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EVALUATION OF NHTSA MODIFIED
VOLKSWAGEN RABBITS

MDB-TO-CAR SIDE IMPACT TEST OF
A 19° CRABBED MOVING DEFORMABLE BARRIER
TO A 1977 VOLKSWAGEN RABBIT
AT 46.1 MPH

PREPARED BY:
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FINAL REPORT
OCTOBER 1983

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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 modification 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, crabbled to 19°, at 46.1 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 September 7, 1983 and the ambient temperature was 73°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	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

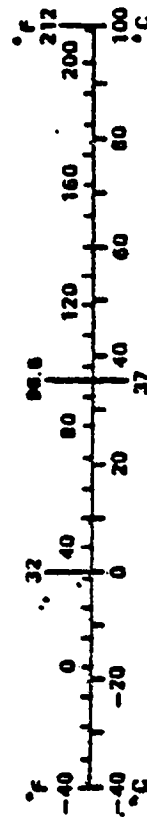


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SECTION 1.0
PURPOSE AND INTRODUCTION

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 1977 Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on September 7, 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 46.1 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 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: Volkswagenwerk AG

MAKE/MODEL: Volkswagen Rabbit

VIN: 1773372541

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: 8/22/83

ODOMETER READING: 48897

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 modification
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

GWWR: 2777 LBS.,

GAWR: 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): Right Front - Uniroyal Rallye
180-155SR13
All others - Michelin ZX Radial
155SR13

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 3

IS SPARE TIRE "SPACE SAVER"? No

IS SPARE TIRE STANDARD EQUIPMENT? Yes

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

RIGHT FRONT 590 LBS. RIGHT REAR 330 LBS.

LEFT FRONT 590 LBS. LEFT REAR 350 LBS.

TOTAL FRONT WEIGHT 1180 LBS. (63.4 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 680 LBS. (36.6 % OF TOTAL VEHICLE WEIGHT)

TOTAL DELIVERED WEIGHT 1860 LBS.

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE: RF 25 1/2 ;LF 24 15/16 ;RR 24 15/16 ;LR 24 9/16

PRE-TEST ATTITUDE: RF 24 1/2 ;LF 24 1/16 ;RR 22 5/8 ;LR 22 1/4

POST-TEST ATTITUDE: RF 23 5/8 ;LF 24 1/8 ;RR 22 1/8 ;LR 23 5/16

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

RIGHT FRONT 670 LBS. RIGHT REAR 570 LBS.

LEFT FRONT 680 LBS. LEFT REAR 555 LBS.

TOTAL FRONT WEIGHT 1355 LBS. (54.6 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 1125 LBS. (45.4 % 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*: 10.5 GALLONS

TEST VOLUME: 5.0 GALLONS

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

DETAILS OF FUEL SYSTEM: DNA

ELECTRIC FUEL PUMP: Yes

FUEL INJECTION: Yes

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

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: 830907

DATE OF TEST: September 7, 1983

TIME OF TEST: 10:40

WIND VELOCITY: 3-6 261° SW

HUMIDITY: 57%

AMBIENT TEMPERATURE AT IMPACT AREA: 73° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 76° F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2480	2470
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	46.1	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 Window</u>	<u>Side header, side 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>Tools required</u>	<u>Easy</u>
Rear	<u>DNA</u>	<u>DNA</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>No</u>	<u>Yes, L.F. seat shifted 2"</u>
Rear	<u>No</u>	<u>No</u>

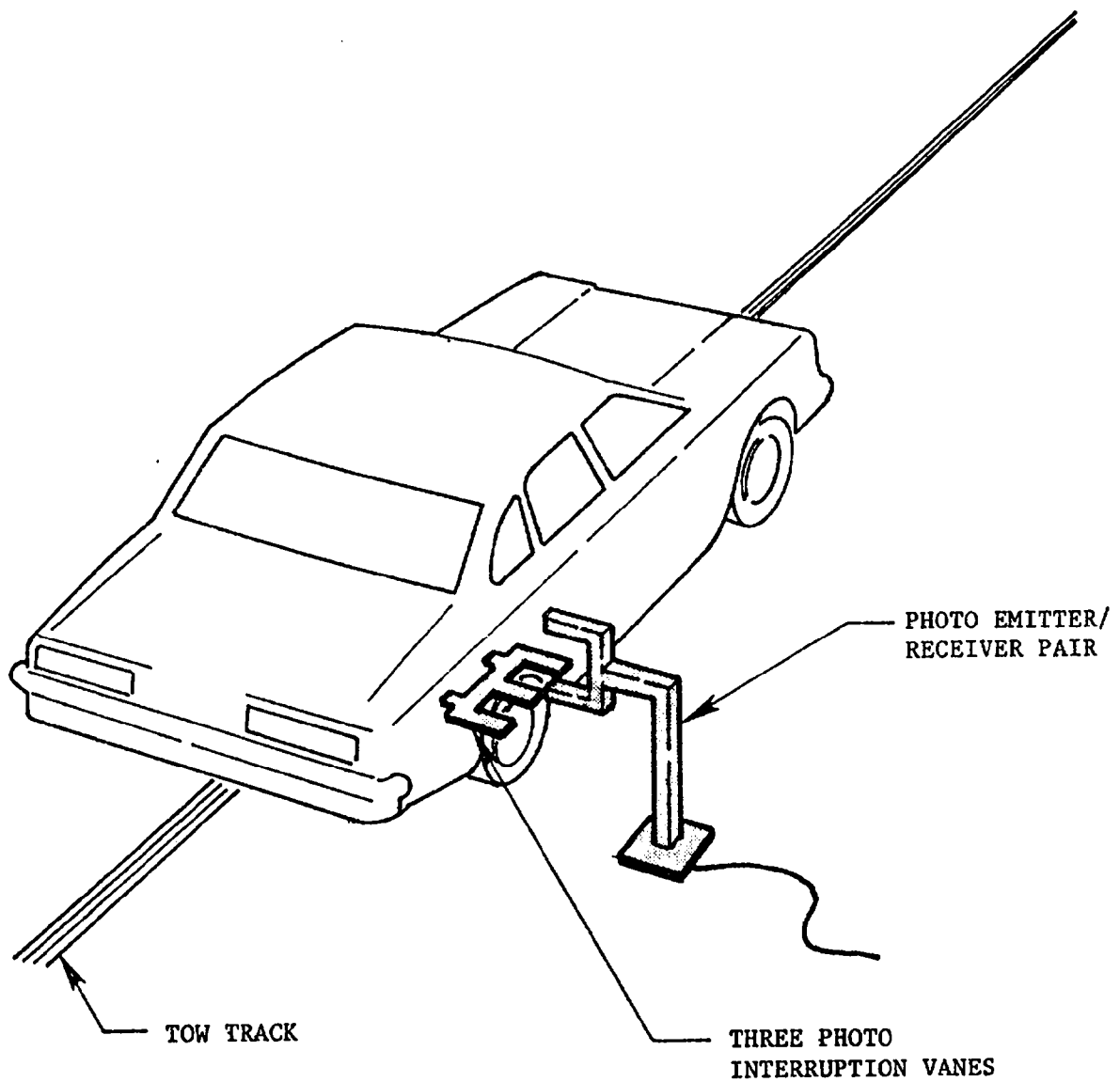
GLAZING DAMAGE:

Left bottom corner of windshield cracked, no
driver side window damage, left rear passenger
side window separated intact.

OTHER NOTABLE IMPACT EFFECTS:

Driver door torn loose at A-Pillar.

IMPACT VELOCITY MEASUREMENT SYSTEM



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

VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned}\text{Test Weight} &= \text{Unloaded Delivered Weight} + \\ &\quad \text{Number of Dummies} \times 174 \text{ lbs.} + \\ &\quad \text{Cargo Weight} \\ &= 1860 + 2 \times 174 + 262 \text{ lbs.} \\ &= 2470 \text{ lbs.}\end{aligned}$$

To achieve test weight, 5 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

1) Cable separation occurred in data channel T01YG1 (Driver Upper Spine Acceleration Y Axis) at approximately 265 msec. Because the separation occurred late into the test, a delta velocity was reported and the peak negative pulse was chosen to be the largest pulse prior to cable separation.

2) No data was collected for the channels LRTYD1 (Driver Left Rib to Spine Displacement) and LRTYD3 (Passenger Left Rib to Spine Displacement). Immediately following the placement of pre-test calibration levels on analog tape, the data acquisition system was not returned to the DATA mode. The effect of this error was that all potentiometric transducers (the above two channels are the only ones) were locked at center band frequency.

3) The cables of five vehicle accelerometers were separated or otherwise damaged during the test. They were:

- LFSYG5 - Left Front Sill Acceleration Y Axis
- 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
- TFRXG7 - Trunk Floor Right Acceleration X Axis

LFDYG2 and LFDYG5 were completely separated and no peak levels or delta velocities were reported. LFDYG2 was repaired but LFDYG5 was replaced. LFDYG3 had partial separation at approximately 25 msec and no peak levels or delta velocities were reported. This accelerometer was repaired. LFSYG5 was repaired and peak levels and delta velocity were reported. TFRXG7 was replaced and peak levels were reported.

4) Post-test examination conducted on September 26, 1983 of the driver dummy skull revealed unwelded joints that allowed the head to ring. All driver head data channel peak values, the resultants and HIC are, therefore, unrealistic.

SECTION 3.0
DATA REQUIRED BY R&D

The following pages are included in this section:

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

DUMMY TEMPERATURE CONTROL AND POSITIONING

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

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

DUMMY PLACEMENT AND POSITIONING

SIDE IMPACT DUMMY*

. DRIVER DSP

HEAD	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.
LOWER TORSO	Midsagittal plane is vertical and centered on bucket seat.
UPPER LEGS (thighs or femurs)	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.
LOWER LEGS	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.
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.

REAR PASSENGER DSP

Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.
Placed against seat back. Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.
Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.
Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.
Located so that planes defined by femur and tibia centerlines are as close as possible to vertical.
Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.
Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.
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

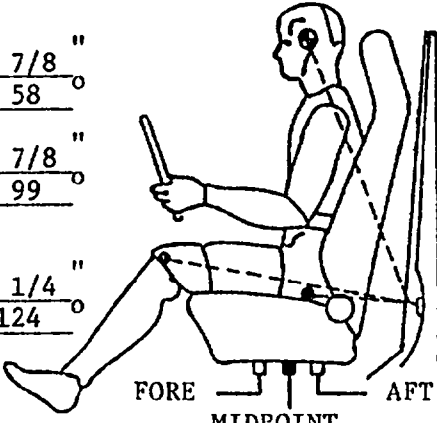
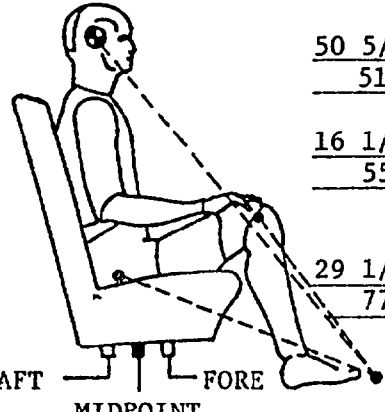
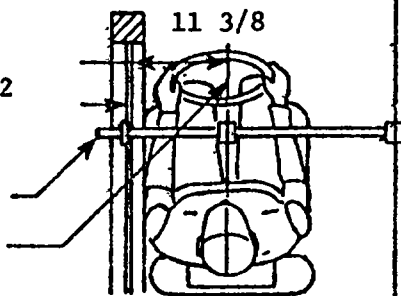
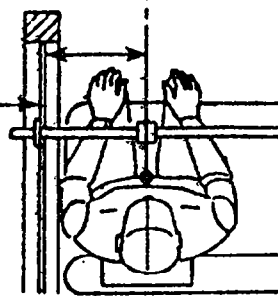
BUCKET SEAT BACK TYPE: FIXED
X ADJUSTABLE

TECHNICIANS:

1. M. Garrison
2. J. Kokoruda
3. E. Grumbling

POSITIONING DATE: 9/7/83

AMBIENT TEMP.: 75° F. TIME: 1:30

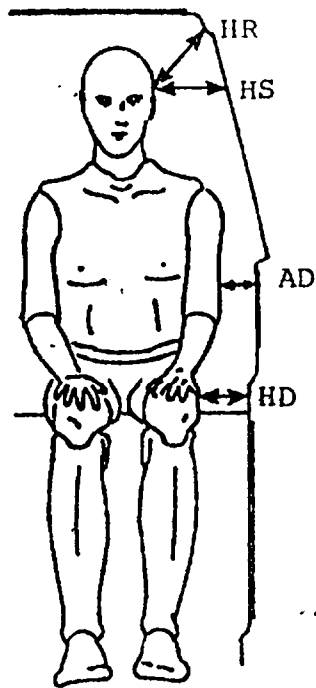
DRIVER DUMMY # 06 HEAD <u>19 7/8</u> " TARGET* <u>58</u> ° KNEE <u>31 7/8</u> " JOINT <u>99</u> ° APPROX. "H" <u>17 1/4</u> " POINT <u>124</u> °  FORE MIDPOINT AFT	REAR PASSENGER DUMMY # U02 <u>50 5/16</u>" HEAD <u>51</u> ° TARGET** <u>16 1/2</u> " KNEE <u>55</u> ° JOINT APPROX. 29 1/8 " "H" <u>77</u> ° POINT †  AFT MIDPOINT FORE
DOOR GLASS HEIGHT*** <u>9 1/2</u> <u>11 3/8</u> LATERAL BAR ADJUSTABLE POINTER  DRIVER DUMMY # 06	DOOR GLASS HEIGHT <u>10 9/16</u> DNA  PASSENGER DUMMY # U02

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

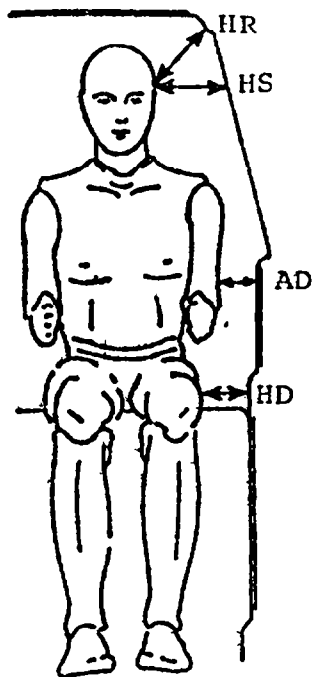
**All passenger dummy dimensions referenced to front seat back latch bolt with front seat in mid-position and all angles referenced to vertical.

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

†Due to structural modifications interference, the "H" Point location was estimated.

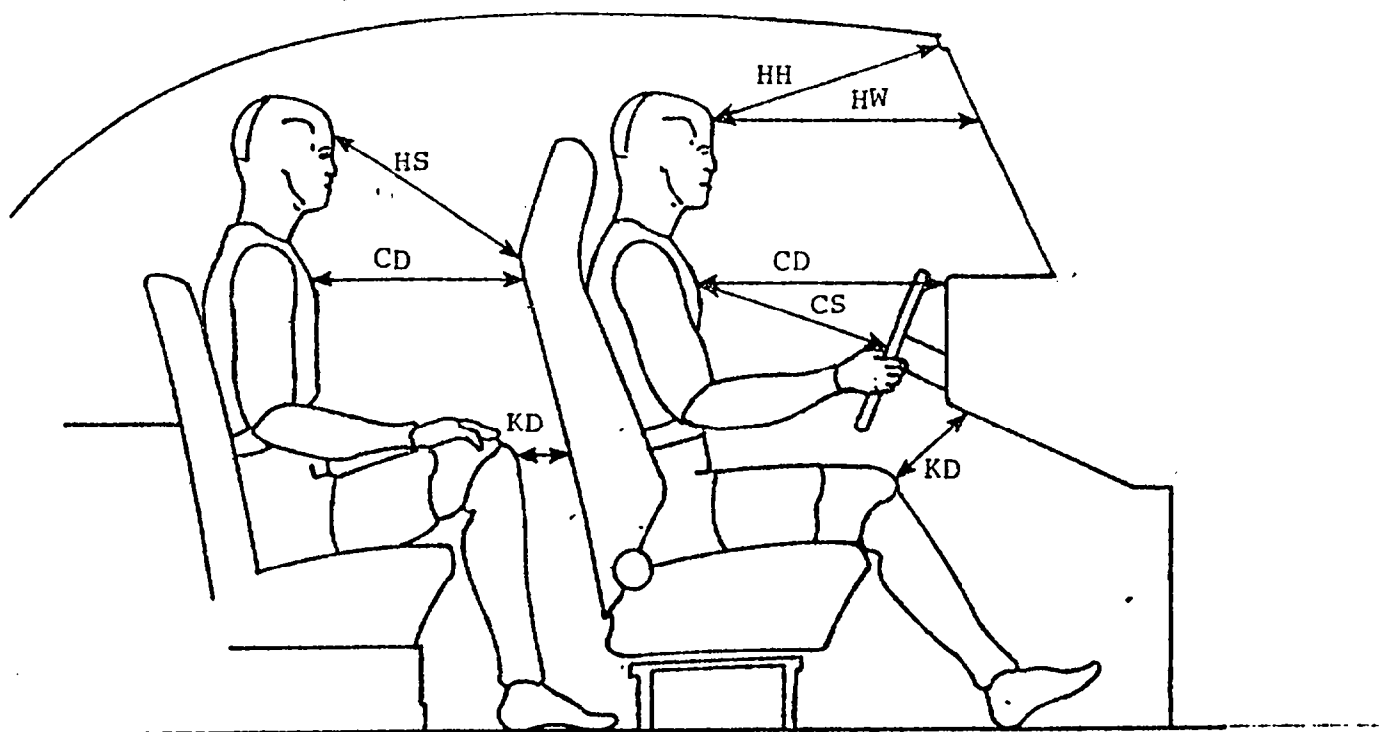


	06 DRIVER	U02 PASSENGER
HR	6	6
HS	7 9/16	8
AD	0	0
HD	2 3/4	2 1/4



NOTE: ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



	06 DRIVER	U02 PASSENGER
HH	14 5/8	DNA
HW	21 1/4	DNA
HS	DNA	24 3/8
CD	20 7/8	18 7/8
CS	12 3/4	DNA
KDL	7 9/16	3 1/2
KDR	7 3/16	3 1/8

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the dummy's torso contacted the padded driver's door and the head contacted the driver's window and the top of the deformable barrier face. The dummy rebounded from the driver's door and its buttocks struck the passenger's window sill. The dummy came to rest sitting upright in the front passenger's seat facing the driver's side.

PASSENGER

During impact, the dummy's torso contacted the padded left rear occupant side wall and the head contacted the side window and side header. The dummy's feet became trapped between the driver's seat and the rear bench seat preventing further gross dummy motion as it rebounded from the side wall. The dummy came to rest sitting 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	11.0	X	X	20.1	20.2	20.2	20.2	20.2	20.3	20.3	20.3	20.3	20.6	20.7	X	X
H-Point	18.0	X	X	18.1	18.2	18.2	18.1	18.1	18.1	18.0	18.0	18.3	18.3	18.4	X	X
Mid Door	25.0	16.4	17.9	17.8	17.8	17.8	17.8	17.7	17.7	17.7	17.8	17.9	17.9	18.0	18.2	17.3
Window Sill	35.0	X	19.6	19.4	19.3	19.3	19.3	19.3	19.3	19.4	19.4	19.4	19.5	19.6	19.7	19.9
Window Top	53.3	X	X	X	X	X	26.9	26.4	26.3	26.2	26.3	26.3	26.4	26.6	26.9	27.5

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

Axle Height	11.0	X	X	22.3	26.5	27.8	29.4	28.2	27.6	27.0	26.3	25.0	23.4	22.3	X	X
H-Point	18.0	X	X	26.6	36.1	38.4	39.1	38.6	37.1	35.1	32.8	30.1	28.1	25.9	X	X
Mid Door	25.0	22.3	24.4	24.2	35.0	36.6	37.6	37.3	36.1	34.3	32.6	30.2	28.3	26.1	23.8	20.8
Window Sill	35.0	X	21.6	20.1	30.0	33.4	36.4	37.8	36.8	34.6	32.1	30.4	27.3	24.8	22.4	20.8
Window Top	53.3	X	X	X	X	X	29.8	29.3	29.1	29.1	29.0	29.2	28.9	28.9	28.9	29.3

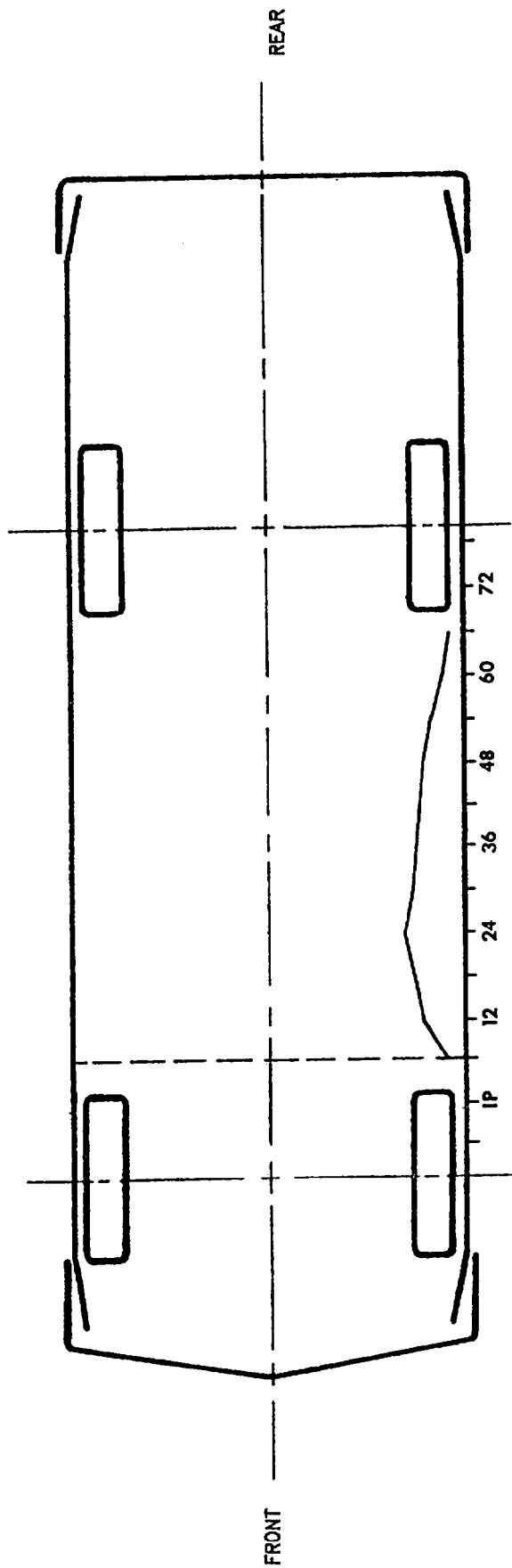
STATIC CRUSH (IN)

Axle Height	11.0	X	X	2.2	6.3	7.6	9.2	8.0	7.3	6.7	6.0	4.7	2.8	1.6	X	X
H-Point	18.0	X	X	8.5	17.9	20.2	21.0	20.5	19.0	17.1	14.8	11.8	9.8	7.5	X	X
Mid Door	25.0	5.9	6.5	6.4	17.2	18.8	19.8	19.6	18.4	16.6	14.8	12.3	10.4	8.1	5.6	3.5
Window Sill	35.0	X	2.0	0.7	10.7	14.1	17.1	18.5	17.5	15.2	12.7	11.0	7.8	5.2	2.7	0.9
Window Top	53.3	X	X	X	X	X	2.9	2.9	2.8	2.9	2.7	2.9	2.5	2.3	2.0	1.8

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

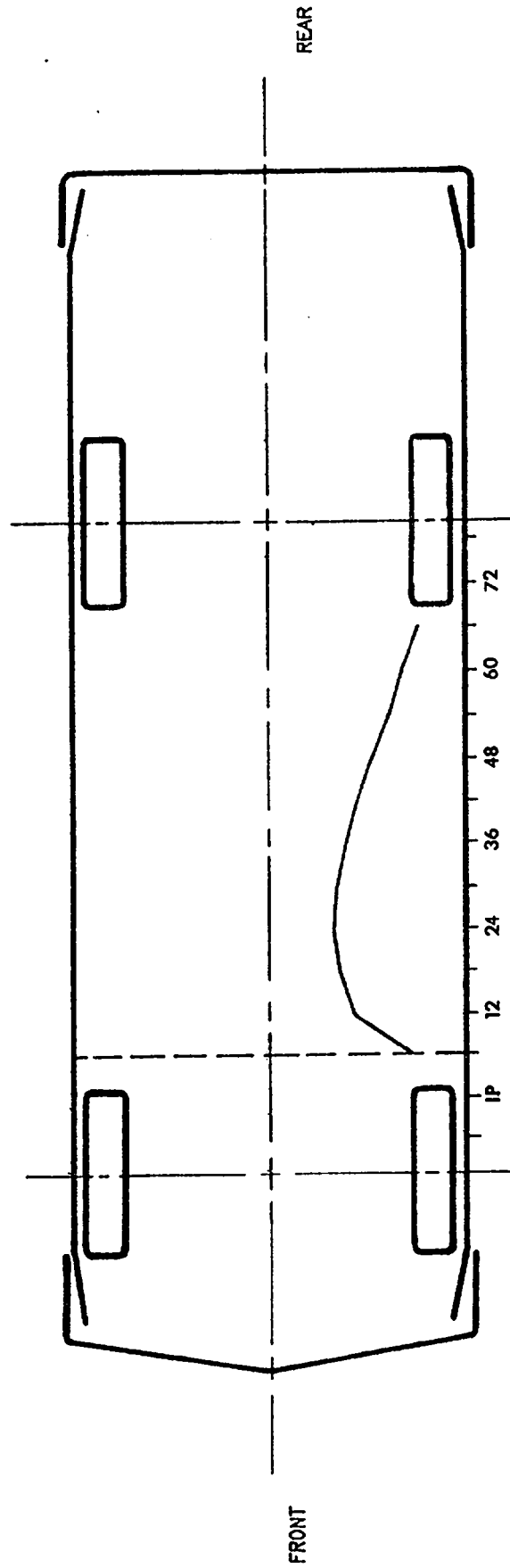
** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



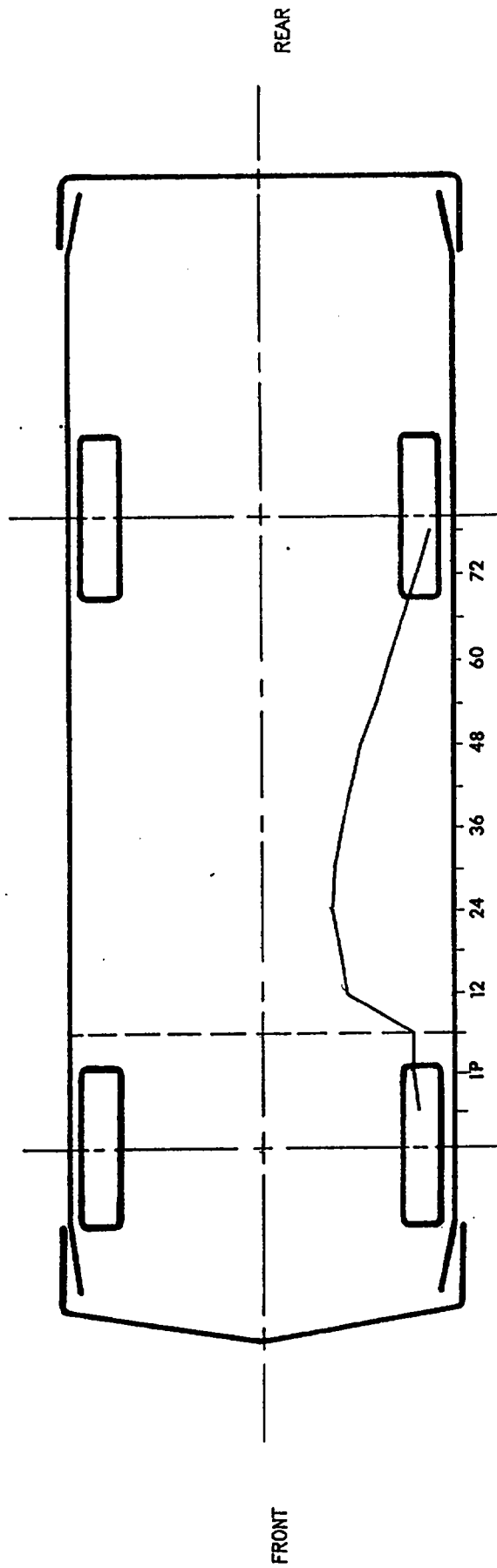
PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



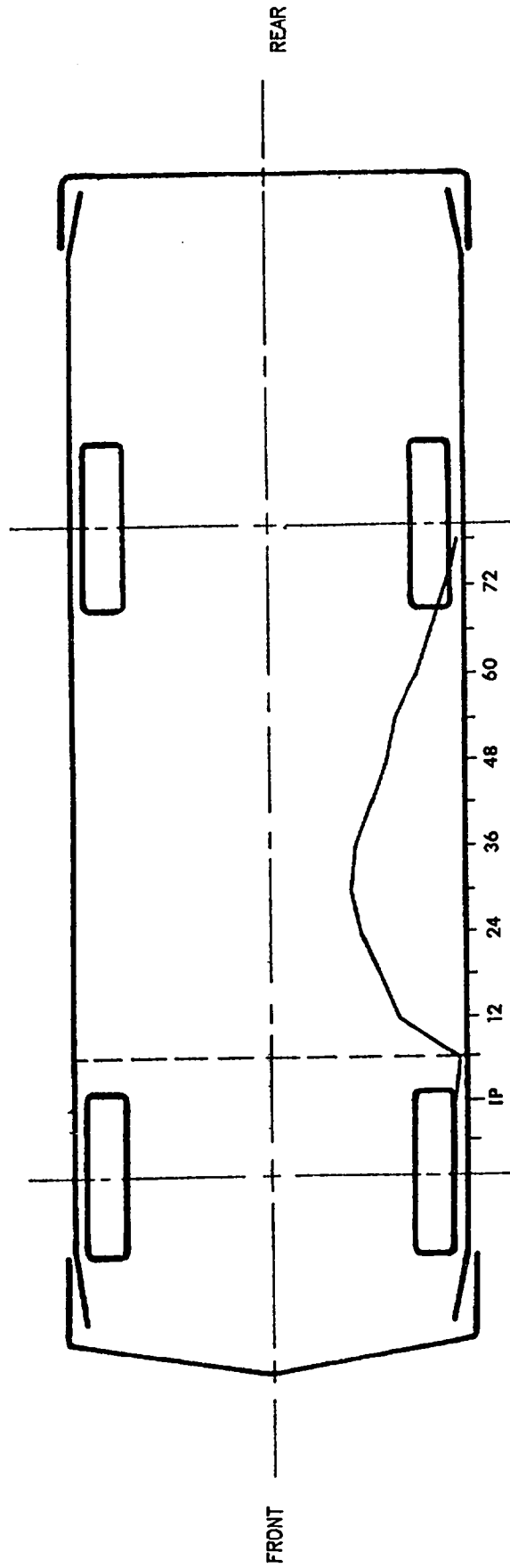
PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



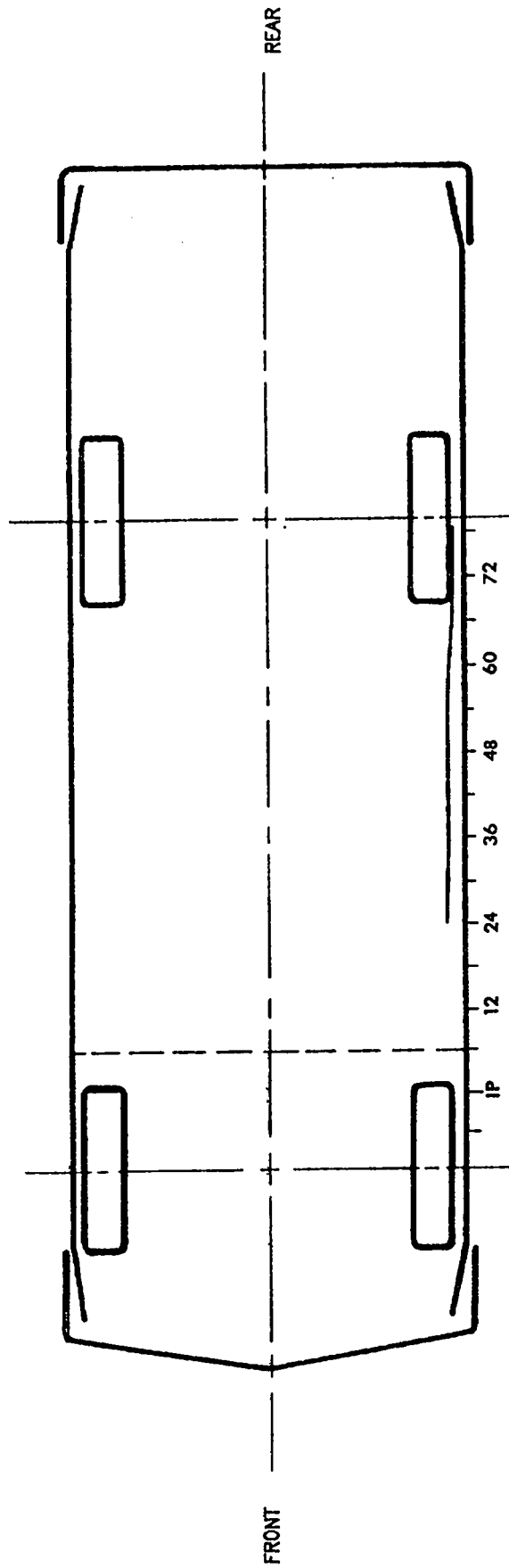
PROFILE LEVEL EQUALS MID-DOOR HEIGHT
 IP EQUALS PROJECTED IMPACT POINT

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	176.94	173.13	48.64	78.50Y	91.10	230.63	47.65	68.88
LATERAL	282.92	51.88	33.62	171.25Y	70.02	68.00	22.82	86.63
VERTICAL	52.11	174.38	131.53	171.63Y	87.14	89.25	36.63	71.00
RESULTANT		283.47 @	51.88Y			91.63 @	230.63	
HIC	2330.81	from 51.50 to 67.25Y				662.64	from 64.38 to 94.50	
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	38.78	185.63	36.37	46.88	9.83	220.00	52.91	80.00
LATERAL (P)***	166.66	47.50	30.26	65.25Y	47.53	76.88	8.13	113.00Y
LATERAL (R)***	168.82	47.50	29.67	66.25	49.03	76.88	7.76	115.00
VERTICAL	26.34	185.63	23.79	49.37	21.51	63.75	23.40	78.13
RESULTANT (P)		172.10 @	46.50Y			70.57 @	76.63Y	
RESULTANT (R)		174.20 @	47.50			72.05 @	78.75	
DELTA V (MPH)****		38.2 @	58.75 (P) Y			—	— Y	
		39.4 @	58.75 (R)			16.5 @	108.13 (R)	
LOWER SPINE								
LONGITUDINAL	43.25	55.63	25.35	43.75	17.38	93.13	35.94	70.63
LATERAL (P)	124.19	44.38	44.79	59.38	72.82	69.38	26.02	91.25
LATERAL (R)	127.97	43.13	42.70	60.00	70.23	69.38	25.66	91.25
VERTICAL	27.59	44.38	10.50	177.50	26.23	66.87	14.43	96.88
RESULTANT (P)		129.55 @	44.38			83.91 @	69.38	
RESULTANT (R)		133.06 @	43.75			81.80 @	70.00	
DELTA V (MPH)		46.7 @	56.88 (P)			27.0 @	86.25 (P)	
		46.5 @	56.88 (R)			26.9 @	86.25 (R)	
LEFT UPPER RIB								
LATERAL (P)	138.54	41.25	9.00	68.13	46.69	78.13	10.20	166.25
LATERAL (R)	133.36	41.25	10.77	68.75	44.23	78.75	10.07	193.13
DELTA V (MPH)		38.0 @	73.38 (P)			26.8 @	108.13 (P)	
		38.7 @	75.63 (R)			26.8 @	107.50 (R)	
LEFT LOWER RIB								
LATERAL (P)	164.14	40.63	73.51	63.75	58.39	73.75	14.03	193.13
LATERAL (R)	161.72	40.63	71.60	63.75	60.81	74.37	13.42	193.13
DELTA V (MPH)		42.1 @	61.25 (P)			27.9 @	109.38 (P)	
		43.5 @	61.25 (R)			28.1 @	109.38 (R)	
PELVIS ACCELERATION								
LONGITUDINAL	223.99	49.88	161.53	68.75 ⁰	9.70	91.25	87.06	63.25
LATERAL	214.86	35.00	129.96	69.13 ⁰	160.23	63.38	27.01	48.88
VERTICAL	41.51	39.63	156.72	75.00 ⁰	46.04	70.75	22.91	55.00
RESULTANT		241.91 @	69.13 ⁰			183.96 @	63.38	
DELTA V (MPH)		40.0 @	65.38 ⁰			29.2 @	75.38	

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	<u>DRIVER DUMMY</u>				<u>PASSENGER DUMMY</u>			
	<u>POSITIVE</u>		<u>NEGATIVE</u>		<u>POSITIVE</u>		<u>NEGATIVE</u>	
	<u>DIRECTION*</u>		<u>DIRECTION**</u>		<u>DIRECTION*</u>		<u>DIRECTION**</u>	
	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>
	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>
RIB DEFLECTION †	---	---	---	--- Y	---	---	---	--- Y

* 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

Y See TEST ANOMALIES

⁰ 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

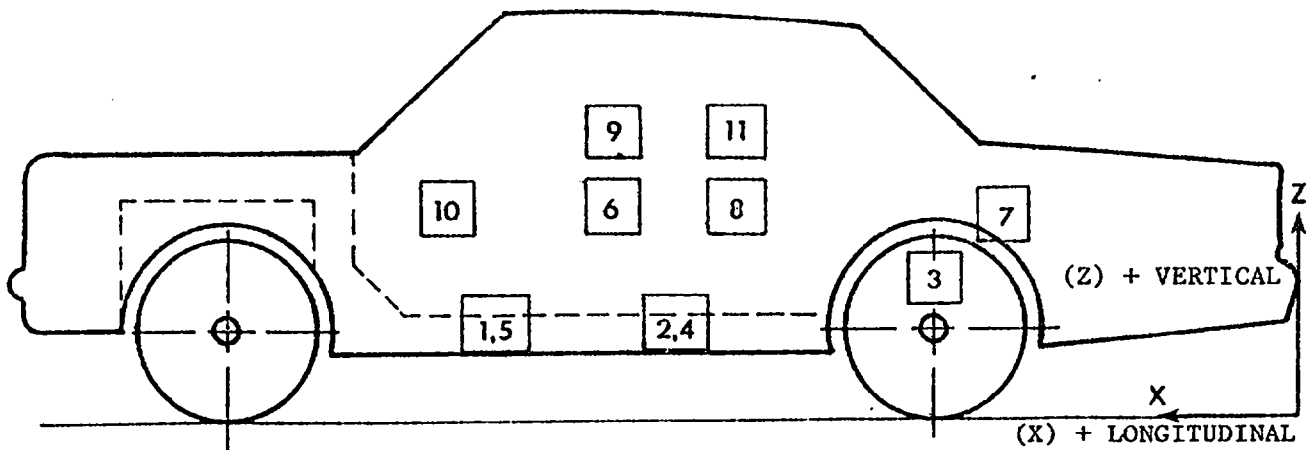
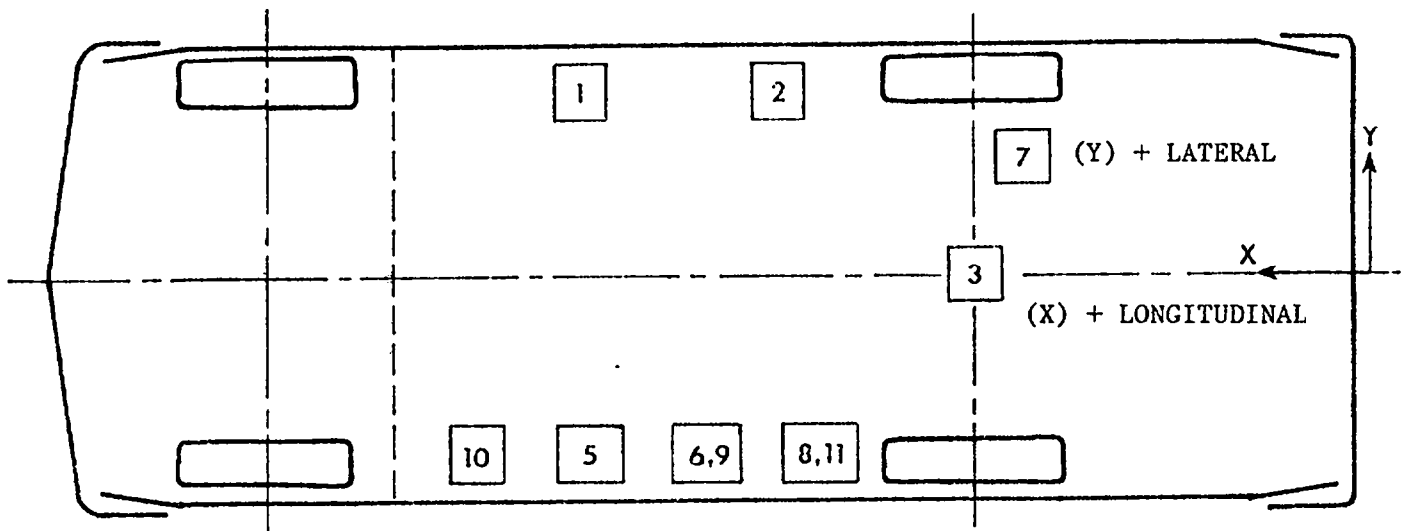
NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT SILL AT FRONT SEAT (LONGITUDINAL)	83.3	23.5	7.6	1.92	189.38	9.29	76.63
	(LATERAL)				15.12	58.13	3.85	125.38
	(VERTICAL)				11.53	53.00	13.07	45.13
	(RESULTANT)					17.97 @ 58.38		
2	RIGHT SILL AT REAR SEAT (LONGITUDINAL)	61.3	23.8	6.9	2.44	189.00	7.52	12.25
	(LATERAL)				26.43	54.00	4.72	87.63
	(VERTICAL)				6.25	84.25	8.00	184.13
	(RESULTANT)					27.49 @ 53.88		
3	REAR DECK OVER AXLE (LONGITUDINAL)	32.0	0.0	7.1	4.94	119.25Y	14.41	85.75Y
	(LATERAL)				31.54	70.00	4.44	119.38
	(VERTICAL)				10.20	78.75	12.18	71.25
	(RESULTANT)					35.18 @ 70.25Y		
4	LEFT SILL AT REAR SEAT (LATERAL)	61.0	-23.8	7.4	53.56	50.75	8.33	79.88
5	LEFT SILL AT FRONT SEAT (LATERAL)	83.6	-23.6	9.1	52.04	50.38	54.59	30.00Y
6	LEFT FRONT DOOR CENTERLINE (LATERAL)	81.3	-27.0	22.8	211.76	21.50	59.35	36.50
7	RIGHT REAR COMPARTMENT (LONGITUDINAL)	31.0	15.4	13.9	3.31	194.88Y	8.95	85.50Y
8	MIDREAR OF LEFT FRONT DOOR (LATERAL)	60.0	-26.3	22.5	---	--- Y	---	--- Y
9	UPPER LEFT FRONT DOOR CENTERLINE (LATERAL)	81.9	-26.0	33.0	---	--- Y	---	--- Y
10	MIDFRONT OF LEFT FRONT DOOR (LATERAL)	99.6	-26.3	21.3	89.74	15.88	90.29	28.75
11	UPPER REAR OF LEFT FRONT DOOR (LATERAL)	70.5	-26.0	32.6	---	--- Y	---	--- Y

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

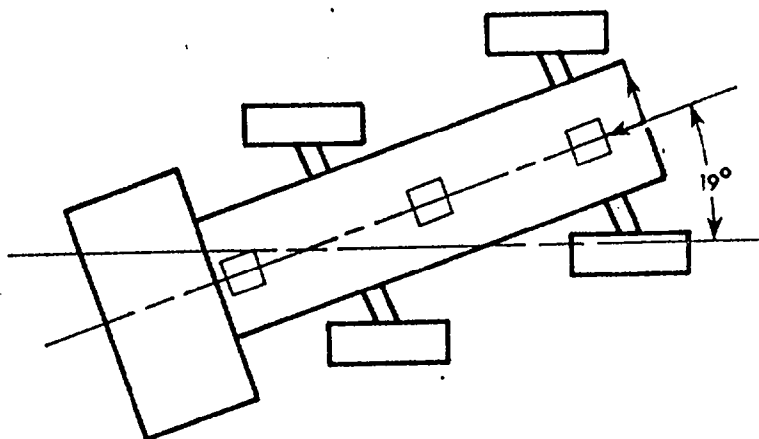
All measurements of accelerometer locations in inches.

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)	$\Delta V = -19.3 \text{ mph @ } 130.00 \text{ msec}$			1.29	152.25	16.62	51.25
	(LATERAL)	$\Delta V = -2.8 \text{ mph @ } 130.00 \text{ msec}$			2.33	23.63	7.51	72.25
	(VERTICAL)				15.15	89.25	18.90	78.88
	(RESULTANT)					23.16 @ 78.75		
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	$\Delta V = -14.3 \text{ mph @ } 130.00 \text{ msec}$			6.26	3.00	17.34	63.88
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -17.8 \text{ mph @ } 130.00 \text{ msec}$			1.99	196.63	14.39	66.88

* 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	800	Vehicle dynamics
2	Overhead	Photosonics 1B	25	732	Close-up of impact point
3	Onboard MDB	Stalex	25	495	Close-up of impact point
4	Onboard MDB	Photosonics 1B	13	807	Driver kinematics
5	Ground level - right	Hycam	25	732	Overall view
6	Ground level - left	Photosonics 1B	17	795	Overall view
7	Onboard vehicle	Photosonics 1B	8	800	Driver kinematics - front view
8	Onboard vehicle	Photosonics 1B	8	802	Driver kinematics
9	Onboard vehicle	Photosonics 1B	8	795	Passenger kinematics

NOTE: CAMERAS ARE NUMBERED ACCORDING TO SPLICING SEQUENCE OF FILM.
 (24 fps) REAL TIME MOVIE FILM COVERAGE OF PRE-CRASH, POST-CRASH
 AND CRASH EVENT SPLICED AT START AND END OF FILM.

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	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	MFGR.	DATE OF LAST CALIBRATION	SENSITIVITY	DESIRED FULL SCALE (ENGR. UNITS)
BCGXG	Accel	4-202-0001	18845	Bell Howell	8/9/83	.236 MV/G	50 G
BCGYG	Accel	4-202-0001	18858	Bell Howell	8/9/83	.2385 MV/G	50 G
BCGZG	Accel	4-202-0001	18857	Bell Howell	8/9/83	.2385 MV/G	50 G
BFCXG	Accel	4-202-0001	18240	Bell Howell	8/9/83	.2385 MV/G	50 G
BRCXG	Accel	4-202-0001	19022	Bell Howell	8/9/83	.221 MV/G	50 G

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

APPENDIX A
PHOTOGRAPHS

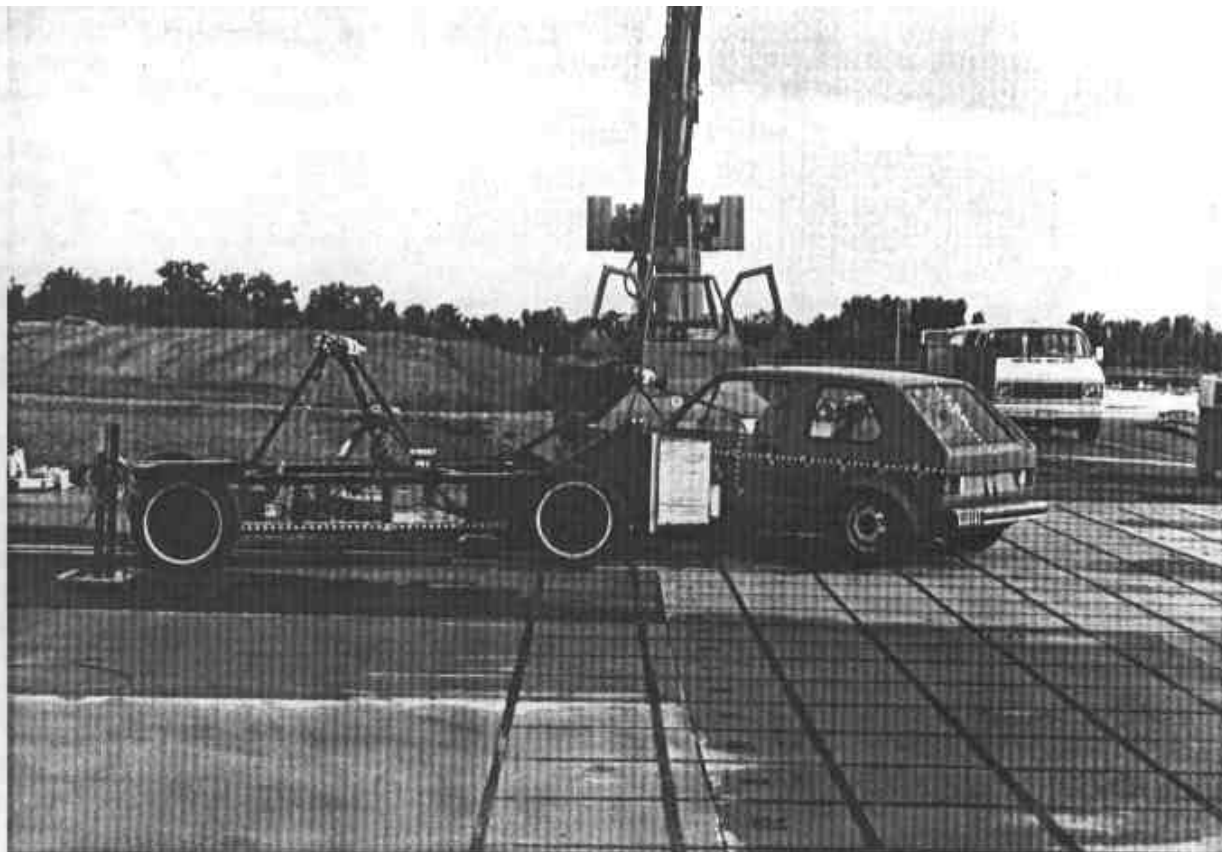


Figure A-1. PRE-TEST OVERALL - VIEW 1



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



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



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



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

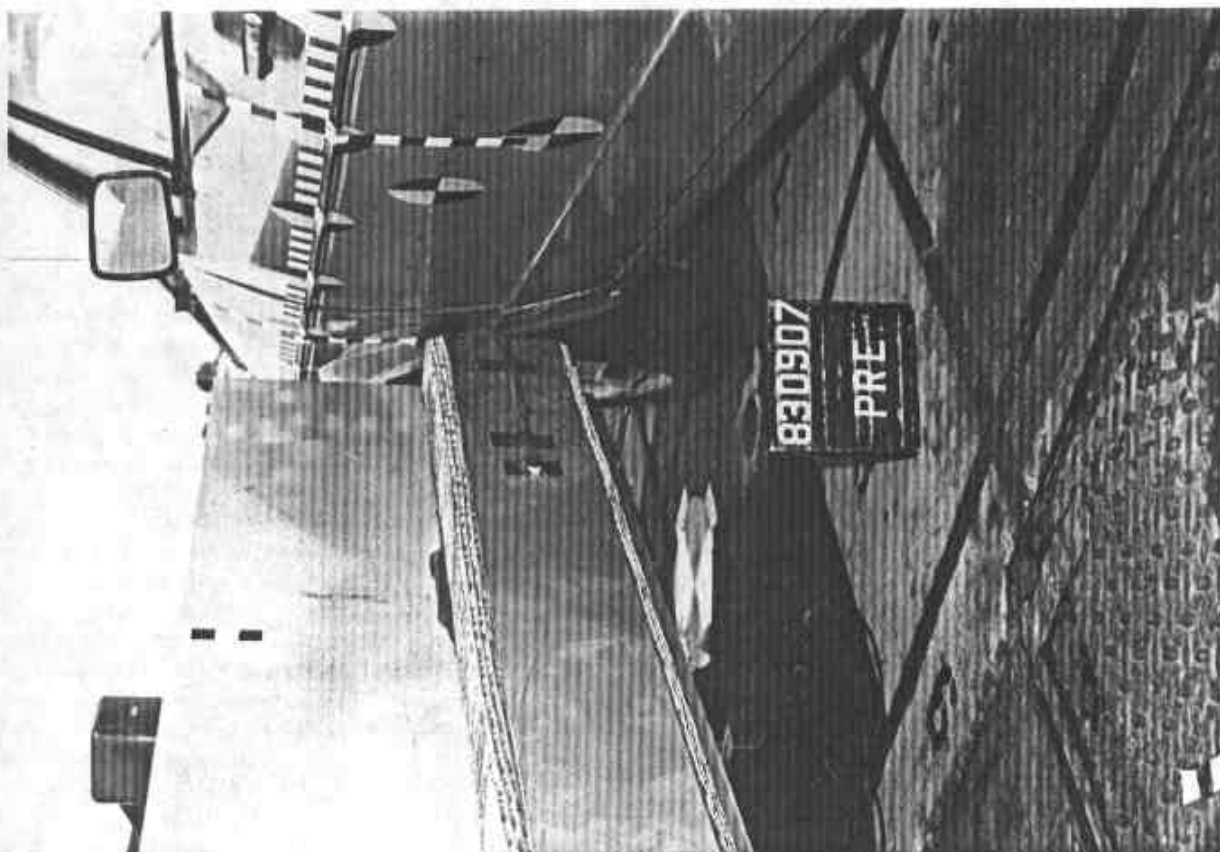


Figure A-6. PRE-TEST CLOSEUP - VIEW 2
A-4

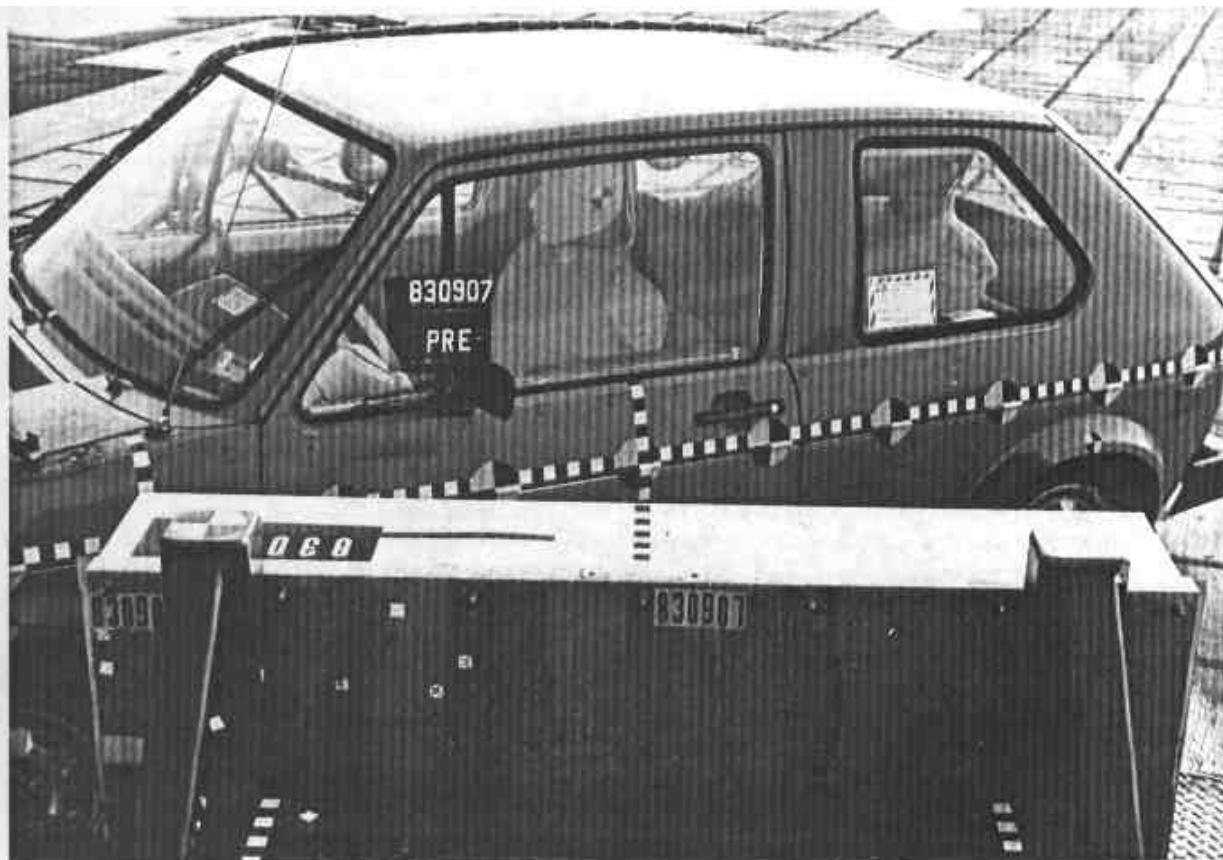


Figure A-7. PRE-TEST CLOSEUP - VIEW 3



Figure A-8. PRE-TEST DRIVER DUMMY - VIEW 1
A-5



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

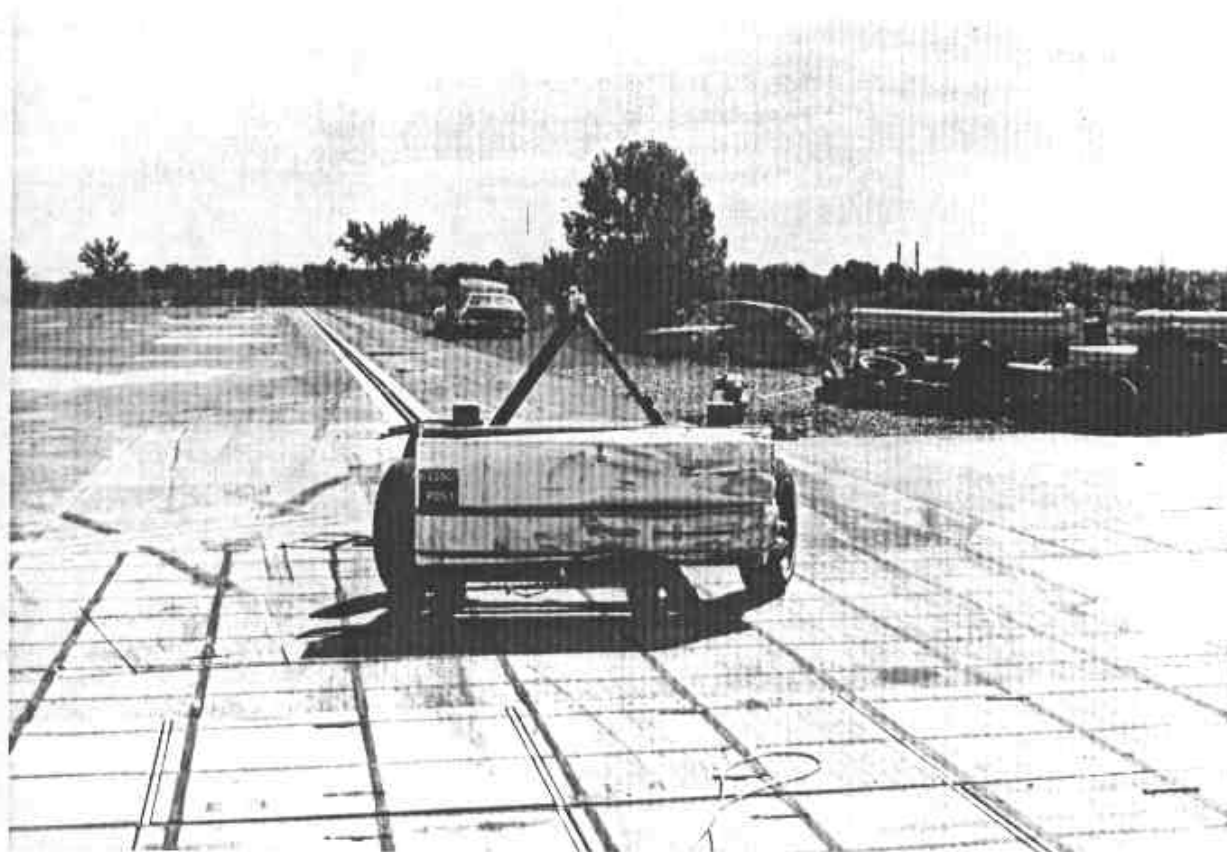


Figure A-12. POST-TEST OVERALL - VIEW 1



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



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



Figure A-15. POST-TEST OVERALL - VIEW 4



Figure A-16. POST-TEST DRIVER DUMMY VIEW - 1



Figure A-17. POST-TEST DRIVER DUMMY - VIEW 2



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



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



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



Figure A-21. POST-TEST VEHICLE DAMAGE - VIEW 1



Figure A-22. POST-TEST VEHICLE DAMAGE - VIEW 2



Figure A-23. POST-TEST VEHICLE DAMAGE - VIEW 3



Figure A-24. POST-TEST VEHICLE DAMAGE - VIEW 4

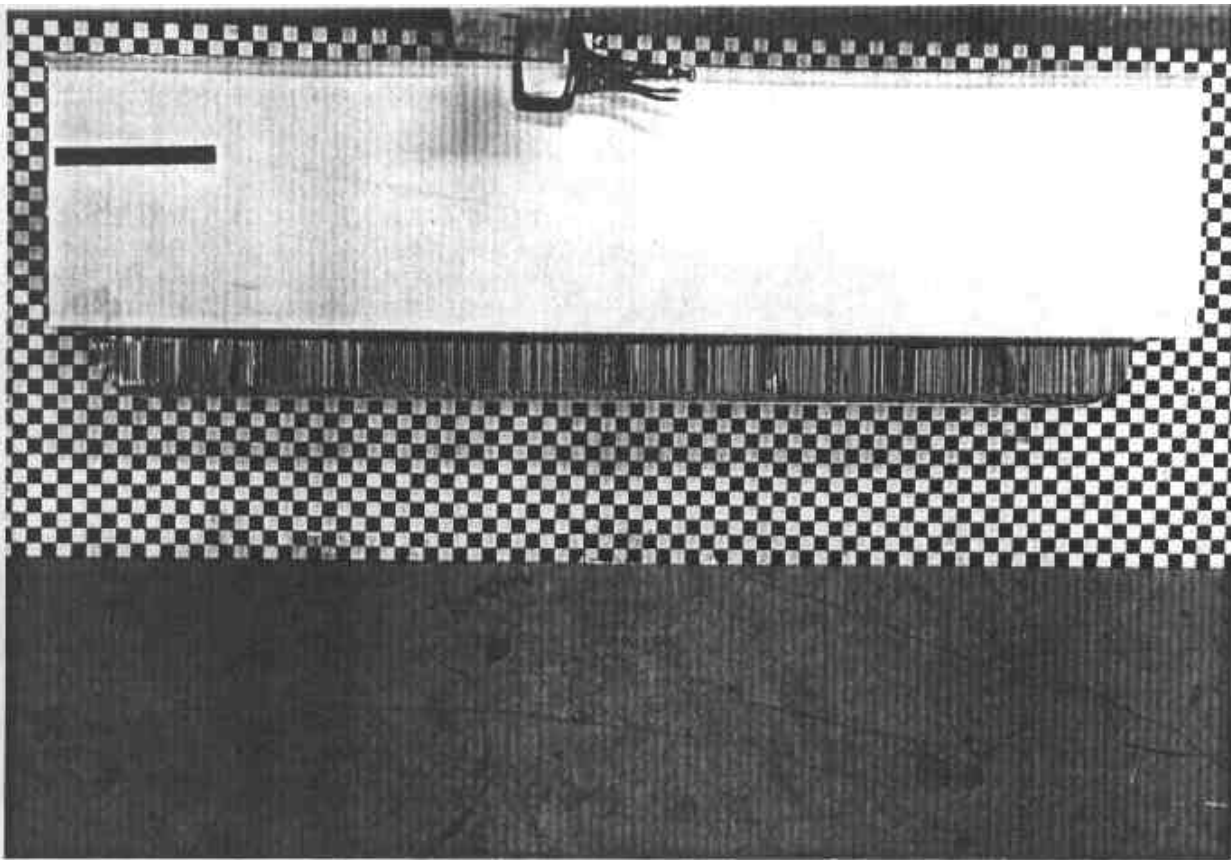


Figure A-25. PRE-TEST MDB FACE - VIEW 1

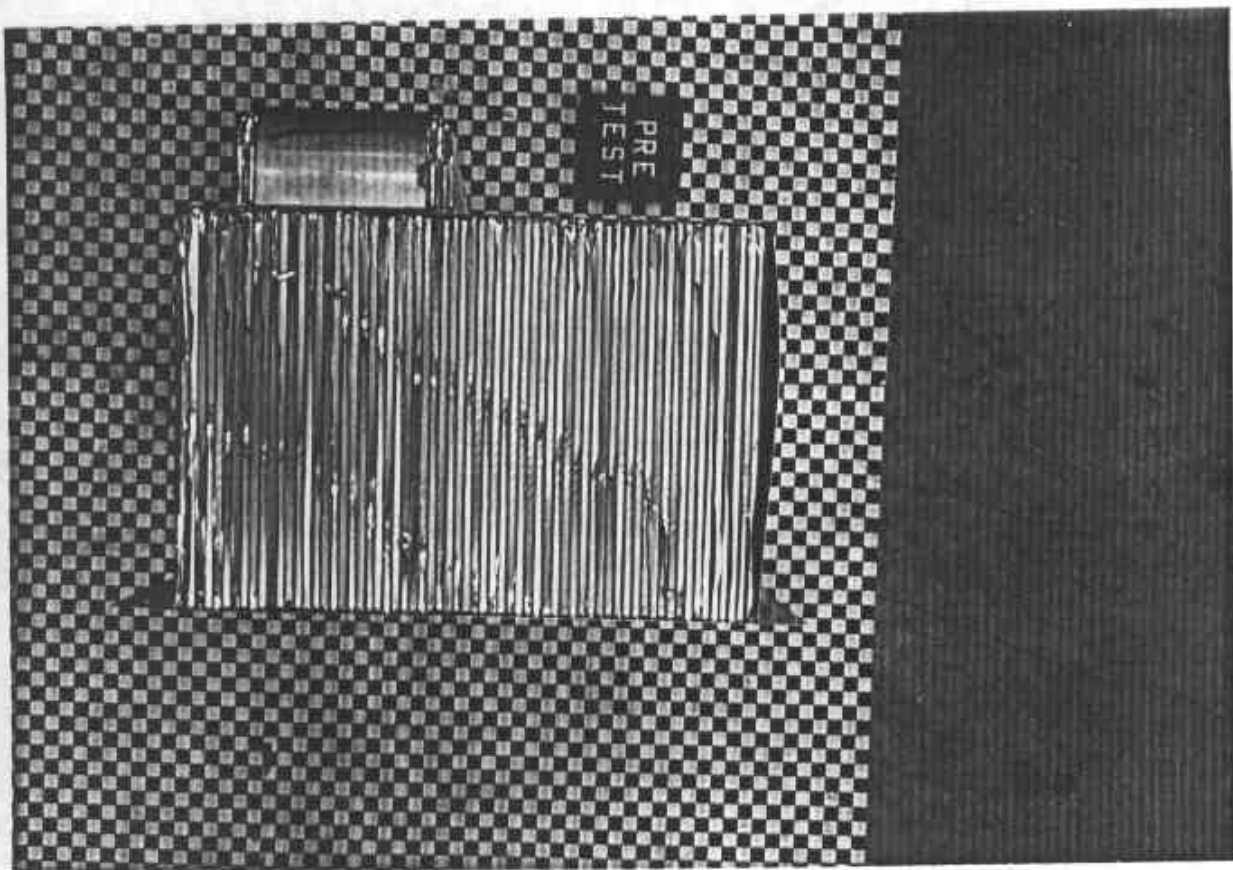


Figure A-26. PRE-TEST MDB FACE - VIEW 2

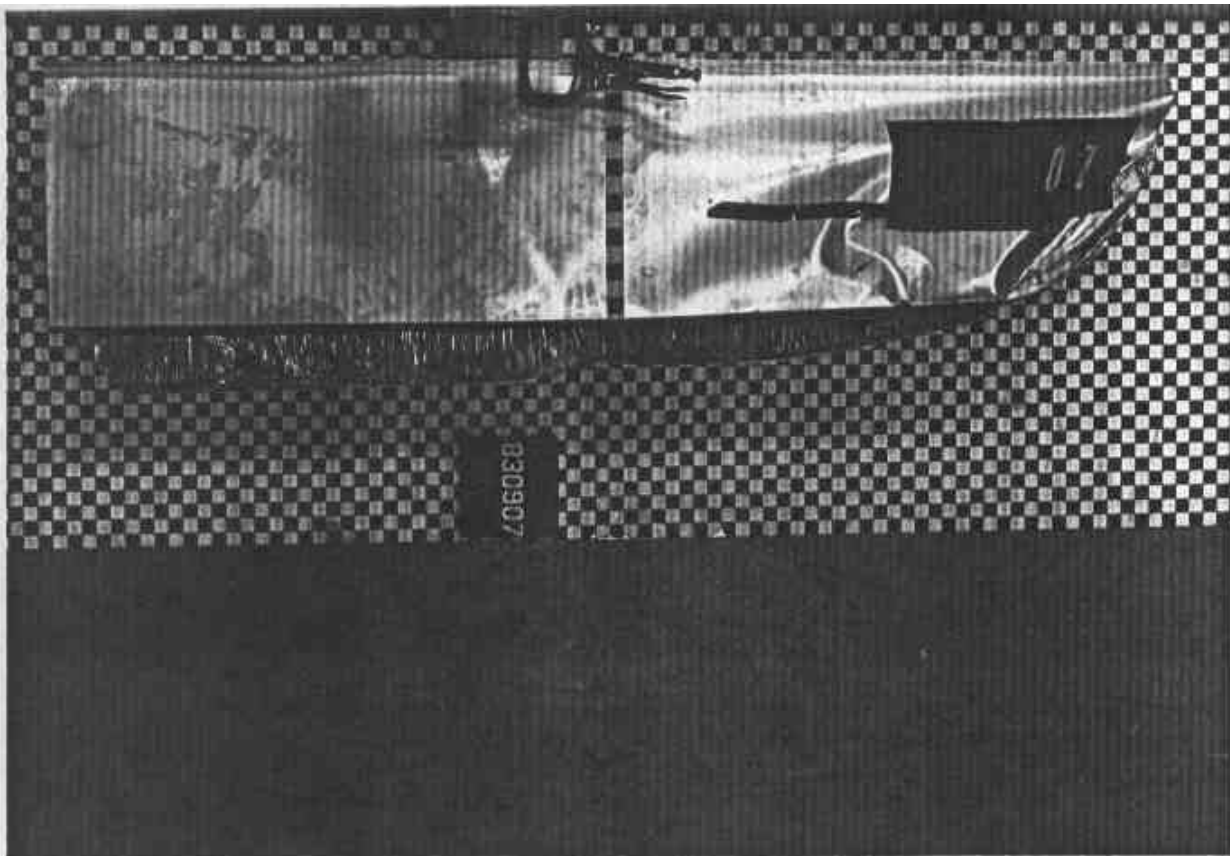


Figure A-27. POST-TEST MDB FACE - VIEW 1

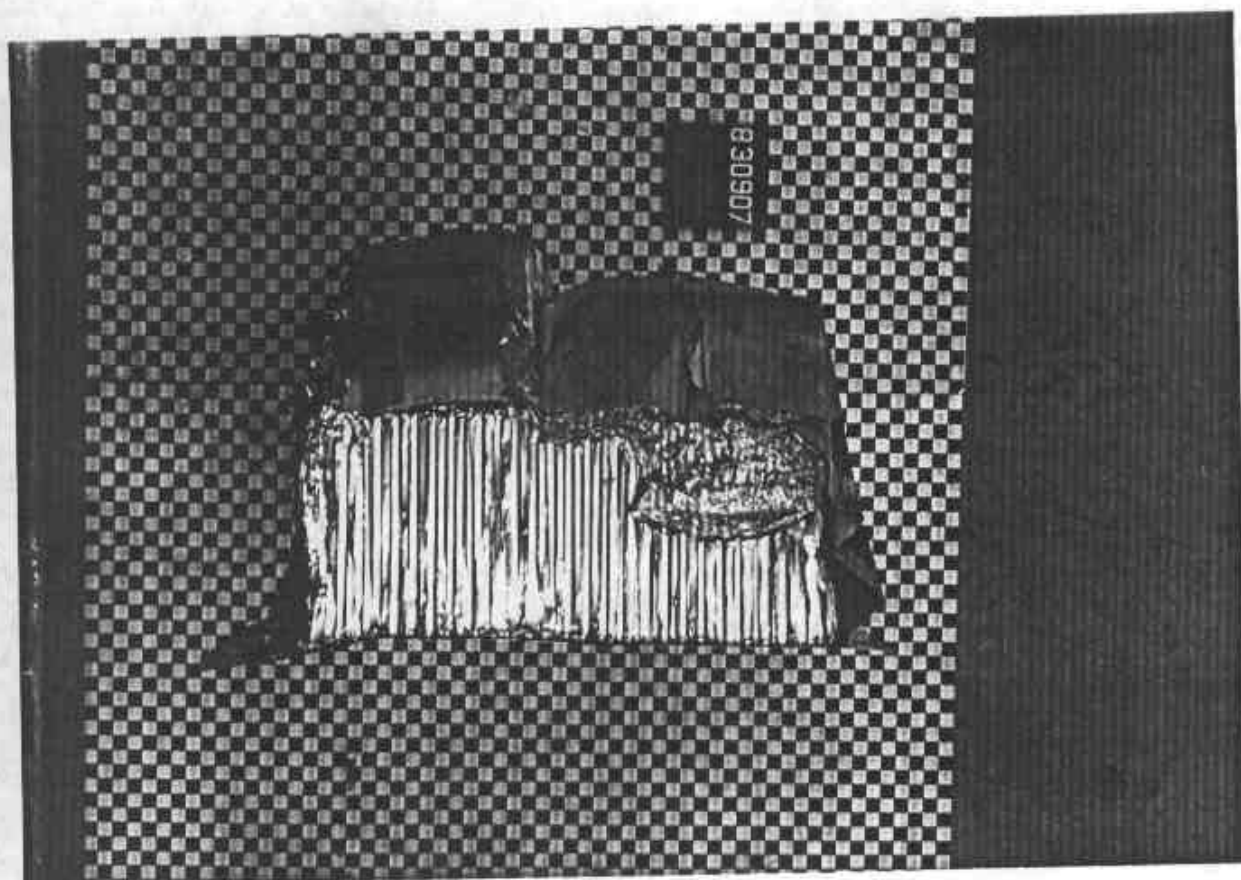


Figure A-28. POST-TEST MDB FACE - VIEW 2
A-15

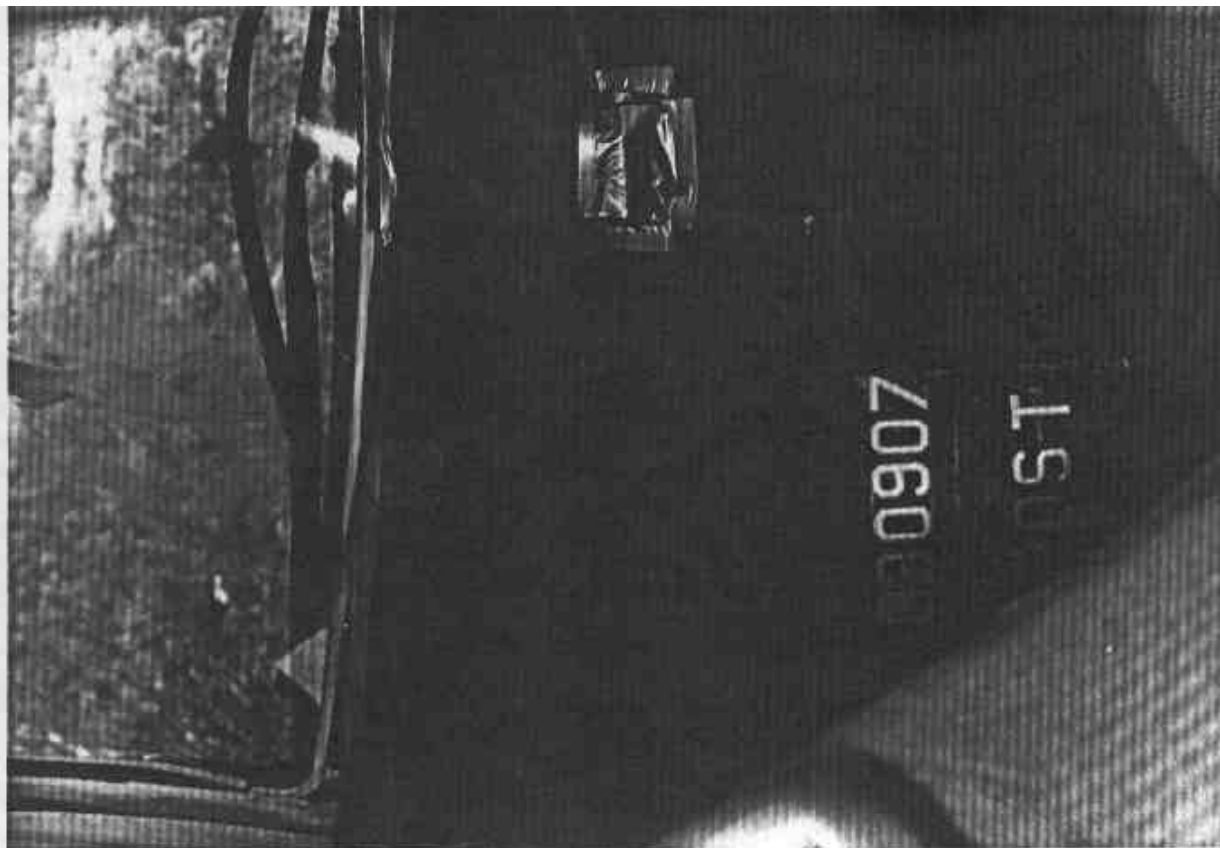


Figure A-29. POST-TEST PADDING CONDITION

APPENDIX B
DATA PLOT PRESENTATION

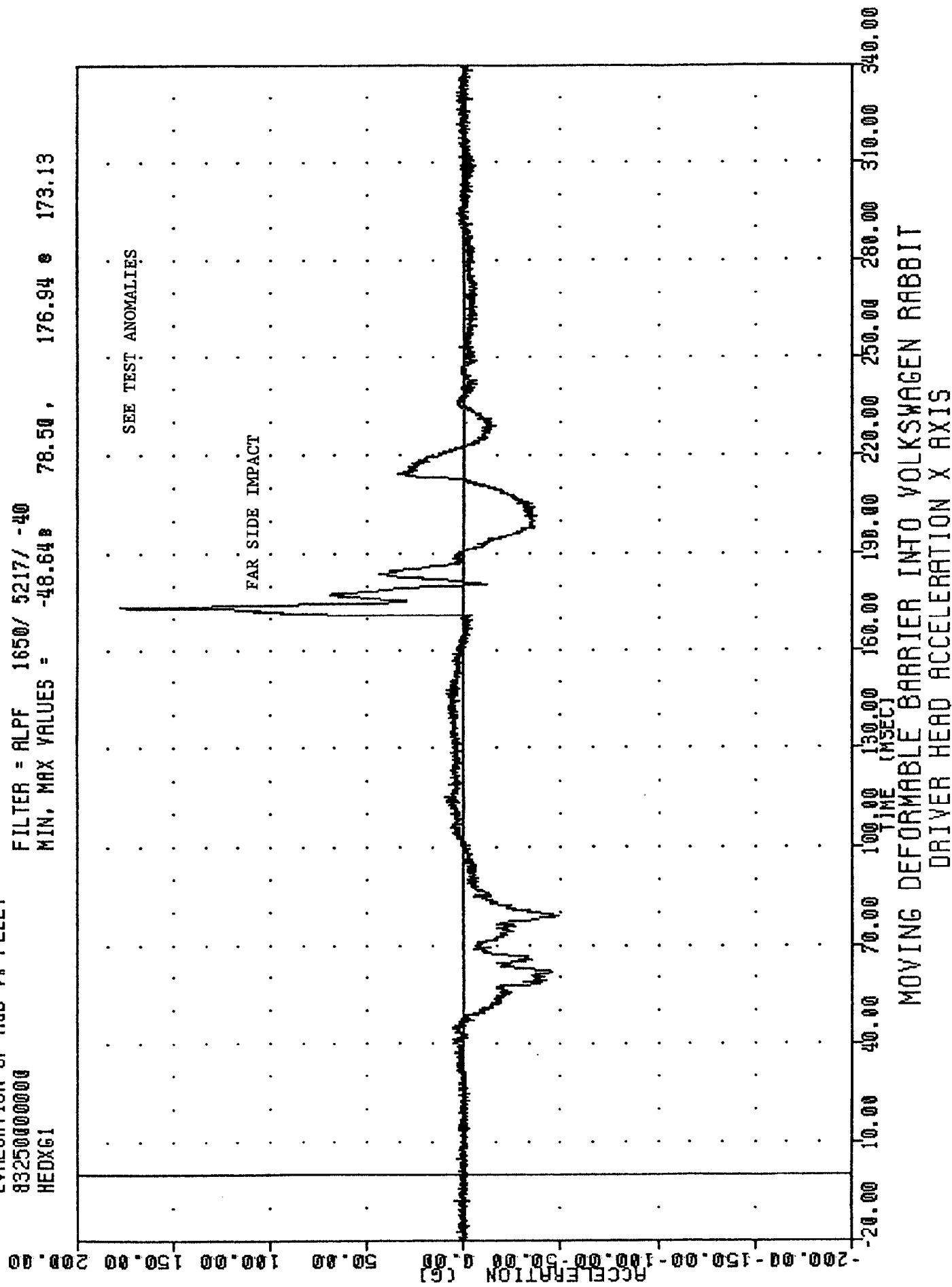
Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data were filtered according to SAE J211, except that dummy thorax data were filtered using the HSRI filter.

TRC
EVALUATION OF MOD VV FLEET
832500000000
HEDXG1

PLOT DATE 12-SEP-83 13:16:44

FILTER = ALPF 1650/ 5217/ -40

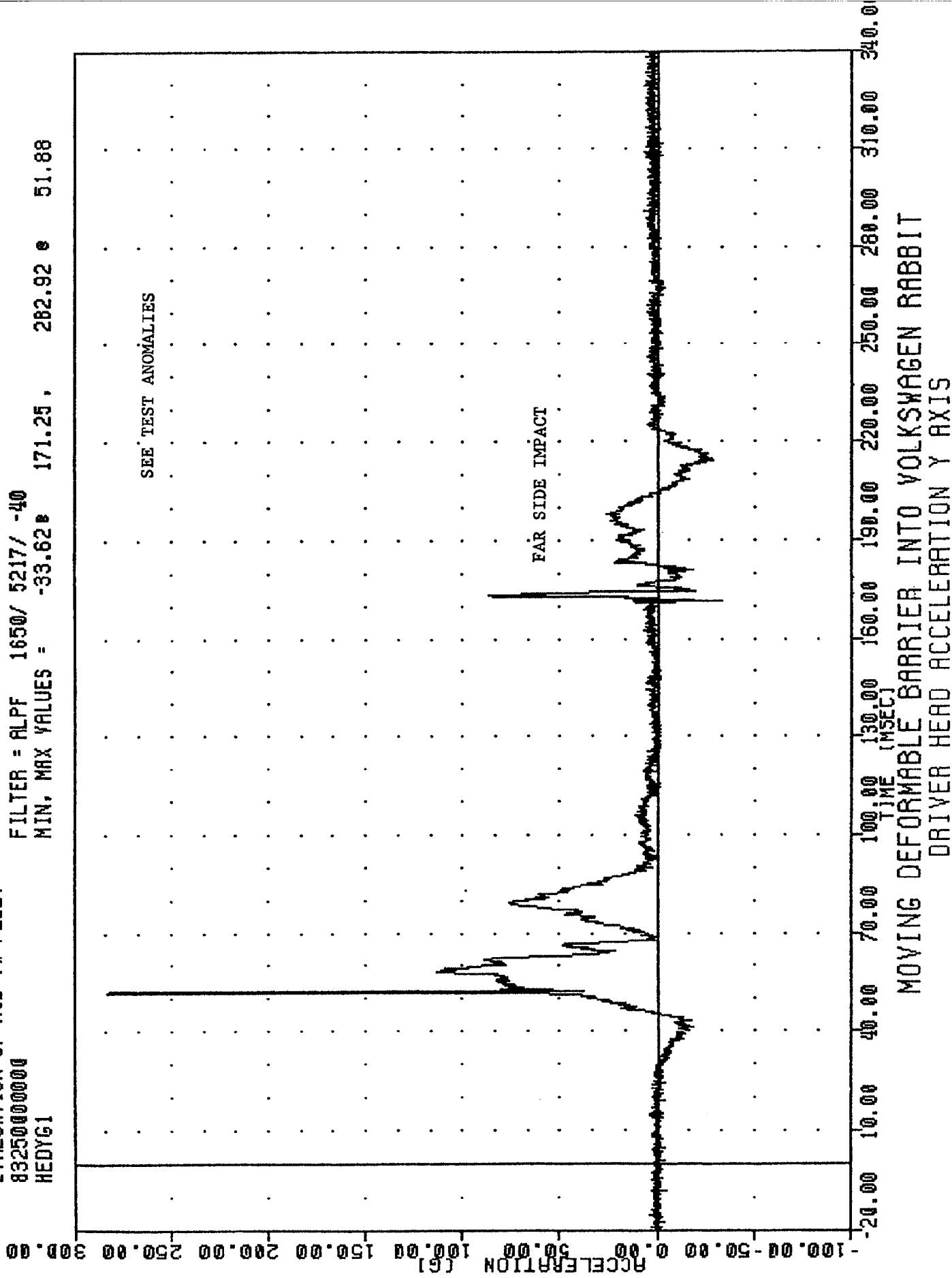
MIN, MAX VALUES = -48.648 78.50, 176.94 @ 173.13



TRC
EVALUATION OF MOD VW FLEET
83250000000
HEDYG1

PLOT DATE 13-SEP-83 11:00:45

FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -33.62 171.25, 282.92 51.88

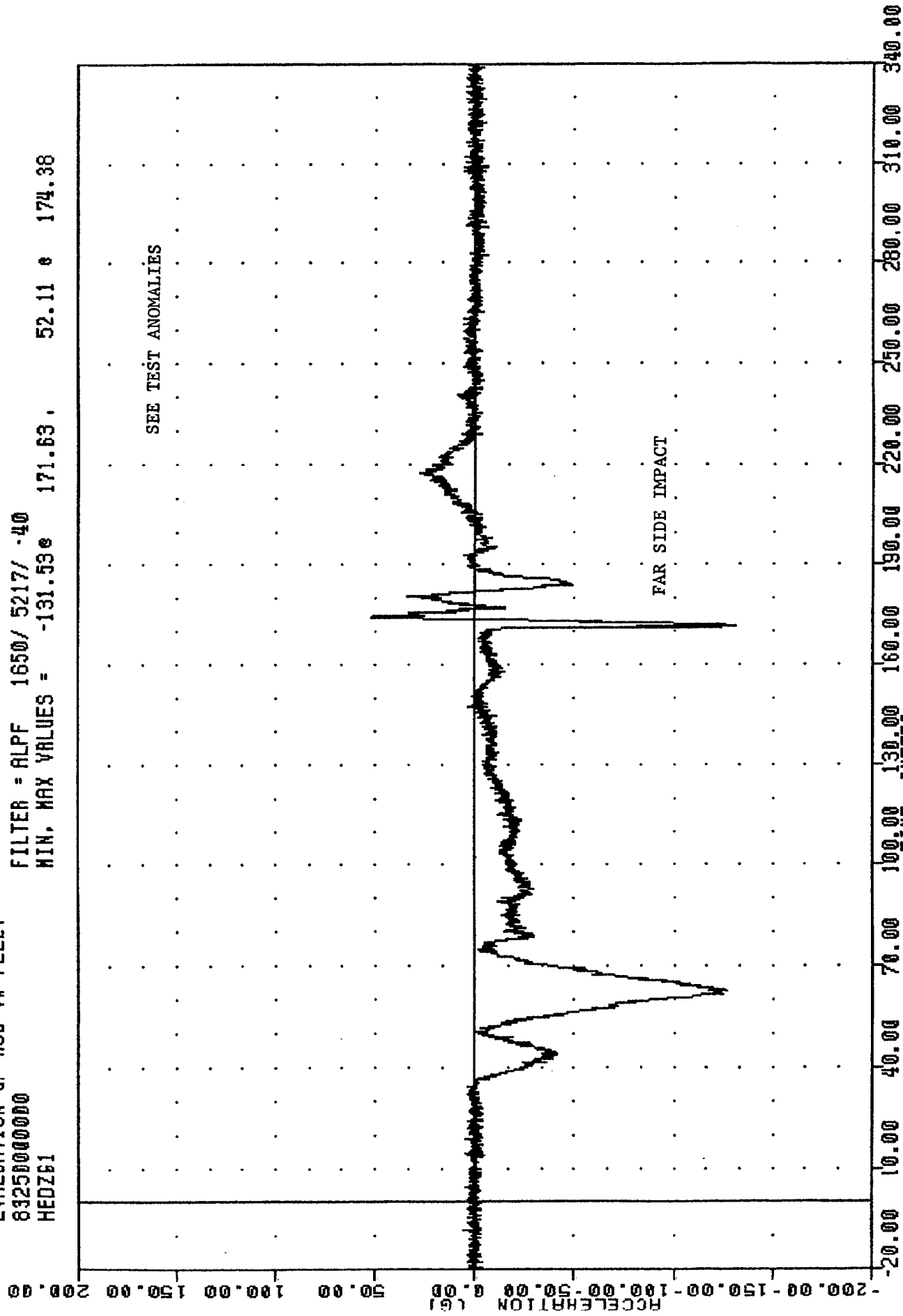


TAC
EVALUATION OF MOD VW FLEET
83250000000
HEDZ61

PLOT DATE 12-SEP-83 13:16:44

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -131.53e 171.63. 52.11 e 174.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Z AXIS

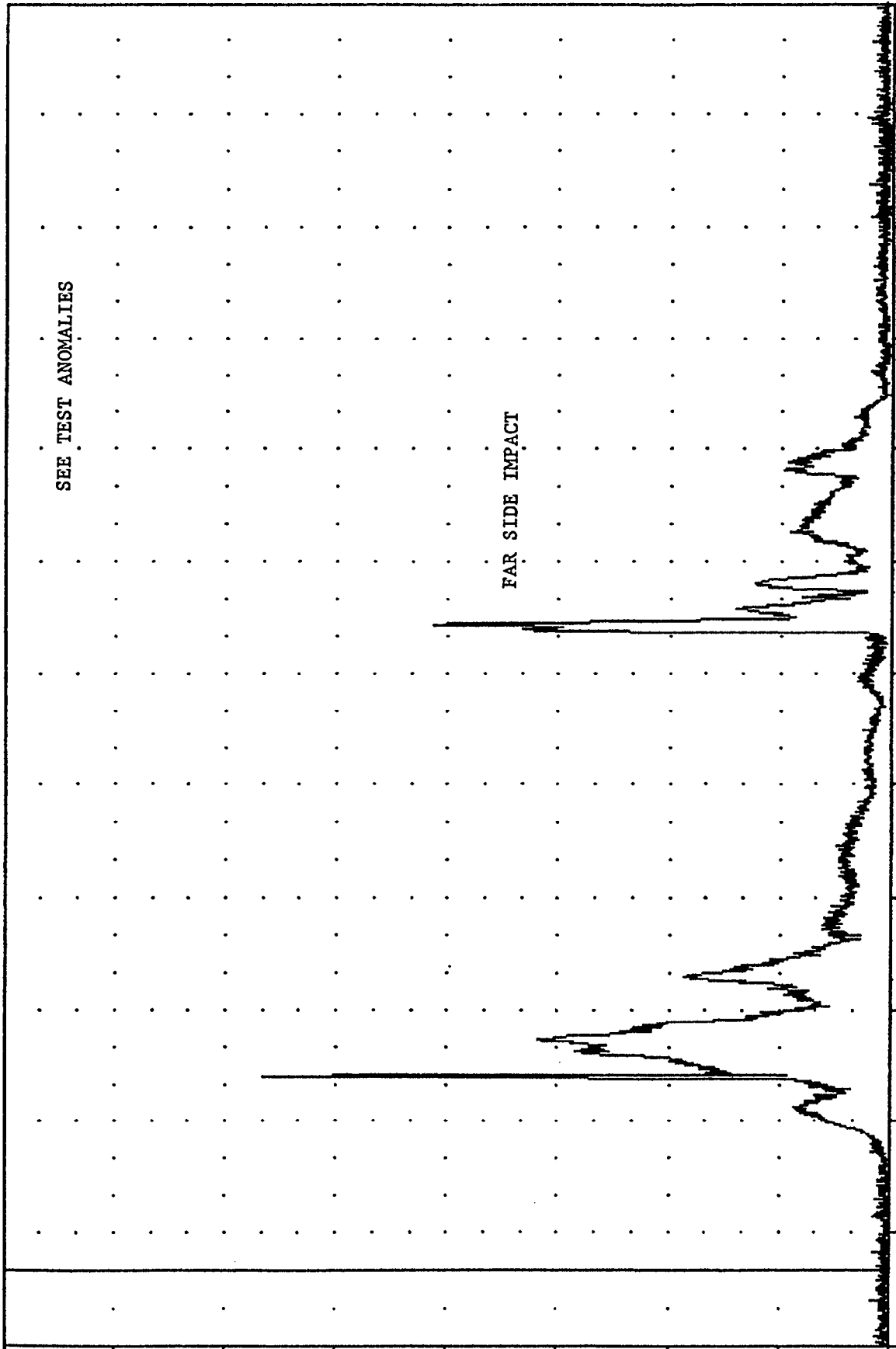
TRC
 EVALUATION OF MDD VW FLEET
 832500000000
 HEDRG1

PLOT DATE 12-SEP-83 13:16:44

FILTER = ALPF 1650/ 5217/ -10

MIN, MAX VALUES = 0.220 -12.00, 283.47 @ 51.88

ACCELERATION (G)



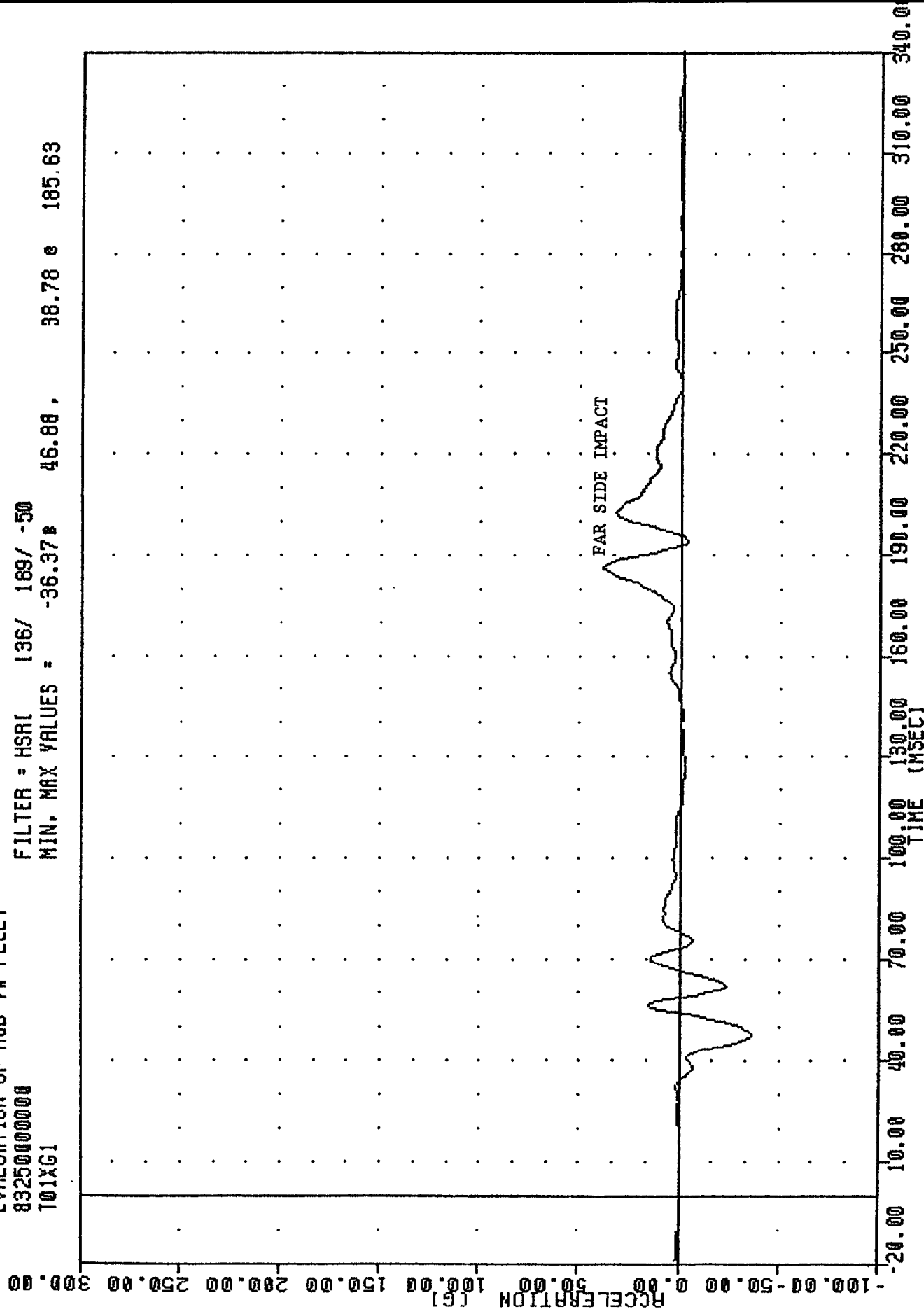
TIME (msec)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD RESULTANT

TRC
EVALUATION OF MOD YW FLEET
83250000000
T01XG1

PLOT DATE 13-SEP-83 11:05:41

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -36.37 46.88 38.78 185.63



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

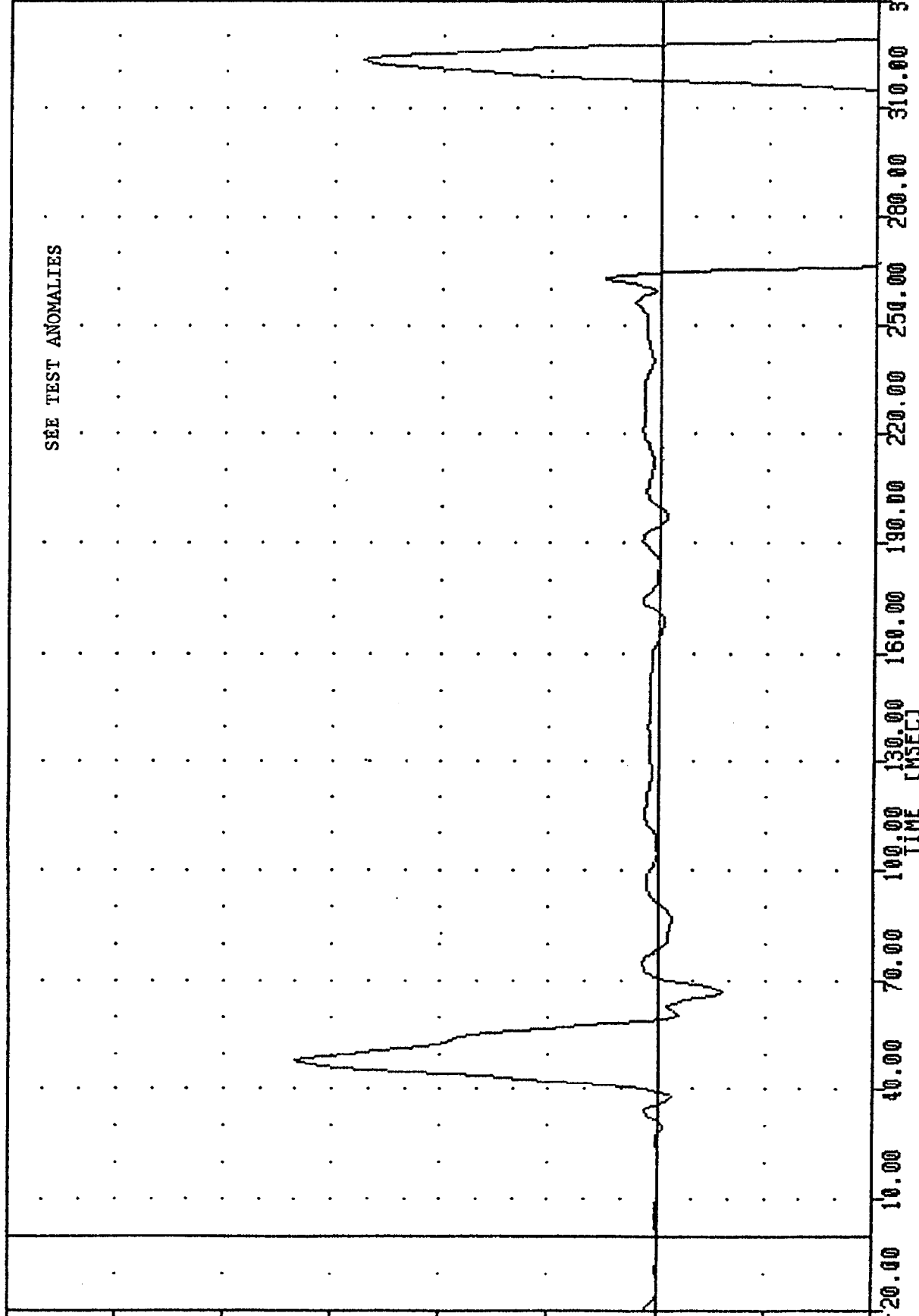
TRC
EVALUATION OF MDD VW FLEET
832500000000
T01YG1

PLOT DATE 13-SEP-83 11:05:41

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -429.57e 270.00, 166.66 e 47.50

ACCELERATION (G)

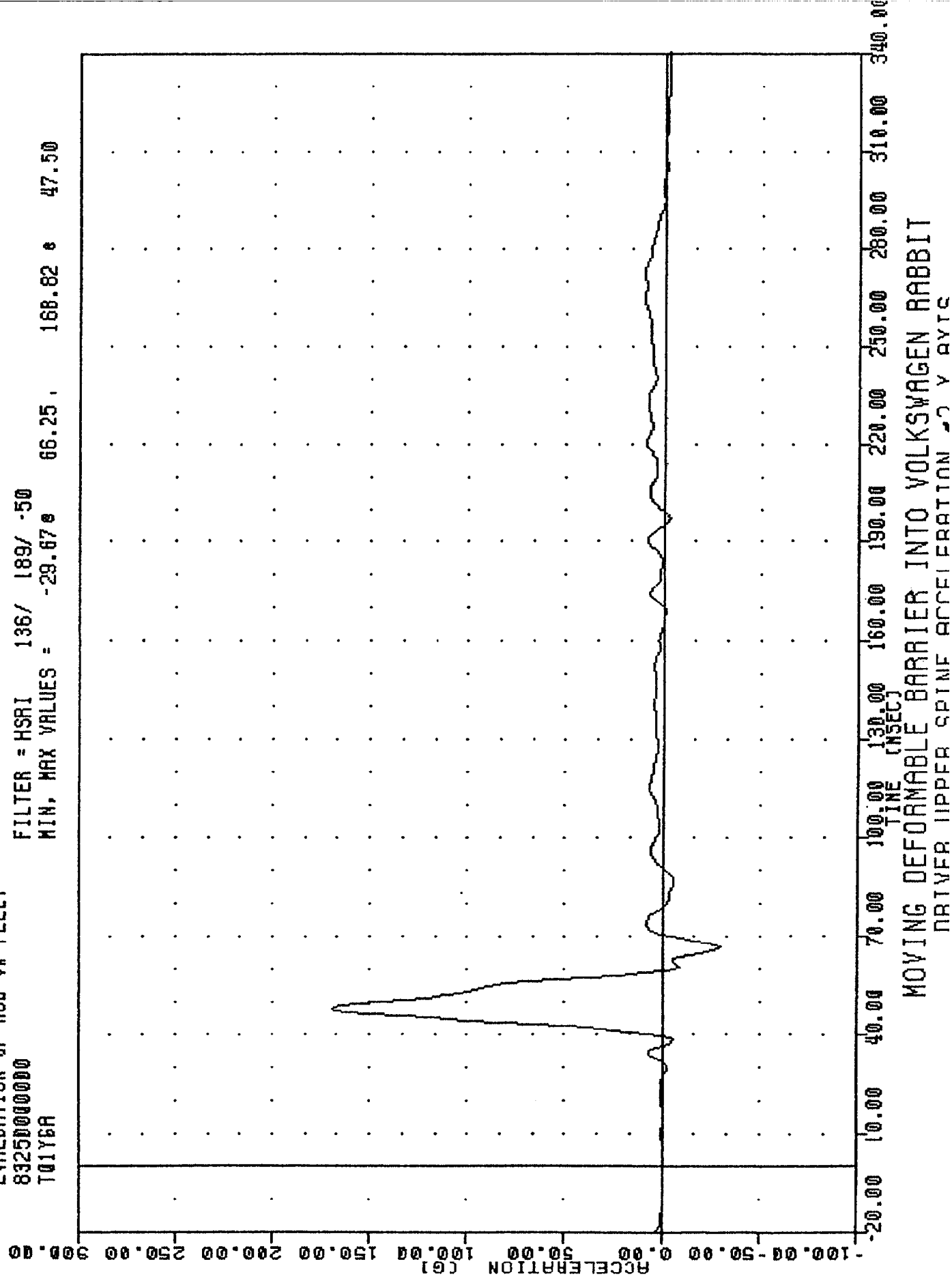


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION Y AXIS

TAC
EVALUATION OF MOD VW FLEET
83250000000
T01Y6A

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -29.67 66.25, 168.82 47.50



TRC , 830907
EVALUATION OF MOD YW FLEET
83250000000
T017G1

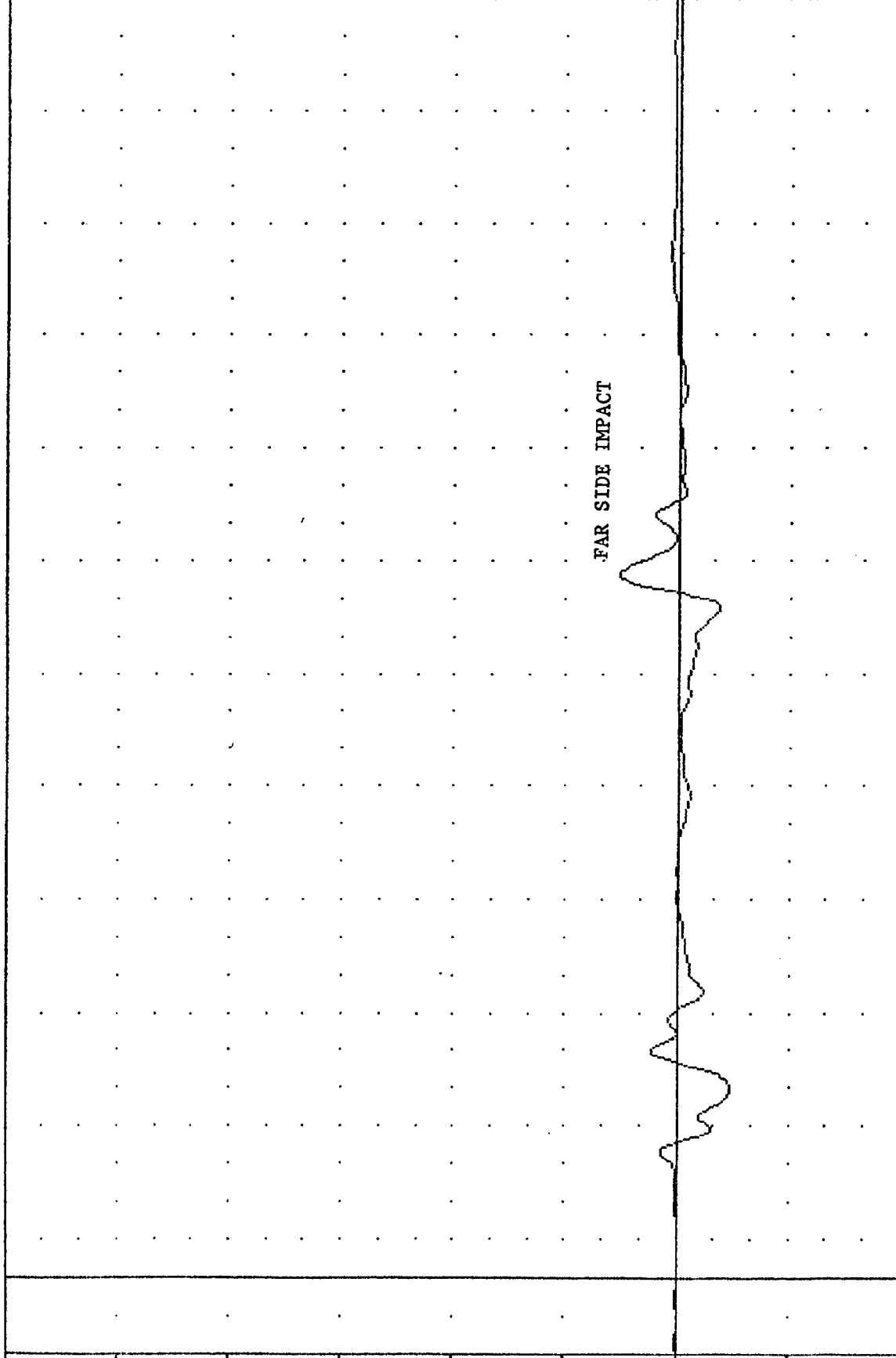
PLOT DATE 16-SEP-83 12:44:38

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -23.79 49.37, 26.34 185.63

ACCELERATION (G)

300.00
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00



FAR SIDE IMPACT

-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

NOTED LIDDED CBME ACCELERATION 7 MVTC

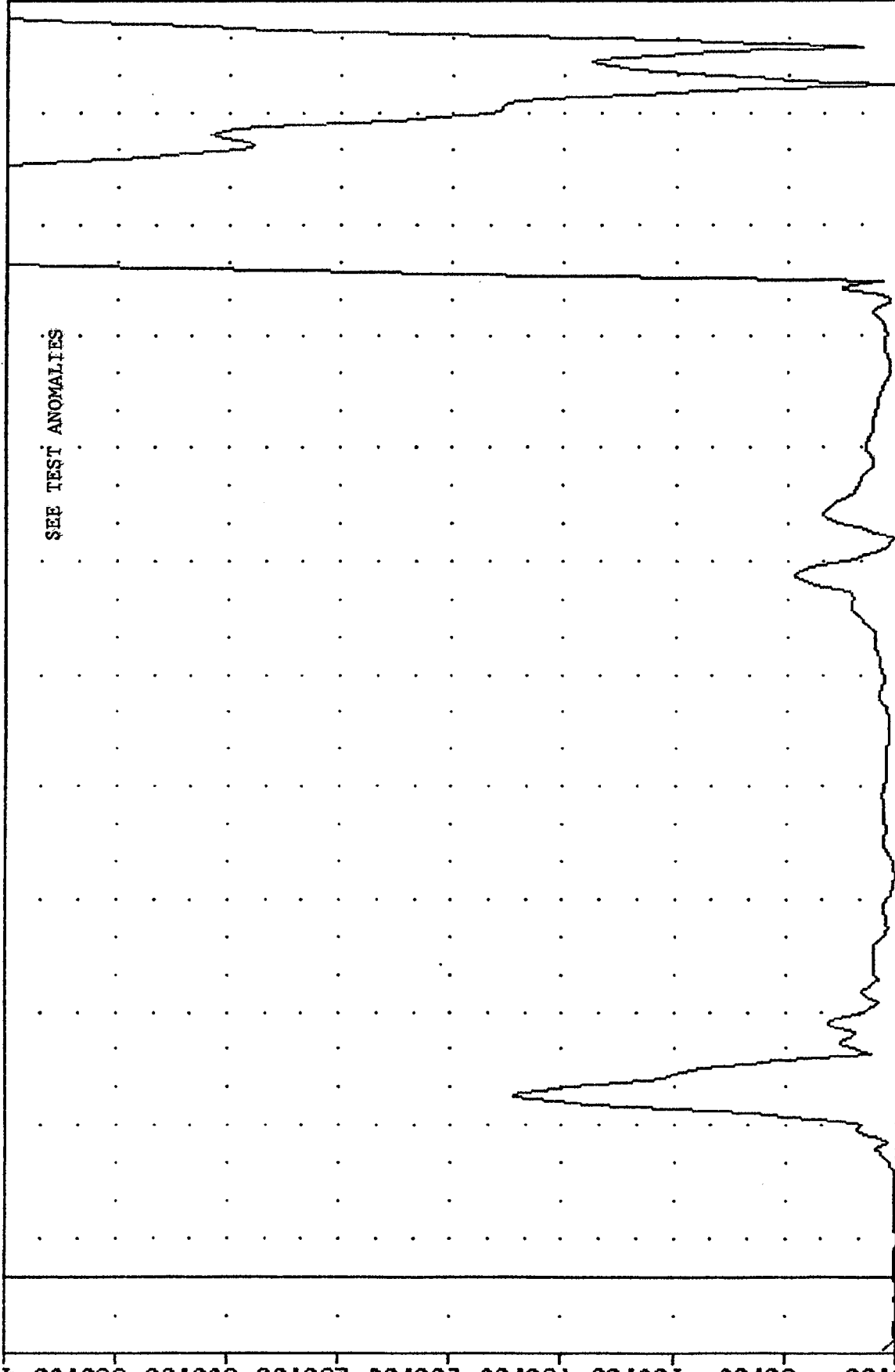
TRC
EVALUATION OF MOD YW FLEET
832501000000
T01RG1

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.148 -10.00, 429.59 e 270.00

ACCELERATION (G)



0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00 400.00

TIME (msec)

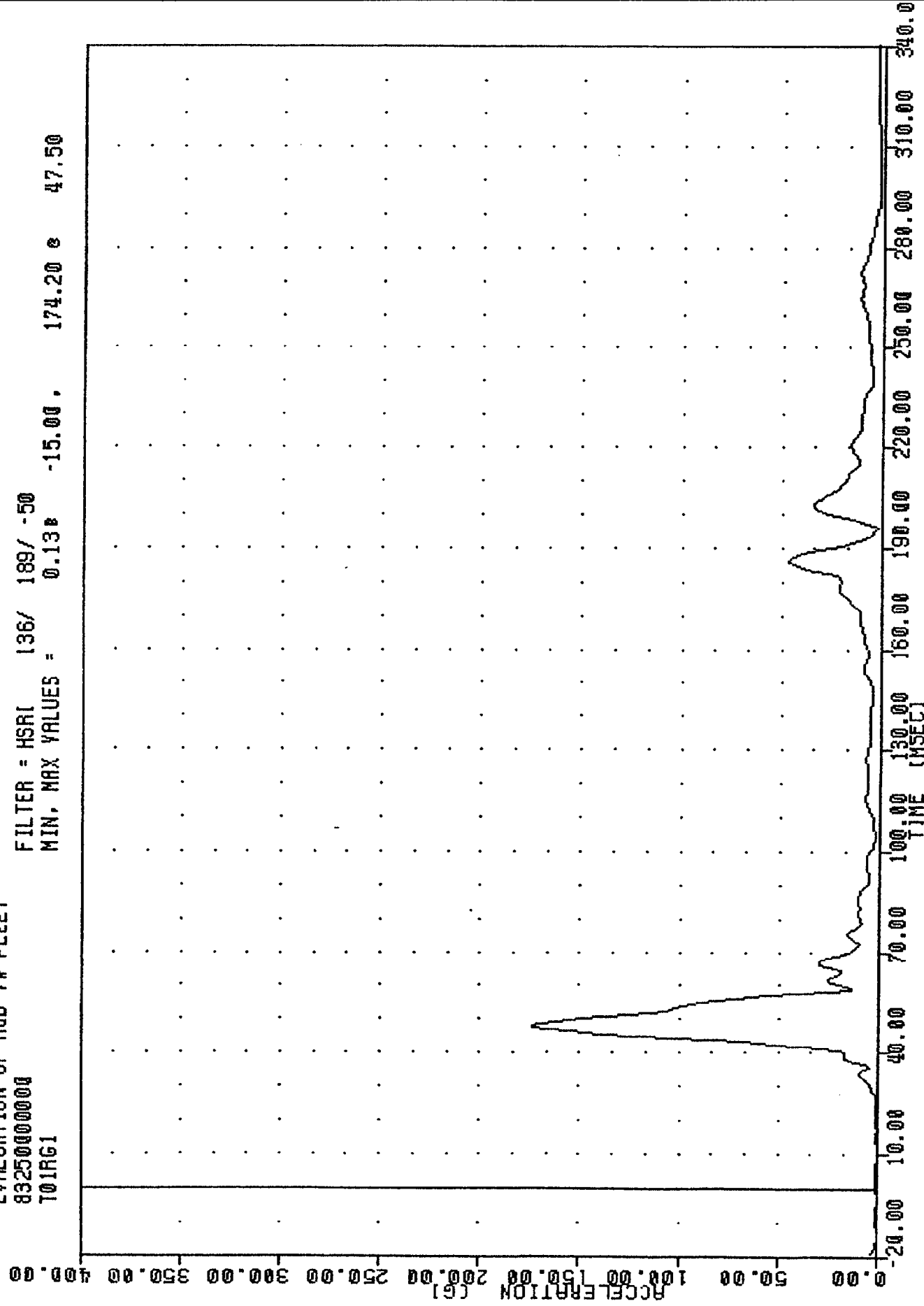
0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER CPTME BECIII TANT

TRC , 830907
EVALUATION OF MOD VV FLEET
83250000000
T01RG1

PLOT DATE 12-SEP-83 13:35:41

FILTER = HSR1 136/ 189/ -50
MIN, MAX VALUES = 0.138 -15.00, 174.20 & 47.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESISTANT IICINC T01VCO

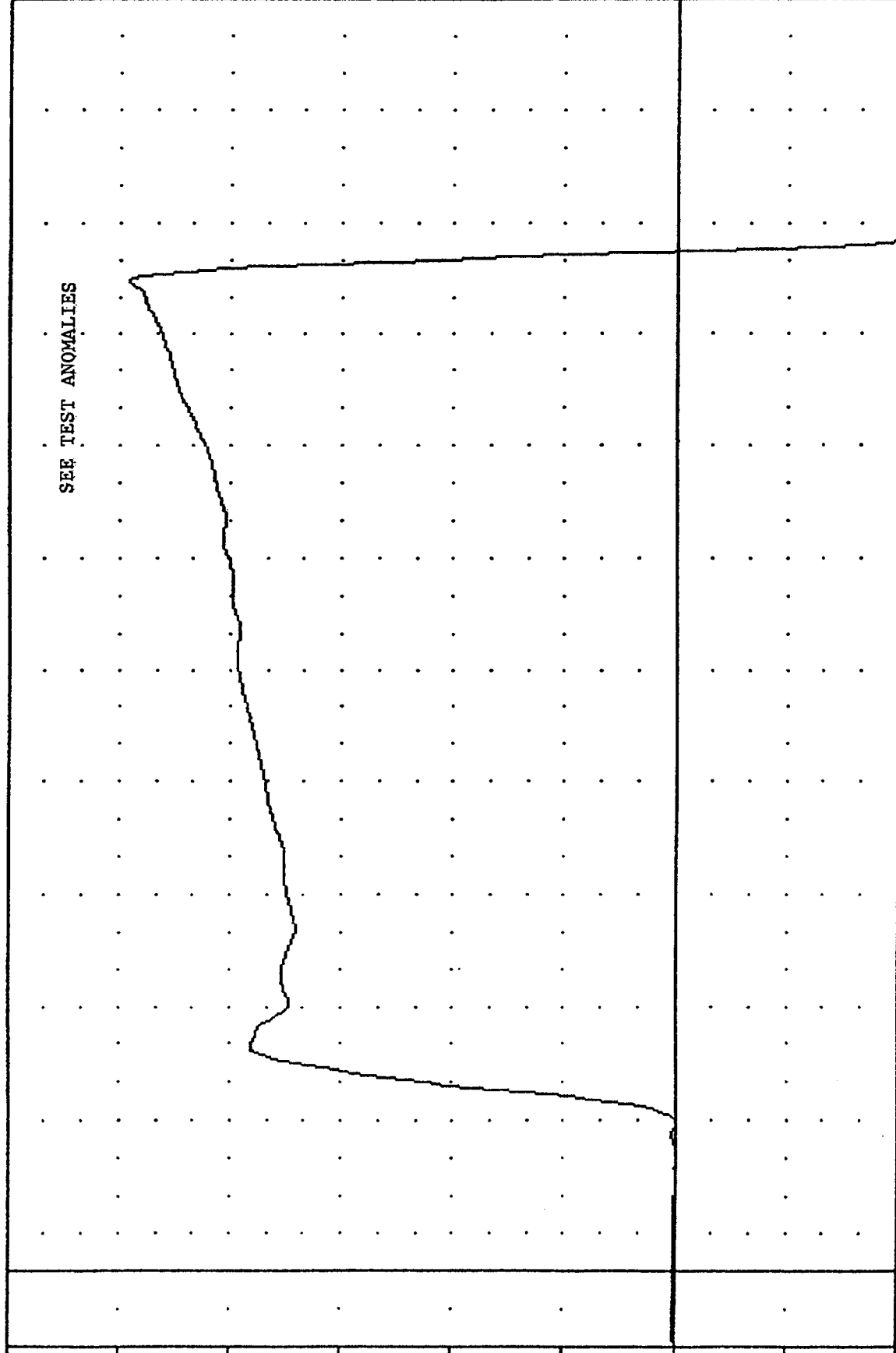
TRC , 830907
EVALUATION OF MOD VV FLEET
83250000000
T01YV1

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = -388.87 340.00 49.08 263.75

VELOCITY (MPH)



-20.00 -10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00

-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 T01YGI

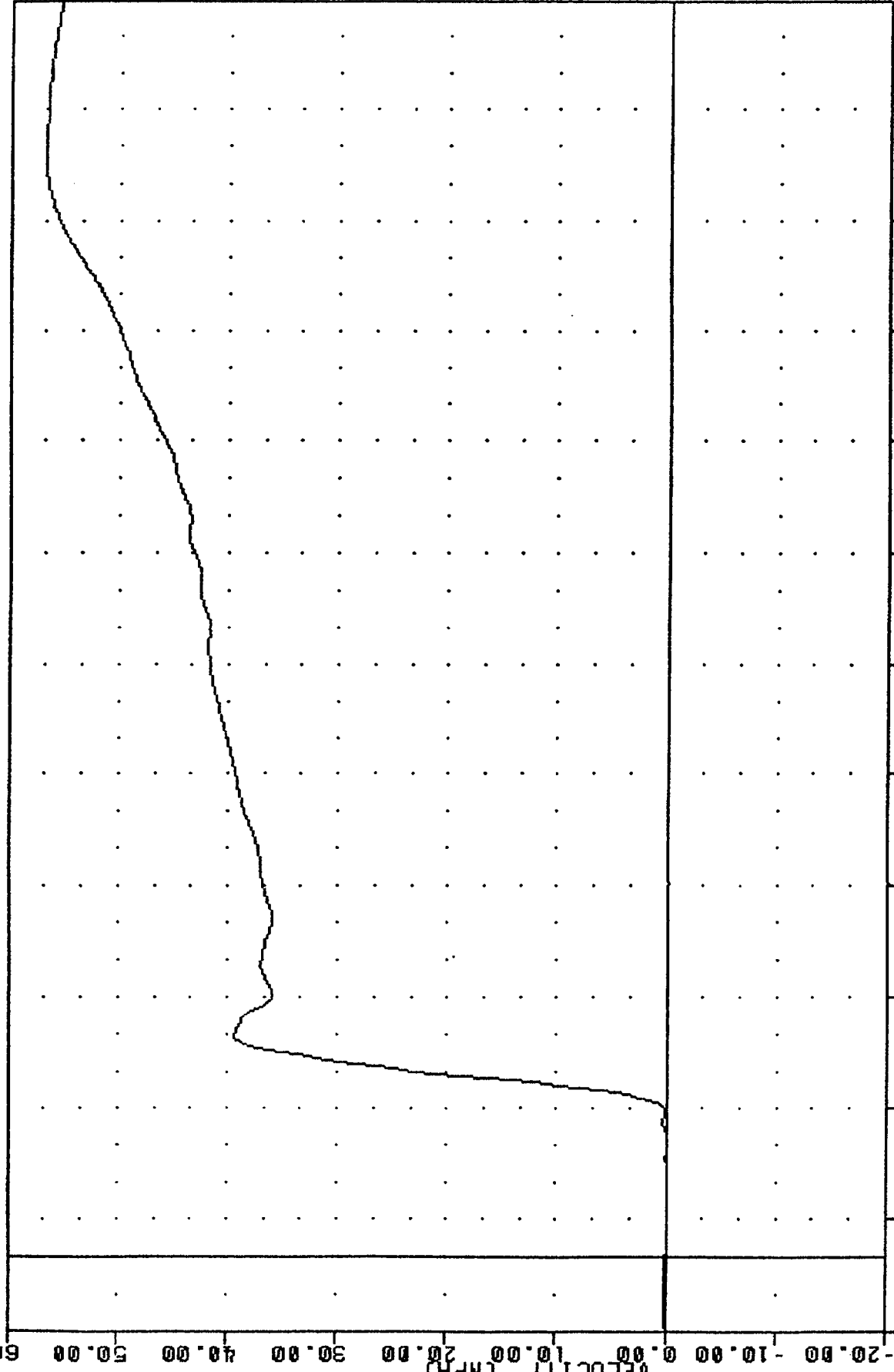
TRC , 830907
EVALUATION OF MDD VW FLEET
832500000000
T01YVA

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.18 30.62 , 56.72 e 300.63

VELOCITY (MPH)

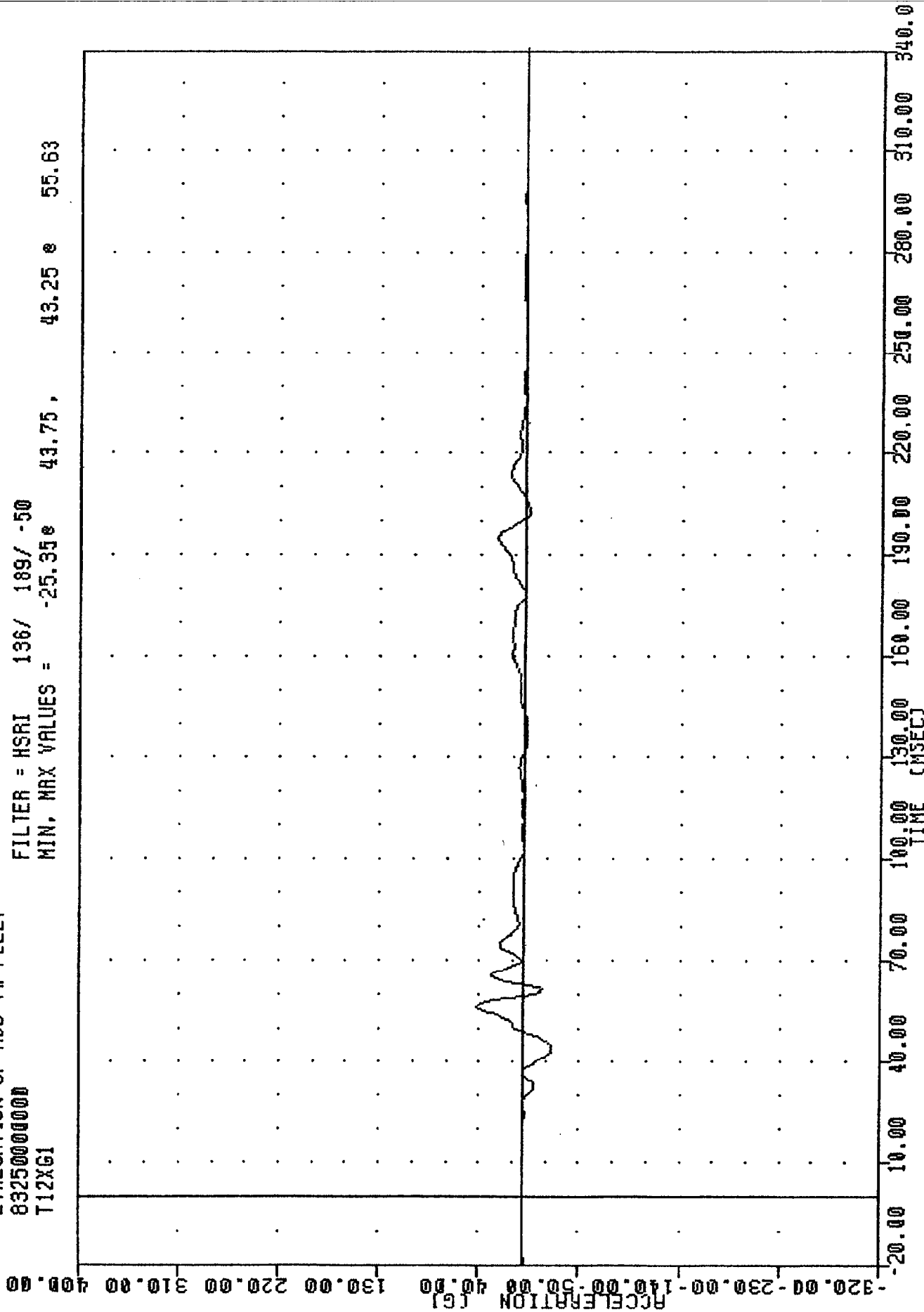


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGA

TRC , 830907
EVALUATION OF M00 YW FLEET
832500000000
T12XG1

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -25.35e 43.75, 43.25 e 55.63



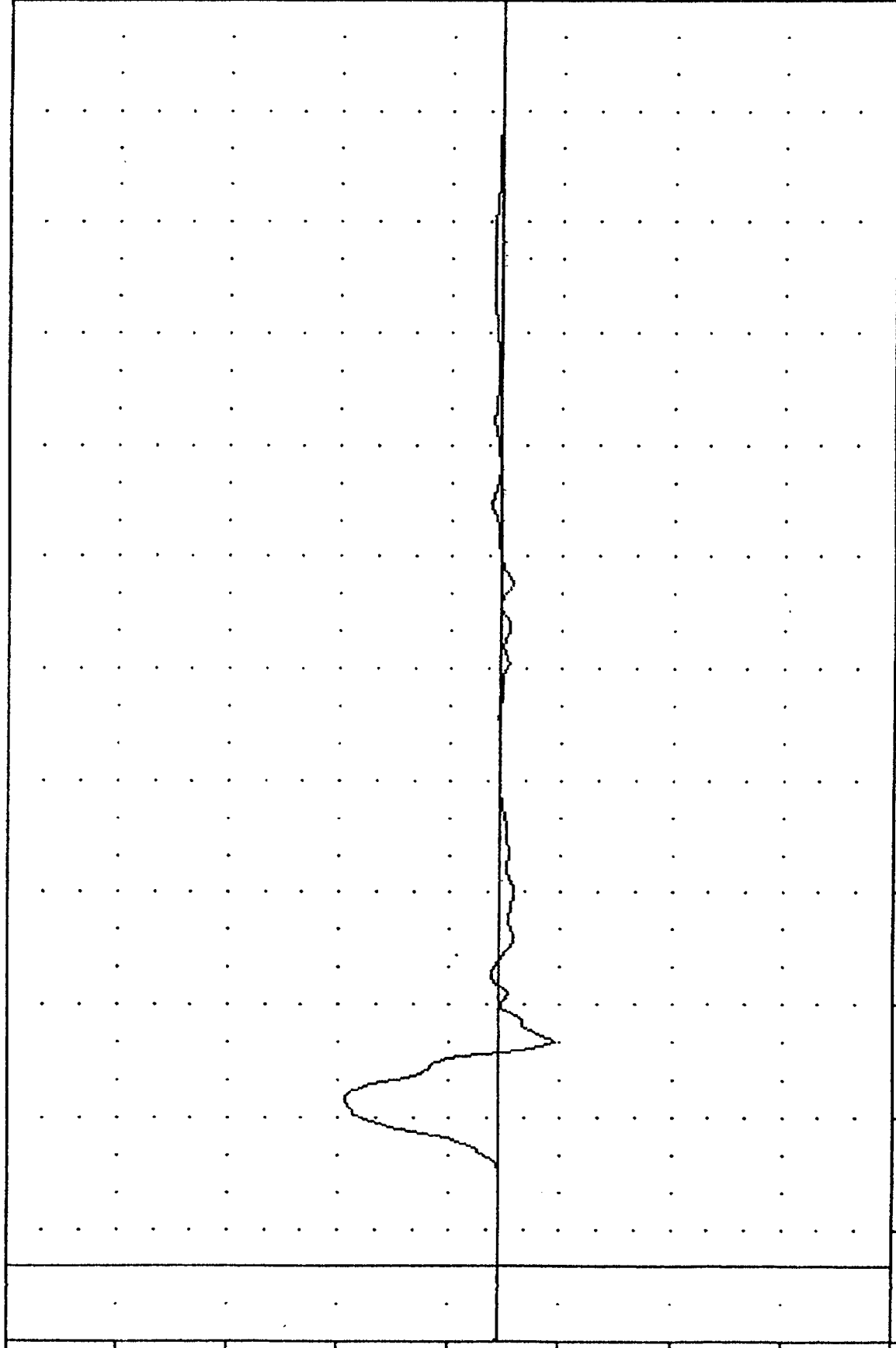
TAC
EVALUATION OF MOD YN FLEET
83250000000
T12Y61

830907

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -44.79 59.38 124.19 44.38

ACCELERATION (G)



TIME (MSEC)

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

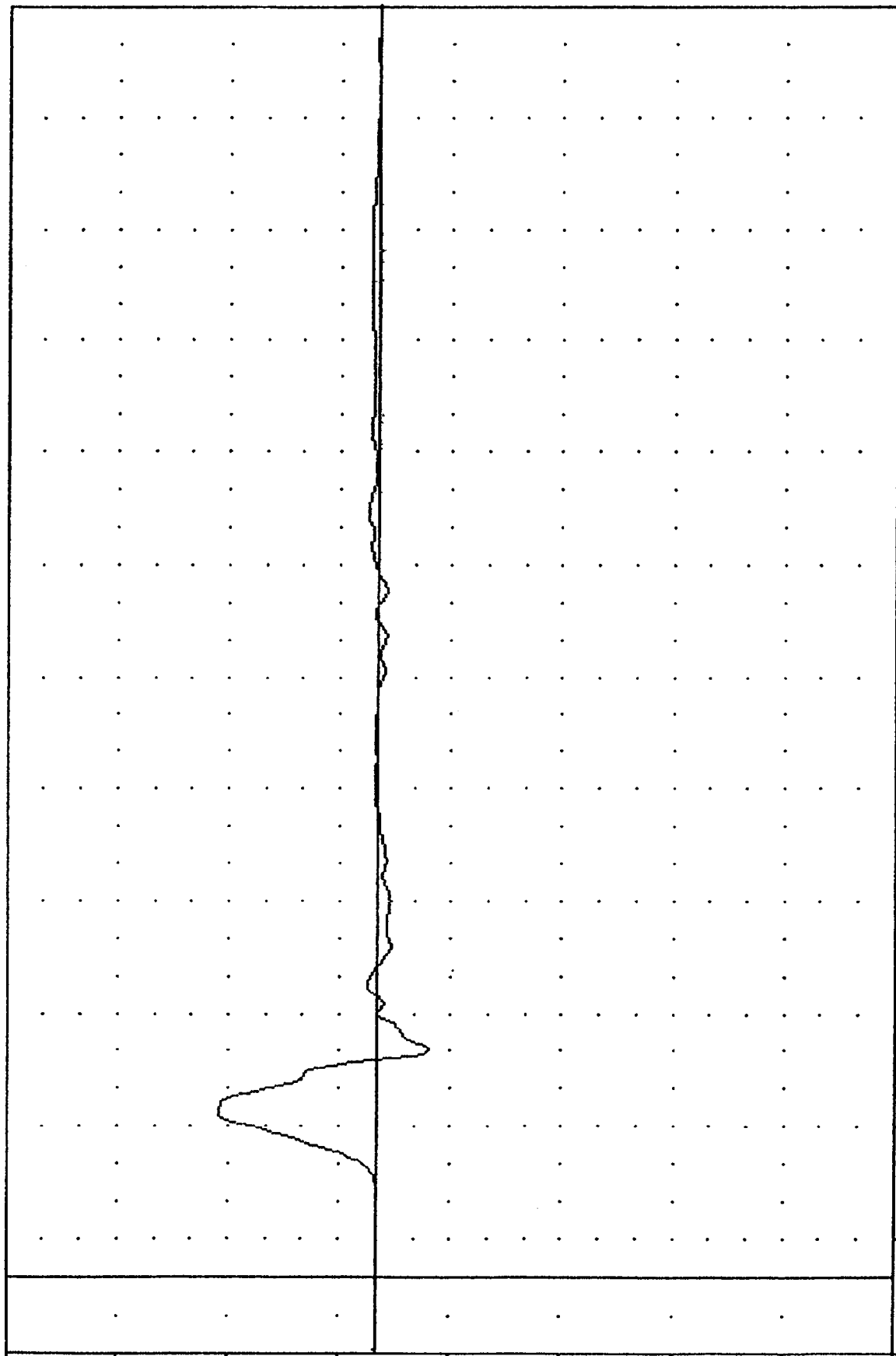
TRC
EVALUATION OF MOD YW FLEET
83250000000
712YGR

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -42.70 60.00 127.97 e 43.13

ACCELERATION (G)



-420.00 -330.00 -240.00 -150.00 -60.00 30.00 120.00 210.00 300.00

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

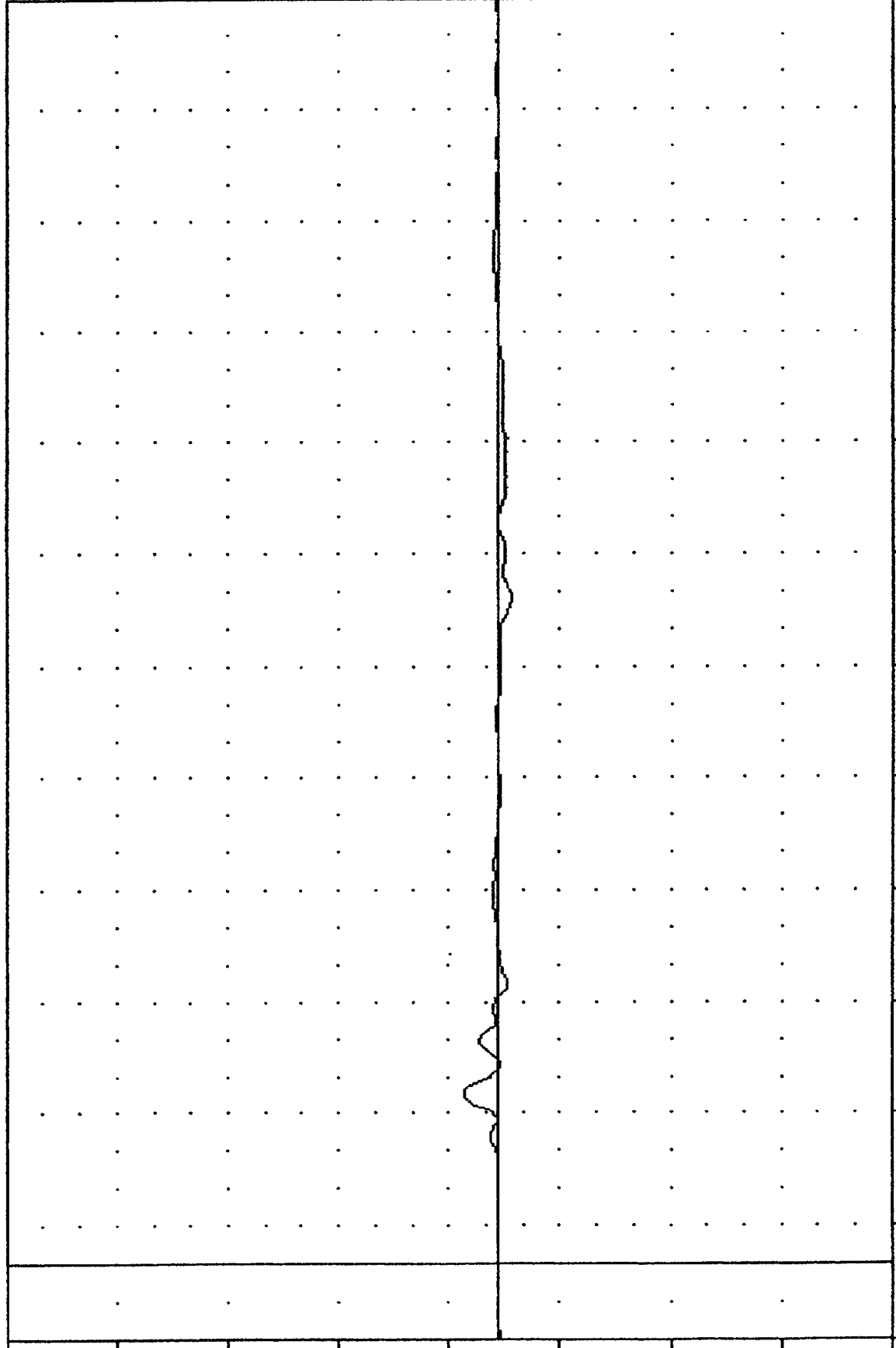
TRC
EVALUATION OF MDD VW FLEET
83250000000
T12ZG1

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -10.50e 177.50, 27.59 e 44.38

ACCELERATION [G]



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

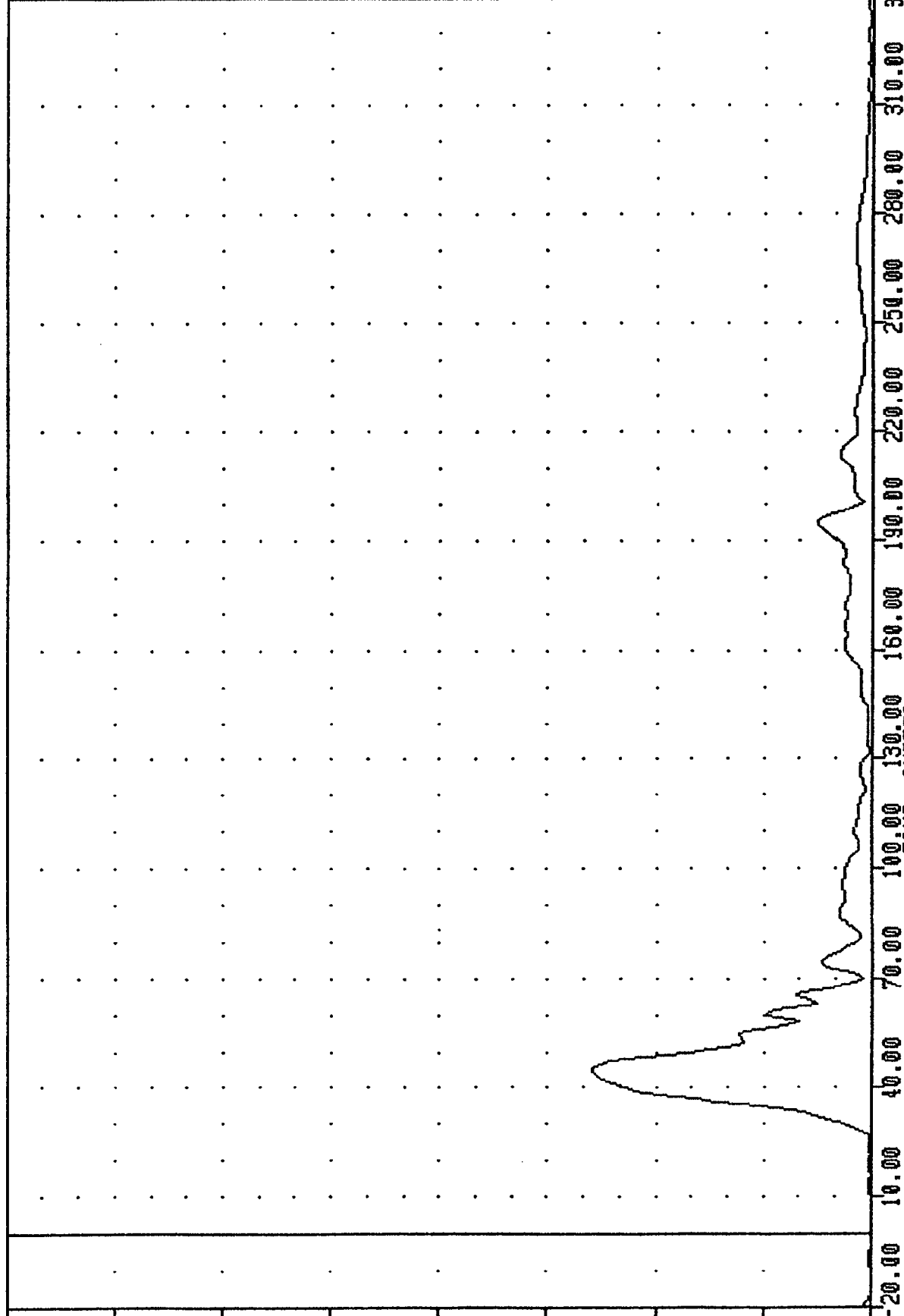
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE ACCELERATION Z AXIS

TAC
EVALUATION OF MOD YW FLEET
83250000000
T12RG1

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = 0.03 1.88 , 129.55 44.38

ACCELERATION (G)

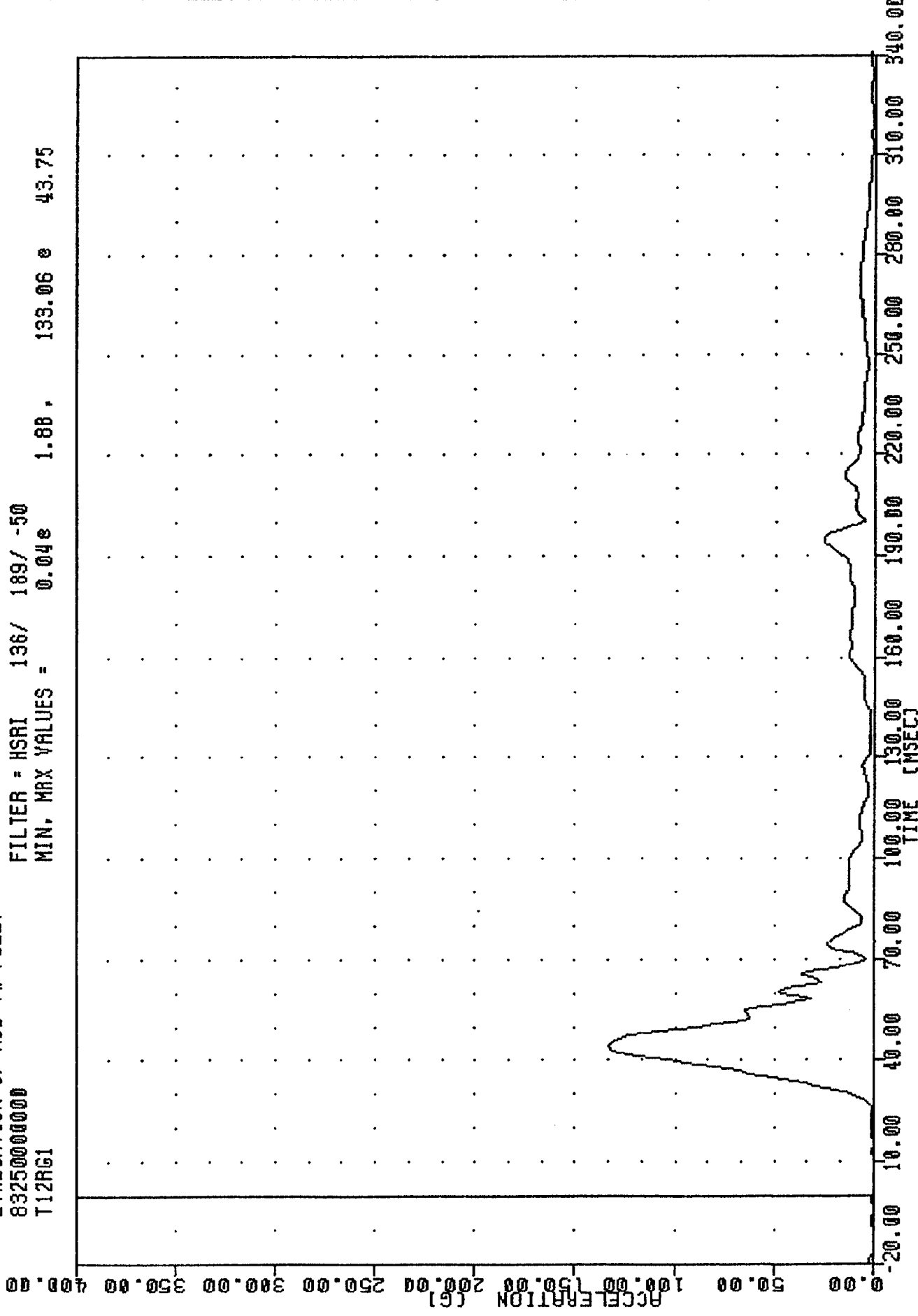


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT

TRC
EVALUATION OF MOD VW FLEET
832500000000
T12RG1

PLOT DATE 12-SEP-83 13:35:41

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = 0.04e 1.88e 133.06e 43.75

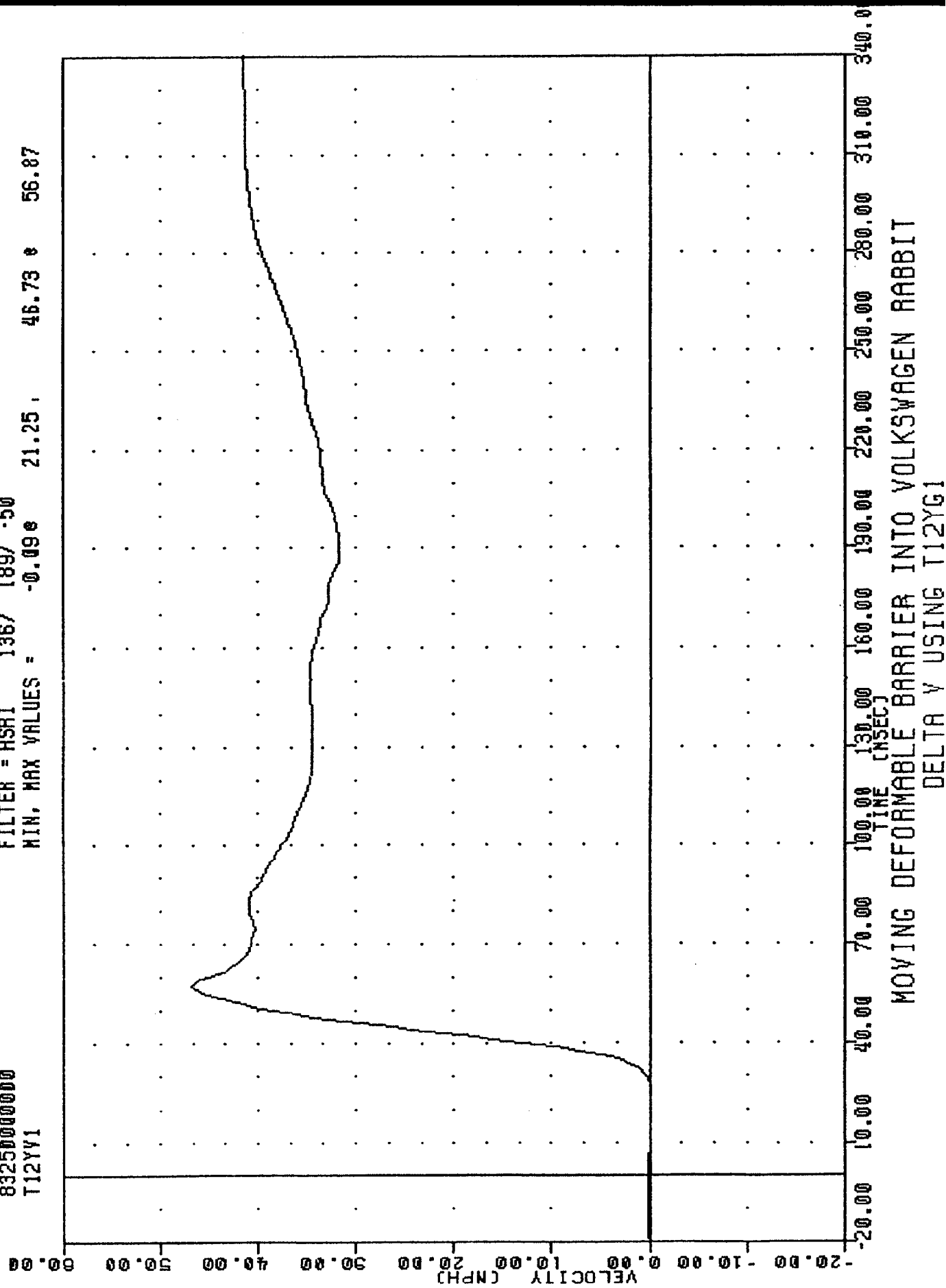


TRC 830907
 EVALUATION OF MOD YW FLEET
 8325000000
 T12YV1

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.090 21.25, 46.73 56.87



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA Y USING T12YGI

TRC
EVALUATION OF MOD YV FLEET
83250000000
T12YV8

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -0.048 19.38, 46.52 & 56.87

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA Y USING T12YGA

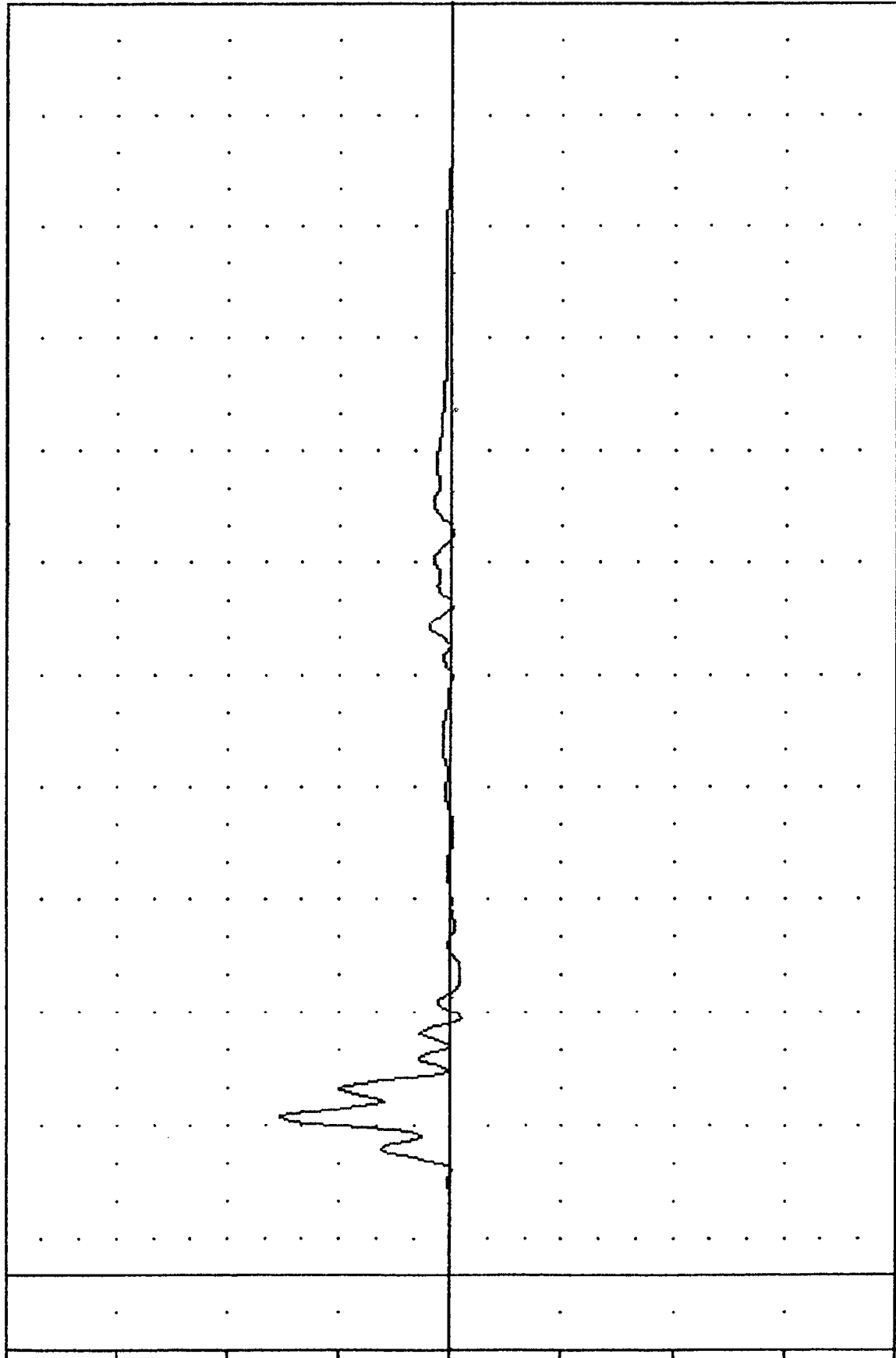
TRC
EVALUATION OF MOD VV FLEET
83250000000
LURY61

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -9.00e 68.13, 138.54 e 41.25

ACCELERATION (G)



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

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

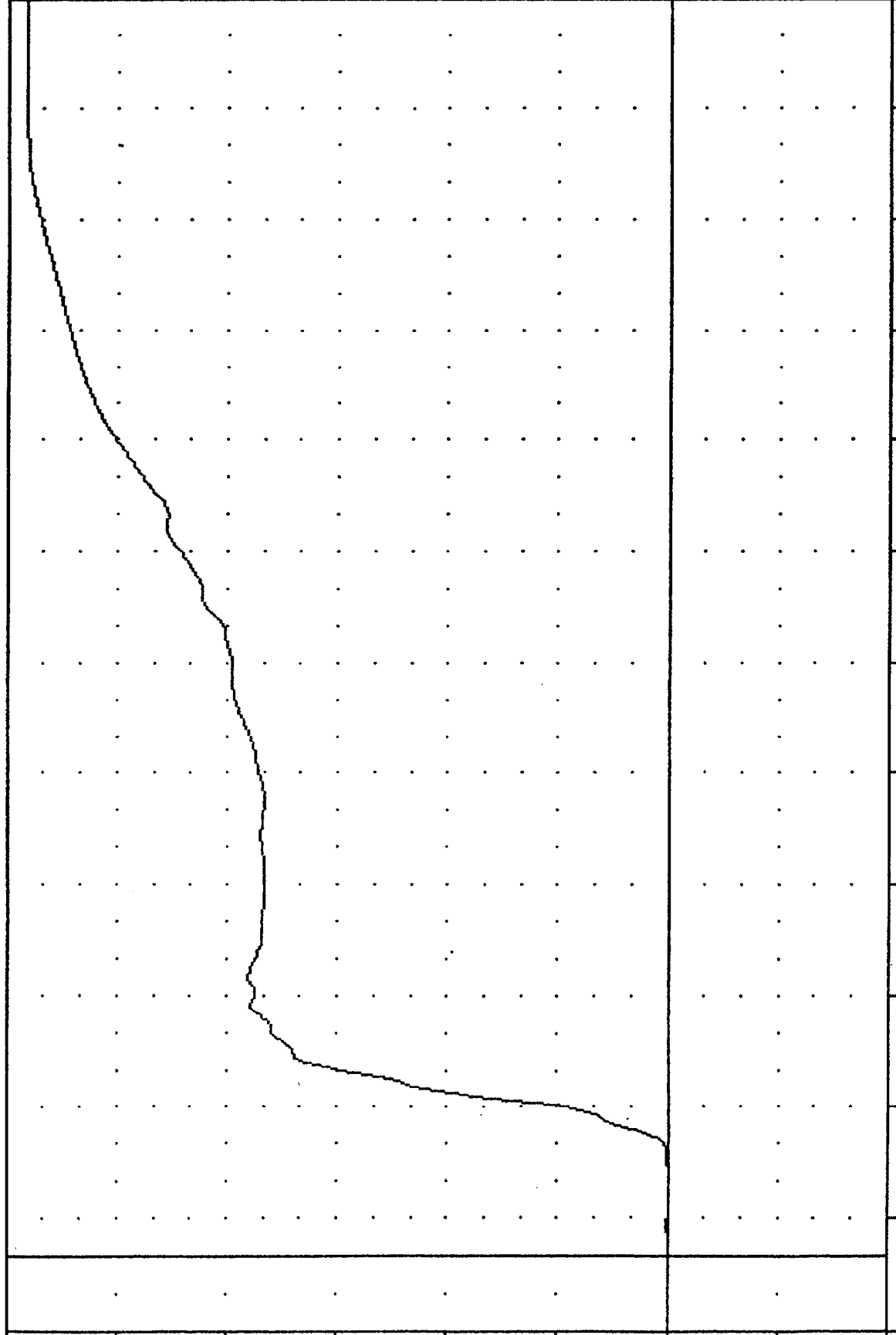
TRC , 830907
 EVALUATION OF MOD VV FLEET
 832500000000
 LURYV1

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.05e 17.50 , 58.29 e 339.38

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

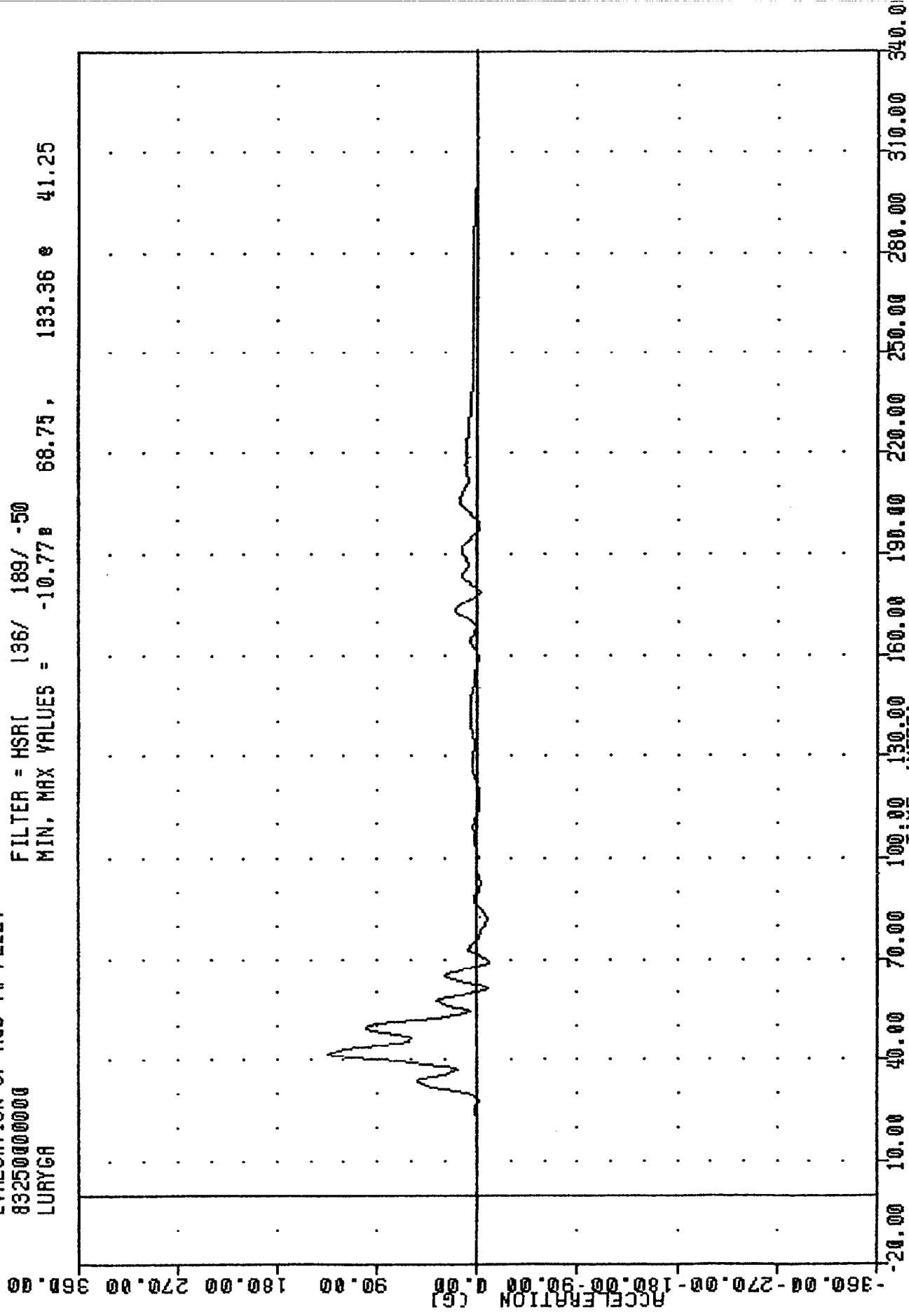
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURYG1

TRC
EVALUATION OF MOD YW FLEET
83250000000
LURYCA

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -10.77 68.75, 133.36 41.25

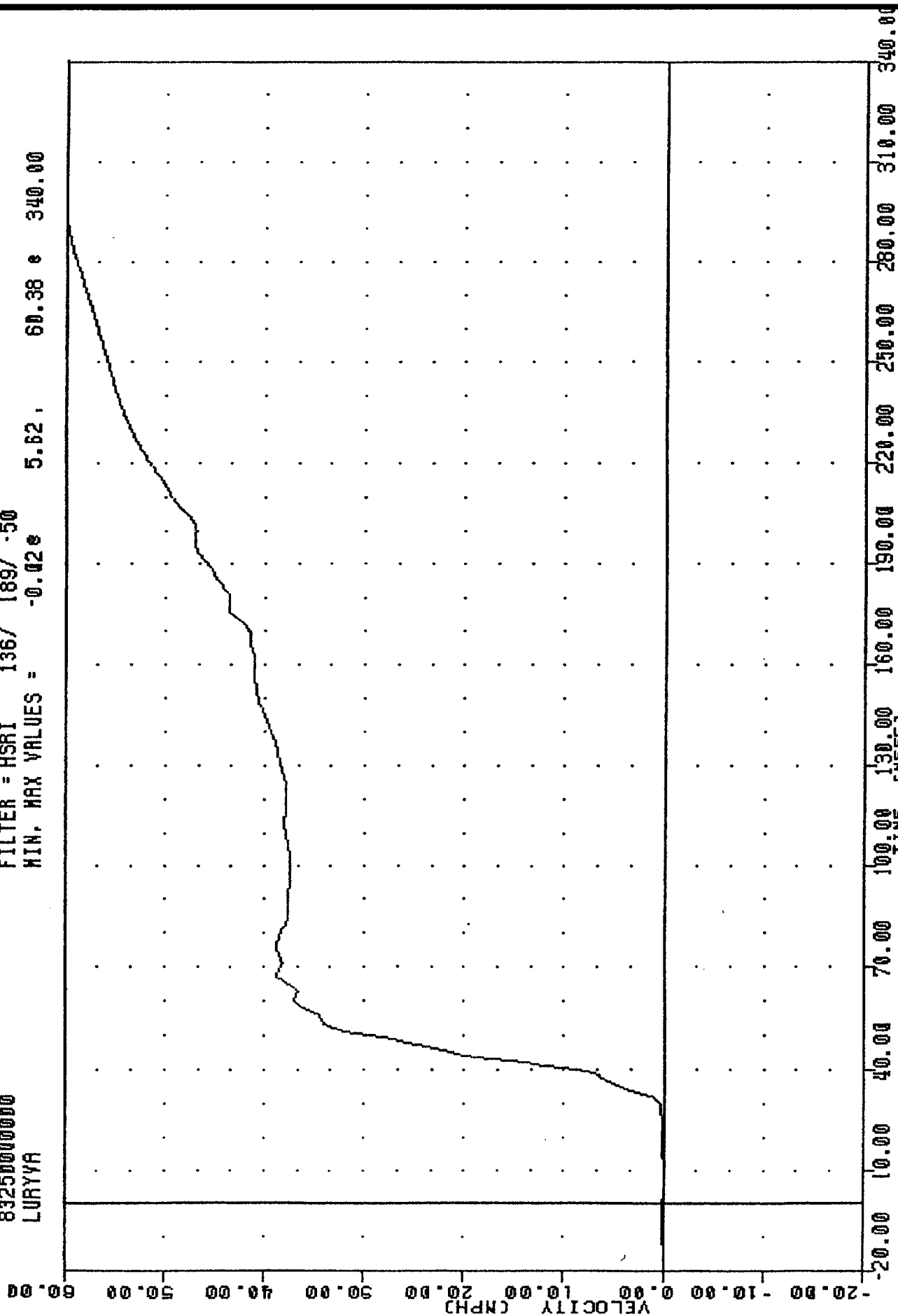


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT UPPER RIB ACCELERATION #2 Y AXIS

TAC
EVALUATION OF MOD YW FLEET
8325000000
LURYVA

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -0.02 5.62 60.38 340.00

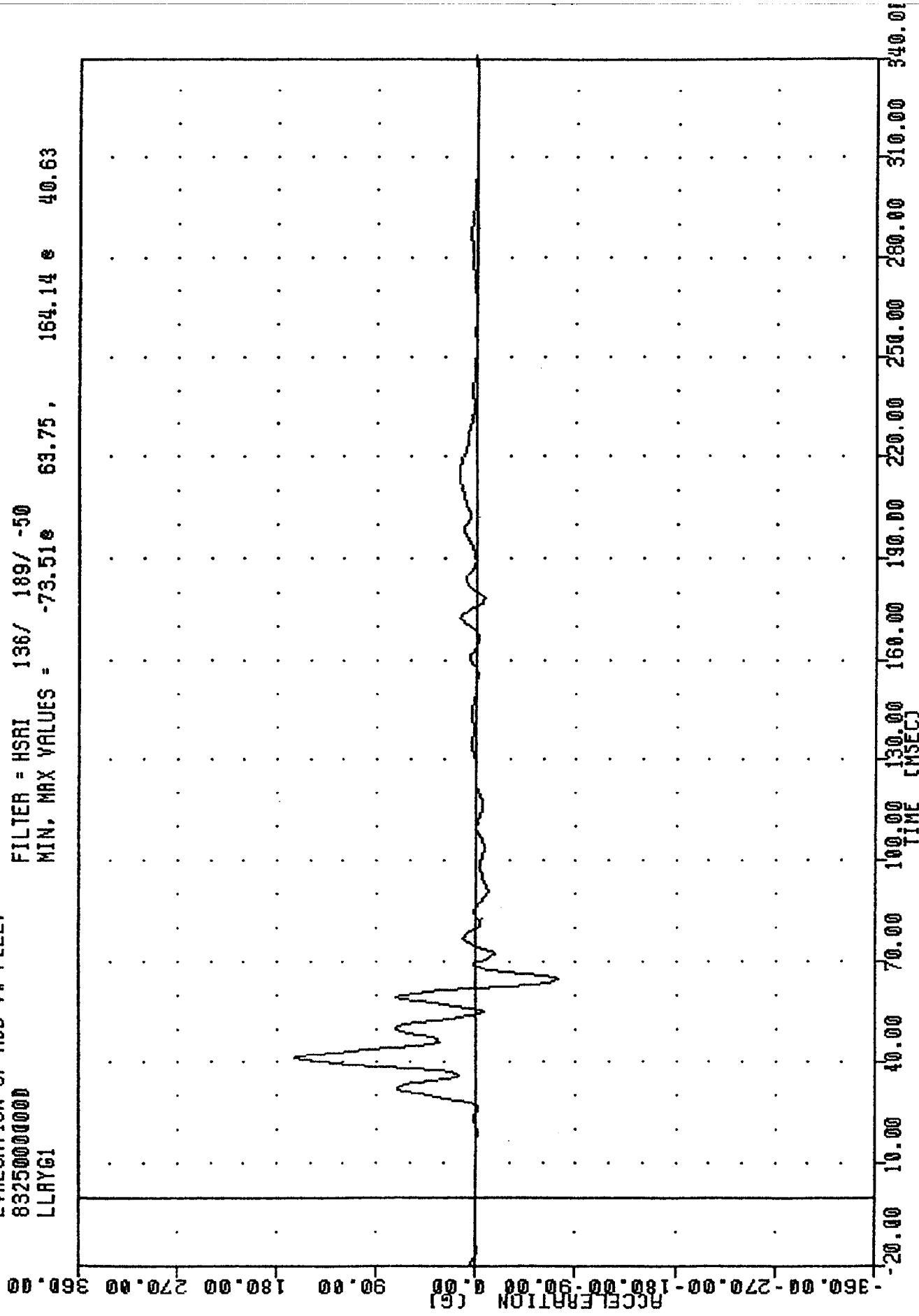


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYGA

TAC
EVALUATION OF MDD V'N FLEET
83250000000
LLAYG1

PLOT DATE 12-SEP-83 13:33:50

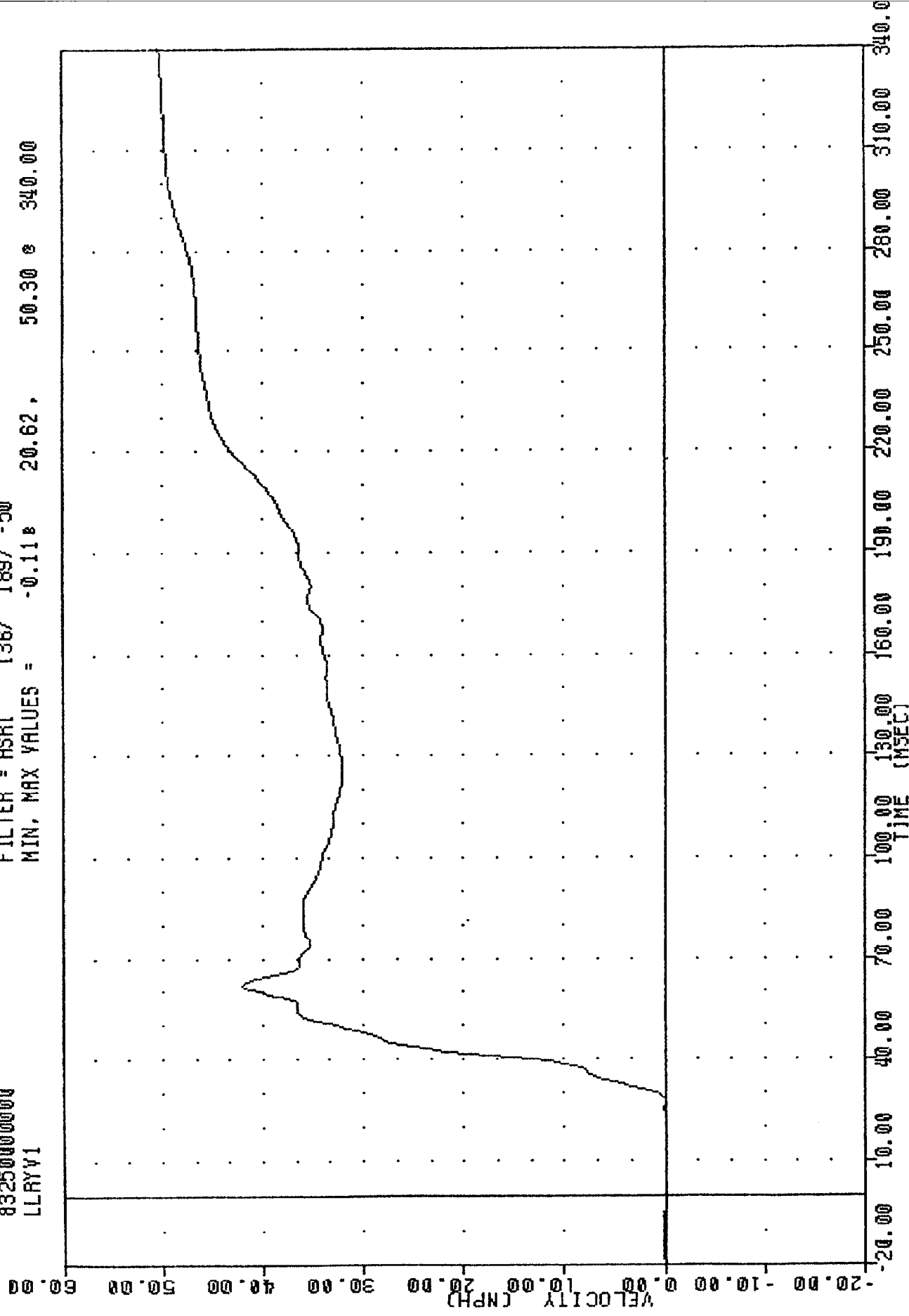
FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -73.51e 63.75 , 164.14 e 40.63



TRC
EVALUATION OF MOD VV FLEET
83250000000
LLRYV1

PLOT DATE 16-SEP-83 12:35:36

FILTER = HSR1 136/ 189/ -50
MIN, MAX VALUES = -0.11 20.62, 50.30 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLRYG1

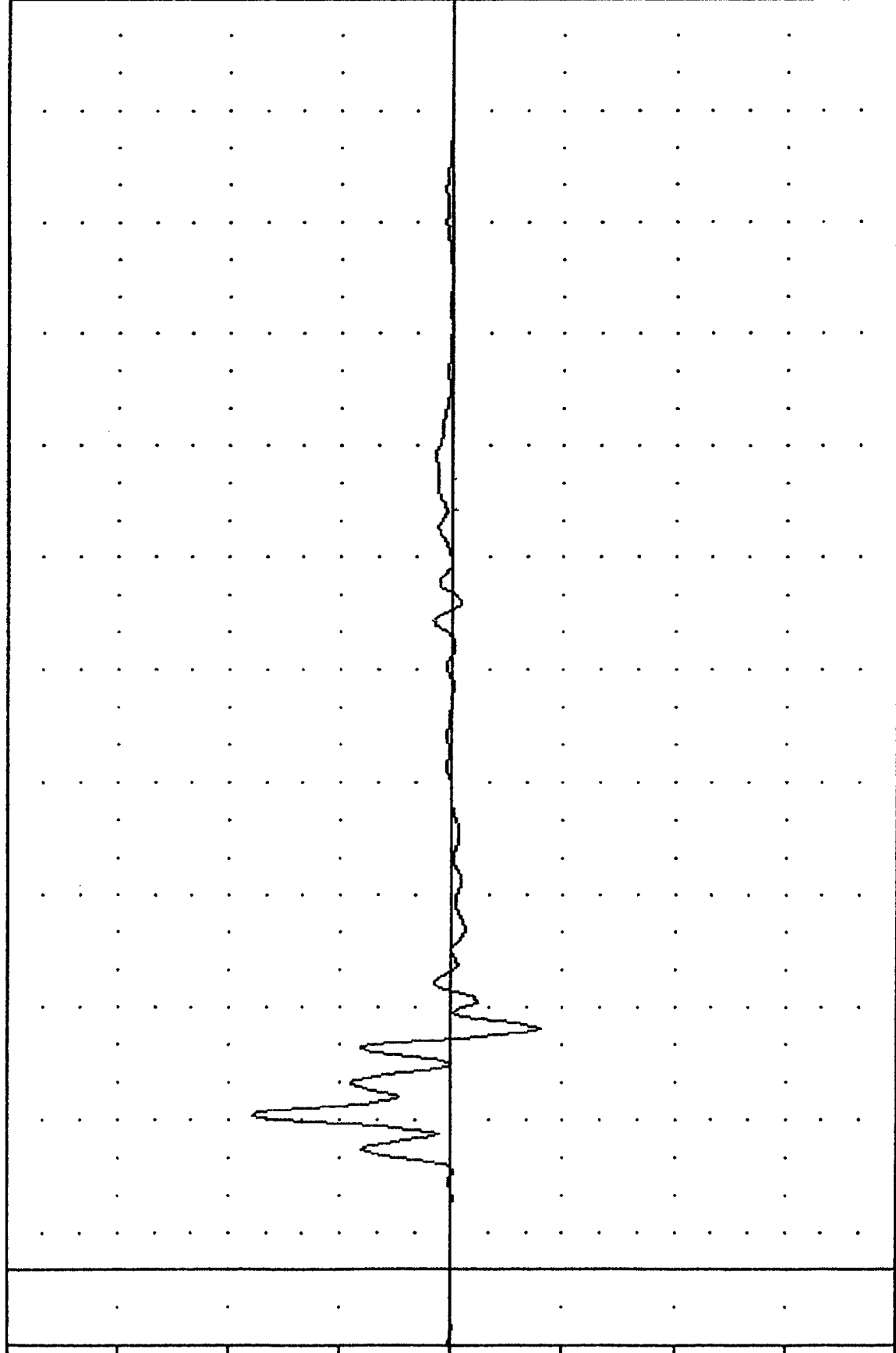
TAC
EVALUATION OF MOD VW FLEET
83250000000
LLRYGA

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -71.60e 63.75. 161.72 e 40.63

ACCELERATION (G)



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

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

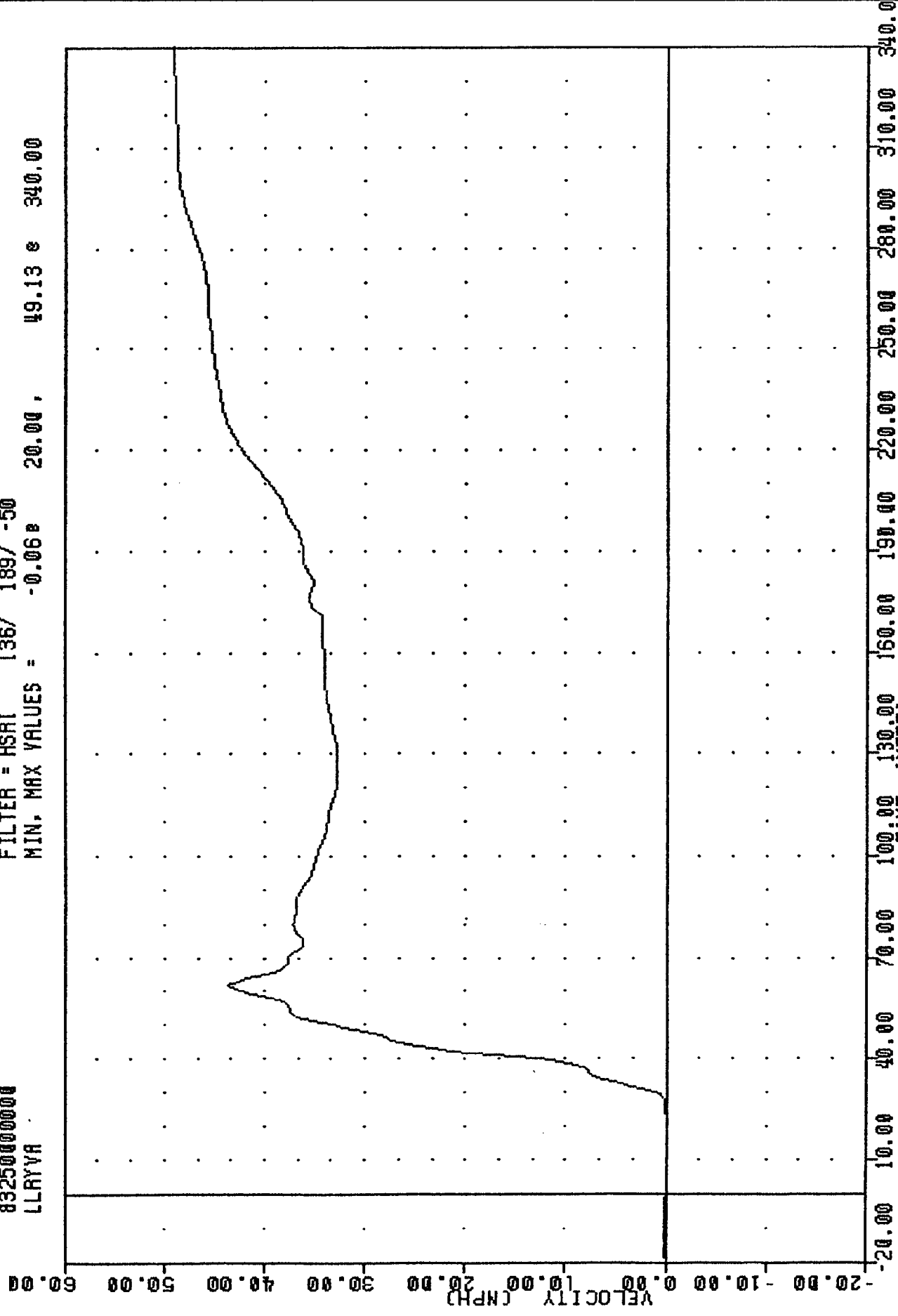
TRC
EVALUATION OF MOD YW FLEET
83250000000
LLRYVR

, 830907

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.068 20.00, 49.13 & 340.00



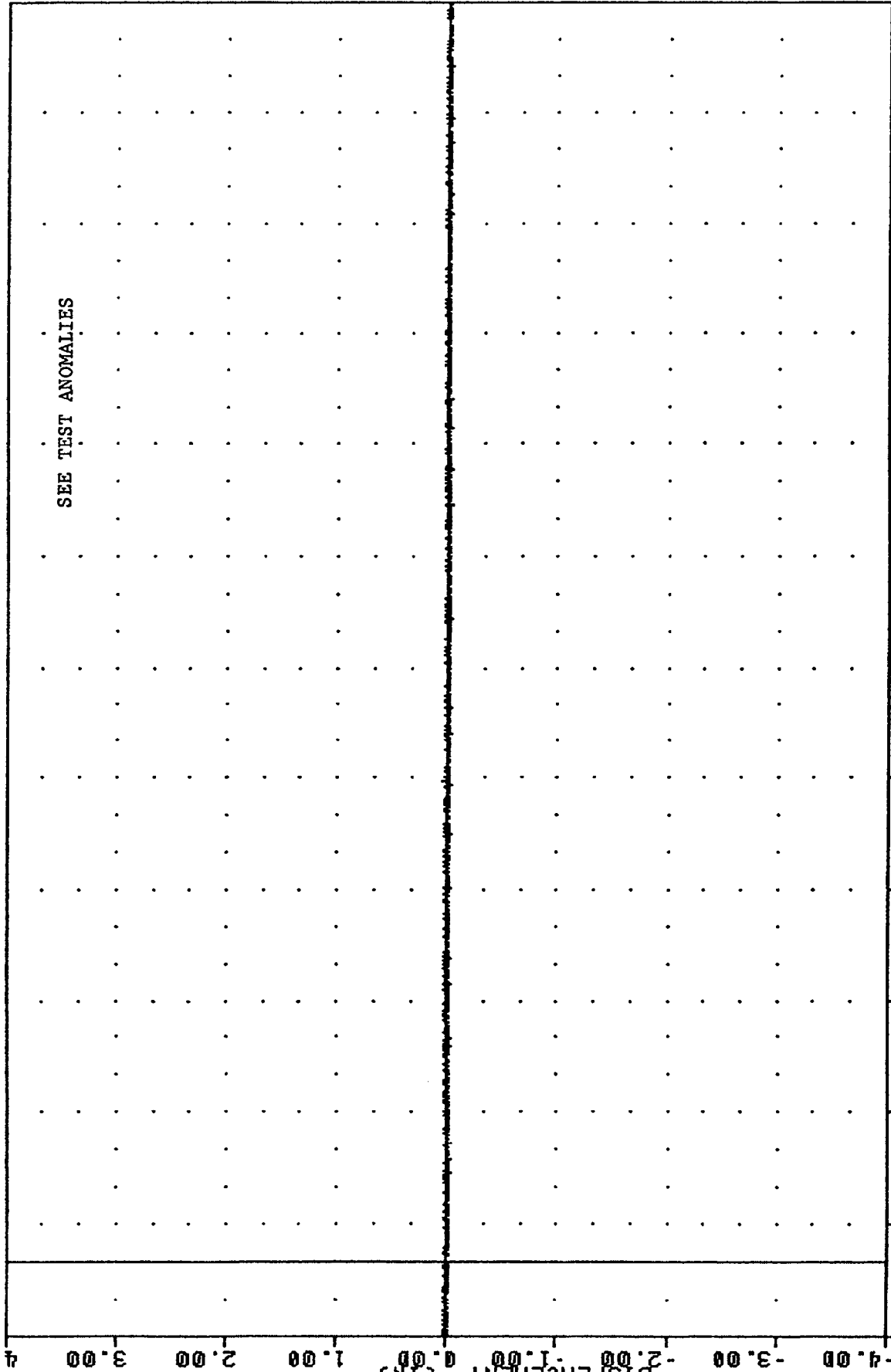
TRC , 830907
EVALUATION OF MOD YW FLEET
832500000000
LRTYD1

PLOT DATE 12-SEP-83 13:16:44

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -0.04 287.63, 0.04 128.88

DISPLACEMENT (IN)



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

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

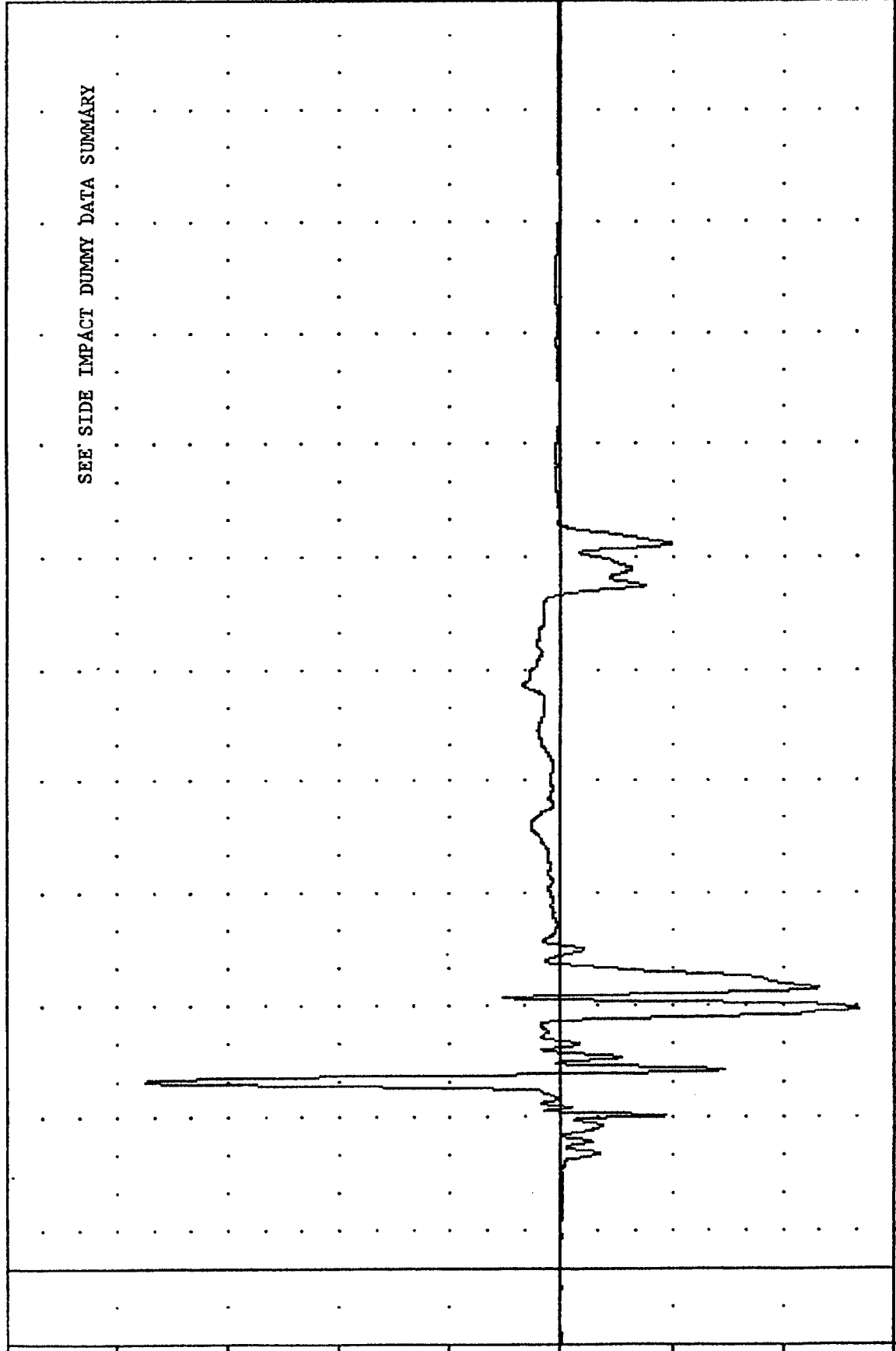
TRC
EVALUATION OF MDD YW FLEET
832500000000
PEYXG1

PLOT DATE 13-SEP-83 11:00:45

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -161.53e 68.75, 223.99 e 49.88

ACCELERATION (G)



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

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION X AXIS

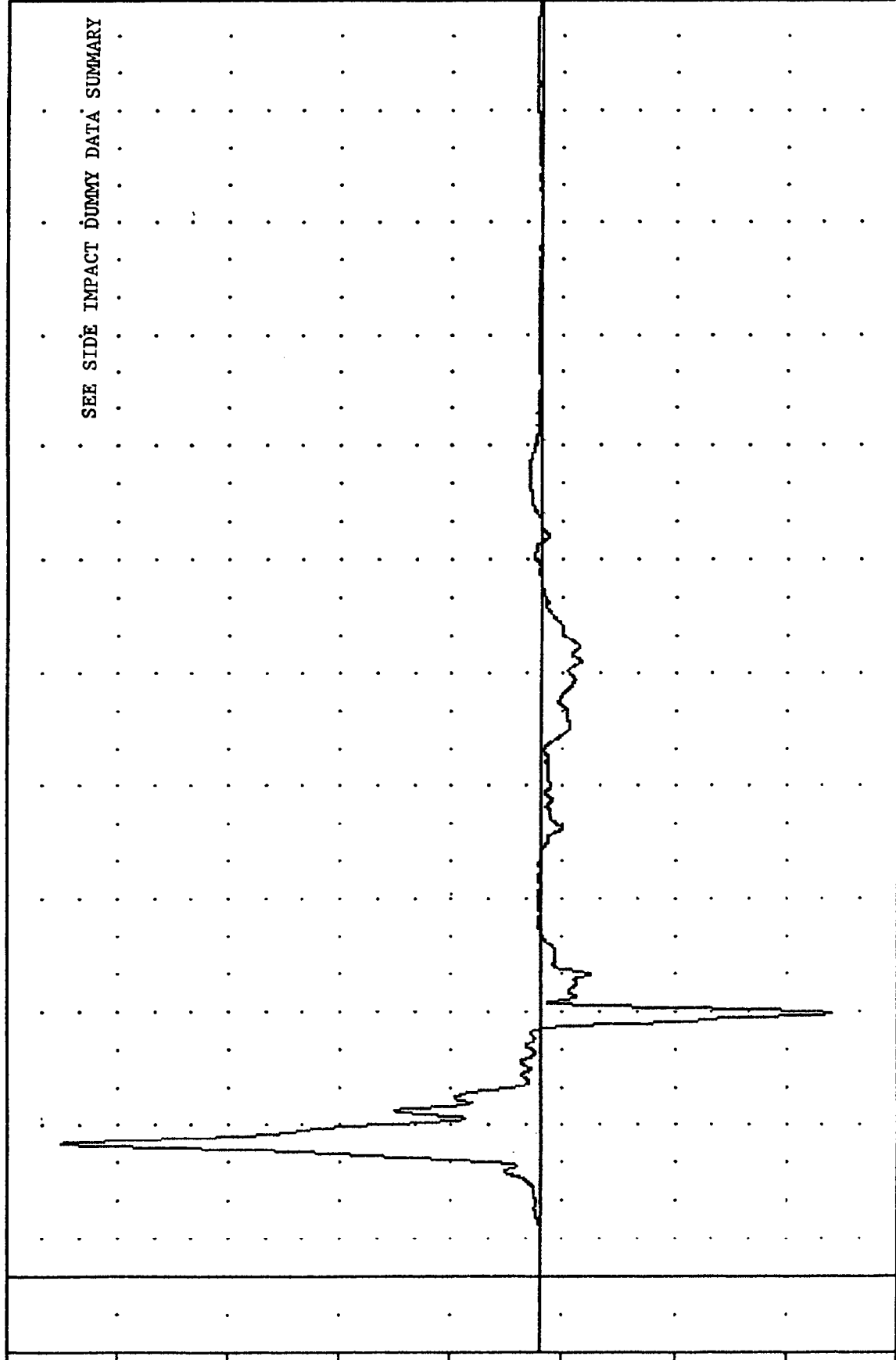
TRC
EVALUATION OF MOD VV FLEET
832500000000
PEVYGI

PLOT DATE 12-SEP-83 13:16:44

FILTER = BLPF 300/ 949/ -10

MIN. MAX VALUES = -129.96e 69.13, 214.86 e 35.00

ACCELERATION (G)



SEE SIDE IMPACT DUMMY DATA SUMMARY

-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

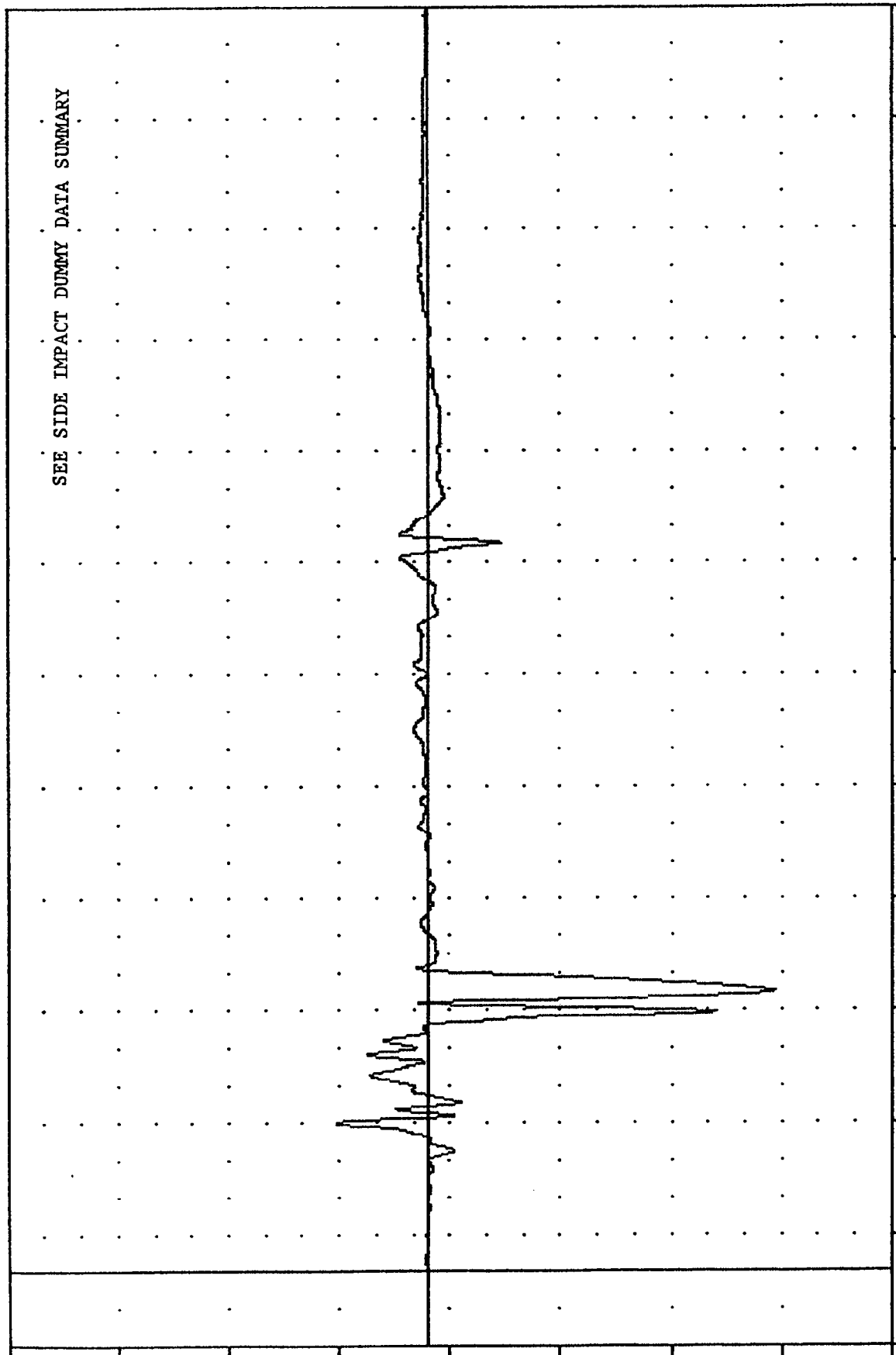
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PFLVIS ACCELERATION Y AXIS

TRC
EVALUATION OF MOD VW FLEET
83250000000
PEVZ61

PLOT DATE 13-SEP-83 11:00:45

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -156.72e 75.00, 41.51 e 39.63

ACCELERATION [G]



TIME [MSEC]

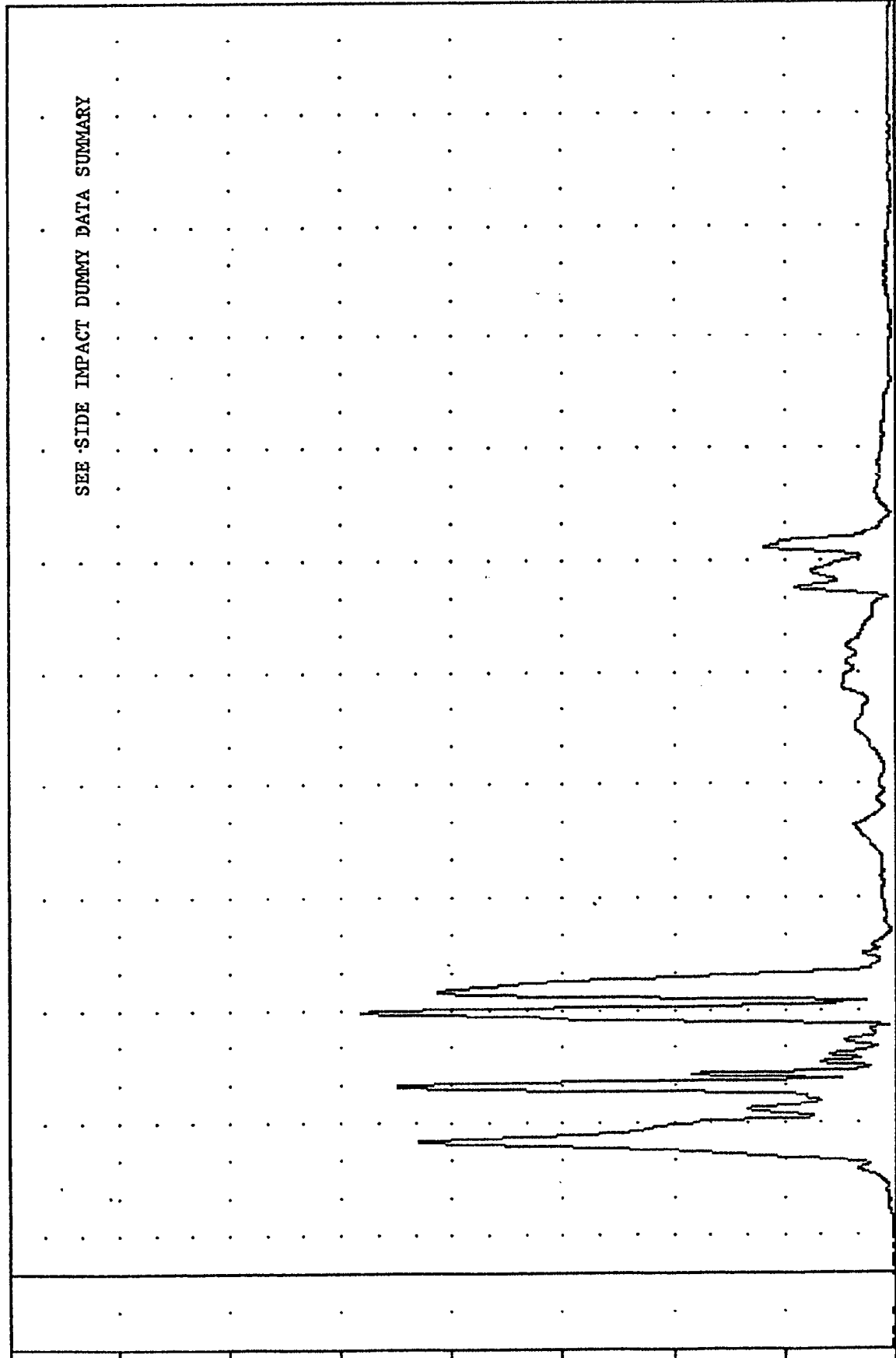
MOVING DEFORMABLE BARRIER- INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Z AXIS

TRC , 830907
EVALUATION OF MOD YW FLEET
83250000000
PEVRG1

PLOT DATE 12-SEP-83 13:16:44

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = 0.088 -6.50, 241.91 & 69.13

ACCELERATION (G)



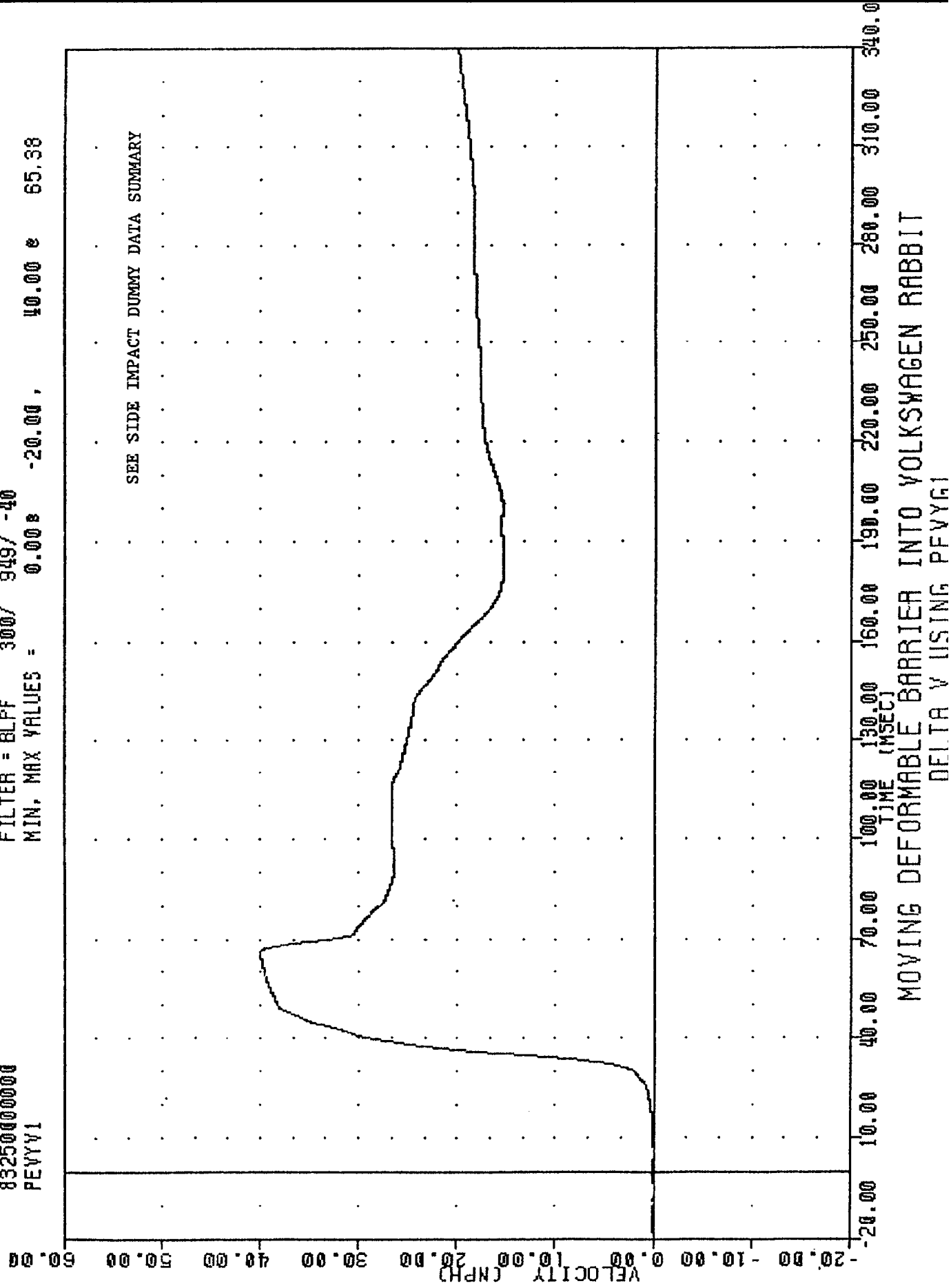
0.00 50.00 100.00 150.00 200.00 250.00 300.00 340.00
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS RESULTANT

TRC
EVALUATION OF MOD YW FLEET
83250000000
PEVYV1

PLOT DATE 14-SEP-83 10:24:07

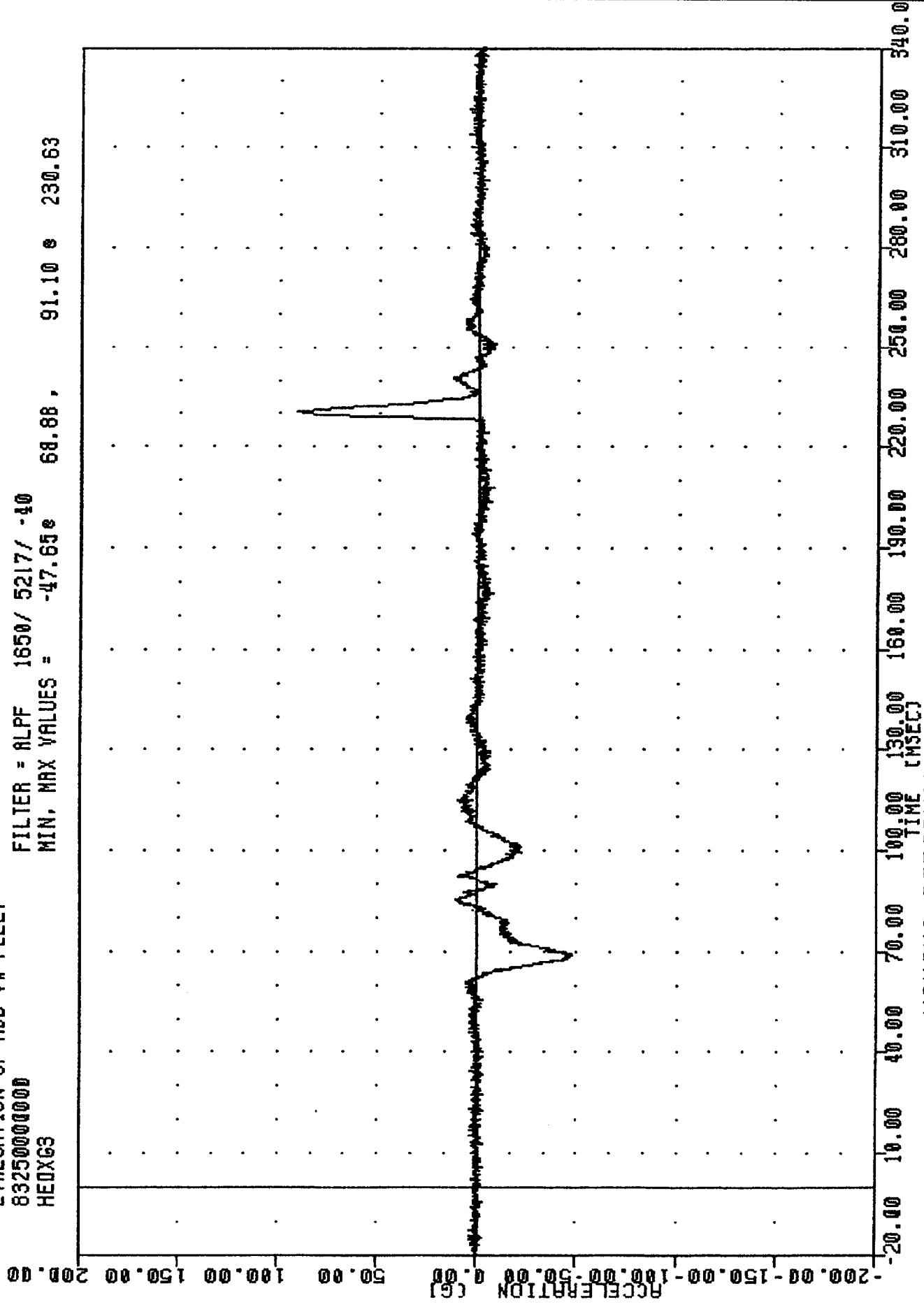
FILTER = BLFF 300/ 949/ -40
MIN. MAX VALUES = 0.00 s -20.00 , 40.00 e 65.38



TRC
EVALUATION OF MDD VV FLEET
832500000000
HEDXG3

PLOT DATE 12-SEP-83 13:16:44

FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -47.65e 68.88 , 91.10 e 230.63

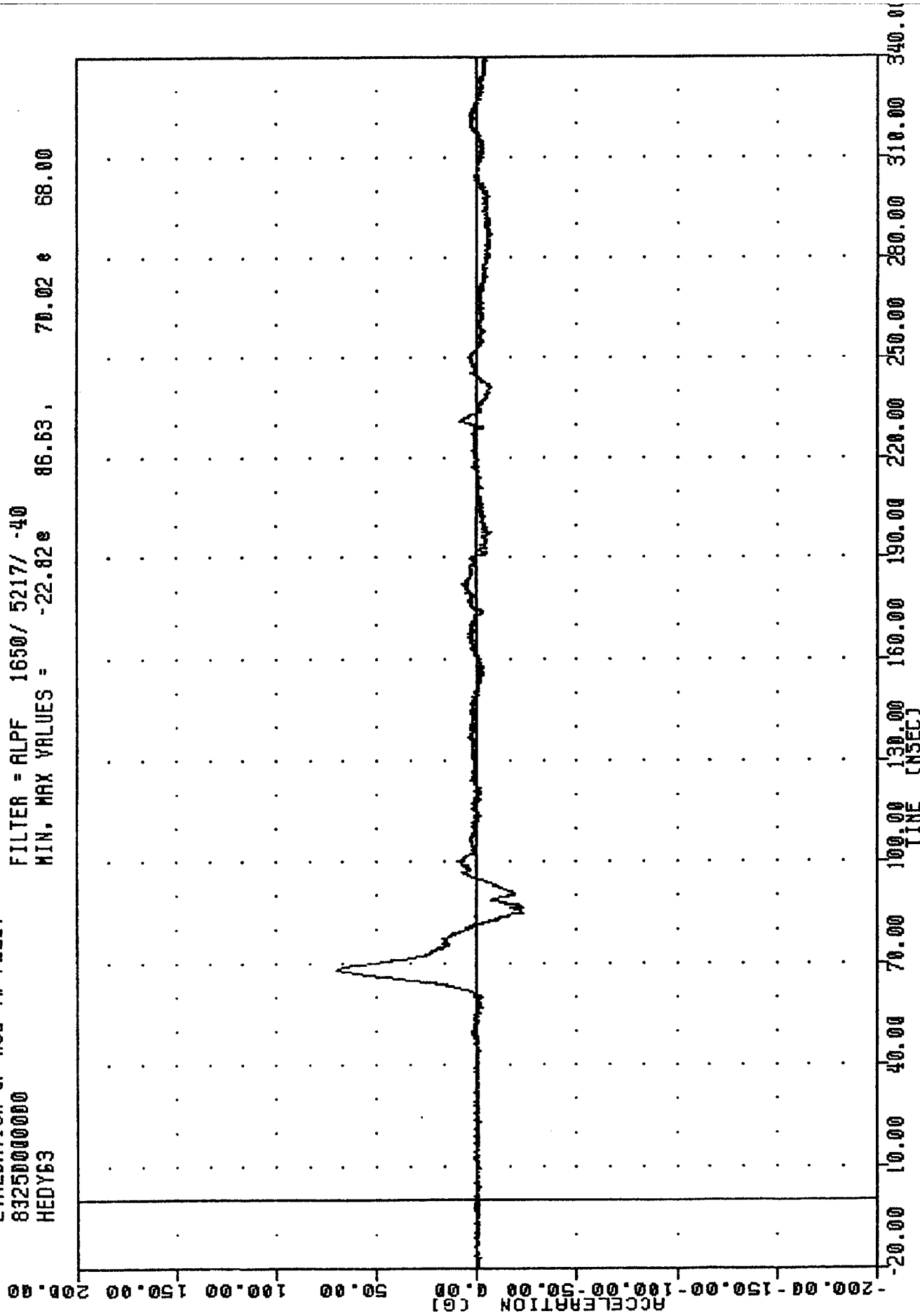


TAC
EVALUATION OF MOD VW FLEET
83250000000
HEDY63

PLOT DATE 12-SEP-83 13:16:44

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -22.82g 86.63, 70.02 g 68.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Y AXIS

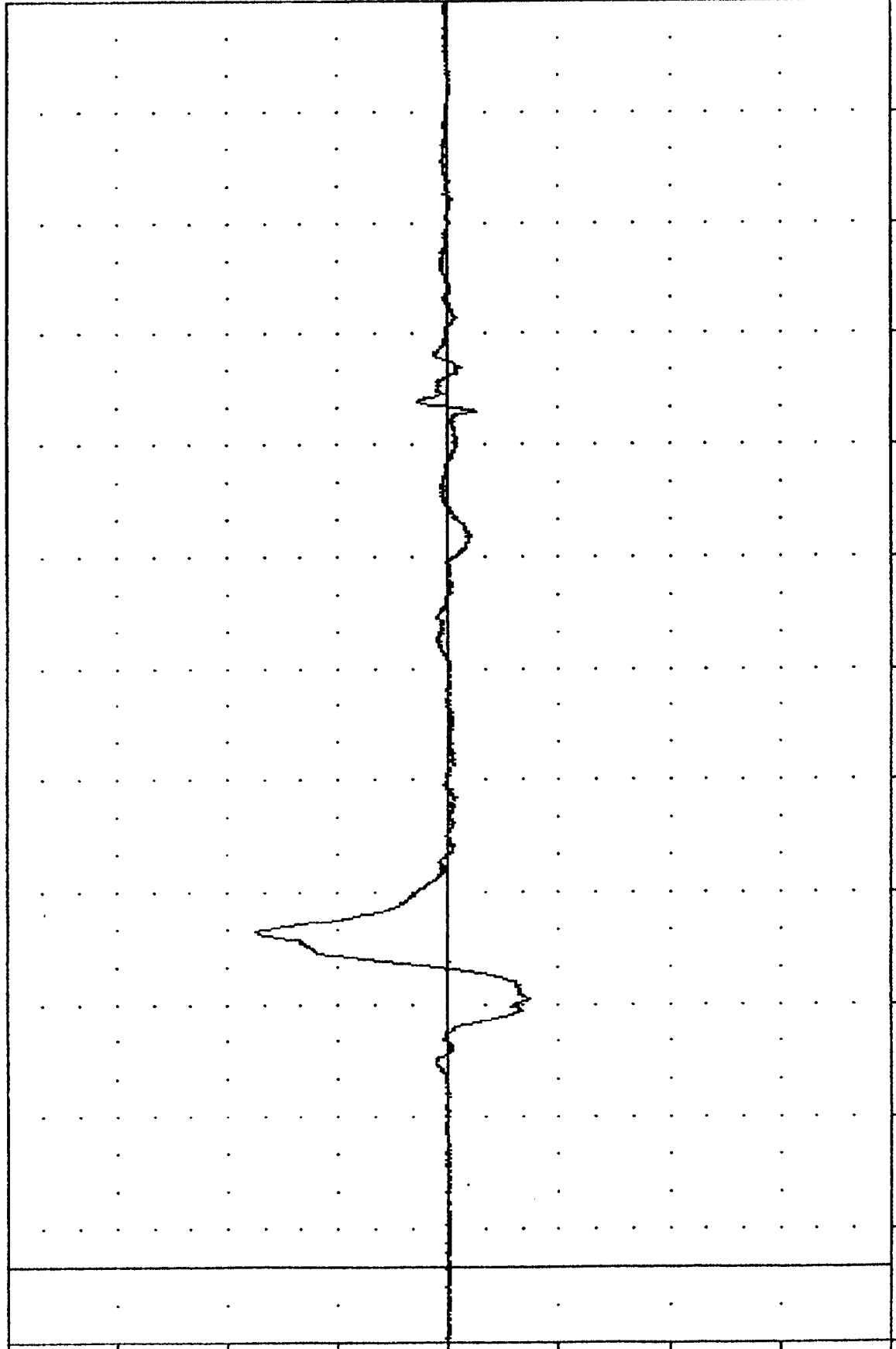
TRC , 830907
EVALUATION OF MOD YW FLEET
83250000000
HEDZG3

PLOT DATE 16-SEP-83 13:38:36

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -36.638 71.00 87.14 @ 89.25

ACCELERATION (G)



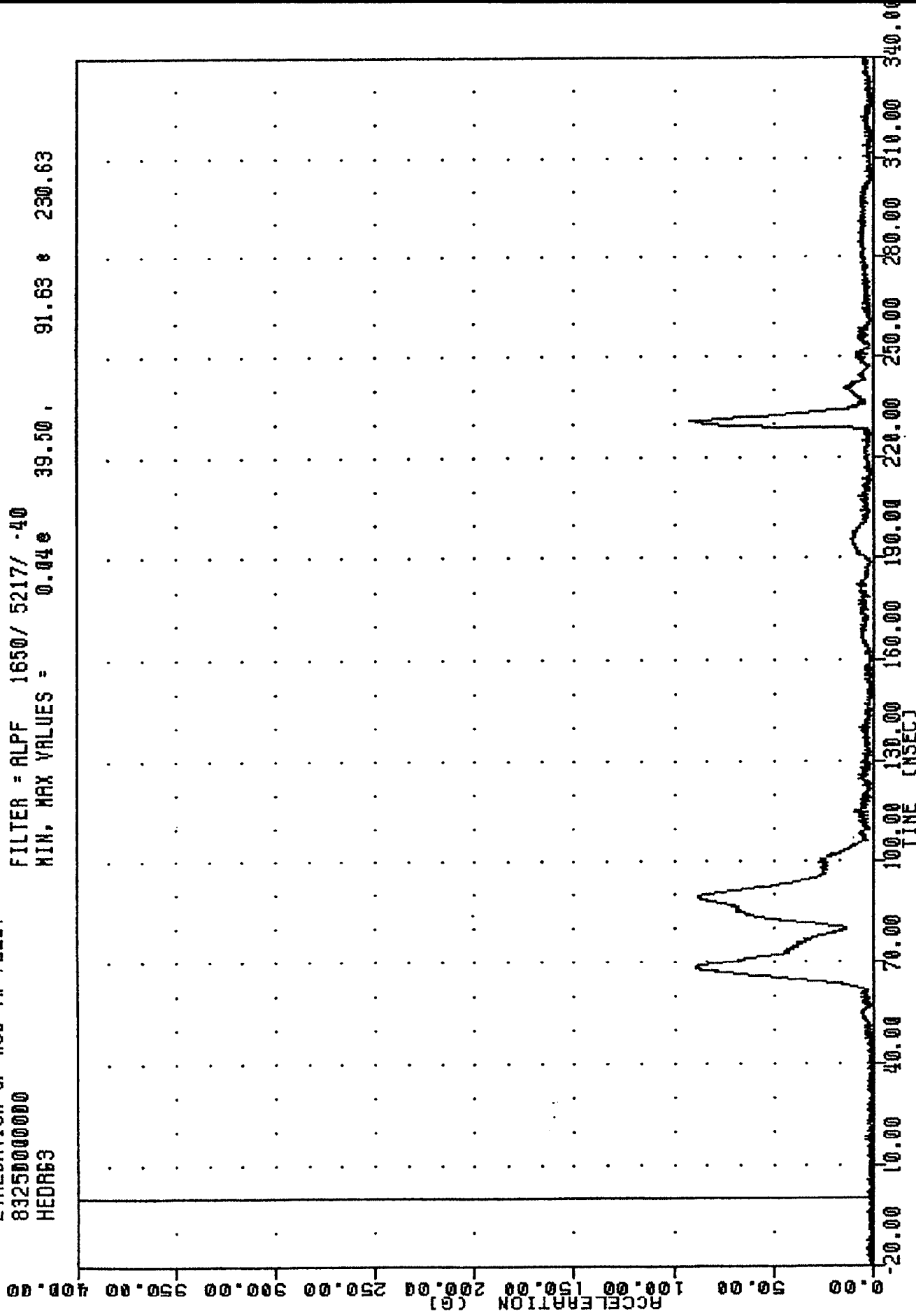
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Z AXIS

TAC
EVALUATION OF MOD VV FLEET
83250000000
HEAD63

PLOT DATE 12-SEP-83 13:16:44

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = 0.04e 39.50, 91.63 * 230.63



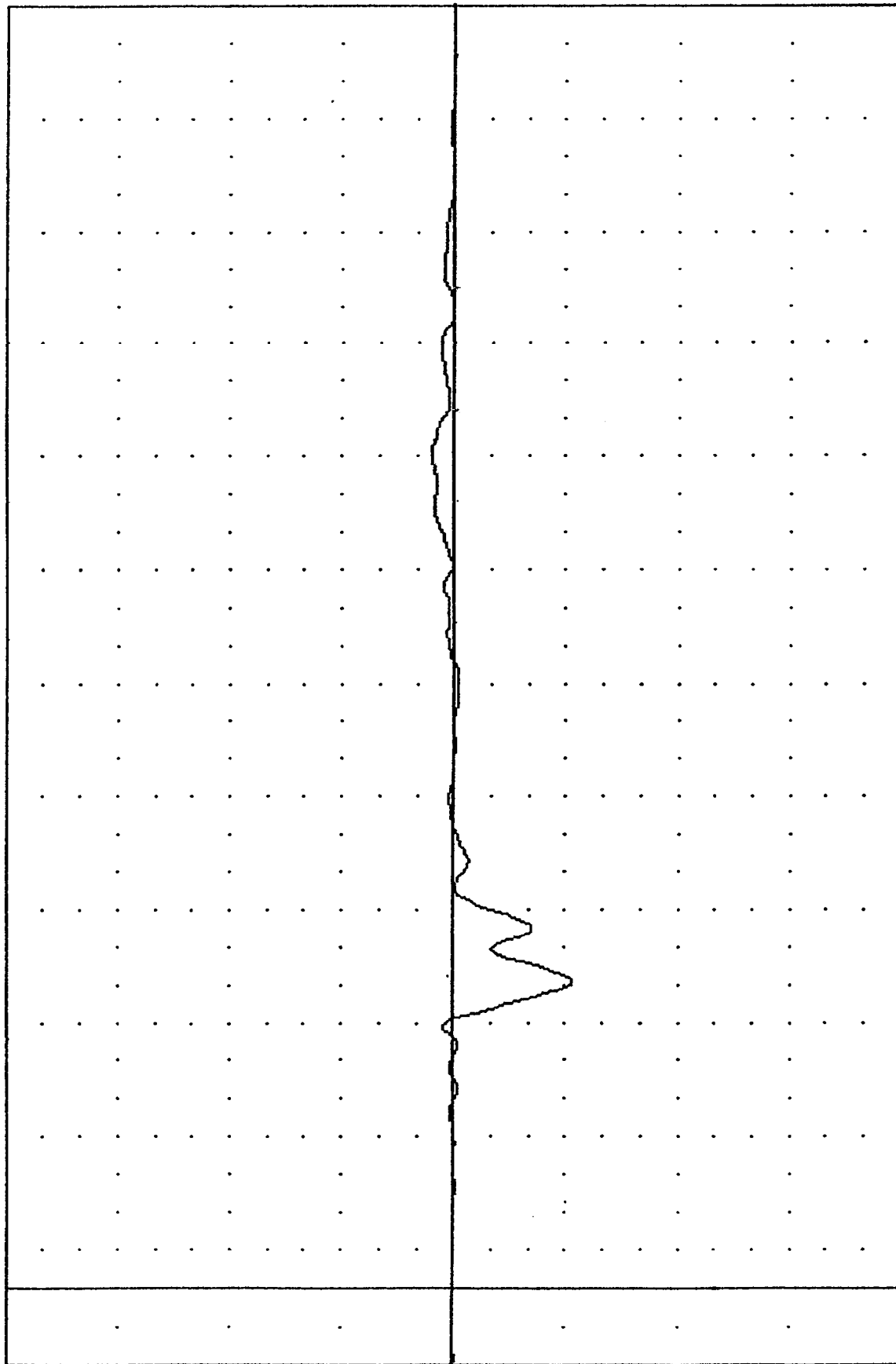
TRC , 830907
 EVALUATION OF MOD YV FLEET
 83250000000
 T01XG3

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -52.91 80.00 , 9.83 220.00

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

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

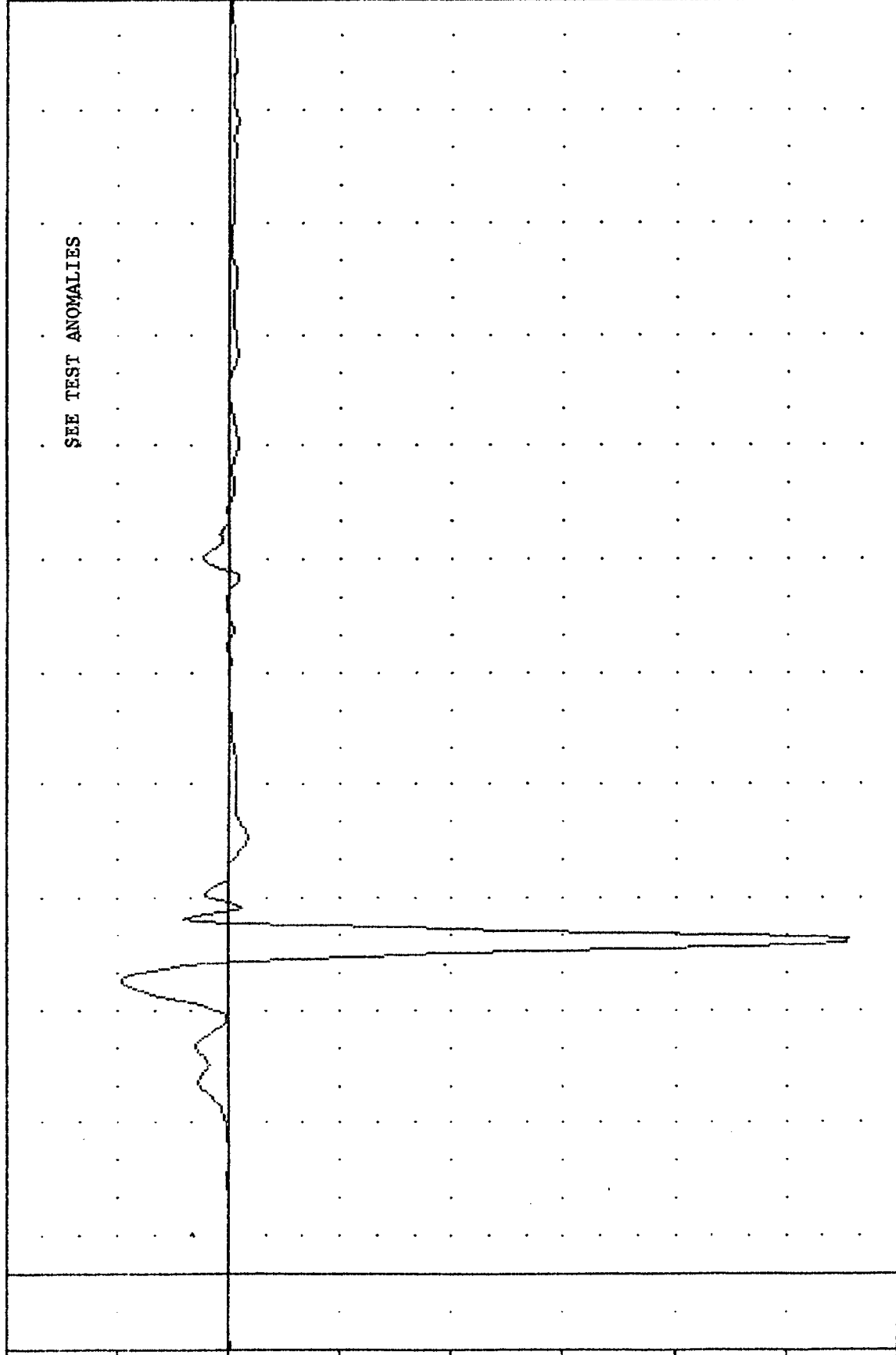
TRC
EVALUATION OF MOD V'W FLEET
832500000000
T01Y63

PLOT DATE 16-SEP-83 12:44:38

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -277.85e 88.13, 47.53 e 76.88

ACCELERATION (G)



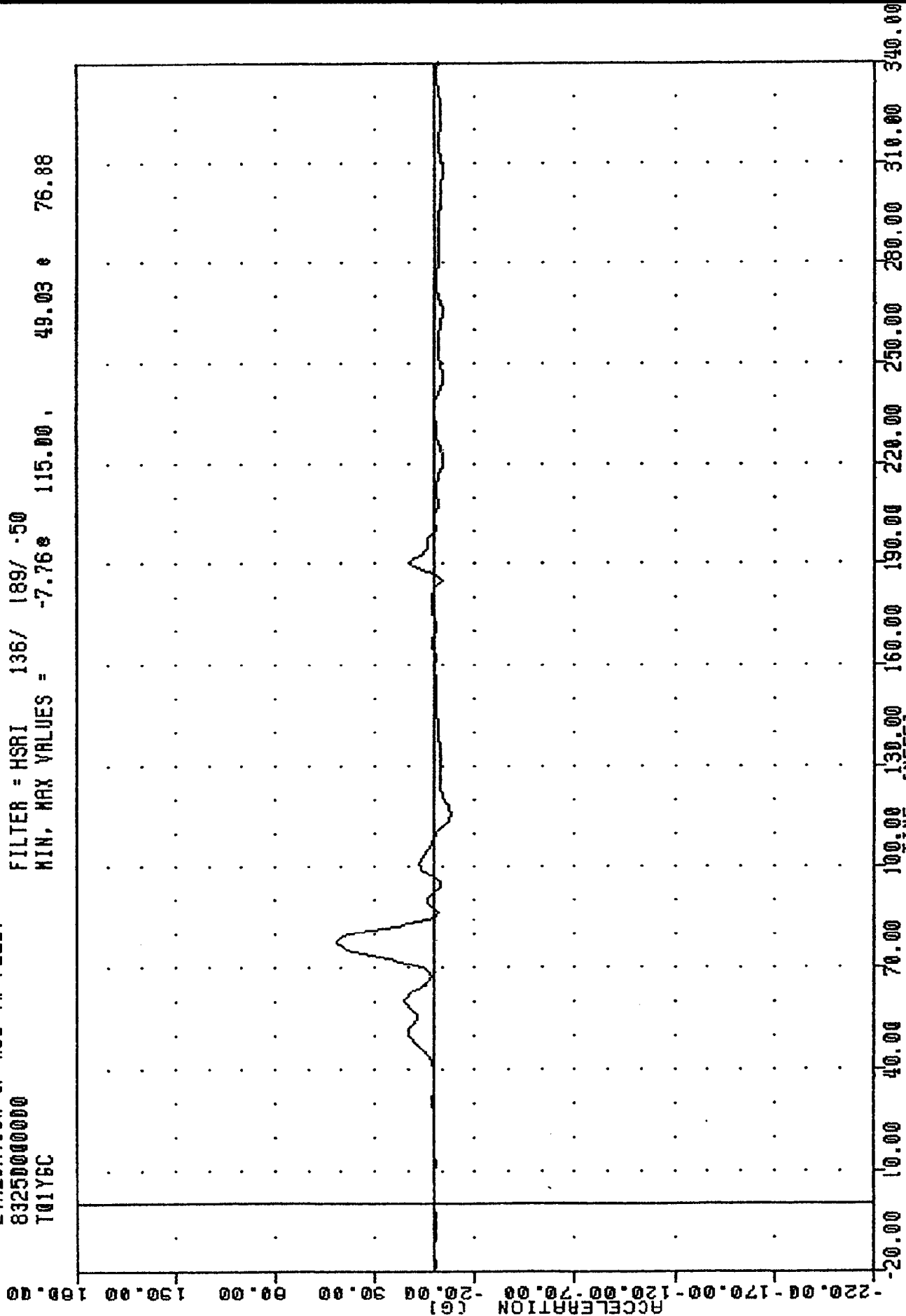
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

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

TAC
EVALUATION OF MOD VV FLEET
83250000000
T01Y6C

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -7.76 115.00, 49.03 76.88



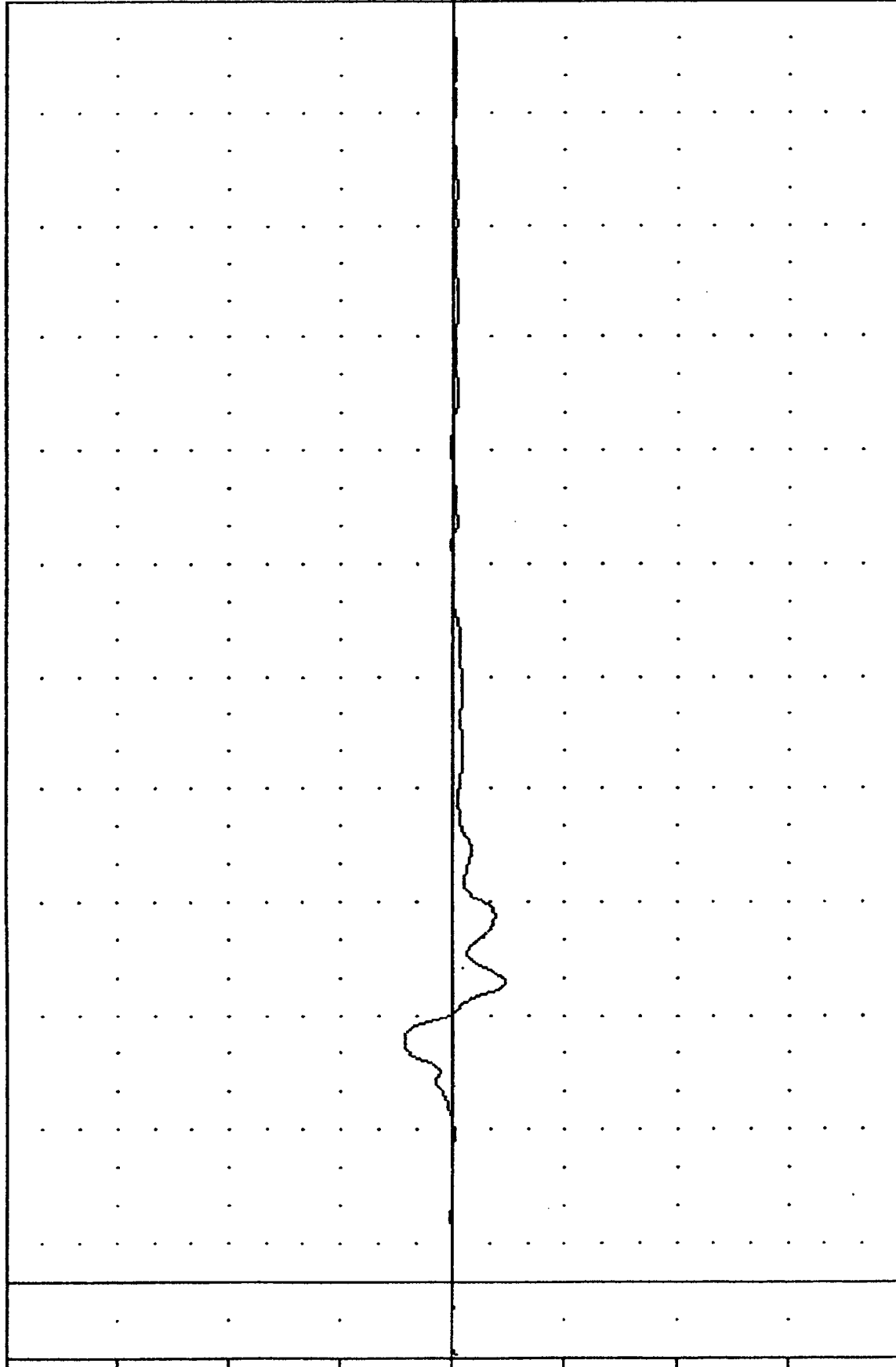
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE ACCELERATION #2 Y AXIS

TRC 830907
 EVALUATION OF MOD YW FLEET
 83250000000
 701ZG3

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSR(136/ 189/ -50
 MIN, MAX VALUES = -23.40 78.13, 21.51 63.75

ACCELERATION (G)



TIME (MSEC)

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

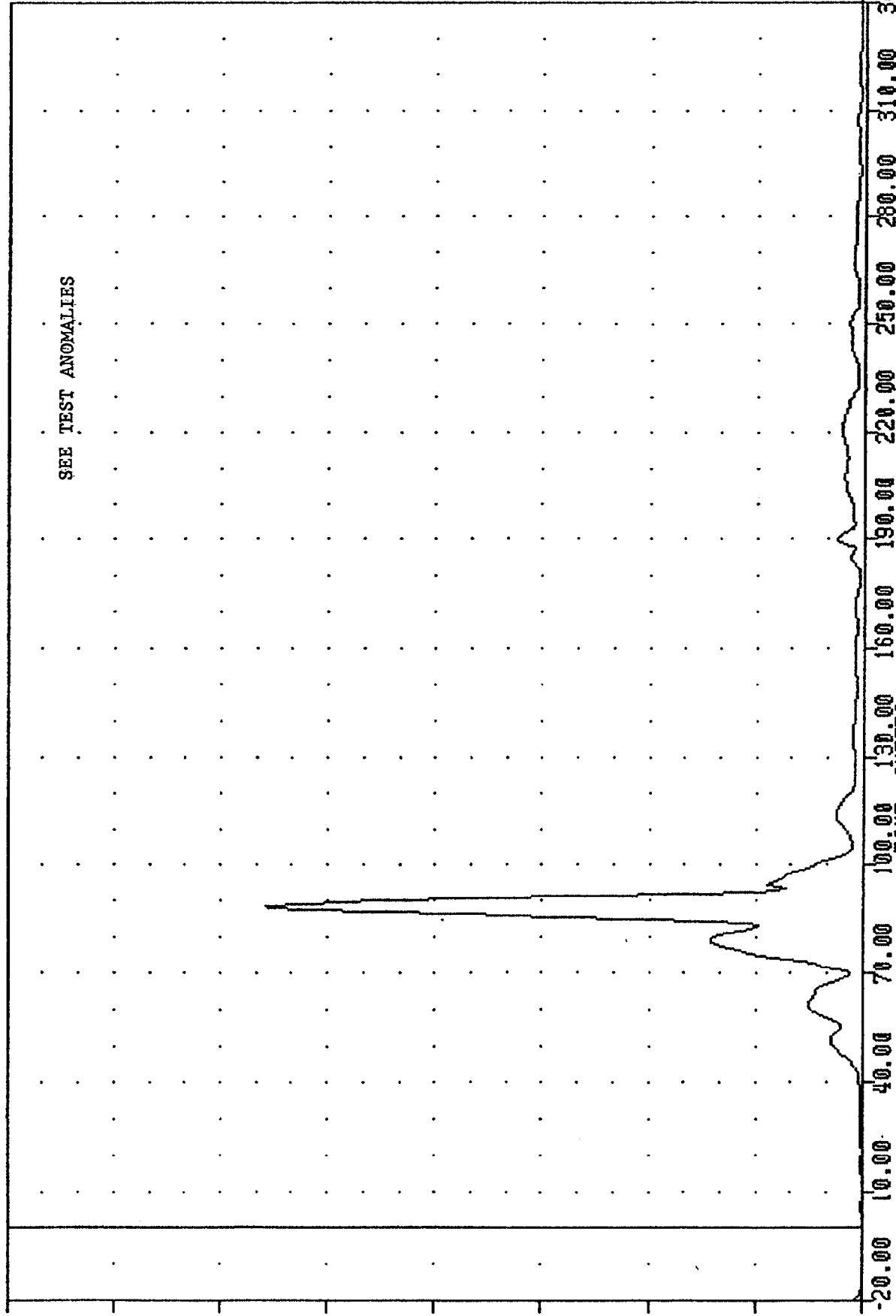
TAC
EVALUATION OF MOD VV FLEET
83250000000
T01R63

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ .50

MIN. MAX VALUES = 0.02 278.54 88.13

ACCELERATION [G]

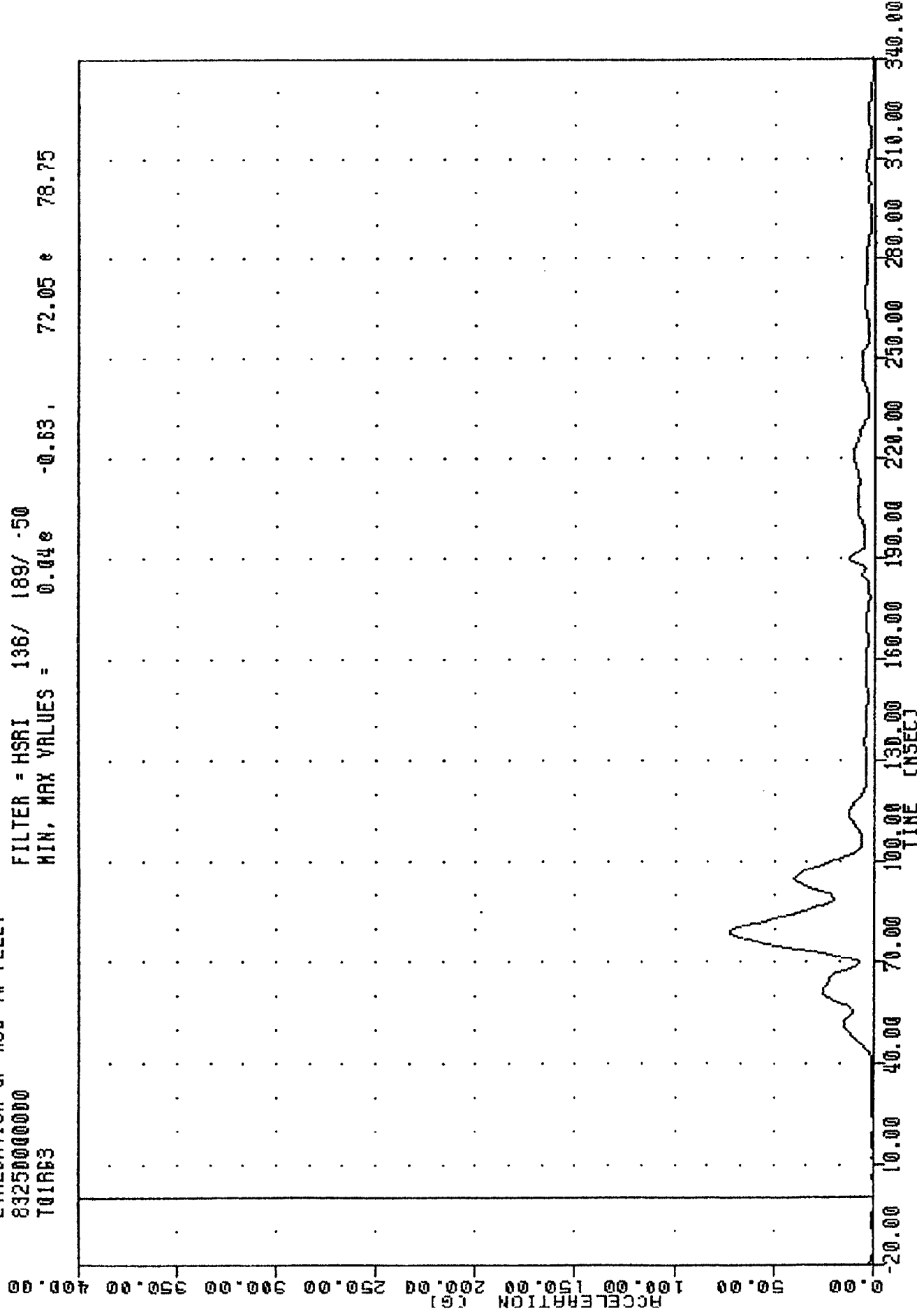


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT

TRC
EVALUATION OF MOD VV FLEET
83250000000
T01R63

PLOT DATE 12-SEP-83 13:35:41

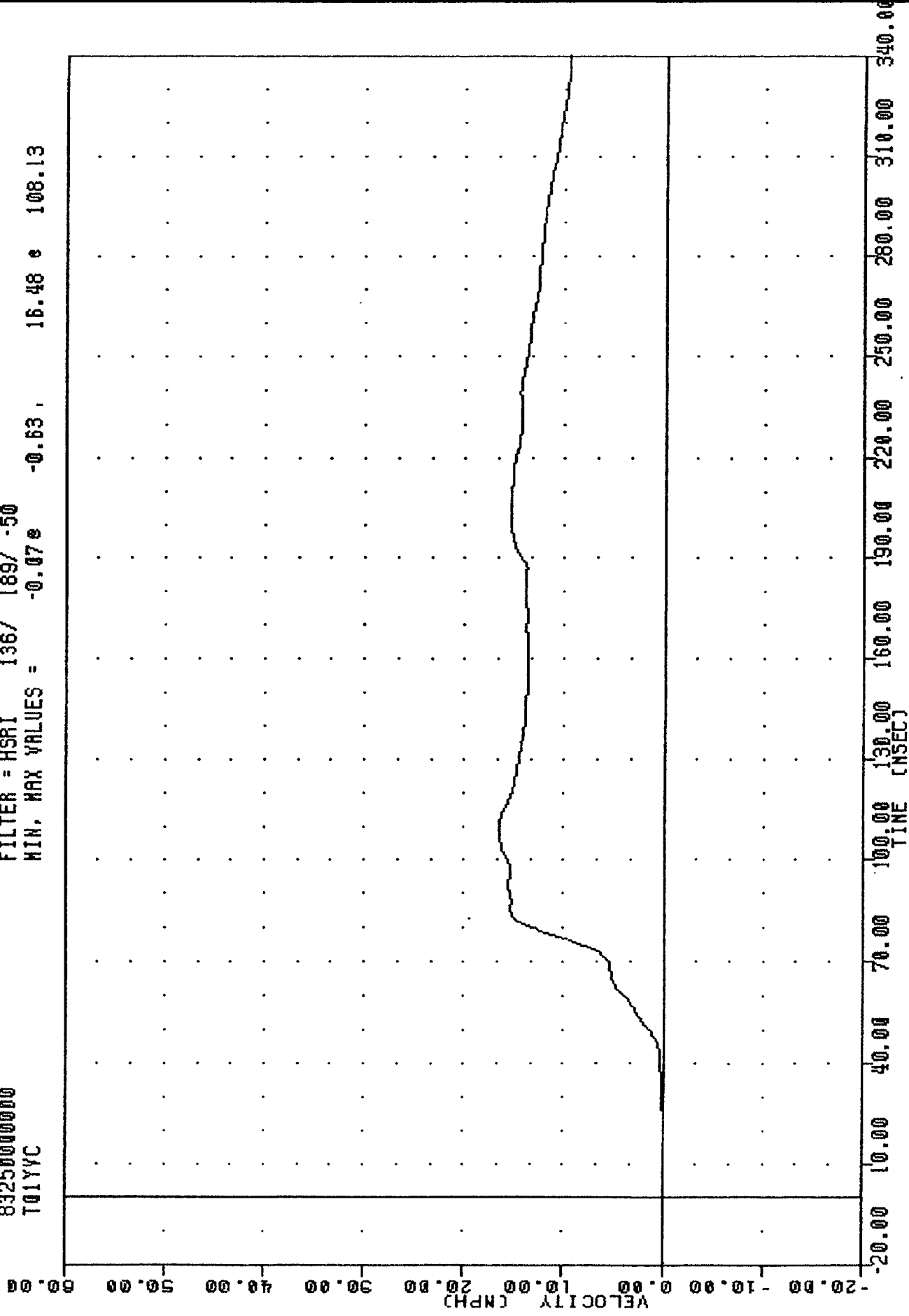
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = 0.048 -0.63, 72.05 e 78.75



TAC
EVALUATION OF MOD VV FLEET
83250010000
T01YVC

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.07 e 16.48 e 108.13



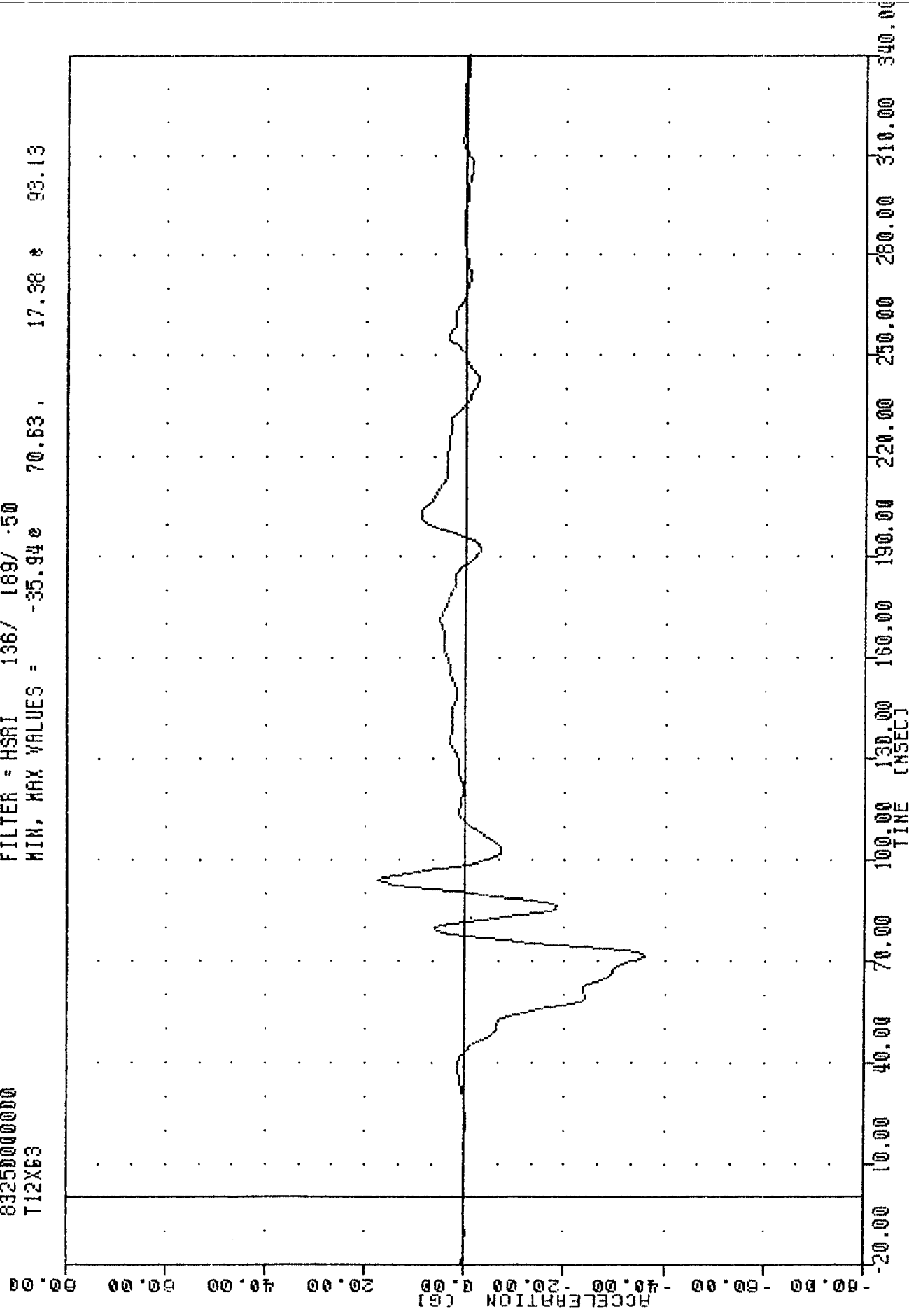
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGC

TAC
EVALUATION OF MOD VN FLEET
83250000000
T12X63

PLOT DATE 16-SEP-83 12:44:38

FILTER = HSRI 136/ 189/ -50

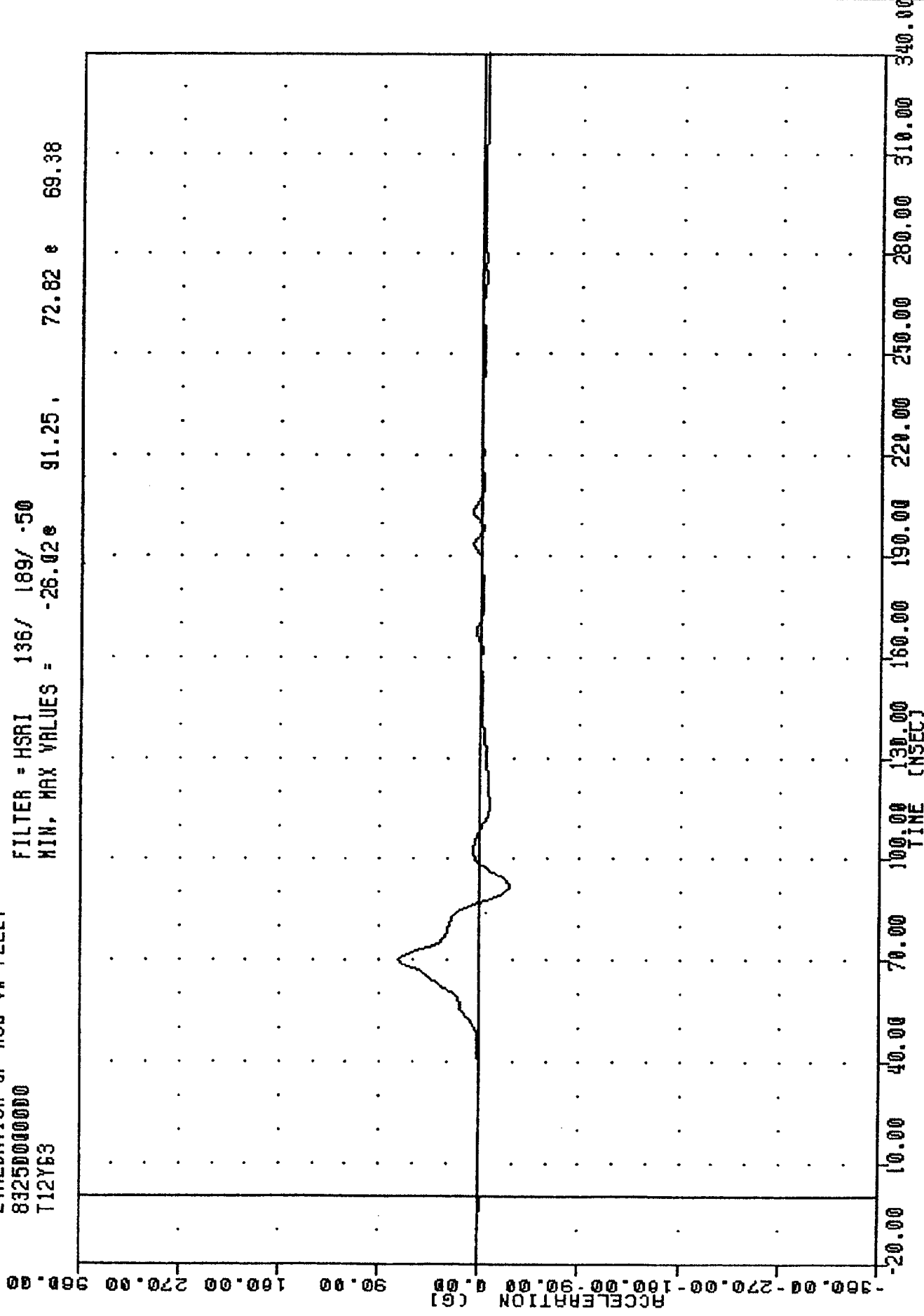
MIN, MAX VALUES = -35.94e 70.63 , 17.38 e 93.13



TAC
EVALUATION OF MOD VN FLEET
8325000000
T12Y63

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -26.02 91.25, 72.82 69.38



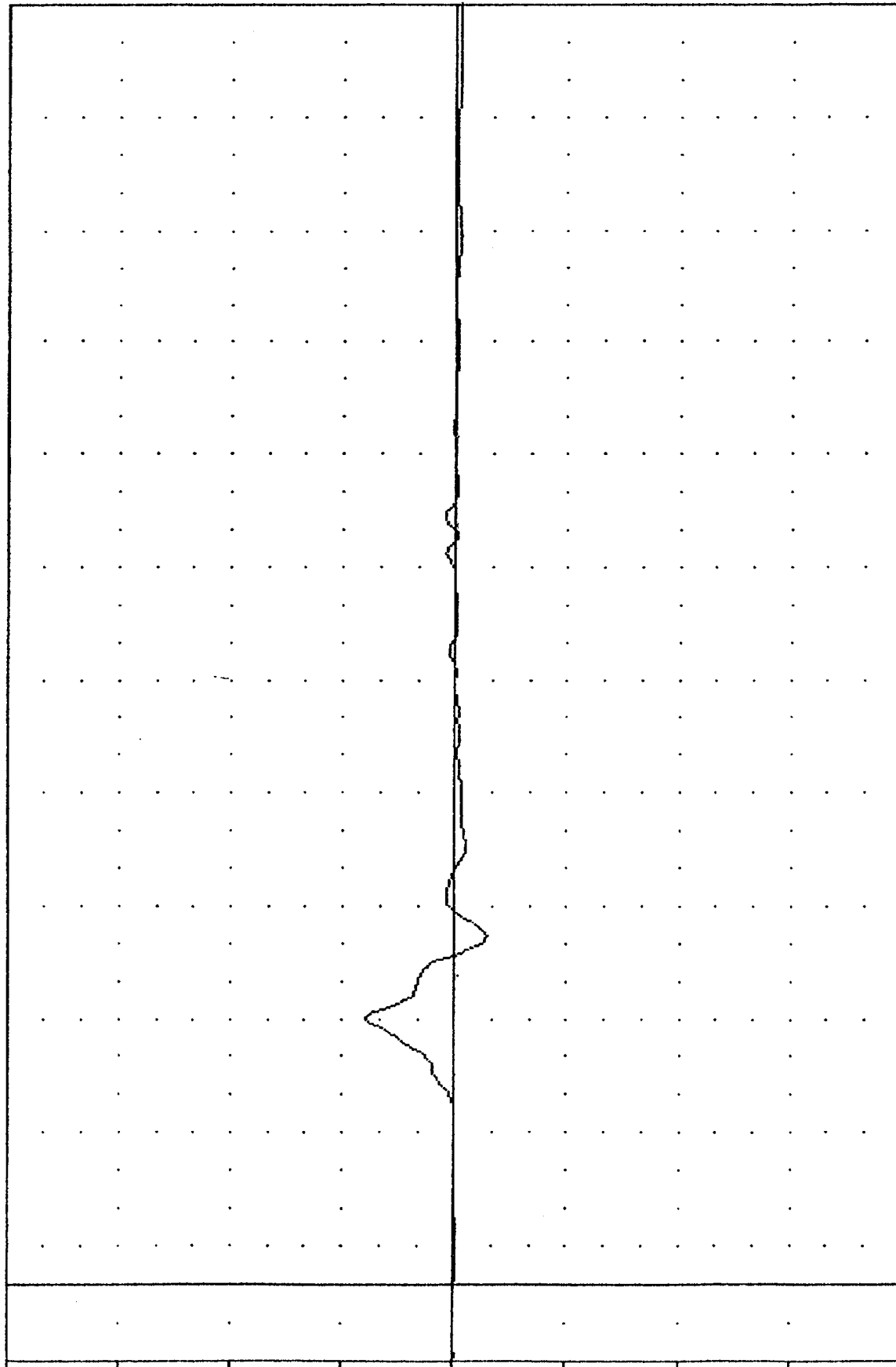
TRC
EVALUATION OF MOD YW FLEET
832500000000
T12YGC

PLOT DATE 16-SEP-83 13:40:04

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -25.66 91.25, 70.23 69.38

ACCELERATION (G)



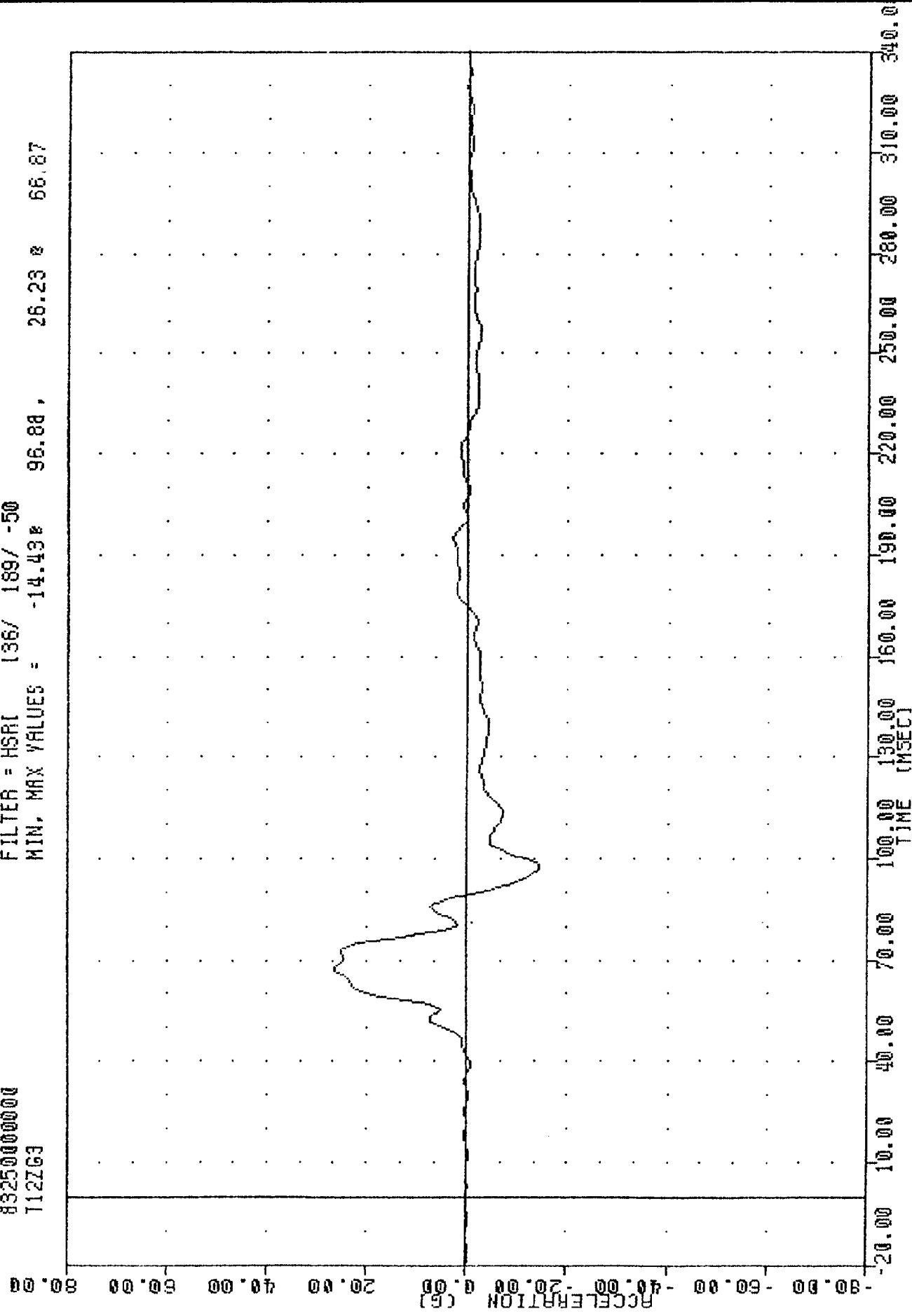
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION #2 Y AXIS

TRC
EVALUATION OF MOD YW FLEET
832500000000
T12ZG3

PLOT DATE 16-SEP-83 12:44:38

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = -14.43% 96.88, 26.23 % 66.87

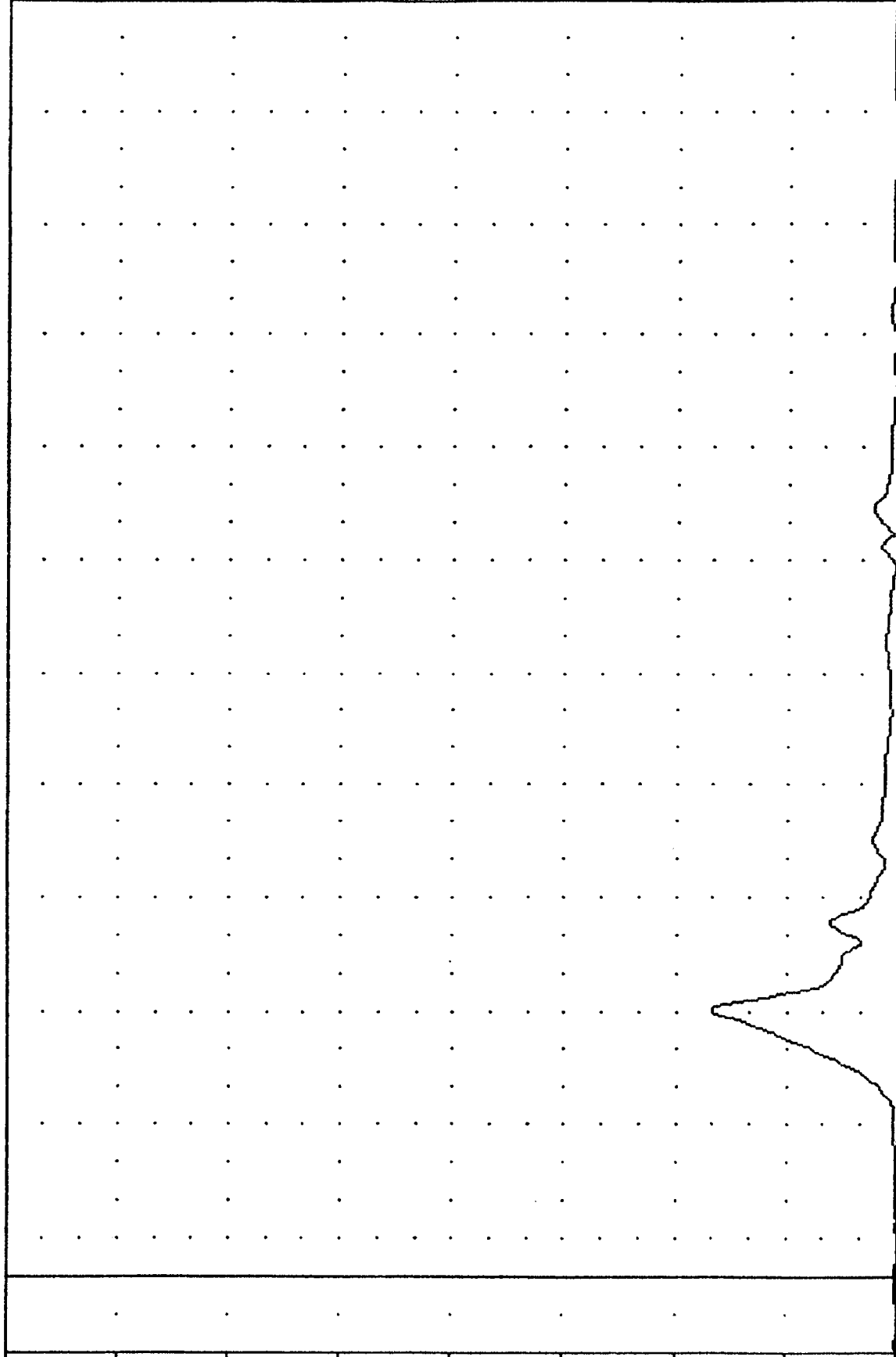


TRC
EVALUATION OF MOD YW FLEET
83250000000
T12RG3

PLOT DATE 12-SEP-83 13:33:50

FILTER = HSR1 136/ 189/ -50
MIN, MAX VALUES = 0.05 8.75 83.91 69.38

ACCELERATION (G)



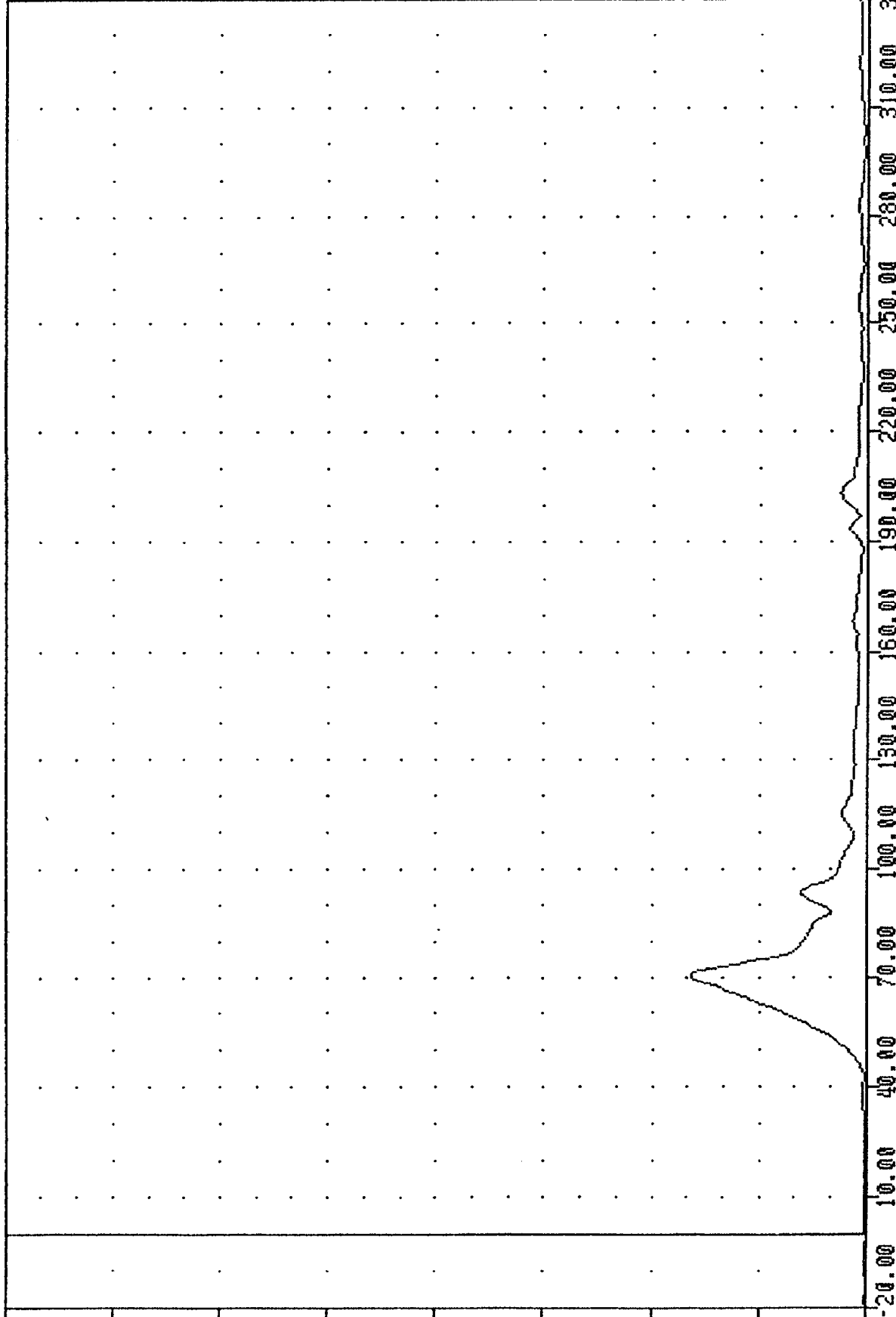
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE REFORM TANT

TRC
EVALUATION OF MOD YW FLEET
832500000000
T12RG3

PLOT DATE 12-SEP-83 13:35:41

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = 0.128 -1.25, 81.80 8 70.00

ACCELERATION [G]



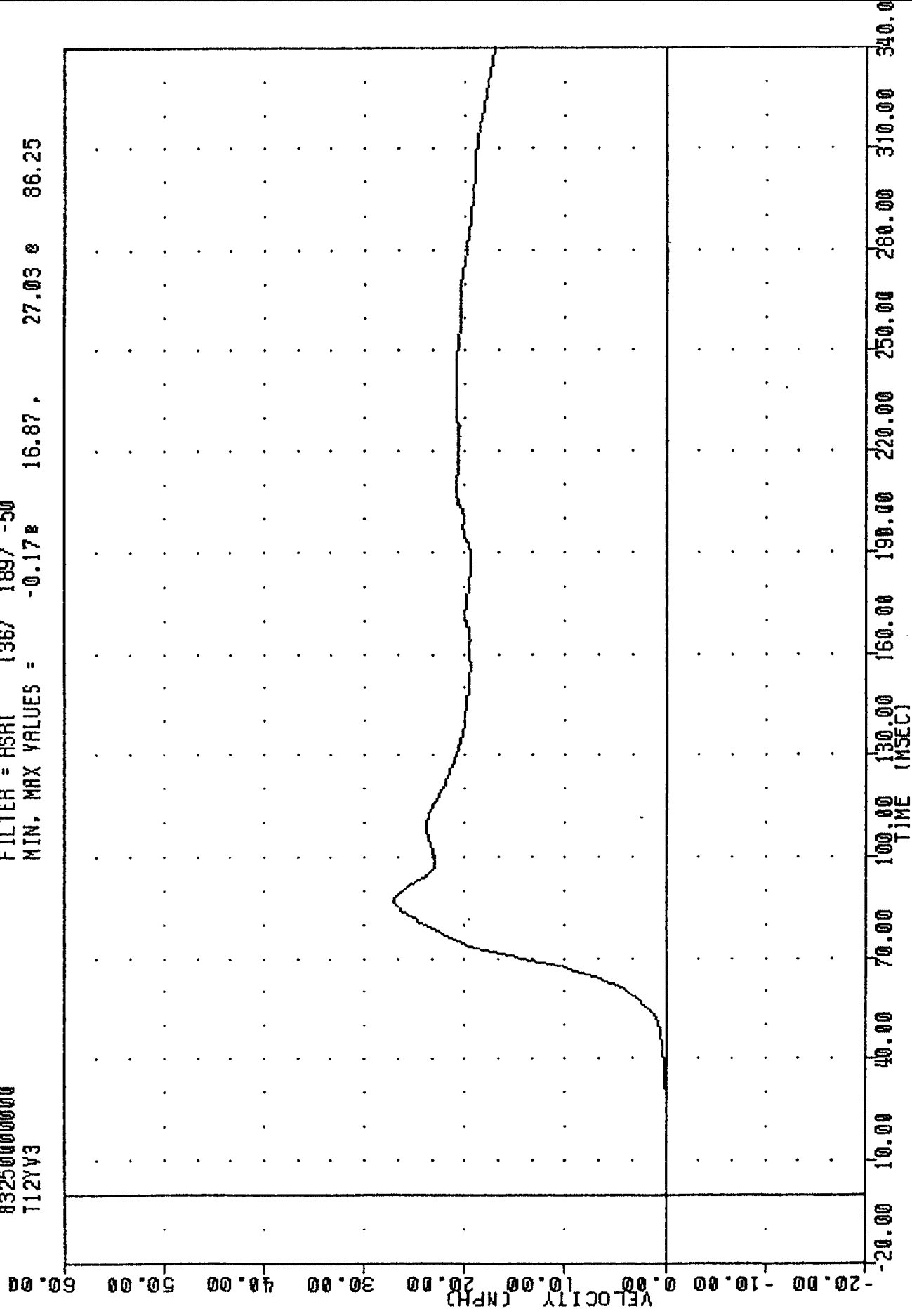
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE RESULTANT USING T12YGC

TAC
EVALUATION OF MOD YW FLEET
83250000000
T12YV3

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSR1 136/ 189/ -50

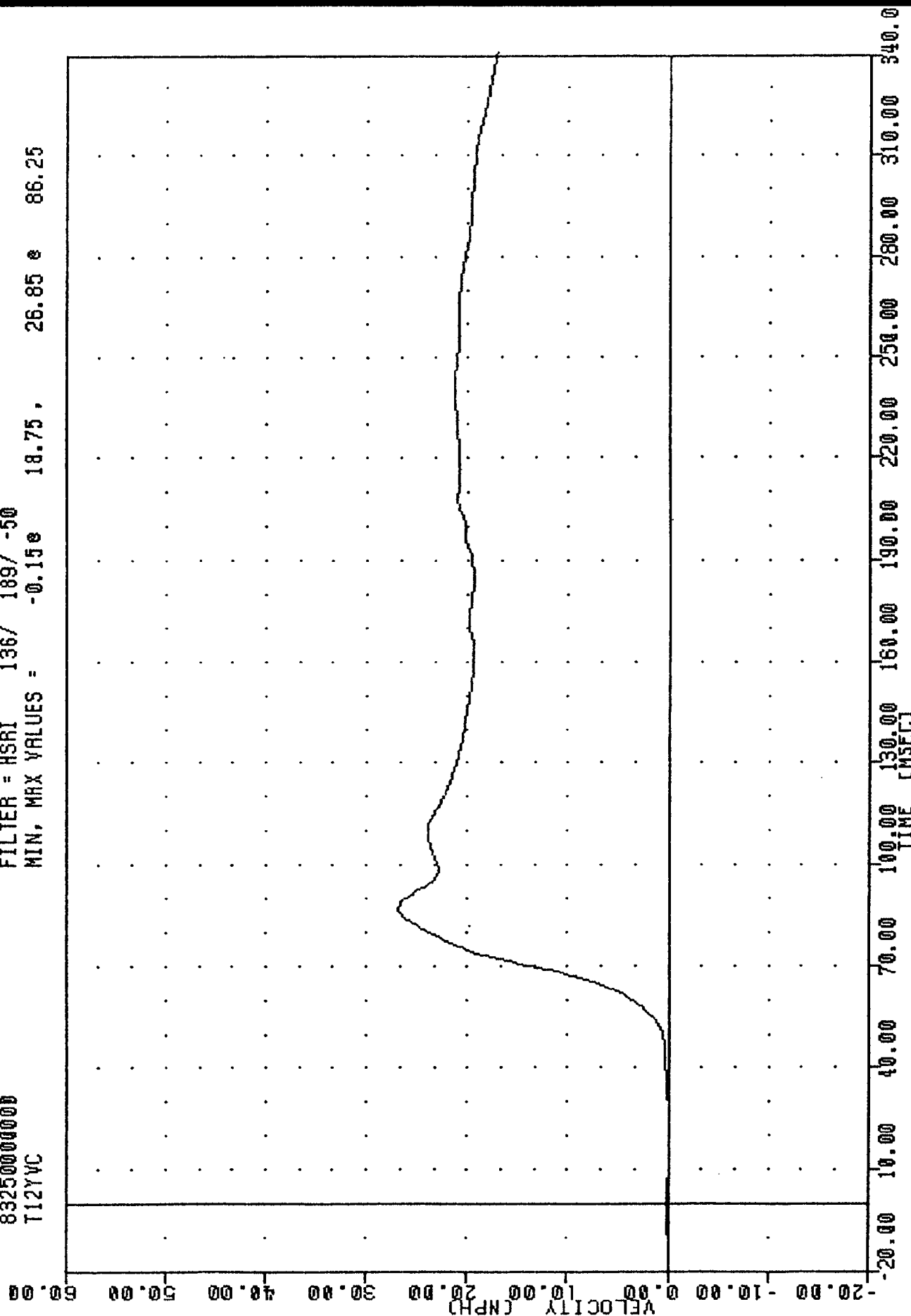
MIN. MAX VALUES = -0.17 16.87 27.03 86.25



TRC , 830907
 EVALUATION OF MOD VV FLEET
 83250000000
 T12YVC

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.150 18.75 , 26.85 0 86.25

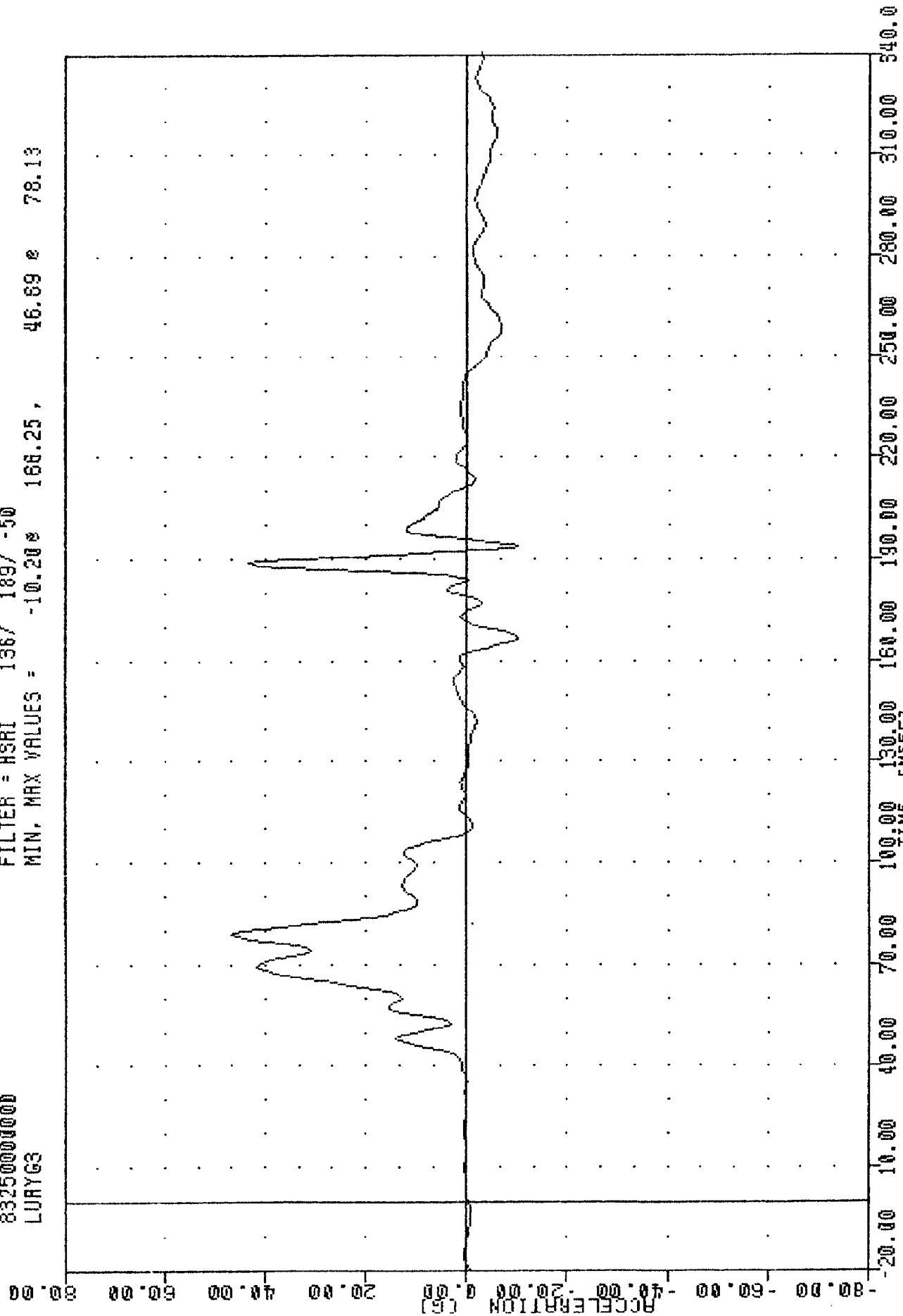


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YGC

TRC
EVALUATION OF MDD VV FLEET
83250000000
LURY63

PLOT DATE 16-SEP-83 12:44:38

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -10.20 166.25, 46.89 78.13

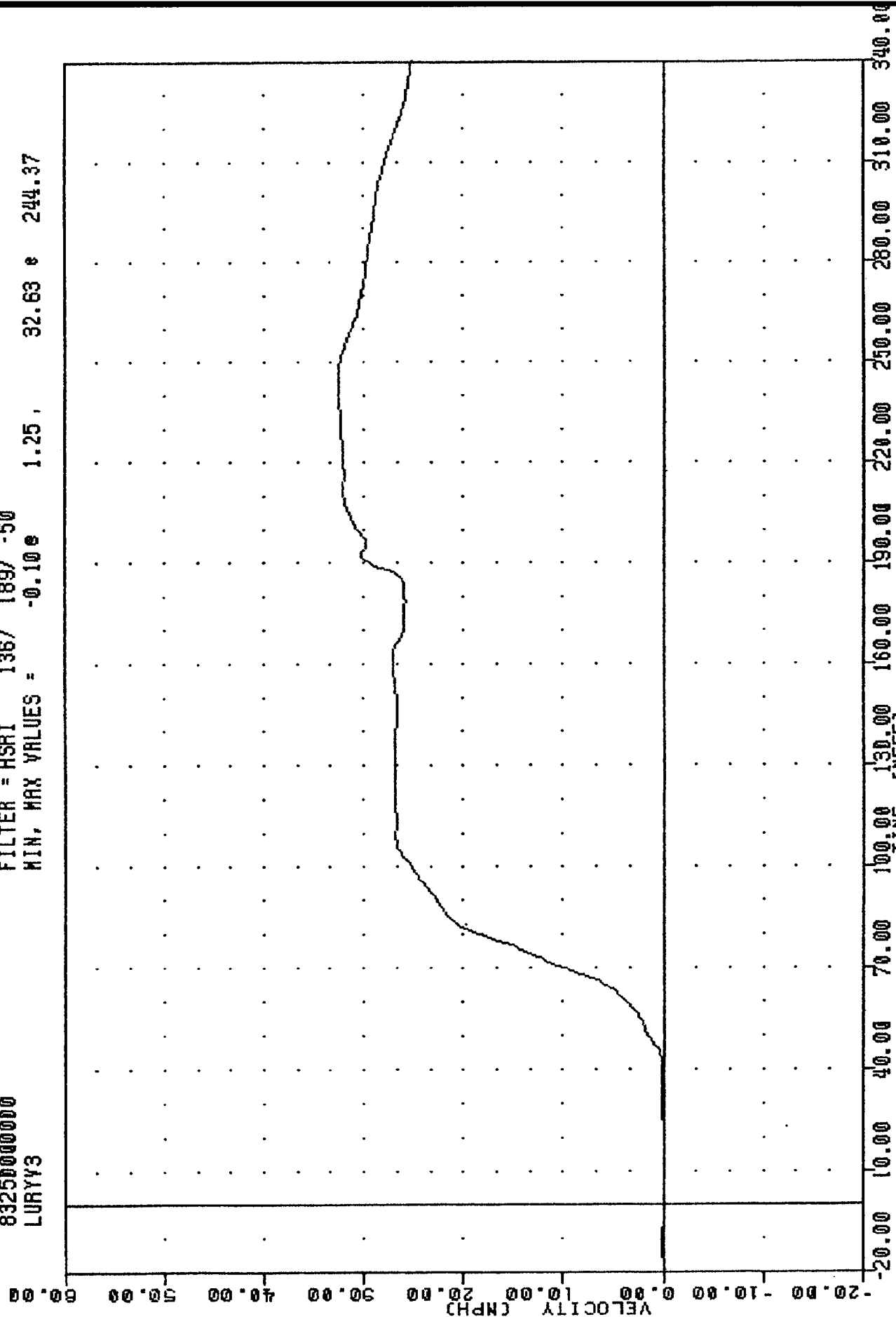


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT UPPER RIB ACCELERATION Y AXIS

TAC
EVALUATION OF MOD VW FLEET
83250000000
LURYV3

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.10 1.25, 32.63 244.37



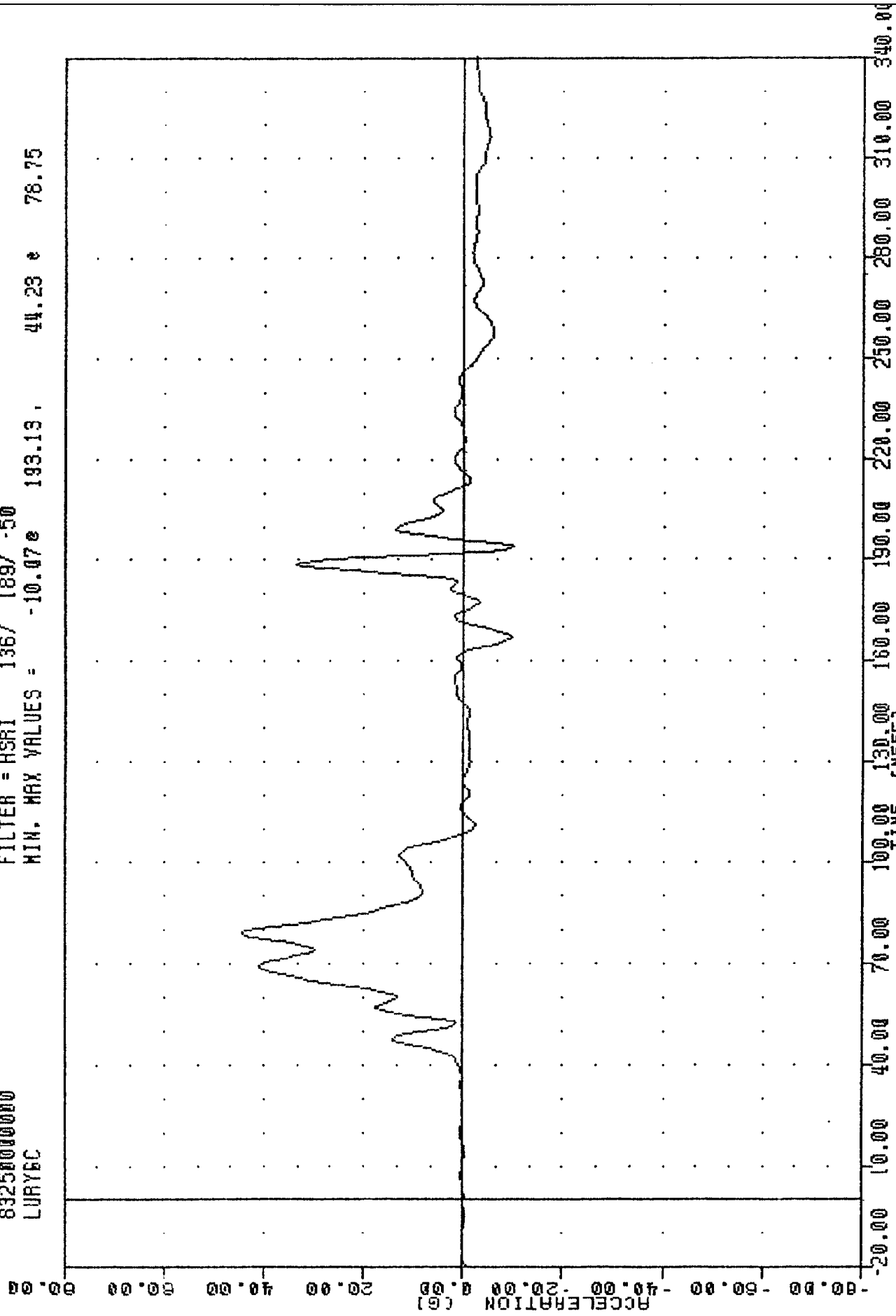
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA Y USING LURYG3

TAC
EVALUATION OF MOD VN FLEET
8325000000
LURYEC

PLOT DATE 16-SEP-83 12:44:38

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -10.07e 193.13, 44.23 e 76.75

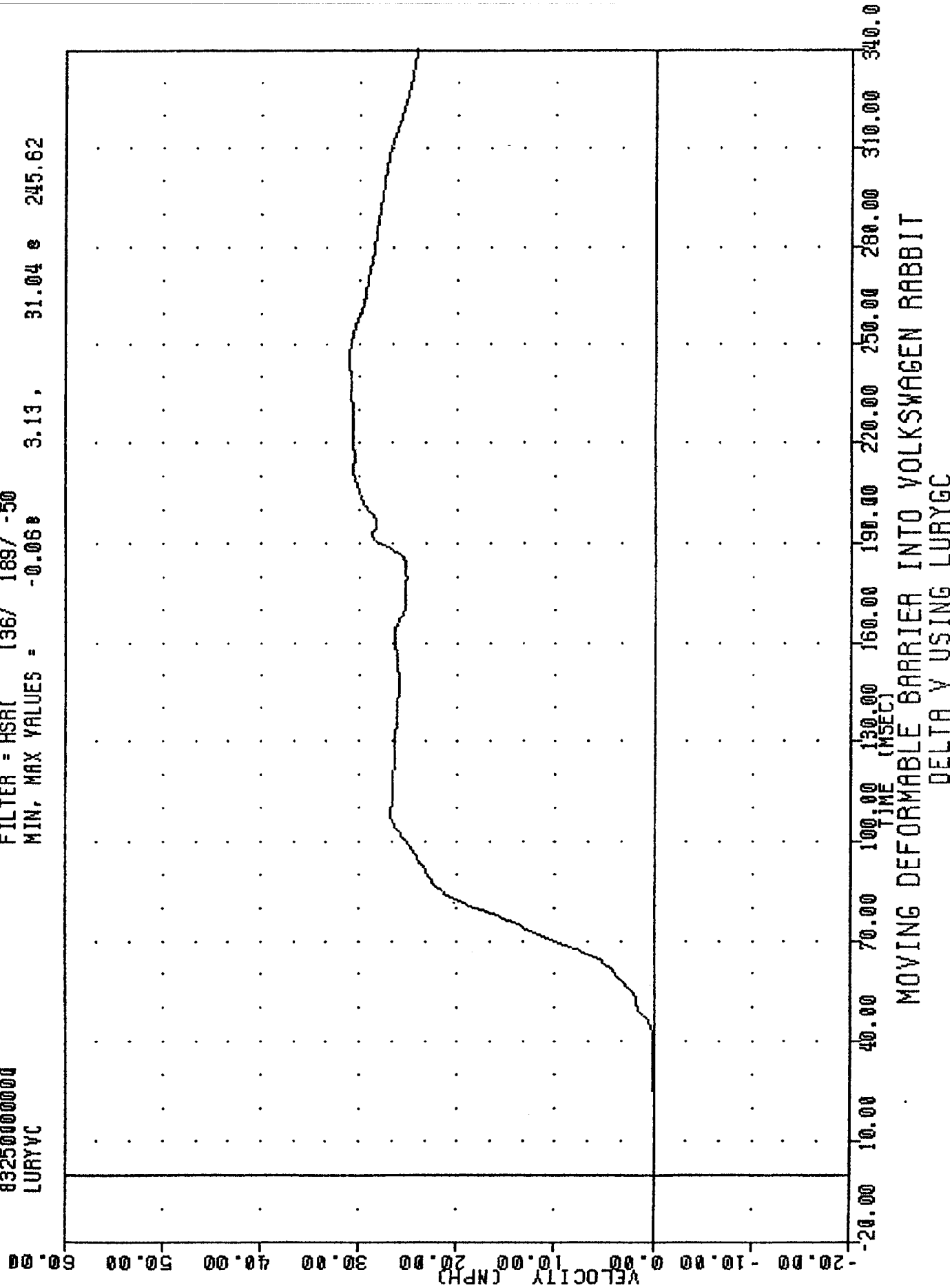


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT UPPER RIB ACCELERATION #2 Y AXIS

TRC
EVALUATION OF MOD YW FLEET
83250000000
LURYVC

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.068 3.13, 31.04 & 245.62

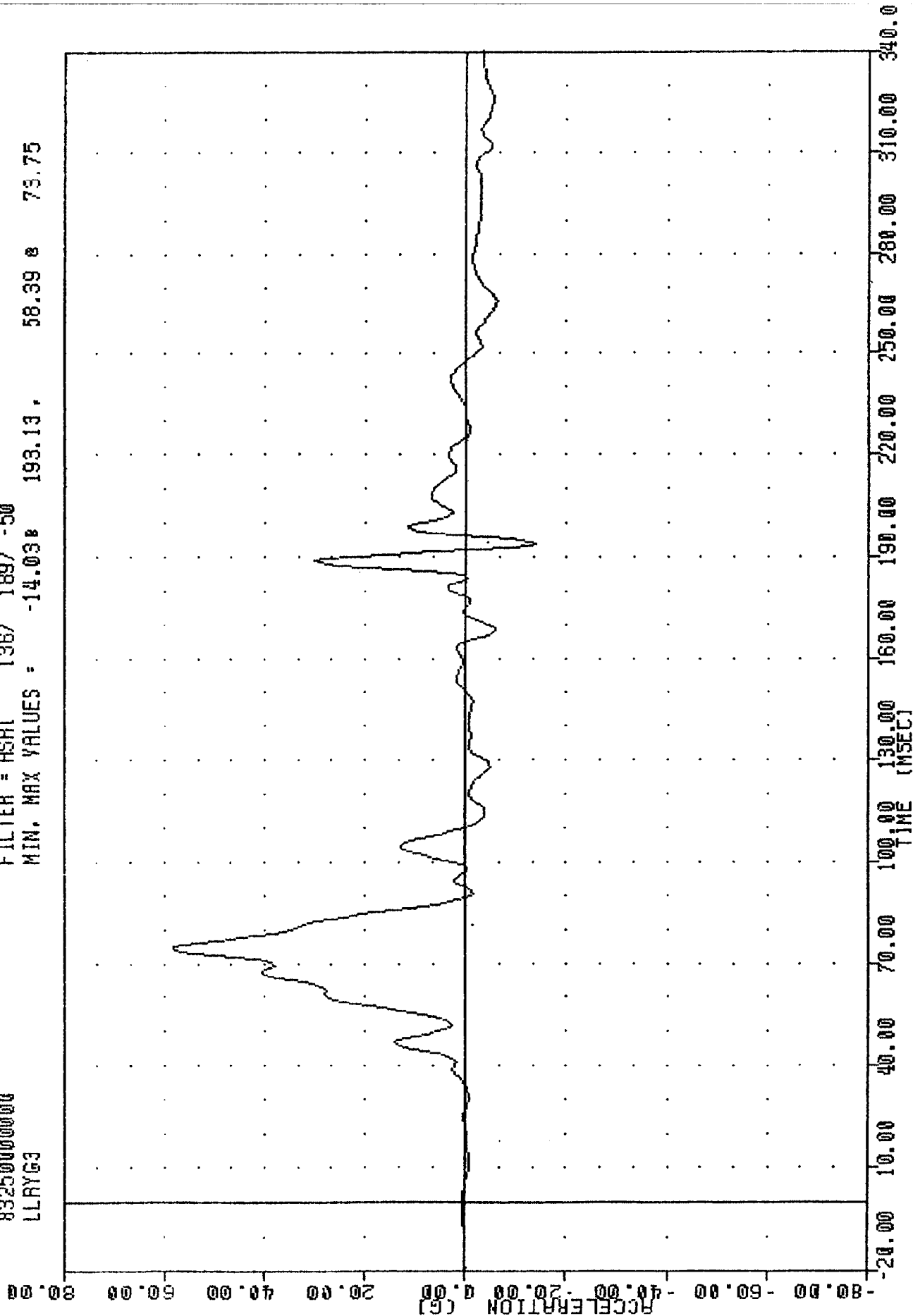


TAC 830907
 EVALUATION OF MDD YW FLEET
 832500000000
 LLRYG3

PLOT DATE 16-SEP-83 12:44:38

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -14.038 193.13 58.39 73.75

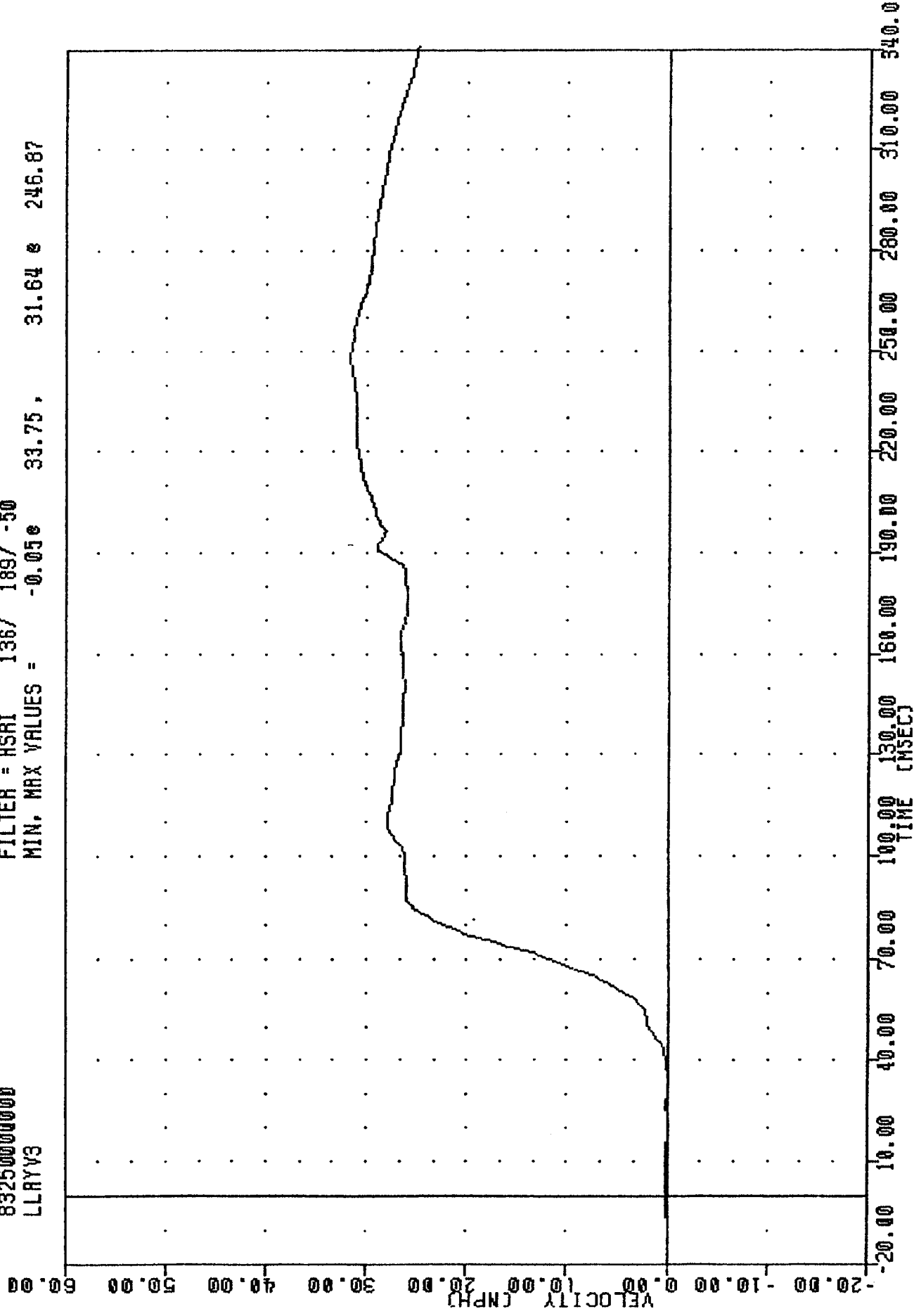


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

TRC , 830907
EVALUATION OF MOD VN FLEET
832500000000
LLRYV3

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.05e 33.75, 31.64 e 246.87

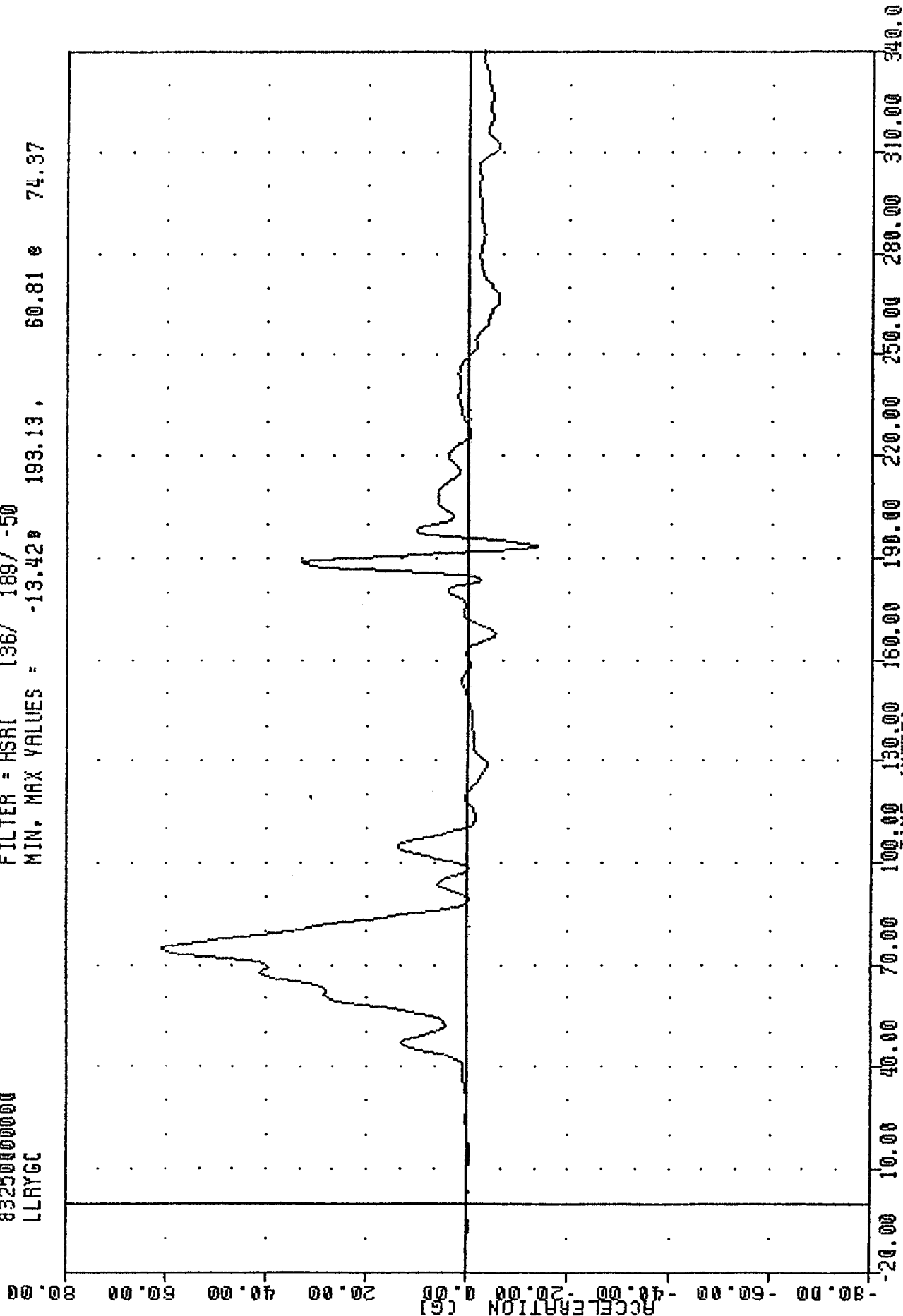


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLRYG3

TRC 830907
 EVALUATION OF MOD YW FLEET
 8325000000
 LLRYGC

PLOT DATE 16-SEP-83 12:58:37

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -13.42 193.13, 60.81 74.37

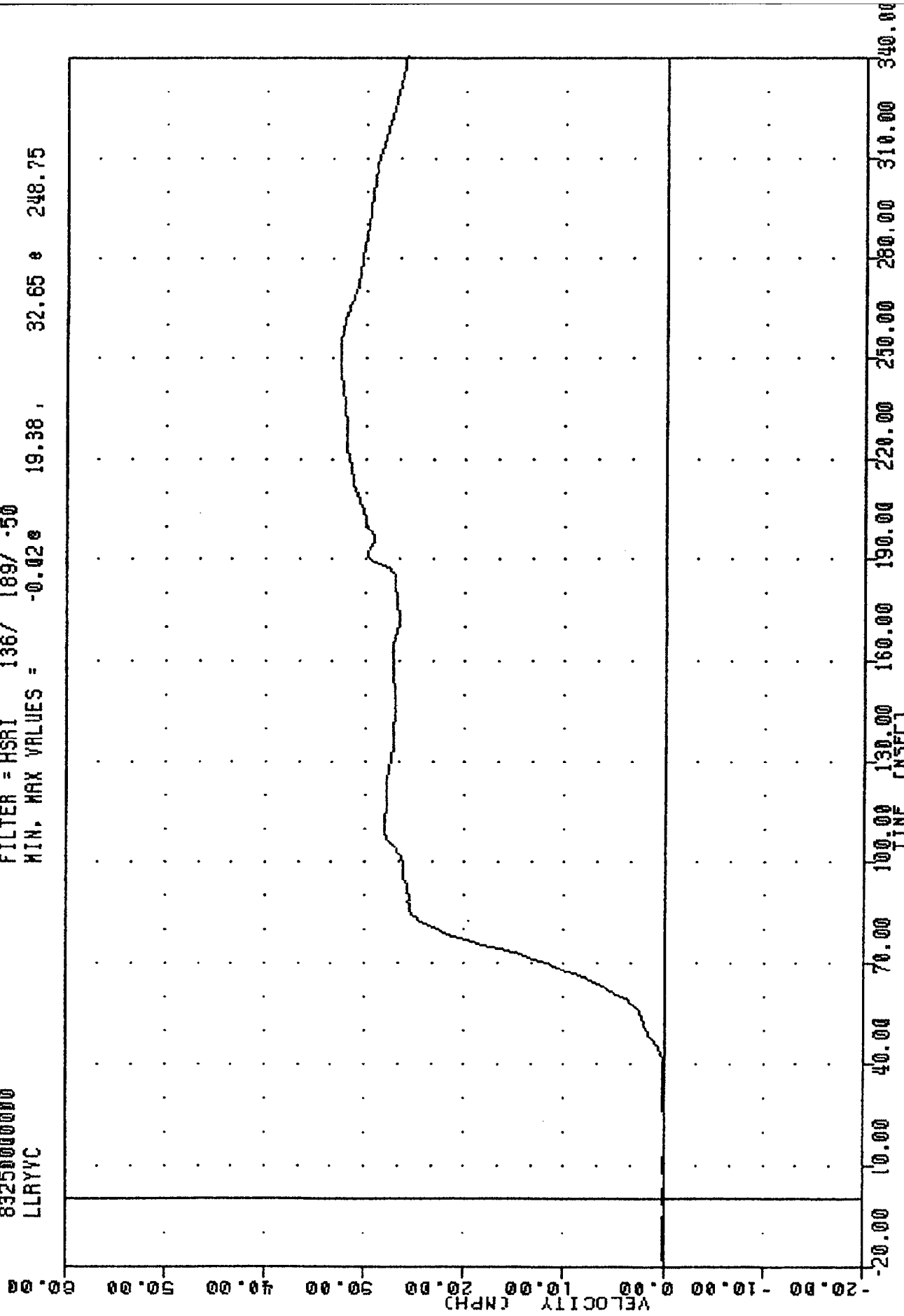


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LEFT LOWER RIB ACCELERATION -2 Y AXIS

TAC
EVALUATION OF MOD VW FLEET
83250000000
LLRYVC

PLOT DATE 14-SEP-83 10:22:28

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -0.02 19.38, 32.65 248.75

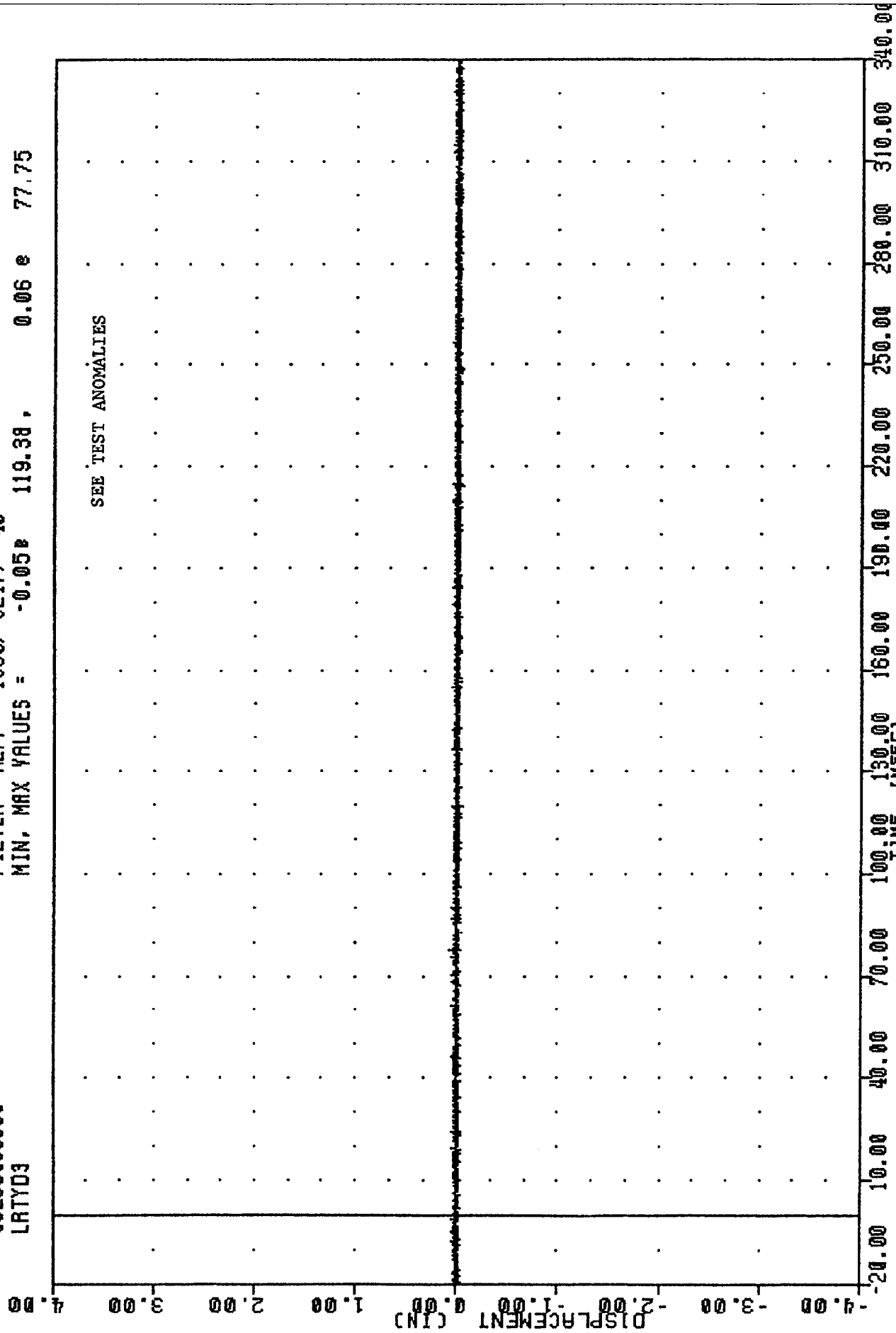


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLRYGC

TRC
EVALUATION OF MOD YW FLEET
83250000000
LRTYD3

PLOT DATE 13-SEP-83 10:47:59

FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -0.058 119.38 , 0.06 e 77.75

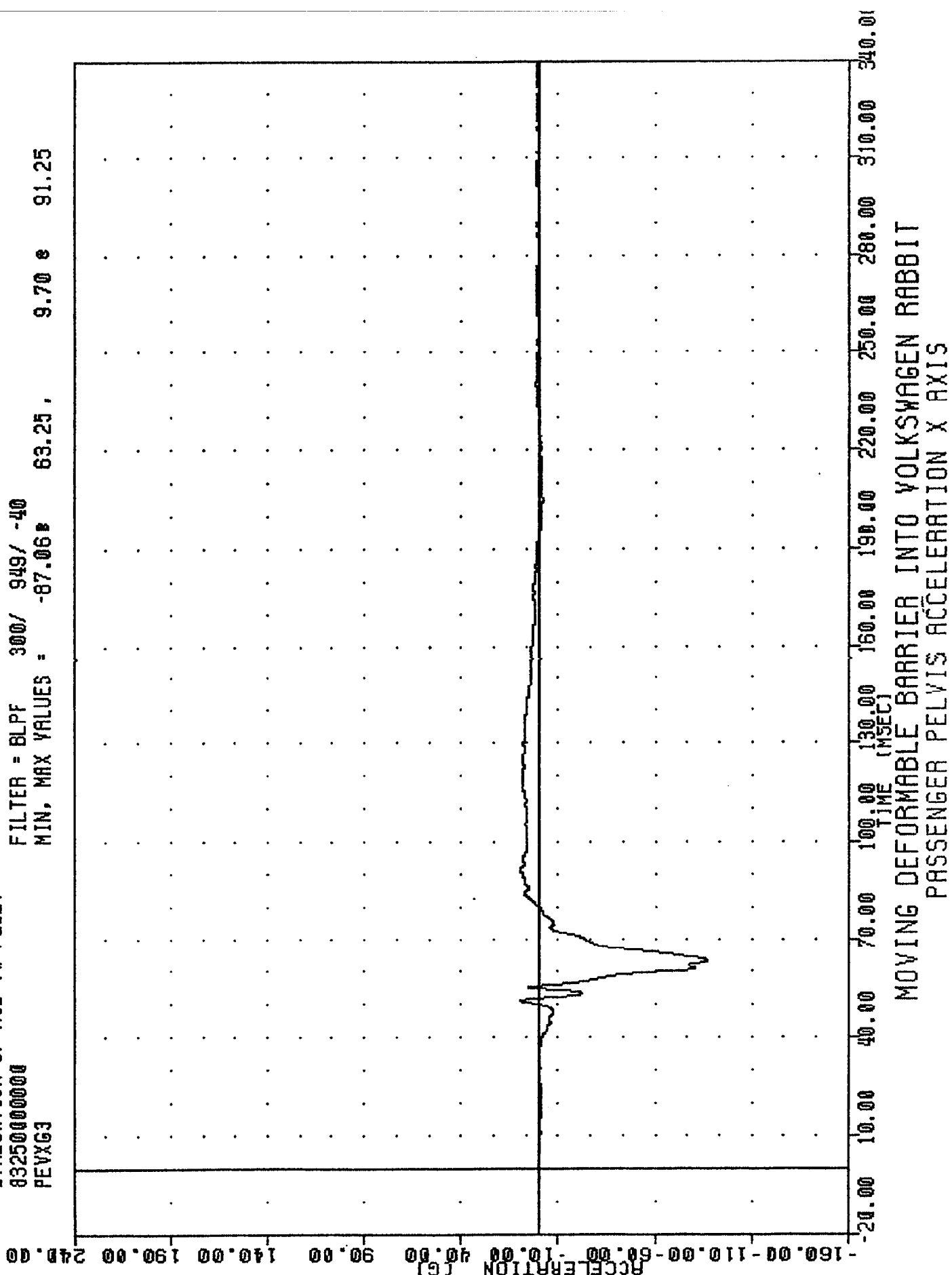


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT RIB TO SPINE DISPLACEMENT INCHES

TRC
EVALUATION OF MOD VV FLEET
83250000000
PEVXG3

PLOT DATE 13-SEP-83 10:47:39

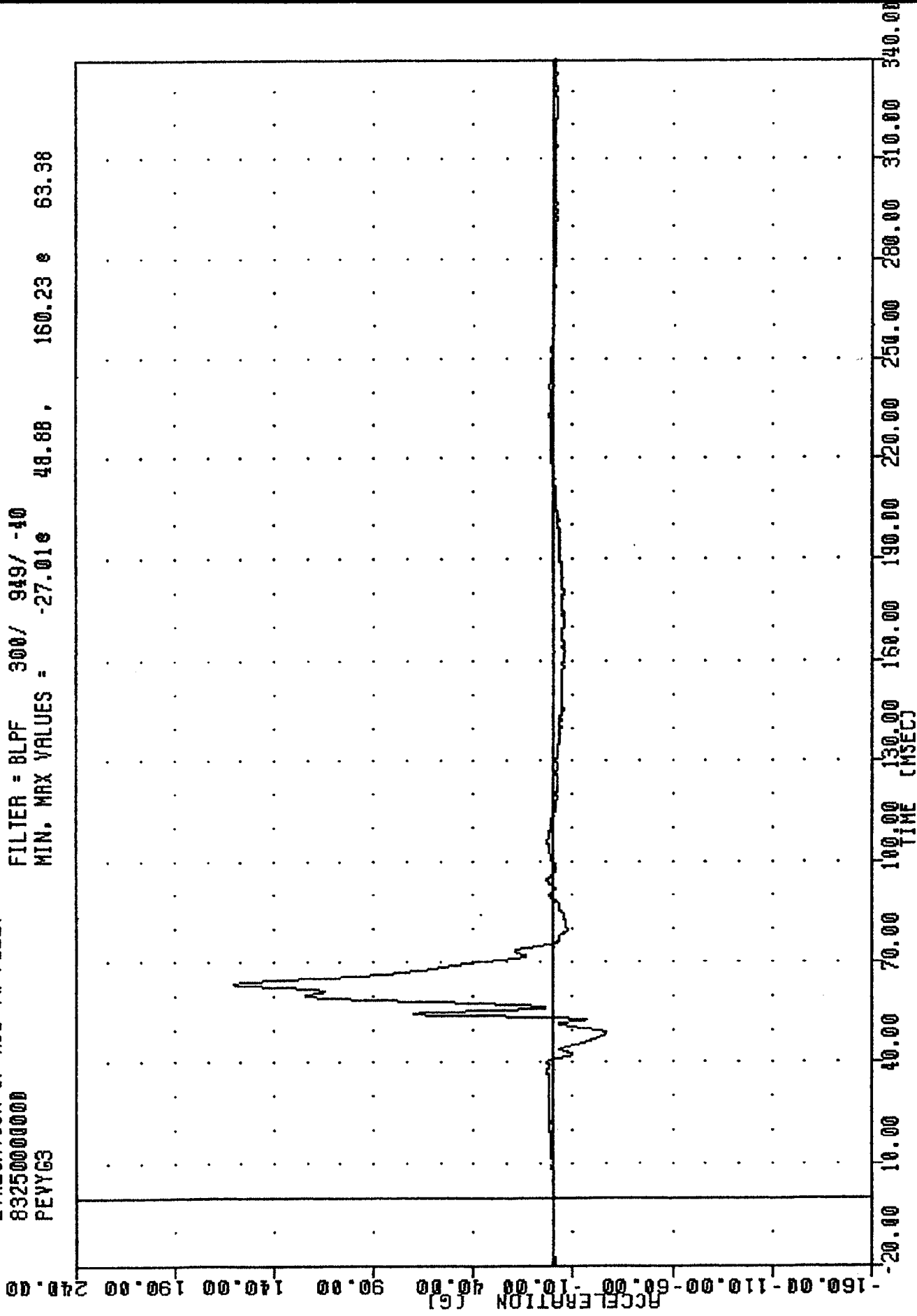
FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -87.06 63.25 , 9.70 91.25



TRC
EVALUATION OF MDD VW FLEET
832500000000
PEVY63

PLOT DATE 13-SEP-83 10:47:59

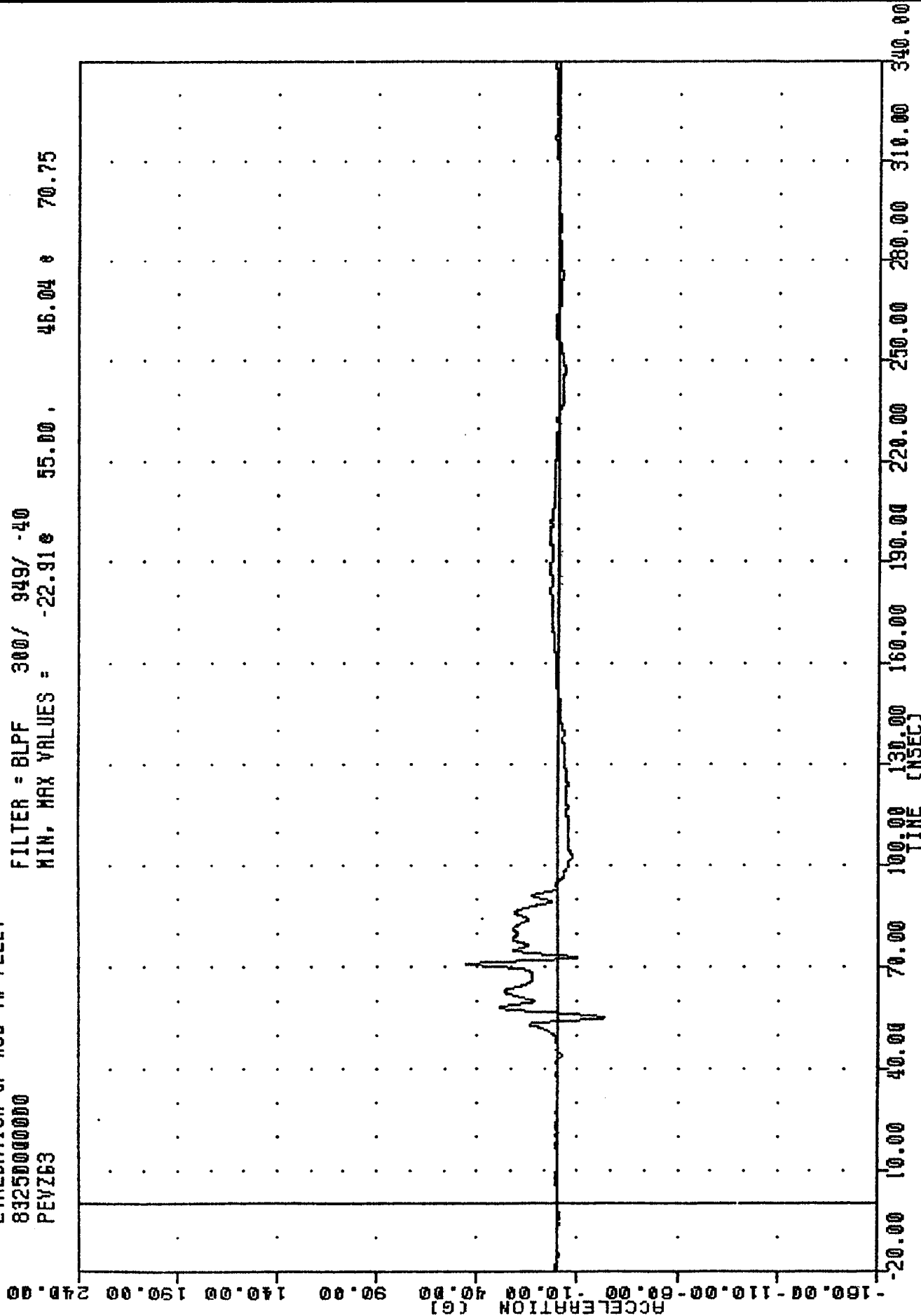
FILTER = 8LPF 300/ 949/ -40
MIN. MAX VALUES = -27.01e 48.88, 160.23 e 63.38



TAC
EVALUATION OF MOD VN FLEET
832500000000
PEVZ63

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -22.91 55.00, 46.04 70.75

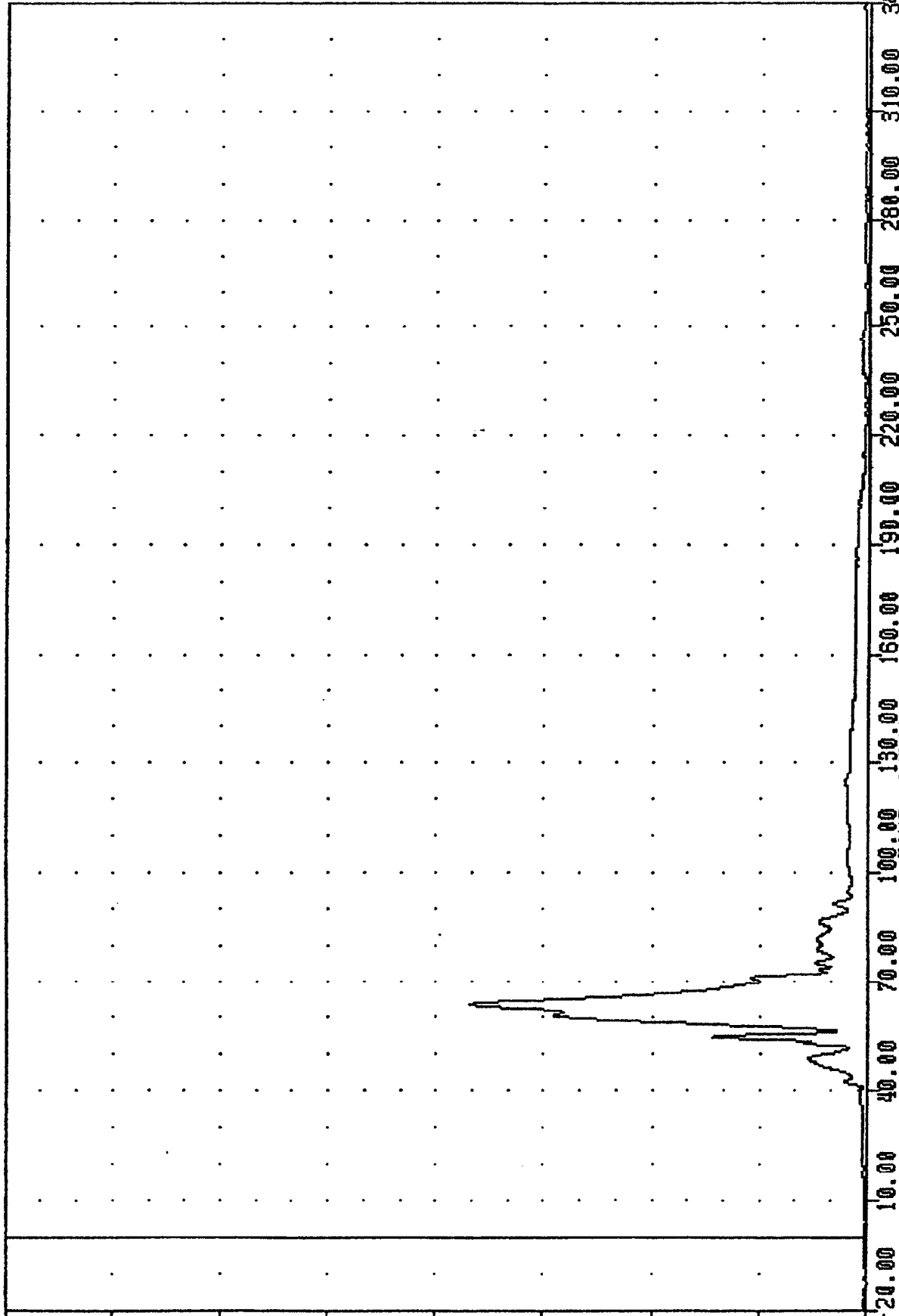


TRC
EVALUATION OF MOD YW FLEET
83250000000
PEVRG3

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = 0.088 -12.88, 183.96 e 63.38

ACCELERATION (G)

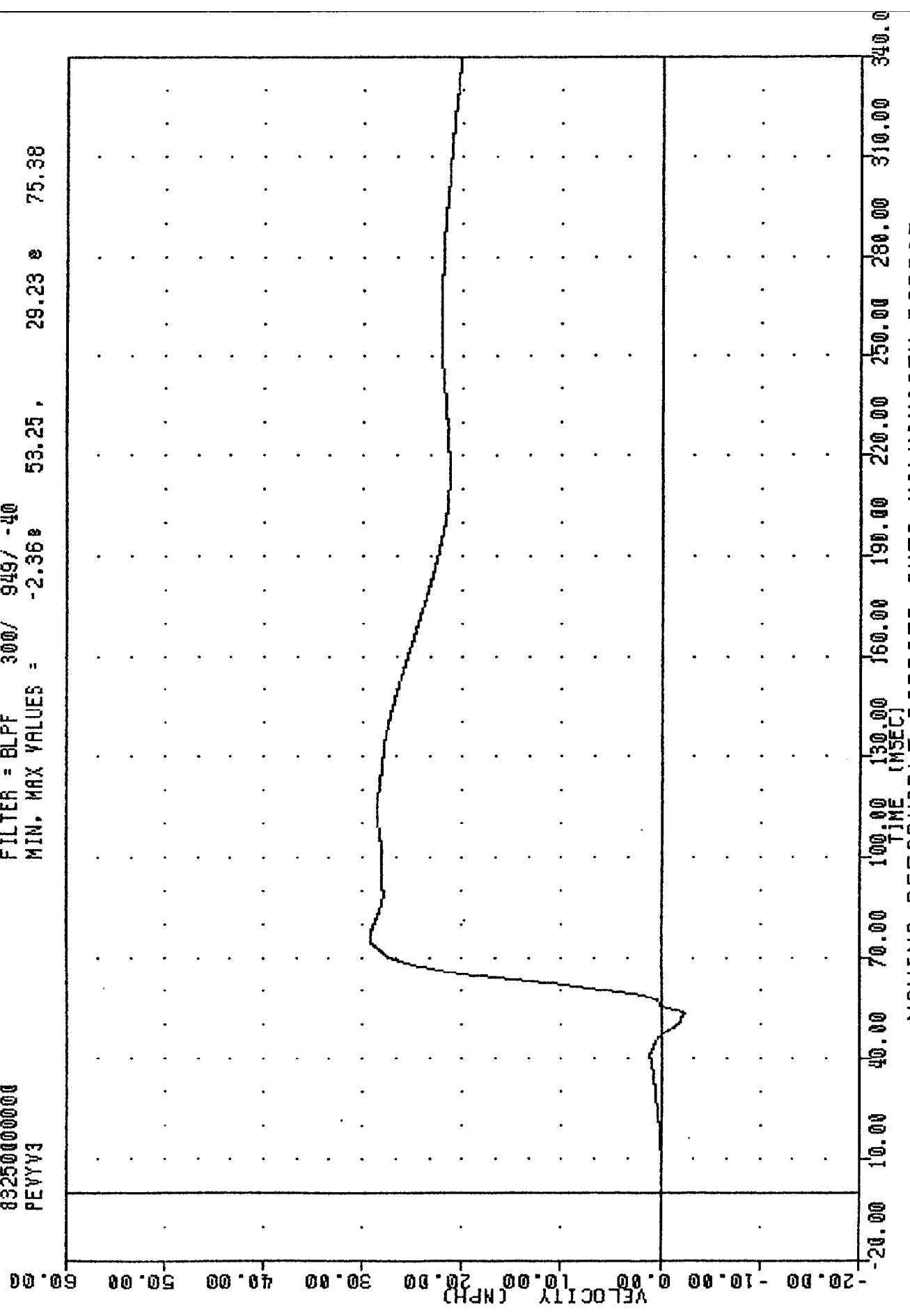


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS RESULTANT

TRC
 EVALUATION OF MOD YW FLEET
 83250000000
 PEVYV3

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -2.36 53.25 29.23 75.38

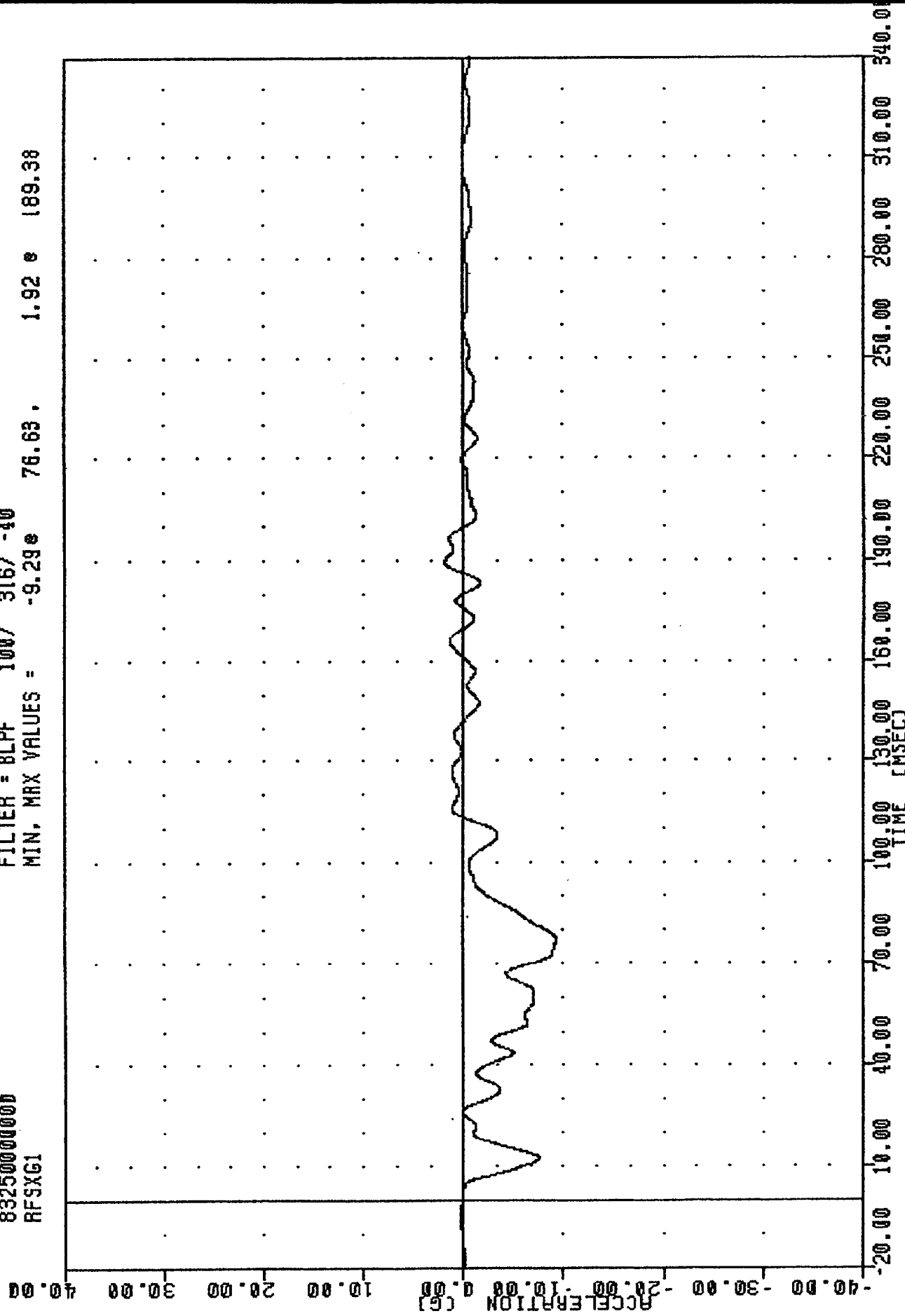


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING PEVYG3

TRC
EVALUATION OF MDD VW FLEET
832500000000
RFSXG1

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -9.29e 76.63, 1.92 e 189.38

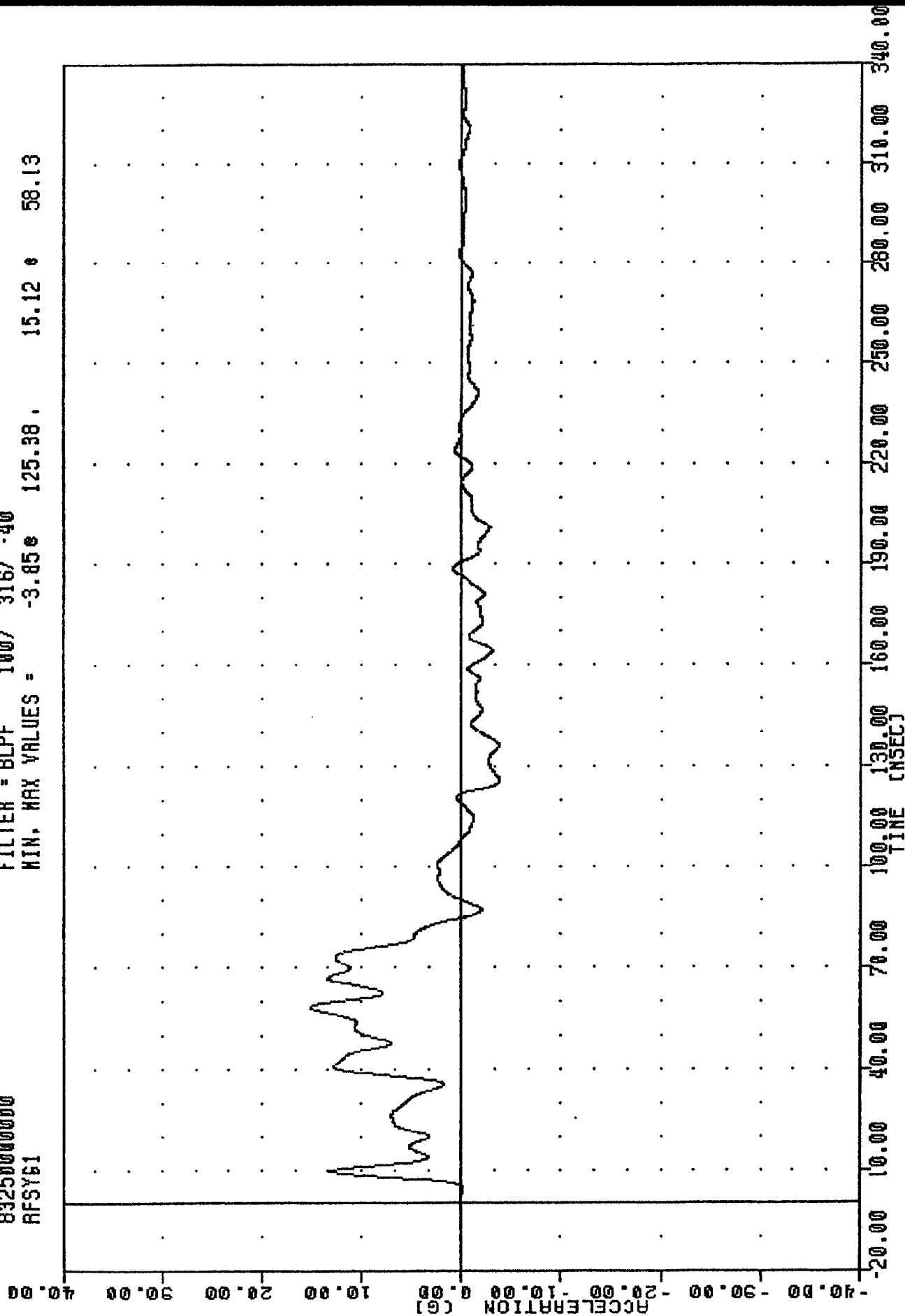


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION X AXIS

TAC
EVALUATION OF MOD VN FLEET
83250000000
AFSY61

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -3.85e 125.38, 15.12 e 58.13

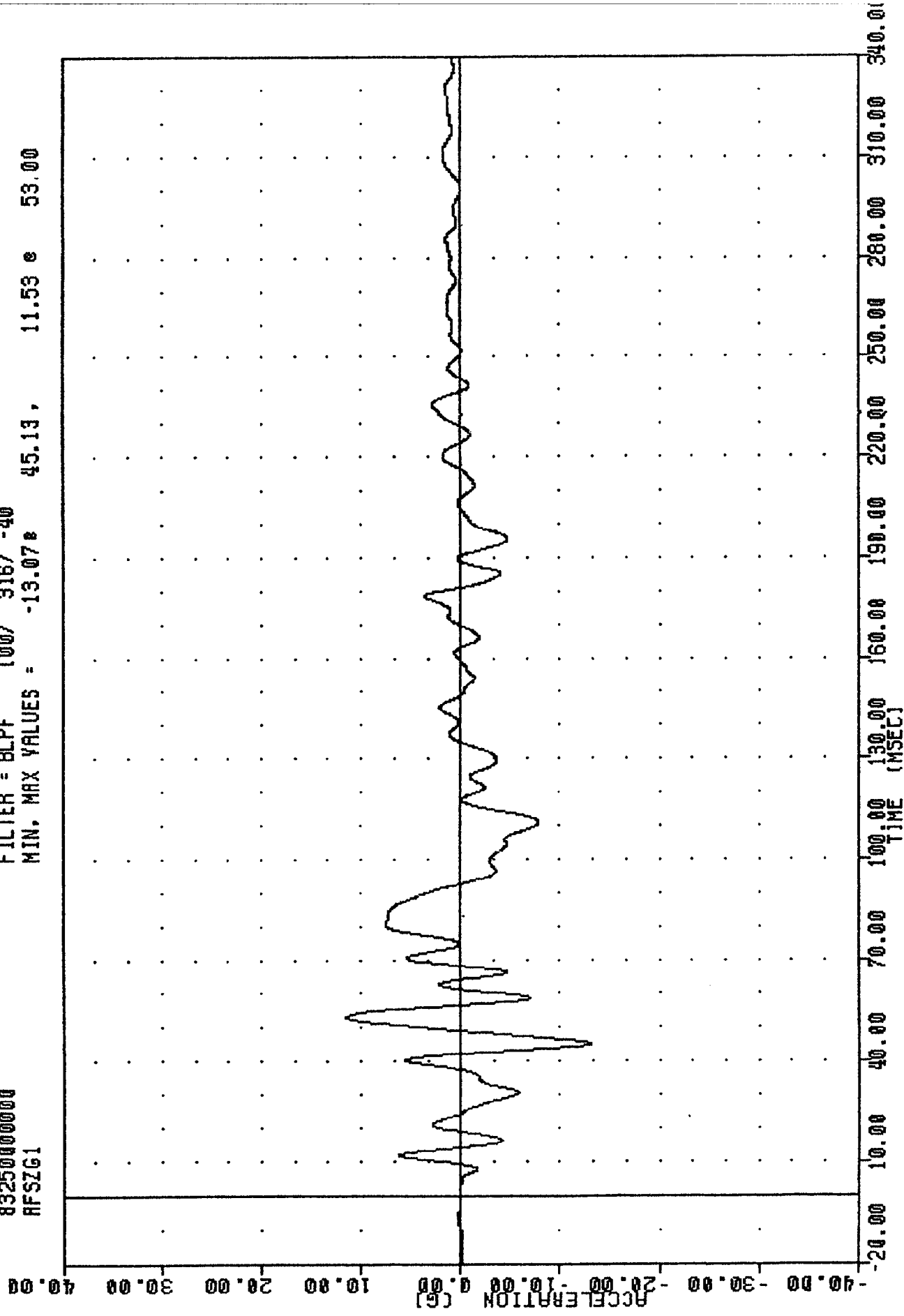


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION Y AXIS

TRC
EVALUATION OF MOD YW FLEET
83250000000
AFSG1

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -13.07e 45.13, 11.53 e 53.00



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

TRC
EVALUATION OF MDD VV FLEET
832500000000
RFSRG1

, 830907

PLOT DATE

13-SEP-83

10:47:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.05e 2.00, 17.97 e 58.38

ACCELERATION (G)

80.00

70.00

60.00

50.00

40.00

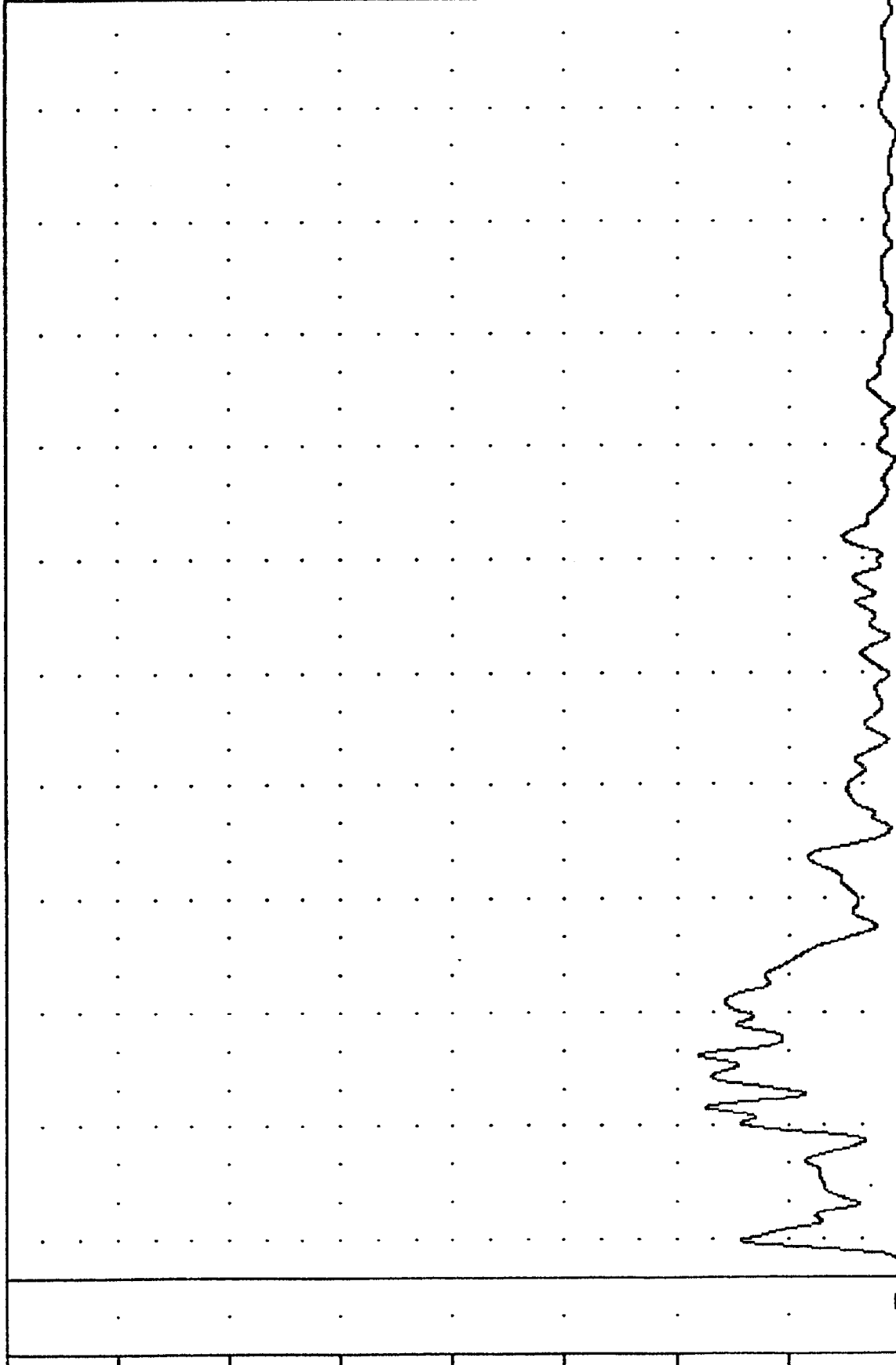
30.00

20.00

10.00

0.00

-20.00



TIME (msec)

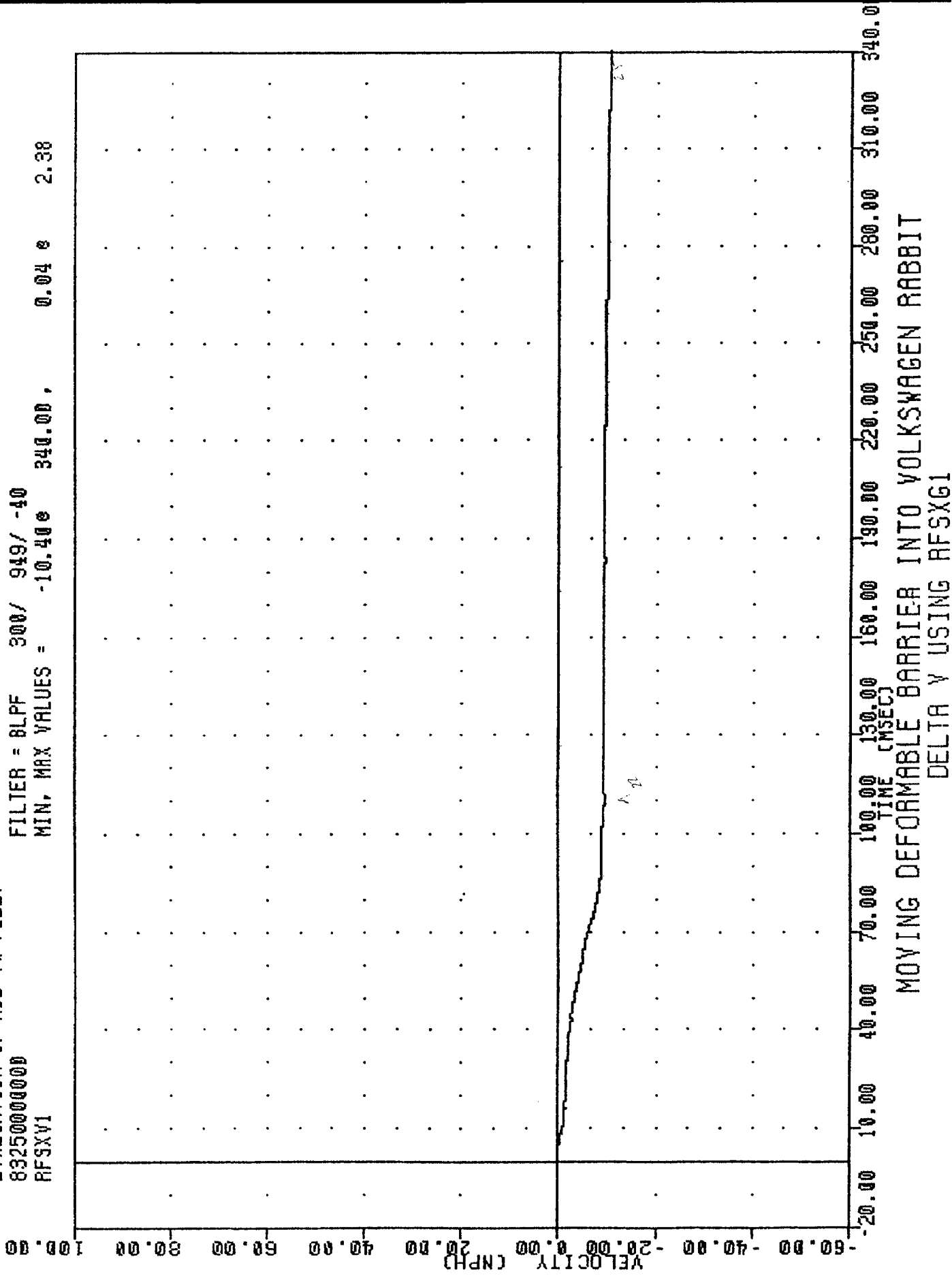
340.00 310.00 280.00 250.00 220.00 190.00 160.00 130.00 100.00 70.00 40.00 10.00 0.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL RESULTANT

TRC
EVALUATION OF MDD VW FLEET
83250000000
RFSXV1

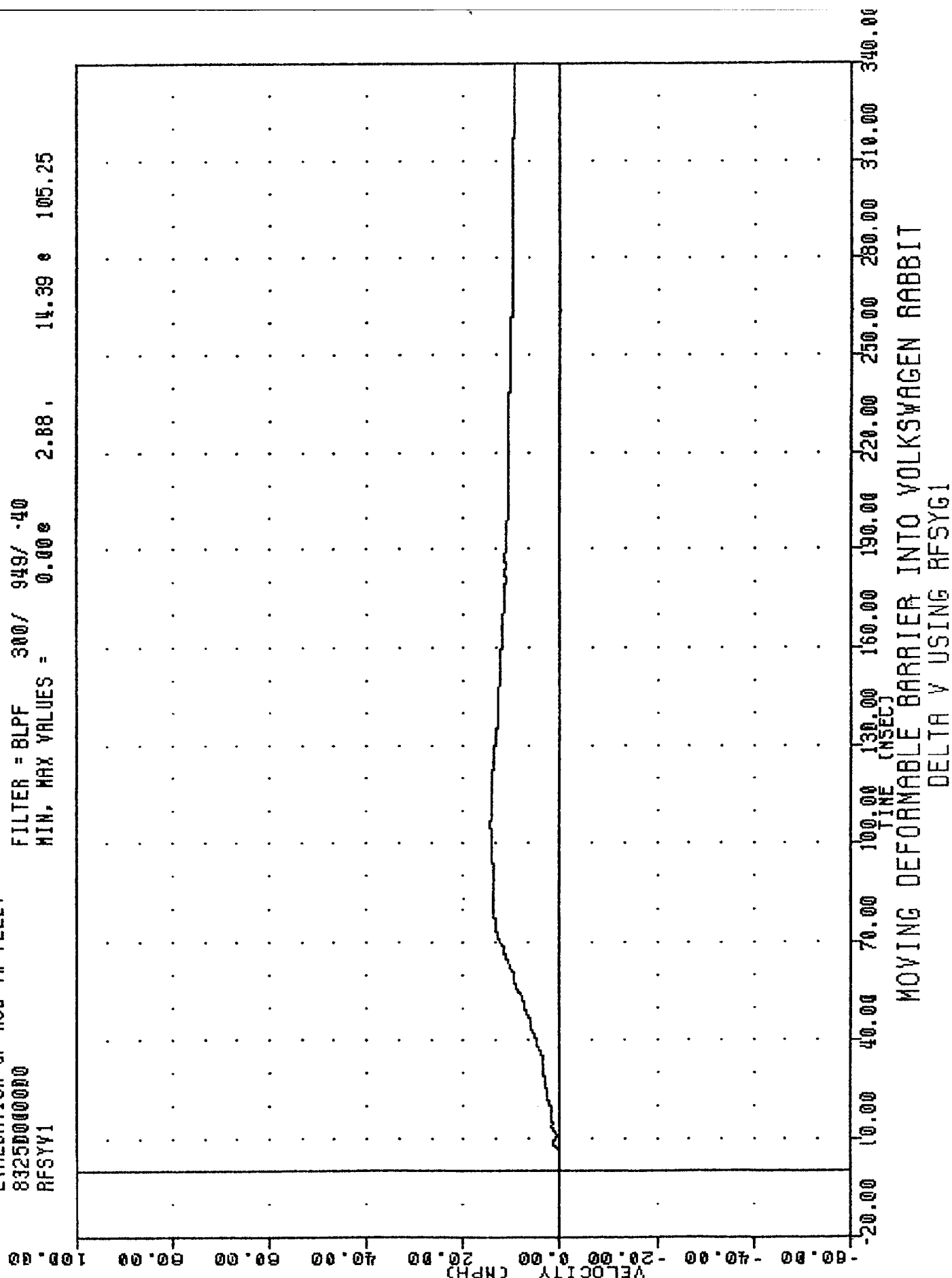
PLOT DATE 14-SEP-83 10:24:27

FILTER = 8LPF 300/ 949/ -40
MIN, MAX VALUES = -10.400 340.00, 0.040 2.38



TAC
EVALUATION OF MOD VN FLEET
83250000000
RFSYV1

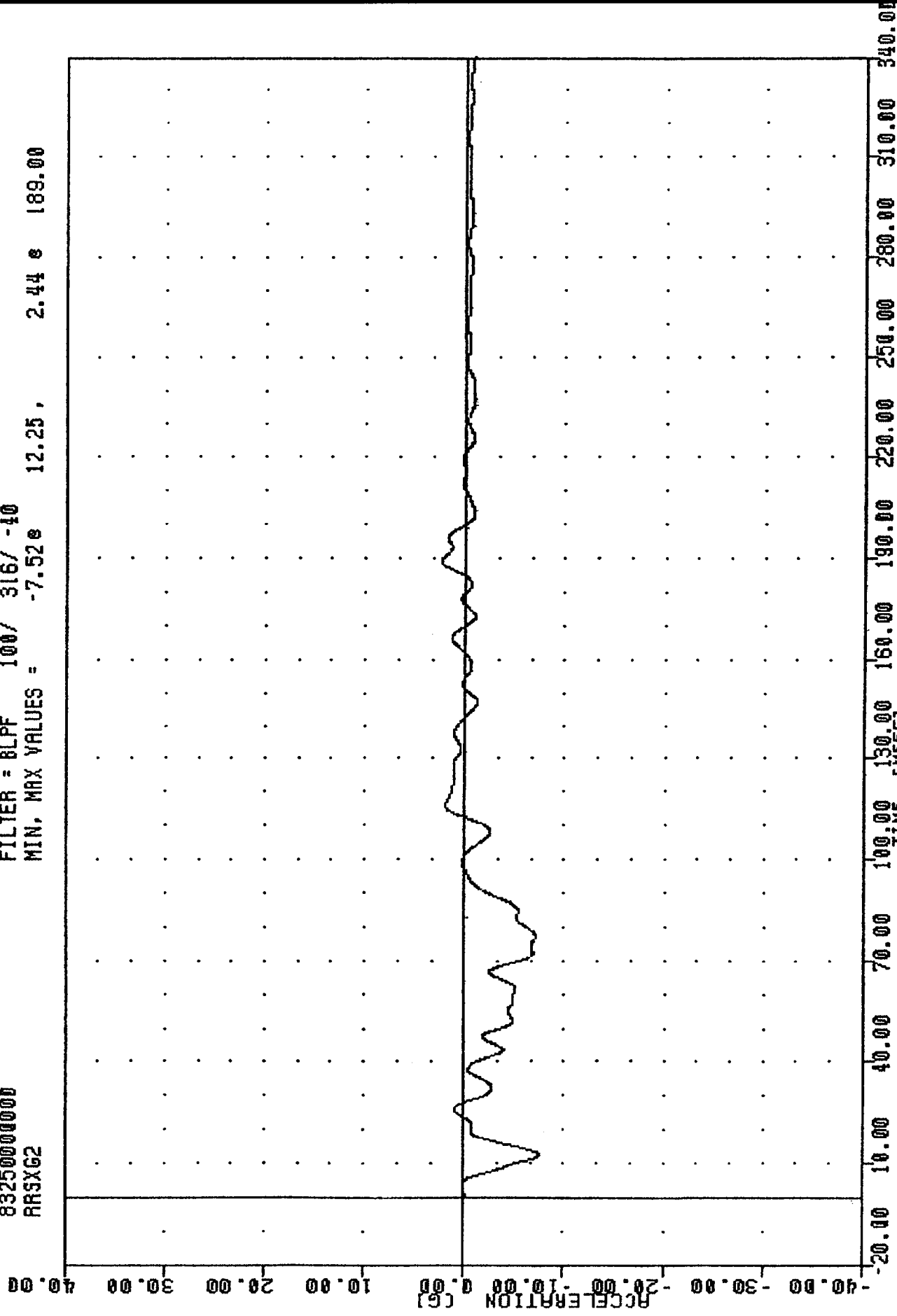
830907
14-SEP-83 10:24:27
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 0.00 2.88 14.39 105.25



TRC
 EVALUATION OF MDD VW FLEET
 832500000000
 RRSXG2

PLOT DATE 13-SEP-83 10:47:59

FILTER = 8LPF 100/ 316/ -10
 MIN, MAX VALUES = -7.52e 12.25, 2.44 e 189.00



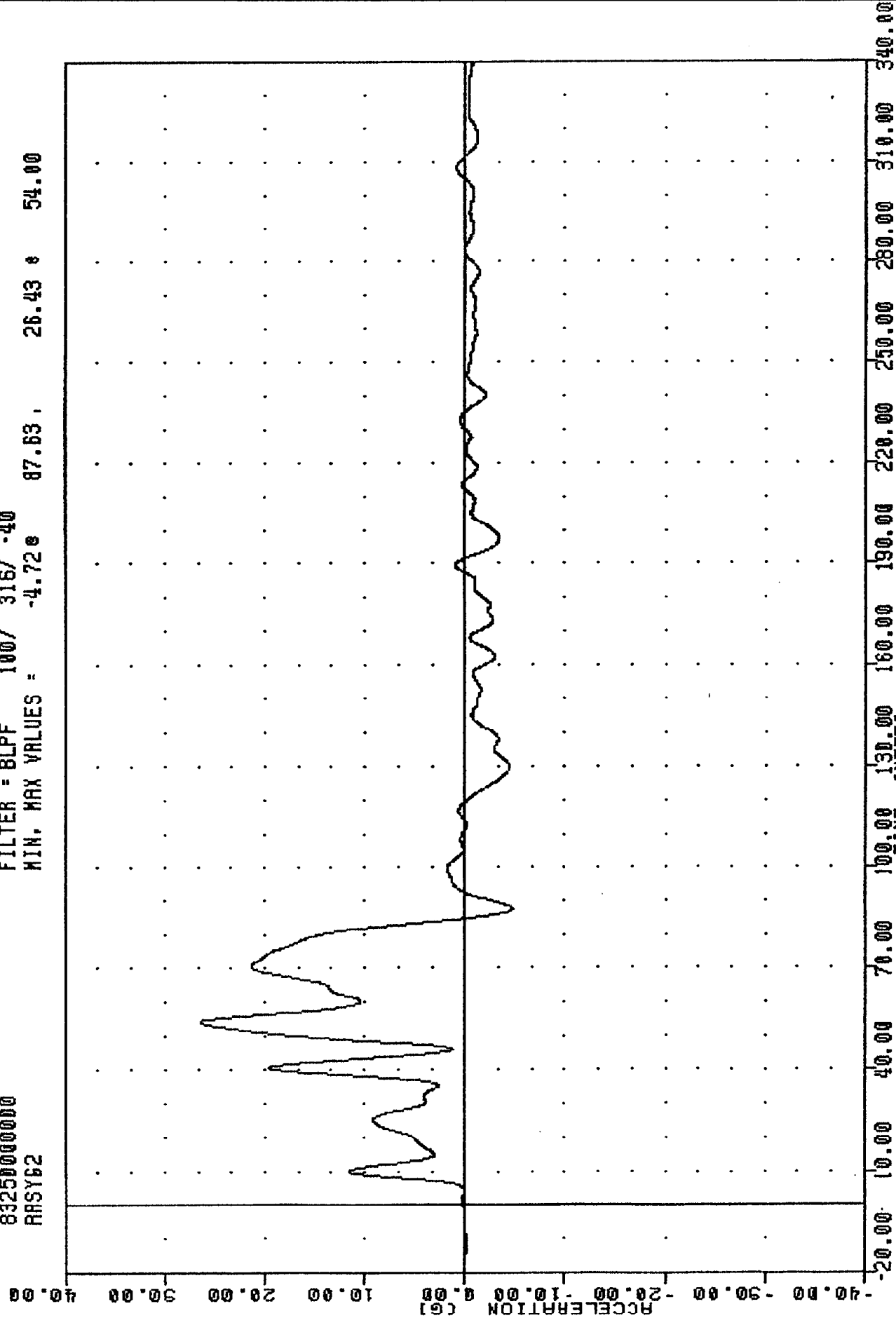
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT REAR SILL ACCELERATION X AXIS

TRC , 830907
EVALUATION OF MOD YW FLEET
83250000000
RRSY62

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40

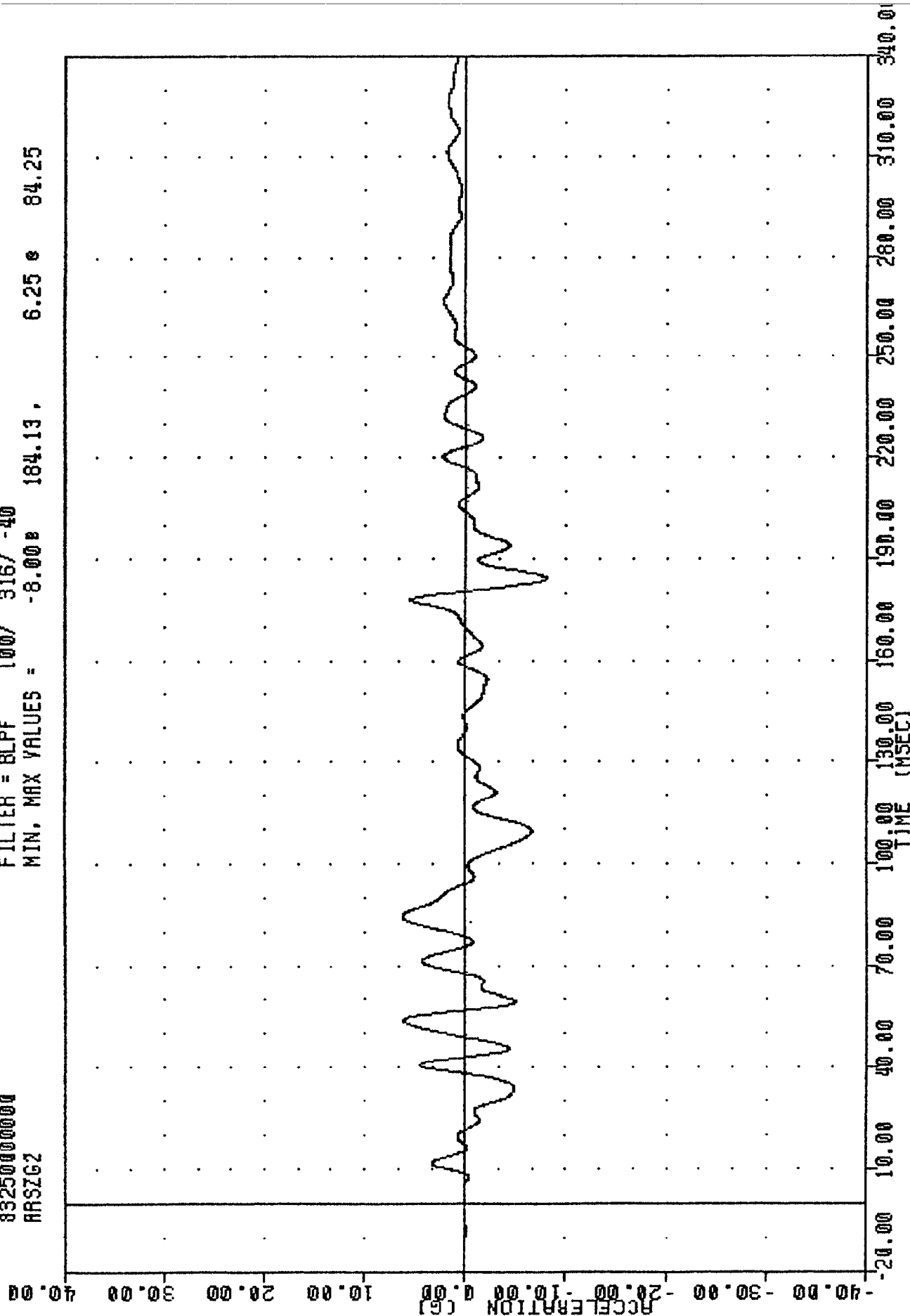
MIN, MAX VALUES = -4.72 87.63 , 26.43 54.00



TRC
EVALUATION OF MOD YW FLEET
832500000000
ARSZG2

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -8.00 184.13, 6.25 84.25



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

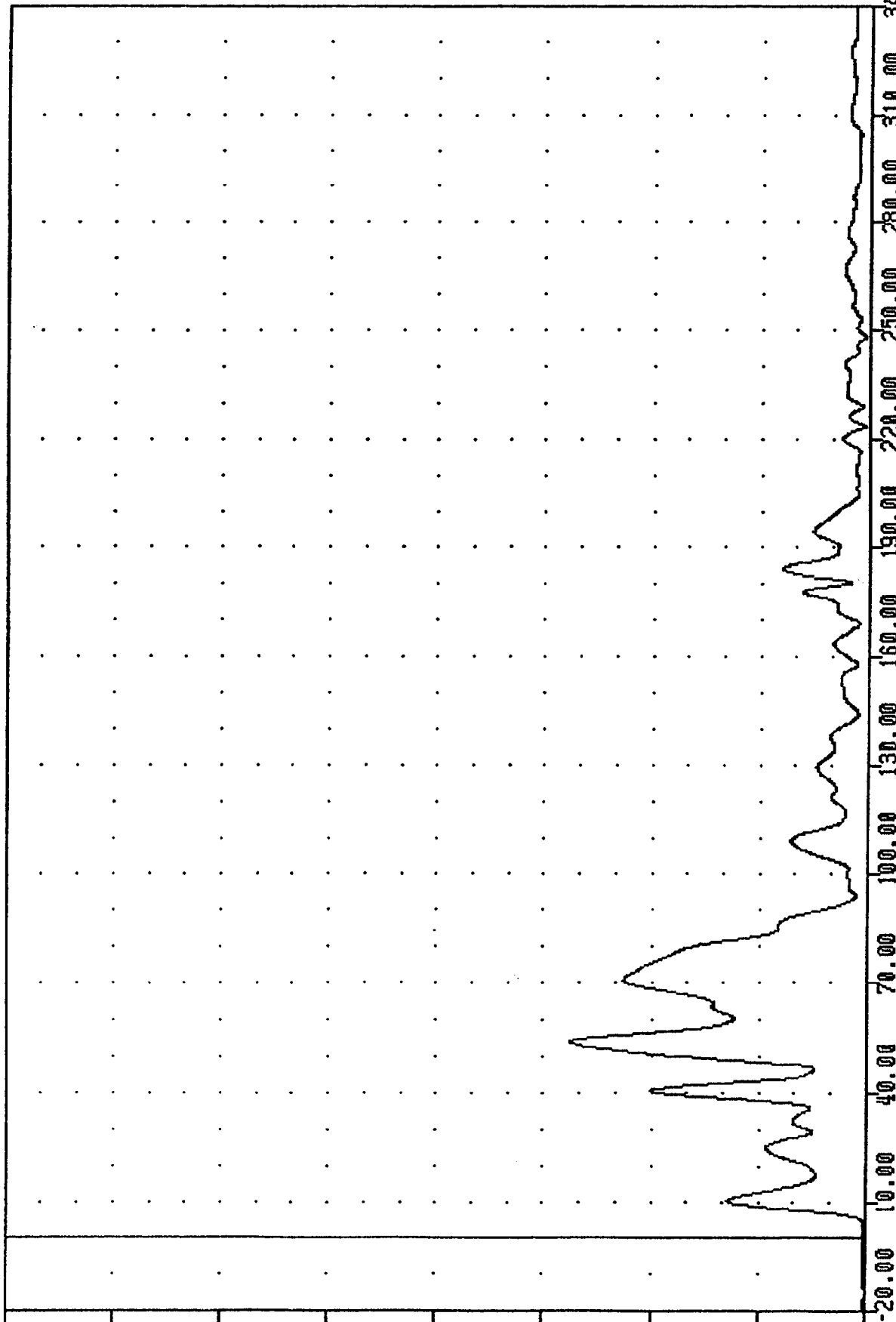
TRC
EVALUATION OF MOD VN FLEET
83250000000
RRSR62

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.05e -15.00, 27.49 e 53.88

ACCELERATION (G)



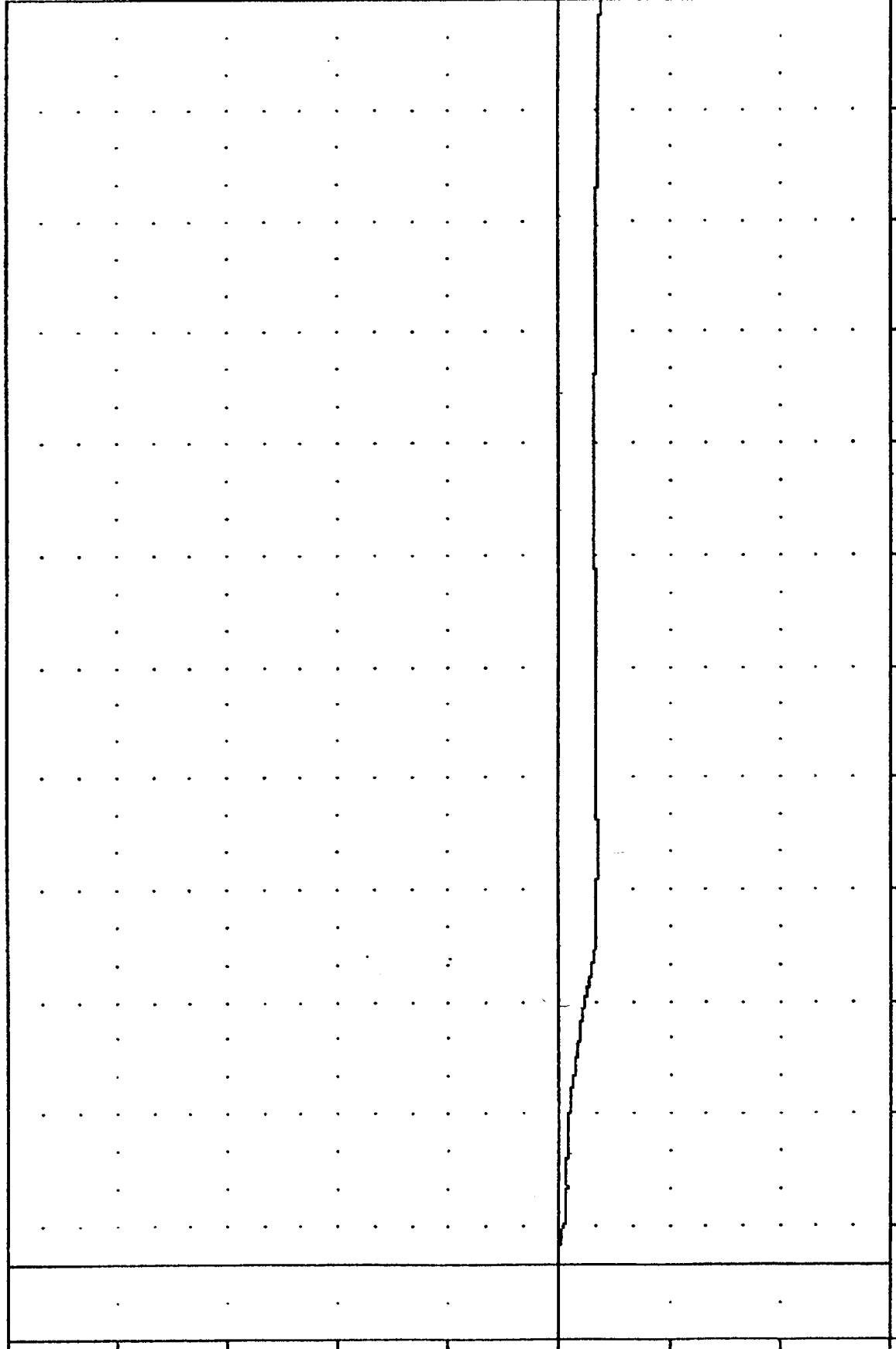
MOVING DEFORMABLE BARRIER- INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR STIFF RESISTANT

TRC
EVALUATION OF MOD VV FLEET
832500000000
RRSXV2

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -7.32e 340.00 . 0.02 e 2.50

VELOCITY (MPH)



TIME (msec)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RRSXG2

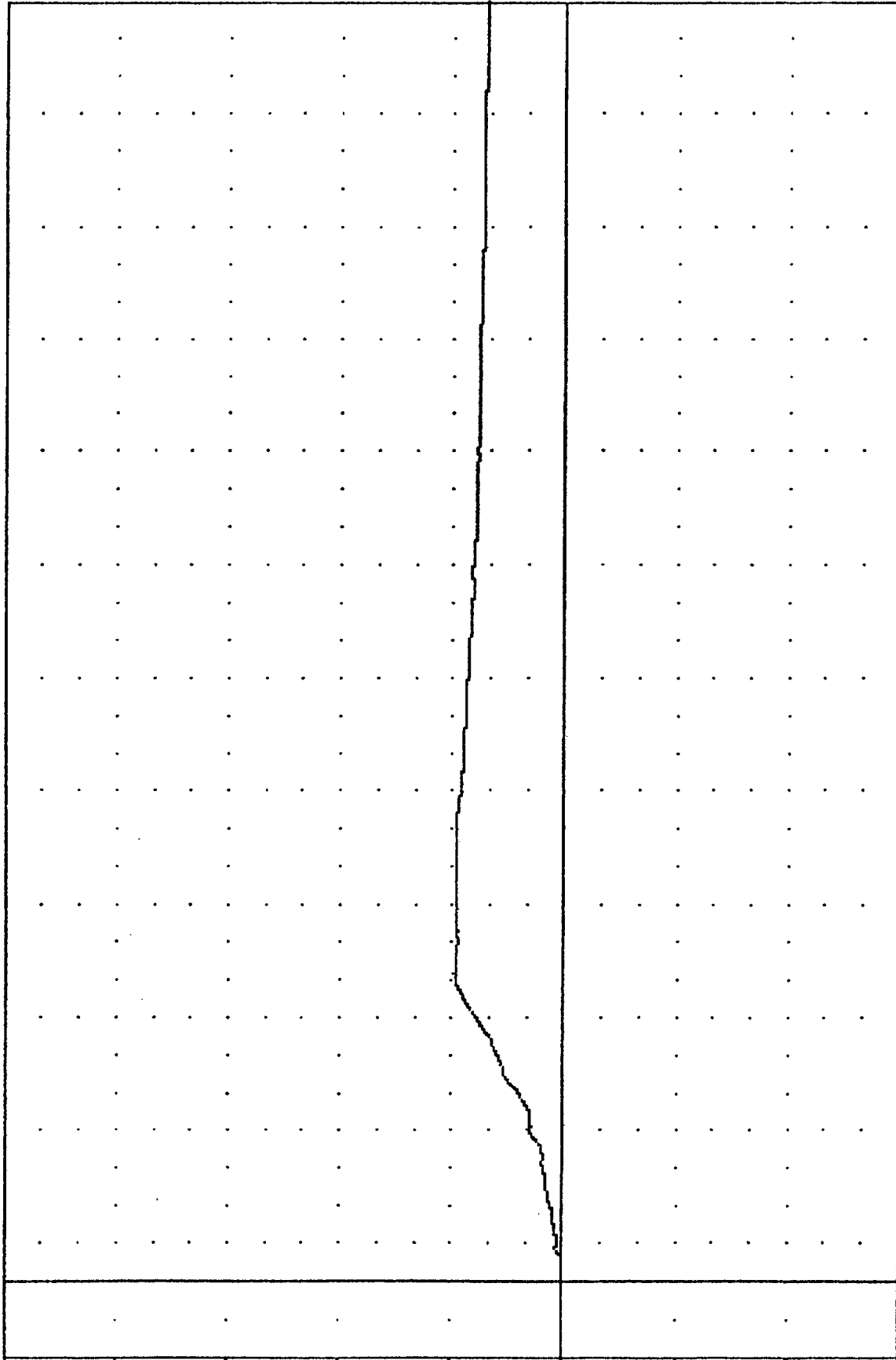
TRC , 830907
 EVALUATION OF MOD VW FLEET
 83250000000
 RRSYV2

PLOT DATE 14-SEP-83 10:24:27

FILTER = 8LPF 300/ 949/ -40
 MIN, MAX VALUES = -0.01e -11.88, 19.44 e 80.88

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

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

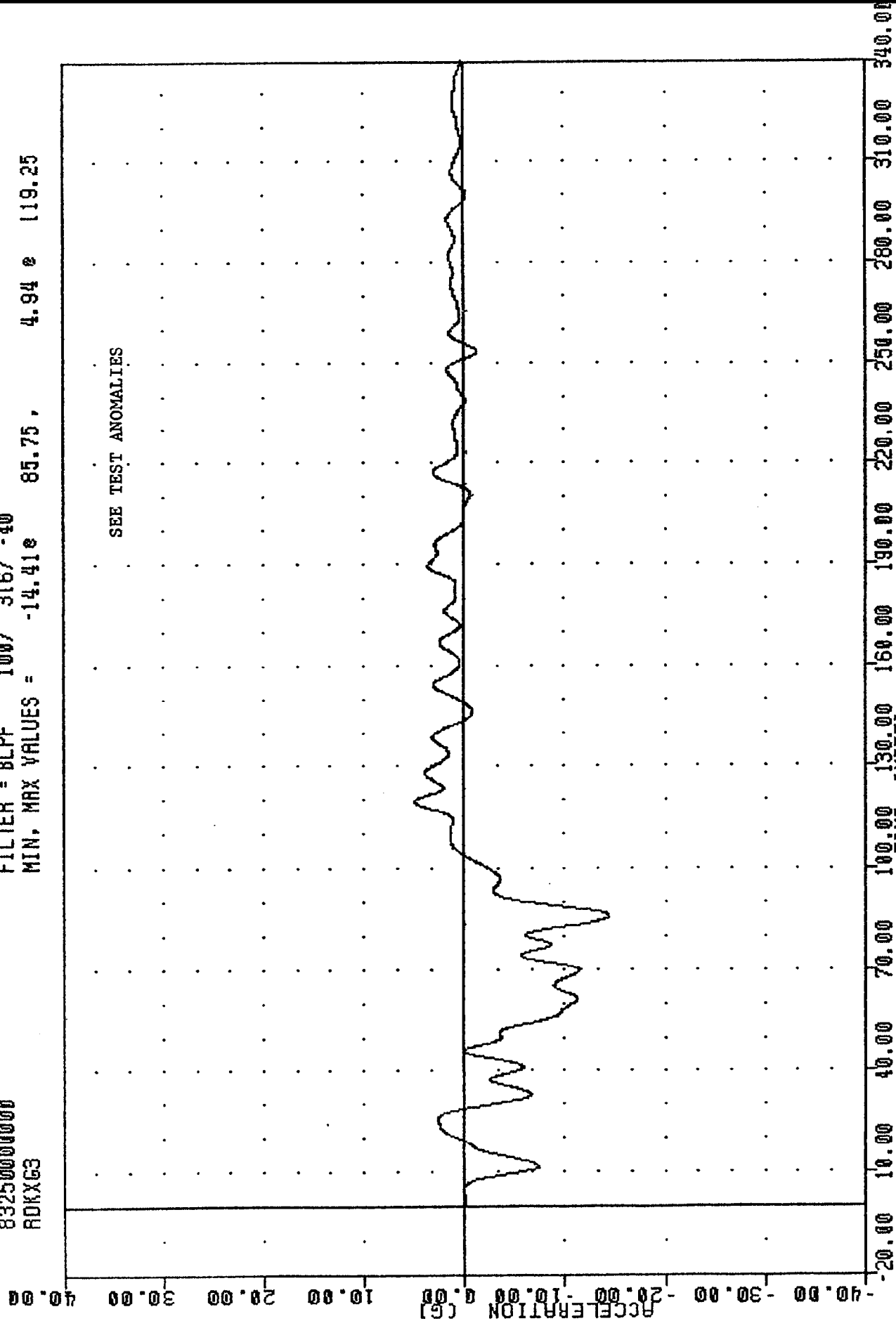
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRSYG2

TRC
EVALUATION OF MDD YW FLEET
832500000000
ADKXG3

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -14.41e 85.75, 4.94 e 119.25



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

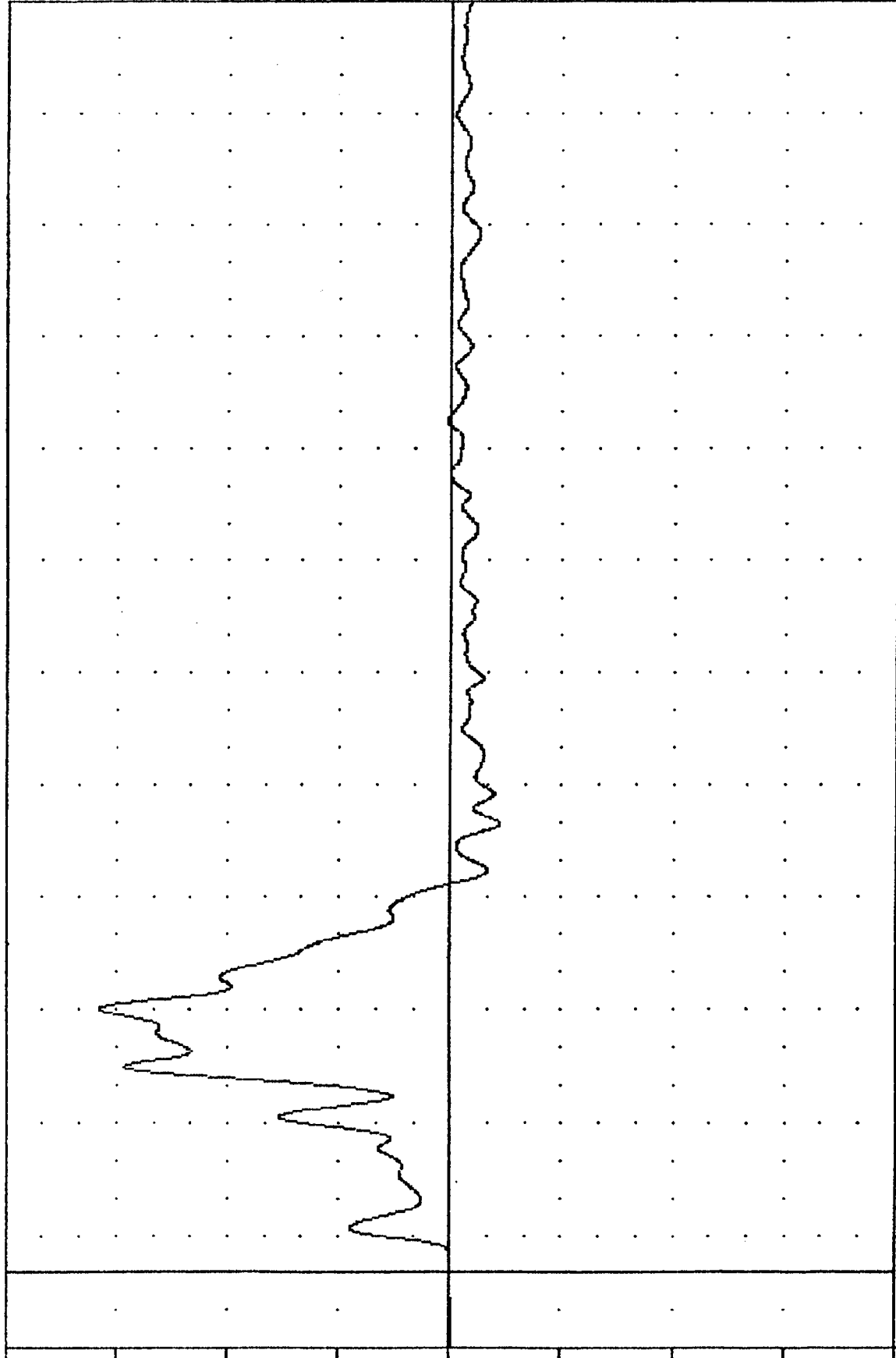
TAC , 830907
EVALUATION OF MOD YW FLEET
83250000000
R0KY63

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -4.44e 119.38 , 31.54 e 70.00

ACCELERATION (G)

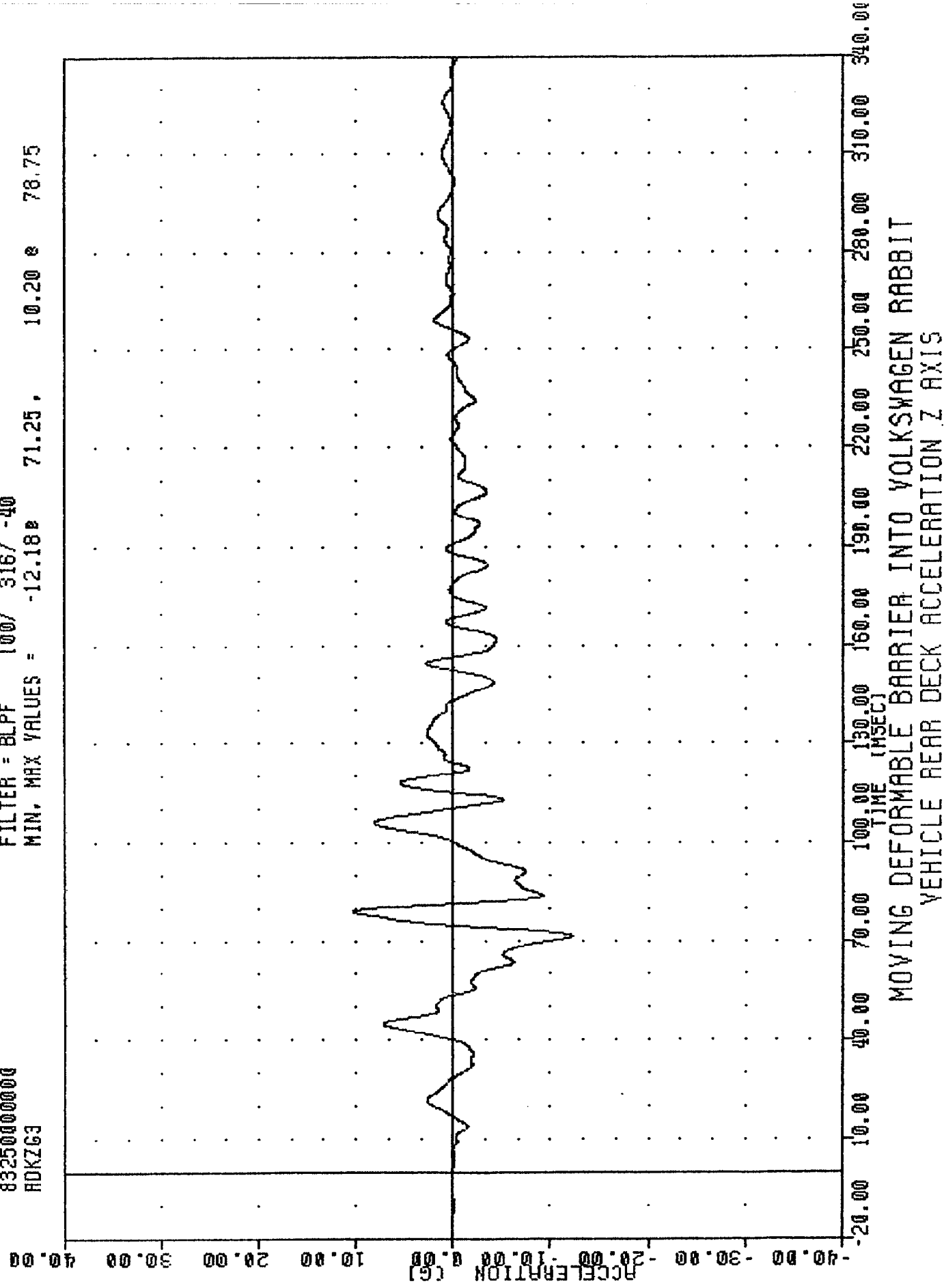


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION Y AXIS

TRC
EVALUATION OF MOD YW FLEET
83250000000
RDKZG3

PLOT DATE 13-SEP-83 10:47:59

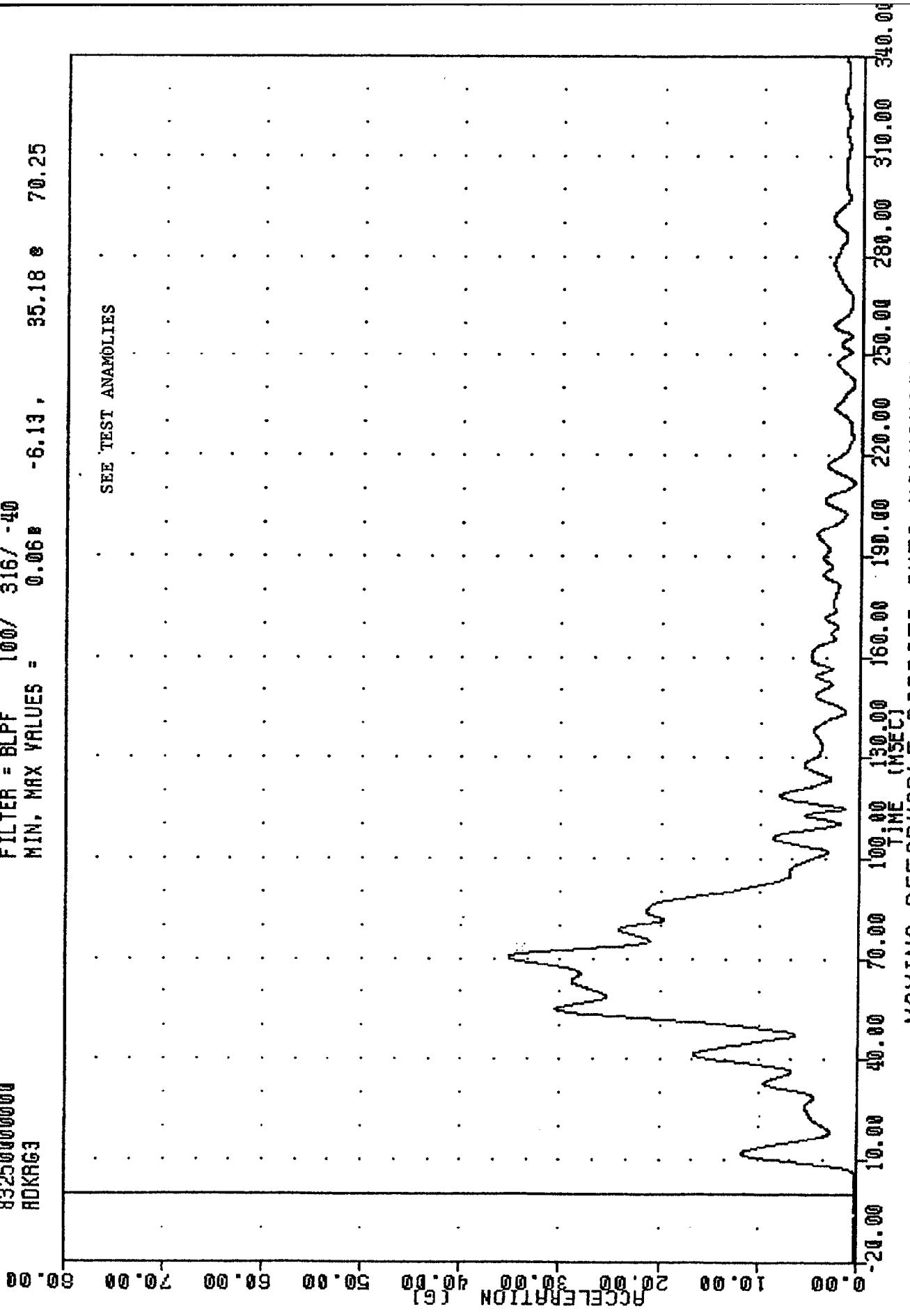
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -12.18 71.25, 10.20 78.75



TRC
EVALUATION OF MOD YW FLEET
83250000000
ADKRG3

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = 0.06 35.18 70.25



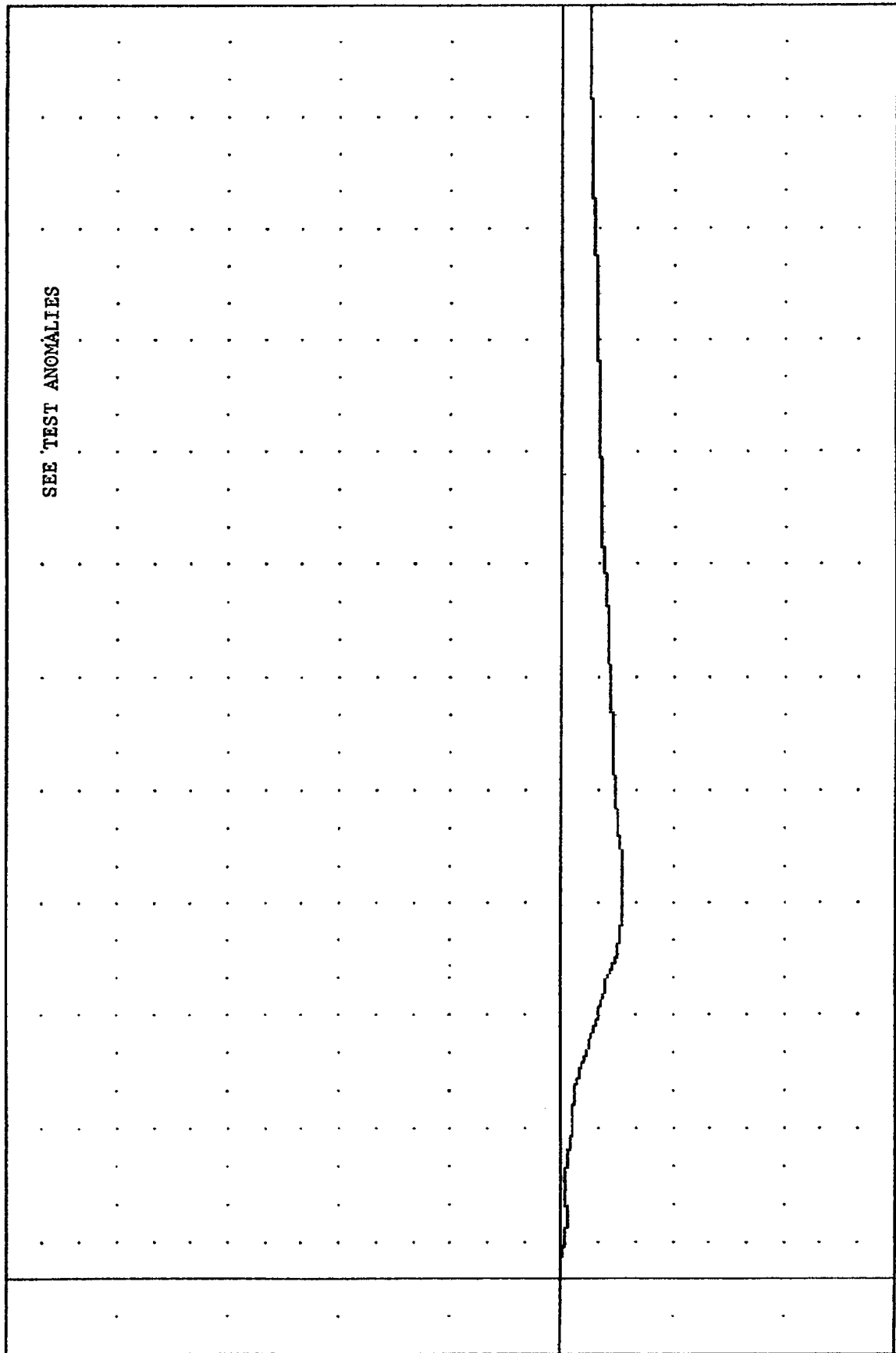
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK RESULTANT

TRC , 830907
 EVALUATION OF MOD VV FLEET
 832500000000
 RDKXY3

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -10.98 100.50 , 0.02 -2.63

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



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

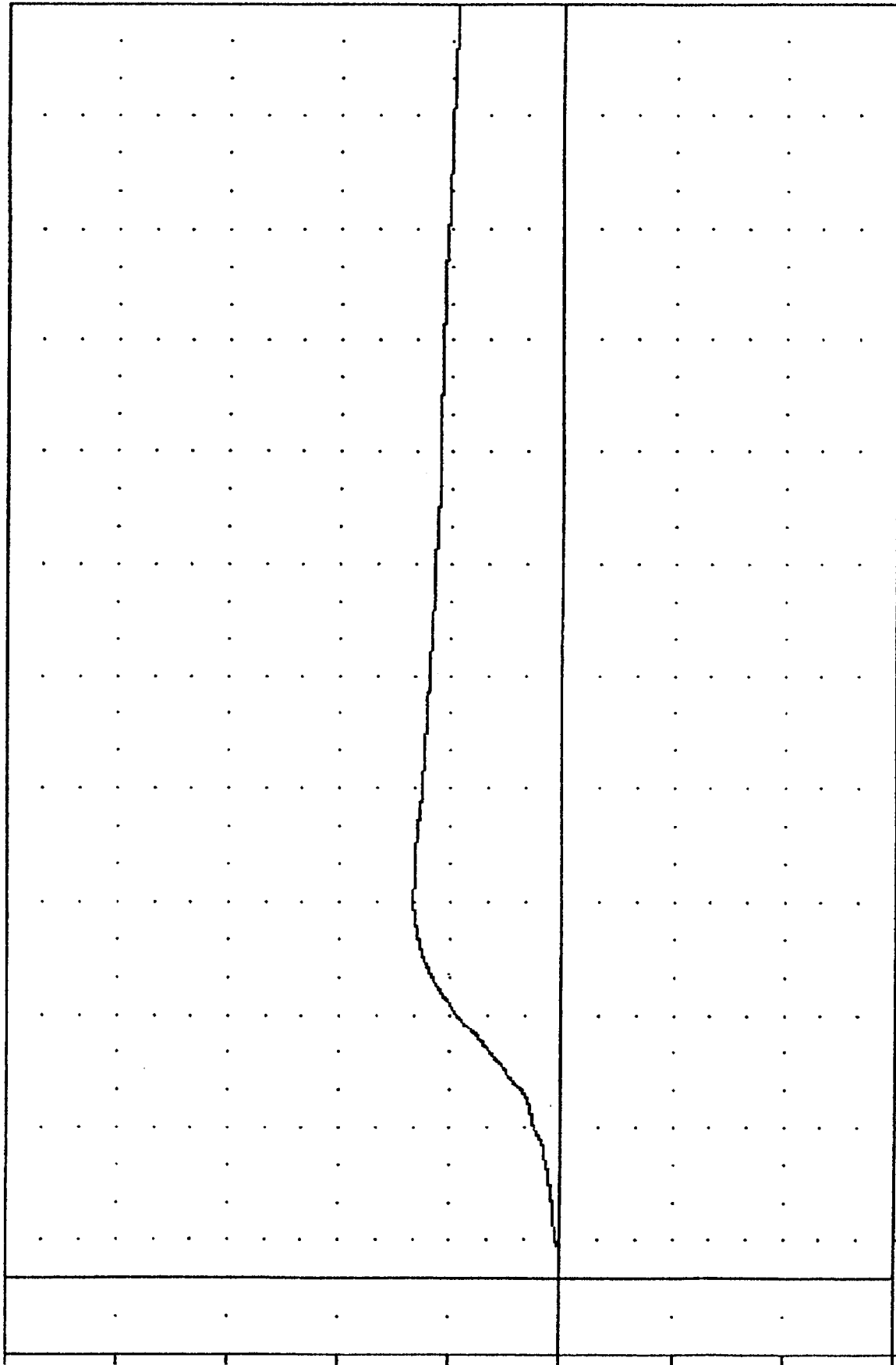
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RDKXG3

TAC
EVALUATION OF MOD YW FLEET
8325000000
ADKYV3

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -0.038 -8.63 26.85 e 100.75

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

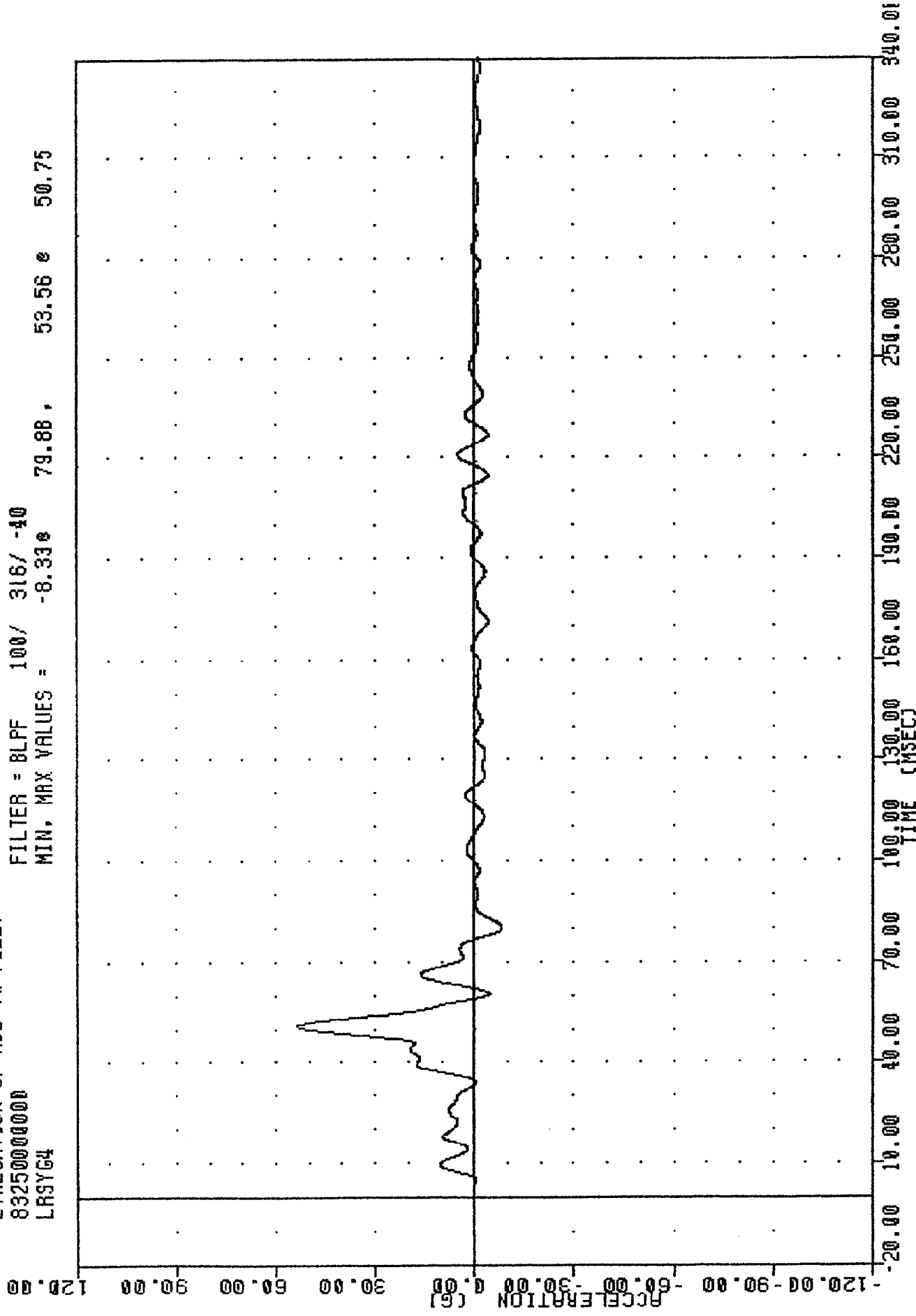
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING ADKYG3

TRC
EVALUATION OF MDD YW FLEET
832500000000
LR3YG4

PLOT DATE 13-SEP-83 10:47:59

FILTER = 8LPF 100/ 316/ -40
MIN, MAX VALUES = -8.33e 79.88, 53.56 e 50.75

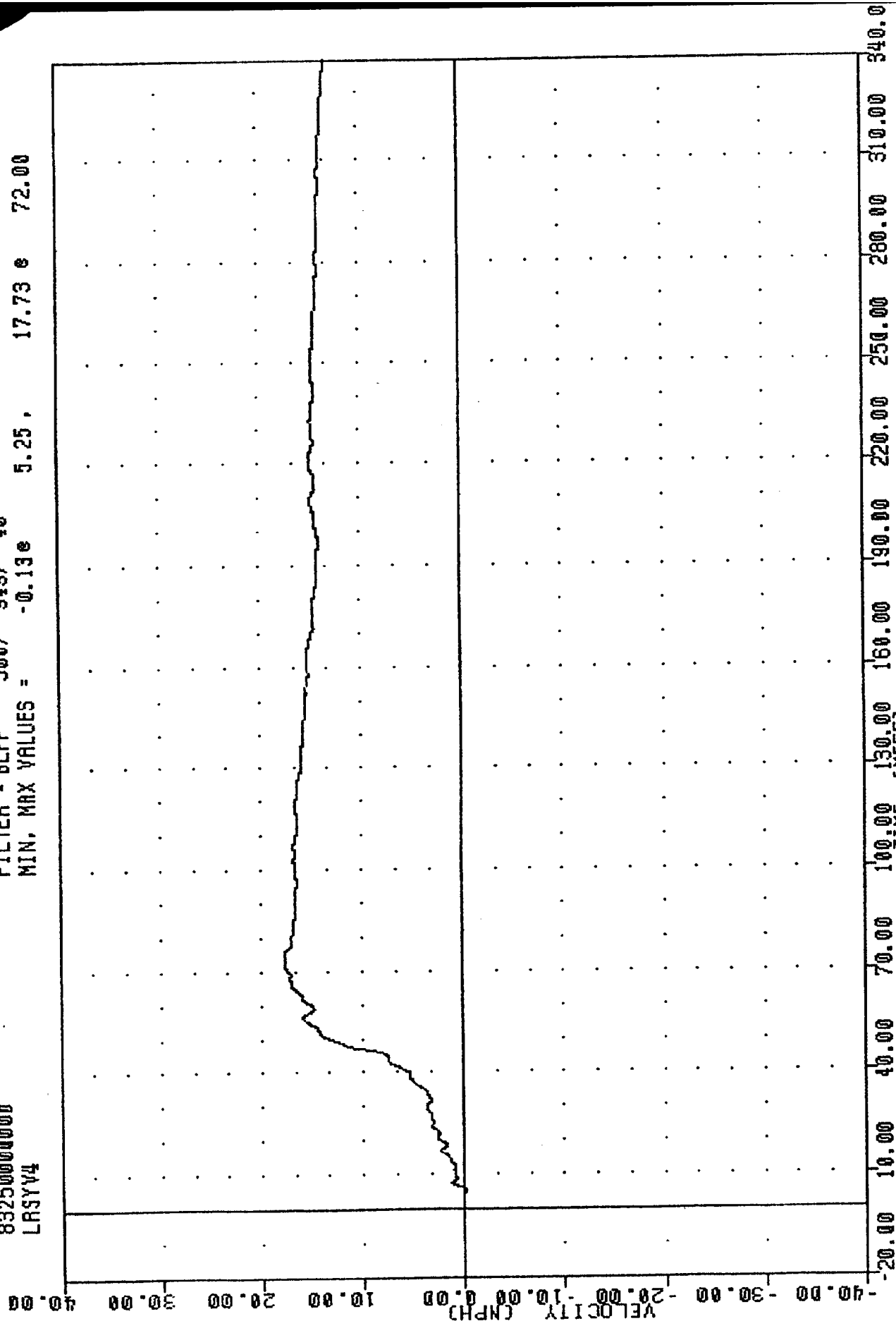


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT REAR SILL ACCELERATION Y AXIS

TRC
EVALUATION OF MDD VW FLEET
832500000000
LRSYV4

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -10
MIN, MAX VALUES = -0.13e 5.25, 17.73 e 72.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LRSYV4

TAC , 830907
EVALUATION OF MOD VV FLEET
83250000000
LFSY65

PLOT DATE 13-SEP-83 10:47:59

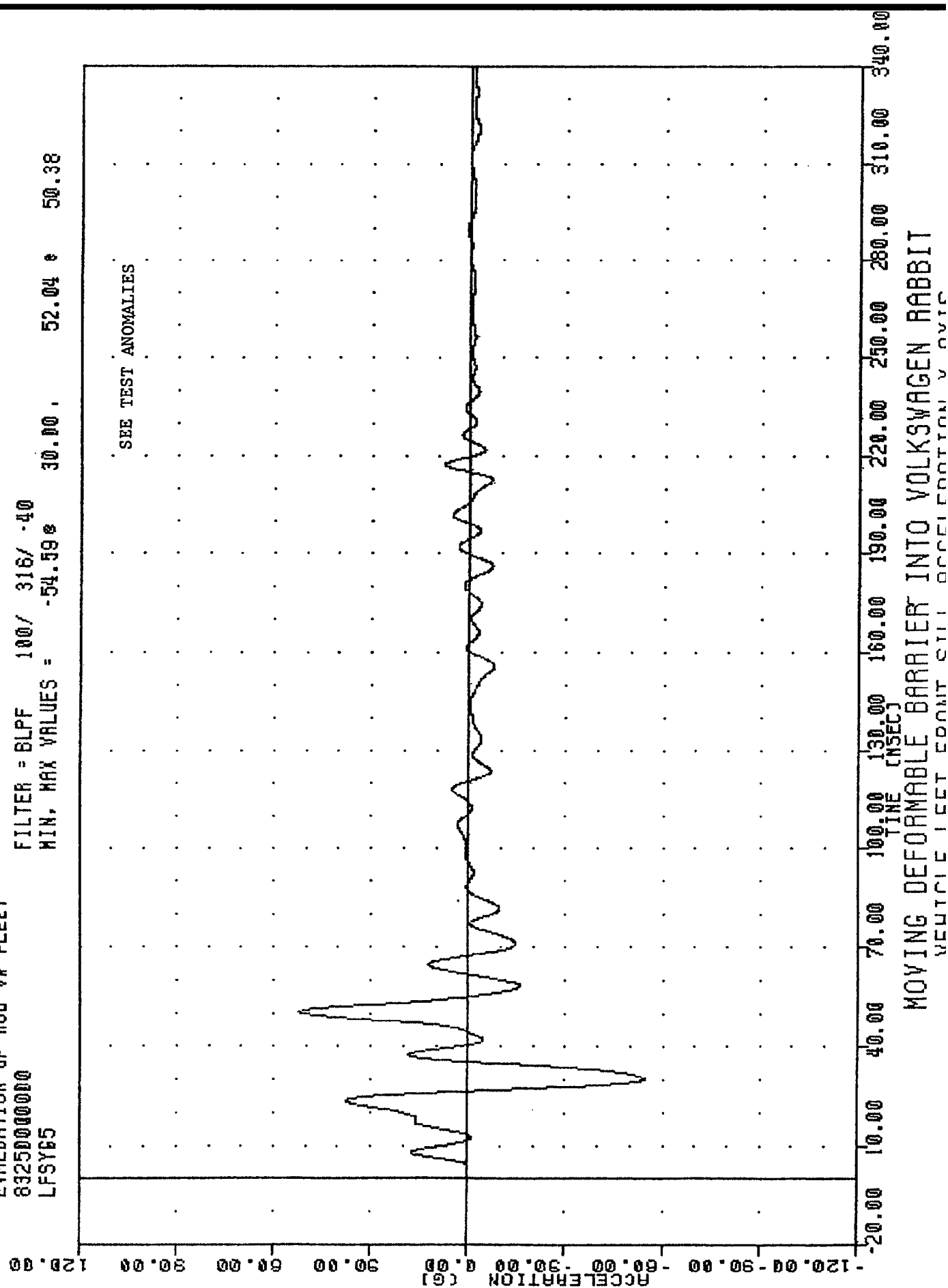
FILTER = BLPF

100/ 316/ -40

MIN, MAX VALUES =

-54.59 30.00

52.04 50.38



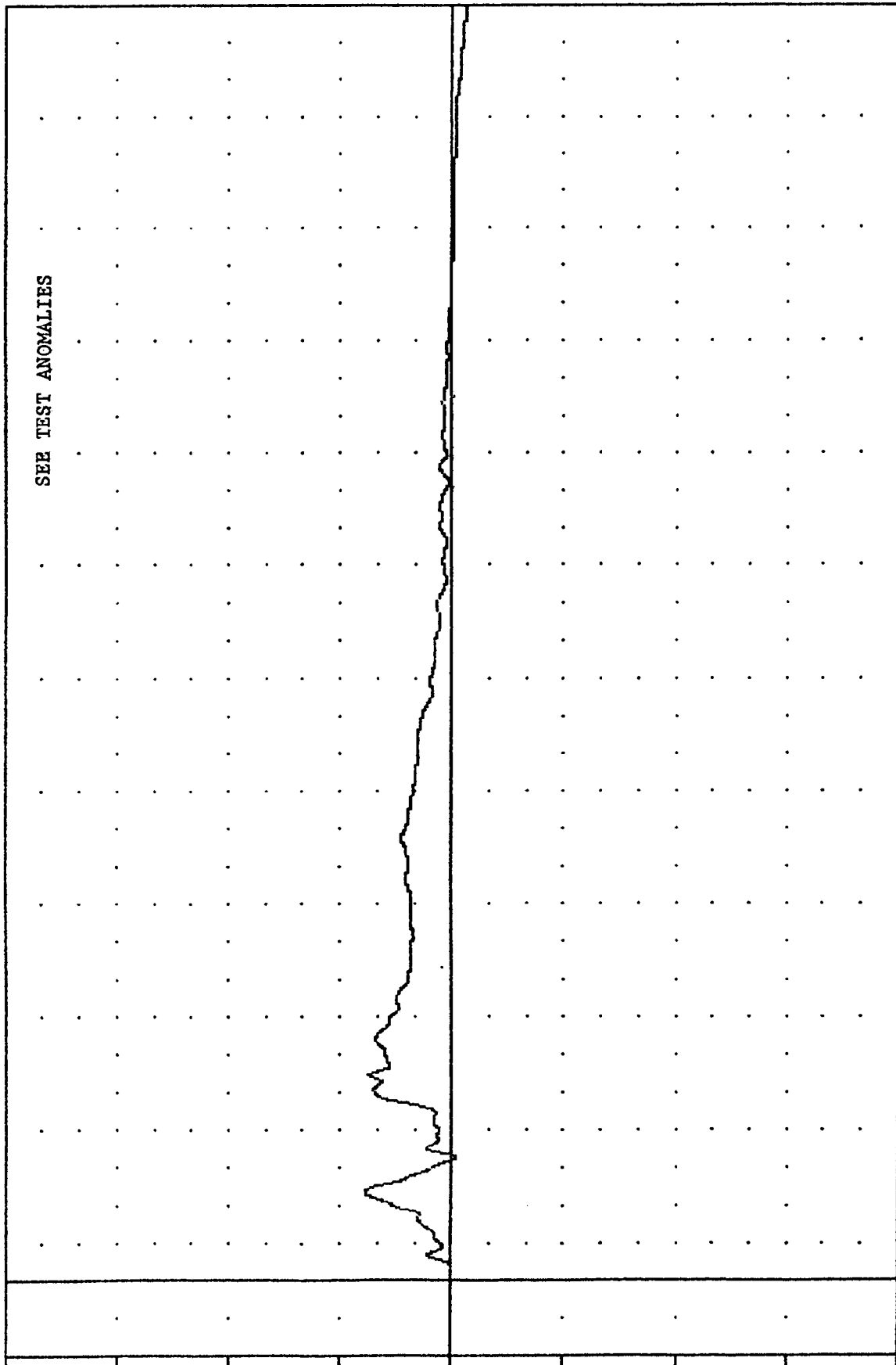
TRC , 830907
 EVALUATION OF MOD VN FLEET
 83250000000
 LFSY75

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -1.16e 338.63, 7.78 e 23.00

40.00
 30.00
 20.00
 10.00
 0.00
 -10.00
 -20.00
 -30.00
 -40.00
 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 (NSEC)

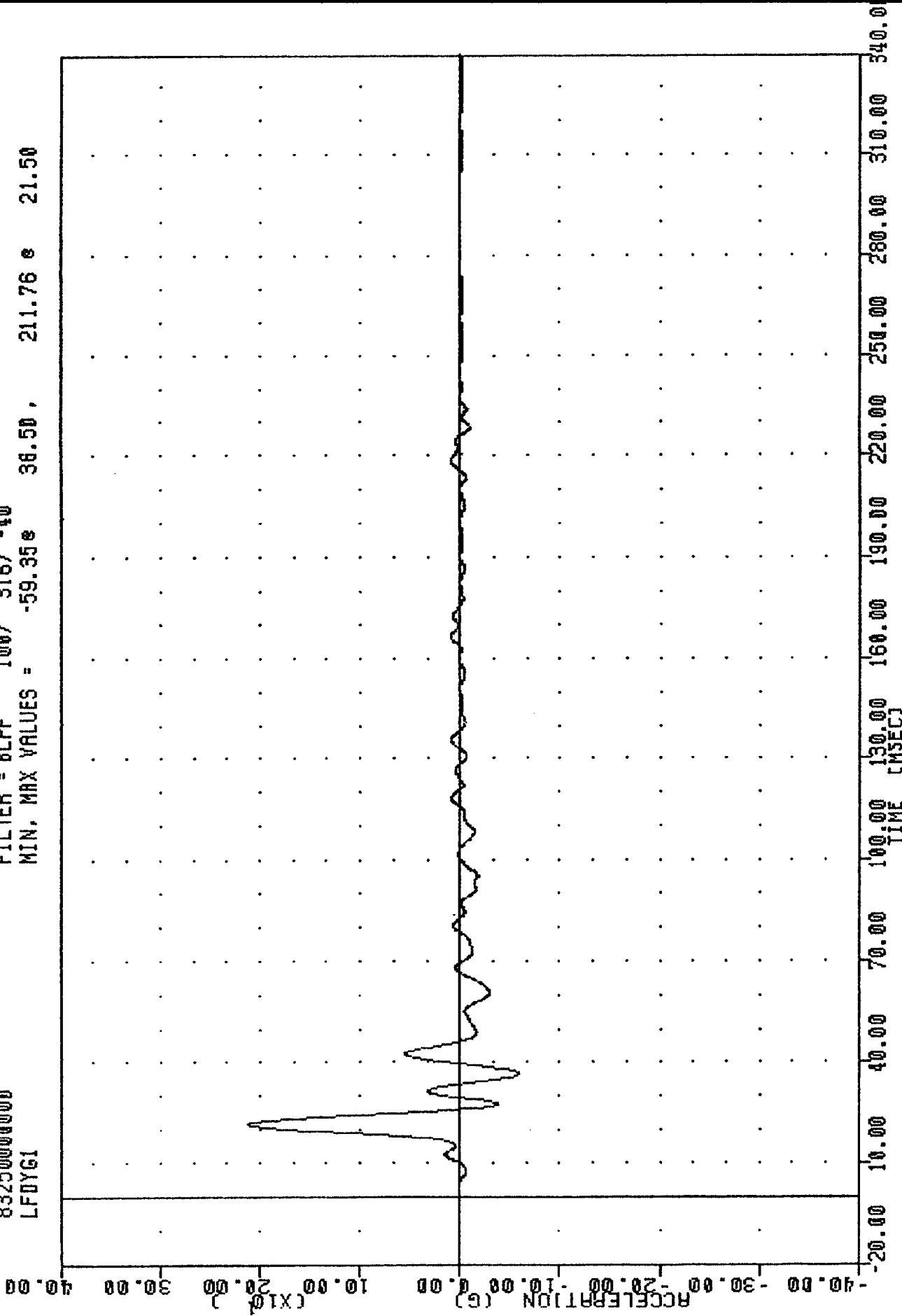
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V DURING TEST

TRC , 830907
 EVALUATION OF MDD VV FLEET
 832500000000
 LFDYGI

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -59.35e 38.50, 211.76 e 21.50



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

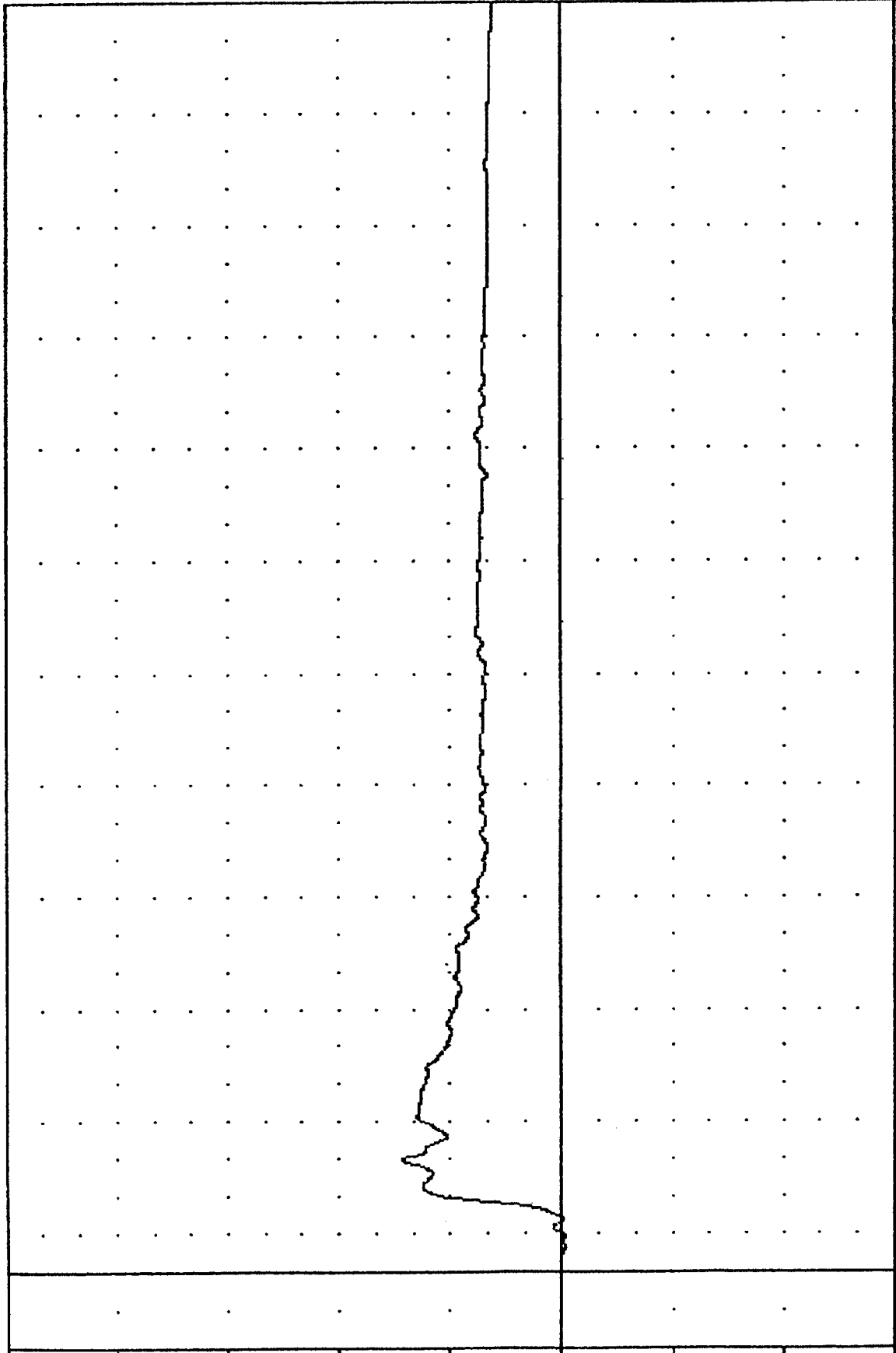
TRC , 830907
 EVALUATION OF MOD YW FLEET
 8325000000
 LFDYV1

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.68 6.25, 28.76 29.63

VELOCITY (MPH)



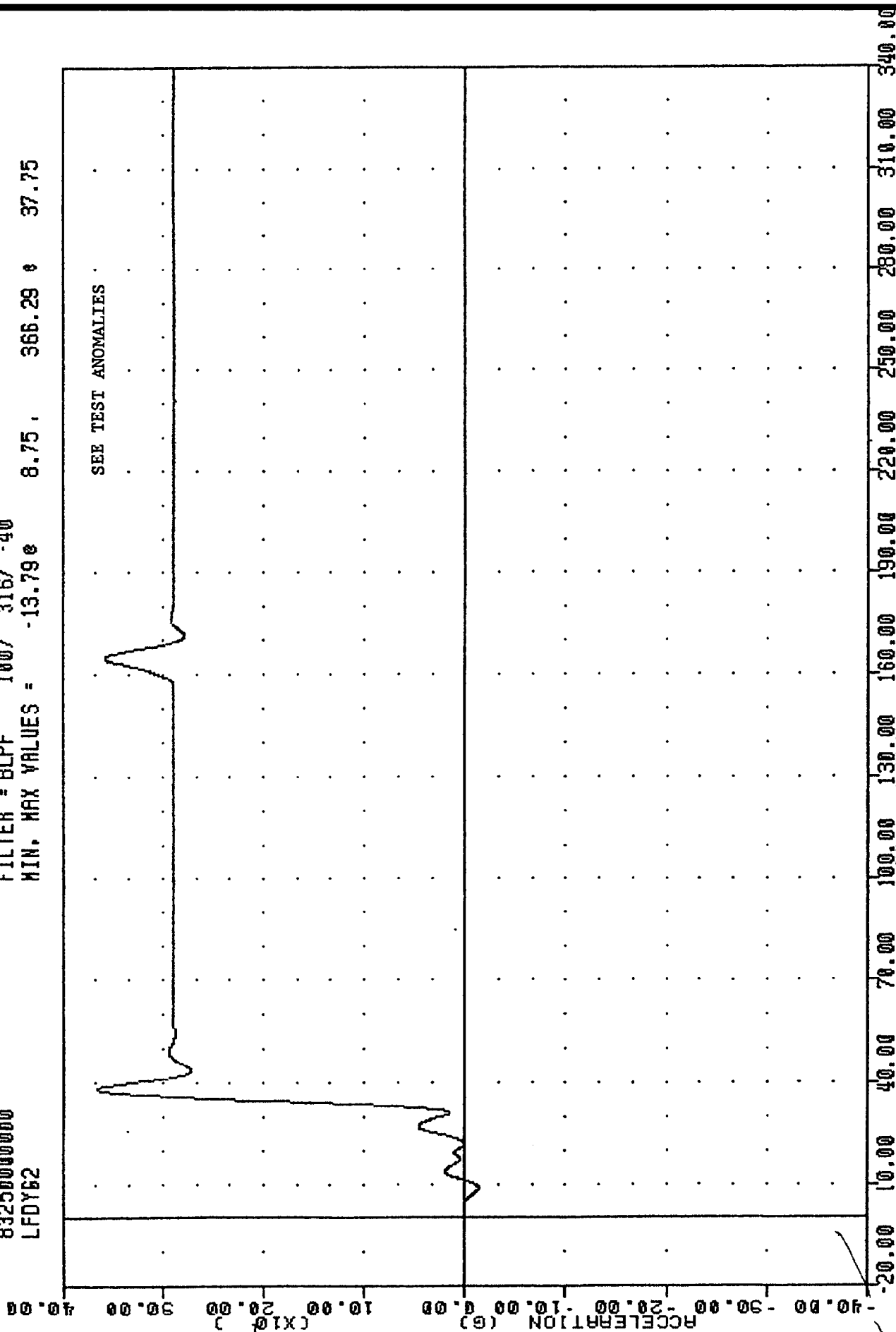
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LFDYGI

TAC , 830907
 EVALUATION OF MOD VN FLEET
 83250000000
 LFDY62

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -13.79 8.75, 366.29 37.75

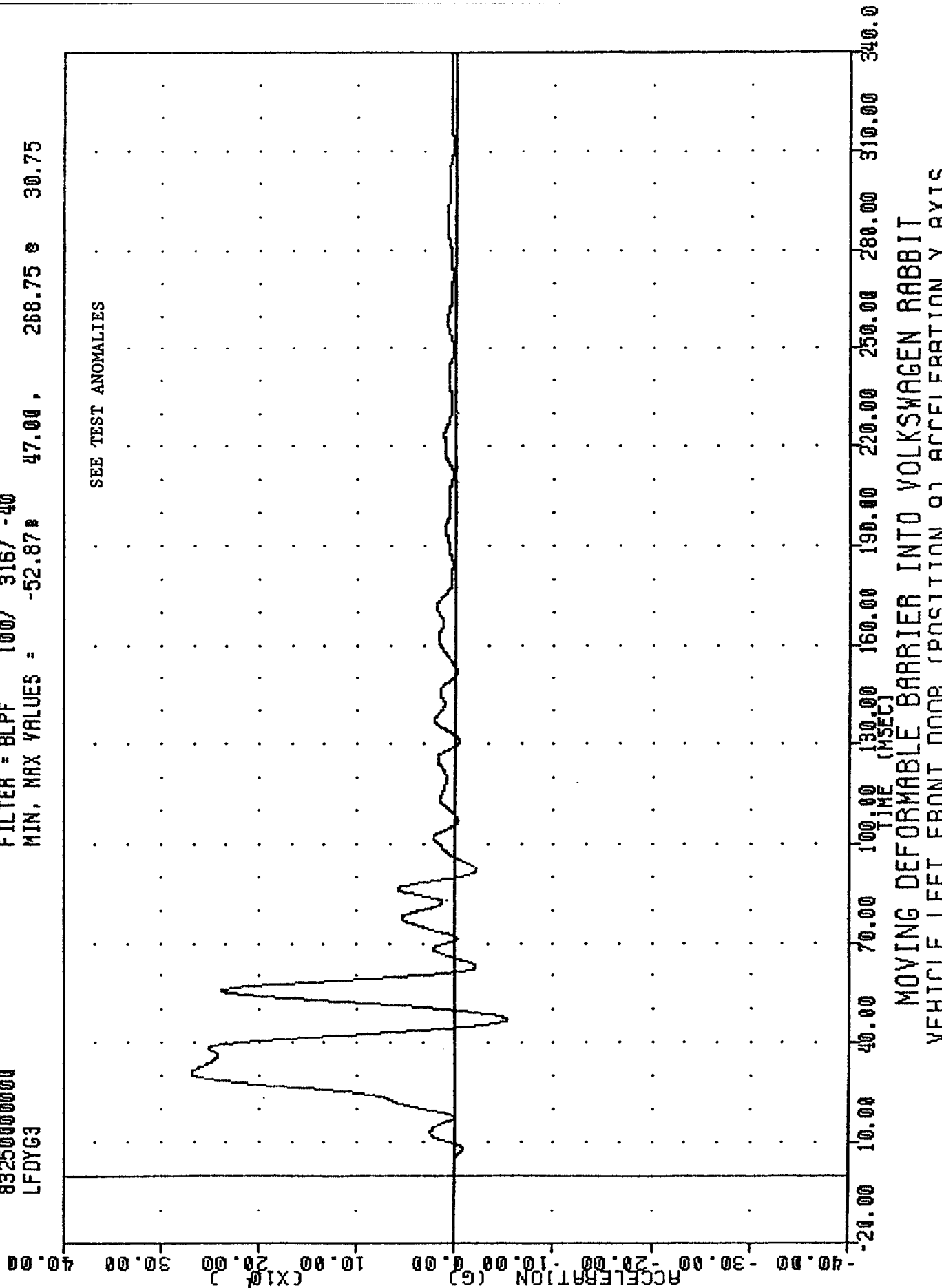


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT RAMP POSITION 81 ACCELERATION Y AXIS

TRC , 830907
 EVALUATION OF MOD VV FLEET
 83250000000
 LFDY63

PLOT DATE 13-SEP-83 10:47:59

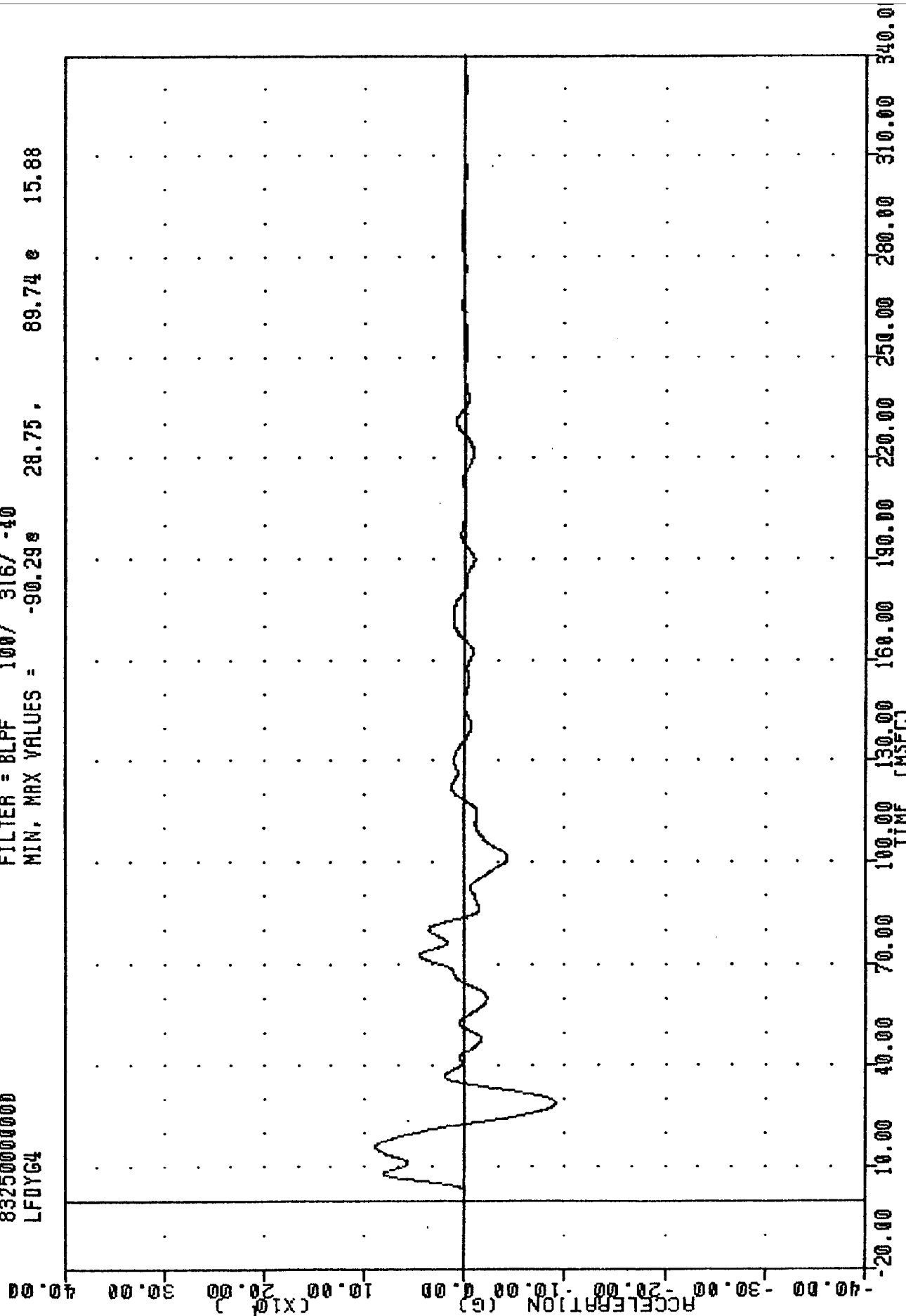
FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -52.87 47.00 , 268.75 30.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT CORNER POSITION OF ACCELERATION Y AXIS

TRC
EVALUATION OF MDD VW FLEET
83250000000
LF0Y64

PLOT DATE 13-SEP-83 10:47:59
FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -90.29 28.75, 89.74 15.88

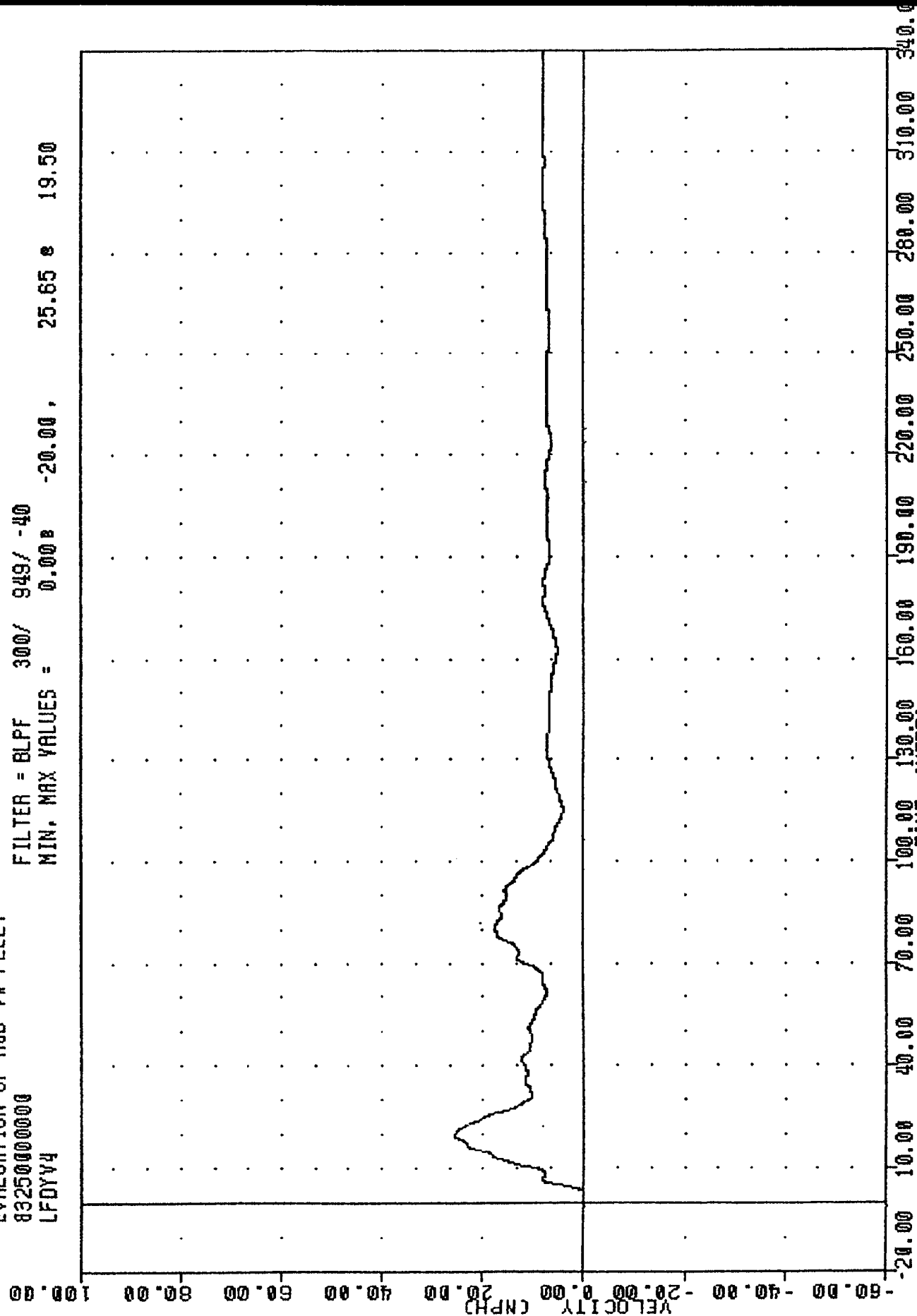


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 10) ACCELERATION Y AXIS

TRC , 830907
 EVALUATION OF MOD YN FLEET
 83250000000
 LFDYV4

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.00 25.65 19.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING IFDYG4

TRC
EVALUATION OF MOD YW FLEET
83250000000
LFDY65

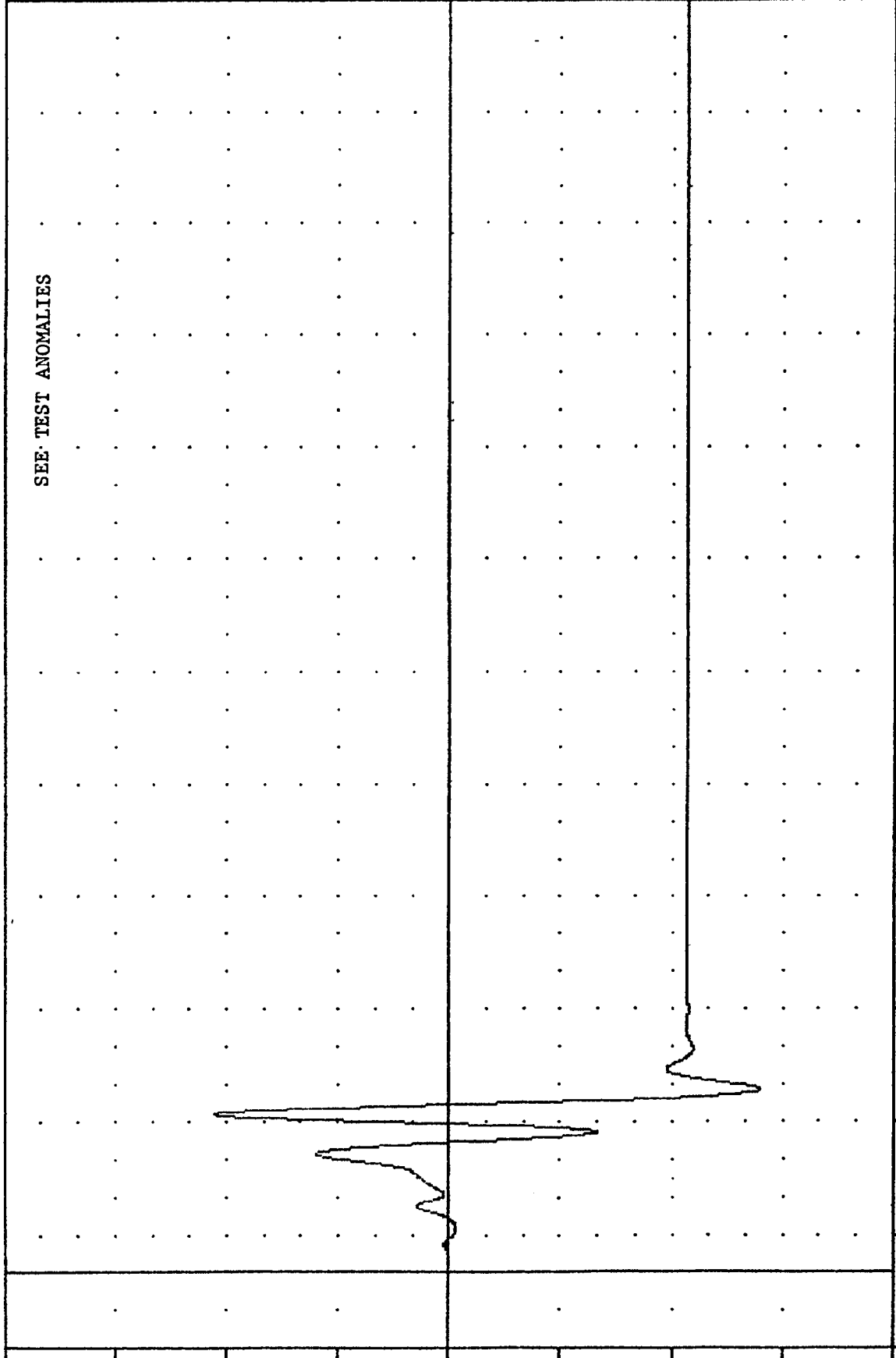
, 830907

PLOT DATE 13-SEP-83 10:47:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -280.28e 48.50, 210.69 e 41.88

ACCELERATION (G)
(X10⁴)



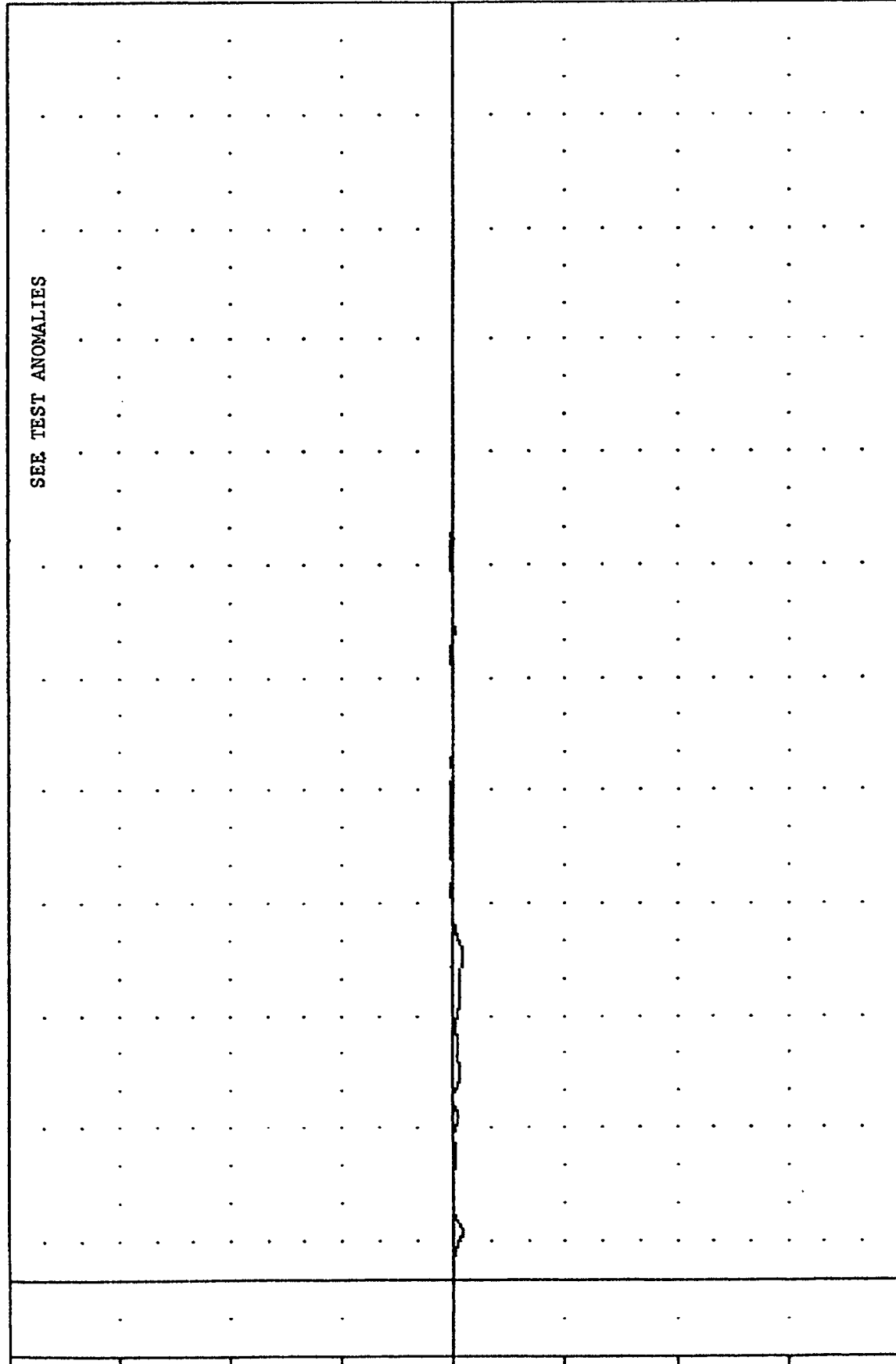
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

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

TRC
EVALUATION OF MOD YW FLEET
83250000000
TFRXG7

PLOT DATE 13-SEP-83 10:47:59
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -8.95% 85.50, 3.31% 194.88

ACCELERATION (G)
(X10⁴)



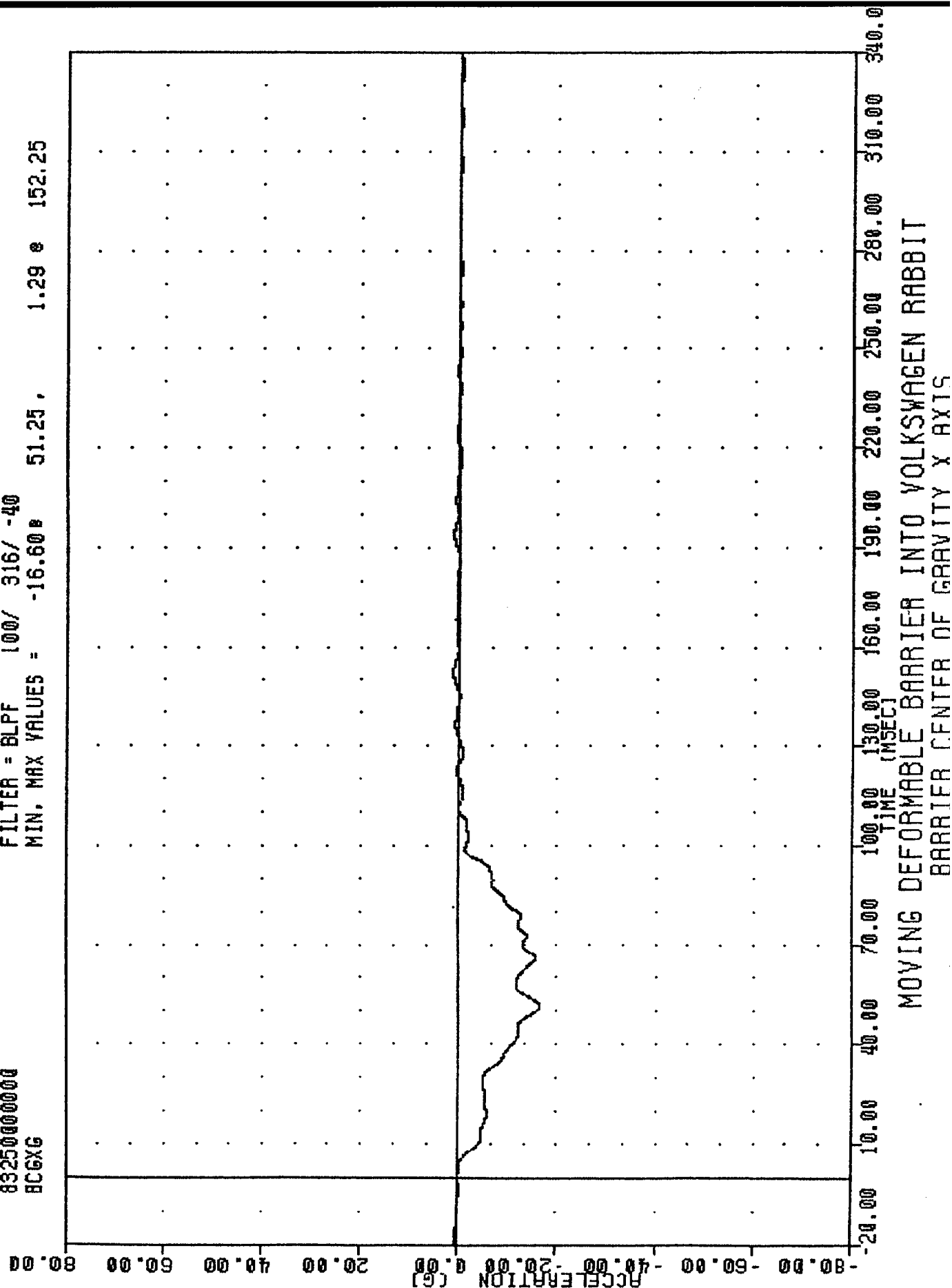
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE TRUNK FLOOR RIGHT ACCELERATION X AXIS

TRC , 830907
 EVALUATION OF MOD YV FLEET
 832500000000
 BCGXC

PLOT DATE 12-SEP-83 13:21:57

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -16.60 51.25, 1.29 152.25



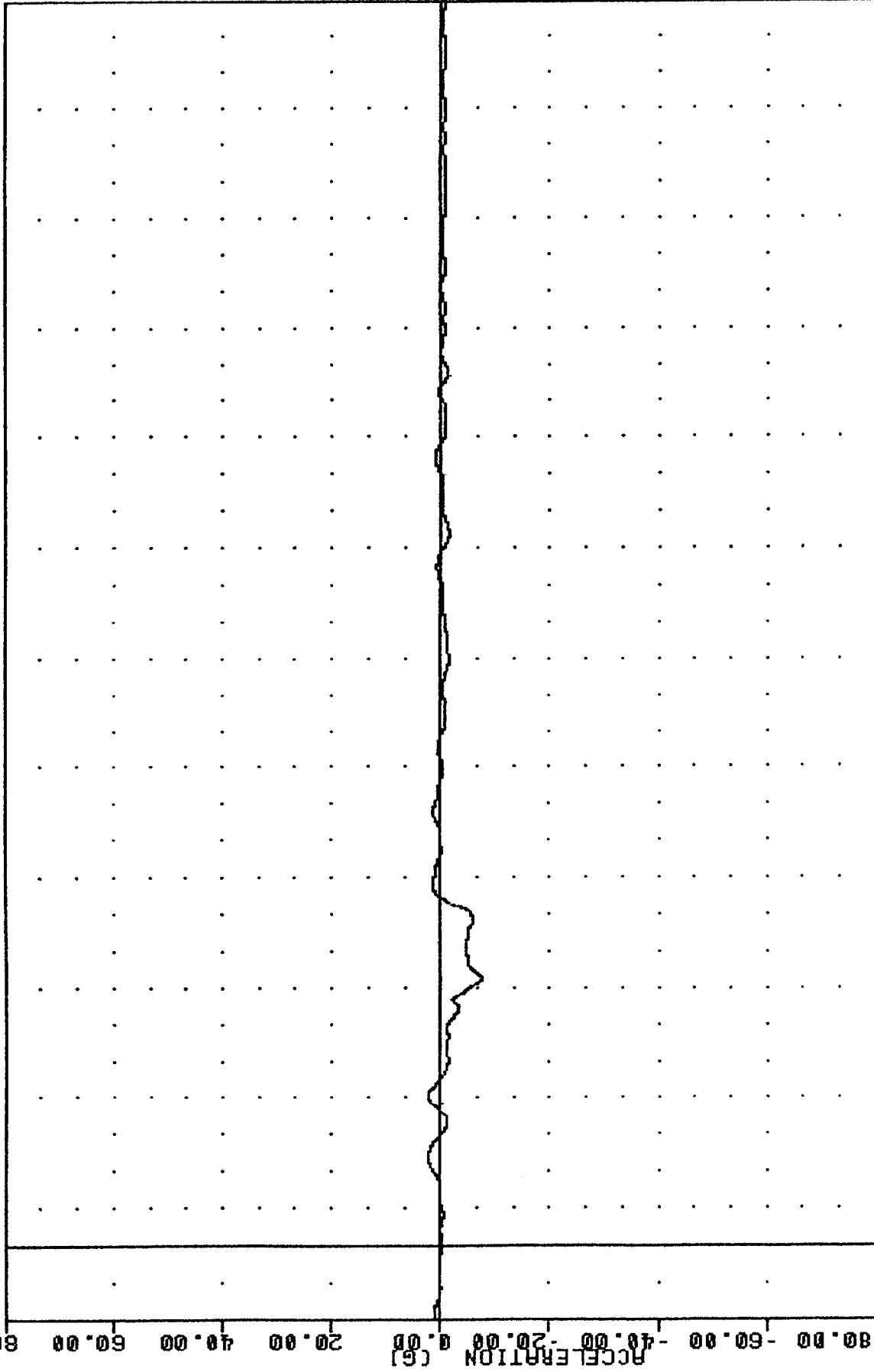
TRC , 830907
 EVALUATION OF MOD YW FLEET
 832500000000
 BCGYG

PLOT DATE 12-SEP-83 13:21:57

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -7.51e 72.25 , 2.33 e 23.63

80.00



ACCELERATION (CG)

-80.00

-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

320.00

340.00

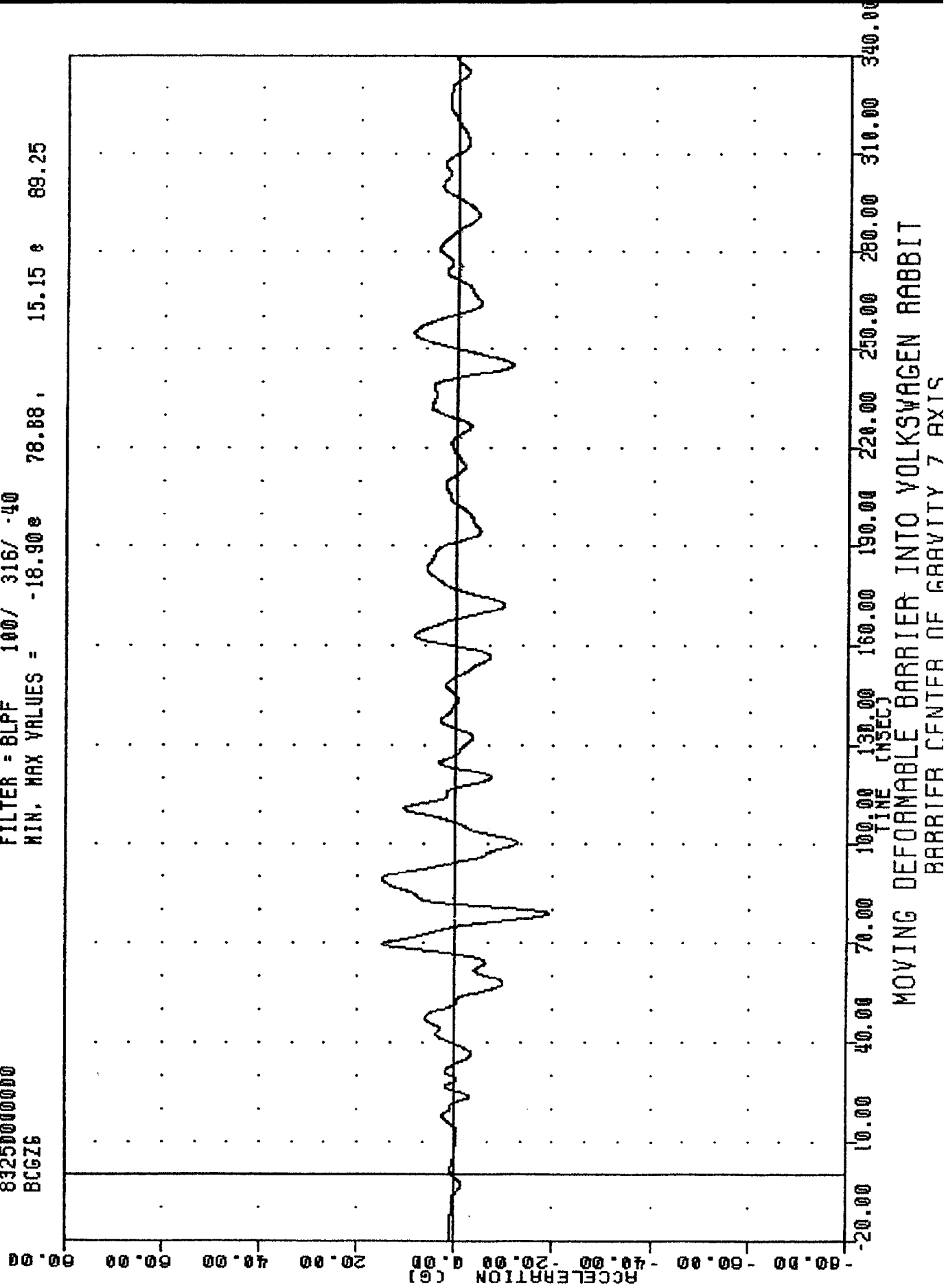
TIME (MSEC)

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

TAC
EVALUATION OF MOD VW FLEET
83250000000
BCGZ6

PLOT DATE 12-SEP-83 13:21:57

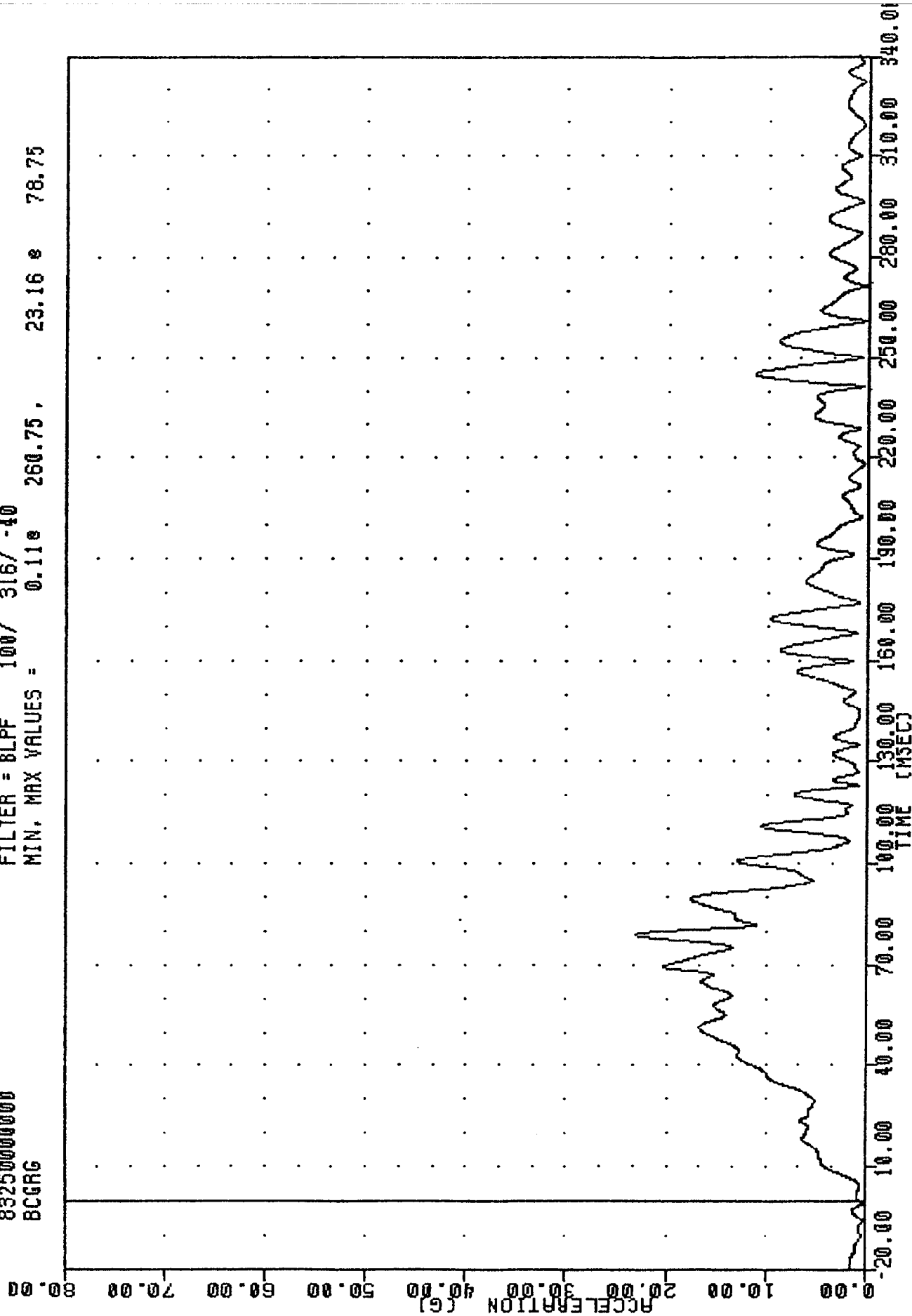
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -18.90e 78.88, 15.15 e 89.25



TRC
EVALUATION OF MDD VW FLEET
832500000000
BCGRG

PLOT DATE 13-SEP-83 10:47:59

FILTER = 8LPF 100/ 316/ -40
MIN. MAX VALUES = 0.11e 260.75, 23.16 e 78.75



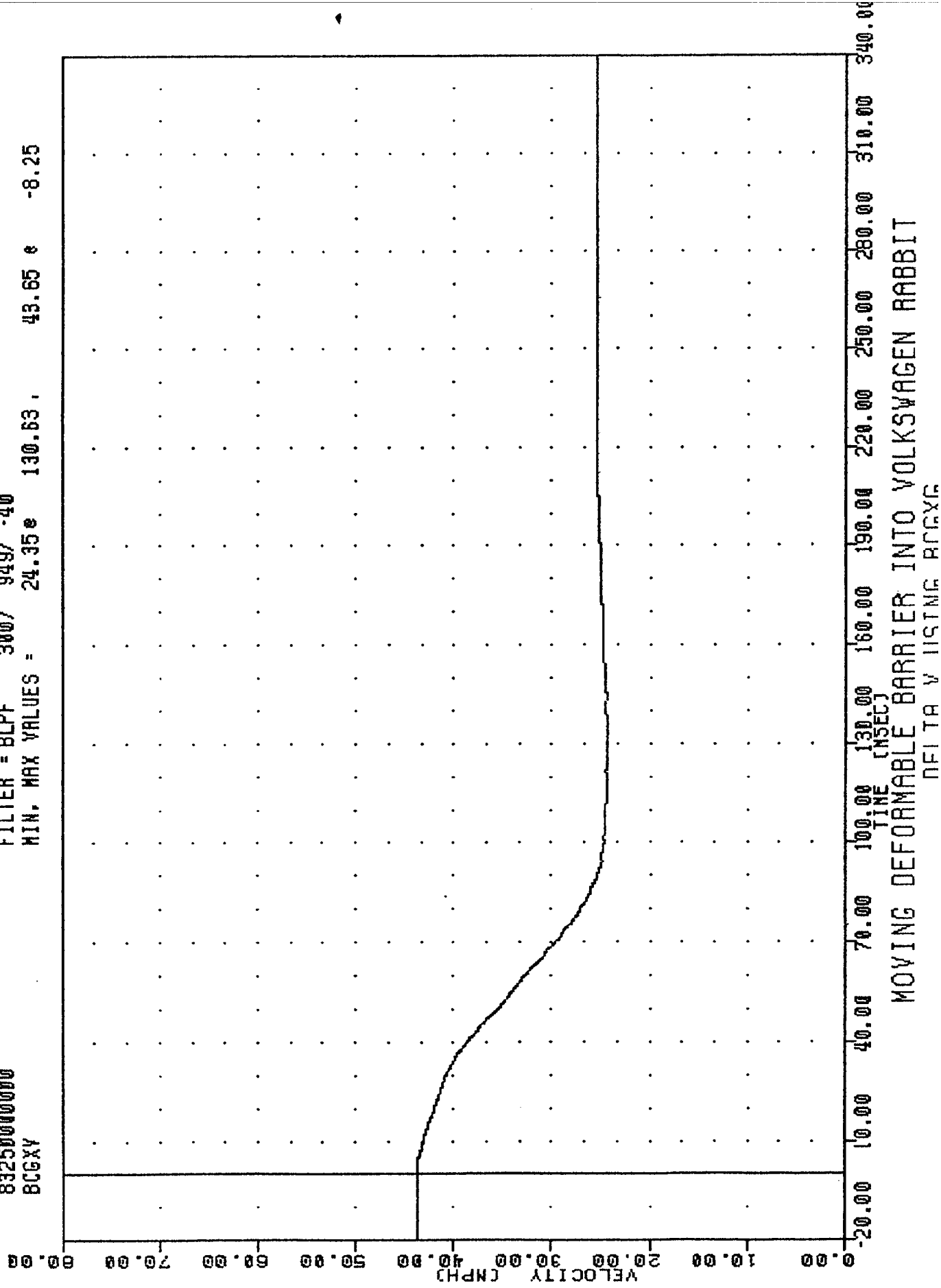
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CG REFERENCE

TAC
EVALUATION OF MOD VV FLEET
8325000000
BCGX

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 24.35e 130.63 , 43.65 e -8.25



TRC , 830907
EVALUATION OF MOD YV FLEET
83250000000
BCGYV

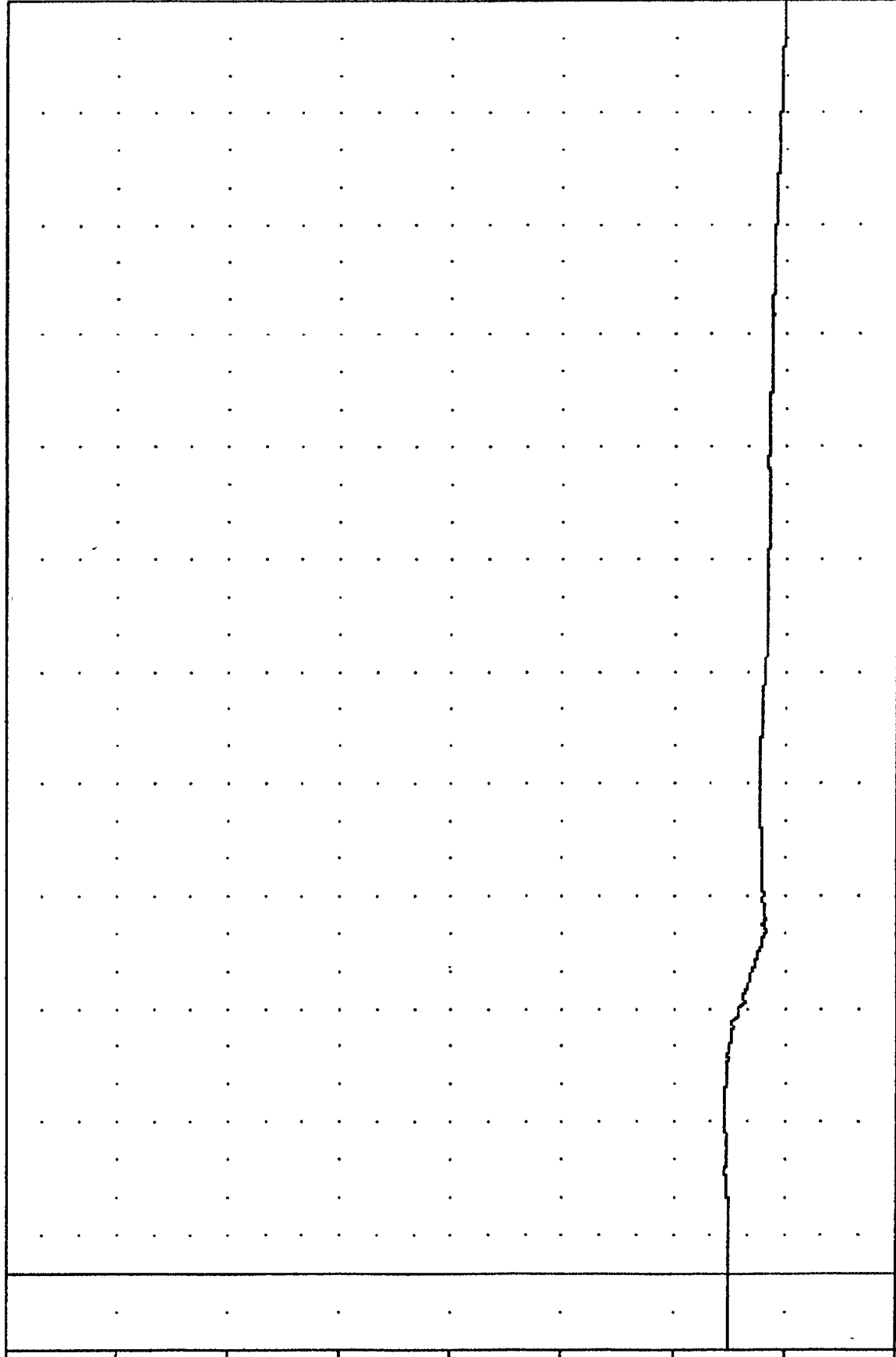
PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 10.10 340.00, 15.50 44.75

80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00

VELOCITY (MPH)



-20.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00
TIME (MSEC) 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

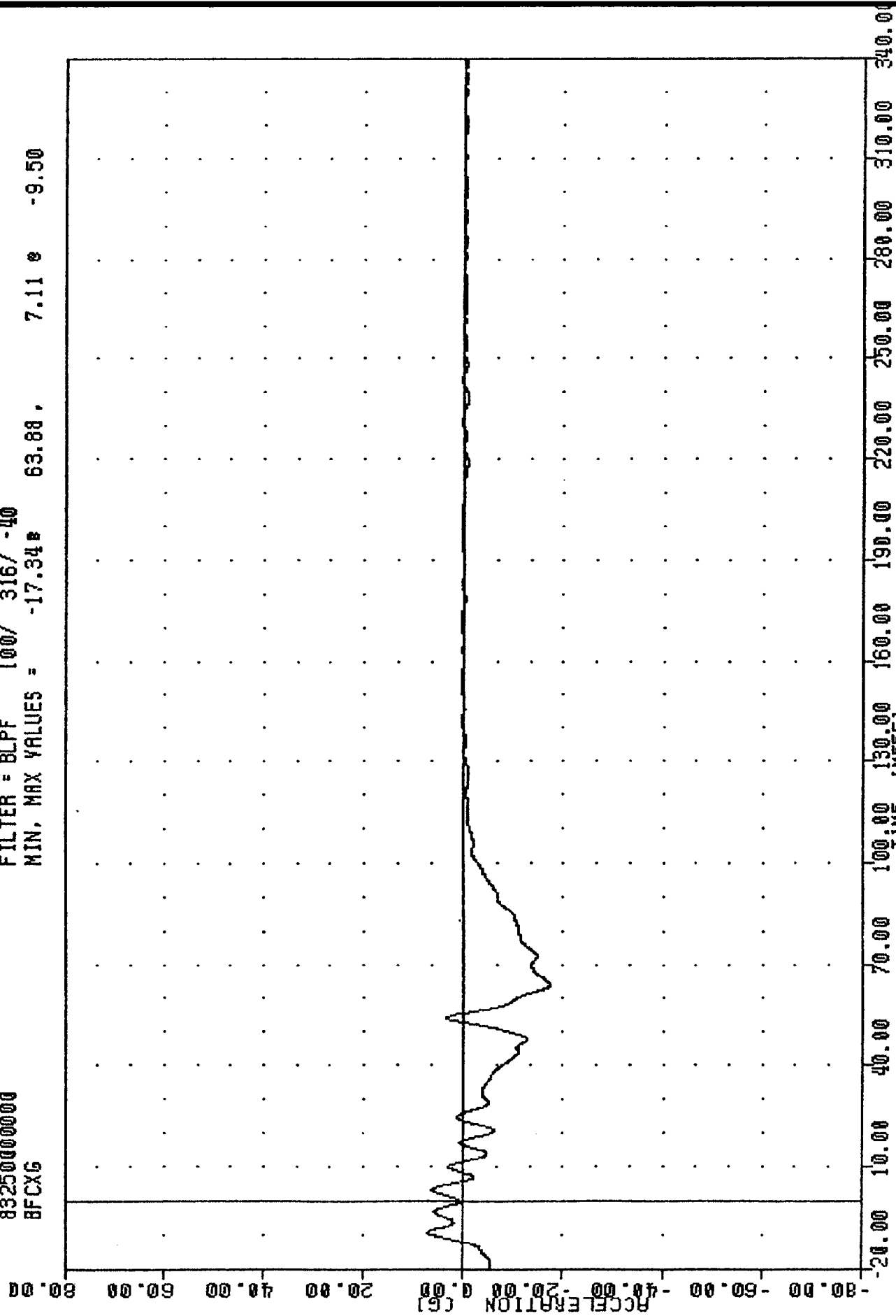
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RCGYG

TRC
EVALUATION OF MOD YW FLEET
832500000000
BFCXG

PLOT DATE 13-SEP-83 10:55:54

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -17.34 63.88, 7.11 9 -9.50



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

TRC , 830907
 EVALUATION OF MOD YW FLEET
 832500000000
 BFCXY

PLOT DATE 21-SEP-83 13:11:56

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 29.24e 140.00 , 44.31 e 12.63

80.00

70.00

60.00

50.00

40.00

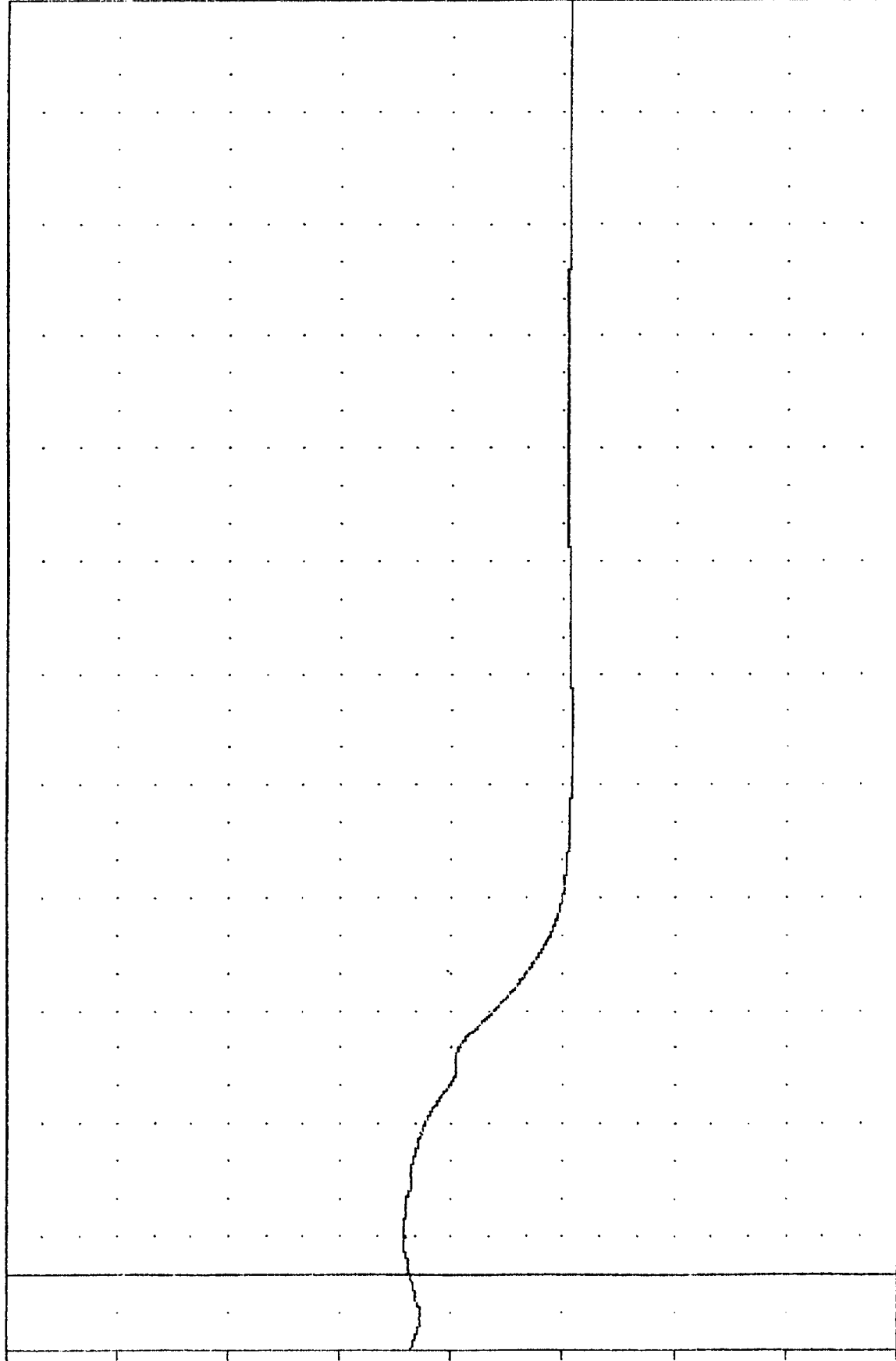
30.00

20.00

10.00

0.00

VELOCITY (MPH)



-20.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00

TIME (MSEC)

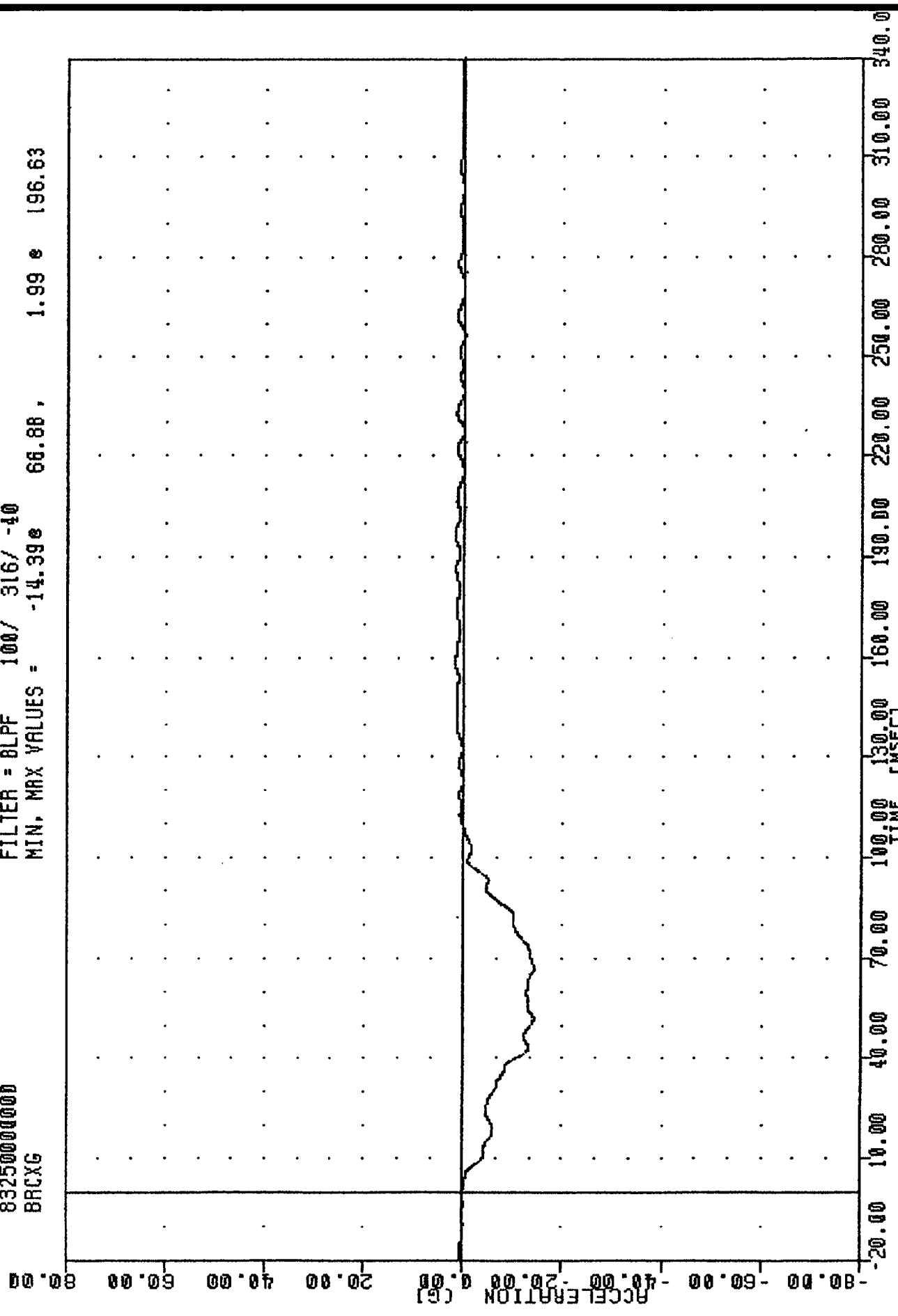
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

NET TA V USING RFCYG

TRC
EVALUATION OF MOD VW FLEET
832500000000
BRCXG

PLOT DATE 12-SEP-83 13:21:57

FILTER = 8LPF 100/ 316/ -40
MIN, MAX VALUES = -14.39e 66.88, 1.99 e 196.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER REAR CROSSMEMBER ACCELERATION Y DUTC

TAC
EVALUATION OF MOD YW FLEET
83250000000
BRCXY

PLOT DATE 14-SEP-83 10:24:27

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 25.48e 106.88, 43.66 e -8.00

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA Y USING BRCXG