

DOT/015

EVALUATION OF NHTSA MODIFIED
VOLKSWAGEN RABBITS

MDB-TO-CAR SIDE IMPACT TEST OF
A 19⁰ CRABBED MOVING DEFORMABLE BARRIER
TO A 1982 VOLKSWAGEN RABBIT
AT 46.2 MPH

PREPARED BY:
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FINAL REPORT
NOVEMBER 1983

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
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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 baseline 1982 Volkswagen Rabbit 2-door hatchback at the TRCO Crash Test Facility, East Liberty, Ohio. The test vehicle was impacted on the left side by a moving deformable barrier, crabbled to 19 ⁰ , at 46.2 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 October 13, 1983 and the ambient temperature was 50 ⁰ F.			
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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

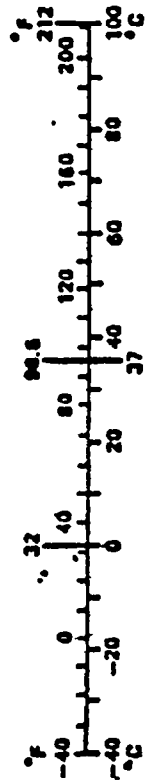


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SECTION 1.0

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 1982 Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on October 13, 1983. The test was to simulate an intersection collision with the striking vehicle traveling at 35 mph and the struck vehicle traveling at 17.5 mph. The orientation angle of the striking vehicle was 60⁰ 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 46.3 mph with the MDB's wheels crabbed clockwise to 19⁰. The actual test speed was 46.2 mph and the actual impact point was 38 inches forward of the midpoint of the Volkswagen Rabbit's wheelbase.

The vehicle was a baseline model with no structural modification. 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.

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: Volkswagen of America

MAKE/MODEL: Volkswagen Rabbit

VIN: 1VWBB0175CV079507

BODY STYLE: 2-Door Hatchback

MODEL YEAR: 1982

NHTSA NO.: R & D

COLOR: Slate

ENGINE DATA: TYPE: Transverse

CYLINDERS: 4

DISPLACEMENT 105 CID

TRANSMISSION DATA: 4 Speed Manual

DATE VEHICLE RECEIVED: 9/20/83

ODOMETER READING: 11795

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING No
POWER BRAKES Yes
POWER SEATS No
POWER WINDOWS No
TINTED GLASS Yes
RADIO Yes
CLOCK Yes
OTHER

AUTOMATIC TRANSMISSION No
AUTOMATIC SPEED CONTROL No
TILTING STEERING WHEEL No
TELESCOPING STEERING WHEEL No
AIR CONDITIONING Yes
ANTI-SKID BRAKE No
REAR WINDOW DEFROSTER Yes

REMARKS:

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

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

VEHICLE MANUFACTURED BY: Volkswagen of America

DATE OF MANUFACTURE: 4/82

GVWR: 2822 LBS.,

CAWR: FRONT 1609 LBS., REAR 1278 LBS.

VEHICLE TIRE DATA

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

TIRES ON VEHICLE (MFG. & LINE, SIZE): Michelin XZX P185/80R13

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 670 LBS. RIGHT REAR 350 LBS.

LEFT FRONT 660 LBS. LEFT REAR 370 LBS.

TOTAL FRONT WEIGHT 1330 LBS. (64.9 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 720 LBS. (35.1 % OF TOTAL VEHICLE WEIGHT)

TOTAL DELIVERED WEIGHT 2050 LBS.

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE: RF 26 1/16 ;LF 26 ;RR 25 1/16 ;LR 24 15/16

PRE-TEST ATTITUDE: RF 24 1/4 ;LF 24 5/8 ;RR 22 5/8 ;LR 22 3/4

POST-TEST ATTITUDE: RF 25 1/4 ;LF 24 1/8 ;RR 23 1/8 ;LR 23 3/8

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 158 LBS. CARGO:

RIGHT FRONT 720 LBS. RIGHT REAR 533 LBS.

LEFT FRONT 720 LBS. LEFT REAR 583 LBS.

TOTAL FRONT WEIGHT 1440 LBS. (56.3 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 1116 LBS. (43.7 % OF TOTAL VEHICLE WEIGHT)

TOTAL TEST WEIGHT 2556 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*: NA GALLONS

TEST VOLUME: 1.0 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 15.0 GALLONS

DETAILS OF FUEL SYSTEM: DNA

ELECTRIC FUEL PUMP: No

FUEL INJECTION: Yes

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 31 psi

RECOMMENDED TIRE SIZE: P155/80R13 LOAD RANGE X B, C,

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

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 2 FRONT

CARGO LOAD 135 LBS. 2 REAR

TOTAL 735 LBS. 4 TOTAL

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

TEST CONDITIONS

TEST NUMBER: 831013

DATE OF TEST: October 13, 1983

TIME OF TEST: 13:10

WIND VELOCITY: 5-10 mph 225° SW

HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA: 50° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 68° F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2556	2533
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	46.2	46.3
IMPACT POINT (INCHES)**	38.	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 #	PASSENGER #
Head	<u>Left side window & sill</u>	<u>Padded left side header & window</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>Door separated from hinges</u>	<u>Difficult</u>
Rear	<u>DNA</u>	<u>DNA</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>Yes, Driver's seat</u>	<u>Driver's seat separated from mounts</u>
Rear	<u>No</u>	<u>No</u>

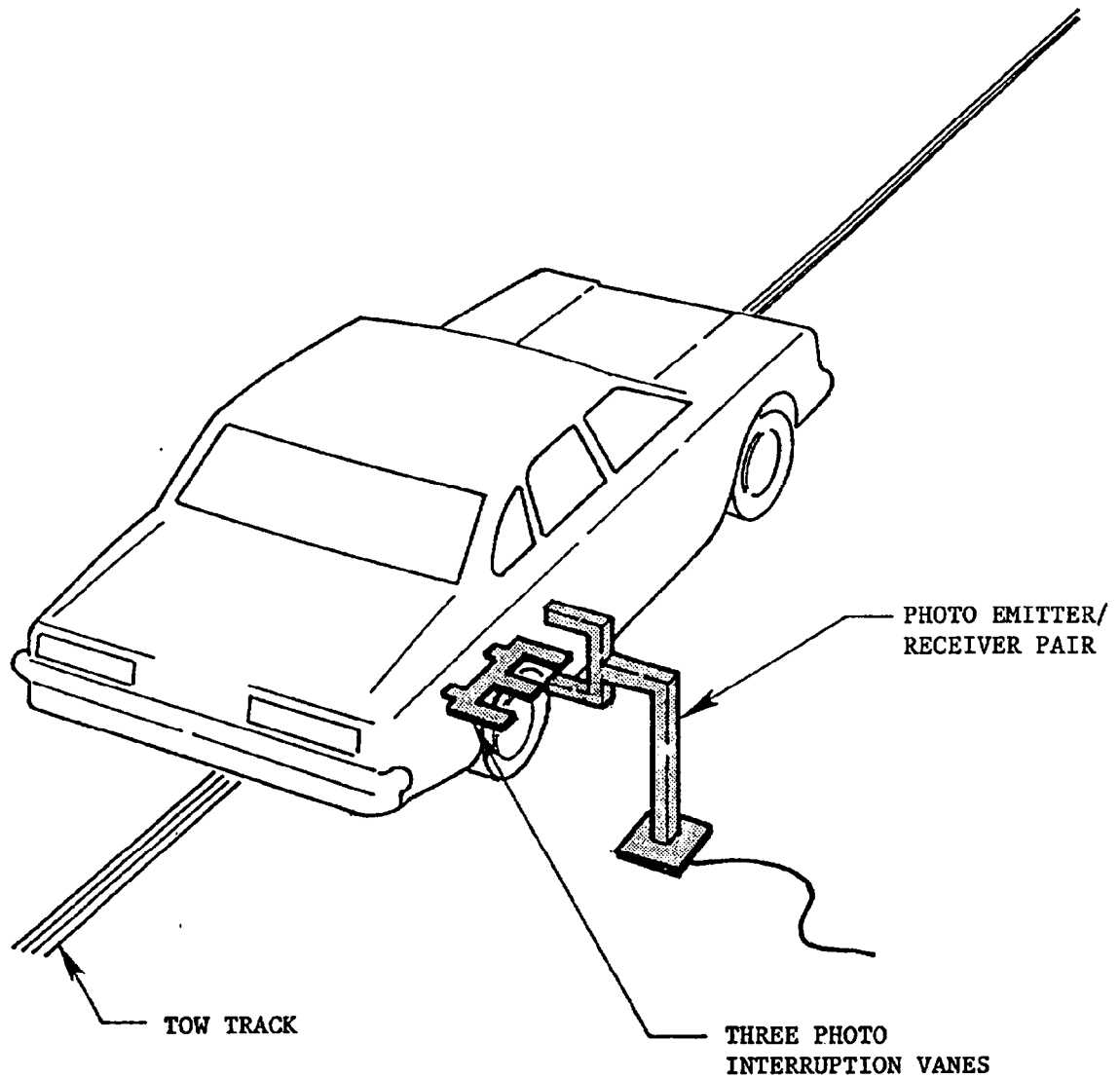
GLAZING DAMAGE:

Windshield cracked centrally, both left side windows shattered, no backlight damage.

OTHER NOTABLE IMPACT EFFECTS:

Driver's door separated from hinges, B-Pillar intrusion approximately 18 inches.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane is located two inches before impact.
The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned}\text{Test Weight} &= \text{Unloaded Delivered Weight} + \\ &\quad \text{Number of Dummies} \times 174 \text{ lbs.} + \\ &\quad \text{Cargo Weight} \\ &= 2050 + 2 \times 174 + 135 \text{ lbs.} \\ &= 2533 \text{ lbs.}\end{aligned}$$

To achieve test weight, 1 gallon 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

1) High speed camera #3, located on the Moving Deformable Barrier failed to run. The problem was traced to burnt out power supply circuitry and has been repaired.

2) The cables of three vehicle accelerometers were separated during the test. They were:

LFDYG2 - Left Front Door (Position 8) Acceleration Y Axis

LFDYG3 - Left Front Door (Position 9) Acceleration Y Axis

LFDYG5 - Left Front Door (Position 11) Acceleration Y Axis

No peak levels or delta velocities were reported for these three channels. All three accelerometer cables were repaired.

SECTION 3.G
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.

DUMMY IN-VEHICLE POSITION RECORDING SHEET

VEHICLE NHTSA NO. R&D

MFR./MAKE/MODEL: Volkswagen Rabbit

FRONT SEAT TYPE: BENCH
X BUCKET
 SPLIT BENCH

ADJUSTER TYPE: X MANUAL
 POWER

BUCKET SEAT BACK TYPE: FIXED
X ADJUSTABLE

TECHNICIANS:

1. J. Kokoruda

2. M. Garrison

3. N. Echeverria

POSITIONING DATE: 10/13/83

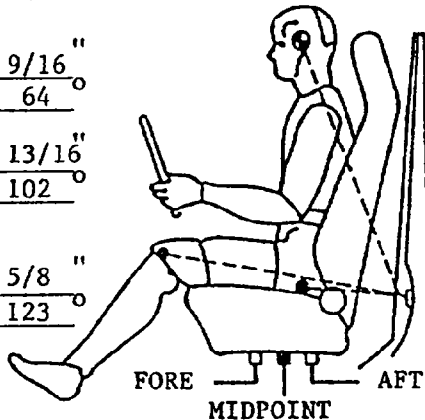
AMBIENT TEMP.: 69° F. TIME: 5:09

DRIVER DUMMY # 06

HEAD 19 9/16"
 TARGET* 64°

KNEE 32 13/16"
 JOINT 102°

APPROX.
 "H" 19 5/8"
 POINT 123°

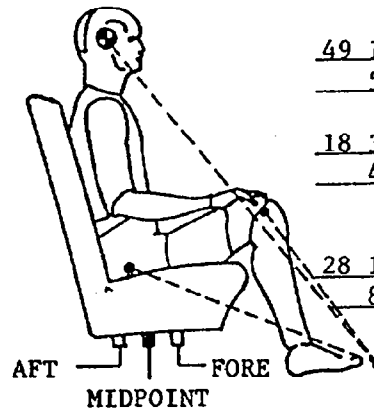


REAR PASSENGER DUMMY # U02

49 1/8" HEAD
50° TARGET**

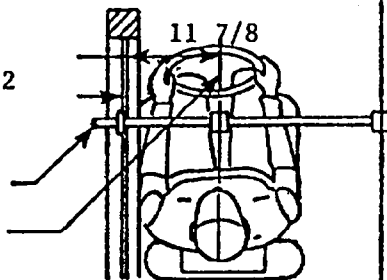
18 3/4" KNEE
49° JOINT

APPROX.
28 1/2" "H"
80° POINT



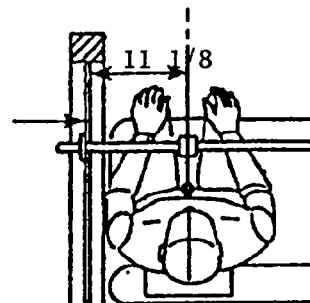
DOOR
 GLASS
 HEIGHT*** 9 1/2"

LATERAL BAR
 ADJUSTABLE
 POINTER



DRIVER
 DUMMY # 06

DOOR
 GLASS
 HEIGHT NA

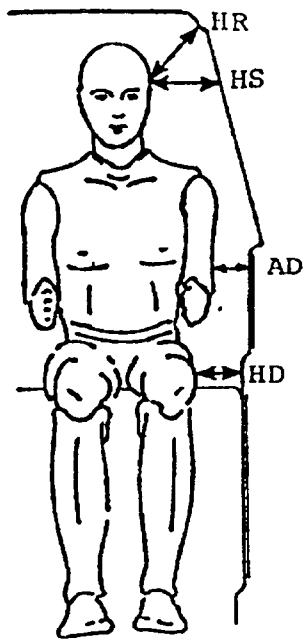
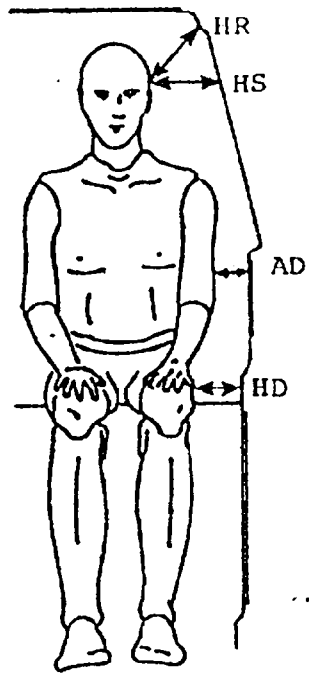


PASSENGER
 DUMMY # U02

*All driver dummy dimensions referenced to top of striker bolt and all angles referenced to vertical.

**All passenger dummy dimensions referenced to front seat back latch bolt with front seat in mid-position and all angles referenced to vertical.

***Door glass height is equal on the right and left side of vehicle at dummy nose level.

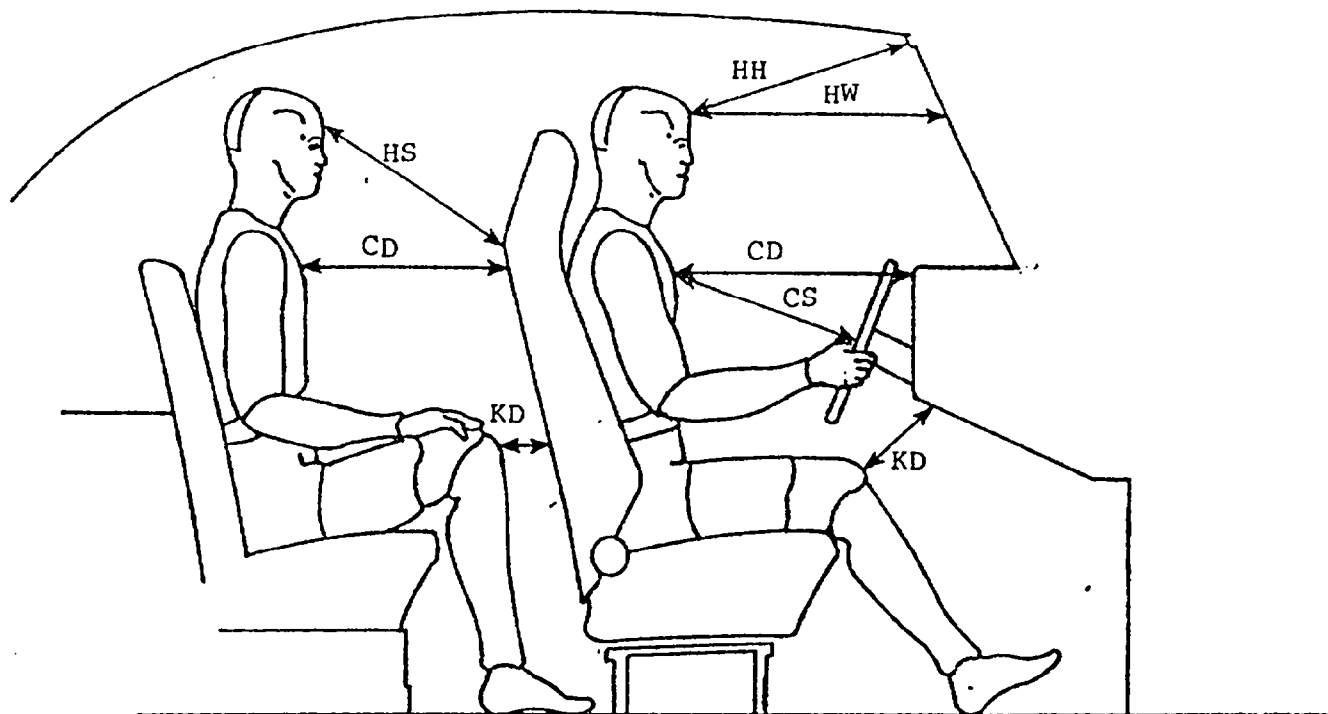


06 **U02

	DRIVER	PASSENGER
HR	6 1/2	4 7/8
HS	8 3/8	7 13/16
AD	1/4	0
HD	2 1/4	2 3/4

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



	06 DRIVER	U02 PASSENGER
HH	14 3/16	DNA
HW	20 13/16	DNA
HS	DNA	22 3/8
CD	21 1/8	17 1/2
CS	12 5/8	DNA
KDL	4 1/8	3 3/4
KDR	4 11/16	4

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 sill after the window had shattered. The dummy rebounded from the driver's door across the car body. It's head and right shoulder struck the roof and it's buttocks struck the passenger side door and window sill. The dummy pitched forward and came to rest face down across the front seats.

PASSENGER

During impact, the dummy's torso contacted the padded left rear occupant side wall and the head contacted the padded side header. The dummy's feet became trapped beneath the driver's seat. The dummy maintained contact with the left rear side wall and came to rest upright and facing forward.

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	8.4	X	X	19.8	19.6	19.5	19.6	19.5	19.4	19.5	19.5	19.6	19.1	19.7	X	X
H-Point	16.2	X	X	16.8	16.8	16.8	16.3	16.3	16.3	16.8	16.8	17.0	17.1	17.1	15.9	X
Mid Door	22.7	15.3	16.8	16.6	16.6	16.5	16.5	16.4	16.4	16.5	16.5	16.6	16.6	16.6	16.5	16.1
Window Sill	33.0	X	18.7	18.4	18.3	18.1	17.7	18.1	18.1	18.1	18.2	18.1	18.3	18.4	18.4	18.6
Window Top	51.1	X	X	X	X	X	26.0	25.4	25.4	25.2	25.3	25.2	25.3	25.3	25.6	25.9

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

Axle Height	8.4	X	X	21.1	23.5	24.5	25.5	25.8	26.0	25.8	32.0	29.2	25.8	22.4	X	X
H-Point	16.2	X	X	23.0	41.2	44.8	43.9	41.6	39.4	36.8	33.8	36.9	30.3	27.1	23.8	X
Mid Door	22.7	20.4	21.0	20.4	37.4	41.1	42.1	40.6	38.8	36.9	34.8	34.4	39.8	26.8	23.3	20.0
Window Sill	33.0	X	19.1	19.2	31.8	35.3	37.4	39.0	37.2	35.1	33.4	32.6	29.4	26.1	23.1	20.2
Window Top	51.1	X	X	X	X	X	26.5	26.2	26.1	26.1	26.1	26.1	26.2	26.2	26.3	26.6

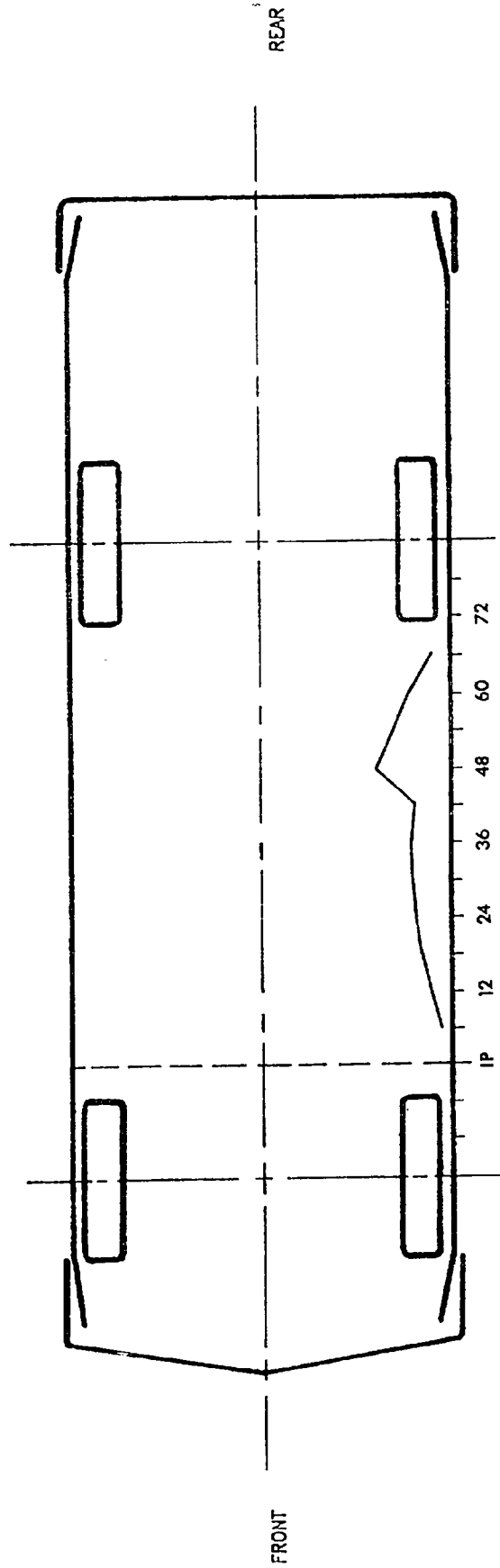
STATIC CRUSH (IN)

Axle Height	8.4	X	X	1.3	3.9	5.0	5.9	6.3	6.6	6.3	12.5	9.6	6.7	2.7	X	X
H-Point	16.2	X	X	6.2	24.4	28.0	27.6	25.3	23.1	20.0	17.0	19.9	13.2	10.0	7.9	X
Mid Door	22.7	5.1	4.2	3.8	20.8	24.6	25.6	24.2	22.4	20.4	18.3	17.8	23.2	10.2	6.8	3.9
Window Sill	33.0	X	0.4	0.8	13.5	17.2	19.7	20.9	19.1	17.0	15.2	14.5	11.1	7.7	4.7	1.6
Window Top	51.1	X	X	X	X	X	0.5	0.8	0.9	0.9	0.8	0.9	0.9	0.9	0.7	0.7

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

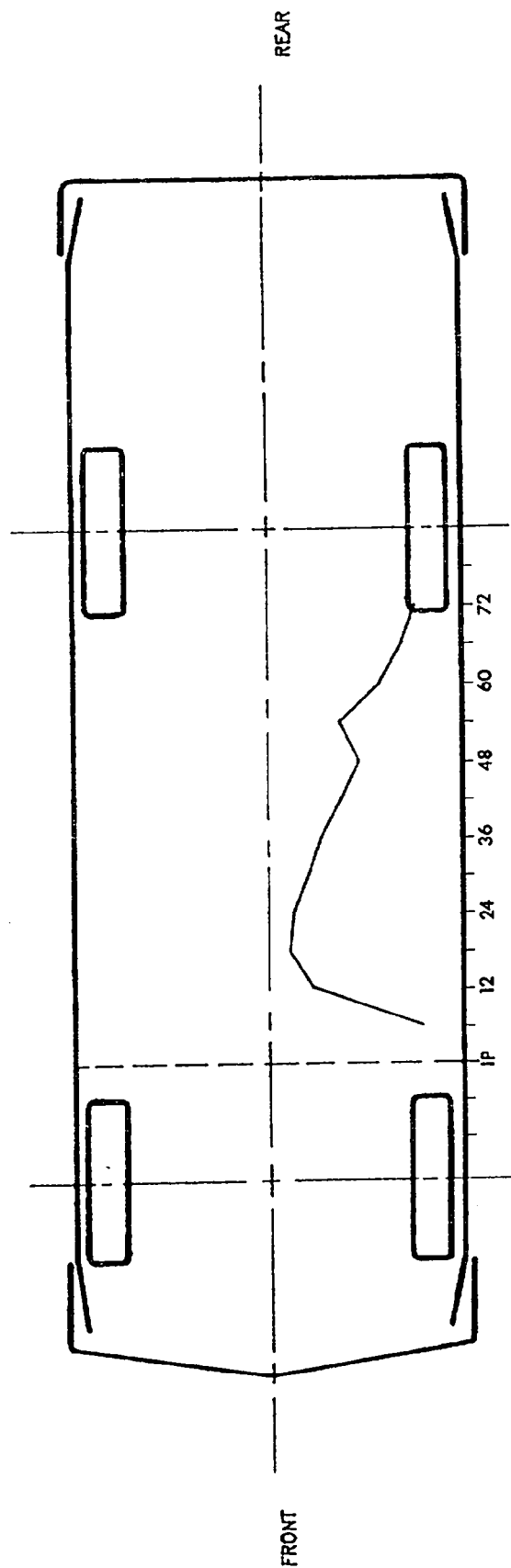
** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



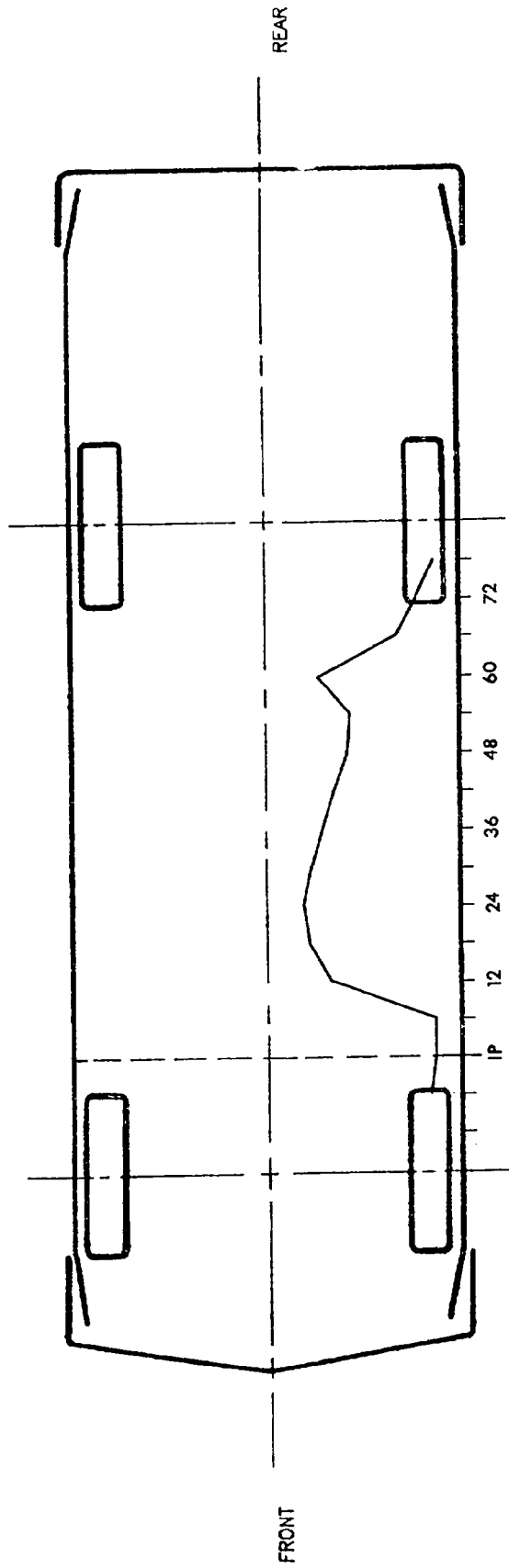
PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



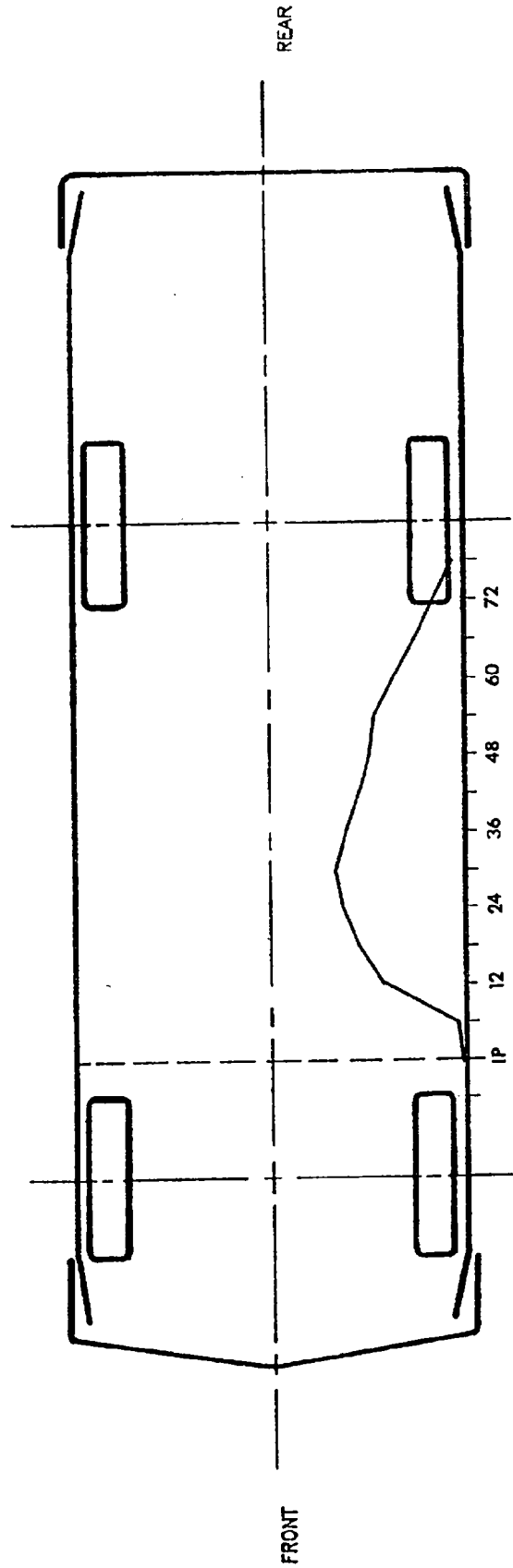
PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



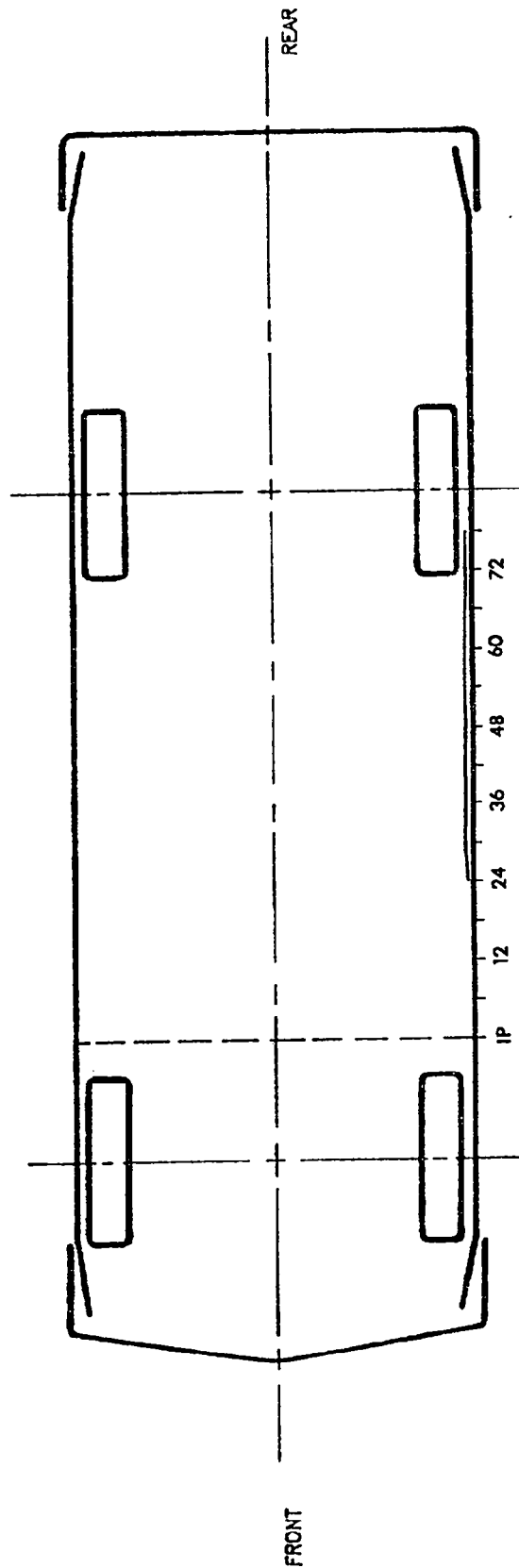
PROFILE LEVEL EQUALS MID-DOOR HEIGHT
IP EQUALS PROJECTED IMPACT POINT

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	52.47	142.00	206.06	84.63 Y	58.88	187.25	44.13	87.13
LATERAL	120.01	84.63	27.50	142.63 Y	52.18	72.88	13.46	99.38
VERTICAL	36.17	156.50	129.64	70.75 Y	73.72	91.50	53.51	73.88
RESULTANT		239.05	à 84.63 Y			80.83	à 187.25	
HIC	3691.05	from 56.75 to 89.00 Y			884.15	from 70.63 to 97.25		
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	69.20	151.87	30.17	48.75	16.29	192.50	61.77	81.88
LATERAL (P)***	164.34	50.63	42.53	74.37	84.81	77.50	11.40	145.63
LATERAL (R)***	167.42	50.00	41.14	74.37	86.32	77.50	11.13	145.63
VERTICAL	22.57	39.38	33.83	45.62	22.88	66.87	28.24	90.62
RESULTANT (P)		167.17	à 50.63			92.22	à 78.75	
RESULTANT (R)		170.53	à 50.00			93.86	à 78.75	
DELTA V (MPH)****		38.8	à 66.25 (P)			22.7	à 131.25 (P)	
		41.2	à 66.25 (R)			24.0	à 131.88 (R)	
LOWER SPINE								
LONGITUDINAL	43.81	63.13	23.63	48.75	25.44	93.13	51.20	74.37
LATERAL (P)	163.28	44.38	41.55	67.50	98.95	73.13	27.42	91.25
LATERAL (R)	156.77	45.00	53.72	67.50	97.91	73.13	25.32	91.87
VERTICAL	34.25	48.13	10.67	84.38	36.61	76.25	12.27	100.63
RESULTANT (P)		163.75	à 44.38			112.48	à 73.75	
RESULTANT (R)		157.44	à 45.00			112.50	à 73.75	
DELTA V (MPH)		47.8	à 63.13 (P)			37.0	à 88.13 (P)	
		48.9	à 63.75 (R)			36.8	à 88.13 (R)	
LEFT UPPER RIB								
LATERAL (P)	95.35	41.25	9.99	79.38	95.67	141.25	19.41	146.25
LATERAL (R)	92.23	41.25	13.69	78.13	78.29	73.13	17.68	146.25
DELTA V (MPH)		40.1	à 75.00 (P)			34.1	à 116.88 (P)	
		39.7	à 75.00 (R)			33.7	à 116.25 (R)	
LEFT LOWER RIB								
LATERAL (P)	120.39	45.00	44.33	72.50	96.30	73.75	23.04	93.13
LATERAL (R)	114.72	45.00	40.81	72.50	101.92	74.37	20.10	92.50
DELTA V (MPH)		42.4	à 69.38 (P)			34.5	à 90.63 (P)	
		44.3	à 69.38 (R)			34.5	à 90.63 (R)	
PELVIS ACCELERATION								
LONGITUDINAL	27.66	73.13	303.02	53.88 °	14.50	97.63	62.11	67.00
LATERAL	358.75	53.75	57.76	55.88 °	190.05	67.00	24.66	52.88
VERTICAL	72.52	45.75	457.13	57.75 °	68.99	73.00	9.00	75.13
RESULTANT		581.37	à 53.88 °			202.33	à 67.00	
DELTA V (MPH)		57.3	à 69.75 °			34.5	à 87.38	

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	DRIVER DUMMY				PASSENGER DUMMY			
	POSITIVE		NEGATIVE		POSITIVE		NEGATIVE	
	DIRECTION*		DIRECTION**		DIRECTION*		DIRECTION**	
	MAX	TIME	MAX	TIME	MAX	TIME	MAX	TIME
	(in)	(msec)	(in)	(msec)	(in)	(msec)	(in)	(msec)
RIB DEFLECTION †	0.05	170.25	1.82	63.50	0.11	144.38	1.55	90.50

* LONGITUDINAL: FORWARD
 LATERAL: RIGHTWARD
 VERTICAL: UPWARD

**LONGITUDINAL: REARWARD
 LATERAL: LEFTWARD
 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

‡ See TEST ANOMALIES

° The CTM has judged that intermittent rattling has occurred in these channels and, therefore, the peak values reported are questionable as are applicable resultants and Delta V's.

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

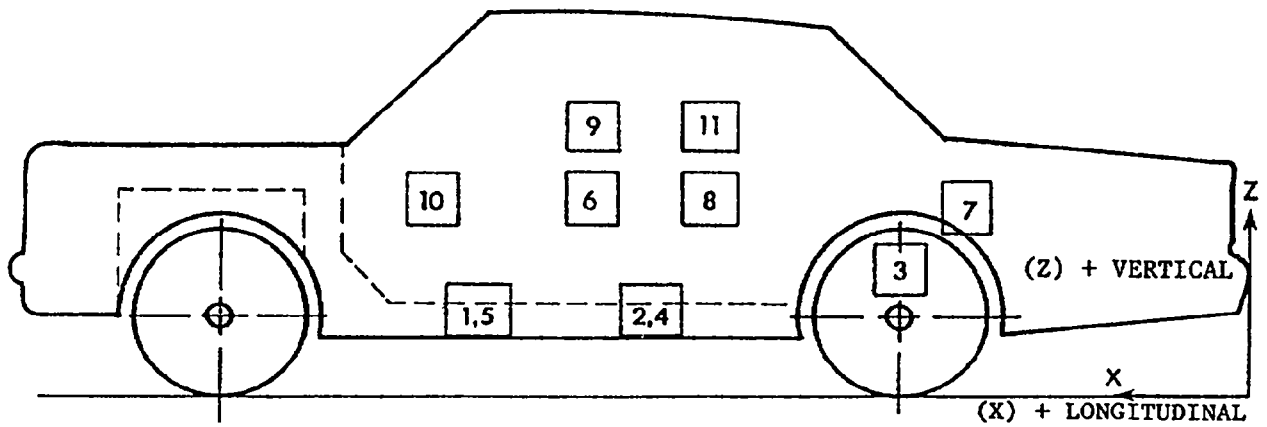
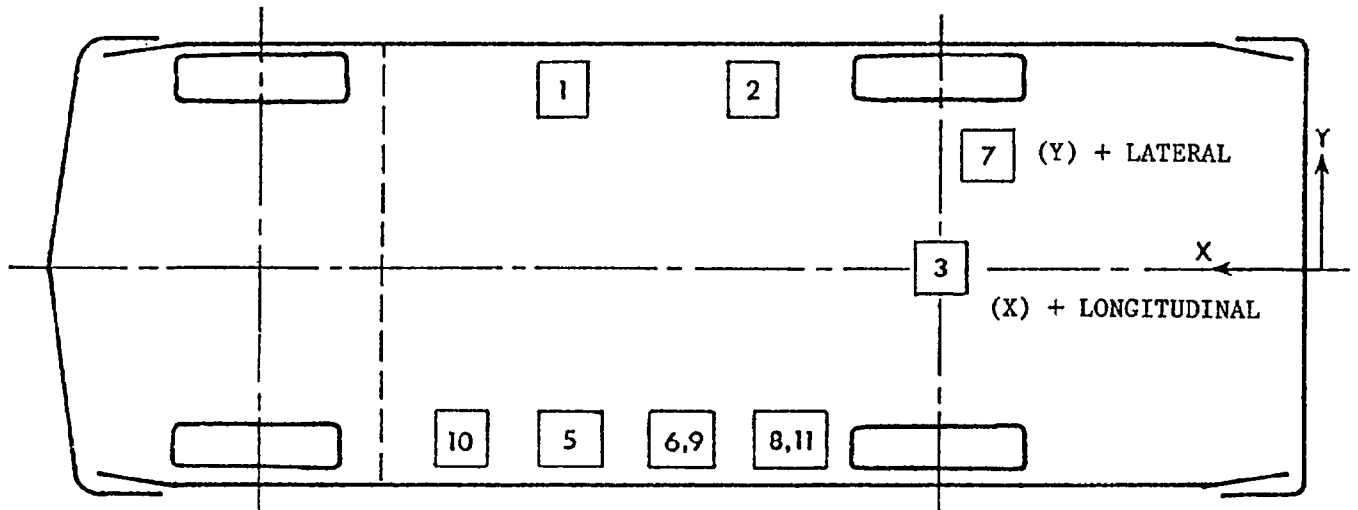
NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT SILL AT FRONT SEAT (LONGITUDINAL)	83.3	23.5	10.4				
	(LATERAL)				$\Delta V = -9.7$ mph à 140.00 msec	1.07	315.25	10.02
	(VERTICAL)				$\Delta V = 13.2$ mph à 140.00 msec	18.32	71.88	3.58
	(RESULTANT)				6.56	59.00	11.87	43.00
						19.31 à 72.13		
2	RIGHT SILL AT REAR SEAT (LONGITUDINAL)	61.3	23.5	8.0				
	(LATERAL)				$\Delta V = -7.6$ mph à 140.00 msec	1.52	317.38	7.63
	(VERTICAL)				$\Delta V = 18.1$ mph à 140.00 msec	26.91	71.25	2.94
	(RESULTANT)				7.39	154.38	9.78	66.13
						27.21 à 71.25		
3	REAR DECK OVER AXLE (LONGITUDINAL)	32.0	0.0	6.3				
	(LATERAL)				$\Delta V = -9.4$ mph à 140.00 msec	10.82	121.63	18.51
	(VERTICAL)				$\Delta V = 24.8$ mph à 140.00 msec	30.62	75.50	4.75
	(RESULTANT)				11.07	52.88	10.04	84.38
						35.02 à 78.25		
4	LEFT SILL AT REAR SEAT (LATERAL)	61.0	-23.5	7.9				
					$\Delta V = 13.9$ mph à 68.75 msec	43.32	68.88	50.01
							77.00	
5	LEFT SILL AT FRONT SEAT (LATERAL)	83.6	-23.5	9.3				
					$\Delta V = 17.0$ mph à 56.63 msec	88.54	56.00	107.07
							62.50	
6	LEFT FRONT DOOR CENTERLINE (LATERAL)	80.0	-26.5	23.0				
					231.88	116.50	43.75	17.50
7	RIGHT REAR COMPARTMENT (LONGITUDINAL)	31.0	15.4	11.0				
					3.64	120.00	10.21	64.13
8	MIDREAR OF LEFT FRONT DOOR (LATERAL)	60.0	-26.5	23.2				
					---	---γ	---	---γ
9	UPPER LEFT FRONT DOOR CENTERLINE (LATERAL)	81.5	-26.5	32.1				
					---	---γ	---	---γ
10	MIDFRONT OF LEFT FRONT DOOR (LATERAL)	98.5	-26.5	22.1				
					$\Delta V = 25.6$ mph à 24.63 msec	135.93	12.38	149.62
							34.13	
11	UPPER REAR OF LEFT FRONT DOOR (LATERAL)	70.5	-26.5	32.1				
					---	---γ	---	---γ

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

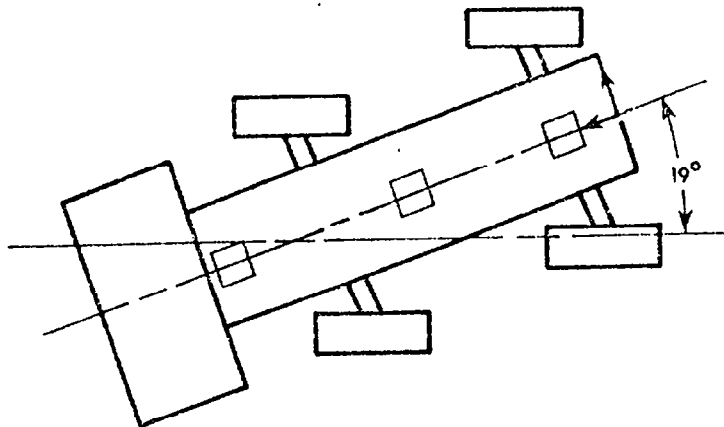
All measurements of accelerometer locations in inches.

γ See TEST ANOMALIES

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)	$\Delta V = -18.5 \text{ mph } \Delta 140.00 \text{ msec}$			0.19	0.00	14.86	75.38
	(LATERAL)	$\Delta V = -4.0 \text{ mph } \Delta 140.00 \text{ msec}$			2.28	26.88	5.45	83.75
	(VERTICAL)				19.40	83.00	15.90	121.63
	(RESULTANT)					22.89 Δ 82.88		
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	$\Delta V = -16.2 \text{ mph } \Delta 140.00 \text{ msec}$			1.65	20.50	13.77	76.38
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -16.9 \text{ mph } \Delta 140.00 \text{ msec}$			1.28	167.38	13.43	75.00

* 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	450	Vehicle Dynamics
2	Overhead	Photosonics 1B	25	460	Close-up of impact point
3	Onboard MDB	Stalex	25	---*	Close-up of impact point
4	Onboard MDB	Photosonics 1B	13	500	Driver kinematics
5	Ground level - right	Hycam	25	412	Overall view
6	Ground level - left	Photosonics 1B	17	490	Overall view
7	Onboard vehicle	Photosonics 1B	8	810	Driver kinematics - front view
8	Onboard vehicle	Photosonics 1B	8	800	Driver kinematics
9	Onboard vehicle	Photosonics 1B	8	800	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.

* See TEST ANOMALIES

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	0	25'
2	0	0	25'
5	26'4"	50'	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	11845	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

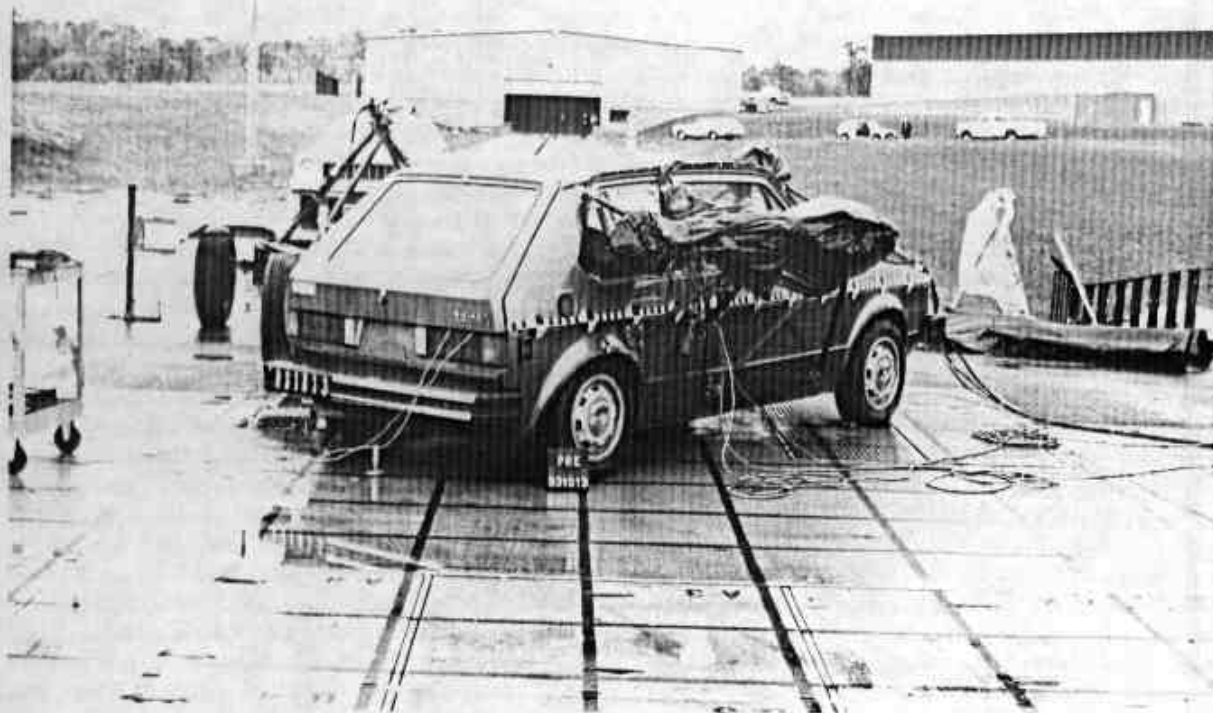


Figure A-3. PRE-TEST OVERALL - VIEW 3



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

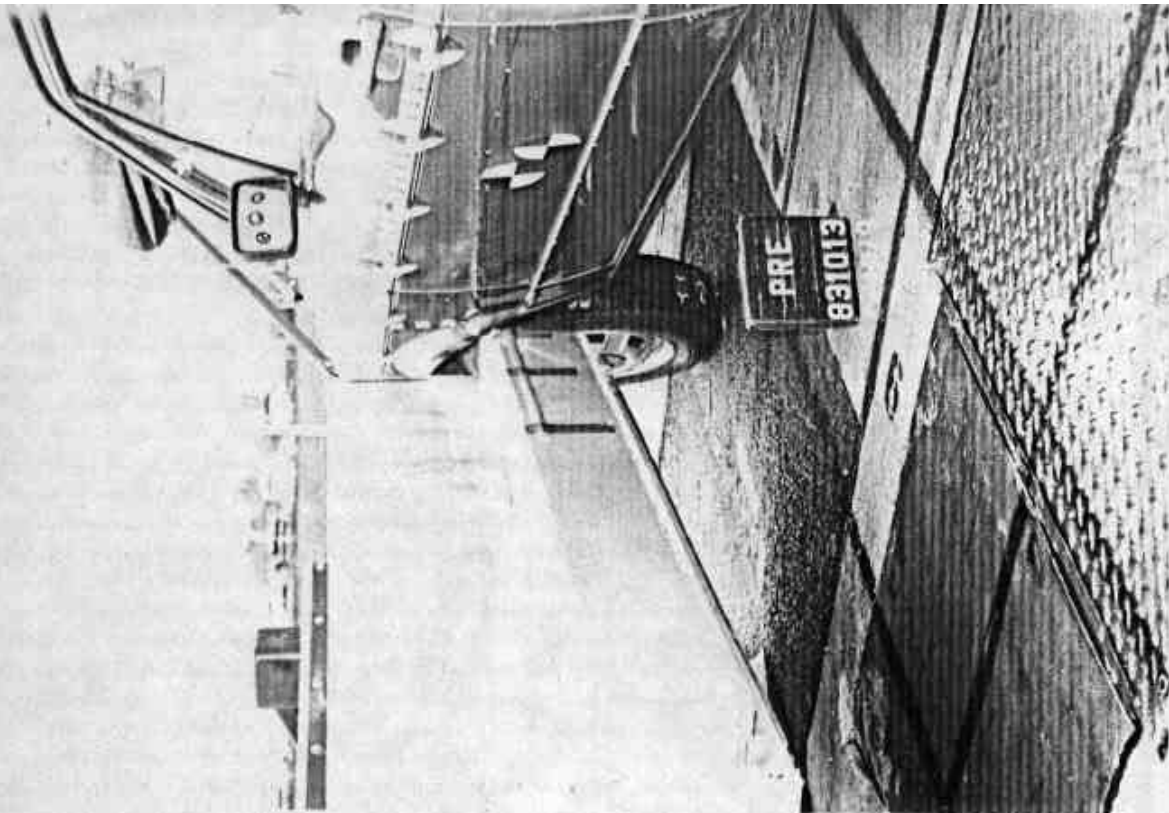


Figure A-5. PRE-TEST CLOSEUP - VIEW 1

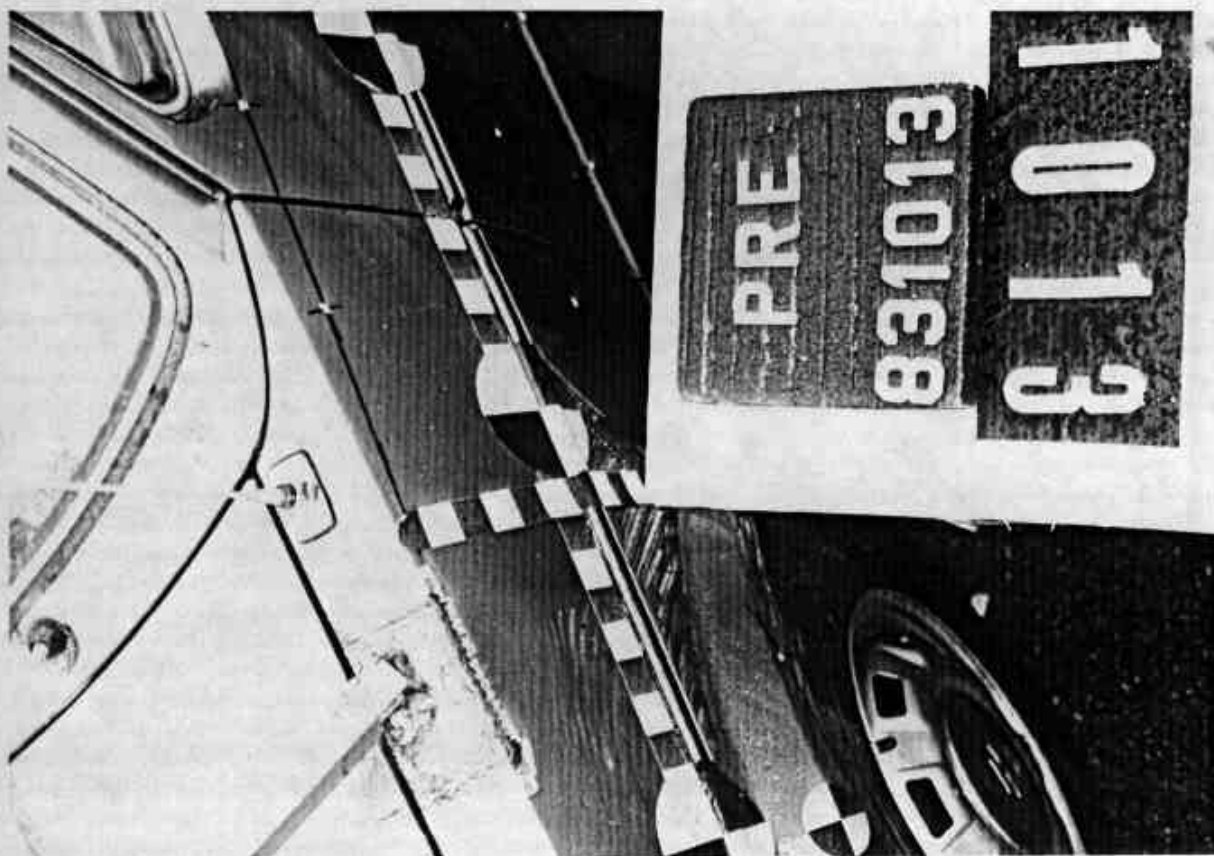


Figure A-6. PRE-TEST CLOSEUP - VIEW 2

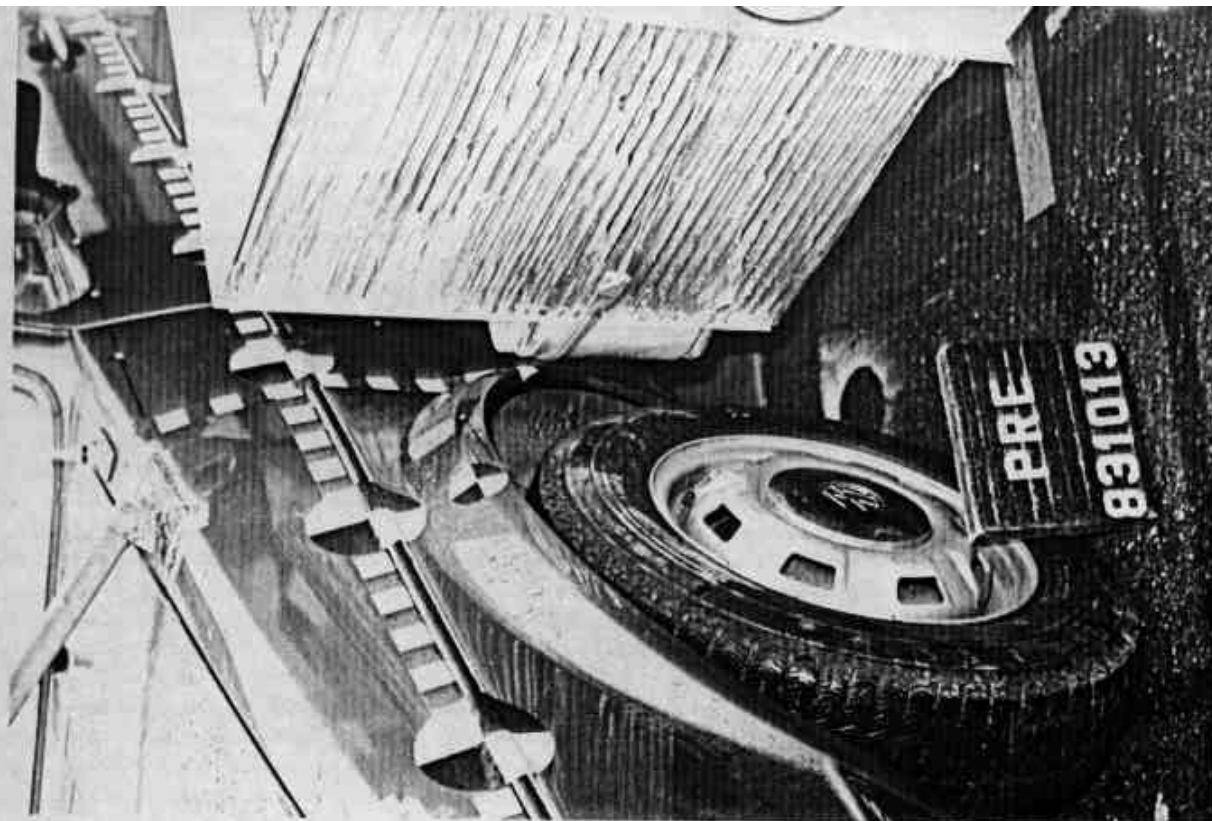


Figure A-7. PRE-TEST CLOSEUP - VIEW 3

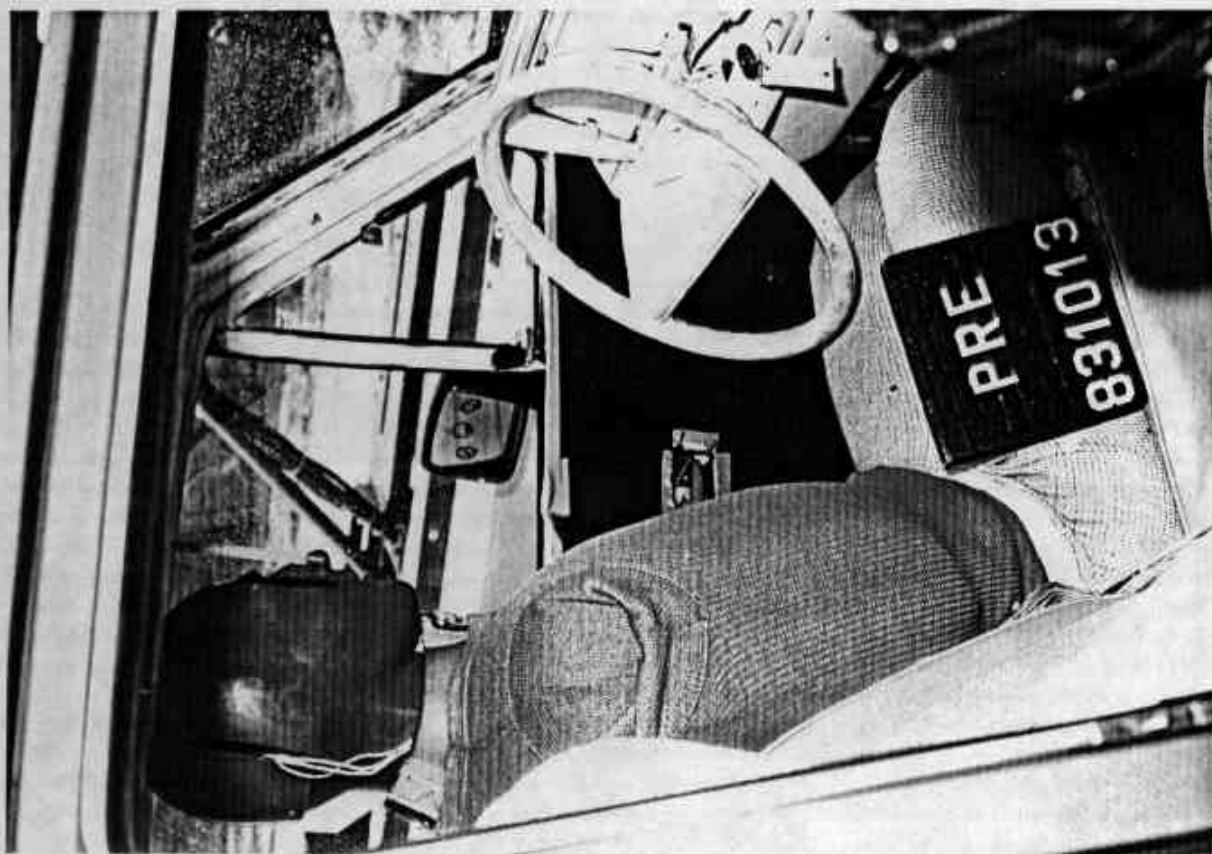


Figure A-8. PRE-TEST DRIVER DUMMY - VIEW 1

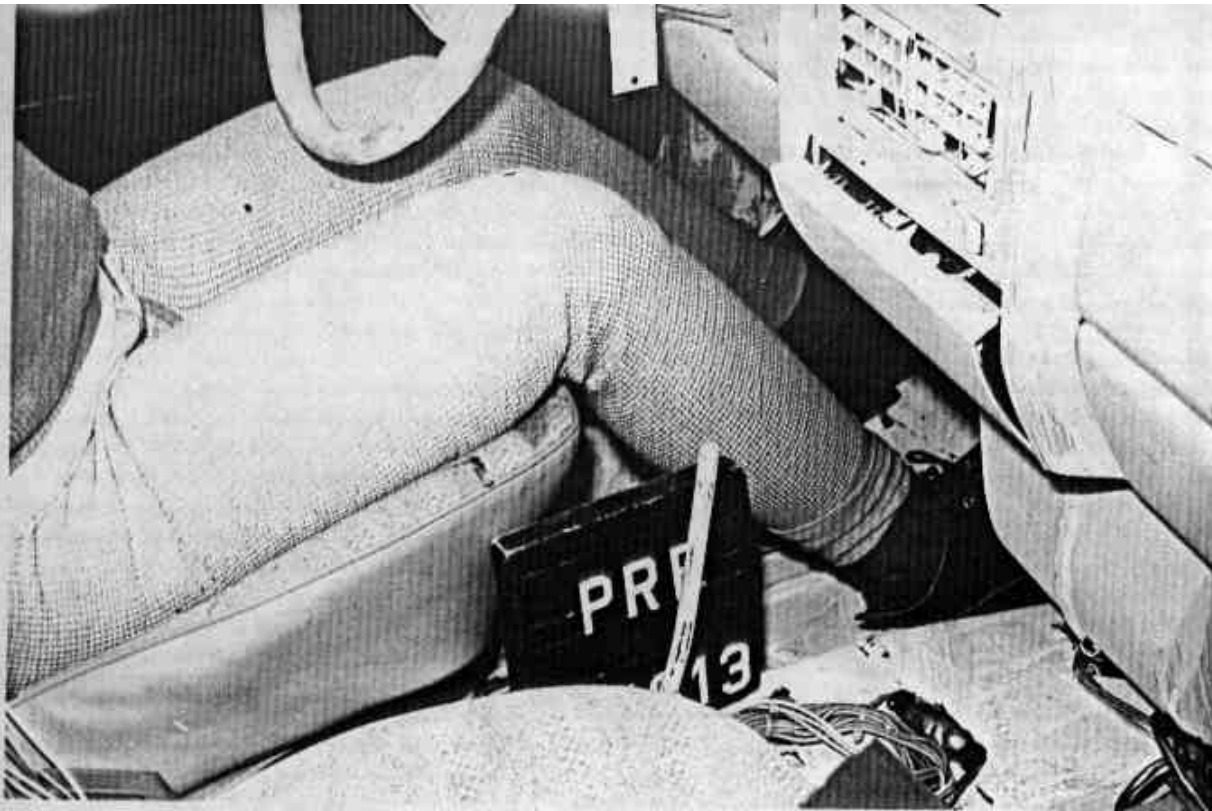


Figure A-9. PRE-TEST DRIVER DUMMY - VIEW 2

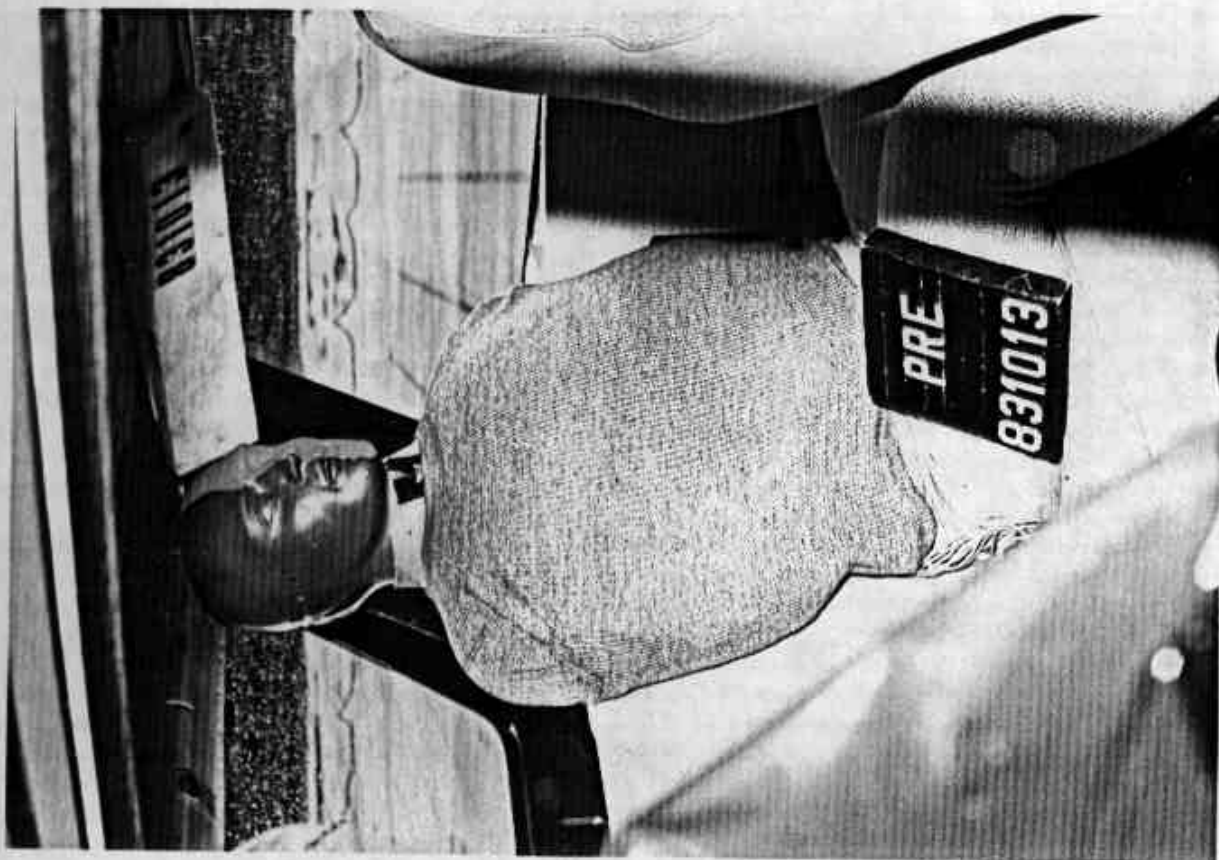


Figure A-10. PRE-TEST PASSENGER DUMMY - VIEW 1

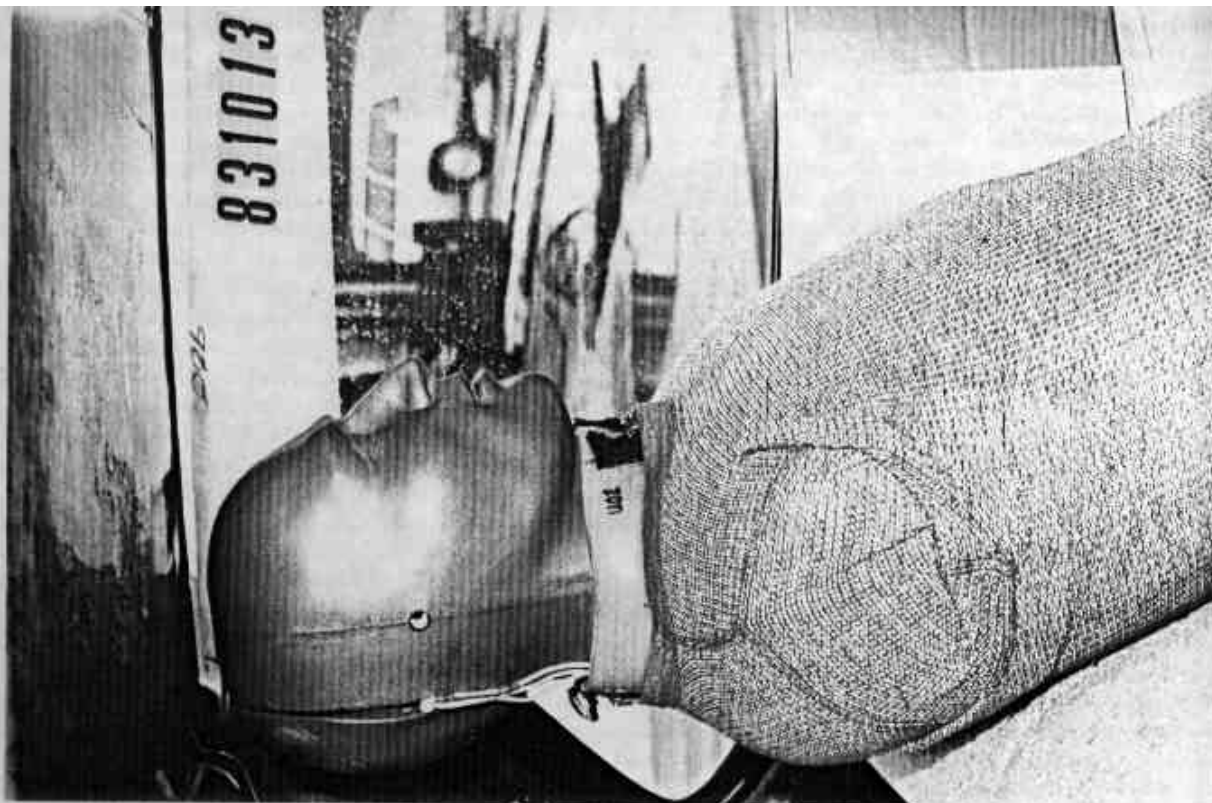


Figure A-11. PRE-TEST PASSENGER DUMMY - VIEW 2

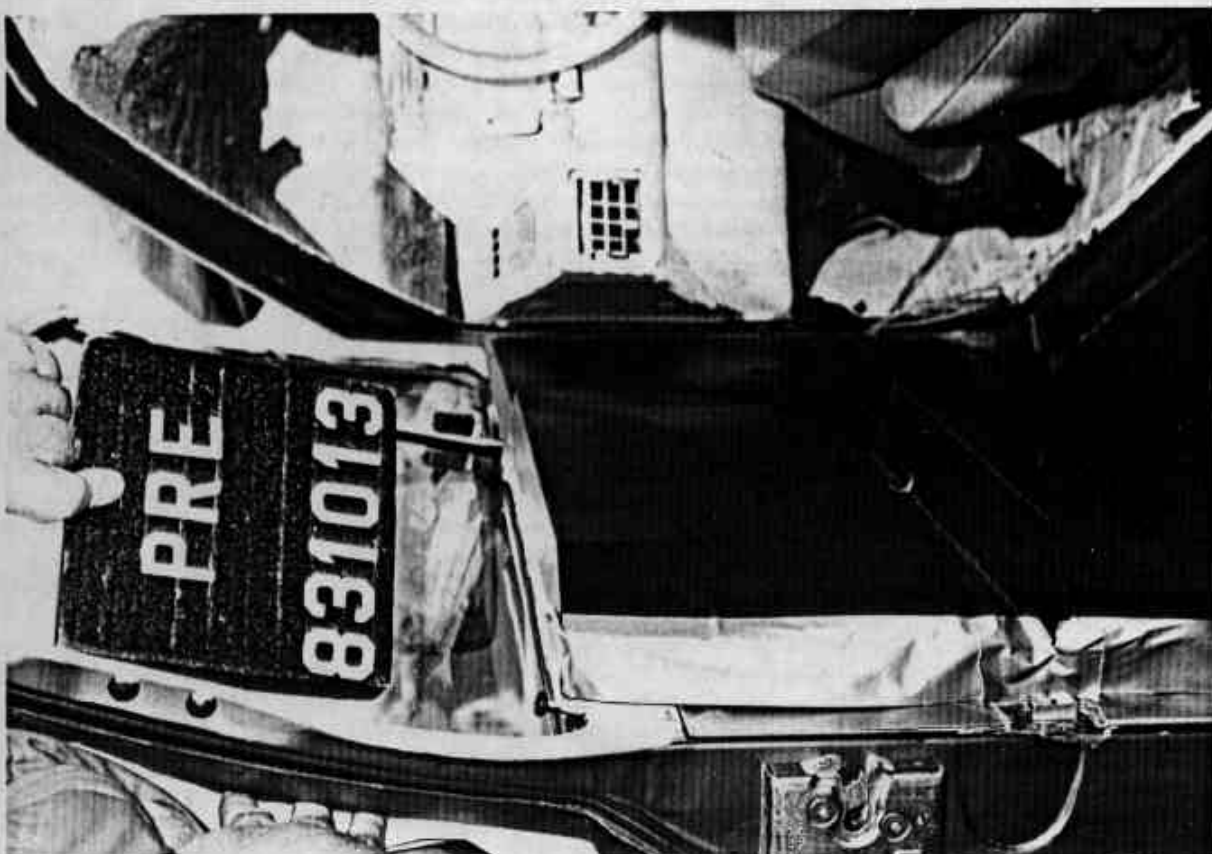


Figure A-12. PRE-TEST DRIVER'S PADDING

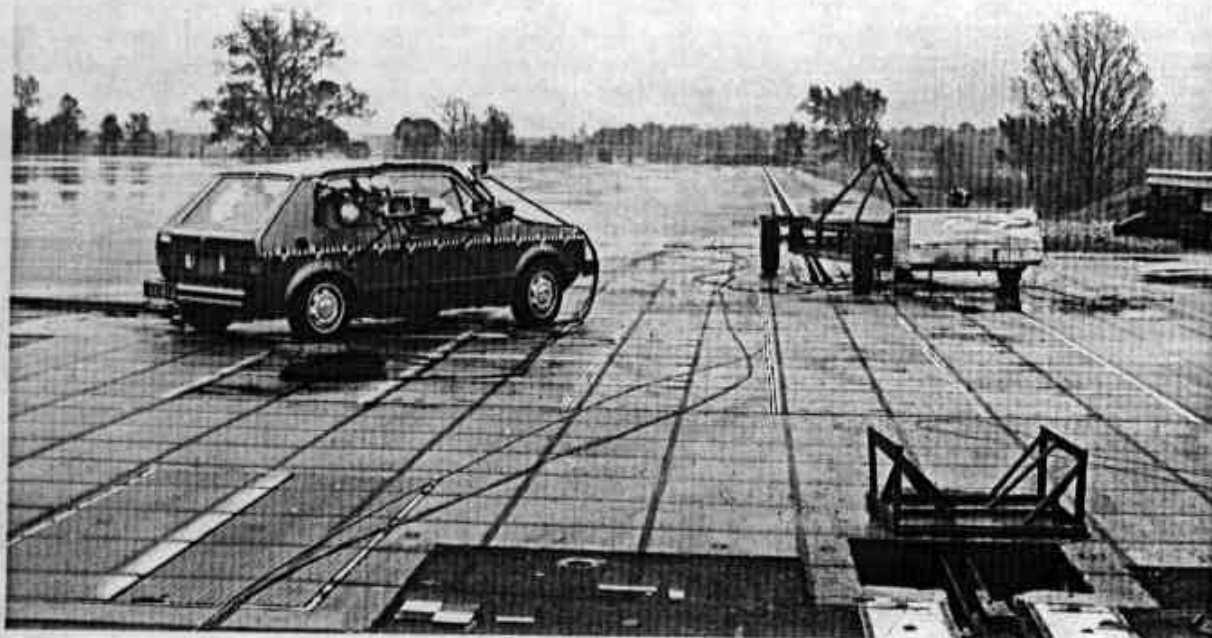


Figure A-13. POST-TEST OVERALL - VIEW 1



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

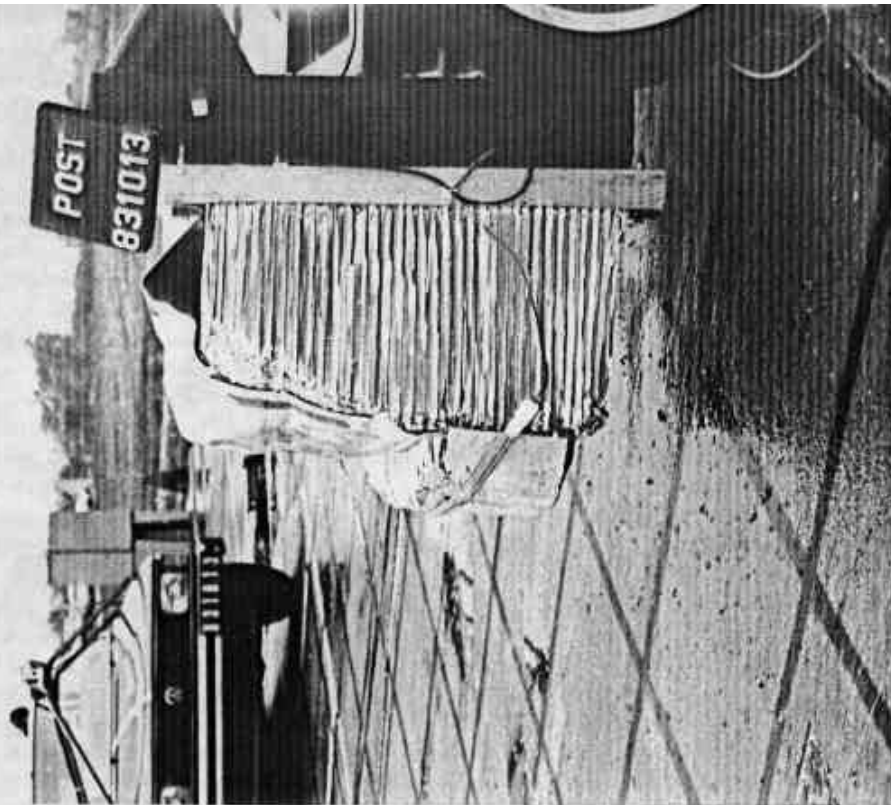


Figure A-15. POST-TEST OVERALL - VIEW 3

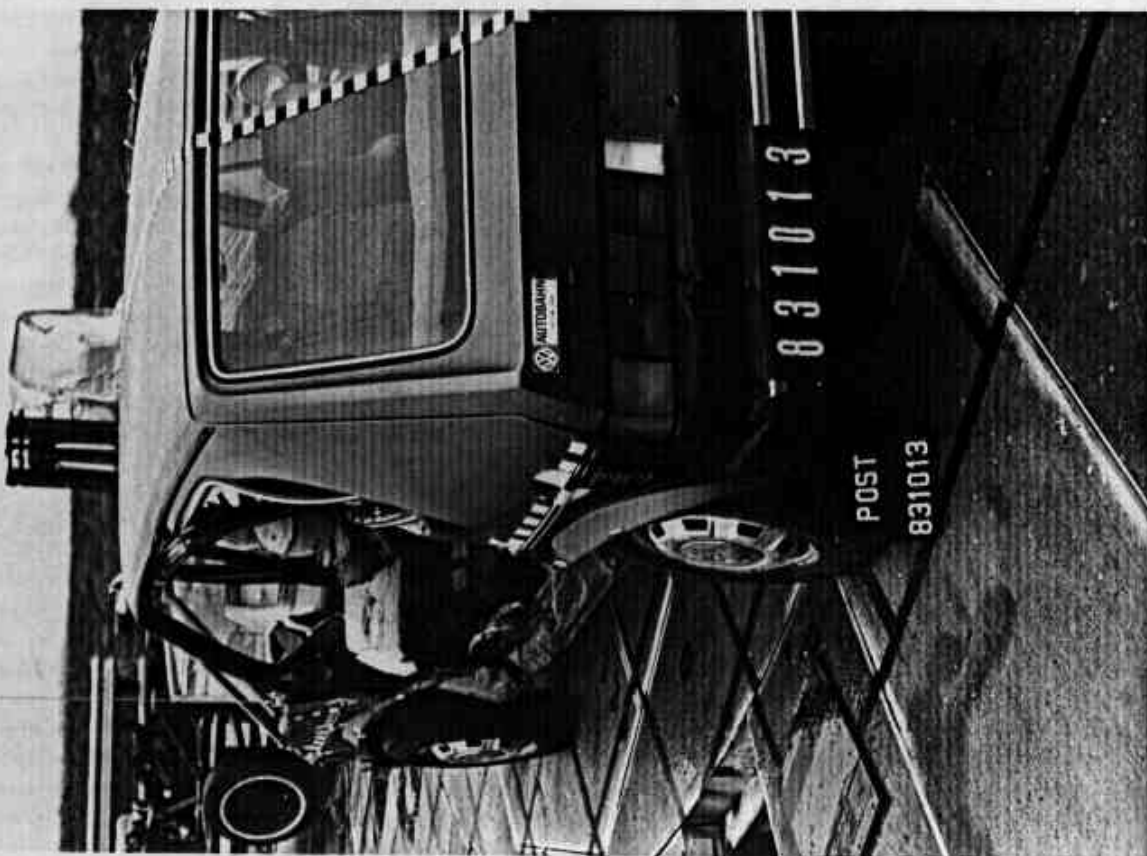


Figure A-16. POST-TEST CLOSEUP - VIEW 1



Figure A-17. POST-TEST CLOSEUP - VIEW 2



Figure A-18. POST-TEST DRIVER DUMMY - VIEW 1



Figure A-19. POST-TEST DRIVER DUMMY - VIEW 2

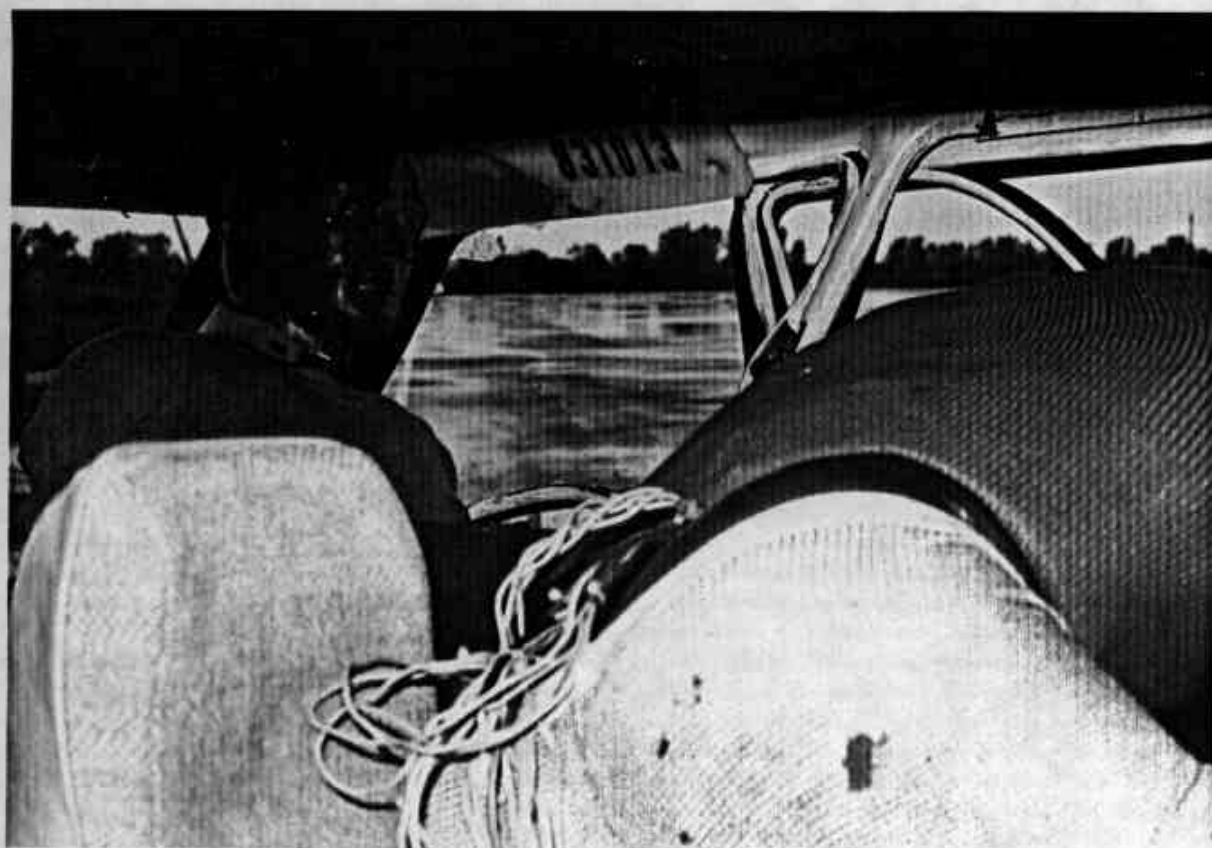


Figure A-20. POST-TEST DRIVER DUMMY - VIEW 3

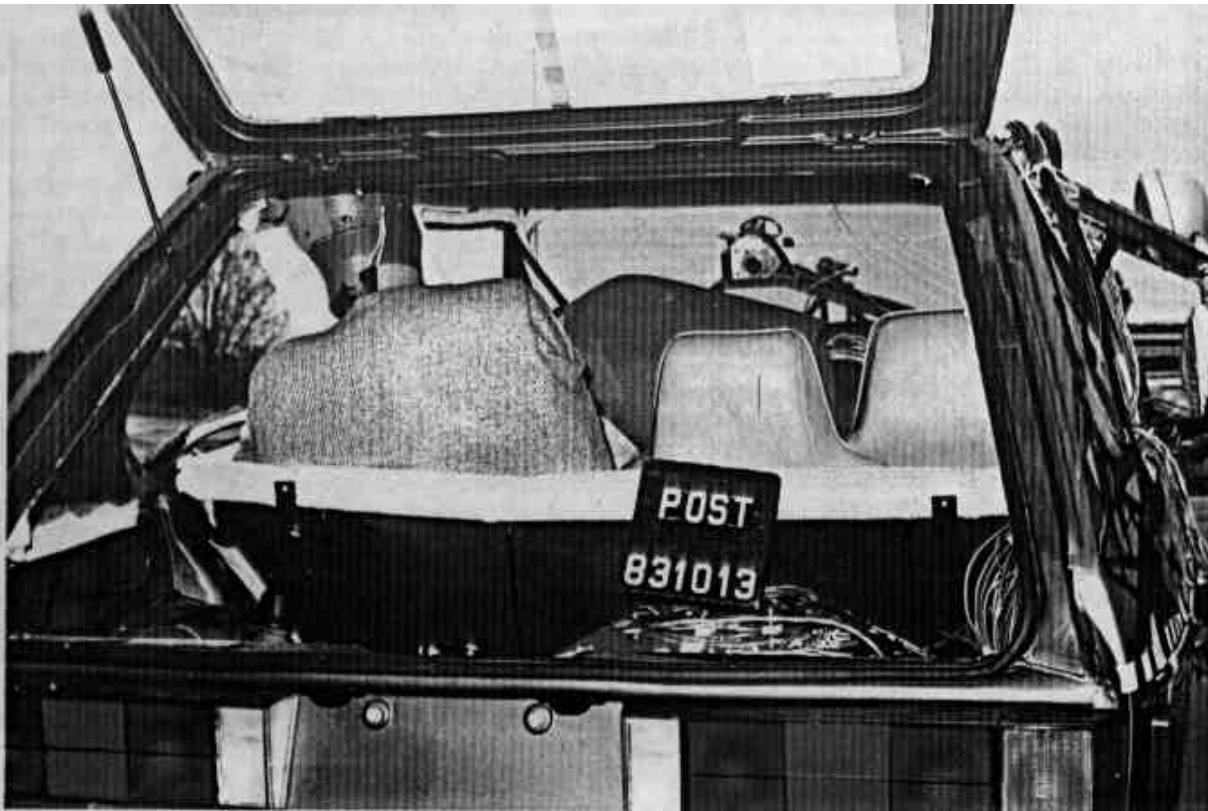


Figure A-21. POST-TEST PASSENGER DUMMY - VIEW 1



Figure A-22. POST-TEST PASSENGER DUMMY - VIEW 2



Figure A-23. POST-TEST VEHICLE DAMAGE - VIEW 1

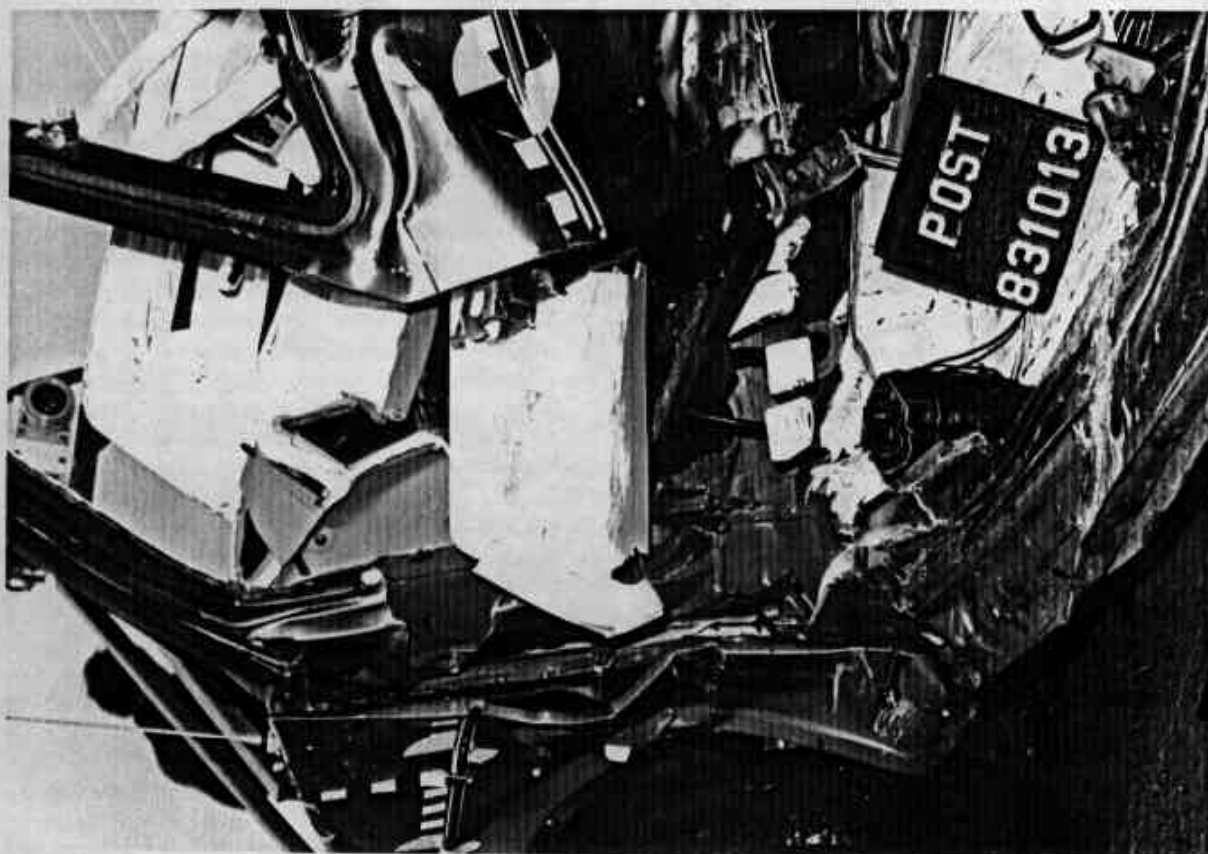


Figure A-24. POST-TEST VEHICLE DAMAGE - VIEW 2



Figure A-25. POST-TEST VEHICLE DAMAGE - VIEW 3

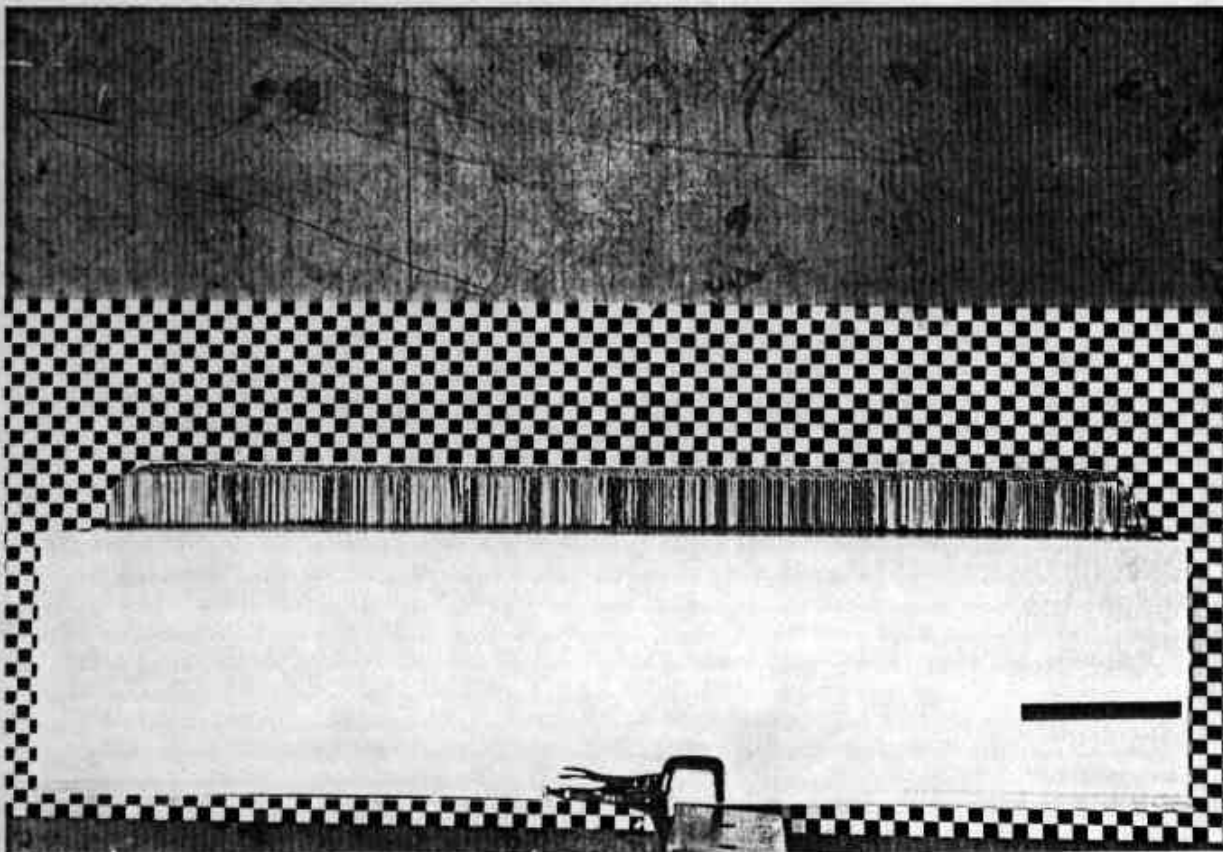


Figure A-26. PRE-TEST MDB FACE - VIEW 1

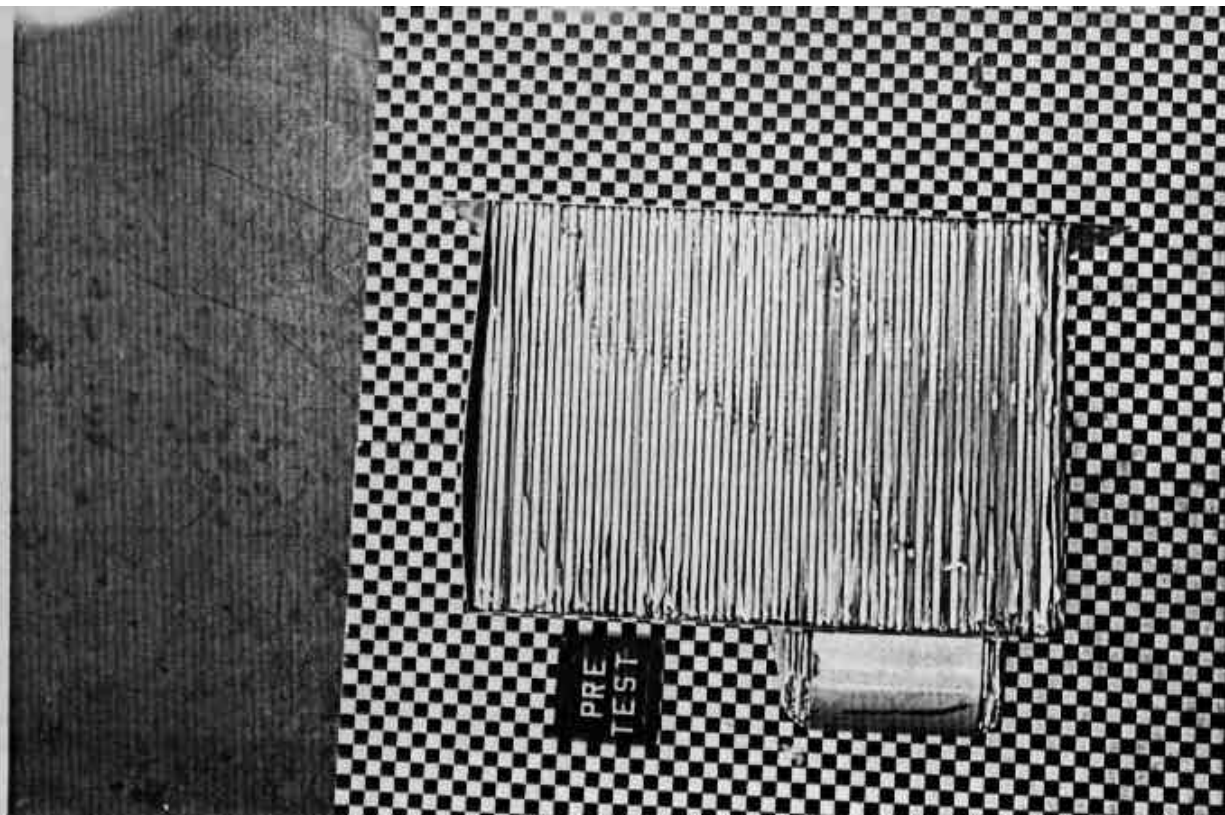


Figure A-27. PRE-TEST MDB FACE - VIEW 2

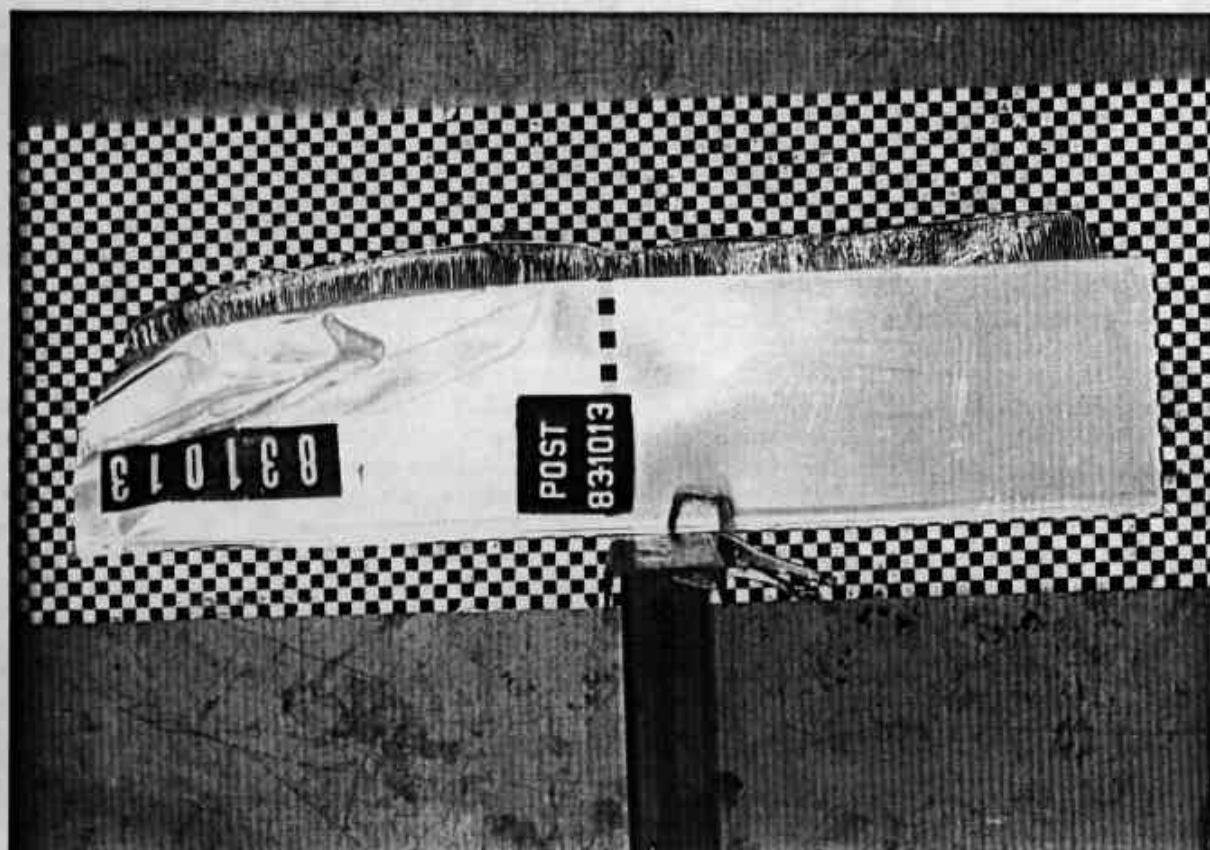


Figure A-28. POST-TEST MDB FACE - VIEW 1

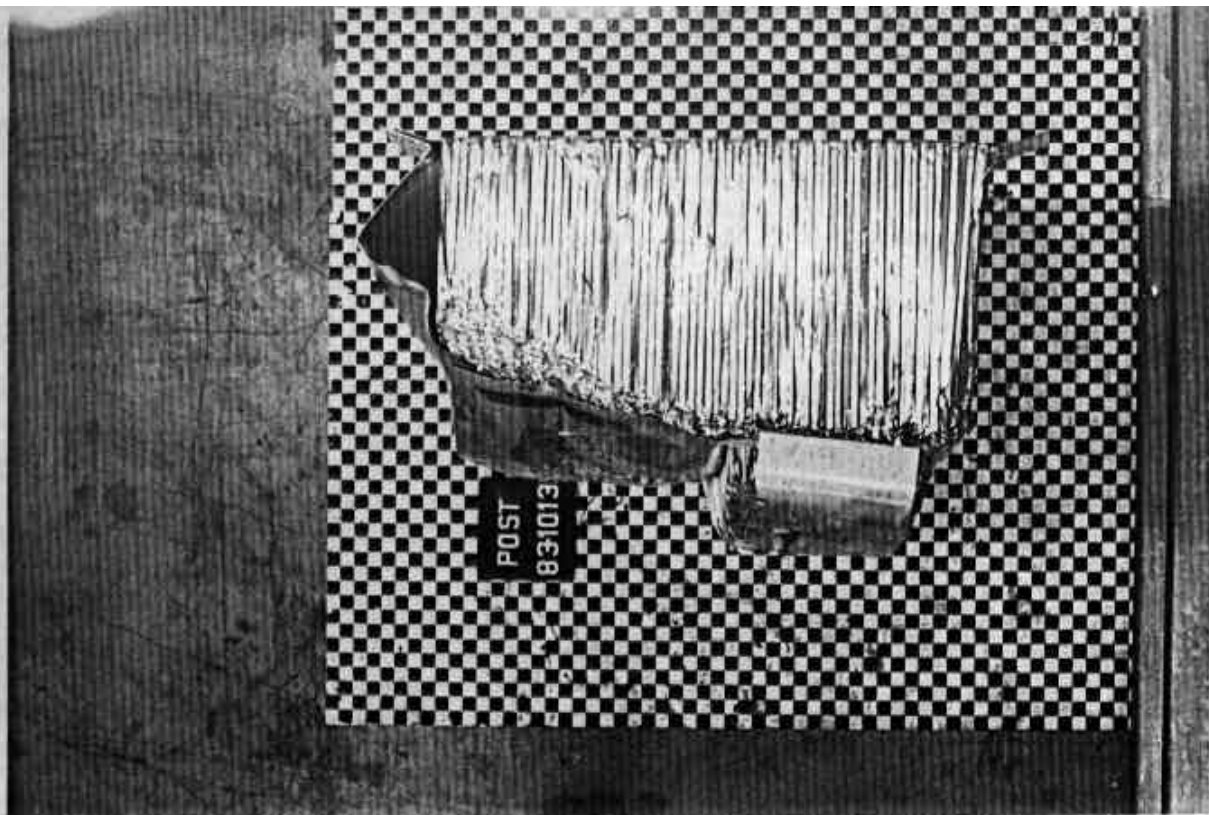


Figure A-29. POST-TEST MDB FACE - VIEW 2

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 HSR1 filter.

TRC 831013 PLOT DATE 31 OCT 85 19:33:52

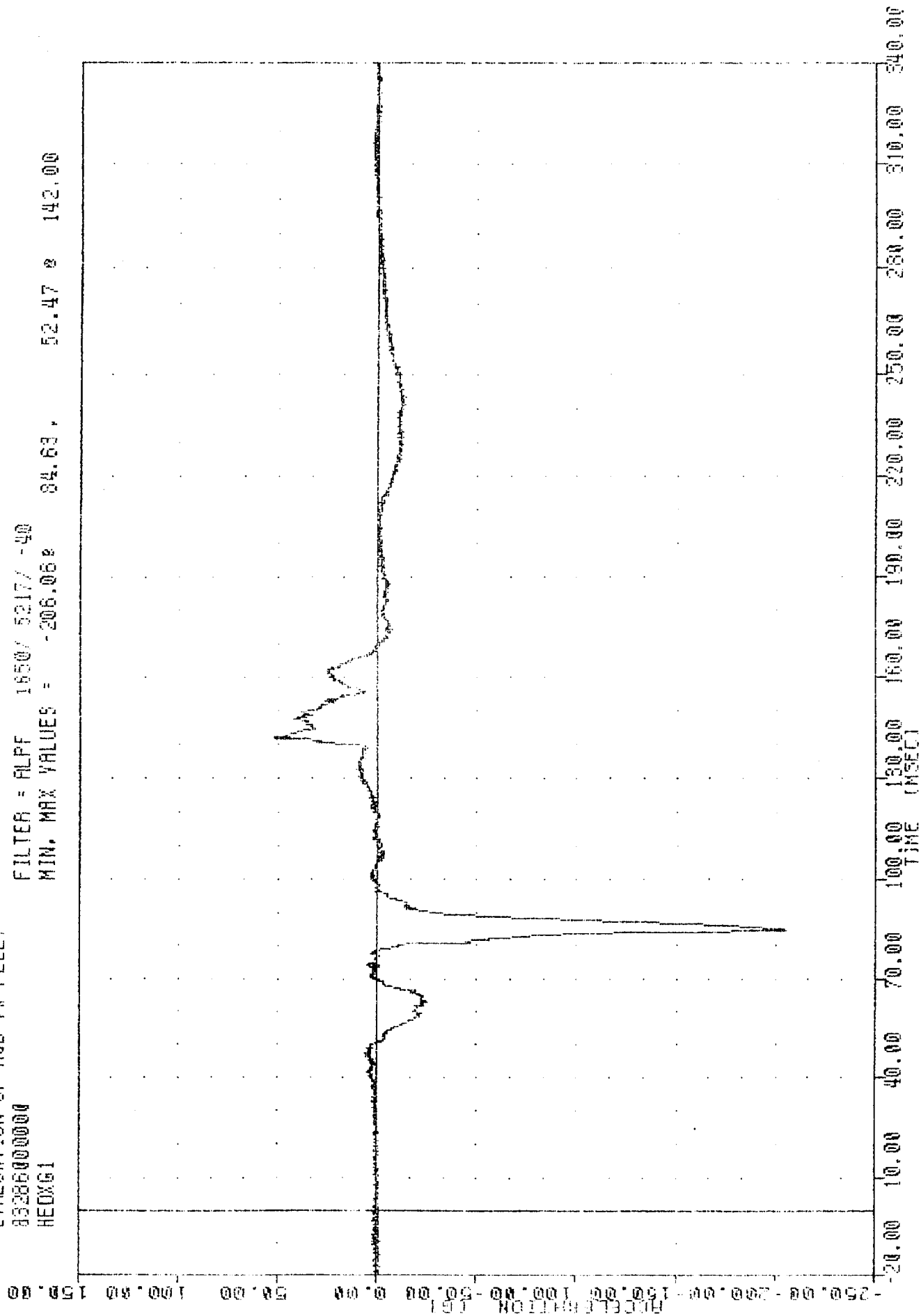
EVALUATION OF MOD VW FLEET

832860000000

HEADG1

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -206.062 84.63 52.47 142.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION X AXIS

TRC 831013

EVALUATION OF MOD VW FLEET

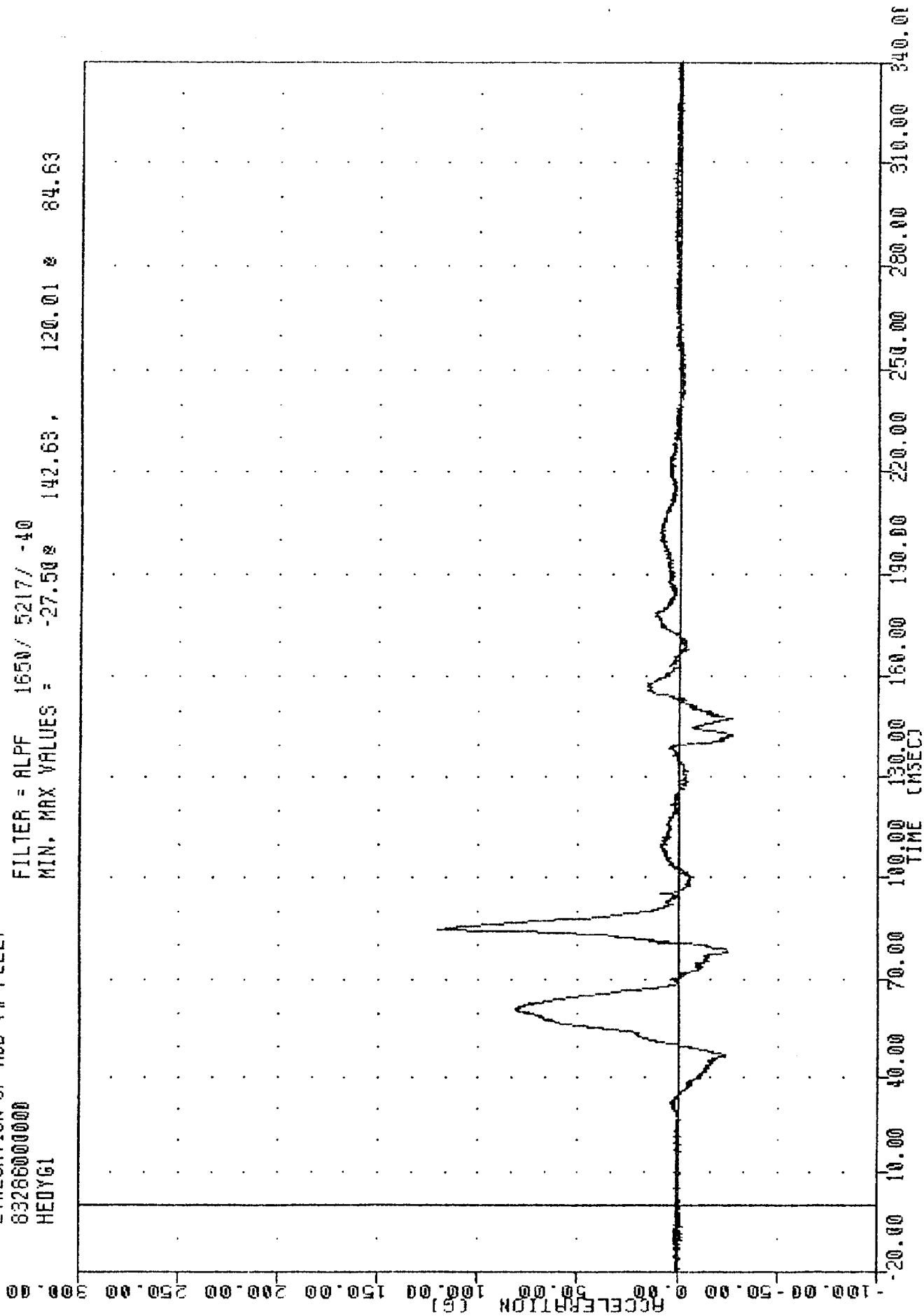
83286000000

HE0Y61

PLOT DATE 21-OCT-83 10:38:11

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -27.50g 142.63, 120.01 g 84.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Y AXIS

TAC 831013

EVALUATION OF MOD VW FLEET

83286000000

HED261

21-OCT-85

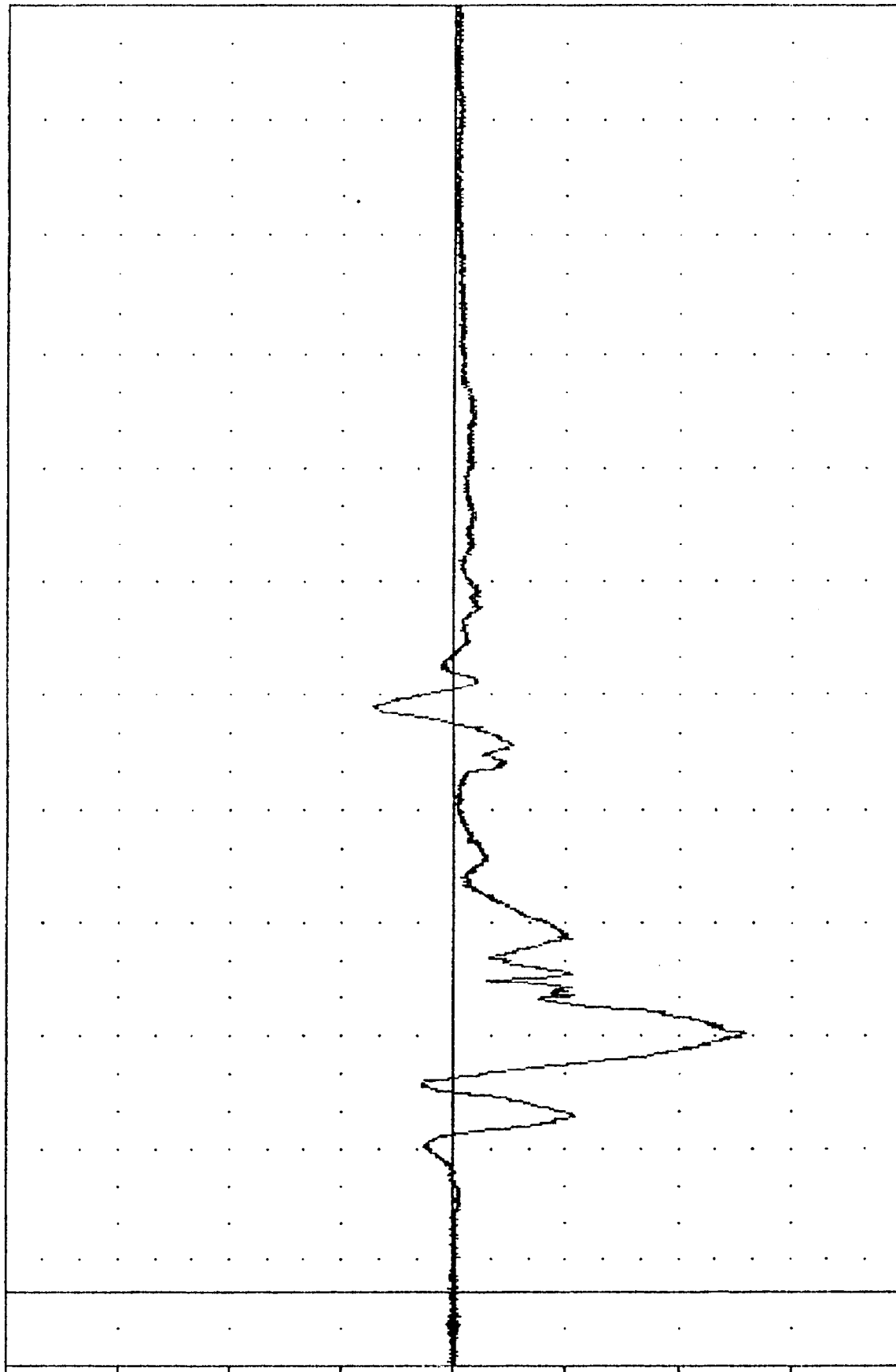
10:59:11

FILTER = ALPF 1650/ 5217/ .40

MIN. MAX VALUES = -129.64g 70.75g

36.17g 156.50

ACCELERATION (G)



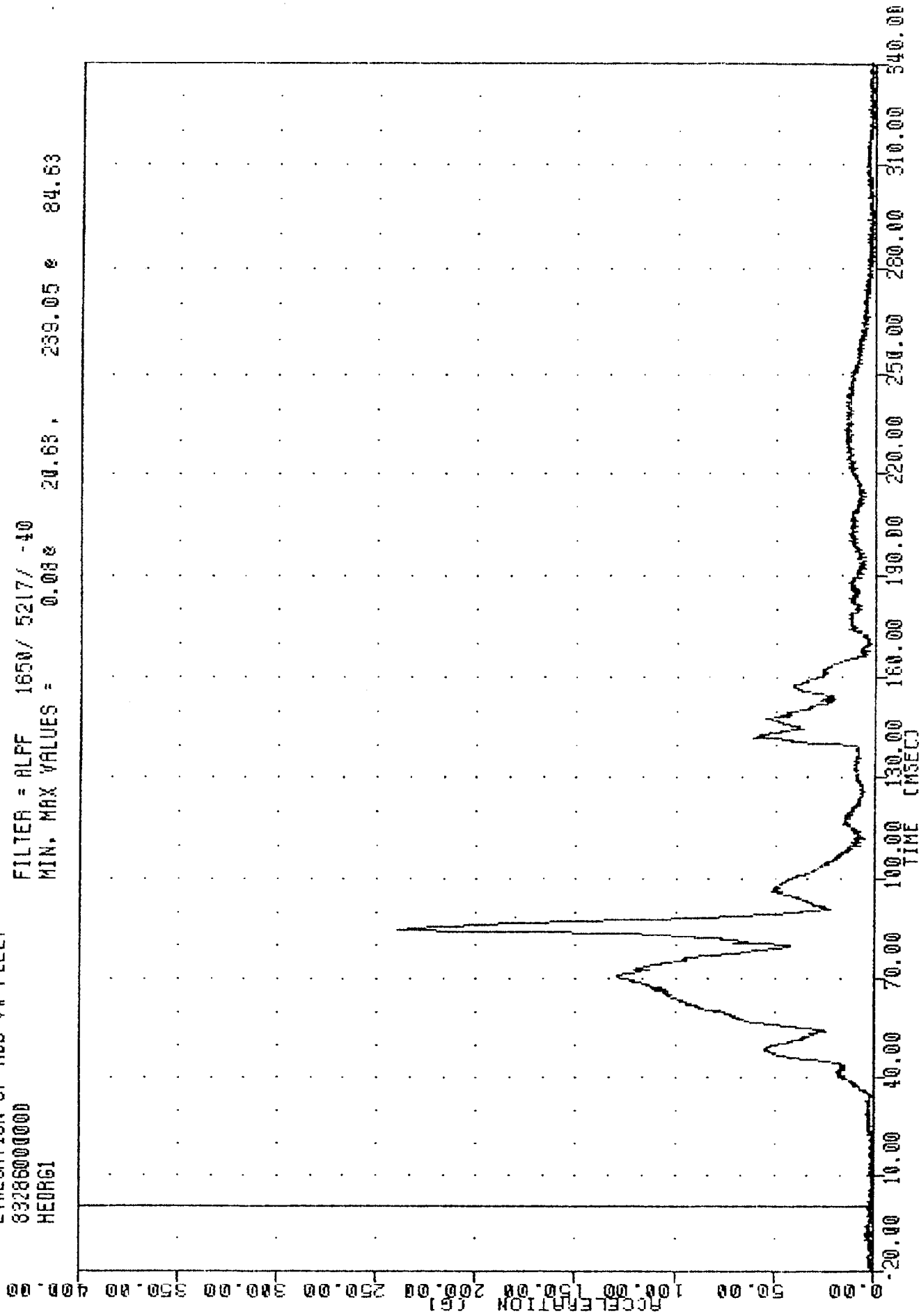
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DRIVER HEAD ACCELERATION Z AXIS

TRC 831013
 EVALUATION OF MOD VW FLEET
 83286000000
 HEADG1

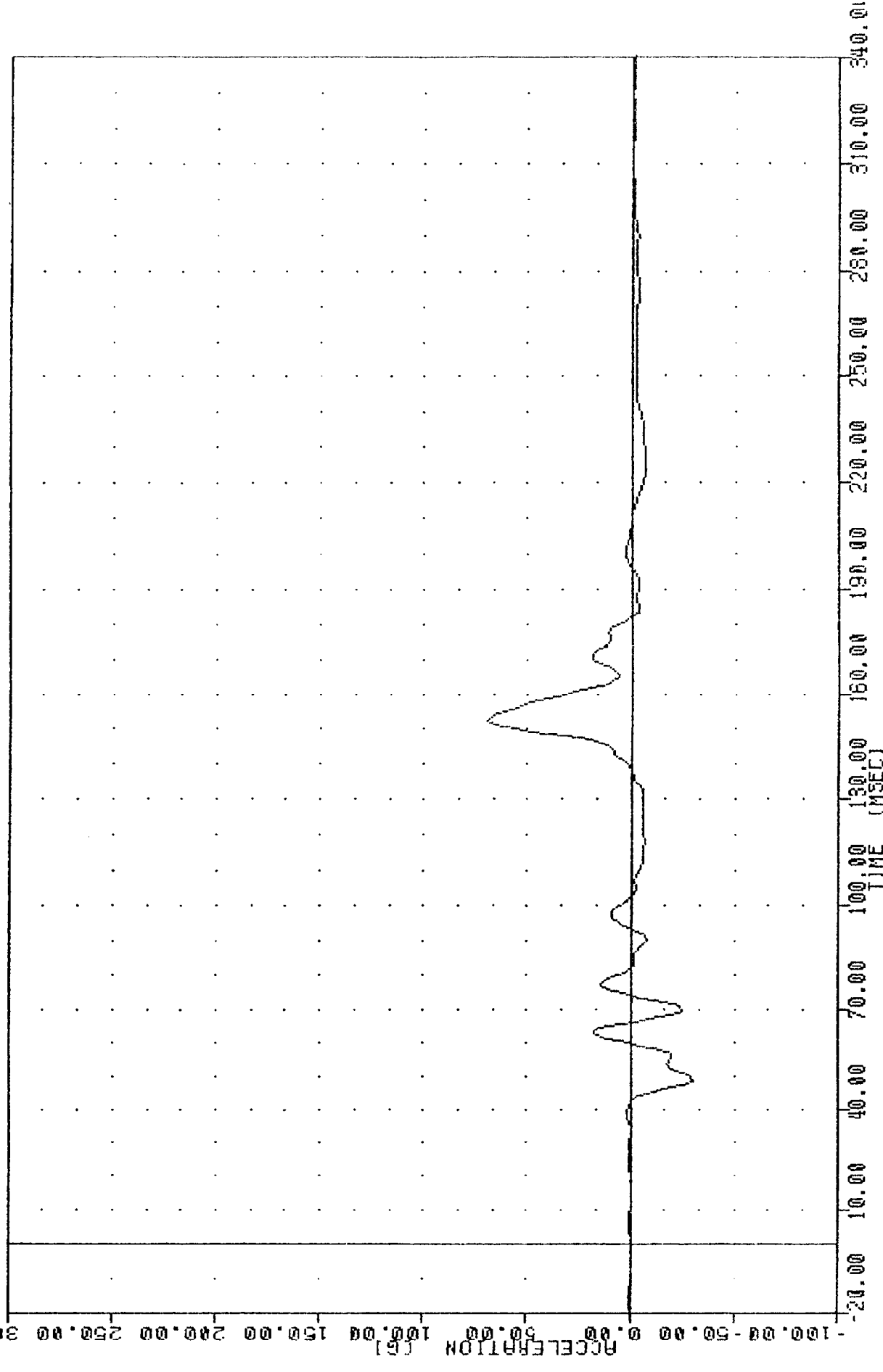
PLOT DATE 21-OCT-83 10:59:11

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = 0.00e 20.63, 239.05 e 84.53



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD RESULTANT

TRC 831015
 EVALUATION OF MOD YW FLEET
 83286000000
 101XG1
 FILTER = HSR1 136/ 189/ -50
 MIN. MAX VALUES = -30.17 48.75, 69.20 e 151.87
 PLOT DATE 21-OCT-83 13:28:41



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

TRC 831013 PLOT DATE 21-OCT-85 13:28:41

EVALUATION OF MDD VN FLEET

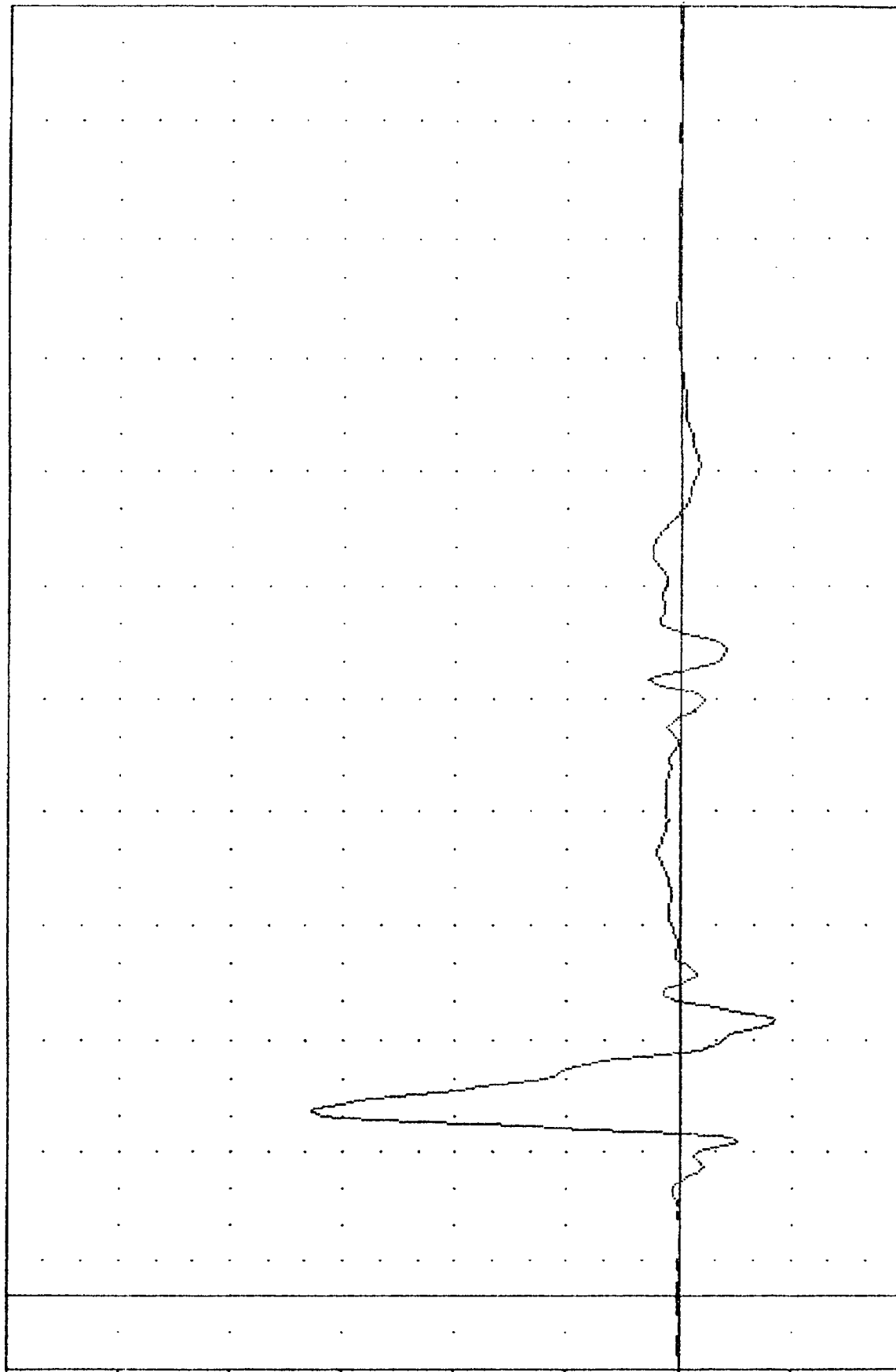
83286000000

T01Y61

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -42.53% 74.37, 164.34 % 50.63

ACCELERATION (G)



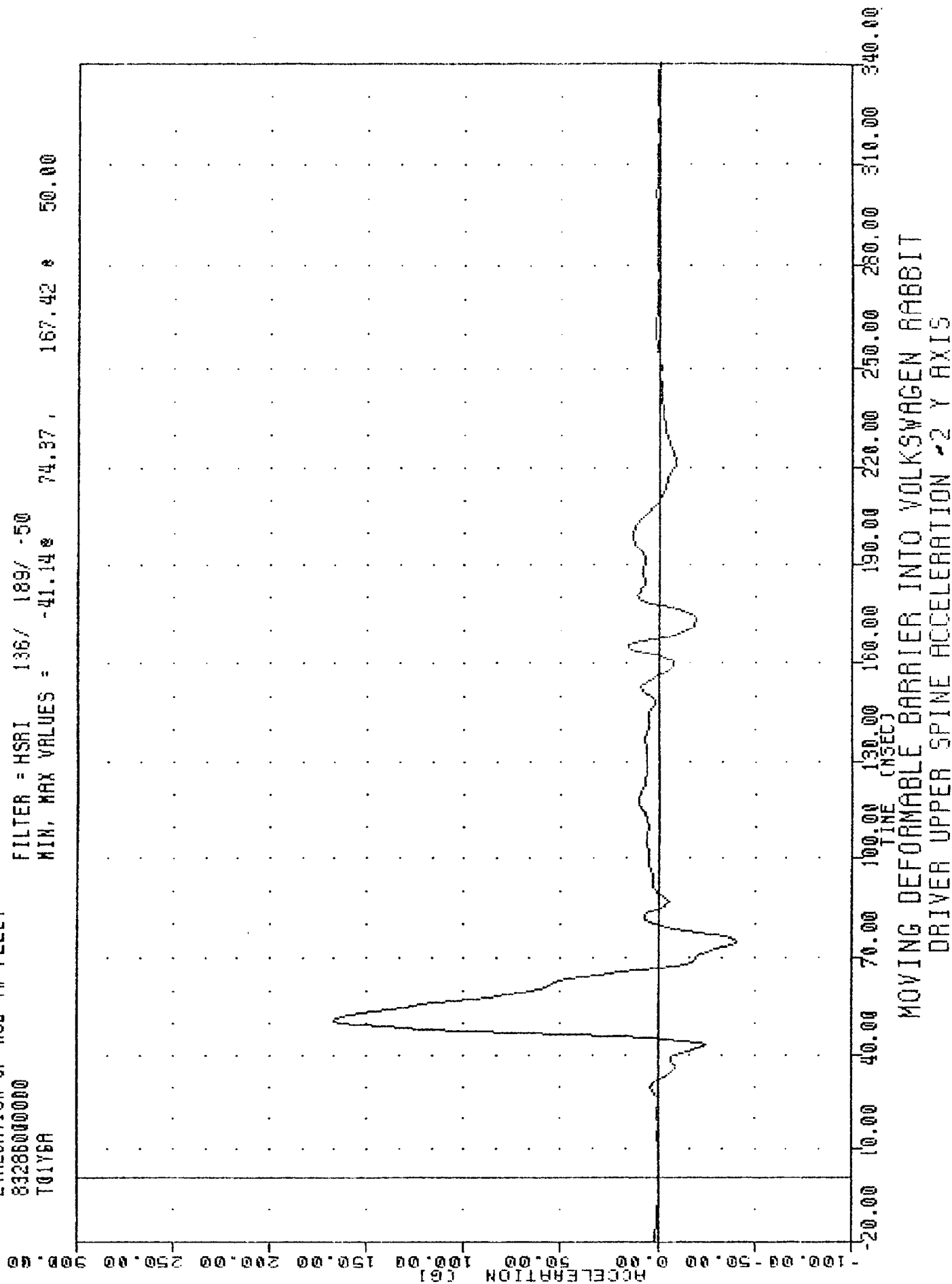
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DRIVER UPPER SPINE ACCELERATION Y AXIS

TAC 831013
 EVALUATION OF MOD YW FLEET
 83286000000
 T01Y6A

PLOT DATE 21-OCT-83 13:28:41

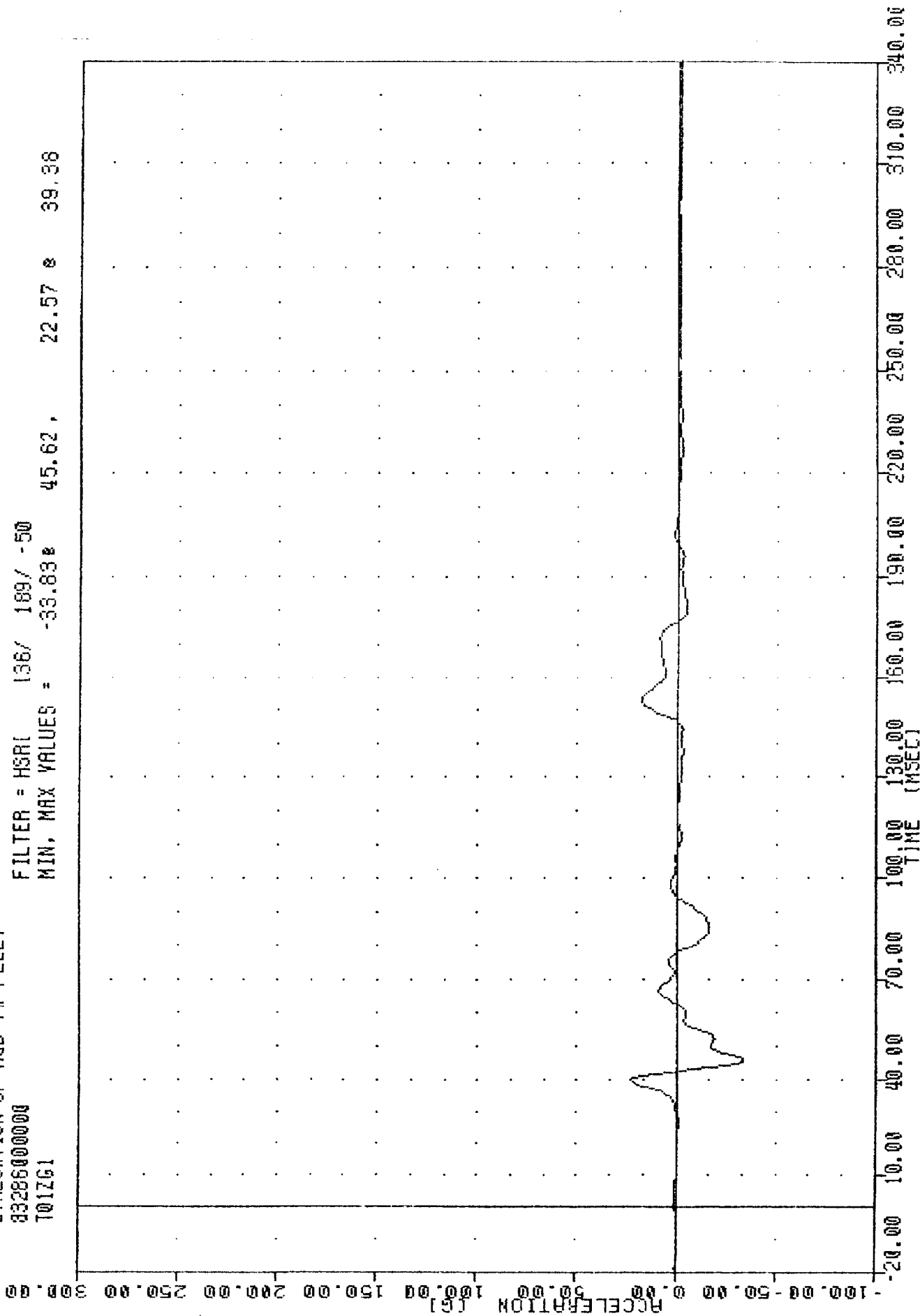
FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -41.14 74.37, 167.42 50.00



TRC 831013
EVALUATION OF MOD VV FLEET
33286000000
T01ZG1

21-OCT-83 13:28:41

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -33.83 45.62 22.57 39.38



TRC , 831013 PLOT DATE 21-OCT-83 13:28:41

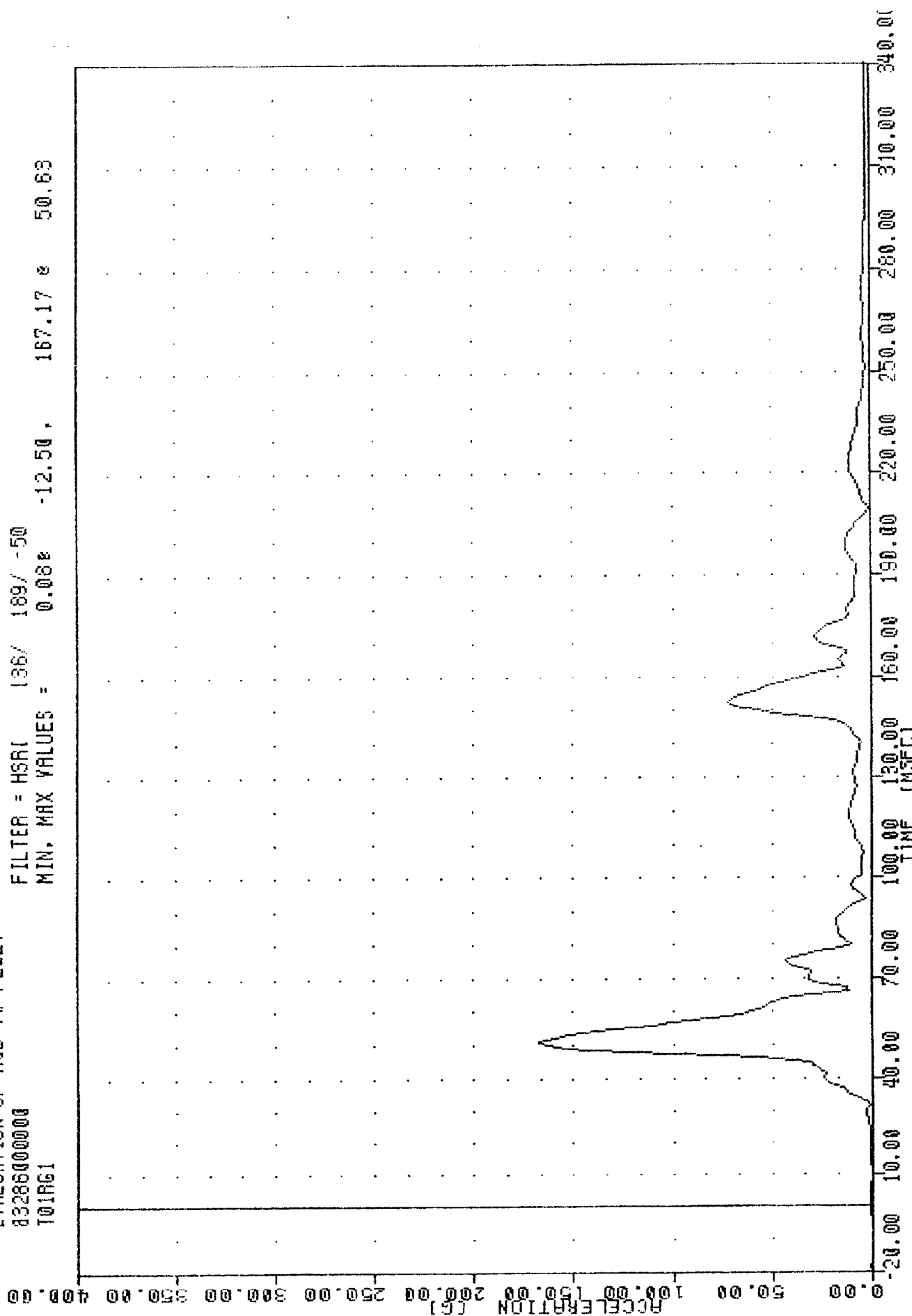
EVALUATION OF MOD YW FLEET

83286000000

T01RG1

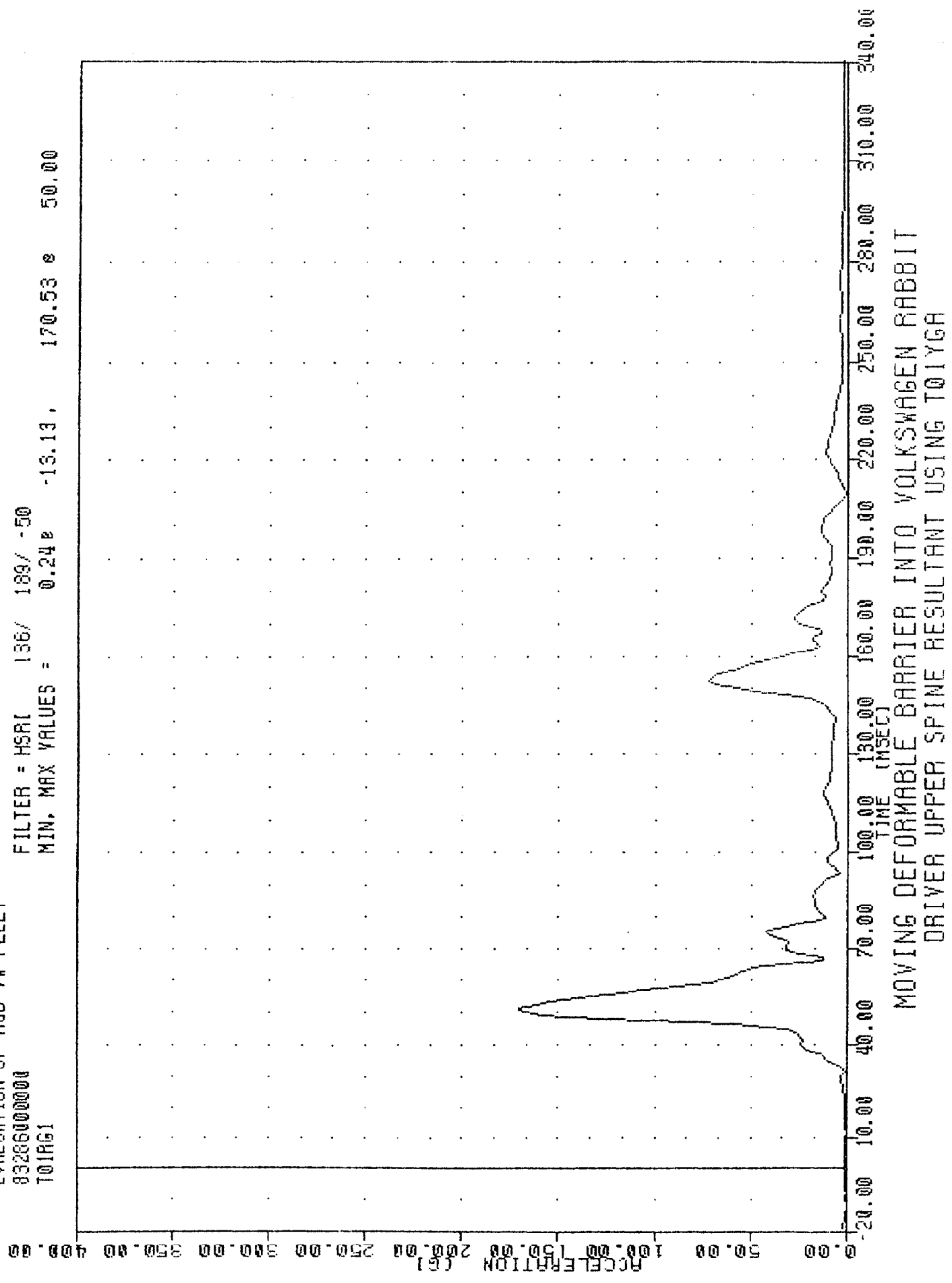
FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.080 -12.50 , 167.17 & 50.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESULTANT

TRC 831013
 EVALUATION OF MOD YW FLEET
 83286000000
 T01RG1
 FILTER = HSR1 136/ 189/ -50
 MIN, MAX VALUES = 0.24e -13.13, 170.53 e 50.00
 PLOT DATE 21-OCT-83 13:30:21



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE RESULTANT USING T01YGA

TAC

, 831013

PLUT DATE

21-OCT-83

13:31:57

EVALUATION OF MOD VN FLEET

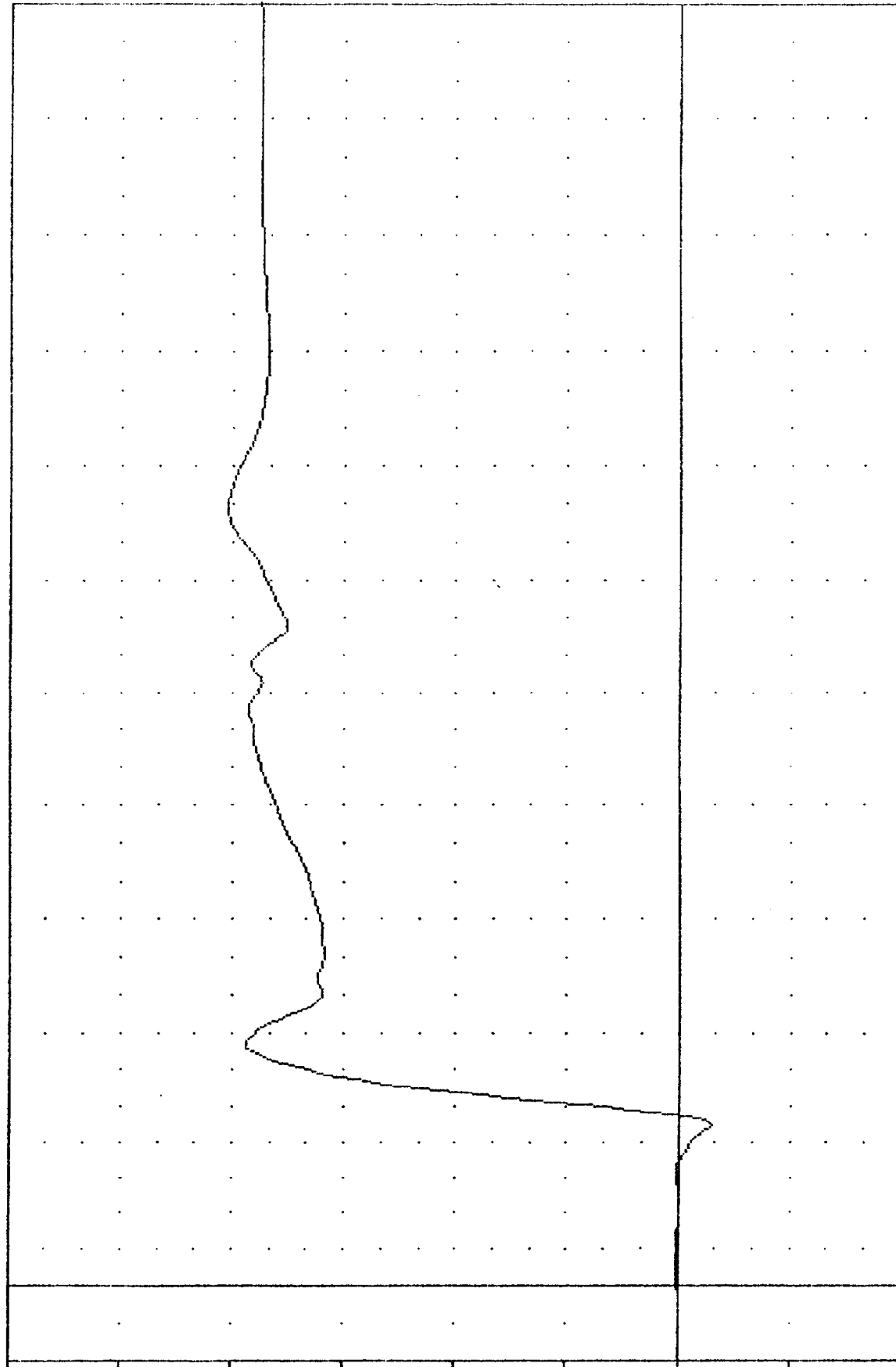
83285000000

T01YV1

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -3.03e 44.38, 40.42 s 208.75

VELOCITY (MPH)

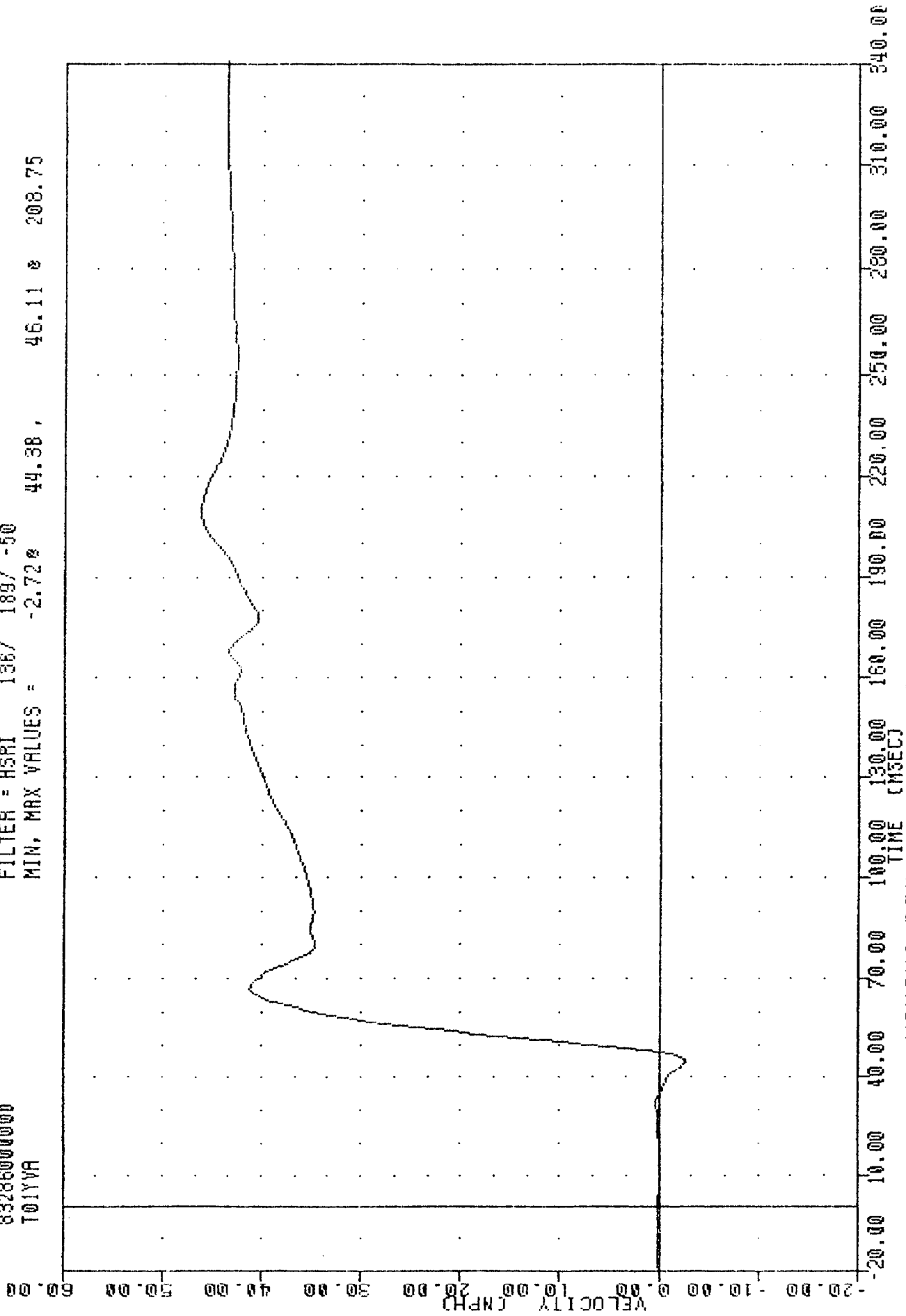


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGI

TRC 831013
EVALUATION OF MDD VV FLEET
83285000000
T01YVA

PLOT DATE 21-OCT-83 13:34:57

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -2.728 44.38, 46.11 & 208.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01Y6A

TIC

831013

EVALUATION OF MOD VW FLEET

PLOT DATE

21-OCT-83

13:28:41

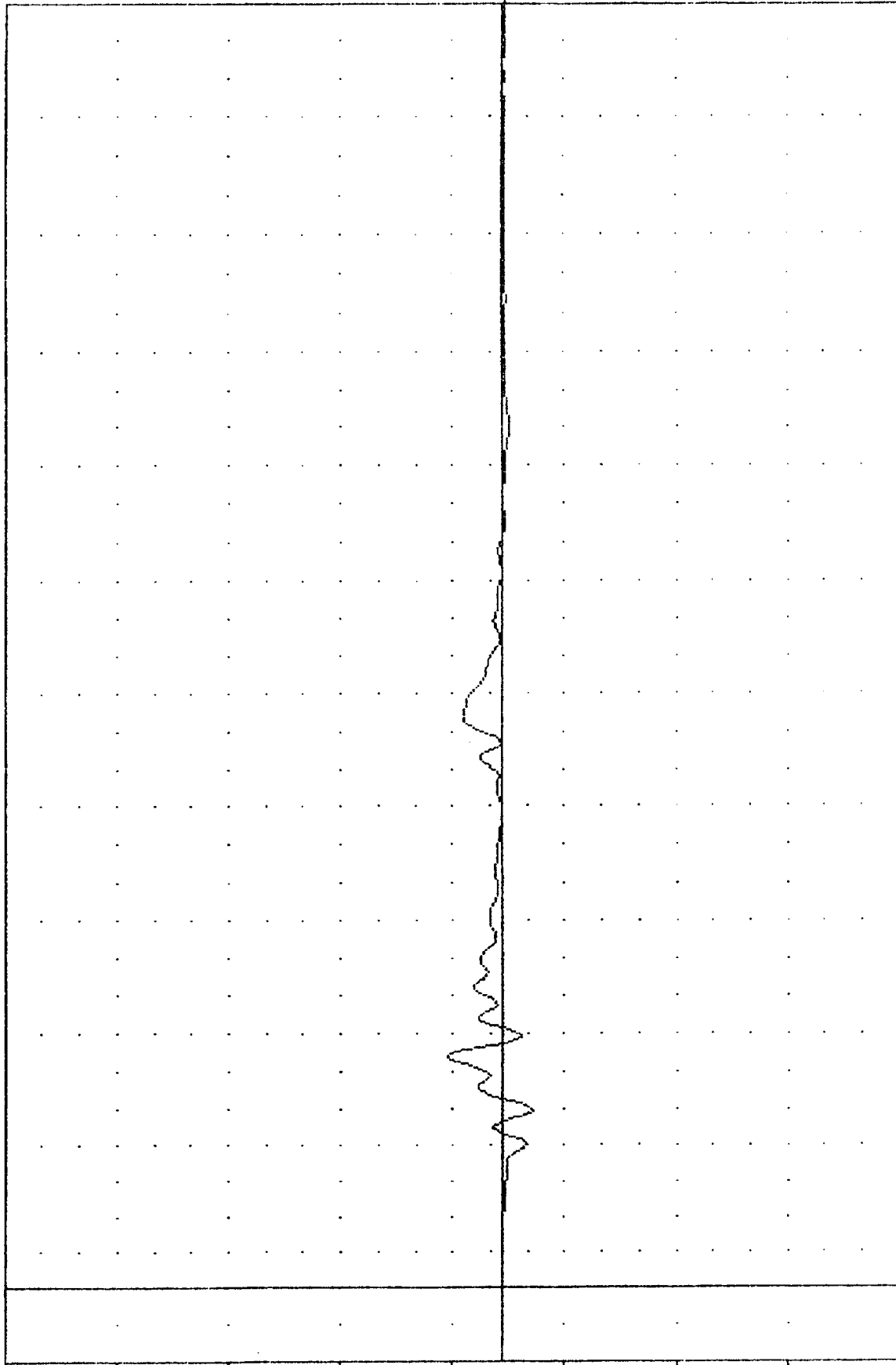
83286000000

T12XG1

FILTER = H3RI 136/ 189/ -50

MIN, MAX VALUES = -23.63e 48.75, 43.81 e 63.13

ACCELERATION (G)



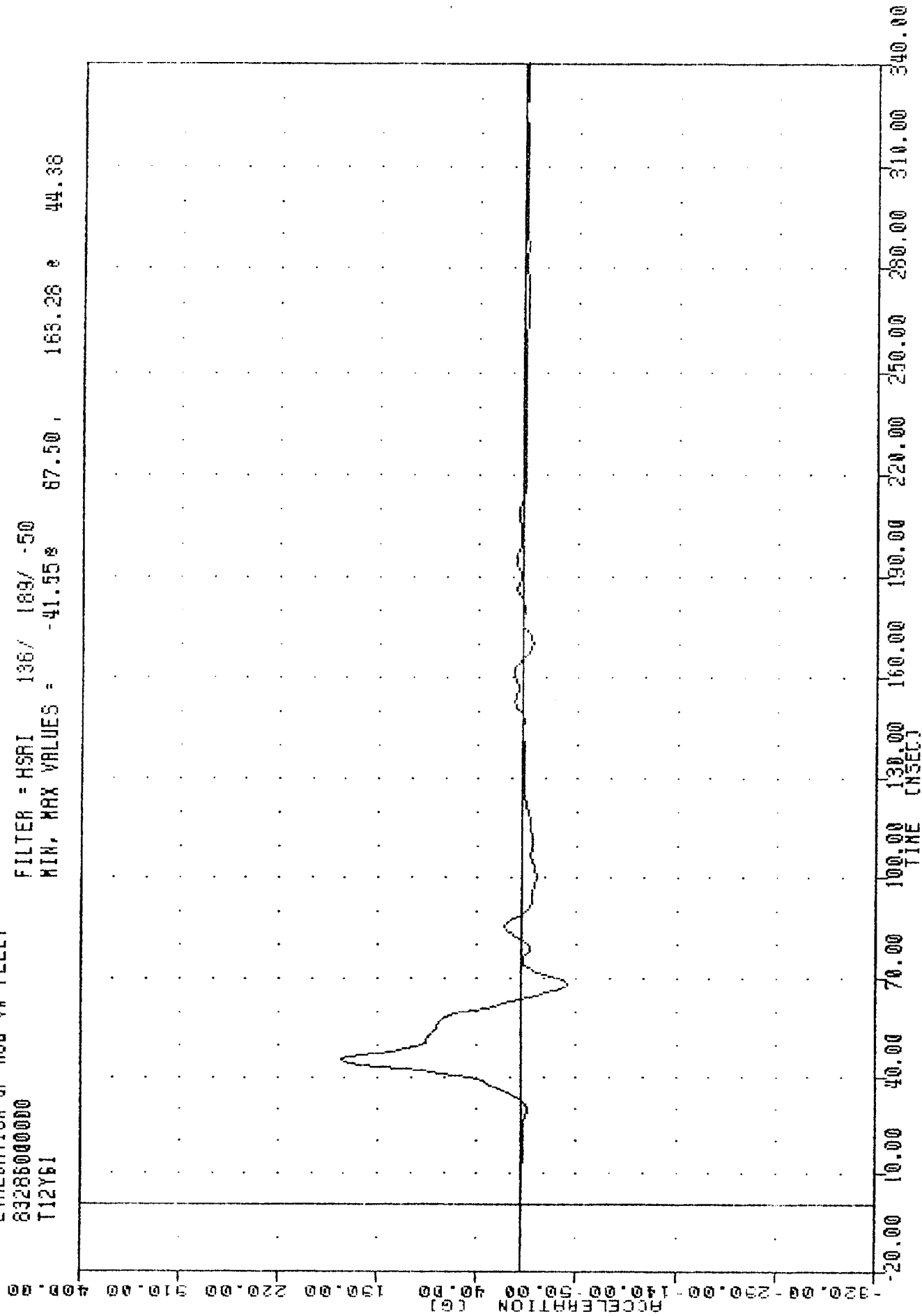
TIME (MSEC)

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

THC
EVALUATION OF MOD VW FLEET
83286000000
T12Y61

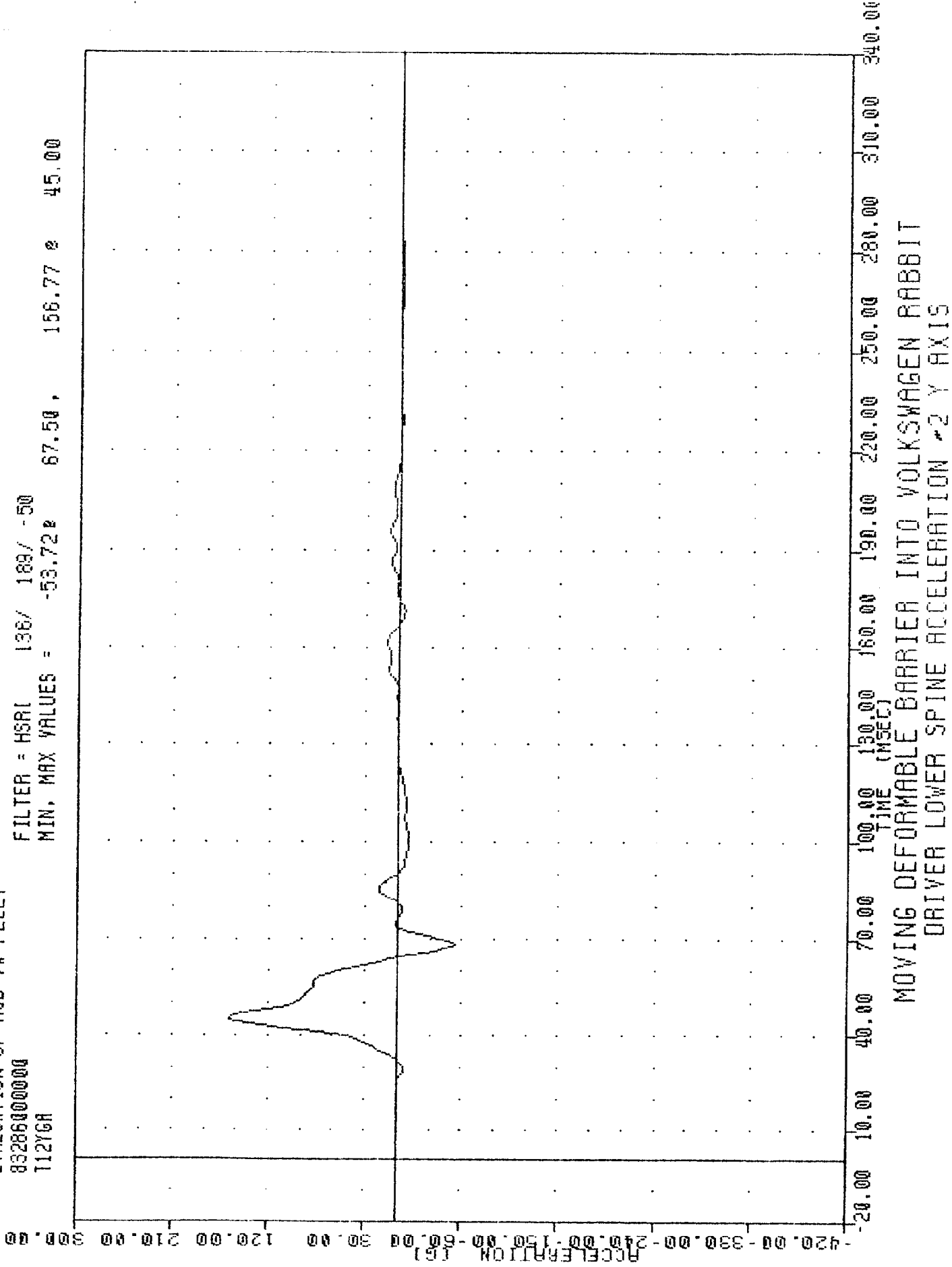
PLUT DATE 21-OCT-83 15:28:41

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -41.55% 87.50, 163.28 e 44.38



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

INC 031013
 EVALUATION OF MOD YW FLEET
 83286000000
 T12YGR
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -53.72 67.50, 156.77 2 45.00
 PLOT DATE 21 OCT 83 13:28:41



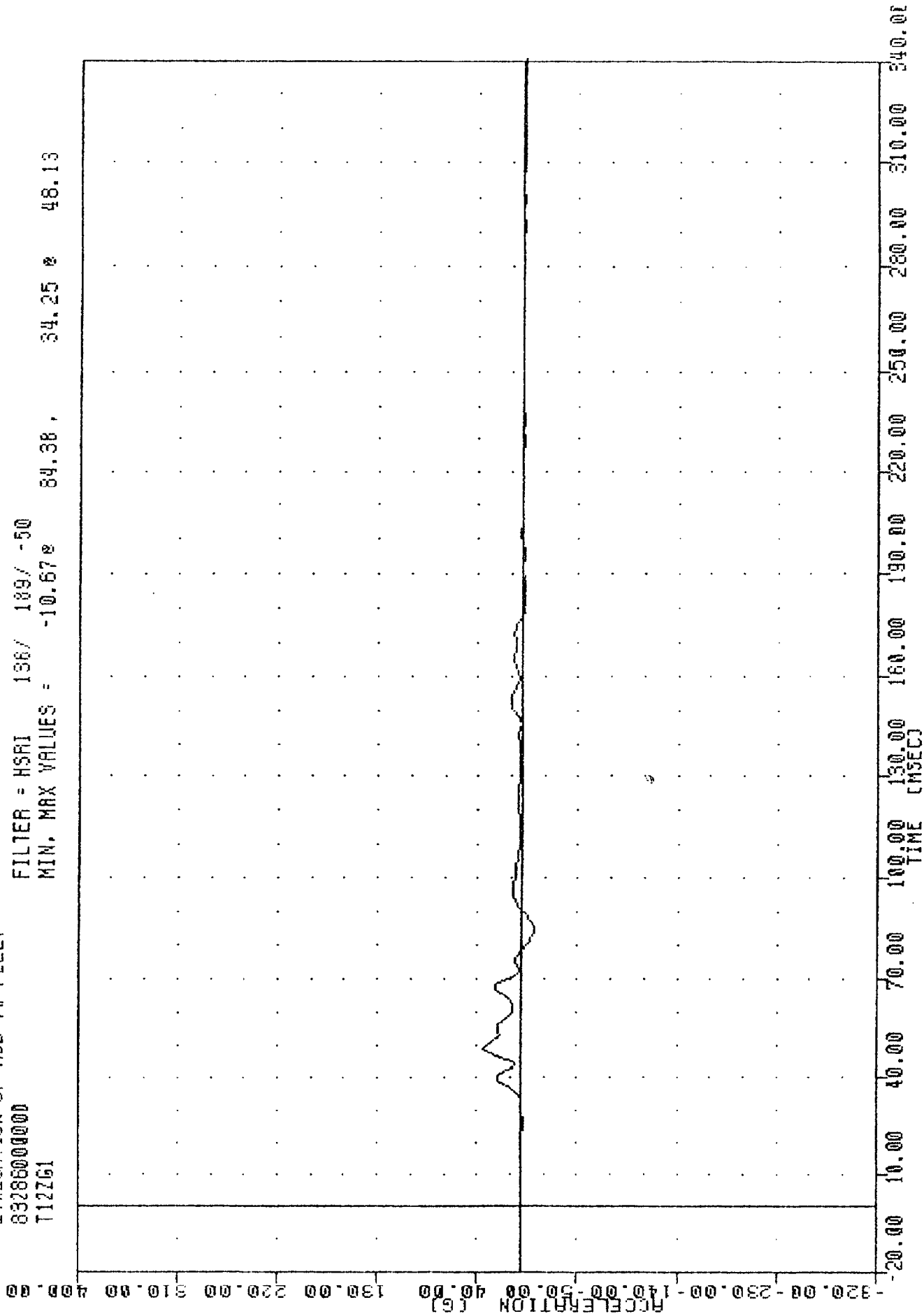
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE ACCELERATION #2 Y AXIS

TRC 831015
EVALUATION OF MDD VW FLEET
83288000000
T12761

PLOT DATE 21 OCT 85 13:28:41

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -10.67g 84.38g 34.25g 48.13



TRC

831013

PLOT DATE

21-OCT-83

13:28:41

EVALUATION OF MDD VW FLEET

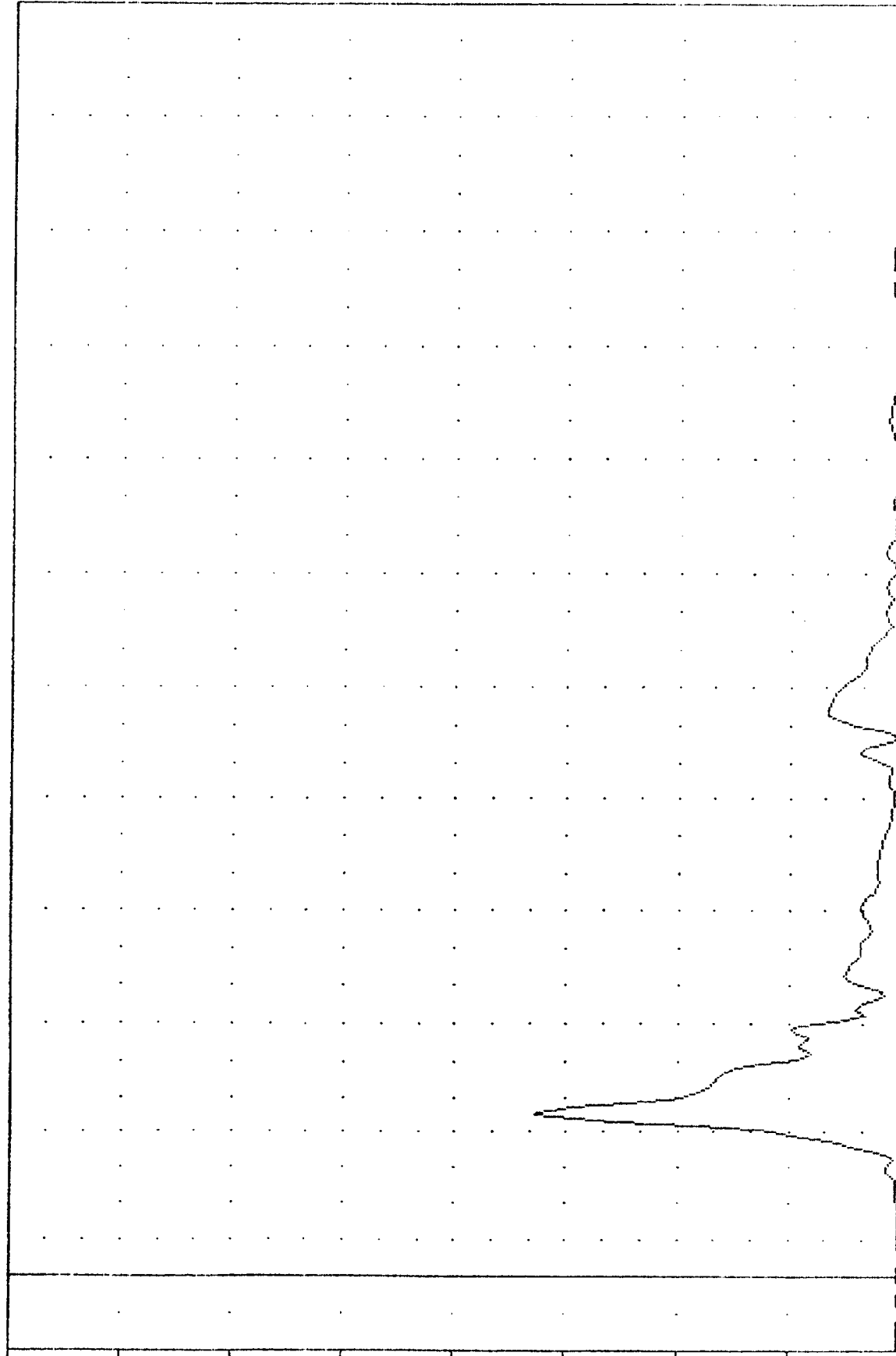
83286000000

T12RC1

FILTER = HSRI 136/ 189/ -50

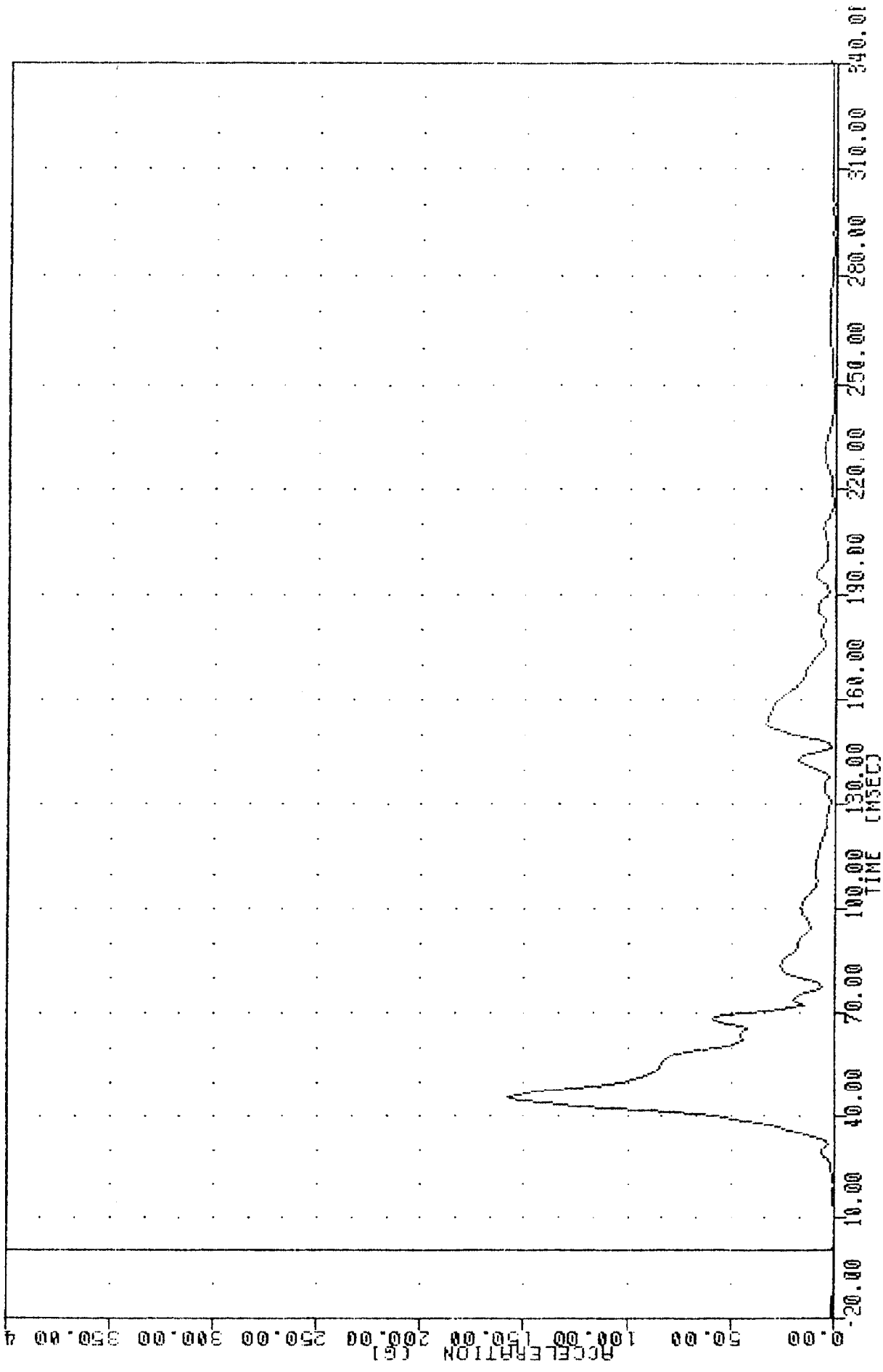
MIN. MAX VALUES = 0.24s -10.63. 163.75 s 44.38

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT

TRC
 EVALUATION OF MOD VW FLEET
 83286000000
 T12RG1
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = 0.07e 5.00, 157.44 e 45.00
 PLOT DATE 21 OCT 85 13:30:21



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

TAL 831013 PLOT DATE 21-OCT-83 13:34:57

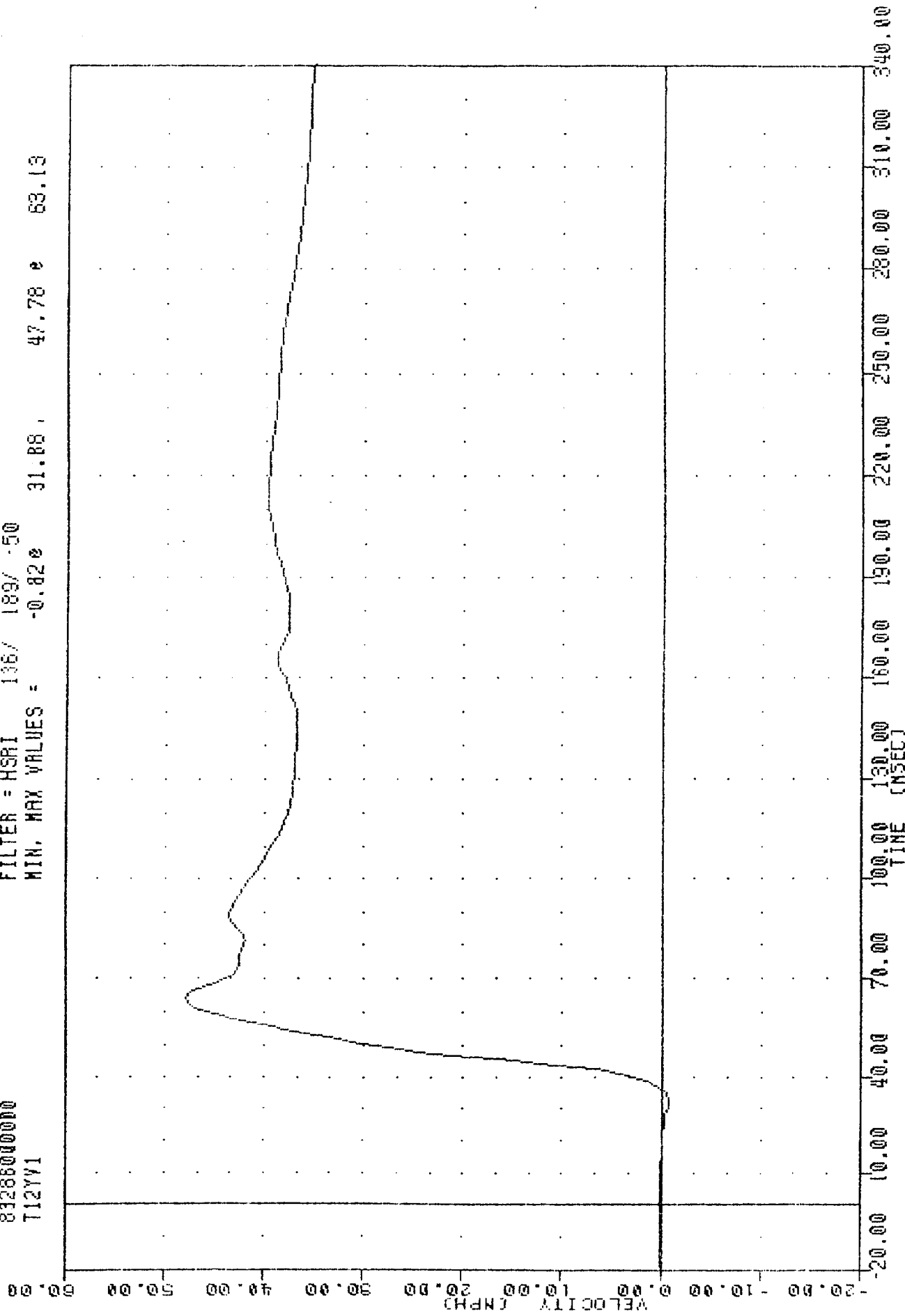
EVALUATION OF MOD VM FLEET

83288000000

T12YV1

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.82 e 31.88 , 47.78 e 63.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA W USING T12Y61

TRC 831013 PLOT DATE 21-01-83 13:34:57

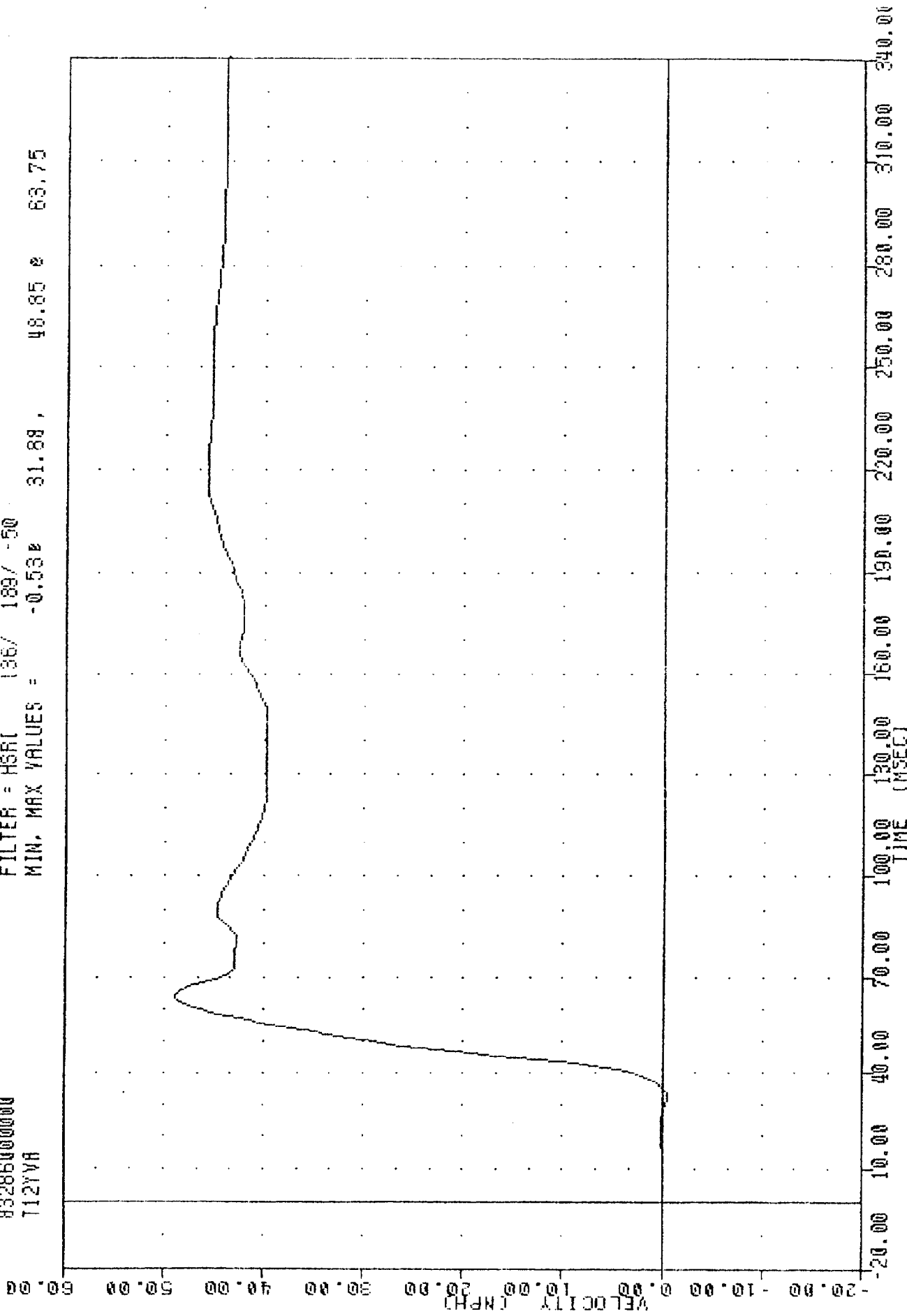
EVALUATION OF MOD VV FLEET

83286000000

T12YV8

FILTER = HSR 136/ 189/ -50

MIN. MAX VALUES = -0.53 31.88 48.85 63.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGA

TRC 83J013 PLOT DATE 21-OCT-85 13:28:41

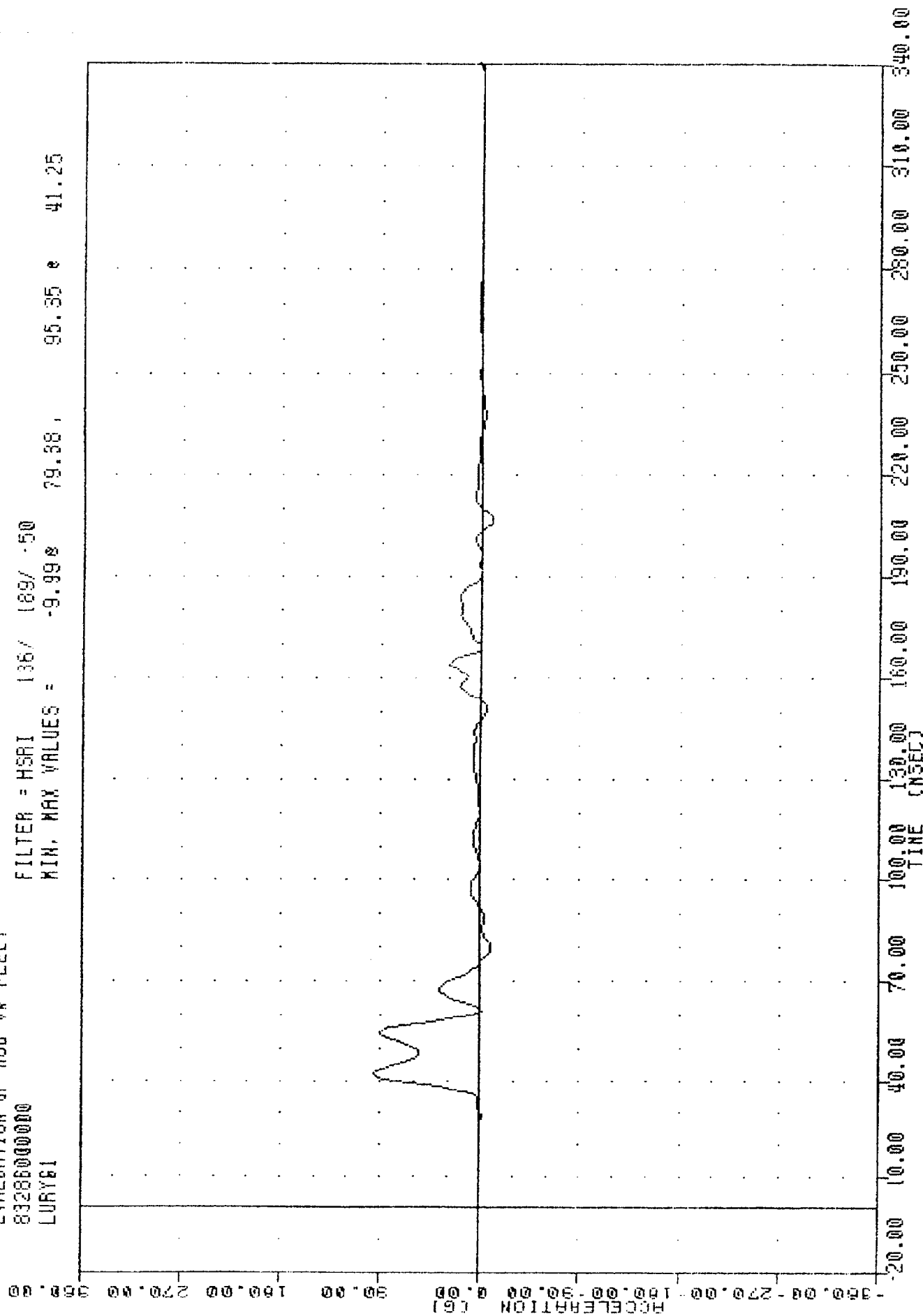
EVALUATION OF MOD YW FLEET

83286000000

LURY81

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -9.998 79.38, 95.35 e 41.25



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

TRC

831013

PLUT DATE

21 OCT 83

13:34:57

EVALUATION OF MOD VW FLEET

83286000000

LURYV1

FILTER = HSRI 136/ 189/ -50

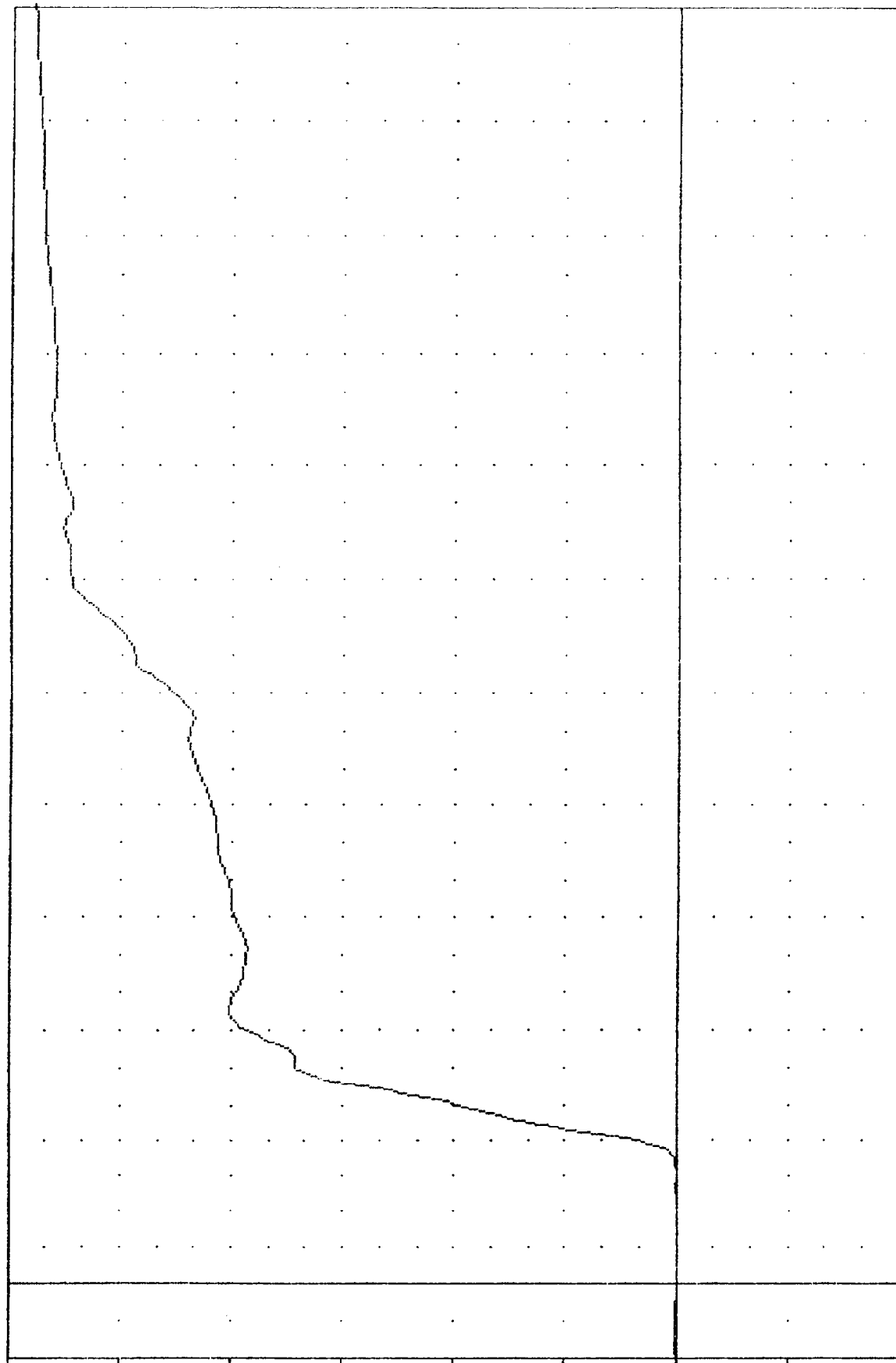
MIN, MAX VALUES = -0.03%

29.38,

57.99 %

340.00

VELOCITY (MPH)



-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 LURYG1

TRC 831013 PLOT DATE 21 OCT 83 13:28:41

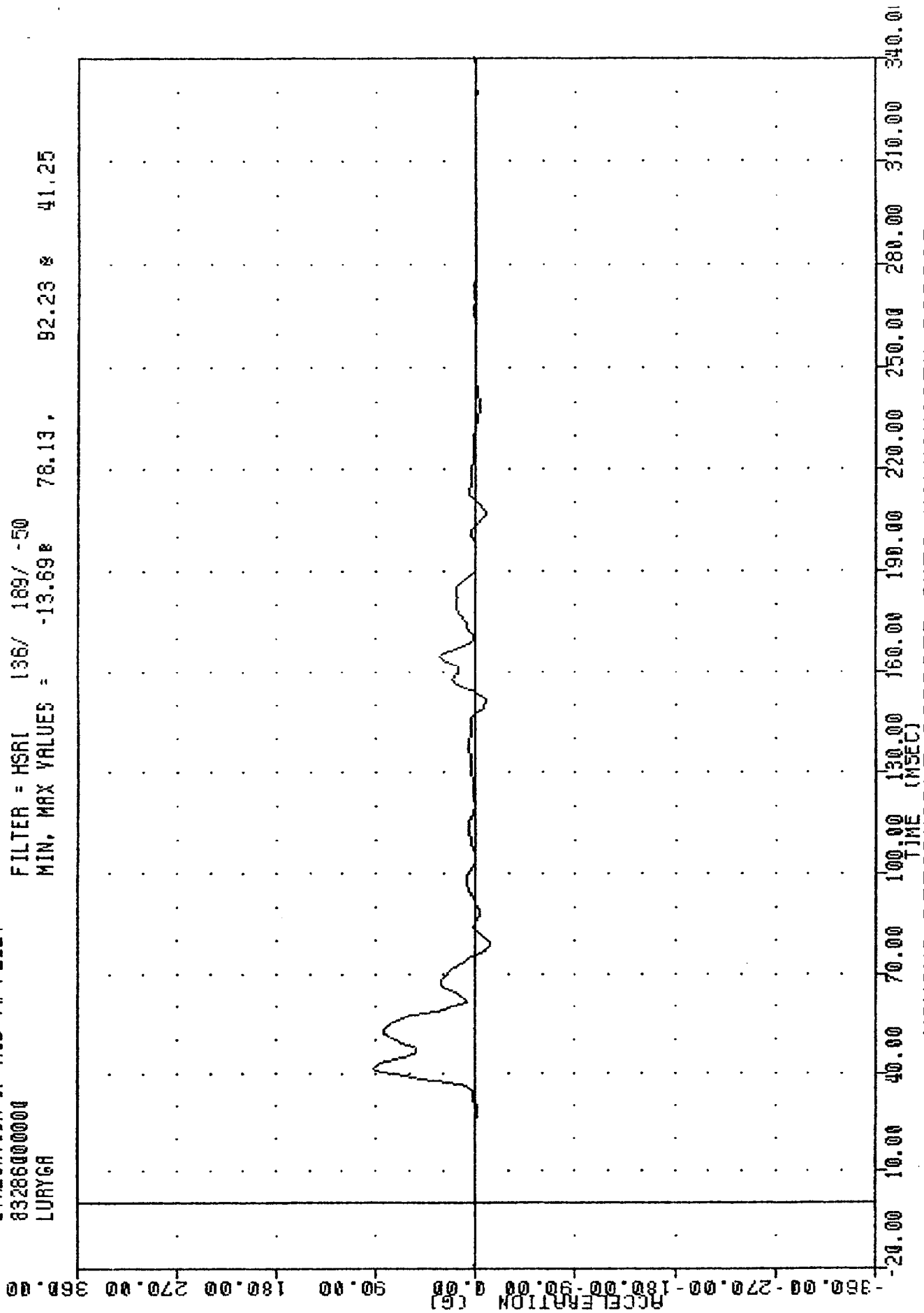
EVALUATION OF MOD YW FLEET

83286000000

LURYGA

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -13.69 78.13, 92.23 41.25



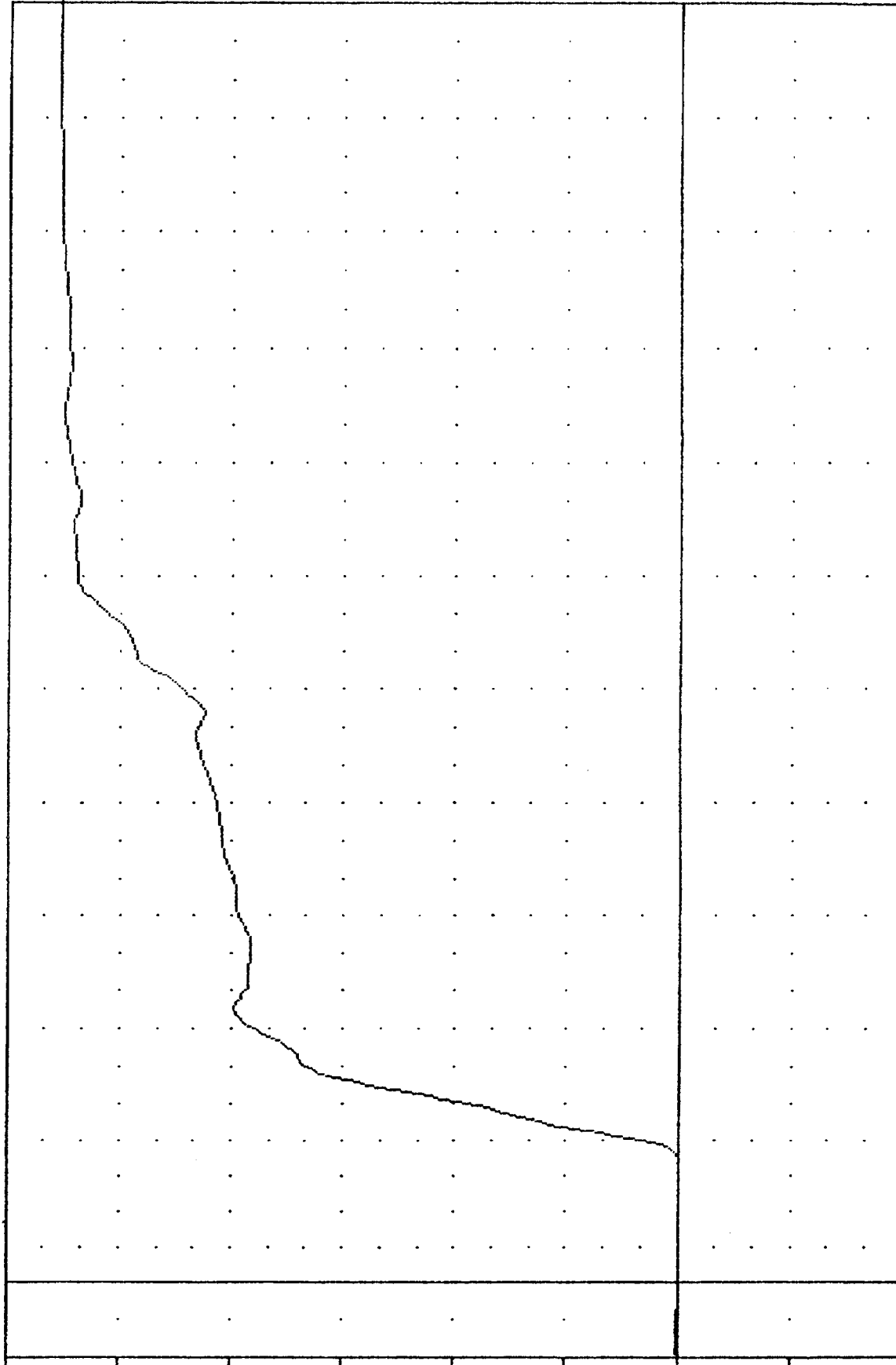
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT UPPER RIB ACCELERATION -2 Y AXIS

TAC 831013
 EVALUATION OF MOD VN FLEET
 83286000000
 LURYVA

PLOT DATE 21-OCT-83 13:34:57

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.178 30.00, 55.49 e 340.00

VELOCITY (MPH)



-20.00 -10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00
 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 LURYGA

TRC 831013 PLOT DATE 21-OCT-83 13:28:41

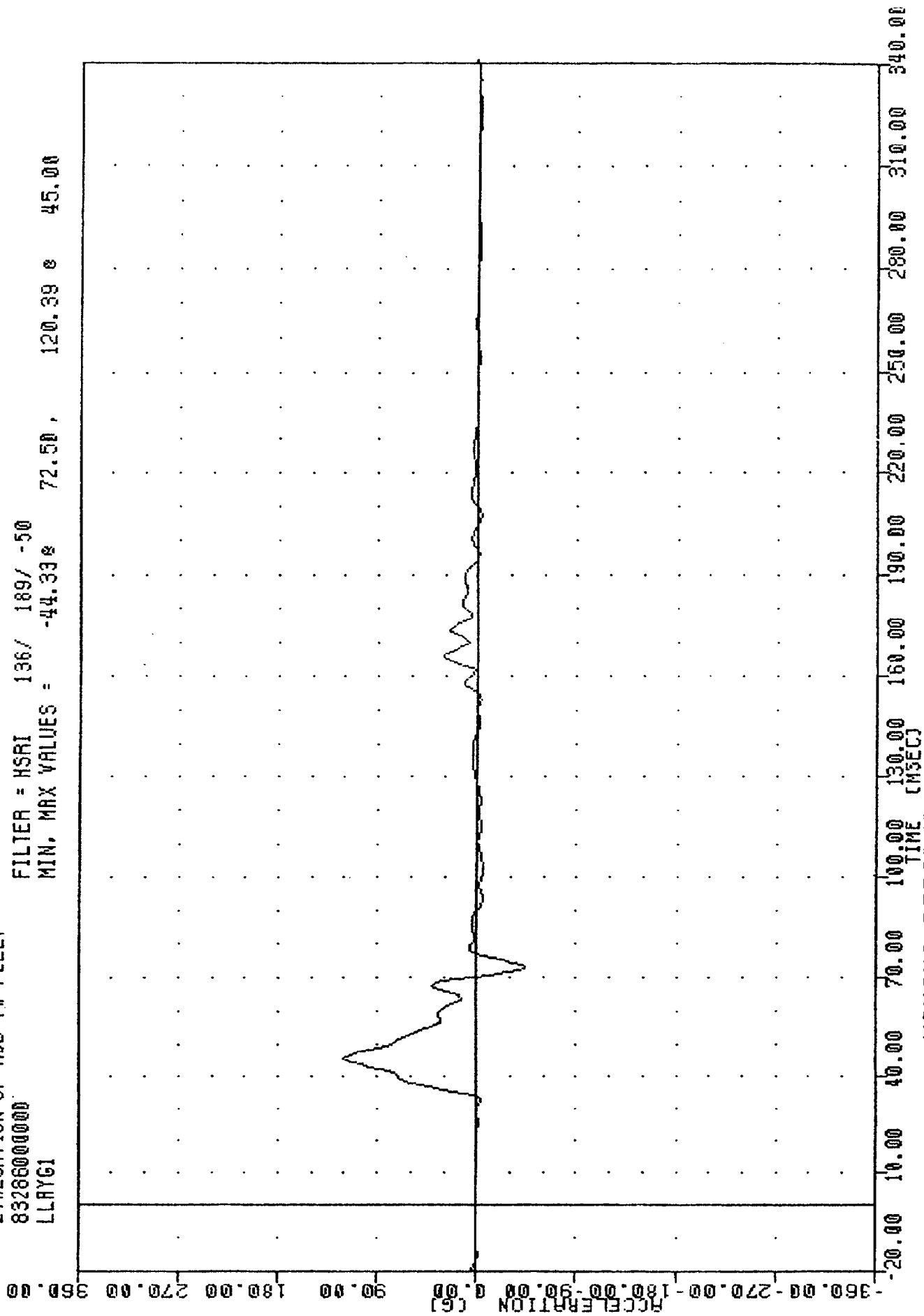
EVALUATION OF MDD YW FLEET

83286000000

LLRYG1

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -44.33g 72.50, 120.39 g 45.00



TRC

031013

EVALUATION OF MOD VV FLEET

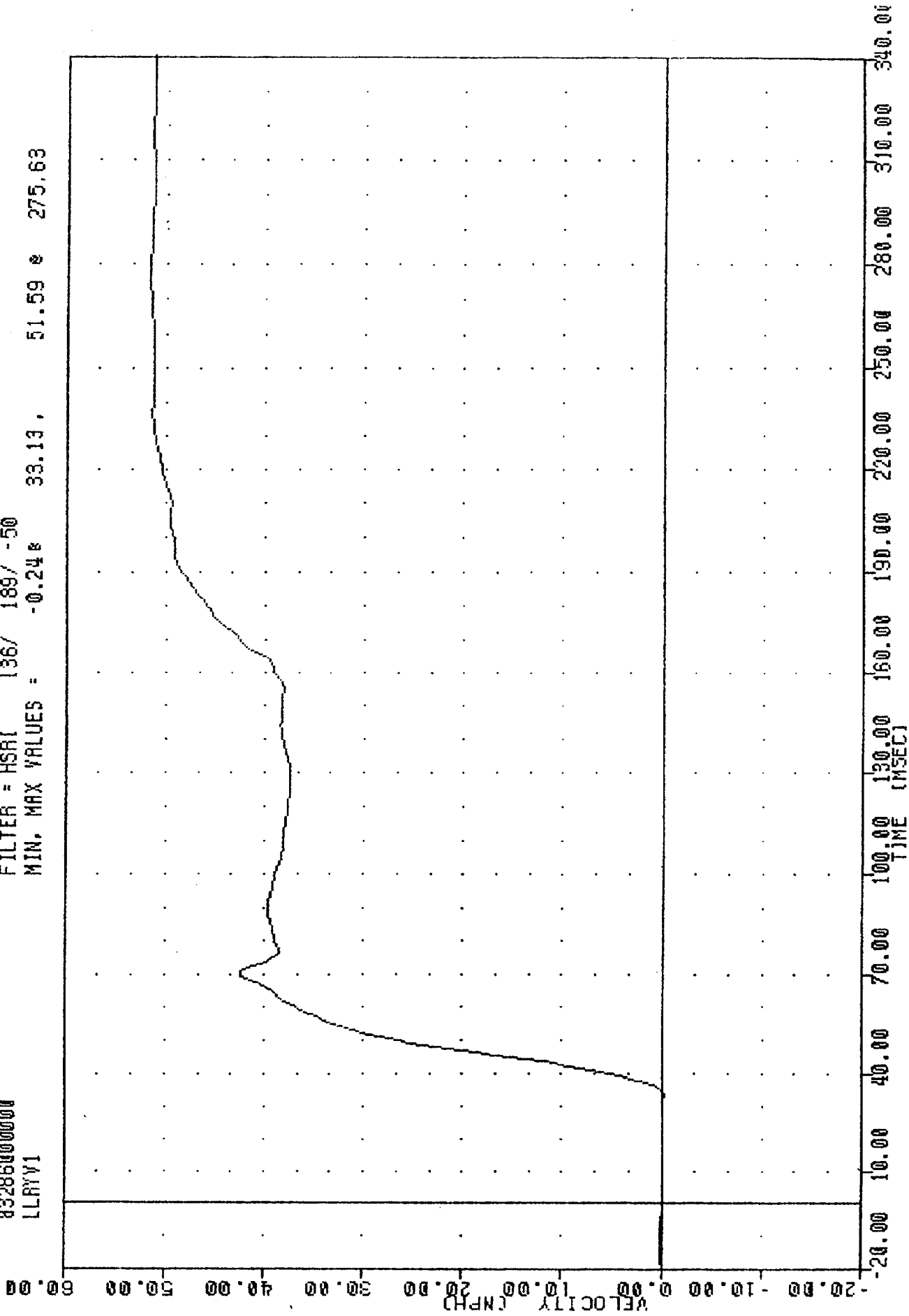
PLOT DATE 21 OCT 85 13:34:57

83286000000

FILTER = HSRI 136/ 189/ -50

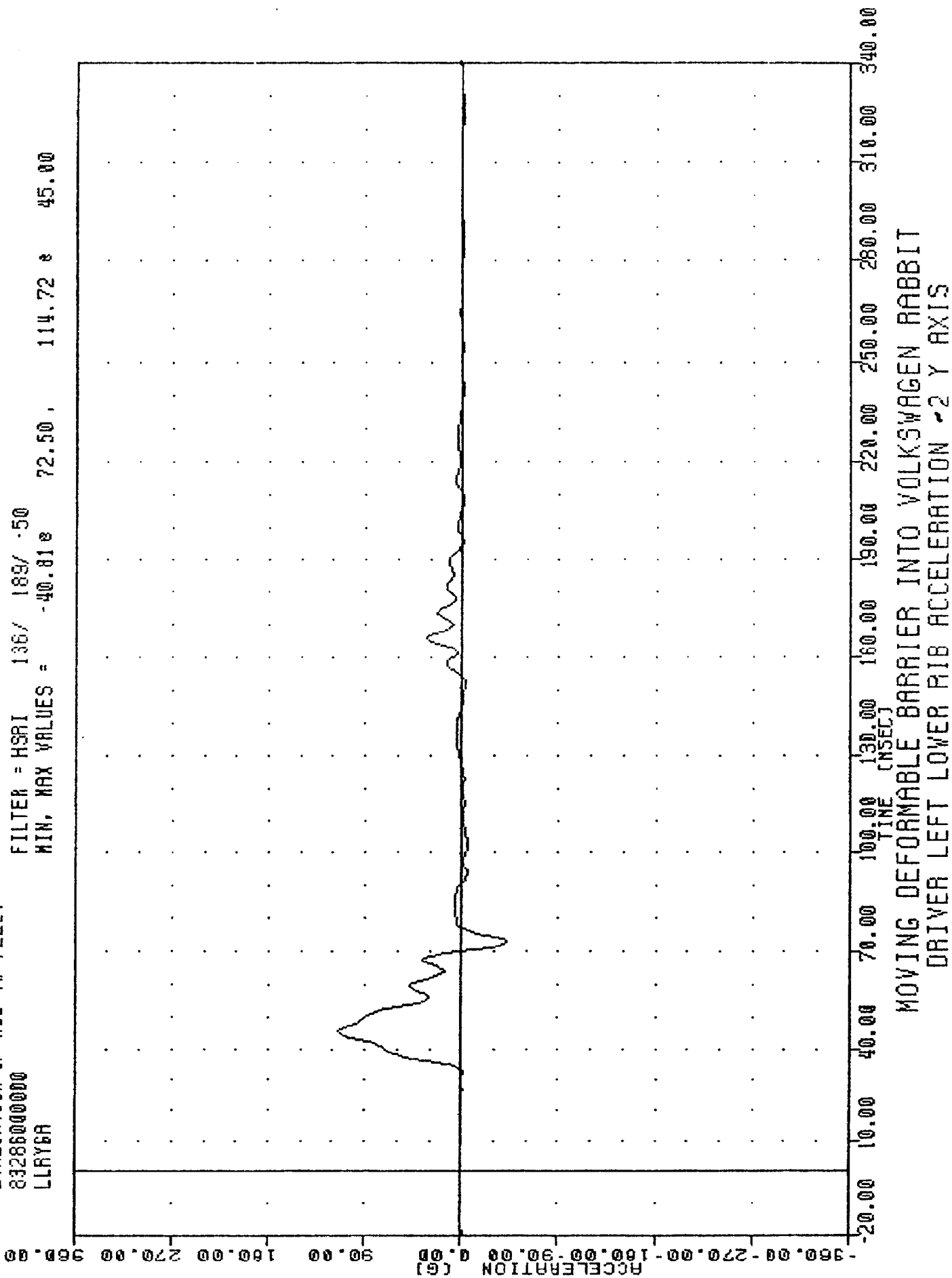
LLRYV1

MIN, MAX VALUES = -0.24 33.13, 51.59 275.63

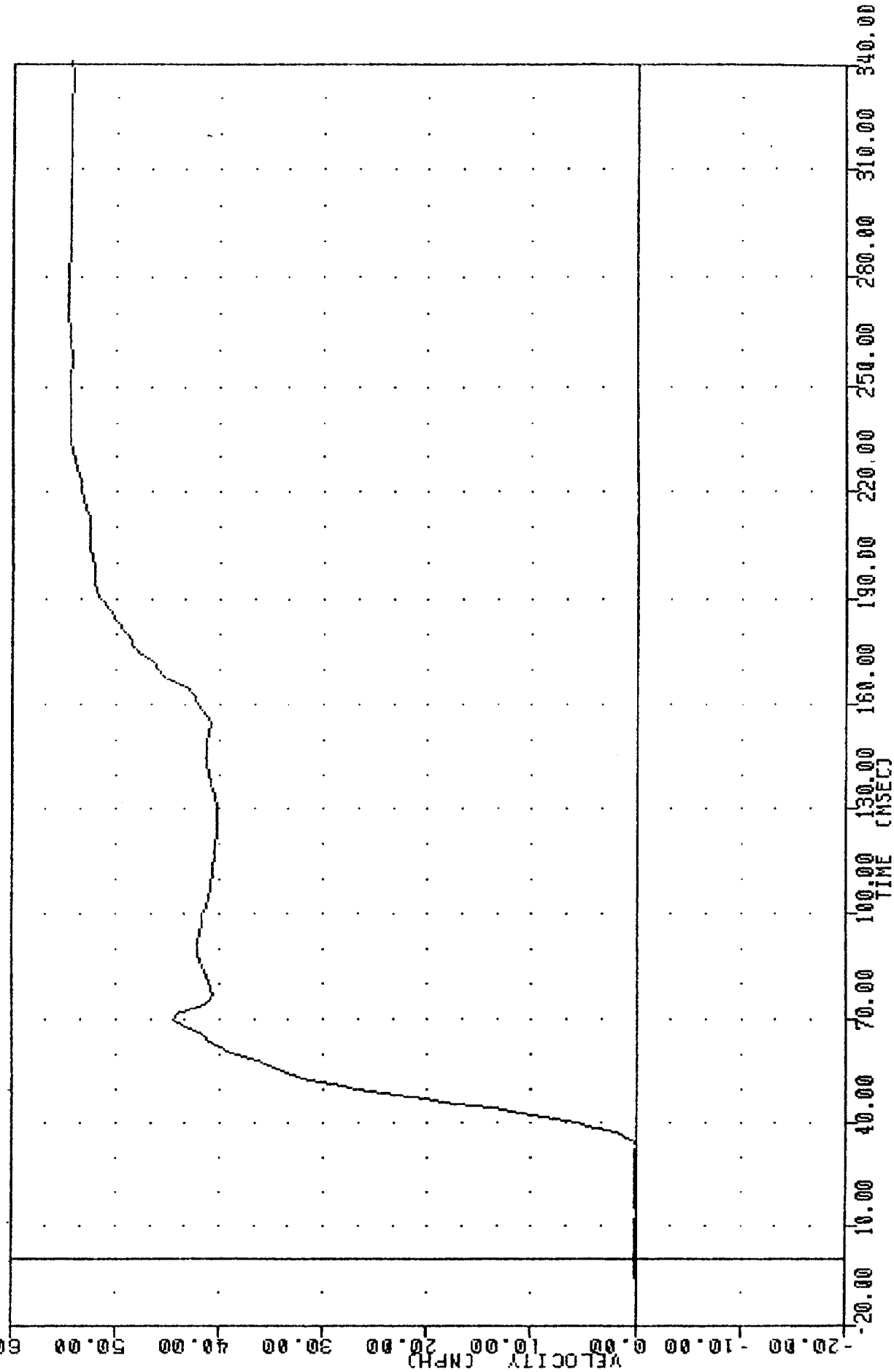


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLRYG1

TAC 831013 PLOT DATE 21-OCT-83 13:28:41
 EVALUATION OF MOD VN FLEET
 8328600000
 LLY6R
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -40.81g 72.50, 114.72 g 45.00



TRC [REDACTED], 031013 [REDACTED] PLOT DATE 21 OCT-83 13:34:57
 EVALUATION OF MOD VW FLEET
 83286000000
 LLAYVA
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.048 -17.50, 54.59 & 274.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLAYVA

TRC 831013

EVALUATION OF MOD VN FLEET

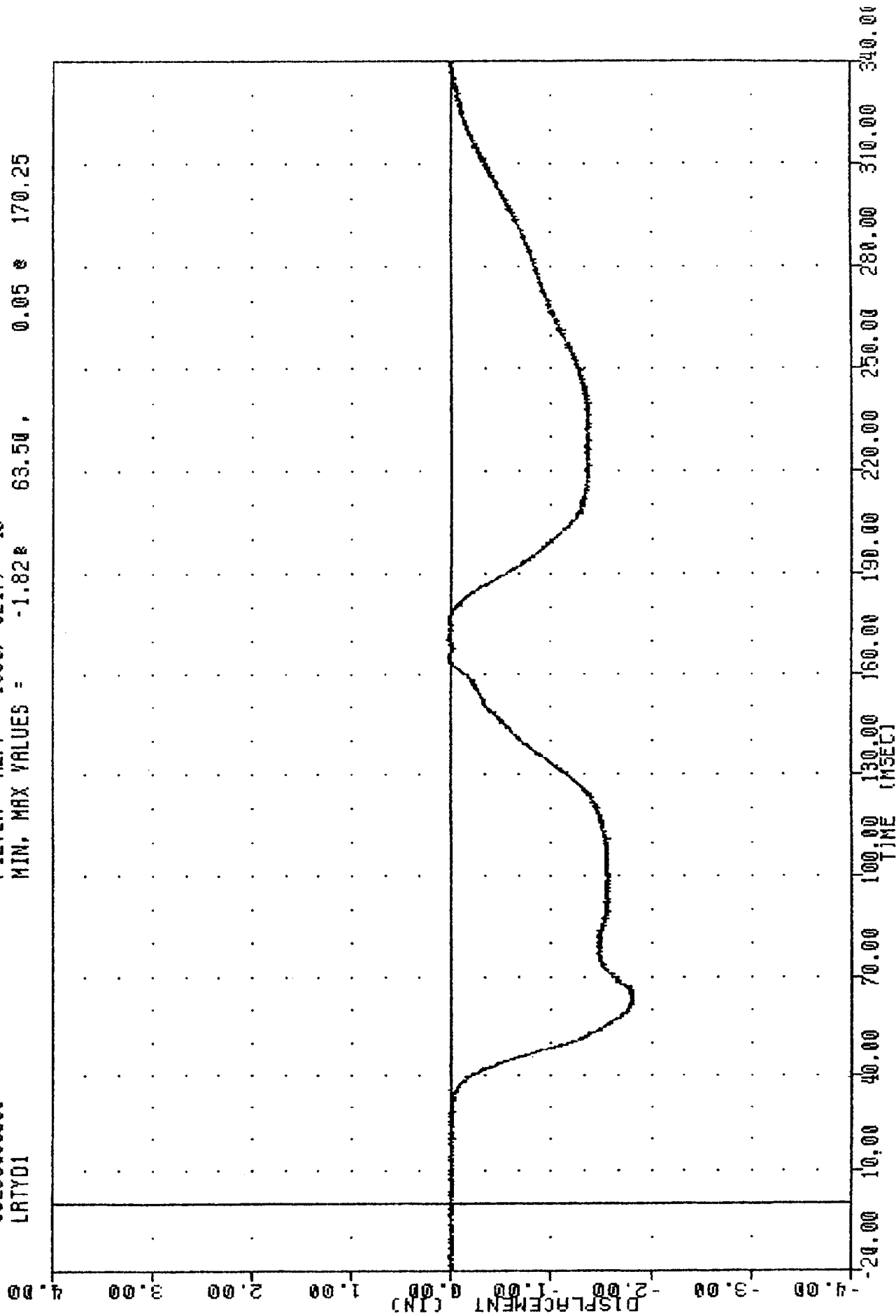
83286000000

LRTYD1

PLOT DATE 21 OCT 83 10:33:11

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -1.82 63.50 0.05 170.25

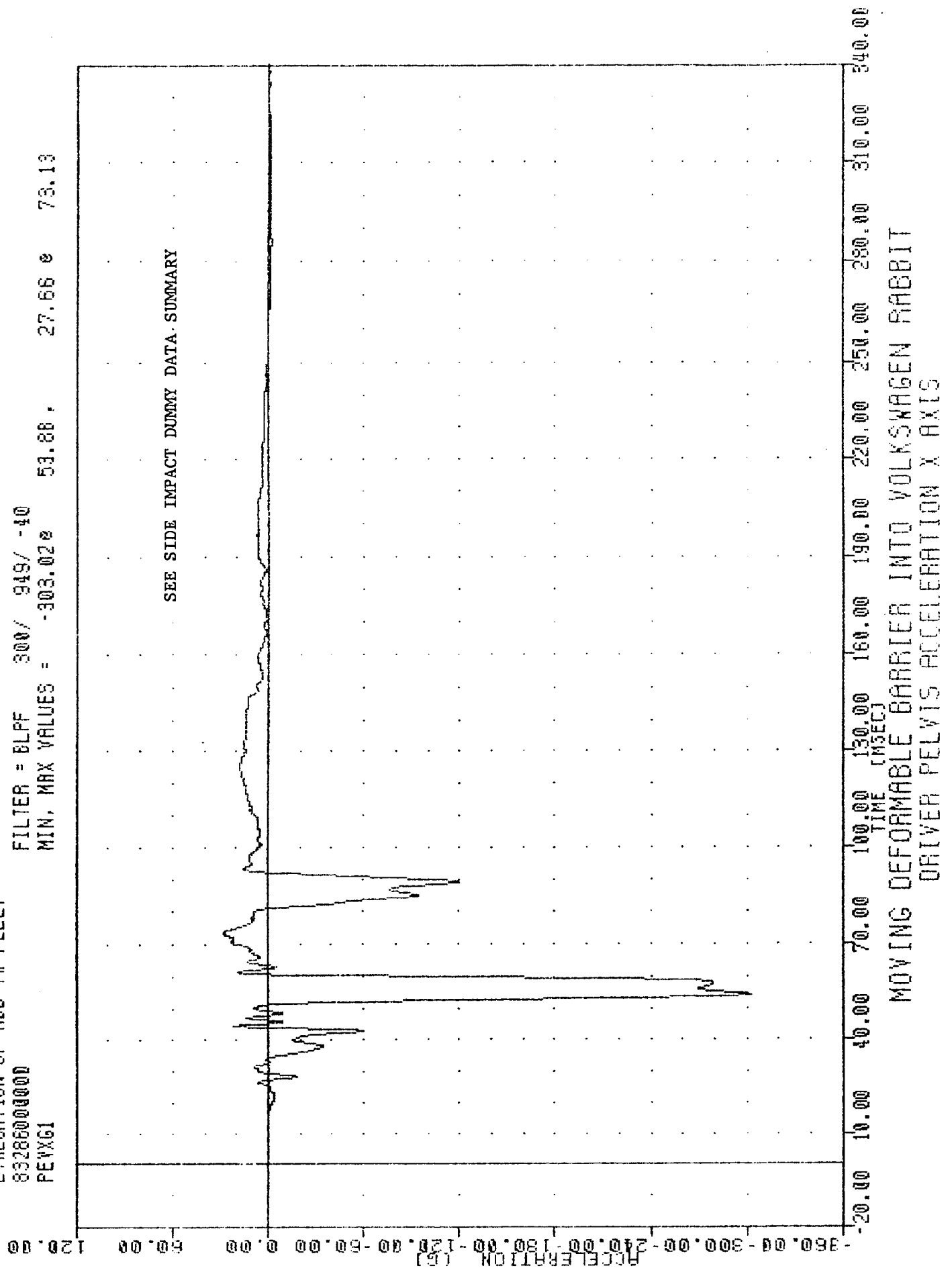


TRC
EVALUATION OF MOD V'N FLEET
83286000000
PEVXG1

PLOT DATE 31-OCT-83 14:00:52

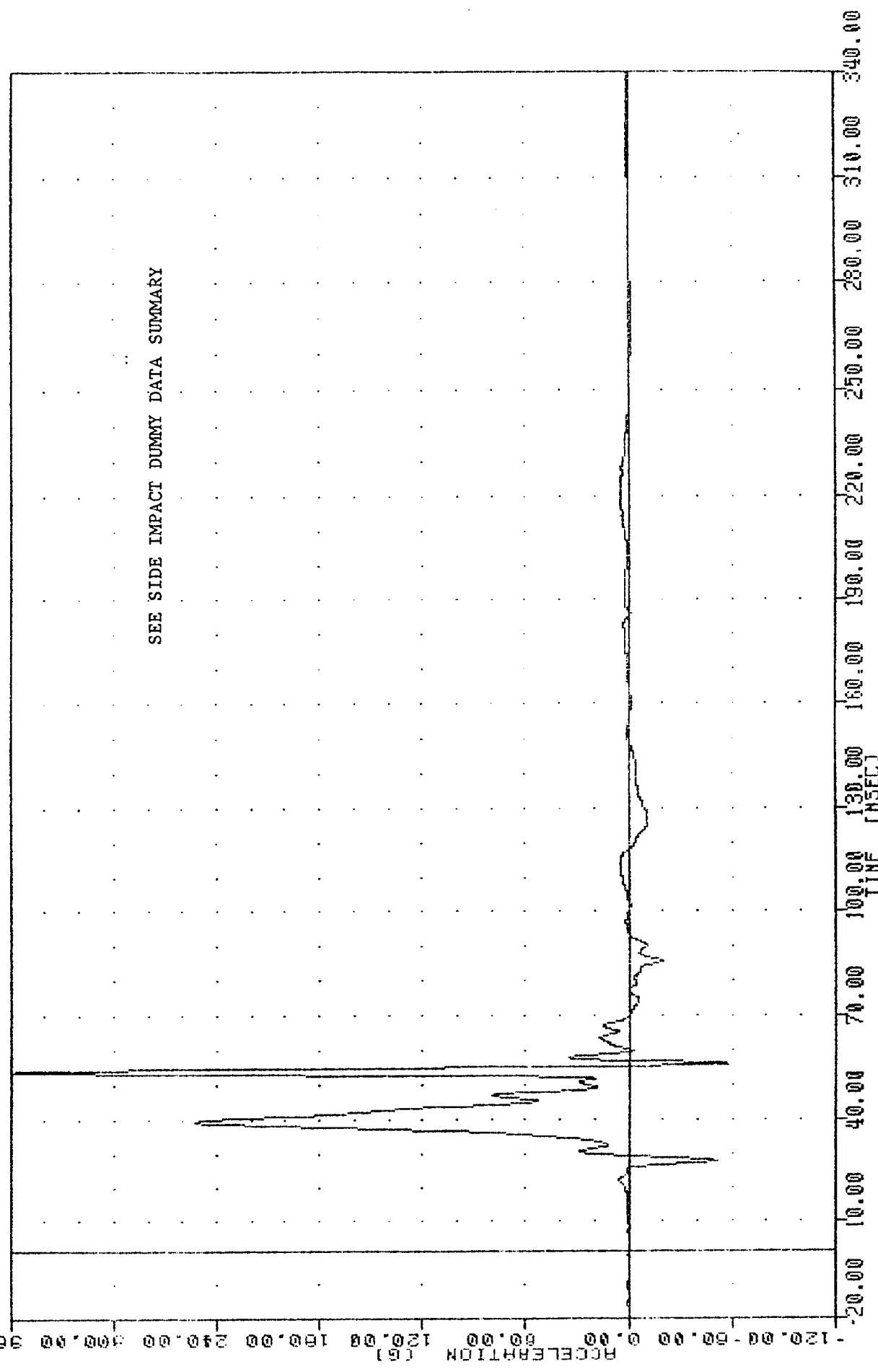
FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -303.02e 53.88e 27.66e 73.13

SEE SIDE IMPACT DUMMY DATA SUMMARY



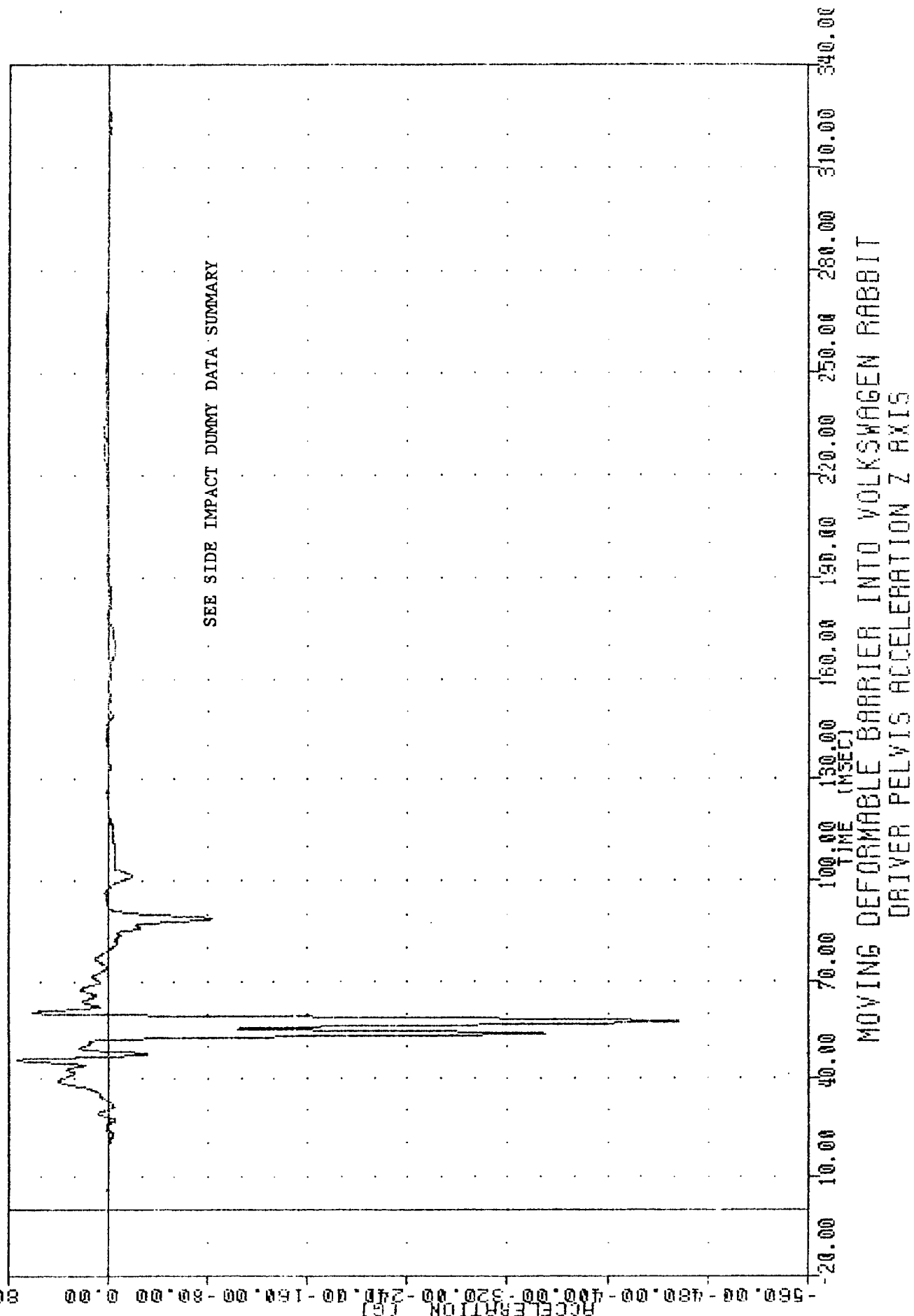
TAC [REDACTED], 83J013 [REDACTED] PLOT DATE [REDACTED] 31-OCT-83 [REDACTED] 14.33.52
 EVALUATION OF MOD VM FLEET
 83286000000
 PEVY61

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -57.76 55.88 350.75 53.75



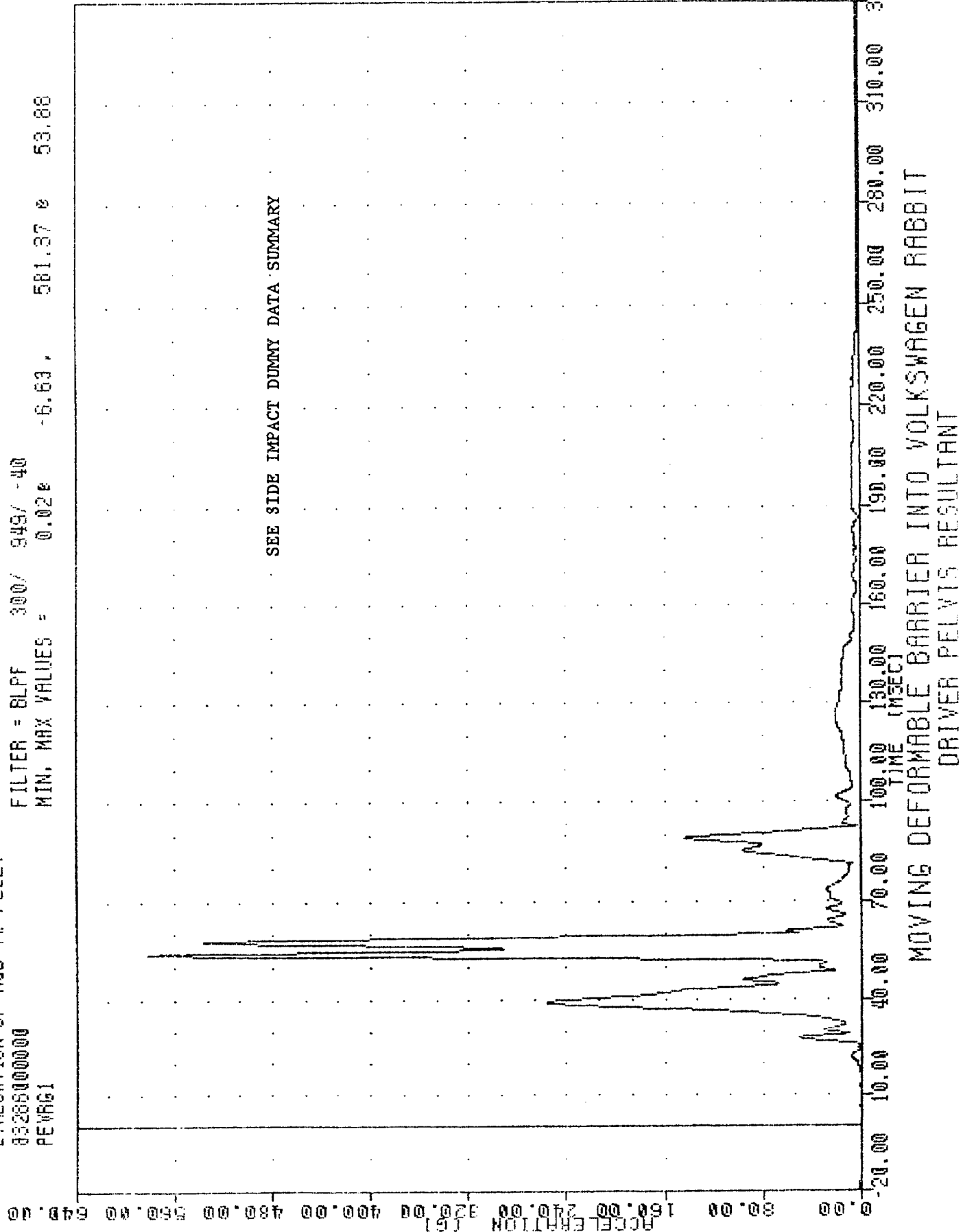
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS ACCELERATION Y AXIS

TRC 831013
 EVALUATION OF MOD VN FLEET
 83286000000
 PEVZ61
 PLOT DATE 31-OCT-83 14:55:52
 FILTER = 6LPF 300/ 949/ -40
 MIN. MAX VALUES = -457.13 57.75 72.52 45.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS ACCELERATION Z AXIS

TRC 831013
 EVALUATION OF MOD YW FLEET
 83265000000
 PEVRG1
 FILTER = 8LPP 300/ 949/ -40
 MIN. MAX VALUES = 0.02e -6.63 , 581.37 e 53.88
 PLOT DATE 1-NOV-83 14.41.46



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS RESULTANT

TRC

831013

EVALUATION OF MOD VN FLEET

83286000000

PEVYV1

PLOT DATE

21-OCT-83

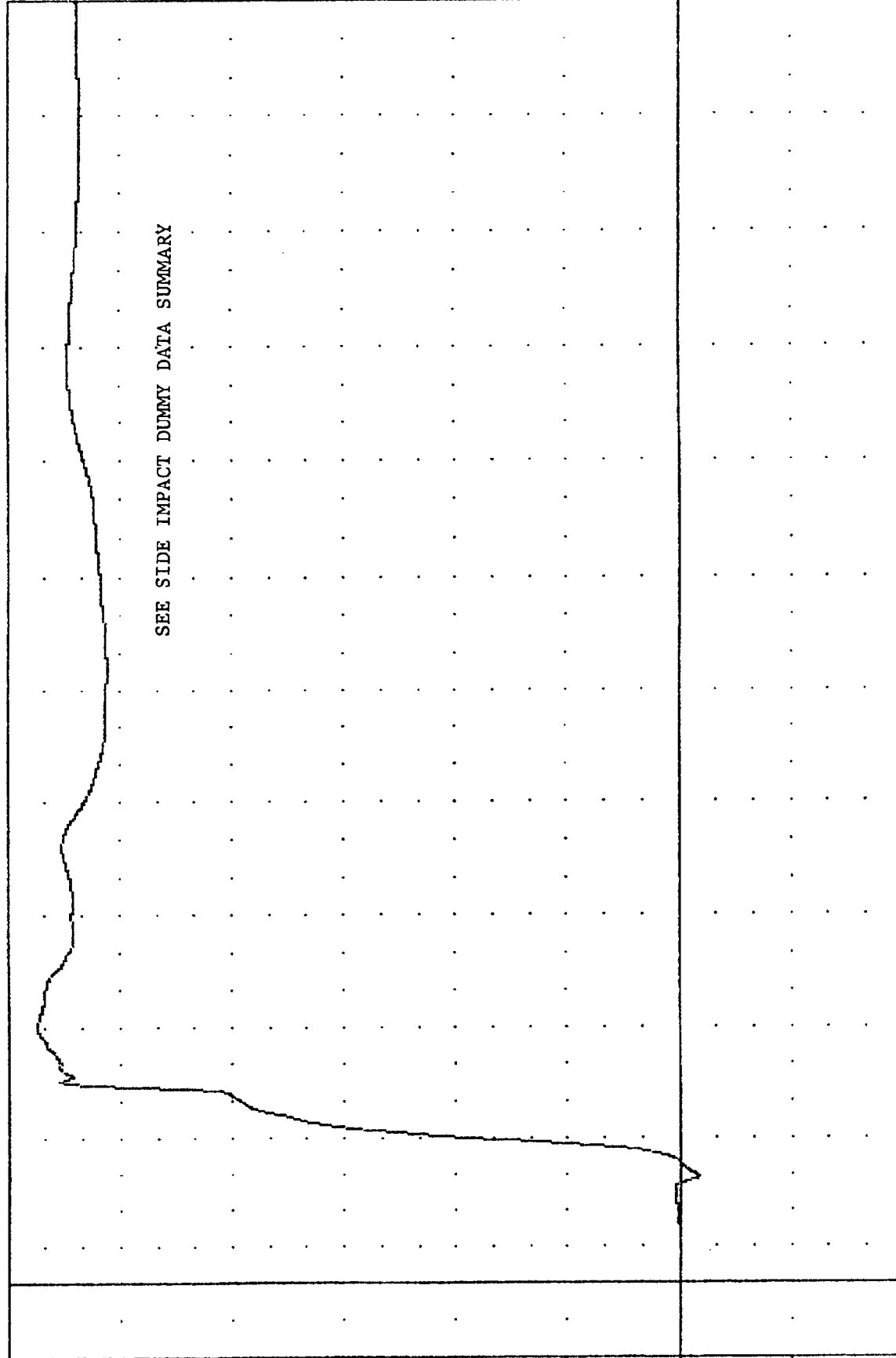
13:30:50

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -1.70 29.25

57.33 69.75

VELOCITY (MPH)



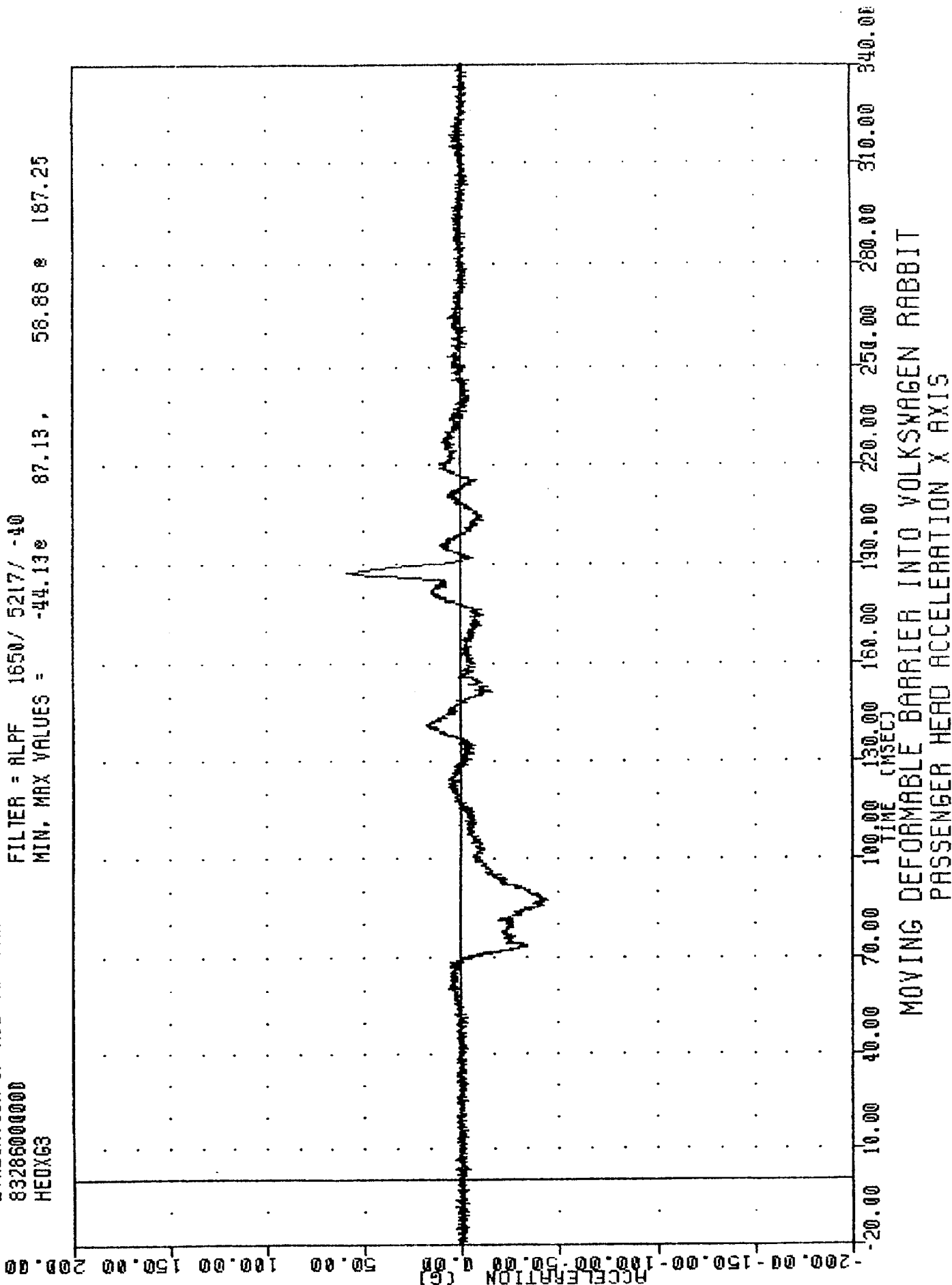
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING PEVYGI

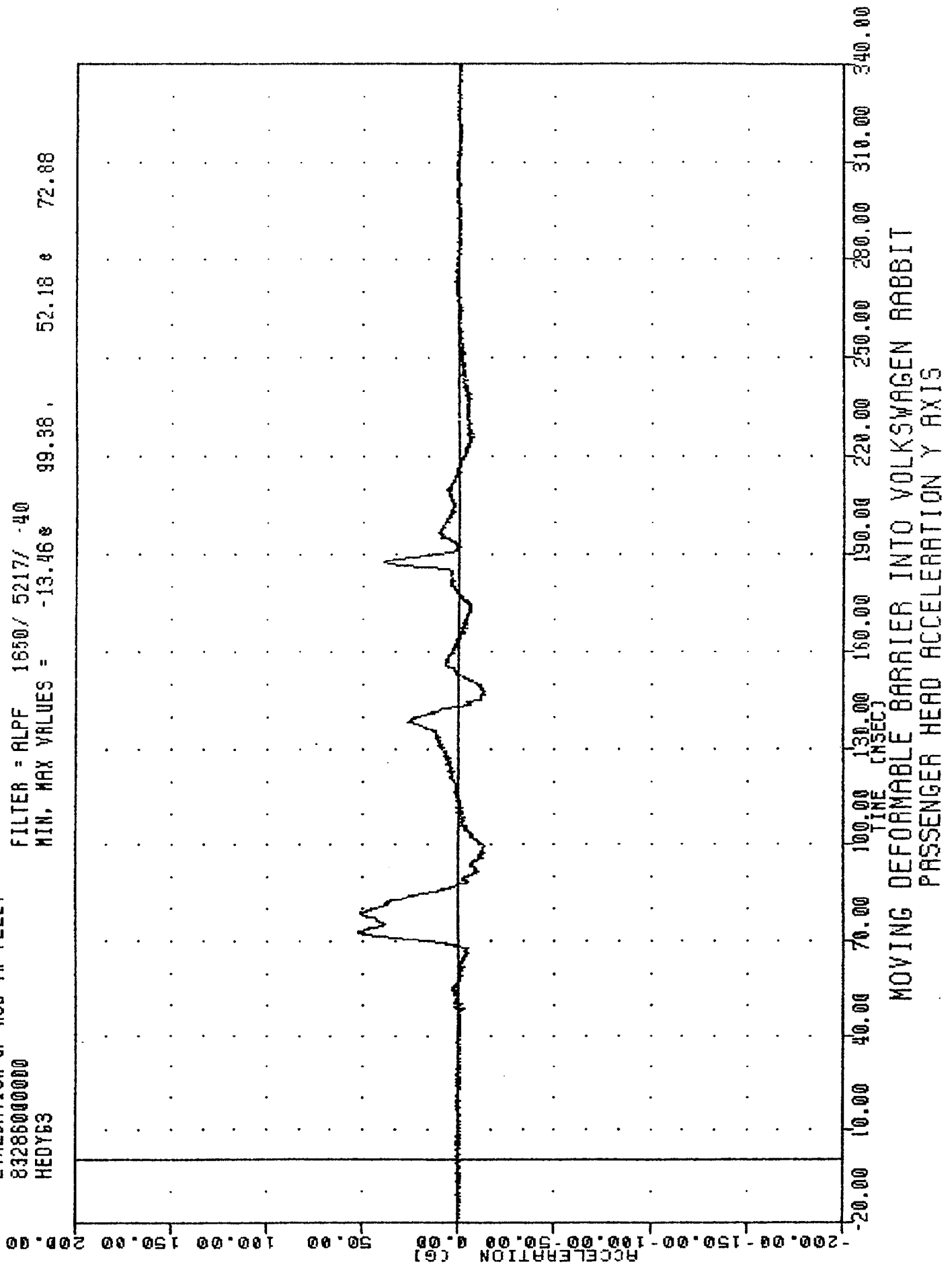
TRC , 831013
 EVALUATION OF MOD VW FLEET
 83286000000
 HEDXG3

PLOT DATE 21-OCT-83 10:59:11

FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -44.13e 87.13, 56.88 e 187.25



TRC 831013
 EVALUATION OF MOD VN FLEET
 83286000000
 HEDY63
 FILTER = ALPF 1650 / 5217 / -40
 MIN, MAX VALUES = -13.46 99.38 52.18 72.88
 PLOT DATE 21-OCT-83 10:58:11



TRC 831013 PLOT DATE 21 OCT 85 10:03:11

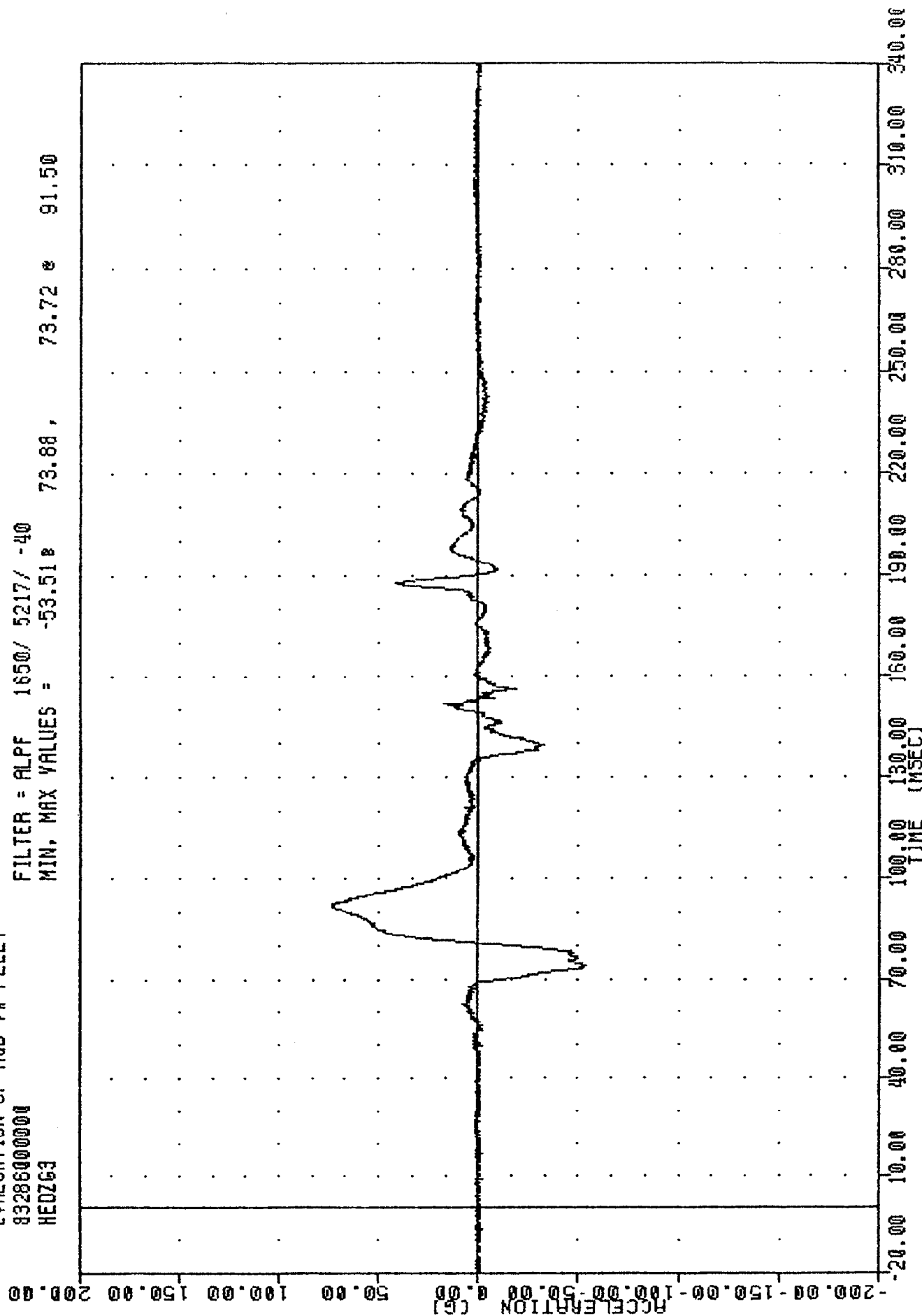
EVALUATION OF MOD YN FLEET

83286000000

HEDZ63

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -53.51 73.88 , 73.72 91.50

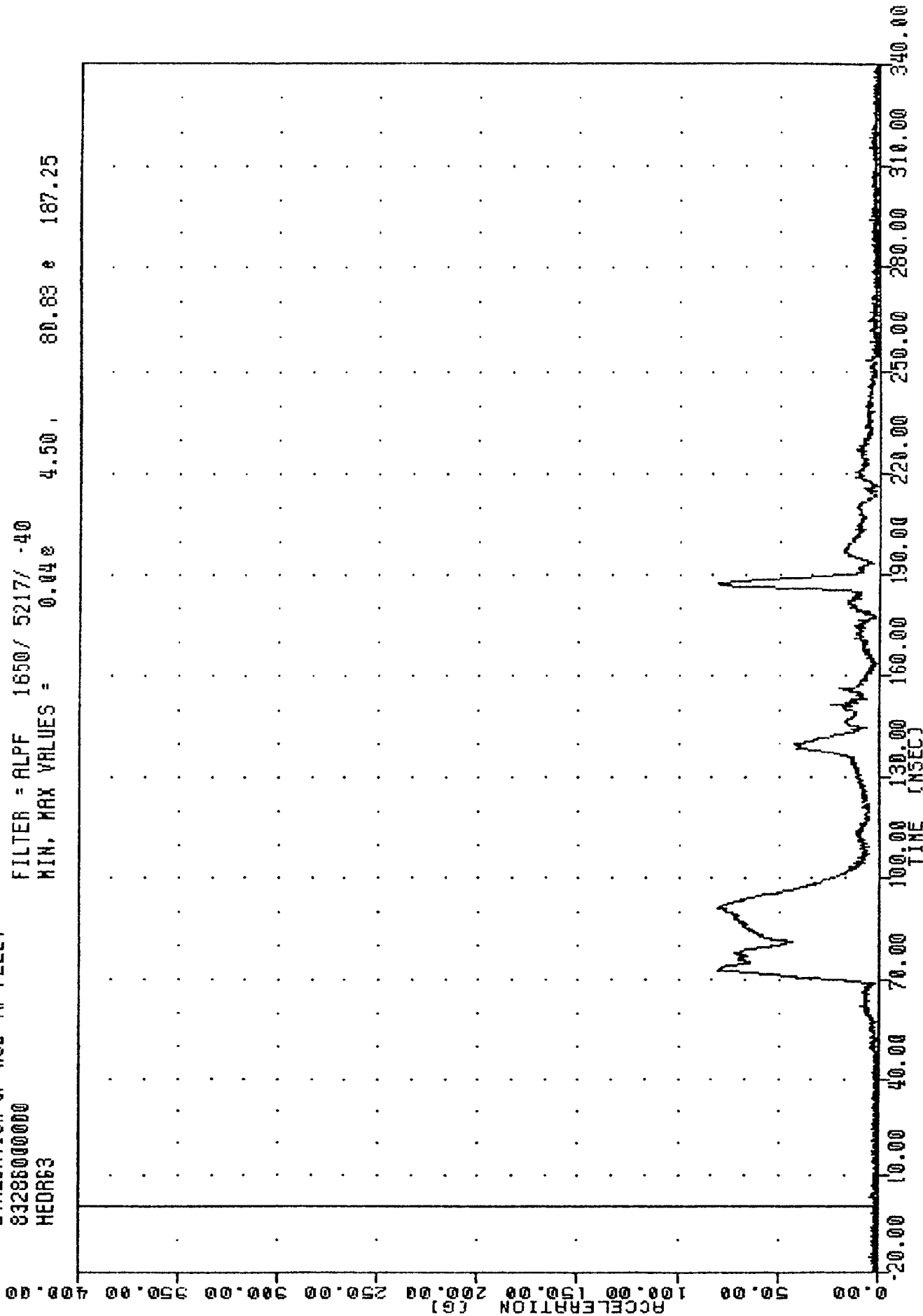


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Z AXIS

TRC
EVALUATION OF KOD VV FLEET
83288000000
HEAD83

PLOT DATE 21-OCT-83 10:59:11

FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = 0.042 4.50 80.83 187.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD RESULTANT

TAC

831013

PLOT DATE 21-OCT-83 13:28:41

EVALUATION OF MOD YW FLEET

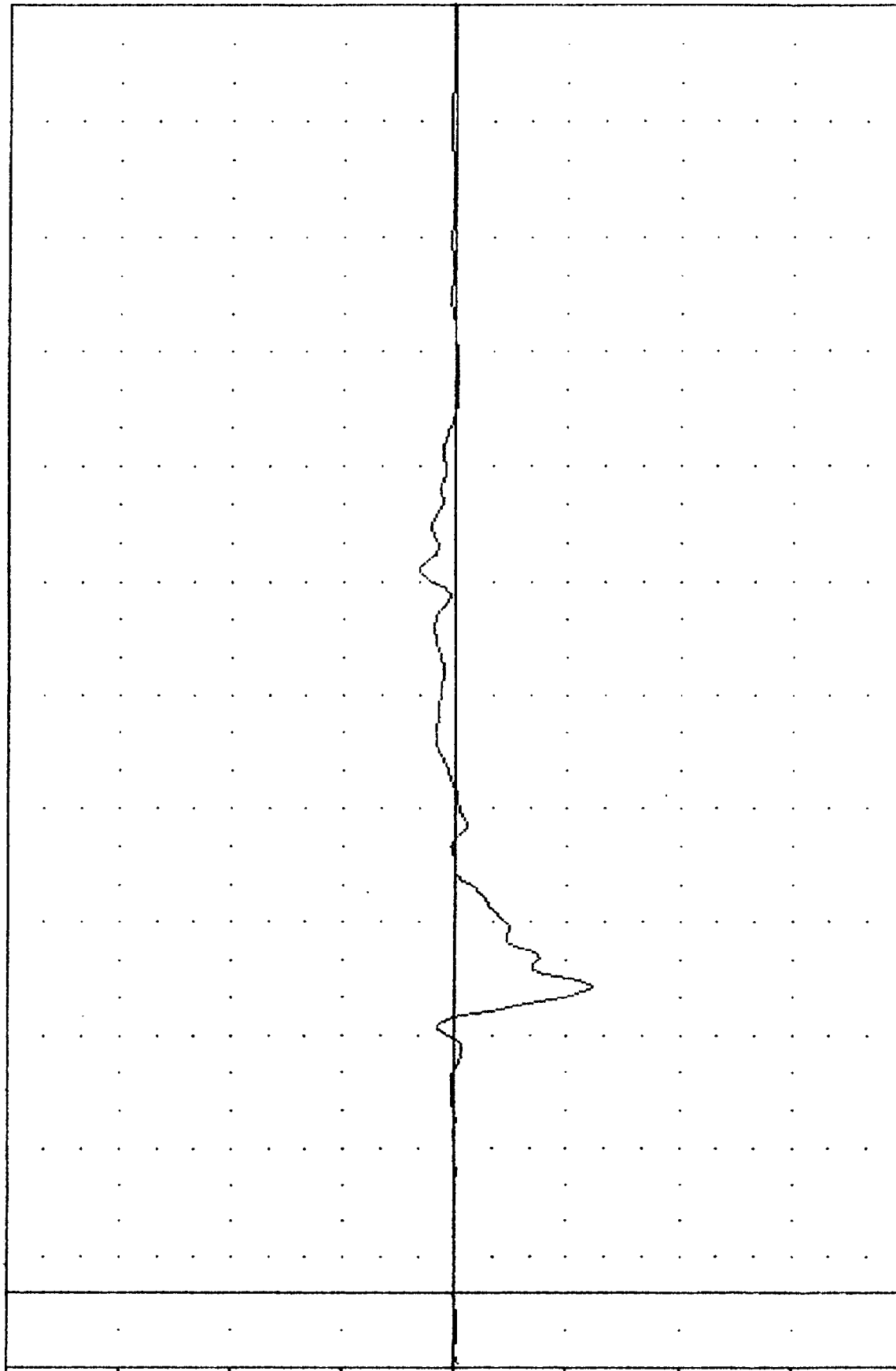
83286000000

T01XG3

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -61.77 81.88 16.29 e 192.50

ACCELERATION (G)



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

TRC 831013

EVALUATION OF MDD V# FLEET

83286000000

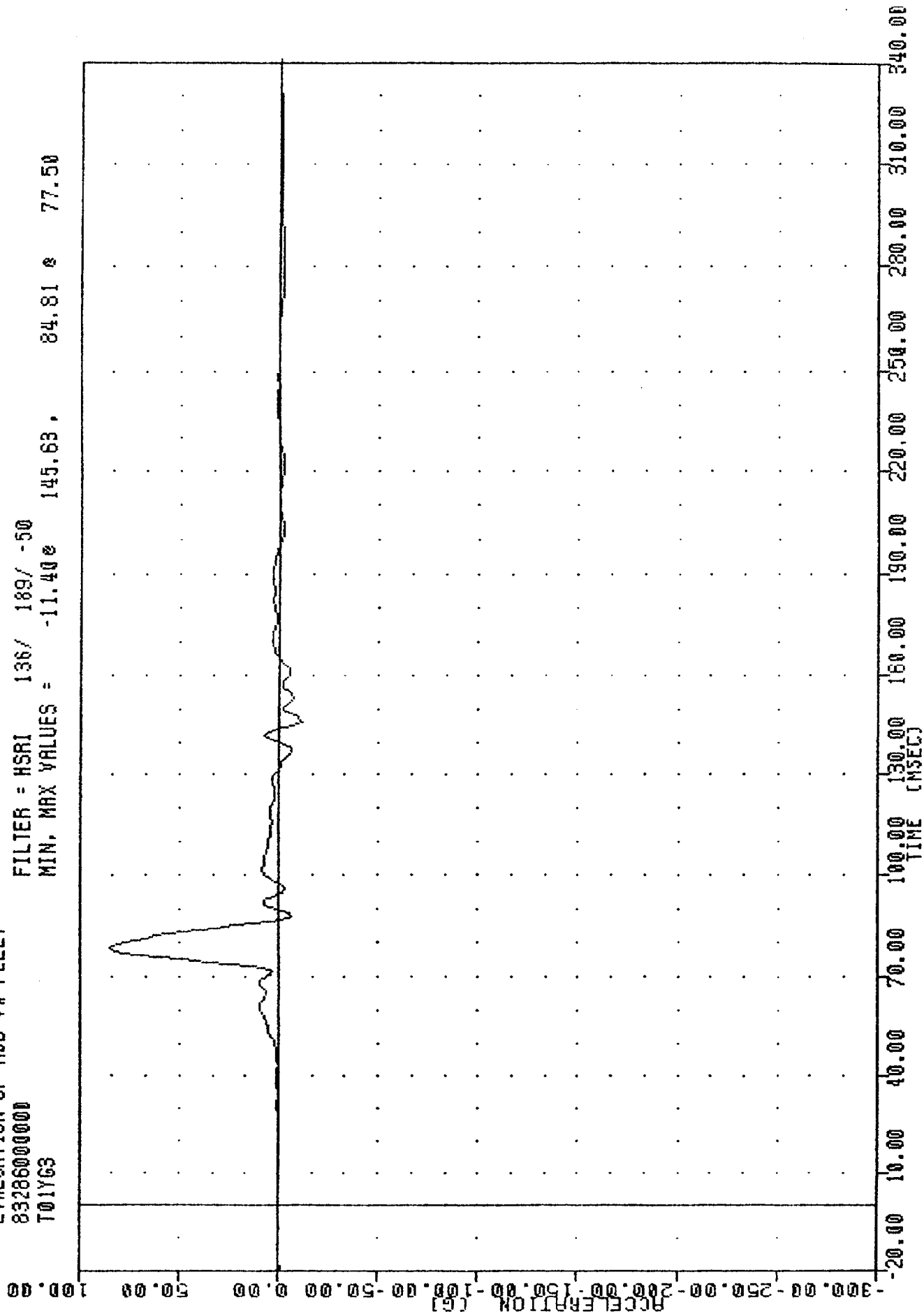
T01Y63

PLOT DATE 21-DEC-83 13:28:41

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -11.40e 145.63,

84.81 s 77.50



TRC 831013

EVALUATION OF MOD YW FLEET

83285000000

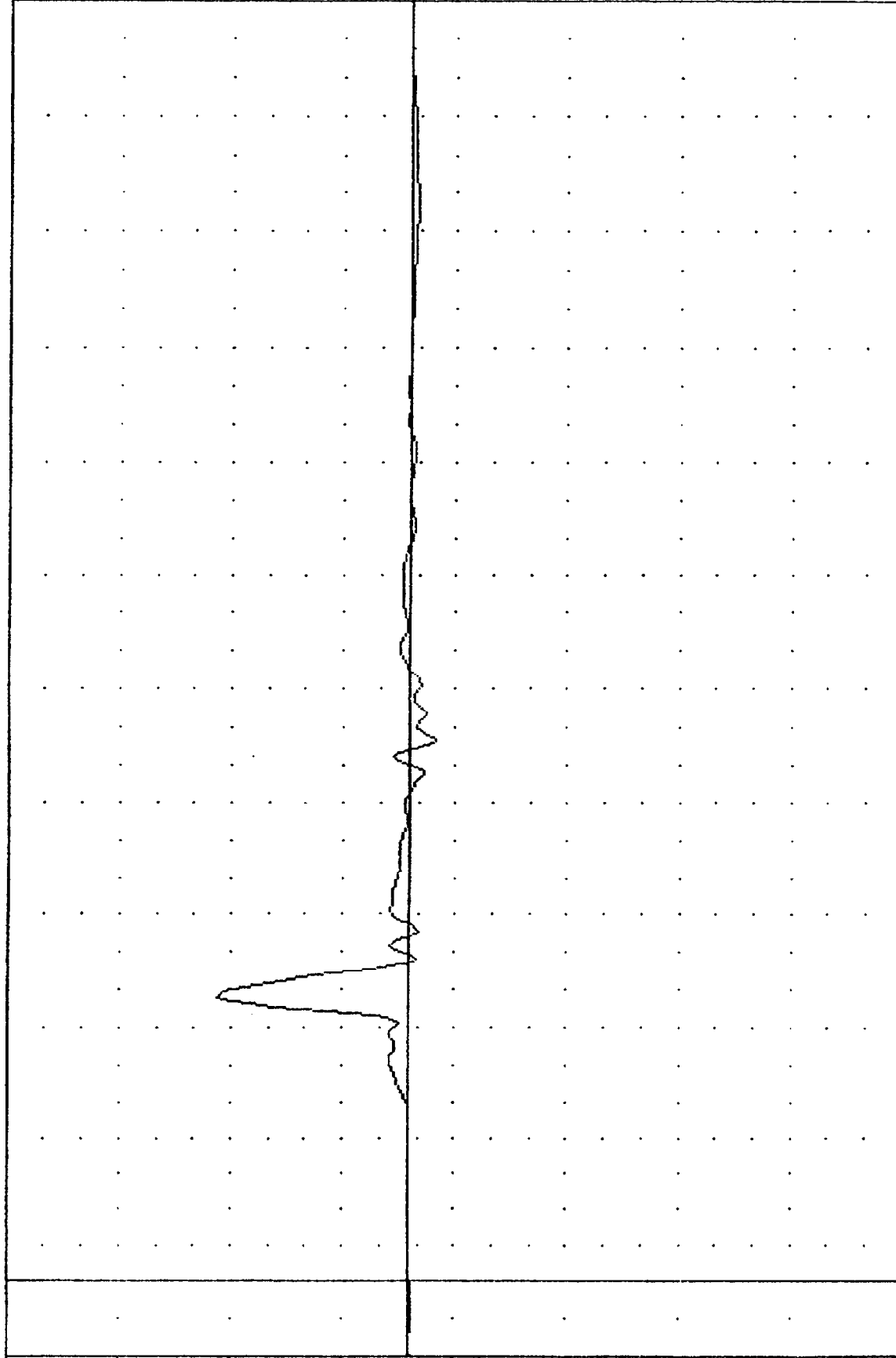
T01Y5C

PLOT DATE 21-OCT-83 13:28:41

FILTER = HSRI 136/ 189/ .50

MIN, MAX VALUES = -11.13 145.63, 86.32 77.50

ACCELERATION (G)



TIME (msec)

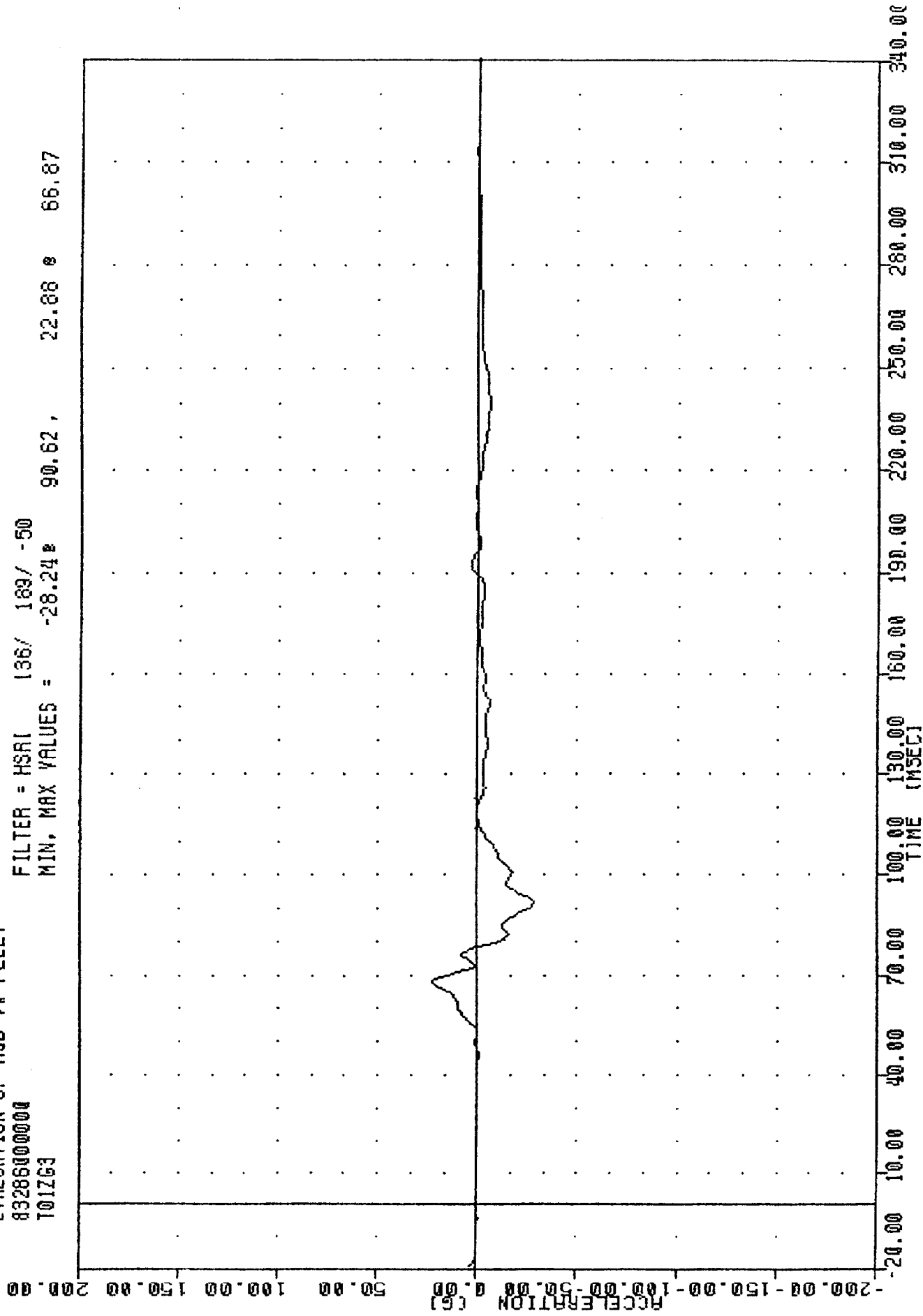
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE ACCELERATION -2 Y AXIS

TRC 831013
EVALUATION OF MOD YW FLEET
83286000000
T01ZG3

PLOT DATE 21 OCT 83 15:28:41

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -28.24 90.62, 22.88 66.87

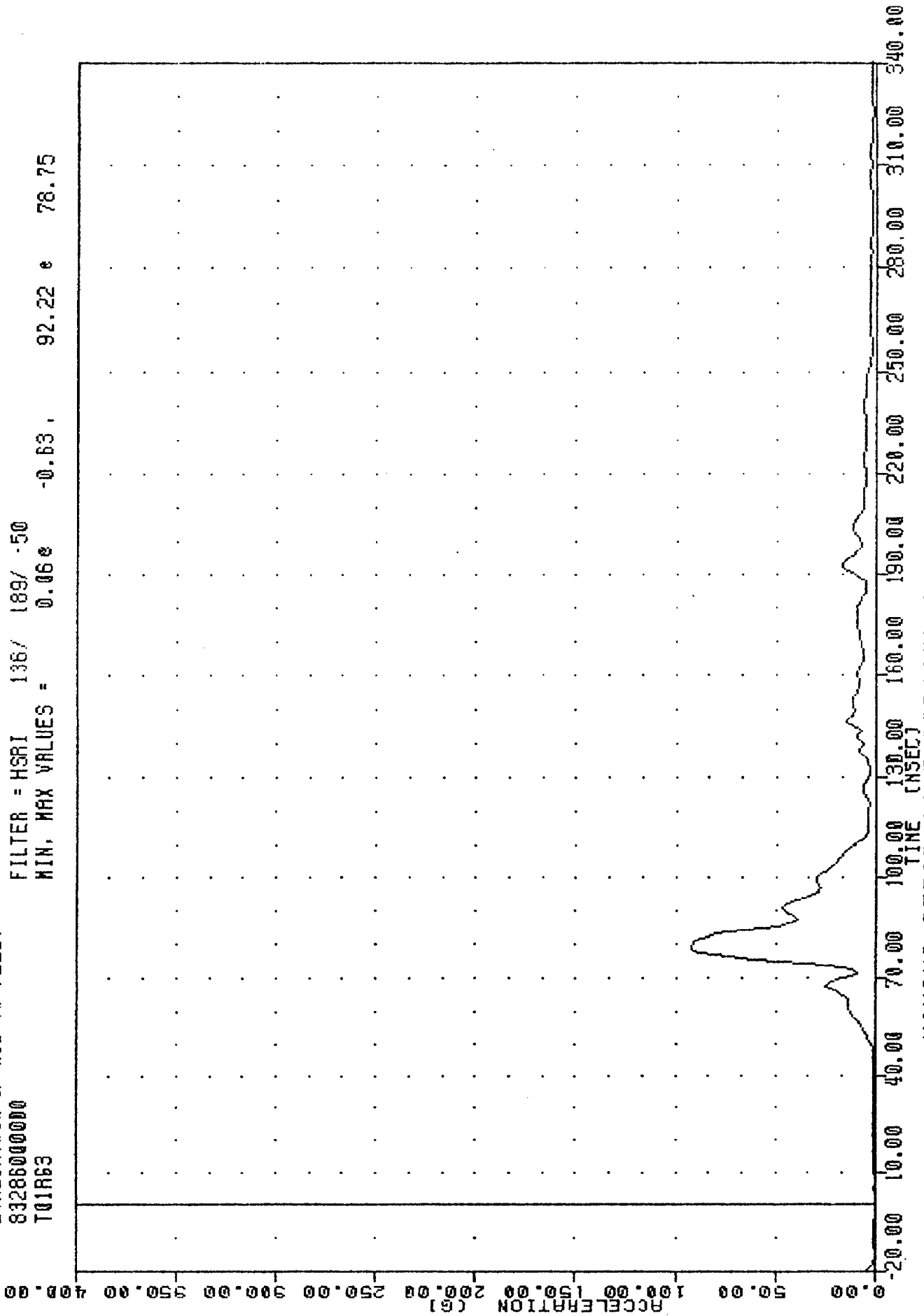


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE ACCELERATION Z AXIS

TAC 83286000000
 EVALUATION OF MOD VV FLEET
 T01R63

DATE 21 OCT 83 13:20:41

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = 0.068 -0.63, 92.22 e 78.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE RESULTANT

TAC

83JW13

PLOT DATE

21-OCT-83

13.30.21

EVALUATION OF MOD VN FLEET

8328000000

T01R63

FILTER = HSRI

136/ 189/ -50

MIN. MAX VALUES =

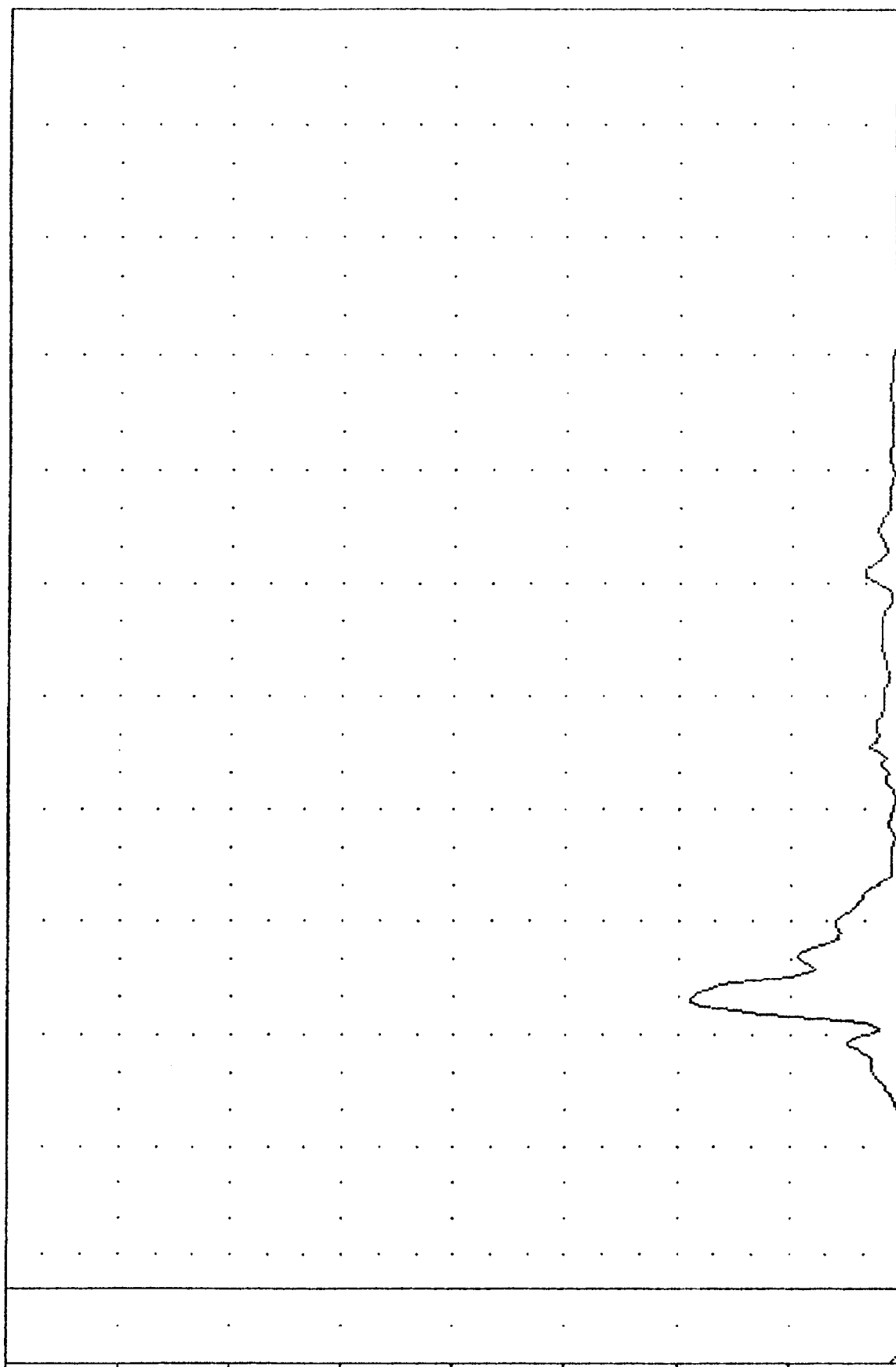
0.108

0.00,

93.86 e

78.75

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 UPPER SPINE RESULTANT USING T01YGC

TAC 831013 PLOT DATE 21-OCT-83 13:34:57

EVALUATION OF MOD VN FLEET

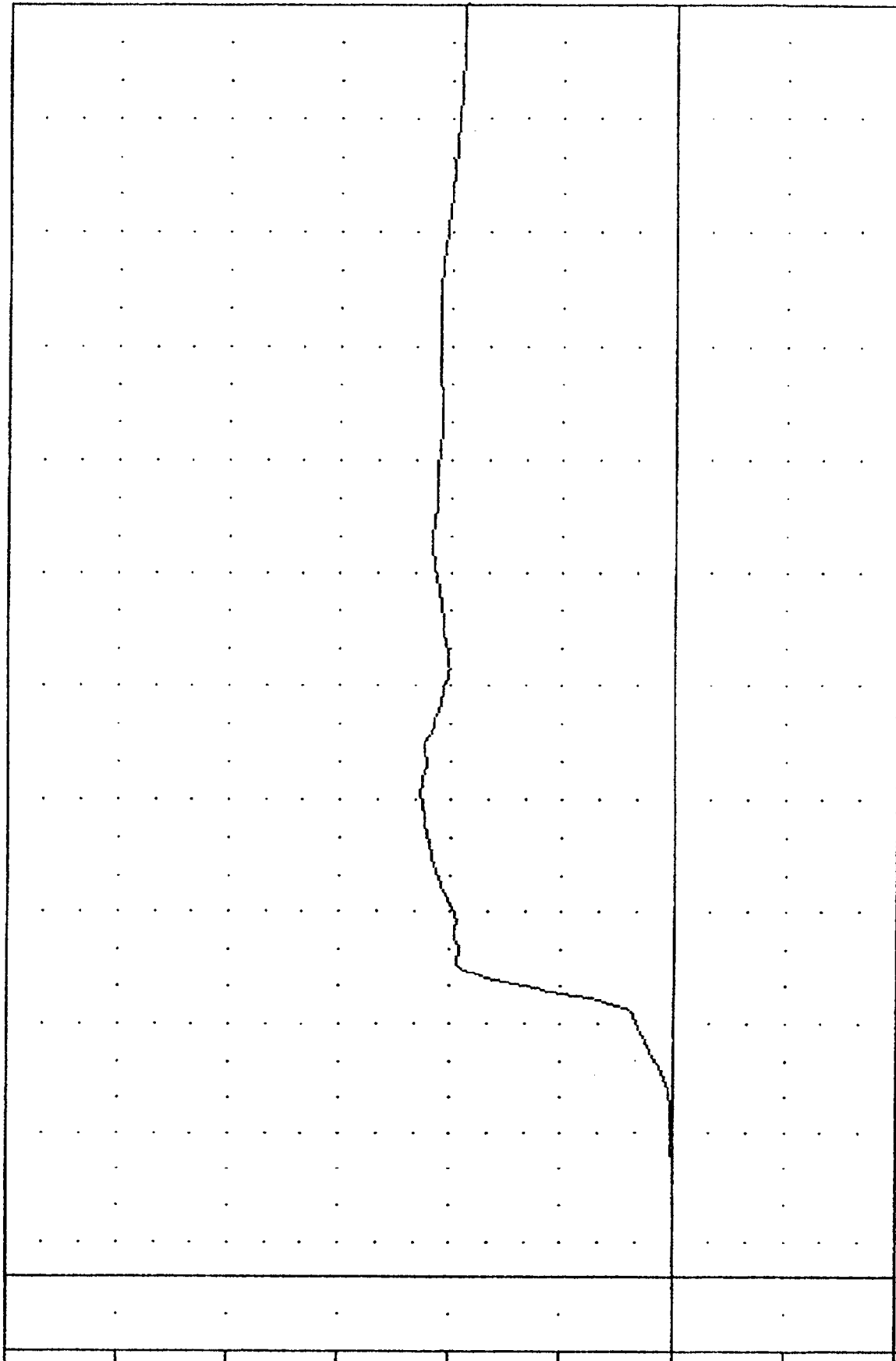
8328600000

T01YV3

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.11e 15.63 , 22.72 e 131.25

VELOCITY (MPH)



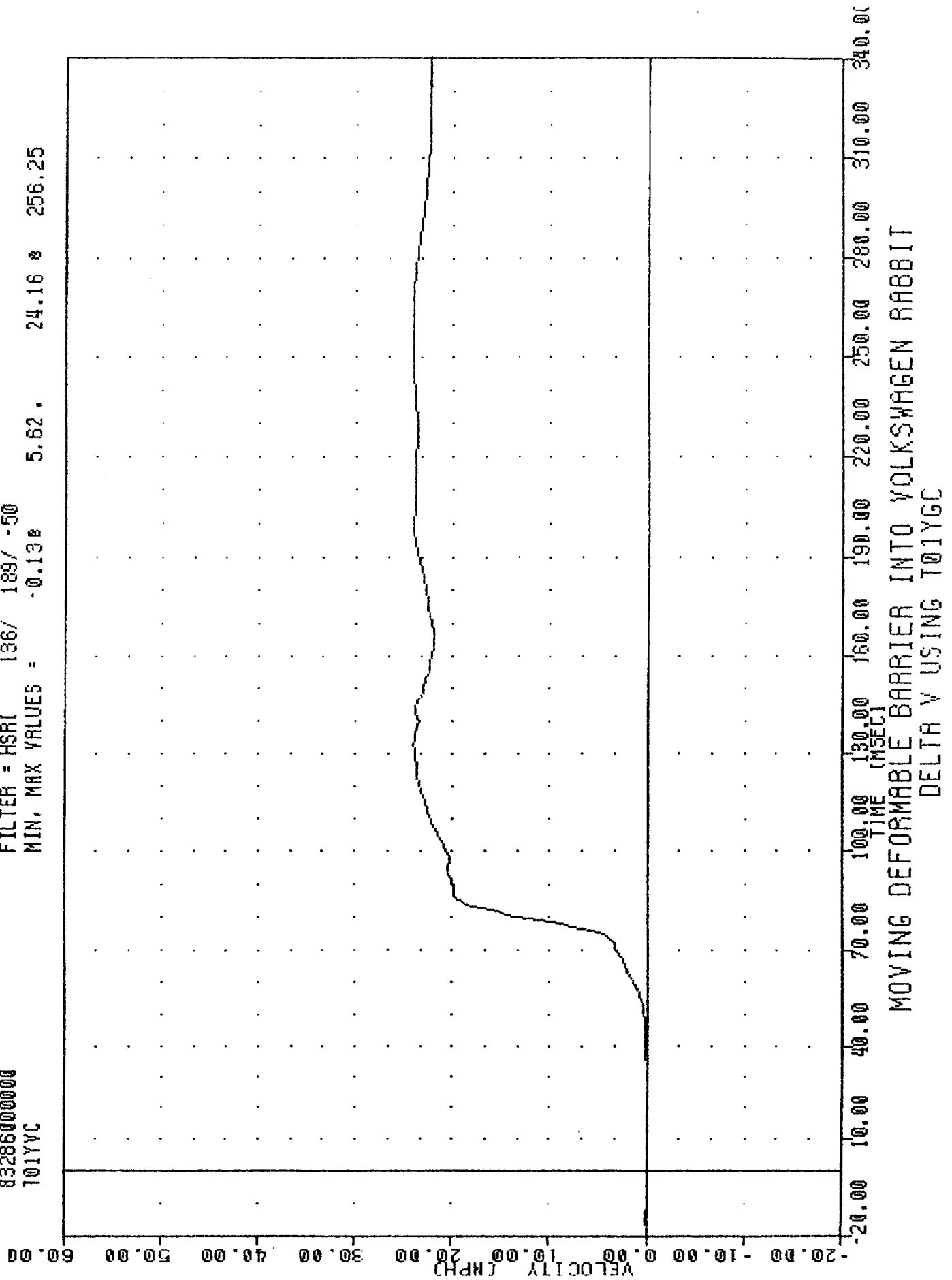
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YV3

TRC , 831013
 EVALUATION OF MOD VV FLEET
 83286000000
 T01YVC

PLOT DATE 21-OCT-83 13:34:57

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.138 5.62. 24.16 256.25



TRC , 831013 PLOT DATE 21-OCT-83 13:28:41

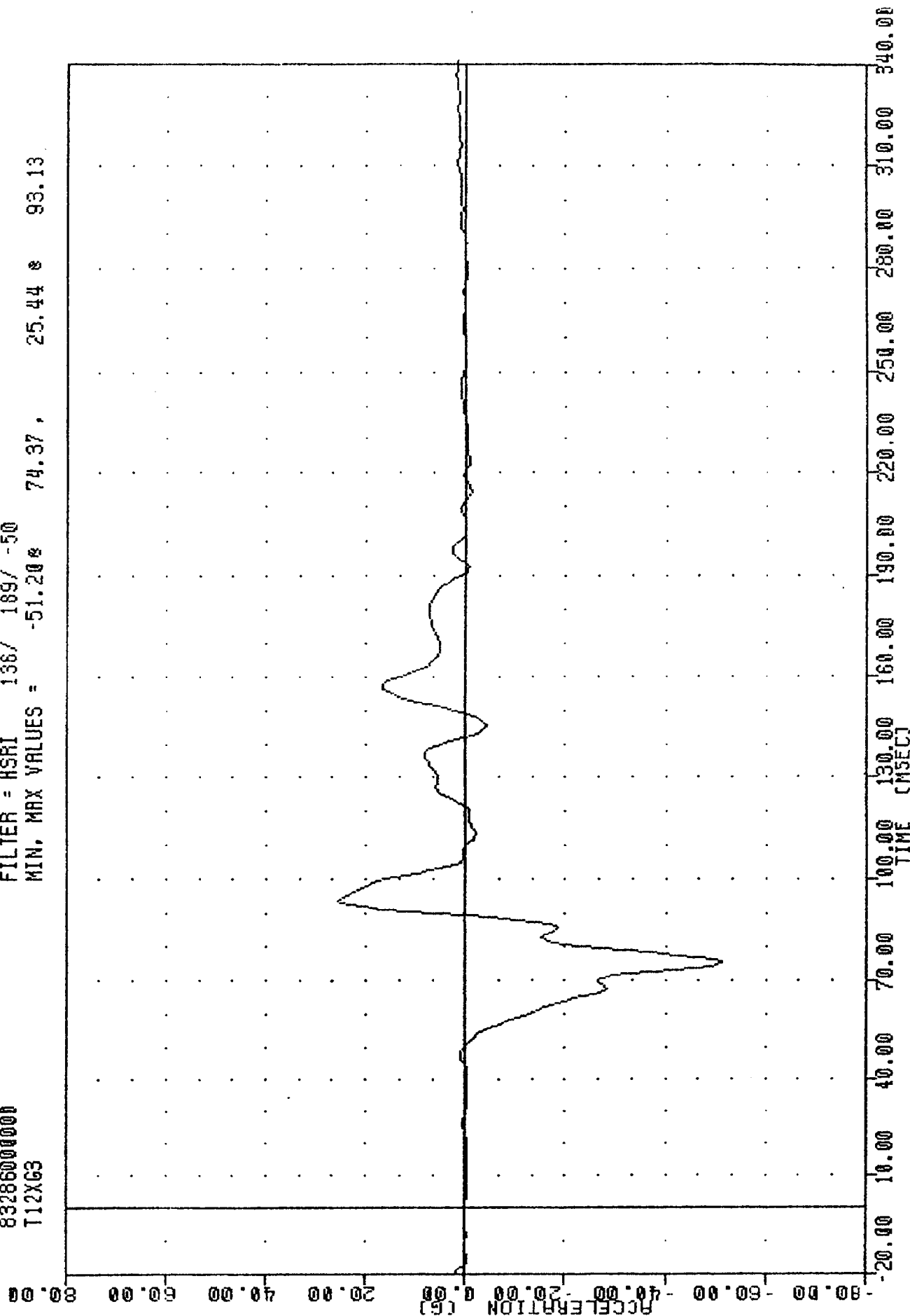
EVALUATION OF MOD VW FLEET

83286000000

T12XG3

FILTER = HSRI 138/ 189/ -50

MIN, MAX VALUES = -51.20% 74.37, 25.44 & 93.13



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

TAC 831013 PLOT DATE 21-OCT-83 13:28:41

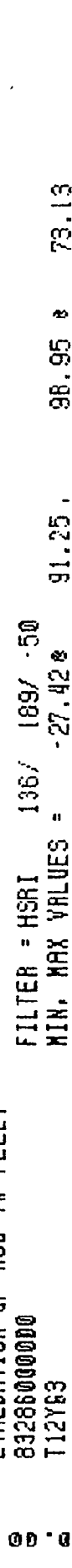
EVALUATION OF MOD VN FLEET

83286000000

T12Y83

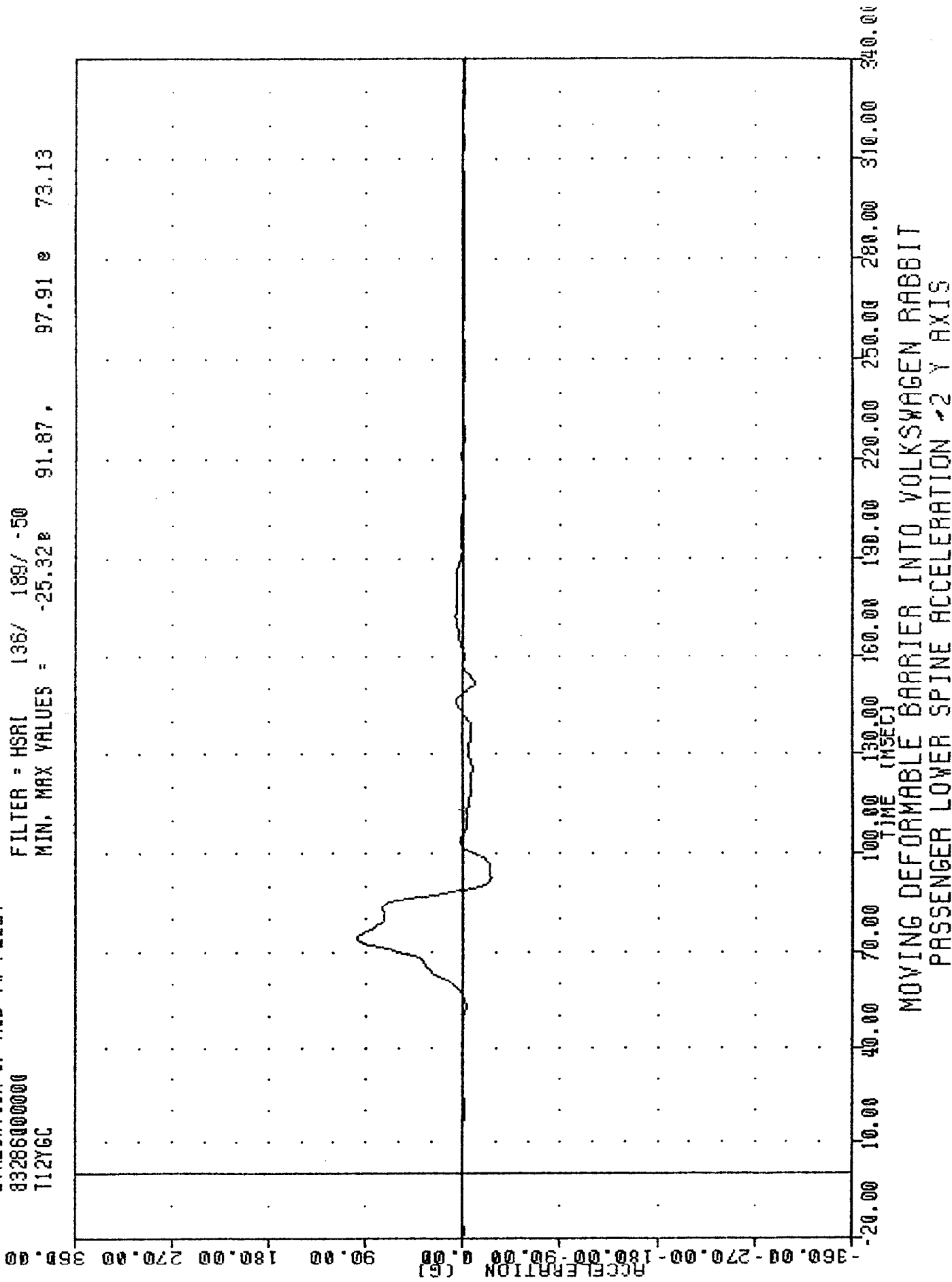
FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -27.42 91.25 98.95 73.13

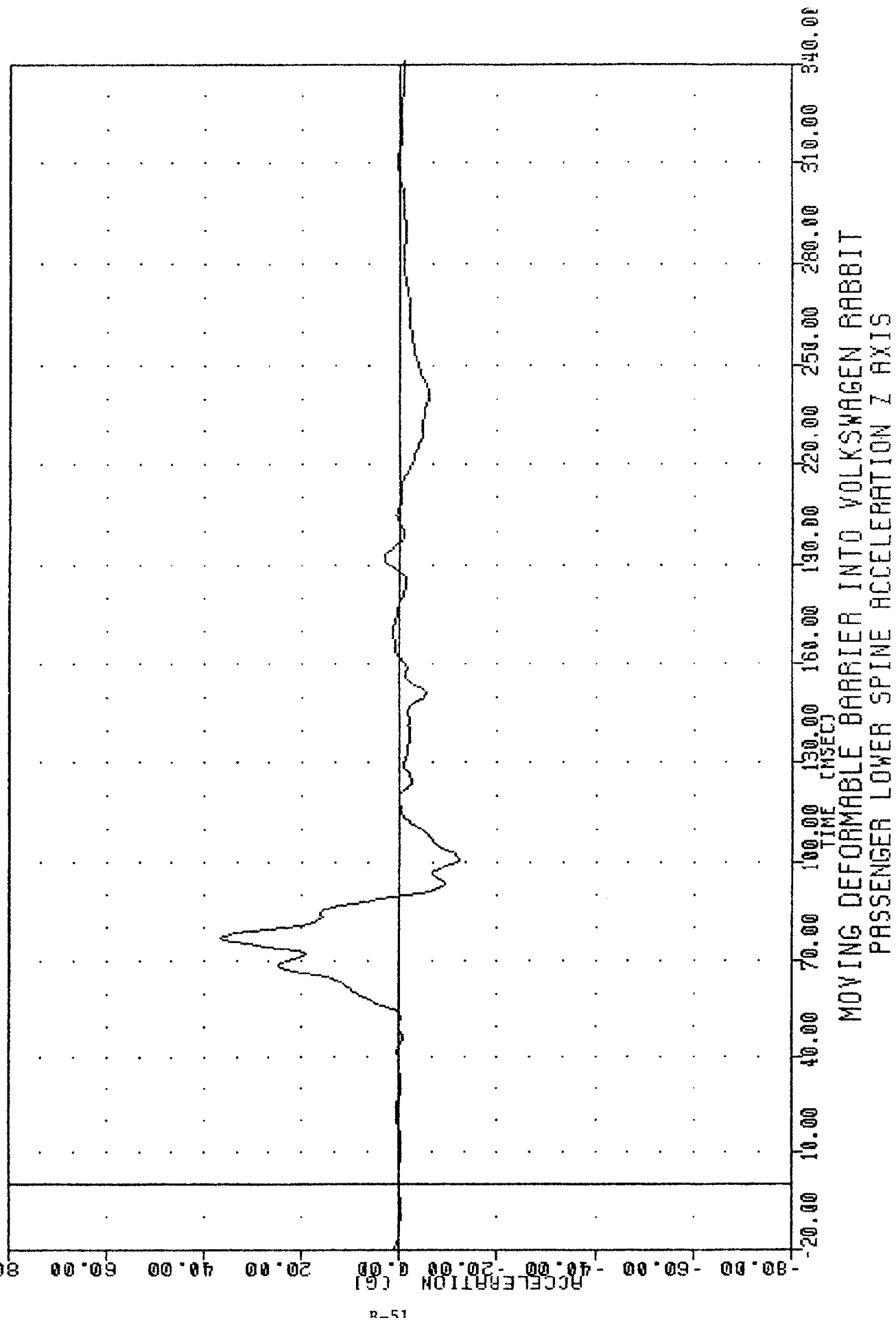


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION Y AXIS

TRC 831013 PLOT DATE 21-OCT-83 13:28:41
 EVALUATION OF MOD YW FLEET
 83286000000
 T12YGC
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -25.32g 91.87, 97.91 g 73.13



TRC
 EVALUATION OF MDD VW FLEET
 83286000000
 T12ZG3
 PLOT DATE 21-OCT-83 13:28:41
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -12.27e 100.63, 36.61 e 76.25



TRC 831013

EVALUATION OF MOD VN FLEET

83286000000

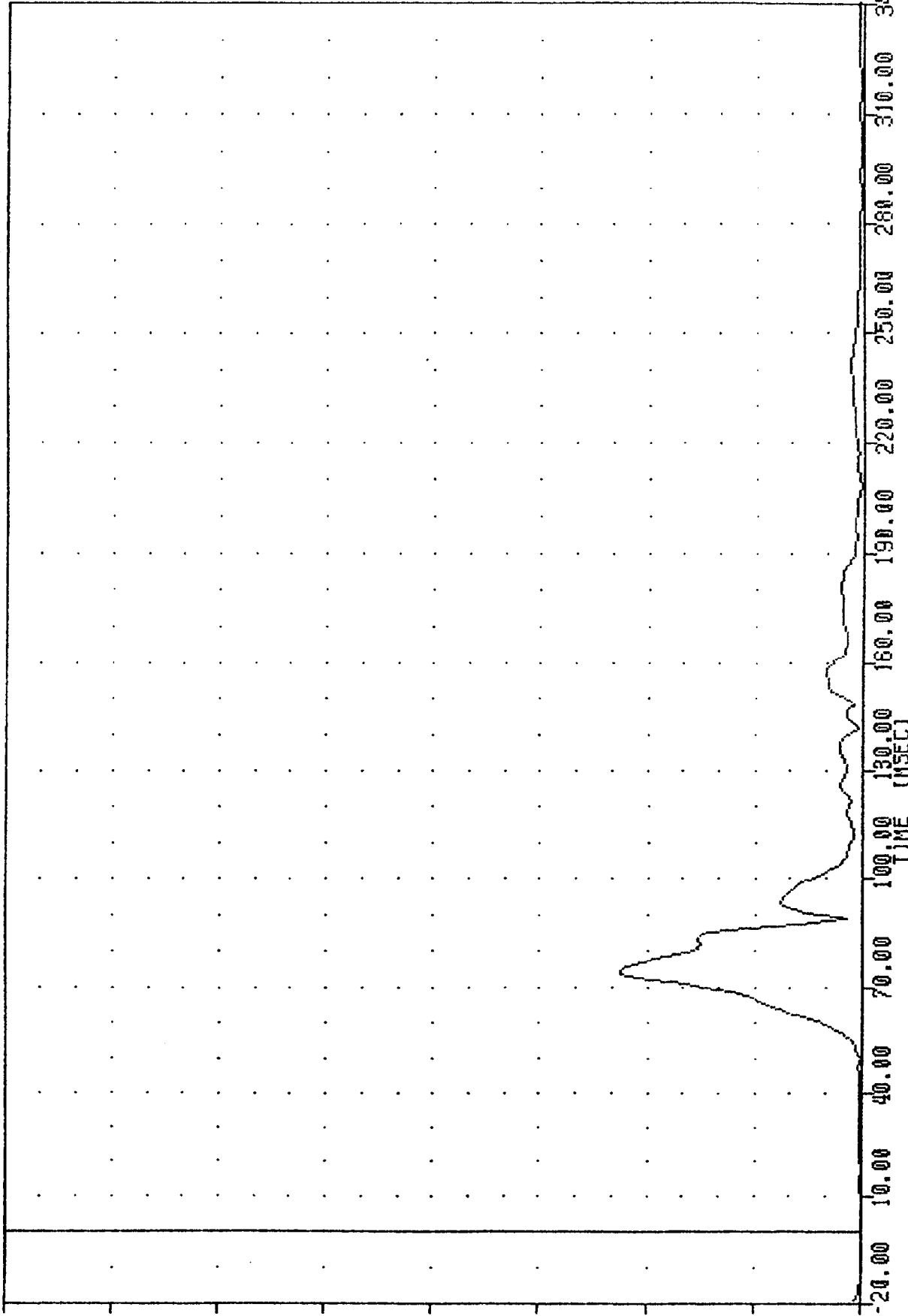
712RG3

PLOT DATE 21-OCT-83 13:28:41

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.188 -14.37, 112.48 & 73.75

ACCELERATION (G)

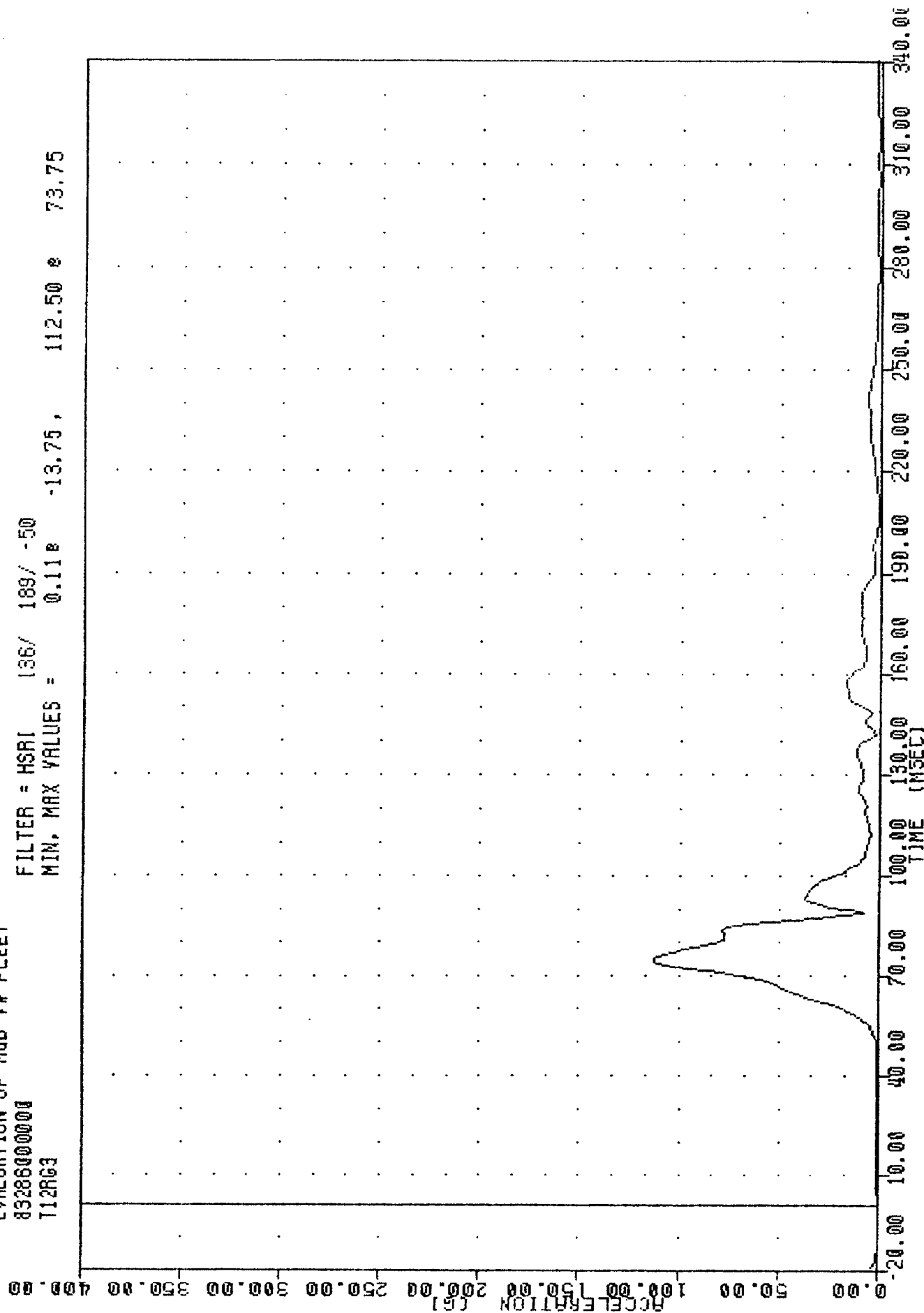


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE RESULTANT

TAC 831013
EVALUATION OF MOD YW FLEET
83286000000
T12RG3

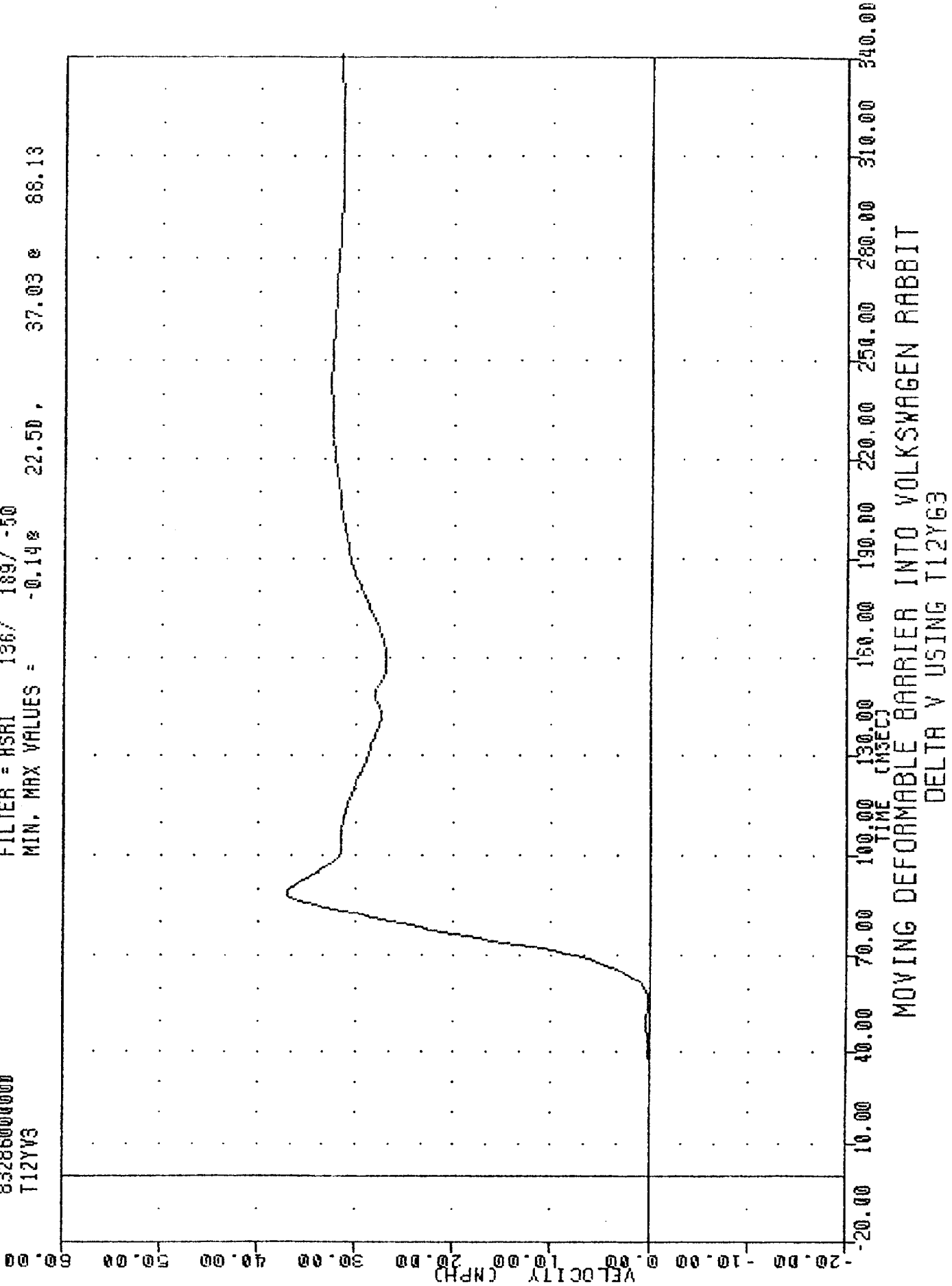
PLOT DATE 21-OCT-83 13:30:21

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = 0.11e -13.75, 112.50 e 73.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE RESULTANT USING T12YGC

TRC 831013 PLOT DATE 21 OCT 83 13:34:57
 EVALUATION OF M00 VW FLEET
 83286000000
 T12YV3
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.148 22.50, 37.03 e 88.13



TAL 831013 PLOT DATE 21-DEC-83 13:34:57

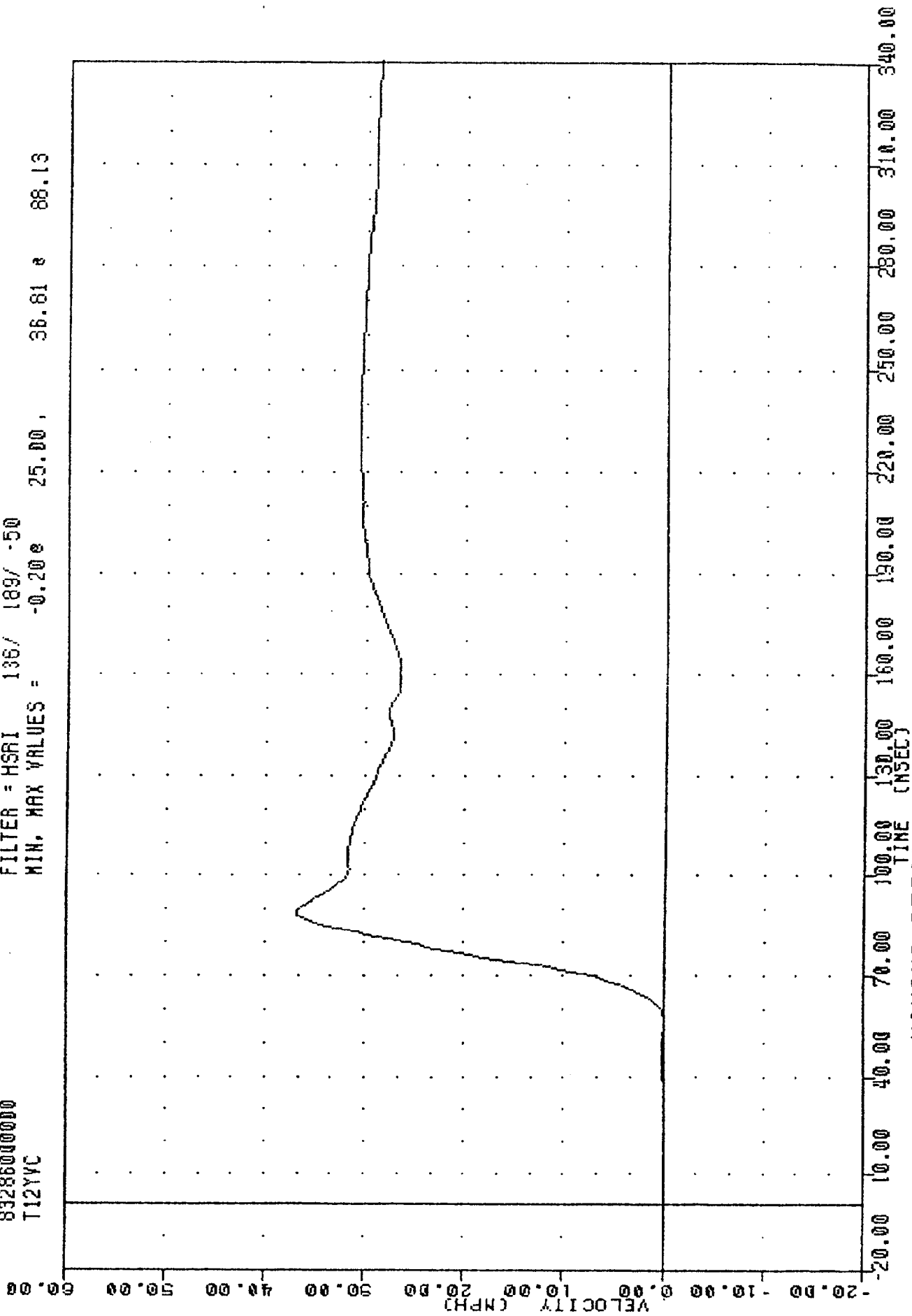
EVALUATION OF MOD VN FLEET

8328600000

T12YVC

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.20 25.00 36.81 88.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGC

TRC 831013

EVALUATION OF MOD VV FLEET

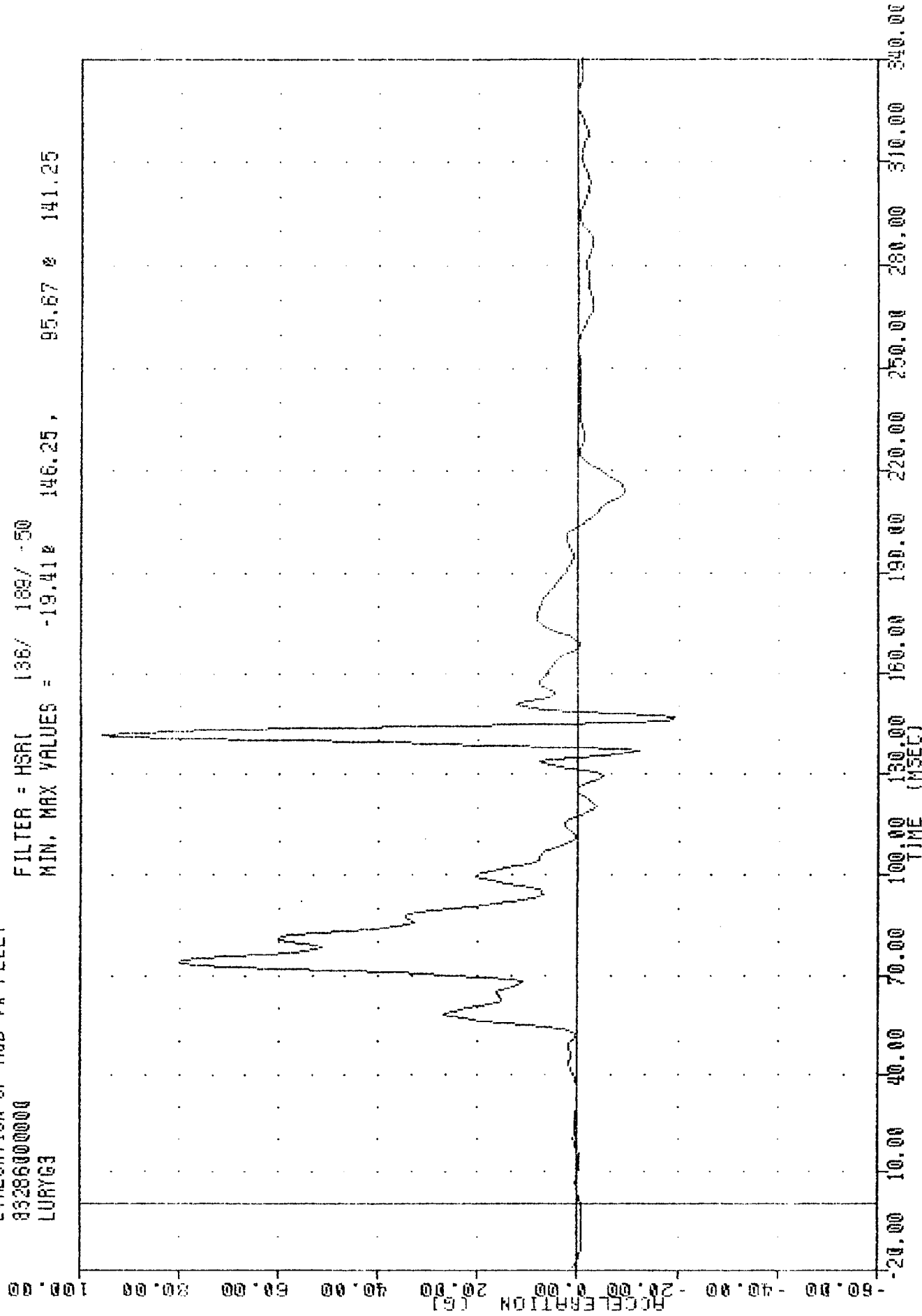
83286000000

LURY63

PLOT DATE 31-ULT-83 14:58:22

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = -19.41 146.25, 95.67 141.25



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

TRC 831013 PLOT DATE 21-OCT-83 13:34:57

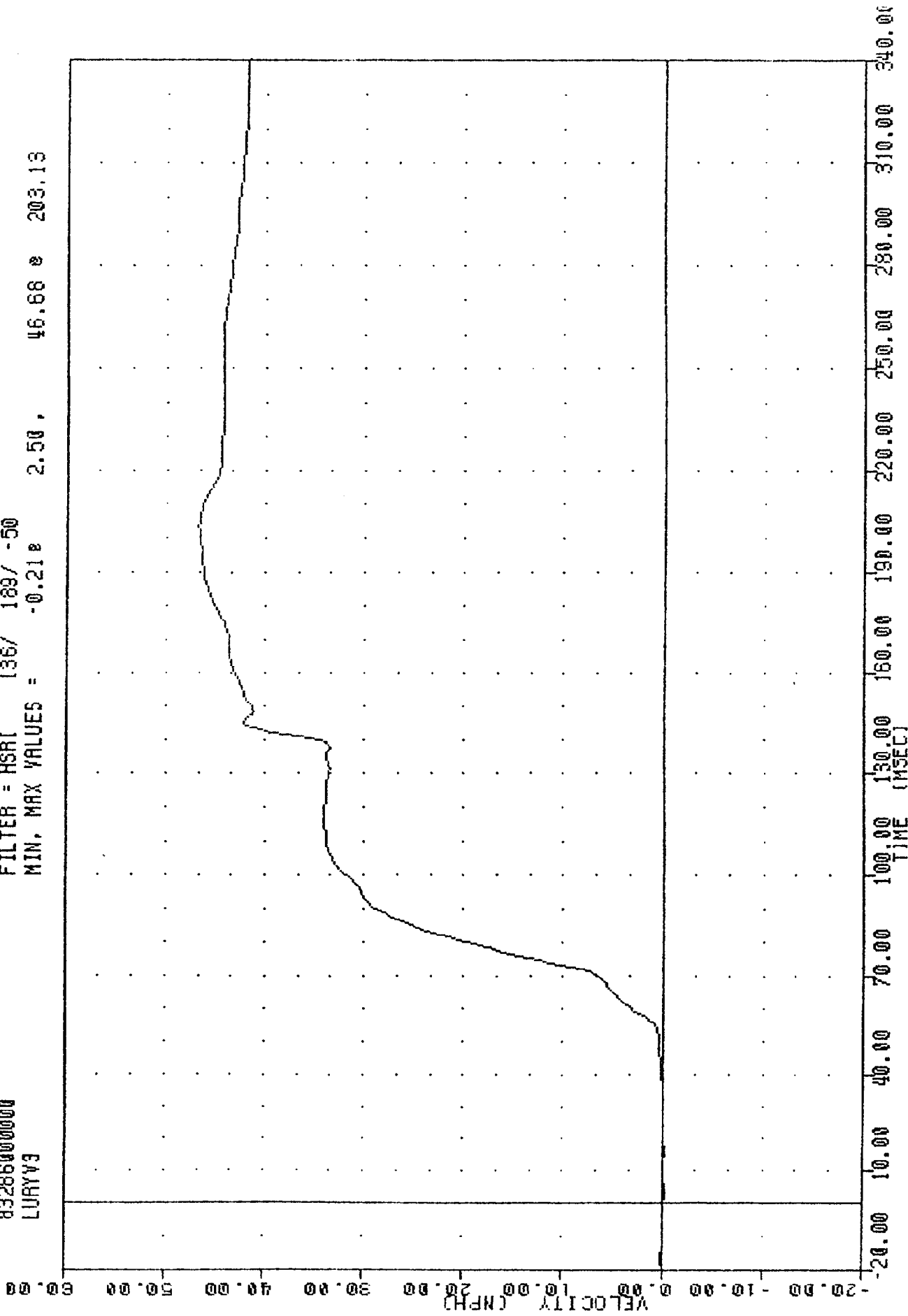
EVALUATION OF MOD YW FLEET

83286000000

LURYV3

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -0.21e 2.50, 46.68 e 203.13

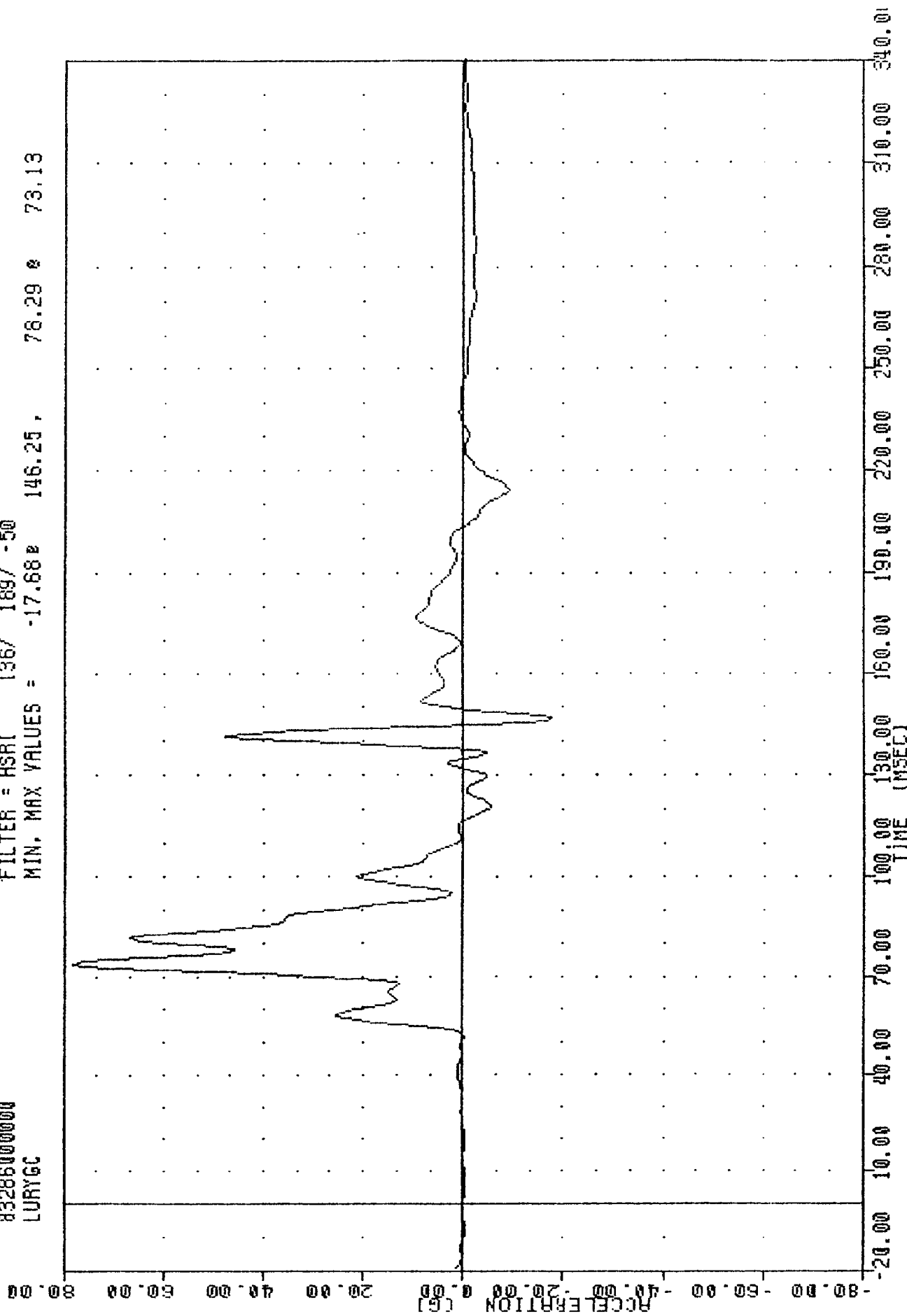


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYG3

TRC 831013
EVALUATION OF MOD VV FLEET
83286000000
LURYGC

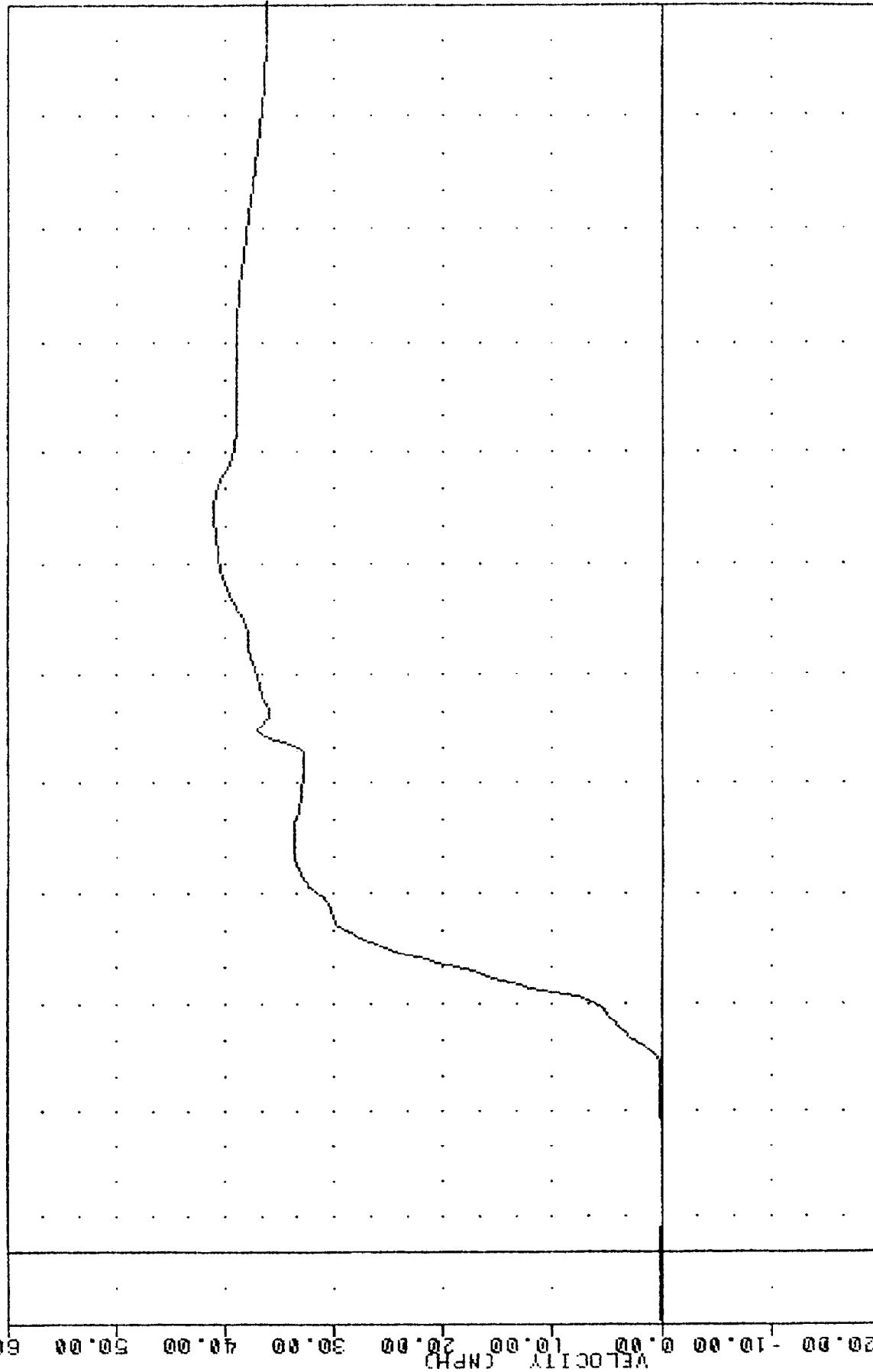
PLOT DATE 21-OCT-83 13:28:41

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -17.68e 146.25, 78.29 e 73.13



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

TAC 831013 PLOT DATE 21-OCT-83 13:34:57
 EVALUATION OF MDD VN FLEET
 83286000000
 LURYVC
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.052 23.75, 41.08 203.13



-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 LURYGC

TRC 831013 PLOT DATE 31-OCT-83 14:58:22

EVALUATION OF MDD VW FLEET

83286000000

LLRY63

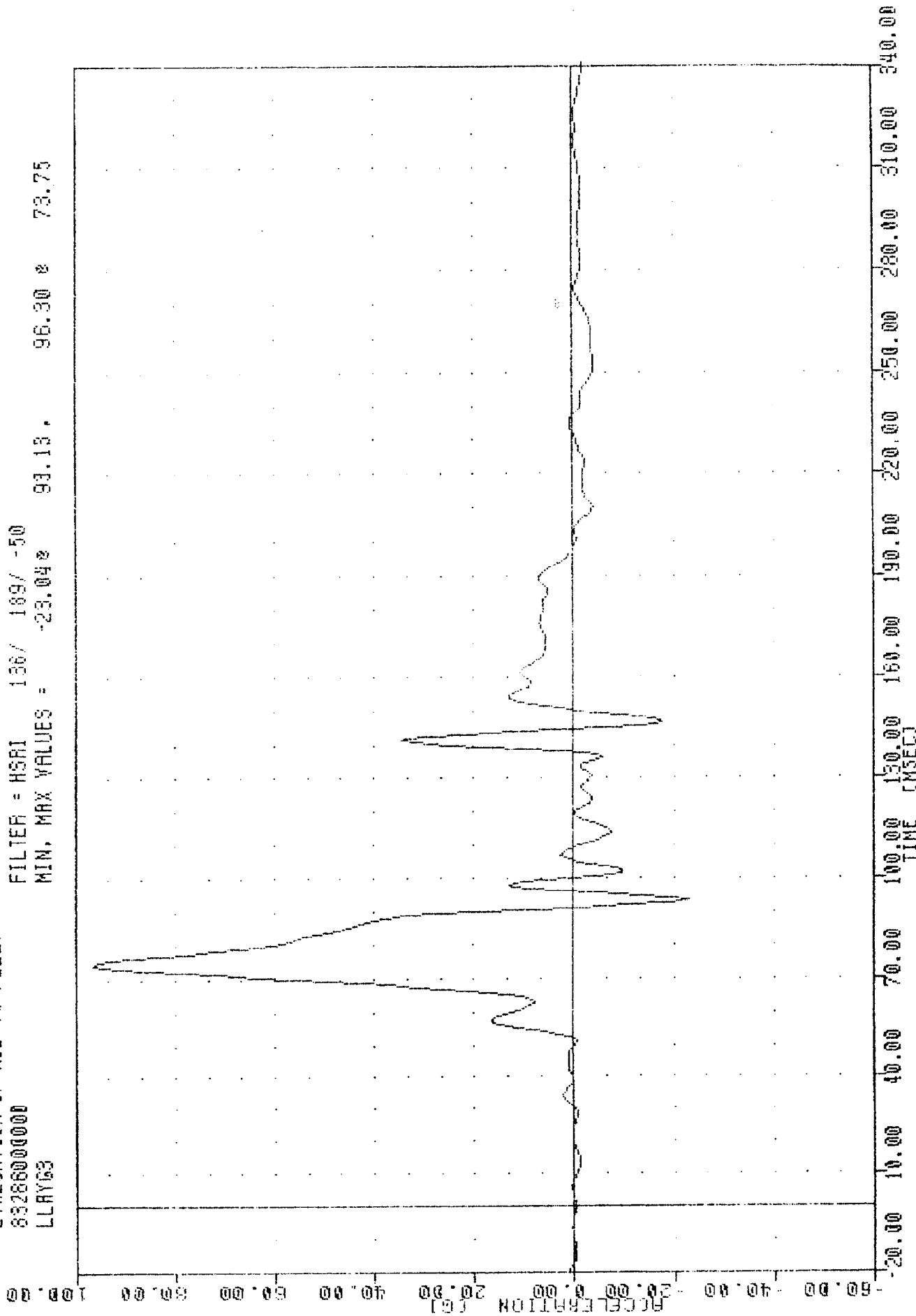
FILTER = HSRI 136/ 109/ -50

MIN. MAX VALUES = -23.048

93.13.

96.30 s

73.75

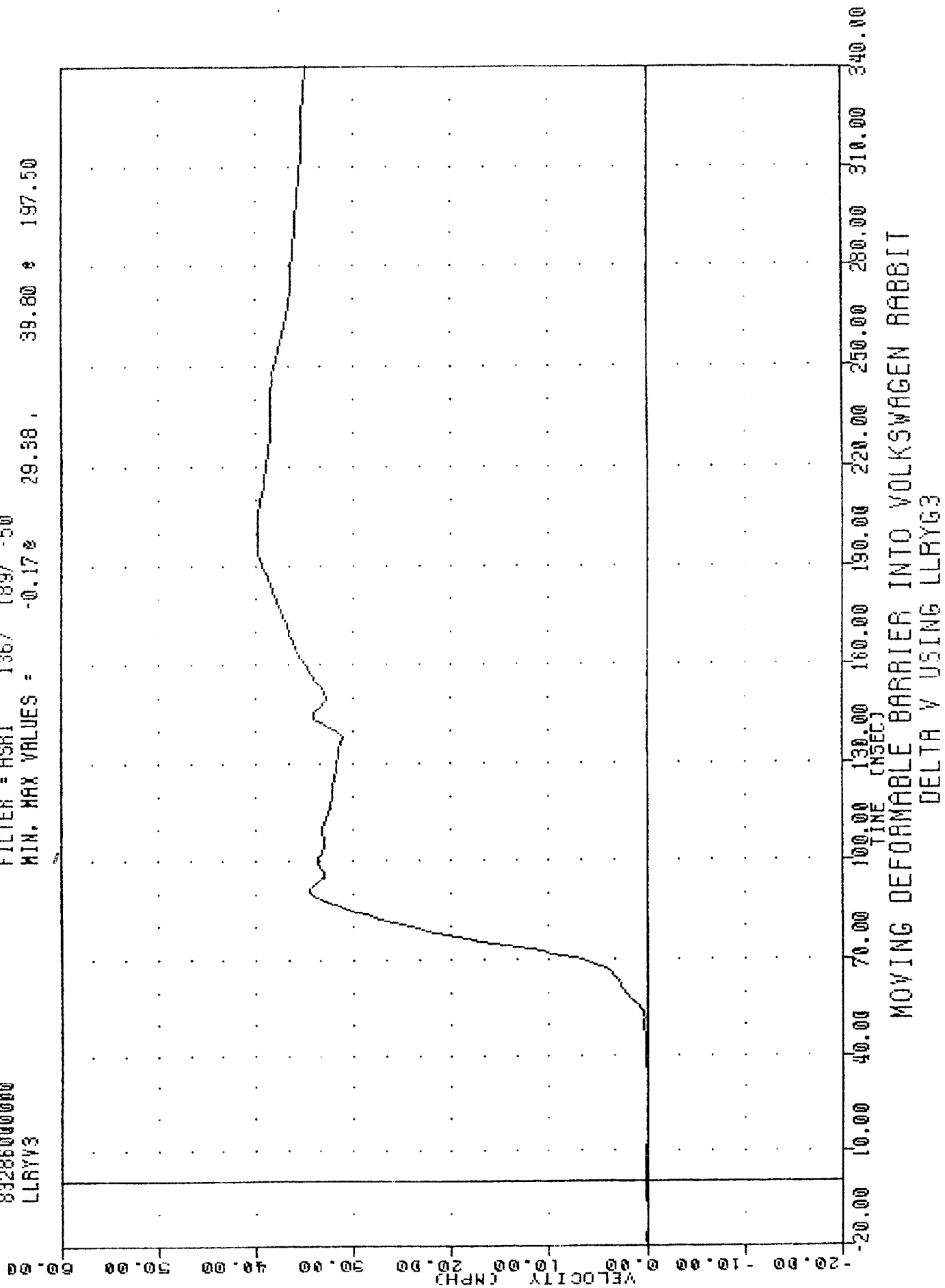


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

TRC 831013
EVALUATION OF MOD VW FLEET
83286000000
LLRYV3

PLOT DATE 21-OCT-83 13:34:57

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -0.17% 29.38, 39.80 * 197.50



TAC 831013

EVALUATION OF MOD VW FLEET

83286000000

LLRY6C

PLOT DATE

31-OCT-83

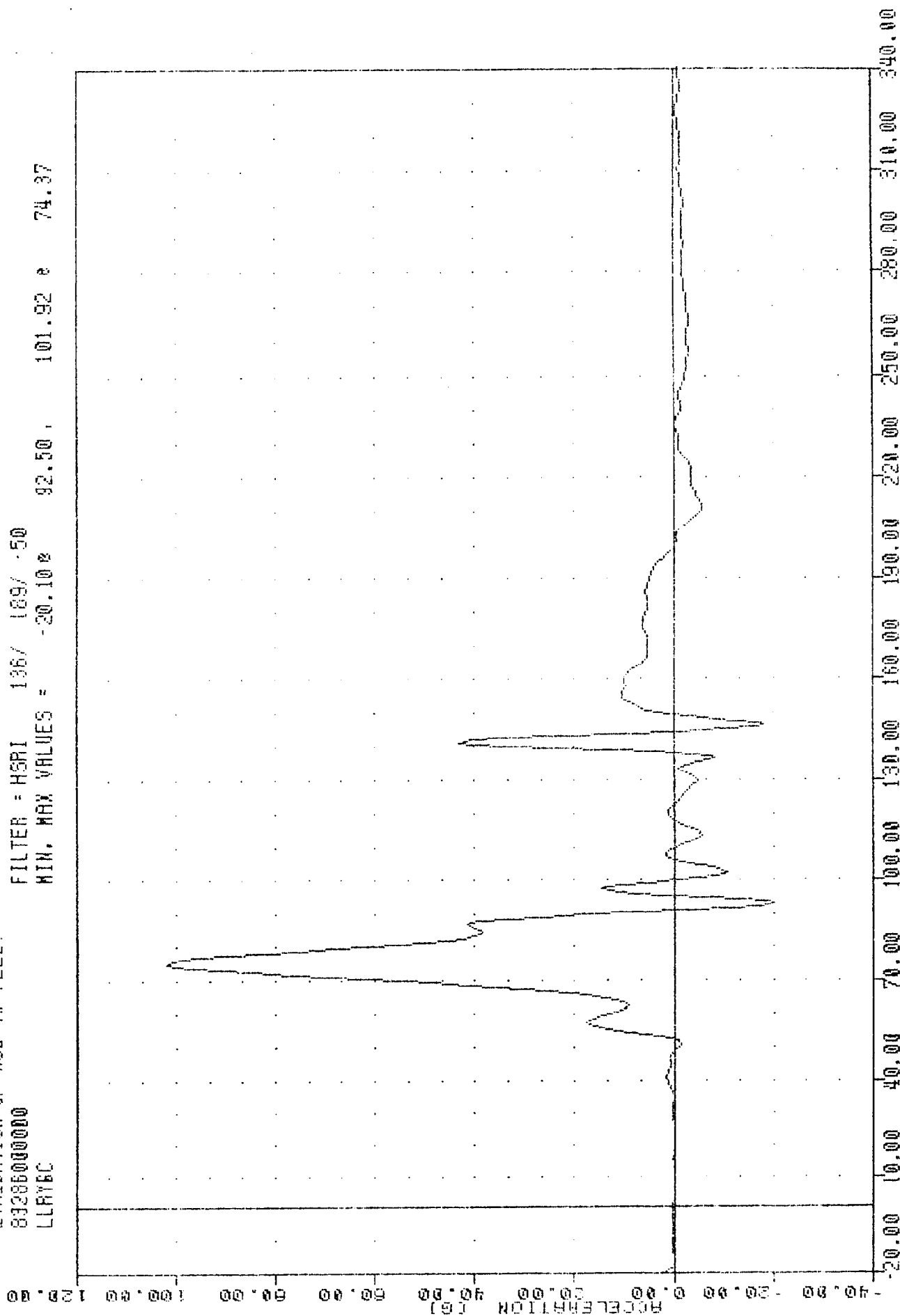
14:58:22

FILTER = HSRI 136/ 189/ -50

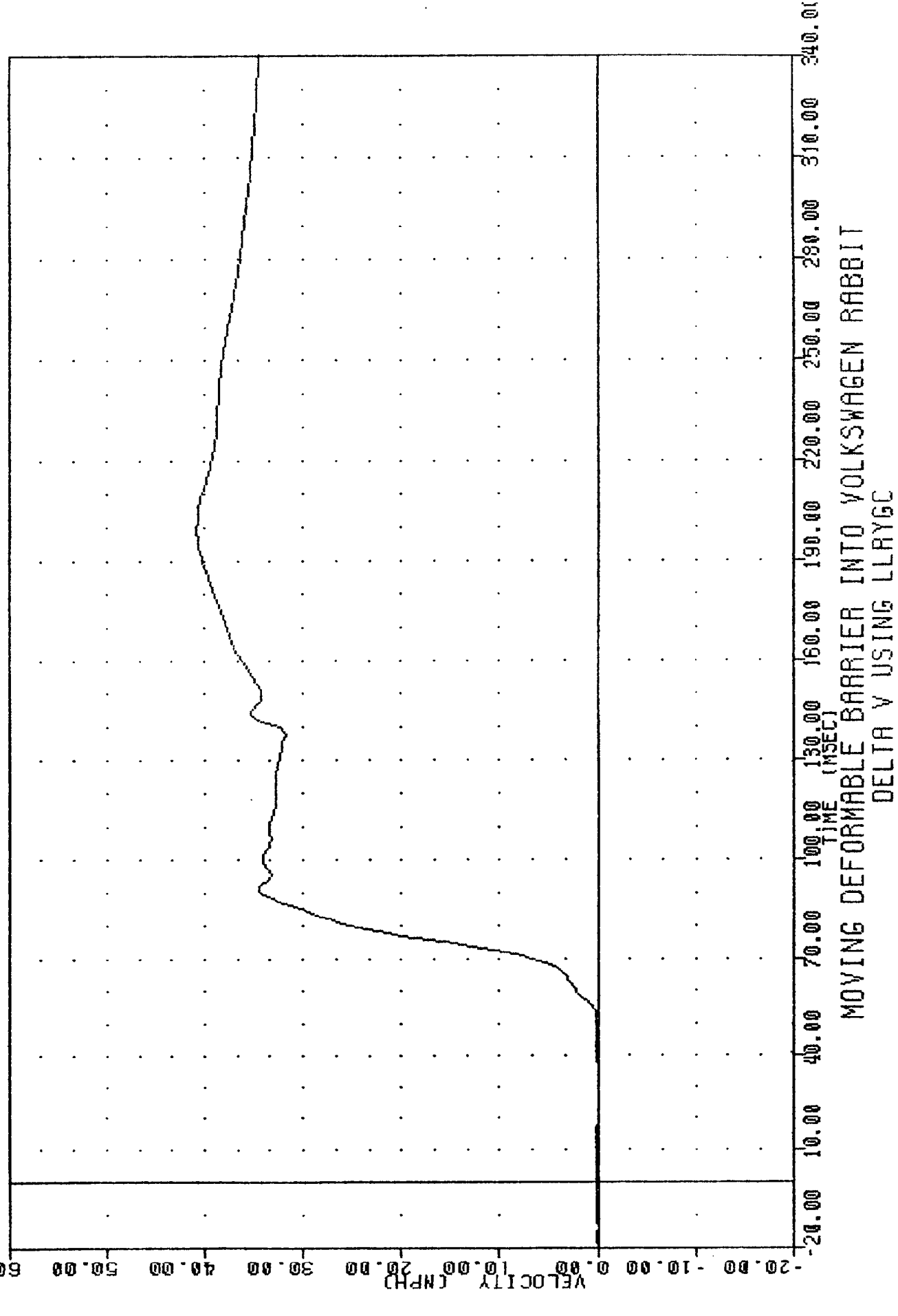
MIN. MAX VALUES = -20.10 92.50

101.92 e

74.37



18C
 EVALUATION OF MOD YN FLEET
 83286000000
 LLYVC
 FILTER = HSR1 136/ 189/ -50
 MIN, MAX VALUES = -0.04e 26.25, 40.74 s 198.12
 PLOT DATE 21 OCT 83 13:34:57

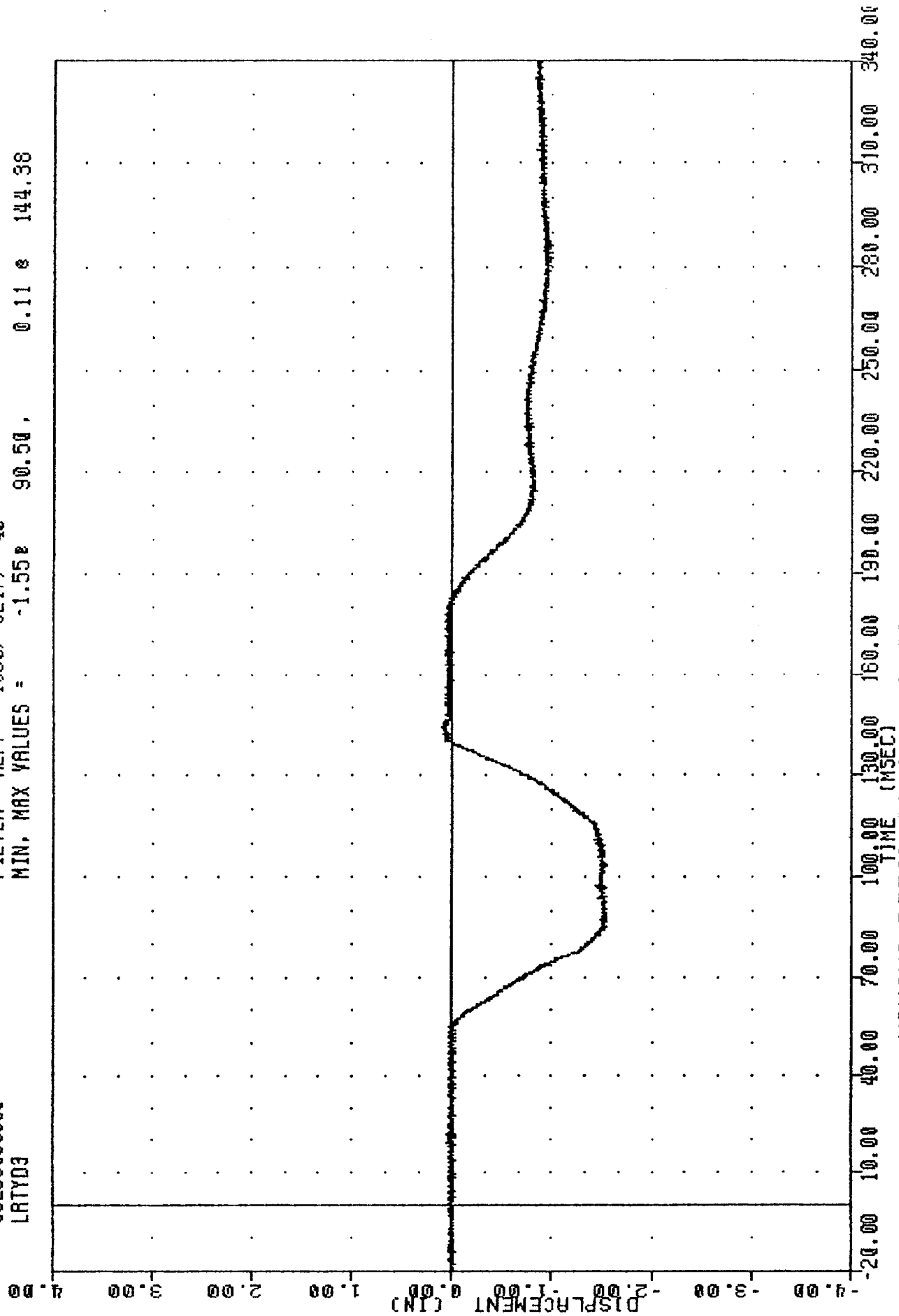


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLYGC

TRC
EVALUATION OF MOD YW FLEET
83286000000
LRTYD3

PLOT DATE 21 OCT 89 11:07:17

FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -1.55 90.50, 0.11 144.38



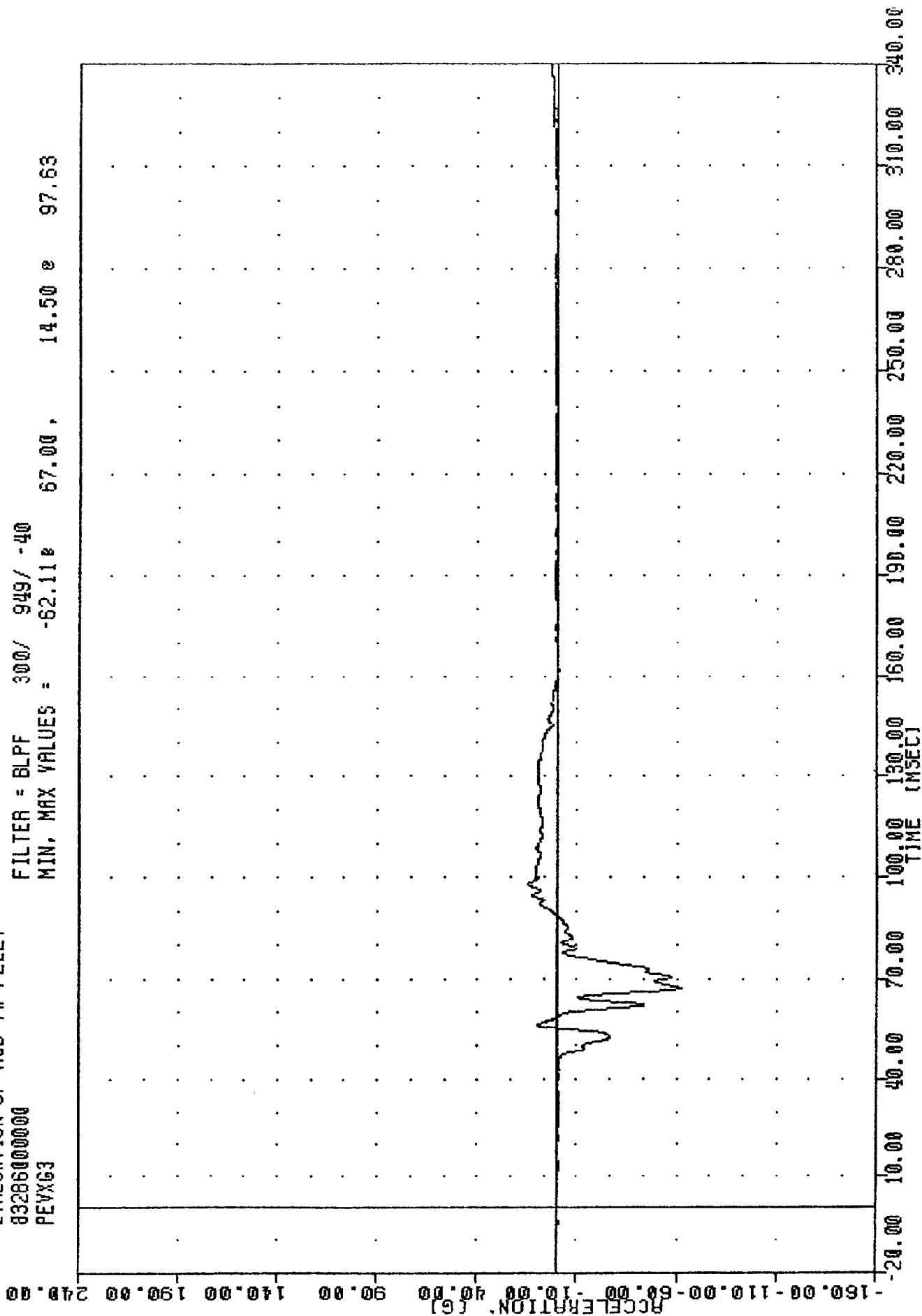
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT RIB TO SPINE DISPLACEMENT INCHES

TRC 831013
EVALUATION OF MOD YW FLEET
83286000000
PEVXG3

PLOT DATE 21 OCT 83 11:01:17

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -62.11e 67.00, 14.50 e 97.63

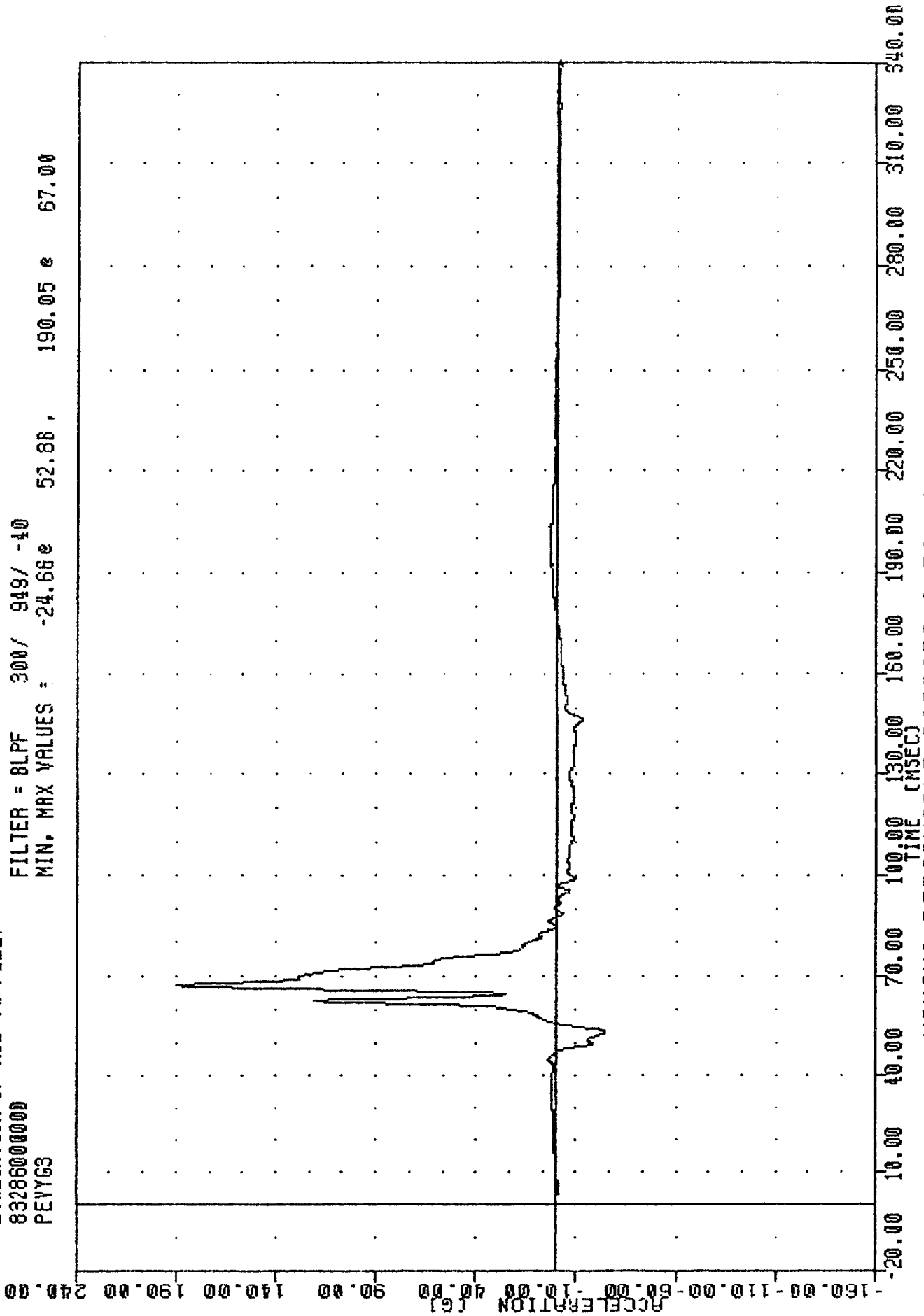


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION X AXIS

TAC 031013
EVALUATION OF MDD VW FLEET
83286000000
PEVYG3

PLOT DATE 21 OCT 83 11:01:17

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -24.66e 52.88, 190.05 e 67.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION Y AXIS

TAC 831013

EVALUATION OF MOD VN FLEET

8328600000

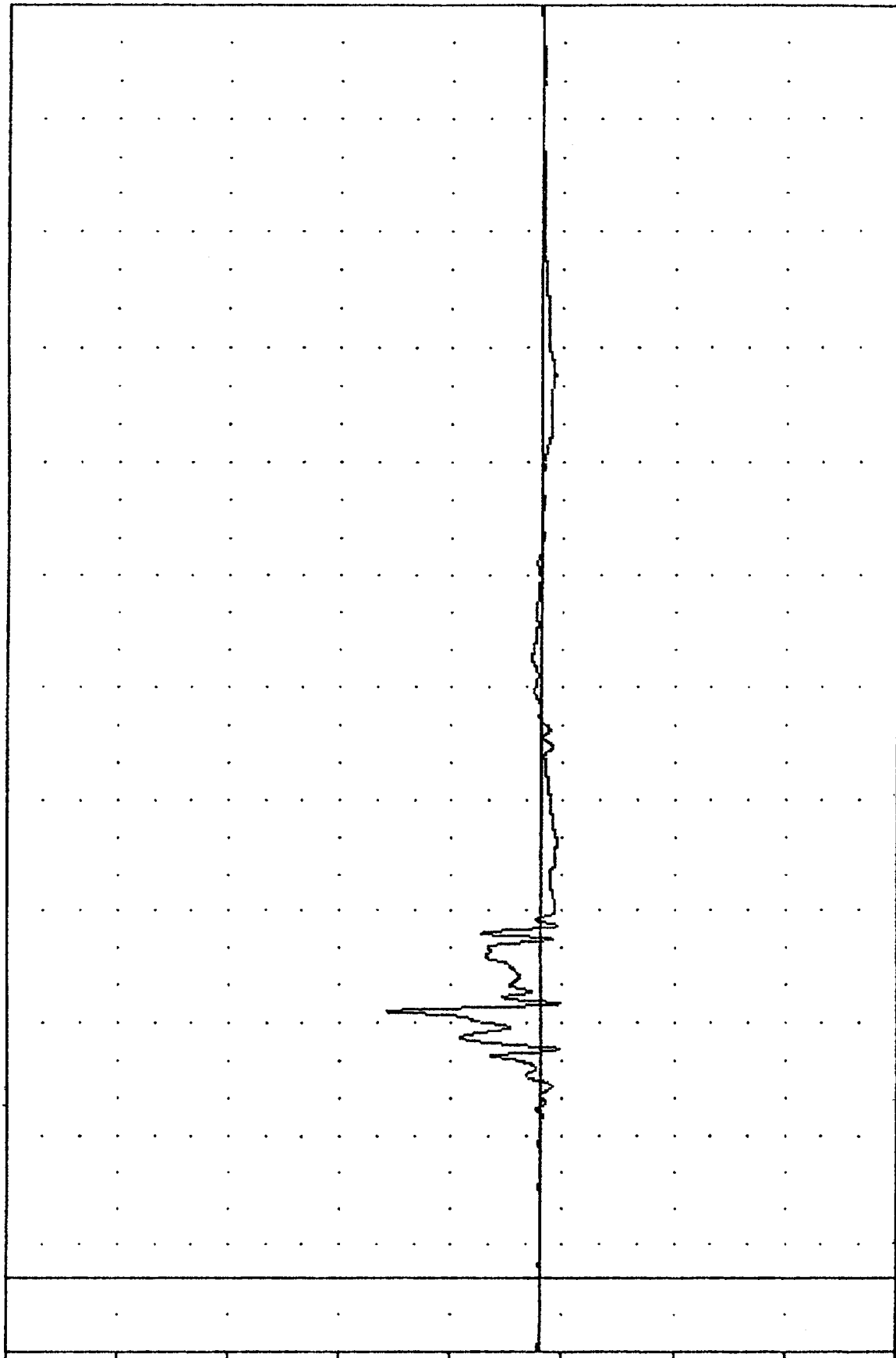
PEVZ63

PLOT DATE 21 OCT 83 11:01:17

FILTER = 8LPF 300/ 949/ -40

MIN, MAX VALUES = -9.00e 75.13, 68.99 & 73.00

ACCELERATION (G)



TIME (MSEC)

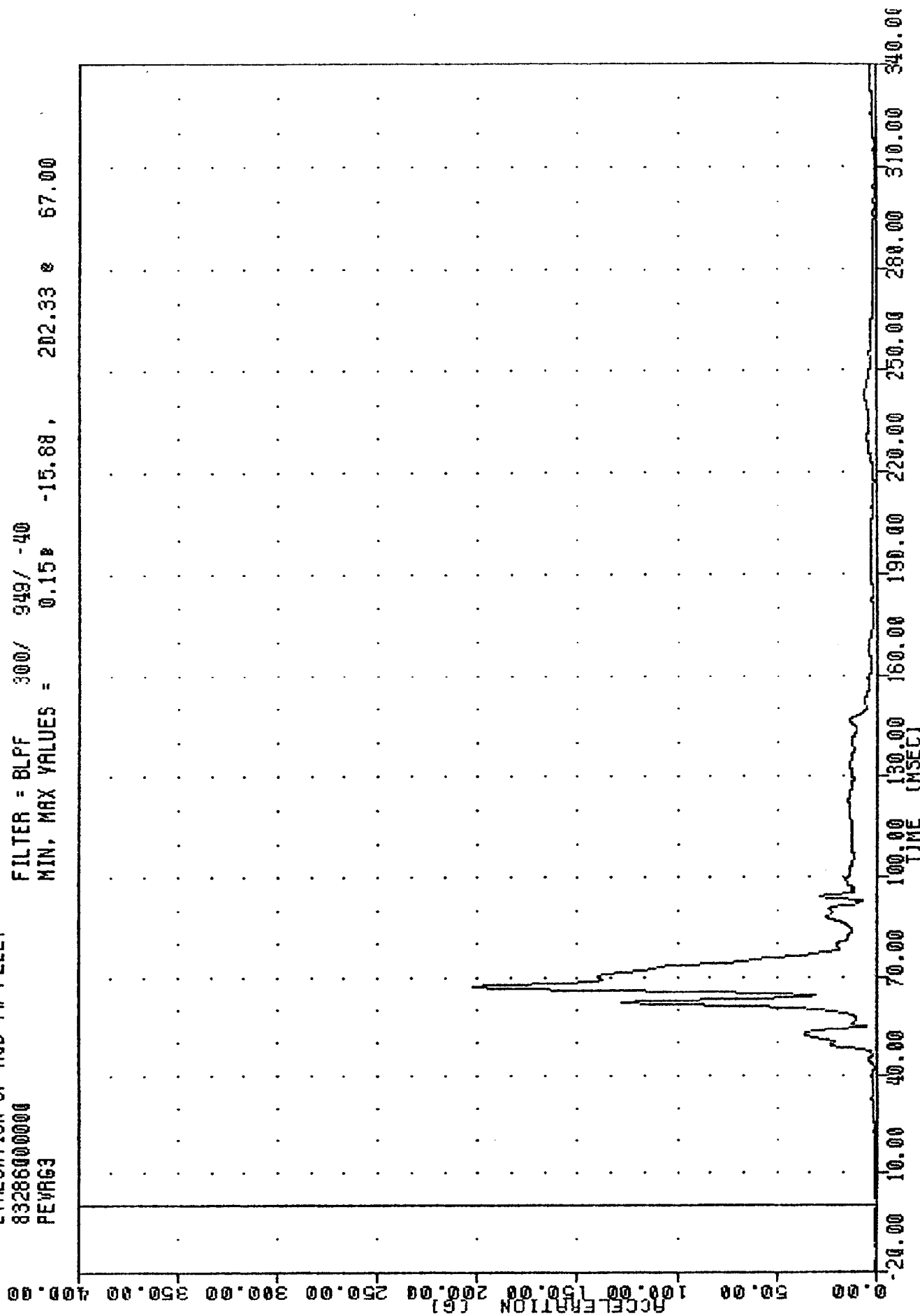
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION Z AXIS

TRC 831013
EVALUATION OF MOD YW FLEET
83286000000
PEVR63

PLOT DATE 21 OCT 83 13:26:42

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 0.158 -15.88, 202.33 @ 67.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS RESULTANT

TAC 831013 PLOT DATE 21-OCT-83 15:00:37

EVALUATION OF MOD YW FLEET

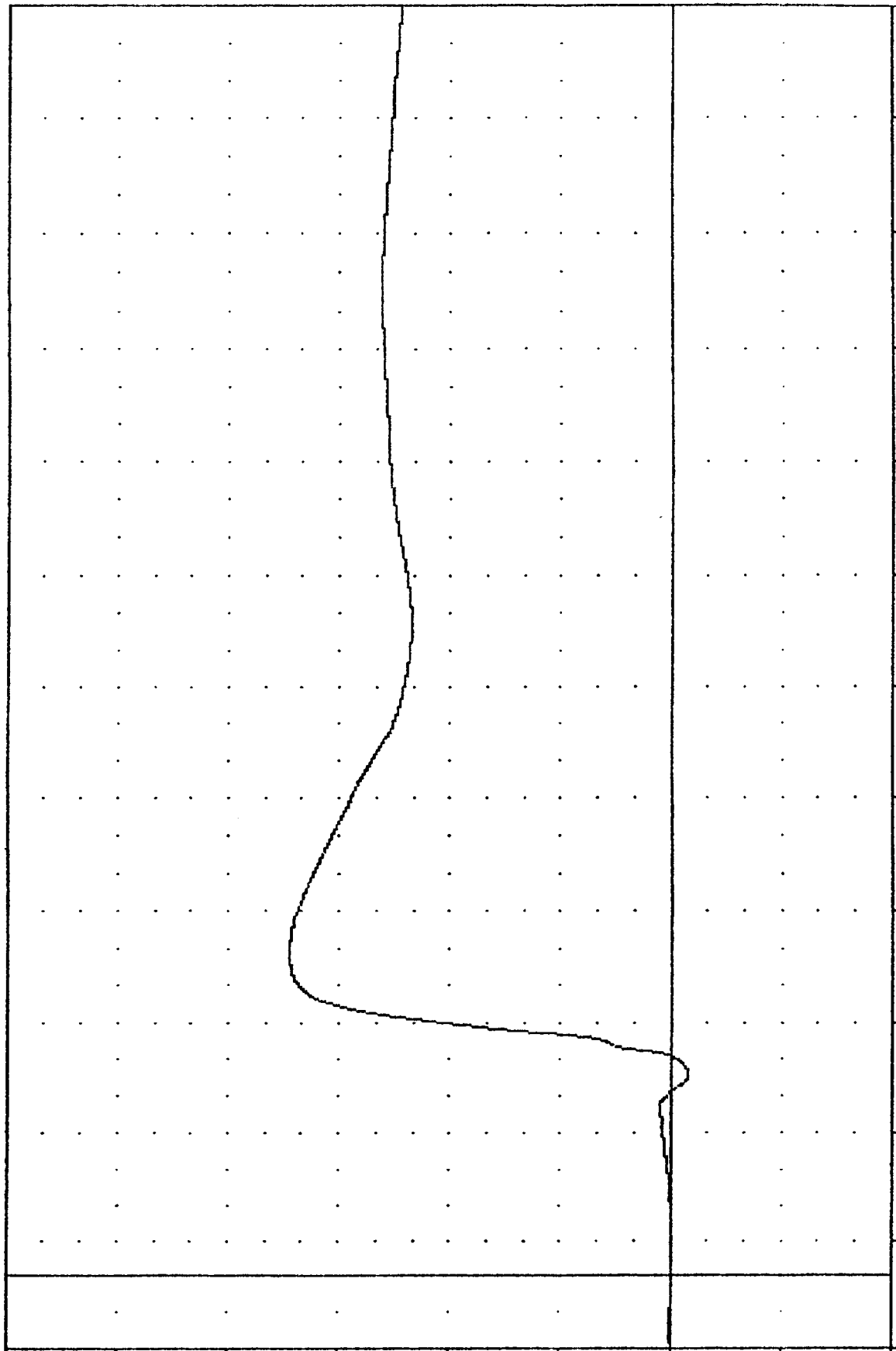
8328600000

PEVYV3

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -1.66 55.50 , 34.49 87.38

VELOCITY (MPH)



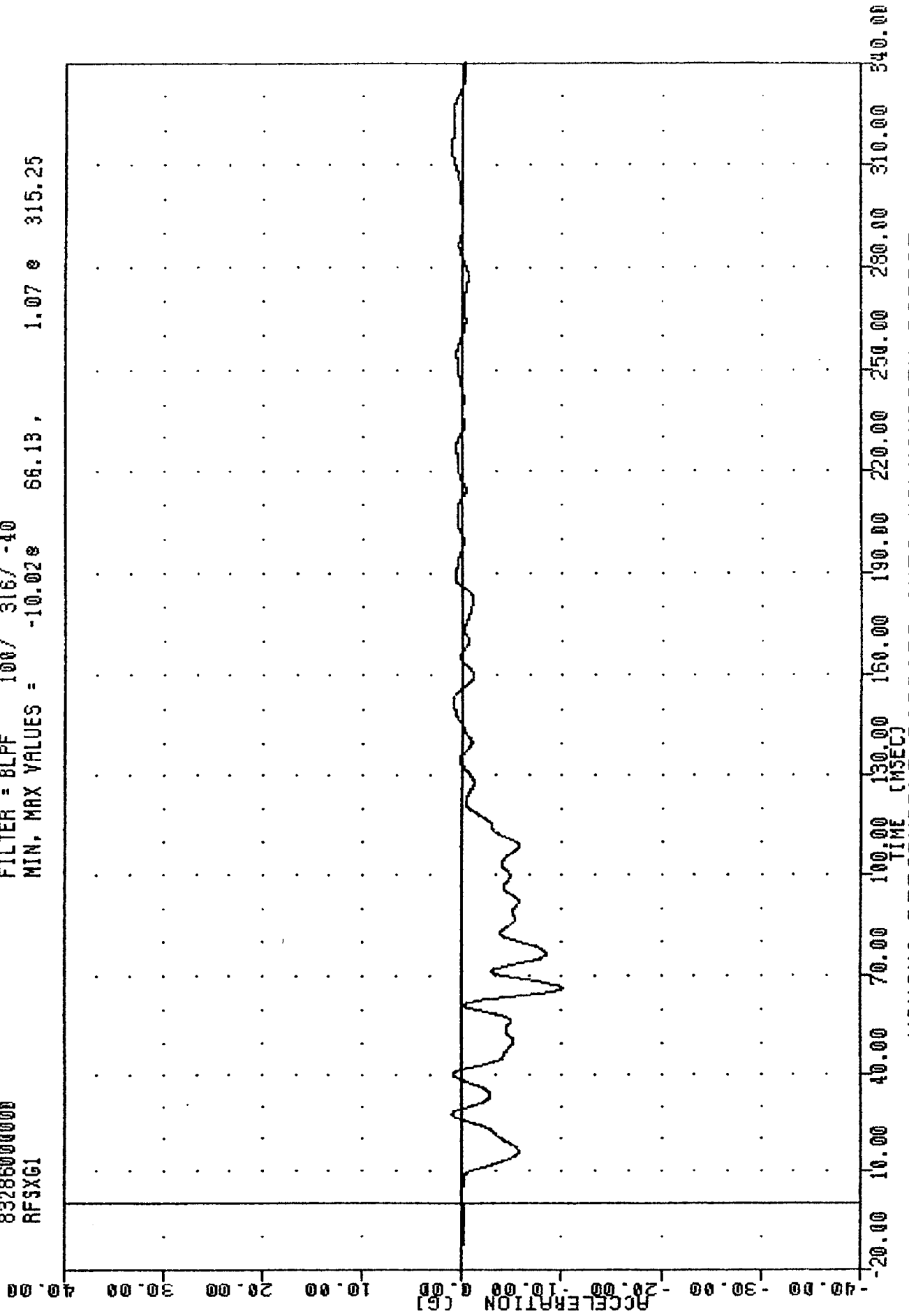
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING PEVYV3

TRC 831015
EVALUATION OF MOD VV FLEET
83286000000
RFSXG1

PLOT DATE 21-OCT-83 11:01:17

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -10.02e 66.13, 1.07 e 315.25



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

TAC 837013

EVALUATION OF MOD VN FLEET

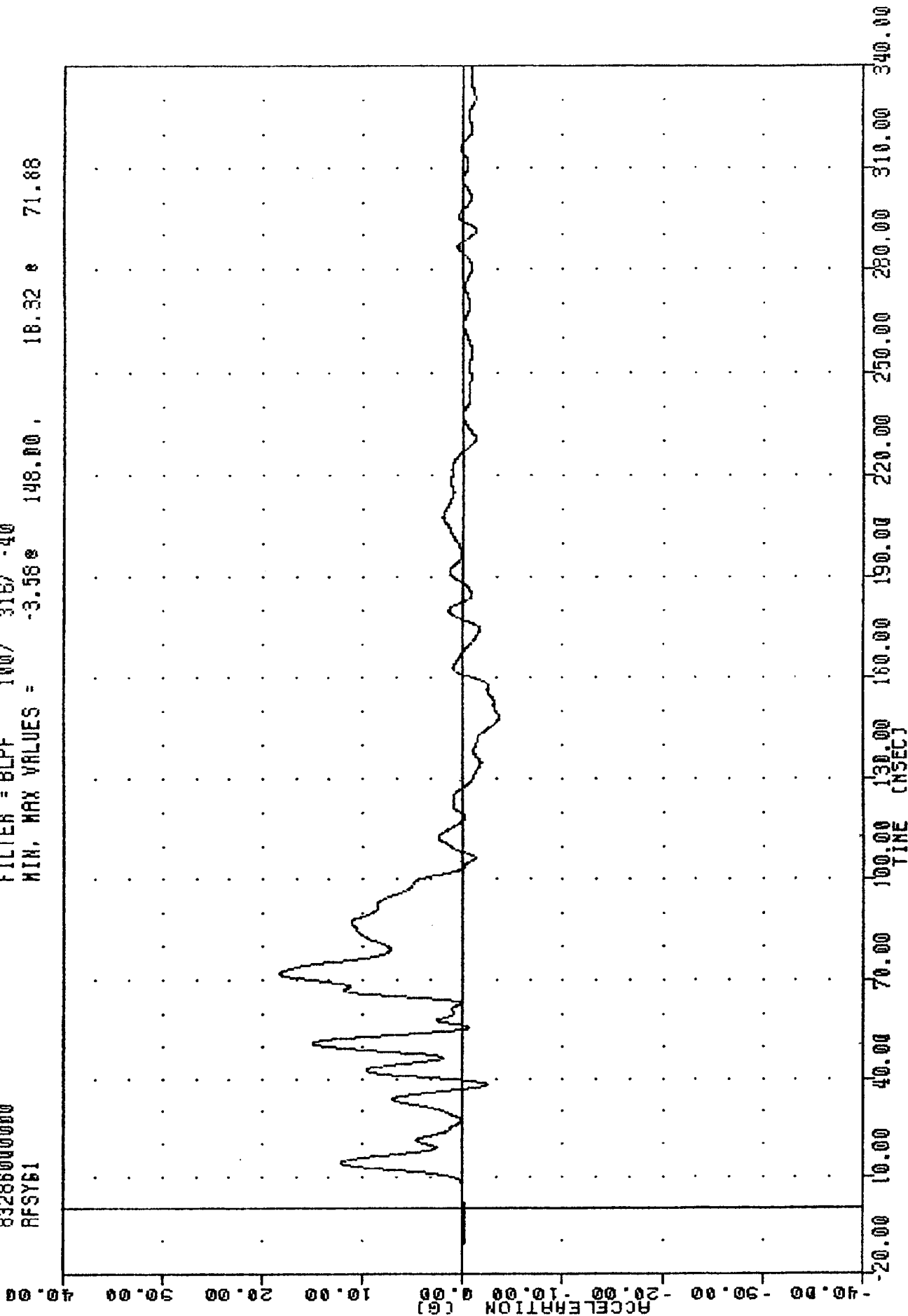
83286000000

RFSYS1

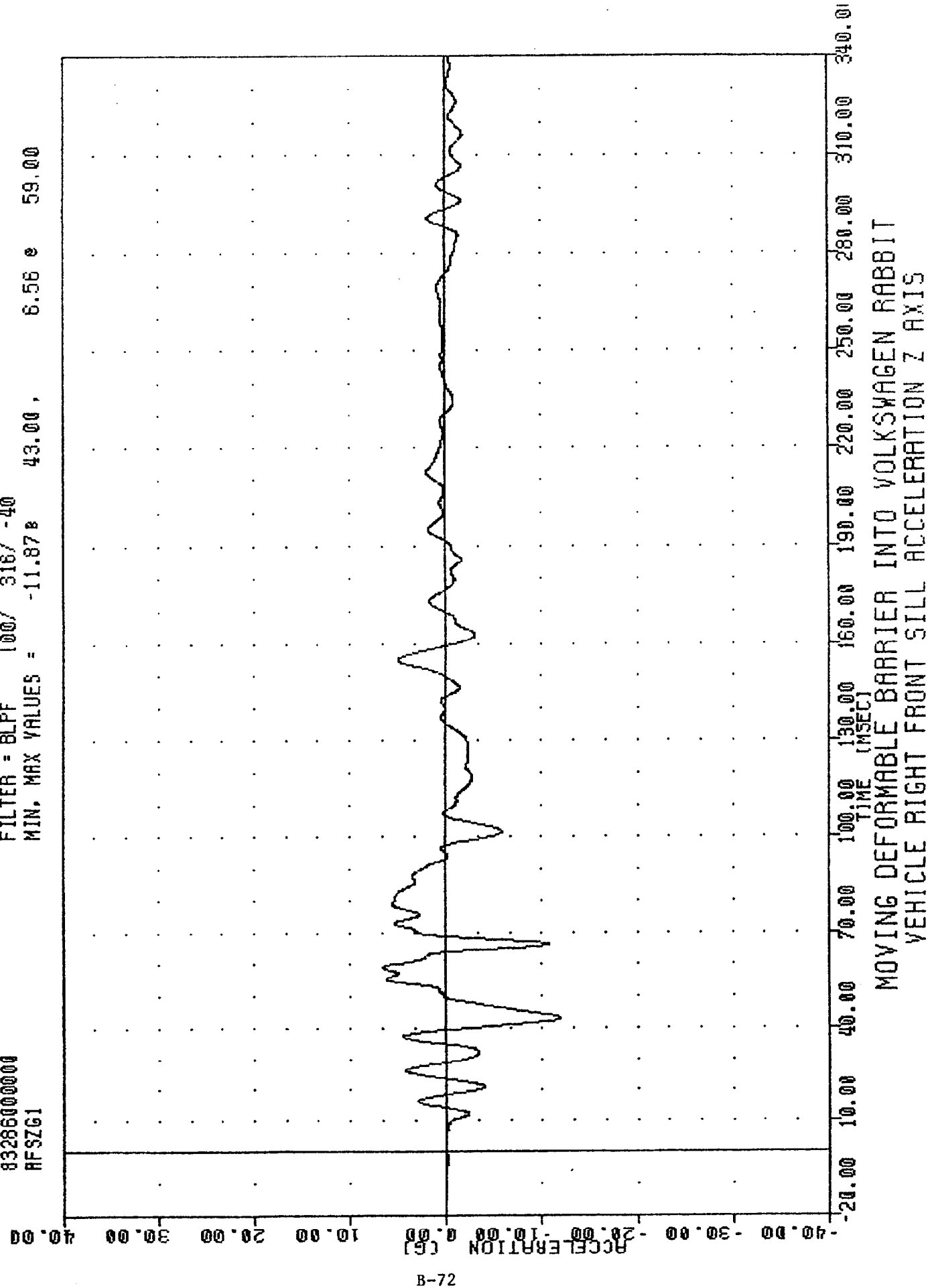
PLOT DATE 21-DEC-85 11:01:17

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -3.56e 148.00, 18.32 e 71.88



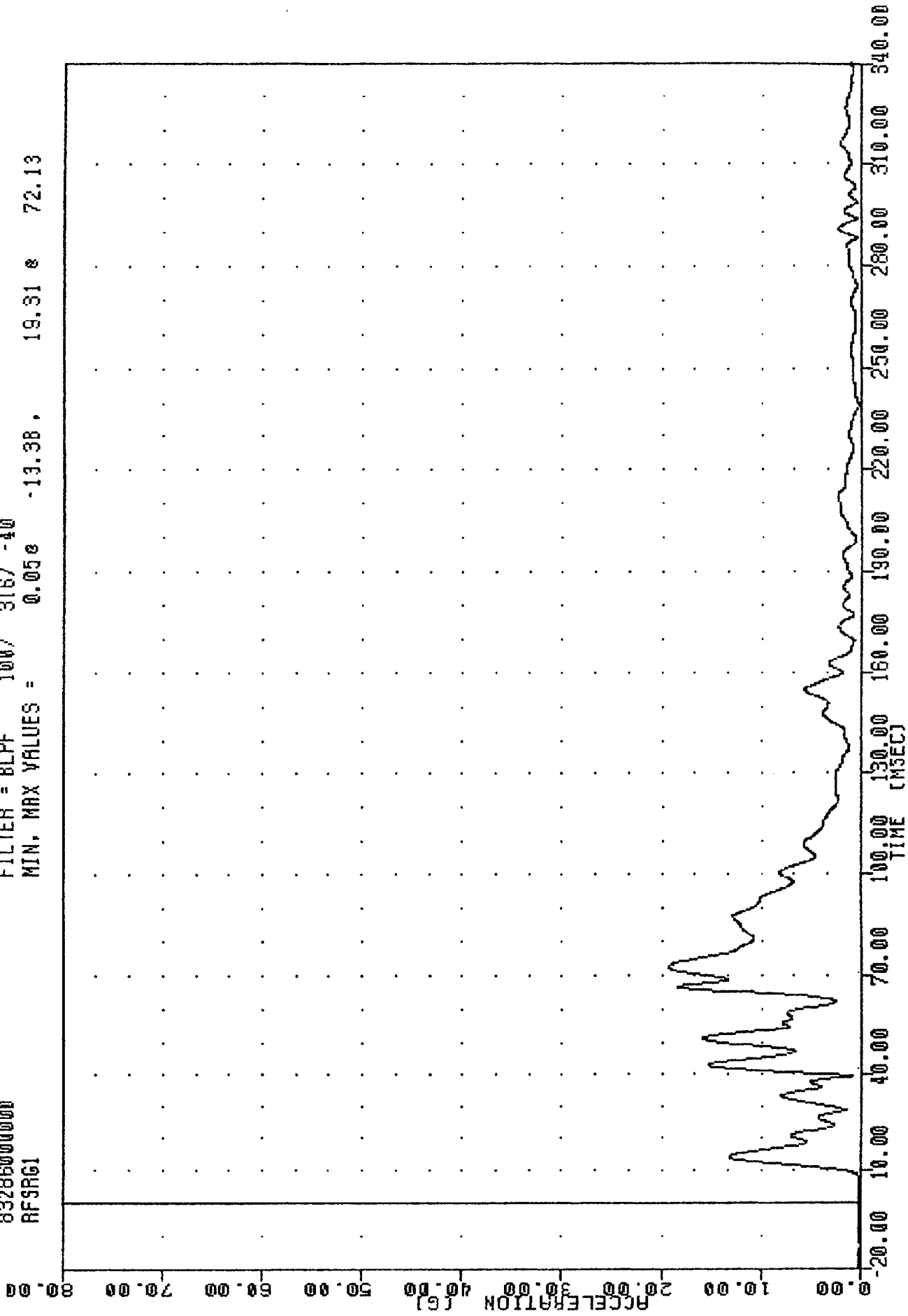
TRC 831013 PLOT DATE 21-OCT-83 11:01:17
 EVALUATION OF MOD VV FLEET
 83286000000
 RFSZG1
 FILTER = 8LPF 100/ 316/ -40
 MIN, MAX VALUES = -11.87g 43.00, 8.58 g 59.00



TRC
EVALUATION OF MOD VV FLEET
83286000000
RFSRG1

PLOT DATE 21 OCT 85 13:28:42

FILTER = 8LPF 100/ 316/ -40
MIN, MAX VALUES = 0.050 -13.38, 19.31 & 72.13

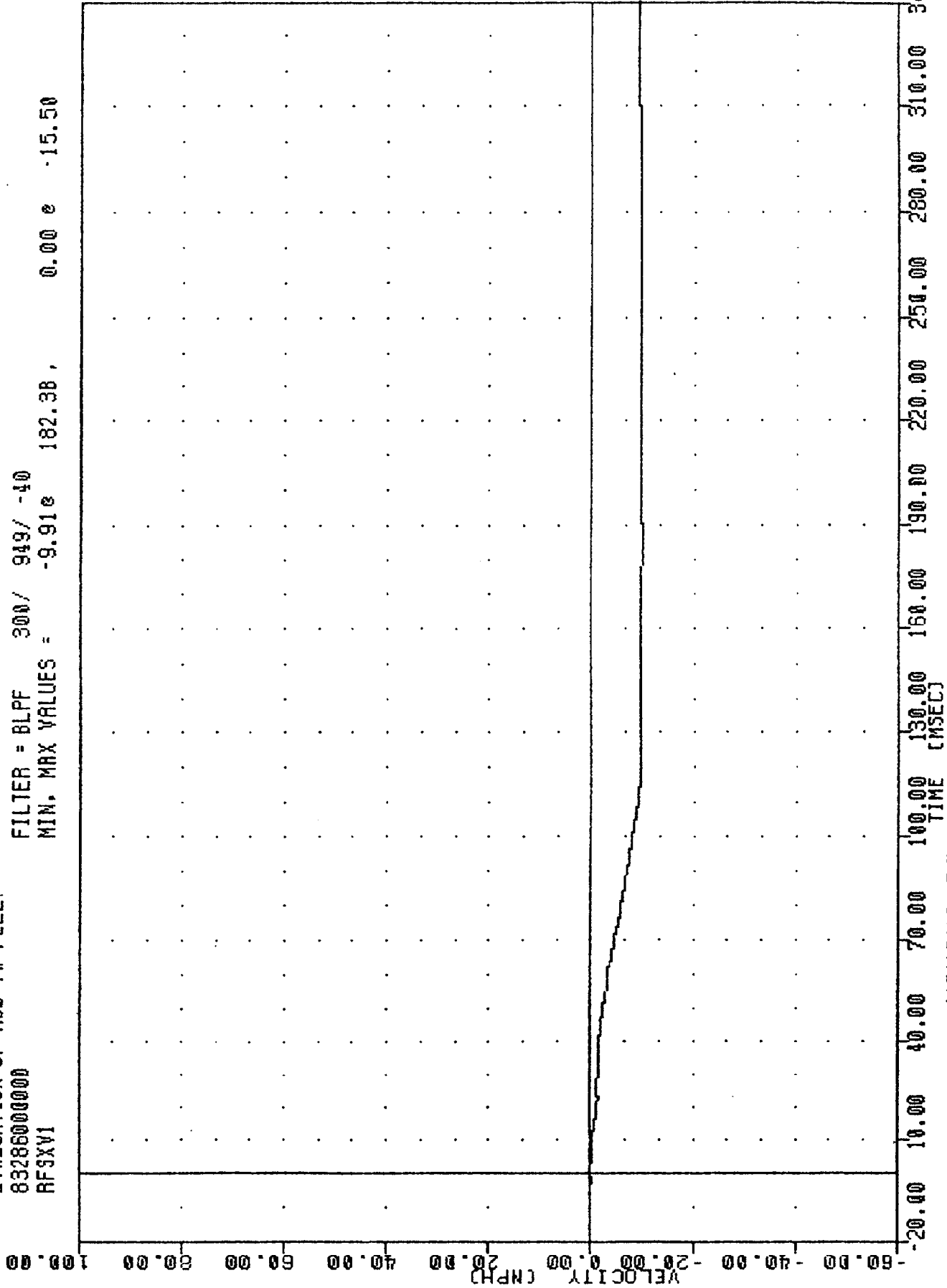


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL RESULTANT

TRC
EVALUATION OF MDD VW FLEET
83286000000
RFSXV1

PLOT DATE 21 OCT 83 15:00:37

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -9.91e 182.38 , 0.00 e -15.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RFSXG1

TRC 83286000000
 EVALUATION OF MOD YW FLEET
 RFSYV1

PLOT DATE 21 OCT 83 15:00:37

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.058 5.38, 13.63 & 124.50

100.00

80.00

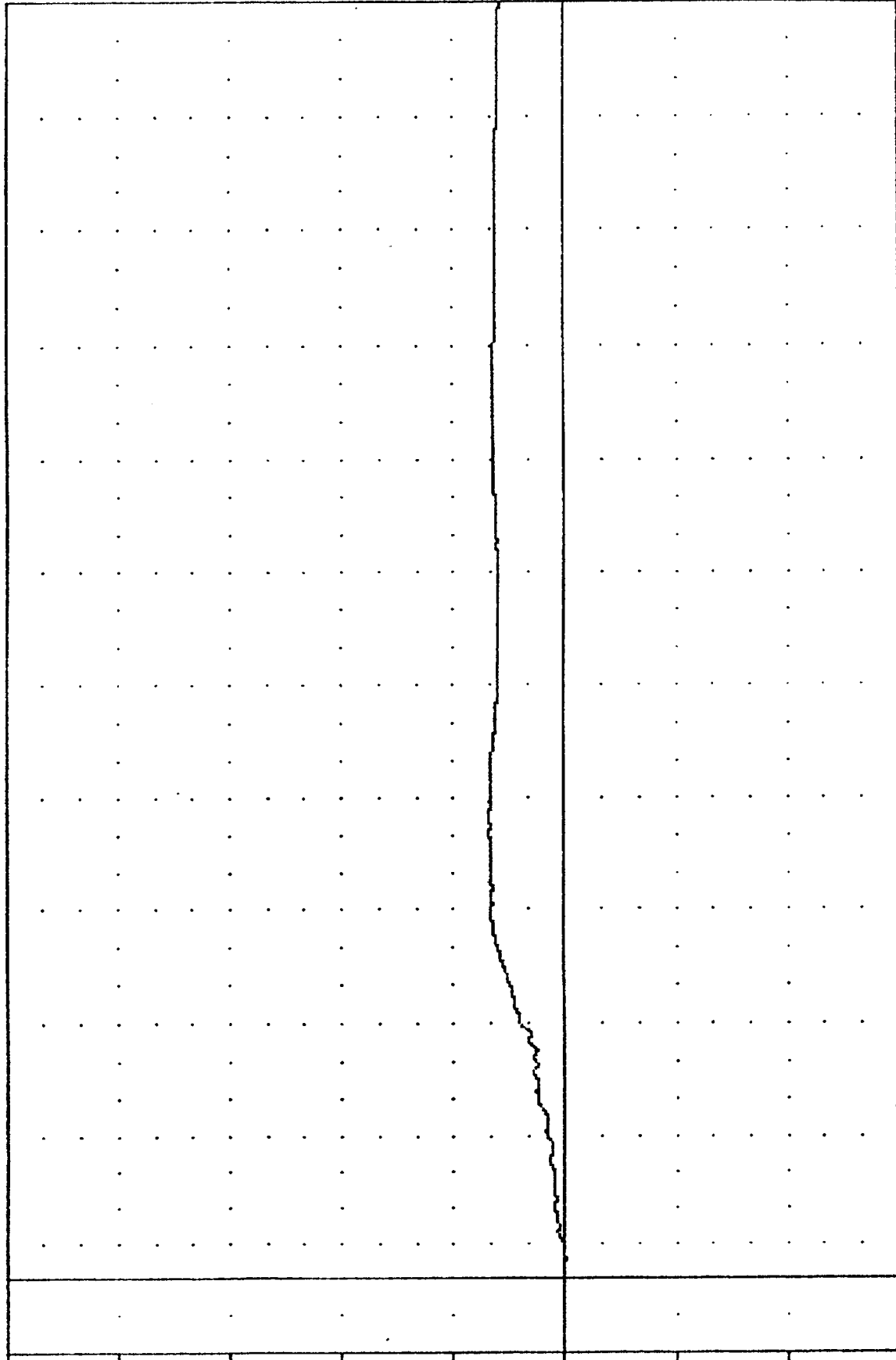
60.00

40.00

20.00

R-75

VELOCITY (MPH)



-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
 DELTA V USING RFSYG1

TRC 851013 PLOT DATE 21 OCT 85 17:01:17

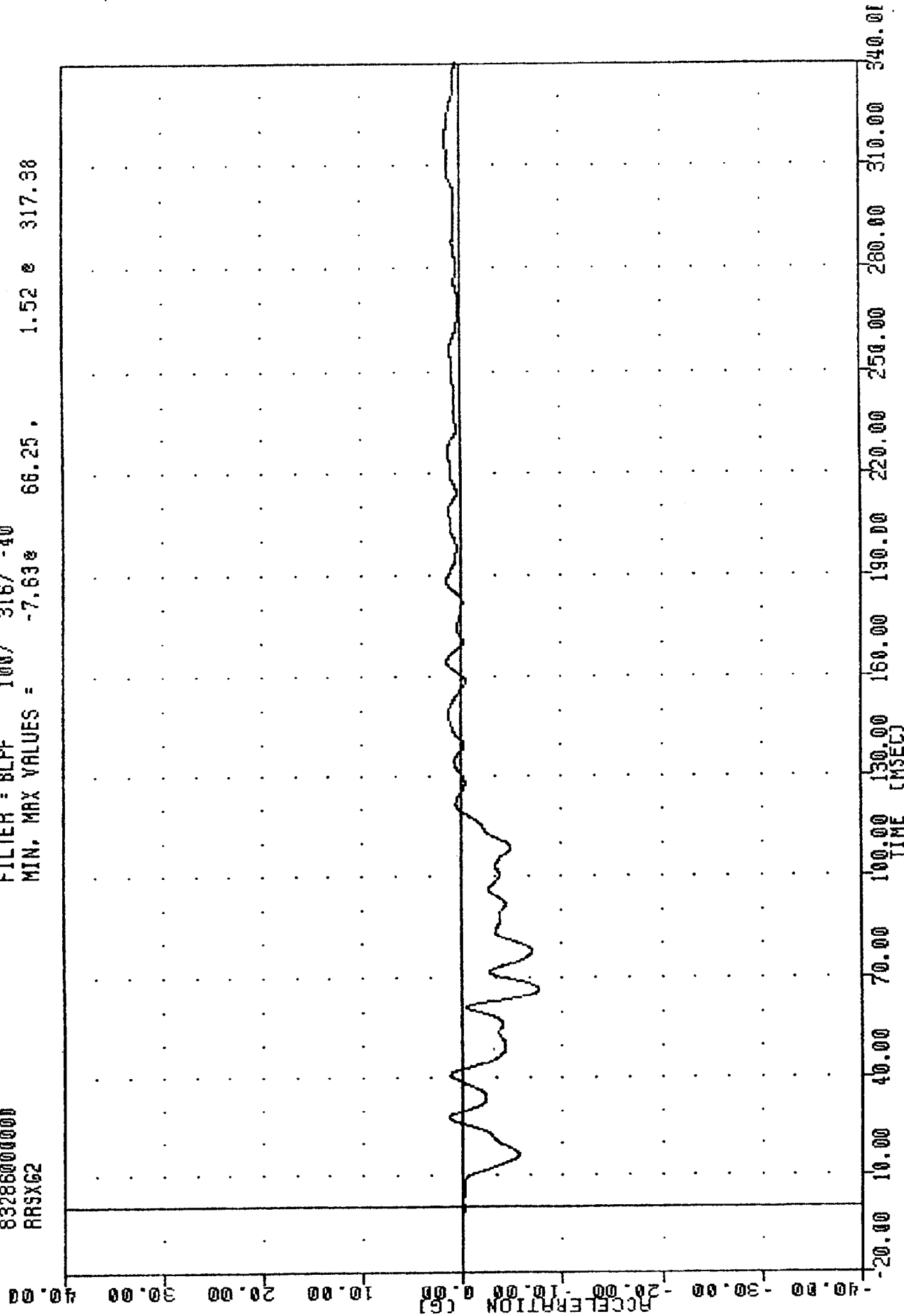
EVALUATION OF MOD VN FLEET

83286000000

RRSX62

FILTER = 8LPF 100/ 316/ -40

MIN. MAX VALUES = -7.63% 66.25, 1.52% 317.38

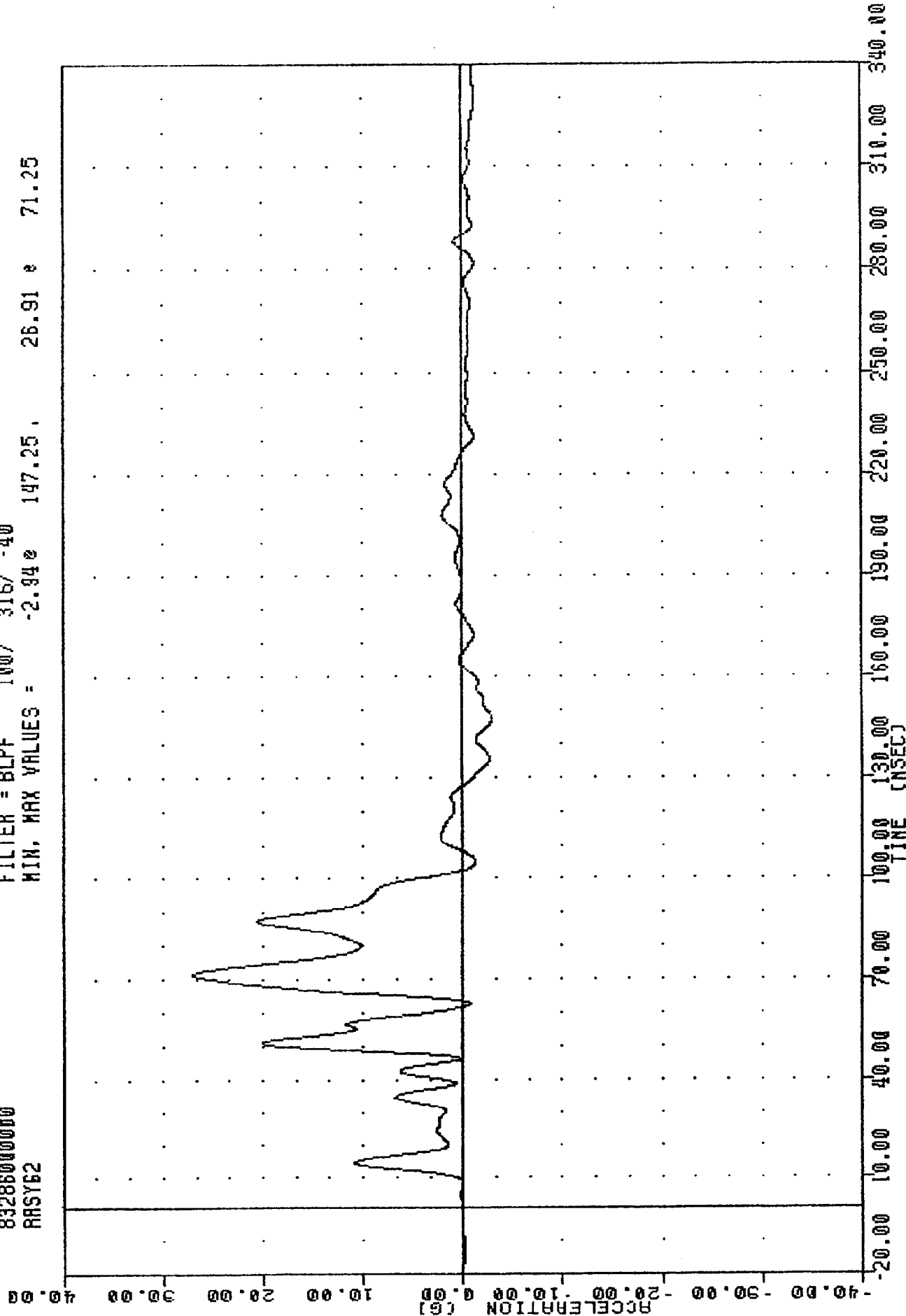


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL ACCELERATION X AXIS

TRC 831013
 EVALUATION OF MOD YW FLEET
 83286000000
 RRSY62

PLOT DATE 21-OCT-83 11:01:17

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -2.94e 147.25, 26.91 e 71.25



TRC

, 831013

EVALUATION OF MGD YN FLEET

8328600000

ARSZG2

PLOT DATE

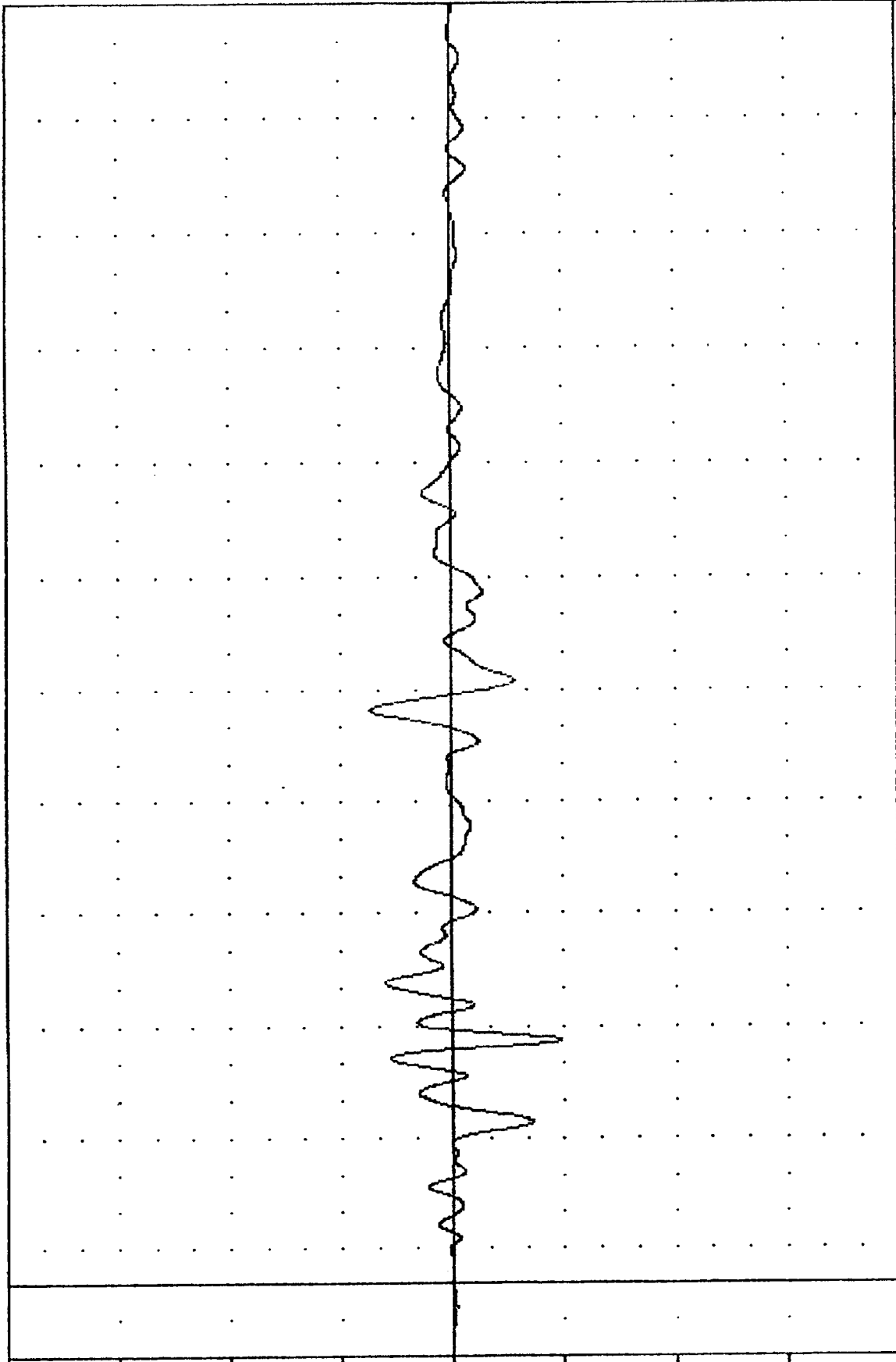
21-OCT-83

11:01:17

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -9.78 66.13, 7.39 154.38

ACCELERATION (G)



B-78

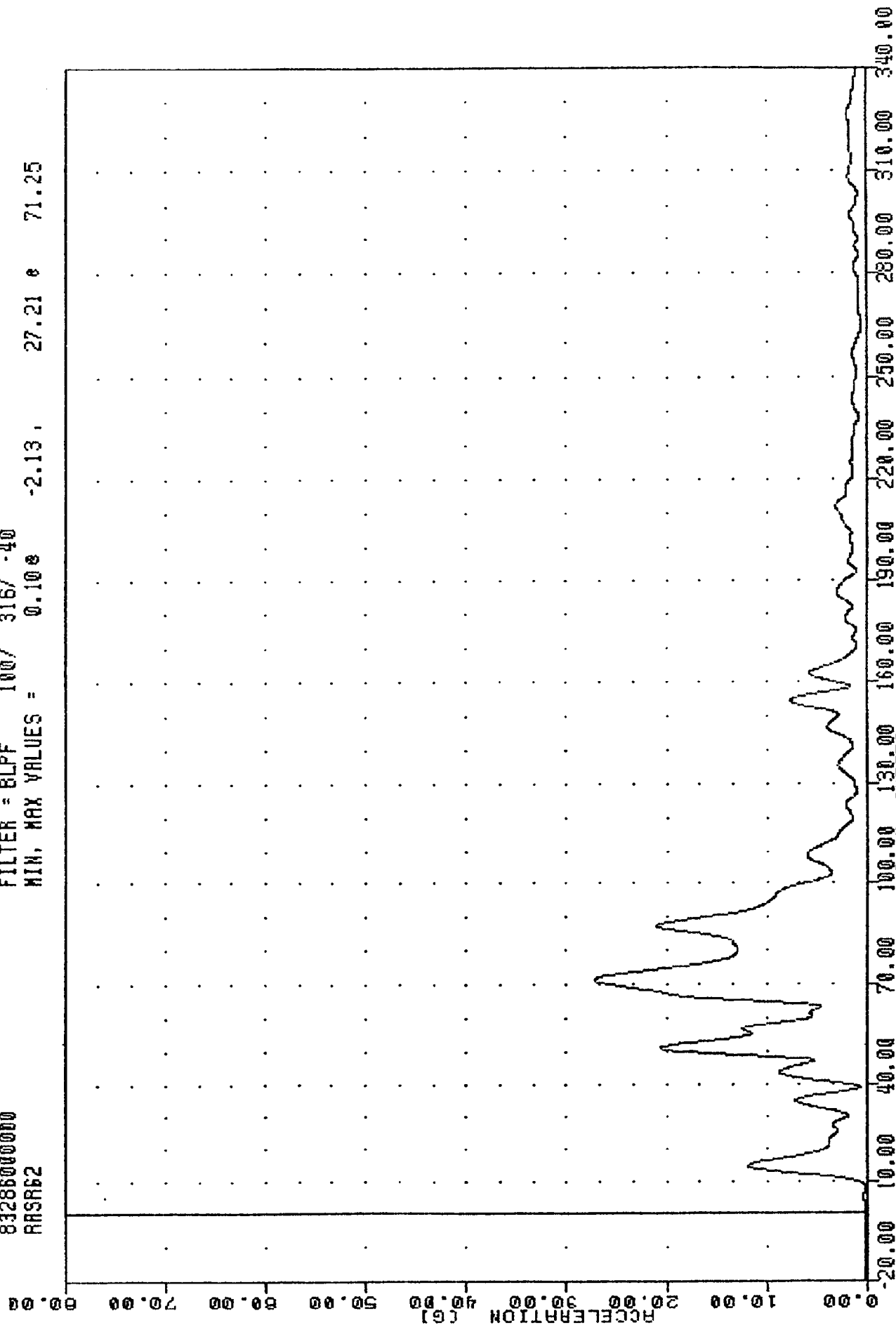
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL ACCELERATION Z AXIS

TAC 831013
 EVALUATION OF MOD YW FLEET
 83286000000
 RRSR62

PLOT DATE 21 OCT 83 13.26.42

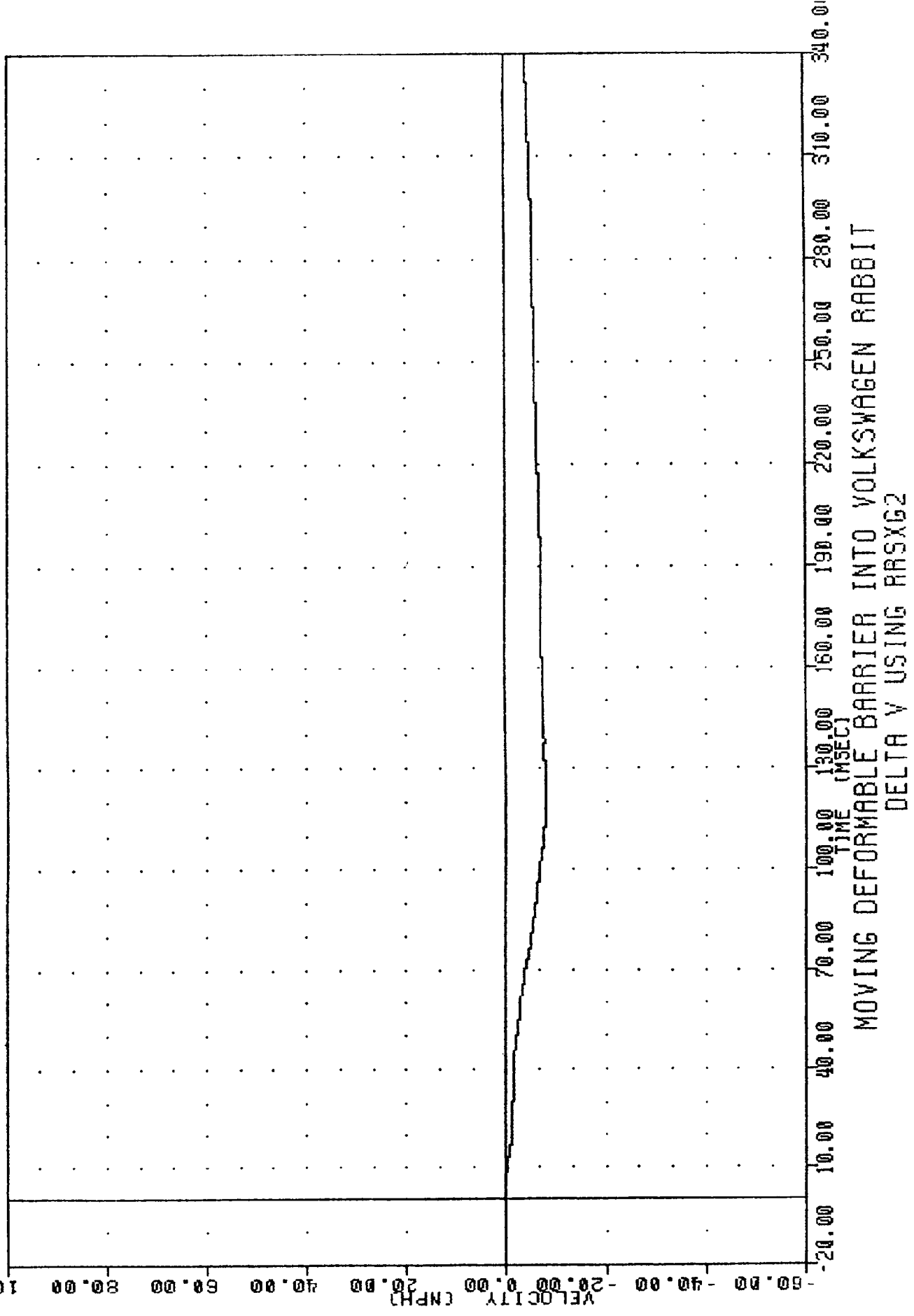
FILTER = 8LPF 100/ 316/ -40

MIN, MAX VALUES = 0.10e -2.13, 27.21 e 71.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT REAR SILL RESULTANT

TRC 831013
 EVALUATION OF MOD VV FLEET
 83286000000
 RRSXY2
 PLOT DATE 21-OCT-83 15:00:37
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -7.78% 114.63, 0.00% -14.88

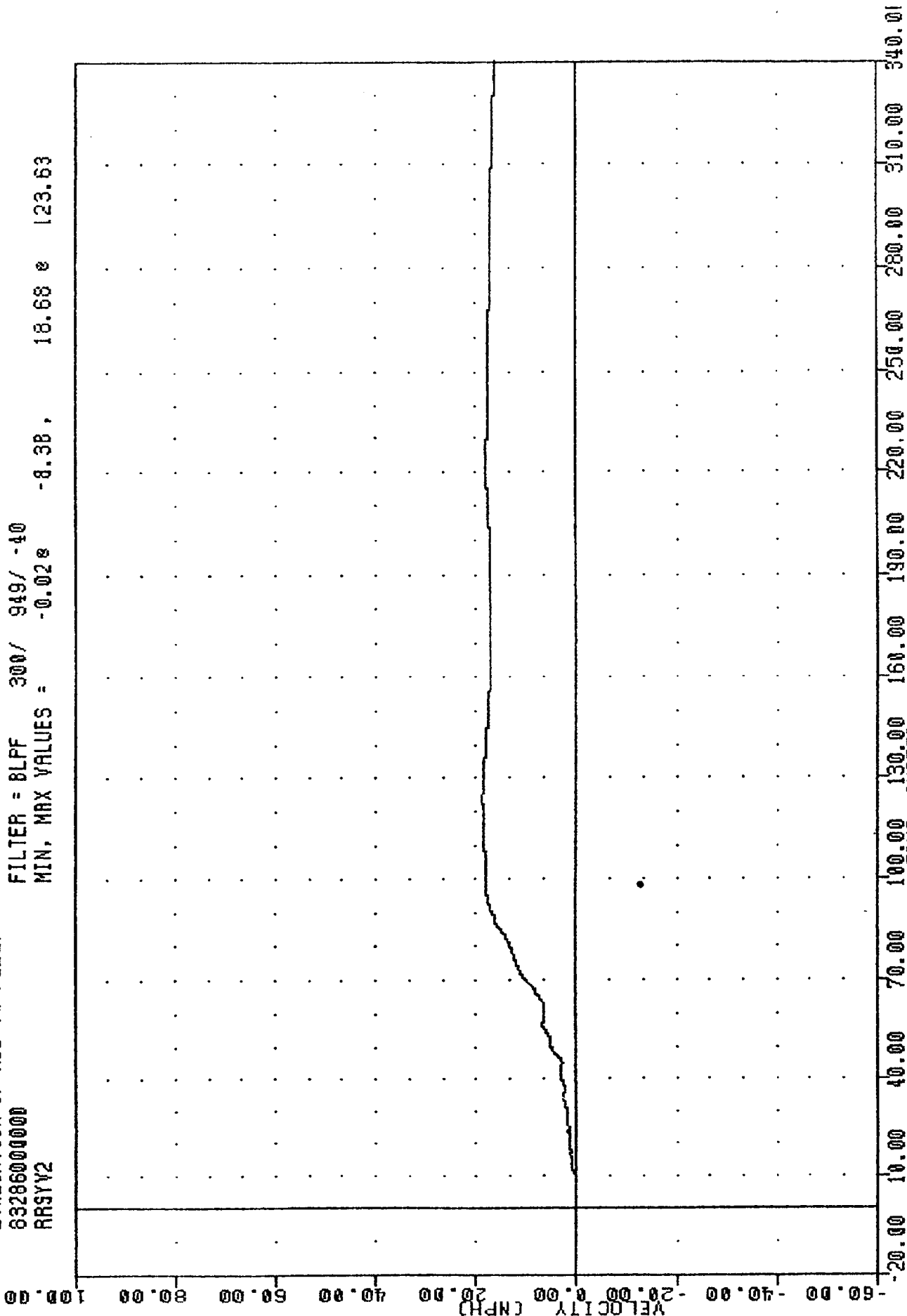


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRSXG2

TRC 831013
 EVALUATION OF MOD VW FLEET
 83286000000
 RRSYV2

PLOT DATE 21 OCT-83 15:00:37

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -0.028 18.68 123.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRSYG2

TRC 83T013 PLOT DATE 21 OCT-83 11:01:17

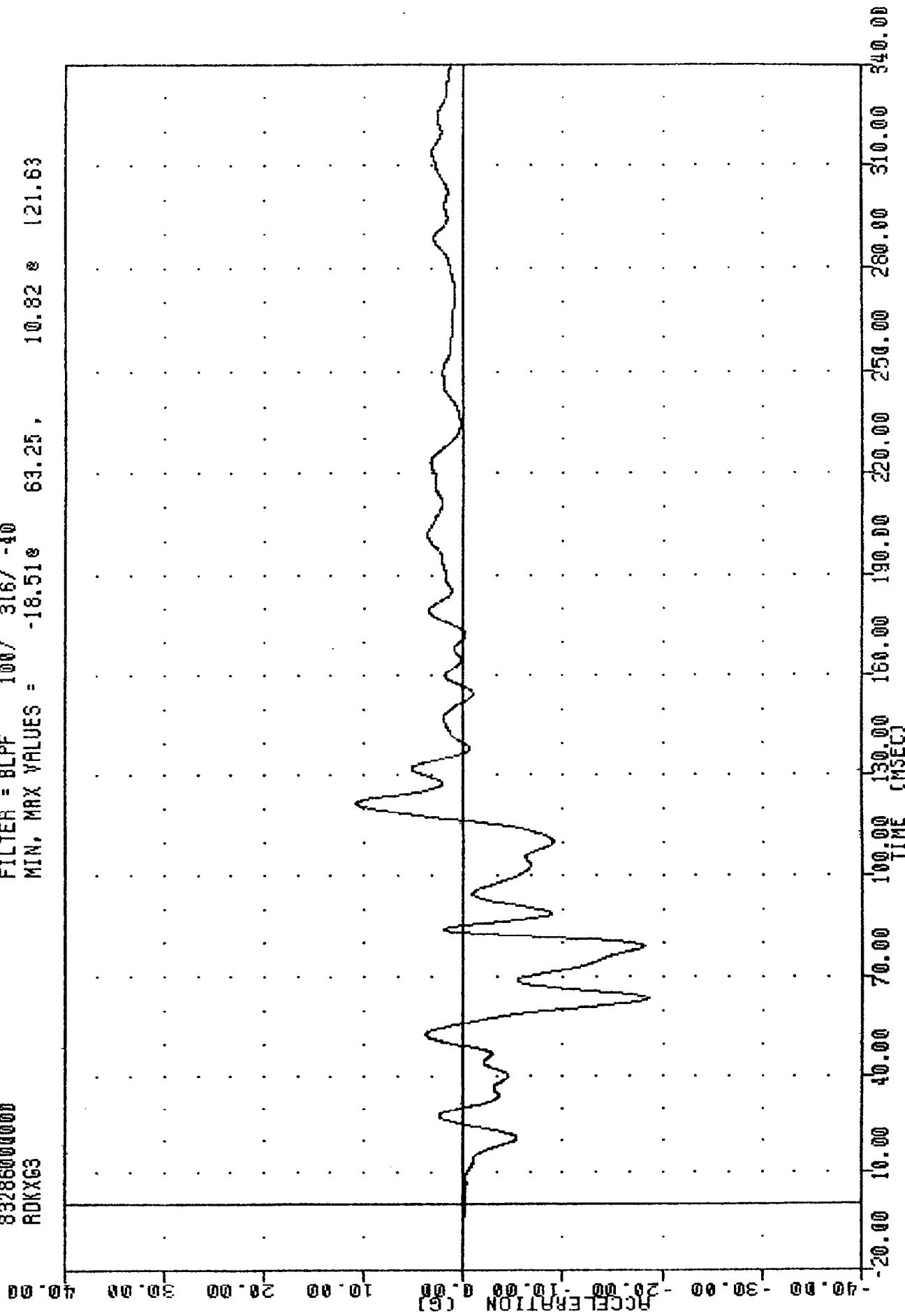
EVALUATION OF MOD VV FLEET

83286000000

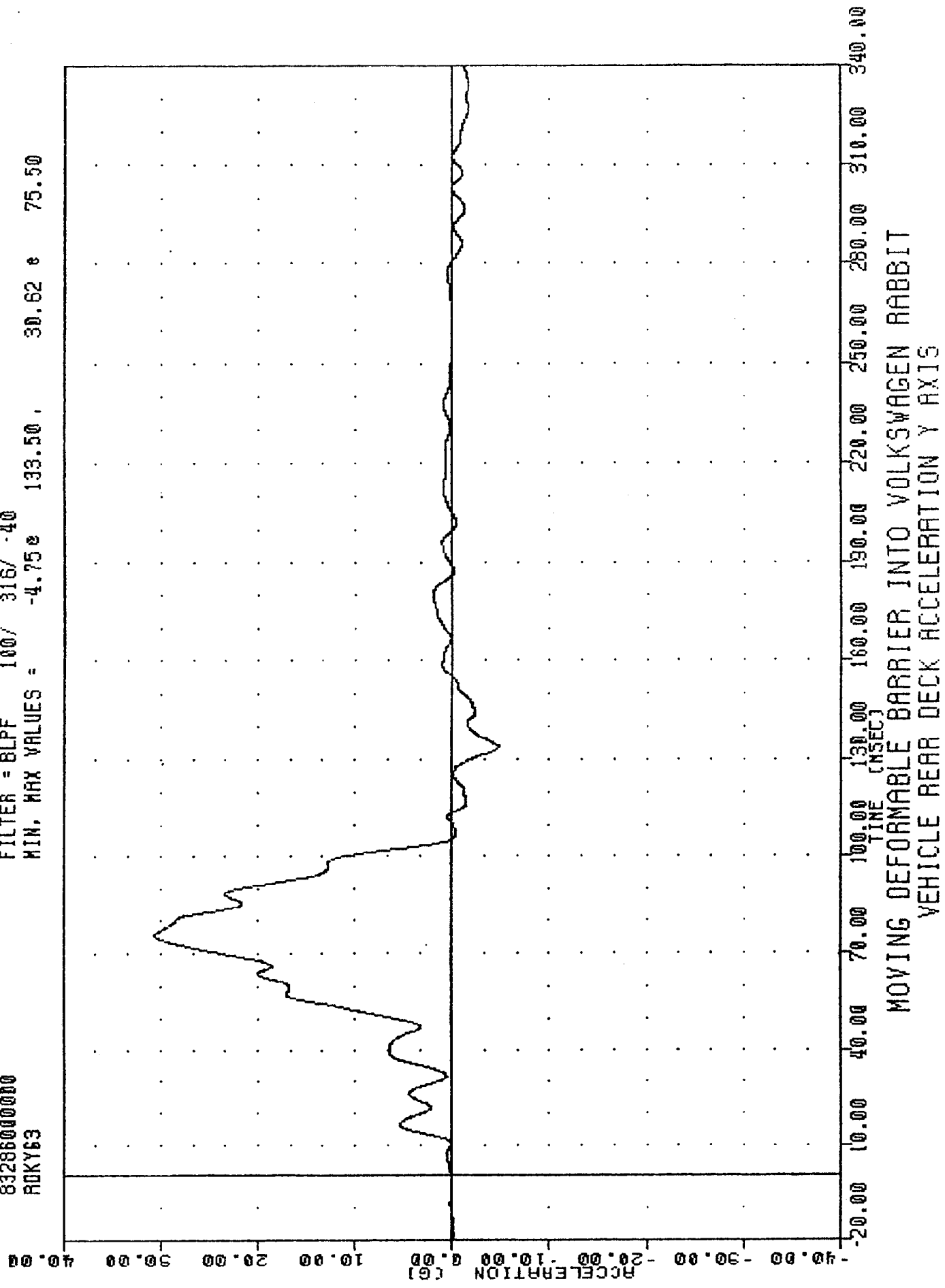
RDKXG3

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -18.518 63.25, 10.82 121.63



TRC 831013
 EVALUATION OF MOD VN FLEET
 83286000000
 ROKY63
 PLOT DATE 21-OCT-83 11:01:17
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -4.75e 133.50 , 30.62 e 75.50



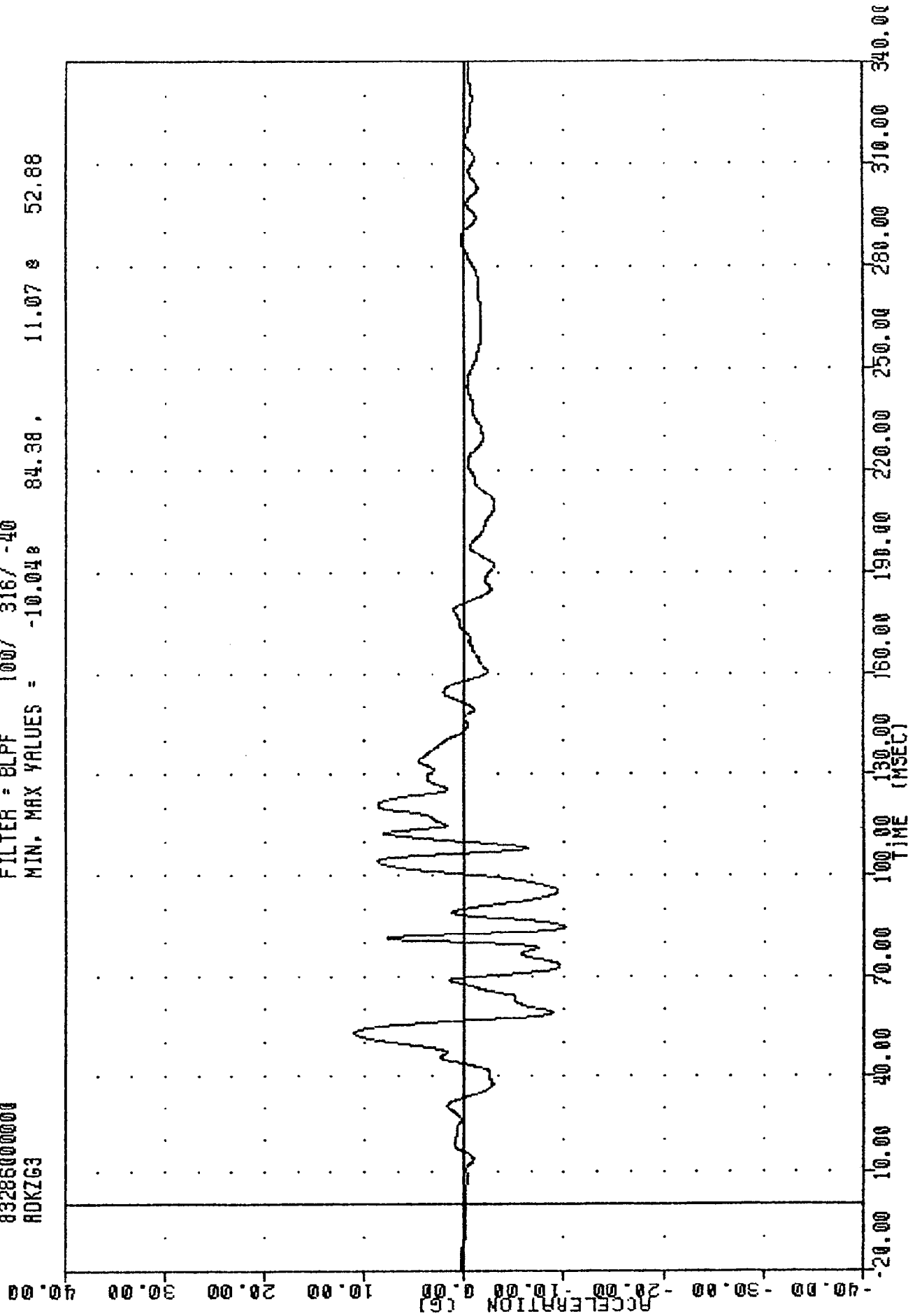
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE REAR DECK ACCELERATION Y AXIS

TRC 831013
 EVALUATION OF MOD VV FLEET
 83286000000
 ADKZG3

PLOT DATE 21-OCT-85 11:01:17

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -10.048 84.38 .

11.07 s 52.88



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

TRC 831013, 831013, 21 OCT 85 13:20:42

EVALUATION OF MOD YV FLEET

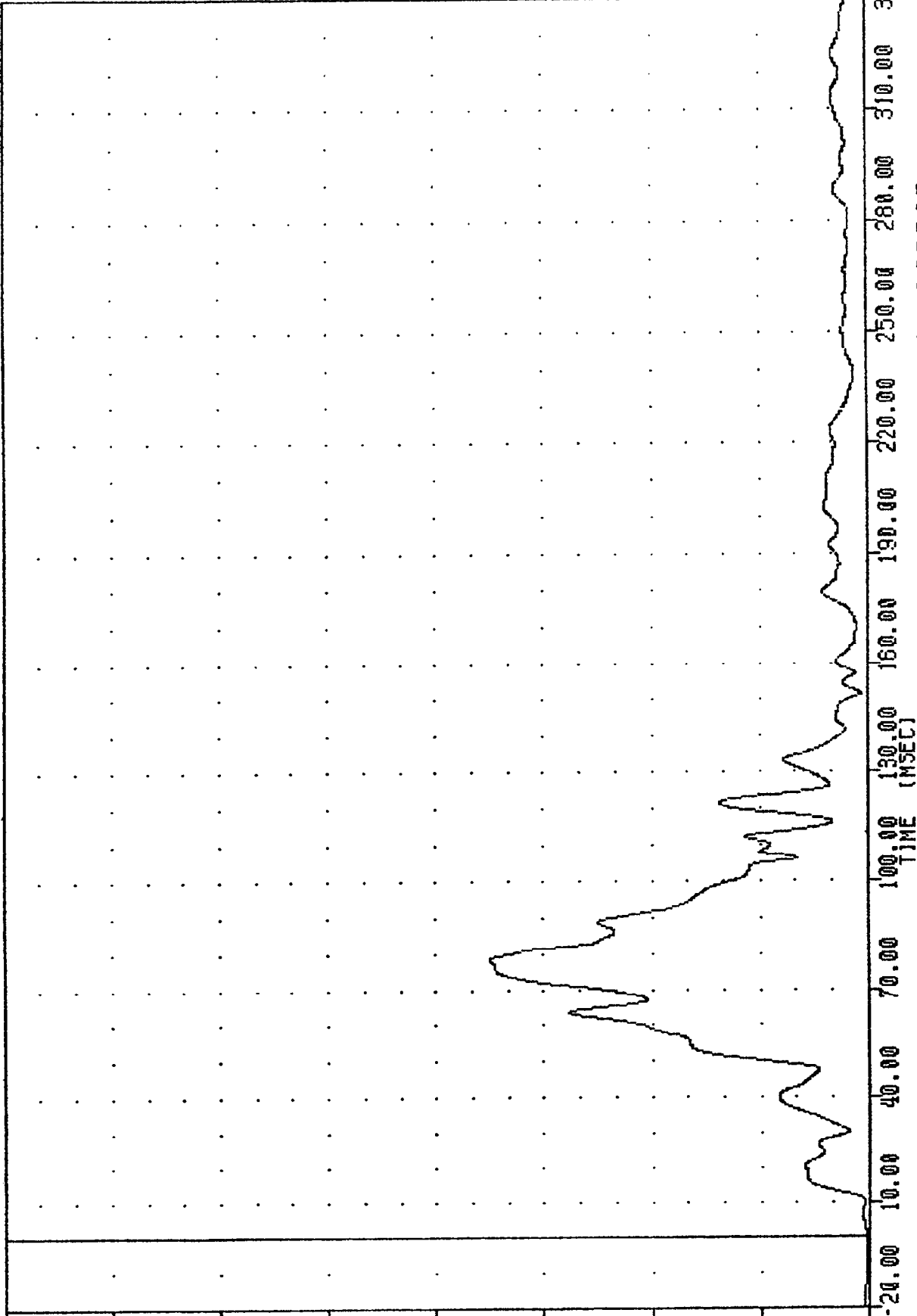
83286000000

ADKRG3

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.12e -4.50, 35.02 e 78.25

ACCELERATION (G)



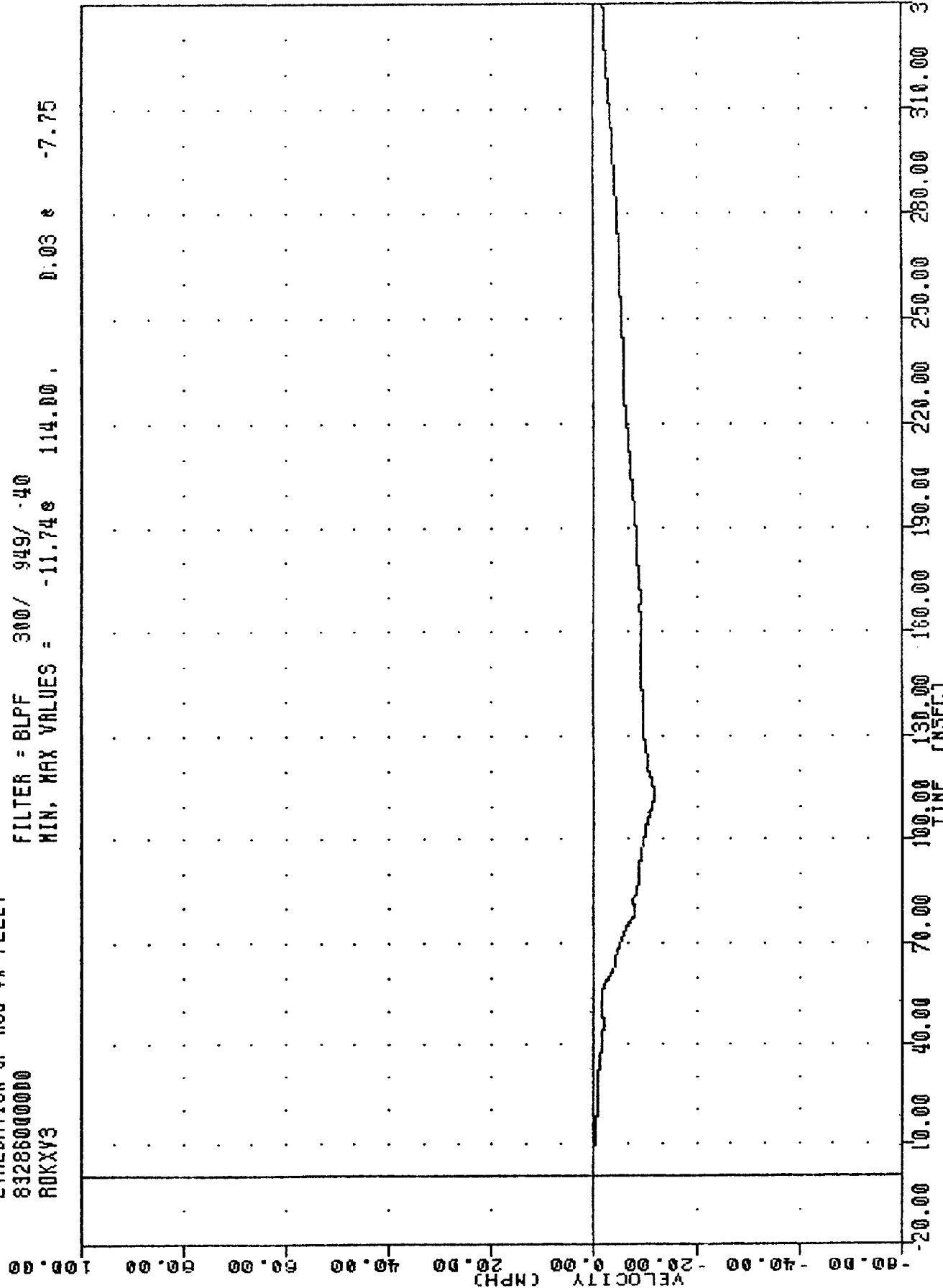
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK RESULTANT

TAC 831013
 EVALUATION OF MOD VW FLEET
 83286000000
 ROKXY3

PLOT DATE 21 OCT 83 15.00.37

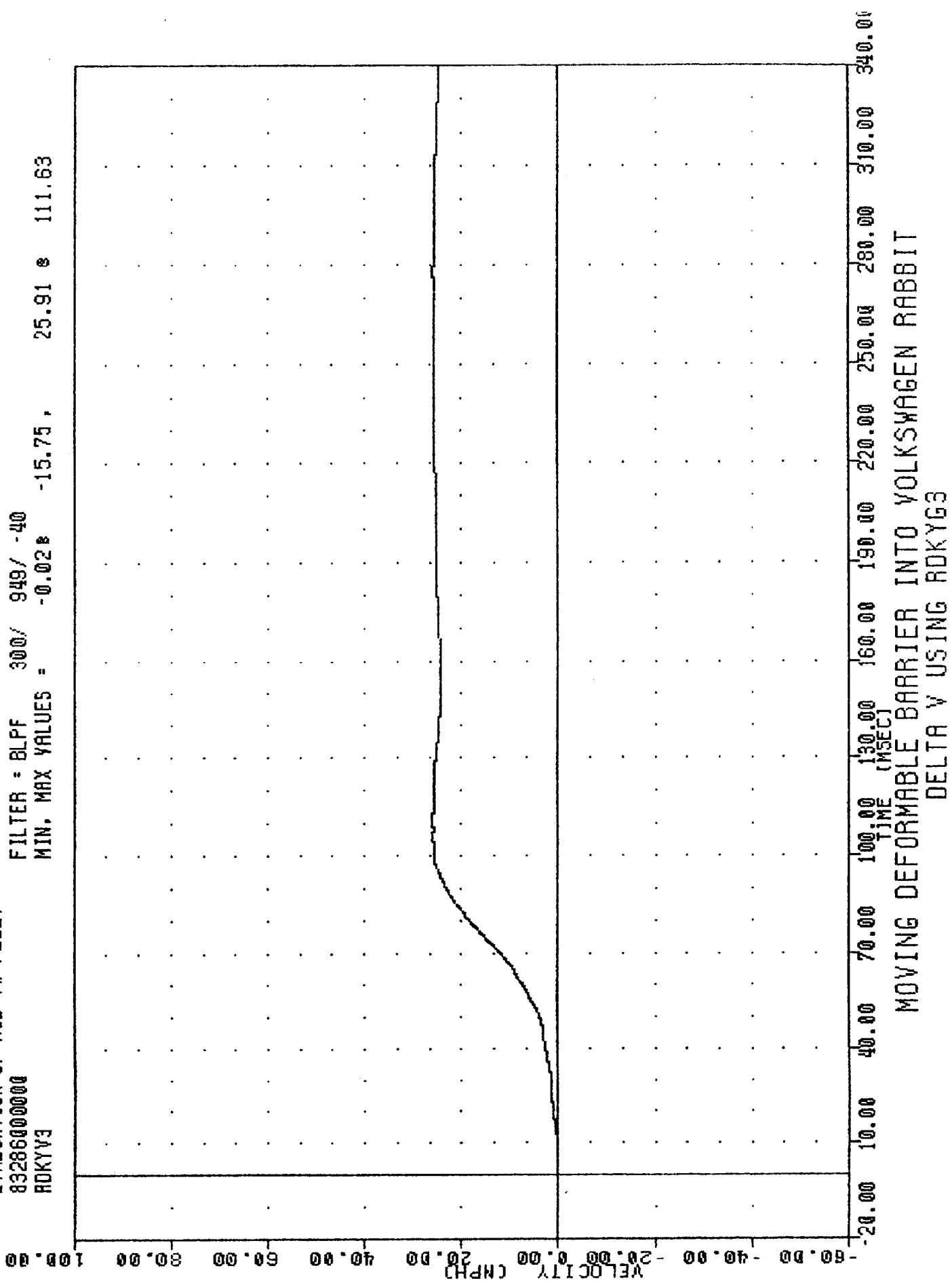
FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -11.74 114.00 0.03 -7.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING ROKXG3

TRC 831013
 EVALUATION OF MOD YW FLEET
 8328600000
 ROKYV3
 PLOT DATE 21-OCT-83 15:00:37
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.028 -15.75 , 25.91 8 111.63



TRC 831013 PLOT DATE 21-OCT-83 11:01:17

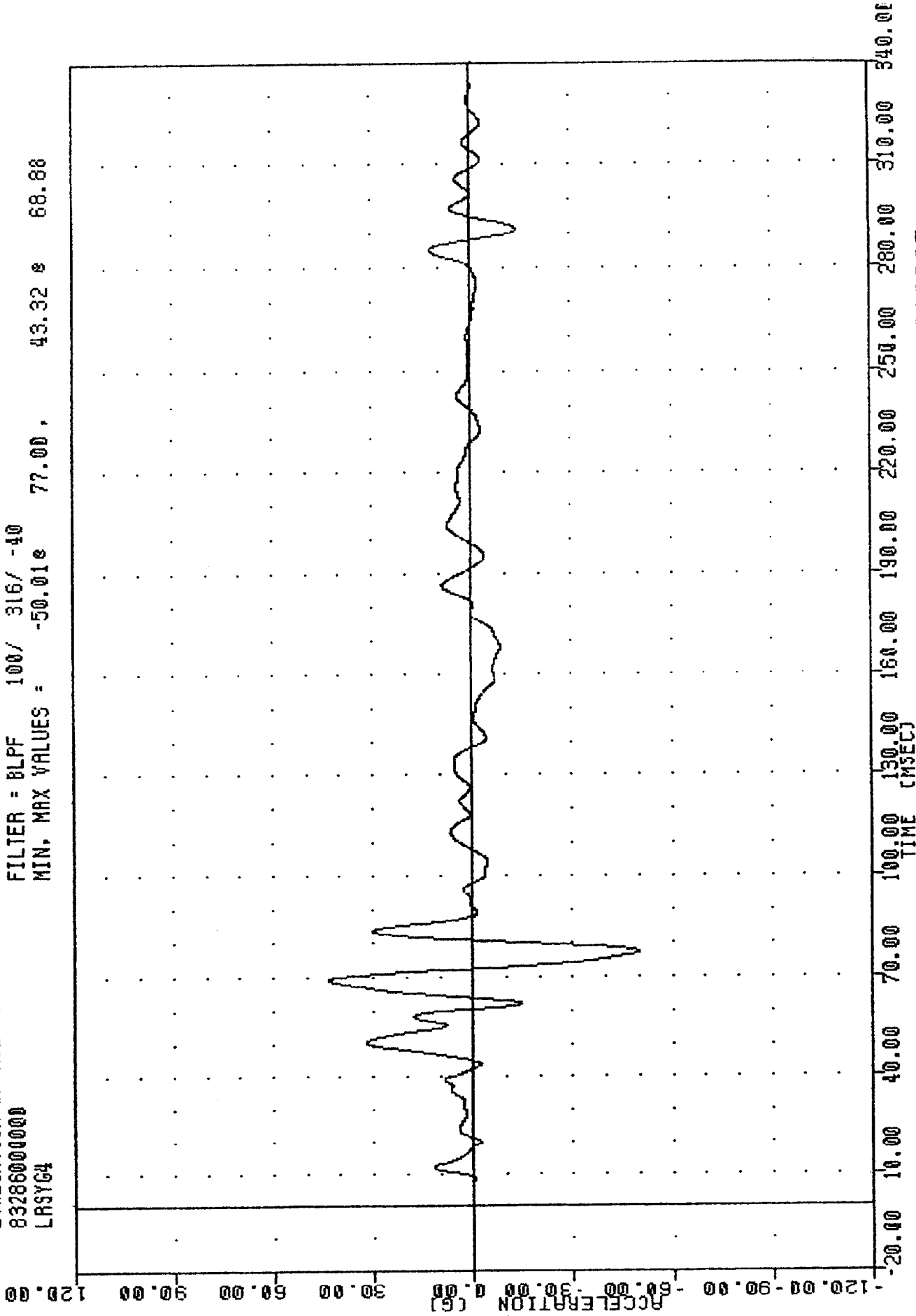
EVALUATION OF MOD VN FLEET

8328600000

LRSYG4

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -50.01e 77.00, 43.32 e 68.88



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

TRC 831013 PLOT DATE 21-OCT-83 15:00:37

EVALUATION OF MDD VV FLEET

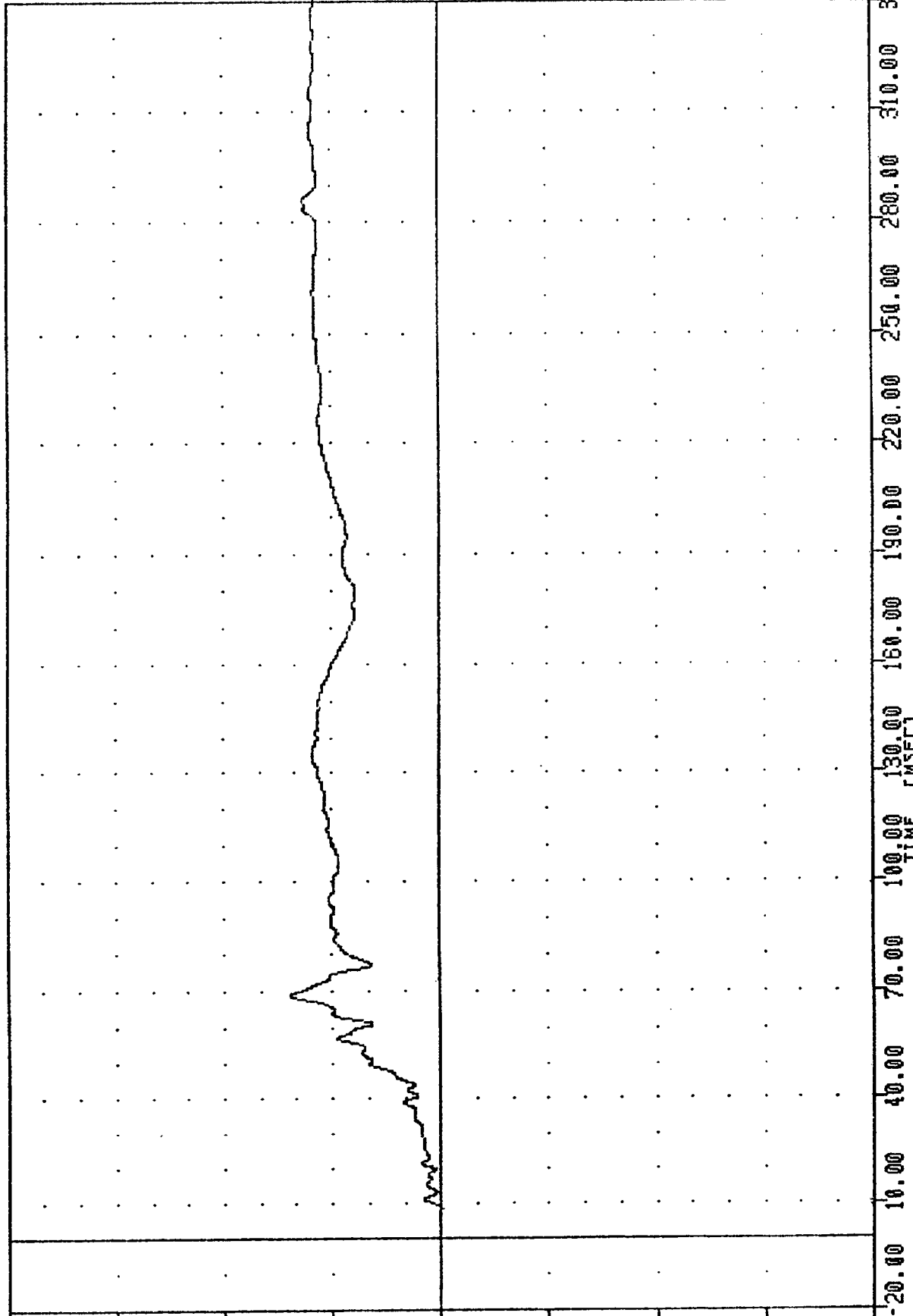
83286000000

LR5YV4

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.068 8.38, 13.86 & 68.75

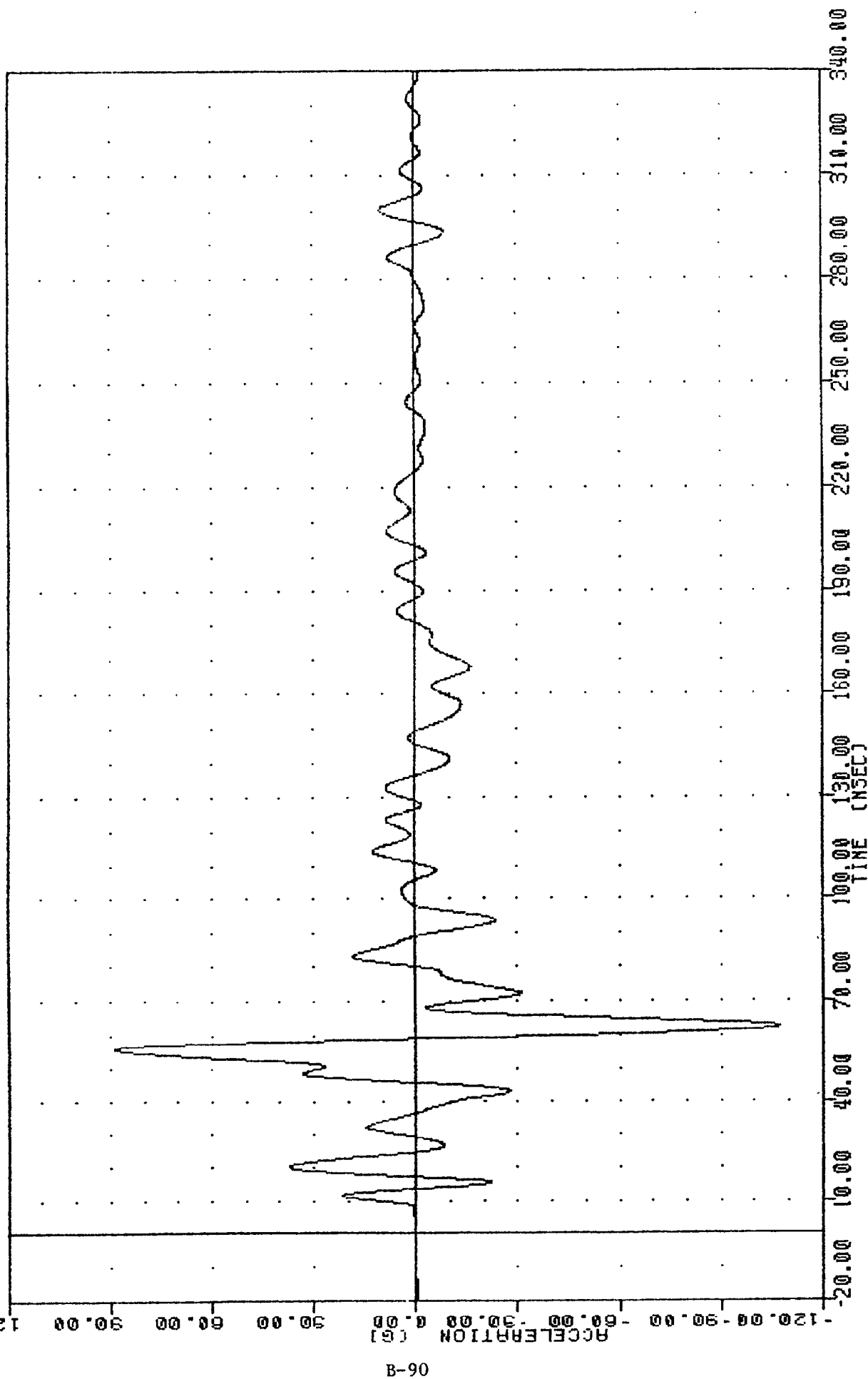
VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING LRSYG4

TAC 831013
 EVALUATION OF MOD YN FLEET
 83286000000
 LFSY65
 PLOT DATE 21 OCT 83 11:01:17
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -107.07 88.54 56.00



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

TAC 832860000000

EVALUATION OF MOD VN FLEET

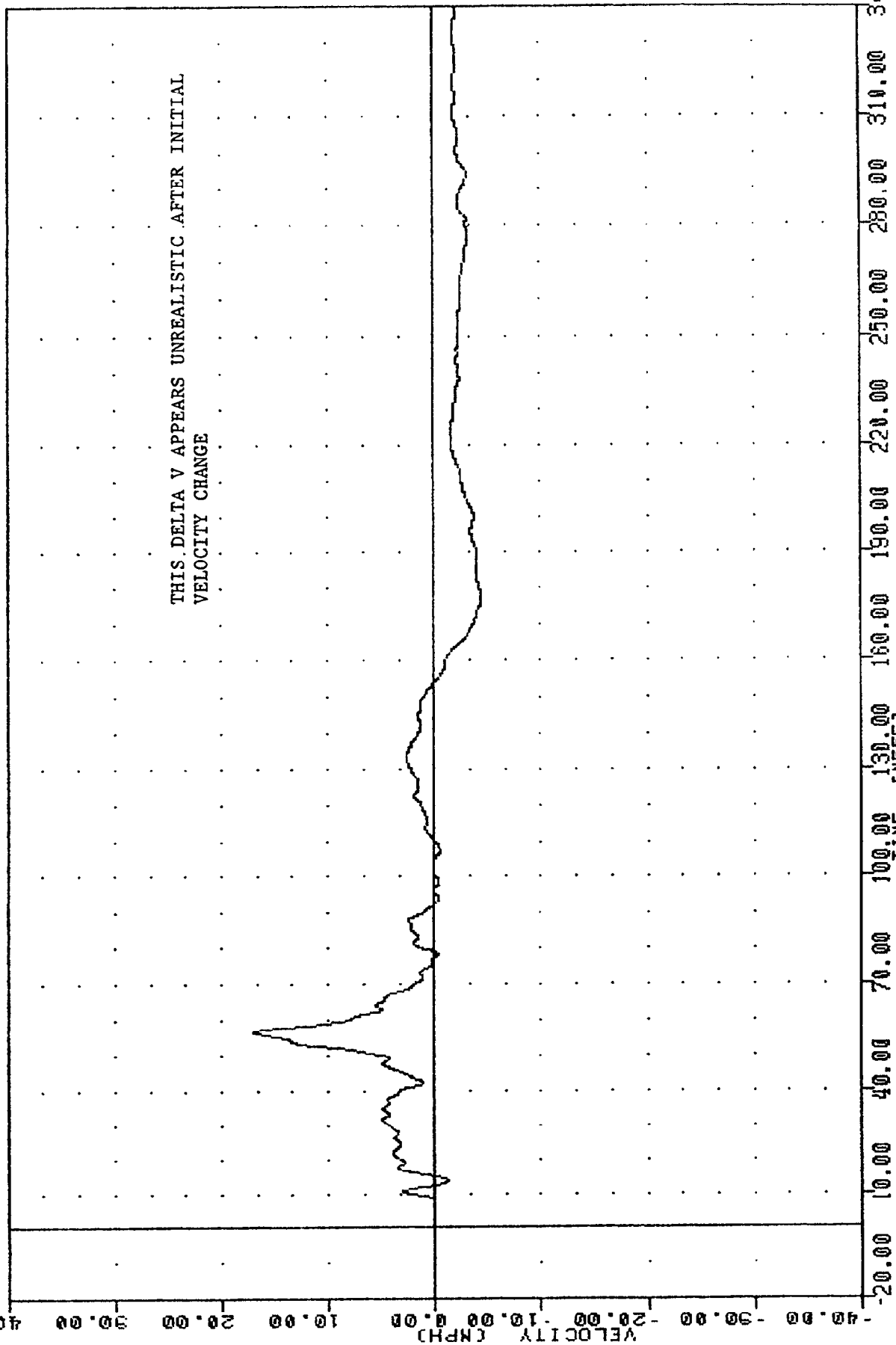
PLOT DATE 21 OCT 83 15:00:37

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -4.50 178.13, 17.00 56.63

40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00

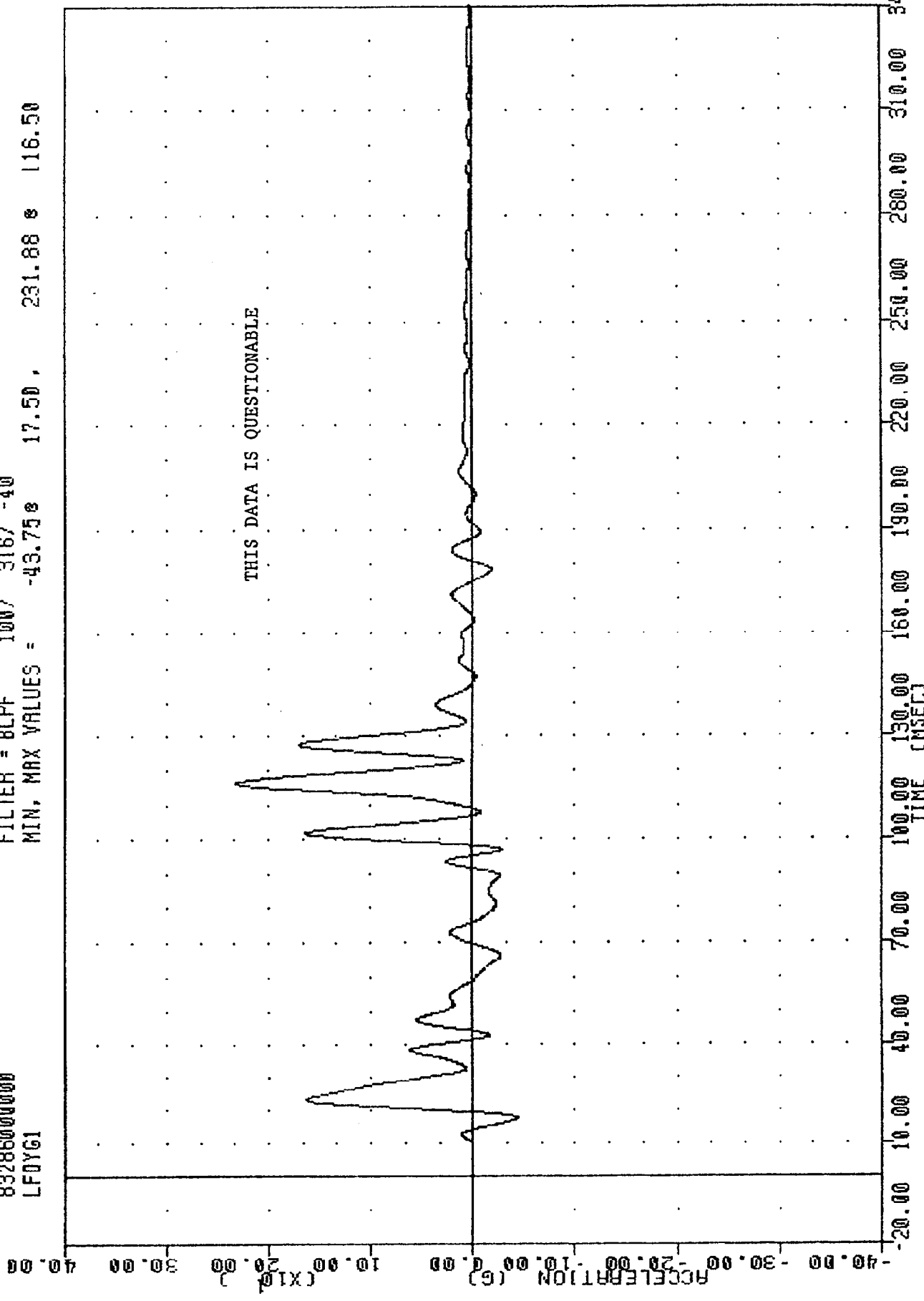
B-91



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFSYG5

-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)

TRC 831013 PLOT DATE 21 OCT 85 11:01:17
 EVALUATION OF MDD VW FLEET
 83286000000
 LF0Y61
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -43.750 17.50, 231.88 116.50



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

TRC

, 831013

EVALUATION OF MOD YW FLEET

83285000000

LFDYV1

PLOT DATE

31-OCT-83

15:00:14

FILTER = BLPF

300/ 949/ -40

MIN, MAX VALUES =

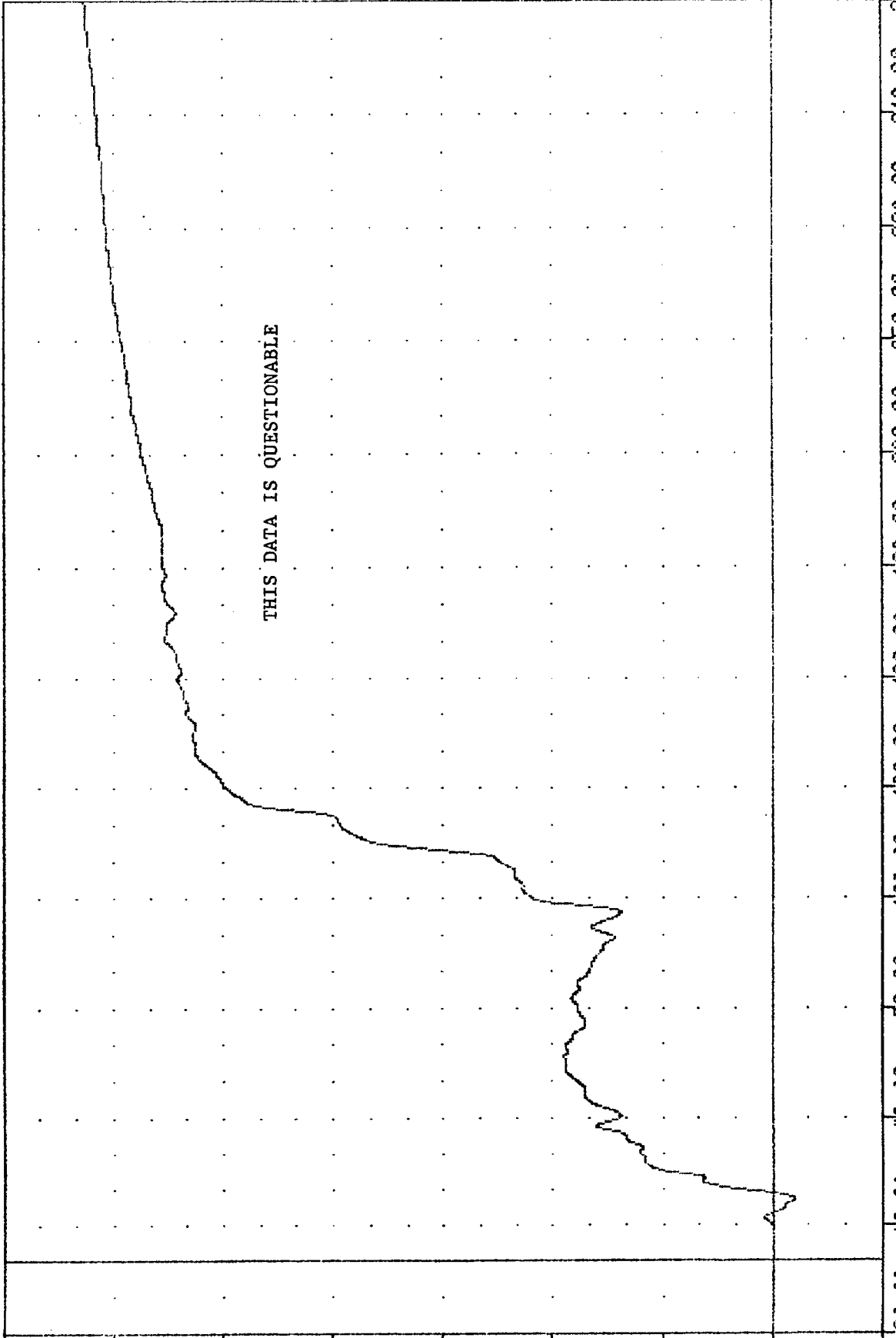
-4.01e

17.25,

125.28 e

340.00

VELOCITY (MPH)



TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING LFDYV1

TAC

831013

PLOT DATE

21-OCT-83

11:01:17

EVALUATION OF MOD YN FLEET

83286000000

FILTER = BLPF

100/ 316/ -40

LFDY62

MIN. MAX VALUES =

-39.28

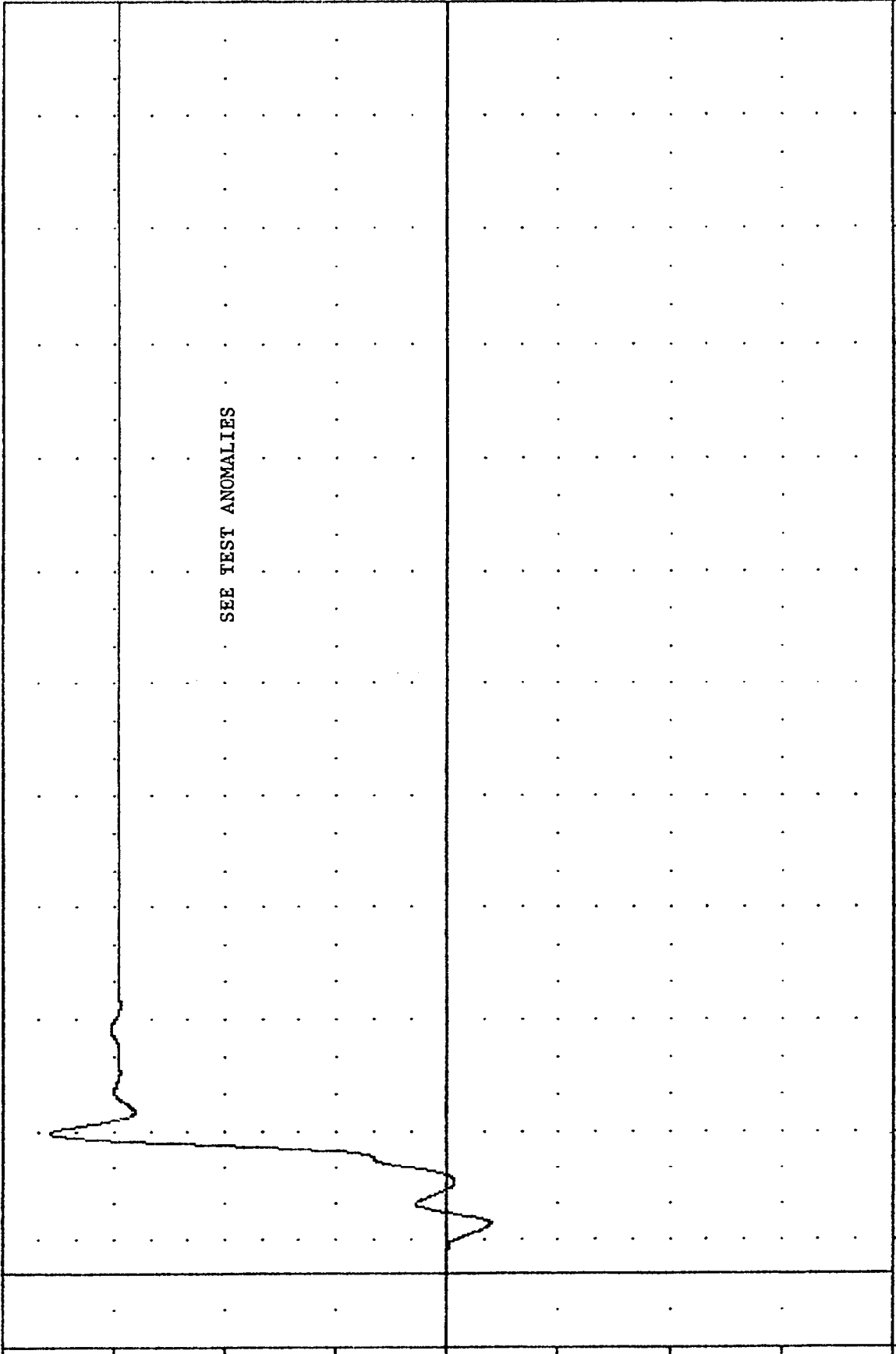
14.13

357.45

39.50

ACCELERATION (G)

(X10²)



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

TRC 831013

PLOT DATE 21-OCT-83 11:01:17

EVALUATION OF MOD YW FLEET

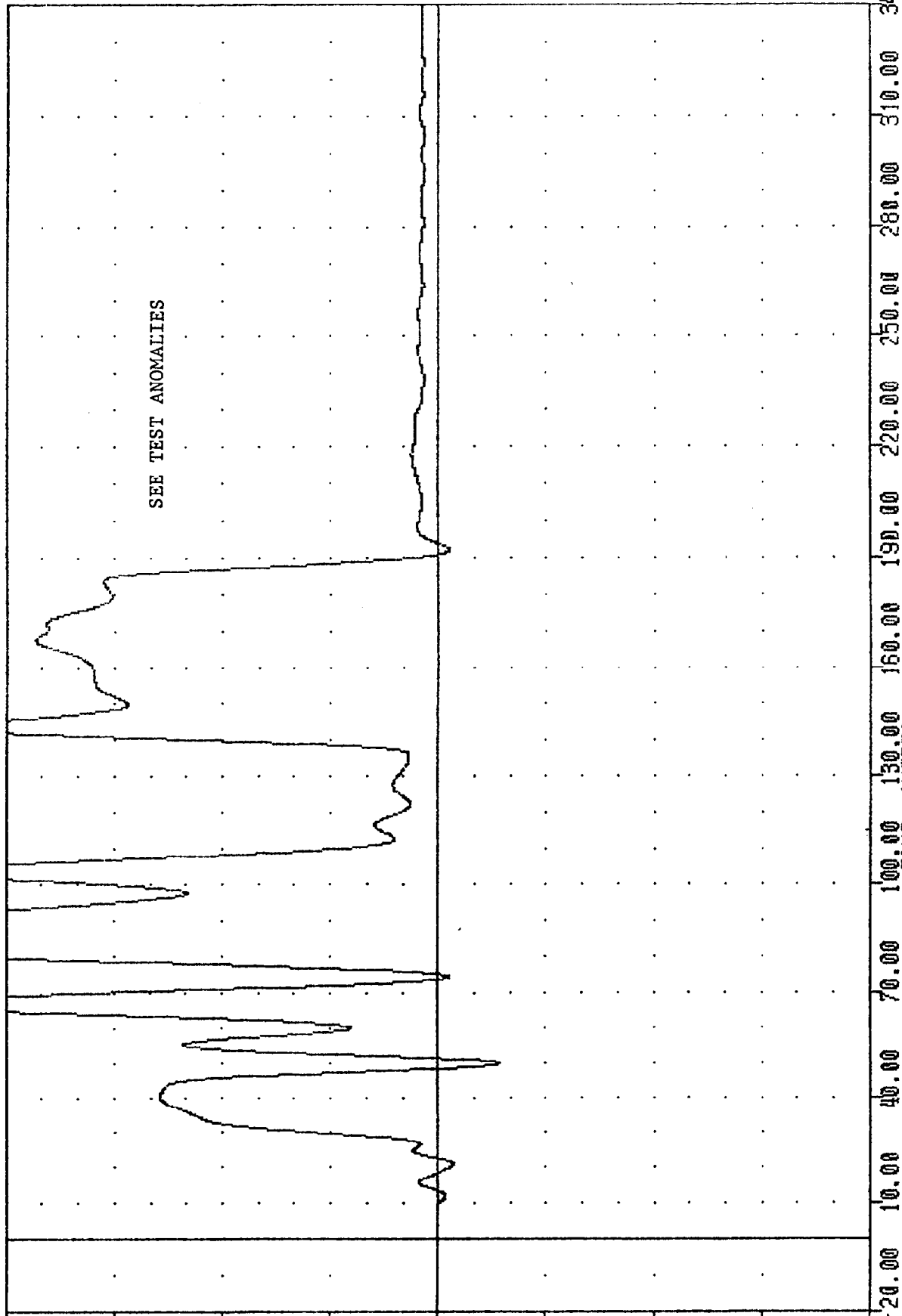
8328600000

LFDY63

FILTER = BLPF 100/ 316/ -40

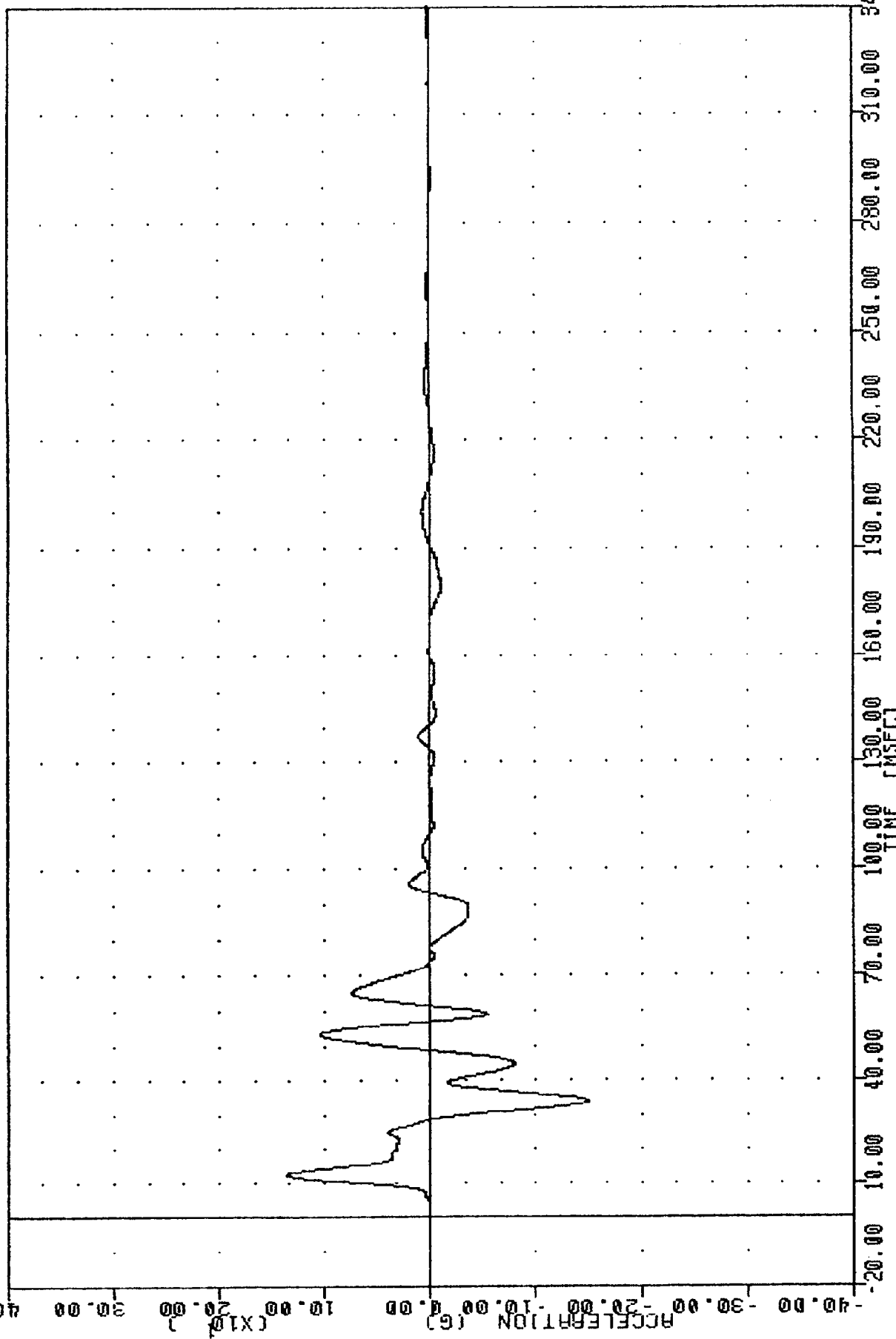
MIN. MAX VALUES = -57.22 50.00, 516.18 82.25

ACCELERATION (G) (X10)



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

TRC 831013 PLOT DATE 21-OCT-83 11:01:17
 EVALUATION OF MOD VW FLEET
 83286000000
 LF0Y64
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -149.62g 34.13, 135.93g 12.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR (POSITION 10) ACCELERATION Y AXIS

TRC 831013 PLOT DATE 21-OCT-83 15:00:37

EVALUATION OF MOD YW FLEET

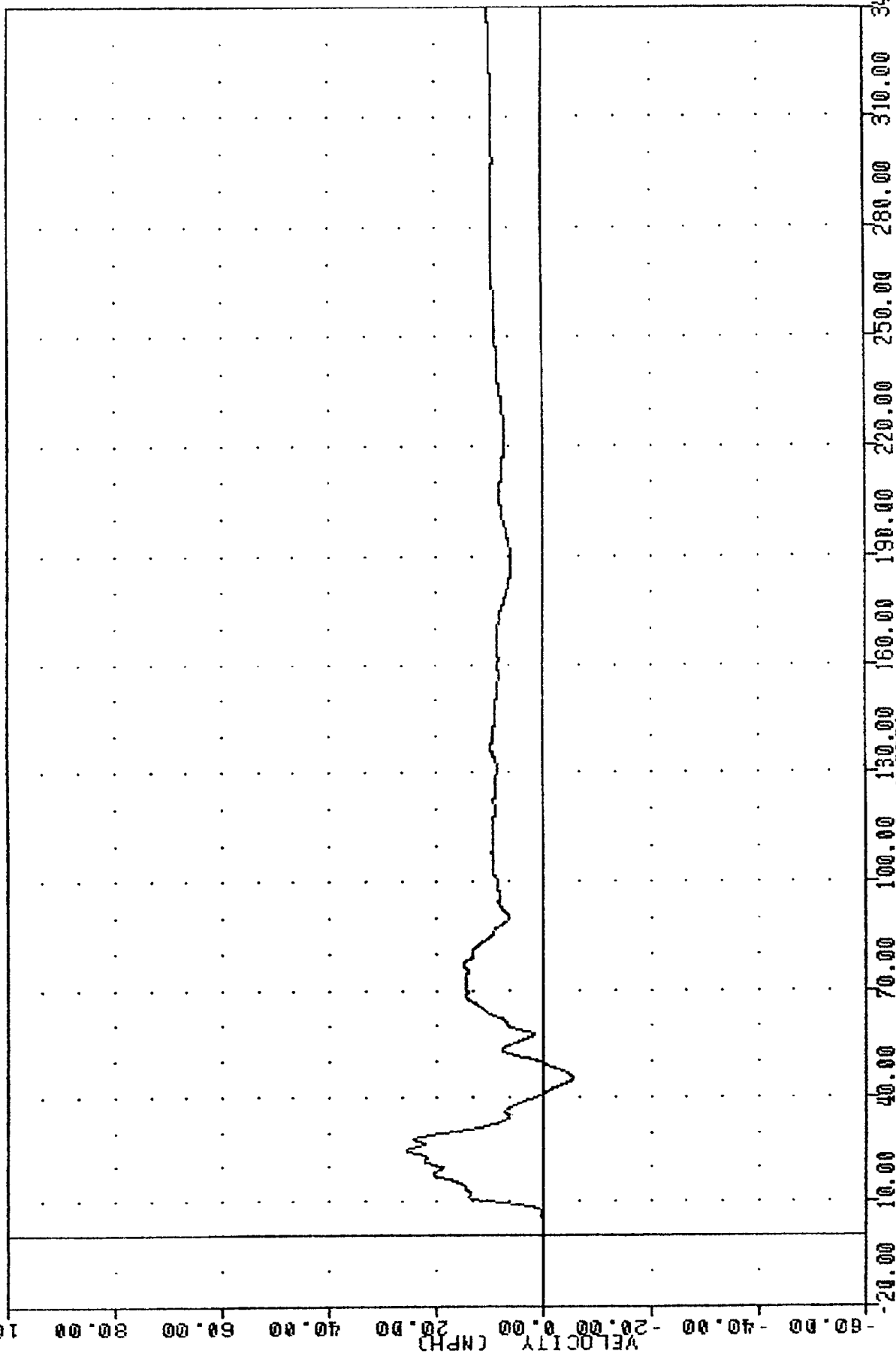
83286000000

LFOYV4

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -5.218 45.38 25.57 24.63

100.00

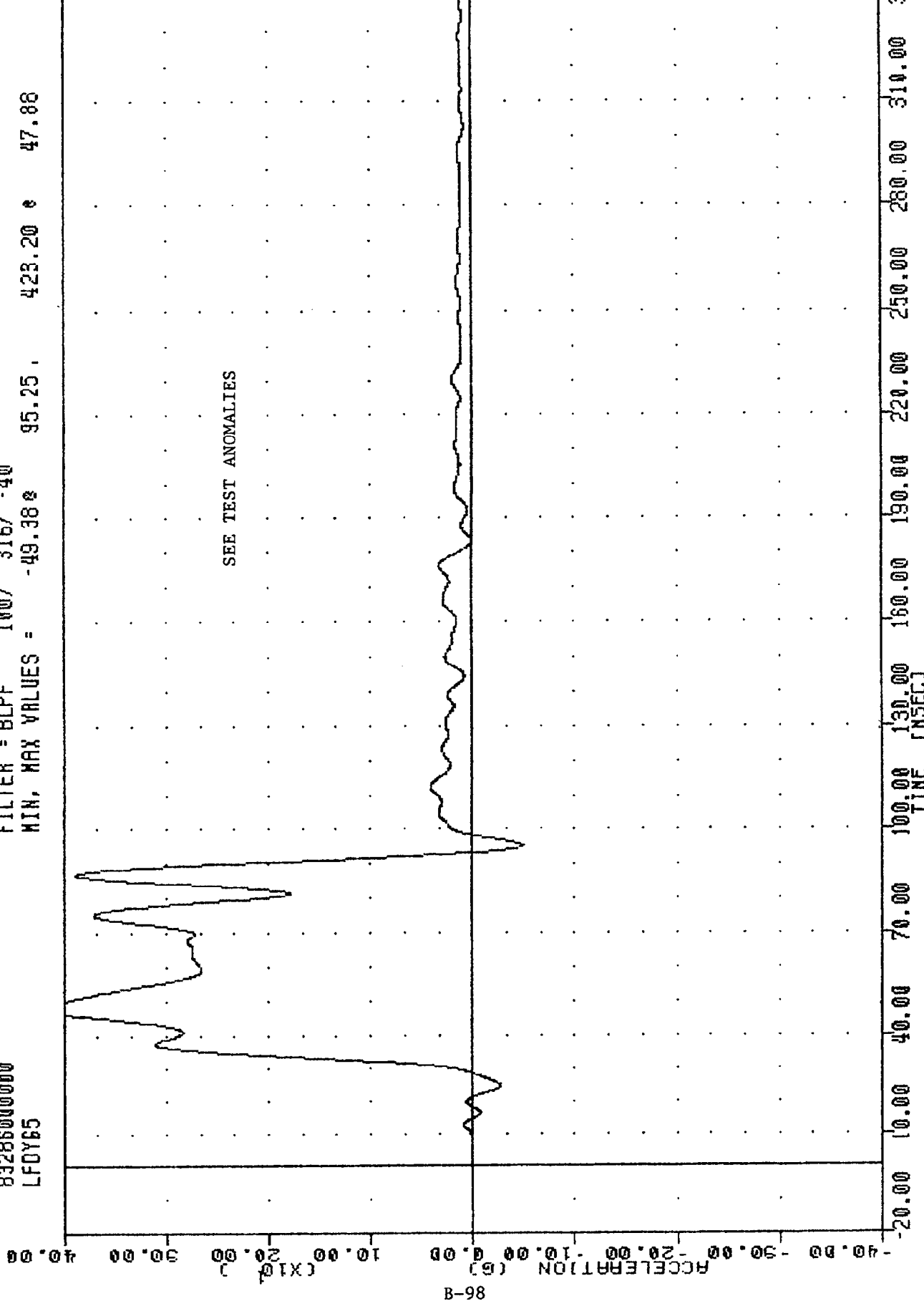


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFOYV4

TAC 83J013
 EVALUATION OF MOD VW FLEET
 83286000000
 LFDY65

PLOT DATE 21-OCT-83 11:01:17

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -49.38 95.25 423.20 47.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR (POSITION 11) ACCELERATION Y AXIS

TRC

831013

PLOT DATE

21 OCT 83

17:17

EVALUATION OF MOD YN FLEET

83285000000

FILTER = BLPF 100/ 316/ -40

TFRXG?

MIN, MAX VALUES =

-10.218

64.13,

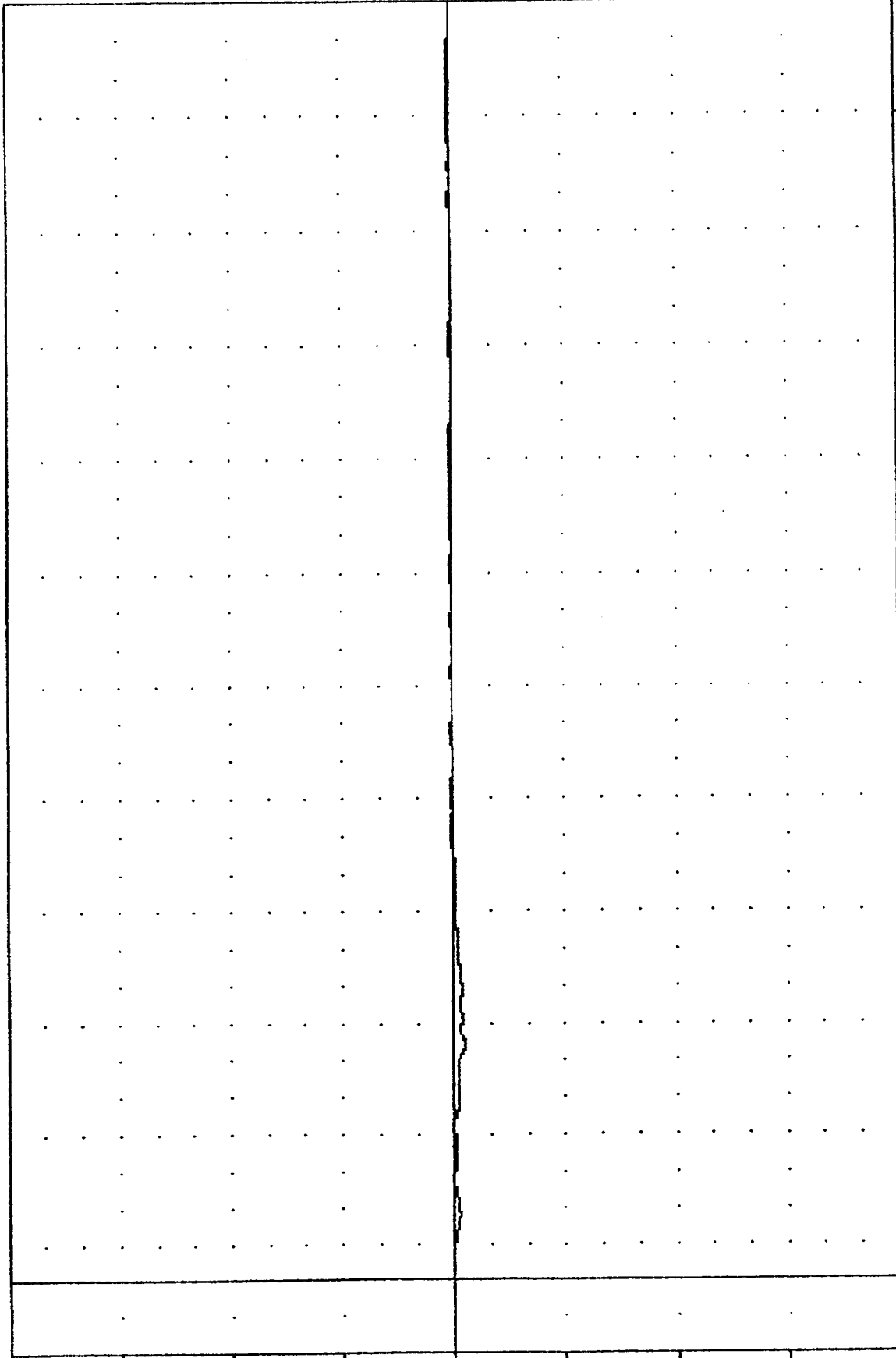
3.64

120.00

ACCELERATION (G)

(X10⁻¹)

R-00



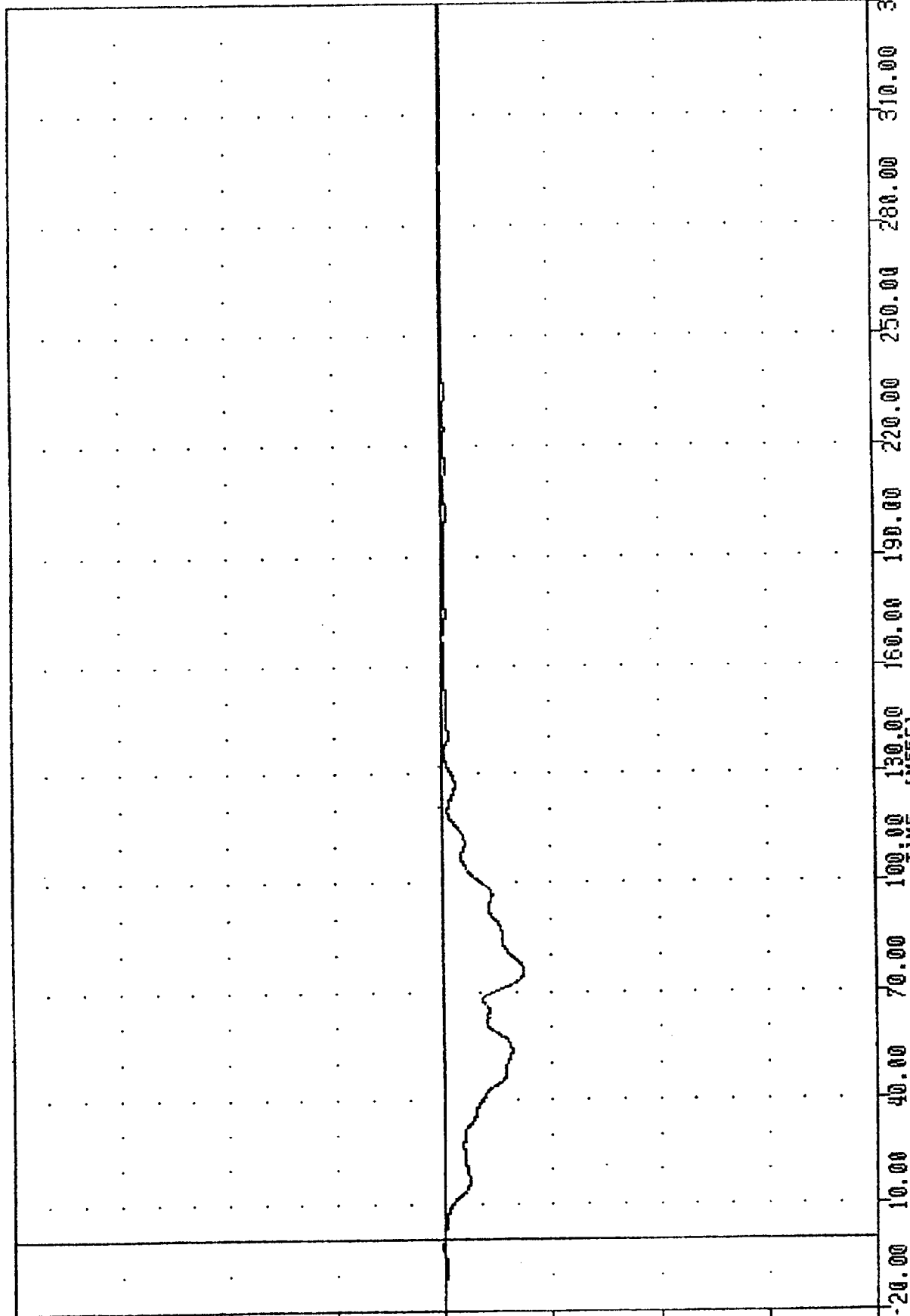
TIME (MSEC)

TRC 831013
 EVALUATION OF MOD YW FLEET
 83286000000
 BCGXG

PLOT DATE 21-OCT-83 11:01:17

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -14.868 75.38 0.38 e -2.25

ACCELERATION (G)



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

TRC 831013

EVALUATION OF MOD VN FLEET

83286000000

BCGYG

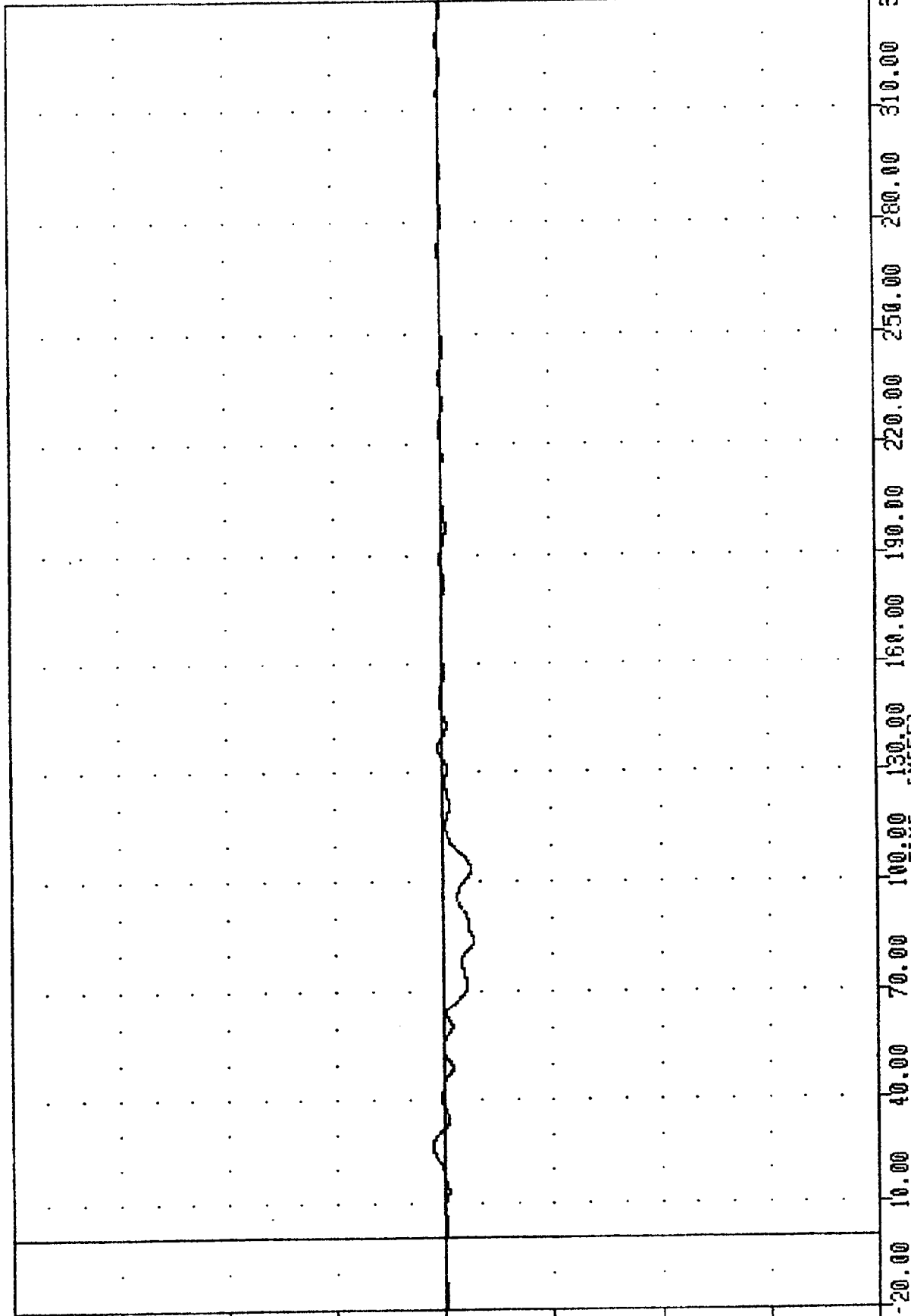
21 OCT 83

11:01:17

FILTER = BLPF 100/ 316/ -40

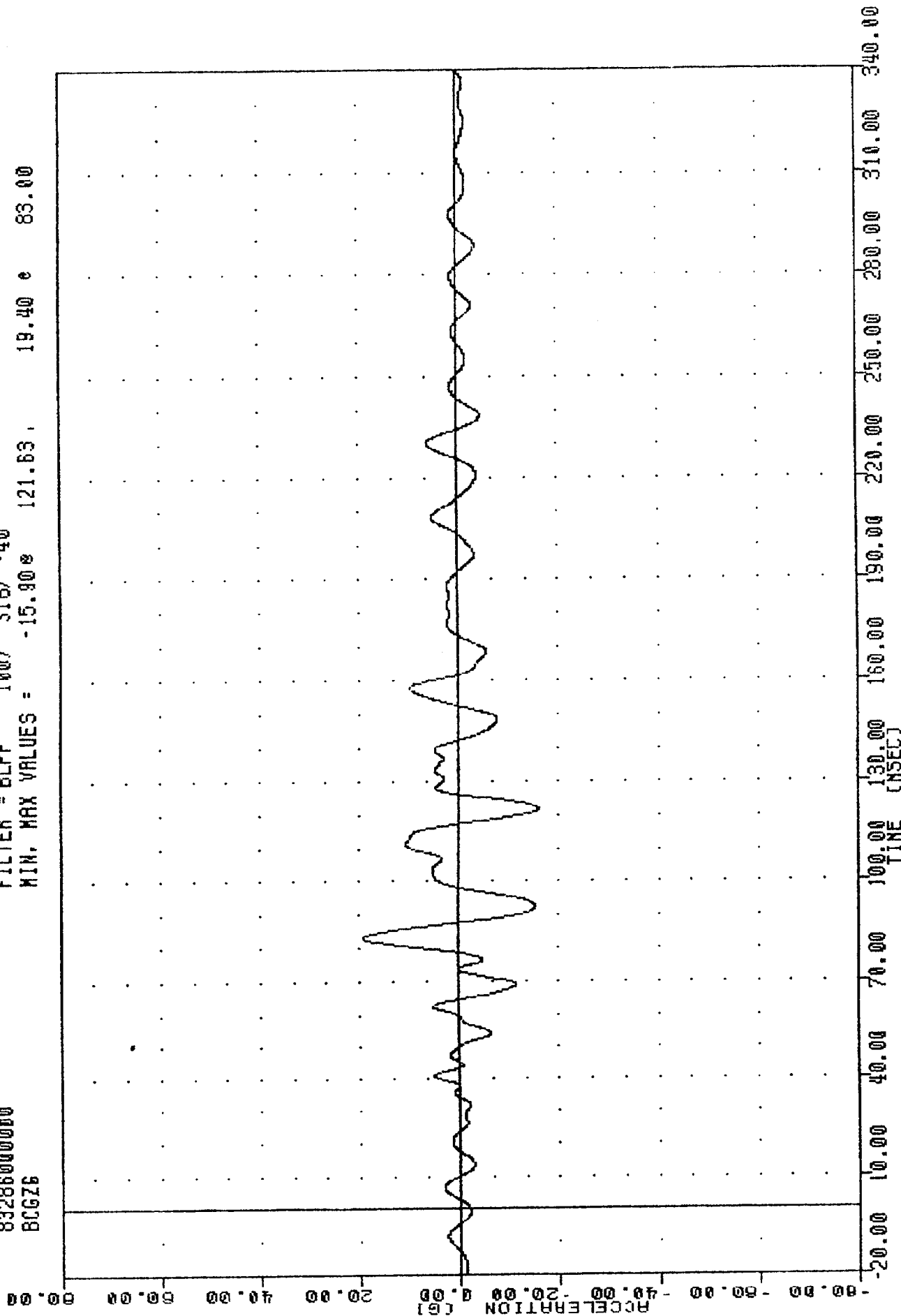
MIN. MAX VALUES = -5.45e 83.75, 2.28 e 26.88

ACCELERATION (G)



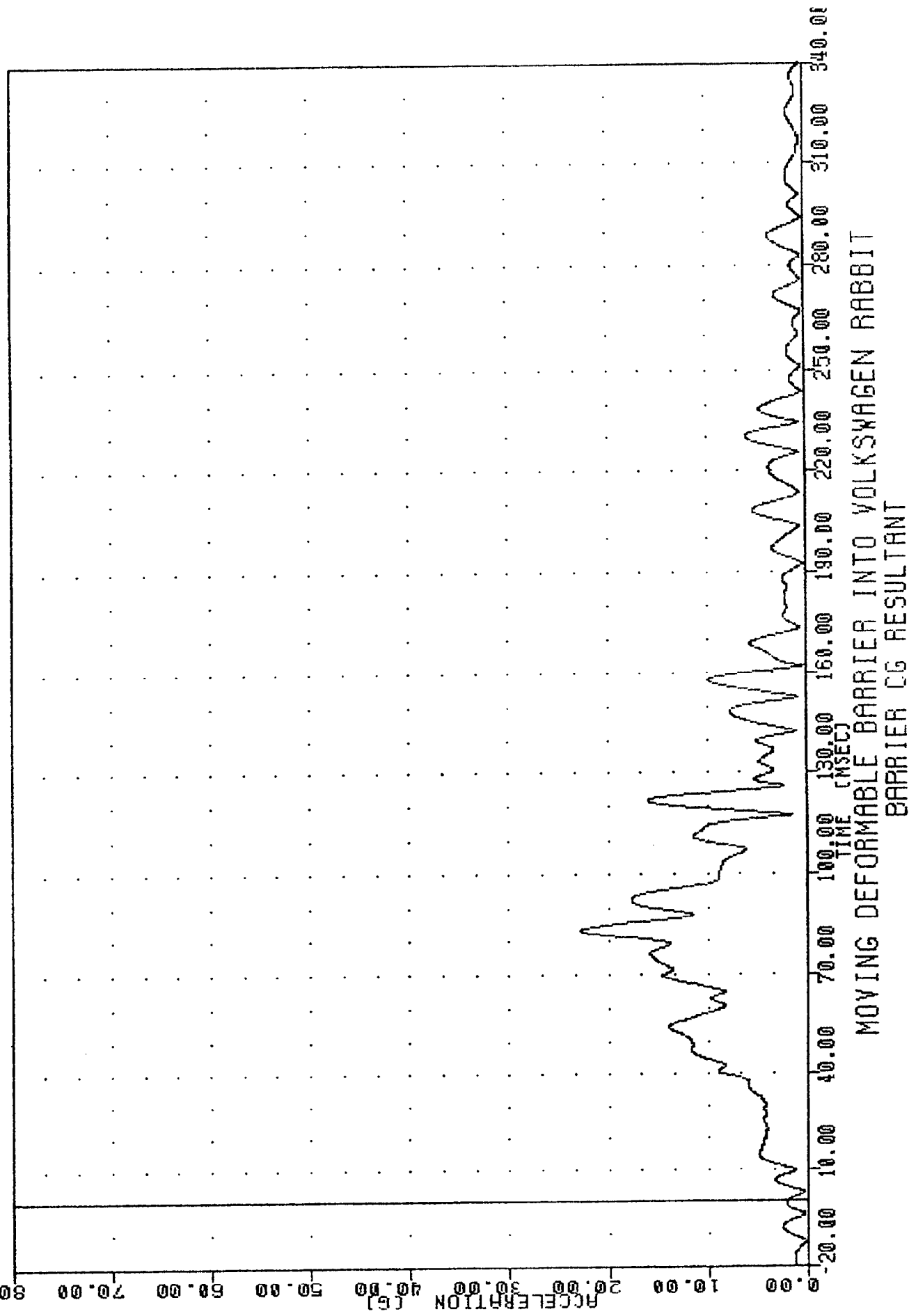
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CENTER OF GRAVITY Y AXIS

TRC 831013 21-OCT-83 11:07:17
 EVALUATION OF MOD VV FLEET
 83286000000
 BCGZB
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -15.90e 121.63, 19.40 e 83.00



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

TRC 831013
 EVALUATION OF MDD VV FLEET
 83286000000
 BCGRG
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = 0.12e -13.00, 22.89 e 82.88
 PLOT DATE 21-OCT-83 13:26:42

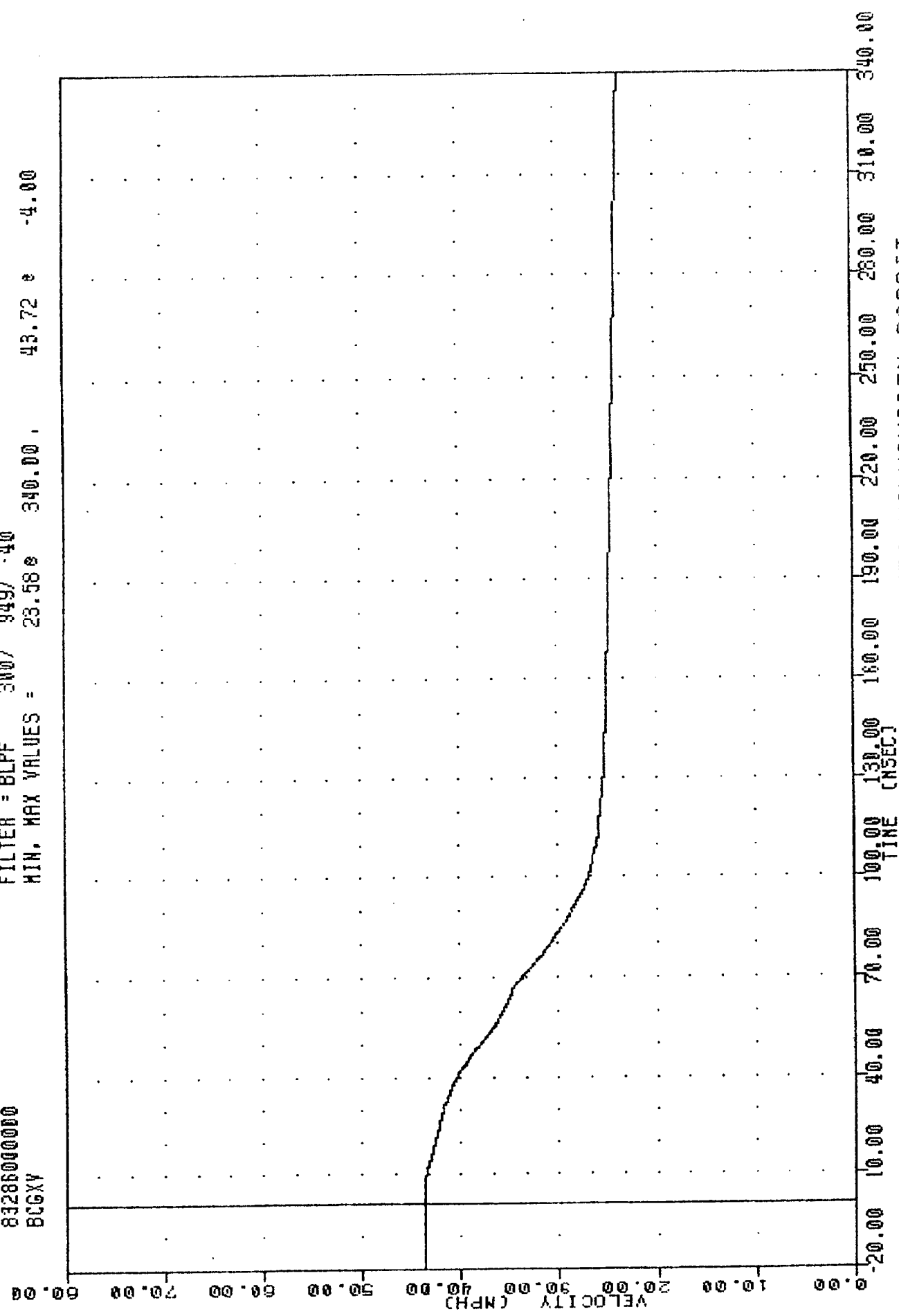


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER CG RESULTANT

TAC 83J013
 EVALUATION OF MOD VW FLEET
 83286000000
 BCGXY

PLOT DATE 21-OCT-83 15:00:37

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 23.58 340.00 43.72 -4.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BCGXG

TRC

831013

EVALUATION OF MOD VN FLEET

PLOT DATE

21-OCT-83

15:00:37

8328600000

BCGY

8328600000

FILTER = BLPF

300/

949/ -40

MIN. MAX VALUES =

10.93e

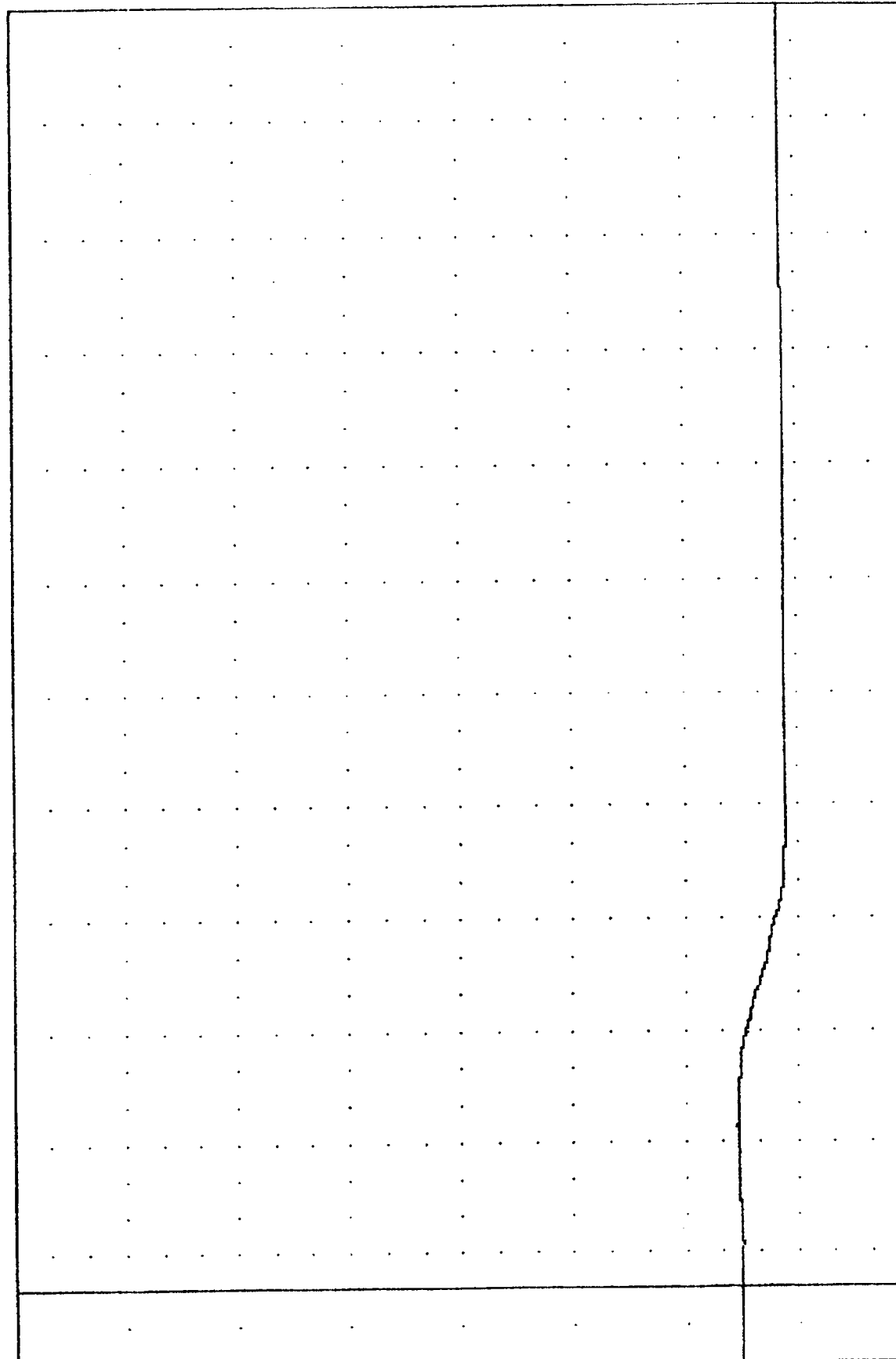
130.00,

15.35 s

44.00

80.00 70.00 60.00 50.00 40.00 30.00 20.00 10.00 0.00

VELOCITY (MPH)



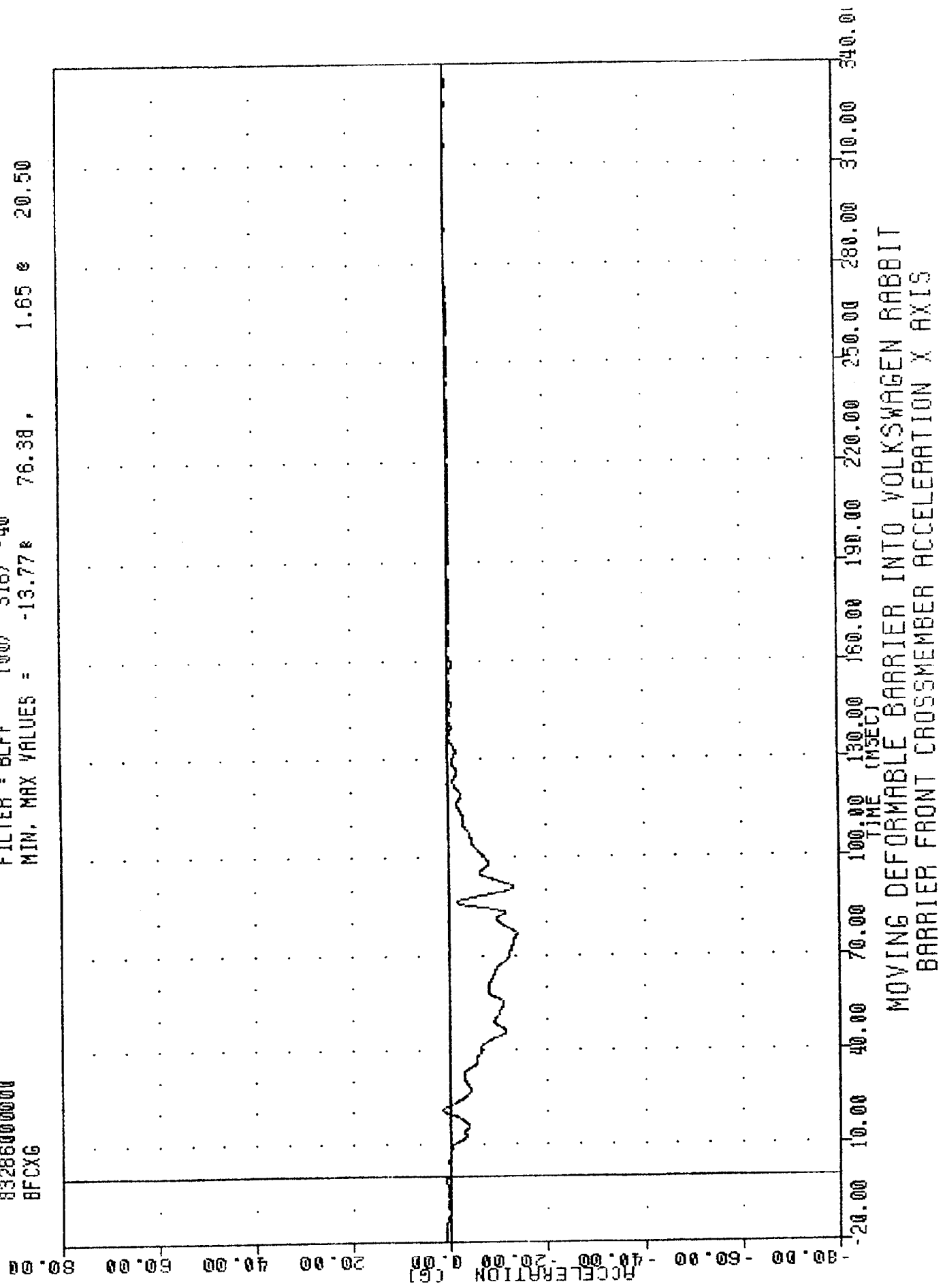
TIME (MSEC)

-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 BCGYG

TRC
 EVALUATION OF MOD YH FLEET
 83286000000
 BFCXG
 FILTER = BLFF 100/ 316/ -40
 MIN. MAX VALUES = -13.77% 76.38, 1.65 e 20.50
 PLOT DATE 21 OCT 83 11:07:17



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

TRC 831013 PLOT DATE 21-OCT-83 15:00:37

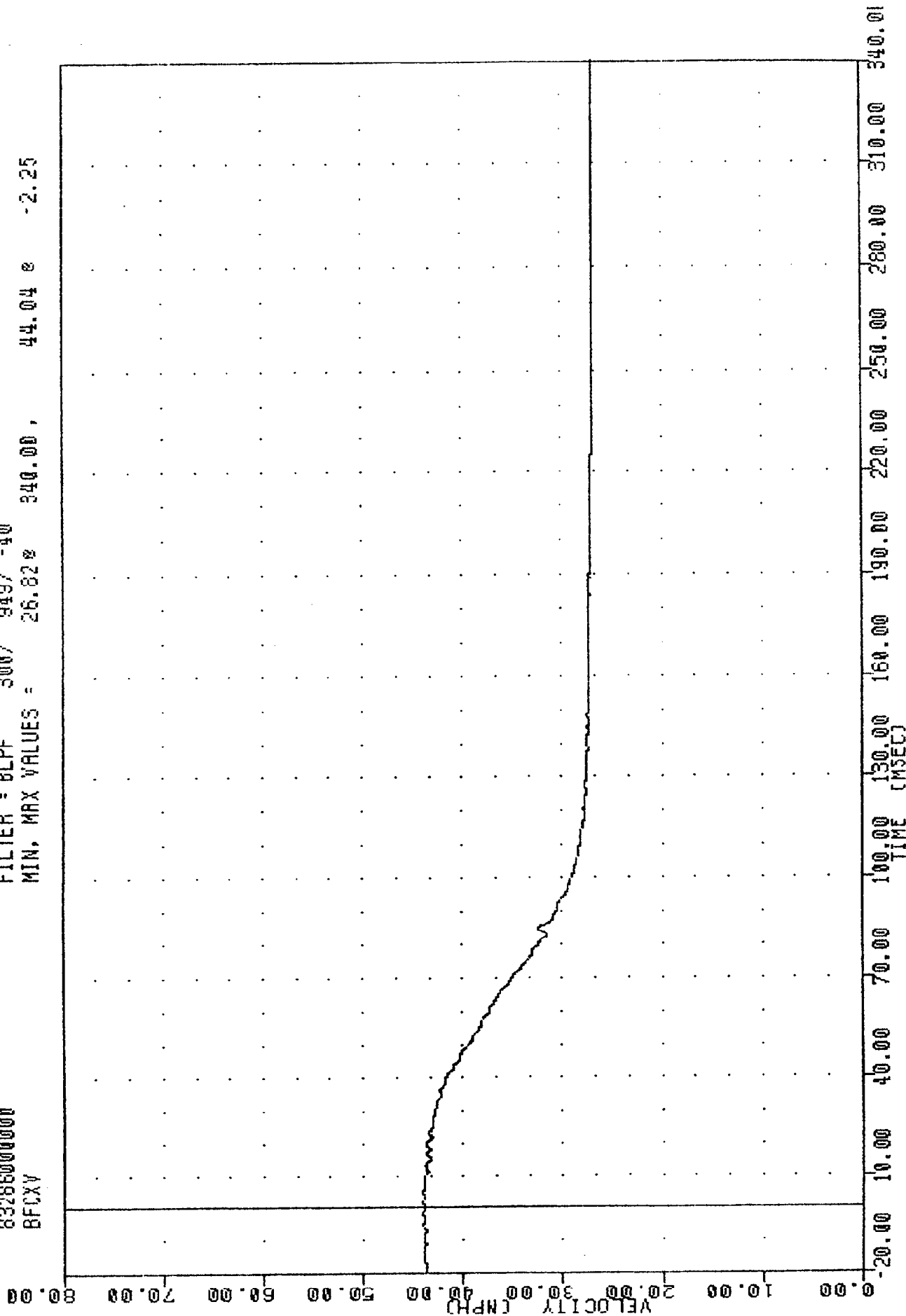
EVALUATION OF MDD YW FLEET

832850000000

BFCXV

FILTER = BLPF 300/ 949/ -40

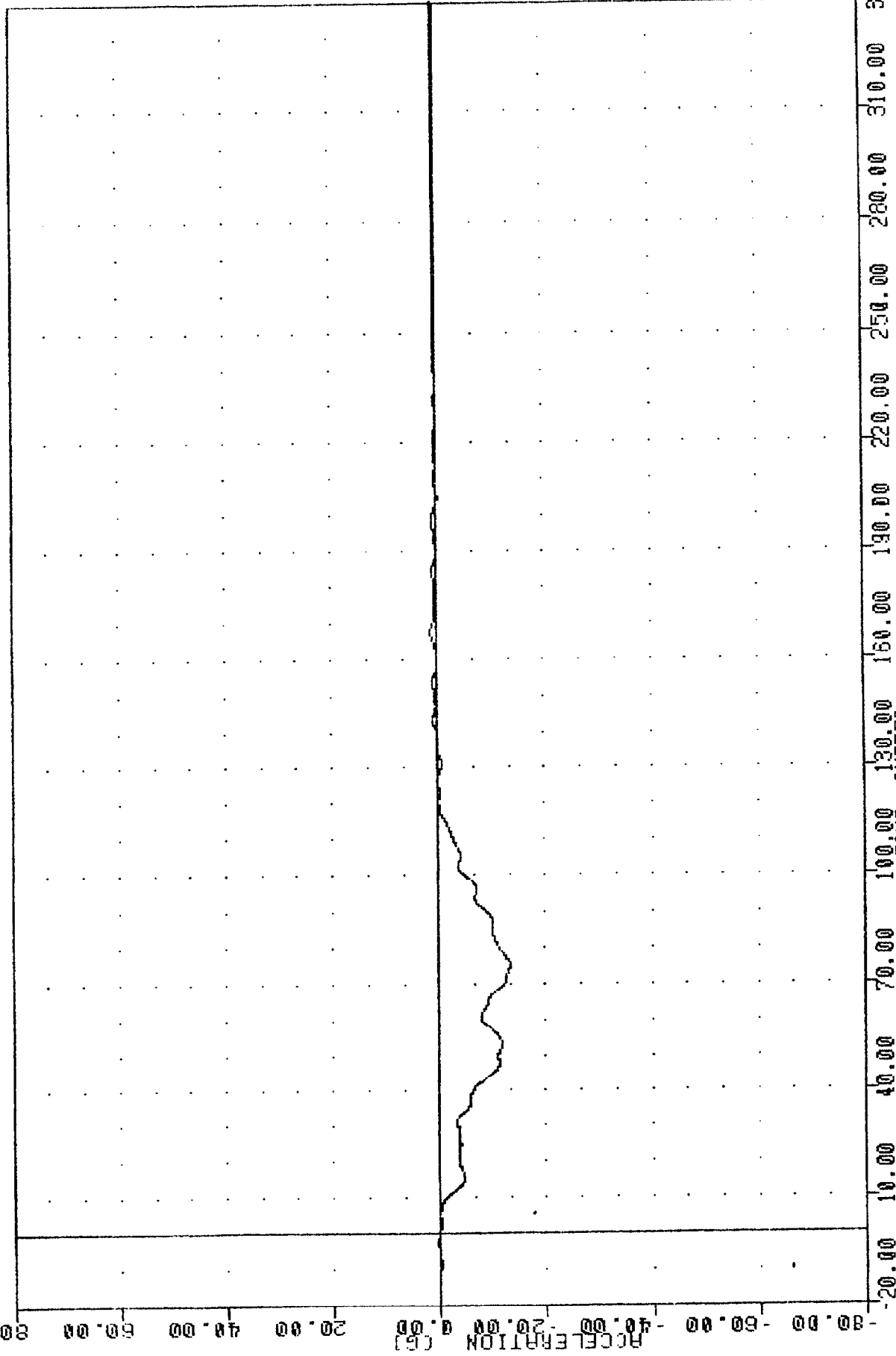
MIN. MAX VALUES = 26.82% 340.00, 44.04% -2.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING BFCXG

TRC 831013 PLOT DATE 21-OCT-83 11:07:17
 EVALUATION OF MDD VW FLEET
 83286000000
 BRCXG
 FILTER = 8LPF 100/ 316/ -40
 MIN, MAX VALUES = -13.438 75.00, 1.28 e 167.38



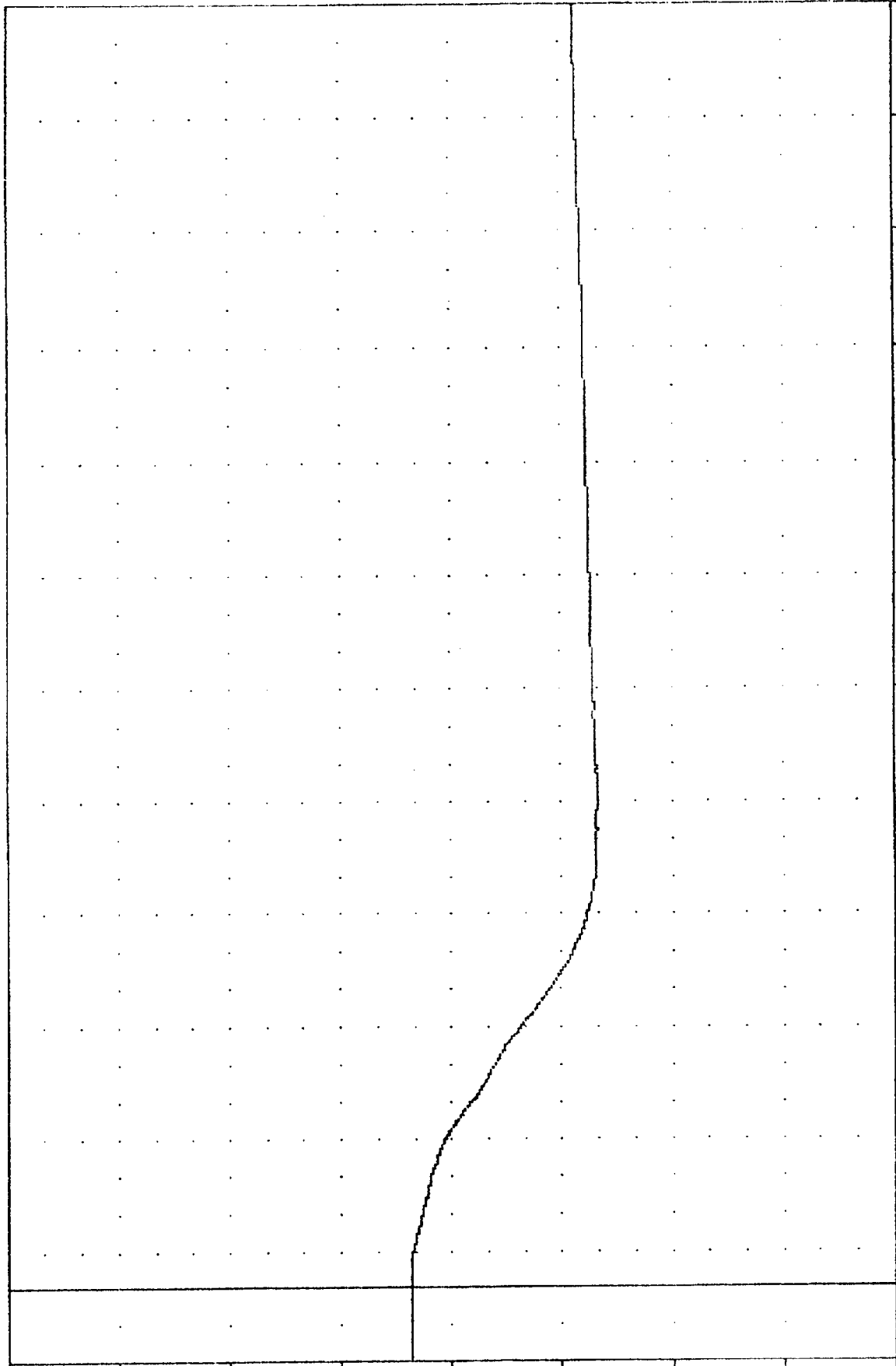
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER REAR CROSSMEMBER ACCELERATION X AXIS

TRC 83286000000
 EVALUATION OF MOD VW FLEET
 BRCXY

DATE 21 OCT 83 15.00.37

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 26.75e 130.13 , 43.74 e -4.13

VELOCITY (MPH)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BRCXG

TIME (NSEC)

-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