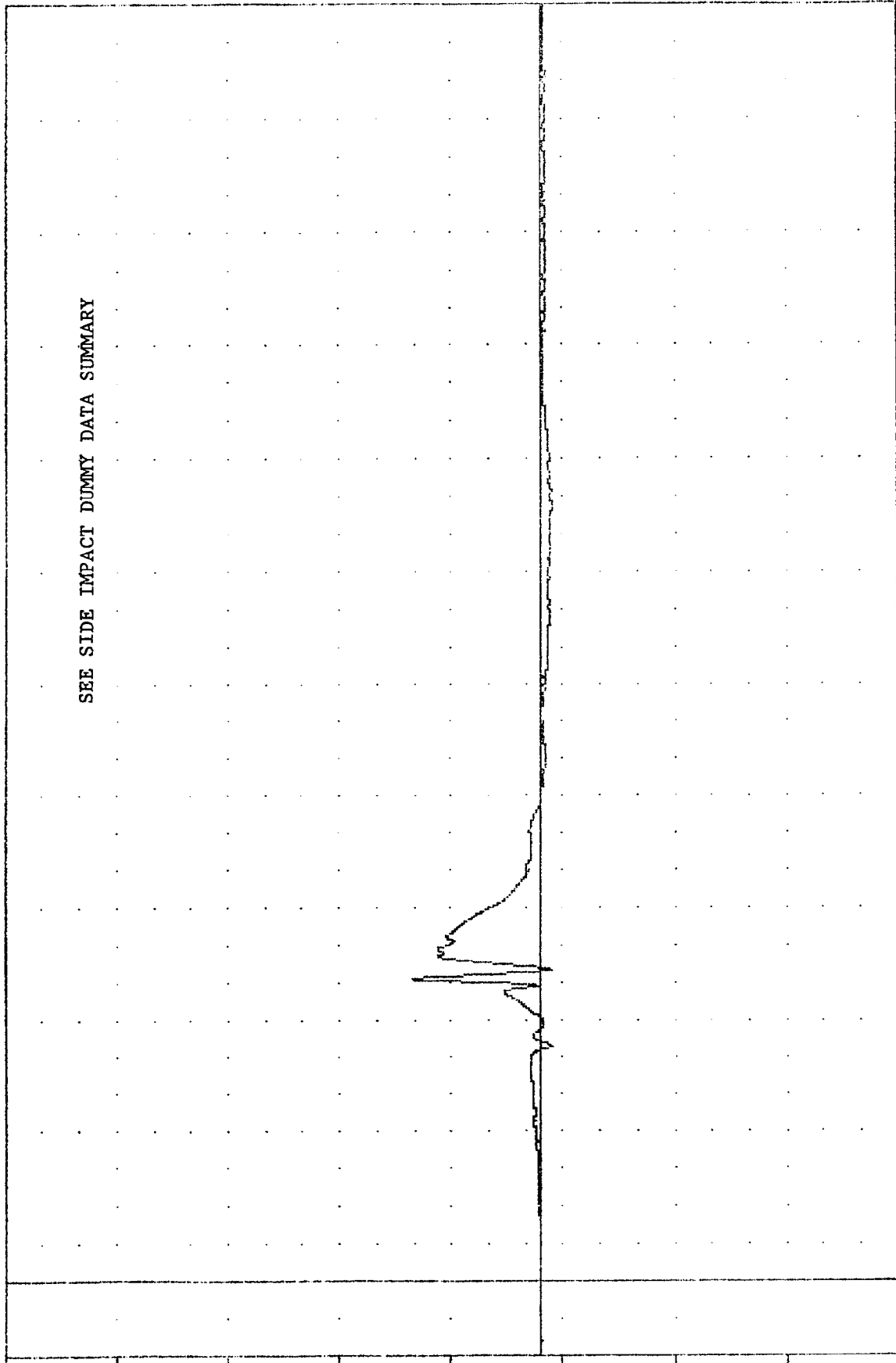
83242000000

PEY63

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -5.06e 206.88, 57.57 e 80.75

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION Y AXIS

TRC 830830 6-SEP-83 09:06:23

EVALUATION OF MOD VW FLEET

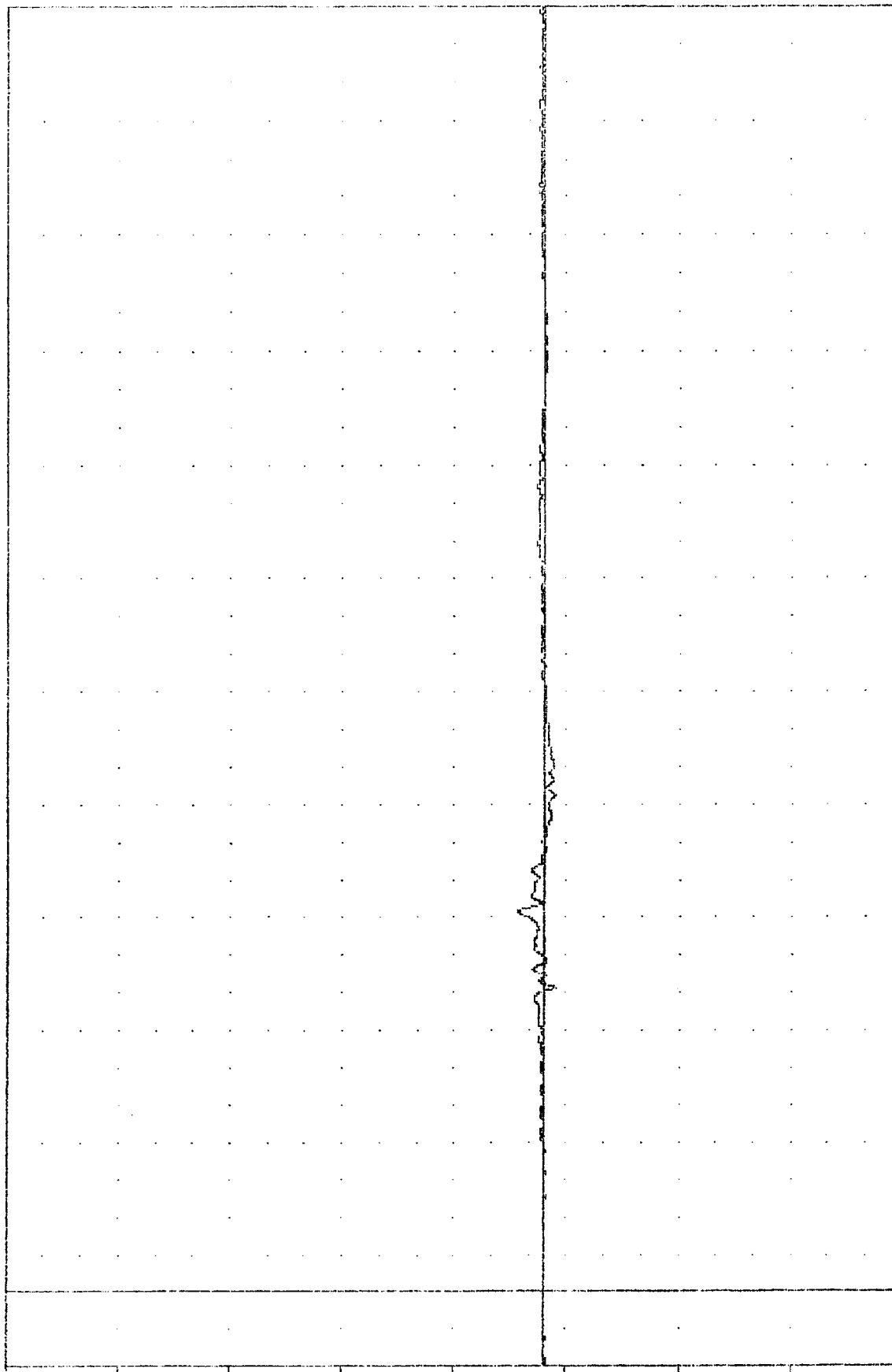
83242000000

PEV163

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -4.920 132.13, 11.38 * 101.38

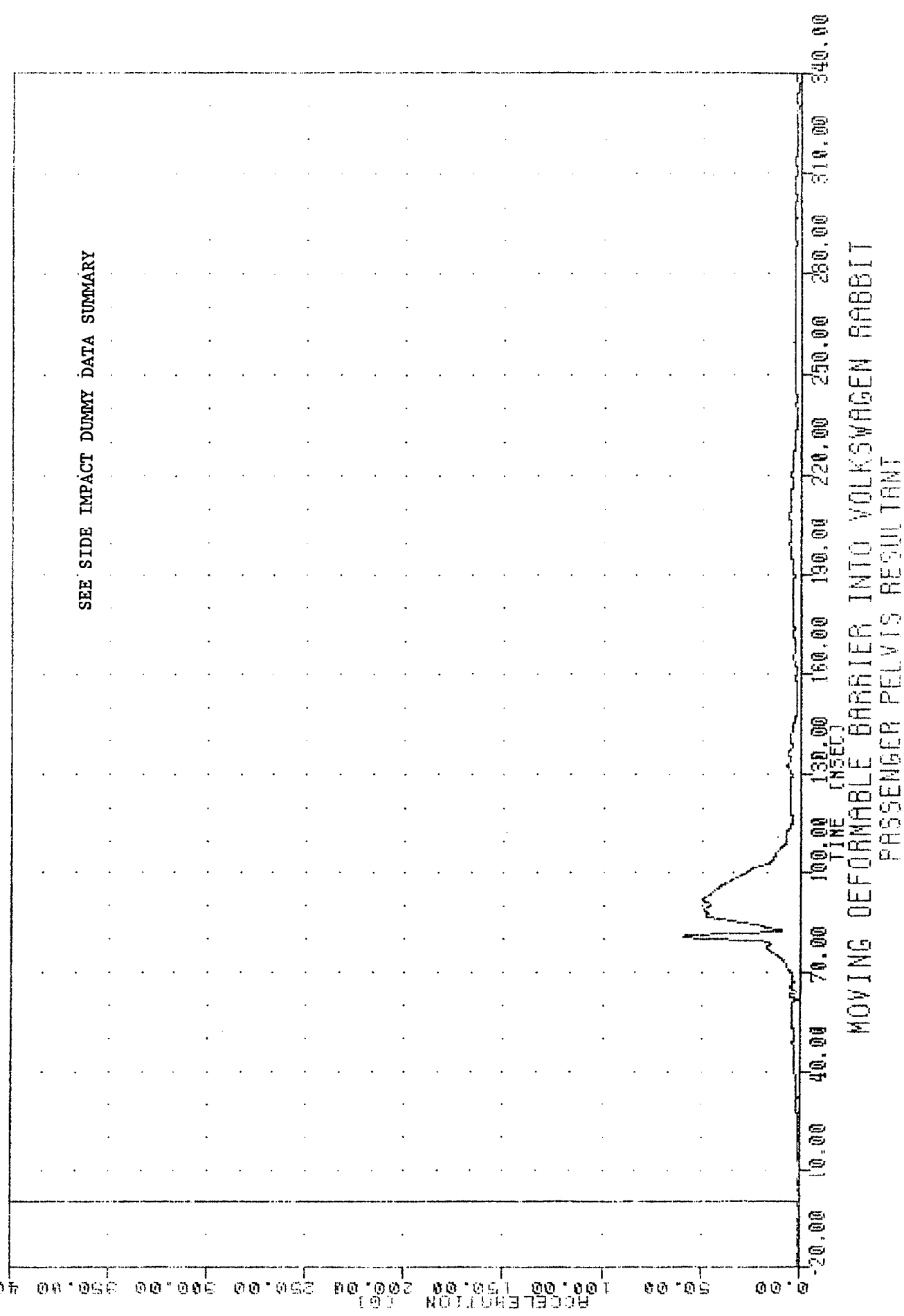
ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

PASSENGER PELVIS ACCELERATION Z AXIS

TRC 8300300
 EVALUATION OF MOD VN FLEET
 832420000000
 PEVRES
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.09% -15.00 59.36 80.63
 6-SEP-83 09:05:23



TRC

830830

EVALUATION OF MOD VN FLEET

832420000000

PEVYV3

PLOT DATE

6-SEP-83

14:00:22

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.04 8.00

22.68 0 120.25

50.00

50.00

50.00

50.00

50.00

50.00

50.00

50.00

50.00

50.00

50.00

50.00

50.00

50.00

50.00

50.00

20.00 10.00 0.00 -10.00 -20.00

TIME (MSEC)

20.00 10.00 0.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

SEE SIDE IMPACT DUMMY DATA SUMMARY

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING PEVYV3

TAC 830830 8-SEP-83 09:05:23

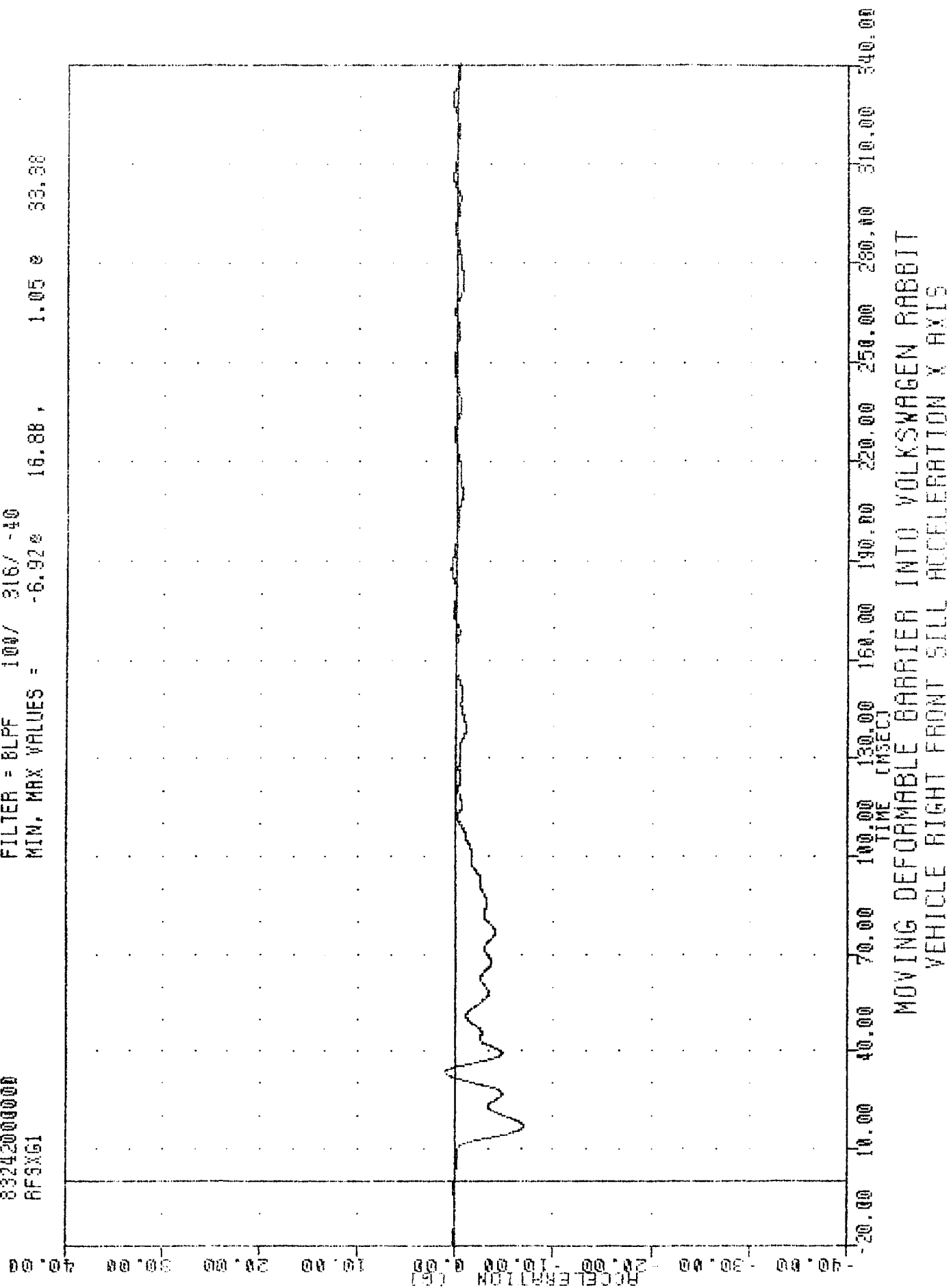
EVALUATION OF MDD VW FLEET

83242000000

RF3XG1

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -6.92% 16.88, 1.05 e 33.38

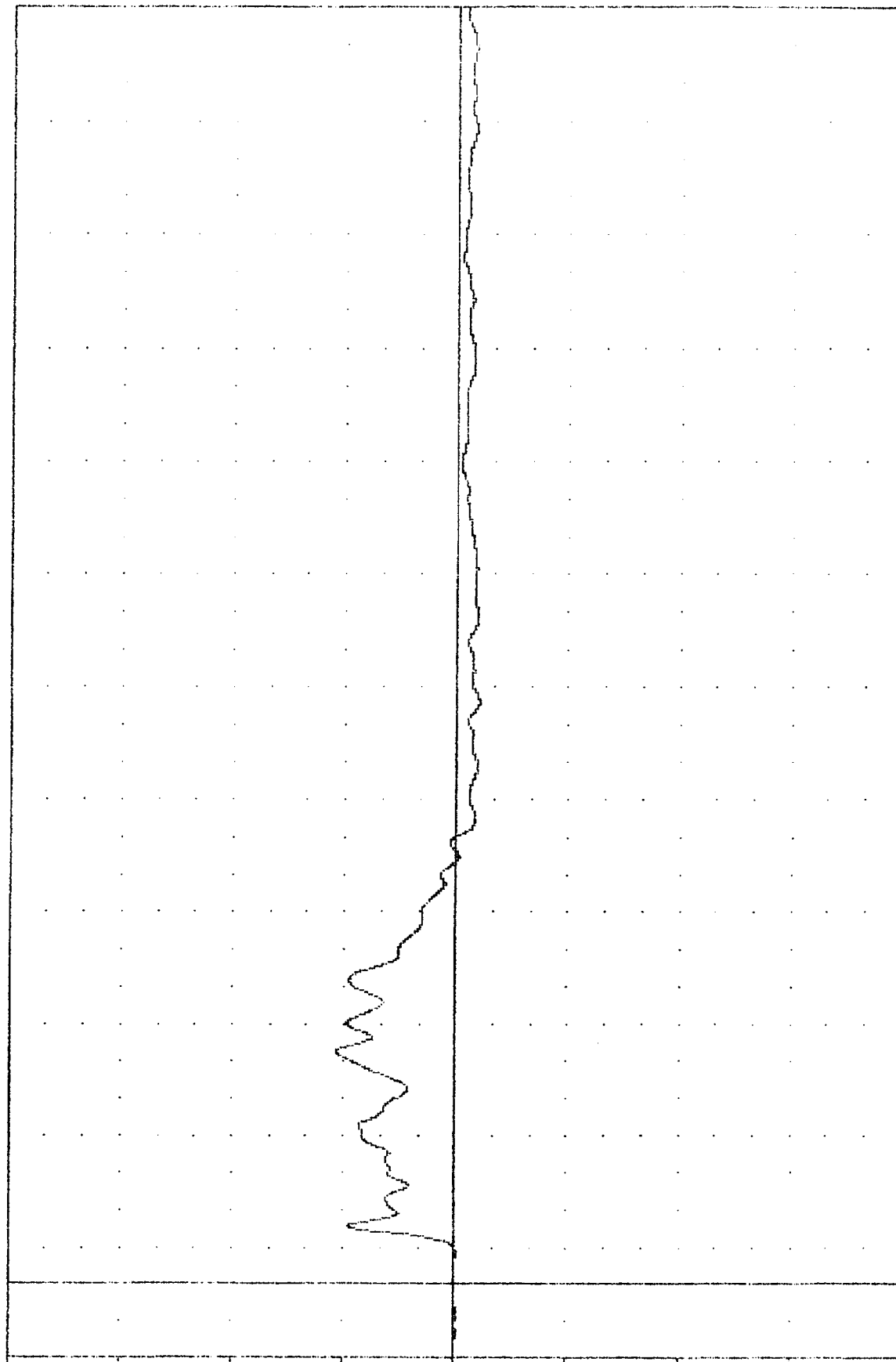


IAC 830030
 EVALUATION OF MOD VN FLEET
 83242000000
 RFSY61

PLOT DATE 8-SEP-83 09:30.23

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -2.01e 155.88, 10.64 e 62.50

ACCELERATION (G)
 -40.00
 -30.00
 -20.00
 -10.00
 0.00
 10.00
 20.00
 30.00
 40.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (NSEC)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT FRONT SILL ACCELERATION Y AXIS

TRC

830630

EVALUATION OF MOD VW FLEET

PLOT DATE

6-SEP-83

09:56:23

832420000000

AFSIG1

FILTER = BLPF

100/ 316/ -40

MIN. MAX VALUES = -2.92 54.75 3.45 86.00

ACCELERATION (G)

40.00

30.00

20.00

10.00

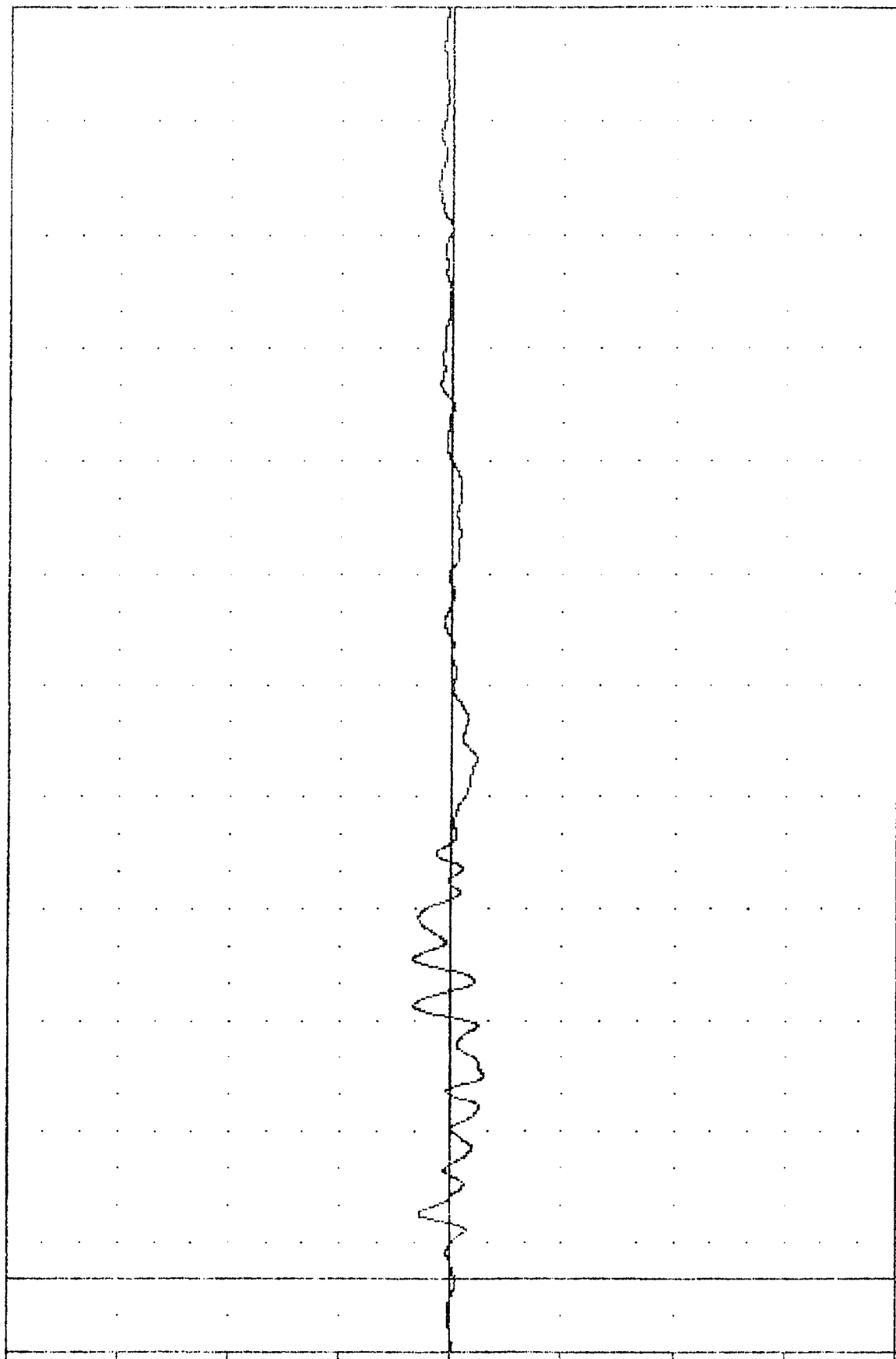
0.00

-10.00

-20.00

-30.00

-40.00



TIME (MSEC)

340.00

310.00

280.00

250.00

220.00

190.00

160.00

130.00

100.00

70.00

40.00

10.00

-20.00

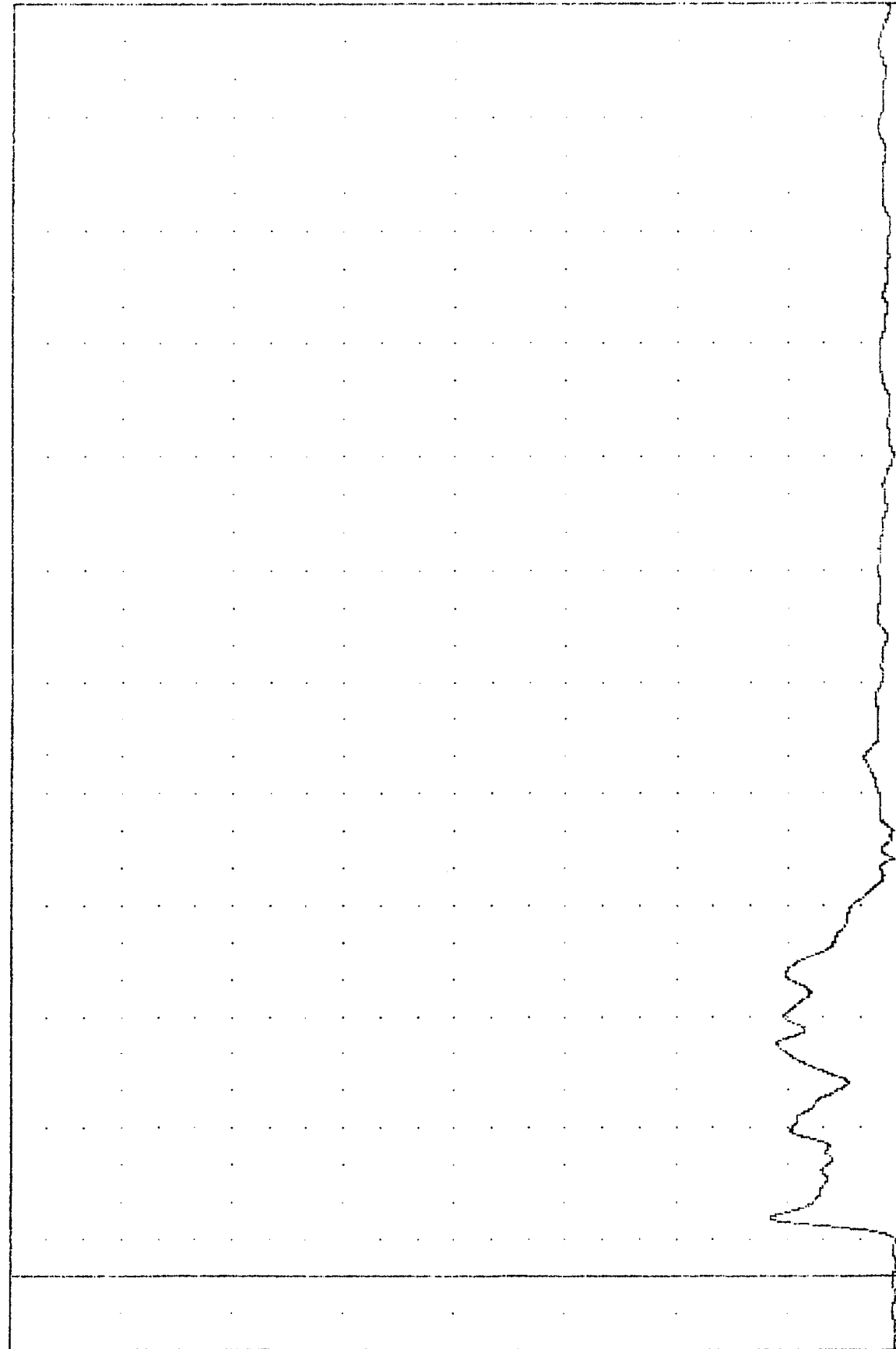
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION Z AXIS

TRC 830630
 EVALUATION OF MOD VW FLEET
 83242400000
 AFSAG1

PLOT DATE 8-SEP-83 09:56:23

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = 0.092 3.00, 11.51 15.63

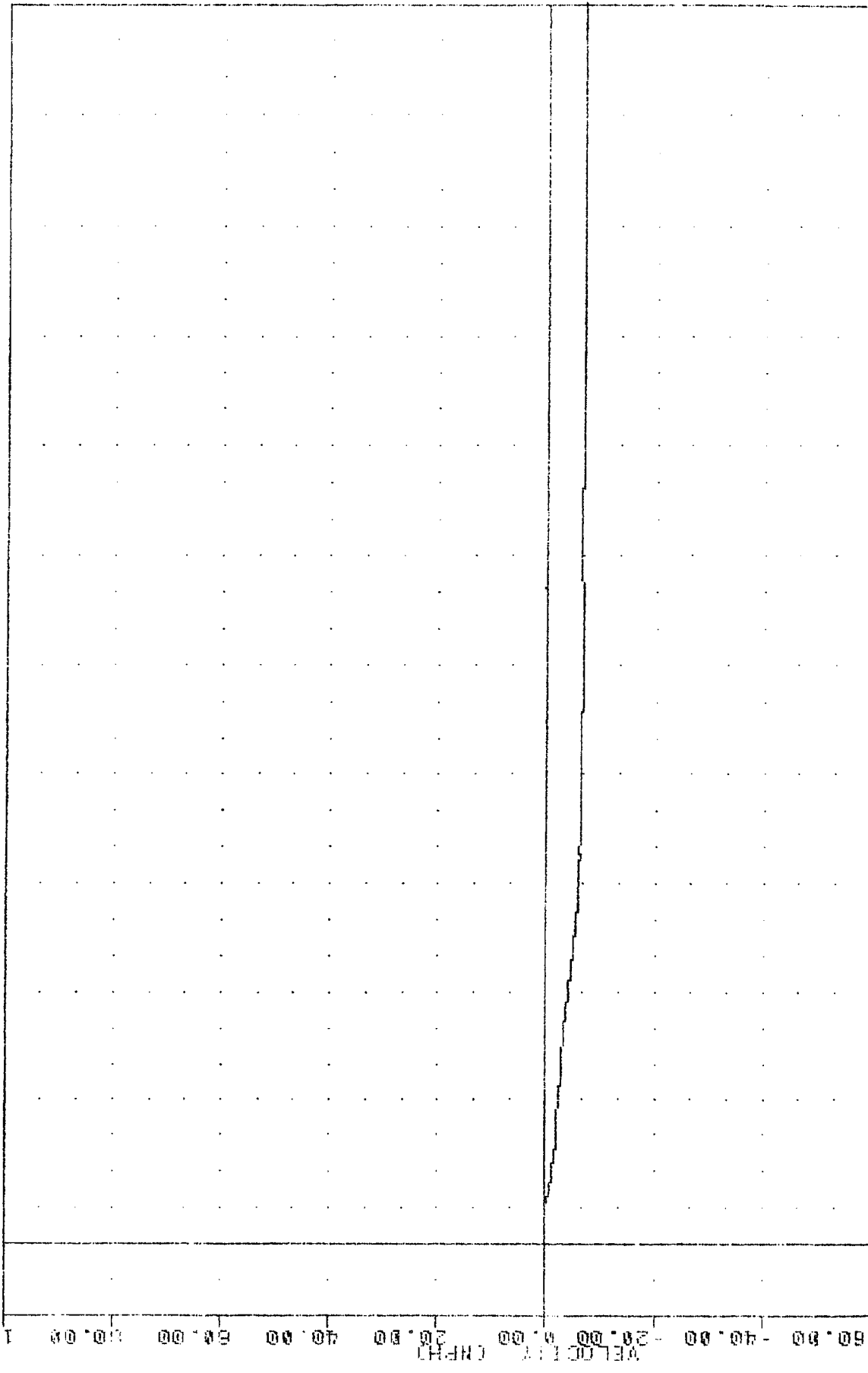
ACCELERATION (G)



TIME (MSEC)

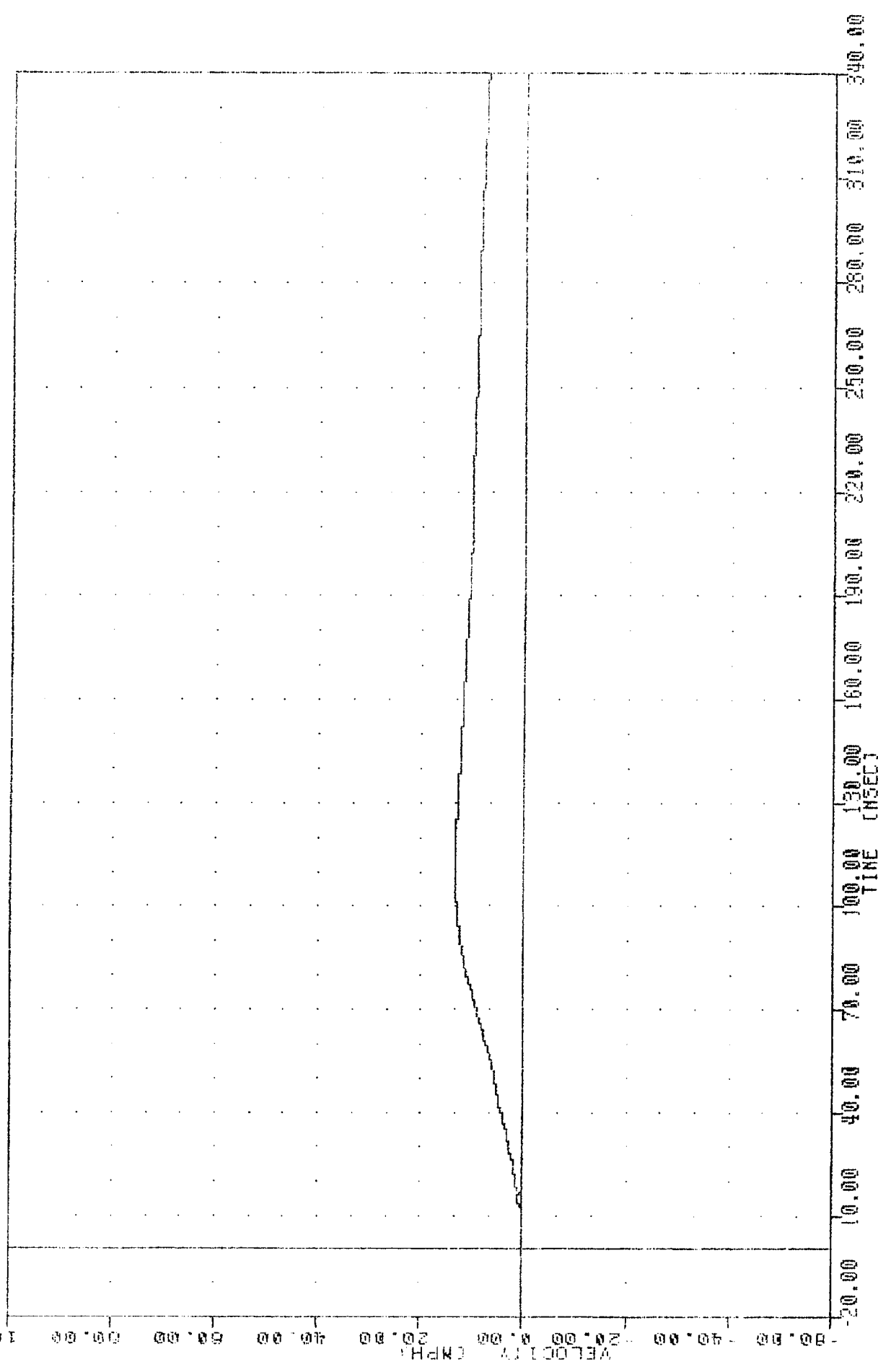
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT FRONT SILL RESULTANT

TRC
 EVALUATION OF MOD VW FLEET
 83242000000
 RFSXV1
 830830
 6-SEP-83 14:00:22
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -6.63% 299.38, 0.04% 0.80



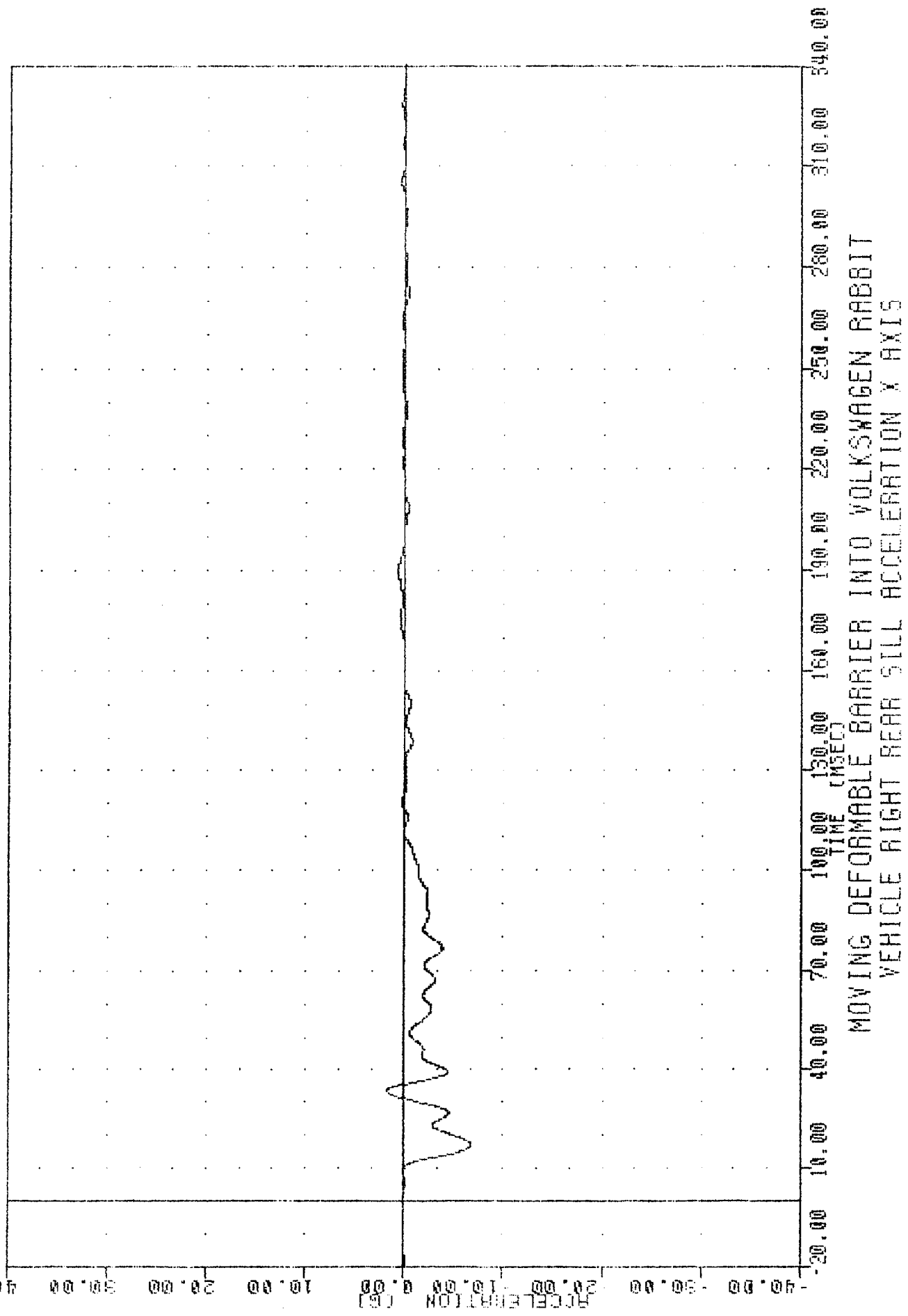
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RFSXV1

TAC 830030
 EVALUATION OF MOG VW FLEET
 83242000000
 RFSYV1
 PLOT DATE 6-SEP-83 14:00:22
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.828 -9.13 13.40 117.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RFSYV1

TRC
 EVALUATION OF MDD VN FLEET
 83242000000
 RRSX62
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -6.77% 17.00, 1.69% 33.38
 PLOT DATE 8-SEP-83 09:05.23



TRC

830830

6-SEP-83

09:58:23

83242000000

83242000000

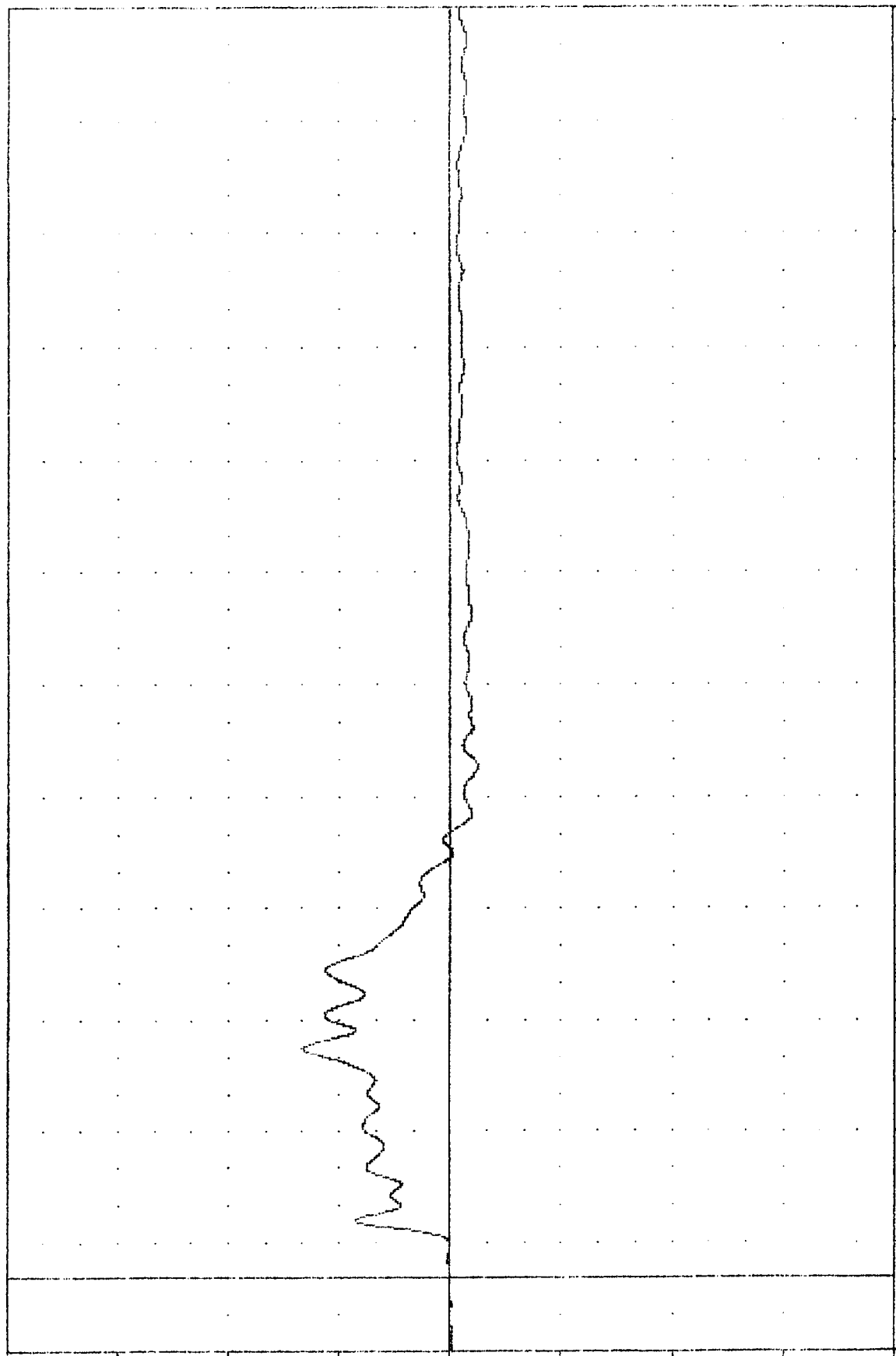
RRSY62

EVALUATION OF MOD VN FLEET

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -2.44 137.75 13.31 62.38

ACCELERATION (G)



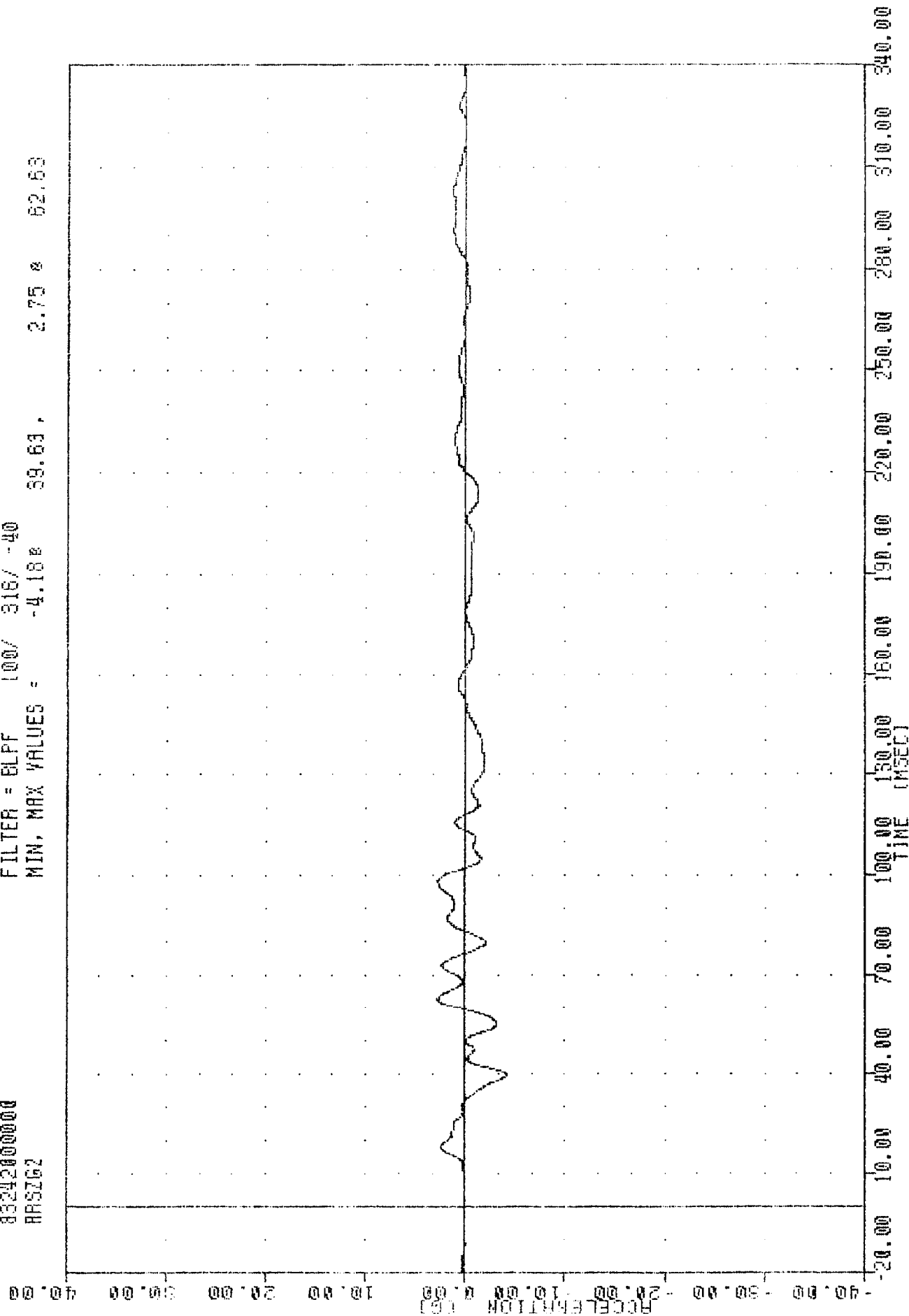
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL ACCELERATION Y AXIS

TRC
EVALUATION OF MOD VN FLEET
832420000000
RRSIG2

PLOT DATE 6-SEP-83 09:56:23

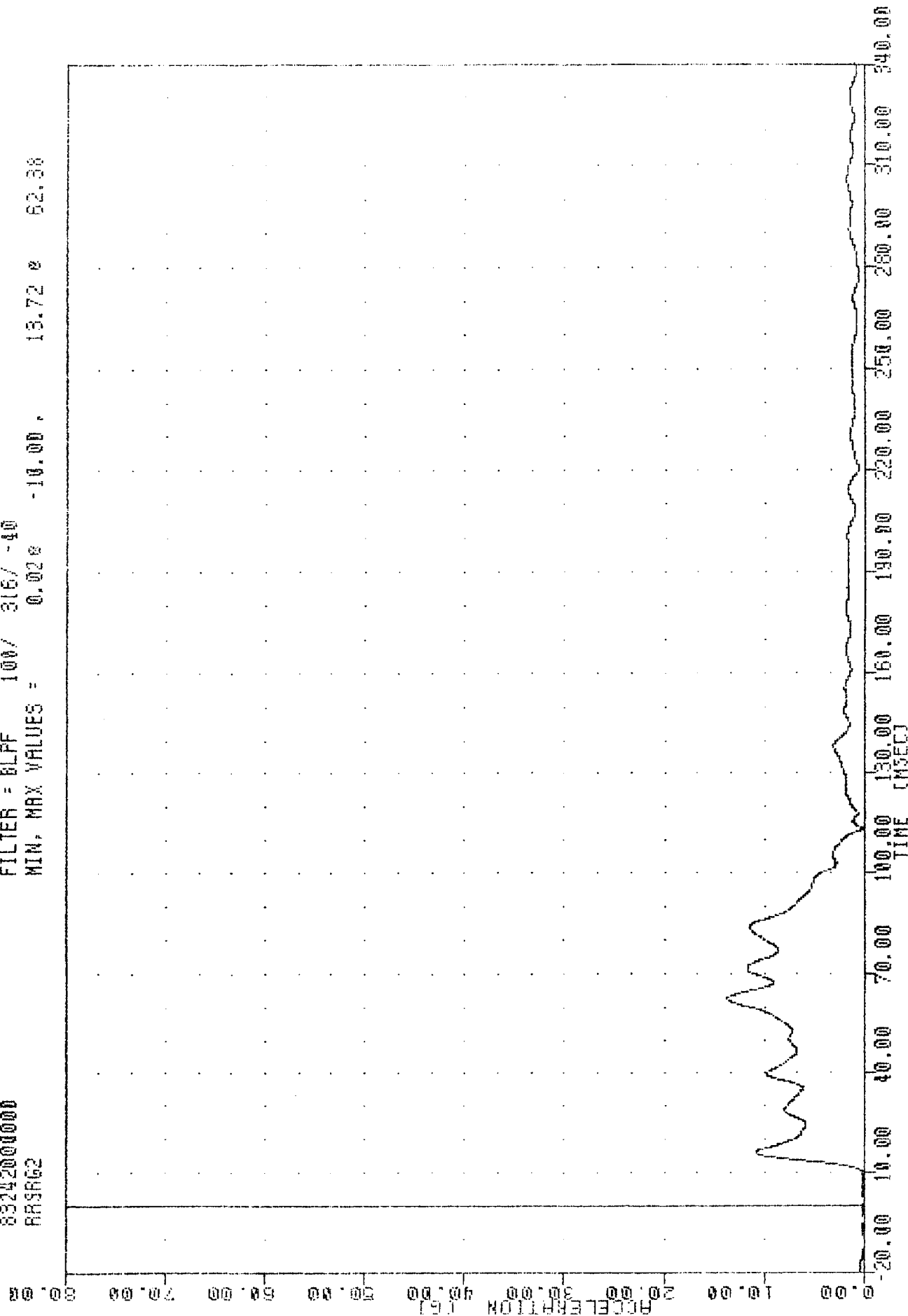
FILTER = BLPF 100/ 318/ -40

MIN, MAX VALUES = -4.18e 59.63, 2.75 e 62.63



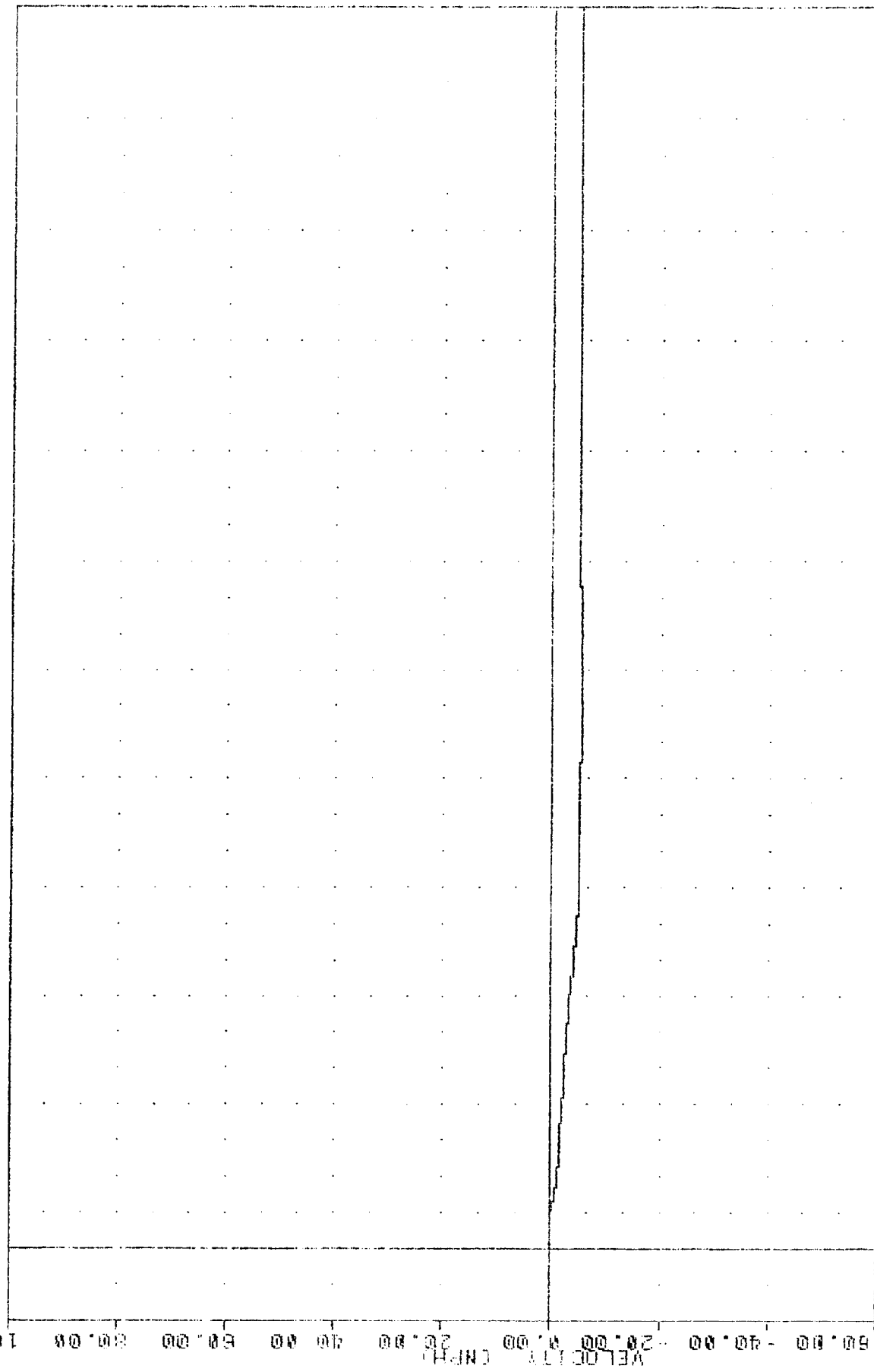
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL ACCELERATION Z AXIS

TRC [REDACTED], 830630 [REDACTED] PLOT DATE 6-SEP-83 08:55:23
 EVALUATION OF MDD VW FLEET
 83242000000
 RRSRG2
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = 0.028 -10.00, 13.72 8 62.38



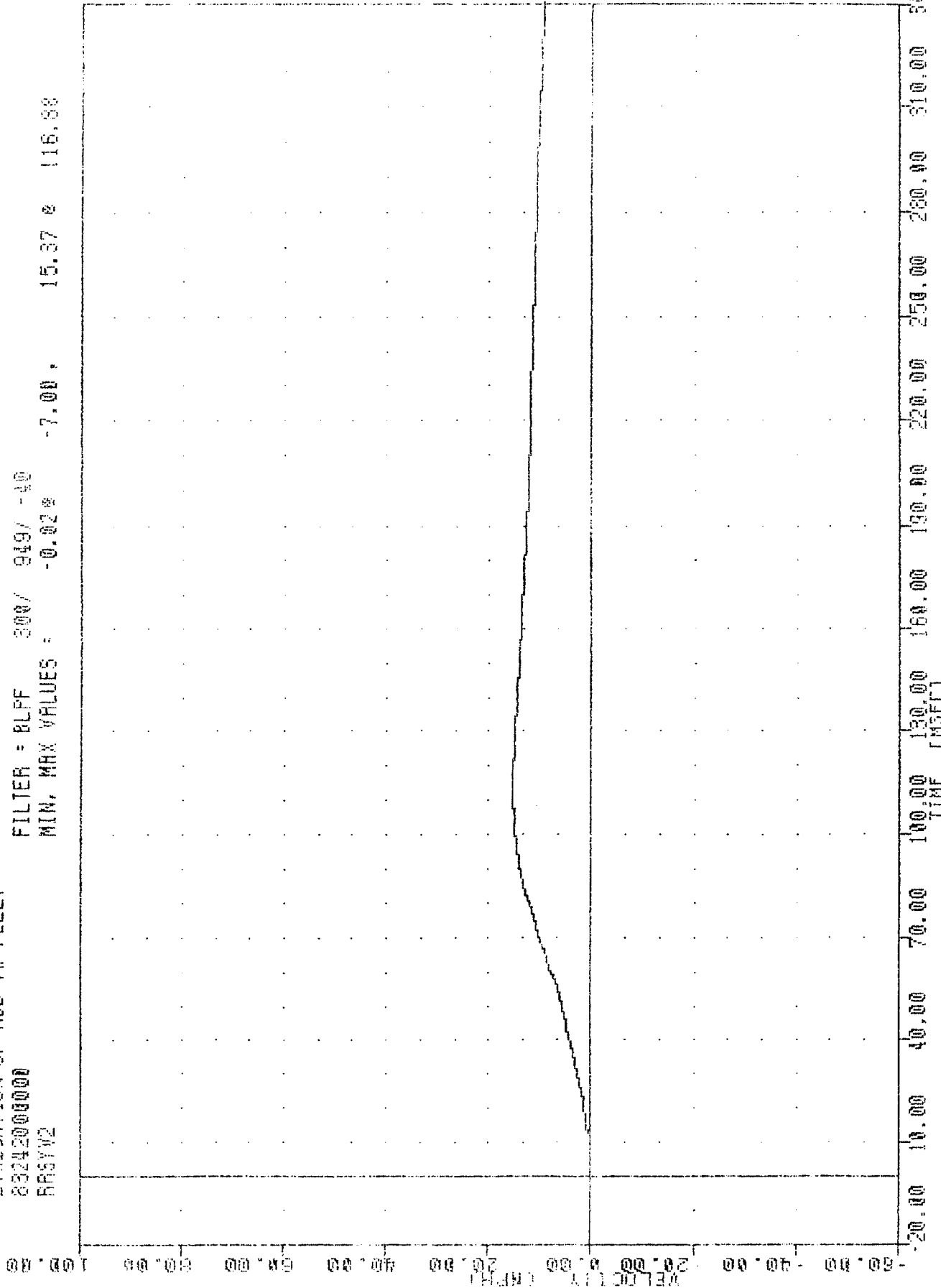
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT REAR SILL RESULTANT

TRC
 EVALUATION OF MID YW FLEET
 03242000000
 RRSXV2
 FILTER = ELPF 300/ 949/ -40
 MIN. MAX VALUES = -5.29% 150.00, 0.01% 7.13
 PLOT DATE 6-SEP-88 14:00:22



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRR392

TRC 830830 PLOT DATE 6-SEP-83 14:00:22
 EVALUATION OF MDD VW FLEET
 83242000000
 RRSYV2
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -0.02% -7.00, 15.37% 116.88

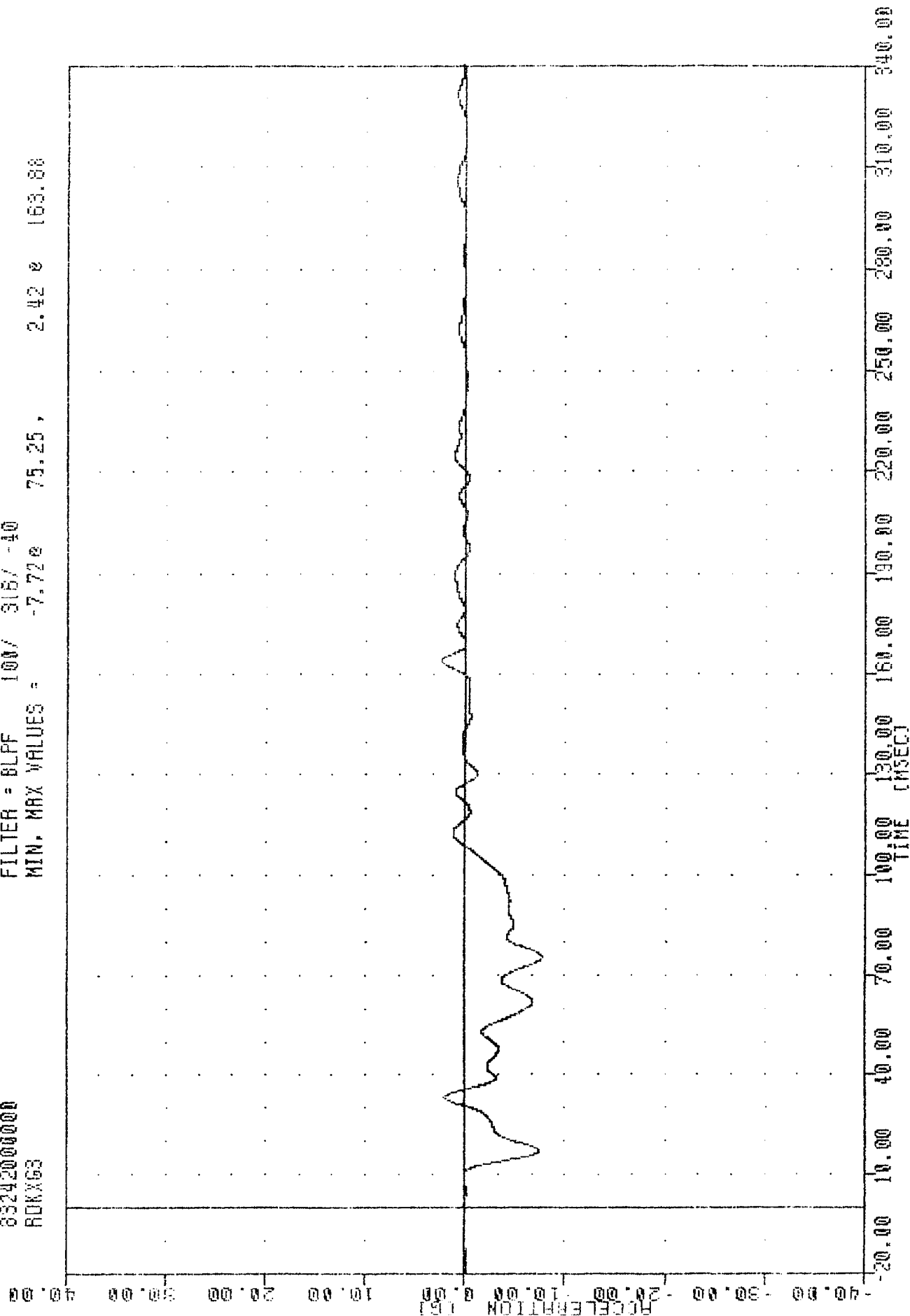


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRSYV2

TRC 830830
 EVALUATION OF MDD VW FLEET
 83242000000
 RDKX63

PLOT DATE 8-SEP-83 09:35:23

FILTER = BLPF 100/ 316/-40
 MIN. MAX VALUES = -7.72e 75.25, 2.42 e 163.88

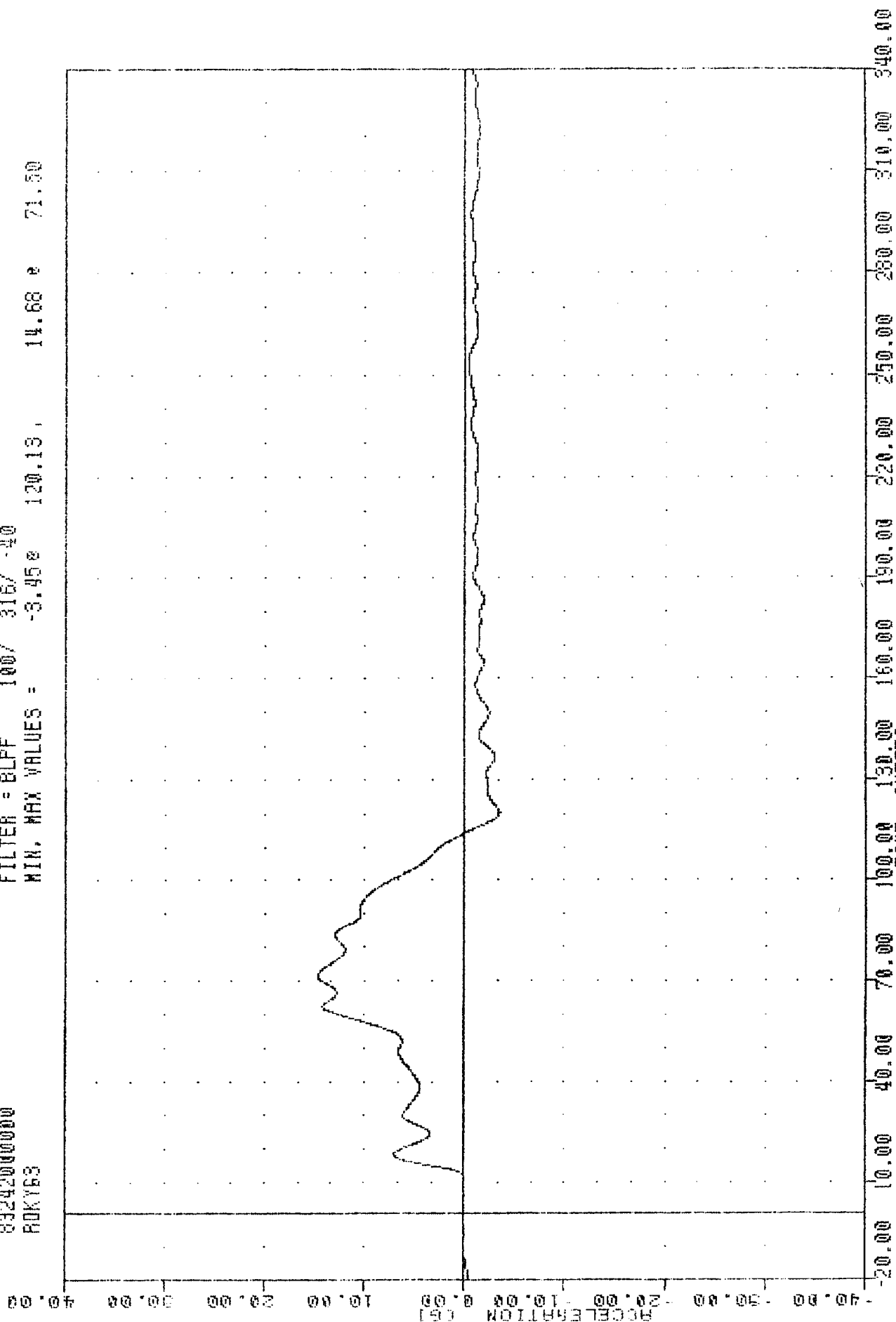


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE REAR DECK ACCELERATION X AXIS

TAC
EVALUATION OF MOD VN FLEET
83242000000
R0K163

PLOT DATE 6-SEP-83 09:56:23

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -3.45e 120.13, 14.68e 71.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION Y AXIS

TRC 830830 PLOT DATE 6-SEP-83 09:56:23

EVALUATION OF MOD YW FLEET

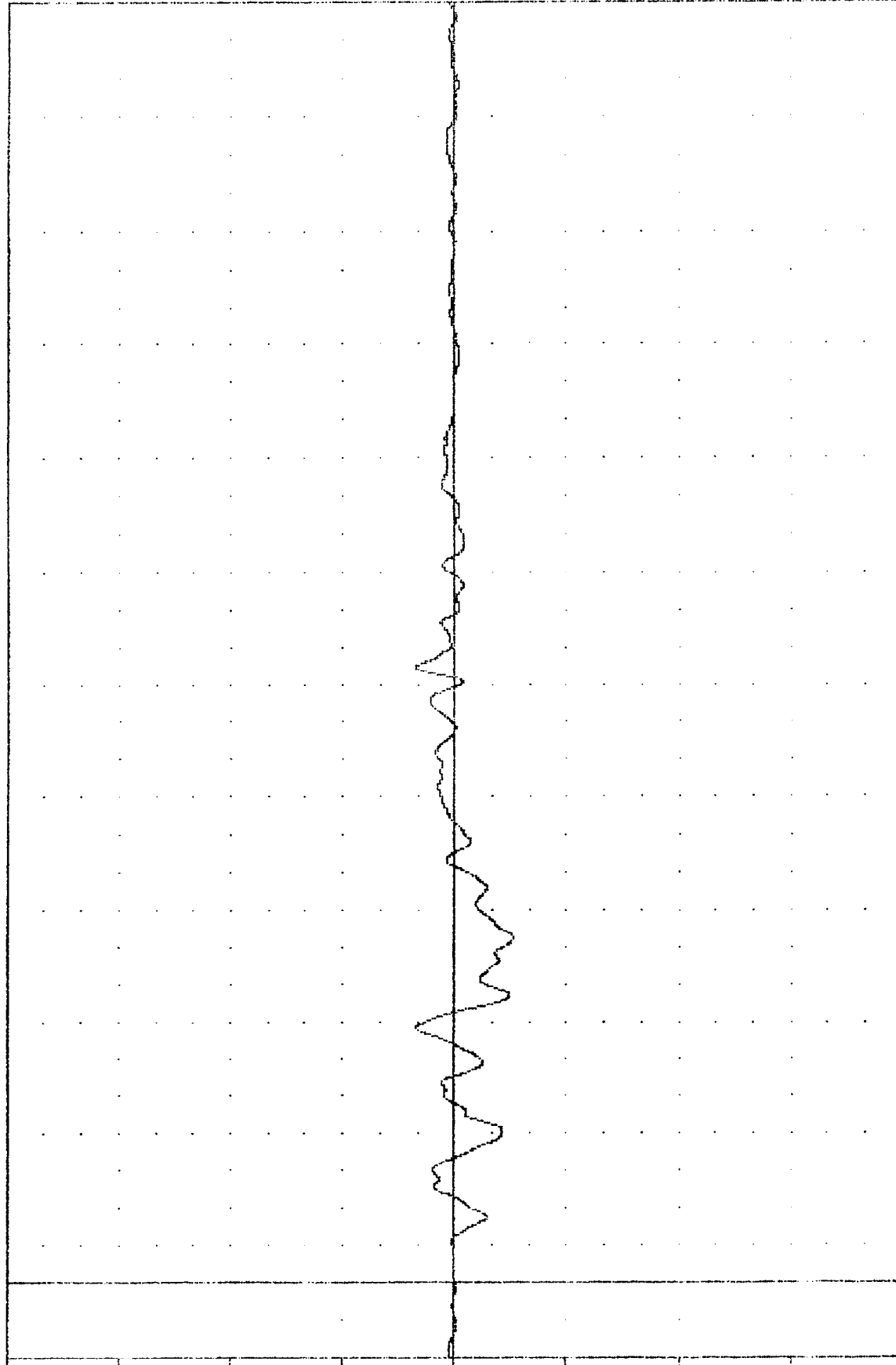
832420000000

ADKZG3

FILTER = BLPF 100/ 316/ -40

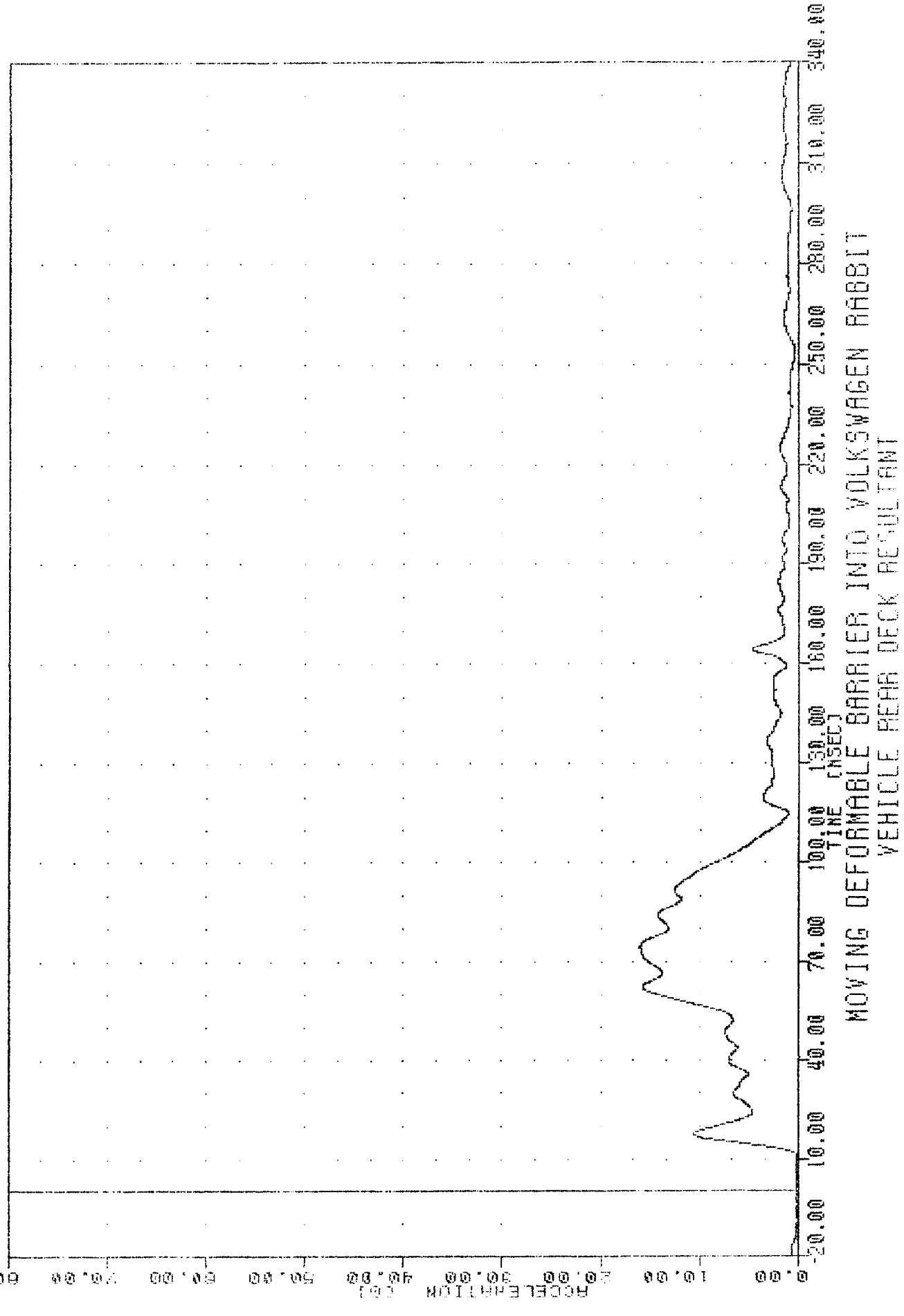
MIN, MAX VALUES = -5.22e 92.13, 3.53 e 164.25

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION Z AXIS

TAC 630630 09:05:23
 EVALUATION OF MOD VW FLEET
 83242000000
 ROKR63
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = 0.028 0.13, 15.99 8 74.50

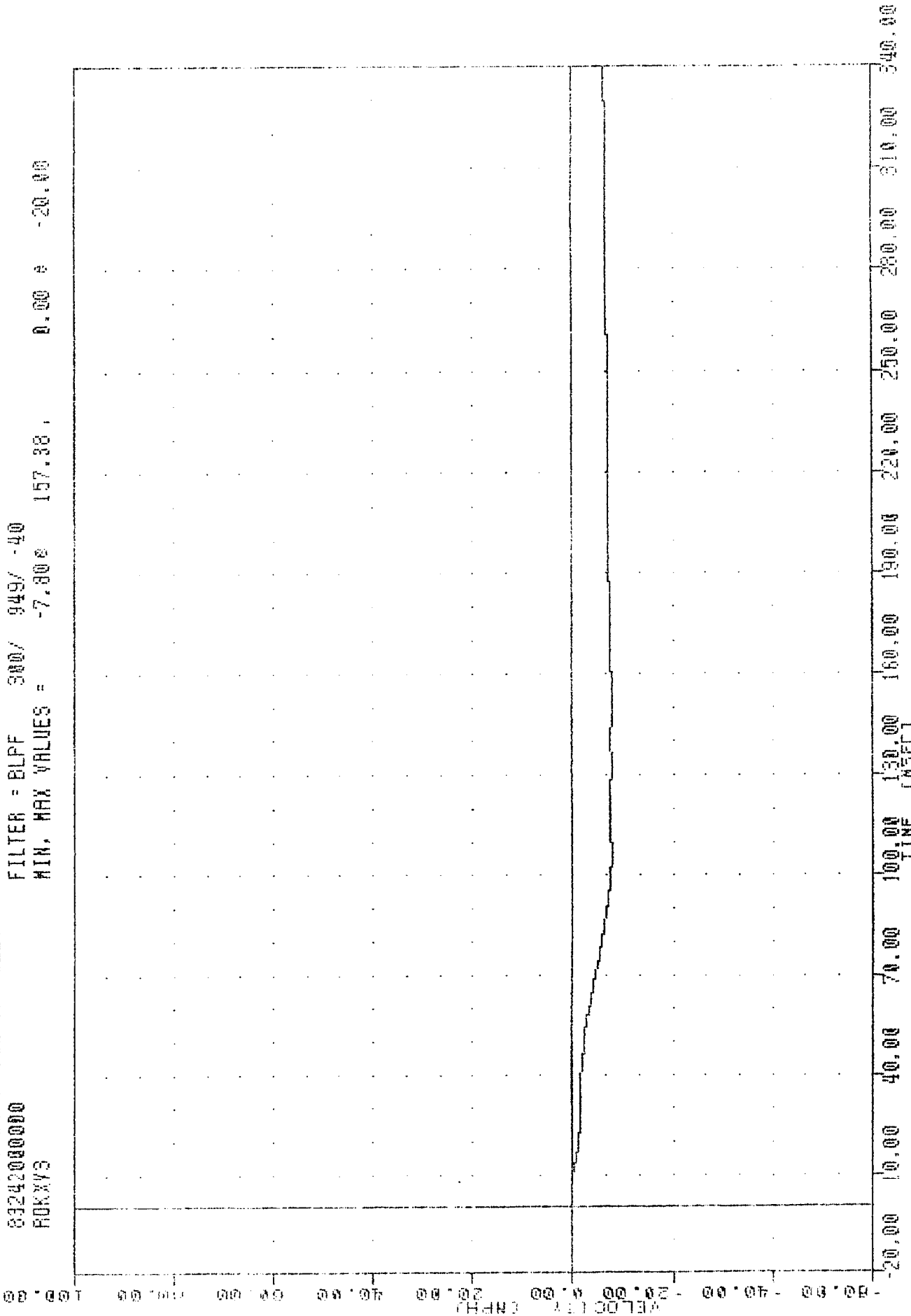


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE REAR DECK RESULTANT

TAC
EVALUATION OF MOD VN FLEET
83242000000
ROKXVS

PLOT DATE 8-SEP-83 14:00:22

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -7.800 157.30 0.00 0 -20.00

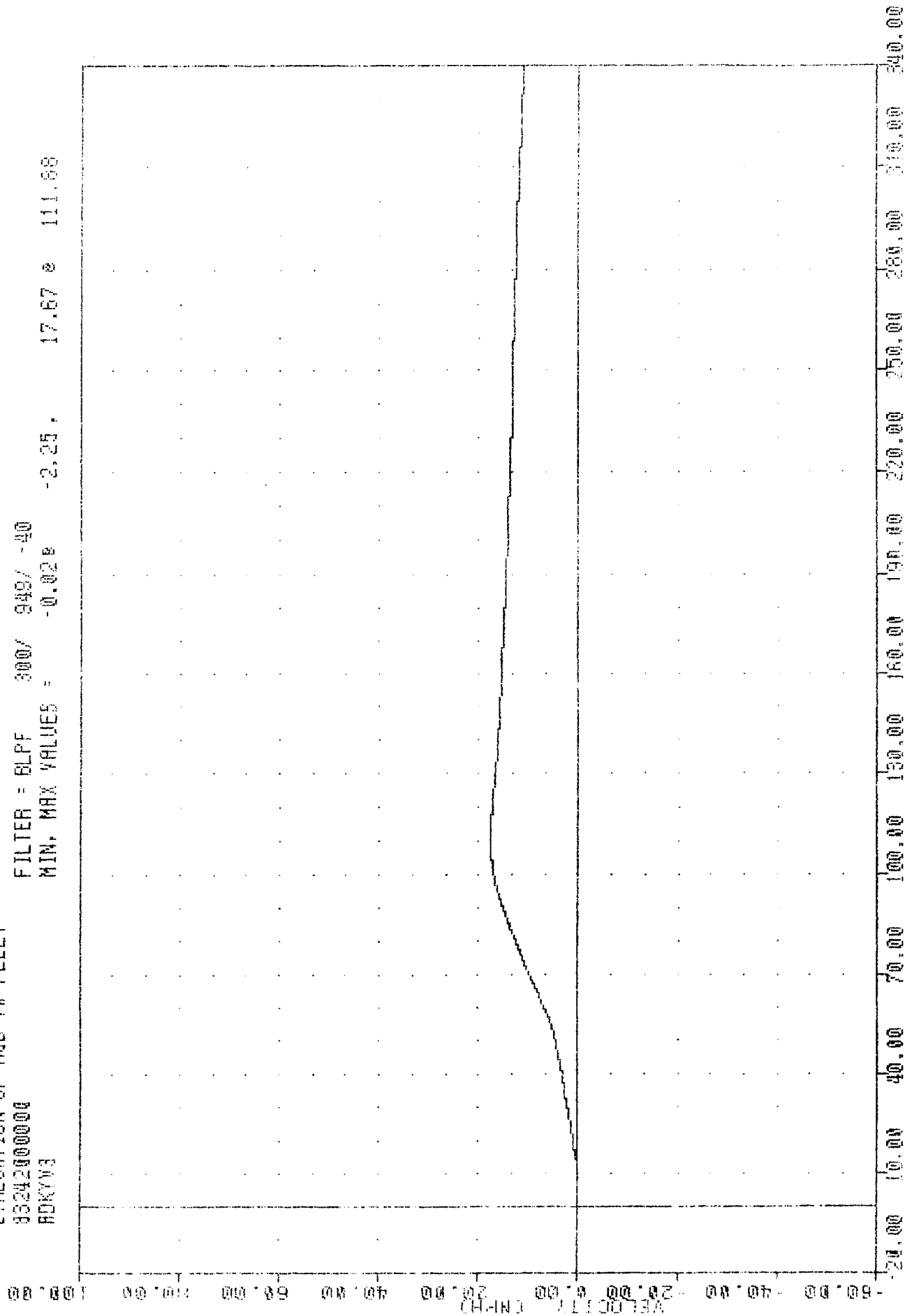


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA W USING ROKXG3

TRC
EVALUATION OF MOD YW FLEET
832420000000
RDKYV3

PLOT DATE 6-SEP-83 14:00:22

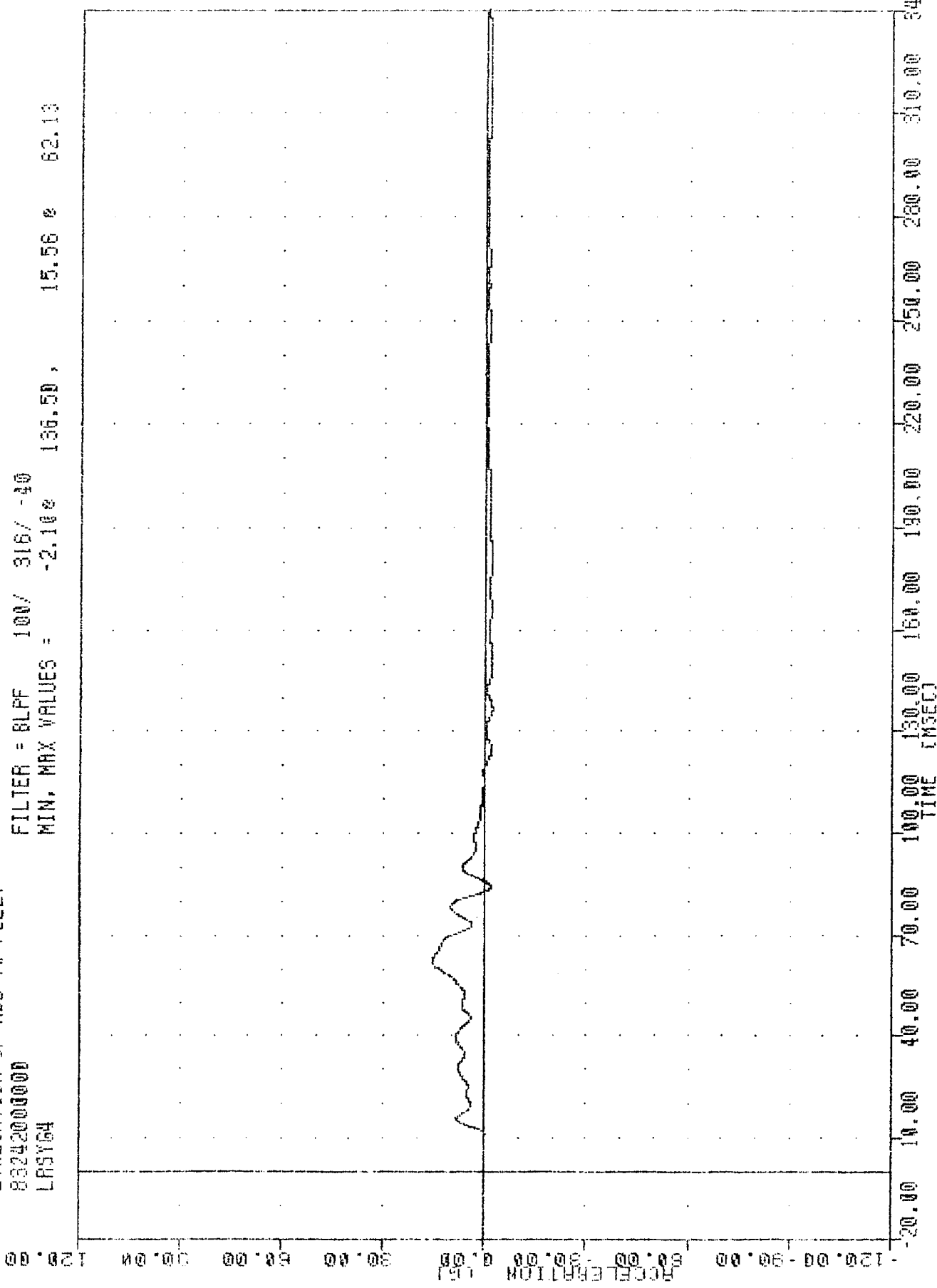
FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -0.028 -2.25, 17.67 e 111.68



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RDKYV3

TBC
EVALUATION OF MDD VW FLEET
83242000000
LRSY64

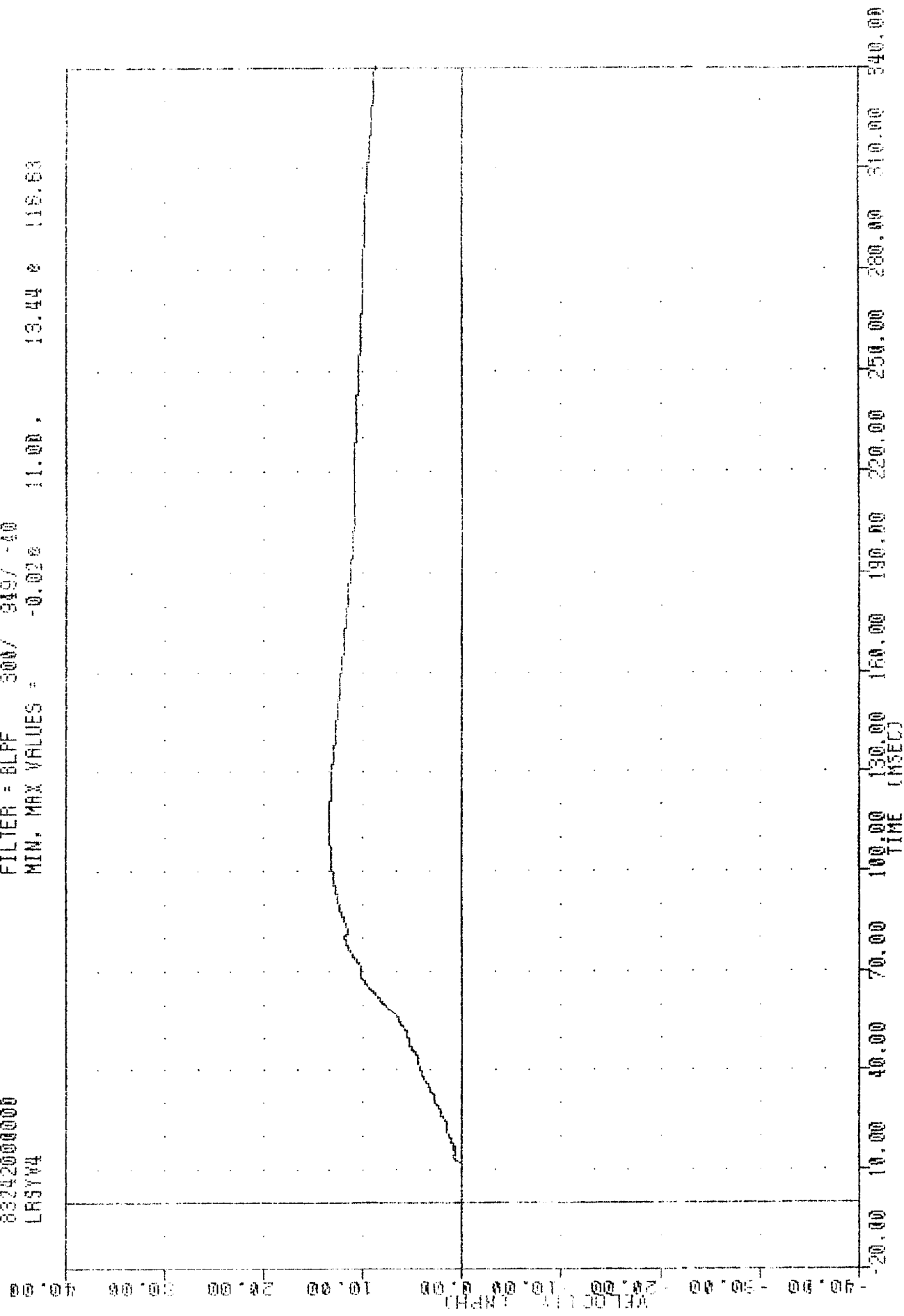
850830
PLOT DATE 8-SEP-83 09:05:23
FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -2.10% 136.50, 15.56% 62.13



TRC
 EVALUATION OF NDD VW FLEET
 83242000000
 LR5YV4

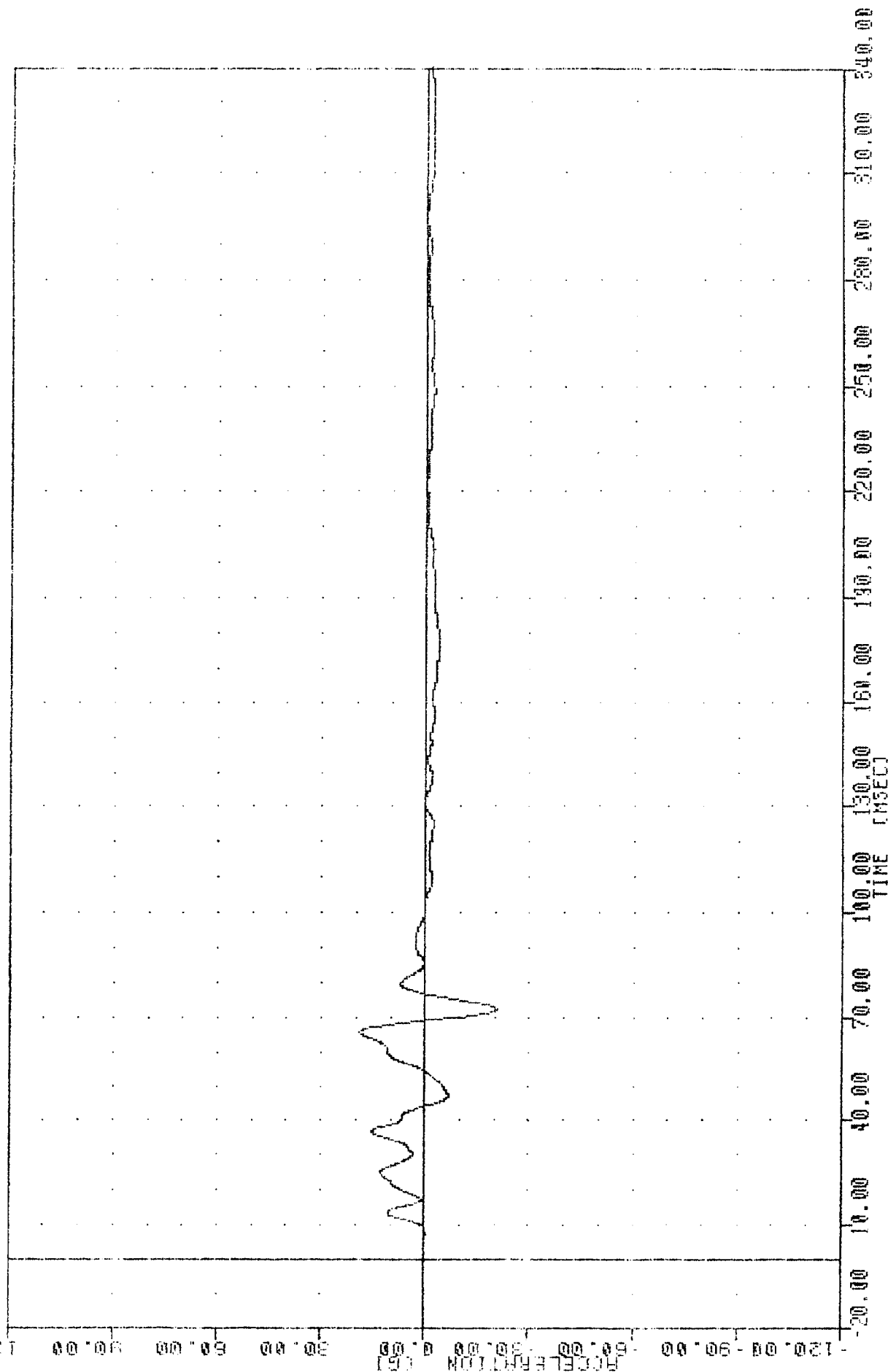
PLOT DATE 6-SEP-83 14:00:22

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.020 11.00 13.44 e 118.63



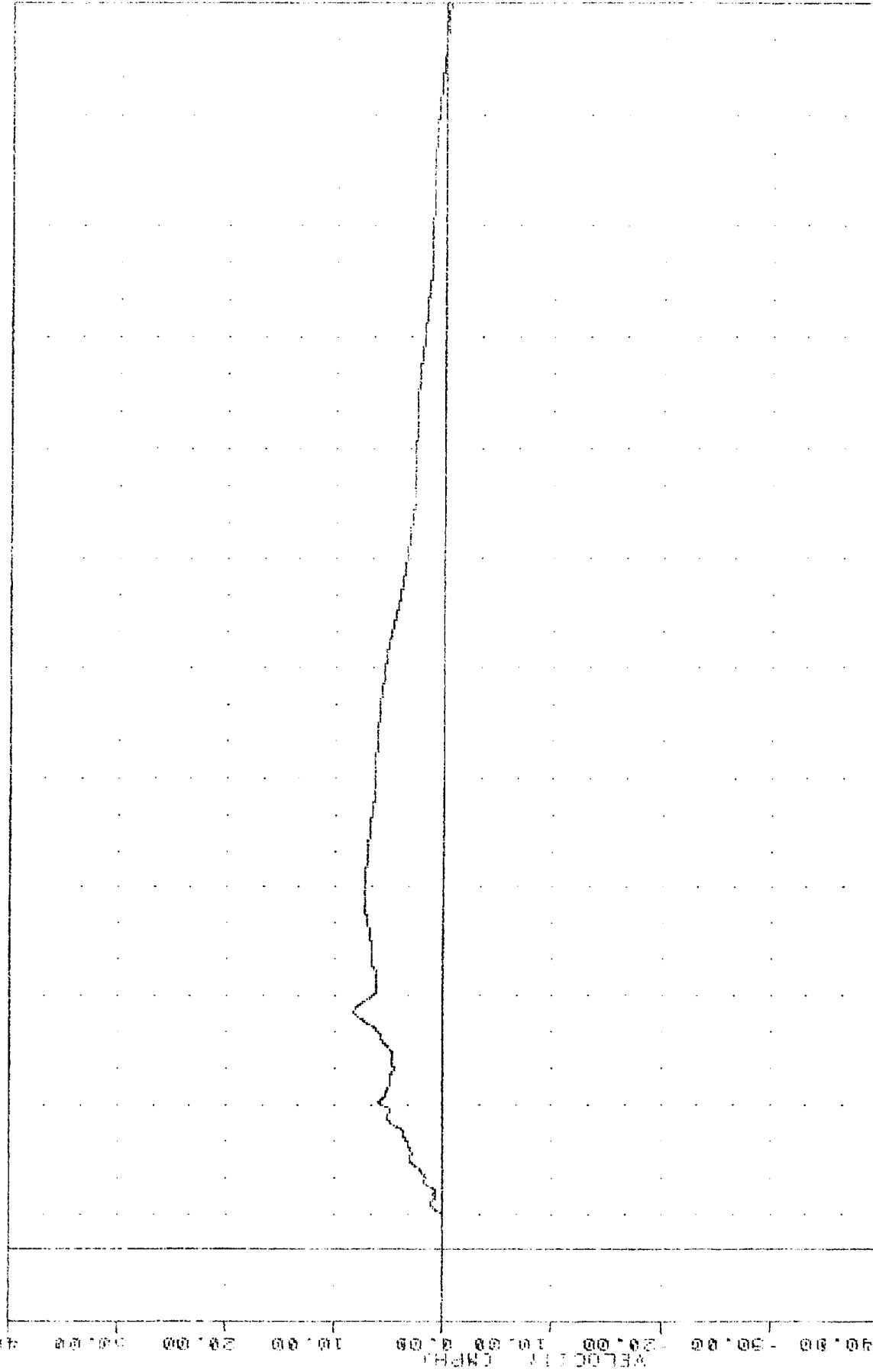
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LR5YV4

TRC
 EVALUATION OF MOD VW FLEET
 832420000000
 LFSY65
 PLOT DATE 6-SEP-83 10:56:56
 FILTER = 6LFF 100/ 316/ -40
 MIN. MAX VALUES = -20.98 72.13 19.00 65.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT SILL ACCELERATION Y AXIS

TAC 8300300
 EVALUATION OF MOD VW FLEET
 832420000000
 LFSYV5
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.33 340.00 0.28 65.50
 PLOT DATE 8-SEP-83 14:00:22

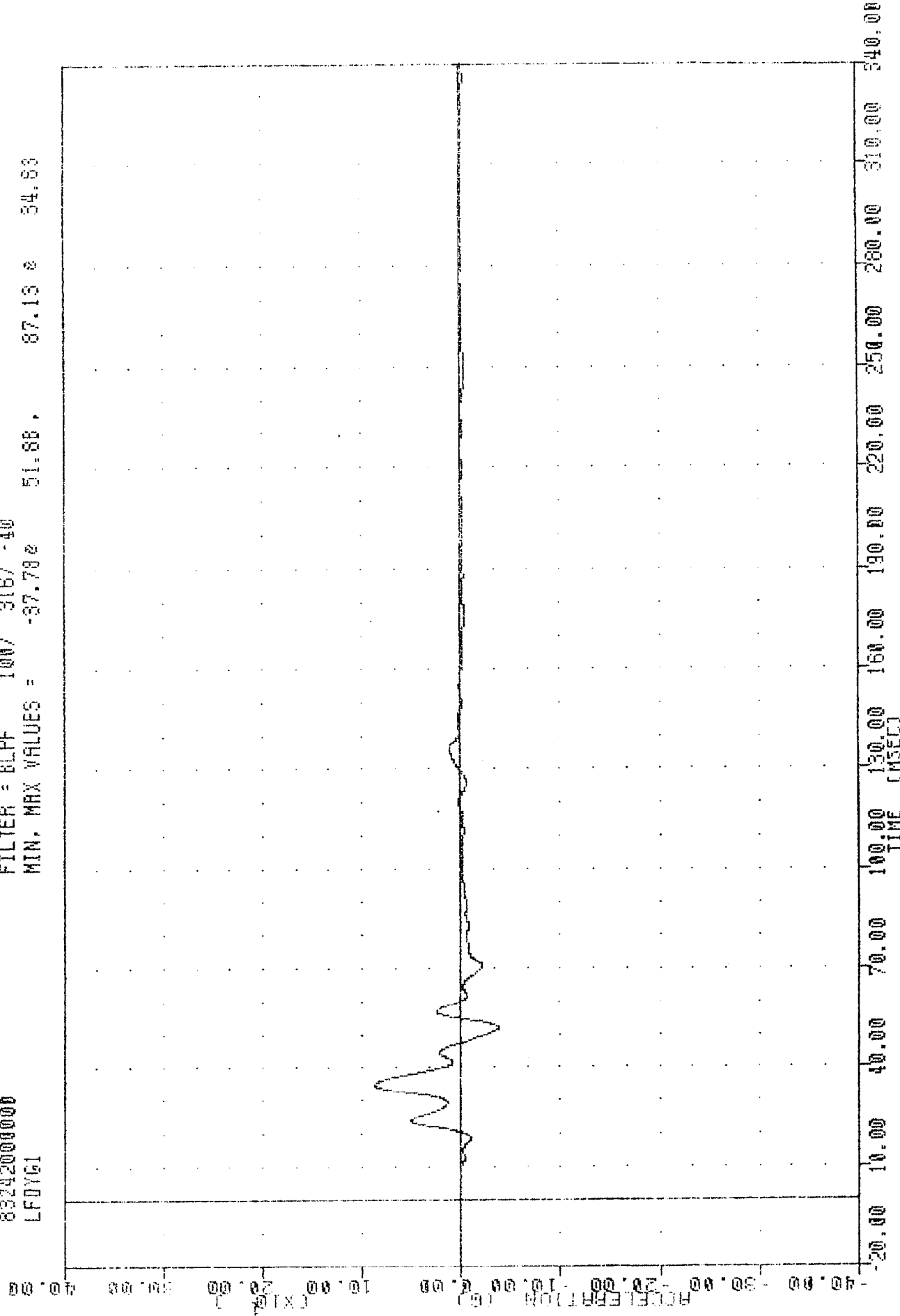


-40.00
 -30.00
 -20.00
 -10.00
 0.00
 10.00
 20.00
 30.00
 40.00
 VELOCITY (CMPH)
 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00
 TIME (MSEC)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA W USING LFSYV5

TRC
EVALUATION OF MDD VW FLEET
83242000000
LFDY61

PLOT DATE 6-SEP-83 09:56:23

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -37.782 51.88, 87.13 34.83



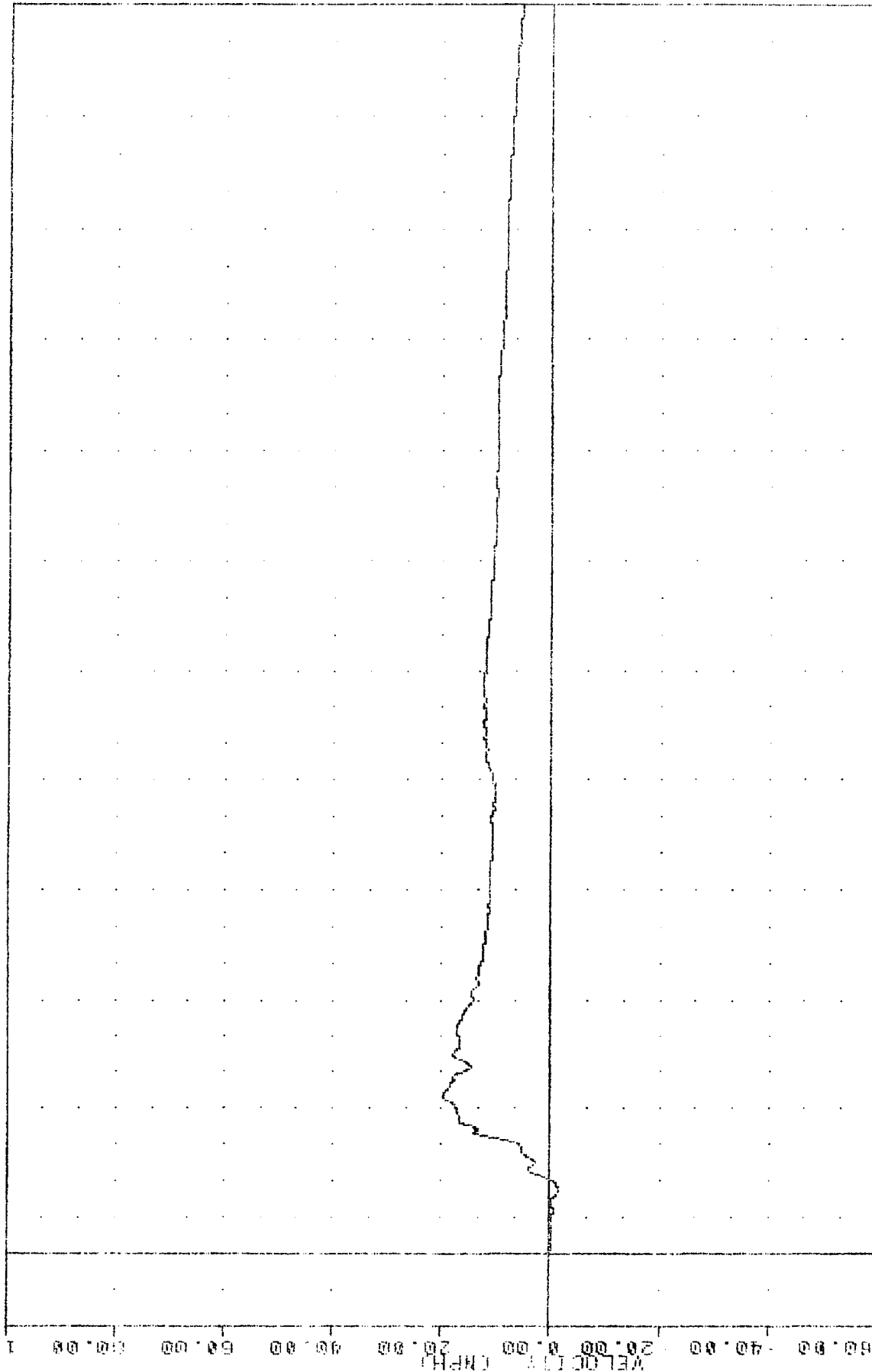
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 6) ACCELERATION Y AXIS

TRC 830830
EVALUATION OF MDD YW FLEET
83242000000
LFDYV1

PLOT DATE 8-SEP-83 14:00:22

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -1.42e 16.88 e 43.38

100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00



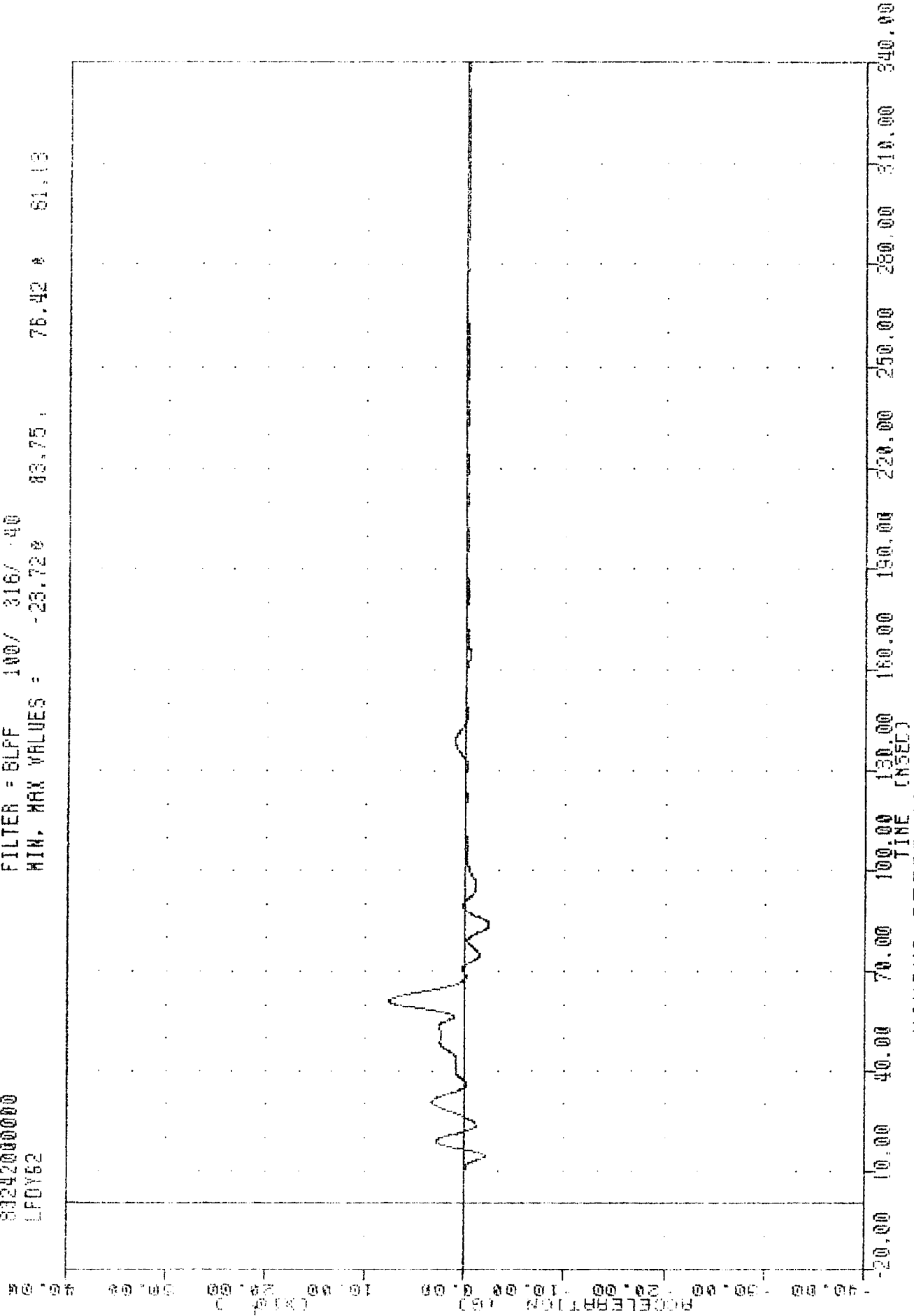
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (msec)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYV1

TAC
EVALUATION OF KOD VW FLEET
83242000000
LFDY62

830830
6-SEP-83 09:56:23

FILTER = BLPF 100/ 316/ .40
MIN. MAX VALUES = -23.720 83.75 76.42 * 61.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 8) ACCELERATION Y AXIS

TRC

830830

PLOT DATE

6-SEP-83

14:00:22

EVALUATION OF MOD VW FLEET

832420000000

FILTER = BLPF 300/ 949/ -10

LFDYV2

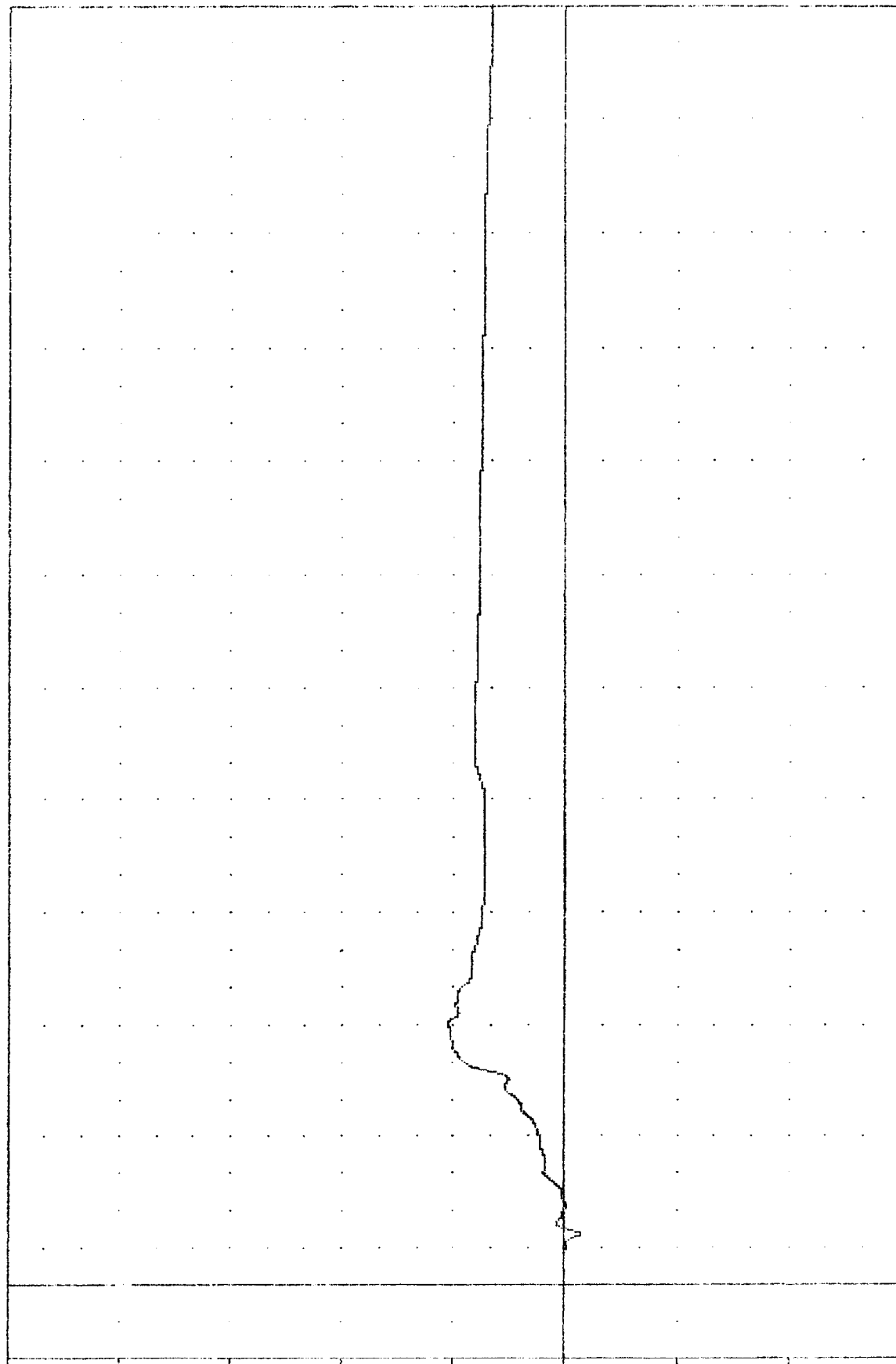
MIN, MAX VALUES = -2.900

13.69

20.94

70.25

VELOCITY (MPH)



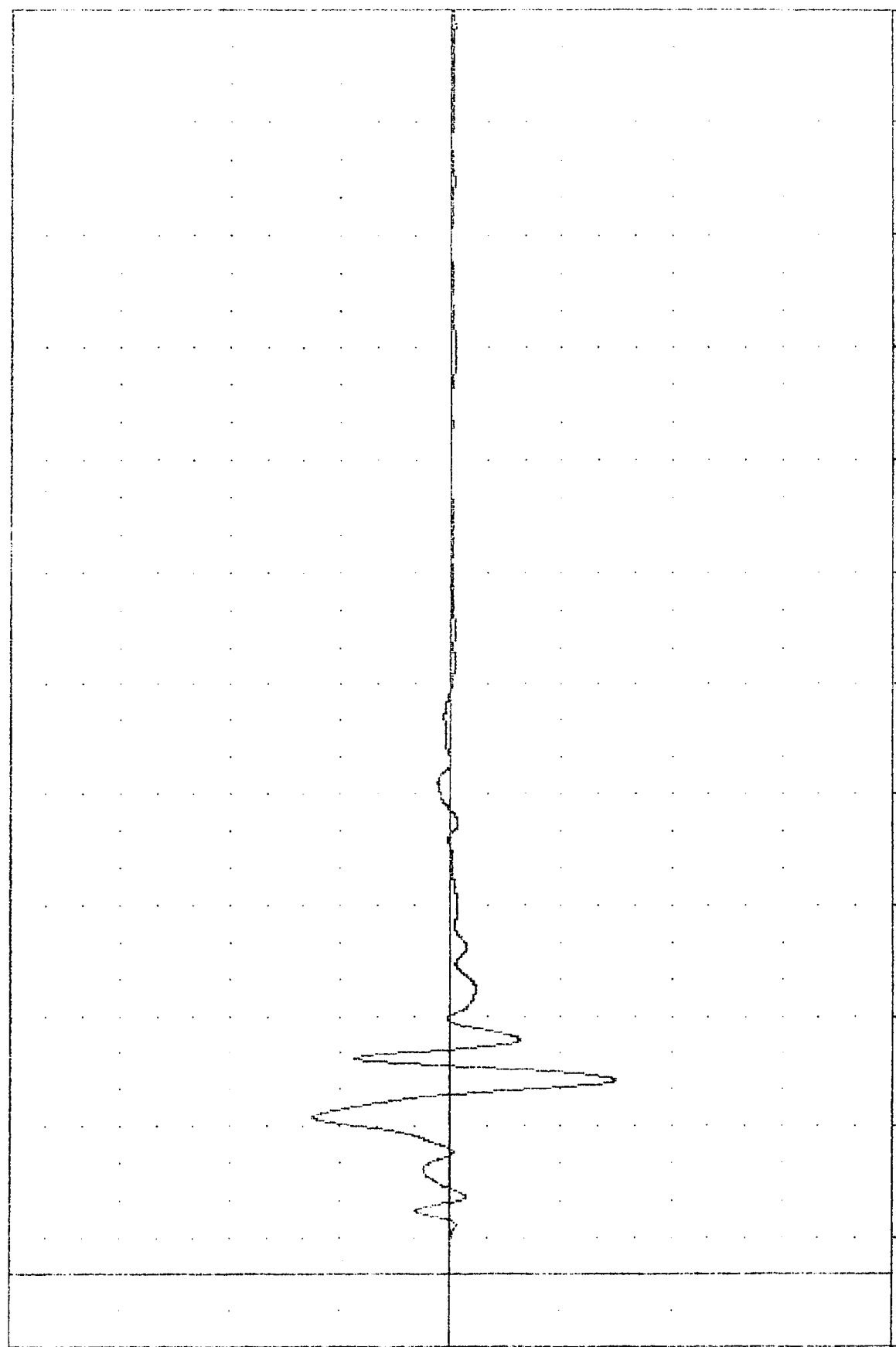
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYV2

TRC
 EVALUATION OF MOD VW FLEET
 03242000000
 LFDV63

PLOT DATE 6-SEP-88 09:56:23

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -150.41 124.96 42.38

ACCELERATION (G)
 (X10⁻¹)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR (POSITION 9) ACCELERATION Y AXIS

TAC 830830

EVALUATION OF MOD VN FLEET

83242000000

LFDYV3

PLOT DATE 6-SEP-83 14:00:22

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -3.640 340.00 25.01 45.75

100.00

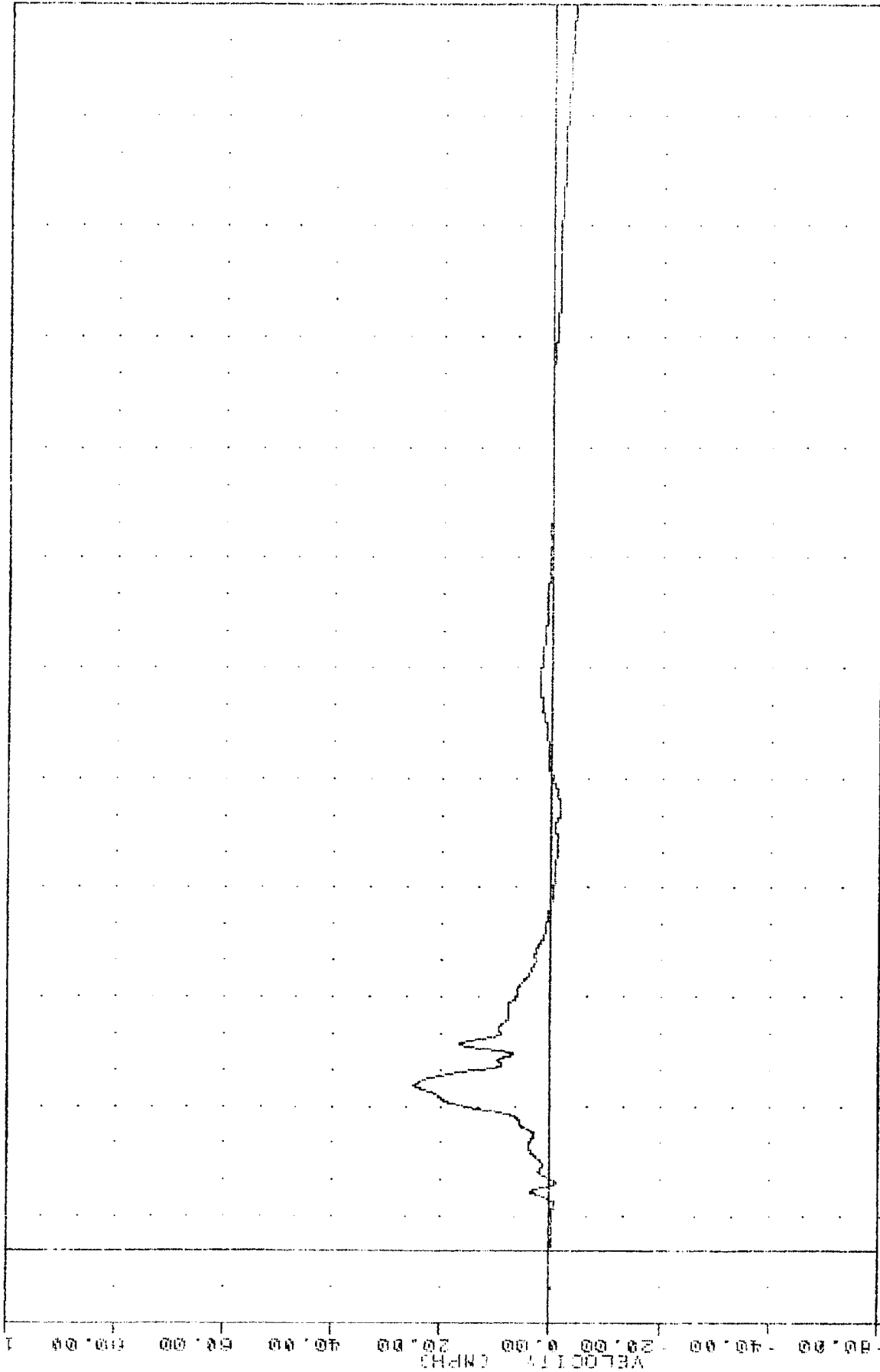
80.00

60.00

40.00

20.00

B-97

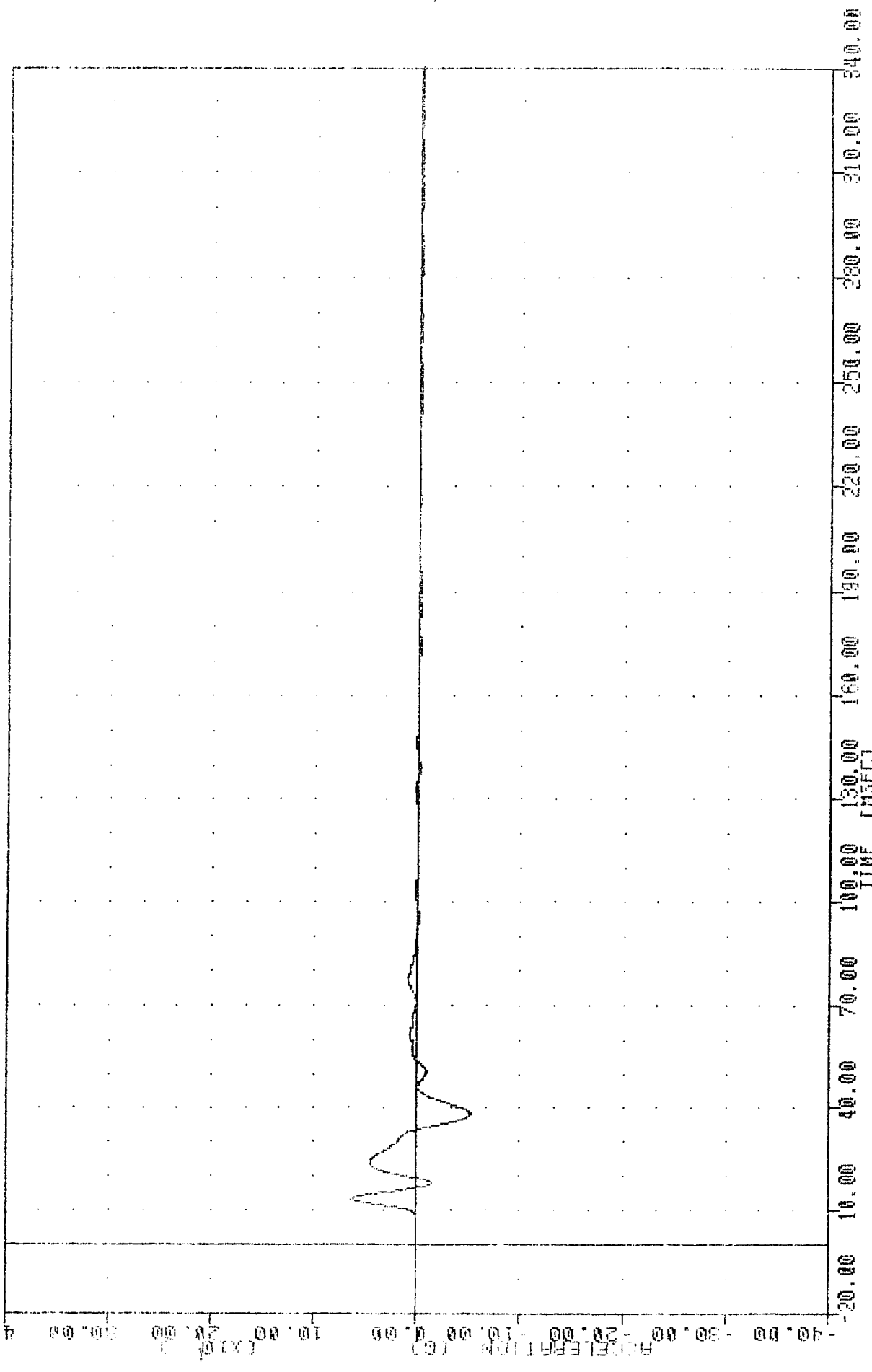


-80.00 -60.00 -40.00 -20.00 0.00 20.00 40.00 60.00 80.00 100.00

-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDY63

TRC 830820 PLOT DATE 8-SEP-83 09:56:23
 EVALUATION OF MDD VW FLEET
 83242000000
 LFOY64
 FILTER = 8LPP 100/ 316/ -40
 MIN, MAX VALUES = -51.856 38.25, 63.44 * 13.28

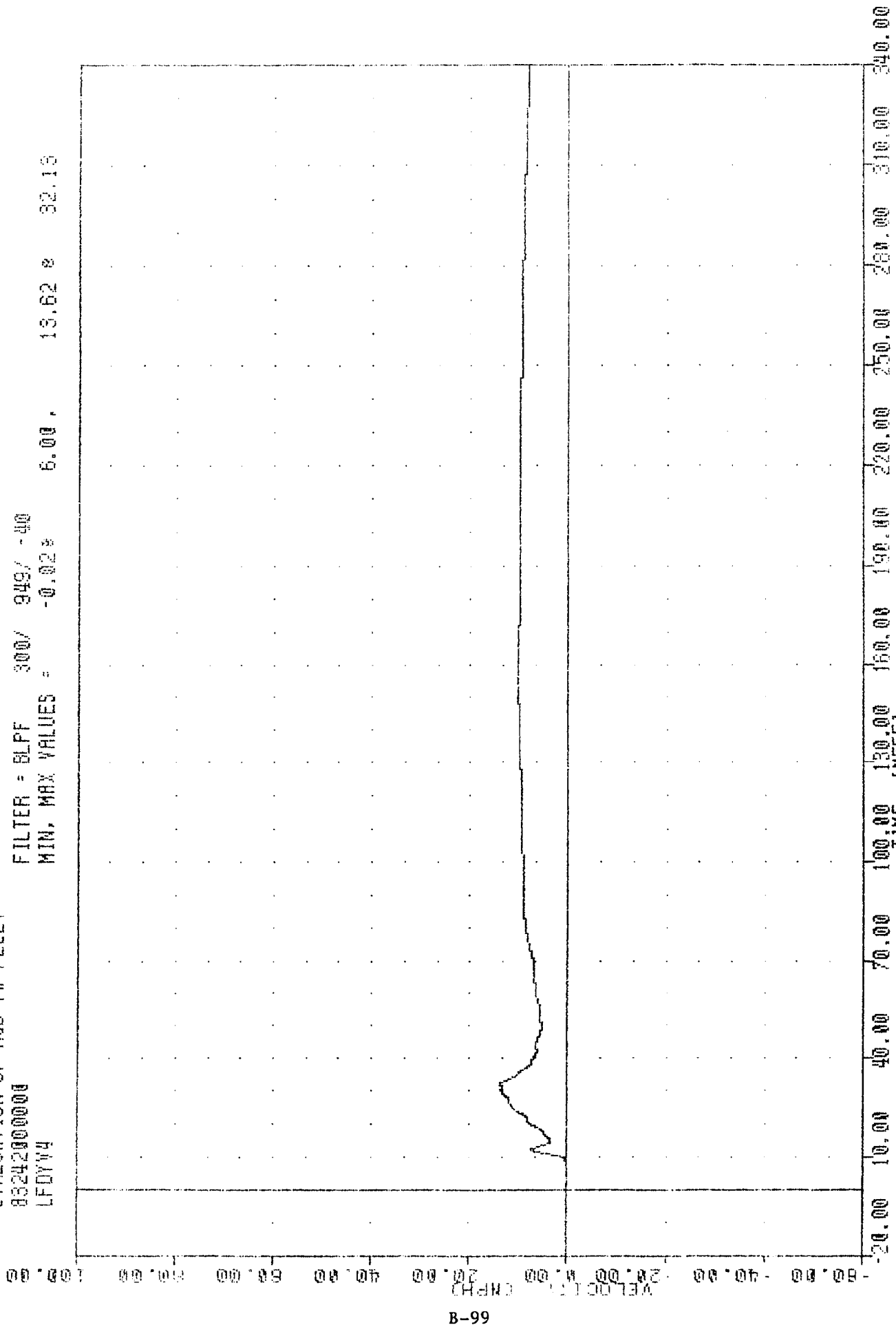


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR POSITION (0) ACCELERATION Y AXIS

TRC
EVALUATION OF MOD VW FLEET
83242000000
LFDYV4

PLOT DATE 6-SEP-83 14:00:22

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -0.02% 6.00, 13.62% 32.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYV4

TAC 8308300 PLOT DATE 6-SEP-83 09:05:23

EVALUATION OF MOD VN FLEET

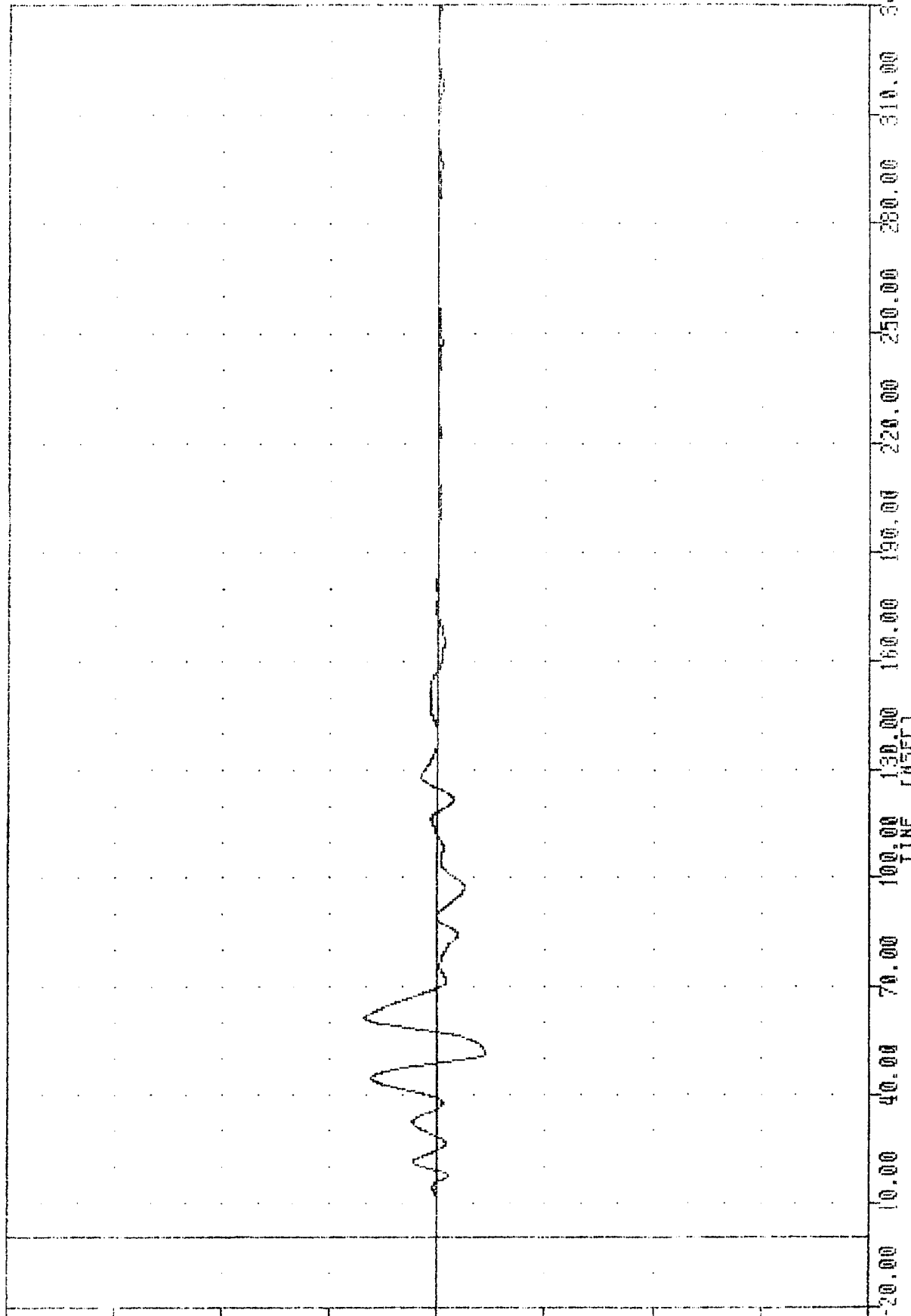
832420000000

LFDY65

FILTER = BLPF 100/ 318/ -40

MIN. MAX VALUES = -45.05 51.25 57.38 61.13

ACCELERATION (G)



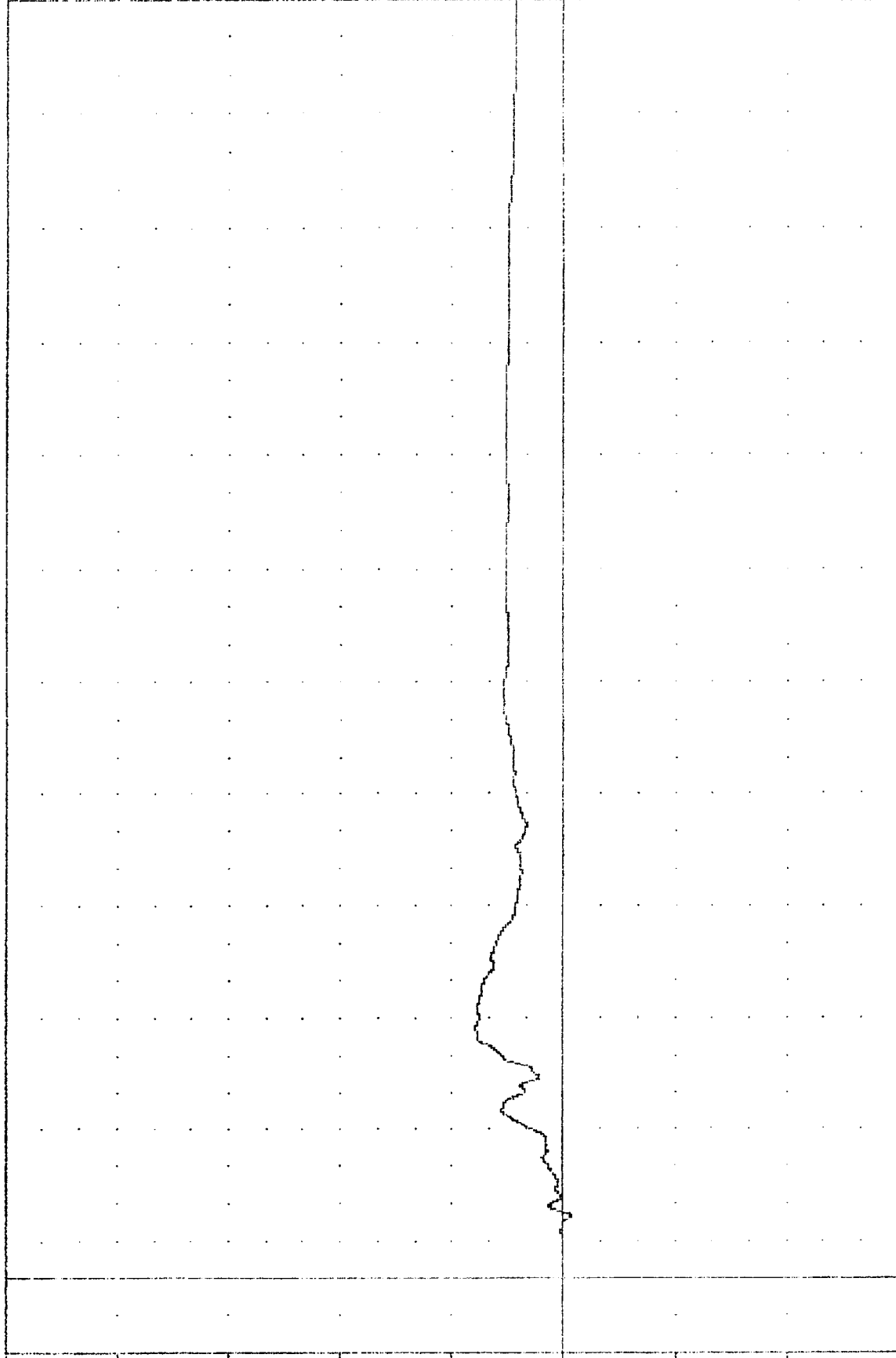
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 1) ACCELERATION Y AXIS

TRC
 EVALUATION OF MOD VW FLEET
 83242000000
 LF0YV5

PLOT DATE 6-SEP-83 14:00:22

FILTER = BLFF 300/ 949/ -40
 MIN, MAX VALUES = -1.35% 16.63, 15.77% 67.00

WELCITY CMFH
 100.00
 80.00
 60.00
 40.00
 20.00
 0.00
 -20.00
 -40.00
 -60.00

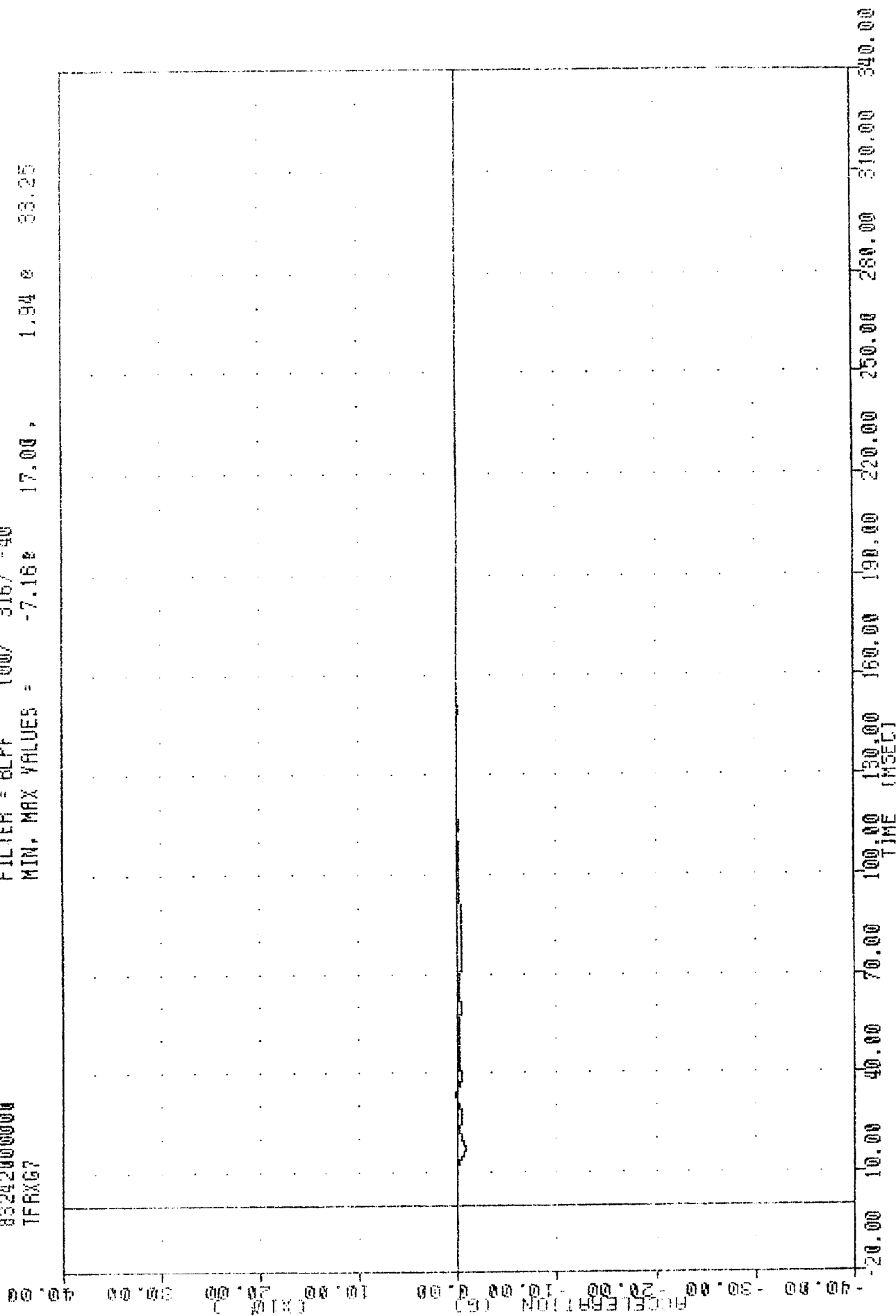


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LF0YV5

TRC
EVALUATION OF MOD VW FLEET
83242000000
TFRXG7

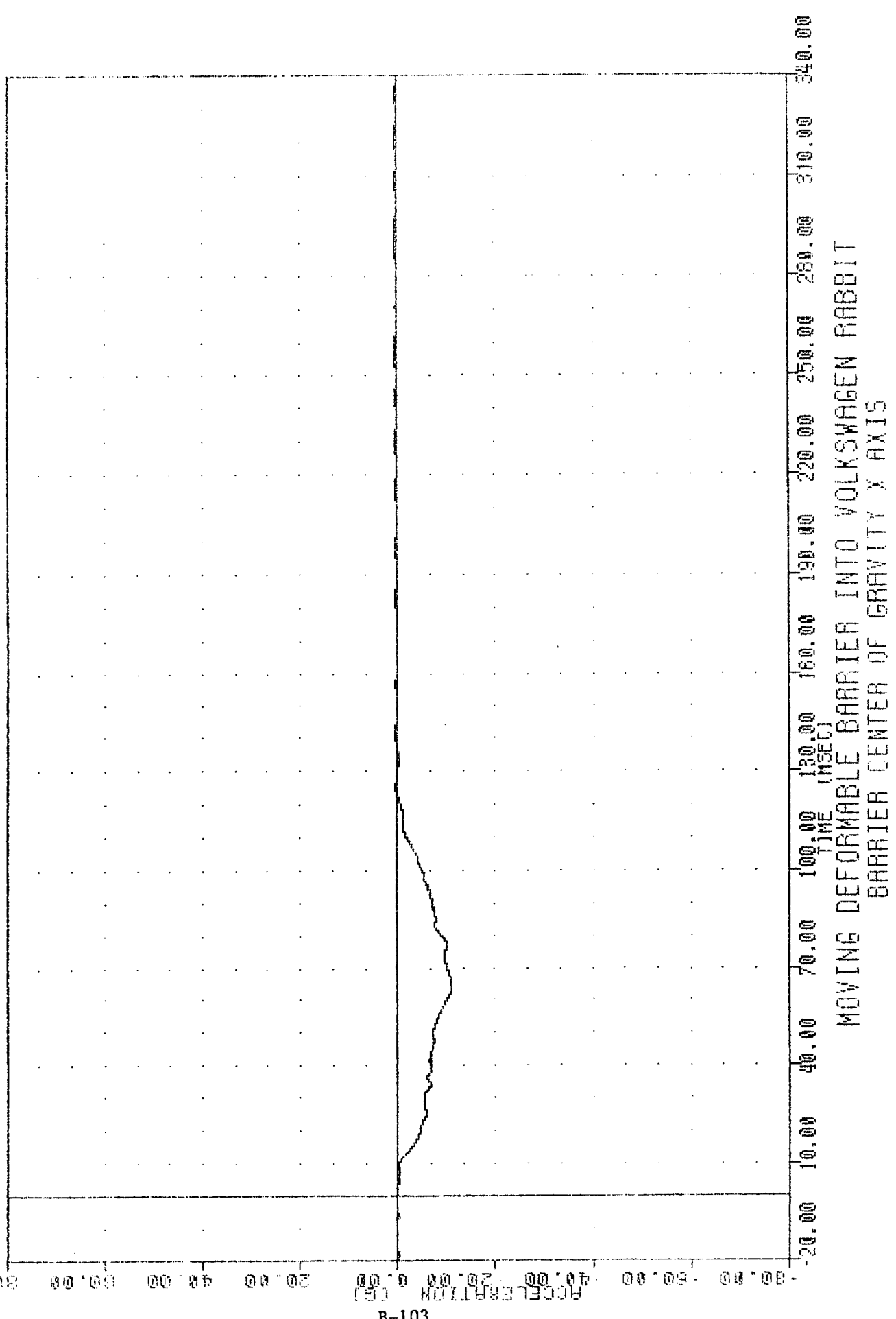
PLOT DATE 6-SEP-83 09.00.23

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -7.16E 17.00 1.94 E 33.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE TRUNK FLOOR RIGHT ACCELERATION X AXIS

TRC
 EVALUATION OF MOD YW FLEET
 832420000000
 806X6
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -10.98e 63.50, 0.55 e 214.86
 PLOT DATE 9-SEP-83 14:18:51



TRC 830830 9-SEP-83 14:18:51

EVALUATION OF MOD VW FLEET

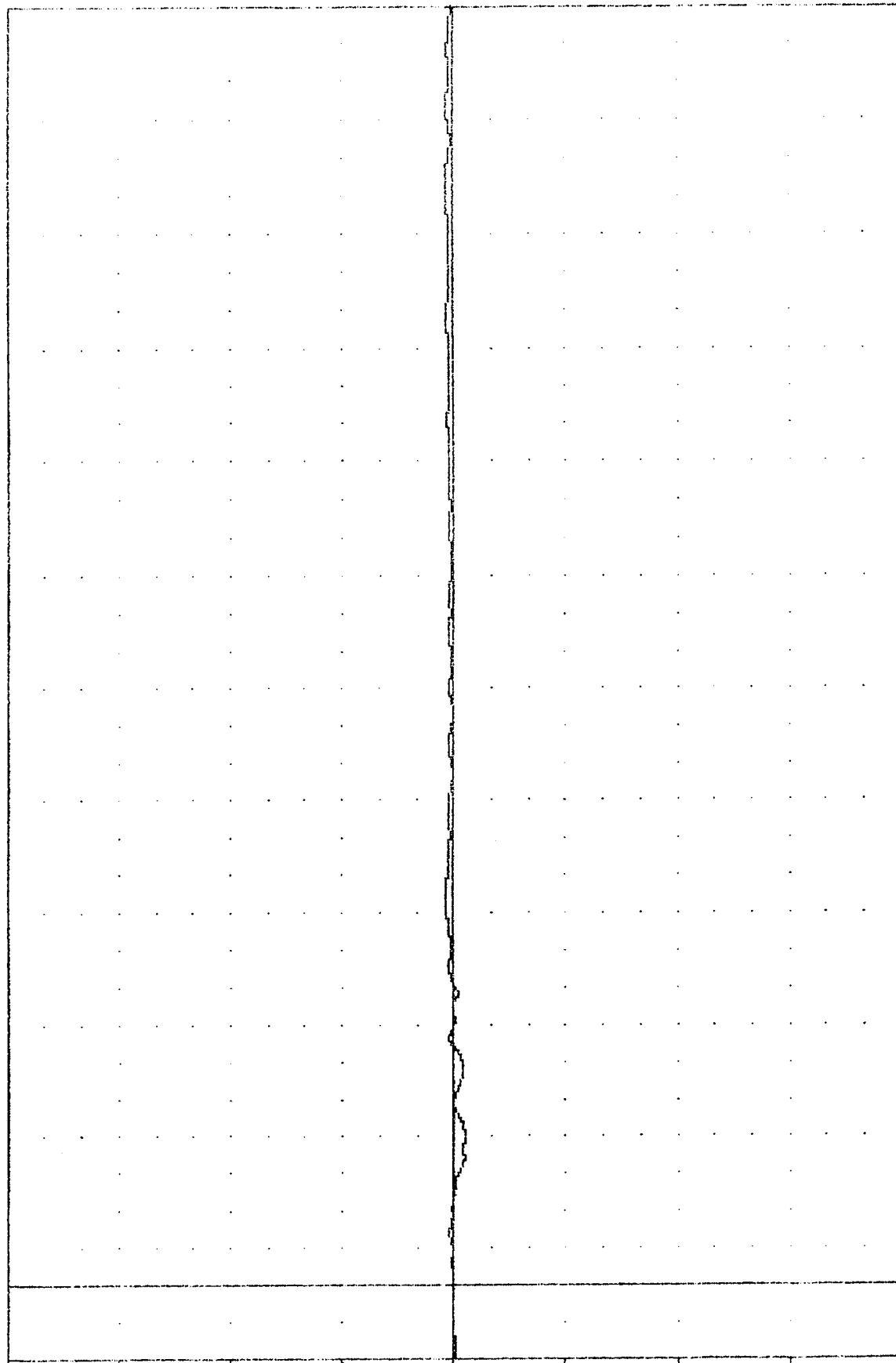
832420000000

BCGYG

FILTER = BLFF 100/ 316/ -40

MIN. MAX VALUES = -2.060 39.75, 1.56 102.88

ACCELERATION (G)



TIME (msec)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CENTER OF GRAVITY Y AXIS

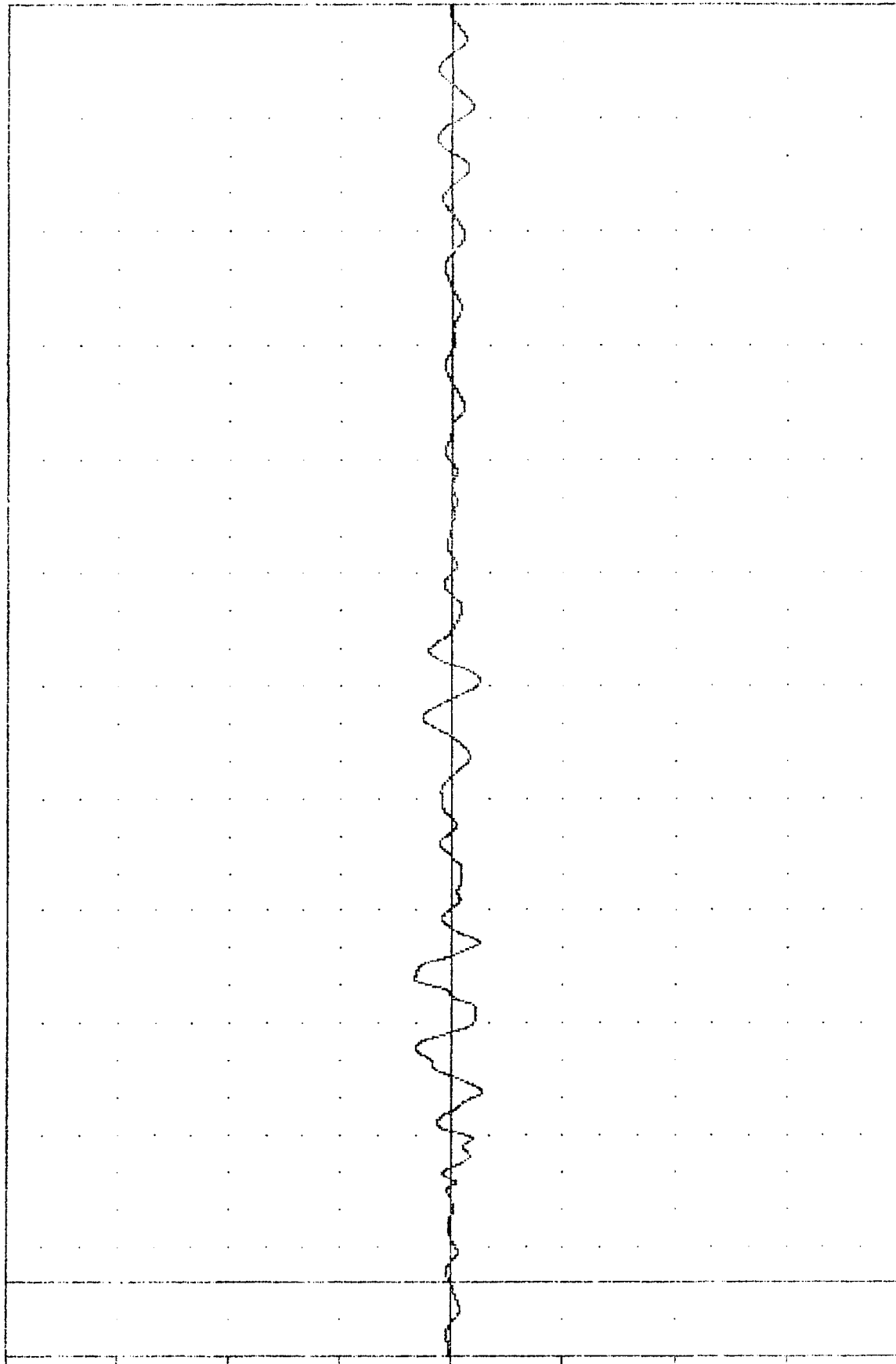
TAC
EVALUATION OF MOD VW FLEET
23242000000
B0616

PLOT DATE 6-SEP-83 09:56:23

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -5.596 51.38 5.91 61.53

ACCELERATION (G)



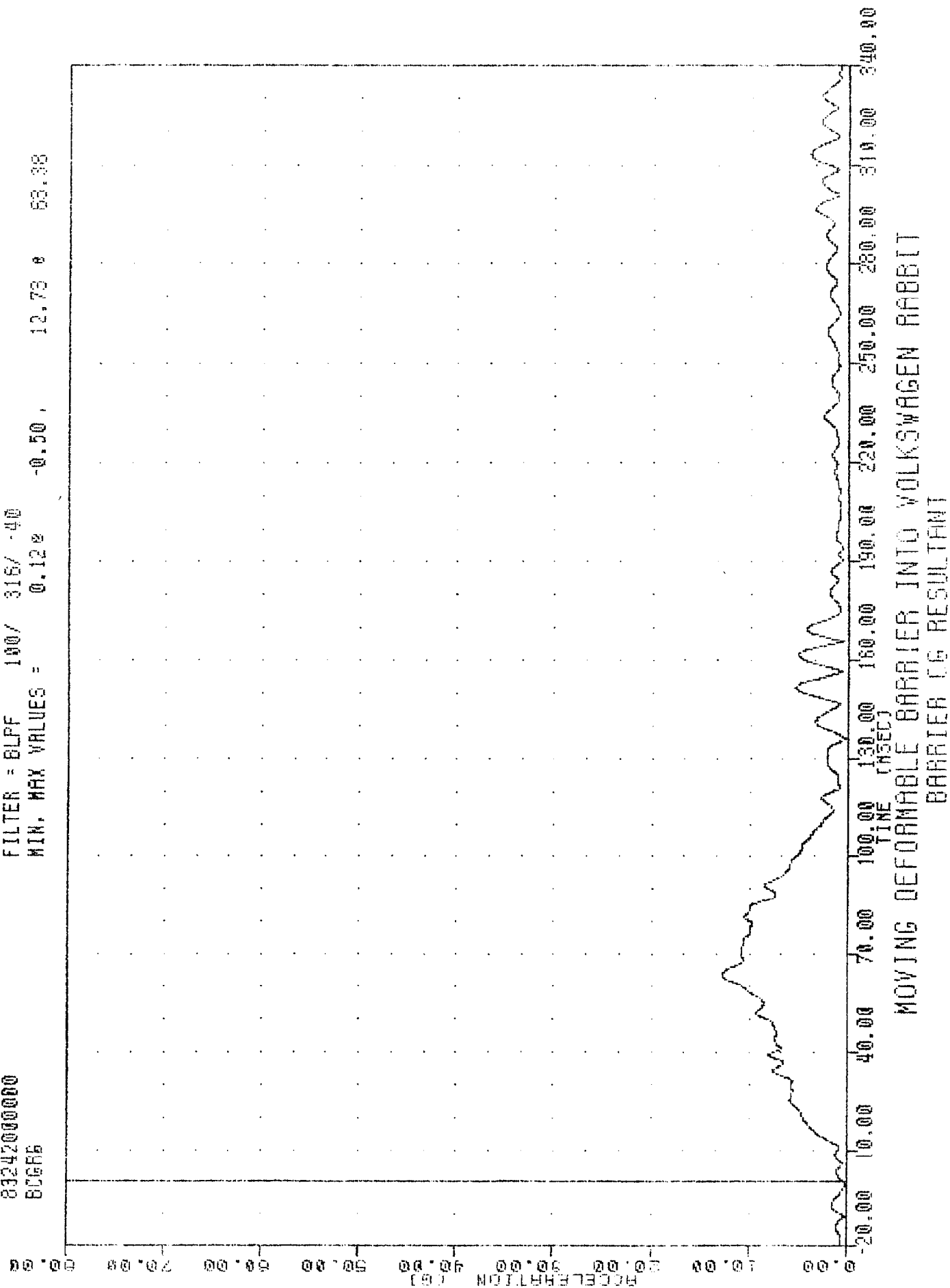
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CENTER OF GRAVITY Z AXIS

TAC
EVALUATION OF MOD VN FLEET
83242000000
BCGR6

PLOT DATE 6-SEP-83 10:58:56

FILTER = BLPF 100/ 315/ -40
MIN. MAX VALUES = 0.128 -0.50 12.73 53.38



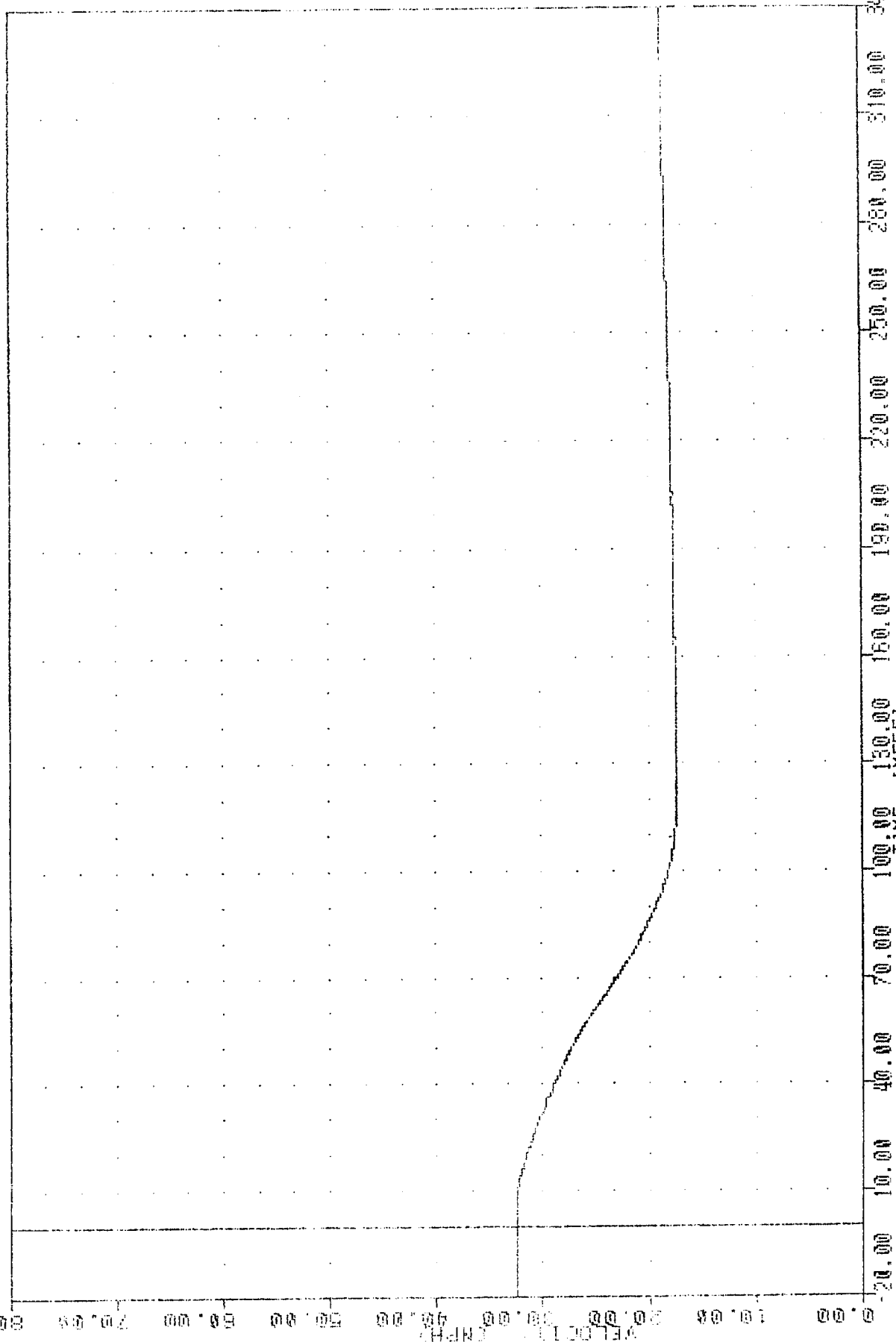
1RC 830830 PLOT DATE 9-SEP-83 14:18:55

EVALUATION OF MDD VW FLEET

832428000000 FILTER = BLPF 300/ 949/ -40

BCGXV MIN, MAX VALUES = 17.32 118.38, 32.42 0.75

80.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BCGXG

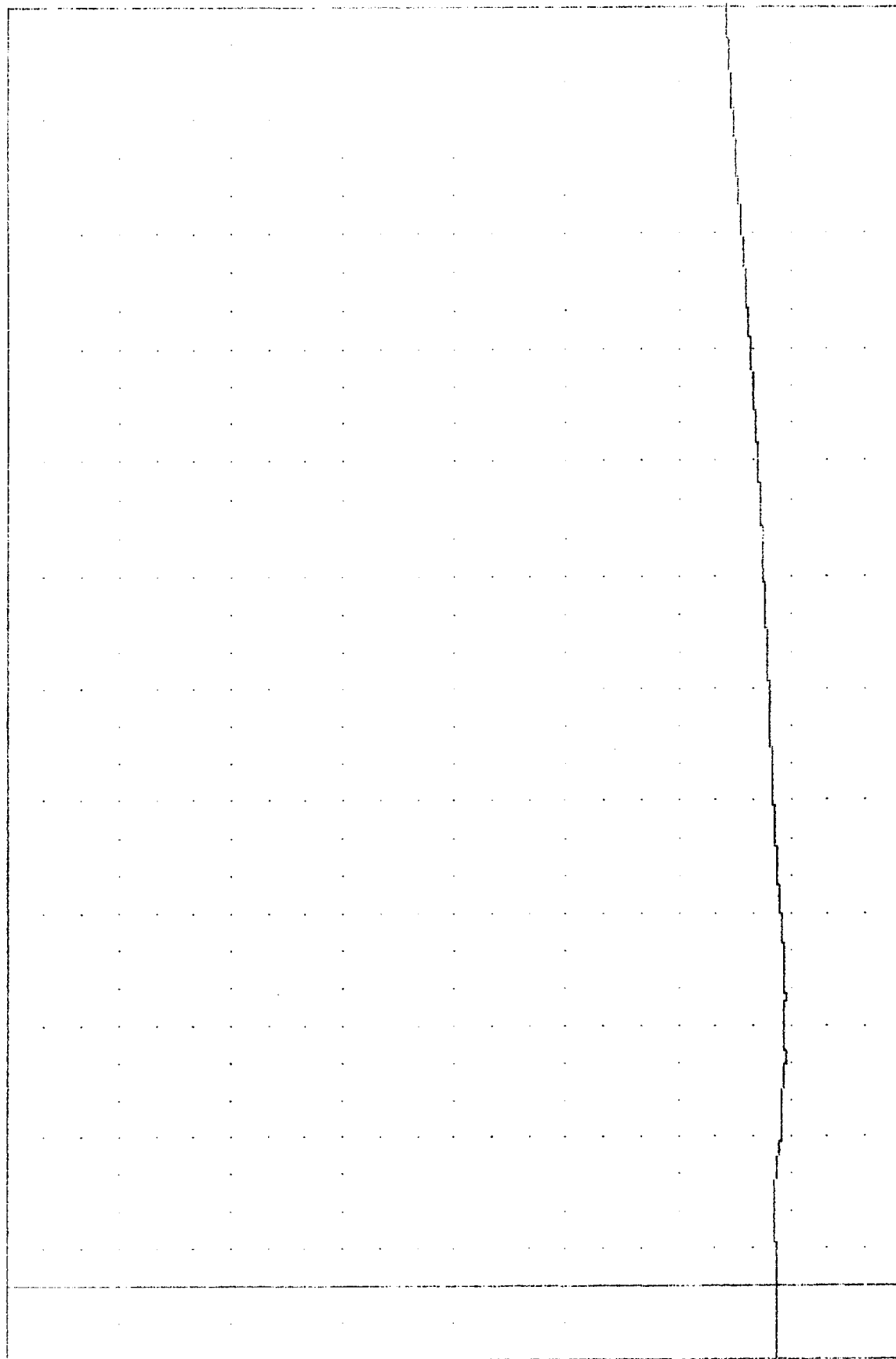
TRC
EVALUATION OF MDD VV FLEET
832420000000
BCGYV

PLOT DATE 8-SEP-83 14:19:55

FILTER = 6LFF 300/ 949/ -10

MIN. MAX VALUES = 10.39e 77.38, 15.70 e 340.00

00.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00



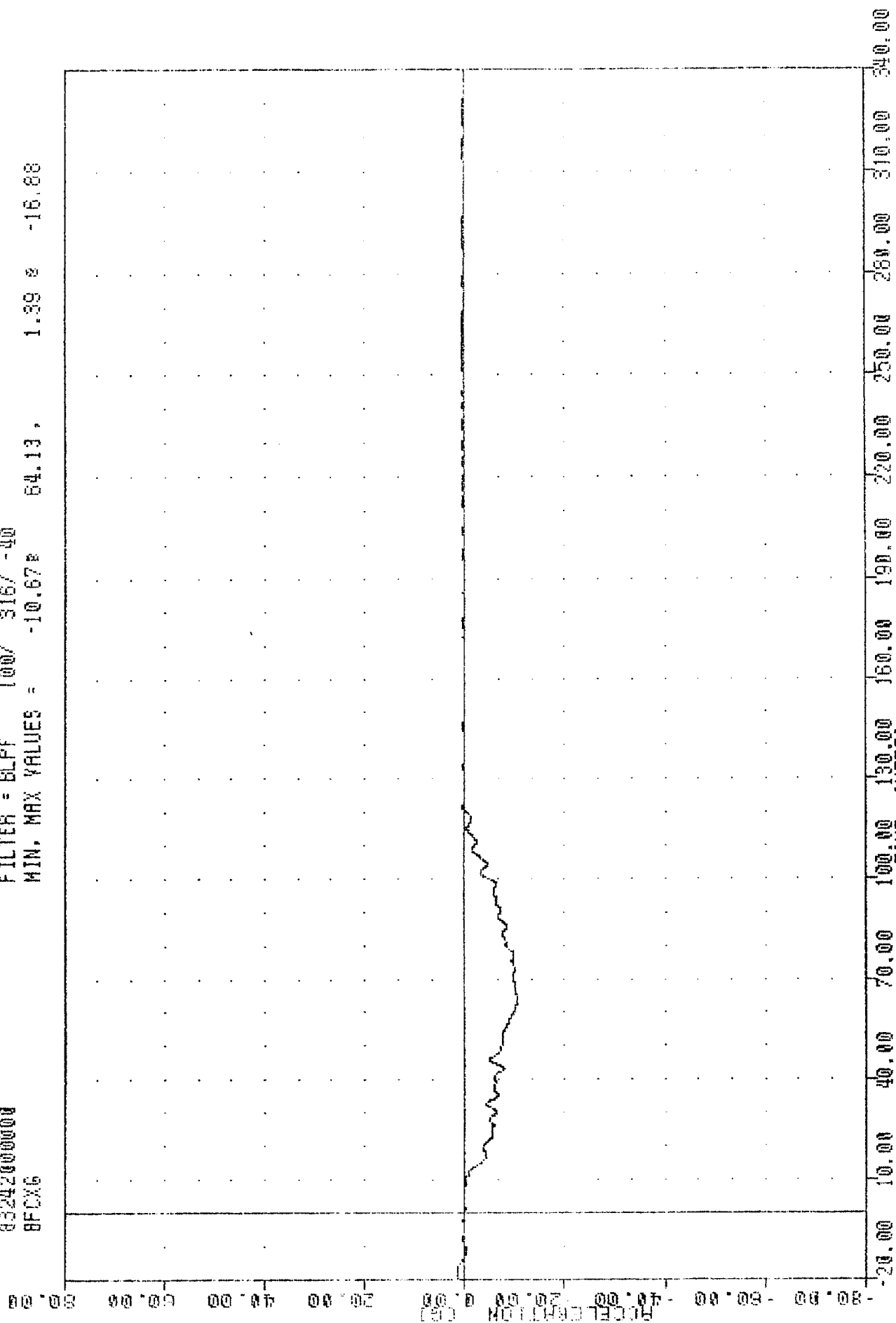
0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BC67e

TRC
EVALUATION OF MOD YV FLEET
03242000000
BFCX6

PLOT DATE 9-SEP-83 13:27:07

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -10.67 64.13 1.39 2 -16.88



TRC 830830 PLOT DATE 9-SEP-83 13:36:31

EVALUATION OF HQD YW FLEET

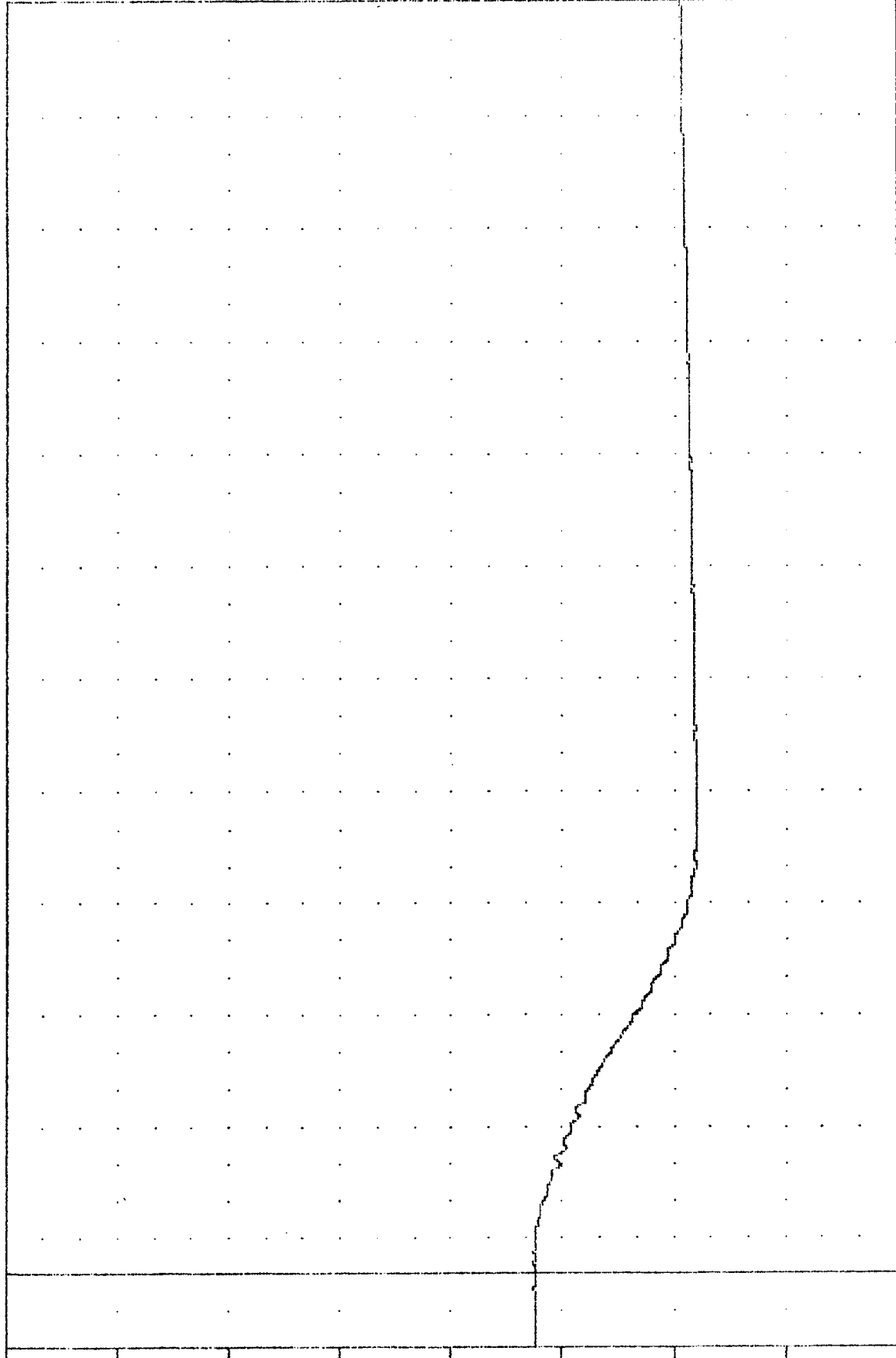
832420000000

BFCXV

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 17.92 122.50 32.56 2.75

80.00
60.00
40.00
20.00
0.00
VELOCITY (MPH)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

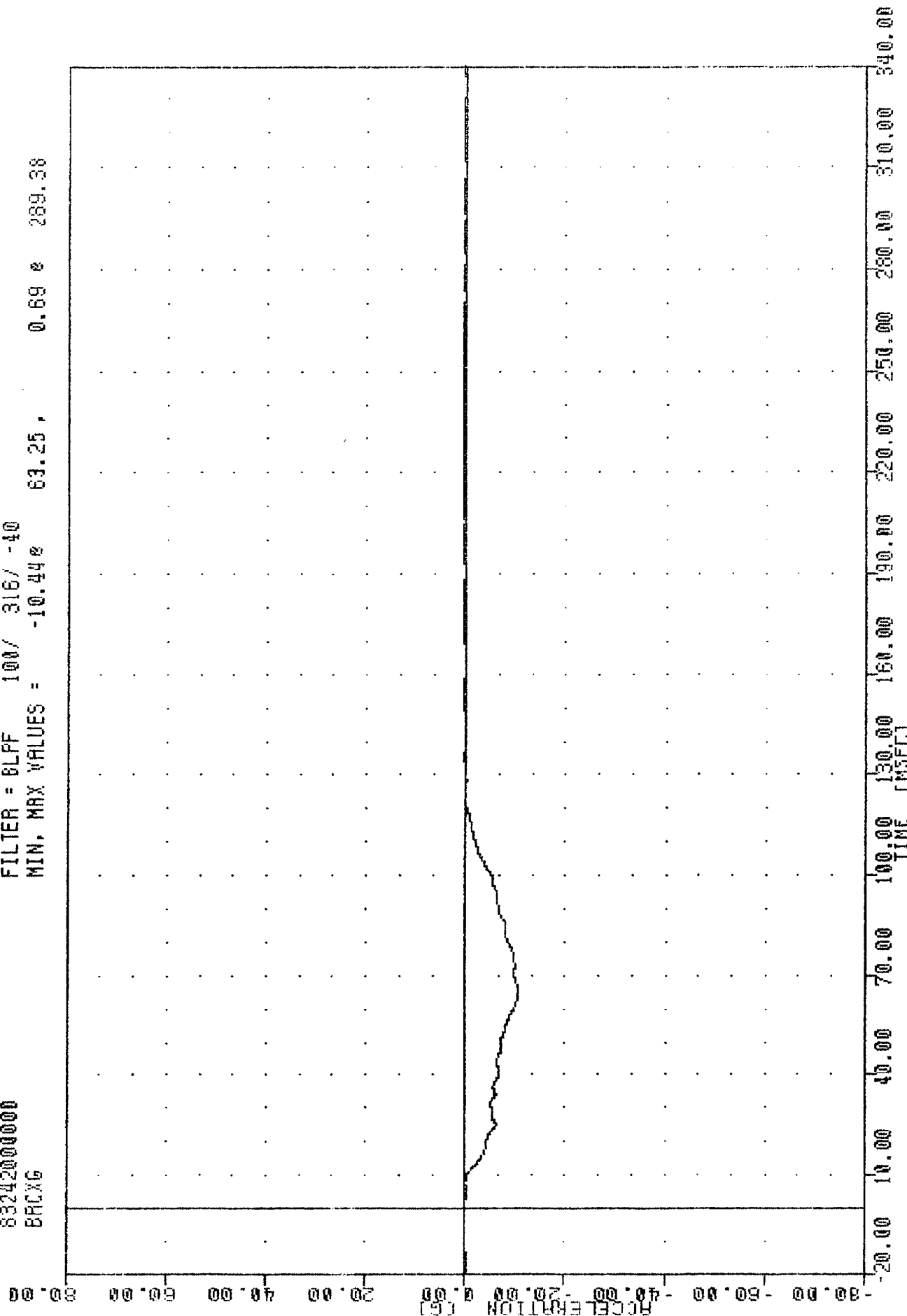
DELTA V USING BFCXG

TRC , 830830
 EVALUATION OF MOD VW FLEET
 83242000000
 BRXG

PLOT DATE 6-SEP-83 09:56:23

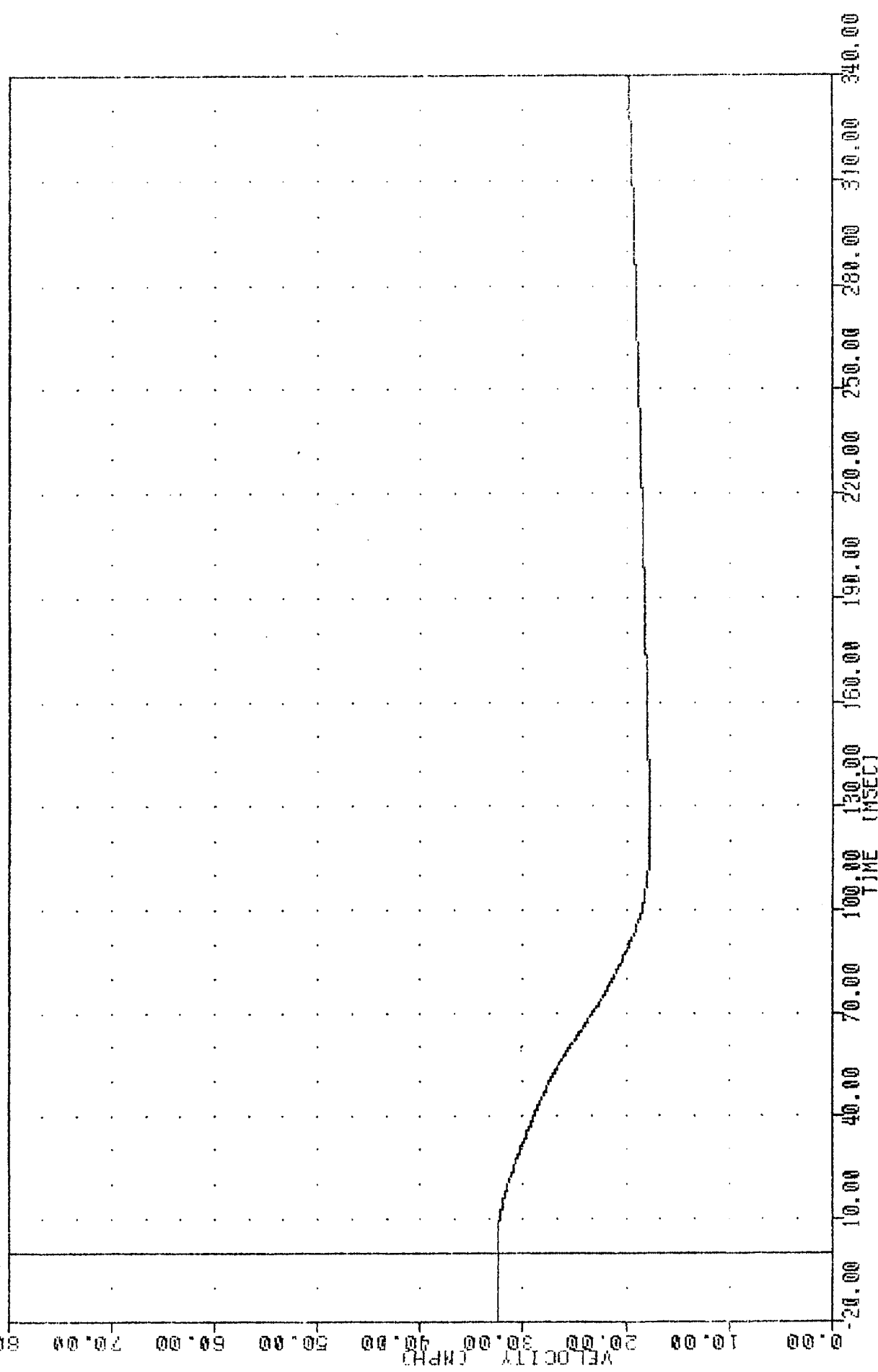
FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -10.44 63.25 , 0.69 289.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER REAR CROSSMEMBER ACCELERATION X AXIS

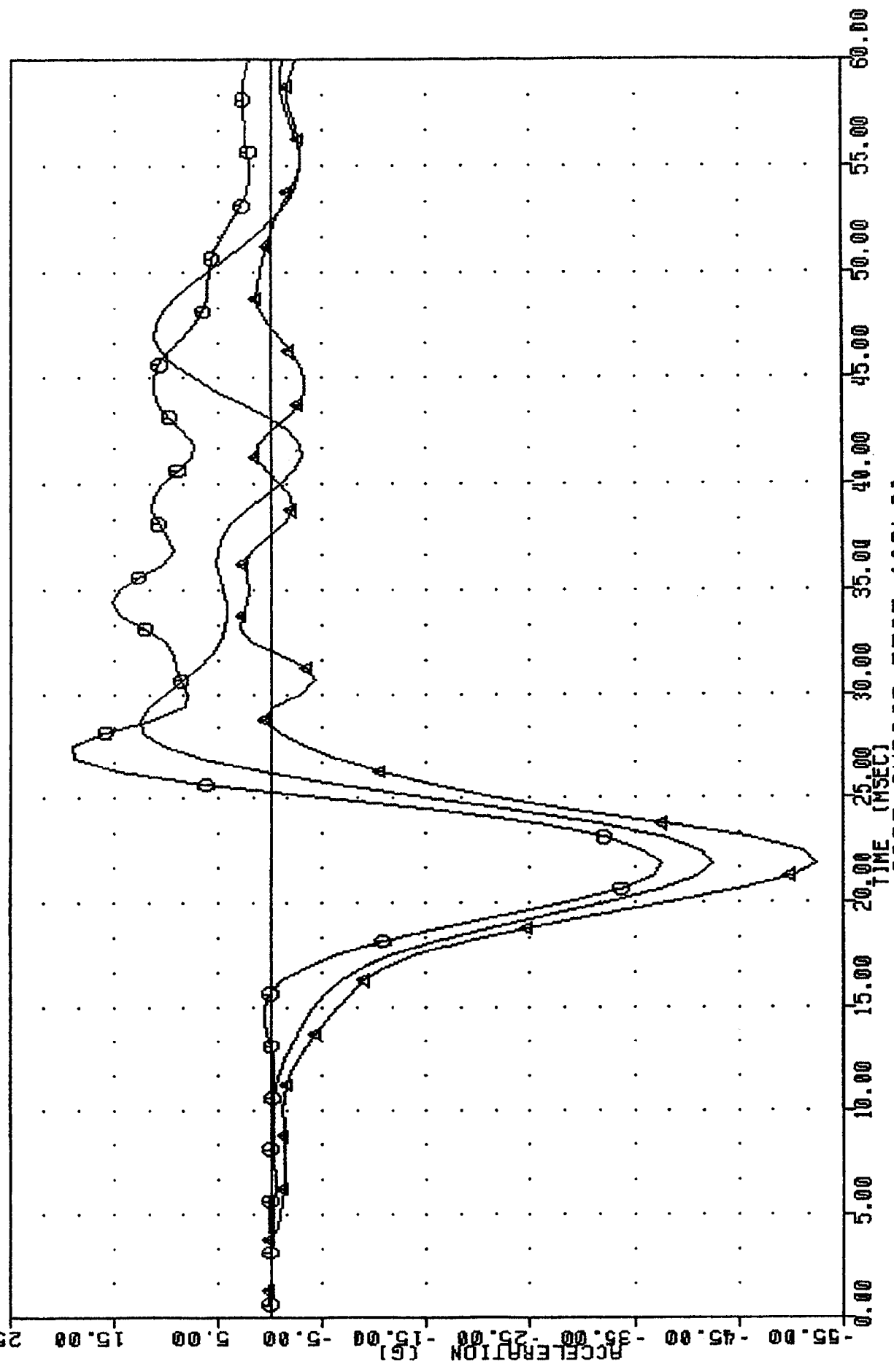
IRC 830630
 EVALUATION OF MOD VW FLEET
 83242000000
 BRCXV
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 17.76 117.75, 32.40 2 -20.00
 PLOT DATE 9-SEP-83 14:19:55



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BRCXG

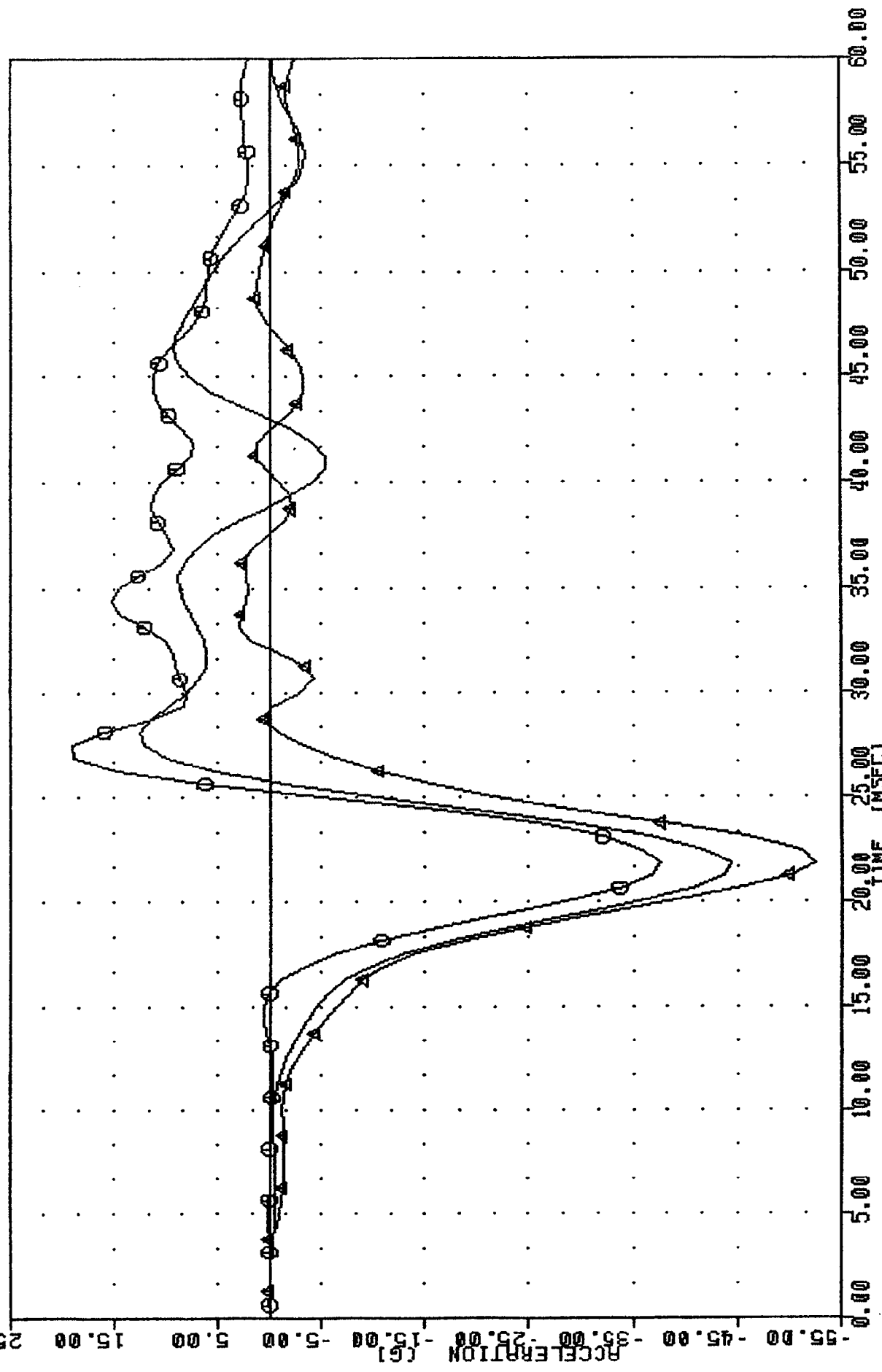
APPENDIX C
DUMMY CERTIFICATION

VRTC SRL26 , ARL6 CAL58 SID THORAX 6 BODY 318 CAL 58 83227 18-AUG-83 10:30:47
 LLYG1 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -42.55 21.25, 12.36 28.13
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.66 21.25, 19.00 26.87
 MN-2SD A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 21.25, 2.94 32.50



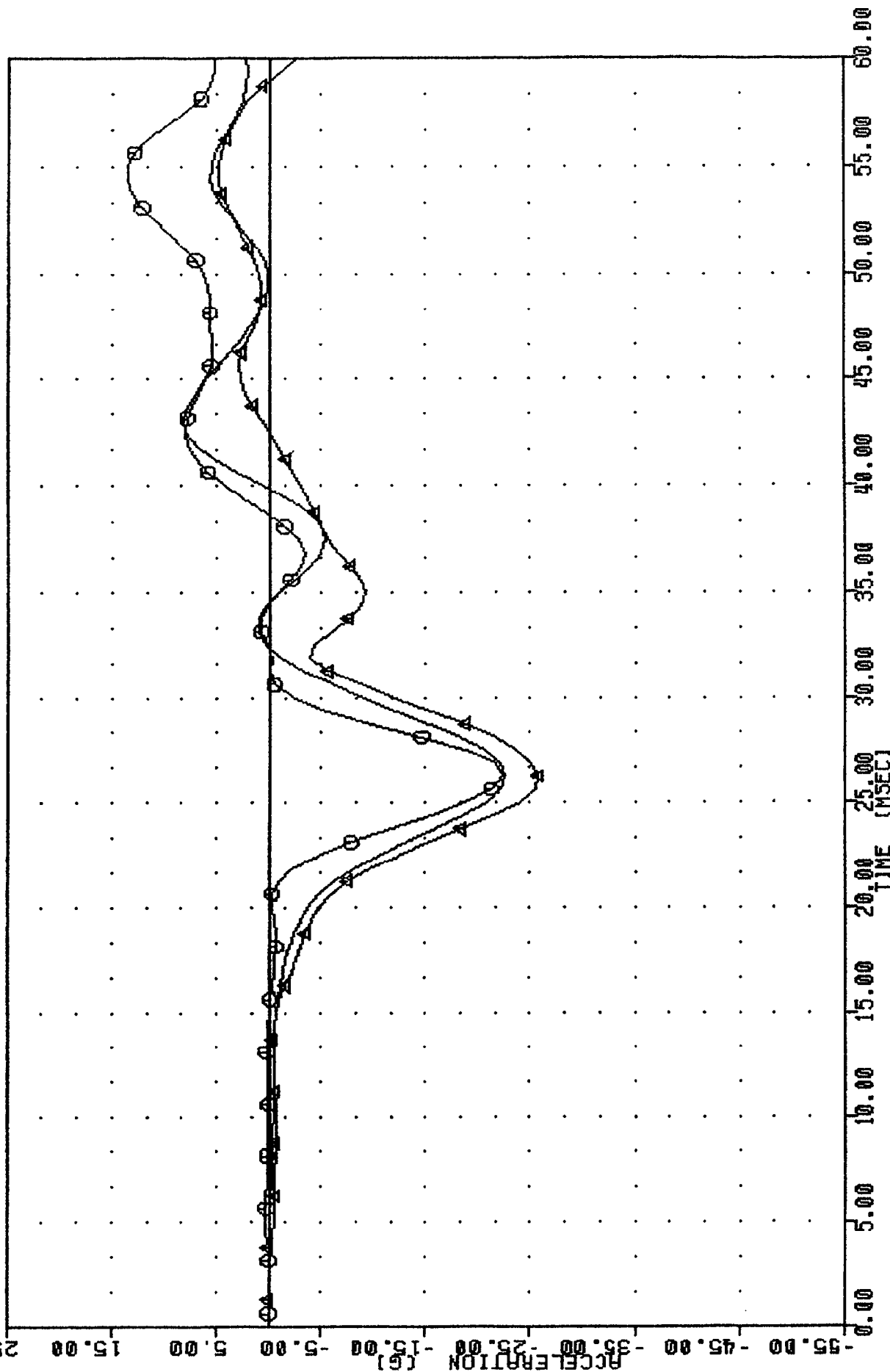
SIDE IMPACT TEST (ARL6)
 LEFT LOWER RIB ACCELERATION Y AXIS -1

VRTC SRL26 , ARL6 CAL58 SID THORAX 6 BODY 318 CAL 58 83227 18-AUG-83 10:35:28
 LLRYGA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -44.39 21.25, 12.36 27.50
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.66 21.25, 19.00 26.87
 MN-2SD 1 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 21.25, 2.94 32.50



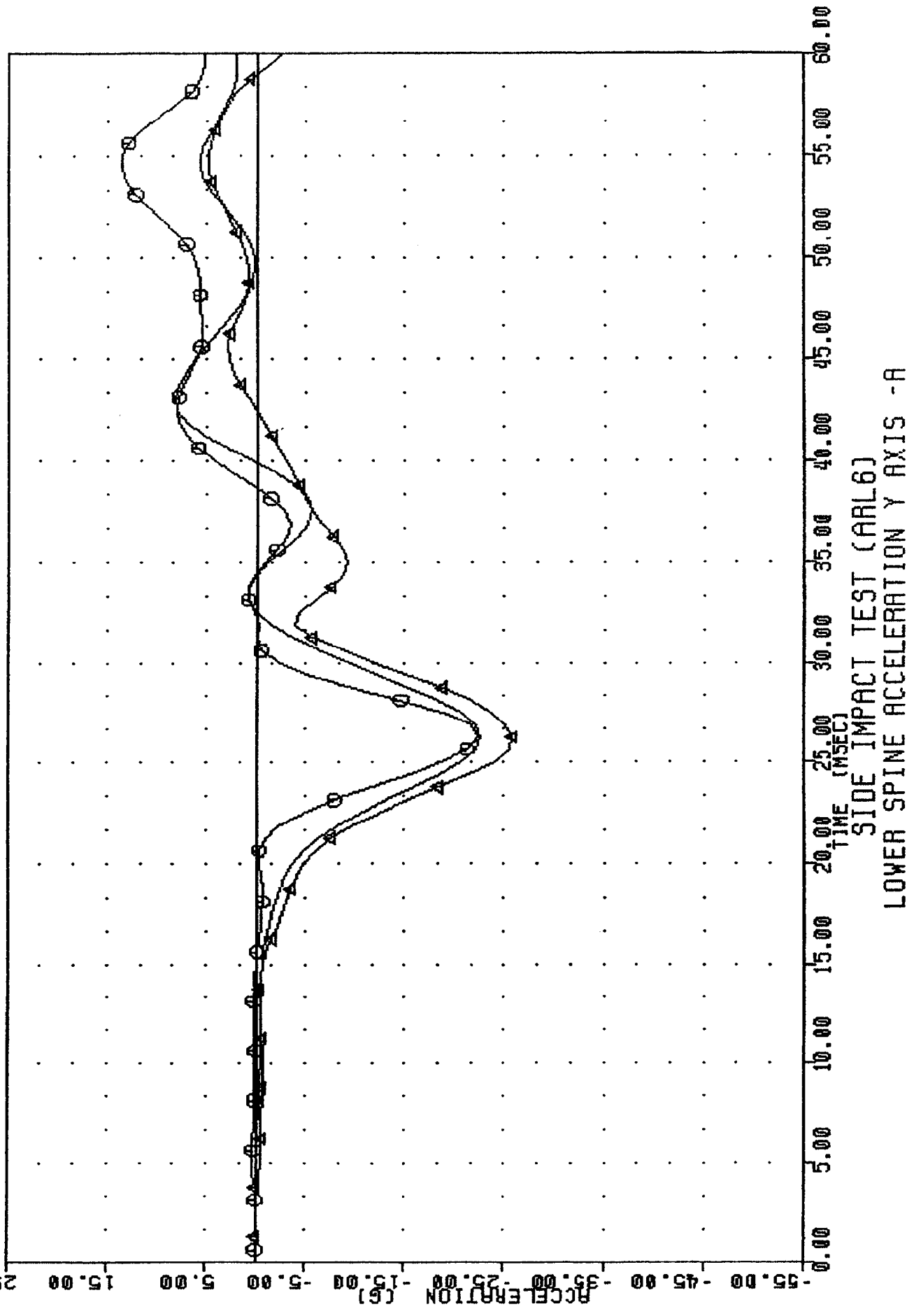
SIDE IMPACT TEST (ARL6)
 LEFT LOWER RIB ACCELERATION Y AXIS -A

YRIC SRL26 , ARL6 CAL58, SID THORAX 6 BODY 318 CAL 58 83227 18-AUG-83 10:37:07
 T12YGI FILTER : HSRI 136/ 189/ -50 MIN, MAX = -22.66 25.63 8.10 42.50
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -22.37 25.63 13.54 53.75
 MN-2SD A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.84 25.63 4.85 53.75



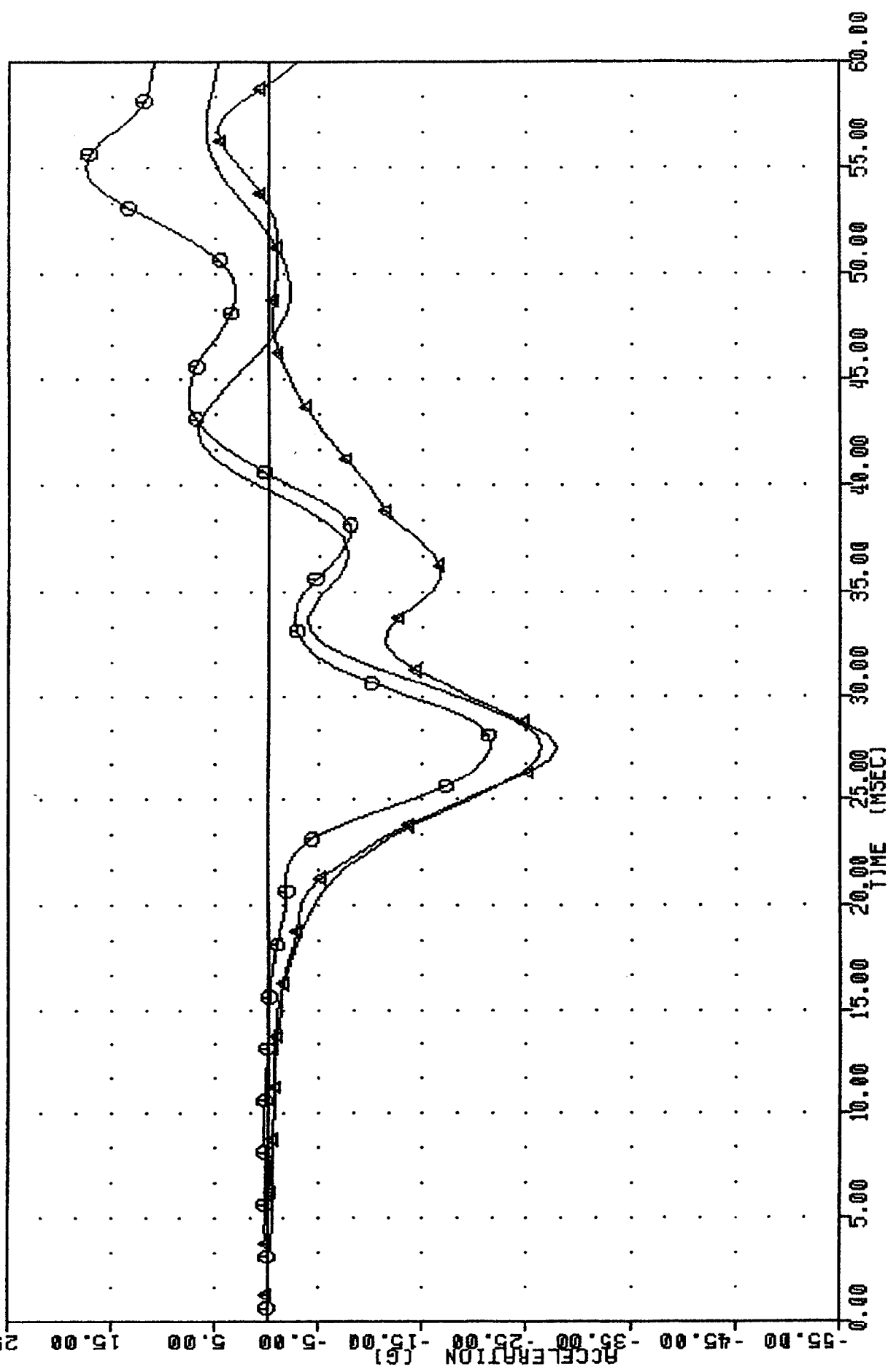
SIDE IMPACT TEST (ARL6)
 LOWER SPINE ACCELERATION Y AXIS -1

VRLC SRL26 , ARL6 CAL58 , STU THURAX 6 BODY 318 CAL 58 83227 PLOT DATE 18-AUG-83 10:38:44
 T12YGR FILTER : HSRI 136/ 189/ -50 MIN, MAX = -22.58 8 25.63, 8.15 8 42.50
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -22.37 8 25.63, 13.54 8 53.75
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.84 8 25.63, 4.85 8 53.75



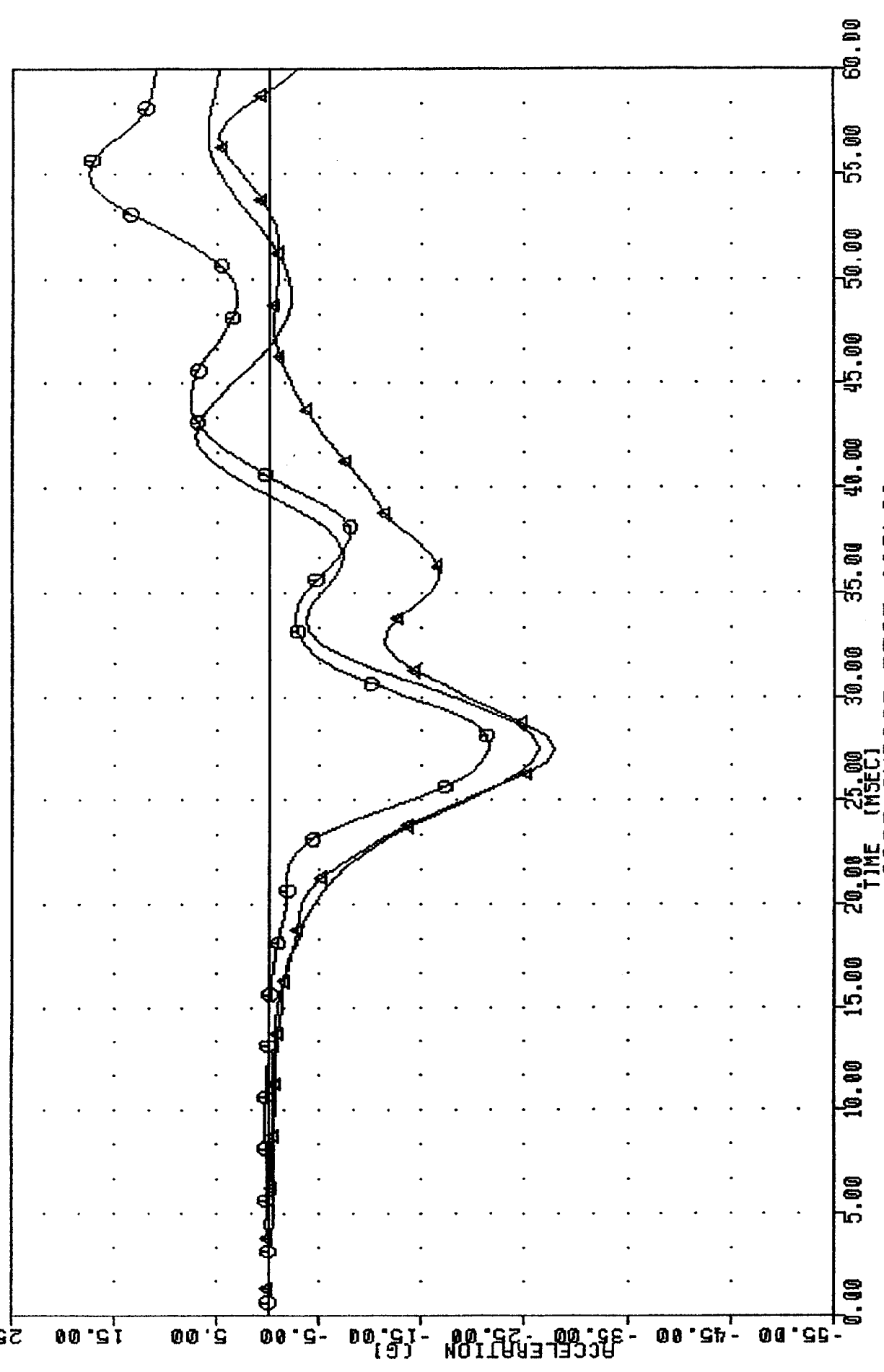
SIDE IMPACT TEST (ARL6)
 LOWER SPINE ACCELERATION Y AXIS -A

VRIC SRL26 • ARL6 CAL58 SIO THORAX 6 BODY 318 CAL 58 83227 PLOT DATE 18-AUG-83 10:45:46
TOIYGR FILTER : HSRI 136/ 189/ -50 MIN, MAX = -26.44 6.65 41.87
MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -21.58 17.54 54.38
MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -27.91 26.87 56.25



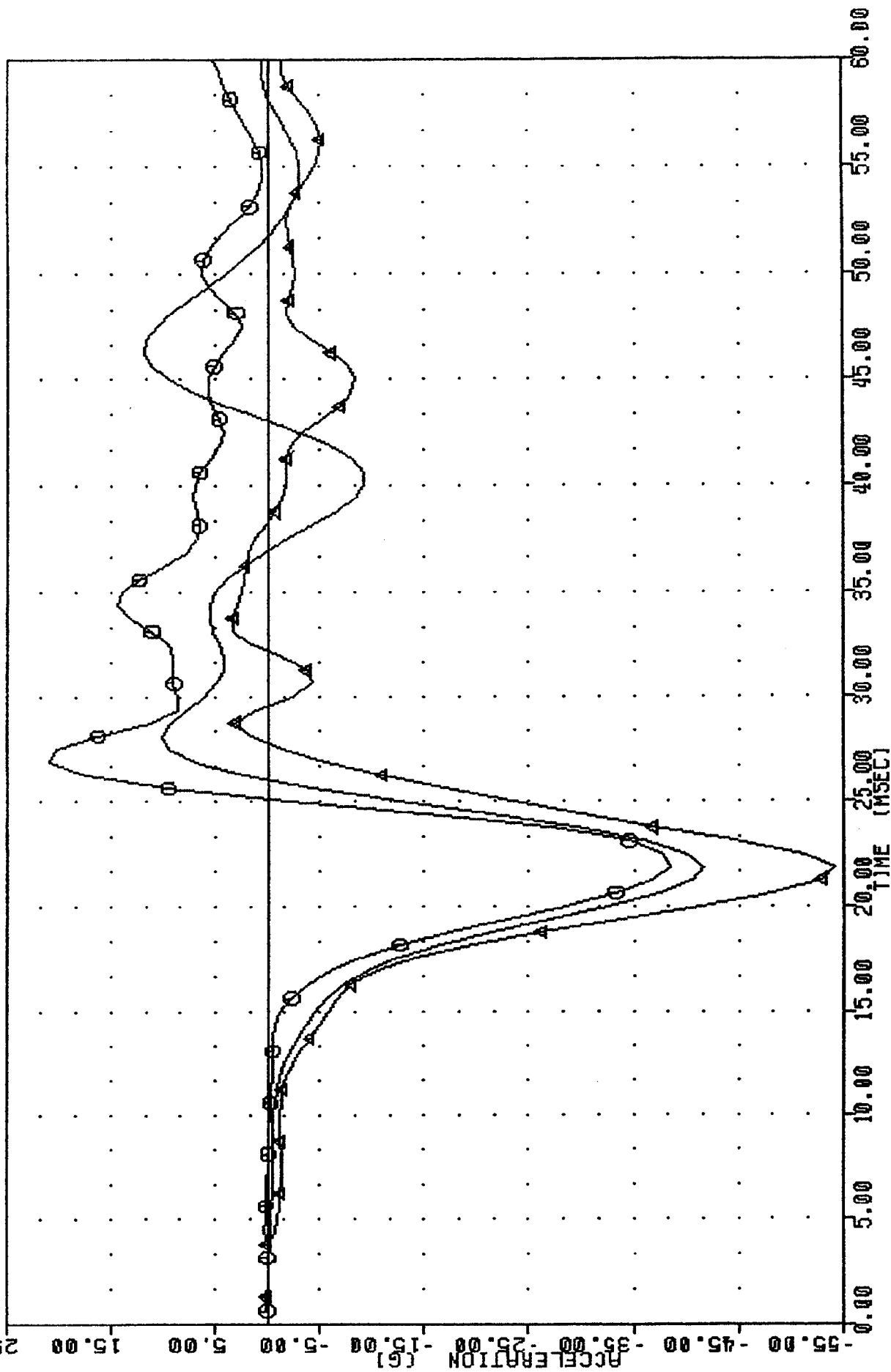
SIDE IMPACT TEST (ARL6)
UPPER RIB ACCELERATION Y AXIS -A

VRTC SAL26 , ARL6 CAL58 SID THORAX 6 BODY 318 CAL 58 83227 PLOT DATE 18-AUG-83 10:44:33
 T01YGI FILTER : HSRI 136/ 189/ -50 MIN, MAX = -26.32 26.87 7.03 41.87
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -21.58 26.87 17.54 54.38
 MN-2SD A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -27.91 26.87 4.78 56.25



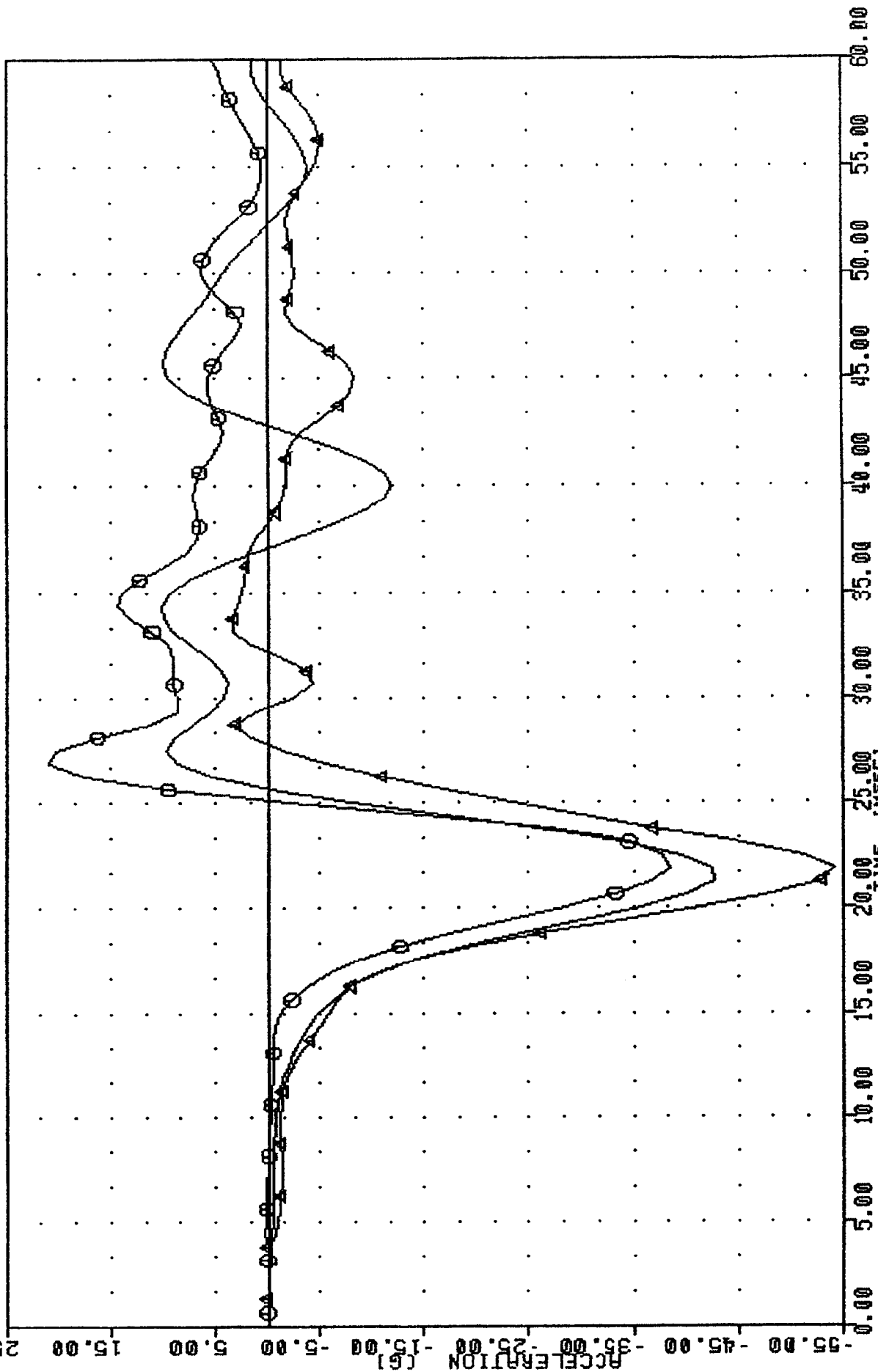
SIDE IMPACT TEST (ARL6)
 UPPER SPINE ACCELERATION Y AXIS -1

VRIC SRL26 • ARL6 CAL58 SID THORAX 6 BODY 318 CAL 58 83227 17-AUG-83 14:35:35
 LURYGI FILTER : HSRI 136/ 189/ -50 MIN, MAX = -41.76 21.25, 11.75 45.62
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 21.25, 20.92 26.25
 MN-2SD A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 21.25, 3.31 33.13



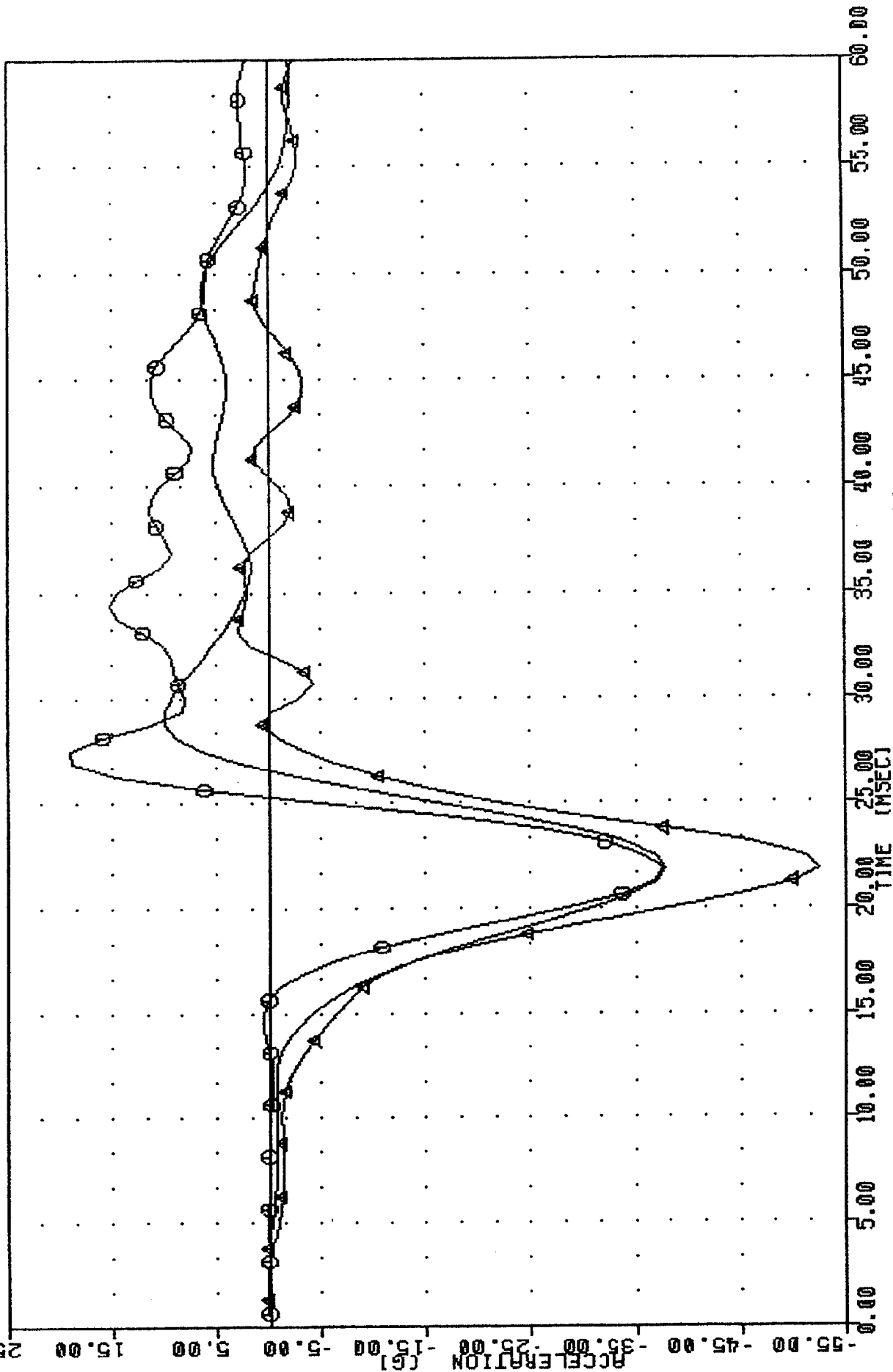
SIDE IMPACT TEST (ARL6)
 LEFT UPPER RIB ACCELERATION Y AXIS -1

VRTC SRL26 , ARL6 CAL58 SID THORAX 6 BODY 318 CAL 58 83227 PLOT DATE 17-AUG-83 14:37:58
 LURYCA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -42.69 20.62, 10.15 33.75
 MN-250 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 21.25, 20.92 26.25
 MN-250 A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 21.25, 3.31 33.13



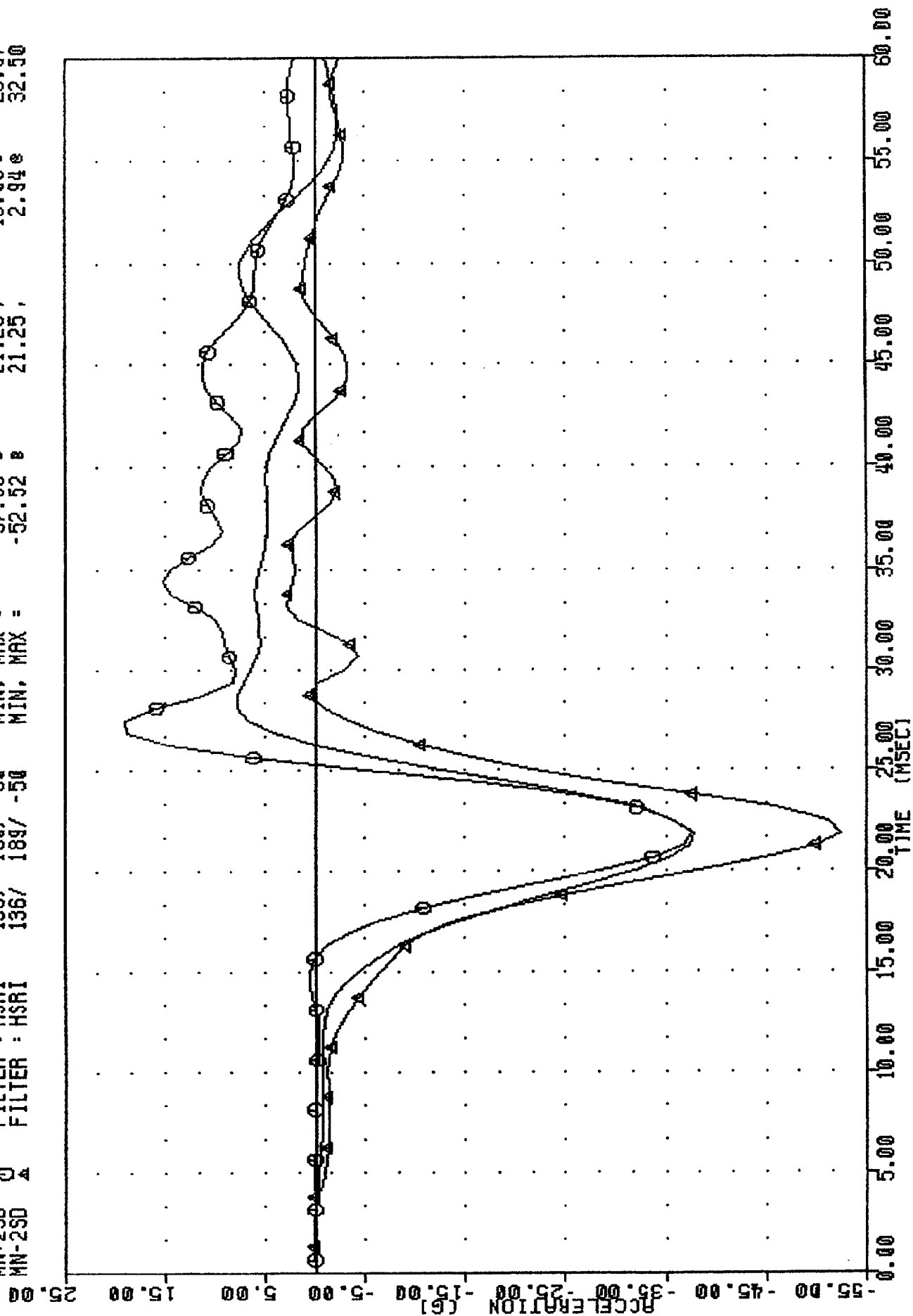
SIDE IMPACT TEST (ARL6)
 LEFT UPPER ACCELERATION Y AXIS -A

VRIC SRL26 , U02 CAL60 SID THORAX U02 BODY 830 CAL 60 83230 11:03:47
 LLRYGA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.87 9.92
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.86 19.00
 MN-2SD A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 2.94



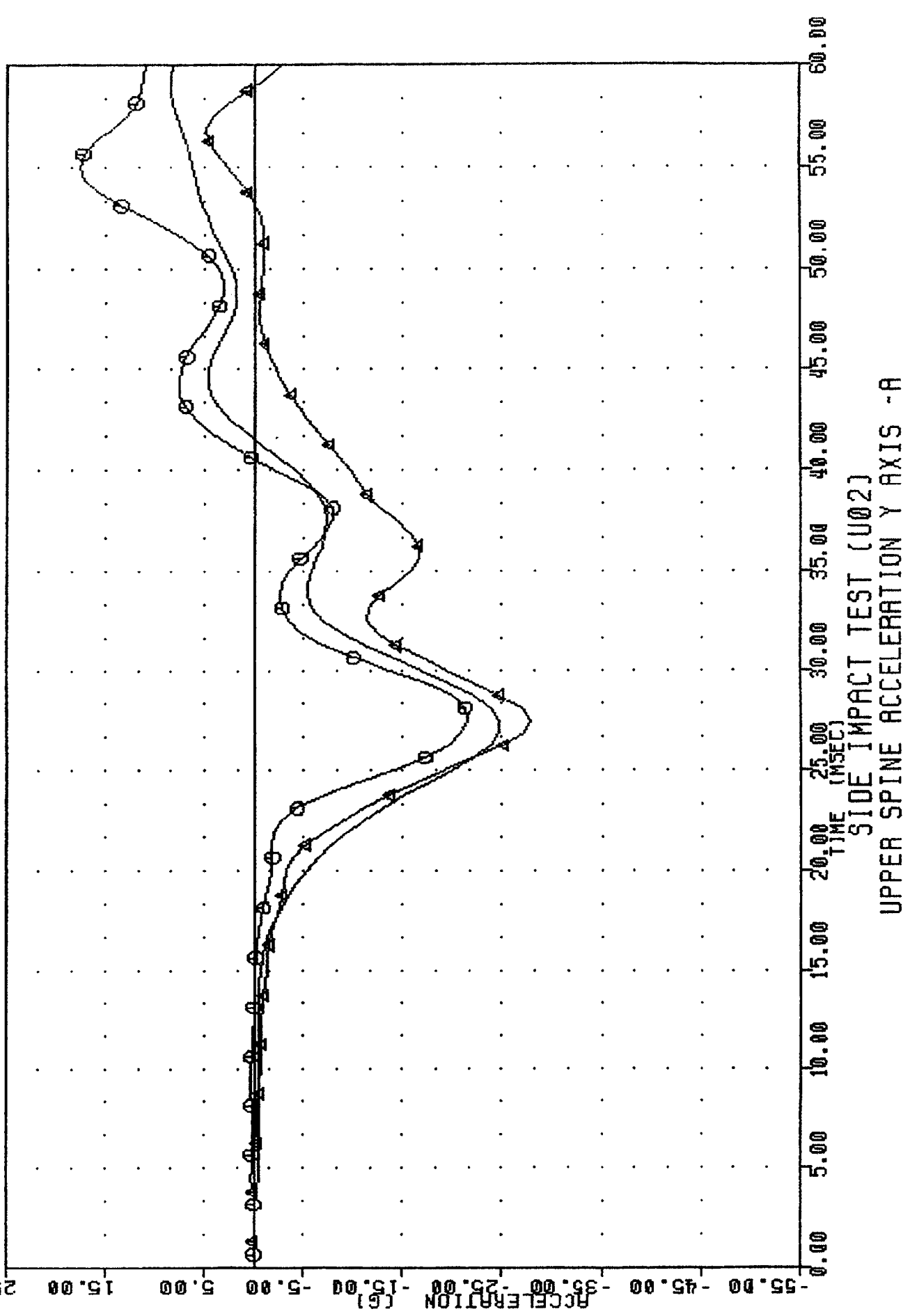
SIDE IMPACT TEST (U02)
 LEFT LOWER RIB ACCELERATION Y AXIS -A

VRTC SRL26 , U02 CAL60 SID THORAX U02 BODY 830 CAL 60 83230 PLOT DATE 18-AUG-83 11:02:21
 LLRYGI FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.77 7.74 28.13
 MN-250 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.66 19.00 26.87
 MN-250 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 21.25 2.94 32.50

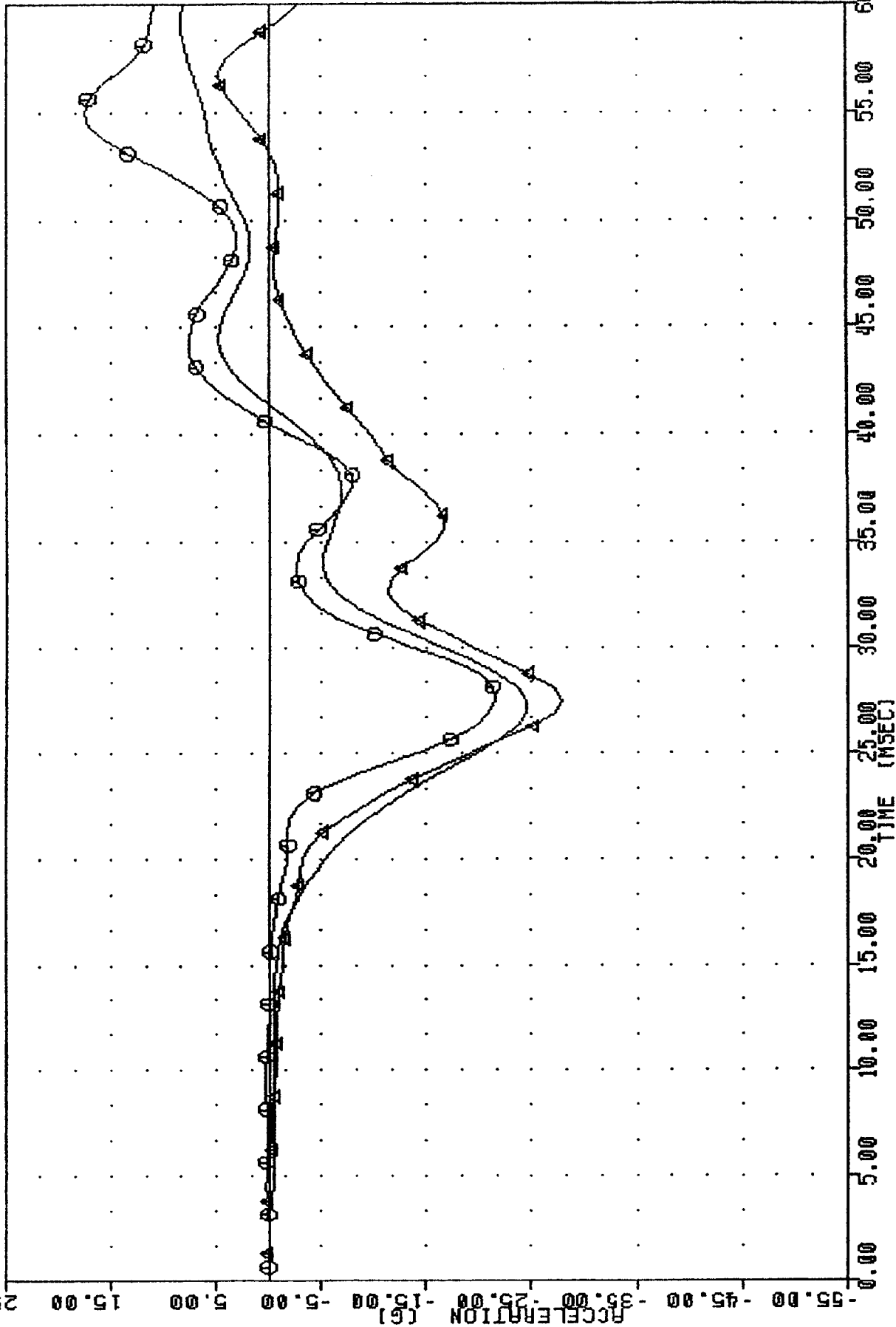


SIDE IMPACT TEST (U02)
 LEFT LOWER RIB ACCELERATION Y AXIS -1

VRIC SRL26 . U02 CAL60 SID THORAX U02 BODY 830 CAL 60 83230 PLOT DATE 18-AUG-83 11:10:06
 T01YGA FILTER : HSRI 136/ 189/ -50 MIN. MAX = -24.77 8.39 58.75
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -21.58 17.54 54.38
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -27.91 26.87 56.25

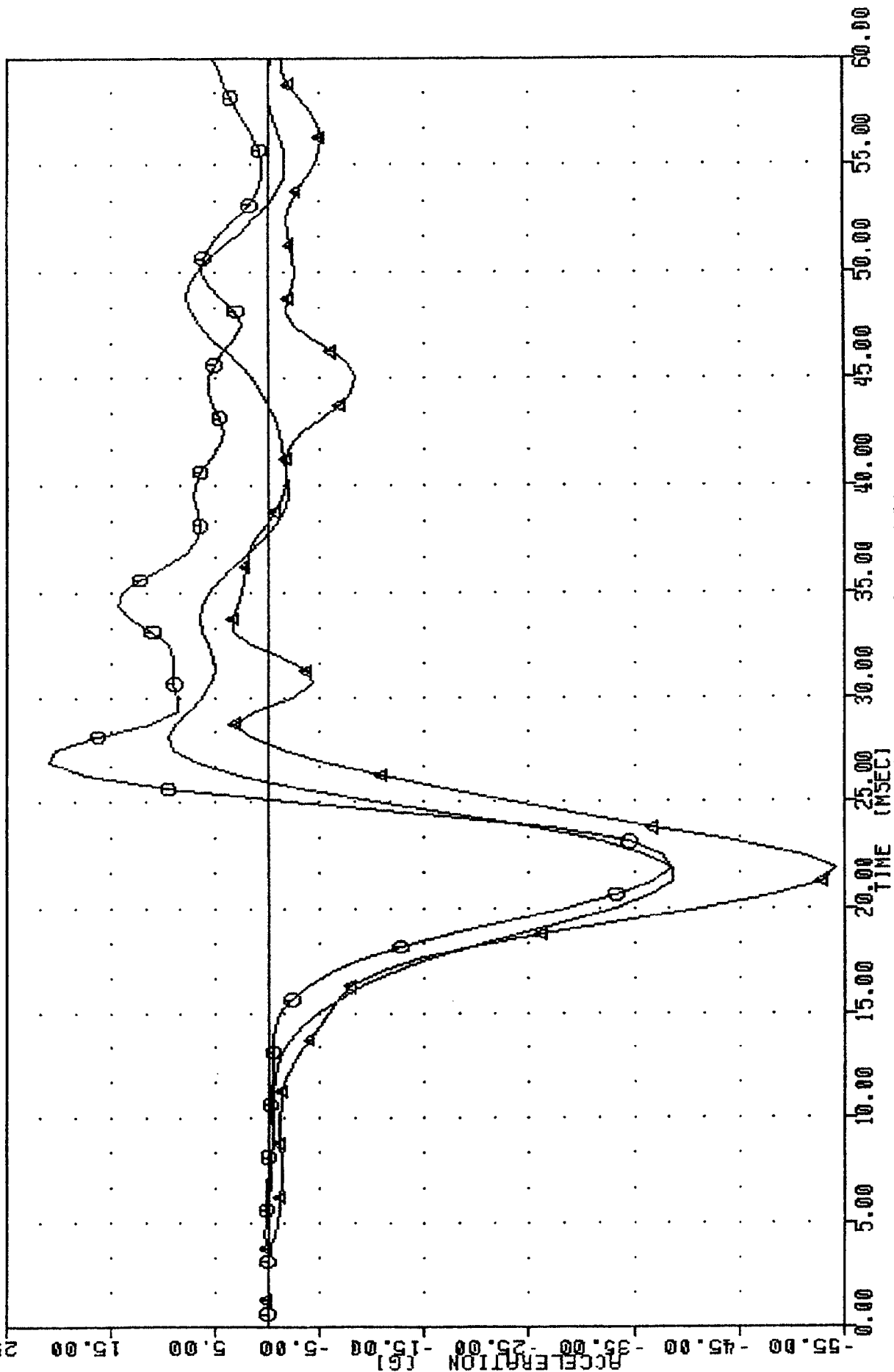


VRTC SRL26 , U02 CAL60 SID THORAX U02 BODY 830 CAL 60 83230 PLOT DATE 18-AUG-83 11:07:42
 T01Y61 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -24.50 8 26.87, 8.368 58.75
 MN-250 0 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -21.58 8 26.87, 17.548 54.38
 MN-250 4 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -27.91 8 26.87, 4.788 56.25



SIDE IMPACT TEST (U02)
 UPPER SPINE ACCELERATION Y AXIS -1

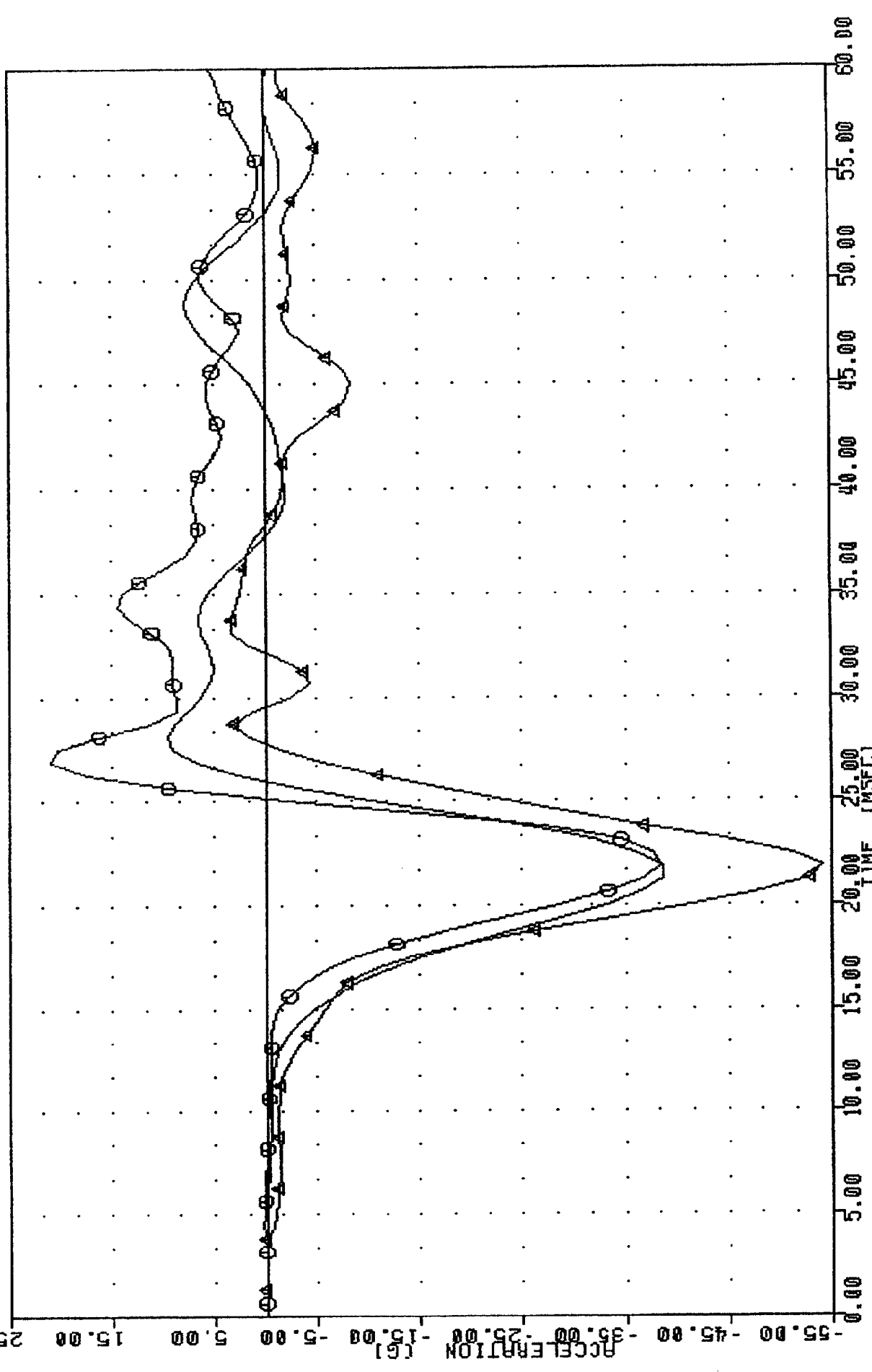
VRIC SRL26 U02 CAL60 SID THORAX U02 BODY 830 CAL 60 83230 PLOT DATE 18-AUG-83 10:56:48
 LURYGA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.61 21.25 9.42 27.50
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 21.25 20.92 26.25
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 21.25 3.31 33.13



SIDE IMPACT TEST (U02)
 LEFT UPPER RIB ACCELERATION Y AXIS - A

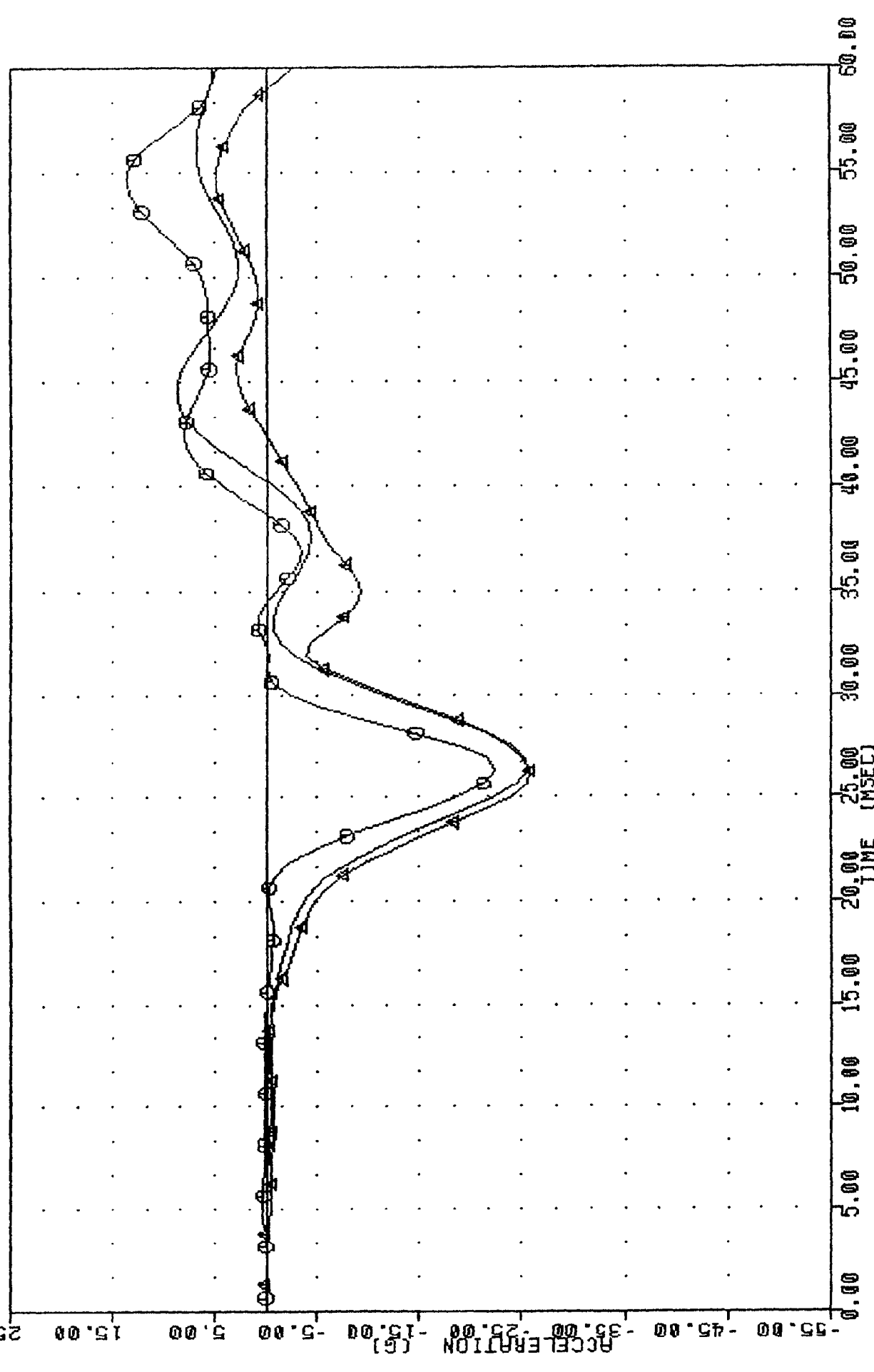
YRIC SRL26 , U02 CAL60 SID THORAX U02 BODY 830 CAL 60 83230
 LURYGA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.61
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44
 MN-2SD A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08

18-AUG-83 10:58:49
 21.25, 9.42
 21.25, 20.92
 21.25, 3.31



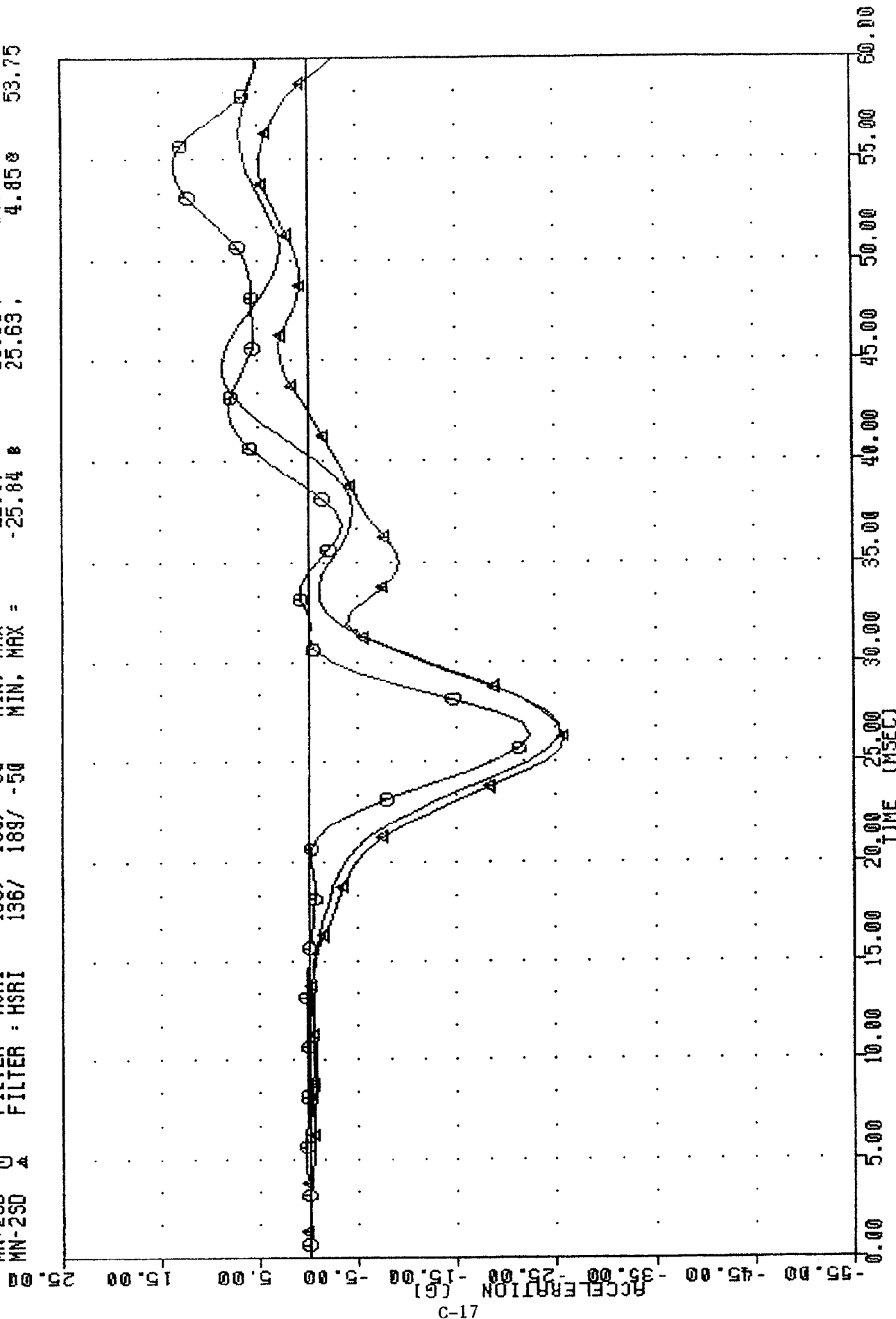
SIDE IMPACT TEST (U02)
 LEFT UPPER RIB ACCELERATION Y AXIS - A

VPTC SRL26 • U02 CAL60 STD THORAX U02 BODY 830 CHL 80 83230 18-AUG-83 TT:12:37
 T12Y61 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.45 25.63 8.618 43.75
 MN-250 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -22.37 25.63 13.540 53.75
 MN-250 1 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.84 25.63 4.850 53.75



SIDE IMPACT TEST (U02)
 LOWER SPINE ACCELERATION Y AXIS -1

YRTC SRL26 , U02 CAL60 S10 THORAX U02 BODY 830 CAL 60 83230 18-AUG-83 11:13:19
 T12YGA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.34 8 25.63, 8.508 43.75
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -22.37 8 25.63, 13.54 53.75
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.84 8 25.63, 4.858 53.75



SIDE IMPACT TEST (U02)
 LOWER SPINE ACCELERATION Y AXIS -A