

769

SIDE IMPACT AGGRESSIVENESS
ATTRIBUTES

MDB-TO-CAR SIDE IMPACT TEST OF
A 19° CRABBED MOVING DEFORMABLE BARRIER
TO A 1981 VOLKSWAGEN RABBIT
AT 46.2 MPH

PREPARED BY:
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FINAL REPORT
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16. Abstract This test report documents one of a series of twelve crash tests to evaluate the side impact aggressiveness attributes of various deformable barrier face configurations. The configurations to be used are designated as "Lowered Stiffness", "Altered Profile" and "Lowered Bumper". In addition, four pole tests will be conducted. Testing was conducted on a 1981 diesel Volkswagen Rabbit 2-door hatchback at the TRCO Crash Test Facility, East Liberty, Ohio. The test vehicle was structurally unmodified but contained additional padding on the driver's side door and the left rear quarter panel. The test vehicle was impacted on the left side by a moving deformable barrier designated as "Lowered Stiffness" crabbed to 19°, at 46.2 mph. Occupant responses of two side impact dummies were measured. One dummy was located in the driver's designated seating position and one was located in the left rear passenger position. The test date was September 5, 1984 and the ambient temperature was 66° F.			
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

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

Approximate Conversions from Metric Measures

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

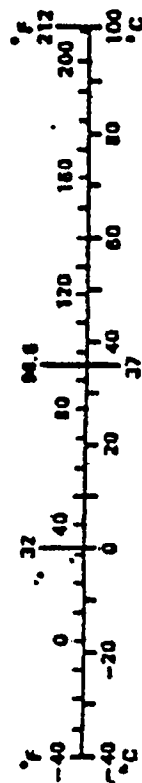


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SECTION 1.0
PURPOSE AND INTRODUCTION

PURPOSE

The main purpose of this test was to evaluate the side impact aggressiveness of a deformable barrier face designated as "Lowered Stiffness". In all, there will be twelve crash tests involving deformable barrier faces designated as "Lowered Stiffness", "Altered Profile" and "Lowered Bumper". In addition, four pole tests will be conducted. The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

INTRODUCTION

A stationary 1981 diesel Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on September 5, 1984. The barrier face was designated as "Lowered Stiffness". In order to obtain this lowered stiffness of 25 psi, 44 holes with a nominal diameter of 2 1/2 inches were drilled into the aluminum honeycomb, equally spaced throughout the barrier face. 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 46.2 mph and the actual impact point was 36.5 inches forward of the midpoint of the Volkswagen Rabbit's wheelbase.

The vehicle was structurally unmodified, but contained additional padding in both the driver's door and left rear passenger's quarter panel.

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 describe the General Test and Vehicle
Parameter Data.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Volkswagen of America, Inc.

MAKE/MODEL: Volkswagen Rabbit Diesel VIN: 1VWBG0173BV162059

BODY STYLE: 2-Door Hatchback MODEL YEAR: 1981

NHTSA NO.: R & D COLOR: Light Brown

ENGINE DATA: TYPE: Inline CYLINDERS: 4 DISPLACEMENT 105 CID

TRANSMISSION DATA: 4 Speed Manual

DATE VEHICLE RECEIVED: 8/22/84 ODOMETER READING: 40062

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

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

REMARKS:

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

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

VEHICLE MANUFACTURED BY: Volkswagen of America, Inc.

DATE OF MANUFACTURE: 5/81

GVWR: 2822 LBS.,

GAWR: FRONT 1609 LBS., REAR 1278 LBS.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 27 psi; REAR 31 psi

TIRES ON VEHICLE (MFGR. & LINE, SIZE): Goodyear Tiempo P155 80 13

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 3

IS SPARE TIRE "SPACE SAVER"? No

IS SPARE TIRE STANDARD EQUIPMENT? Yes

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

RIGHT FRONT	670	LBS.	RIGHT REAR	320	LBS.
LEFT FRONT	680	LBS.	LEFT REAR	310	LBS.
TOTAL FRONT WEIGHT	1350		LBS. (68.2 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	630		LBS. (31.8 % OF TOTAL VEHICLE WEIGHT)		
TOTAL DELIVERED WEIGHT	1980		LBS.		

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 23 7/8	;LF 23 13/16	;RR 24 11/16	;LR 24 11/16
PRE-TEST ATTITUDE:	RF 23 5/8	;LF 23 3/16	;RR 22 1/16	;LR 21 5/8
POST-TEST ATTITUDE:	RF 22 5/8	;LF 22 15/16	;RR 21 5/16	;LR 22 3/8

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 185 LBS. CARGO:

RIGHT FRONT	720	LBS.	RIGHT REAR	540	LBS.
LEFT FRONT	750	LBS.	LEFT REAR	560	LBS.
TOTAL FRONT WEIGHT	1470		LBS. (57.2 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1100		LBS. (42.8 % OF TOTAL VEHICLE WEIGHT)		
TOTAL TEST WEIGHT	2570		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: 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? No

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

VEHICLE LOAD (UP TO CAPACITY): FRONT 27 psi; REAR 31 psi

RECOMMENDED TIRE SIZE: 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
4 TOTAL

CARGO LOAD 185 LBS.

TOTAL 785 LBS.

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

TEST CONDITIONS

TEST NUMBER: 840905

DATE OF TEST: September 5, 1984

TIME OF TEST: 14:15

WIND VELOCITY: 3-8 mph 10° N

HUMIDITY: DNA

AMBIENT TEMPERATURE AT IMPACT AREA: 66° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 72° F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2570	2573
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	46.2	46.3
IMPACT POINT (INCHES)**	36.5	37.0

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 vehicle's wheelbase.

VISIBLE DUMMY CONTACT POINTS:

	DRIVER 06	PASSENGER U02
Head	<u>Side Window, Barrier Face, Inside Roof</u>	<u>Window & Hatchback Frames</u>
Chest	<u>Side Door Panel</u>	<u>Inner Quarter Panel</u>
Abdomen	<u>Side Door Panel</u>	<u>Inner Quarter Panel</u>
Left Knee	<u>Side Door Panel</u>	<u>Inner Quarter Panel</u>
Right Knee	<u>Left Knee</u>	<u>Left Knee</u>

DOOR OPENING:

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

SEAT MOVEMENT:

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

GLAZING DAMAGE:

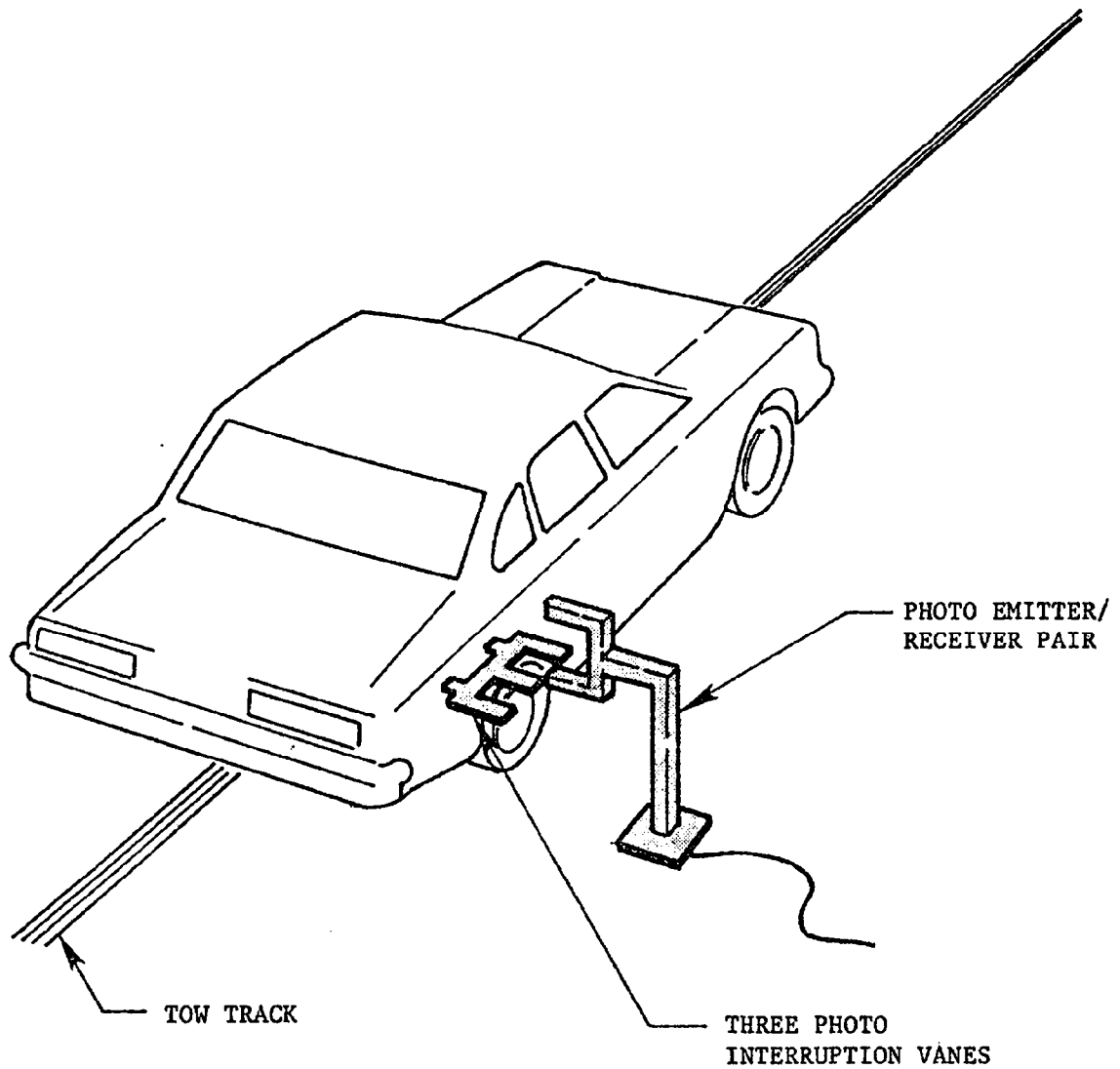
Windshield shattered, driver's door glass and rear
left side shattered.

OTHER NOTABLE IMPACT EFFECTS:

Driver dummy's left foot separated.

*The driver's door was to remain closed for subsequent door opening effort studies.

IMPACT VELOCITY MEASUREMENT SYSTEM



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

VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned}\text{Test Weight} &= \text{Unloaded Delivered Weight} + \\ &\quad \text{Number of Dummies X 174 lbs.} + \\ &\quad \text{Cargo Weight} \\ &= 2040 + 2 \times 174 + 185 \text{ lbs.} \\ &= 2573 \text{ lbs.}\end{aligned}$$

To achieve test weight, 5.0 gallons of Stoddard Solvent were added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a Loadmeter Corporation Hiway Loadometer.

TEST ANOMALIES

The accelerometer mounted in the Left Front Door, Position 8, LFDYG2, experienced temporary shorts during impact due to the door kinematics.

SECTION 3.0
DATA REQUIRED BY R & D

The following pages are included in this section:

1. Dummy temperature control and position 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.

DUMMY IN-VEHICLE POSITION RECORDING SHEET

VEHICLE NHTSA NO. R & D

MFR./MAKE/MODEL: Volkswagen Rabbit

FRONT SEAT TYPE: BENCH
☒ BUCKET
☐ SPLIT BENCH

ADJUSTER TYPE: ☒ MANUAL
☐ POWER

BUCKET SEAT BACK TYPE: FIXED
☒ ADJUSTABLE

TECHNICIANS:

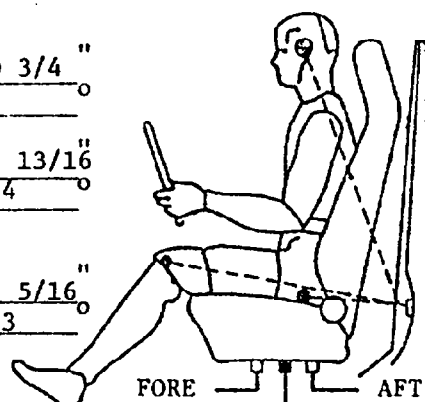
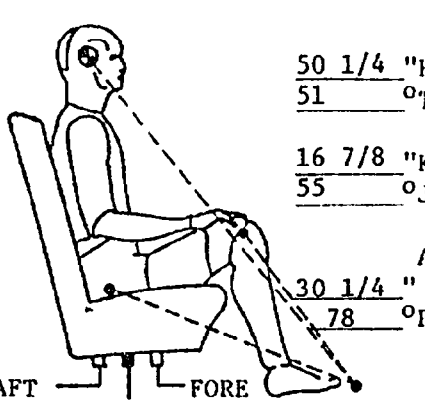
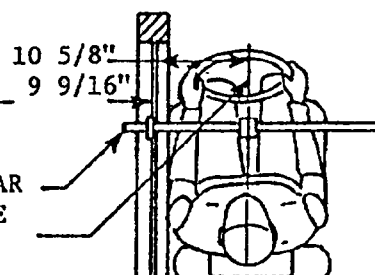
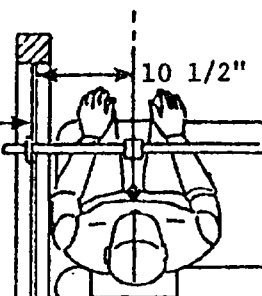
1. M. Garrison

2. B. Miller

3. P. Clay

POSITIONING DATE: 9/5/84

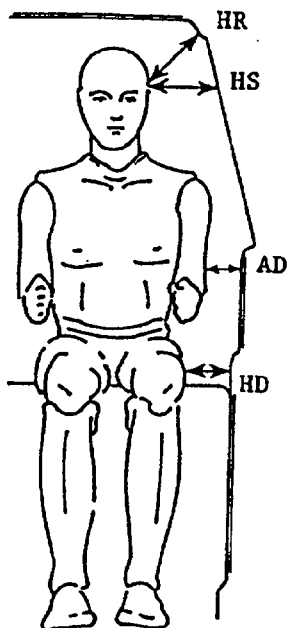
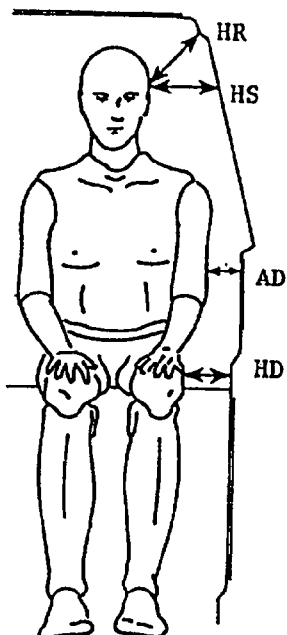
AMBIENT TEMP.: 68° F. TIME: 10:04

DRIVER DUMMY # <u>06</u>  HEAD <u>20 3/4</u> " TARGET*<u>53</u> ° KNEE <u>31 13/16</u> " JOINT <u>104</u> ° APPROX. "H" <u>18 5/16</u> " POINT <u>123</u> ° FORE MIDPOINT AFT	REAR PASSENGER DUMMY # <u>U02</u>  <u>50 1/4</u> "HEAD <u>51</u> °TARGET** <u>16 7/8</u> "KNEE <u>55</u> °JOINT APPROX. "H" <u>30 1/4</u> " POINT <u>78</u> ° AFT MIDPOINT FORE
DOOR GLASS HEIGHT*** <u>10 5/8</u> " <u>9 9/16</u> " LATERAL BAR ADJUSTABLE POINTER  DRIVER DUMMY # <u>06</u>	DOOR GLASS HEIGHT <u>DNA</u> <u>10 1/2</u> "  PASSENGER DUMMY # <u>U02</u>

*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.



DRIVER
06

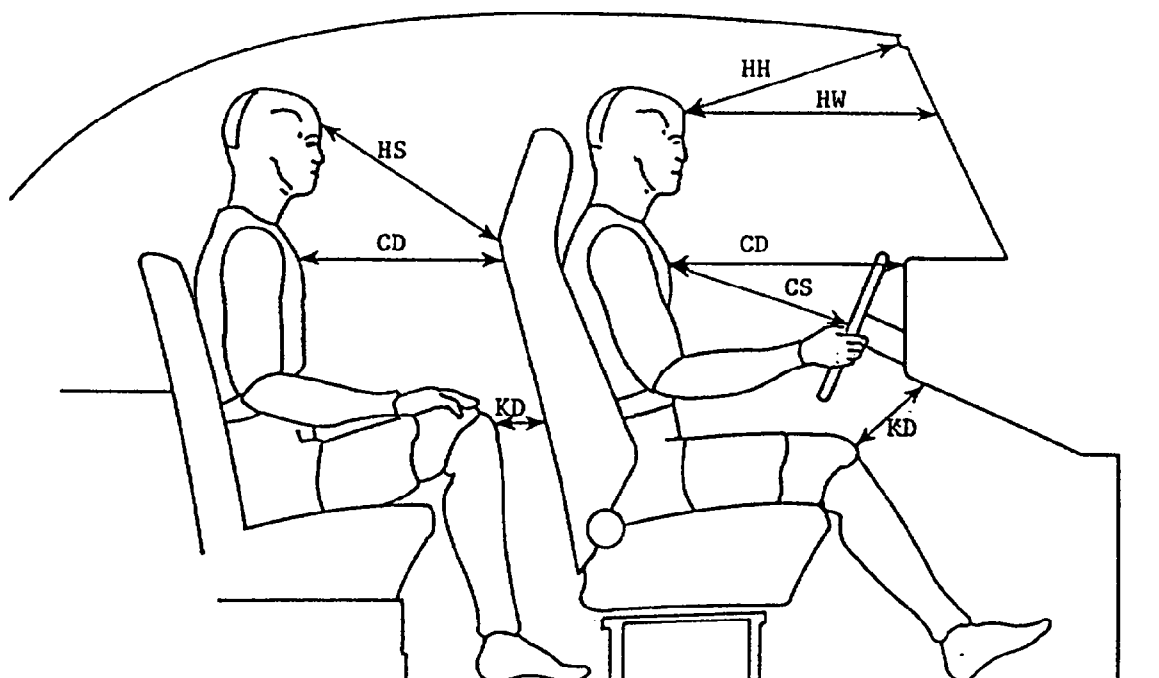
PASSENGER
U02

HR	5 5/8*	5 5/16*
HS	6 7/8	8 1/16
AD	0*	7/8*
HD	2 13/16*	2 11/16*

ALL MEASUREMENTS IN INCHES

*Measurements were made from the dummy to the modified padding.

DUMMY LATERAL CLEARANCE DIMENSIONS



DRIVER

PASSENGER

06

U02

HH	14 1/8	DNA
HW	17 3/4	DNA
HS	DNA	23 3/4
CD	18 11/16	16 7/8
CS	11 3/8	DNA
KDL	5 1/16	4 7/8
KDR	5 1/8	4 1/8

ALL MEASUREMENTS IN INCHES

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

DUMMY KINEMATIC SUMMARY

DRIVER

During impact the dash below the steering column burst inward, striking the driver's knees. The left hip and side of the dummy contacted the inner door panel as the door caved in. The dummy's head went through the broken side window, striking the top of the barrier face. As the dummy rebounded from the inner door panel, the body moved to the right side occupant area, lifting and striking the roof with the head as it did so. Resting position showed the dummy seated in the front passenger area in a partially upright position.

PASSENGER

During impact, the back of the driver's seat contacted the passenger's knees. At the same time, the B-Pillar crushed in, hitting the dummy's left knee and calf. The torso rotated left, striking the quarter panel while the dummy's head hit the padding along the upper window frame. As the front seat back continued to rotate backwards, the dummy's torso returned to the original frontal position. Rebound momentum pushed the dummy into the seat, causing the head to whip back and hit the upper frame of the hatchback. The final resting position showed the dummy seated upright and centered behind the driver's original position.

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	13.5	X	X	19.9	19.9	19.8	19.9	19.9	19.9	20.0	20.4	20.2	20.2	20.2	X	X
H-Point	21.0	X		16.9	17.8	17.8	17.8	17.7	17.8	17.8	17.9	18.0	18.1	18.2	17.1	X
Mid Door	25.1			16.9	17.7	17.5	17.4	17.3	17.3	17.4	17.4	17.5	17.6	17.8	17.9	X
Window Sill	35.6			20.4	19.6	19.4	19.5	19.4	19.1	19.2	19.1	19.0	19.1	19.1	19.2	19.2
Window Top	55.5	X	X	X	X	X	26.8	26.5	26.4	26.1	26.3	26.3	26.4	26.5	26.8	27.0

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

Axle Height	13.5	X	X	25.0	29.1	29.4	29.4	29.4	29.4	29.2	28.1	26.8	24.7	22.8	X	X
H-Point	21.0	X		22.6	26.6	49.8	46.9	43.8	40.6	37.2	33.9	30.5	33.2	30.4	27.9	25.3
Mid Door	25.1			21.8	22.4	24.4	52.4	46.9	47.1	44.3	41.6	38.6	36.0	34.6	32.3	29.3
Window Sill	35.6			20.8	20.6	21.1	47.1	46.4	44.8	43.3	41.3	39.9	37.7	37.8	34.8	31.3
Window Top	55.5	X	X	X	X	X	27.9	28.1	28.7	29.5	30.6	30.5	29.7	29.0	28.6	28.5

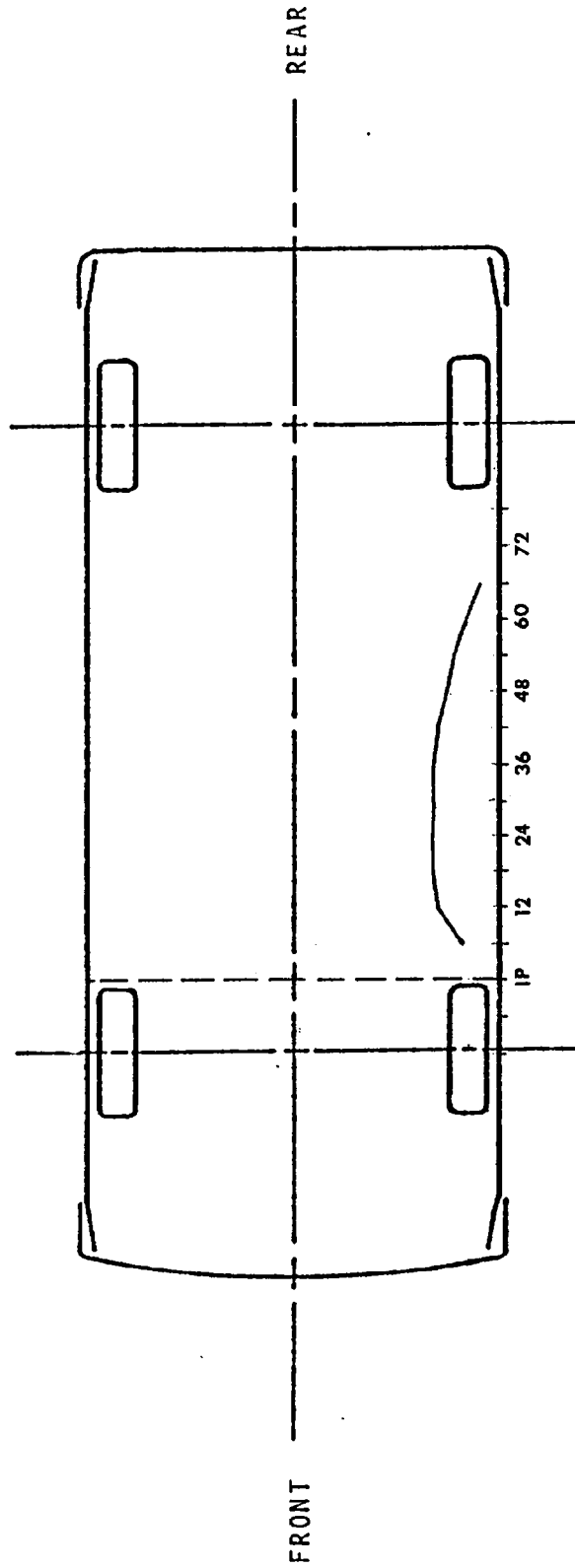
STATIC CRUSH (IN)

Axle Height	13.5	X	X	5.1	9.2	9.6	9.5	9.5	9.5	9.2	7.7	6.6	4.5	2.6	X	X
H-Point	21.0	X		5.7	8.8	32.0	29.1	26.0	22.9	19.4	16.1	12.6	15.2	12.3	9.7	8.2
Mid Door	25.1			4.9	4.7	6.9	34.9	29.5	29.7	27.0	24.3	21.2	18.6	17.1	14.7	11.5
Window Sill	35.6			0.4	1.0	1.7	27.6	27.0	25.7	24.1	22.2	20.8	18.7	18.8	15.7	12.2
Window Top	55.5	X	X	X	X	X	1.1	1.6	2.3	3.4	4.3	4.2	3.3	2.5	1.8	1.5

* 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

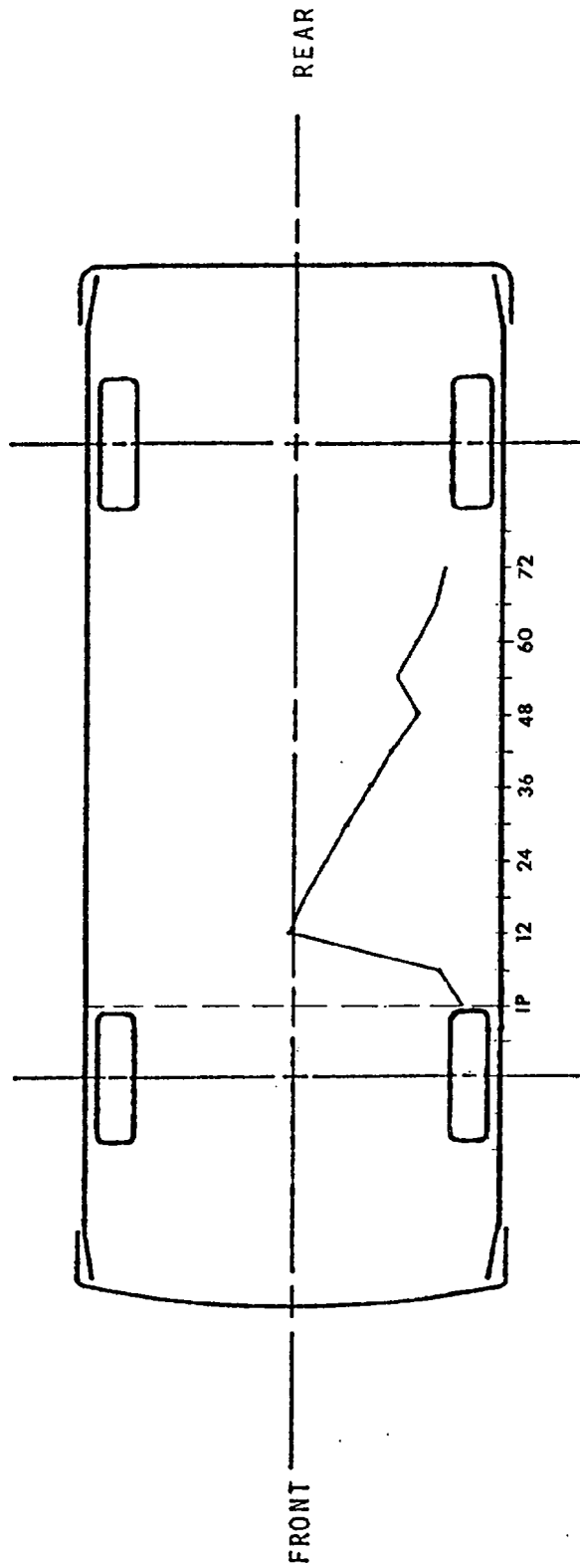


PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Width of Car = 62.75"
Length of Car = 153.0"

Maximum Crush = 9.6"
Length of Crush = 60"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

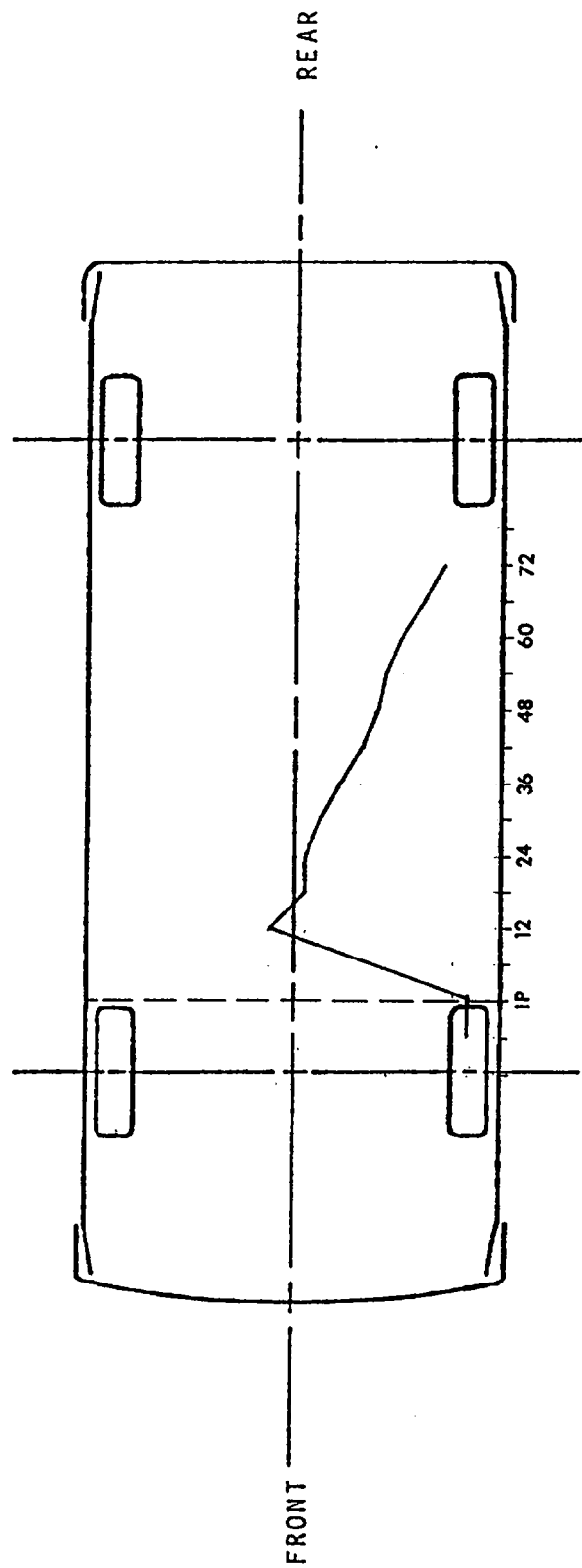


PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Width of Car = 62.75"
Length of Car = 153.0"

Maximum Crush = 32.0"
Length of Crush = 72"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

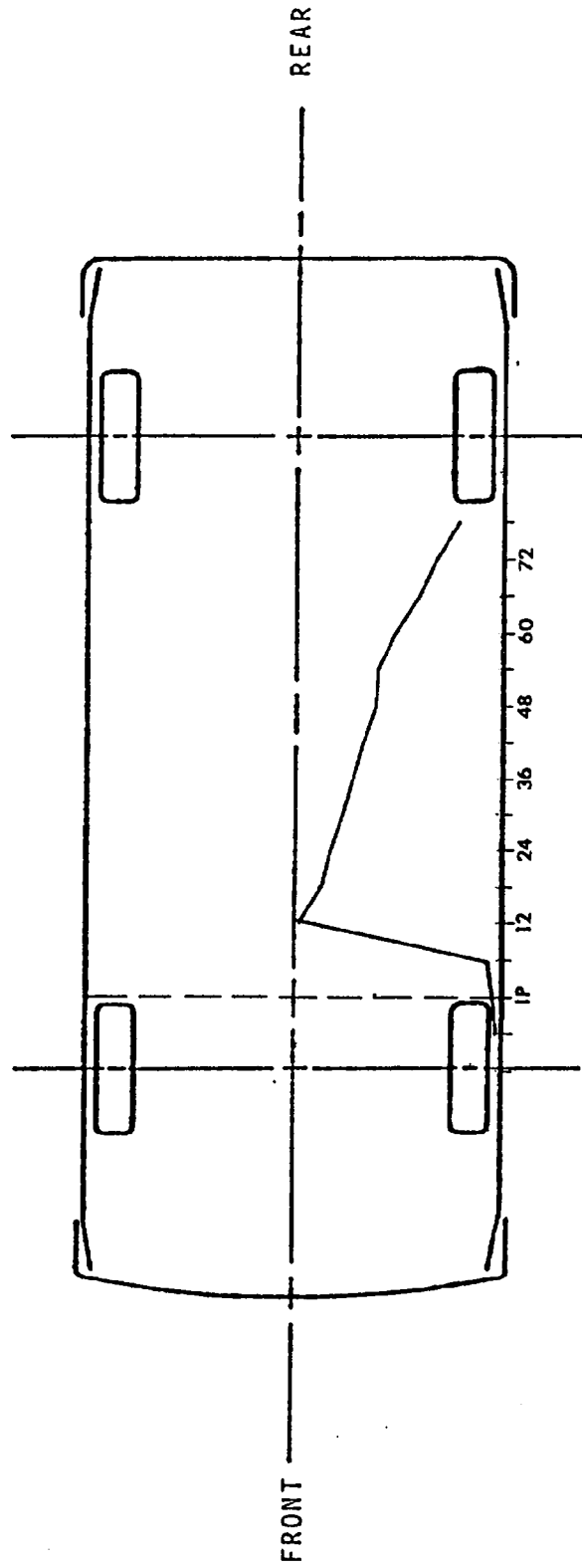


PROFILE LEVEL EQUALS MID-DOOR HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Width of Car = 62.75"
Length of Car = 153.0"

Maximum Crush = 34.9"
Length of Crush = 78"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

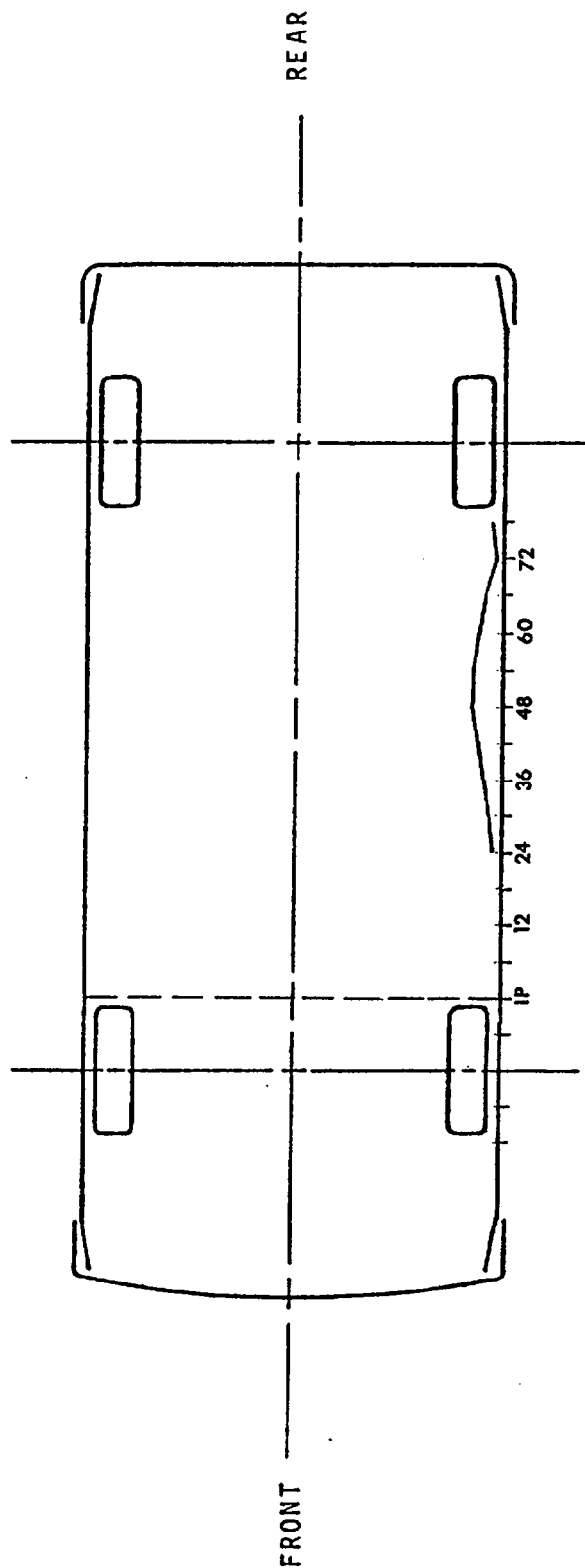


PROFILE LEVEL EQUALS WINDOW SILL HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Width of Car = 62.75"
Length of Car = 153.0"

Maximum Crush = 27.6"
Length of Crush = 84"

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Width of Car = 62.75"
Length of Car = 153.0"

Maximum Crush = 4.3"
Length of Crush = 54"

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	70.37	133.50	99.45	66.25	105.62	152.00	71.30	65.75
LATERAL	249.91	60.50	20.05	34.63	91.57	63.63	26.56	175.75
VERTICAL	26.07	174.50	120.41	58.13	64.85	151.75	45.98	58.63
RESULTANT		273.87 @ 60.50				123.30 @ 152.00		
HIC	3419.22	from 46.88 to 70.38			1173.21	from 57.75 to 73.75		
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	32.88	61.88	46.32	41.87	3.57	45.00	64.27	61.87
LATERAL (P)***	164.52	39.38	33.66	58.75	72.22	53.75	2.76	72.50
LATERAL (R)***	169.20	39.38	30.98	58.75	73.56	53.75	2.08	73.13
VERTICAL	17.59	50.00	37.27	33.13	12.82	50.00	14.80	73.13
RESULTANT (P)		169.61 @ 40.00				73.68 @ 53.75		
RESULTANT (R)		174.06 @ 40.00				75.00 @ 53.75		
DELTA V (MPH)****		38.6 @ 50.00 (P)				26.3 @ 95.63 (P)		
		40.6 @ 50.00 (R)				26.9 @ 95.00 (R)		
LOWER SPINE								
LONGITUDINAL	33.42	48.13	50.07	37.50	74.03	66.87	55.45	51.25
LATERAL (P)	190.36	33.13	33.75	51.25	95.21	50.63	18.49	66.87
LATERAL (R)	170.87	33.13	45.45	51.25	96.32	51.25	38.93	66.87
VERTICAL	43.02	50.63	6.13	73.75	16.36	50.63	6.81	77.50
RESULTANT (P)		190.59 @ 33.13				111.28 @ 51.25		
RESULTANT (R)		171.13 @ 33.13				112.31 @ 51.25		
DELTA V (MPH)		46.1 @ 49.37 (P)				30.9 @ 65.00 (P)		
		45.1 @ 49.37 (R)				31.9 @ 64.38 (R)		
LEFT UPPER RIB								
LATERAL (P)	132.38	30.00	11.73	24.38	67.82	57.50	2.31	35.63
LATERAL (R)	132.74	29.38	12.97	24.38	70.18	56.87	1.33	36.25
DELTA V (MPH)		40.4 @ 59.38 (P)				36.2 @ 97.50 (P)		
		40.4 @ 59.38 (R)				35.4 @ 97.50 (R)		
LEFT LOWER RIB								
LATERAL (P)	116.71	35.00	59.01	56.87	74.03	46.88	2.18	68.75
LATERAL (R)	118.12	35.63	56.80	56.87	84.63	47.50	3.37	68.75
DELTA V (MPH)		43.9 @ 53.75 (P)				33.2 @ 75.63 (P)		
		45.2 @ 53.75 (R)				32.2 @ 76.25 (R)		
PELVIS ACCELERATION								
LONGITUDINAL	17.20	69.50	60.86	35.38	18.58	92.13	70.26	54.63
LATERAL	330.41	31.88	60.53	22.75	120.55	46.63	26.42	33.75
VERTICAL	47.27	33.50	10.65	36.88	39.57	68.63	20.43	67.00
RESULTANT		333.36 @ 31.88				126.29 @ 45.63		
DELTA V (MPH)		39.5 @ 60.88				30.7 @ 82.38		

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	DRIVER DUMMY				PASSENGER DUMMY			
	POSITIVE DIRECTION*		NEGATIVE DIRECTION**		POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)
RIB DEFLECTION †	1.92	51.00	---	--- ε	1.52	62.63	---	--- ε

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

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

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

† Compression: Positive

ε There were no negative values in the time interval of interest.

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	83.4	23.7	10.3				
	(LONGITUDINAL)	$\Delta V = -5.1 \text{ mph @ } 178.38 \text{ msec}$			3.33	36.00	6.70	44.75
	(LATERAL)	$\Delta V = 15.8 \text{ mph @ } 178.38 \text{ msec}$			13.60	49.38	1.97	125.63
	(VERTICAL)				7.44	42.75	12.02	37.00
	(RESULTANT)					15.12 @	48.75	
2	RIGHT SILL AT REAR SEAT	61.5	23.5	9.1				
	(LONGITUDINAL)	$\Delta V = -2.8 \text{ mph @ } 178.38 \text{ msec}$			4.18	35.88	5.25	45.00
	(LATERAL)	$\Delta V = 20.1 \text{ mph @ } 178.38 \text{ msec}$			18.87	50.25	1.54	127.13
	(VERTICAL)				4.16	41.88	7.49	36.75
	(RESULTANT)					19.67 @	50.25	
3	REAR DECK OVER AXLE	32.0	0.0	7.1				
	(LONGITUDINAL)	$\Delta V = -4.8 \text{ mph @ } 178.38 \text{ msec}$			4.28	150.75	13.96	42.50
	(LATERAL)	$\Delta V = 26.7 \text{ mph @ } 178.38 \text{ msec}$			24.98	46.50	1.67	162.75
	(VERTICAL)				5.57	34.38	9.85	63.88
	(RESULTANT)					28.16 @	46.00	
4	LEFT SILL AT REAR SEAT	61.0	-23.4	8.6				
	(LATERAL)	$\Delta V = 15.8 \text{ mph @ } 97.25 \text{ msec}$			48.16	28.63	44.35	36.13
5	LEFT SILL AT FRONT SEAT	83.4	-23.2	10.4				
	(LATERAL)	$\Delta V = \text{---} \text{---} \tau$			53.92	27.25	56.74	60.25
6	LEFT FRONT DOOR CENTERLINE	80.6	-23.7	23.0				
	(LATERAL)	$\Delta V = \text{---} \text{---} \tau$			99.02	23.25	99.97	33.50
7	RIGHT REAR COMPARTMENT	31.0	11.1	14.4				
	(LONGITUDINAL)				3.33	100.38	9.48	44.88
8	MIDREAR OF LEFT FRONT DOOR	60.3	-26.0	23.1				
	(LATERAL)	$\Delta V = \text{---} \text{---} \tau$			---	--- Y	---	--- Y
9	UPPER LEFT FRONT DOOR CENTERLINE	81.2	-25.5	32.1				
	(LATERAL)	$\Delta V = \text{---} \text{---} \tau$			132.75	22.00	212.05	33.25
10	MIDFRONT OF LEFT FRONT DOOR	99.1	-26.0	21.9				
	(LATERAL)	$\Delta V = 31.3 \text{ mph @ } 18.88 \text{ msec}$			147.80	8.38	86.35	38.38
11	UPPER REAR OF LEFT REAR DOOR	70.3	-25.8	32.2				
	(LATERAL)	$\Delta V = 27.1 \text{ mph @ } 27.88 \text{ msec} \tau$			229.74	28.75	153.05	34.75

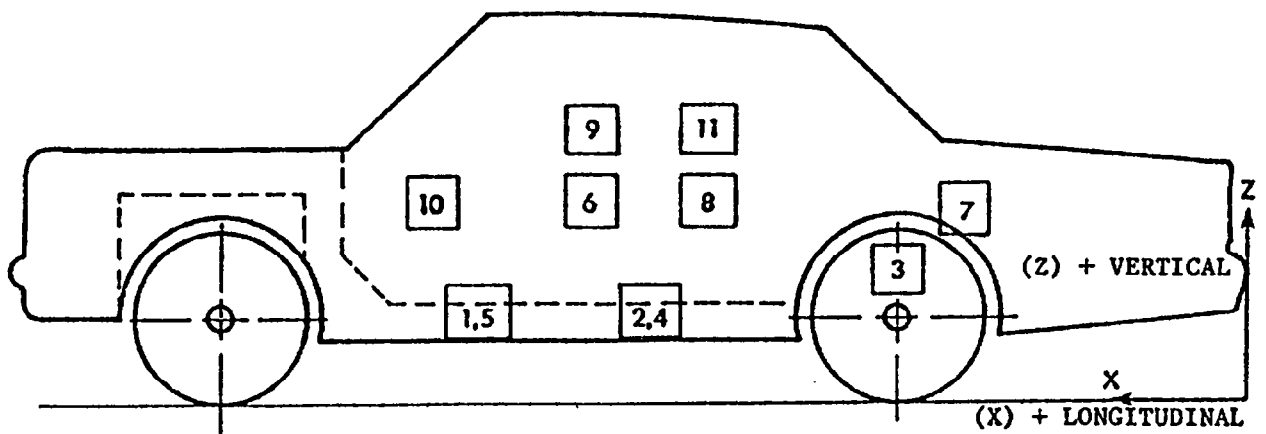
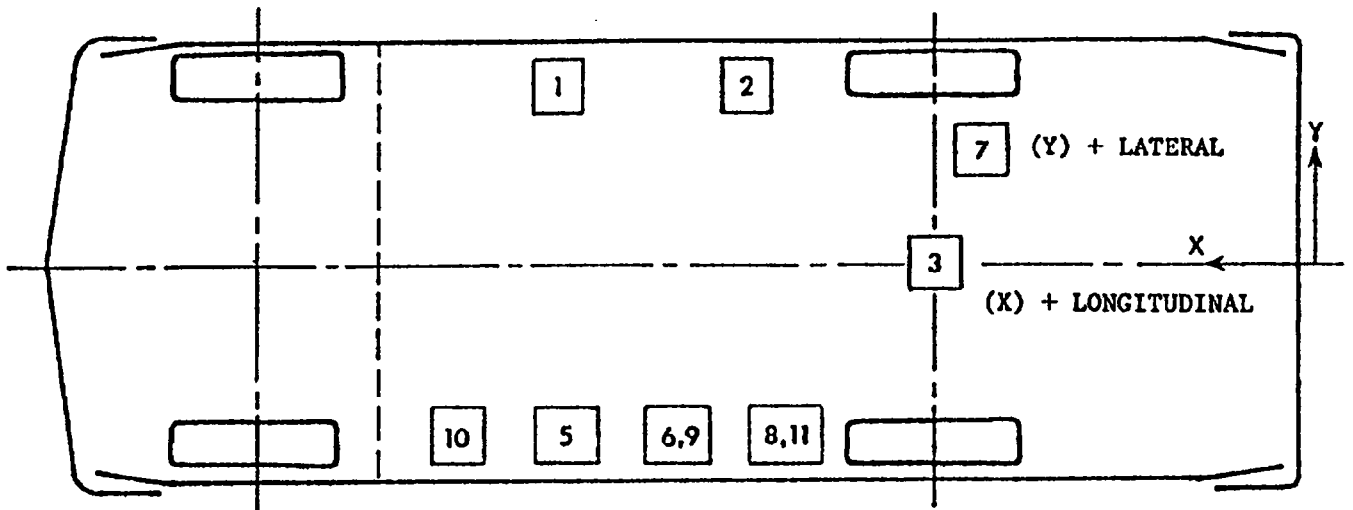
* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right),
Z - Ground Level (+ Up)

All measurements of accelerometer locations in inches.

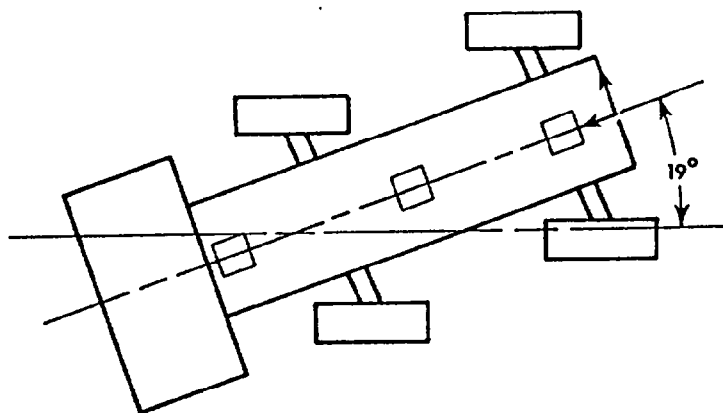
τ Delta V appears unrealistic after initial velocity change.

Y 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)	V = -19.9 mph @ 178.38 msec			---	---	12.72	56.00
	(LATERAL)	V = 4.2 mph @ 178.38 msec			2.12	126.38	6.29	57.00
	(VERTICAL)				10.93	87.13	7.01	76.75
	(RESULTANT)					15.45 @ 55.50		
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	V = -19.8 mph @ 178.38 msec			1.62	0.38	12.23	57.00
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	V = -19.6 mph @ 178.38 msec			---	---	12.49	54.38

* 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.

* There were no positive values in the time interval of interest.

HIGH SPEED CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Overhead	Photosonic 1B	8	470	Vehicle dynamics
2	Overhead	Photosonic 1B	25	487	Closeup of impact point
3	Onboard MDB	Photosonic 1B	25	500	Closeup of impact point
4	Onboard MDB	Photosonic 1B	13	502	Driver kinematics
5	Ground level - right	Hycam	16	482	Overall view
6	Ground level - left	Photosonic 1B	17	520	Overall view
7	Onboard vehicle	Photosonic 1B	8	800	Driver kinematics - front view
8	Onboard vehicle	Photosonic 1B	8	802	Driver kinematics
9	Onboard vehicle	Photosonic 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	5/2/84	0.237 MV/G	50 G
BCGYG	Accel	4-202-0001	18858	Bell Howell	5/2/84	0.236 MV/G	50 G
BCGZG	Accel	4-202-0001	18857	Bell Howell	5/2/84	0.239 MV/G	50 G
BFCXG	Accel	4-202-0001	18240	Bell Howell	5/2/84	0.239 MV/G	50 G
BRCXG	Accel	4-202-0001	19022	Bell Howell	5/2/84	0.220 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

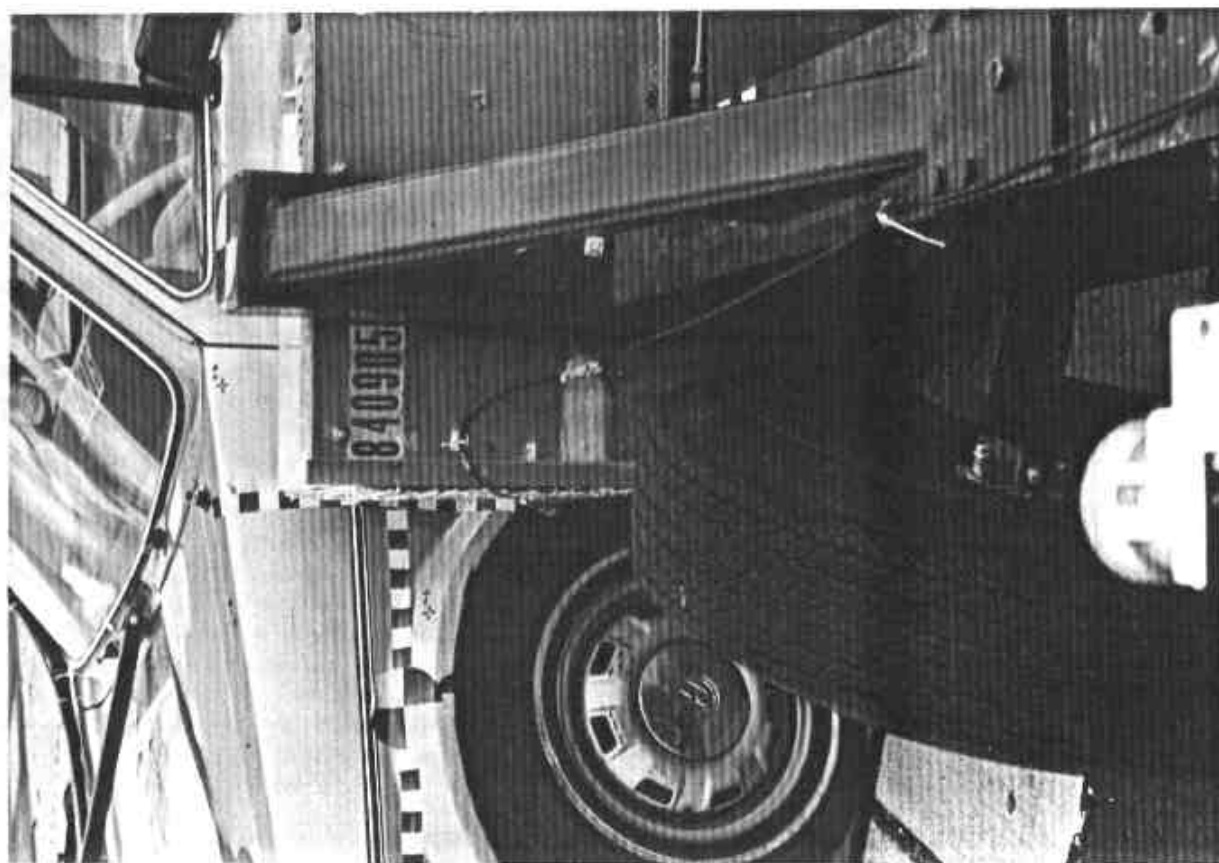


Figure A-4. PRE-TEST CLOSEUP - VIEW 1
A-3



Figure A-5. PRE-TEST CLOSEUP - VIEW 2



Figure A-6. PRE-TEST CLOSEUP - VIEW 3
A-4



Figure A-7. PADDING MODIFICATIONS



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

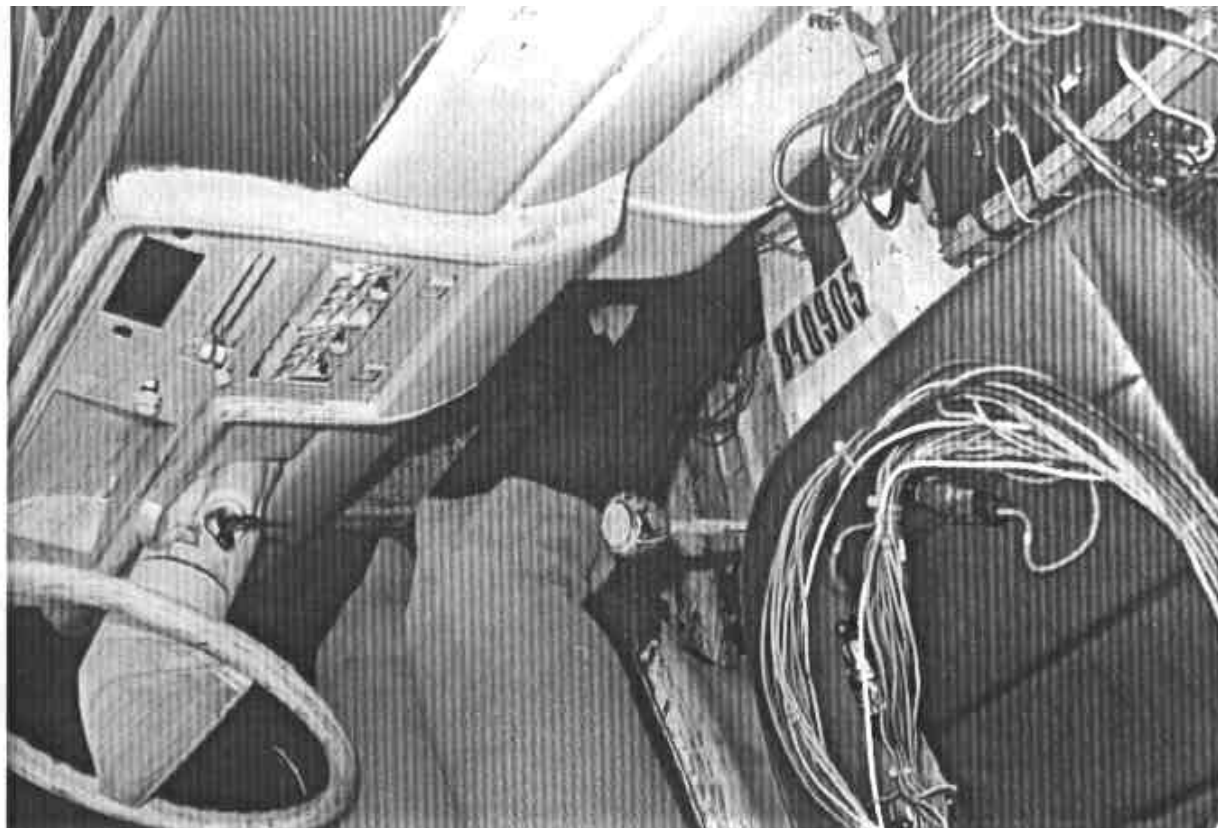


Figure A-9. PRE-TEST DRIVER DUMMY - VIEW 2



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

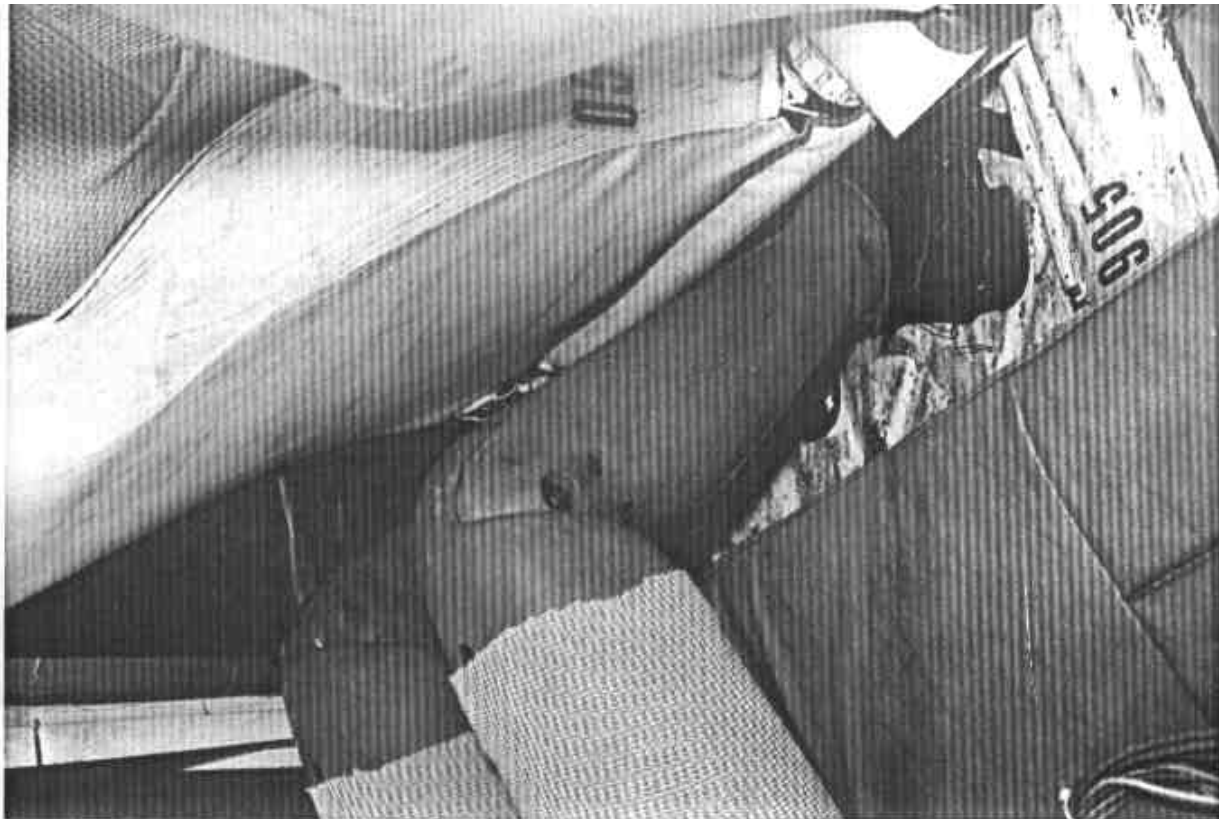


Figure A-11. PRE-TEST PASSENGER DUMMY - VIEW 2

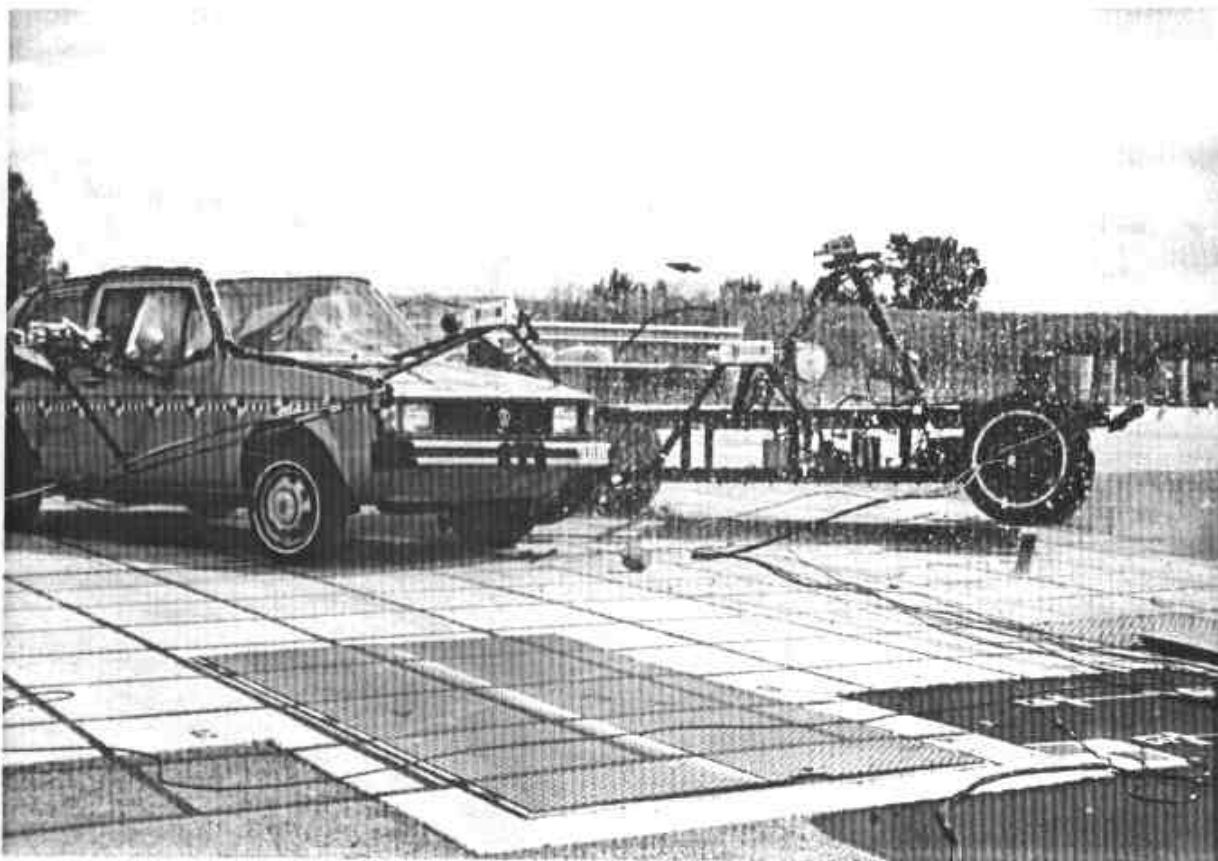


Figure A-12. CRASH EVENT PHOTOGRAPH
A-7



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



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



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



Figure A-16. POST-TEST OVERALL - VIEW 4
A-9

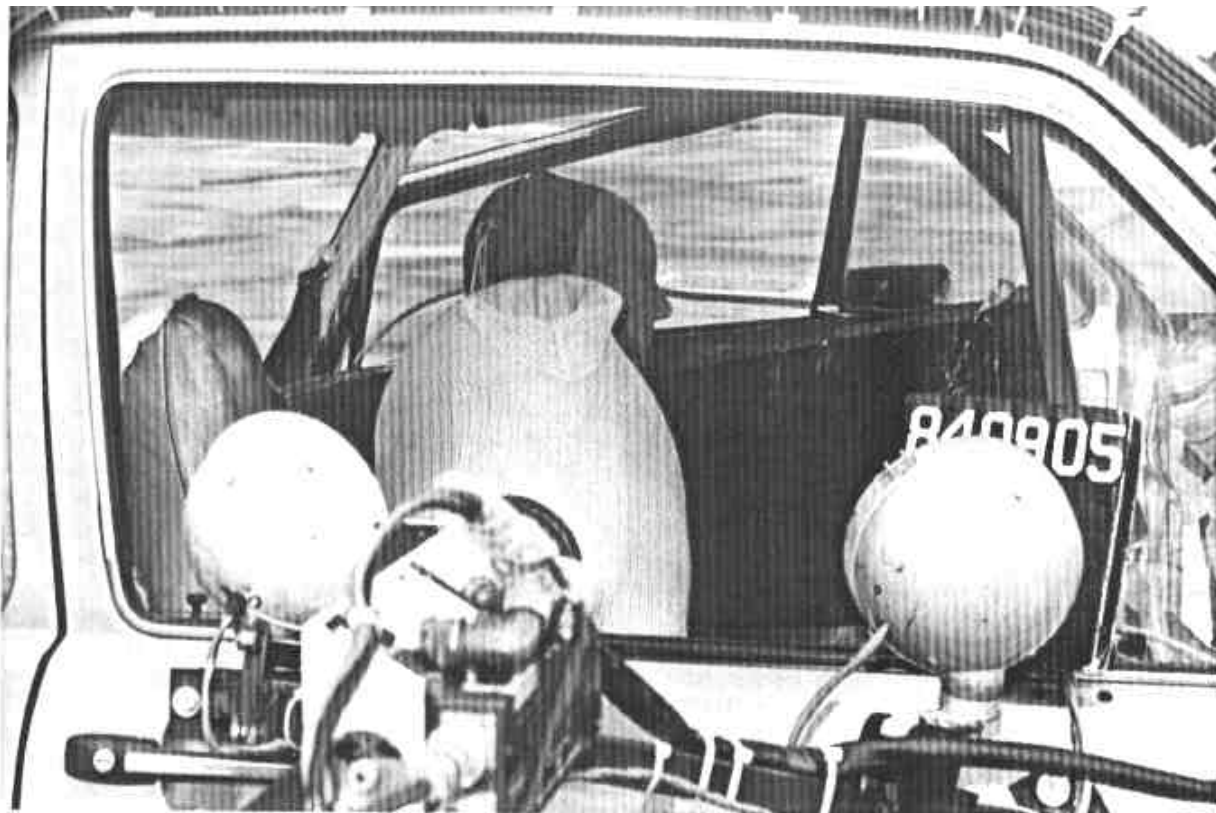


Figure A-17. POST-TEST DRIVER DUMMY - VIEW 1

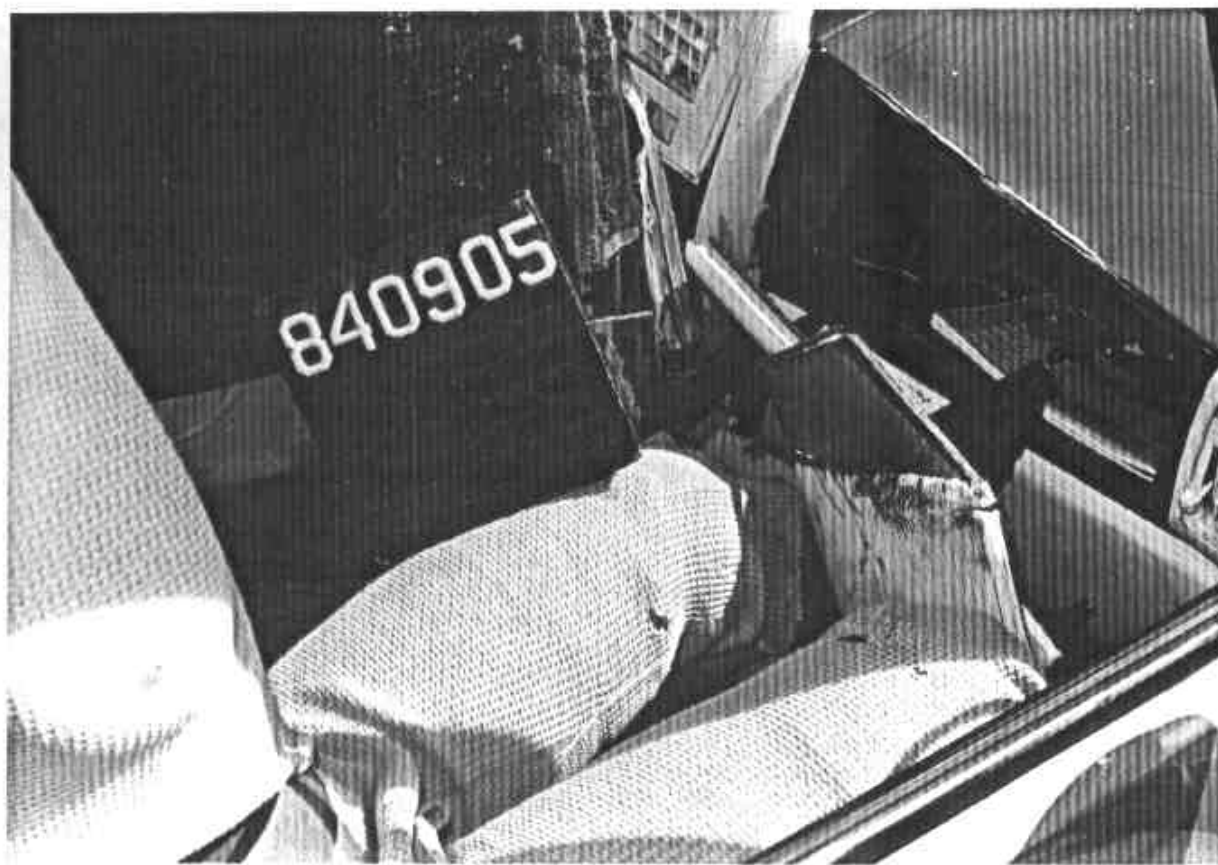


Figure A-18. POST-TEST DRIVER DUMMY - VIEW 2
A-10



Figure A-19. POST-TEST PASSENGER DUMMY - VIEW 1

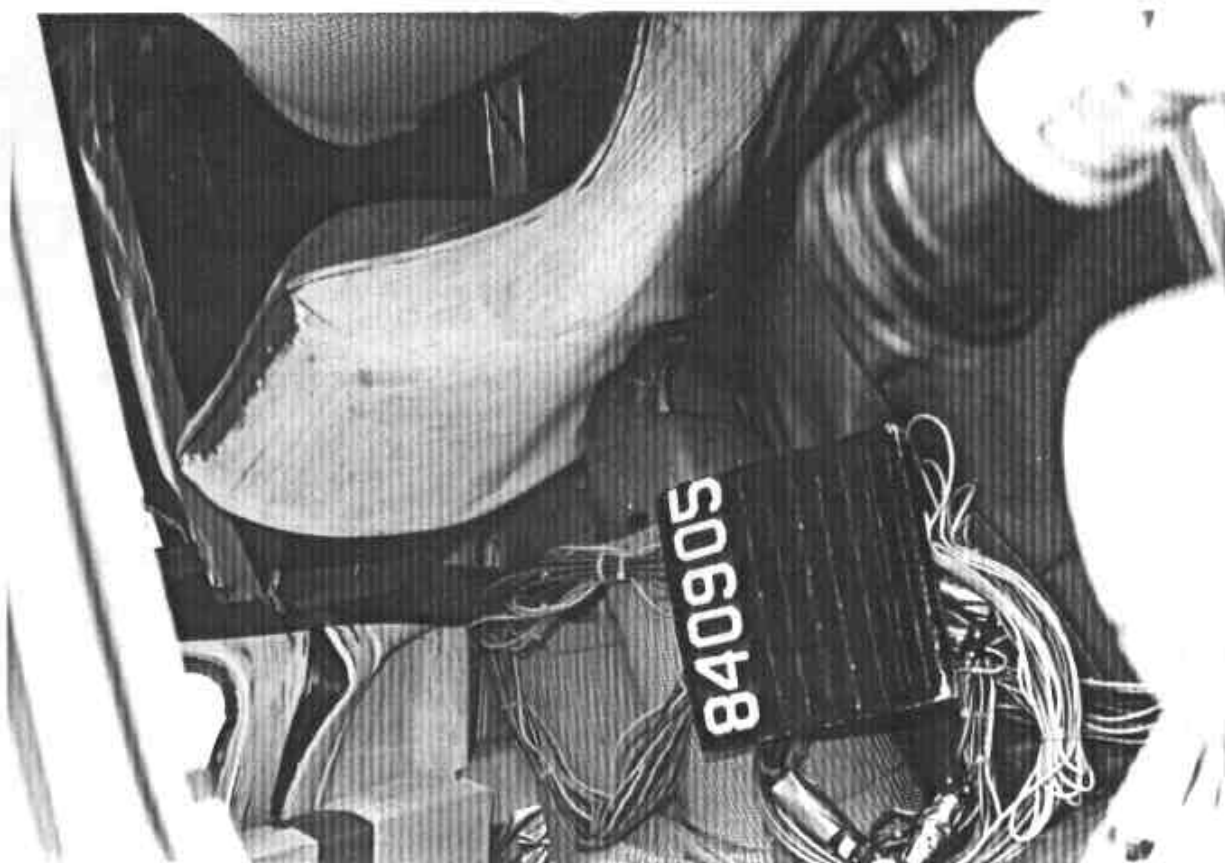


Figure A-20. POST-TEST PASSENGER DUMMY - VIEW 2
A-11



Figure A-21. POST-TEST DUMMIES OVERALL



Figure A-22. POST-TEST VEHICLE DAMAGE - VIEW 1
A-12

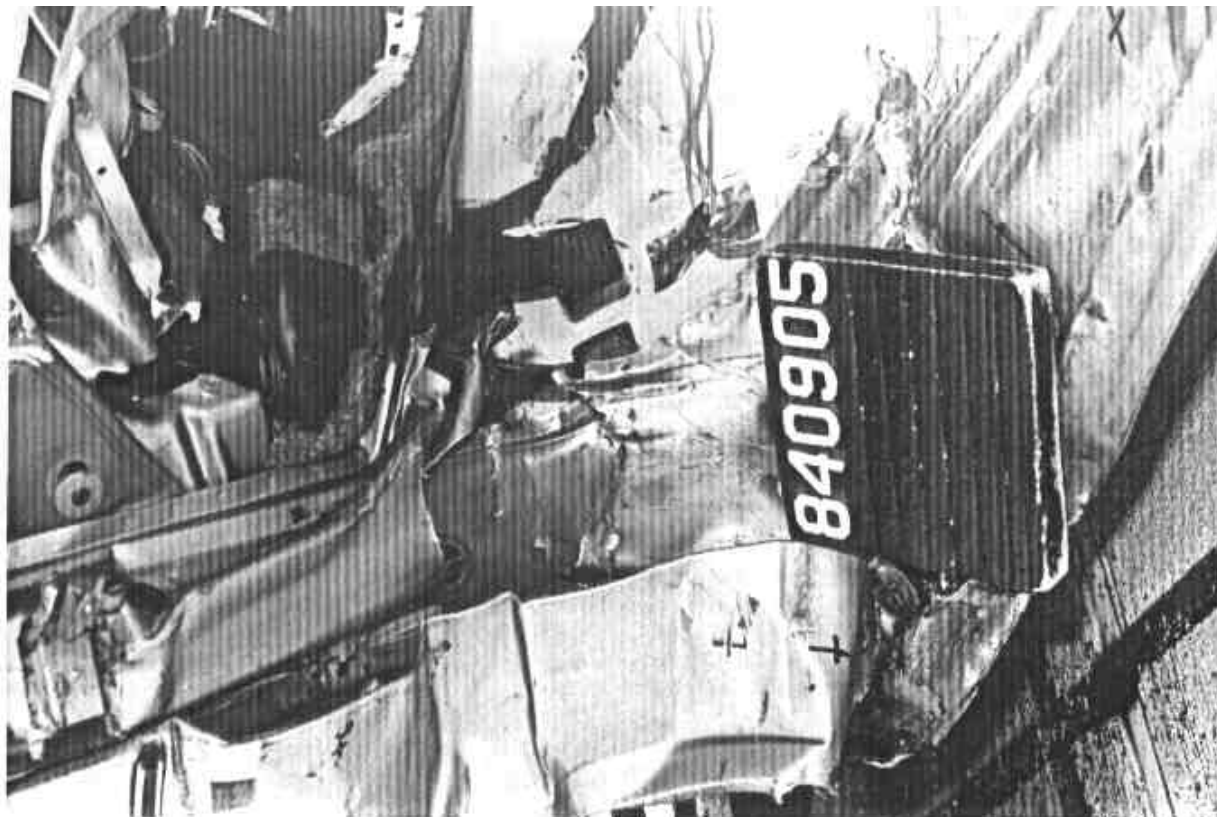


Figure A-23. POST-TEST VEHICLE DAMAGE - VIEW 2



Figure A-24. POST-TEST VEHICLE DAMAGE - VIEW 3
A-13

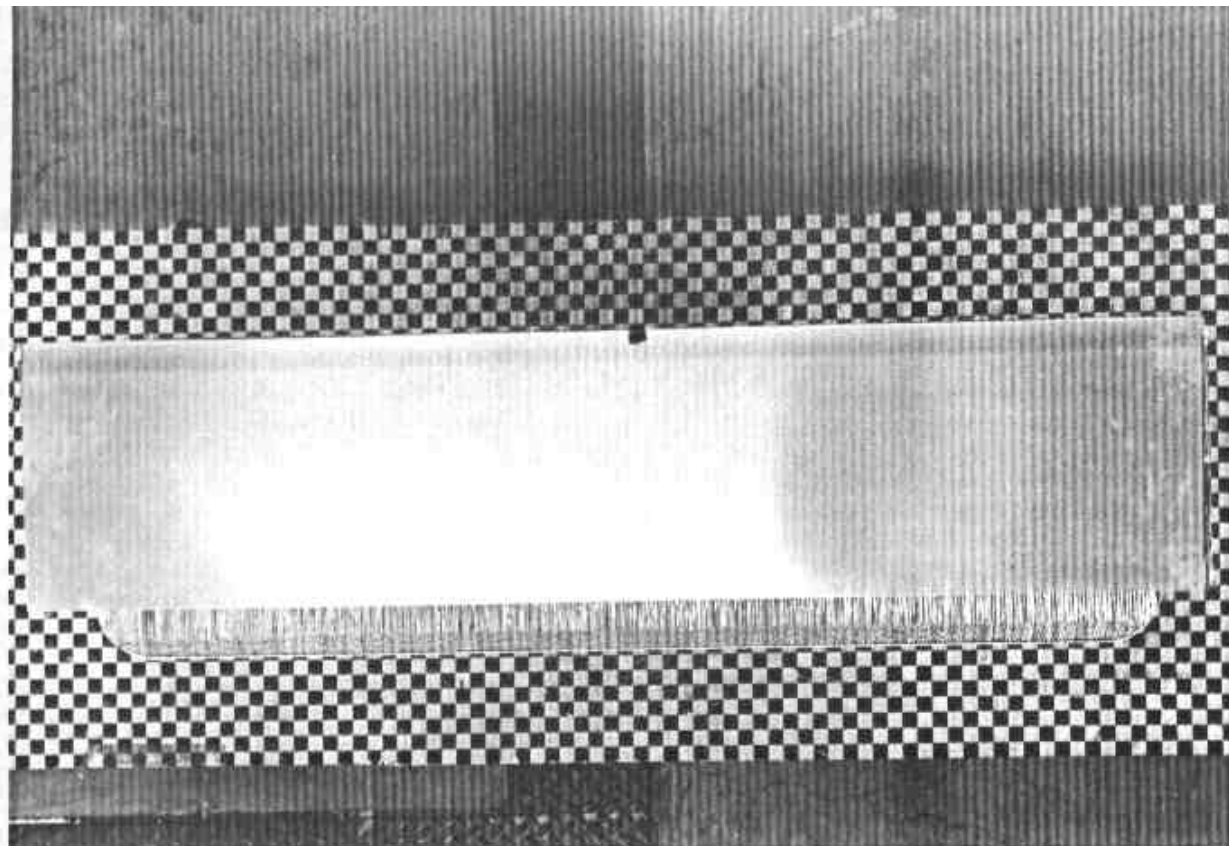


Figure A-25. PRE-TEST MDB FACE - VIEW 1

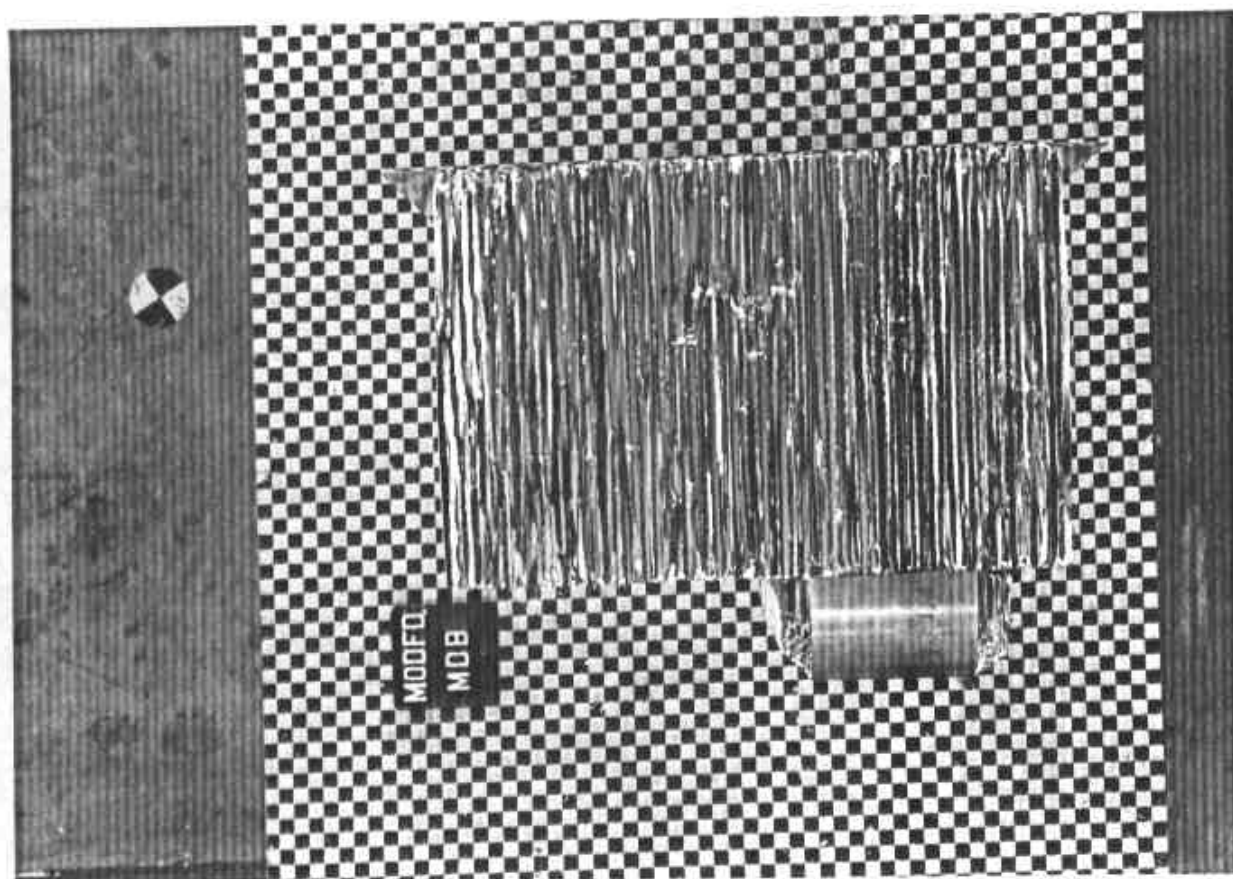


Figure A-26. PRE-TEST MDB FACE - VIEW 2
A-14

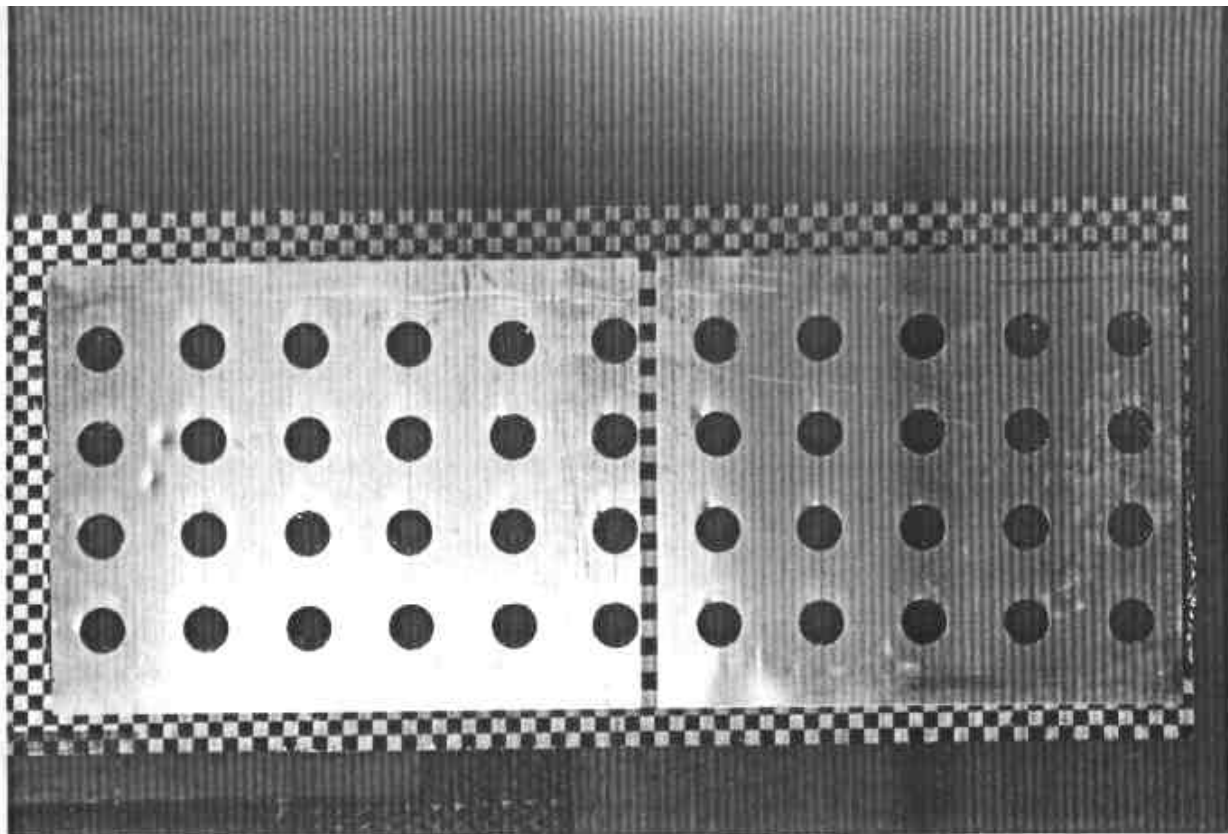


Figure A-27. PRE-TEST MDB FACE - VIEW 3

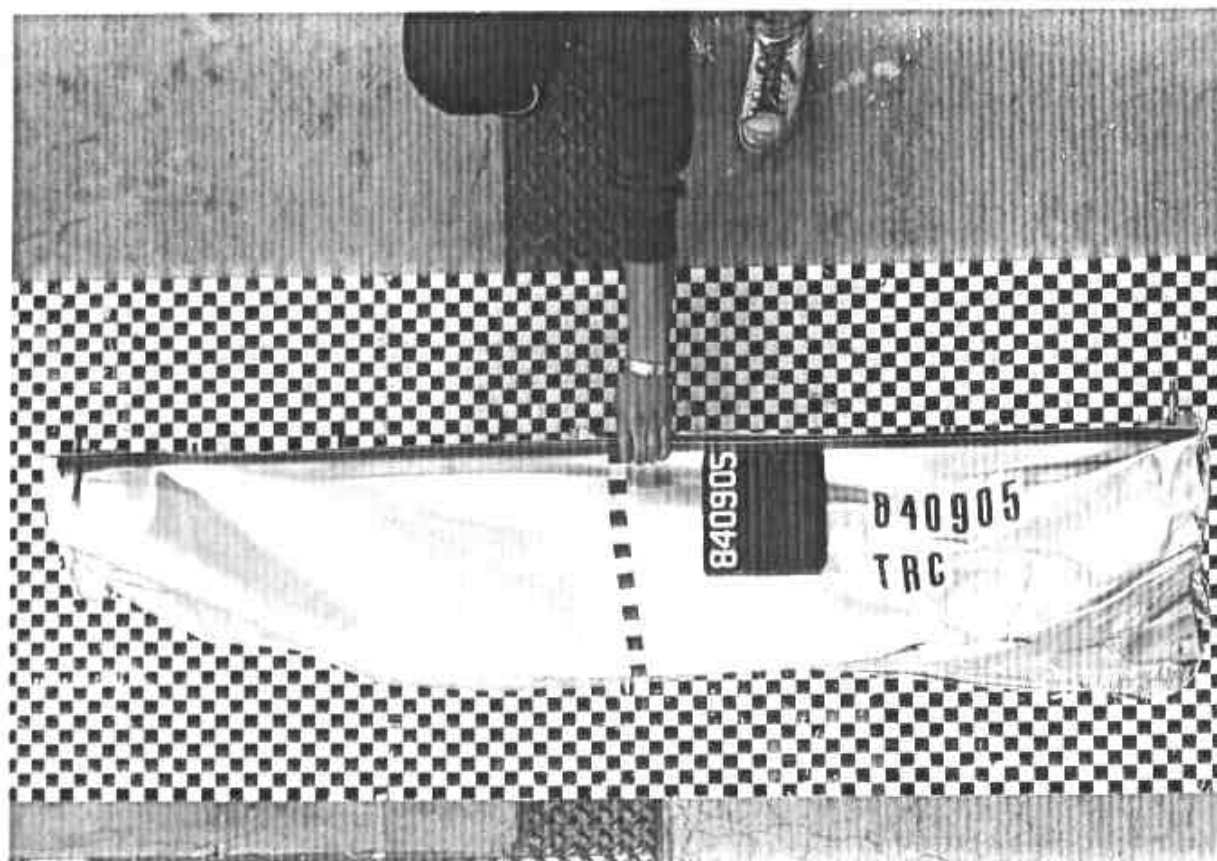


Figure A-28. POST-TEST MDB FACE - VIEW 1
A-15

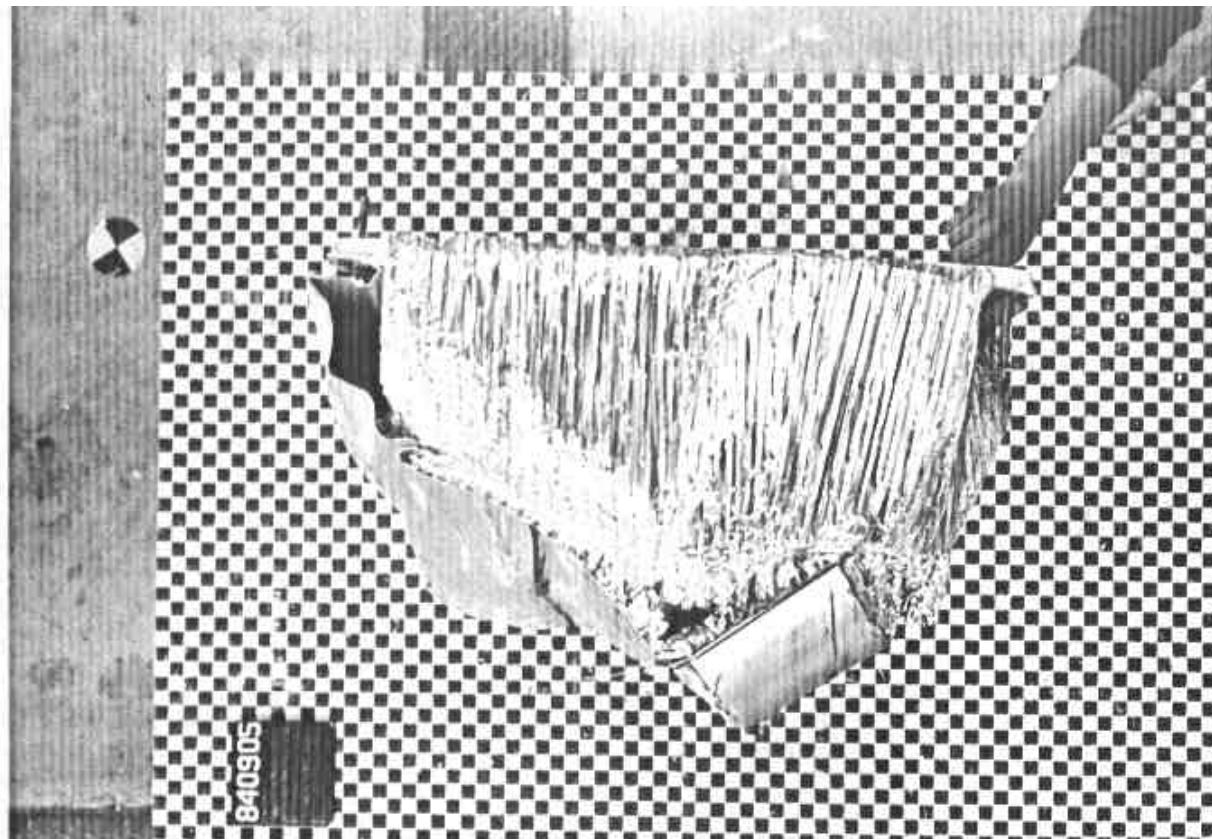


Figure A-29. POST-TEST MDB FACE - VIEW 2

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. The data was filtered according to SAE J211, except dummy thorax data which was filtered using the HSRI filter.

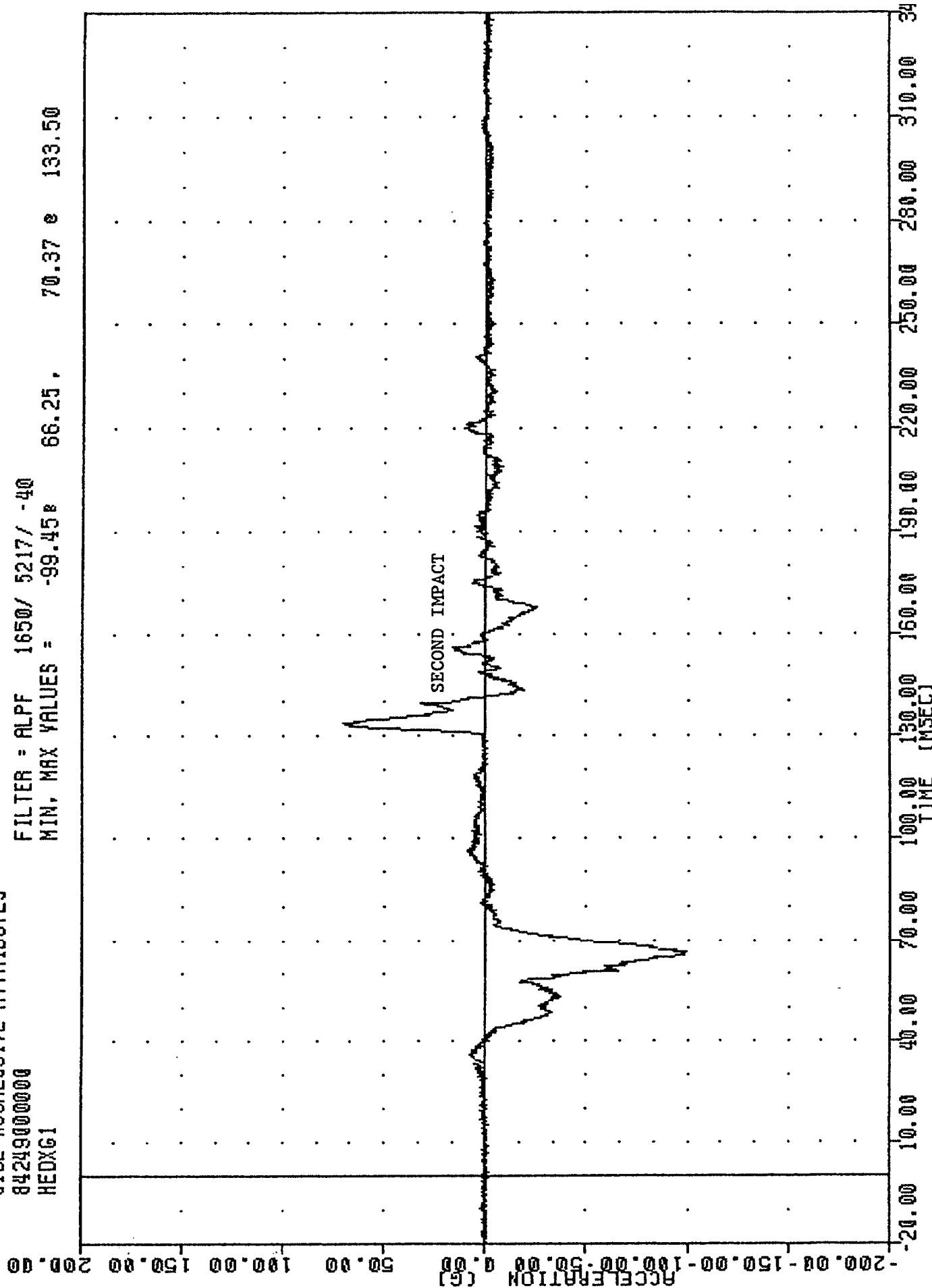
DATE RECORDED: 11/11/1983

84249000000

HEDXG1

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -99.45 66.25 , 70.37 133.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION X AXIS

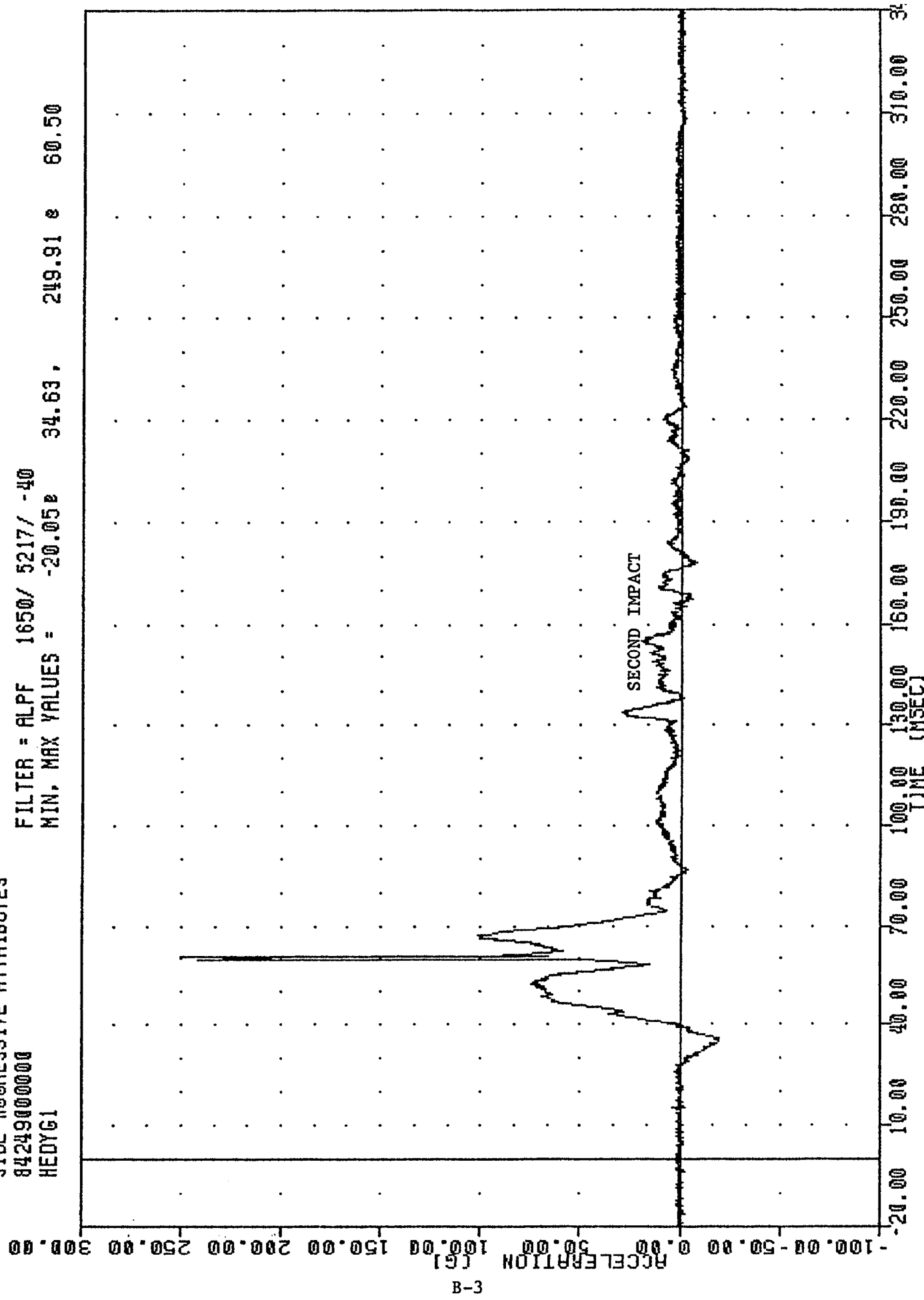
FILTER = ALPF 1650/ 5217/ -40

1940E

MIN. MAX VALUES = -20.052

33-15

249.91 8 60.50



THE CASE OF
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Y AXIS

842490000000

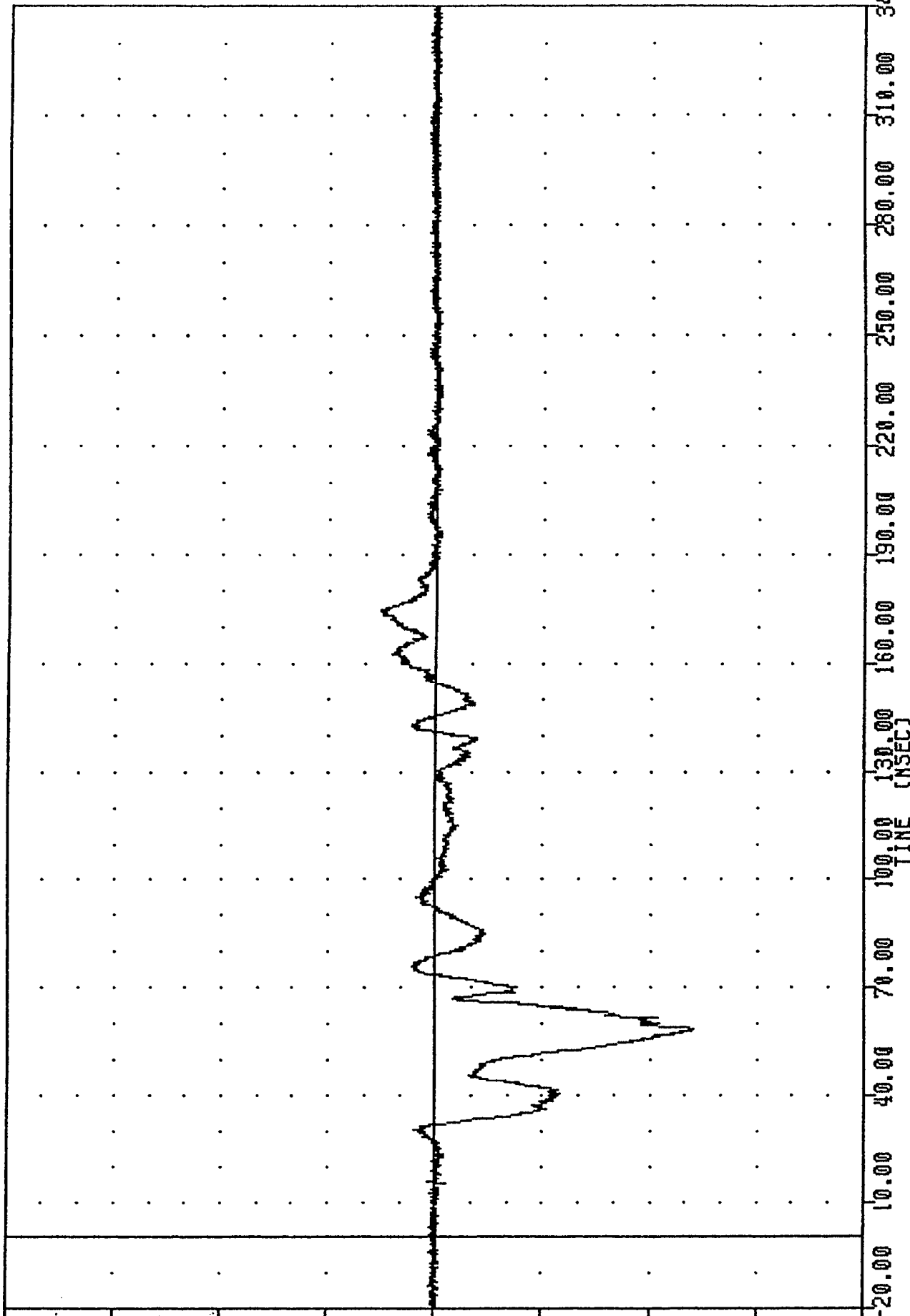
HEDZ61

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -120.41g 58.13, 26.07 g 174.50

ACCELERATION (G)

B-4



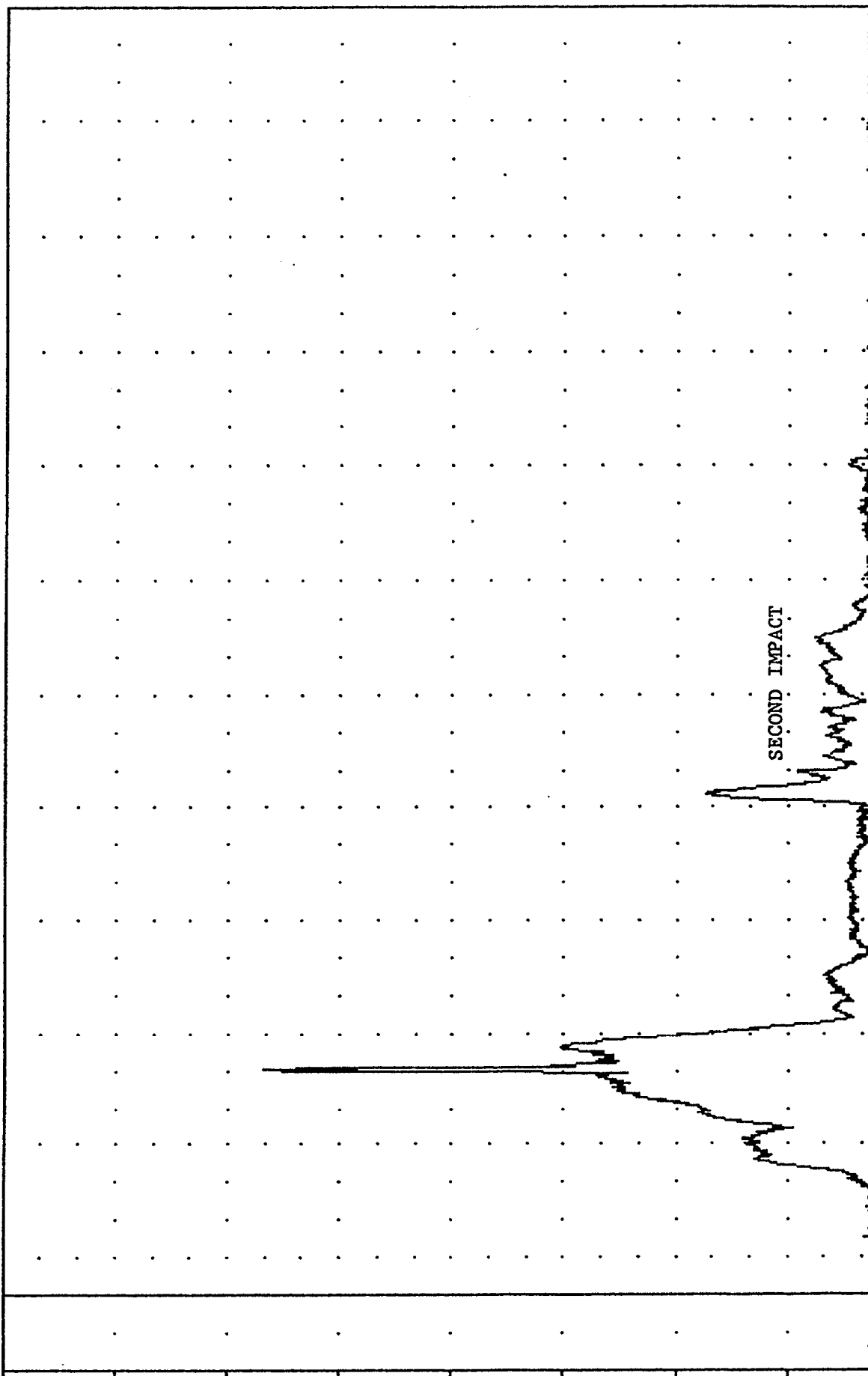
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Z AXIS

84249000000
HEADG1

FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = 0.06e 10.63,

273.87 e 60.50

ACCELERATION (G)



TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD RESULTANT

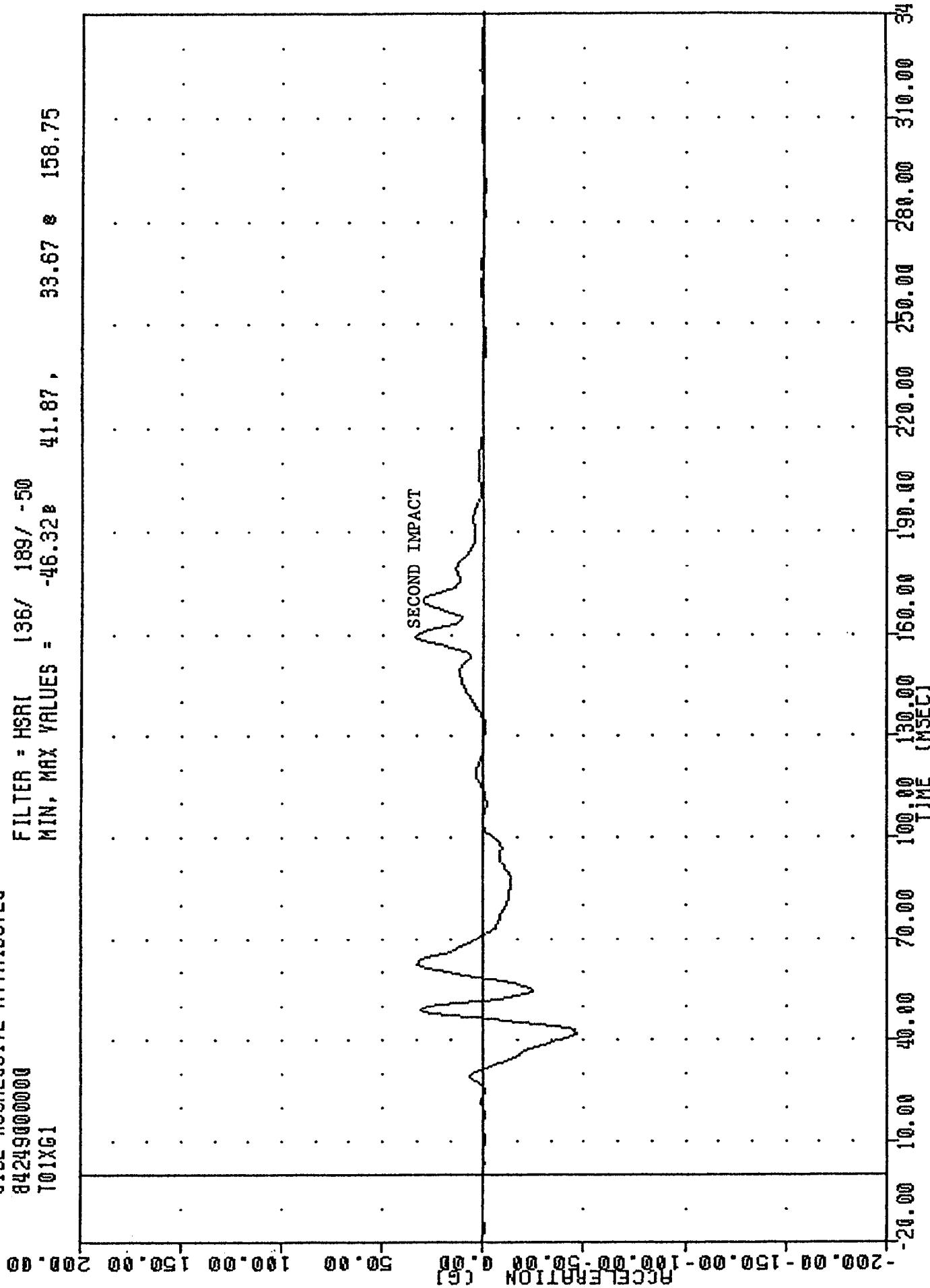
DATE OF TEST: 01/11/2001

84249000000

T01XG1

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -46.32 41.87, 33.67 158.75



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

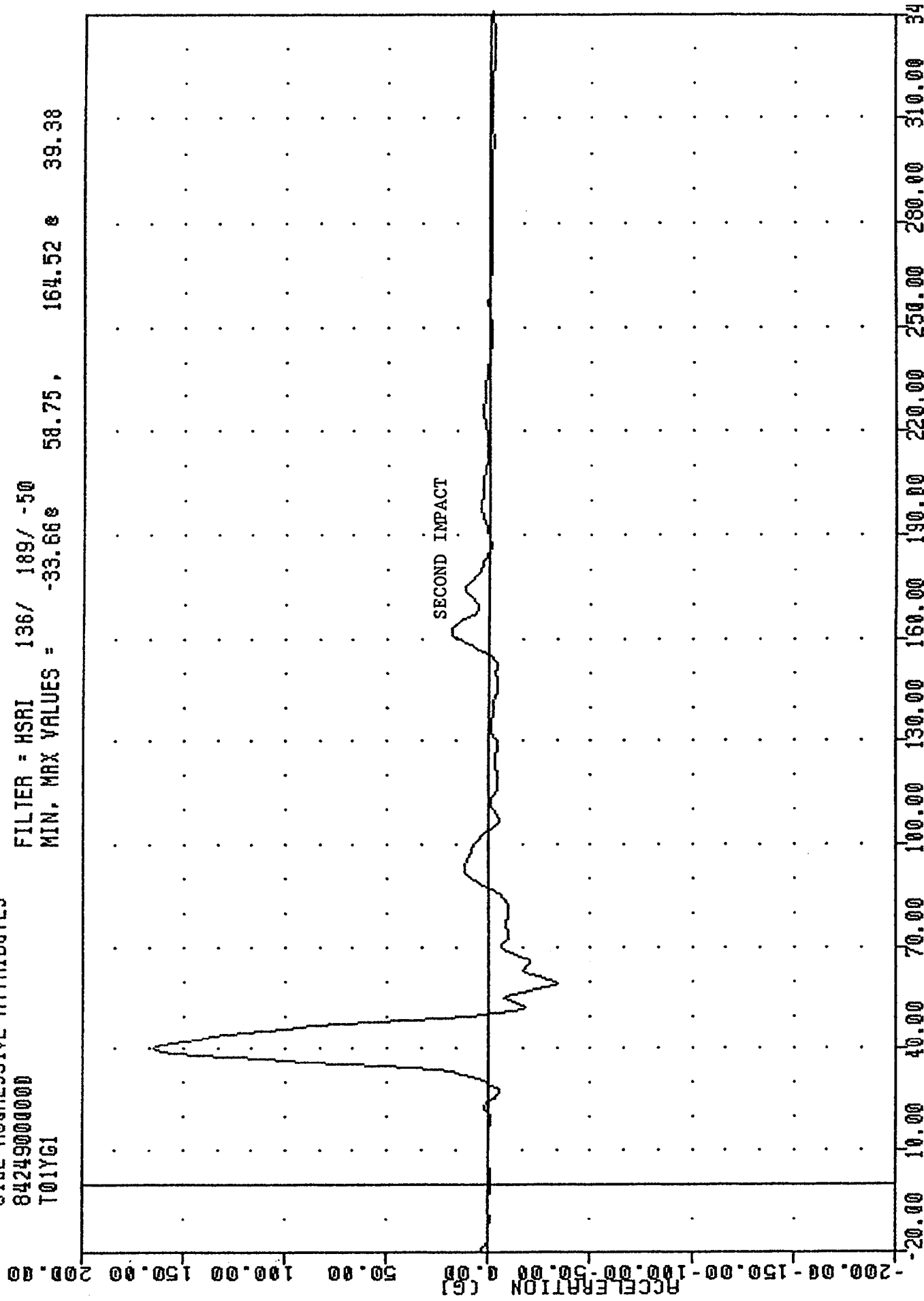
DATE OF TEST: 01/11/2011

84249000000

T01Y61

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -33.66e 58.75, 164.52 e 39.38



B-7

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

SIDE IMPRESSIVE MINIBUUES

842490000000

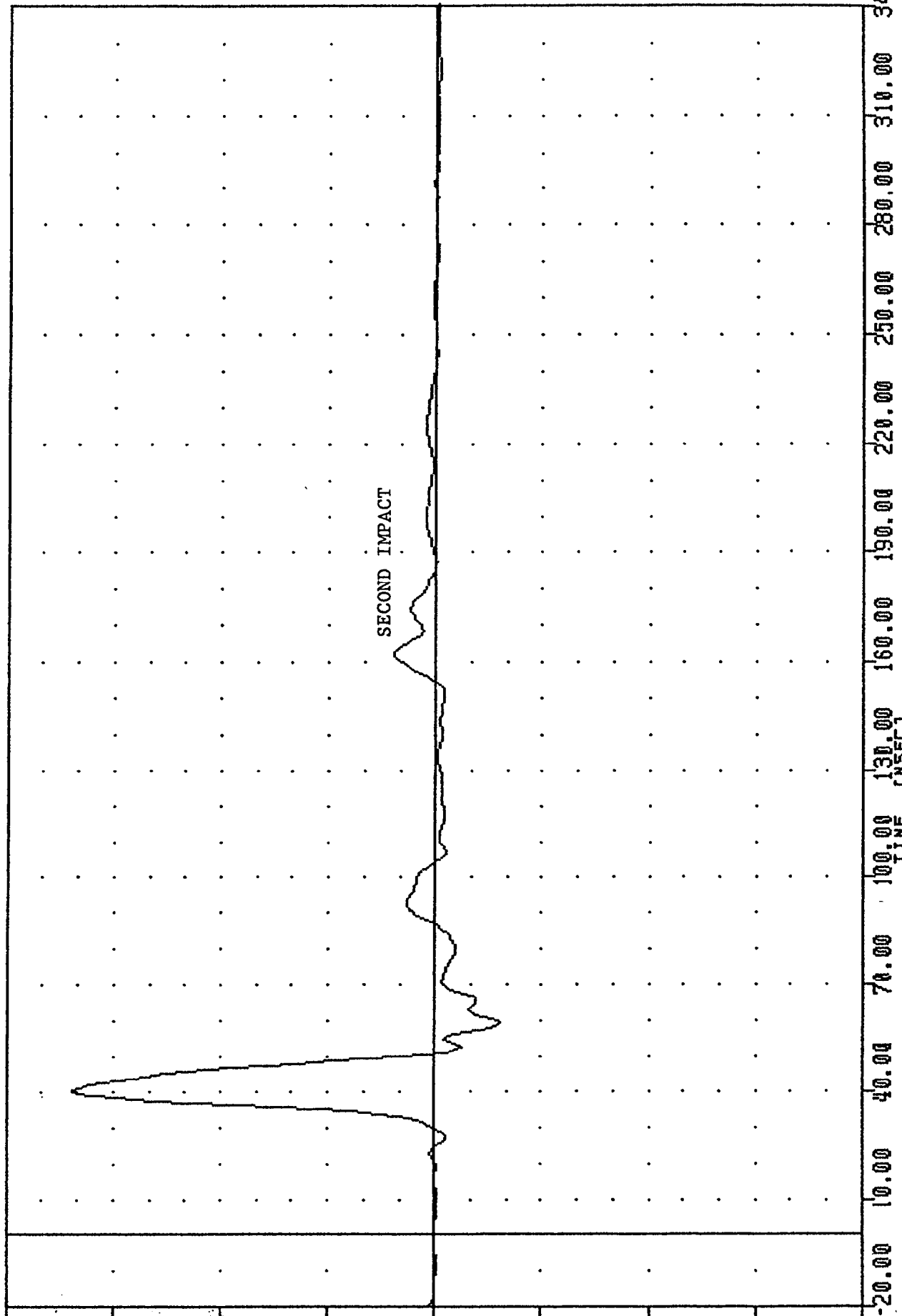
T01Y6A

FILTER = HSRI 136/ 189/ .50

MIN, MAX VALUES = -30.98 58.75 . 169.20 39.38

ACCELERATION [G]

B-8



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

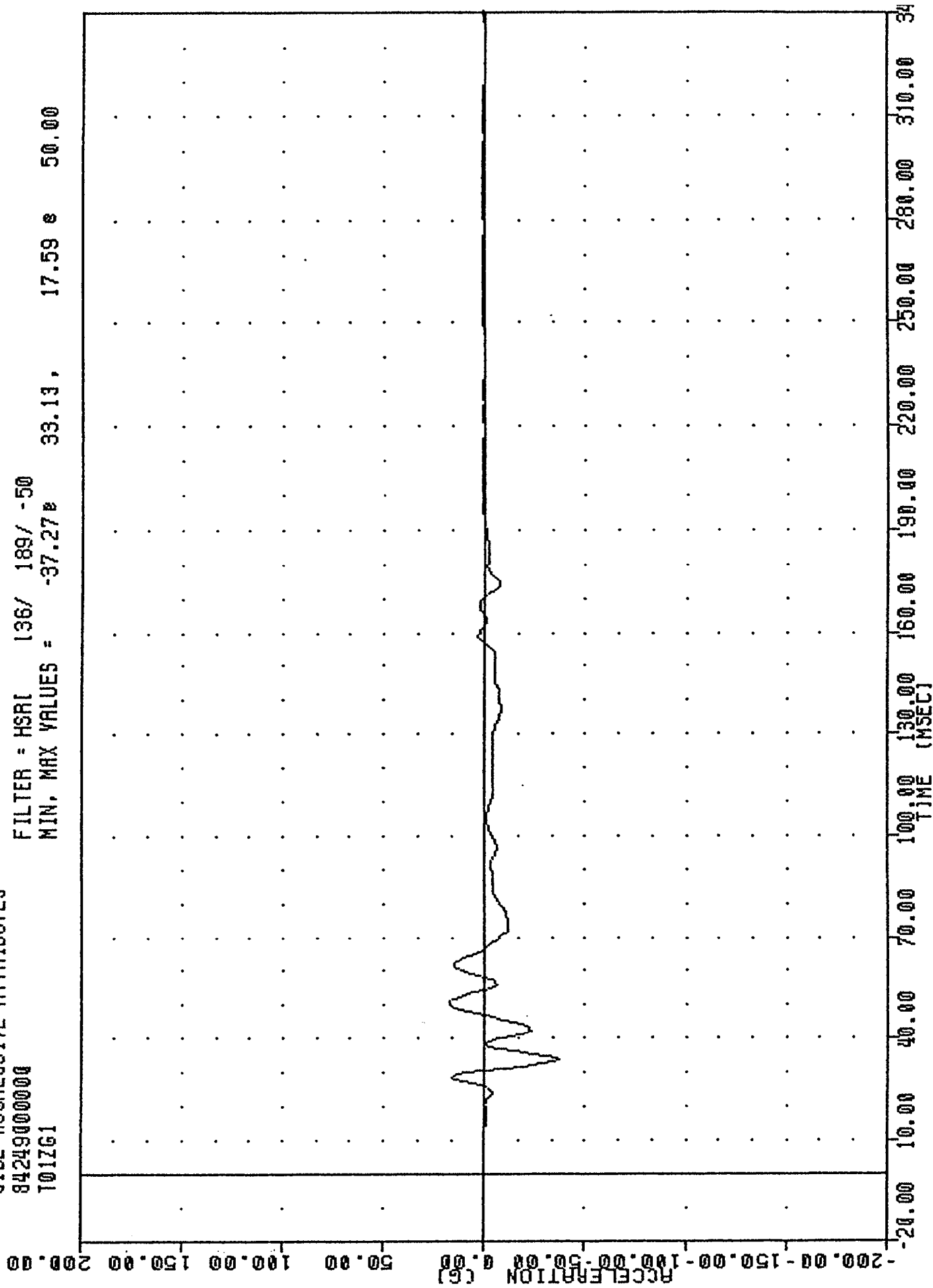
SIDE IMPRESSIVE HISTOGRAMS

84249000000

T01261

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -37.27 33.13, 17.59 50.00



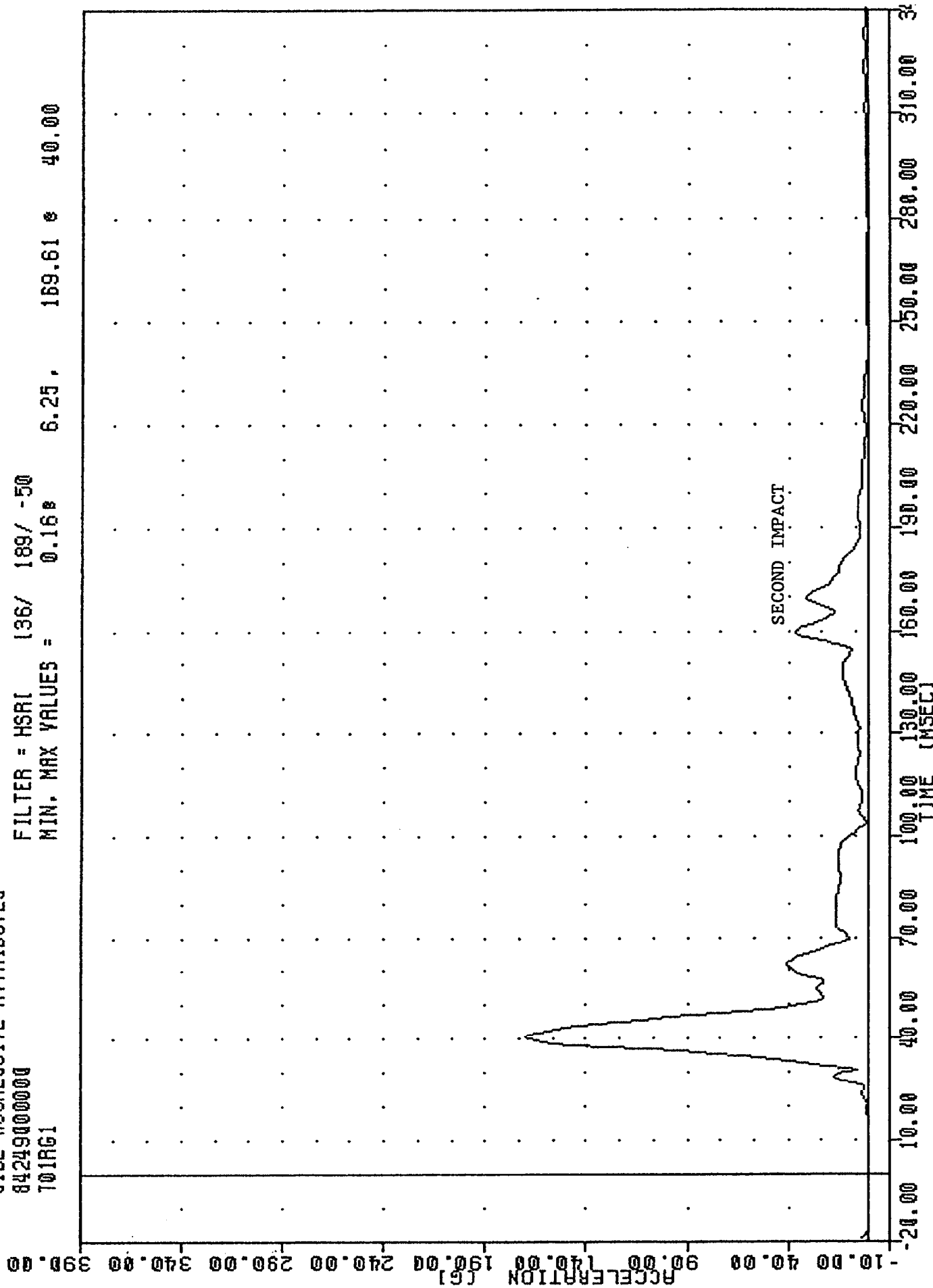
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION Z AXIS

TWIRGI

FILTER = HSP1 136/ 189/ -50

MIN. MAX VALUES = 0.168

DATE	DESCRIPTION	AMOUNT	BALANCE
6.25.	169.61	\$	40.00

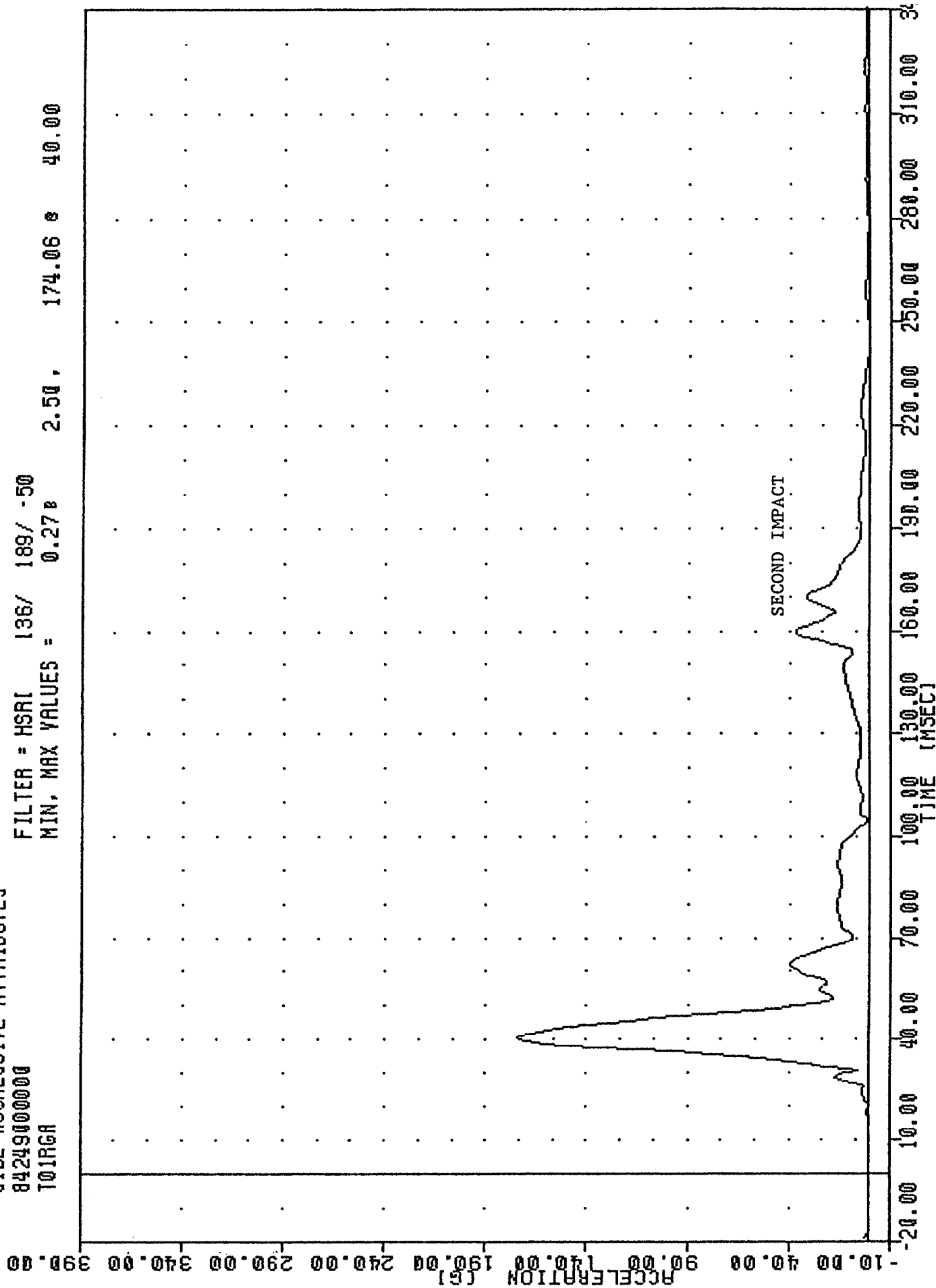


THE OBJECT
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESULTANT

T01RGA

FILTER = HSR 136/ 189/ -50

MIN, MAX VALUES = 0.278 2.50, 174.06 & 40.00



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

DATE 11/01/00 TIME 01:00:00

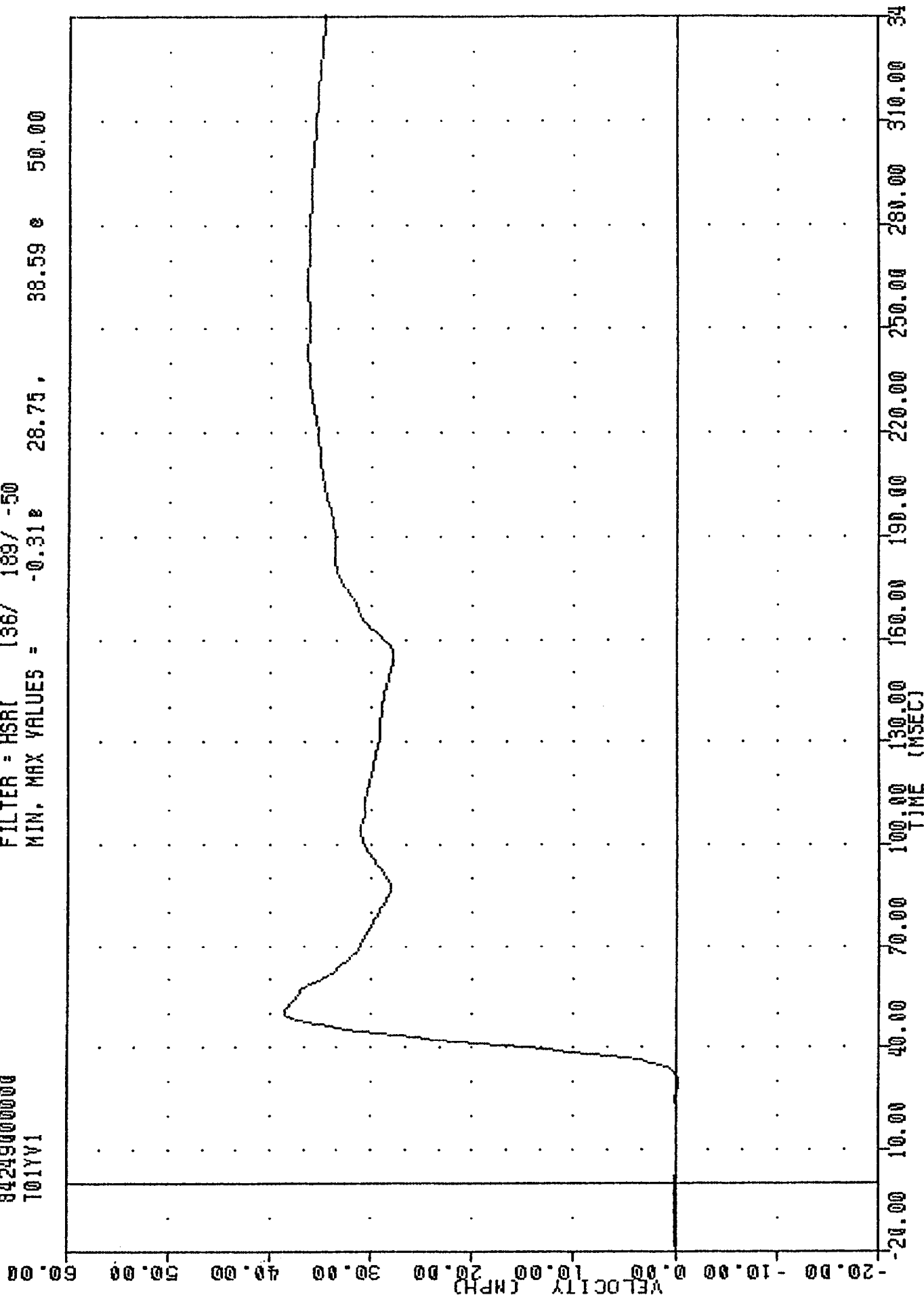
84249000000

T01YV1

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -0.310 28.75, 38.59 0 50.00

B-12



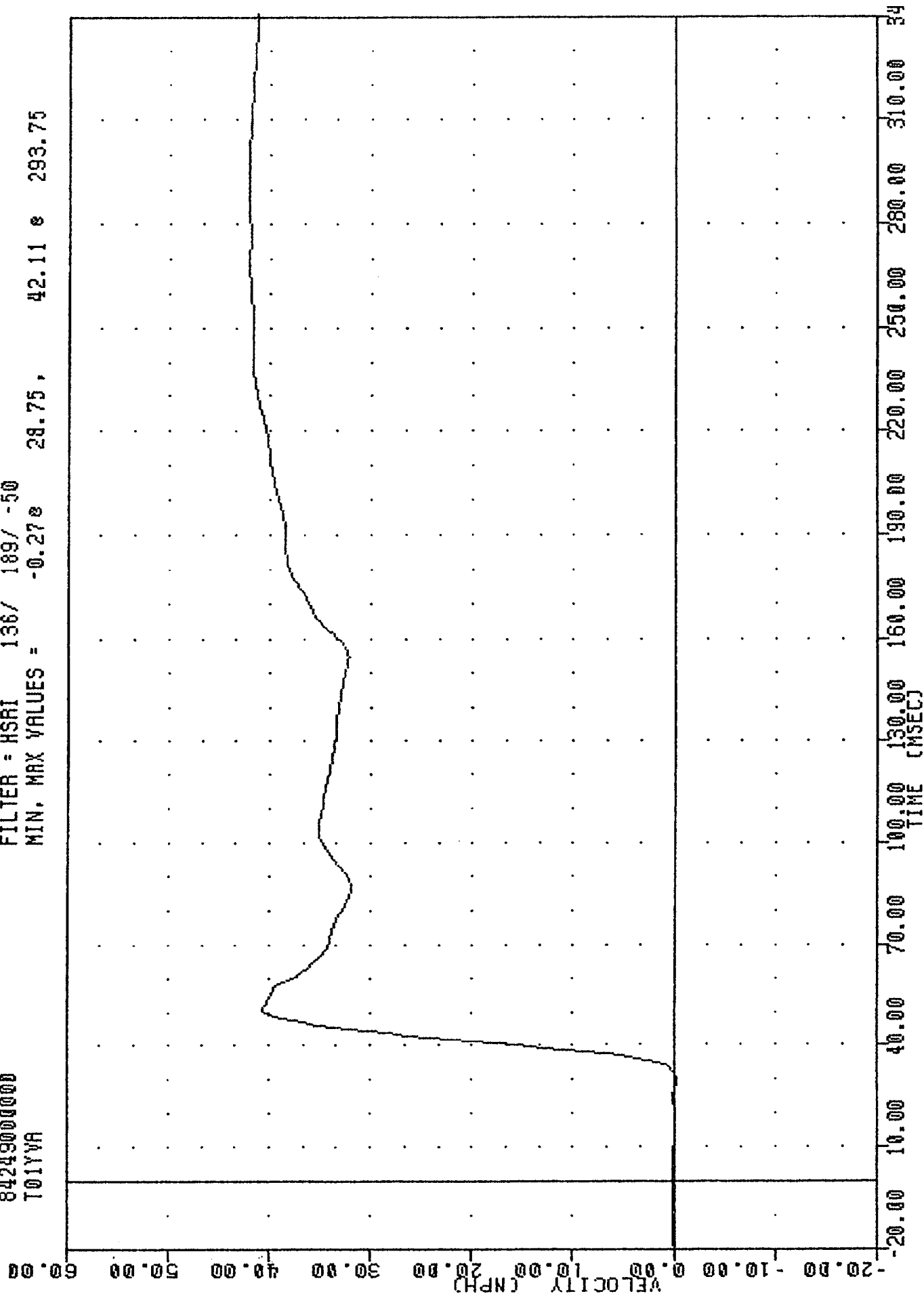
FILTER = HSRI 136/ 189/ -50

000006728

10174

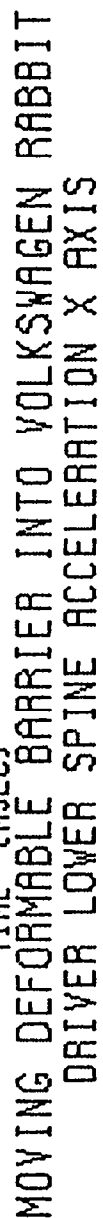
FILTER = HSRI 136/ 189/ -50

29.75, 42.11 & 293.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA Y USING T01YGA

33.42 38.13



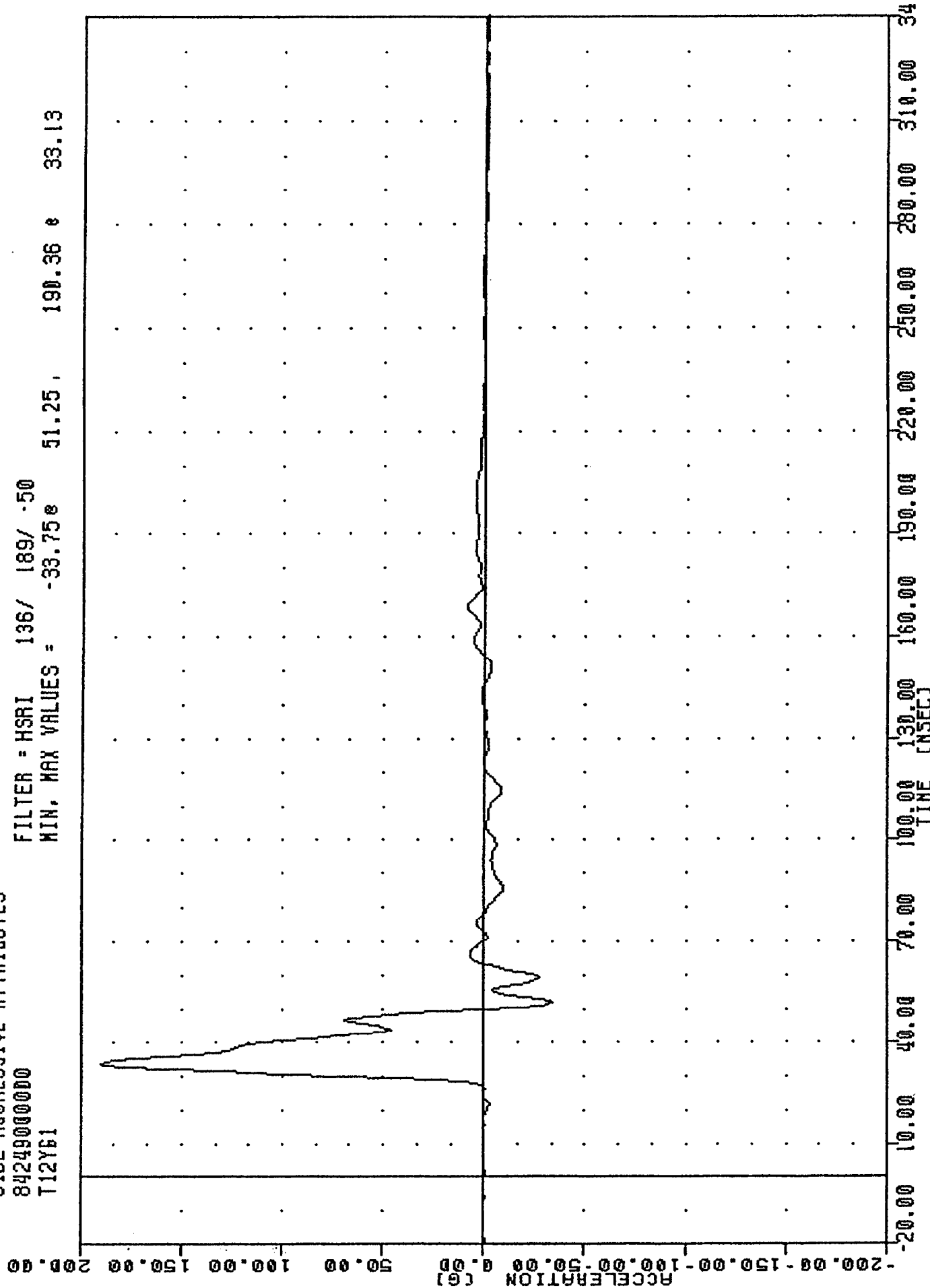
SALE NUMERICAL MINIMIZED

84249000000

T12Y61

FILTER = HSRI 136/ 189/ -50

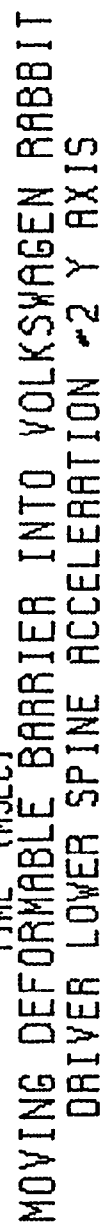
MIN. MAX VALUES = -33.75e 51.25, 190.36 e 33.13



B-15

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

7
 7
 7



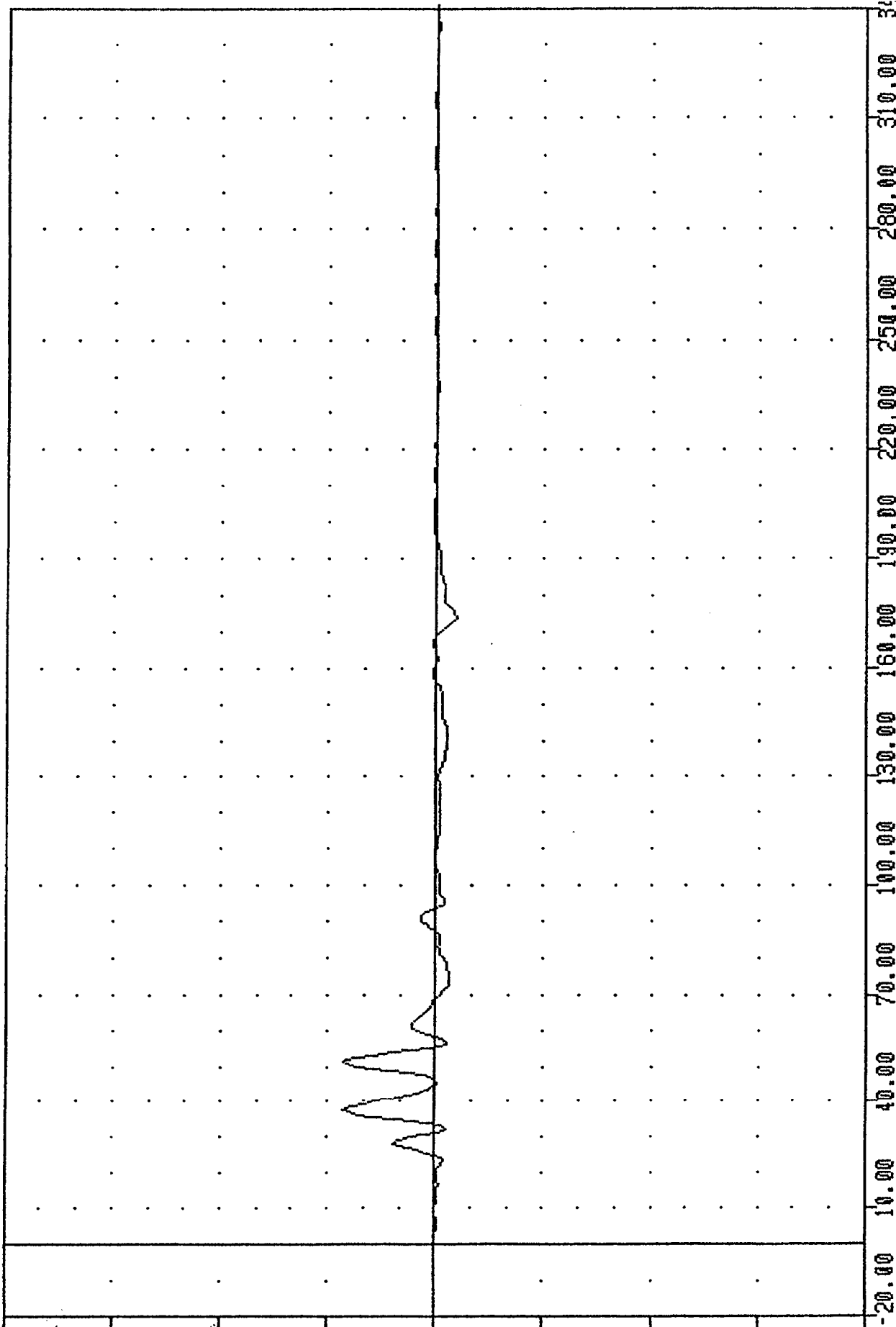
842490000000

T12ZG1

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -8.92e 173.75, 43.02 e 50.63

ACCELERATION (G)



B-17

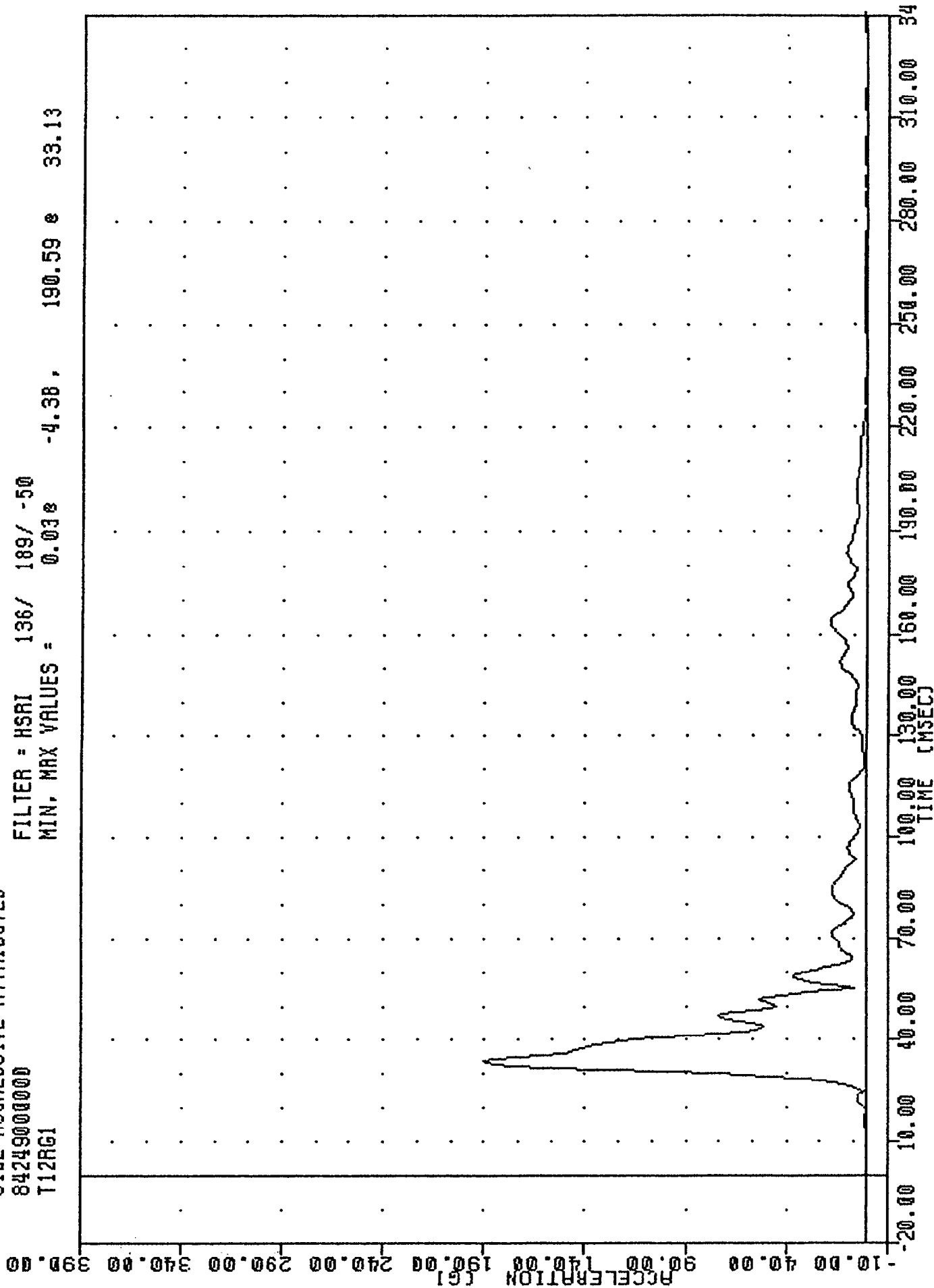
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE ACCELERATION Z AXIS

T12RGI

FILTER = HSP1 136/ 189/ -50

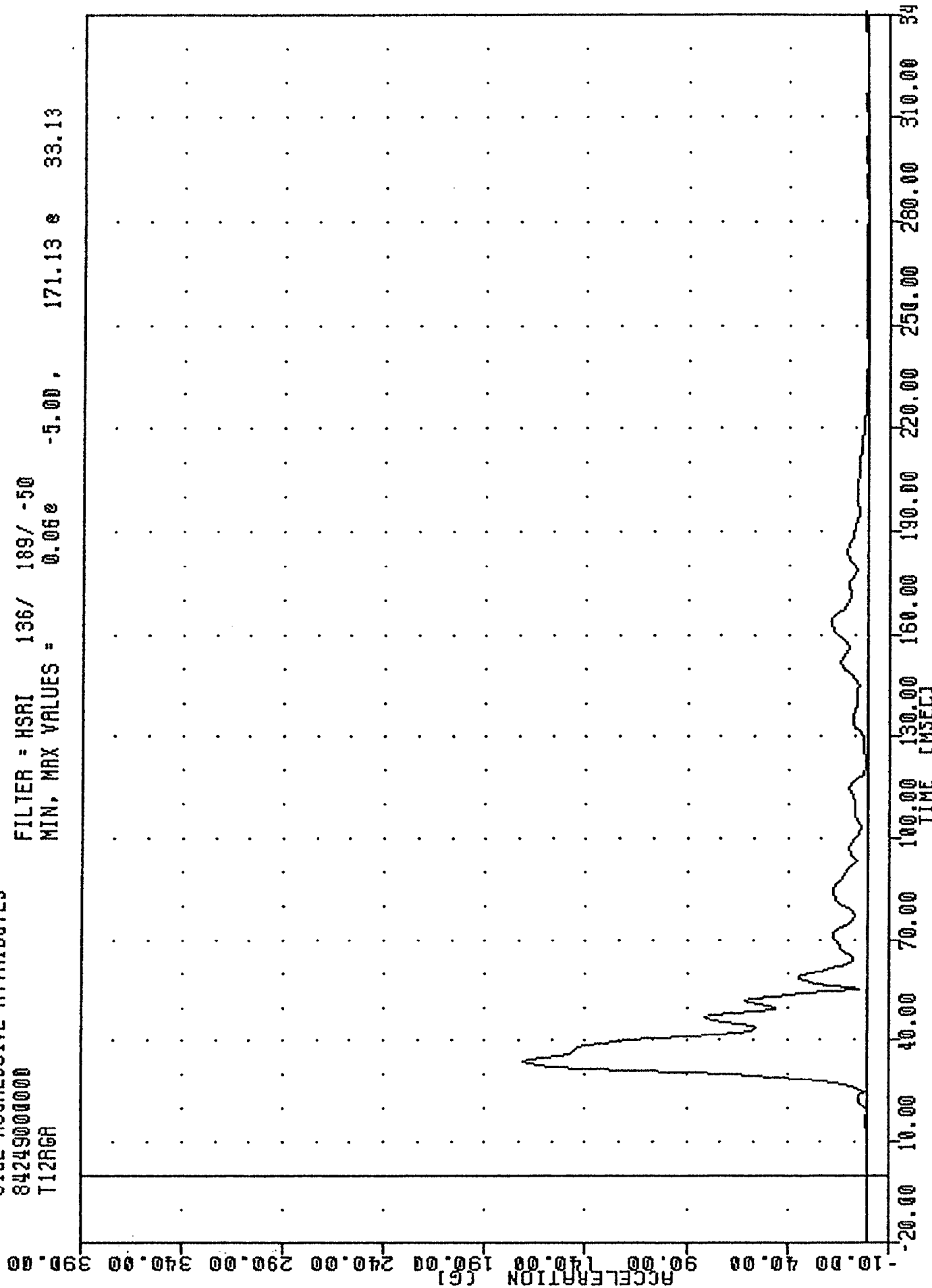
MIN. MAX VALUES = 0.032

-4.38	190.59	33.13
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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT

3-10



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

DATA PROCESSING RESULTS

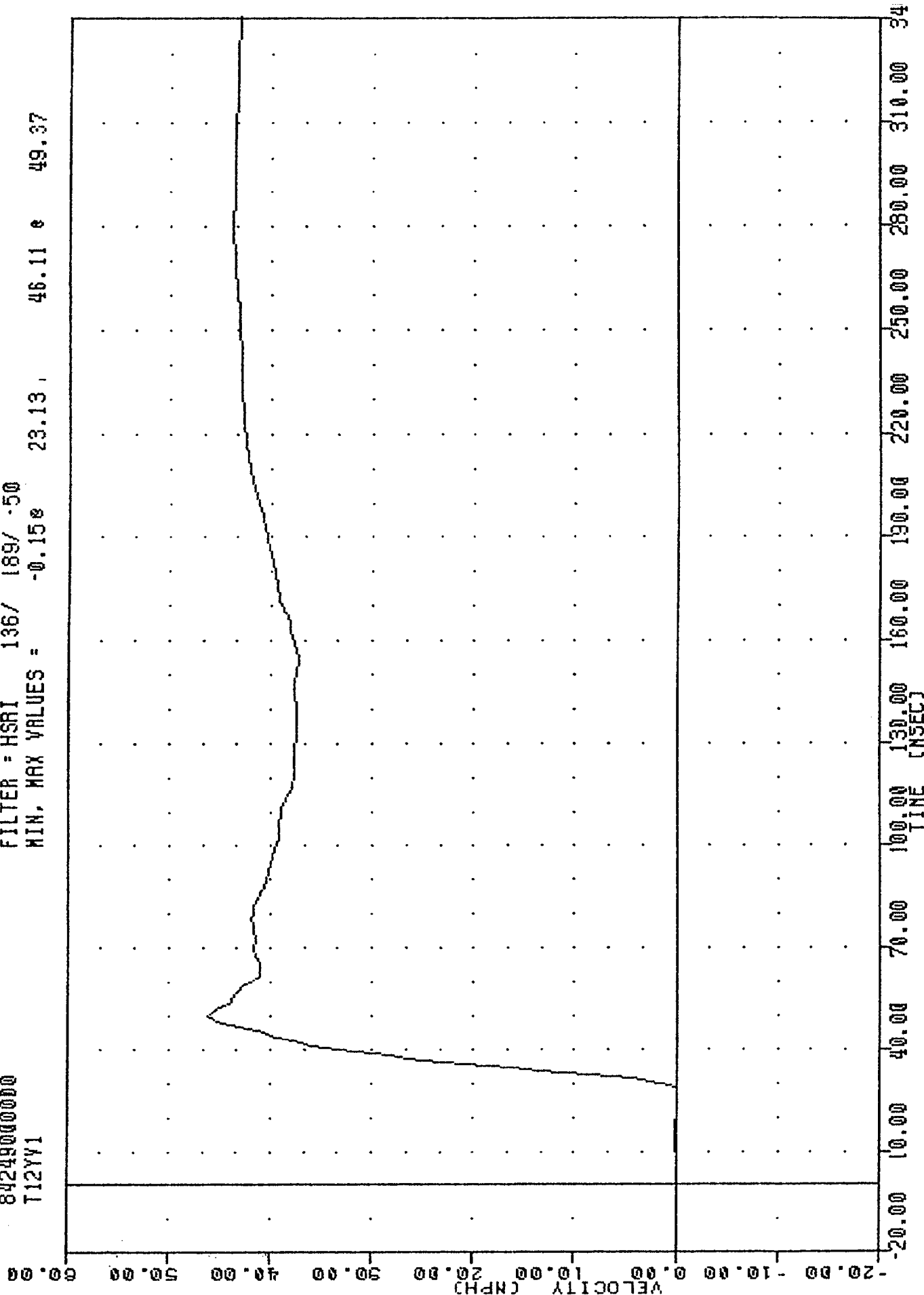
84249000000

T12YV1

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.150 23.13 , 46.11 0 49.37

B-20



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA Y USING T12YGI

DATE TIME

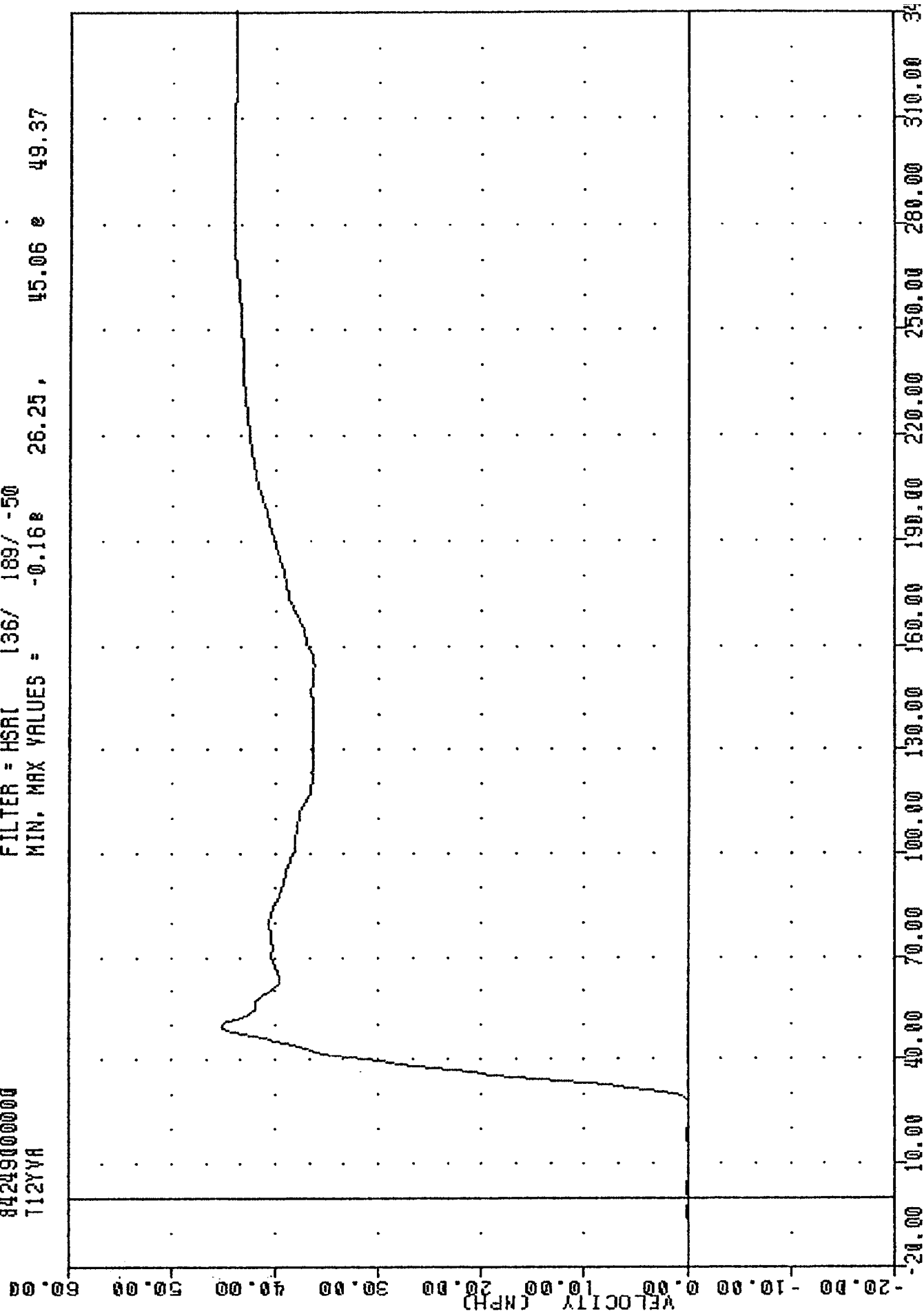
84249000000

T12YVA

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.16 26.25 ,

45.06 49.37



B-21

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGA

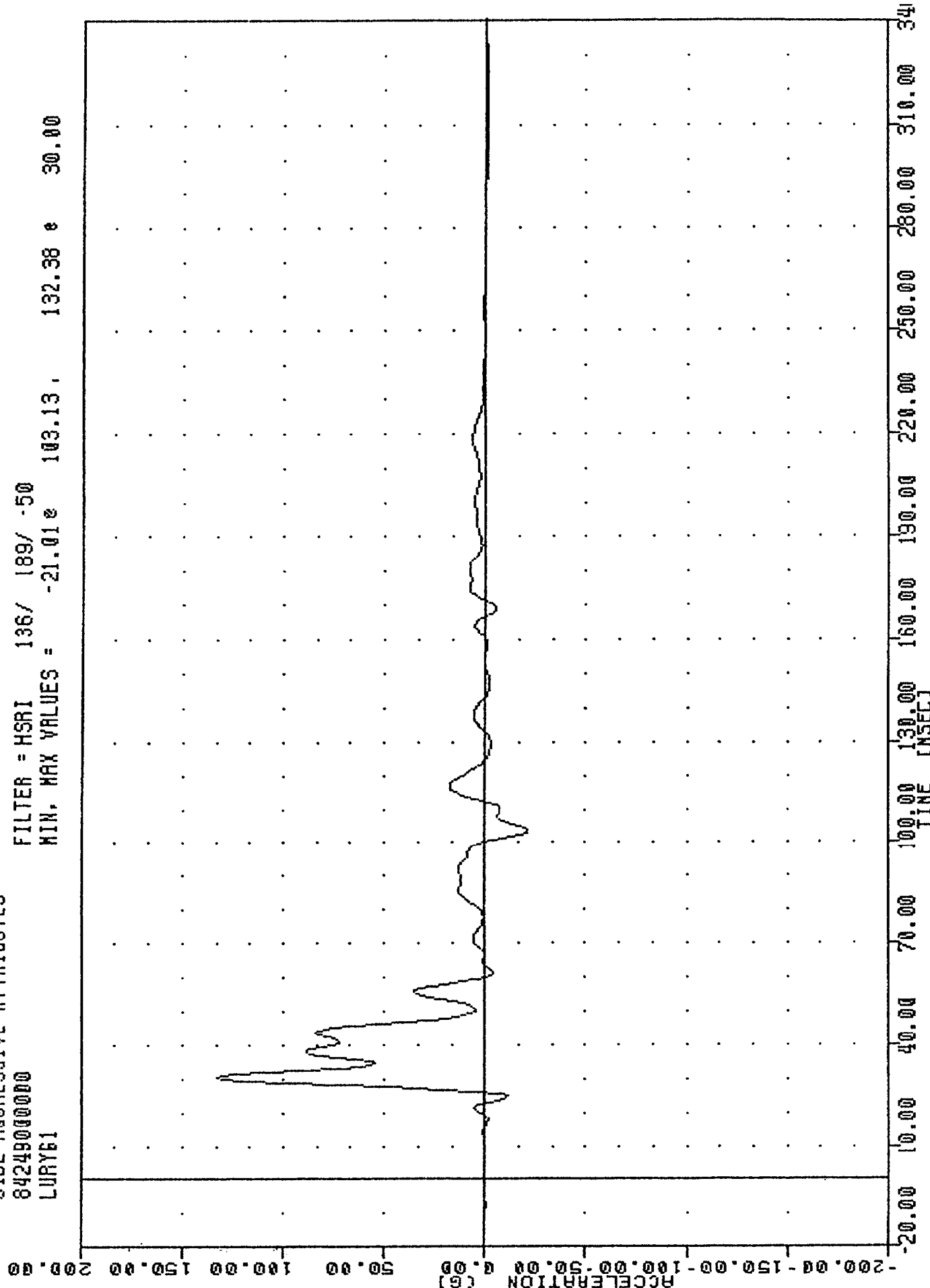
SIDE IMPRESSIVE MINIMUMS

84249000000

LURY61

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -21.01e 103.13, 132.38 e 30.00



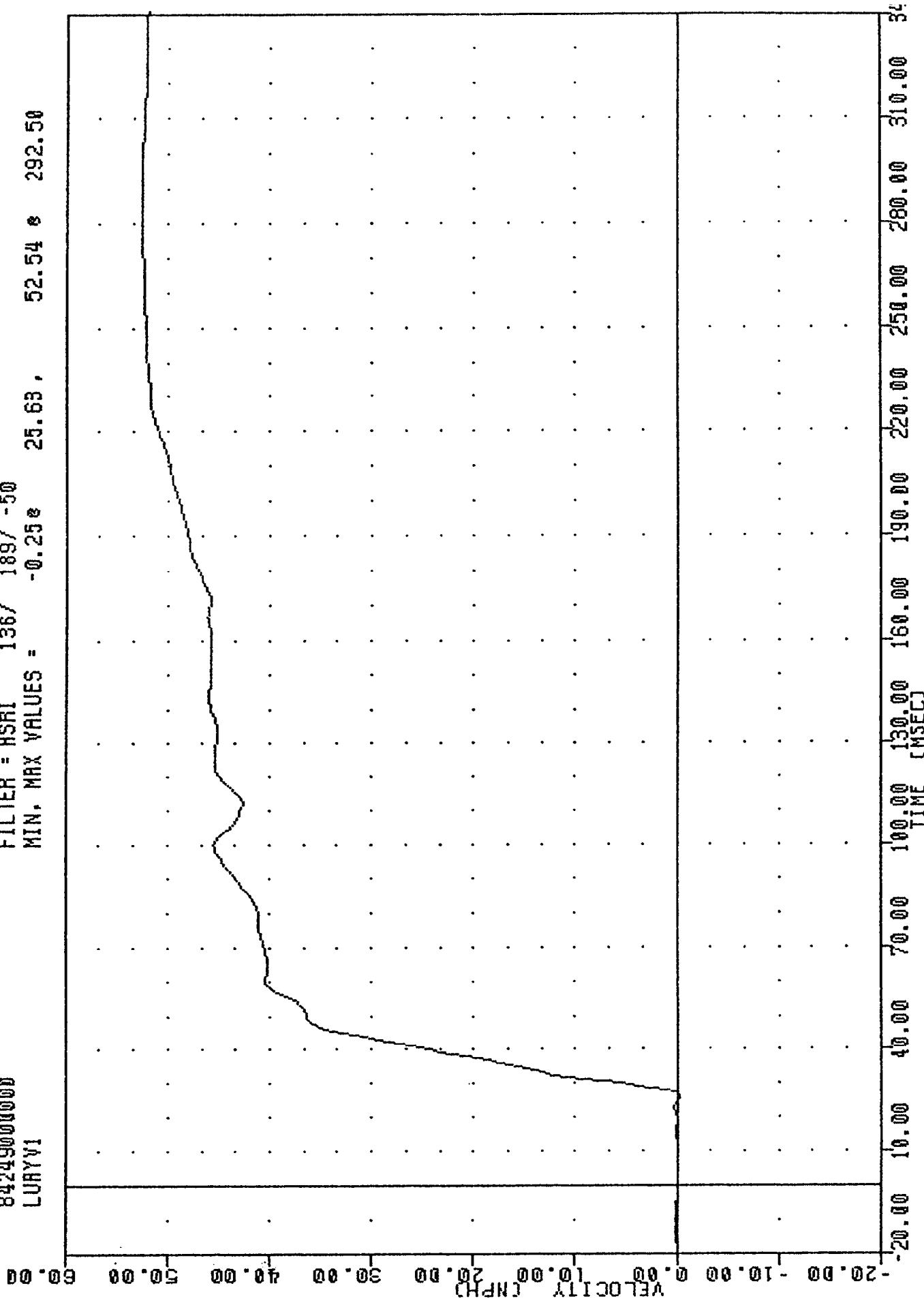
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT UPPER RIB ACCELERATION Y AXIS

84249000000

LURYV1

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.250 25.63 , 52.54 0 292.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYG1

SIDE IMPRESSIVE HITIMBUIES

84249000000

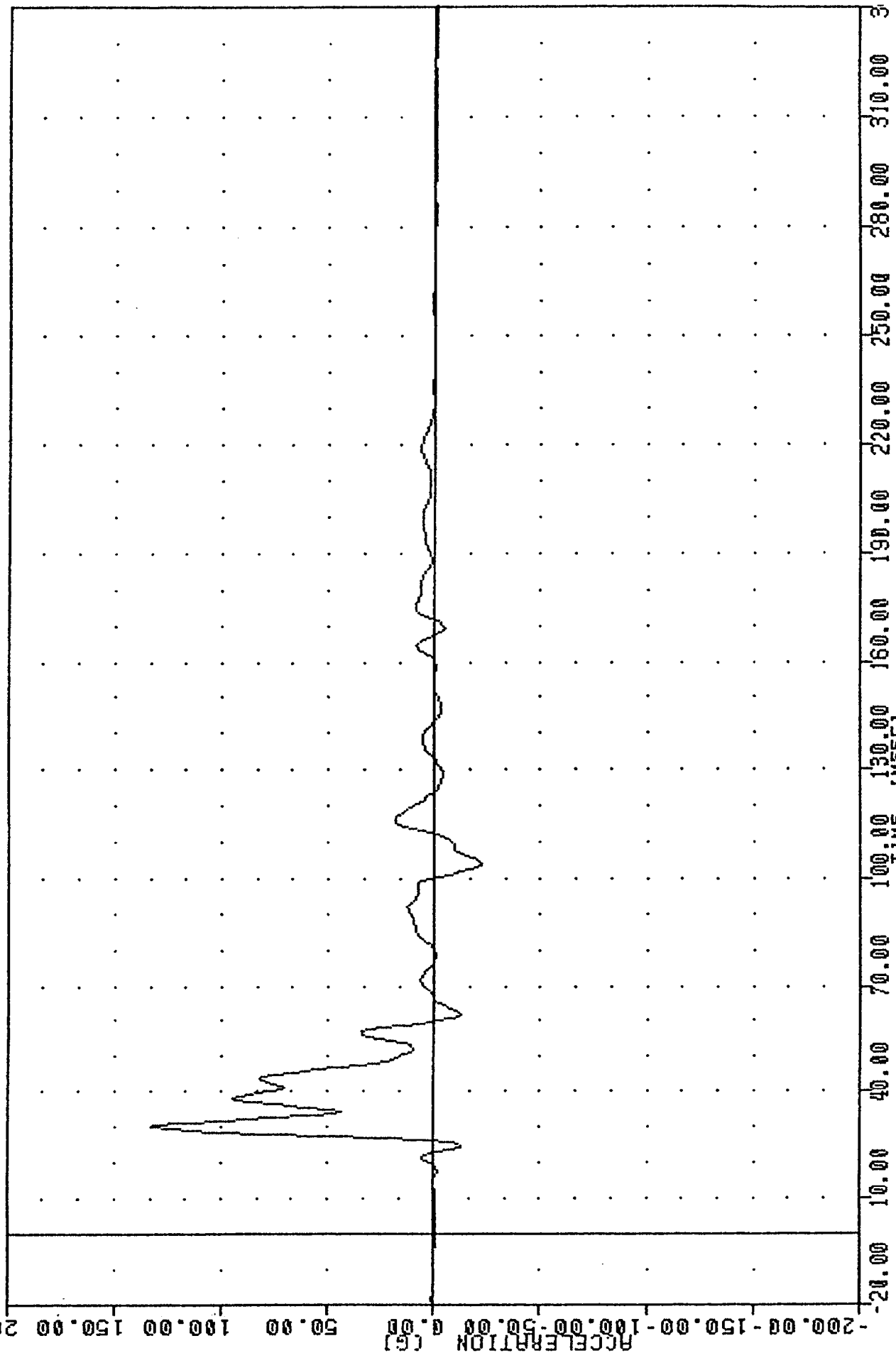
LURYGA

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -21.90 103.13 132.74 29.38

ACCELERATION (G)

B-24



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

DATE TIME LOCATION

84249000000

LURYVA

FILTER = HSRI 136/ 189/ .50

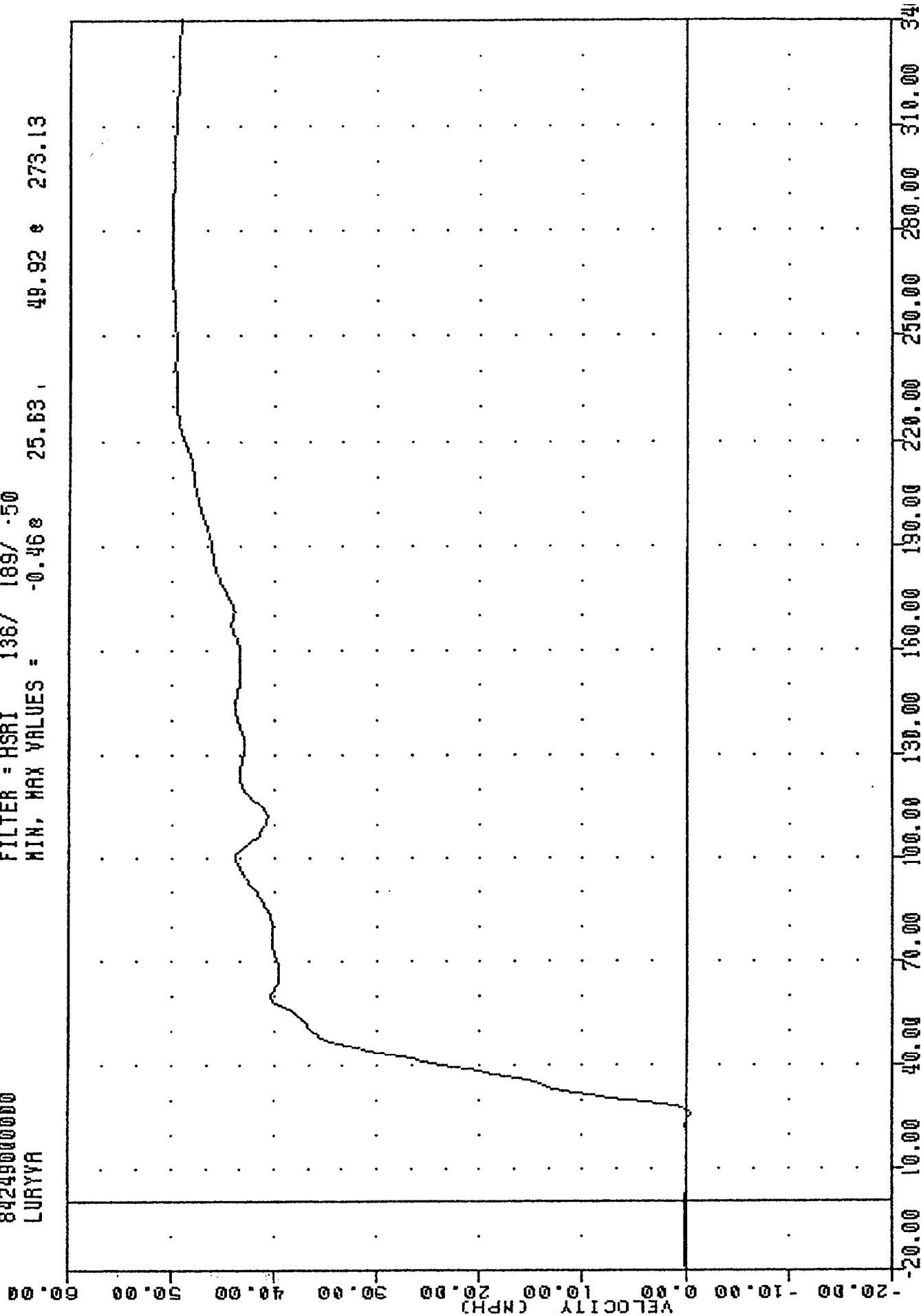
HIN, MAX VALUES = -0.468

25.63,

49.92 &

273.13

B-25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA Y USING LURYGA

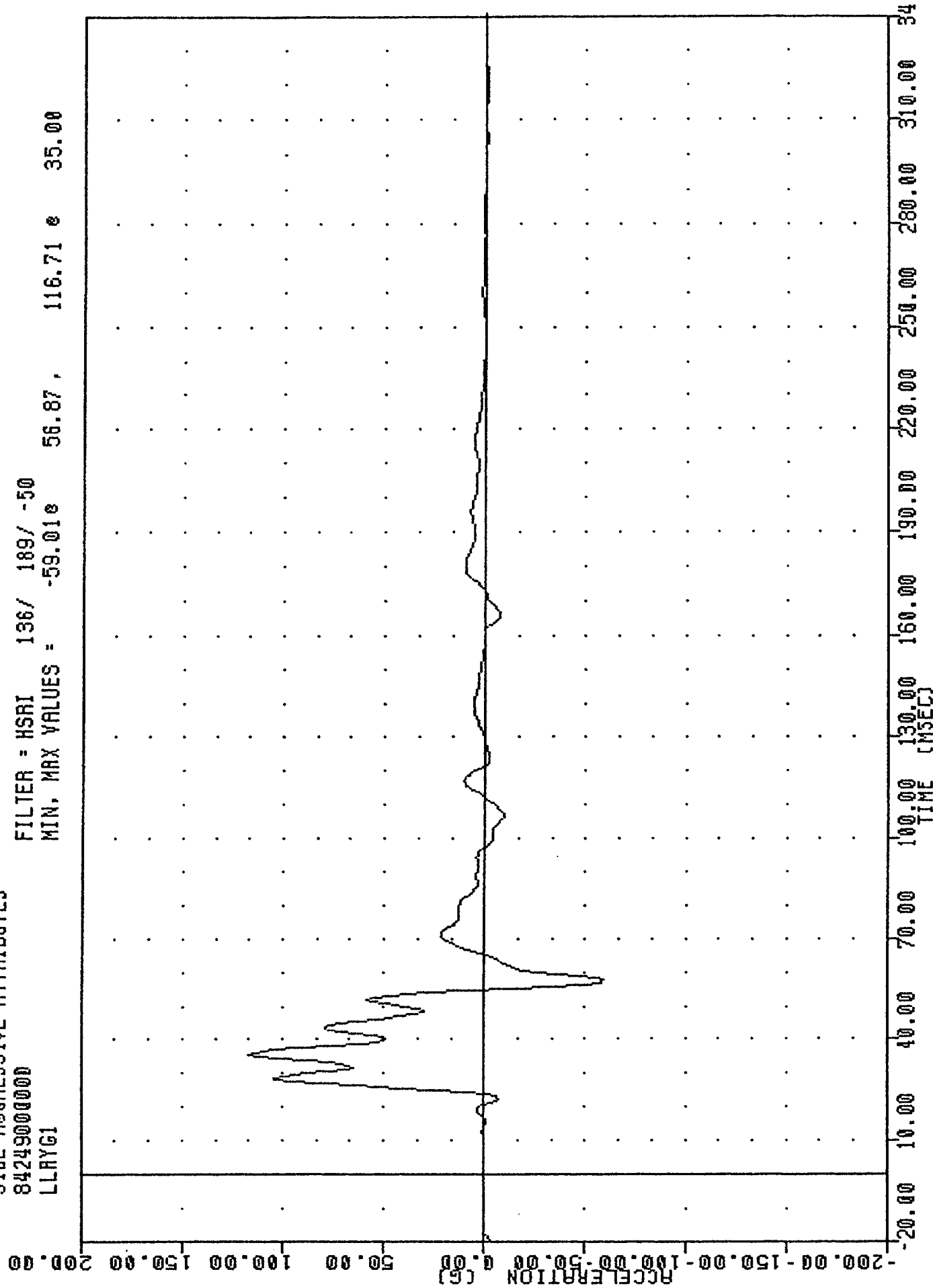
SLIDE AGGRESSIVE PARAMETERS

84249000000

LLRYG1

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -59.01e 56.87, 116.71 e 35.00



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

DATE RECEIVED: 11/11/2012

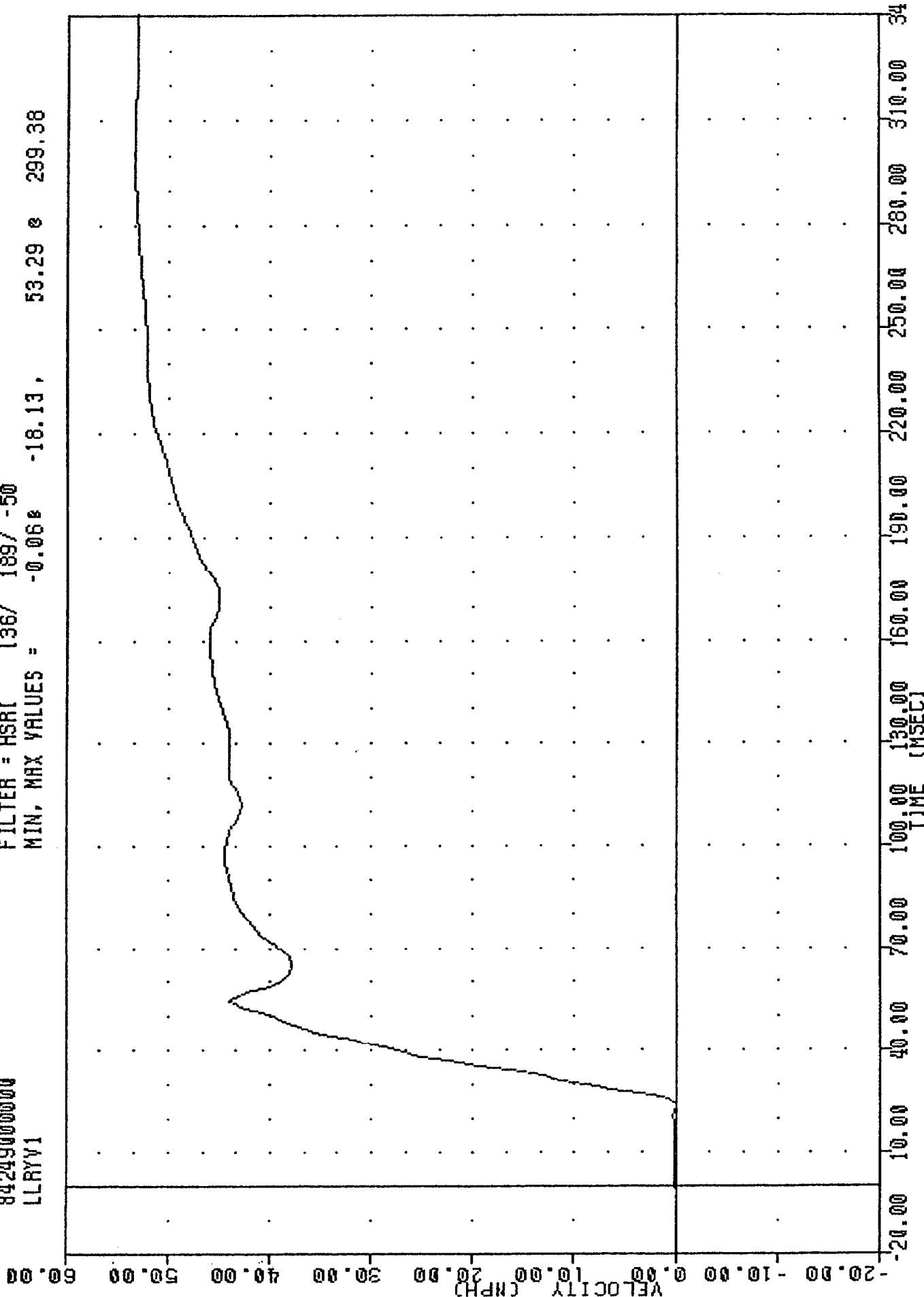
84249000000

LLRYV1

FILTER = HSR[136/ 189/ -50

MIN, MAX VALUES = -0.068 -18.13, 53.29 @ 299.38

B-27



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLRYG1

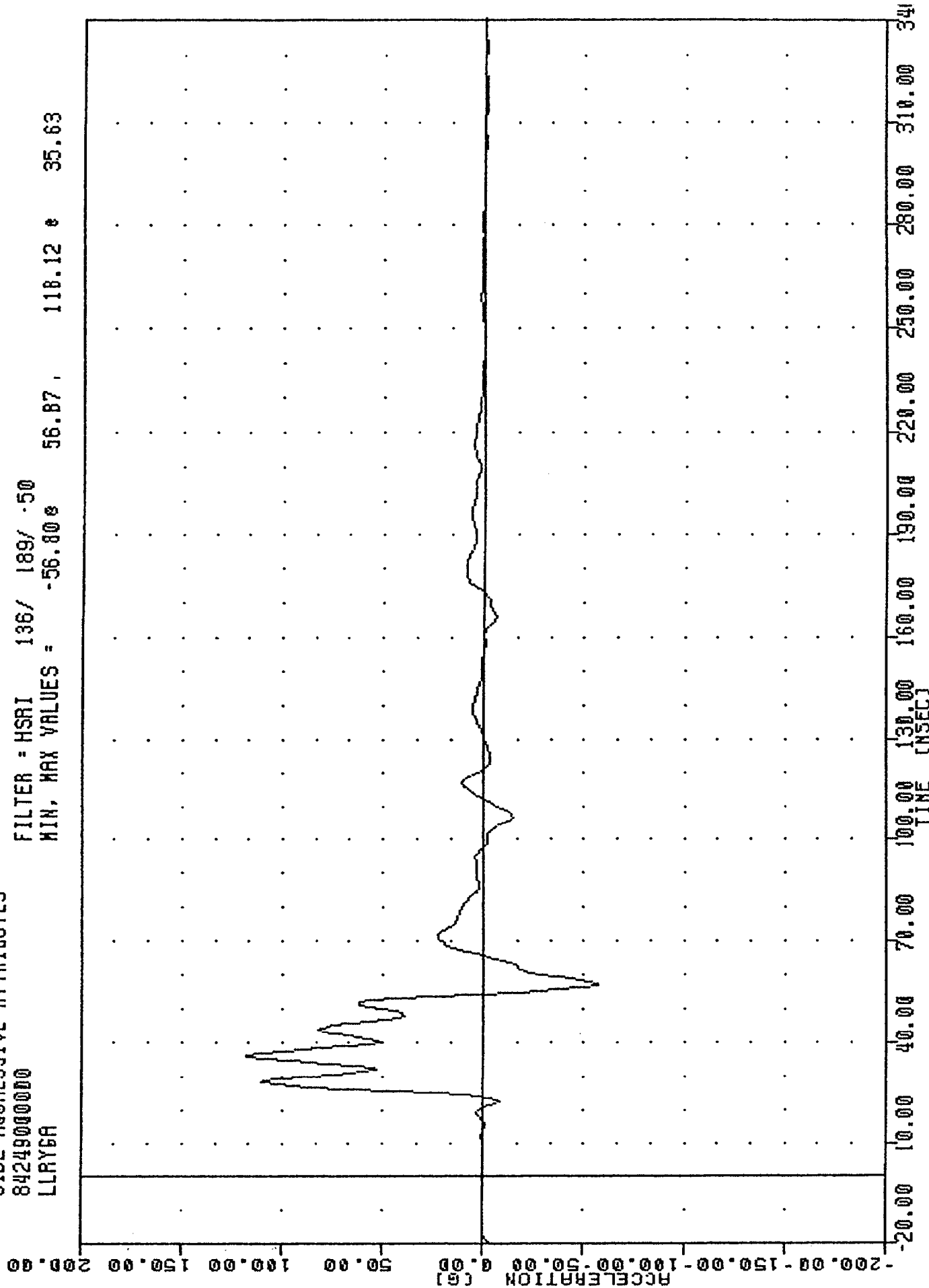
SIDE IMPRESSIVE INQUIRIES

84249000000

LLRYGA

FILTER = HSRI 136/ 189/ .50

MIN, MAX VALUES = -56.80 56.87, 118.12 35.63



B-28

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

52-05 300-00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT DELTA V USING LLYGA

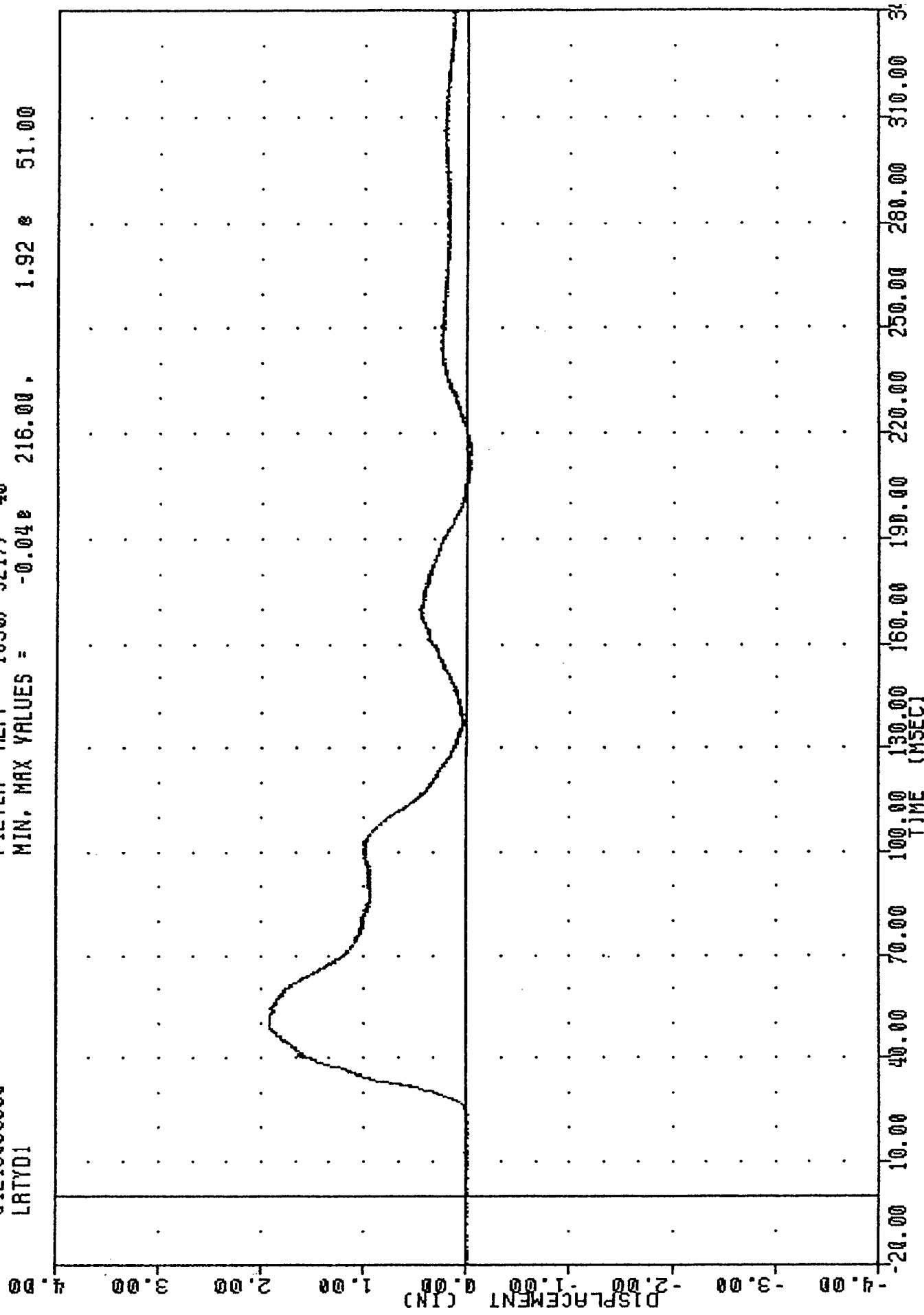
DATE 08/08/88 TIME 11:00:00

84249000000

LRTYD1

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -0.048 216.00, 1.92 51.00



B-30

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

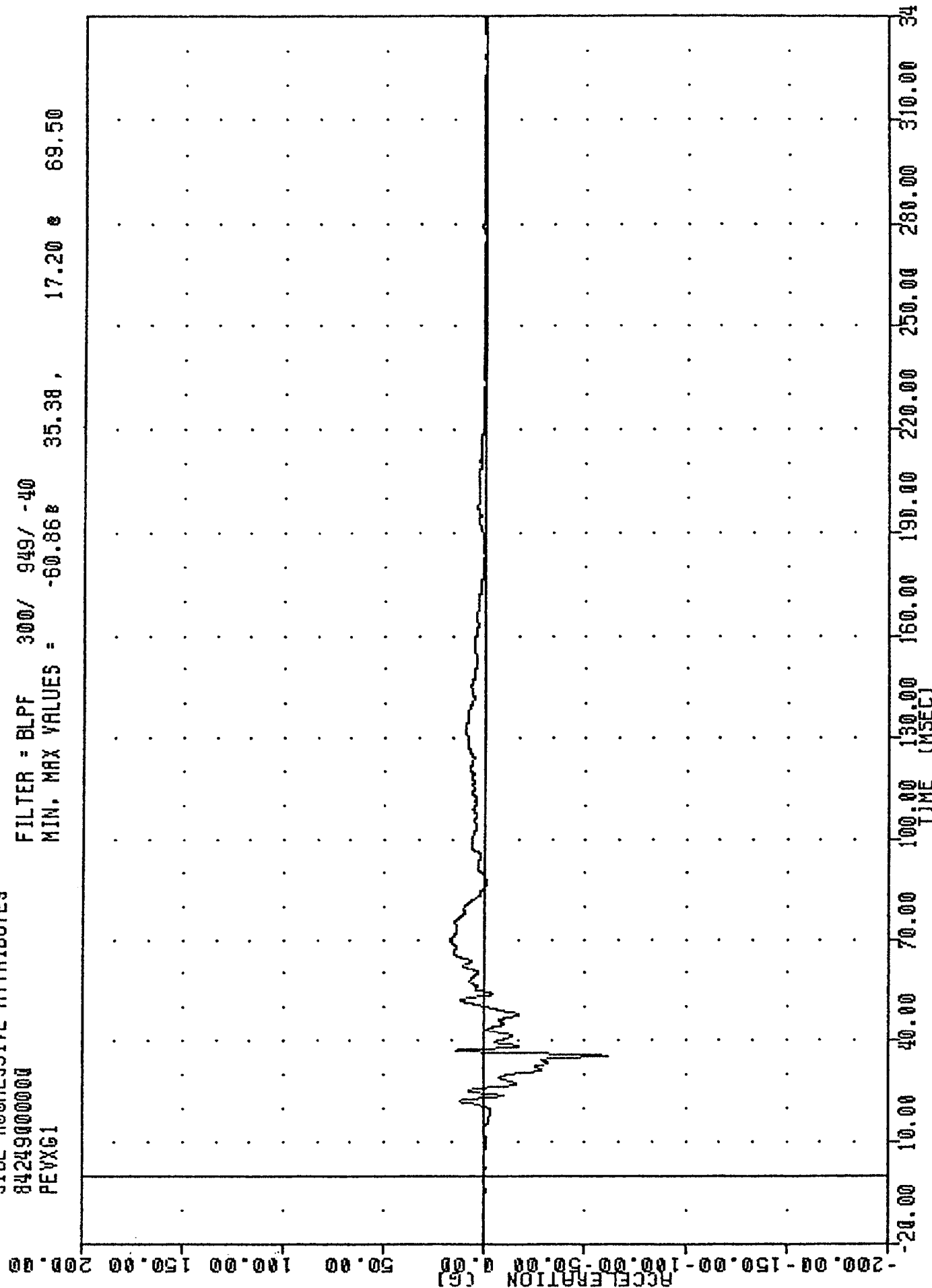
STATE UNIVERSITY OF NEW YORK

842490000000

PEVXG1

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -60.86 35.38 , 17.20 69.50



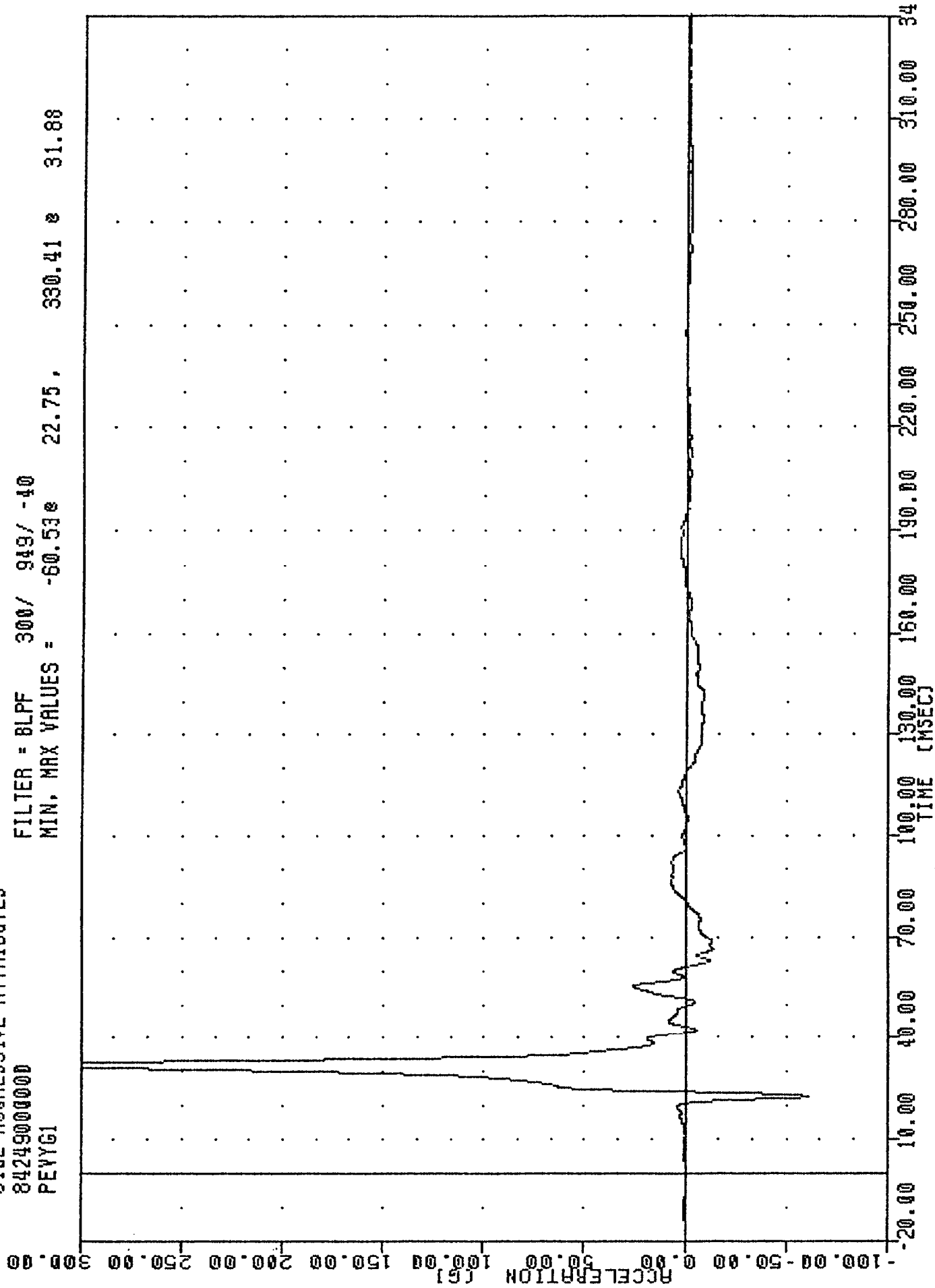
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION X AXIS

PEYGI

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -60.53%

22.75.	330.41	31.88
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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Y AXIS

DATE OF TEST: 01/11/1983

84249000000

PEVZ61

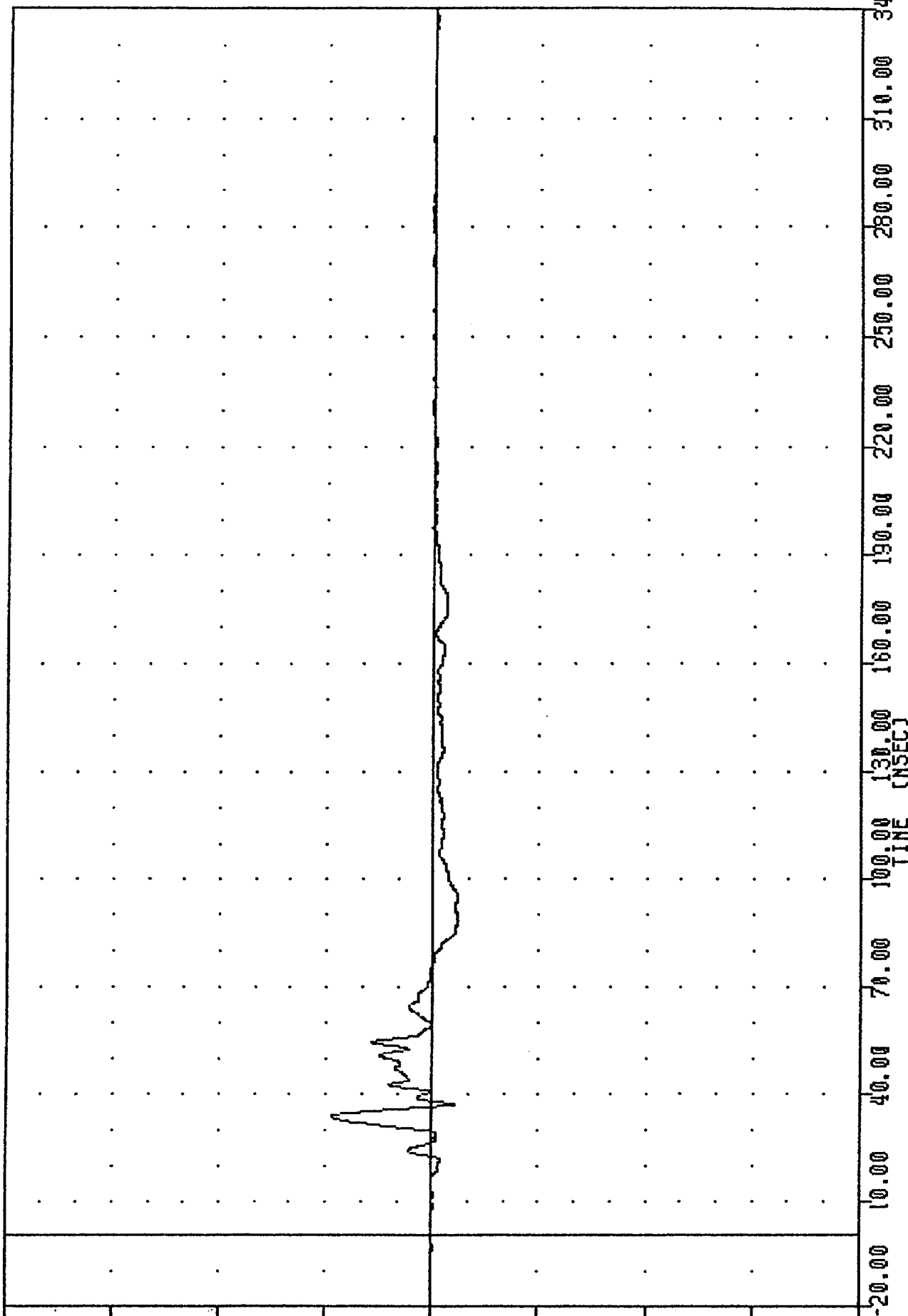
FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -11.86e

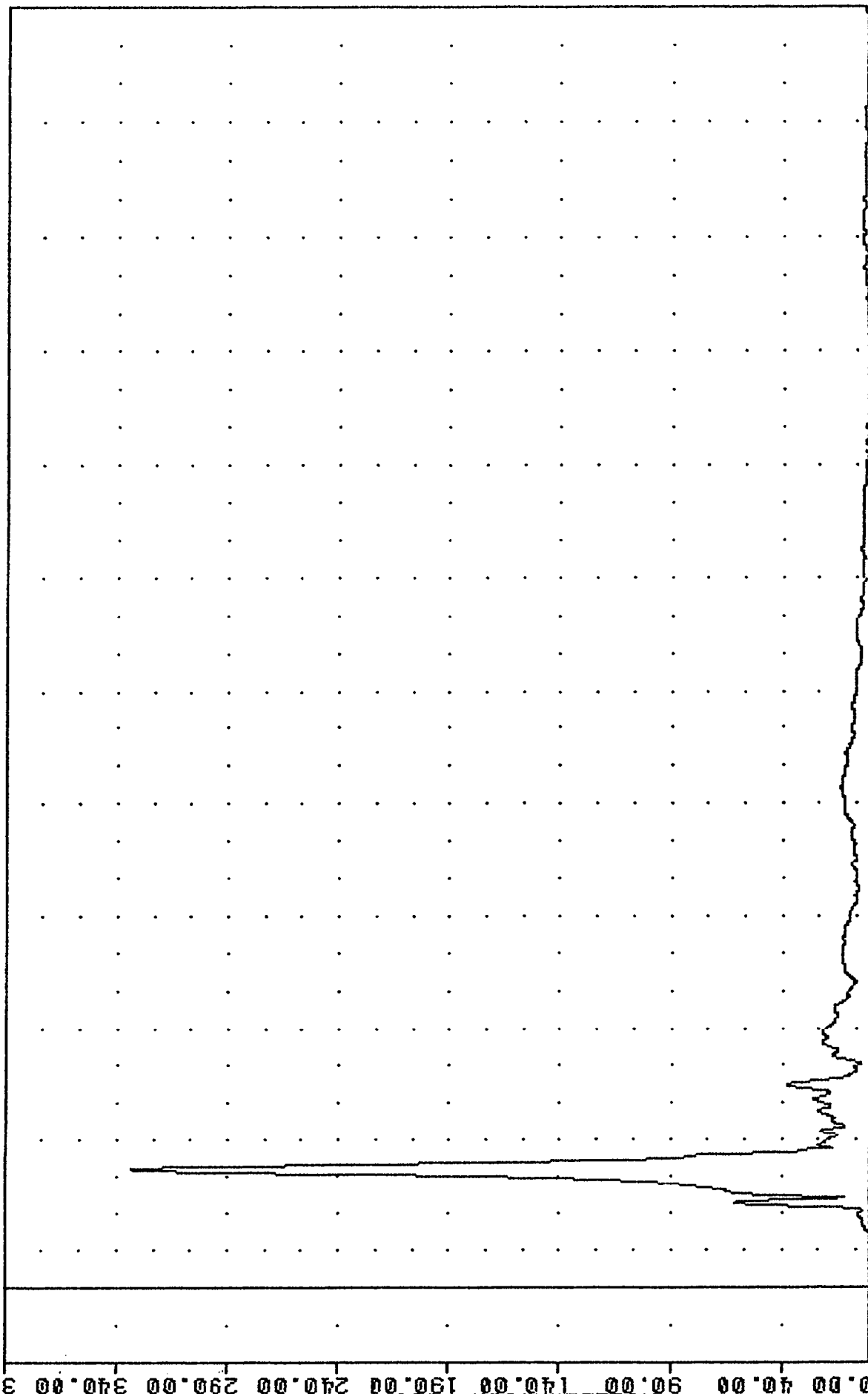
88.25, 47.27 e 33.50

ACCELERATION (G)

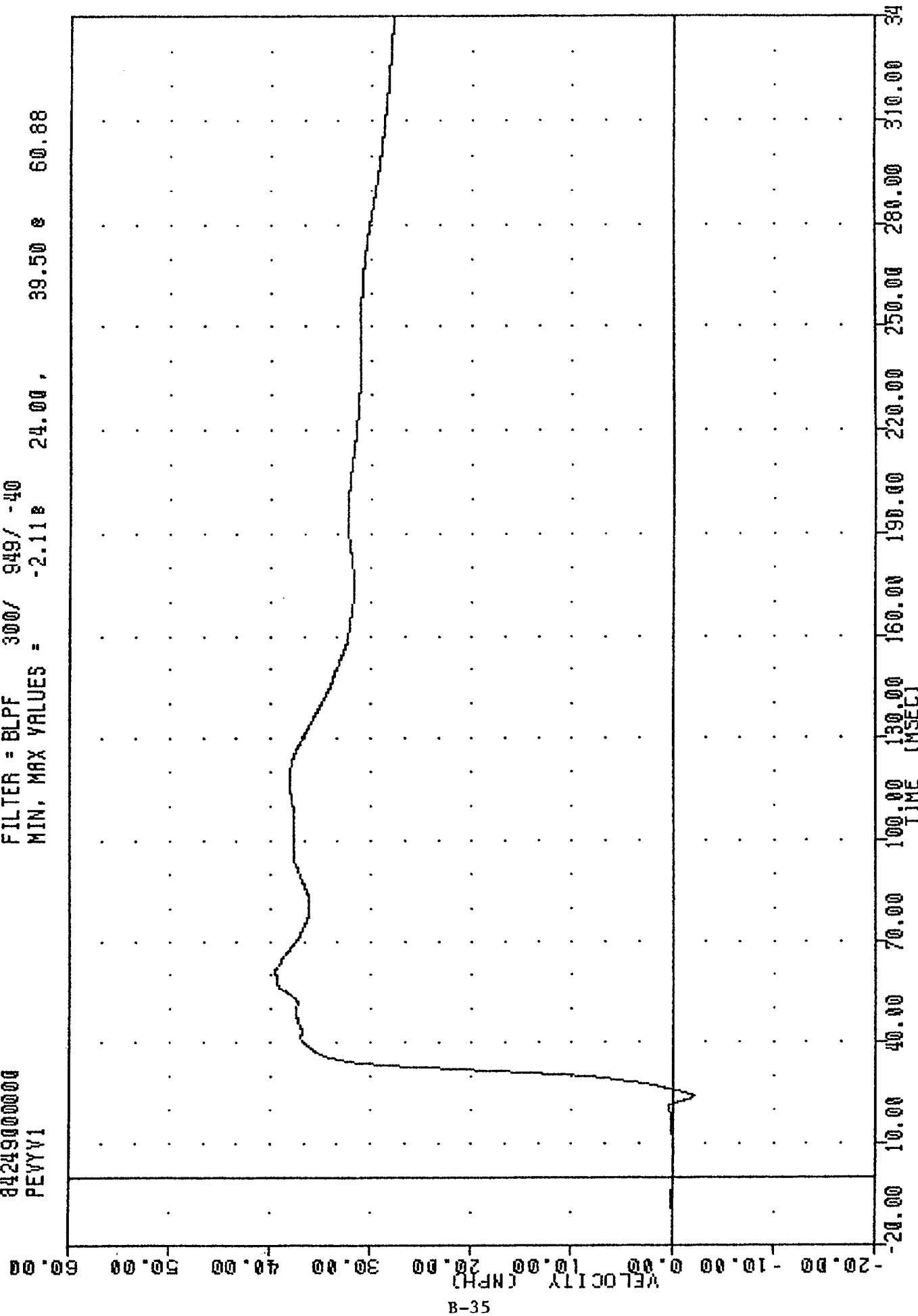
B-33



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Z AXIS



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS RESULTANT



65.75, 105.62 @ 152.00

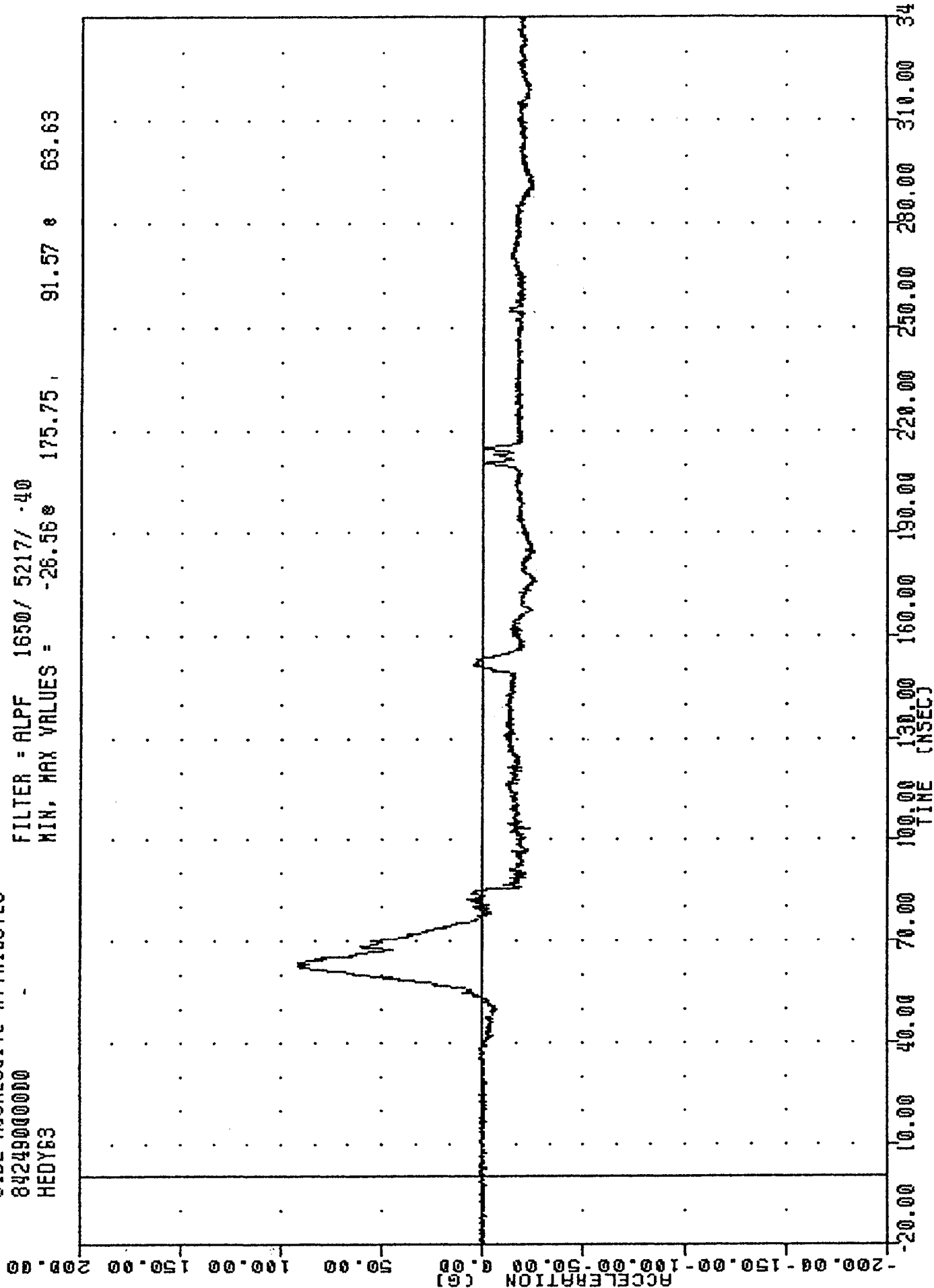
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION X AXIS

842490000000

HEDY63

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -26.56 175.75 91.57 63.63



B-37

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Y AXIS

SILE AGGRESSIVE HIIHIBUUES

84249000000

HEDZG3

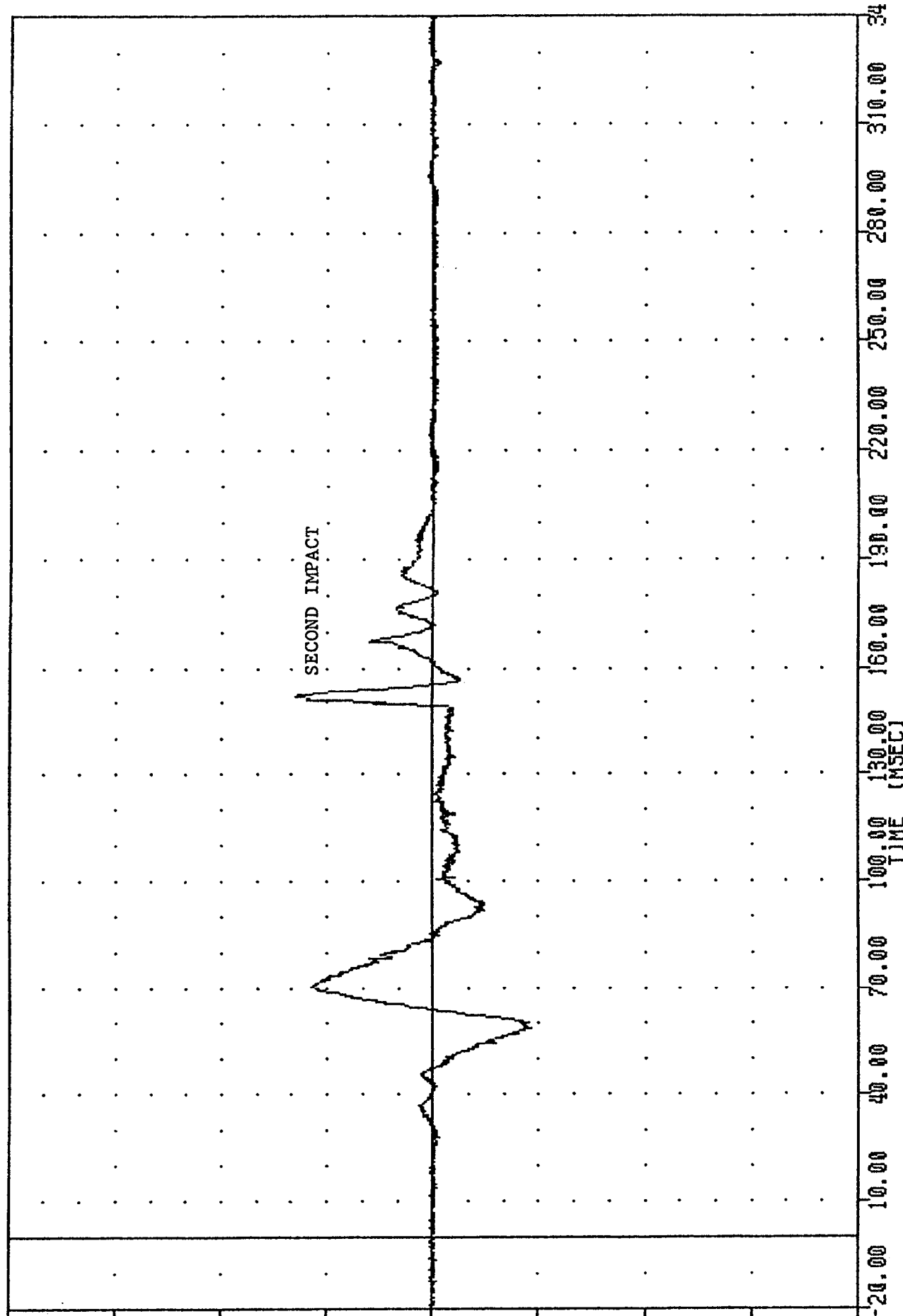
FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -45.98e

58.63, 64.85 e 151.75

ACCELERATION [G]

B-38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Z AXIS

-1.25, 123.30 & 152.90



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD RESULTANT

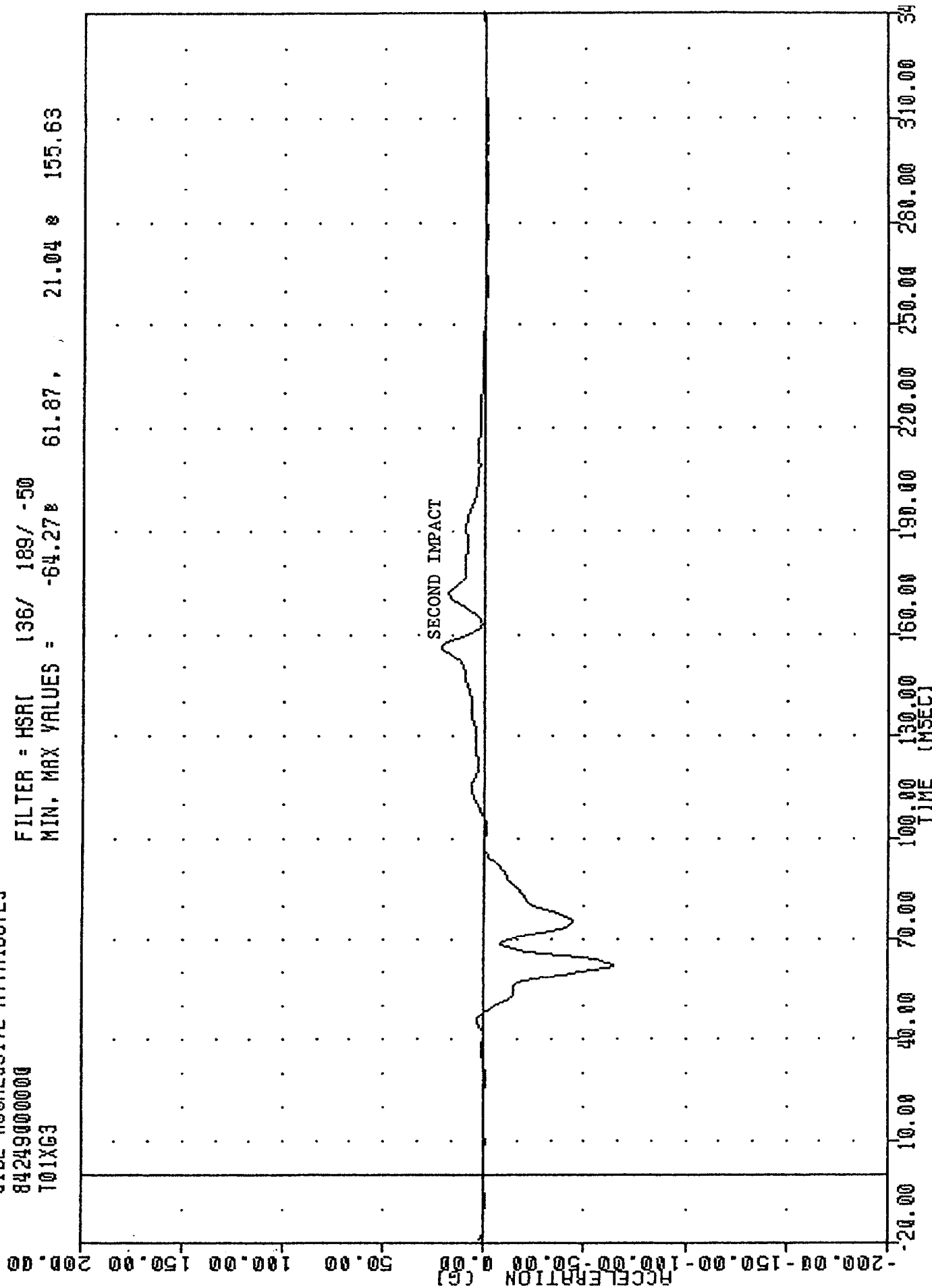
SIDE IMPRESSIVE MINIMUES

84249000000

T01XG3

FILTER = HSR[136/ 189/ -50

MIN, MAX VALUES = -64.27 61.87 , 21.04 155.63



B-40

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

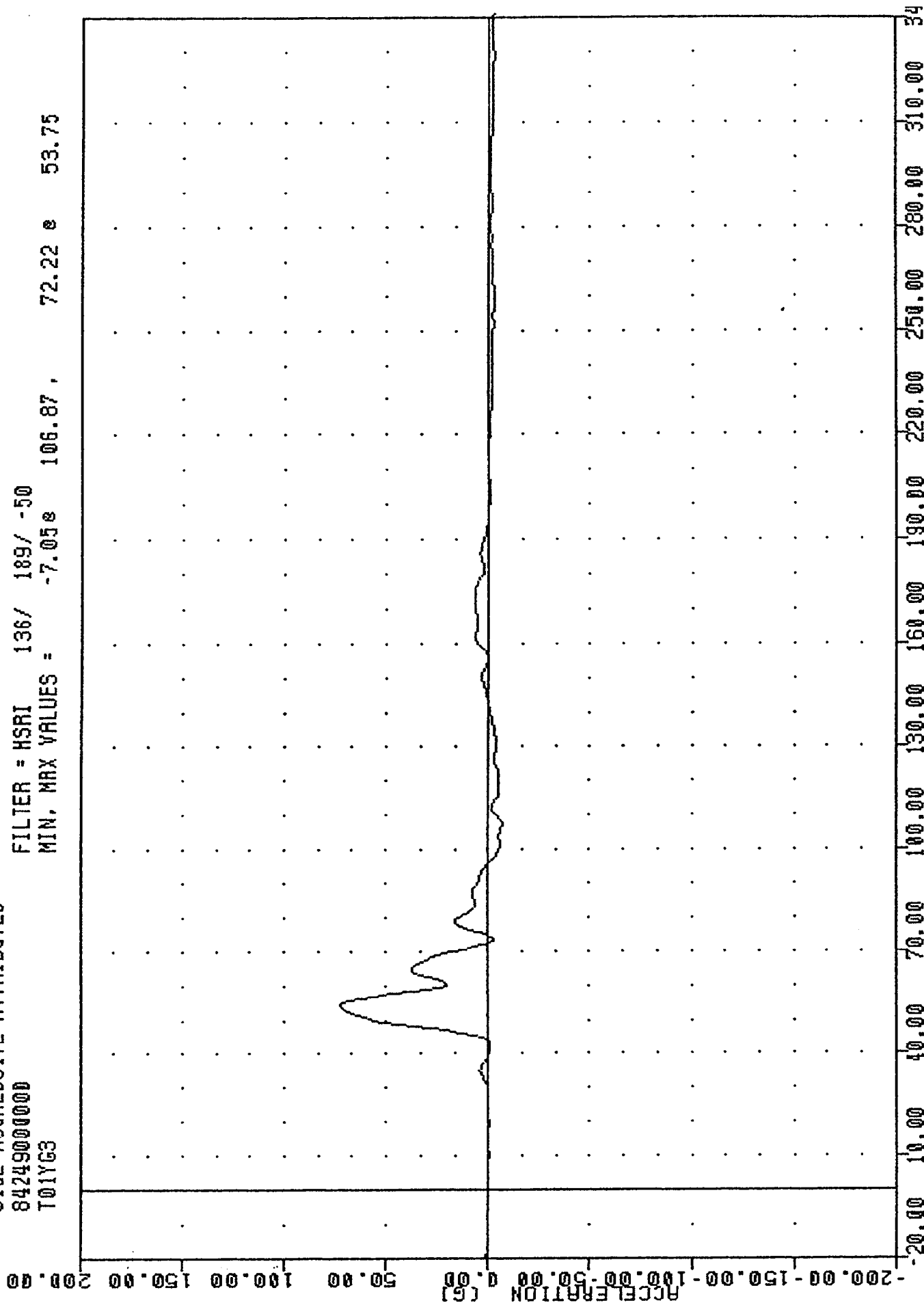
BLUE HUMPHREYS HUMPHREYS

84249000000

T01Y63

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -7.058 106.87, 72.22 @ 53.75



B-41

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

SLIDE NUMBER 842490000000

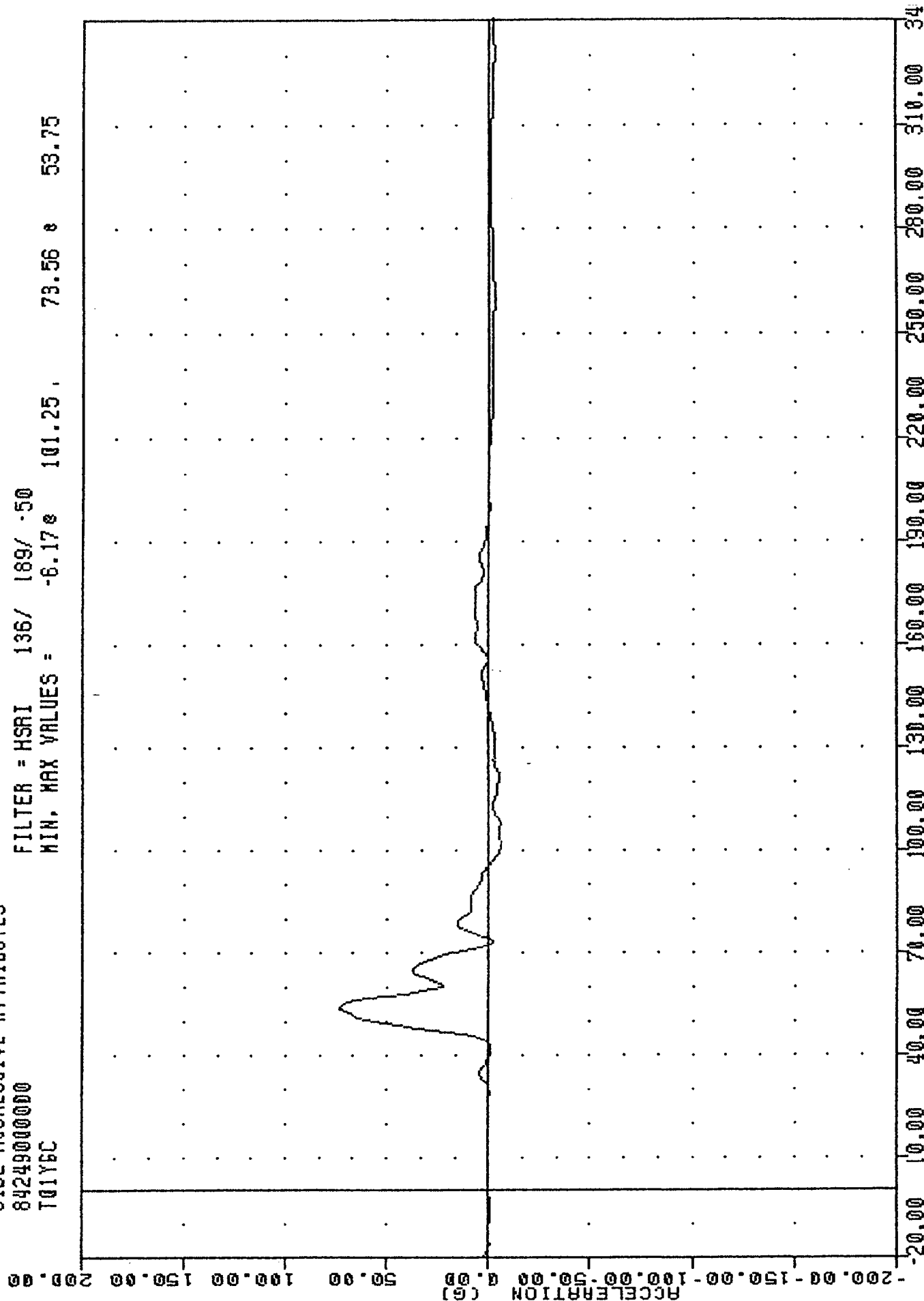
842490000000

T01Y6C

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -6.17 101.25

73.56 53.75



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

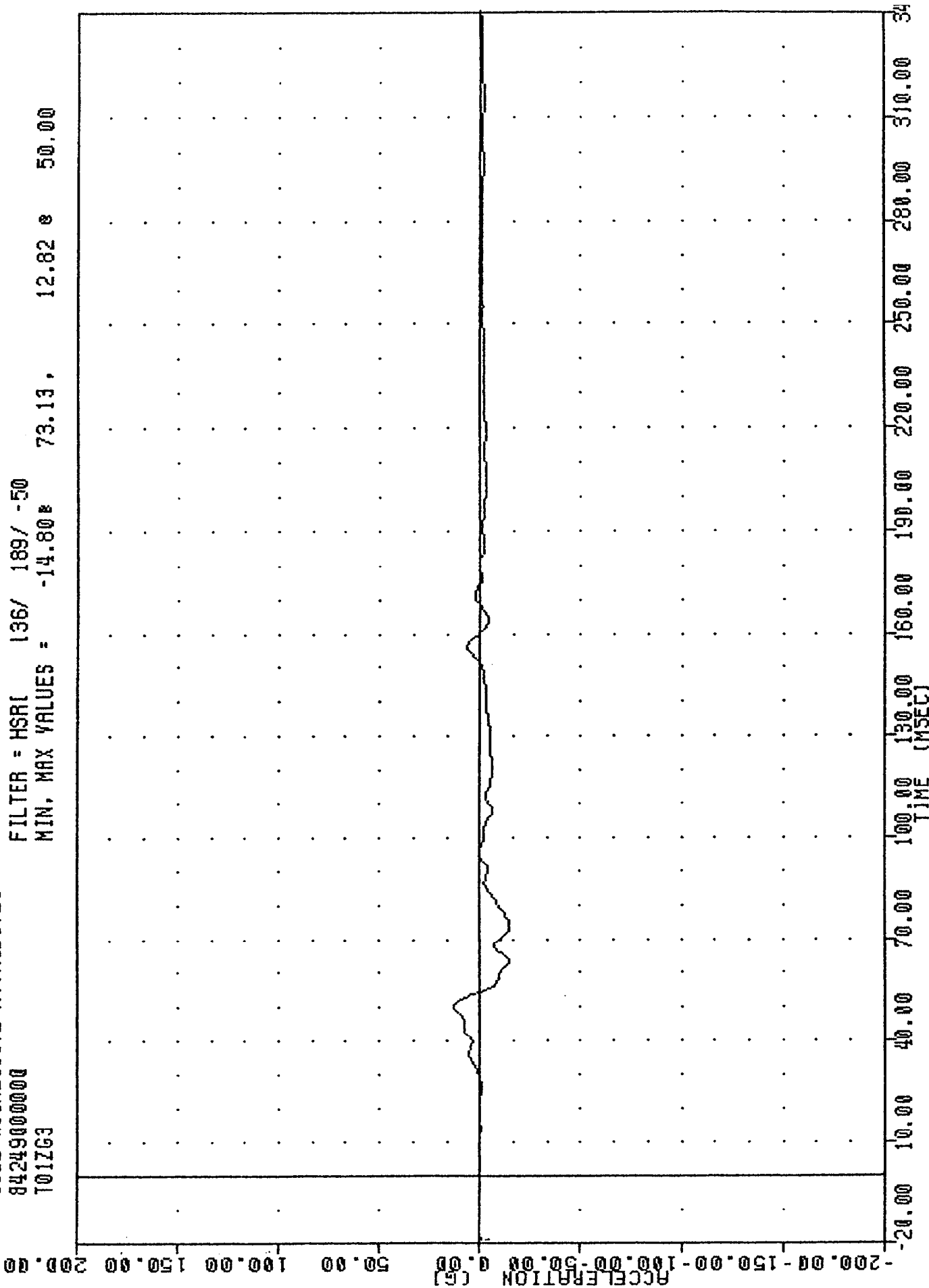
SIDE AGGRESSIVE ATTRIBUTES

84249000000

T01ZG3

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -14.80 73.13, 12.82 50.00



B-43

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

DATA ACQUISITION SYSTEM

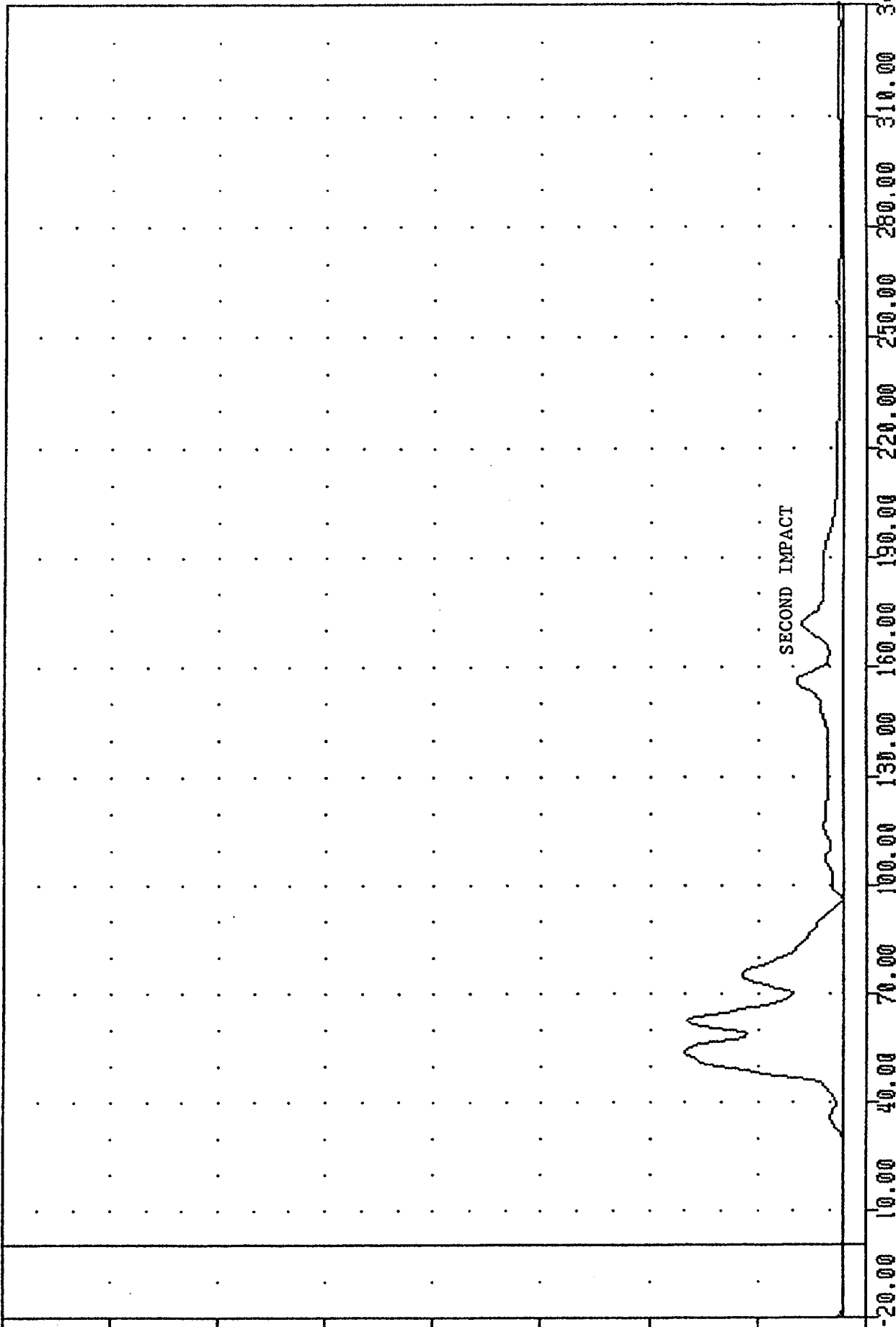
84249000000

T01R53

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.098 -3.75, 73.68 & 53.75

ACCELERATION (G)



SECOND IMPACT

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT

SIDE IMPRESSIVE MINIMIZED

84249000000

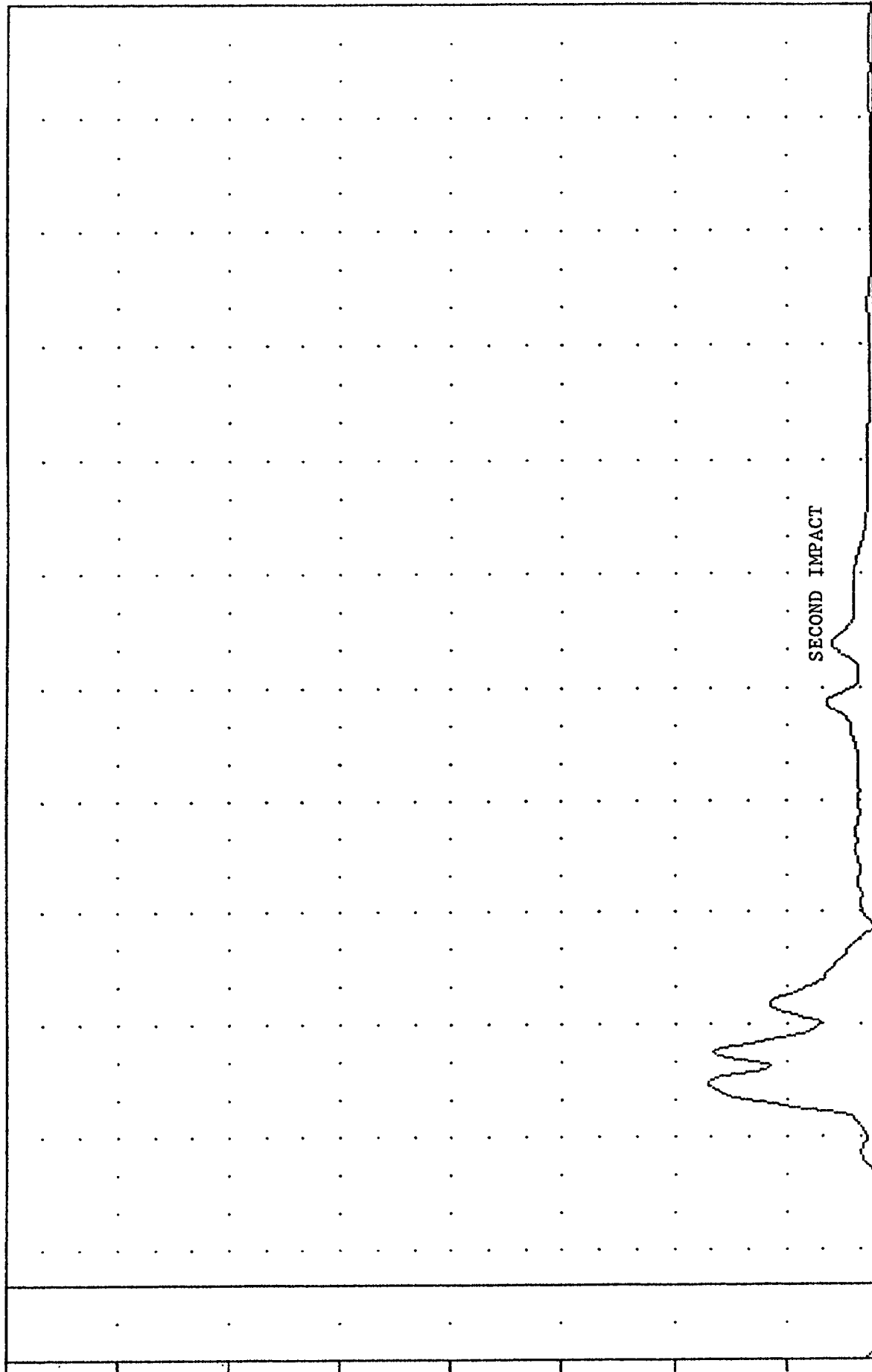
T01REC

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.06e -15.00 , 75.00 e 53.75

ACCELERATION [G]

B-45



-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

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

SIZE INCREMENTAL MINIMUMS

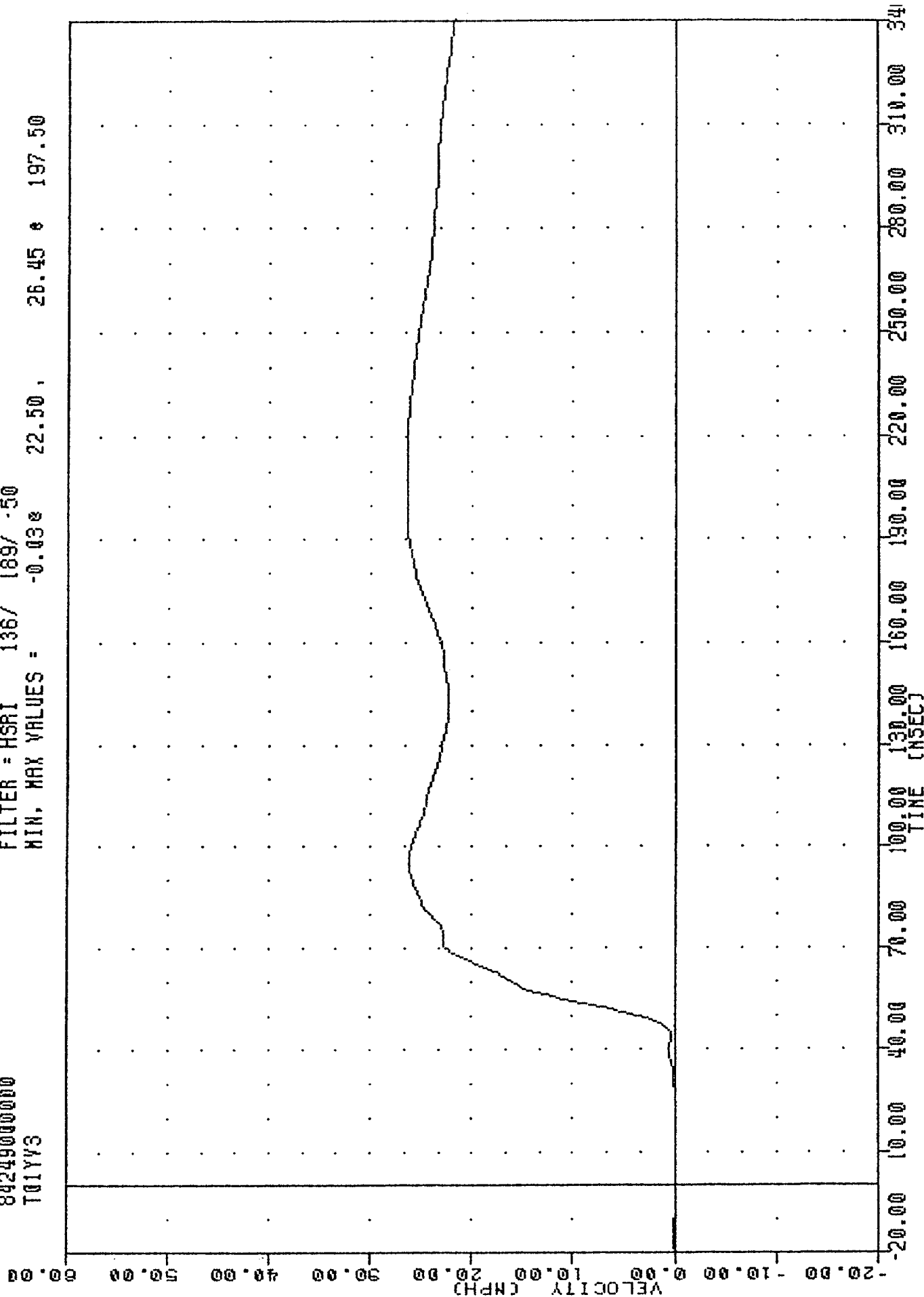
84249000000

T01YV3

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.03 22.50 , 26.45 197.50

B-46



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING T01YG3

SIDE AGGRESSIVE ATTRIBUTES

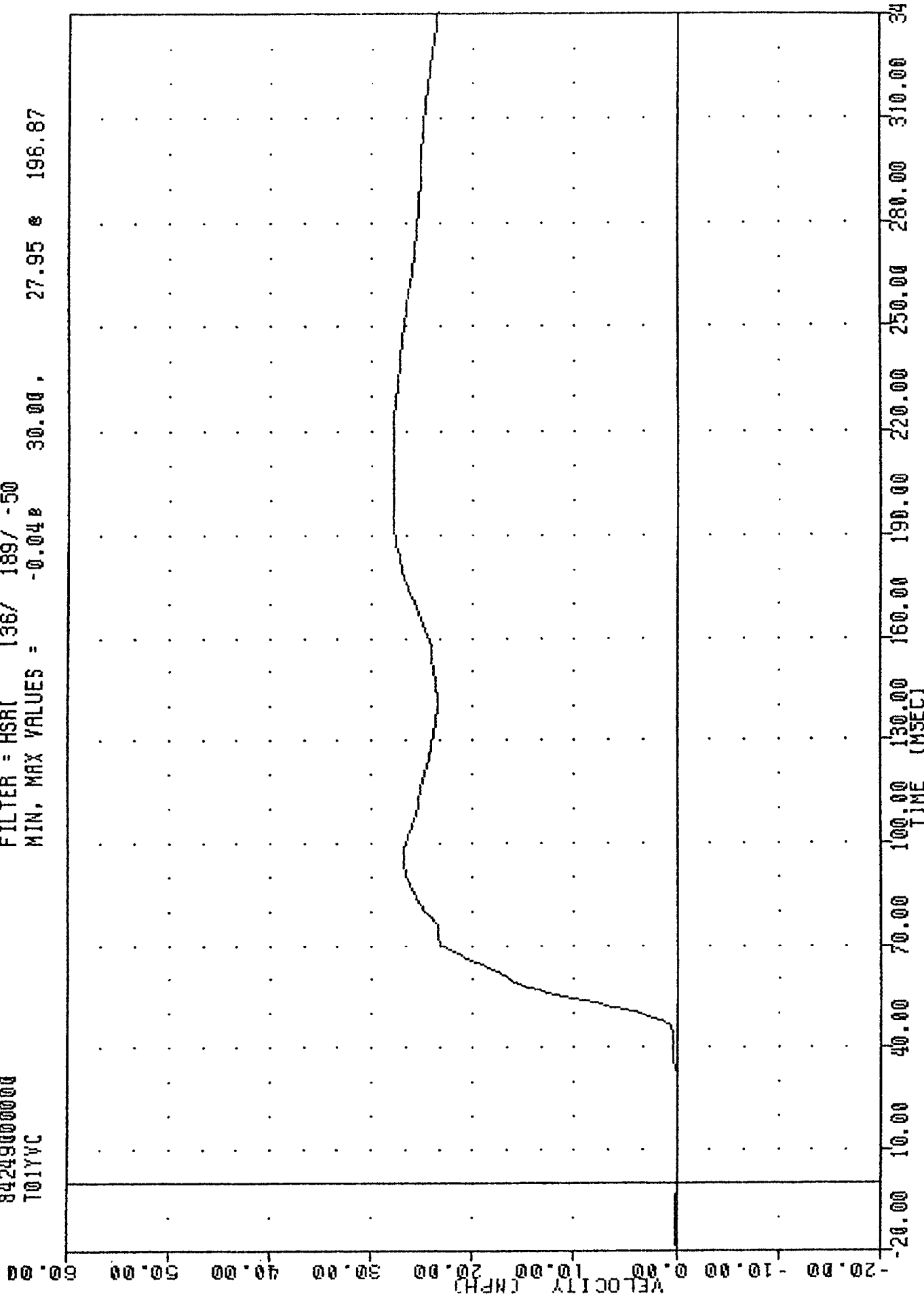
84249000000

T01YVC

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.048 30.00 , 27.95 & 196.87

B-47



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGC

BLUE HUGHES/SHAW INDUSTRIES

84249000000

T12XG3

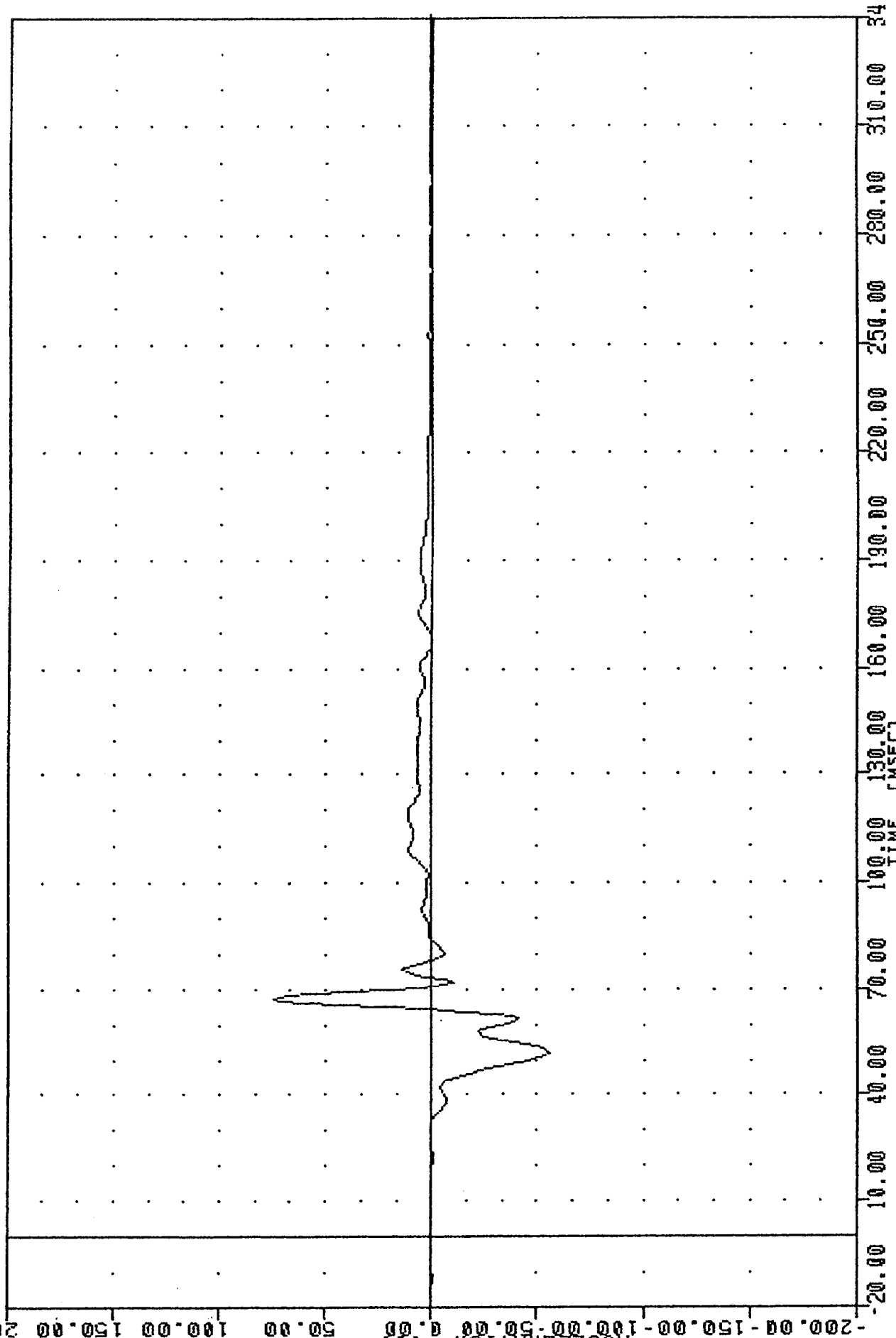
FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -55.45e

51.25, 74.03 e 66.87

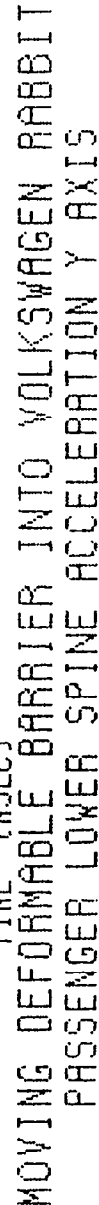
ACCELERATION (G)

B-48



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

25



DATE: 08/09/2017 TIME: 11:11:00

842490000000

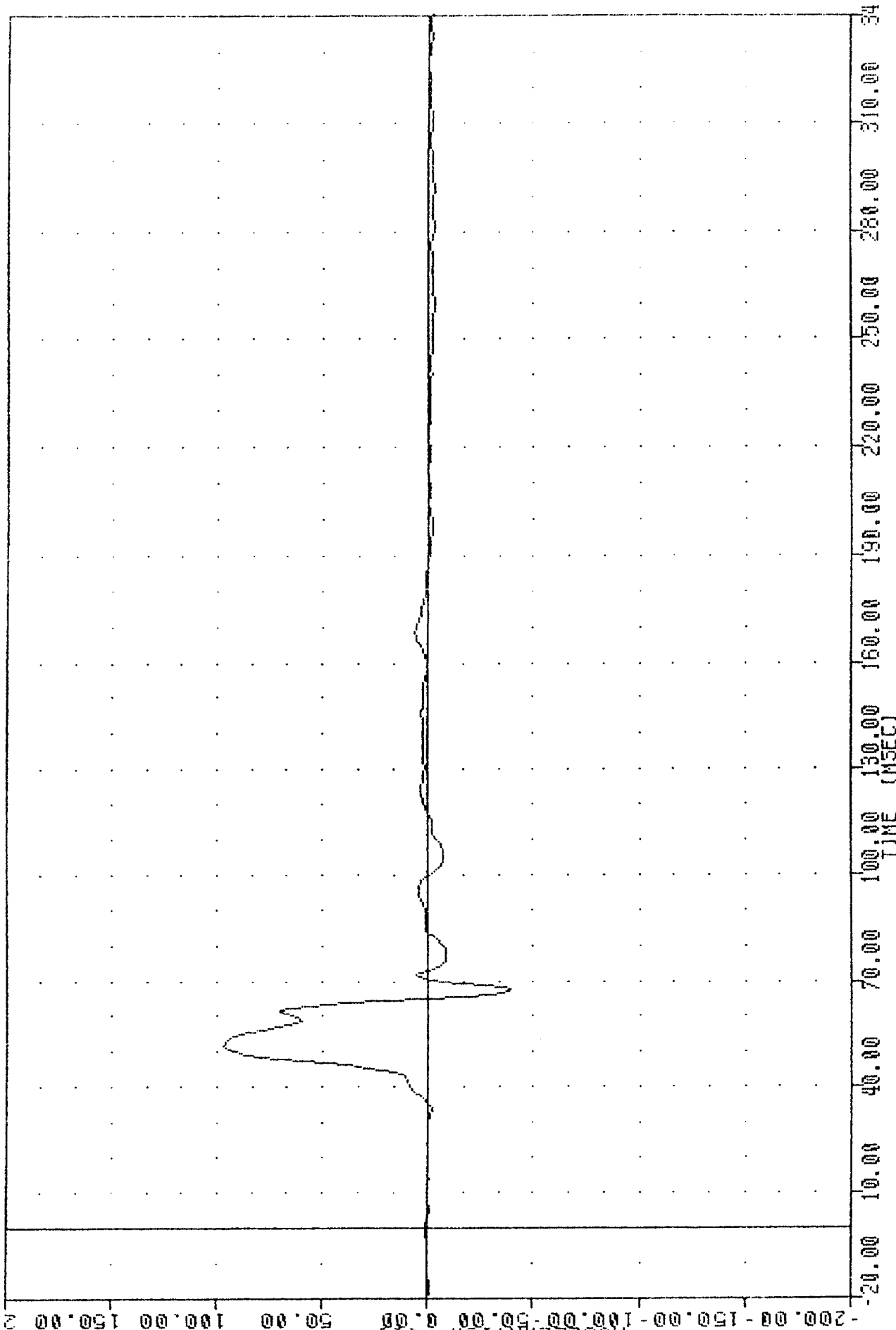
T12YGC

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -38.93 66.87, 96.32 51.25

ACCELERATION (G)

B-50



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

BLUE PNEUMATIC MEASUREMENTS

84249000000

T12ZG3

FILTER = HSRI

136/ 189/ -50

MIN. MAX VALUES =

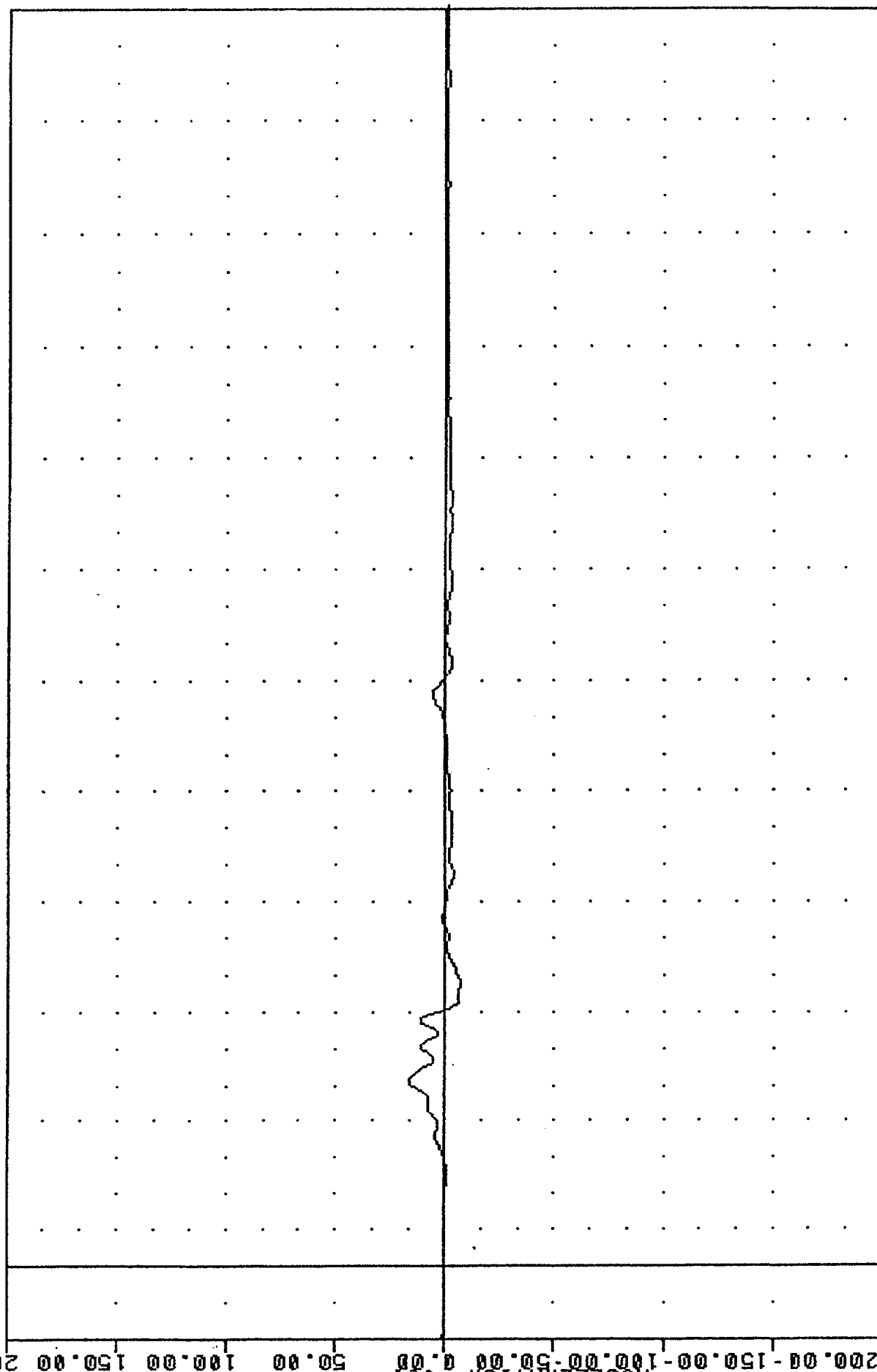
-6.81e

77.50,

16.36 e

50.63

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
PASSENGER LOWER SPINE ACCELERATION Z AXIS

מספר תיקון: 84249000000

84249000000

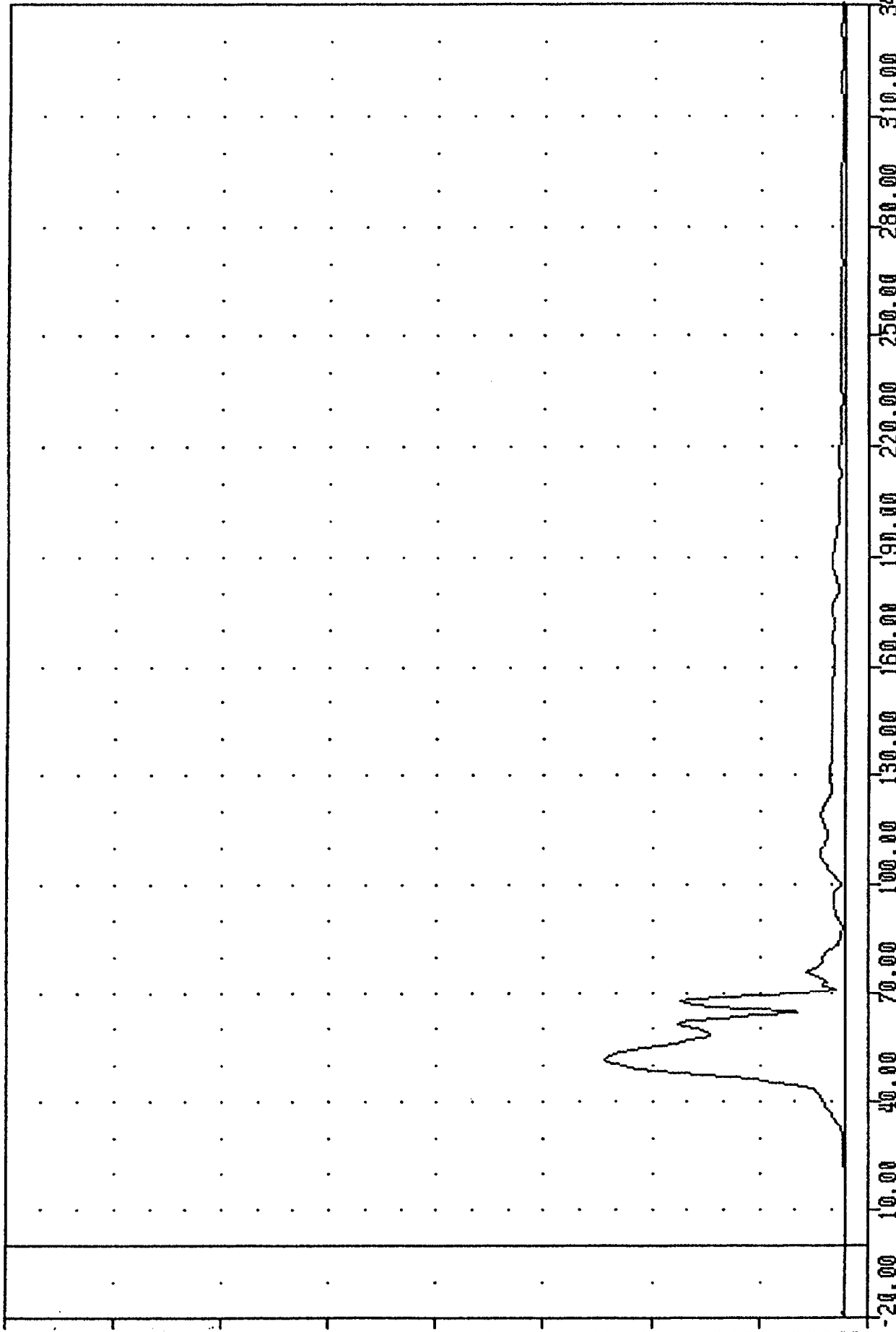
T12RG3

FILTER = HSR 136/ 189/ -50

MIN, MAX VALUES = 0.10 6.25, 111.28 51.25

ACCELERATION (G)

B-52



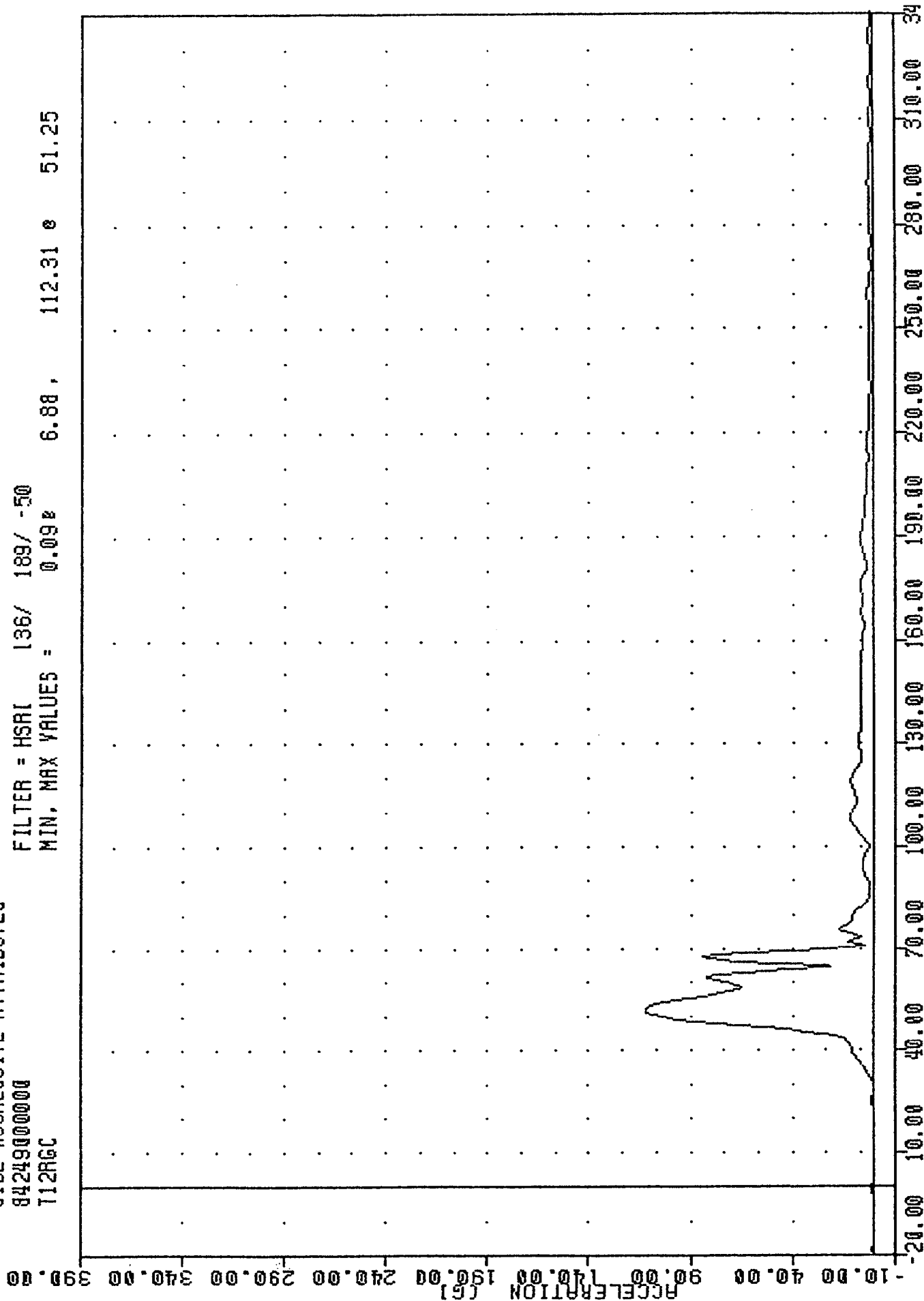
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE RESULTANT

112861

FILTER = HSP1 136/ 189/ -50

MIN, MAX VALUES = 0.098

6.88	112.31	51.25
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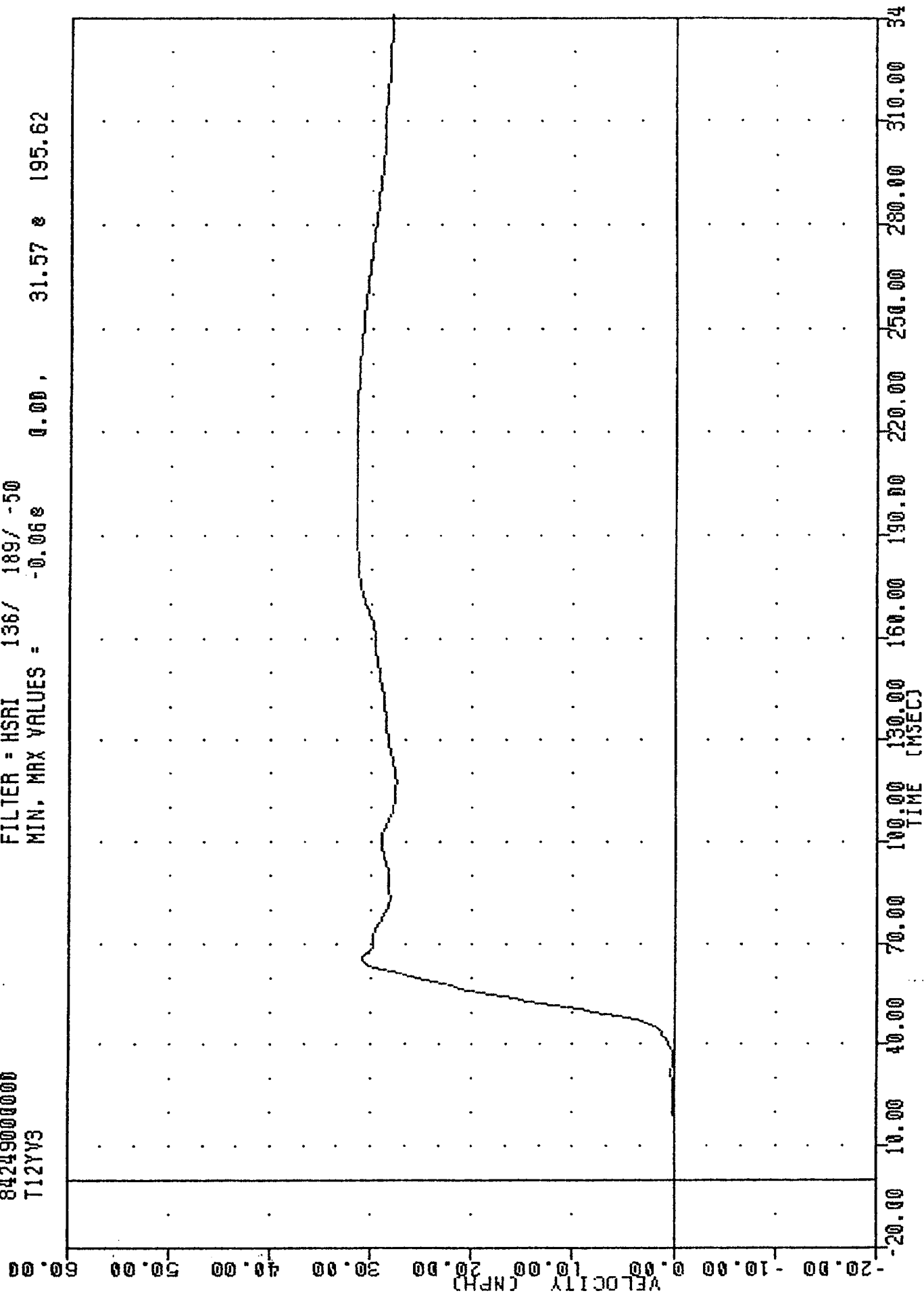


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE RESULTANT USING T12YGC

8424900
T12YV3

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES =	-0.068	0.00	31.57	195.62
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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YG3

SIDE IMPRESSIVE HISTOGRAMS

84249000000

T12YVC

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.090

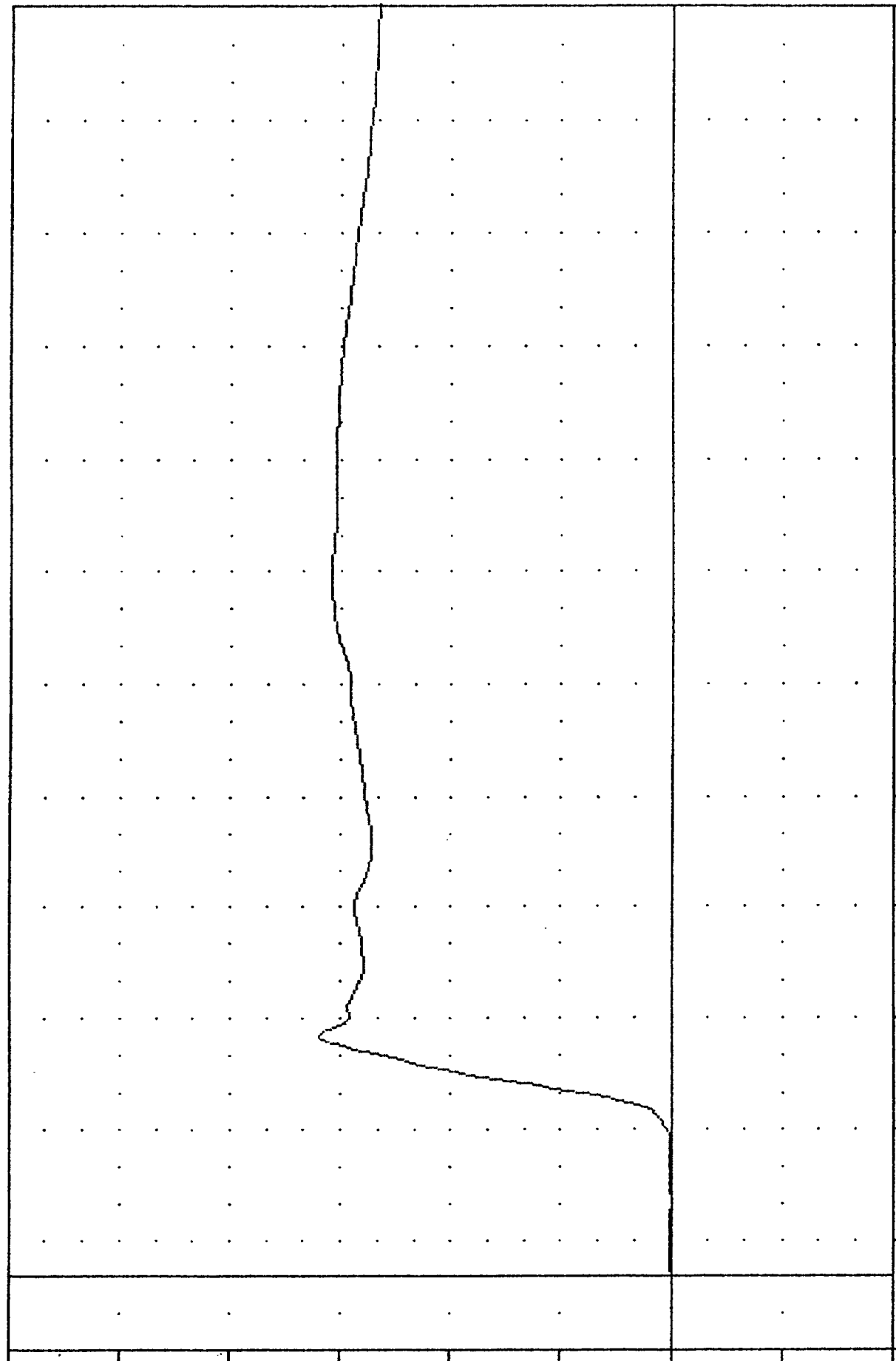
-6.25

31.91

64.38

55-B

VELOCITY (MPH)



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

TIME (NSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING T12YGC

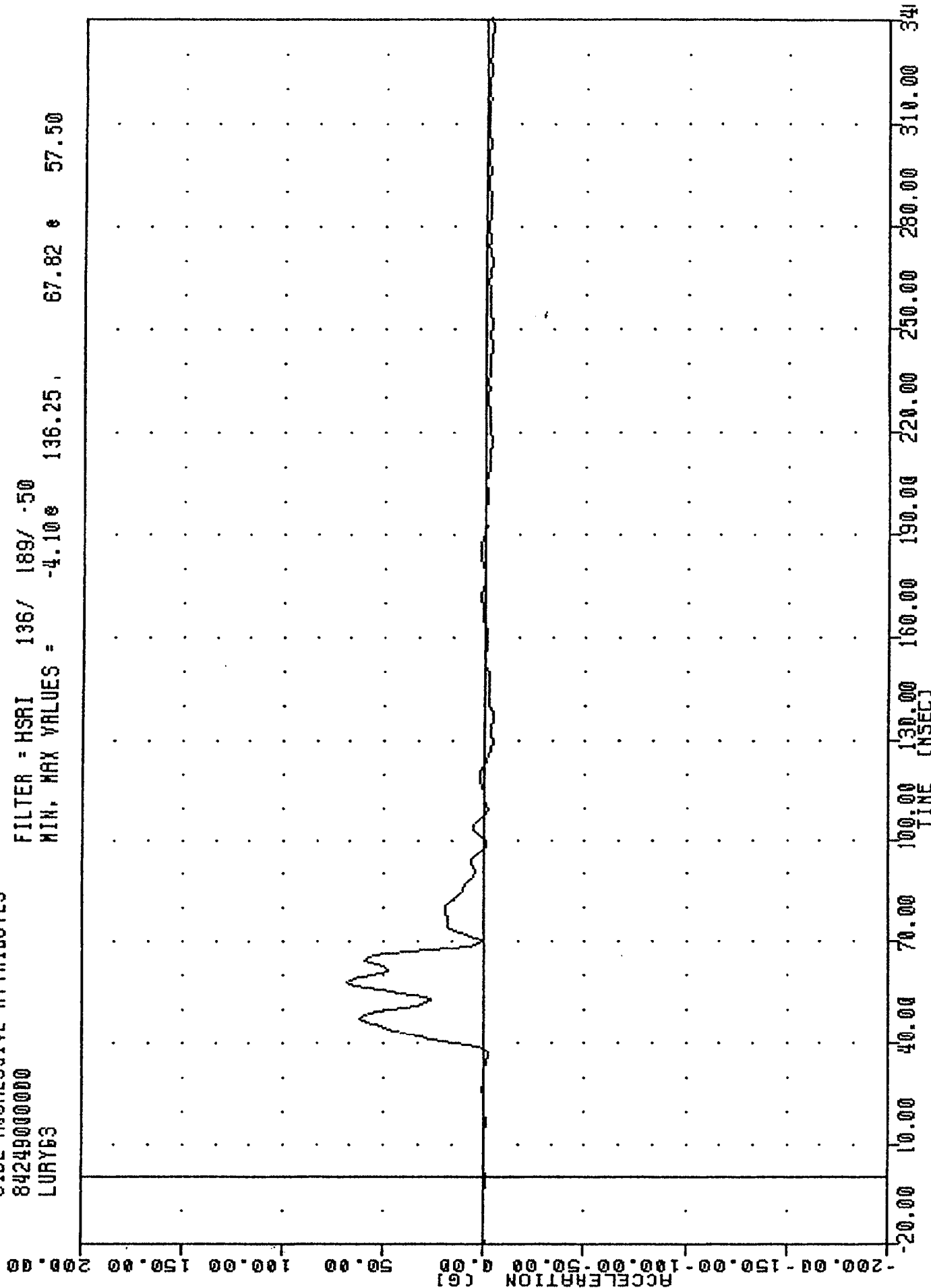
DATE: 08/08/88 TIME: 11:11:11

842490000000

LURY63

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -4.10e 136.25 , 67.82 e 57.50



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

SIDE IMPRESSIVE HISTOGRAMS

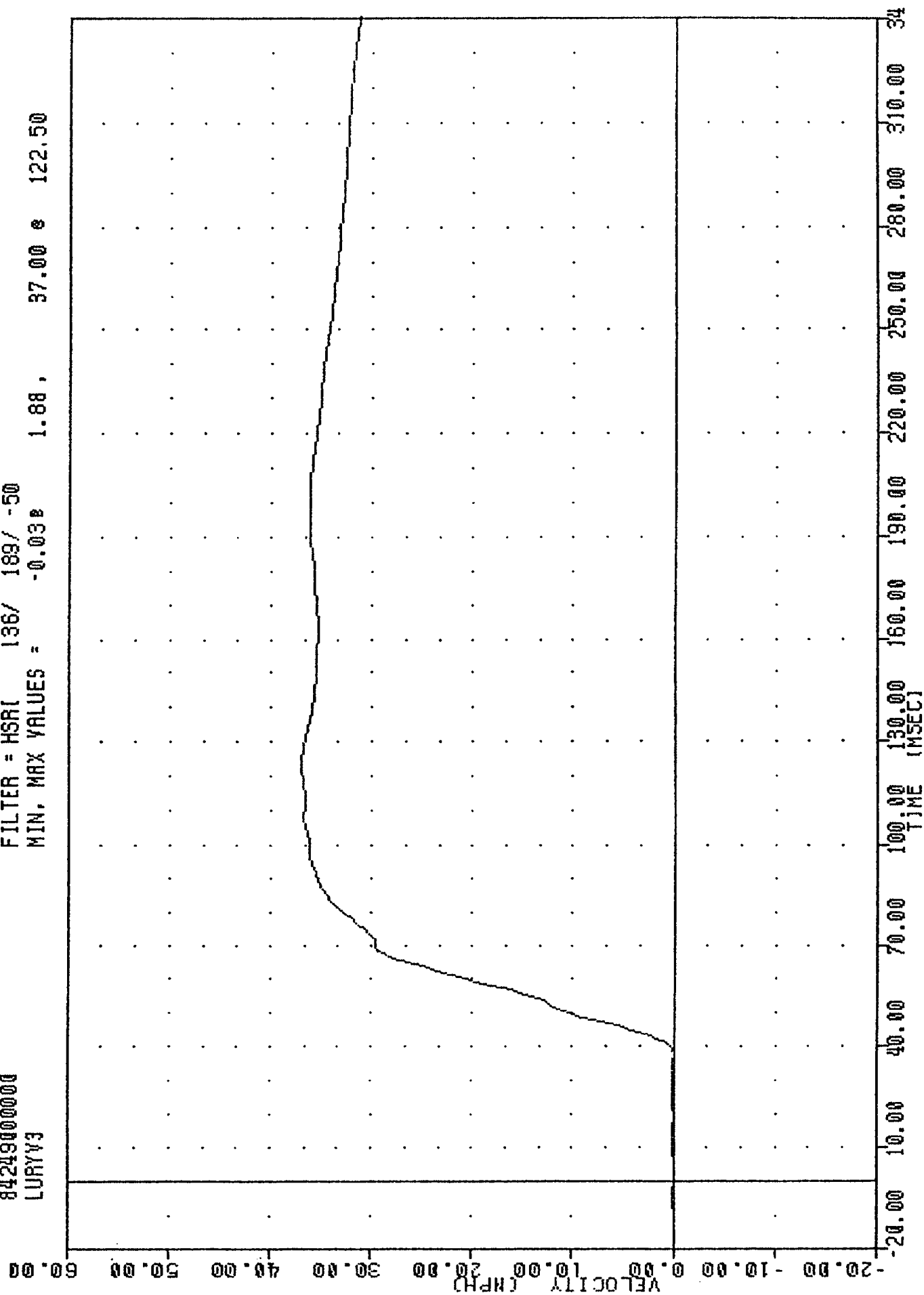
84249000000

LURYV3

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -0.038 1.88, 37.00 @ 122.50

B-57



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYG3

842490000000

LURYGC

FILTER = HSRI

136/ 189/ -50

MIN, MAX VALUES =

-4.26

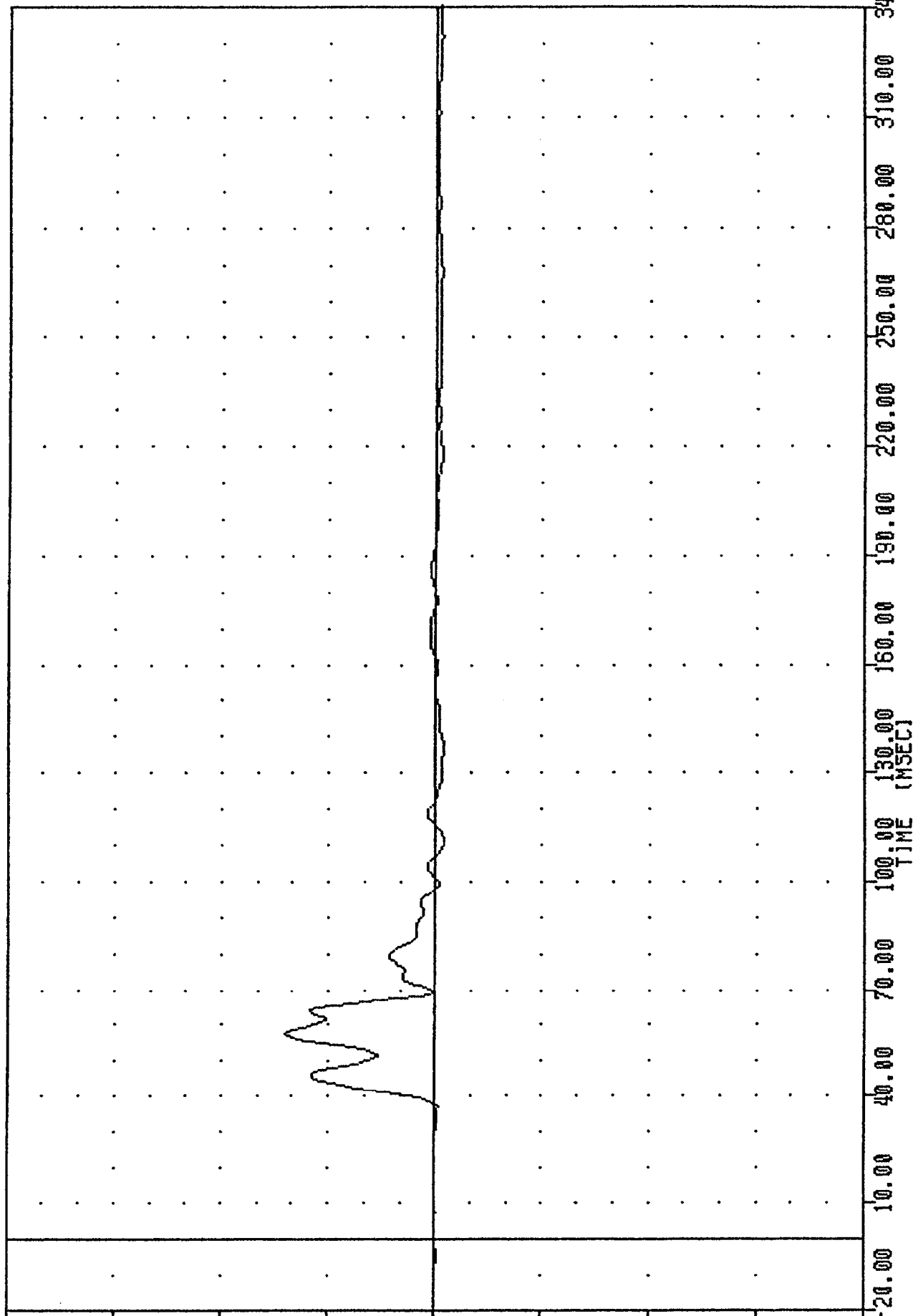
136.25,

70.18

56.87

ACCELERATION [G]

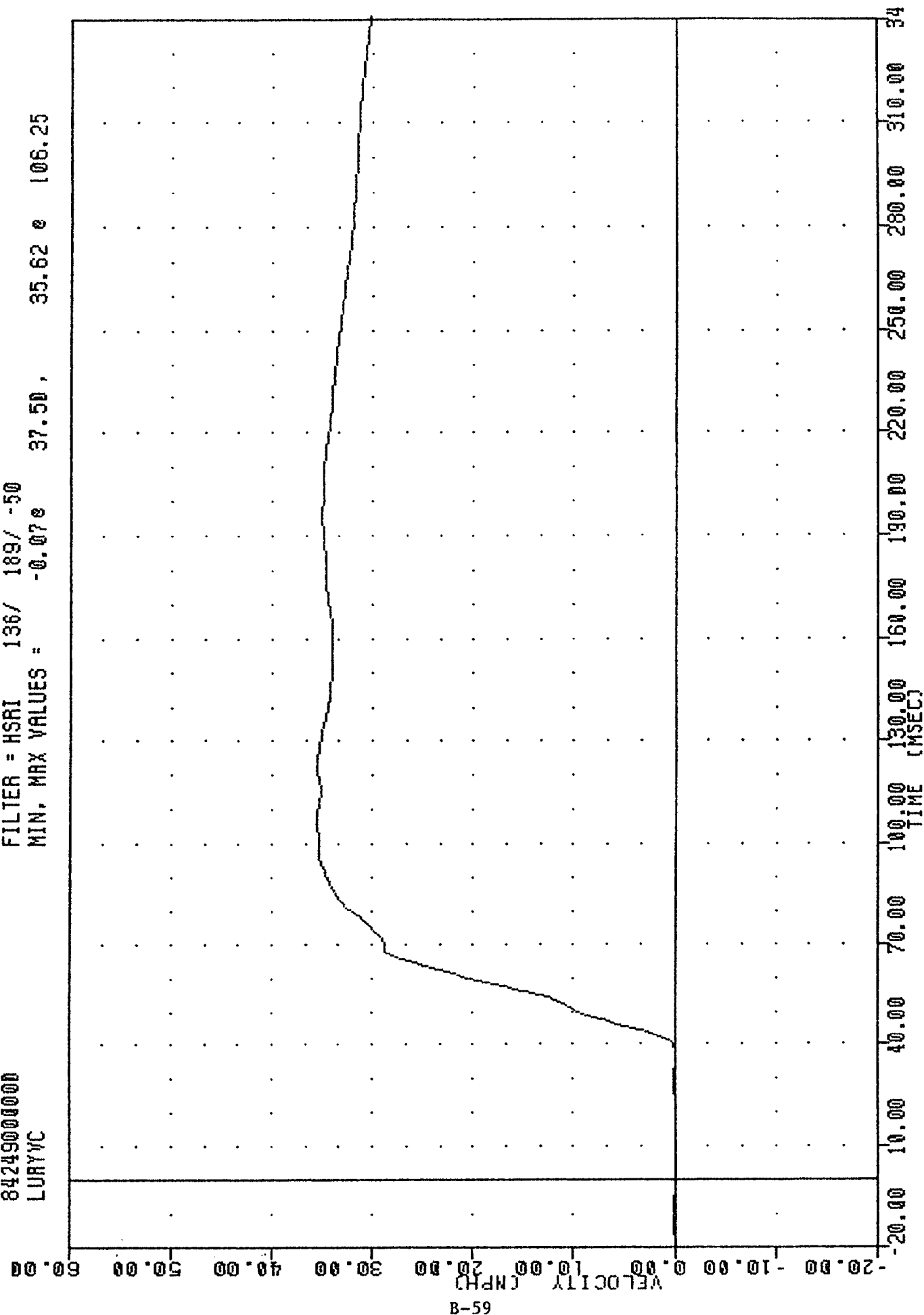
B-58



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

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.078 37.50 , 35.62 @ 106.25

8424900000
LURYC



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
TIME (MSEC)
DELTA V USING LURYGC

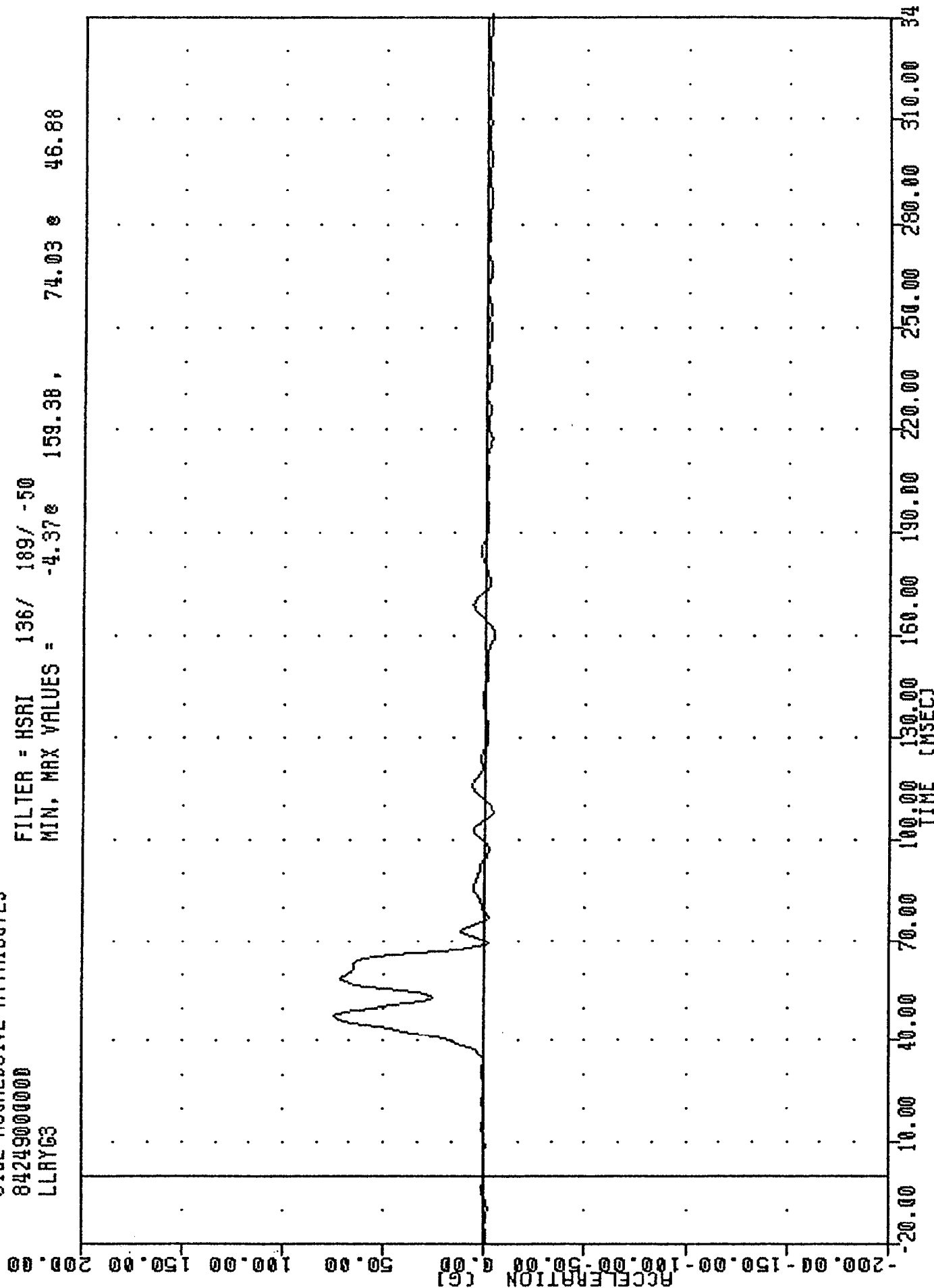
DATE: 08/08/2000 TIME: 11:00:00

84249000000

LLRY63

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -4.37 159.38 , 74.03 46.88



B-60

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

STATE NUMERICALS IN INCHES

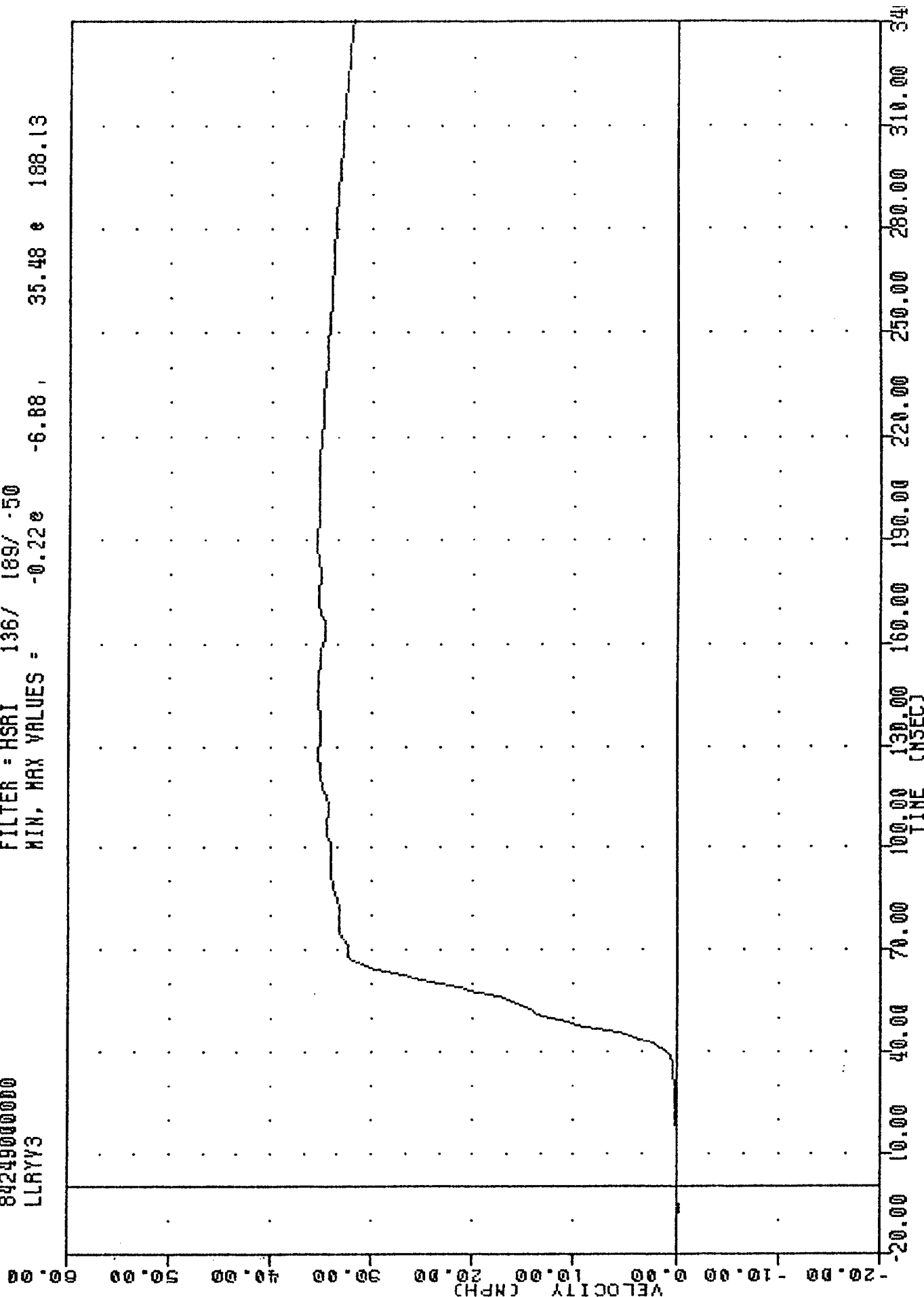
842490000000

LLRYV3

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.22e -6.88 , 35.48 e 188.13

B-61



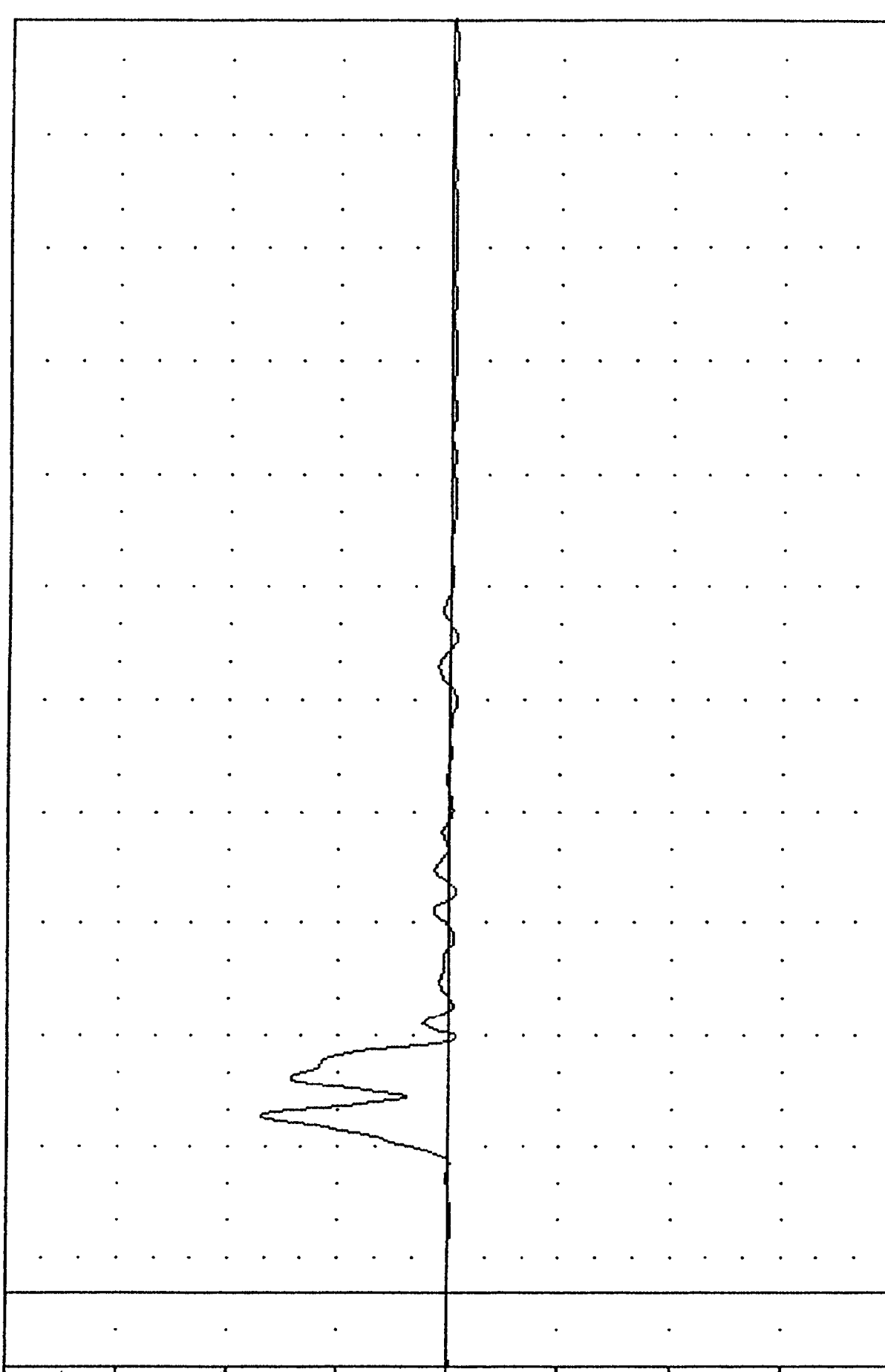
842490000000

LLRY6C

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -3.40 159.38 , 84.63 47.50

B-62
ACCELERATION (G)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00



-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

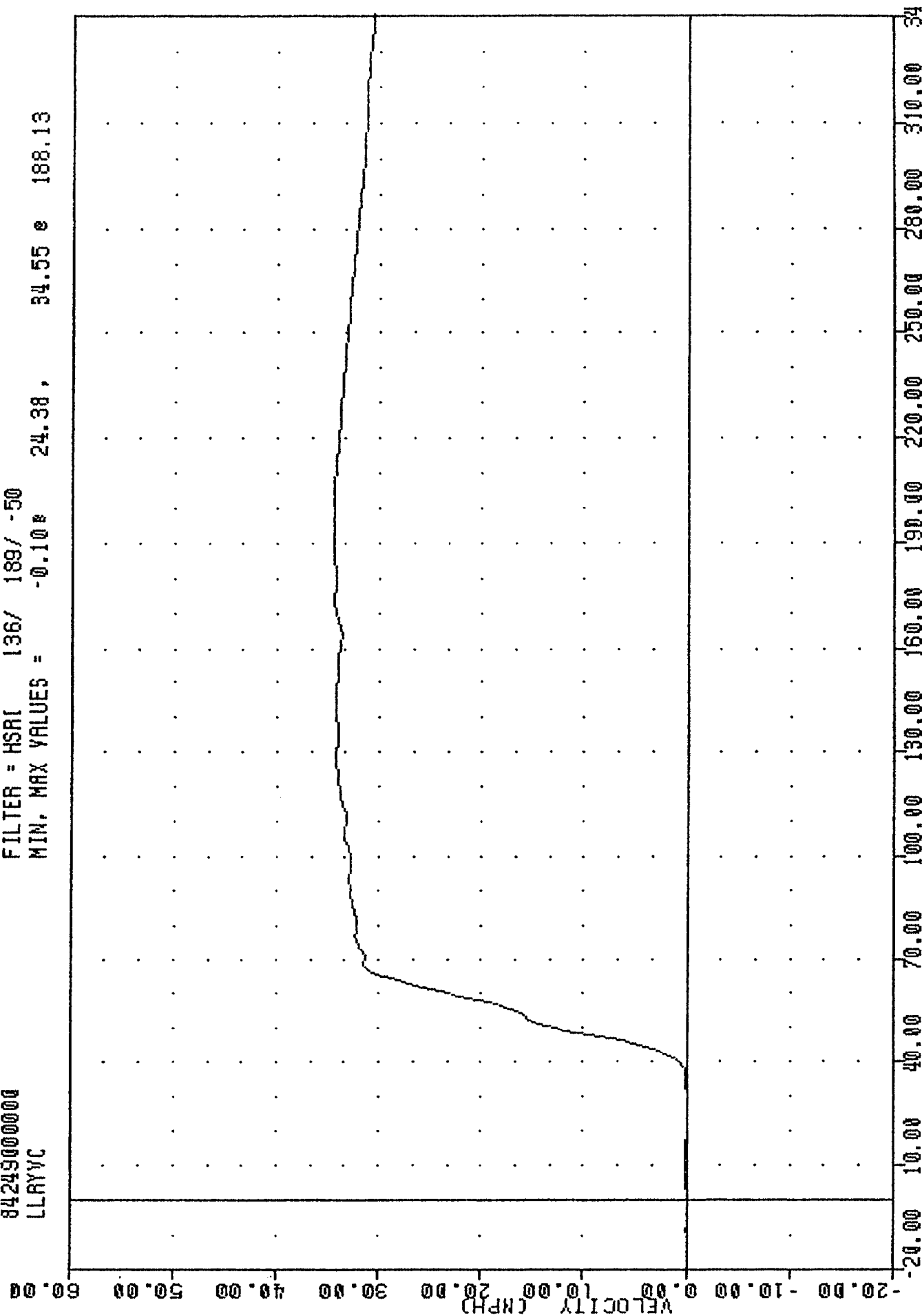
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT LOWER RIB ACCELERATION #2 Y AXIS

842490000000

LLRYVC

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.10 24.38 , 34.55 e 188.13

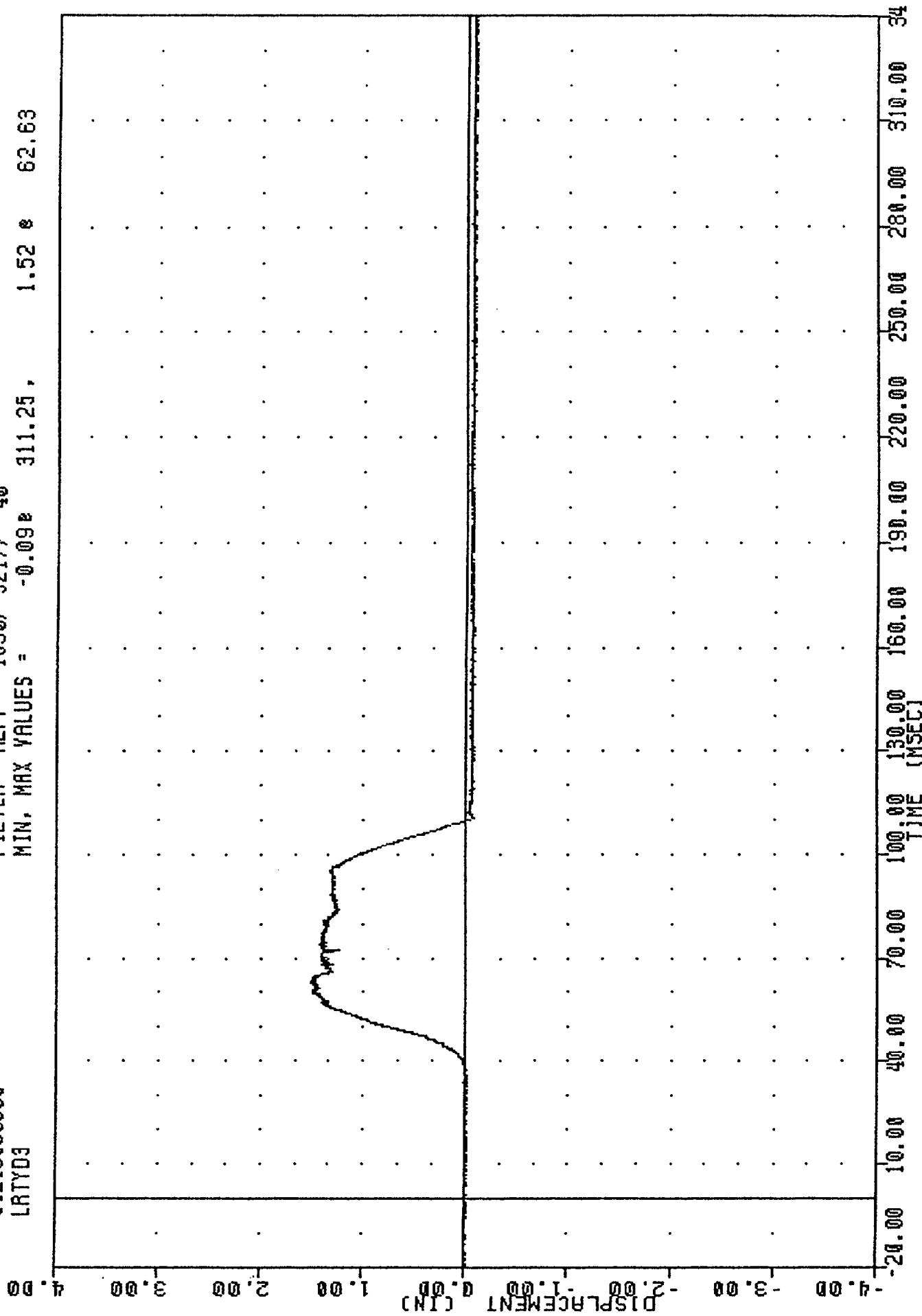


842490000000

LRTYD3

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -0.09e 311.25, 1.52 e 62.63



B-64

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

3106 10/05/00 11:11:11

84249000000

PEVXG3

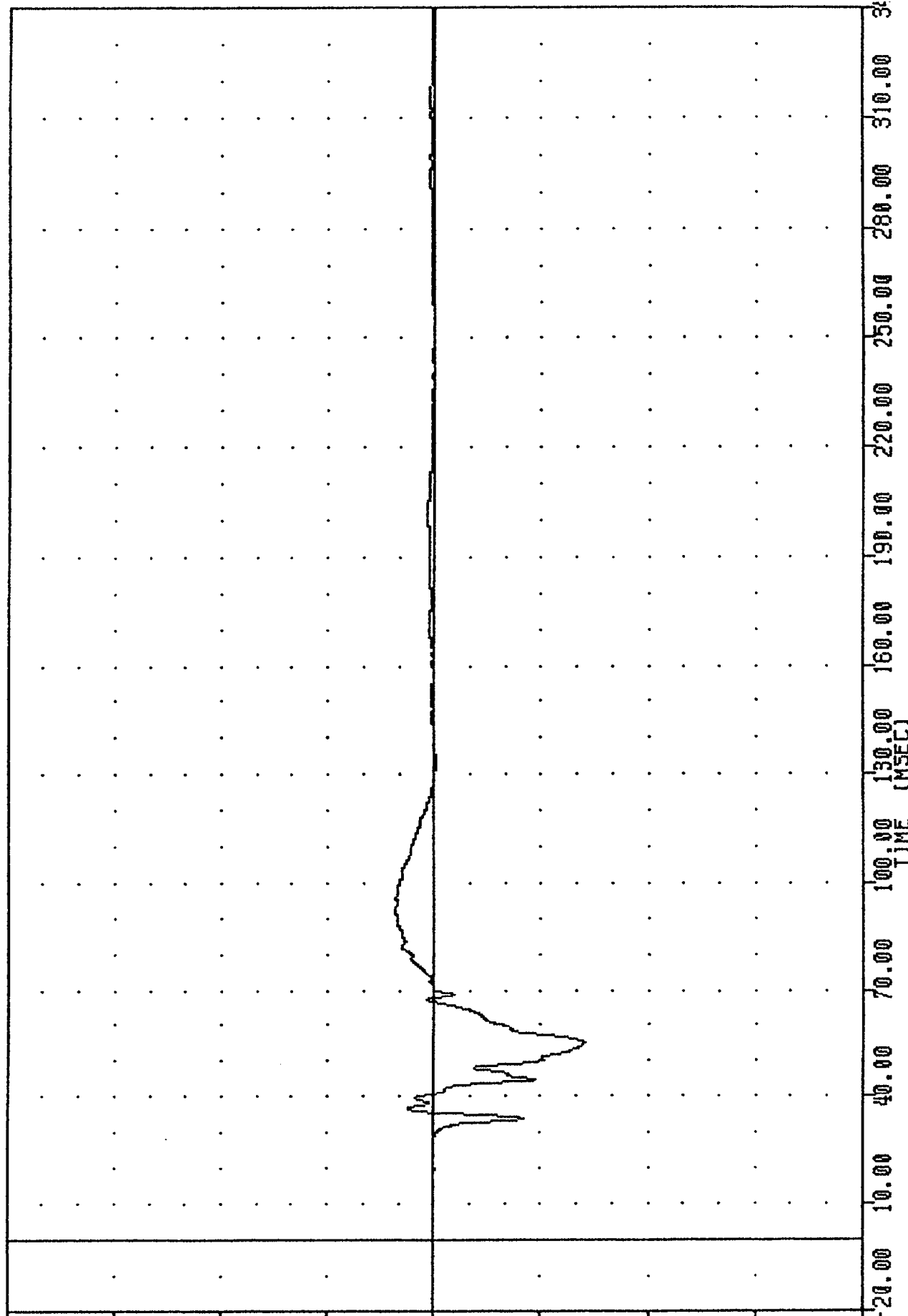
FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -70.26 54.63

18.58 92.13

ACCELERATION (G)

B-65



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION X AXIS

DATE OF TEST: 01/10/1983

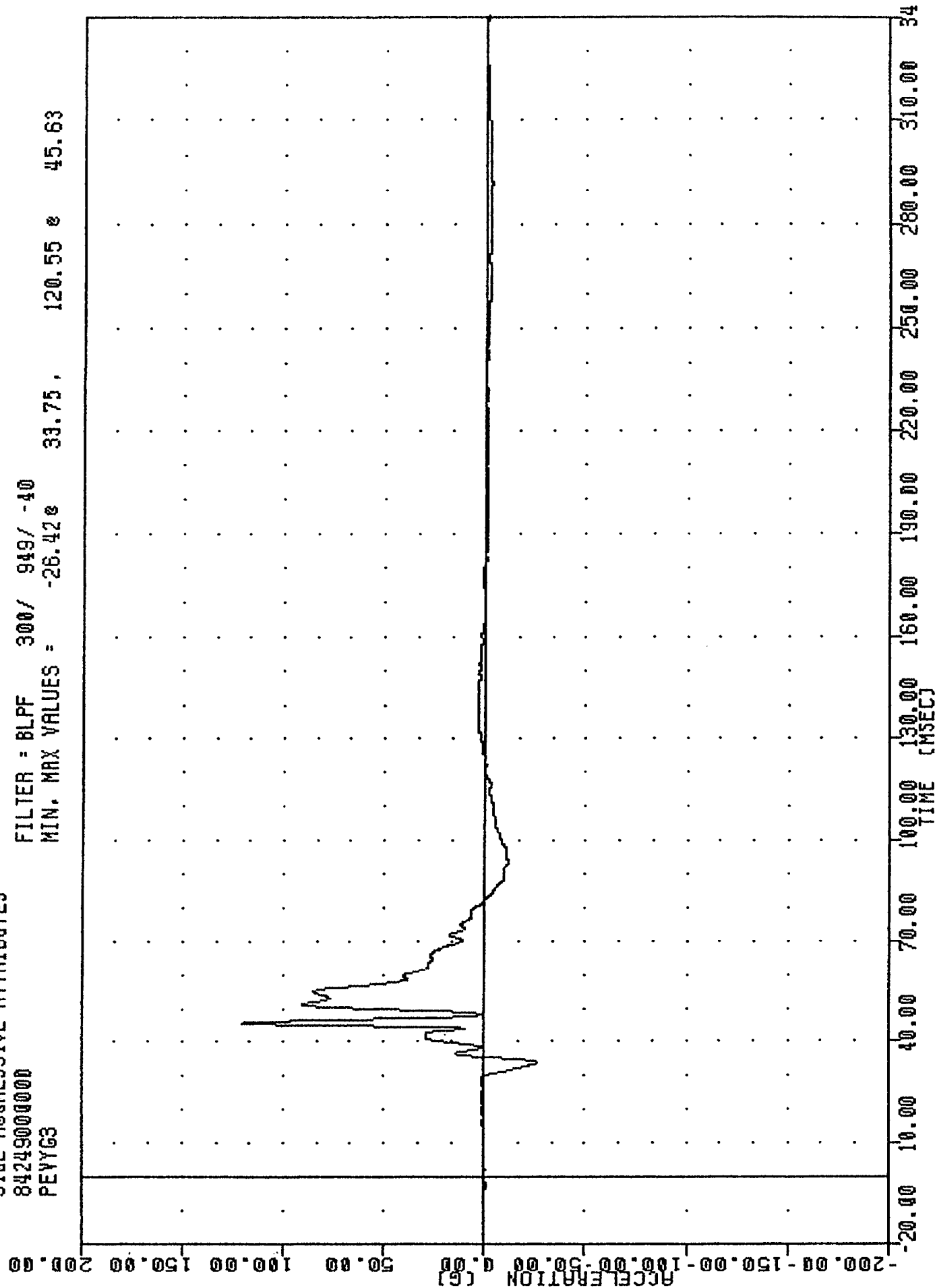
84249000000

PEYGC3

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -26.420

33.75, 120.55 0 45.63



B-66

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION Y AXIS

SIDE IMPRESSIVE HISTOGRAMS

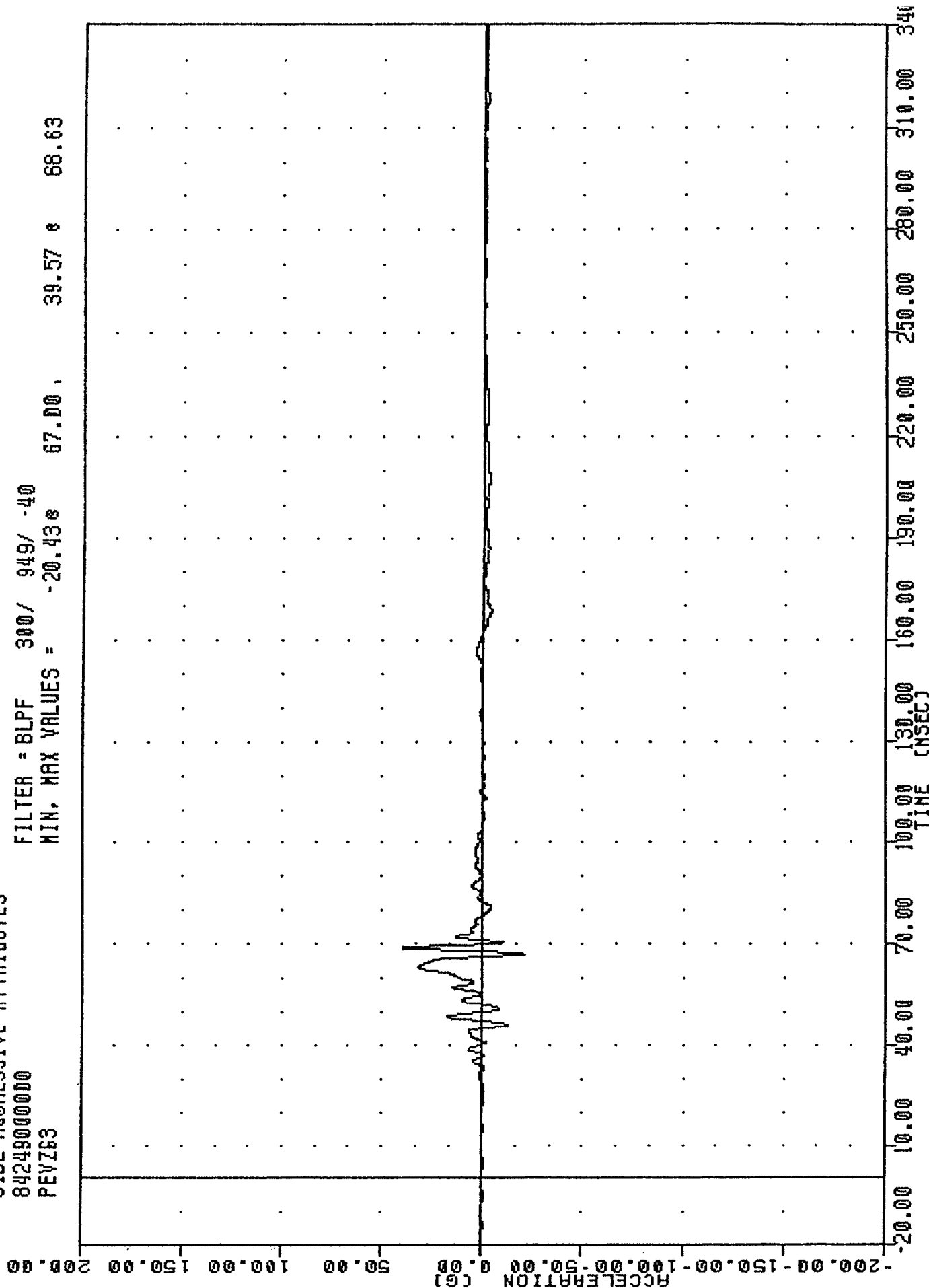
84249000000

PEVZ63

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -20.43 67.00 ,

39.57 68.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION Z AXIS

84249000000

PEVRG3

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES =

0.21g

-18.63,

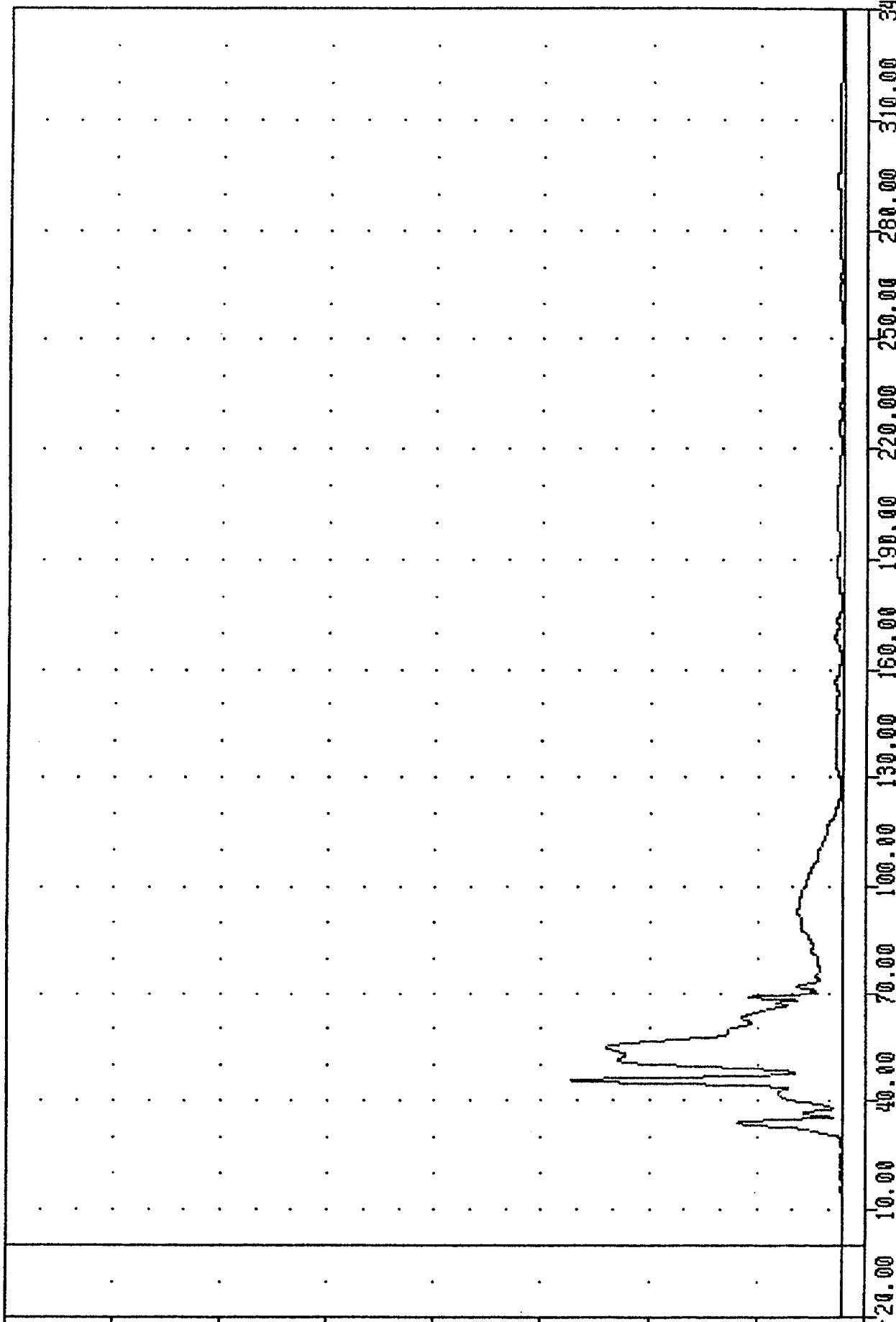
126.29 g

45.63

ACCELERATION (G)

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS RESULTANT



DATE RECEIVED: 11/11/2013

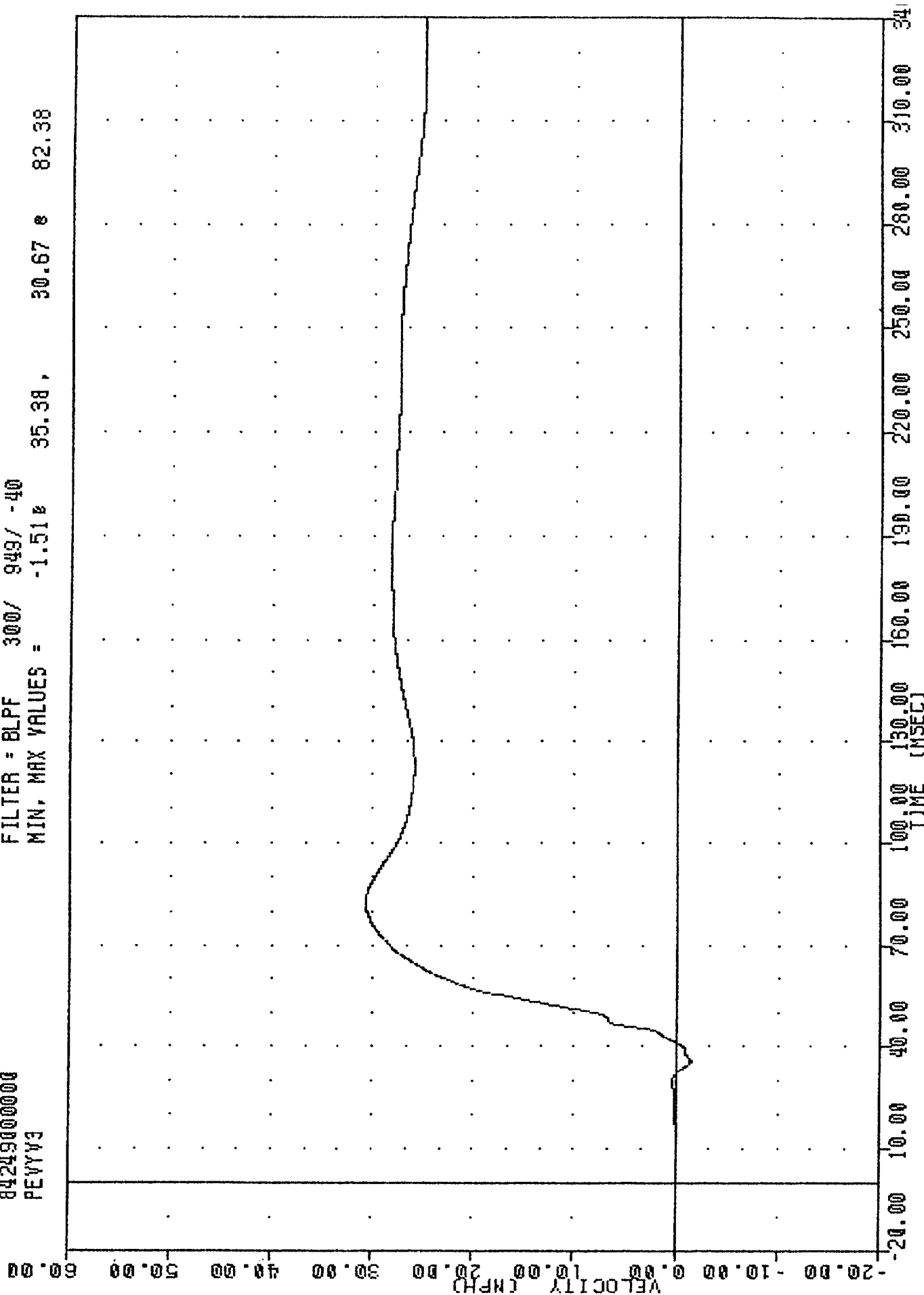
84249000000

PEVYV3

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -1.51e 35.38, 30.67 e 82.38

B-69



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING PEVYG3

SLUE HGGRESSIVE ATTRIBUTES

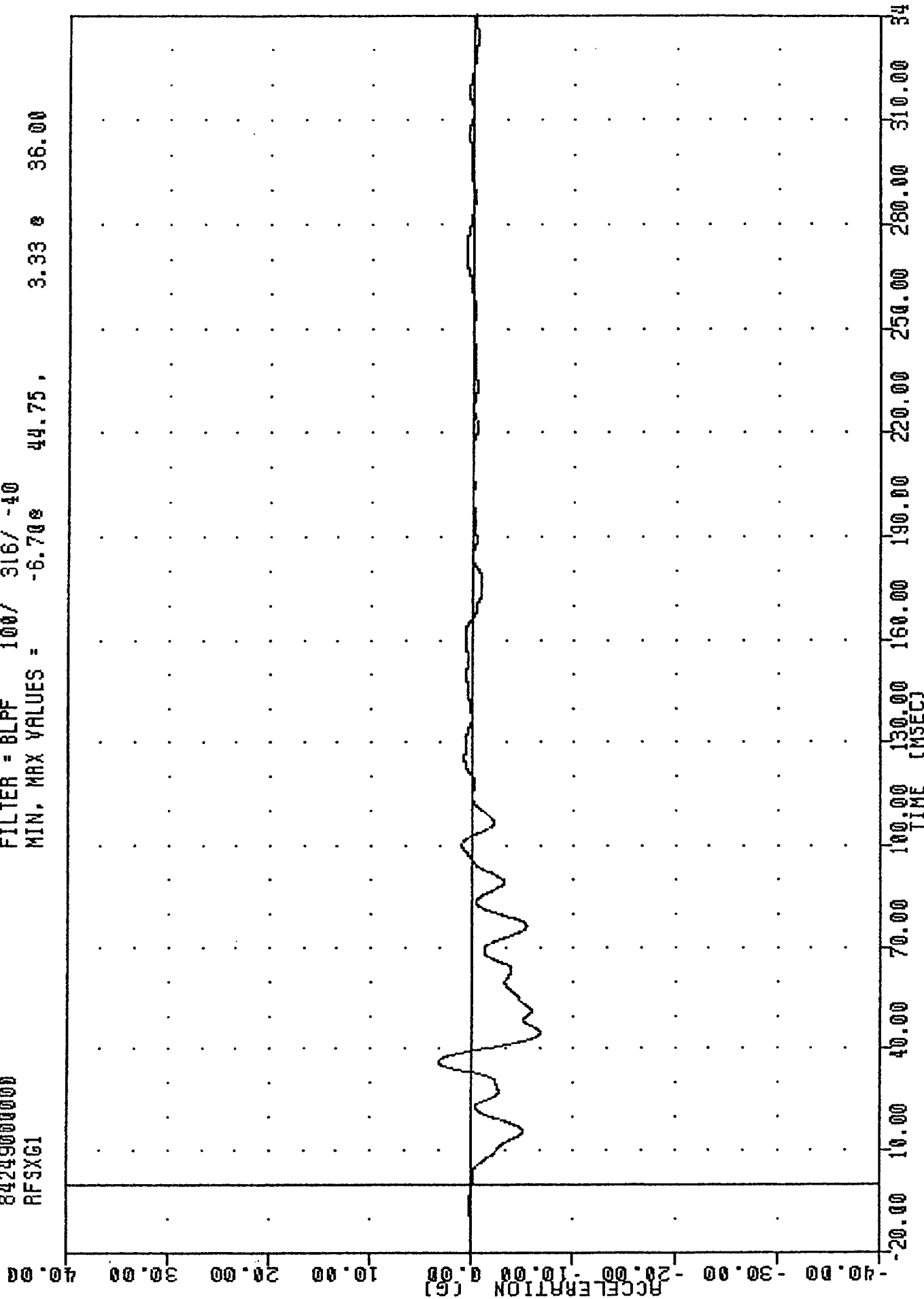
842490000000

RFSXG1

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -6.708 44.75 , 3.33 0 36.00

B-70



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

SIDE IMPRESSIVE HIGHLIGHTS

84249000000

RFSY61

FILTER = BLPF 100/ 316/ -40

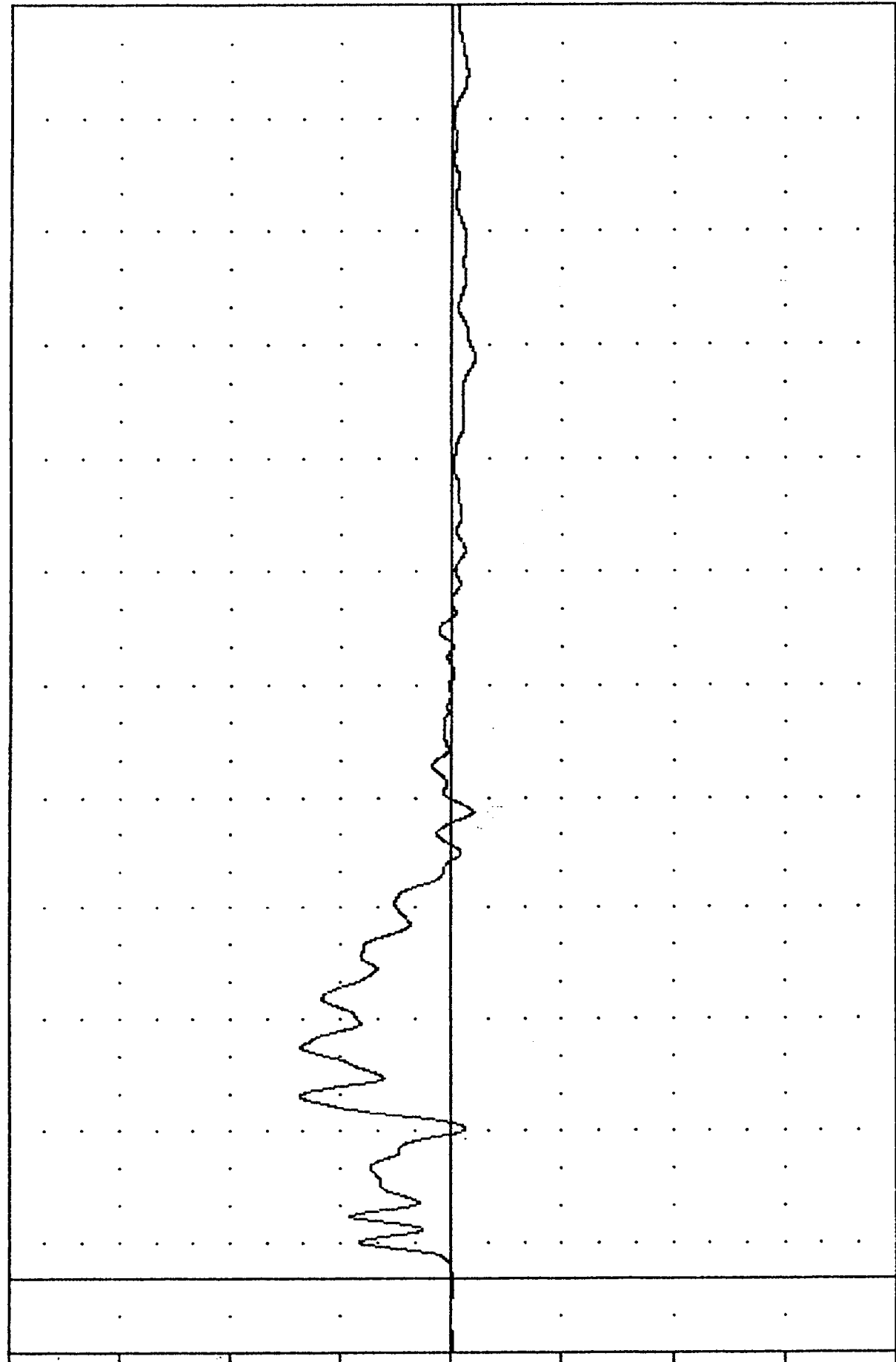
MIN, MAX VALUES = -2.03e 246.75 , 13.60 e 49.38

B-71

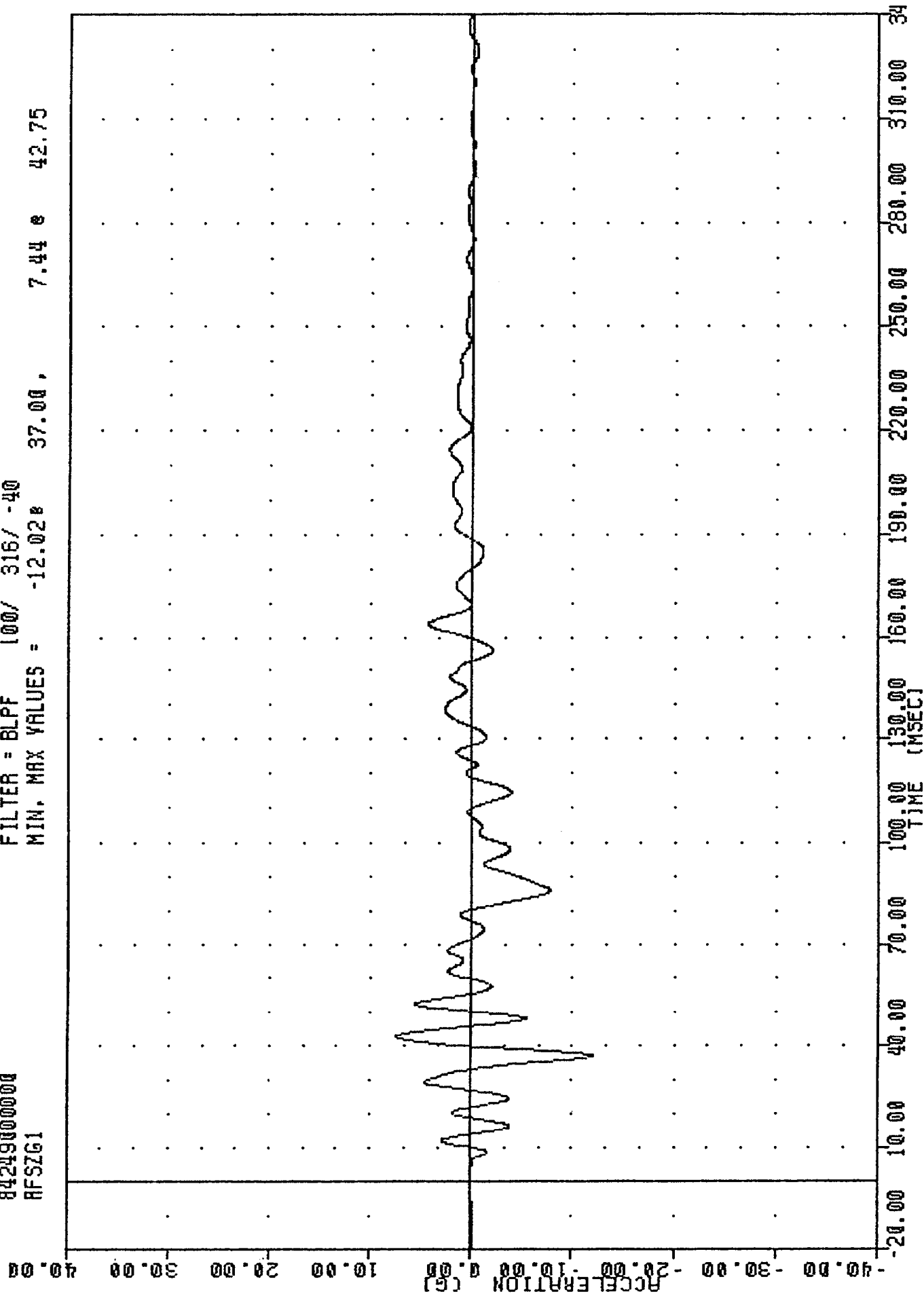
ACCELERATION (G)

TIME (MSEC)

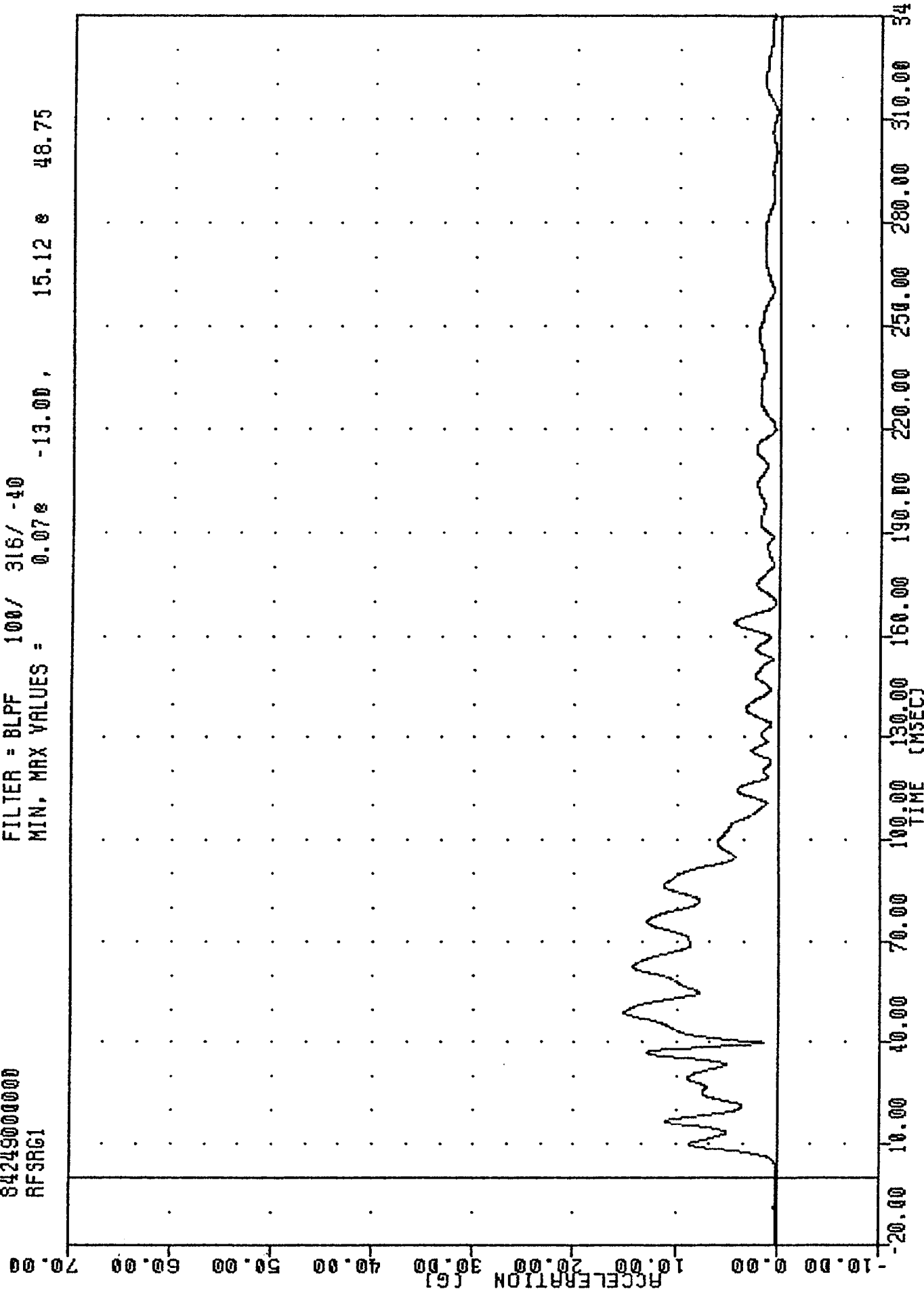
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION Y AXIS



MIN. MAX VALUES =	-12.028	37.00	7.44	42.75
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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION Z AXIS



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL RESULTANT

842490000000

RF5XY1

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES =

-5.398

116.75,

0.04

-4.00

B-74

VELOCITY (MPH)

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

-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

220.00

250.00

280.00

310.00

340.00

34

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING RFSXG1

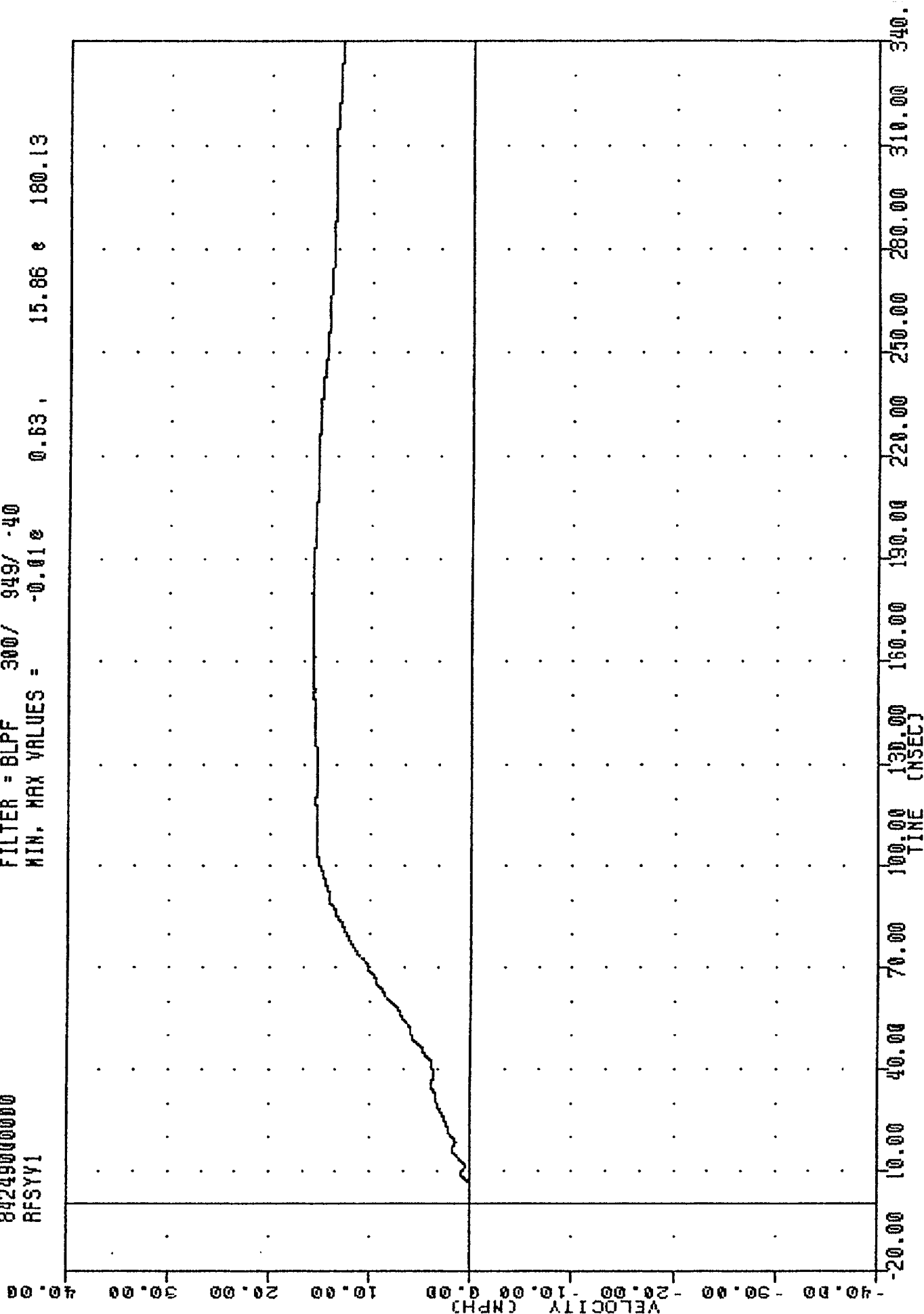
SIDE IMPRESSIVE HISTOGRAMS

84249000000

RFSYV1

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.01e 0.63 , 15.86 e 180.13



B-75

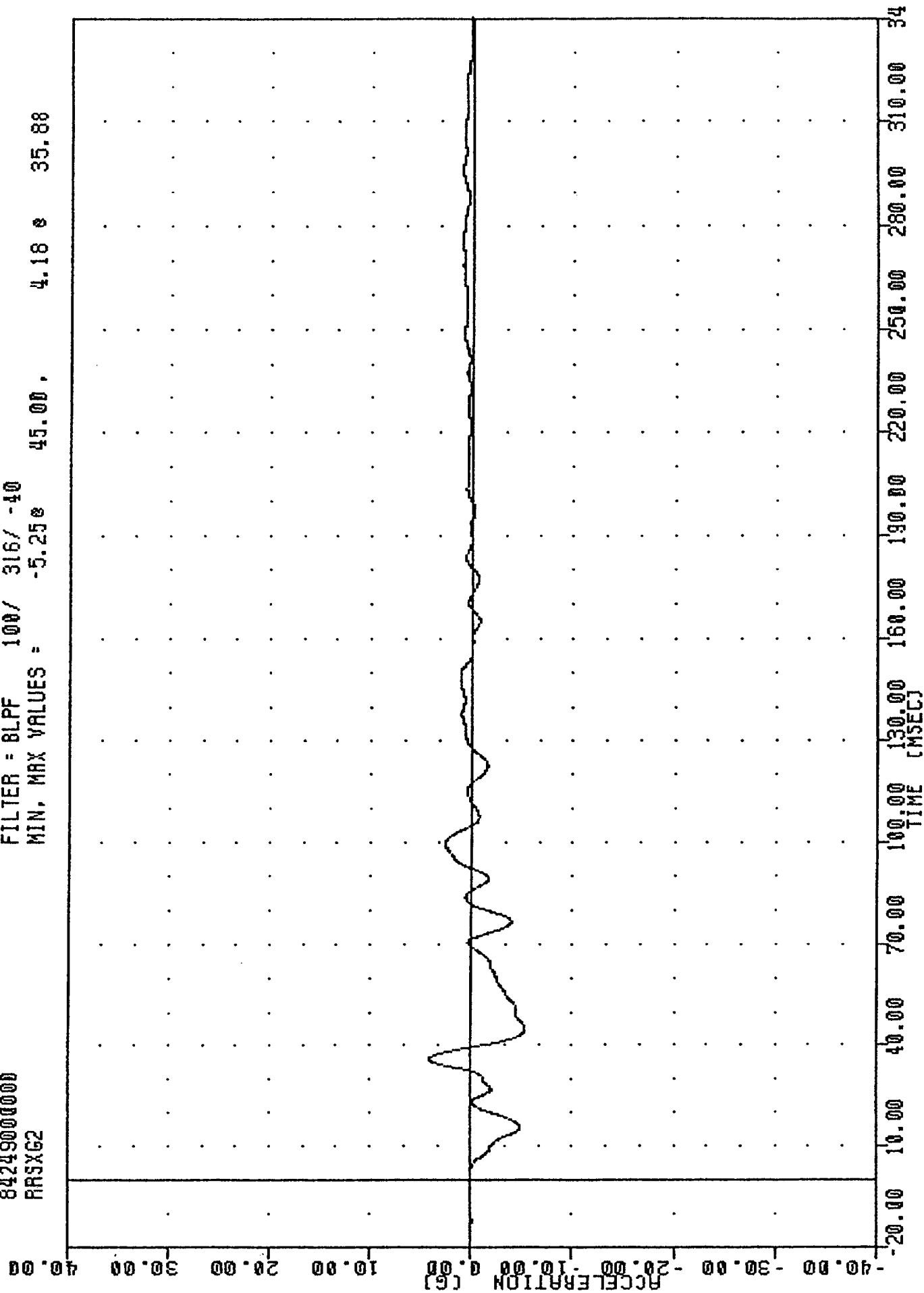
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RFSYG1

PP5XG2

FILTER = 8LPF 100/ 316/ -40

MIN, MAX VALUES = -5.25 45.00

4.18.23 35.88



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

SAVE SUCCESSIVE MINIMUBUES

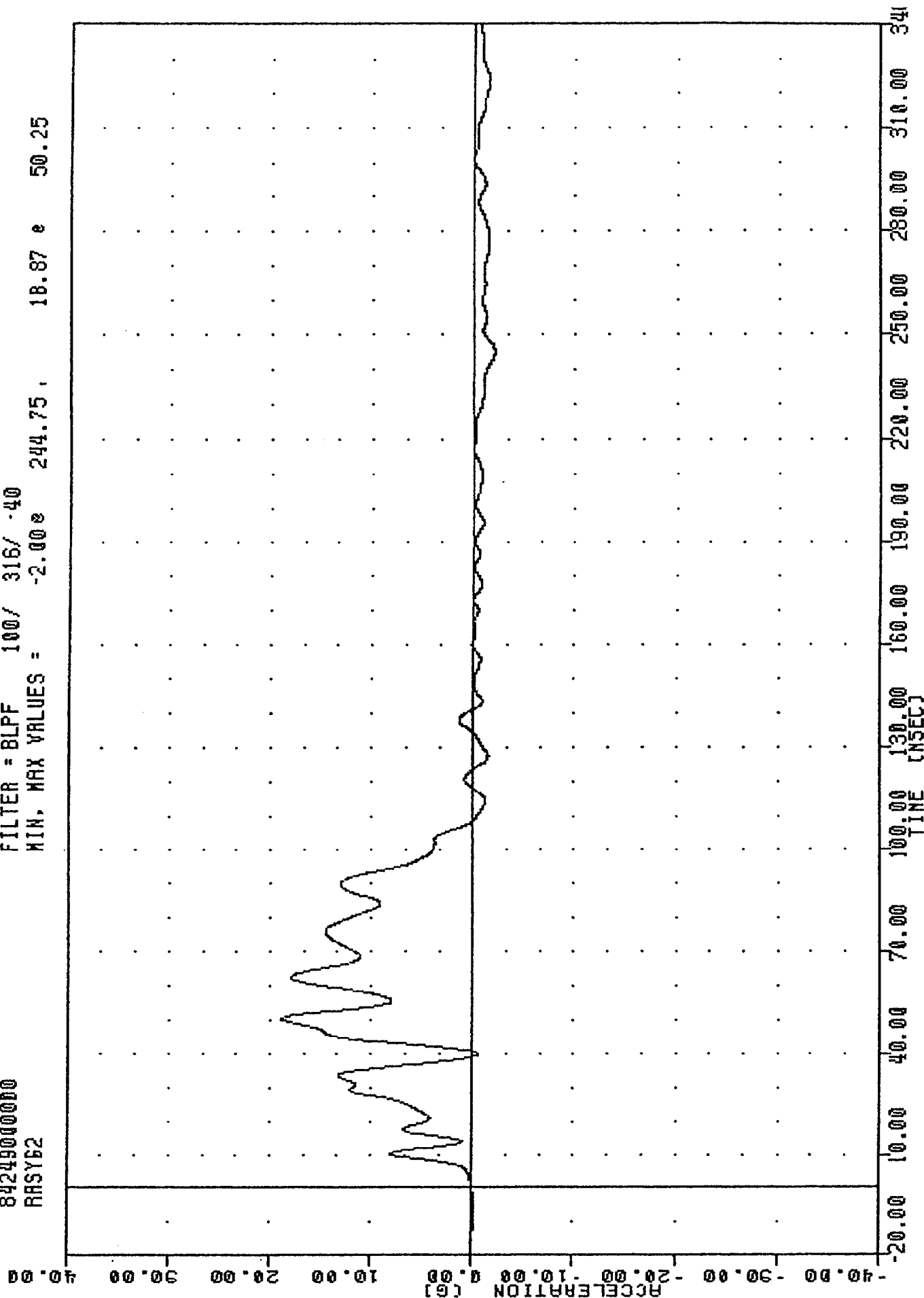
842490000000

RMSY62

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -2.00e 244.75, 18.87 e 50.25

B-77



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

842490000000

ARSIG2

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES =

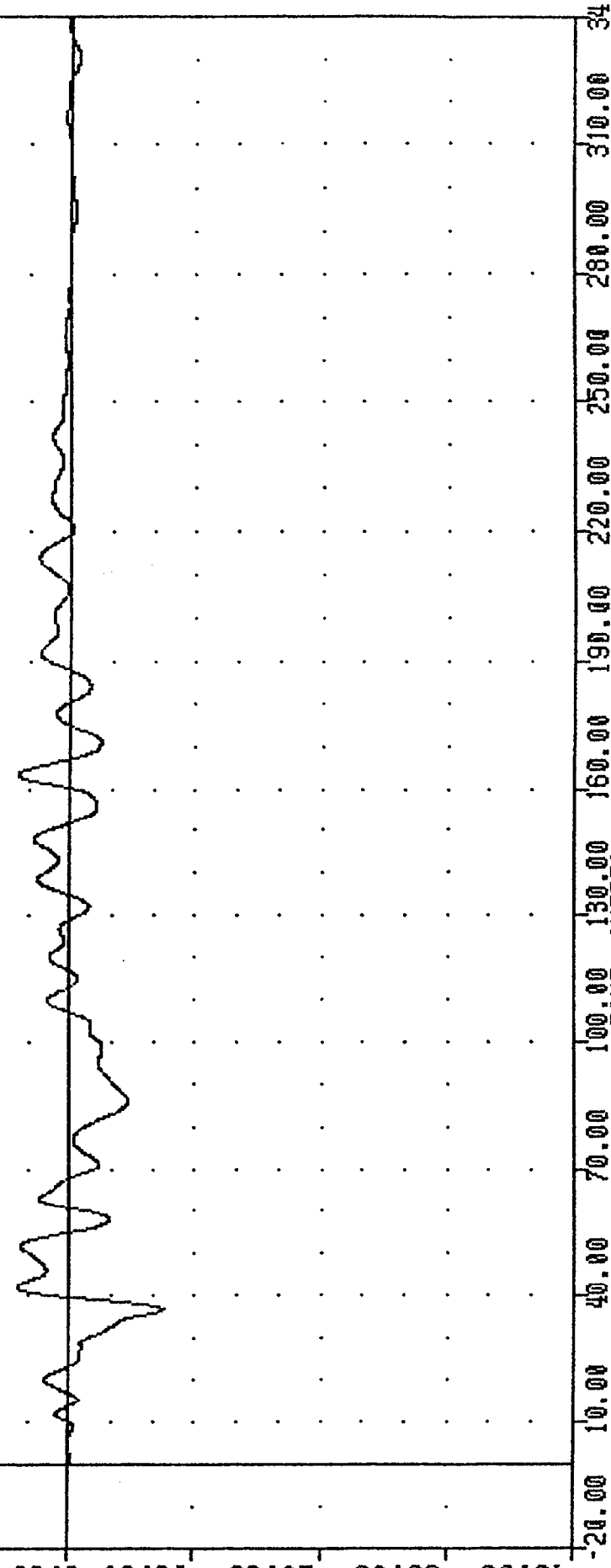
36.75,

4.16 0

41.88

B-78

ACCELERATION (G)



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

DATA IDENTIFICATION INFORMATION

84249000000

RRSR62

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.068 -1.00 ,

19.67 & 50.25

70.00

60.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

ACCELERATION (G)

B-79

-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

TIME (NSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL RESULTANT

DATE TIME LOCATION

84249000000

RRSXV2

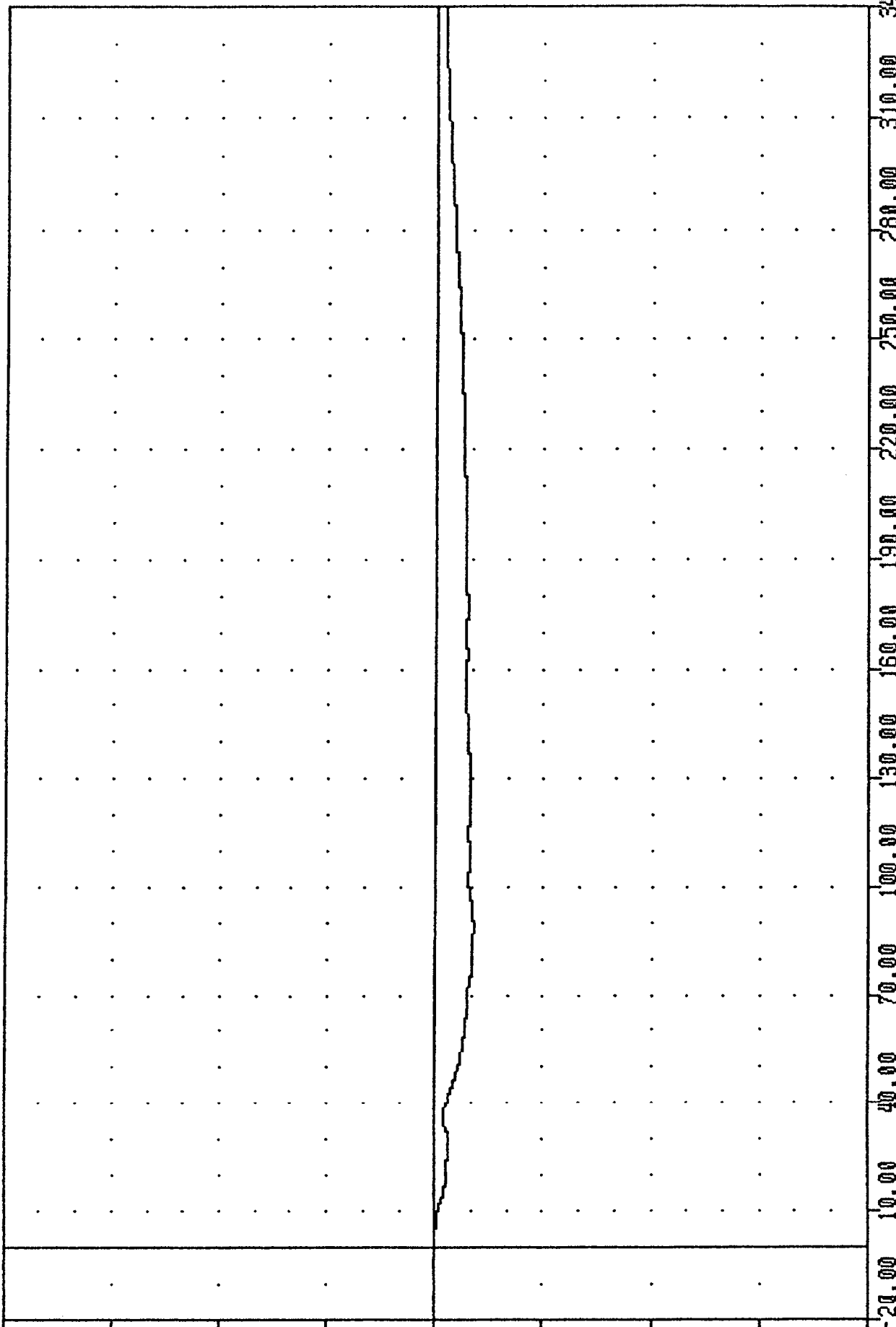
FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -3.50 88.63

0.00 8 -6.63

VELOCITY (MPH)

B-80



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING RRSXG2

STATE UNIVERSITY OF NEW YORK

84249000000

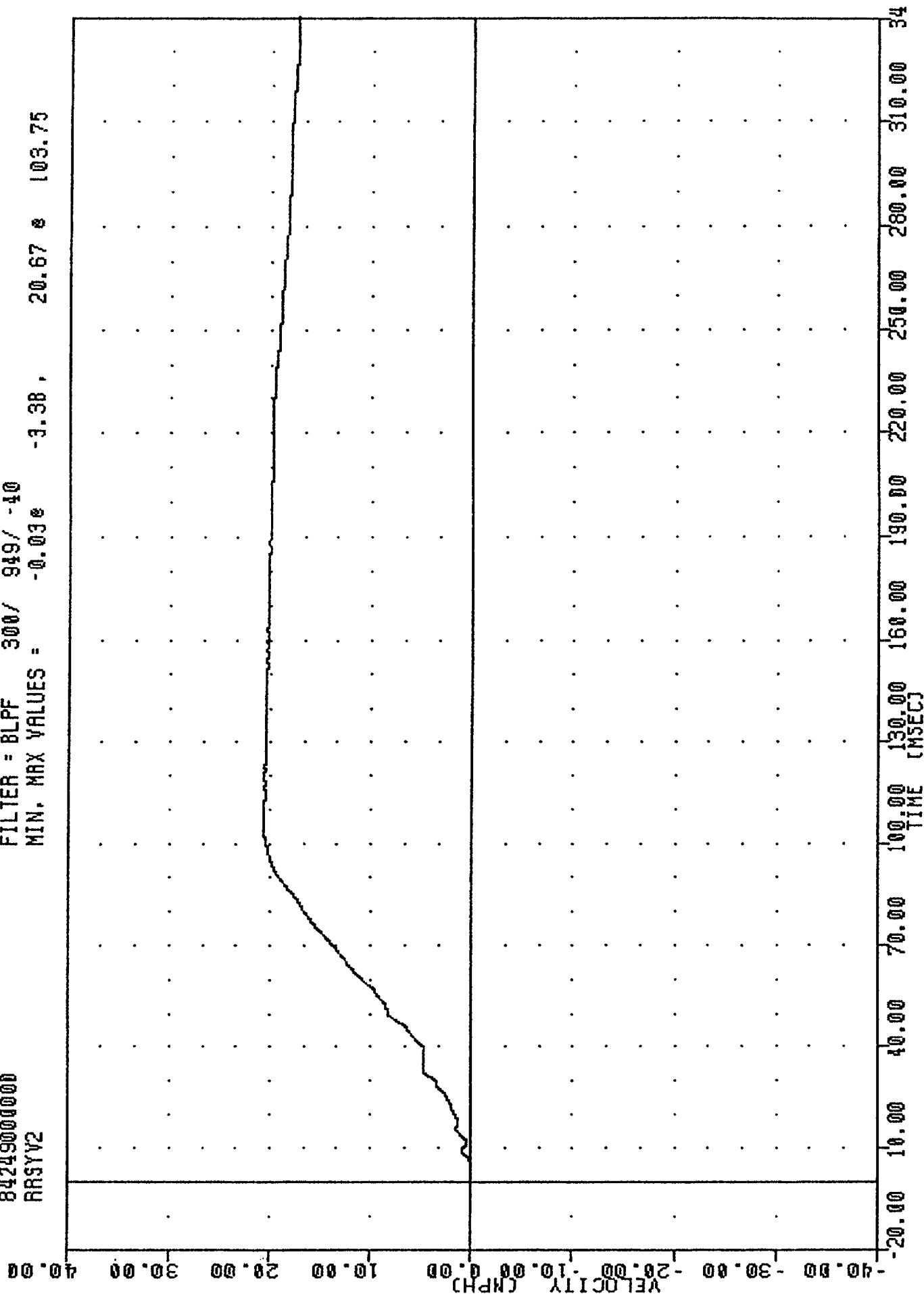
RRSYV2

FILTER = BLPF 300/ 949/ -10

MIN. MAX VALUES = -0.030

-3.38, 20.67 @ 103.75

B-81



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RRSYG2

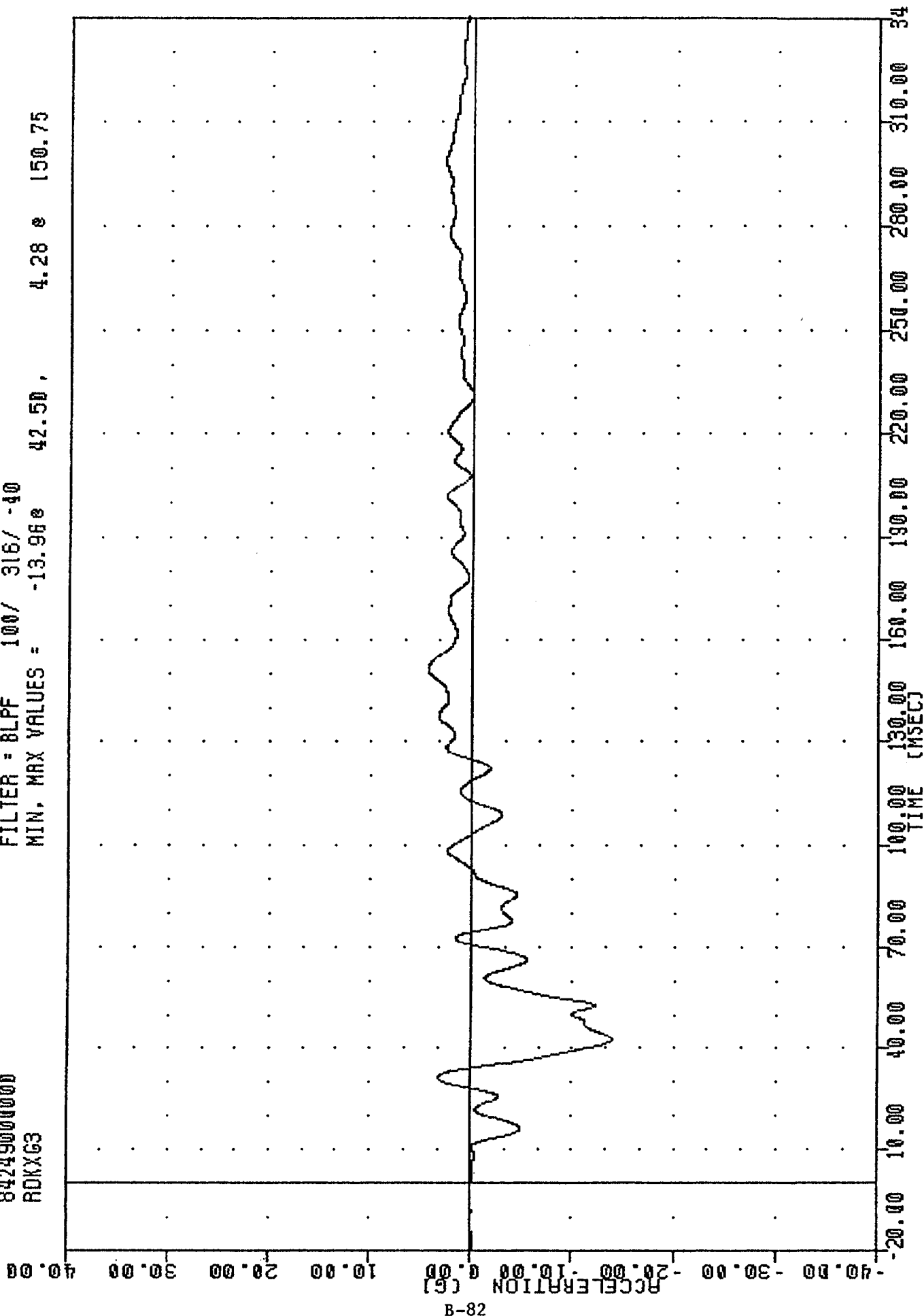
842490000000

842490000000

RDXG63

FILTER = 8LPF 100/ 316/ -40

MIN, MAX VALUES = -13.96e 42.50 , 4.28 e 150.75



SIDE IMPRESSIVE MEASUREMENTS

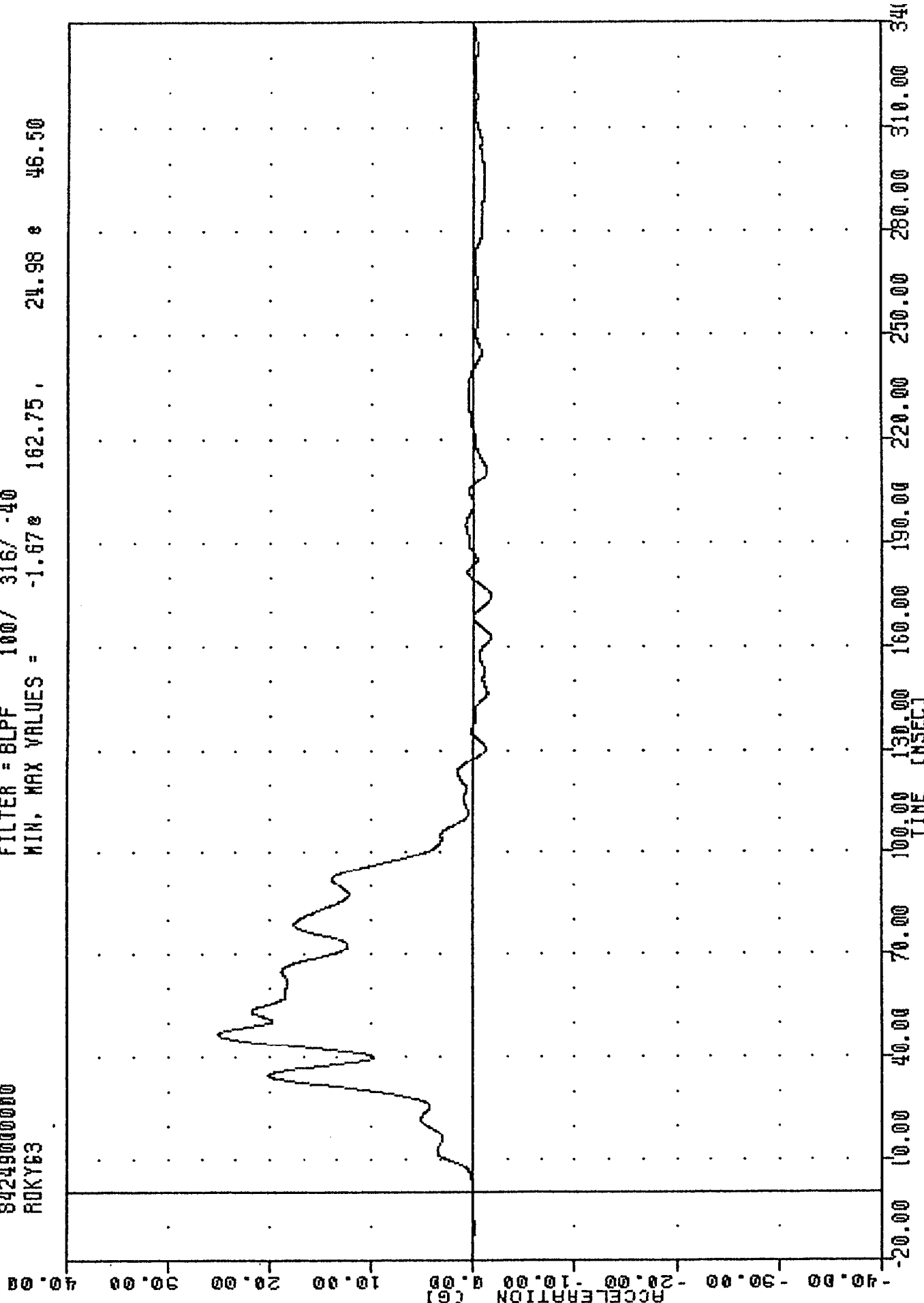
84249000000

R0KY63

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -1.67e 162.75, 24.98 e 46.50

B-83



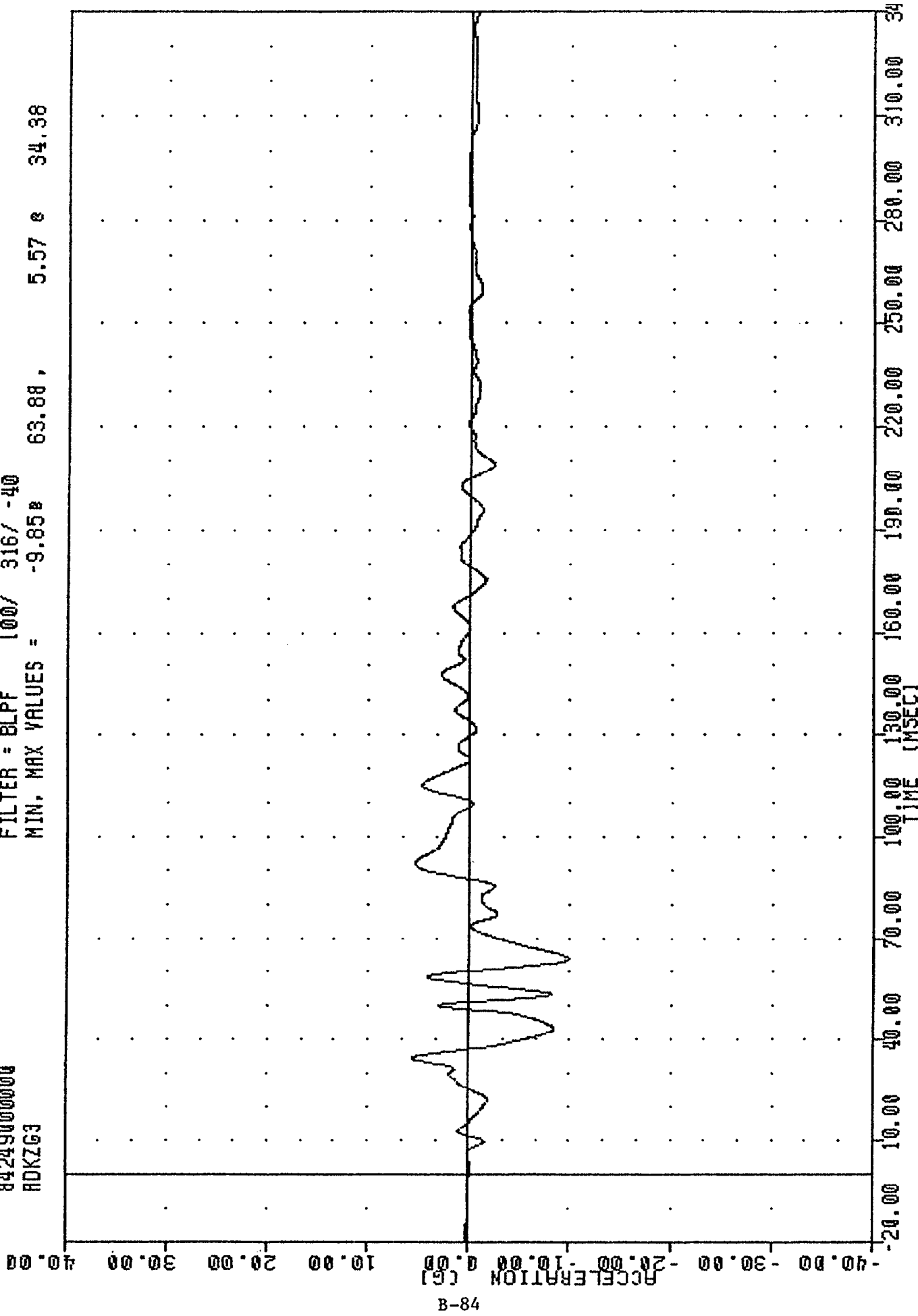
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION Y AXIS

842490000000

ADKZG3

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -9.85 63.88, 5.57 34.38

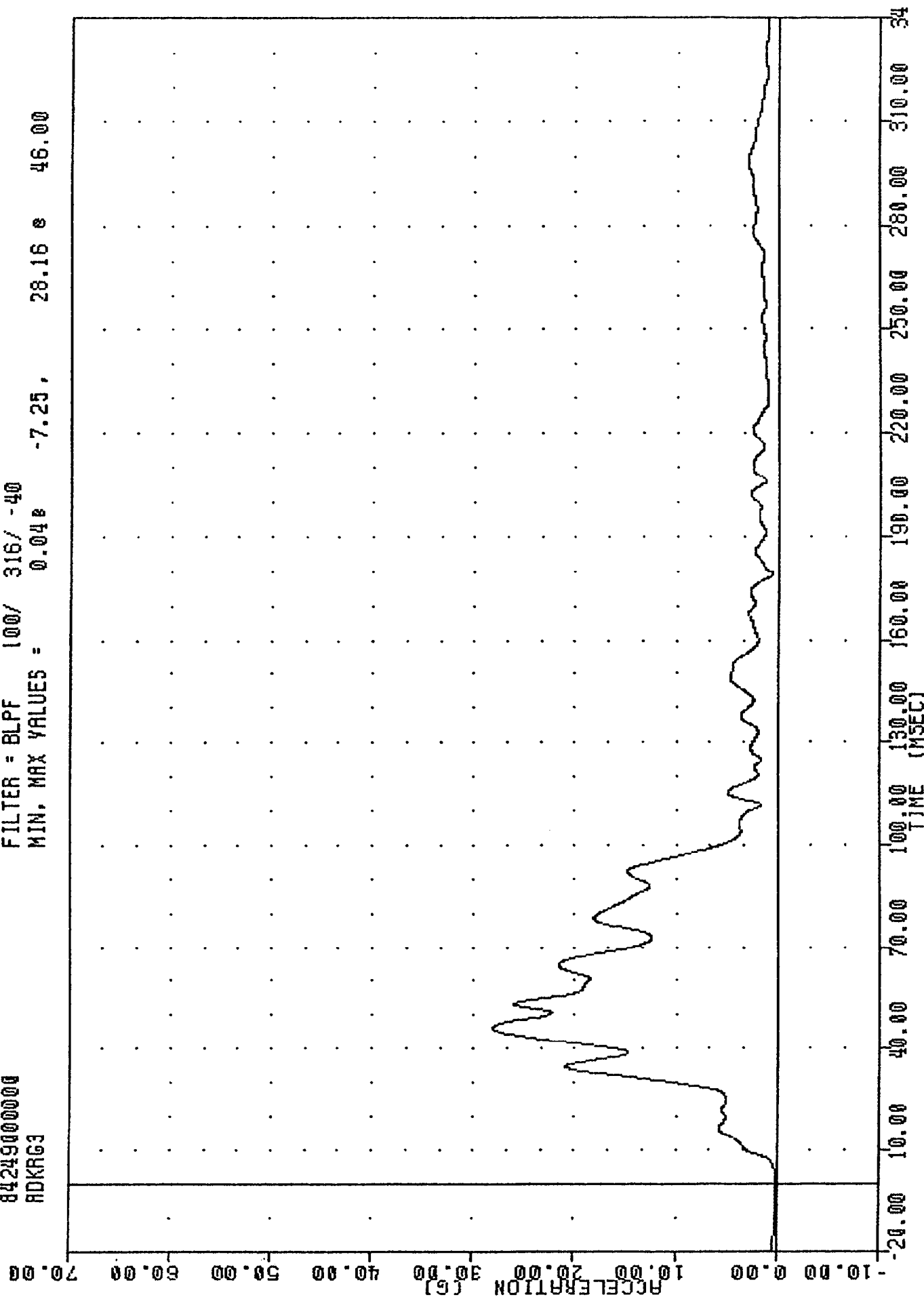


ADKRG3

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = 0.048

-7.25.	28.16	46.00
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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK RESULTANT

DATE TIME LOCATION

84249000000

ROKXV3

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -7.68e 121.25, 0.59 e 340.00

B-86

VELOCITY (MPH)

-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

90.00

100.00

110.00

120.00

130.00

140.00

150.00

160.00

170.00

180.00

190.00

200.00

210.00

220.00

230.00

240.00

250.00

260.00

270.00

280.00

290.00

300.00

310.00

320.00

330.00

340.00

TIME (NSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING RDKXG3

0000067278

07- /676 300C JETTER = BLTIF

EXHIBIT

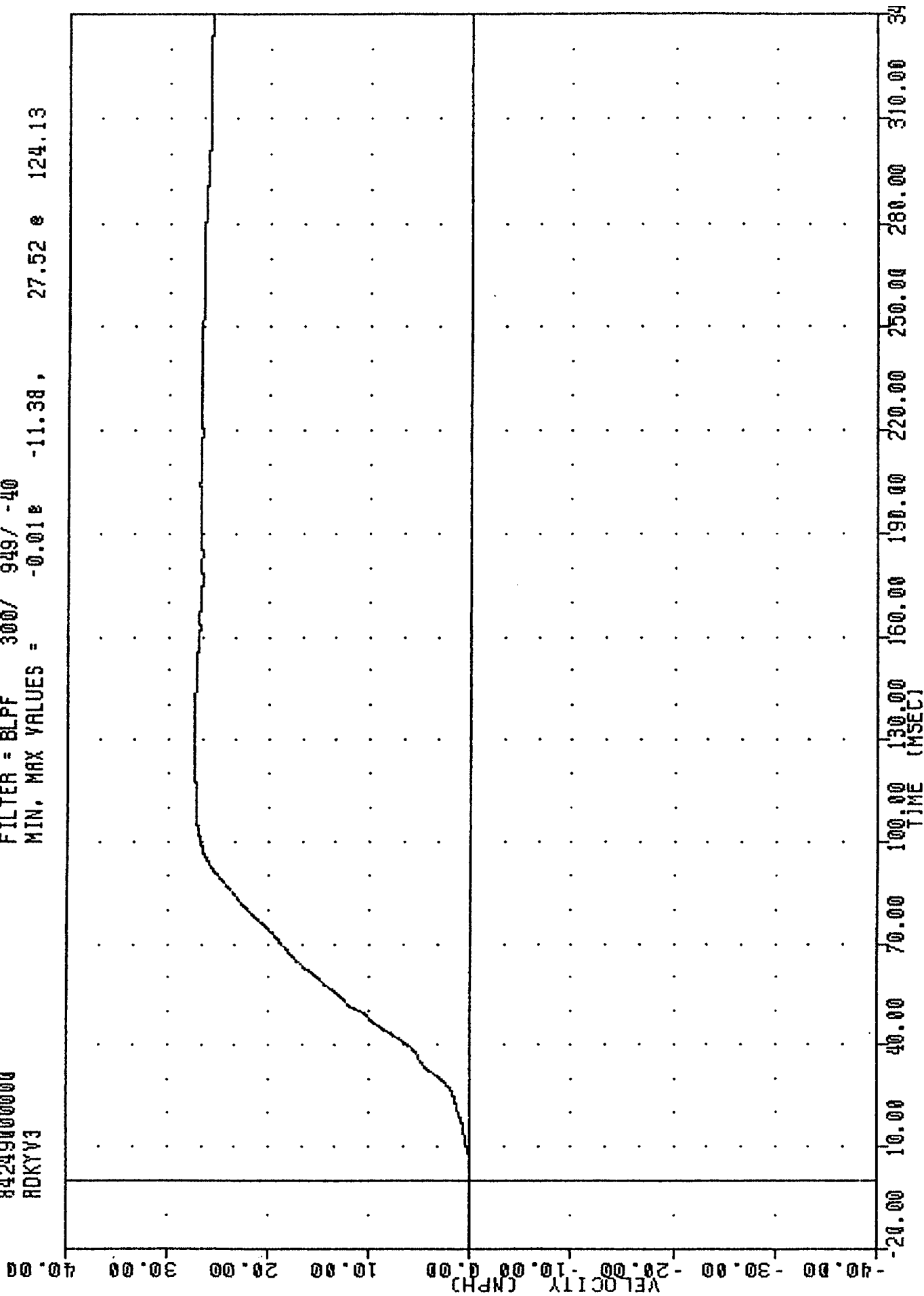
3007

07- 1676

-11.38-

27.52 8

124.13

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
TIME (MSEC)

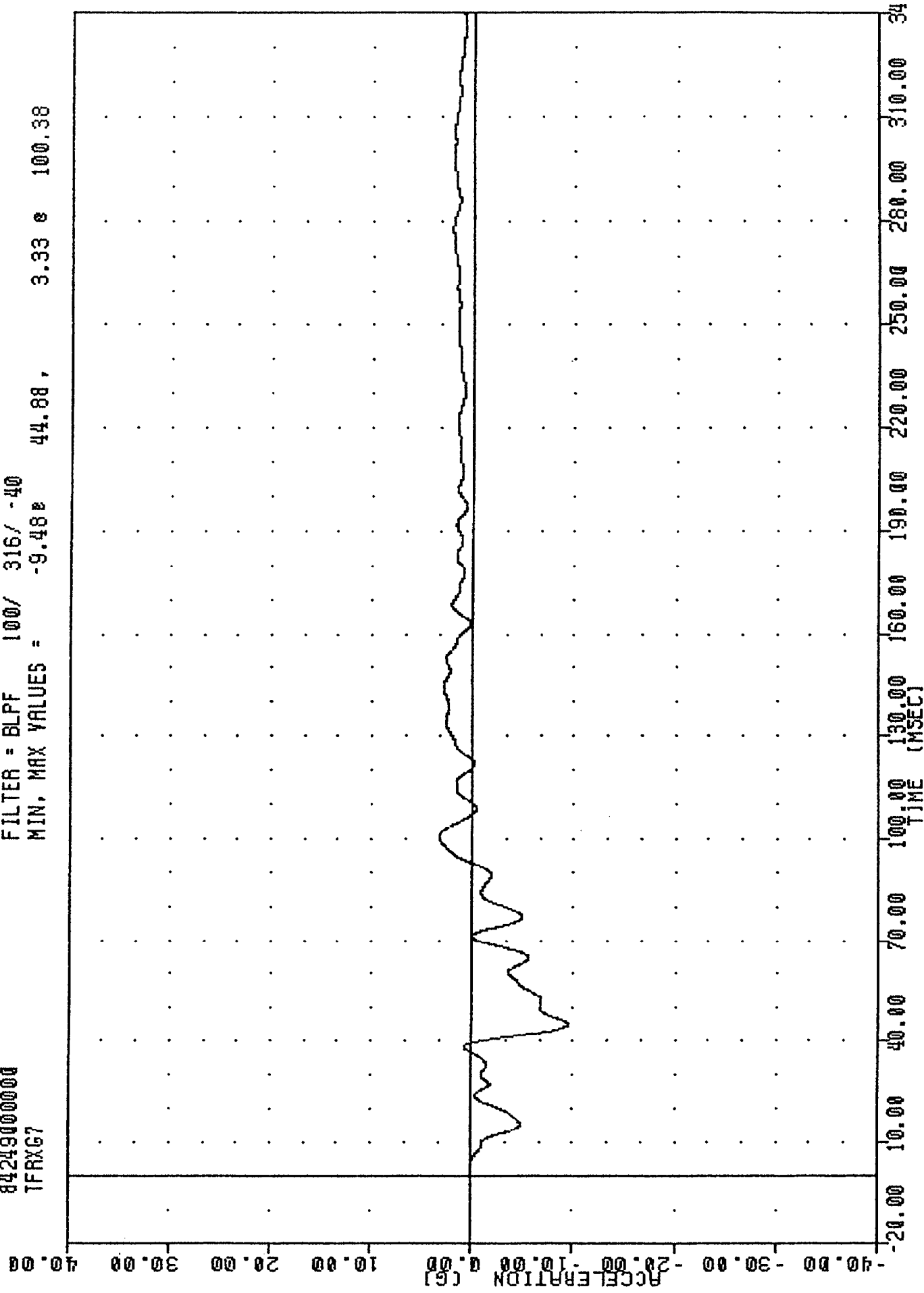
DELTA V USING RDKYG3

842490000000

TFRXG7

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -9.488 44.88, 3.33 @ 100.38



B-88

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

SIDE IMPACTIVE HILIMBUUES

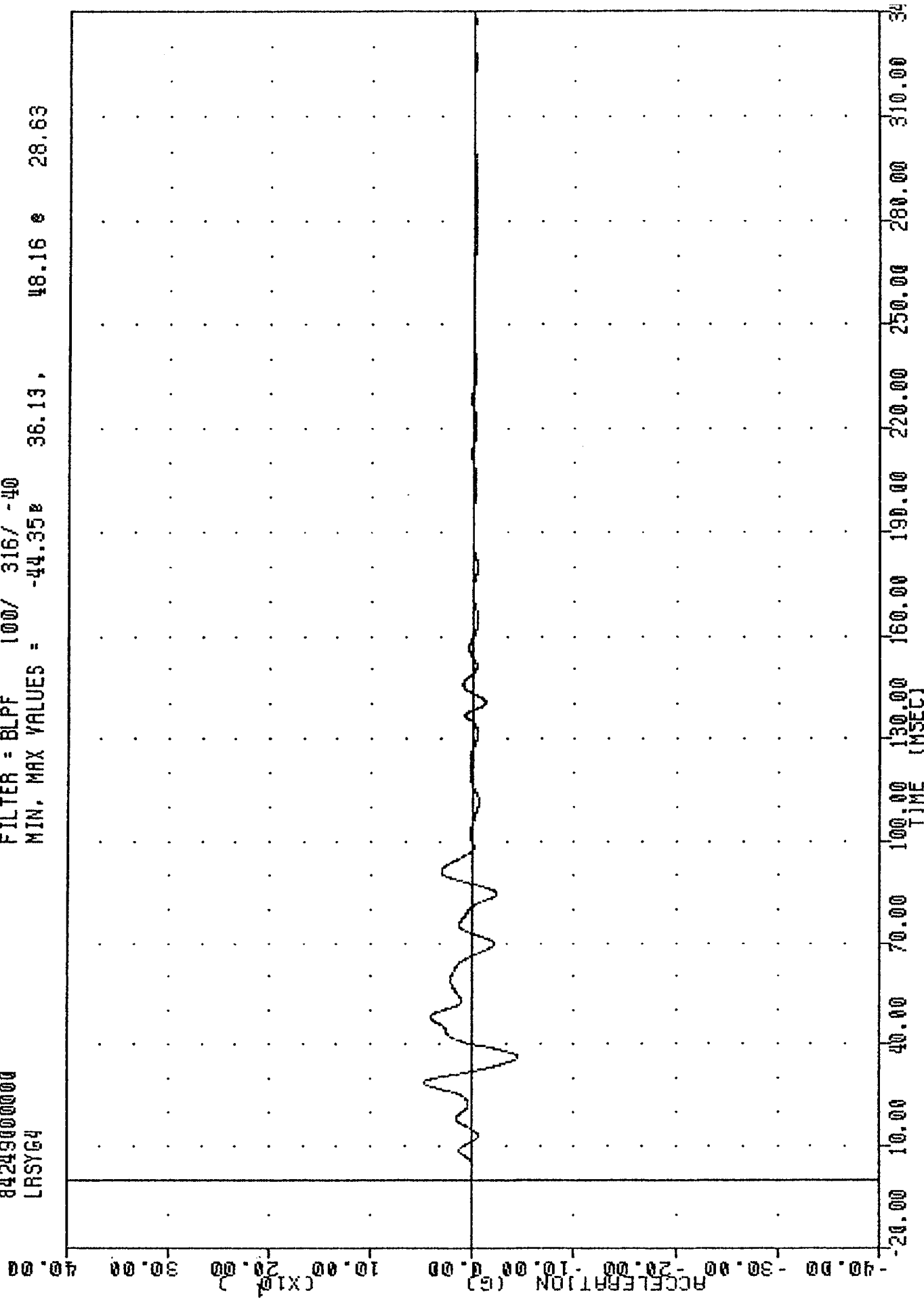
84249000000

LRSG4

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -44.35 36.13 48.16 28.63

B-89



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

842490000000

842490000000

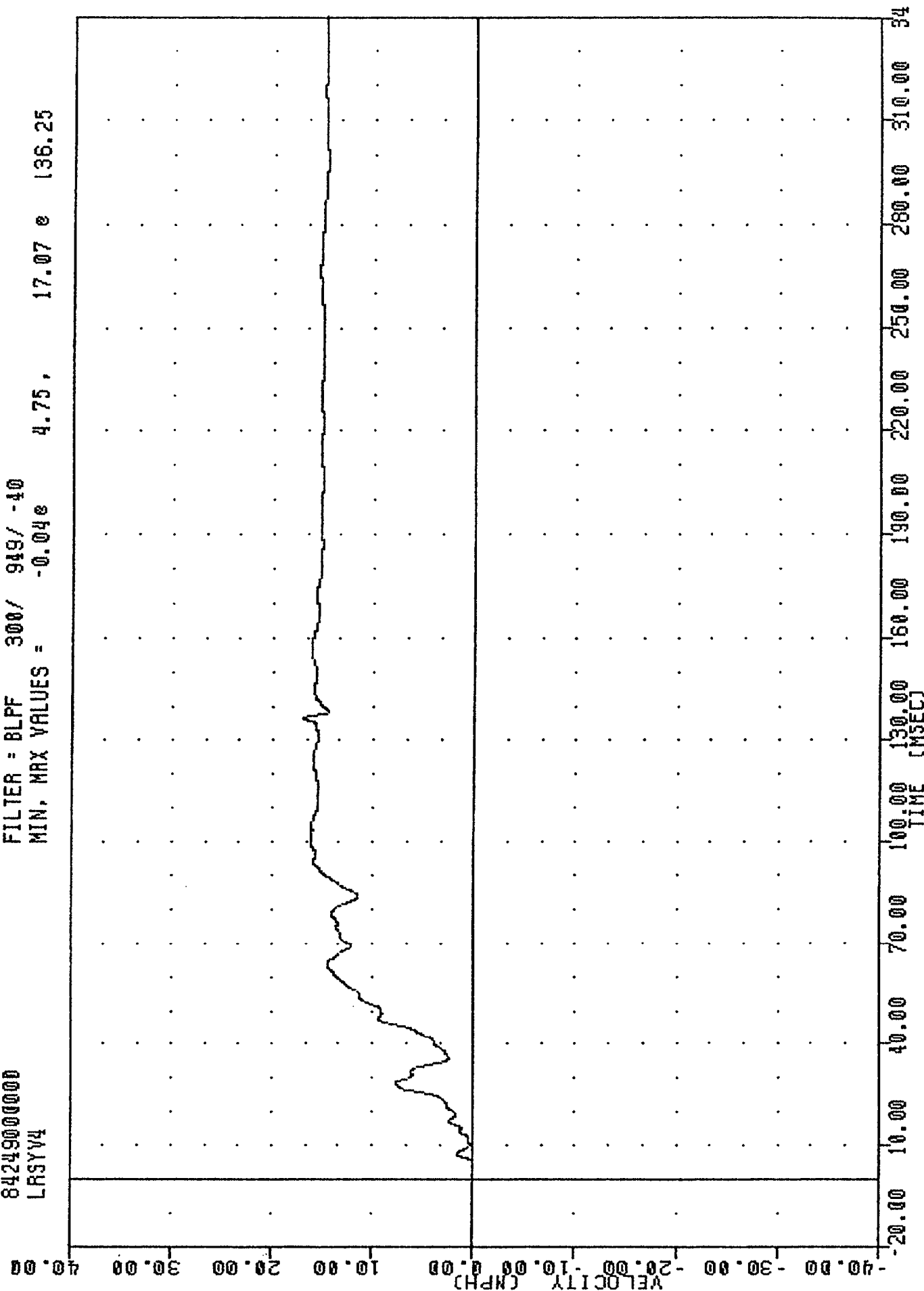
LRSYV4

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.040

4.75, 17.07 0 136.25

B-90



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LRSYG4

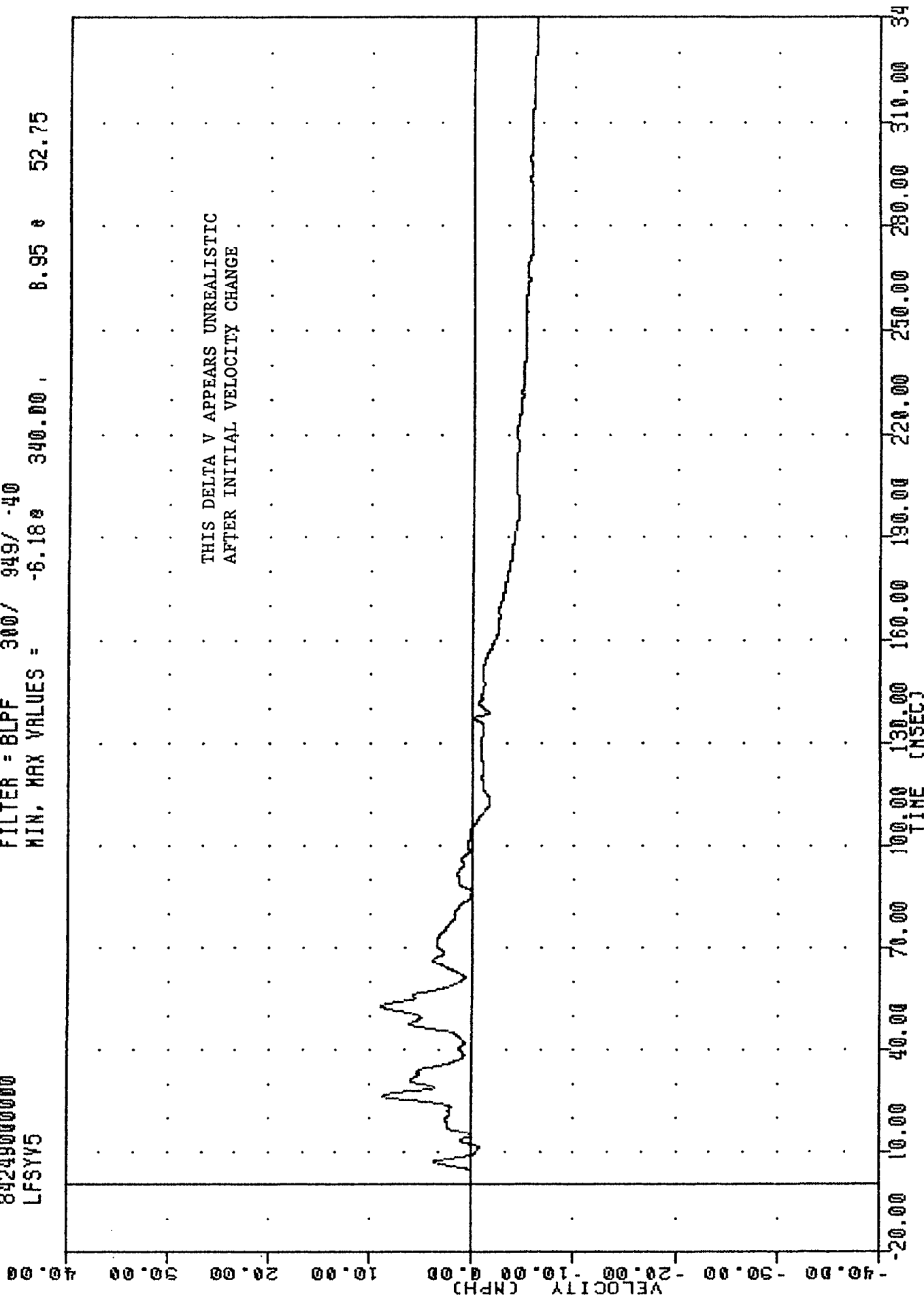
25

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

8.95 52.75

THIS DELTA V APPEARS UNREALISTIC
AFTER INITIAL VELOCITY CHANGE.

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 (TIME CRUISED)
 DELTA Y USING LFSYG5



33.50, 99.02, 23.25



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

DATE ADJUSTED: 11/11/81

84249000000

LFDYV1

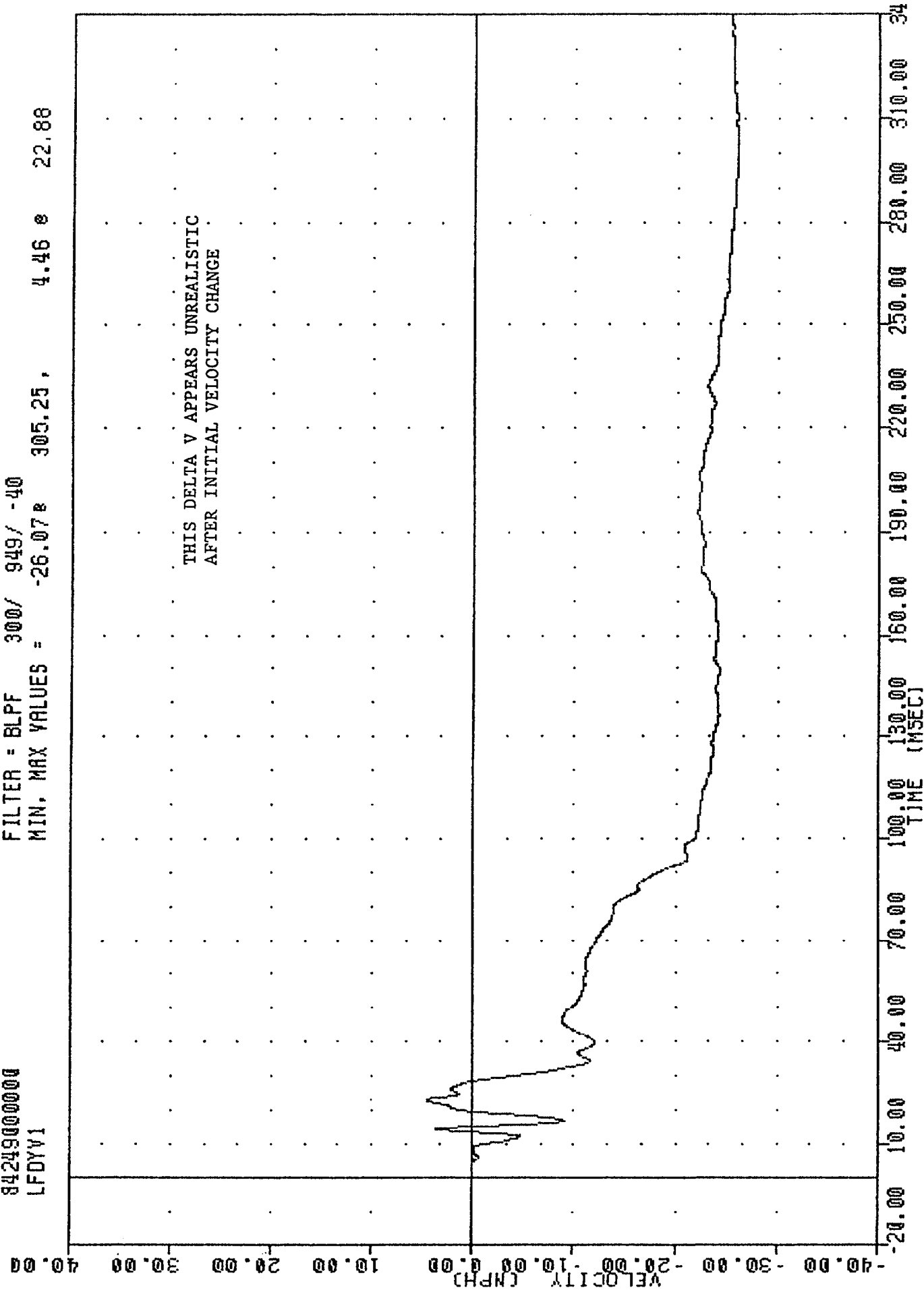
FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -26.07 e 305.25 ,

4.46 e

22.88

B-94



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING LFDYGI

SIDE IMPRESSIVE HISTOGRAMS

84249000000

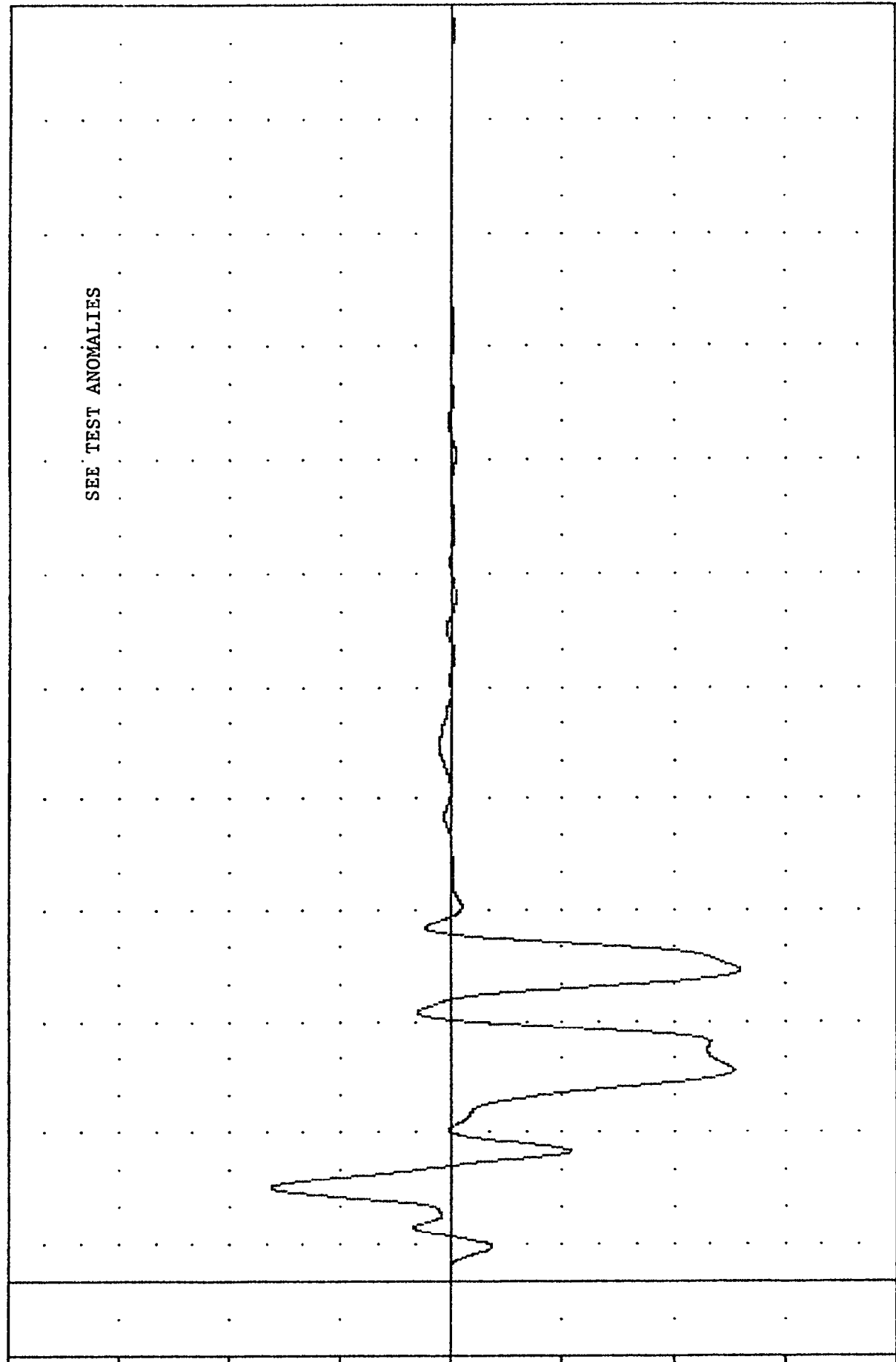
LFDY62

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -260.21e 83.25, 162.52 e 25.13

B-95

ACCELERATION (G) (X10²)

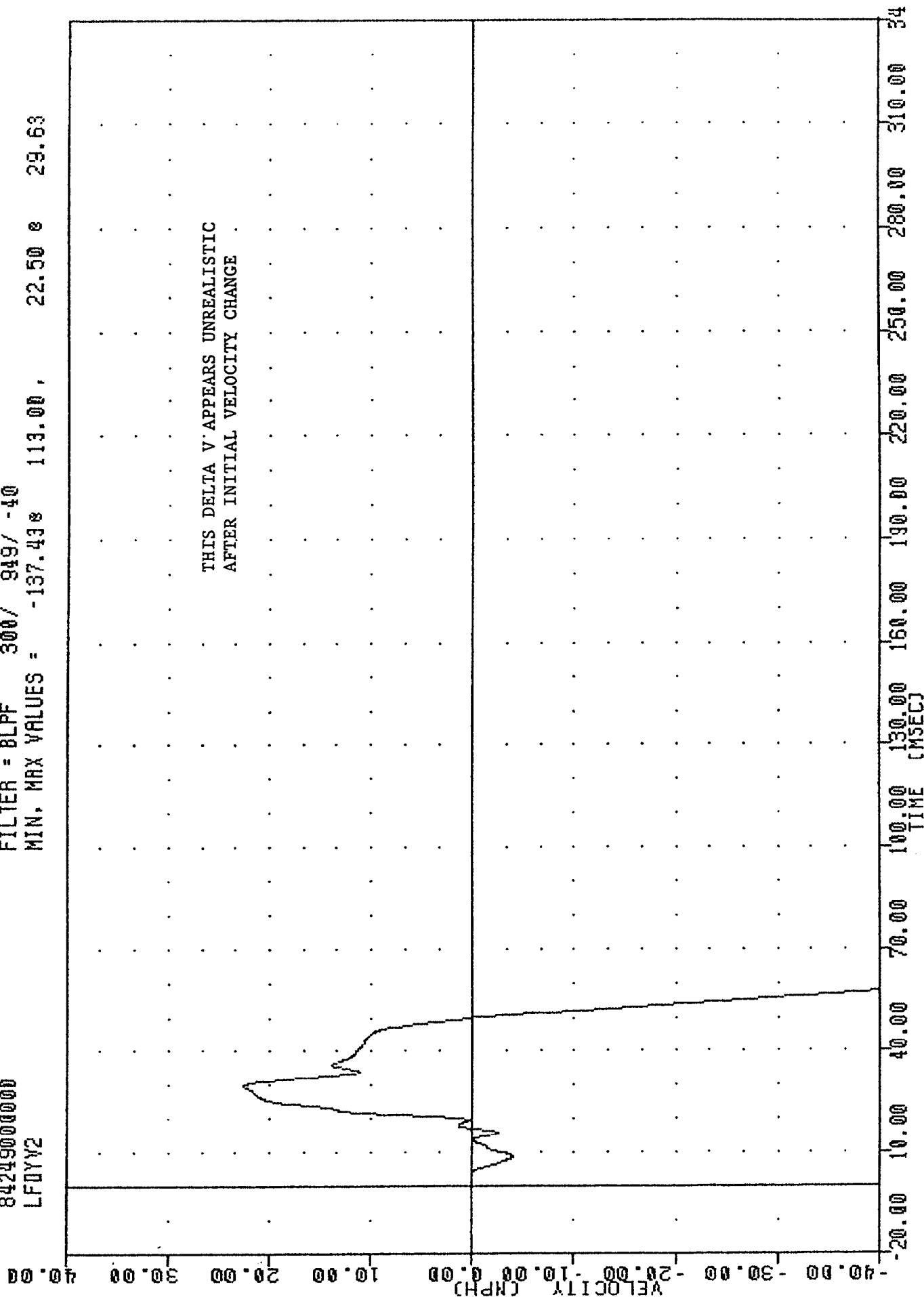


TIME (MSEC)

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

211037

MIN.	MAX	VALUES =	-137.438	113.00	22.50	29.63
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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA Y USING LF0Y62

SINE HARMONIC HIGHLIGHTS

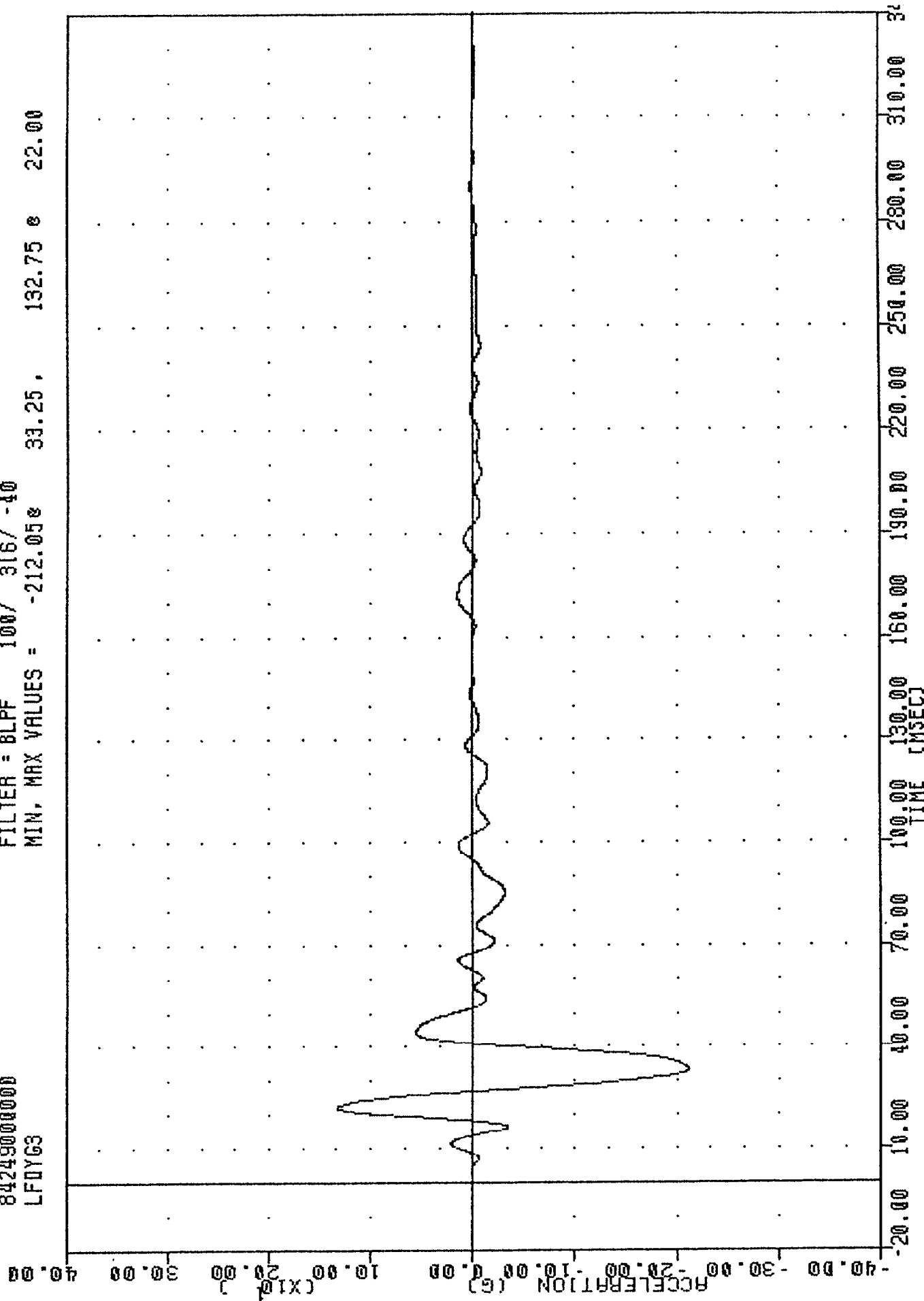
84249000000

LF0Y63

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -212.058 33.25, 132.75 8 22.00

B-97



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

842480000000

842480000000

LFDYV3

FILTER = BLPF

300/ 949/ -40

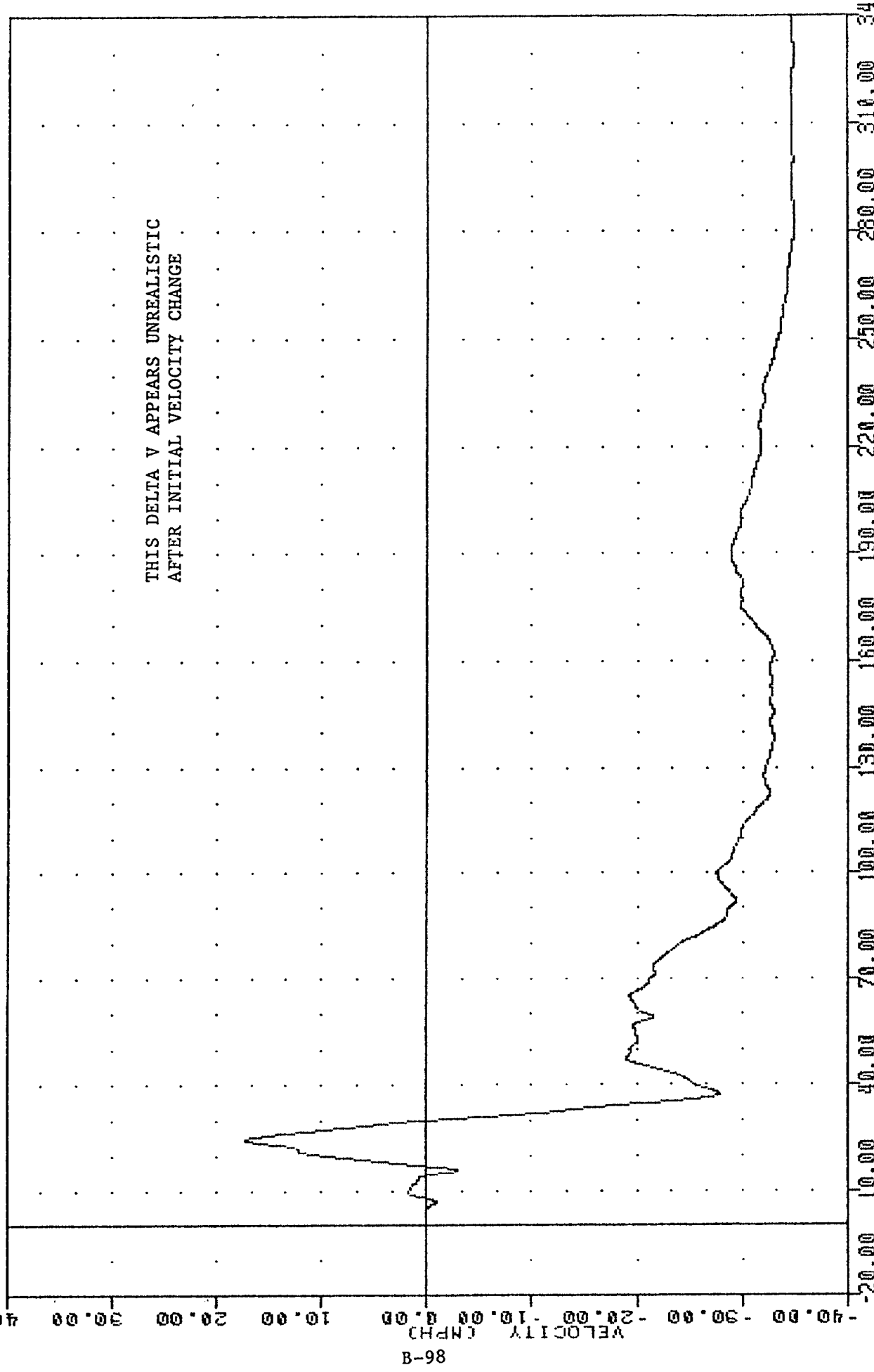
MIN, MAX VALUES =

-35.010

282.38

17.17

24.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYV3

842490000000

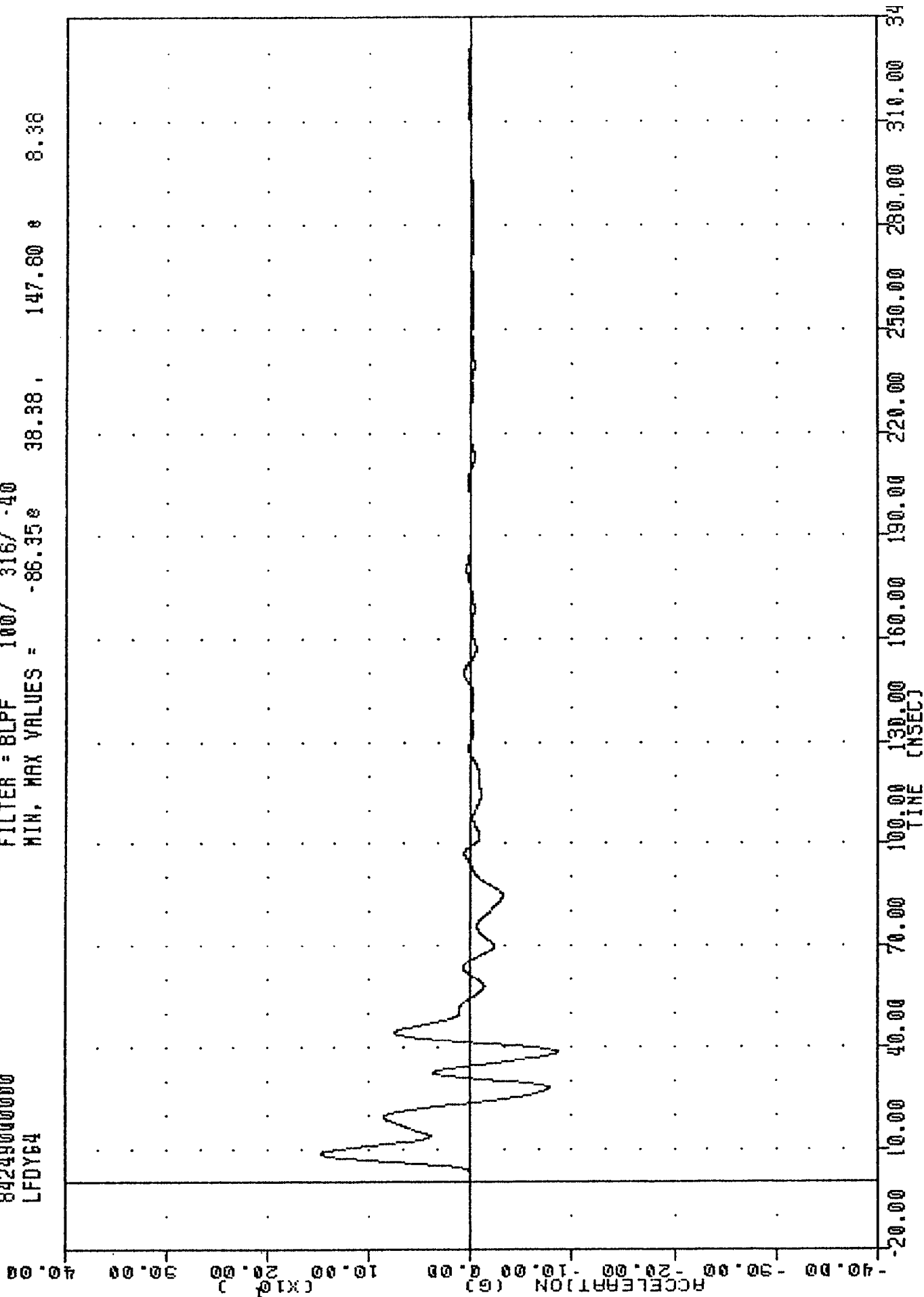
LFDY64

842490000000

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -86.358 38.38 , 147.80 8 8.38

B-99

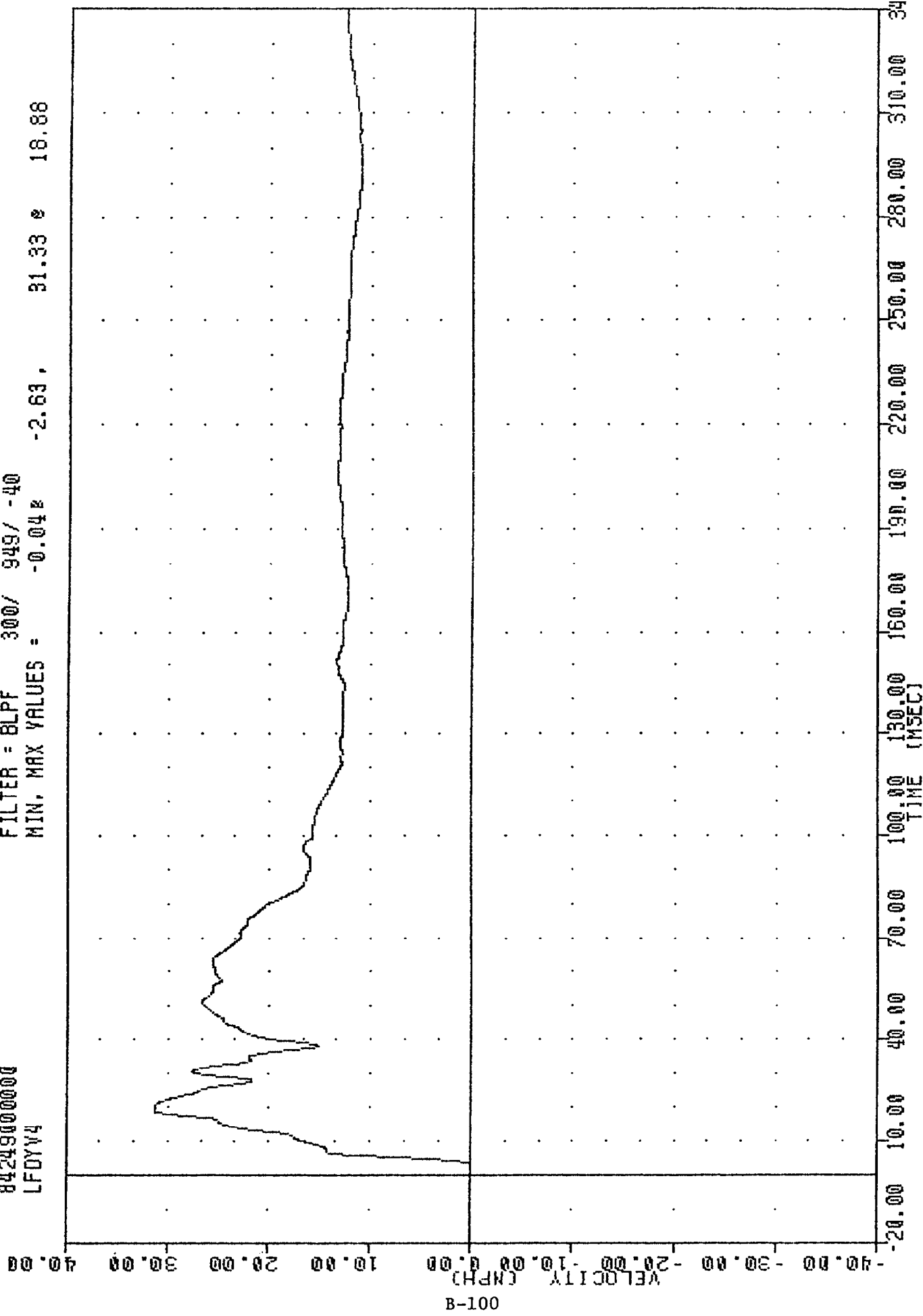


84249000000

LFDYV4

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.048 -2.63, 31.33 18.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING LFDYV4

SIDE IMPACTIVE ATTRIBUTES

84249000000

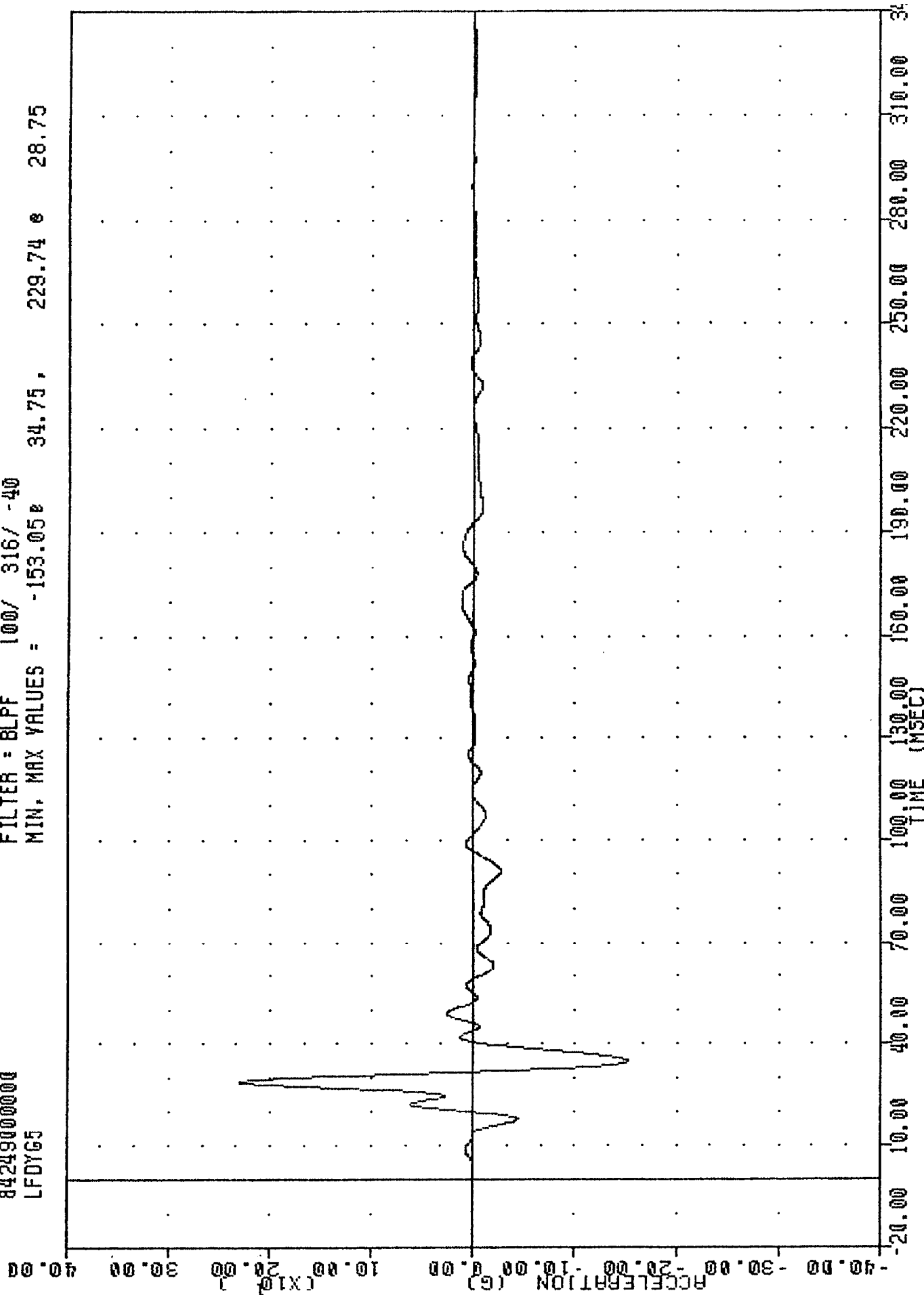
LFDY65

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -153.05 34.75

229.74 28.75

B-101



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

BLUE AGGRESSIVE HIGHWAYS

84249000000

LF0YV5

FILTER = BLPF

300/ 949/ -40

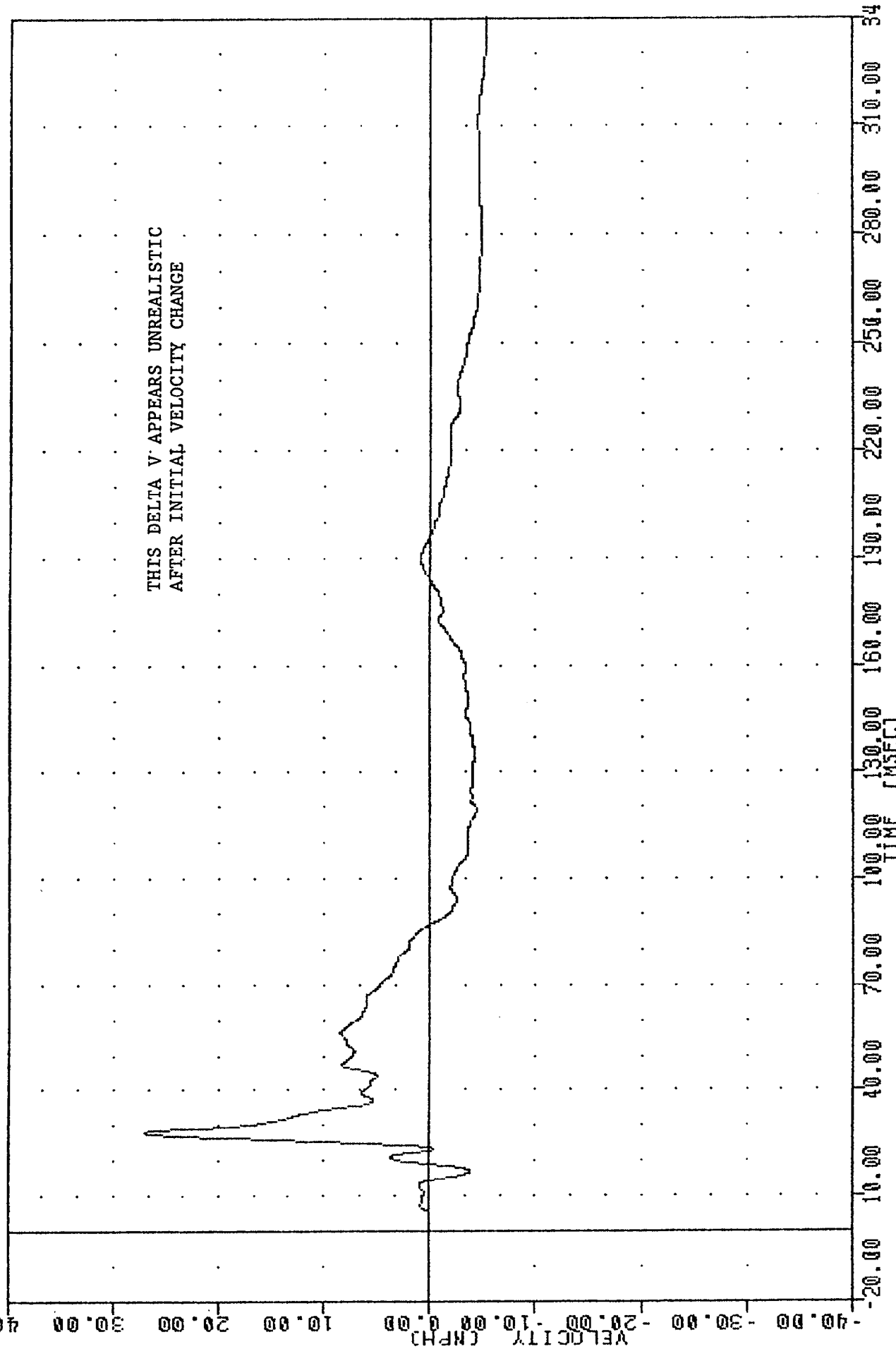
MIN. MAX VALUES =

-5.25e 340.00,

27.05 e

27.88

B-102



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LF0YV5

BLUE PAGERESSIVE HIIHIBUUES

84249000000

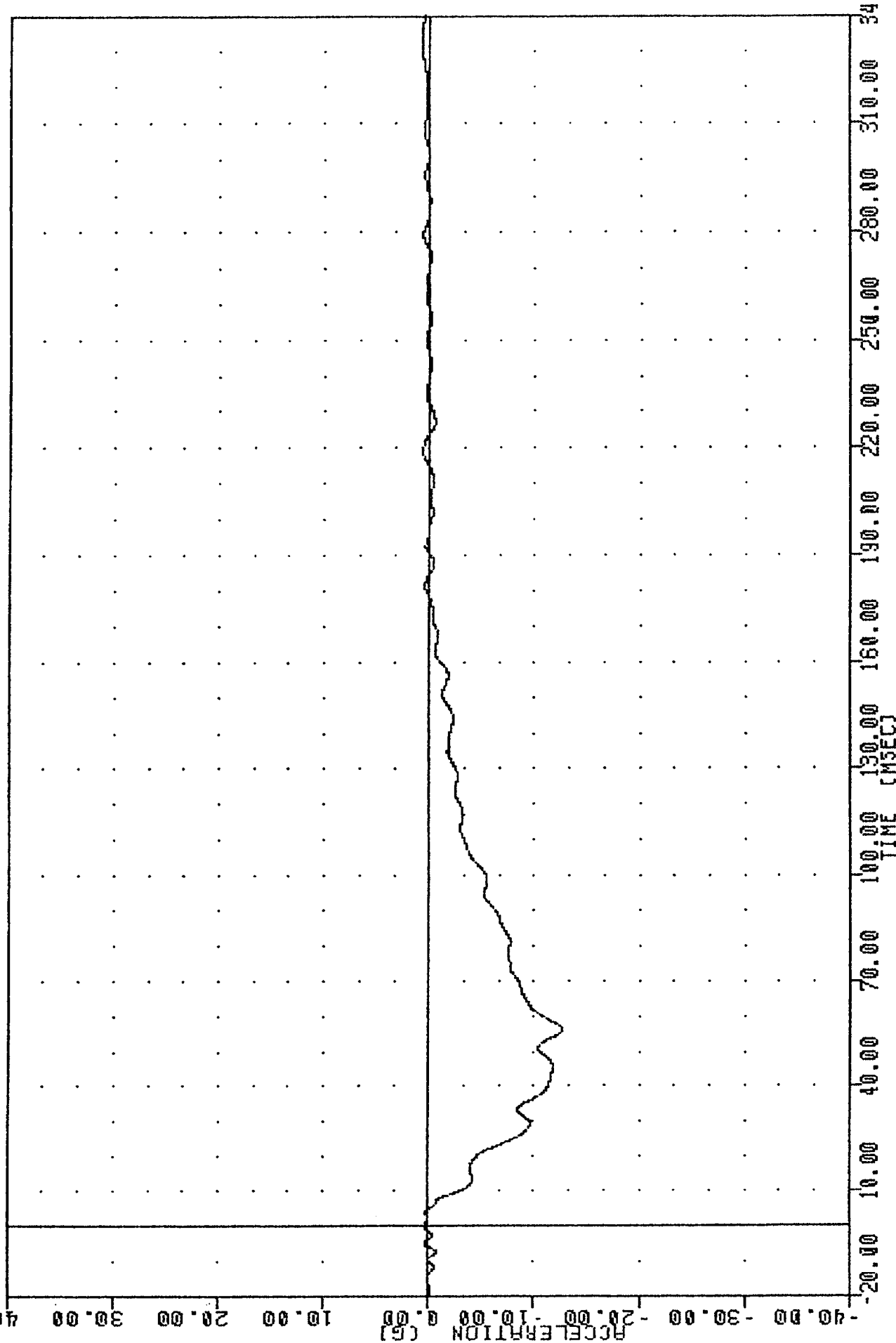
BCGXG

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -12.72e 56.00, 0.75 e 334.50

ACCELERATION (G)

B-103



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

DATA PROCESSING INSTRUMENTS

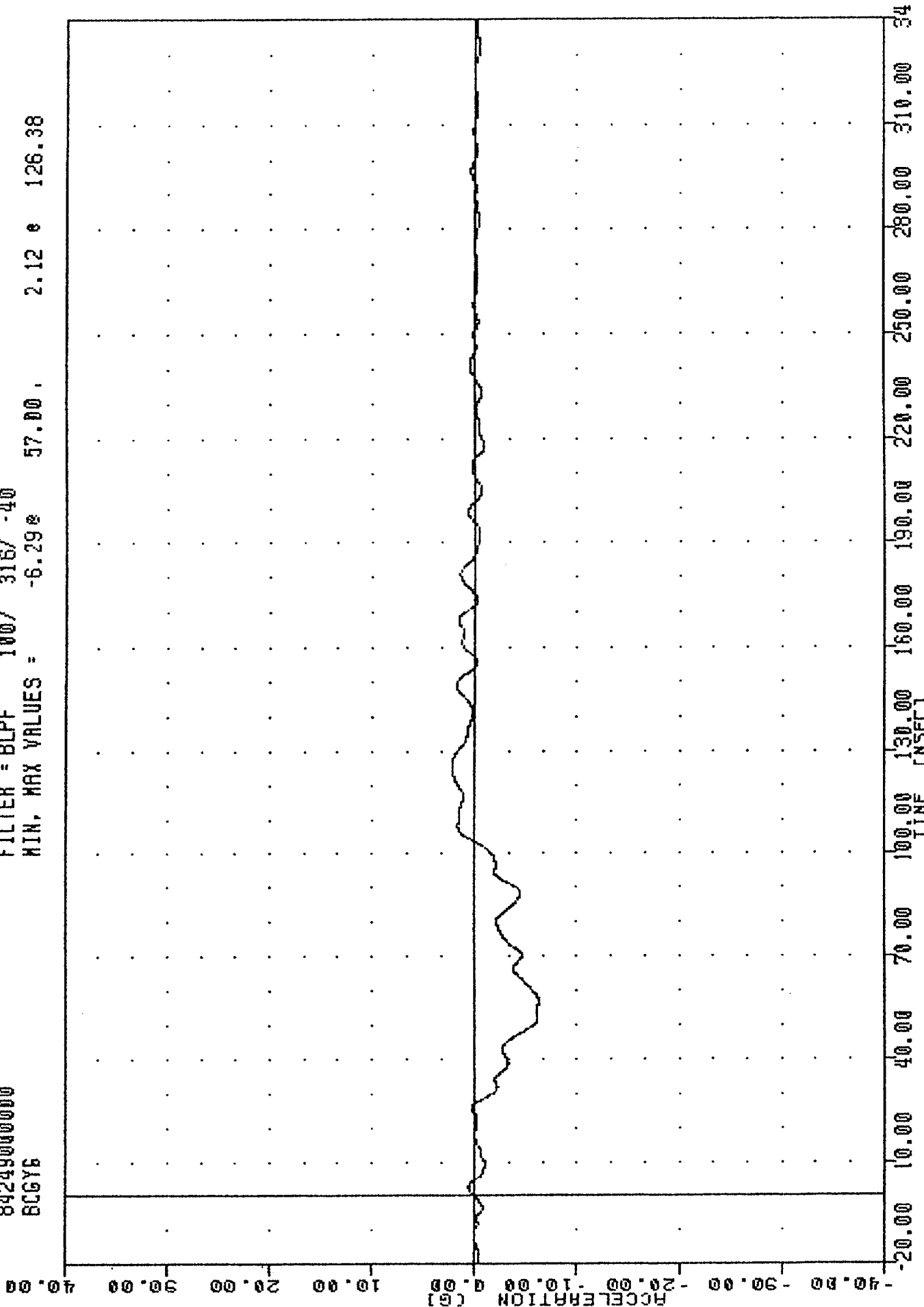
84249000000

BCGY6

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -6.29 57.00, 2.12 126.38

B-104

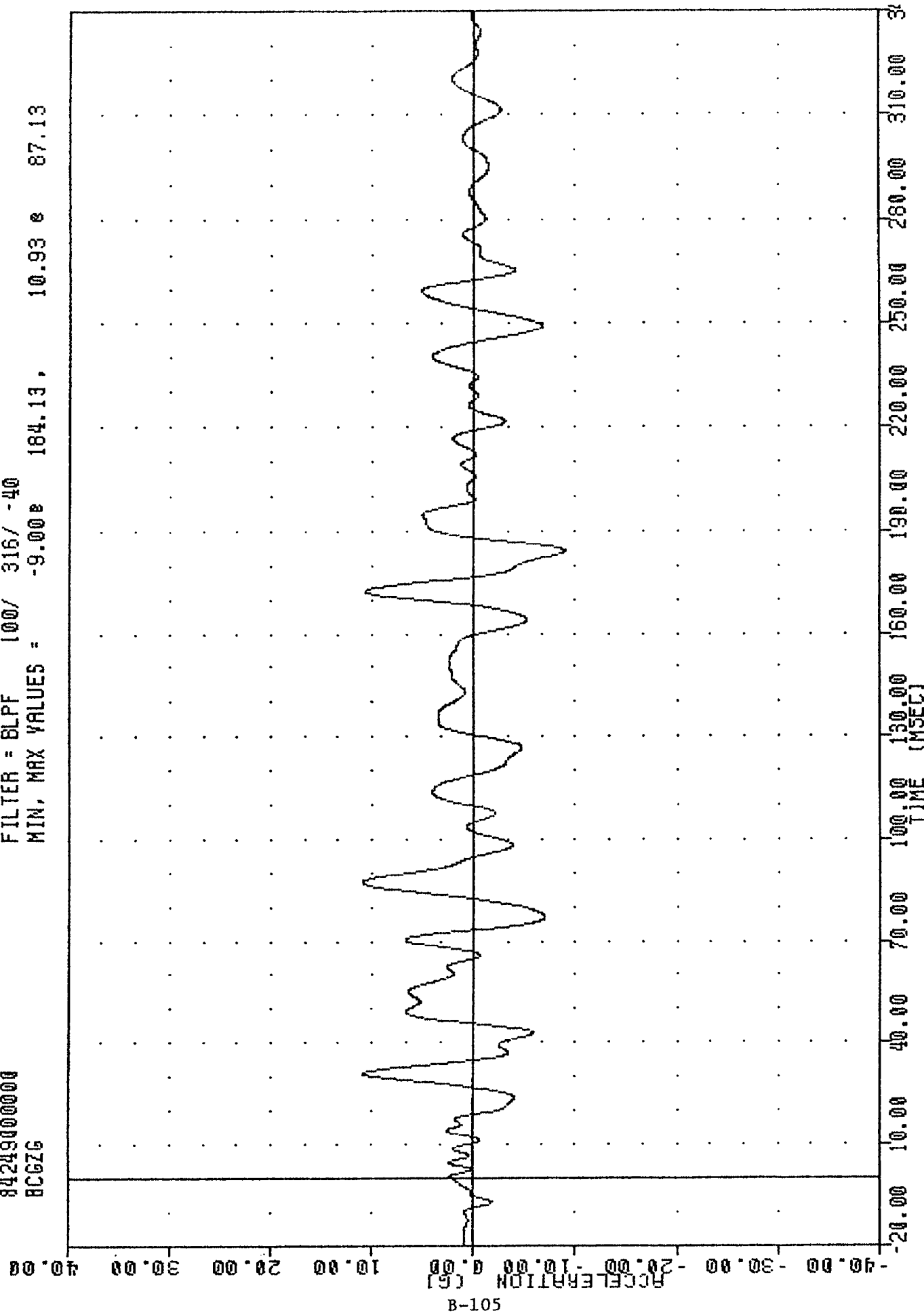


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CENTER OF GRAVITY Y AXIS

92938

FILTER = BLPF 100/ 316/ -40

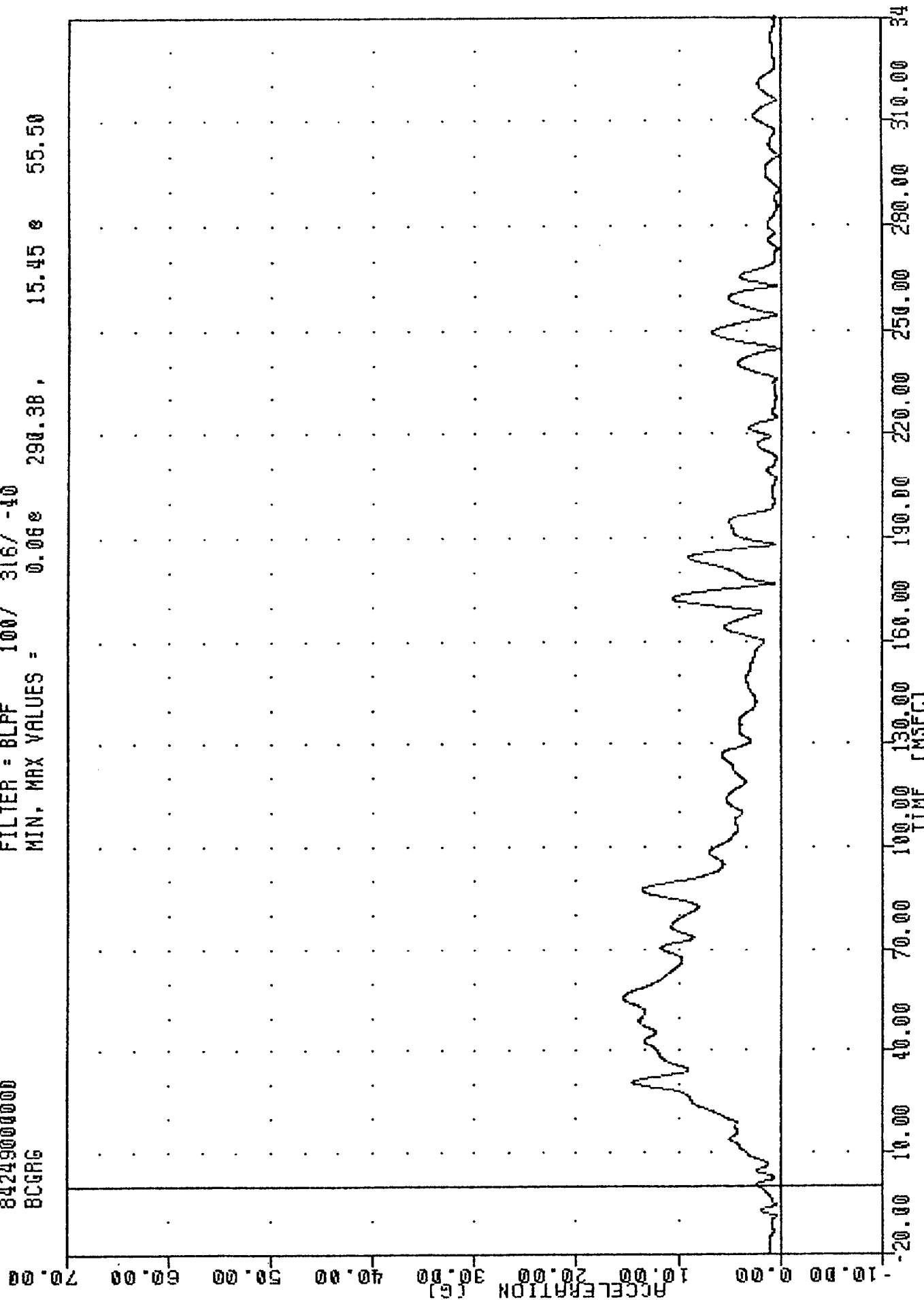
MIN, MAX VALUES =	-9.00E	184.13,	10.93E	87.13
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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CENTER OF GRAVITY Z AXIS

84249000000
BCGRG

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = 0.068 290.38, 15.45 55.50



B-106

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CG RESULTANT

DATE PURCHASED IN INCHES

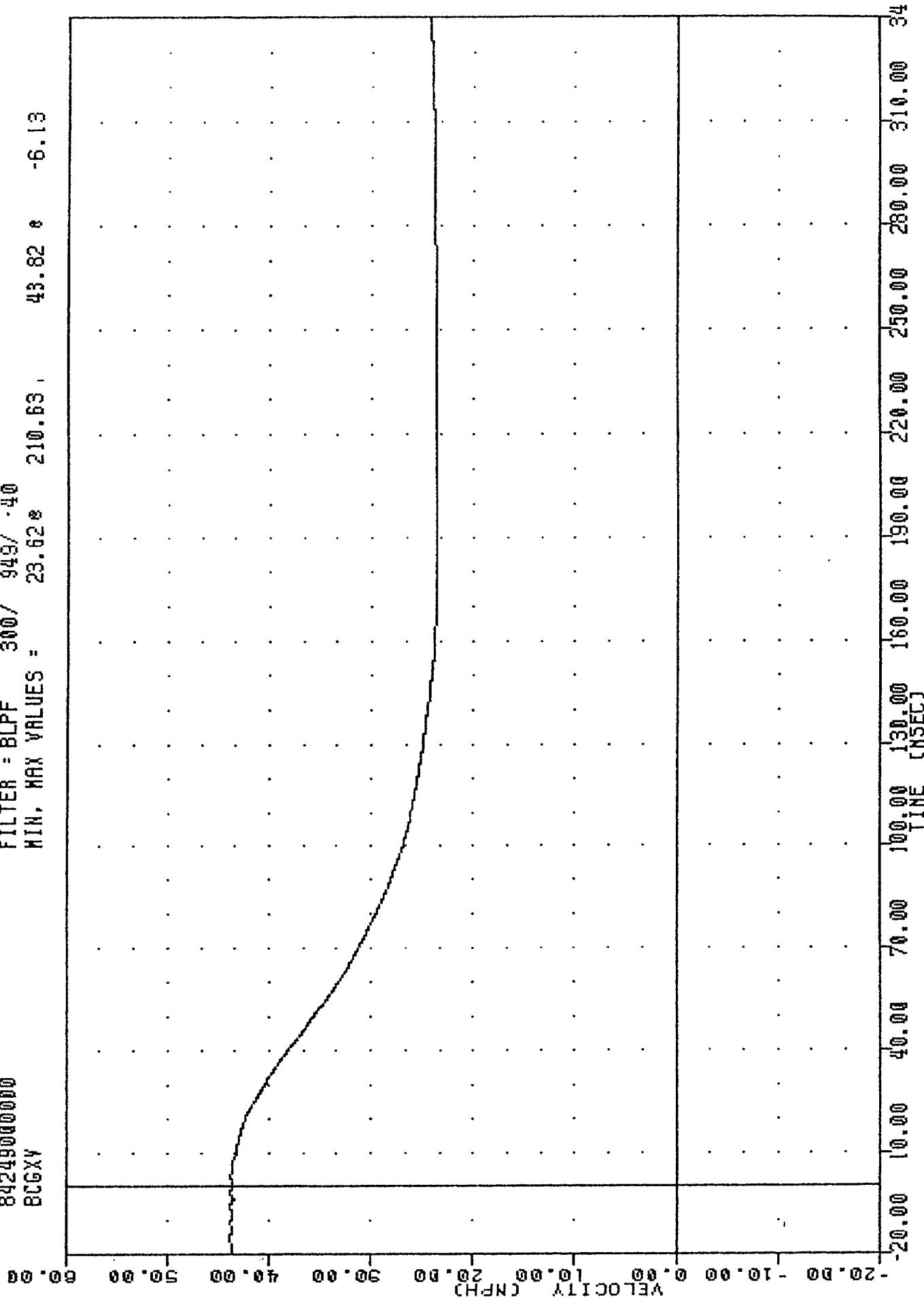
842490000000

BCGX

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 23.62 210.63 43.82 -6.13

B-107



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BCGXG

517

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BCGYG

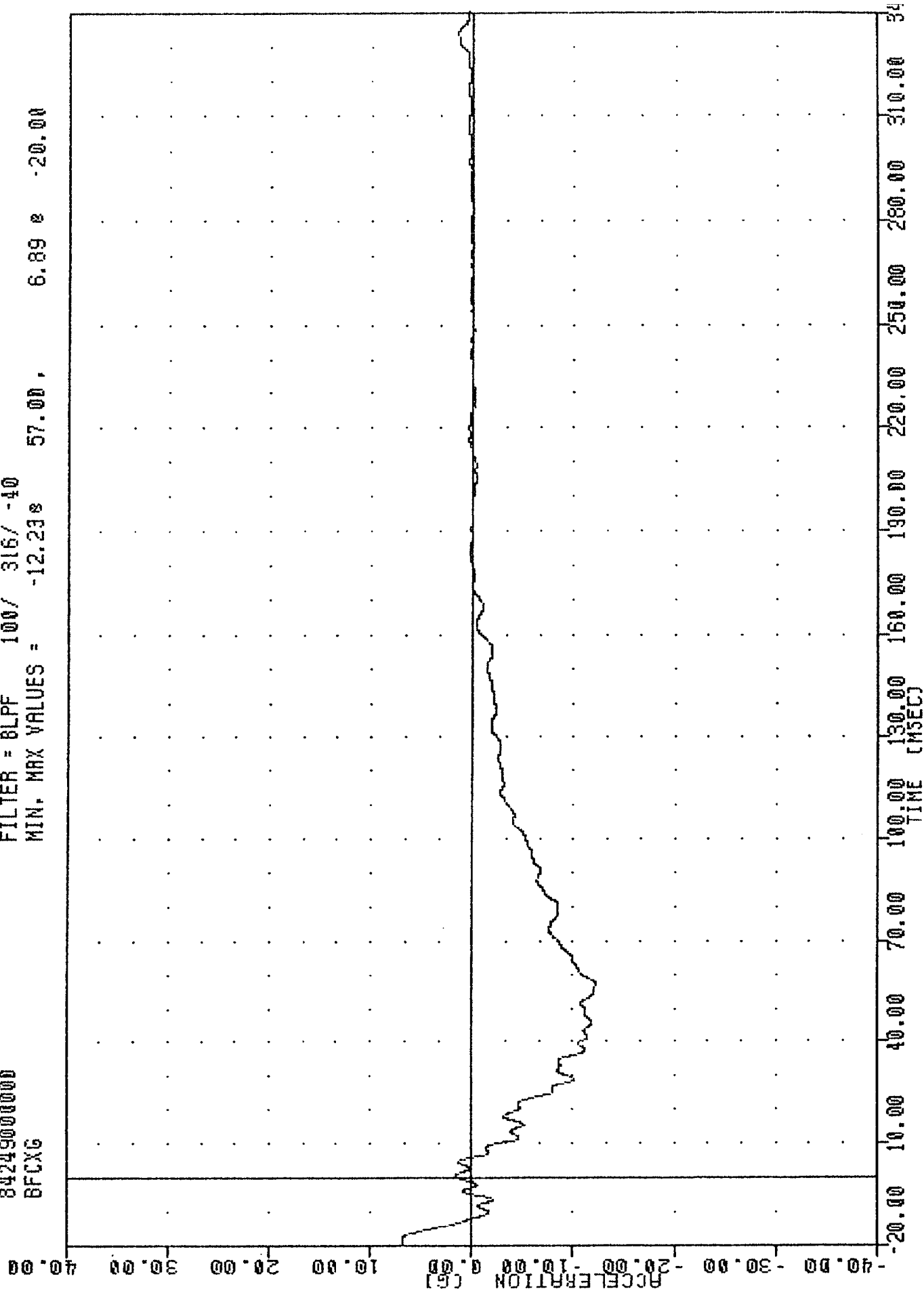
3106 HUGHES

84249000000

BFCXG

FILTER = 8LPP 100/ 316/ -40

MIN. MAX VALUES = -12.23s 57.00, 6.89 s -20.00



B-109

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

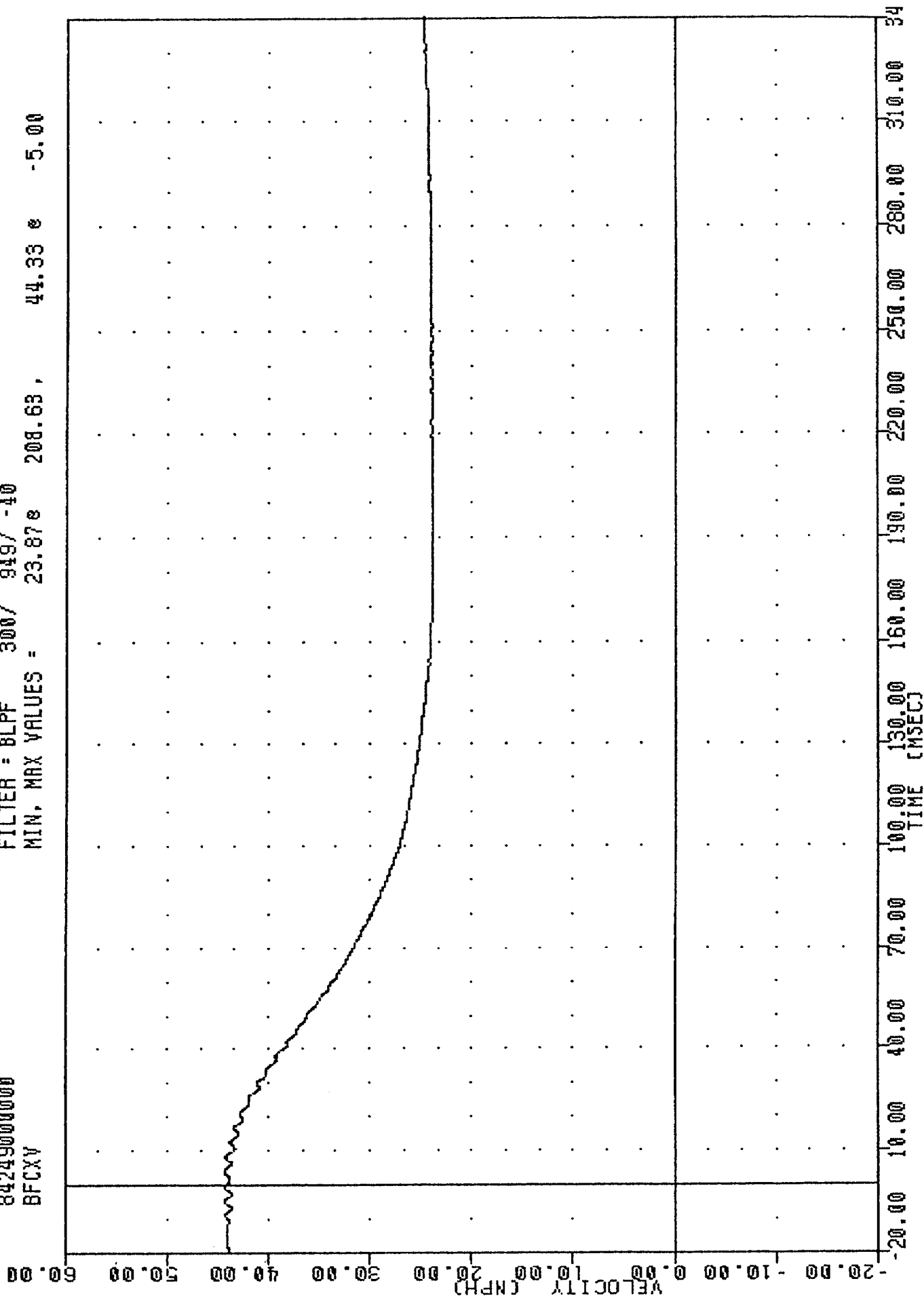
84249000000

BFCXY

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 23.878 208.63, 44.33 0 -5.00

B-110



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BFCXG

SIDE IMPRESSIVE HISTOGRAMS

842490000000

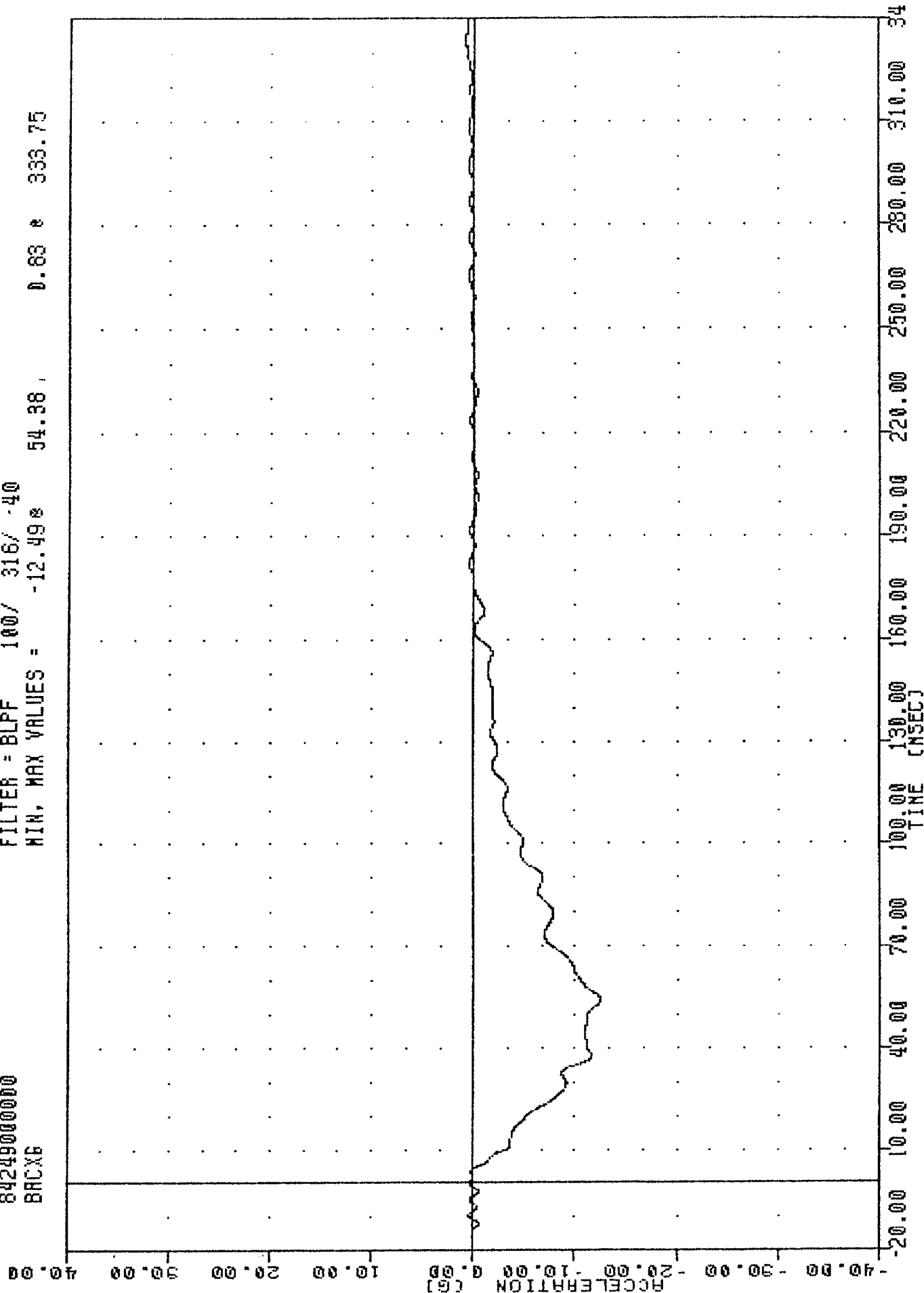
BRXG

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -12.498 54.38 ,

0.83 333.75

B-111



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

VALUE INDICATED IN INCHES

84249000000

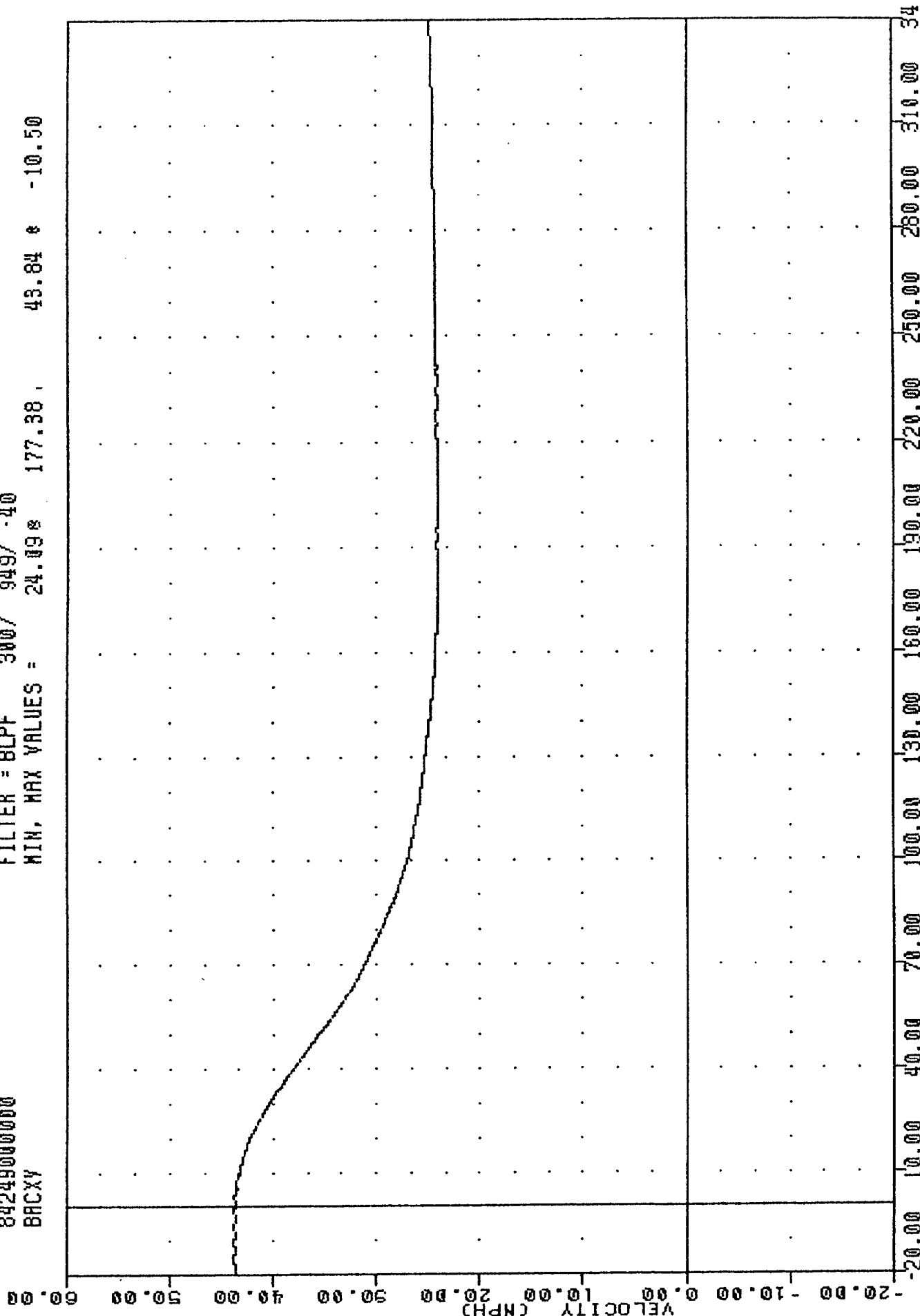
BACXY

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 24.09 177.38

43.84 10.50

B-112



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BACXG