

EVALUATION OF NHTSA MODIFIED
VOLKSWAGEN RABBITS

DOT 622

MDB-TO-CAR SIDE IMPACT TEST OF
A 19⁰ CRABBED MOVING DEFORMABLE BARRIER
TO A 1977 VOLKSWAGEN RABBIT
AT 45.9 MPH

PREPARED BY:
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FINAL REPORT
NOVEMBER 1983

PREPARED FOR:
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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 1977 Volkswagen Rabbit 2-door hatchback with structural modifications designated as Optimized 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 ⁰ , at 45.9 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 27, 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
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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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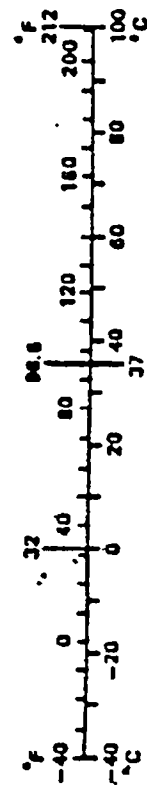


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SECTION 1.0
PURPOSE AND INTRODUCTION

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 1977 Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on October 27, 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 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 46.3 mph with the MDB's wheels crabbed clockwise to 19°. The actual test speed was 45.9 mph and the actual impact point was 37.5 inches forward of the midpoint of the Volkswagen Rabbit's wheelbase.

The vehicle was structurally modified to the level designated "Optimized". The driver door and left rear occupant wall were unpadded.

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: 1773549598

BODY STYLE: 2-Door Hatchback

MODEL YEAR: 1977

NHTSA NO.: R & D

COLOR: Orange

ENGINE DATA: TYPE: Transverse

CYLINDERS: 4

DISPLACEMENT 97 CID

TRANSMISSION DATA: 4 Speed Manual

DATE VEHICLE RECEIVED: 10/17/83

ODOMETER READING: 1244

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	No	AUTOMATIC TRANSMISSION	No
POWER BRAKES	No	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	No	AIR CONDITIONING	No
RADIO	Yes	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? No*
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: 9/76

GVWR: 2777 LBS.,

GAWR: FRONT 1609 LBS., REAR 1278 LBS.

* Front windshield has vertical crack at windshield centerline.

VEHICLE TIRE DATA

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

TIRES ON VEHICLE (MFG. & LINE, SIZE): Goodyear Cruiser P165/75/D13

BIAS PLY, BELTED, OR RADIAL: Bias Ply

PLY RATING: 2

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 580 LBS. RIGHT REAR 330 LBS.

LEFT FRONT 610 LBS. LEFT REAR 350 LBS.

TOTAL FRONT WEIGHT 1190 LBS. (63.6 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 680 LBS. (36.4 % OF TOTAL VEHICLE WEIGHT)

TOTAL DELIVERED WEIGHT 1870 LBS.

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE: RF 25 11/16 ;LF 25 15/16 ;RR 25 13/16 ;LR 25 5/8

PRE-TEST ATTITUDE: RF 24 15/16 ;LF 24 13/16 ;RR 23 1/8 ;LR 22 15/16

POST-TEST ATTITUDE: RF 24 11/16 ;LF 24 5/8 ;RR 22 7/8 ;LR 22 15/16

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 262 LBS. CARGO:

RIGHT FRONT 650 LBS. RIGHT REAR 575 LBS.

LEFT FRONT 670 LBS. LEFT REAR 585 LBS.

TOTAL FRONT WEIGHT 1320 LBS. (53.2 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 1160 LBS. (46.8 % OF TOTAL VEHICLE WEIGHT)

TOTAL TEST WEIGHT 2480 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: 8.0 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 262 LBS.

4 TOTAL

TOTAL 862 LBS.

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

TEST CONDITIONS

TEST NUMBER: 831027

DATE OF TEST: October 27, 1983

TIME OF TEST: 13:00

WIND VELOCITY: 0-2 mph 27⁰ NE

HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA: 50⁰ F

TEMPERATURE IN OCCUPANT COMPARTMENT: 74⁰ F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2480	2480
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	45.9	46.3
IMPACT POINT (INCHES)**	37.5	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>Side Header, Side Window</u>	<u>Side Header, Side Window</u>
Chest	<u>Driver's Door Panel</u>	<u>Side Wall</u>
Abdomen	<u>Driver's Door Panel</u>	<u>Side Wall</u>
Left Knee	<u>Driver's Door Panel</u>	<u>Left Quarter Panel</u>
Right Knee	<u>Left Knee</u>	<u>Left Knee</u>

DOOR OPENING:

	LEFT	RIGHT
Front	<u>Difficult</u>	<u>Easy</u>
Rear	<u>DNA</u>	<u>DNA</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>Yes</u>	<u>Driver's Seat Separated From Mounts</u>
Rear	<u>No</u>	<u>No</u>

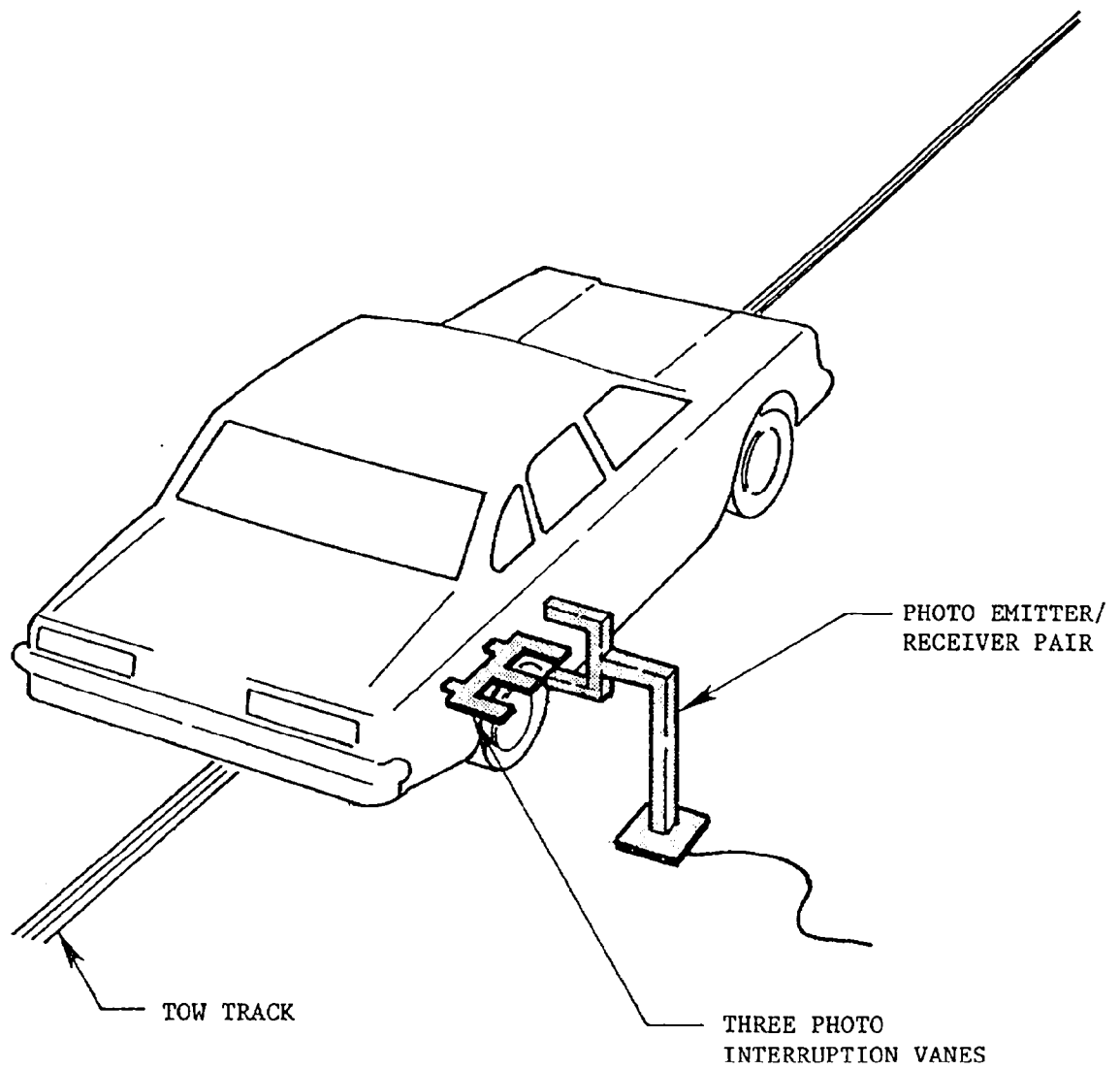
GLAZING DAMAGE:

Left side of windshield cracked, left front
window retained except at top, left rear
window separated and broken, no backlight
damage.

OTHER NOTABLE IMPACT EFFECTS:

Driver's door separated from hinges but
remained in vehicle, driver dummy leg
severed at knee.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane is located two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

Test Weight = Unloaded Delivered Weight +
 Number of Dummies X 174 lbs. +
 Cargo Weight
 = 1870 + 2 X 174 + 262 lbs.
 = 2480 lbs.

To achieve test weight, 8 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

Cable separation occurred in data channel T01YGI - Driver Upper Spine Acceleration Y Axis at approximately 270 msec. The separation occurred after the crash pulse and, therefore, peak levels and a resultant are reported.

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

<u>SIDE IMPACT DUMMY*</u>	<u>DRIVER DSP</u>	<u>REAR PASSENGER DSP</u>
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.

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. M. Garrison

2. J. Kokoruda

3. N. Echeverria

POSITIONING DATE: 10/27/83

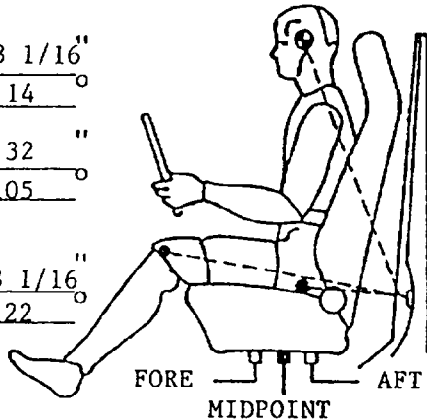
AMBIENT TEMP.: 66° F. TIME: 7:30

DRIVER DUMMY # 06

HEAD 18 1/16"
 TARGET* 14

KNEE 32"
 JOINT 105

APPROX.
 "H" 18 1/16"
 POINT 122

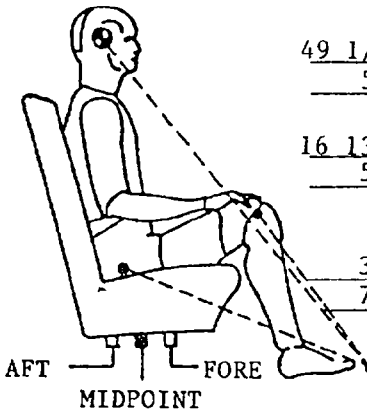


REAR PASSENGER DUMMY # U02

49 1/2" HEAD
52" TARGET**

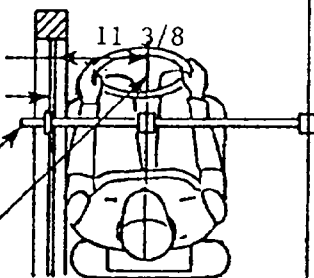
16 13/16" KNEE
52" JOINT

APPROX.
30" "H"
75" POINT †



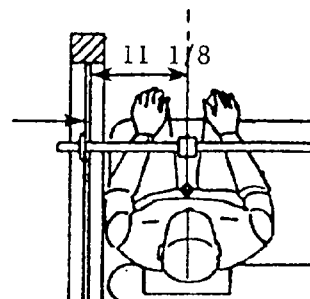
DOOR
 GLASS
 HEIGHT*** 9 1/2

LATERAL BAR
 ADJUSTABLE
 POINTER



DRIVER
 DUMMY # 06

DOOR
 GLASS
 HEIGHT DNA



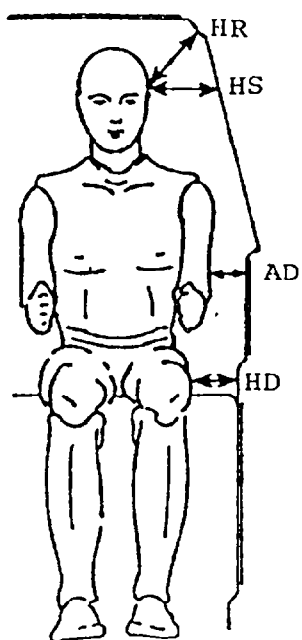
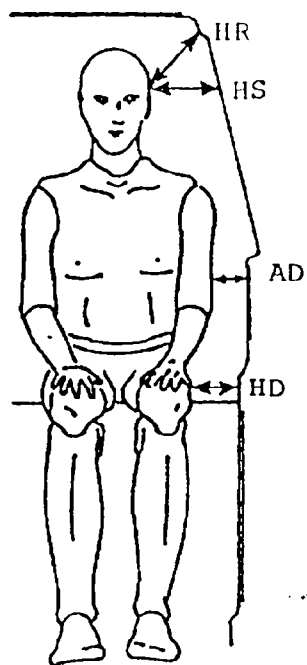
PASSENGER
 DUMMY # U02

*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.

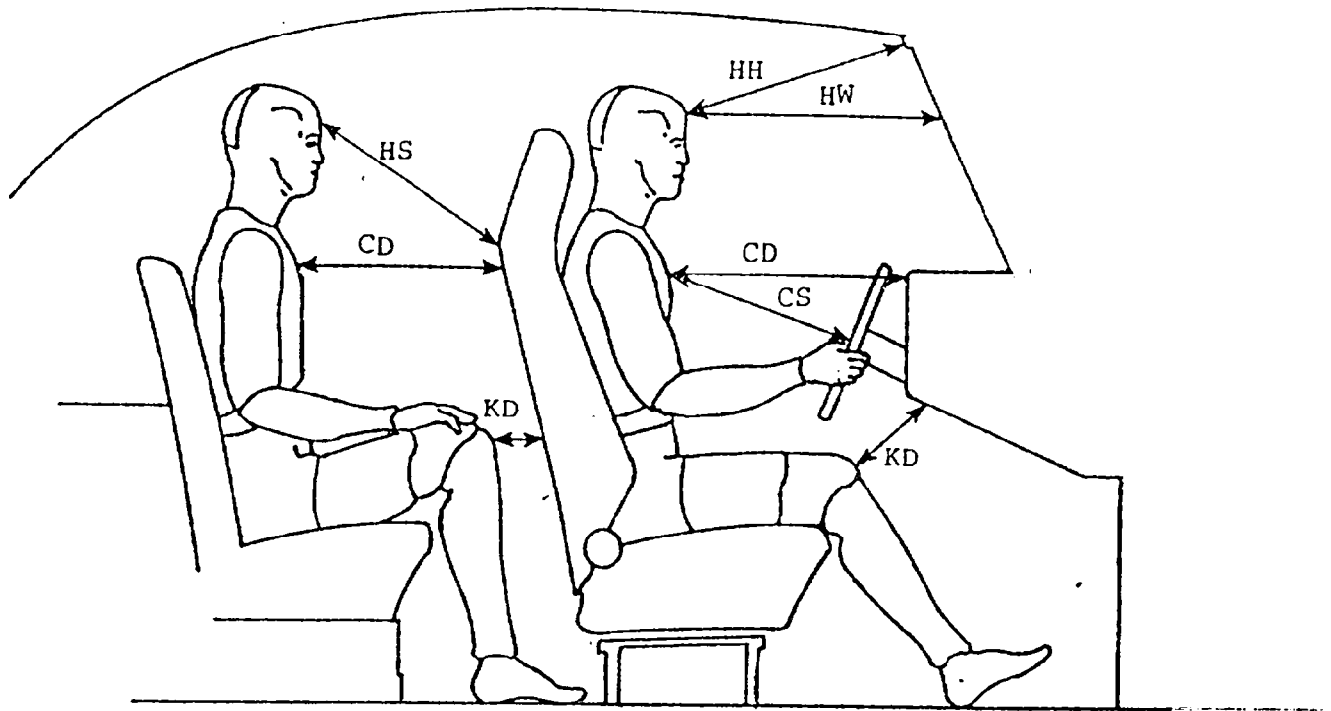
† Due to structural modification interference, the "H" point location was estimated.



	06 DRIVER	002 PASSENGER
HR	6 3/8	5 7/8
HS	7 7/8	7 3/8
AD	3 1/2	2 5/8
HD	5 5/16	5 3/16

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



	06	U02.
	DRIVER	PASSENGER
HH	15 1/4	DNA
HW	20 3/4	DNA
HS	DNA	22 3/8
CD	22 7/16	18
CS	13 1/2	DNA
KDL	9	3 1/4
KDR	8 1/4	3 1/4

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the dummy's torso contacted the driver's door and the head contacted the driver's side window and header. The dummy rebounded across the vehicle; it's head and shoulder's struck the roof and it's buttocks struck the passenger side window top. The dummy fell forward and came to rest laying across the front seats face downwards.

PASSENGER

During impact, the dummy's torso contacted the left rear passenger side wall and the head contacted the side window and header. The dummy rebounded laterally in an upright position with it's feet trapped beneath the driver's seat. The dummy came to rest upright leaning against the left rear passenger side wall.

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	9.0	X	X	19.6	19.5	19.7	19.6	19.6	19.7	19.8	19.8	19.8	19.7	19.5	X	X
H-Point	17.0	X	X	17.2	17.3	17.2	17.1	17.1	17.1	17.0	17.0	17.3	17.3	17.3	16.3	X
Mid Door	23.0	15.7	17.1	17.0	17.0	16.9	16.9	16.8	16.8	16.8	16.8	16.9	17.0	17.1	17.3	16.4
Window Sill	33.0	X	18.9	18.6	18.5	18.4	18.4	18.4	18.3	18.3	18.3	18.6	18.3	18.4	18.6	18.8
Window Top	51.0	X	X	X	X	X	27.2	26.7	26.3	26.1	26.1	26.0	25.9	26.0	26.1	26.4

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

Axle Height	9.0	X	X	22.3	25.7	27.3	29.1	27.3	26.7	26.3	25.9	25.0	23.0	21.8	X	X
H-Point	17.0	X	X	24.9	35.0	37.3	38.1	37.5	36.3	34.3	31.5	30.4	28.3	24.8	23.5	X
Mid Door	23.0	20.5	22.4	23.4	32.0	34.5	35.6	35.6	34.1	32.3	29.9	30.8	28.4	26.2	23.6	20.1
Window Sill	33.0	X	20.3	21.0	26.3	29.4	32.1	34.6	32.6	30.1	27.9	29.9	27.3	24.8	22.0	20.5
Window Top	51.0	X	X	X	X	X	28.0	27.3	27.1	27.1	27.0	27.1	27.0	26.8	26.7	26.9

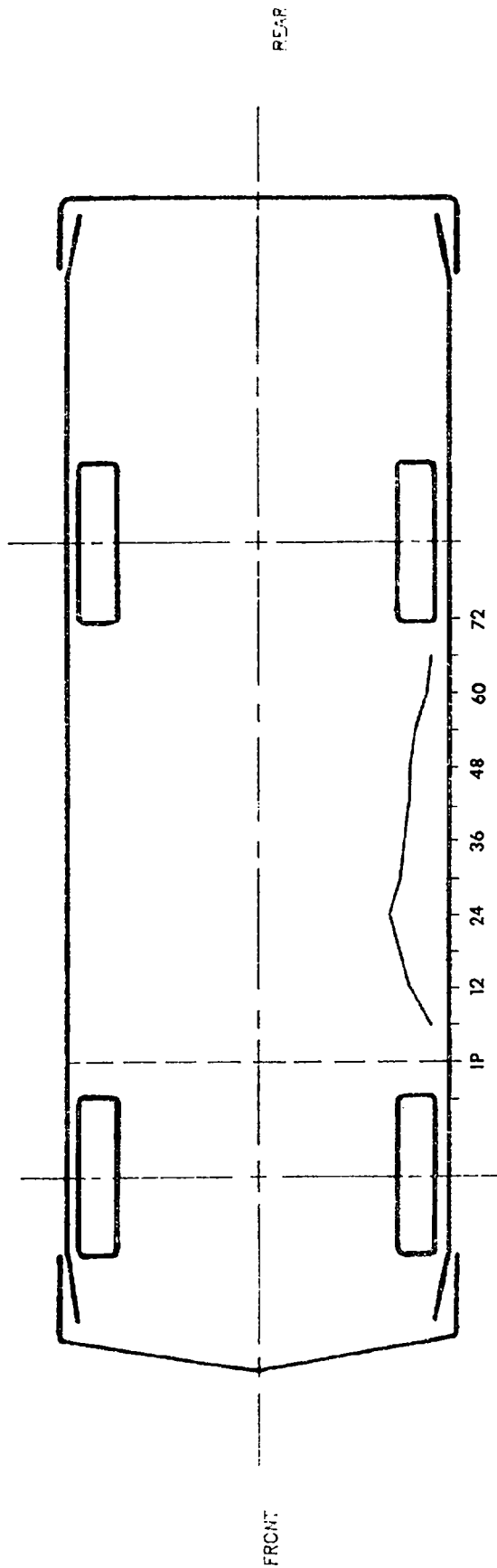
STATIC CRUSH (IN)

Axle Height	9.0	X	X	2.7	6.2	7.6	9.5	7.7	7.0	6.5	6.1	5.2	3.3	2.3	X	X
H-Point	17.0	X	X	7.7	17.7	20.1	21.0	20.4	19.2	17.3	14.5	13.1	11.0	7.5	7.2	X
Mid Door	23.0	4.8	5.3	6.4	15.0	17.6	18.7	18.8	17.3	15.5	13.1	13.9	11.4	9.1	6.3	3.7
Window Sill	33.0	X	1.4	2.4	7.8	11.0	13.7	16.2	14.3	11.6	9.6	11.3	9.0	6.4	3.4	1.7
Window Top	51.0	X	X	X	X	X	0.8	0.6	0.8	1.0	0.9	1.1	1.1	0.8	0.6	0.5

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

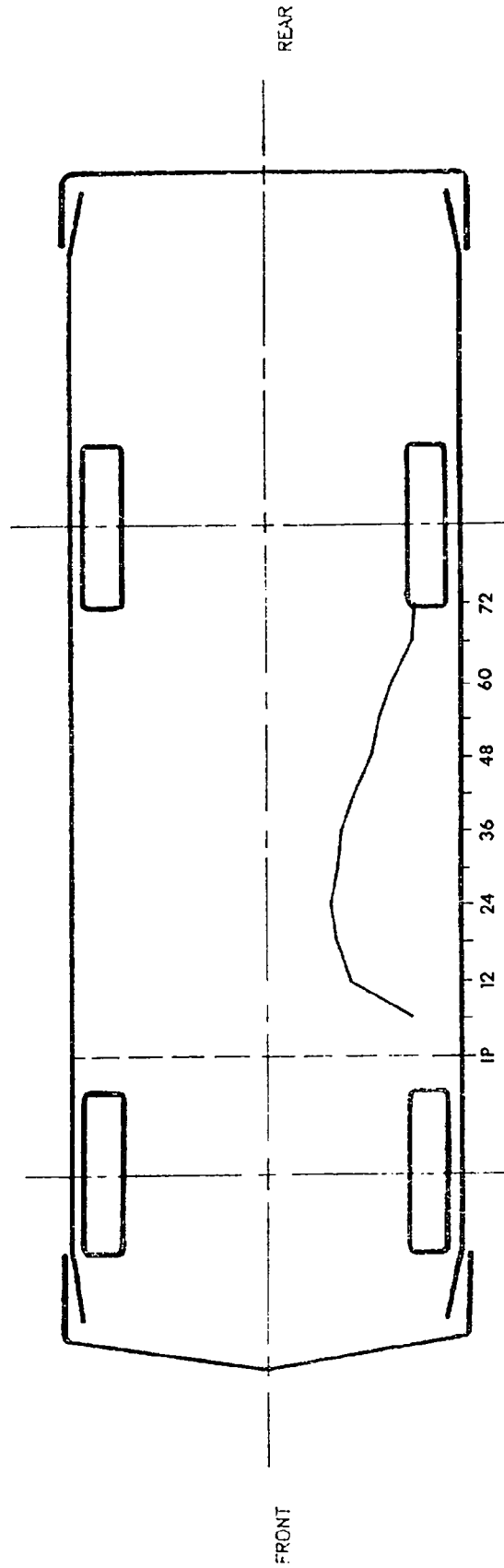
** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



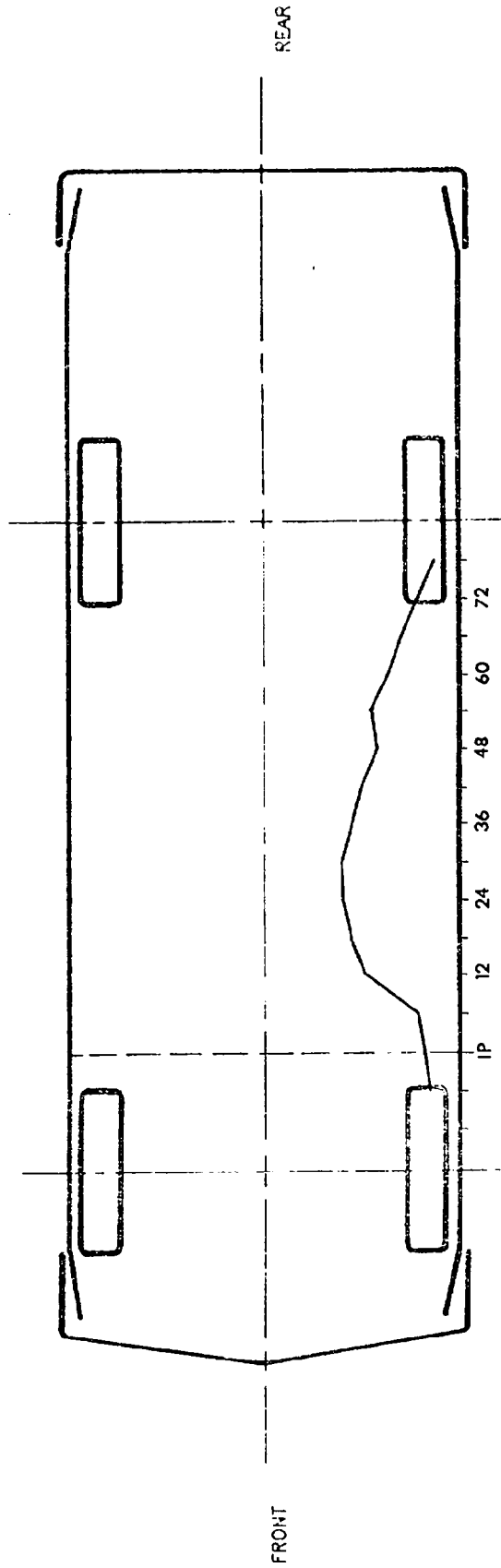
PROFILE LEVEL EQUALS AXLE HEIGHT
 IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



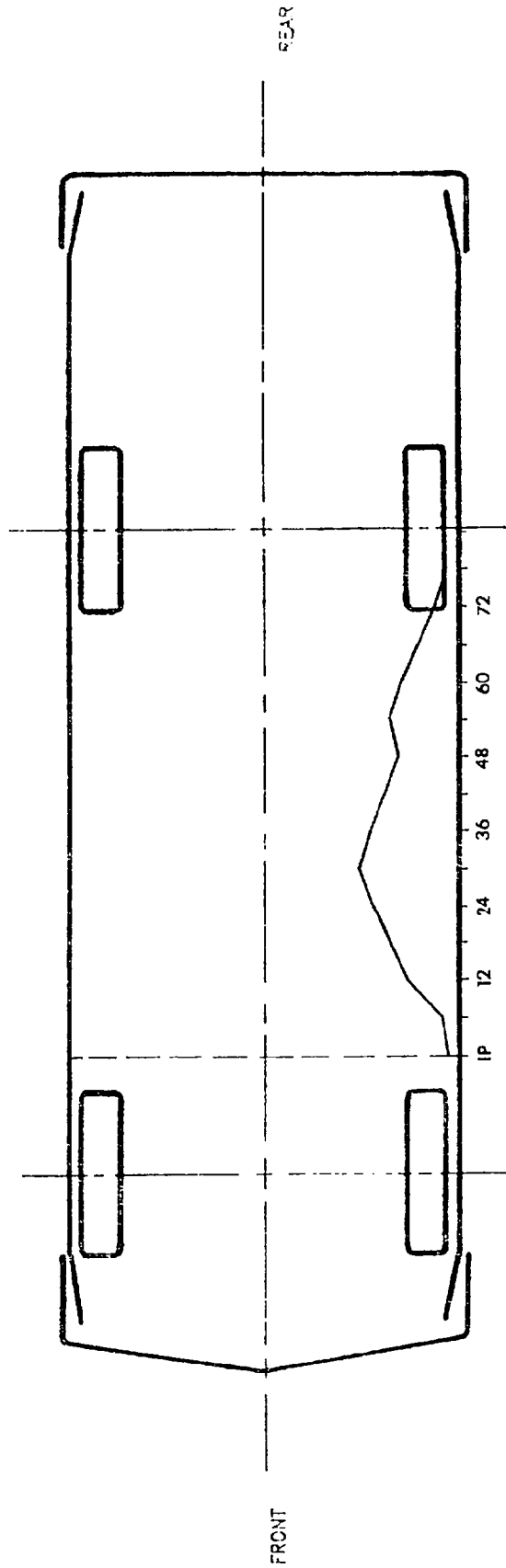
PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



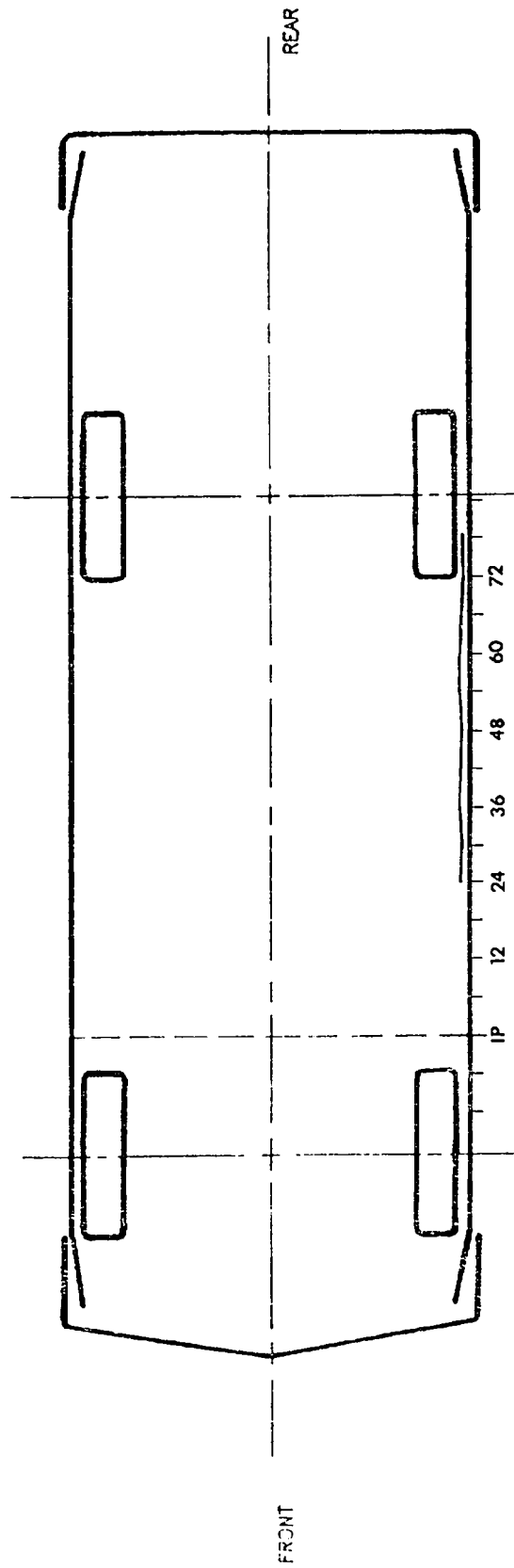
PROFILE LEVEL EQUALS MID-DOOR HEIGHT
 IP EQUALS PROJECTED IMPACT POINT

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 DIRECTION*		NEGATIVE DIRECTION**		POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
HEAD ACCELERATION								
LONGITUDINAL	25.70	182.25	86.60	91.13	32.86	92.50	42.76	107.63
LATERAL	70.10	66.50	26.58	50.13	82.51	71.13	50.47	91.13
VERTICAL	22.45	186.75	119.39	76.75	100.25	90.63	53.76	77.75
RESULTANT		119.98	à 76.75			113.61	à 90.63	
HIC	2068.08	from 60.88 to 98.00			838.70	from 68.75 to 95.50		
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	61.48	175.00	86.03	53.75	11.58	73.13	53.30	81.88
LATERAL (P)***	181.25	53.13	54.11	46.25Y	126.50	82.50	14.28	100.00
LATERAL (R)***	184.97	53.12	50.37	46.25	129.14	82.50	13.87	100.00
VERTICAL	19.63	173.75	27.17	50.00	22.24	66.87	22.86	81.25
RESULTANT (P)		200.49	à 53.13Y			138.56	à 81.88	
RESULTANT (R)		203.86	à 53.12			140.92	à 82.50	
DELTA V (MPH)****		30.1	à 78.75 (P)Y			24.4	à 90.62 (P)	
		32.6	à 79.38 (R)			25.4	à 91.25 (R)	
LOWER SPINE								
LONGITUDINAL	34.07	179.38	27.82	53.75	21.55	86.88	23.36	70.63
LATERAL (P)	139.45	47.50	47.31	66.87	98.30	74.37	40.74	96.88
LATERAL (R)	129.65	47.50	44.44	66.87	96.47	74.37	38.82	96.88
VERTICAL	34.91	50.00	7.36	85.63	25.74	76.88	7.03	95.00
RESULTANT (P)		145.36	à 47.50			100.37	à 74.37	
RESULTANT (R)		135.98	à 47.50			98.58	à 74.37	
DELTA V (MPH)		45.5	à 63.13 (P)			34.6	à 90.62 (P)	
		46.0	à 63.75 (R)			35.7	à 91.25 (R)	
LEFT UPPER RIB								
LATERAL (P)	182.94	47.50	28.84	178.13	120.86	75.62	13.93	116.25
LATERAL (R)	176.13	47.50	26.37	180.62	115.19	75.00	13.71	116.88
DELTA V (MPH)		34.8	à 86.88 (P)			33.5	à 220.63 (P)	
		36.1	à 86.88 (R)			35.6	à 221.88 (R)	
LEFT LOWER RIB								
LATERAL (P)	198.18	46.25	32.64	70.00	117.42	74.37	31.94	95.00
LATERAL (R)	186.63	46.25	36.13	70.00	123.11	75.00	31.91	95.00
DELTA V (MPH)		38.6	à 67.50 (P)			32.7	à 235.00 (P)	
		38.5	à 66.88 (R)			33.2	à 239.38 (R)	
PELVIS ACCELERATION								
LONGITUDINAL	24.92	248.13	118.05	242.25	29.23	52.75	90.93	67.25
LATERAL	230.59	38.88	30.73	32.63	194.99	67.50	66.07	50.25
VERTICAL	84.59	48.88	29.84	50.88	60.57	75.25	18.42	77.13
RESULTANT		234.62	à 38.75			216.33	à 67.38	
DELTA V (MPH)		38.1	à 75.75			32.0	à 83.38	

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	DRIVER DUMMY				PASSENGER DUMMY			
	POSITIVE		NEGATIVE		POSITIVE		NEGATIVE	
	DIRECTION*		DIRECTION**		DIRECTION*		DIRECTION**	
	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)
RIB DEFLECTION †	0.18	267.13	1.74	109.50	0.12	168.88	1.56	89.13

* 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

γ See TEST ANOMALIES

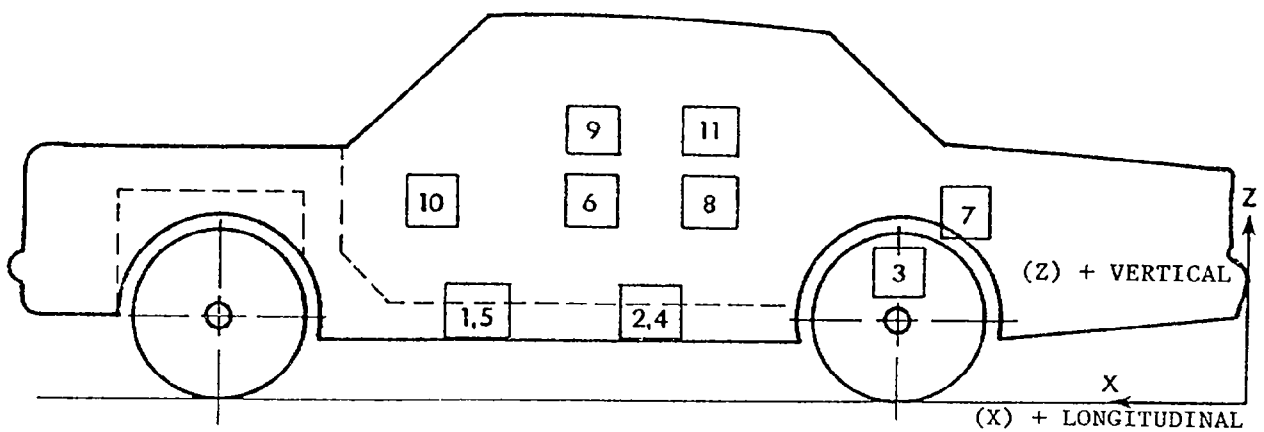
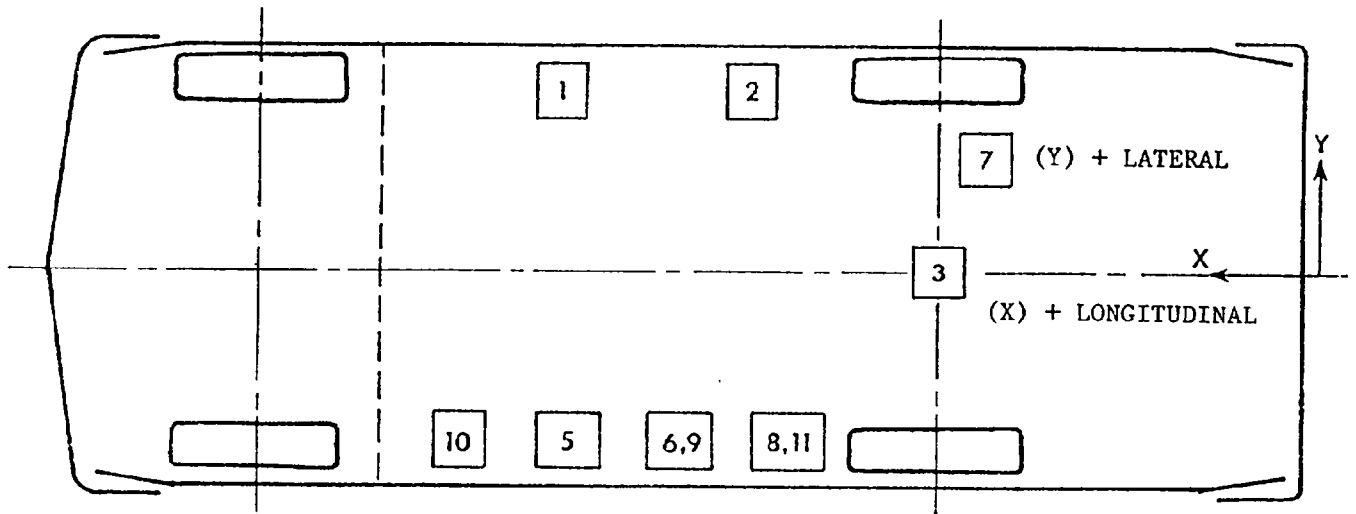
VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT SILL AT FRONT SEAT (LONGITUDINAL) (LATERAL) (VERTICAL) (RESULTANT)	83.3	23.8	10.5				
		$\Delta V = -8.8 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			2.48	122.63	14.48	58.25
		$\Delta V = 14.4 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			18.92	58.63	4.12	92.13
					12.35	66.88	9.44	71.13
						24.84	57.88	
2	RIGHT SILL AT REAR SEAT (LONGITUDINAL) (LATERAL) (VERTICAL) (RESULTANT)	61.3	24.1	10.1				
		$\Delta V = -5.7 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			3.10	121.50	7.87	15.38
		$\Delta V = 19.6 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			32.88	57.25	11.56	80.63
					12.21	81.00	6.76	71.25
						33.89	57.25	
3	REAR DECK OVER AXLE (LONGITUDINAL) (LATERAL) (VERTICAL) (RESULTANT)	32.0	0.0	6.8				
		$\Delta V = -9.1 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			5.46	27.75	18.37	85.75
		$\Delta V = 26.5 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			29.82	74.25	4.74	133.63
					8.97	49.13	15.48	74.63
						35.27	74.63	
4	LEFT SILL AT REAR SEAT (LATERAL)	61.0	-23.5	10.1				
		$\Delta V = 16.7 \text{ mph } \hat{a} \text{ } 90.63 \text{ msec}$			48.56	49.88	10.86	65.00
5	LEFT SILL AT FRONT SEAT (LATERAL)	83.6	-23.8	10.9				
		$\Delta V = 9.5 \text{ mph } \hat{a} \text{ } 28.63 \text{ msec}$			73.70	23.38	66.09	30.88
6	LEFT FRONT DOOR CENTERLINE (LATERAL)	80.6	-26.2	23.6				
		$\Delta V = 31.4 \text{ mph } \hat{a} \text{ } 32.88 \text{ msec}$			233.07	26.50	86.19	33.75
7	RIGHT REAR COMPARTMENT (LONGITUDINAL)	31.0	15.4	13.6				
					5.72	72.88	8.44	91.50
8	MIDREAR OF LEFT FRONT DOOR (LATERAL)	60.6	-26.3	23.5				
		$\Delta V = 55.1 \text{ mph } \hat{a} \text{ } 59.75 \text{ msec}$			237.75	43.38	97.32	60.75
9	UPPER LEFT FRONT DOOR CENTERLINE (LATERAL)	81.4	-25.9	32.6				
		$\Delta V = 33.1 \text{ mph } \hat{a} \text{ } 37.88 \text{ msec}$			195.45	31.50	81.45	42.00
10	MIDFRONT OF LEFT FRONT DOOR (LATERAL)	99.3	-26.1	22.2				
		$\Delta V = 28.1 \text{ mph } \hat{a} \text{ } 27.75 \text{ msec}$			115.52	20.38	127.30	32.00
11	UPPER REAR OF LEFT FRONT DOOR (LATERAL)	70.4	-26.8	32.8				
		$\Delta V = 31.3 \text{ mph } \hat{a} \text{ } 75.75$			151.32	36.25	157.45	42.88

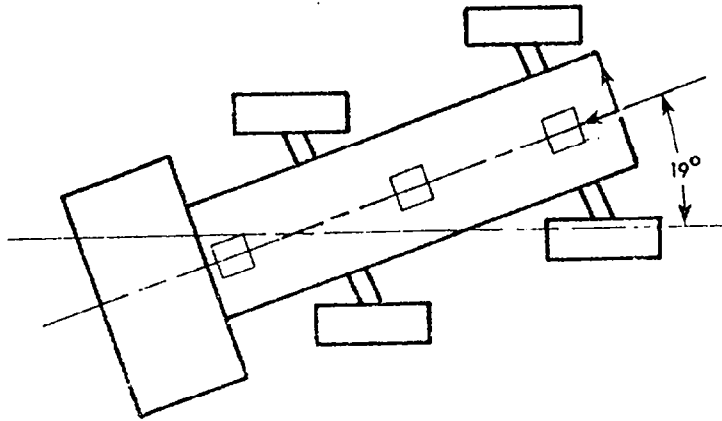
* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right),
Z - Ground Level (+ Up)

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)	$\Delta V = -18.2 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			1.05	210.38	15.01	55.25
	(LATERAL)	$\Delta V = -3.2 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			3.09	42.00	7.75	86.13
	(VERTICAL)				20.40	105.50	15.84	74.25
	(RESULTANT)					20.54 $\hat{a}$ 105.50		
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	$\Delta V = -18.5 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			1.06	9.50	16.91	82.13
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -18.1 \text{ mph } \hat{a} \text{ } 130.00 \text{ msec}$			1.90	216.00	14.86	72.63

* 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	757	Vehicle Dynamics
2	Overhead	Photosonics 1B	25	752	Close-up of impact point
3	Onboard MDB	Photosonics 1B	25	495	Close-up of impact point
4	Onboard MDB	Stalex	13	497	Driver kinematics
5	Ground level - right	Hycam	25	755	Overall view
6	Ground level - left	Photosonics 1B	17	802	Overall view
7	Onboard vehicle	Photosonics 1B	8	805	Driver kinematics - front view
8	Onboard vehicle	Photosonics 1B	8	815	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.

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	0	25'
2	0	0	25'
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	MFR.	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

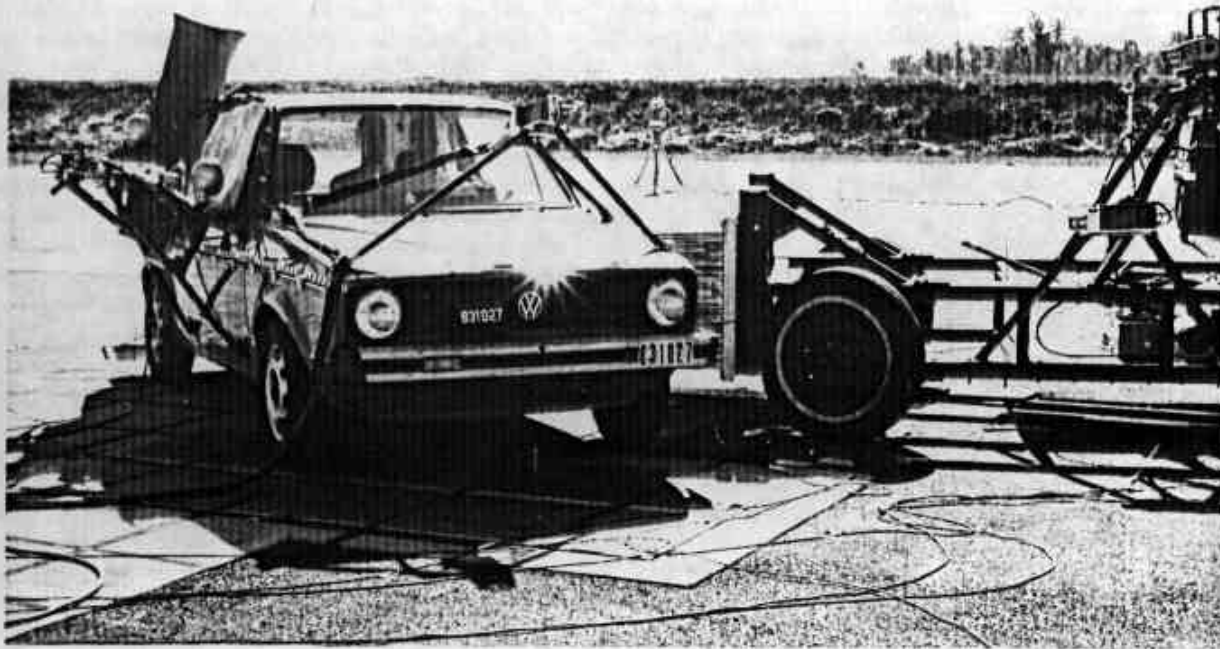


Figure A-1. PRE-TEST OVERALL - VIEW 1

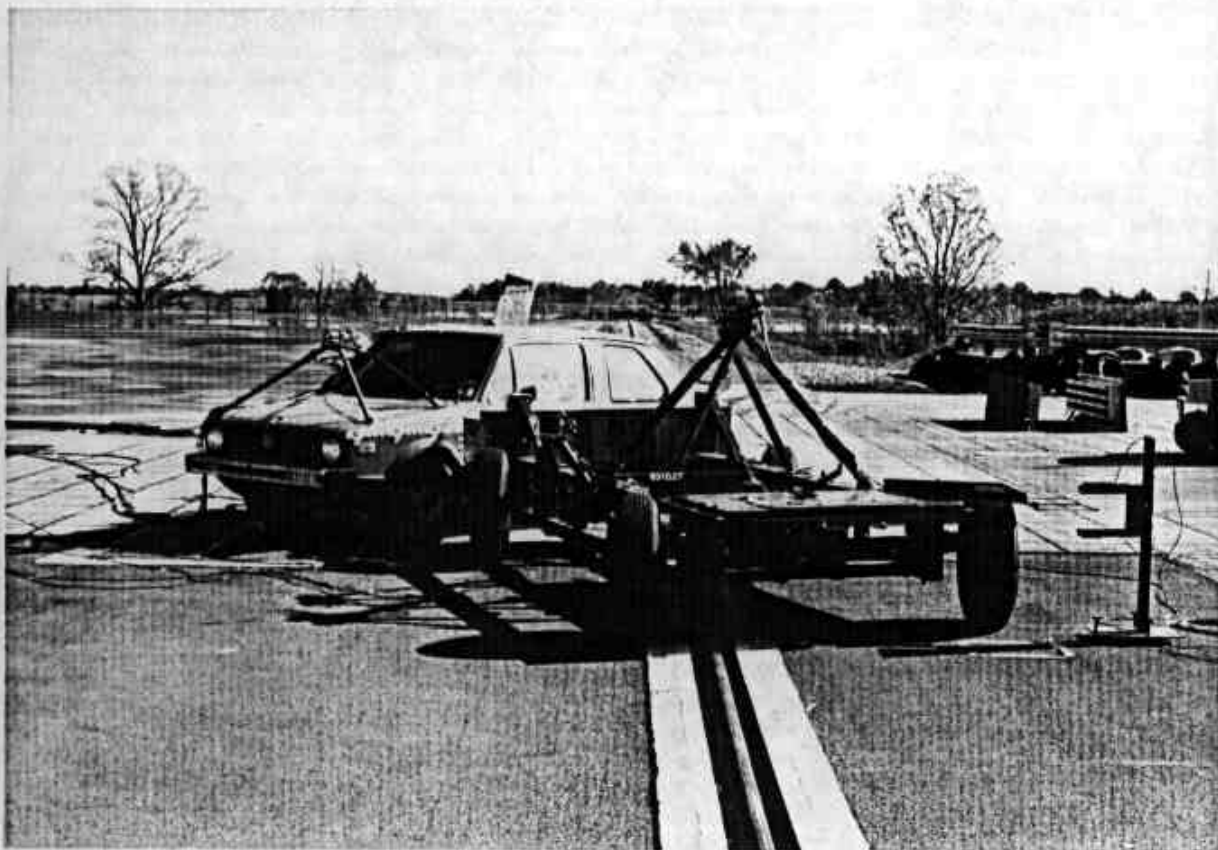


Figure A-2. PRE-TEST OVERALL - VIEW 2

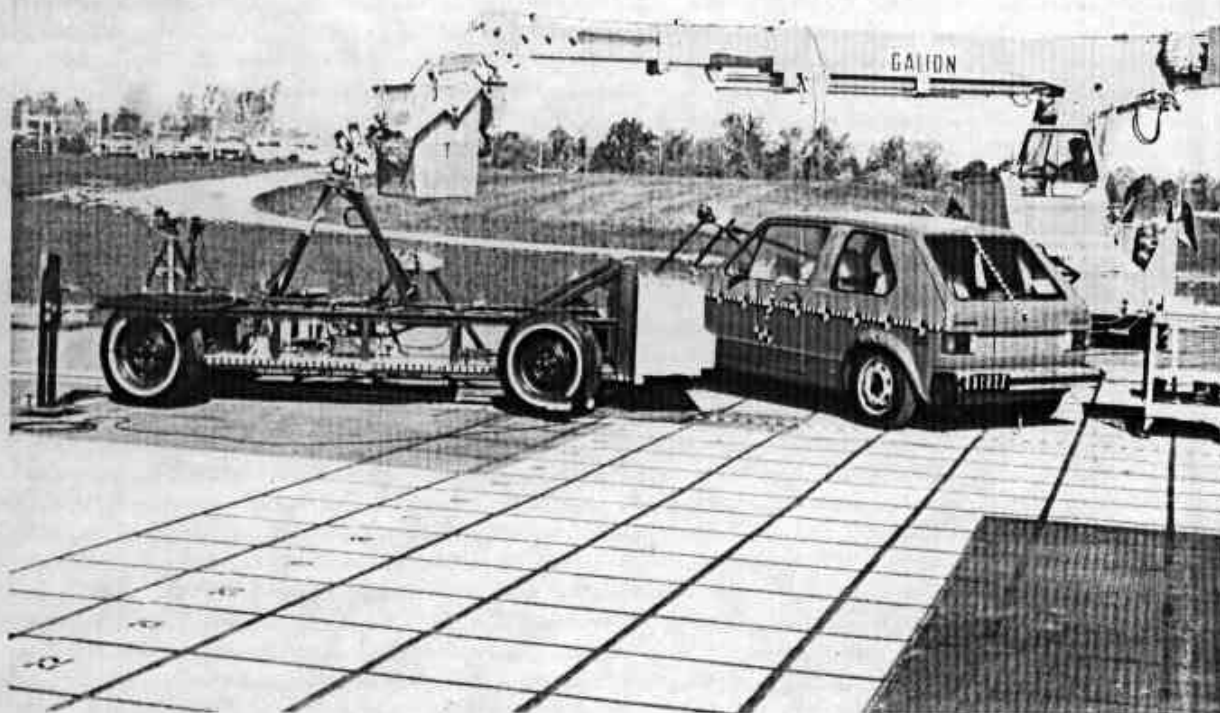


Figure A-3. PRE-TEST OVERALL - VIEW 3

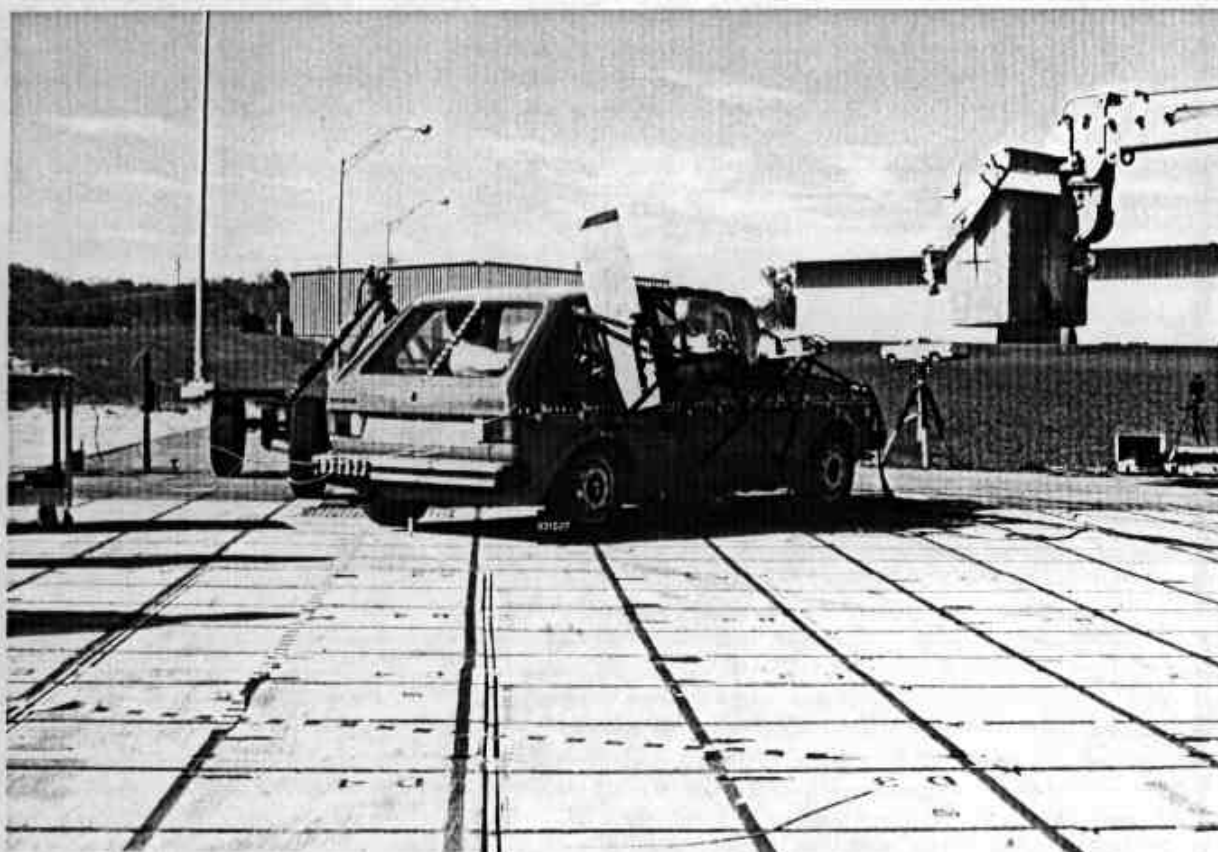


Figure A-4. PRE-TEST OVERALL - VIEW 4

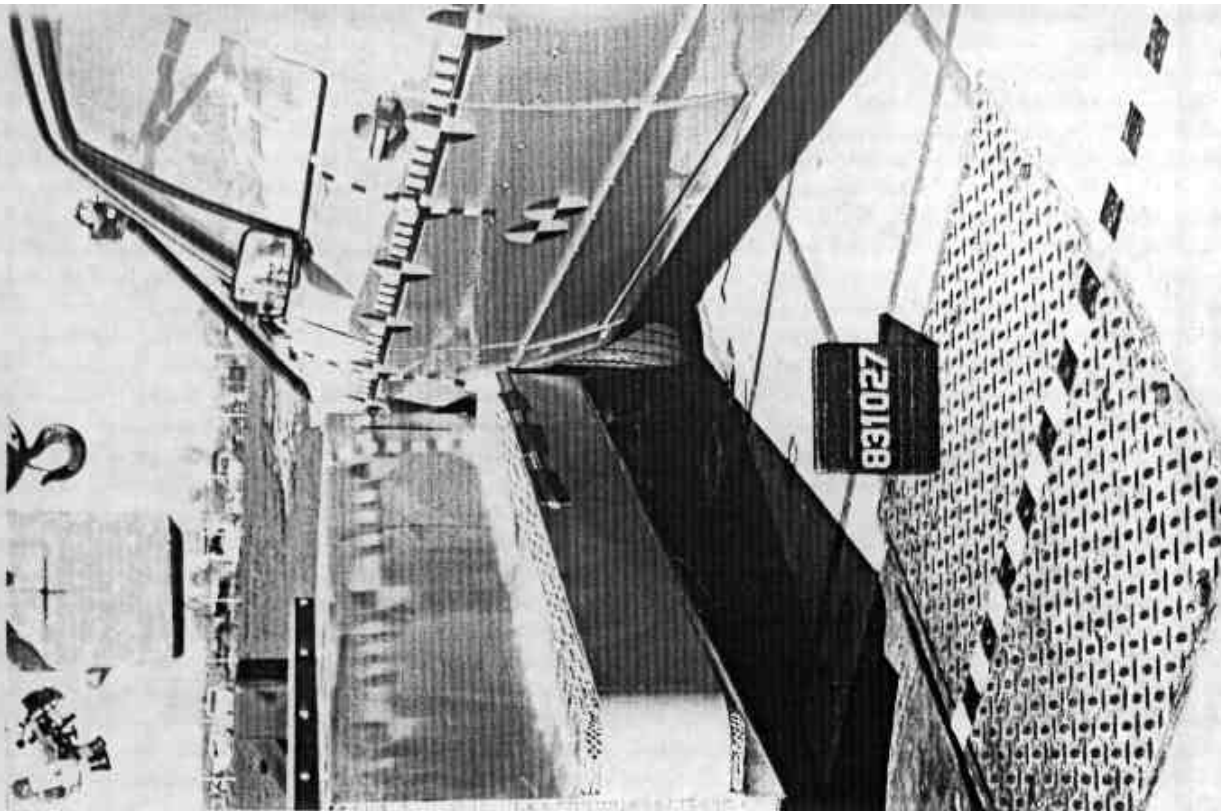


Figure A-5. PRE-TEST CLOSEUP - VIEW 1



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

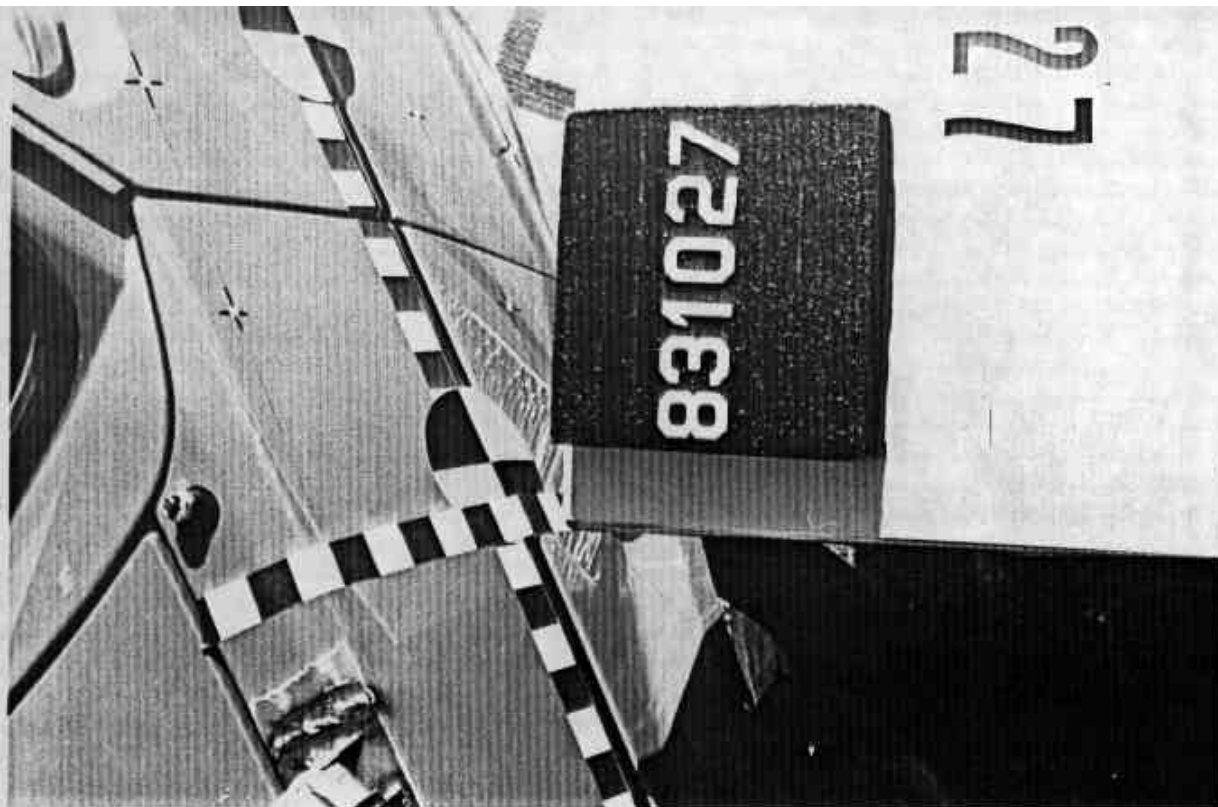


Figure A-7. PRE-TEST CLOSEUP - VIEW 3

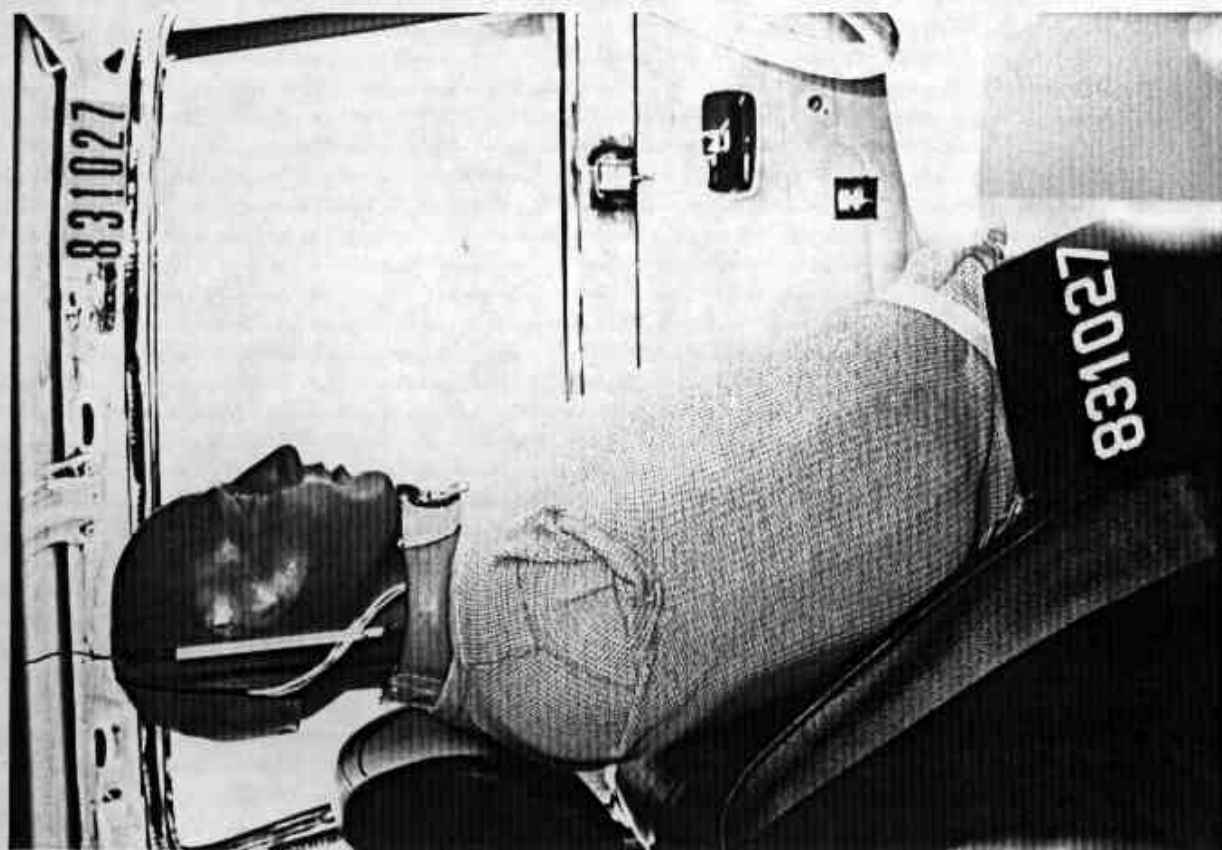


Figure A-8. PRE-TEST DRIVER DUMMY - VIEW 1

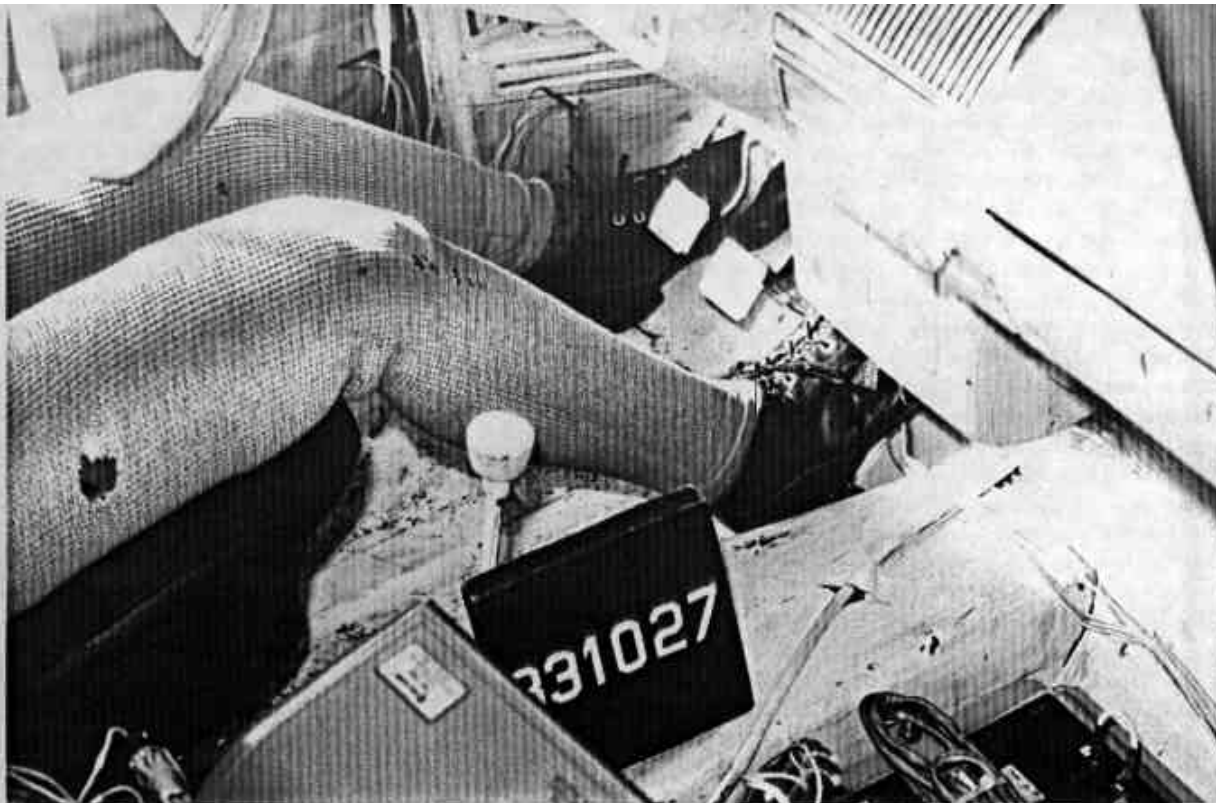


Figure A-9. PRE-TEST DRIVER DUMMY - VIEW 2

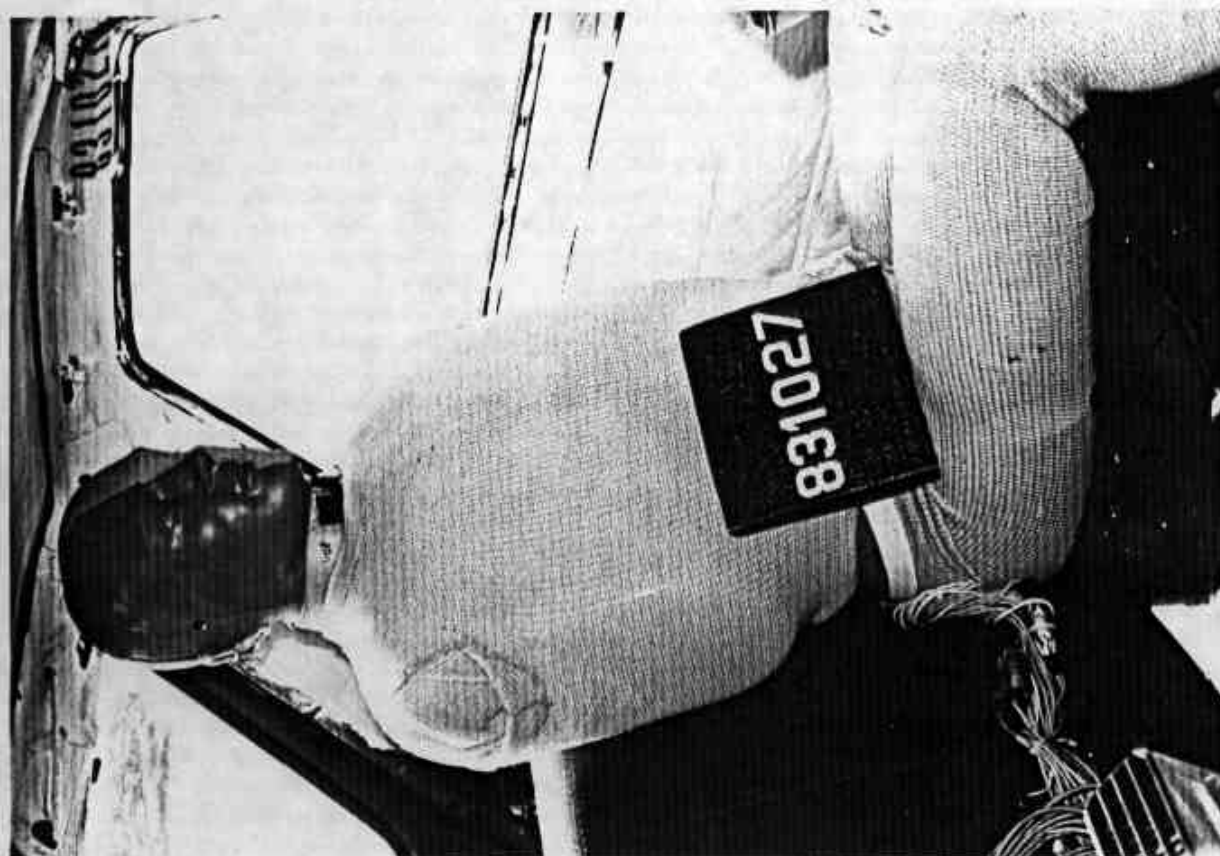


Figure A-10. PRE-TEST PASSENGER DUMMY - VIEW 1



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

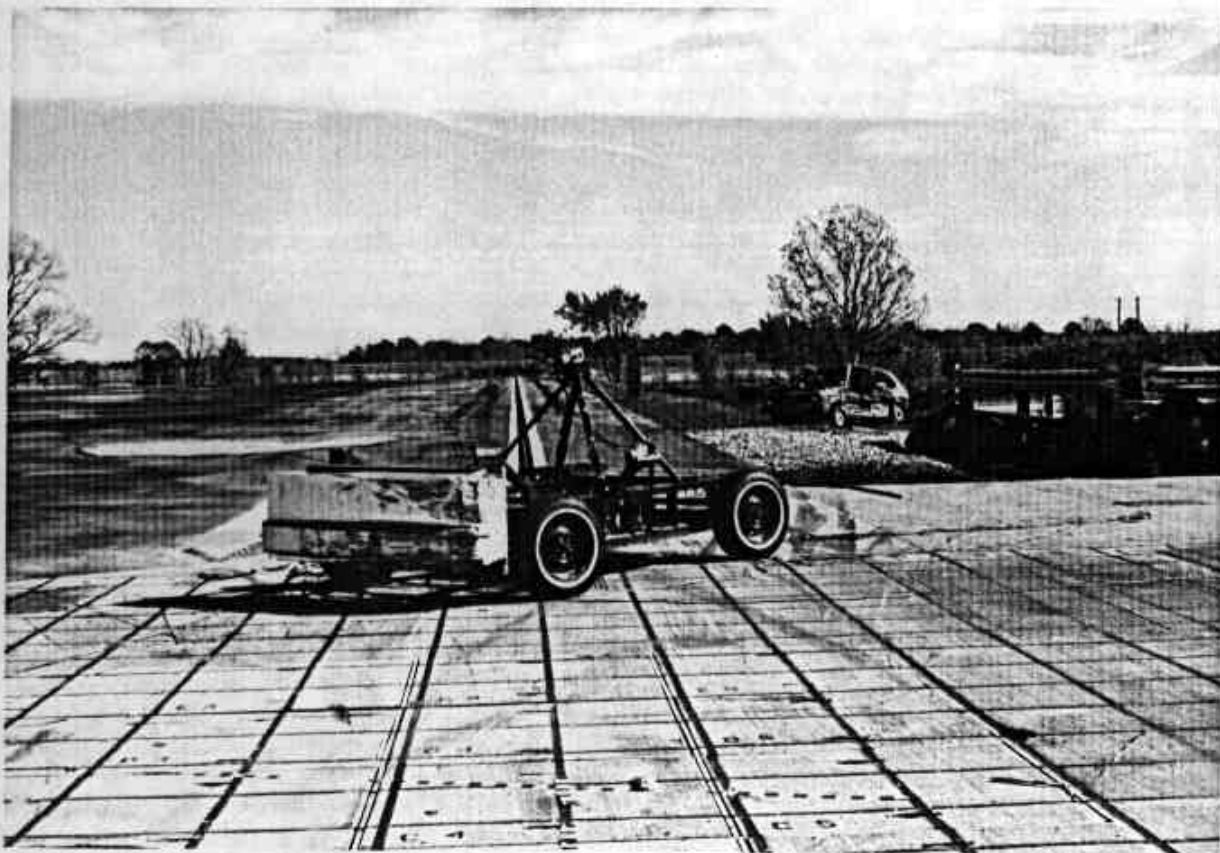


Figure A-12. POST-TEST OVERALL - VIEW 1



Figure A-13. POST-TEST OVERALL - VIEW 2



Figure A-14. POST-TEST OVERALL - VIEW 3

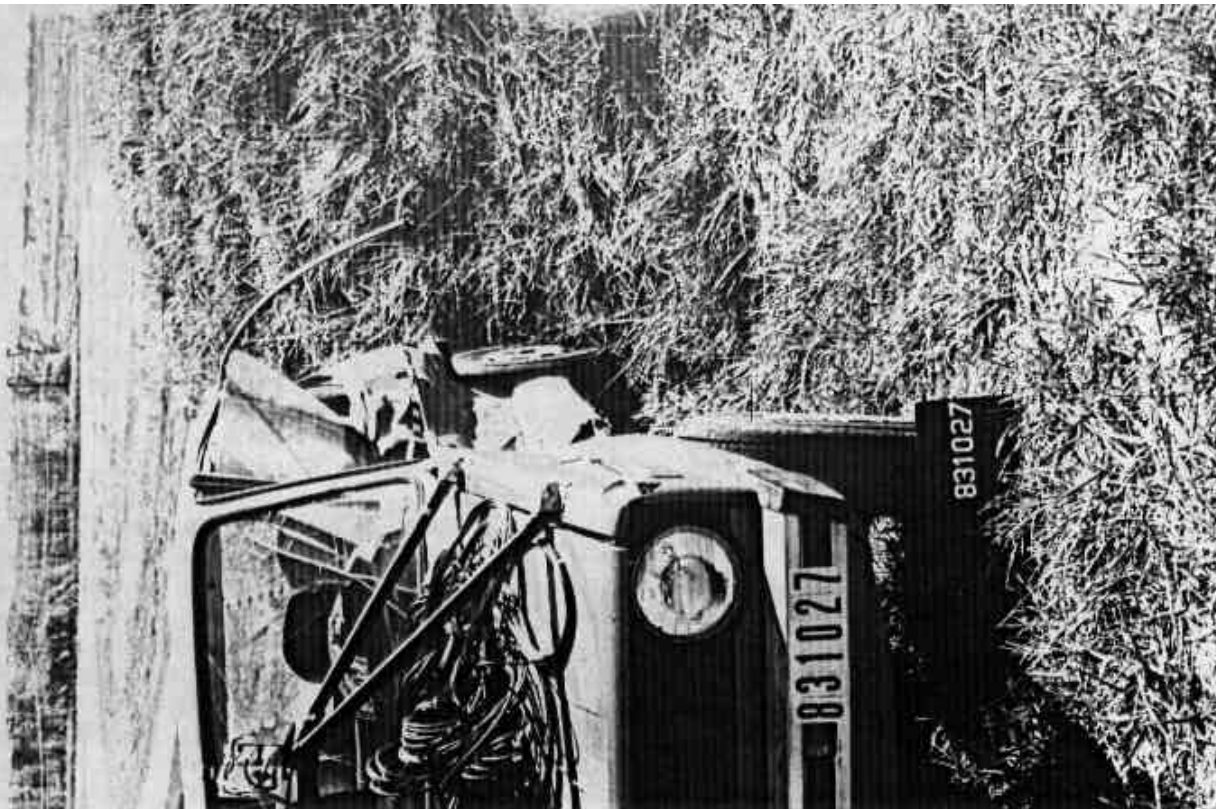


Figure A-15. POST-TEST CLOSEUP - VIEW 1

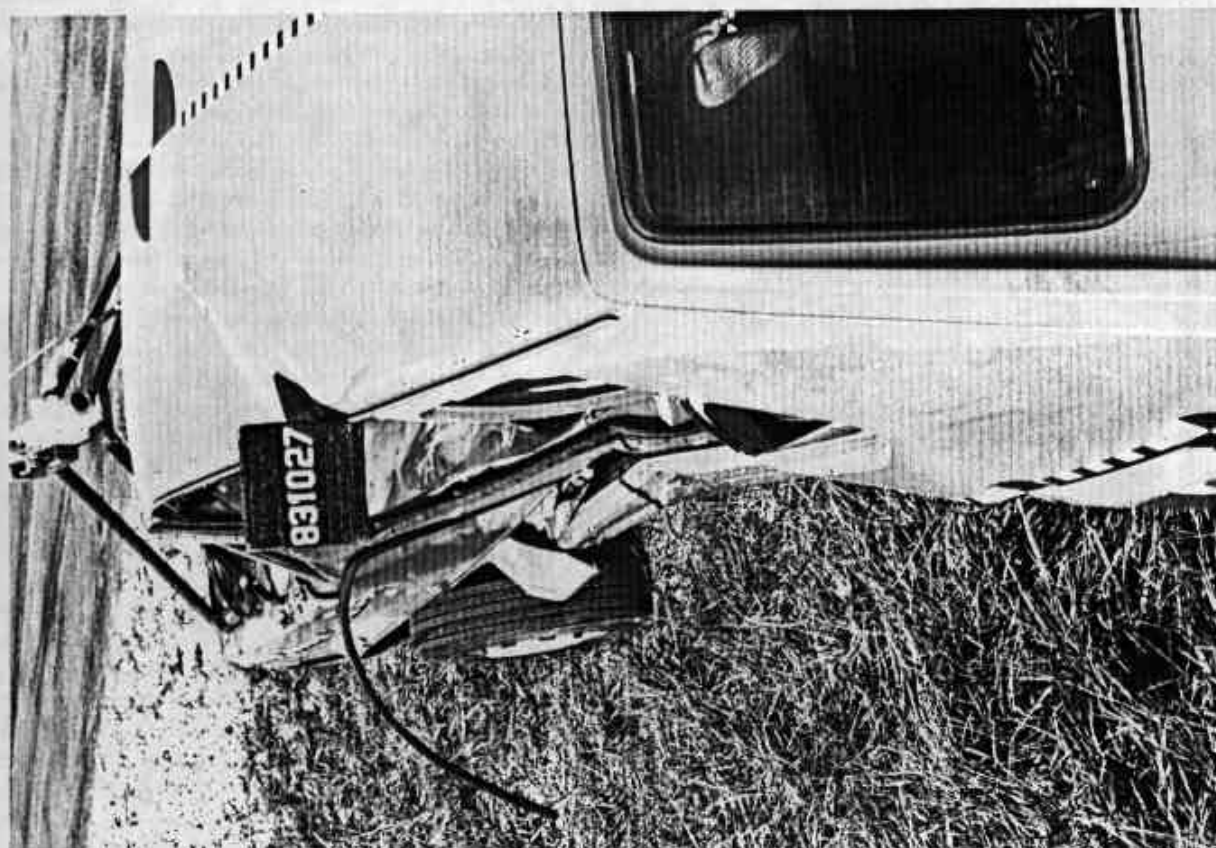


Figure A-16. POST-TEST CLOSEUP - VIEW 2

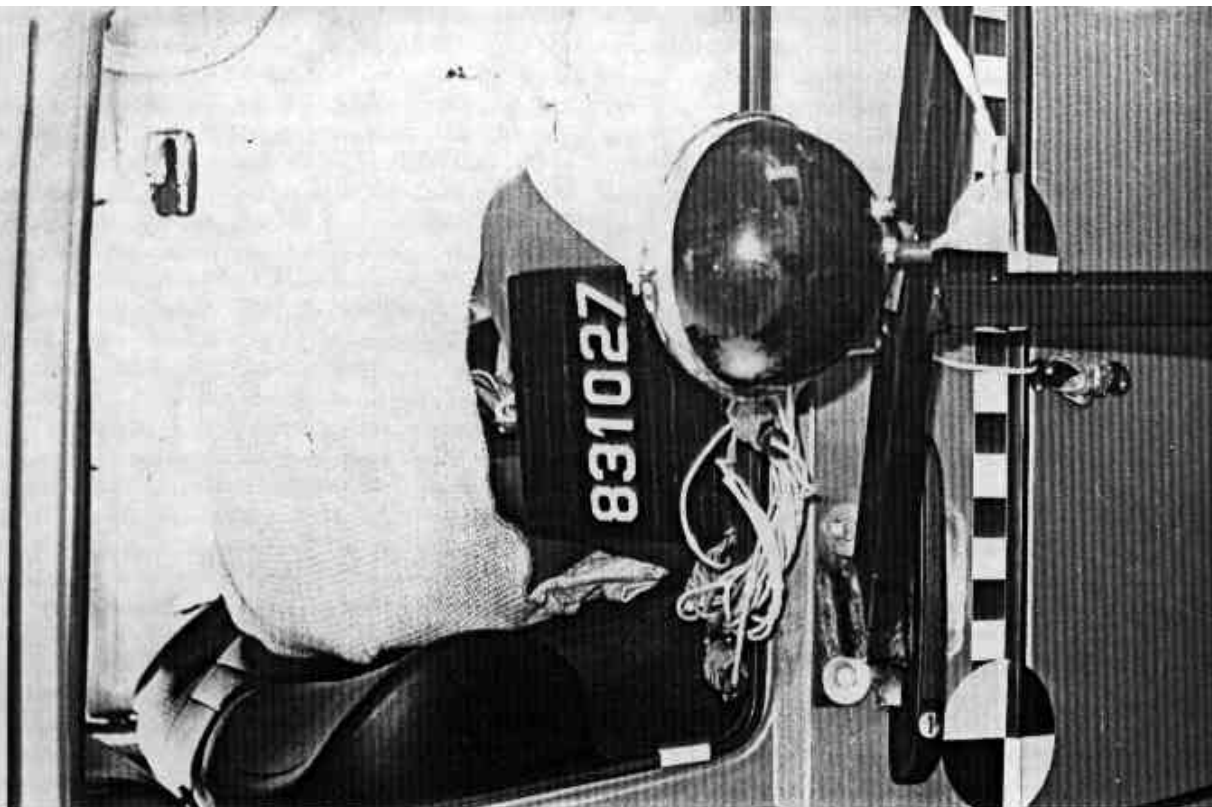


Figure A-17. POST-TEST DRIVER DUMMY - VIEW 1



Figure A-18. POST-TEST DRIVER DUMMY - VIEW 2



Figure A-19. POST-TEST DRIVER DUMMY - VIEW 3



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

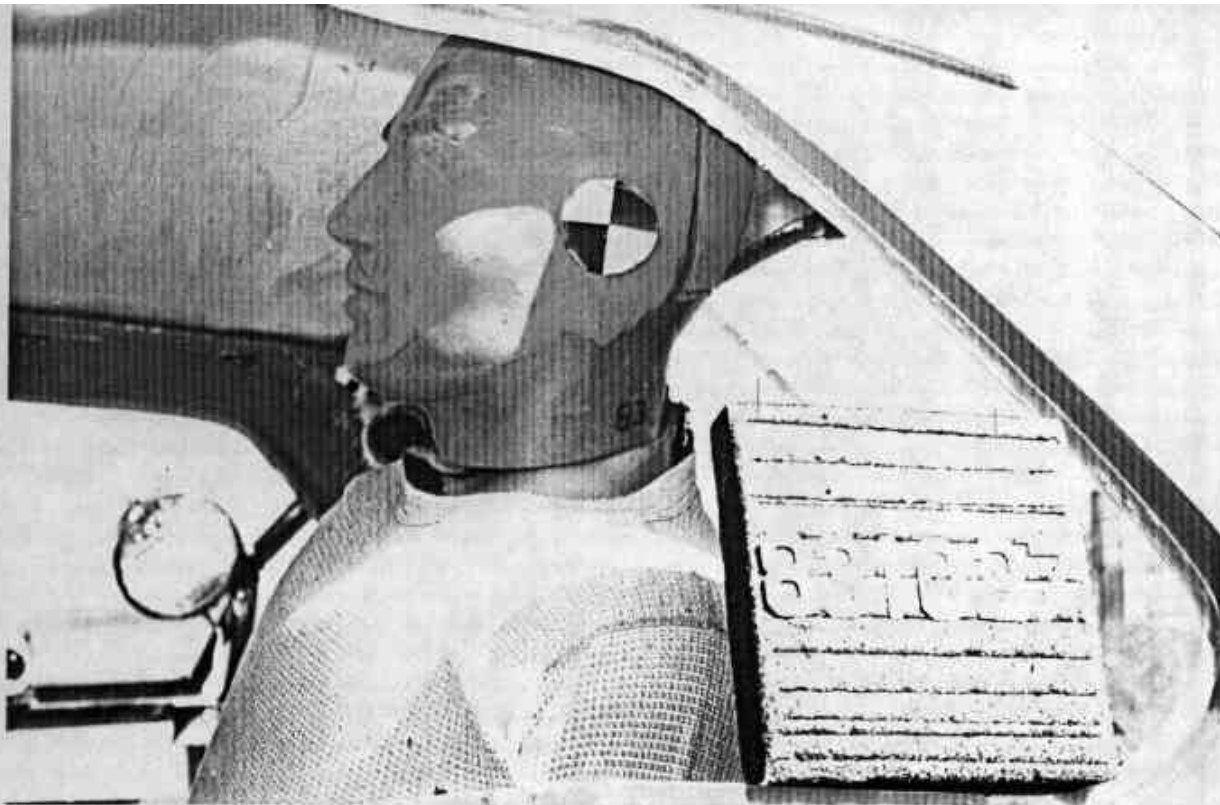


Figure A-21. POST-TEST PASSENGER DUMMY - VIEW 2

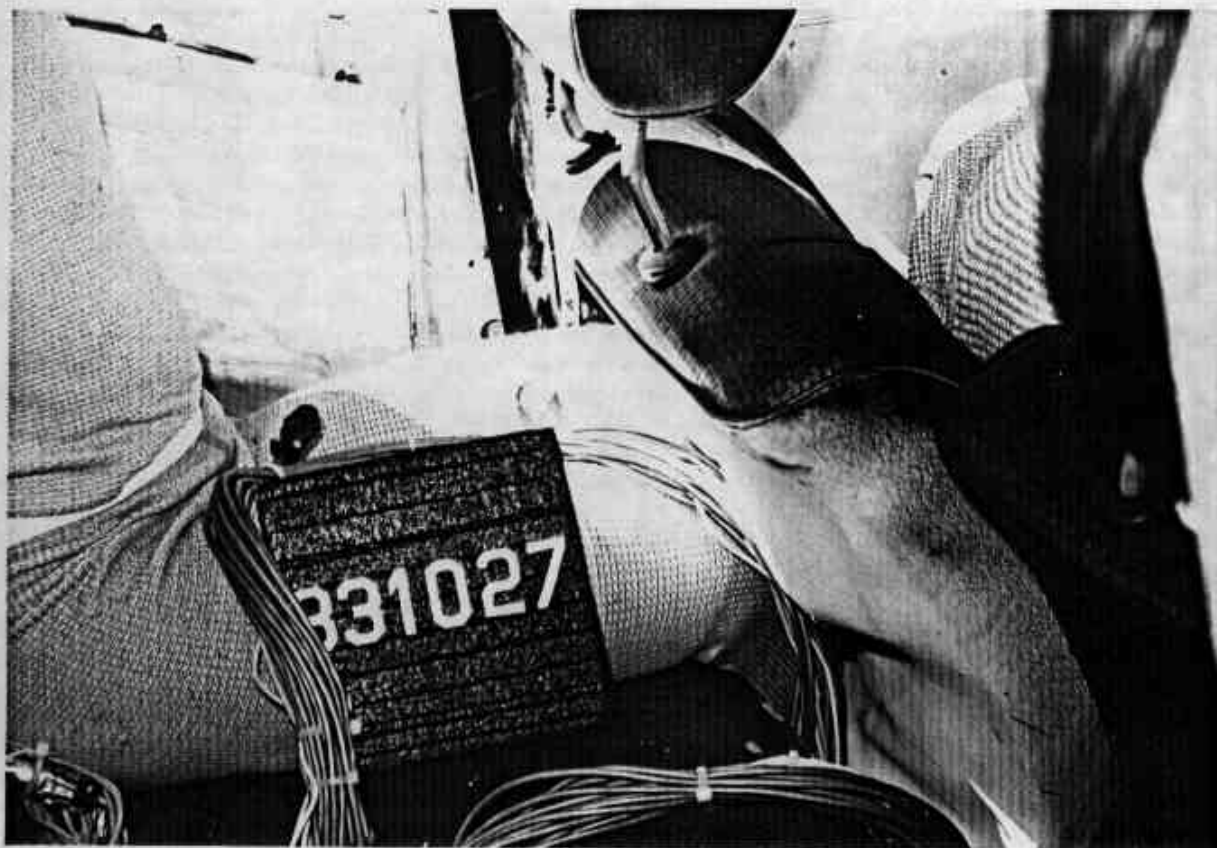


Figure A-22. POST-TEST PASSENGER DUMMY - VIEW 3



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

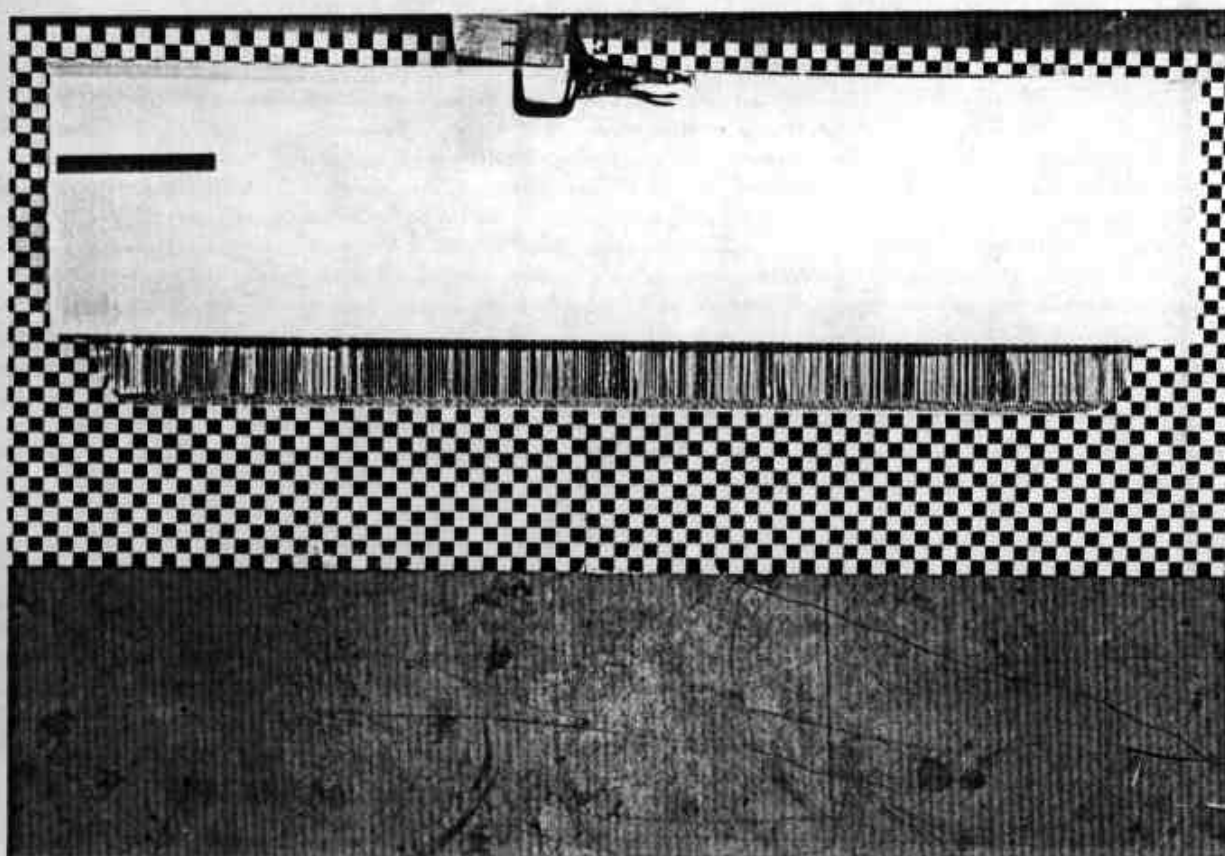


Figure A-26. PRE-TEST NDB FACE - VIEW 1

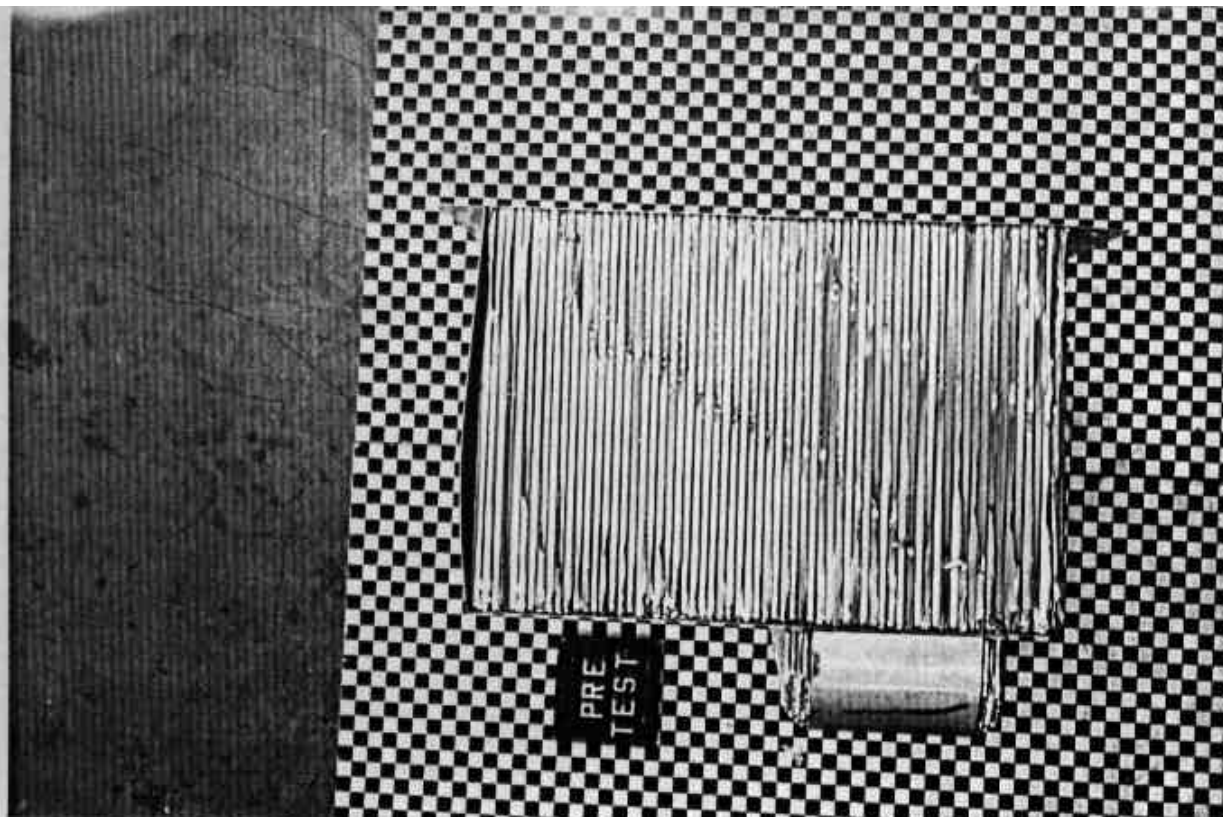


Figure A-27. PRE-TEST MDB FACE - VIEW 2

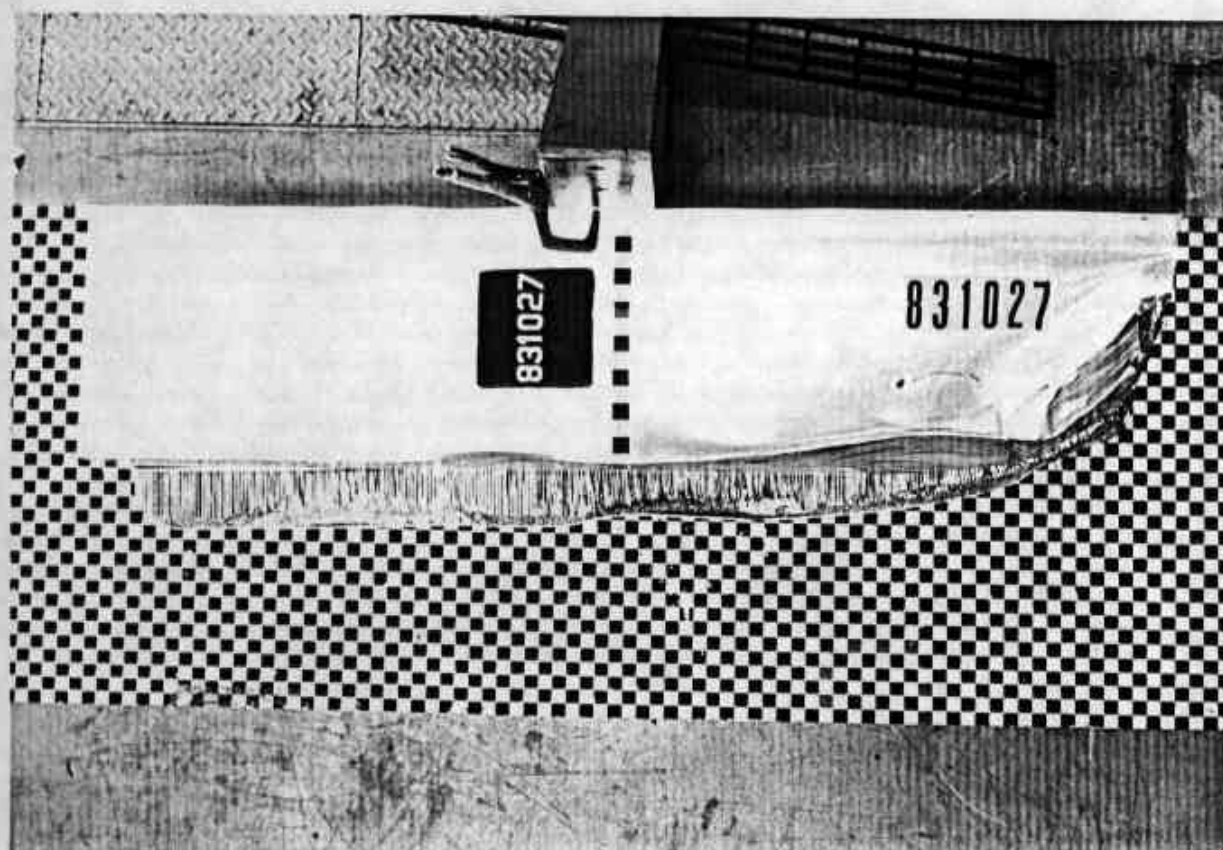


Figure A-28. POST-TEST MDB FACE - VIEW 1

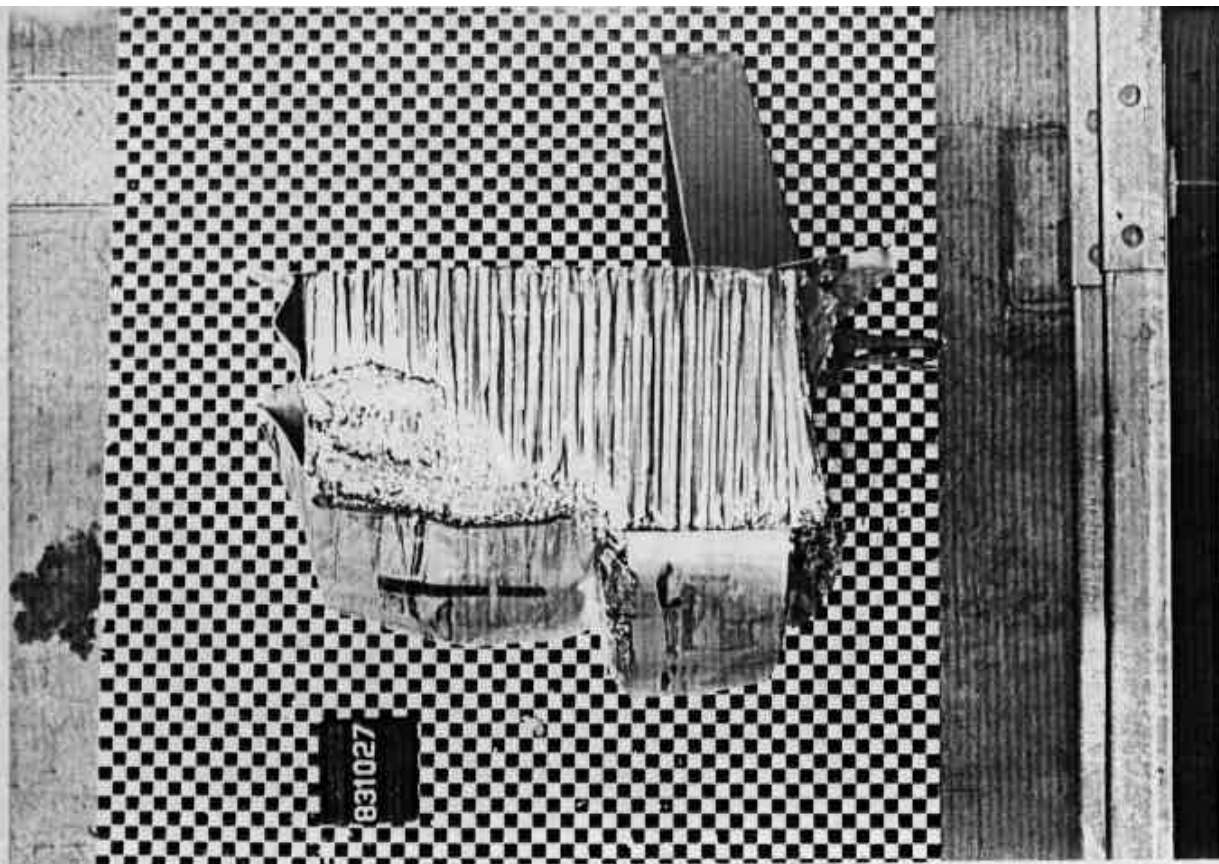


Figure A-29. POST-TEST MDB FACE - VIEW 2

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 HSRI filter.

TAC 031027 PLOT DATE 31-OCT-83 13:54:39

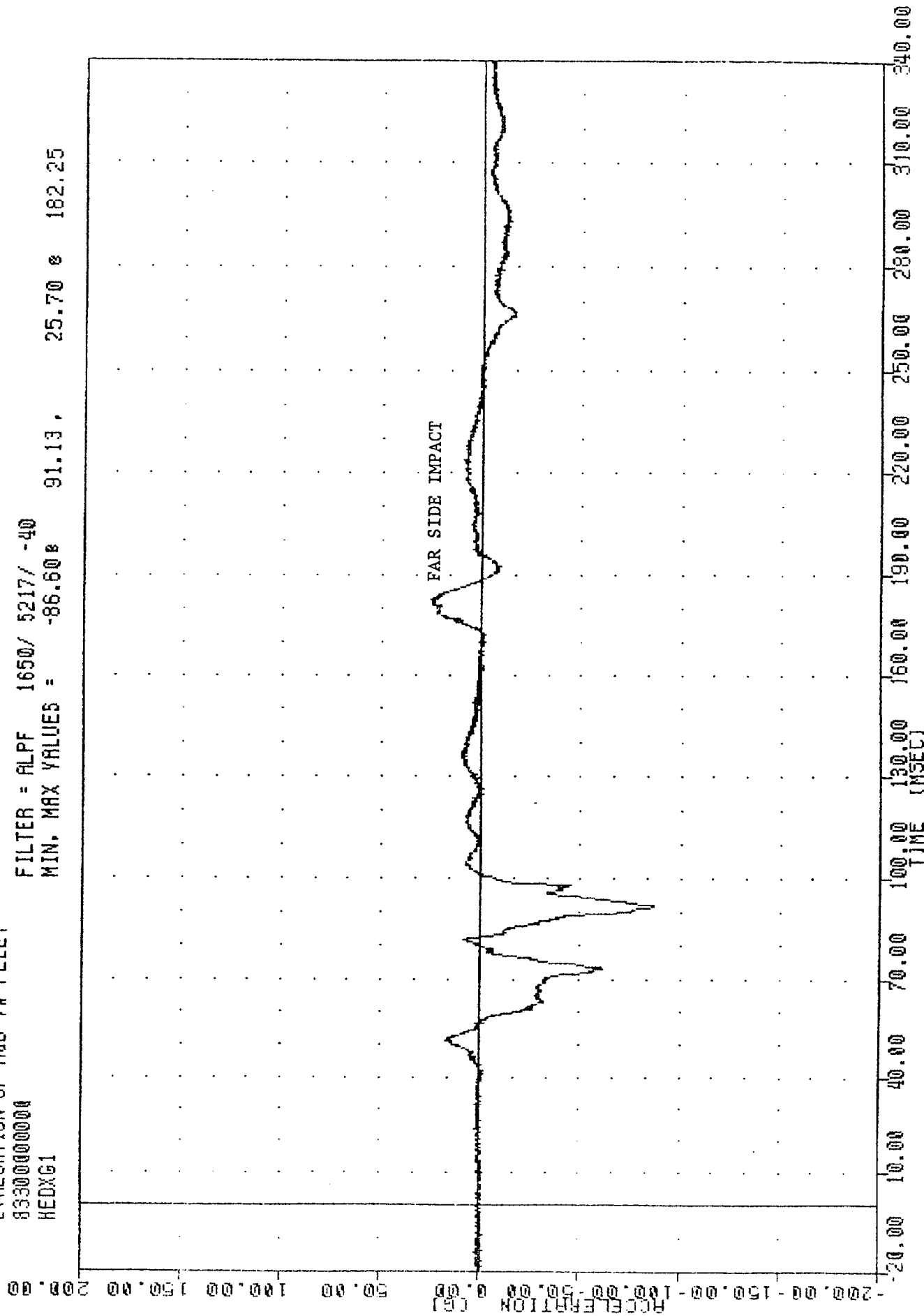
EVALUATION OF MOD YW FLEET

833000000000

HEDXG1

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -86.60 91.13, 25.70 182.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION X AXIS

TRC 001027, 31 OCT 83 13:54:39

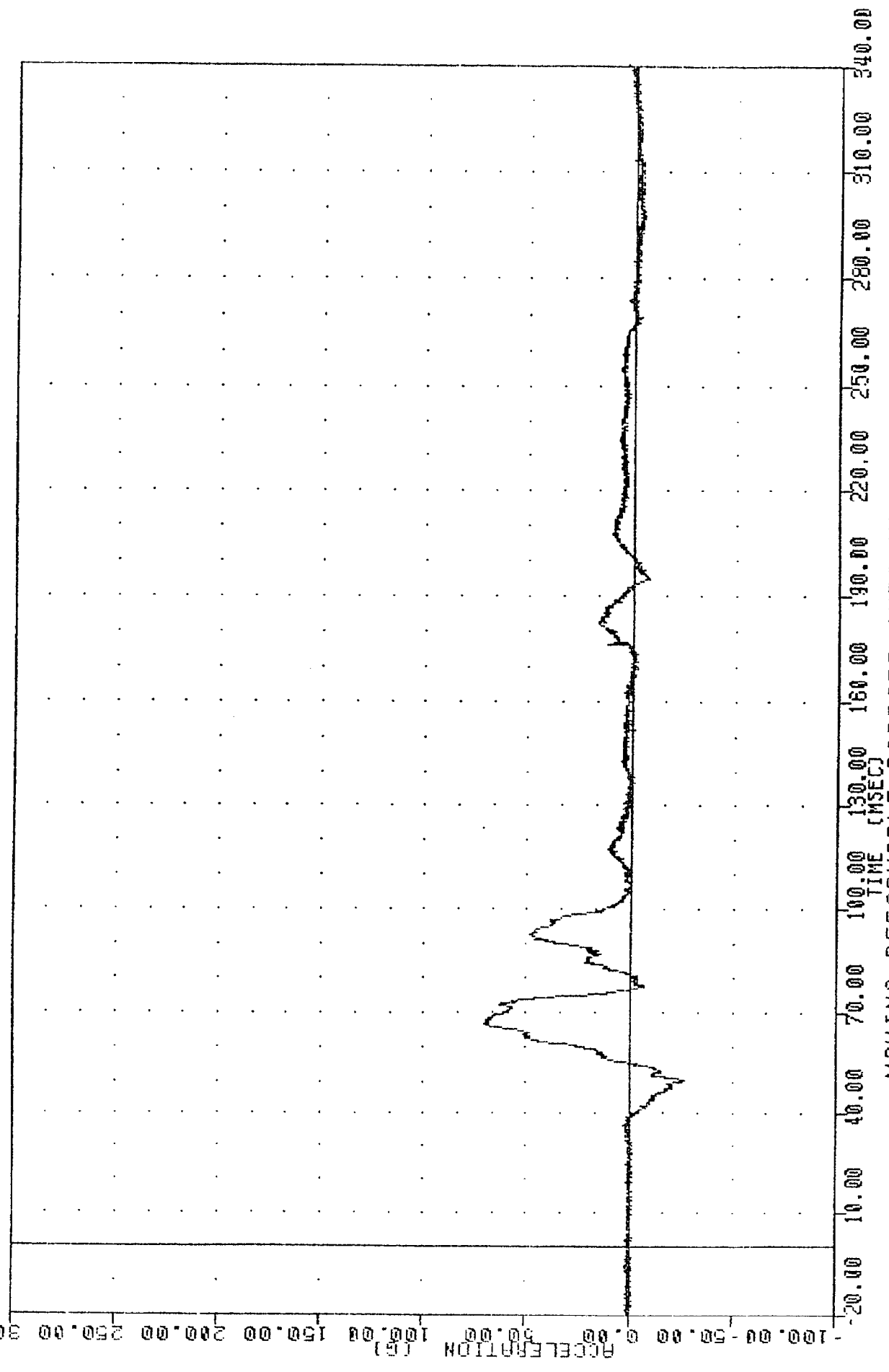
EVALUATION OF MOD VW FLEET

833000000000

HEADY61

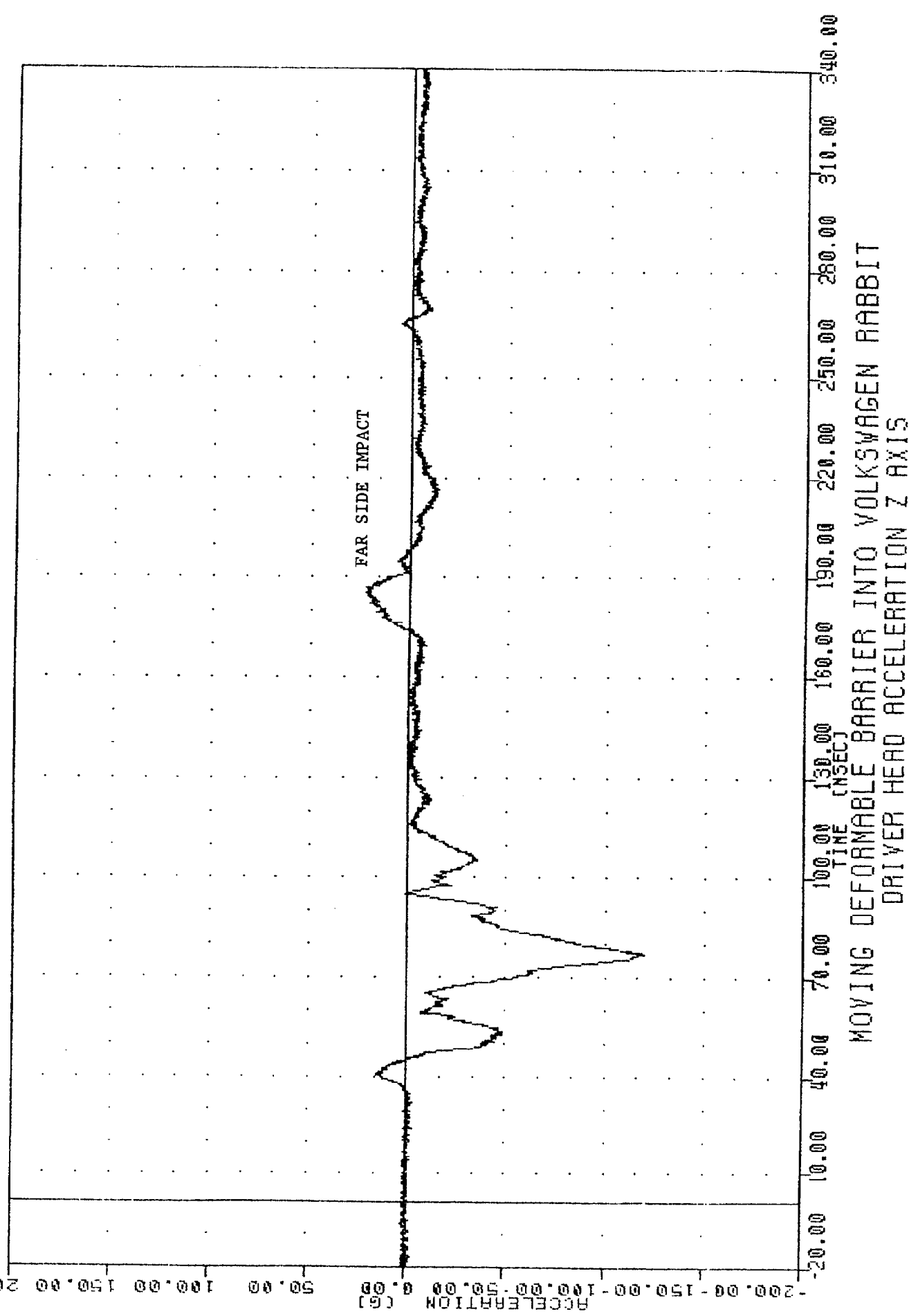
FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -26.58e 50.13, 70.10 e 68.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Y AXIS

TAG [REDACTED], 831027 [REDACTED] PLOT DATE 31-OCT-83 13:54:39
 EVALUATION OF MOD VN FLEET
 833000000000
 HED7E1
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -119.39g 76.75, 22.45 & 186.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD ACCELERATION Z AXIS

TRC 031027, 31 OCT 85 13:54:39

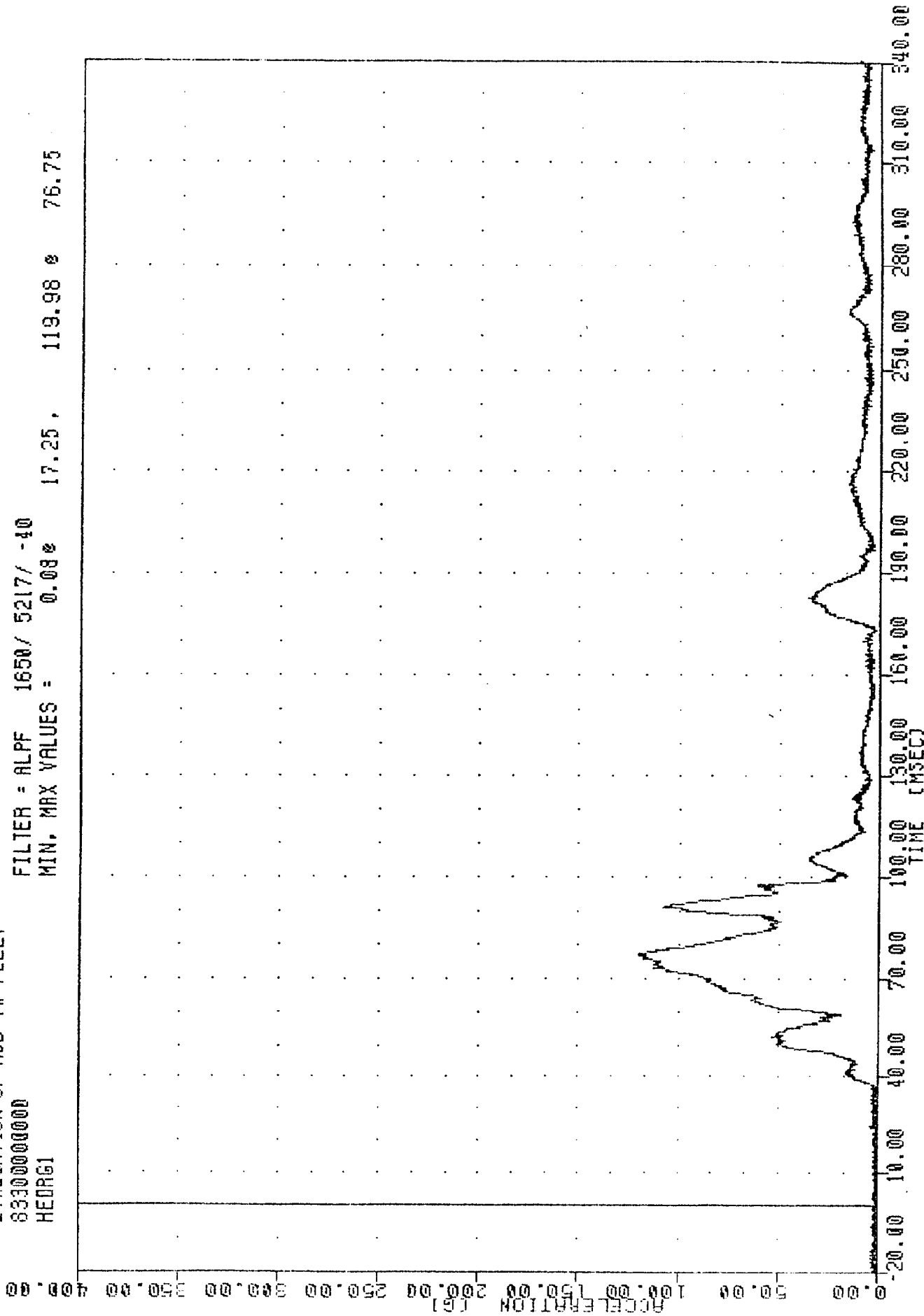
EVALUATION OF MOD VW FLEET

83300000000

HEADG1

FILTER = ALPF 1650/ 5217/ -40

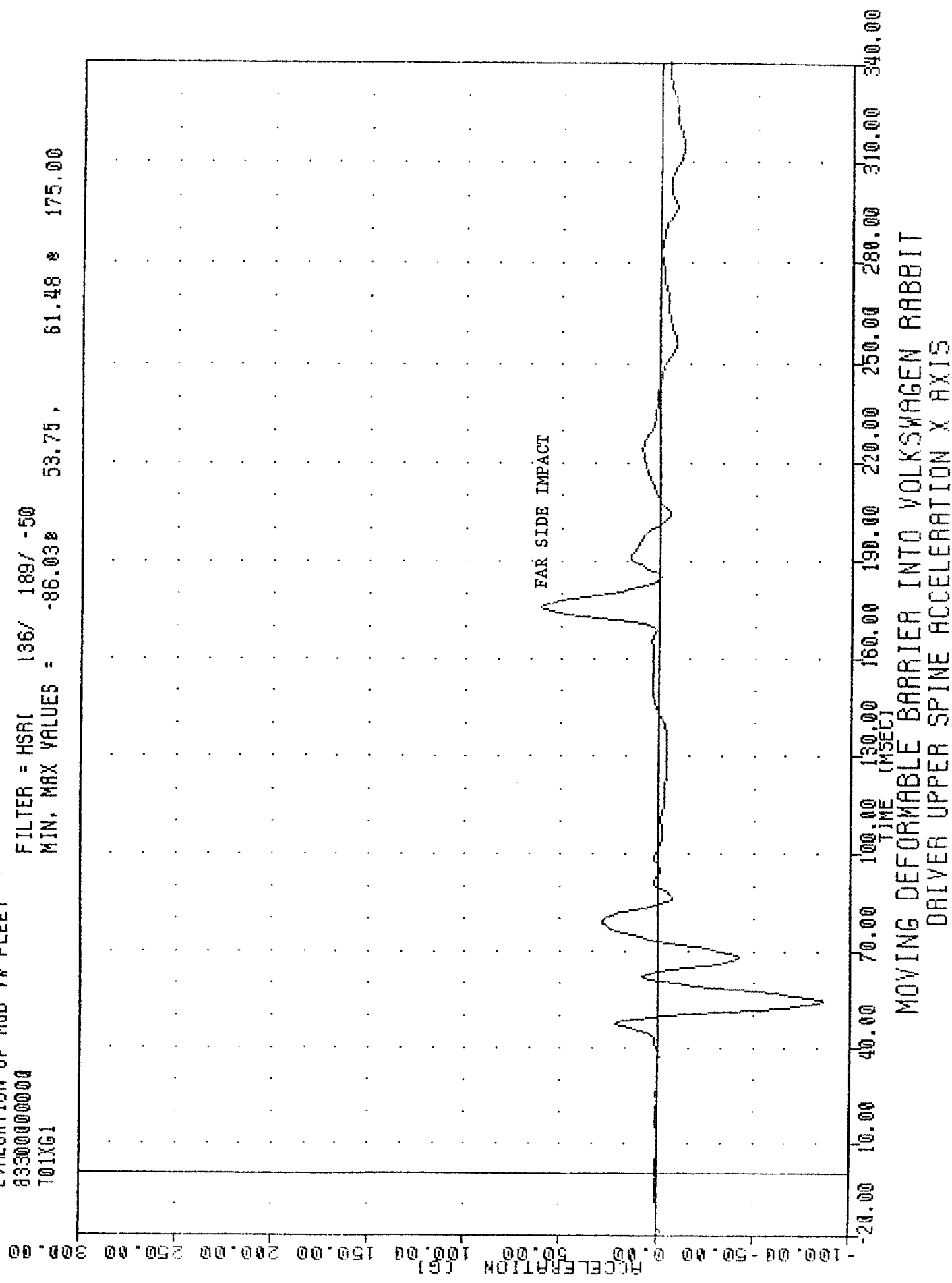
MIN. MAX VALUES = 0.08 17.25 119.98 76.75



TRC 831027 31-01-83 13:55:24

EVALUATION OF MOD YW FLEET
833000000000
701XG1

FILTER = HSR1 136/ 189/ -50
MIN. MAX VALUES = -86.03 53.75, 61.48 175.00



TRC 031027 PLOT DATE 31-OCT-83 13:55:24

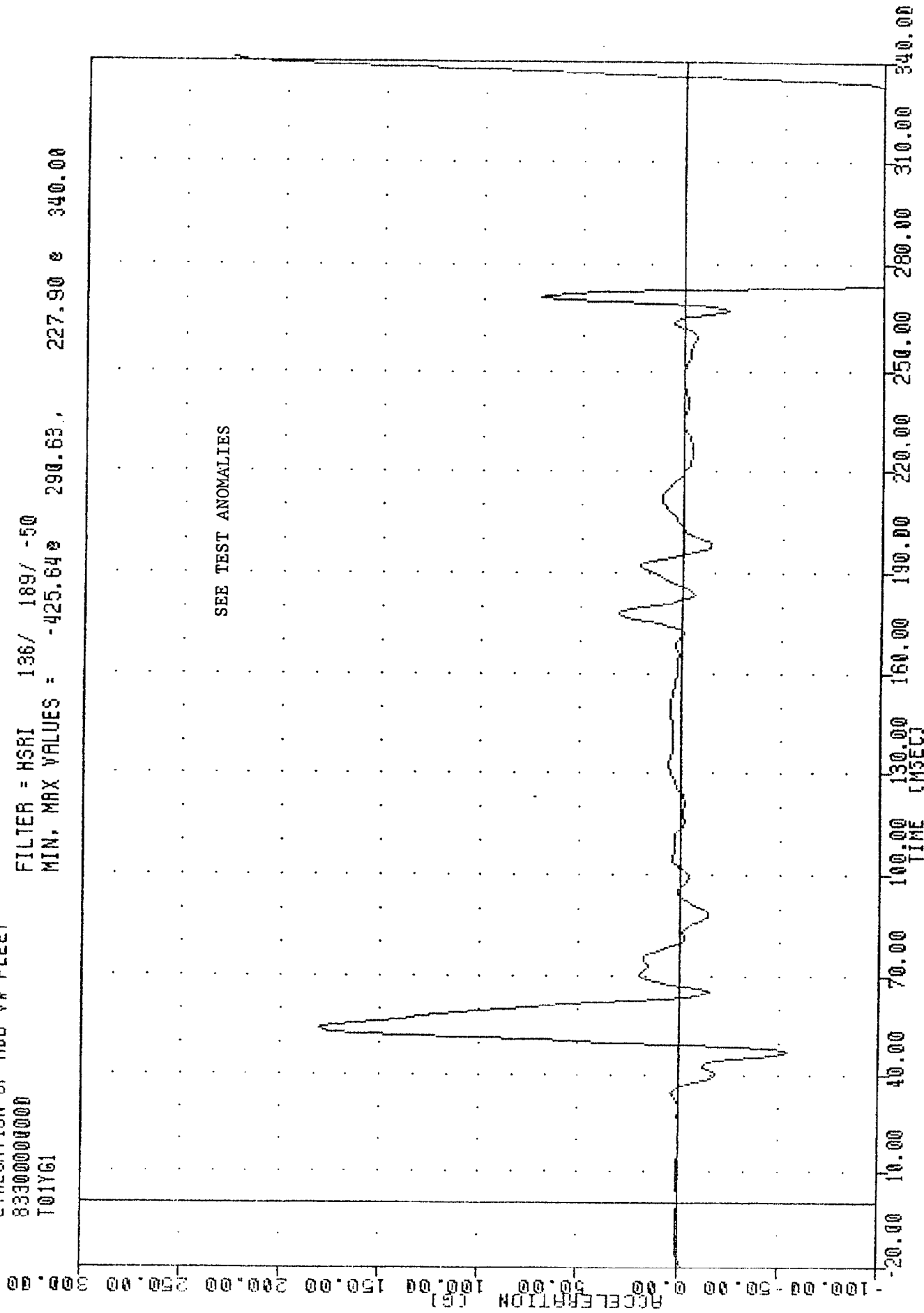
EVALUATION OF MDD YW FLEET

833000000000

T01Y61

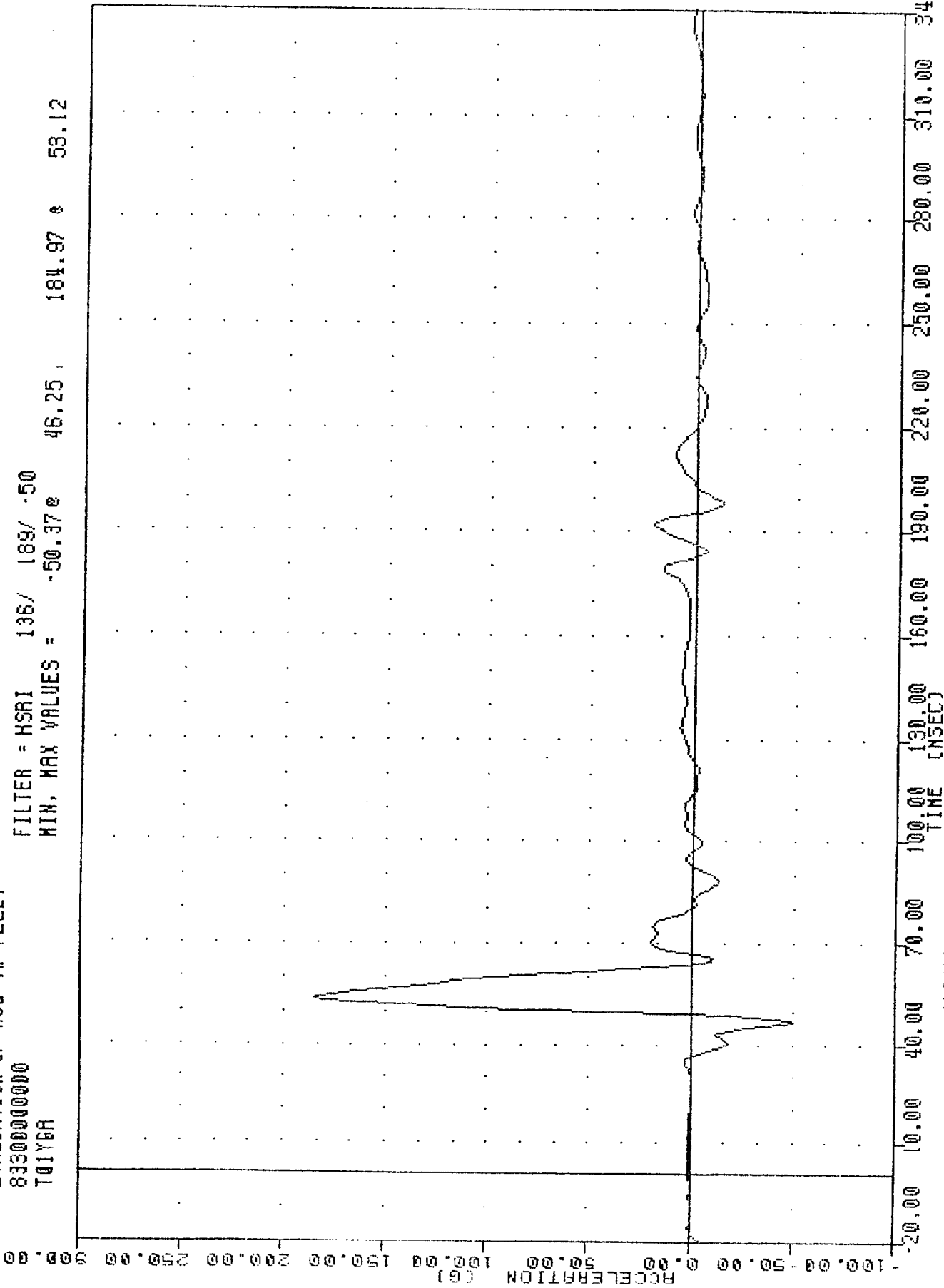
FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -425.64 290.63, 227.90 340.00



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

TRC [REDACTED], 03/02/83, DATE 31 OCT-83 13:33:24
 EVALUATION OF MOD VW FLEET
 833000000000
 T01Y6R
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -50.37e 46.25, 184.97 e 53.12



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

TRC 031027 PLOT DATE 31 OCT 83 13:53:24

EVALUATION OF MOD YW FLEET

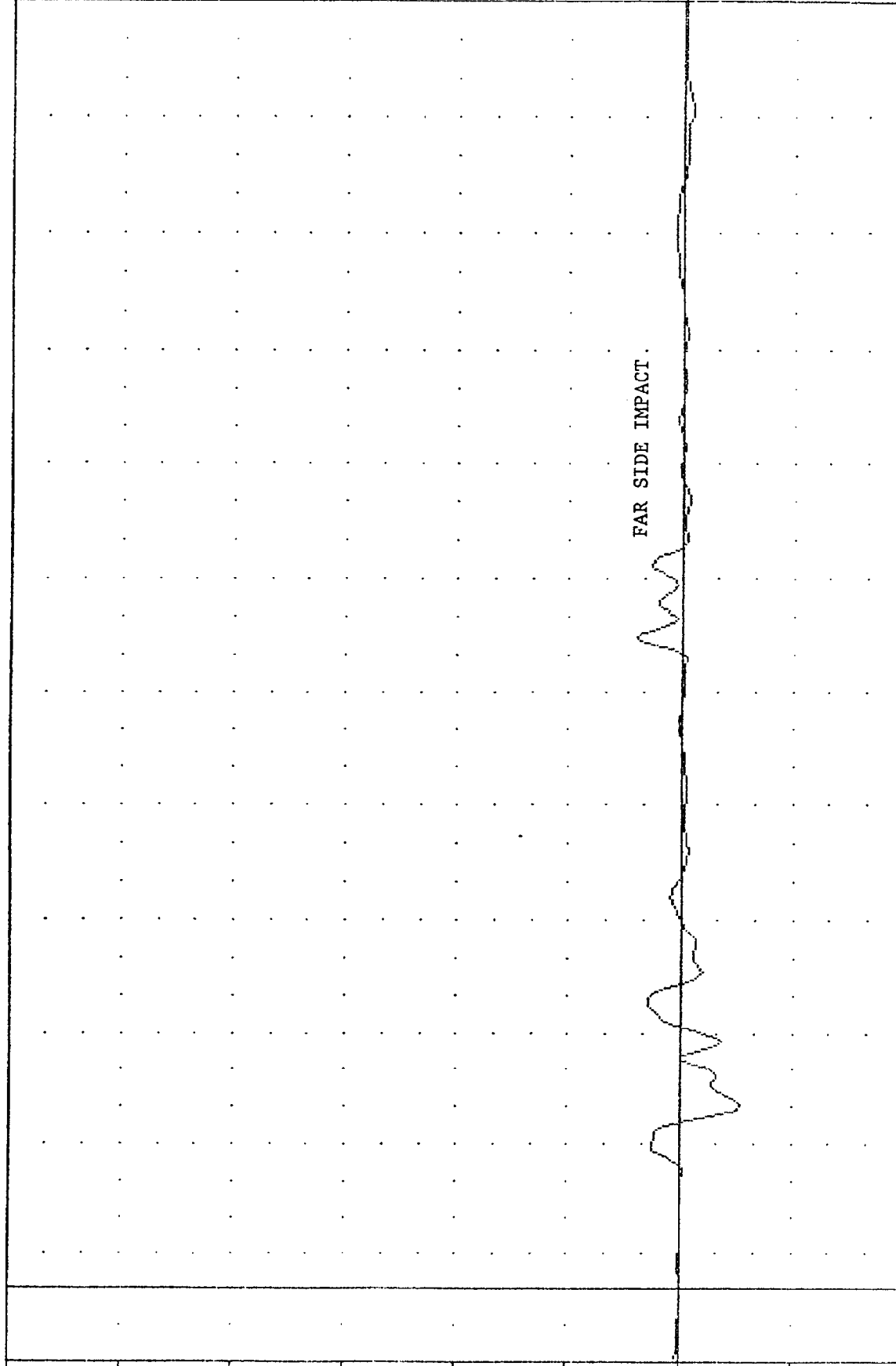
833000000000

701761

FILTER = HSR(136/ 189/ -50

MIN. MAX VALUES = -27.17 50.00 , 19.63 173.75

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 Z AXIS

TRC 831027 PLOT DATE 31-OCT-83 13:55:24

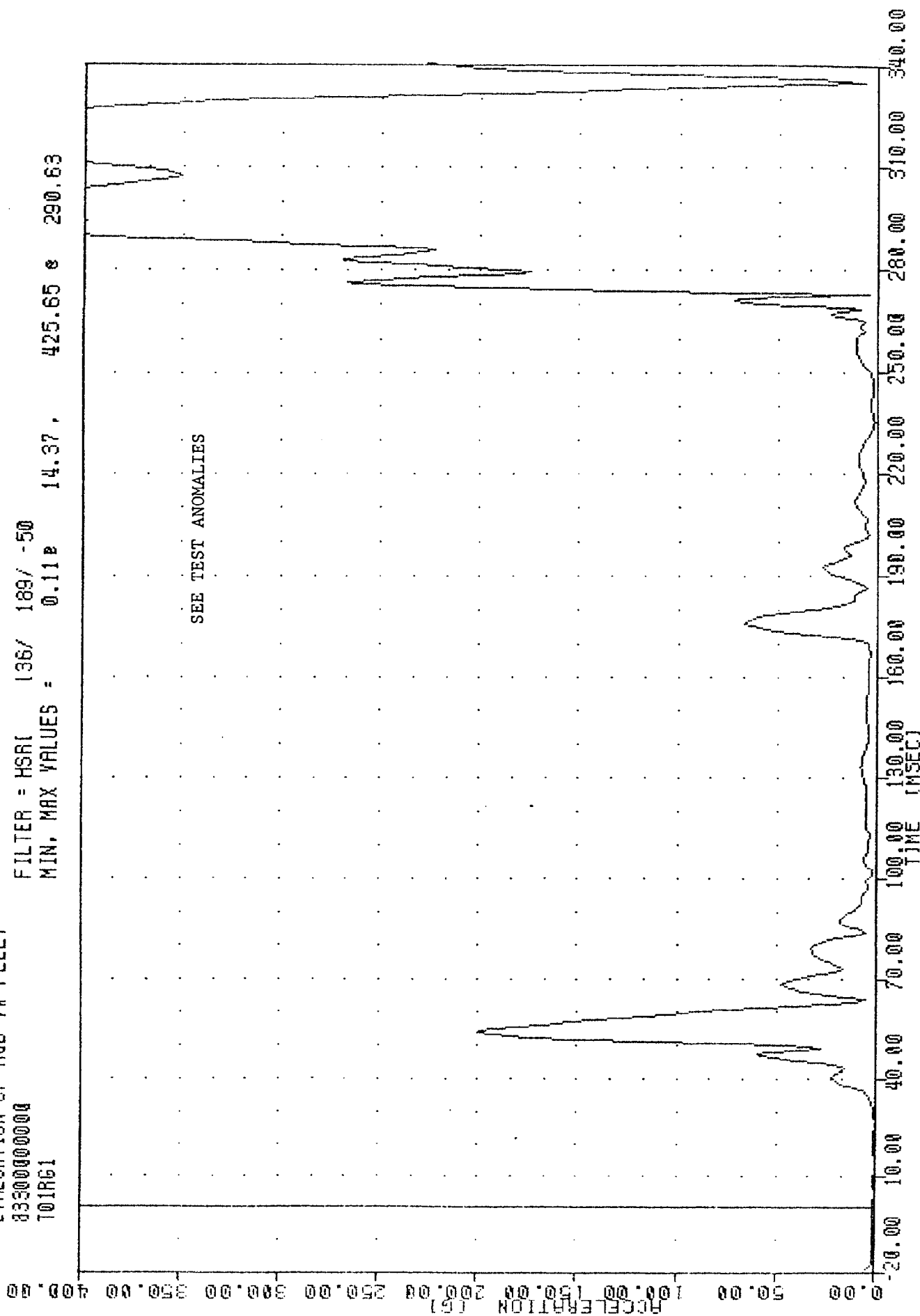
EVALUATION OF MOD YV FLEET

833000000000

T01RG1

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = 0.11e 14.37, 425.65 e 290.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESULTANT

TRC 831027, 31-01-83 13:56:35

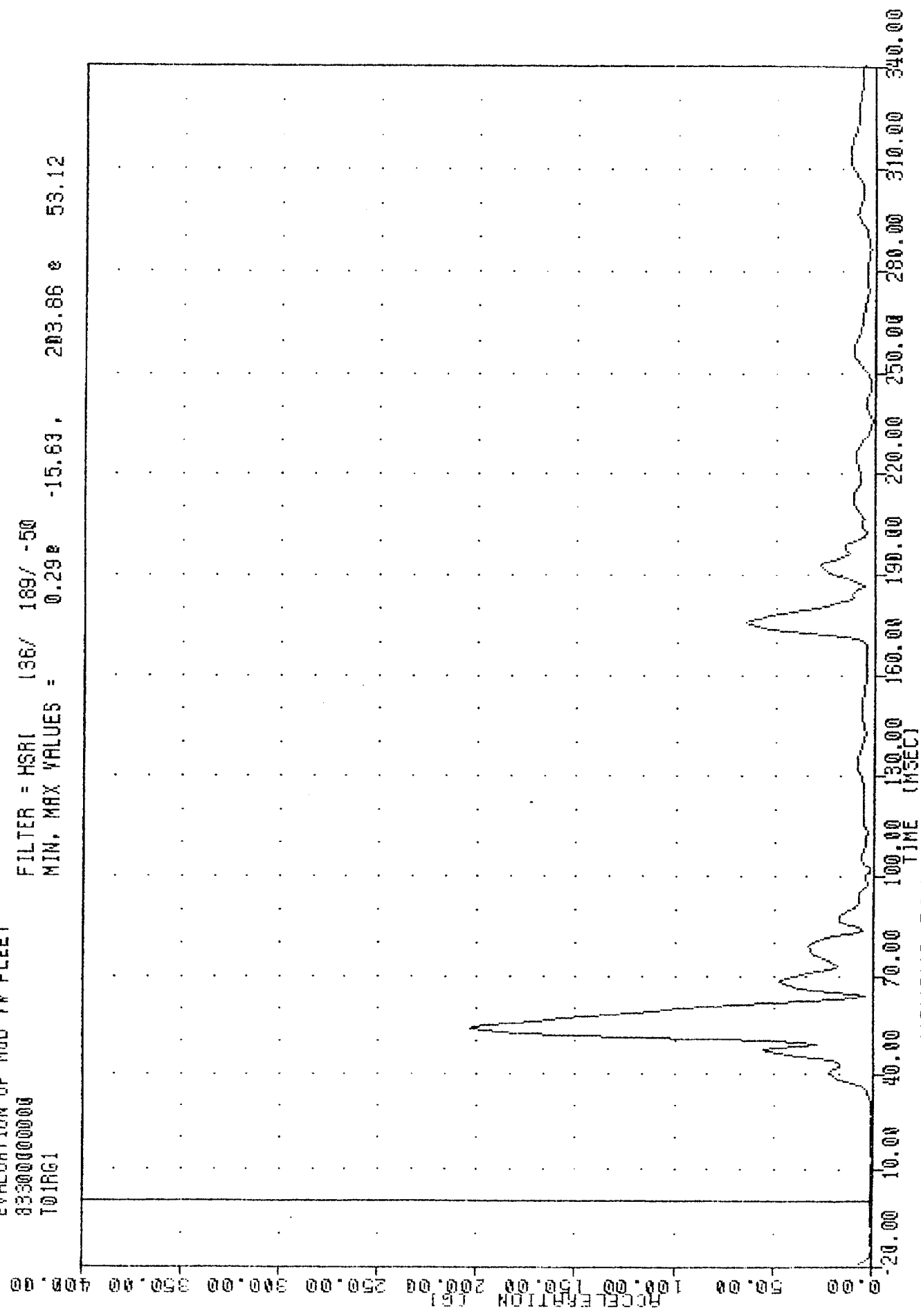
EVALUATION OF MOD YW FLEET

833000000000

T01RG1

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.29e -15.63, 203.86 e 53.12

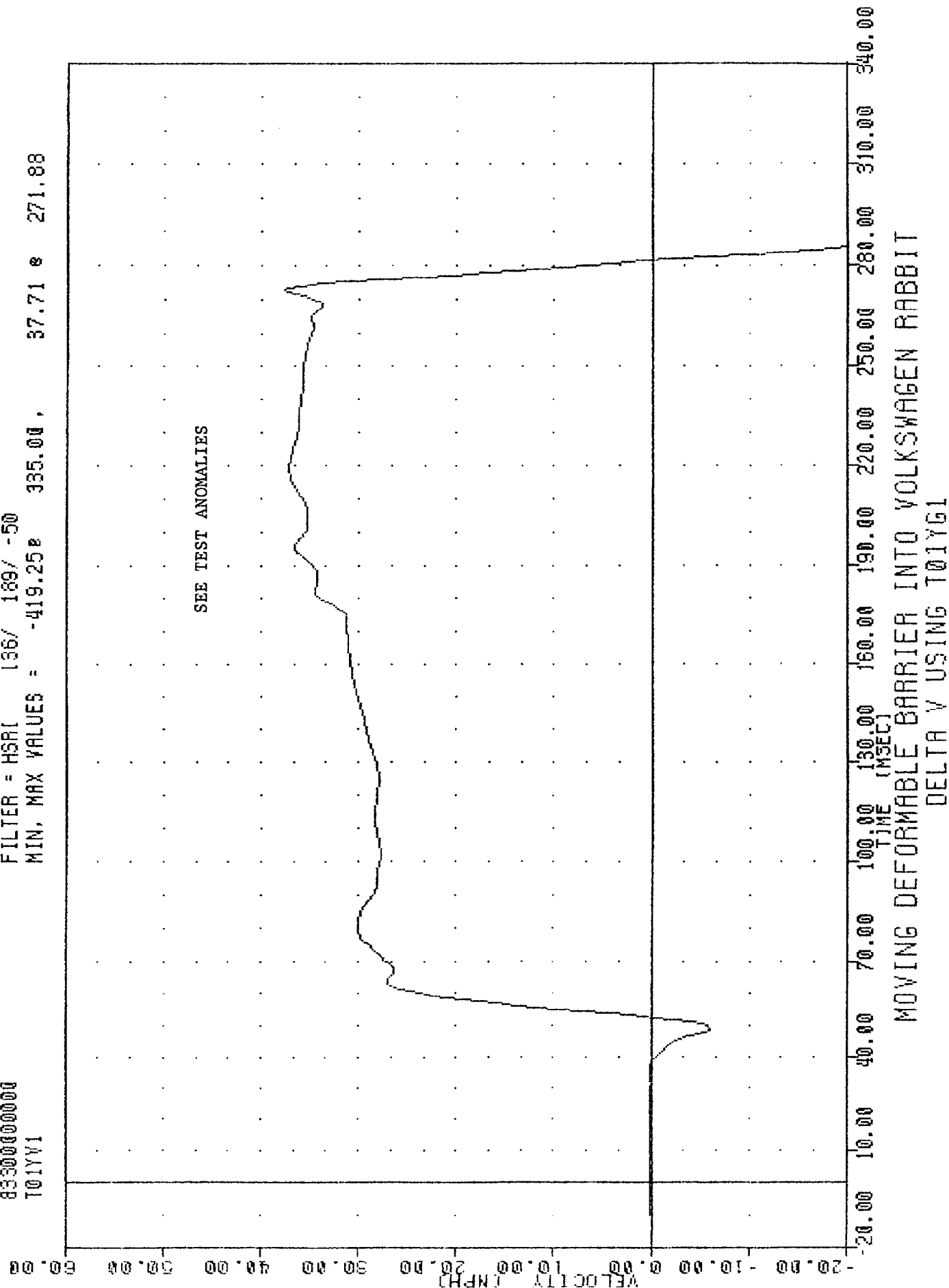


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESULTANT USING T01YGA

TRC 831027
EVALUATION OF MOD YW FLEET
833000000000
T01YV1

PLOT DATE 1-NOV-83 08:35:27

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -419.25 335.00, 37.71 271.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGI

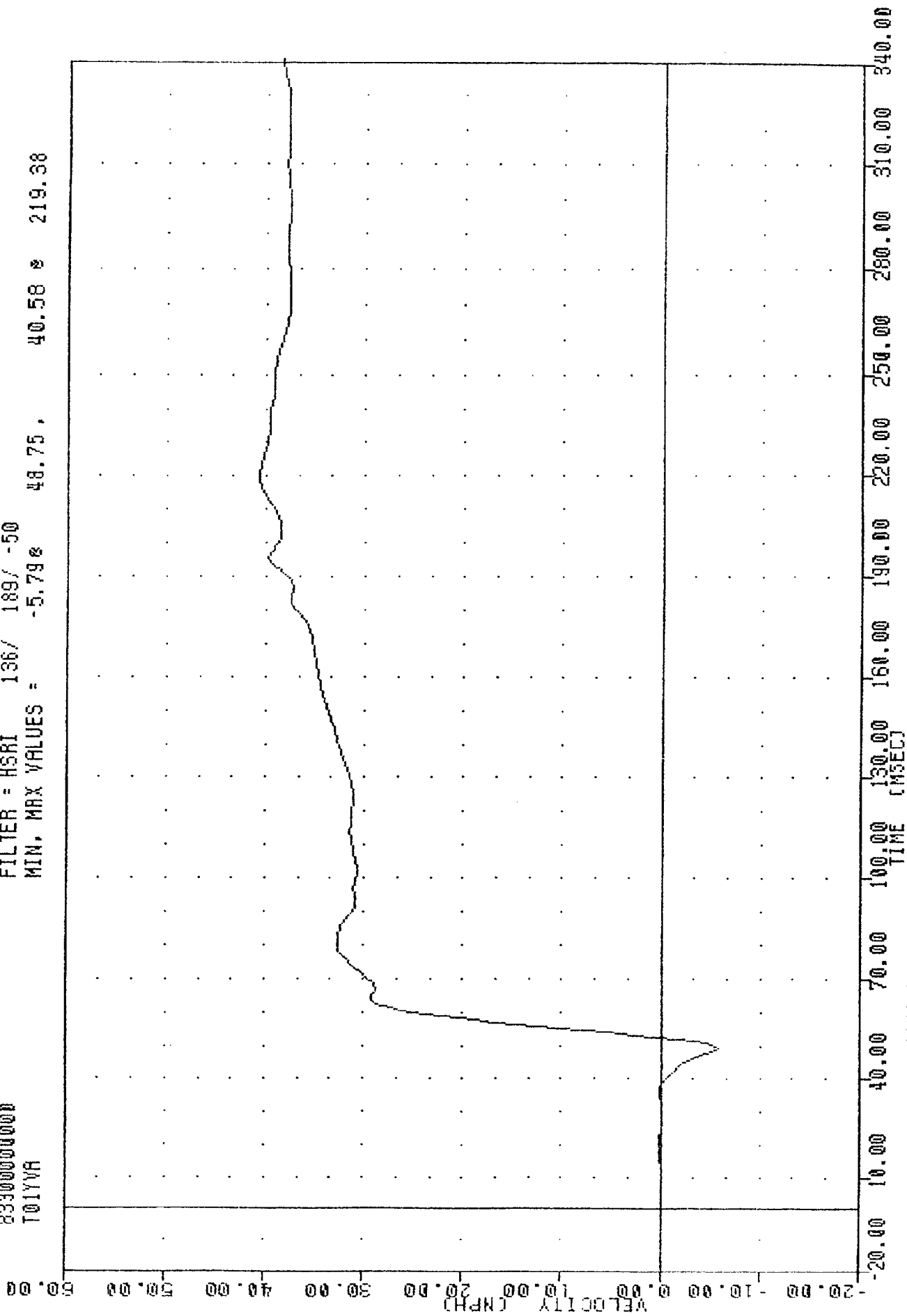
TRC 831027 PLOT DATE 1-MOV-83 00:35:27

EVALUATION OF MOD VW FLEET

833000000000

T01YVR

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -5.798 48.75, 40.58 219.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGA

TRC 831027 PLOT DATE 31-OCT-83 13:55:24

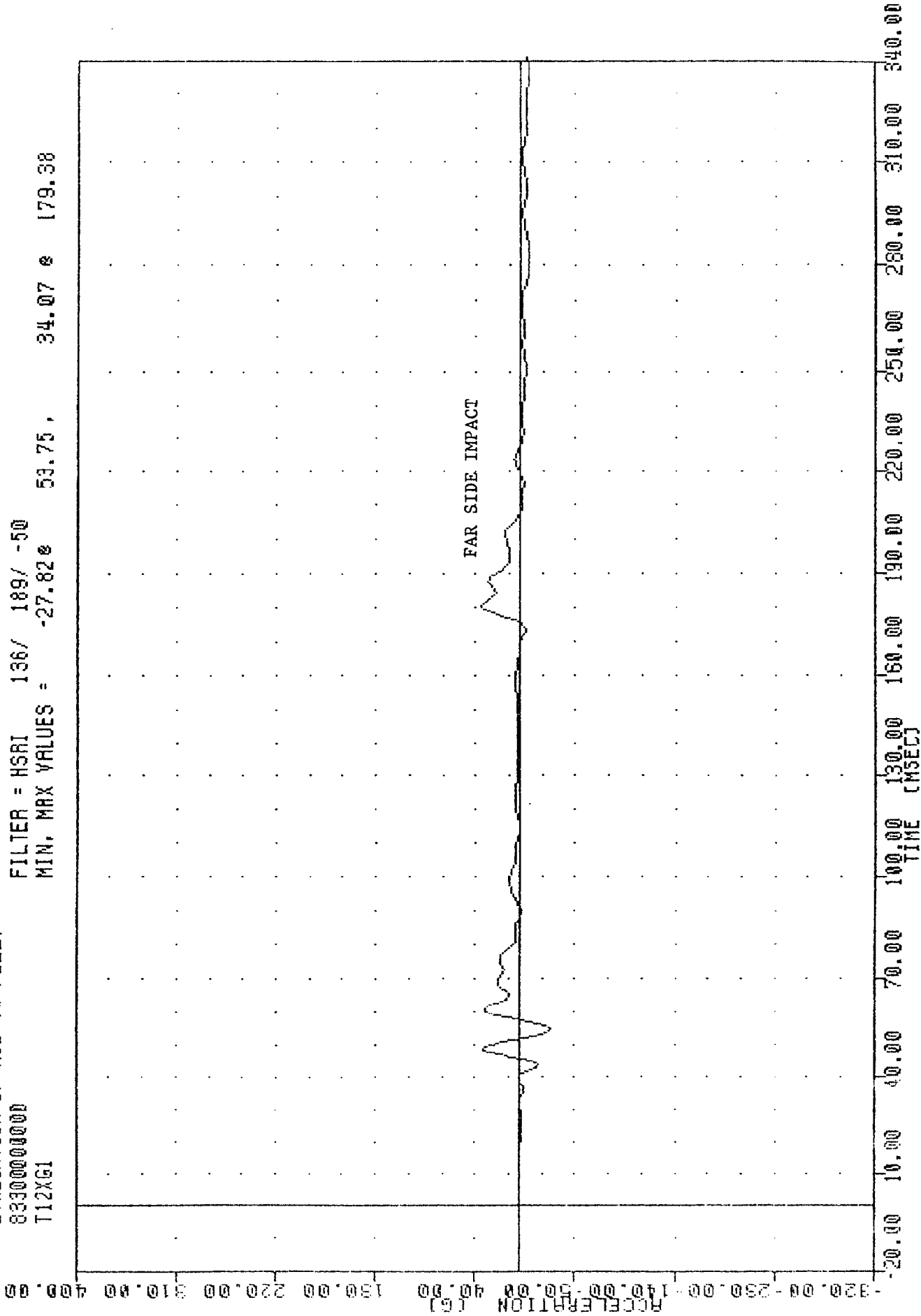
EVALUATION OF MOD VN FLEET

833000000000

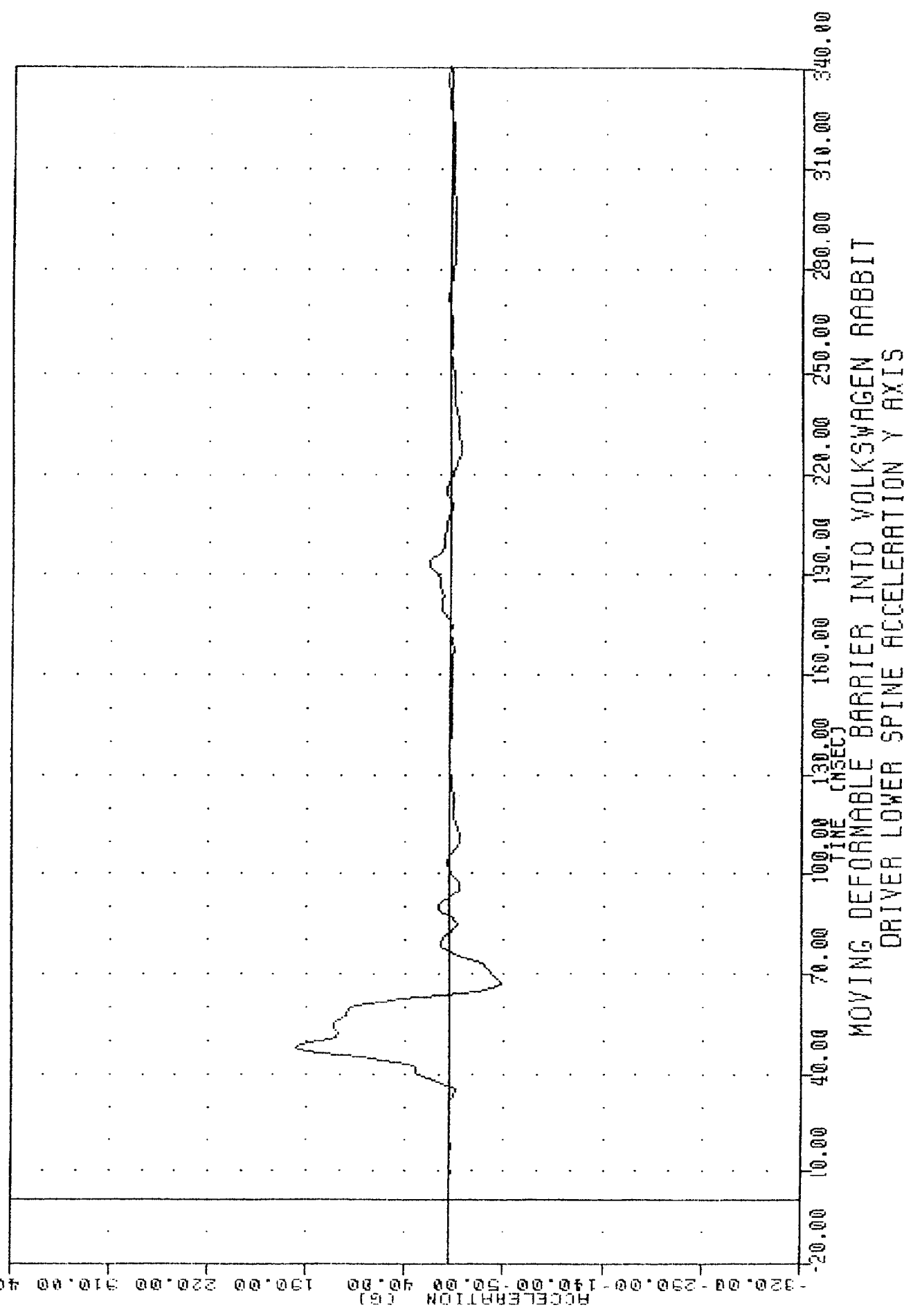
T12XG1

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -27.82 53.75 , 34.07 179.38



TAC 831027 31-OCT-83 13:55:24
 EVALUATION OF MOD VN FLEET
 833000000000
 T12161
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -47.31 86.87 139.45 47.50



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

TFC 831027 PLOT DATE 31-OCT-83 13:55:24

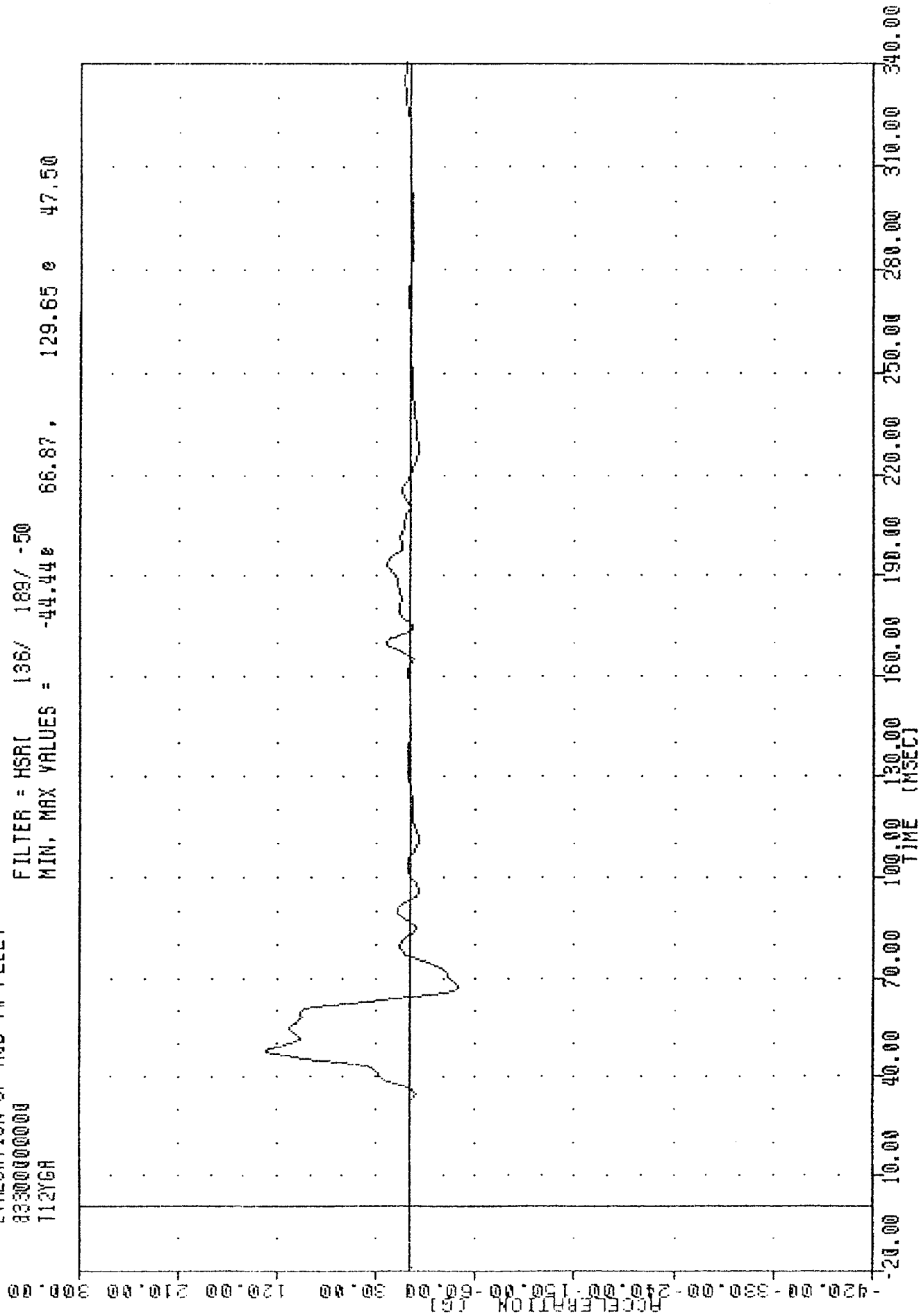
EVALUATION OF MOD VN FLEET

833000000000

112YGR

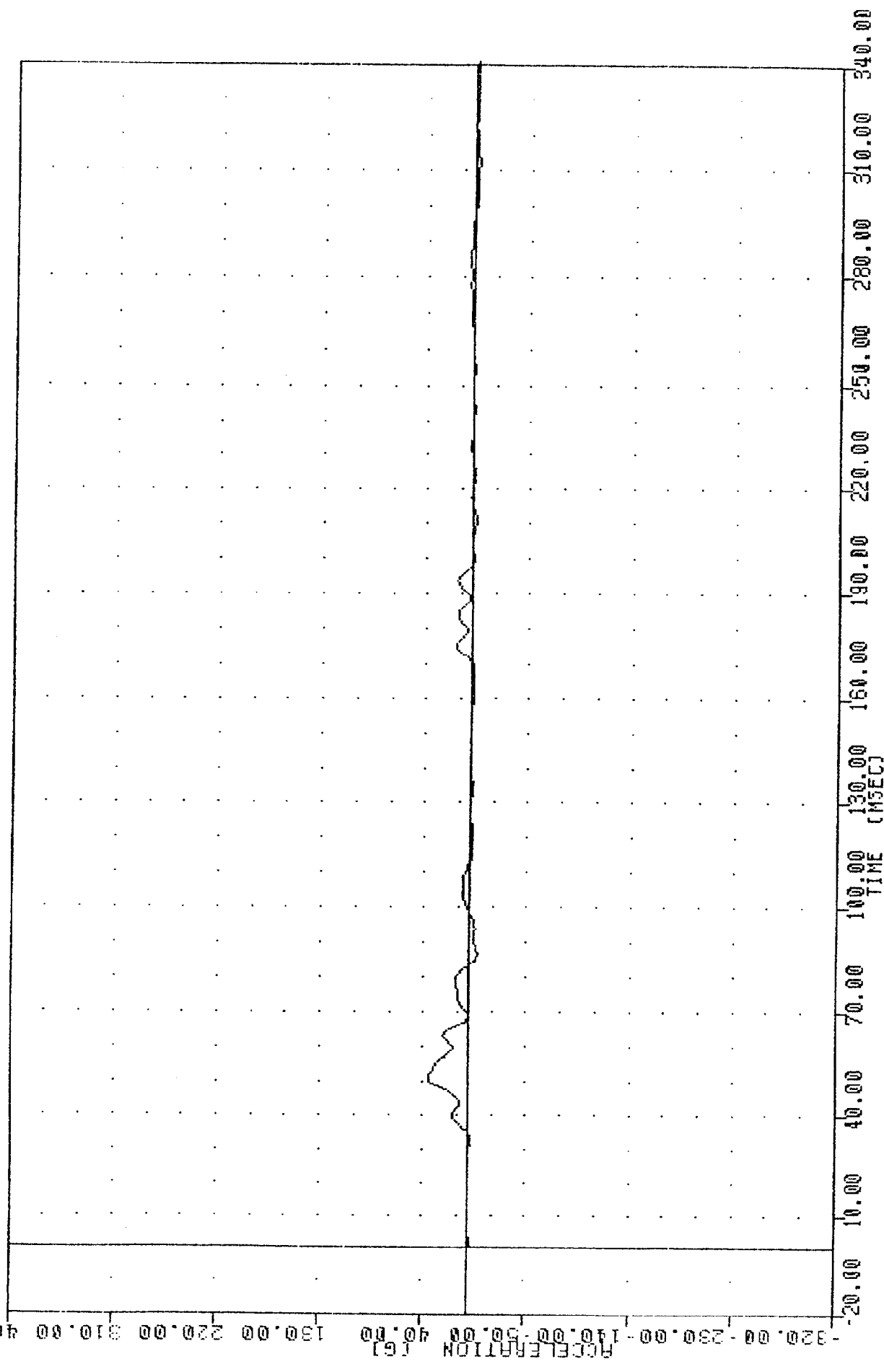
FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -44.44e 66.87, 129.65 e 47.50



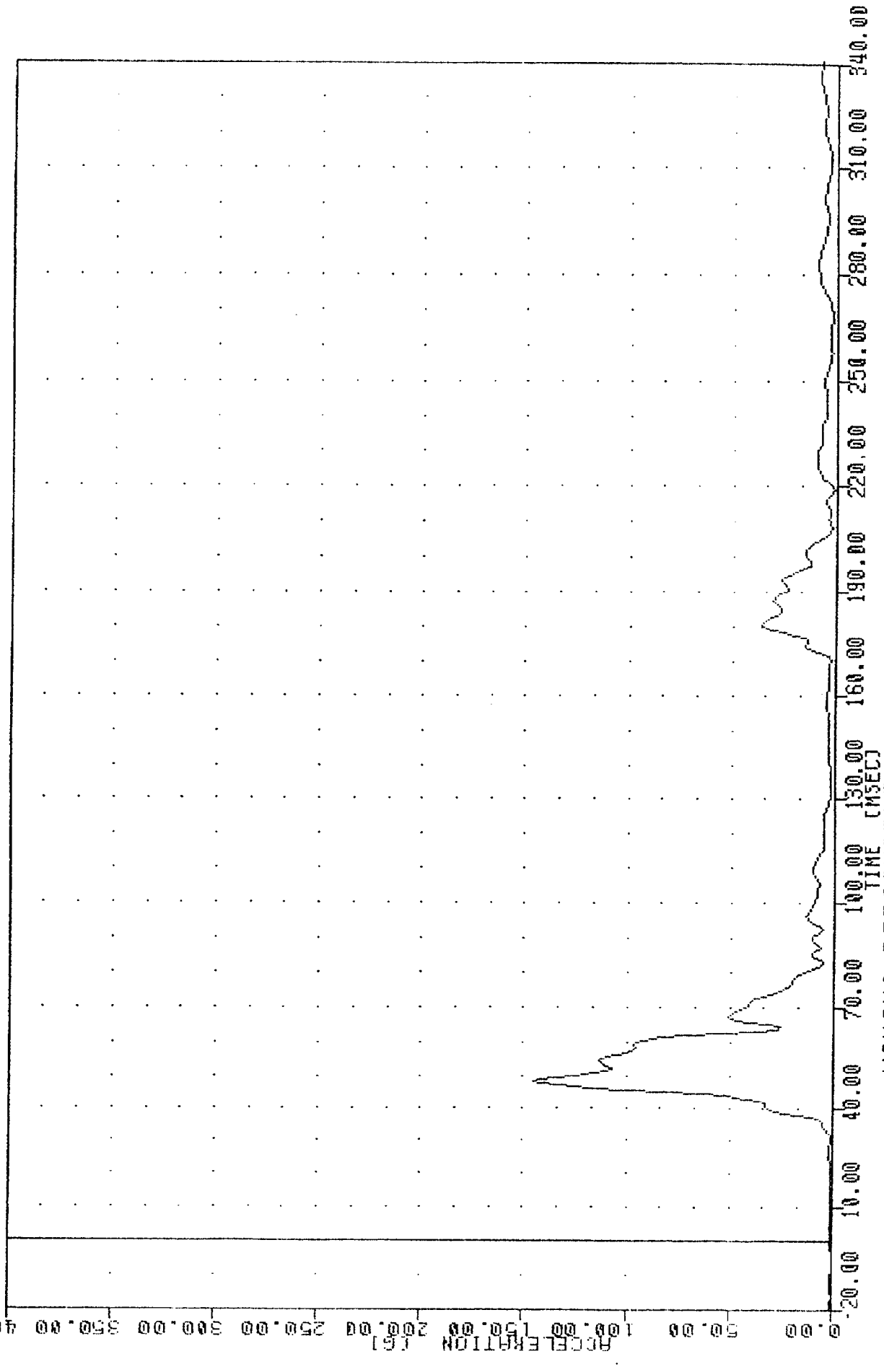
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE ACCELERATION -2 Y AXIS

TRC [REDACTED], 031027 [REDACTED] PLOT DATE 31 OCT-85 13:03:24
 EVALUATION OF MOD VW FLEET
 833000000000
 T12Z61
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -7.36s 85.63, 34.91 s 50.00



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

TRC 631027, 631027 PLOT DATE 31-DEC-83 13:55:24
 EVALUATION OF MDD YW FLEET
 833000000000
 T12RG1
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = 0.16s -6.88, 145.36 s 47.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE RESULTANT

TRC 031027 PLOT DATE 31-OCT-83 13:55:35

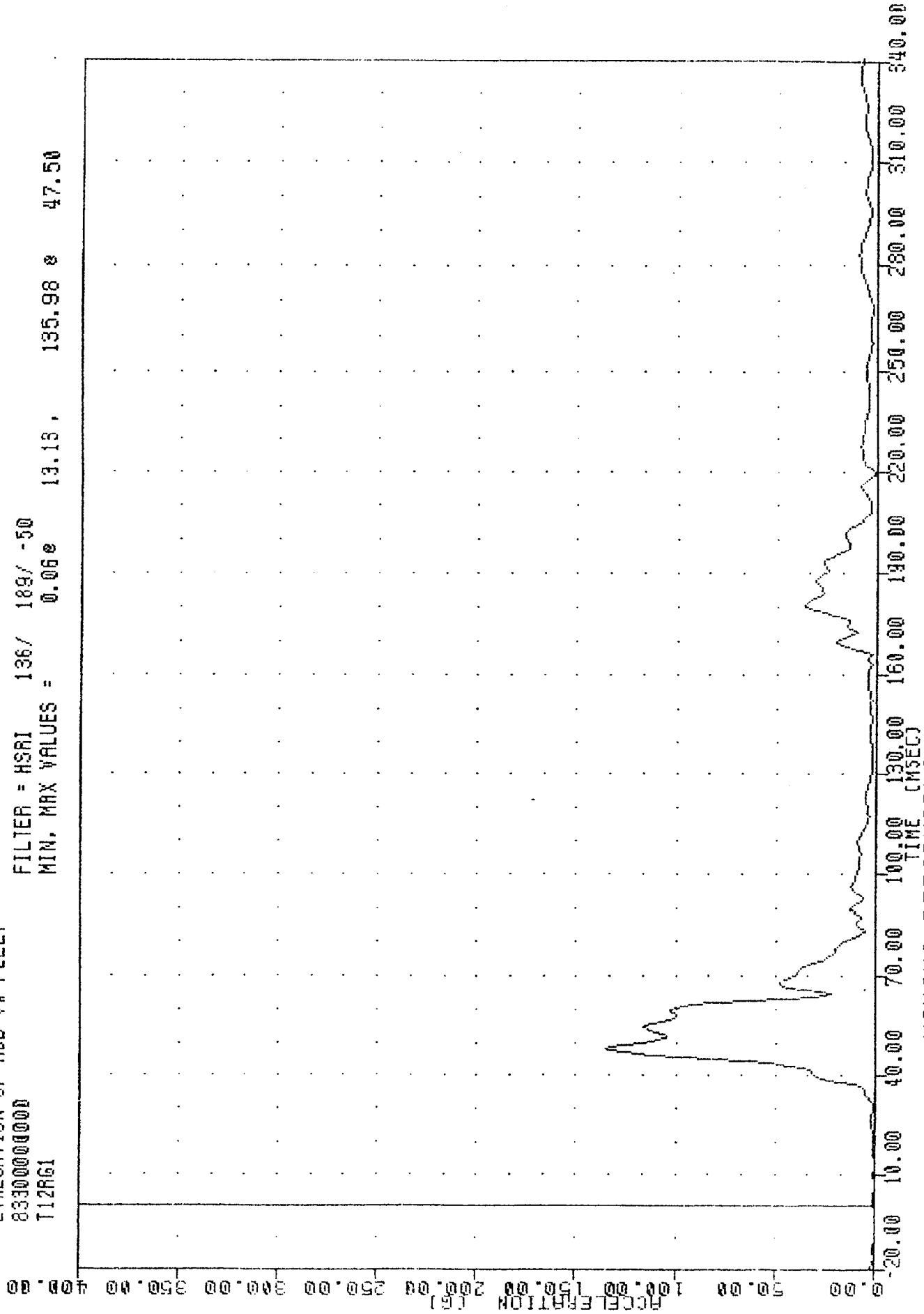
EVALUATION OF MDD VW FLEET

833000000000

T12R61

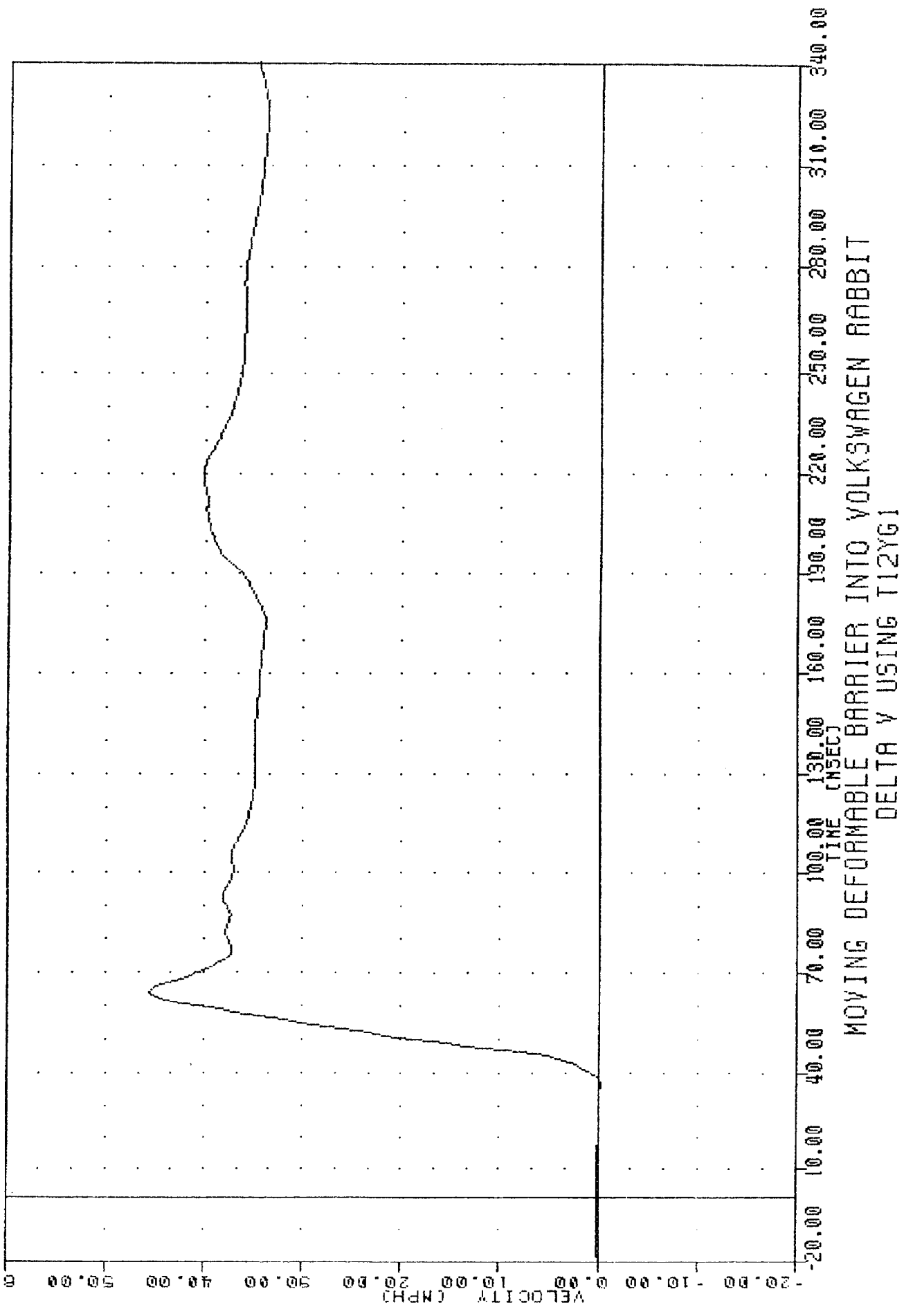
FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.06e 13.13, 135.98 e 47.50



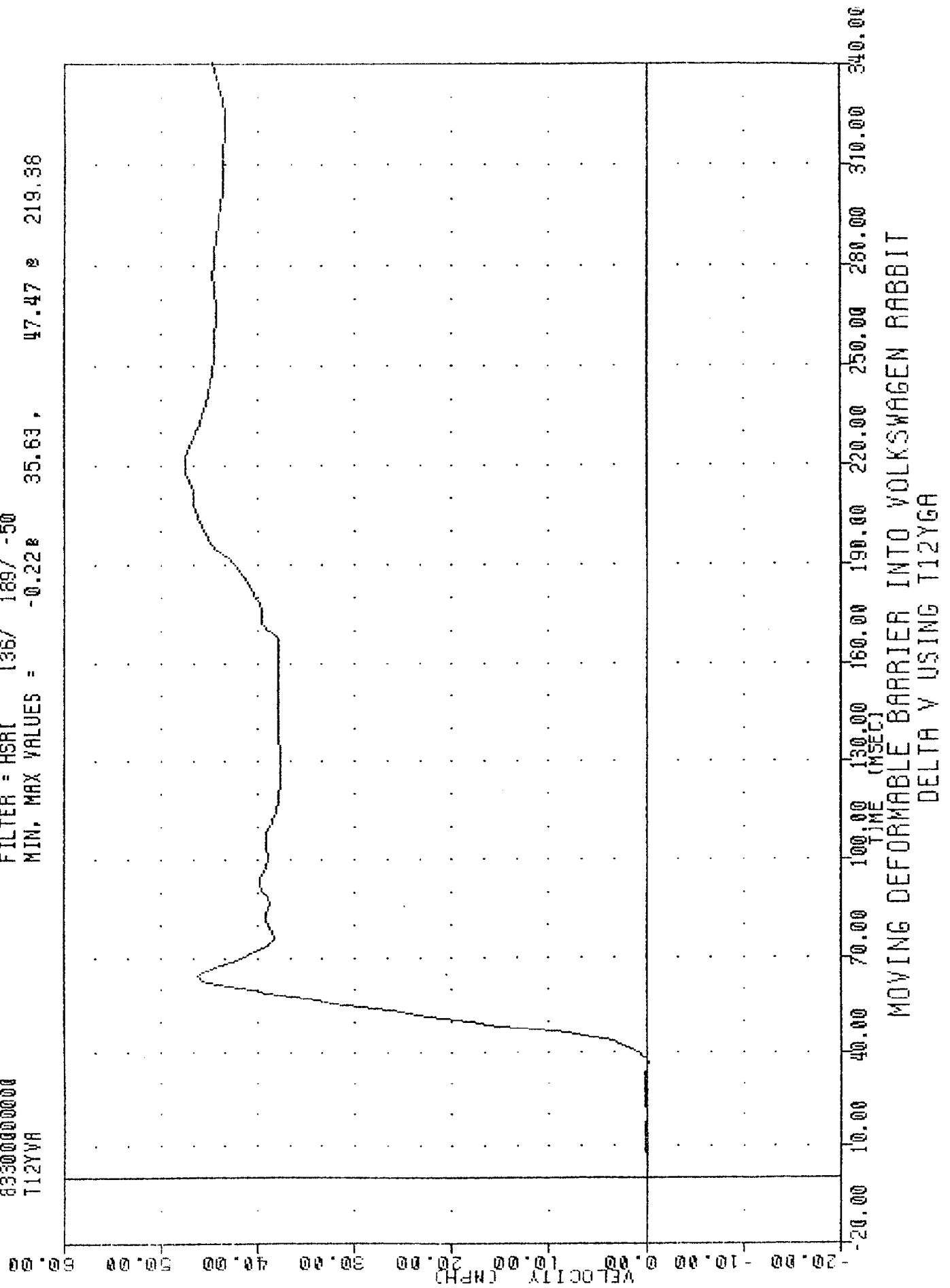
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT USING T12YGA

TAG [REDACTED], 05/02/87, 08:35:27
 EVALUATION OF MOD VN FLEET
 833000000000
 T12YV1
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.35 35.63, 45.52 e 63.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YGI

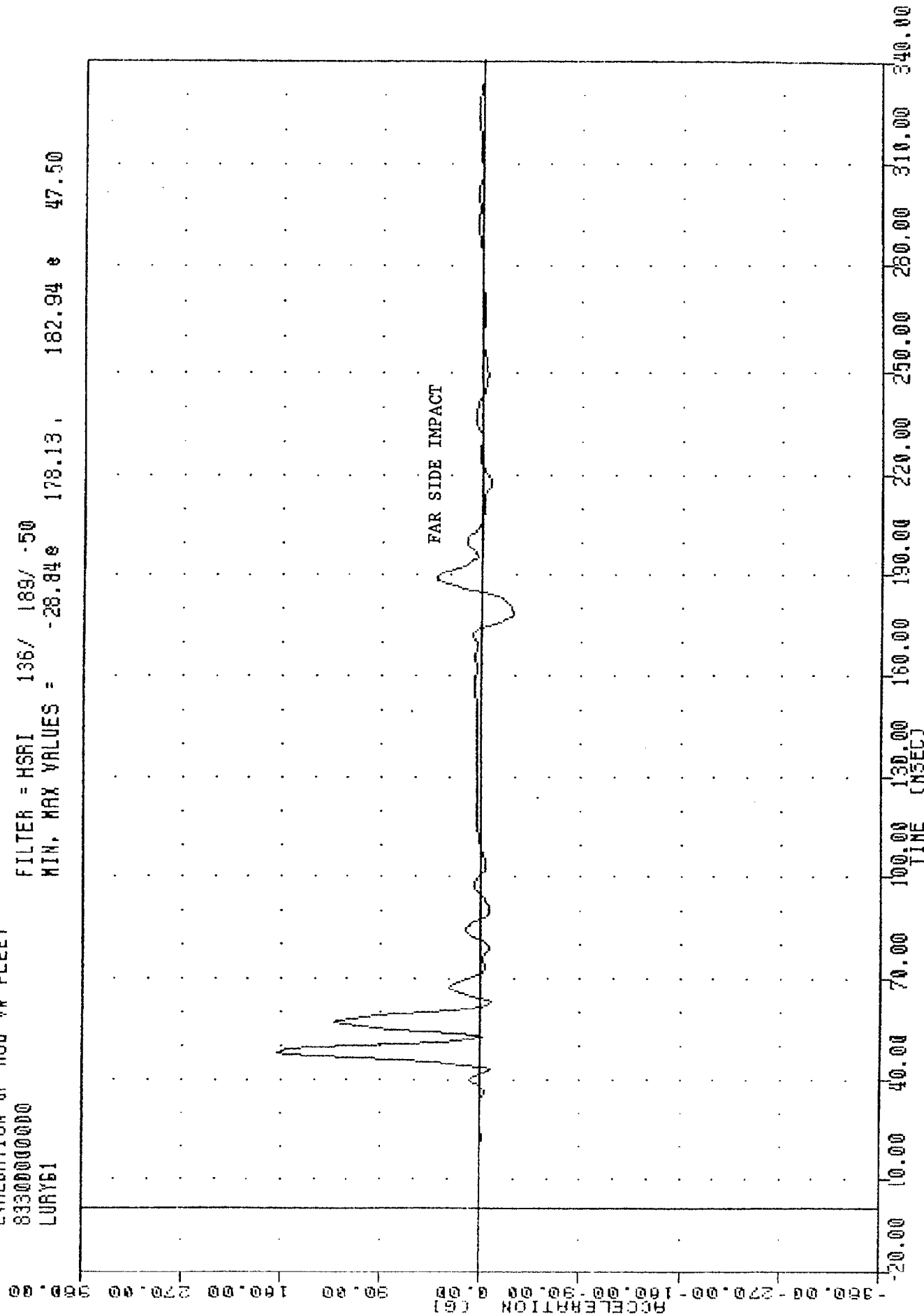
TRC 831027, 831027 PLOT DATE 1-MOV-83 08:35:27
 EVALUATION OF MOD VN FLEET
 833000000000
 T12YVR
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.22 35.63, 47.47 219.38



TRC 831027
 EVALUATION OF MOD VN FLEET
 833000000000
 LURYS1

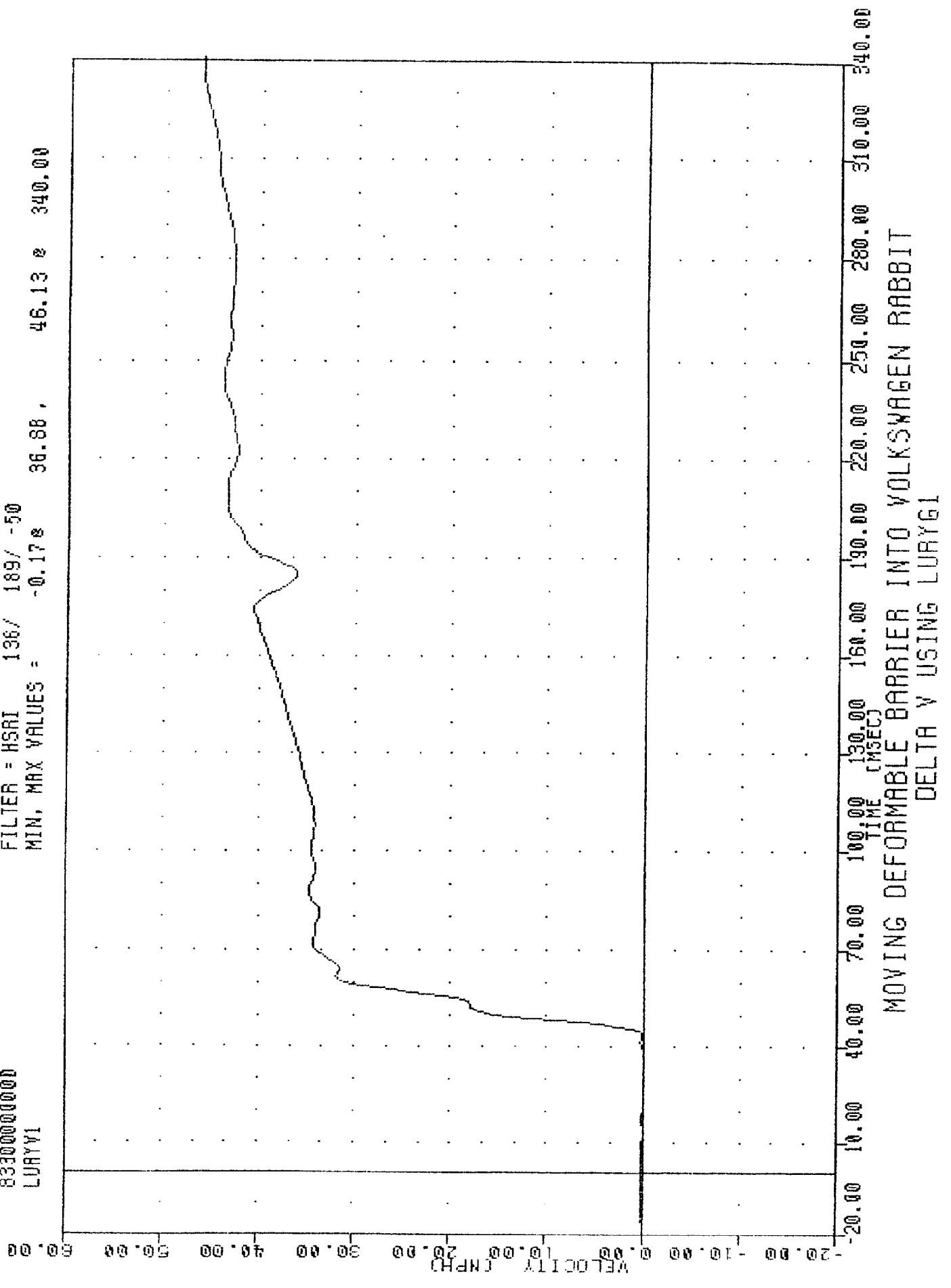
PLOT DATE 31 OCT 83 13:55:24

FILTER = HSRI 136/ 189/ .50
 MIN. MAX VALUES = -28.84e 178.13, 182.94e 47.50



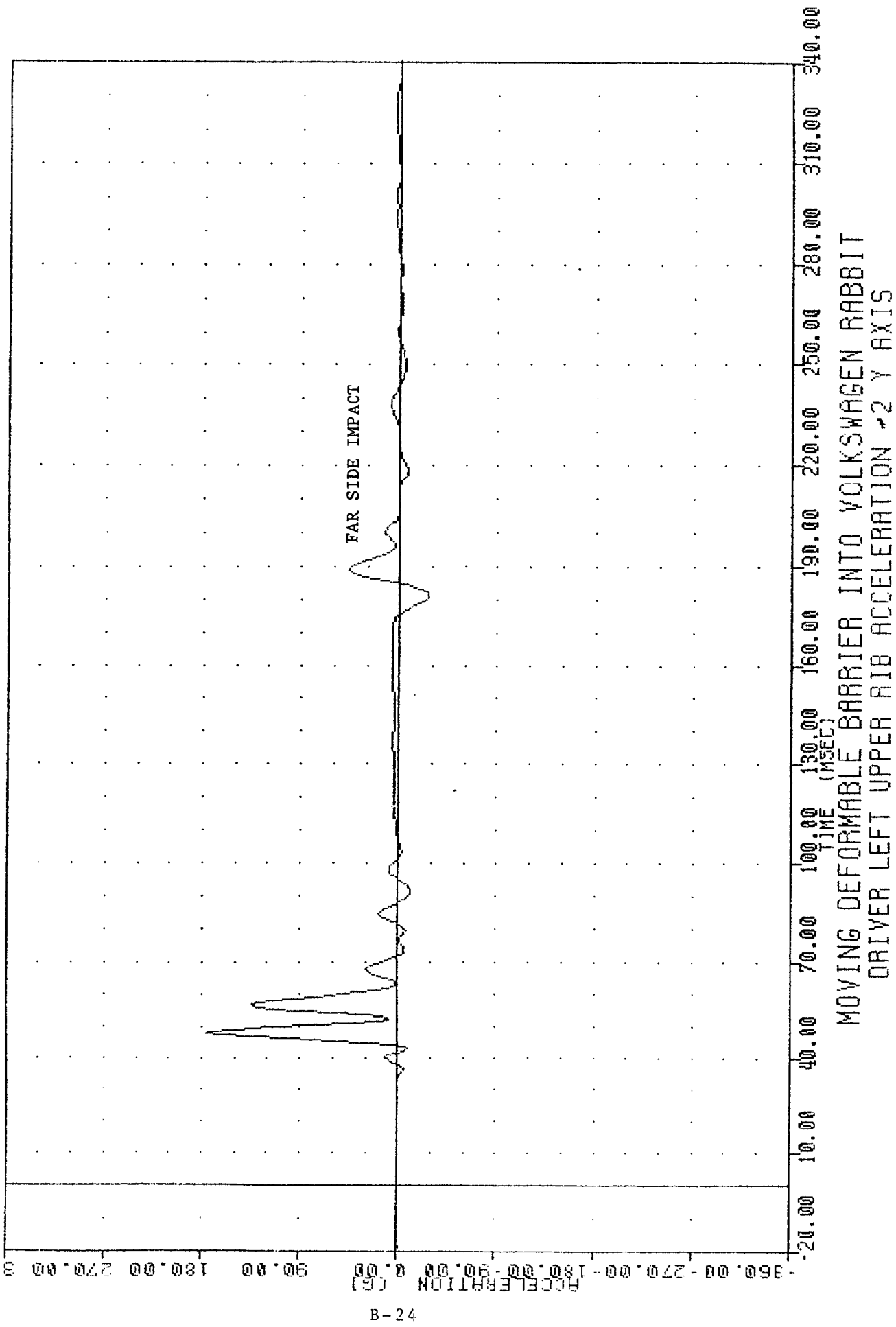
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT UPPER RIB ACCELERATION Y AXIS

TRC [REDACTED], 031027 [REDACTED] PLOT DATE 1 NOV-85 06:33:27
 EVALUATION OF MOD VW FLEET
 833000000000
 LURYV1
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.17s 36.88, 46.13 s 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURYG1

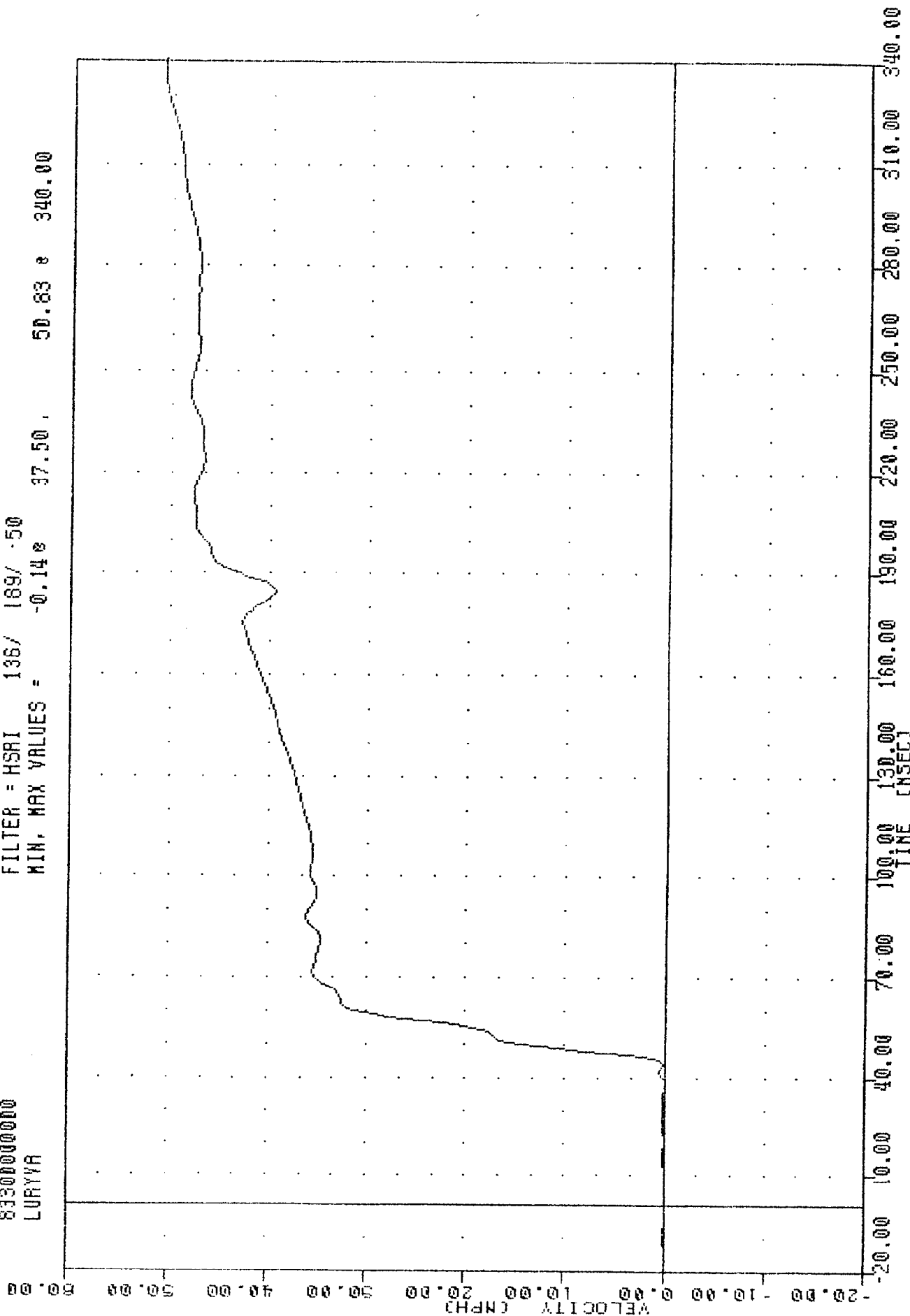
TRC [REDACTED], 031027 [REDACTED] PLOT DATE 31 OCT 83 15:30:24 [REDACTED]
 EVALUATION OF MOD YW FLEET
 833000000000
 LURYGA
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -26.37e 180.62, 176.13 e 47.50



TRU [REDACTED], 08/02/83
 EVALUATION OF MOD VN FLEET
 83300000000
 LURYVA

PLOT DATE 1 NOV 83 08:33:27

FILTER = HSRI 136/ 169/ -50
 MIN, MAX VALUES = -0.148 37.50, 50.83 e 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURYGA

TRC 03127 PLOT DATE 31 OCT 83 13:55:24

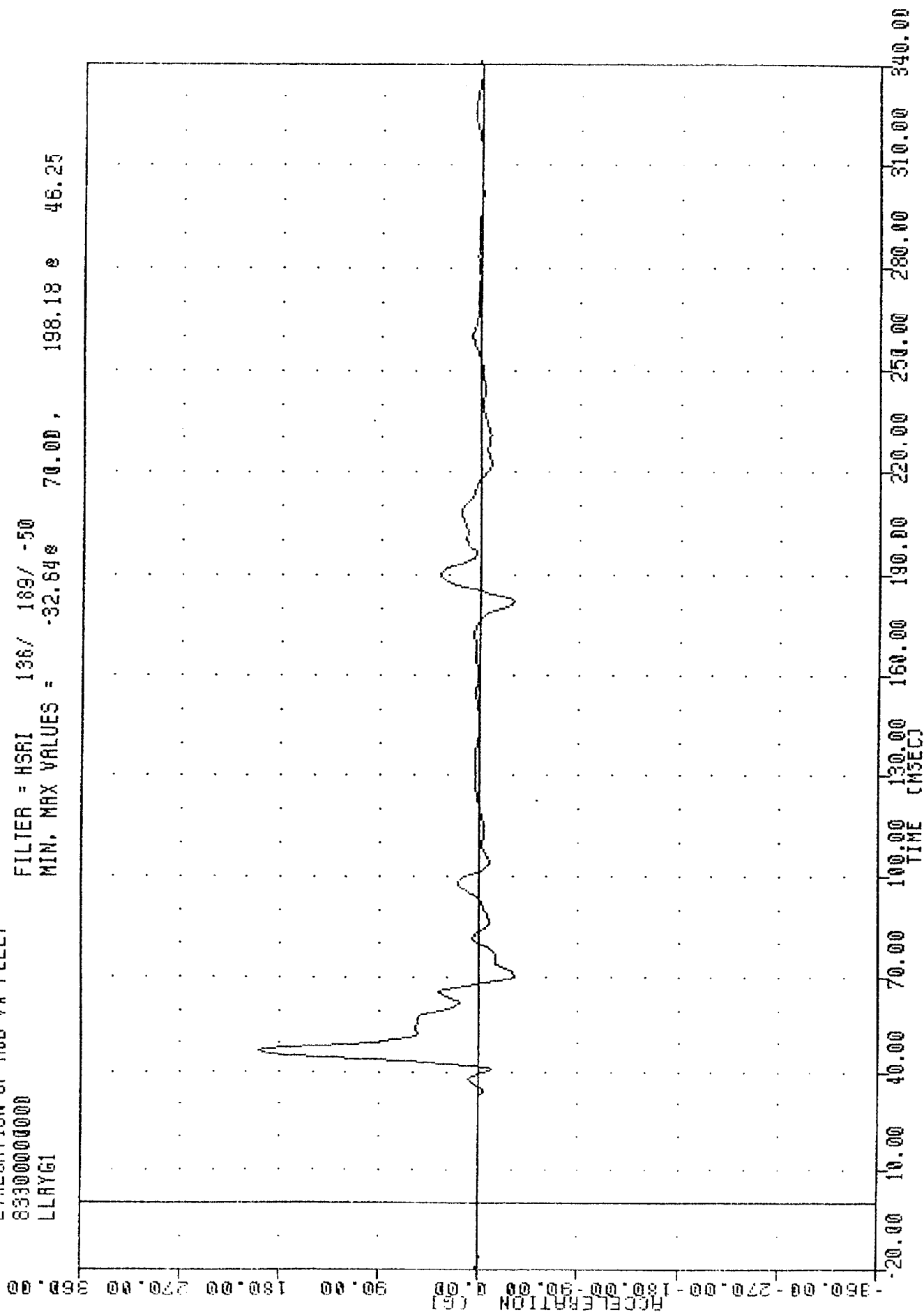
EVALUATION OF MOD VN FLEET

833000000000

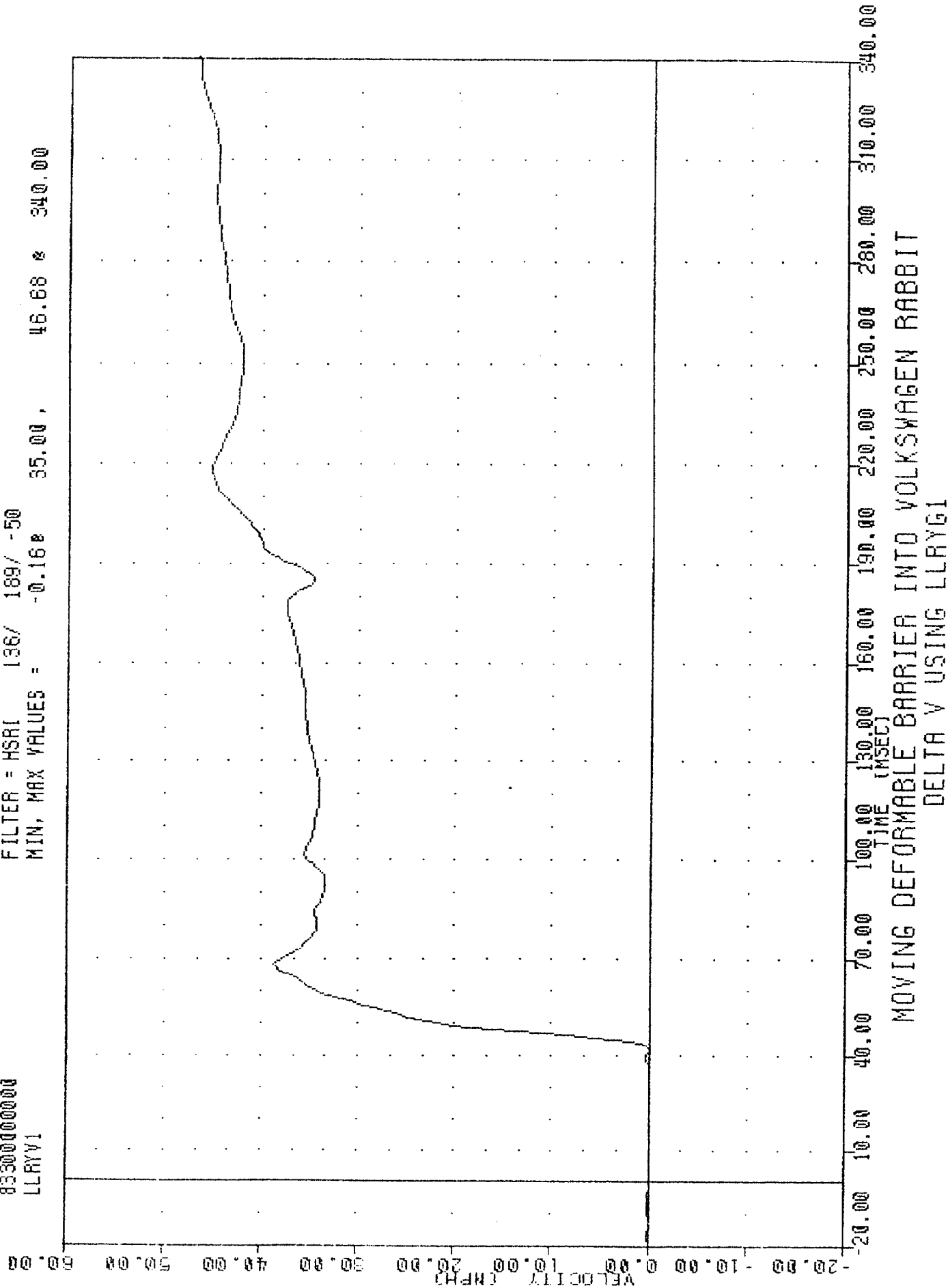
LLAYG1

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -32.64 70.00, 198.18 46.25



TRC [REDACTED], 831027 [REDACTED] PLOT DATE 1-NOV-83 08:35:27
 EVALUATION OF MOD VV FLEET
 833000000000
 LLRYV1
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.168 35.00, 46.68 & 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYG1

TAC 831027, 31-DEC-83 13:55:24

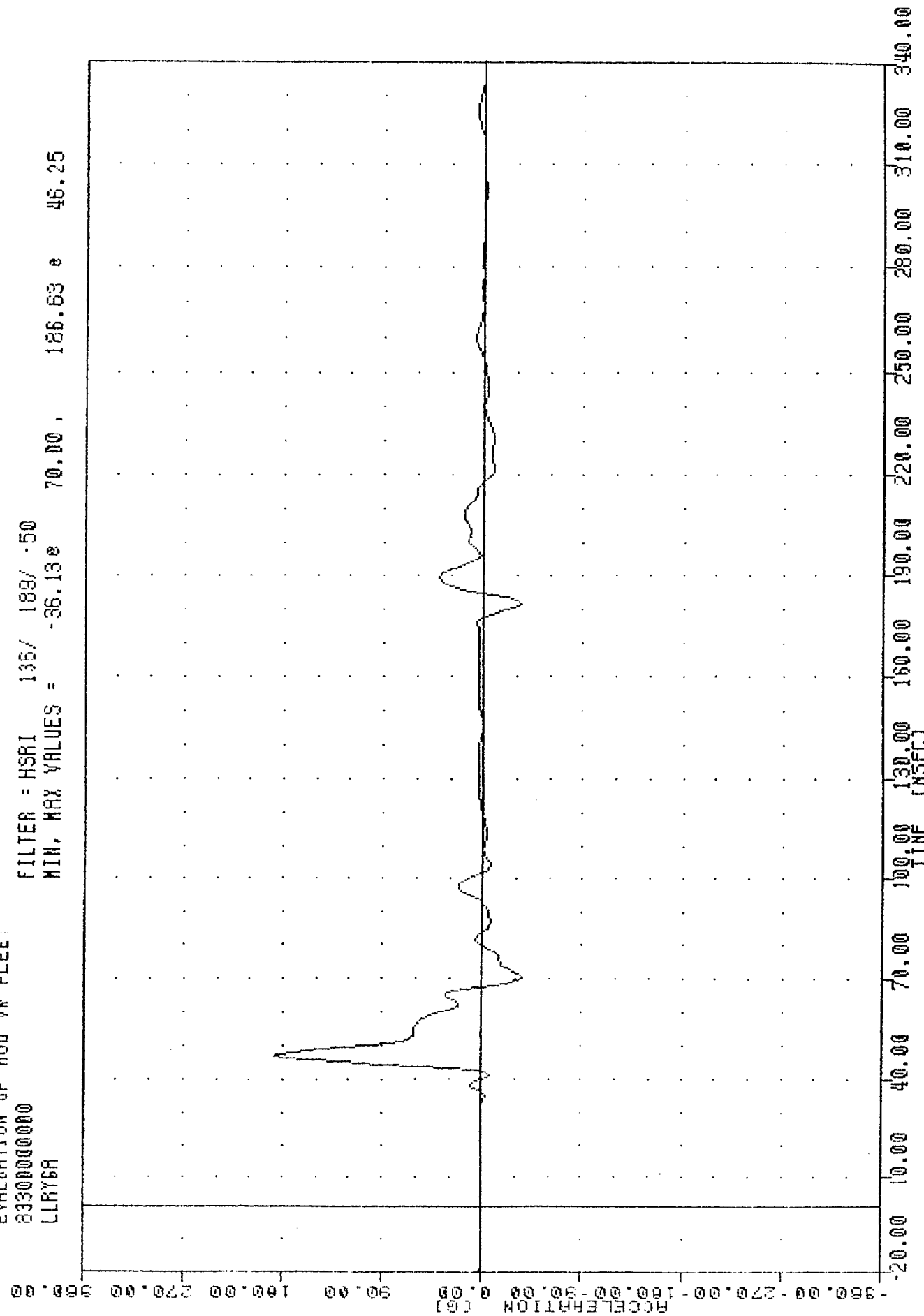
EVALUATION OF MOD VN FLEET

833000000000

LLRYGR

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -36.13e 70.00, 186.63 e 46.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT LOWER RIB ACCELERATION ~2 Y AXIS

TRC 831027, 031027 PLOT DATE 1 NOV 83 08:35:27

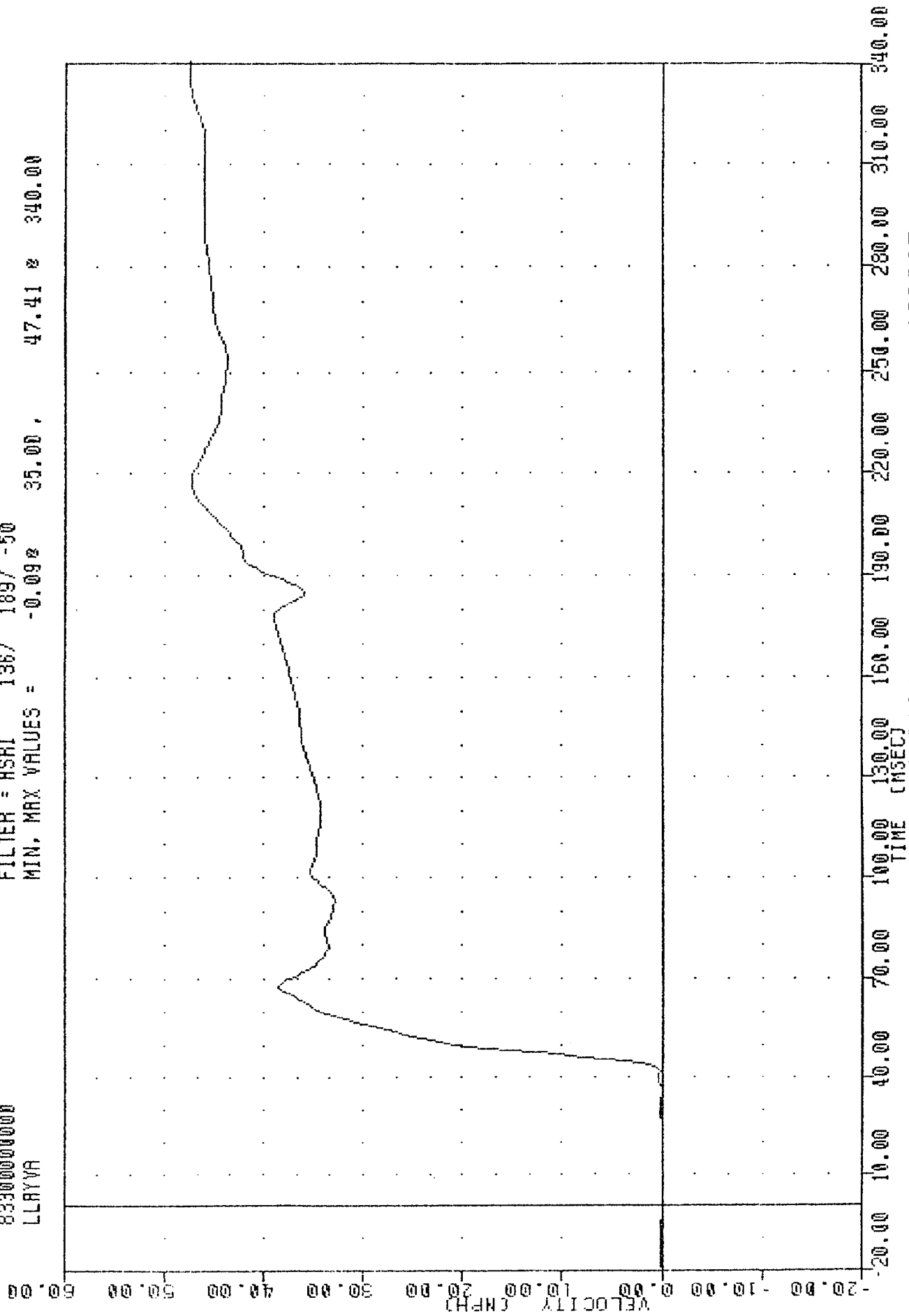
EVALUATION OF MOD VW FLEET

833000000000

LLAYVA

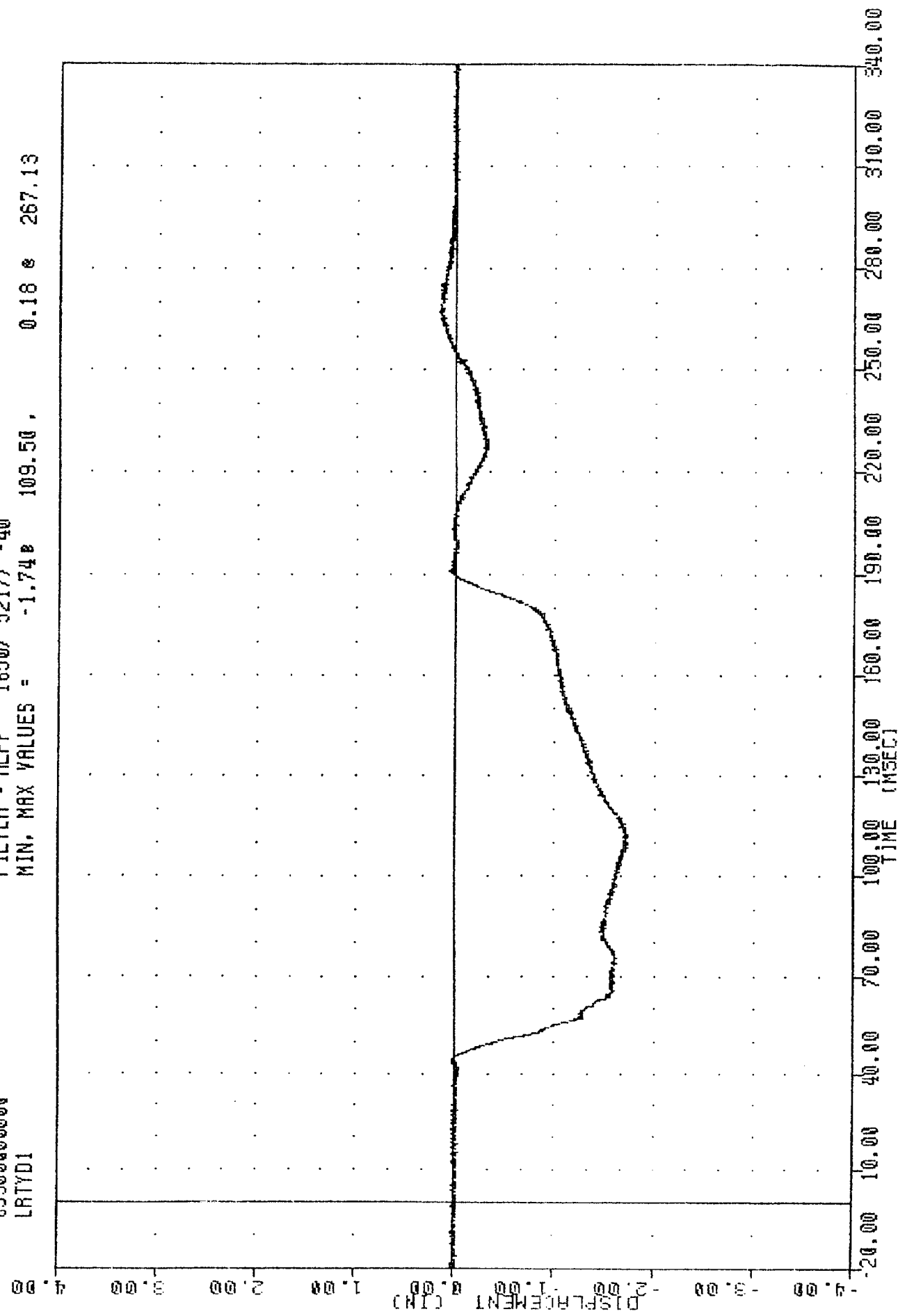
FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.092 35.00, 47.41 340.00



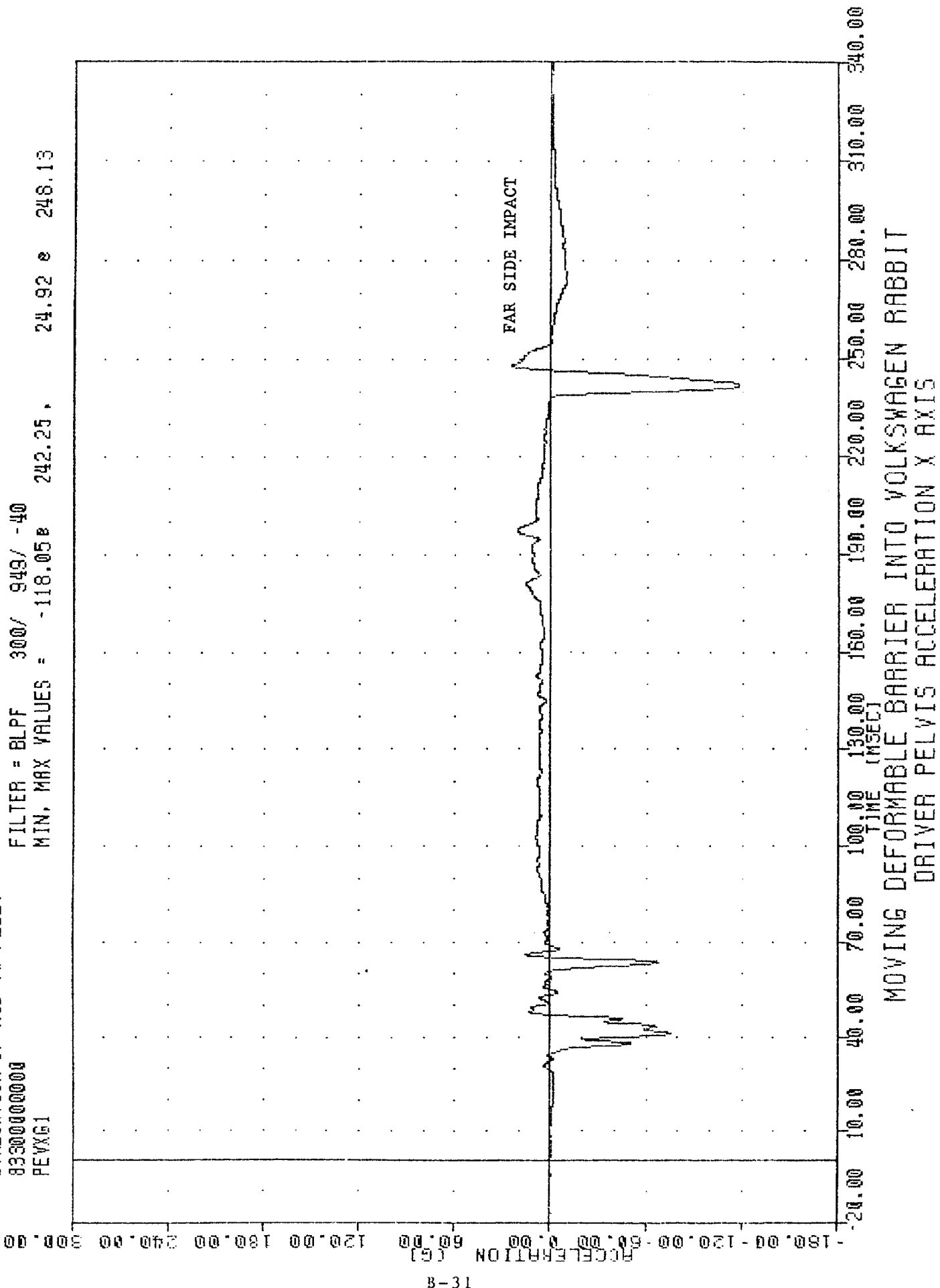
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLAYVA

TRC 831027
 EVALUATION OF MOD YW FLEET
 83300000000
 LRTYD1
 PLOT DATE 31-OCT-83 13:54:39
 FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -1.74e 109.50, 0.18 e 267.13



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

TRC 831027
 EVALUATION OF MOD YV FLEET
 833000000000
 PEVX61
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -118.05 242.25, 24.92 248.13
 PLOT DATE 31-OCT-83 13:54:39



TRC 831027 PLOT DATE 31-OCT-83 13:54:39

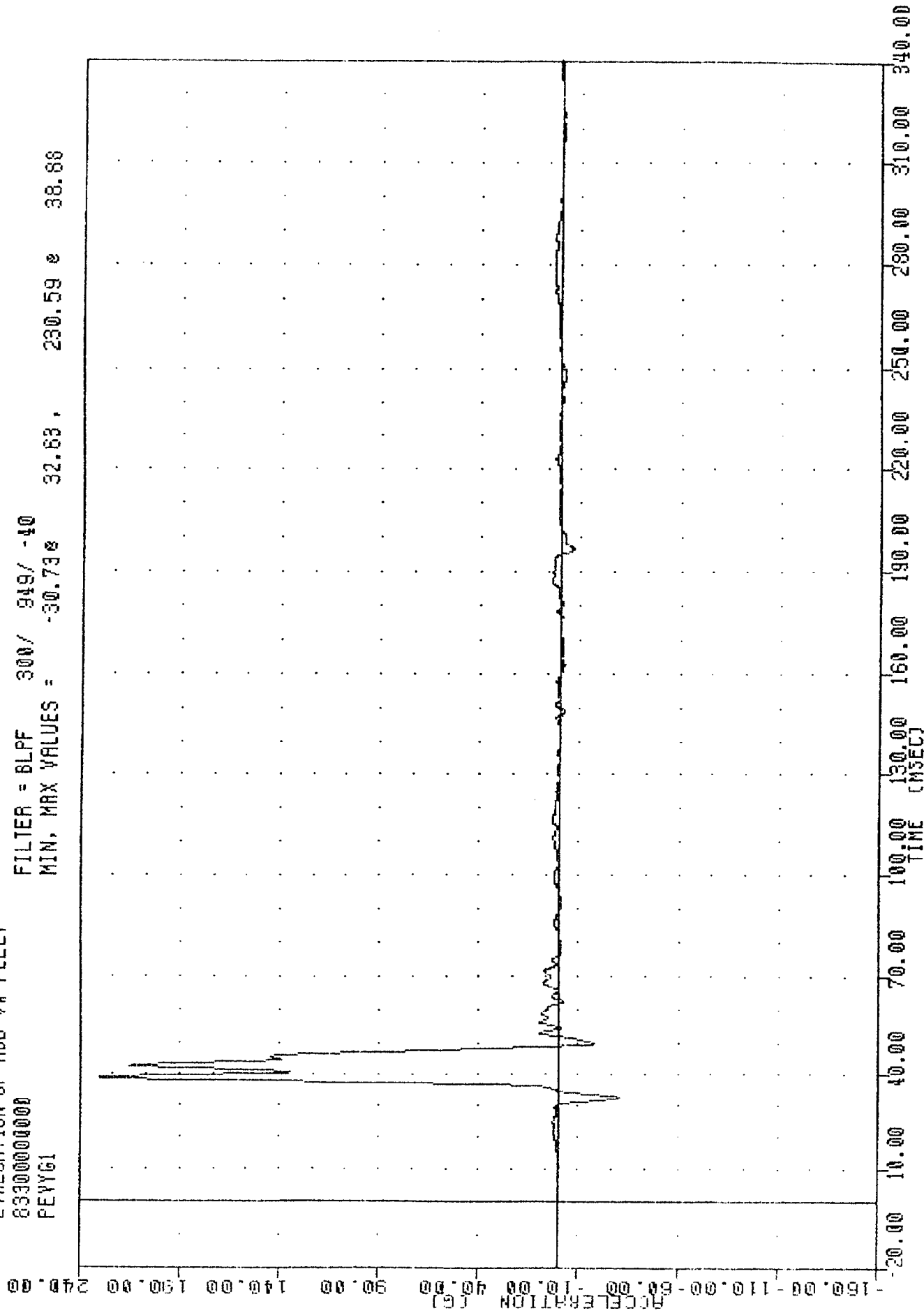
EVALUATION OF MOD VW FLEET

833000000000

PEY61

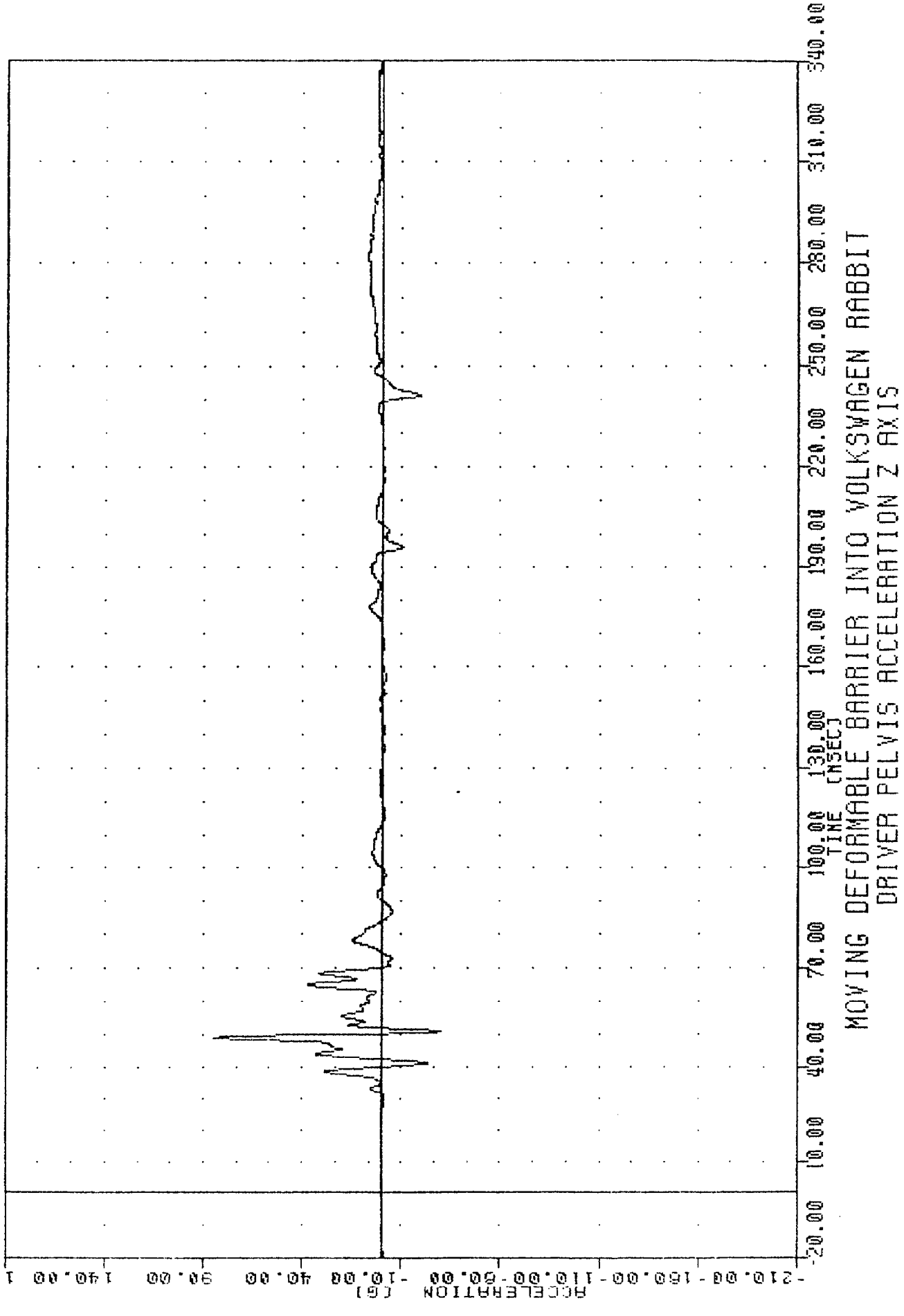
FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -30.73e 32.63, 230.59 e 38.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Y AXIS

TRC [REDACTED], 03/02/83, 31 OCT-83 13:34:39
 EVALUATION OF MOD VW FLEET
 83300000000
 PEVZ61
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -29.84g 50.88g 84.59g 48.88g



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS ACCELERATION Z AXIS

TRC 831027 PLOT DATE 31-OCT-83 13:54:39

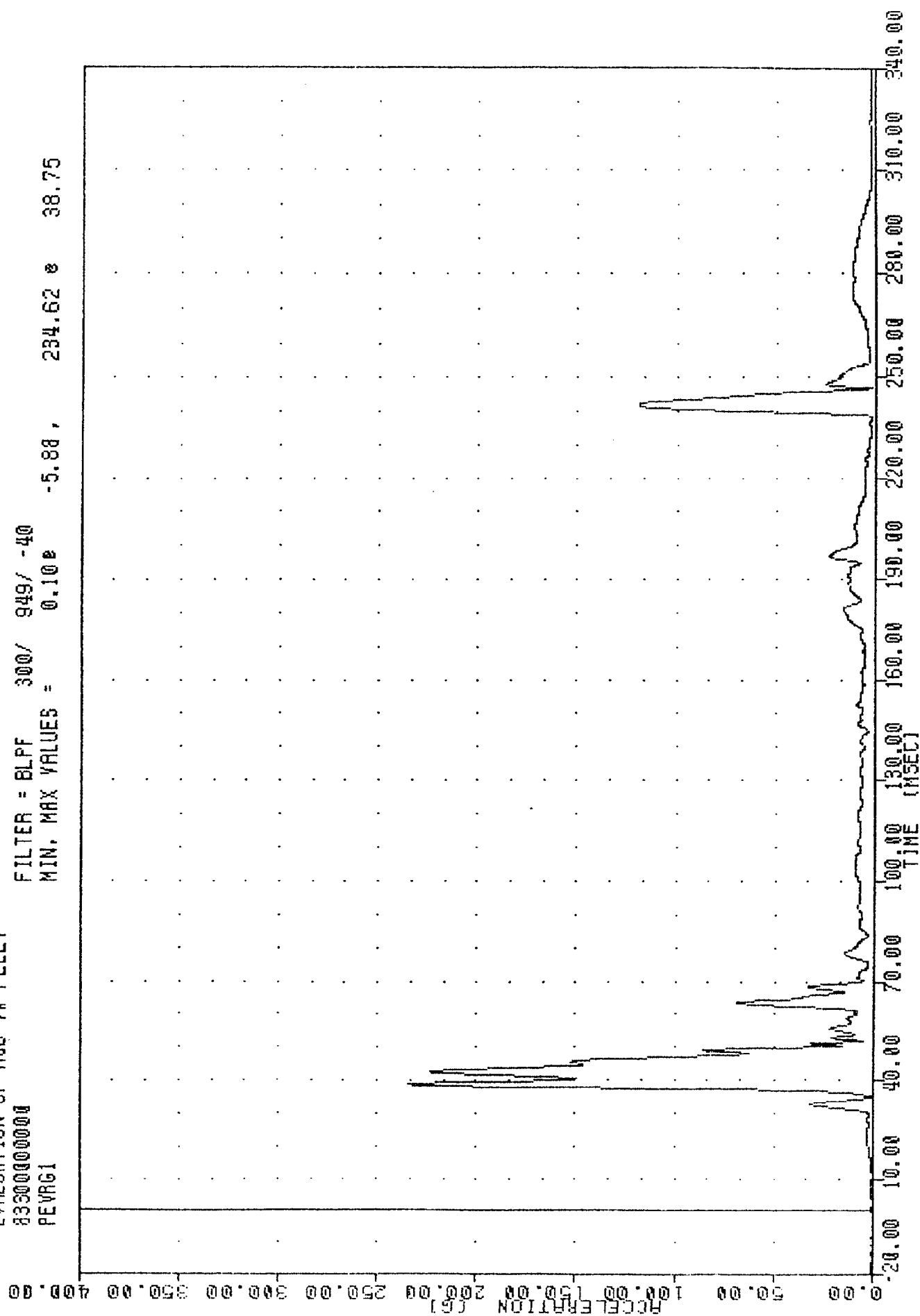
EVALUATION OF MOD YW FLEET

833000000000

PEVRG1

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.10e -5.88 , 234.62 e 38.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS RESULTANT

TRC 831027, 831027, 1-NOV-83 08:35:09

EVALUATION OF MOD YN FLEET

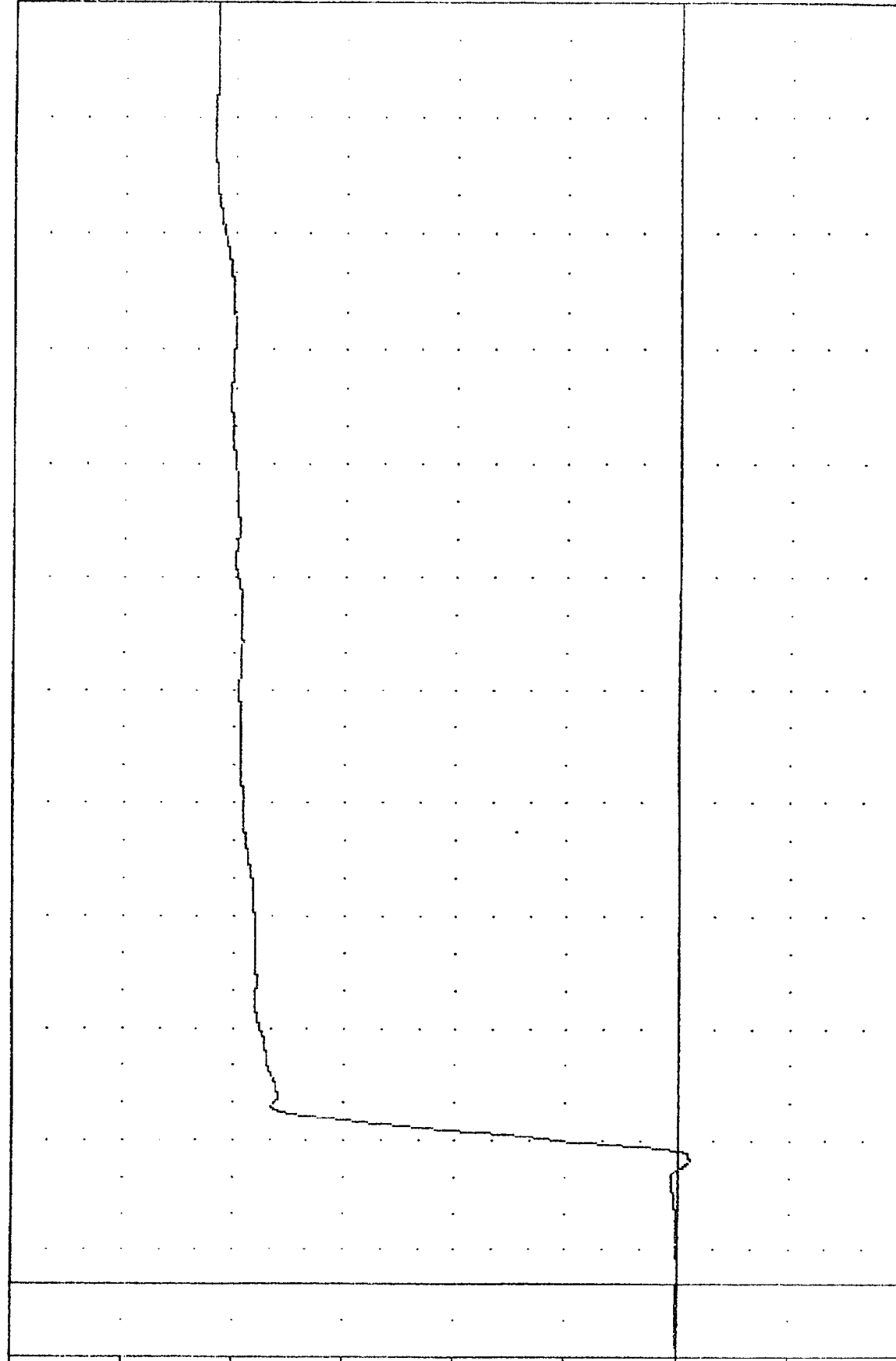
833000000000

PEVYV1

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -1.072 34.88, 41.83 s 308.75

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 (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING PEVYV1

TRC 831027 PLOT DATE 31 OCT 85 13:04:39

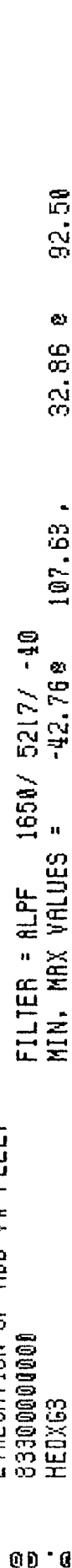
EVALUATION OF MDD VW FLEET

833000000000

HEDXG3

FILTER = 8LPF 1650/ 5217/ -40

MIN. MAX VALUES = -42.76g 107.63g 32.86g 92.50

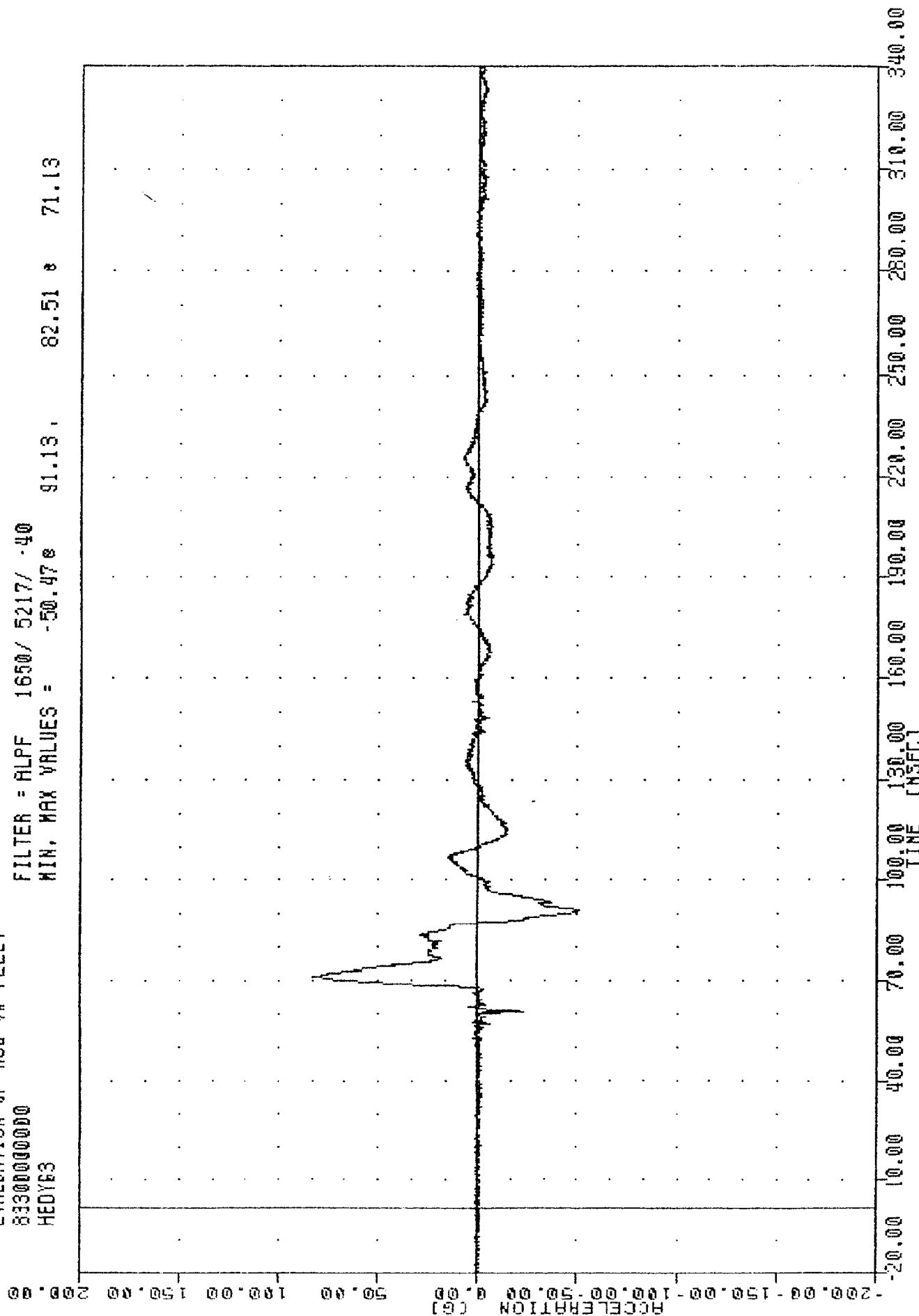


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION X AXIS

TAC 831027
 EVALUATION OF MOD VN FLEET
 83300000000
 HEDY63

PLT DATE 31-OCT-83 13:34:39

FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -50.47e 91.13, 82.51 e 71.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION Y AXIS

TRC 031027 PLOT DATE 31 OCT 83 13:04:39

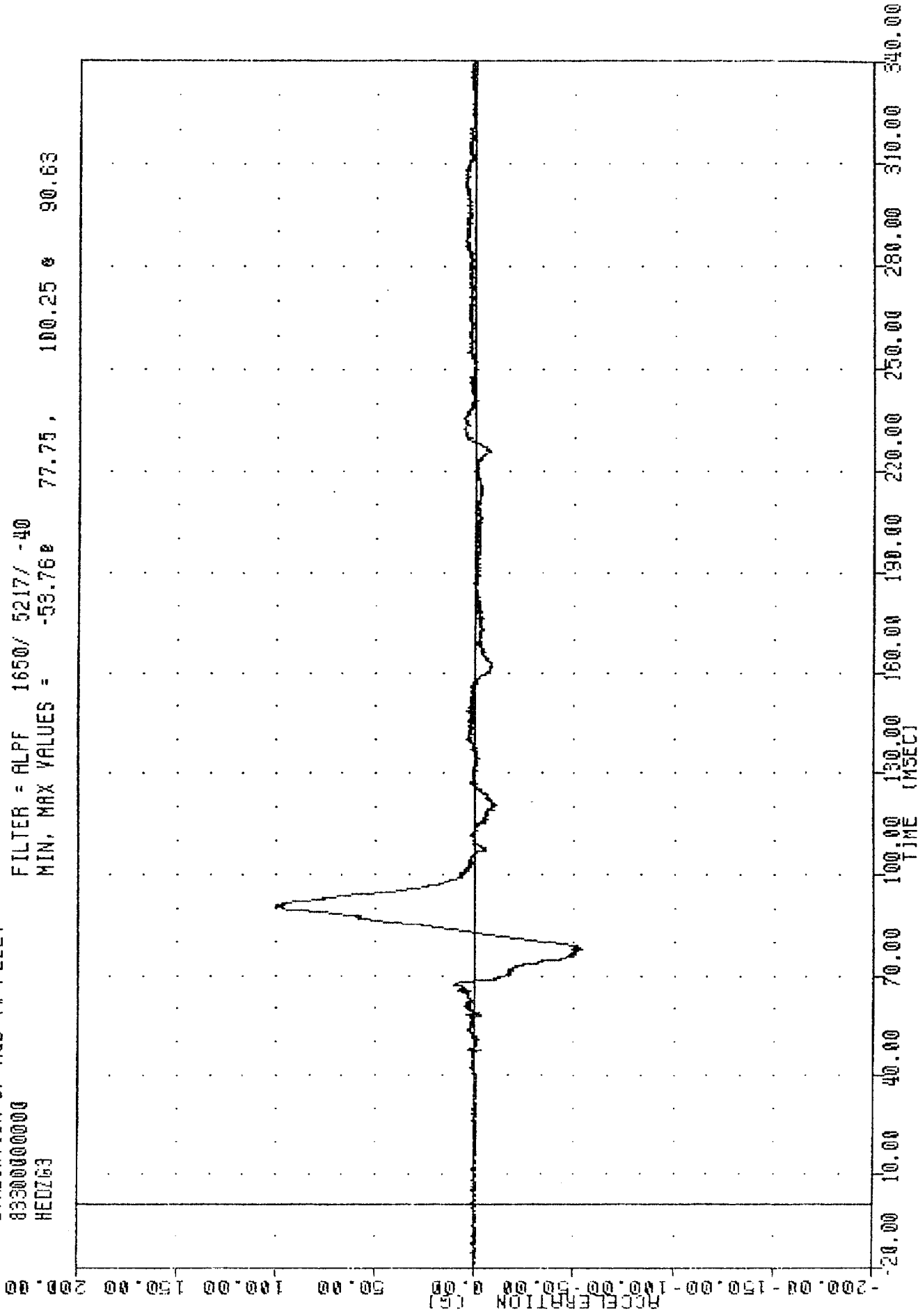
EVALUATION OF MOD YW FLEET

833000000000

HEDZ63

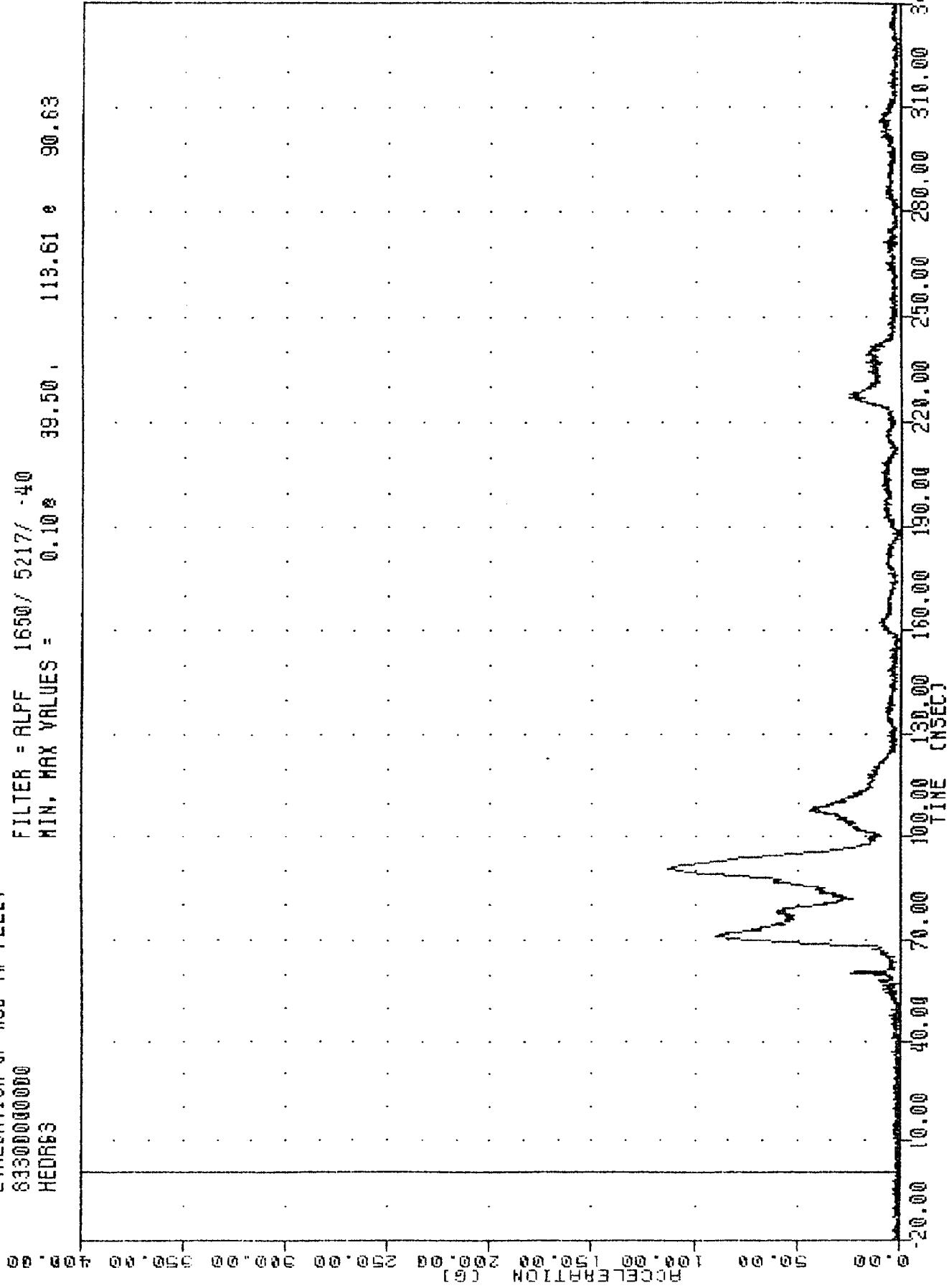
FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -53.76e 77.75, 100.25 e 90.63



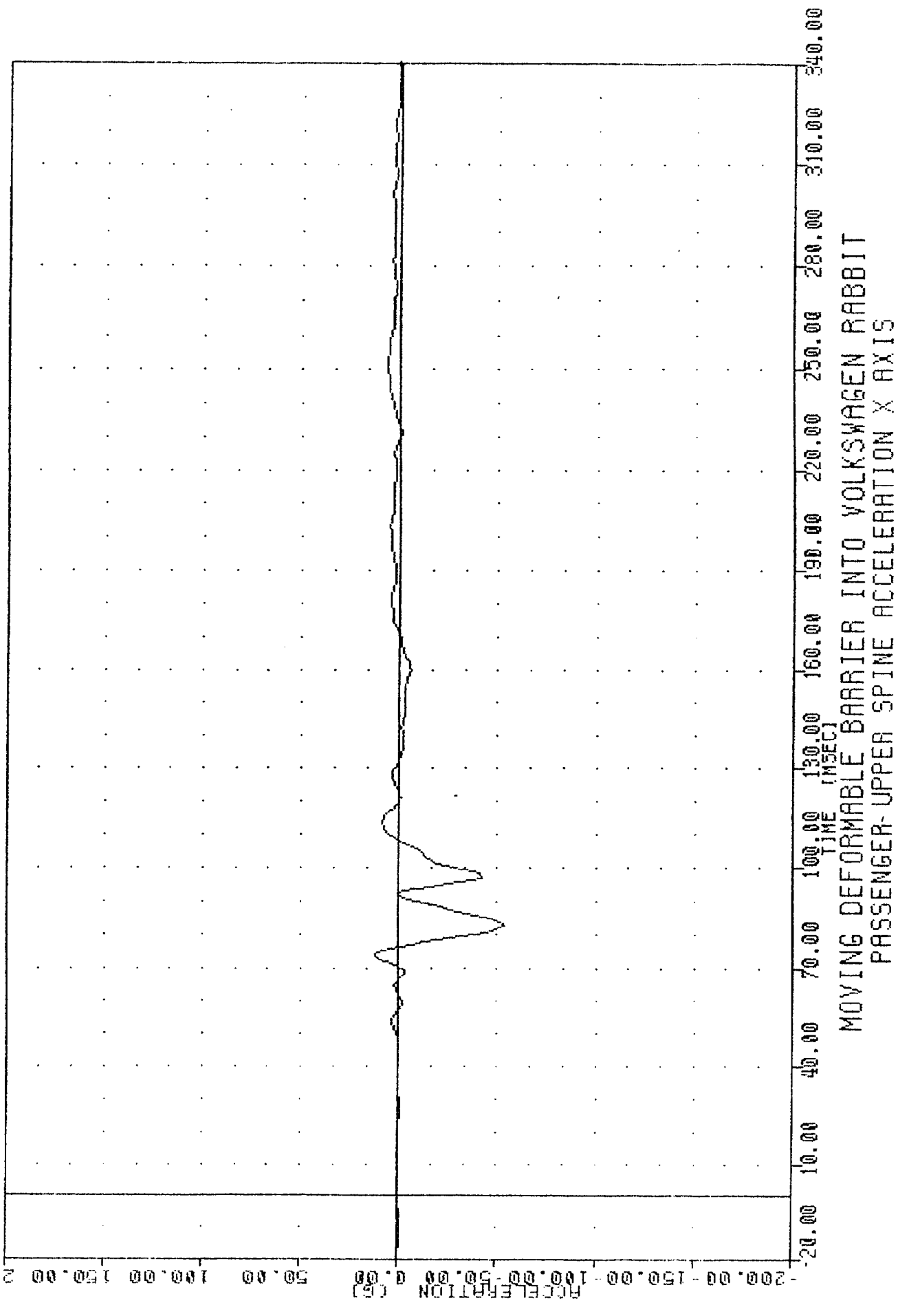
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Z AXIS

THC [REDACTED], 831027 [REDACTED] PLOT DATE 31-OCT-83 13:54:39
 EVALUATION OF MOD VN FLEET
 833000000000
 HEADS3
 FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = 0.102 39.50 , 113.61 e 90.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD RESULTANT

TRC [REDACTED], 031027 [REDACTED] PLOT DATE 31 OCT 85 13:03:24
 EVALUATION OF MOD YW FLEET
 83300000000
 T01XG3
 FILTER = HSR1 136/ 189/ -50
 MIN. MAX VALUES = 81.88, 11.58 e 73.13



TRC 031027 PLOT DATE 31 OCT 85 15:43:32

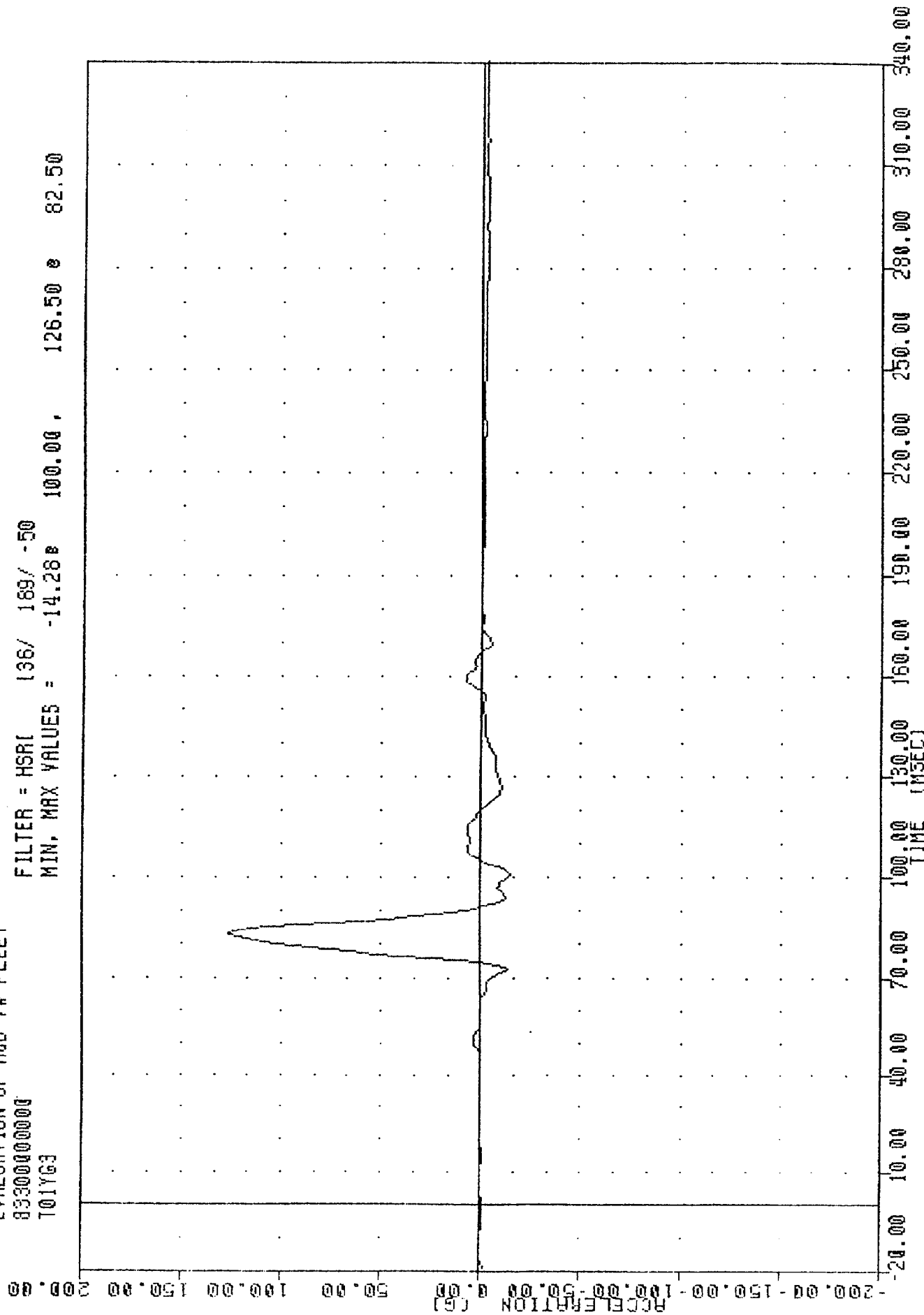
EVALUATION OF MOD YW FLEET

833000000000

T01YG3

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -14.28 100.00 , 126.50 82.50



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

TRC 831027 31-DEC-83 13:55:24

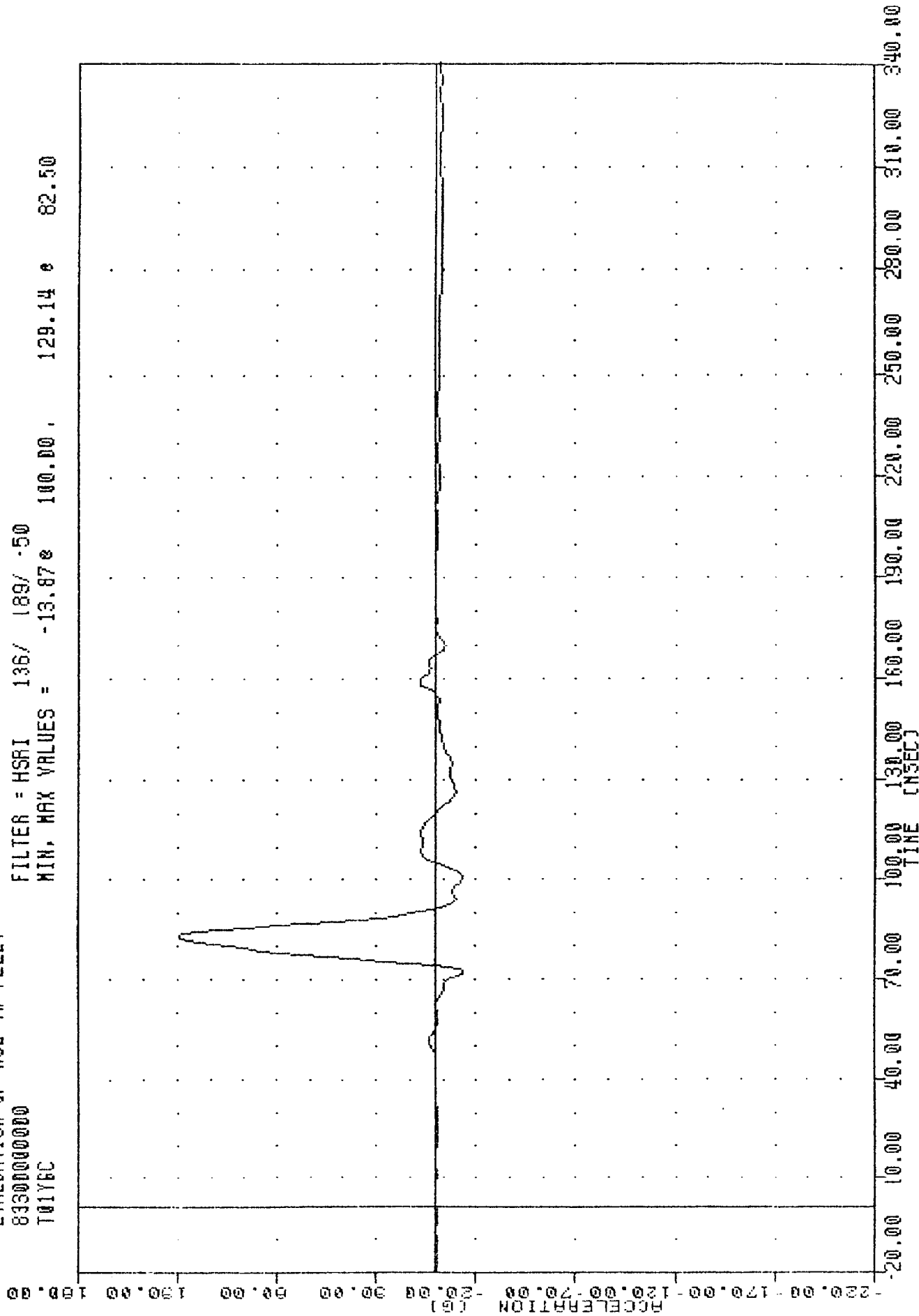
EVALUATION OF MOD VN FLEET

83300000000

T01Y6C

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -13.87 100.00 129.14 82.50



TRC 031027 PLOT DATE 31 OCT 83 13:53:24

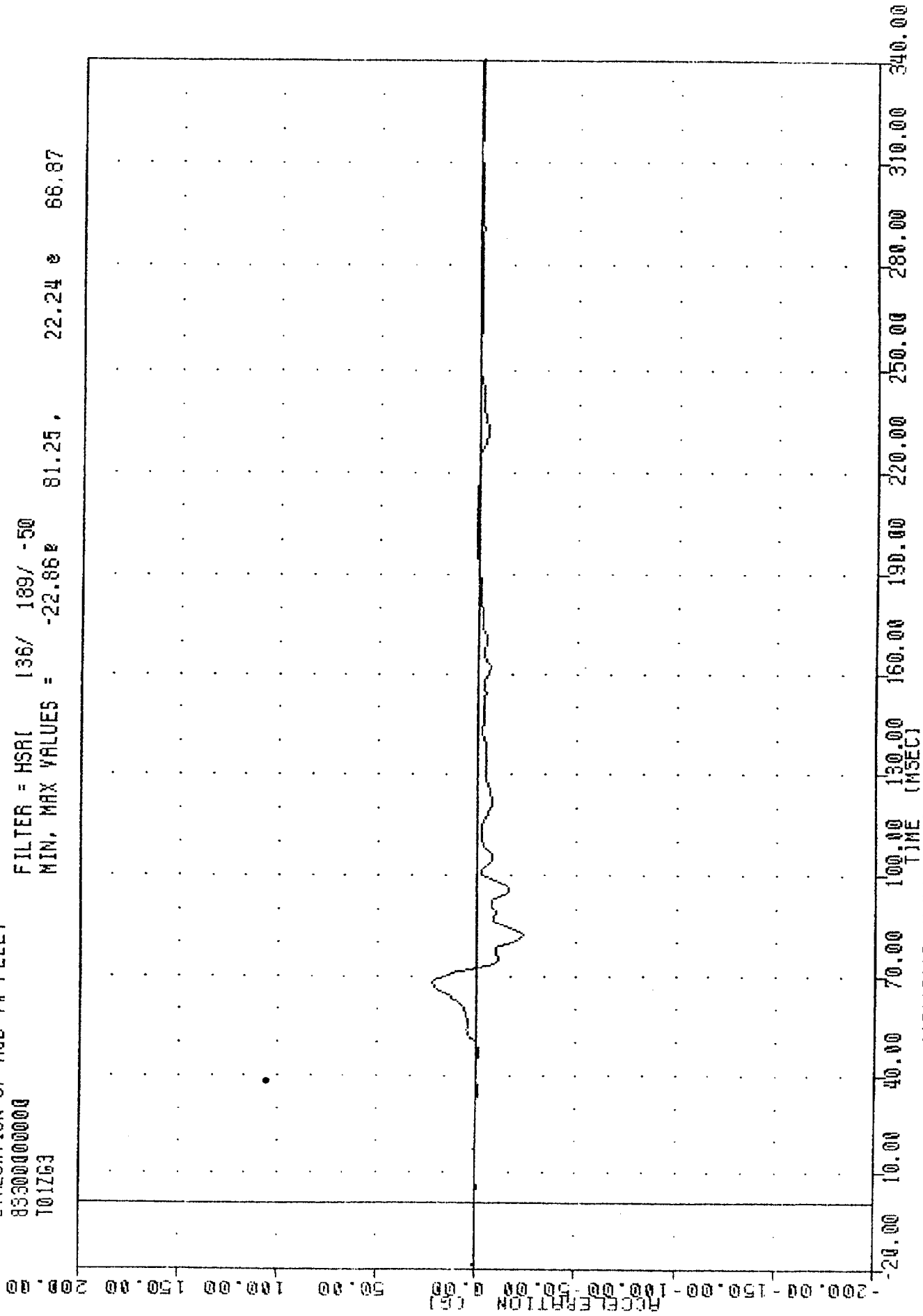
EVALUATION OF MOD YW FLEET

853000000000

T01ZG3

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -22.86 81.25, 22.24 66.87



TRC 833027, 31 OCT 83 13:55:24

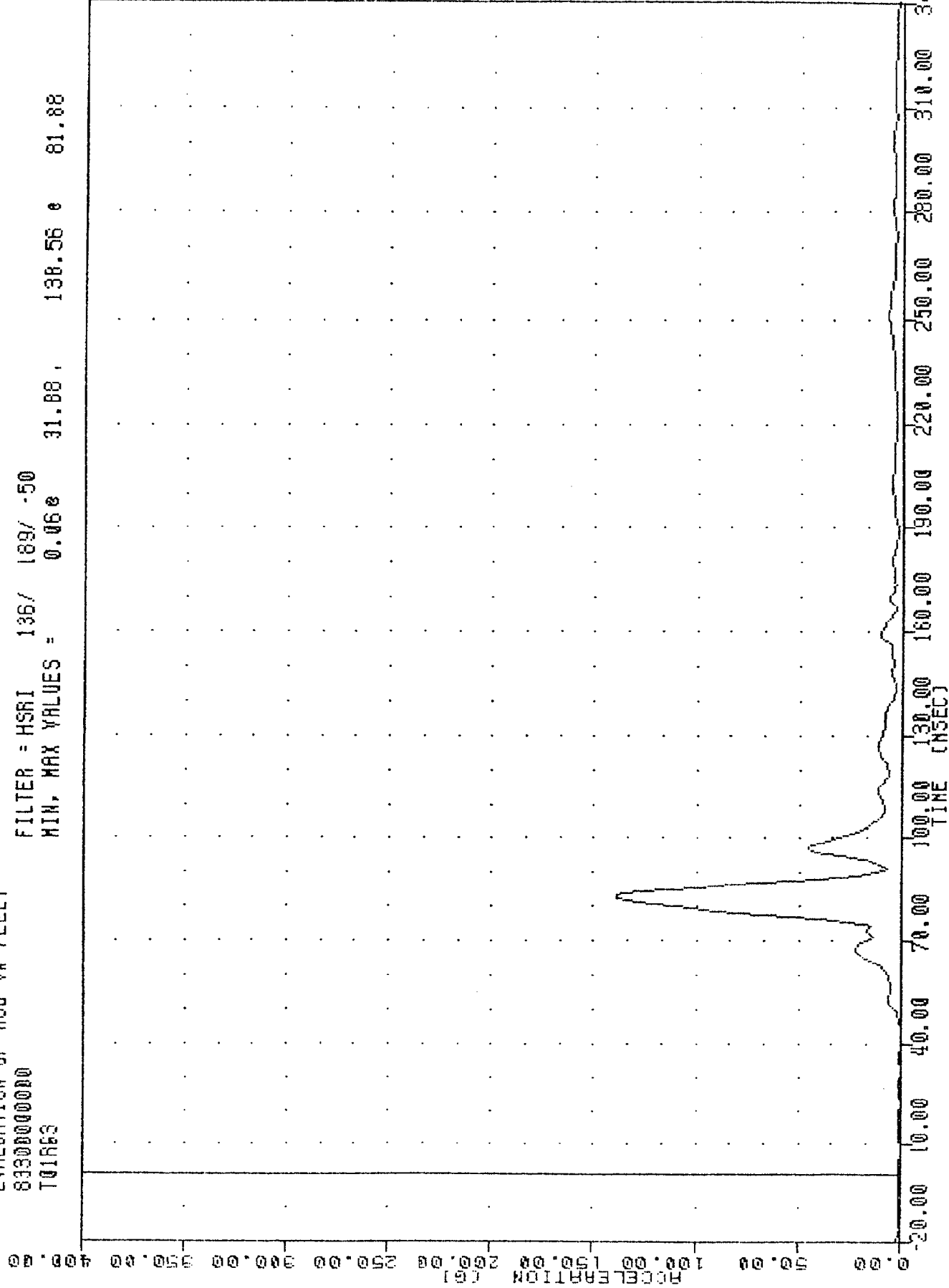
EVALUATION OF MOD VW FLEET

833000000000

T01R63

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.068 31.88 138.56 81.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT

TAC

031027

PLOT DATE

31 OCT-83

13:06:35

EVALUATION OF MOD VN FLEET

833000000000

T01R63

FILTER = HSRI

136/ 189/ -50

MIN. MAX VALUES =

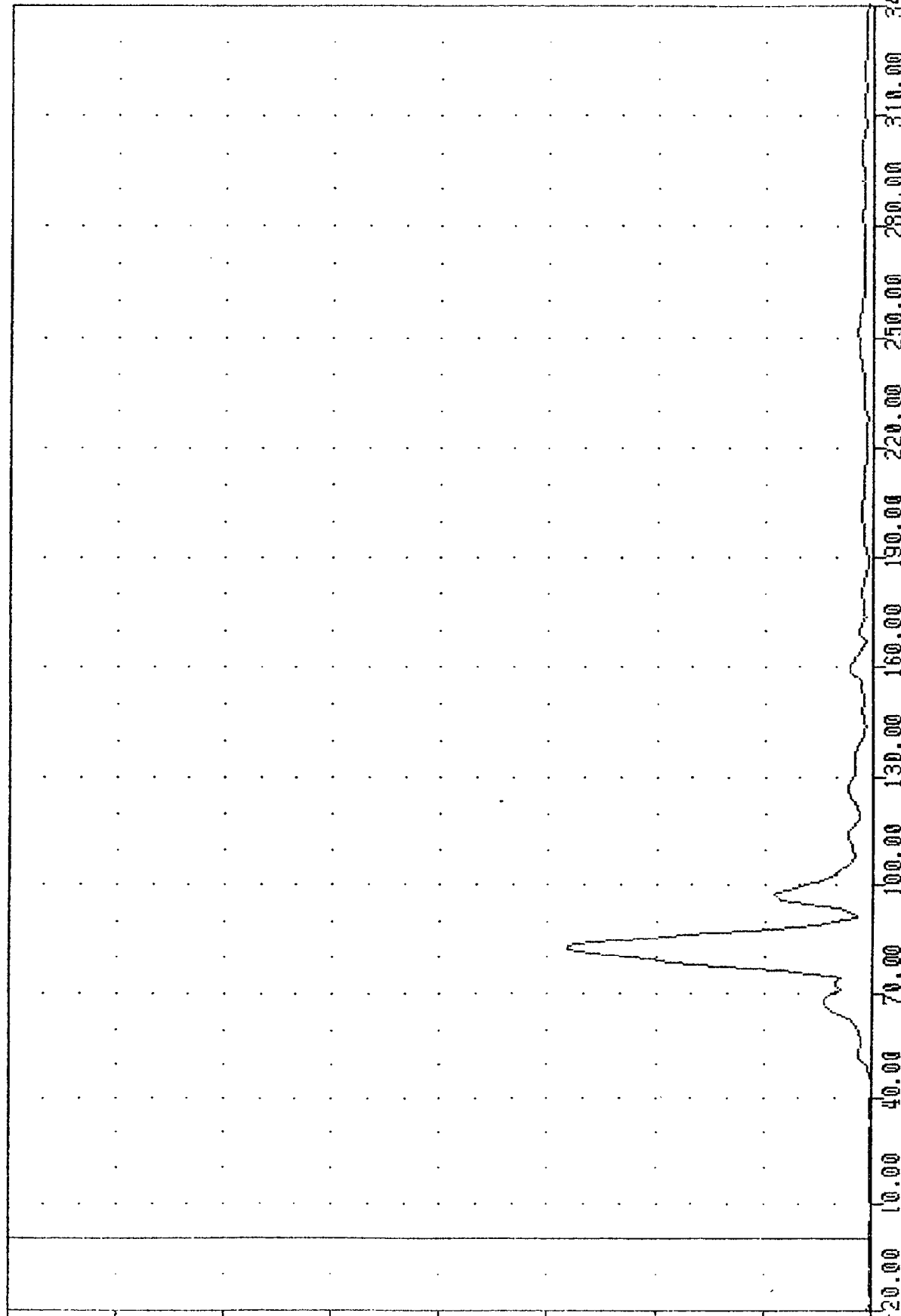
0.06e

31.88,

140.92 e

82.50

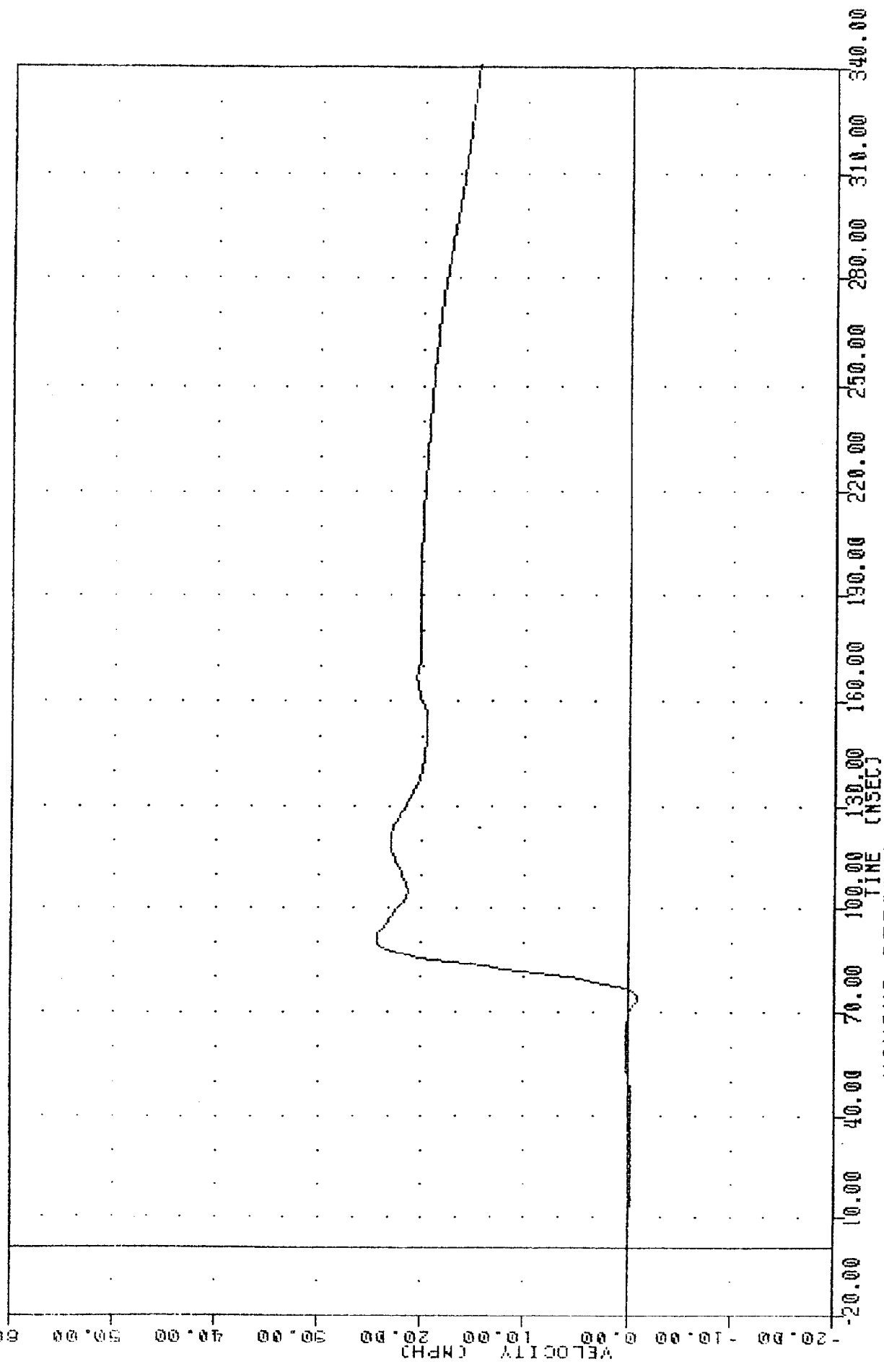
ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT USING T01YGC

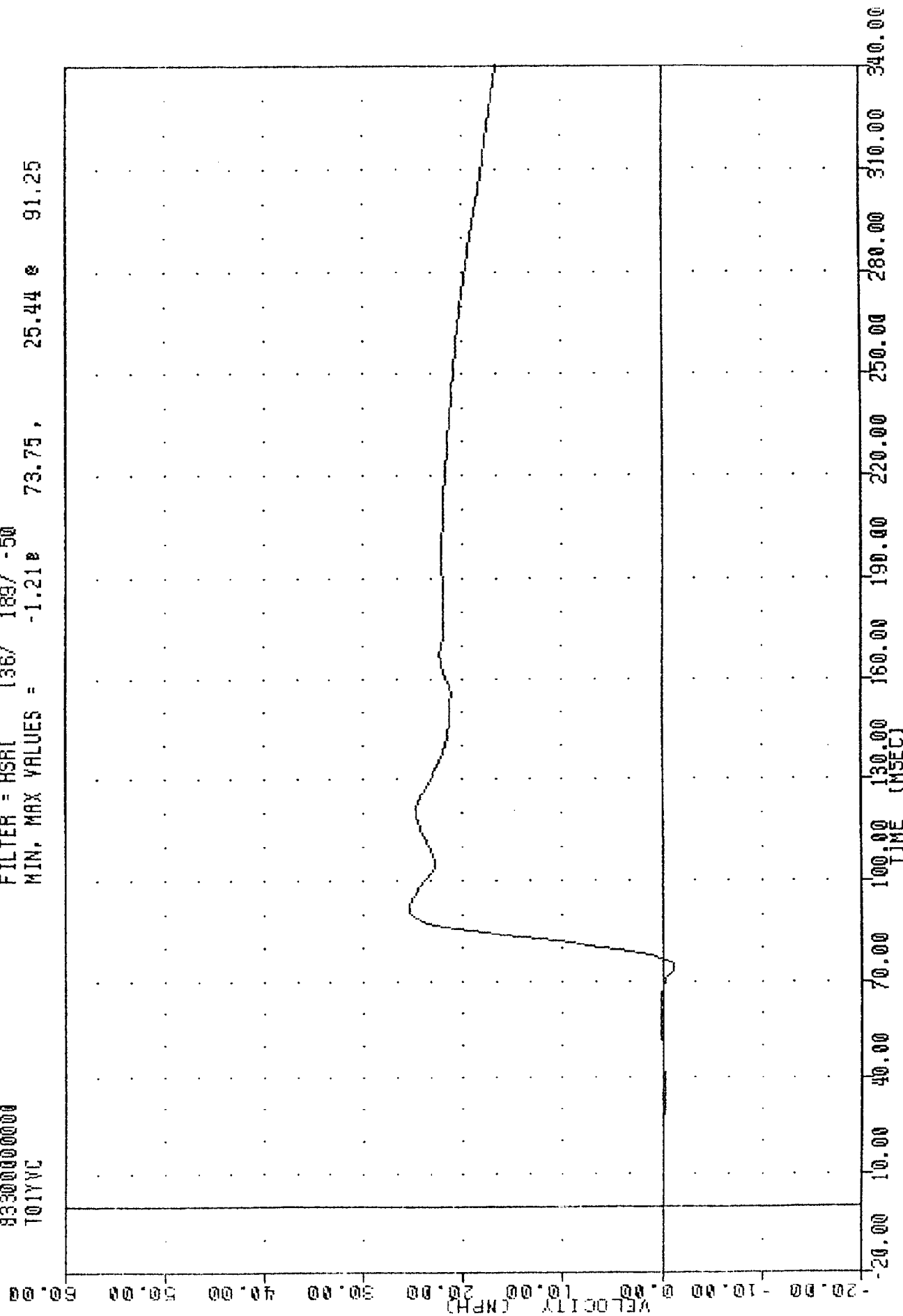
TRC [REDACTED], 631027 [REDACTED] PLOT DATE 1-NOV-83 08:35:27
 EVALUATION OF MOD VW FLEET
 63300000000
 T01YV3

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -1.058 73.75, 24.37 e 90.62



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01Y63

TRC 831027 PLOT DATE 1-NOV-83 08:35:27
 EVALUATION OF MOD VN FLEET
 933000000000
 T01YVC
 FILTER = HSRL 136/ 189/ -50
 MIN. MAX VALUES = -1.21 73.75, 25.44 91.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01YVC

TRC 831027 PLOT DATE 31-UL-83 13:55:24

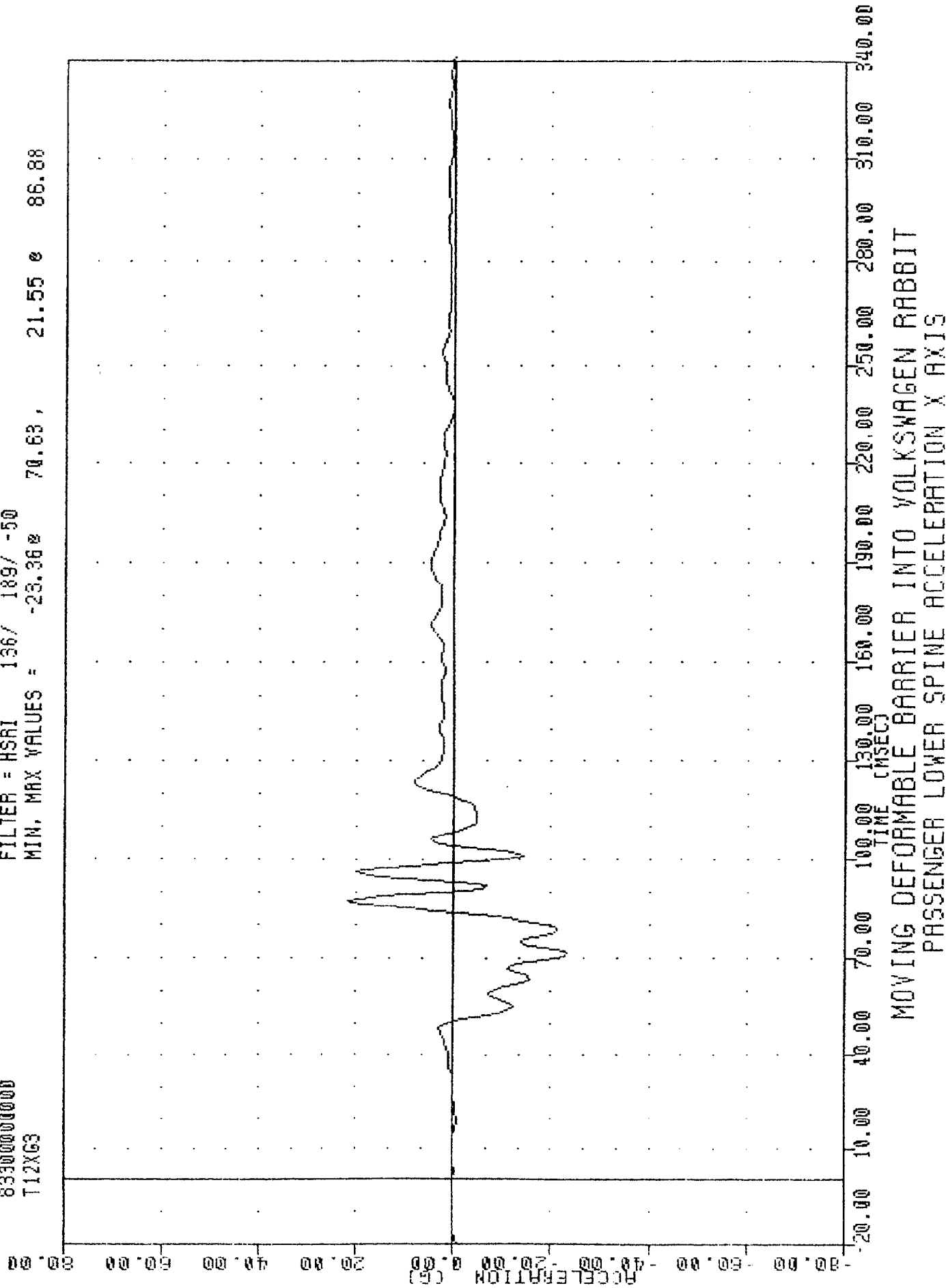
EVALUATION OF MOD VW FLEET

833000000000

T12XG3

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -23.36 70.63, 21.55 86.88



TAC 831027 PLOT DATE 31-OCT-83 13:55:24

EVALUATION OF MOD VN FLEET

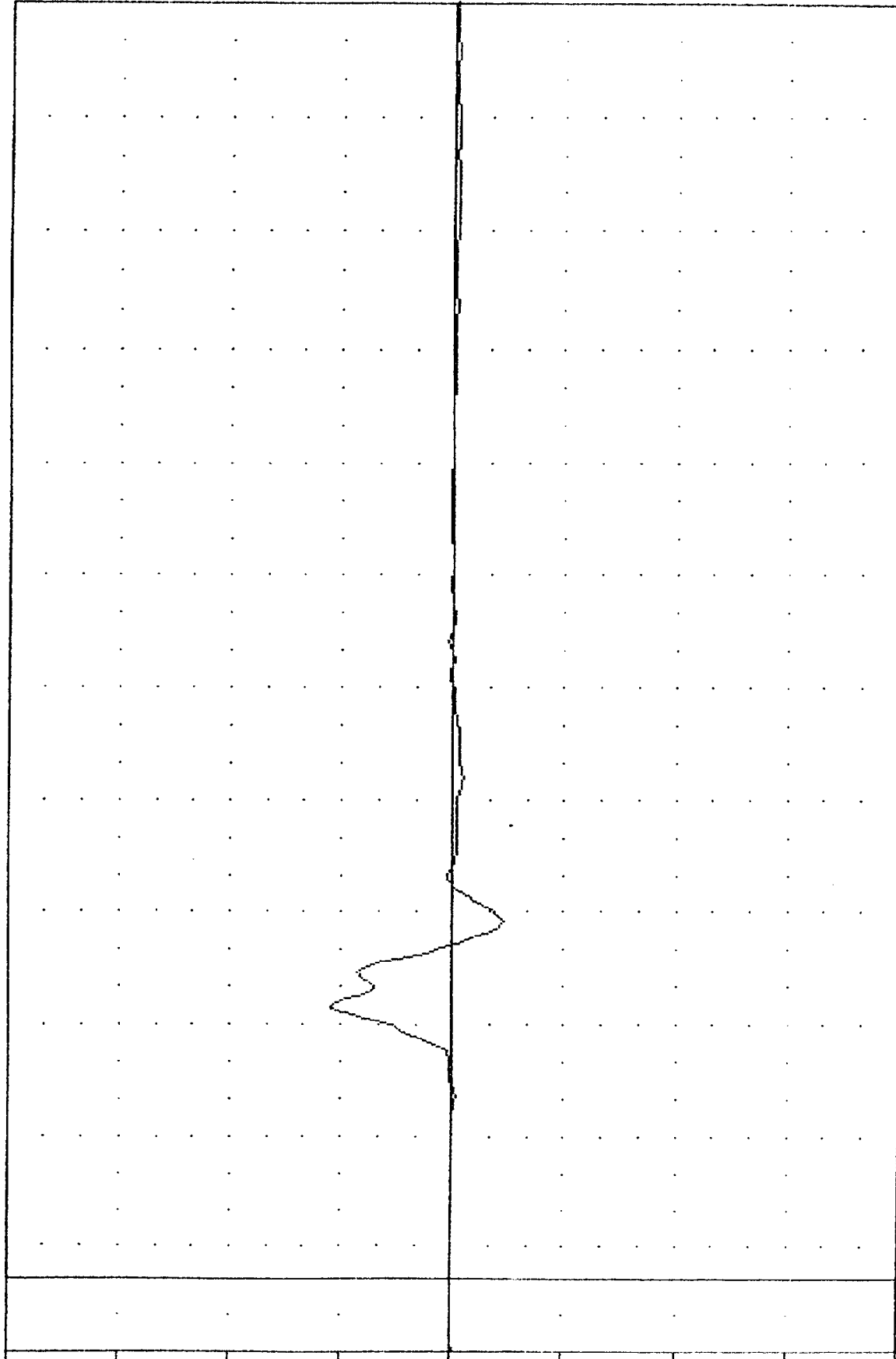
833000000000

T12Y63

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -40.74 96.83 98.30 74.37

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
PASSENGER LOWER SPINE ACCELERATION Y AXIS

TPL 831027 PLOT DATE 31-OCT-83 13:55:24

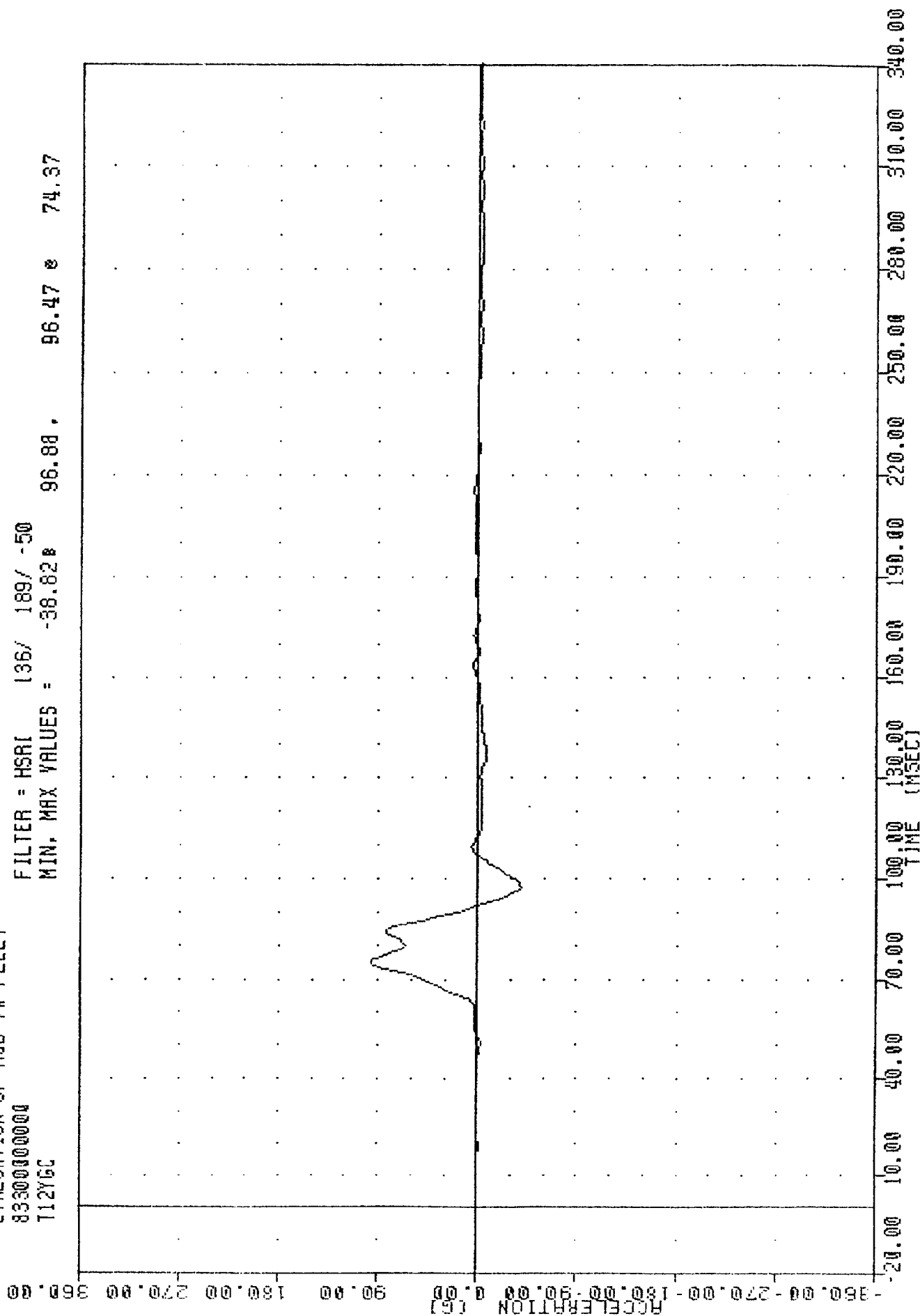
EVALUATION OF MOD YN FLEET

83300000000

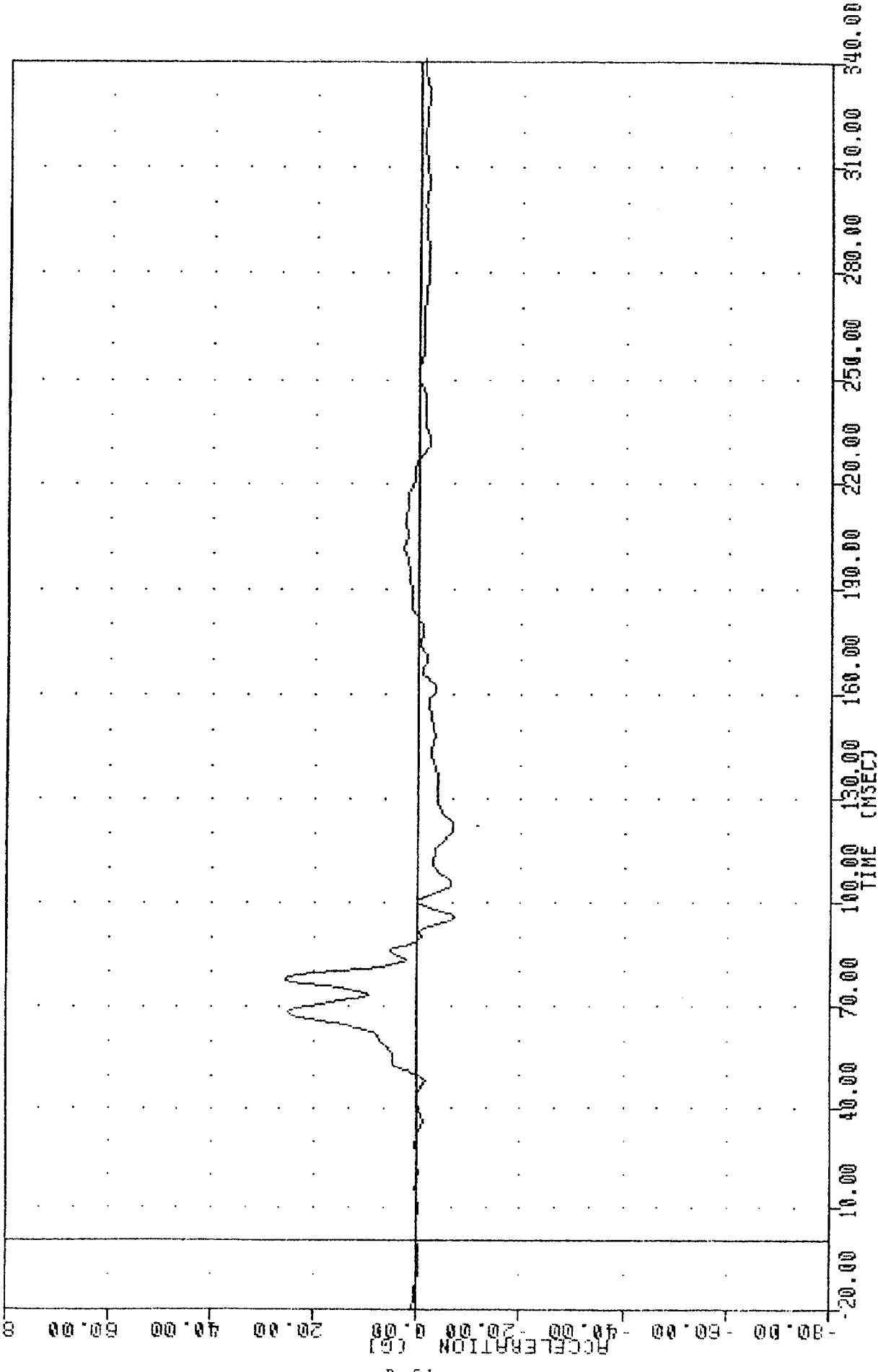
T12Y6C

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -38.82 96.88 96.47 74.37

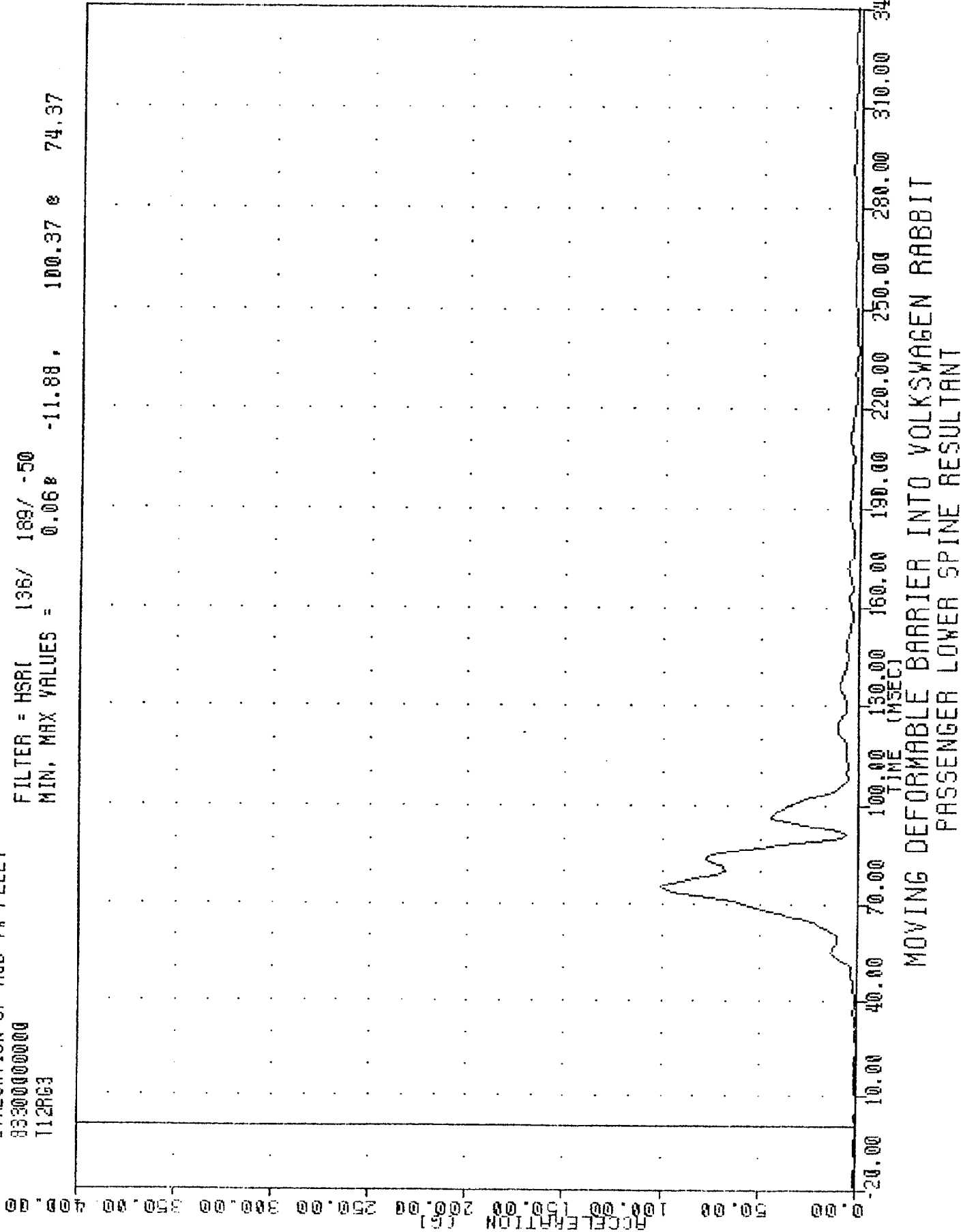


TRC [REDACTED], 001027 [REDACTED] PLOT DATE [REDACTED] 31 OCT-85 [REDACTED] 13:00:24 [REDACTED]
 EVALUATION OF MDD VW FLEET
 833000000000
 T12763
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -7.03e 95.00, 25.74 e 76.88



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

TFC [REDACTED], [REDACTED] 027 [REDACTED] PLOT DATE 31-DEC-83 13:55:24
 EVALUATION OF MOD VN FLEET
 833000000000
 T12R63
 FILTER = HSR 136/ 189/ -50
 MIN. MAX VALUES = 0.068 -11.88, 100.37 & 74.37



TRC 831027 PLOT DATE 31-OCT-83 13:56:35

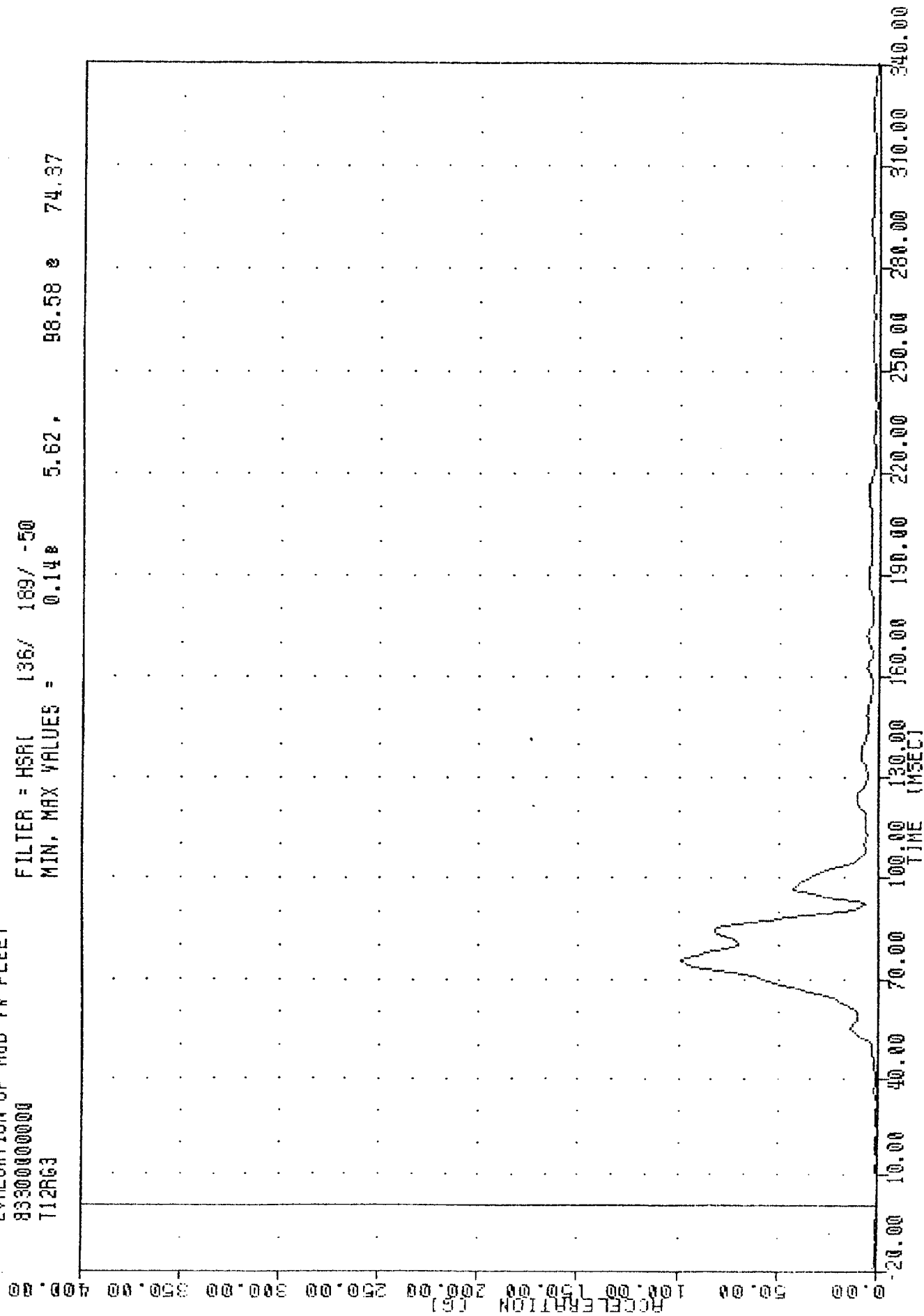
EVALUATION OF MOD YW FLEET

833000000000

T12R63

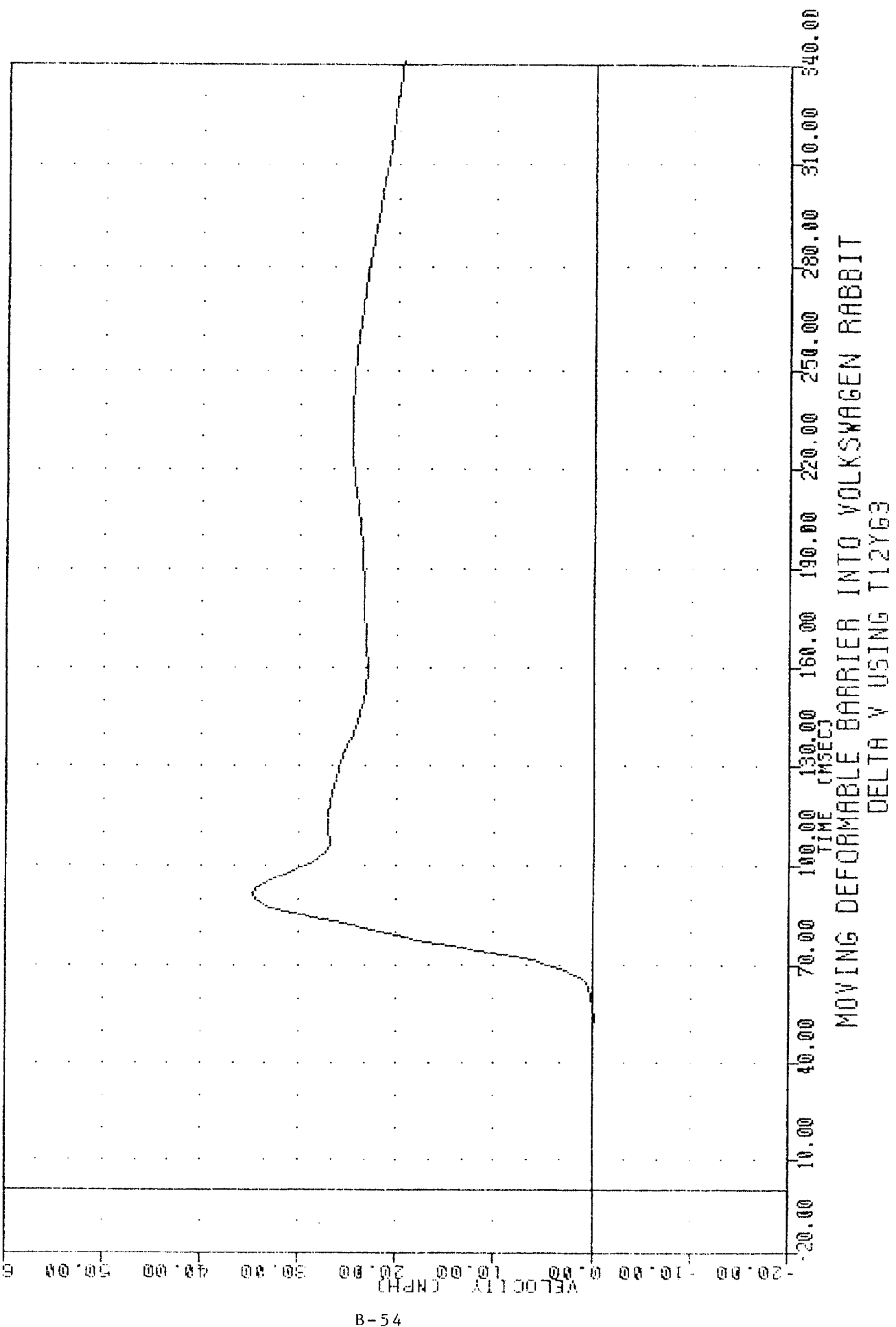
FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = 0.14g 5.62g 98.58g 74.37

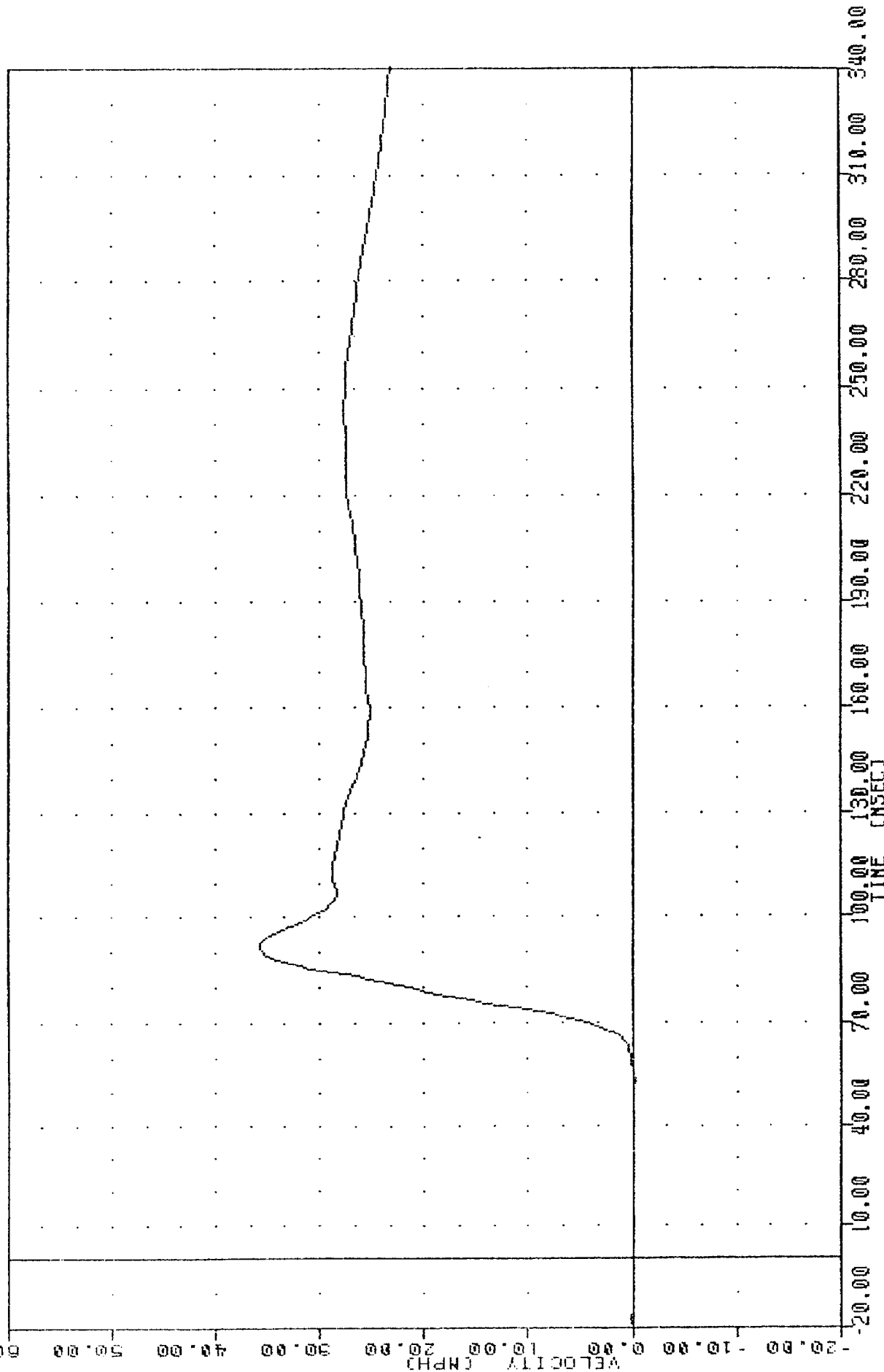


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE RESULTANT USING T12YGC

TPC [REDACTED], 03/02/87, PLOT DATE 1 NOV-85 08:30:27
 EVALUATION OF MOD VN FLEET
 833000000000
 T12YV3
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.23e 53.12, 34.63 e 90.62



TAC 831027 1-NOV-83 08:35:27
 EVALUATION OF MOD VW FLEET
 83300000000
 T12YVC
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.23 52.50 35.69 91.25

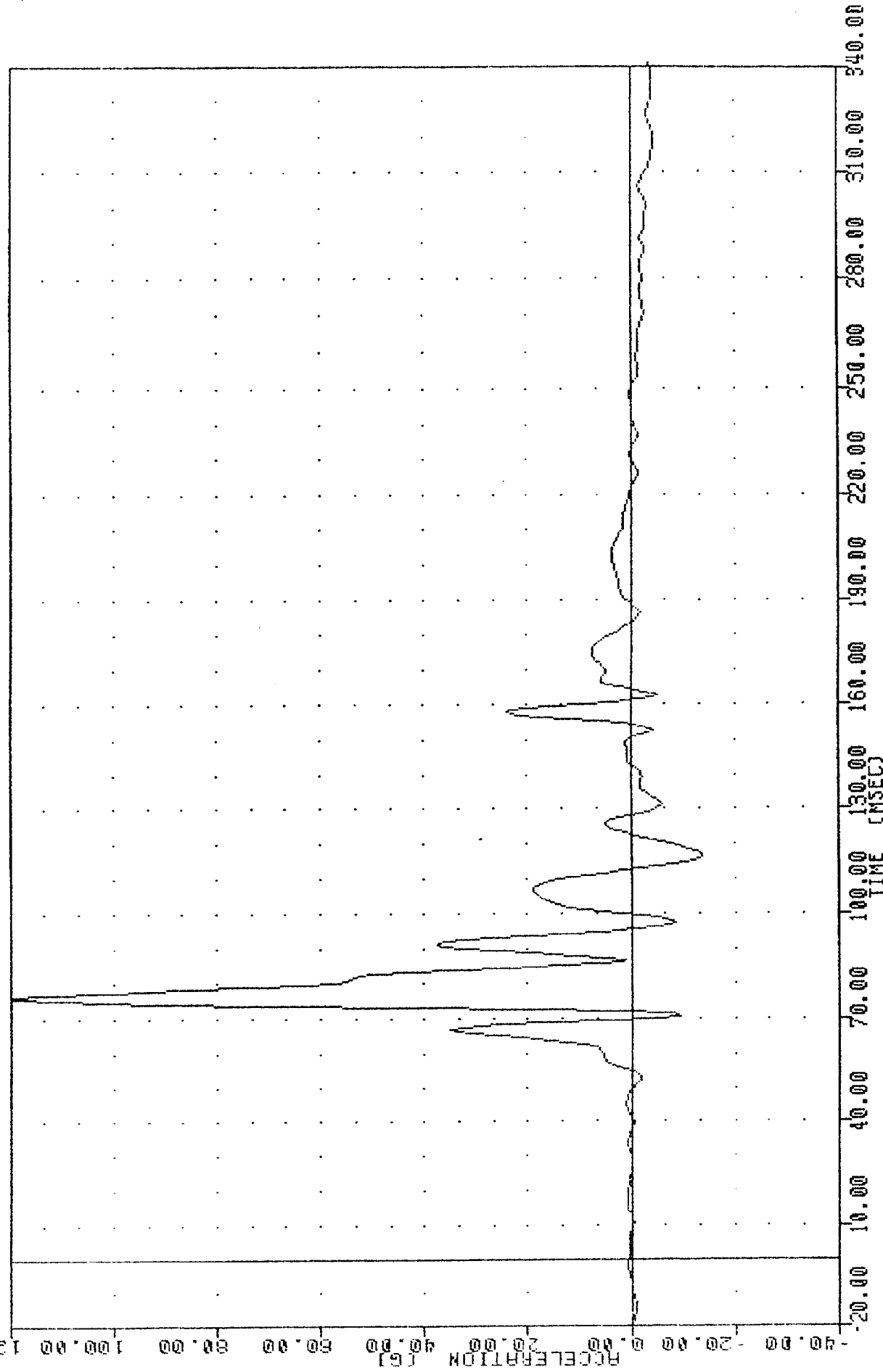


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YGC

TRC 831027, 831027, 31-OCT-83 15:43:32

EVALUATION OF MOD VW FLEET
833000000000
LURYG3

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -13.93g 116.25, 120.86 g 75.62



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

TRC

831027

PLOT DATE

1 NOV 83

08:35:27

EVALUATION OF MOD YW FLEET

83300000000

LURYV3

FILTER = HSRI 136/ 189/ -50

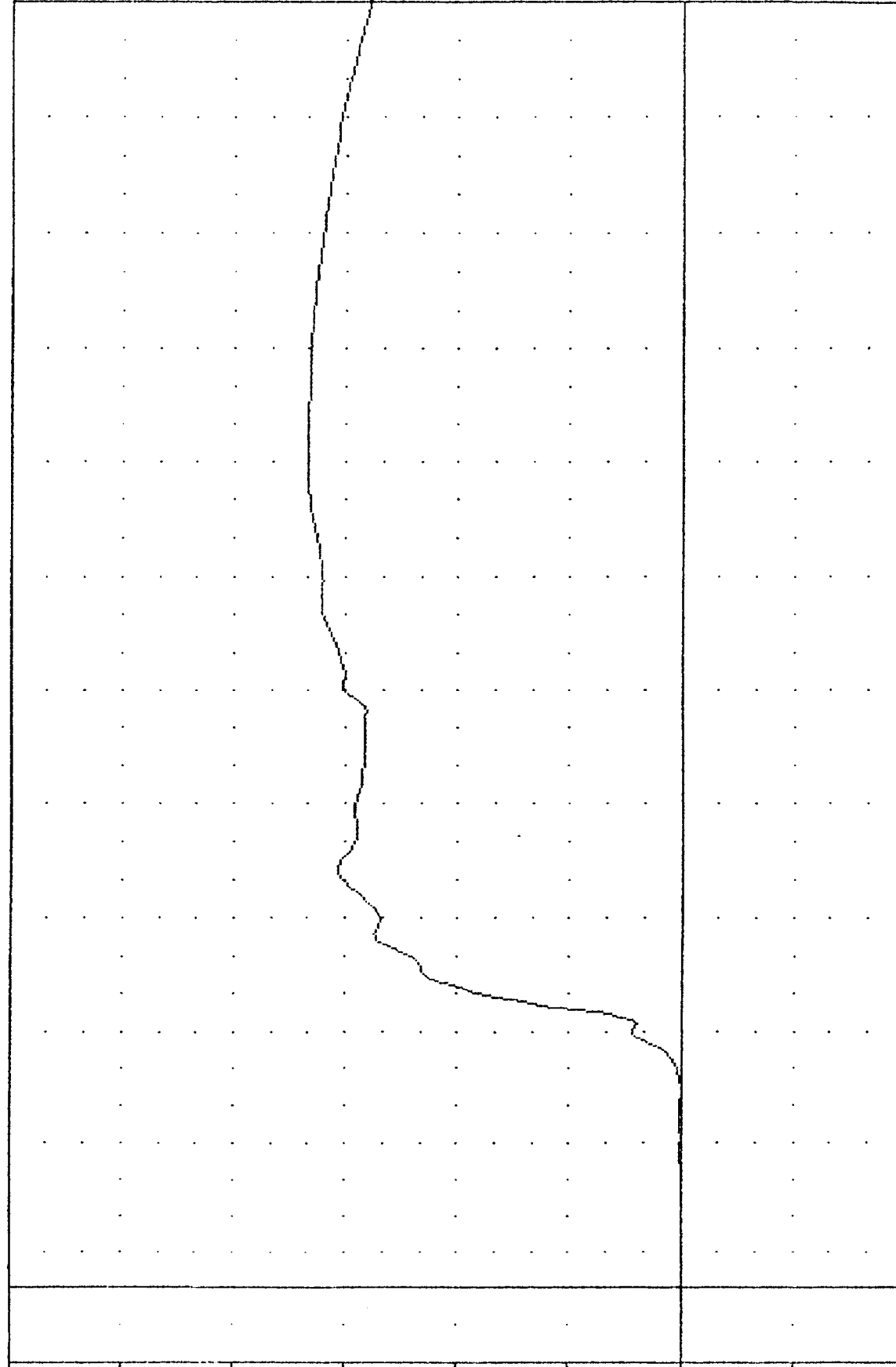
MIN, MAX VALUES = -0.17e

-6.88,

33.50 e

220.63

VELOCITY (MPH)



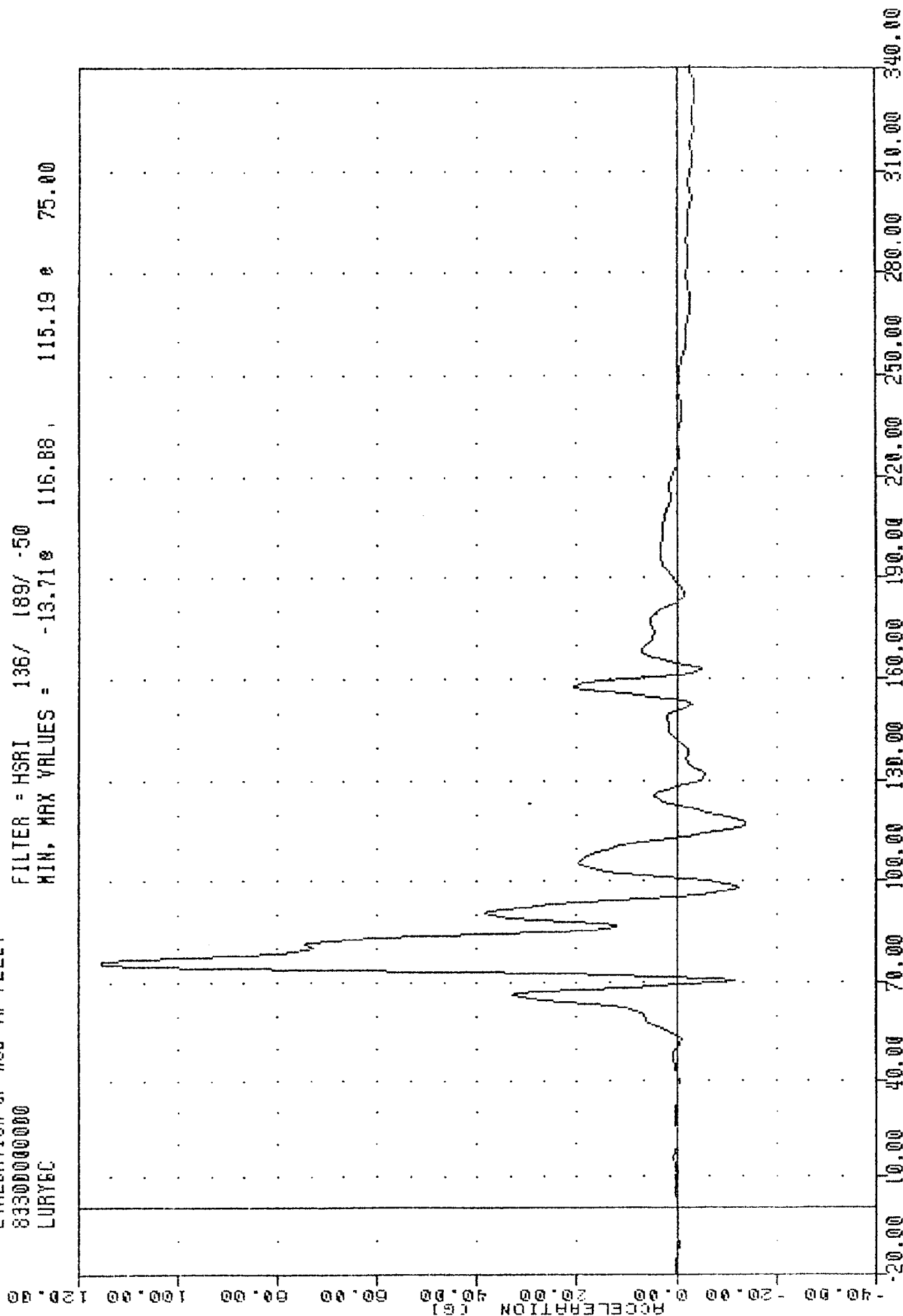
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYG3

TAC 831027 31-OCT-83 15:49:32

EVALUATION OF MOD VN FLEET
833000000000
LURYEC

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -13.718 116.88 115.19 75.00



TRC

831027

PLOT DATE

1-MAY-83

08:35:27

EVALUATION OF MOD VW FLEET

83300000000

LURYVC

FILTER = HSRI 136/ 189/ -50

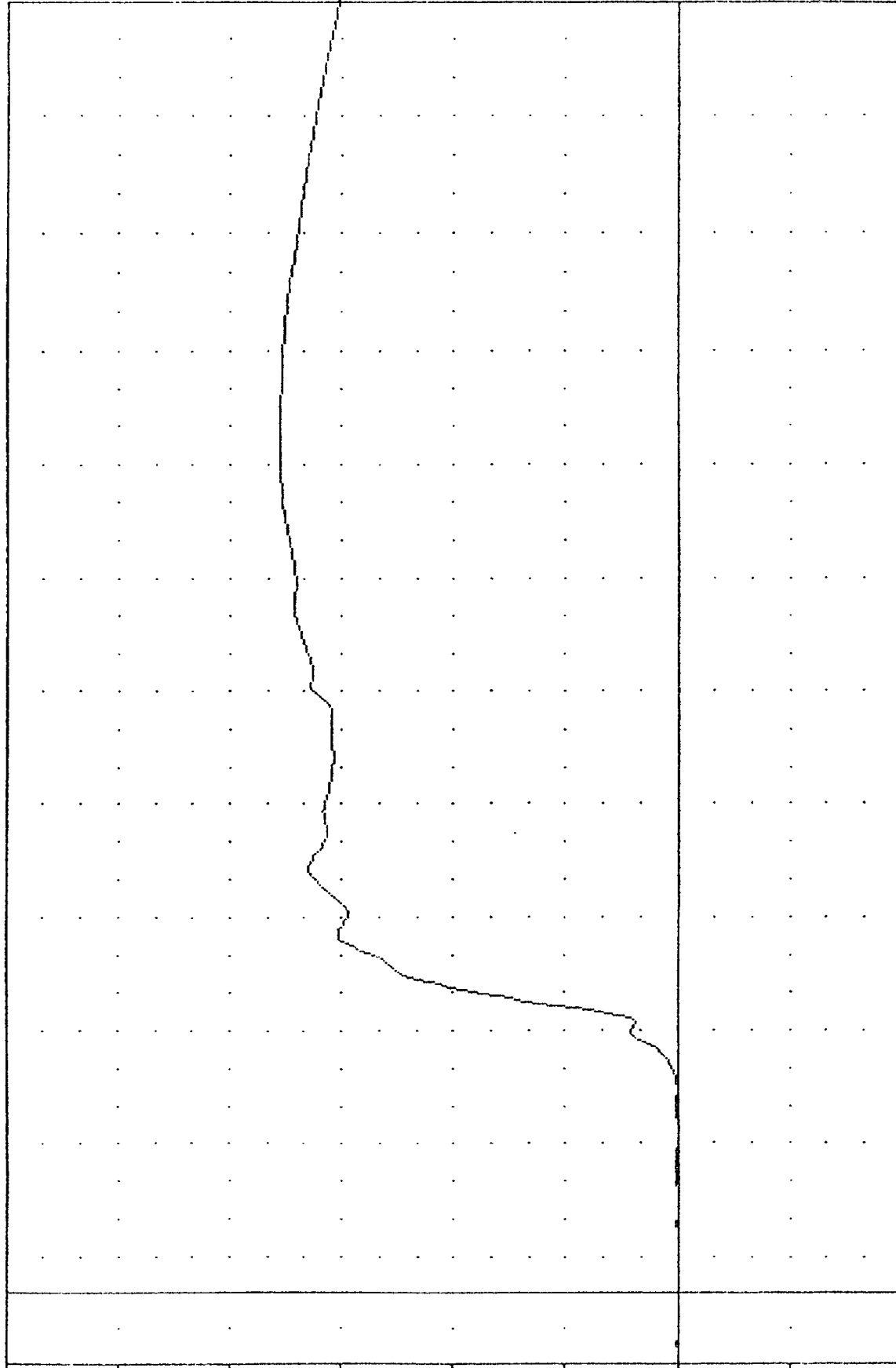
MIN. MAX VALUES = -0.07e

2.50,

35.60 e

221.88

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING LURY6C

TRC 831027 PLOT DATE 31-OCT-83 15:48:32

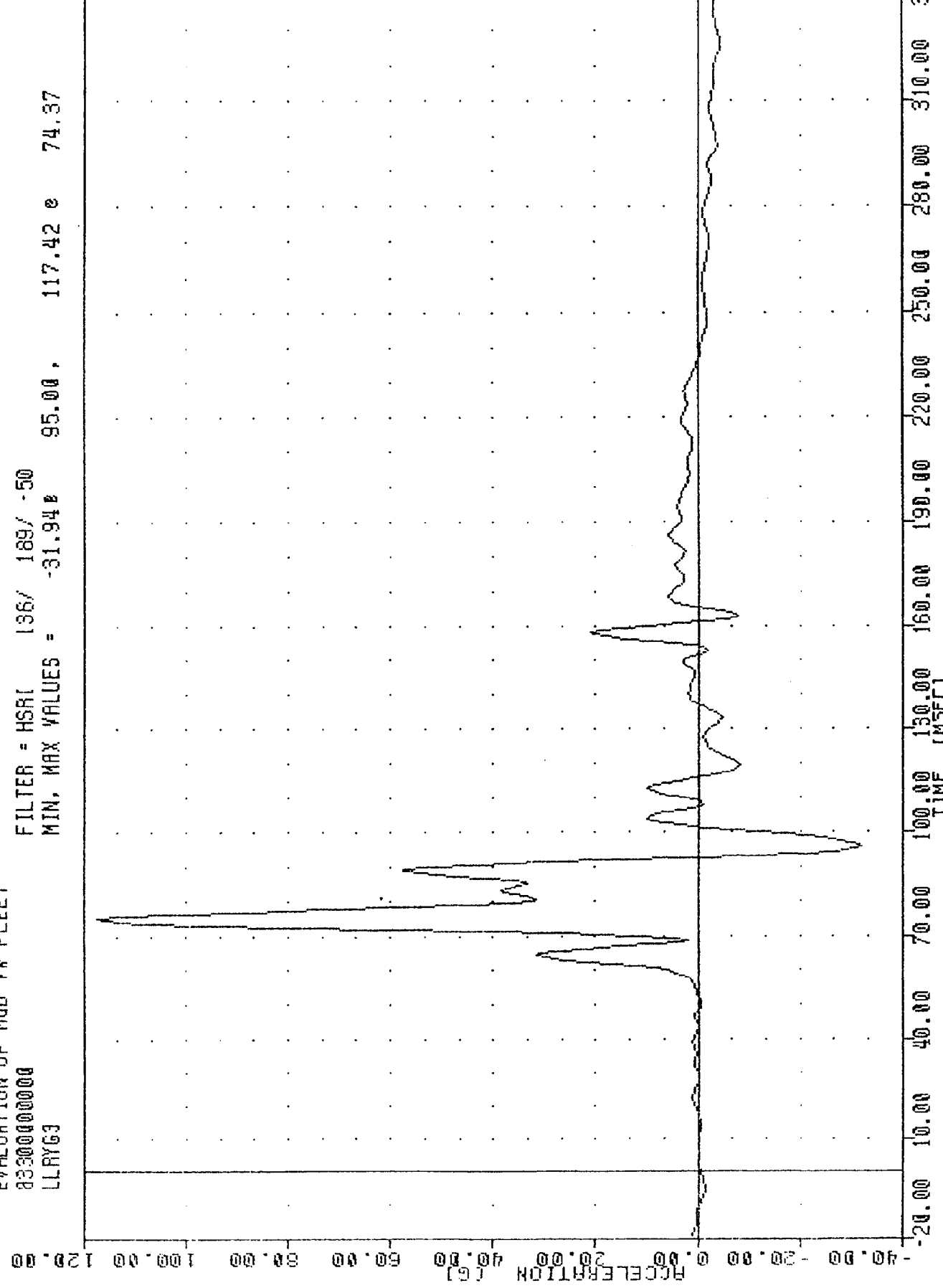
EVALUATION OF MOD VN FLEET

833000000000

LLRY63

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -31.94 95.00, 117.42 e 74.37

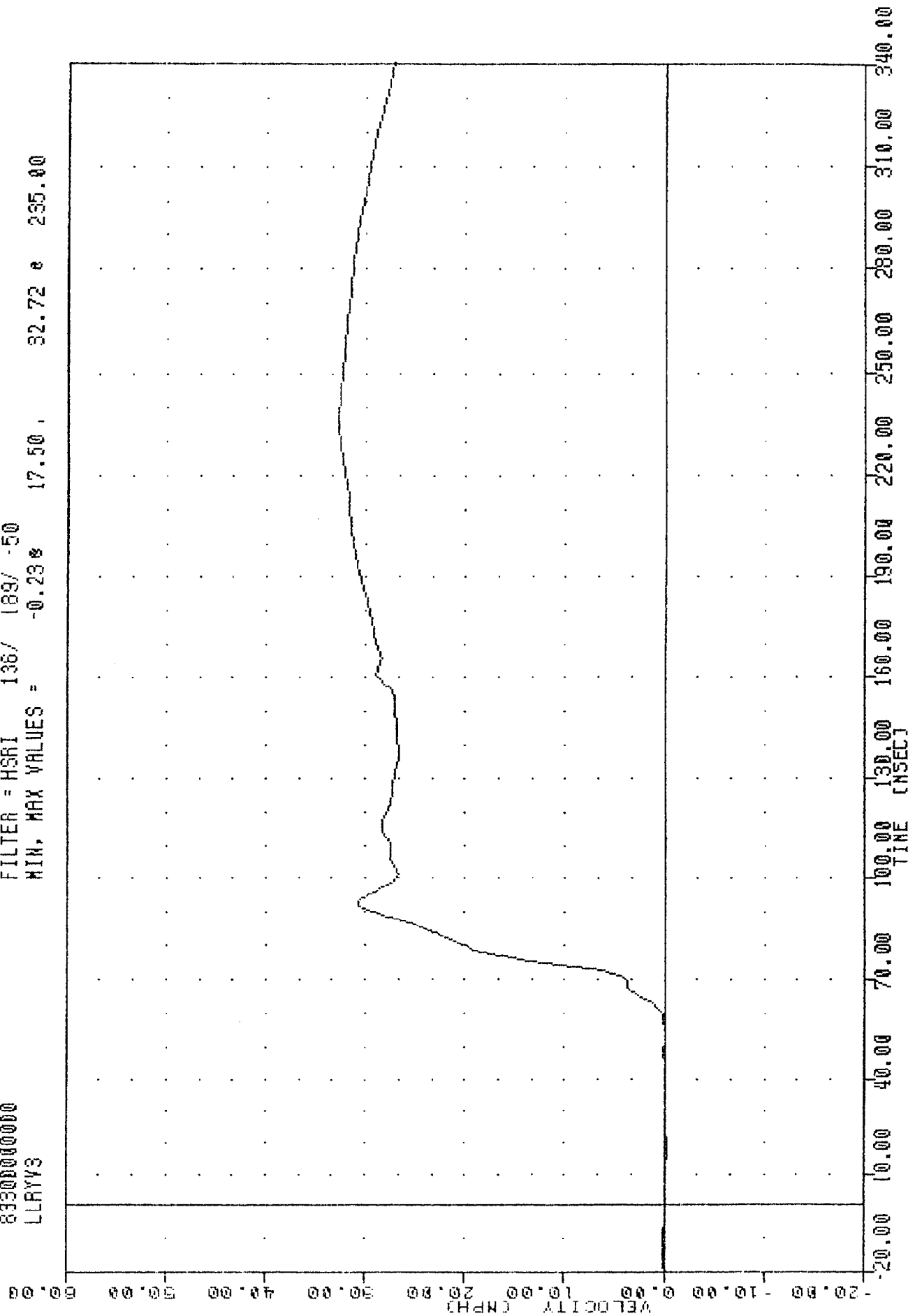


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

TRC 831027
 EVALUATION OF MOD VN FLEET
 83300000000
 LLRYV3

PLOT DATE 1-NOV-83 08:35:27

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.23 17.50 32.72 235.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYG3

TRC 831027 PLOT DATE 31-OCT-83 15:49:32

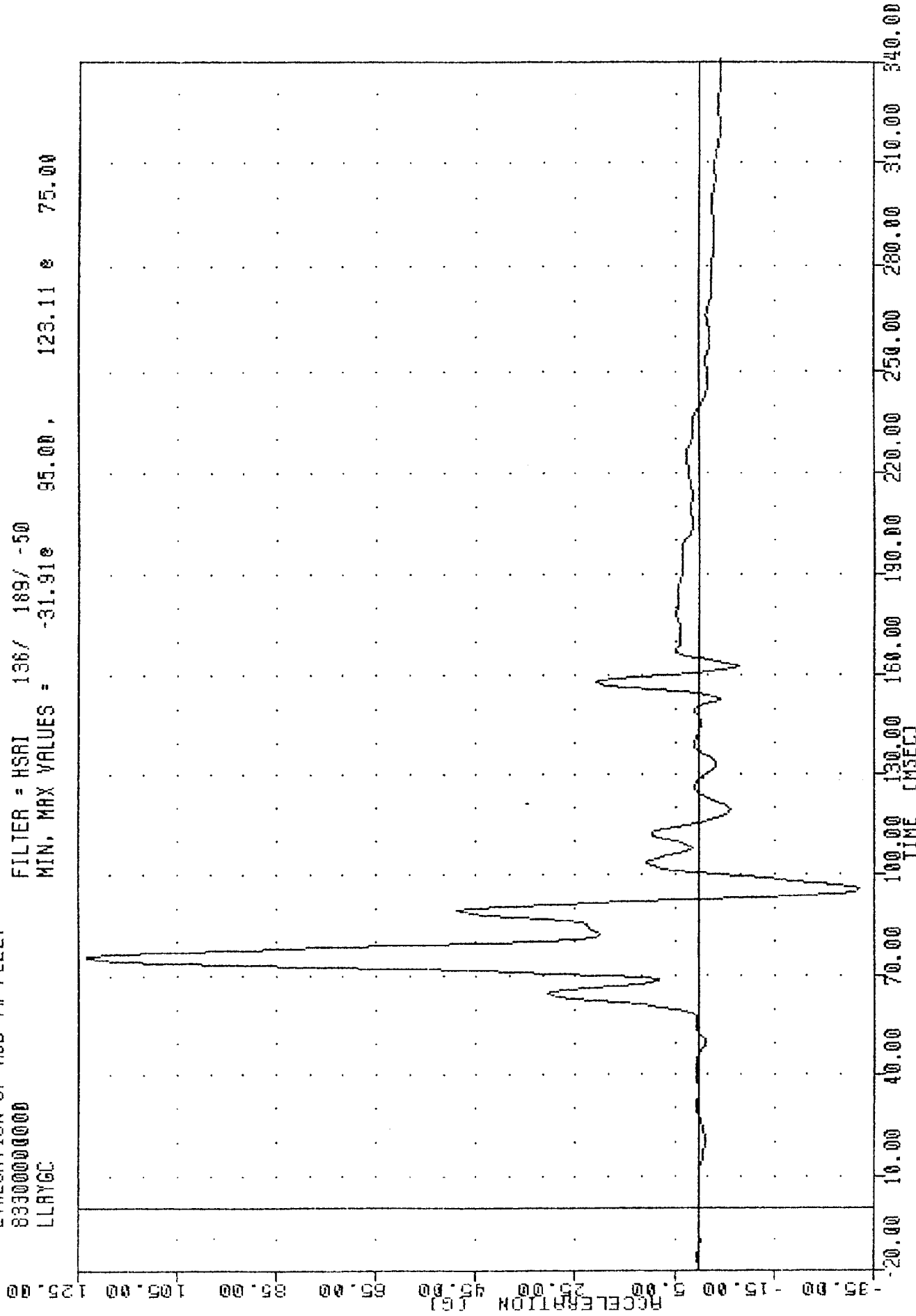
EVALUATION OF MOD VW FLEET

833000000000

LLAYGC

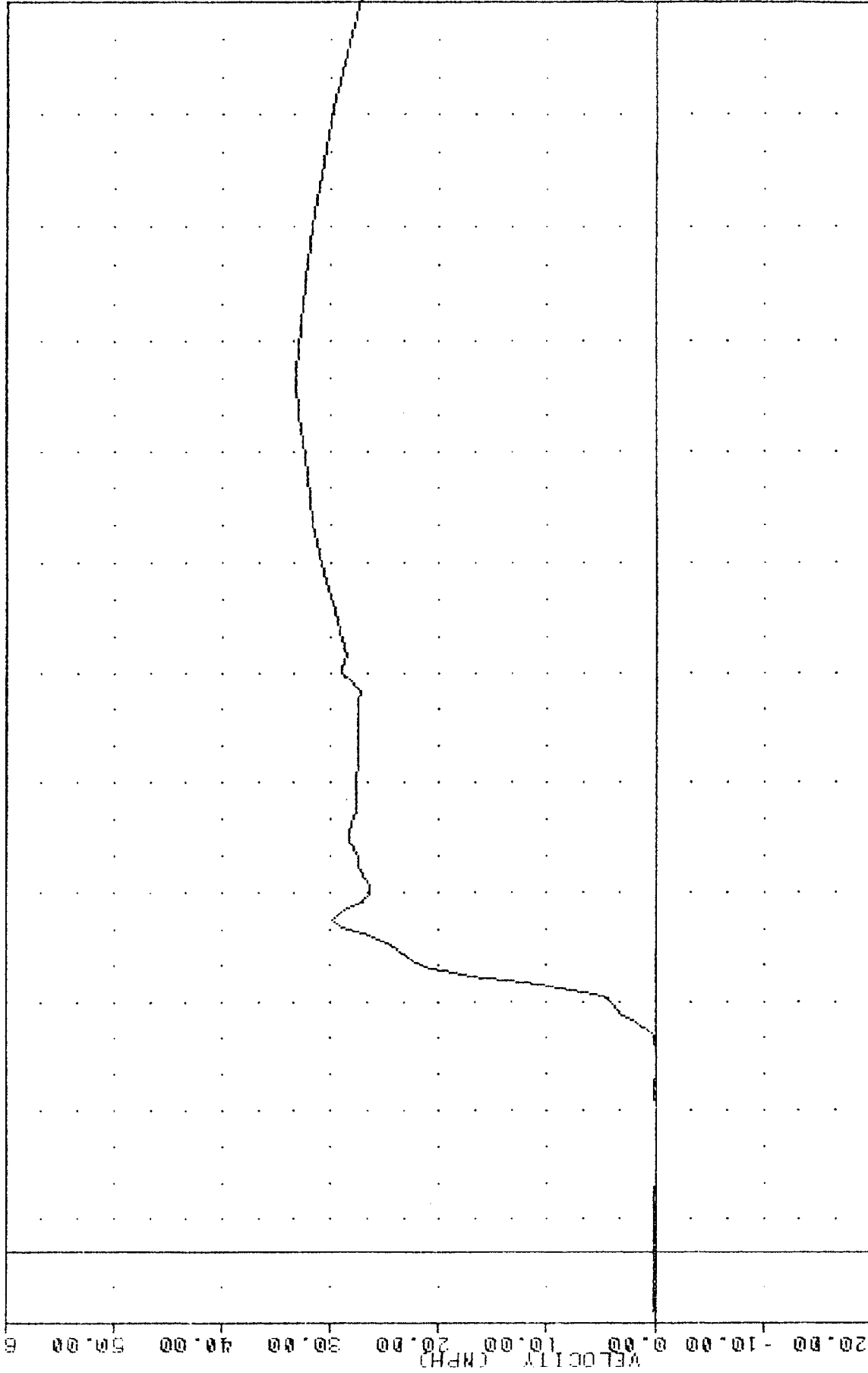
FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -31.91e 95.00, 123.11 e 75.00



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

TRC [REDACTED], 031027 [REDACTED] PLOT DATE 1 NOV 83 08:33:27
 EVALUATION OF MOD VW FLEET
 83300000000
 LLRYVC
 FILTER = HSRL 136/ 189/ -50
 MIN, MAX VALUES = -0.138 26.87, 33.20 & 239.38



-20.00 10.00 20.00 30.00 40.00 50.00 60.00
 VELOCITY (MPH)
 -20.00 -10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00
 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 LLRYGC

TRC 831027 PLOT DATE 31-OCT-83 13:56:58

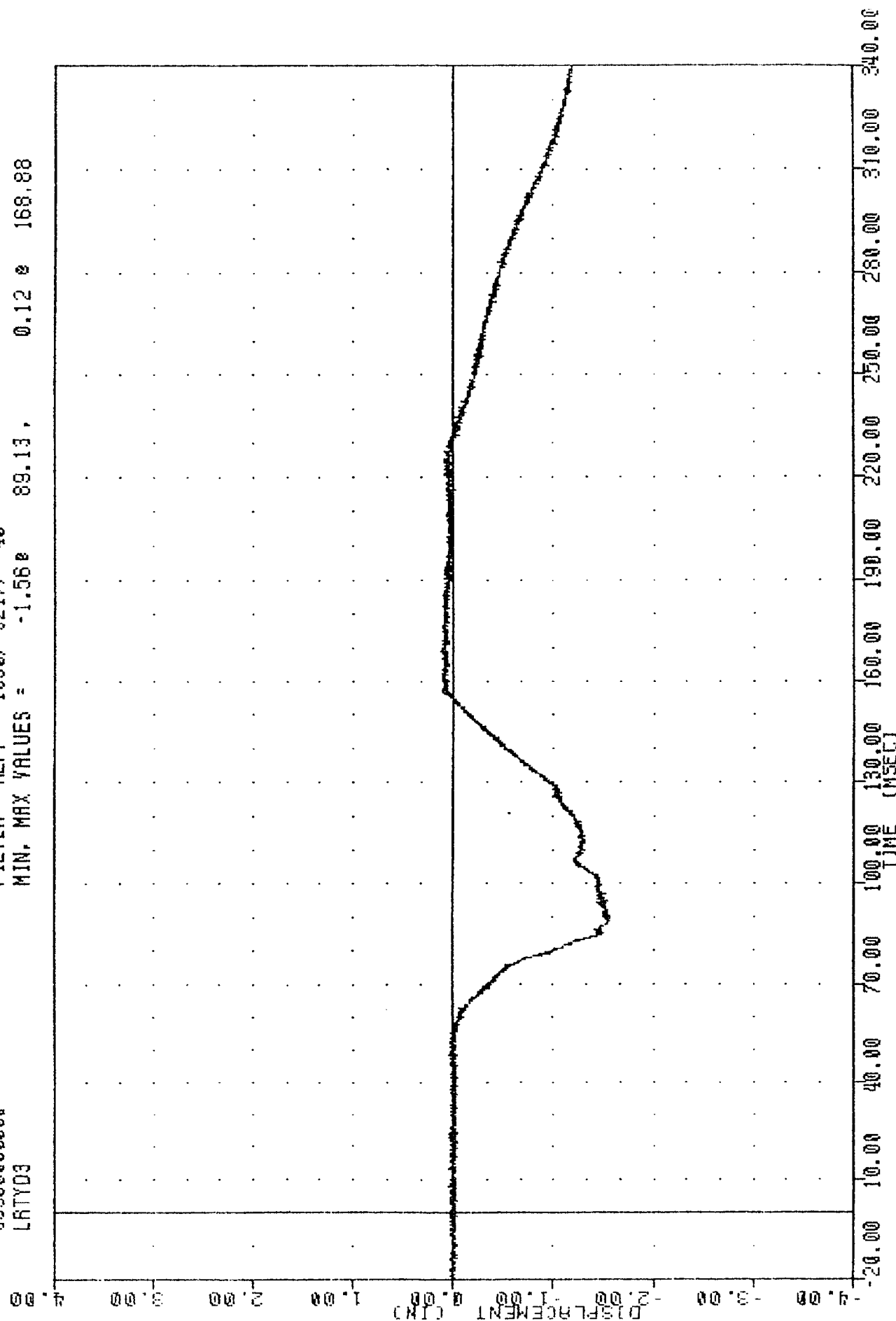
EVALUATION OF MOD VN FLEET

83300000000

LRTYD3

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -1.56e 89.13, 0.12 e 168.88



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

TRC 831027 31-ULF-83 13:56:58

EVALUATION OF MOD YW FLEET

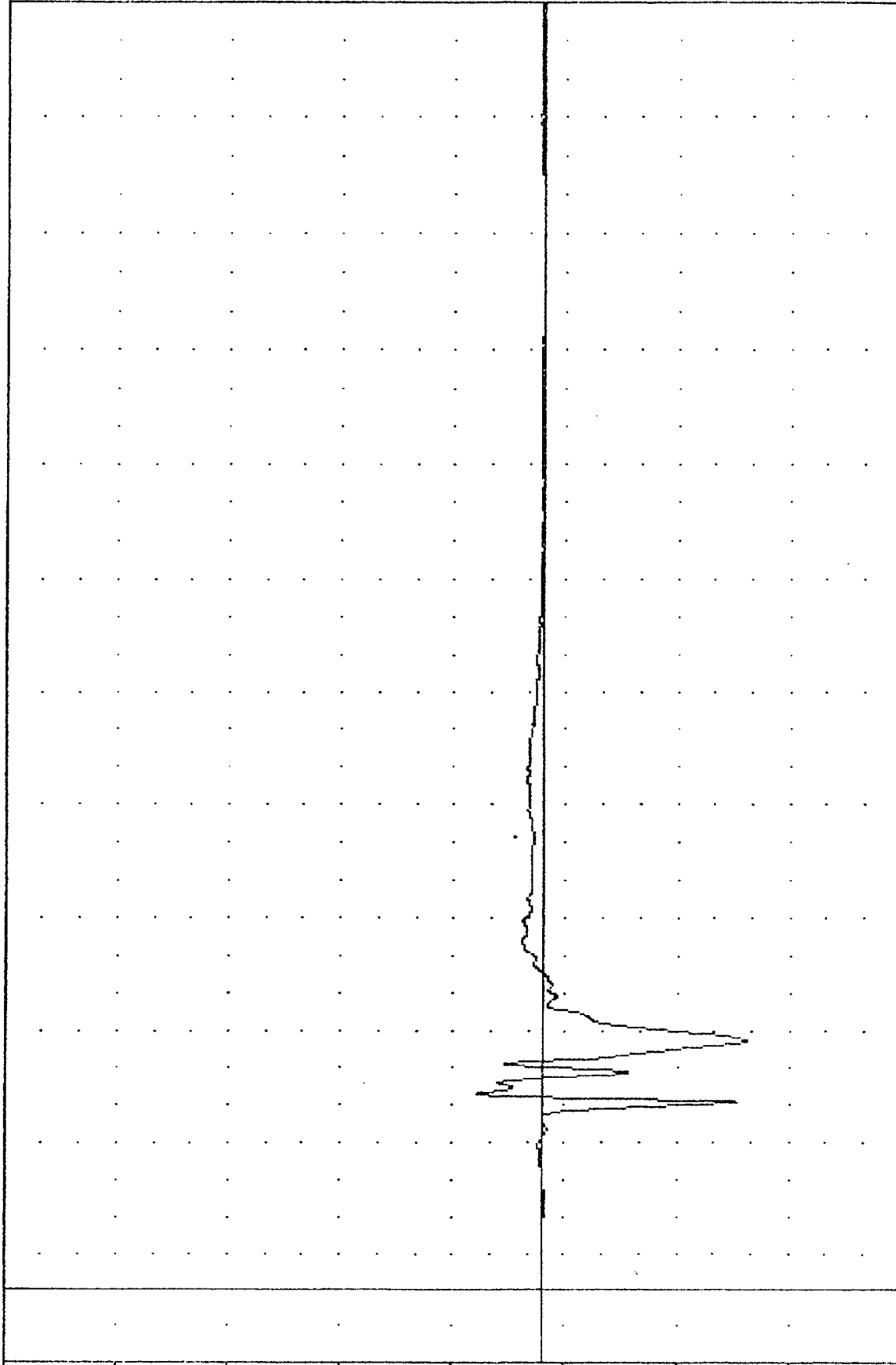
83300000000

PEVXG3

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -90.93 67.25, 29.23 s 52.75

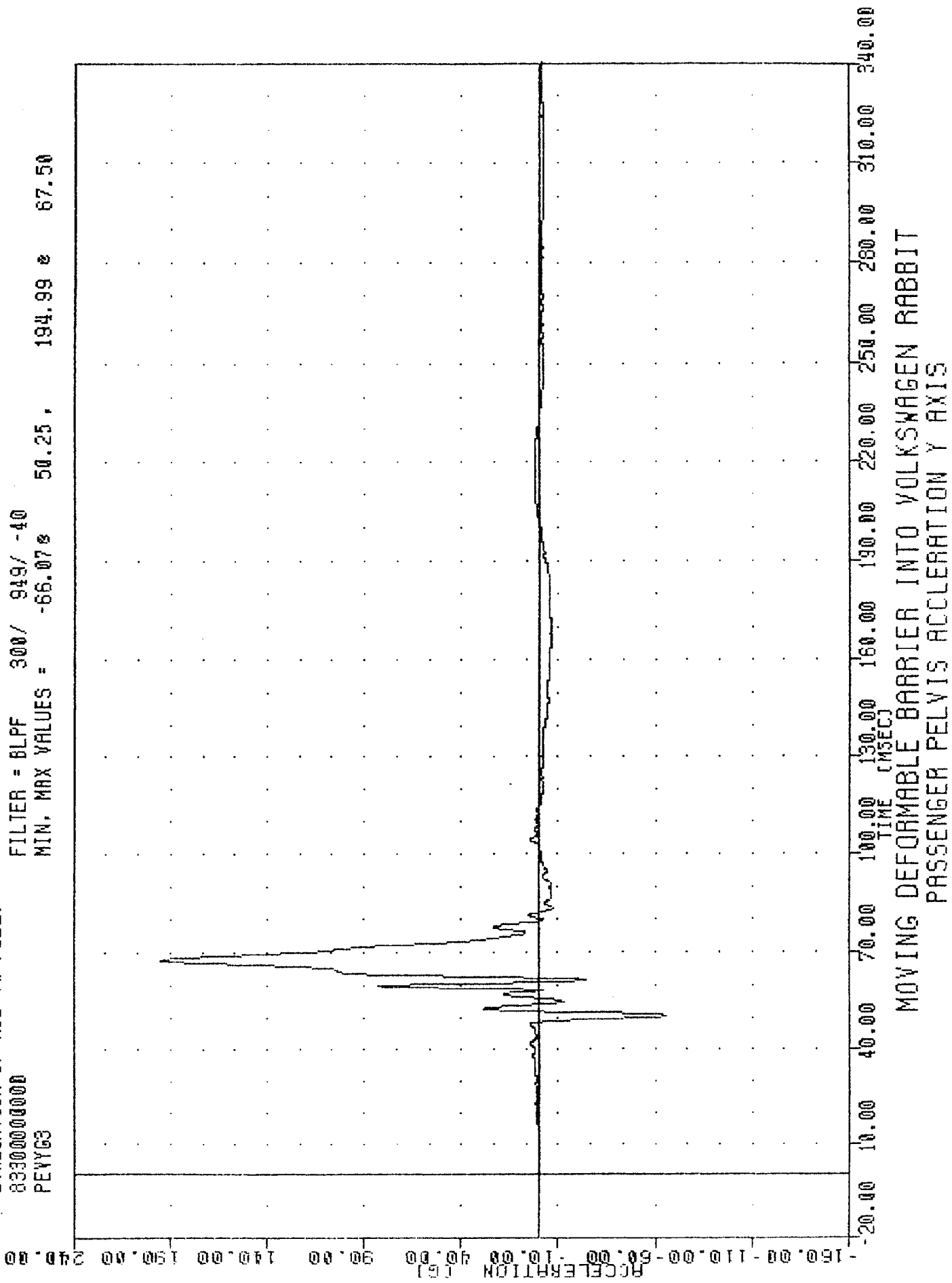
ACCELERATION (G)



TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION X AXIS

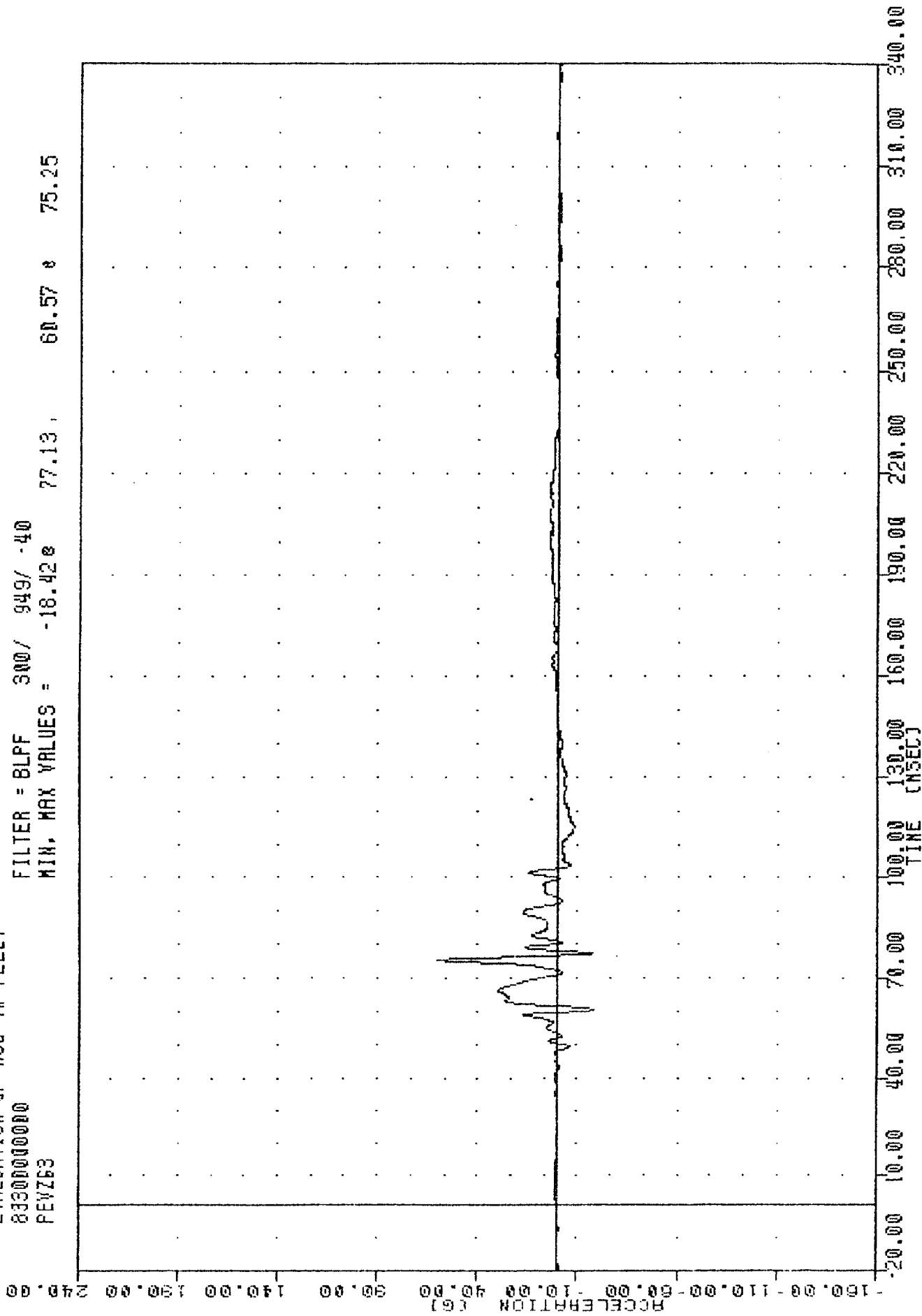
TRC 831027 PLOT DATE 31-OCT-83 13:56:58
 EVALUATION OF MDD YW FLEET
 833000000000
 PEVY63
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -66.07% 50.25, 194.99 & 67.50



TRC 831027
EVALUATION OF MOD VN FLEET
833000000000
PEVZ63

PLOT DATE 31-OCT-83 13:56:58

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -18.428 77.13 60.57 75.25



TRC 831027 PLOT DATE 31-DEC-83 13:58:27

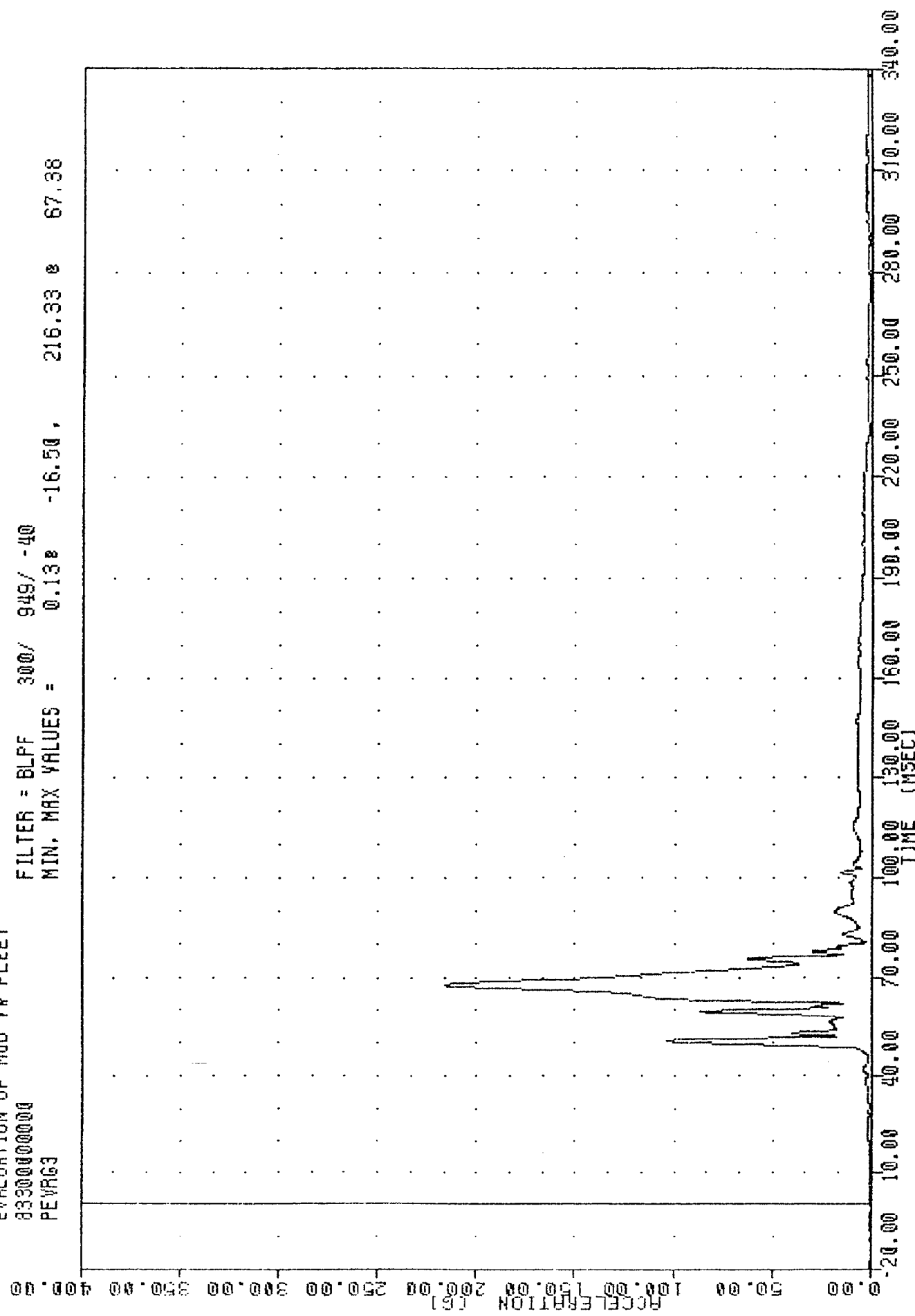
EVALUATION OF MOD YW FLEET

833000000000

PEVR63

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.13e -16.50, 216.33 e 67.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS RESULTANT

TRC

831027

PLOT DATE

1-NOV-83

08:44:23

EVALUATION OF MOD YW FLEET

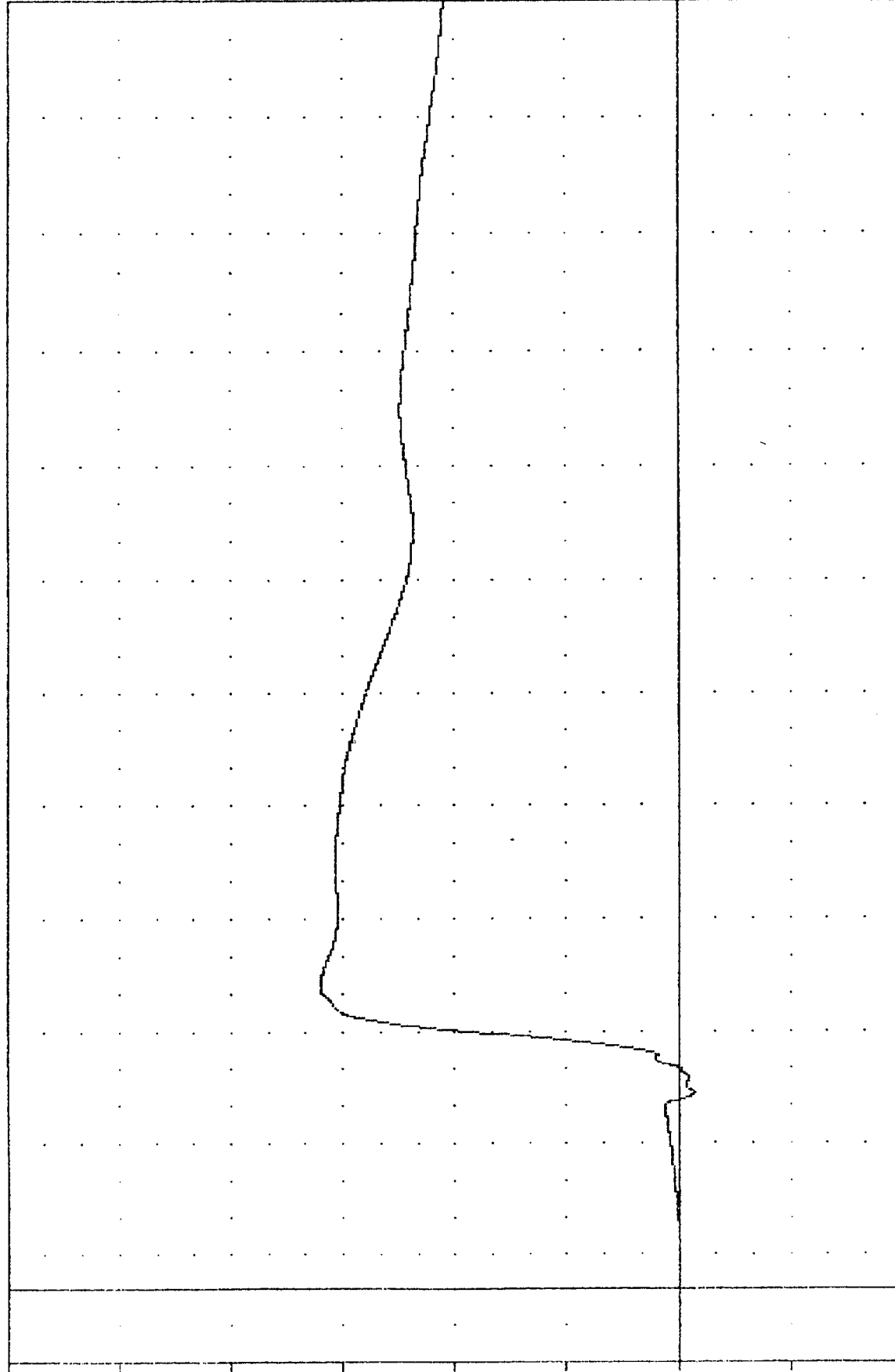
833000000000

PEVYV3

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -1.498 53.13 , 32.02 8 83.36

VELOCITY (MPH)

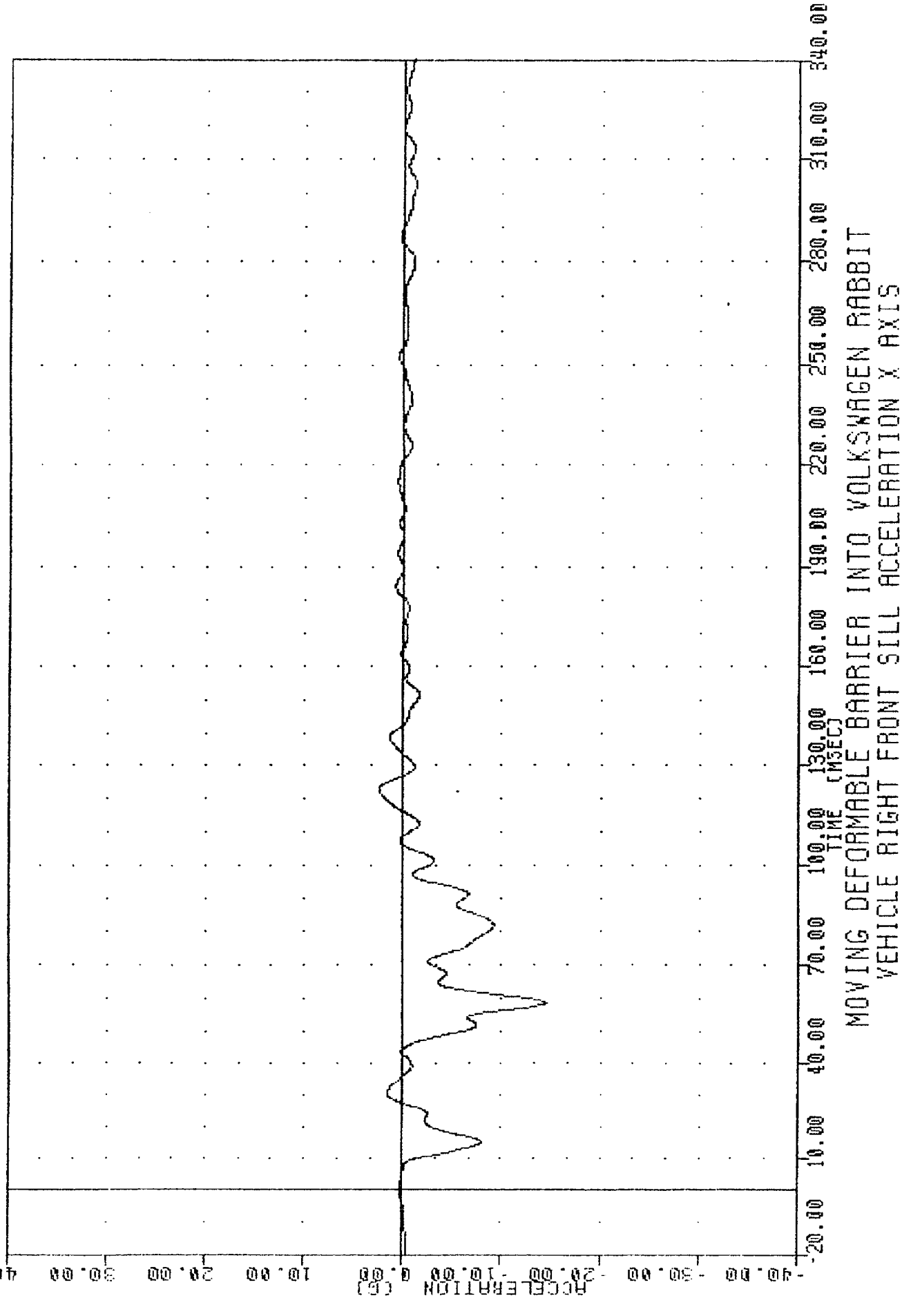


-20.00 -10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00

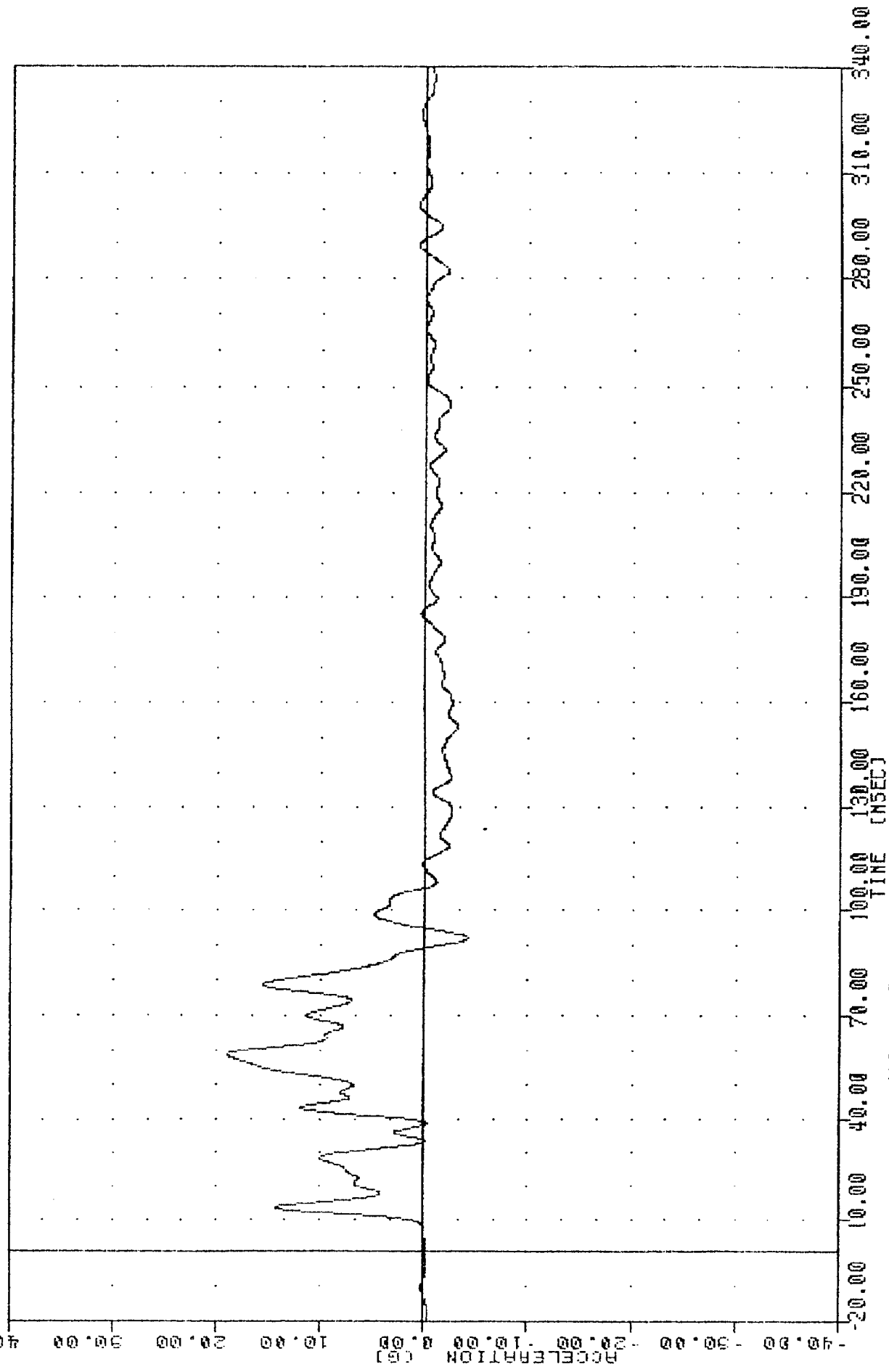
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING PEVY3

TRC 831027, 831027 PLOT DATE 31-OCT-83 13:55:58
 EVALUATION OF MDD VW FLEET
 833000000000
 RFSXG1
 FILTER = 8LFF 100/ 316/ -40
 MIN. MAX VALUES = -14.48e 58.25, 2.48 e 122.63



TRC [REDACTED], 037027 [REDACTED] PLOT DATE [REDACTED] 31 OCT 83 [REDACTED] 13.58.58
 EVALUATION OF MOD VW FLEET
 833000000000
 RFSY61
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -4.12e 92.13, 18.92 e 58.63



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

TRC 001027 PLOT DATE 31 OCT 83 15:36:58

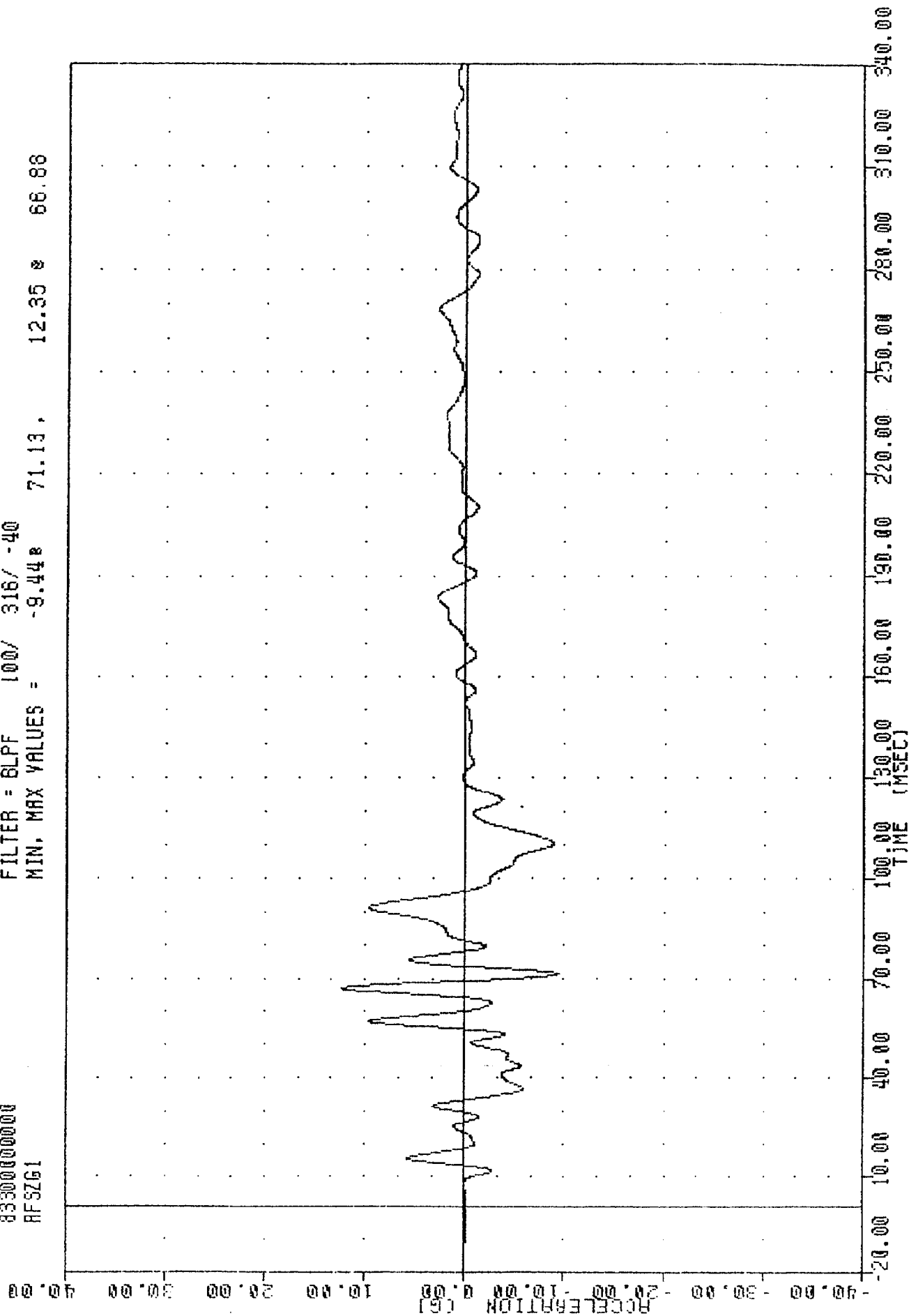
EVALUATION OF MOD YW FLEET

833000000000

RF5ZG1

FILTER = BLPF 100/ 316/ -40

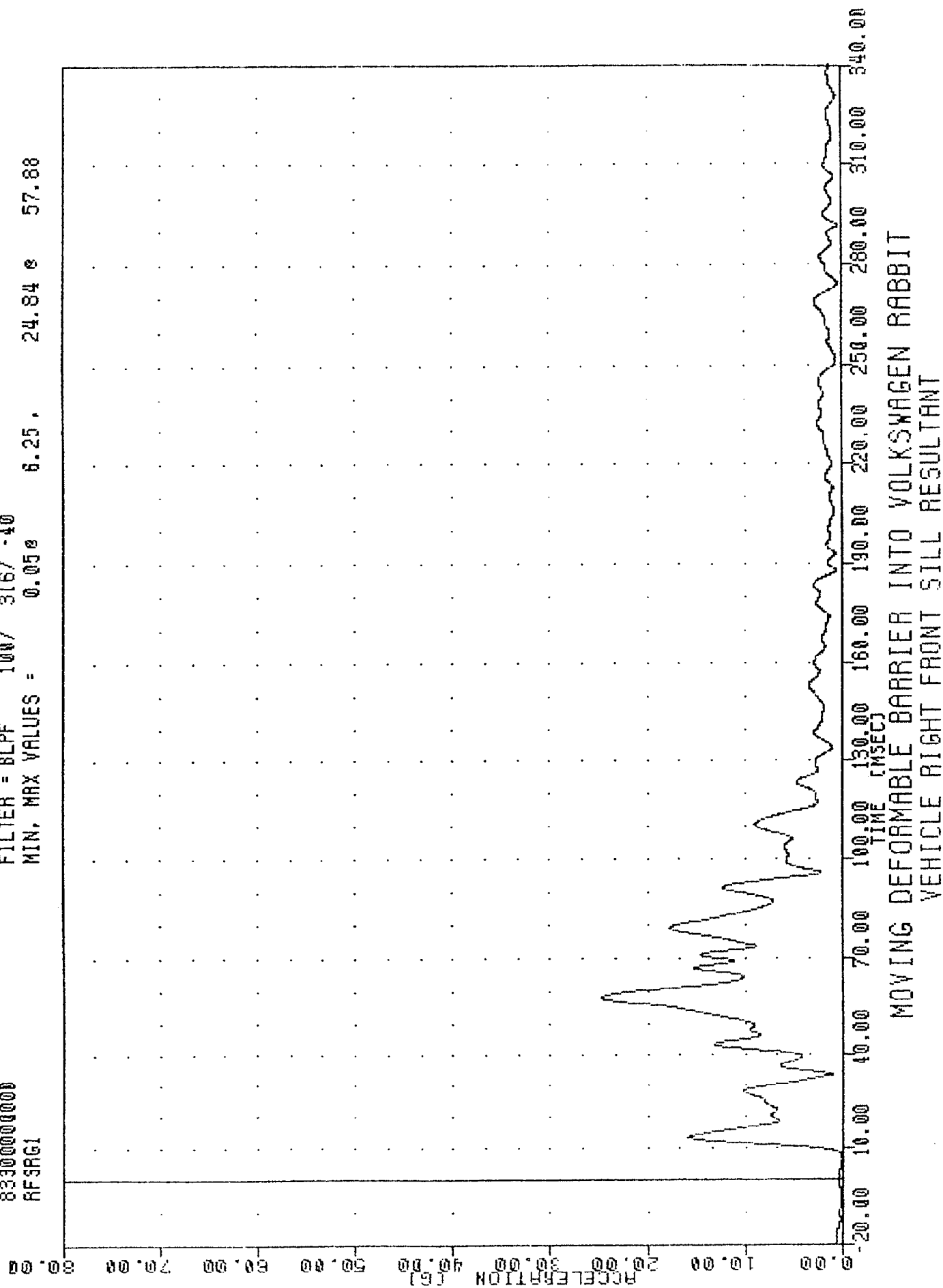
MIN. MAX VALUES = -9.44 71.13, 12.35 68.88



TRC 831027
 EVALUATION OF MDD VV FLEET
 833000000000
 RFSRG1

PLOT DATE 31-OCT-83 13:58:27

FILTER = 8LPF 100/ 316/ -40
 MIN, MAX VALUES = 0.058 24.84 57.88



TRC 831027 PLOT DATE 1-NOV-83 08:44:23

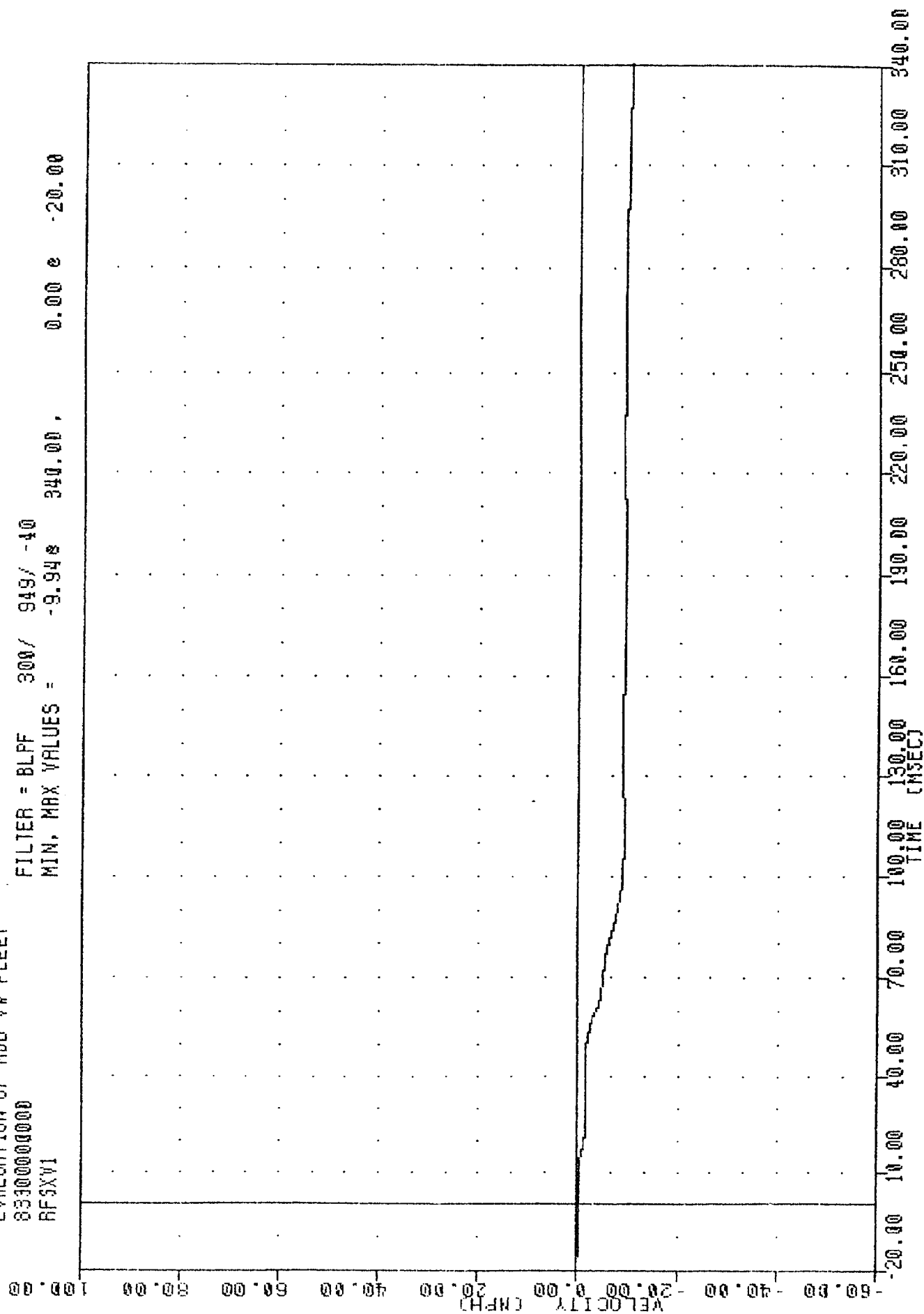
EVALUATION OF MOD VW FLEET

833000000000

RFSXV1

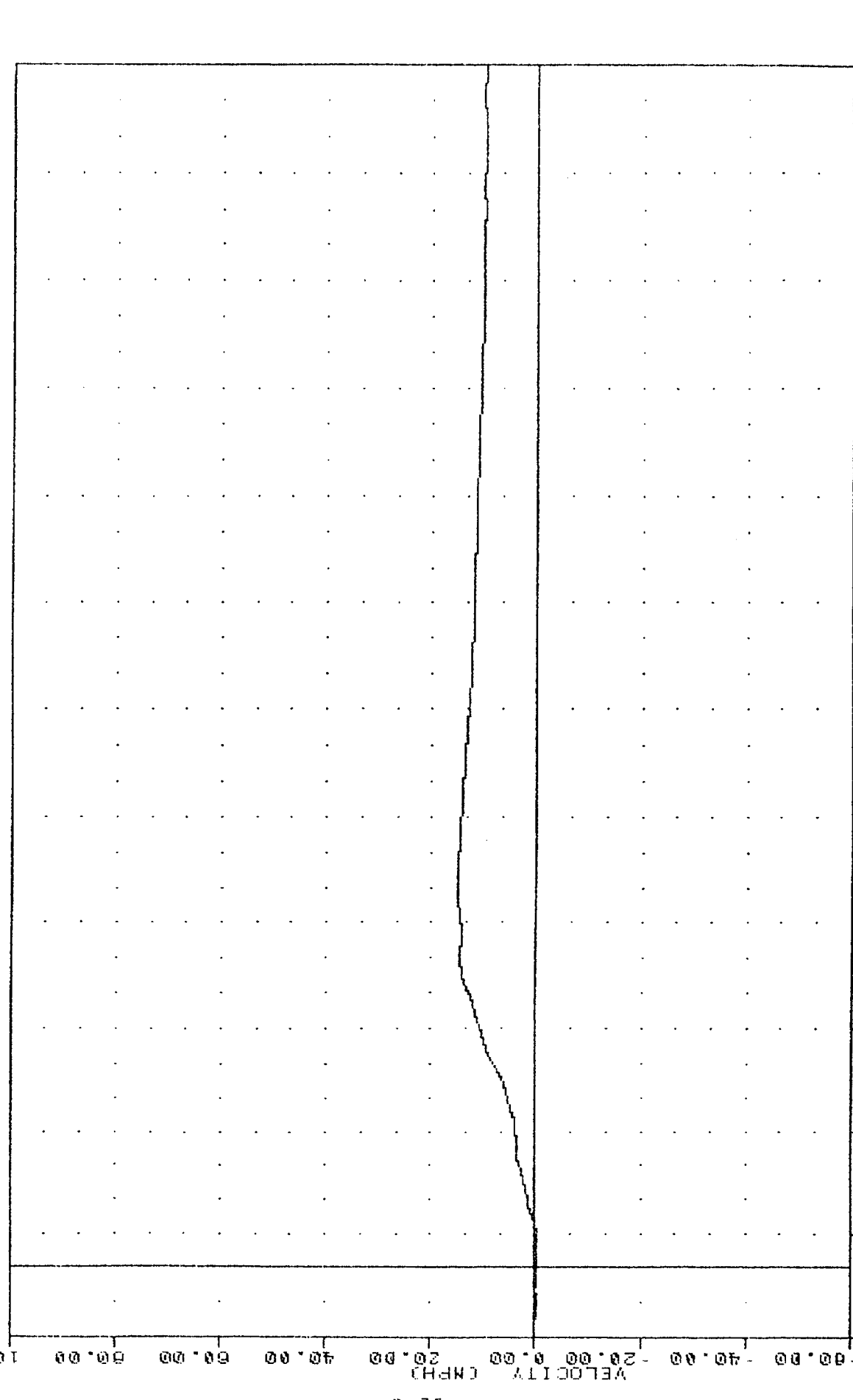
FILTER = BLPF 300/ 949/ -10

MIN. MAX VALUES = -9.948 340.00, 0.00 e -20.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RFSXG1

TAC 830027, 830027
 EVALUATION OF MOD YN FLEET
 833000000000
 RFSYV1
 FILTER = BLPF 300/ 949/ 40
 MIN, MAX VALUES = -0.07e 6.00, 15.00 e 107.88
 PLOT DATE 1-MAY-83 08:44:23



-60.00
 -40.00
 -20.00
 0.00
 20.00
 40.00
 60.00
 80.00
 100.00
 120.00
 140.00
 160.00
 180.00
 200.00
 220.00
 240.00
 260.00
 280.00
 300.00
 310.00
 320.00
 330.00
 340.00
 TIME (NSEC)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RFSYG1

TAC 831027 PLOT DATE 31-OCT-83 13:56:58

EVALUATION OF MOD VN FLEET

833000000000

RR3XG2

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -7.87% 15.36 .

3.10 s 121.50

40.00

30.00

20.00

10.00

0.00

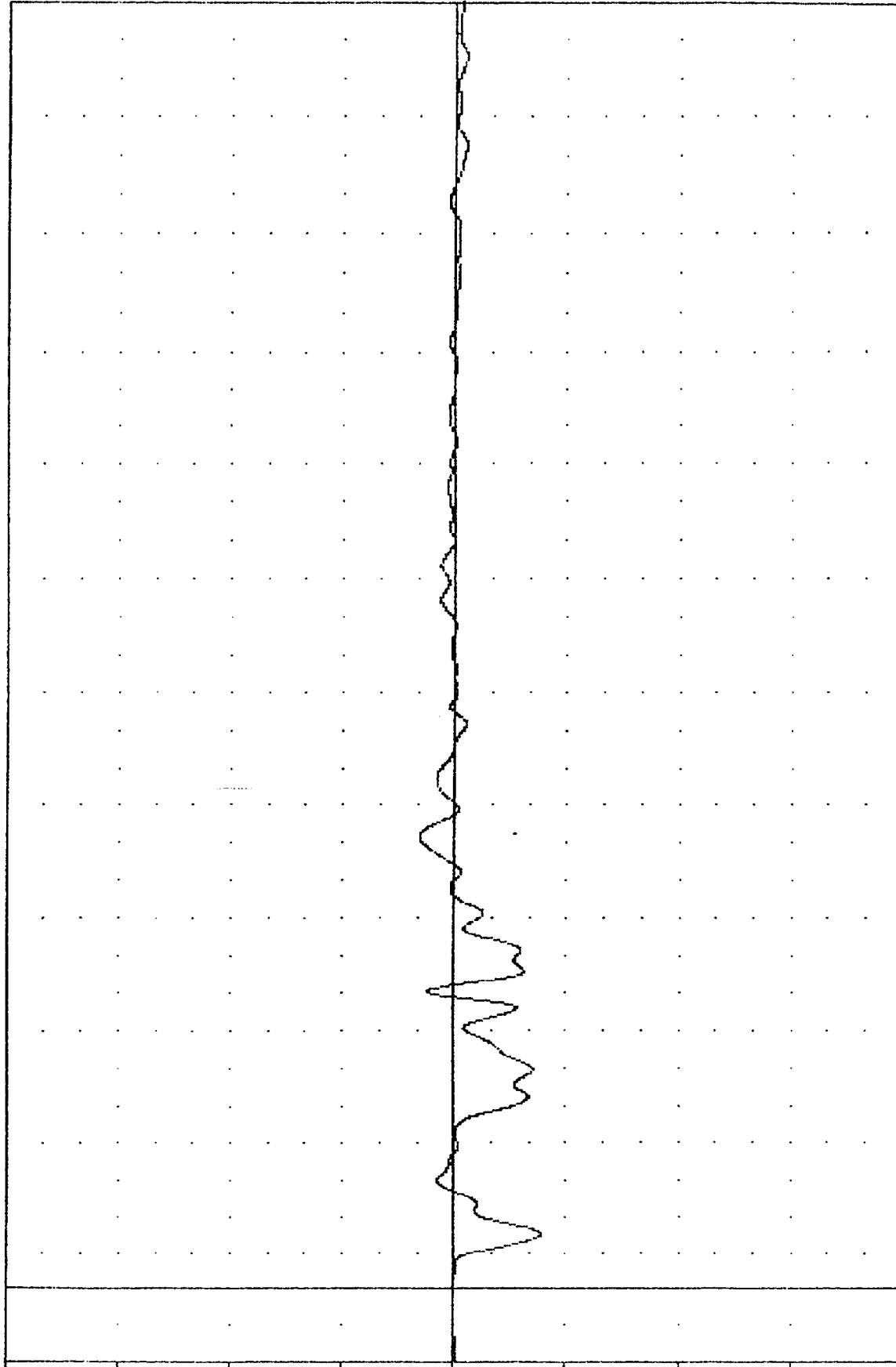
-10.00

-20.00

-30.00

-40.00

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

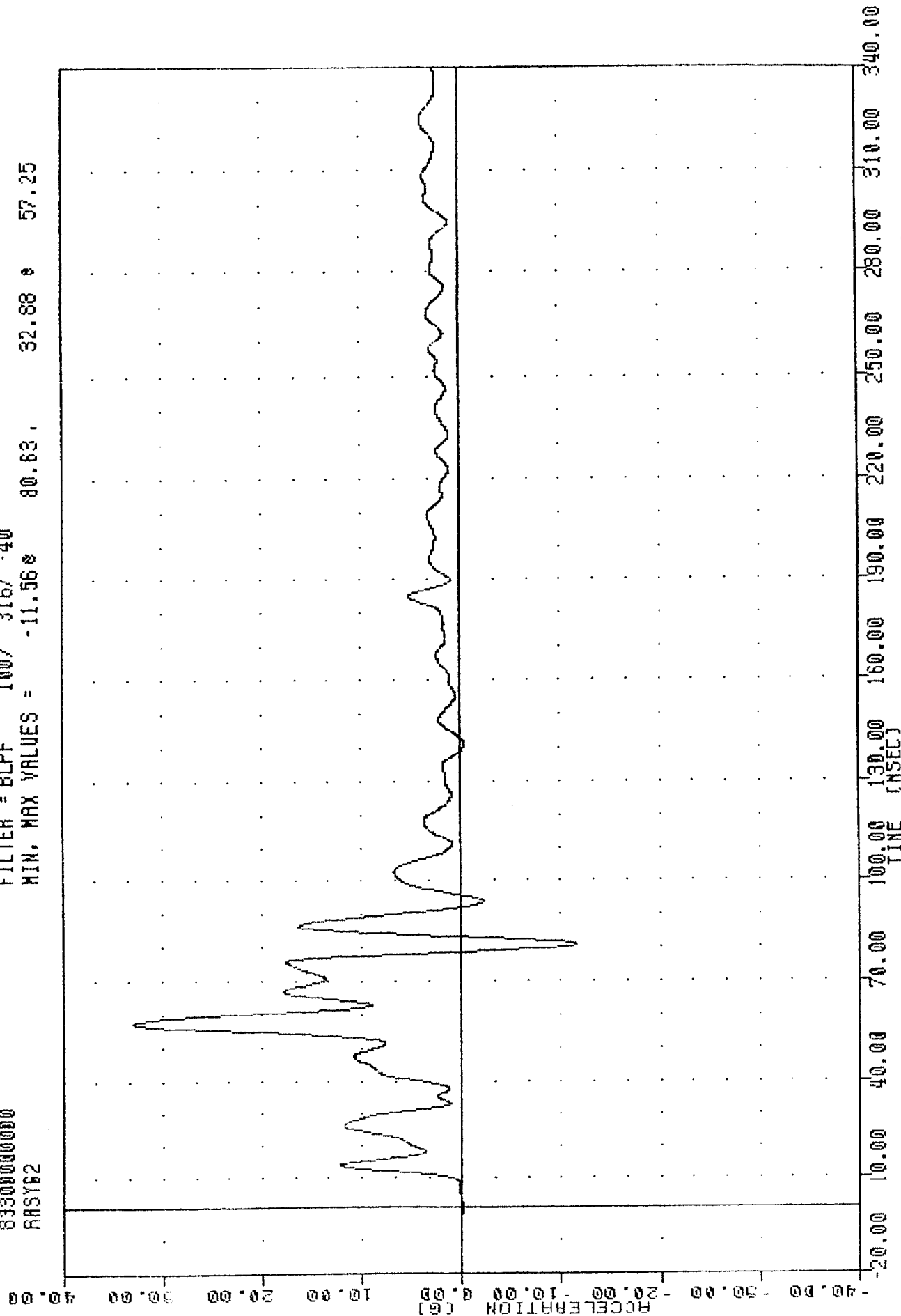
TIME (MSEC)

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

TAC 831027
 EVALUATION OF MOD VV FLEET
 833000000000
 RRSY62

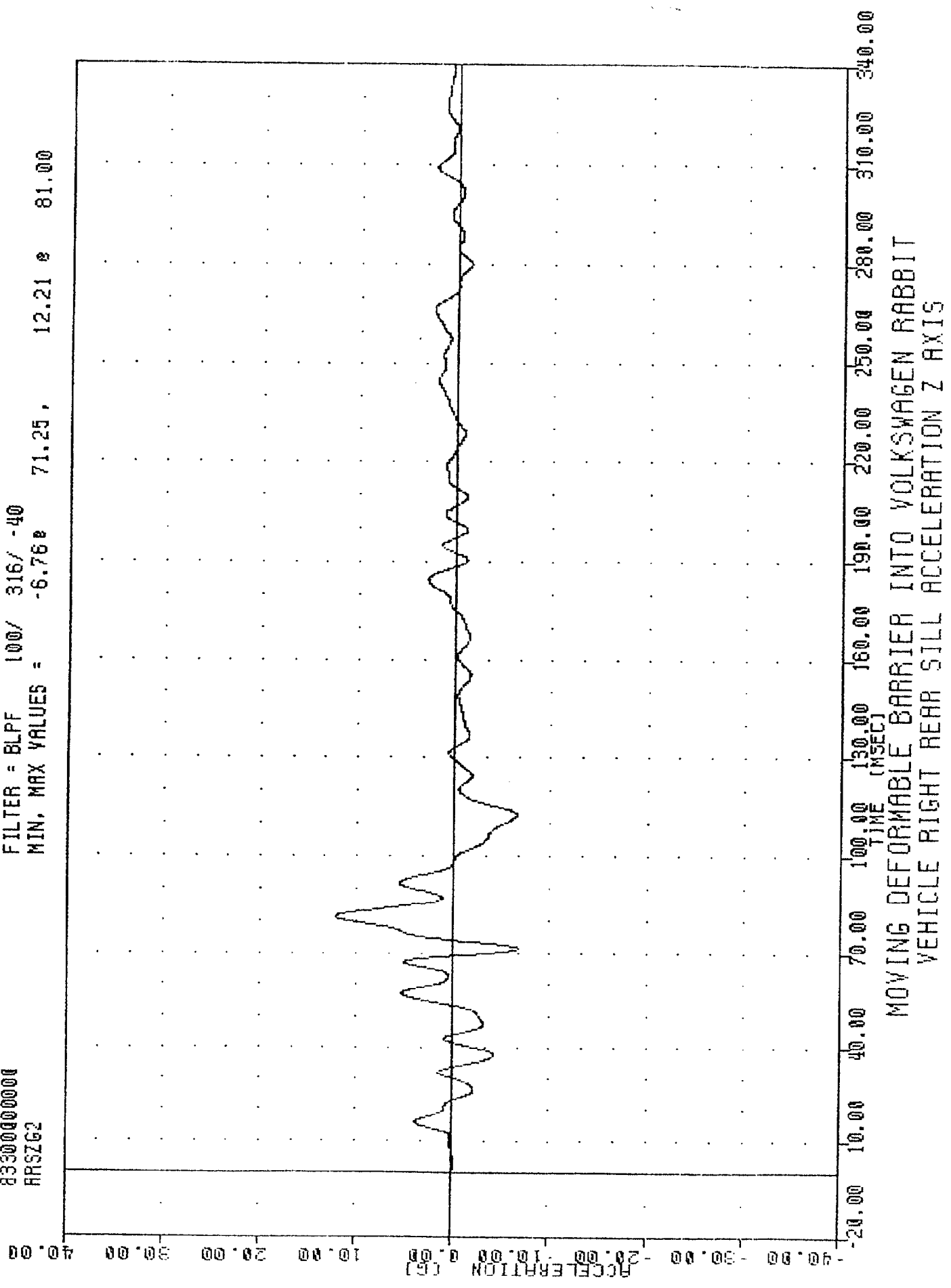
PLOT DATE 31-OCT-83 13:56:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -11.56 80.63 32.88 57.25



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

TRC [REDACTED] 022 [REDACTED] PLOT DATE 31 OCT 85 13:56:58
 EVALUATION OF MOD YW FLEET
 833000000000
 ARS2G2
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -6.76e 71.25, 12.21 e 81.00



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

TRC 537027 31-OCT-83 13:58:27

EVALUATION OF MOD VN FLEET

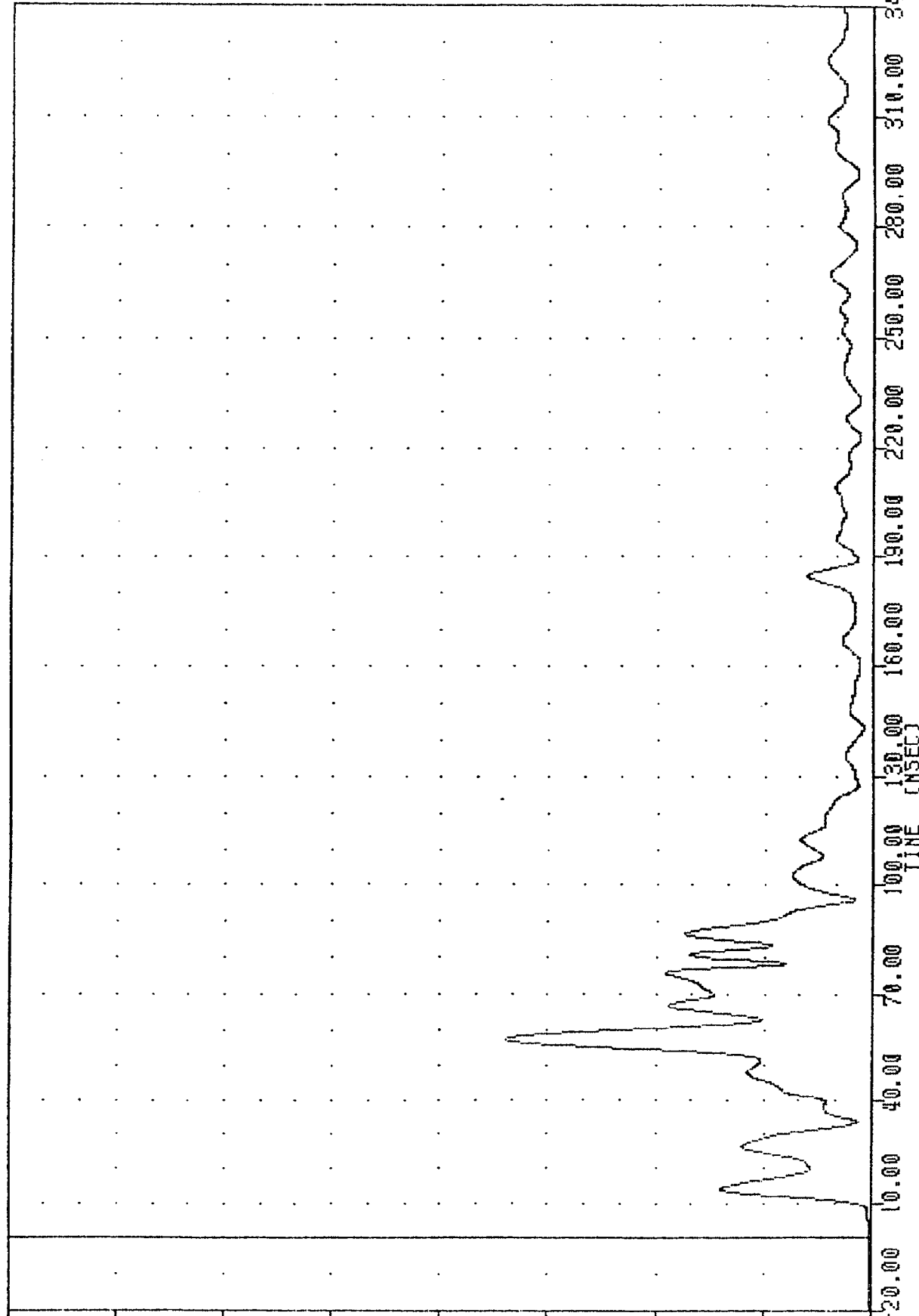
833000000000

RRSR62

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.092 -7.50 33.89 57.25

ACCELERATION (G)

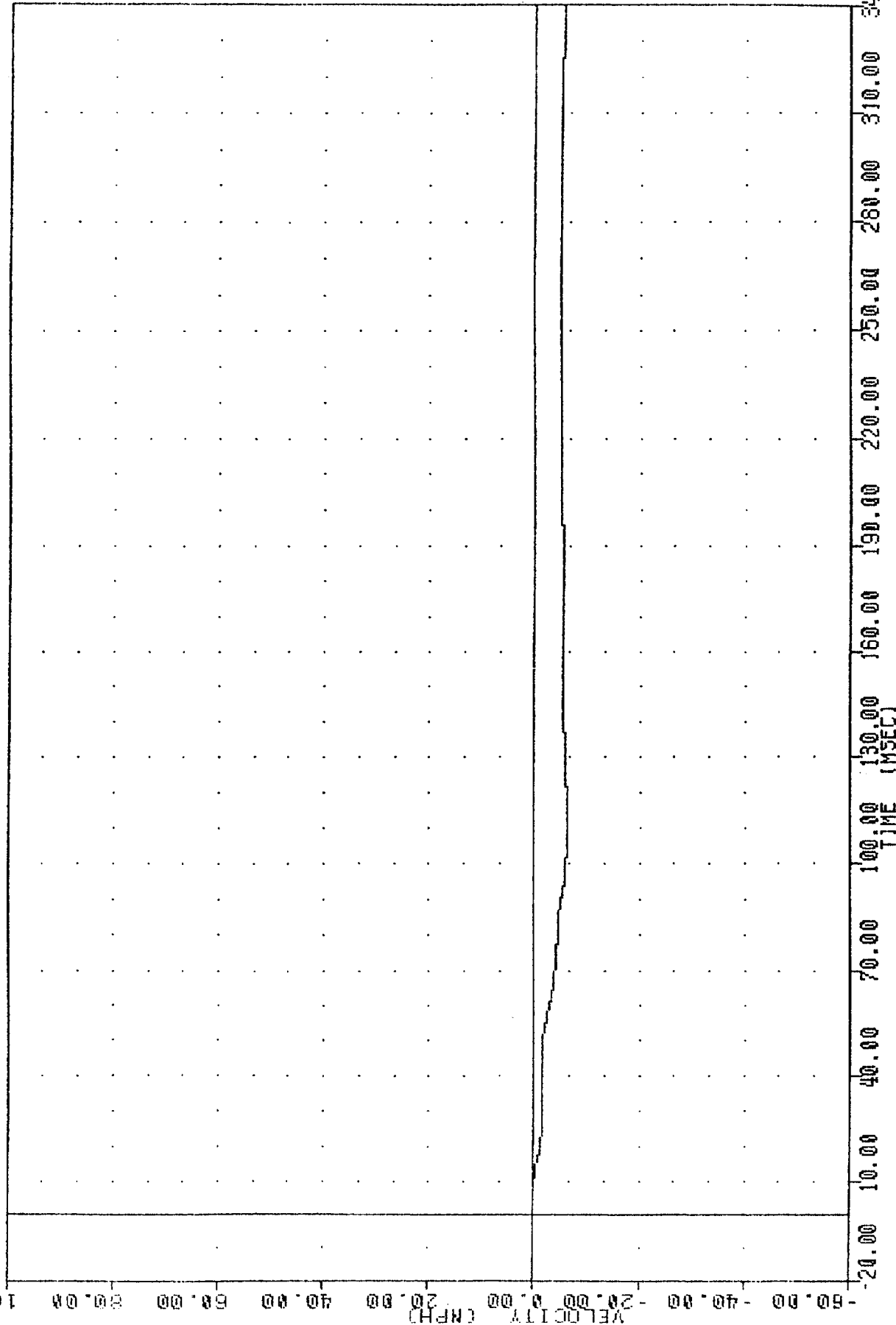


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL RESULTANT

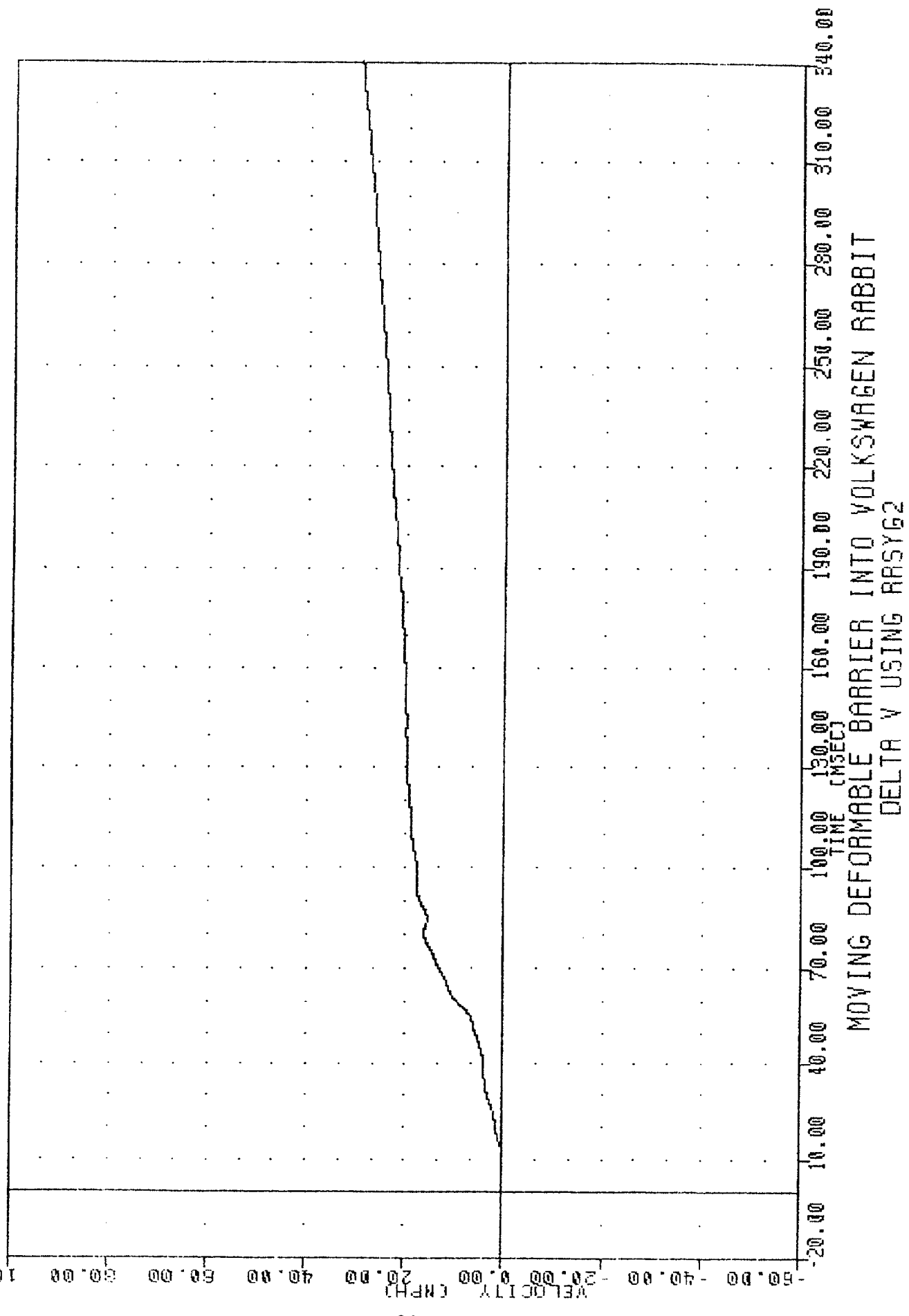
100

2000

MIN, MAX VALUES =	-6.19%	115.63%	0.00%	-20.00%
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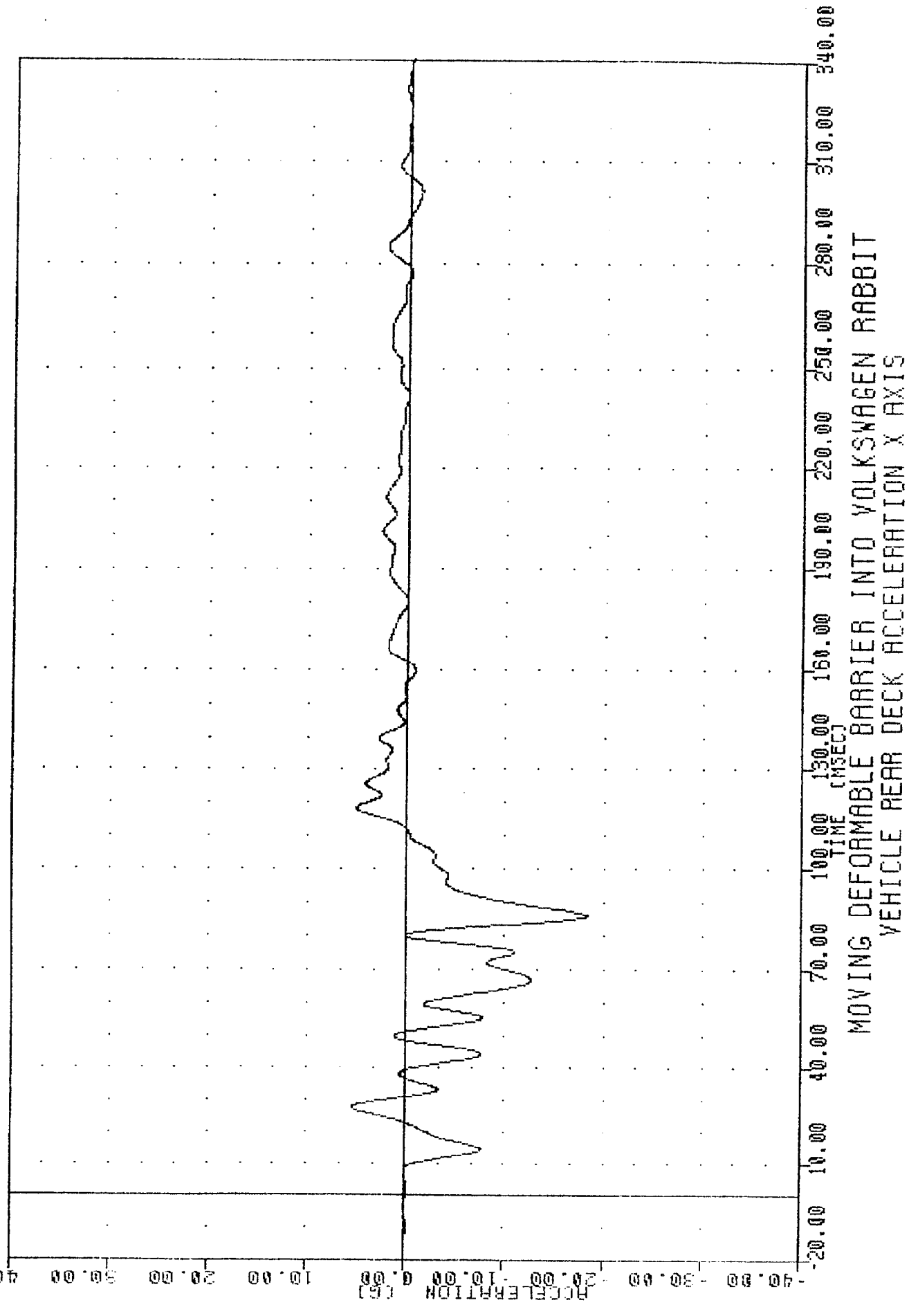
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RRSXG2

TRC [REDACTED], 03/02/83, 08:44:23
 EVALUATION OF MOD VW FLEET
 833000000000
 RRSYY2
 FILTER = 8LFF 300/ 949/ -40
 MIN. MAX VALUES = 0.008 -20.00, 29.70 e 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRSYG2

TRC [REDACTED], 03/10/27 [REDACTED] PLOT DATE [REDACTED] 31 DEC 83 [REDACTED] 13:06:58
 EVALUATION OF MDD VW FLEET
 833000000000
 RDKX63
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -18.37e 85.75, 5.46 e 27.75



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

TAC 831027, 31-OCT-83 13:56:58

EVALUATION OF MOD VN FLEET

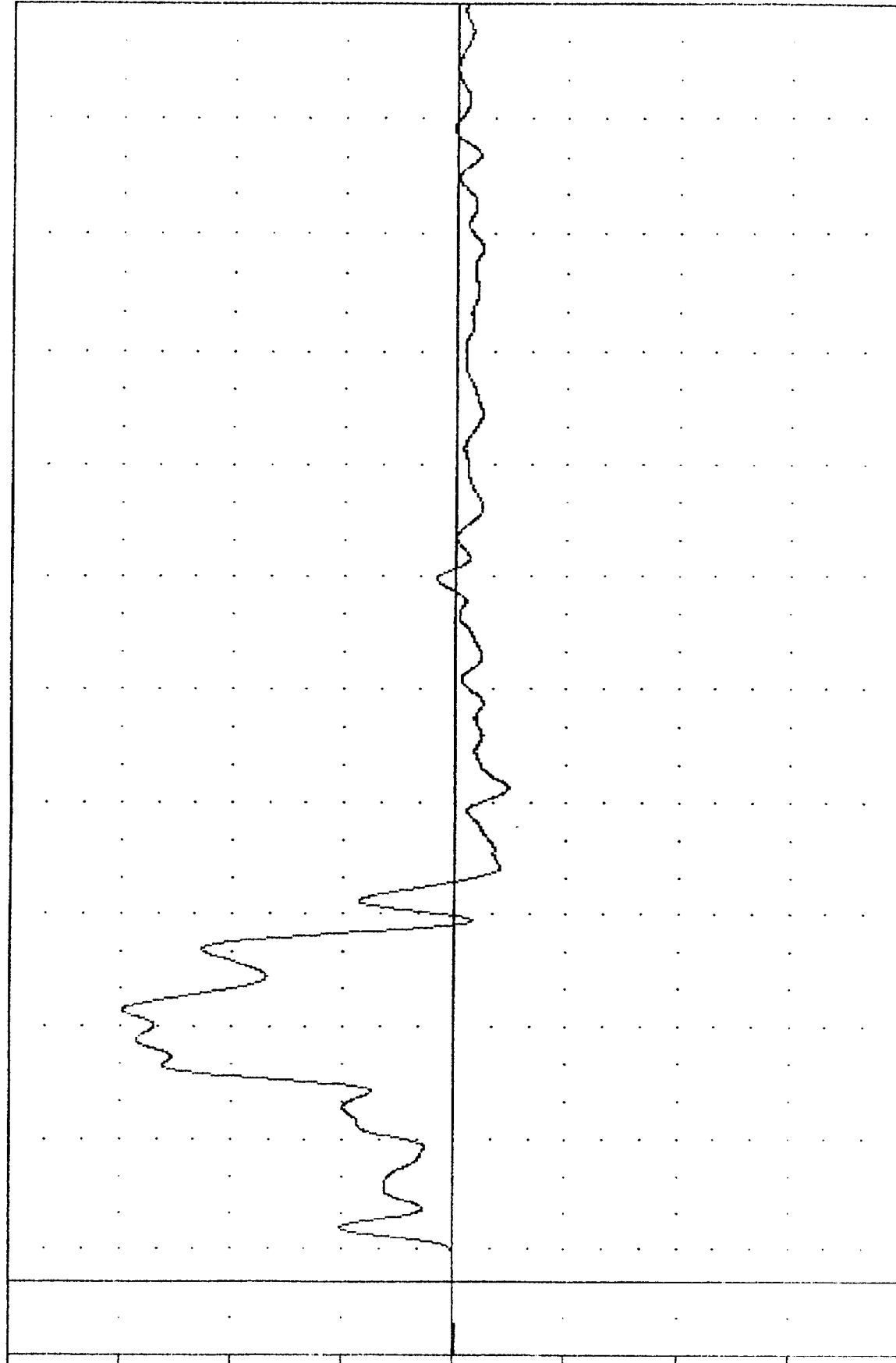
83300000000

ROKYG3

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -4.74 133.63 29.82 74.25

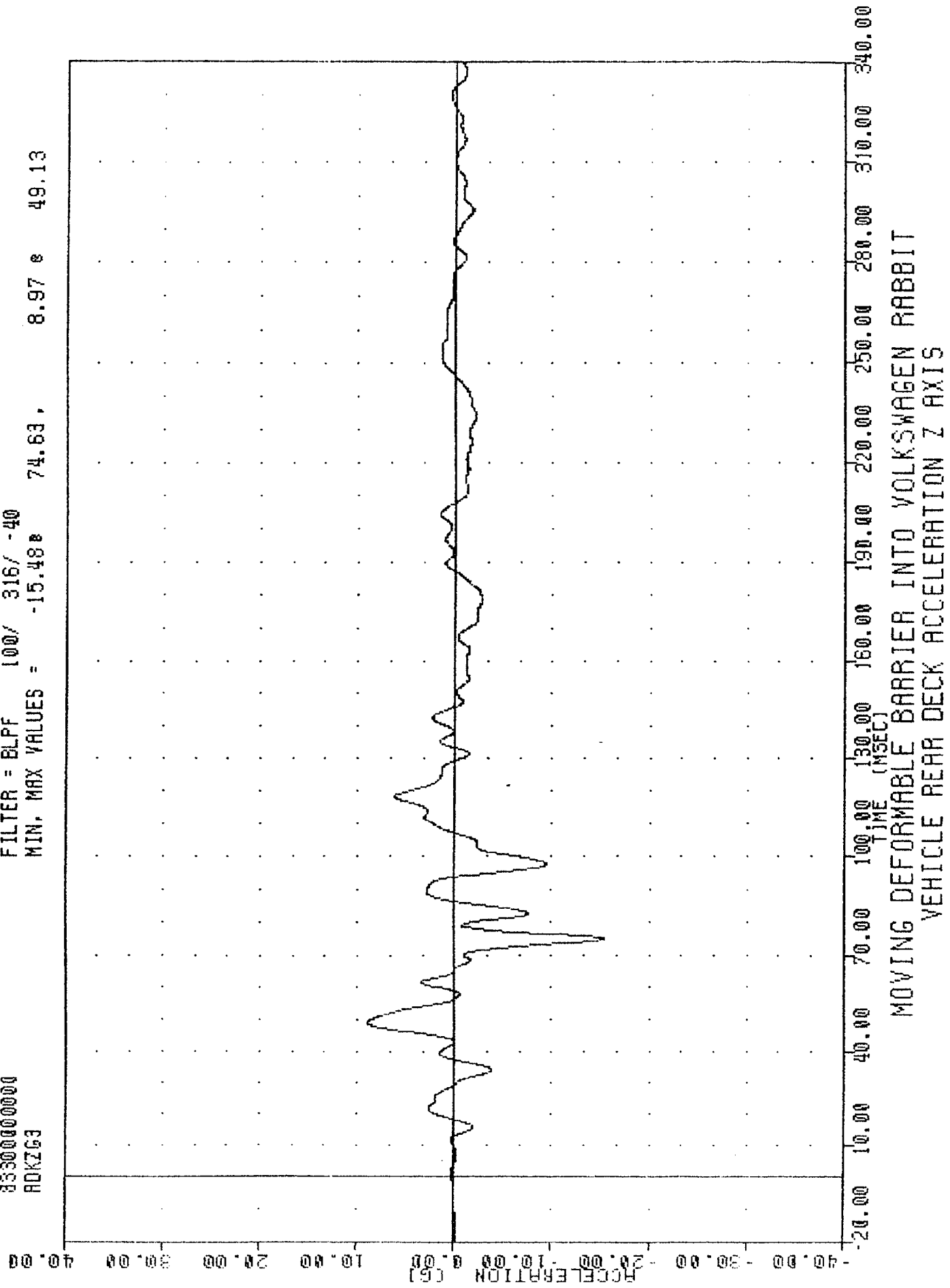
ACCELERATION (G)



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

TRC [REDACTED], 831027 [REDACTED] PLOT DATE 31-DEC-83 13:56:58
 EVALUATION OF MOD VW FLEET
 833000000000
 RDKZG3

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -15.48 74.63 8.97 49.13



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

TRC

831027

EVALUATION OF MOD VW FLEET

833000000000

ADKRG3

PLOT DATE

31-OCT-83

13:58:27

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.068

-6.75,

35.27

74.63

80.00

70.00

60.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

-30.00

-40.00

-50.00

-60.00

-70.00

-80.00

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

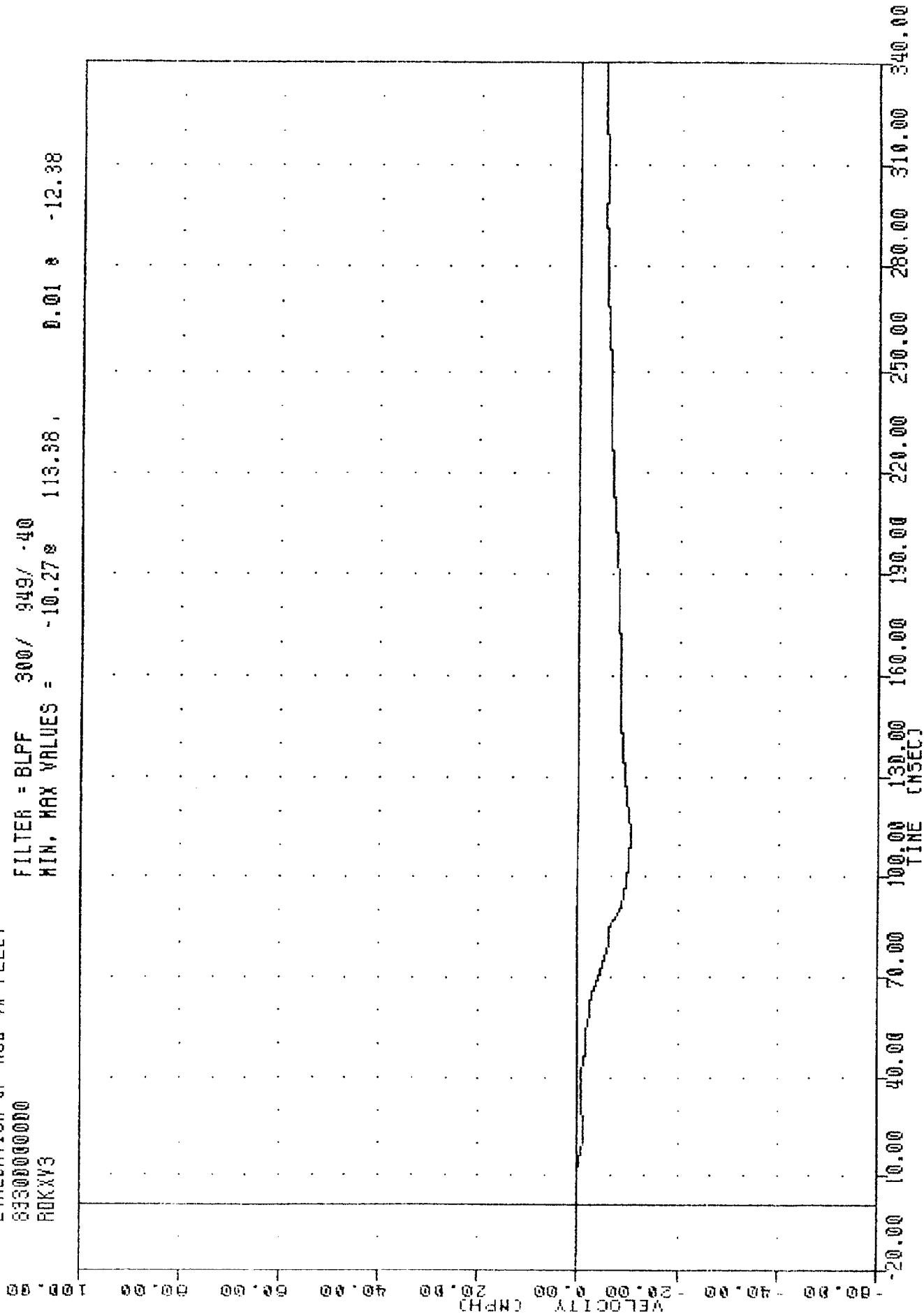
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK RESULTANT

TRC [REDACTED], 830827 [REDACTED]
 EVALUATION OF MOD VW FLEET
 833000000000
 RDKXV3

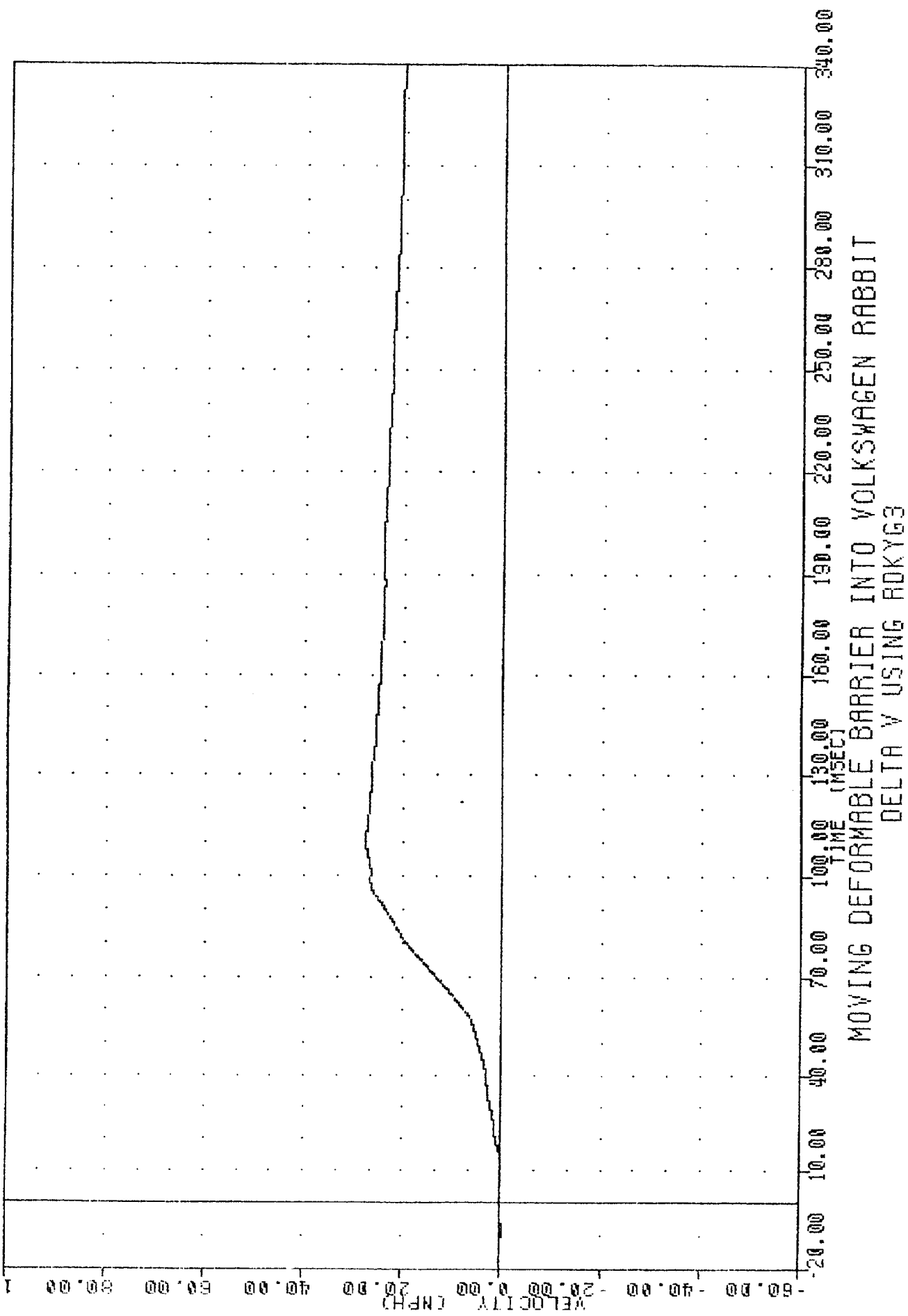
PLOT DATE 1 NOV 83 08:44:23

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -10.27 113.38 0.01 0 -12.38



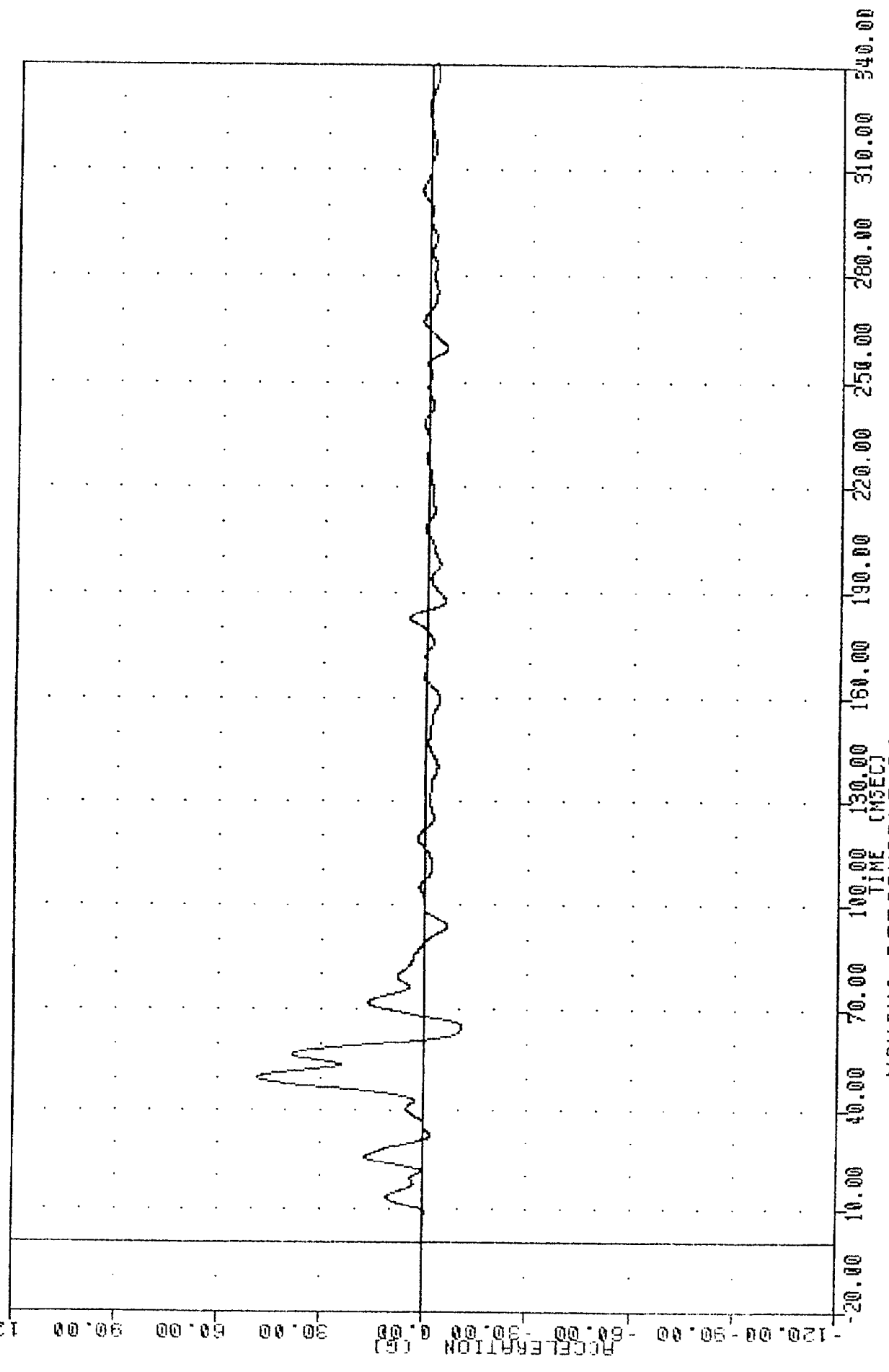
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RDKXG3

TRC [REDACTED], 031027 [REDACTED] PLOT DATE 1 MAY 83 08:41:23
 EVALUATION OF MOD YW FLEET
 833000000000
 ADKYY3
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -0.048 -9.25, 27.66 & 110.13



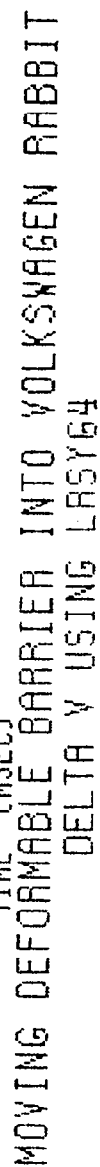
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RDKYG3

TRC [REDACTED], 051027 [REDACTED] PLOT DATE 31 OCT 83 13:55:58
 EVALUATION OF MDD VV FLEET
 833000000000
 LRSYG4
 FILTER = 8LPF 100/ 316/ -40
 MIN, MAX VALUES = -10.86e 65.00, 48.56 e 49.88

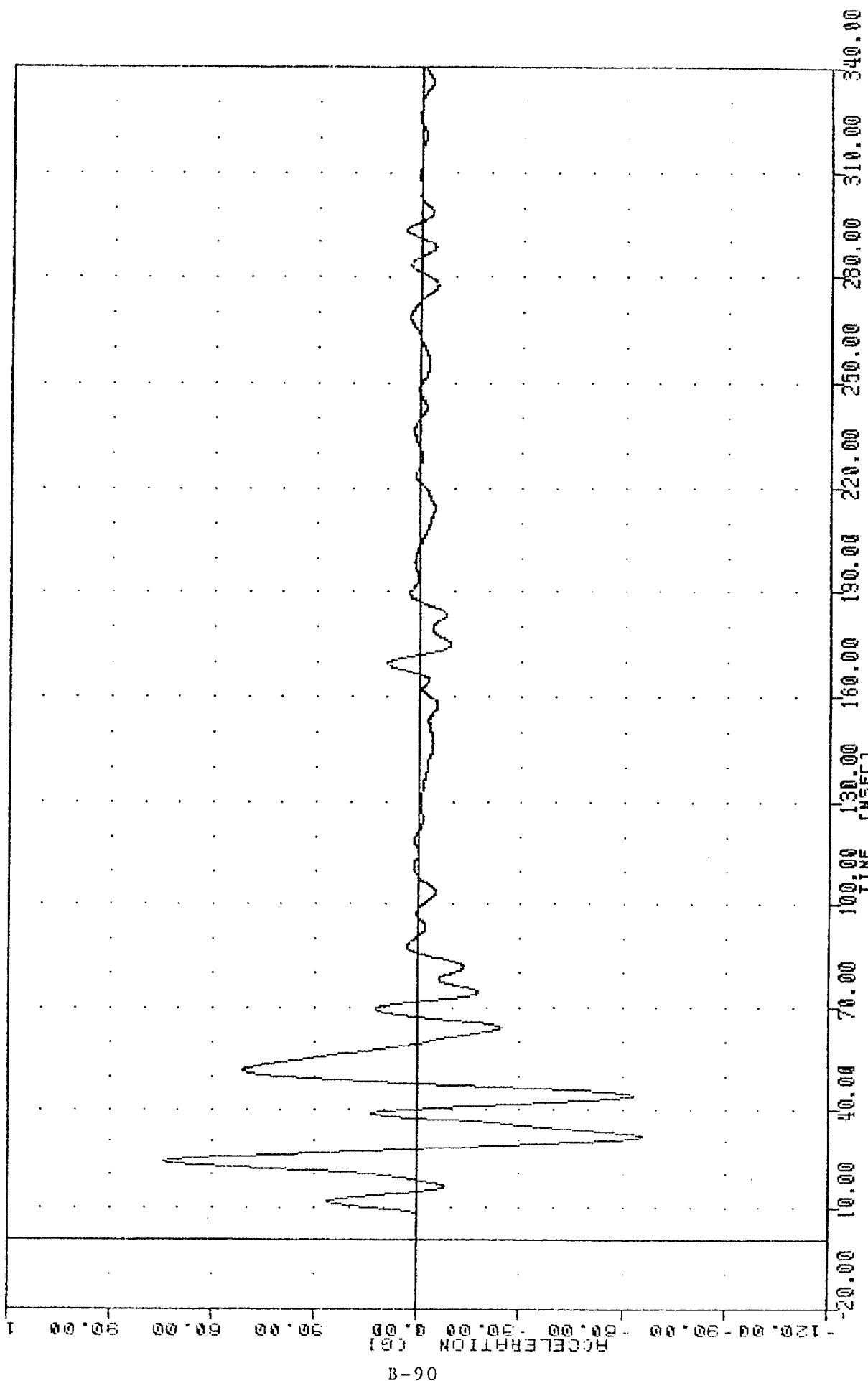


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT REAR SILL ACCELERATION Y AXIS

16.70 @ 90.63



TAG 027 PLOT DATE 31-08-83 13:58
 EVALUATION OF MOD VN FLEET
 83300000000
 LFSY65
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -66.09 30.88 73.70 23.38



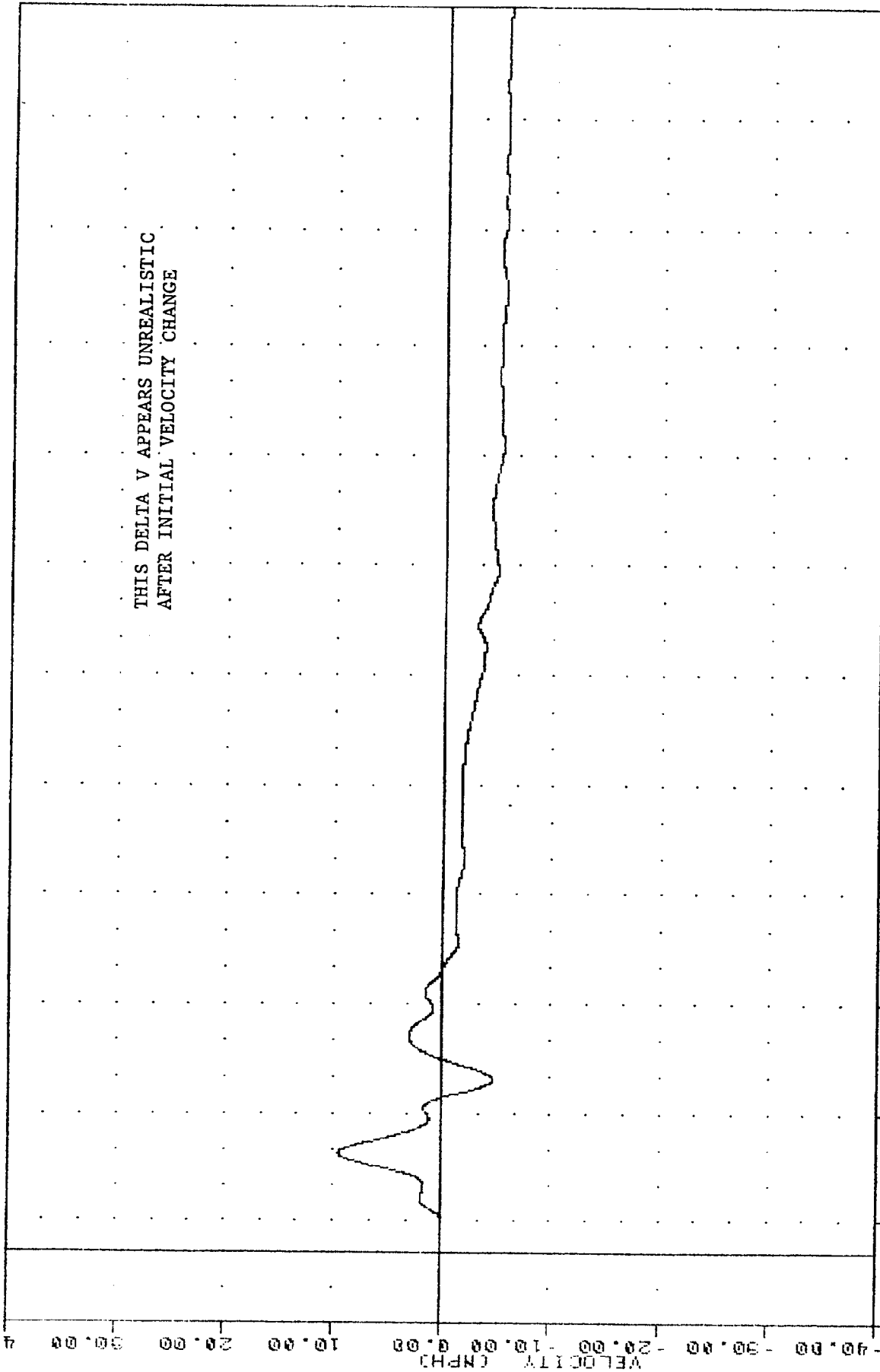
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT SILL ACCELERATION Y AXIS

TRAIL, 833027
 EVALUATION OF MOD VN FLEET
 83300000000
 LFSY45

PLOT DATE 1 NOV 83 08.44.23

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -5.72e 340.00, 9.50 e 28.63

40.00

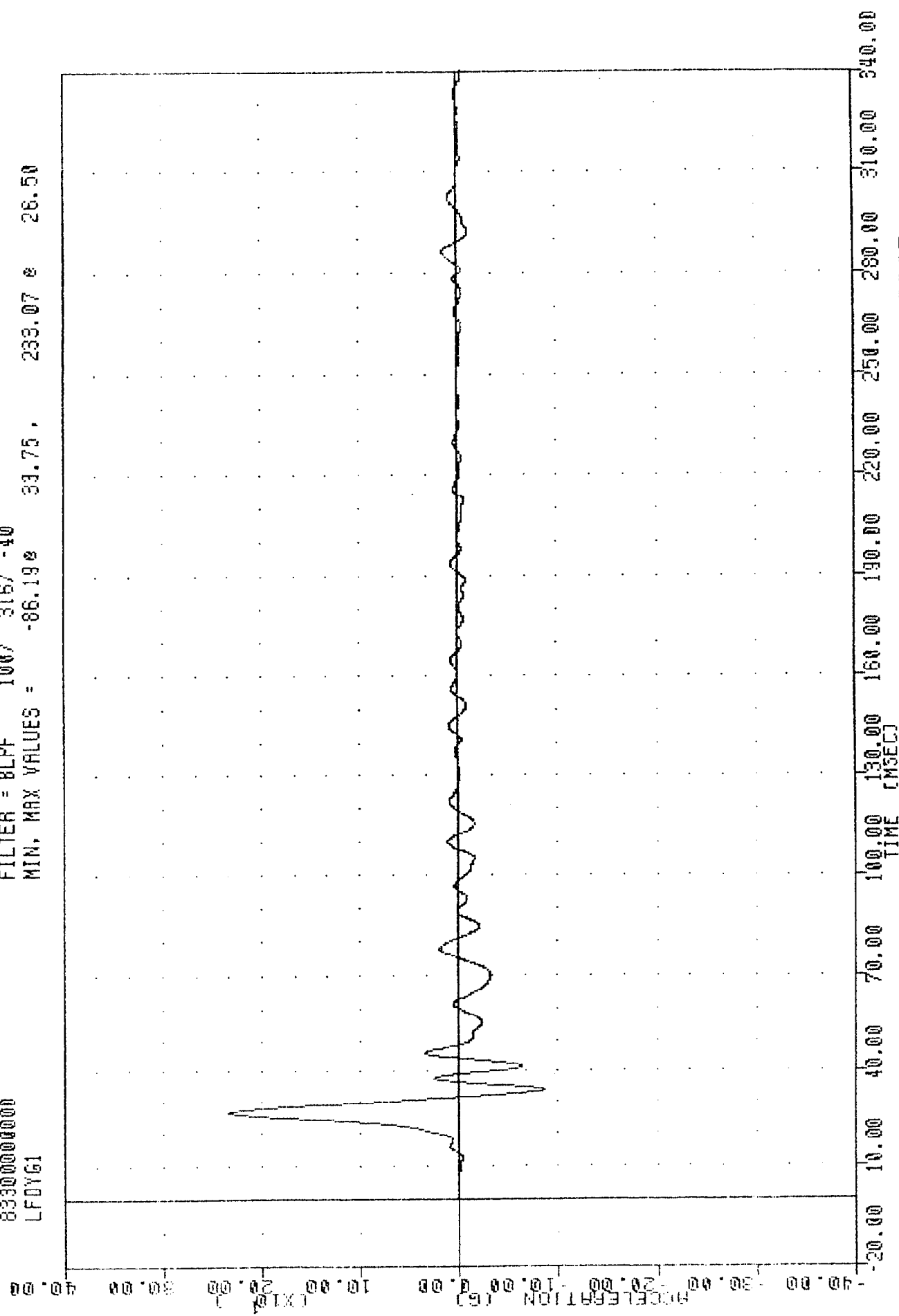


B-91

-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 LFSYG5

TRC 831027 PLOT DATE 31-OCT-83 13:56:58
 EVALUATION OF MOD VW FLEET
 833000000000
 LFDY61
 FILTER = 8LFF 100/ 316/ -40
 MIN. MAX VALUES = -86.19g 33.75, 233.07 g 28.50



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

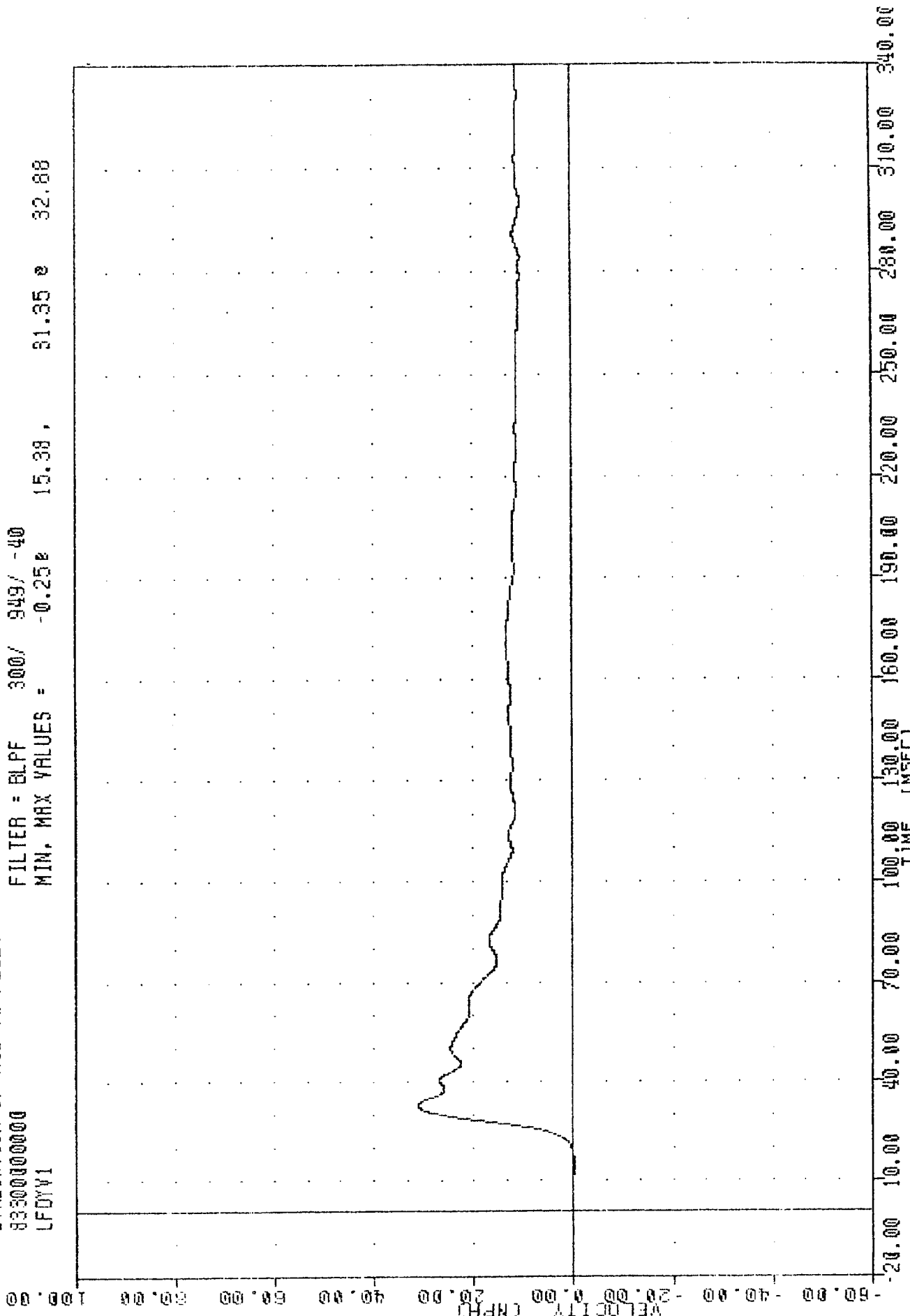
TRC 831027 PLOT DATE 1-NOV-83 08:44:23

EVALUATION OF MOD VW FLEET

83300000000

LFDYV1

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -0.25e 15.38 , 31.35 e 32.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA W USING LFDYGI

TRC 831027

EVALUATION OF MOD VN FLEET

83300000000

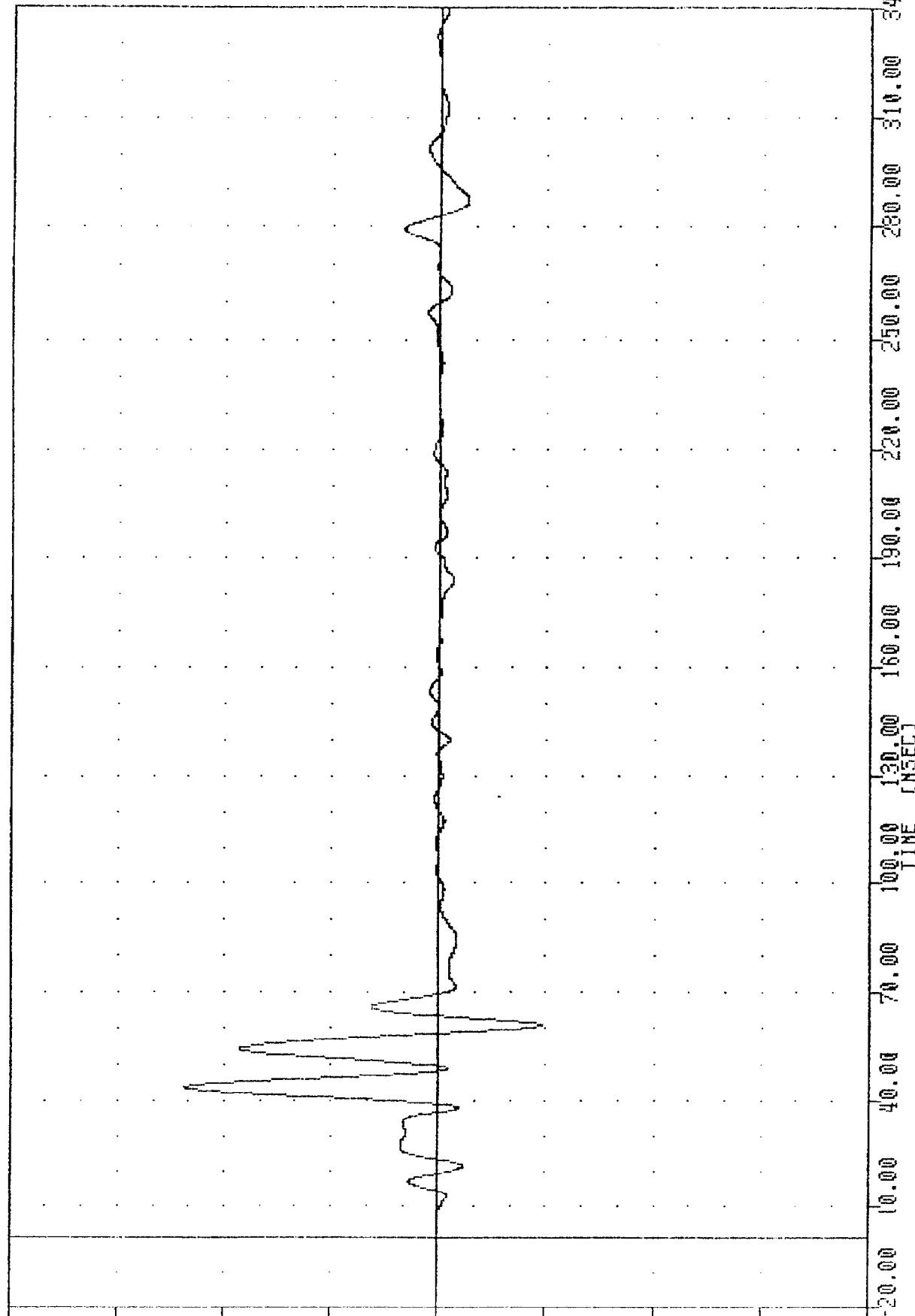
LFDY62

PLOT DATE 31-OCT-83 13:56:58

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -97.328 60.75 237.75 43.38

ACCELERATION (G)
(X10⁴)

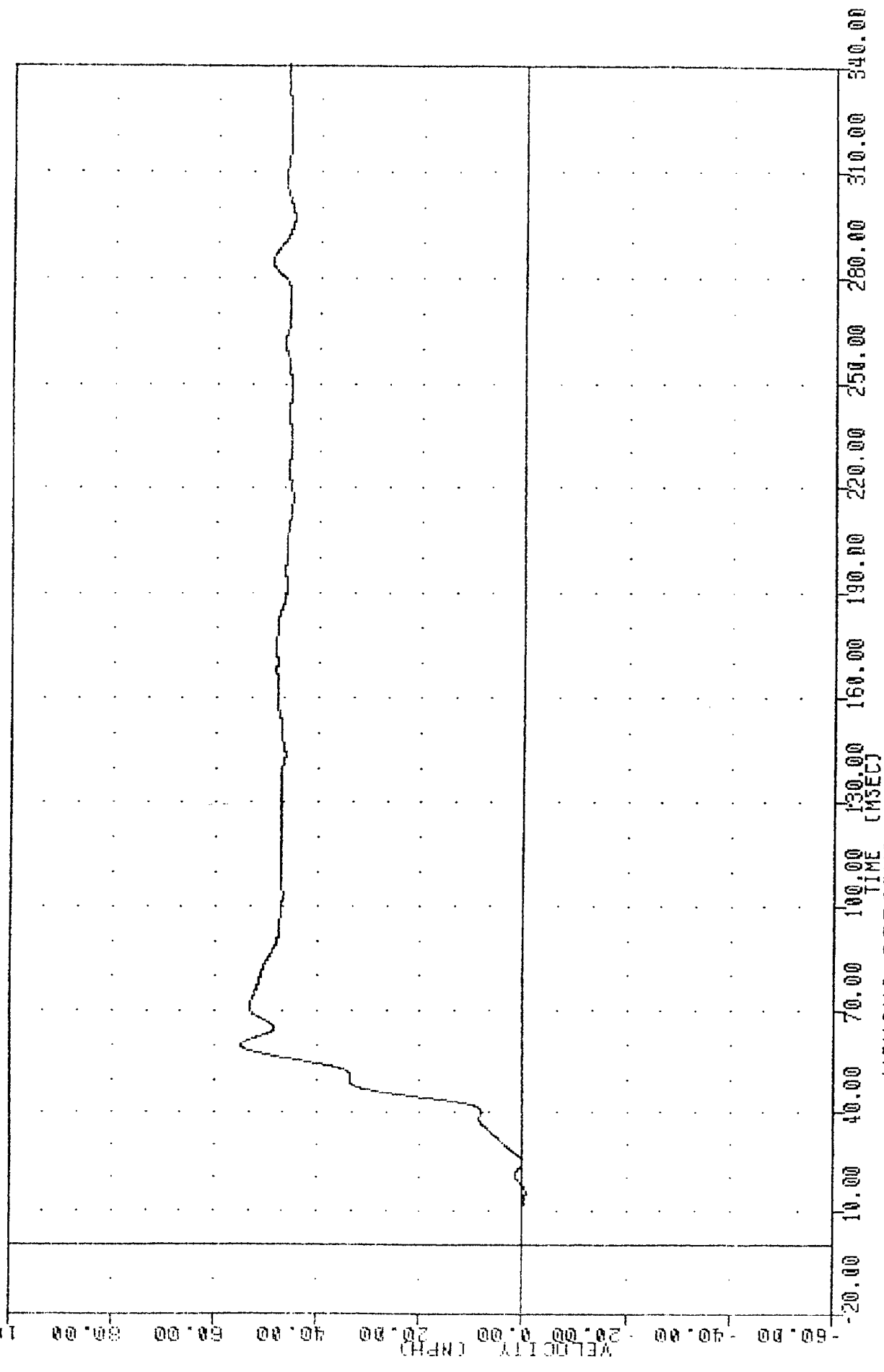


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 8) ACCELERATION Y AXIS

TRC 031027, 031027 PLOT DATE 1-NOV-83 08:44:23

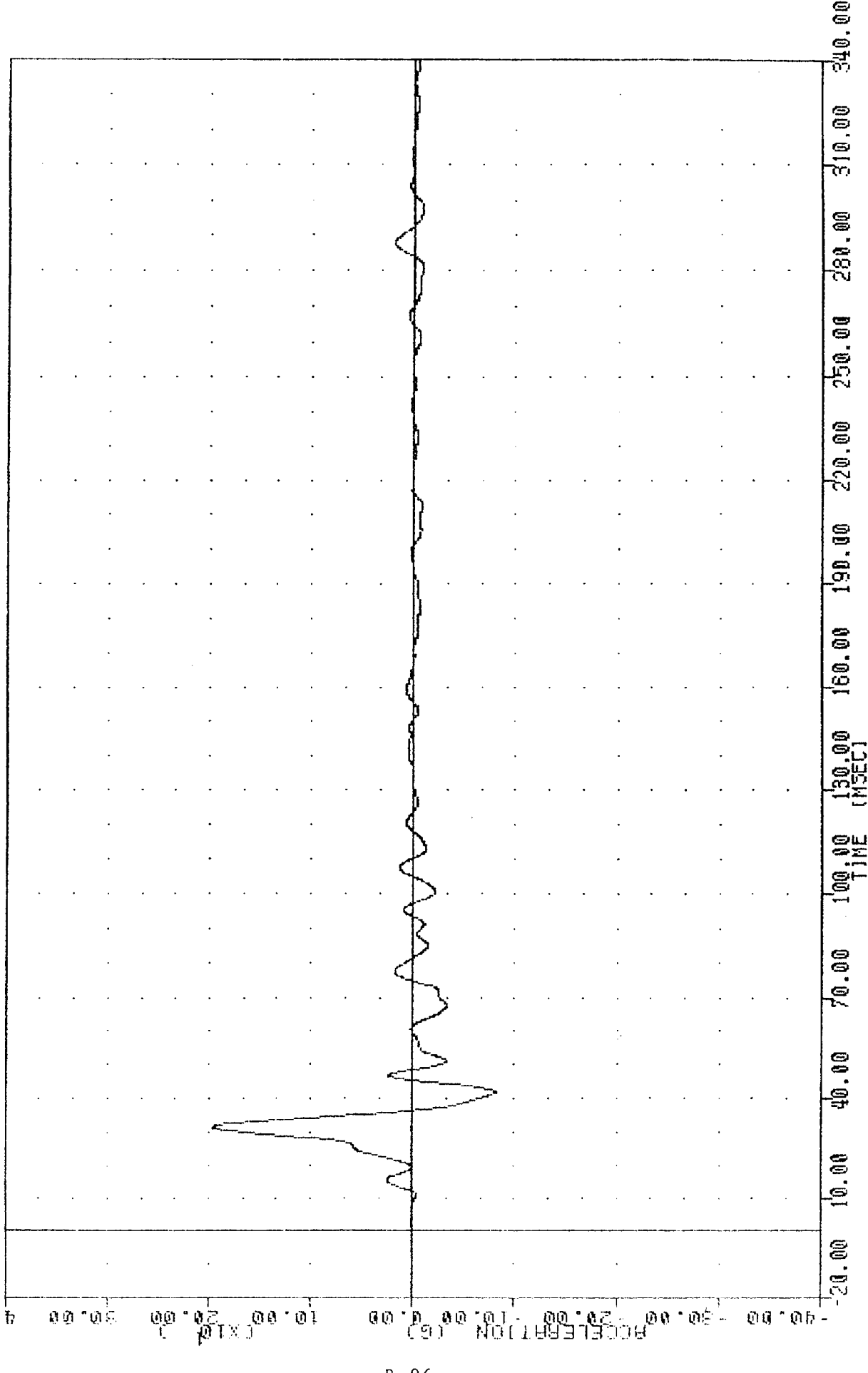
EVALUATION OF MOD VW FLEET
833000000000
LFDYV2

FILTER = 8LFF 300/ 949/ -40
MIN. MAX VALUES = -0.528 15.50, 55.05 59.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYV2

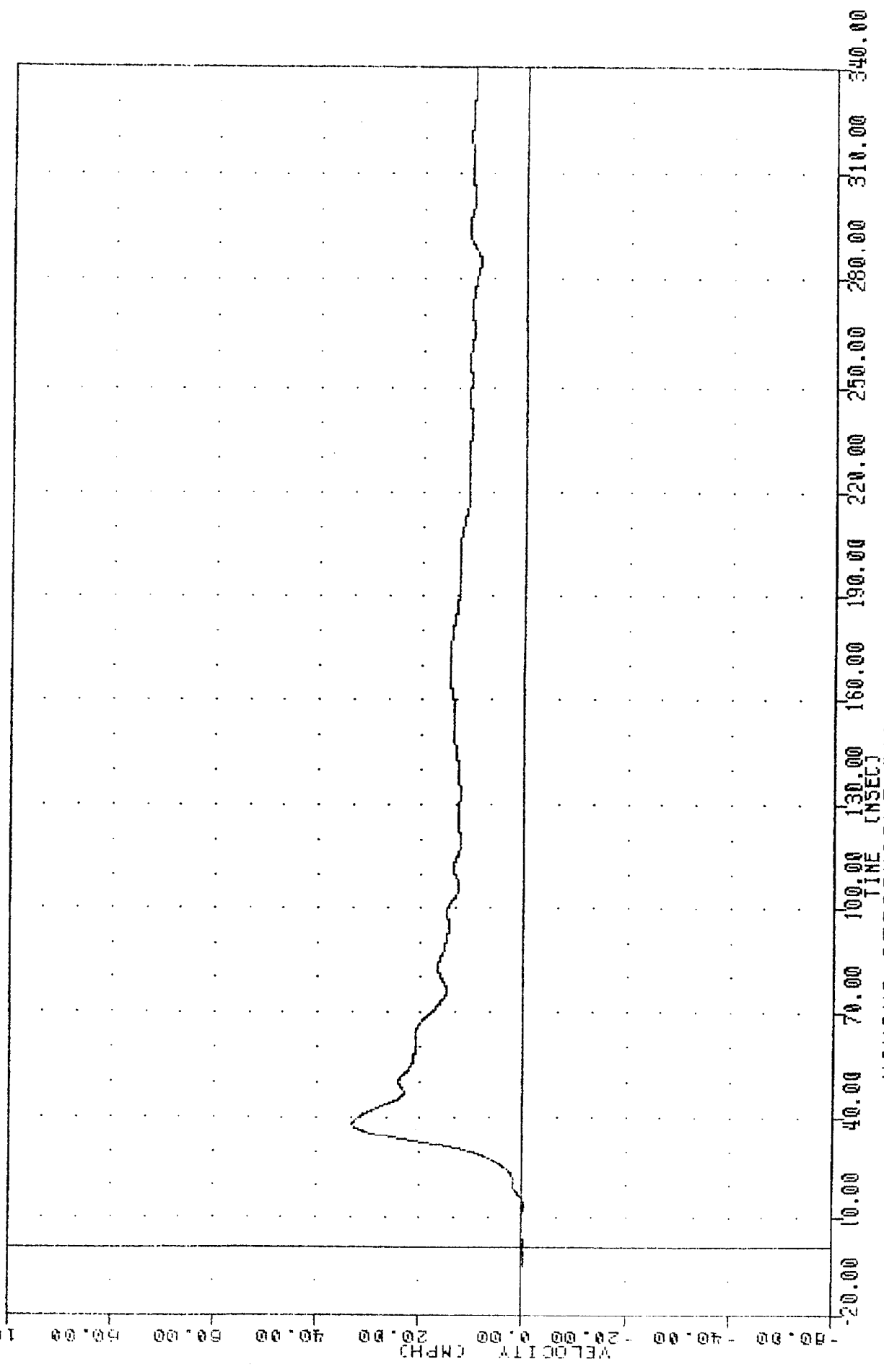
TRC [REDACTED], 031027 [REDACTED] PLOT DATE 31 OCT 85 13:36:58
 EVALUATION OF MOD VW FLEET
 83300000000
 LFOY63
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -81.45e 42.00, 195.45 e 31.50



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

TAC [REDACTED], 531027 [REDACTED] PLOT DATE 1-NOV-83 08:44:23
 EVALUATION OF MOD VW FLEET
 833000000000
 LFDYV3

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -0.16 13.50 33.11 37.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LFDYV3

TRC 831027, 31-OCT-83 13:58:58

EVALUATION OF MDD VW FLEET

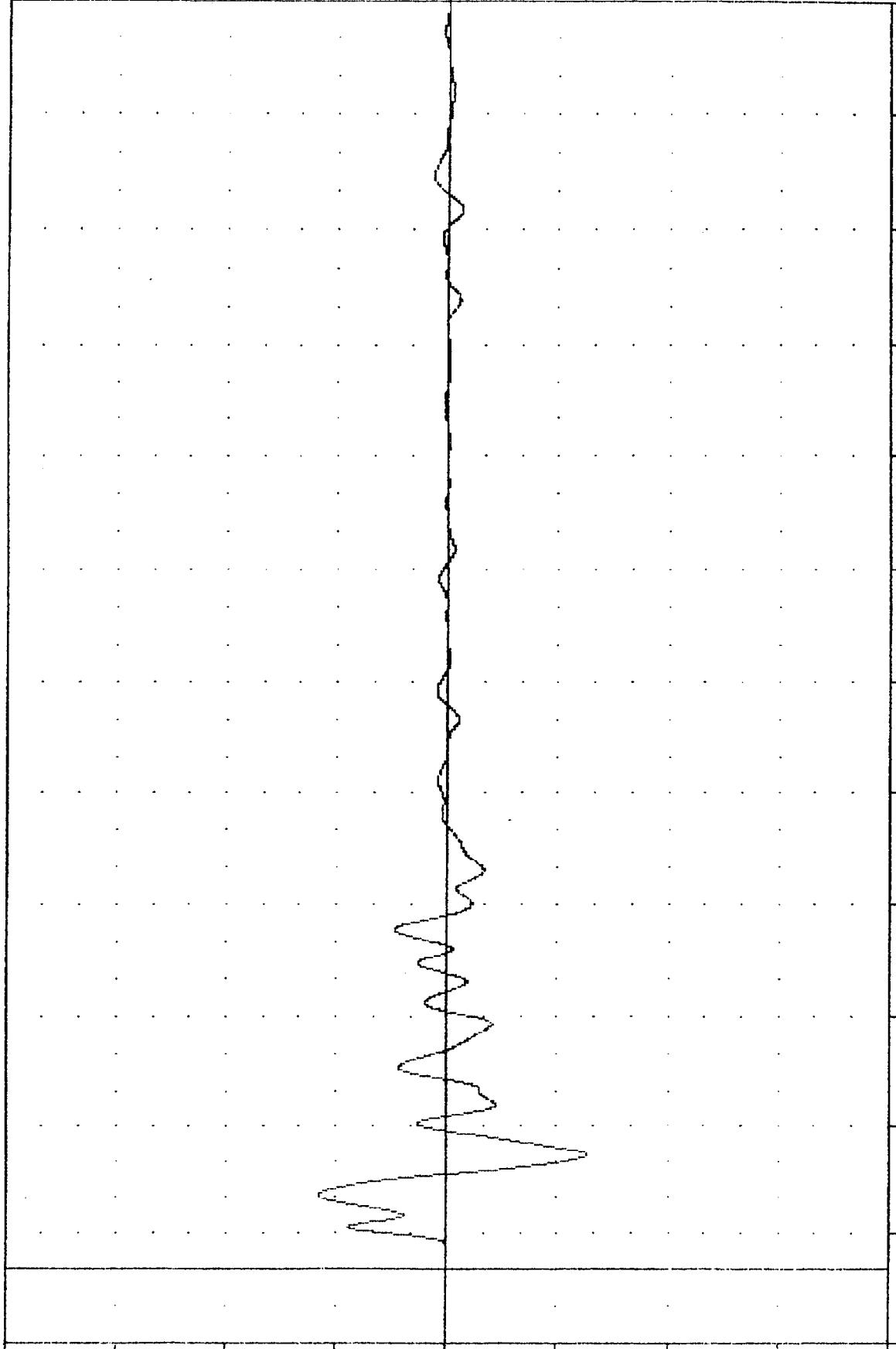
833000000000

LF0Y64

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -127.308 32.00, 115.52 e 20.38

ACCELERATION (G)



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

TRC 031027 PLOT DATE 1-NOV-83 08:44:23

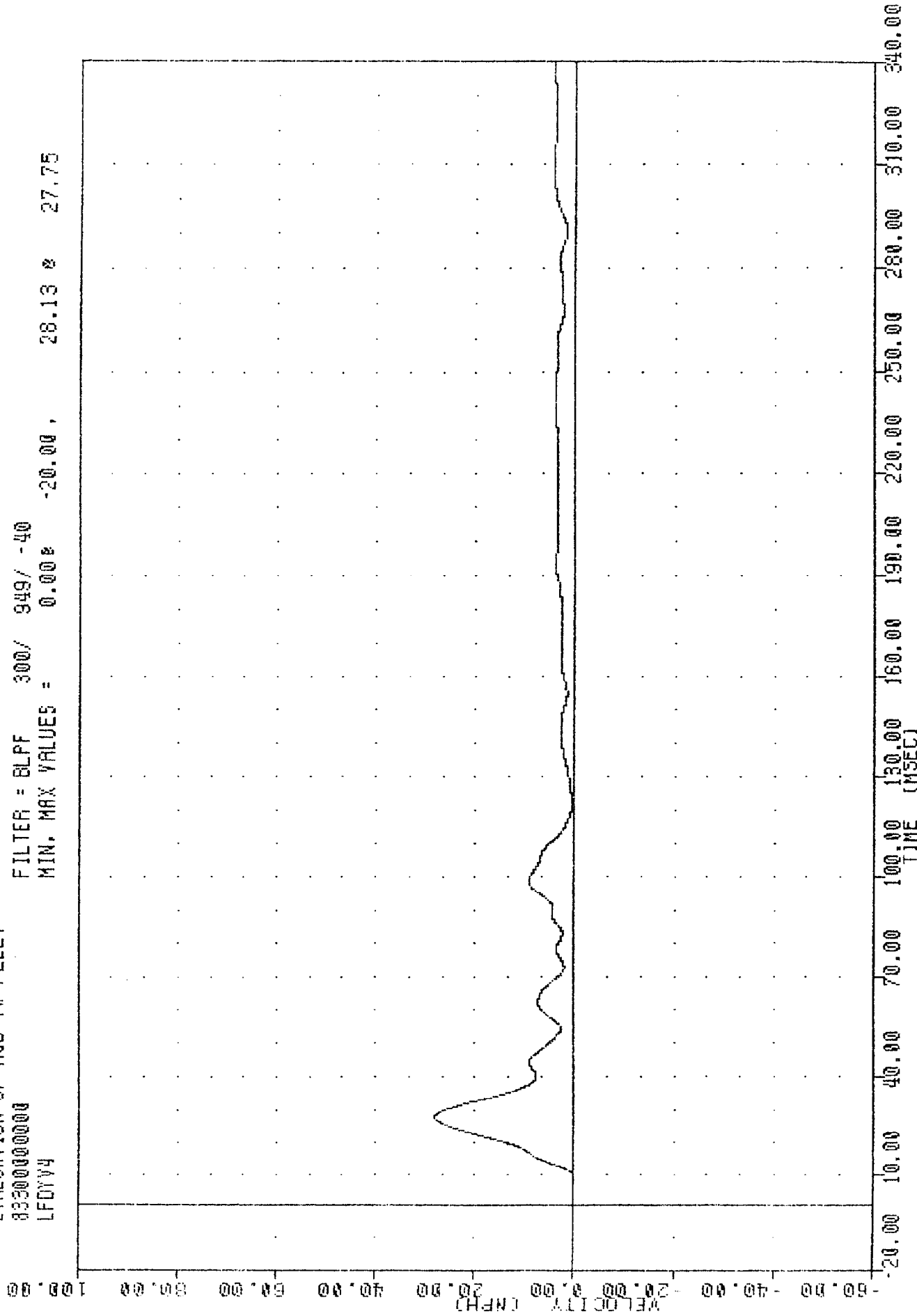
EVALUATION OF MOD YW FLEET

833000000000

LFDYV4

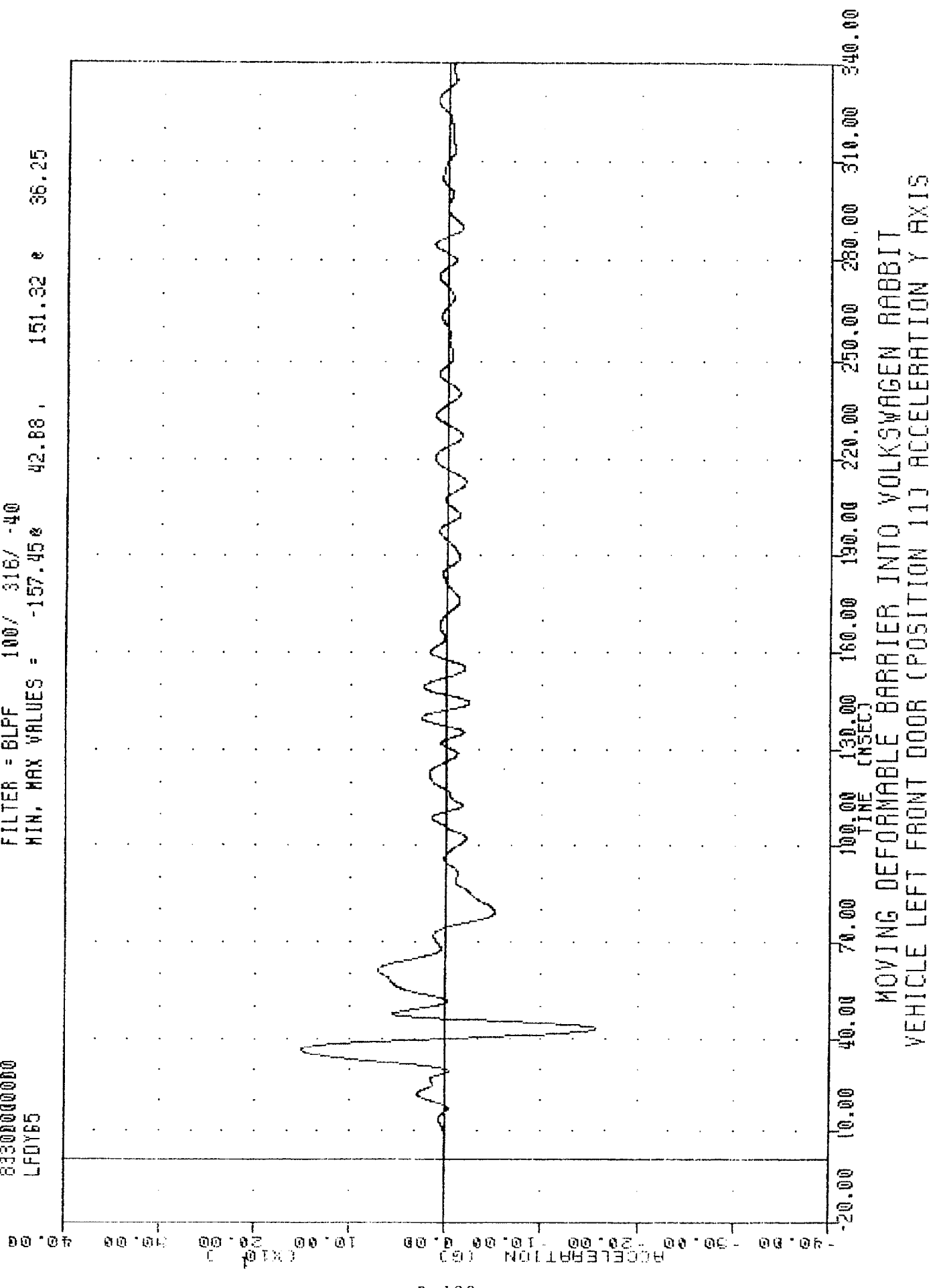
FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.00e -20.00, 28.13 e 27.75

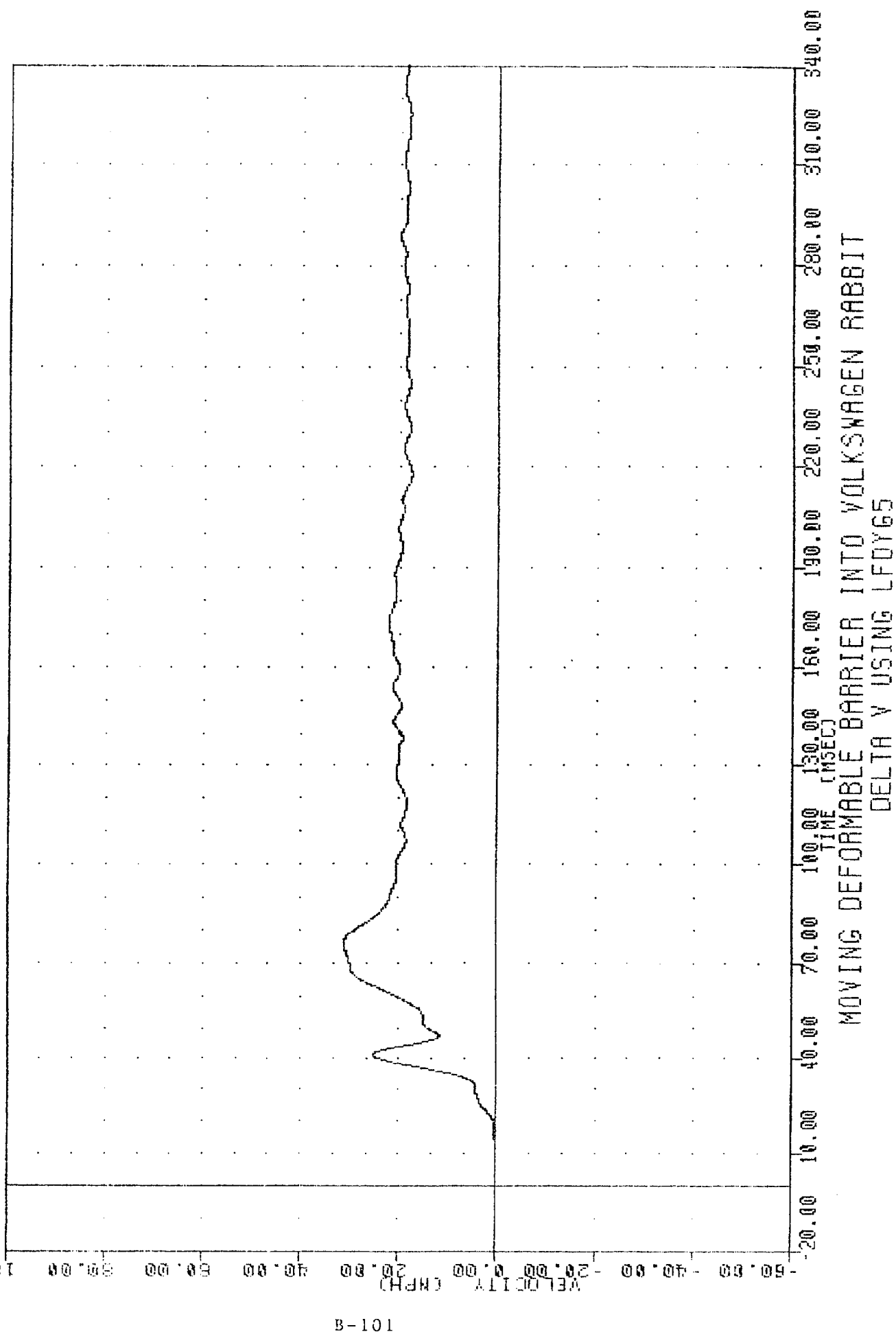


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYV4

TRC [REDACTED], 887027 [REDACTED] PLOT DATE 31 OCT 83 13:38:58
 EVALUATION OF MOD VW FLEET
 833000000000
 LFDY65
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -157.45% 42.88, 151.32 e 36.25



TRC [REDACTED], 03/02/85 [REDACTED] PLOT DATE 1 NOV-85 06:44:23
 EVALUATION OF MOD VW FLEET
 833000000000
 LFDYV5
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.00e -5.88, 31.30 e 75.75



TRC [REDACTED], [REDACTED] 31 OCT 83 13:56:58

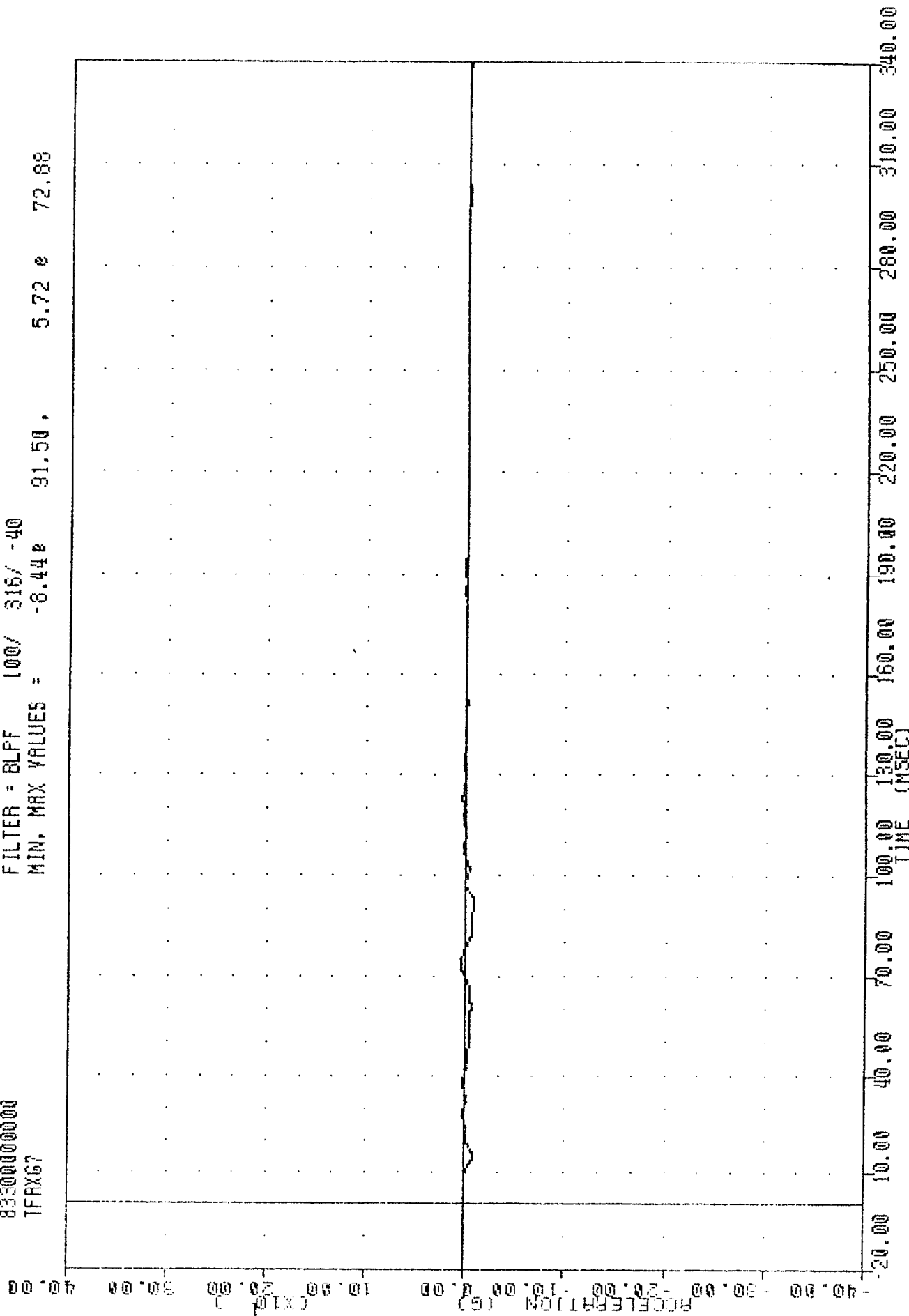
EVALUATION OF MOD VN FLEET

833000000000

TRXG7

FILTER = BLPF 100/ 316/ -40

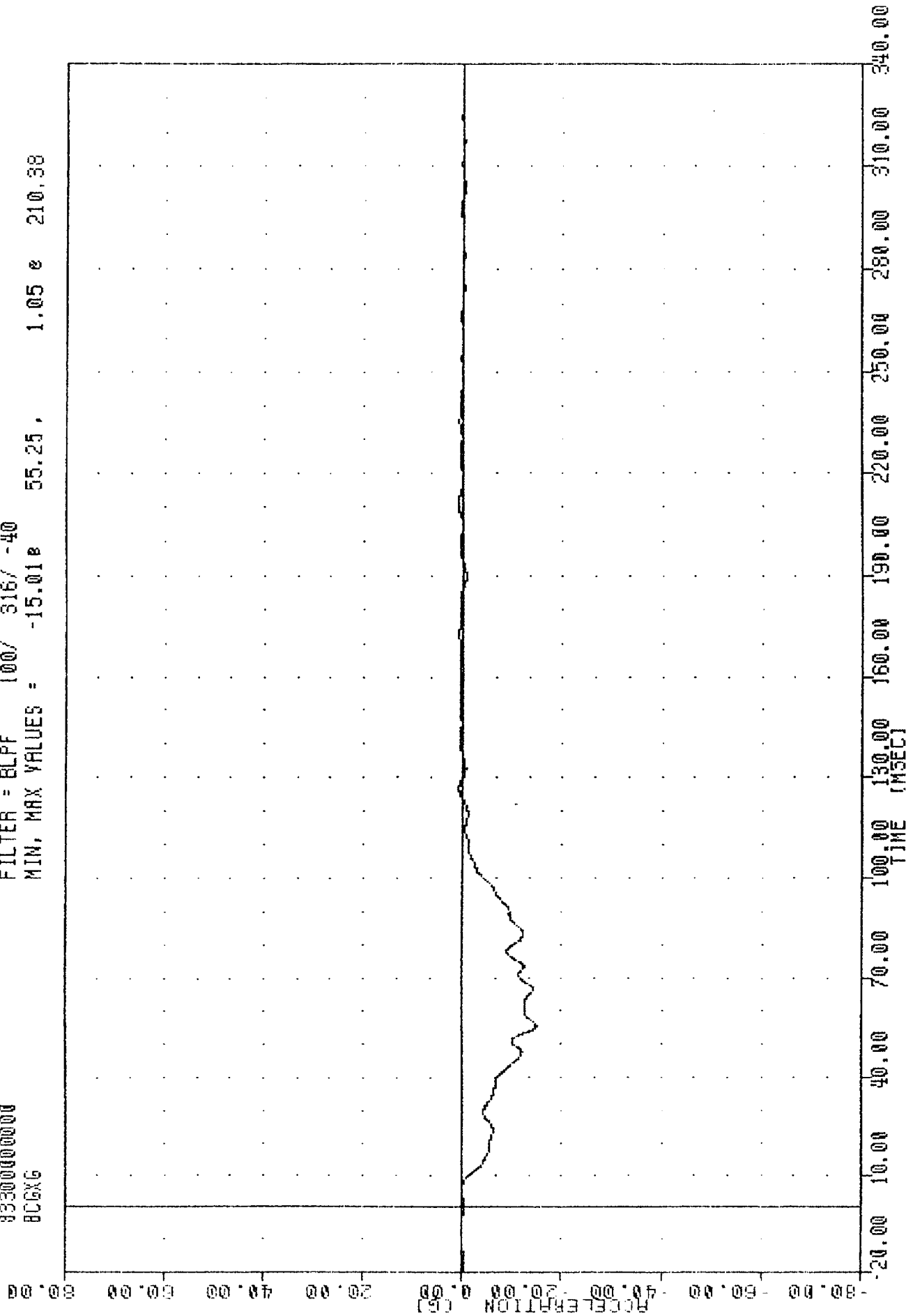
MIN. MAX VALUES = -8.44e 91.50, 5.72 e 72.88



TRC 831027
 EVALUATION OF MOD YW FLEET
 833000000000
 BCGXG

PLOT DATE 31-OCT-83 13:58:58

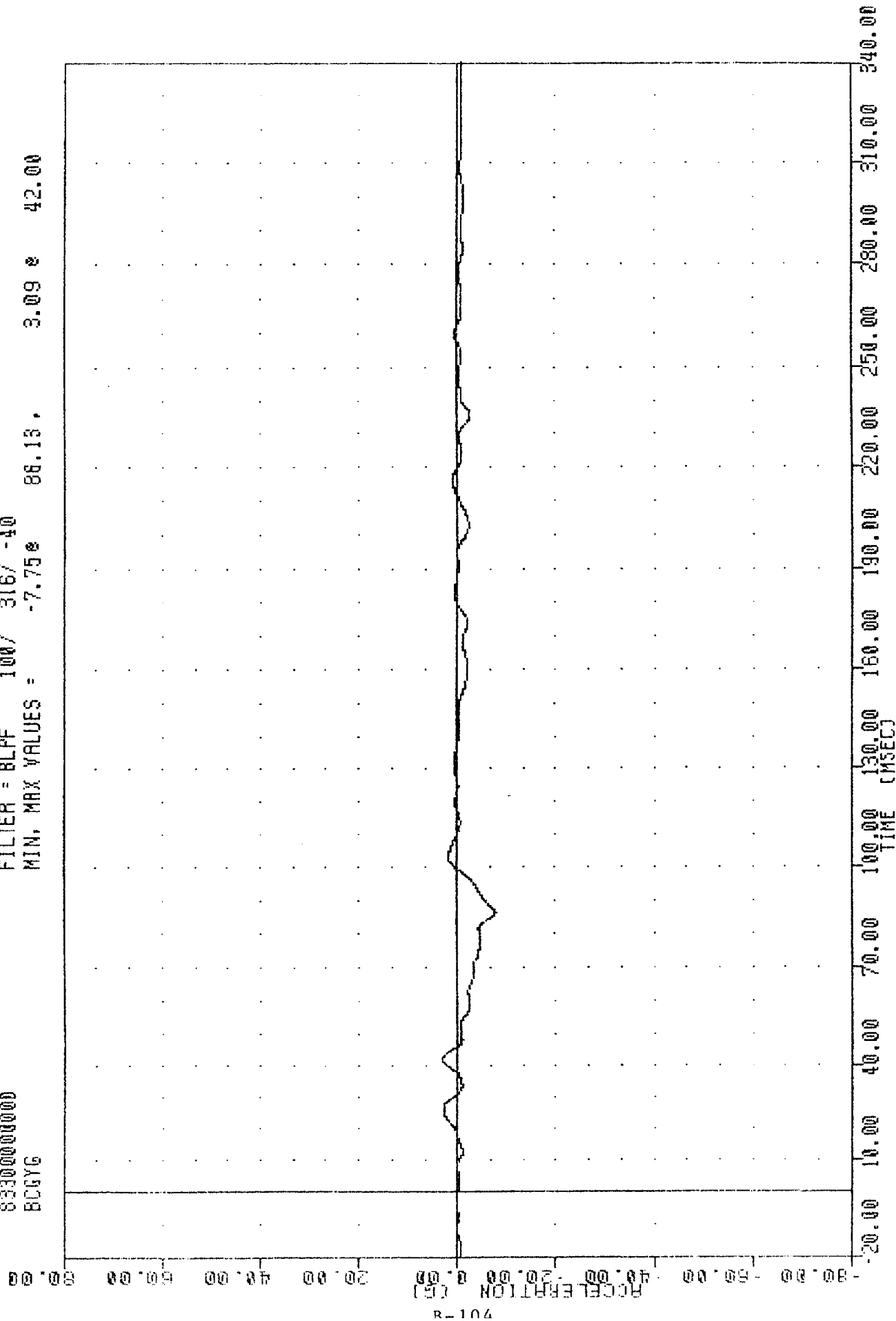
FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -15.01e 55.25, 1.05 e 210.38



TRC 831027
 EVALUATION OF MOD VW FLEET
 833000000000
 BCGYG

PLOT DATE 31-OCT-83 13:58:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -7.75% 86.13, 3.09 & 42.00



R-104

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

TAL 831027 31-OCT-83 13:56:58

EVALUATION OF MOD VW FLEET

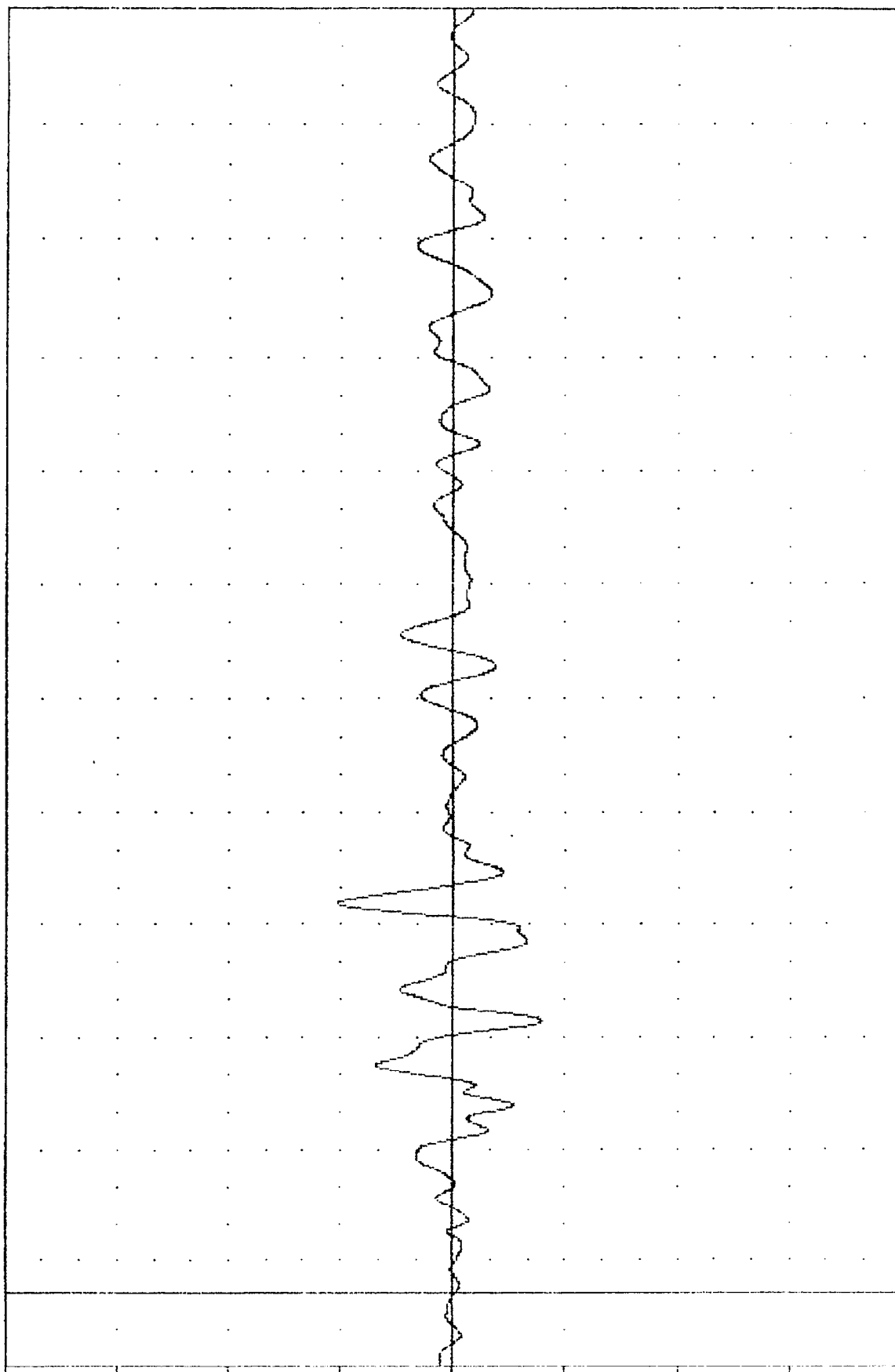
833000000000

BCG26

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -15.84g 74.25, 20.40 g 105.50

ACCELERATION (G)



TRC

851027

PLOT DATE 31-OCT-83 13:58:27

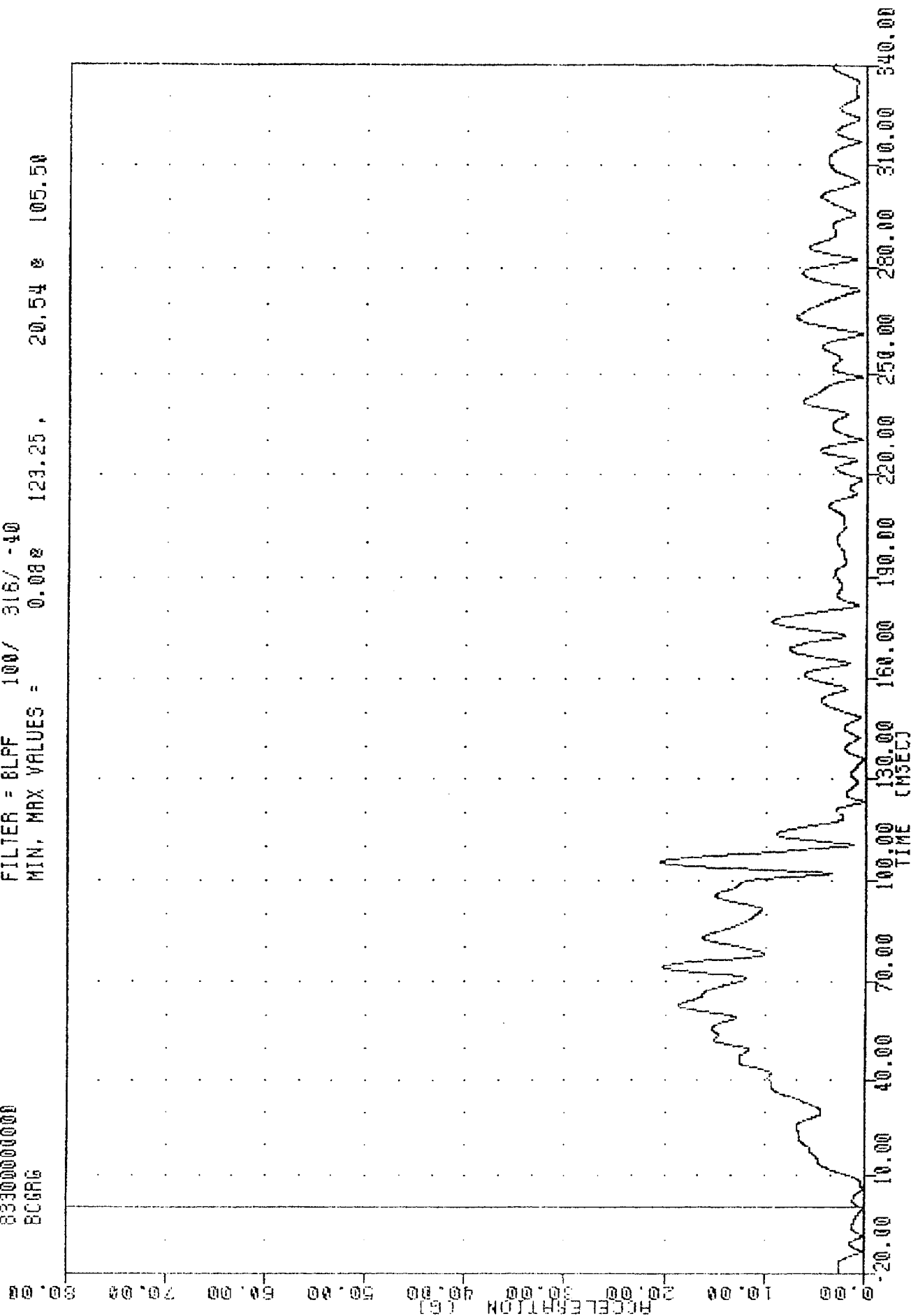
EVALUATION OF MDD VW FLEET

833000000000

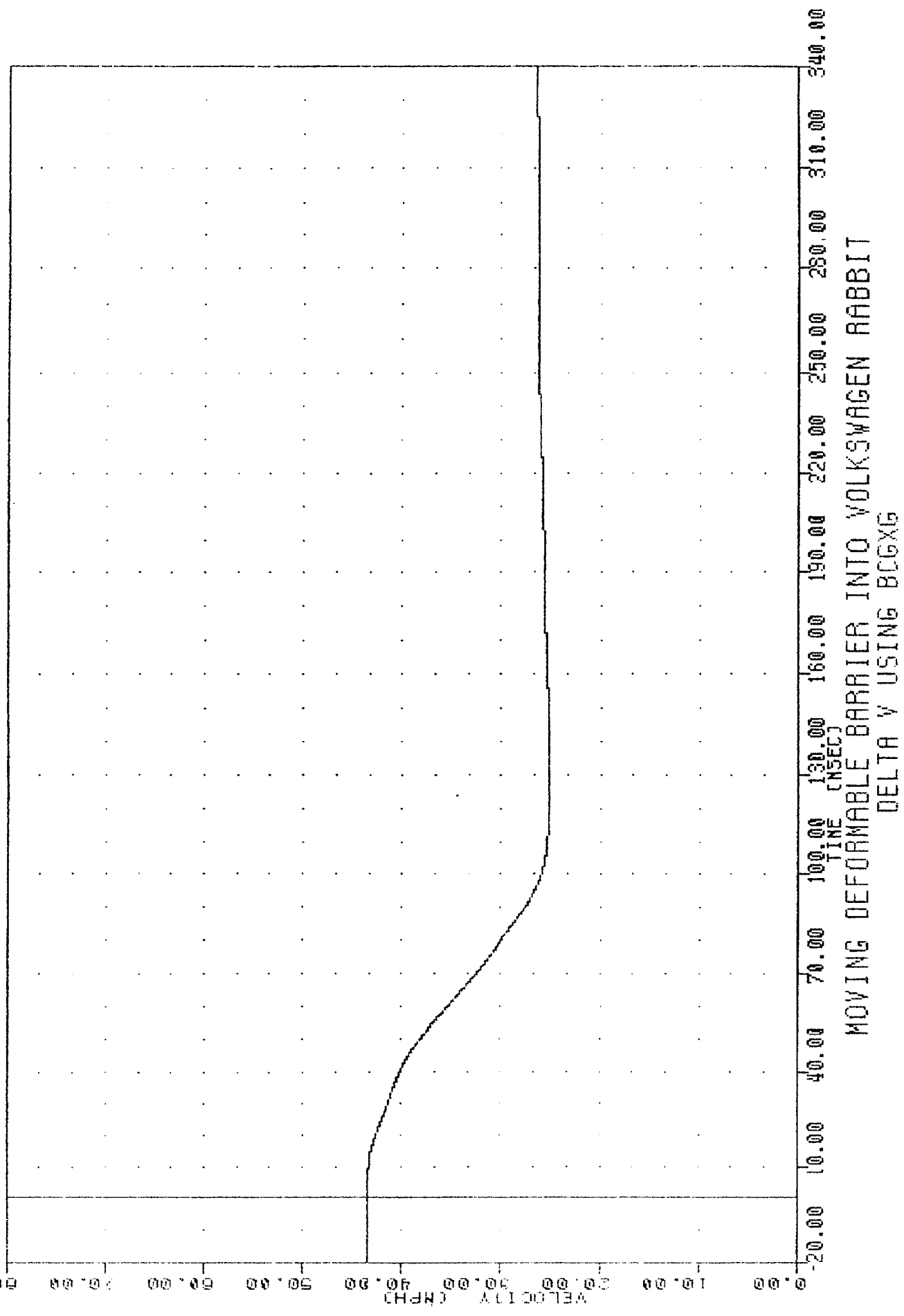
BCGRG

FILTER = 8LFF 100/ 316/ -40

MIN. MAX VALUES = 0.00e 123.25, 20.54 e 105.50

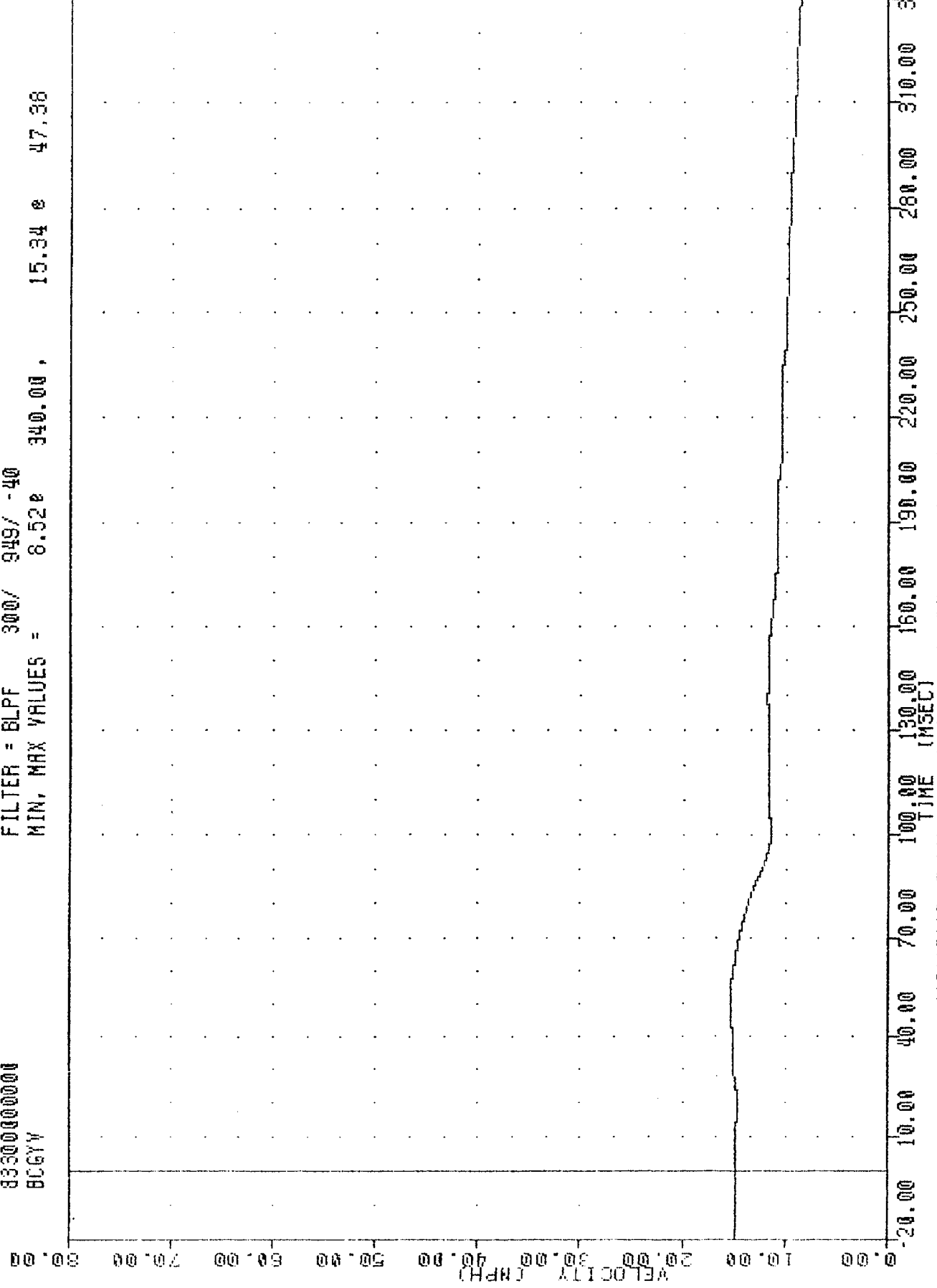


TRC [REDACTED], 03J027 [REDACTED] 1-WDY-83 08:44.23
 EVALUATION OF MOD VN FLEET
 83300000000
 BCGXY
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 25.118 124.63, 43.40 20.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BCGXG

TAC [REDACTED], 831027 [REDACTED] PLOT DATE 1-NOV-83 08:44:23
 EVALUATION OF MOD YW FLEET
 833000000000
 BCGYV
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 8.52e 340.00, 15.34 e 47.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BCGYG

THC 831027 PLOT DATE 31-OCT-83 13:56:58

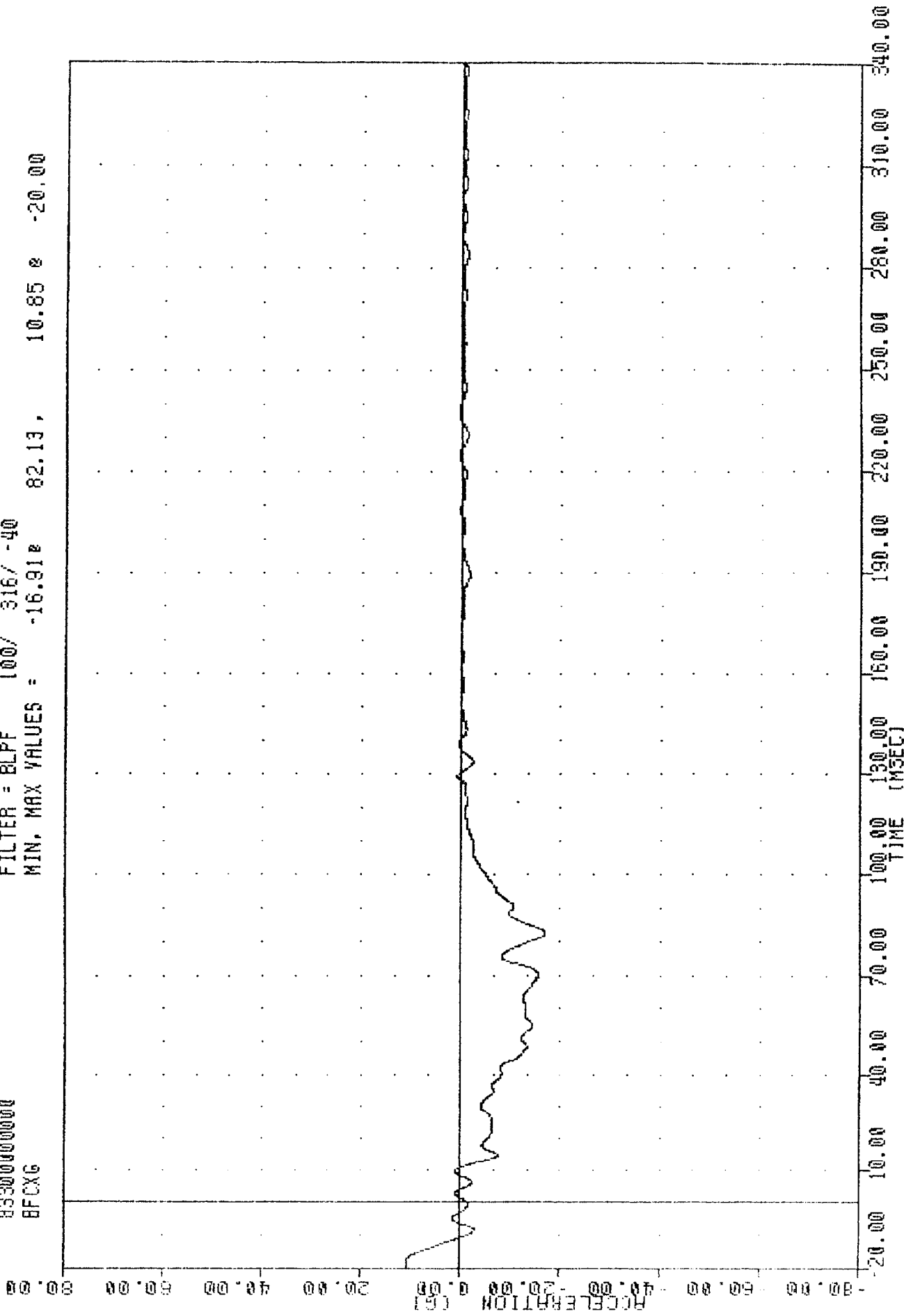
EVALUATION OF MOD VW FLEET

83300000000

BFCXG

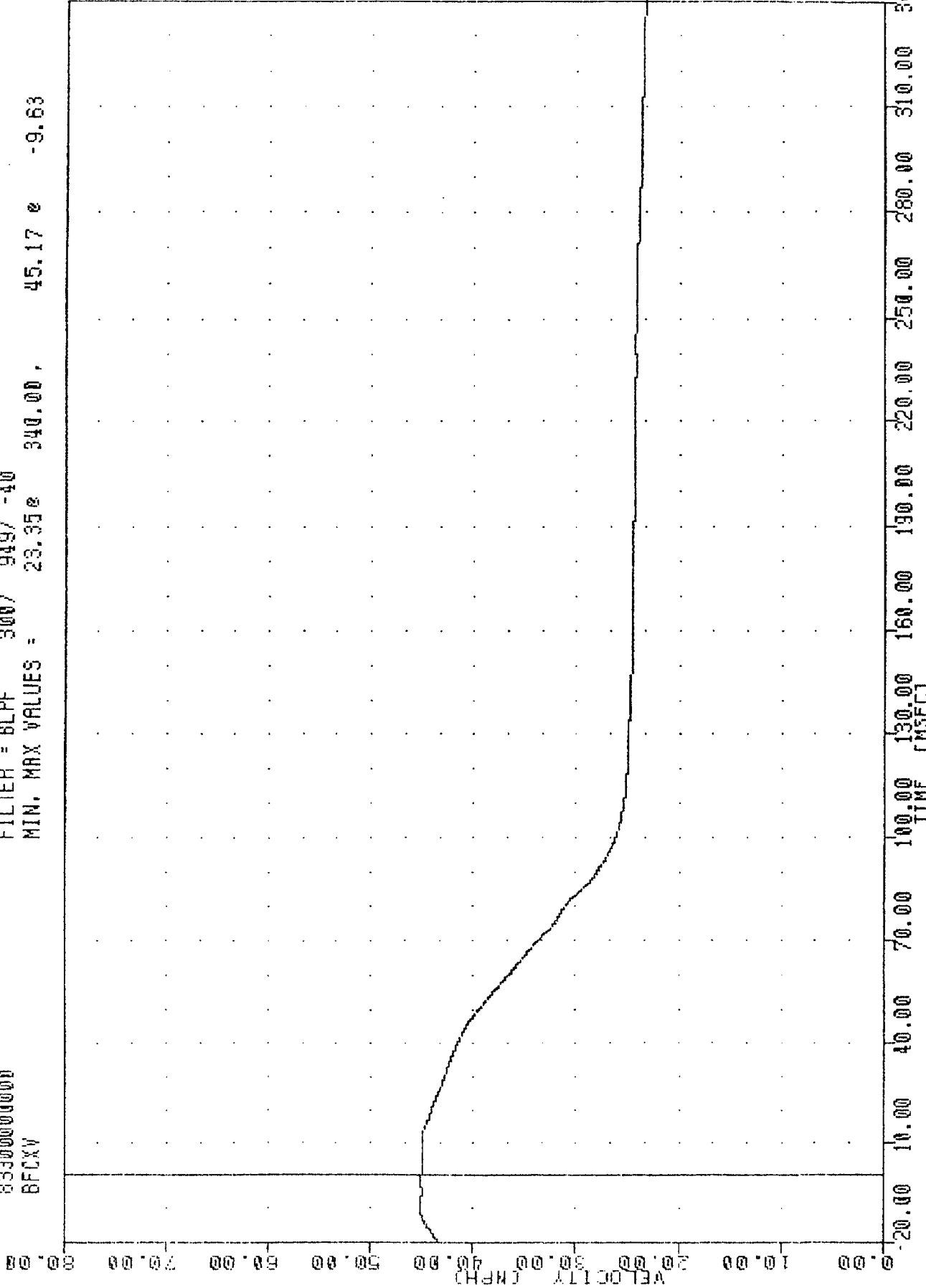
FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -16.91e 82.13, 10.85 e -20.00



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

TRC [REDACTED], 03/02/85, 1-W07-85 06:44:23
 EVALUATION OF MOD VW FLEET
 833000000000
 BFCXV
 FILTER = 8LPF 300/ 949/ -40
 MIN. MAX VALUES = 23.35e 340.00, 45.17 e -9.63



TAC 027, 31 OCT 83 13:06:58

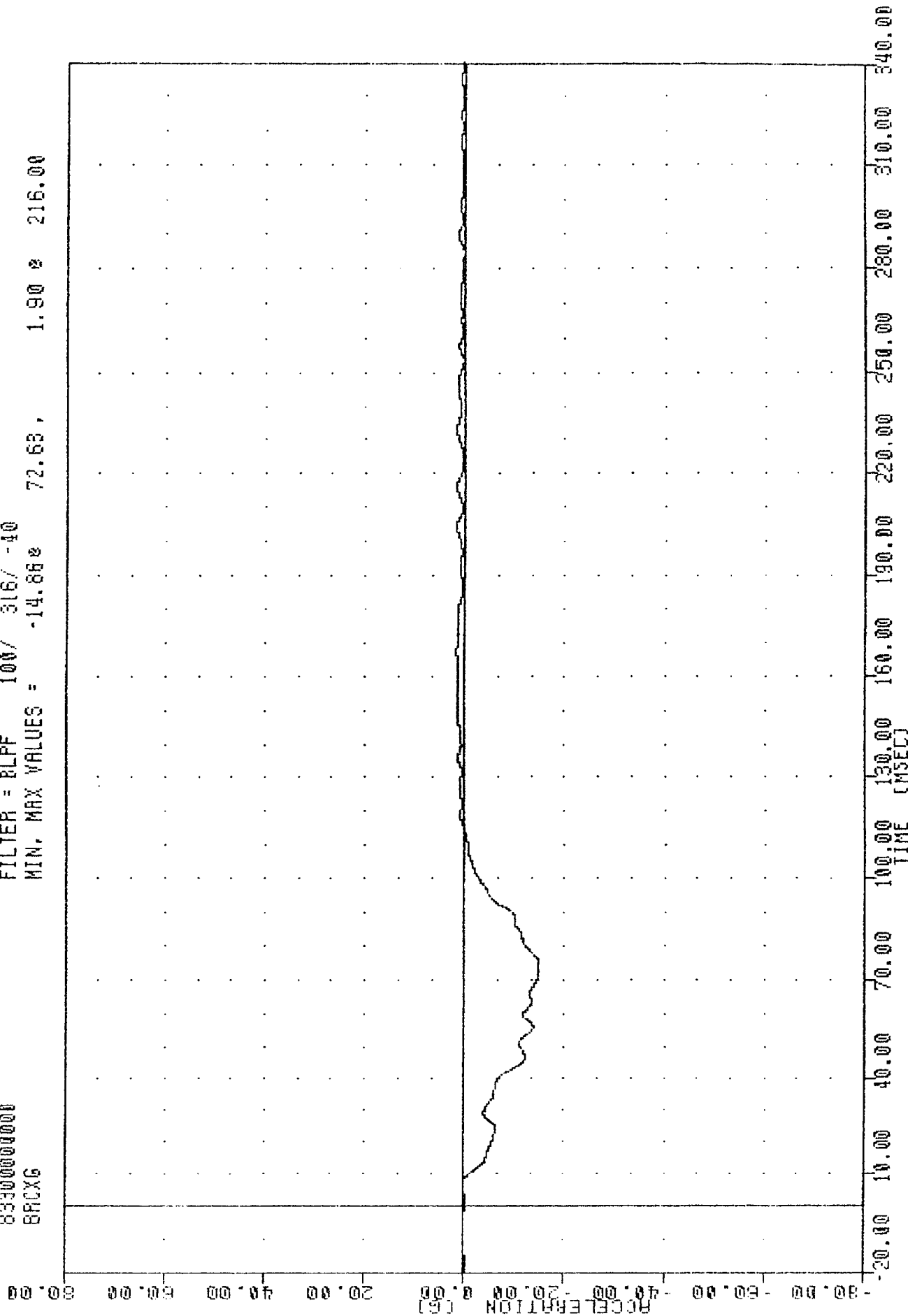
EVALUATION OF MOD VM FLEET

833000000000

BRCXG

FILTER = 8LPF 100/ 316/ -40

MIN. MAX VALUES = -14.86g 72.63, 1.90g 216.00

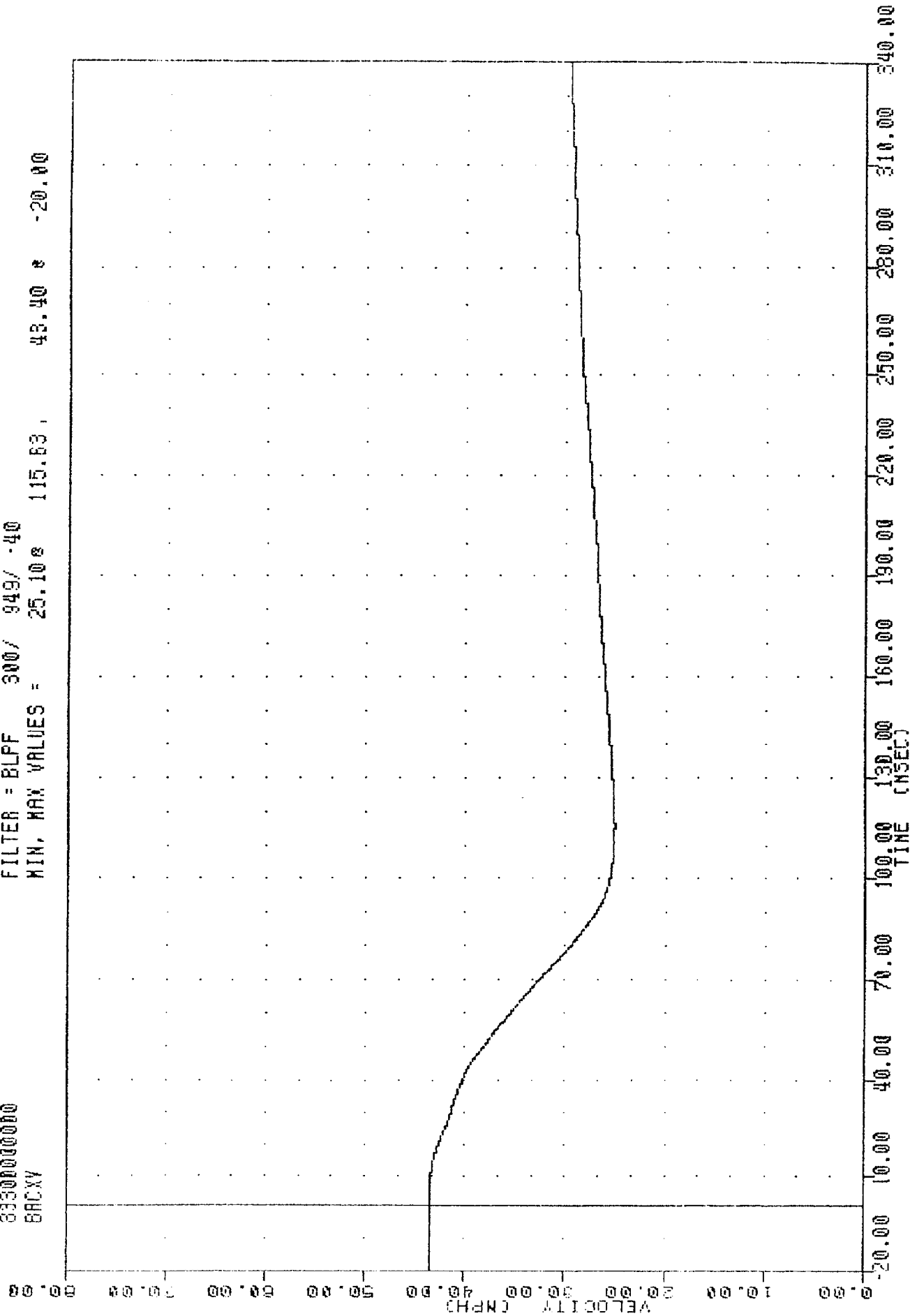


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER REAR CROSSMEMBER ACCELERATION X AXIS

TRC [REDACTED], 031027 [REDACTED]
 EVALUATION OF MOD VX FLEET
 33300000000
 BACXY

PLOT DATE 1 NOV-83 08:44:23

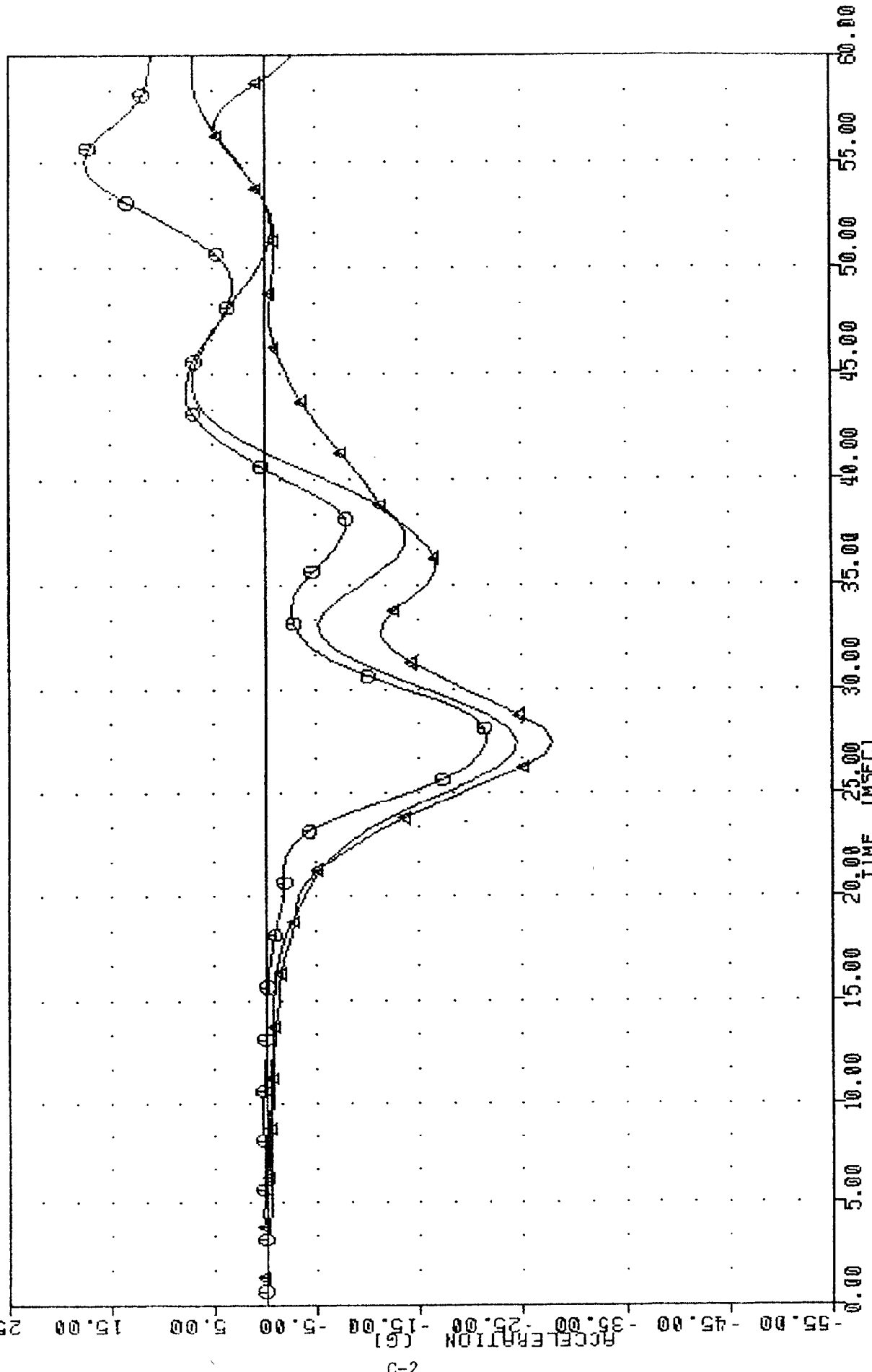
FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 25.108 115.63, 43.40 -20.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BRCXG

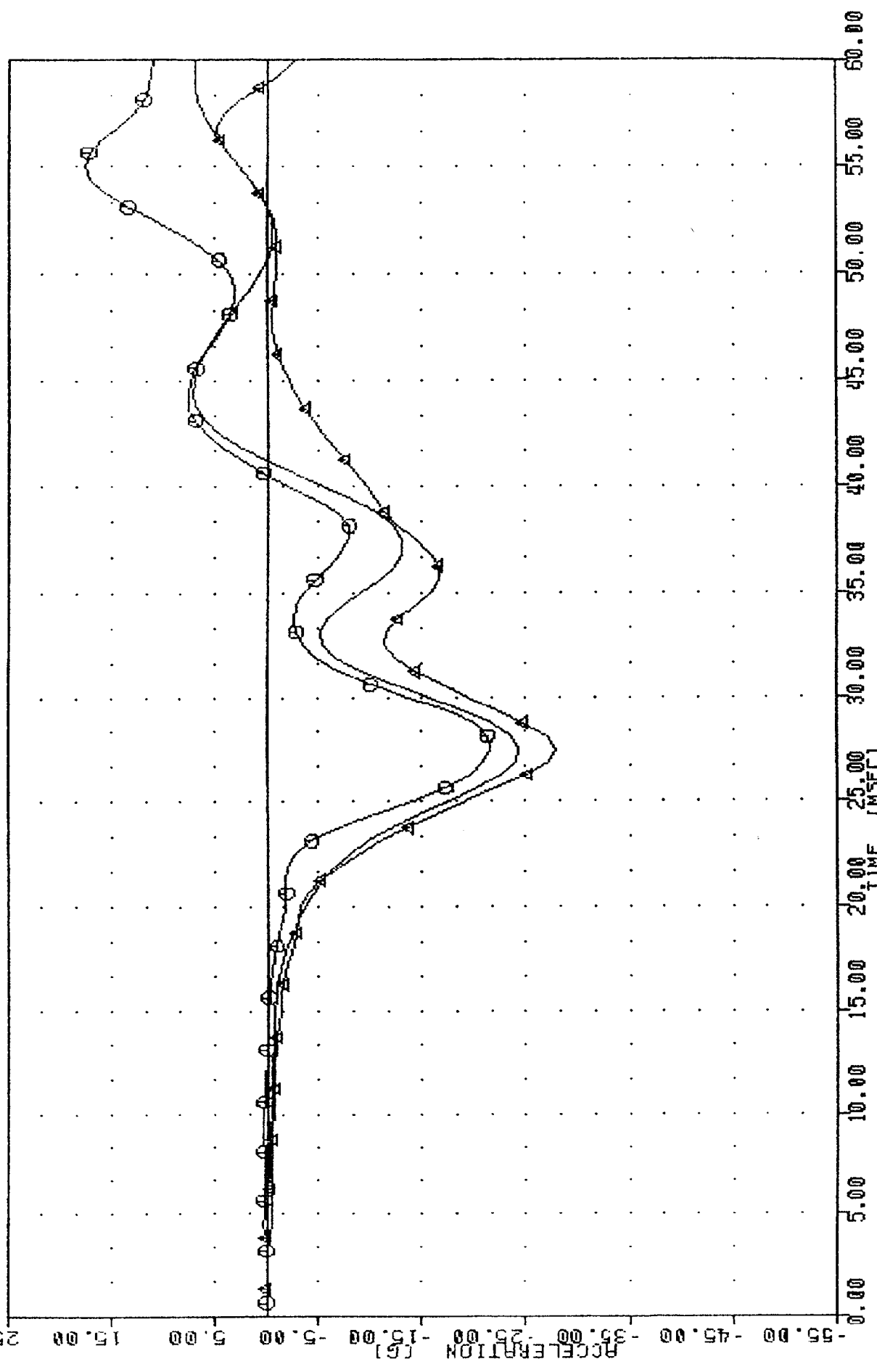
APPENDIX C
DUMMY CERTIFICATION

VRTC SRL26 ARL6CA69 SID THORAX 6 BODY 318 CAL 69 83298 PLOT DATE 27-OCT-83 08:59:47
 TOIYGH FILTER = HSRI 136/ 189/ -50 MIN, MAX = -24.45 8 26.87, 6.93 8 56.75
 MN-2SD FILTER = HSRI 136/ 189/ -50 MIN, MAX = -21.58 8 26.87, 17.54 8 54.38
 MN-2SD FILTER = HSRI 136/ 189/ -50 MIN, MAX = -27.91 8 26.87, 4.78 8 56.25



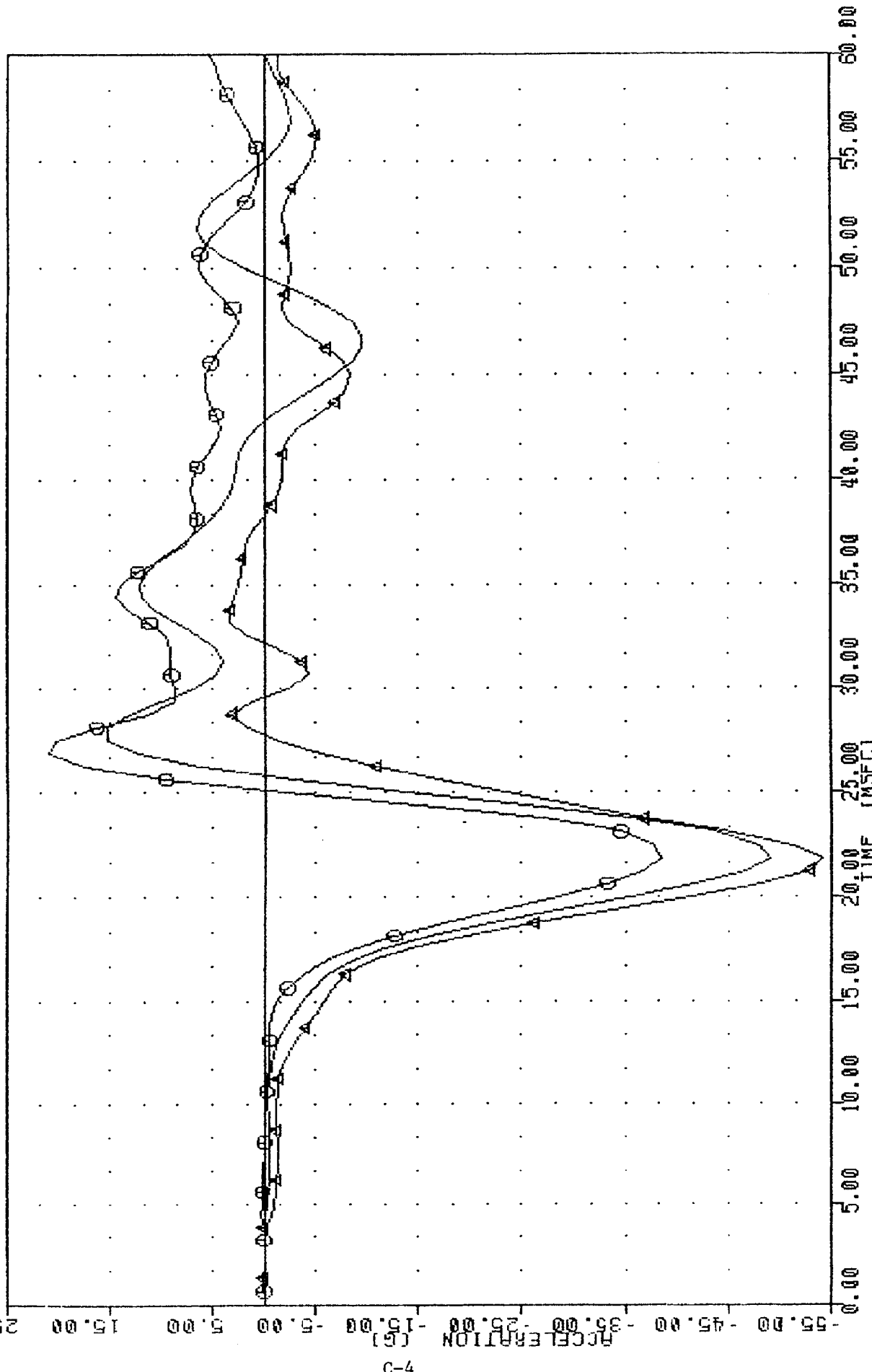
SIDE IMPACT TEST (ARL006)
 UPPER SPINE ACCELERATION Y AXIS -A

VRIC SRL26 , ARL0069 SID THORAX 6 BODY 318 CAL 69 83298 PLOT DATE 27-OCT-83 08:52:19
 TO1Y61 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -24.37 26.87 7.06 43.75
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -21.58 26.87 17.54 54.38
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -27.91 26.87 4.78 56.25



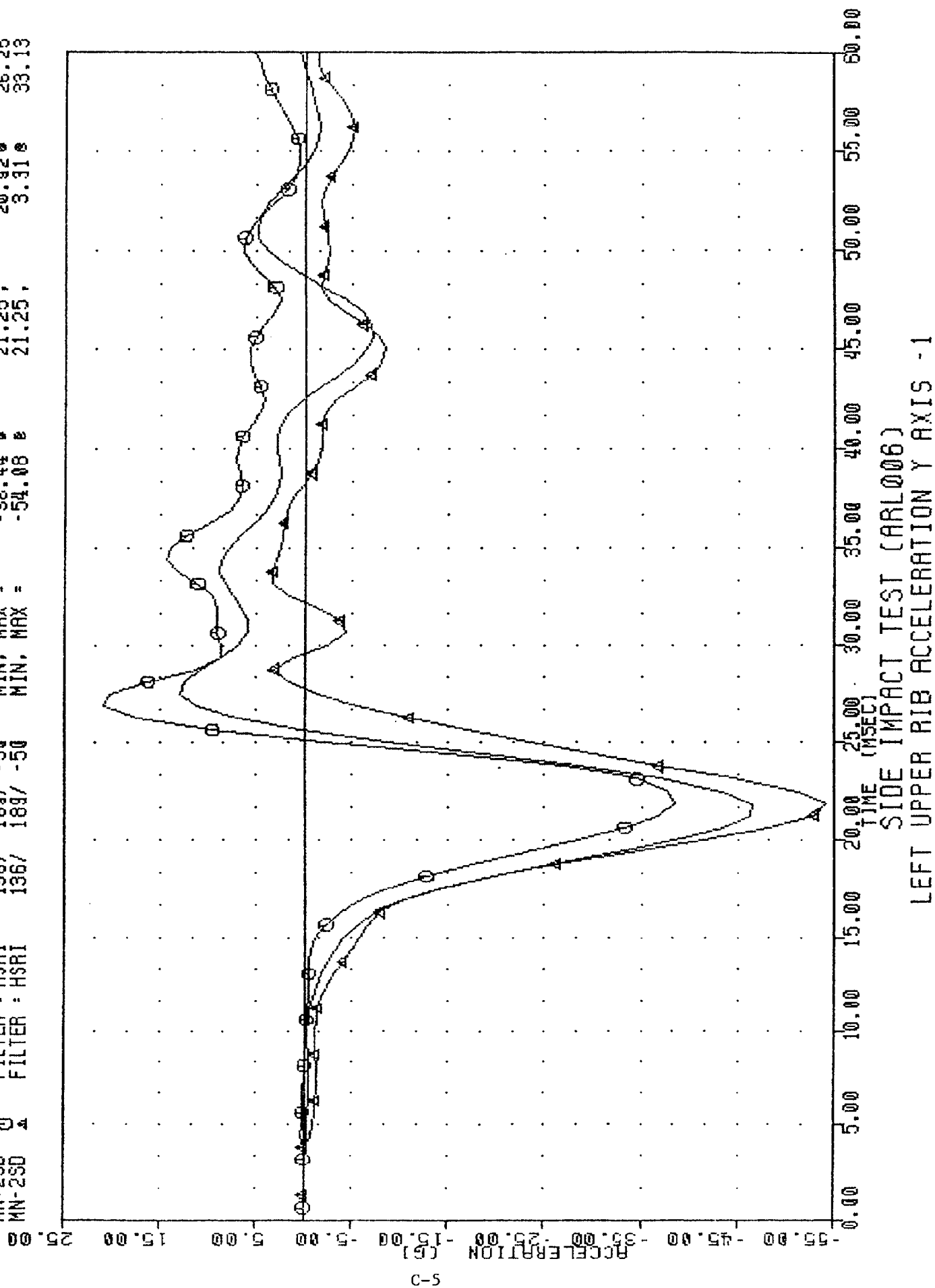
SIDE IMPACT TEST (ARL006)
 UPPER SPINE ACCELERATION Y AXIS -1

VRIC SRL26 , ARL6C869 SID THORAX 6 BODY 318 CAL 69 83298 PLOT DATE 27-OCT-83 09:25:19
 LURYGR FILTER : HSRI 136/ 189/ -50 MIN. MAX = -49.15 21.25, 15.17 27.50
 MN+2SD 0 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -38.44 21.25, 20.92 26.25
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -54.08 21.25, 3.31 33.13

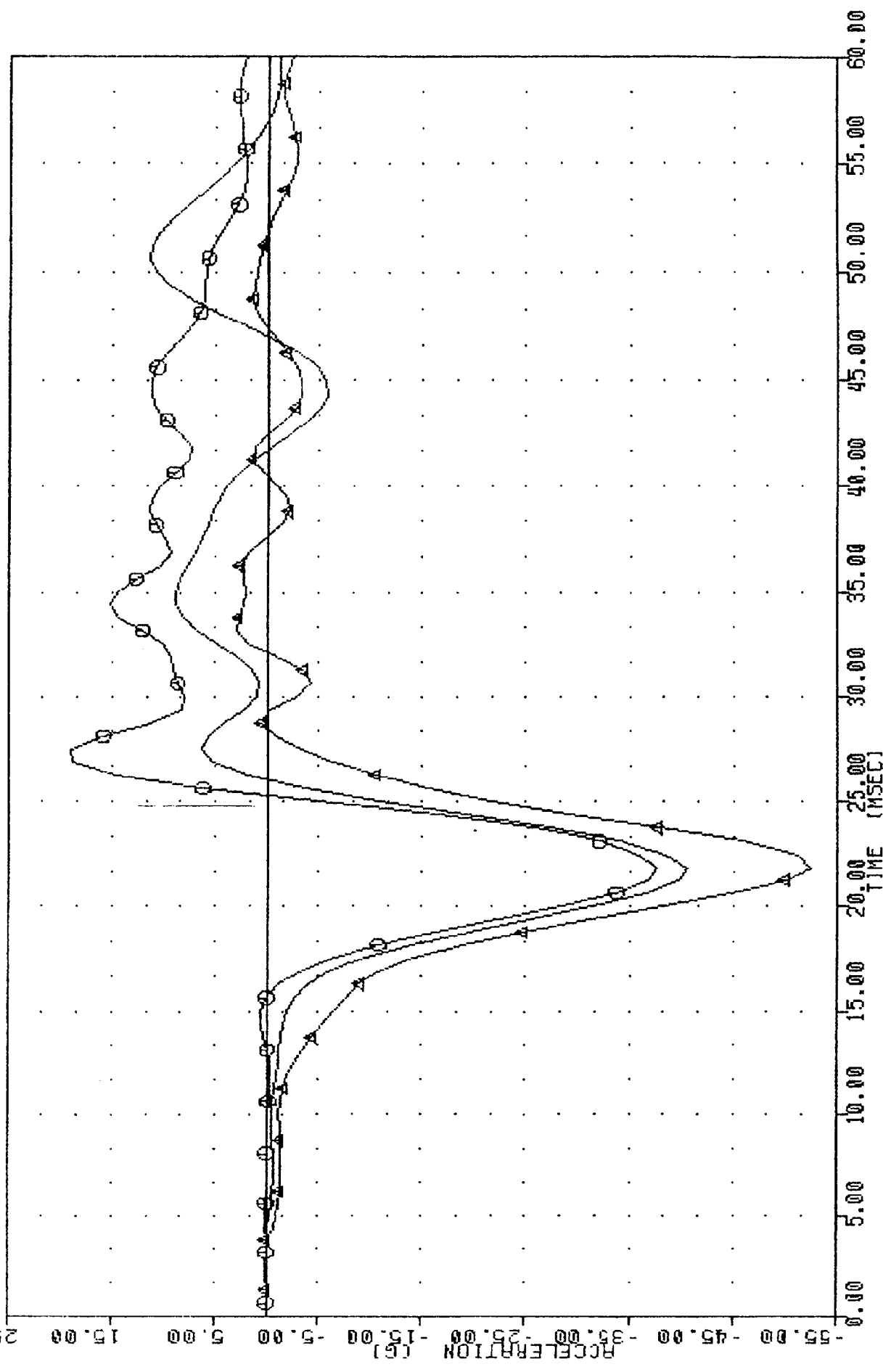


SIDE IMPACT TEST (ARL006)
 LEFT UPPER RIB ACCELERATION Y AXIS -A

UNIT	CALL	THORAX	BODY	CALL	MIN	MAX	PLT	DATE	TIME
WILC 5AL26	80869	510		59			83298	27-OCT-83	09:02:13
LURYGI			136/	189/	-50			21.25	12.74
WV-25D			136/	189/	-50			21.25	20.92
WV-25D			136/	189/	-50			21.25	3.31

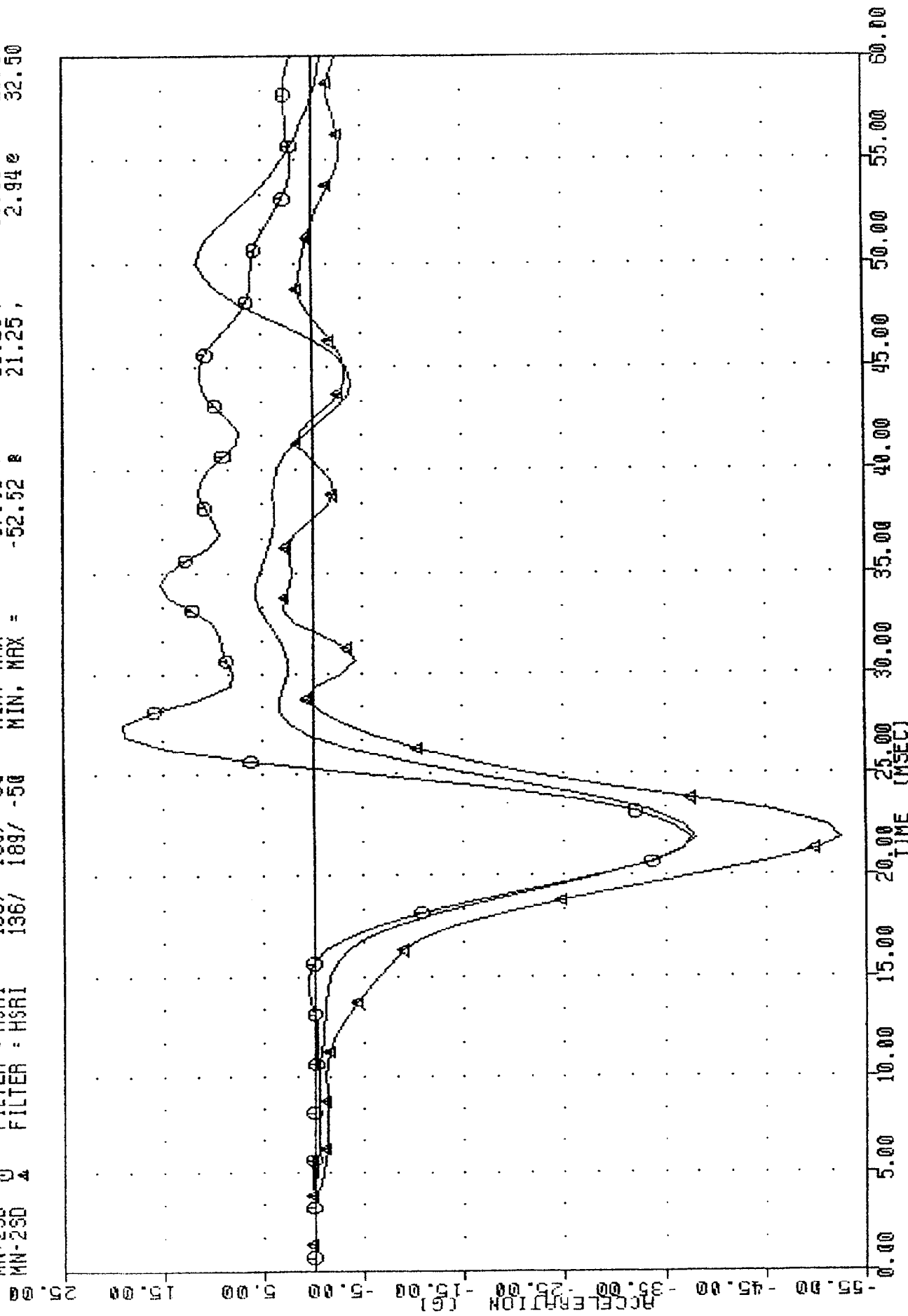


VRTIC SHL26 HRL6CH69 SID THORAX BODY 318 CAL 69 83298 PLOT DATE 27-OCT-83 09:23:23
 LLRYGA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -40.55 11.36 50.00
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.68 18.00 26.87
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 21.25 32.50



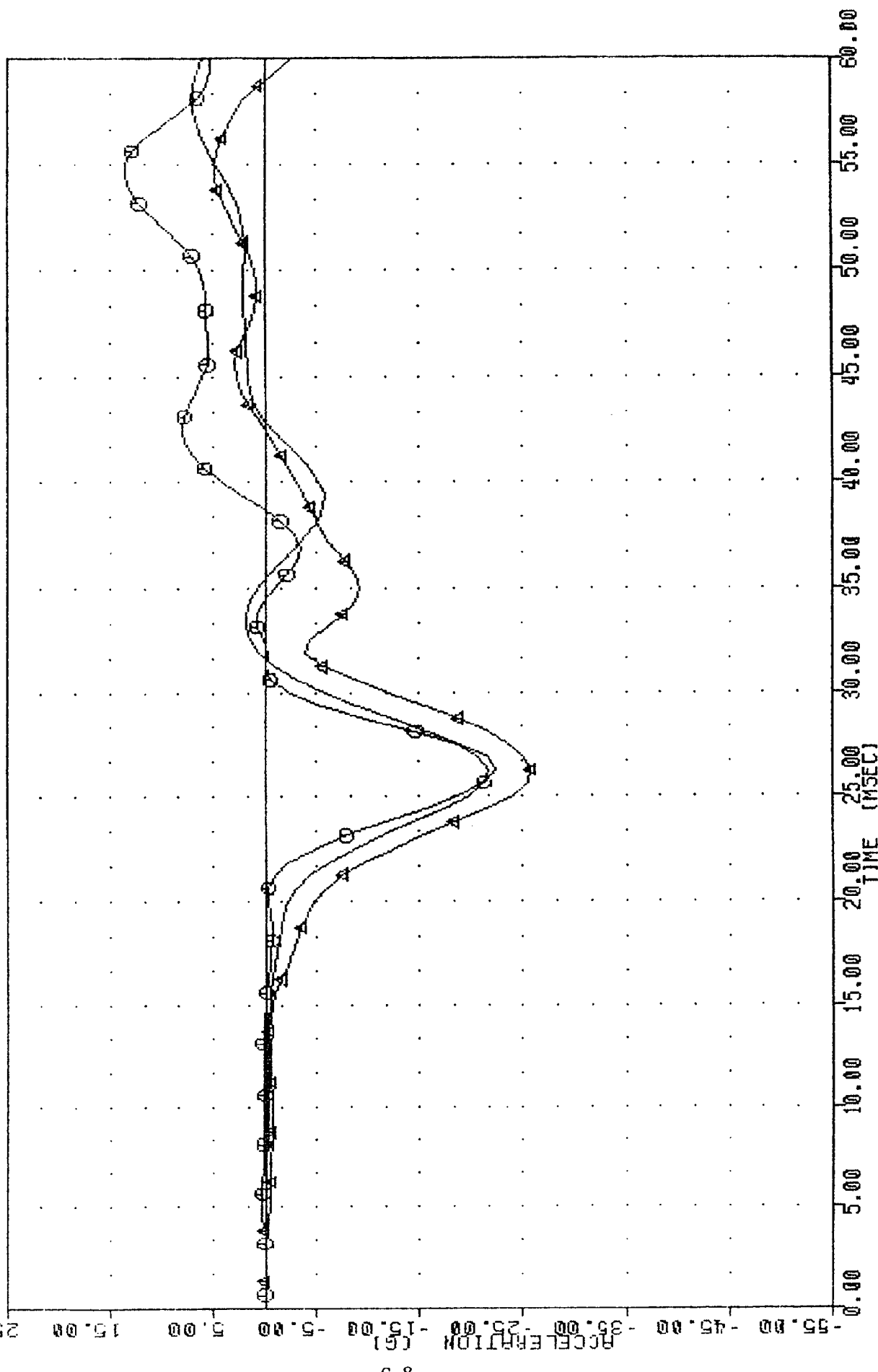
SIDE IMPACT TEST (ARL006)
 LEFT LOWER RIB ACCELERATION Y AXIS -A

VRTC SRL26 , ARL6CA69 S10 THORAX B BODY 318 CAL 69 83298 PLOT DATE 27-OCT-83 09:21:24
 LLRYG1 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.01 21.25, 11.33 49.37
 MN+2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.66 21.25, 19.00 26.87
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 21.25, 2.94 32.50



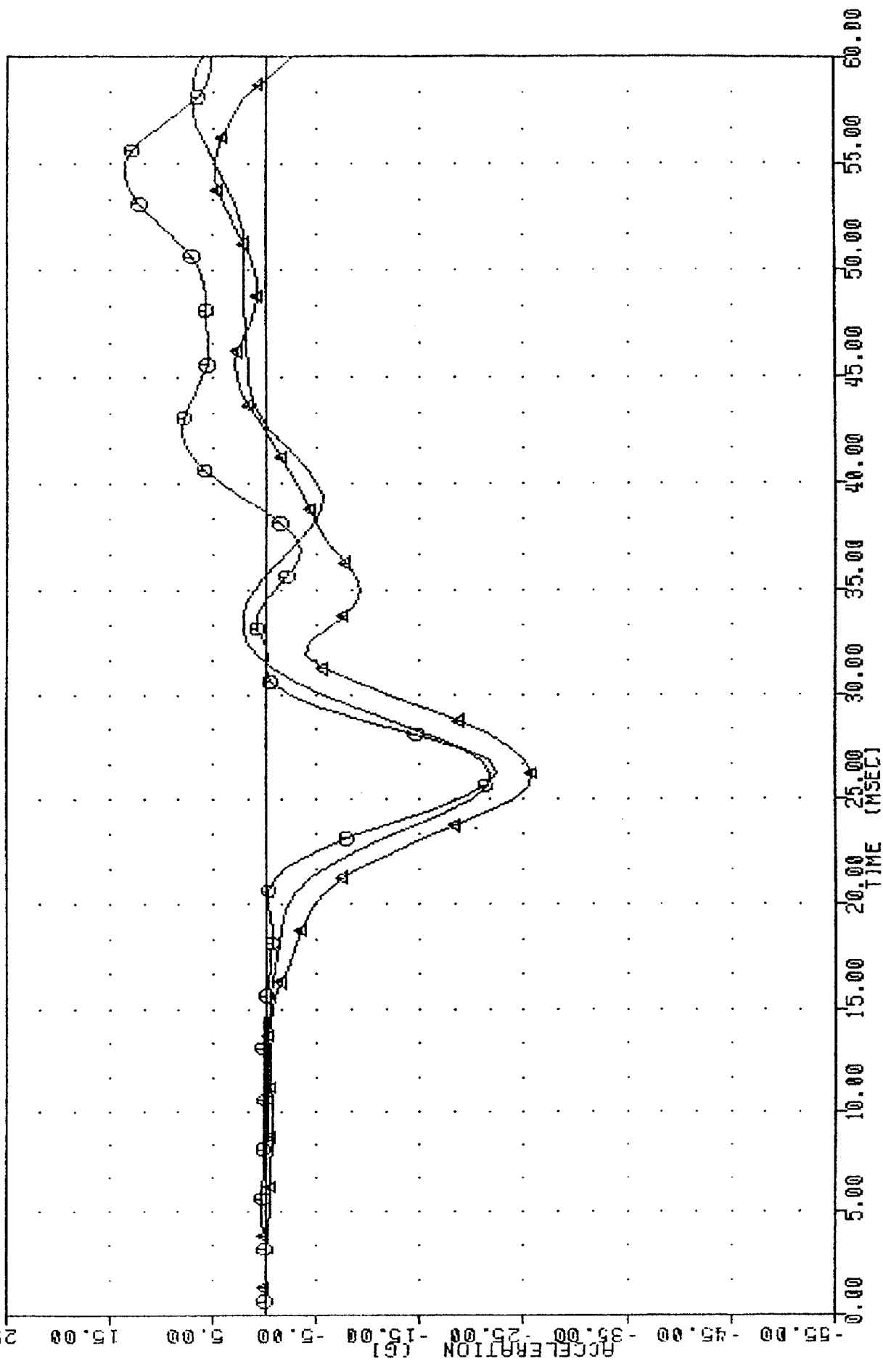
SIDE IMPACT TEST (ARL006)
 LEFT LOWER RIB ACCELERATION Y AXIS -1

WHIC SRL26
 T12YGA
 MN-2SD 0
 MN-2SD 4
 HRL6C89
 FILTER : HSRI
 FILTER : HSRI
 FILTER : HSRI
 SID THORAX 6 BODY 318 CAL 89
 136/ 189/ -50
 136/ 189/ -50
 136/ 189/ -50
 MIN, MAX =
 MIN, MAX =
 MIN, MAX =
 83298
 -21.65
 -22.37
 -25.84
 25.63
 25.63
 25.63
 27-OCT-83
 6.91e
 13.54e
 4.85e
 09:19:02
 57.50
 53.75
 53.75



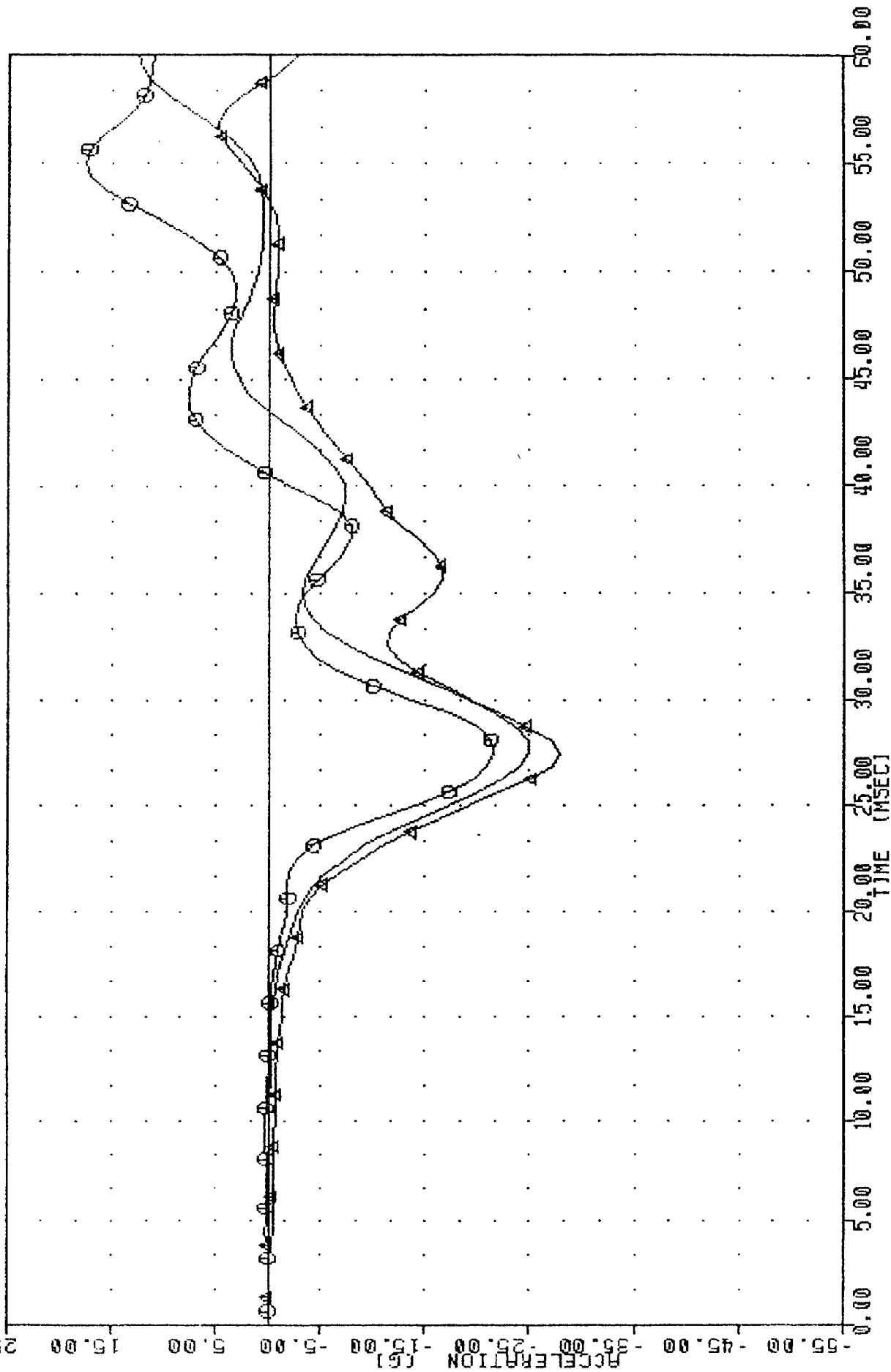
SIDE IMPACT TEST (CARL0006)
 LOWER SPINE ACCELERATION Y AXIS -A

UNIT: SLC26
 T12Y61
 MN-2SD 0
 MN-2SD A
 FILTER: HSRI
 FILTER: HSRI
 FILTER: HSRI
 SID THORAX 6 BODY 318 CHL 69
 136/ 189/ -50 MIN, MAX =
 136/ 189/ -50 MIN, MAX =
 136/ 189/ -50 MIN, MAX =
 PLOT DATE 27-OCT-83
 83298
 -21.80 e
 -22.37 e
 -25.84 e
 09:16:54
 7.03 e
 13.54 e
 4.85 e
 57.50
 53.75
 53.75



SIDE IMPACT TEST (ARL006)
 LOWER SPINE ACCELERATION Y AXIS -1

VRTIC SHL26 , 002CAL70 SID THORAX DW2 BODY 830 CHL 70 83298 PLOT DATE 27-OCT-83 09:11:02
 TO1YGI FILTER : HSRI 136/ 189/ -50 MIN, MAX = -24.99 26.87 12.32 59.38
 MN+2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -21.58 26.87 17.54 54.38
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -27.91 26.87 4.78 56.25



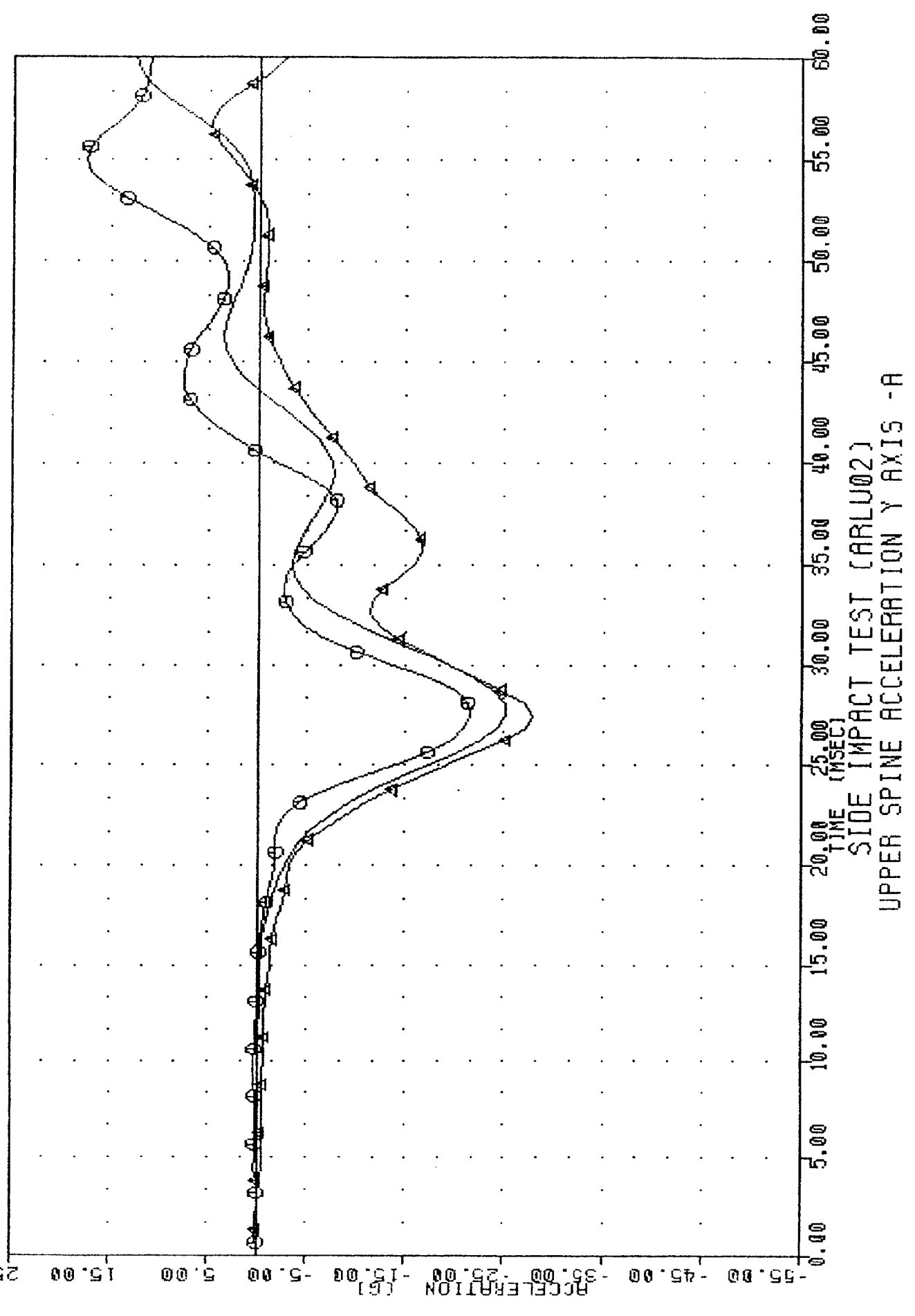
SIDE IMPACT TEST (ARLU02)
 UPPER SPINE ACCELERATION Y AXIS -1

UNIT 3426
 TO1YGA
 MN-250
 MN-250

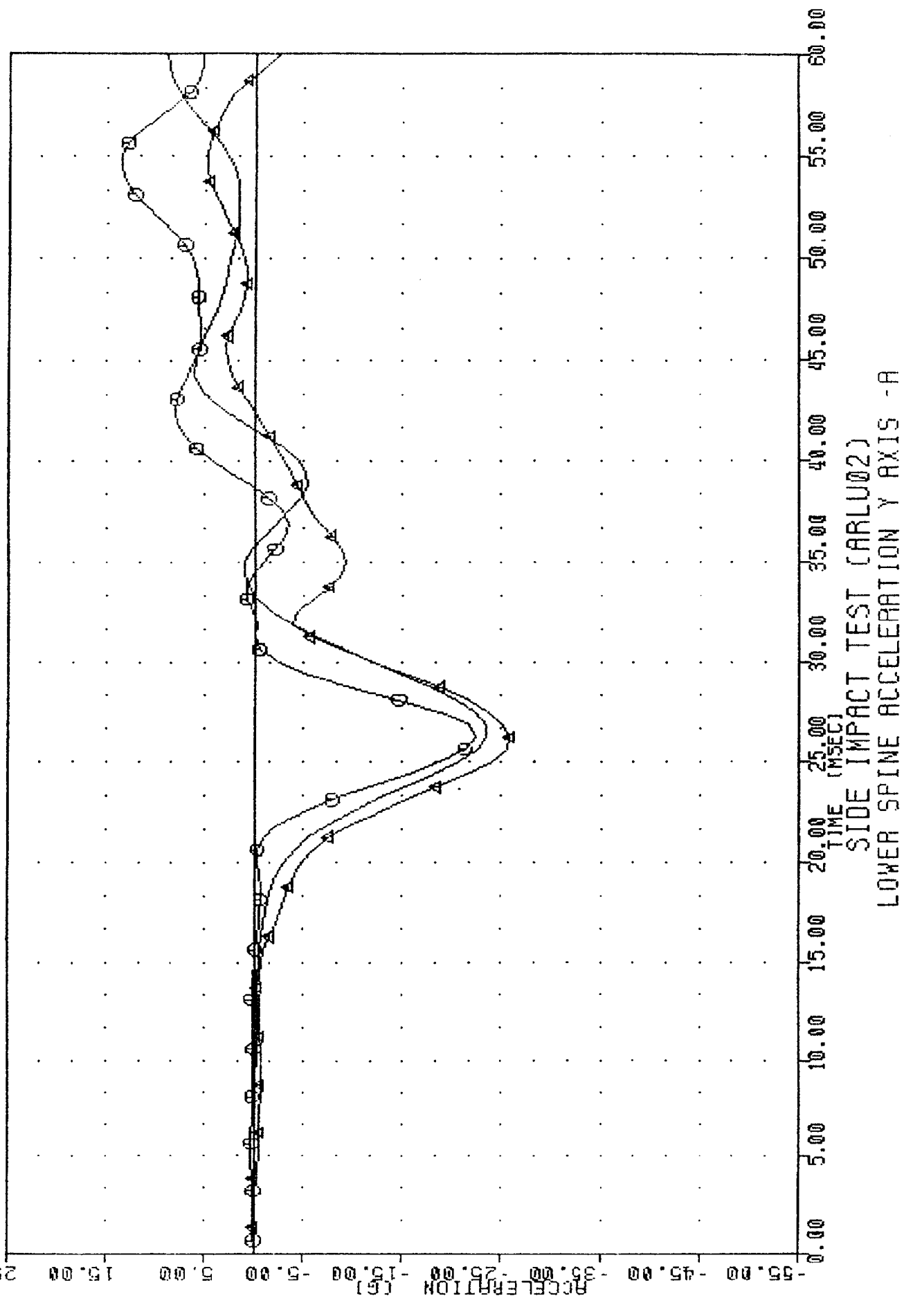
FILTER : HSRI
 FILTER : HSRI
 FILTER : HSRI

STD THORAX UN2 BODY 830 CHL 70 83298
 136/ 189/ -50 MIN, MAX = -25.16 s
 136/ 189/ -50 MIN, MAX = -21.58 s
 136/ 189/ -50 MIN, MAX = -27.91 s

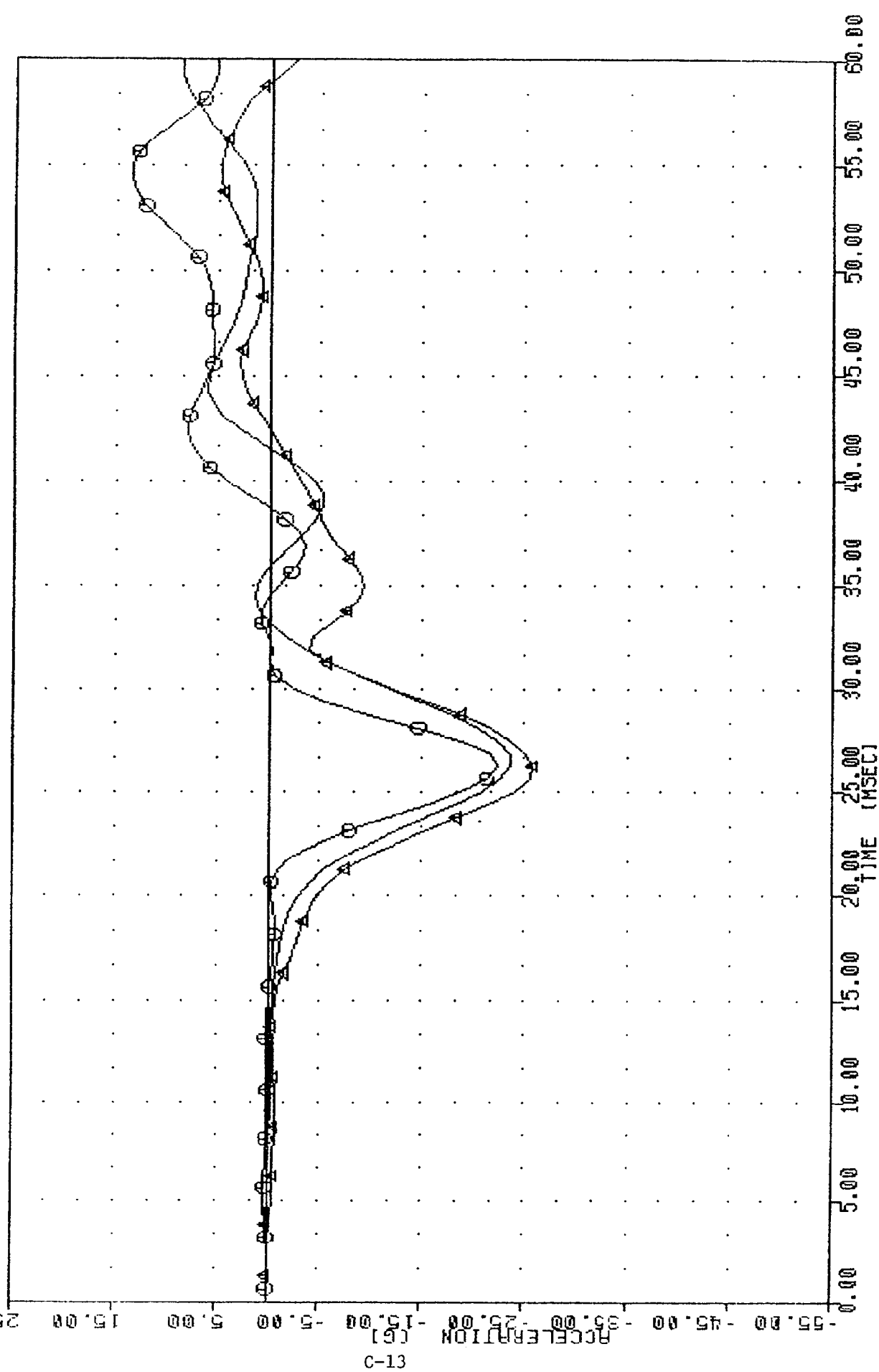
PLOT DATE 27-OCT-83 09:18:06
 26.87, 12.34 s
 26.87, 17.54 s
 26.87, 4.78 s



VMC SHL26, UNZCAL, 510 THOMAS UNZ 8001-830 CHL 70 63290 27-OCT-83 09:22:31
 T12YGR FILTER: HSRI 136/ 189/ -50 MIN, MAX = -23.47 8.77 59.38
 MN-2SD 0 FILTER: HSRI 136/ 189/ -50 MIN, MAX = -22.37 8.77 59.38
 MN-2SD A FILTER: HSRI 136/ 189/ -50 MIN, MAX = -25.84 4.85 53.75

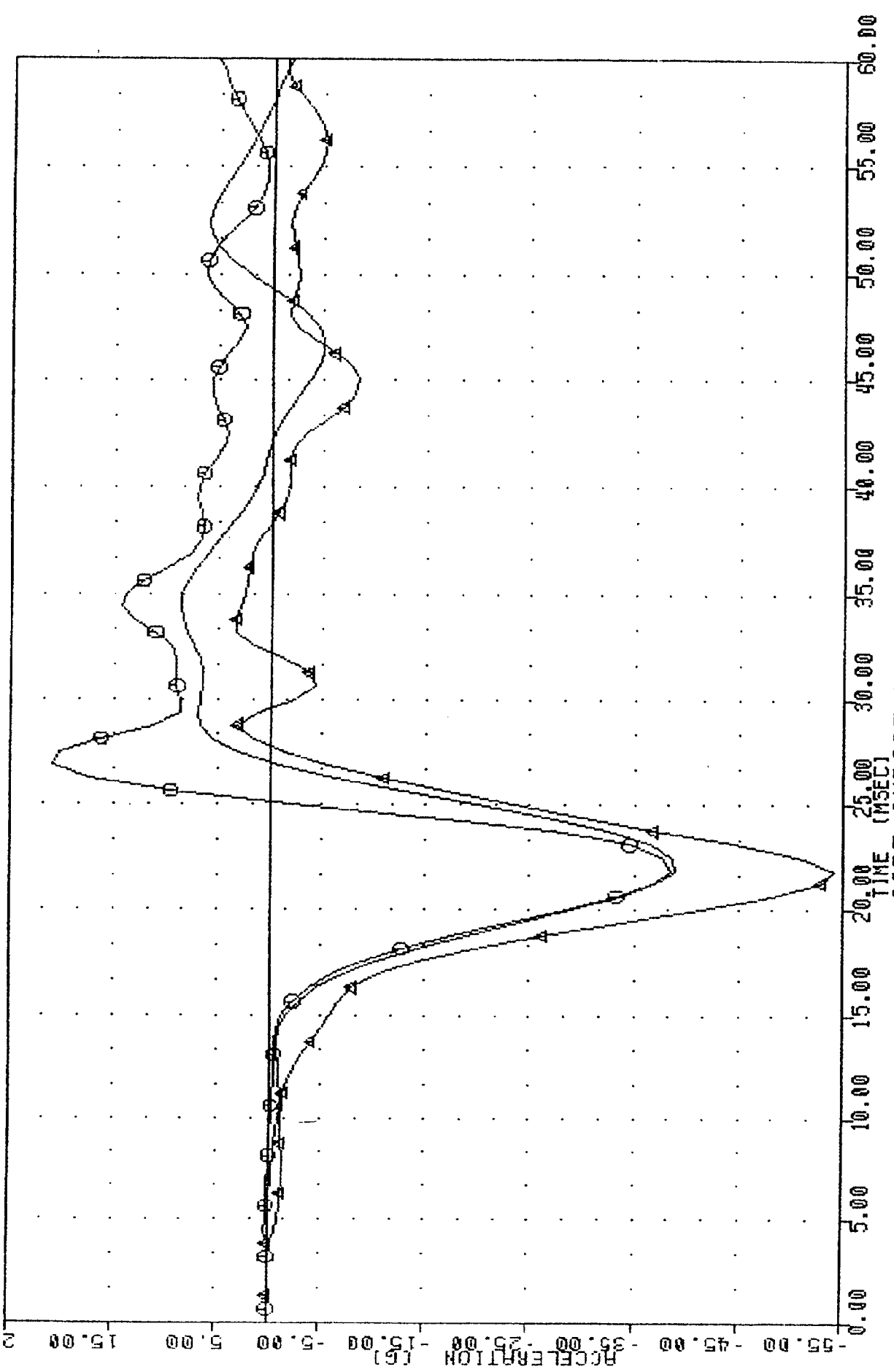


UNIT: SMC20, CH2: 800, CH1: 70, 63296, 27-OCT-83, 09:42:17
 T12Y61, FILTER: HSRI, 136/ 189/ -50, MIN, MAX = -23.60, 8.66, 59.38
 MN-2SD, FILTER: HSRI, 136/ 189/ -50, MIN, MAX = -22.37, 13.54, 53.75
 MN-2SD, FILTER: HSRI, 136/ 189/ -50, MIN, MAX = -25.84, 25.63, 53.75



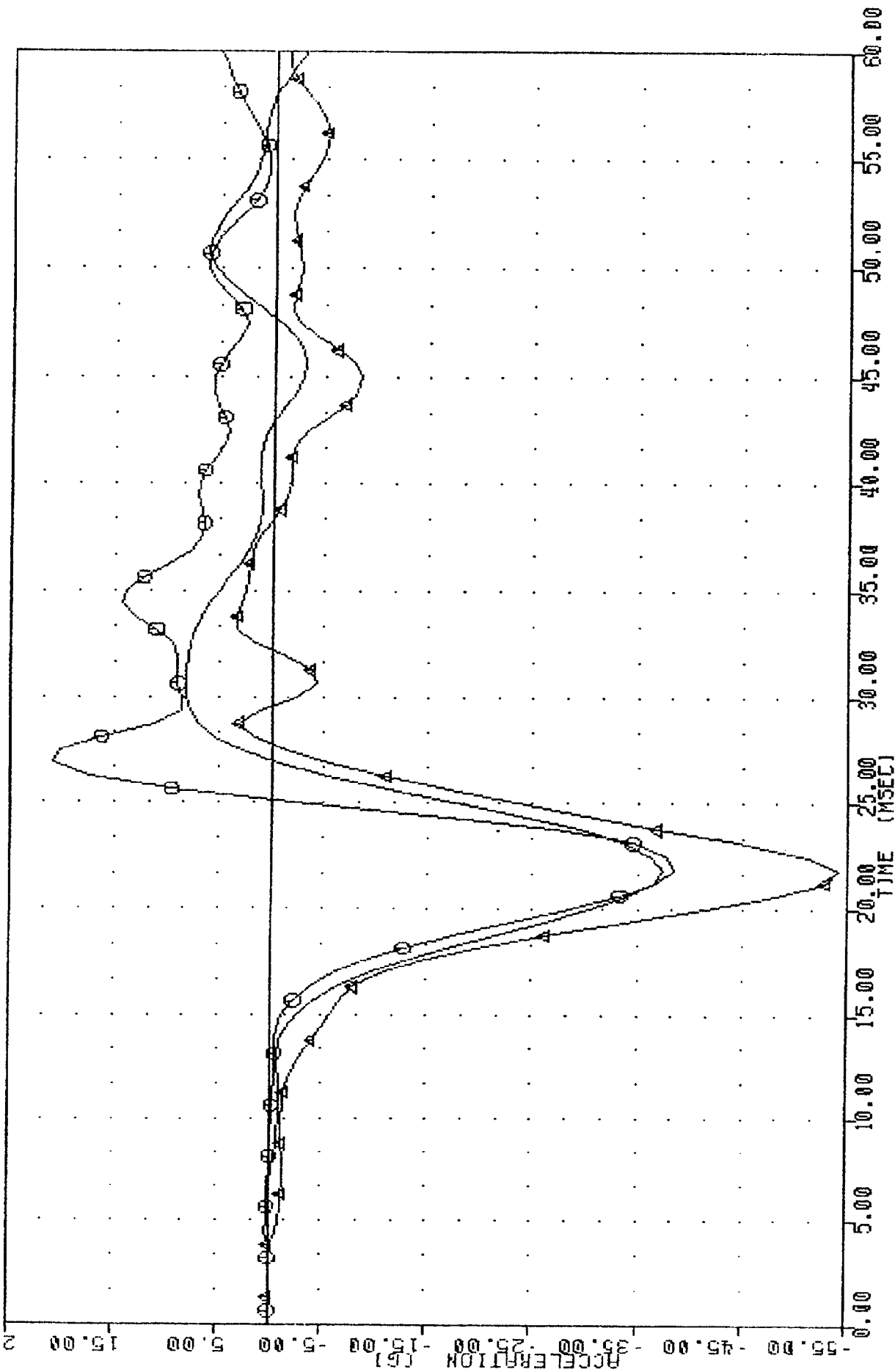
SIDE IMPACT TEST (ARLU02)
 LOWER SPINE ACCELERATION Y AXIS -1

S-6
 LURYGA
 MN-250
 MN-250
 FILTER : HSRI
 FILTER : HSRI
 FILTER : HSRI
 MIN, MAX =
 MIN, MAX =
 MIN, MAX =
 806/ 330
 136/ 189/ -50
 136/ 189/ -50
 136/ 189/ -50
 83250
 38.82
 38.44
 54.08
 21.25
 21.25
 21.25
 8.70
 20.92
 3.31
 09:27:10
 33.75
 26.25
 33.13

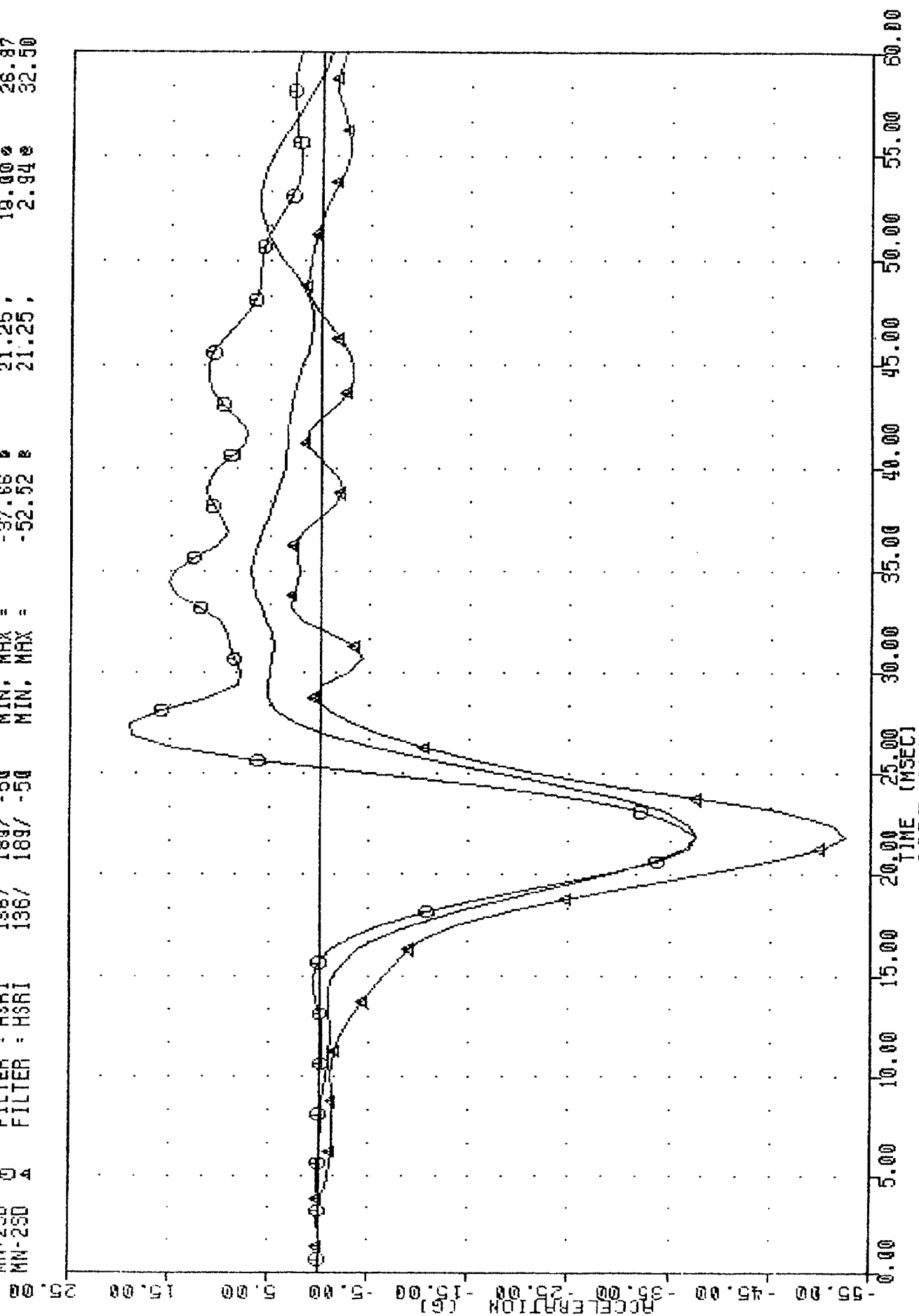


SIDE IMPACT TEST (ARLU02)
 LEFT UPPER RIB ACCELERATION Y AXIS - A

C-15
 LURVGI
 MN-250
 MN-250
 FILTER : HSRI
 FILTER : HSRI
 FILTER : HSRI
 136/ 189/ -50
 136/ 189/ -50
 136/ 189/ -50
 80/ 330/ 70/ 332/ 83
 MIN. MAX =
 MIN. MAX =
 MIN. MAX =
 -37.36
 -38.44
 -54.08
 21.25
 21.25
 21.25
 8.24
 20.82
 3.31
 09:34:38
 30.00
 26.25
 33.13



SECRET



FILE (INSEC)
SIDE IMPACT TEST (ARLU02)
LEFT LOWER RIB ACCELERATION Y AXIS - 1

C S 6
 LLRYGA
 MN-2SD 0
 MN-2SD A
 CAL 330
 FILTER : HSRI
 FILTER : HSRI
 FILTER : HSRI
 MAX 80
 136/ 189/ -50
 136/ 189/ -50
 136/ 189/ -50
 MIN. MAX =
 MIN. MAX =
 MIN. MAX =
 35.90 8
 37.66 8
 52.52 8
 LOT DATE 27-06-83
 21.25
 21.25
 21.25
 09:28:33
 6.138
 18.008
 2.948
 50.00
 26.87
 32.50

