

SIDE IMPACT AGGRESSIVENESS
ATTRIBUTES

MDB-TO-CAR SIDE IMPACT TEST OF
A 26° CRABBED MOVING DEFORMABLE BARRIER
TO A 1981 VOLKSWAGEN RABBIT
AT 38.8 MPH

PREPARED BY:
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FINAL REPORT
DECEMBER 1984

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

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

Approximate Conversions From Metric Measures

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

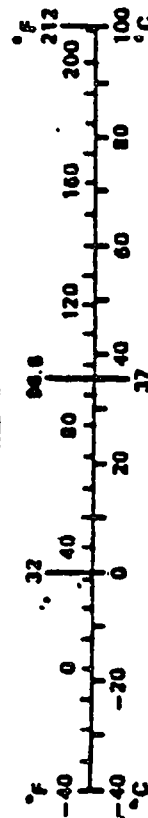


TABLE OF CONTENTS

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

<u>Figure</u>	<u>LIST OF PHOTOGRAPHS</u>	<u>Page</u>
A-1.	PRE-TEST OVERALL - VIEW 1	A-2
A-2.	PRE-TEST OVERALL - VIEW 2	A-2
A-3.	PRE-TEST OVERALL - VIEW 3	A-3
A-4.	PRE-TEST OVERALL - VIEW 4	A-3
A-5.	PRE-TEST CLOSEUP - VIEW 1	A-4
A-6.	PRE-TEST CLOSEUP - VIEW 2	A-4
A-7.	PADDING MODIFICATION	A-5
A-8.	PRE-TEST DRIVER DUMMY - VIEW 1	A-5
A-9.	PRE-TEST DRIVER DUMMY - VIEW 2	A-6
A-10.	PRE-TEST PASSENGER DUMMY - VIEW 1	A-6
A-11.	PRE-TEST PASSENGER DUMMY - VIEW 2	A-7
A-12.	CRASH EVENT PHOTOGRAPH	A-7
A-13.	POST-TEST OVERALL - VIEW 1	A-8
A-14.	POST-TEST OVERALL - VIEW 2	A-8
A-15.	POST-TEST OVERALL - VIEW 3	A-9
A-16.	POST-TEST OVERALL - VIEW 4	A-9
A-17.	POST-TEST DRIVER DUMMY - VIEW 1	A-10
A-18.	POST-TEST DRIVER DUMMY - VIEW 2	A-10
A-19.	POST-TEST PASSENGER DUMMY - VIEW 1	A-11
A-20.	POST-TEST PASSENGER DUMMY - VIEW 2	A-11
A-21.	POST-TEST DUMMIES OVERALL	A-12
A-22.	POST-TEST VEHICLE DAMAGE	A-12
A-23.	PRE-TEST MDB FACE - VIEW 1	A-13
A-24.	PRE-TEST MDB FACE - VIEW 2	A-13
A-25.	POST-TEST MDB FACE - VIEW 1	A-14
A-26.	POST-TEST MDB FACE - VIEW 2	A-14

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 Bumper". In all, there will be twelve crash tests involving deformable barrier faces designated as "Lowered Stiffness", "Altered Profile" and "Lowered Bumper". The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

INTRODUCTION

A stationary 1981 Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on November 20, 1984. The barrier face was designated as "Lowered Bumper" and was assembled from two existing faces in order to obtain the correct dimensions. 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 90° 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 39.1 mph with the MDB's wheels crabbed clockwise to 26°. The actual test speed was 38.8 mph and the actual impact point was 35.5 inches forward of the midpoint of the Volkswagen Rabbit's wheelbase.

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

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

VIN: 1VWCB9170BV035597

BODY STYLE: 2-Door Hatchback

MODEL YEAR: 1981

NHTSA NO.: R & D

COLOR: Grey

ENGINE DATA: TYPE: Transverse CYLINDERS: 4 DISPLACEMENT 1600 cc

TRANSMISSION DATA: 4 Speed Manual

DATE VEHICLE RECEIVED: 11/7/84

ODOMETER READING: 44729

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	Yes	AIR CONDITIONING	No
RADIO	Yes	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: 11/80

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): Michelin XZX 155 SR 13

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 4

IS SPARE TIRE "SPACE SAVER"? No

IS SPARE TIRE STANDARD EQUIPMENT? Yes

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

RIGHT FRONT	640	LBS.	RIGHT REAR	390	LBS.
LEFT FRONT	670	LBS.	LEFT REAR	380	LBS.
TOTAL FRONT WEIGHT	1310	LBS.	(63.0 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	770	LBS.	(37.0 % OF TOTAL VEHICLE WEIGHT)		
TOTAL DELIVERED WEIGHT	2080	LBS.			

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 24	;LF 24 1/8	;RR 24 5/16	;LR 24 1/8
PRE-TEST ATTITUDE:	RF 22 5/8	;LF 23 1/8	;RR 21 1/8	;LR 21 5/8
POST-TEST ATTITUDE:	RF 21 5/16	;LF 22 3/4	;RR 20 5/8	;LR 20 5/8

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

RIGHT FRONT	700	LBS.	RIGHT REAR	585	LBS.
LEFT FRONT	720	LBS.	LEFT REAR	605	LBS.
TOTAL FRONT WEIGHT	1420	LBS.	(52.4 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1290	LBS.	(47.6 % OF TOTAL VEHICLE WEIGHT)		
TOTAL TEST WEIGHT	2710	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

CARGO LOAD 185 LBS. 2 REAR
4 TOTAL

TOTAL 785 LBS.

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

TEST CONDITIONS

TEST NUMBER: 841120

DATE OF TEST: November 20, 1984

TIME OF TEST: 15:30

WIND VELOCITY: 3-6 mph 342° NW

HUMIDITY: DNA

AMBIENT TEMPERATURE AT IMPACT AREA: 34° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 81° F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2610	2613
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	38.8	39.1
IMPACT POINT (INCHES)**	35.5	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	Roof, Left Window Sill, <u>Right B-Pillar & Frame</u>	Window Frame, <u>Roof, Hatchback Frame</u>
Chest	Inner Door Panel, <u>Left Window Sill</u>	<u>Rear Quarter Panel</u>
Abdomen	<u>Inner Door Panel</u>	<u>Rear Quarter Panel</u>
Left Knee	<u>Right Knee</u>	<u>Right Knee</u>
Right Knee	<u>Left Knee</u>	<u>Left Knee</u>

DOOR OPENING:

LEFT

RIGHT

Front	<u>Hard*</u>	<u>Easy</u>
Rear	<u>DNA</u>	<u>DNA</u>

SEAT MOVEMENT:

SEAT BACK FAILURE

SEAT SHIFT

Front	<u>Yes</u>	<u>No</u>
Rear	<u>Yes</u>	<u>No</u>

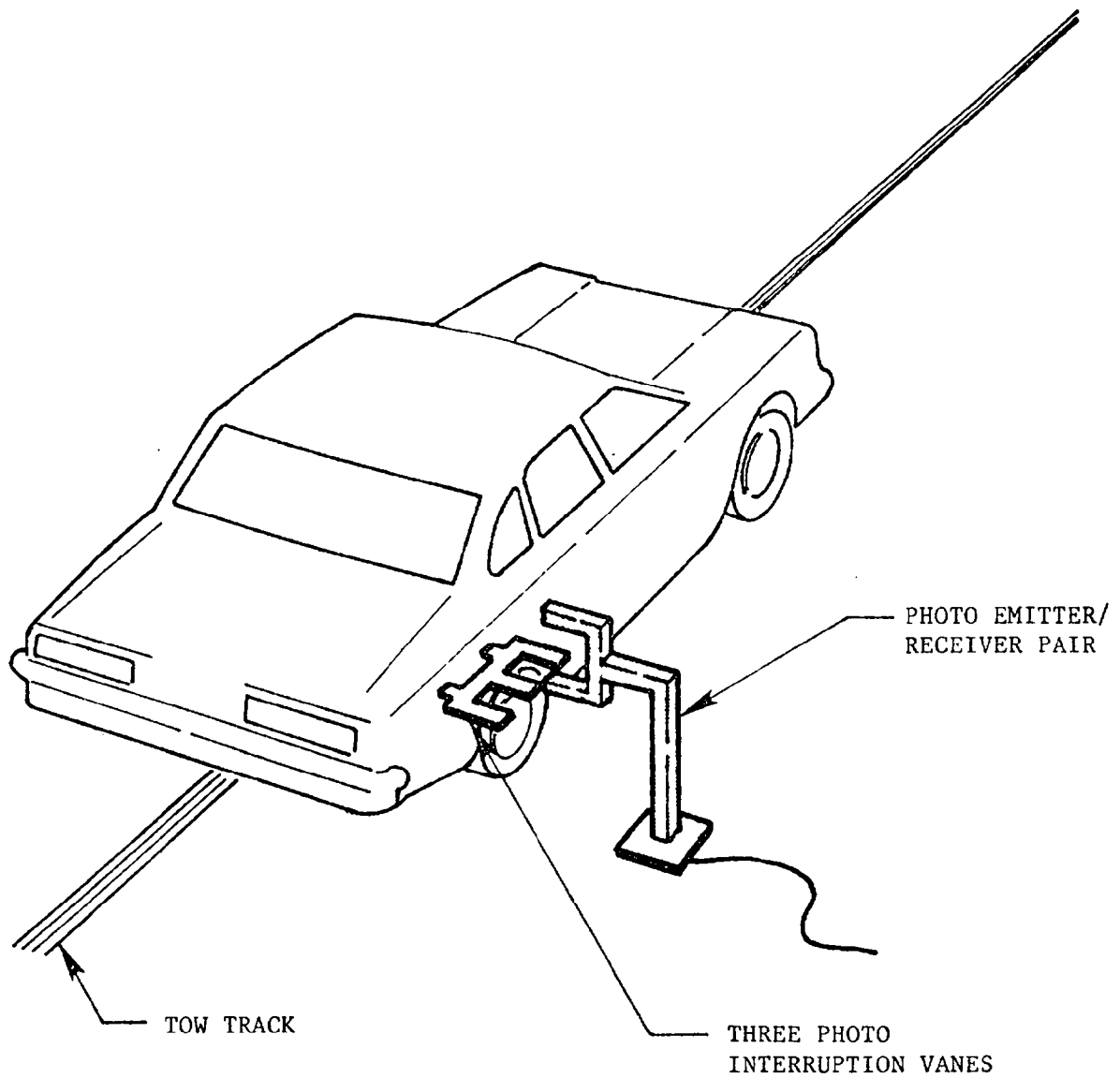
GLAZING DAMAGE:

Windshield cracked

OTHER NOTABLE IMPACT EFFECTS:

*Door had to be opened to remove instrumentation.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane is located two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned}\text{Test Weight} &= \text{Unloaded Delivered Weight*} + \\ &\quad \text{Number of Dummies X 174 lbs.} + \\ &\quad \text{Cargo Weight} \\ &= 2080 + 2 \times 174 + 185 \text{ lbs.} \\ &= 2613 \text{ lbs.}\end{aligned}$$

To achieve test weight, the battery was removed and 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.

$$\begin{aligned}\text{*Unloaded Delivered Weight} &= \text{Measured Weight} + \text{Estimated 10 Gallons Fuel} \\ &= 2020 + 60 \text{ lbs} \\ &= 2080 \text{ lbs}\end{aligned}$$

TEST ANOMALIES

The door accelerometer in Position 10, LFDYG⁴, failed approximately 15 msec after impact.

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

SIDE IMPACT DUMMY

DRIVER DSP

REAR PASSENGER DSP

HEAD	Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.
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.

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.

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. B. Miller

2. R. Benavides

3. M. Garrison

POSITIONING DATE: 11/20/84

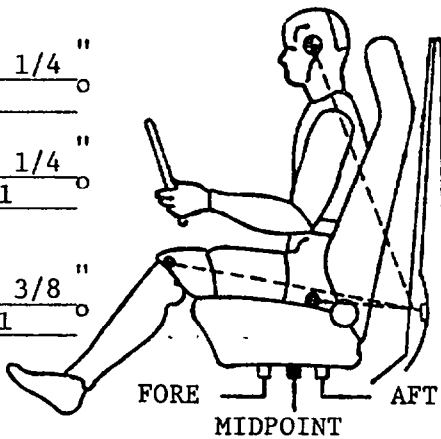
AMBIENT TEMP.: 72° F. TIME: 8:25

DRIVER DUMMY # 06

HEAD 20 1/4 "
 TARGET* 30 °

KNEE 32 1/4 "
 JOINT 101 °

APPROX.
 "H" 18 3/8 "
 POINT 121 °

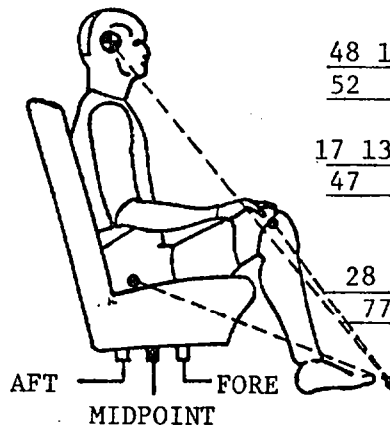


REAR PASSENGER DUMMY # U02

48 1/2 "HEAD
52 °TARGET**

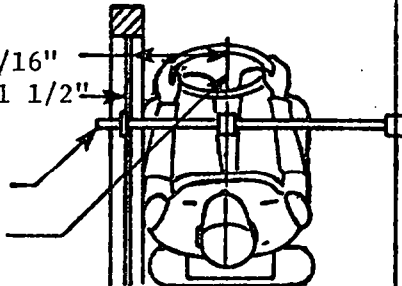
17 13/16 "KNEE
47 °JOINT

APPROX.
28 3/8 " "H"
77 °POINT



DOOR
 GLASS
 HEIGHT*** 11 5/16 "
11 1/2 "

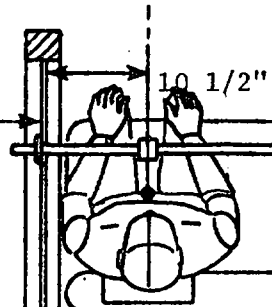
LATERAL BAR
 ADJUSTABLE
 POINTER



DRIVER
 DUMMY #
 06

DOOR
 GLASS
 HEIGHT

DNA

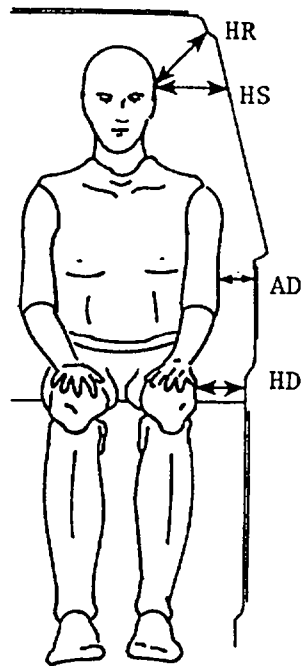


PASSENGER
 DUMMY #
 U02

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

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

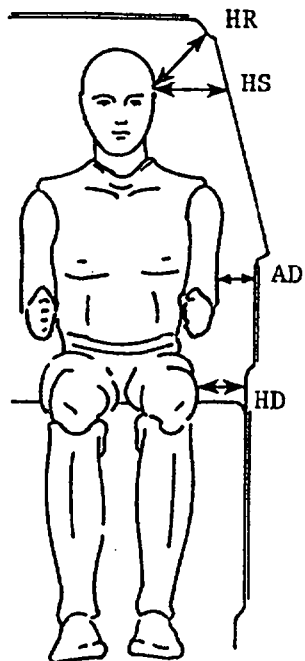
***Door glass height is equal on the right and left side of vehicle at dummy nose level.



DRIVER
06

PASSENGER
U02

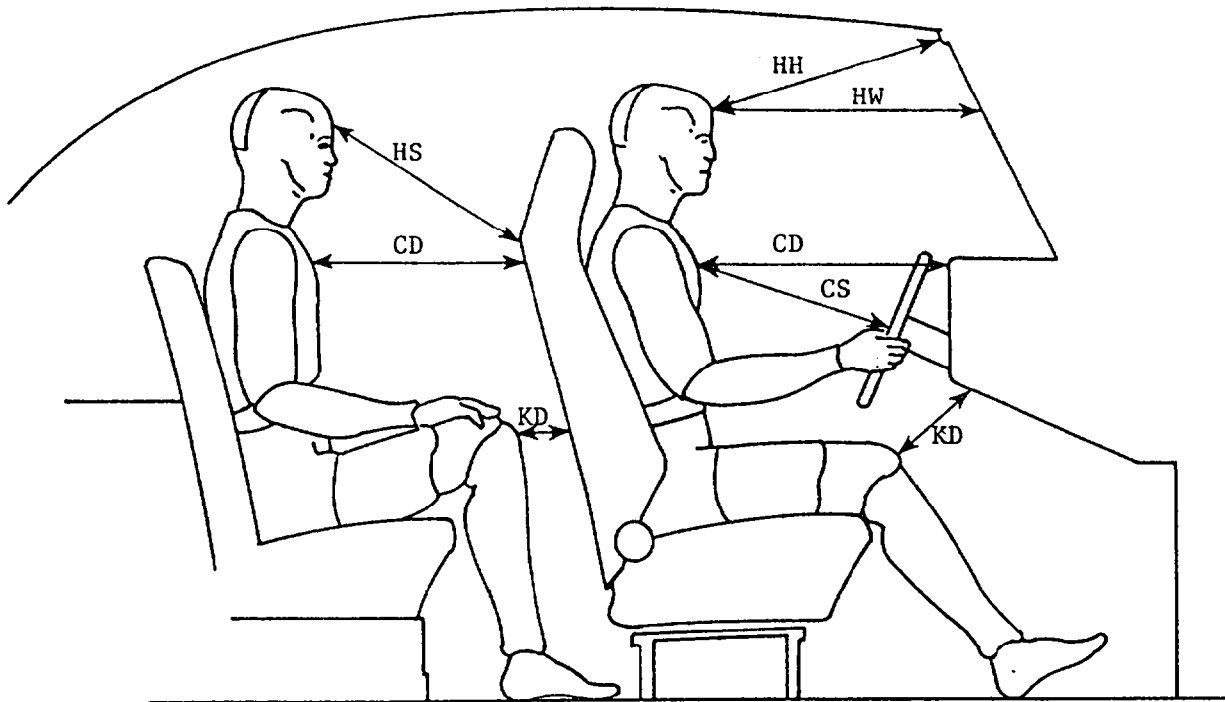
HR	6 1/2	4 11/16*
HS	8	7 1/2
AD	1/2*	0*
HD	2 3/4*	2 1/8*



ALL MEASUREMENTS IN INCHES

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

DUMMY LATERAL CLEARANCE DIMENSIONS



DRIVER

PASSENGER

06

U02

HH	17 1/8	DNA
HW	21 1/8	DNA
HS	DNA	24 3/4
CD	20 1/16	16 13/16
CS	13 1/2	DNA
KDL	4 1/2	2 1/4
KDR	4 3/8	2 7/8

ALL MEASUREMENTS IN INCHES

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the left hip of the dummy contacted the inner panel as the door caved in. As the buttocks swung to the right, the dummy's left shoulder and chest contacted the window sill and the door panel. The head then hit the left window sill. The dummy travelled to the passenger's side of the car as the buttocks lifted. As the back slid down the window sill the head hit the roof, the upper window frame and the B-pillar. The driver came to rest sitting in the passenger's seat, facing left. The legs were extended and the head was resting between the B-pillar and the side of the passenger's head rest.

PASSENGER

During impact, the rear quarter panel caved in contacting the dummy's left leg and hip. The head hit the side header, roof and hatchback frame as the passenger rebounded from the impact. The dummy came to rest in an upright position. His hips were moved to the right while the legs were swung left and the torso was also leaning towards the left.

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	10.6	X	X	20.1	20.1	20.1	20.1	20.1	20.1	20.2	20.4	20.3	20.3	20.4	X	X
H-Point	20.3	X	16.5	17.9	17.9	17.9	17.9	17.9	17.9	17.9	18.0	18.2	18.3	18.4	X	X
Mid Door	24.8	16.6	17.9	17.8	17.8	17.8	17.8	17.7	17.7	17.8	17.8	17.9	17.9	17.8	18.1	X
Window Sill	35.1	X	20.0	19.6	19.5	19.4	19.0	19.3	19.3	19.2	19.2	19.2	19.4	19.5	19.6	19.8
Window Top	53.3	X	X	X	X	X	27.1	26.9	26.9	26.8	26.8	26.8	26.9	26.9	27.1	27.5

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

Axle Height	10.6	X	X	28.8	32.6	32.7	32.3	32.1	31.4	31.0	30.4	29.7	27.9	26.1	X	X
H-Point	20.3	X	24.0	26.5	30.1	30.3	30.5	30.6	30.6	30.6	30.8	31.5	30.6	29.2	X	X
Mid Door	24.8	22.3	24.2	24.6	29.6	29.6	29.7	29.6	29.6	29.8	29.9	30.5	29.9	29.0	27.2	X
Window Sill	35.1	X	22.6	23.0	27.3	28.8	29.8	30.5	30.6	30.8	31.1	31.6	31.4	30.8	27.4	23.2
Window Top	53.3	X	X	X	X	X	30.1	29.6	29.4	29.2	29.0	29.0	28.8	28.6	28.9	28.6

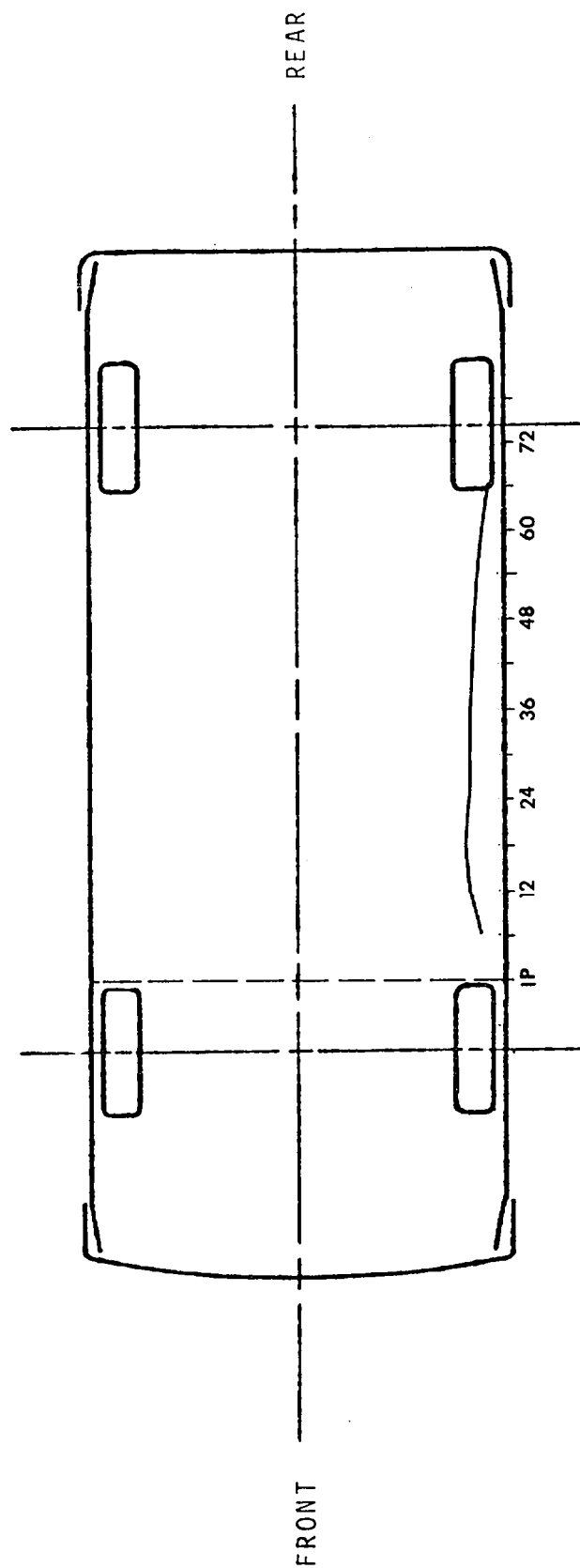
STATIC CRUSH (IN)

Axle Height	10.6	X	X	8.7	12.5	12.6	12.2	12.0	11.3	10.8	10.0	9.4	7.6	5.7	X	X
H-Point	20.3	X	7.5	8.6	12.2	12.4	12.6	12.7	12.7	12.7	12.8	13.3	12.3	10.8	X	X
Mid Door	24.8	5.7	6.3	6.8	11.8	11.8	11.2	11.9	11.9	12.0	12.1	12.6	12.0	11.2	9.1	X
Window Sill	35.1	X	2.6	3.4	7.8	9.4	10.8	11.2	3.7	11.6	11.9	12.4	12.0	11.3	7.8	3.4
Window Top	53.3	X	X	X	X	X	3.0	2.7	2.5	2.4	2.2	2.2	1.9	1.7	1.8	1.1

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

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

VEHICLE EXTERIOR STATIC CRUSH PROFILE

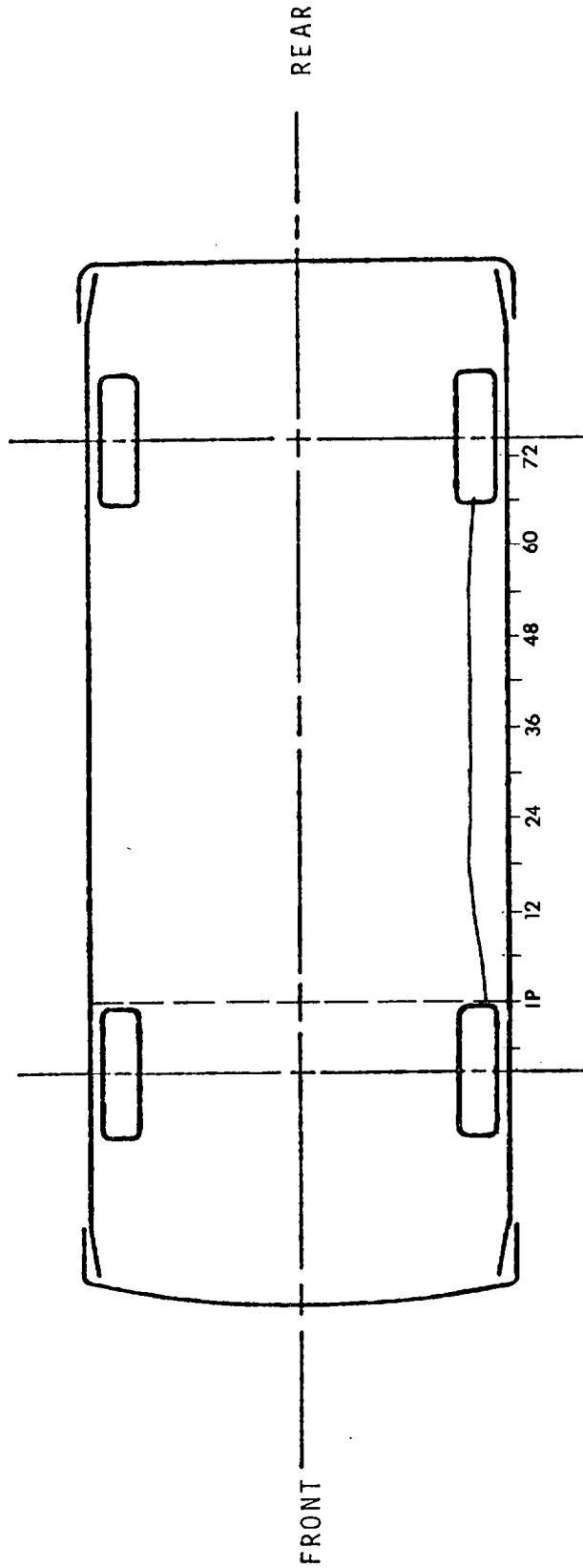


PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Length of Car = 155.3"
Width of Car = 63.5"

Maximum Crush = 12.6"
Approximate Length of Crush = 60.0"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

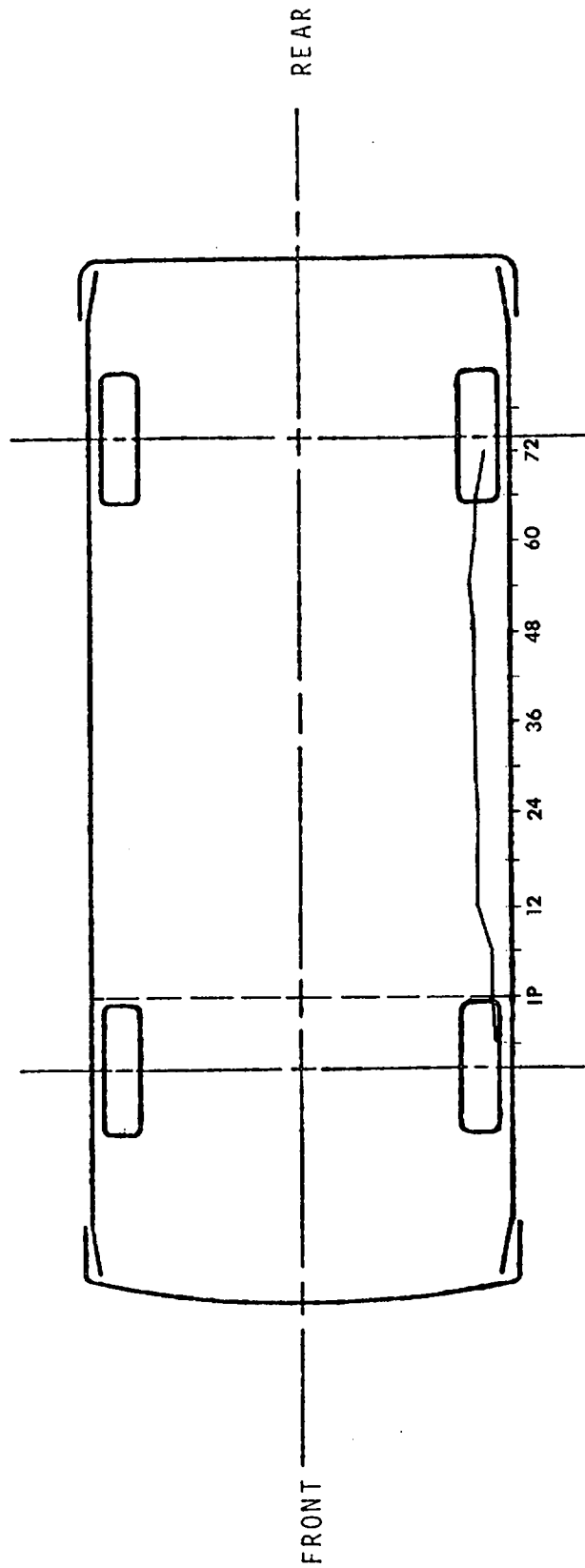


PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Length of Car = 155.3"
Width of Car = 63.5"

Maximum Crush = 13.3"
Approximate Length of Crush = 66"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

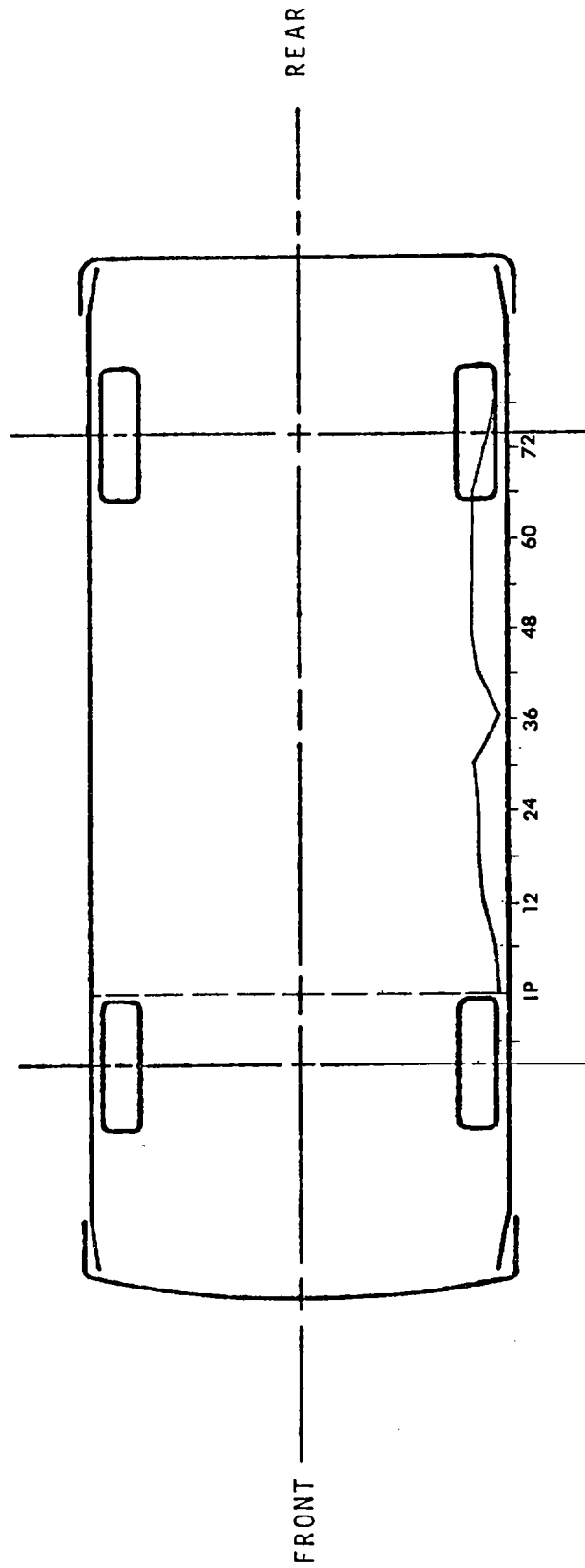


PROFILE LEVEL EQUALS MID-DOOR HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Length of Car = 155.3"
Width of Car = 63.5"

Maximum Crush = 12.6"
Approximate Length of Crush = 78"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

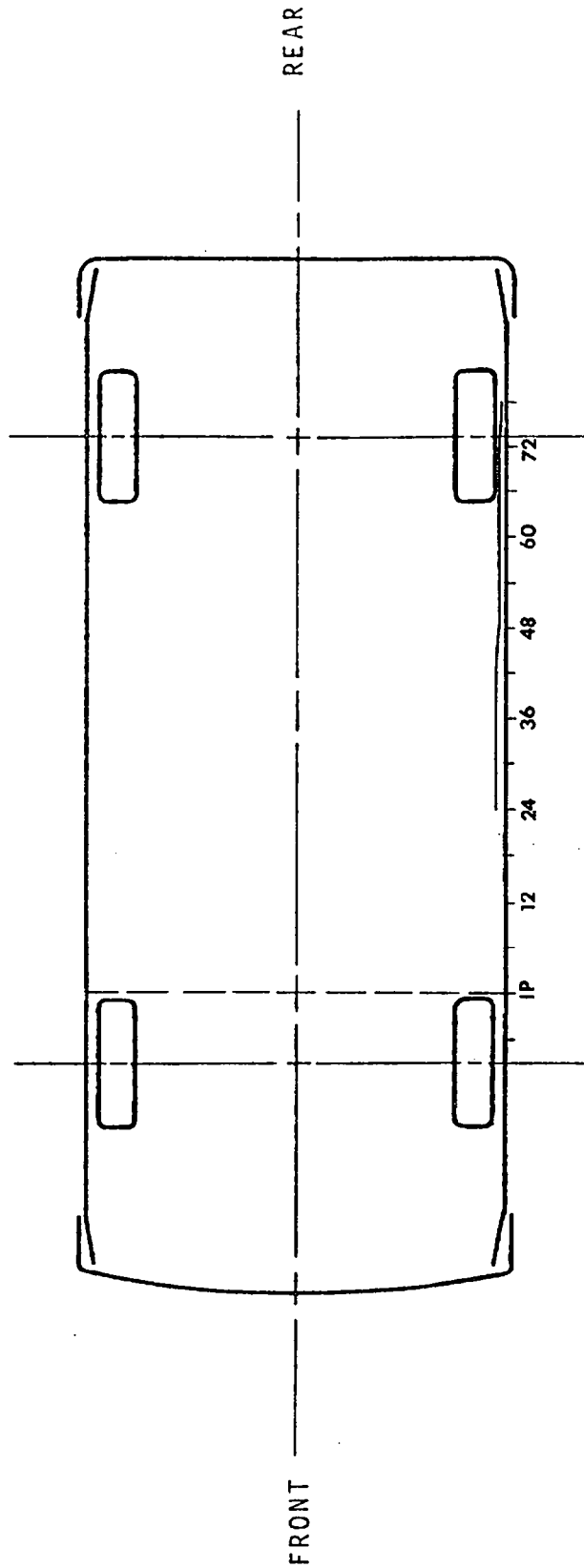


PROFILE LEVEL EQUALS WINDOW SILL HEIGHT
 IP EQUALS PROJECTED IMPACT POINT

Length of Car = 155.3"
 Width of Car = 63.5"

Maximum Crush = 12.4"
 Approximate Length of Crush = 78"

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Length of Car = 155.3"
Width of Car = 63.5"

Maximum Crush = 3.0"
Approximate 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	87.90	314.38	79.83	79.38	24.98	155.63	38.31	47.13
LATERAL	47.27	44.00	23.66	276.75	123.81	47.63	22.91	156.00
VERTICAL	35.21	314.25	66.89	62.25	44.26	55.38	34.61	46.25
RESULTANT		101.17 @ 79.38				130.24 @ 47.63		
HIC	852.30	from 37.63 to 89.00			1065.79	from 44.25 to 55.25		
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	38.71	47.50	25.02	57.50	6.35	80.00	21.58	41.87
LATERAL (P)***	103.86	38.75	40.64	55.63	80.65	43.75	2.89	87.50
LATERAL (R)***	107.09	38.75	40.02	55.63	82.82	43.75	2.51	88.13
VERTICAL	12.52	48.13	17.50	39.38	6.76	33.75	13.24	50.63
RESULTANT (P)		108.00 @ 38.75				83.31 @ 43.75		
RESULTANT (R)		111.10 @ 38.75				85.41 @ 43.75		
DELTA V (MPH)****		33.6 @ 51.88 (P)				28.2 @ 83.75 (P)		
		35.1 @ 51.88 (R)				28.9 @ 85.00 (R)		
LOWER SPINE								
LONGITUDINAL	35.40	45.00	24.25	33.13	34.98	55.00	27.47	34.38
LATERAL (P)	128.12	35.63	25.13	53.75	98.05	38.13	26.75	56.87
LATERAL (R)	128.02	35.63	22.11	60.62	99.43	38.13	31.91	56.87
VERTICAL	14.92	30.62	3.21	78.13	10.20	34.38	0.93	64.38
RESULTANT (P)		129.71 @ 35.00				100.79 @ 38.13		
RESULTANT (R)		129.72 @ 35.00				102.13 @ 38.13		
DELTA V (MPH)		39.7 @ 48.13 (P)				35.2 @ 53.12 (P)		
		40.0 @ 49.37 (R)				36.4 @ 53.12 (R)		
LEFT UPPER RIB								
LATERAL (P)	98.69	31.88	8.33	82.50	73.52	35.00	9.25	56.87
LATERAL (R)	106.75	31.88	8.19	83.75	77.51	35.00	12.90	56.87
DELTA V (MPH)		31.2 @ 67.50 (P)				26.4 @ 55.00 (P)		
		31.2 @ 64.38 (R)				28.4 @ 55.00 (R)		
LEFT LOWER RIB								
LATERAL (P)	87.06	31.25	64.65	60.62	122.70	25.00	17.36	19.38
LATERAL (R)	95.48	31.25	66.16	60.62	72.51	25.00	21.40	52.50
DELTA V (MPH)		35.0 @ 56.88 (P)				33.2 @ 50.63 (P)		
		35.0 @ 56.87 (R)				28.5 @ 50.63 (R)		
PELVIS ACCELERATION								
LONGITUDINAL	7.72	61.38	38.57	40.50	---	---	---	---
LATERAL	108.32	27.25	7.40	44.25	---	---	8.96	114.75
VERTICAL	22.57	56.88	4.67	63.00	---	---	---	---
RESULTANT		108.81 @ 27.25				---	---	---
DELTA V (MPH)		33.4 @ 63.13				---	---	---

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	<u>DRIVER DUMMY</u>				<u>PASSENGER DUMMY</u>			
	<u>POSITIVE</u> <u>DIRECTION*</u>		<u>NEGATIVE</u> <u>DIRECTION**</u>		<u>POSITIVE</u> <u>DIRECTION*</u>		<u>NEGATIVE</u> <u>DIRECTION**</u>	
	<u>MAX</u> <u>(in)</u>	<u>TIME</u> <u>(msec)</u>	<u>MAX</u> <u>(in)</u>	<u>TIME</u> <u>(msec)</u>	<u>MAX</u> <u>(in)</u>	<u>TIME</u> <u>(msec)</u>	<u>MAX</u> <u>(in)</u>	<u>TIME</u> <u>(msec)</u>
RIB DEFLECTION †	1.83	54.38	---	--- ^ε	1.84	50.00	---	--- ^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

⁰The 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.

^εThere 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 (LONGITUDINAL)	83.5	23.6	10.0				
	(LATERAL)				5.57	60.50	8.98	20.00
	(VERTICAL)				25.65	29.38	2.91	73.38
	(RESULTANT)				12.44	24.75	7.58	37.00
						27.10 @ 20.25		
2	RIGHT SILL AT REAR SEAT (LONGITUDINAL)	61.6	23.6	8.5				
	(LATERAL)				6.10	59.13	9.76	21.13
	(VERTICAL)				30.74	40.88	0.59	85.88
	(RESULTANT)				13.18	27.00	7.88	40.13
						31.84 @ 40.75		
3	REAR DECK OVER AXLE (LONGITUDINAL)	32.0	0.0	6.7				
	(LATERAL)				8.15	22.13	17.79	40.25
	(VERTICAL)				35.96	41.13	2.05	90.25
	(RESULTANT)				8.55	52.00	9.27	26.25
						40.08 @ 40.88		
4	LEFT SILL AT REAR SEAT (LATERAL)	62.2	-23.6	8.5				
					81.13	21.38	27.15	13.00
5	LEFT SILL AT FRONT SEAT (LATERAL)	83.5	-23.5	10.0				
					46.40	21.25	56.51	26.63
6	LEFT FRONT DOOR CENTERLINE (LATERAL)	82.6	-25.6	23.5				
					254.28	17.88	38.80	24.88
7	RIGHT REAR COMPARTMENT (LONGITUDINAL)	31.0	15.2	13.8				
					4.88	58.38	6.79	44.63
8	MIDREAR OF LEFT FRONT DOOR (LATERAL)	62.3	-26.0	24.2				
					149.47	13.00	37.20	39.75
9	UPPER LEFT FRONT DOOR CENTERLINE (LATERAL)	83.5	-26.0	32.7				
					314.77	20.75	193.51	27.63
10	MIDFRONT OF LEFT FRONT DOOR (LATERAL)	101.4	-25.8	21.9				
					---	---	---	---
11	UPPER REAR OF LEFT REAR DOOR (LATERAL)	72.2	25.8	32.9				
					251.67	21.00	105.07	90.00

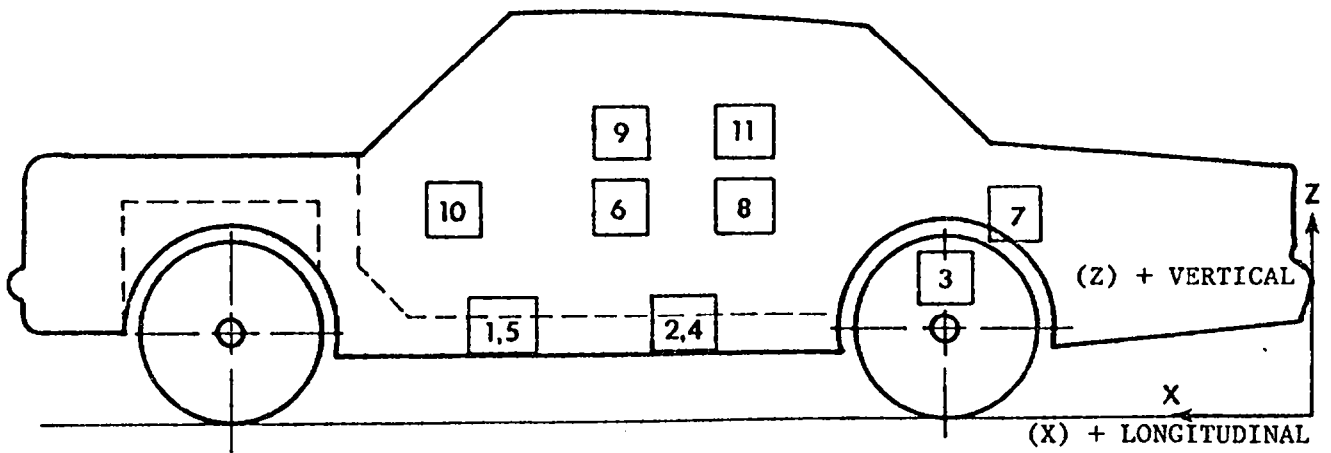
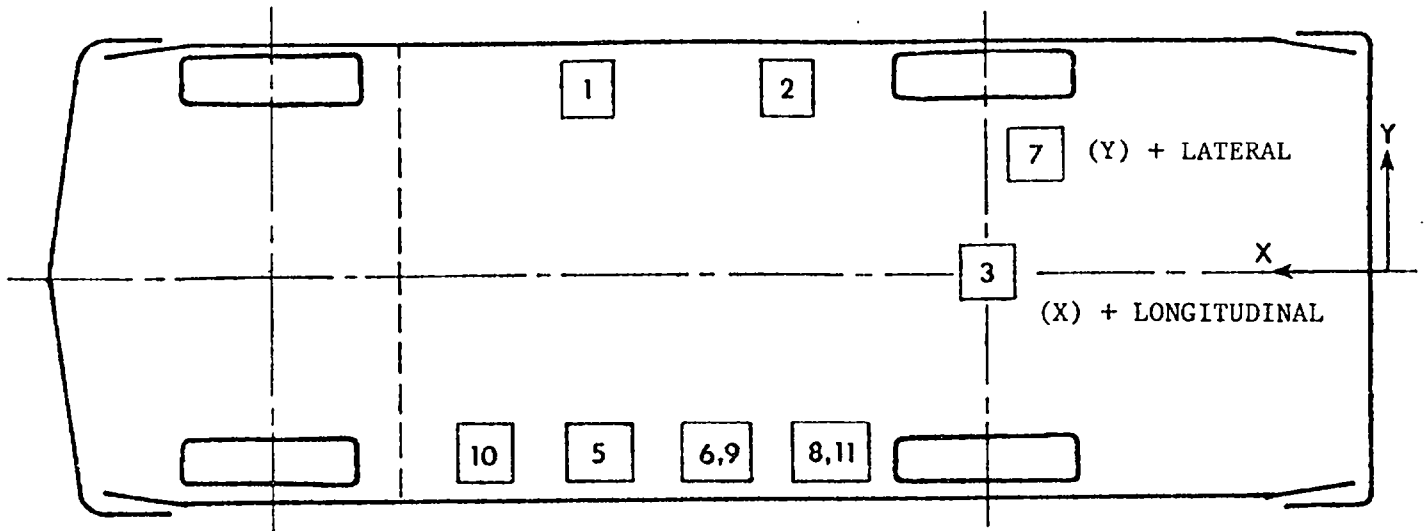
* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right),
Z - Ground Level (+ Up)

All measurements of accelerometer locations in inches.

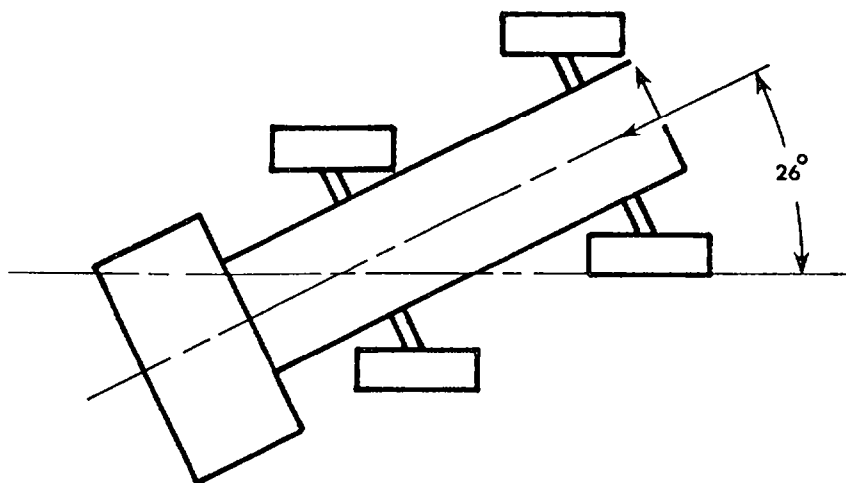
τ This Delta V appears unrealistic

γ See TEST ANOMALIES

VEHICLE ACCELEROMETER LOCATIONS



MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY



NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	CENTER OF GRAVITY	74.5	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -17.9 \text{ mph @ } 90.25 \text{ msec}$			0.78	81.13	21.10	42.88
	(LATERAL)	$\Delta V = -3.8 \text{ mph @ } 90.25 \text{ msec}$			4.50	63.25	10.36	45.50
	(VERTICAL)				21.69	56.13	17.12	62.25
	(RESULTANT)					26.61 @	33.75	
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	$\Delta V = -18.9 \text{ mph @ } 90.25 \text{ msec}$			0.74	0.88	21.45	43.25
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -16.5 \text{ mph @ } 90.25 \text{ msec}$			1.43	89.50	20.91	42.88

* 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	Photosonic 1B	8	470	Vehicle dynamics
2	Overhead	Photosonic 1B	25	450	Close-up of impact point
3	Onboard MDB	Photosonic 1B	25	505	Close-up of impact point
4	Onboard MDB	Photosonic 1B	13	510	Driver kinematics
5	Ground level - right	Photosonic 1B	25	503	Overall view
6	Ground level - left	Photosonic 1B	17	500	Overall view
7	Onboard vehicle	Photosonic 1B	8	805	Driver kinematics - front view
8	Onboard vehicle	Photosonic 1B	8	815	Driver kinematics
9	Onboard vehicle	Photosonic 1B	8	810	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	24'10"	58'8"	45"
6	-20'11"	-11'	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	11/8/84	0.237 MV/G	50 G
BCGYG	Accel	4-202-0001	18858	Bell Howell	11/8/84	0.238 MV/G	50 G
BCGZG	Accel	4-202-0001	18857	Bell Howell	11/8/84	0.240 MV/G	50 G
BFCXG	Accel	4-202-0001	18240	Bell Howell	11/8/84	0.239 MV/G	50 G
BRCXG	Accel	4-202-0001	19022	Bell Howell	11/8/84	0.220 MV/G	50 G

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

APPENDIX A
PHOTOGRAPHS

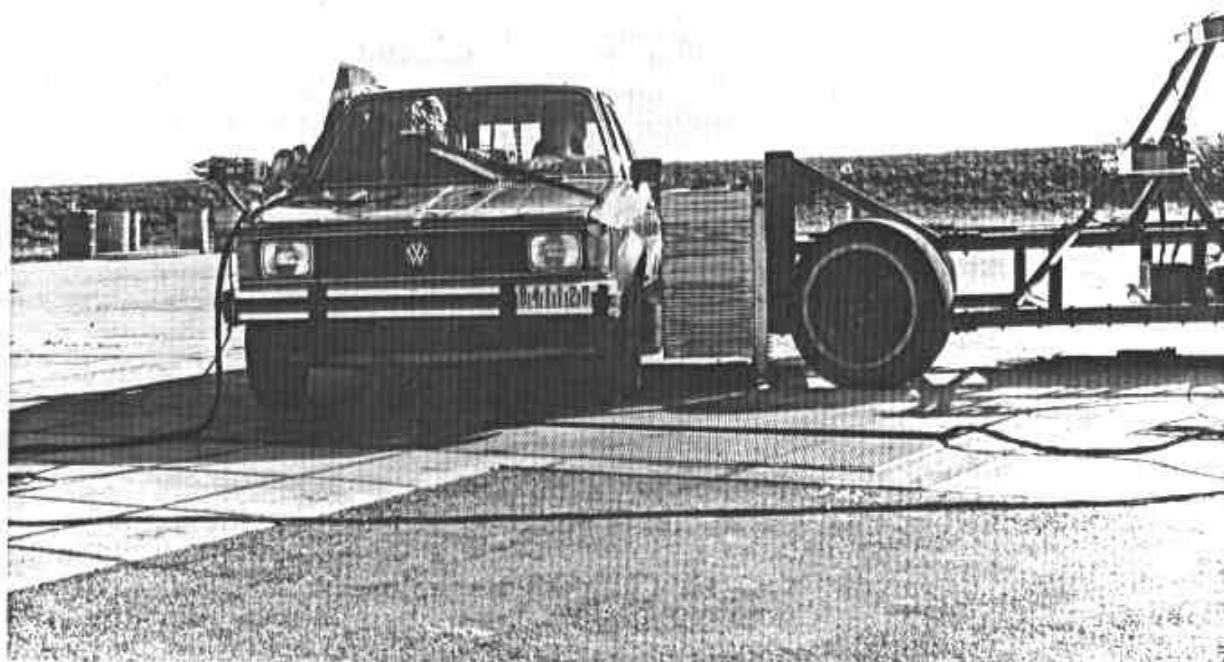


Figure A-1. PRE-TEST OVERALL - VIEW 1

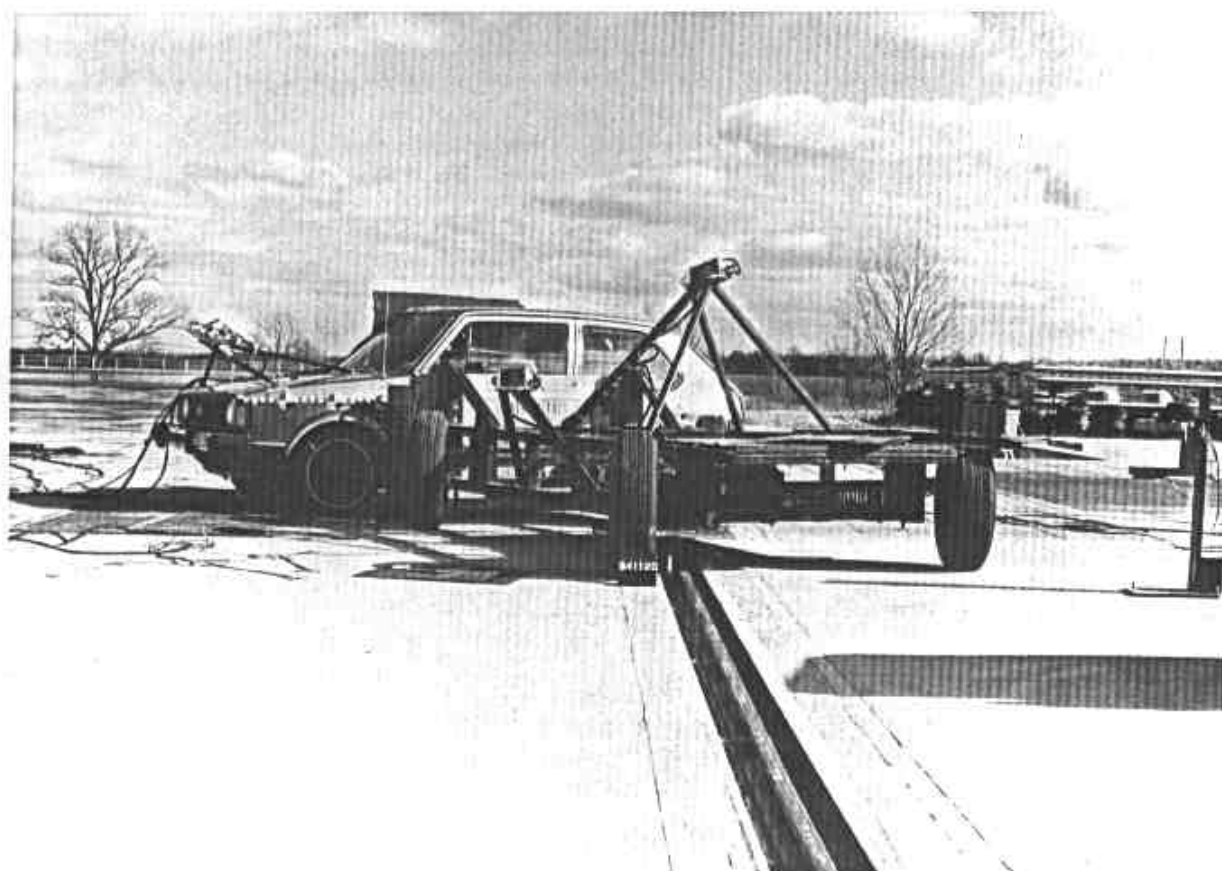


Figure A-2. PRE-TEST OVERALL - VIEW 2
A-2

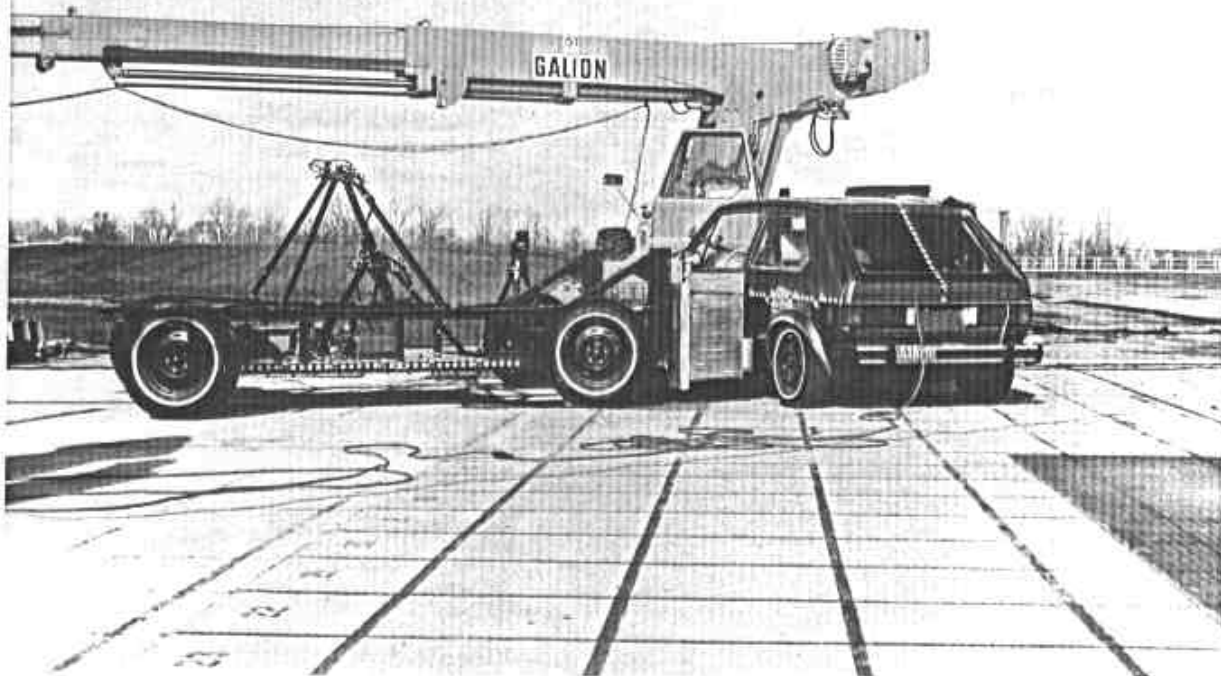


Figure A-3. PRE-TEST OVERALL - VIEW 3



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

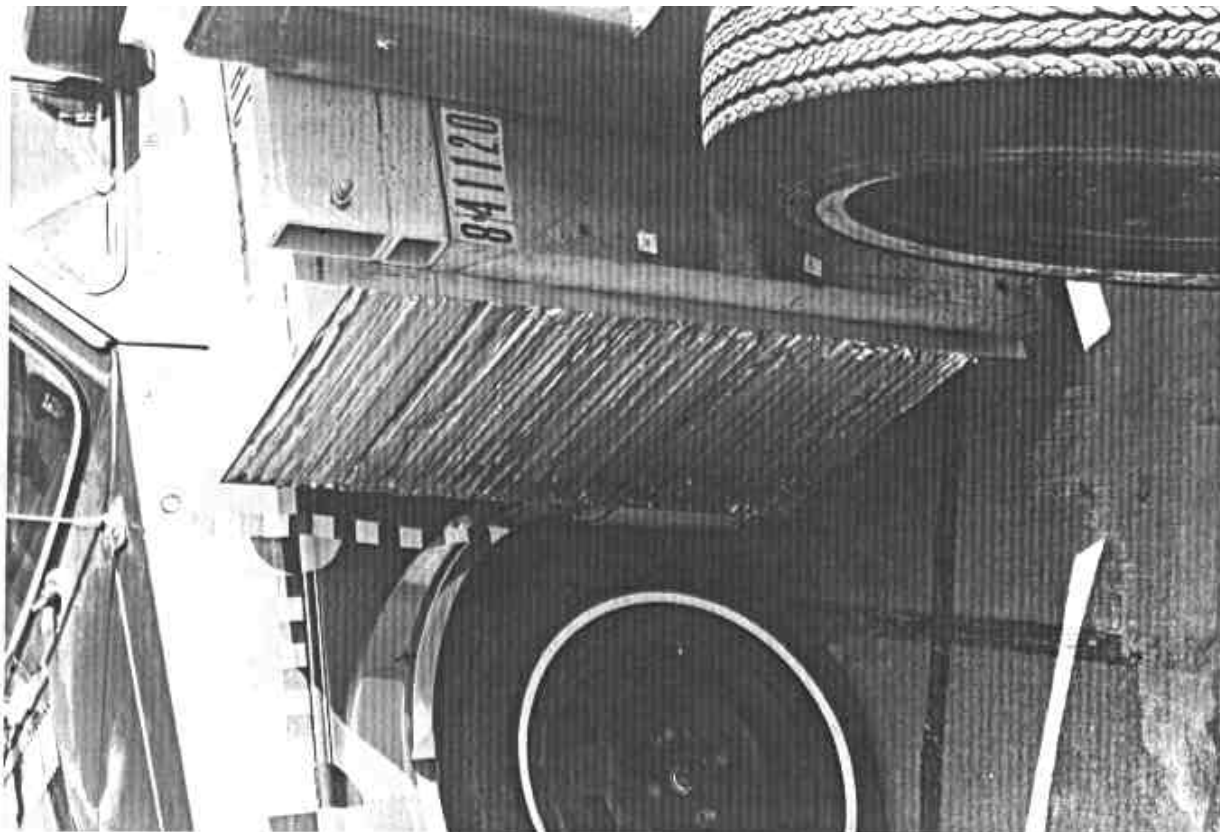


Figure A-5. PRE-TEST CLOSEUP - VIEW 1



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

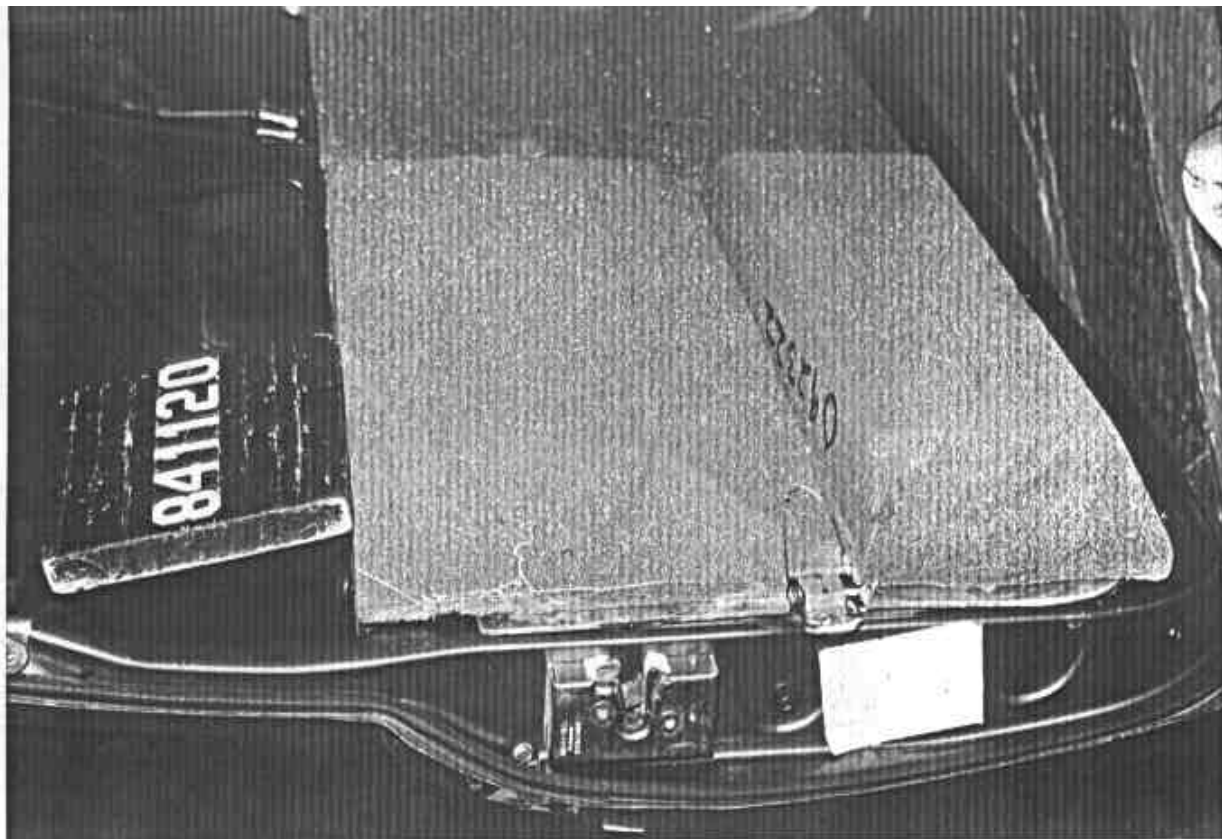


Figure A-7. PADDING MODIFICATION



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

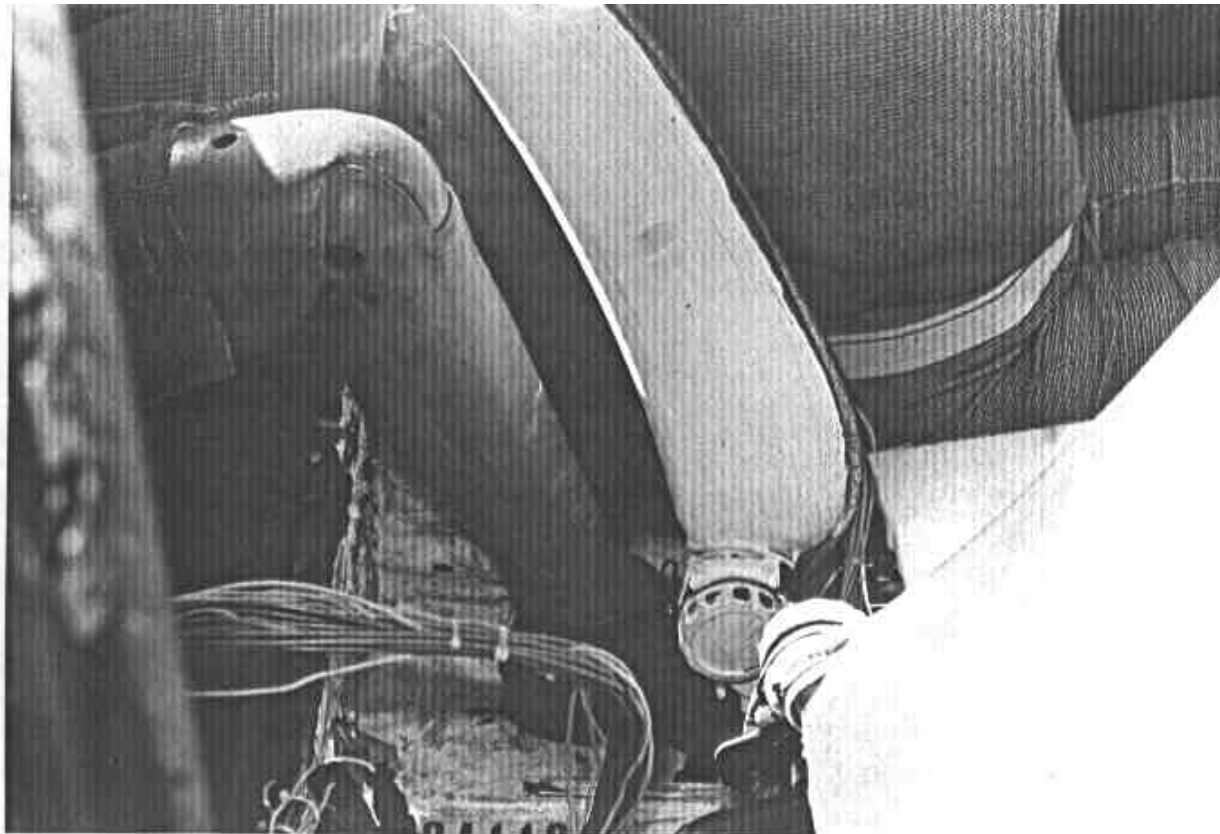


Figure A-11. PRE-TEST PASSENGER DUMMY - VIEW 2

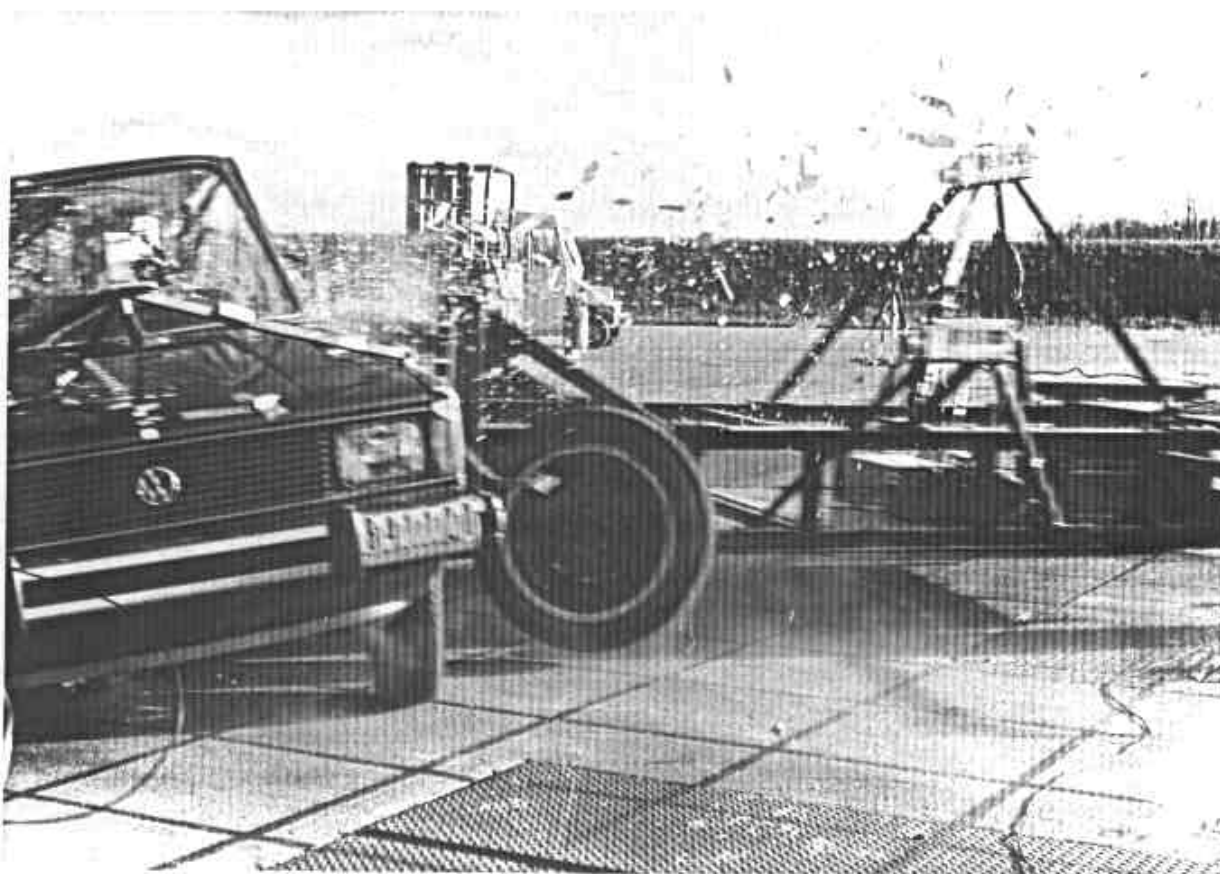


Figure A-12. CRASH EVENT PHOTOGRAPH
A-7

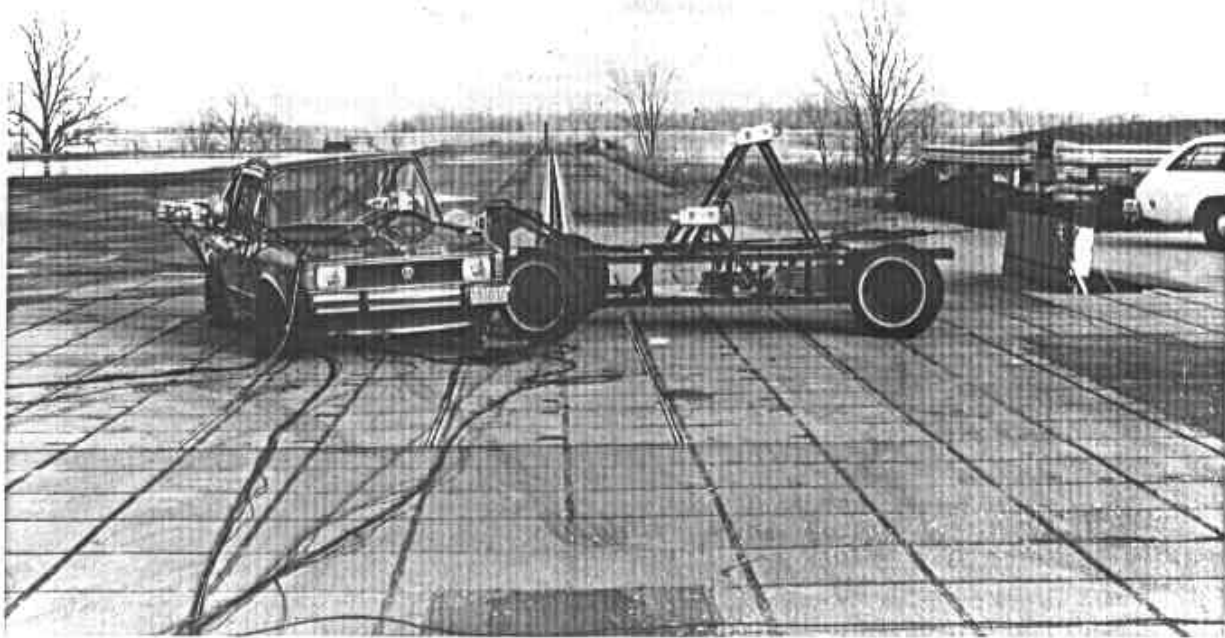


Figure A-13. POST-TEST OVERALL - VIEW 1



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



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

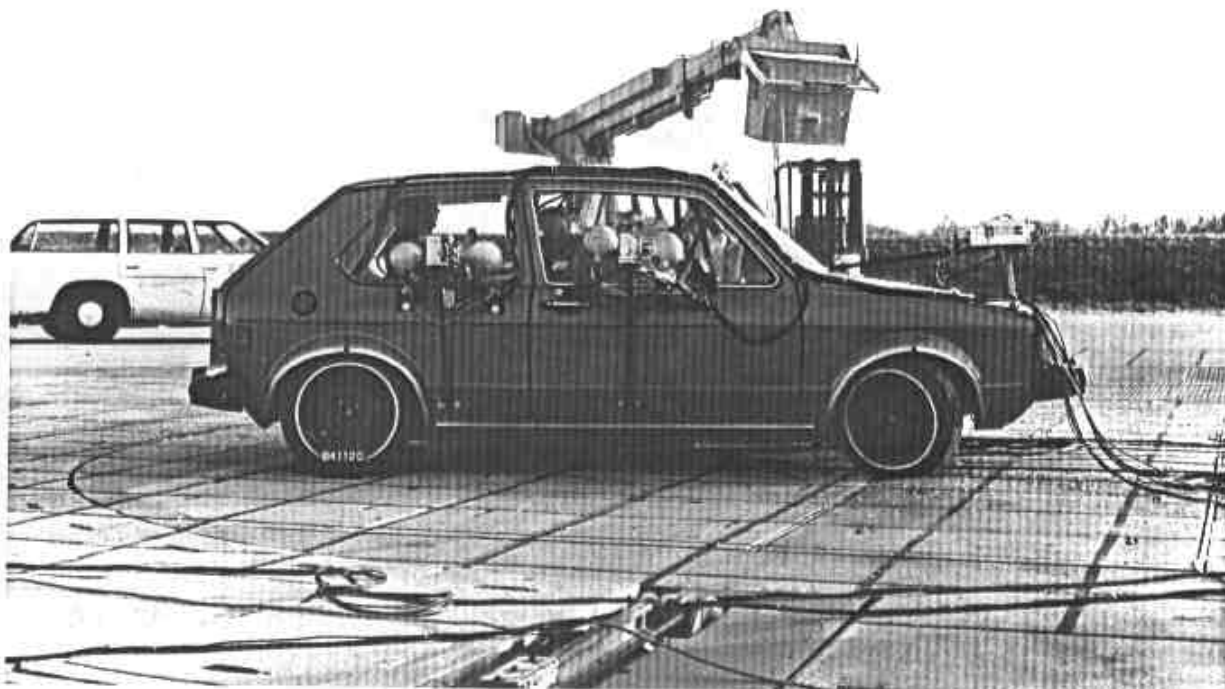


Figure A-16. POST-TEST OVERALL - VIEW 4



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

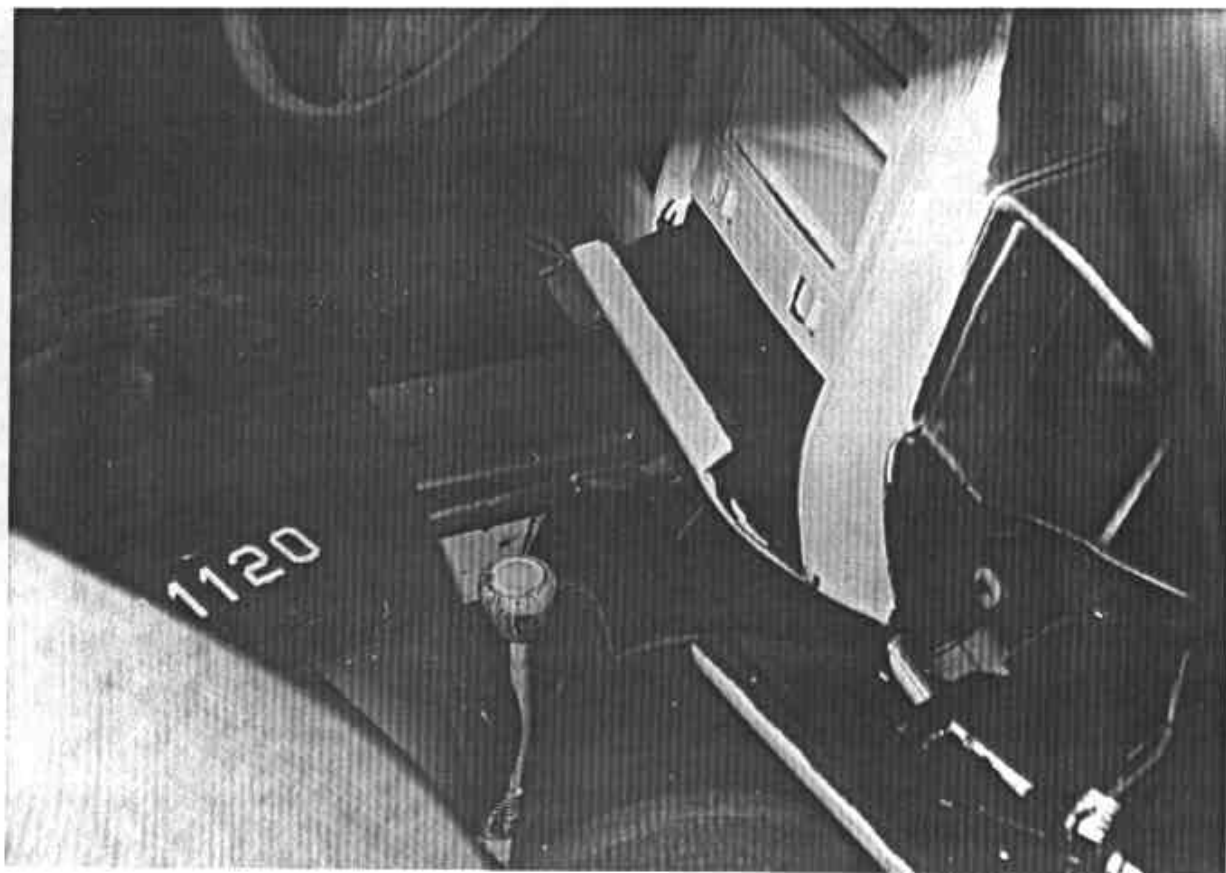


Figure A-18. POST-TEST DRIVER DUMMY - VIEW 2
A-10



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

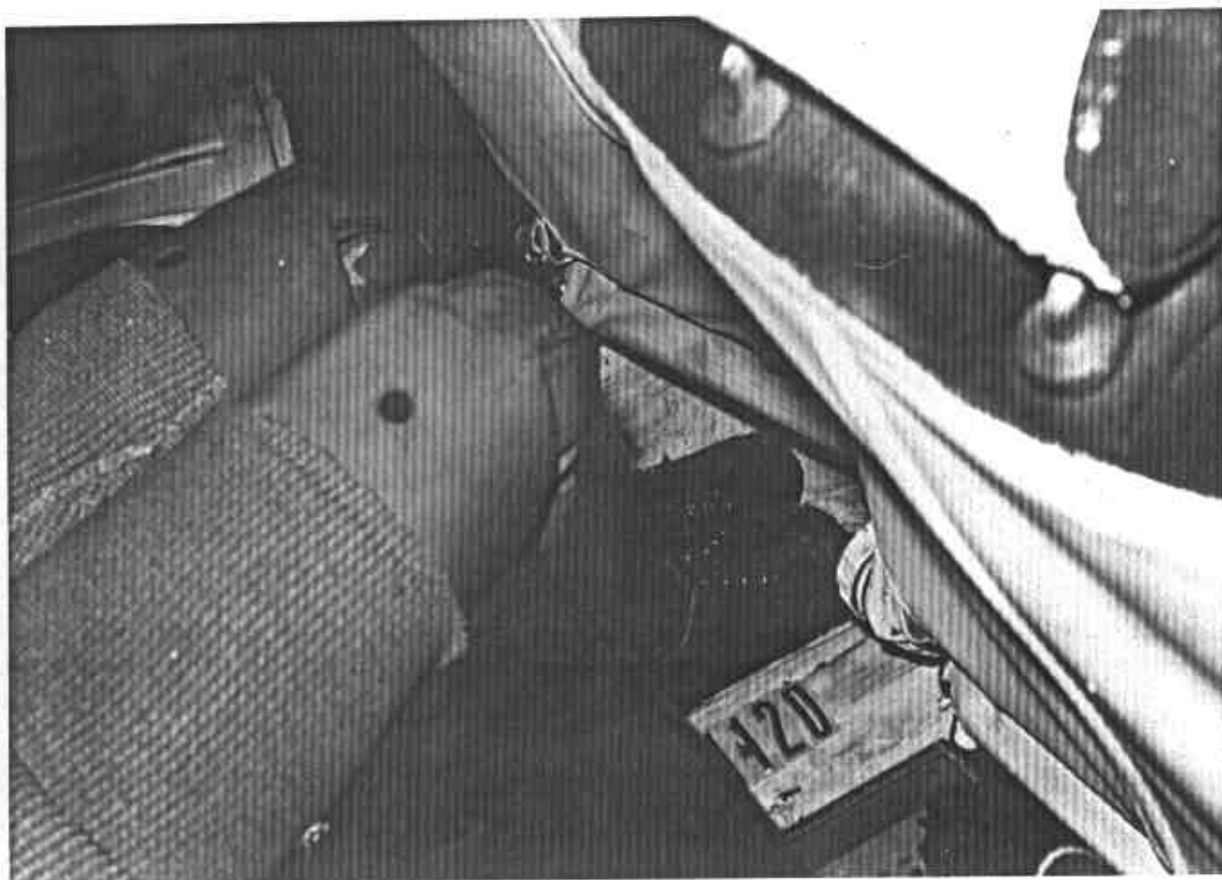


Figure A-20. POST-TEST PASSENGER DUMMY - VIEW 2
A-11



Figure A-21. POST-TEST DUMMIES OVERALL

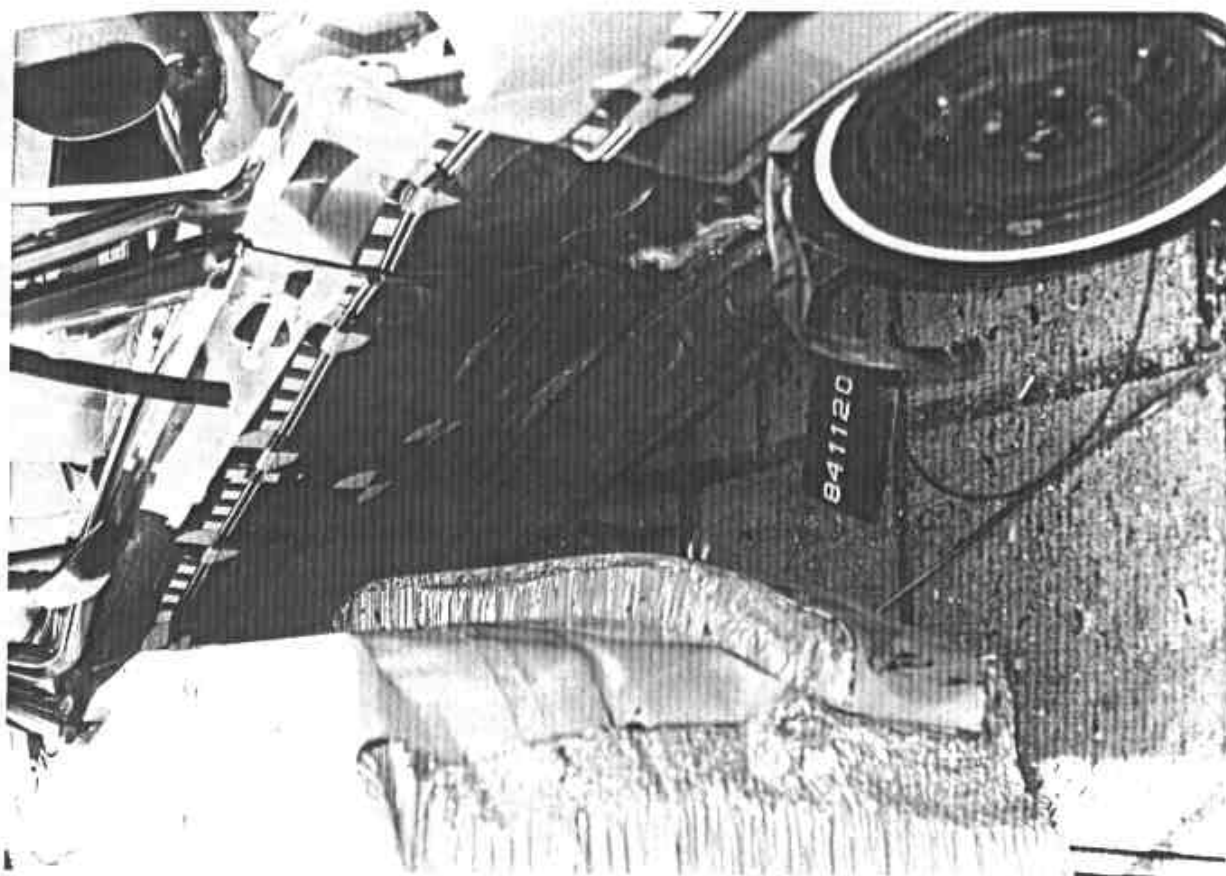


Figure A-22. VEHICLE DAMAGE
A-12

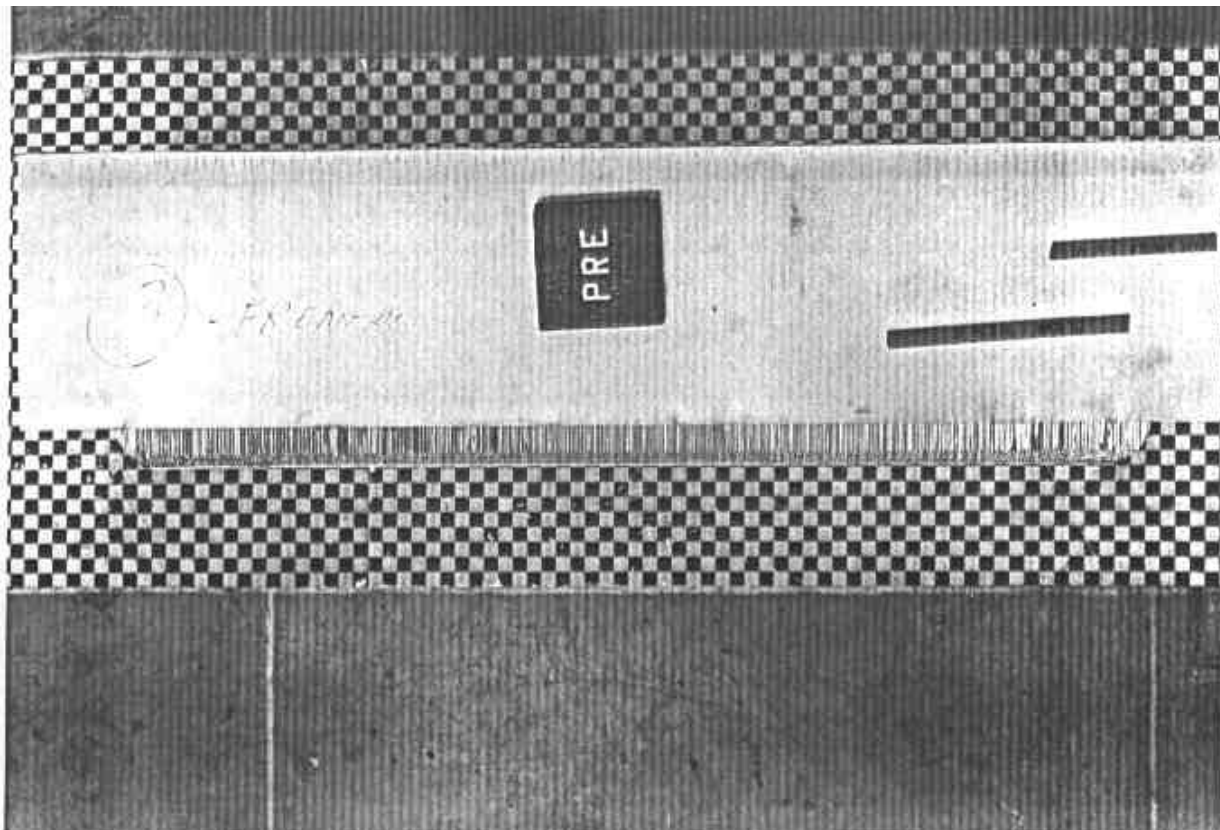


Figure A-23. PRE-TEST MDB FACE - VIEW 1

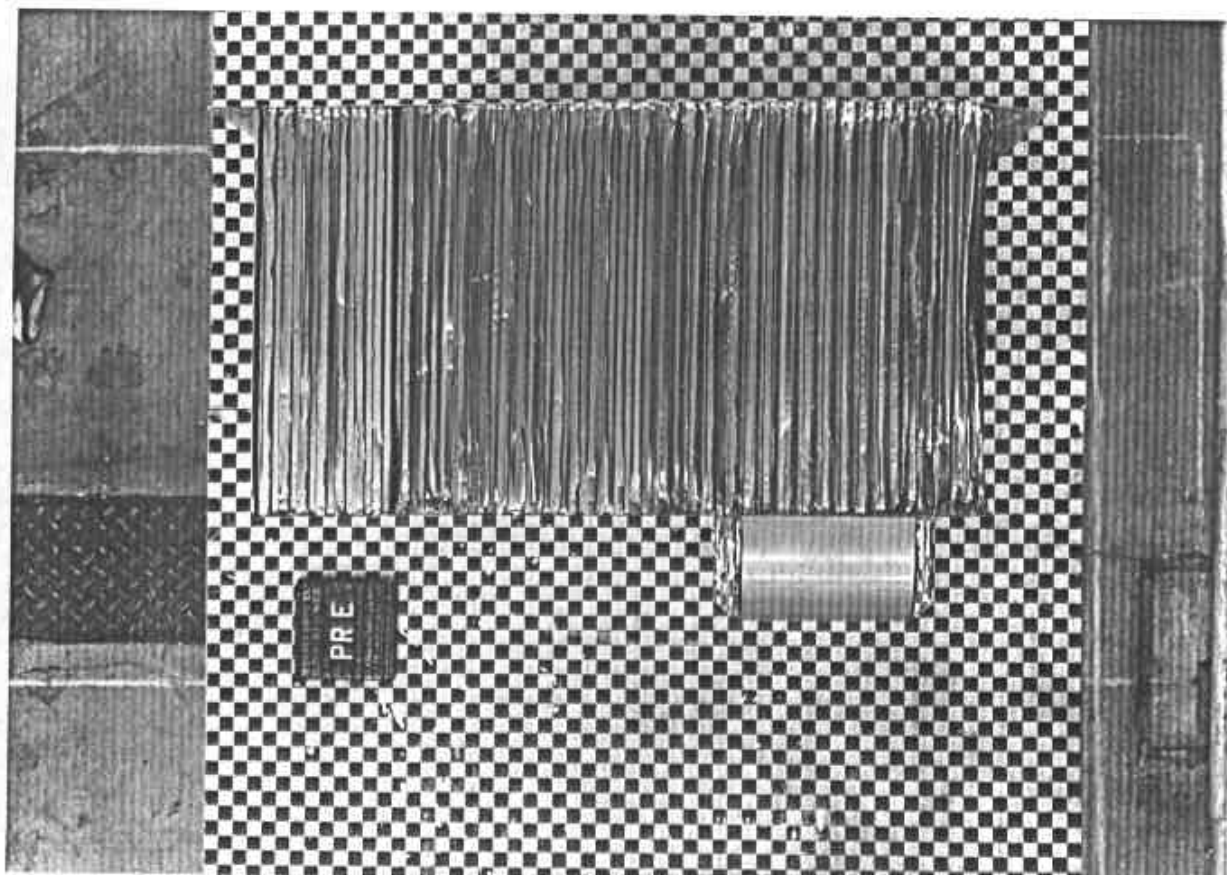


Figure A-24. PRE-TEST MDB FACE - VIEW 2

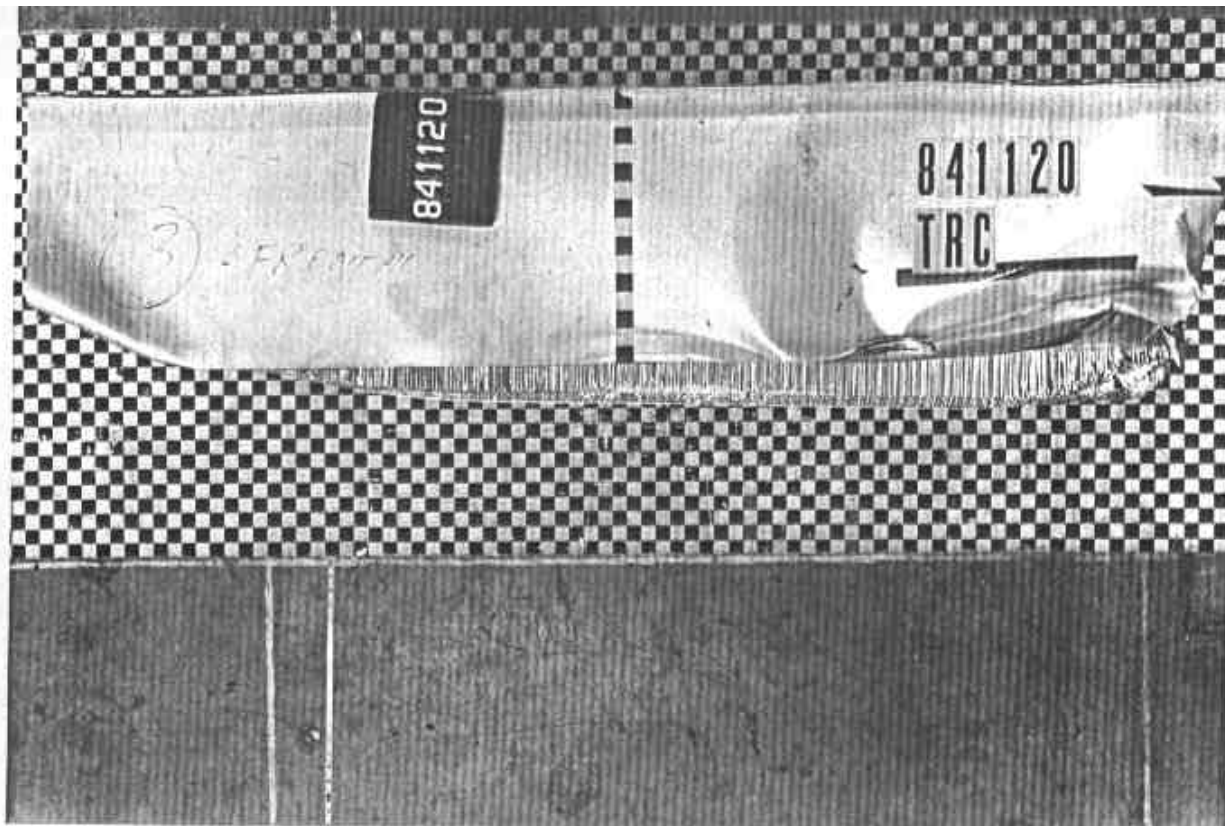


Figure A-25. POST-TEST MDB FACE - VIEW 1

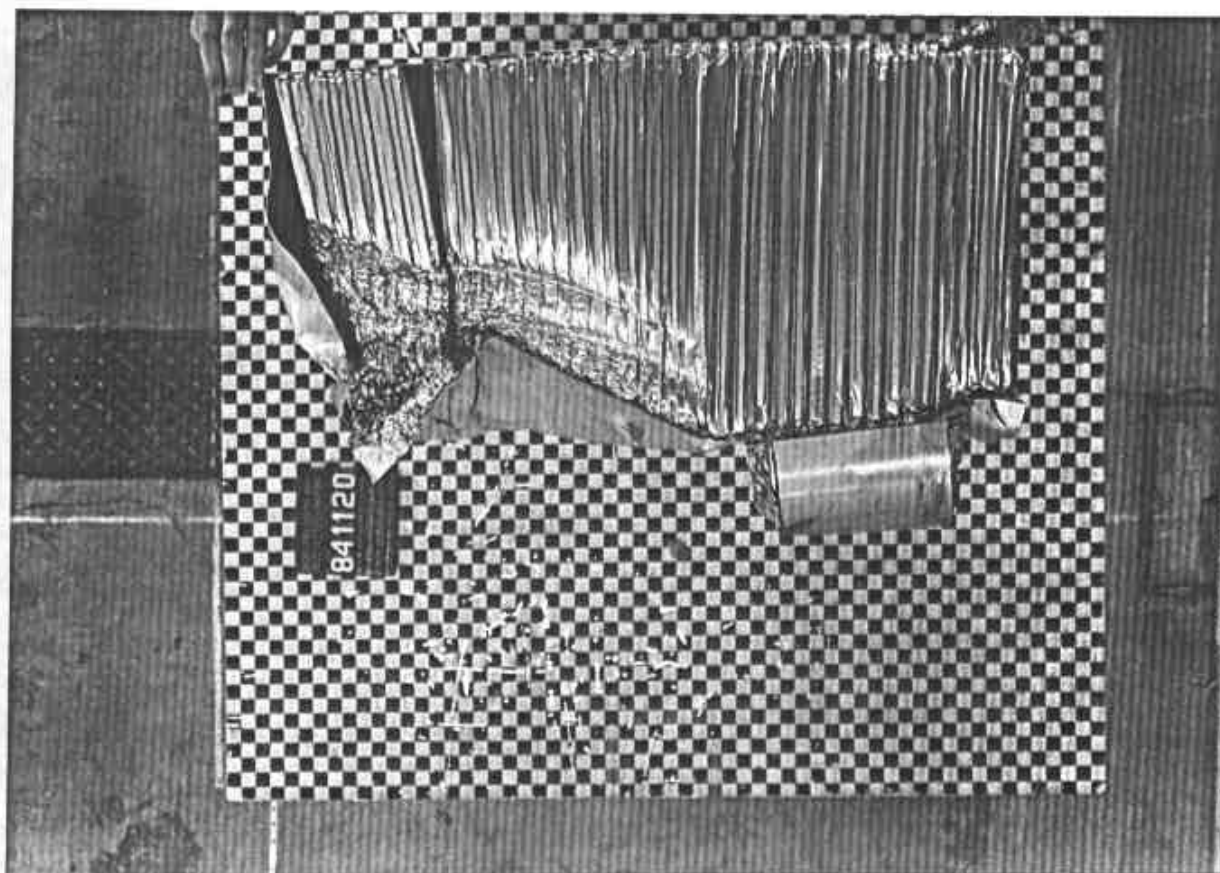


Figure A-26. POST-TEST MDB FACE - VIEW 2

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.

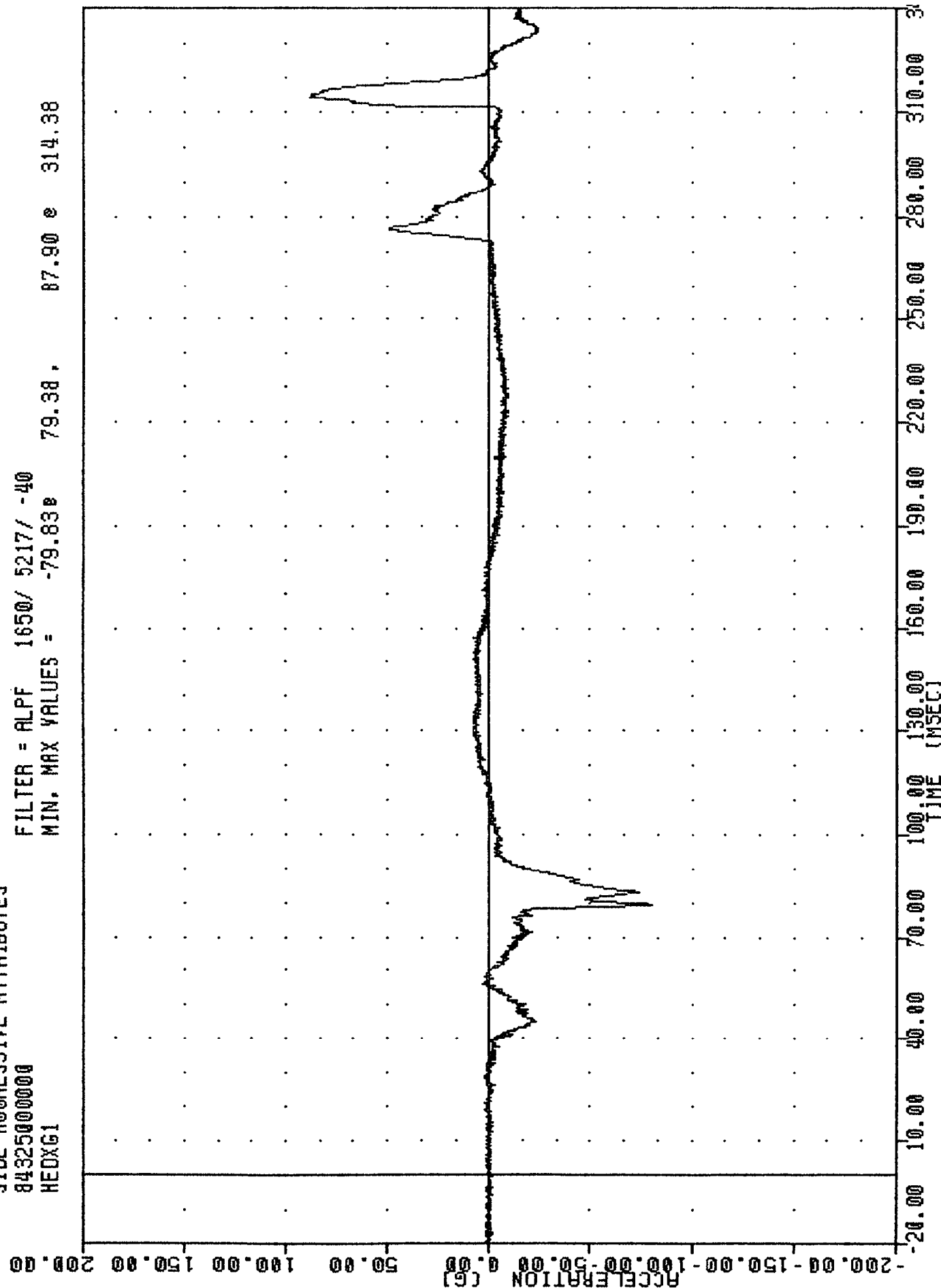
SIDE AGGRESSIVE ATTRIBUTES

84325000000

HEXG1

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -79.83 79.38 , 87.90 314.38



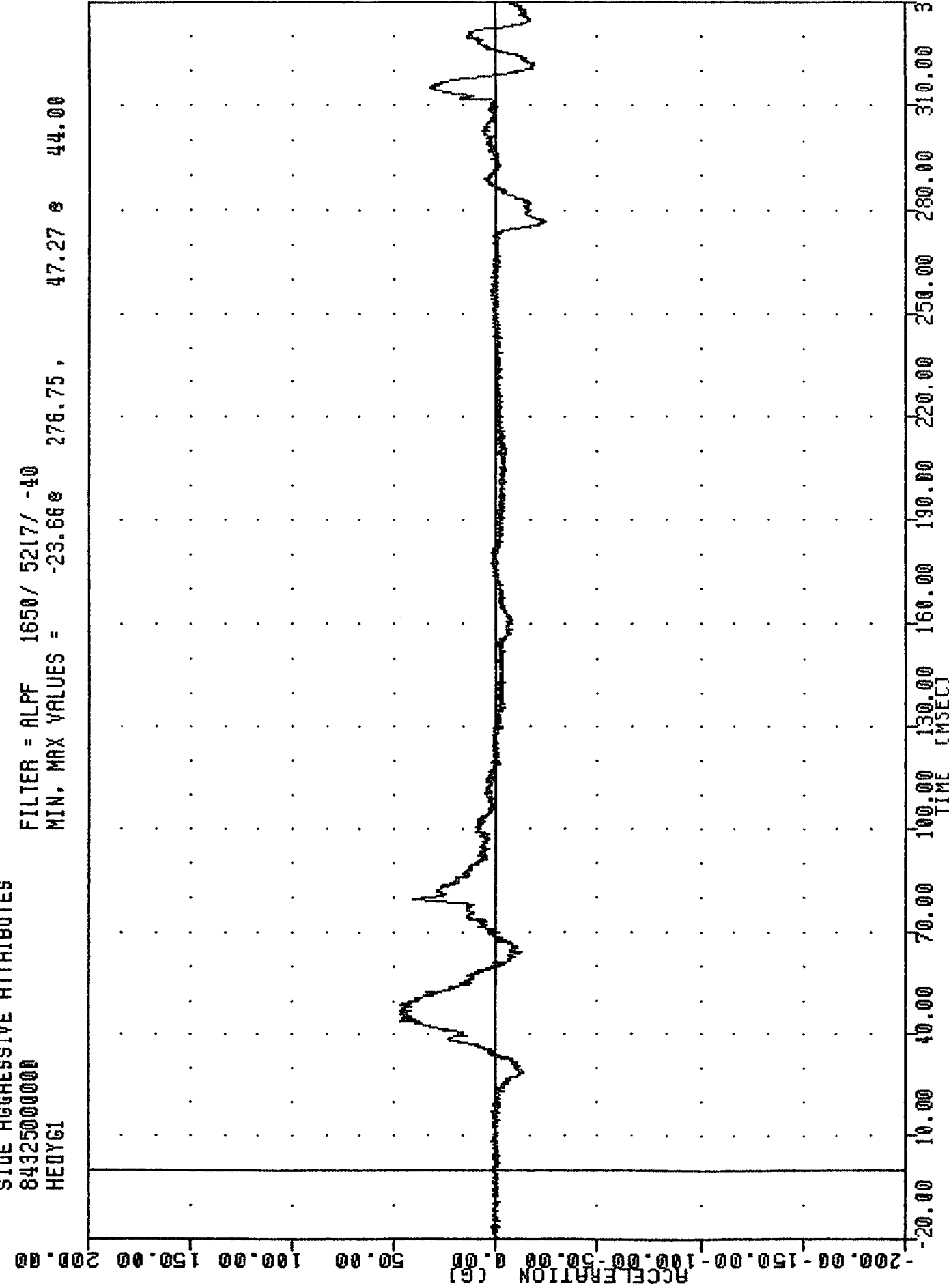
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION X AXIS

..... SIDE AGGRESSIVE ATTRIBUTES

84325000000
HEDYG1

FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -23.66 276.75,

47.27 44.00



B-3

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Y AXIS

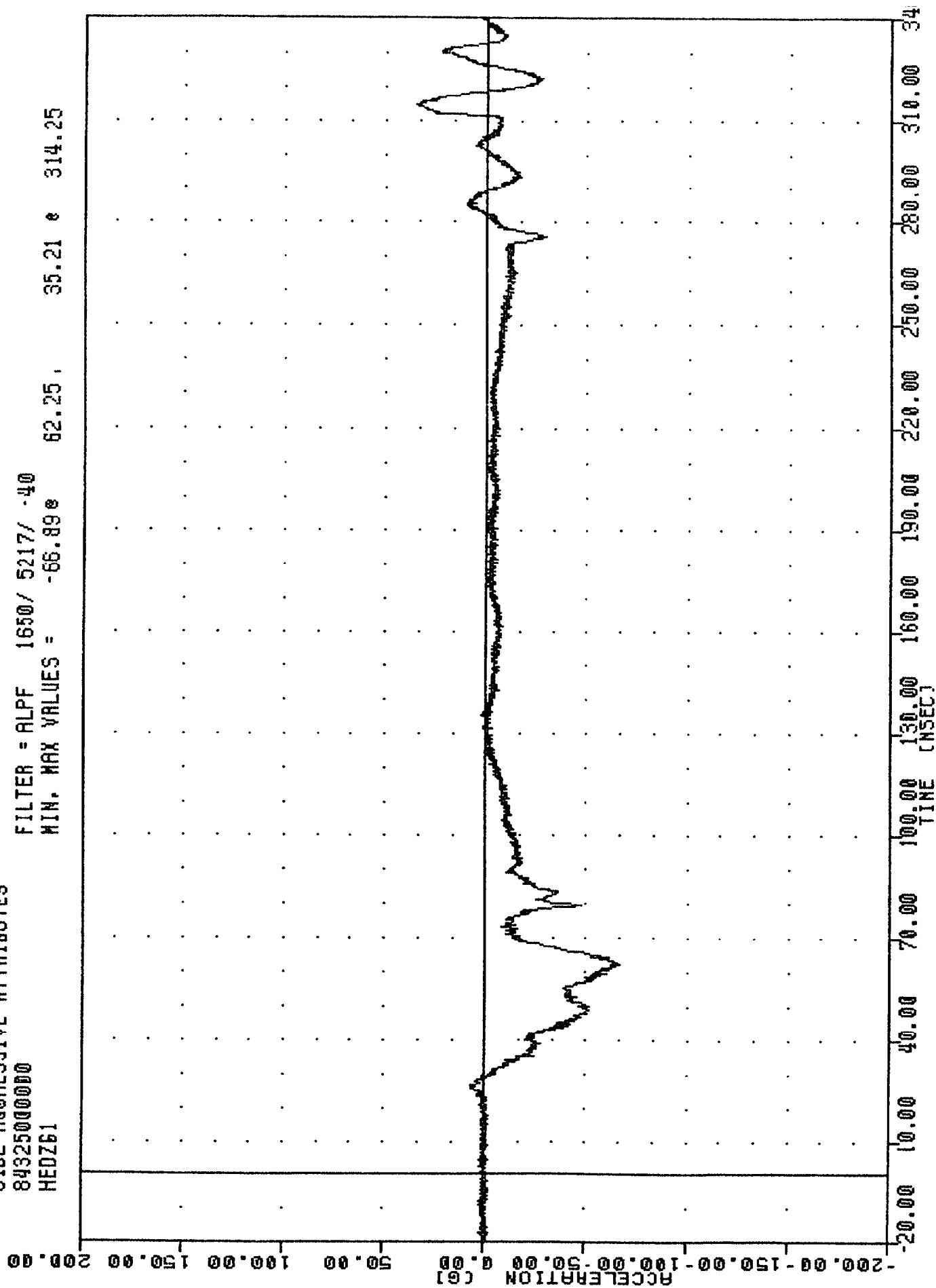
SIDE AGGRESSIVE ATTRIBUTES

84325000000

HEDZ61

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -66.89 62.25 35.21 314.25



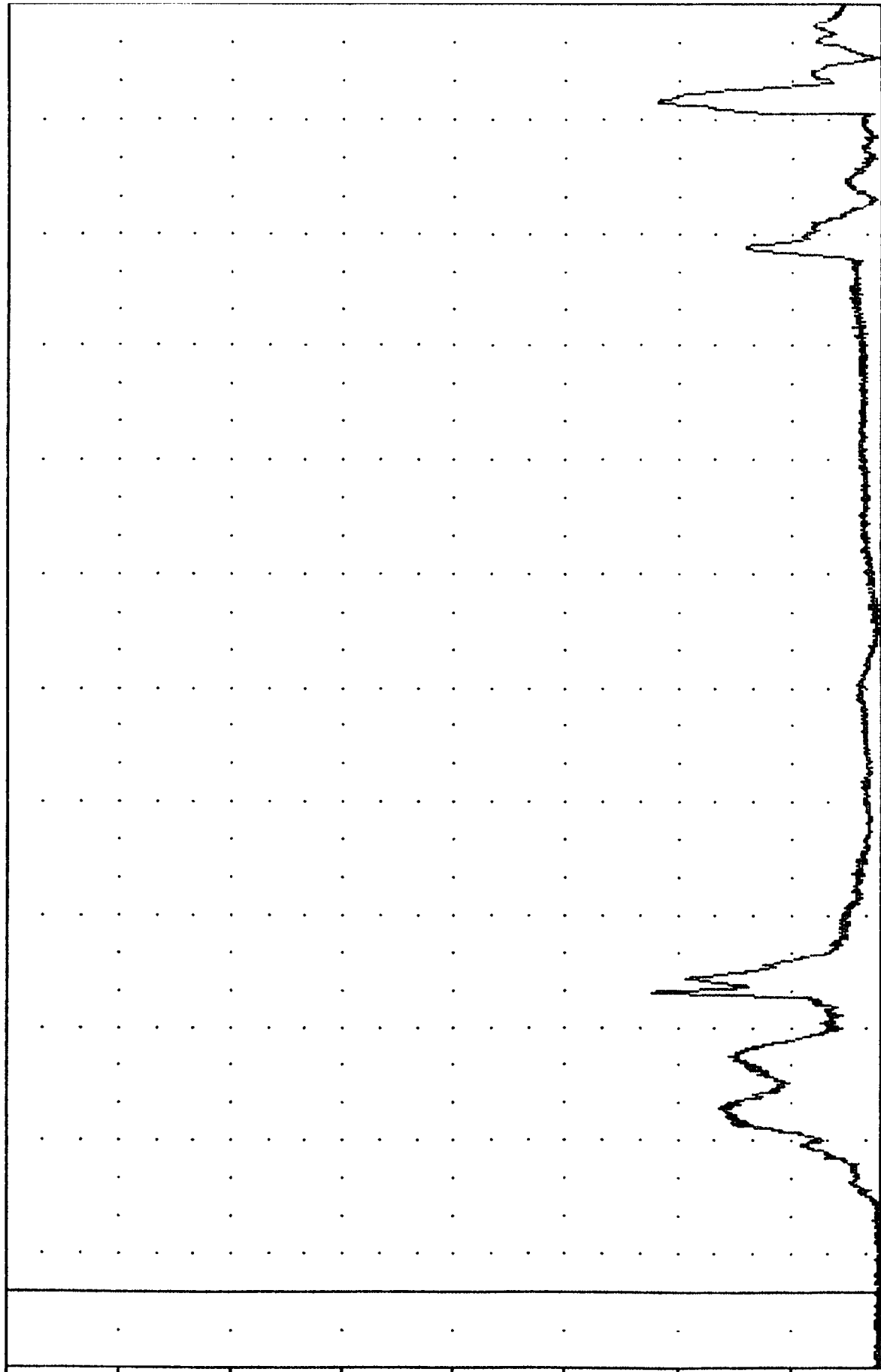
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Z AXIS

... SIDE AGGRESSIVE ATTRIBUTES
84325000000
HEDRG1

... MIN. MAX VALUES = 0.128 -13.25, 101.17 @ 79.38

FILTER = ALPF 1650/ 5217/ -40

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 3

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD RESULTANT

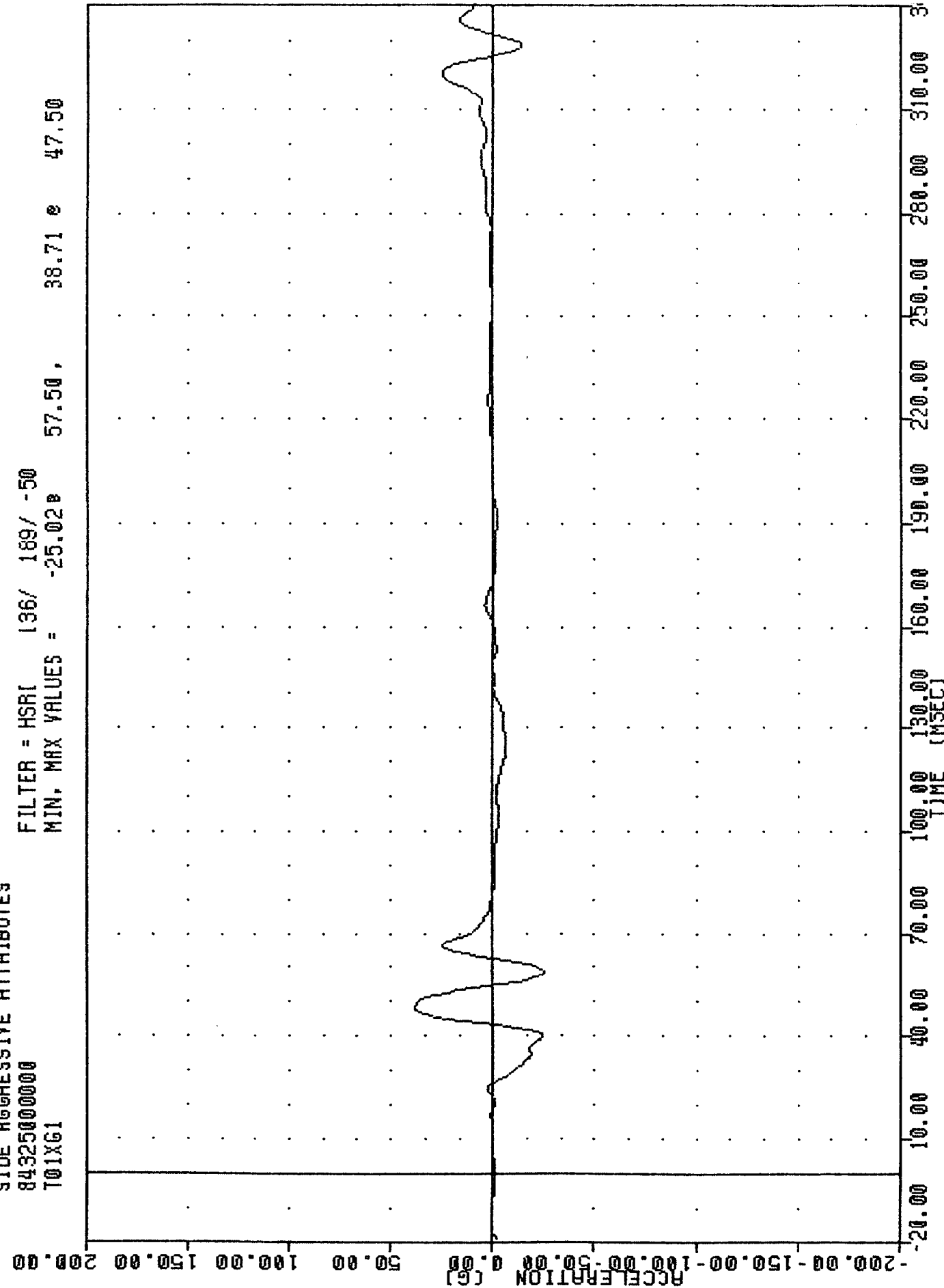
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01XG1

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -25.02e 57.50, 38.71 e 47.50



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

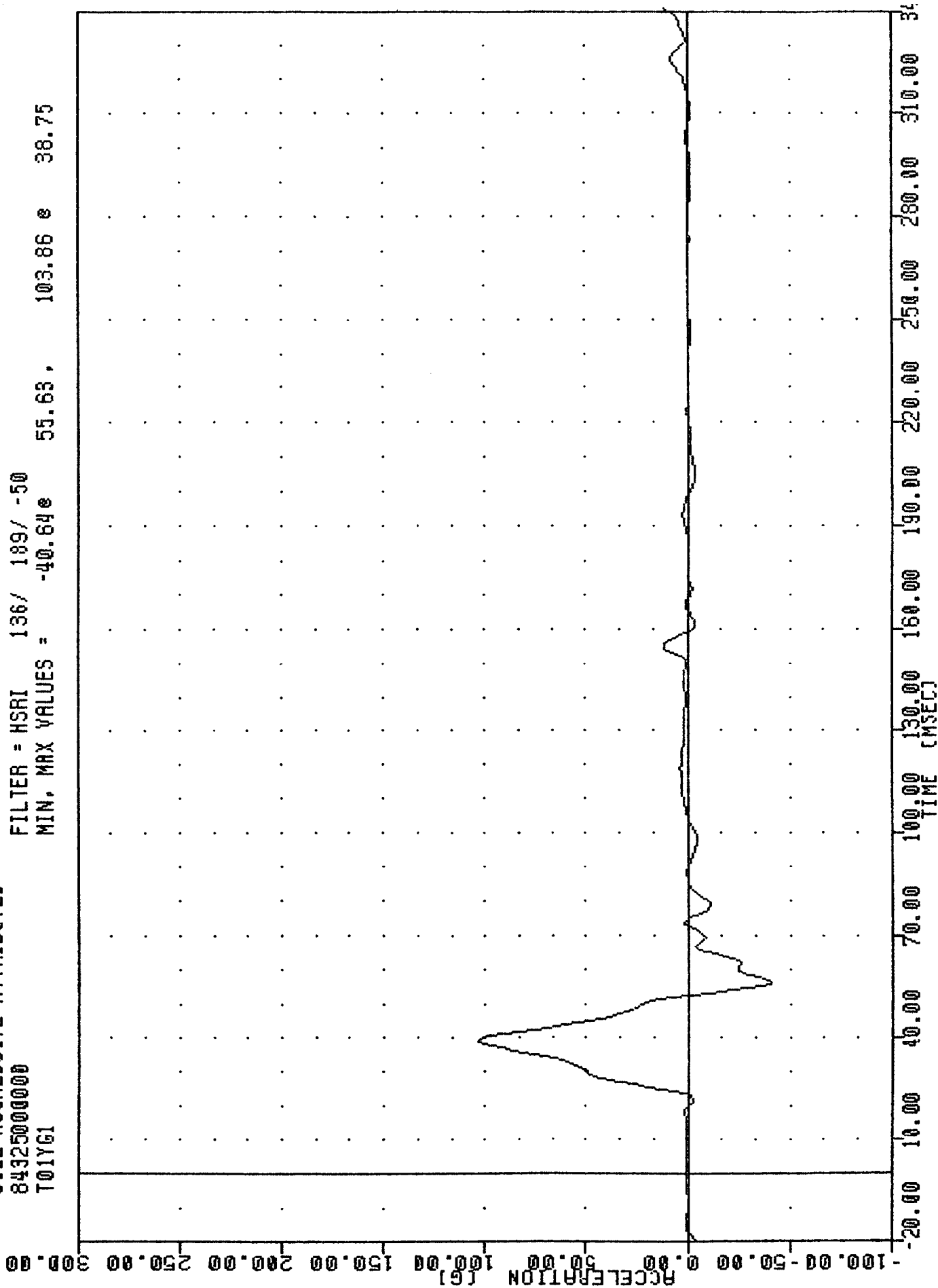
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01Y61

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -40.64e 55.63, 103.86 e 38.75



B-7

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

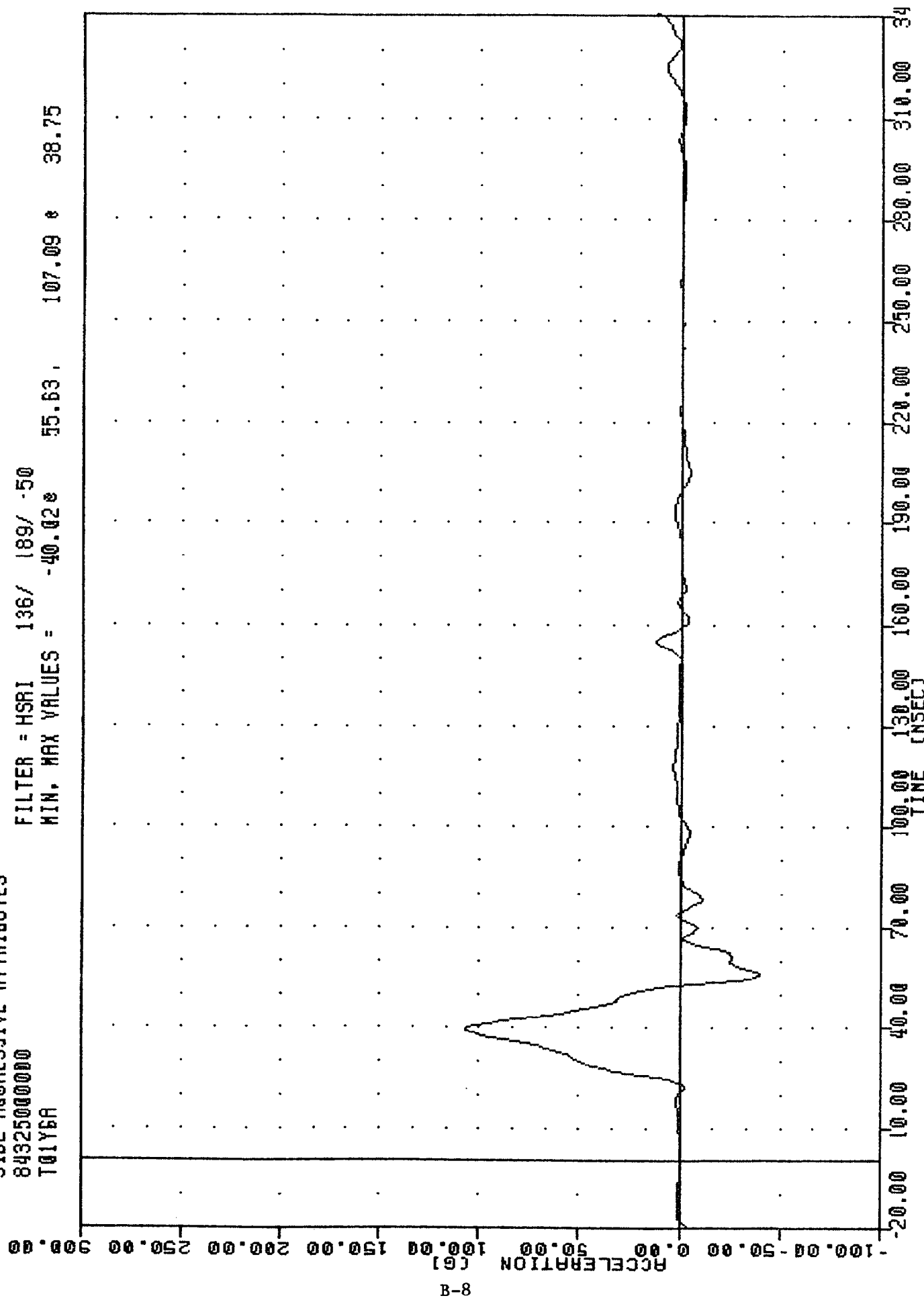
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01Y6A

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -40.02 55.63 , 107.09 38.75

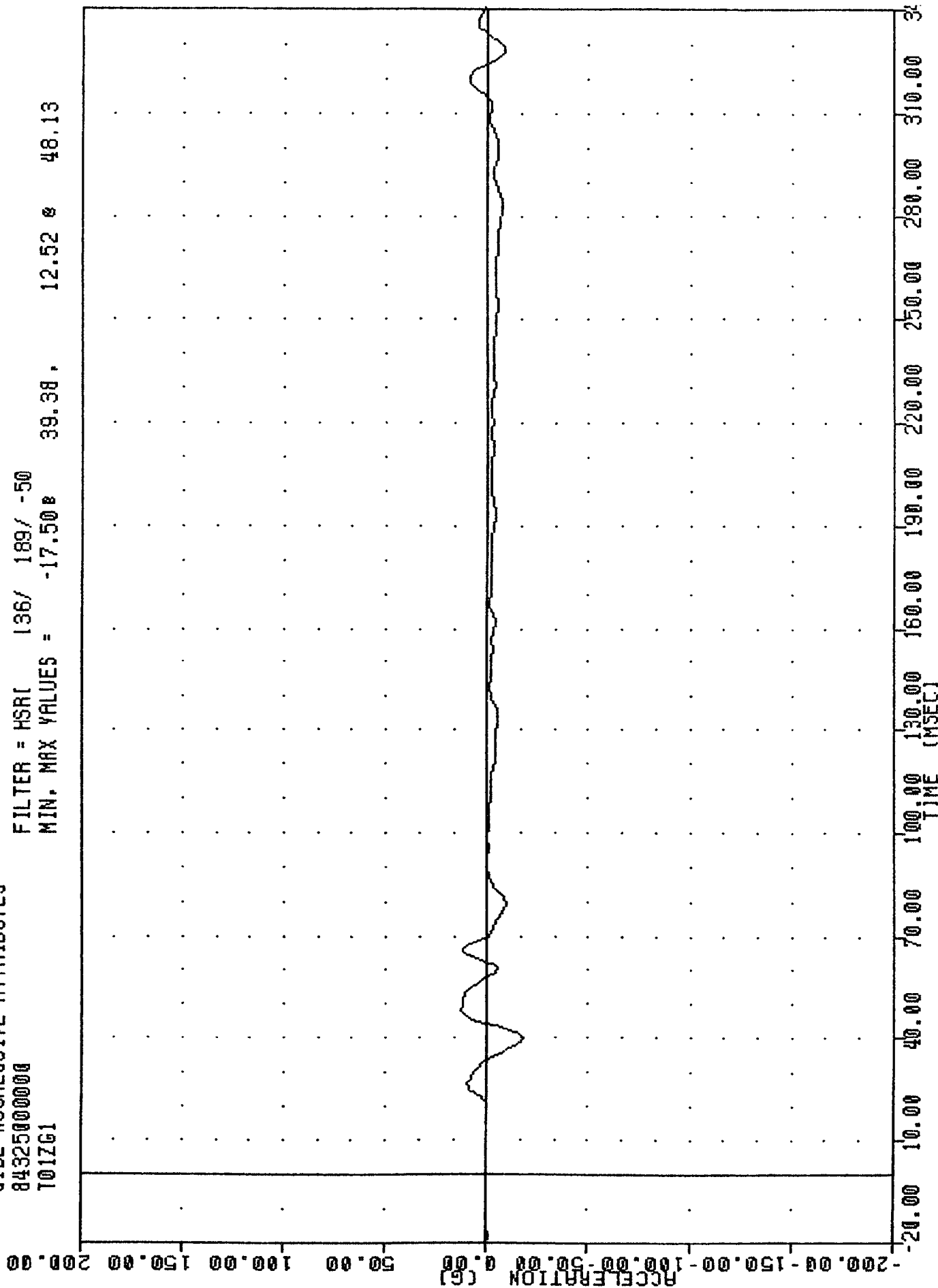


B-8

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

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 701ZG1

FILTER = HSR1 136/ 189/ -50
 MIN. MAX VALUES = -17.500 39.38, 12.52 48.13



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

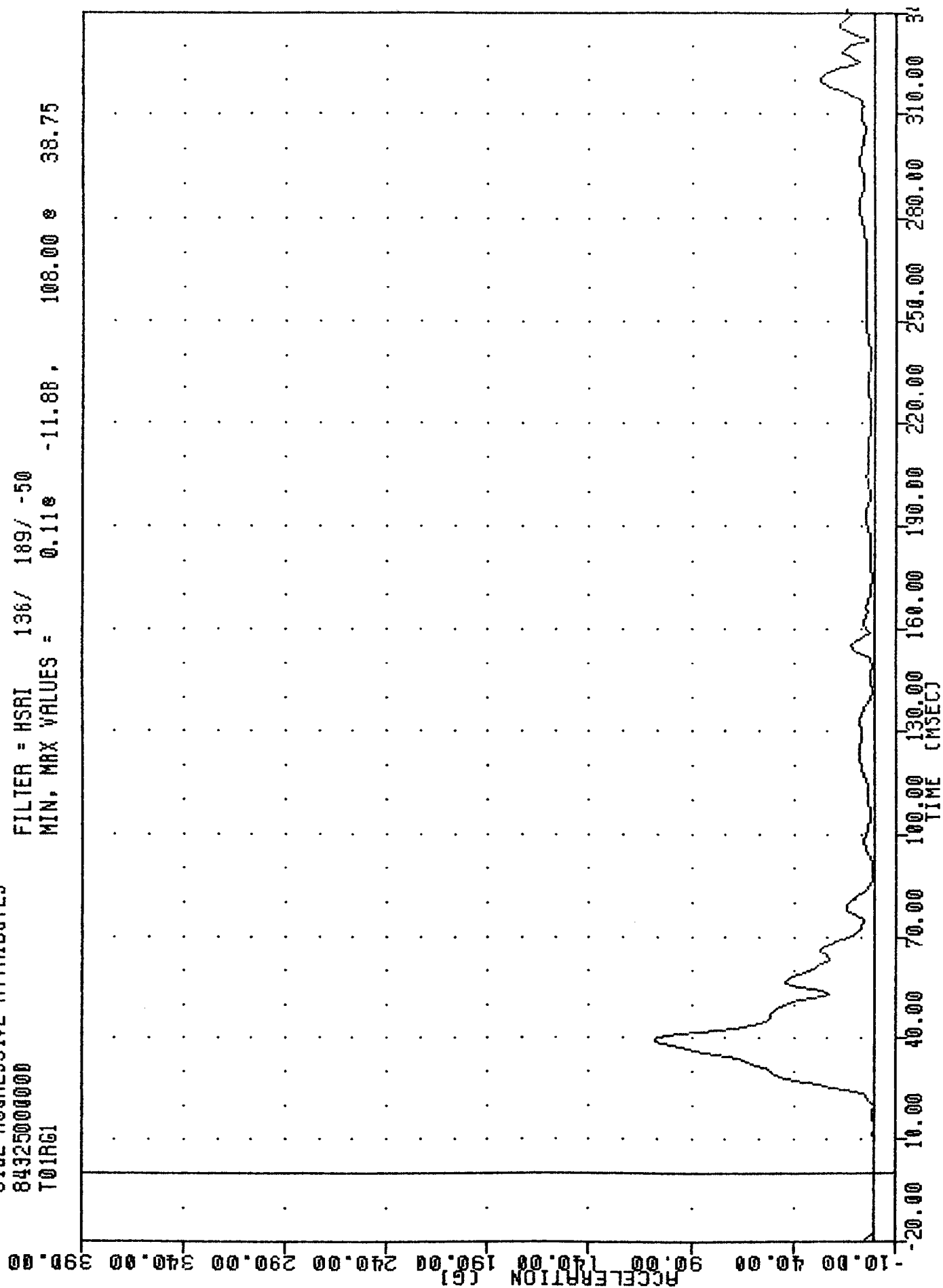
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01RG1

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.11e -11.88, 108.00 e 38.75



B-10

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESULTANT

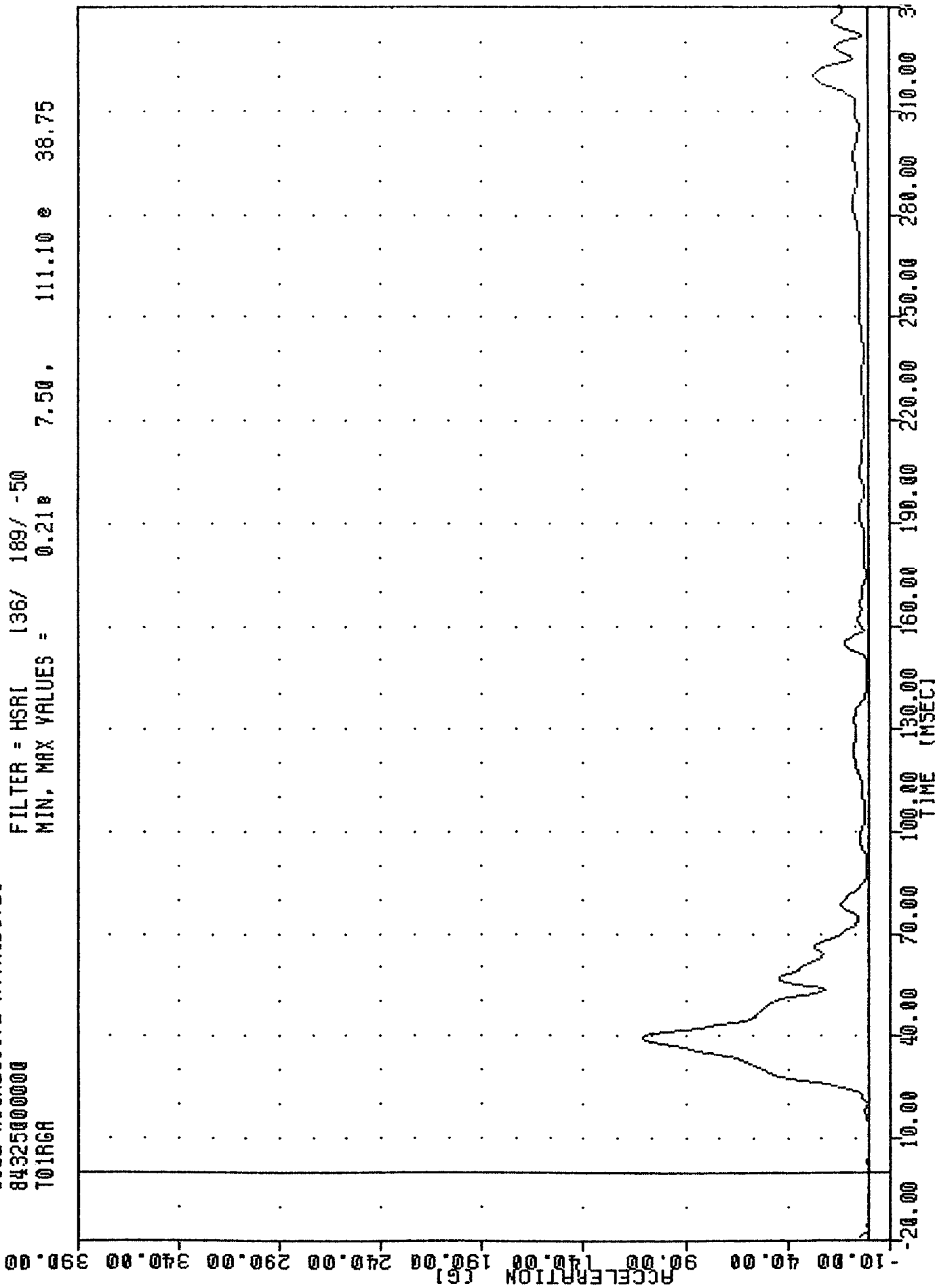
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01RGA

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.218 7.50, 111.10 e 38.75



B-11

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

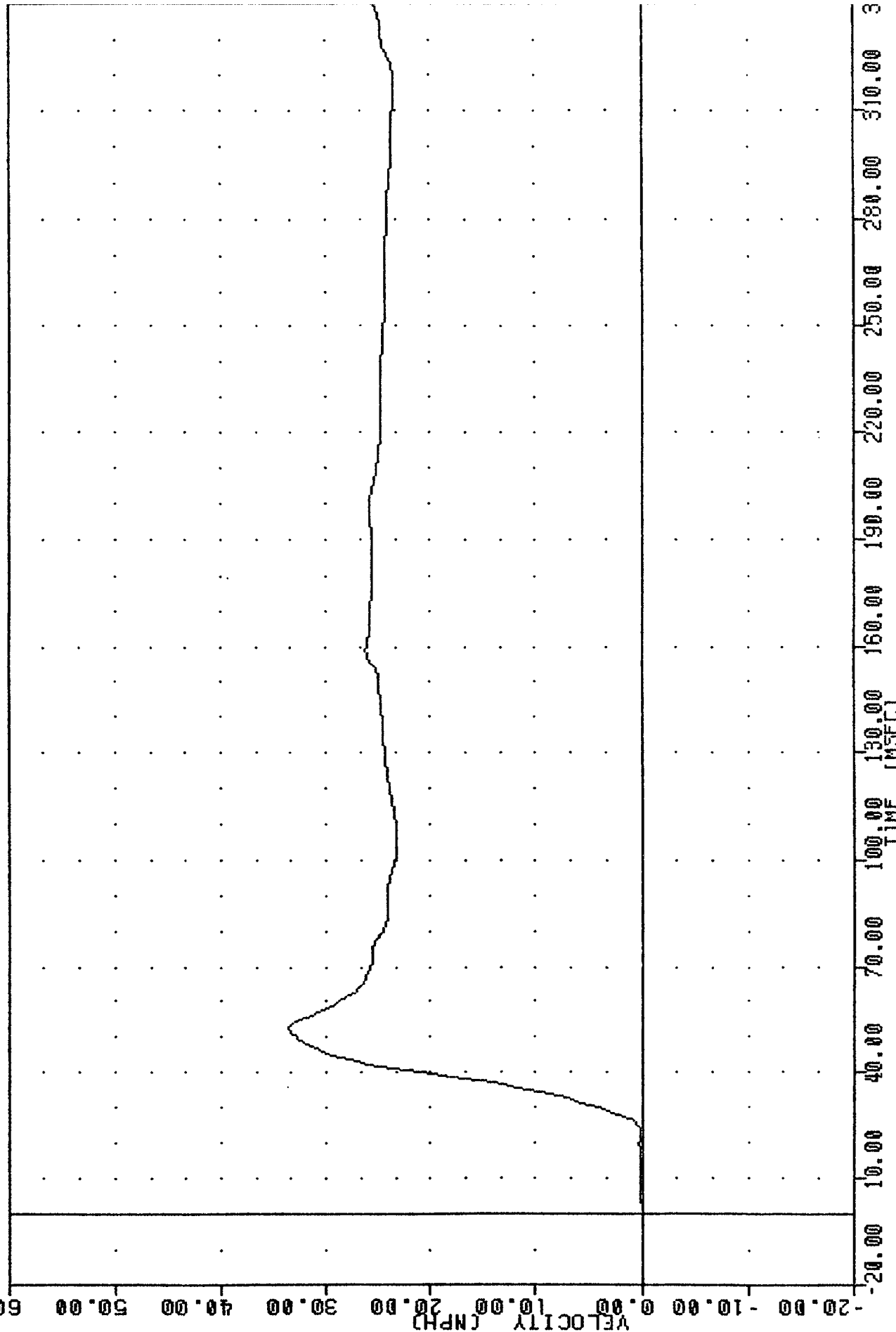
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01YV1

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.08 33.55 51.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGI

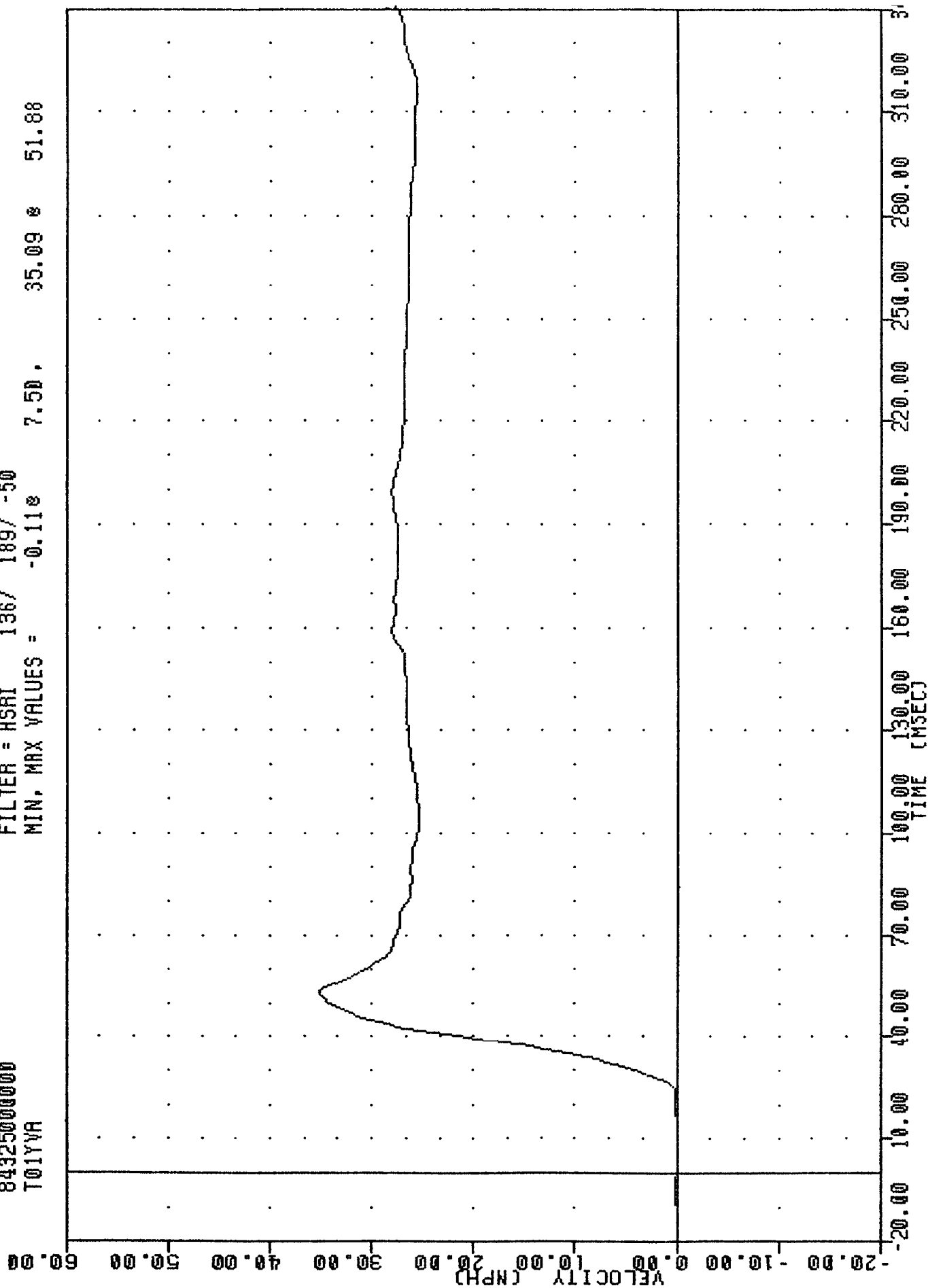
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01YVA

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.118 7.50, 35.09 51.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGA

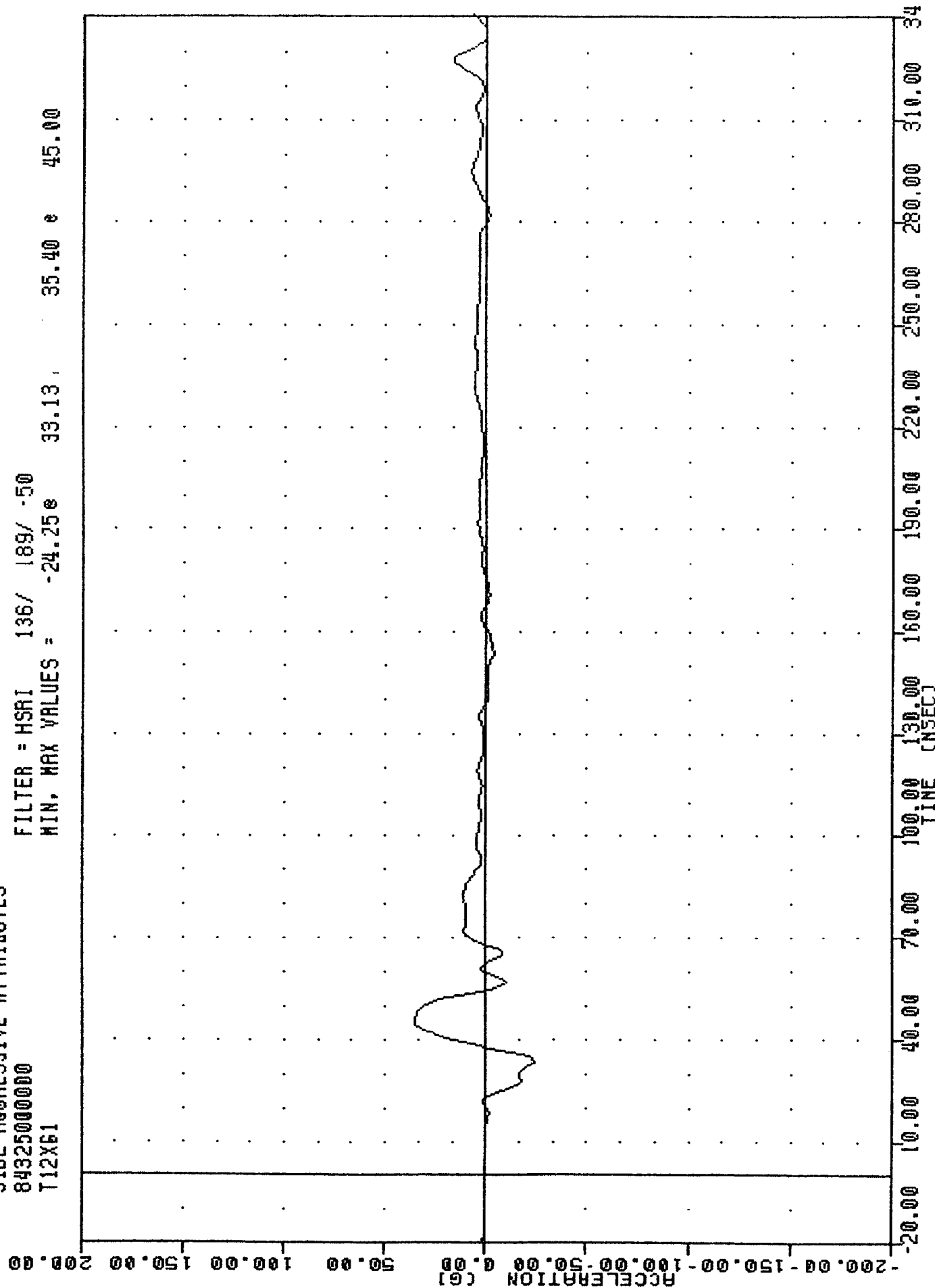
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T12X61

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -24.25e 33.13 , 35.40 e 45.00



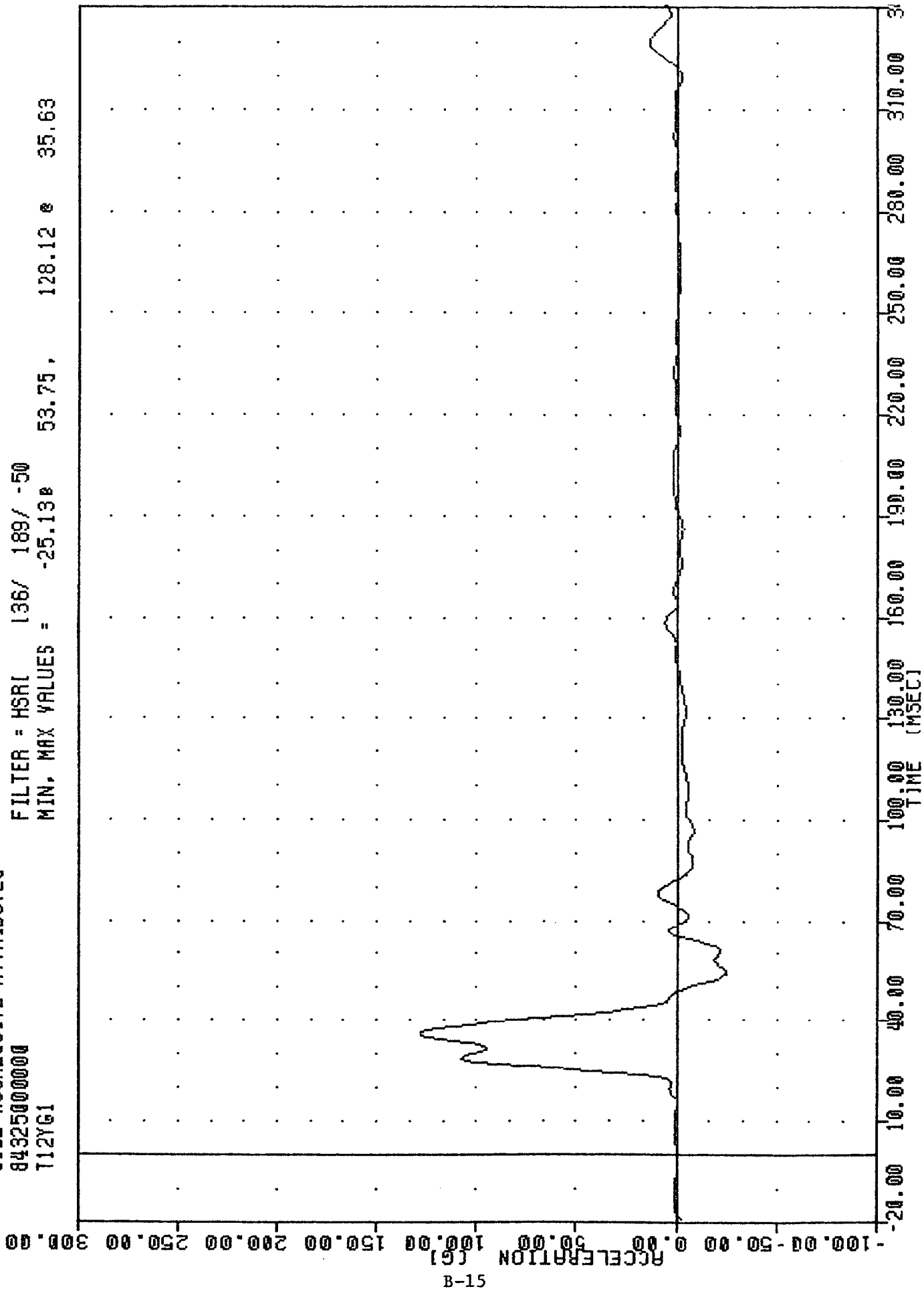
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T12Y61

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -25.13 53.75, 128.12 35.63



B-15

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

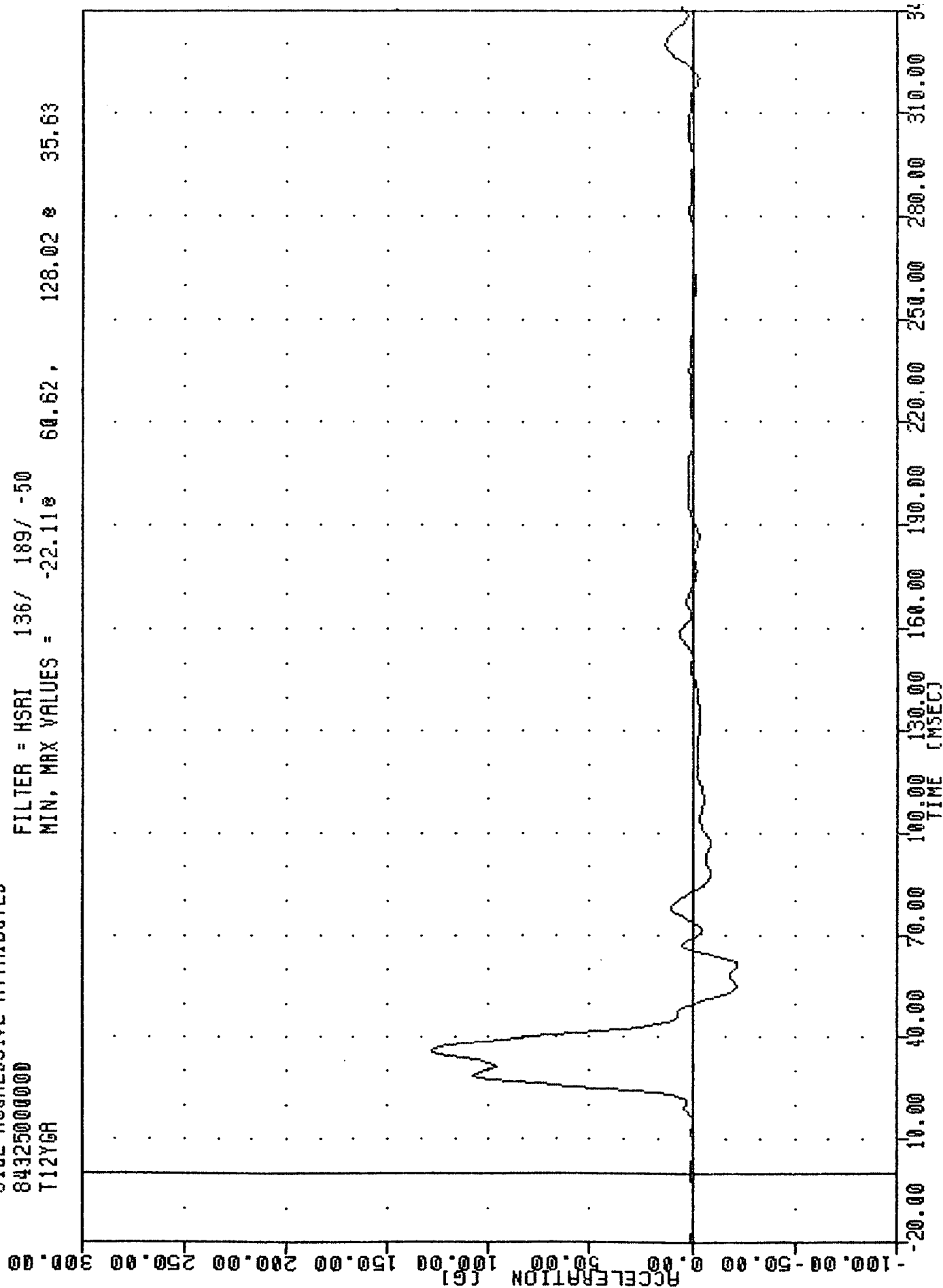
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T12Y6A

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -22.118 60.62, 128.02 35.63



B-16

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

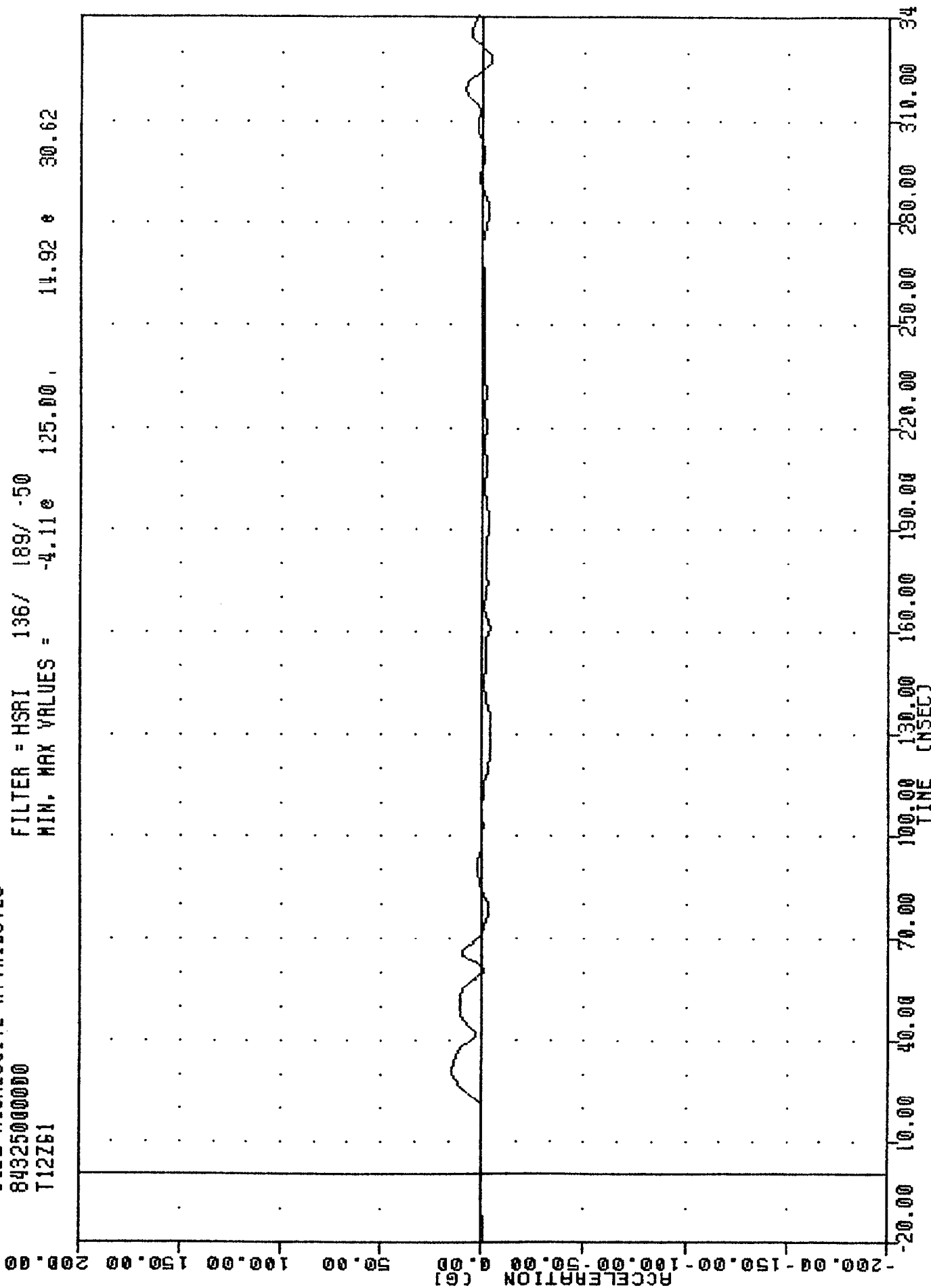
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T12Z61

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -4.11e 125.00 , 14.92 e 30.62



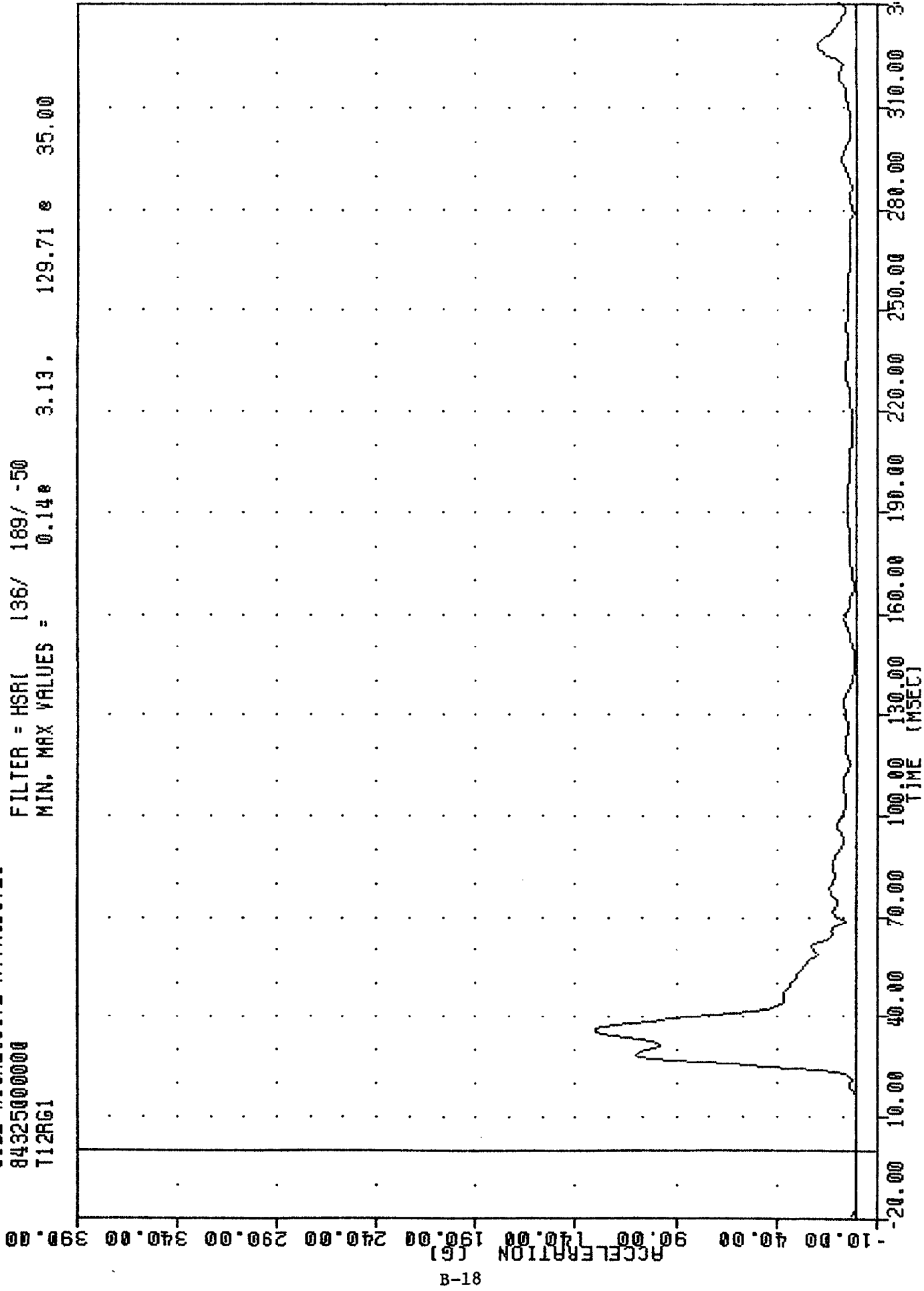
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T12RG1

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = 0.14e 3.13, 129.71 e 35.00



B-18

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT

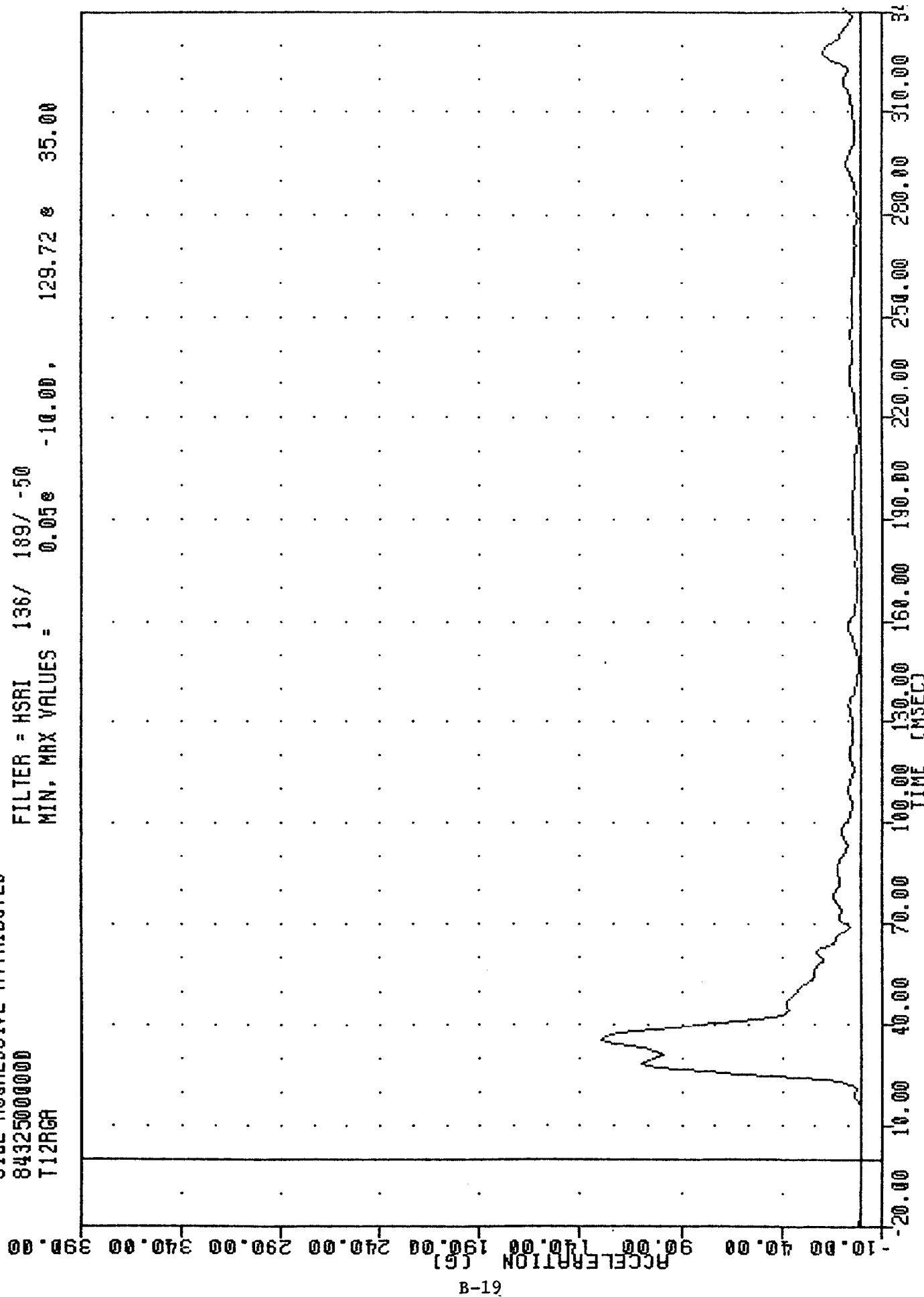
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T12RGA

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.05e -10.00, 129.72 e 35.00



B-19

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

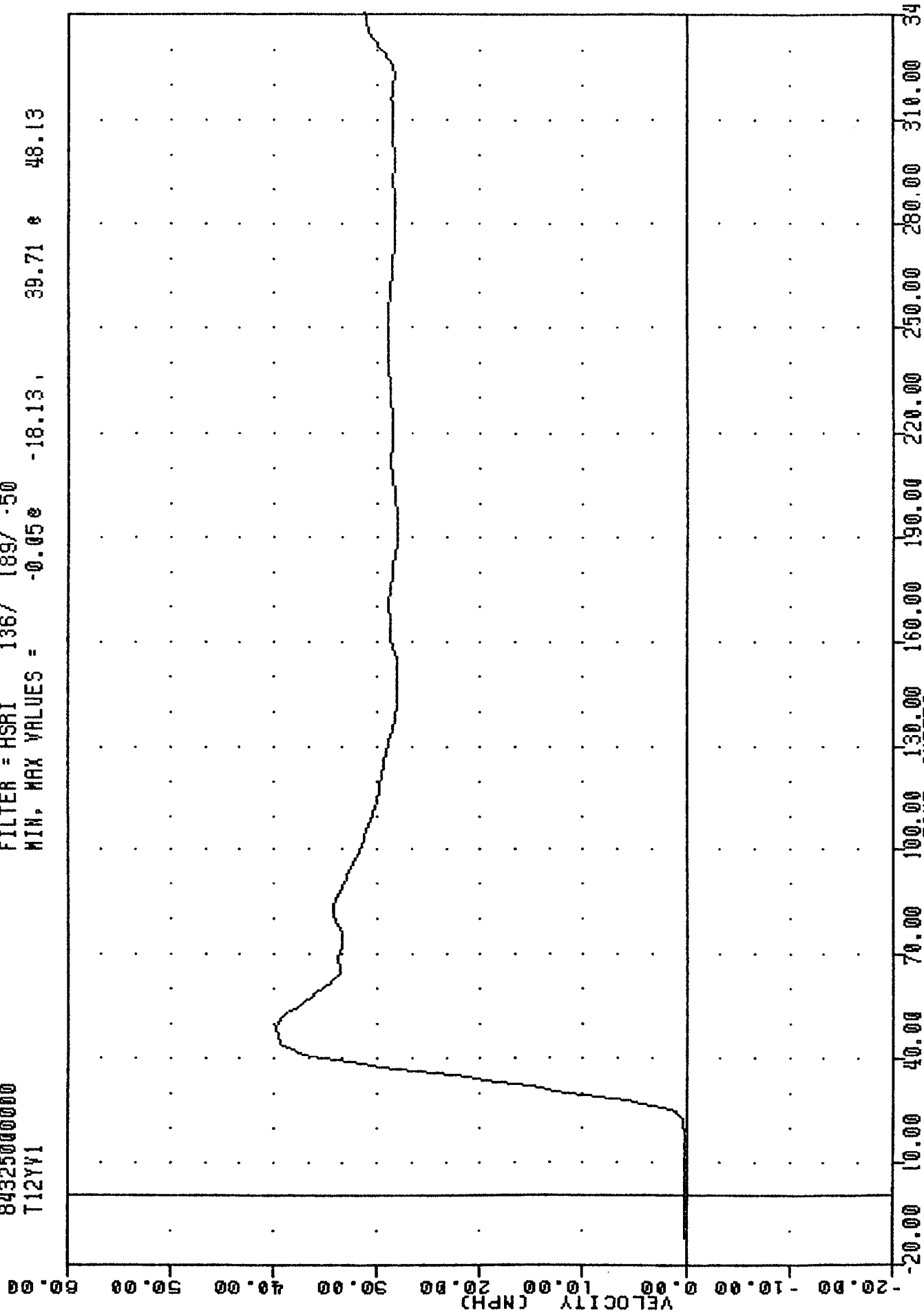
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T12YV1

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.05e -18.13, 39.71 e 48.13



B-20

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGI

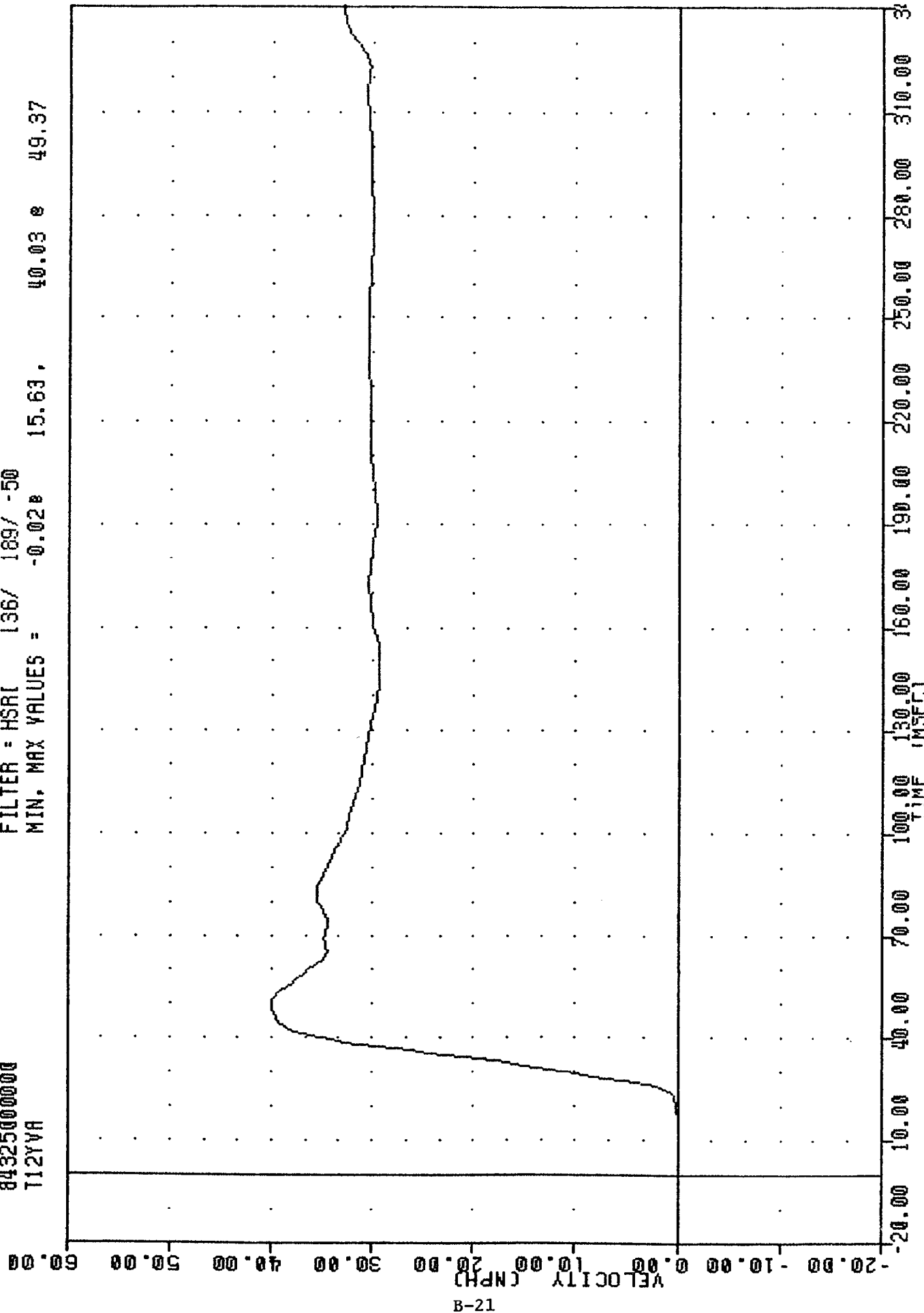
SIDE IMPRESSIVE HITHIBUTES

84325000000

T12YVA

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.02 15.63, 40.03 49.37



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGA

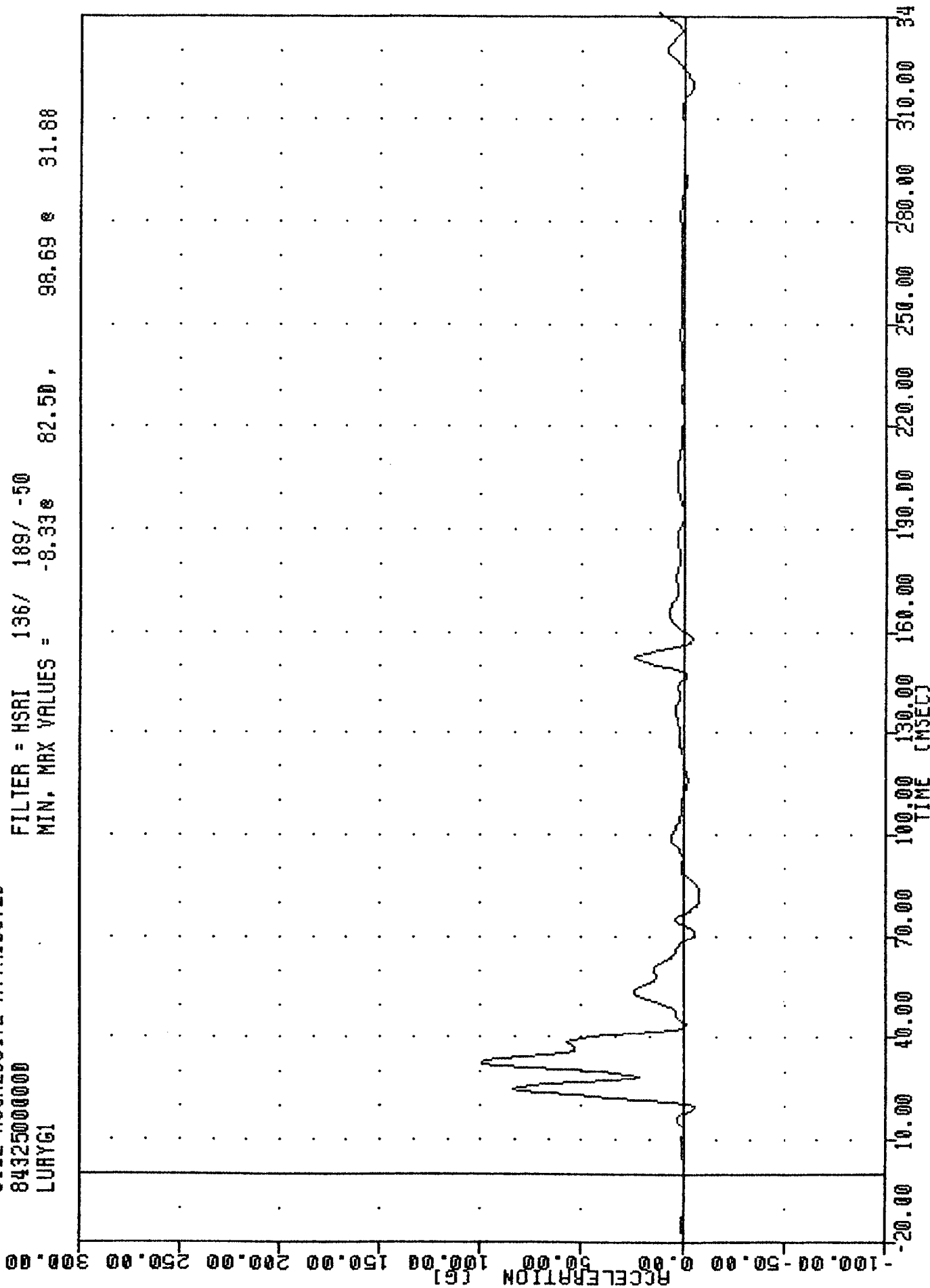
SIDE AGGRESSIVE ATTRIBUTES

84325000000

LURYG1

FILTER = HSRI 136/ 189/ -50

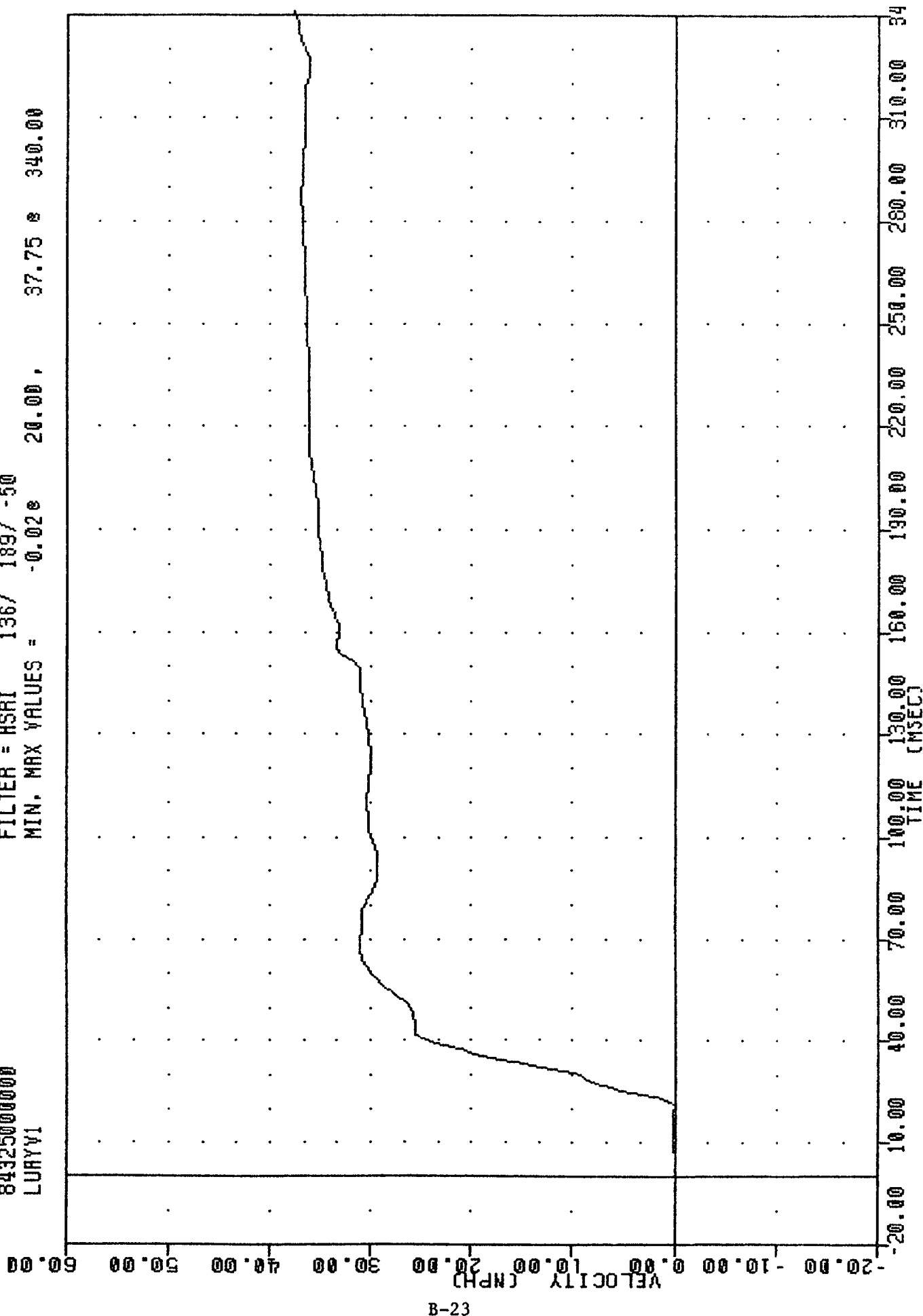
MIN. MAX VALUES = -8.33e 82.50, 98.69 e 31.88



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

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LURYV1

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.020 20.00, 37.75 340.00



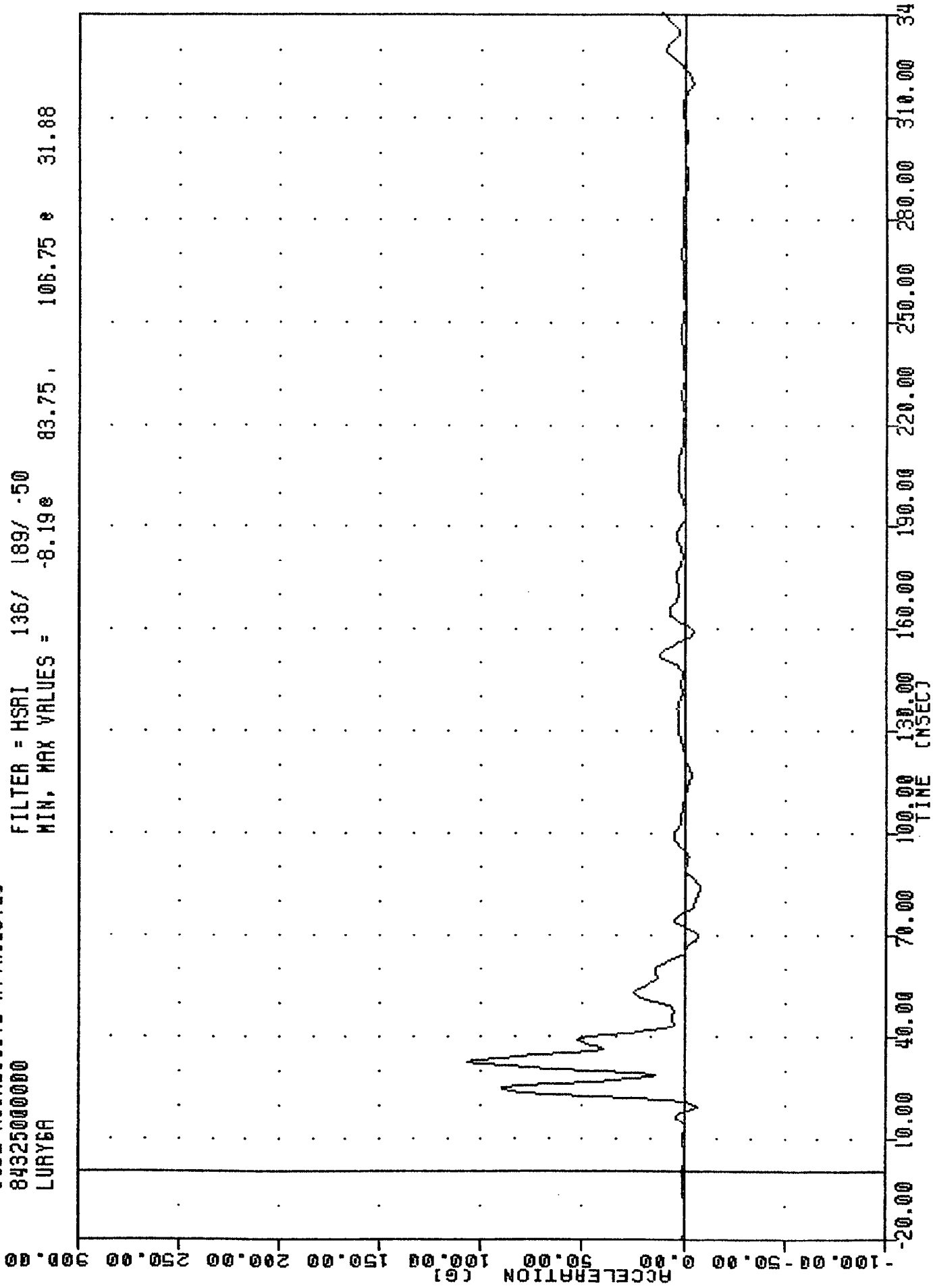
SIDE AGGRESSIVE ATTRIBUTES

84325000000

LURY6A

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -8.19e 83.75 , 106.75 e 31.88



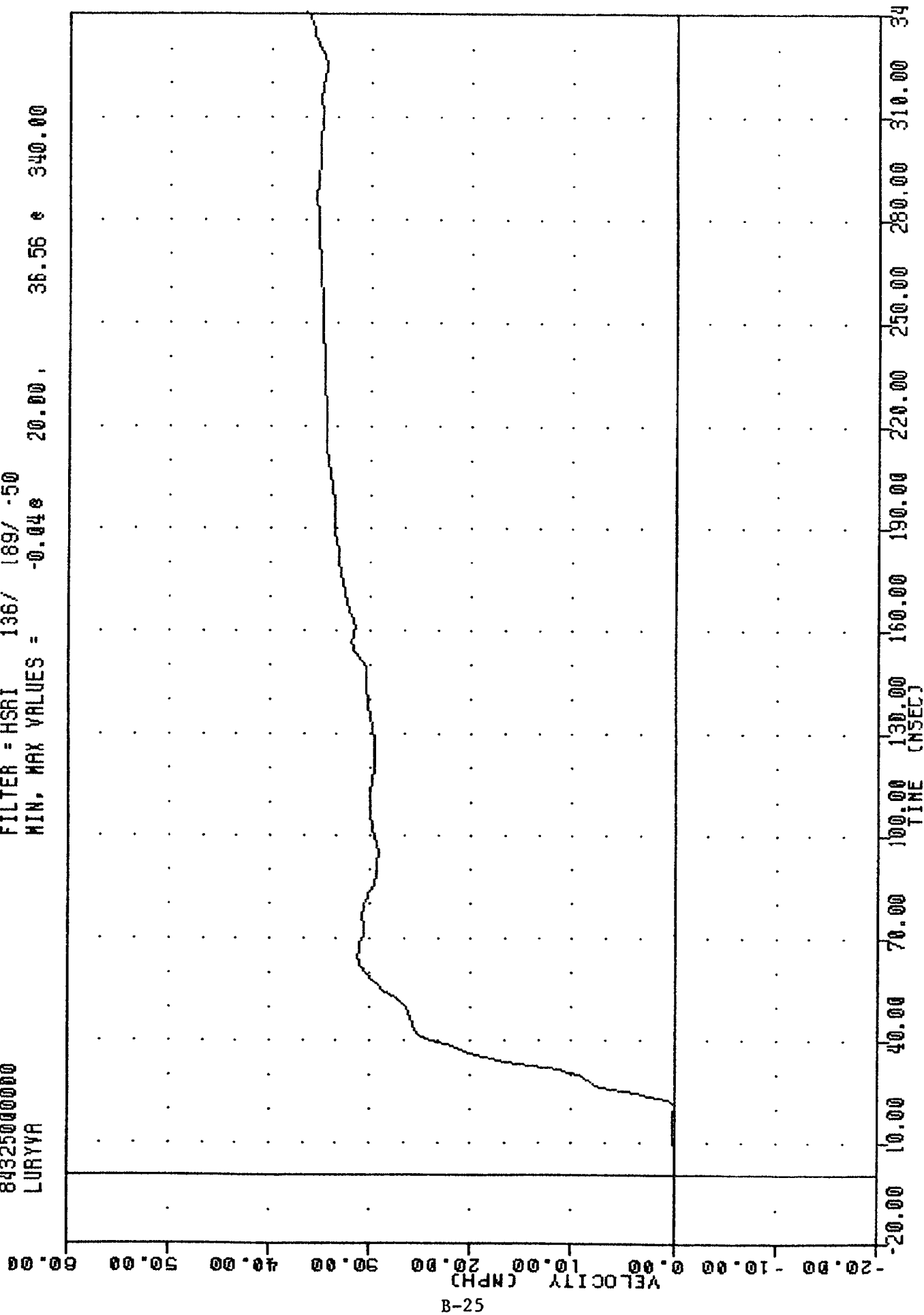
SIDE AGGRESSIVE ATTRIBUTES

84325000000

LURYVA

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.040 20.00, 36.56 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYGA

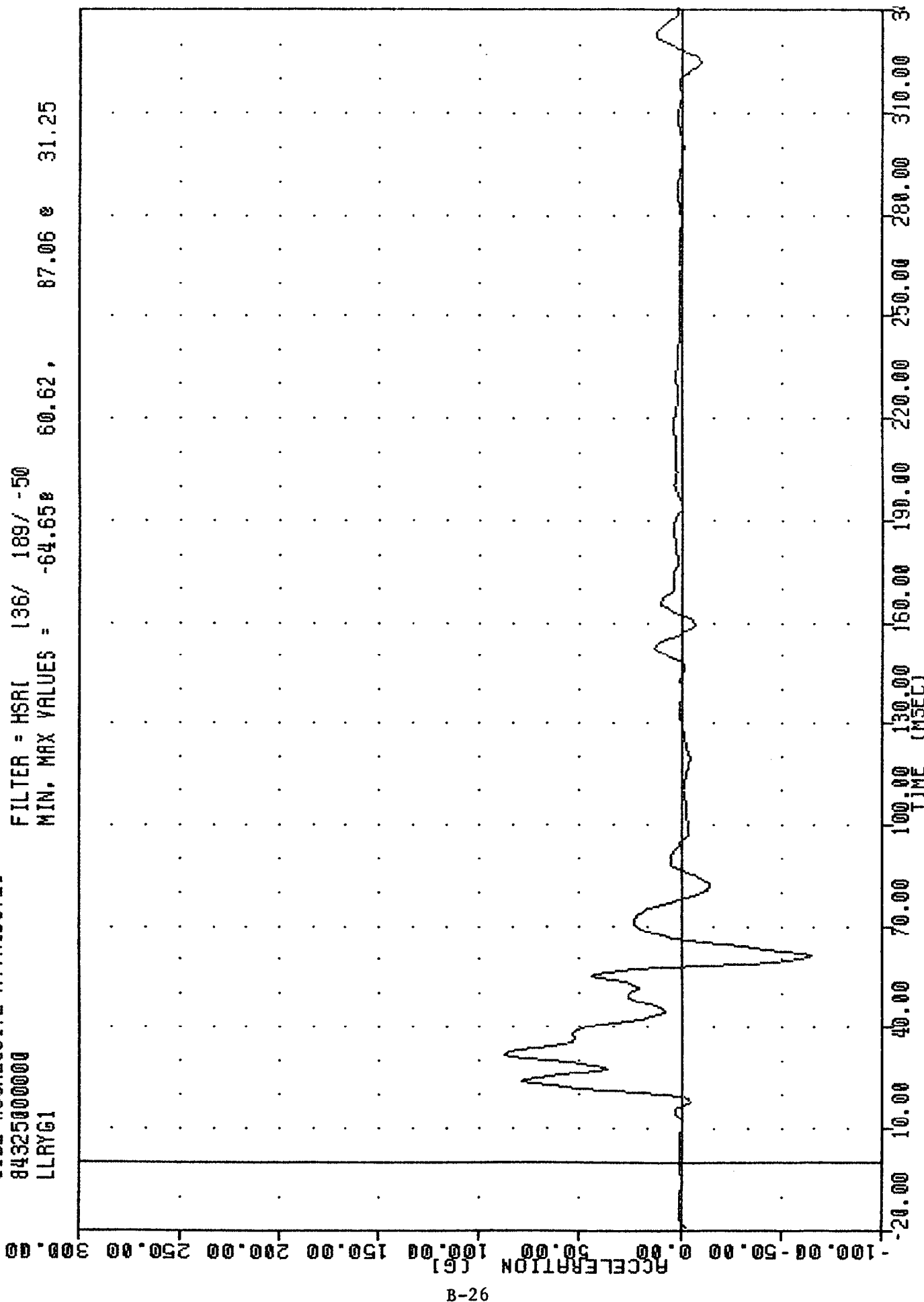
SIDE AGGRESSIVE ATTRIBUTES

84325000000

LLRYG1

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = -64.658 60.62 , 87.06 31.25

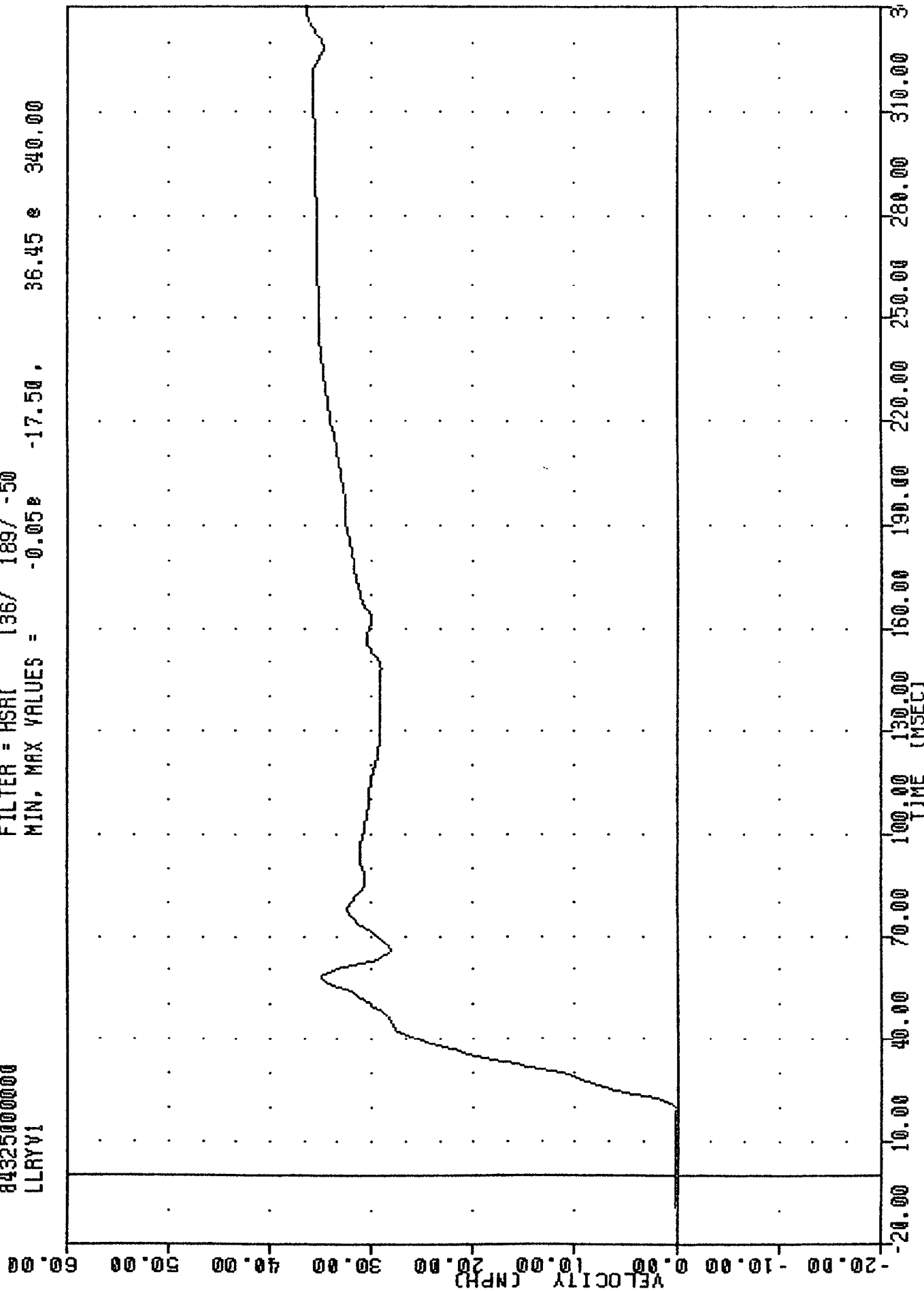


B-26

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

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LLAYV1

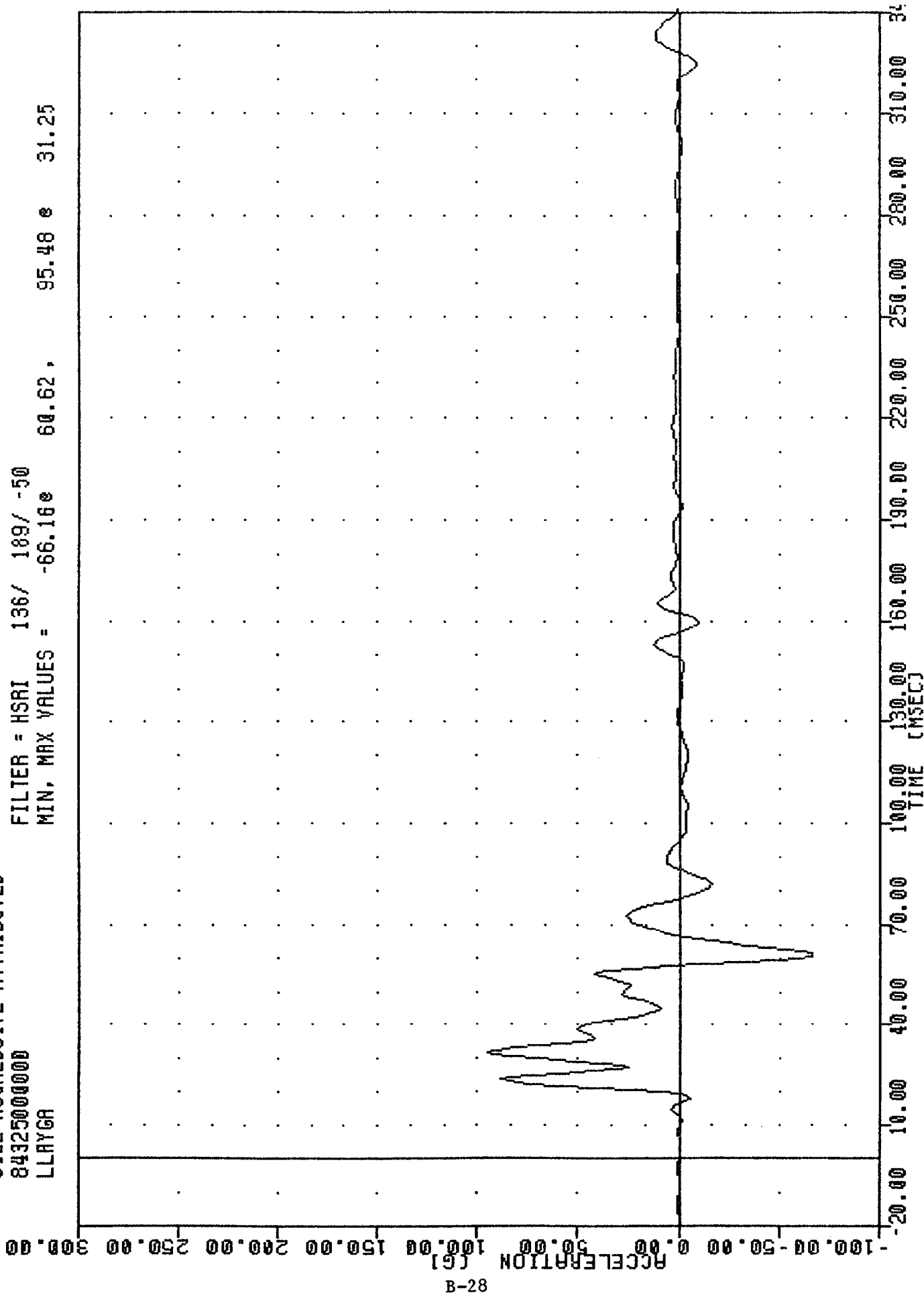
FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.050 -17.50 , 36.45 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLAYG1

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LRAYGA

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -66.16 60.62, 95.48 31.25



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

SIDE AGGRESSIVE ATTRIBUTES

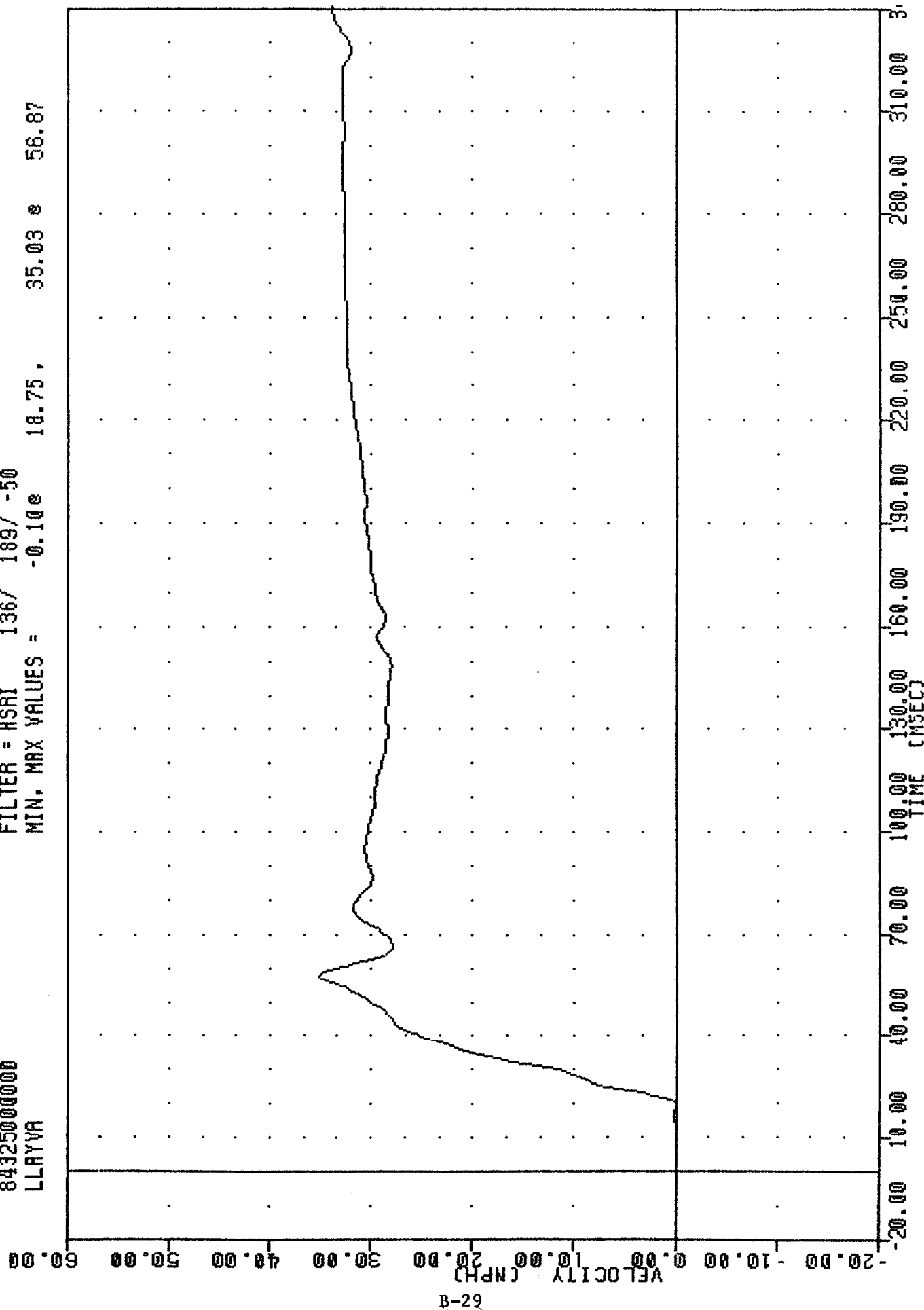
84325000000

LLRYVA

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.10e

18.75, 35.03 e 56.87



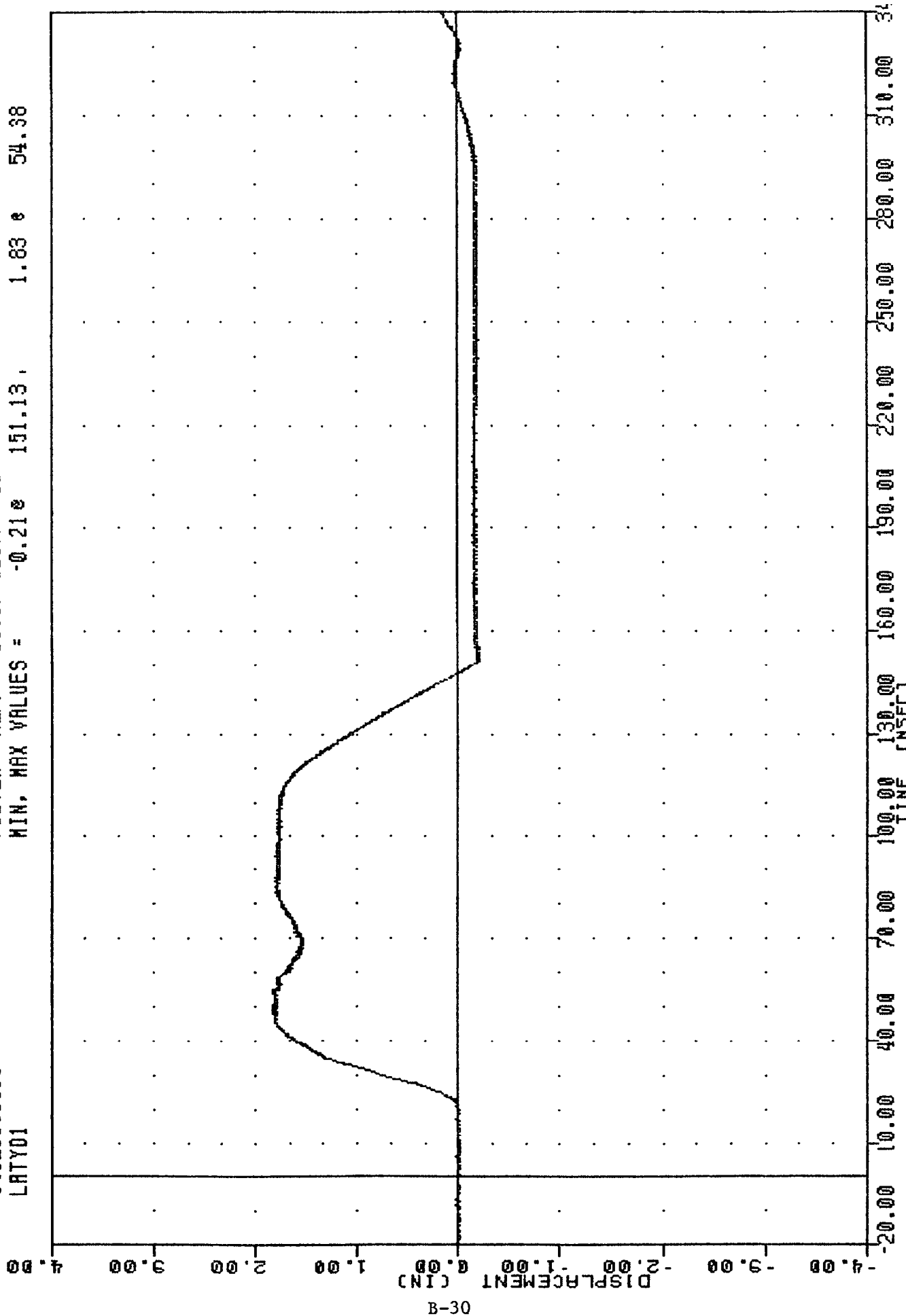
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLRYGA

7031200
SIDE AGGRESSIVE ATTRIBUTES
84325000000
LATY01

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -0.21e 151.13,

1.83 e 54.38



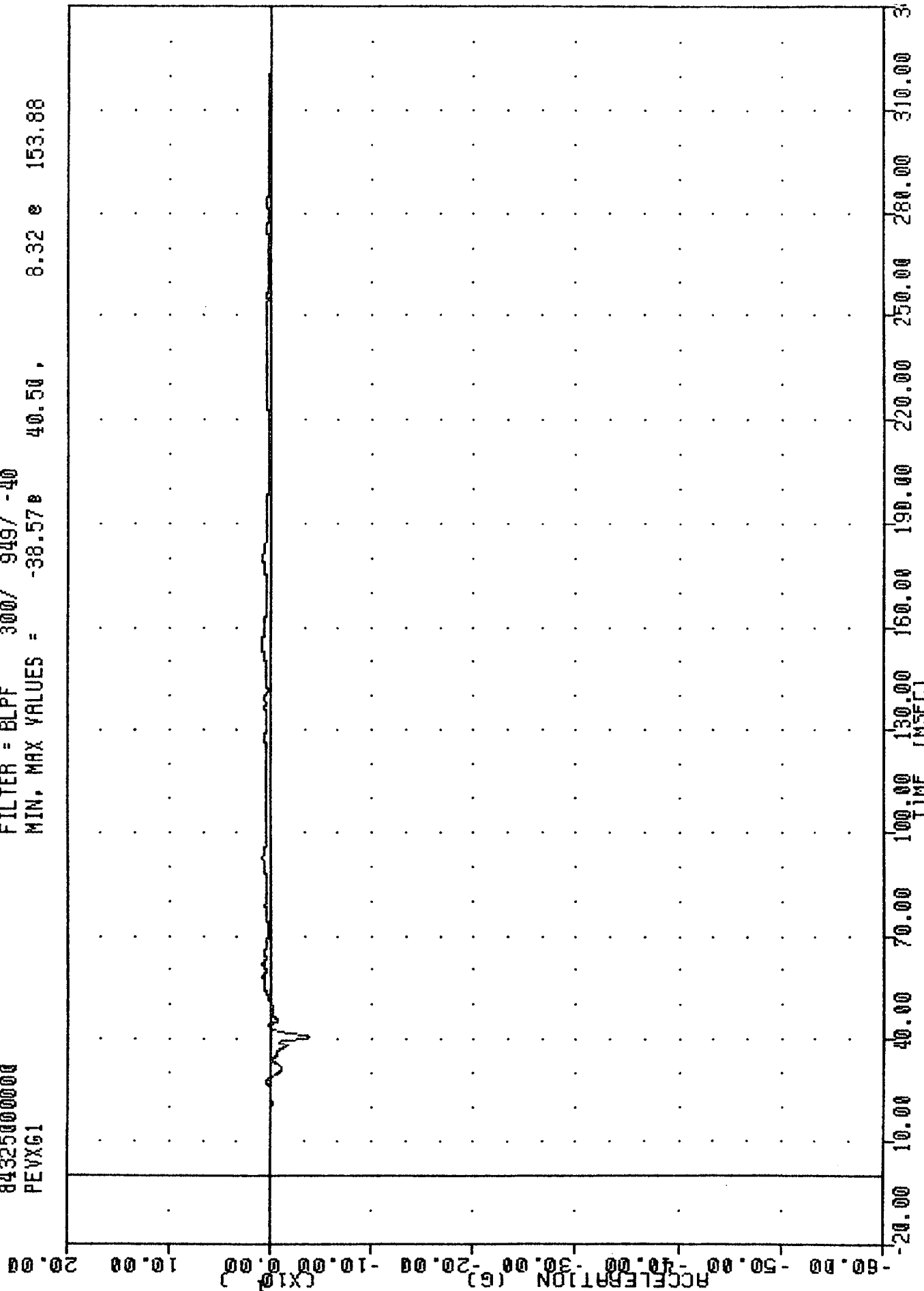
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT RIB TO SPINE DISPLACEMENT INCHES

INC 04112W
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 PEVXG1

FLU1 UNIC 27-NOV-04 10:22:30

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -38.57 40.50, 8.32 153.88

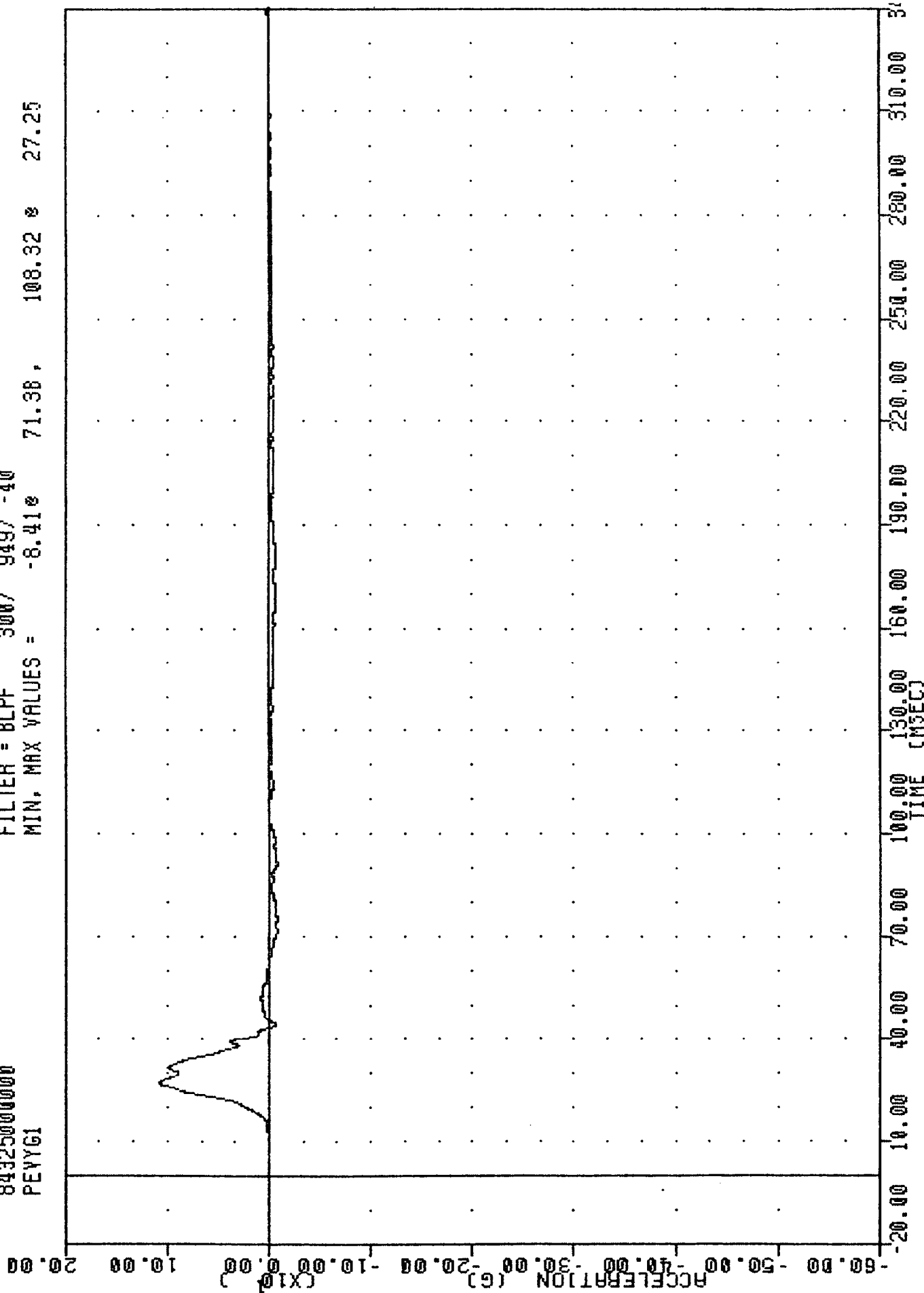


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS ACCELERATION X AXIS

INL 04112W
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 PEY61

FLU1 UNIC 27-11-04 10-22-30

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -8.41e 71.38, 108.32 e 27.25



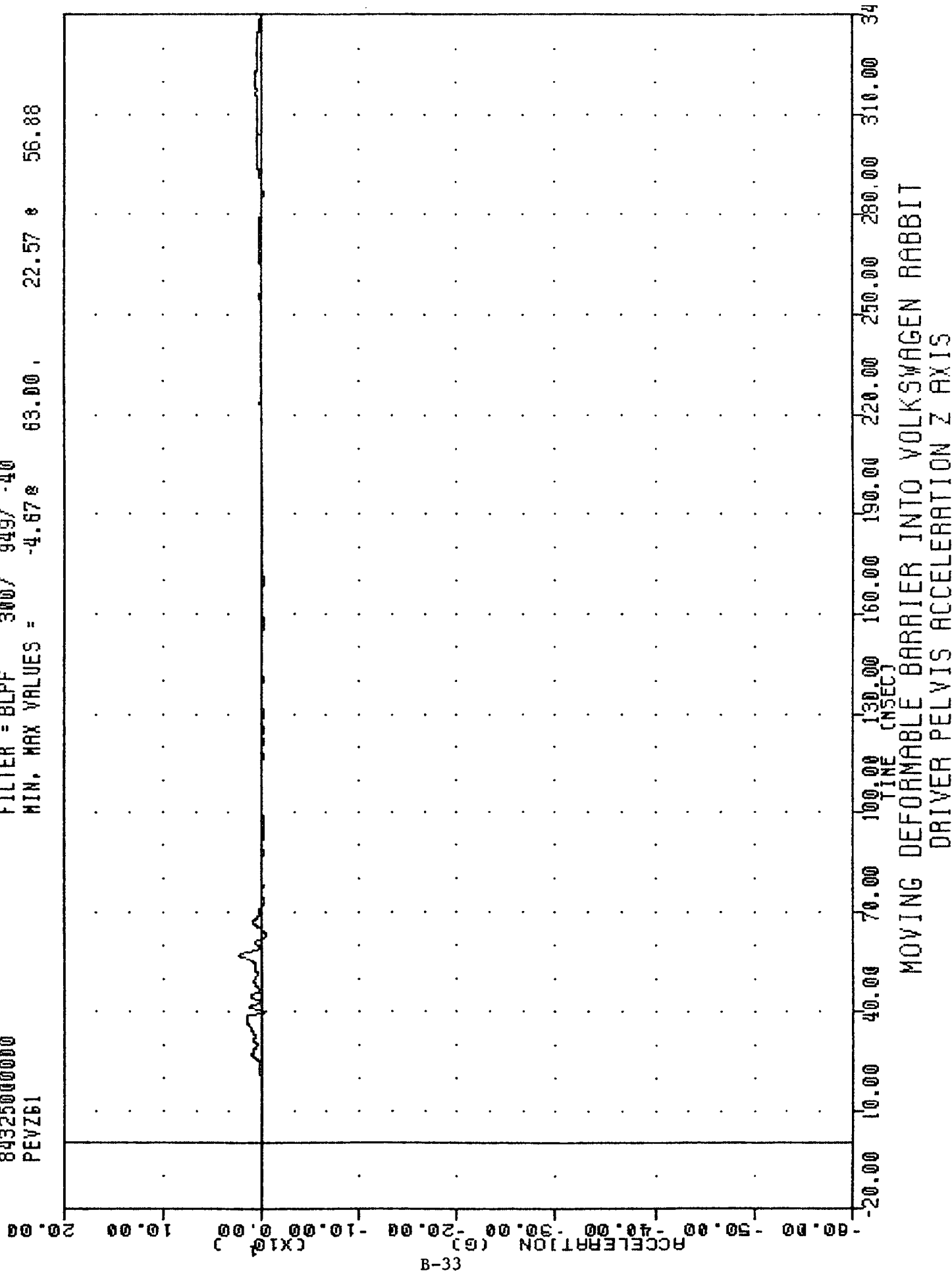
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS ACCELERATION Y AXIS

INL 04112W
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 PEVZ61

FLUJ UNIE 27-MAY-04 10:22:30

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -4.67e 63.00, 22.57 e 56.88



SIDE AGGRESSIVE ATTRIBUTES

84325000000

PEVRG1

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 0.05e -8.63, 108.81 e 27.25

79.00

69.00

59.00

49.00

39.00

29.00

19.00

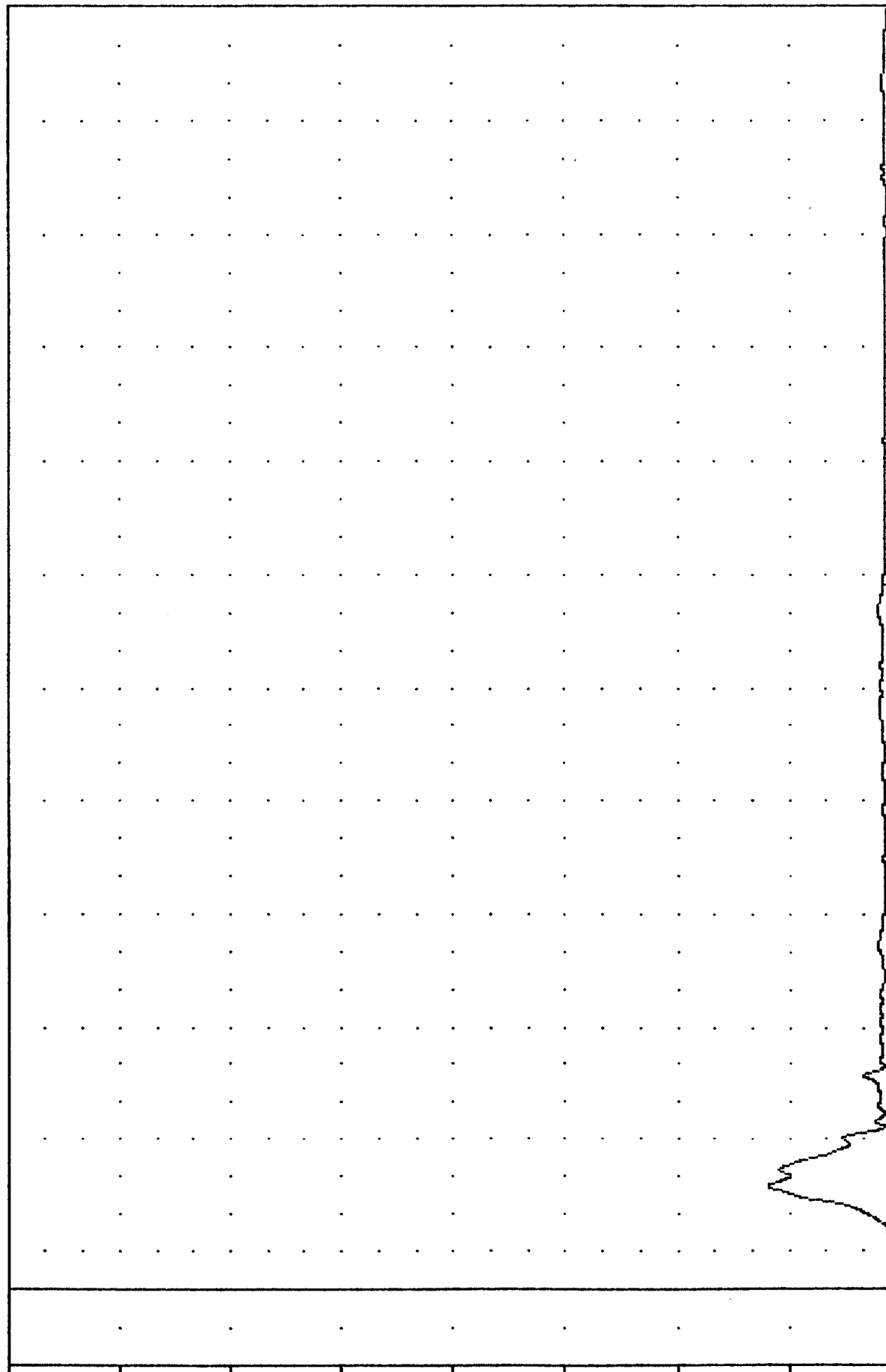
9.00

-1.00

(X10⁴)

ACCELERATION (G)

B-34



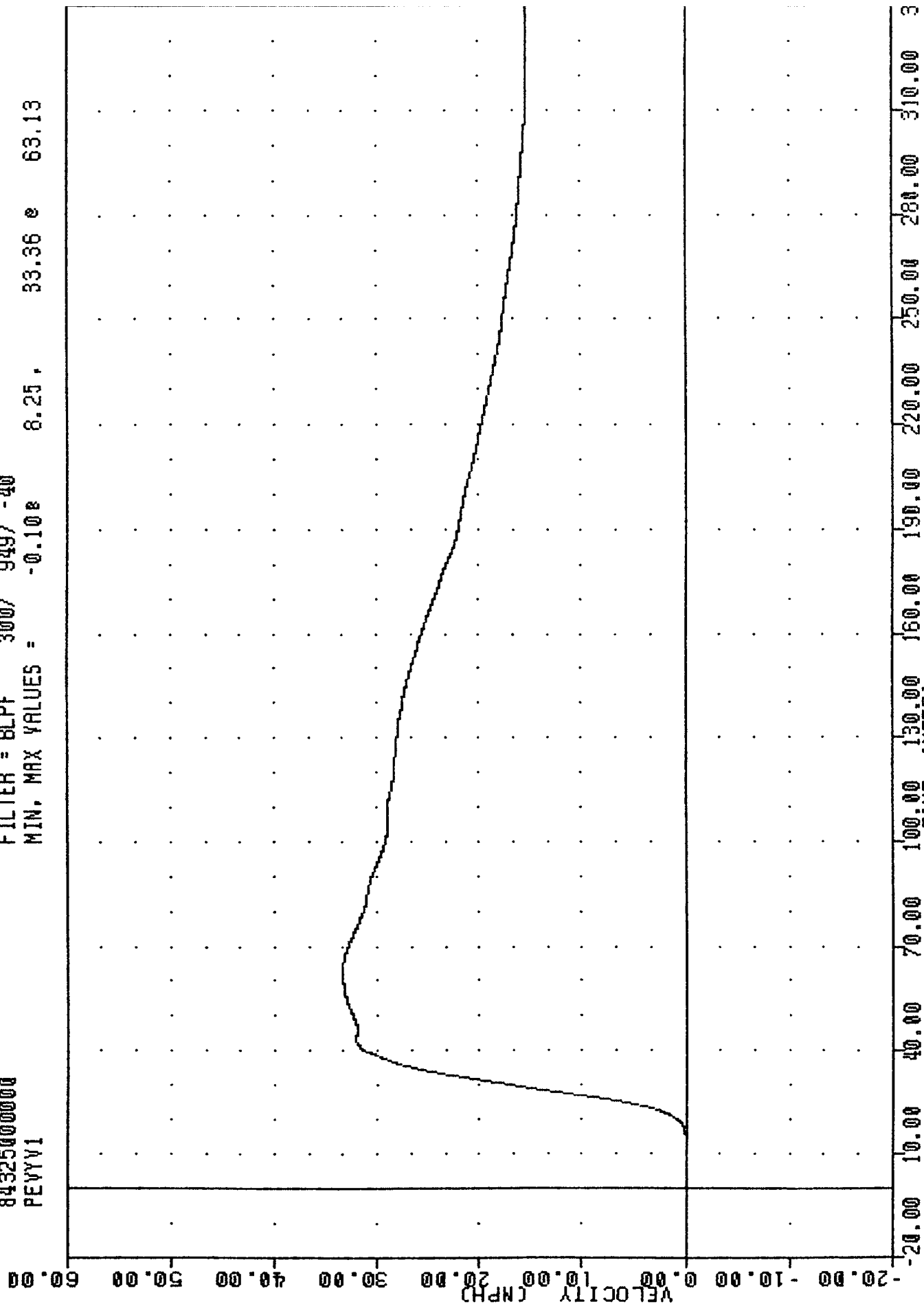
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 3

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS RESULTANT

INL 04112W
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 PEVYV1

FLUI UNIC 27-NUV-04 10-20-20

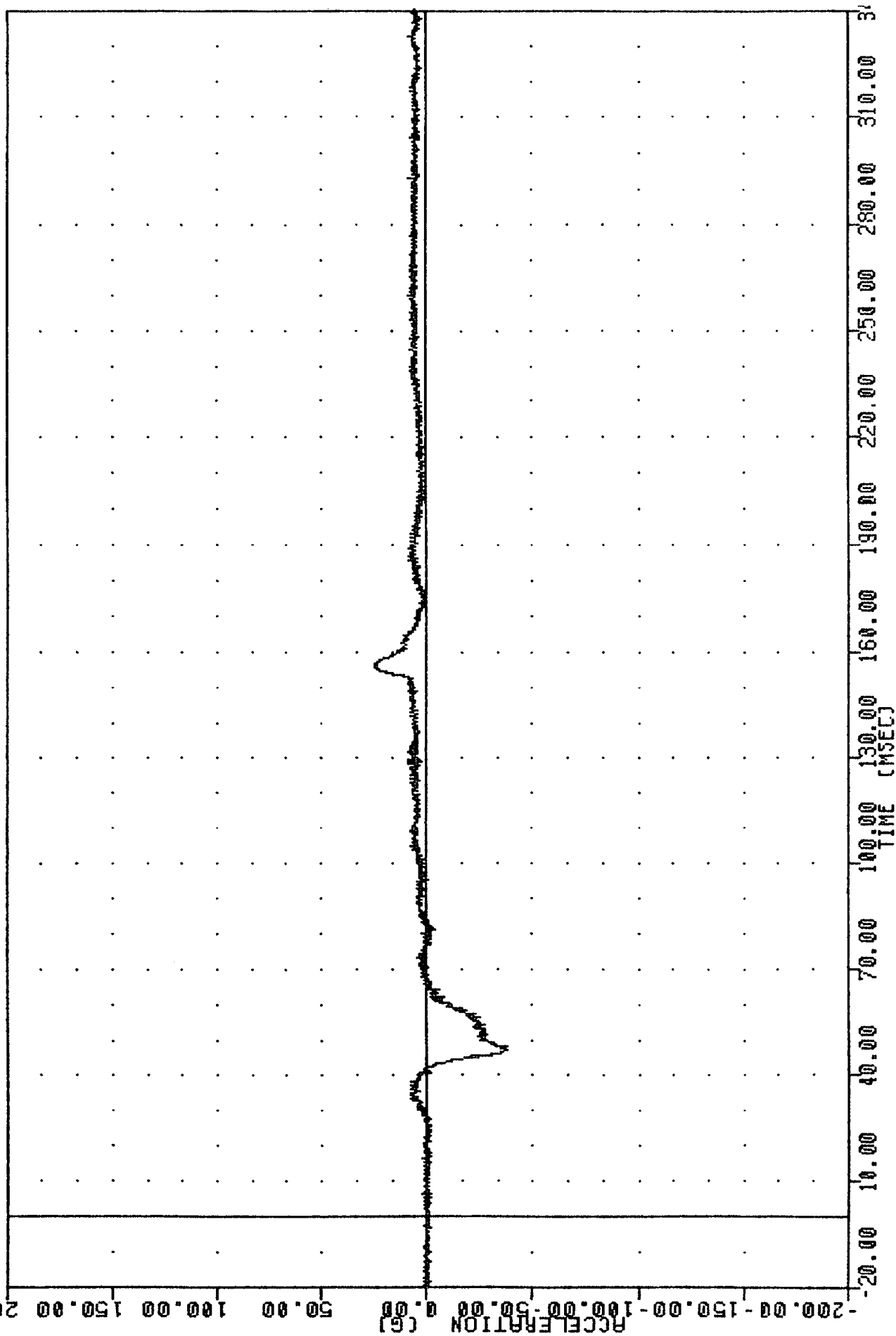
FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.10e 8.25. 33.36 e 63.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING PEVYGI

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 HEOXG3

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -38.31 47.13 , 24.98 155.63

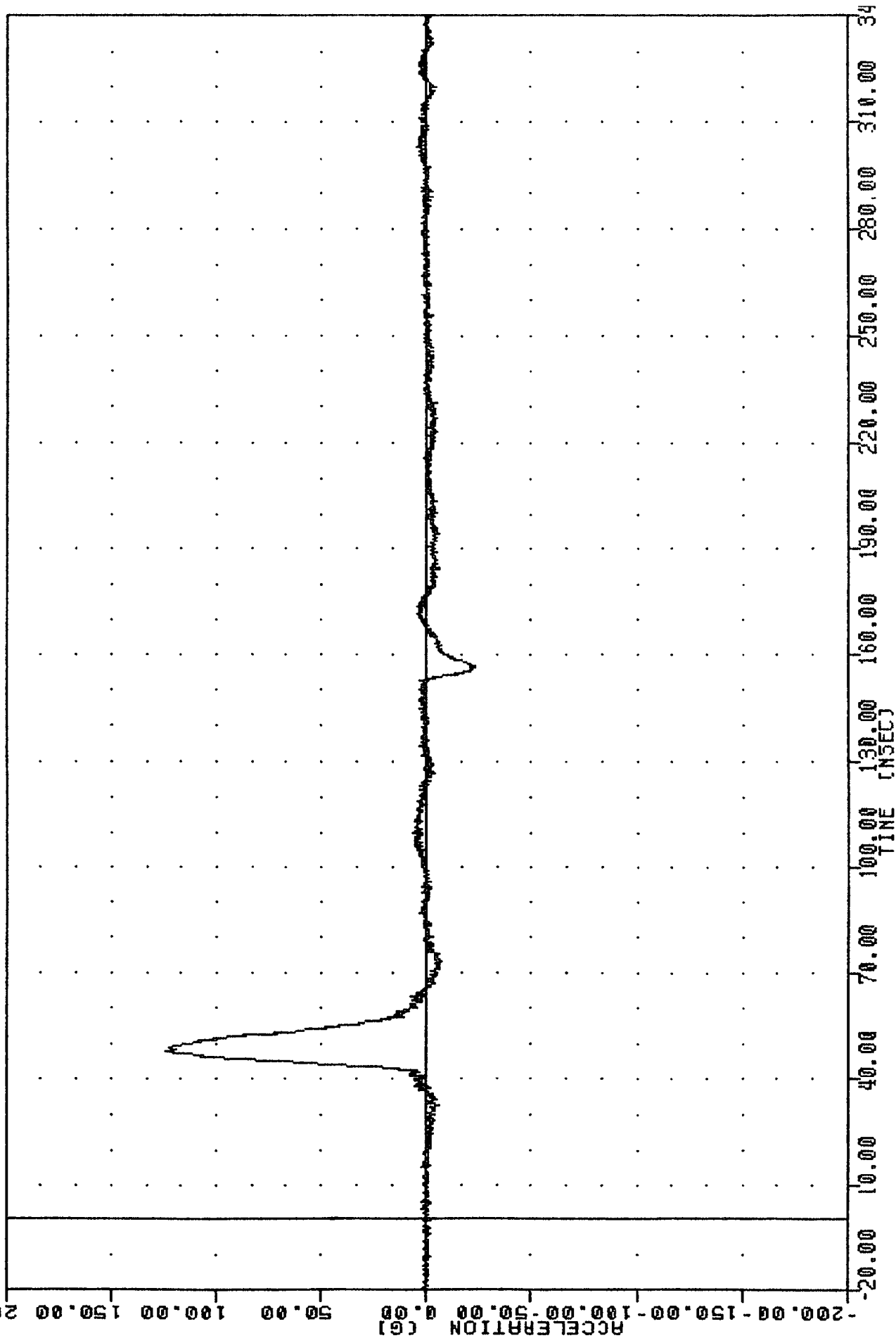


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION X AXIS

SIDE AGGRESSIVE ATTRIBUTES
84325000000
HEDY53

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -22.91 156.00 , 123.81 47.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Y AXIS

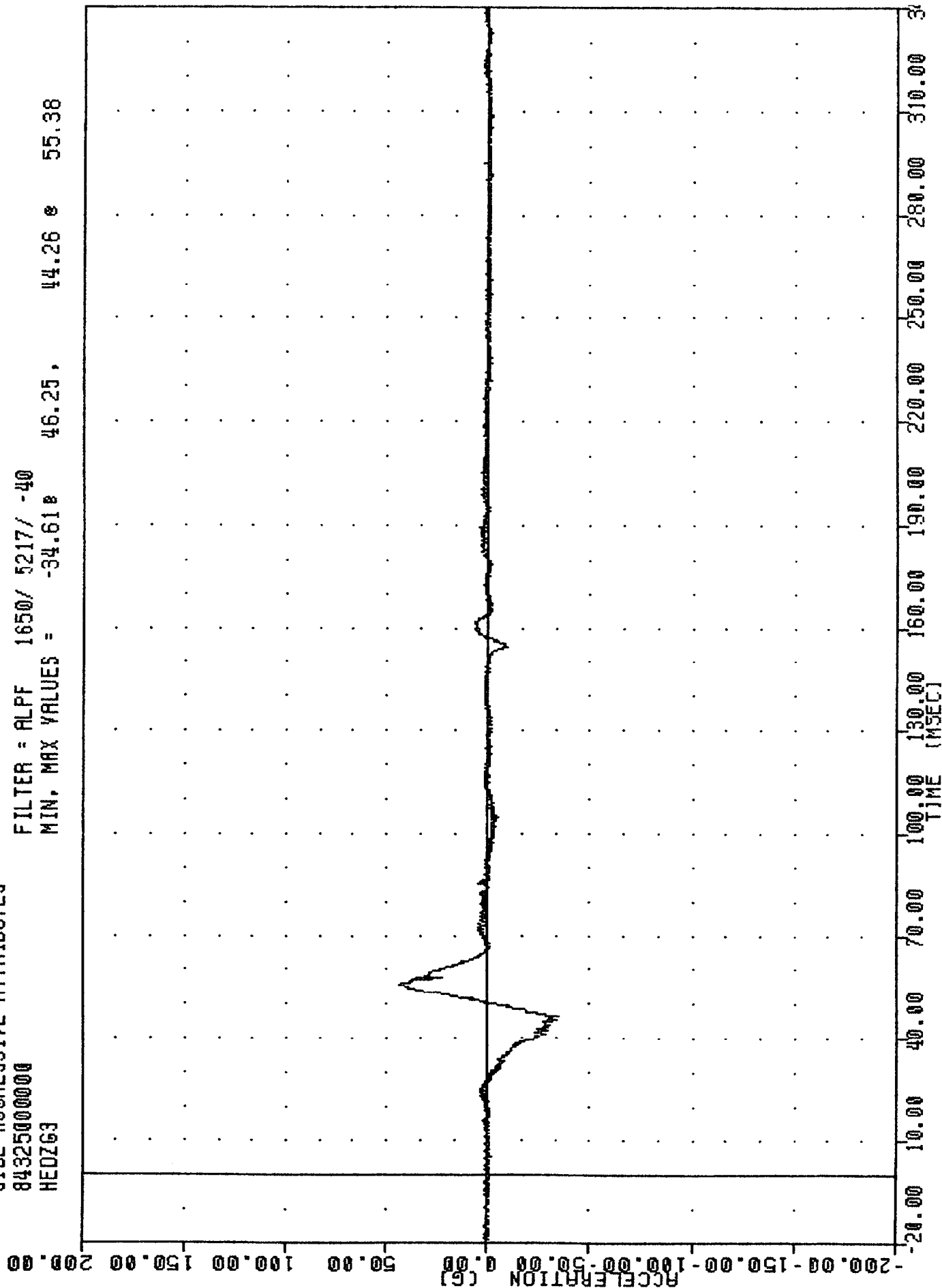
SIDE AGGRESSIVE ATTRIBUTES

84325000000

HEADZ63

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -34.618 46.25, 44.26 55.38



B-38

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Z AXIS

SIDE AGGRESSIVE ATTRIBUTES

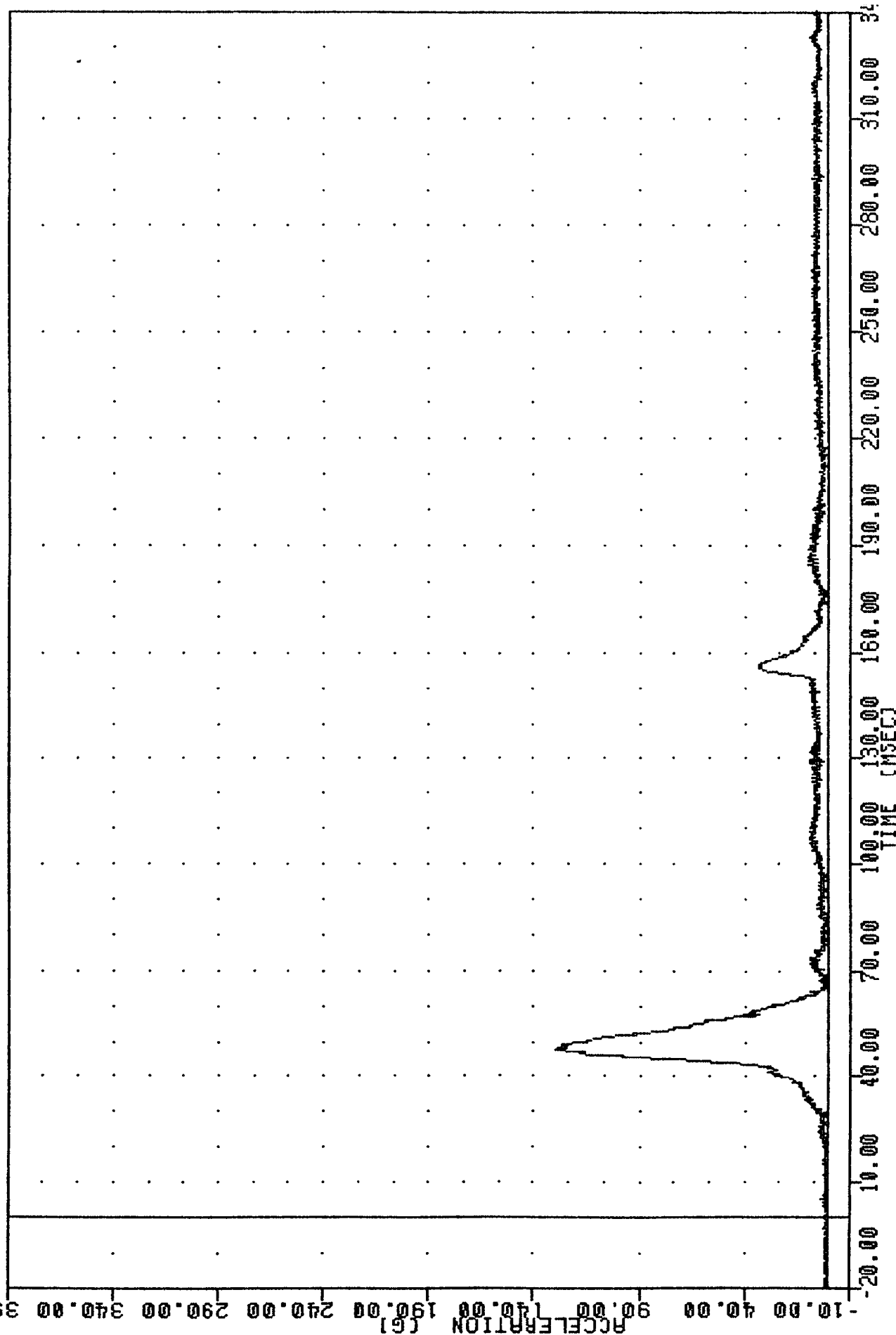
84325000000

HEORC3

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = 0.14e -1.63, 130.24 e 47.63

B-39



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD RESULTANT

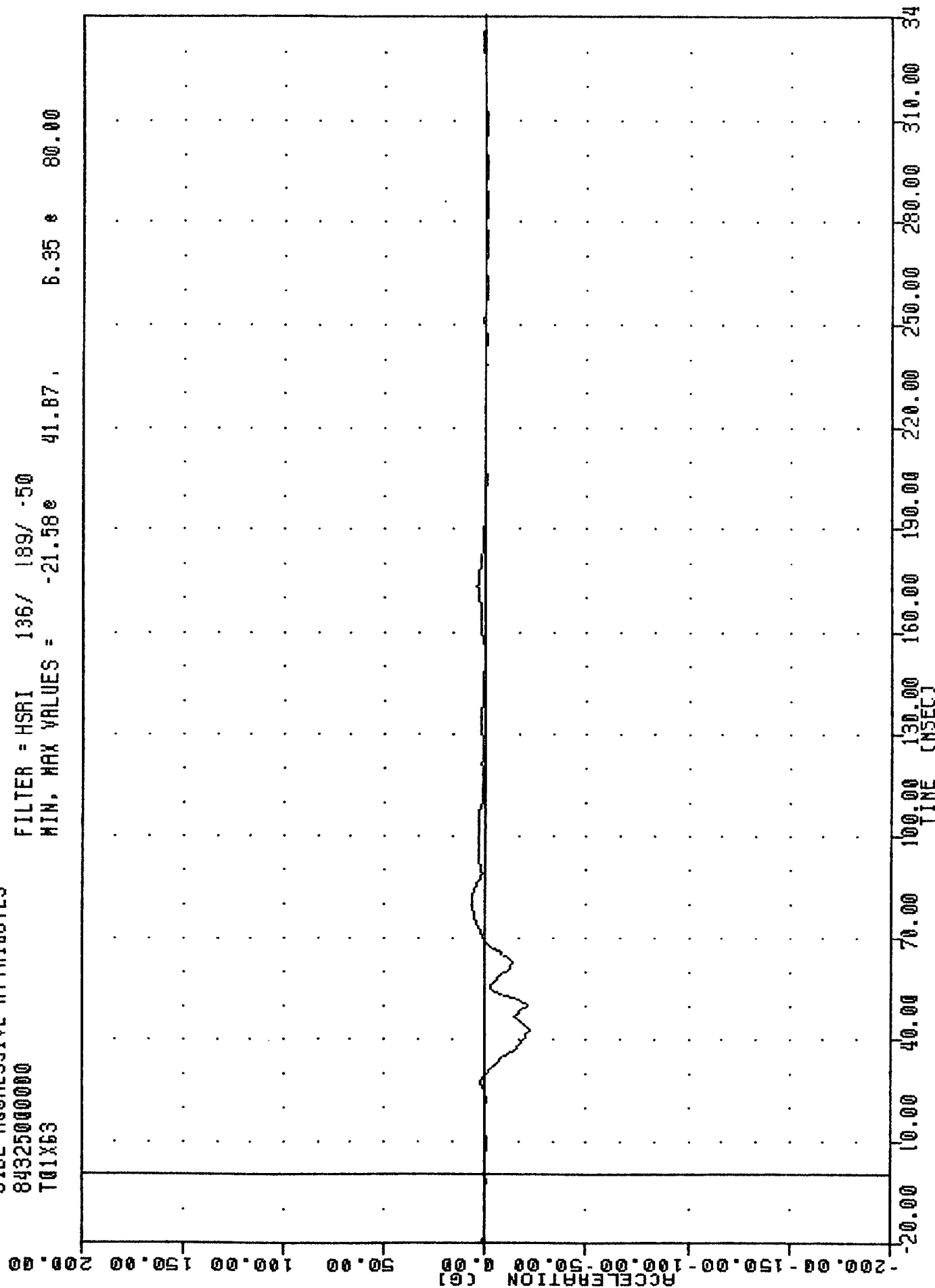
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01X63

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -21.58e 41.87 , 6.35 e 80.00



B-40

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

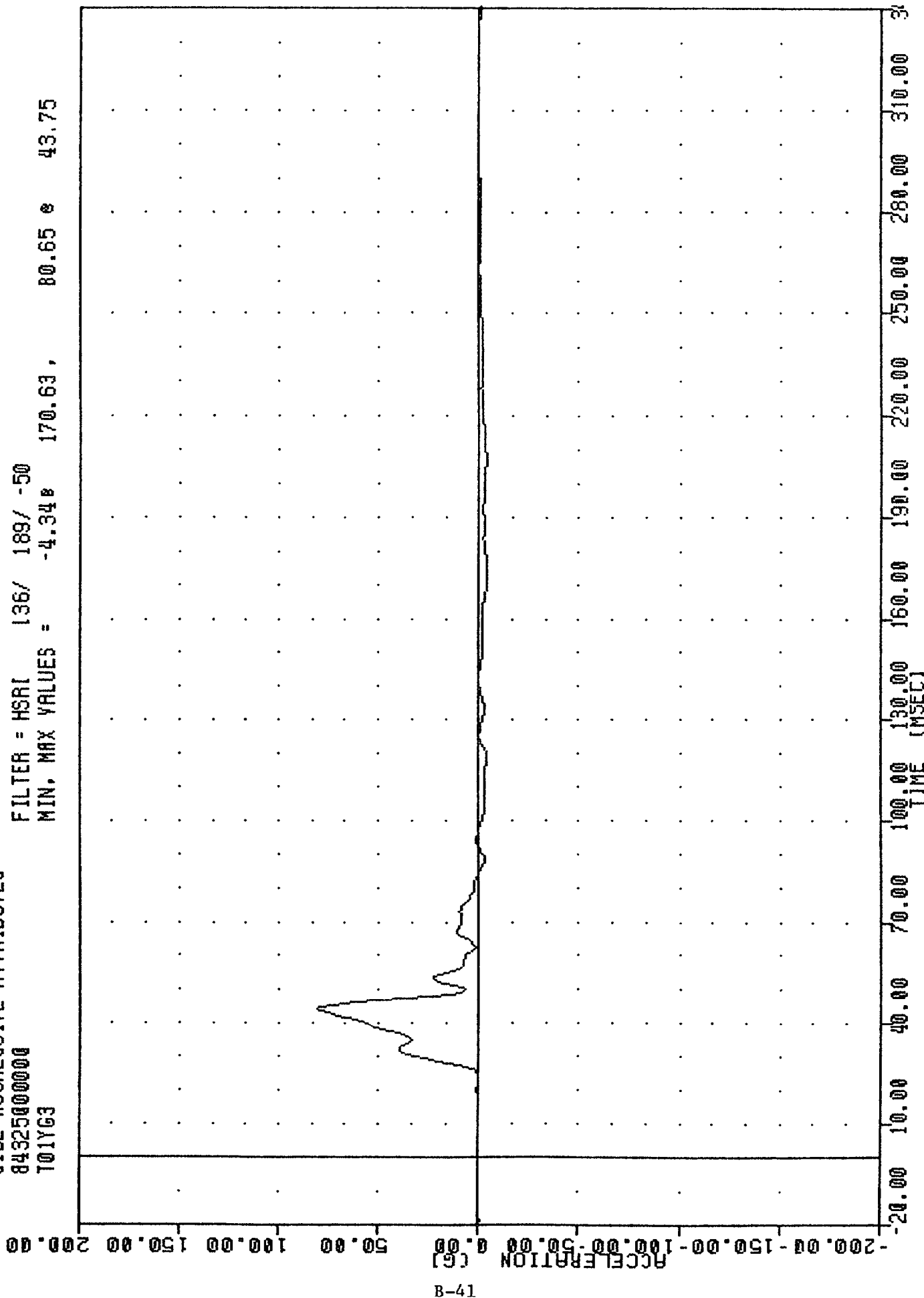
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01Y63

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -4.34e 170.63, 80.65 e 43.75



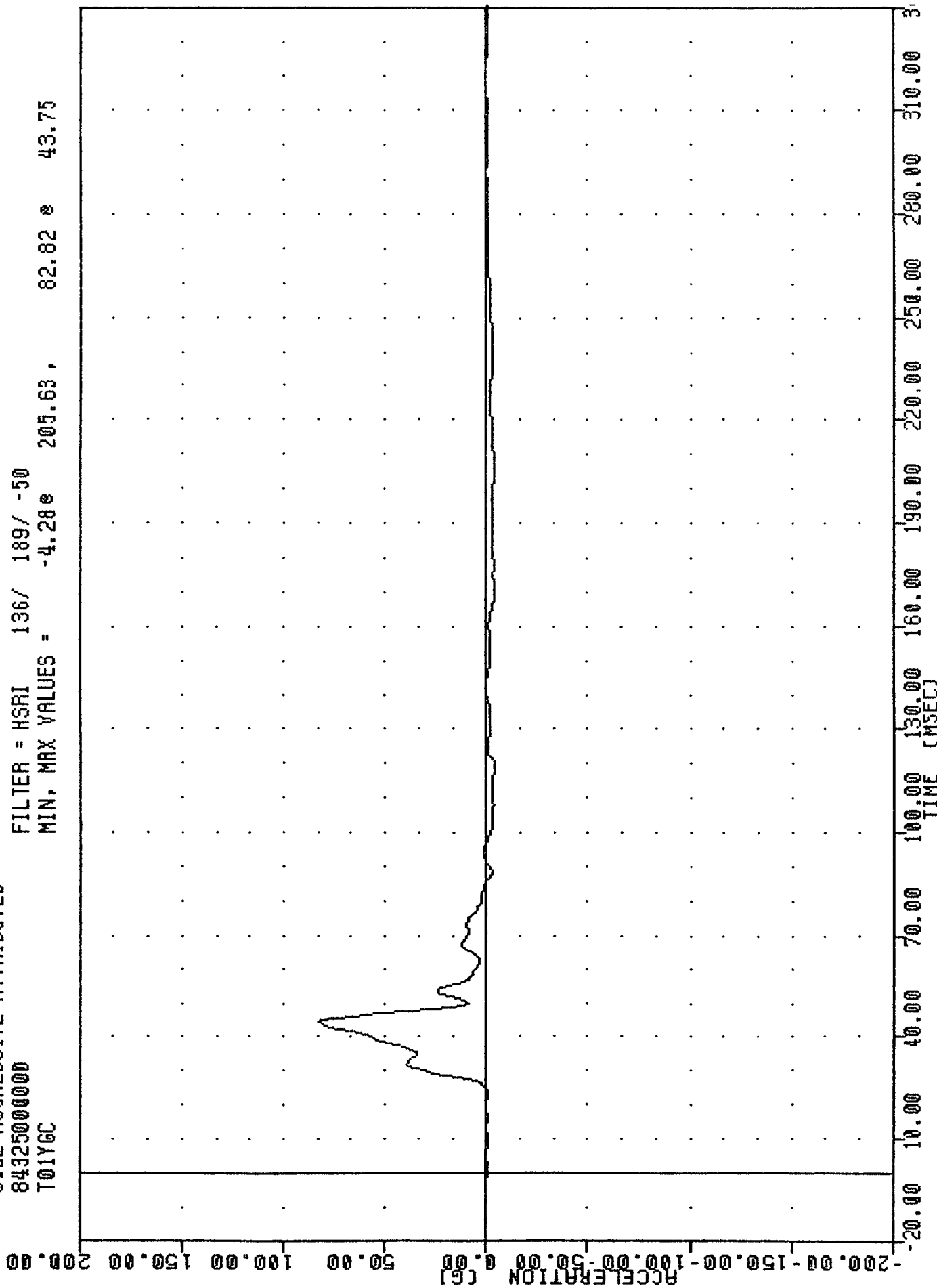
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01YGC

FILTER = HSRI 136/ 189/ -50

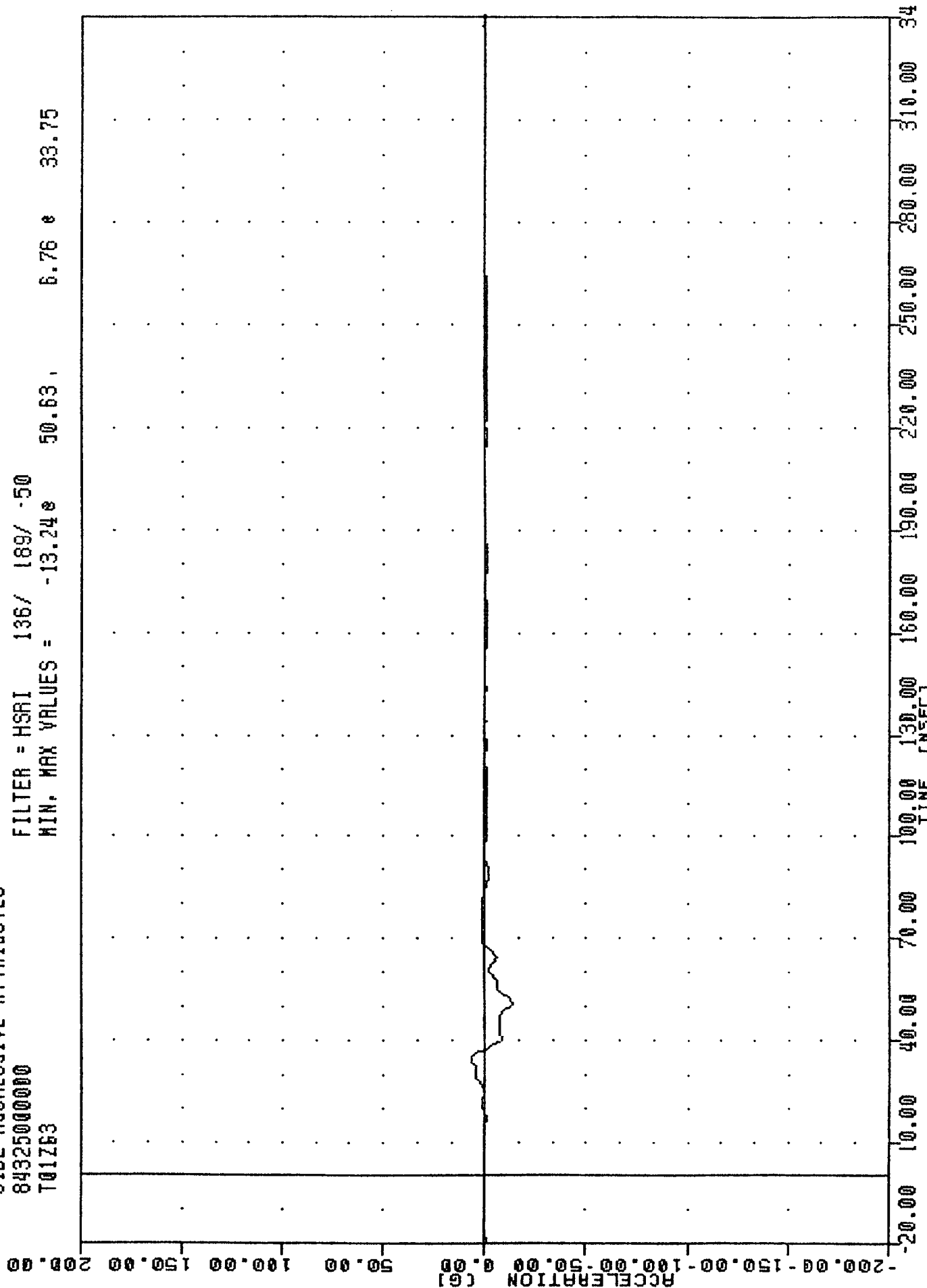
MIN, MAX VALUES = -4.28e 205.63, 82.82 e 43.75



INU
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 T01263

FLUT WINDL 27 NOV 04 10:24:11

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -13.24e 50.63, 6.76 e 33.75



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

SIDE AGGRESSIVE ATTRIBUTES

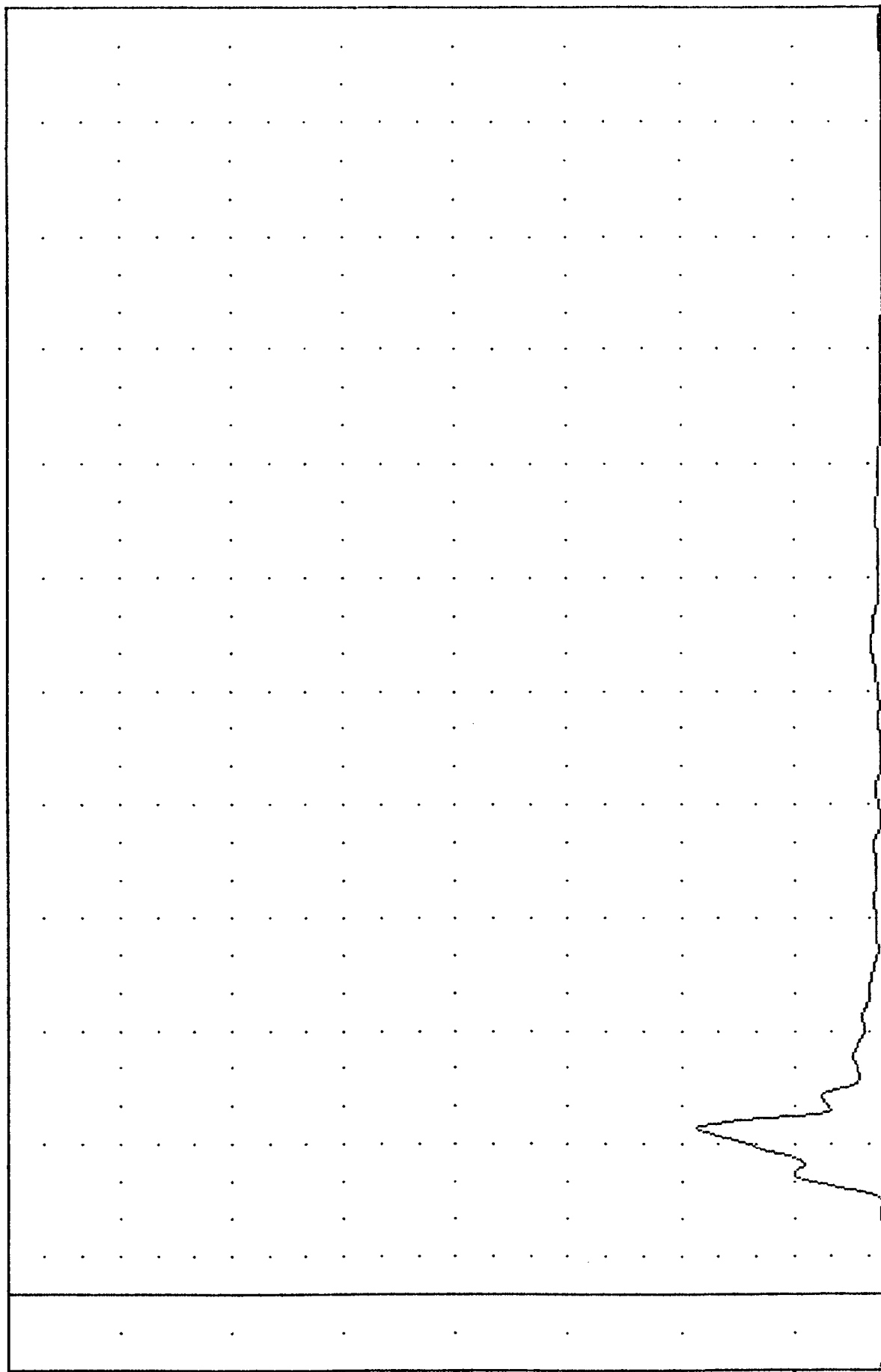
84325000000

T01RG3

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.060 -5.00, 83.31 8 43.75

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 3

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT

SIDE AGGRESSIVE ATTRIBUTES

84325000000

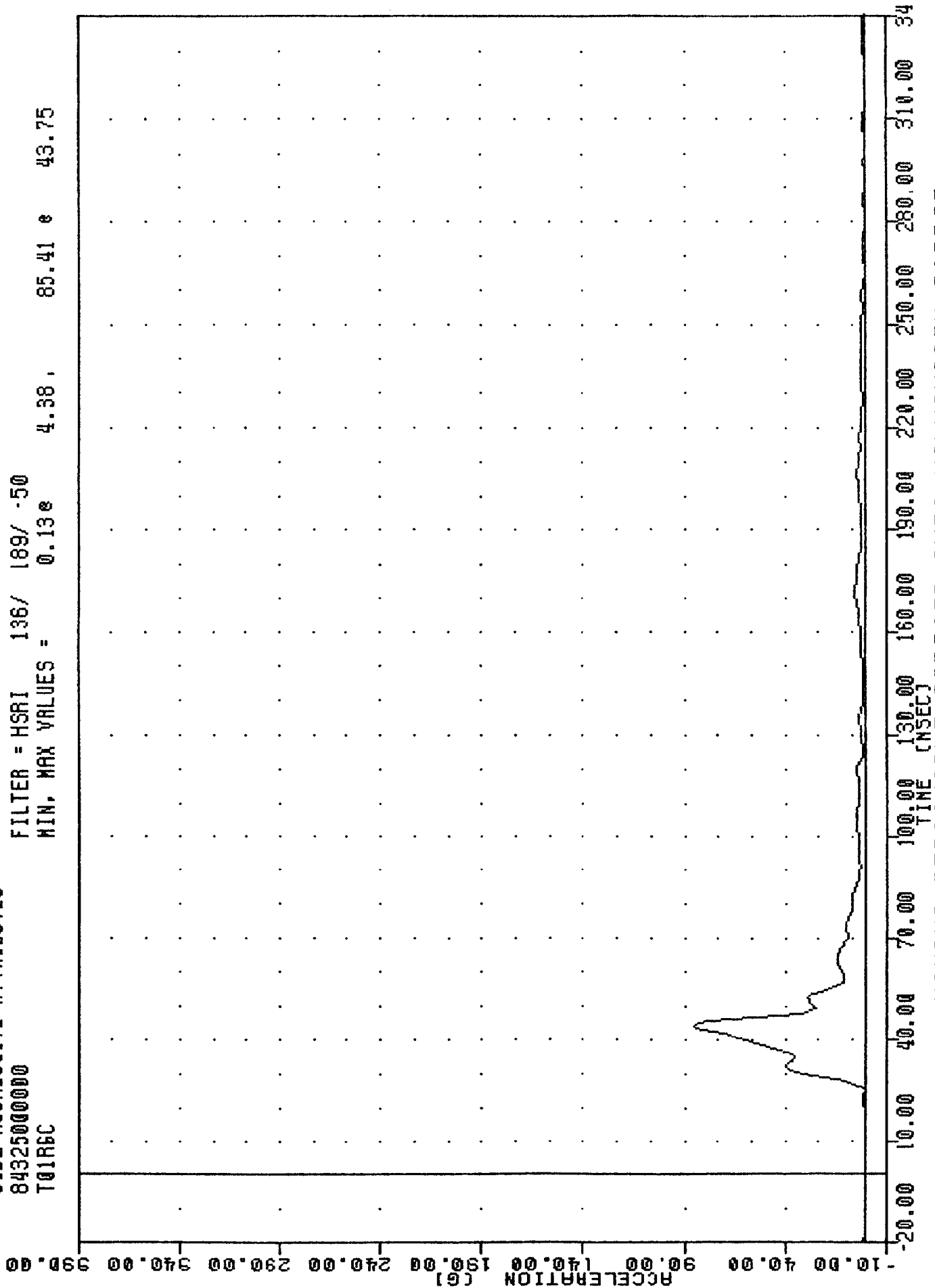
T01REC

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.13e

4.38, 85.41 e 43.75

B-45



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

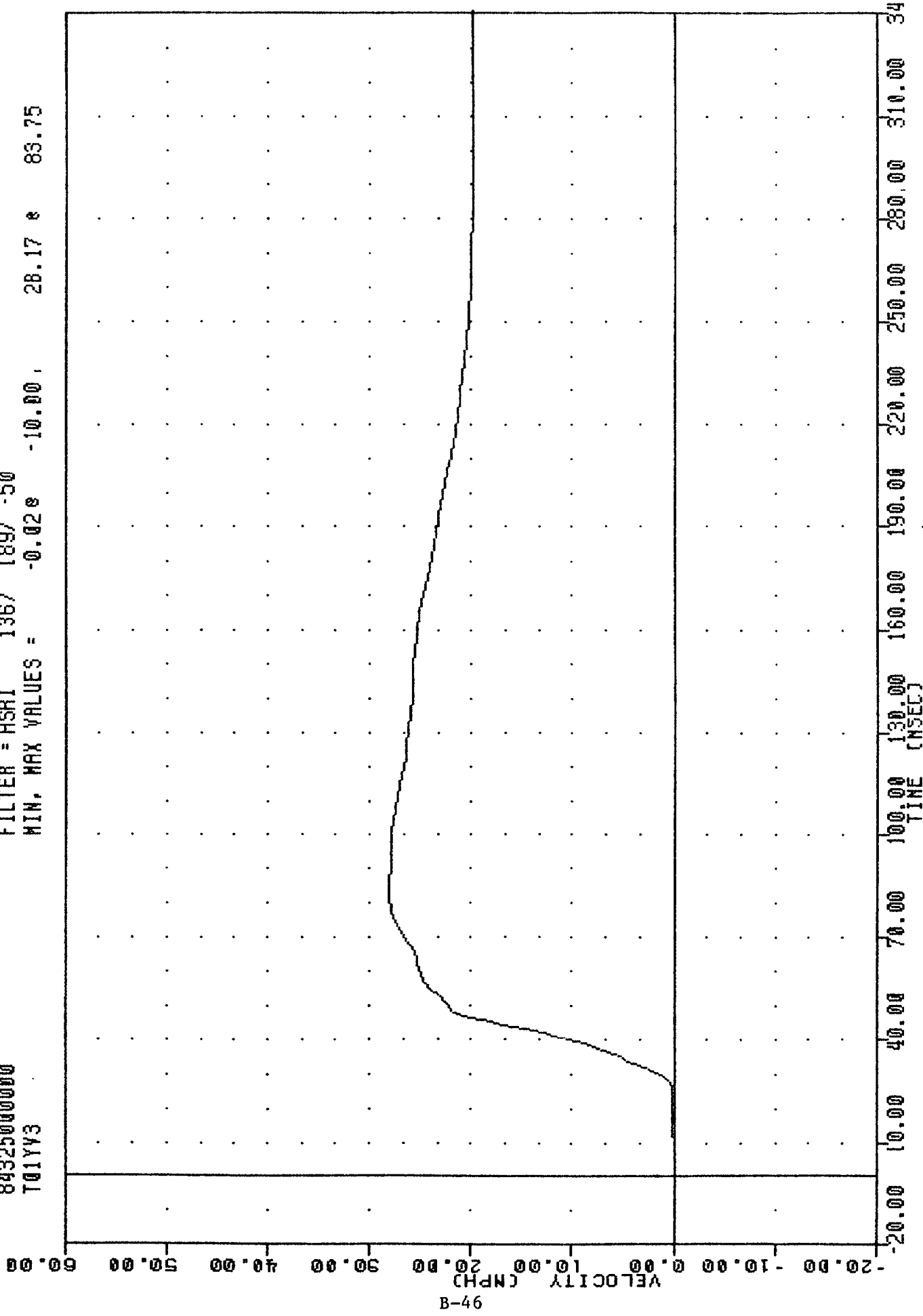
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T01YV3

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.020 -10.00, 28.17 83.75



B-46

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YG3

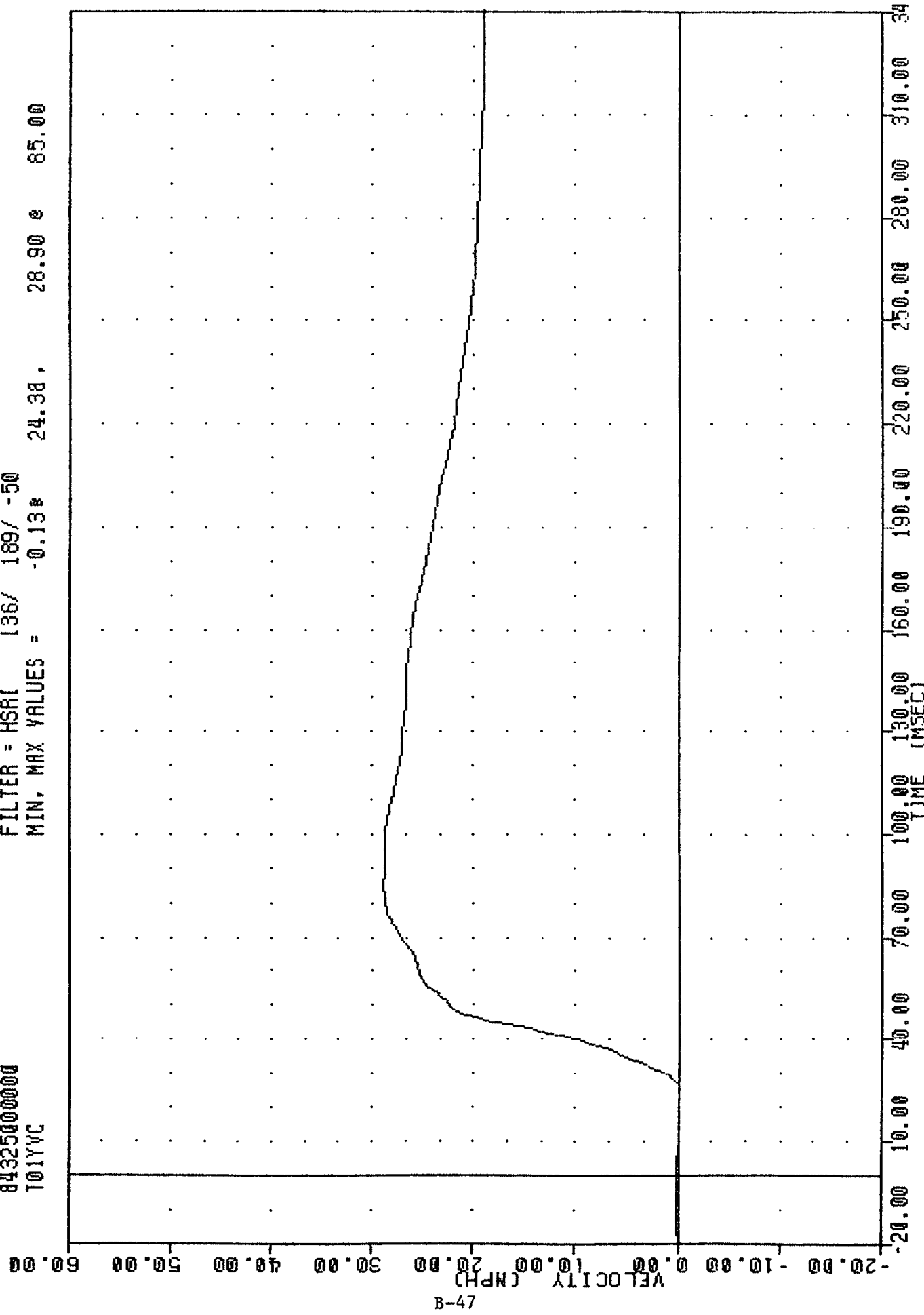
.... SIDE AGGRESSIVE ATTRIBUTES

8432500000

T01YVC

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.13 24.38 , 28.90 8 85.00



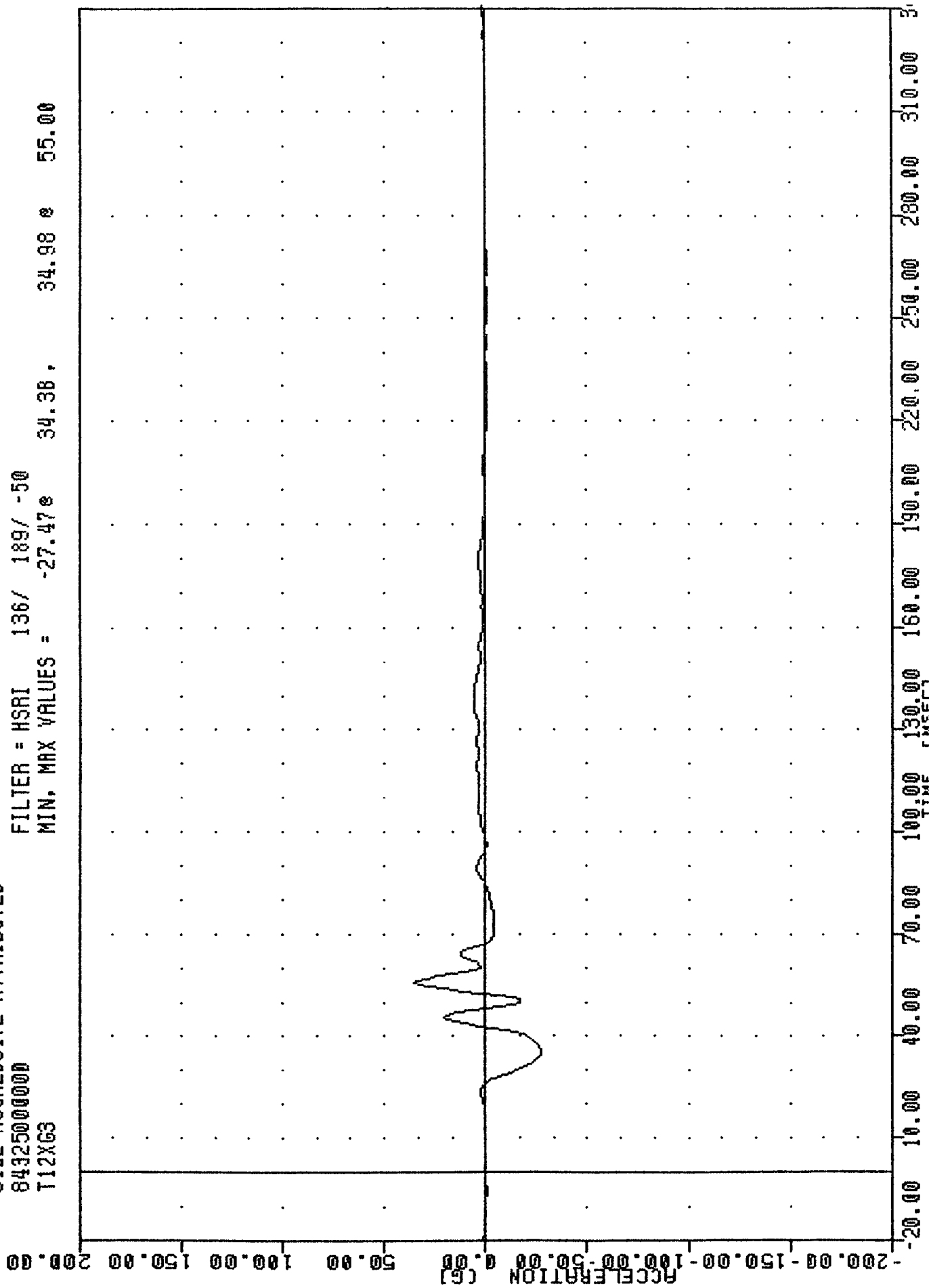
B-47

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGC

VIEW
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 T12XG3

FILED DATE 27 NOV 93 10:27:14

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -27.47e 34.38, 34.98 e 55.00



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

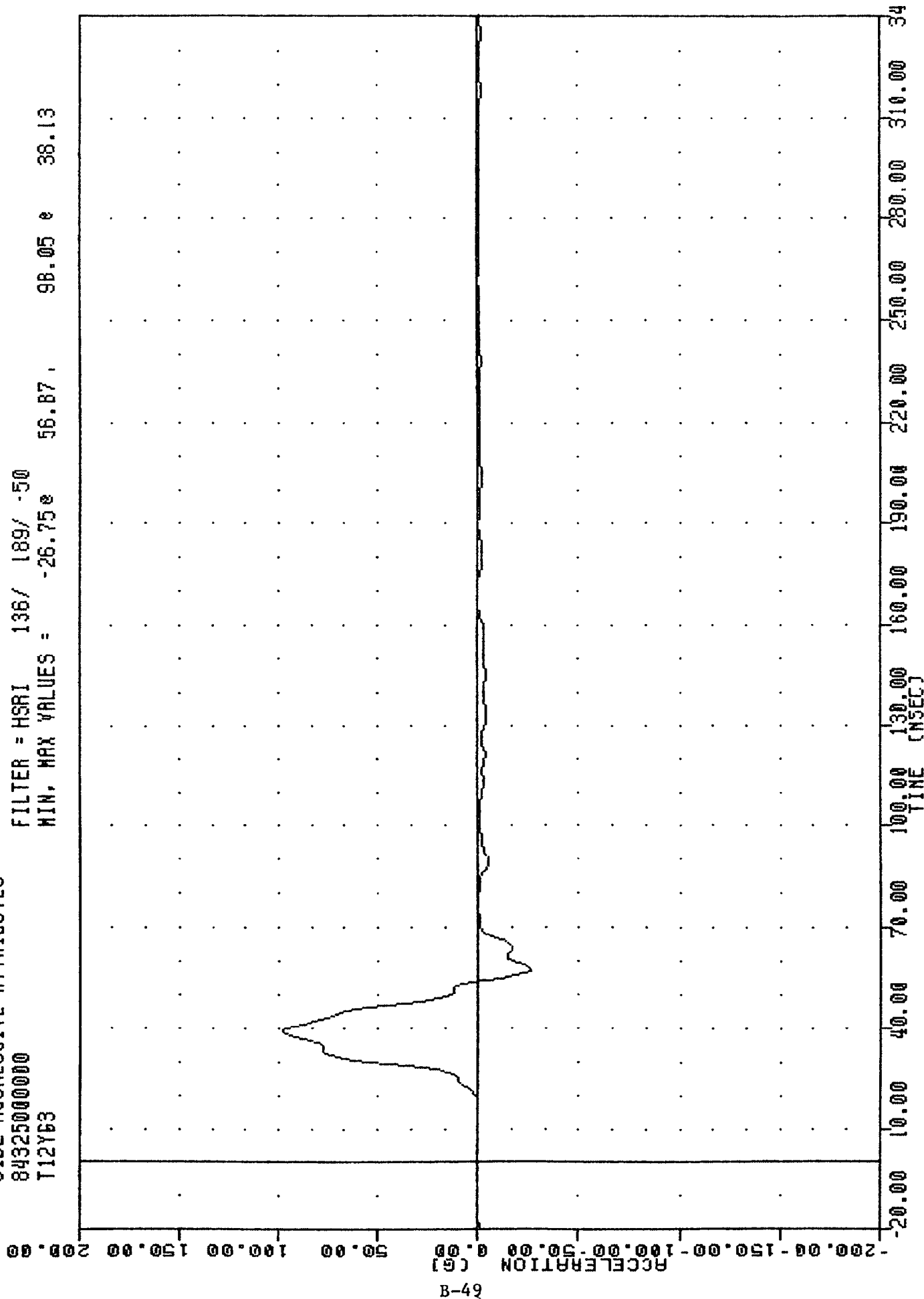
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T12Y63

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -26.75e 56.87, 98.05 e 38.13



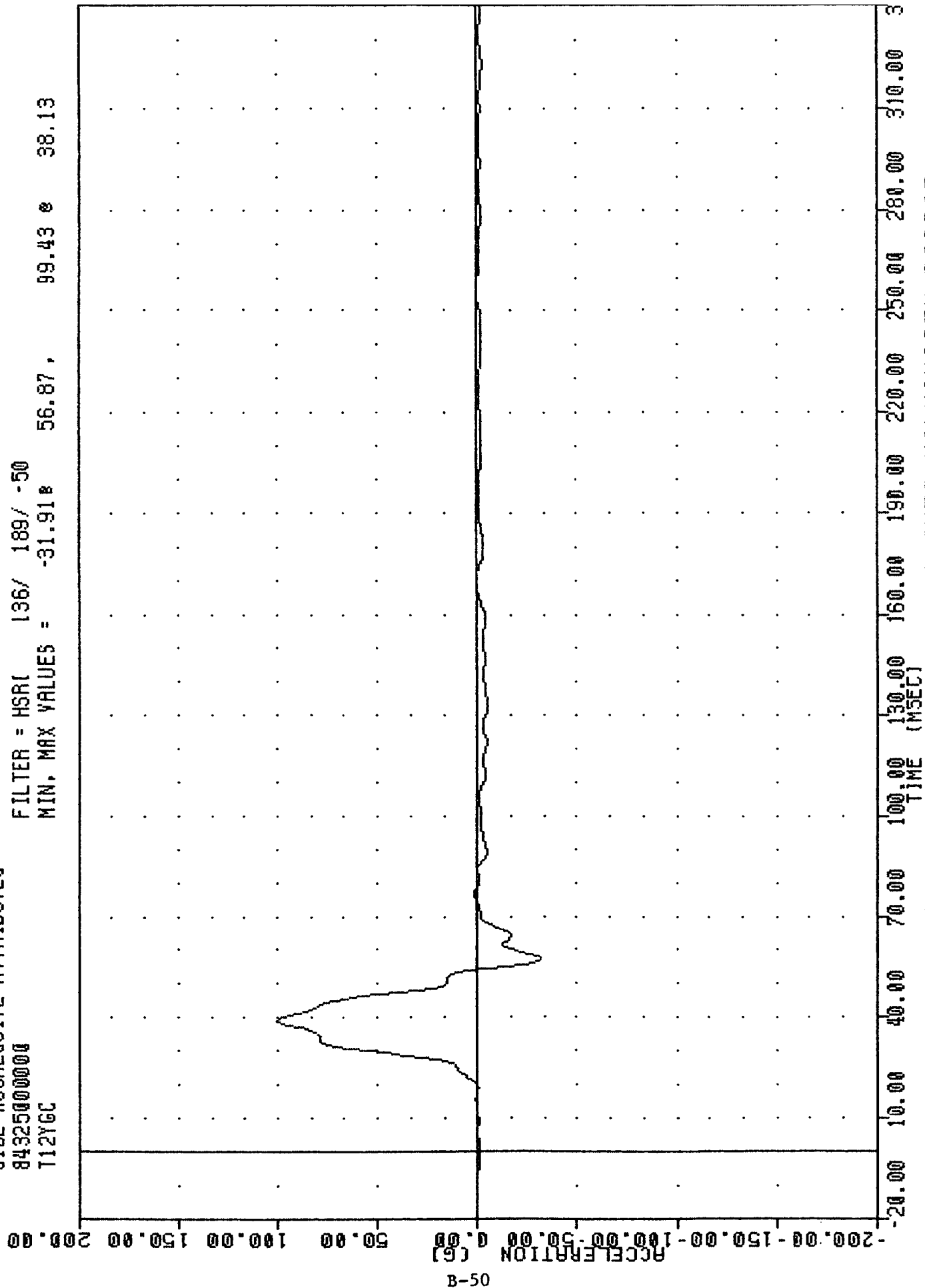
SIDE AGGRESSIVE ATTRIBUTES

84325000000

T12Y6C

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -31.91% 56.87, 99.43 @ 38.13



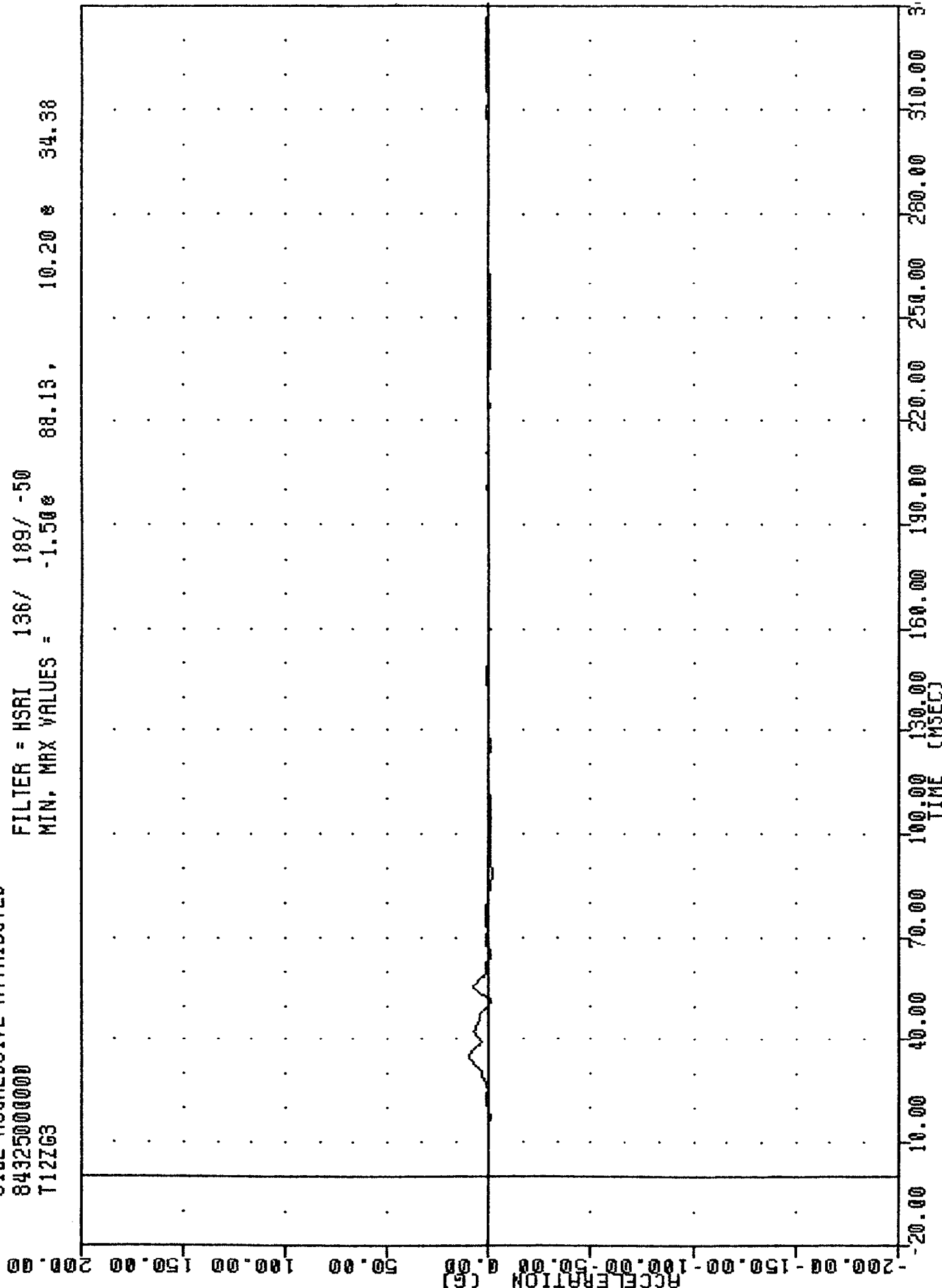
B-50

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

1116
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 T12Z63

1001 0011L 2/ NOV 02 10:23:11

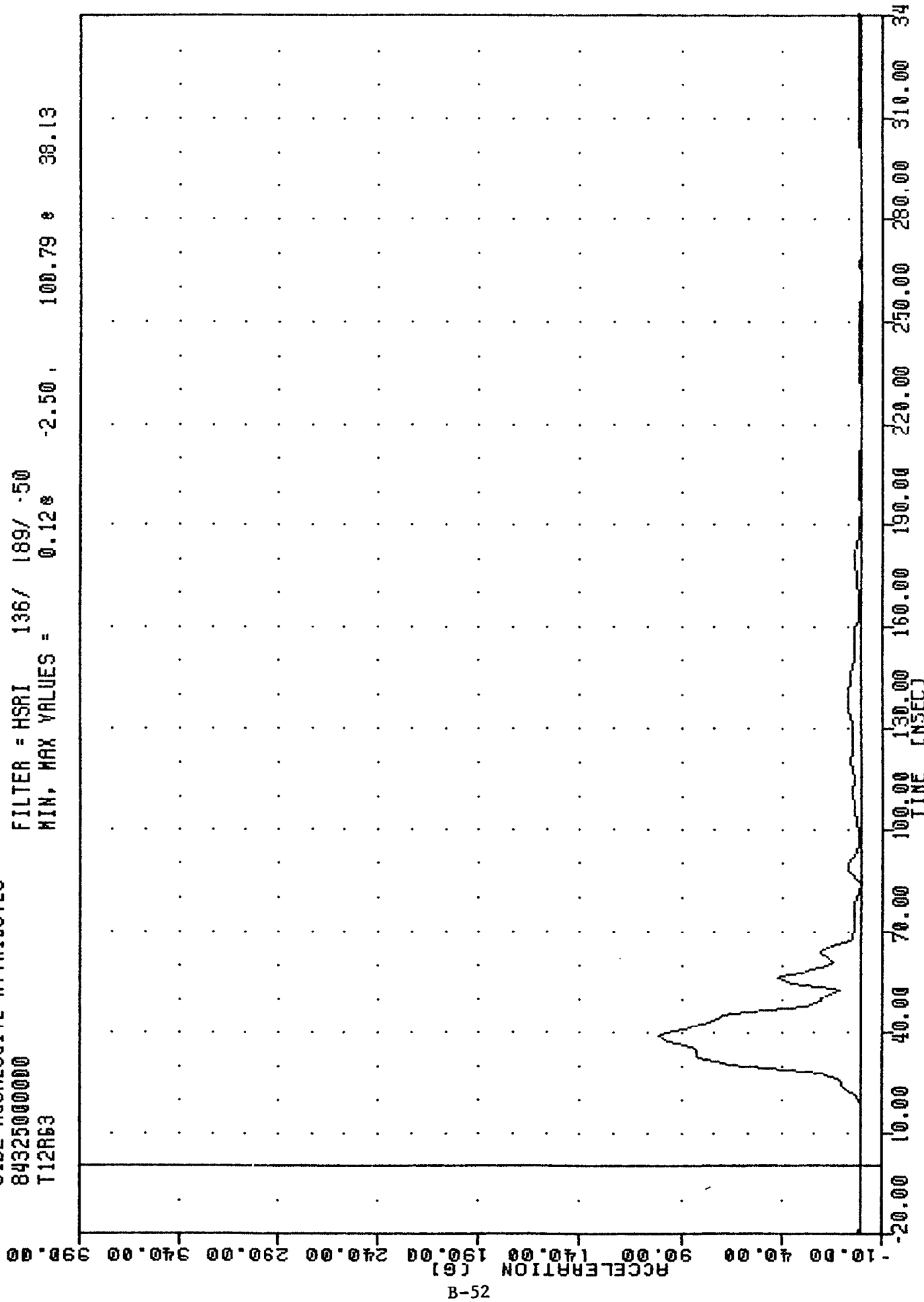
FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -1.500 88.13, 10.20 & 34.38



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

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 T12R63

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = 0.128 -2.50 , 100.79 38.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE RESULTANT

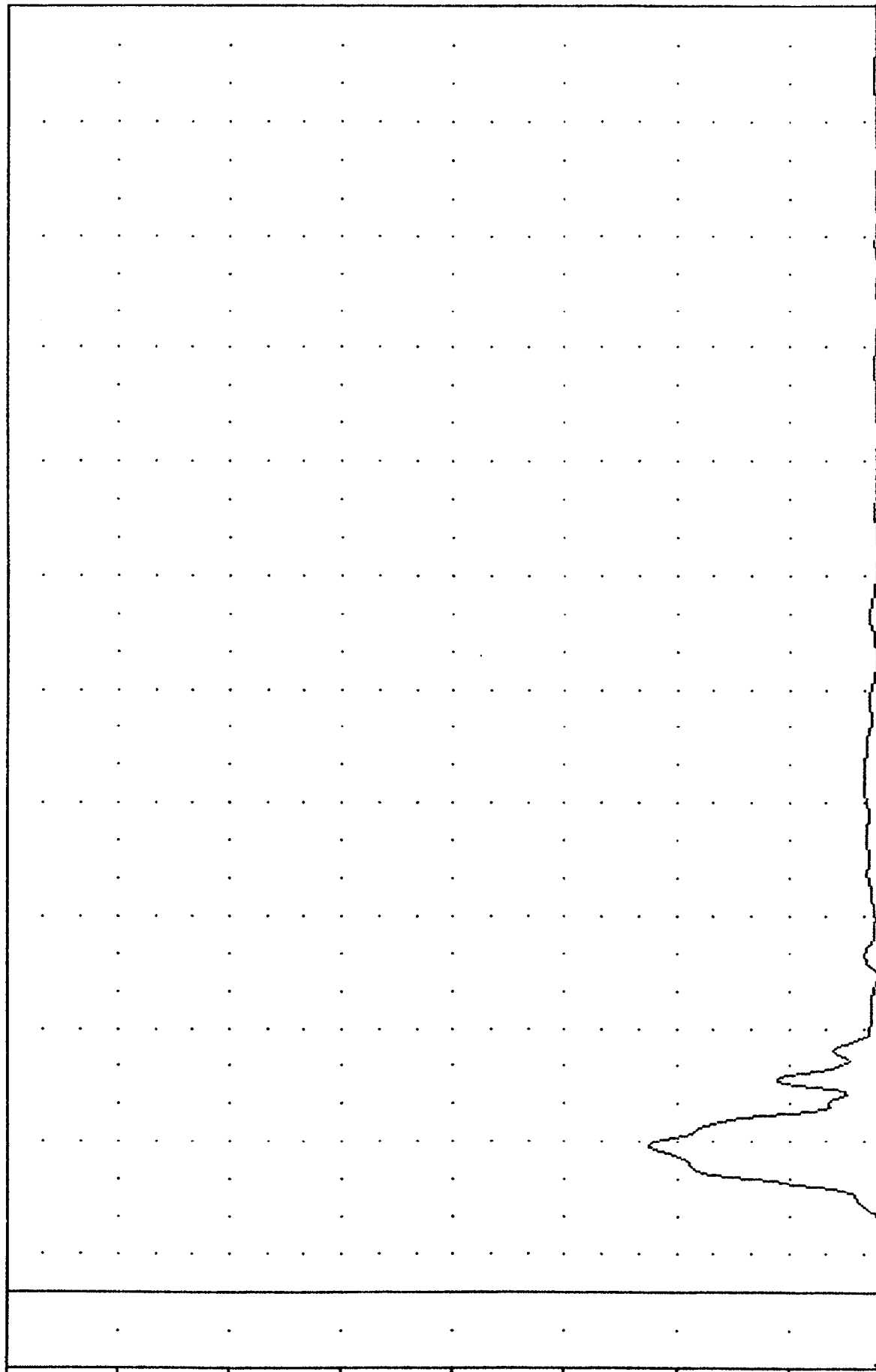
INL 04112W
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 T12RGC

PLU1 UNIC 2/-WUV-04 16:20:20

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.18g 5.62g 102.13g 38.13

ACCELERATION [G]



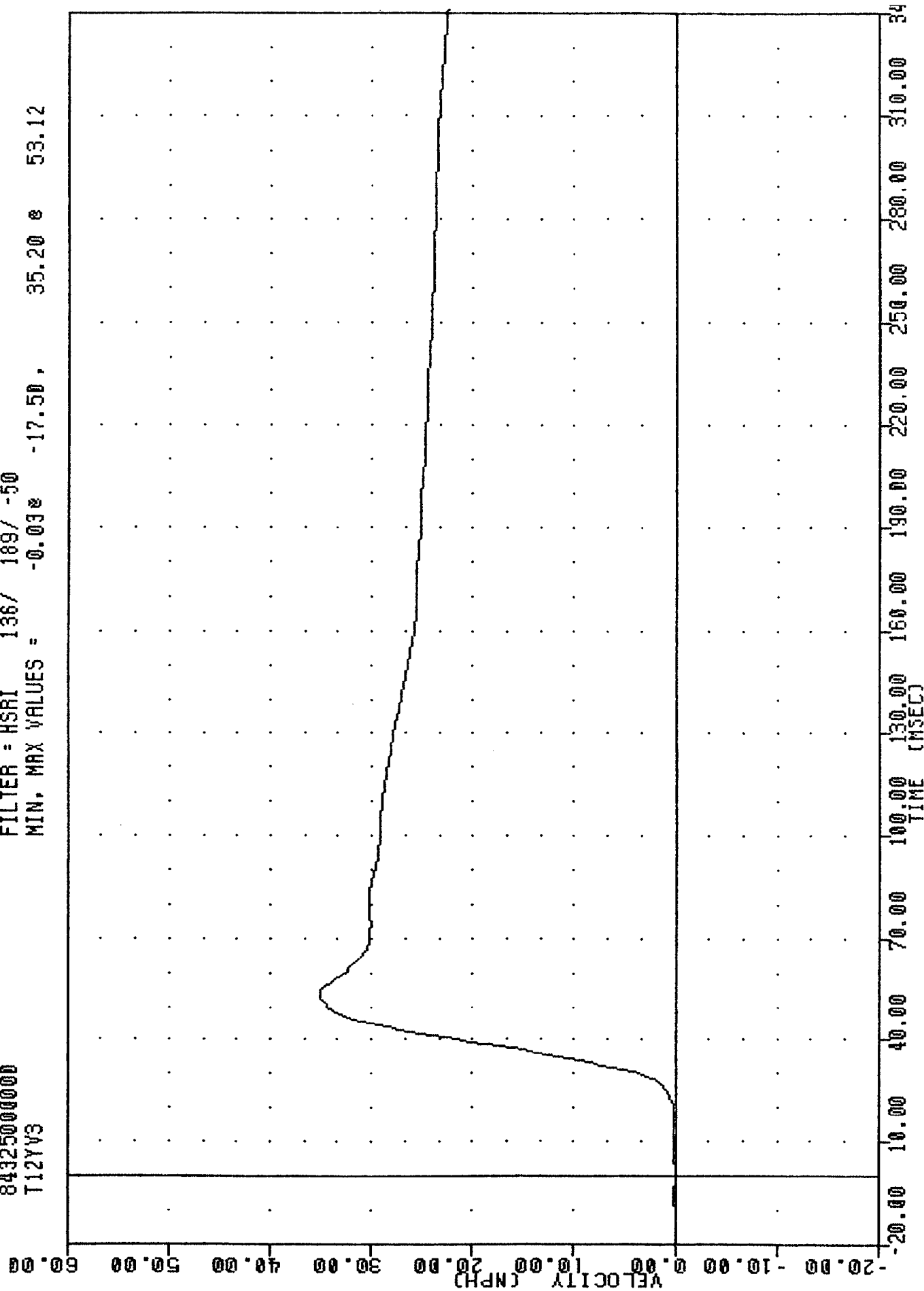
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 3

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

T112
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 T12YV3

1 LOT 0011L 2/ NOV 02 10:20:00

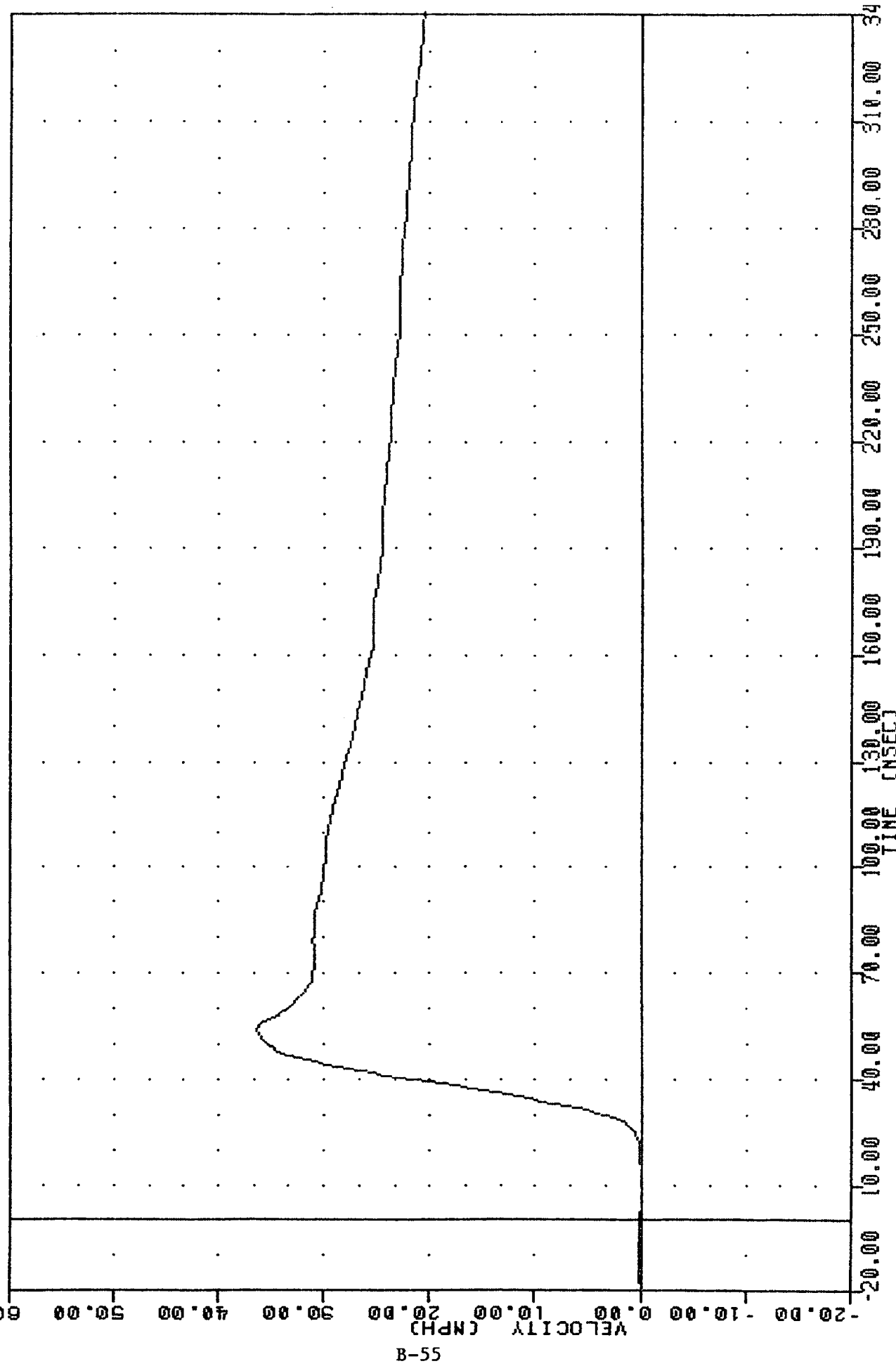
FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.03e -17.50, 35.20 e 53.12



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12Y63

SIDE AGGRESSIVE ATTRIBUTES
84325000000
T12YVC

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -0.04 10.63 36.35 53.12

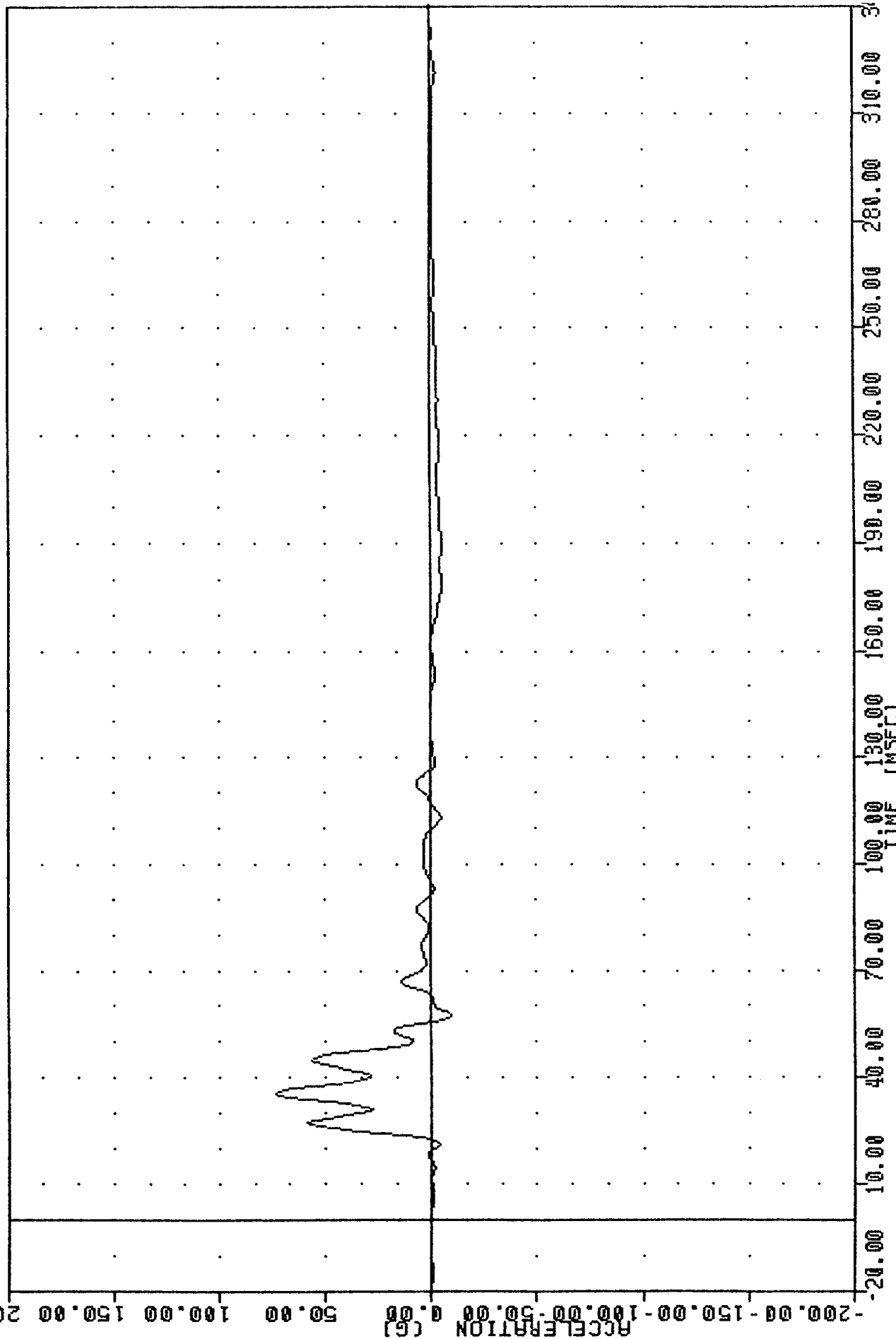


B-55

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGC

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LURYC3

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -9.25 56.87, 73.52 35.00



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

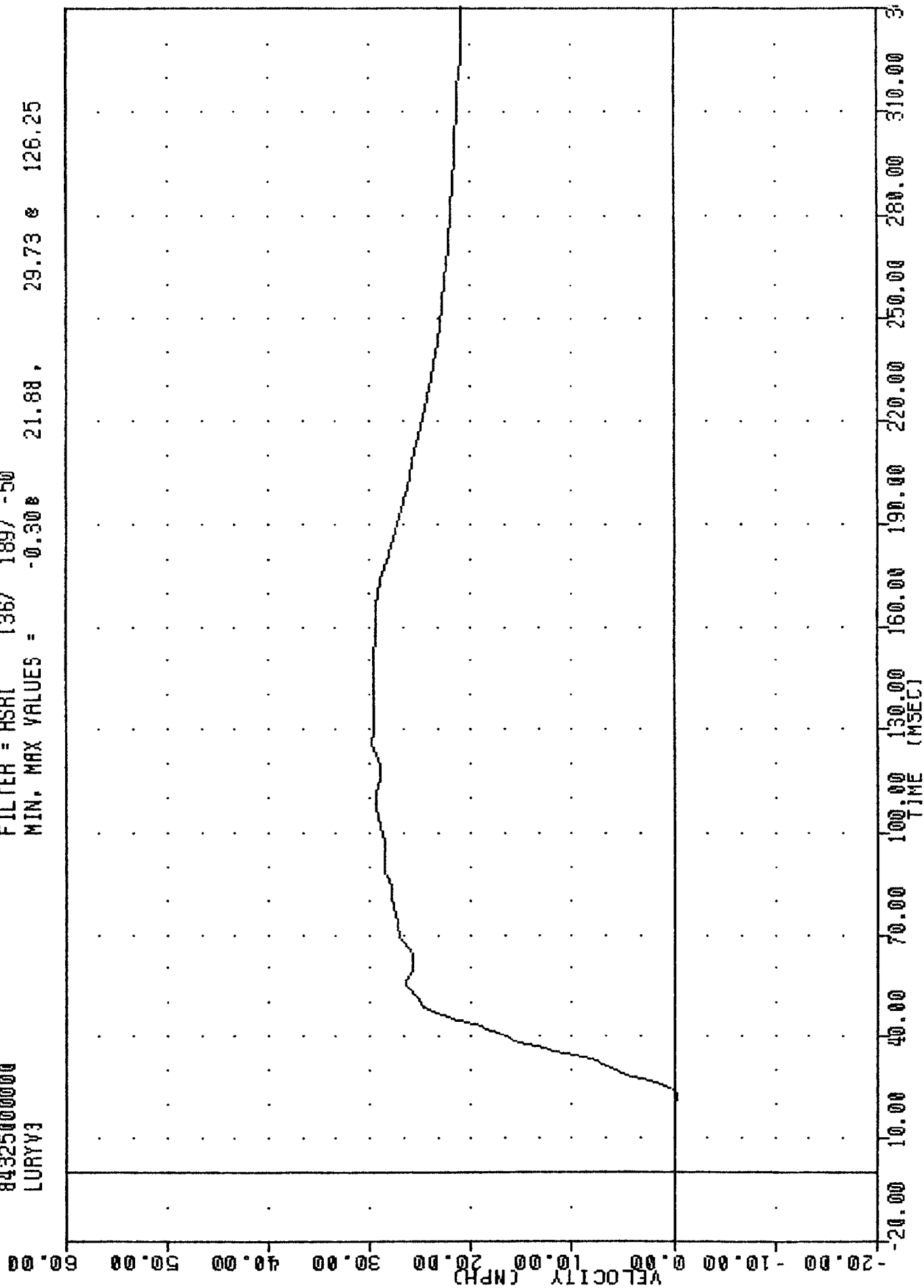
SIDE AGGRESSIVE ATTRIBUTES

84325000000

LURYV3

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.308 21.88, 29.73 & 126.25



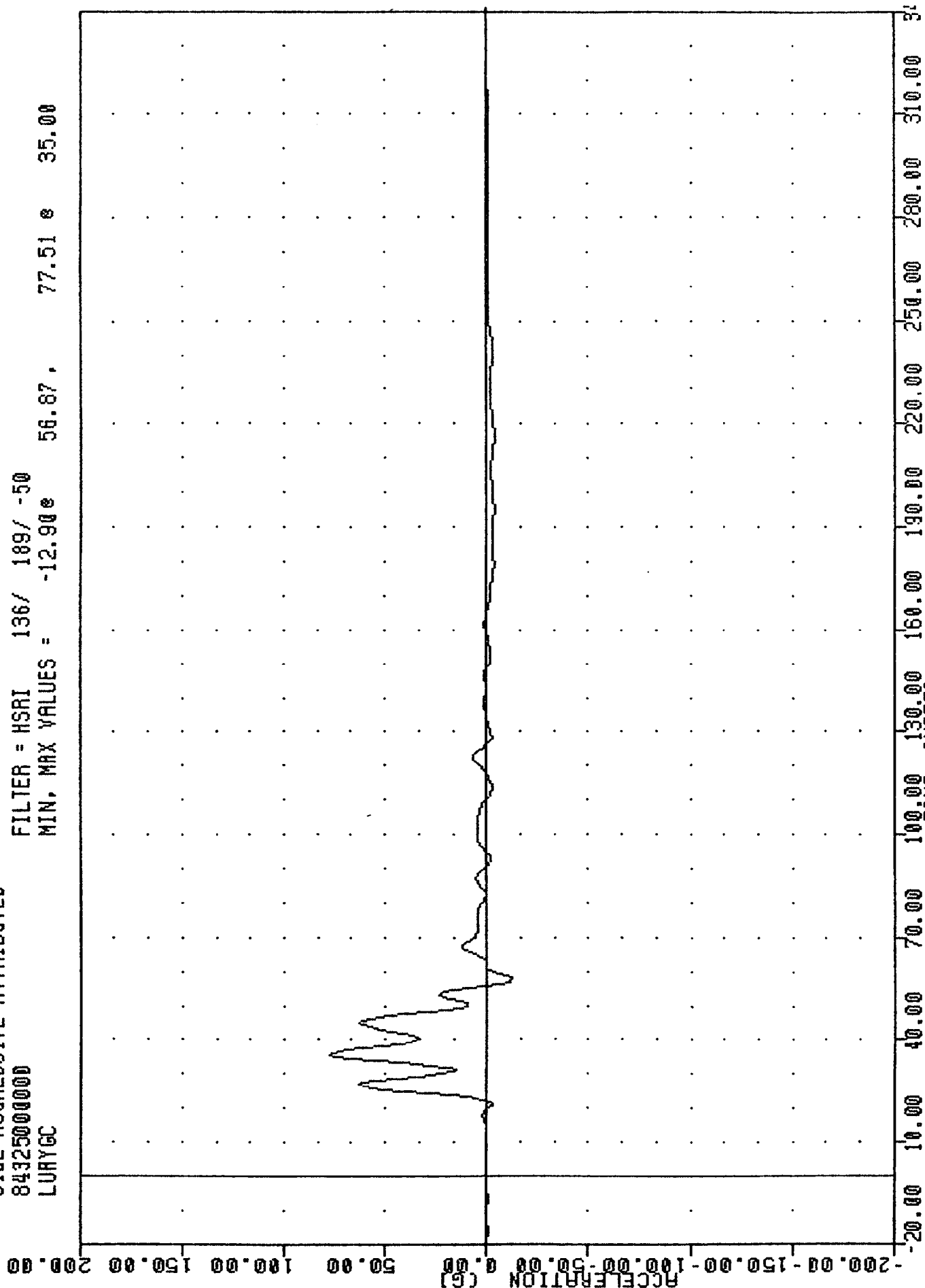
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYG3

IHC , 841120
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LURYGC

PLUI DATE 27-NOV-84 16:24:11

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -12.90e 56.87, 77.51 e 35.00



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

SIDE AGGRESSIVE ATTRIBUTES

84325000000
LURYVC

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.078 -3.13,

31.74 @ 148.13

60.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

B-59

VELOCITY (MPH)

-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

350.00

360.00

370.00

380.00

390.00

400.00

410.00

420.00

430.00

440.00

450.00

460.00

470.00

480.00

490.00

500.00

510.00

520.00

530.00

540.00

550.00

560.00

570.00

580.00

590.00

600.00

610.00

620.00

630.00

640.00

650.00

660.00

670.00

680.00

690.00

700.00

710.00

720.00

730.00

740.00

750.00

760.00

770.00

780.00

790.00

800.00

810.00

820.00

830.00

840.00

850.00

860.00

870.00

880.00

890.00

900.00

910.00

920.00

930.00

940.00

950.00

960.00

970.00

980.00

990.00

1000.00

1010.00

1020.00

1030.00

1040.00

1050.00

1060.00

1070.00

1080.00

1090.00

1100.00

1110.00

1120.00

1130.00

1140.00

1150.00

1160.00

1170.00

1180.00

1190.00

1200.00

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1520.00

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1670.00

1680.00

1690.00

1700.00

1710.00

1720.00

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1750.00

1760.00

1770.00

1780.00

1790.00

1800.00

1810.00

1820.00

1830.00

1840.00

1850.00

1860.00

1870.00

1880.00

1890.00

1900.00

1910.00

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1930.00

1940.00

1950.00

1960.00

1970.00

1980.00

1990.00

2000.00

2010.00

2020.00

2030.00

2040.00

2050.00

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2070.00

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2100.00

2110.00

2120.00

2130.00

2140.00

2150.00

2160.00

2170.00

2180.00

2190.00

2200.00

2210.00

2220.00

2230.00

2240.00

2250.00

2260.00

2270.00

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2560.00

2570.00

2580.00

2590.00

2600.00

2610.00

2620.00

2630.00

2640.00

2650.00

2660.00

2670.00

2680.00

2690.00

2700.00

2710.00

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2760.00

2770.00

2780.00

2790.00

2800.00

2810.00

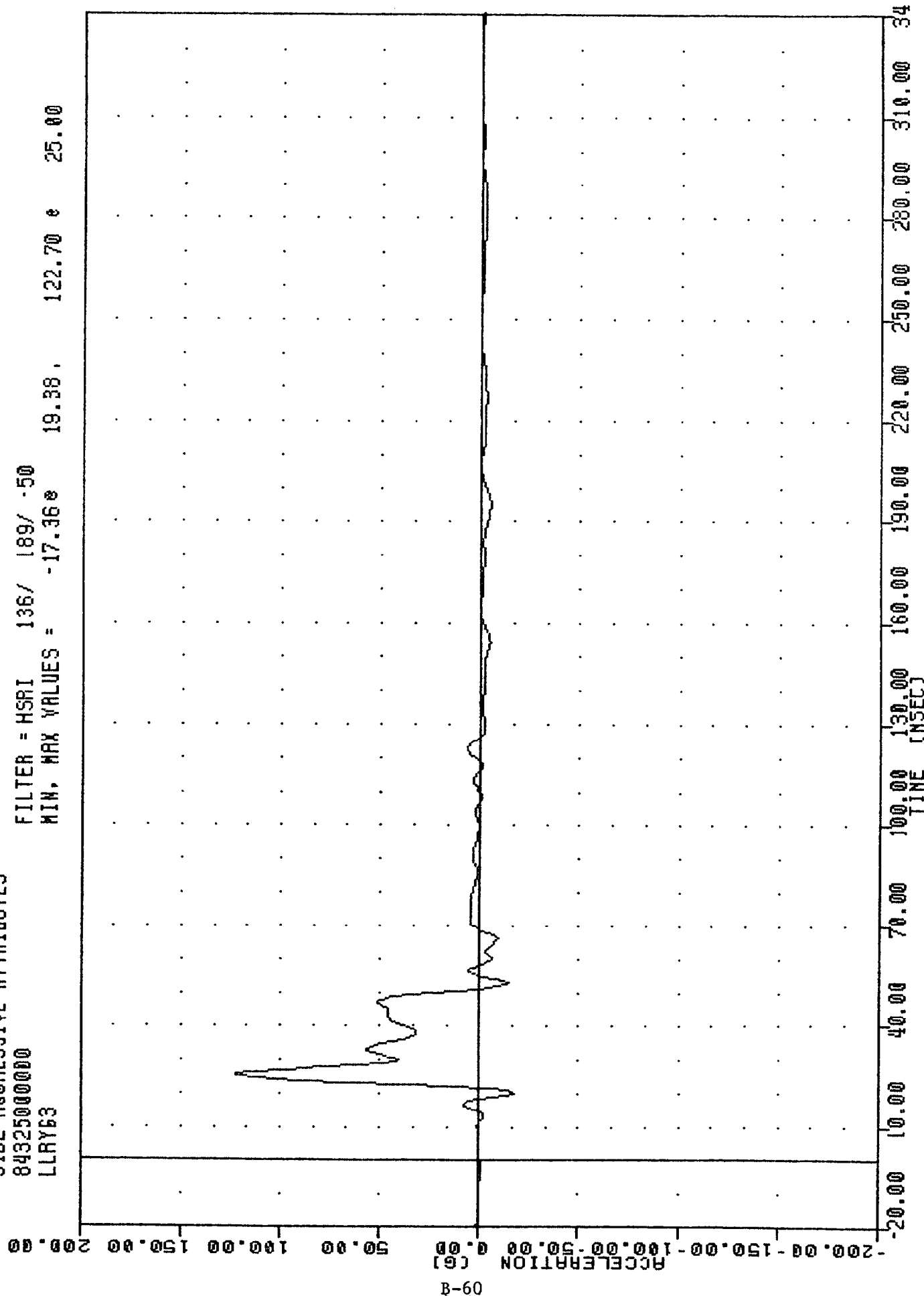
2820.00

2830.00

2840.00

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LLRY63

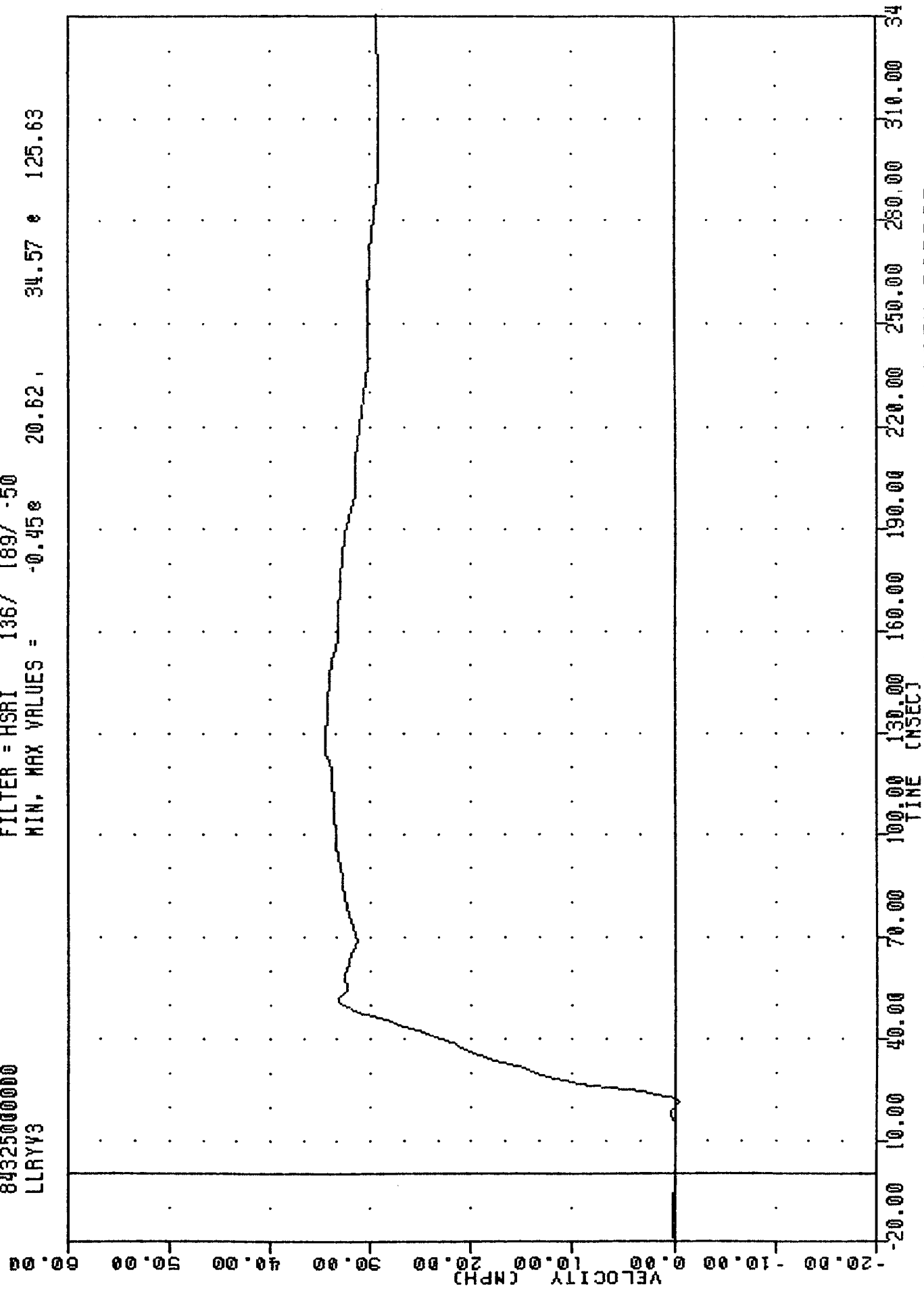
FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -17.36 19.38, 122.70 25.00



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

SIDE AGGRESSIVE ATTRIBUTES
84325000000
LLRYV3

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -0.45 20.62 34.57 125.63

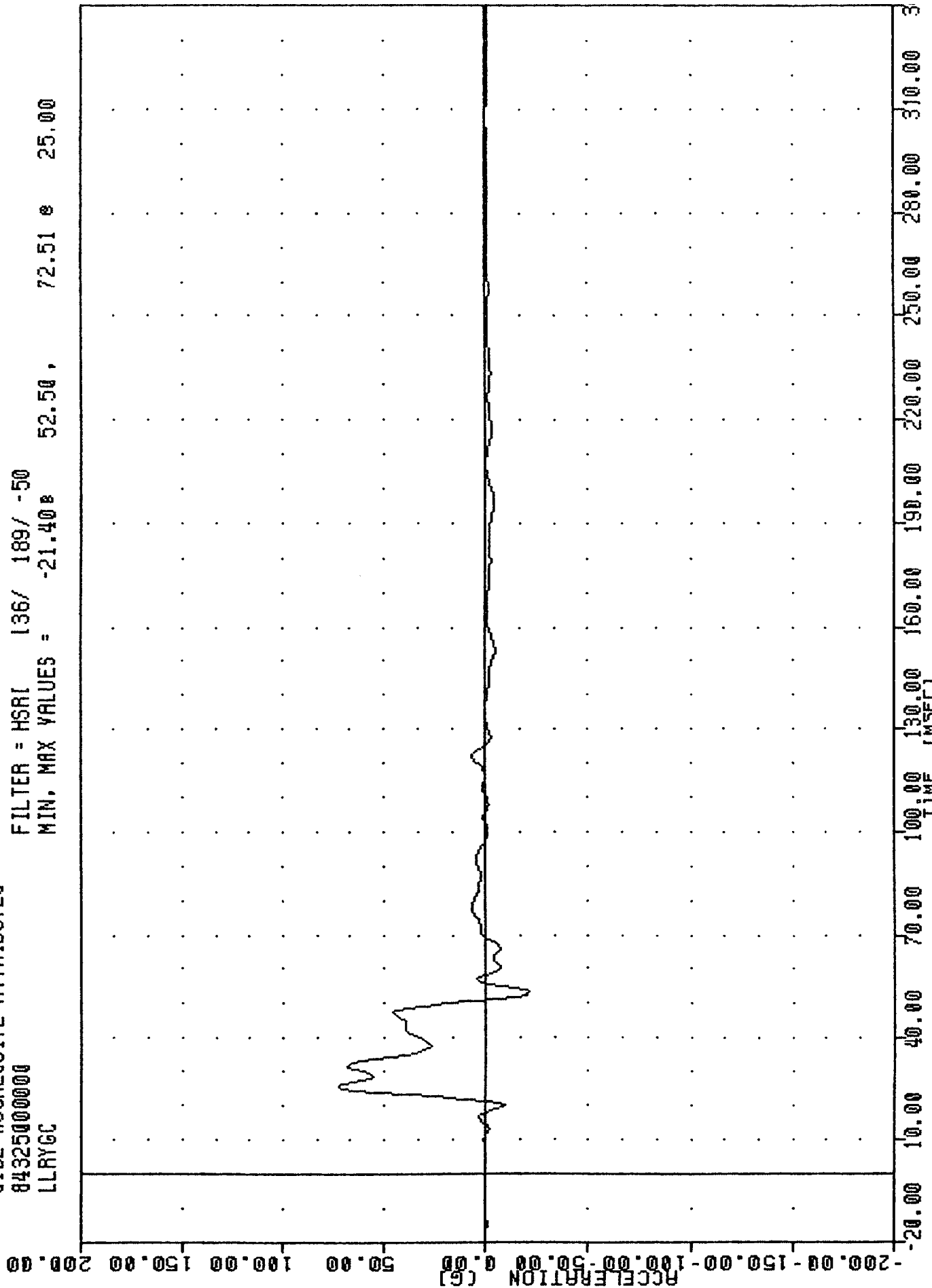


B-61

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLRYG3

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LLRYGC

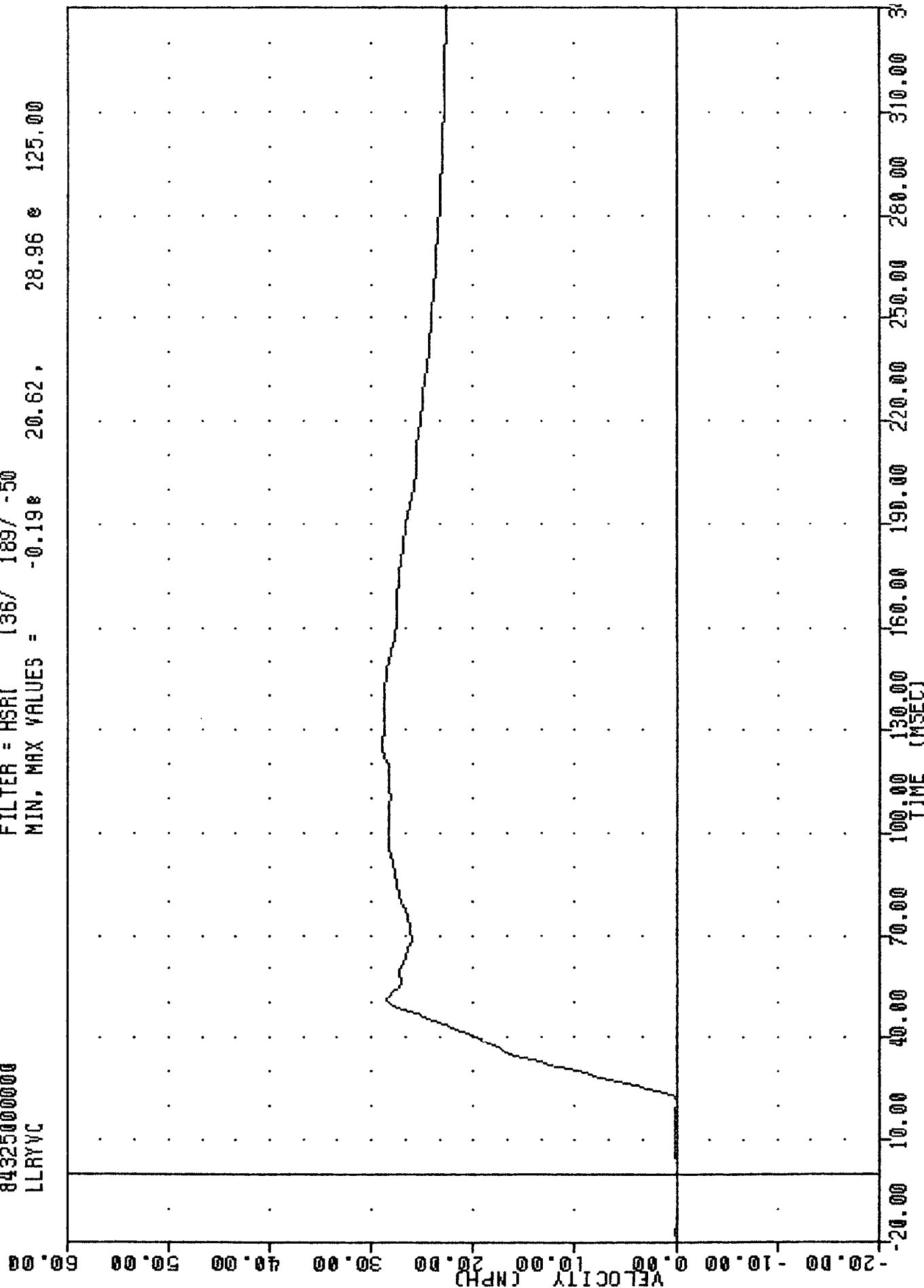
FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -21.408 52.50, 72.51 @ 25.00



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

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LLRYVC

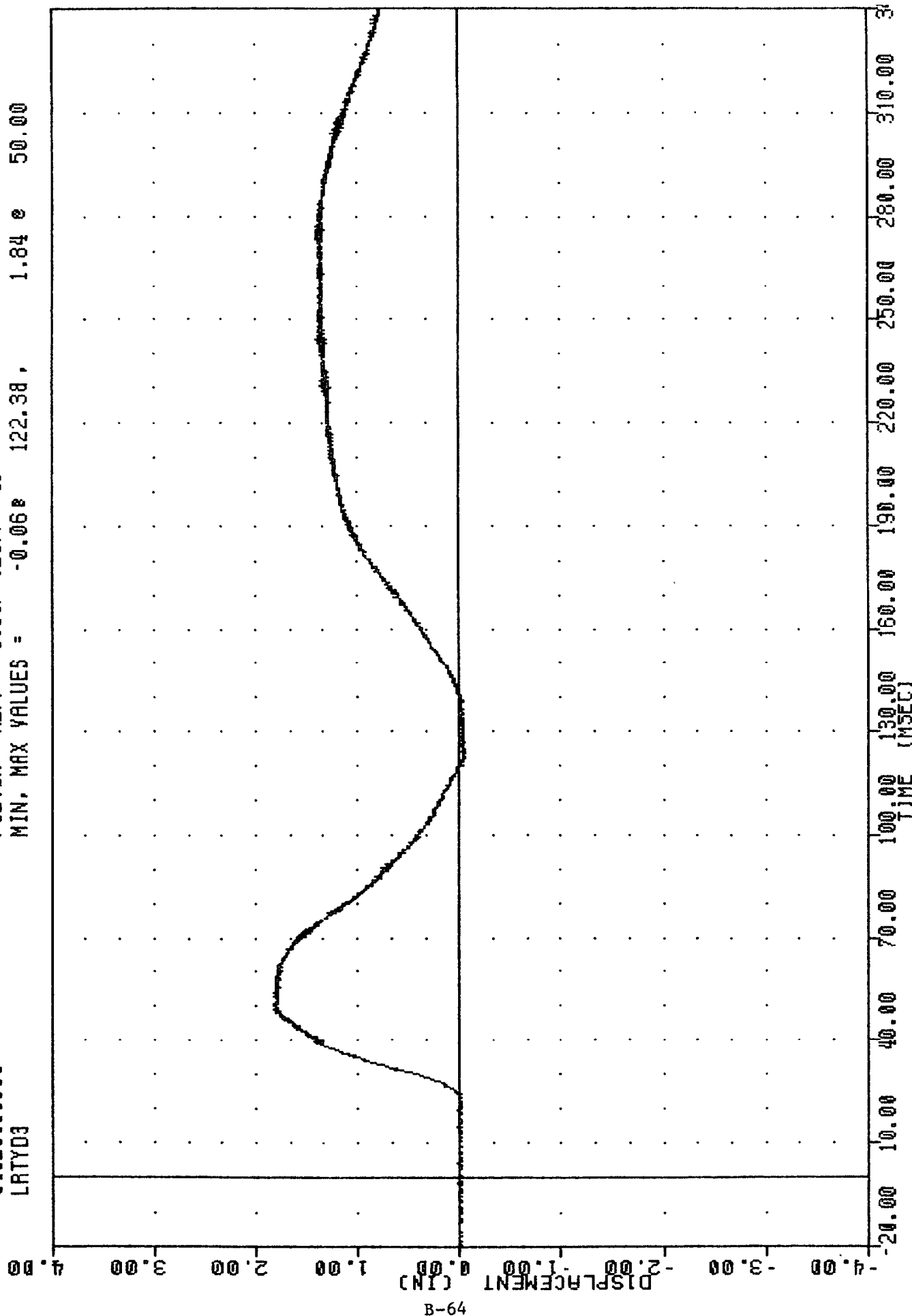
FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.198 20.62, 28.96 @ 125.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYGC

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LRTY03

FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -0.068 122.38, 1.84 @ 50.00

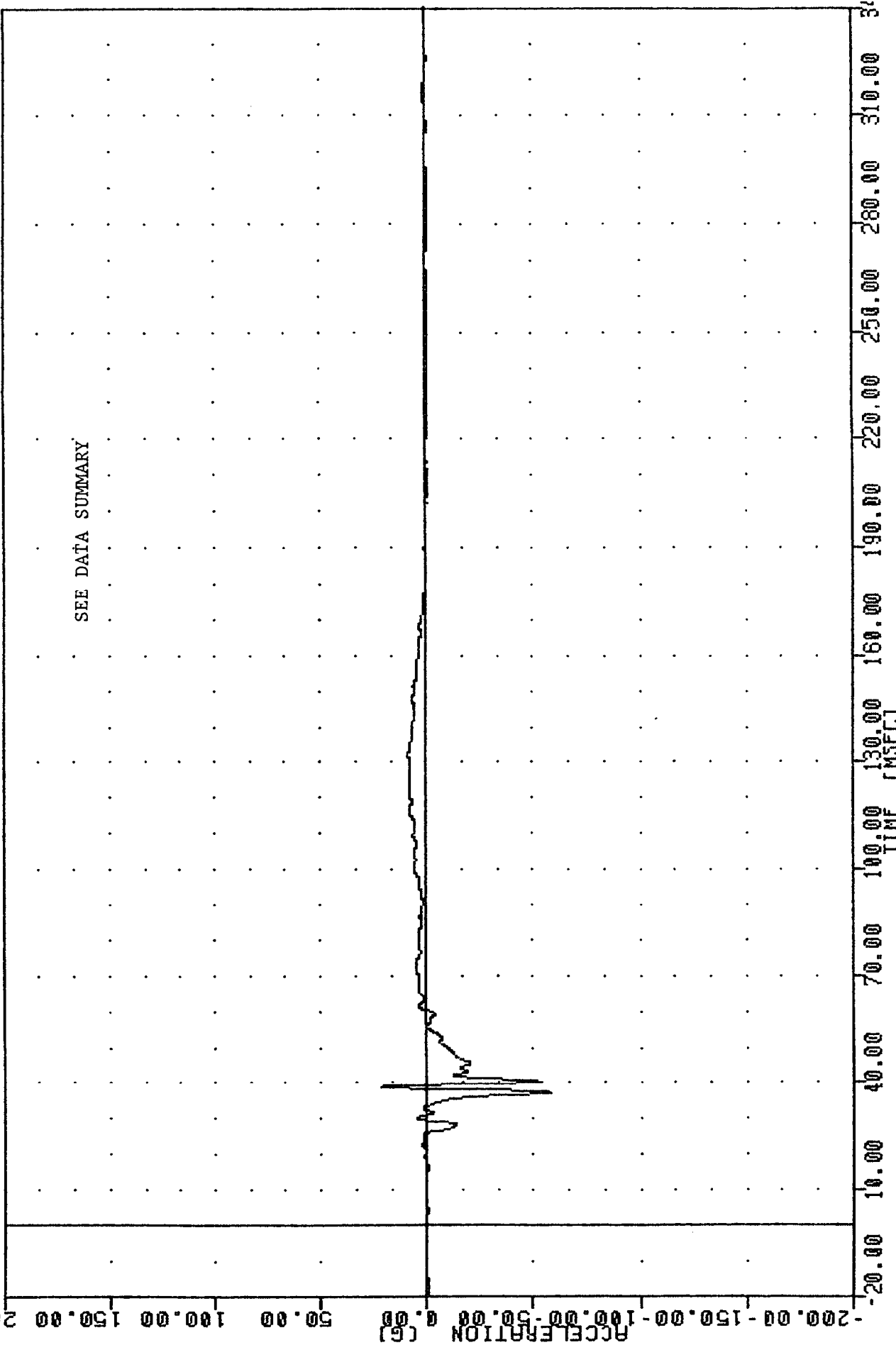


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LEFT RIB TO SPINE DISPLACEMENT INCHES

INC 04112W
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 PEYXG3

ILDT UNIT 27 NOV 02 10:20:06

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -57.700 37.13 21.93 38.75



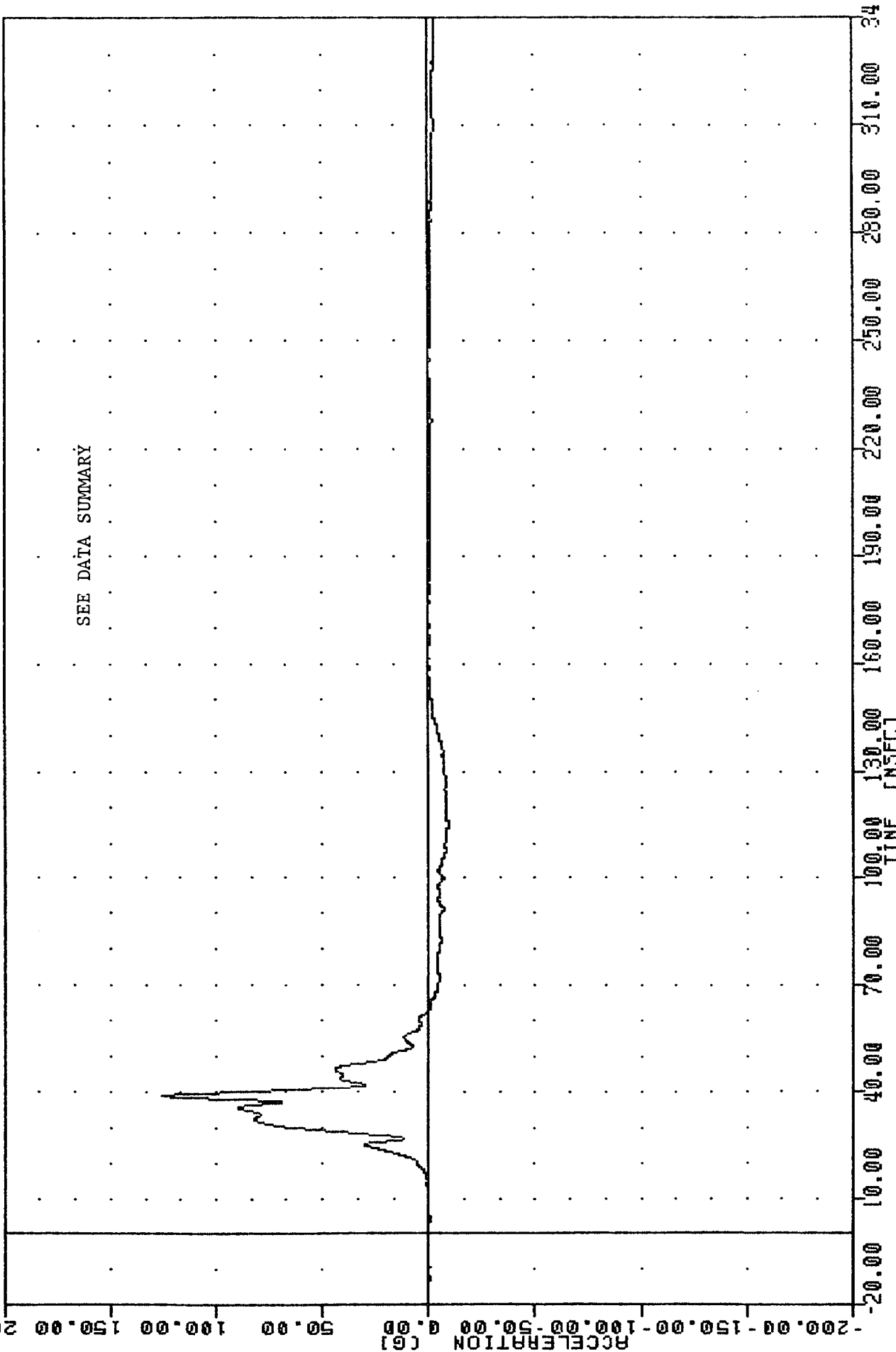
B-65

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION X AXIS

INC 04112W
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 PEVY63

FLU1 UNIL 27 NOV 74 10:23:02

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -8.96e 114.75, 125.08 e 38.63

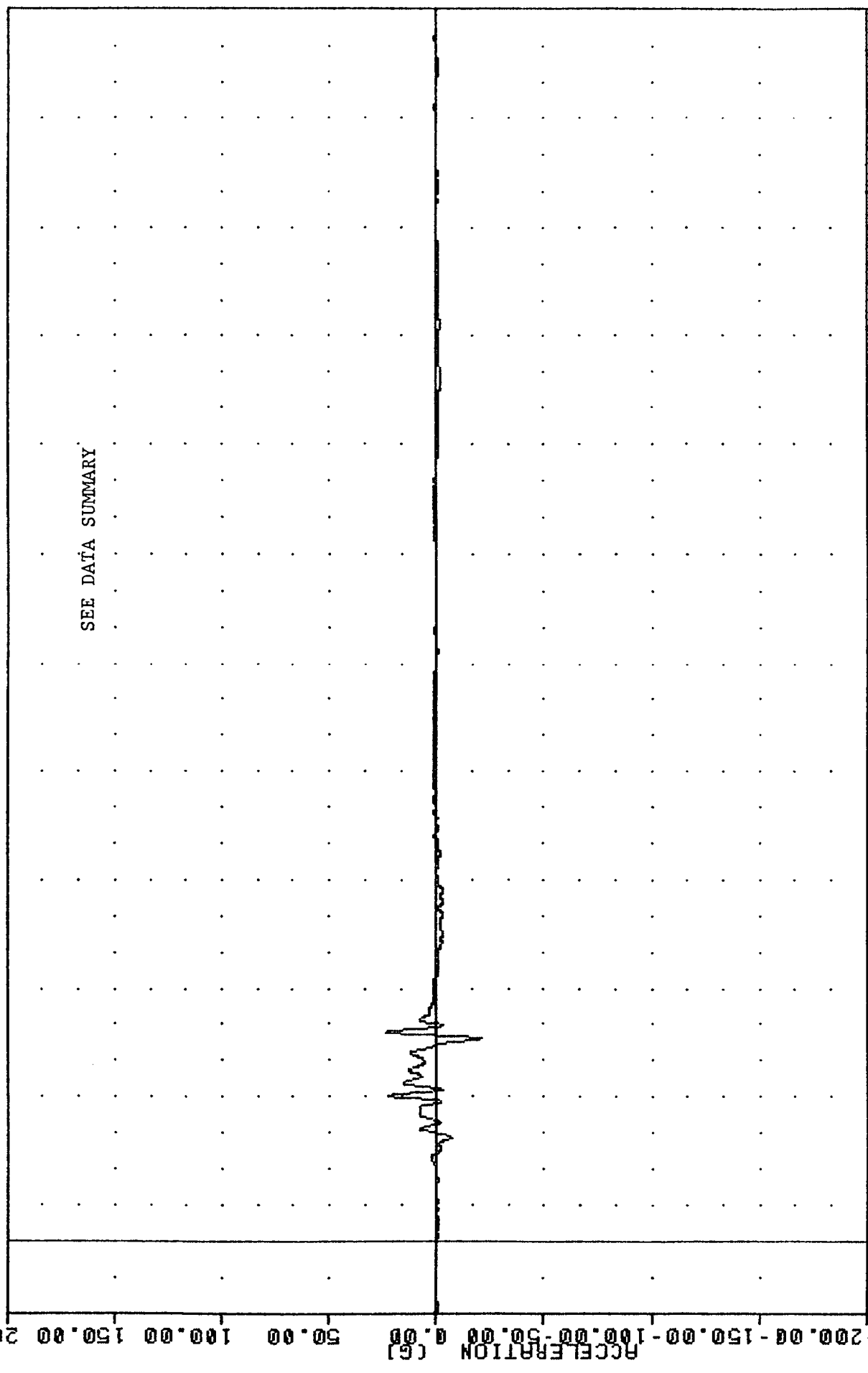


B-66

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION Y AXIS

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 PEVZG3

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -20.530 55.75 , 23.19 0 57.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION Z AXIS

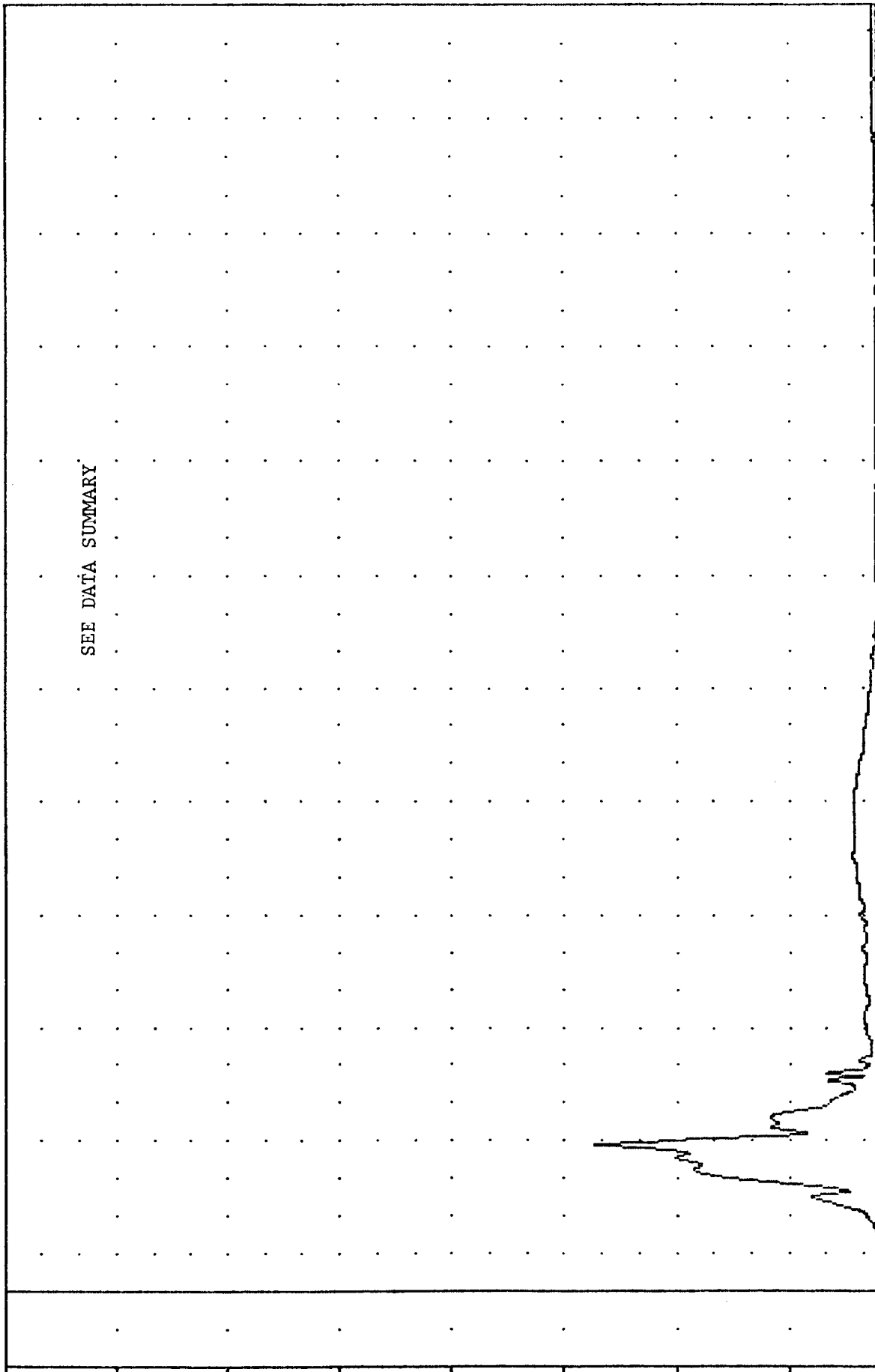
THC , 841120
SIDE AGGRESSIVE ATTRIBUTES
84325000000
PEYRG3

PLUI UNIE 27-NOV-84 16:31:49

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.080 -3.25, 126.92 38.63

ACCELERATION (G)

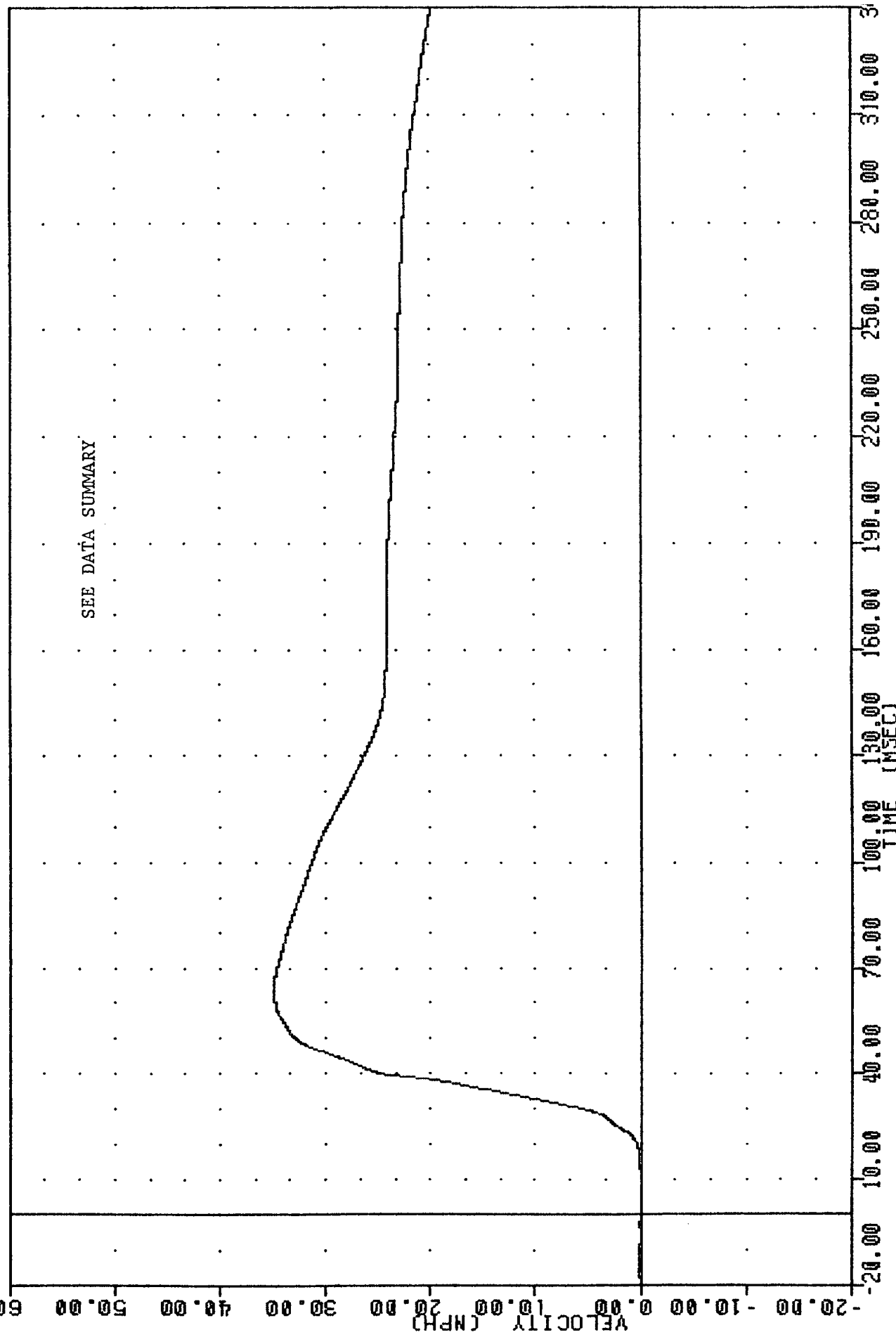


TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS RESULTANT

.....
SIDE AGGRESSIVE ATTRIBUTES
84325000000
PEVYV3

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -0.03e 9.13, 34.95 e 62.75

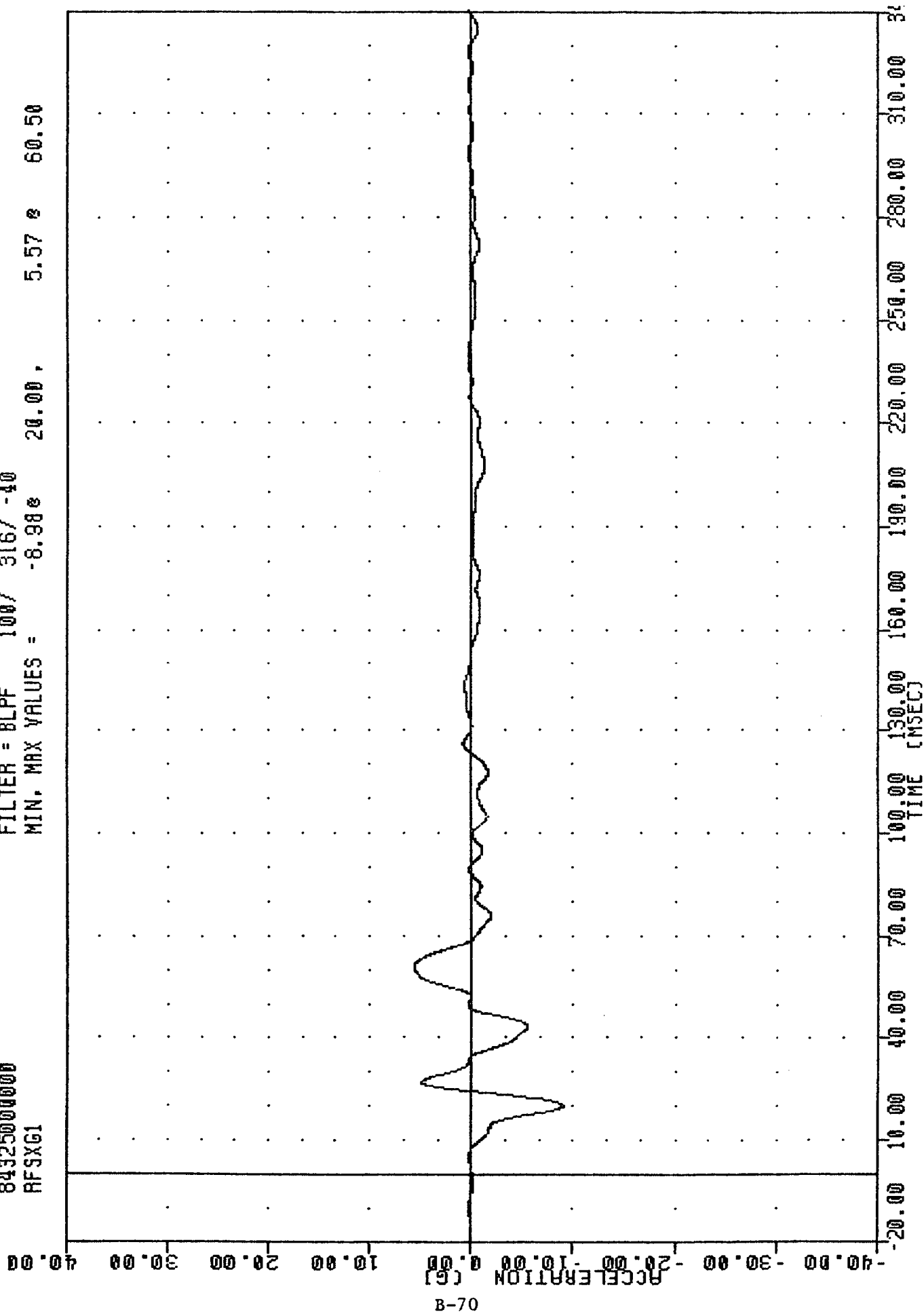


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING PEVY63

SIDE AGGRESSIVE ATTRIBUTES
84325000000
RFSXG1

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -8.98e 20.00,

5.57 s 60.50

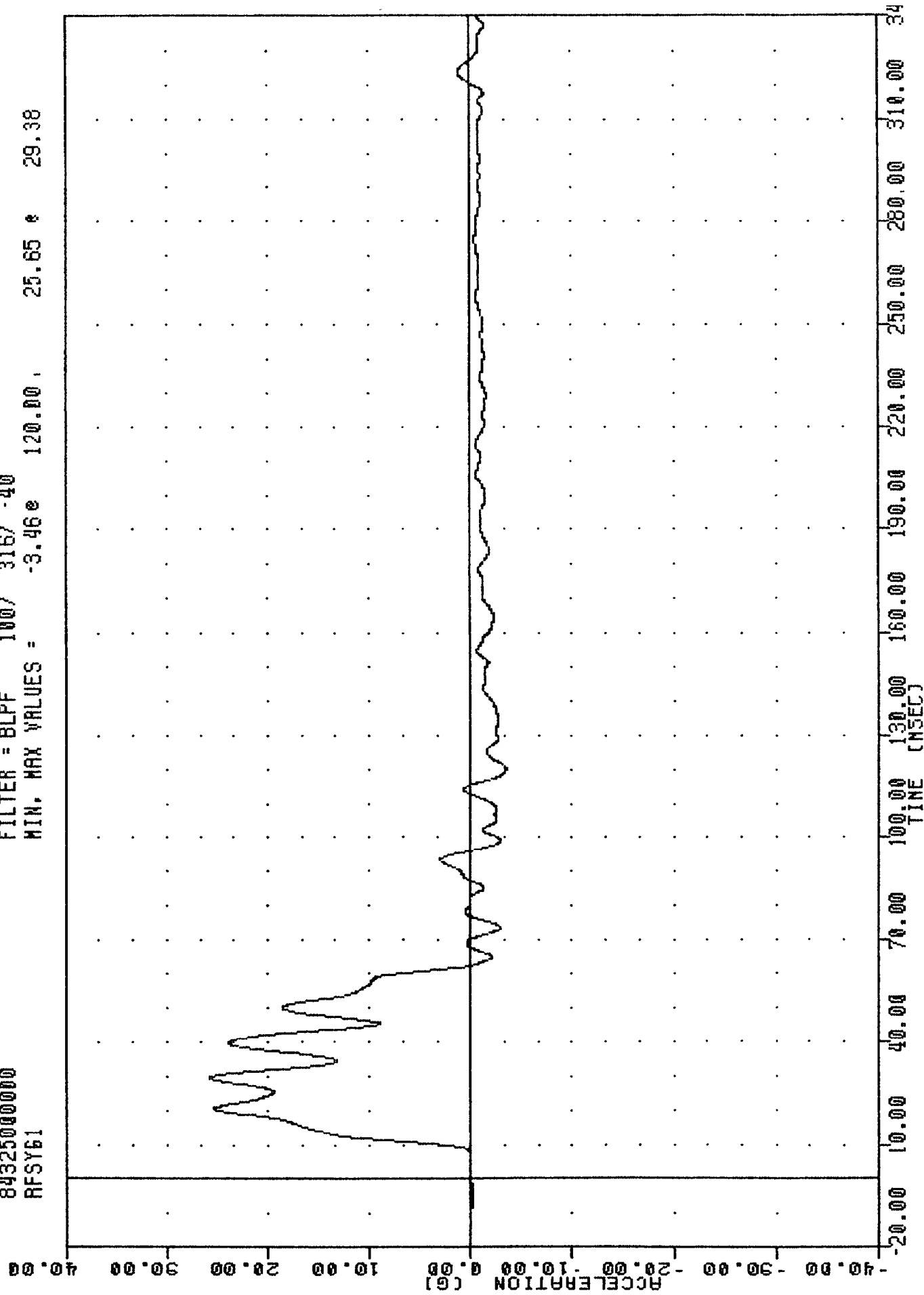


B-70

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

... SIDE AGGRESSIVE ATTRIBUTES
84325000000
RFSY61

... FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -3.46e 120.00 , 25.65 e 29.38



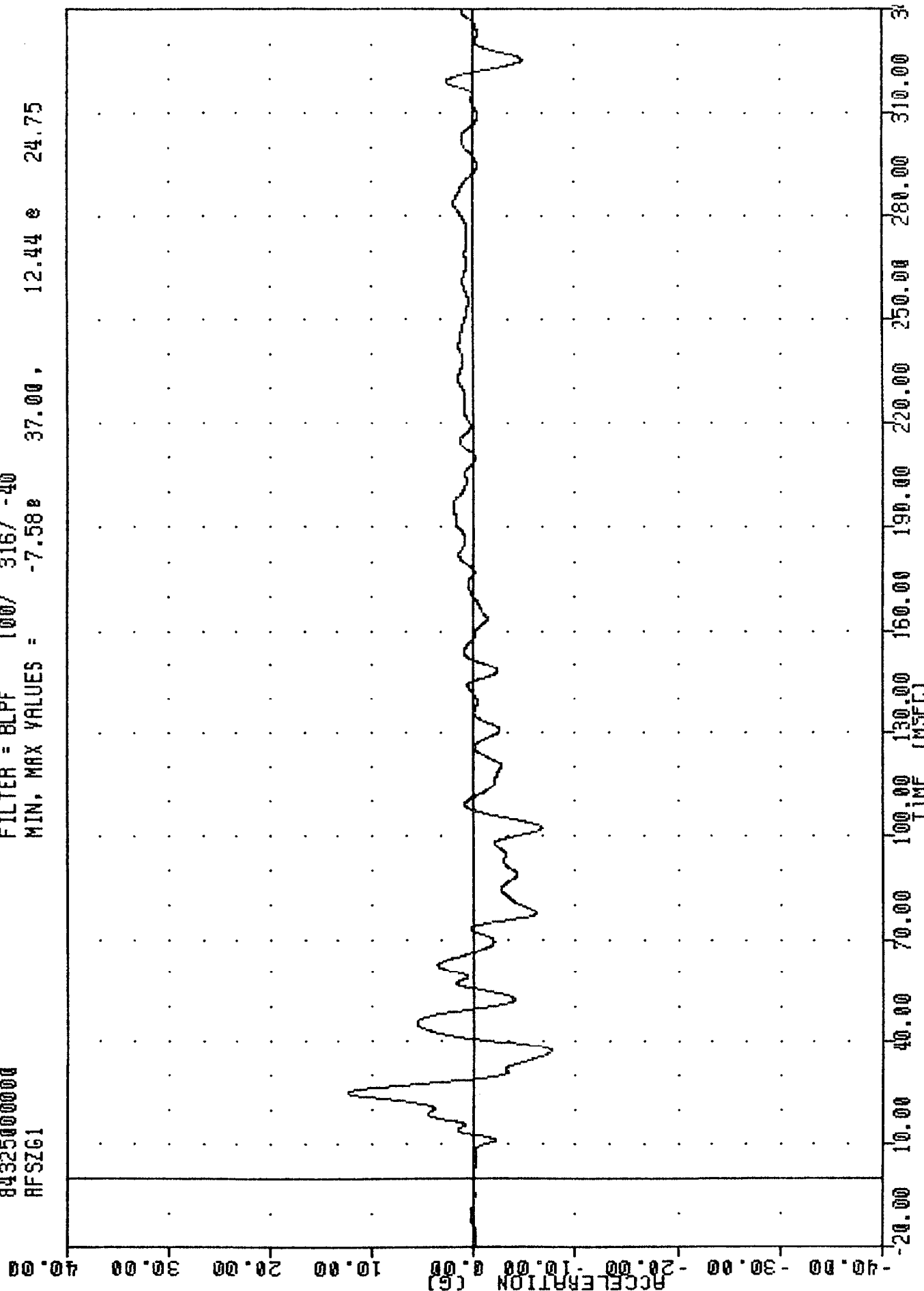
B-71

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

1110
SIDE AGGRESSIVE ATTRIBUTES
84325000000
AFSZG1

1001 0011 00 00 00 00 00 00 00 00

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -7.58 37.00, 12.44 24.75

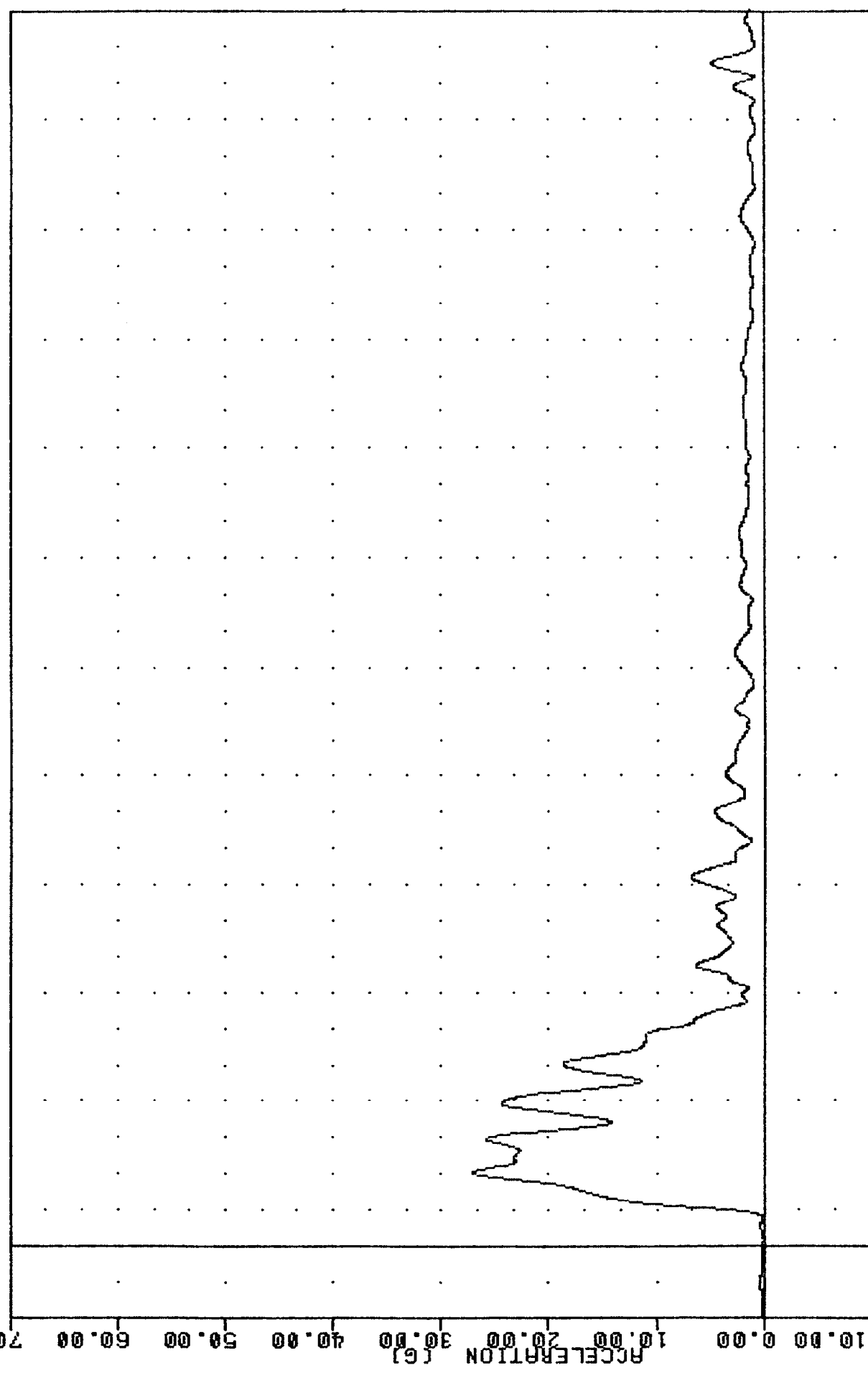


B-72

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

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 RFSRG1

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = 0.01e 1.3e, 27.10 e 20.25



-10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00
 -20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT FRONT SILL RESULTANT

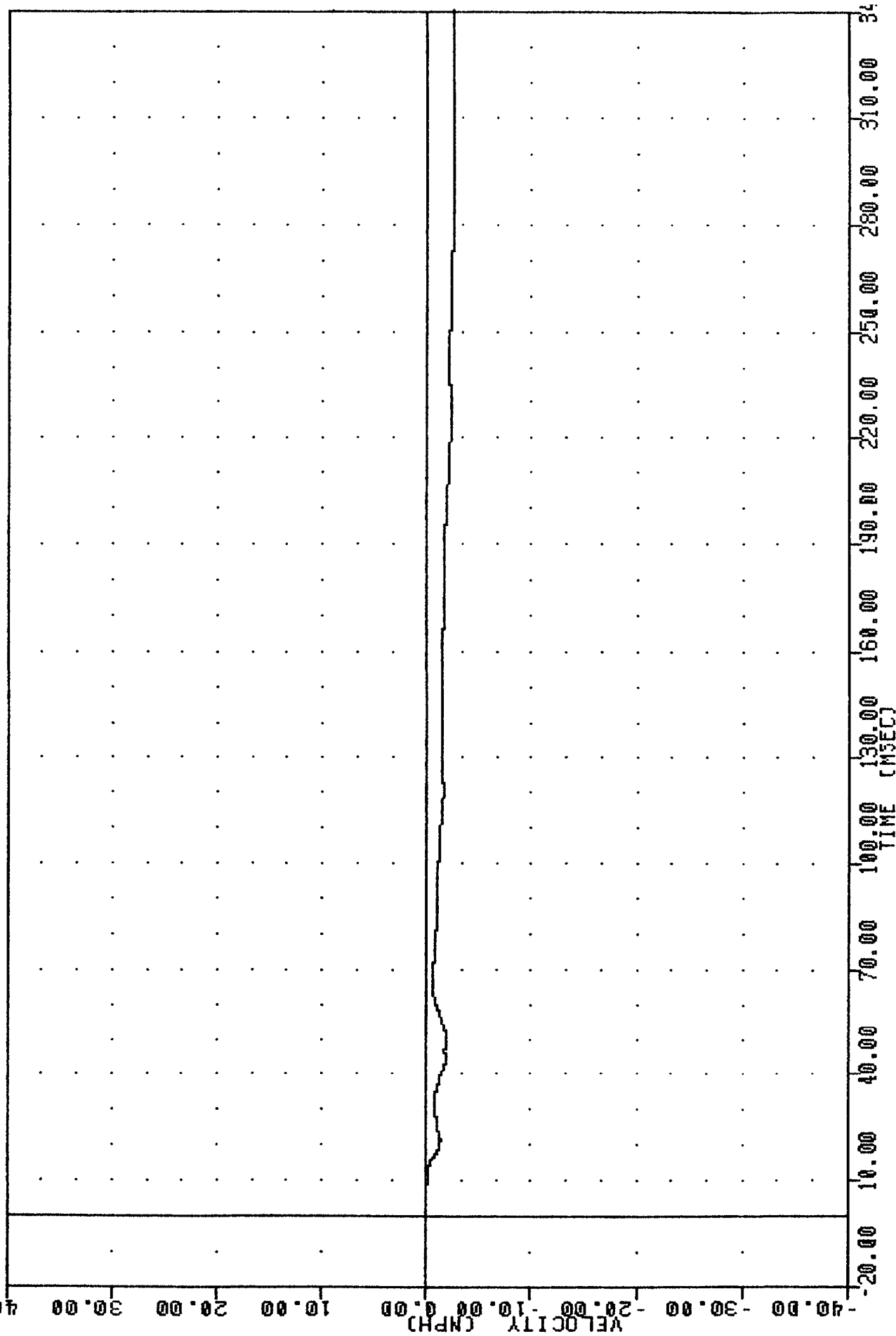
SIDE AGGRESSIVE ATTRIBUTES

84325000000

RFSXV1

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -2.49e 336.38, 0.03 e 4.63

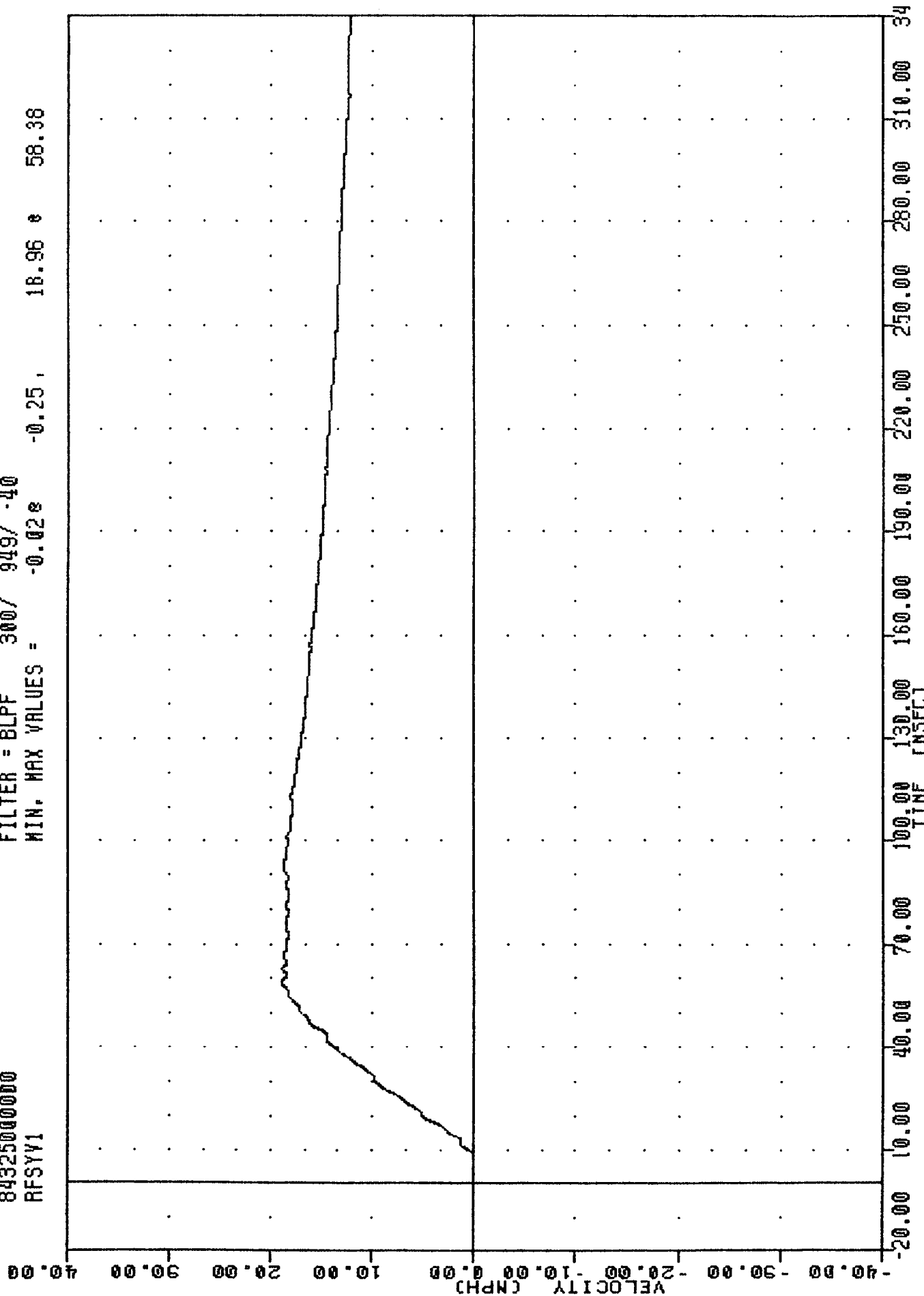


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING RFSXG1

INC SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 RFSYV1

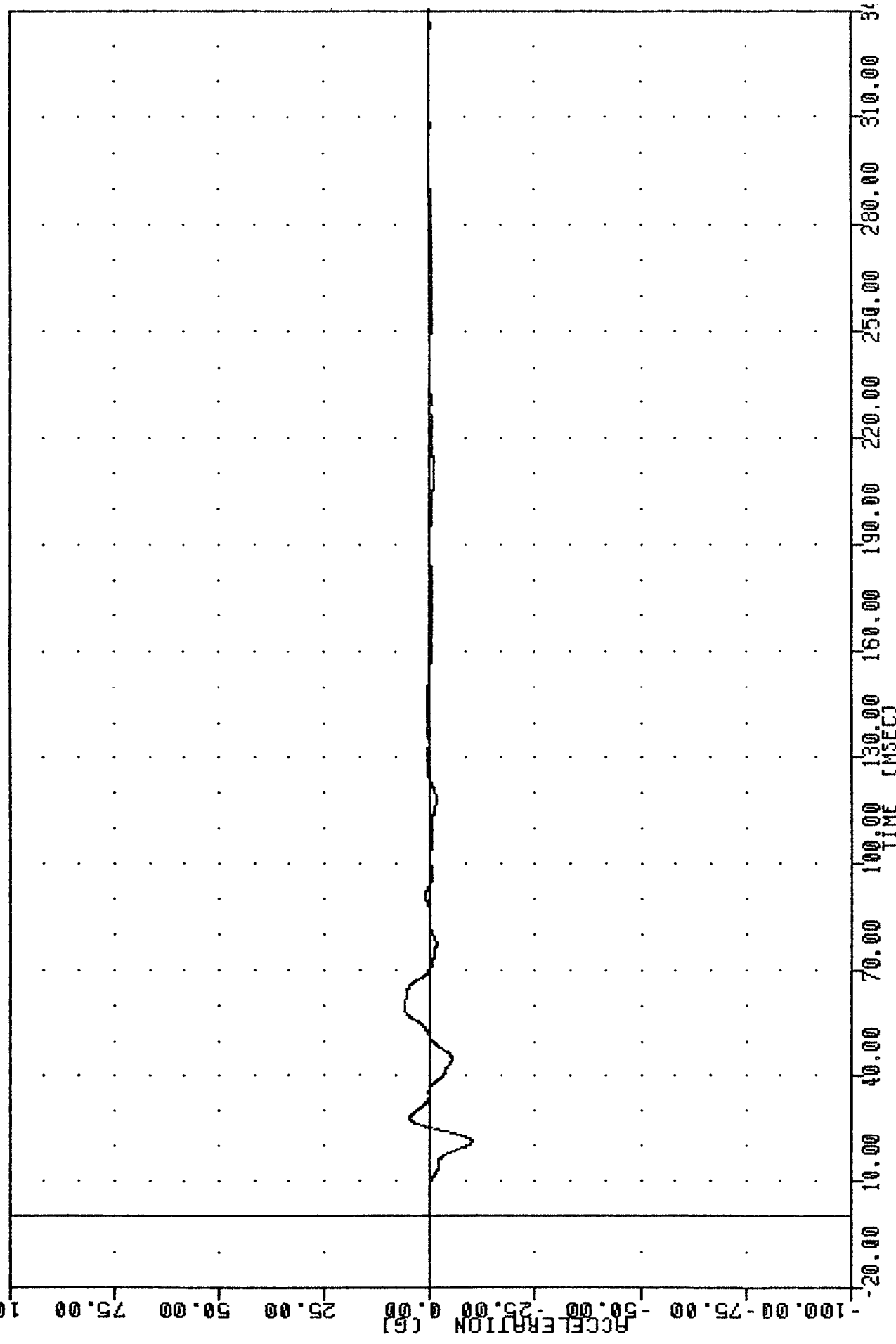
FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -0.028 -0.25, 18.96 58.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RFSYGI

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 RRSXG2

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -9.76e 21.13, 6.10 e 59.13

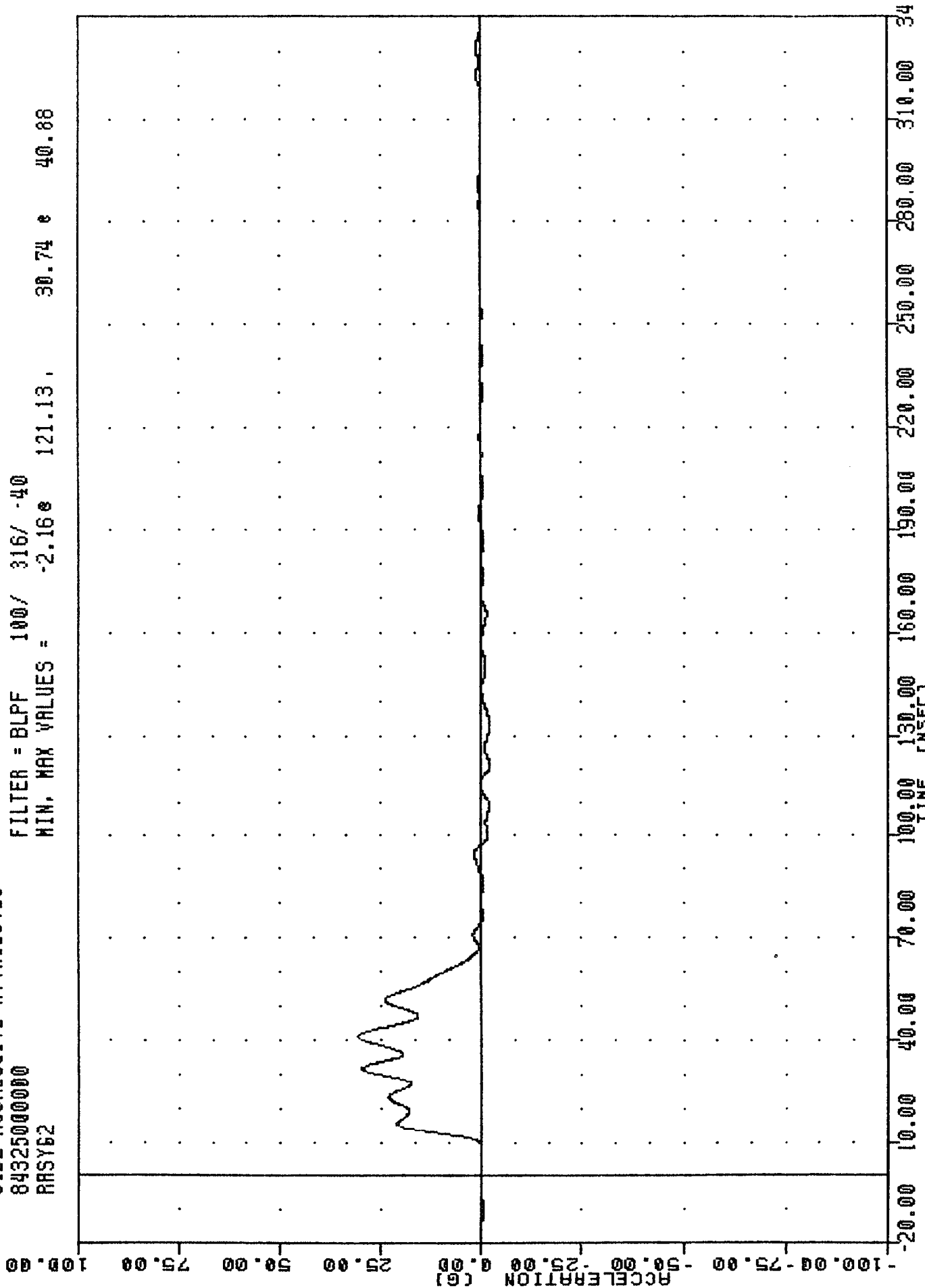


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT REAR SILL ACCELERATION X AXIS

1112
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 RRSY62

1201 0011L 27 NOV 03 10:23:32

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -2.16e 121.13, 30.74 e 40.88



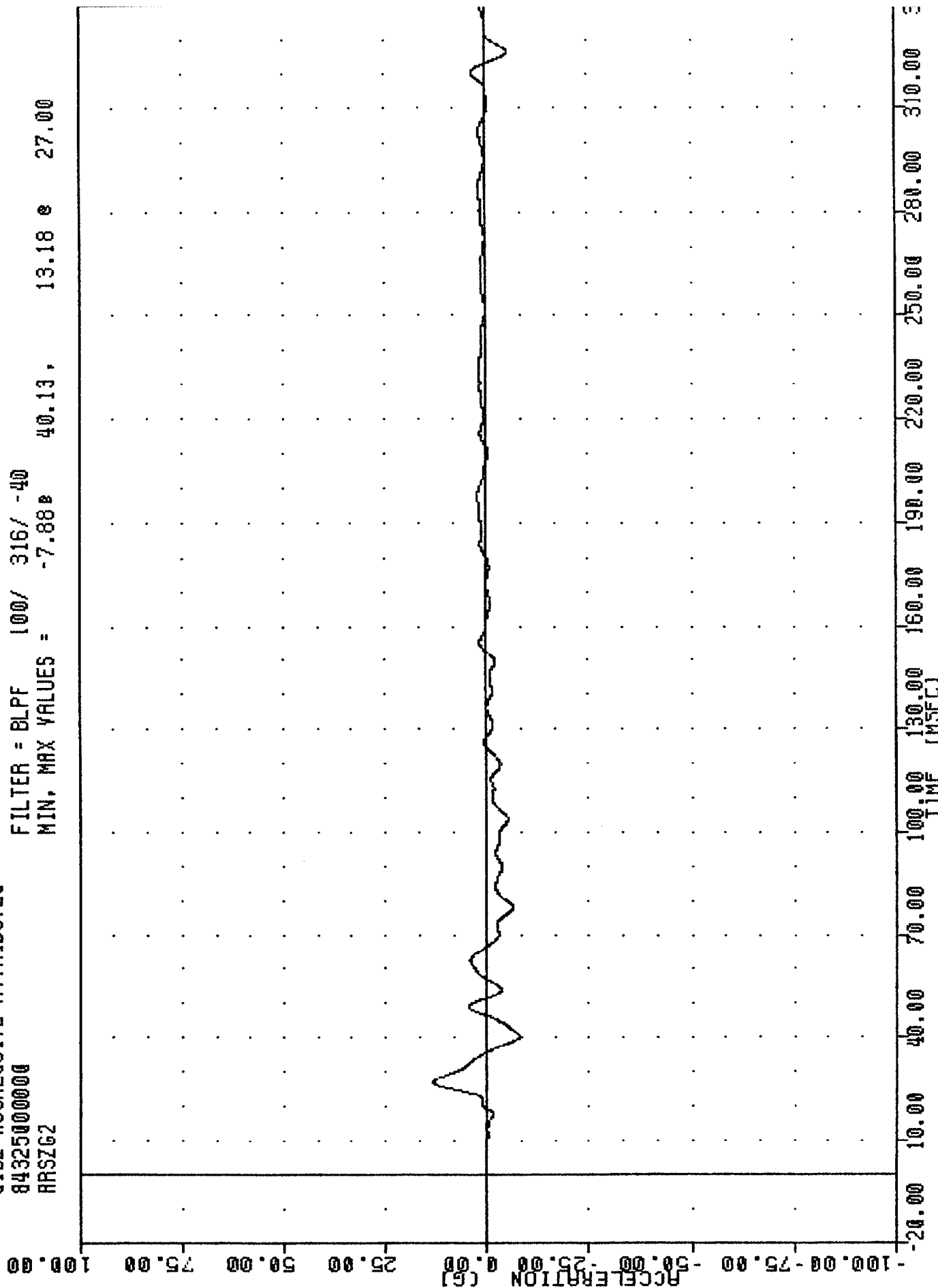
B-77

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

דער פאגל פאר אים

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -7.88E

40.13.	13.18	27.00
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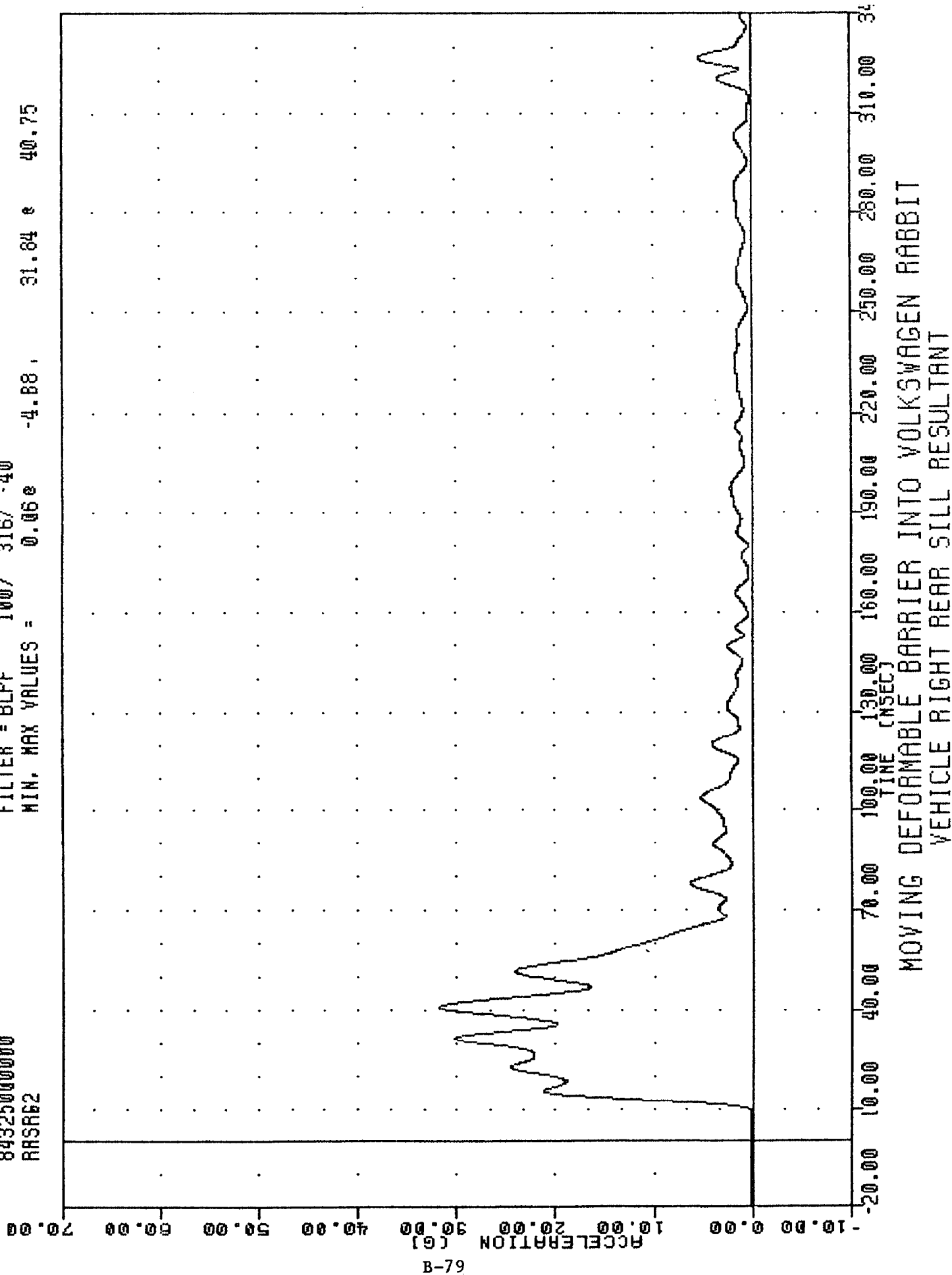
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL ACCELERATION Z AXIS

TAC , 841120
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 RRSRB2

PLOT DATE 27-NOV-84 16:31:49

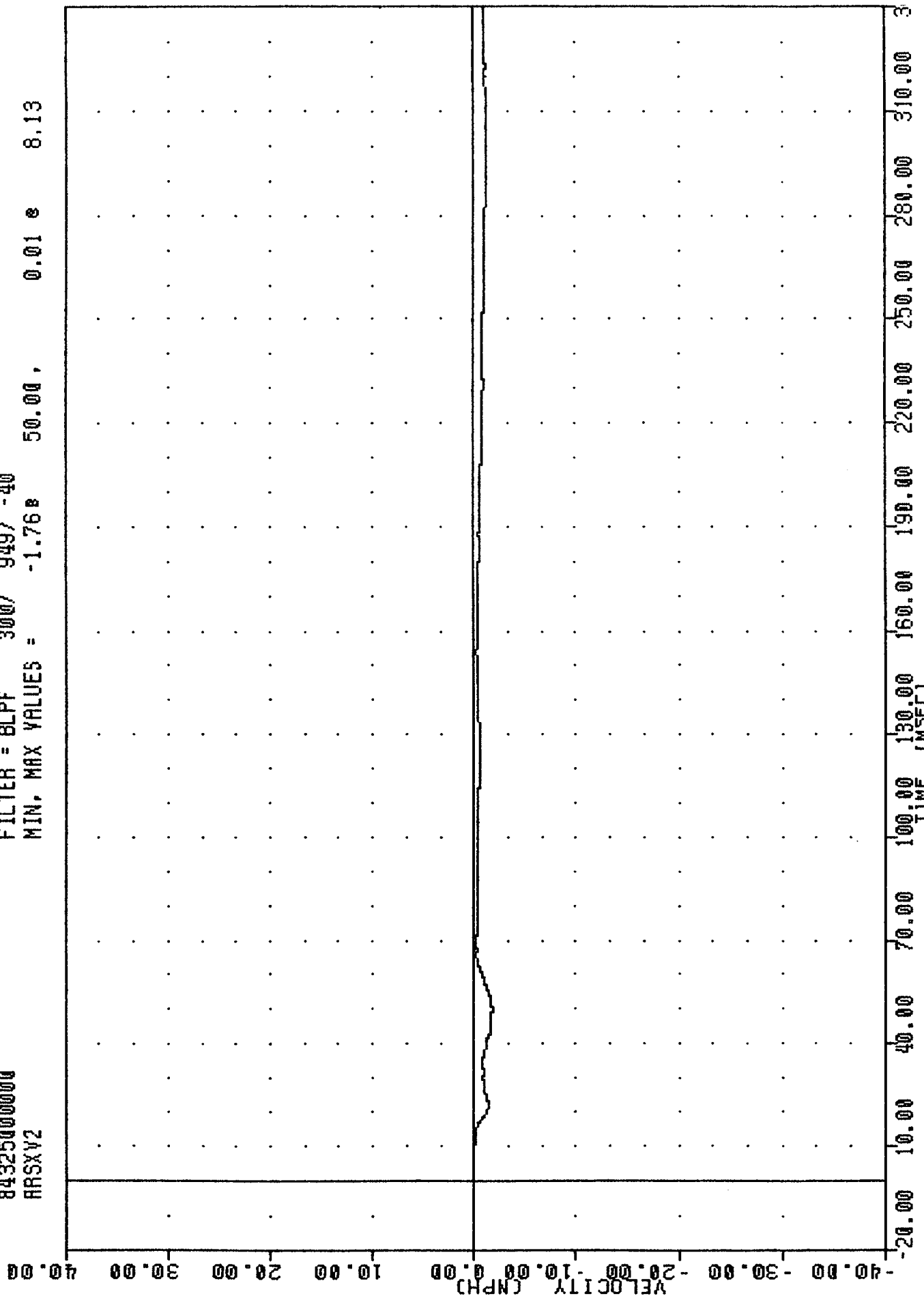
FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = 0.06e -4.88, 31.64 e 40.75



SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 RRSXY2

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -1.768 50.00, 0.01 8.13

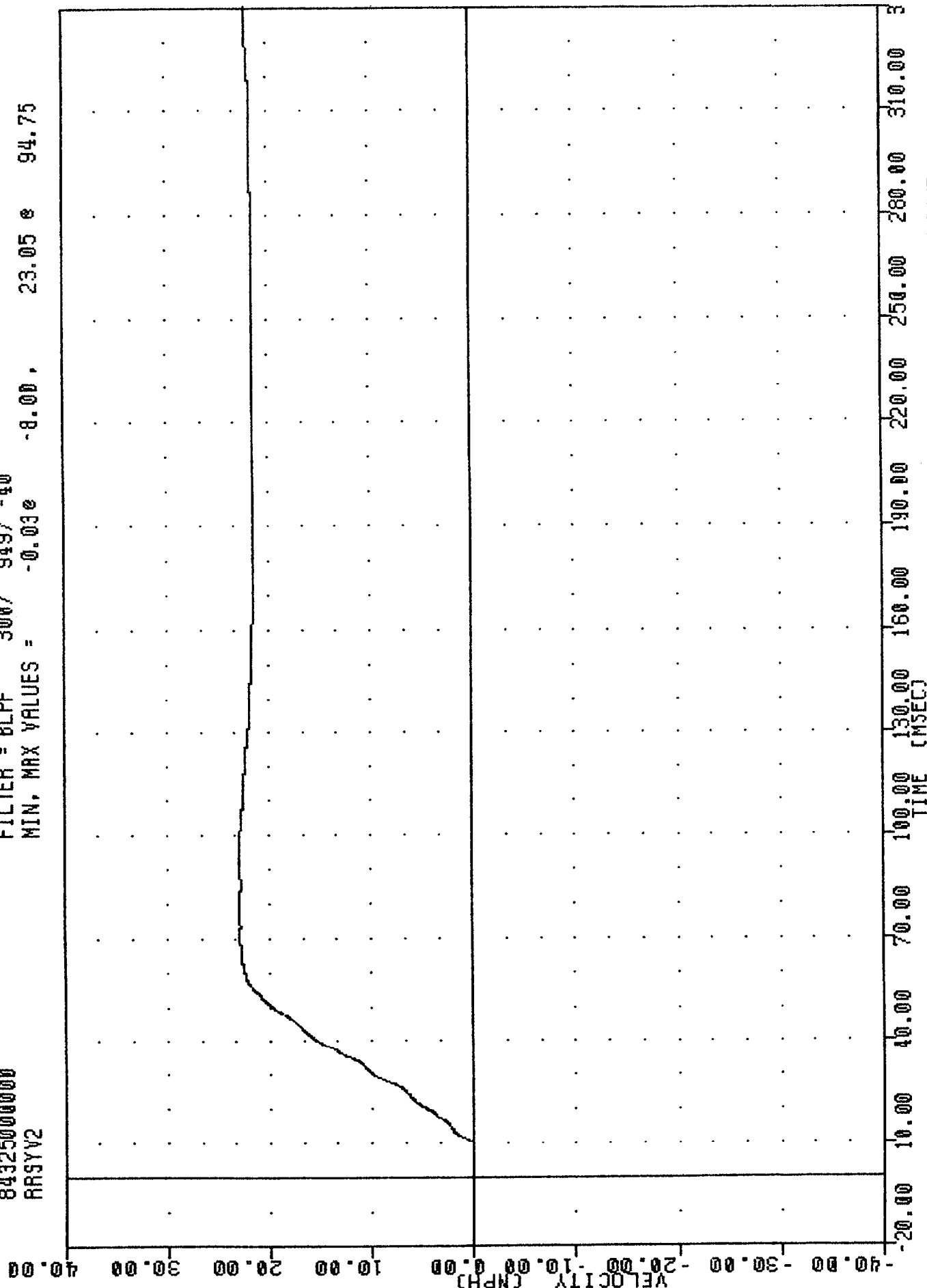


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRSXG2

TRC , 841120
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 RRSYV2

PLUI UNIE 2/-NUV-84 10:32:40

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.03e -8.00, 23.05 e 94.75



B-81

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRSYG2

THC , 841120
SIDE AGGRESSIVE ATTRIBUTES
84325000000
RDKX63

PLUI UNIE 27-NOV-84 16:29:02

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -17.79e 40.25, 8.15 e 22.13

40.00

30.00

20.00

10.00

ACCELERATION (G)

0.00

-10.00

-20.00

-30.00

-40.00

TIME (MSEC)

-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

220.00

250.00

280.00

310.00

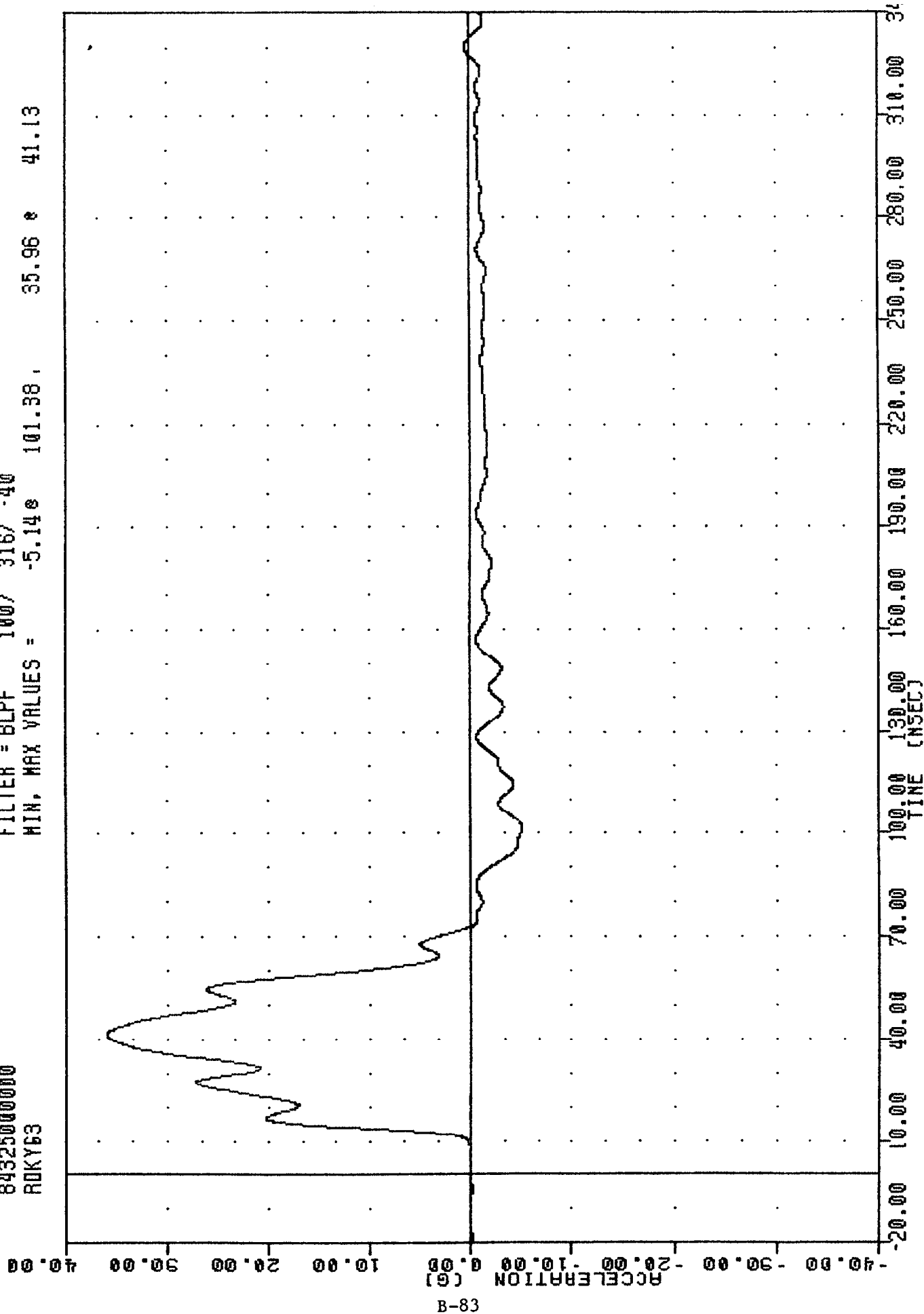
3

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

SIDE AGGRESSIVE ATTRIBUTES
84325000000
RDY63

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -5.14e 101.38 ,

35.96 e 41.13



B-83

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

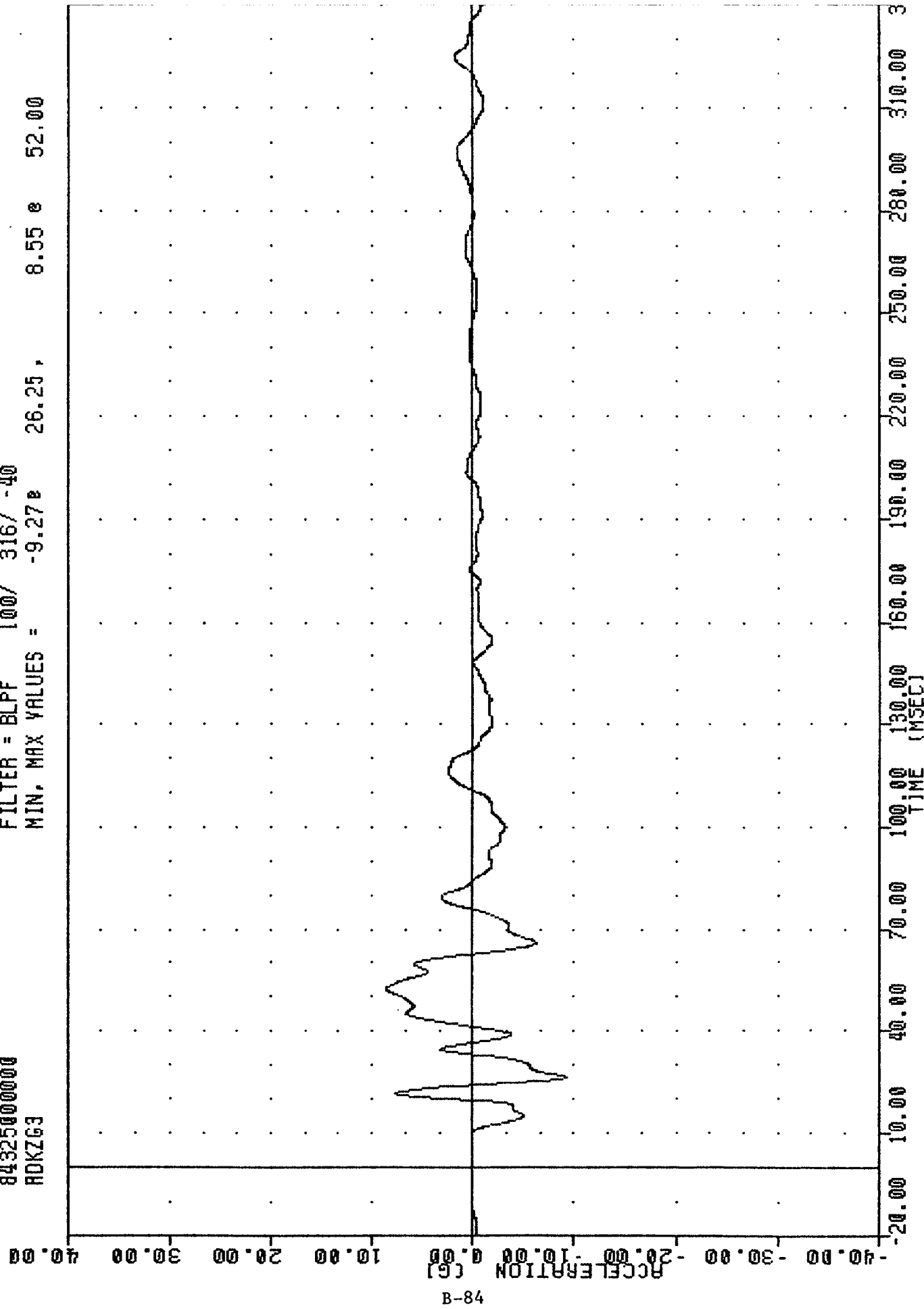
..... SIDE AGGRESSIVE ATTRIBUTES

84325000000

ADKZG3

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -9.27e 26.25, 8.55 e 52.00



B-84

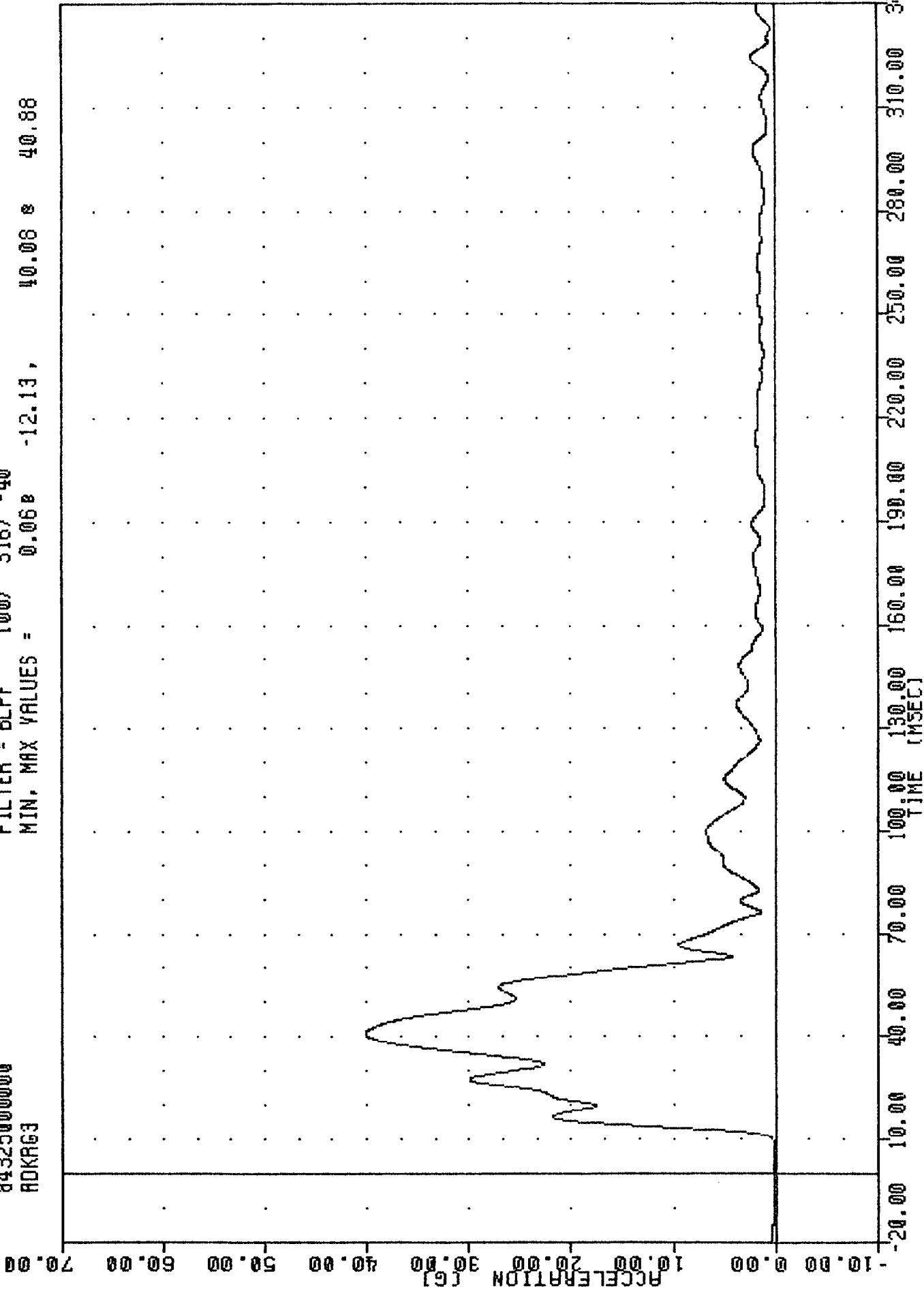
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION Z AXIS

TRC , 841120
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 ADKR63

PLOT DATE 27-NOV-84 16:31:49

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.060 -12.13, 40.08 8 40.88



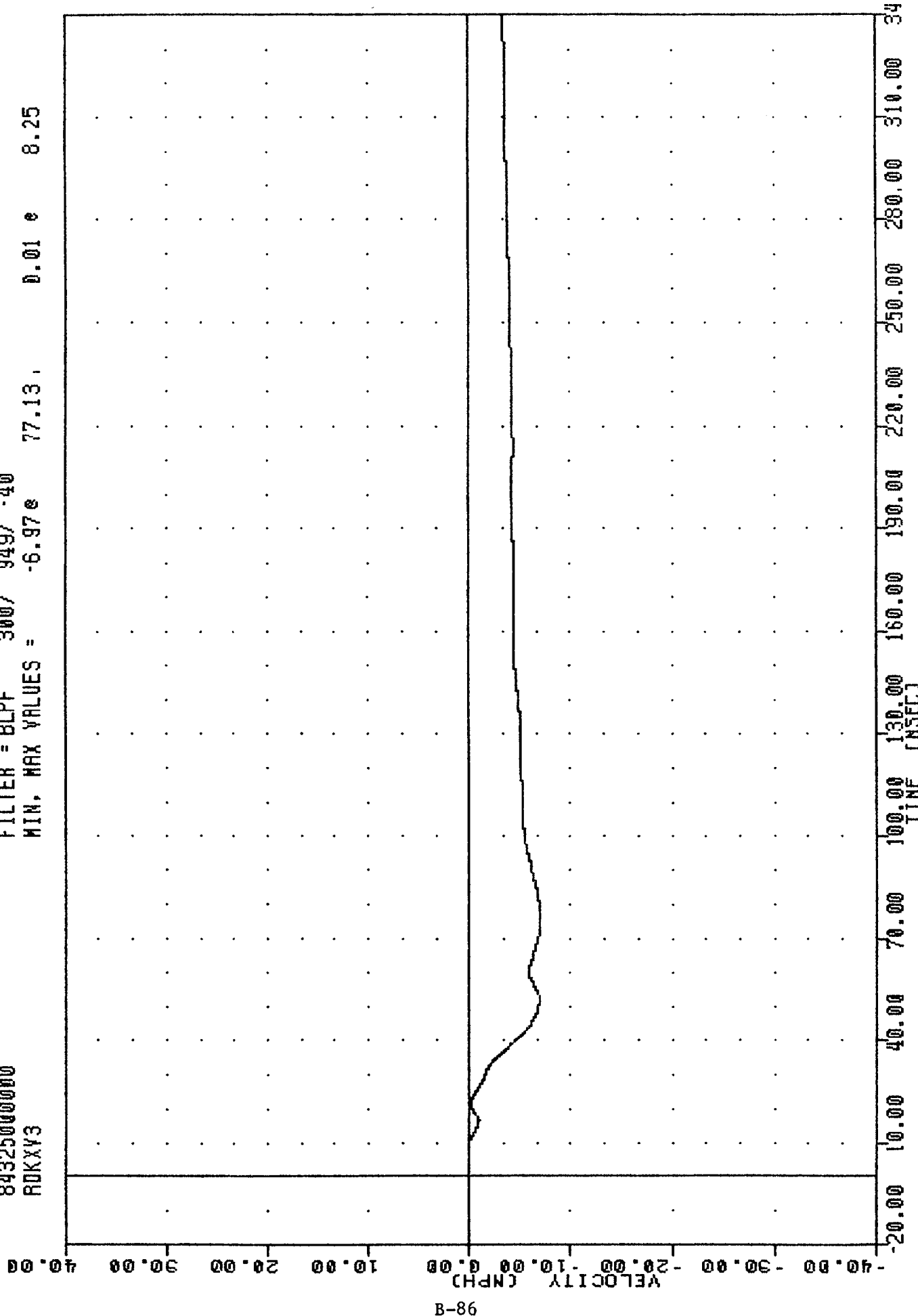
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE REAR DECK RESULTANT

TAC , 841120
SIDE AGGRESSIVE ATTRIBUTES
84325000000
RDKXV3

PLOT DATE 27-NOV-84 16:32:40

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -6.97e 77.13, 0.01 e 8.25

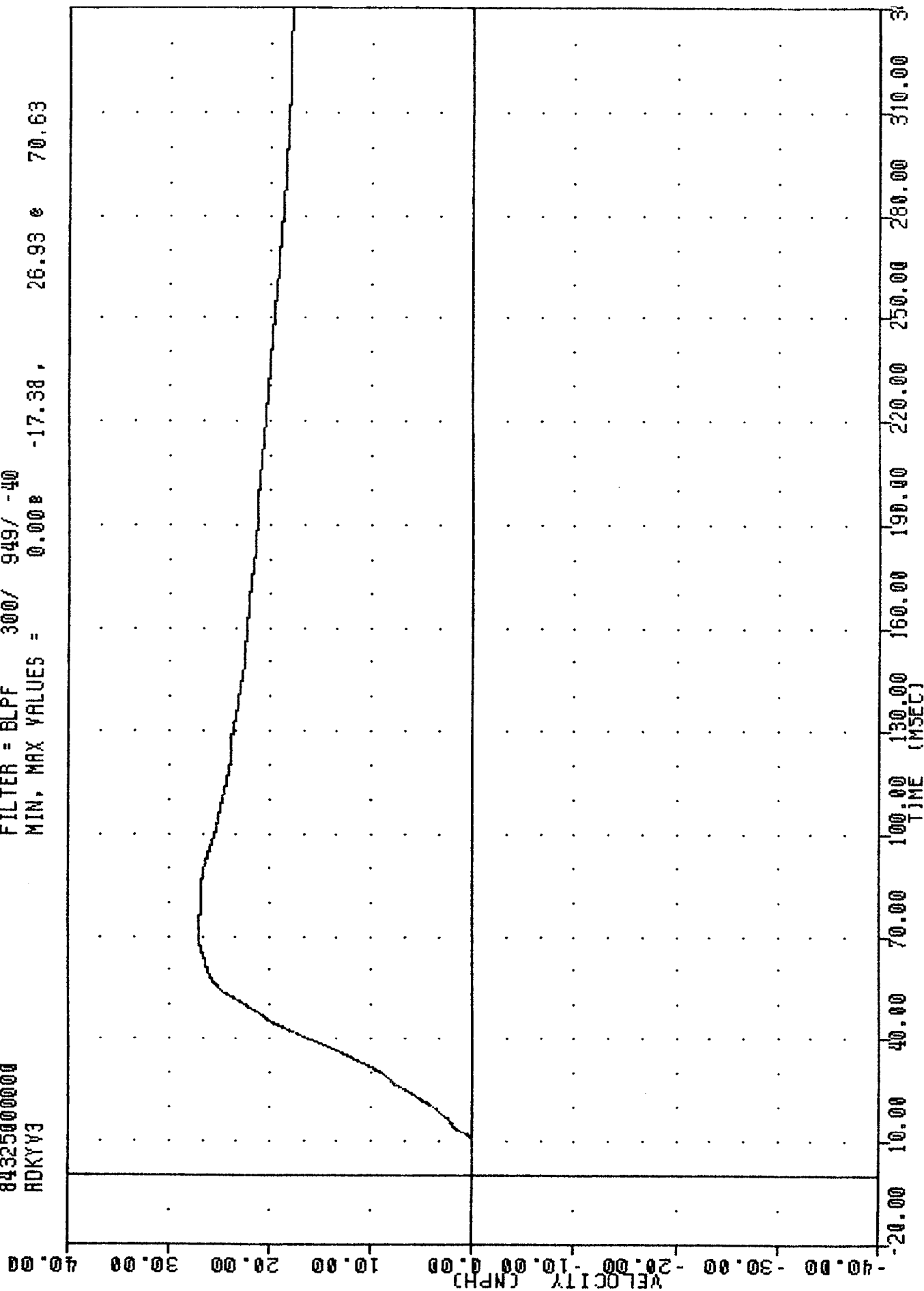


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RDKXG3

1110 P 071120
SIDE AGGRESSIVE ATTRIBUTES
84325000000
ADKYV3

1 101 0011 27 NOV 04 10:02:40

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 0.000 -17.38, 26.93 @ 70.63



B-87

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING ADKYG3

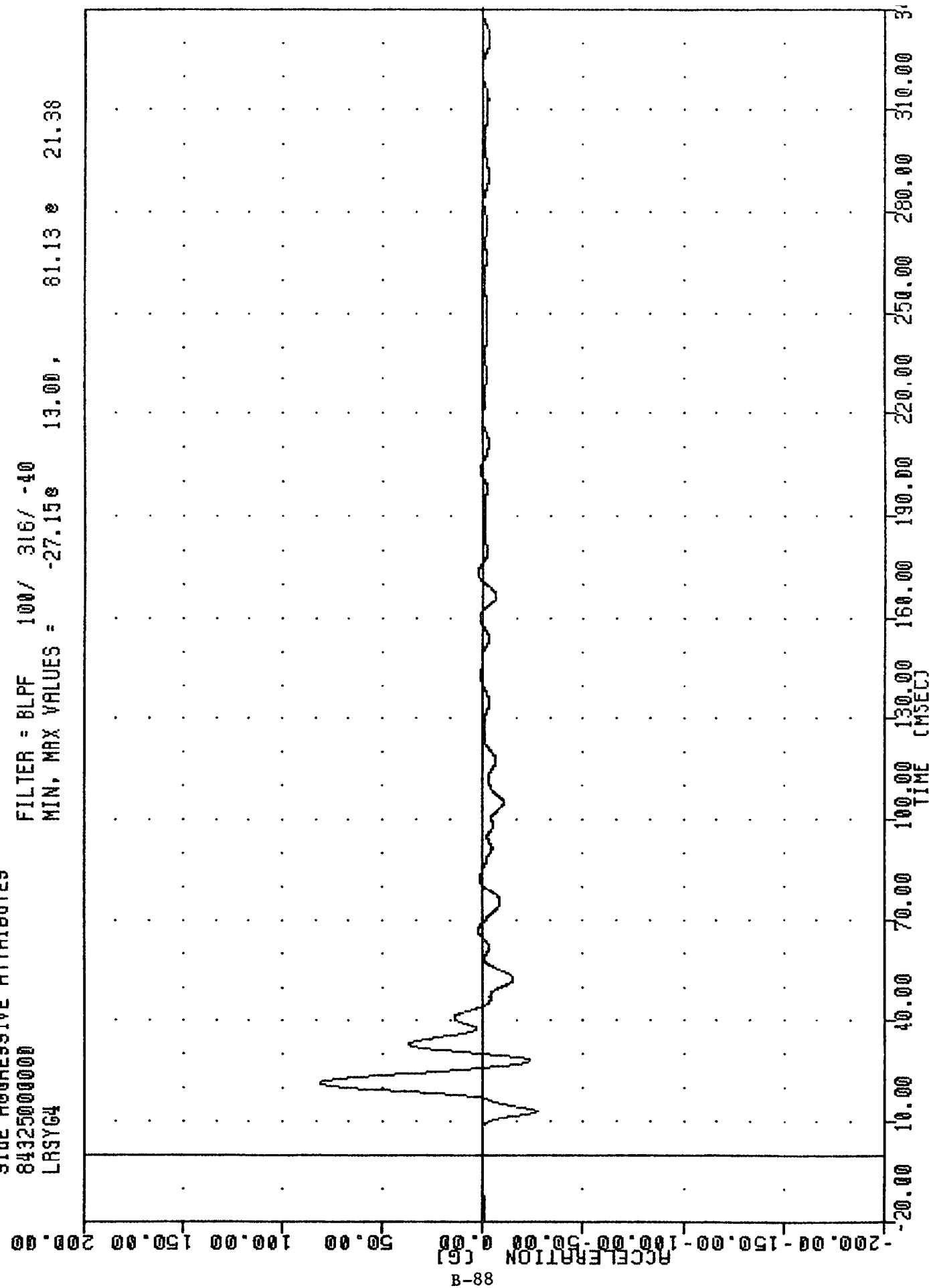
SIDE AGGRESSIVE ATTRIBUTES

843250000000

LRSYG4

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -27.15e 13.00, 81.13 e 21.38



B-88

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

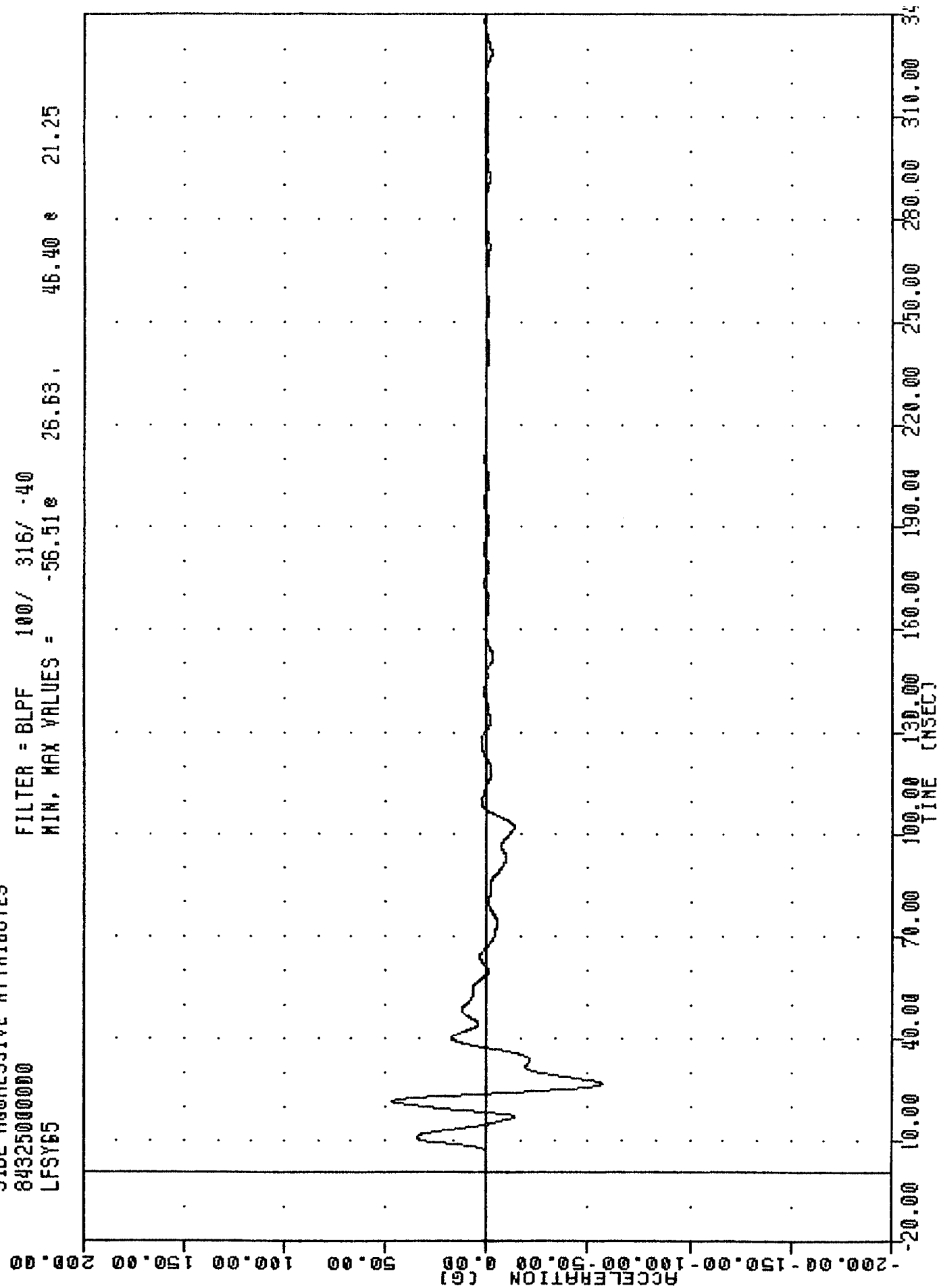
SIDE AGGRESSIVE ATTRIBUTES

84325000000

LFSY65

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -56.51e 26.63, 46.40 e 21.25



B-90

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

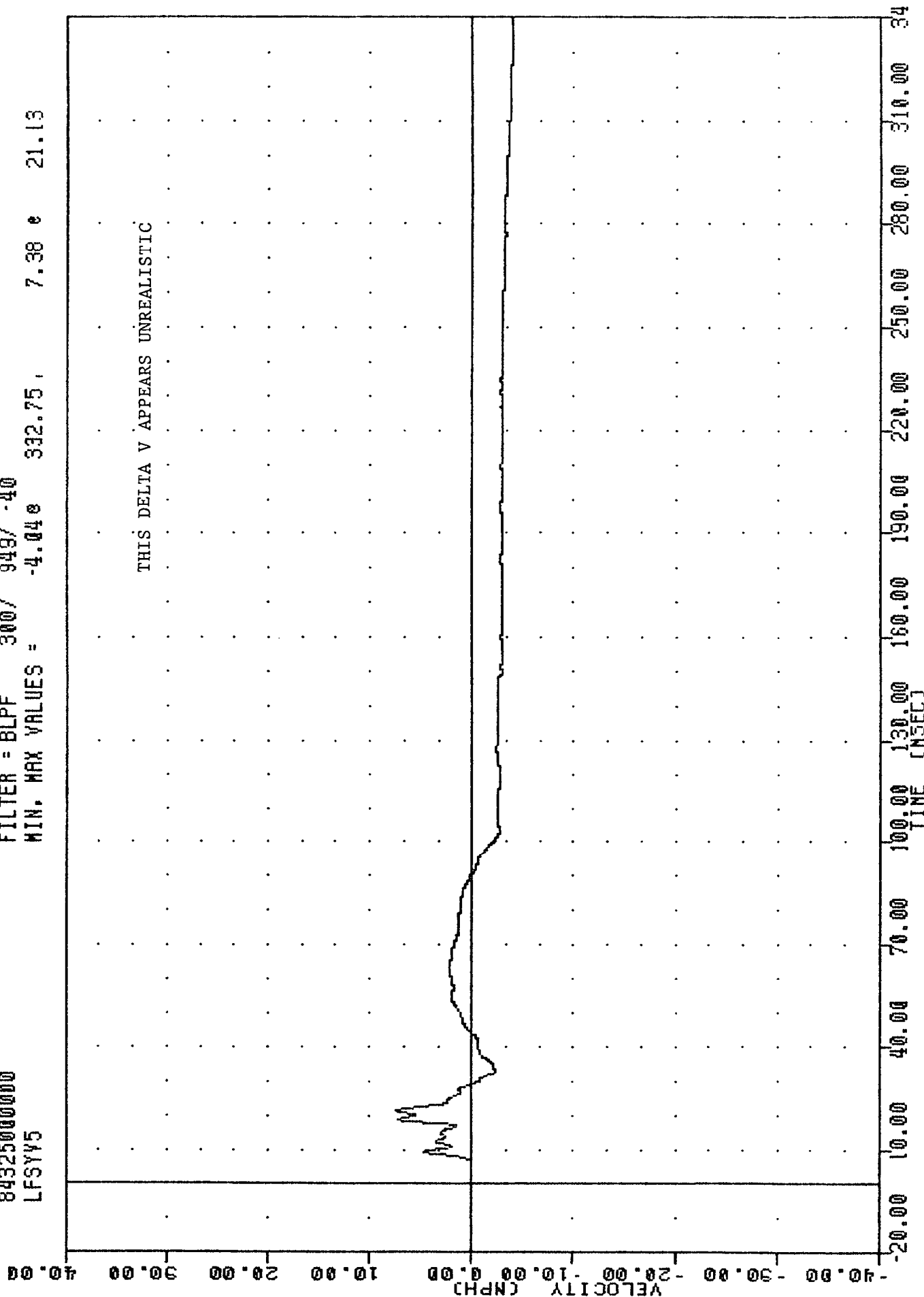
SIDE AGGRESSIVE ATTRIBUTES

84325000000

LFSYV5

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -4.040 332.75 , 7.38 e 21.13

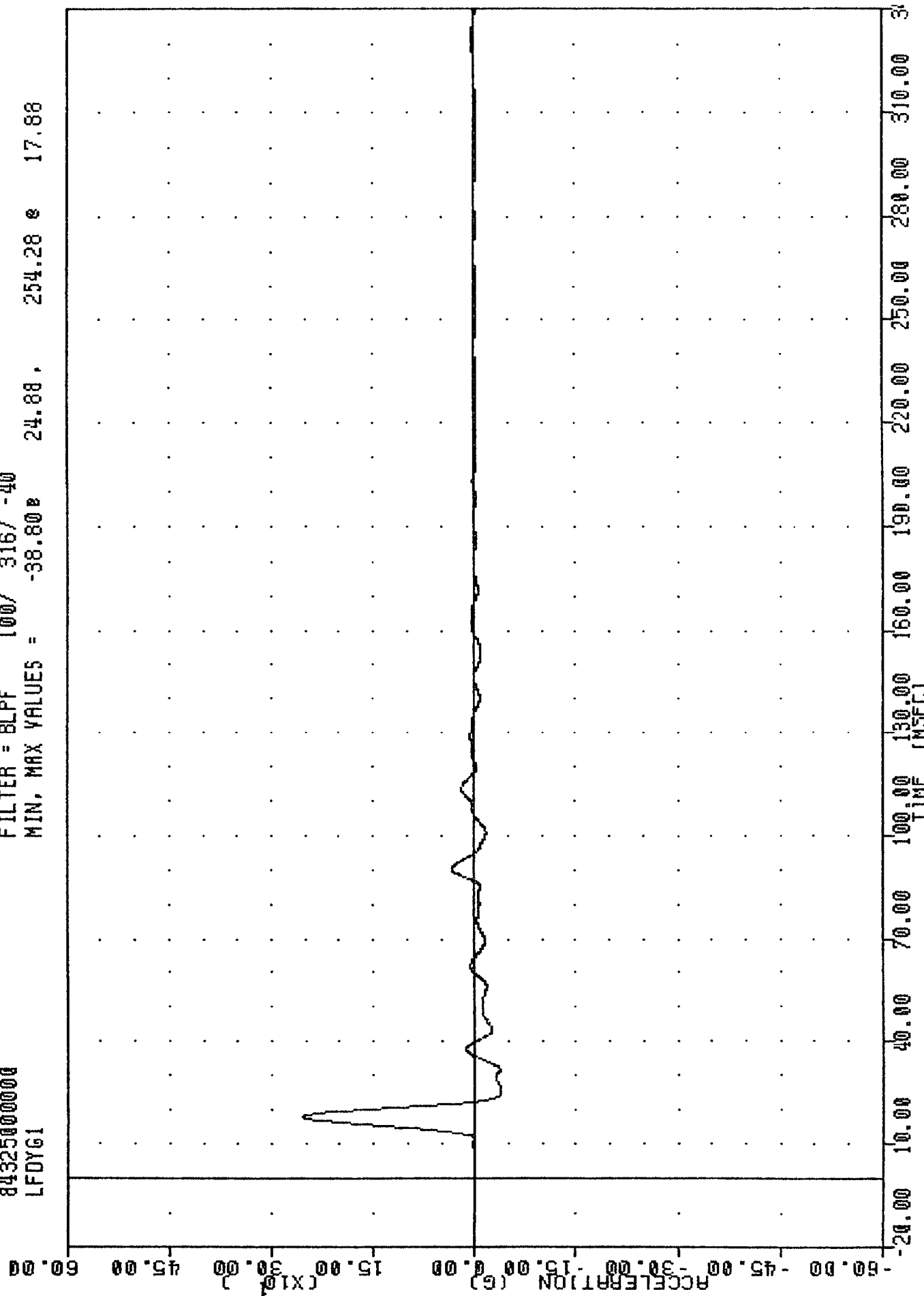


B-91

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFSYG5

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LFDY61

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -38.80 24.88, 254.28 17.88

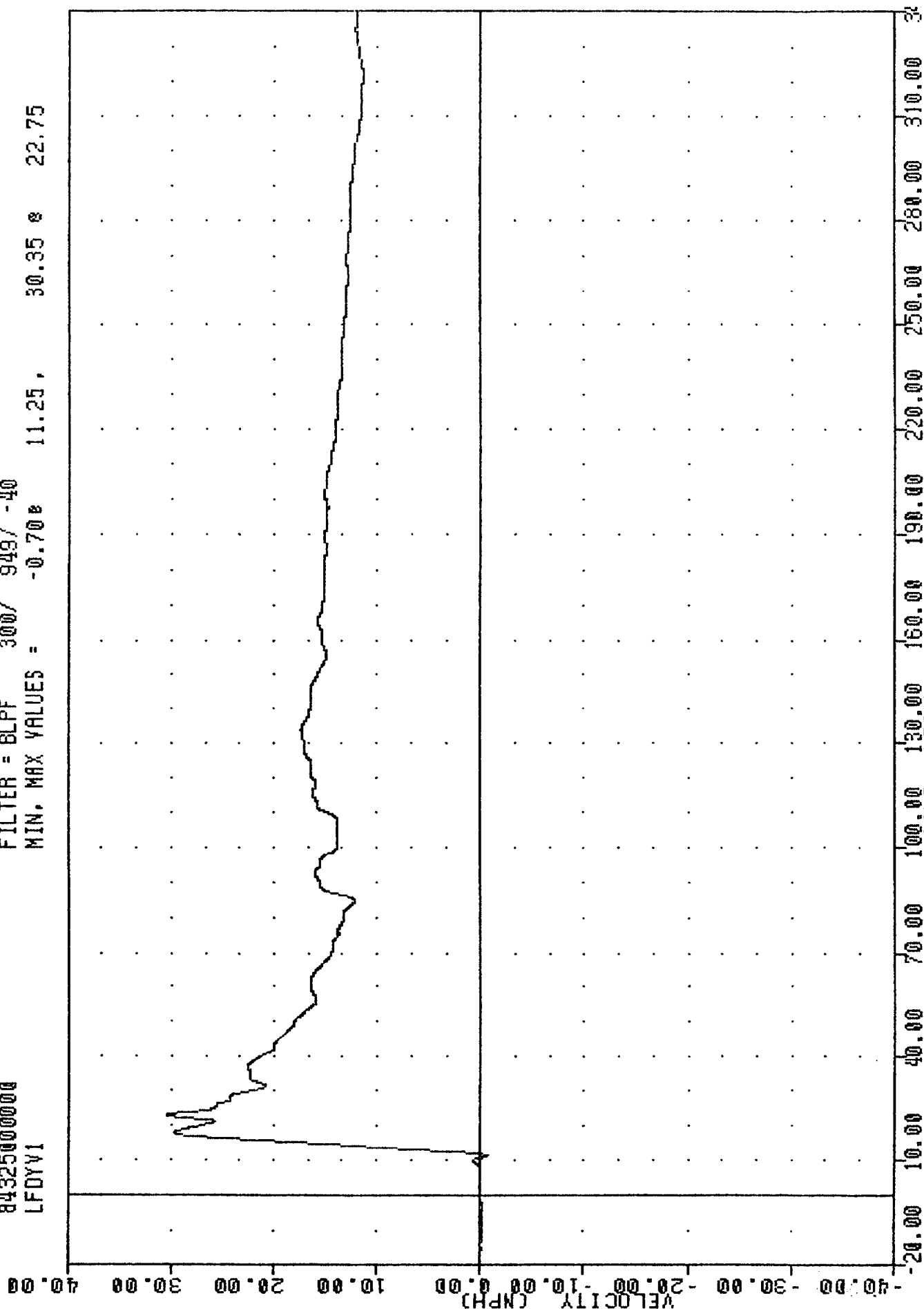


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR (POSITION 6) ACCELERATION Y AXIS

SIDE AGGRESSIVE ATTRIBUTES
84325000000
LFOYV1

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -0.700 11.25,

30.35 22.75

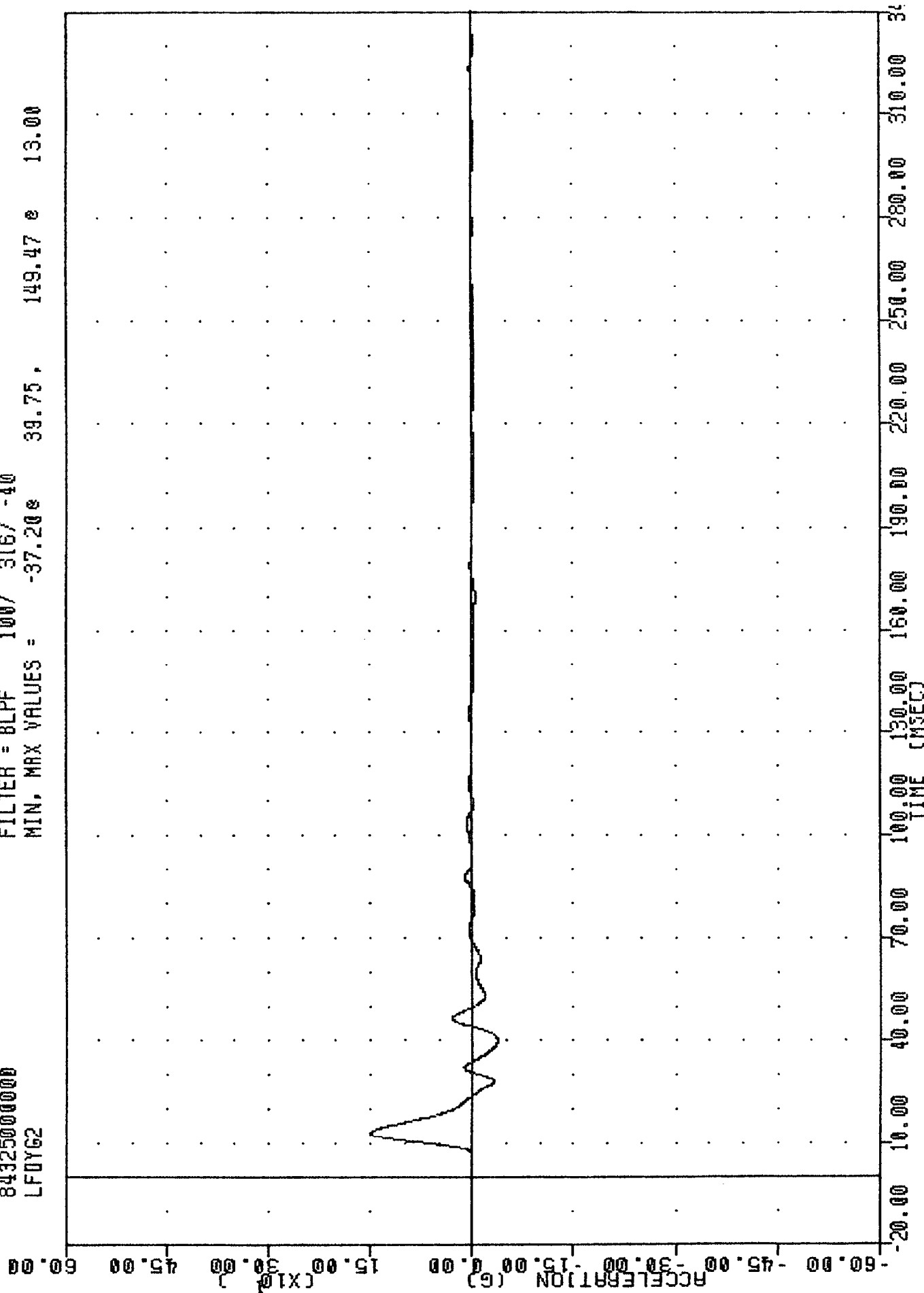


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFOYGI

1110
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LFDY62

1101 UNIT 67 MAY 93 10:20:06

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -37.200 39.75, 149.47 @ 13.00

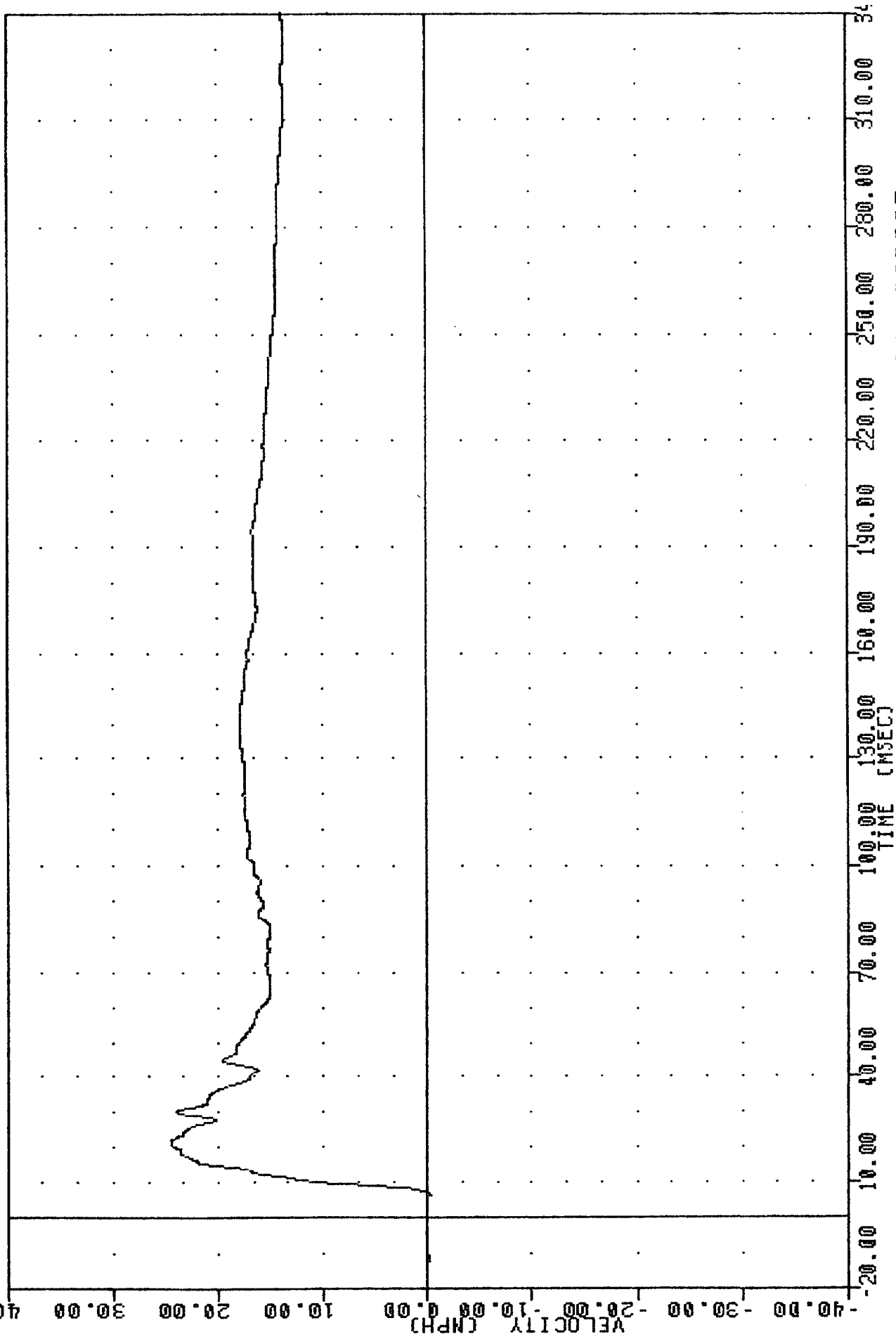


B-94

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

SIDE AGGRESSIVE ATTRIBUTES
84325000000
LFDYV2

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -0.27 6.50, 24.53 21.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDY62

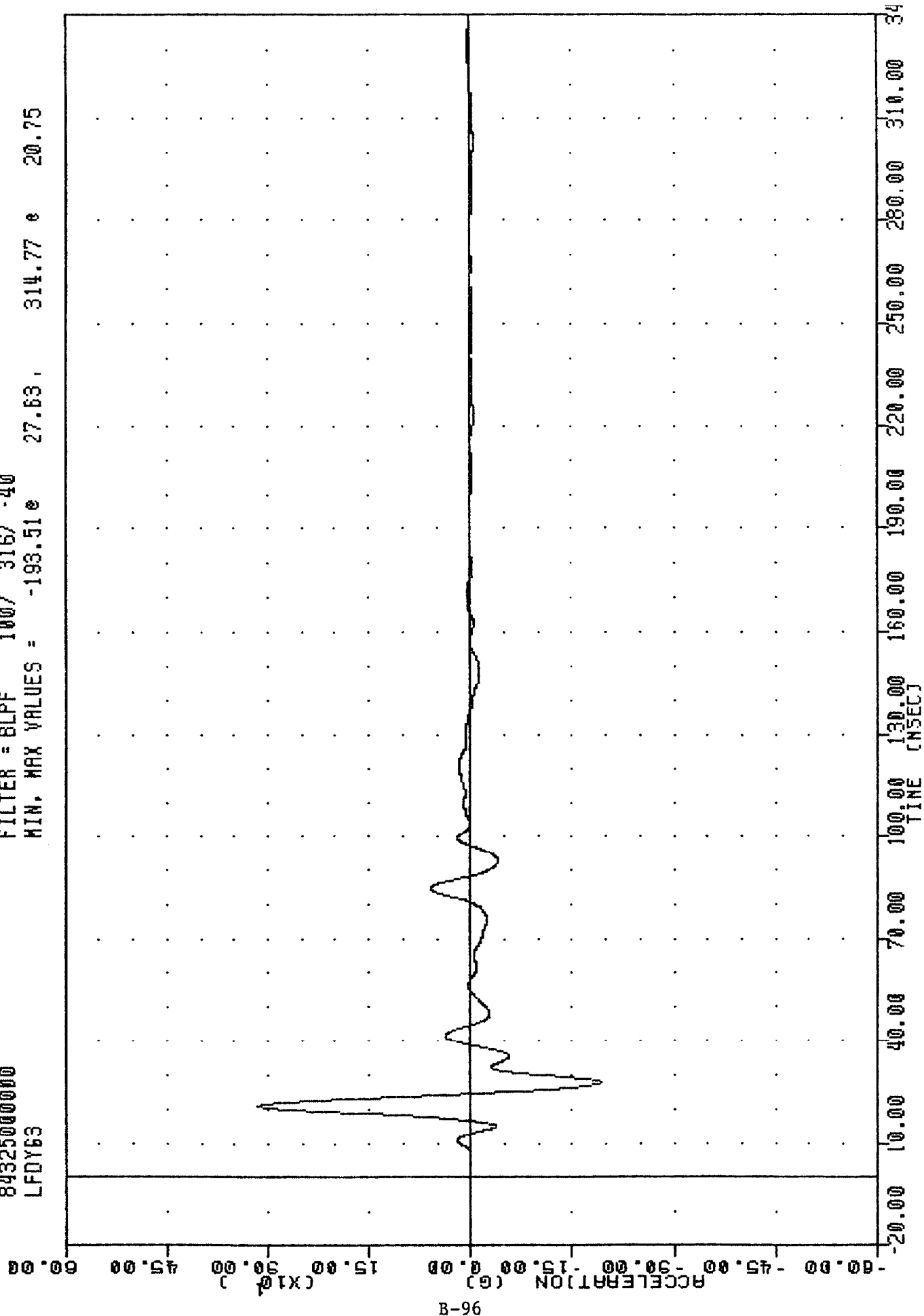
SIDE AGGRESSIVE ATTRIBUTES

84325000000

LFDY63

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -193.51e 27.63, 314.77 e 20.75



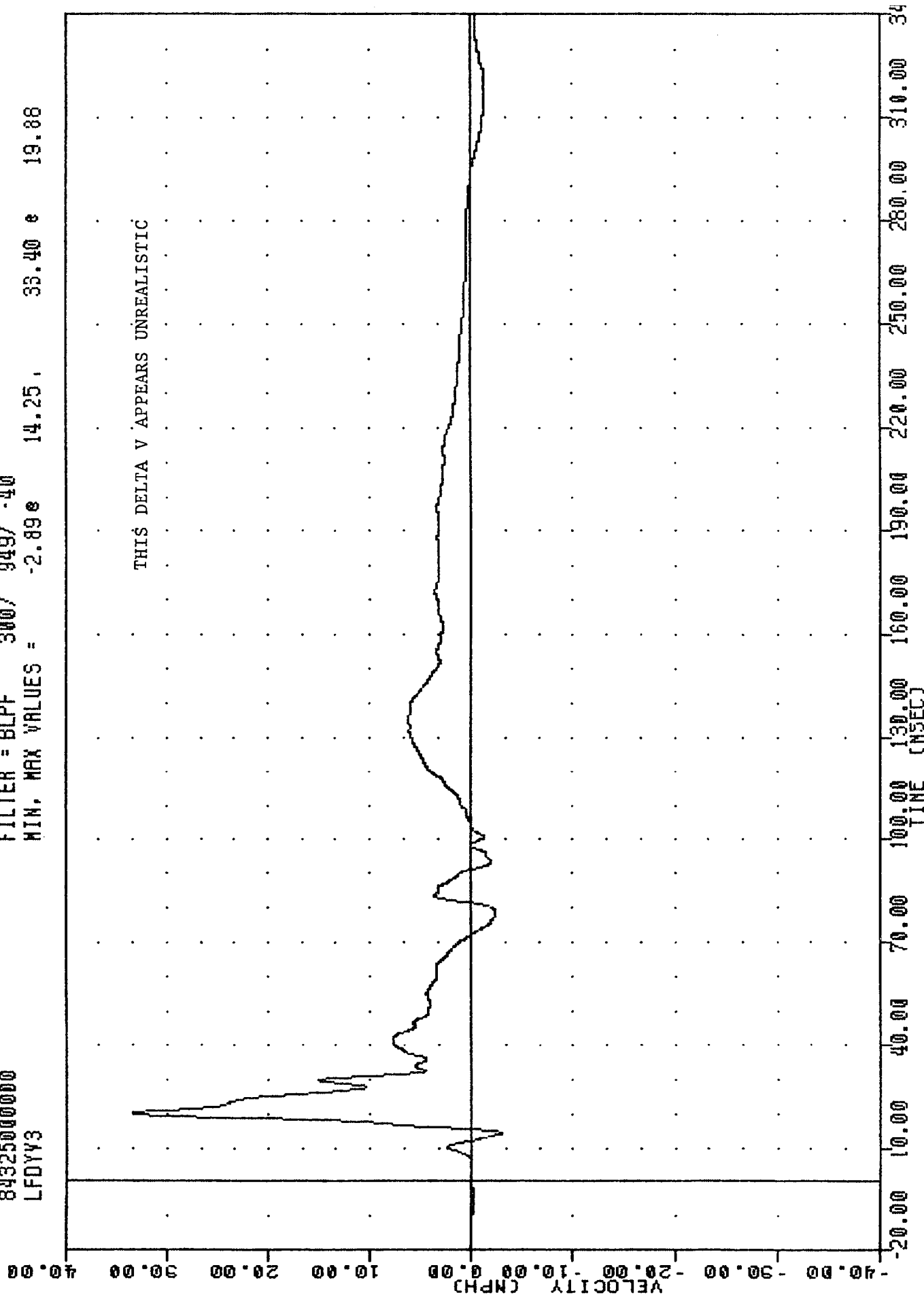
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 9) ACCELERATION Y AXIS

TAC , 841120
SIDE AGGRESSIVE ATTRIBUTES
84325000000
LFDYV3

PLOT DATE 27-NOV-84 16:32:40

FILTER = BLPF 300/ 949/ -40

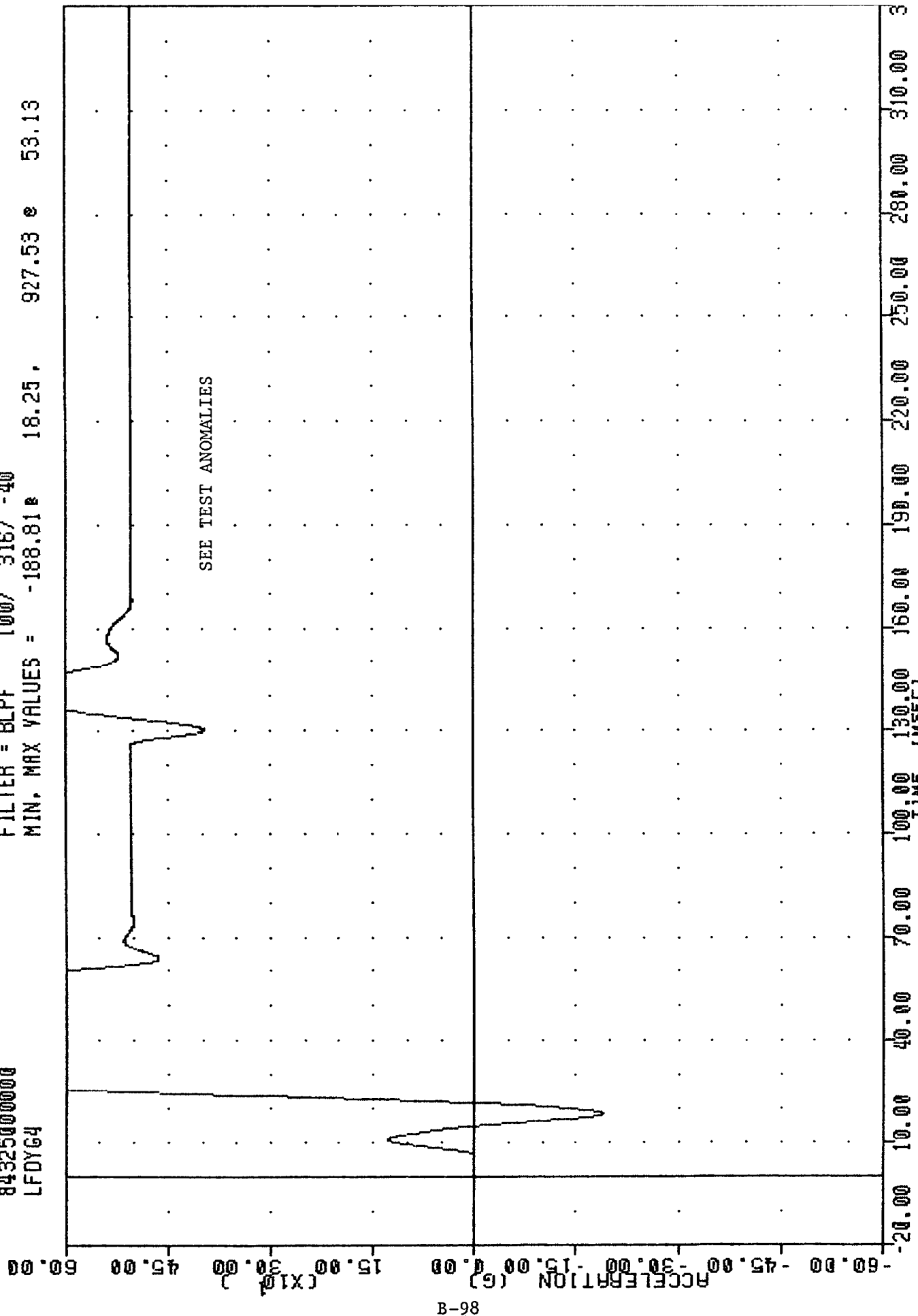
MIN, MAX VALUES = -2.89 14.25 , 33.40 19.88



INC 04112W
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 LFDY64

1001 0011L 27 NOV 03 10:23:02

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -188.818 18.25, 927.53 53.13

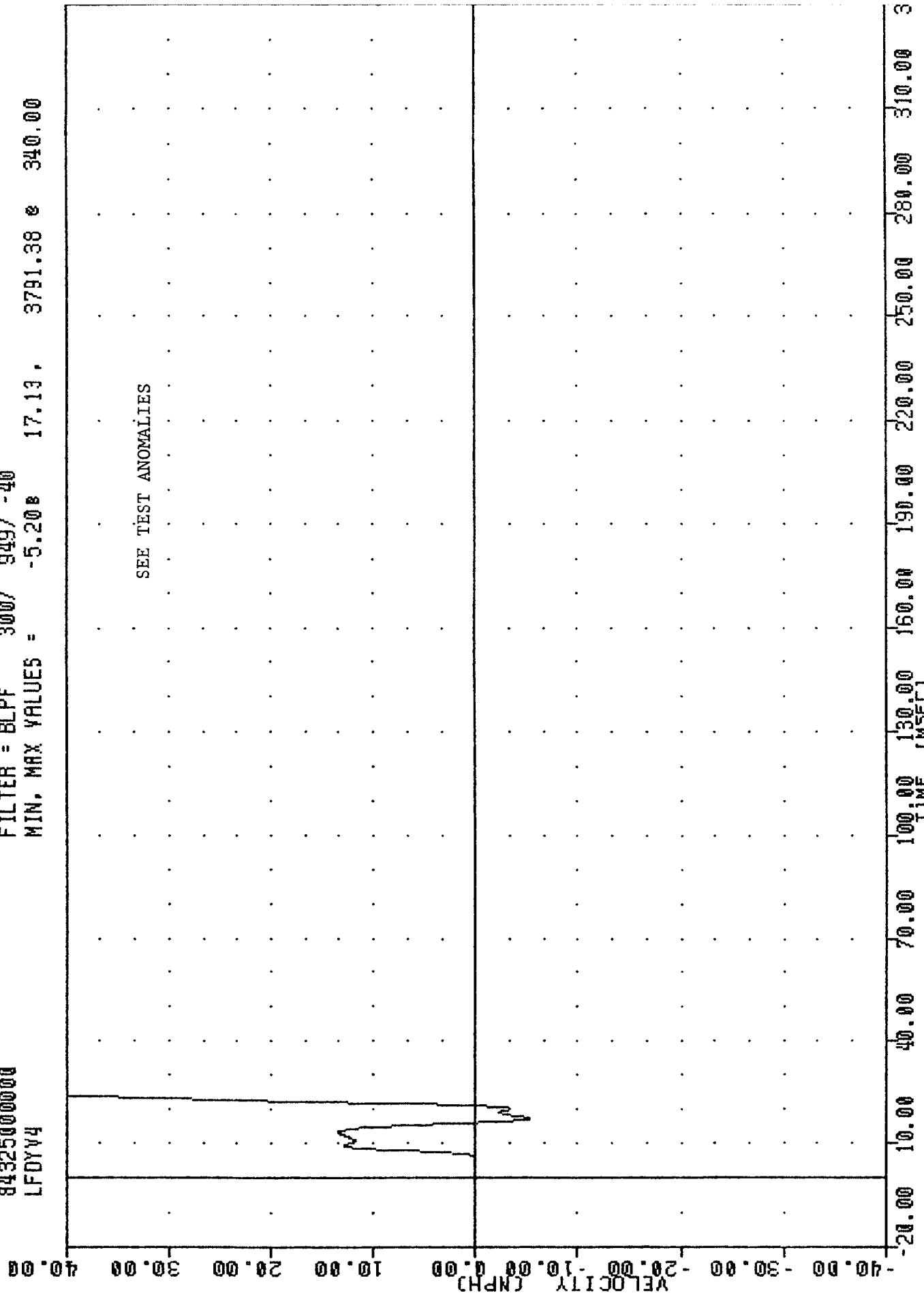


B-98

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

SIDE AGGRESSIVE ATTRIBUTES
84325000000
LFDYV4

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -5.208 17.13 3791.38 340.00



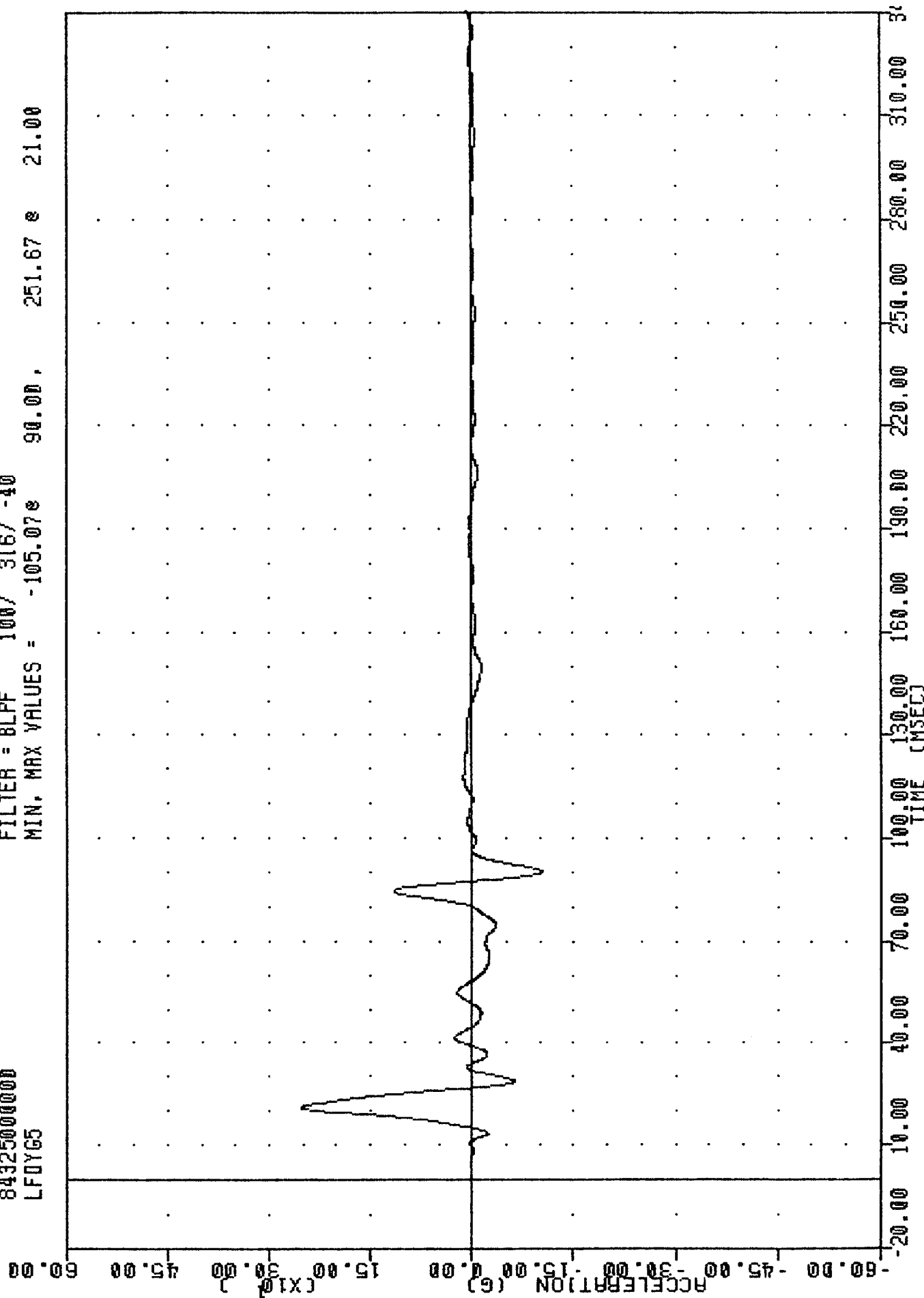
B-99

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYV4

THIS PLOT
SIDE AGGRESSIVE ATTRIBUTES
84325000000
LF0Y65

PLOT WHILE AT IMP CTZ 10-23-92

FILTER = 8LPF 100/ 316/ -40
MIN, MAX VALUES = -105.07g 90.00, 251.67 g 21.00



B-100

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

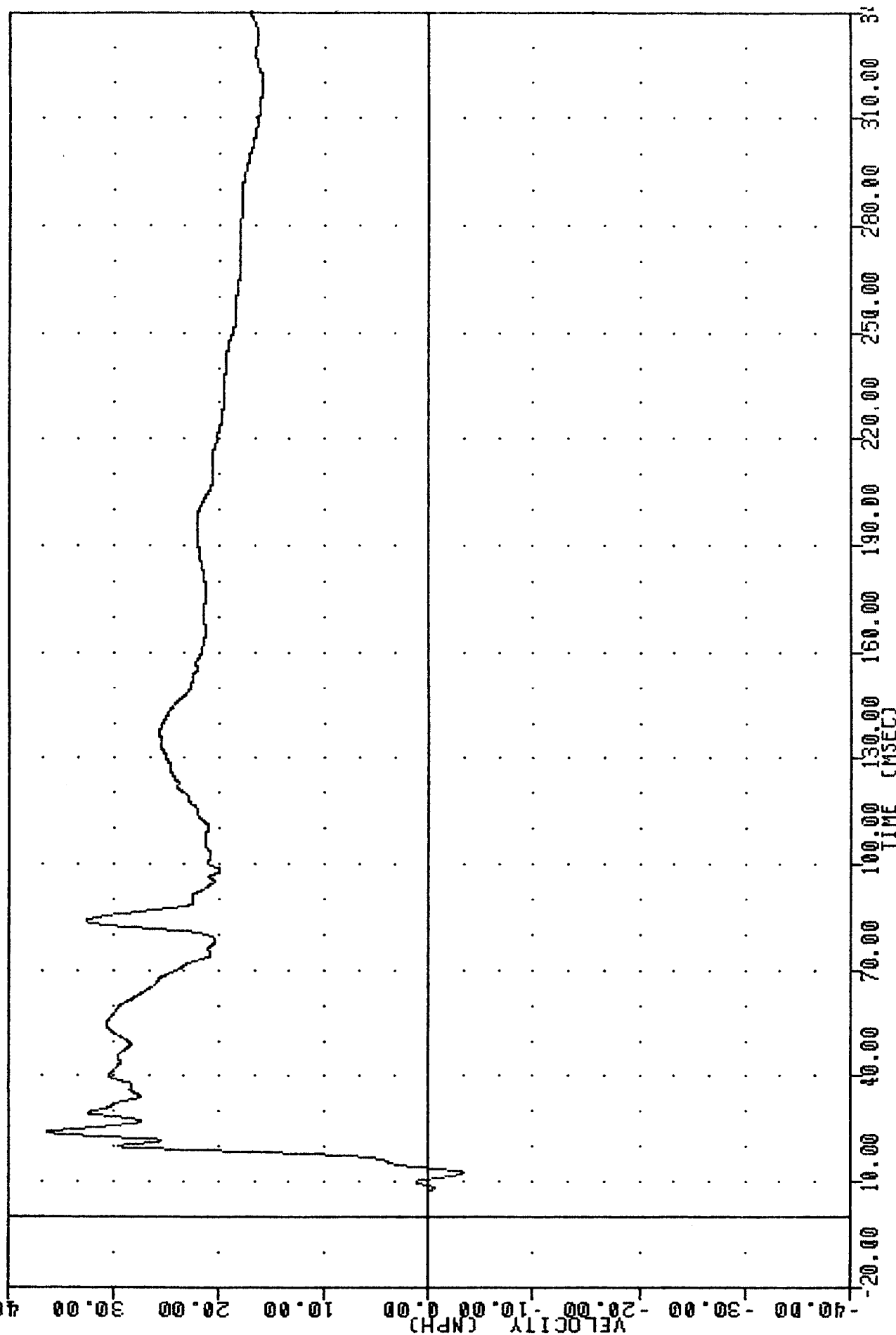
SIDE AGGRESSIVE ATTRIBUTES

84325000000

LFDYV5

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -3.30e 12.50, 36.39 e 23.88



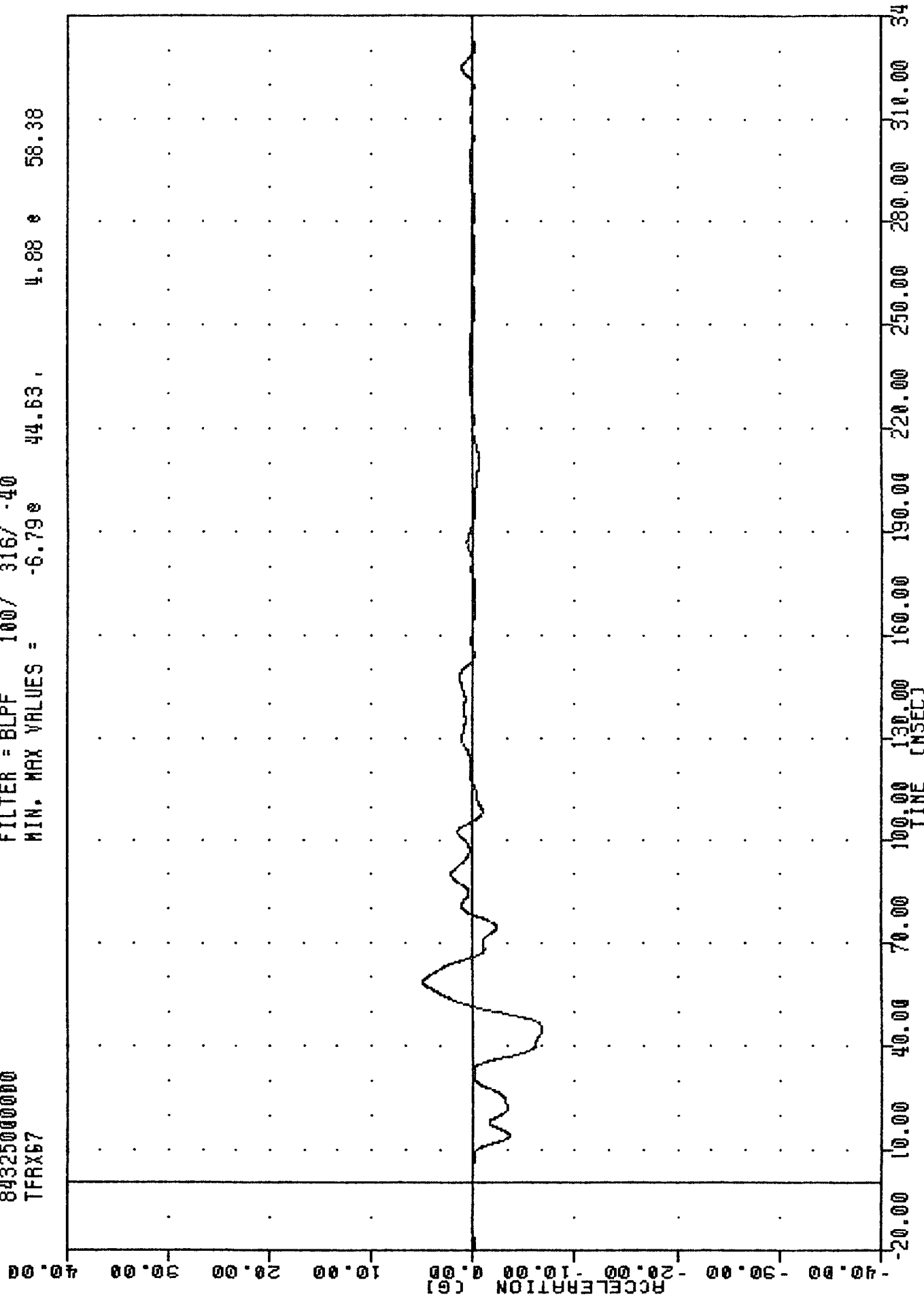
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DELTA V USING LFDY65

INC 00000000
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 TFRX67

PLUT WIND 47 HUR 04 10000000

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -6.79 44.63 4.88 58.38

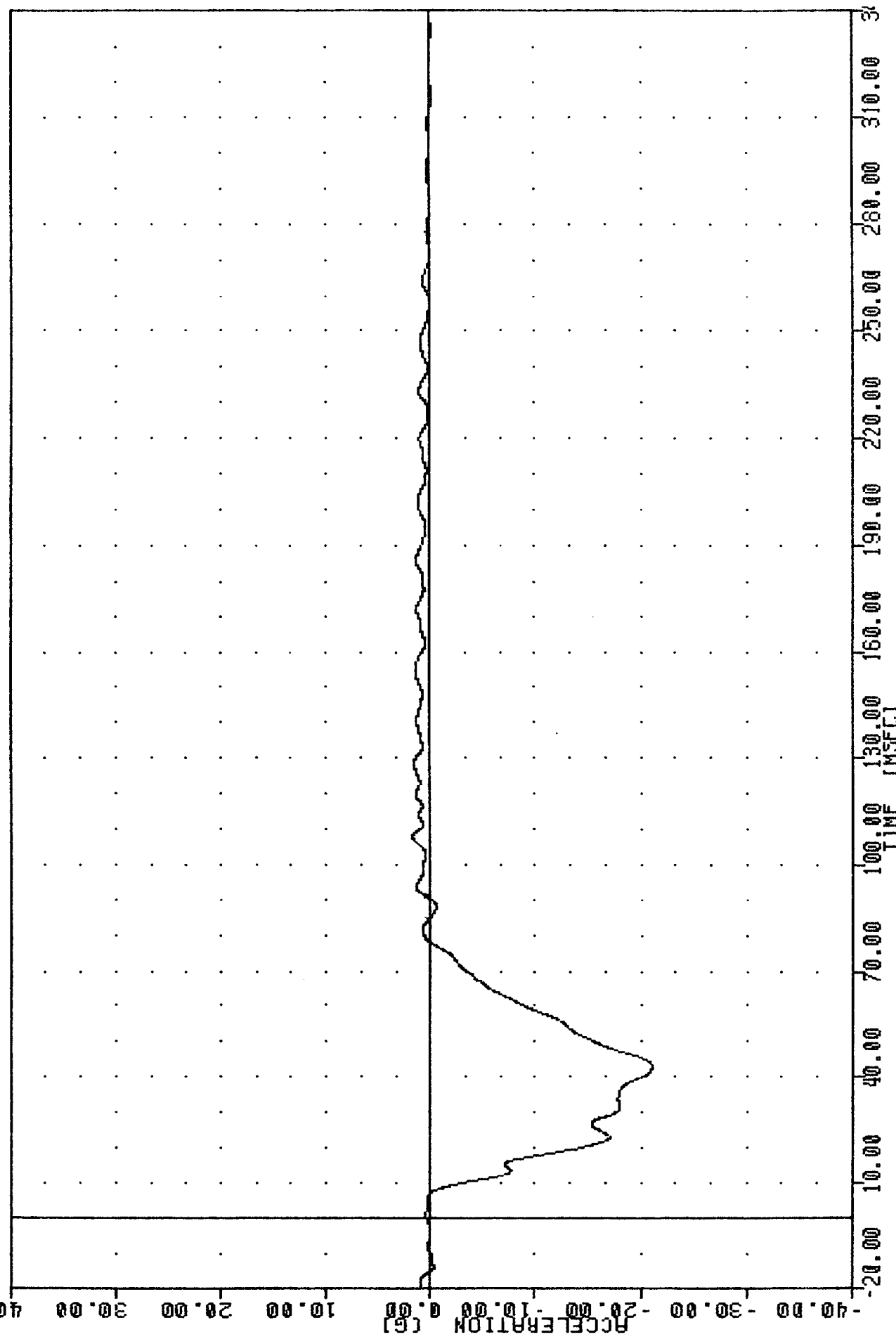


B-102

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

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 BCGXG

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -21.10B 42.88, 1.72 & 107.63

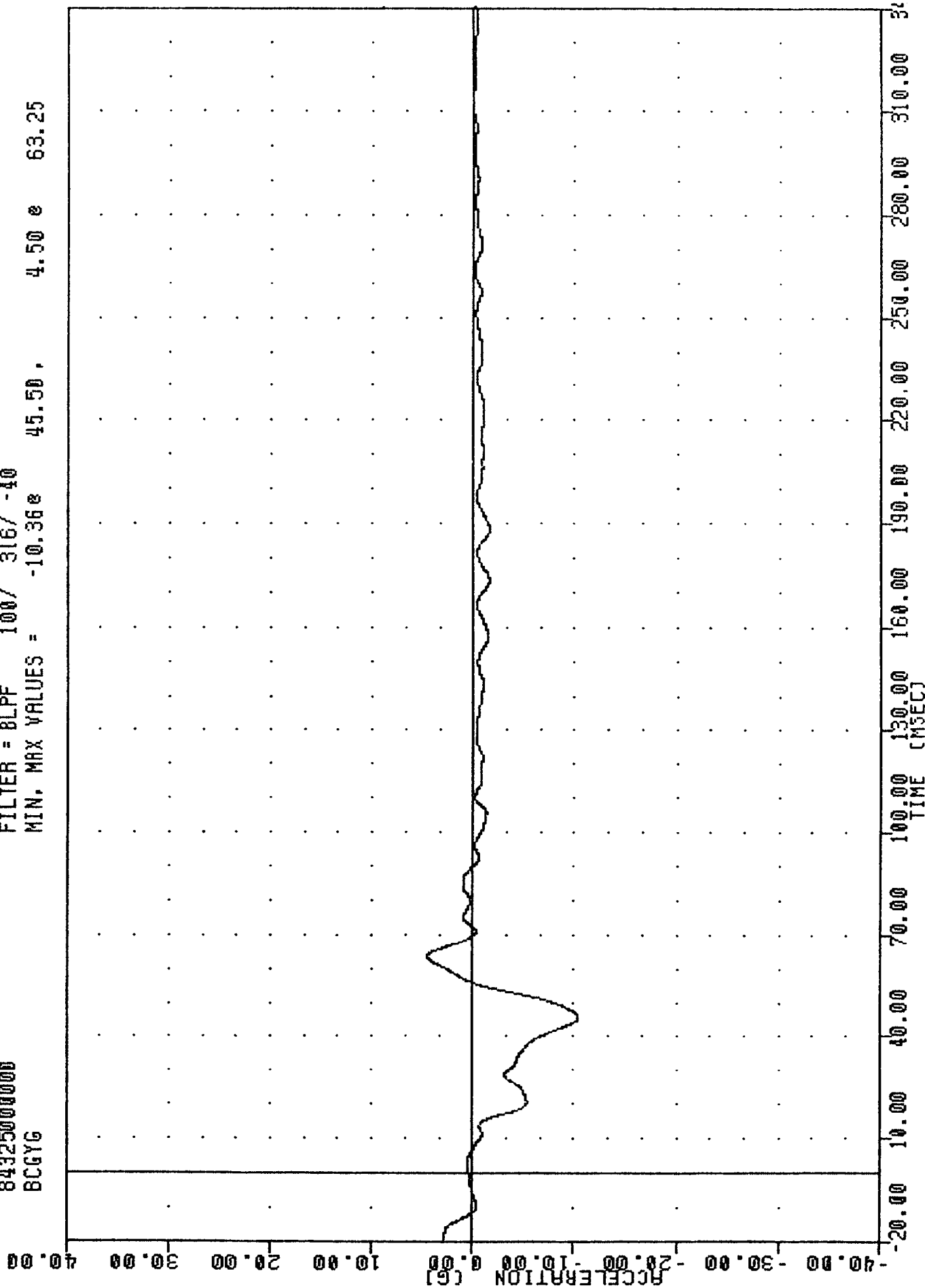


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER CENTER OF GRAVITY X AXIS

SIDE AGGRESSIVE ATTRIBUTES
84325000000
BCGYG

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -10.368 45.50,

4.50 @ 63.25



B-104

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

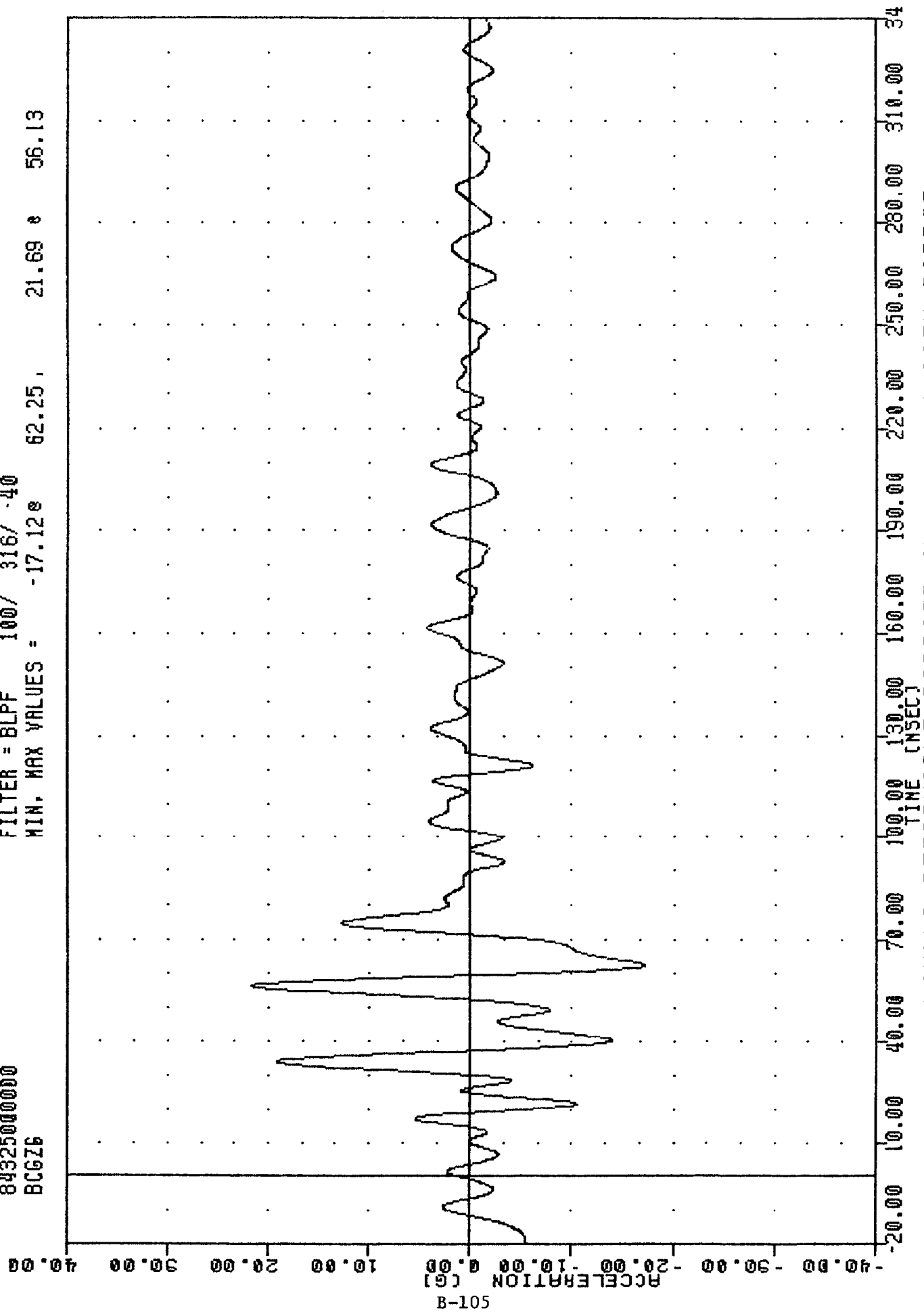
SIDE AGGRESSIVE ATTRIBUTES

84325000000

BCGZ6

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -17.12e 62.25 , 21.69 e 56.13



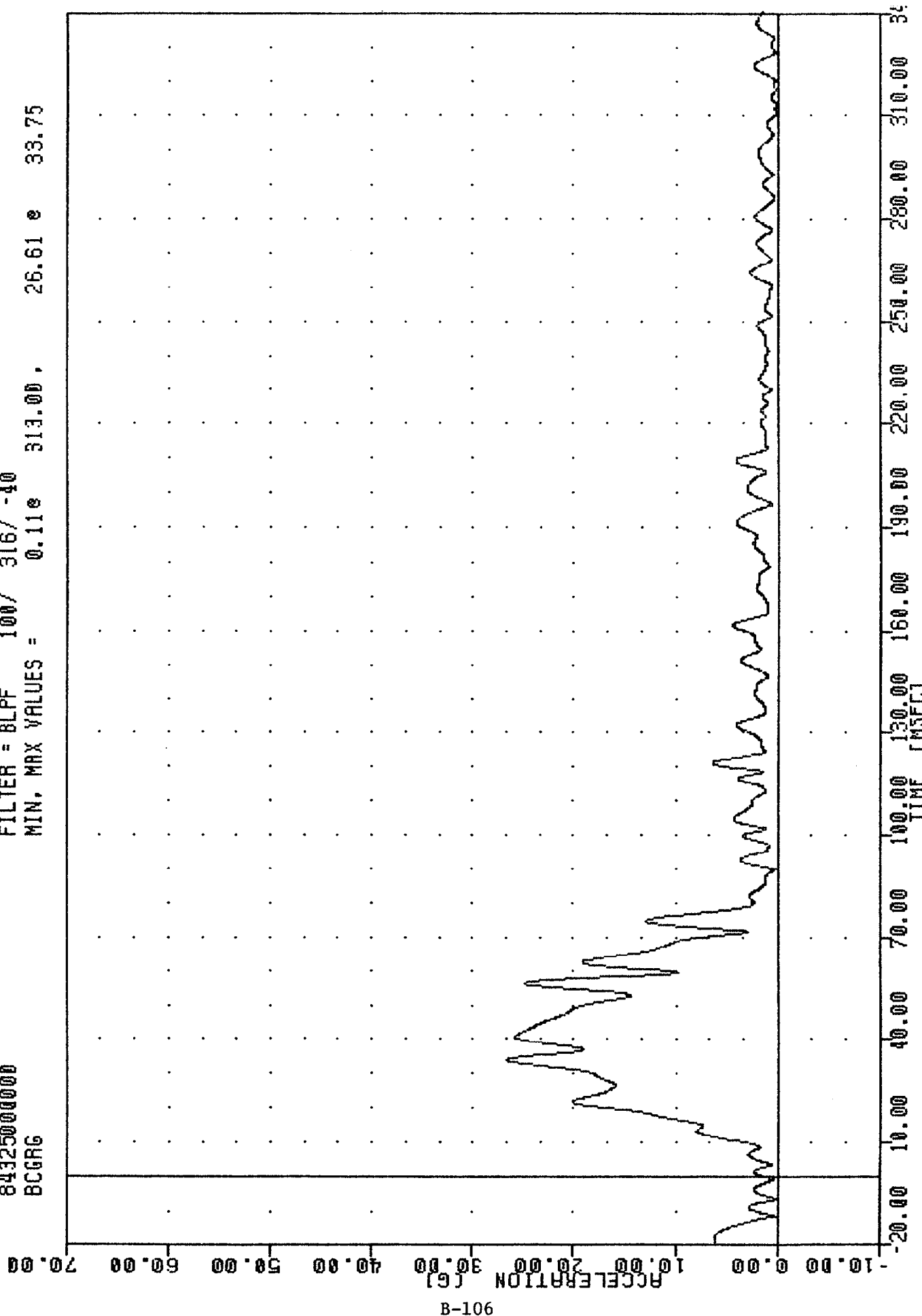
B-105

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

1116
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 BCGRG

1 LUT UNIT 27 NOV 04 10:31:23

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = 0.11e 313.00, 26.61 e 33.75



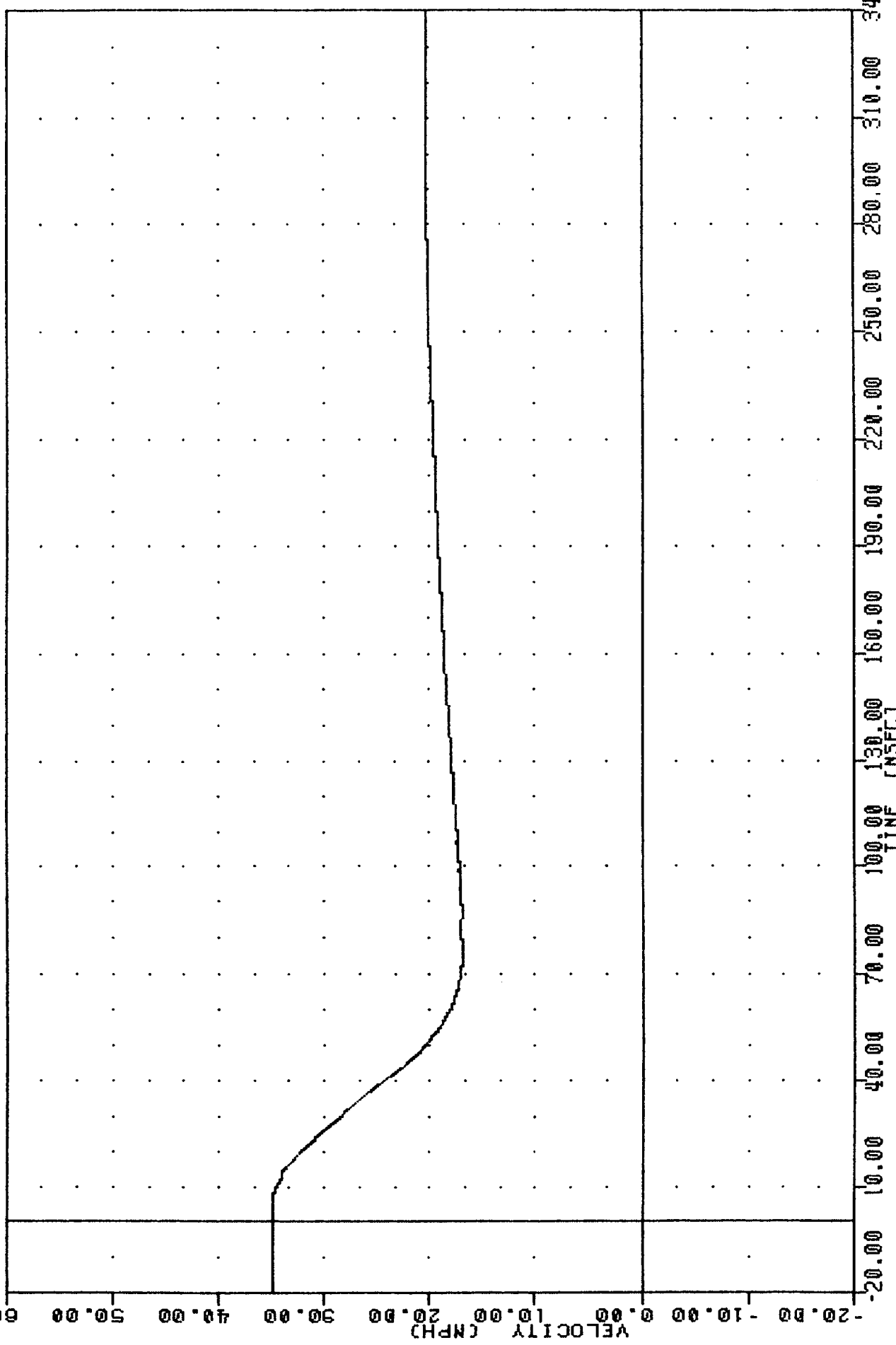
B-106

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER CG RESULTANT

84325000000
BCGXV

84325000000
BCGXV

84325000000
BCGXV

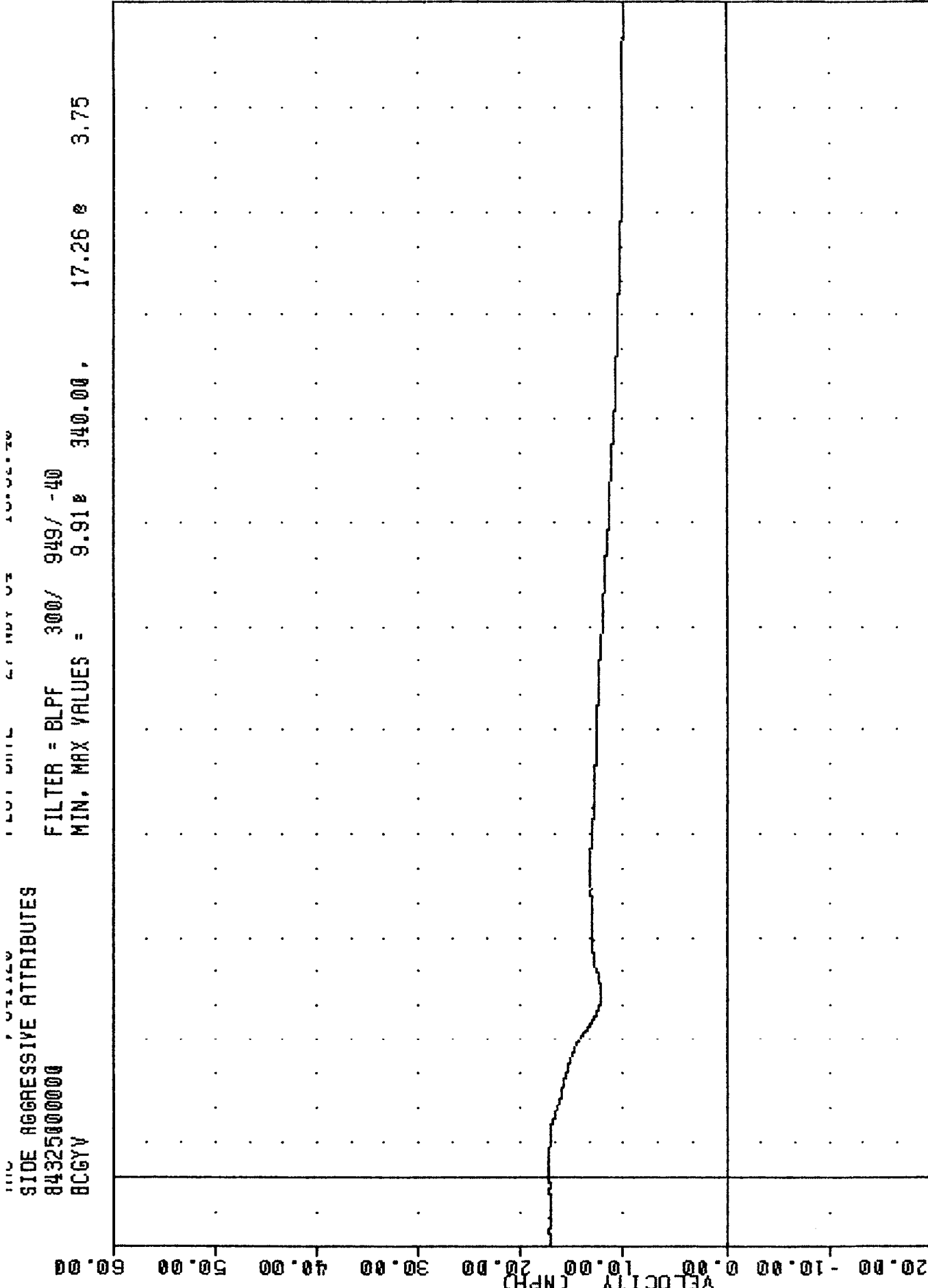


B-107

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BCGXG

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 BCGYV

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 9.910 340.00, 17.26 3.75



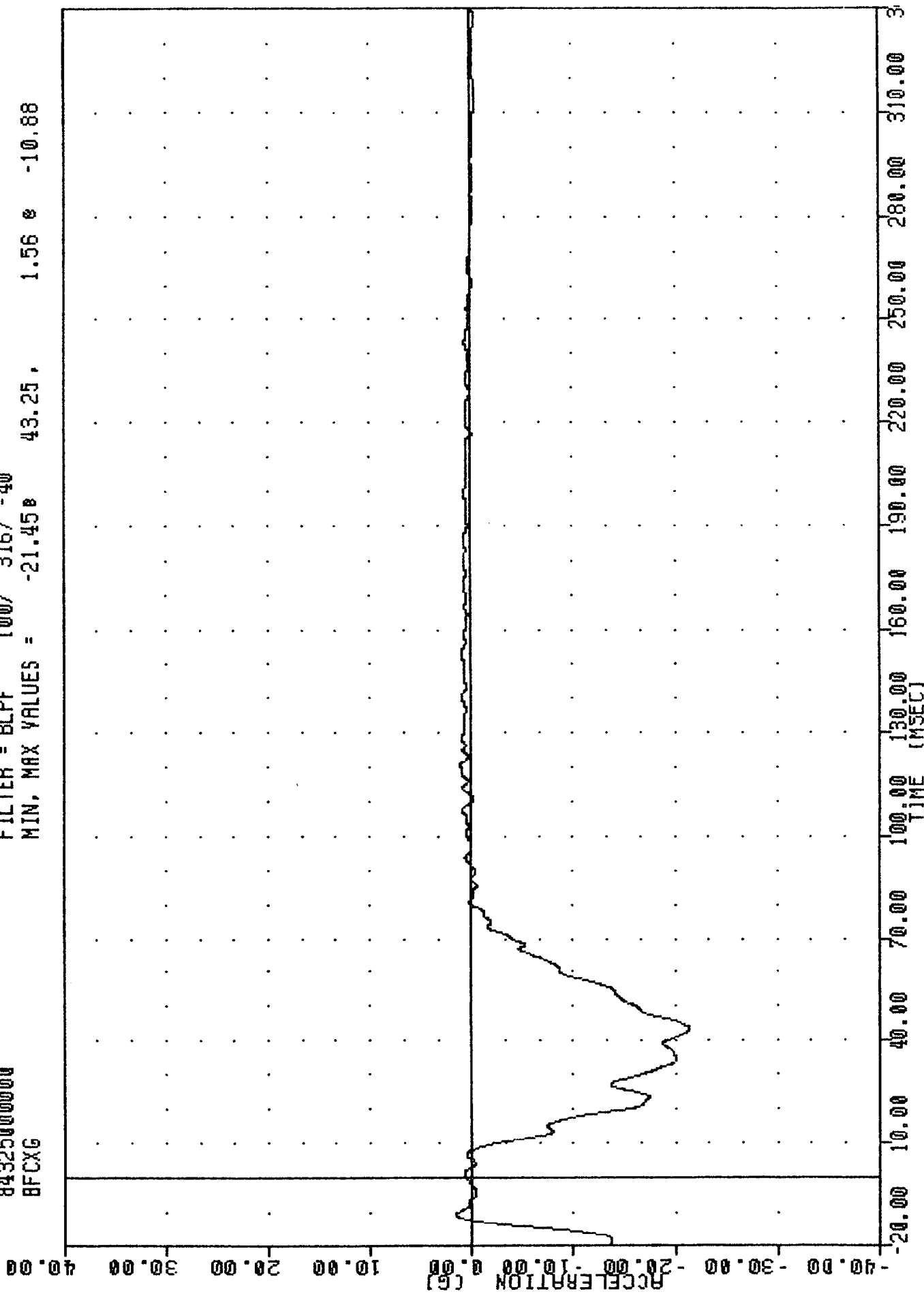
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BCGYG

.... SIDE AGGRESSIVE ATTRIBUTES

84325000000
BFCXG

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -21.45 43.25,

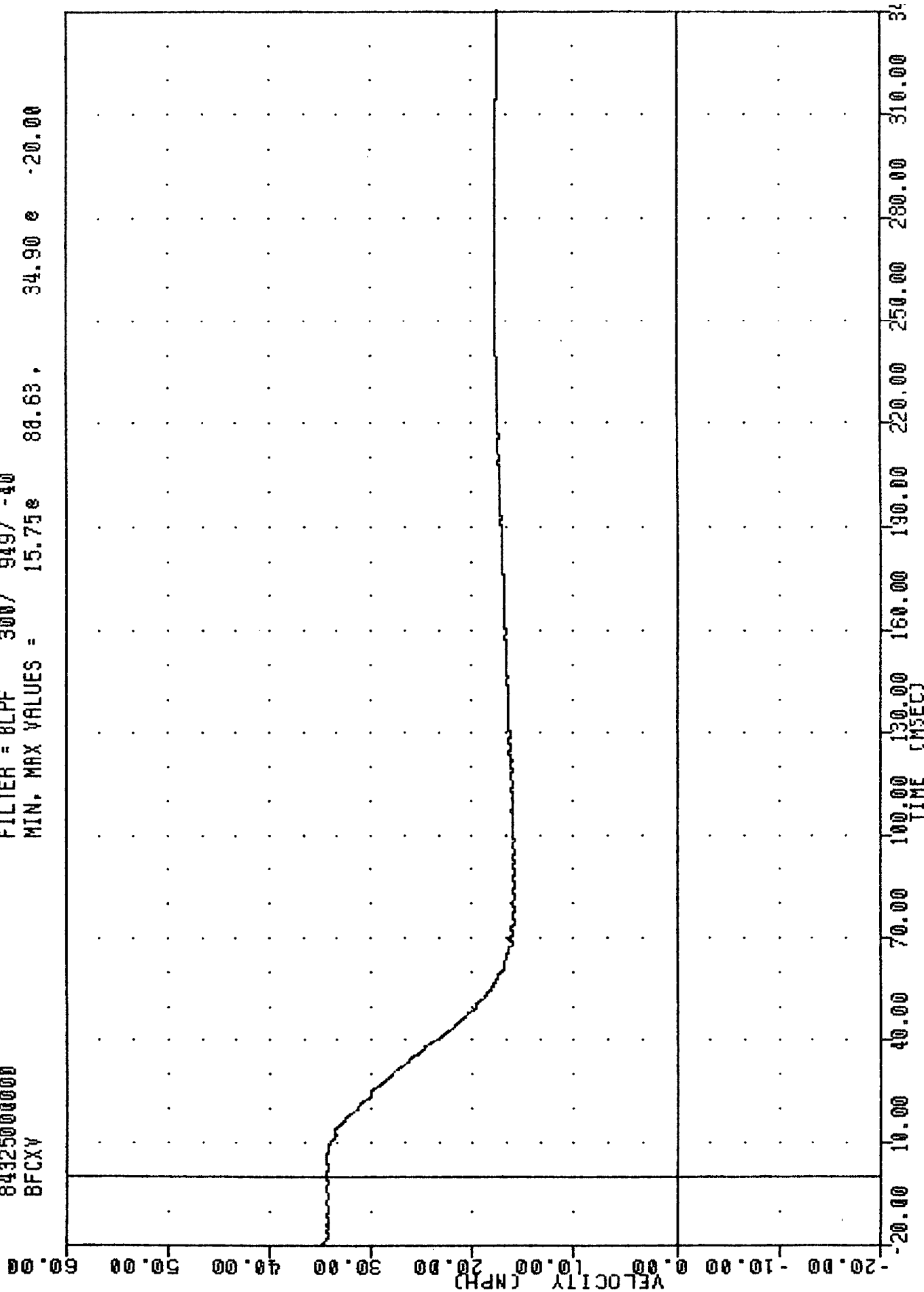
1.56 0 -10.88



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

SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 BFCXY

FILTER = 8LPF 300/ 949/ -40
 MIN. MAX VALUES = 15.75e 88.63, 34.90 e -20.00



B-110

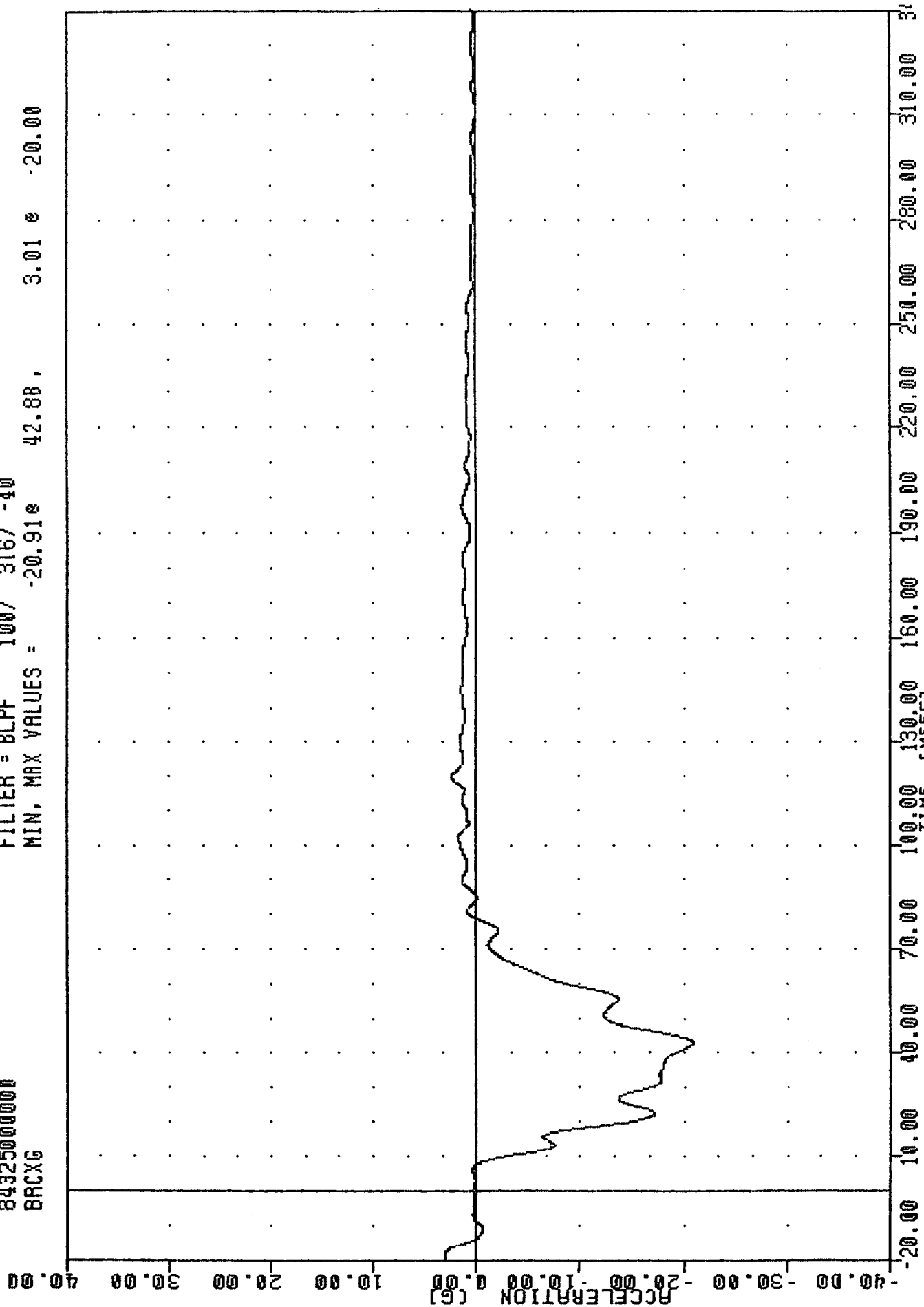
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BFCXG

TRC , 841120
SIDE AGGRESSIVE ATTRIBUTES
84325000000
BRCXG

PLOT DATE 27-NOV-84 16:29:52

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -20.91e 42.88, 3.01 e -20.00



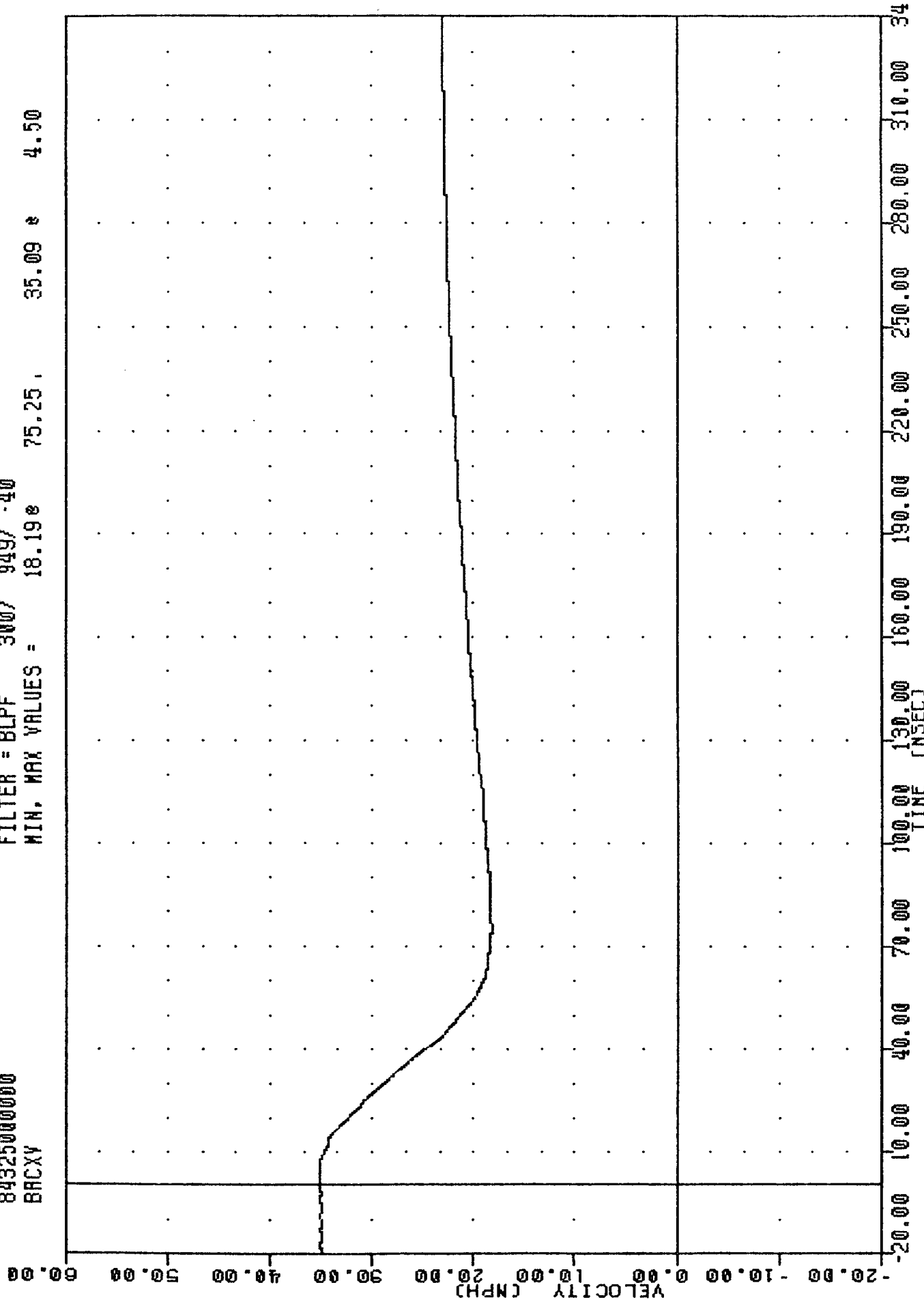
B-111

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

INC 04112W
 SIDE AGGRESSIVE ATTRIBUTES
 84325000000
 BRCXY

FLW1 UNIC 27 INUTON 10-02-4W

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 18.19 75.25 35.09 4.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BRCXG