

V1798

REPORT NO. TRC-92-N03

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

GENERAL MOTORS CORPORATION
1993 CHEVROLET BLAZER
4-DOOR MULTI-PURPOSE PASSENGER VEHICLE
NHTSA NO. MP0102
TRC TEST NO. 921124

PREPARED BY:
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DECEMBER 17, 1992

FINAL REPORT

PREPARED FOR:
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
ROOM NO. 5313 (NRM-22)
400 SEVENTH STREET, S.W.
WASHINGTON, D.C. 20590

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1. Report No. TRC-92-N03	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle NEW CAR ASSESSMENT PROGRAM (NCAP), FRONTAL BARRIER IMPACT TEST OF A 1993 CHEVROLET BLAZER 4-DOOR MULTI-PURPOSE PASSENGER VEHICLE, NHTSA NO. MP0102		5. Report Date DECEMBER 17, 1992	
		6. Performing Organization Code	
7. Author(s) C. A. Markusic, Project Engineer, TRC		8. Performing Organization Report No. TRC-92-N03	
9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43319		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTNH22-90-D-22121	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Market Incentives, Room No. 5313, (NRM-22) 400 Seventh St., S.W., Washington, DC 20590		13. Type of Report and Period Covered FINAL REPORT NOVEMBER-DECEMBER 1992	
		14. Sponsoring Agency Code NRM-22	
15. Supplementary Notes			
16. Abstract A 56 kph (35 mph) frontal load cell barrier impact test was conducted on a 1993 Chevrolet Blazer 4-door multi-purpose passenger vehicle, NHTSA No. MP0102, at the Transportation Research Center Inc. on November 24, 1992. This test was conducted to obtain new car assessment and research data indicant of FMVSS No. 208 performance. The barrier impact velocity was 56.2 kph. The vehicle's maximum crush was 570 millimeters. The ambient temperature was 22° C. The driver's head injury criteria (HIC) was 640. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 62.4 g. The driver's chest maximum deflection was 38 mm. The driver's left and right femur maximum axial forces were 4407 N and 7959 N, respectively. The passenger's head injury criteria (HIC) was 1127. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 53.2 g. The passenger's chest maximum deflection was 52 millimeters. The passenger's left and right femur maximum axial forces were 4608 N and 3726 N, respectively (See DATA ACQUISITION EXPLANATIONS).			
17. Key Words 56.3 kph (35 mph) Frontal Barrier Impact test: New Car Assessment Program (NCAP) FMVSS 208, "Occupant Crash Protection"		18. Distribution Statement Copies of this report are available from Technical Reference Division National Highway Traffic Safety Admin. Nassif Building, Room 5108 400 Seventh St., S.W., Wash. D.C. 20590	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 291	22. Price

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	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	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

* 1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25, SD Catalog No. C13.10286.

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 (10,000 m ²)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.05	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	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F

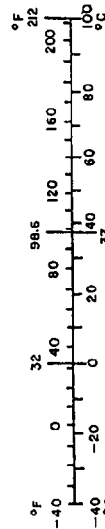


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SECTION 1.0

PURPOSE AND TEST PROCEDURE

PURPOSE

This 56 kph (35 mph) frontal barrier impact test is part of the New Car Assessment Program (NCAP) conducted for the National Highway Traffic Safety Administration's (NHTSA) Office of Market Incentives by the Transportation Research Center Inc. (TRC) under Contract No. DTNH22-90-D-22121.

The purpose of this test was to obtain new car assessment and research data for vehicle crashworthiness and occupant restraint system performance for the subject vehicle, a 1993 Chevrolet Blazer 4-door multi-purpose passenger vehicle, NHTSA No. MP0102, at an impact speed in excess of the current 48 kph (30 mph) FMVSS 208 requirements.

TEST PROCEDURE

This test was conducted in accordance with NHTSA's Laboratory Indicant Test Procedure, New Car Assessment Program, dated January 1, 1990. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection" performance.

The test vehicle was instrumented with nine (9) accelerometers to measure longitudinal axis accelerations. The driver's and passenger's restraint systems were instrumented with four (4) seat belt load cells to measure lap belt tension and shoulder belt tension, two (2) string potentiometers to measure shoulder belt displacement, and two (2) linear potentiometers to measure shoulder belt stretch. The vehicle impacted a frontal load cell barrier instrumented with thirty-six (36) barrier face load cells. The vehicle's specified impact velocity range was 55.5 to 57.1 kph.

The test vehicle contained two (2) Part 572E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedures specified in Appendices VII and VIII of the Laboratory Indicant Test Procedure.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations, and with left and right femur load cells to measure axial forces. Each Part 572 E dummy's instrumentation also included a chest potentiometer to measure longitudinal deflection and a six-axis neck load cell to measure longitudinal, lateral and vertical forces and moments.

The eighty-three (83) data channels were multiplexed and recorded on two (2) 14-track tape drives. The data was digitally sampled at 8000 samples per second and processed per section IP11 of the Laboratory Indicant Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and sixteen (16) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera.

The vehicle, occupant, and load cell barrier data are presented in Section 2.0. The occupant, camera, and vehicle measurements are presented in Section 3.0. Appendix A contains the still photographic prints. Appendix B contains the dummy, vehicle, and load cell barrier data plots. Appendix C contains the dummy certification data. Appendix D contains miscellaneous test information. Appendix E contains the restraint system instructions from the owner's manual.

SECTION 2.0

FRONTAL BARRIER IMPACT TEST SUMMARY

TEST RESULTS SUMMARY

This frontal load cell barrier test was conducted at TRC on November 24, 1992.

The test vehicle, a 1993 Chevrolet Blazer 4-door multi-purpose passenger vehicle, NHTSA No. MP0102, was equipped with a 4.3 liter inline engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 2051 KG. The vehicle's impact speed was 56.2 kph. The vehicle sustained 570 mm of static crush during the impact.

The driver's head injury criteria (HIC) was 640. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 62.4 g. The driver's chest maximum deflection was 38 mm. The driver's left and right femur maximum axial forces were 4407 N and 7959 N, respectively.

The passenger's HIC was 1127. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 53.2 g. The passenger's chest maximum deflection was 52 mm. The passenger's left and right femur maximum axial forces were 4608 N and 3726 N, respectively (See DATA ACQUISITION EXPLANATIONS).

DATA ACQUISITION EXPLANATIONS

The right front passenger's left and right femur load cells, LFMF2 and RFMF2, recorded questionable data spikes at 218 and 283 milliseconds.

The instrument panel center X-axis accelerometer, DPCXG1, did not return to zero following the impact event.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: MP0102 TEST TYPE: Frontal Load Cell Barrier

TEST DATE: 11/24/92 TEST TIME: 1436 AMBIENT TEMP.: 22° C

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1993/Chevrolet/Blazer/4-door MPV

VEHICLE TEST WEIGHT (KG): 2051

IMPACT ANGLE (DEG)*: 0

IMPACT VELOCITY (KPH)**: PRIMARY = 56.2 SECONDARY = 56.2

MAXIMUM STATIC CRUSH (MM): 570

AVERAGE REBOUND (MM): 178

DUMMIES:	Driver #192	Passenger #142
TYPE:	Part 572 E	Part 572 E
LOCATION:	Left front	Right front
RESTRAINT:	3-point unbelt	3-point unbelt
NUMBER OF DATA CHANNELS:	83	
NUMBER OF CAMERAS:	HIGH-SPEED 16	REAL-TIME 2

*With respect to tow track centerline.

**Speed trap measurement ($\pm$.08 kph accuracy)

TABLE 2 TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: General Motors Corporation

MAKE/MODEL: Chevrolet/Blazer

VIN: 1GNDT13W2P2113582

BODY STYLE: 4-door MPV

MODEL YEAR: 1993

NHTSA NO.: MP0102

COLOR: White

ENGINE DATA: TYPE: Inline CYLINDERS: 6 DISPLACEMENT: 4.3 liter

TRANSMISSION DATA: 4 SPEED, MANUAL, X AUTOMATIC, FWD, RWD, X 4WD

DATE VEHICLE RECEIVED: 10/27/92

ODOMETER READING: 437.0

DEALER'S NAME AND ADDRESS: Don McCue Chevrolet, Inc.

P. O. Box 505

Saint Charles, IL 60174

ACCESSORIES:

POWER STEERING Yes
POWER BRAKES Yes
POWER SEATS No
POWER WINDOWS No
TINTED GLASS Yes
RADIO Yes
CLOCK Yes
OTHER None

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

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

CERTIFICATION DATA FROM VEHICLE'S LABEL:

VEHICLE MANUFACTURED BY: General Motors Corporation

DATE OF MANUFACTURE: 09/92

VIN: 1GNDT13W2P2113582

GVWR: 2313 KG

GAWR: FRONT: 1134 KG, REAR: 1315 KG

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Goodyear, Invicta GS, P225/75R15

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 300 kPa
REAR: 300 kPa

SPARE TIRE (MFR., LINE, SIZE): Goodyear, Invicta GS, T225/75R15

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually-adjustable

MAXIMUM WIDTH: 1700 MM

WHEELBASE: 2718 MM

LOCATION OF LABEL STATING TIRE DATA:

The label was located on the driver's side B-pillar.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P235/75R15

RECOMMENDED COLD TIRE PRESSURE: FRONT: 240 kPa; REAR: 240 kPa

DESIGNATED SEATING CAPACITY: NA FRONT NA REAR NA TOTAL

VEHICLE CAPACITY WEIGHT: NA KG

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN MILLIMETERS):

DELIVERED ATTITUDE: LF 864; RF 862; LR 838; RR 832

PRE-TEST ATTITUDE: LF 859; RF 865; LR 828; RR 814

POST-TEST ATTITUDE: LF 911; RF 907; LR 820; RR 831

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	467 KG	RIGHT REAR	407 KG
LEFT FRONT	499 KG	LEFT REAR	393 KG
TOTAL FRONT WEIGHT	966 KG	(54.7% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	800 KG	(45.3% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	1766 KG		

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (1766 KG)

VCW = VEHICLE CAPACITY WEIGHT (NA KG)

DSC = DESIGNATED SEATING CAPACITY (NA)

RCLW* = VCW - 68 (DSC) = 136 KG

TARGET TEST WEIGHT = UDW + RCLW* + (NO. OF HYBRID III DUMMIES X 76 KG/DUMMY)

TARGET TEST WEIGHT = 1766 + 136 + 152

TARGET TEST WEIGHT = 2054 KG

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 133 KG OF CARGO WEIGHT:

RIGHT FRONT	496 KG	RIGHT REAR	513 KG
LEFT FRONT	537 KG	LEFT REAR	505 KG
TOTAL FRONT WEIGHT	1033 KG	(50.4% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1018 KG	(49.6% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	2051 KG	(1 KG UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE: 45 KG behind front seats

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: None

CG = 1349 MM REARWARD OF FRONT WHEEL CENTERLINE

*Cargo weight for multi-purpose passenger vehicles, trucks, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 136 KG, whichever is less.

TABLE 3 POST-IMPACT DATA

TEST NUMBER: 921124 NHTSA NO.: MP0102
TEST DATE: 11/24/92 TEST TIME: 1436
TEST TYPE: Frontal load cell barrier IMPACT ANGLE: 0°
AMBIENT TEMPERATURE AT IMPACT AREA: 22° C
TEMPERATURE IN OCCUPANT COMPARTMENT: 21° C
IMPACT VELOCITY: PRIMARY = 56.2 KPH SECONDARY = 56.2 KPH
(SPECIFIED RANGE = 55.5 TO 57.1 KPH)

DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 660 MM
EXITING VELOCITY TRAP = 51 MM

TEST VEHICLE STATIC CRUSH (ALL MEASUREMENTS ARE IN MILLIMETERS):

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 4452; C 4540; R 4470
POST-TEST: L 3942; C 3970; R 3950
TOTAL CRUSH: L 510; C 570; R 520
AVERAGE CRUSH: 533

TEST VEHICLE REBOUND FROM FLAT BARRIER
(ALL MEASUREMENTS ARE IN MILLIMETERS):

DISTANCE FROM TEST VEHICLE TO BARRIER: L 208; C 172; R 155; AVG. 178

TABLE 4 FUEL SYSTEM DATA

MAKE/MODEL: Chevrolet/Blazer

NHTSA NO.: MP0102

FUEL SYSTEM CAPACITY: 76.0 LITERS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 74.2 LITERS (FURNISHED BY COTR)

TEST VOLUME RANGE: 68.3 LITERS TO 69.7 LITERS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 69.3 LITERS (WITH ENTIRE FUEL SYSTEM FILLED)

TEST FLUID TYPE: STODDARD SOLVENT

SPECIFIC GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

TEST FLUID COLOR: PURPLE

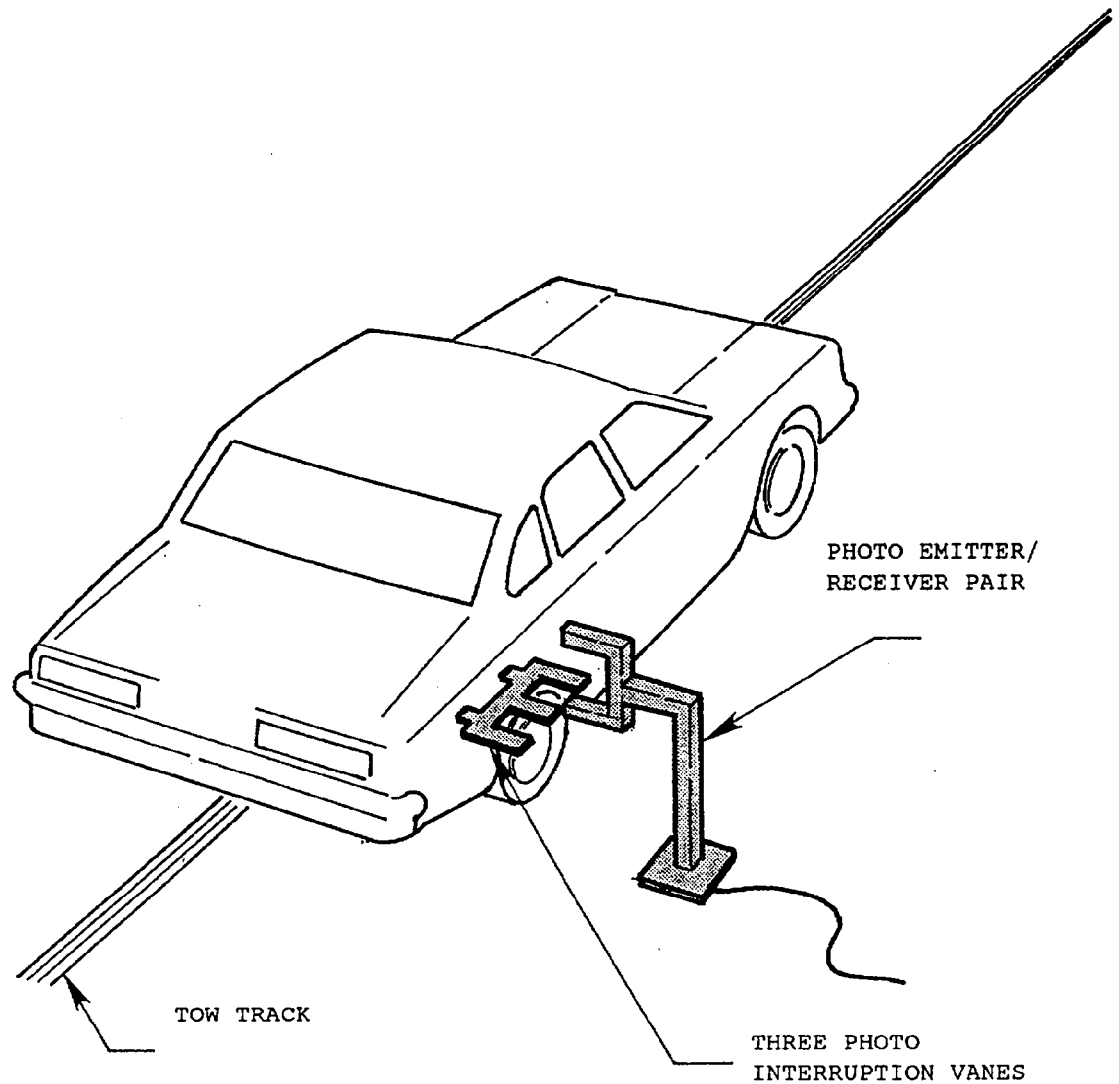
DETAILS OF FUEL SYSTEM: The fuel filler is on the left side. The fuel
lines run along the left frame rail to the front. The fuel tank is
behind the rear axle.

ELECTRIC FUEL PUMP: Yes

FUEL INJECTION: Yes

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT
OPERATING? No

FIGURE 1 IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver 51 millimeters before impact.

The vanes have 305 millimeter spacing.

FIGURE 2 ACCIDENT INVESTIGATION DIVISION DATA
FOR 56 KPH (35 MPH) FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Chevrolet/Blazer/4-door MPV
 VEHICLE NHTSA NO.: MP0102; VIN: 1GNDT13W2P2113582
 MODEL YEAR: 1993; BUILD DATE: 09/92; TEST DATE: 11/24/92
 VEHICLE SIZE CATEGORY: Multi-purpose veh.; TEST WEIGHT: 2051 KG
 VEHICLE WHEELBASE: 2718 MM
 MAXIMUM WIDTH: 1700 MM
 FRONT OVERHANG: 800 MM

COLLISION DEFORMATION
 CLASSIFICATION (CDC) CODE: 12FDEW3

CRUSH DEPTH
 MEASUREMENTS:

C1 =	<u>510</u>	MM
C2 =	<u>538</u>	MM
C3 =	<u>568</u>	MM
C4 =	<u>560</u>	MM
C5 =	<u>550</u>	MM
C6 =	<u>520</u>	MM

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE (LONGITUDINAL)

LENGTH OF DAMAGED
 REGION: L = 1524 MM

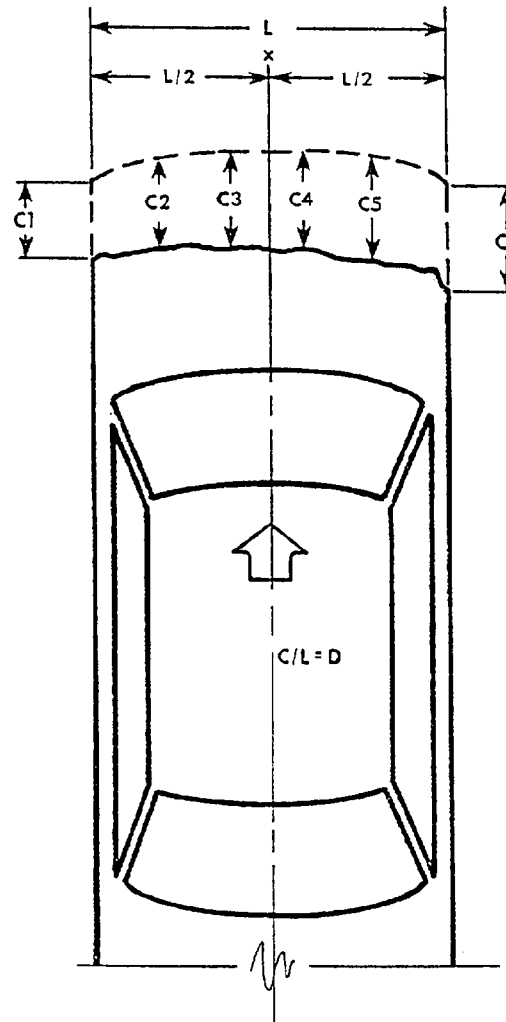
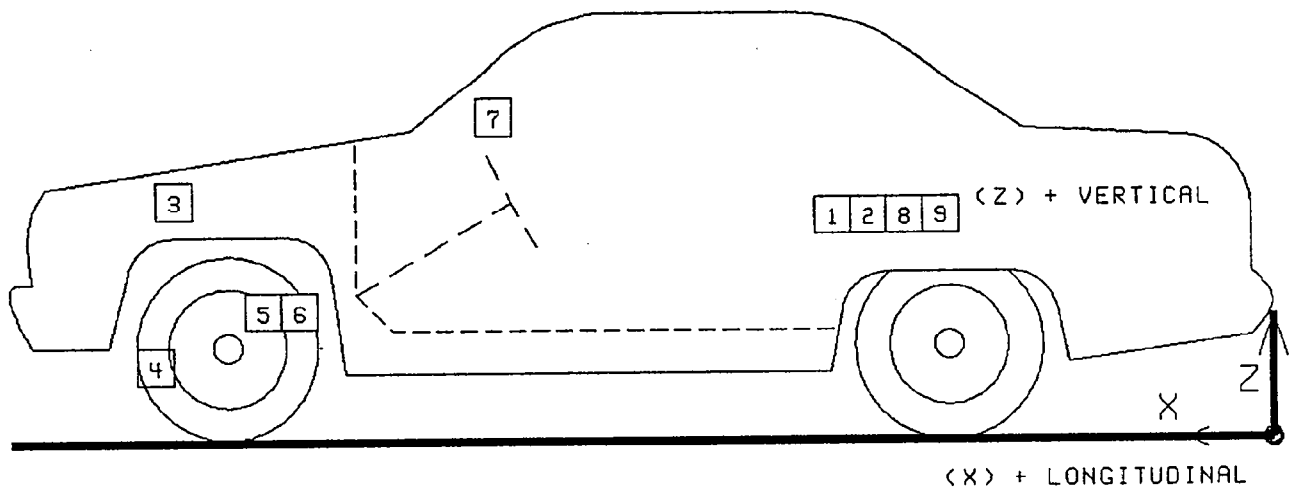
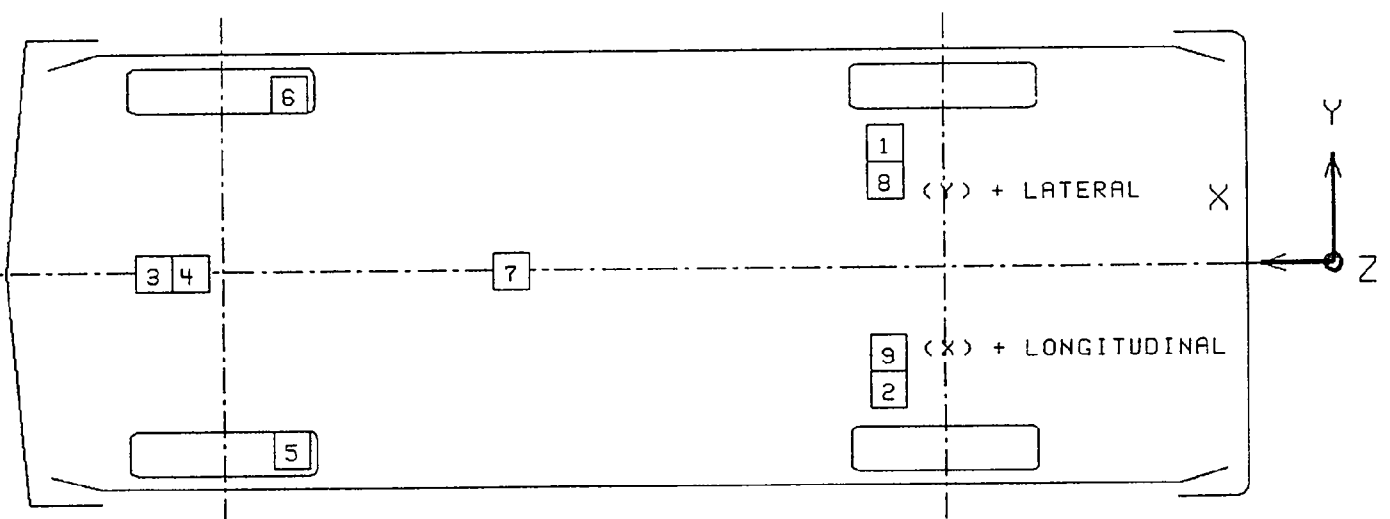


FIGURE 3
VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 5

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 921124

No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX	G MSEC	MAX	G MSEC
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	2944	465	555	2.2	152.4	45.6	49.5
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	2944	-465	553	1.3	161.1	50.1	50.0
3	ENGINE TOP LONGITUDINAL	70	162	839	35.9	45.6	125.6	33.9
4	ENGINE BOTTOM LONGITUDINAL	1033	-20	323	44.4	44.9	98.2	36.1
5	RIGHT BRAKE CALIPER LONGITUDINAL	889	-633	360	40.8	58.9	109.1	44.3
6	LEFT BRAKE CALIPER LONGITUDINAL	881	633	372	39.3	49.6	78.4	35.8
7	INSTRUMENT PANEL CENTER LONGITUDINAL	1346	76	1170	143.6	71.0 ^Y	58.1	48.1 ^Y
8	LEFT REAR SEAT CROSSMEMBER REDUNDANT LONGITUDINAL	2944	495	555	2.5	160.9	46.4	49.6
9	RIGHT REAR SEAT CROSSMEMBER REDUNDANT LONGITUDINAL	2944	-495	553	1.6	170.1	49.6	50.1

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN MILLIMETERS. X-AXIS LOCATIONS ARE MEASURED REARWARD FROM THE FRONT BUMPER.

REFERENCE: X: + FORWARD ACCELERATION
Y: + LEFT FROM VEHICLE CENTERLINE
Z: + UP FROM GROUND LEVEL

^Y See DATA ACQUISITION EXPLANATIONS

TABLE 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #192	PASSENGER #142
HEAD	<u>Steering</u> <u>wheel upper rim</u>	<u>Instrument panel,</u> <u>chest, and header</u>
CHEST	<u>Steering</u> <u>wheel lower rim</u>	<u>None</u>
ABDOMEN	<u>None</u>	<u>None</u>
LEFT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>
RIGHT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>

DOOR OPENING:

	LEFT	RIGHT
FRONT	<u>Difficult,</u> <u>tools required</u>	<u>Difficult,</u> <u>tools required</u>
REAR	<u>Difficult,</u> <u>tools required</u>	<u>Difficult,</u> <u>tools required</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
FRONT	<u>None</u>	<u>None</u>
REAR	<u>NA</u>	<u>NA</u>

GLAZING DAMAGE:

The entire windshield cracked upon impact.

OTHER NOTABLE IMPACT EFFECTS:

None

TABLE 7 FMVSS 208 DATA SUMMARY

VEH. YR./MAKE/MODEL/BODY STYLE: 1993/Chevrolet/Blazer/4-door MPV

VEH. NHTSA NO.: MP0102; TEST DATE: 11/24/92

	DRIVER DUMMY #192	PASSENGER DUMMY #142
<u>MAXIMUM ACCELERATIONS (G):</u>		
HEAD X-AXIS	-168.4	-51.3
HEAD Y-AXIS	-19.8	7.5
HEAD Z-AXIS	-46.1	-76.0
HEAD RESULTANT	168.6	84.2
CHEST X-AXIS	-65.7	-54.0
CHEST Y-AXIS	-7.4	6.7
CHEST Z-AXIS	-22.4	-17.0
CHEST RESULTANT*	62.4	53.2
CHEST RESULTANT TIME INTERVAL (SEC.)*	.003	.003

<u>HEAD INJURY CRITERIA (HIC) VALUES:</u>		
HIC**	640	1127
HIC STARTING TIME (SEC.)	.057	.071
HIC ENDING TIME (SEC.)	.093	.107
AVG. HEAD RESULTANT ACCEL. DURING HIC TIME INTERVAL (G)	50.1	62.8

<u>MAXIMUM CHEST DEFLECTIONS (MM):</u>		
CHEST X-AXIS	38	52
MAXIMUM CHEST DEFLECTION TIME (SEC.)	.071	.084

<u>MAXIMUM COMPRESSIVE FEMUR FORCES (N):</u>		
LEFT FEMUR	4407	4608Y
RIGHT FEMUR	7959	3726Y

<u>MAXIMUM SEAT BELT FORCES (N):</u>		
LAP BELT	7607	9425
SHOULDER BELT	6359	7646

NOTE: ALL VALUES LISTED MUST BE OCCURRING DURING PRIMARY IMPACT EVENT.
(HEAD ACCELERATIONS LISTED MUST BE DURING HIC TIME INTERVAL.)

*0.003 SEC. MINIMUM DURATION.

**THE MAXIMUM HIC TIME INTERVAL IS 36 MILLISECONDS.

YSee DATA ACQUISITION EXPLANATIONS

TABLE 8 HYBRID III NECK DATA SUMMARY

VEHICLE YR./MAKE/MODEL/BODY STYLE: 1993/Chevrolet/Blazer/4-door MPV

VEHICLE NHTSA NO.: MP0102; TEST DATE: 11/24/92

<u>MAXIMUM VALUES:</u>	<u>DRIVER DUMMY #192</u>	<u>PASSENGER DUMMY #142</u>
NECK X-AXIS FORCE (N)	-1724	1810
NECK Y-AXIS FORCE (N)	248	232
NECK Z-AXIS FORCE (N)	3818	3216
NECK MOMENT ABOUT X AXIS (N-M)	-24	22
NECK MOMENT ABOUT Y AXIS (N-M)	-104	94
NECK MOMENT ABOUT Z AXIS (N-M)	-18	7

NOTE: ALL VALUES LISTED MUST BE OCCURRING DURING PRIMARY IMPACT EVENT.

DUMMY KINEMATIC SUMMARY

DRIVER DUMMY

Upon impact the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's chest impacted the lower steering wheel rim followed by the dummy's head impacting the upper steering wheel rim and rotating downward. The driver dummy was restrained by the three-point unbelt. The dummy rebounded rearward into the seat back as the dummy's head rotated rearward into head restraint. The driver dummy came to rest in the driver's seat restrained by the three-point unbelt.

RIGHT FRONT PASSENGER DUMMY

Upon impact the right front passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated downward impacting the instrument panel and the dummy's chest. The right front passenger dummy was restrained by the three-point unbelt. The dummy rebounded rearward into the seat back as the dummy's head rotated slightly rearward contacting the head restraint and header. The right front passenger dummy came to rest in the right front passenger's seat restrained by the three-point unbelt.

TABLE 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

	DRIVER	PASSENGER
<u>BELT LENGTH DATA:</u>		
BELT LENGTH FROM TRIM PANEL EXIT TO BOLT HOLE ANCHOR POINT FOR CONTINUOUS WEBBING SYSTEMS.	3030	3210
SHOULDER BELT LENGTH AS MEASURED ON PART 572 DUMMY.	838	838
LAP BELT LENGTH AS MEASURED ON PART 572 DUMMY.	698	698
<u>SHOULDER BELT SPOOL-OFF LENGTH:</u>		
AS DETERMINED BY FILM ANALYSIS	38	46
AS DETERMINED MECHANICALLY	50	50
AS DETERMINED ELECTRONICALLY	100	111
<u>BELT STRETCH LENGTH (MM/M):</u>		
AS MEASURED MECHANICALLY	0	7
AS MEASURED ELECTRONICALLY	0	34
<u>RETRACTOR LOCK-UP TIME (MS):</u>		
AS DETERMINED BY SHOULDER BELT SPOOL-OFF	44	50

ALL MEASUREMENTS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

FIGURE 4

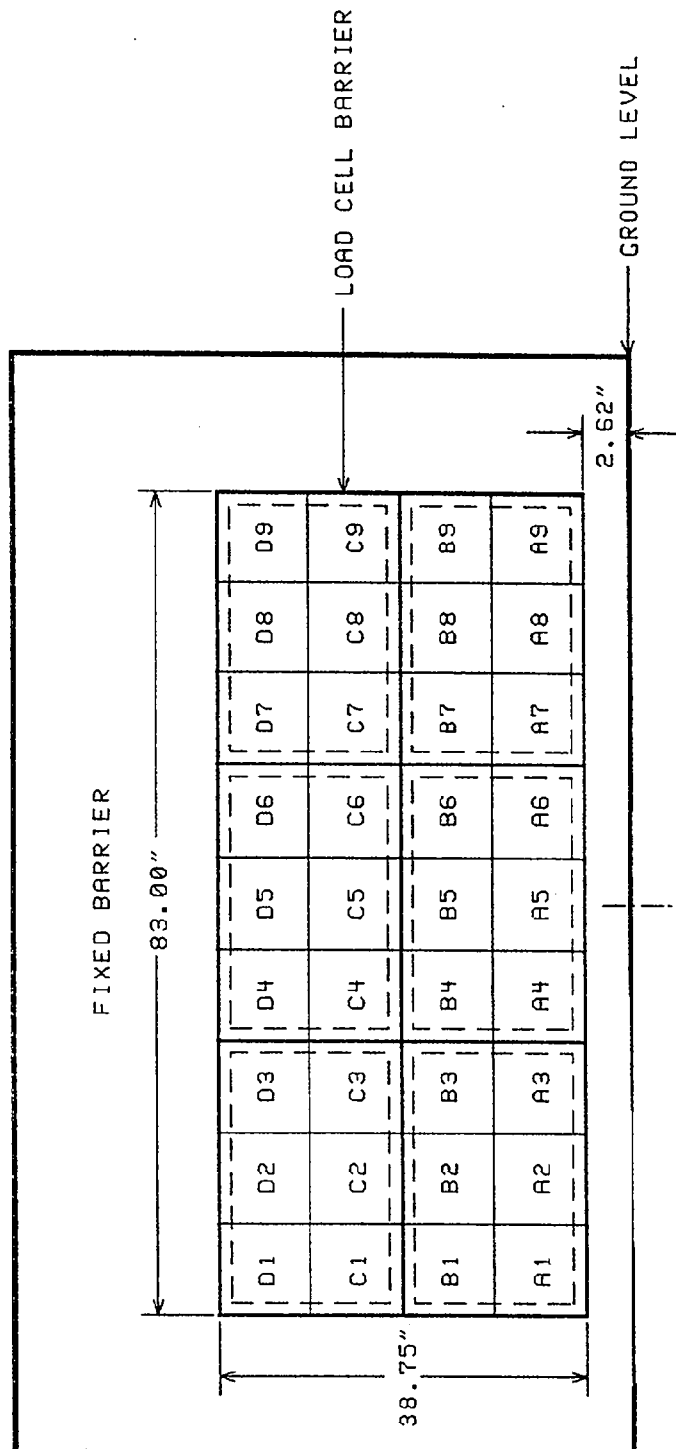
LOAD CELL BARRIER CONFIGURATION

FRONT VIEW

36 LOAD CELLS

4 ROWS

9 COLUMNS



- GROUP 1: A1 THRU B3
- GROUP 2: A4 THRU B6
- GROUP 3: A7 THRU B9
- GROUP 4: C1 THRU D3
- GROUP 5: C4 THRU D6
- GROUP 6: C7 THRU D9

TABLE 10

LOAD CELL BARRIER DATA SUMMARY

TEST NUMBER 9211124

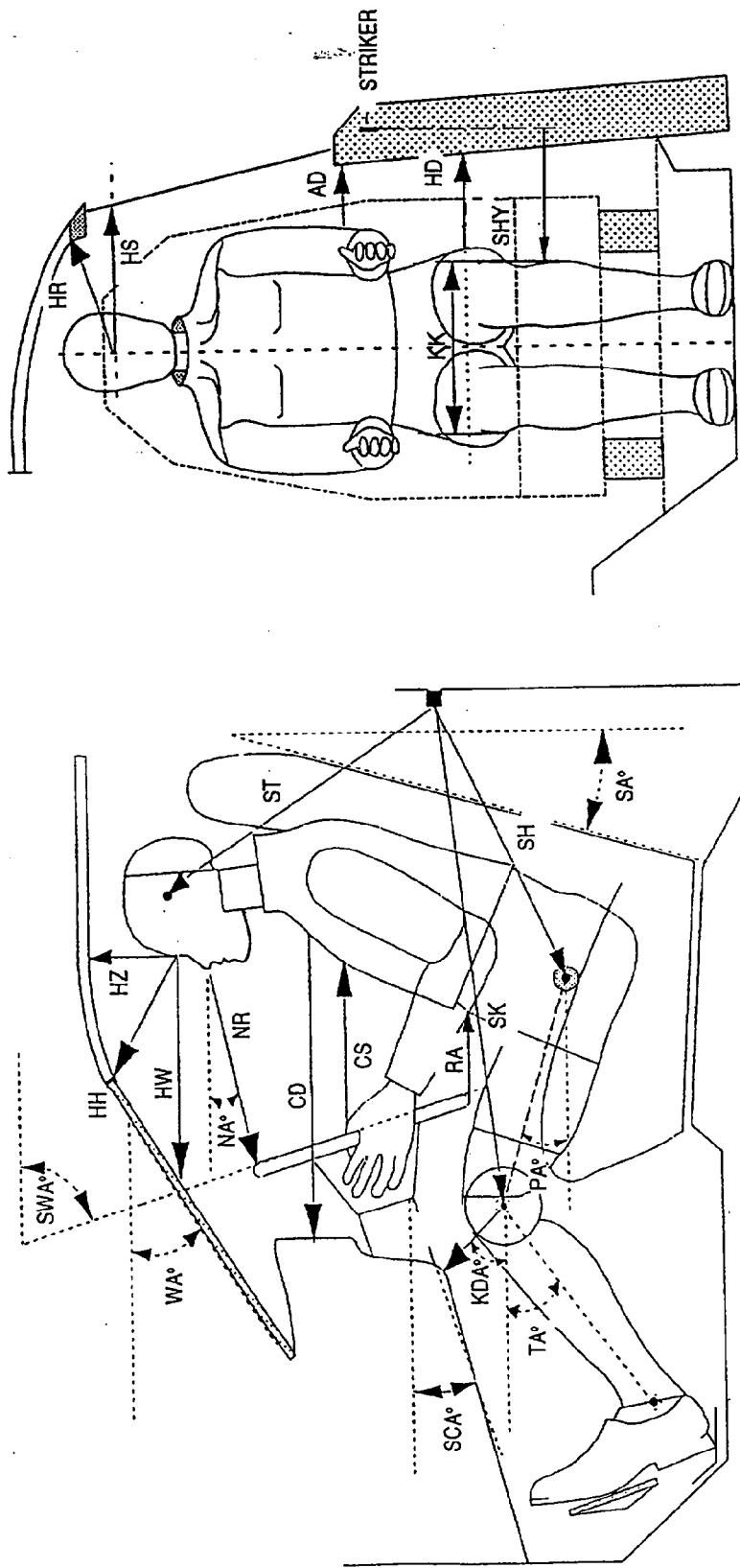
LOCATION	POSITIVE DIRECTION		NEGATIVE DIRECTION	
	KN	MSEC	KN	MSEC
TOTAL GROUP 1	1.5	2.5	118.6	12.6
TOTAL GROUP 2	1.8	1.4	212.3	39.1
TOTAL GROUP 3	2.2	2.3	123.5	11.9
TOTAL GROUP 4	1.4	276.1	69.7	13.4
TOTAL GROUP 5	0.3	235.5	354.2	35.8
TOTAL GROUP 6	1.0	275.3	67.1	13.0
TOTAL LOAD CELL FORCE	3.3	235.8	837.7	35.4
TENSION IS POSITIVE				
COMPRESSION IS NEGATIVE				

SECTION 3.0

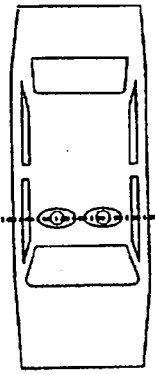
OCCUPANT, CAMERA, & VEHICLE MEASUREMENTS

FIGURE 5

DUMMY MEASUREMENT LOCATIONS FOR FRONT SEAT OCCUPANTS



VERTICAL TRANSVERSE PLANE



VERTICAL LONGITUDINAL PLANE

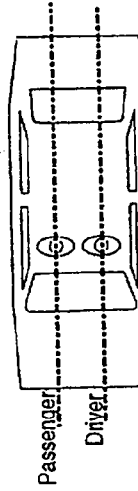


TABLE 11 DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS

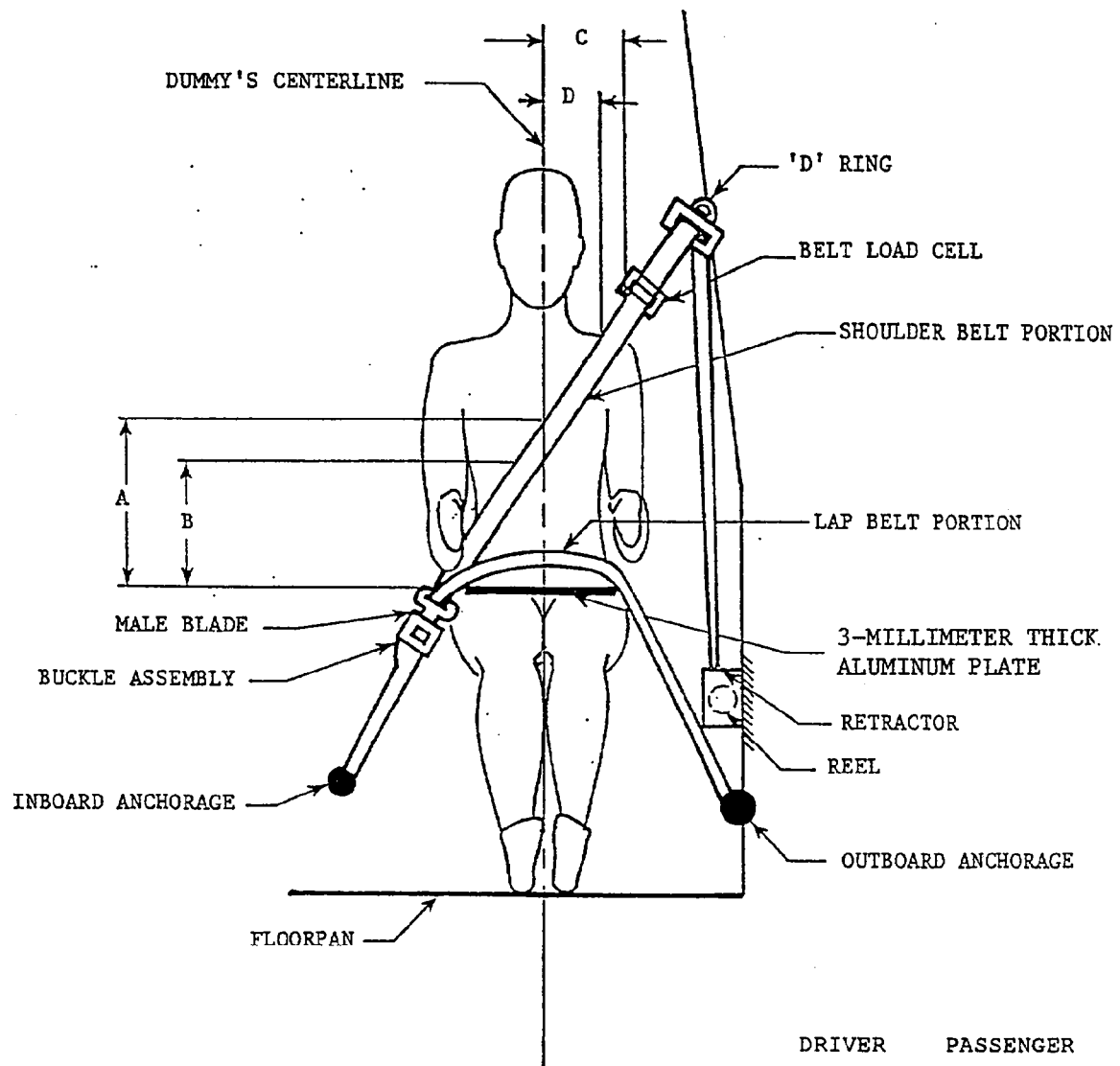
DESIGNATION	TYPE OF MEASUREMENT	DRIVER (SERIAL #192)	PASSENGER (SERIAL #142)
WA°	WINDSHIELD ANGLE	40°	40°
SWA°	STEERING WHEEL ANGLE	70°	NA
SCA°	STEERING COLUMN ANGLE	18°	NA
SA°	SEAT BACK ANGLE	22°	22°
HZ	HEAD TO ROOF	212	233
HH	HEAD TO HEADER	392	430
HW	HEAD TO WINDSHIELD	533	555
HR	HEAD TO SIDE HEADER	251	270
NR	NOSE TO RIM	324	NA
NA	NOSE TO RIM ANGLE	17°	NA
CD	CHEST TO DASH	527	619
CS	STEERING WHEEL TO CHEST	298	NA
RA	RIM TO ABDOMEN	138	NA
KDL	LEFT KNEE TO DASH	195	210
KDR	RIGHT KNEE TO DASH	209	190
KDA	OUTBOARD KNEE TO DASH ANGLE	38°	33°
PA°	PELVIC ANGLE	21°	25°
TA°	TIBIAL ANGLE	41°	45°
KK	KNEE TO KNEE	247	219
ST*	STRIKER TO HEAD	544	510
	STRIKER TO HEAD ANGLE	-63°	-68°
SK*	STRIKER TO KNEE	747	754
	STRIKER TO KNEE ANGLE	0°	7°
SH*	STRIKER TO H-POINT	315	332
	STRIKER TO H-POINT ANGLE	27°	28°
SHY	STRIKER TO H-POINT (Y DIR.)	240	233
HS	HEAD TO SIDE WINDOW	336	330
HD	H-POINT TO DOOR	126	145
AD	ARM TO DOOR	100	106

THE SEAT BACK ANGLE (SA°) IS MEASURED RELATIVE TO VERTICAL, ALL OTHER ANGLES ARE MEASURED RELATIVE TO HORIZONTAL.

*A negative angle indicates the measurement point was located above the striker.

ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

FIGURE 6 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUMINUM PLATE TO BELT UPPER EDGE	378	335
B - TOP SURFACE OF ALUMINUM PLATE TO BELT LOWER EDGE	297	247
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	95	125
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	35	70
LAPBELT TENSION (N)	9	9
SHOULDER BELT TENSION (N)	13	13
ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.		

FIGURE 7
CAMERA POSITIONS

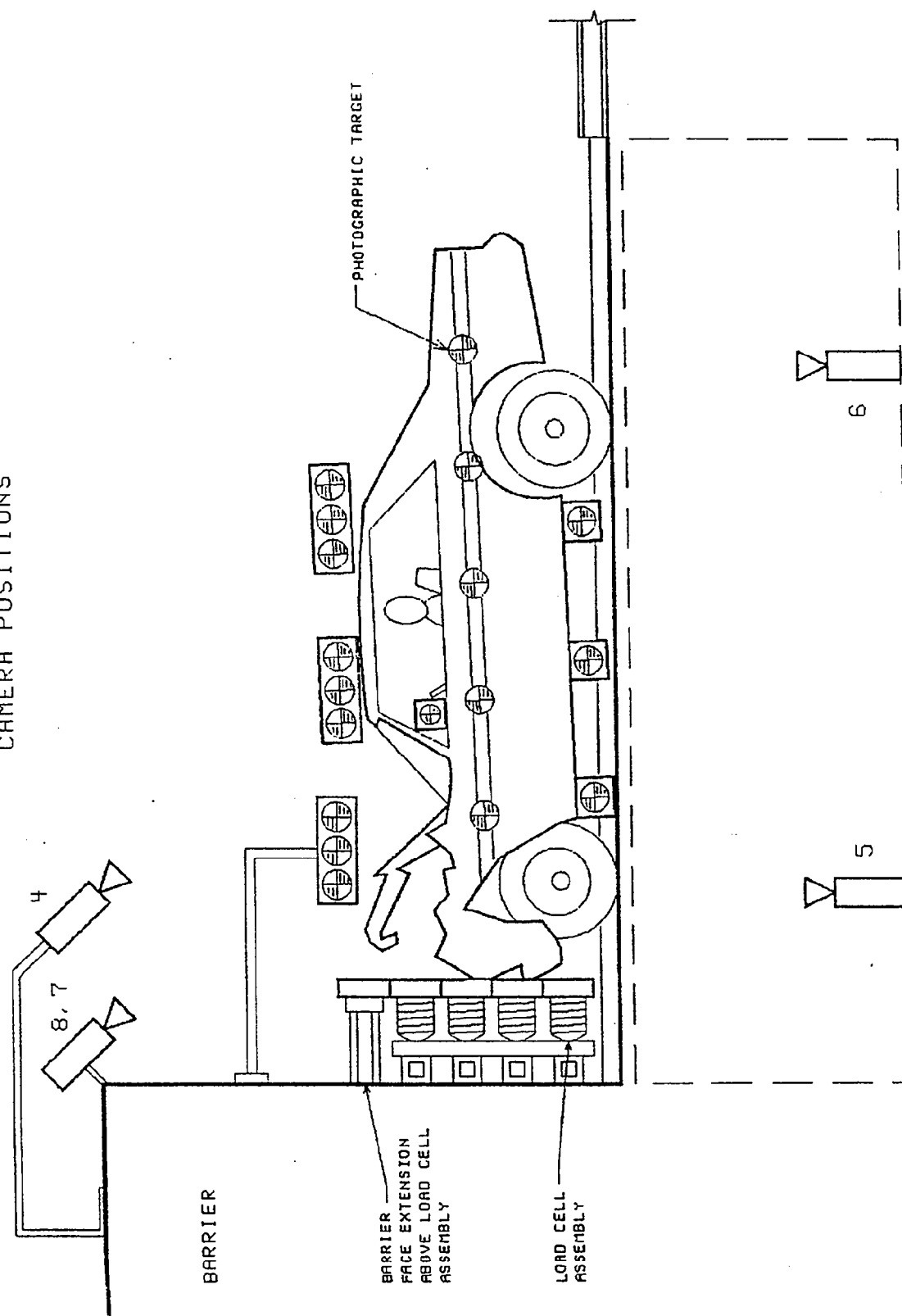


FIGURE 7

CAMERA POSITIONS, CONTINUED

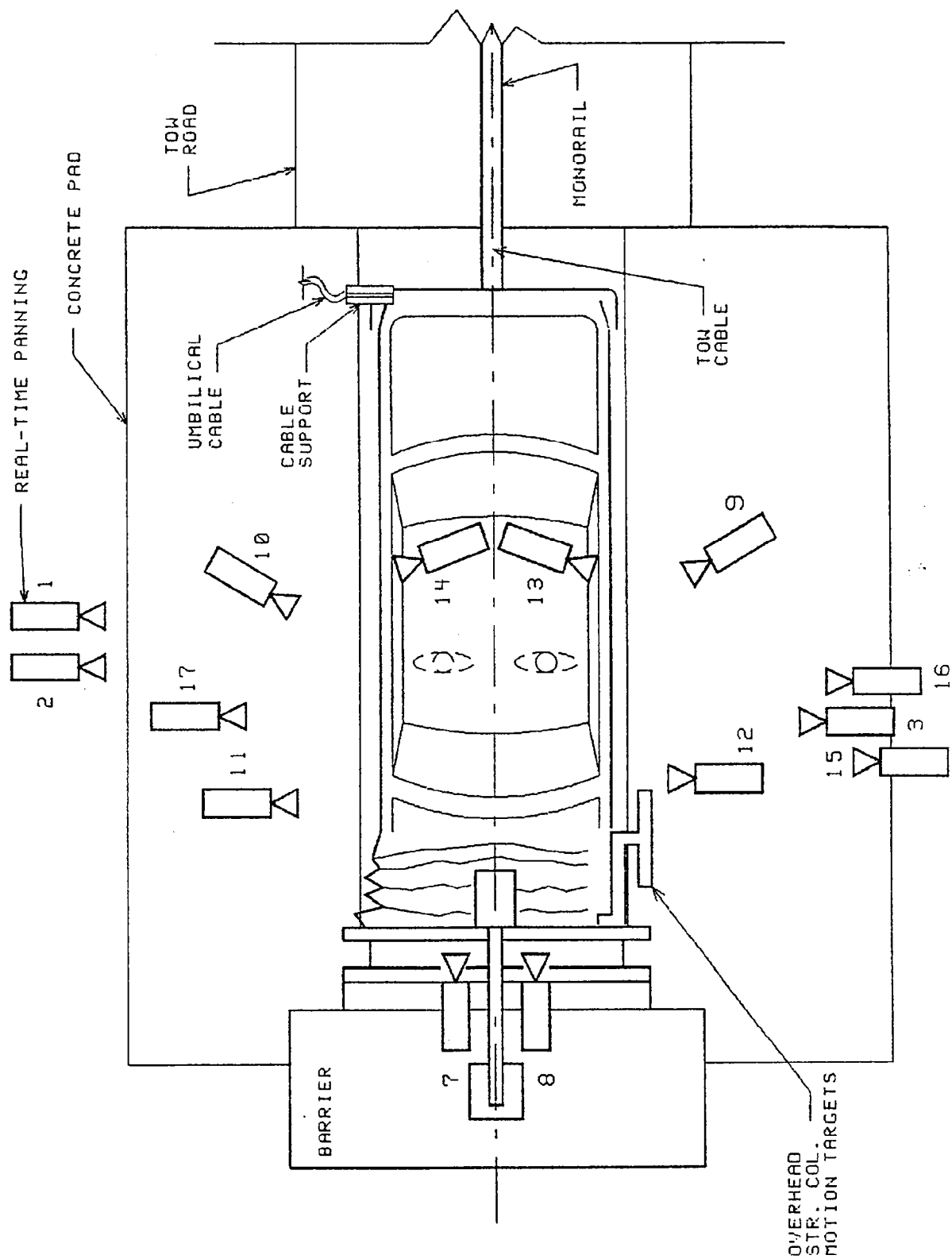


TABLE 12 MOTION PICTURE CAMERA LOCATIONS

TEST NO.: 921124		VEHICLE: 1993 Chevrolet Blazer 4-door MPV					FILM PLANE			FILM
CAMERA NO.	VIEW	CAMERA X	POSITIONS Y	(MM)* Z	ANGLE** (DEG)	TO HEAD TARGET	LENS (MM)	SPEED (FPS)		
1	Real-time panning	-3607	-12802	1549	NA	NA	16	24		
2	Vehicle crush	-2065	-6767	942	-2	NA	13	505		
3	Dummy kinematics	-1054	7493	1118	-12	5207	25	998		
4	Windshield damage	-925	0	2489	-40	NA	13	500		
5	Crush & fluid spillage	-1283	0	-2347	90	NA	13	1000		
6	Fluid spillage	-2522	0	-2515	90	NA	13	998		
7	Passenger kinematics	-114	-351	2159	-40	NA	17	508		
8	Driver kinematics	-173	368	2159	-41	NA	17	502		
9	Driver kinematics	-4572	1854	2591	-27	2413	25	500		
10	Passenger kinematics	-4674	-1880	2540	-26	2616	25	498		
11	Windshield intrusion	-968	-7775	1118	0	NA	50	495		
12	Windshield intrusion	-1346	7859	1074	0	NA	50	492		
13	Driver seatbelt movement	NA	NA	NA	NA	NA	13	500		
14	Passenger seatbelt movement	NA	NA	NA	NA	NA	13	500		
15	Column movement	-2337	7264	2616	-14	NA	25	506		
16	Column movement	-2337	7264	1908	-9	NA	25	498		
17	Passenger kinematics	-986	-5354	1151	7	5461	25	1028		

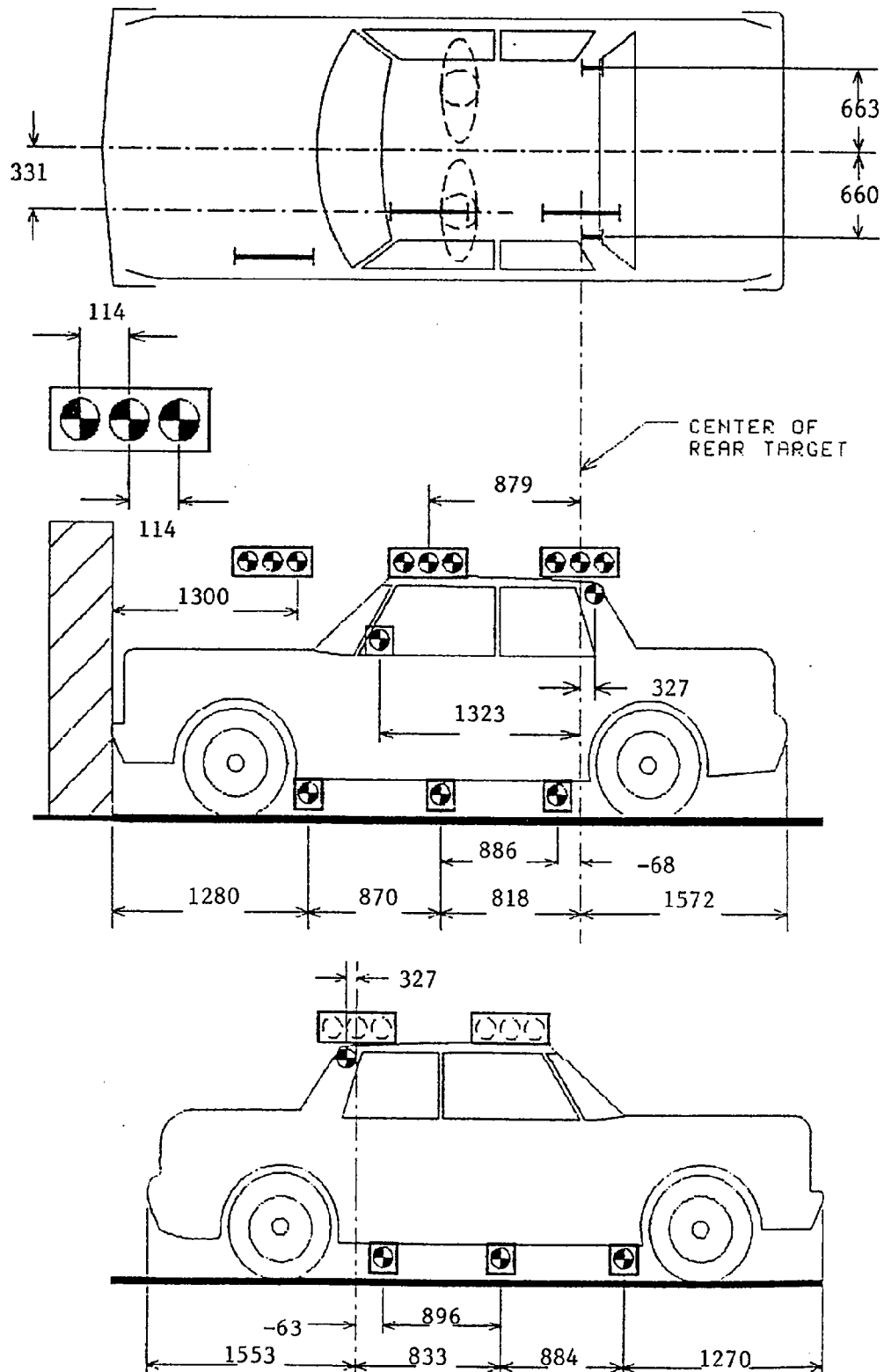
**X = Film plane forward of barrier face

+Y = Film plane to left of monorail centerline

+Z = Film plane above ground level

***Angle = Film plane angled upward from horizontal plane

FIGURE 8
VEHICLE TARGET LOCATIONS



ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.
3-8

921124

FIGURE 9

PRE-TEST AND POST-TEST MEASUREMENT POINTS

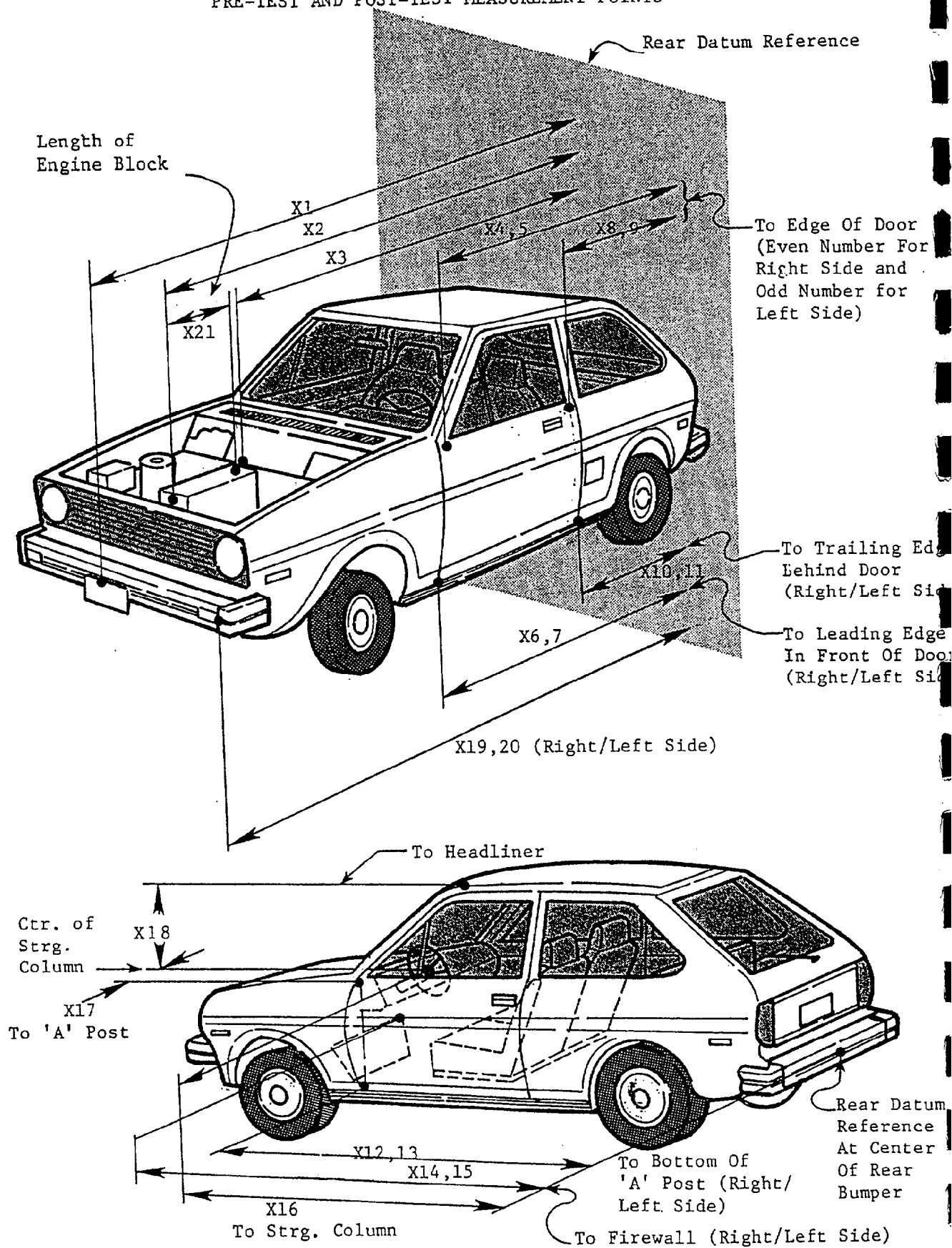


TABLE 13 IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Chevrolet/Blazer		TEST NUMBER: 921124	ALL MEASUREMENTS ARE IN MM		
NO.	TYPE OF MEASUREMENT		PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE		4540	3970	570
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK		4000	3695	305
X3	REAR SURFACE OF VEHICLE TO FIREWALL		3444	3210	234
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR		3208	3185	23
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR		3204	3127	77
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR		3190	3160	30
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR		3192	3175	17
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR		2090	2125	-35
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR		2083	2133	-50
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR		2096	2070	26
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR		2087	2073	14
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE		3169	3140	29
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE		3166	3204	-38
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE		3470	3410	60
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE		3465	3322	143
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER		2718	2740	-22
X17	CENTER OF STEERING COLUMN TO "A" POST		293	300	-7
X18	CENTER OF STEERING COLUMN TO HEADLINER		470	577	-107
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER		4470	3950	520
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER		4452	3942	510
X21	LENGTH OF ENGINE BLOCK		382	382	0

APPENDIX A

PHOTOGRAPHS

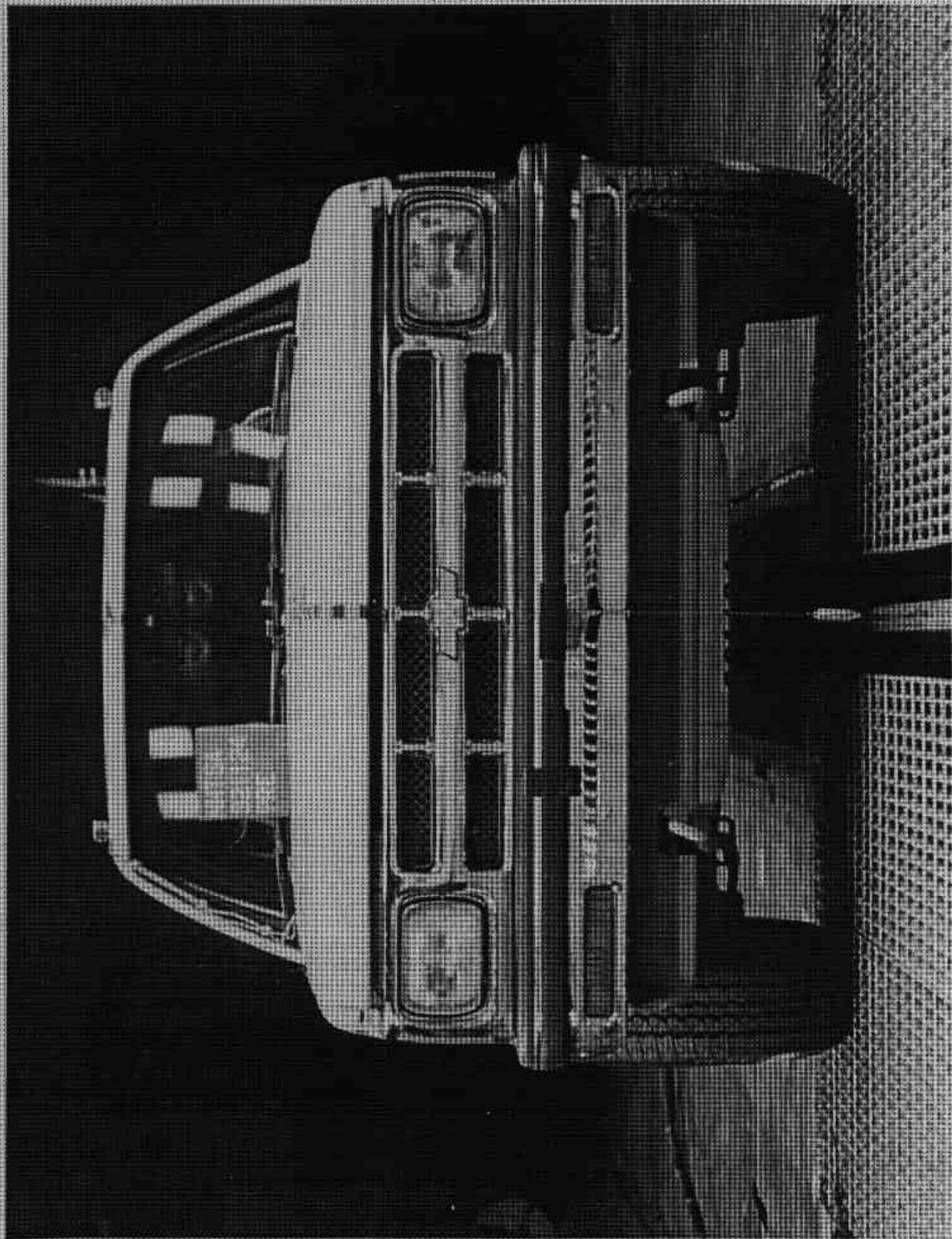


FIGURE A-1. PRE-TEST FRONT VIEW

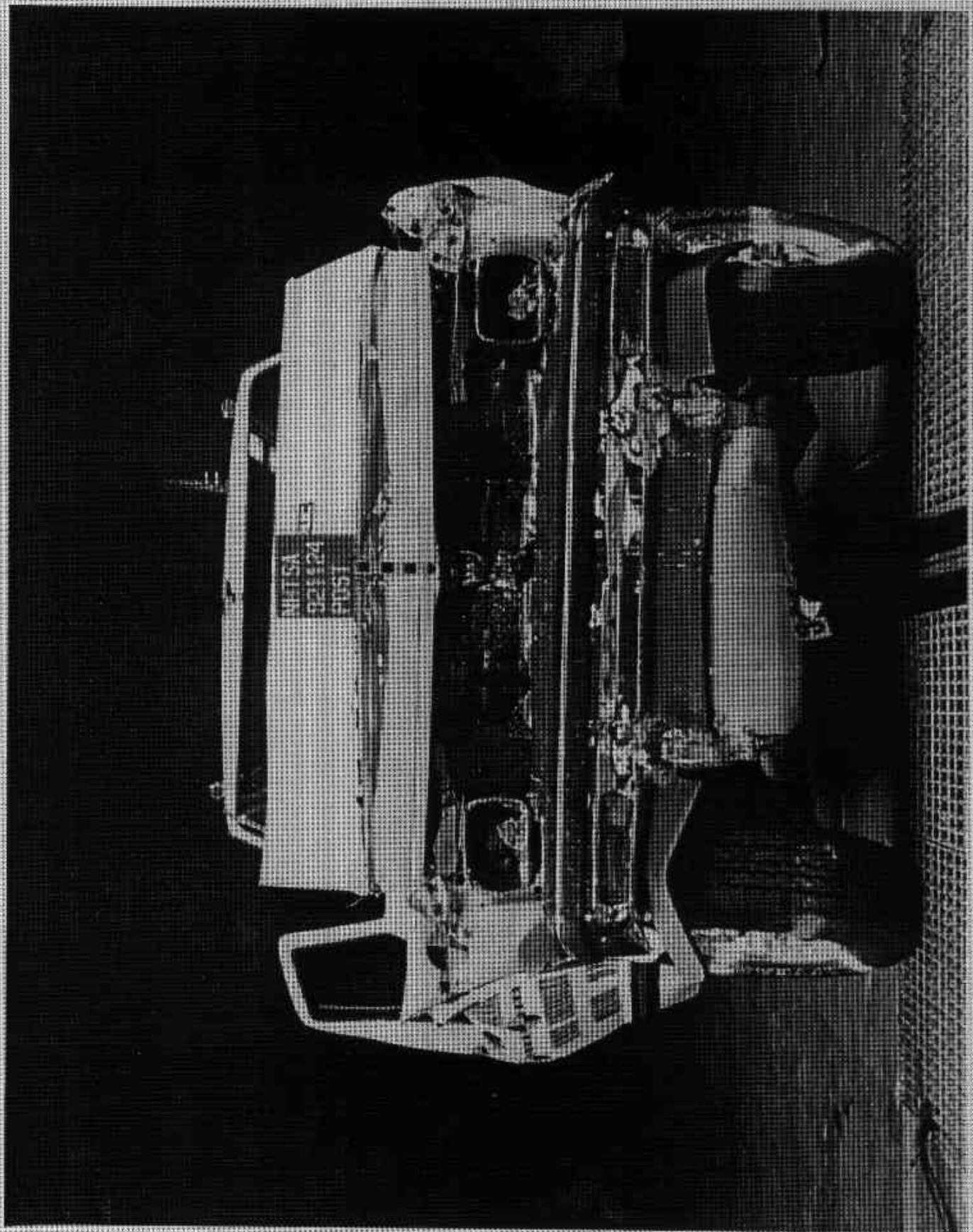


FIGURE A-2. POST-TEST FRONT VIEW

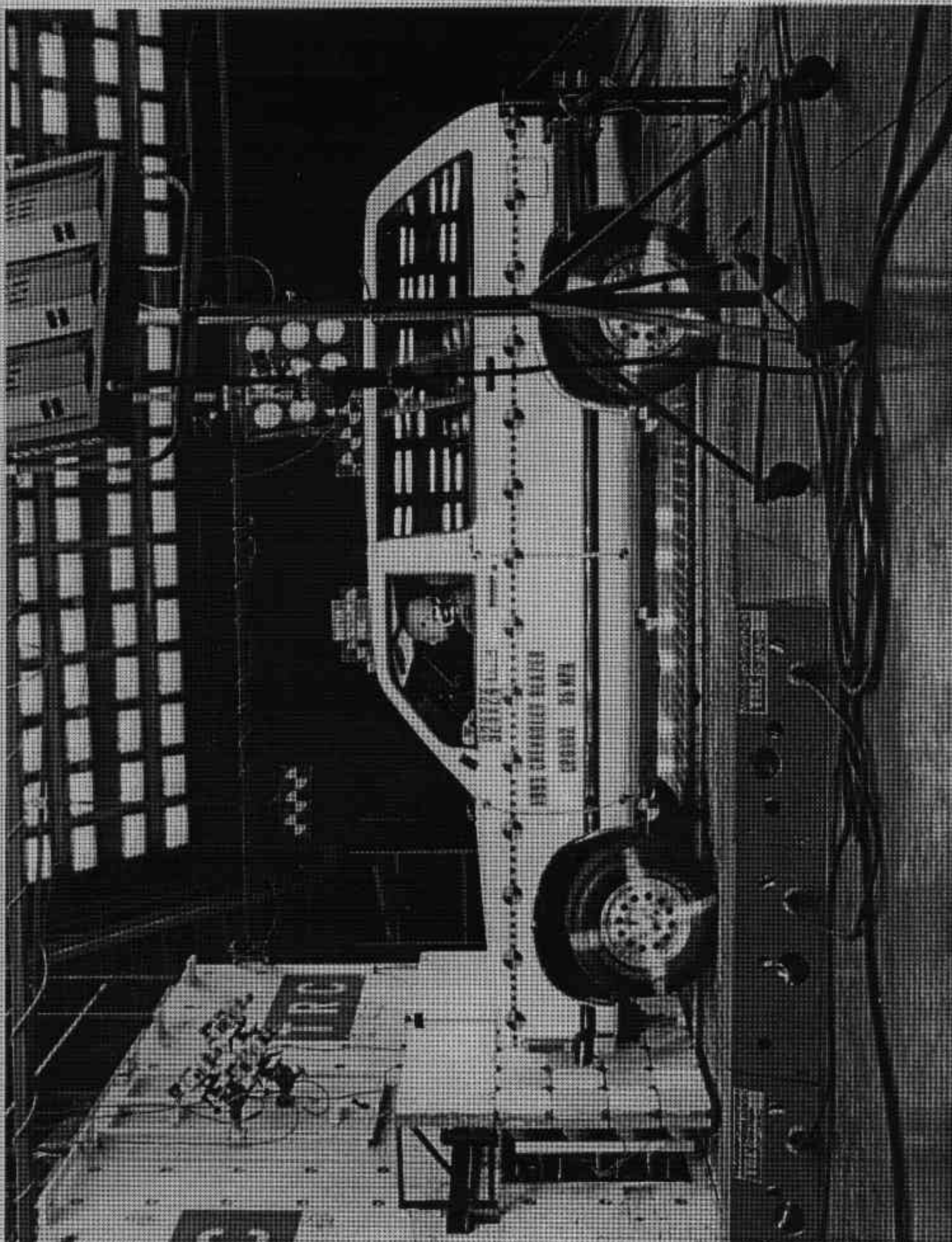


FIGURE A-3. PRE-TEST LEFT SIDE VIEW

A-4

921124

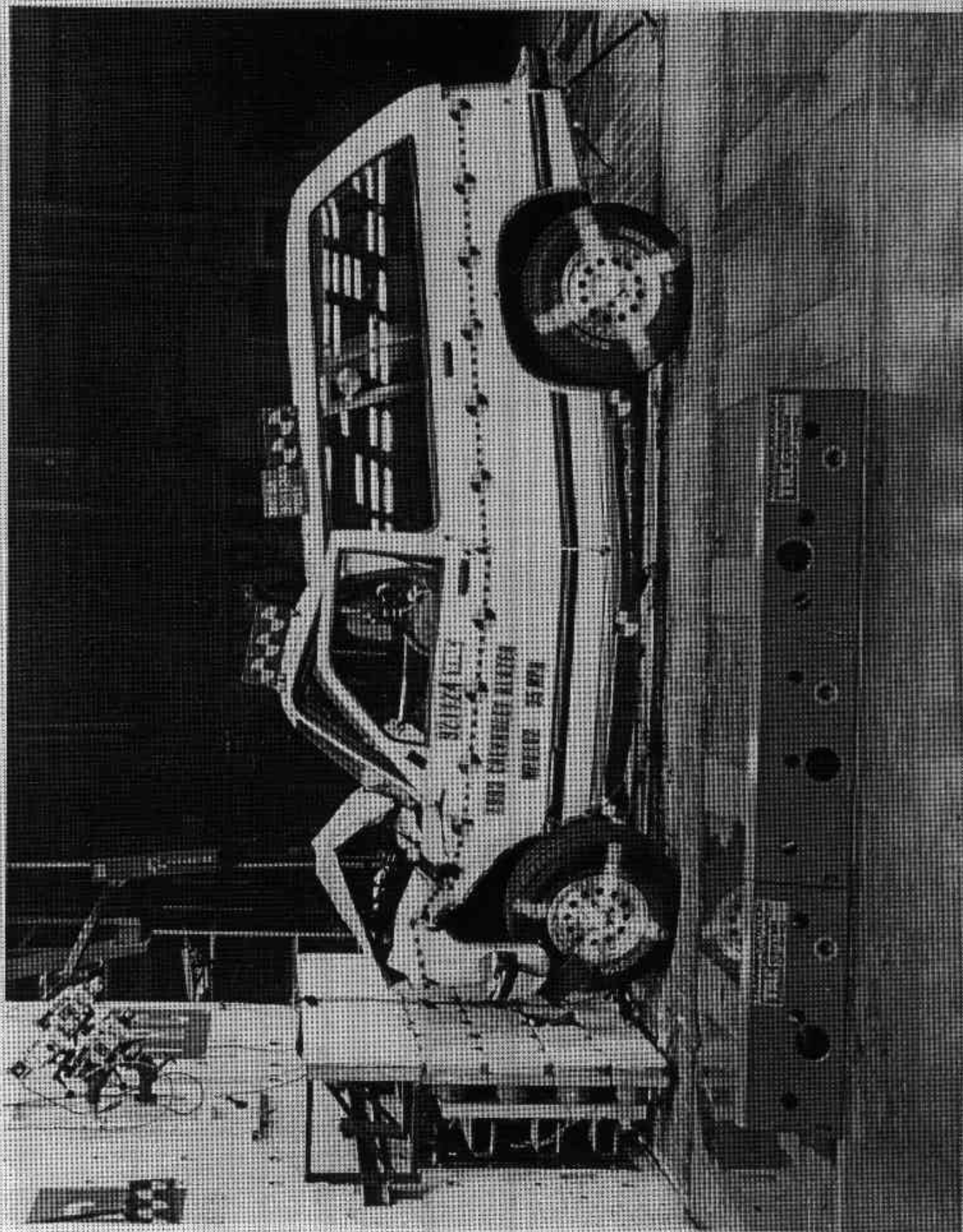


FIGURE A-4, POST-TEST LEFT SIDE VIEW
A-5

921124

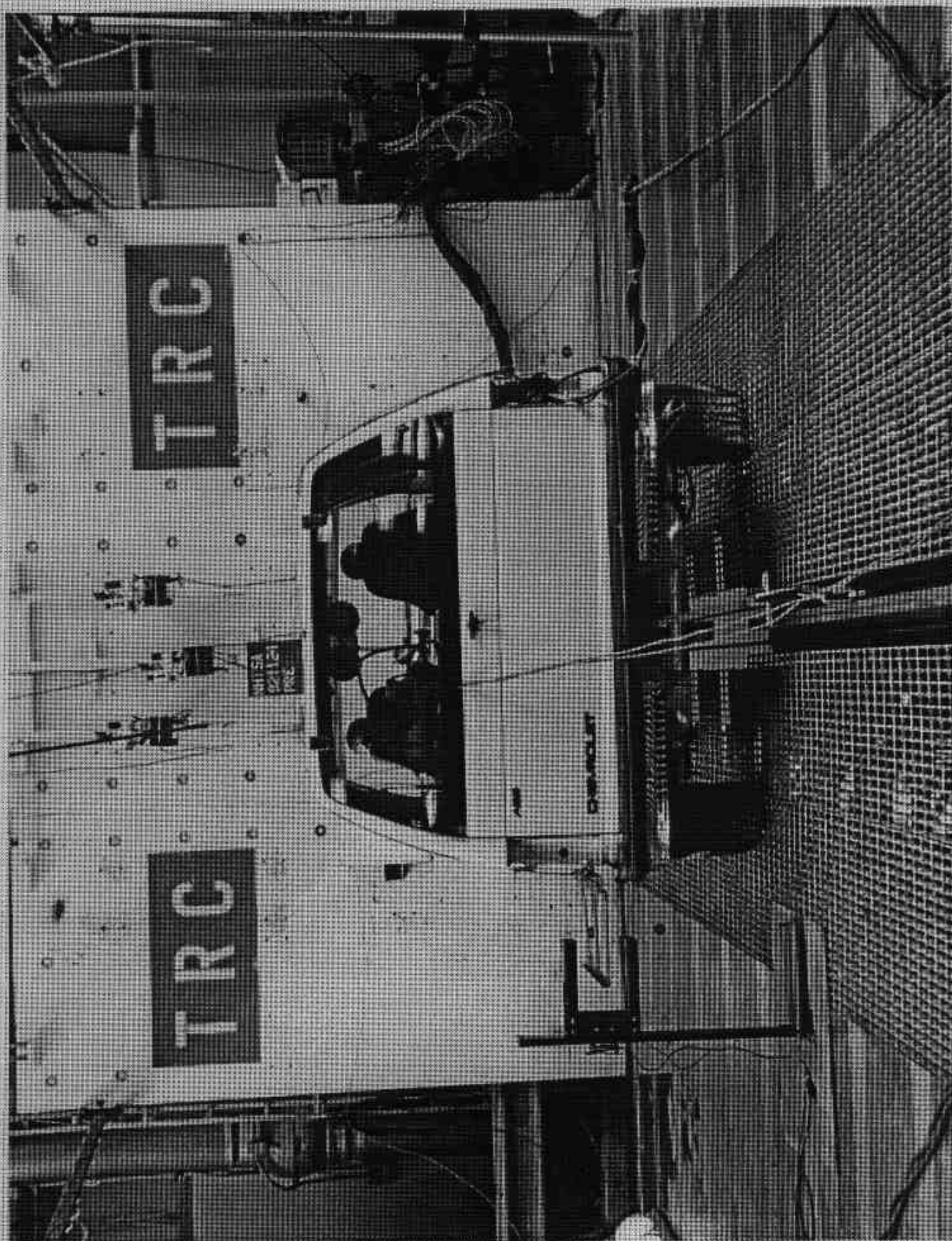


FIGURE A-5. PRE-TEST REAR VIEW

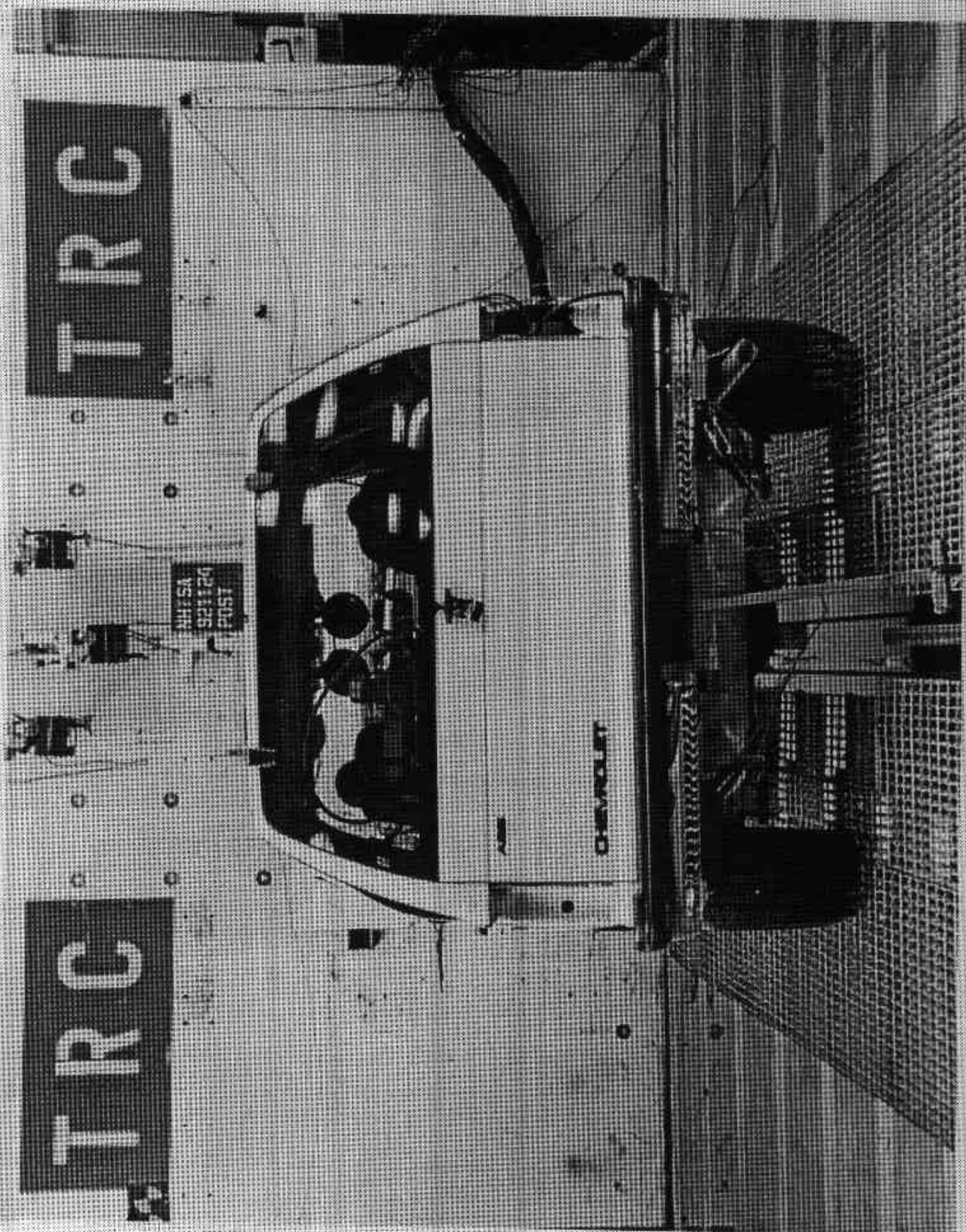


FIGURE A-6. POST-TEST REAR VIEW

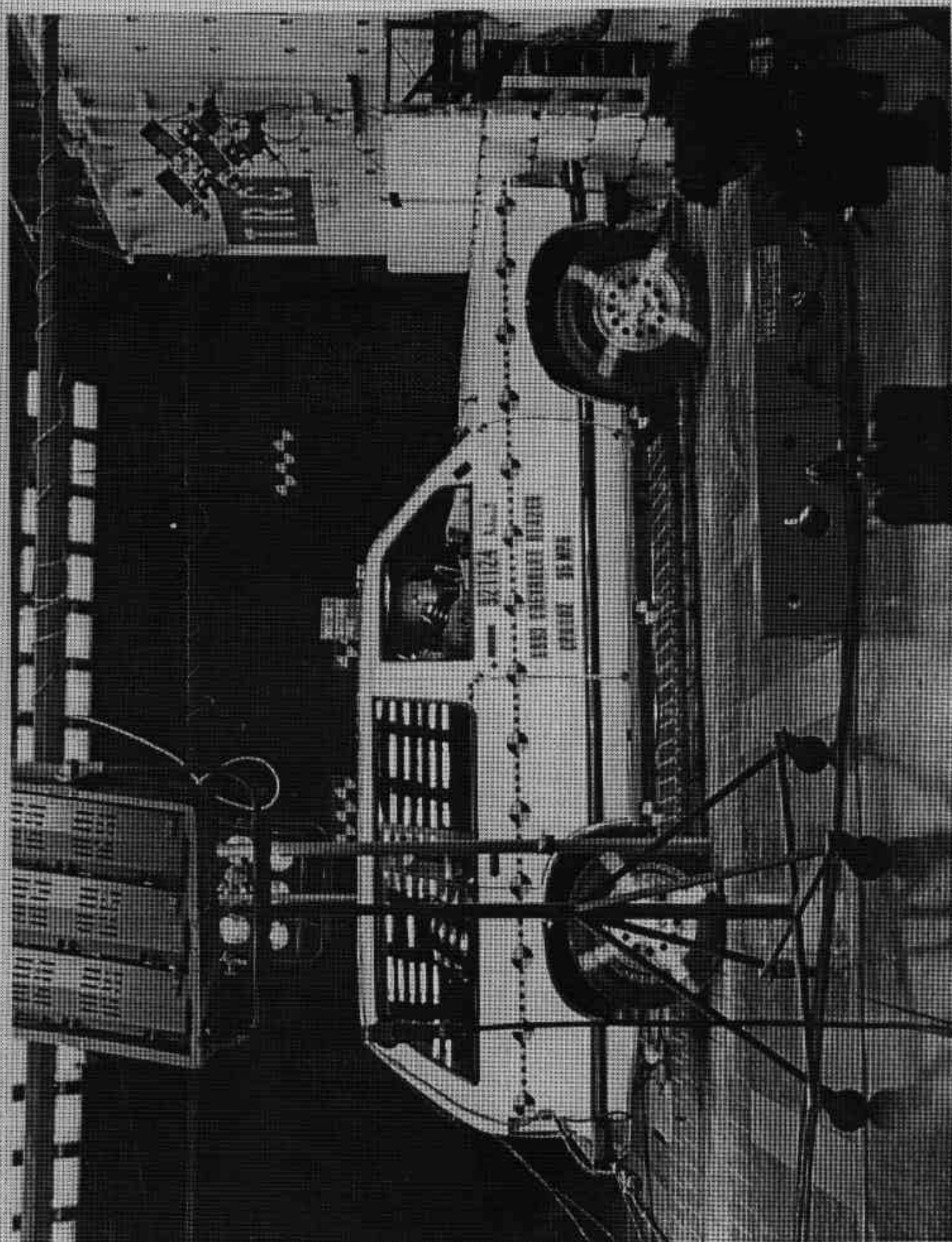


FIGURE A-7, PRE-TEST RIGHT SIDE VIEW

A-8

921124

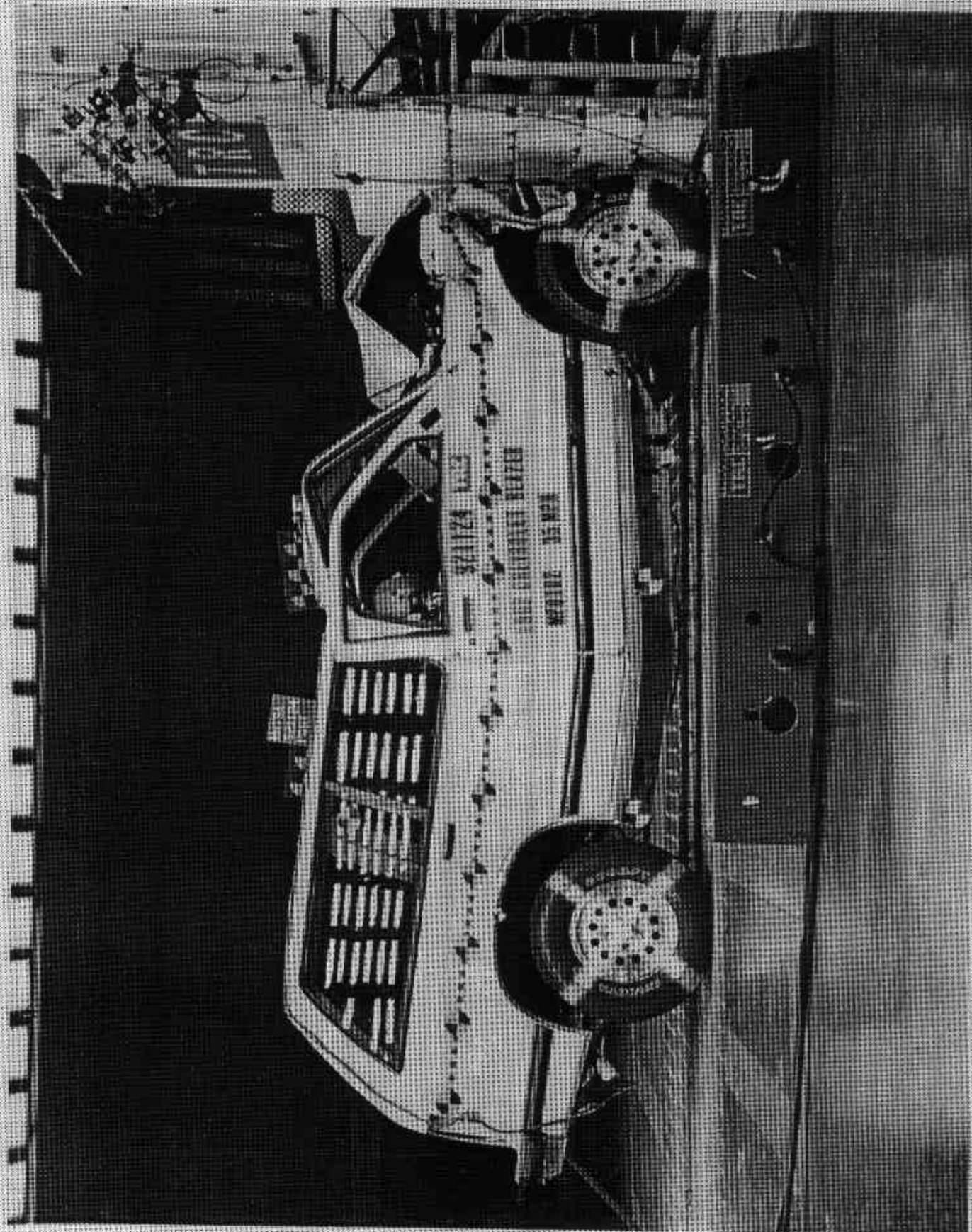


FIGURE A-8. POST-TEST RIGHT SIDE VIEW
A-9

921124

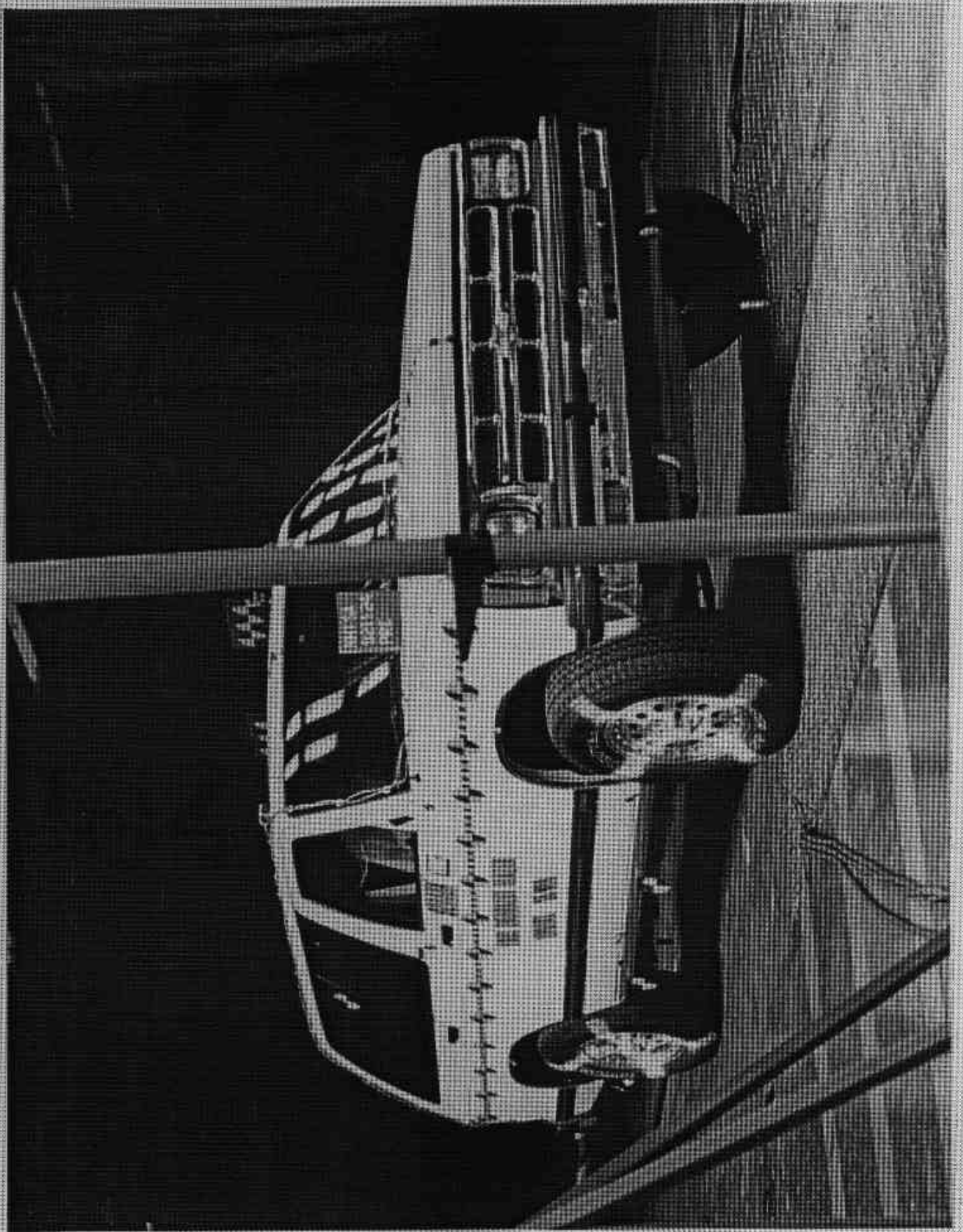


FIGURE A-9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

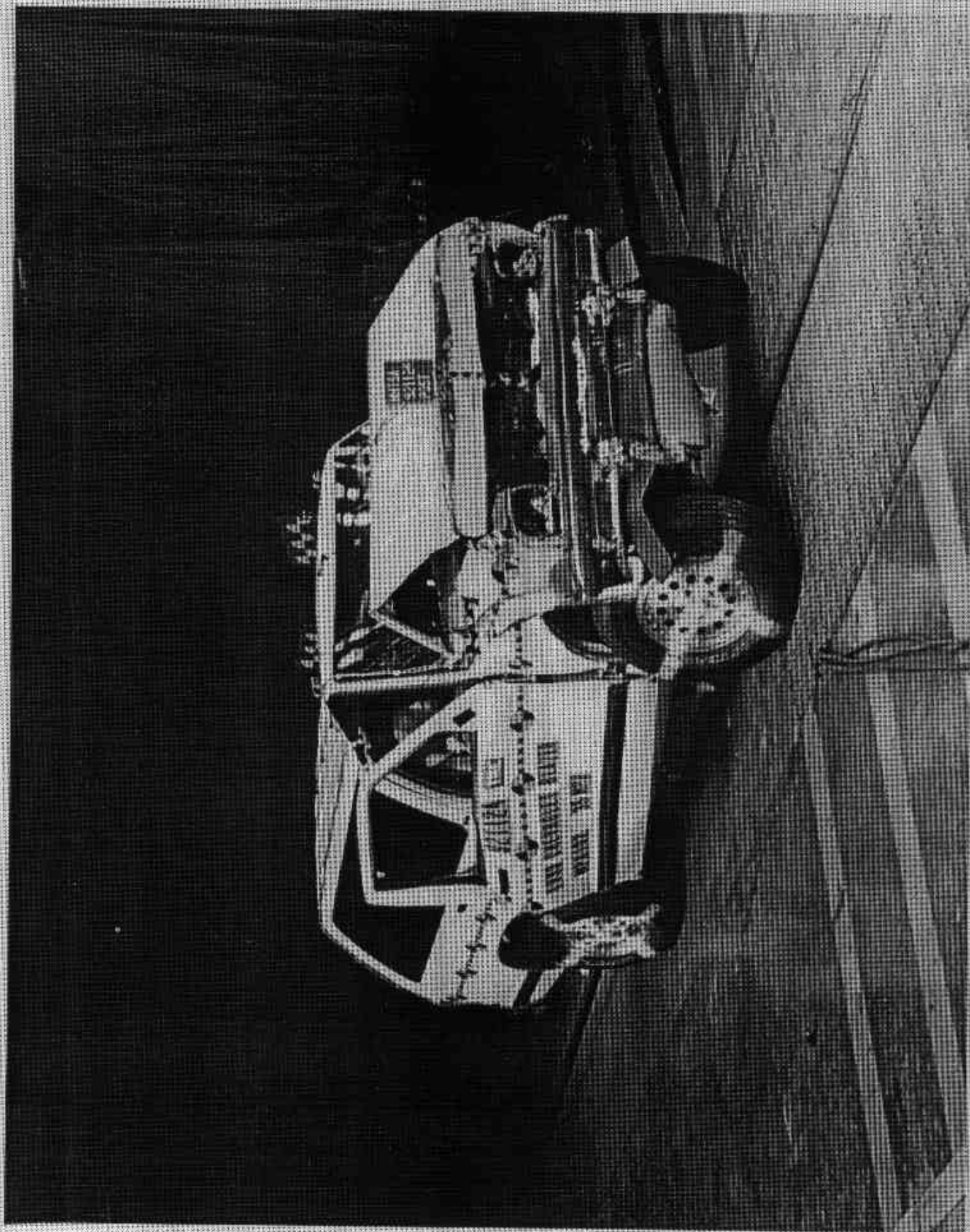


FIGURE A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW
A-11

921124

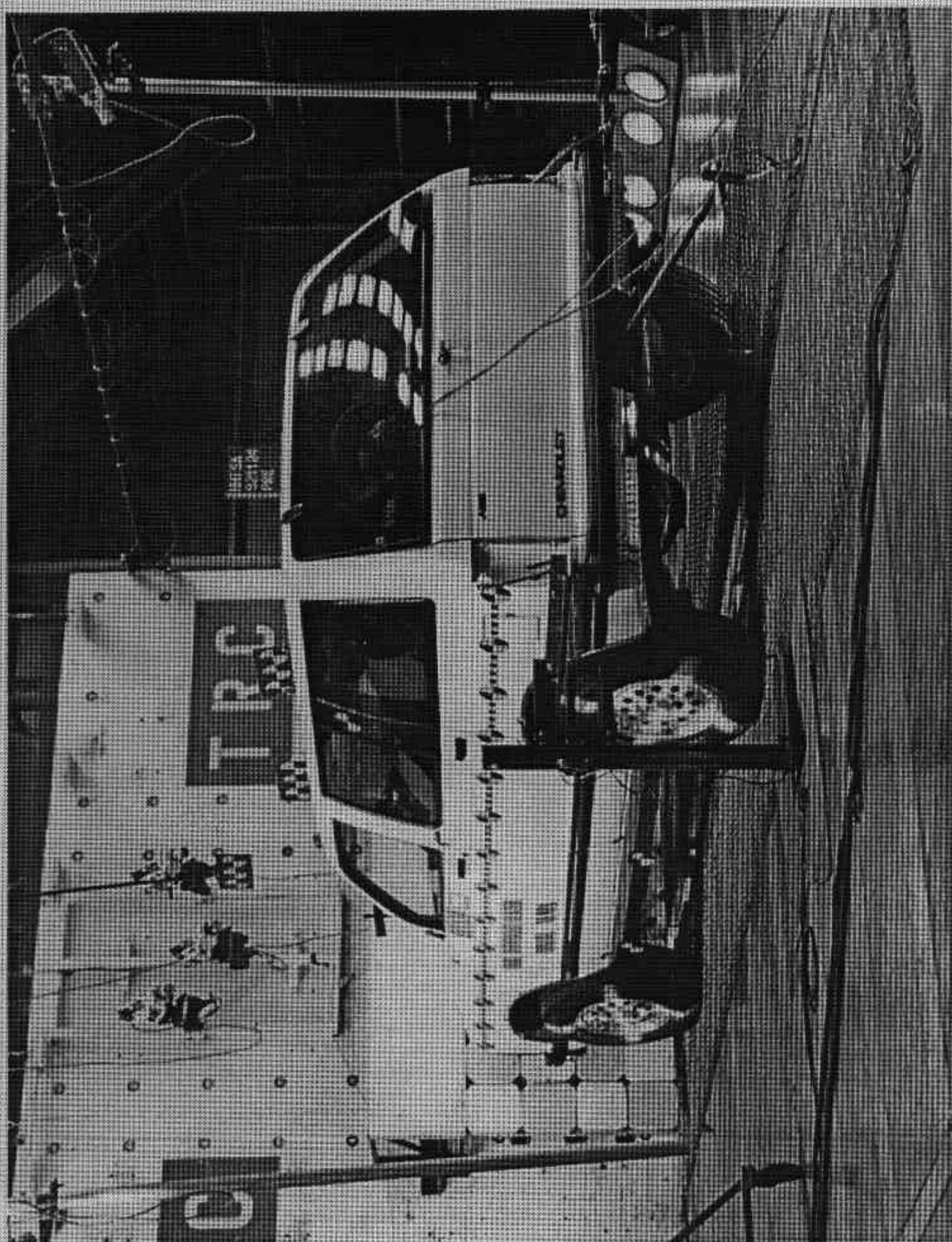


FIGURE A-11. PRE-TEST LEFT REAR THREE-QUARTER VIEW

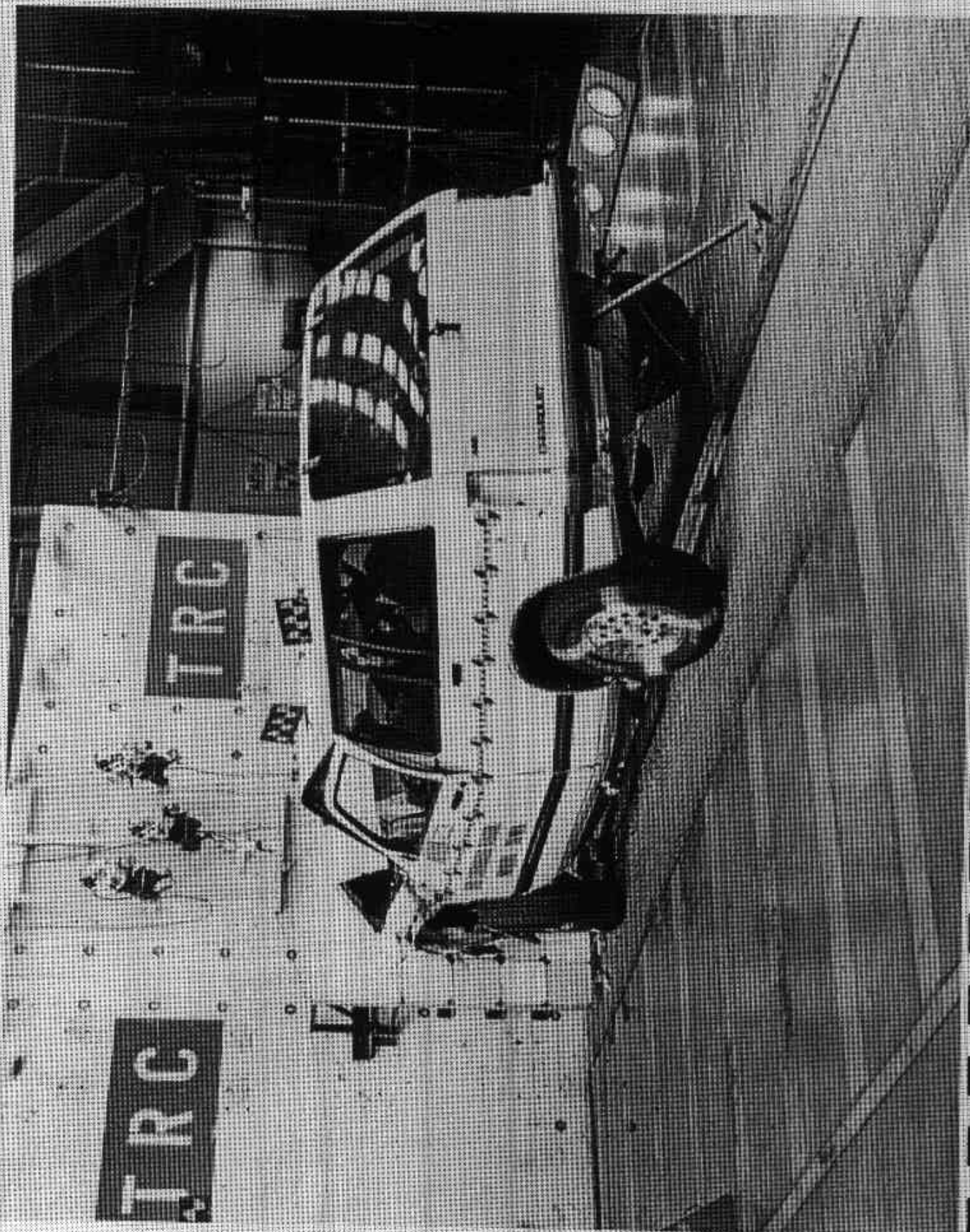
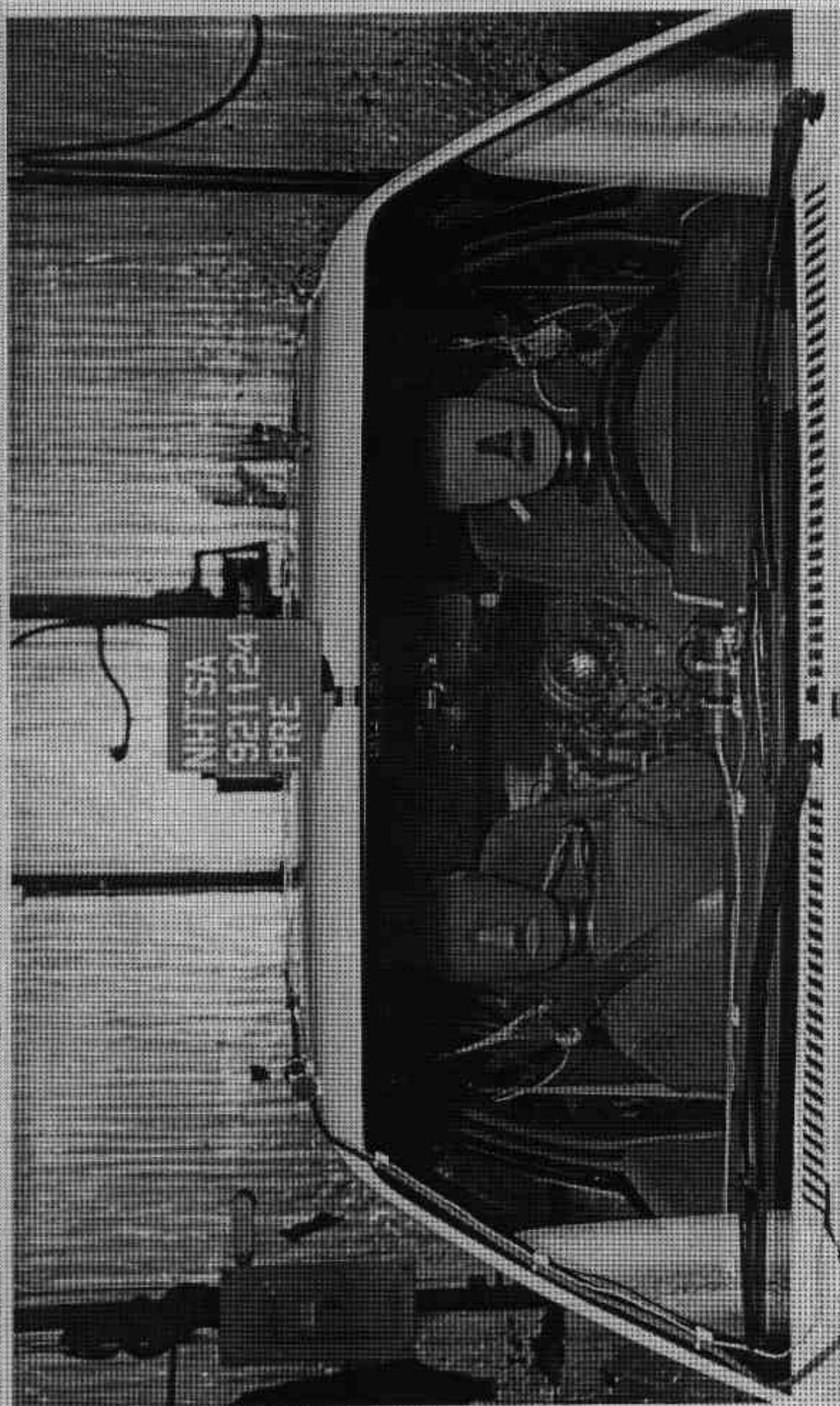


FIGURE A-12. POST-TEST LEFT REAR THREE-QUARTER VIEW
A-13

921124



MP 0-102

FIGURE A-13. PRE-TEST WINDSHIELD VIEW
A-14

921124

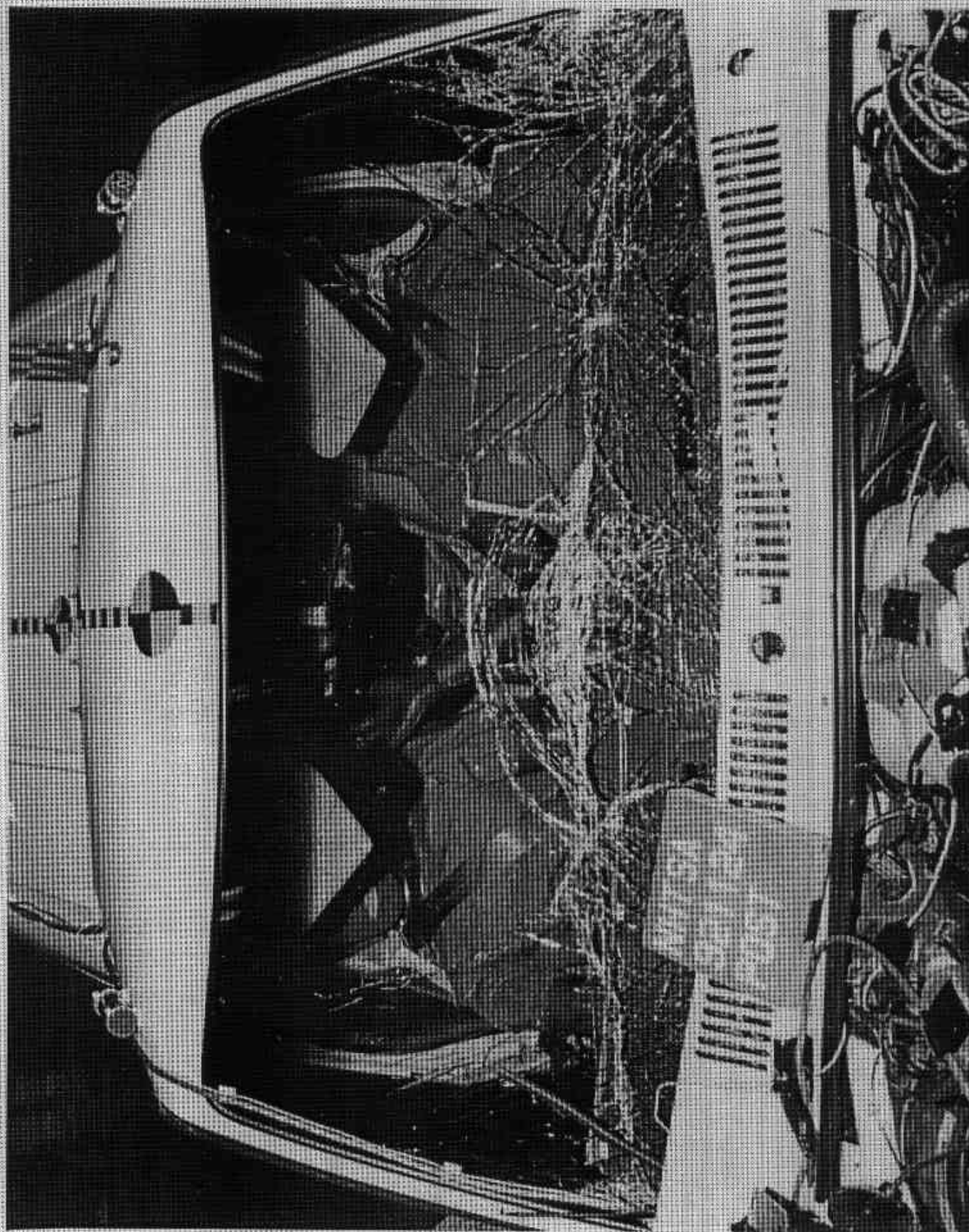


FIGURE A-14, POST-TEST WINDSHIELD VIEW
A-15

921124

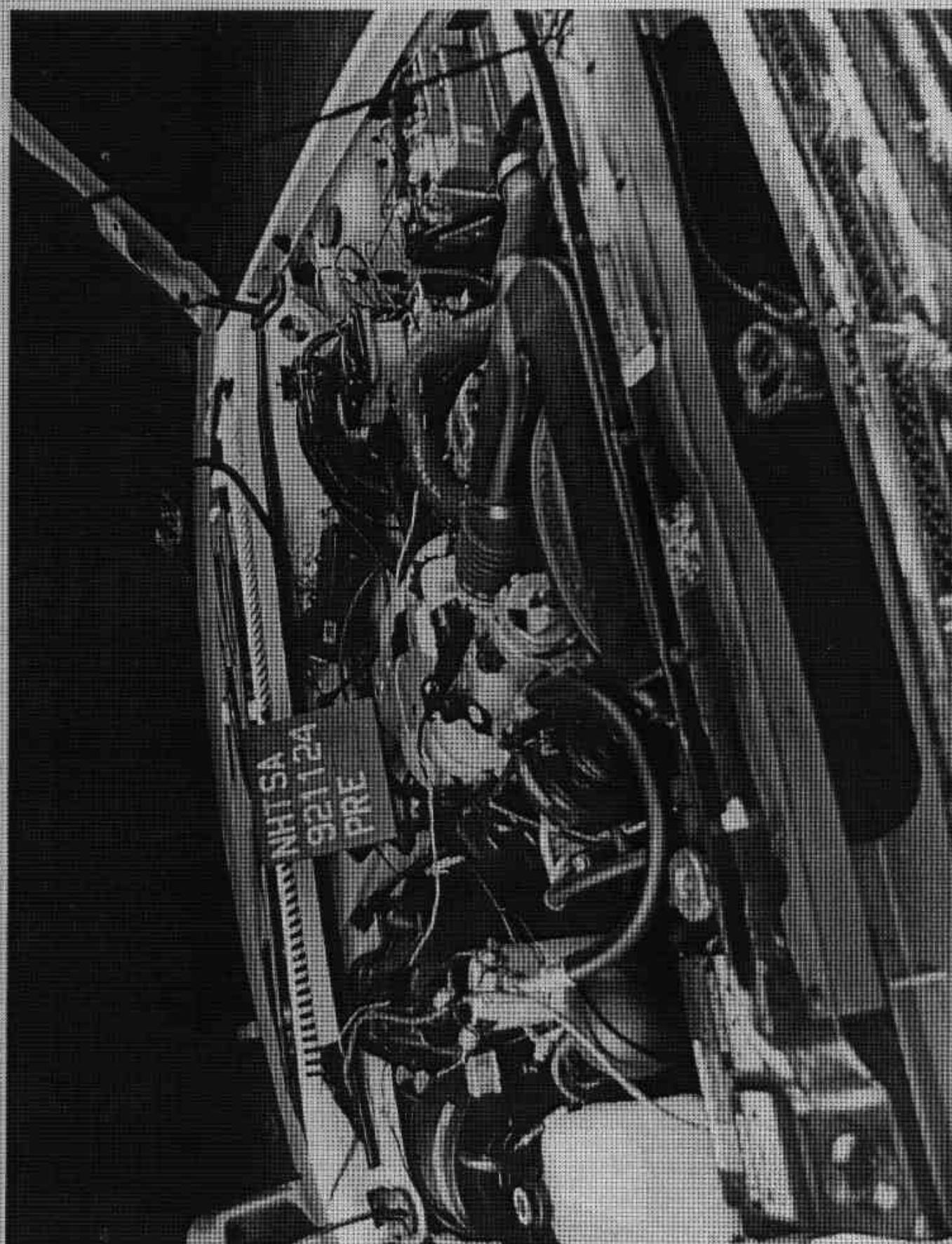


FIGURE A-15. PRE-TEST ENGINE COMPARTMENT VIEW

A-16

921124

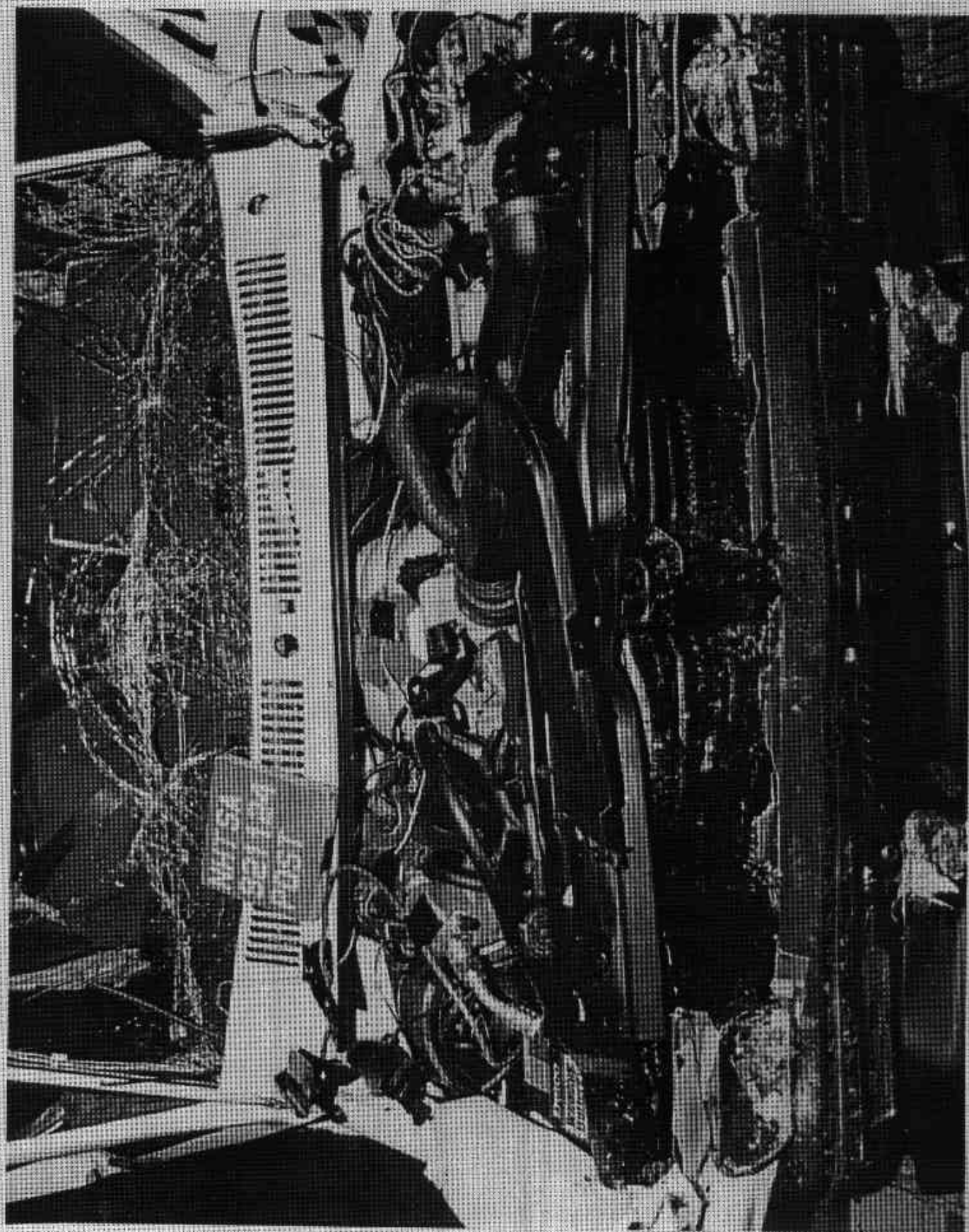


FIGURE A-16. POST-TEST ENGINE COMPARTMENT VIEW
A-17

921124

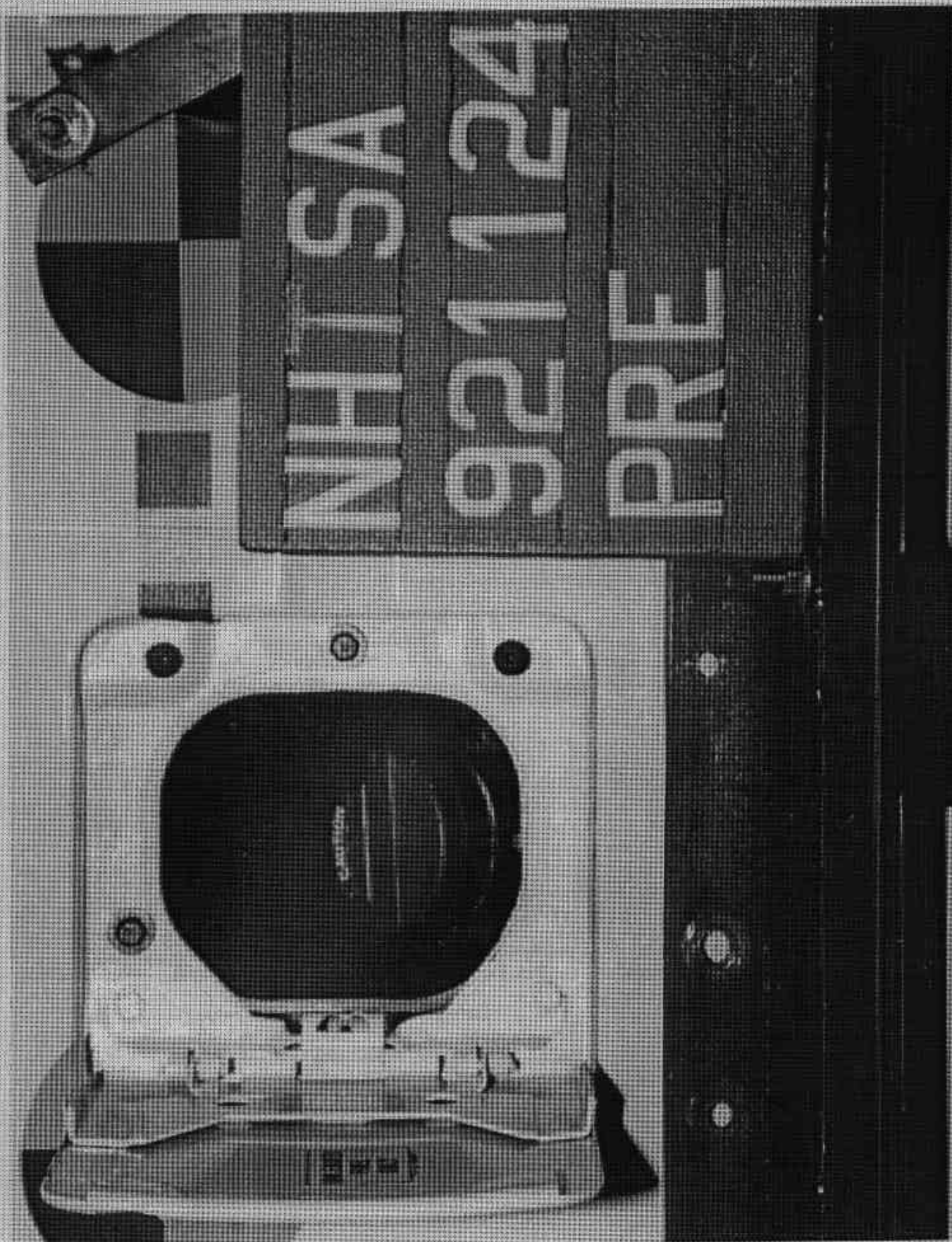


FIGURE A-17. PRE-TEST FUEL FILLER CAP VIEW
A-18

921124



FIGURE A-18. POST-TEST FUEL FILLER CAP VIEW
A-19

921124

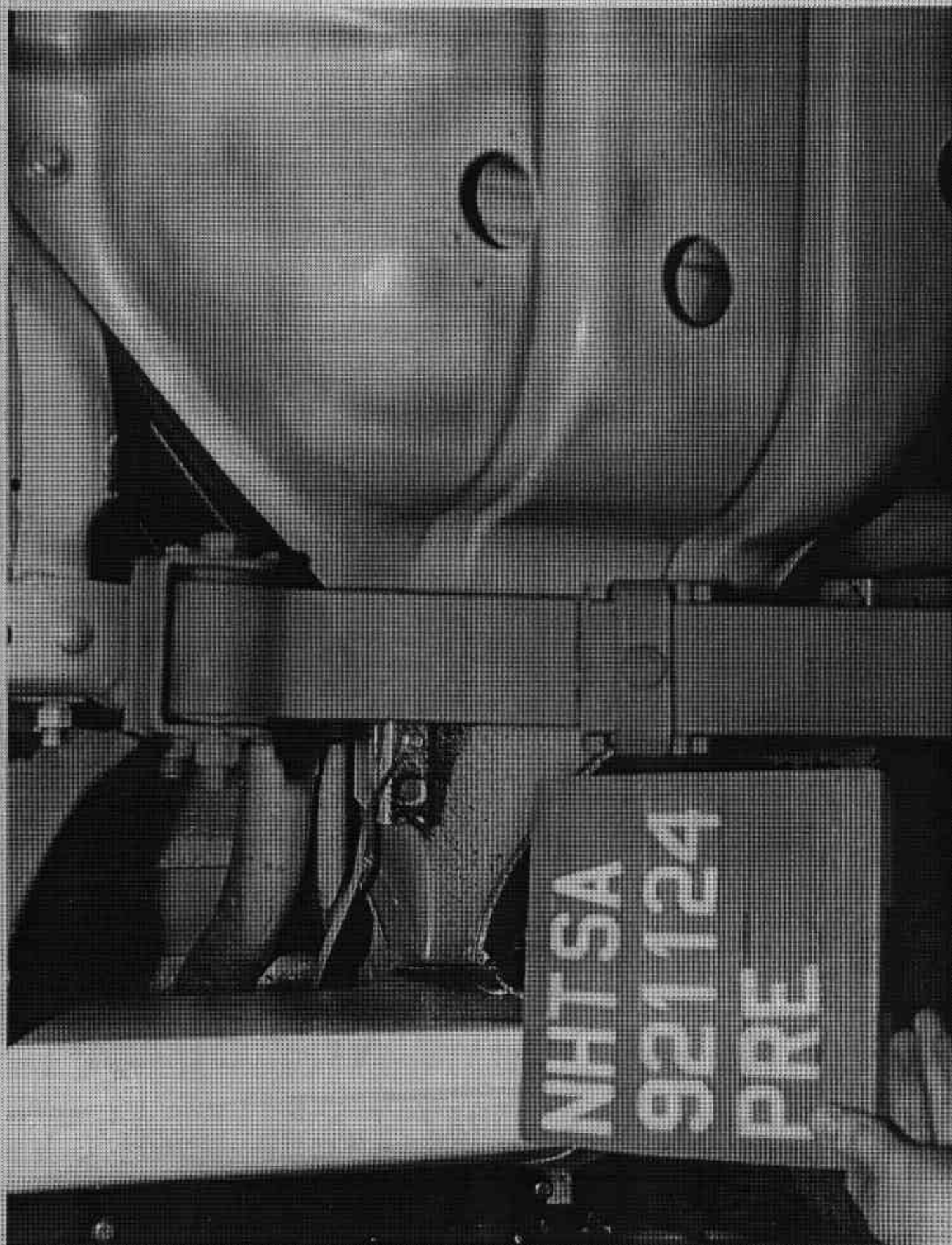


FIGURE A-19. PRE-TEST FUEL FILLER NECK VIEW



FIGURE A-20. POST-TEST FUEL FILLER NECK VIEW
A-21

921124

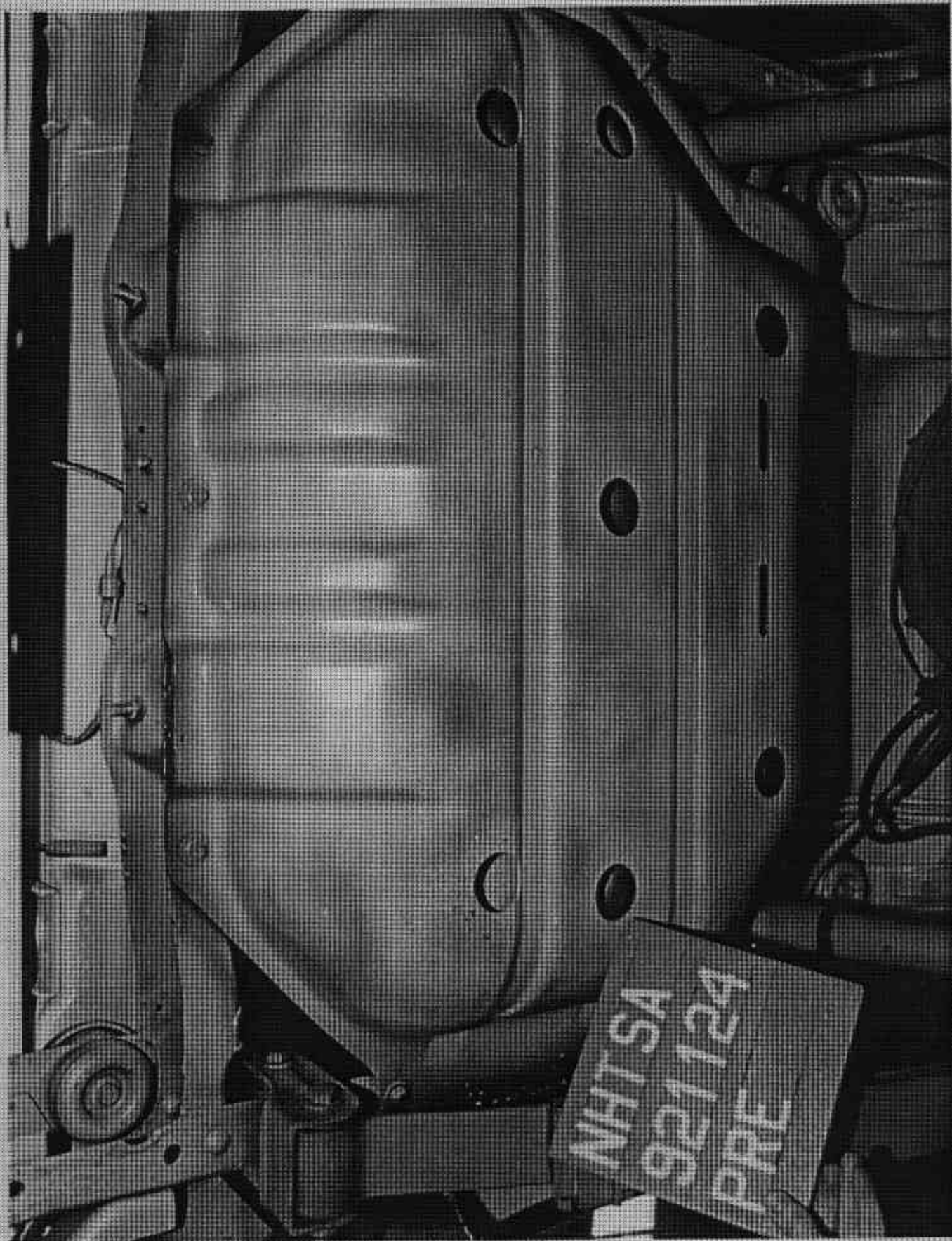


FIGURE A-21. PRE-TEST FUEL TANK VIEW
A-22

921124

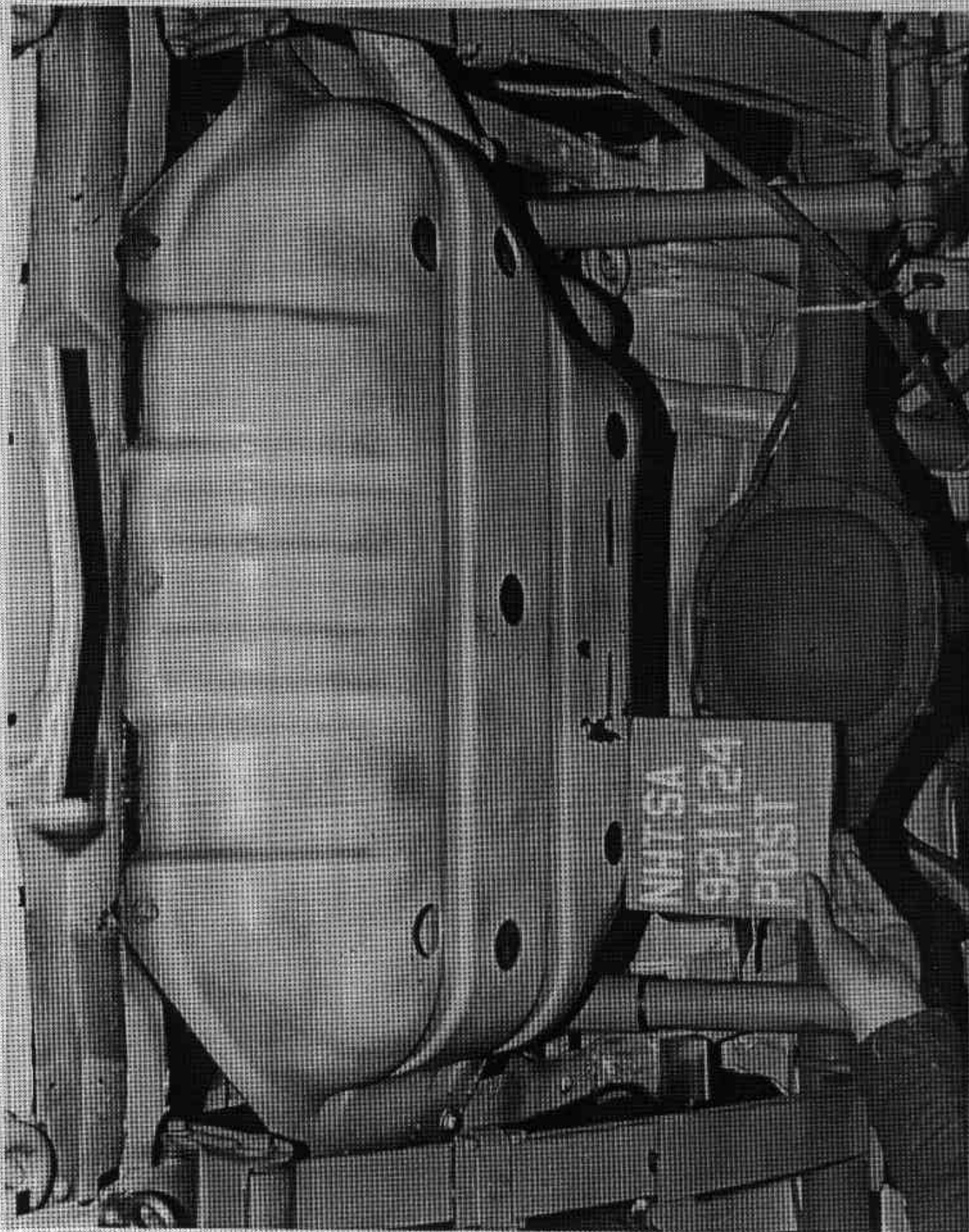


FIGURE A-22. POST-TEST FUEL TANK VIEW

A-23

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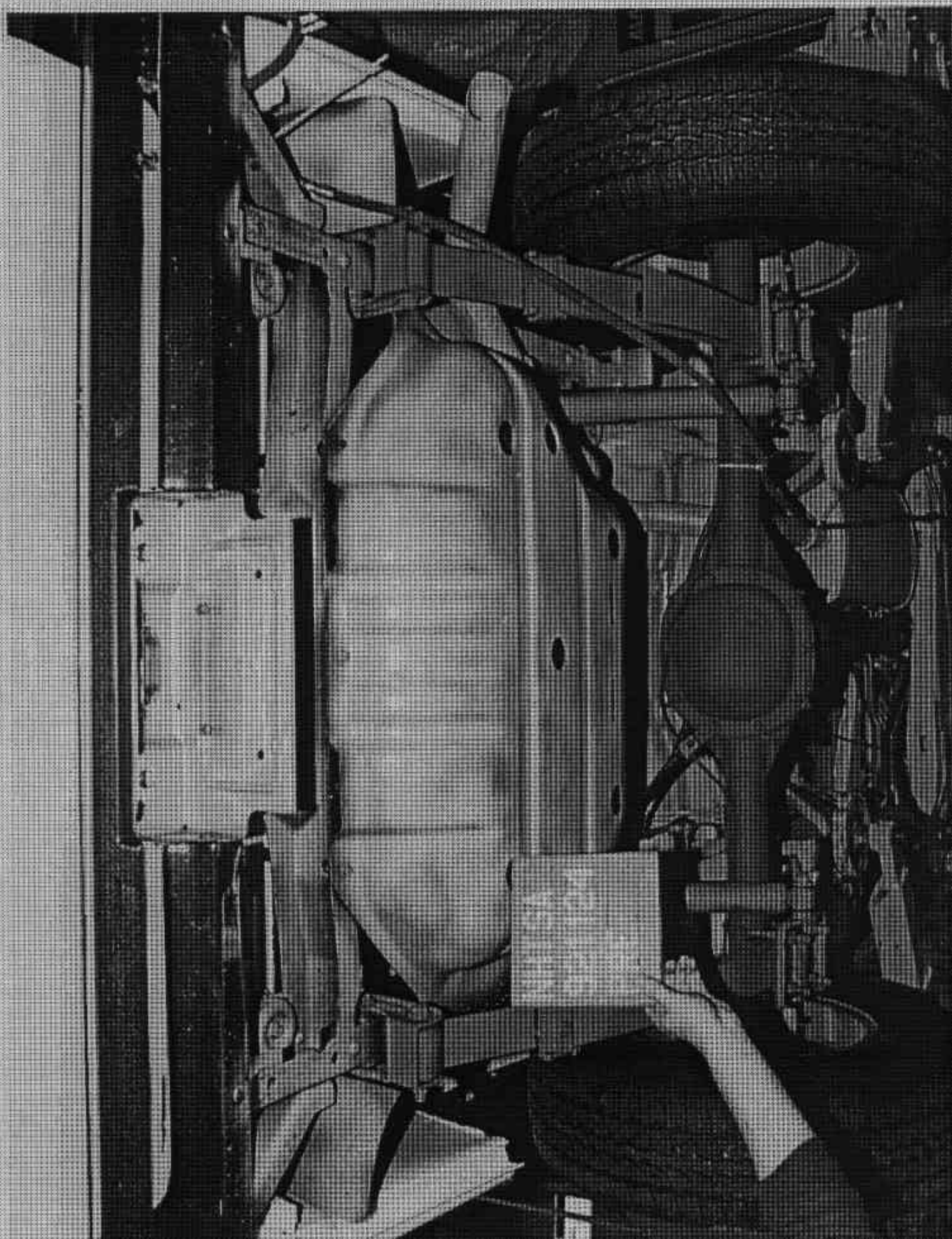


FIGURE A-25. PRE-TEST REAR UNDERBODY VIEW

A-26

921124

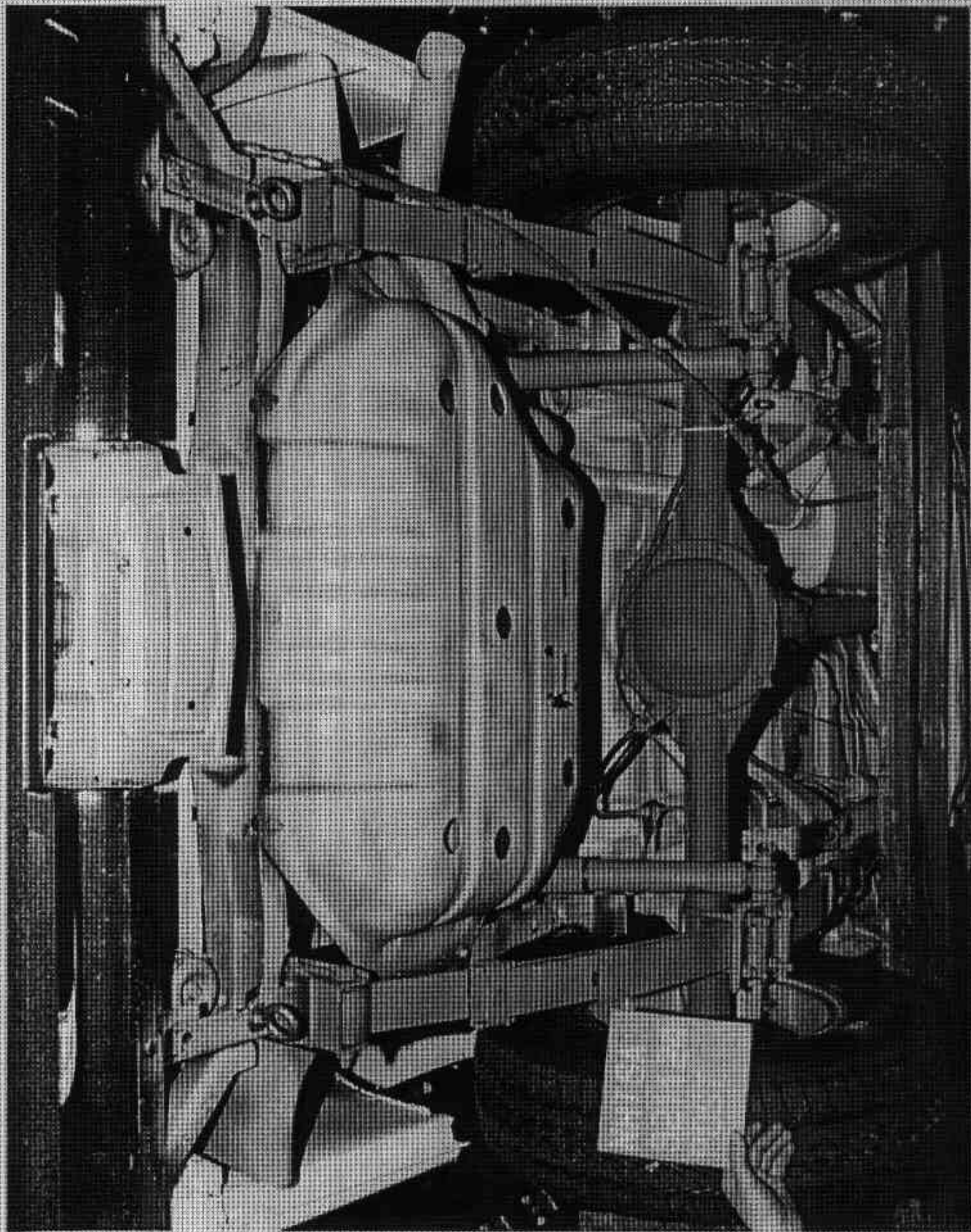


FIGURE A-26. POST-TEST REAR UNDERBODY VIEW
A-27

921124



FIGURE A-27. PRE-TEST BALLAST LOCATION VIEW

A-28

921124

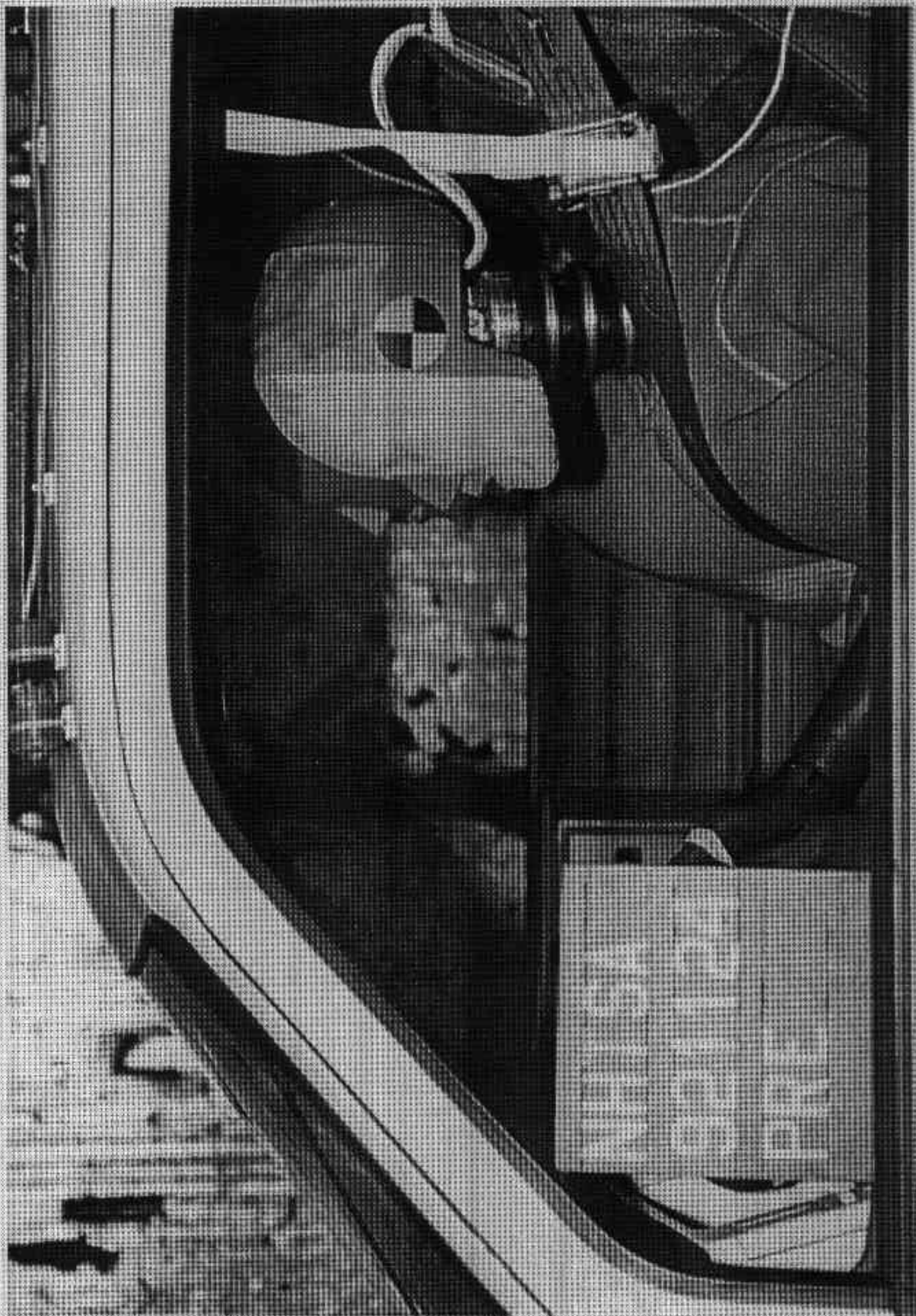
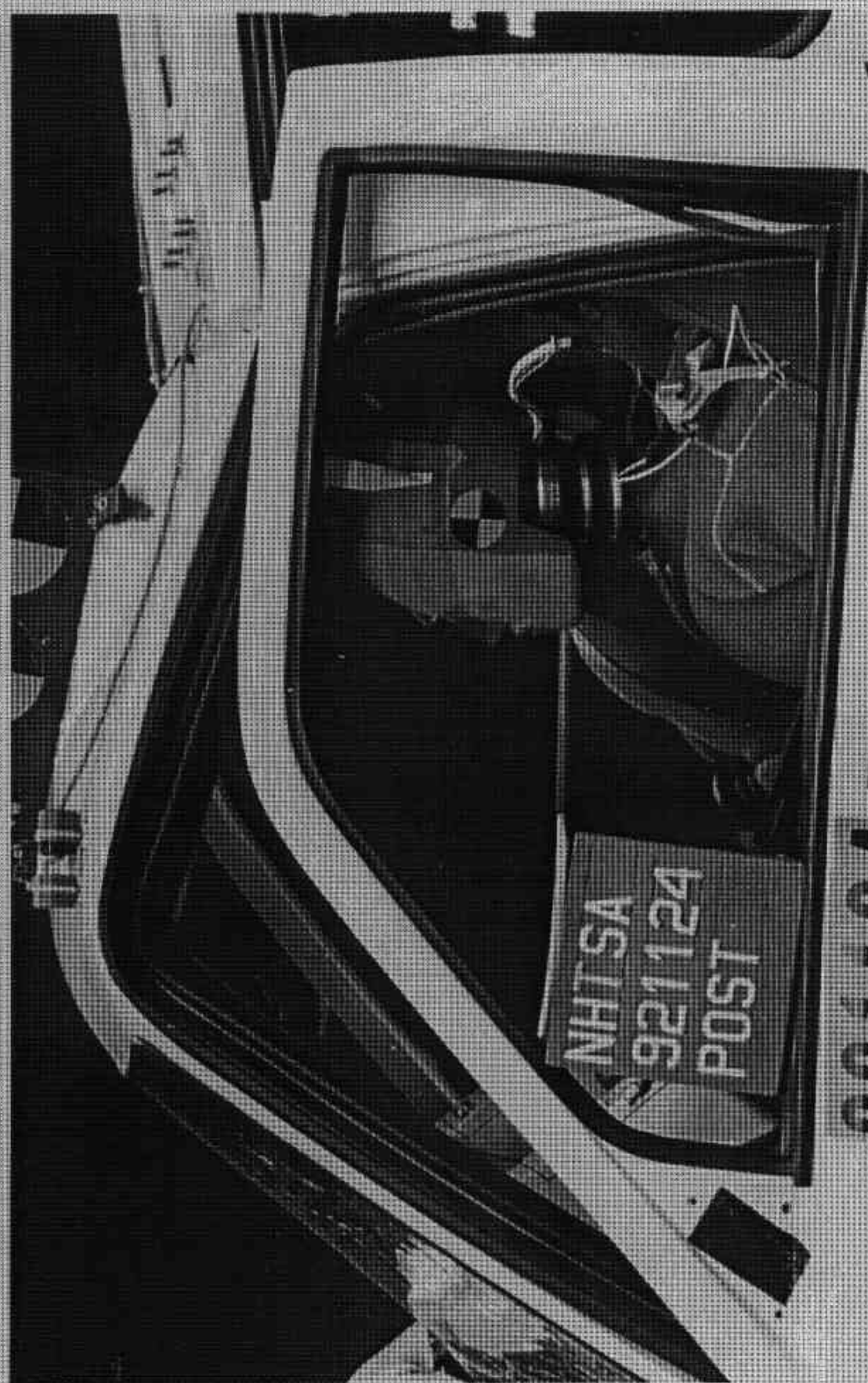


FIGURE A-28. PRE-TEST DRIVER DUMMY POSITION VIEW

A-29

921124



921124

TRC

FIGURE A-29. POST-TEST DRIVER DUMMY POSITION VIEW

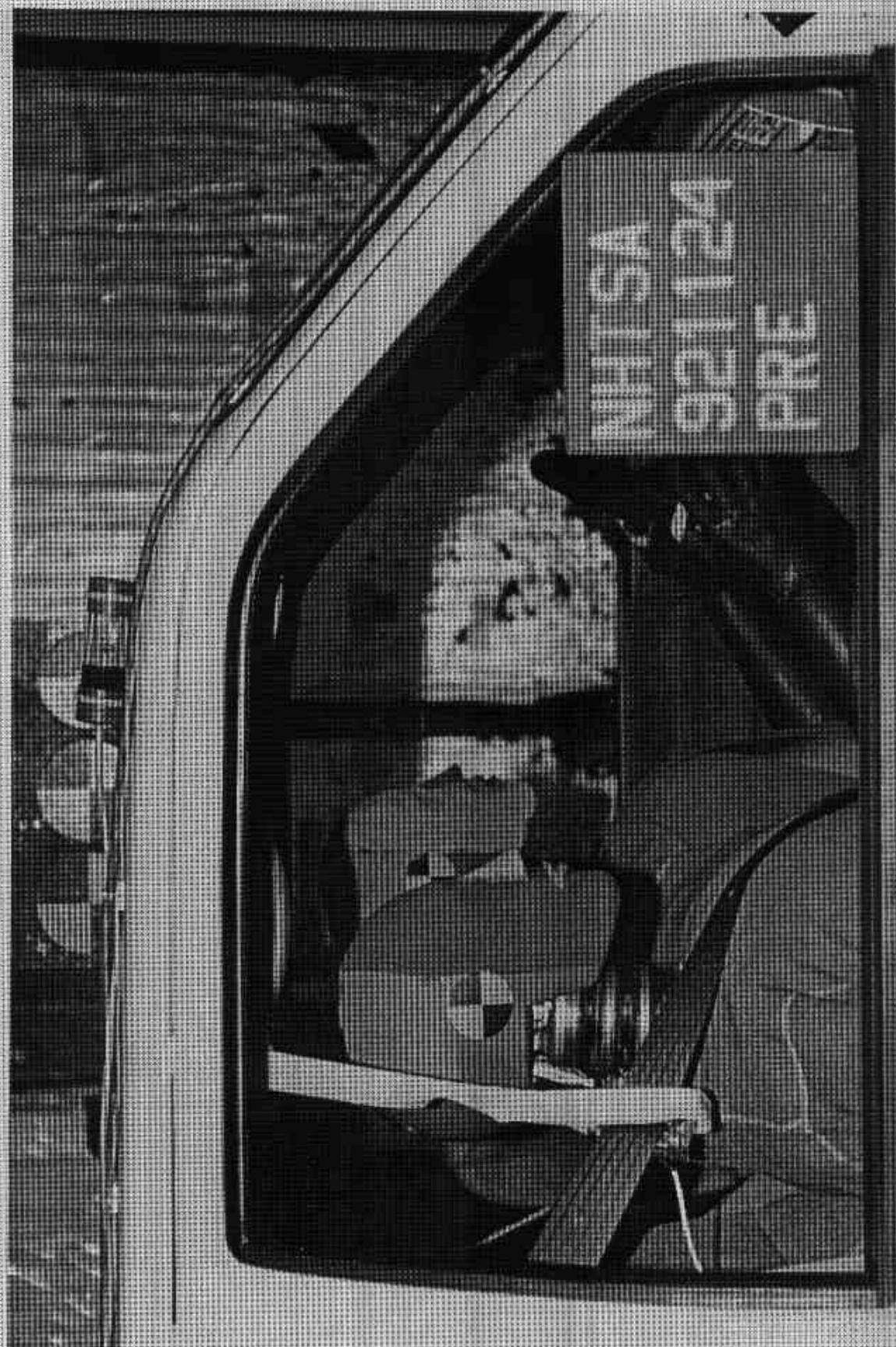


FIGURE A-30. PRE-TEST PASSENGER DUMMY POSITION VIEW
A-31

Q21124

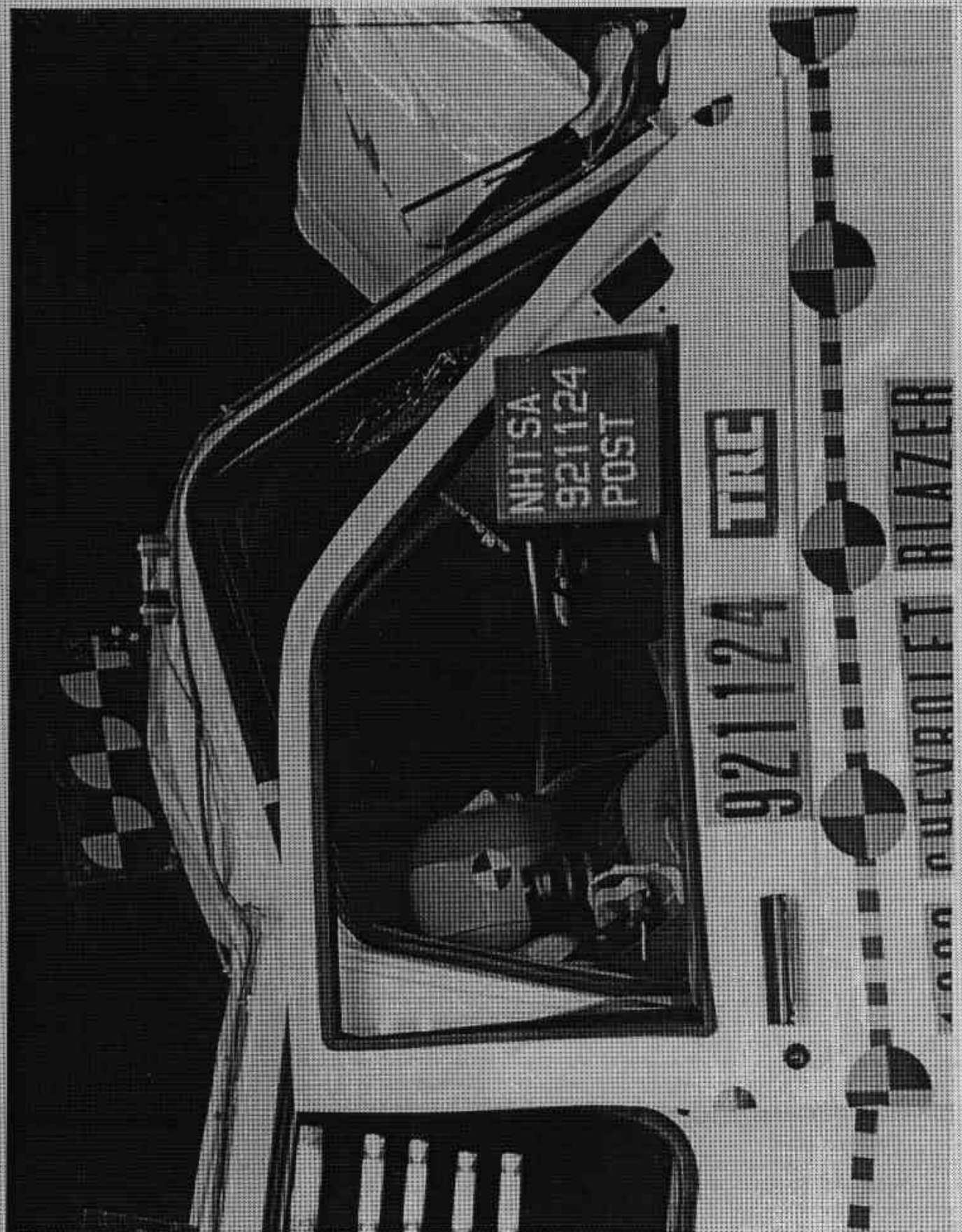


FIGURE A-31. POST-TEST PASSENGER DUMMY POSITION VIEW



FIGURE A-32. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

A-33

921124



FIGURE A-33. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1



FIGURE A-34. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

A-35

921124



FIGURE A-35, POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2



FIGURE A-36. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1
A-37 921124



FIGURE A-37. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1
A-38 921124

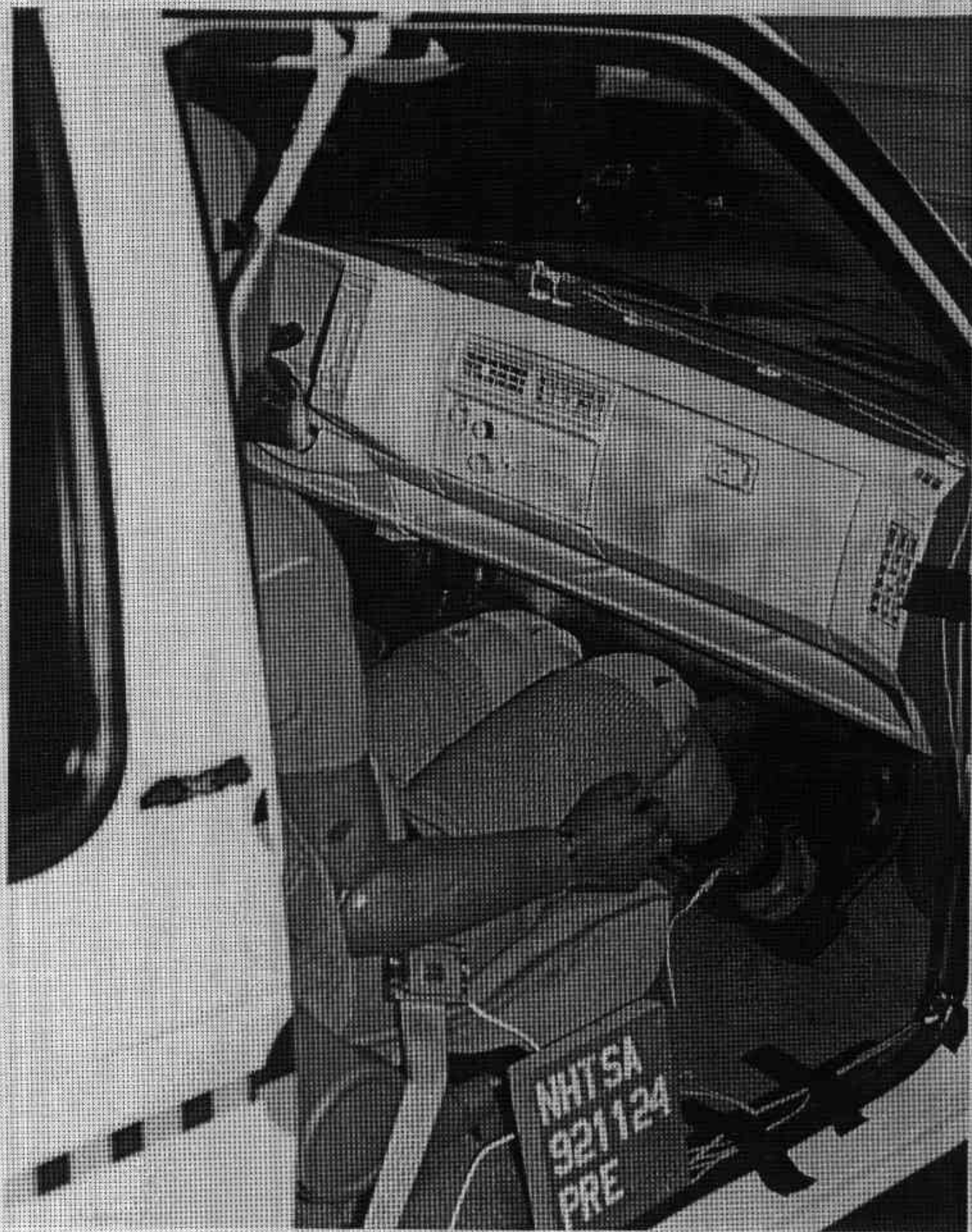


FIGURE A-38. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2
A-39 921124



FIGURE A-39. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2
A-40 921124

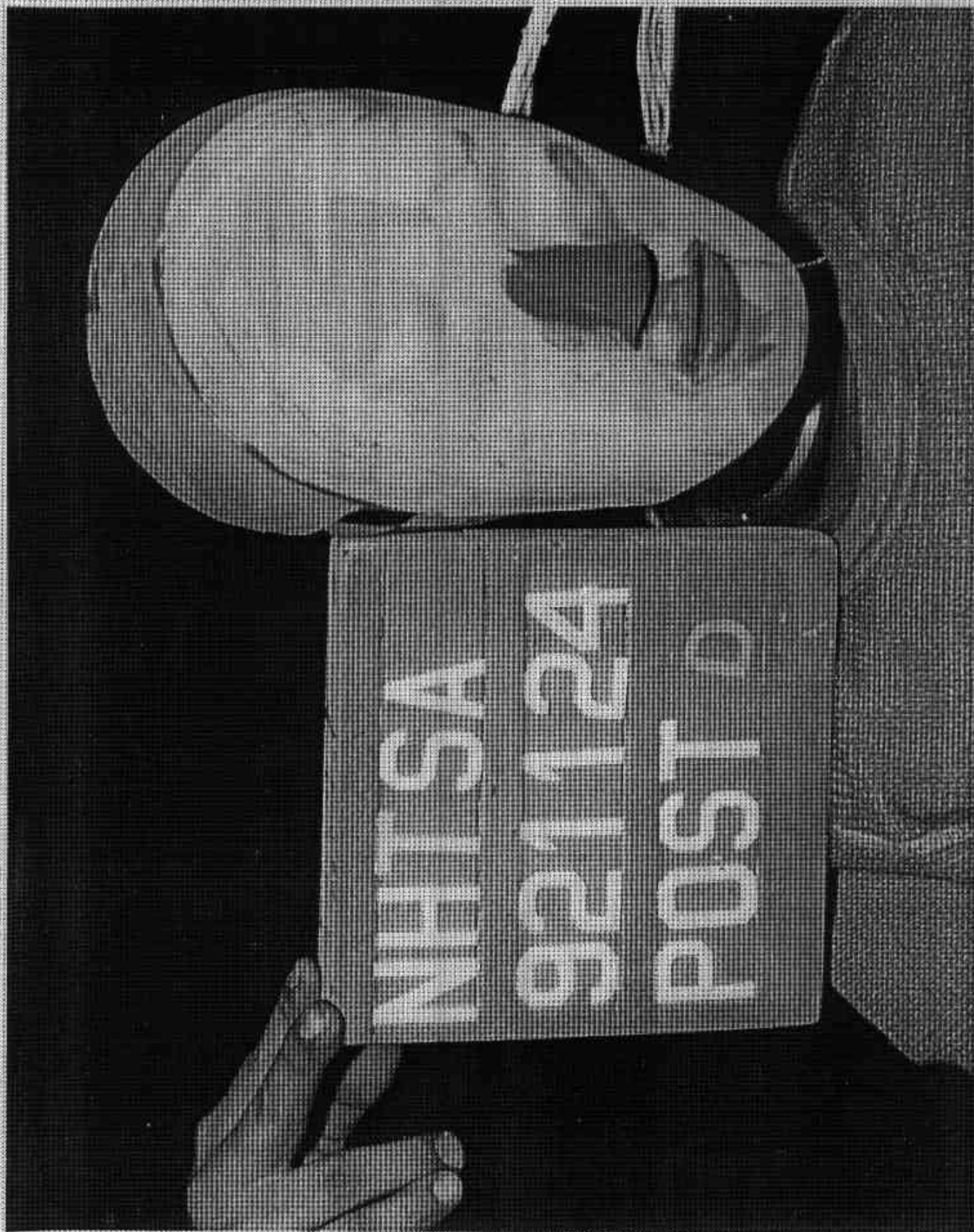


FIGURE A-40. POST-TEST DRIVER DUMMY HEAD CONTACT VIEW
A-41

921124

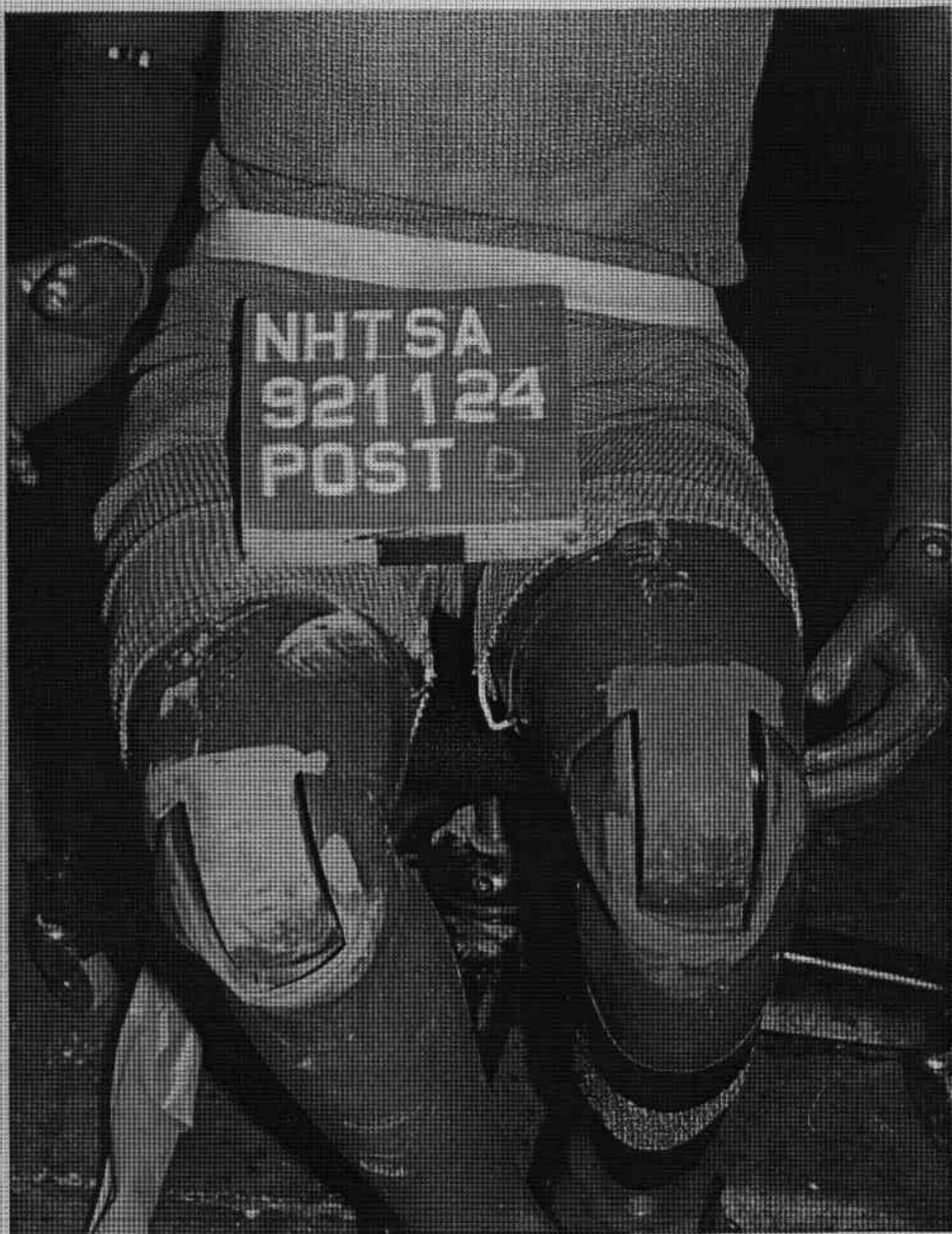


FIGURE A-41. POST-TEST DRIVER DUMMY CHEST & KNEE CONTACT VIEW

A-42

921124

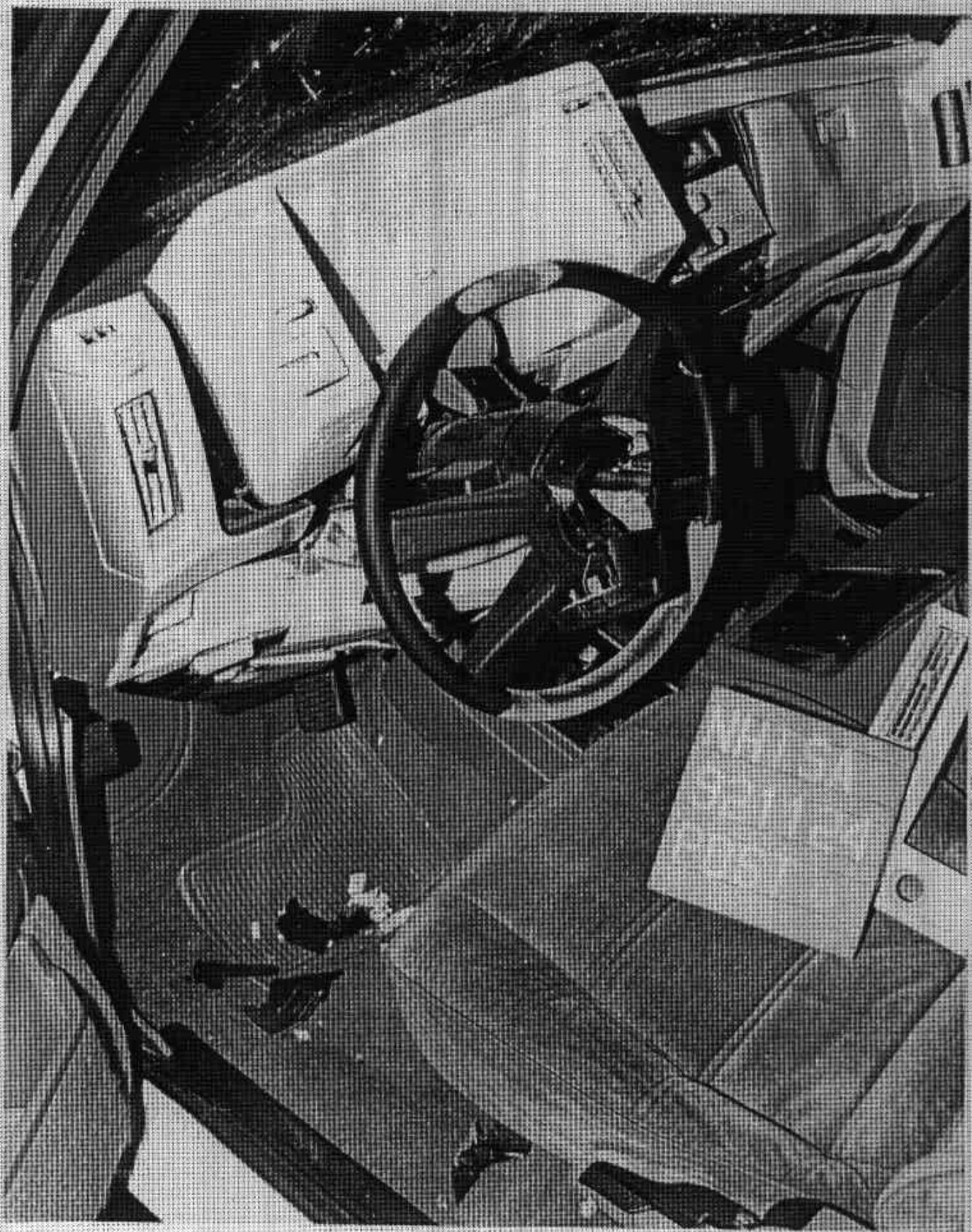


FIGURE A-42. POST-TEST DRIVER DUMMY HEAD, CHEST, & KNEE CONTACT VIEW
A-43 921124

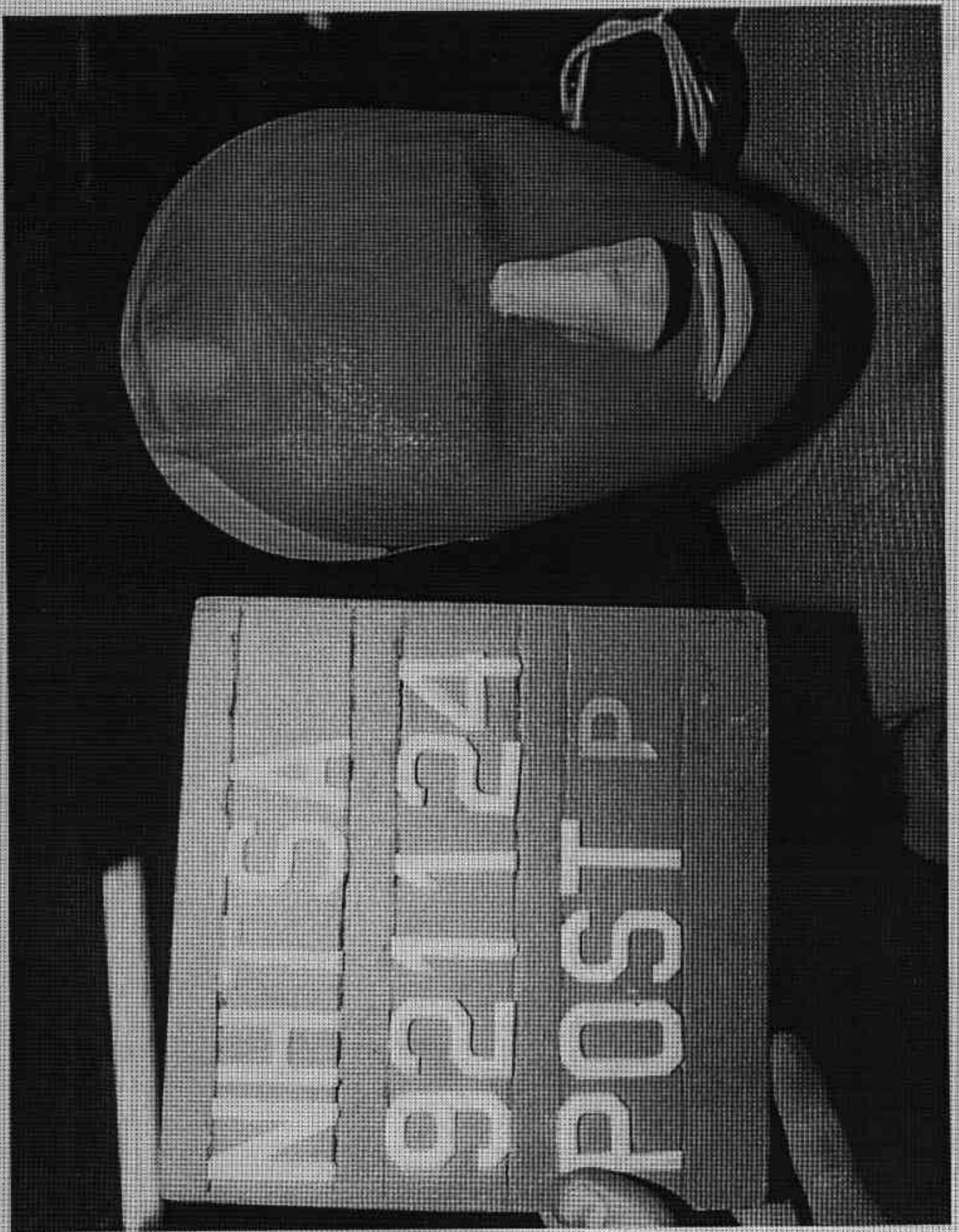


FIGURE A-43. POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 1

A-44

921124



FIG A-45. POST-TEST PASSENGER DUMMY KNEE CONTACT VIEW

A-46

921124



FIGURE A-46. POST-TEST PASSENGER DUMMY HEAD & KNEE CONTACT VIEW

A-47

921124

MFD BY GENERAL MOTORS CORP. 09/92
 GVWR 5100/2313 GAWR FRT 2500/1134 GAWR RR 2900/1315 LB/KG
 THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
 IGNDT13W2P2113582 M.P.V.
 MODEL: T10506
 TPWF TIRE SIZE SPEED RTG RIM PAYLOAD=1183/537
 FRT P235/75R15 S 15X7JJ PSI/KPA (COLD)
 RR P235/75R15 S 15X7JJ 35/240
 SPA P235/75R15 S 15X7JJ 35/240
 SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION.

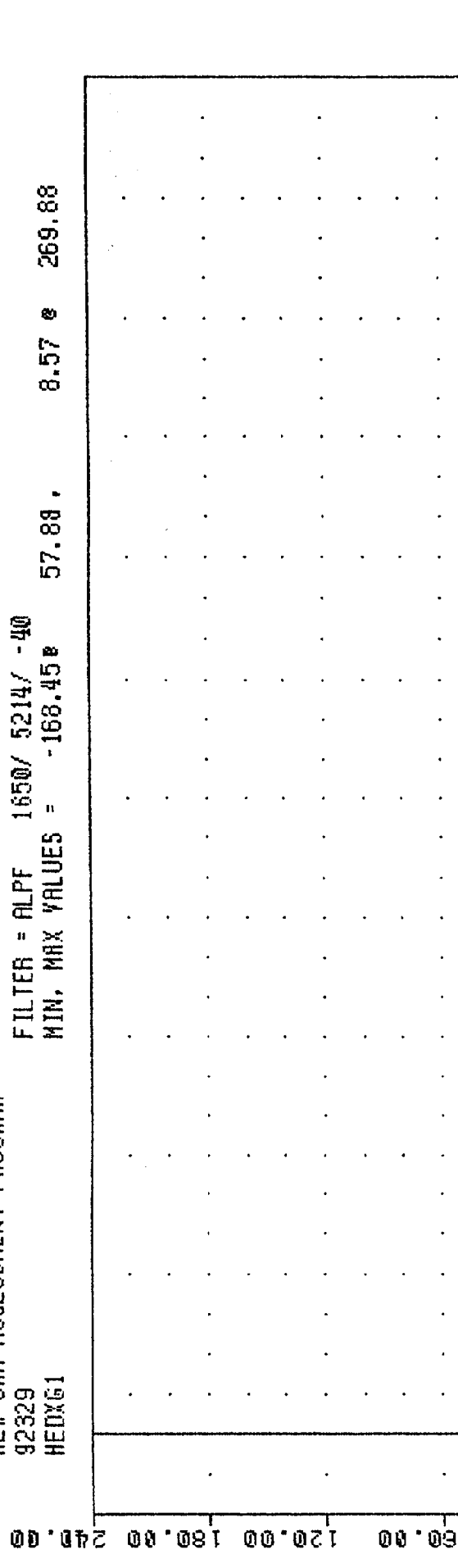
FIGURE A-47. PRE-TEST VEHICLE CERT. & RECOMMENDED TIRE PRES. LABEL
 A-48 921124

APPENDIX B

DATA PLOTS

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 HEDXG1

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -168.45 57.88 , 8.57 269.88



B-2

921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

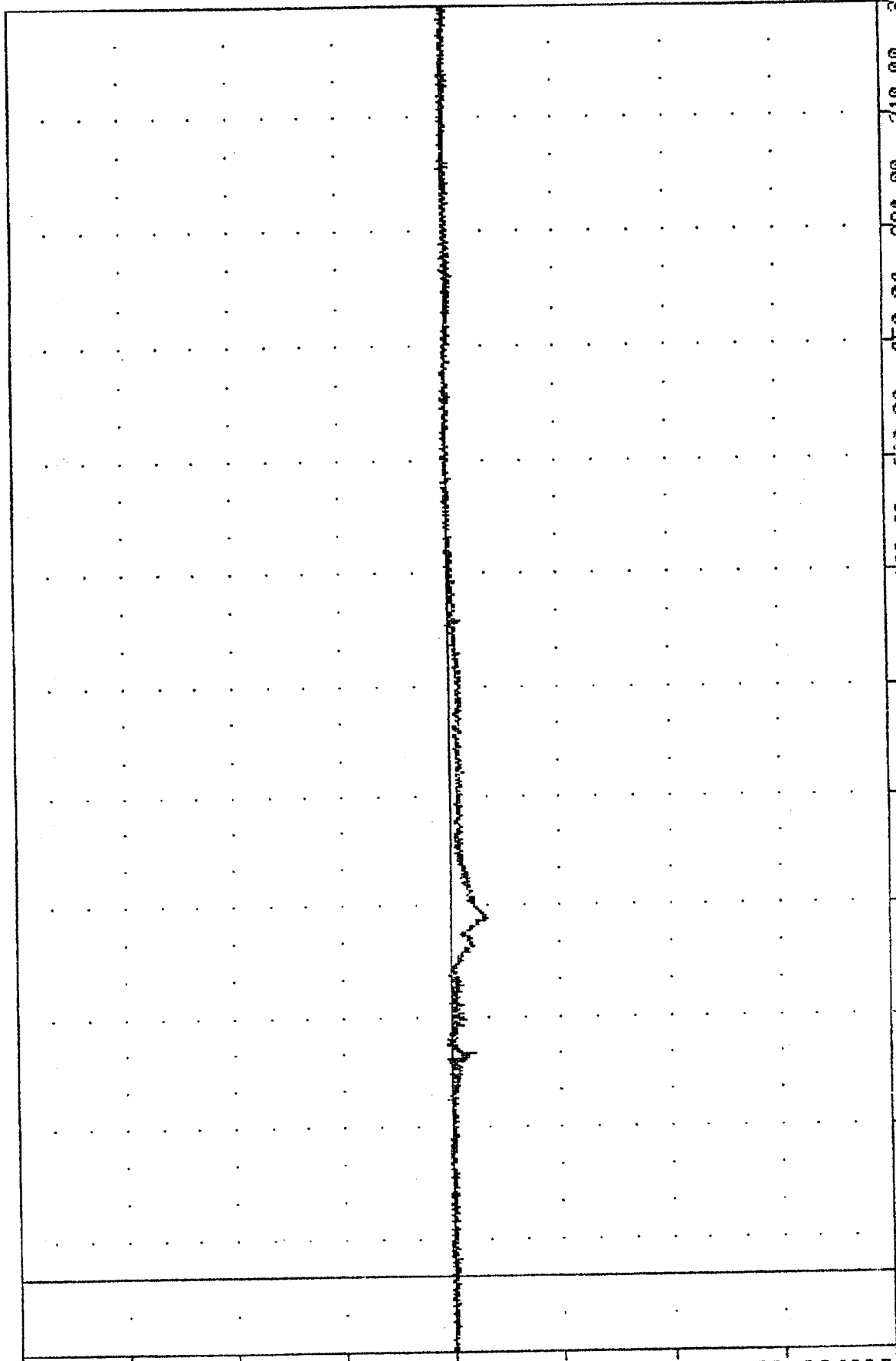
TEST NUMBER: 921124

DATE: 11/11/92 TIME: 14:00:00

TRC 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 HEDY61

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -19.75 96.50 4.24 296.25

ACCELERATION (G)



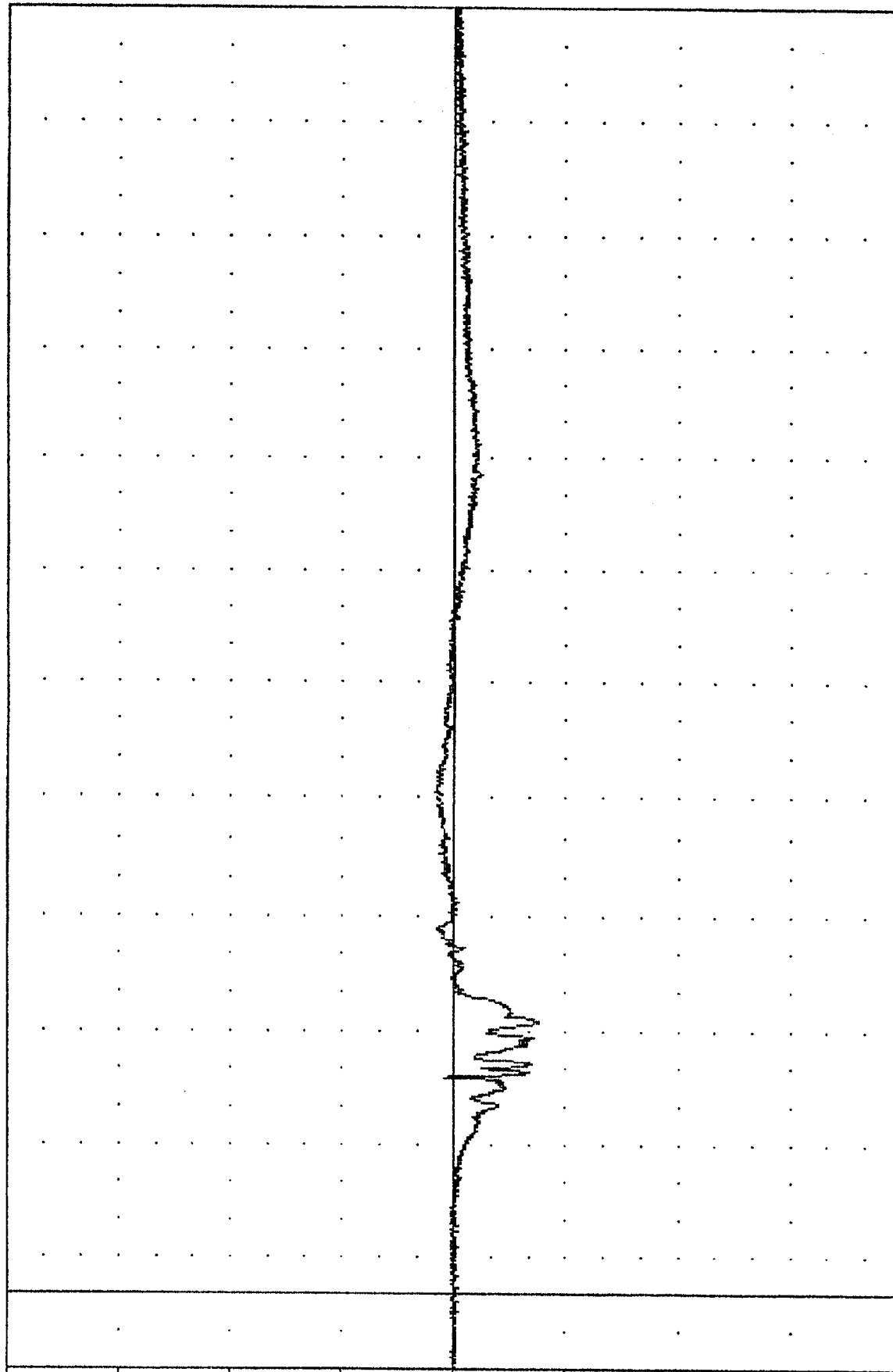
921124

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
 1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Y-AXIS ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 HEDZ61

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -46.07e 72.25, 10.26 e 131.00

ACCELERATION (G)
 240.00
 180.00
 120.00
 60.00
 0.00
 -60.00
 -120.00
 -180.00
 -240.00



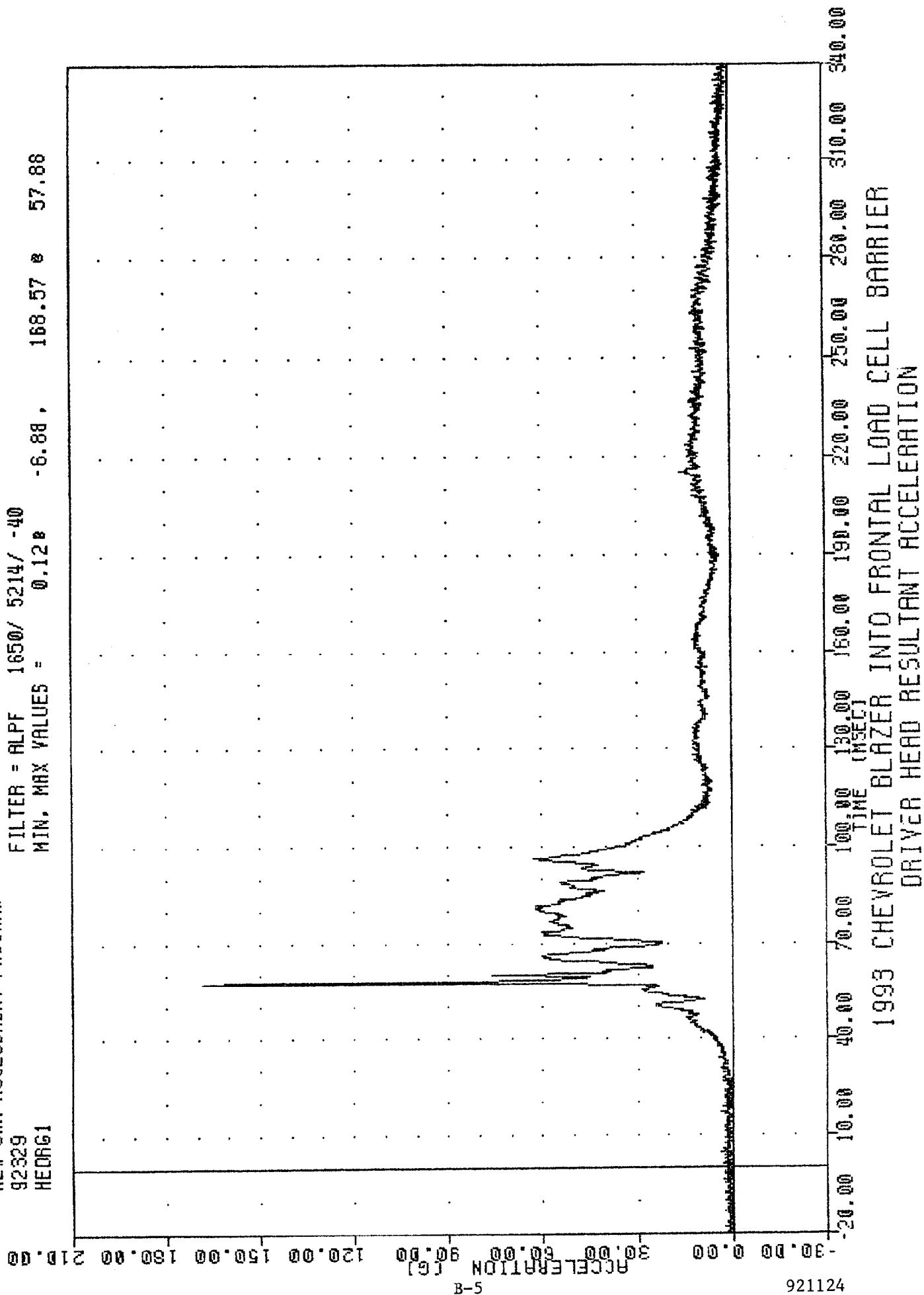
20.00 10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

ACTIVE HENS Z MAXI9 ACCCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 HEDRG1

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = 0.128 -6.88 , 168.57 8 57.88



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 NEKXF1

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -1723.64 58.00 , 1192.89 77.88

100.00

75.00

50.00

(X10³)

25.00

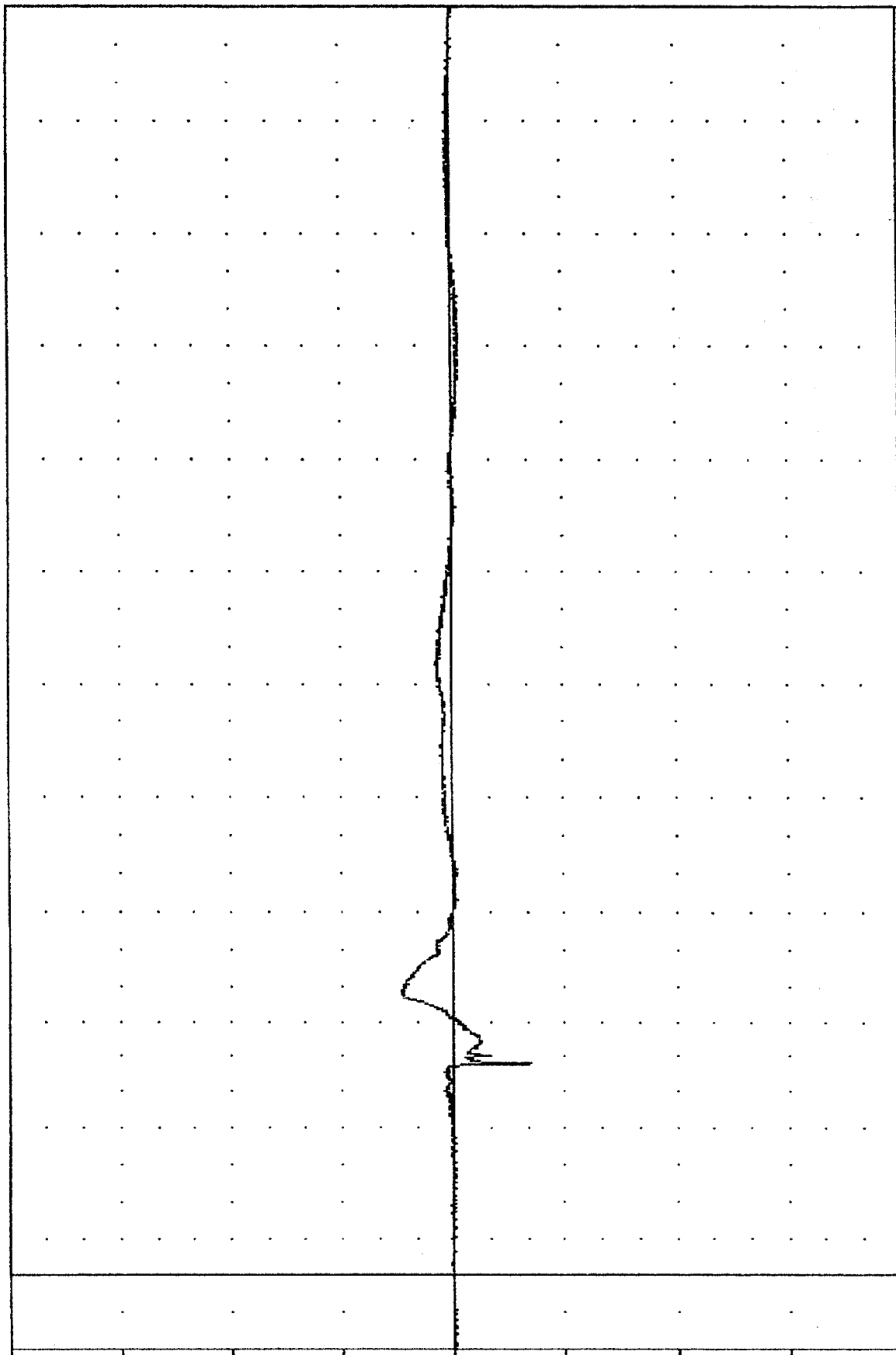
0.00

-25.00

FORCE (N)

B-6

921124



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

TIME (msec)

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

DESCRIPTIVE NAME X-AXIS SHEET FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 NEKYF1

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -130.63 64.63, 248.28 80.88

100.00

75.00

50.00

25.00

0.00

-25.00

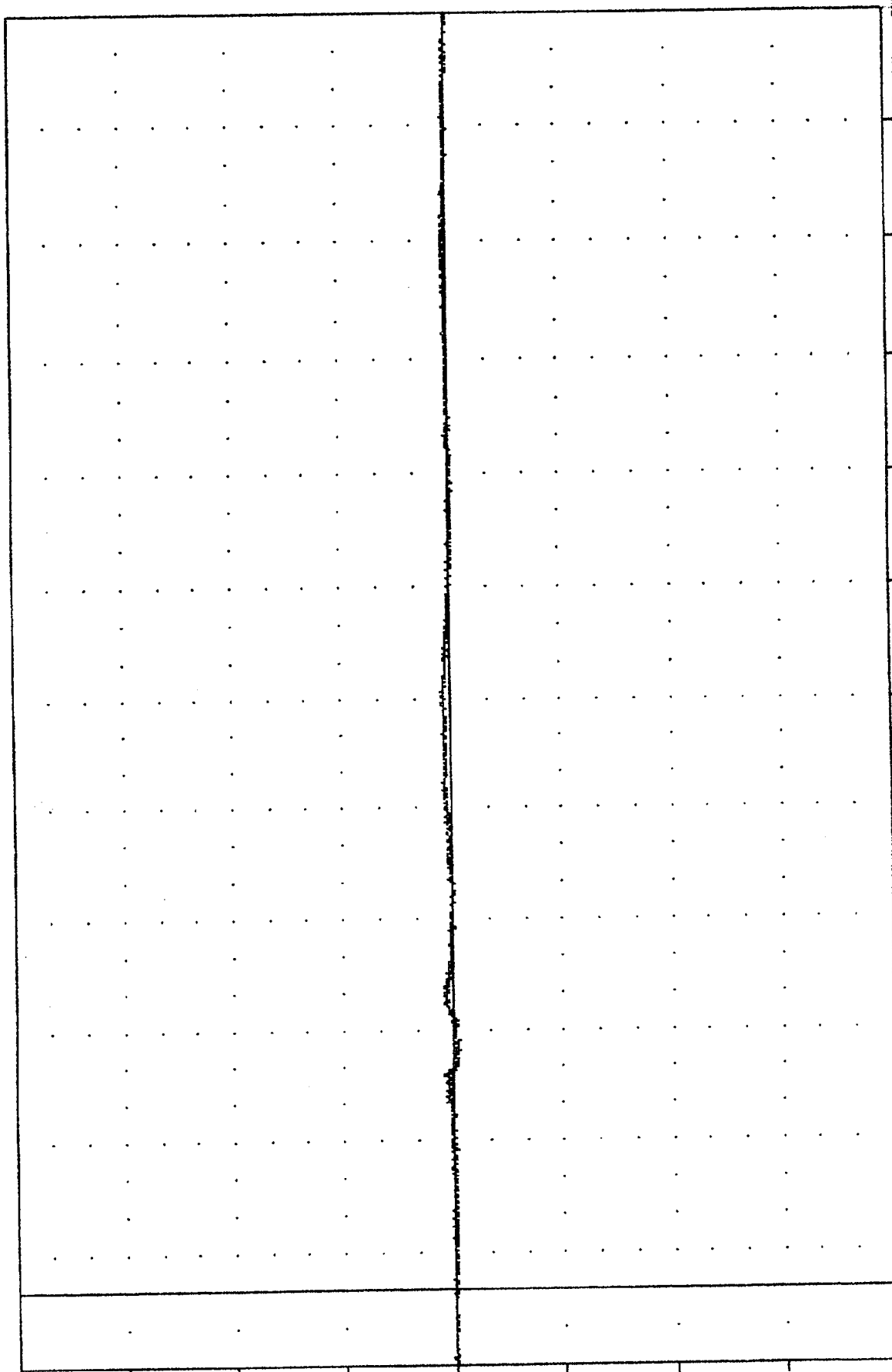
-50.00

-75.00

-100.00

B-7

921124

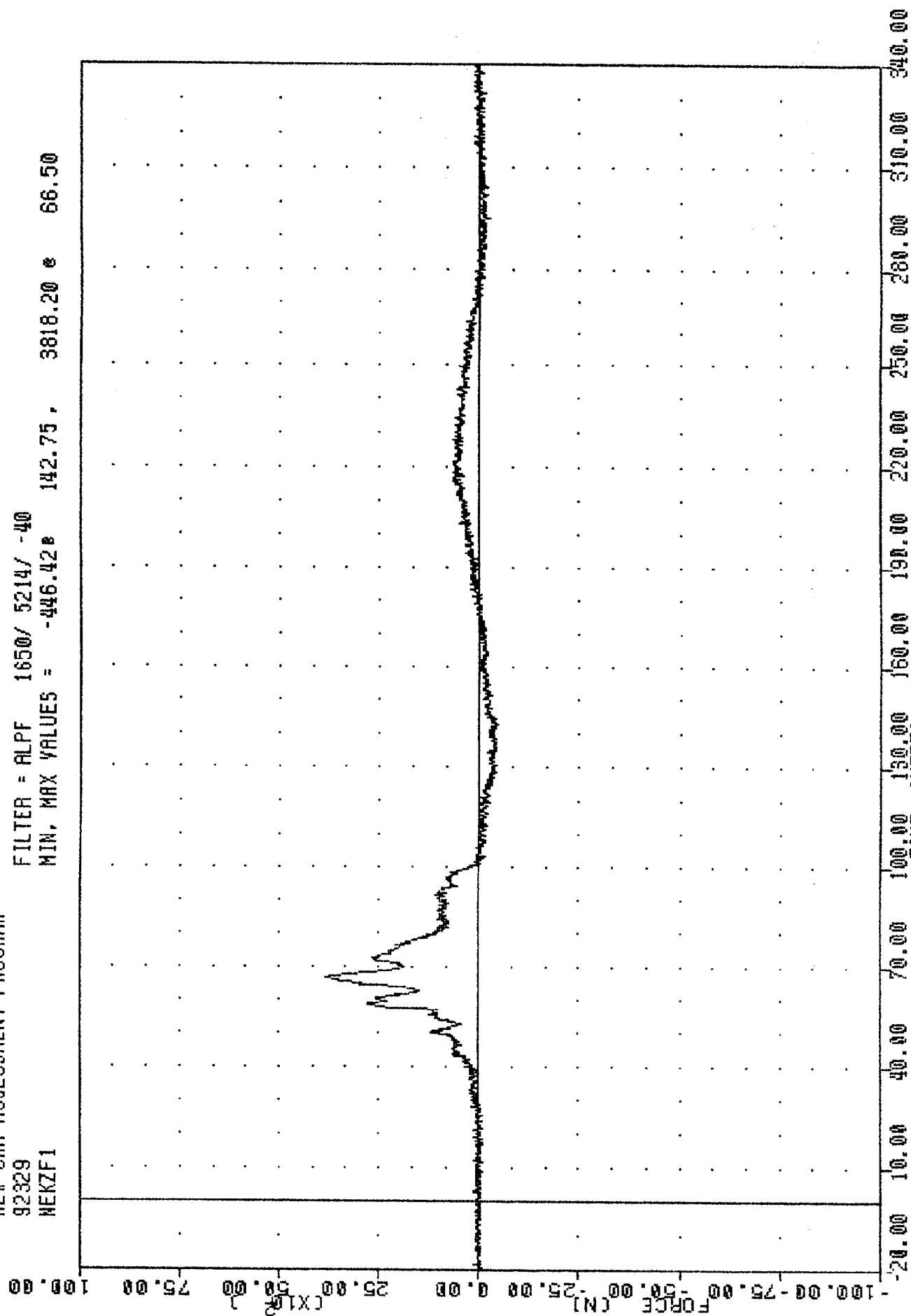


20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK Y-AXIS SHEAR FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 NEKZF1

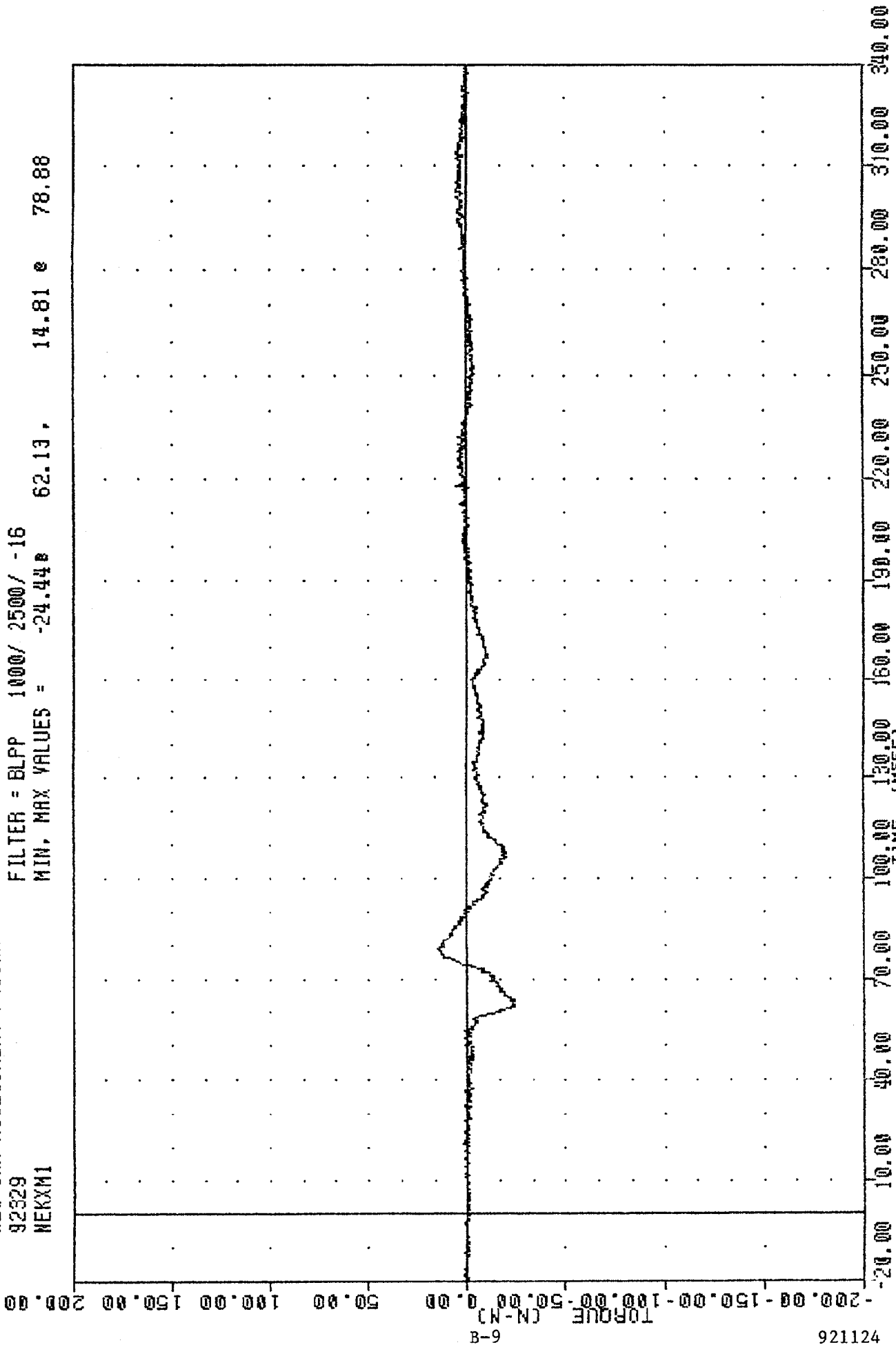
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -446.42 142.75 , 3818.20 66.50



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 DRIVEN NEAR MAXIMUM FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 NEKXM1

FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -24.44 62.13 , 14.81 e 78.88



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT X AXIS

TRC , 921124
NEW CAR ASSESSMENT PROGRAM
92329
HEKYM1

FILTER = BLPP 1000/ 2500/ -16
MIN. MAX VALUES = -103.90 79.63 , 46.46 63.50

200.00

150.00

100.00

50.00

0.00

-50.00

-100.00

-150.00

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-150.00

-200.00

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-50.00

-100.00

-150.00

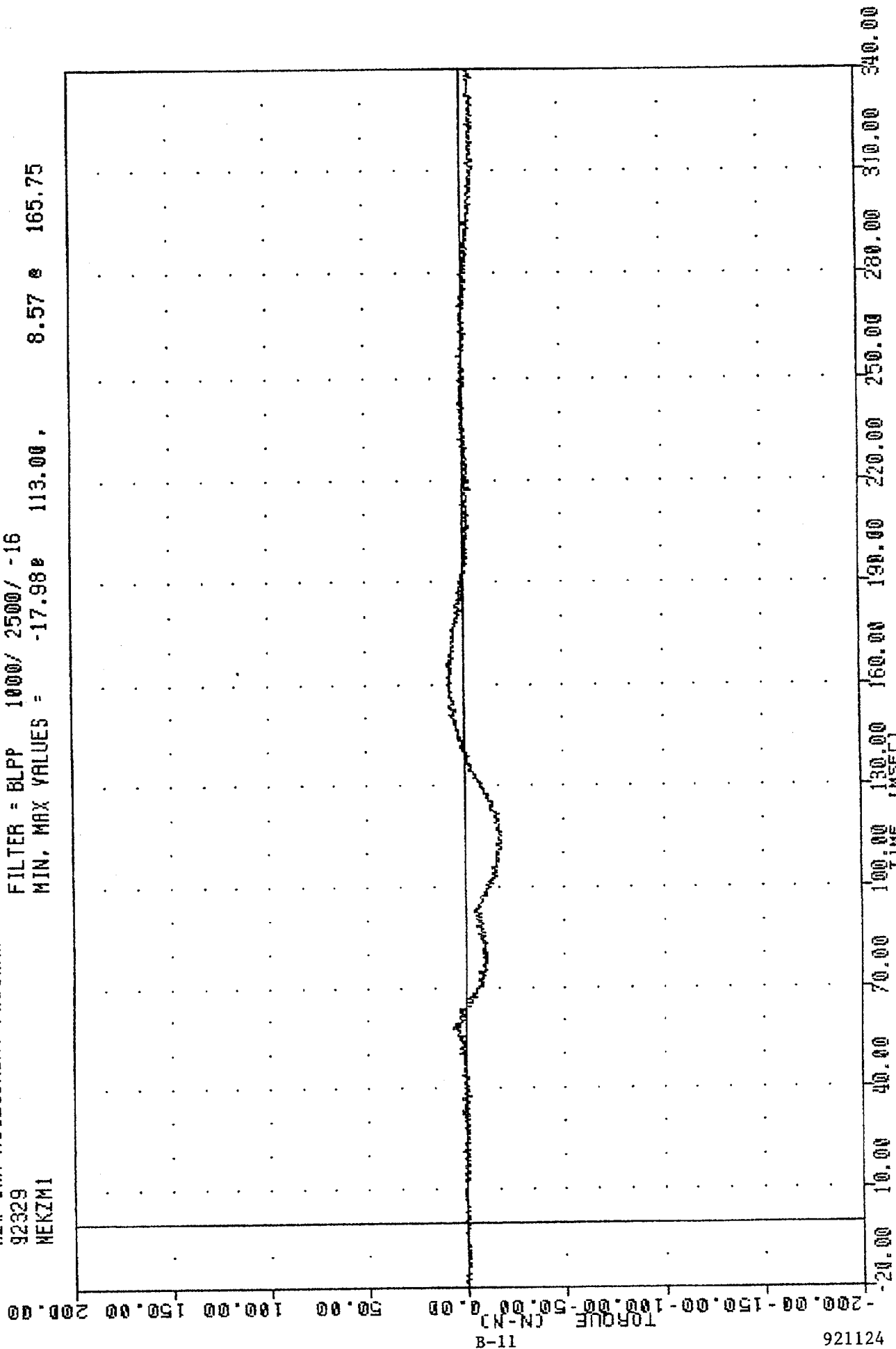
-200.00

200.00

150.00

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 MEKIM1

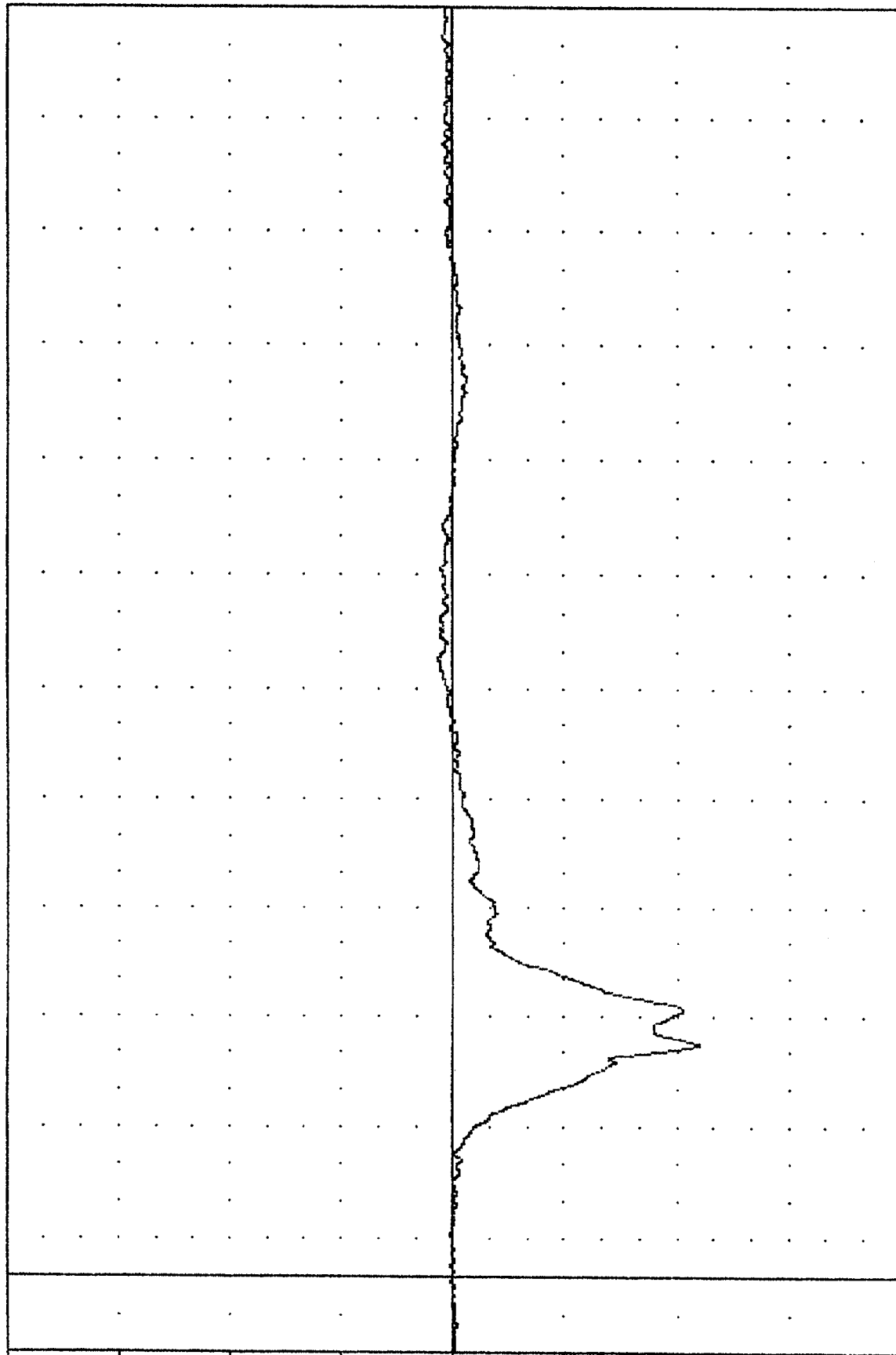
FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -17.98e 113.00 , 8.57 e 165.75



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTXG1

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -65.75 62.13, 3.98 167.75

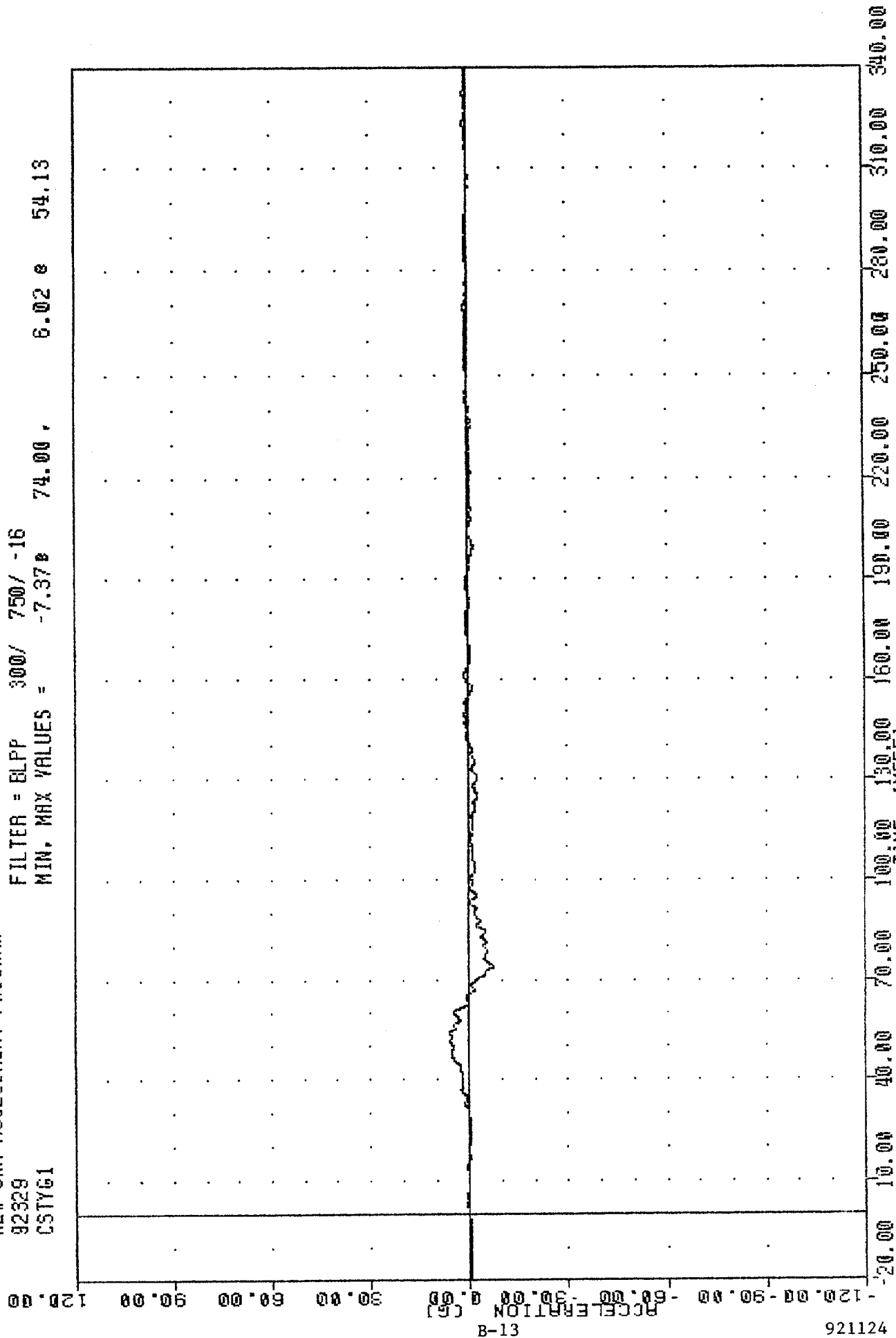
ACCELERATION (G)
 120.00
 90.00
 60.00
 30.00
 0.00
 -30.00
 -60.00
 -90.00
 -120.00



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

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTY61

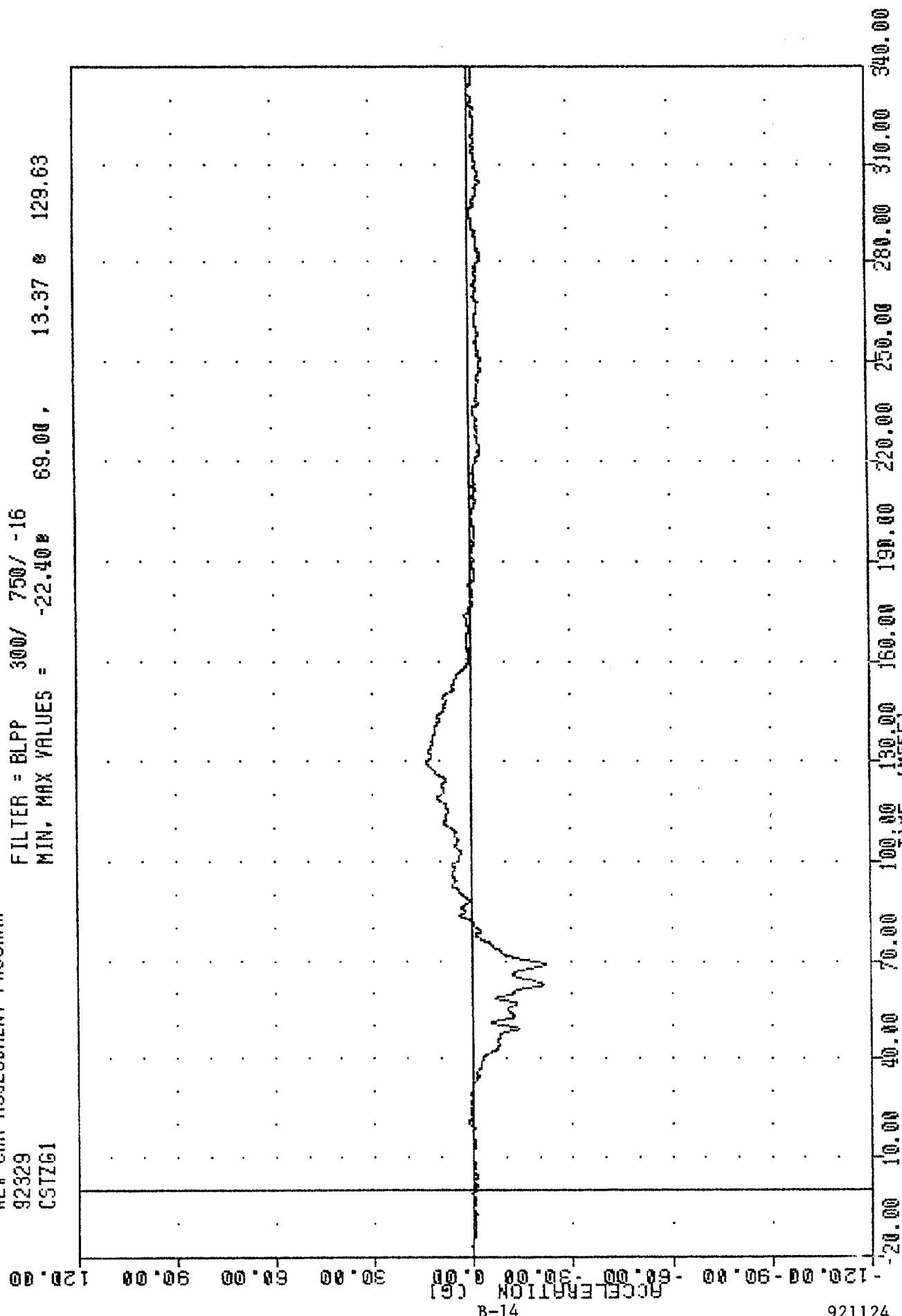
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -7.37e 74.00, 6.02e 54.13



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTZG1

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -22.40 69.00 , 13.37 129.63



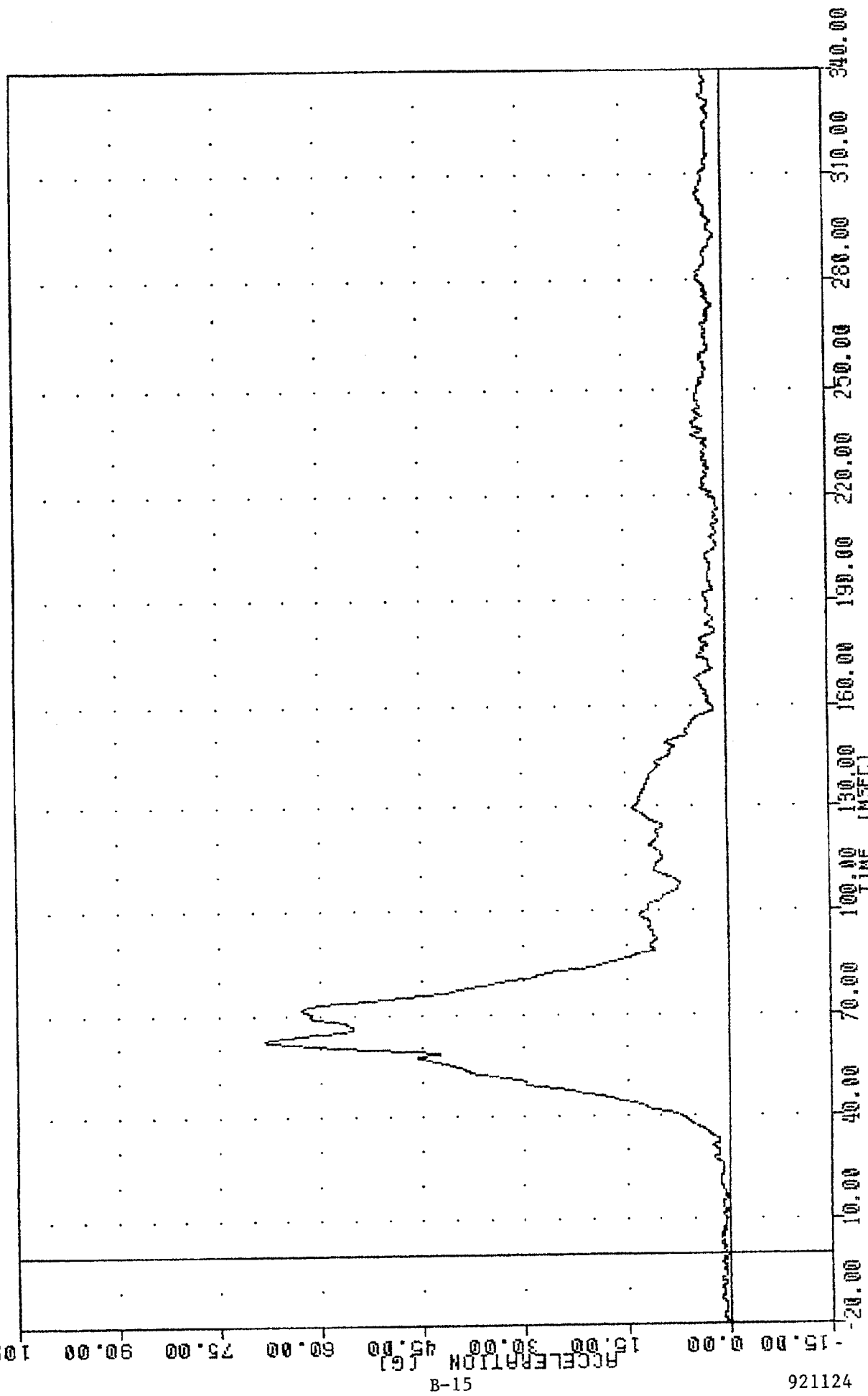
B-14

921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 VERIFIED CHECK Z AXIS ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTR61

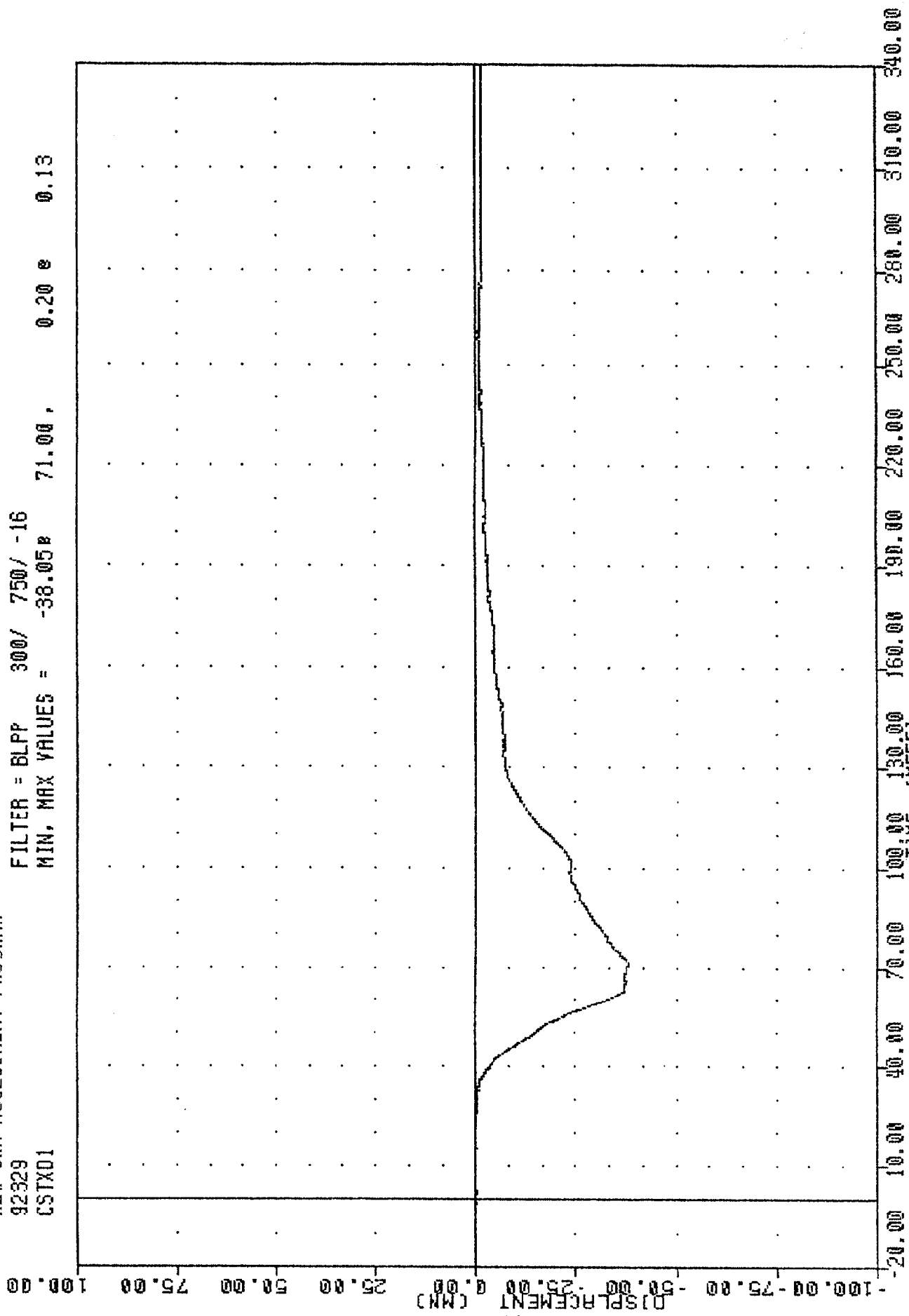
FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 0.08e -20.00, 68.46 e 62.38



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTX01

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -38.05 71.00 , 0.20 0.13



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

DRIVER SEAT DEFECTION

TRC , 921124
NEW CAR ASSESSMENT PROGRAM
92329
LFMF1

FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -4407.35 57.25 , 413.23 306.75

30.00

0.00

-30.00

-60.00

-90.00

-120.00

-150.00

-180.00

-210.00

0.00

30.00

60.00

90.00

120.00

150.00

180.00

210.00

240.00

270.00

300.00

330.00

360.00

390.00

420.00

450.00

480.00

510.00

540.00

570.00

600.00

630.00

660.00

690.00

720.00

750.00

780.00

810.00

840.00

870.00

900.00

930.00

960.00

990.00

1020.00

1050.00

1080.00

1110.00

1140.00

1170.00

1200.00

1230.00

1260.00

1290.00

1320.00

1350.00

1380.00

1410.00

1440.00

1470.00

1500.00

1530.00

1560.00

1590.00

1620.00

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1680.00

1710.00

1740.00

1770.00

1800.00

1830.00

1860.00

1890.00

1920.00

1950.00

1980.00

2010.00

2040.00

2070.00

2100.00

2130.00

2160.00

2190.00

2220.00

2250.00

2280.00

2310.00

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2370.00

2400.00

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2820.00

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2880.00

2910.00

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3030.00

3060.00

3090.00

3120.00

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3240.00

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3630.00

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4050.00

4080.00

4110.00

4140.00

4170.00

4200.00

4230.00

4260.00

4290.00

4320.00

4350.00

4380.00

4410.00

4440.00

4470.00

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4650.00

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6690.00

6720.00

6750.00

6780.00

6810.00

6840.00

6870.00

6900.00

6930.00

6960.00

6990.00

7020.00

7050.00

7080.00

7110.00

7140.00

7170.00

7200.00

7230.00

7260.00

7290.00

7320.00

7350.00

7380.00

7410.00

7440.00

7470.00

7500.00

7530.00

7560.00

7590.00

7620.00

7650.00

7680.00

7710.00

7740.00

7770.00

7800.00

7830.00

7860.00

7890.00

7920.00

7950.00

7980.00

8010.00

8040.00

8070.00

8100.00

8130.00

8160.00

8190.00

8220.00

8250.00

8280.00

8310.00

8340.00

8370.00

8400.00

8430.00

8460.00

8490.00

8520.00

8550.00

8580.00

8610.00

8640.00

8670.00

8700.00

8730.00

8760.00

8790.00

8820.00

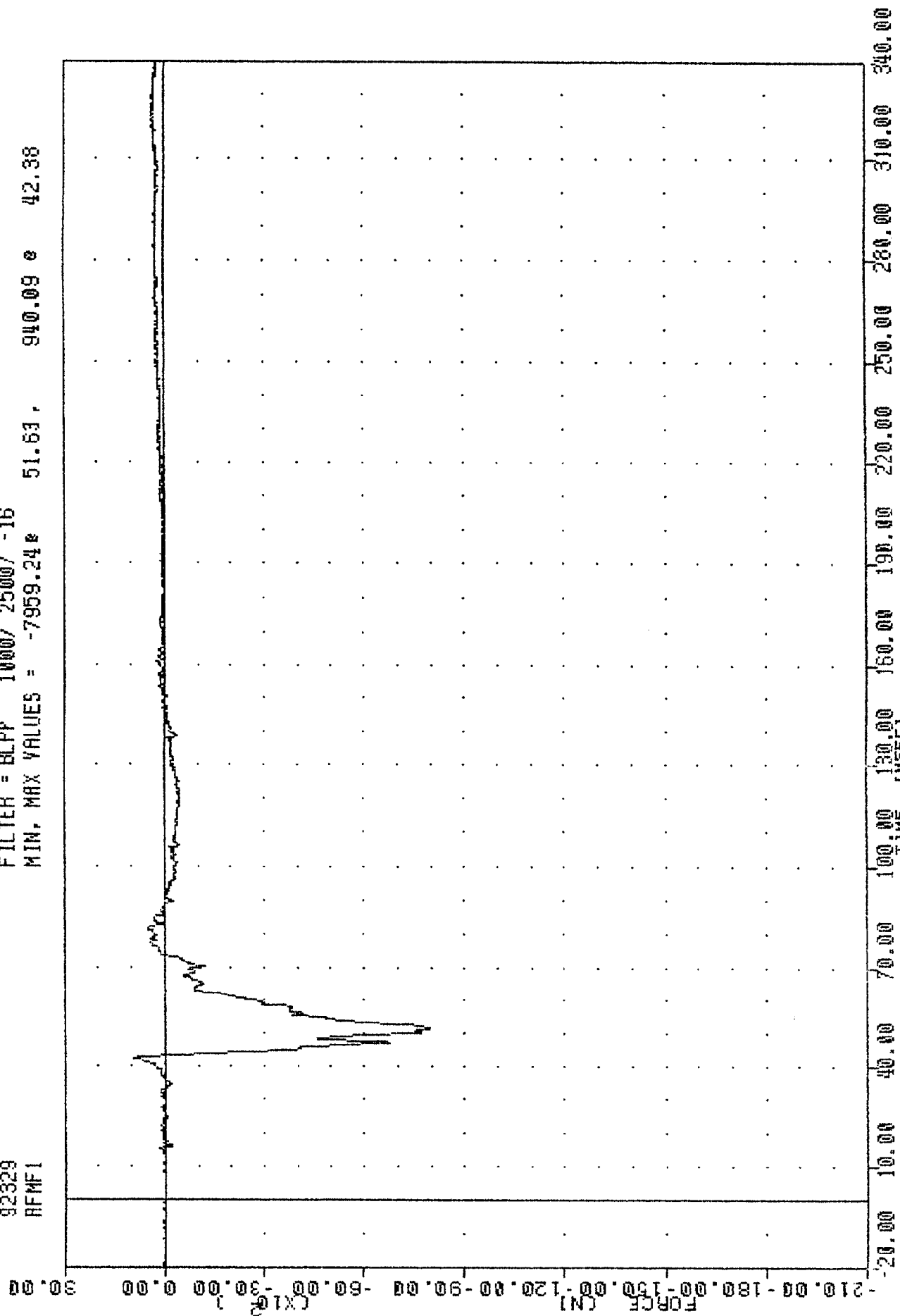
8850.00

8880.00

8910.00

TRC 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 RFMF1

FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -7959.24e 51.63, 940.09 e 42.38



B-18

921124

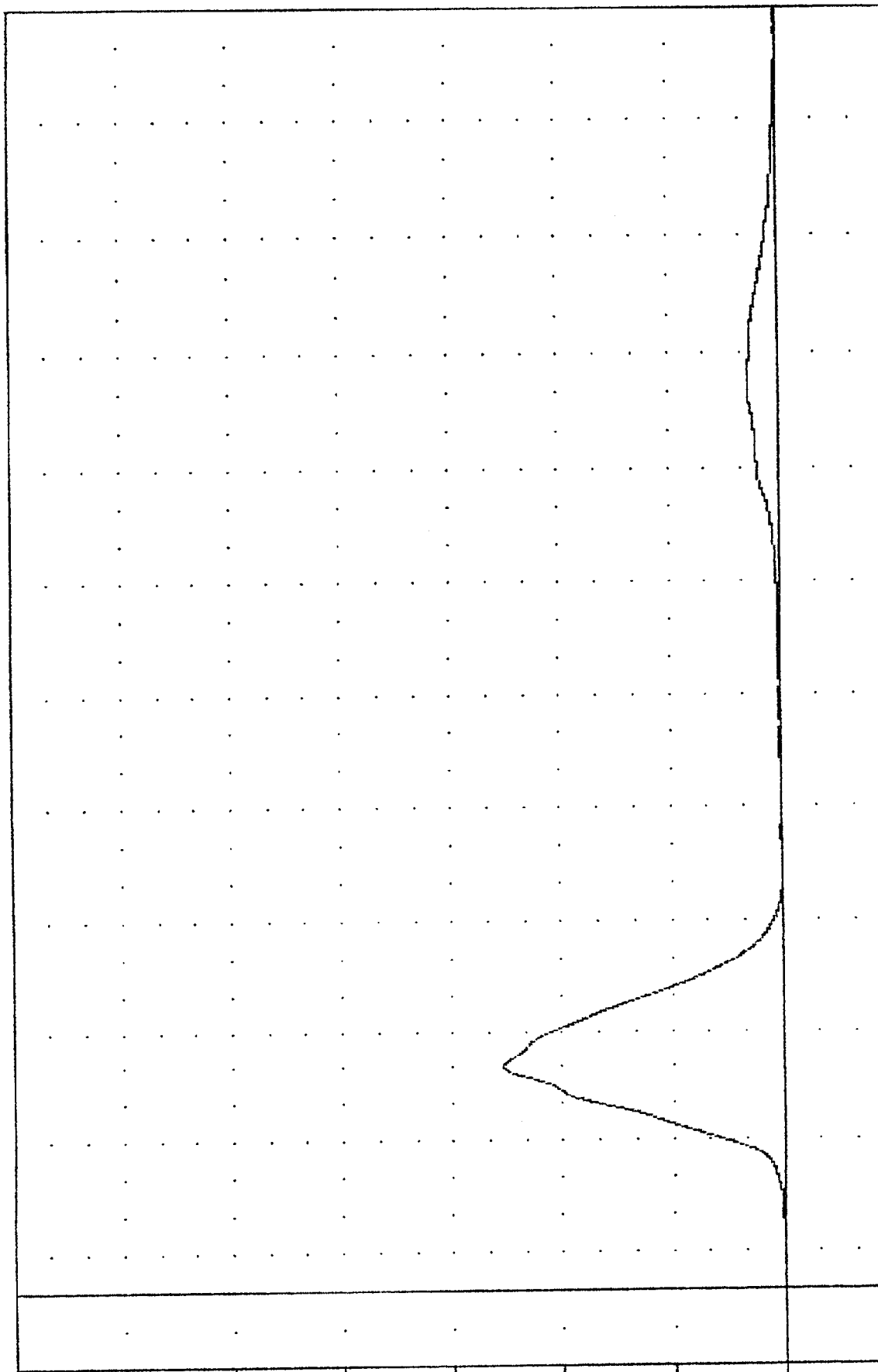
1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

OVERVIEW FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 LBDF1

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -18.28 139.13, 7606.54 & 60.13

FORCE (N) $\times 10^3$



921126

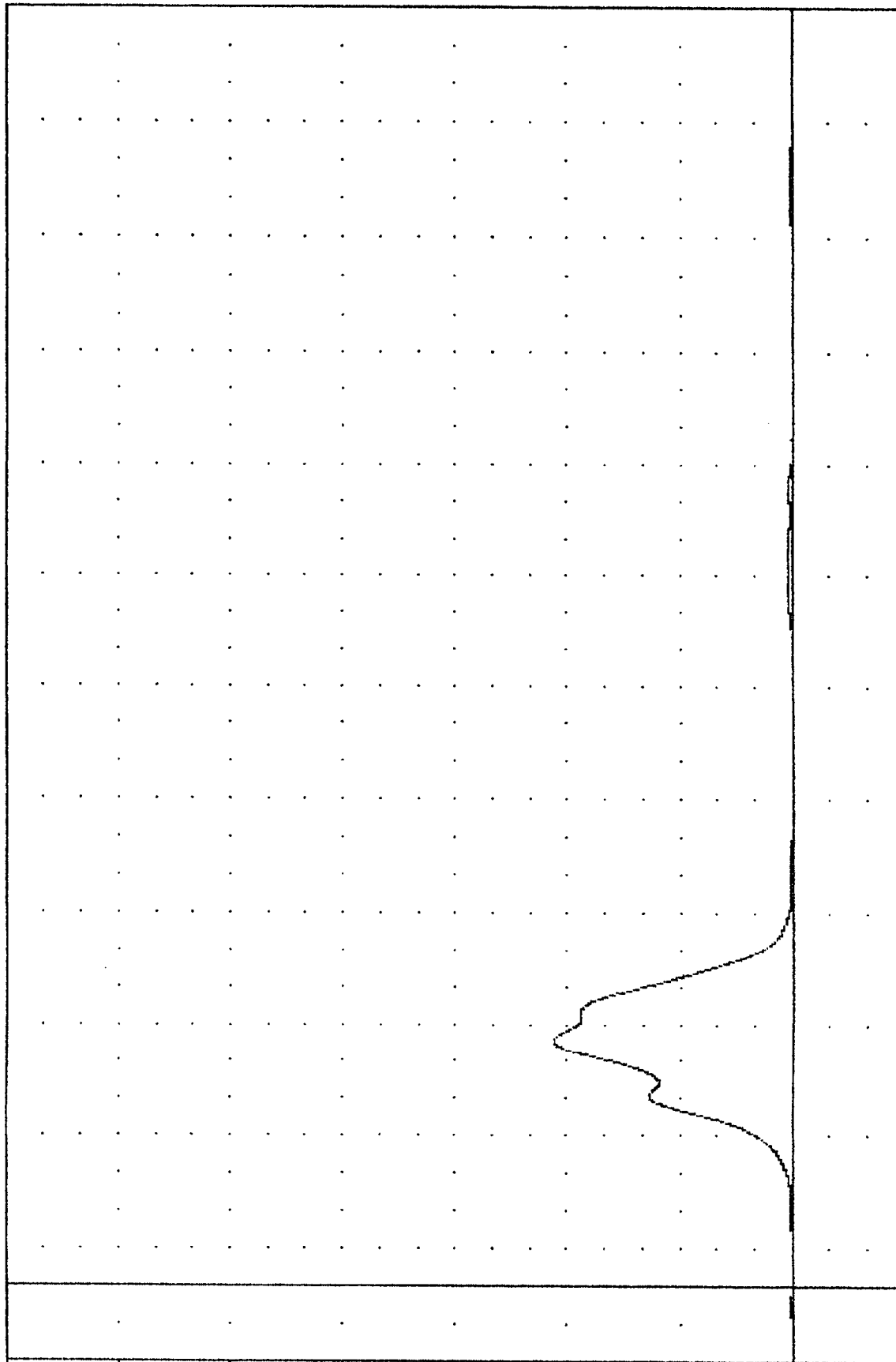
B-19

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 DRIVER LAP BELT OUTBOARD FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 SHBF1

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -29.52 259.38 , 6358.81 65.38

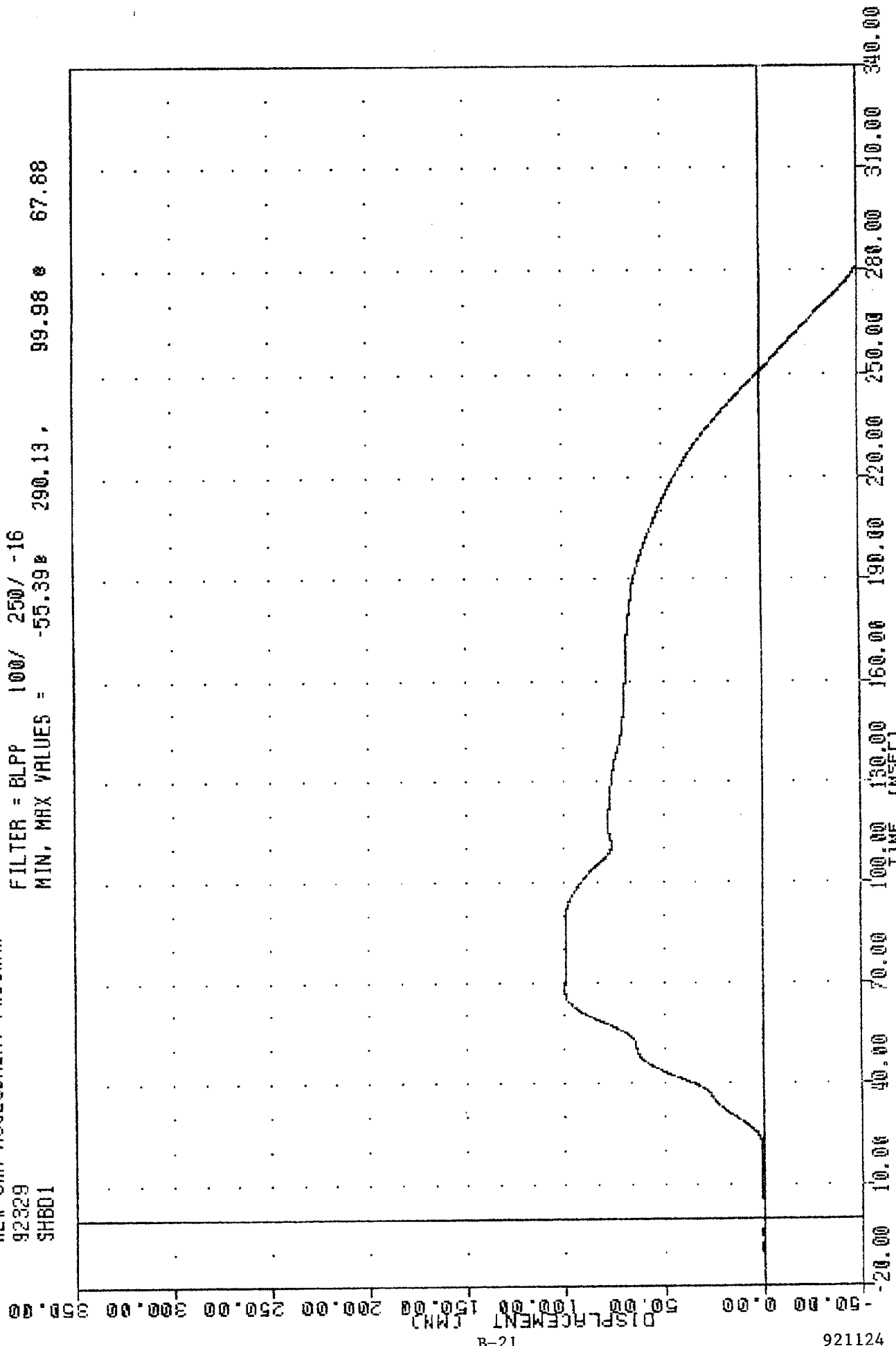
FORCE (N) $\times 10^3$
 -30.00 0.00 30.00 60.00 90.00 120.00 150.00 180.00 210.00



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PRIMER SHOULDER HIT FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 SHBD1

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -55.39 290.13, 99.98 67.88



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT DISPLACEMENT

TRC
NEW CAR ASSESSMENT PROGRAM
92329
SBED1

, 921124

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -0.018 192.75, 0.018 256.50

10.00

7.50

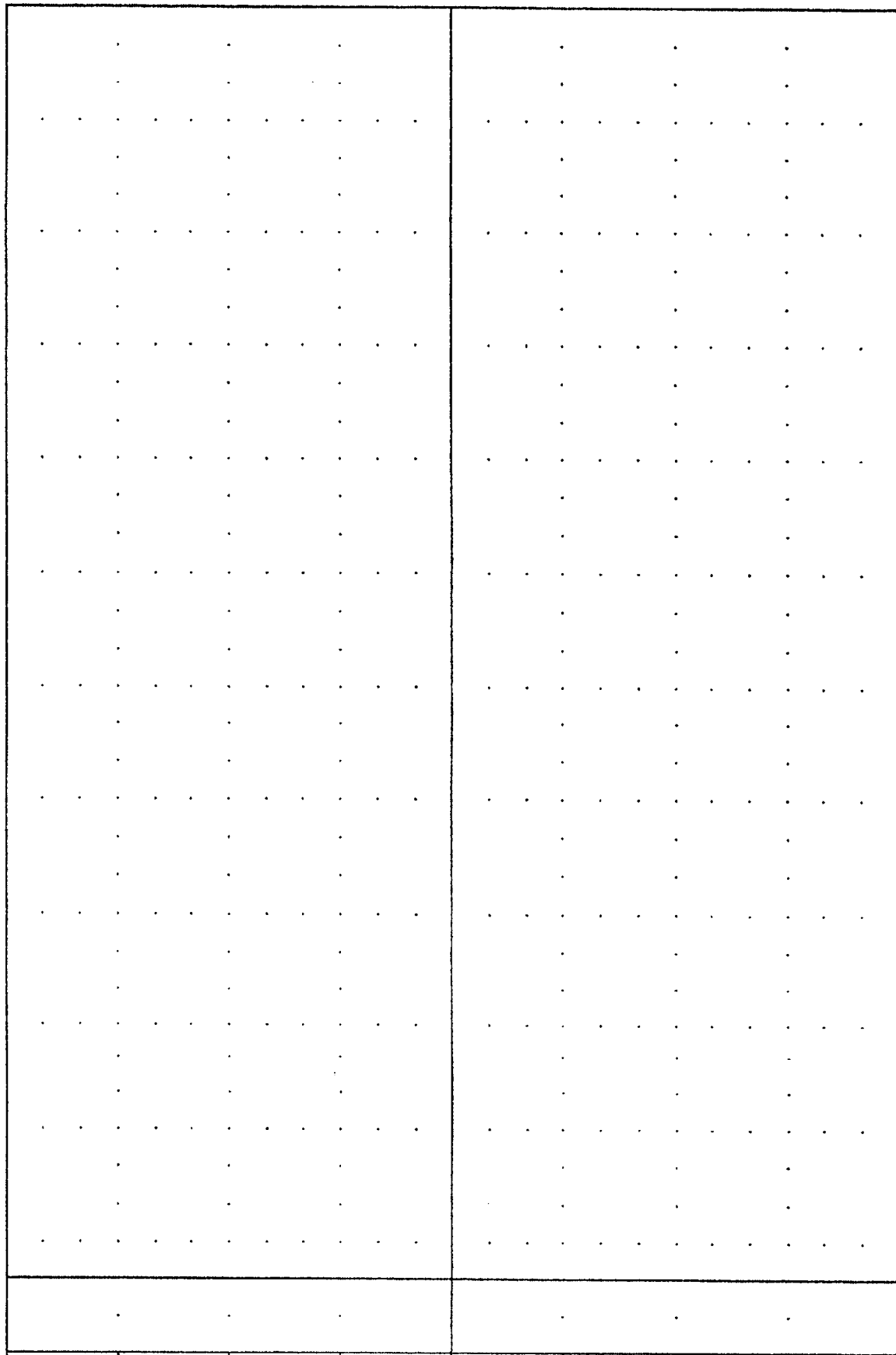
5.00

2.50

DISPLACEMENT (MM)

B-22

921124



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER BELT EXTENSION

TRC
NEW CAR ASSESSMENT PROGRAM
92329
HEDXG2

, 921124

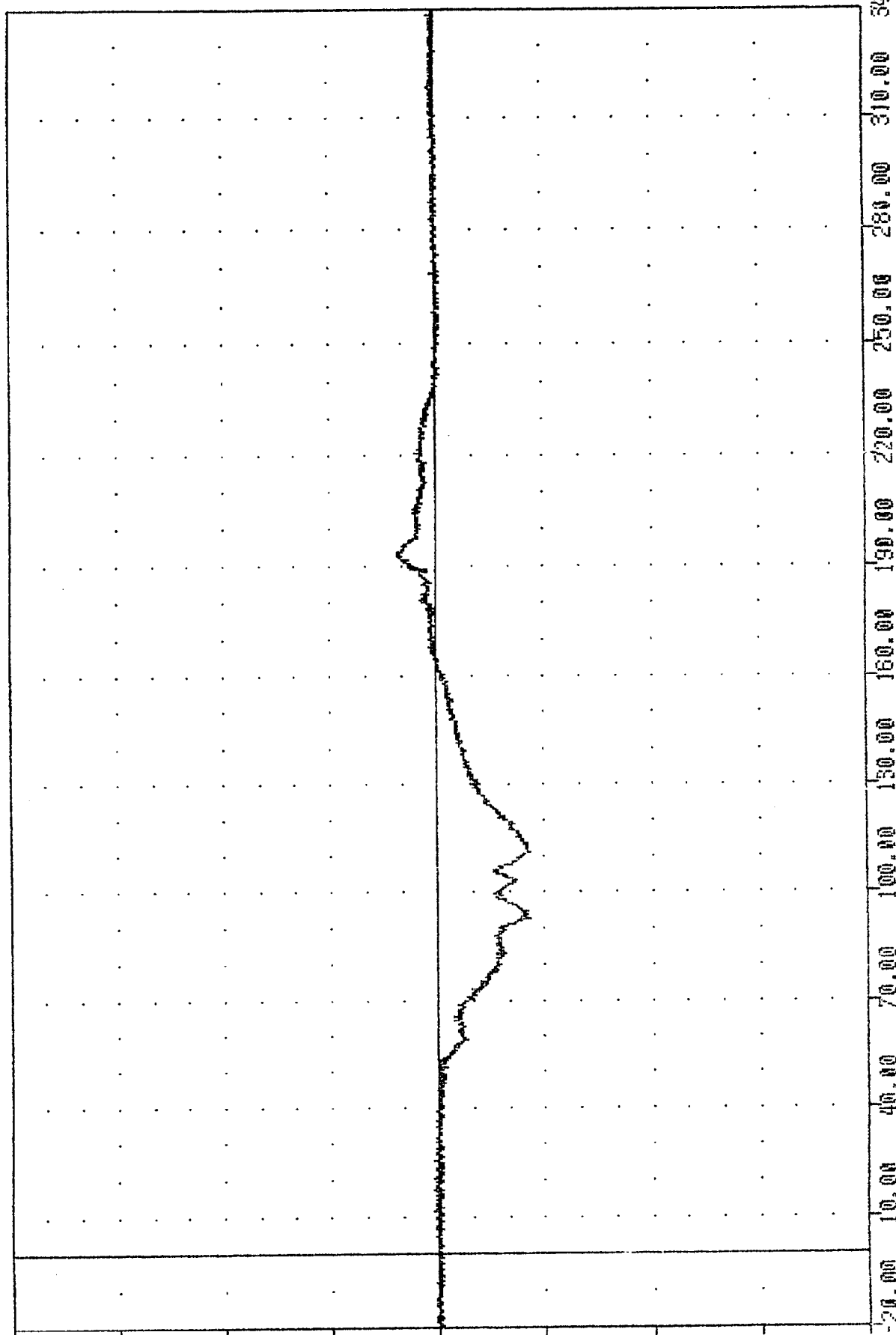
FILTER = ALPF 1650/ -40
MIN, MAX VALUES = -51.27e

21.74 e 193.13

ACCELERATION (G)

B-23

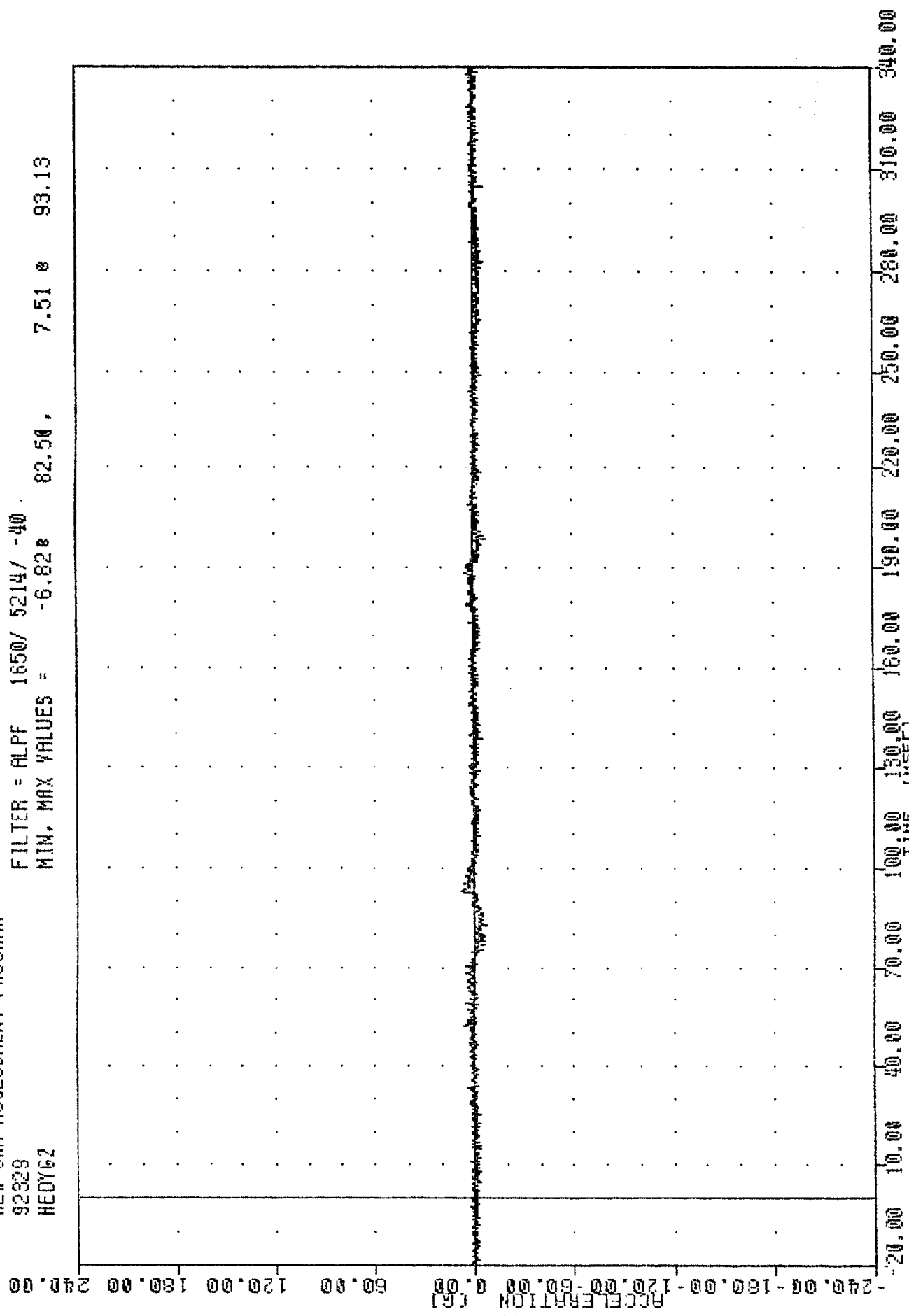
921124



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 HEDY62

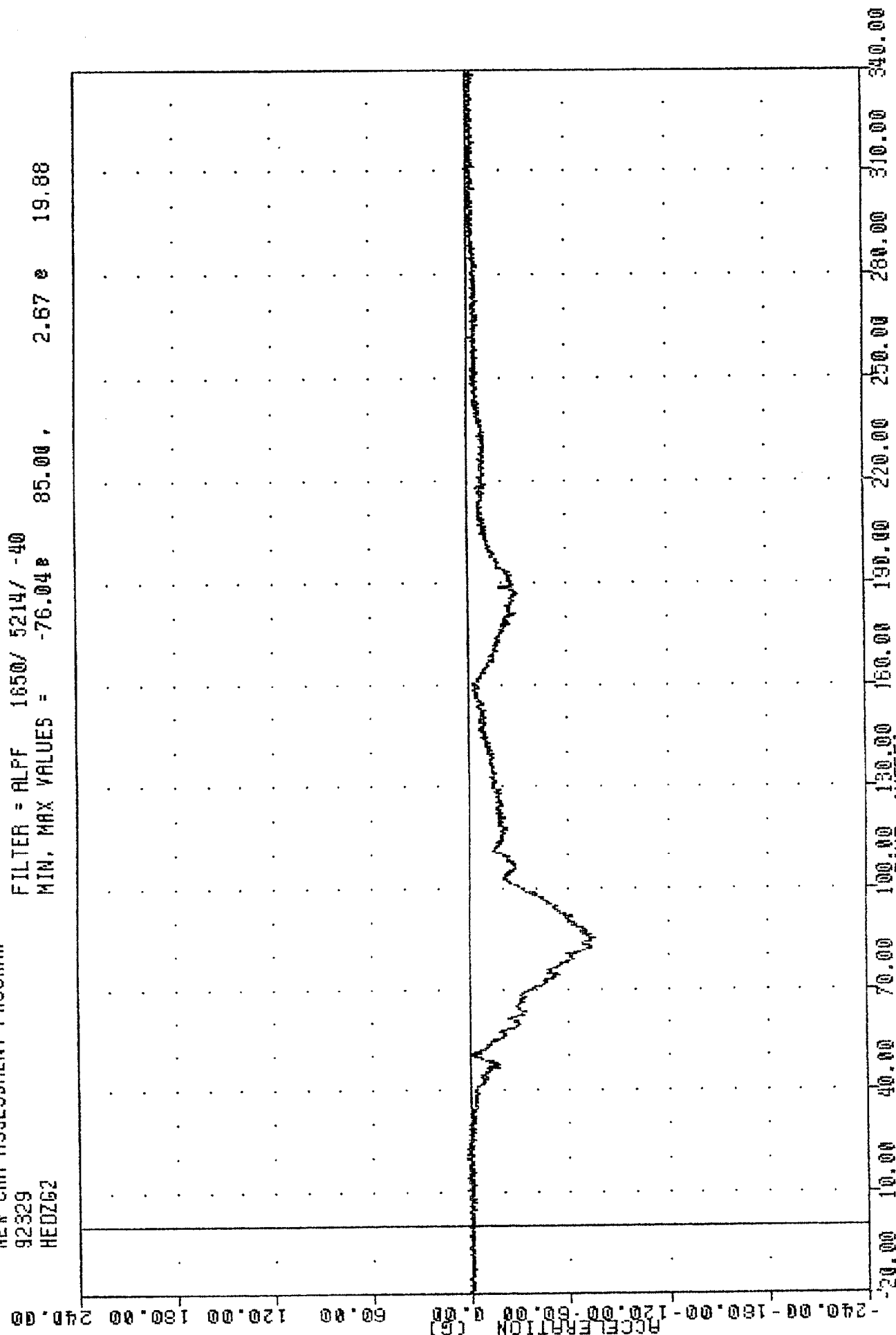
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -6.828 82.50, 7.51 93.13



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER HEAD AXIAL ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 HEDZG2

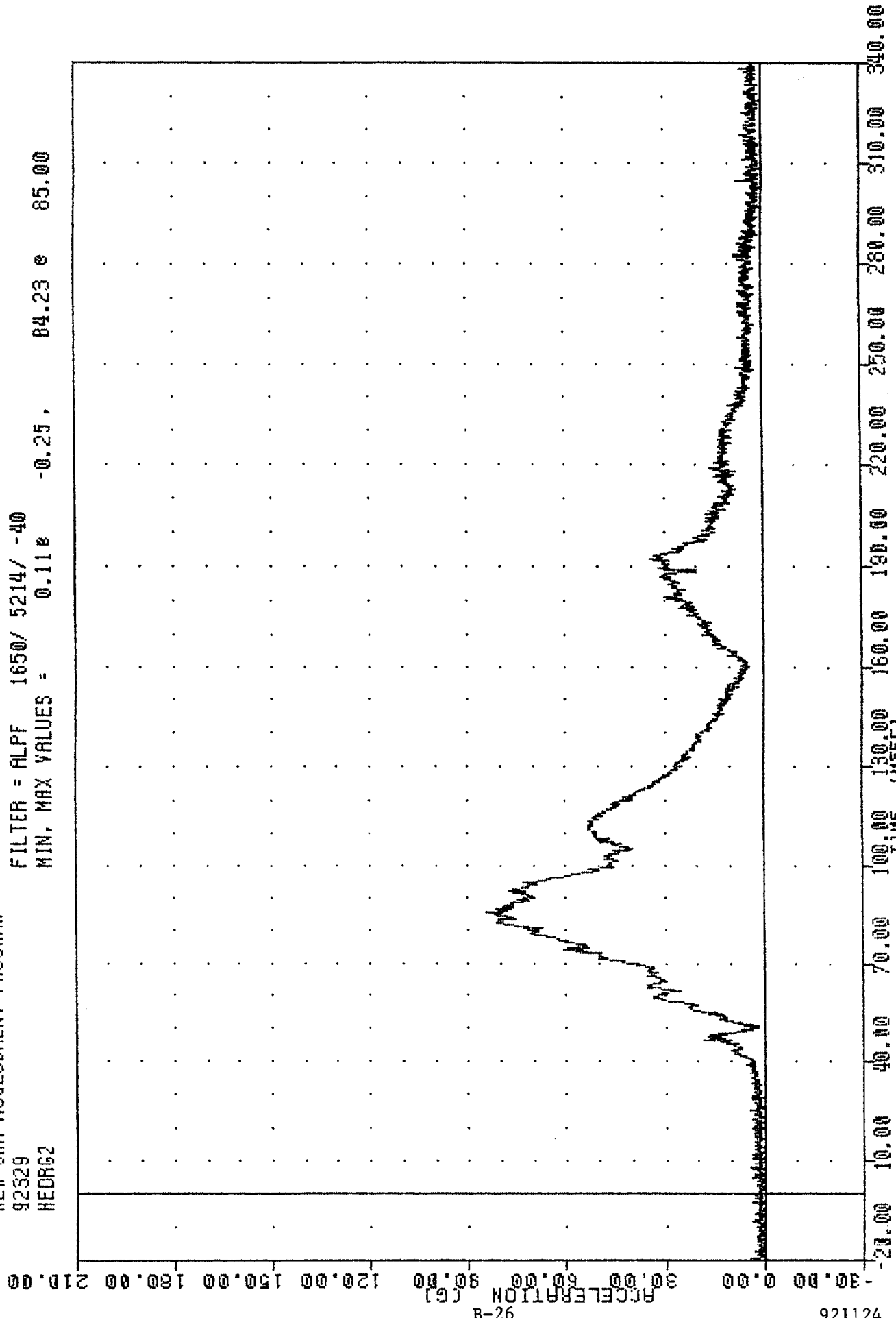
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -76.04 85.00 , 2.67 e 19.88



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER HEAD Z-AXIS ACCELERATION

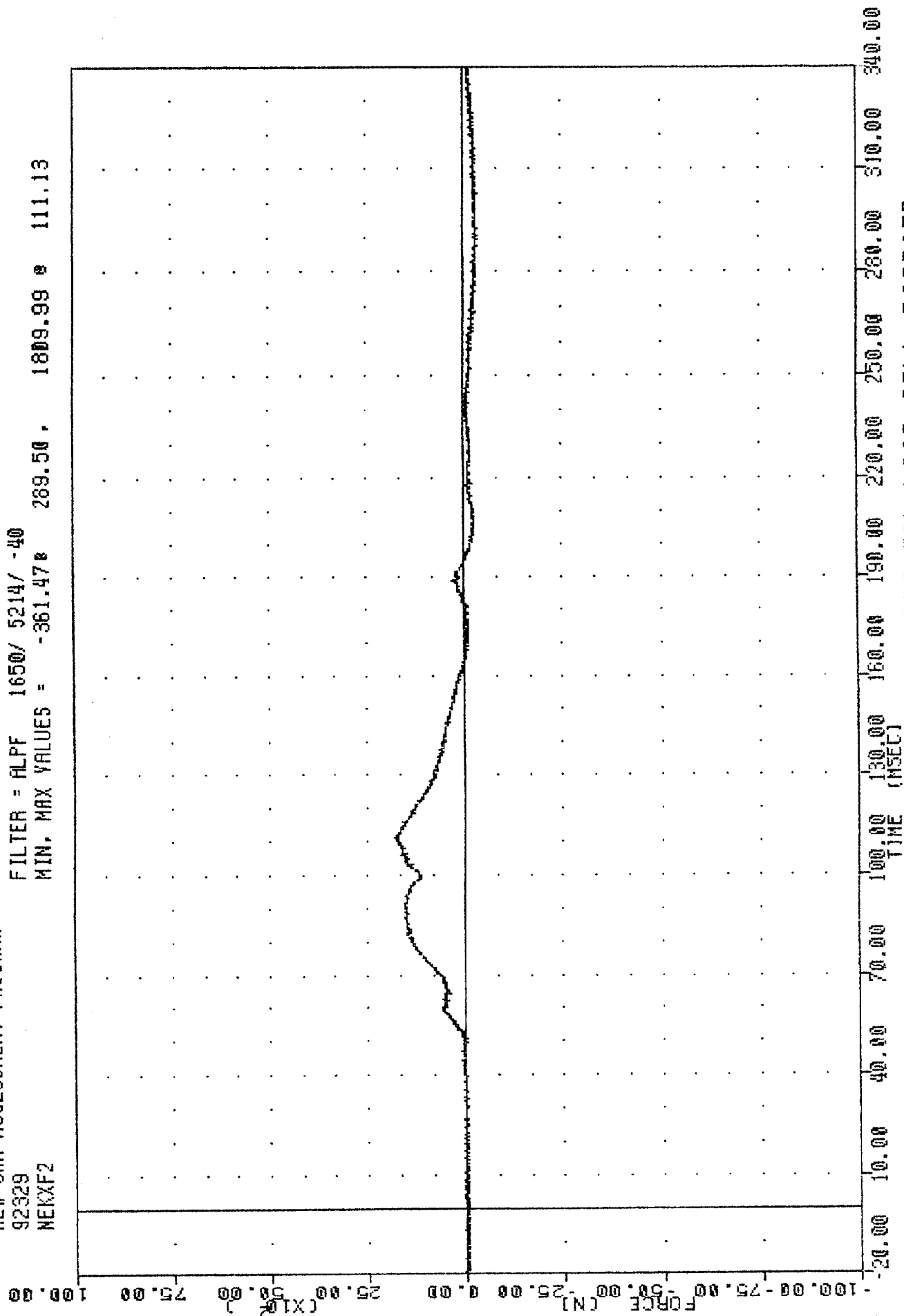
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 HEDRG2

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = 0.118 -0.25, 84.23 e 85.00



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 NEKXF2

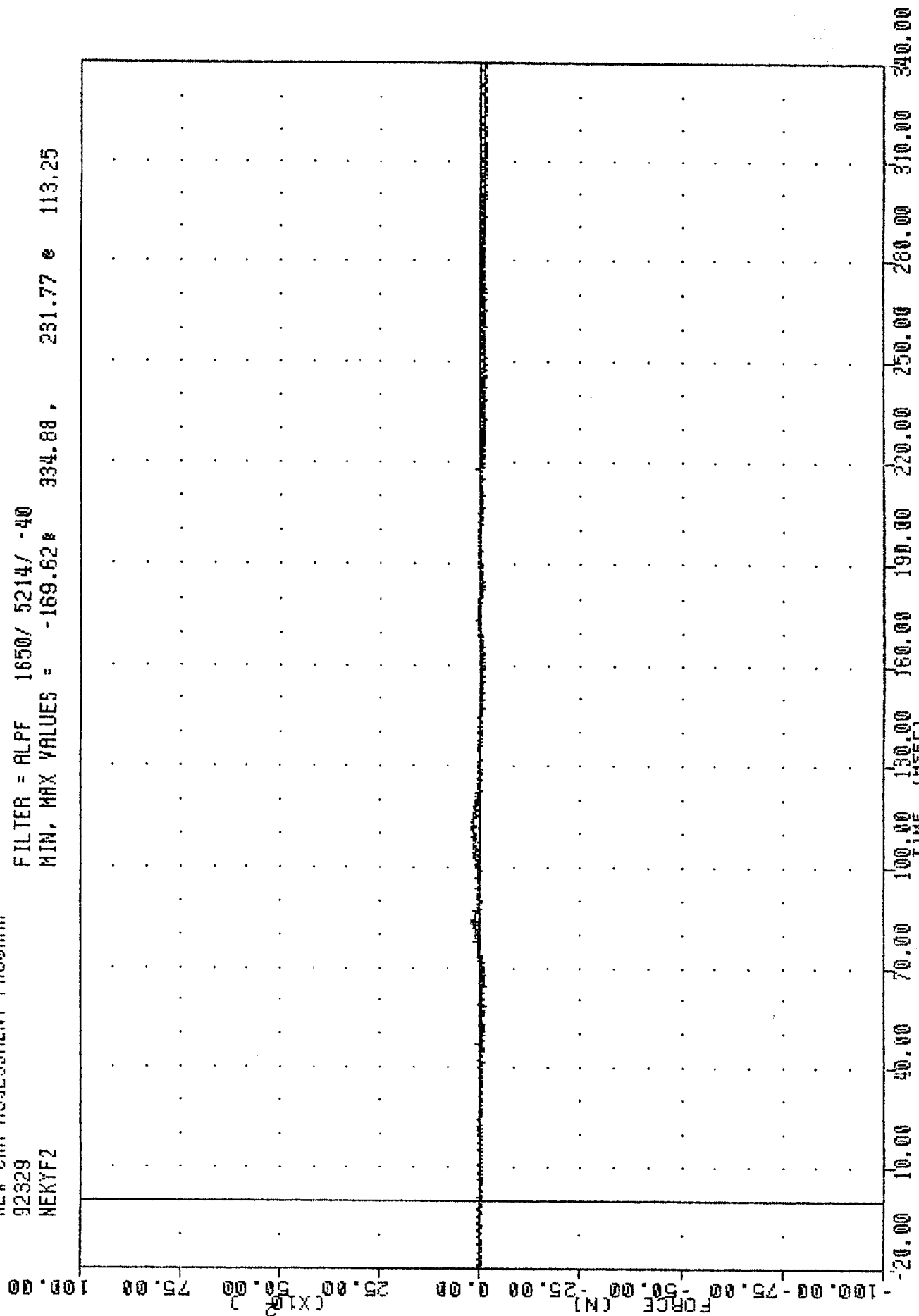
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -361.47 289.50 1809.99 111.13



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK X-AXIS SHEAR FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 NEKYF2

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -169.62* 334.88 , 231.77 e 113.25

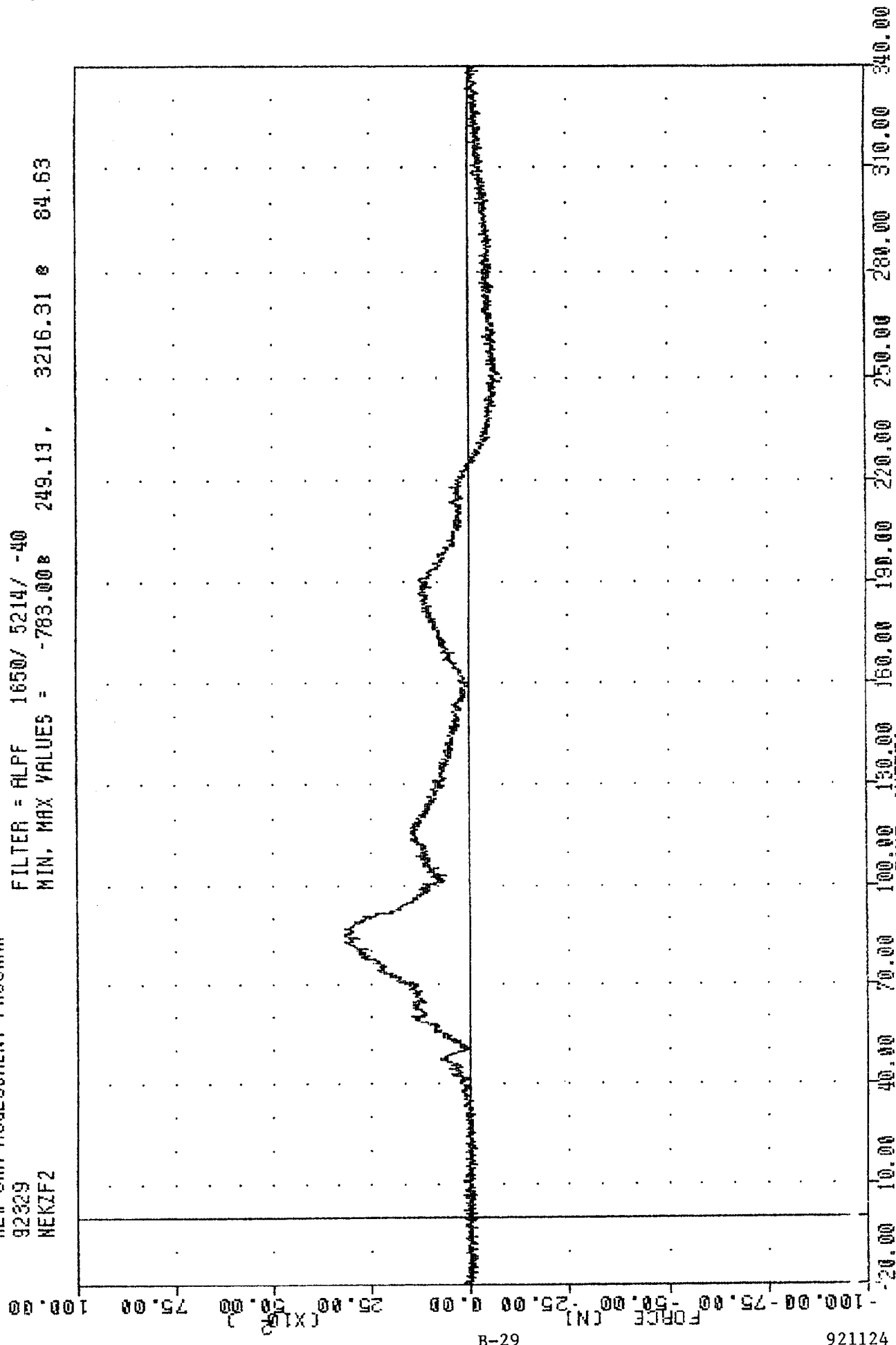


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

PISTON FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 NEKZF2

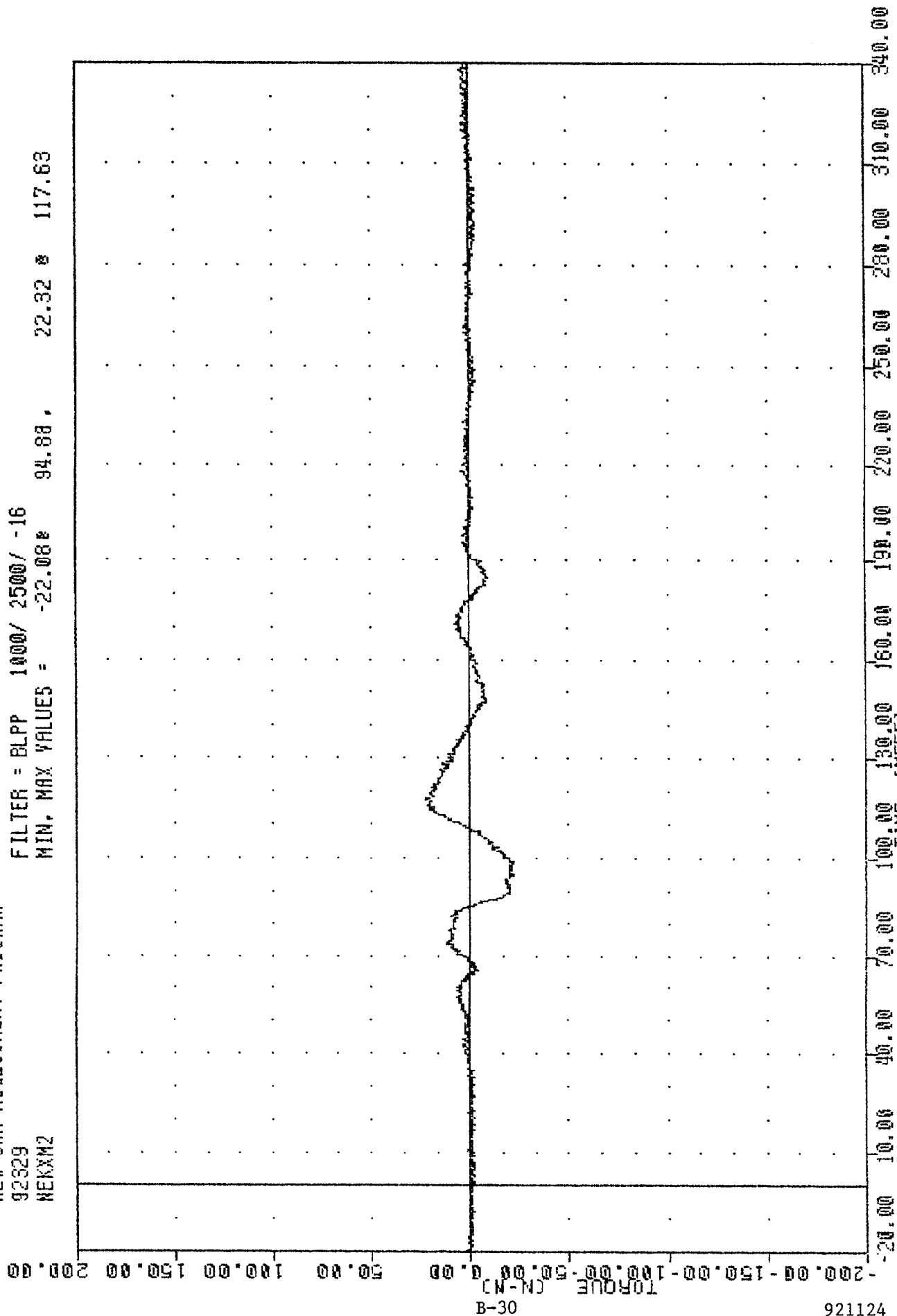
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -783.00 249.13 , 3216.31 84.63



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK Z-AXIS AXIAL FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 HEKX2

FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -22.08 94.88 , 22.32 117.63



B-30

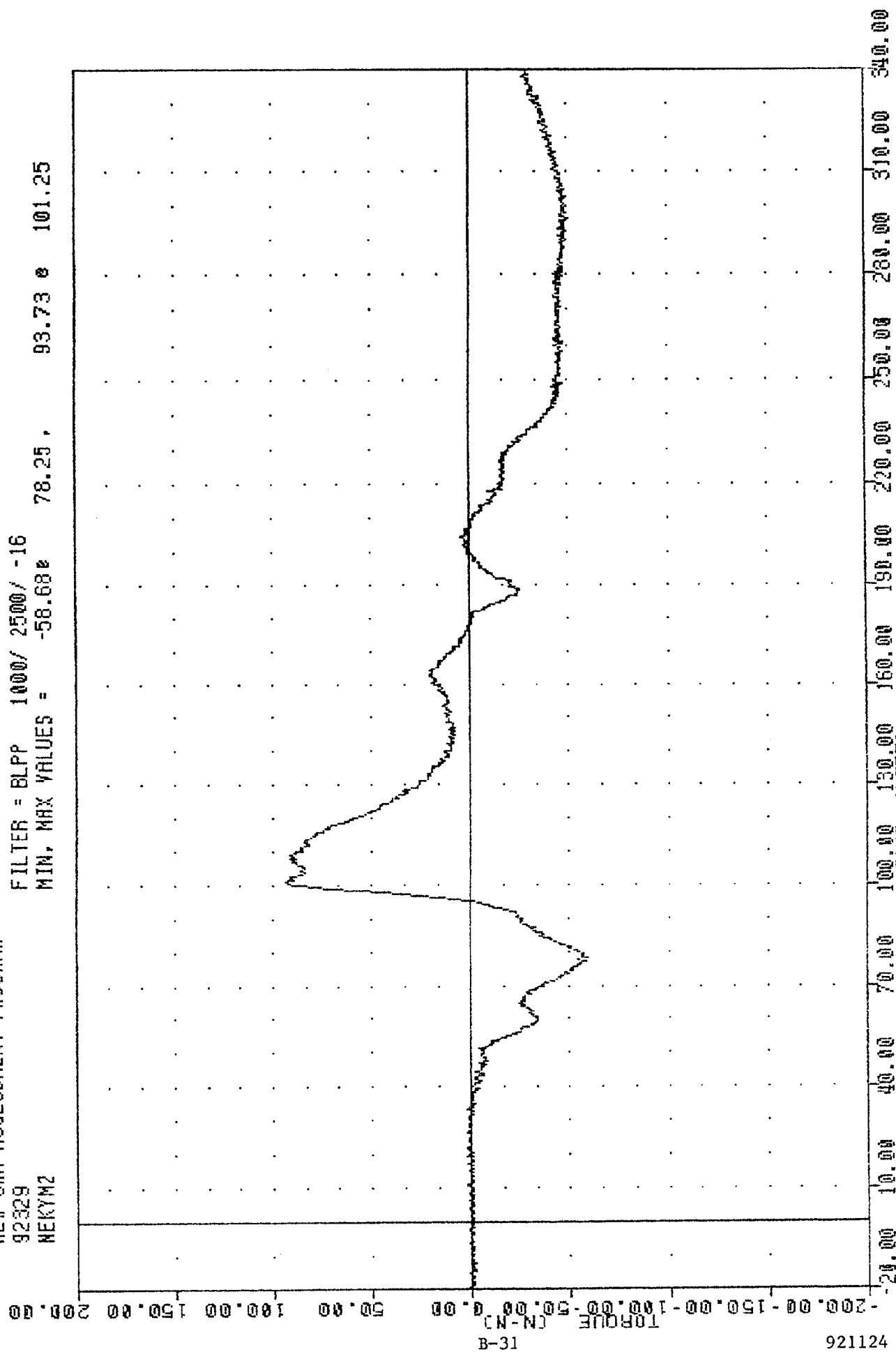
921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SIDE
 MOMENT
 117.63

TRC
 NEW CAR ASSESSMENT PROGRAM
 92329
 NEKYM2

921124

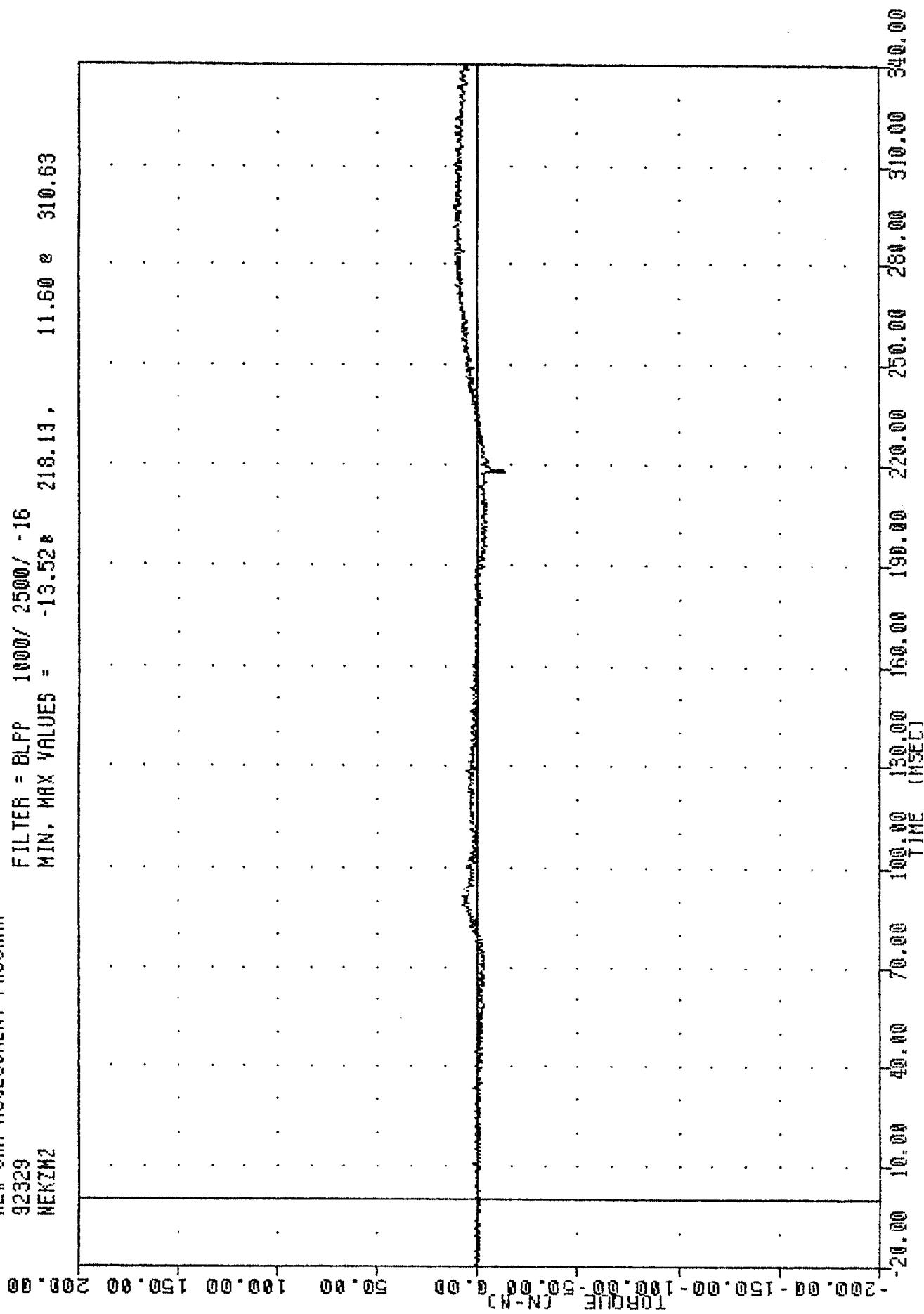
FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -58.68 93.73 101.25



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK MOMENT ABOUT Y AXIS

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 NEKZM2

FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -13.52e 218.13, 11.60 e 310.63

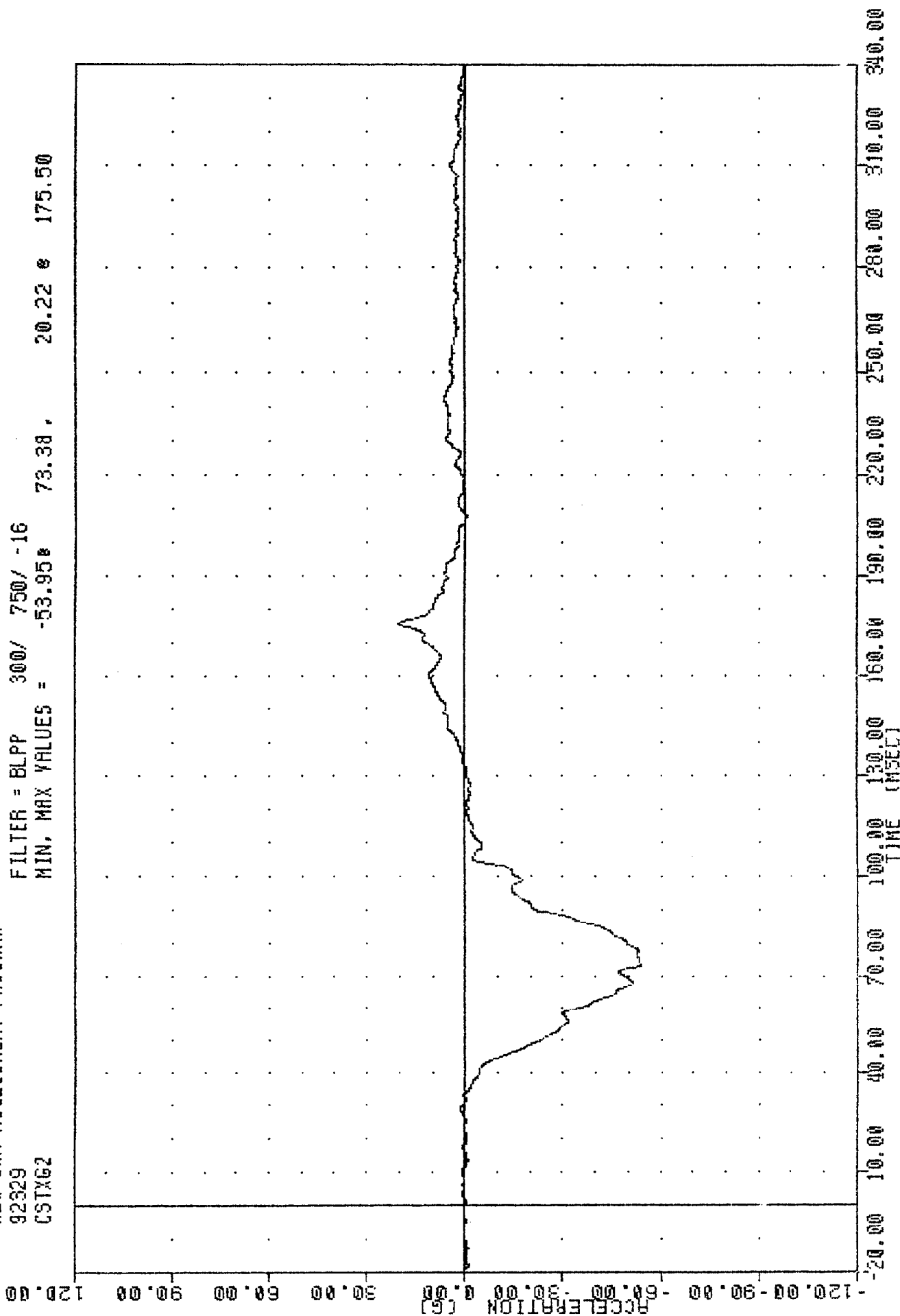


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

PROBING NEWK NIKEN JBC Z

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTXG2

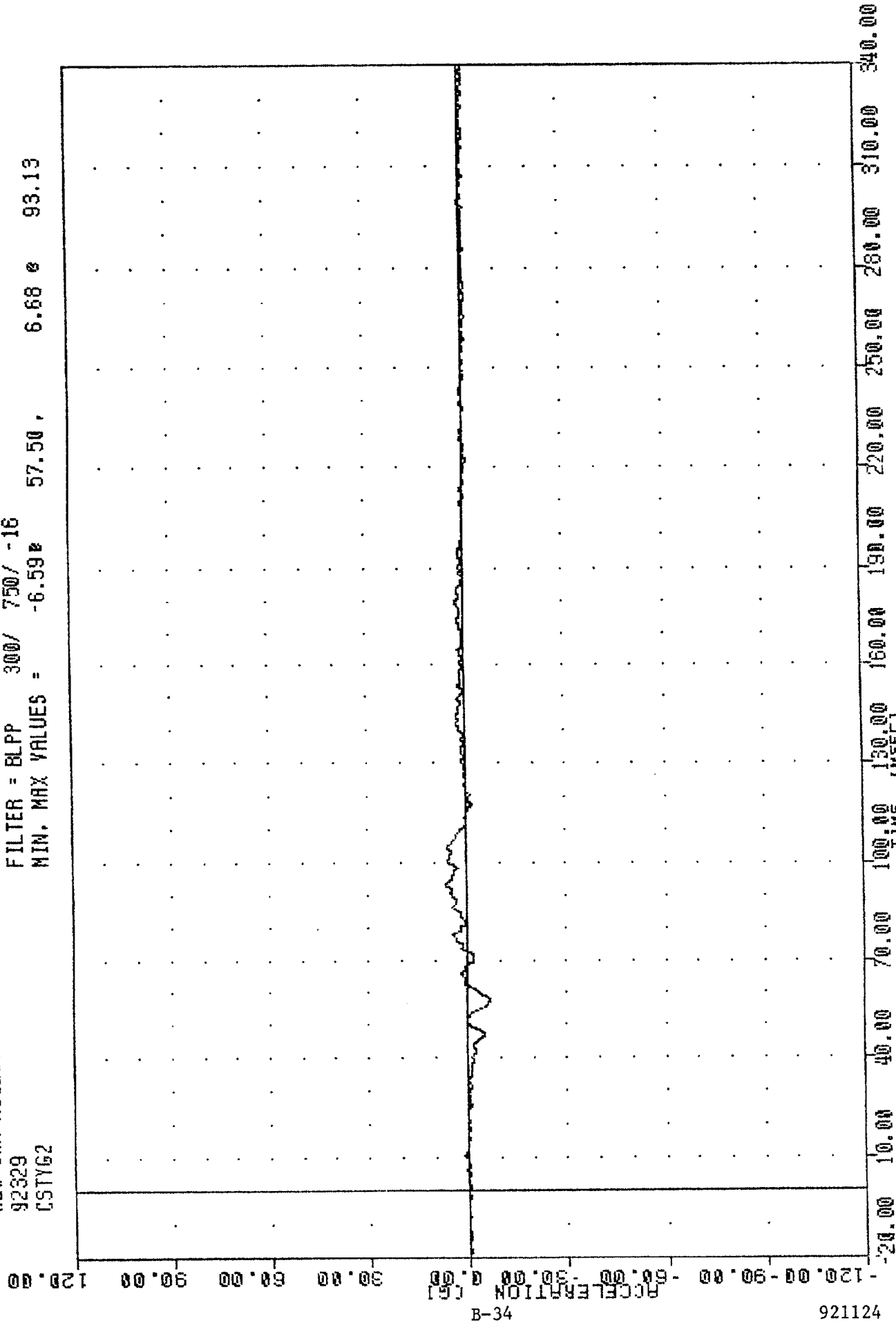
FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -53.95 73.38 , 20.22 175.50



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST X-AXIS ACCELERATION

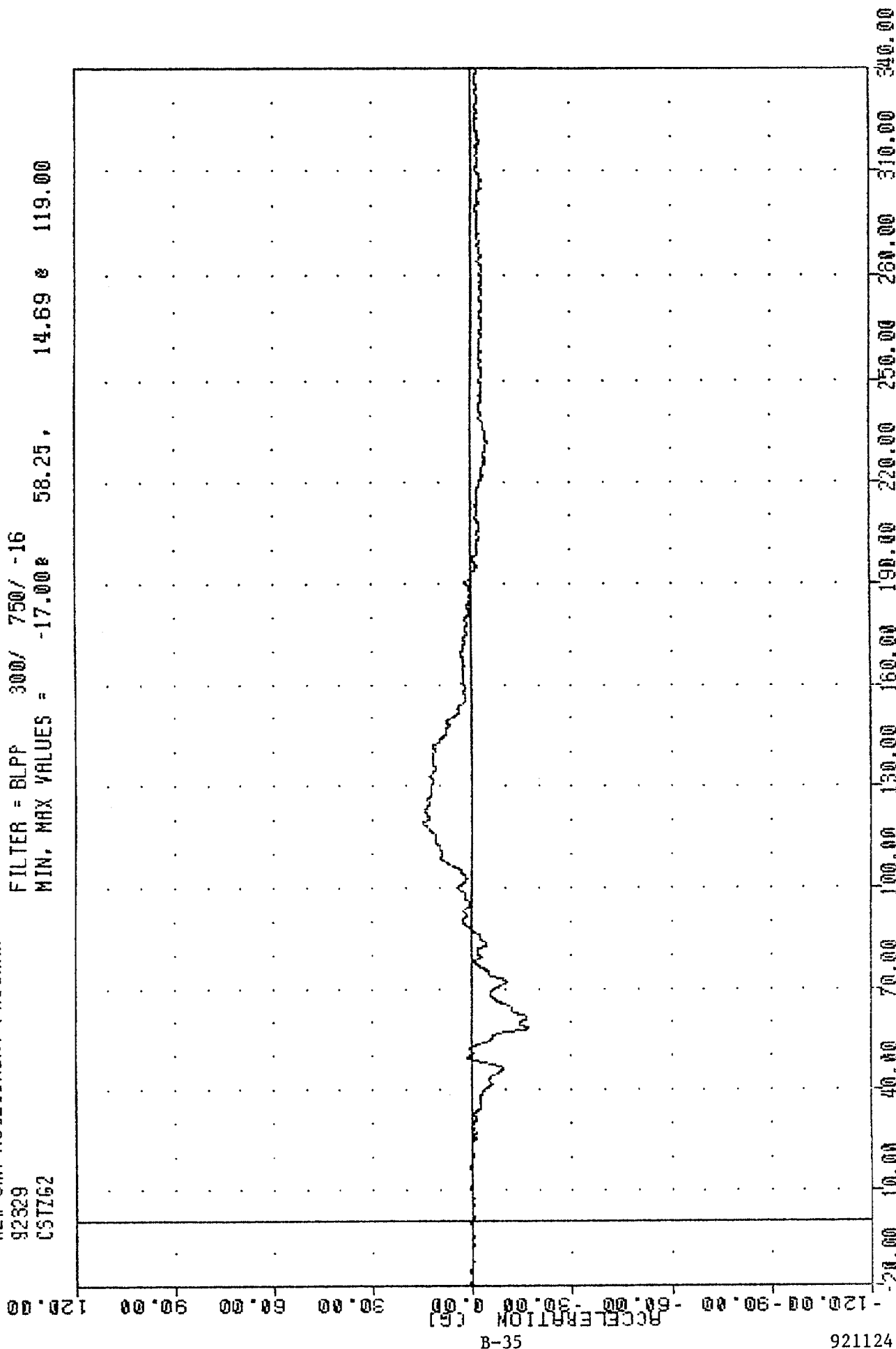
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTYG2

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -6.59% 57.50 , 6.68 % 93.13



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTZ62

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -17.00 58.25, 14.69 119.00

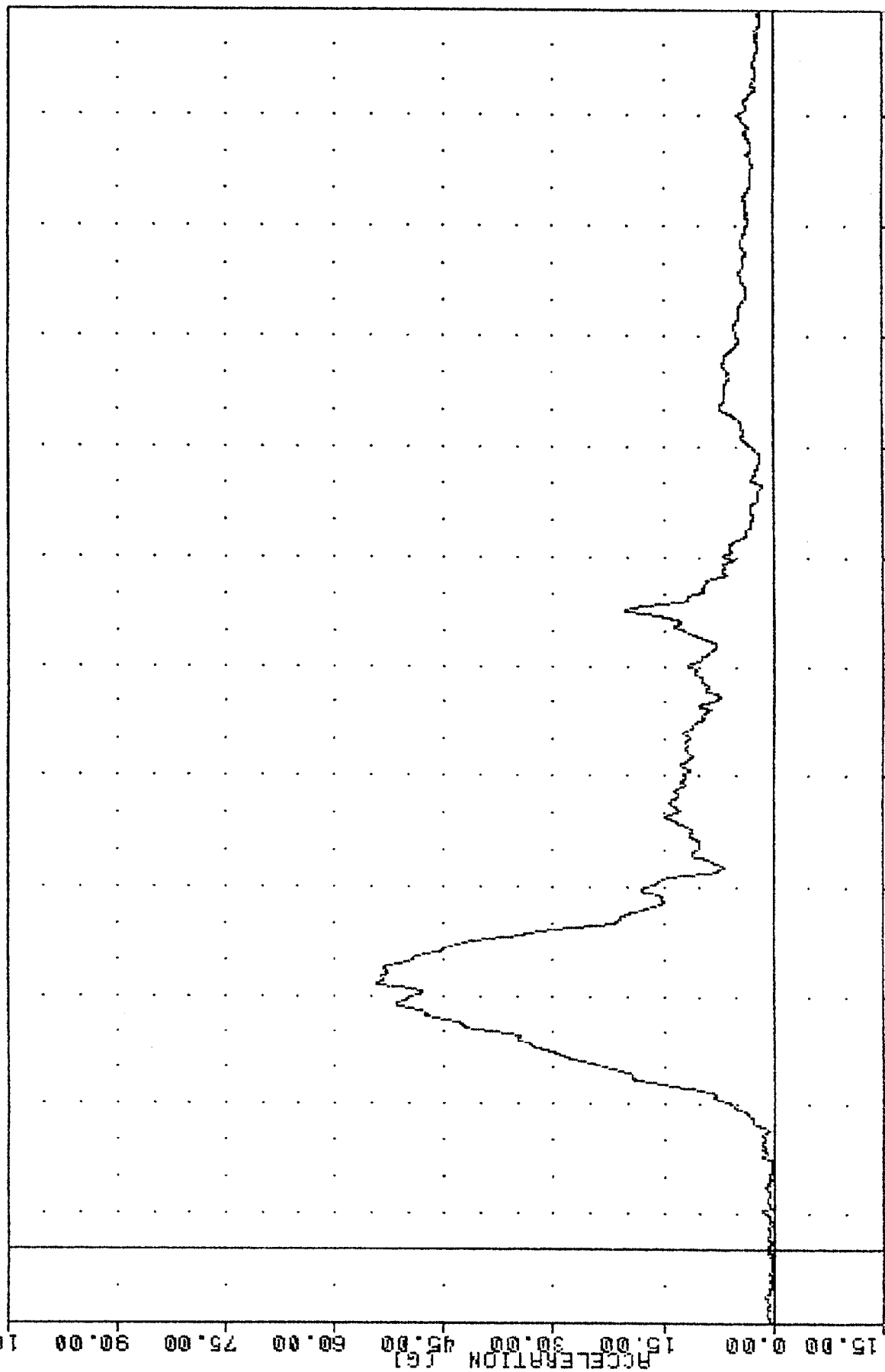


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST Z-AXIS ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTRG2

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = 0.038 -3.75 , 54.39 e 73.25

105.00



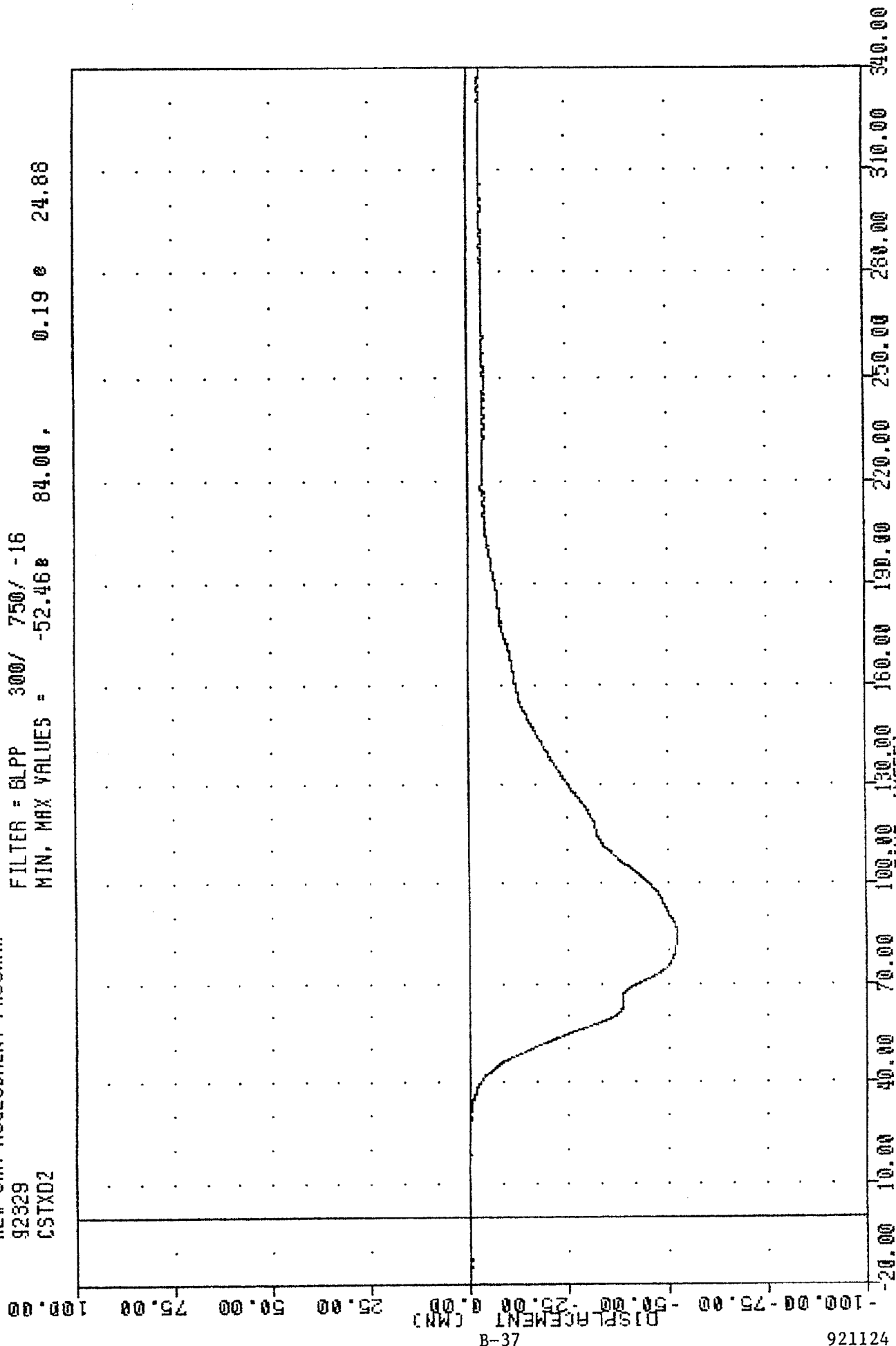
B-36

921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST RESULTANT ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 CSTXD2

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -52.46 84.00 0.19 e 24.88

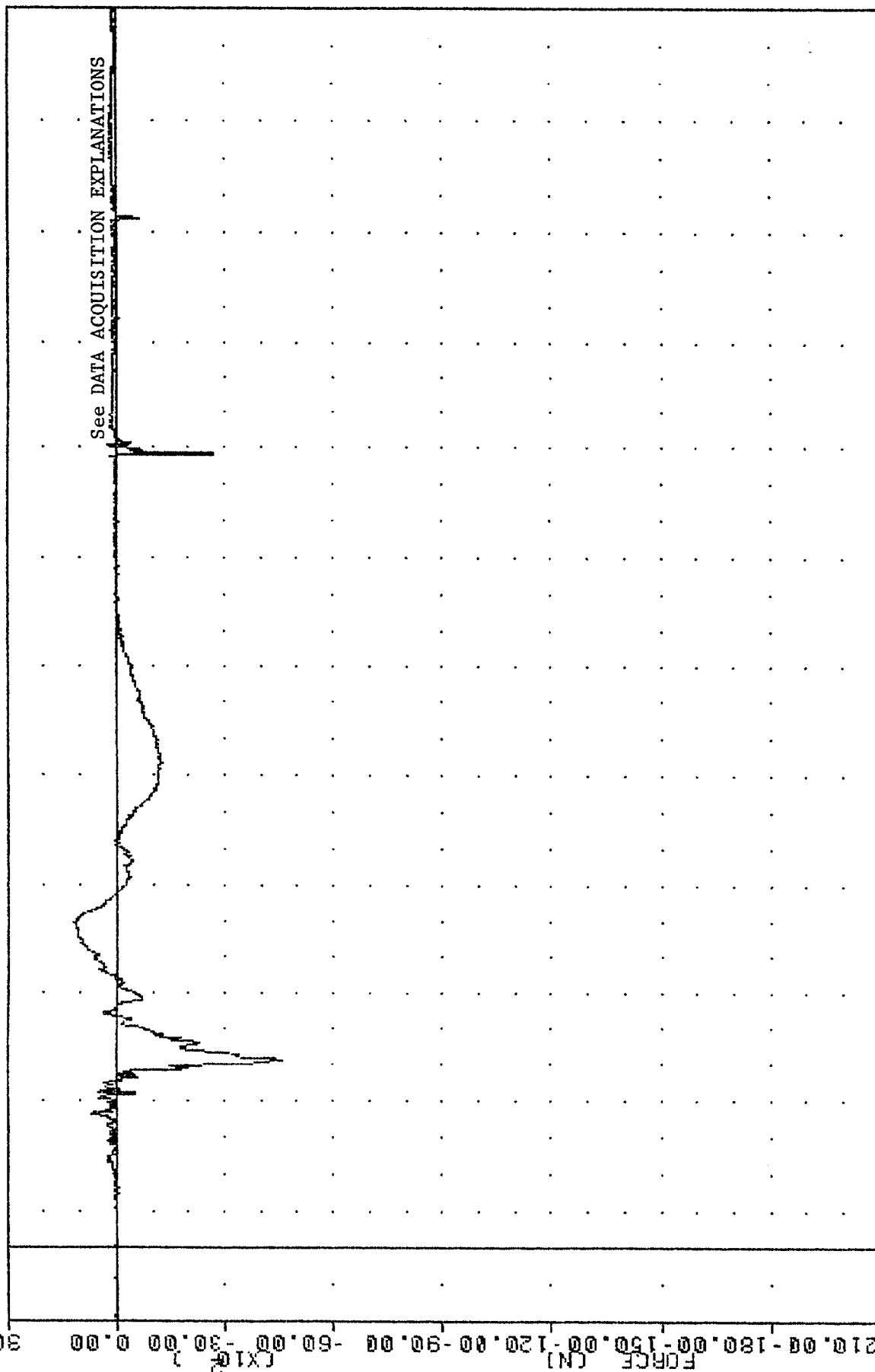


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST DEFLECTION

TRC
 NEW CAR ASSESSMENT PROGRAM
 92329
 LFMF2

FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -4607.89 51.38, 1181.14 89.38

30.00



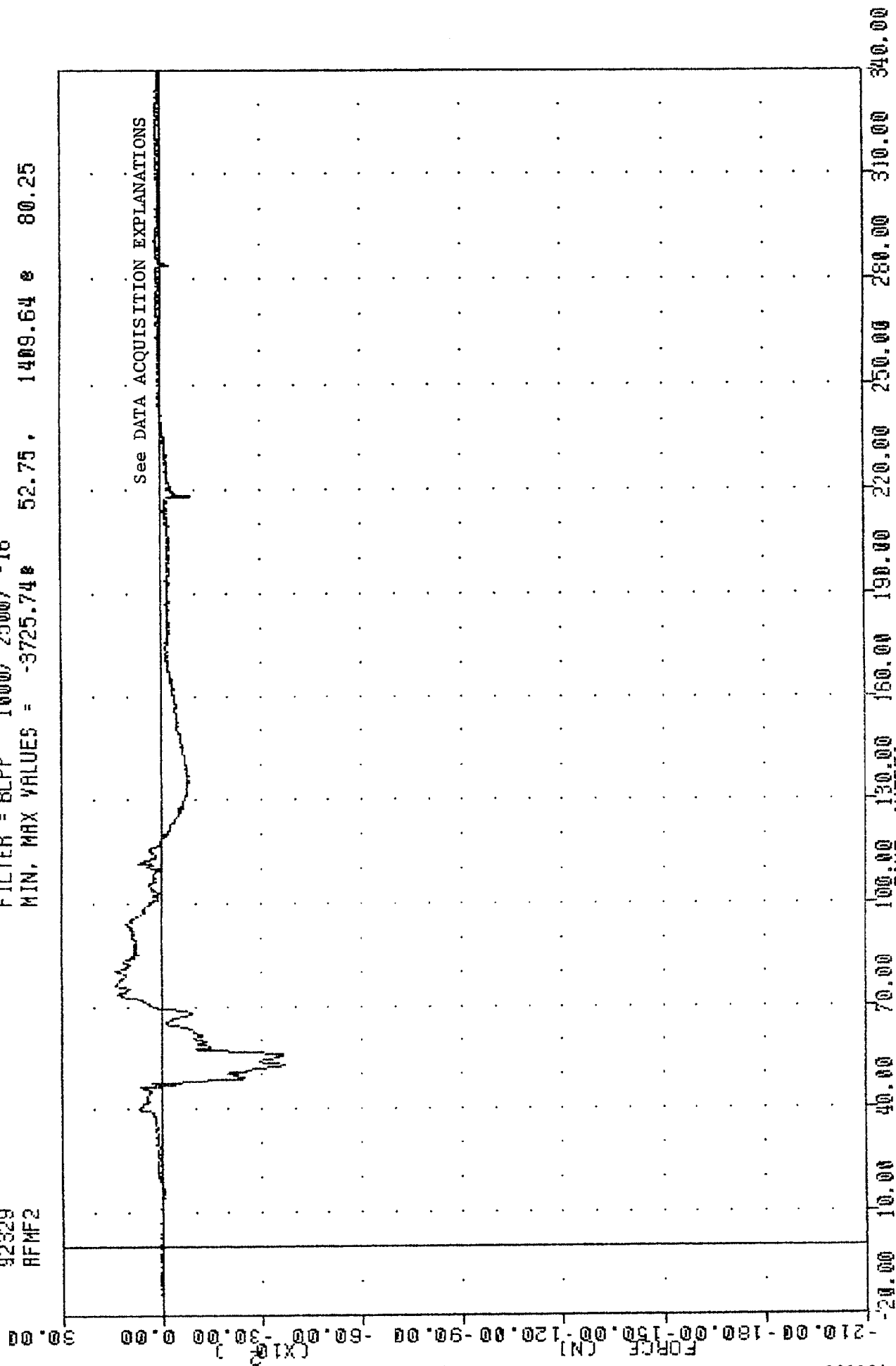
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

PASSENGER LEFT FRONT FLOOR

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 RFMF2

FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -3725.74 52.75 , 1409.64 80.25

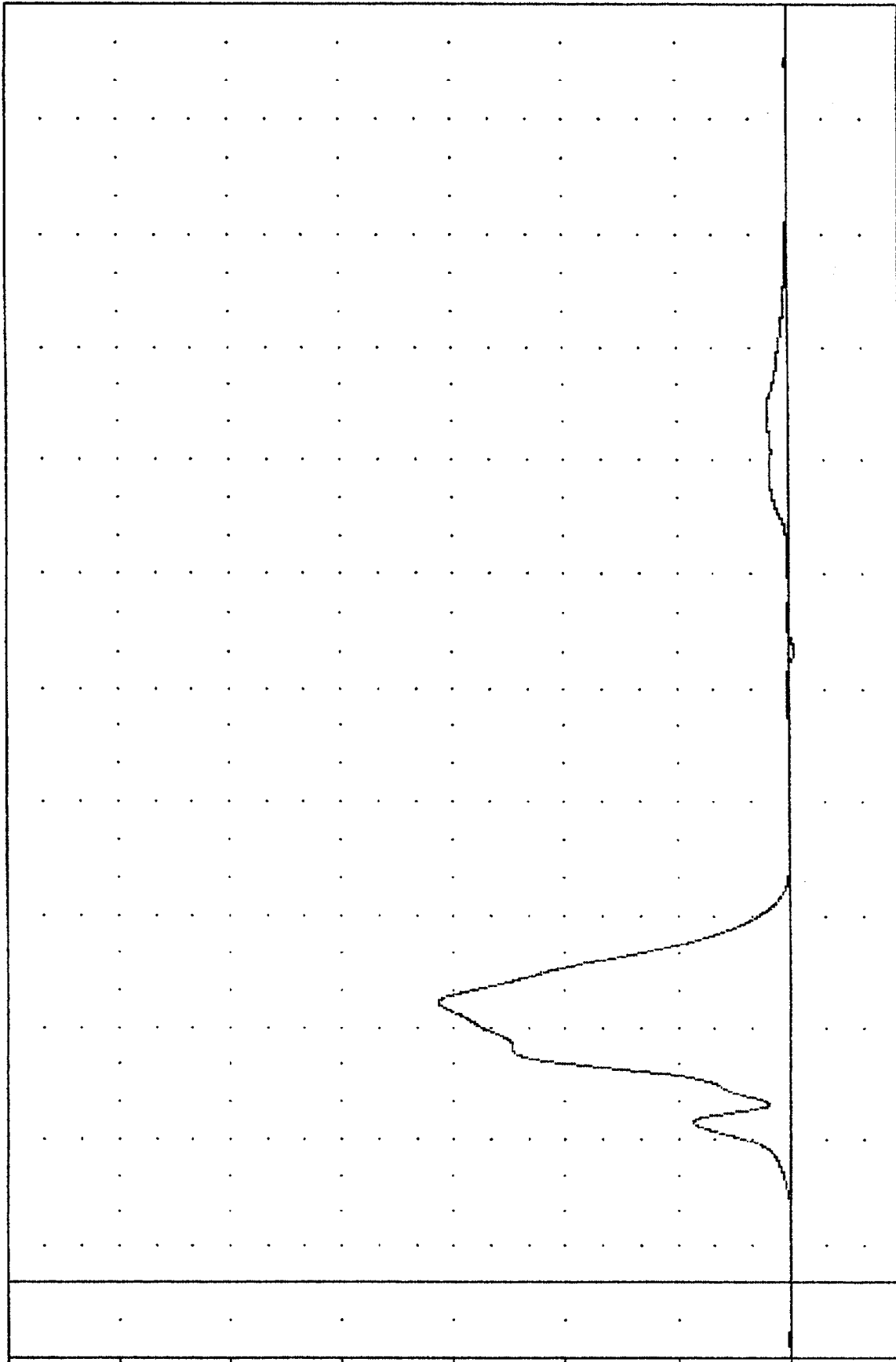


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER RIGHT FEMUR FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 LB0UF2

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -154.02e 170.13, 9425.10 e 76.50

FORCE (N) X10³

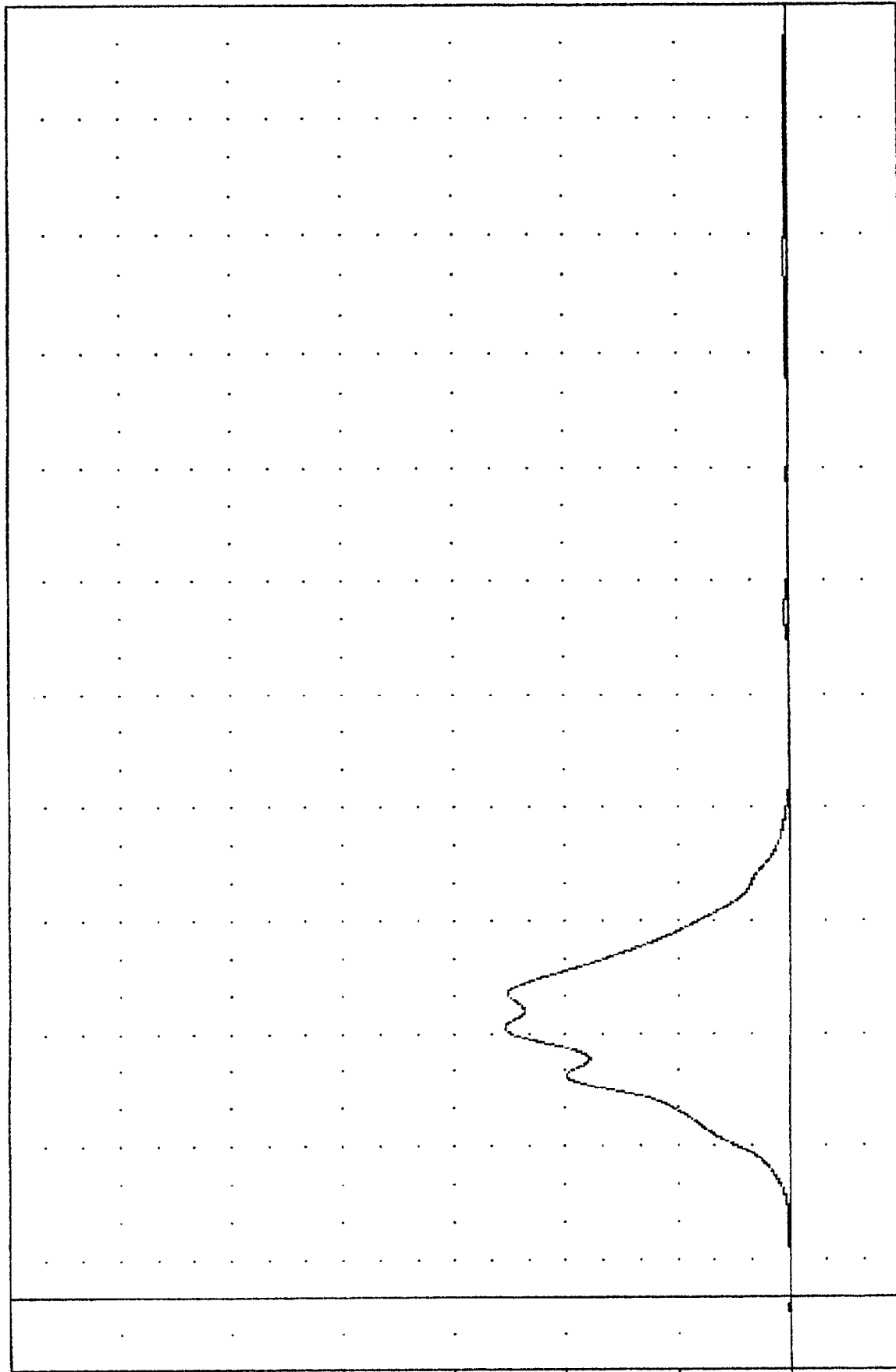


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 TEST OUTBOARD FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 SHBF2

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -17.488 139.50, 7646.21 e 71.38

FORCE (N) (X10³)
 -30.00 0.00 30.00 60.00 90.00 120.00 150.00 180.00 210.00

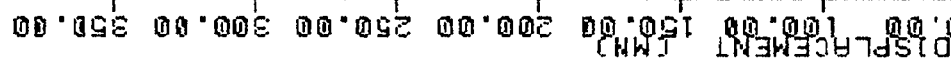


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SHOULDER BELT FORCE

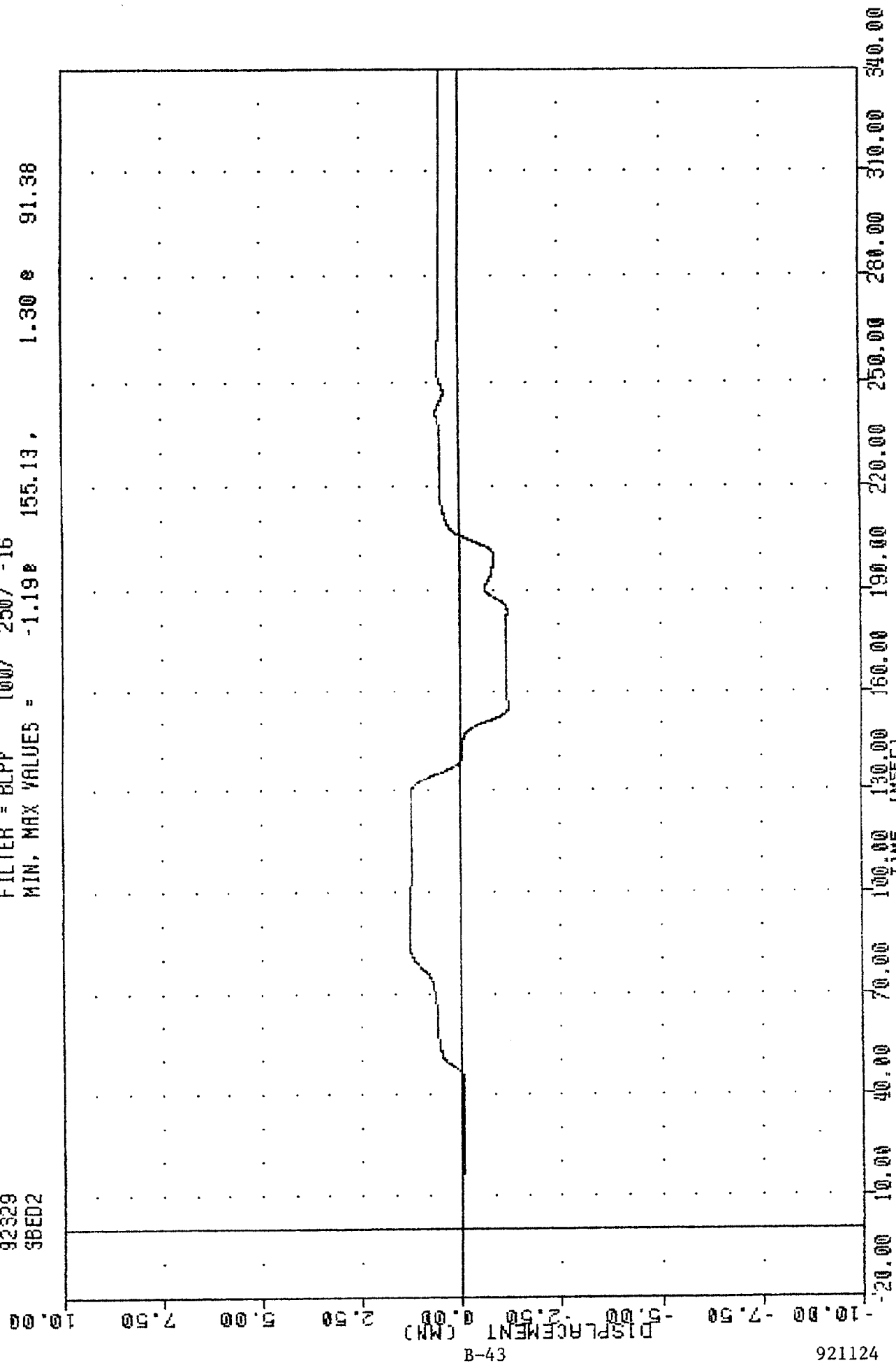
79C 921124

FILTER = 5LPP 100/250/ -16



TRC
 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 3BED2

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1.19e 155.13, 1.30 e 91.38

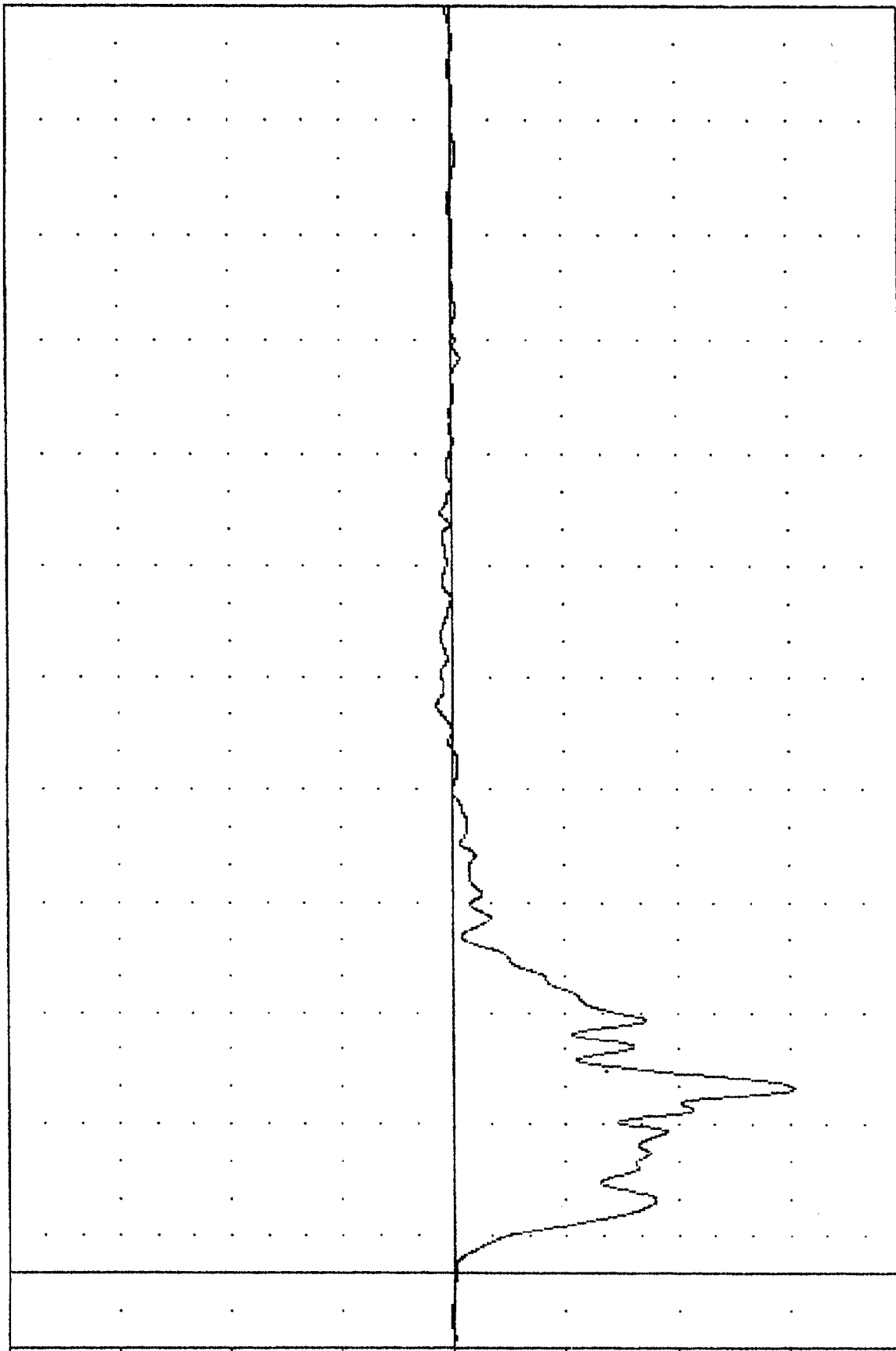


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SEAT BELT EXTENSION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 TLRXG1

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -45.61 49.50 , 2.21 152.38

ACCELERATION (G)
 60.00
 45.00
 30.00
 15.00
 0.00
 -15.00
 -30.00
 -45.00
 -60.00



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921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

TEST NO. 921124

TEST DATE 9/24/93

TEST TIME 10:00 AM

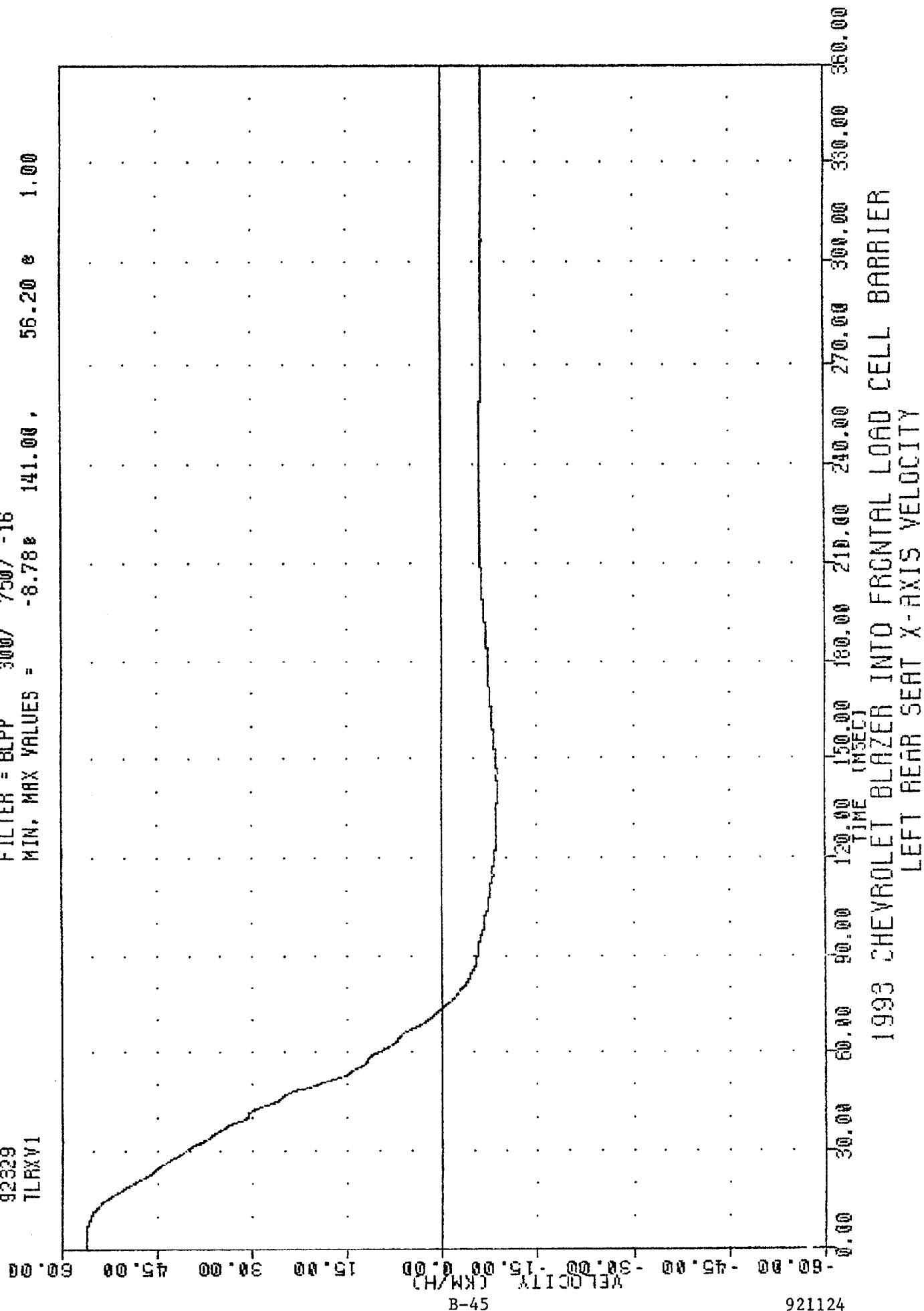
TEST LOCATION

TEST OPERATOR

TEST ENGINEER

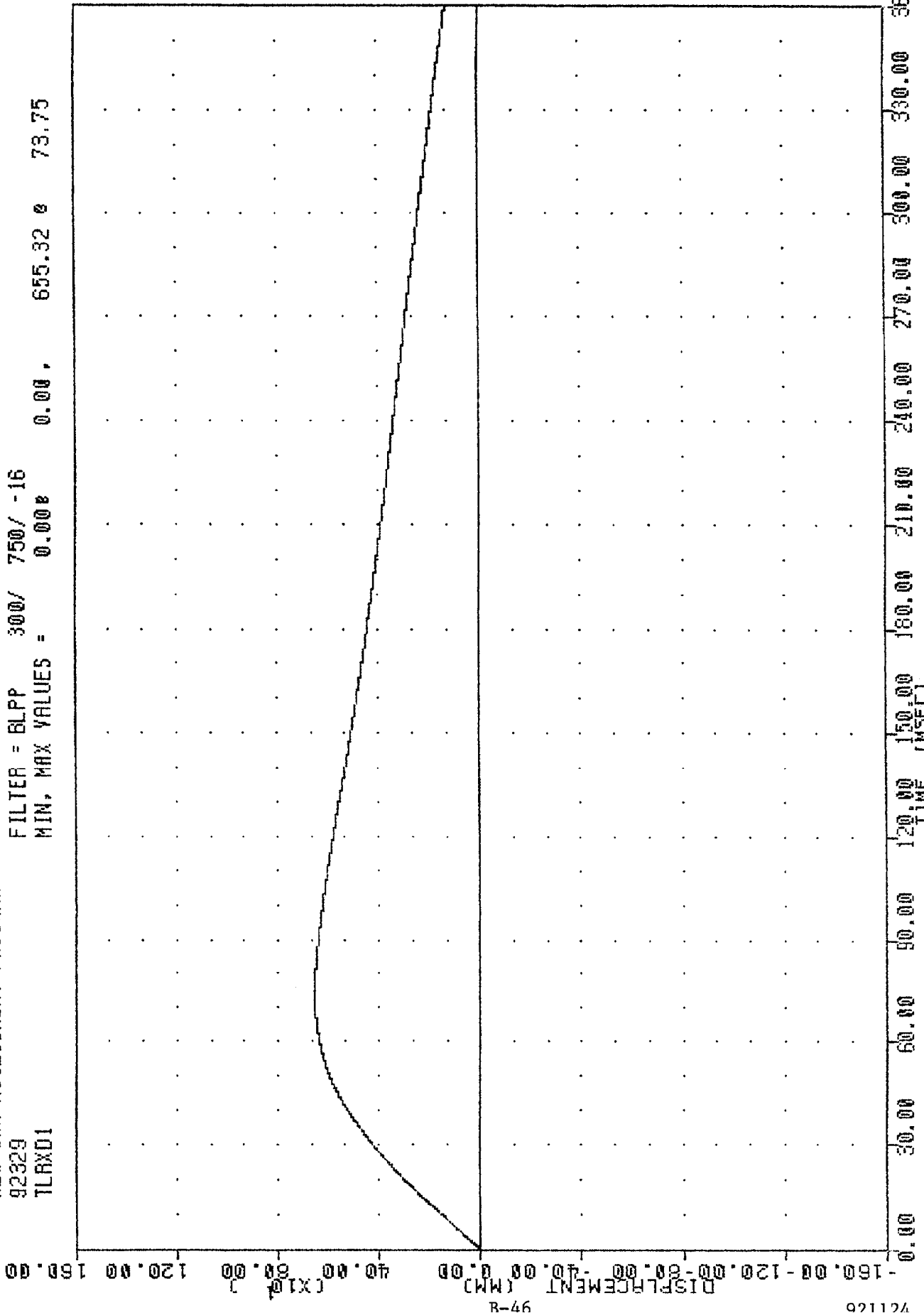
TRC
NEW CAR ASSESSMENT PROGRAM
92329
TLRXV1

FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -8.78% 141.00, 56.20 & 1.00



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 TLBX01

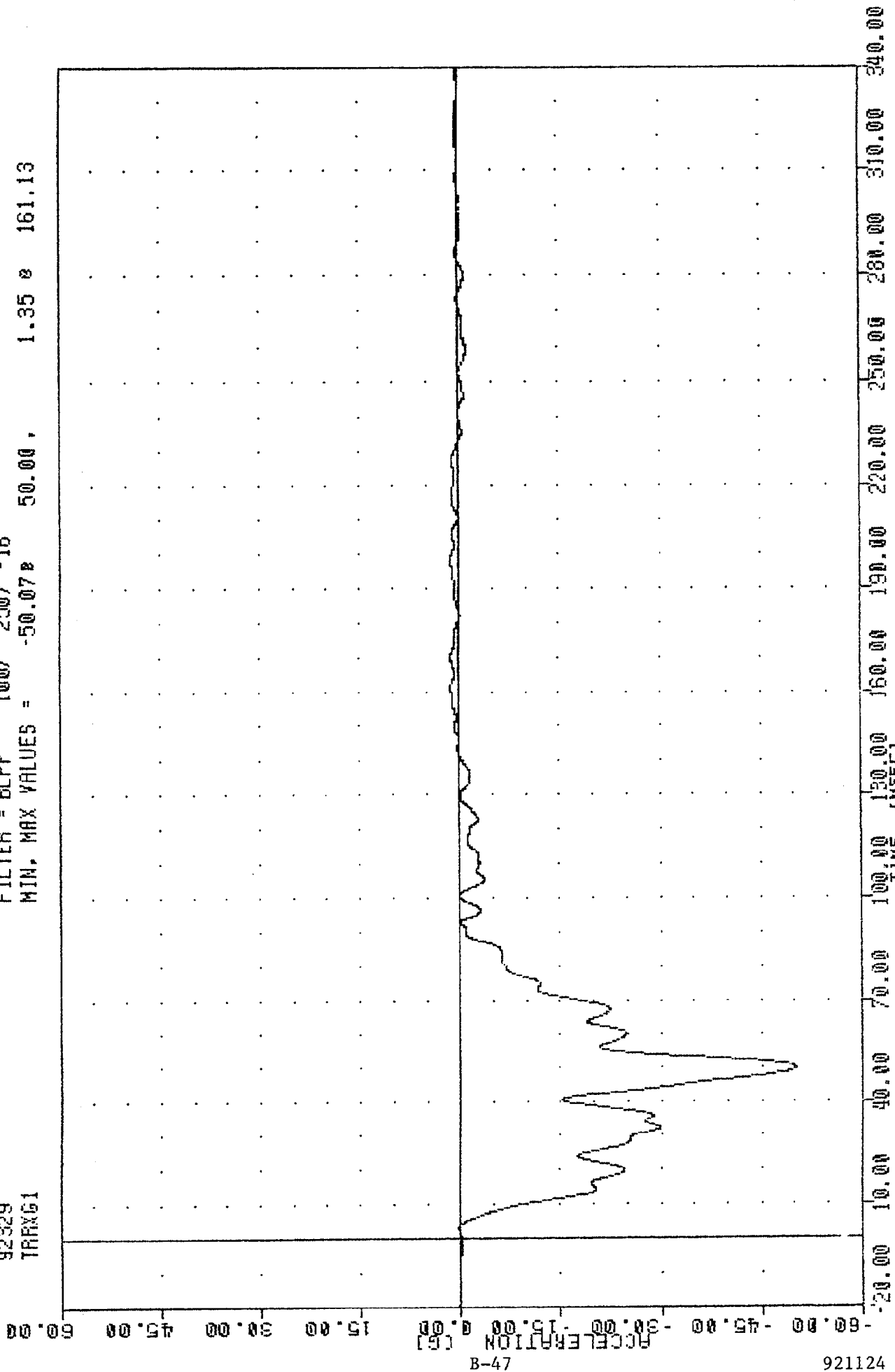
FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 0.000 0.00 , 655.32 0 73.75



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LEFT REAR SEAT X-AXIS DISPLACEMENT

TRC , 921124
NEW CAR ASSESSMENT PROGRAM
92329
TRRXG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -50.07 50.00, 1.35 161.13



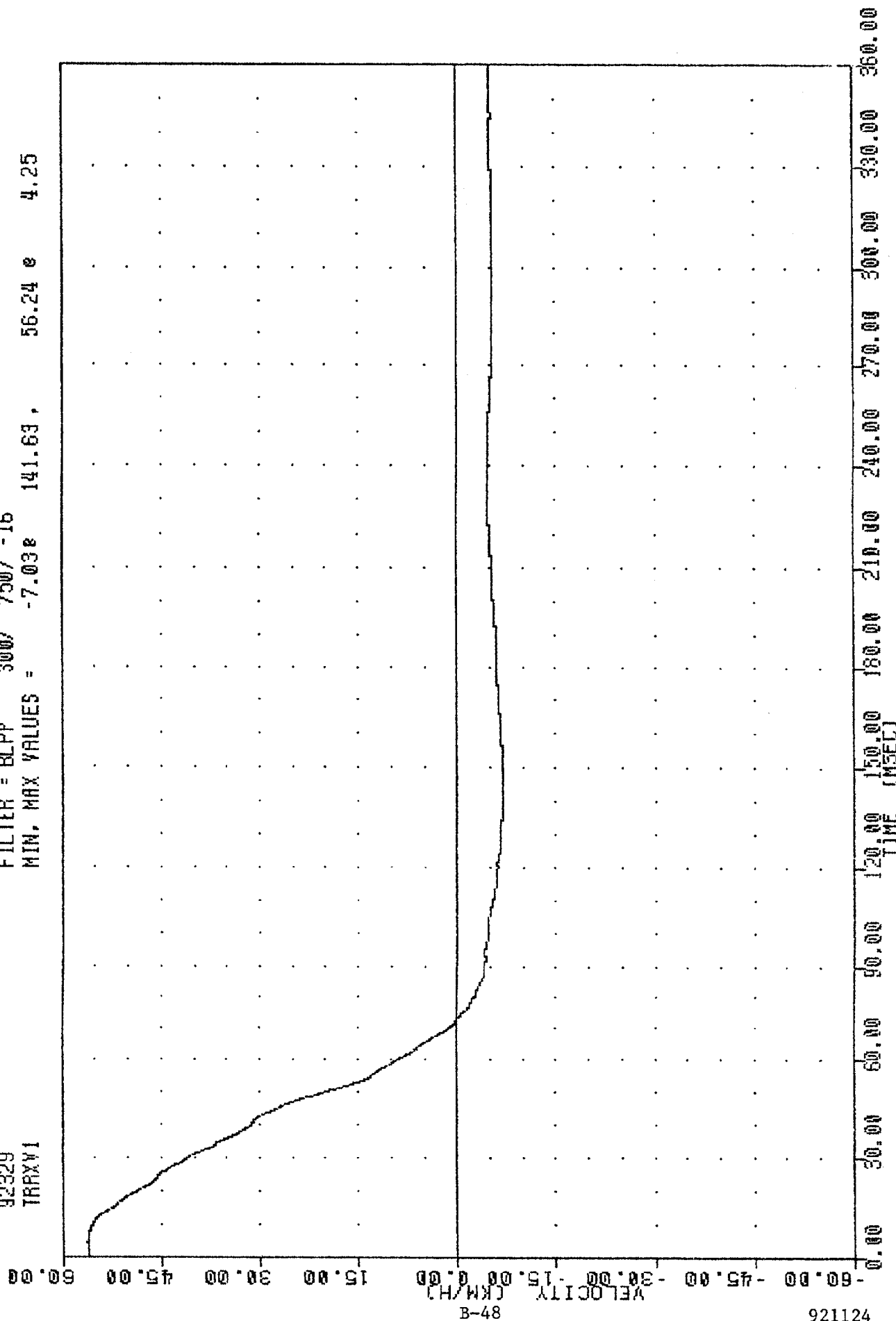
B-47

921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 TRAXY1

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -7.03e 141.63, 56.24 e 4.25



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

FLIGHT RECD SECT X AXIS VELOCITY

TRC 921124

NEW CAR ASSESSMENT PROGRAM

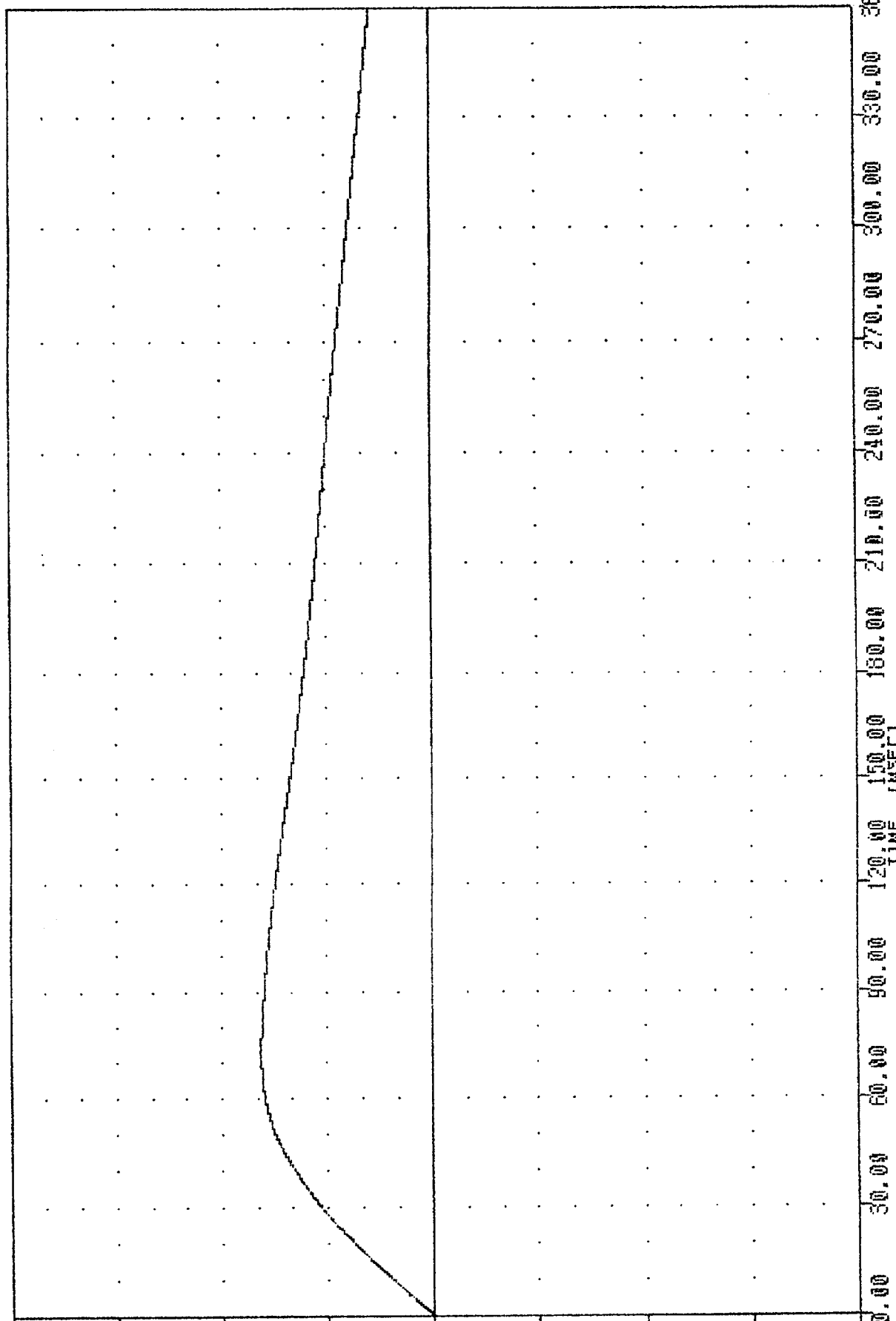
92329

TRAXD1

FILTER = BLPP 300/ 750/ -16

MIN, MAX VALUES = 0.00e 0.00 , 652.24 s 73.00

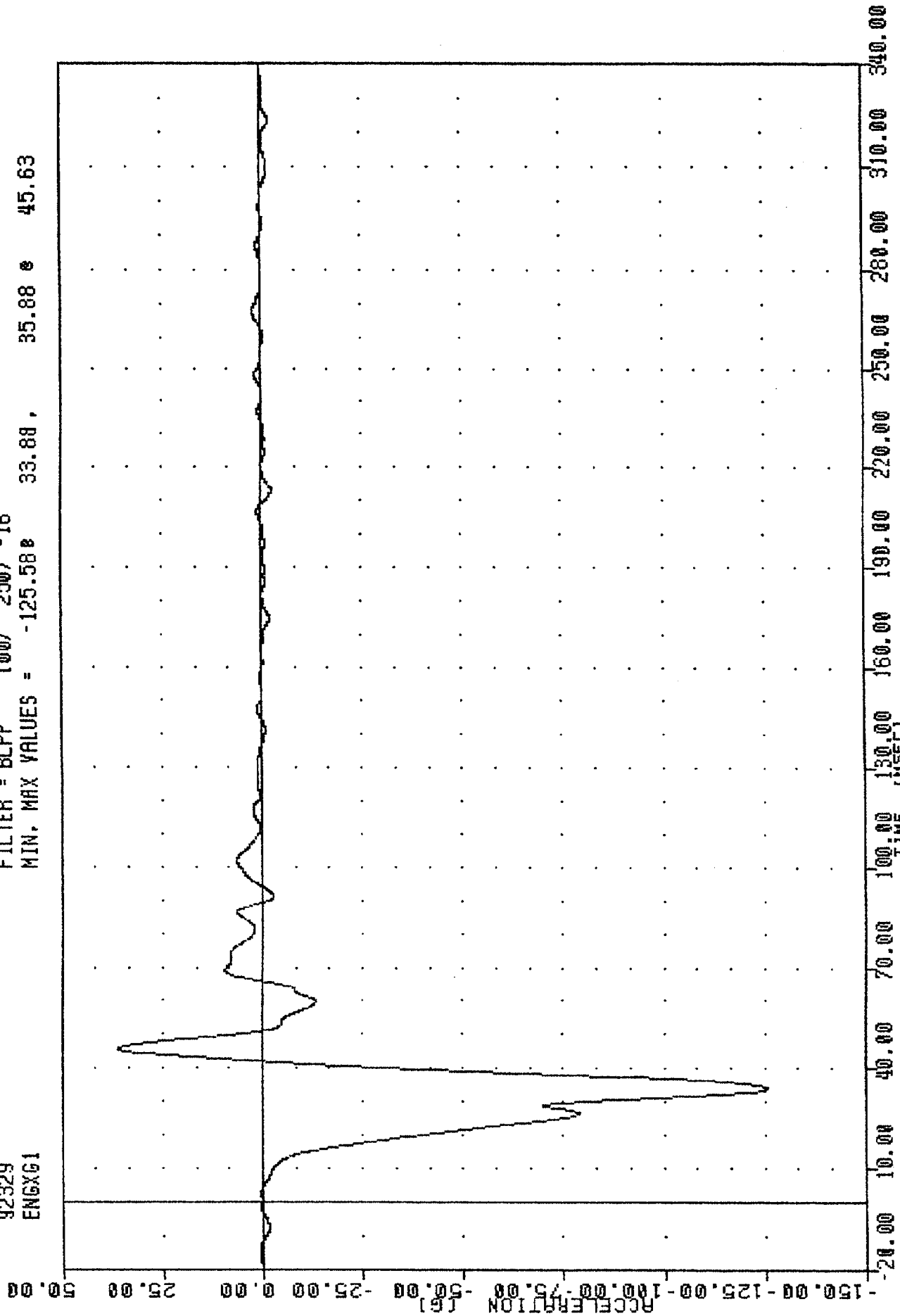
DISPLACEMENT (MM) (X10³)



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS DISPLACEMENT

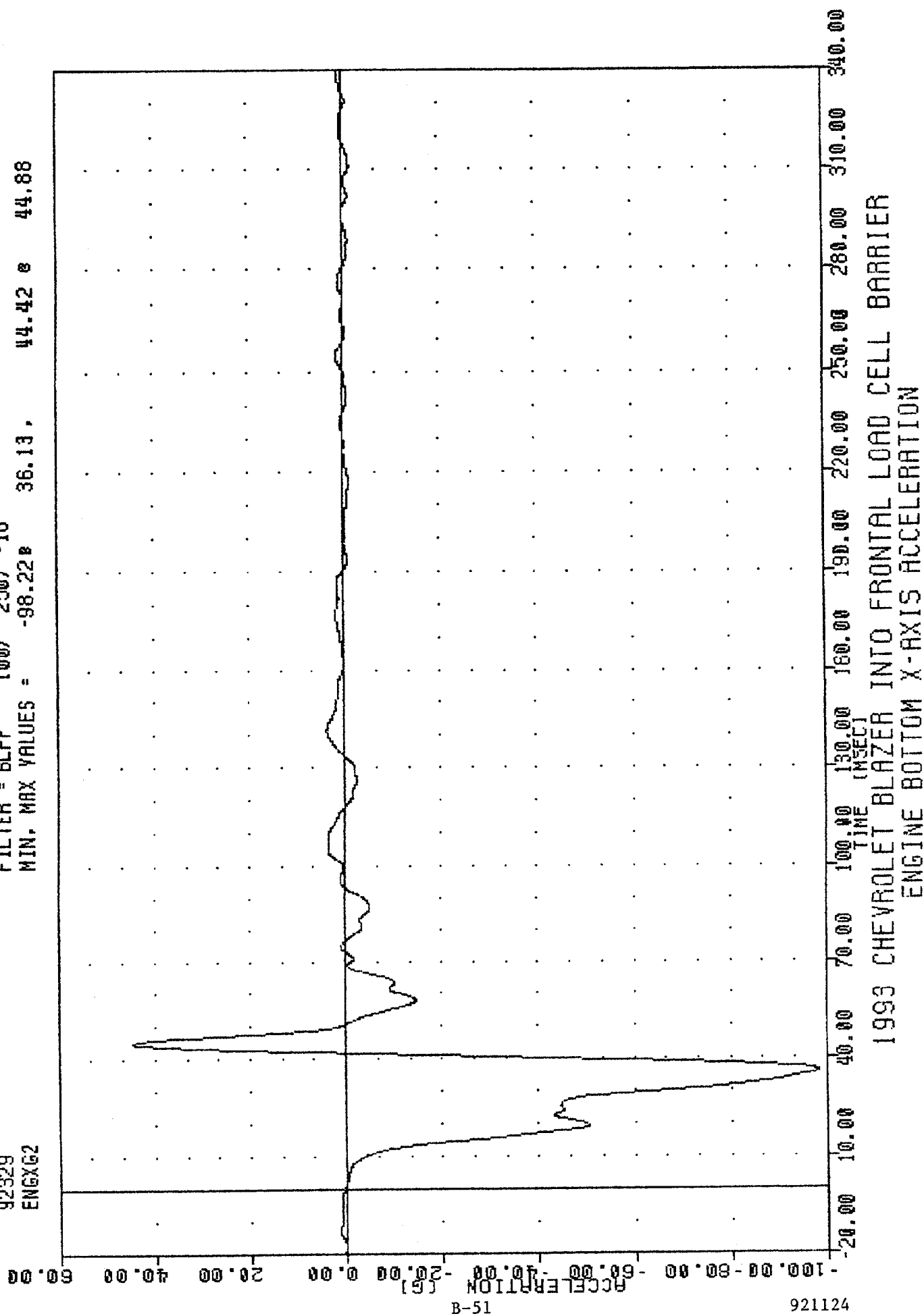
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 ENGXC1

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -125.58 33.88 35.88 45.63



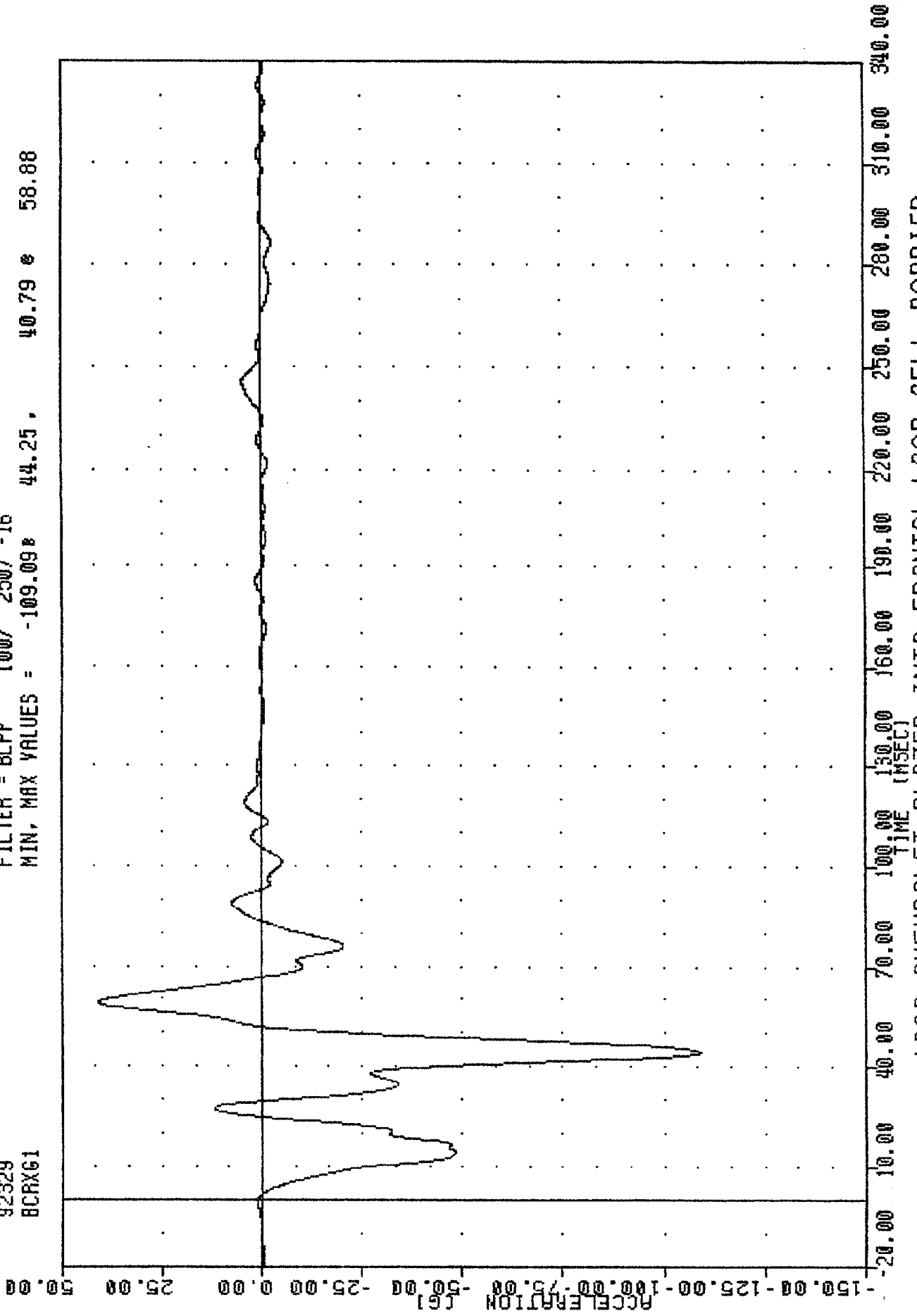
TRC , 921124
NEW CAR ASSESSMENT PROGRAM
92329
ENGXG2

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -98.22 44.42 44.88



TRC
NEW CAR ASSESSMENT PROGRAM
92329
BCRX61

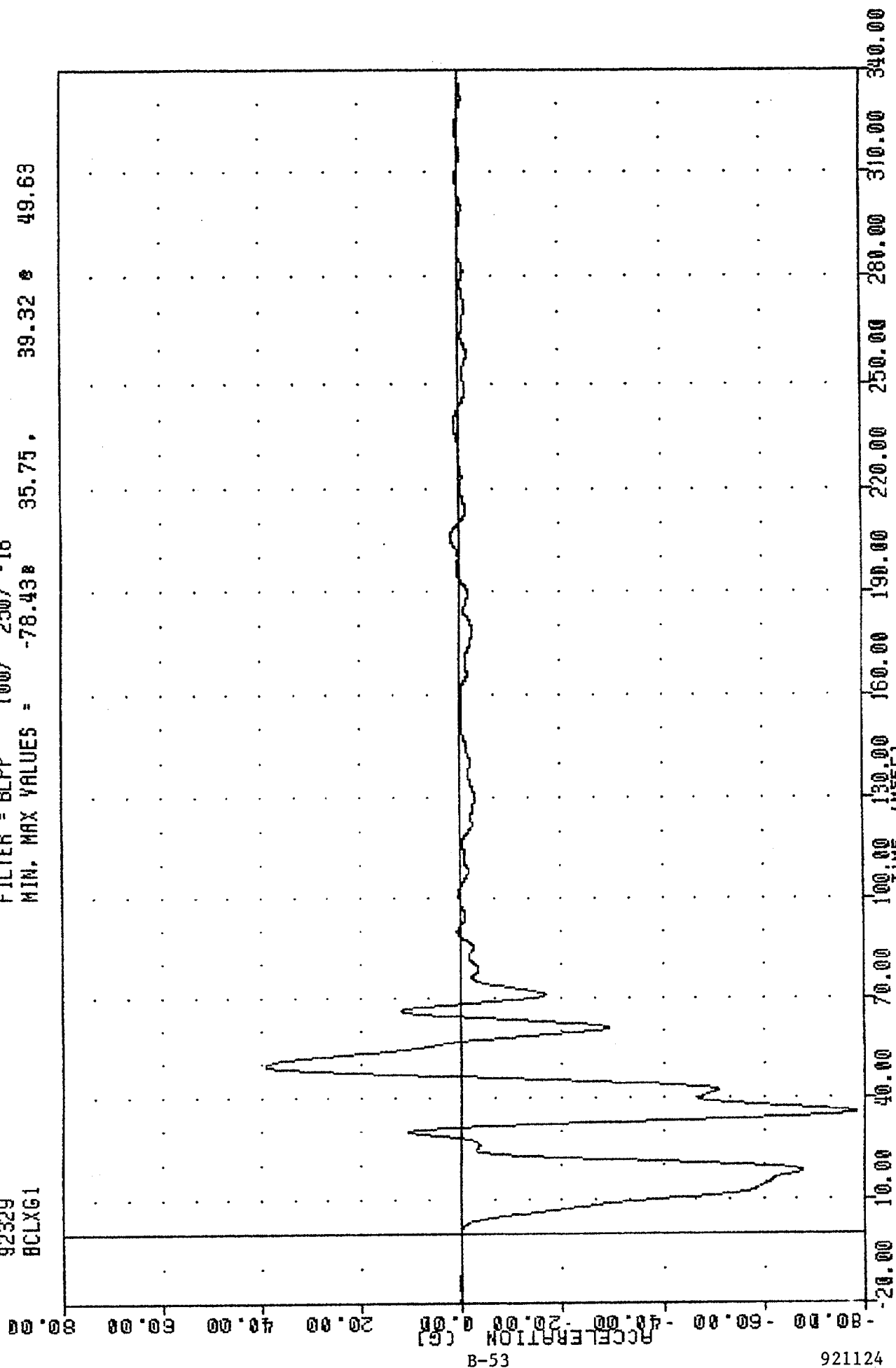
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -109.09 44.25 40.79 58.88



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
HIGH-BRAKE CHEVROLET X-100'S ACCELERATION

TRC , 921124
NEW CAR ASSESSMENT PROGRAM
92329
BCLXG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -78.43 35.75 39.32 49.63



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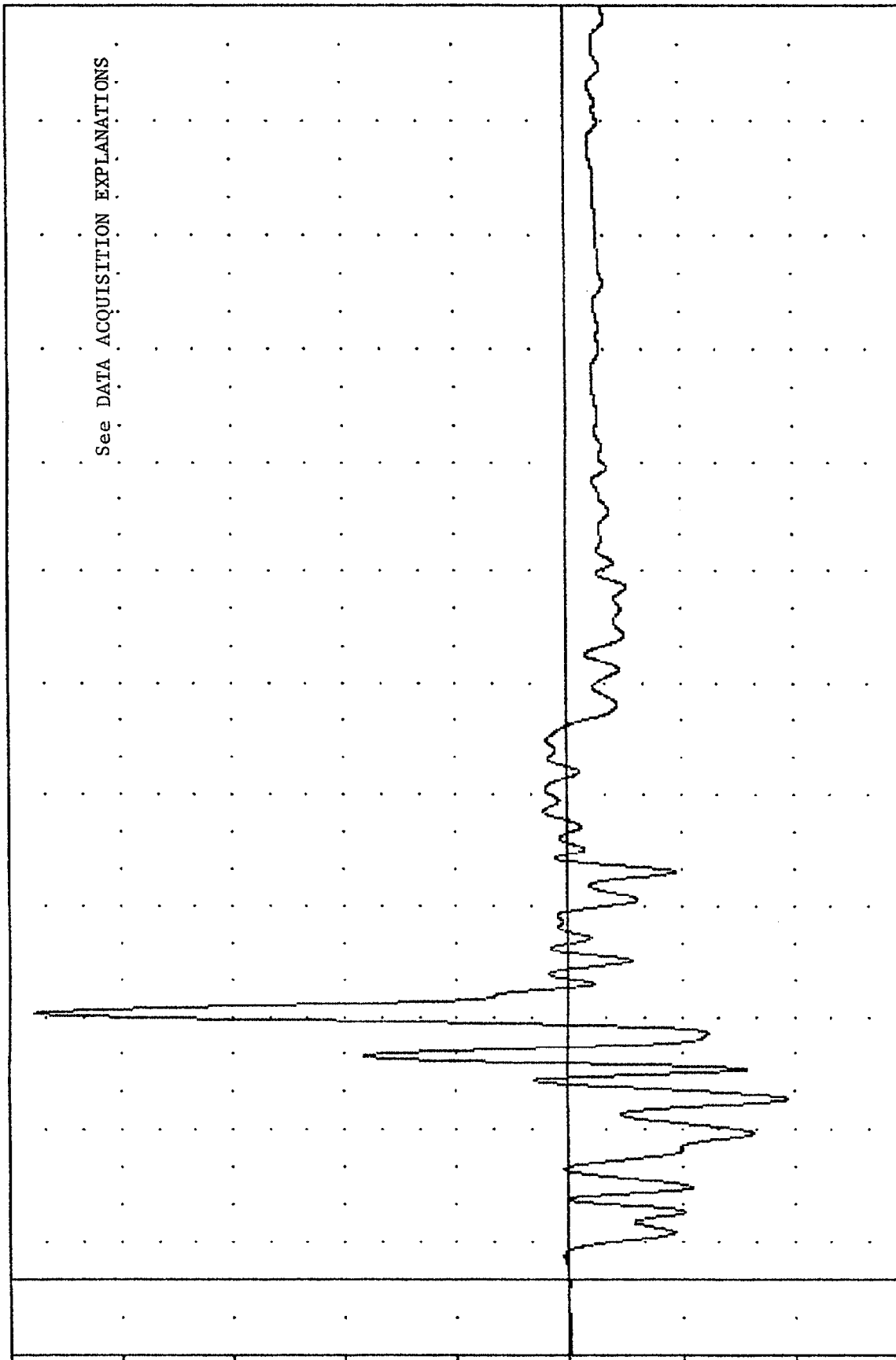
921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 OPCXG1

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -58.15e 48.13, 143.58 e 71.00

ACCELERATION (G)



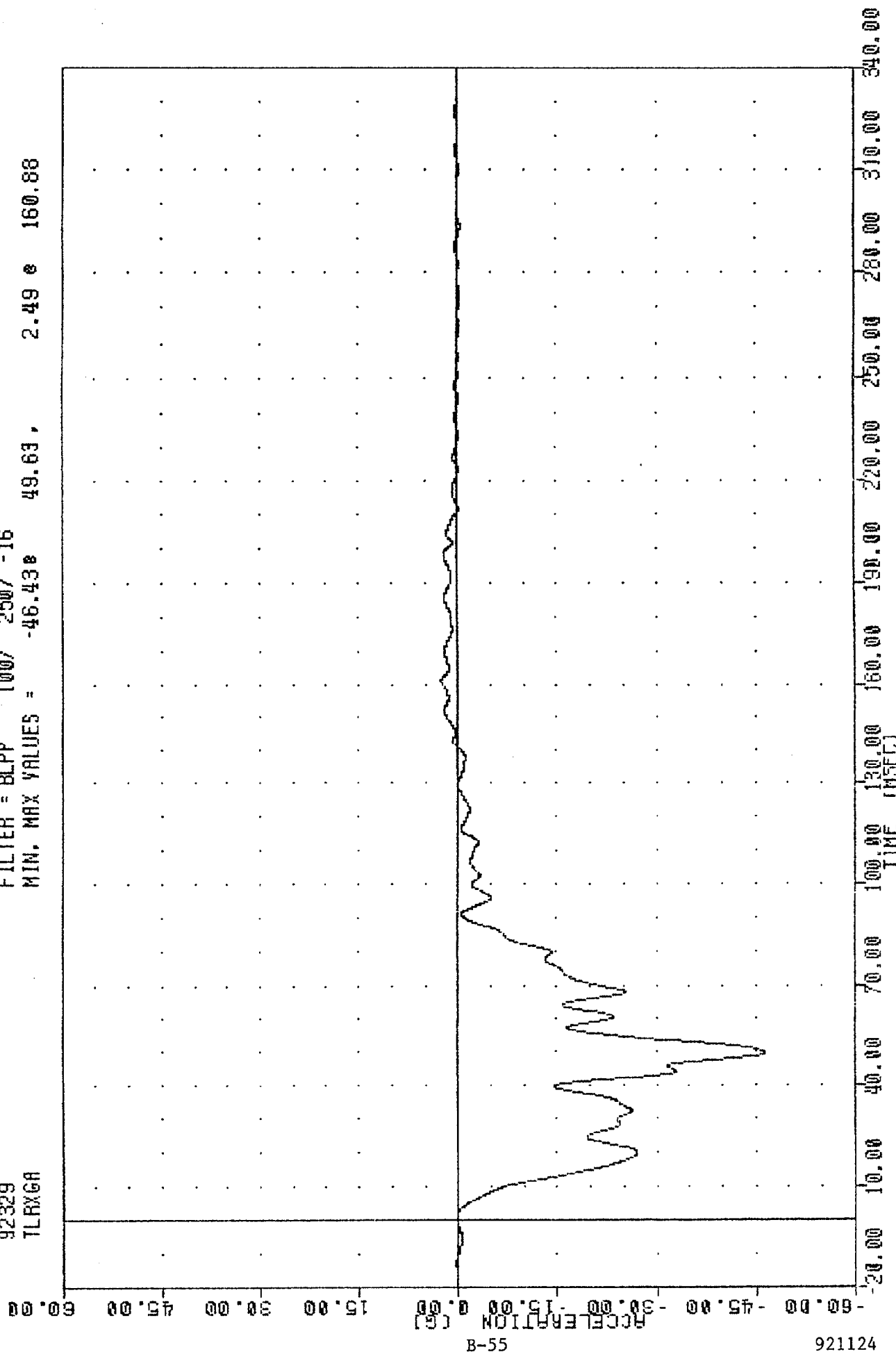
B-54

921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 INSTRUMENT AND CENTER MAXIMUM ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 TLRXGA

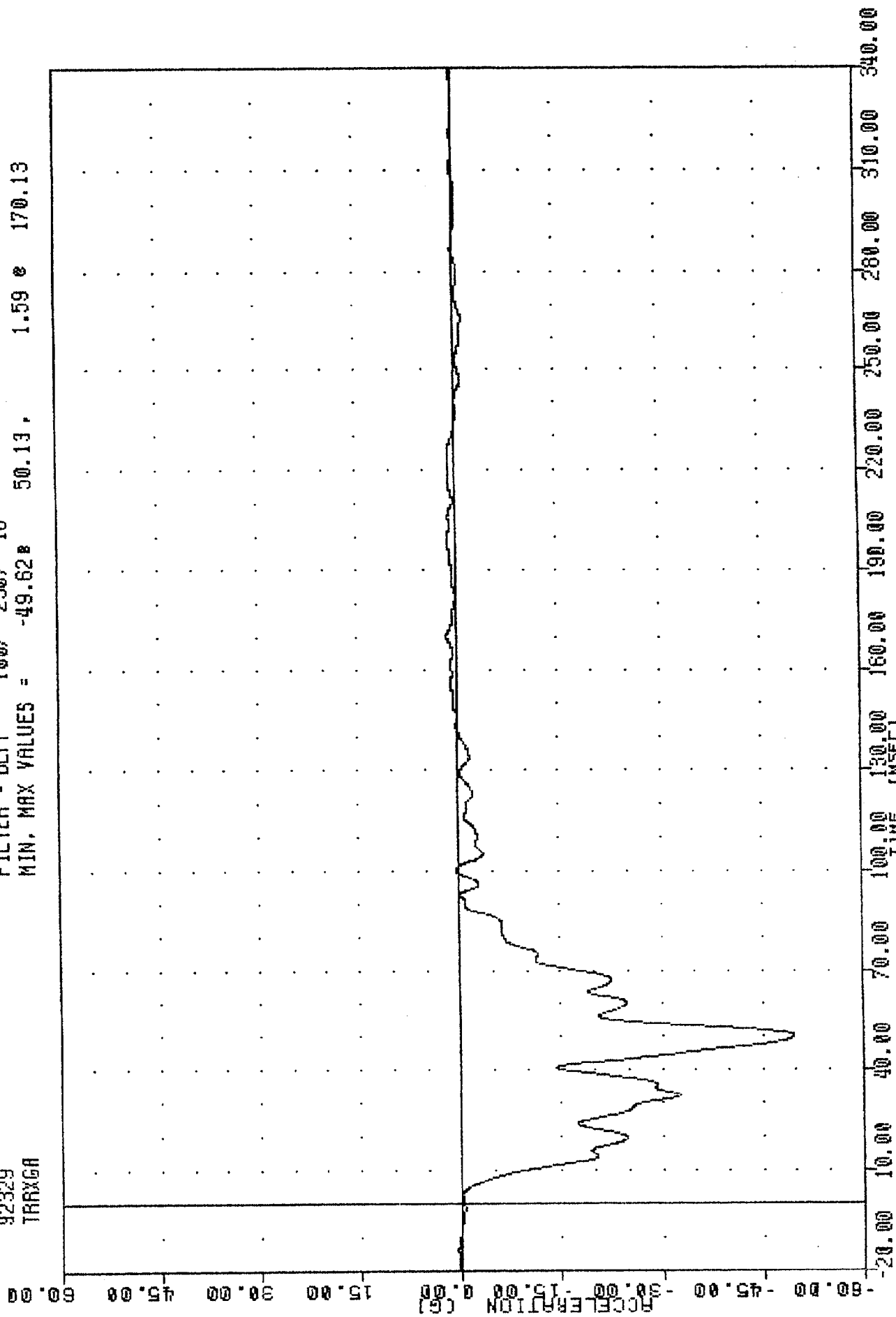
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -46.43 49.63, 2.49 160.88



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LEFT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 TRXGA

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -49.62 50.13, 1.59 e 170.13



B-56

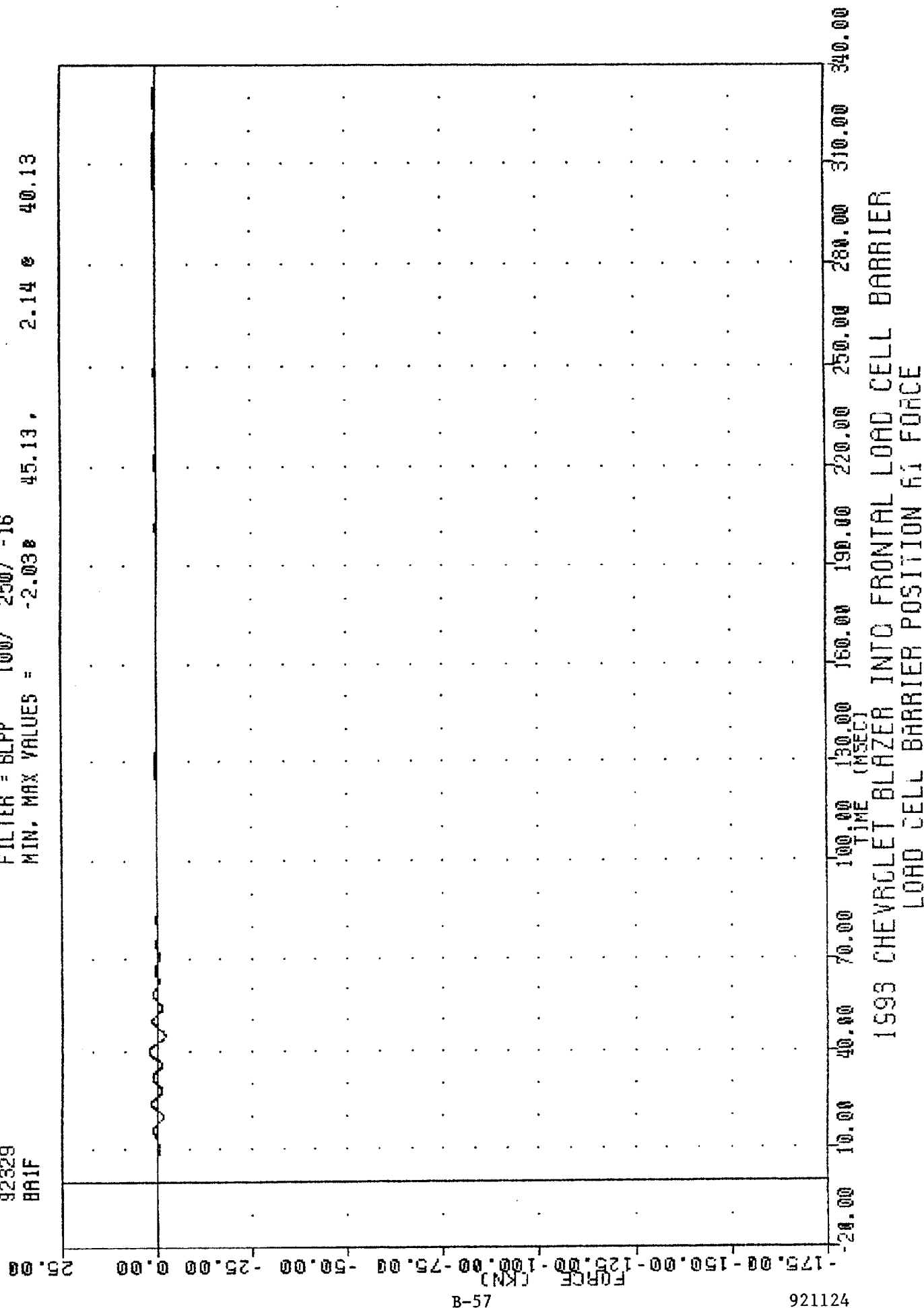
921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT MEDIUM - RACEL

TRC
 92329
 BR1F
 NEW CAR ASSESSMENT PROGRAM

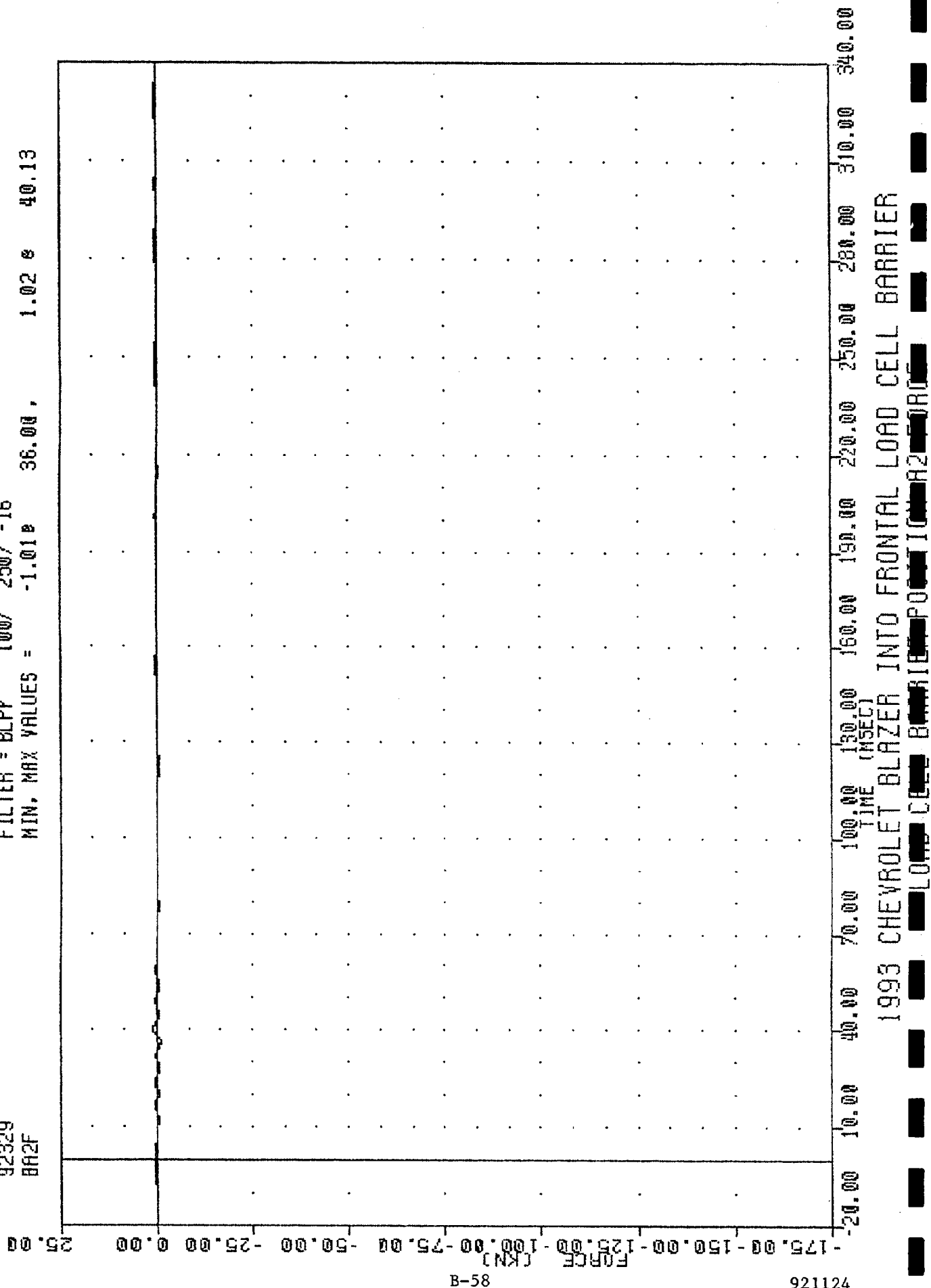
, 921124

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -2.03e 45.13, 2.14 e 40.13



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BR2F

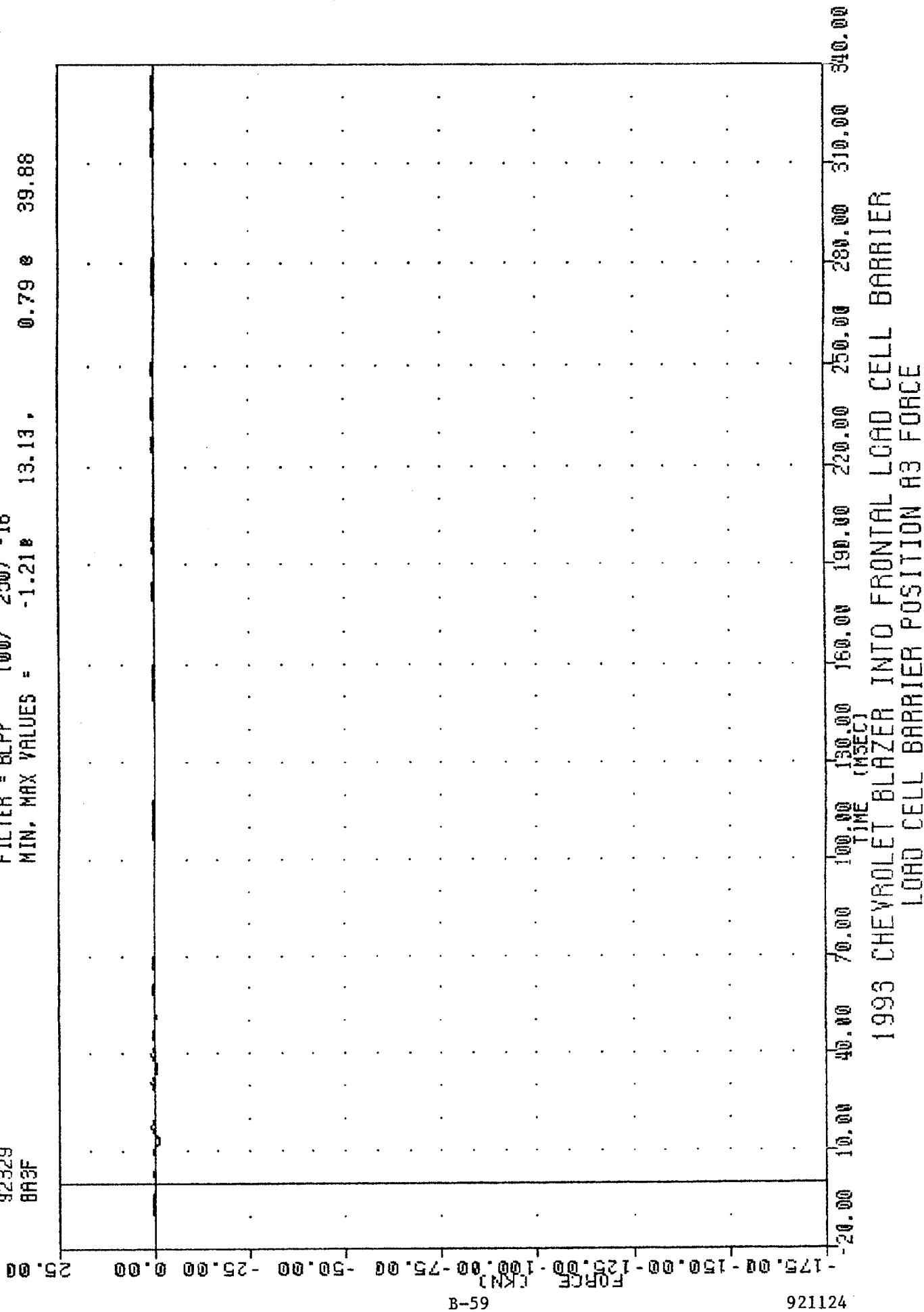
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -1.01e 36.00, 1.02 e 40.13



TRC
NEW CAR ASSESSMENT PROGRAM
92329
BASF

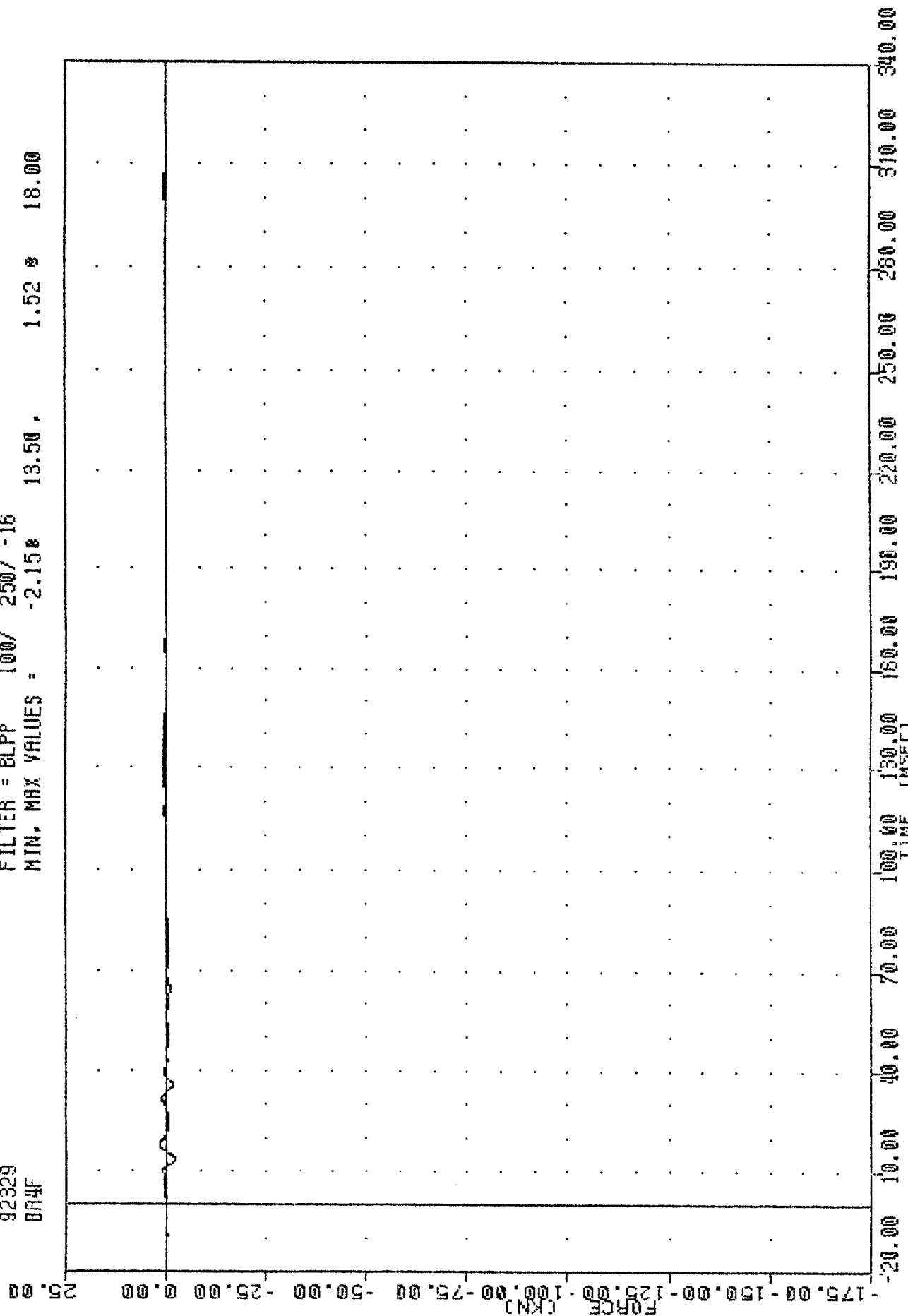
921124

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -1.21e 13.13. 0.79 e 39.88



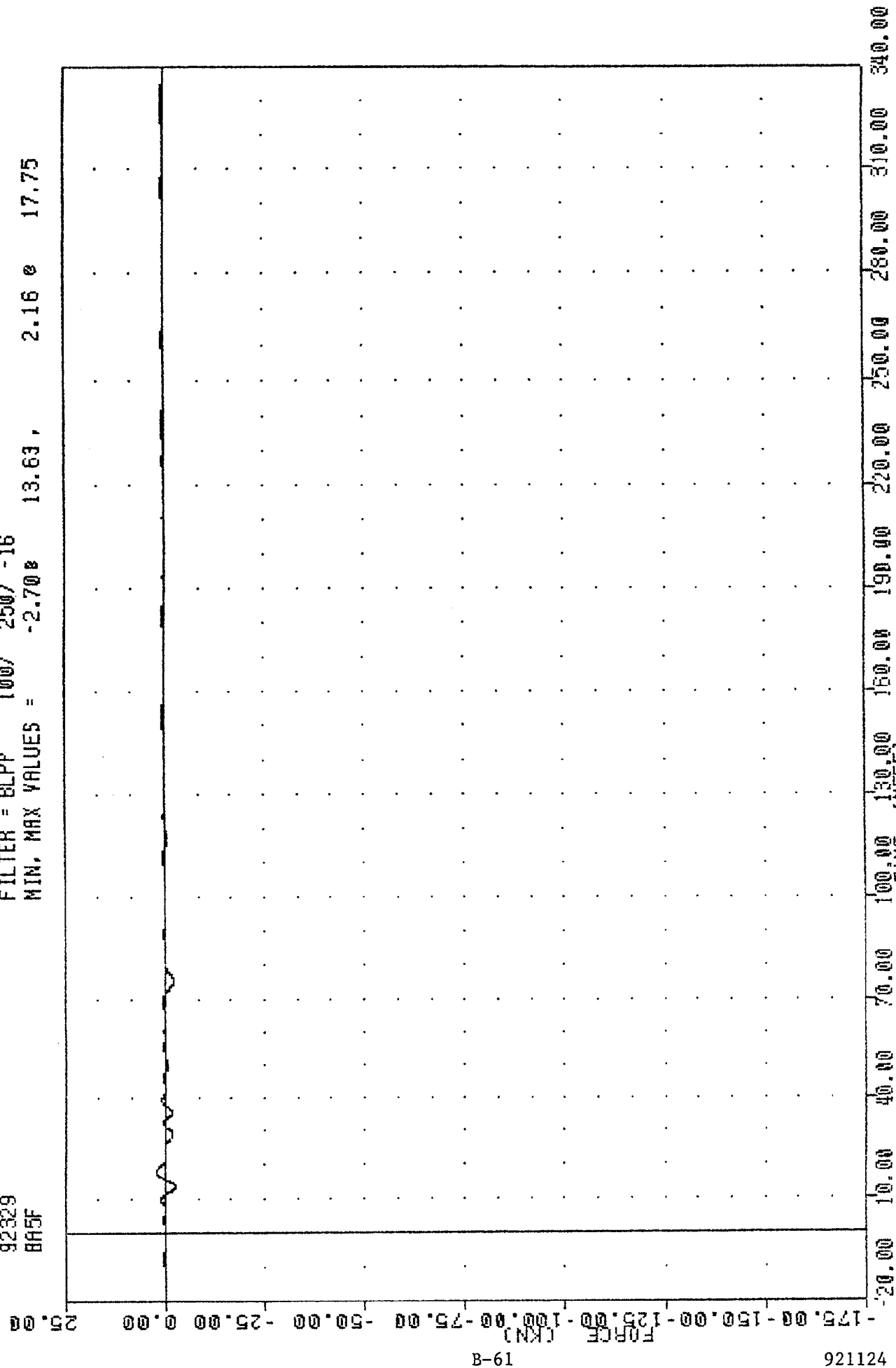
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BR4F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -2.15 13.50 1.52 18.00



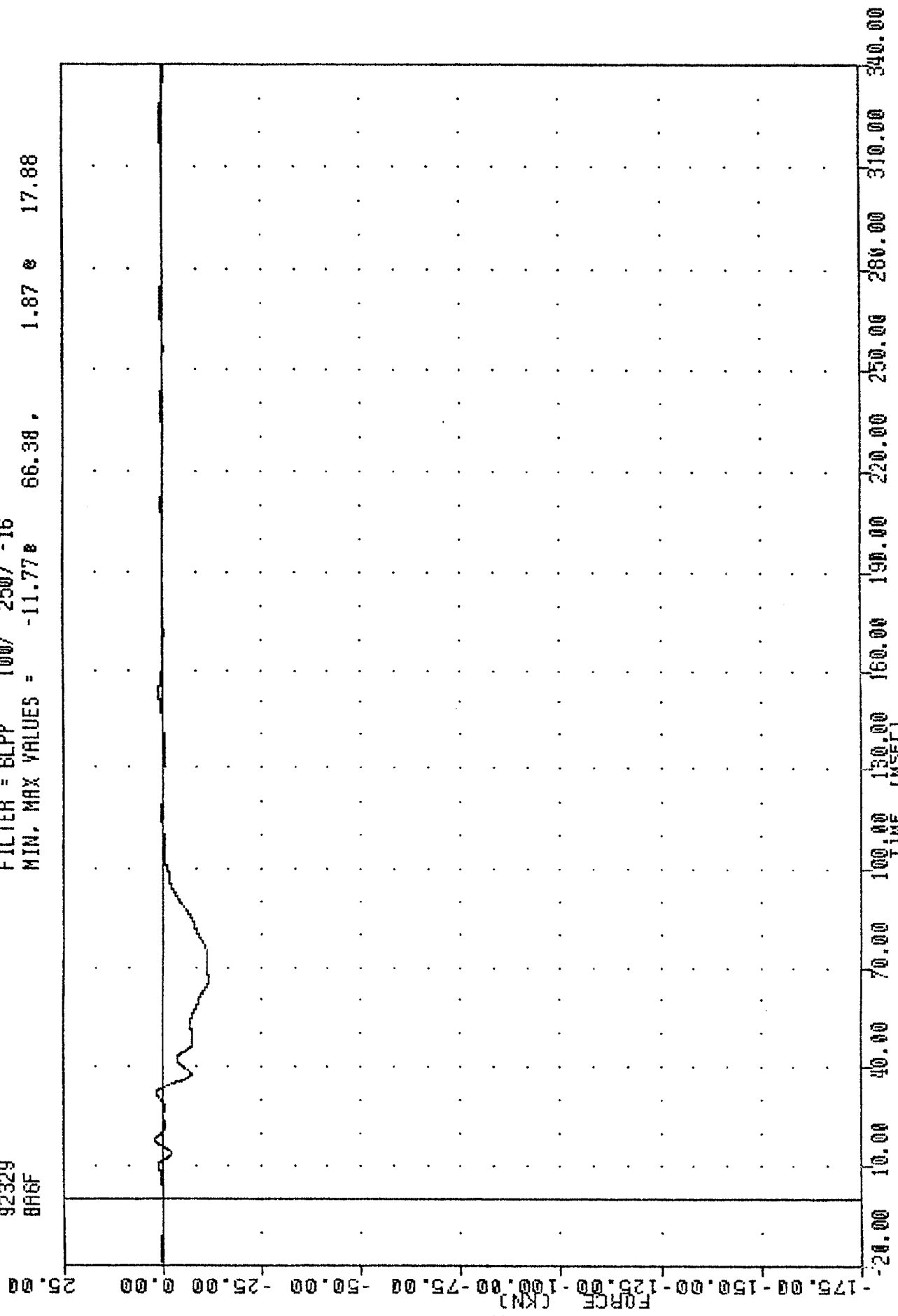
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BASF

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -2.700 13.63 , 2.16 0 17.75



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BAGF

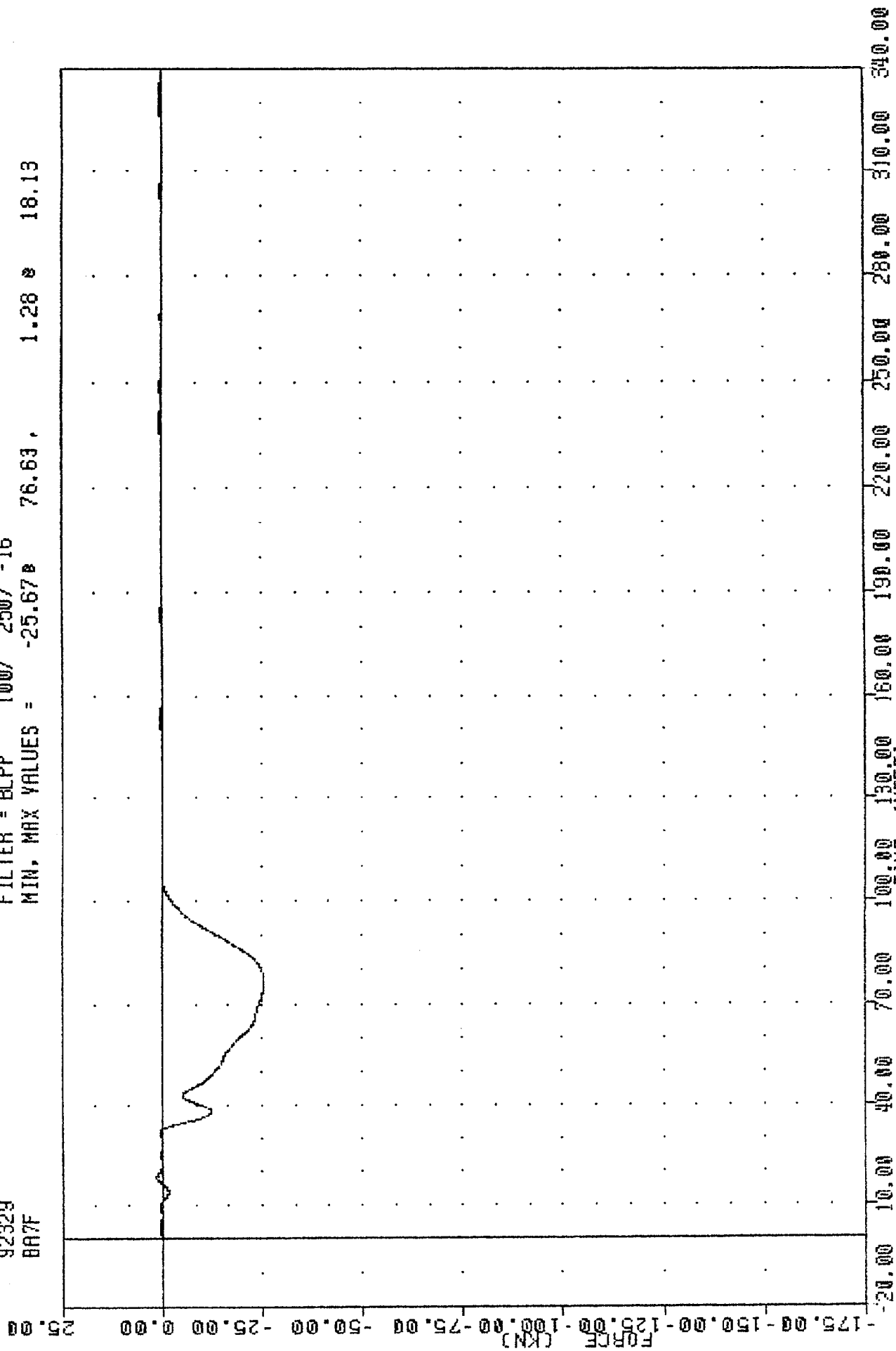
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -11.77 66.38 1.87 17.88



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LONG CELL BARRIER POSITION 10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00 50.00 55.00 60.00 65.00 70.00 75.00 80.00 85.00 90.00 95.00 100.00 105.00 110.00 115.00 120.00 125.00 130.00 135.00 140.00 145.00 150.00 155.00 160.00 165.00 170.00 175.00 180.00 185.00 190.00 195.00 200.00 205.00 210.00 215.00 220.00 225.00 230.00 235.00 240.00 245.00 250.00 255.00 260.00 265.00 270.00 275.00 280.00 285.00 290.00 295.00 300.00 305.00 310.00 315.00 320.00 325.00 330.00 335.00 340.00

TRC
 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BR7F

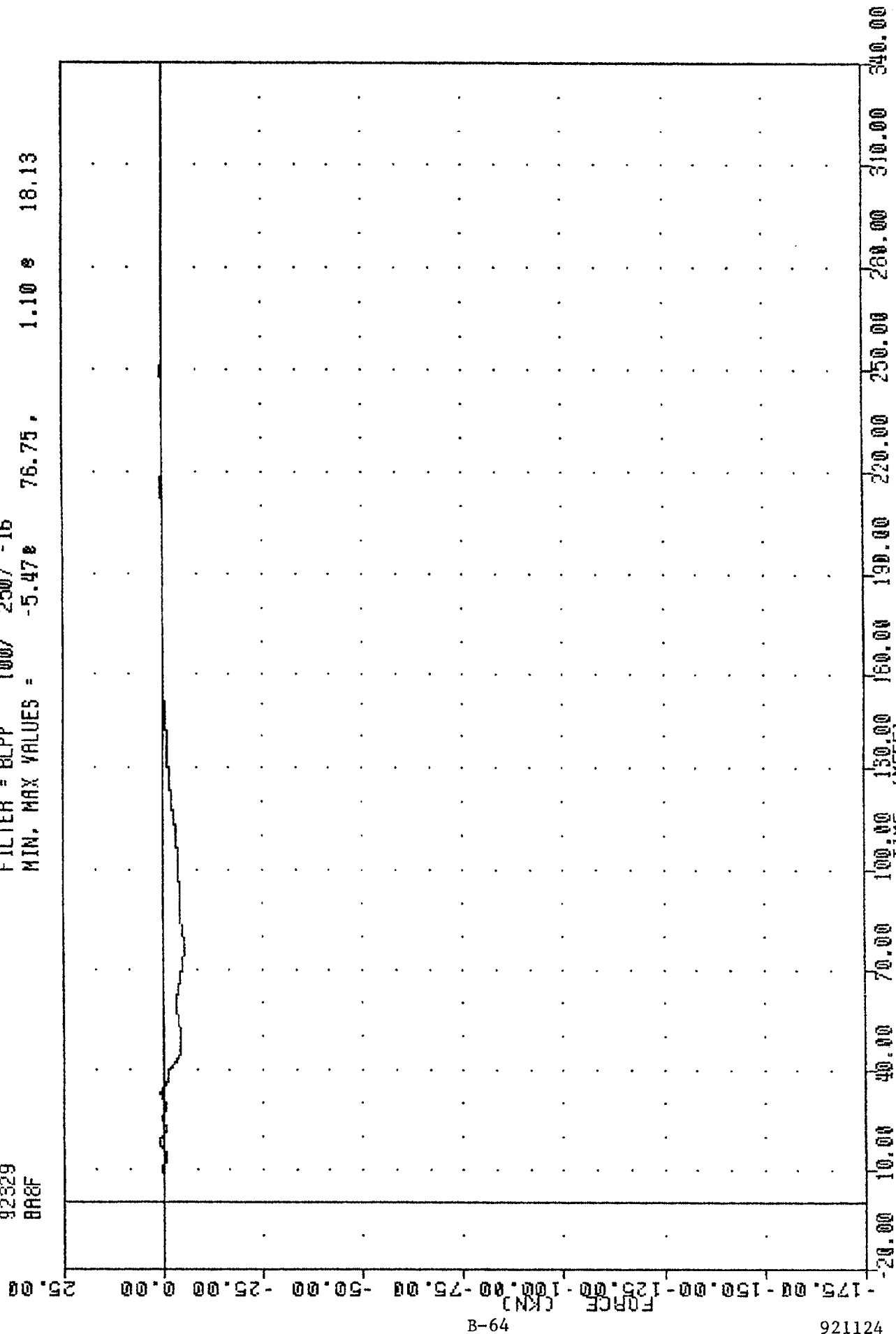
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -25.67 76.63 1.28 18.13



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A7 FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BA8F

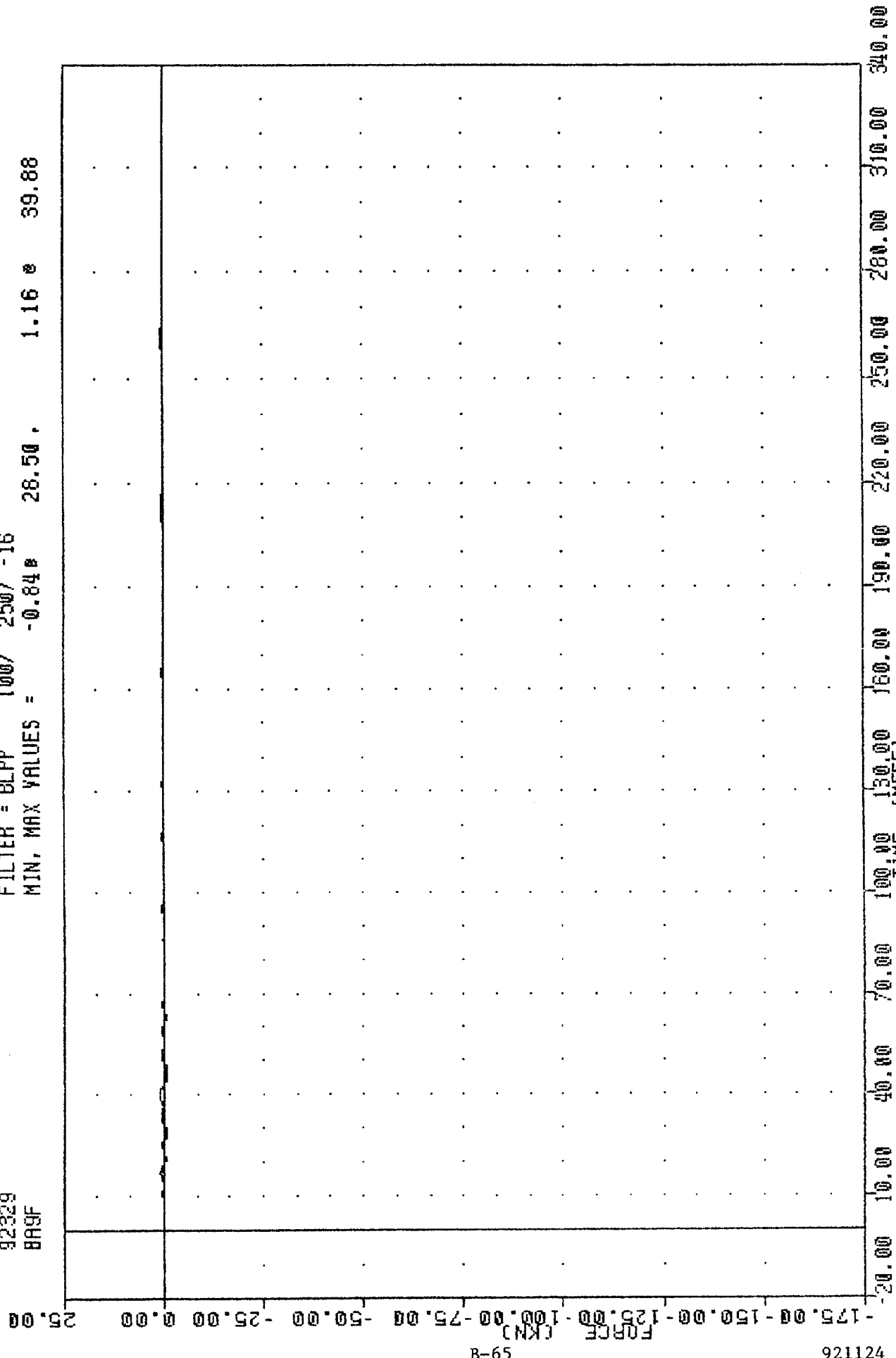
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -5.47 76.75, 1.10 18.13



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER POSITION A850A65

TRC
 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BRGF

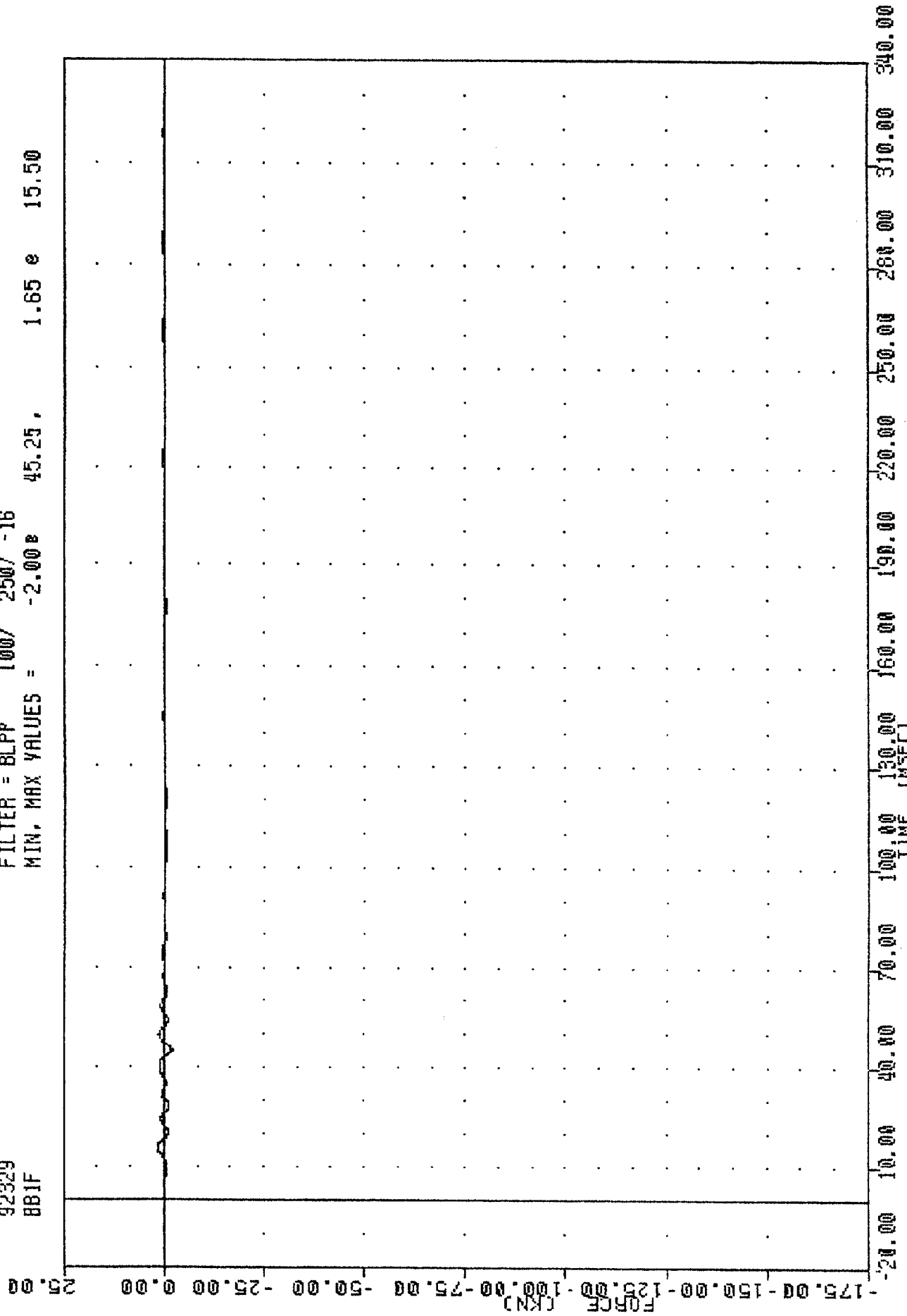
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -0.84 28.50, 1.16 39.88



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION AS FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 881F

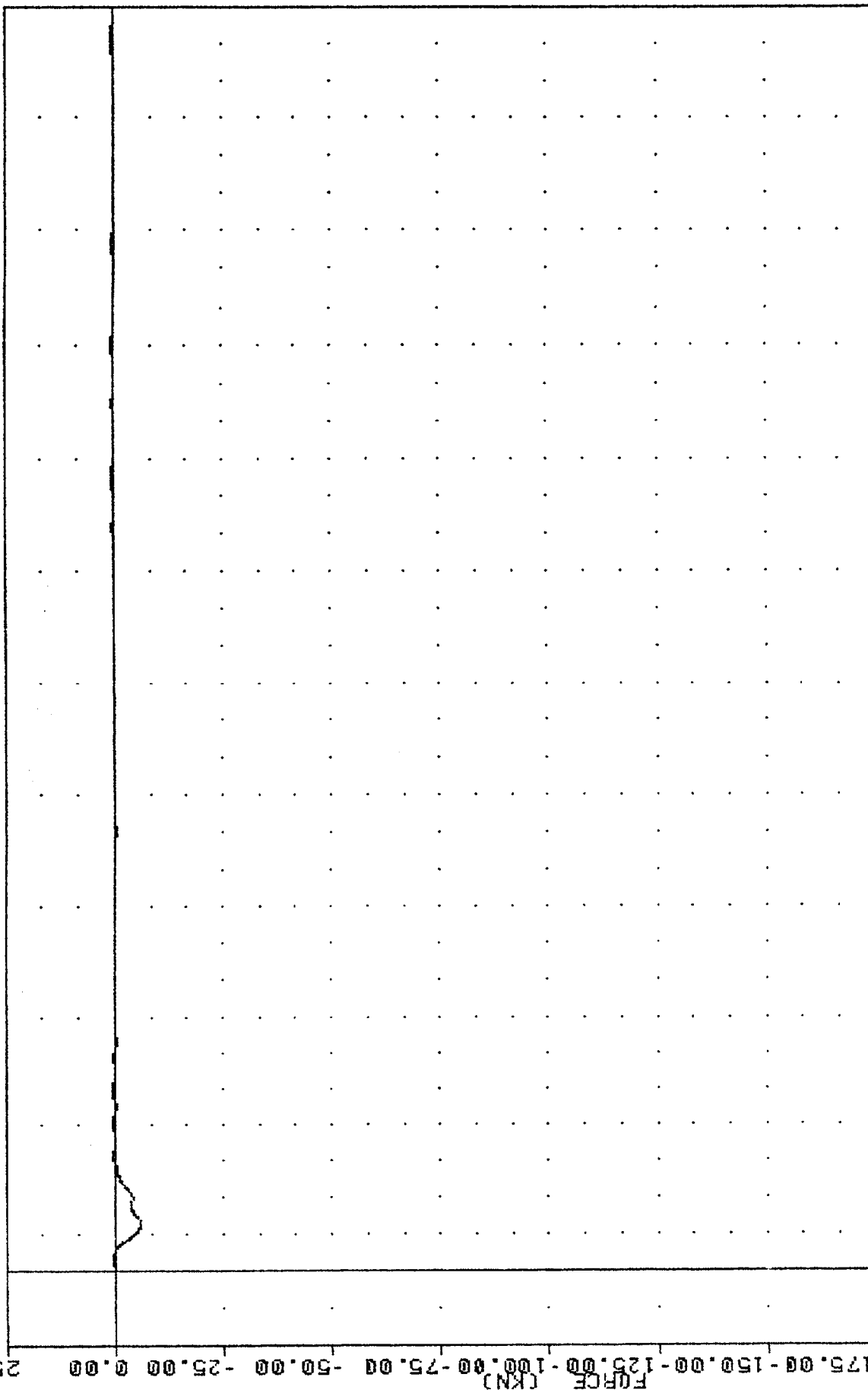
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -2.00 45.25, 1.65 e 15.50



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BB2F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -6.01e 12.75, 0.56 e 31.38

25.00



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921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B2 FORCE

TRC 921124
NEW CAR ASSESSMENT PROGRAM

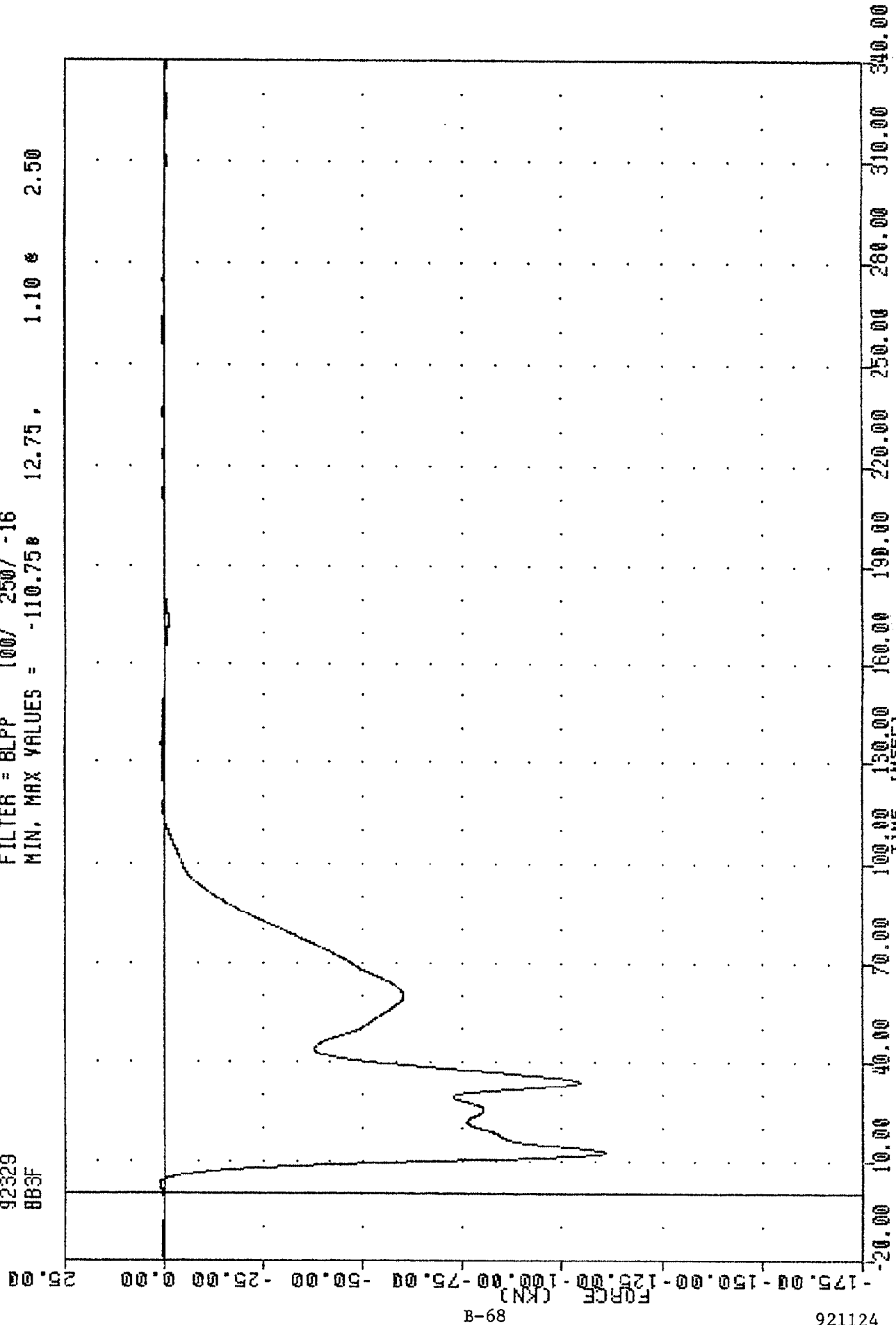
92329

BB3F

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -110.75 12.75

1.10 2.50

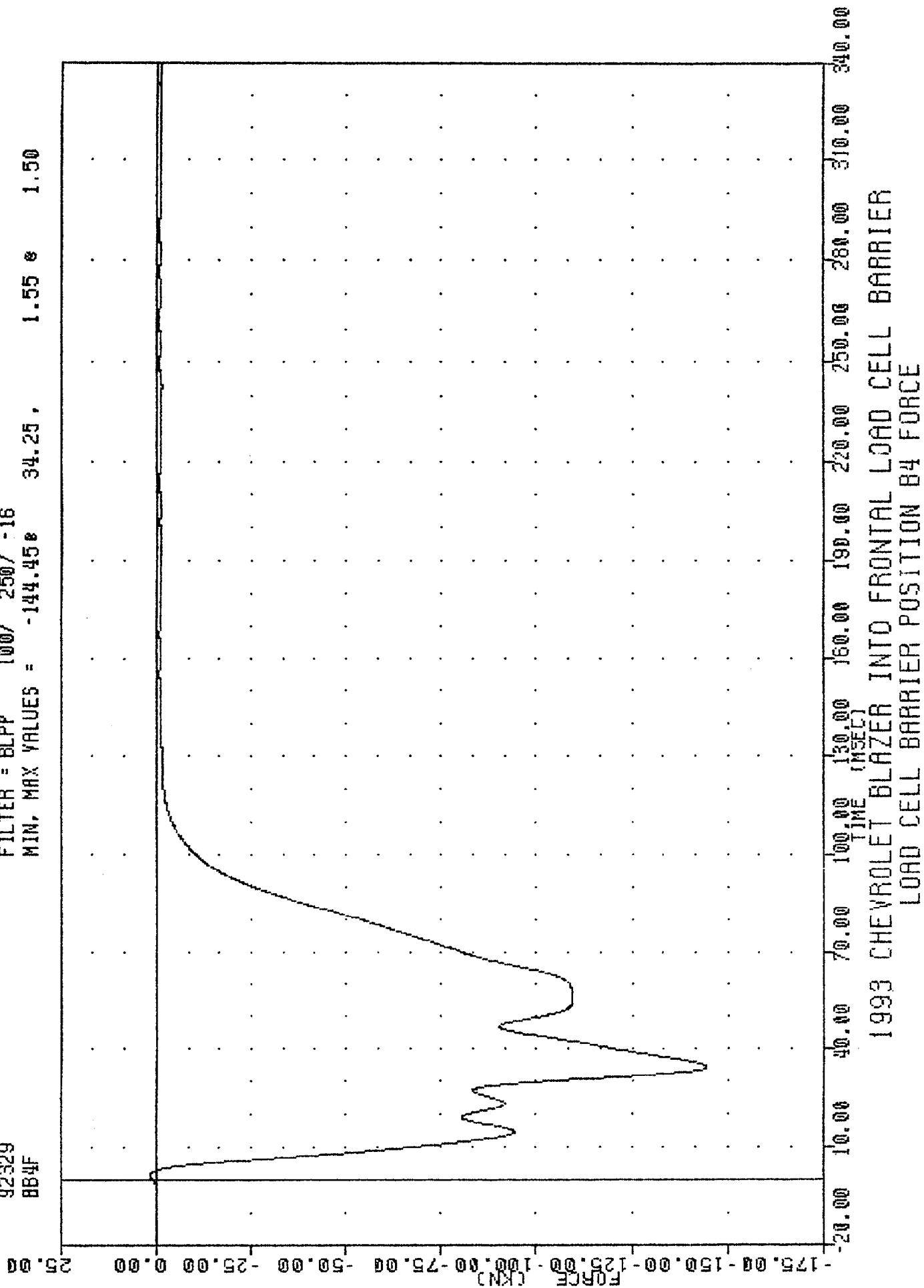


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

LOAD CELL BARRIER POSITION BB3F DRG

TRC 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BB4F

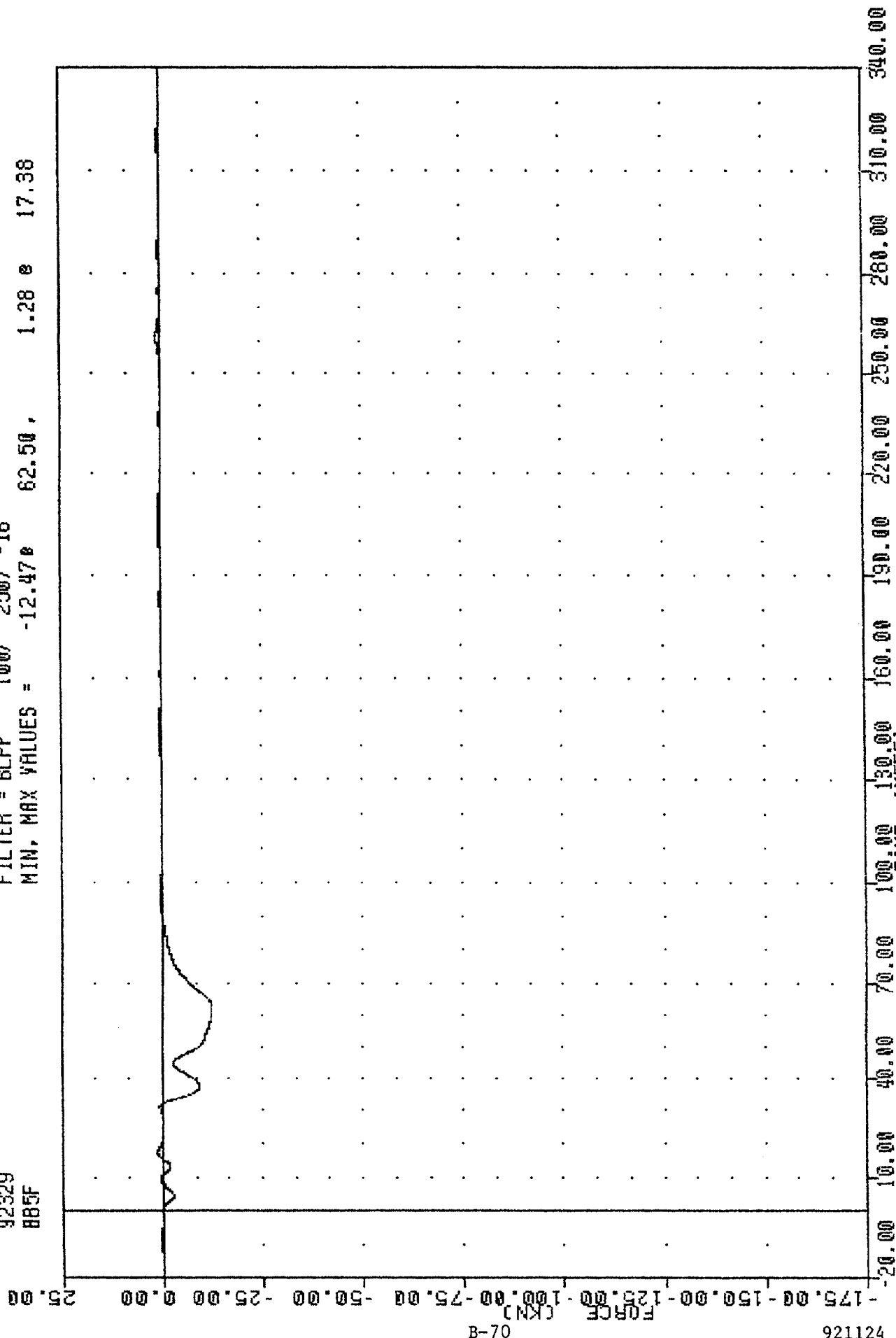
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -144.458 34.25, 1.55 1.50



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B4 FORCE

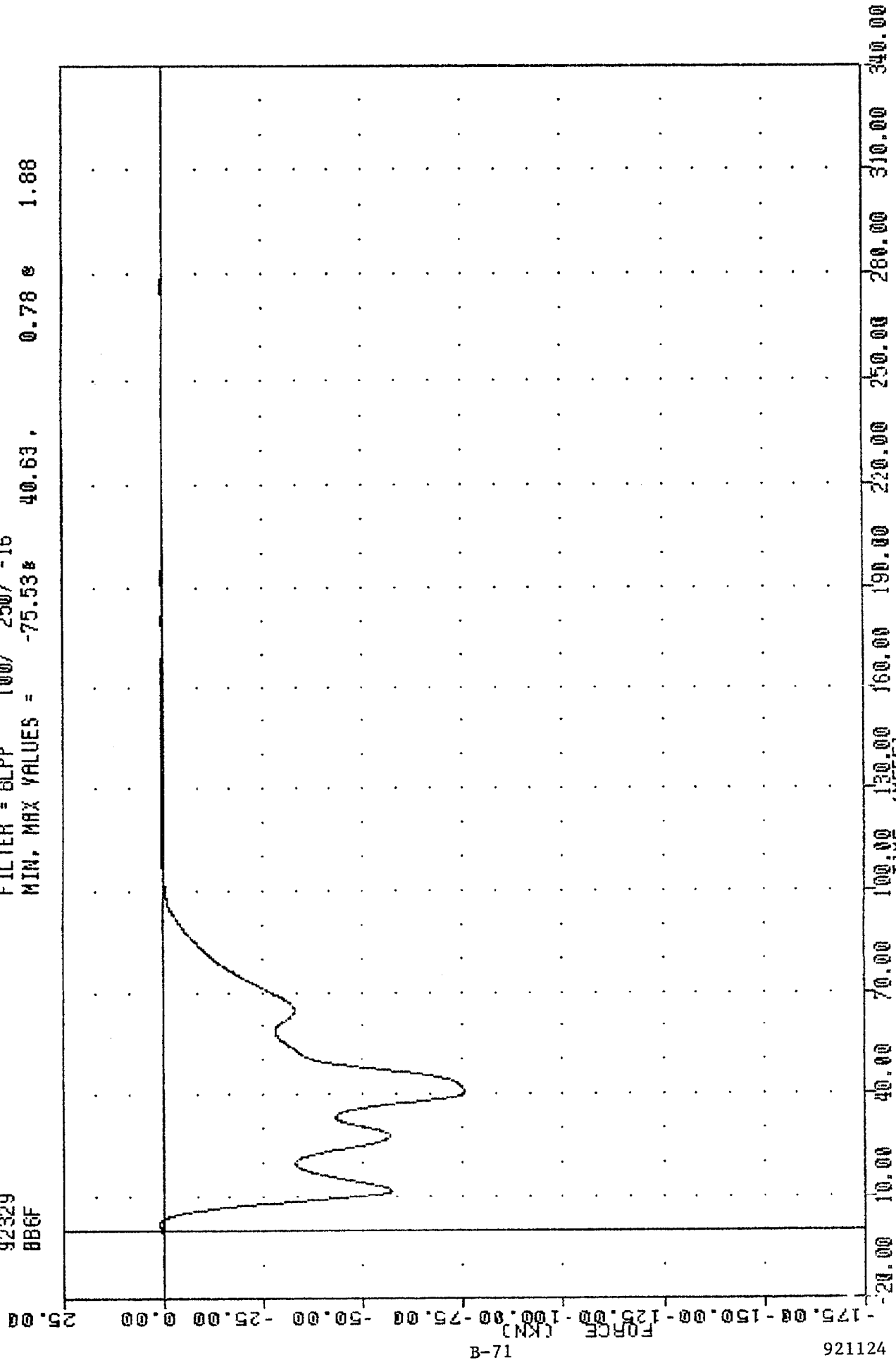
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BB5F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -12.47 62.50, 1.28 e 17.38



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BB6F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -75.53% 40.63, 0.78 % 1.88



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B6 FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM

92329

BB7F

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -114.42e 11.88 ,

1.64 e 2.25

25.00

0.00

-25.00

-50.00

-75.00

-100.00

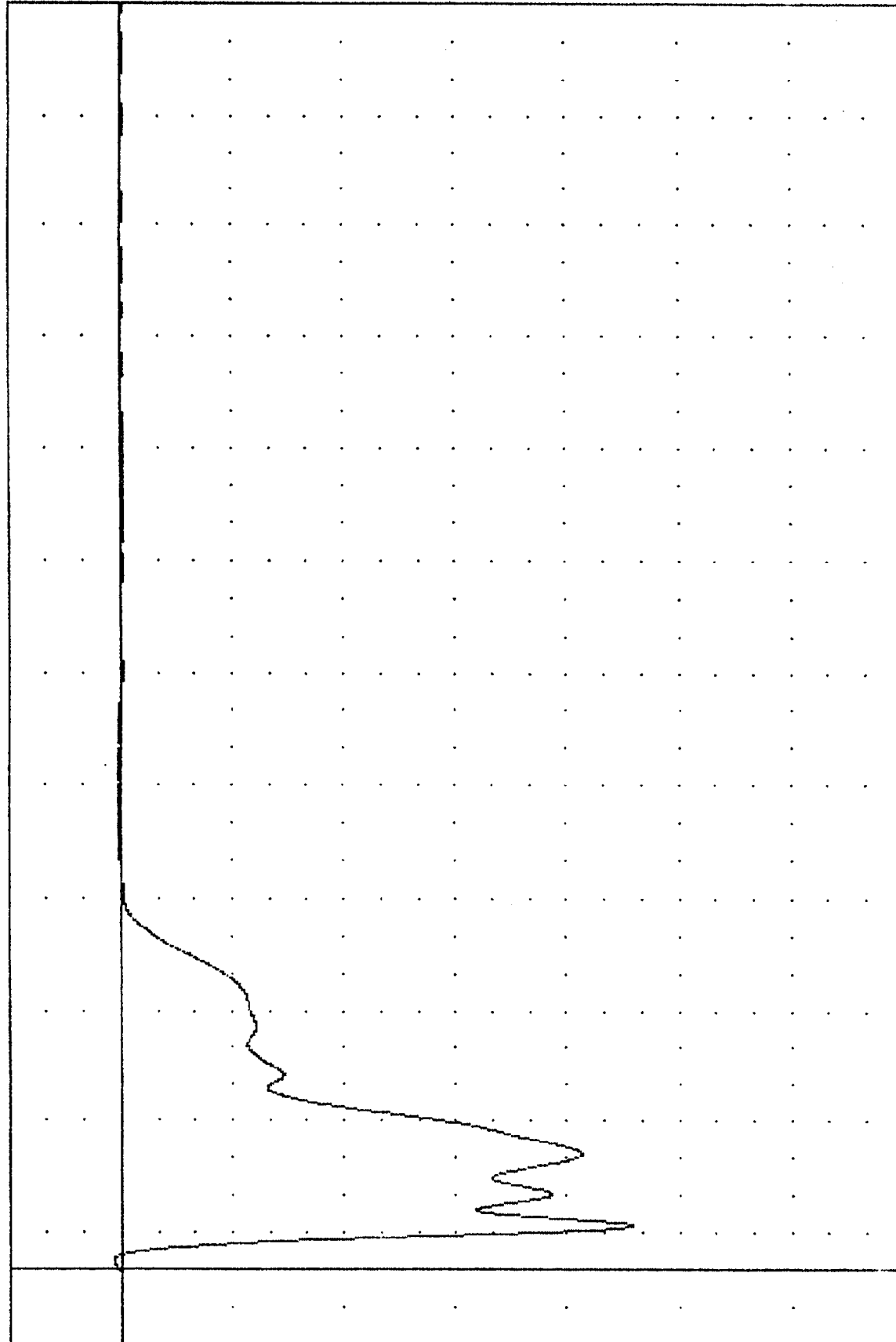
-125.00

-150.00

-175.00

B-72

921124

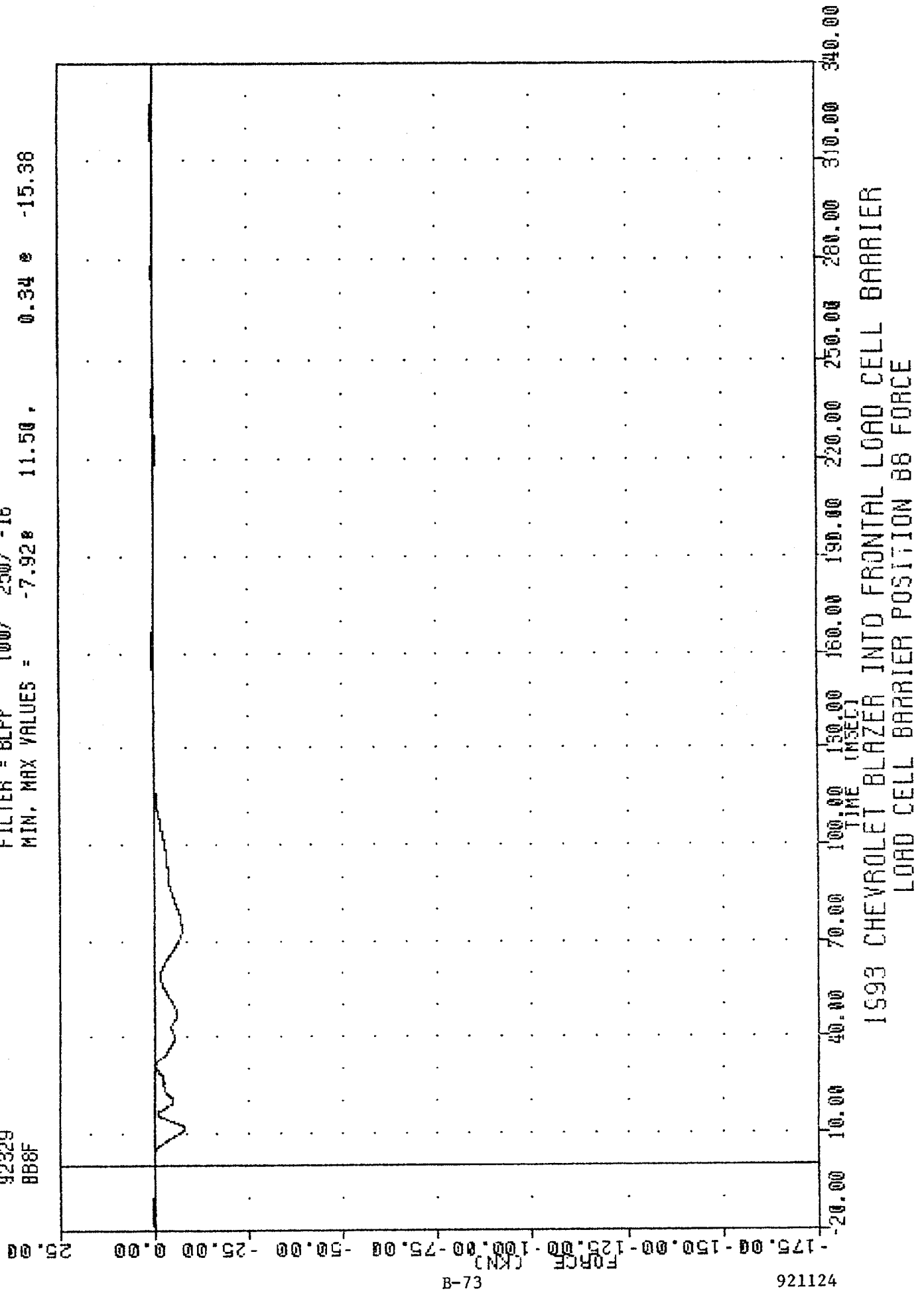


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER POSITION 8750P

TRC
NEW CAR ASSESSMENT PROGRAM
92329
BB8F

, 921124

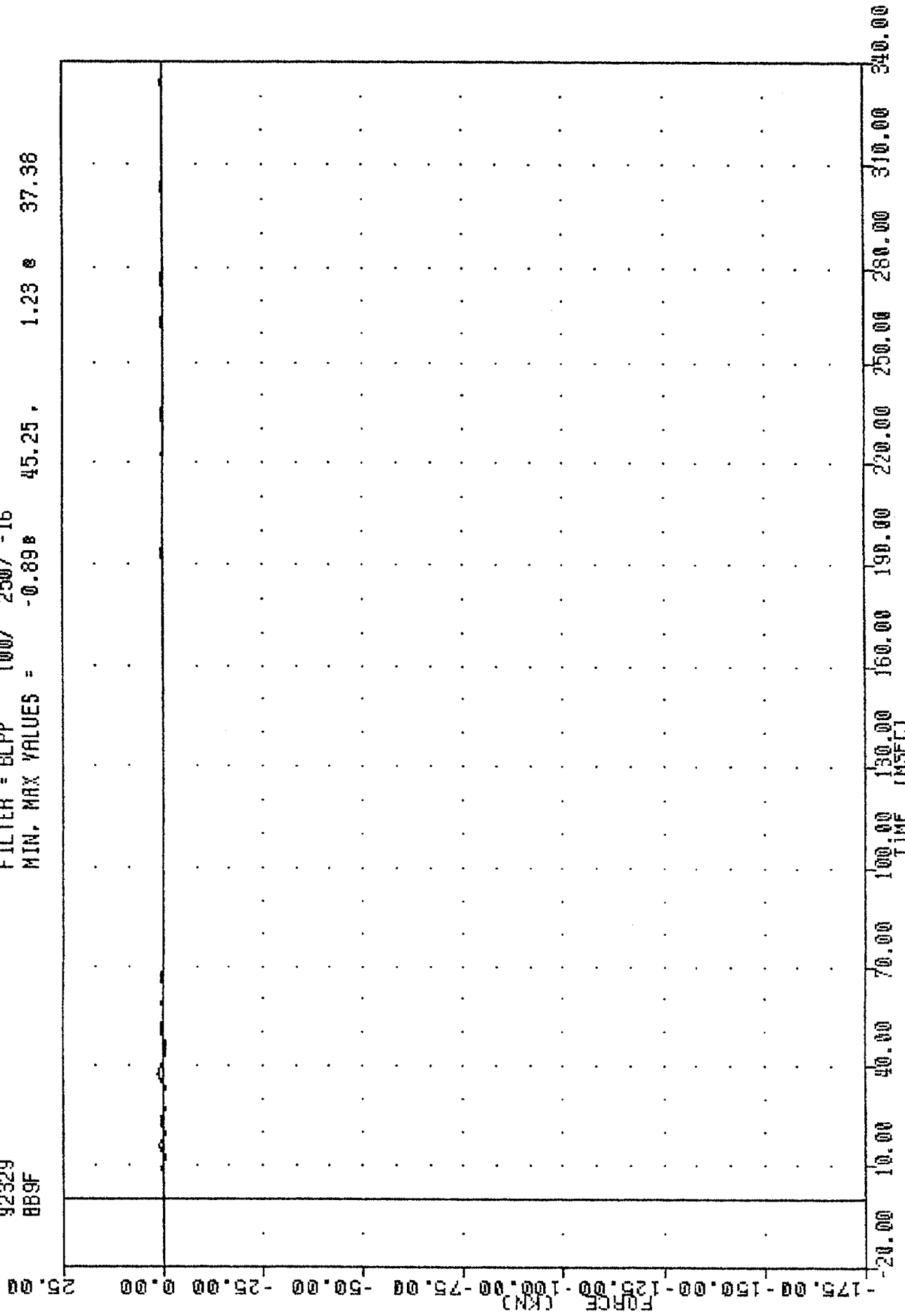
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -7.928 11.50 , 0.34 e -15.38



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION BB FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BB9F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -0.89 45.25 , 1.23 37.38

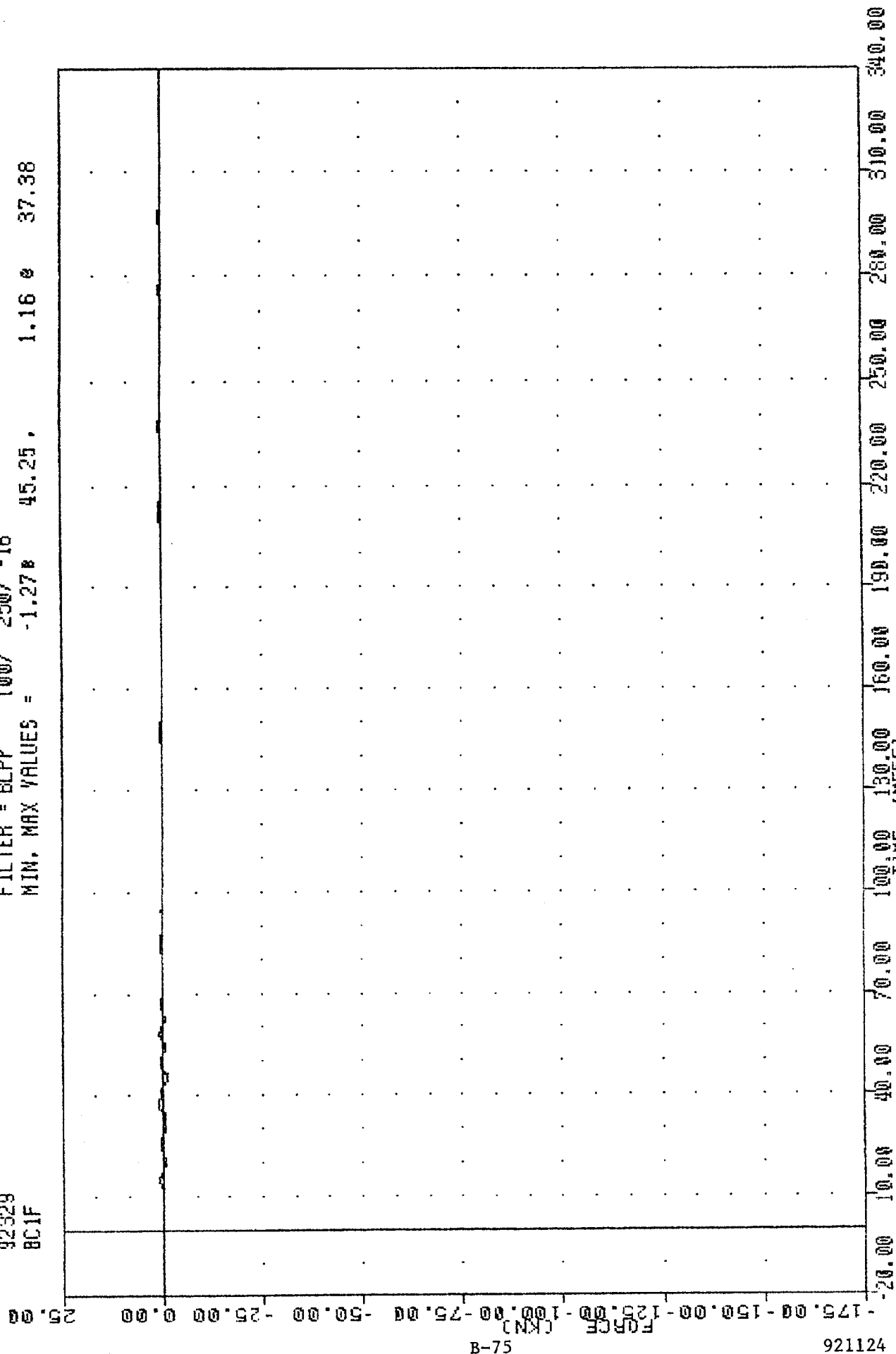


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 POSITION B9 FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 92329
 BC1F

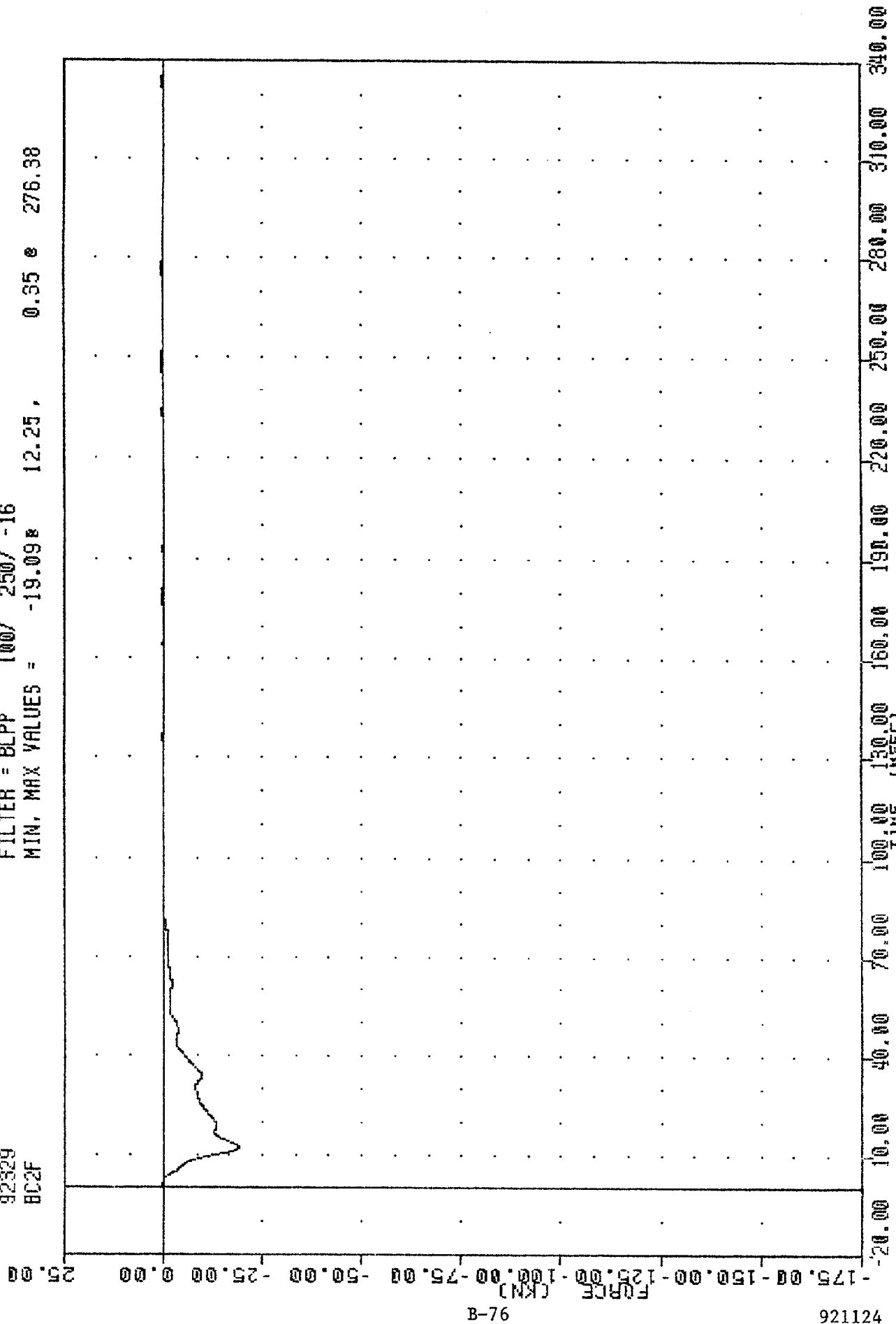
921124

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1.27 45.25 1.16 37.38



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BC2F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -19.098 12.25, 0.35 e 276.38

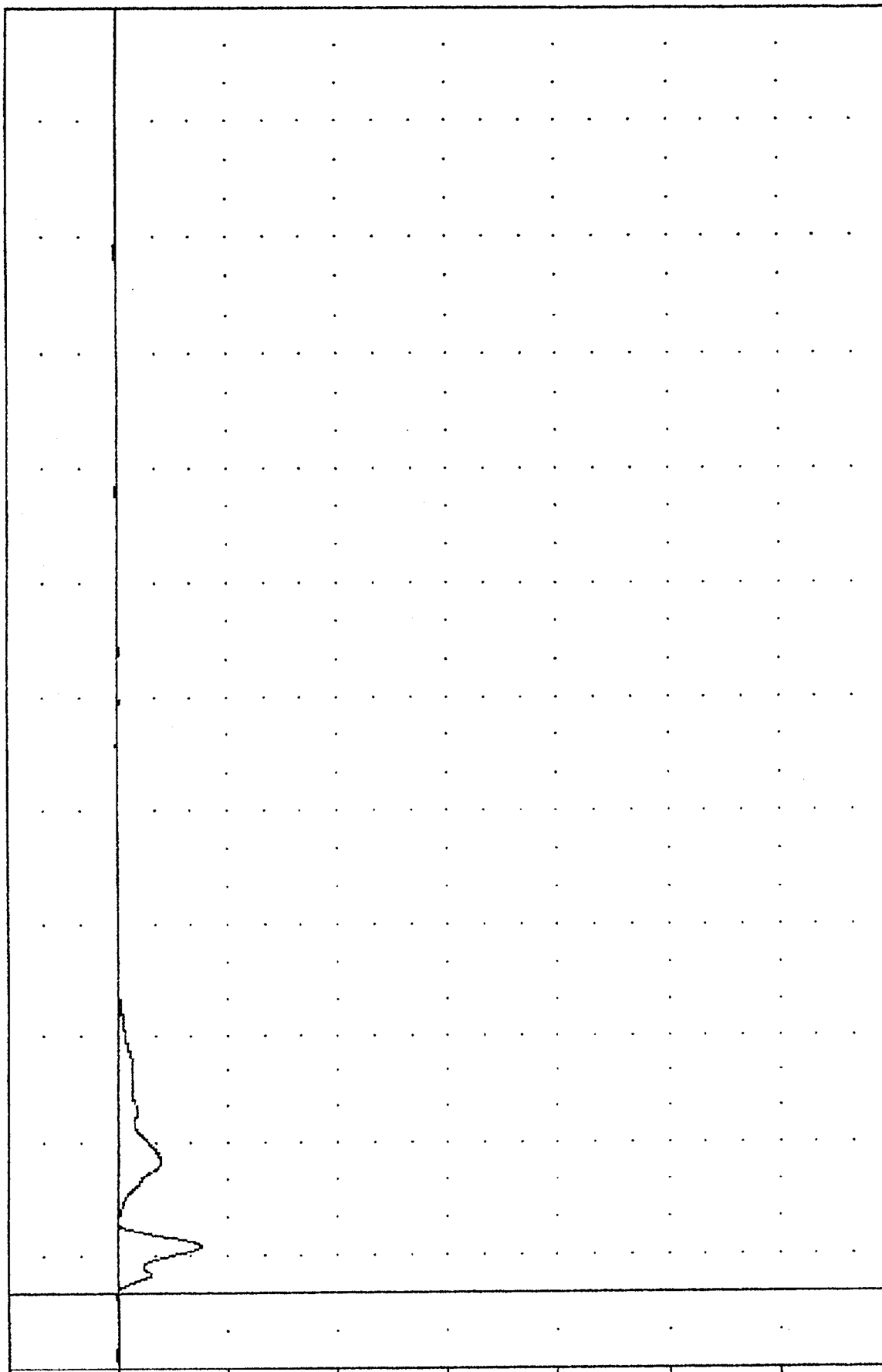


TRC
NEW CAR ASSESSMENT PROGRAM
92829
BC3F

921124

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -19.03 12.50 0.33 276.13

25.00



B-77

921124

-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

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C3 FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM

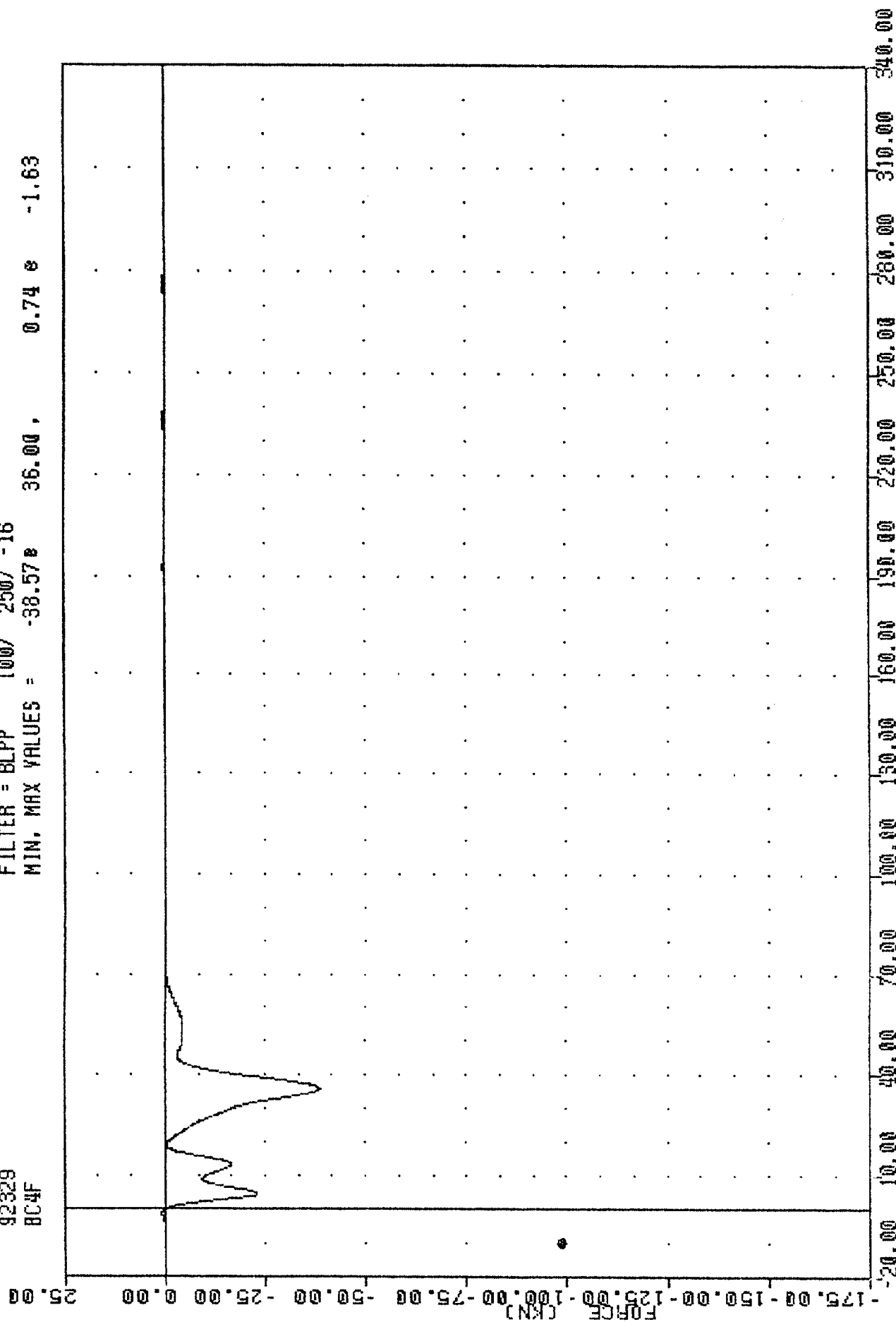
92329

BC4F

FILTER = BLPP 100/ 250/ -16

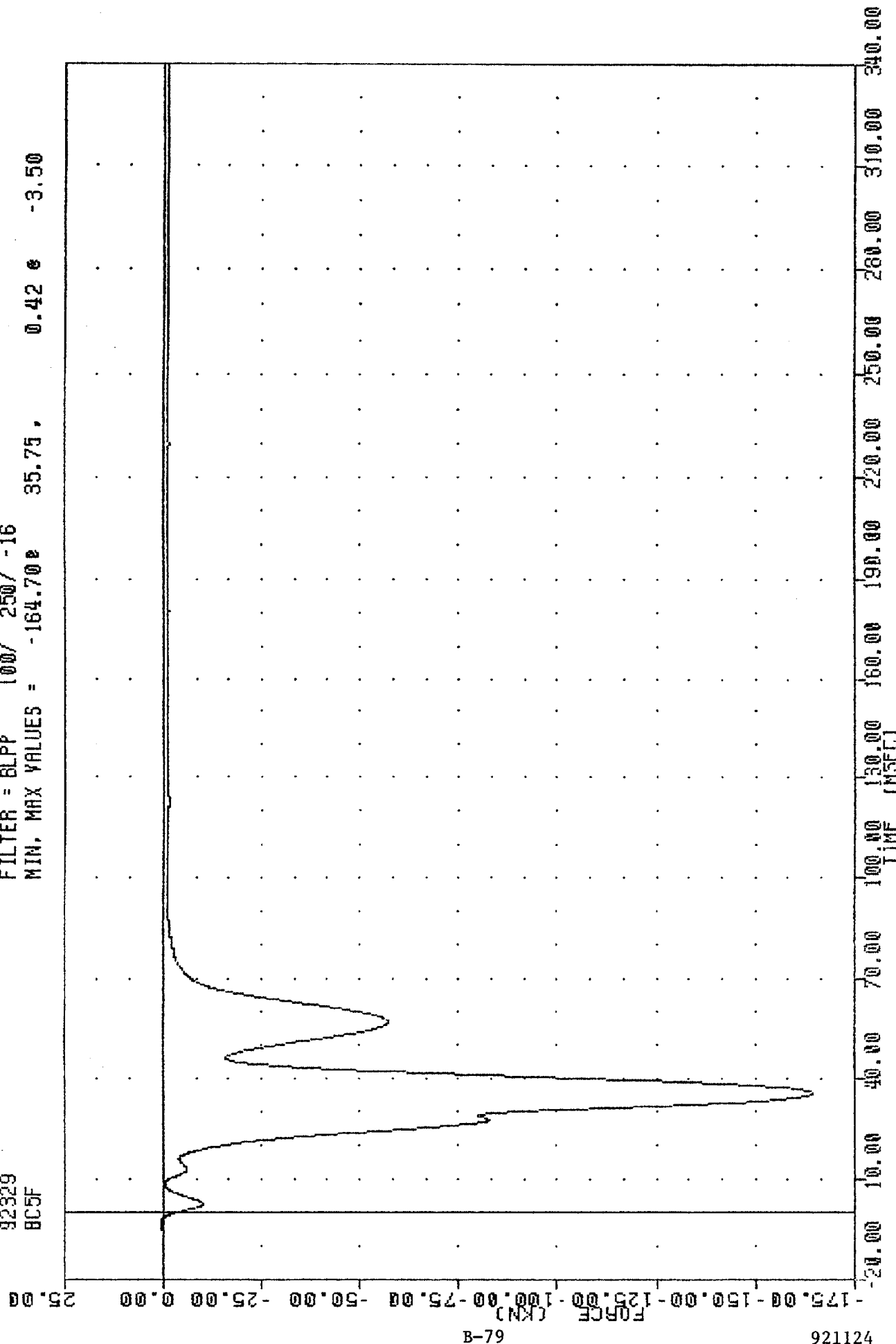
MIN. MAX VALUES = -38.57 36.00 ,

0.74 e -1.63



TRC 921124
NEW CAR ASSESSMENT PROGRAM
92329
BC5F

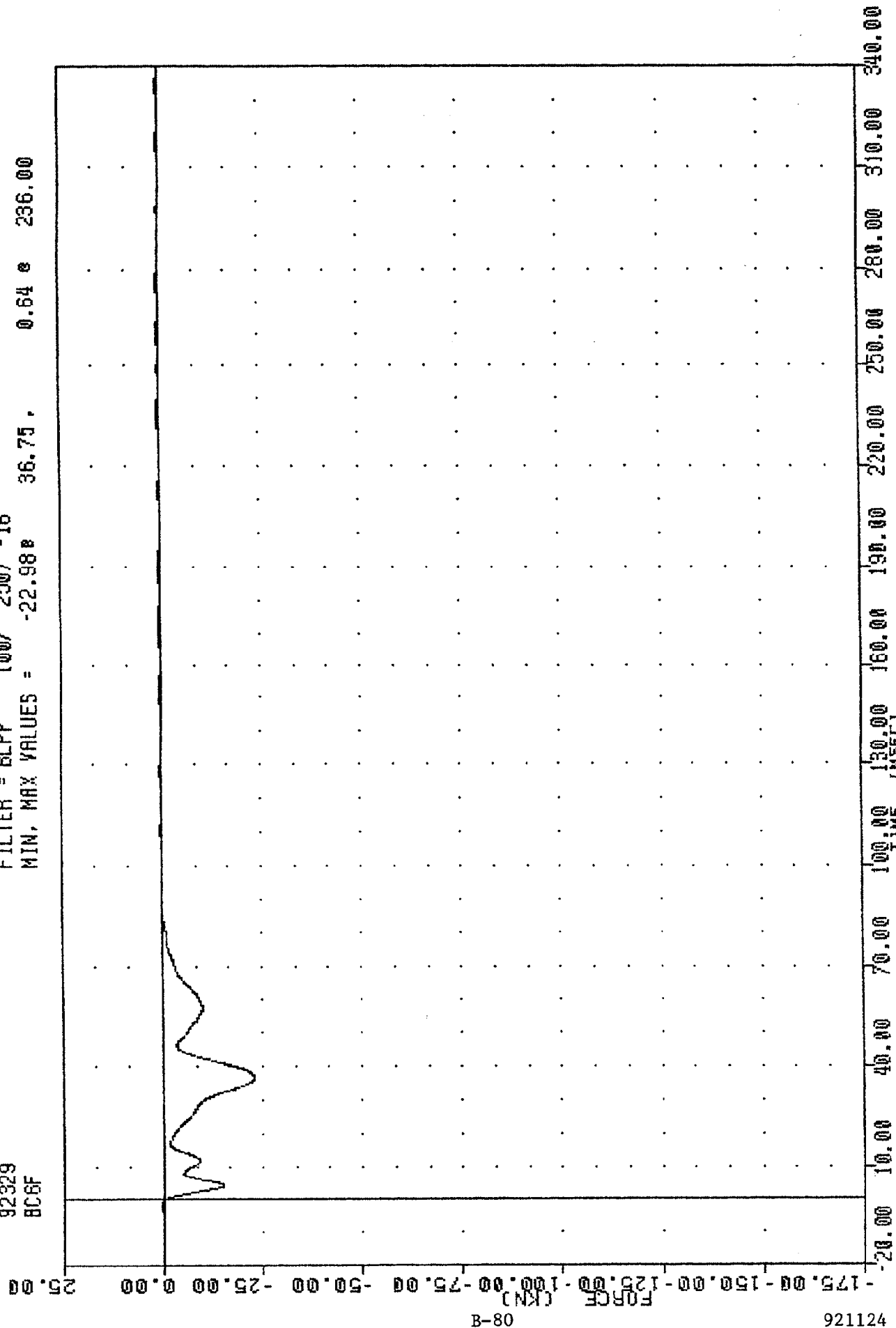
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -164.700 35.75, 0.420 -3.50



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C5 FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BC6F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -22.98 36.75, 0.64 236.00



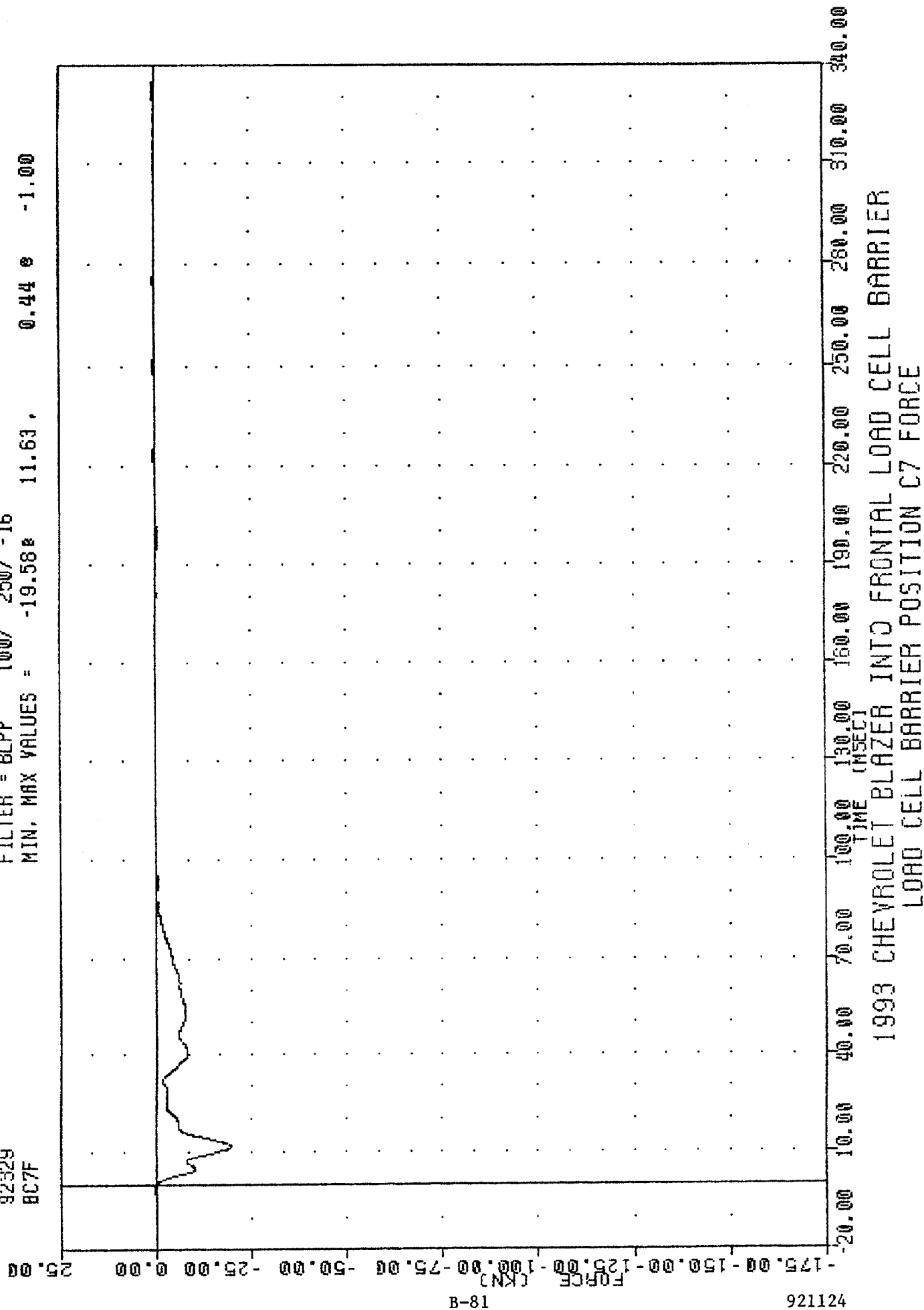
B-80

921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LONG CELL BARRIER POSITION COORDINATES

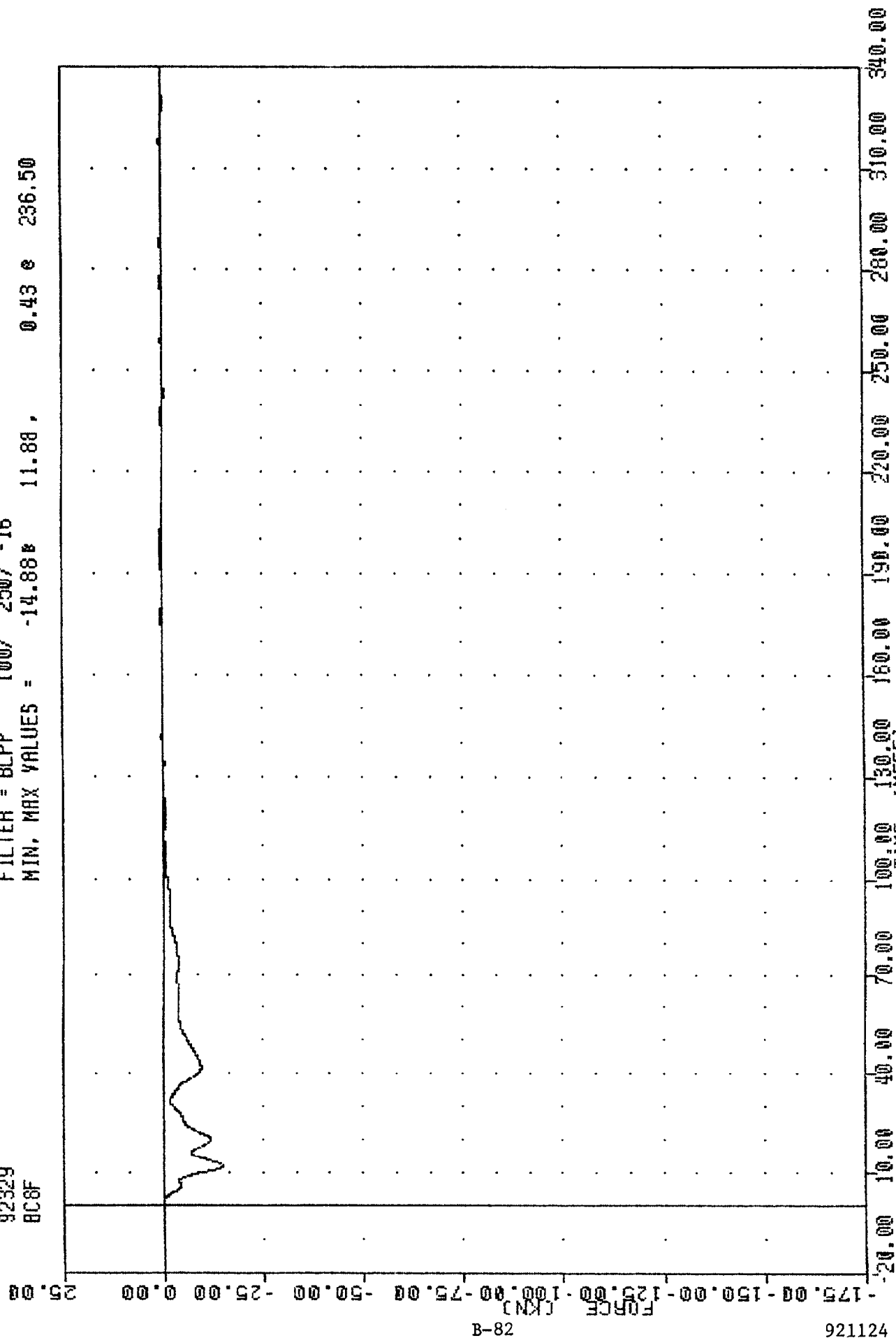
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BC7F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -19.58 0.44 -1.00



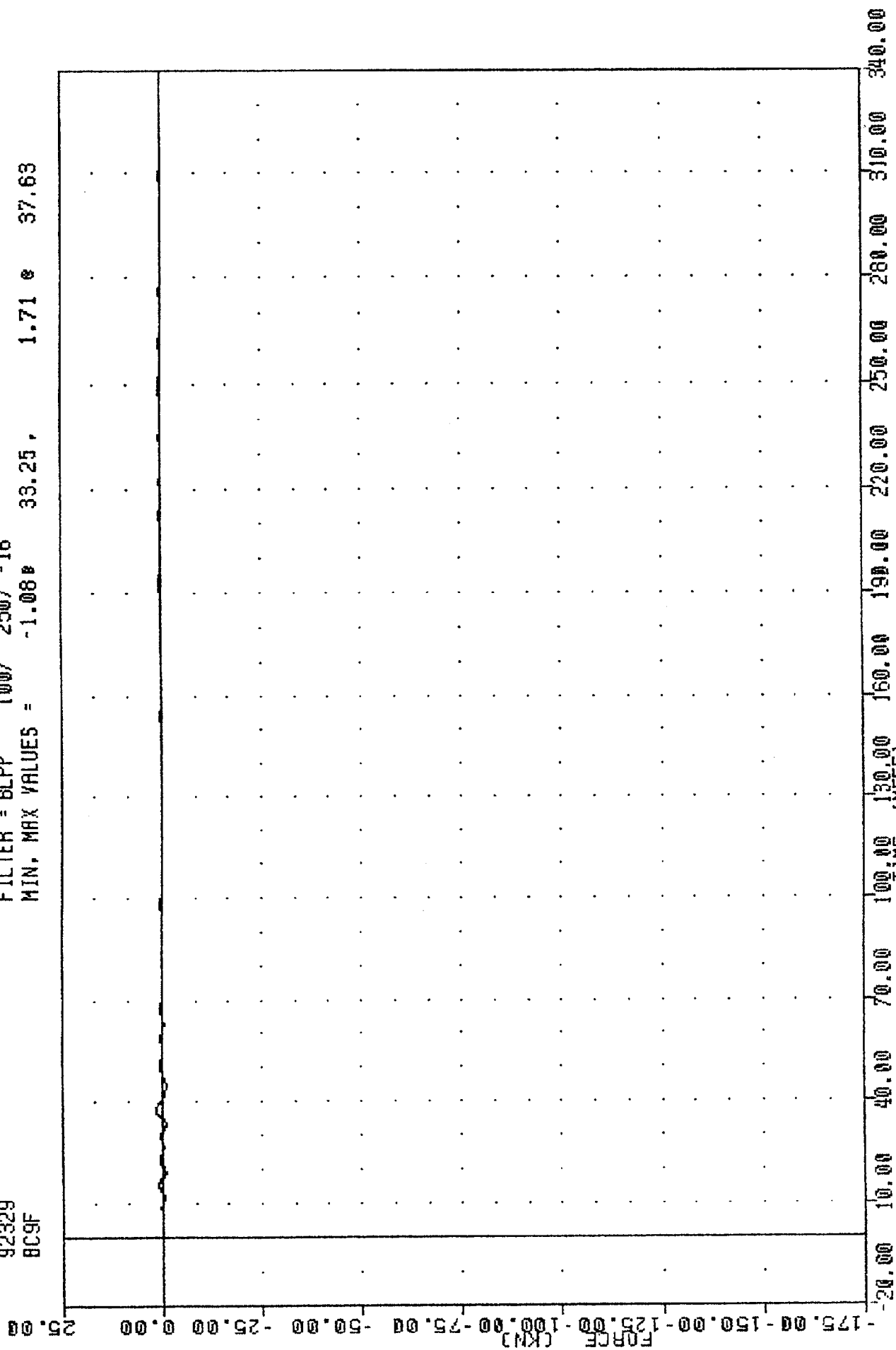
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BC8F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -14.88 11.88 , 0.43 236.50



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BC9F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -1.08 33.25, 1.71 e 37.63



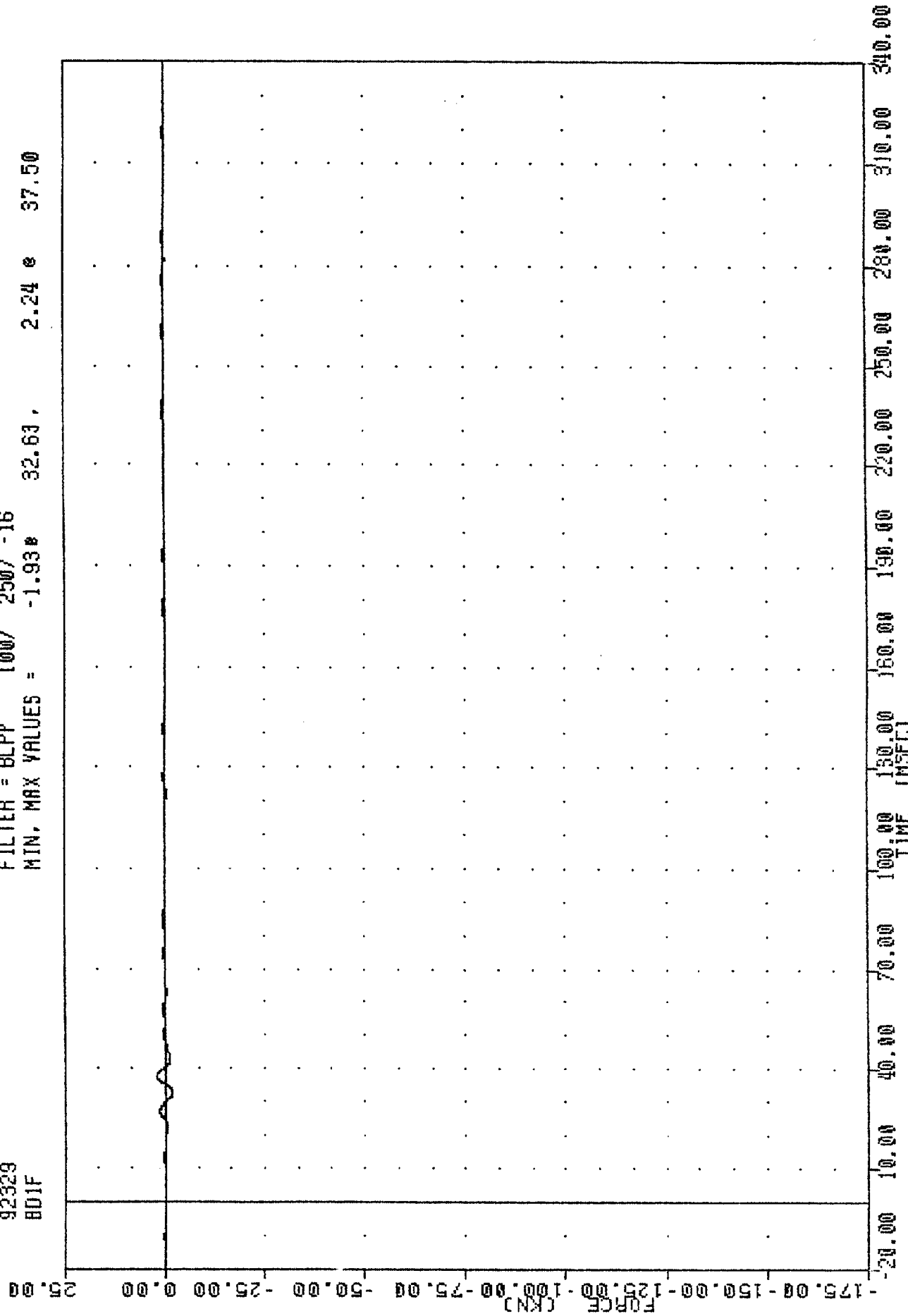
TAC , 921124
NEW CAR ASSESSMENT PROGRAM

92329

BDIF

FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -1.93 32.63 , 2.24 e 37.50

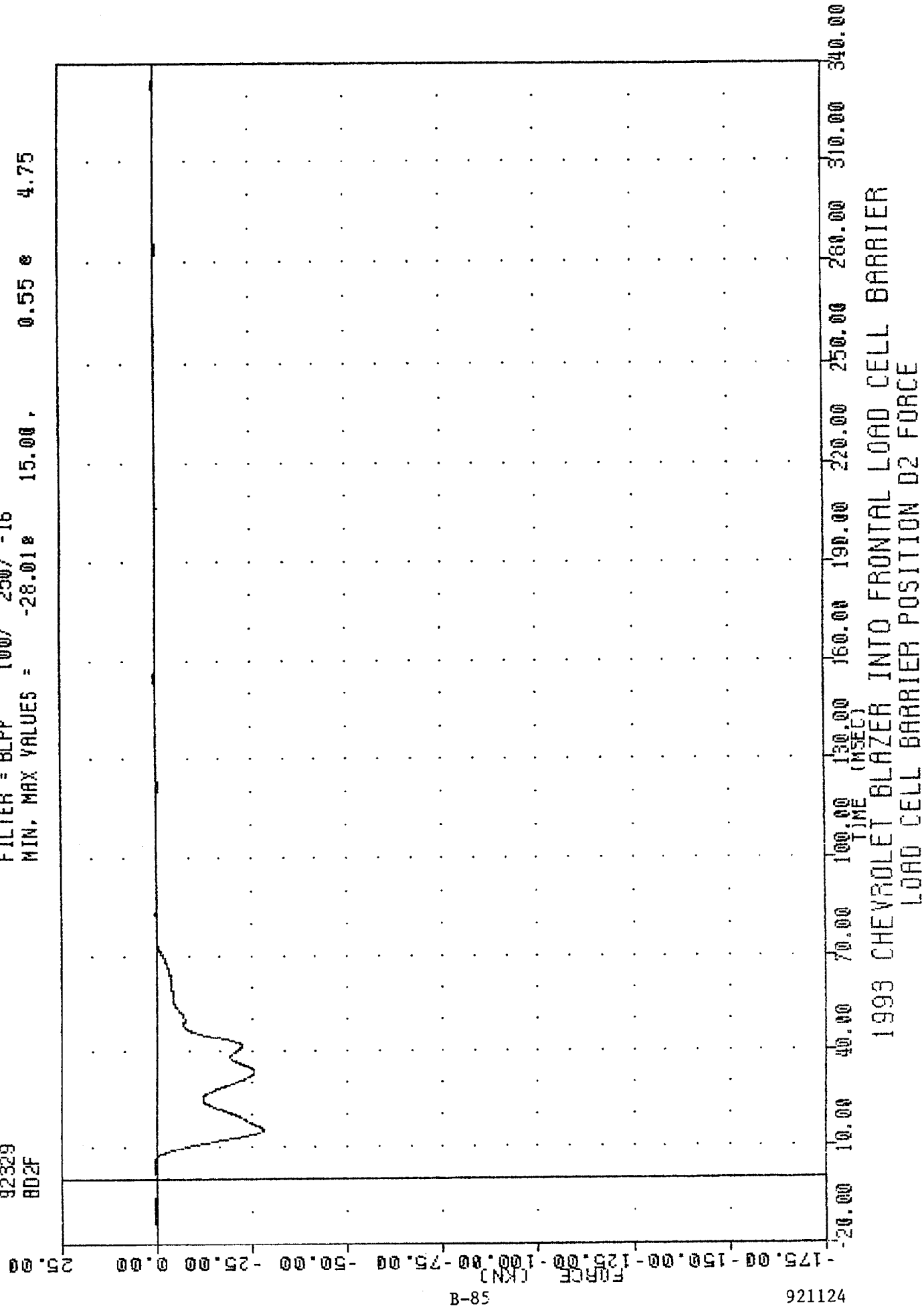


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

LOAD CELL BARRIER POSITION 01 FORCE

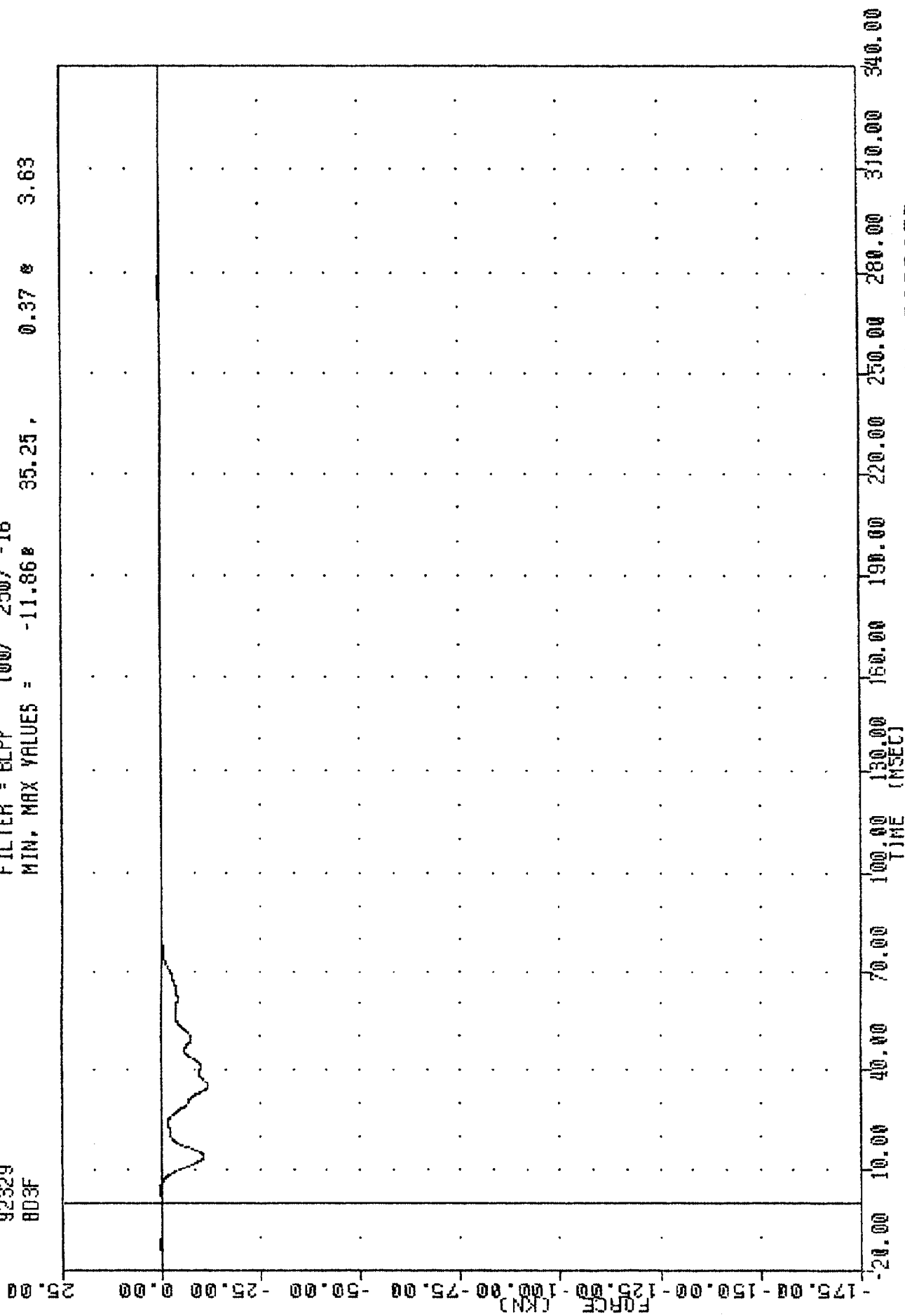
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 8D2F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -28.01e 15.00 , 0.55 e 4.75



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BD3F

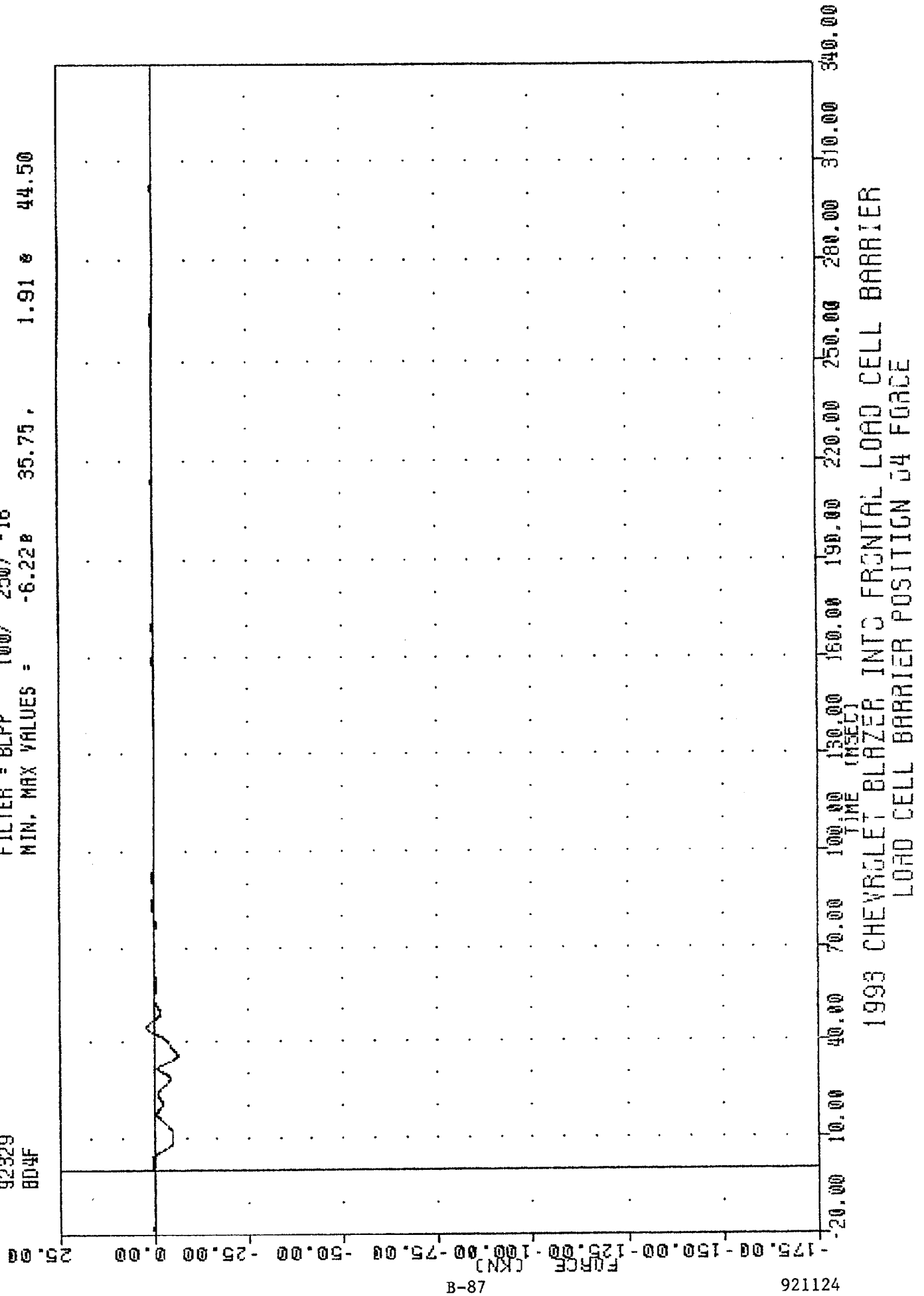
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = 35.25, 0.37 & 3.63



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 03 FORCE

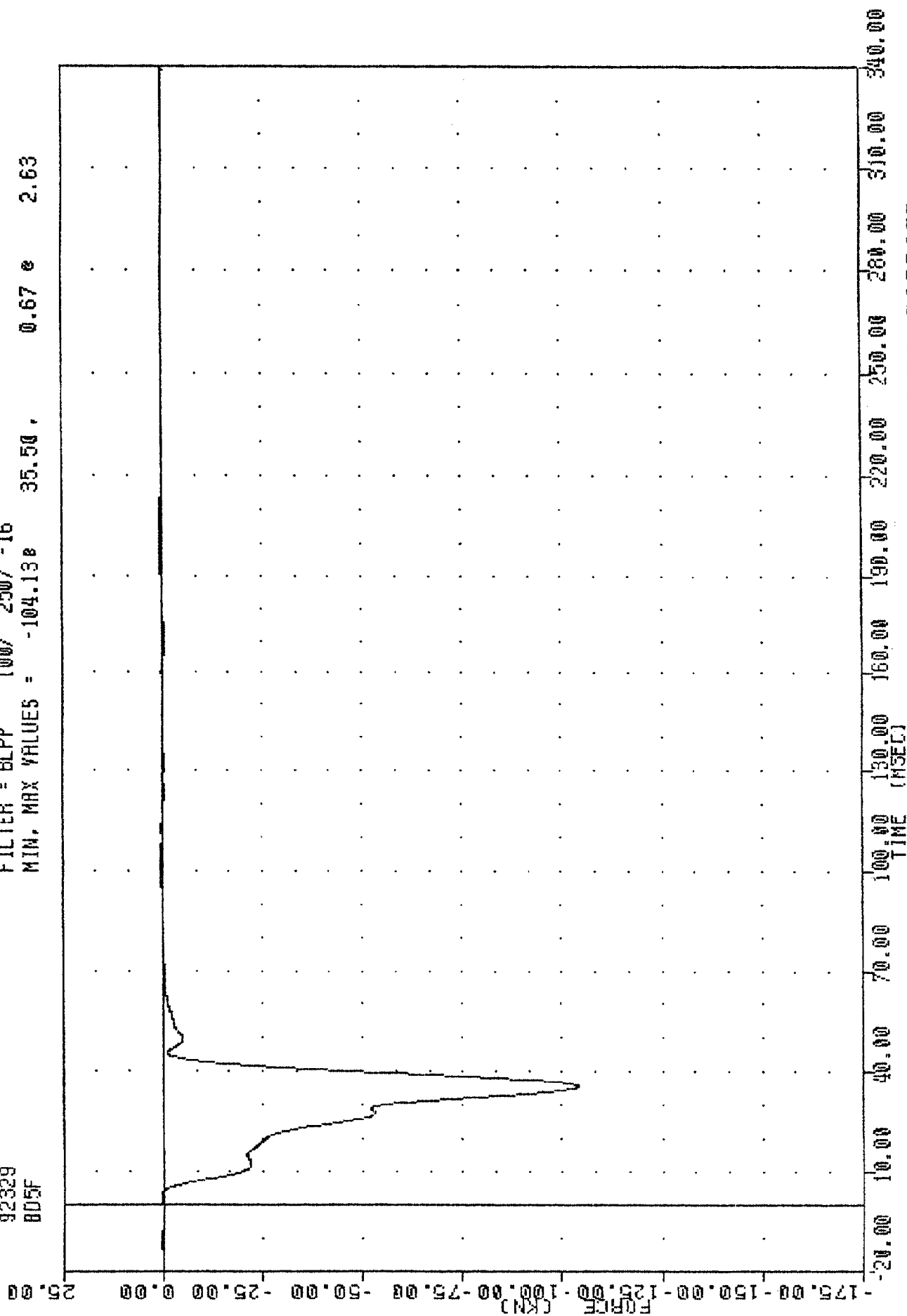
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BD4F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -6.228 35.75 , 1.91 8 44.50



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BD5F

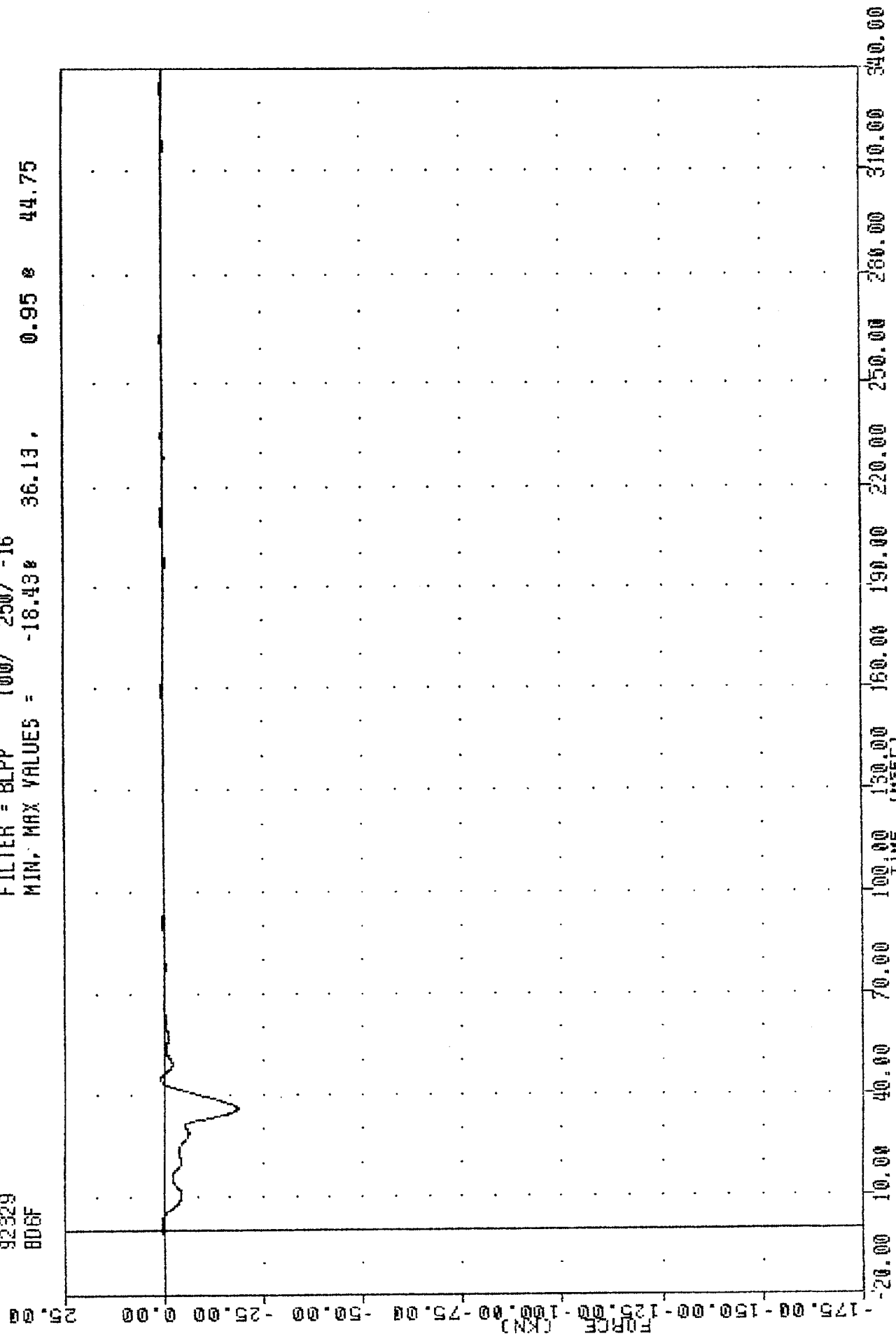
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -104.13e 35.50 , 0.67 e 2.63



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 05 FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BDGF

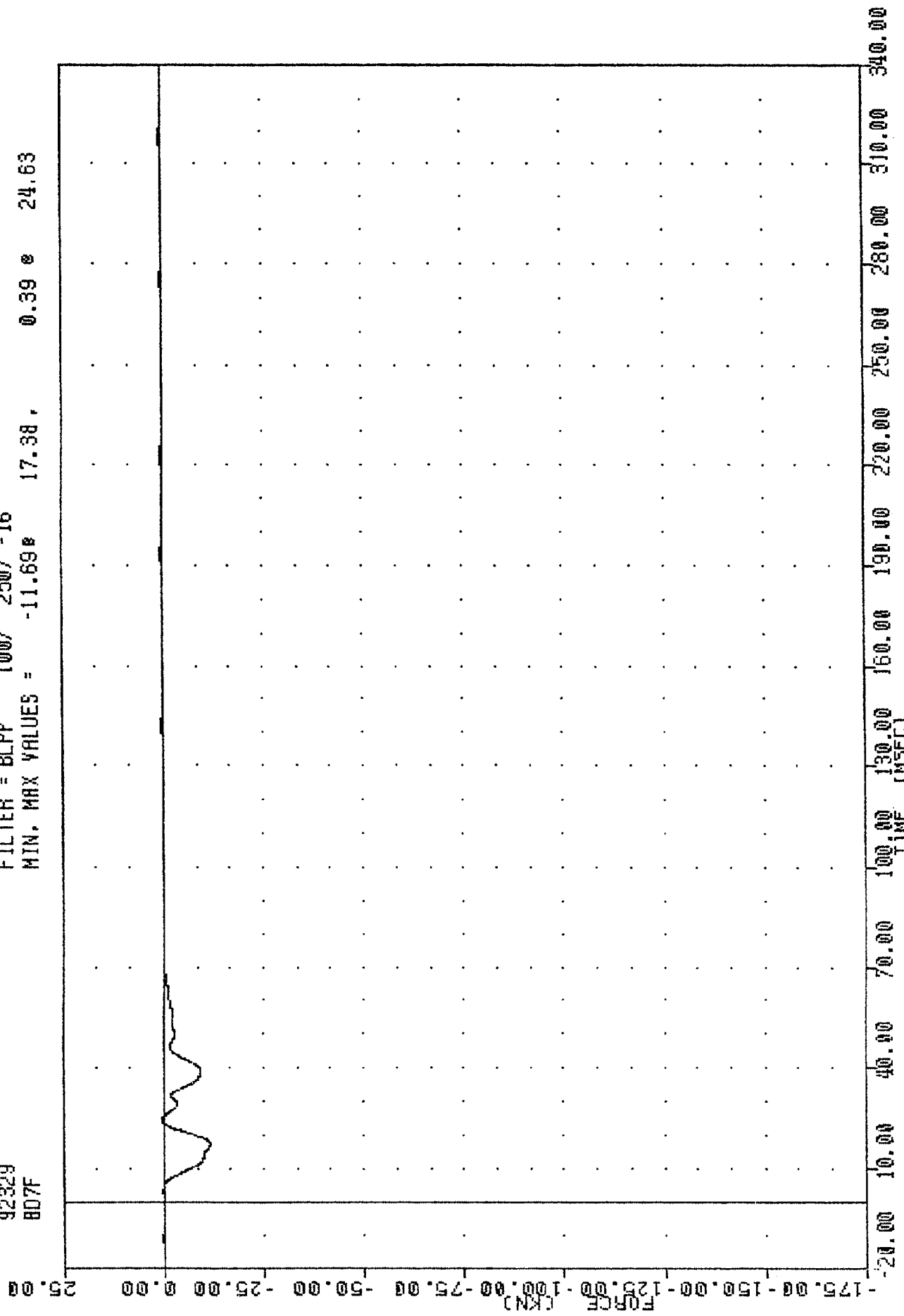
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -18.43 36.13 , 0.95 44.75



1593 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 06 FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BD7F

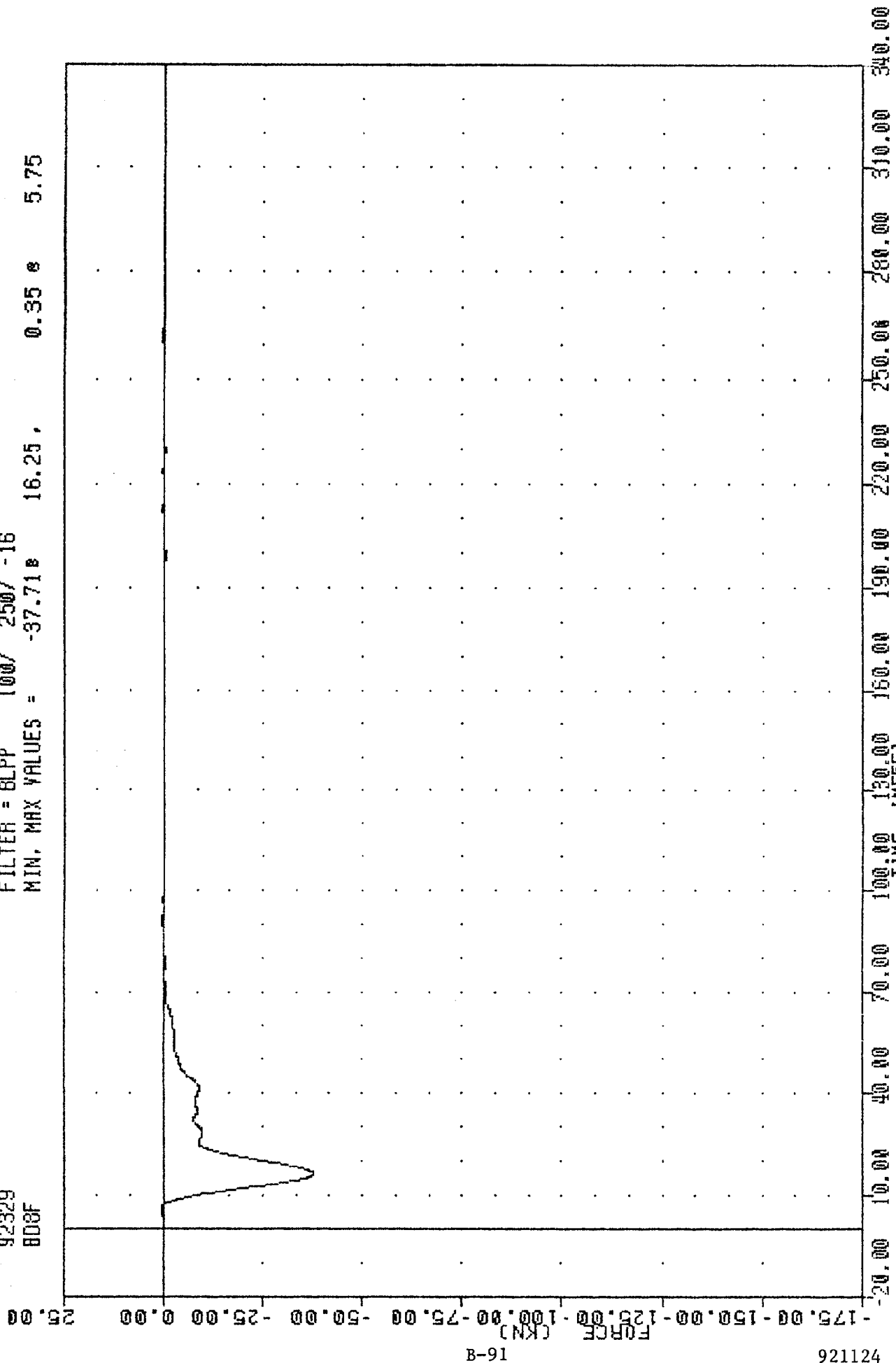
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -11.69 17.38 0.39 24.63



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LONG CAR BARRIER POSITION 075000

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 B03F

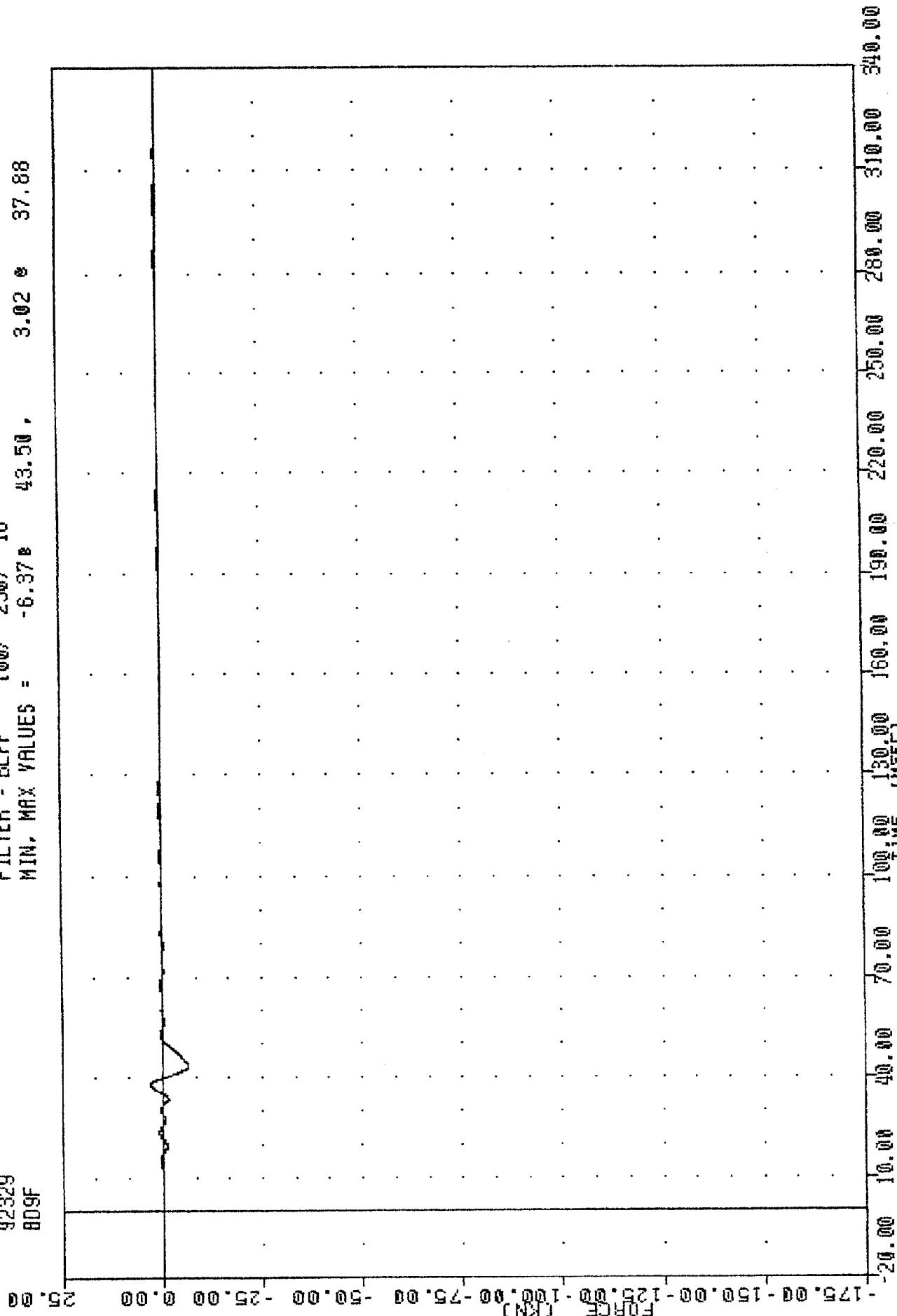
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -37.718 16.25, 0.35 s 5.75



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 08 FORCE

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 BD9F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -6.37 43.50 3.02 37.88

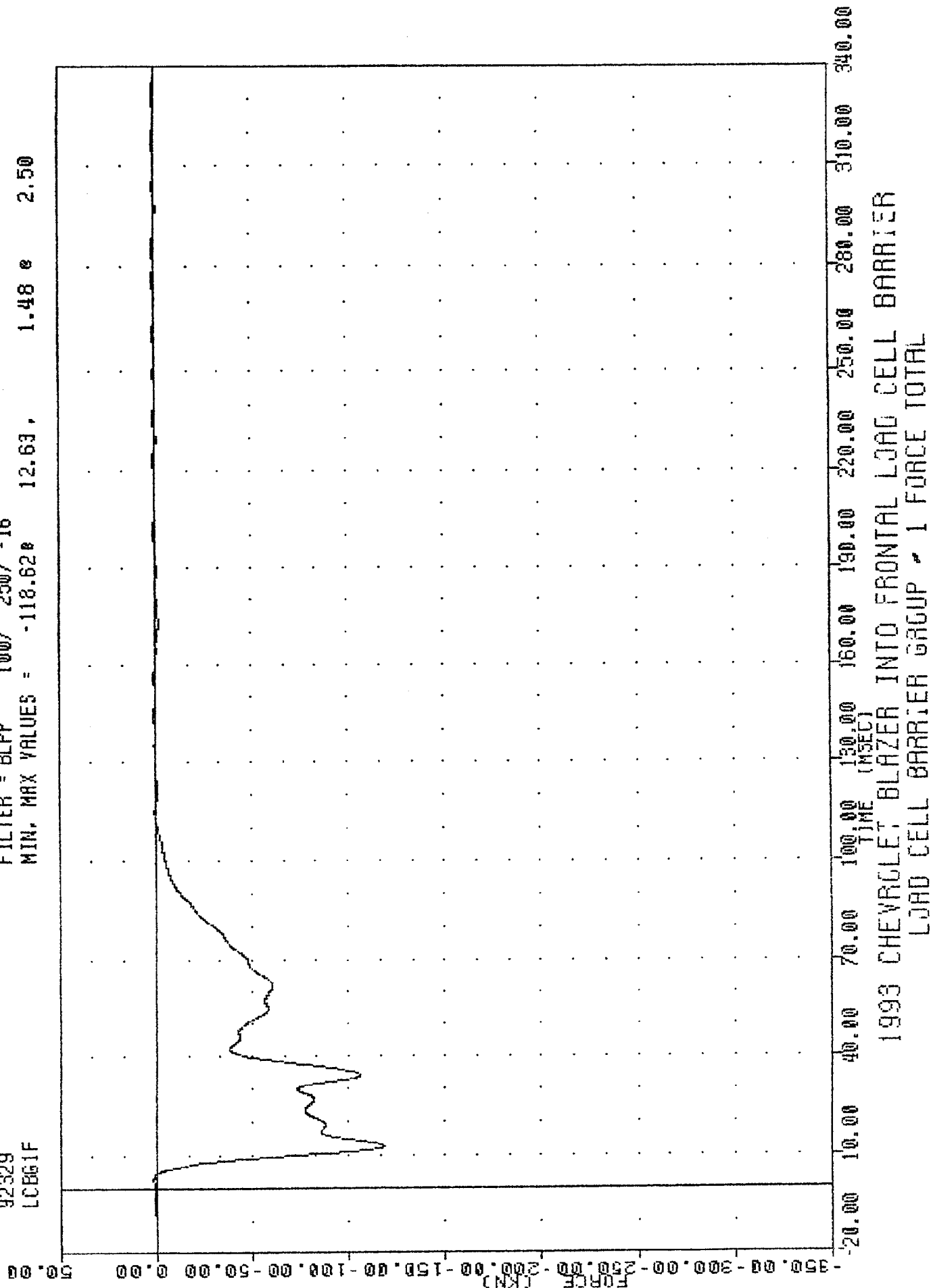


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

LOAD CELL BARRIER POSITION 09 FORCE

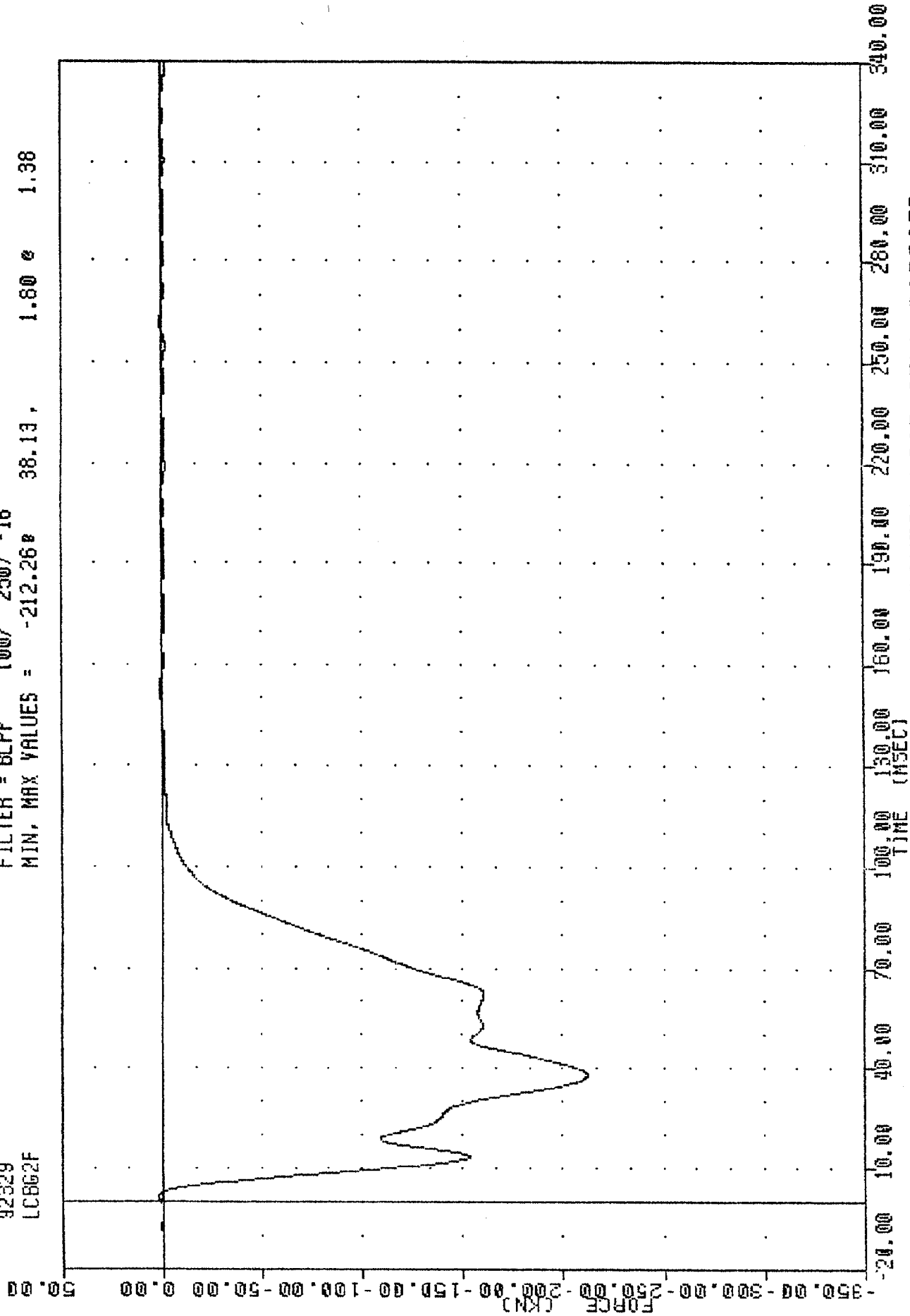
TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 LCBG1F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -118.62 12.63, 1.48 e 2.50



TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 LCBG2F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -212.26 38.13, 1.80 1.38

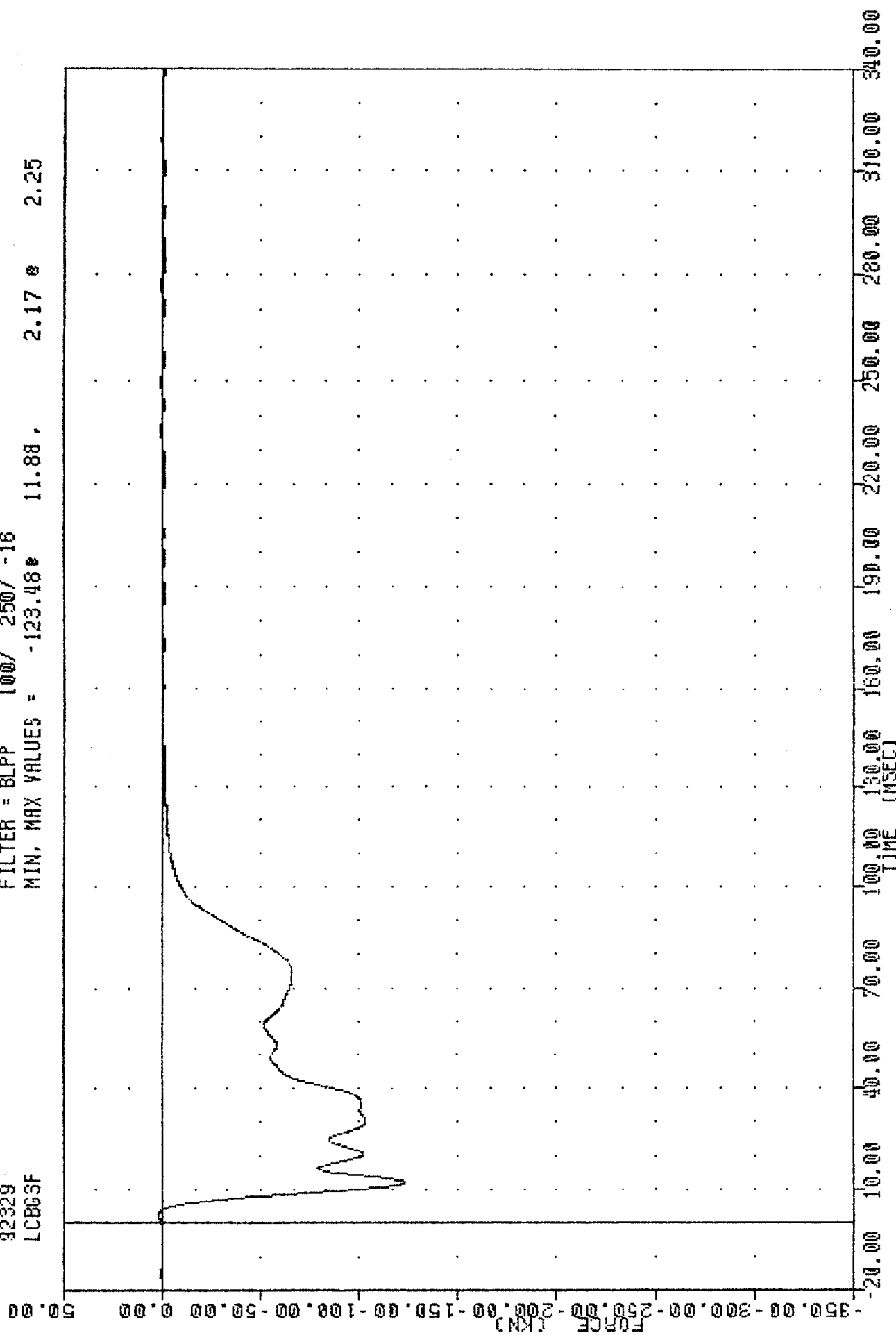


1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

DATE: 01/01/94 TIME: 10:00 AM

TRC 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 LCBG3F

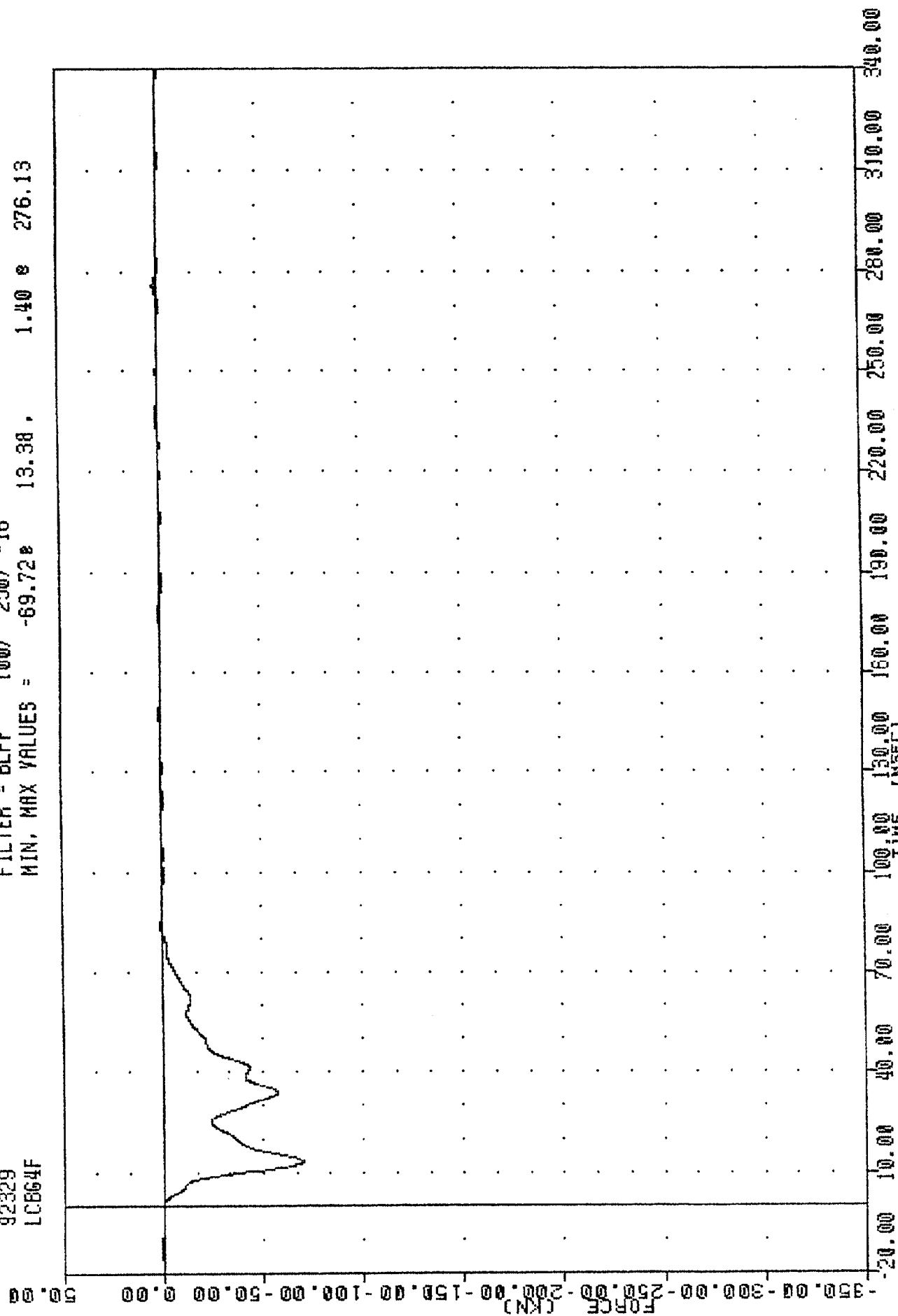
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -123.48 11.88 2.17 2.25



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP - 3 FORCE TOTAL

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 LC864F

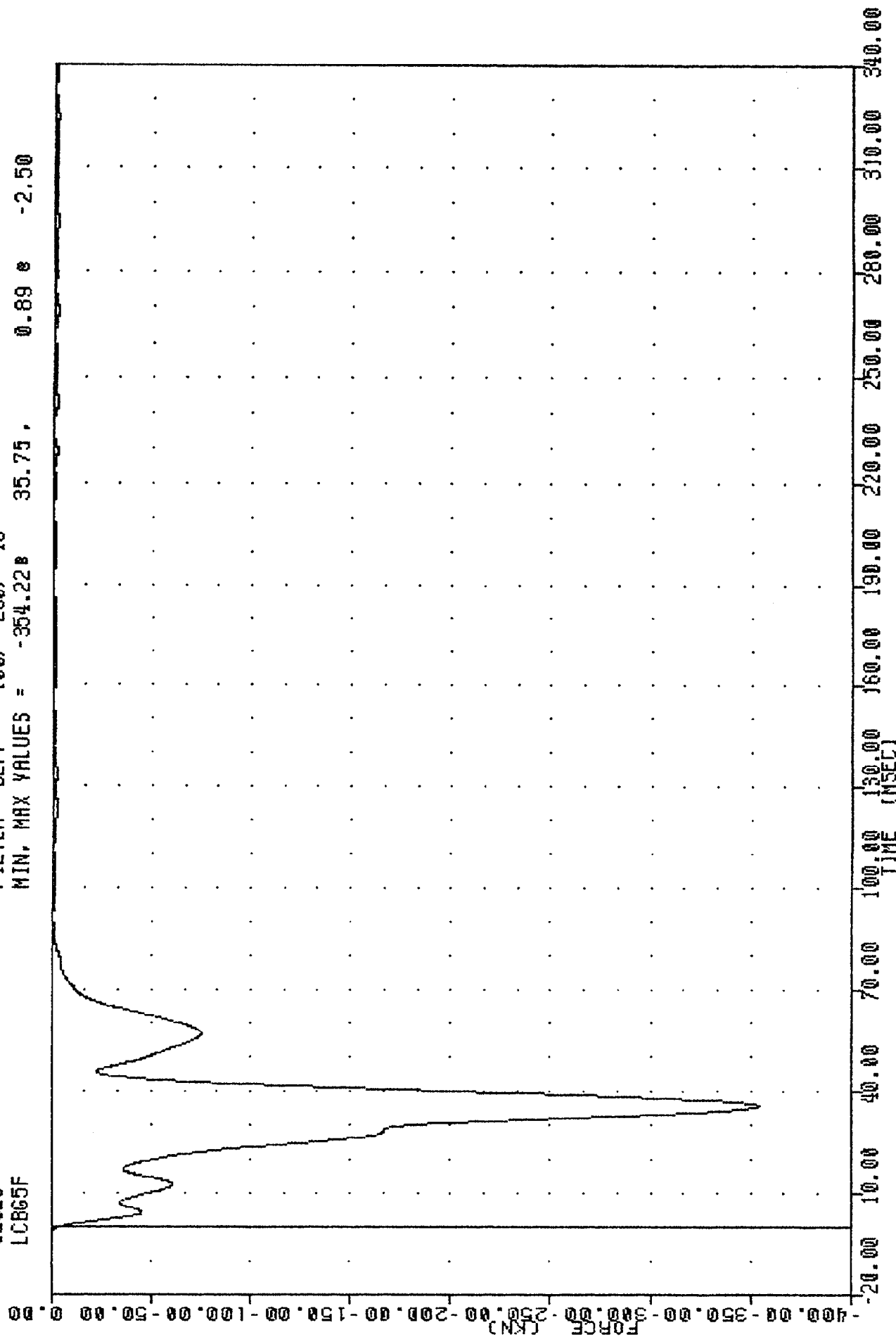
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -69.72 13.38 1.40 276.13



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 TOTAL FORCE

TRC 921124
NEW CAR ASSESSMENT PROGRAM
92329
LCB65F

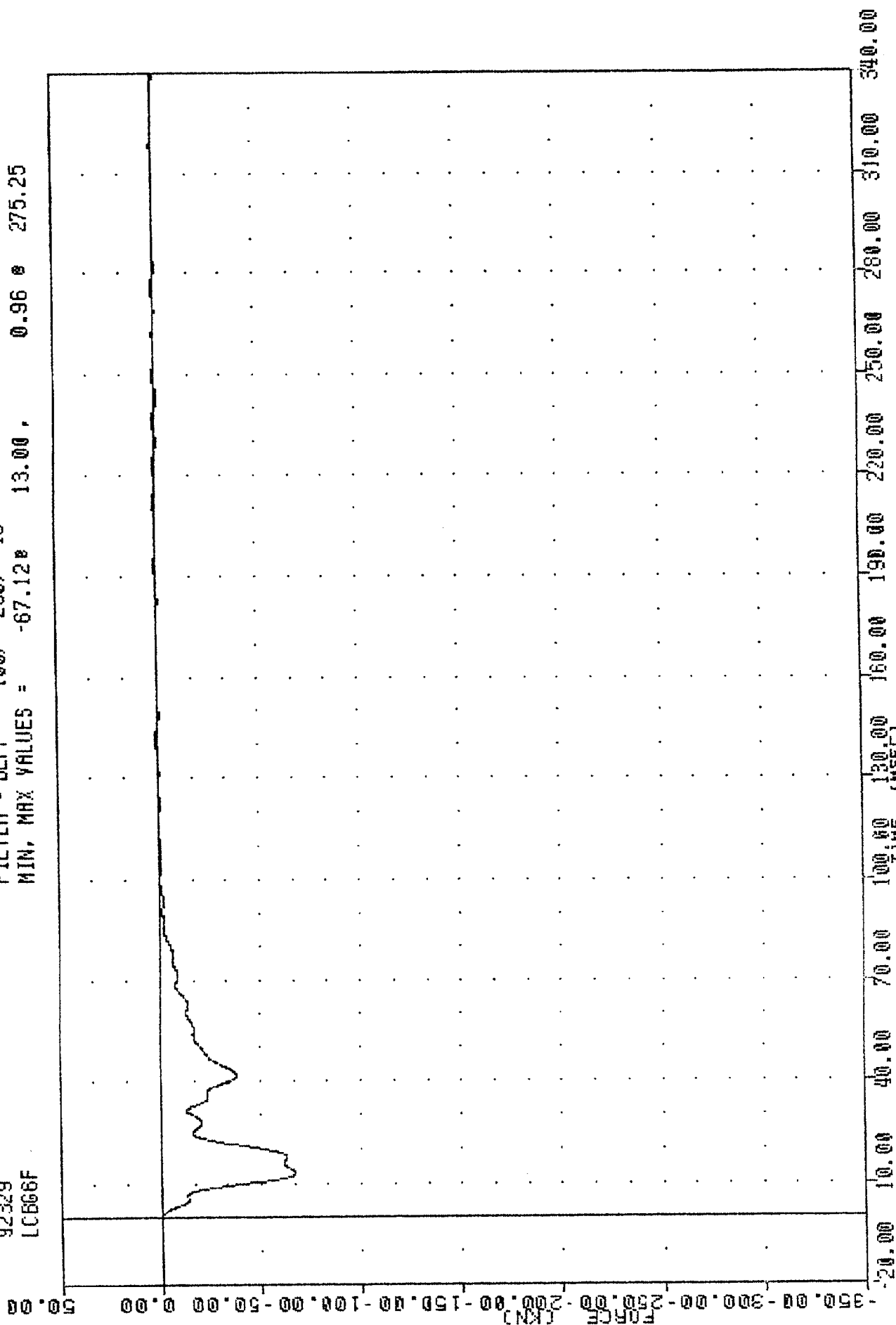
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -354.228 35.75, 0.89 8 -2.50



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP - 5 FORCE TOTAL

TRC , 921124
 NEW CAR ASSESSMENT PROGRAM
 92329
 LC666F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -67.12 13.00 , 0.96 275.25



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921124

1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER

STANDARD BARRIER GROUPS FORCE TOTAL

TRC , 921124

NEW CAR ASSESSMENT PROGRAM

92329

LC8GT

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -837.66 35.38 3.35 235.75

15.00

0.00

-15.00

-30.00

-45.00

-60.00

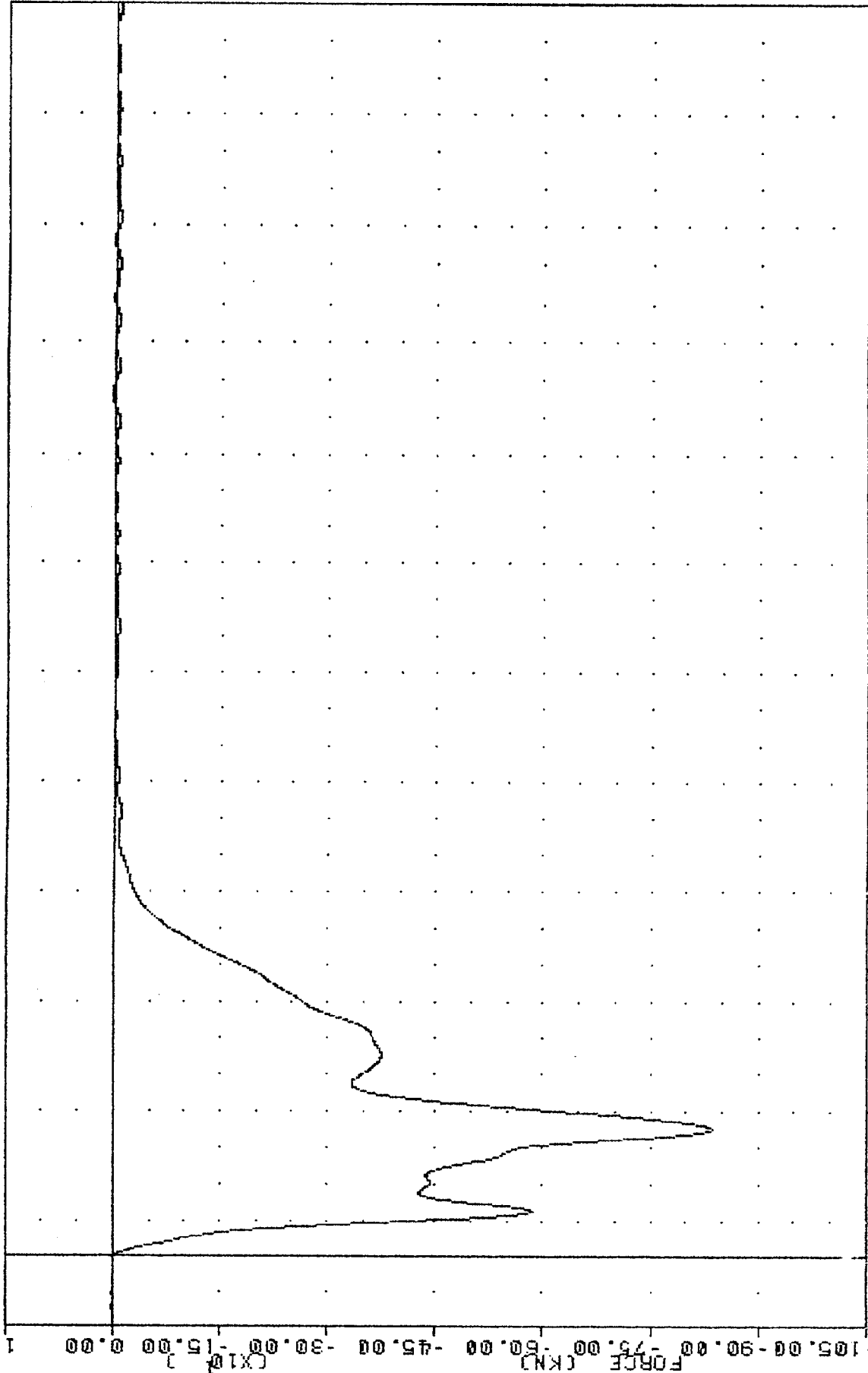
-75.00

-90.00

-105.00

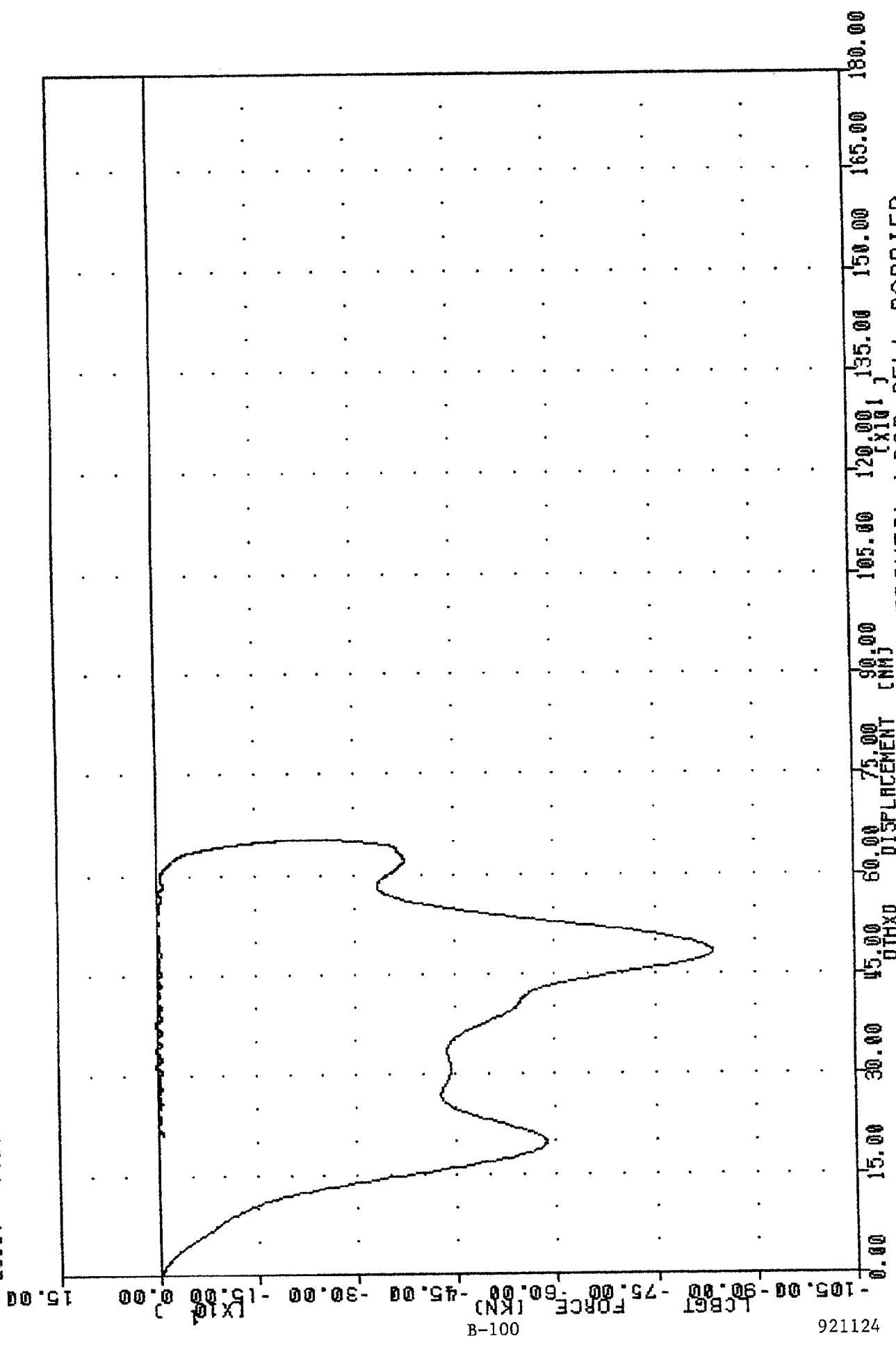
B-99

921124



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
TOTAL LOAD CELL BARRIER FORCE

TRC 1921124 NEV CAR ASSESSMENT PROGRAM 92329 653.77 73.50
 0THXD FILTER = BLPP 500/ 750/ -16 MIN. MAX = 0.00 3.35
 LC8GT FILTER = BLPP 100/ 250/ -16 MIN. MAX = -837.66 35.38



1993 CHEVROLET BLAZER INTO FRONTAL LOAD CELL BARRIER
 TOTAL 1000 CELL BARRIER FORCE VS AVERAGE VEHICLE X-Axis DISPLACEMENT

APPENDIX C

DUMMY CERTIFICATION DATA

PRE-TEST CERTIFICATION DATA

DRIVER DUMMY S/N: 192

TRANSPORTATION RESEARCH CENTER OF OHIO
HYBRID III EXTERNAL DIMENSIONS
ALDERSON 192

12-NOV-92

TRC	192C10ED1	572E SN192 EXT. DIMENSION CAL10
TEST PARAMETER	(DIMEN.)	SPECIFICATION TEST RESULTS
TEMPERATURE		20.6 DEG. C
RELATIVE HUMIDITY		59.0 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)		429- 434 MM 432. MM
LOCATION FOR WAIST CIRCUMFERENCE (BB)		226- 231 MM 229. MM
CHEST CIRCUMFERENCE (Y)		970-1001 MM 983. MM
WAIST CIRCUMFERENCE (Z)		836- 866 MM 848. MM
CHEST DEPTH (D)		213- 229 MM 218. MM
H-POINT HEIGHT (C)		84- 89 MM 86. MM
H-POINT FROM SEATBACK (D)		135- 140 MM 137. MM
SKULL CAP TO BACKLINE (H)		41- 46 MM 43. MM
TOTAL SITTING HEIGHT (A)		879- 889 MM 884. MM
THIGH CLEARANCE (F)		140- 155 MM 147. MM
BUTTOCK KNEE LENGTH (K)		579- 605 MM 602. MM
BUTTOCK POPLITEAL LENGTH (N)		452- 478 MM 472. MM
POPLITEAL HEIGHT (L)		429- 455 MM 450. MM
KNEE PIVOT HEIGHT (M)		485- 500 MM 493. MM
FOOT LENGTH (P)		252- 267 MM 259. MM
FOOT BREADTH (W)		91- 107 MM 102. MM
SHOULDER PIVOT FROM BACKLINE (E)		84- 94 MM 91. MM
SHOULDER BREADTH (V)		422- 437 MM 427. MM
SHOULDER PIVOT HEIGHT (B)		506- 521 MM 513. MM
ELBOW REST HEIGHT (J)		191- 211 MM 206. MM
SHOULDER-ELBOW LENGTH (I)		330- 345 MM 340. MM
BACK OF ELBOW TO WRIST PIVOT (G)		290- 305 MM 295. MM

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Fanta

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

13-NOV-92

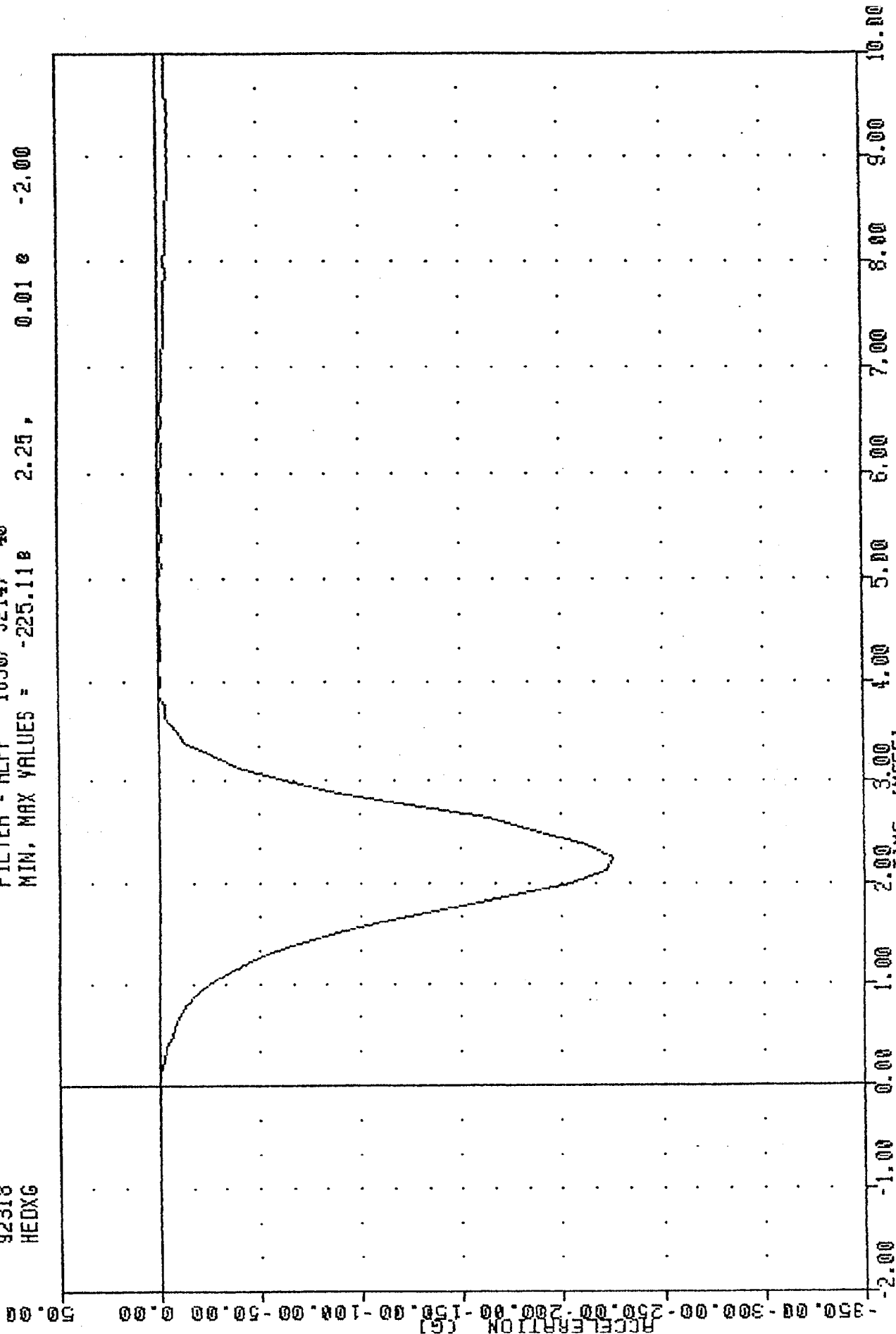
TRC	192C10HD1	572E SN192 HEAD DROP CAL 10
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	262.58 G
PEAK LATERAL ACCELERATION	15 G MAX	-10.17 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN Peter Font

TRC
572E SN192 HEAD DROP CAL 10
92318
HEDXG

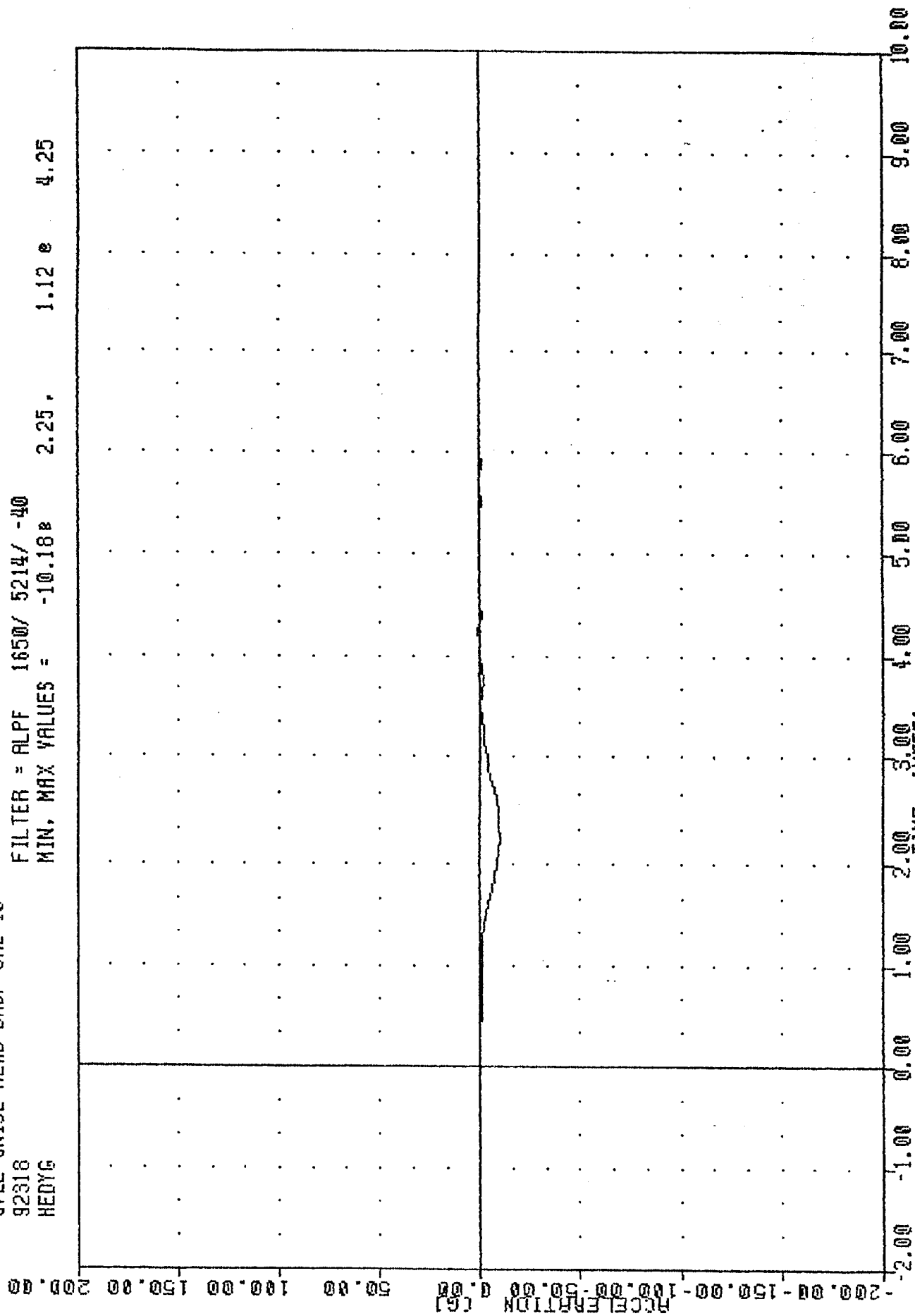
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -225.118 2.25, 0.01 e -2.00



PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

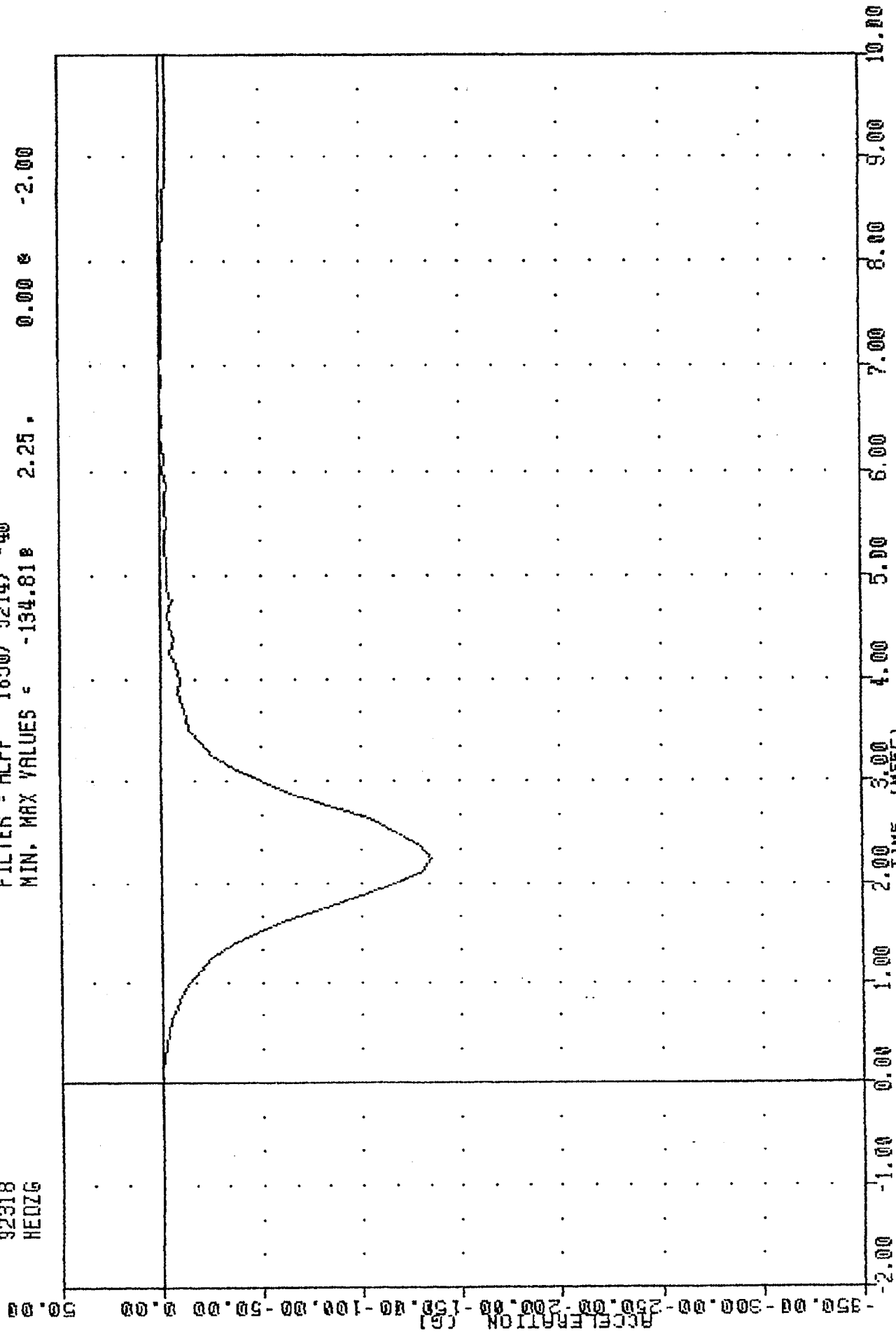
TRC
572E SN192 HEAD DROP CAL 10
92318
HEDYG

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -10.18 2.25, 1.12 e 4.25



TAC
572E SN192 HEAD DROP CAL 10
92318
HEADZG

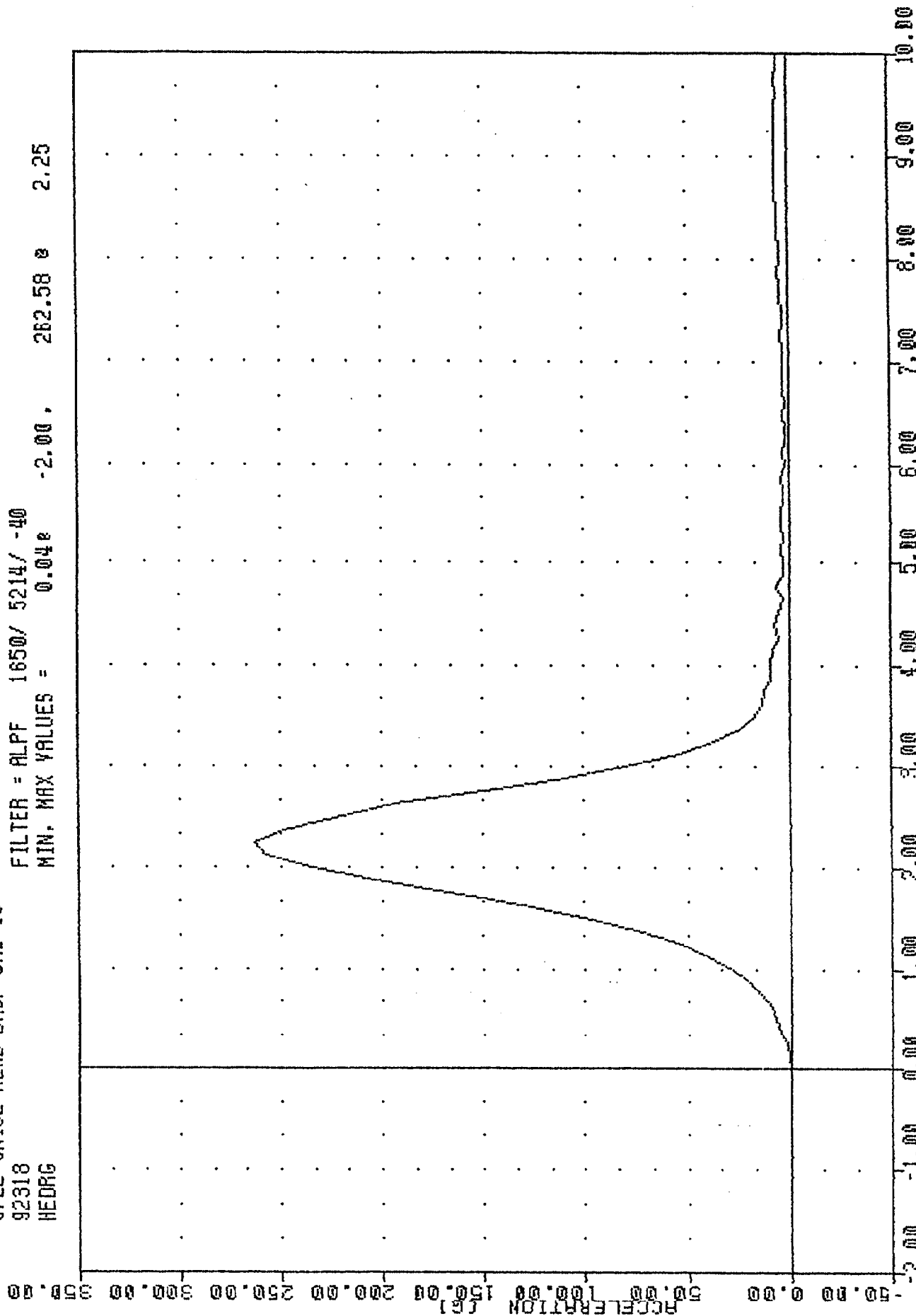
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -134.818 2.25 0.00 e -2.00



PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION 7 AXIS

TRC , 192C10HD1
 572E SN192 HEAD DRDP CAL 10
 92318
 HEDRG

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = 0.04e -2.00 , 262.58 e 2.25



PART 572-E HYBRID ILL HEAD CALIBRATION
 HEAD SPEC IN TANT AIR REFERRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

13-NOV-92

6 AXIS NECK TRANSDUCER
TRC 192C10NF1

572E SN192 NECK FLEXION CAL10

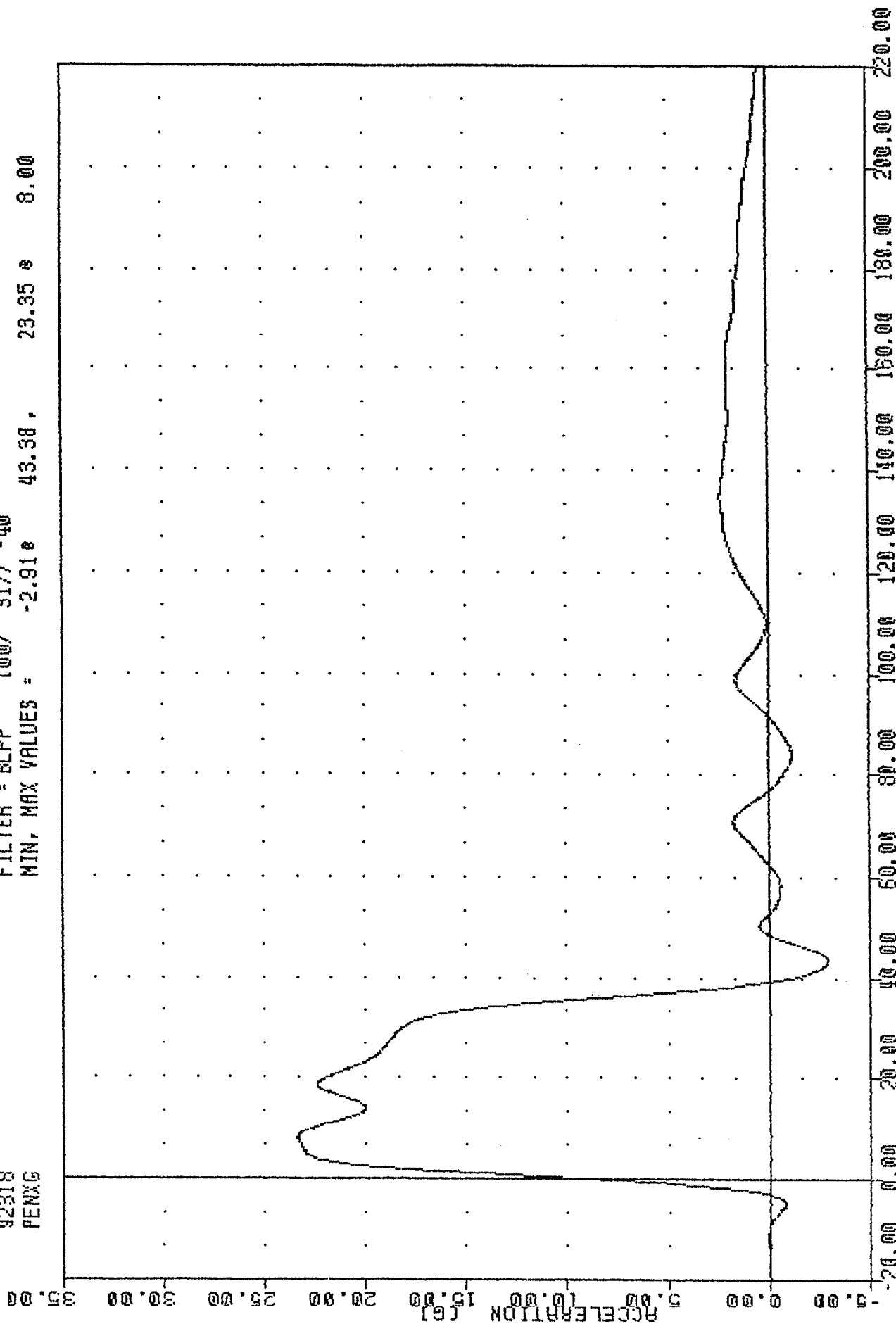
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
IMPACT VELOCITY	6.89 - 7.13 M/SEC	7.10 M/SEC
PENDULUM	10 MS 22.50 - 27.50 G	22.60 G
DECELERATION	20 MS 17.60 - 22.60 G	21.92 G
	30 MS 12.50 - 18.50 G	18.12 G
MAX PENDULUM G ABOVE 30 MS	29 G MAX	18.08 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 42 MS	37.00 MS
D PLANE	MAX 64 - 78 DEG.	69.48 DEG.
ROTATION	TIME 57 - 64 MS	57.75 MS
MOMENT ABOUT OCCIPITAL	MAX 88.2 - 108.5 NM	96.28 NM
CONDYLE	TIME 47 - 58 MS	48.75 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	113 - 128 MS	113.13 MS
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	97 - 107 MS	99.50 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN *Pete Faust*

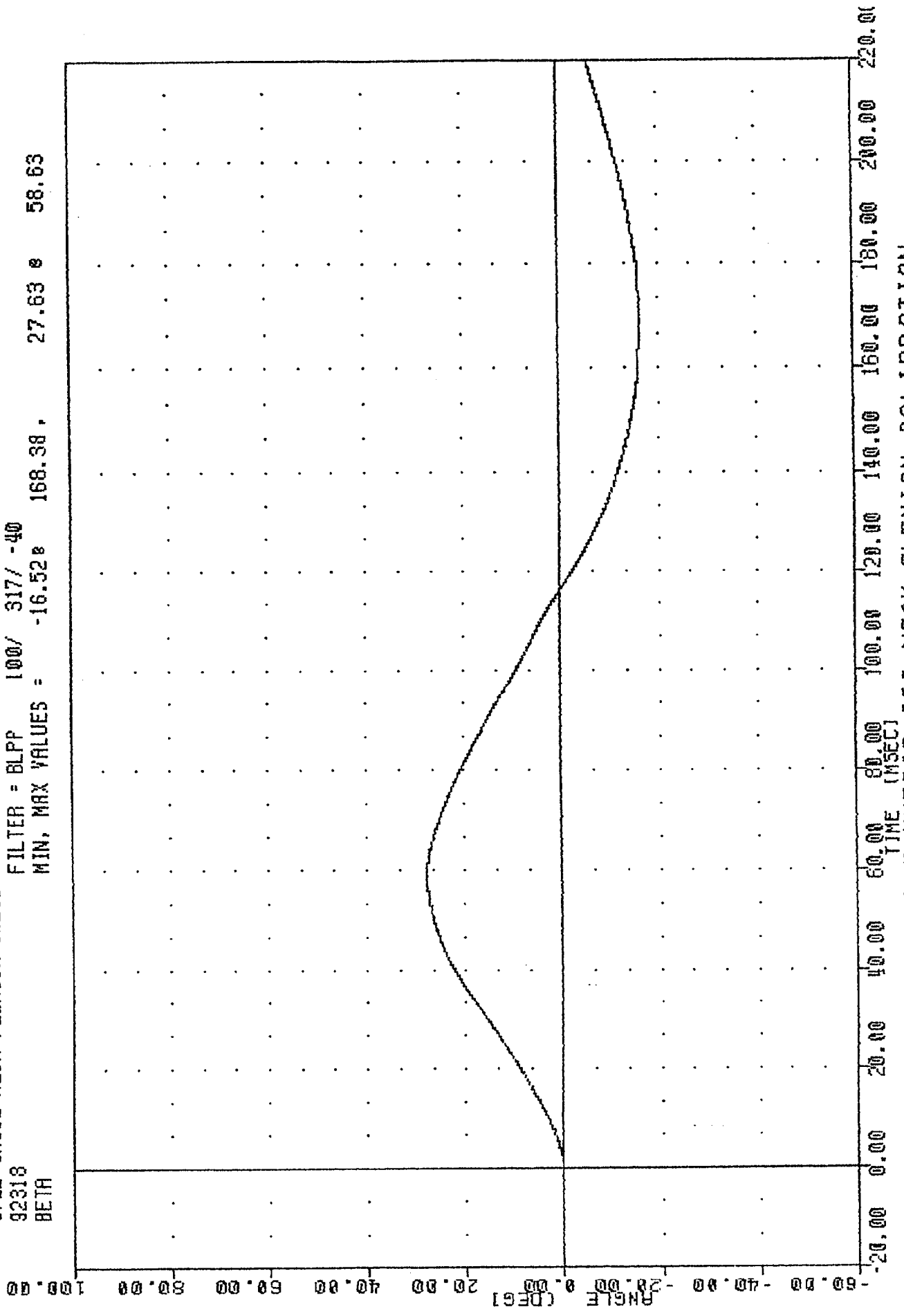
TRC
572E SN192 NECK FLEXION CAL10
92318
PENXG

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -2.91e 43.38, 23.35 e 8.00



TRC
572E SN192 NECK FLEXION CAL10
92318
BETA

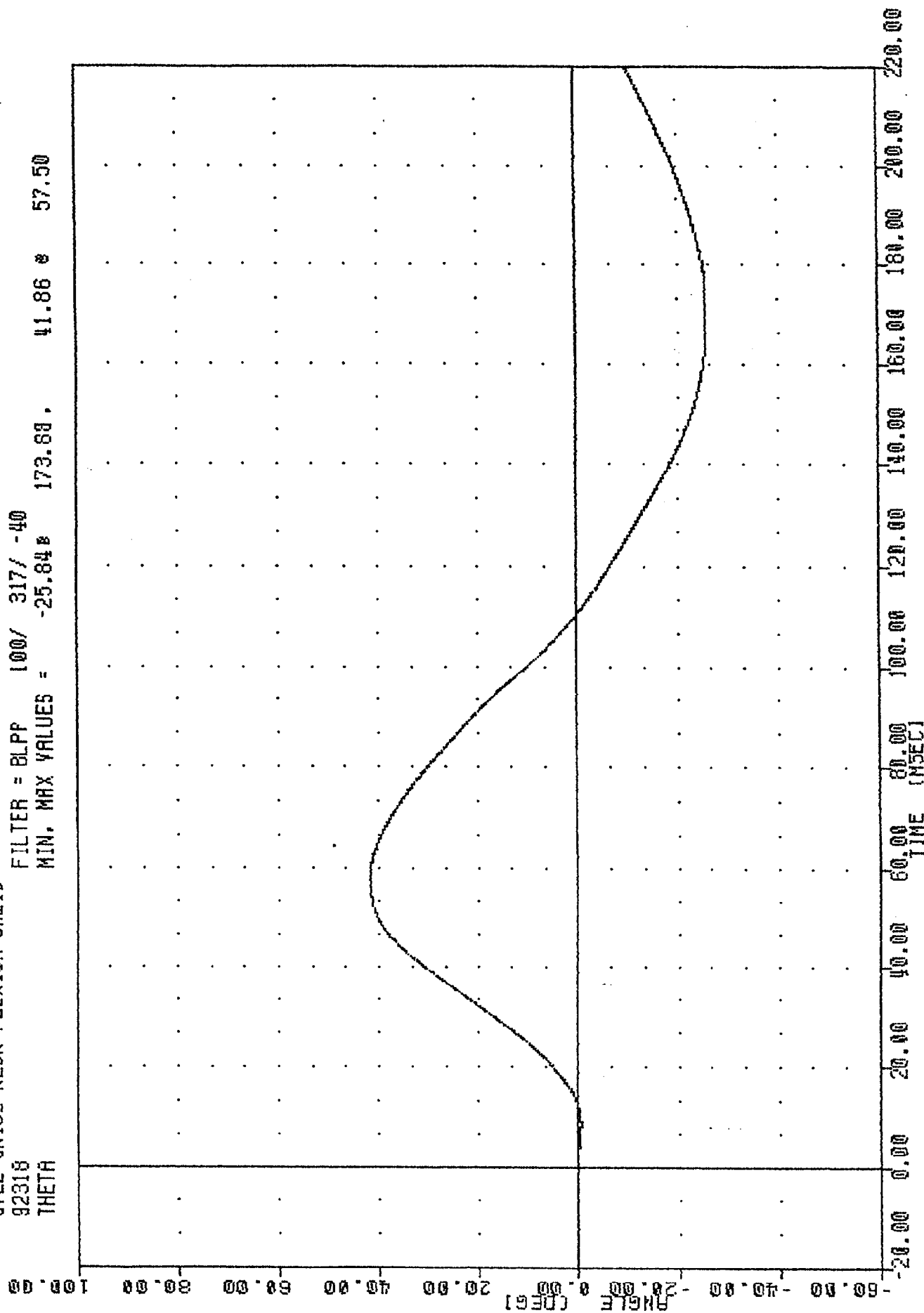
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -16.52 168.38, 27.63 58.63



PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT BASE OF NECK

TRC , 192C10NF1
 572E 3N192 NECK FLEXION CALID
 92310
 THETA

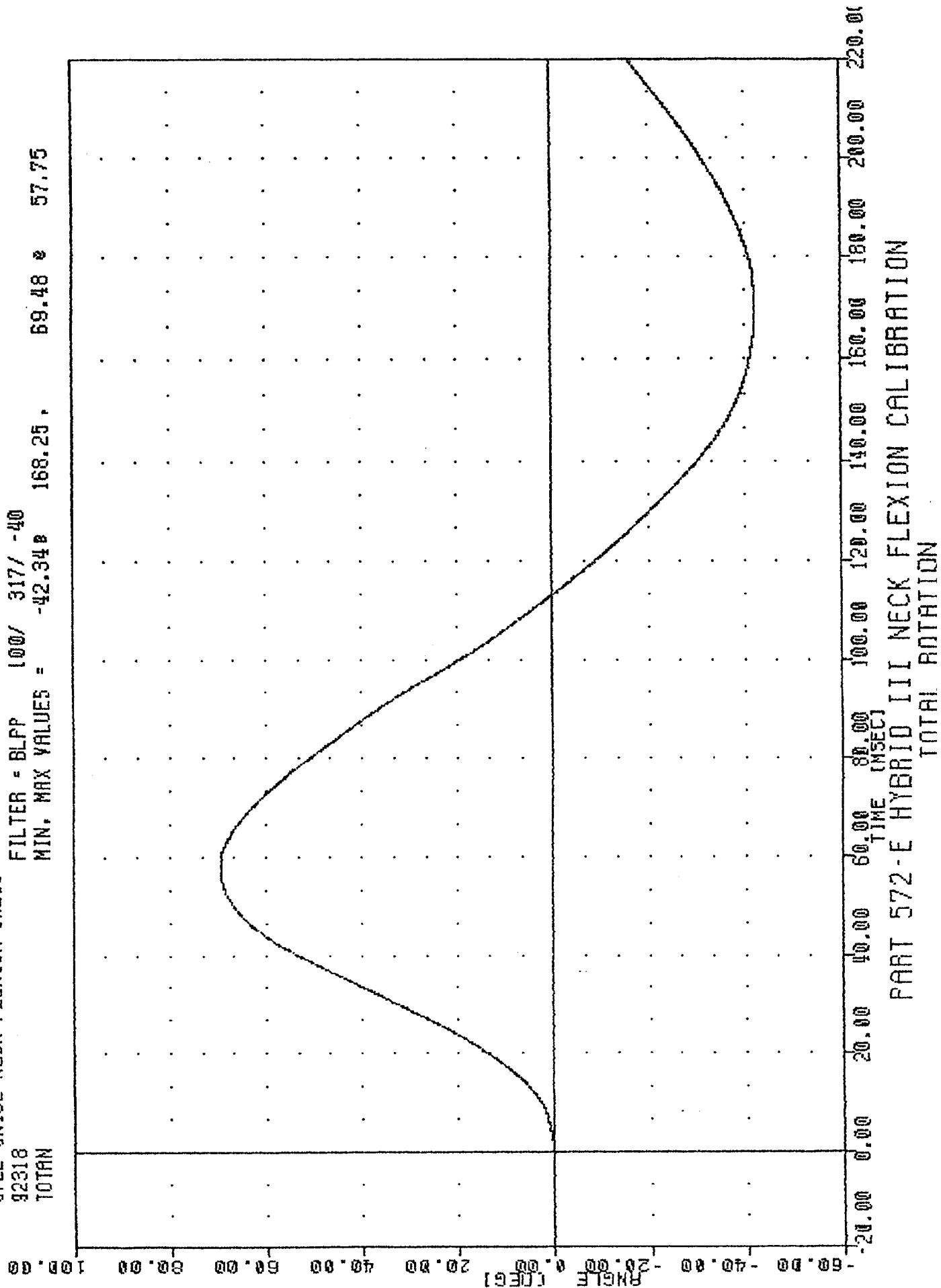
FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -25.84 173.63 41.86 57.50



PART 572-E HYBRID III NECK FLEXION CALIBRATION
 ROTATION FROM OCCIPITAL CONDYLE

TRC
572E SN192 NECK FLEXION CAL10
92318
TOTAL

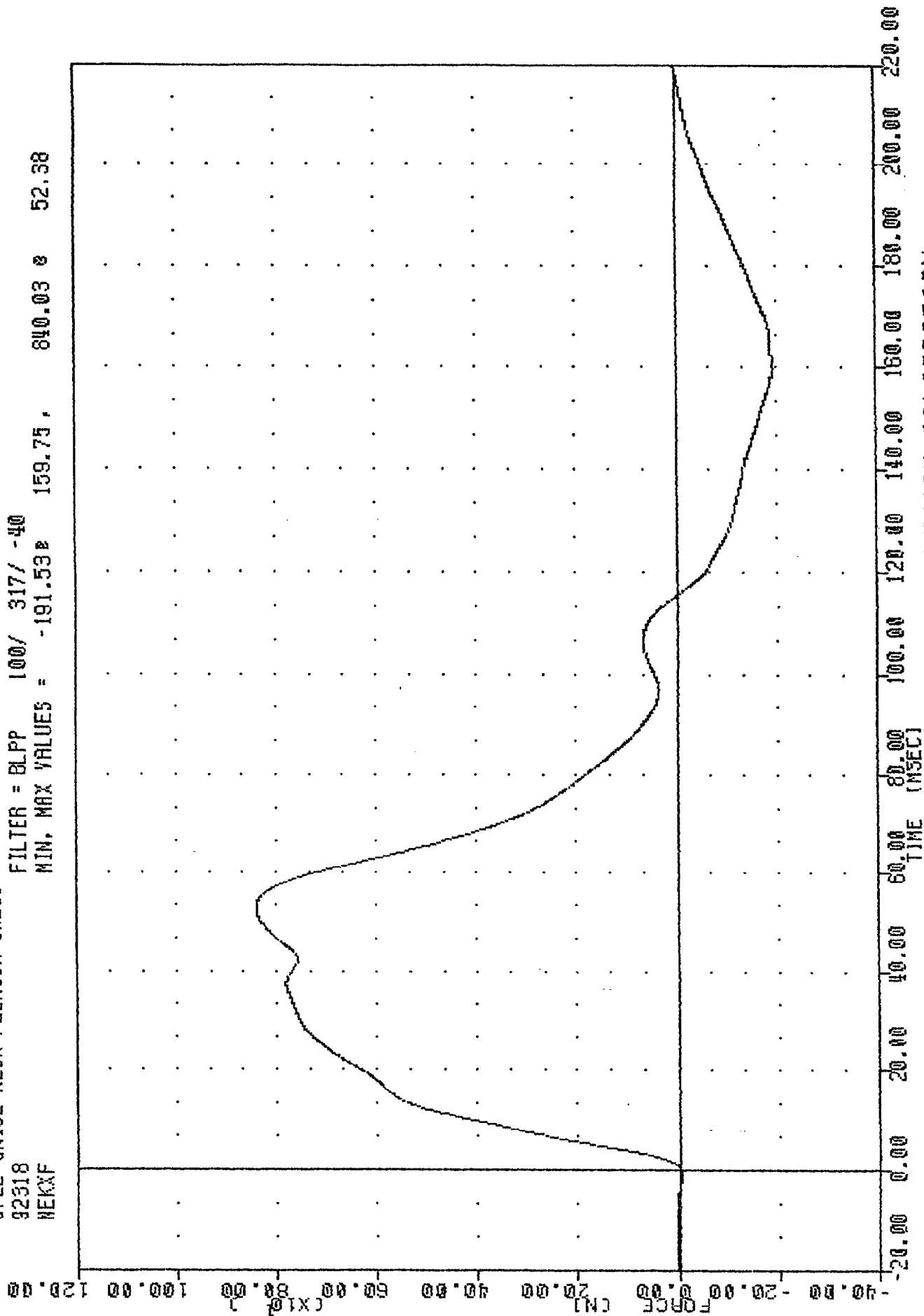
FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -42.340 168.25 69.48 57.75



PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL ROTATION

TRC , 192C10NF1
 572E SN192 NECK FLEXION CAL10
 92318
 WEKXF

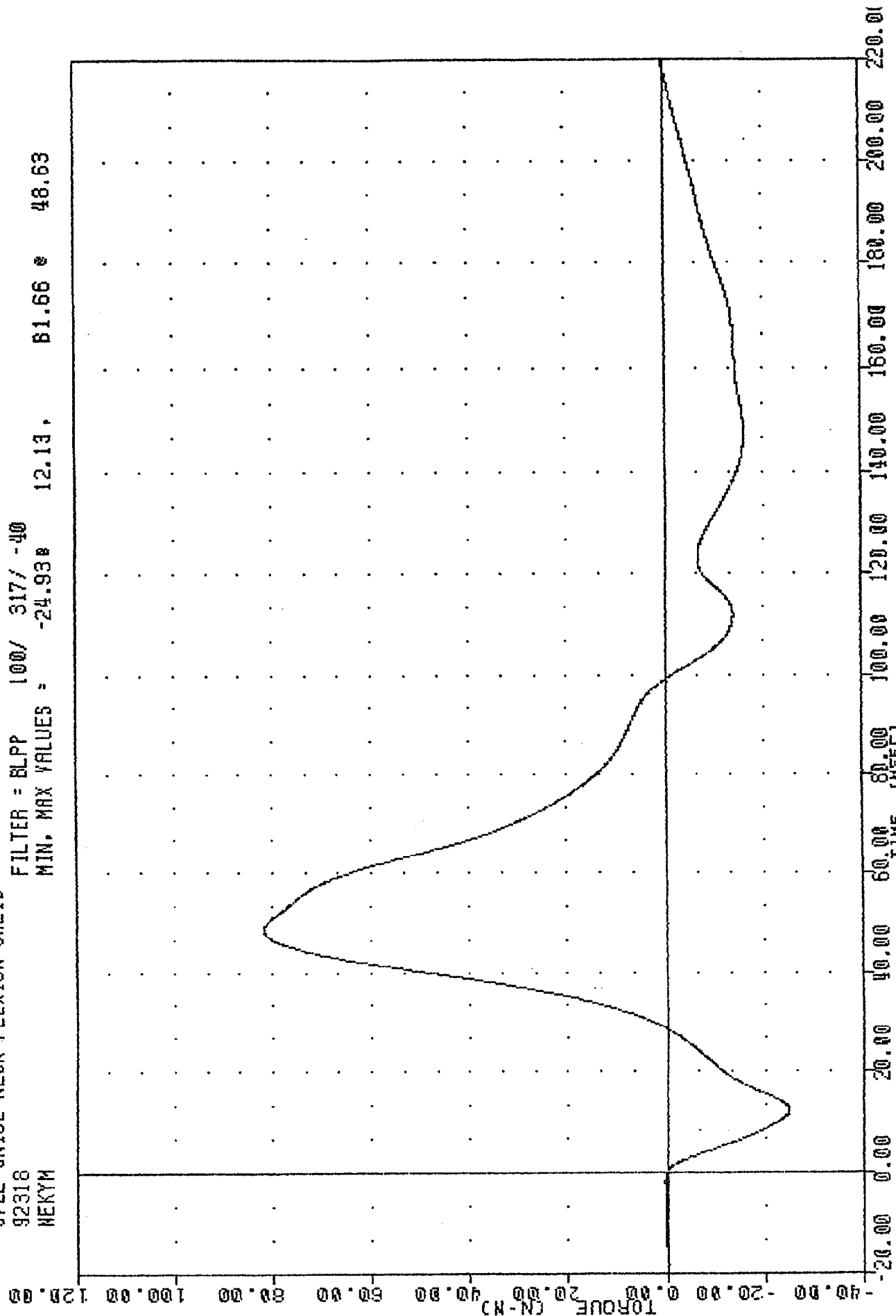
FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -191.53 840.03 52.38



PART 572-E HYBRID III NECK FLEXION CALIBRATION

TRC
572E SN192 NECK FLEXION CAL1D
92318
NEKYM

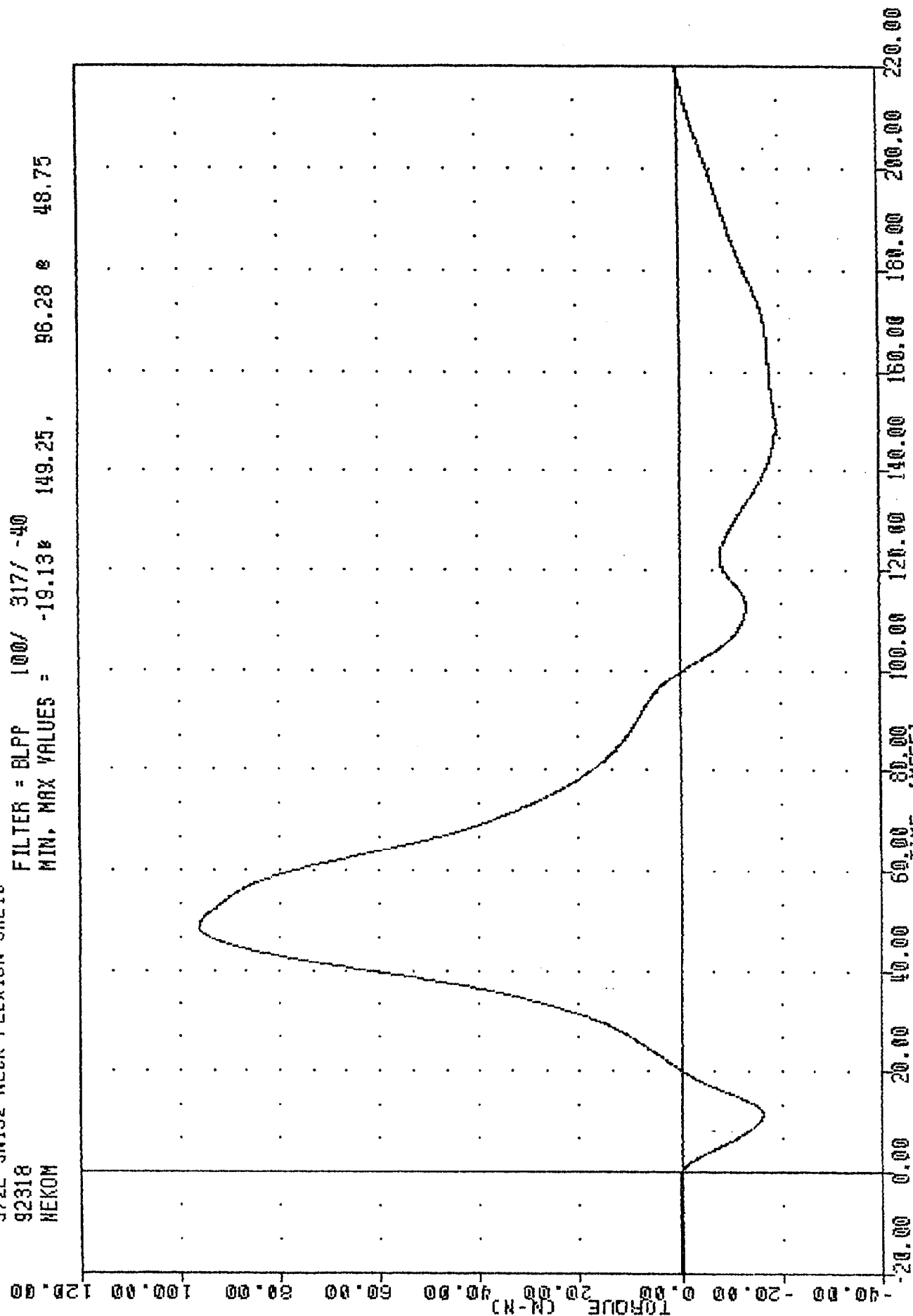
FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -24.93 81.66 48.63



PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS

TRC
572E SN192 NECK FLEXION CAL10
92318
NEKOM

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -19.13 149.25 96.28 48.75



TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

13-NOV-92

6 AXIS NECK TRANSDUCER
TRC 192C10NE1

572E SN192 NECK EXT, CAL10

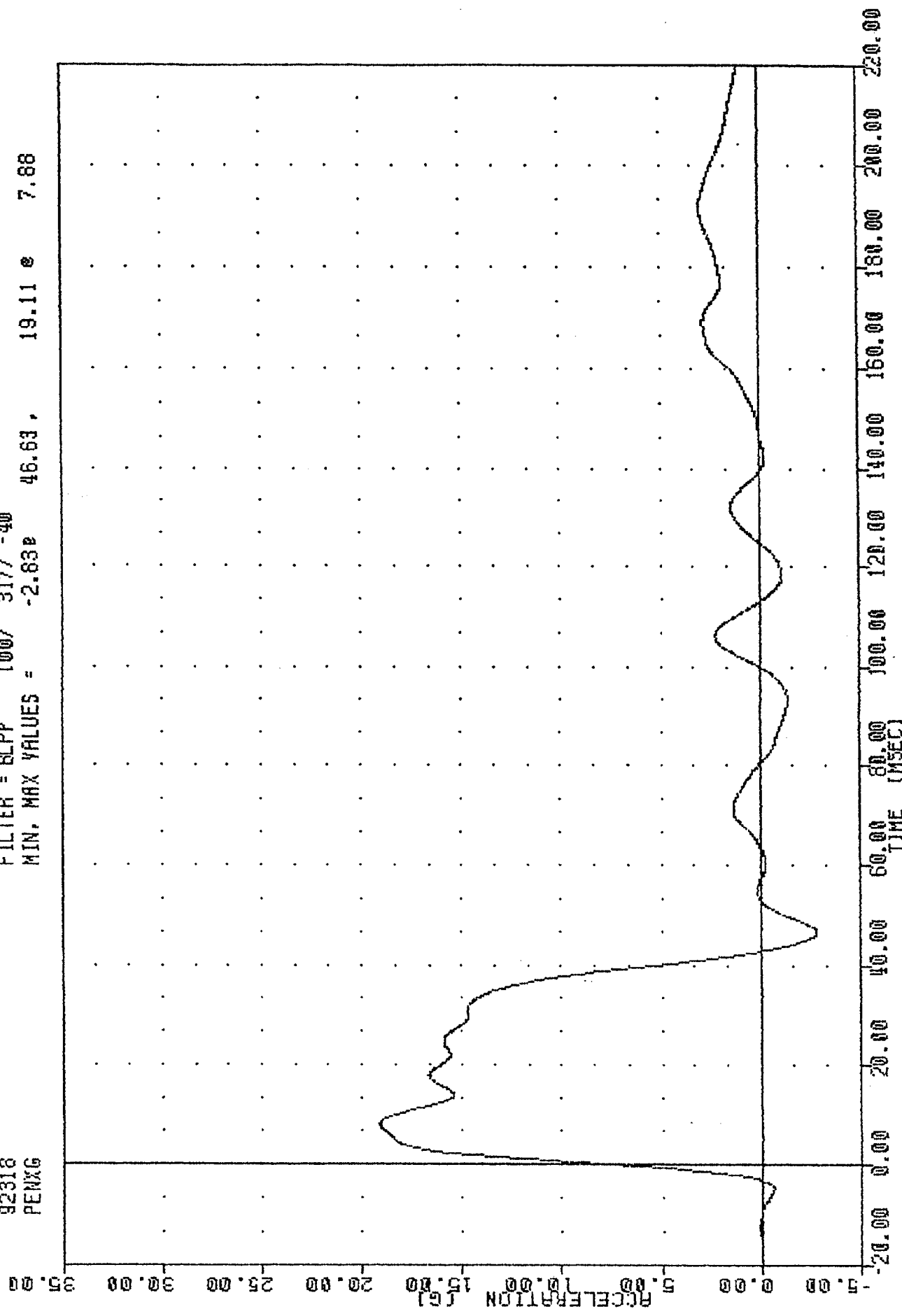
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
IMPACT VELOCITY	5.95 - 6.19 M/SEC	6.05 M/SEC
PENDULUM	10 MS 17.20 - 21.20 G	18.22 G
DECELERATION	20 MS 14.00 - 19.00 G	16.08 G
	30 MS 11.00 - 16.00 G	14.67 G
MAX PENDULUM G ABOVE 30 MS	22 G MAX	14.70 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	38 - 46 MS	40.00 MS
D PLANE	MAX 81 - 106 DEG.	91.40 DEG.
ROTATION	TIME 72 - 82 MS	77.88 MS
MOMENT ABOUT OCCIPITAL	MIN -80.0/-52.9 NM	-55.65 NM
CONDYLE	TIME 65 - 79 MS	70.88 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	147 - 174 MS	159.50 MS
NEGATIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	120 - 148 MS	138.25 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN *[Signature]*

TPC
 572E SN192 NECK EXT. CAL10
 92318
 PENXG

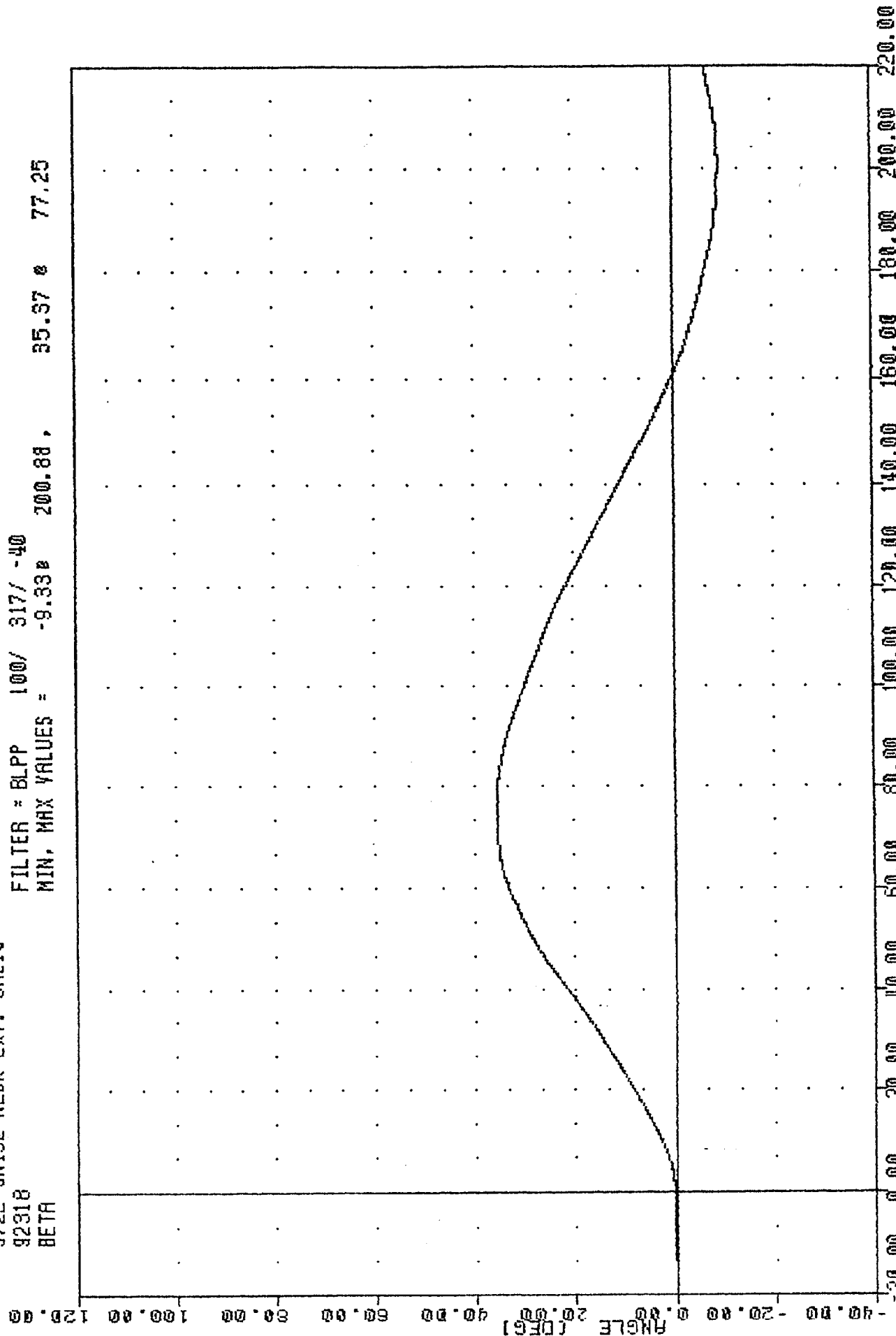
FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -2.63 46.63, 19.11 7.88



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 PENXG IN HYBRID III

TRC
572E 3N192 NECK EXT. CAL10
92318
BETA

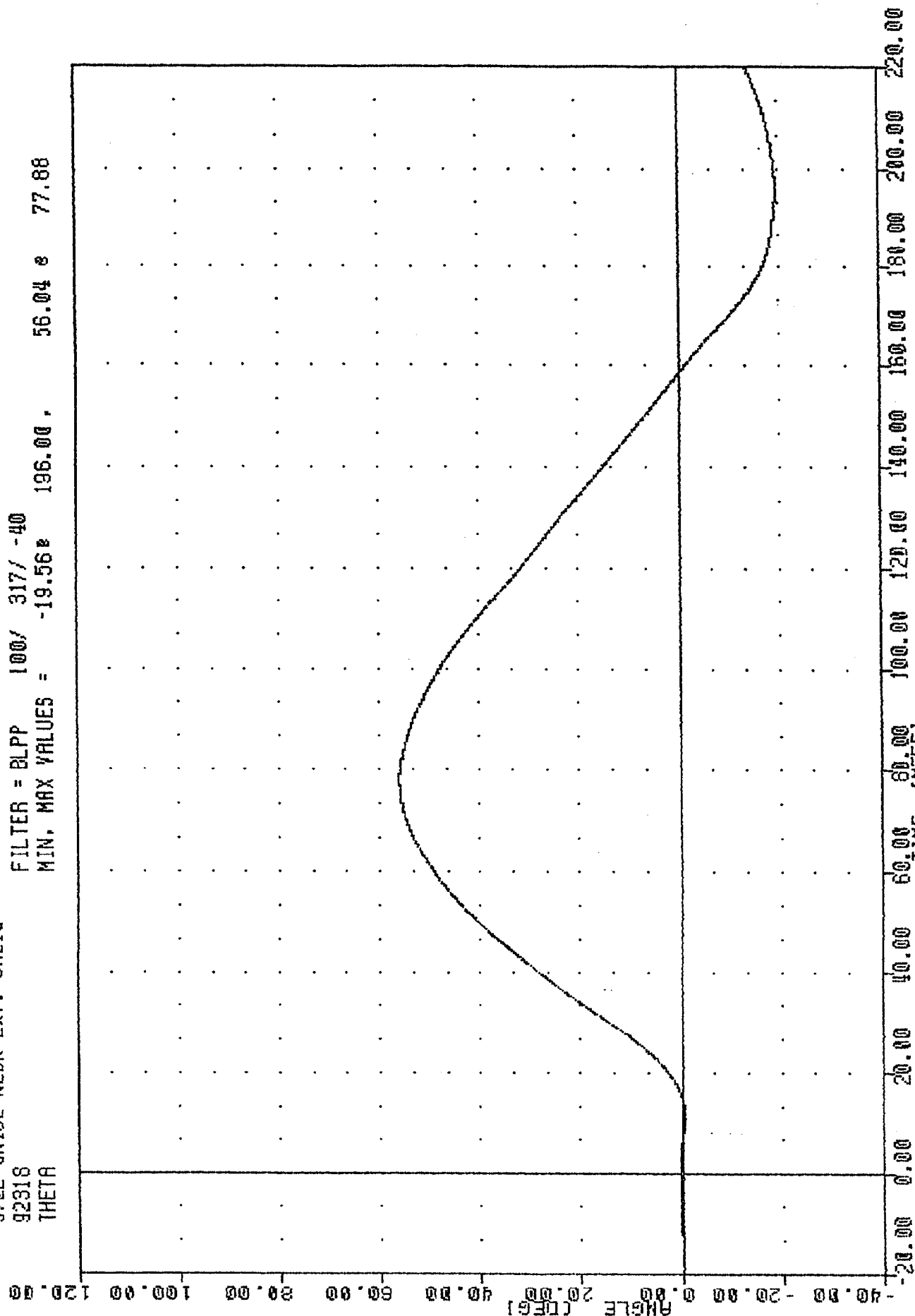
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -9.33 200.88, 35.37 77.25



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT BASE OF NECK

TAC , 192C10NE1
 572E SN192 NECK EXT. CAL10
 92318
 THETA

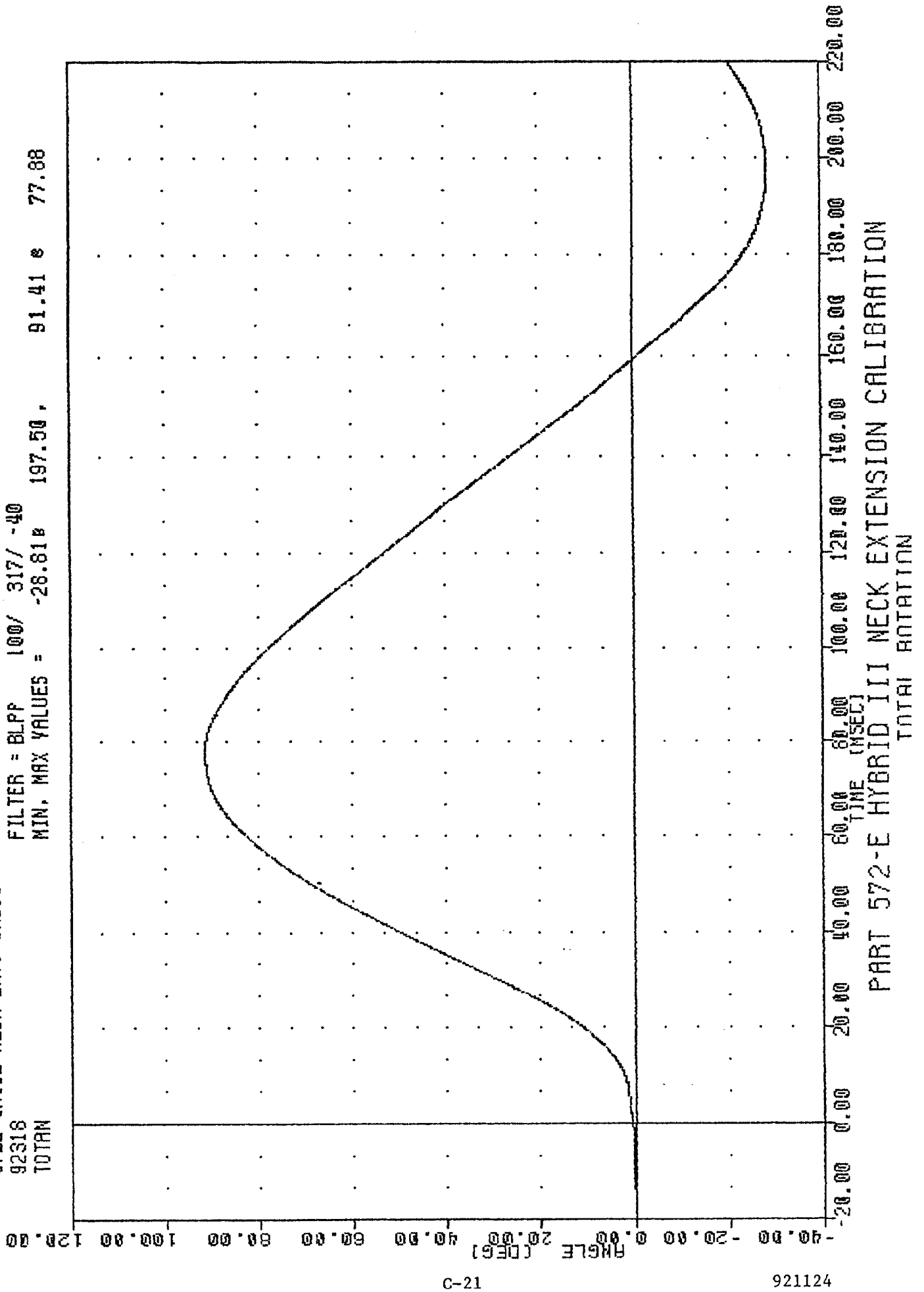
FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -19.56 196.00 56.04 77.88



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 ROTATION ARMED OCCUPANTAL CYCLES

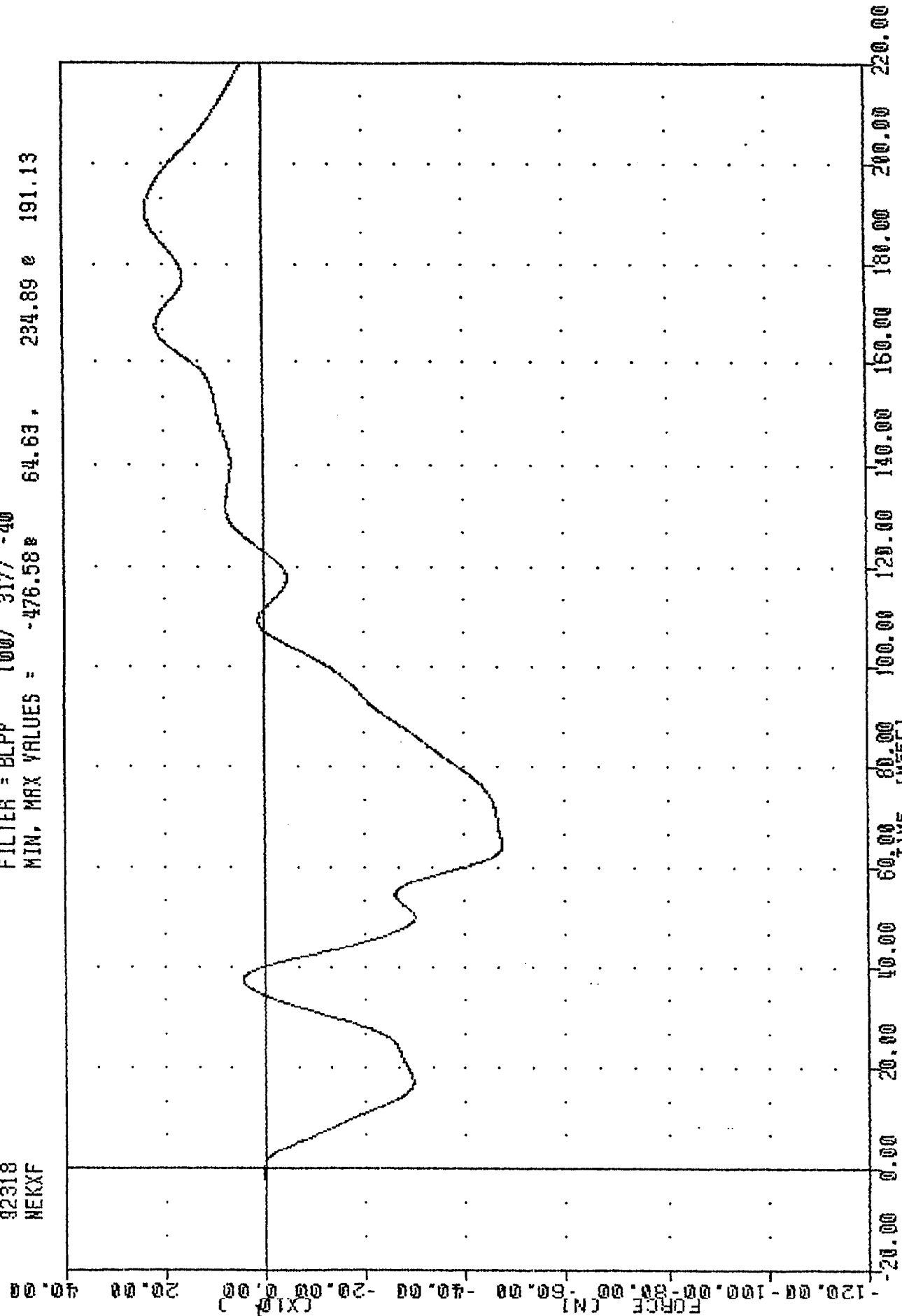
TAC
572E SN192 NECK EXT. CAL10
92318
TOTAM

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -28.81 91.41 8 77.88



TRC ,192C10NE1
 572E 9N192 NECK EXT. CAL10
 92318
 NEKXF

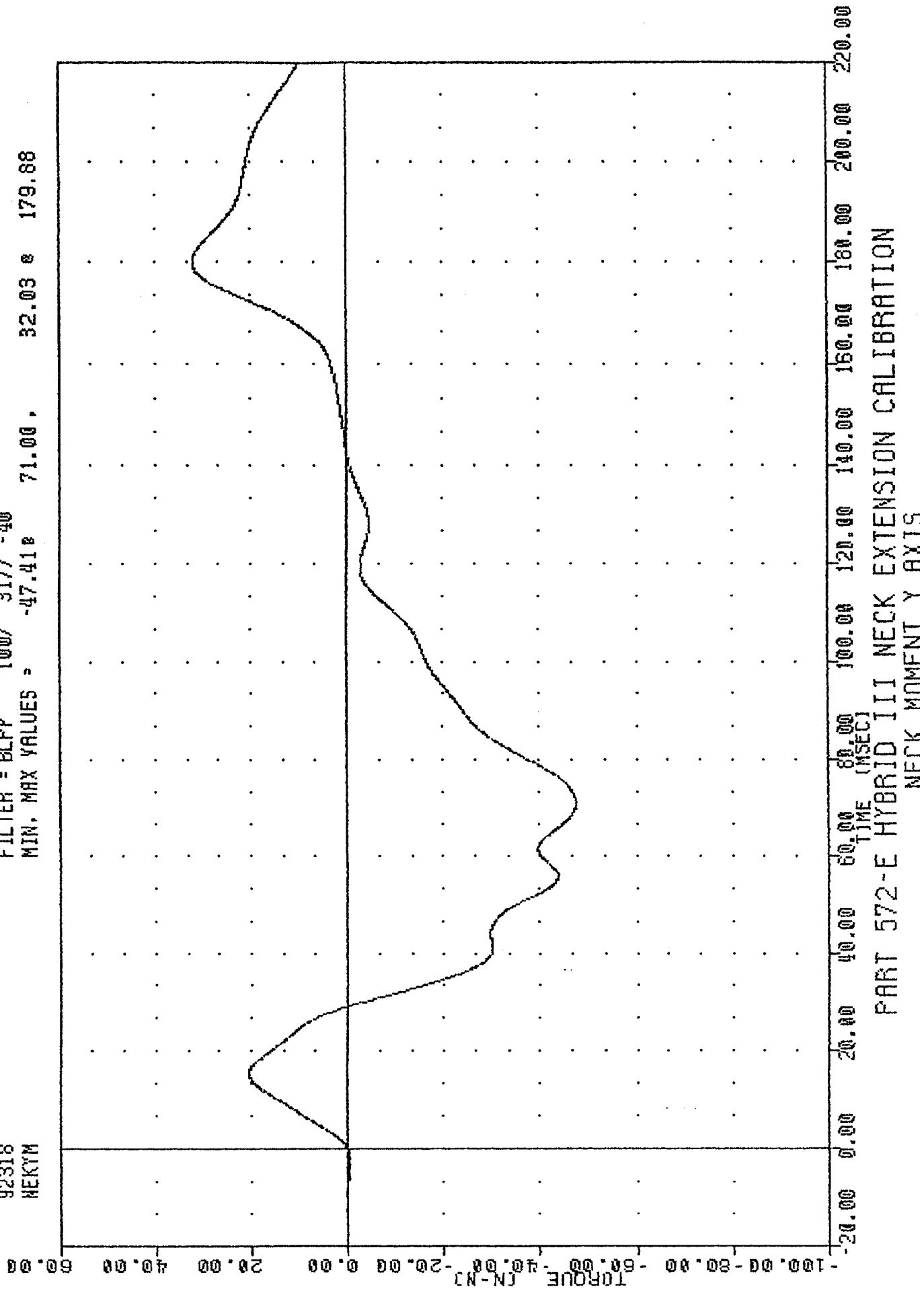
FILTER = BLPP 100/ 317/ -40
 MIN, MAX VALUES = -476.58 64.63, 234.89 e 191.13



PART 572-E HYBRID, ILL NECK EXTENSION CALIBRATION

TRC
572E SN182 NECK EXT. CAL10
92318
HEKYM

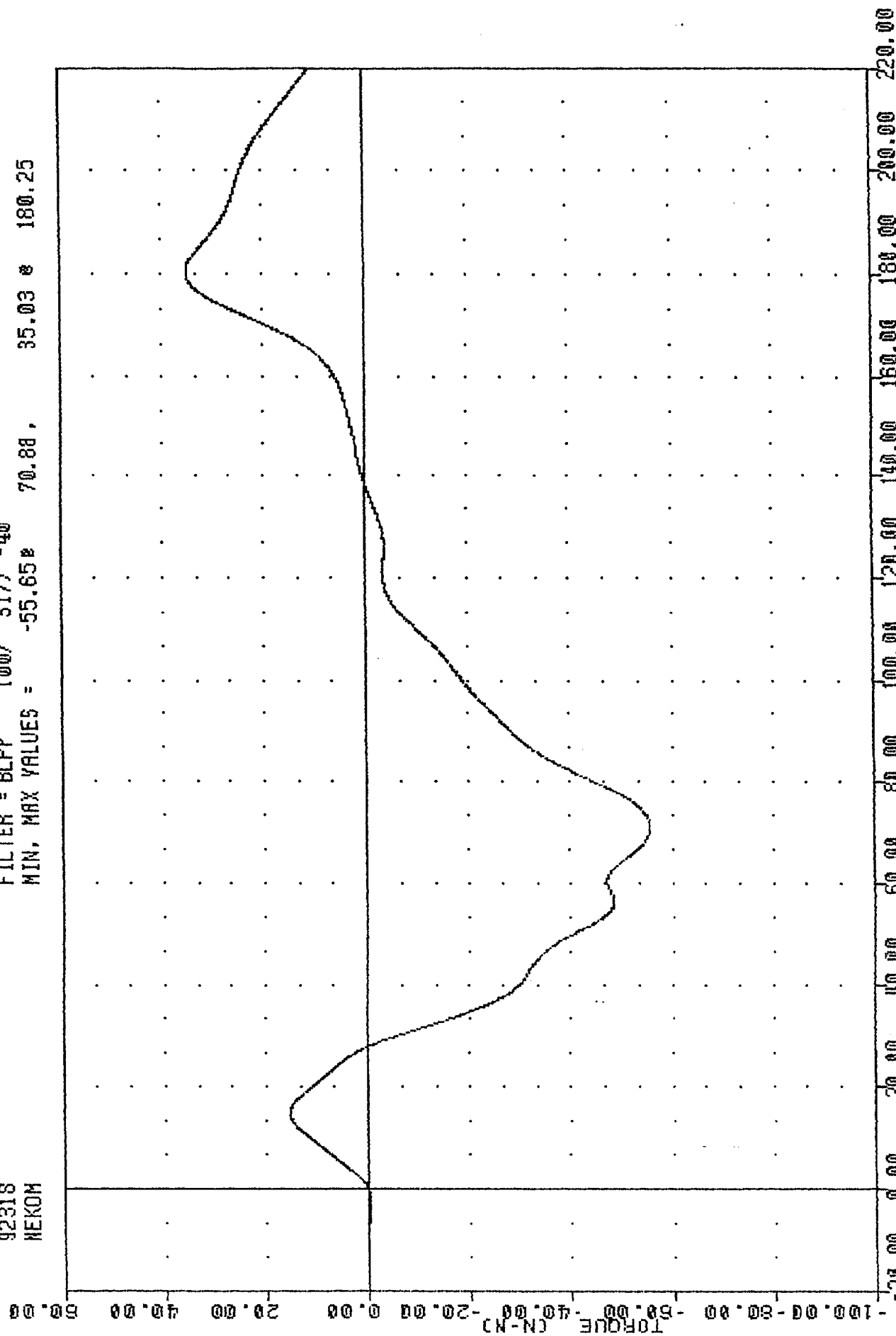
FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -47.41e 71.00e 32.03e 179.88



PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TRC , 192C10NE1
 572E SN192 NECK EXT. CAL10
 92318
 MEKOM

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -55.65 70.88 , 35.03 180.25



TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

16-NOV-92

TRC

192C10TH1

572E SN192 H.S.THORAX CAL10

	HIGH SPEED TEST	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
=====		
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C

RELATIVE HUMIDITY	10% - 70%	46.0 %

PENDULUM VELOCITY	6.59 - 6.83 M/SEC	6.68 M/SEC

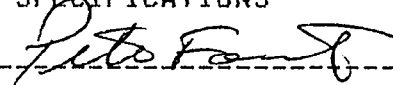
MAXIMUM DEFLECTION	63.5 - 72.6 MM	68.2 MM

MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5512. N

INTERNAL HYSTERESIS	69% - 85%	74.0%

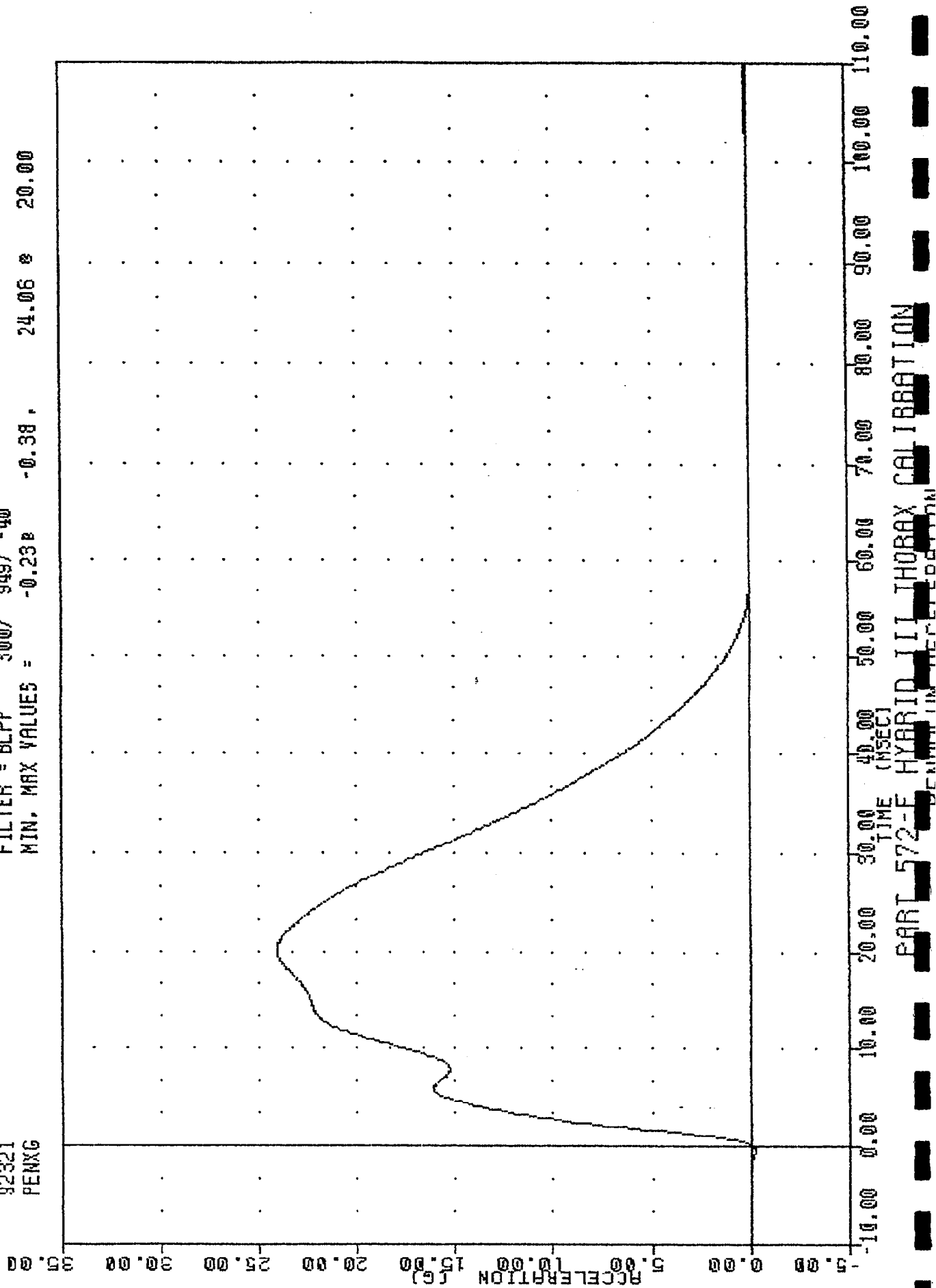
TEST MEETS SPECIFICATIONS

TECHNICIAN



IRC
 572E SN192 H.5. THORAX CAL10
 92321
 PENXG

FILTER = BLPP 300/ 949/ -40
 MIN. MAX VALUES = -0.23 24.06 20.00
 -0.38



TRC
572E 9N192 H.S. THORAX CAL10
92321
PENXF

FILTER = BLPP 300/ 949/ -40
MIN, MAX VALUES = -52.53 5512.48 @ 20.00

84.00

72.00

60.00

48.00

36.00

24.00

12.00

0.00

-12.00

-24.00

-36.00

-48.00

-60.00

-72.00

-84.00

-96.00

-108.00

-120.00

-132.00

-144.00

-156.00

-168.00

-180.00

-192.00

-204.00

-216.00

-228.00

-240.00

-252.00

-264.00

-276.00

-288.00

-300.00

-312.00

-324.00

-336.00

-348.00

-360.00

-372.00

-384.00

-396.00

-408.00

-420.00

-432.00

-444.00

-456.00

-468.00

-480.00

-492.00

-504.00

-516.00

-528.00

-540.00

-552.00

-564.00

-576.00

-588.00

-600.00

-612.00

-624.00

-636.00

-648.00

-660.00

-672.00

-684.00

-696.00

-708.00

-720.00

-732.00

-744.00

-756.00

-768.00

-780.00

-792.00

-804.00

-816.00

-828.00

-840.00

-852.00

-864.00

-876.00

-888.00

-900.00

-912.00

-924.00

-936.00

-948.00

-960.00

-972.00

-984.00

-996.00

-1008.00

-1020.00

-1032.00

-1044.00

-1056.00

-1068.00

-1080.00

-1092.00

-1104.00

-1116.00

-1128.00

-1140.00

-1152.00

-1164.00

-1176.00

-1188.00

-1200.00

-1212.00

-1224.00

-1236.00

-1248.00

-1260.00

-1272.00

-1284.00

-1296.00

-1308.00

-1320.00

-1332.00

-1344.00

-1356.00

-1368.00

-1380.00

-1392.00

-1404.00

-1416.00

-1428.00

-1440.00

-1452.00

-1464.00

-1476.00

-1488.00

-1500.00

-1512.00

-1524.00

-1536.00

-1548.00

-1560.00

-1572.00

-1584.00

-1596.00

-1608.00

-1620.00

-1632.00

-1644.00

-1656.00

-1668.00

-1680.00

-1692.00

-1704.00

-1716.00

-1728.00

-1740.00

-1752.00

-1764.00

-1776.00

-1788.00

-1800.00

-1812.00

-1824.00

-1836.00

-1848.00

-1860.00

-1872.00

-1884.00

-1896.00

-1908.00

-1920.00

-1932.00

-1944.00

-1956.00

-1968.00

-1980.00

-1992.00

-2004.00

-2016.00

-2028.00

-2040.00

-2052.00

-2064.00

-2076.00

-2088.00

-2100.00

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-2160.00

-2172.00

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-2220.00

-2232.00

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-2268.00

-2280.00

-2292.00

-2304.00

-2316.00

-2328.00

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-2376.00

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-2400.00

-2412.00

-2424.00

-2436.00

-2448.00

-2460.00

-2472.00

-2484.00

-2496.00

-2508.00

-2520.00

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-3228.00

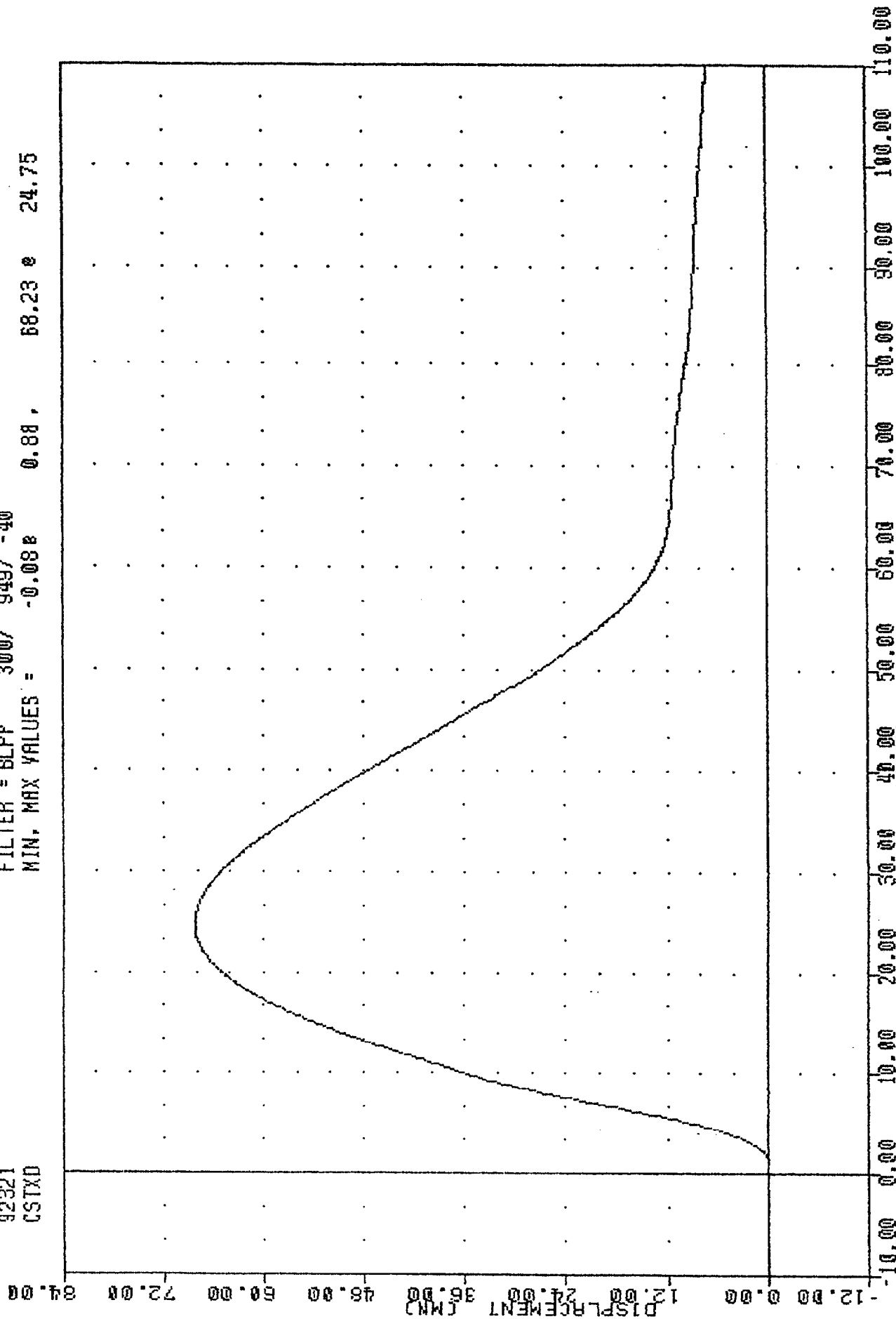
-3240.00

-3252.00

-3264.00

TRC , 192C10TH1
 572E 3N192 H.S. THORAX CAL10
 92321
 CSTXD

FILTER = BLPP 300/ 949/ -40
 MIN, MAX VALUES = -0.038 0.88 , 68.23 e 24.75

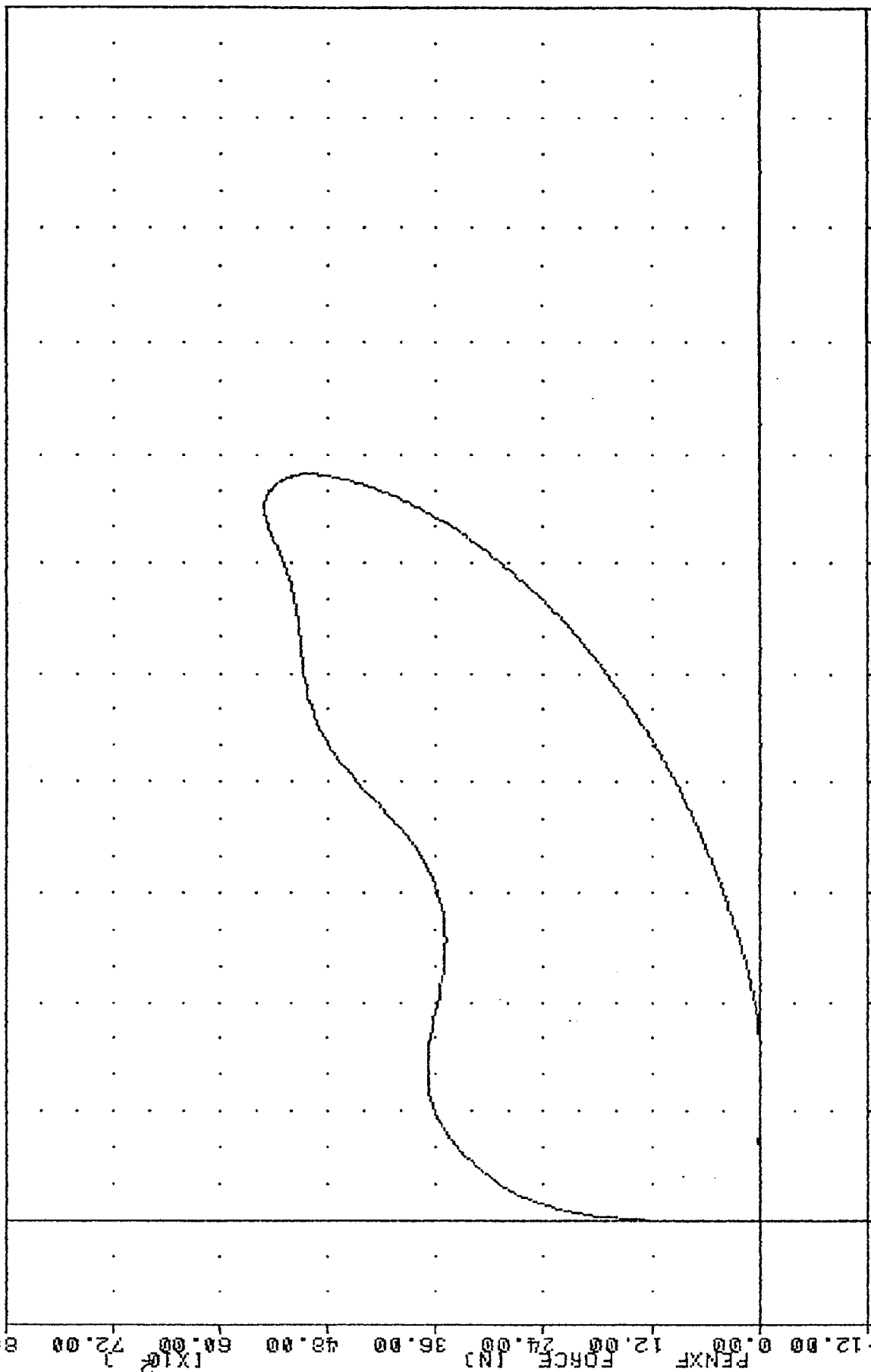


TRC
CSTXD
PENXF

192C10TH1
FILTER = BLPP
572E SN192 H.S. THORAX CAL10
300/ 949/ -40 MIN, MAX =
300/ 949/ -40 MIN, MAX =

92321
-0.08
-52.53
0.88
-0.38
68.23
5512.48
24.75
20.00

84.00



C-29

921124

921124
CSTXD
DISPLACEMENT (MM)
PART 572-E HYBRID III THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

12-NOV-92

RIGHT KNEE

TRC

192C10RK1

572E SN192 RIGHT KNEE CAL 10

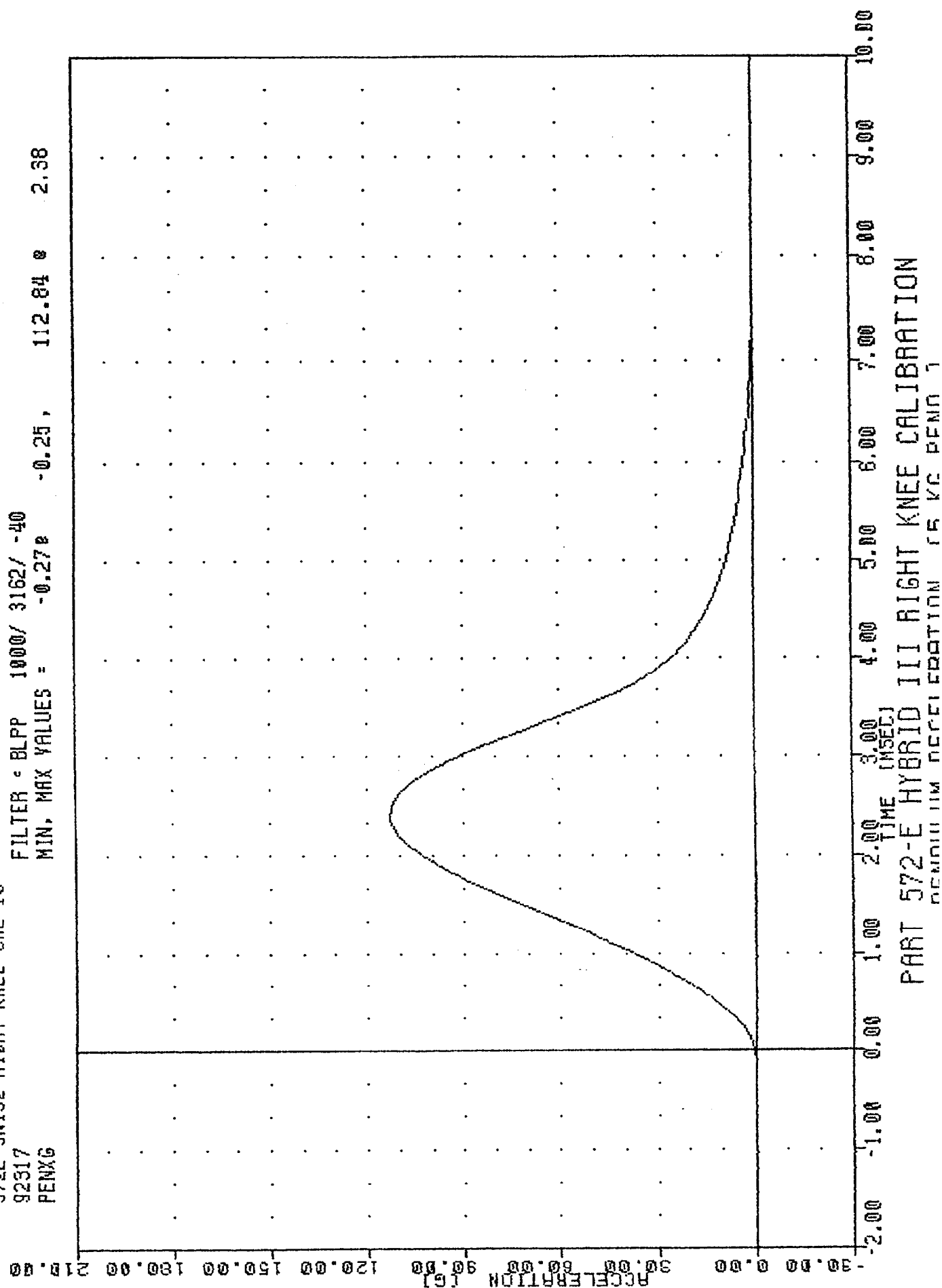
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PROBE VELOCITY	2.07 - 2.13 M/SEC	2.09 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5520.9 N
PROBE WEIGHT	5.0 KG	

TEST MEETS SPECIFICATIONS

TECHNICIAN *Pete Font*

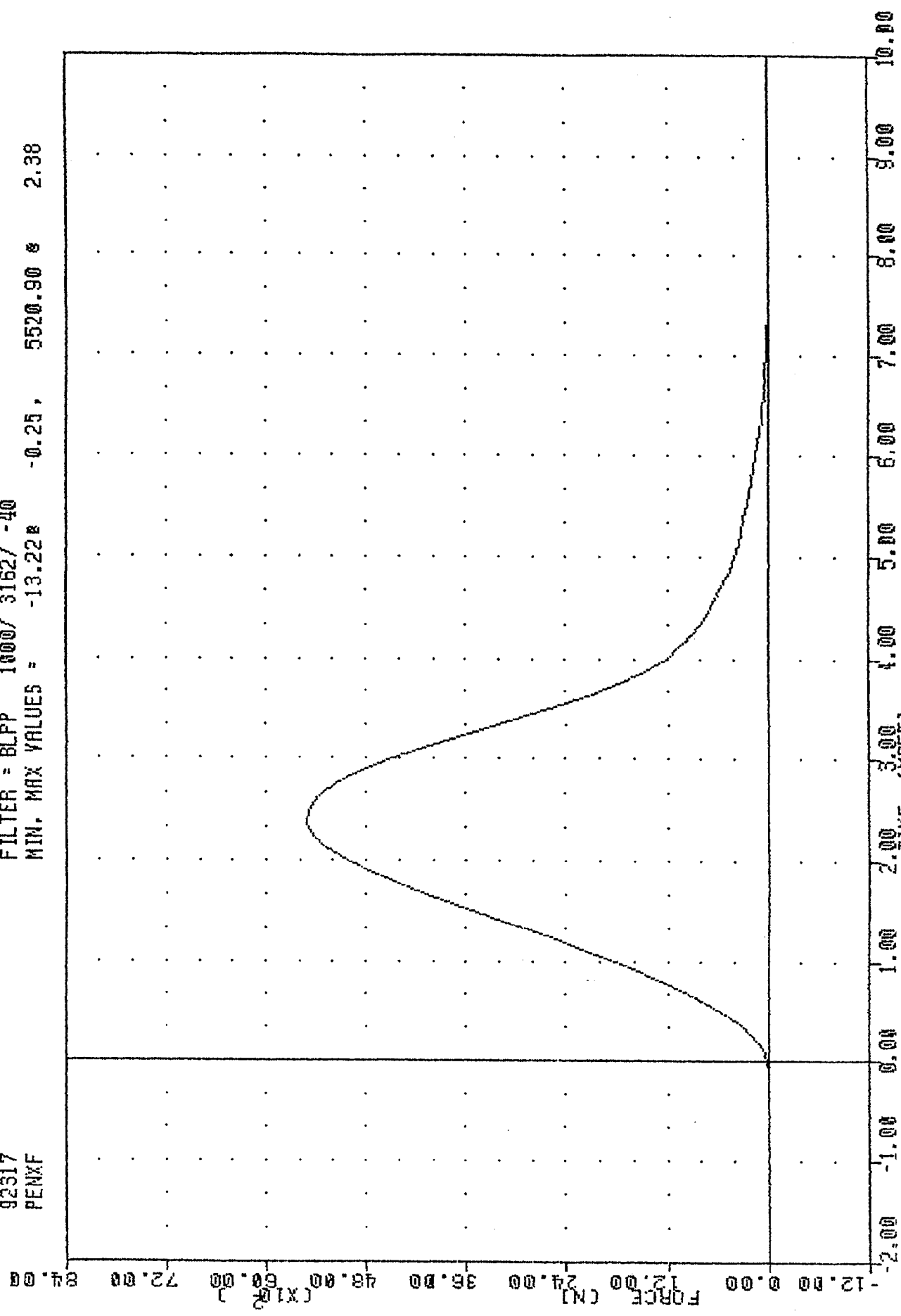
TRC , 192C1QHK1
572E SN192 RIGHT KNEE CARL 10
92317
PENXG

FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -0.272



TAC
 572E SN192 RIGHT KNEE CAL 10
 92317
 PENXF

FILTER = BLPP 1000/ 3162/ -40
 MIN. MAX VALUES = -13.22 5520.90 2.38



PART 572-E HYBRID III RIGHT KNEE CALIBRATION
 PENN STATE UNIV

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

12-NOV-92

LEFT KNEE

TRC

192C10LK1

572E SN192 LEFT KNEE CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PROBE VELOCITY	2.07 - 2.13 M/SEC	2.09 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5606.8 N
PROBE WEIGHT	5.0 KG	

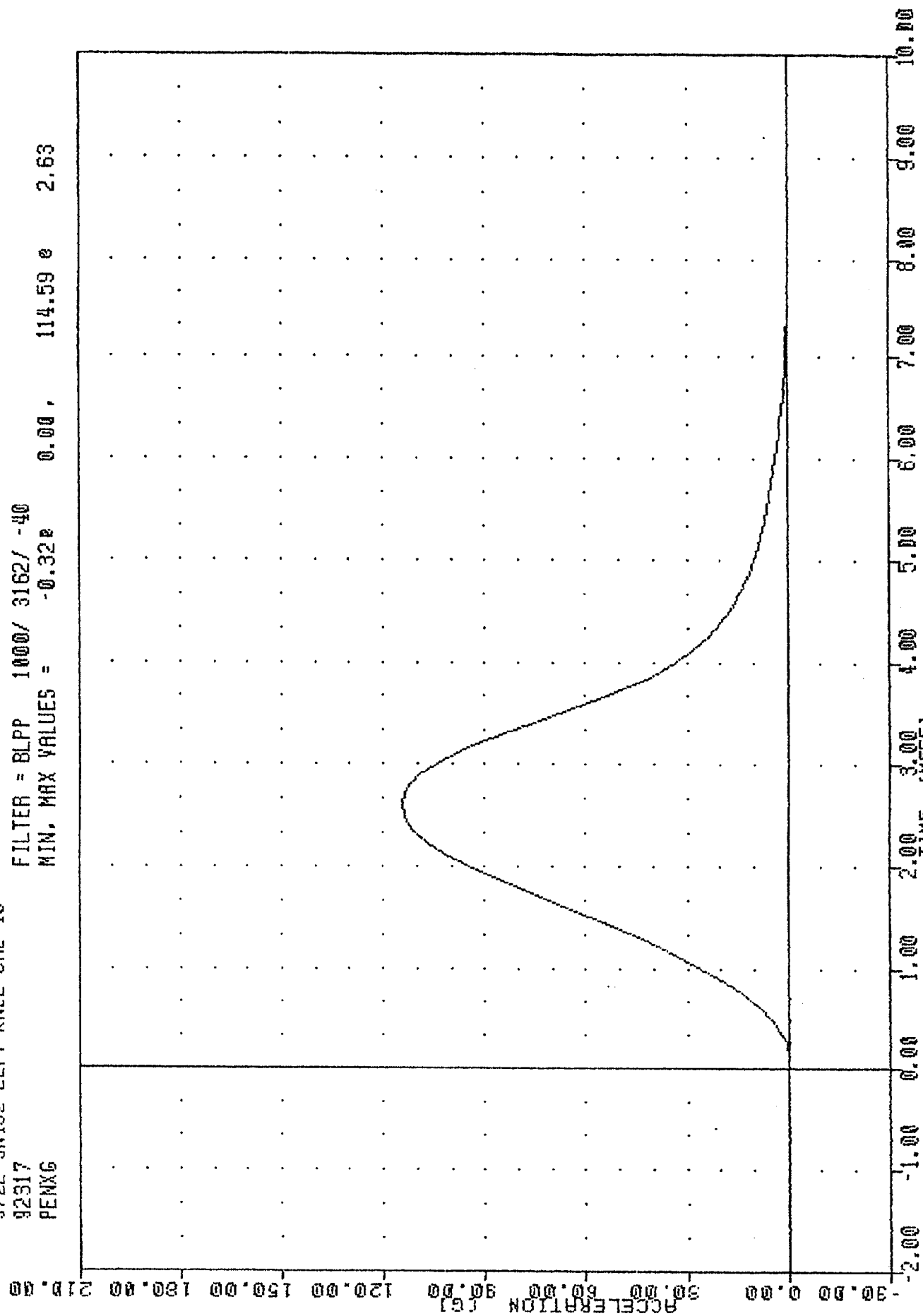
TEST MEETS SPECIFICATIONS

TECHNICIAN

Dito Font

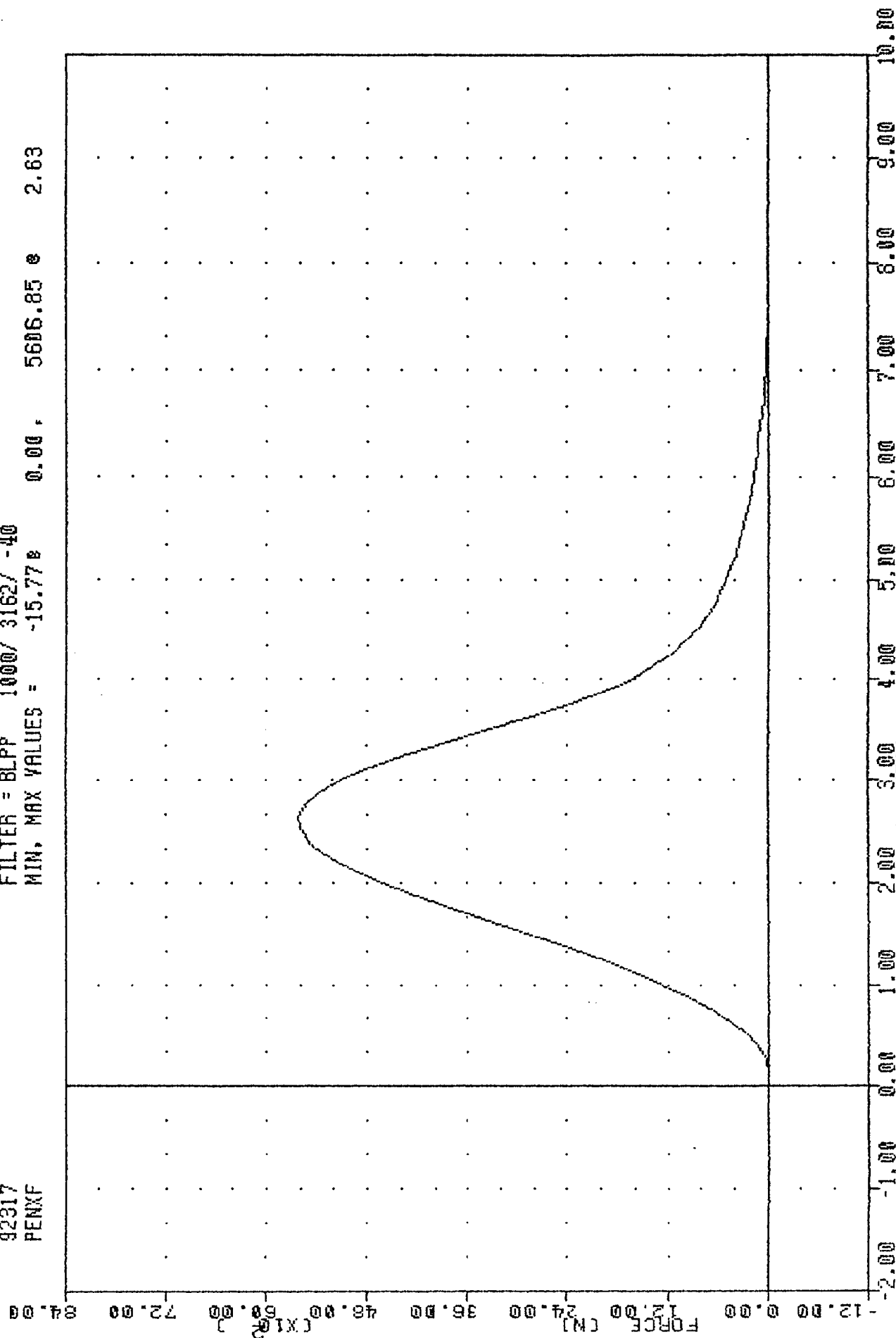
TRC , 192C10LK1
 572E SN192 LEFT KNEE CAL 10
 92317
 PENXG

FILTER = BLPP 1000/ 3162/ -40
 MIN, MAX VALUES = -0.320 0.00 , 114.59 0 2.63



TRC
572E 3N192 LEFT KNEE CAL 10
92317
PENXF

FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -15.77 @ 0.00, 5606.85 @ 2.63



PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)

PRE-TEST CERTIFICATION DATA

PASSENGER DUMMY S/N: 142

TRANSPORTATION RESEARCH CENTER OF OHIO
HYBRID III EXTERNAL DIMENSIONS
HUMANOID 142

12-NOV-92

TRC 142C12ED1 572E SN142 EXT. DIMENSION CAL12

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
TEMPERATURE			20.6 DEG. C
RELATIVE HUMIDITY			59.0 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)		429- 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE (BB)		226- 231 MM	229. MM
CHEST CIRCUMFERENCE (Y)		970-1001 MM	983. MM
WAIST CIRCUMFERENCE (Z)		836- 866 MM	846. MM
CHEST DEPTH (O)		213- 229 MM	218. MM
H-POINT HEIGHT (C)		84- 89 MM	86. MM
H-POINT FROM SEATBACK (D)		135- 140 MM	137. MM
SKULL CAP TO BACKLINE (H)		41- 46 MM	43. MM
TOTAL SITTING HEIGHT (A)		879- 889 MM	886. MM
THIGH CLEARANCE (F)		140- 155 MM	145. MM
BUTTOCK KNEE LENGTH (K)		579- 605 MM	597. MM
BUTTOCK POPLITEAL LENGTH (N)		452- 478 MM	475. MM
POPLITEAL HEIGHT (L)		429- 455 MM	452. MM
KNEE PIVOT HEIGHT (M)		485- 500 MM	490. MM
FOOT LENGTH (P)		252- 267 MM	257. MM
FOOT BREADTH (W)		91- 107 MM	97. MM
SHOULDER PIVOT FROM BACKLINE (E)		84- 94 MM	86. MM
SHOULDER BREADTH (V)		422- 437 MM	427. MM
SHOULDER PIVOT HEIGHT (B)		506- 521 MM	511. MM
ELBOW REST HEIGHT (J)		191- 211 MM	211. MM
SHOULDER-ELBOW LENGTH (I)		330- 345 MM	345. MM
BACK OF ELBOW TO WRIST PIVOT (G)		290- 305 MM	292. MM

TEST MEETS SPECIFICATIONS

TECHNICIAN

Pete Sant

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

13-NOV-92

TRC

142C12HD1

572E SN142 HEAD DROP CAL 12

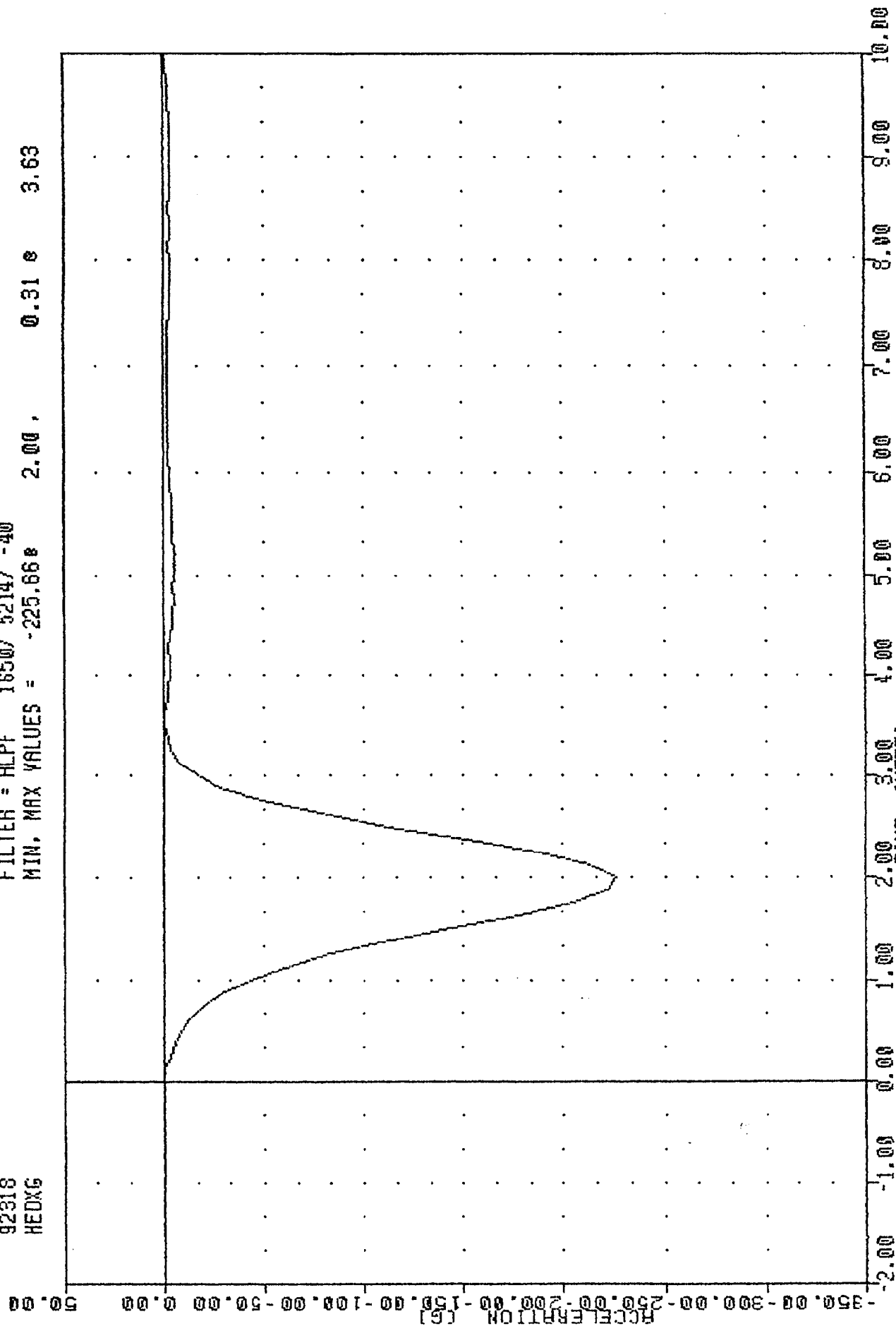
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	264.51 G
PEAK LATERAL ACCELERATION	15 G MAX	5.36 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN *Duta Fant*

TRC
572E SN142 HEAD DROP CAL 12
92318
HEDXG

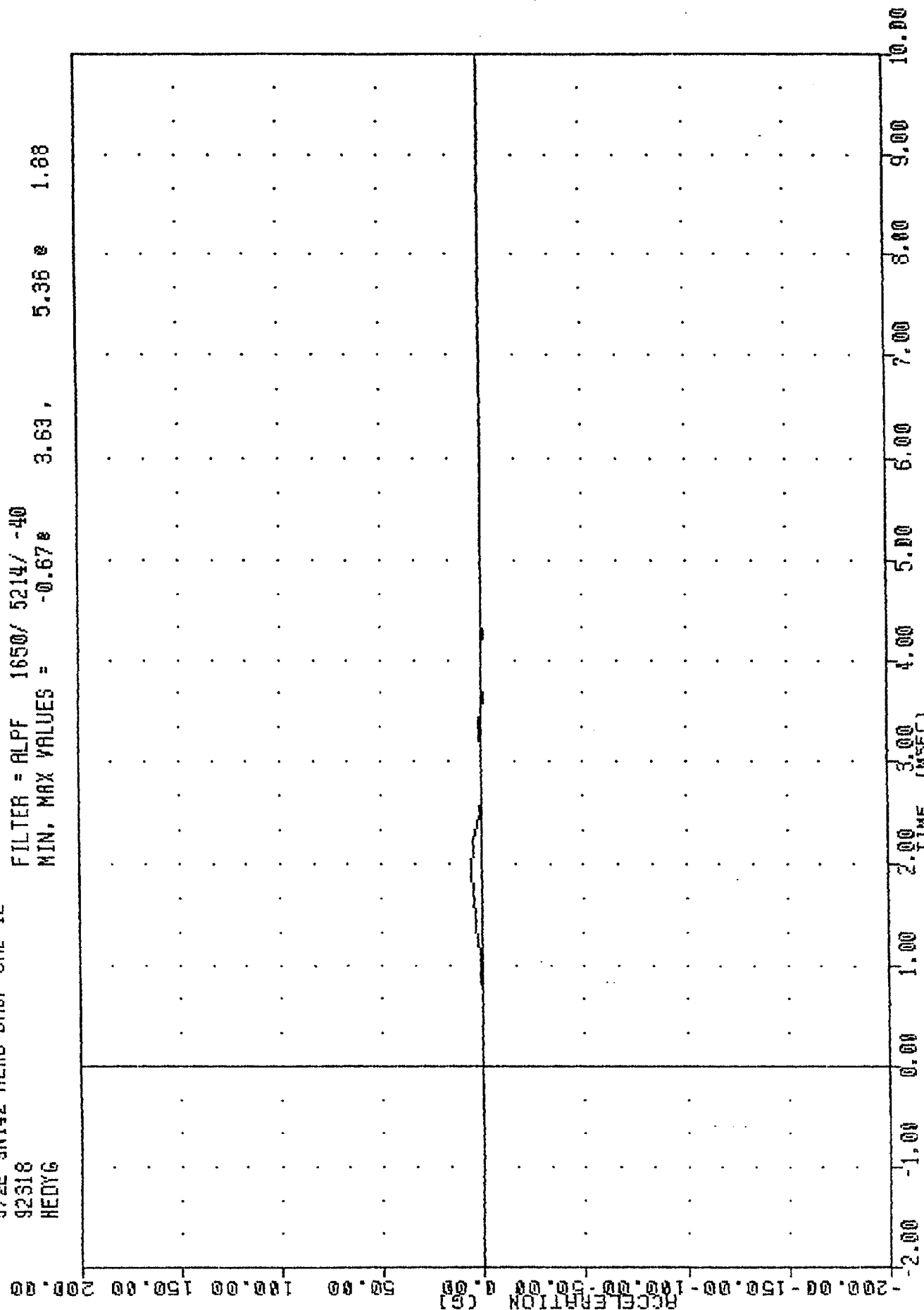
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -225.66 2.00 , 0.31 3.63



PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

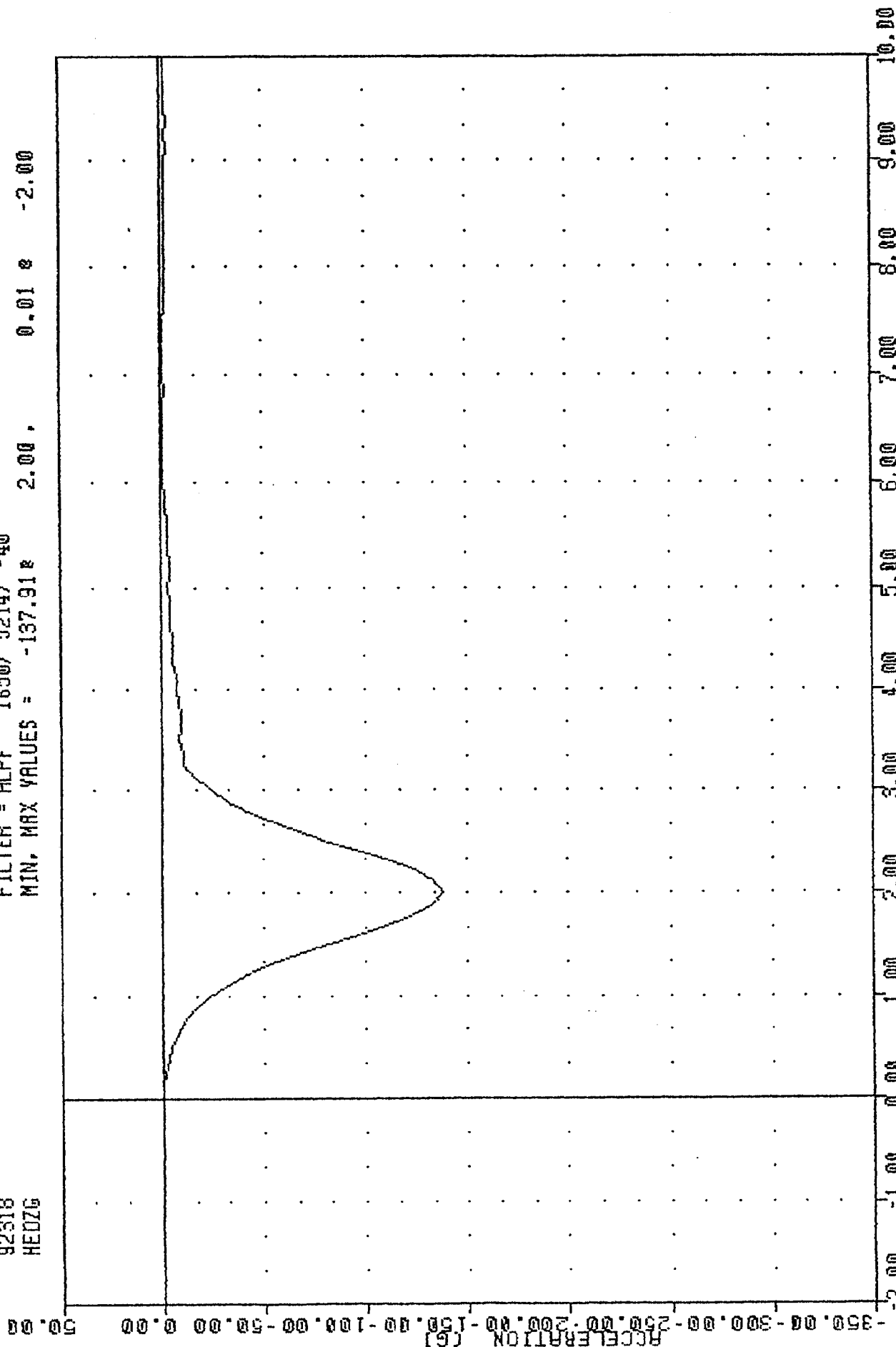
TRC , 142C12HD1
 572E 3N142 HEAD DROP CAL 12
 92318
 HEDYG

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -0.67 3.63 , 5.36 1.88



TRC
572E SN142 HEAD DRAP CAL 12
92318
HEADZG

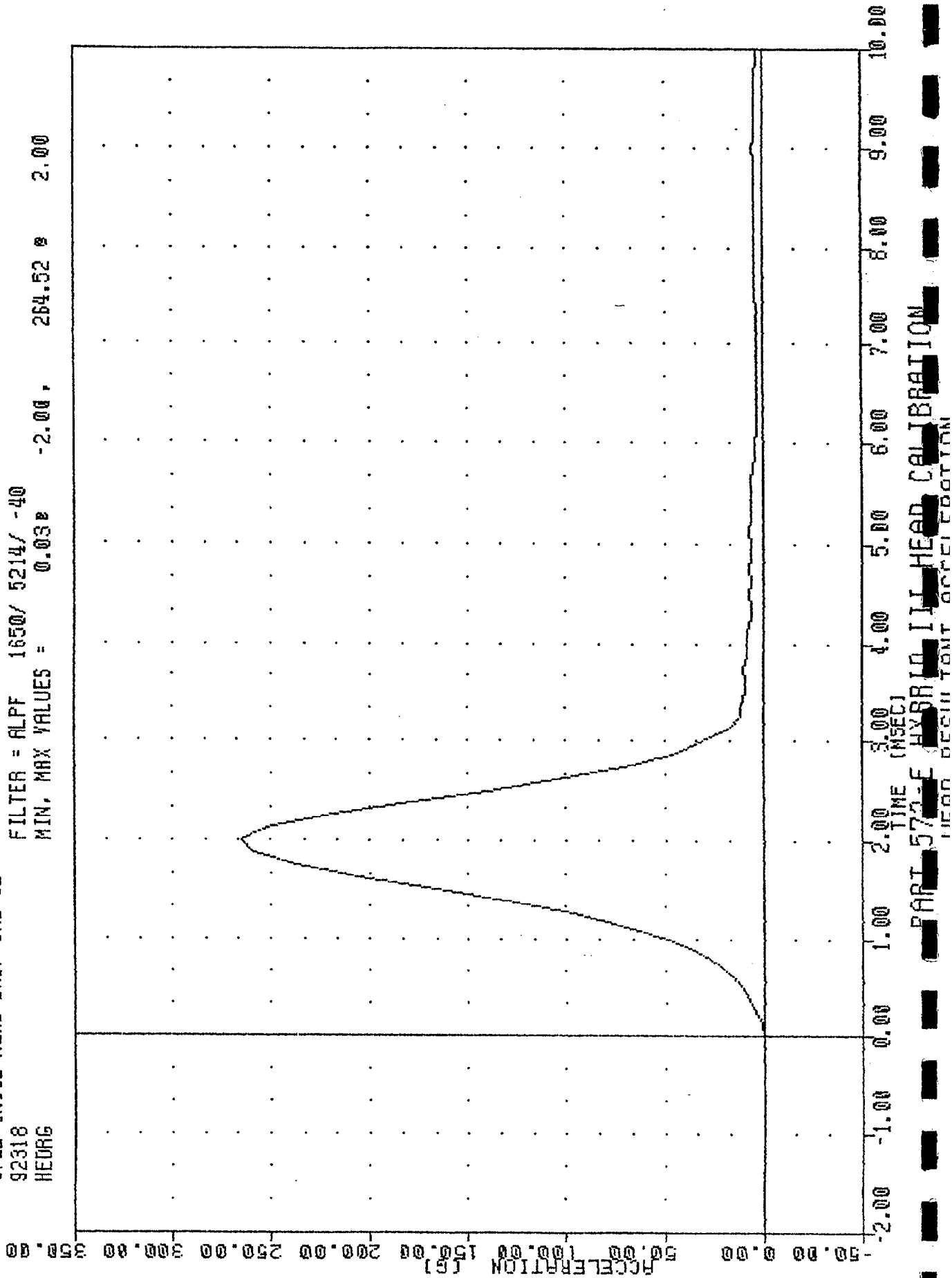
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -137.91 2.00 0.01 0 -2.00



PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION 7 AXIS

TRC .142C12HD1
 572E SN142 HEAD DROP CAL 12
 92318
 HEDRG

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = 0.032 -2.00, 264.52 2.00



TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

13-NOV-92

6 AXIS NECK TRANSDUCER
TRC 142C12NF1

572E SN142 NECK FLEXION CAL12

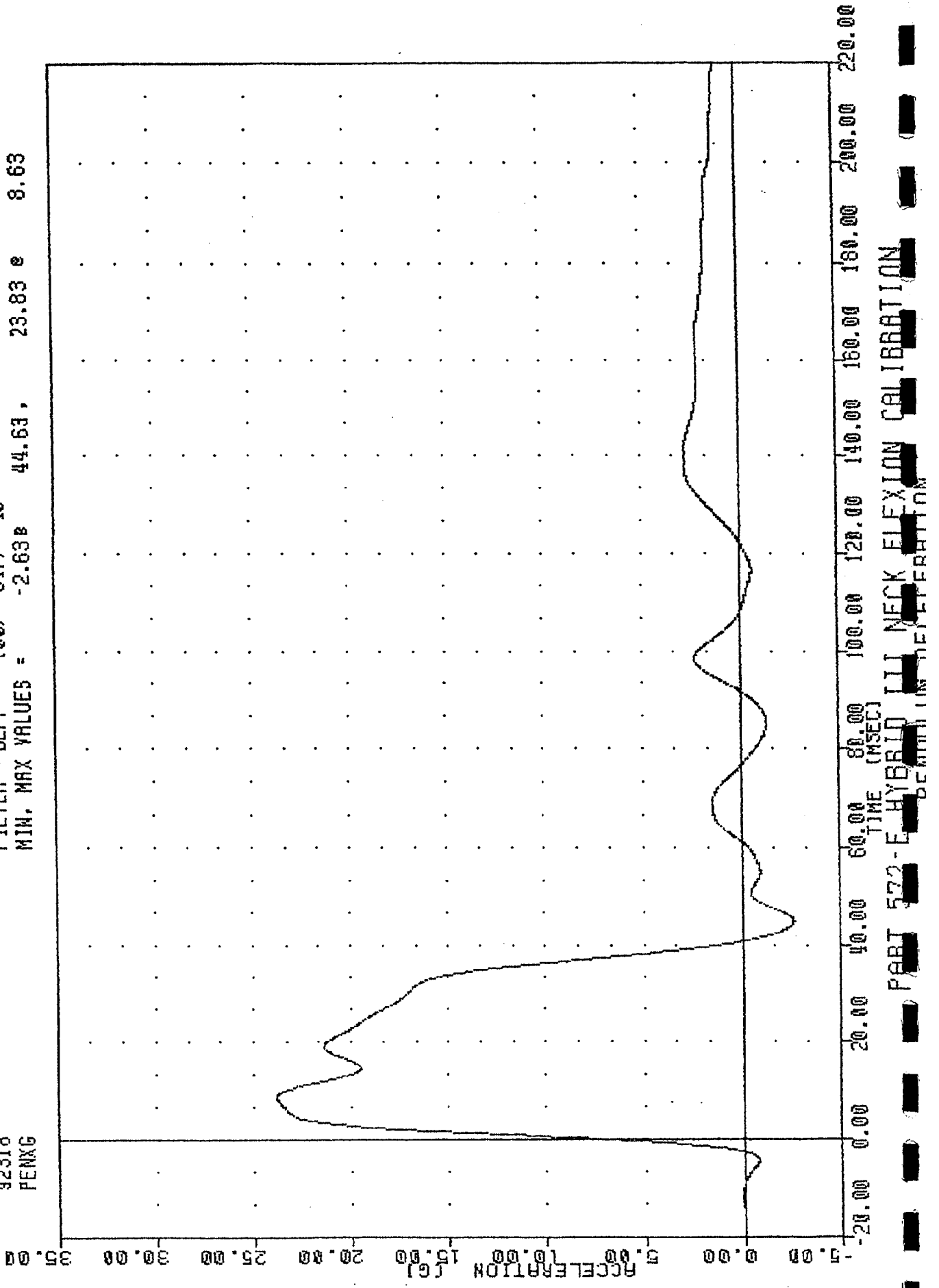
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
IMPACT VELOCITY	6.89 - 7.13 M/SEC	7.03 M/SEC
PENDULUM	10 MS 22.50 - 27.50 G	23.39 G
DECELERATION	20 MS 17.60 - 22.60 G	21.24 G
	30 MS 12.50 - 18.50 G	17.04 G
MAX PENDULUM G ABOVE 30 MS	29 G MAX	17.02 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 42 MS	38.13 MS
D PLANE	MAX 64 - 78 DEG.	74.35 DEG.
ROTATION	TIME 57 - 64 MS	61.50 MS
MOMENT ABOUT OCCIPITAL	MAX 88.2 - 108.5 NM	92.86 NM
CONDYLE	TIME 47 - 58 MS	50.38 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	113 - 128 MS	117.00 MS
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	97 - 107 MS	106.50 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN *Pete Fout*

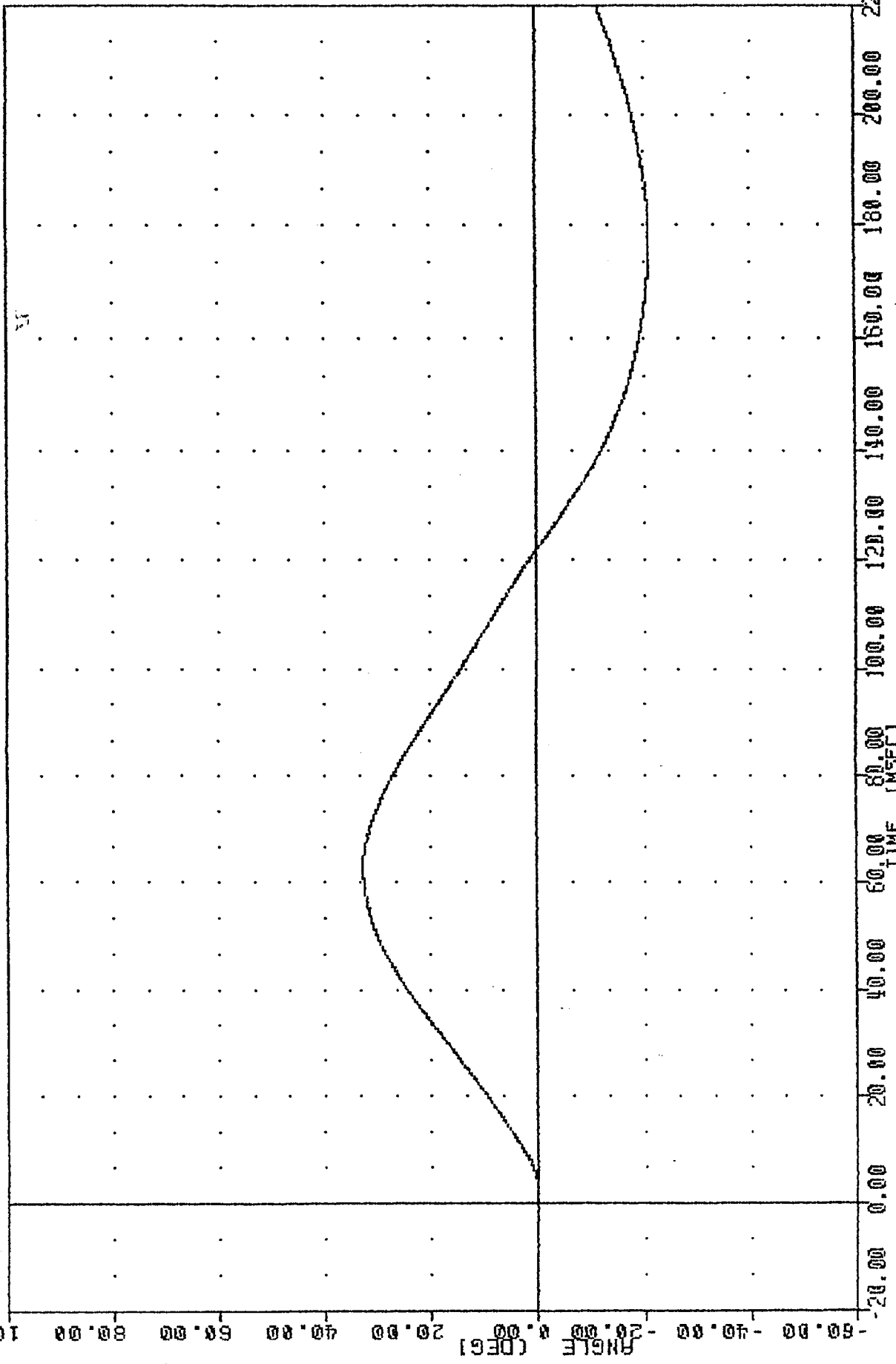
TRC , 142C12HF1
 572E SN142 NECK FLEXION CAL12
 92318
 PENXG

FILTER = BLPP 100/ 317/ -40
 MIN, MAX VALUES = -2.63B 44.63 , 23.83 e 8.63



TRC
572E SN142 NECK FLEXION CAL12
92318
BETA

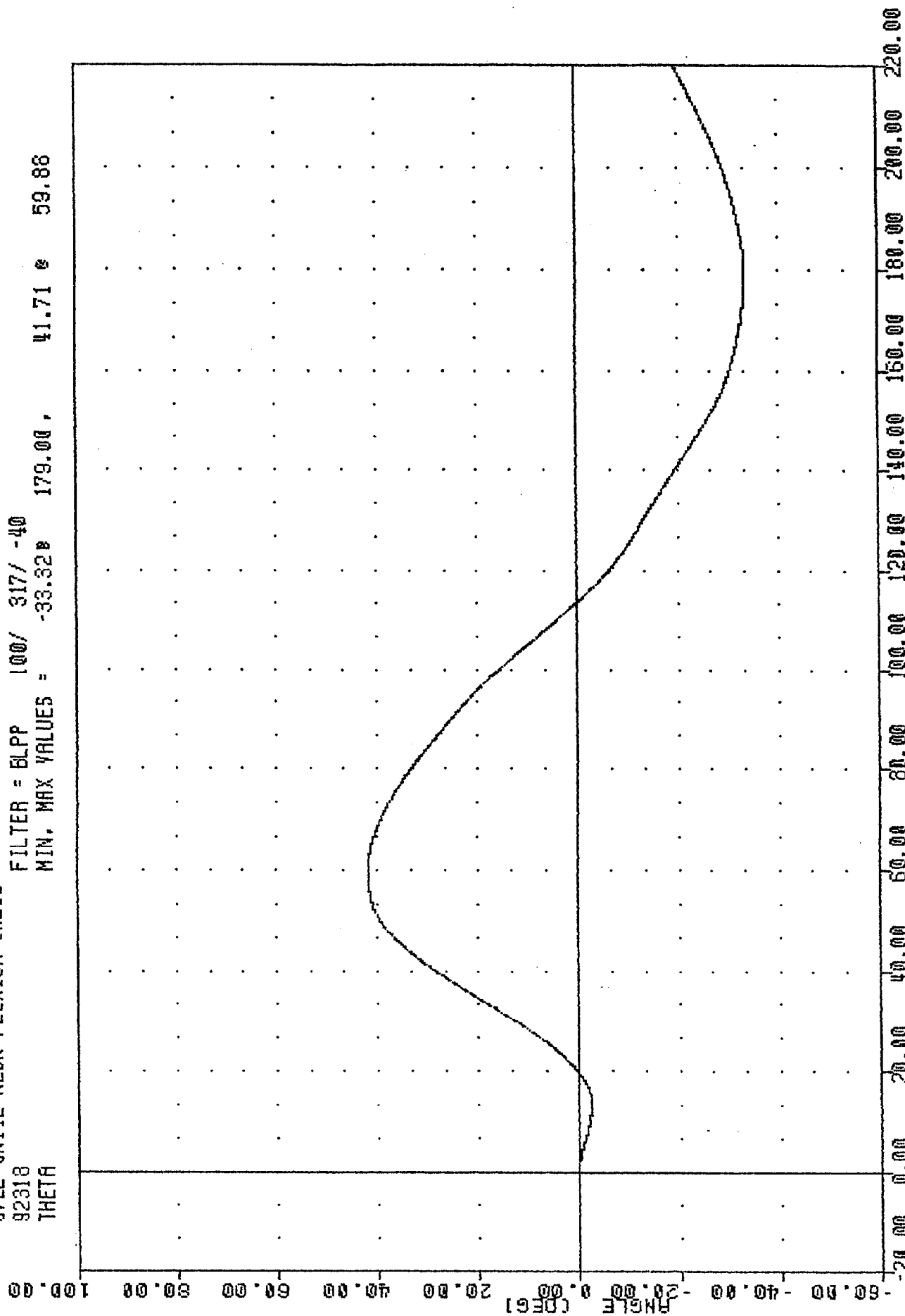
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -21.06 176.63, 32.72 63.00



PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT BASE OF NECK

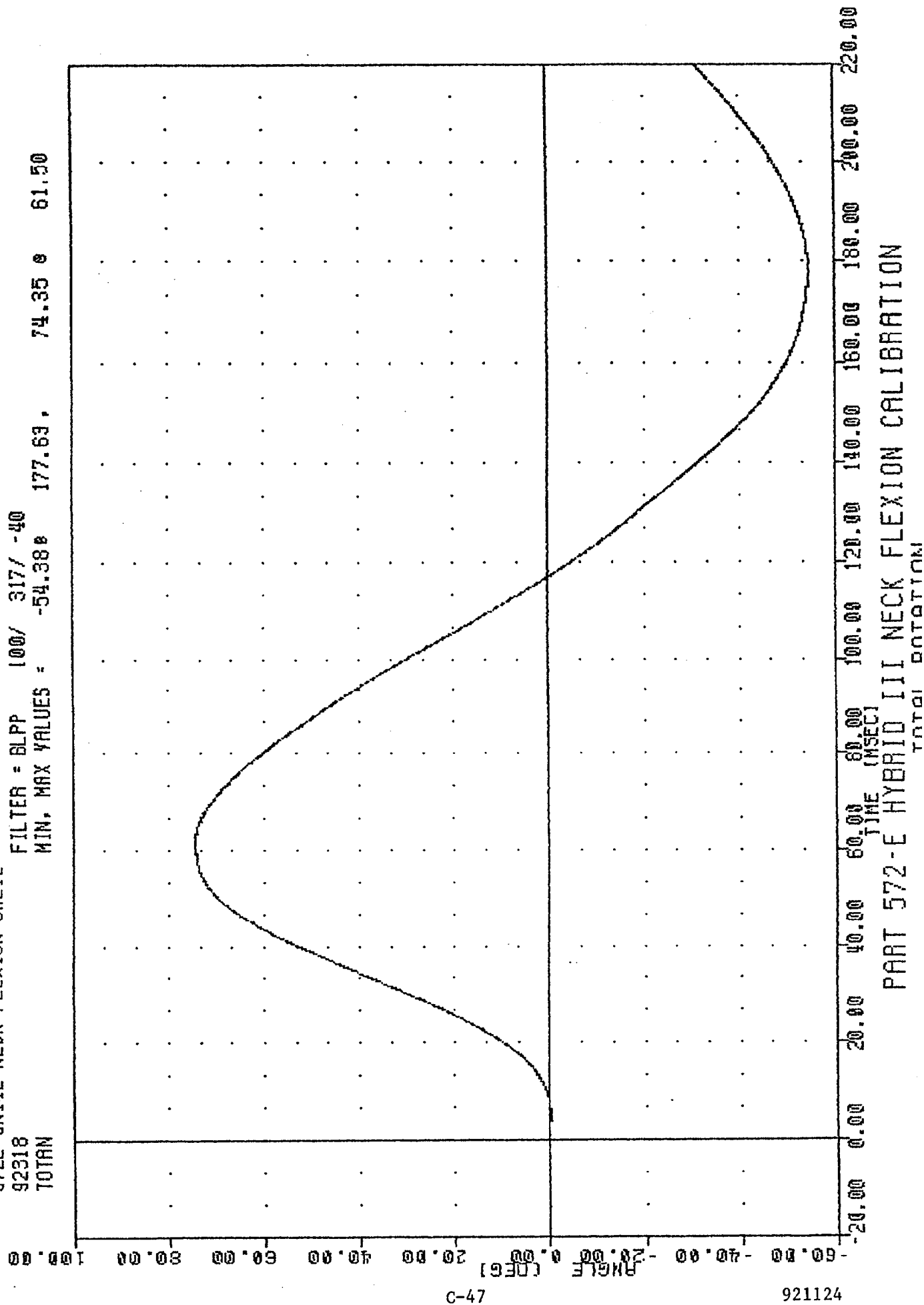
TRC
572E SN142 NECK FLEXION CAL12
92318
THETA

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -33.32 179.00, 41.71 59.86



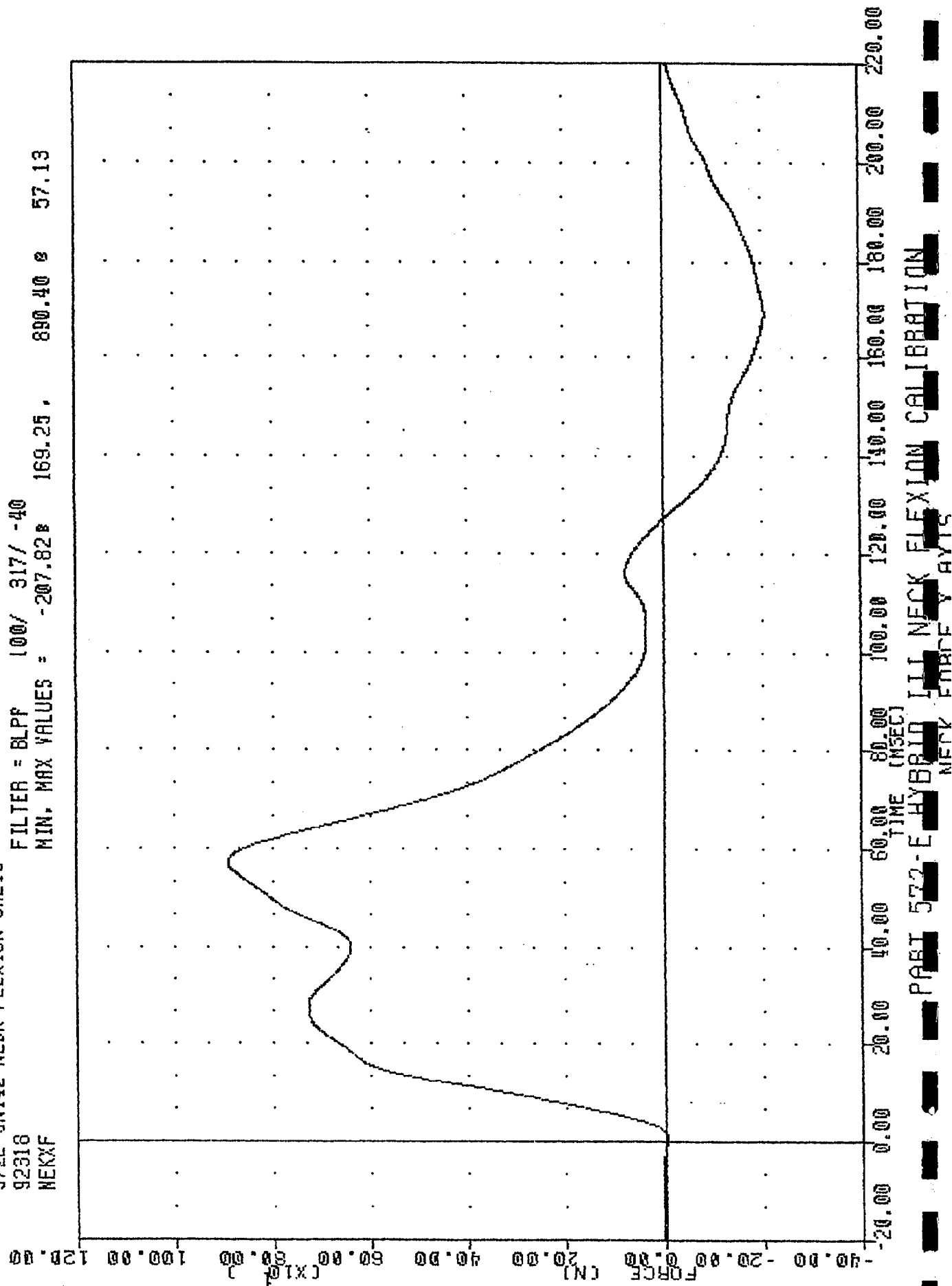
TRC , 142C12NF1
 572E SN142 NECK FLEXION CAL12
 92318
 TOTAL

FILTER = BLPP 100/ 317/ -40
 MIN, MAX VALUES = -54.38 177.63, 74.35 61.50



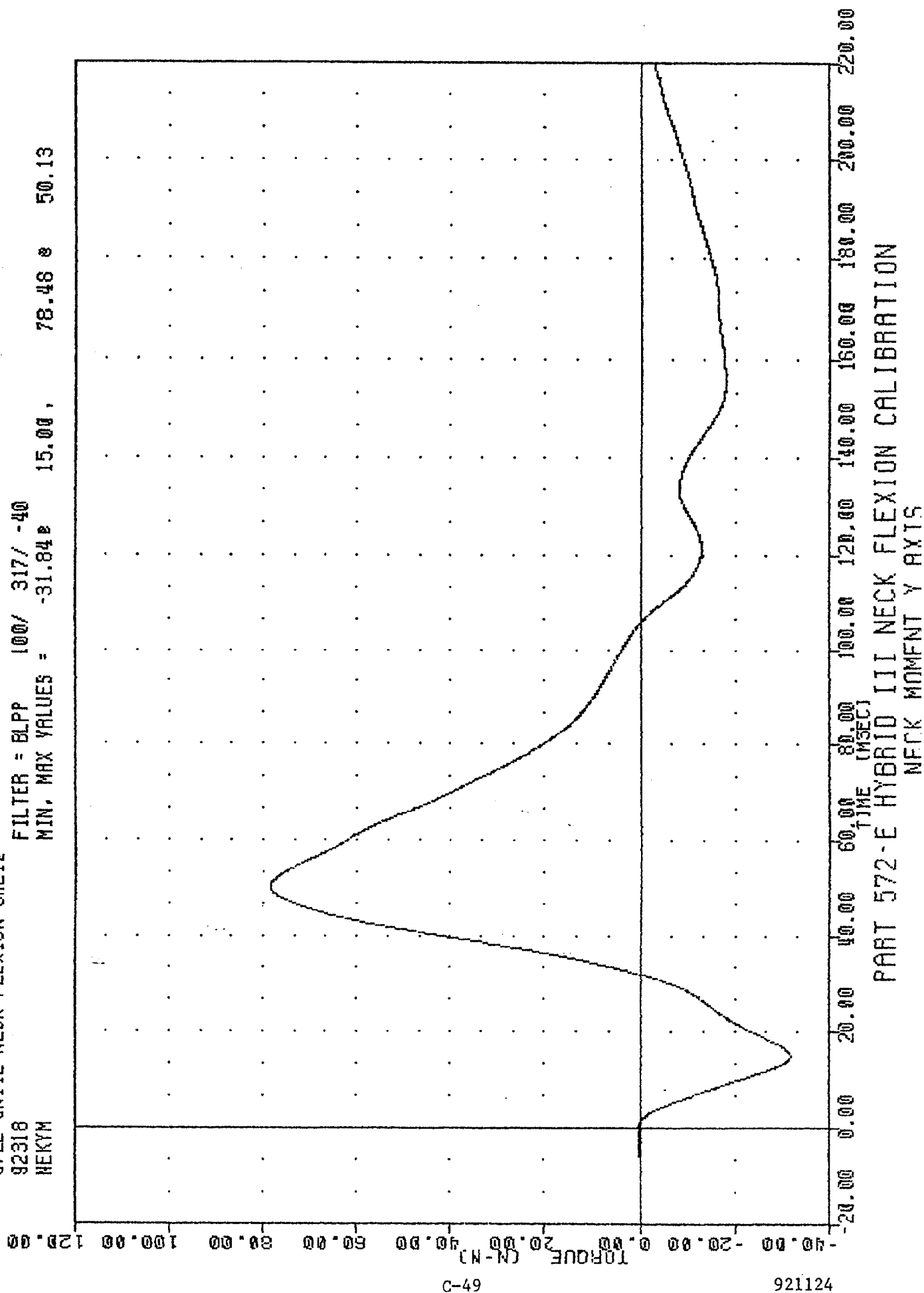
TRC
572E SN142 NECK FLEXION CAL12
92318
NEKXF

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -207.82 890.40 57.13



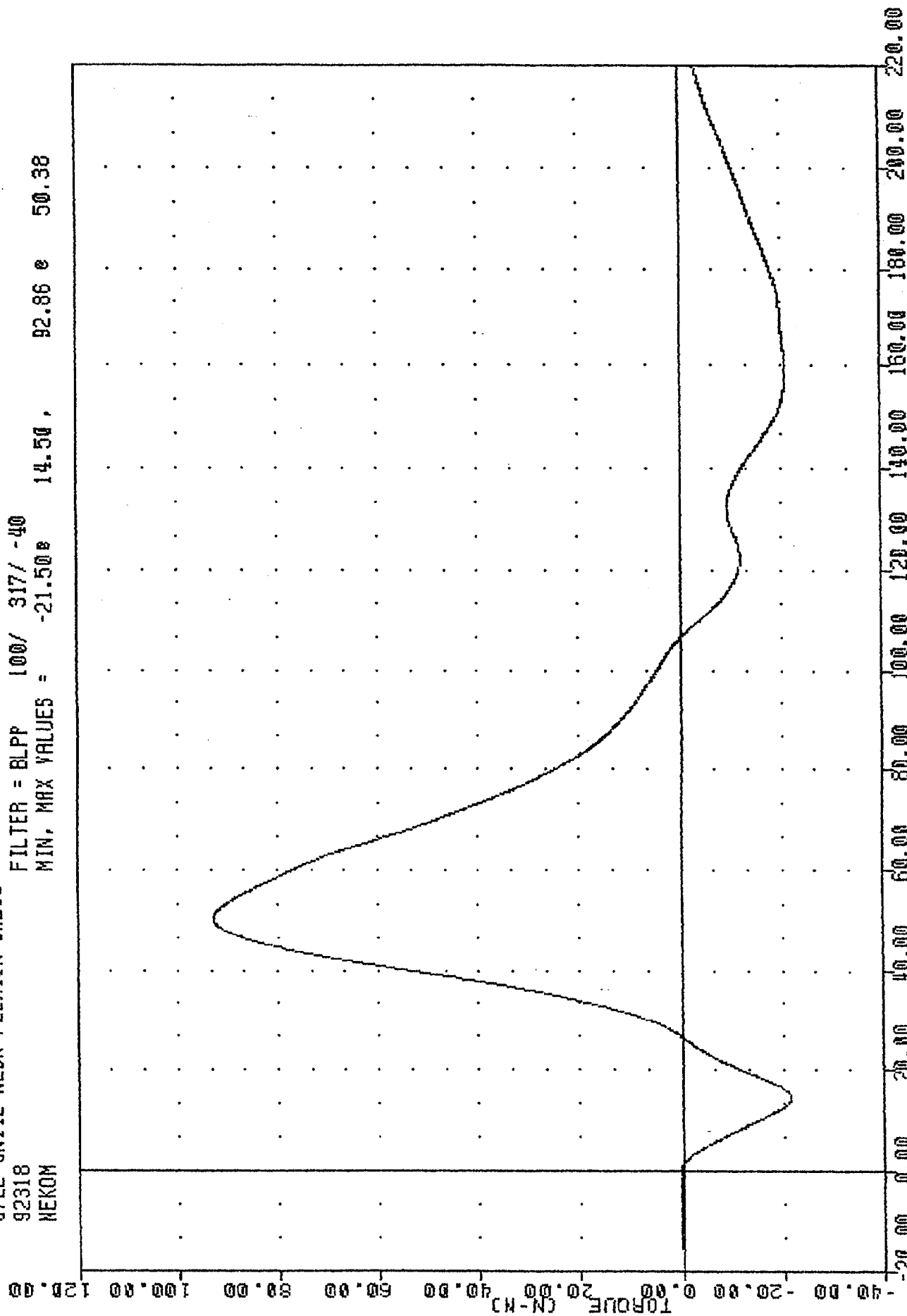
TRC , 142C12NF1
572E SN142 NECK FLEXION CAL12
92318
NEKYM

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -31.84 15.00, 78.48 50.13



TRC
572E SN142 NECK FLEXION CAL12
92318
NEKOM

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -21.500 14.50 , 92.86 0 50.30



TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

13-NOV-92

6 AXIS NECK TRANSDUCER
TRC 142C12NE1

572E SN142 NECK EXT. CAL12

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
IMPACT VELOCITY	5.95 - 6.19 M/SEC	6.05 M/SEC
PENDULUM	10 MS 17.20 - 21.20 G	18.79 G
DECELERATION	20 MS 14.00 - 19.00 G	16.46 G
	30 MS 11.00 - 16.00 G	14.09 G
MAX PENDULUM G ABOVE 30 MS	22 G MAX	14.06 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	38 - 46 MS	40.88 MS
D PLANE	MAX 81 - 106 DEG.	97.70 DEG.
ROTATION	TIME 72 - 82 MS	75.88 MS
MOMENT ABOUT OCCIPITAL	MIN -80.0/-52.9 NM	-70.49 NM
CONDYLE	TIME 65 - 79 MS	71.25 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	147 - 174 MS	154.75 MS
NEGATIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	120 - 148 MS	139.38 MS

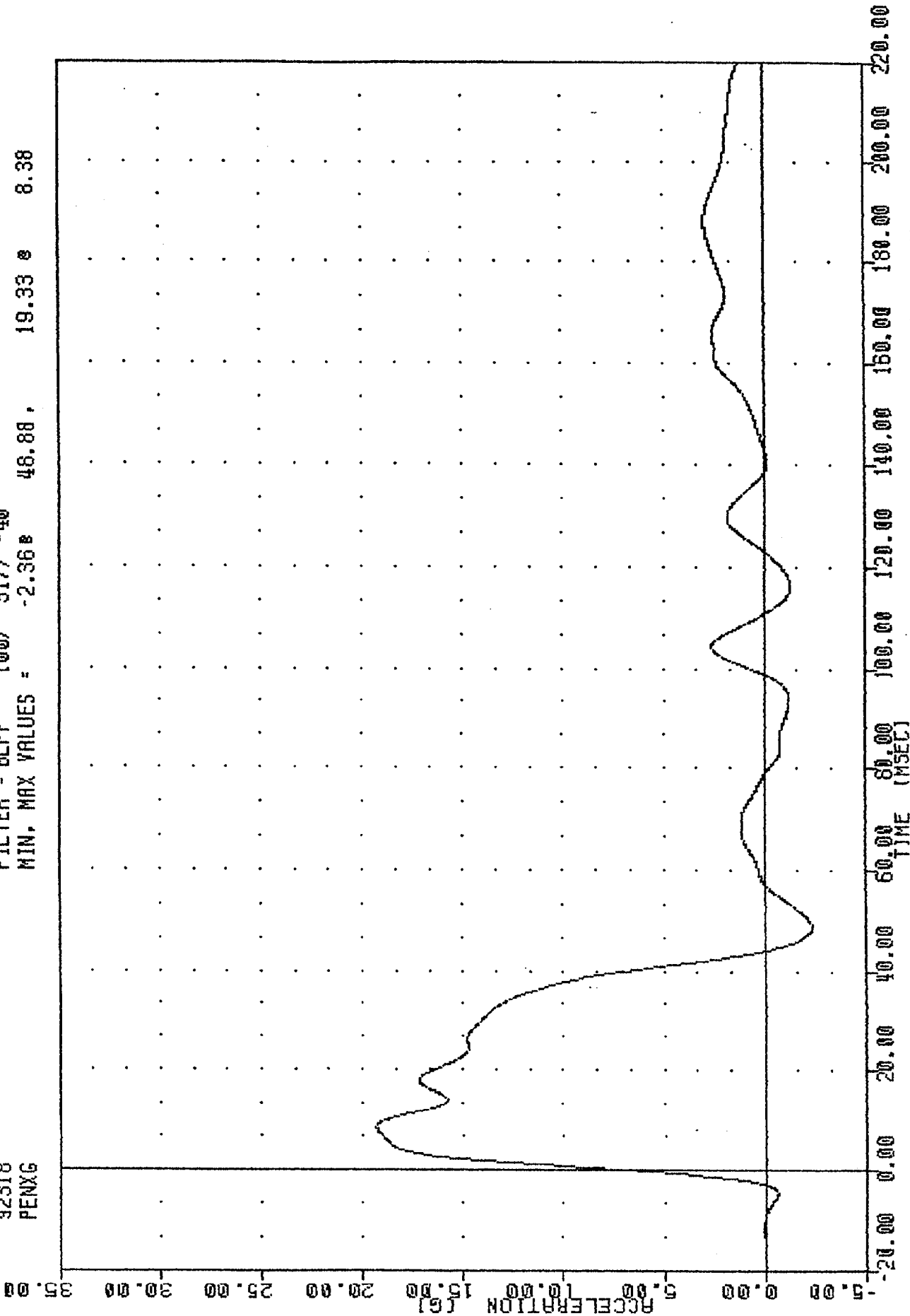
TEST MEETS SPECIFICATIONS

TECHNICIAN

Pete Faint

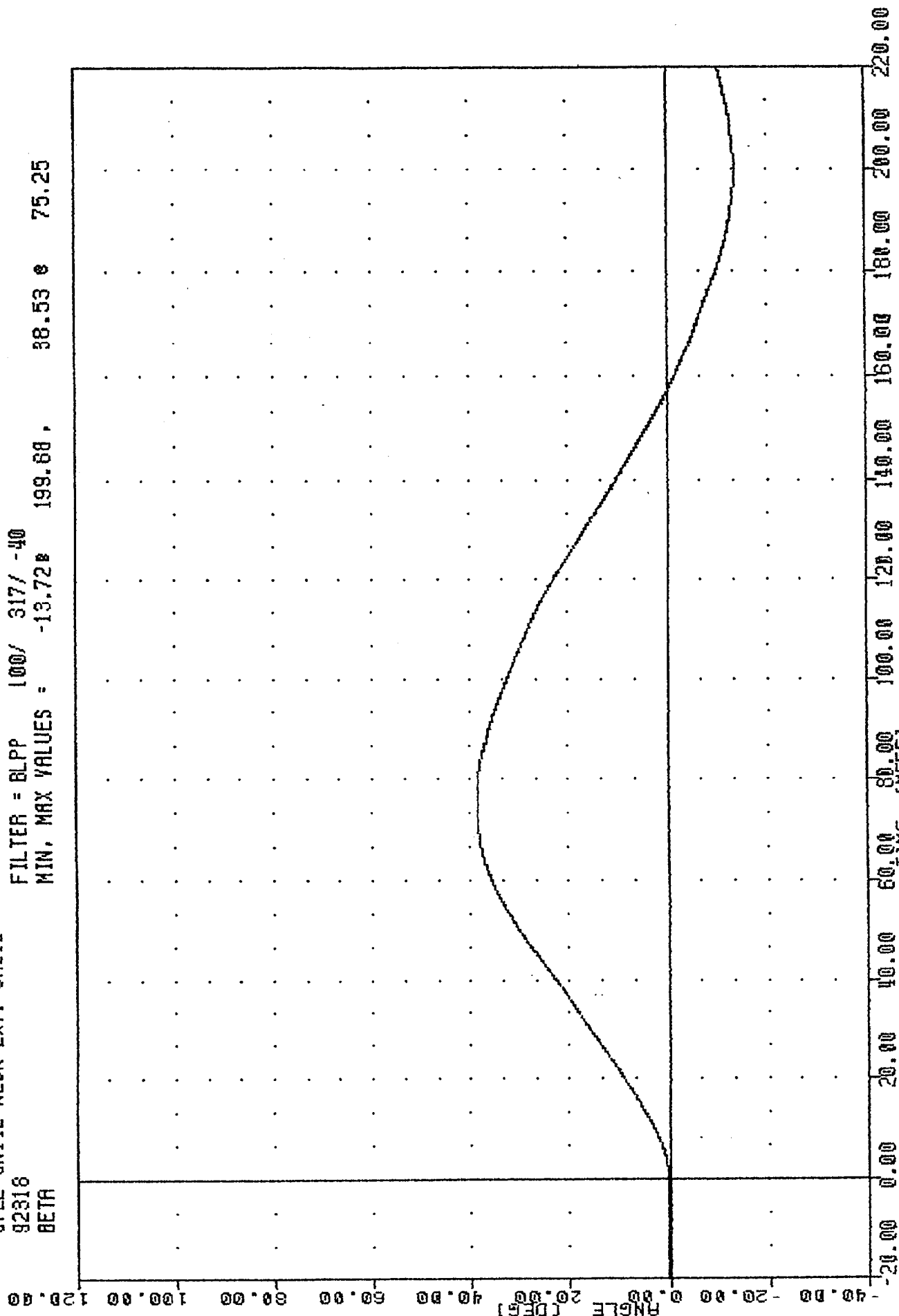
TRC , 142C12HE1
 572E SN142 NECK EXT. CAL12
 92318
 PENXG

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -2.36e 48.88, 19.33 e 8.38



TRC
572E SN142 NECK EXT. CAL12
92316
BETA

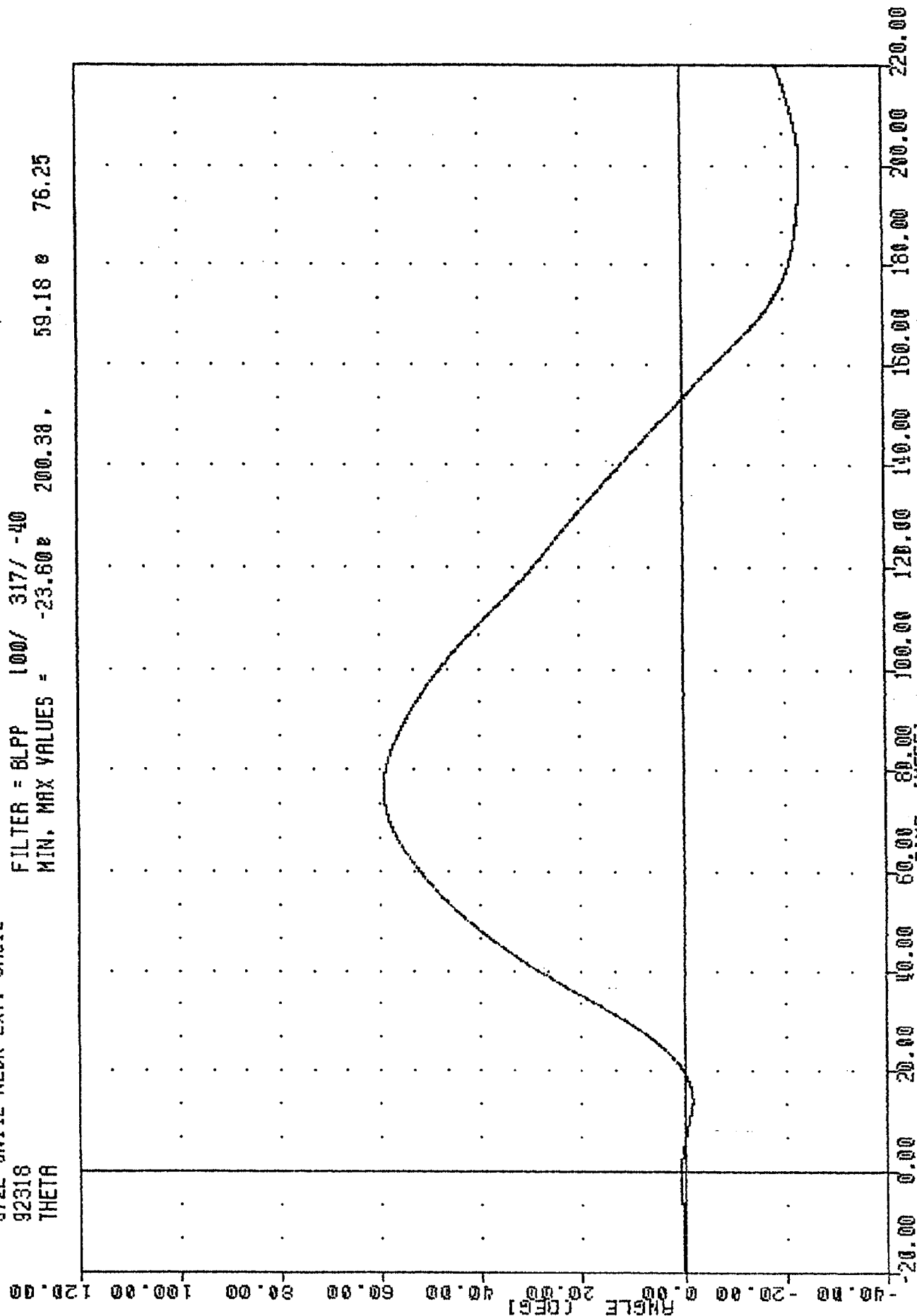
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -13.72 199.68, 38.53 75.25



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT BASE OF NECK

TRC , 142C12NE1
 572E SN142 NECK EXT. CAL12
 92318
 THETA

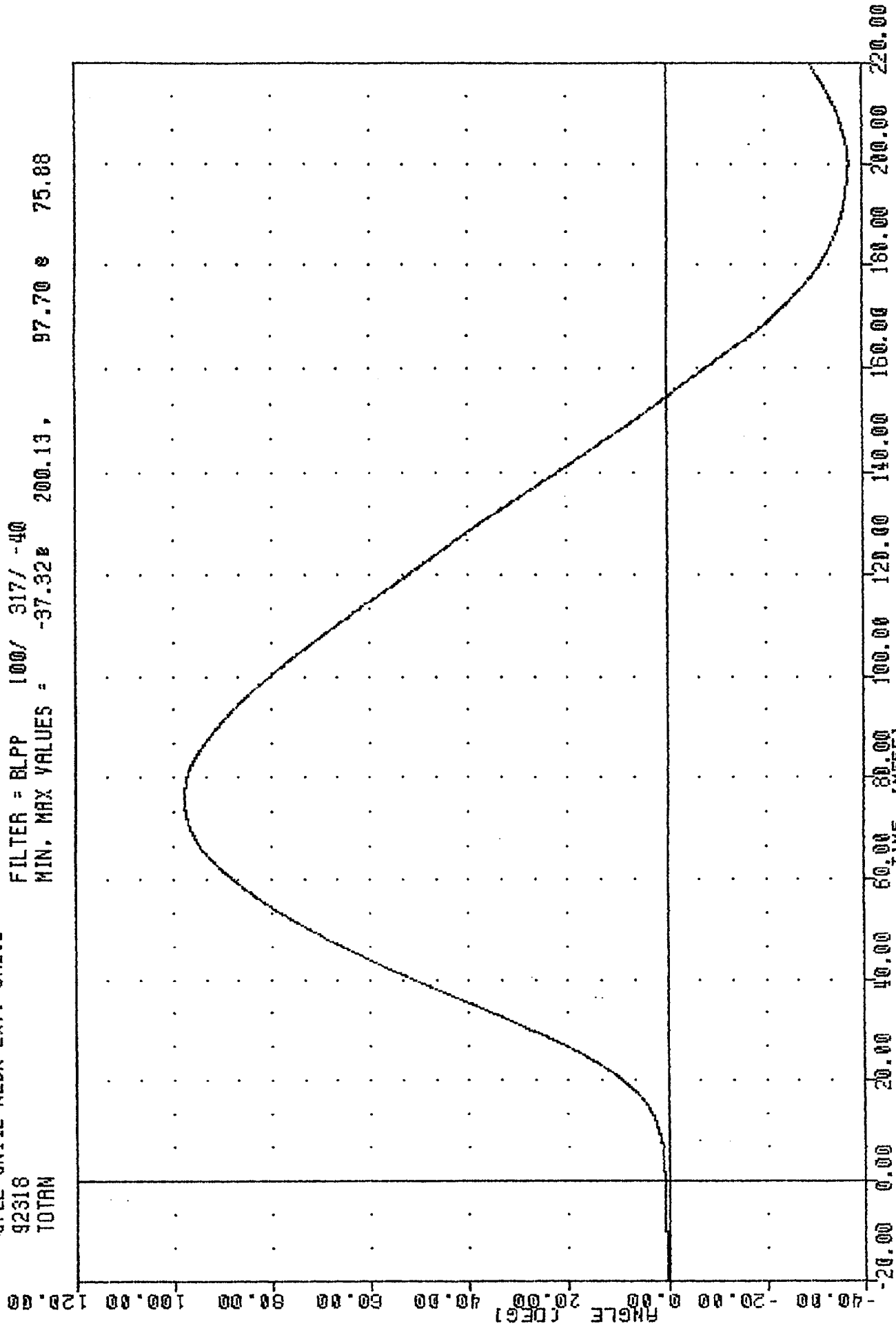
FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -23.60e 200.38, 59.18 e 76.25



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 ROTATION ABOUT OCCIPITAL CONDYLE

TRC
572E SN142 NECK EXT. CAL12
92318
TOTAL

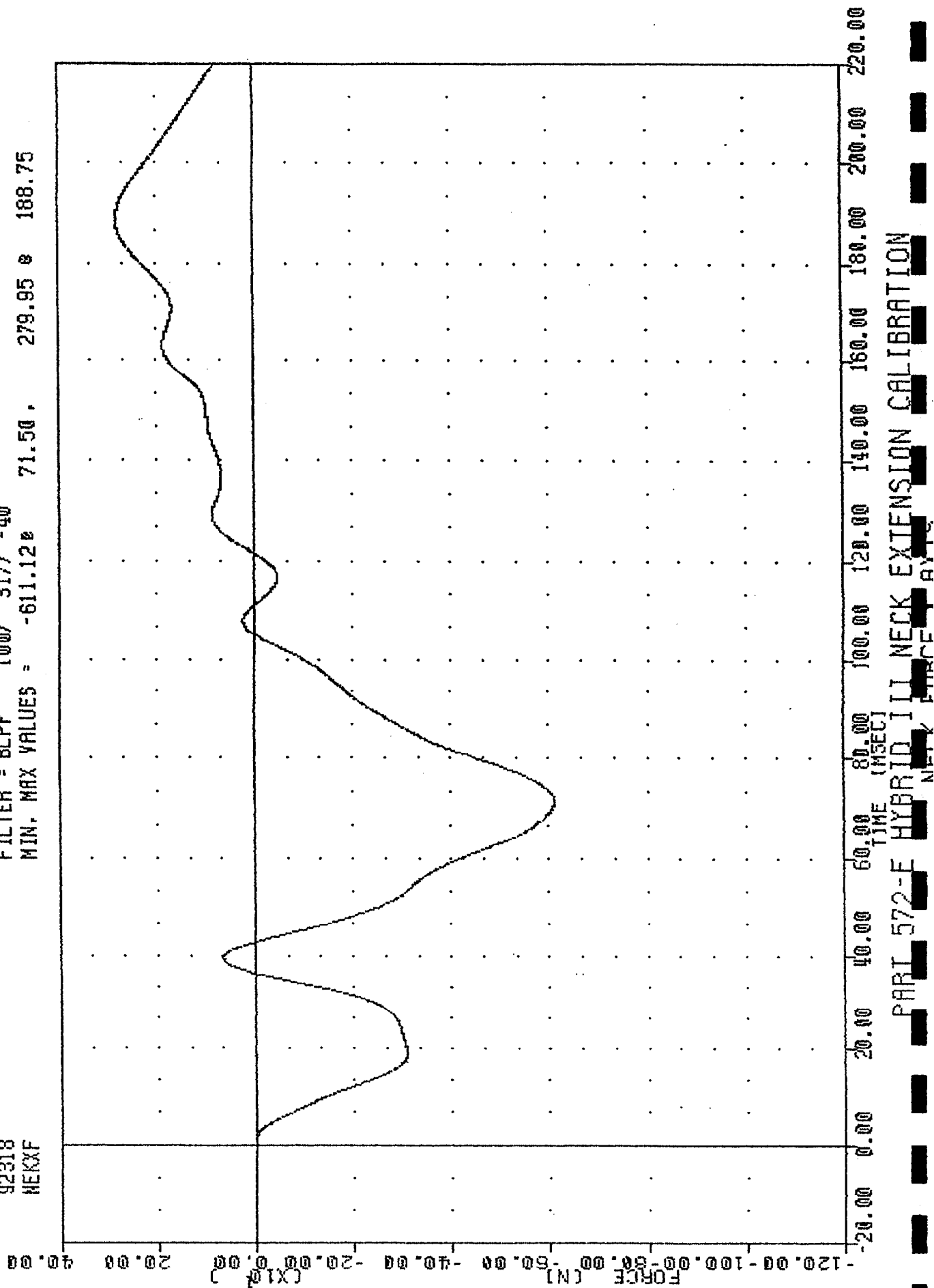
FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -37.32 200.13, 97.70 75.88



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL ROTATION

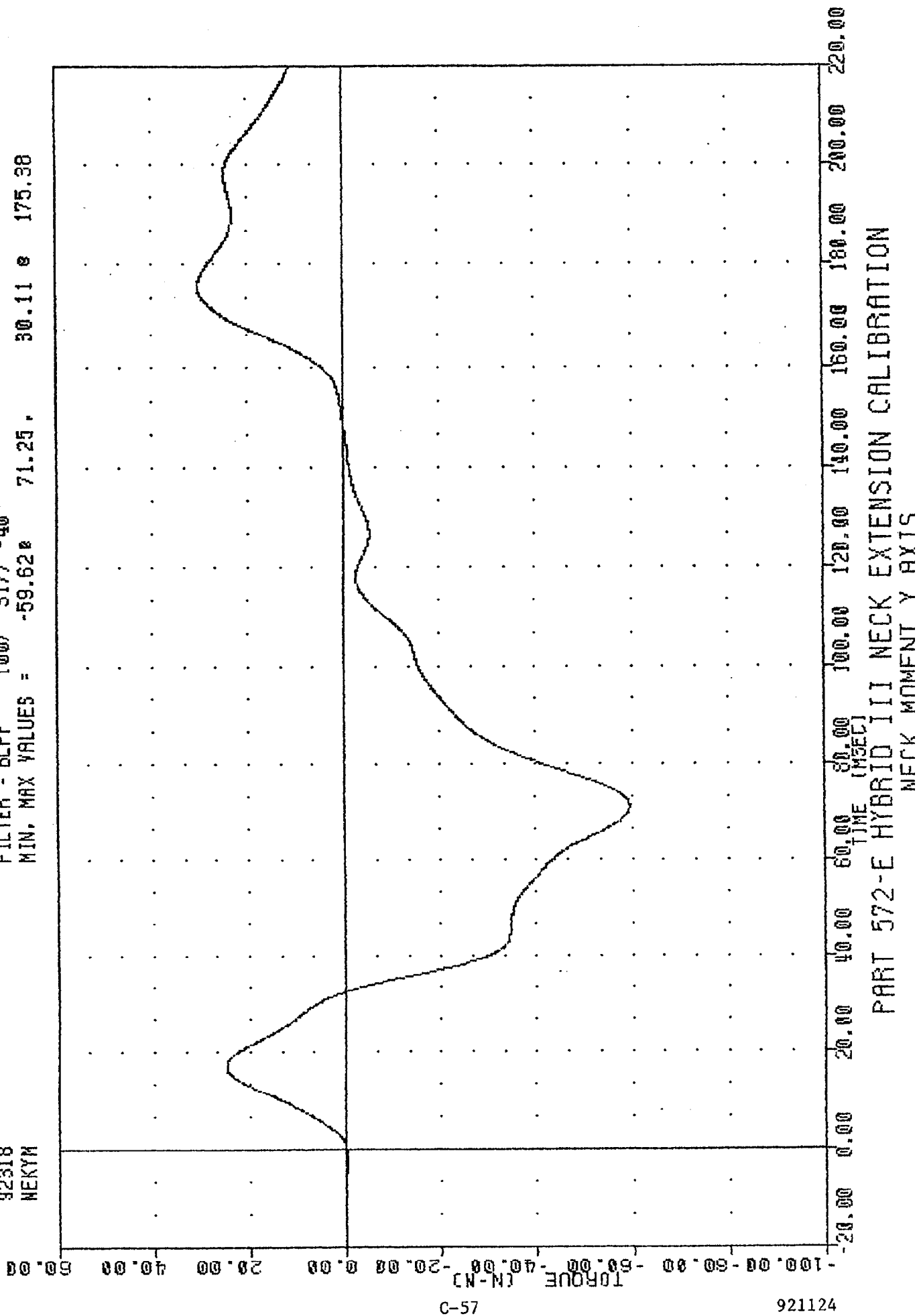
TRC
572E SN142 NECK EXT. CAL12
92318
HEKXF

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -611.12 71.50 279.95 188.75



TRC
572E SN142 NECK EXT. CAL12
92318
NEKYM

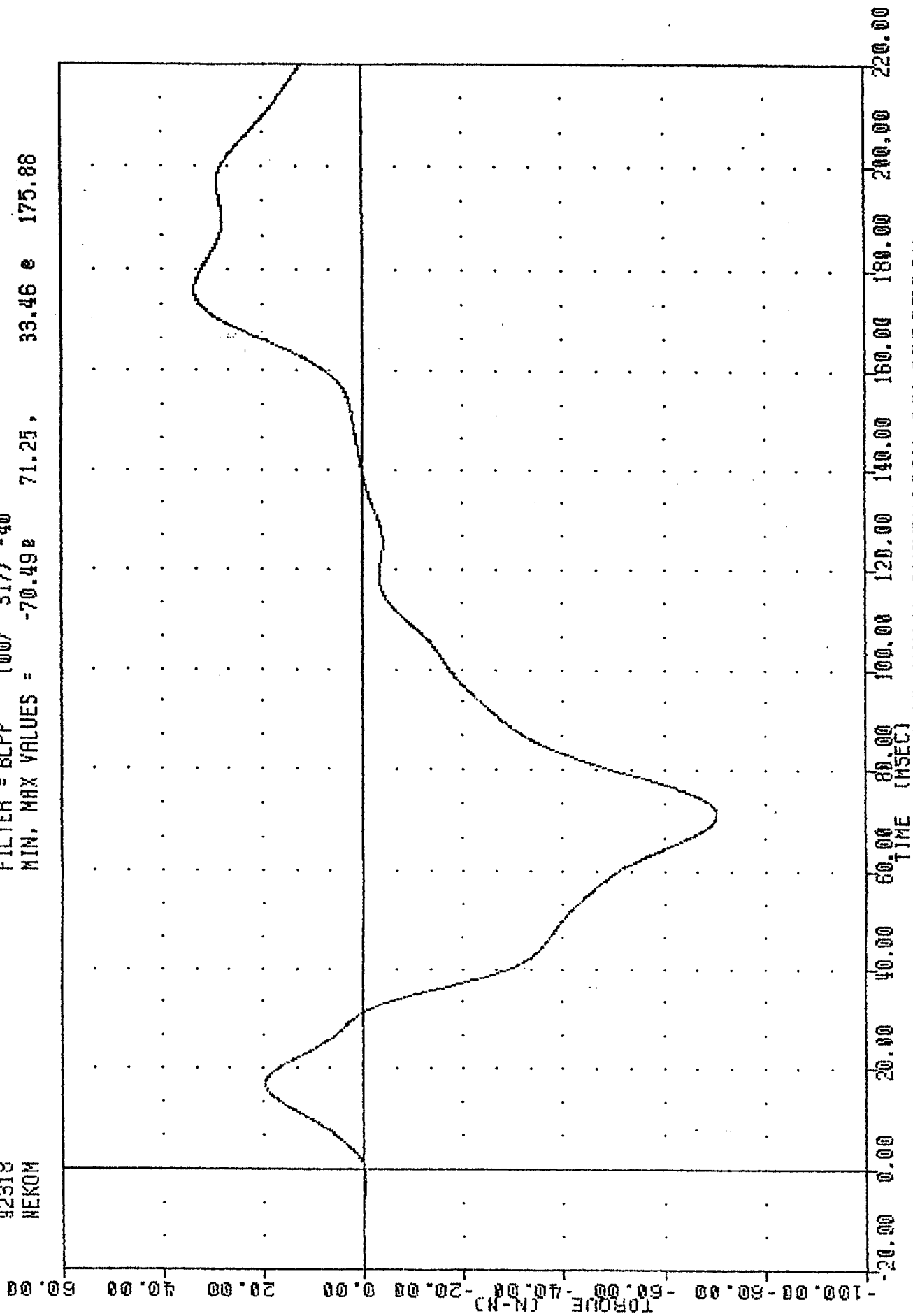
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -59.62e 71.25. 30.11 e 175.38



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS

TRC , 142C12HE1
 572E SN142 NECK EXT. CAL12
 92318
 NEKOM

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -70.49e 71.25, 33.46 e 175.88



TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

13-NOV-92

TRC

142C12TH1

572E SN142 H.S.THORAX CAL12

	HIGH SPEED TEST	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/SEC	6.68 M/SEC
MAXIMUM DEFLECTION	63.5 - 72.6 MM	70.5 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5508. N
INTERNAL HYSTERESIS	69% - 85%	70.7%

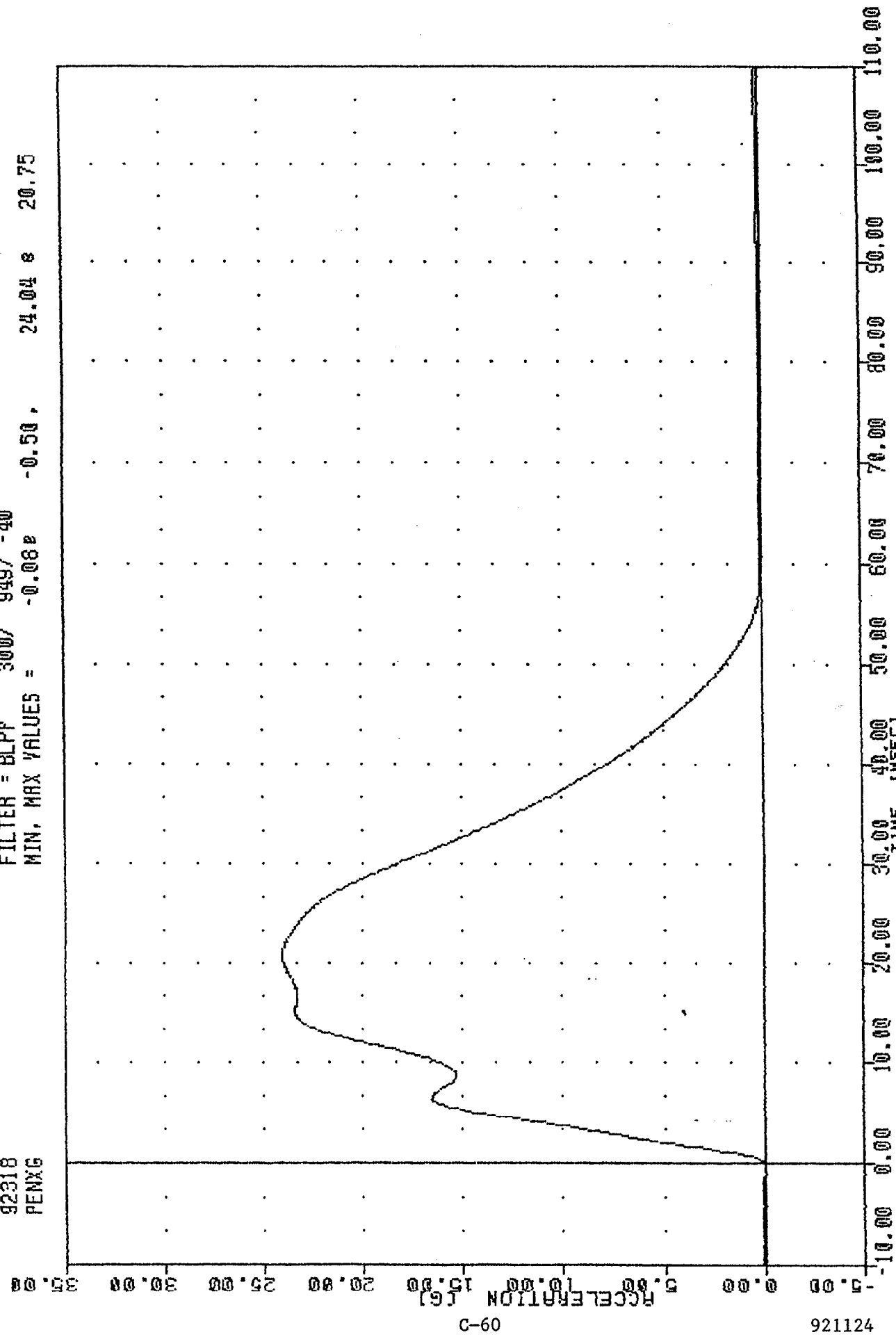
TEST MEETS SPECIFICATIONS

TECHNICIAN

Pete Ford

TRC , 142C12TH1
 572E SN142 H.S. THORAX CAL12
 92318
 PENXG

FILTER = BLPP 300/ 949/ -40
 MIN, MAX VALUES = -0.06 24.04 20.75
 -0.50



C-60

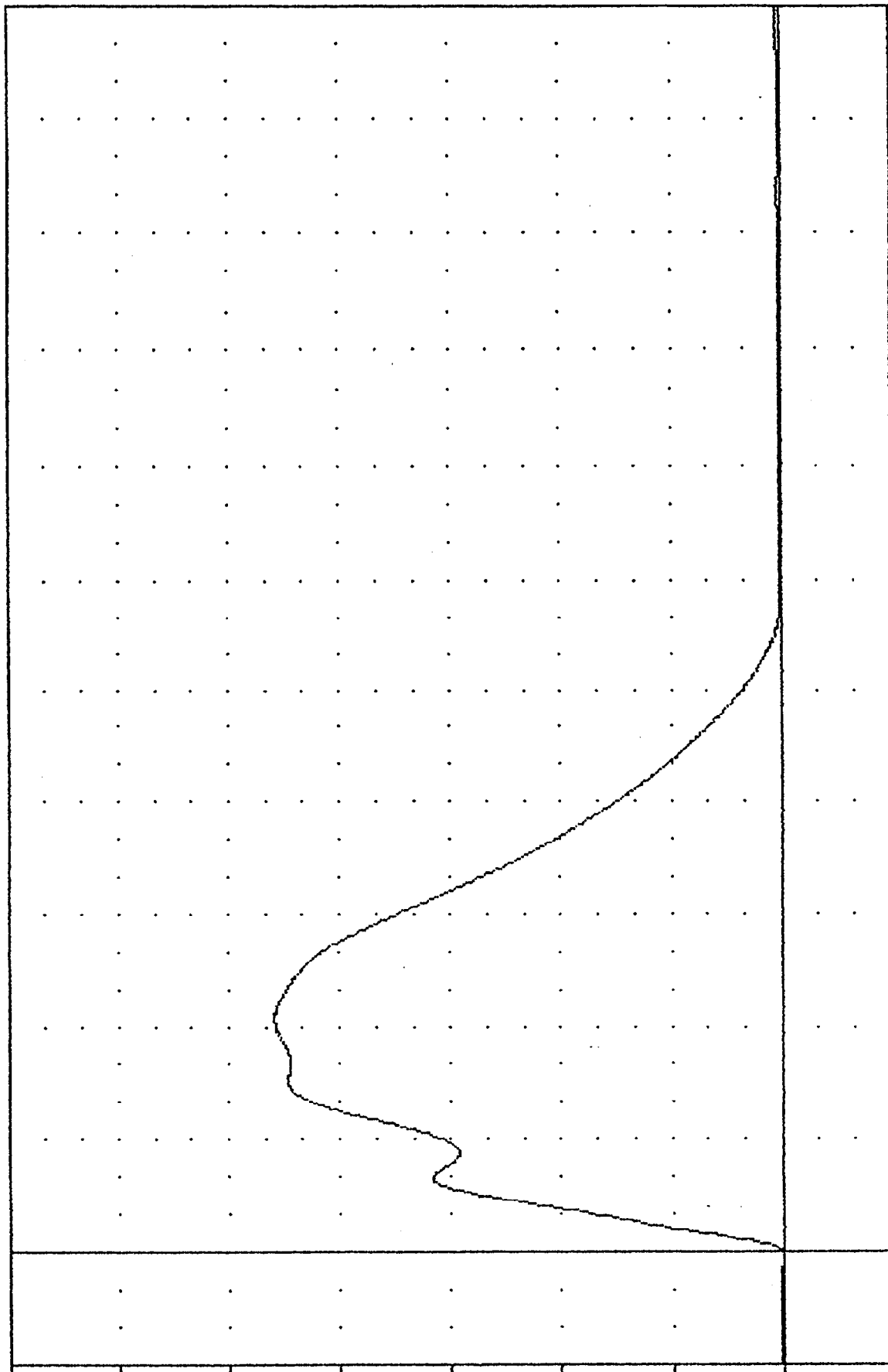
921124

PART 572-E HYBRID III THORAX CALIBRATION

TRC
572E SN142 H.B. THORAX CAL12
92318
PENXF

FILTER = BLPP 300/ 949/ -40
MIN. MAX VALUES = -18.33e -0.50, 5508.00 e 20.75

84.00
72.00
60.00
48.00
36.00
24.00
12.00
0.00

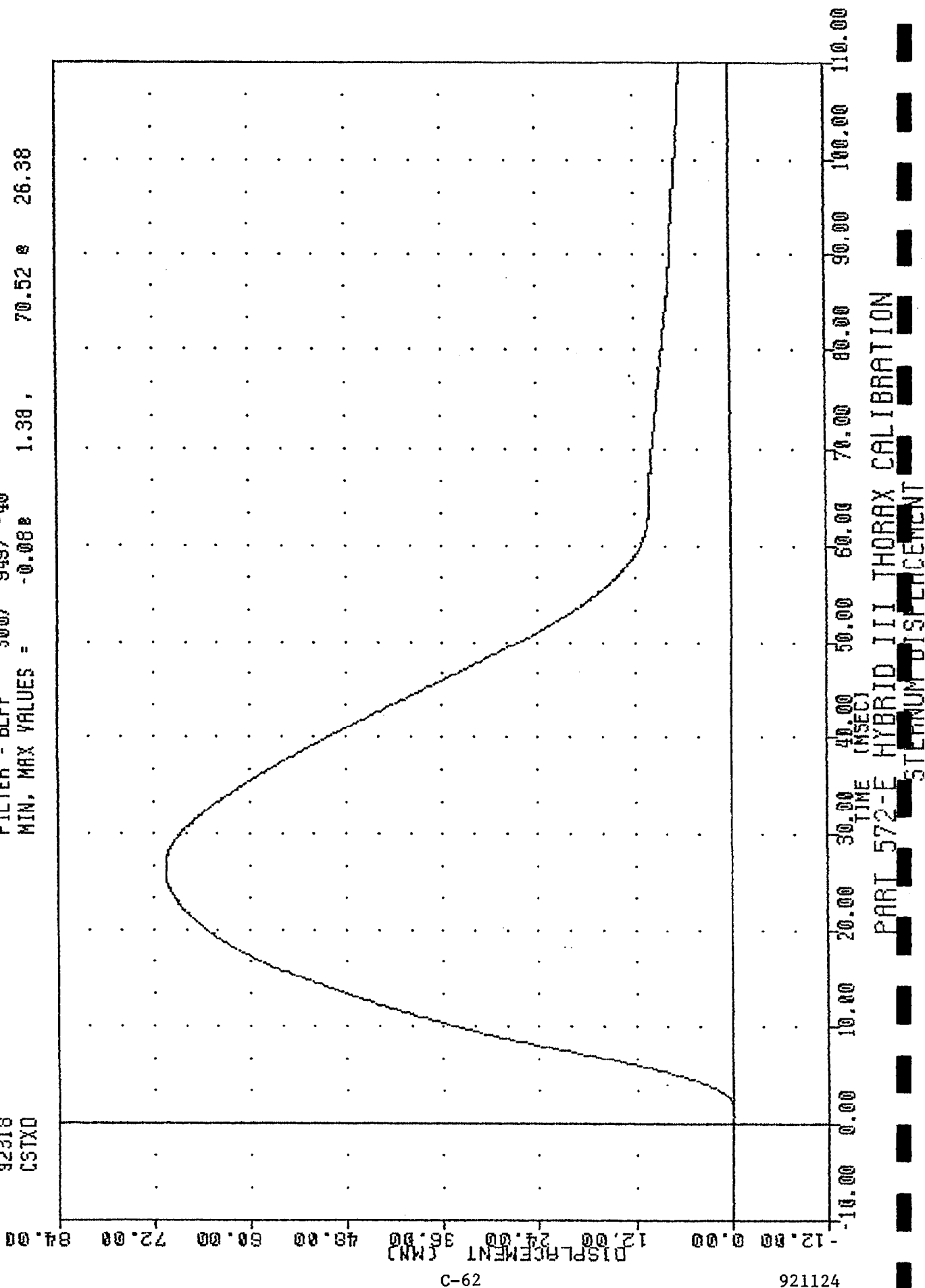


921124

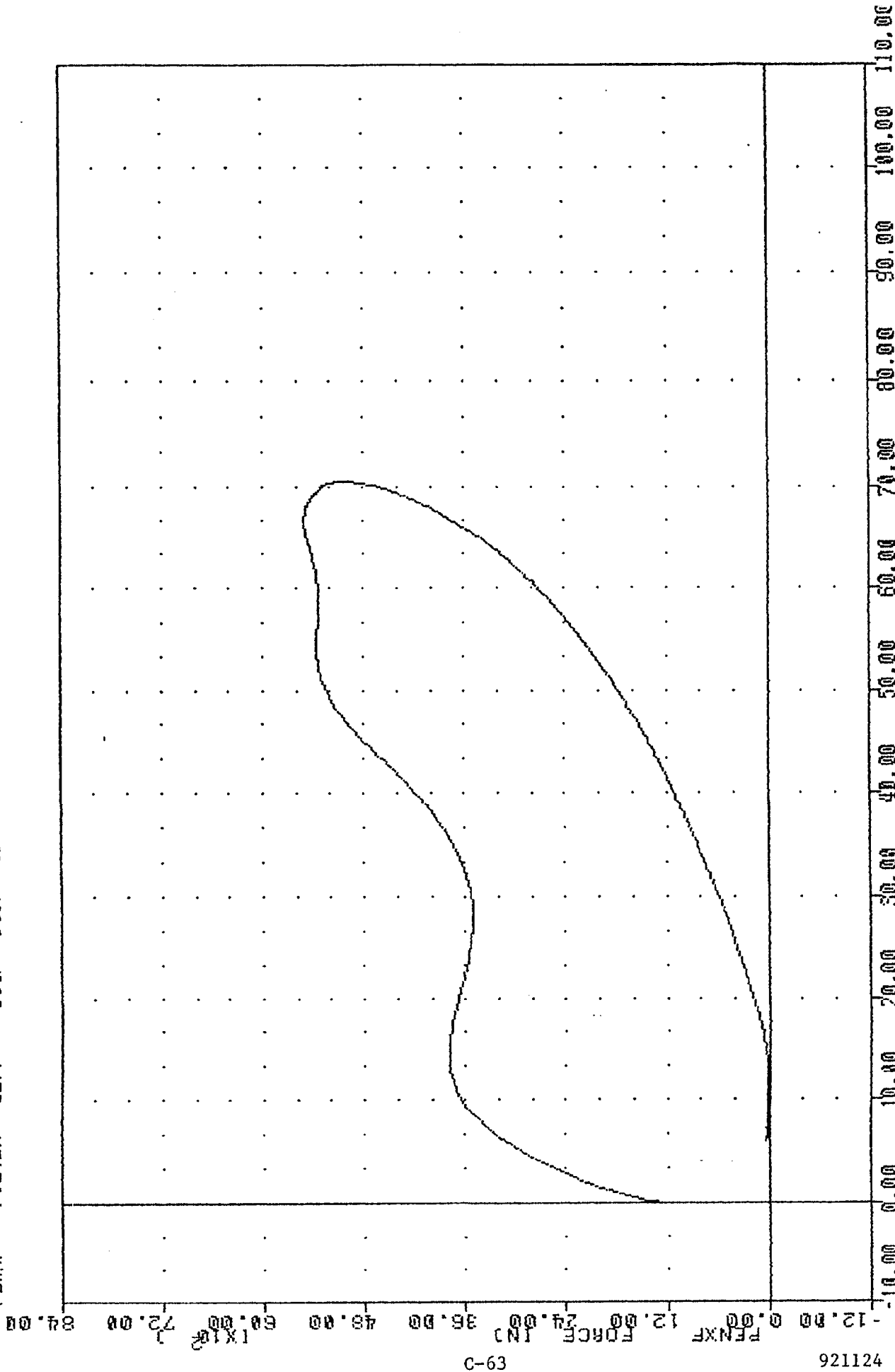
PART 572-E HYBRID III THORAX CALIBRATION
PENNING FORCE

TRC , 142C12TH1
 572E SN142 H.S. THORAX CAL12
 92318
 CSTXD

FILTER = BLPP 300/ 949/ -40
 MIN, MAX VALUES = -0.088 1.38 , 70.52 26.38



TRC 1142C12TH1 572E 5N142 H.S. THORAX CAL12 92318 70.52 26.38
 CSTXD FILTER = BLPP 300/ 949/ -40 MIN. MAX = -0.08 5500.00 20.75
 PENXF FILTER = BLPP 300/ 949/ -40 MIN. MAX = -18.33



PART 572-E HYBRID III THORAX CALIBRATION
 CHEST DISPLACEMENT VS PENNIIUM FORCE

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

12-NOV-92

RIGHT KNEE

TRC

142C12RK1

572E SN142 RIGHT KNEE CAL 12

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PROBE VELOCITY	2.07 - 2.13 M/SEC	2.09 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5393.1 N
PROBE WEIGHT	5.0 KG	

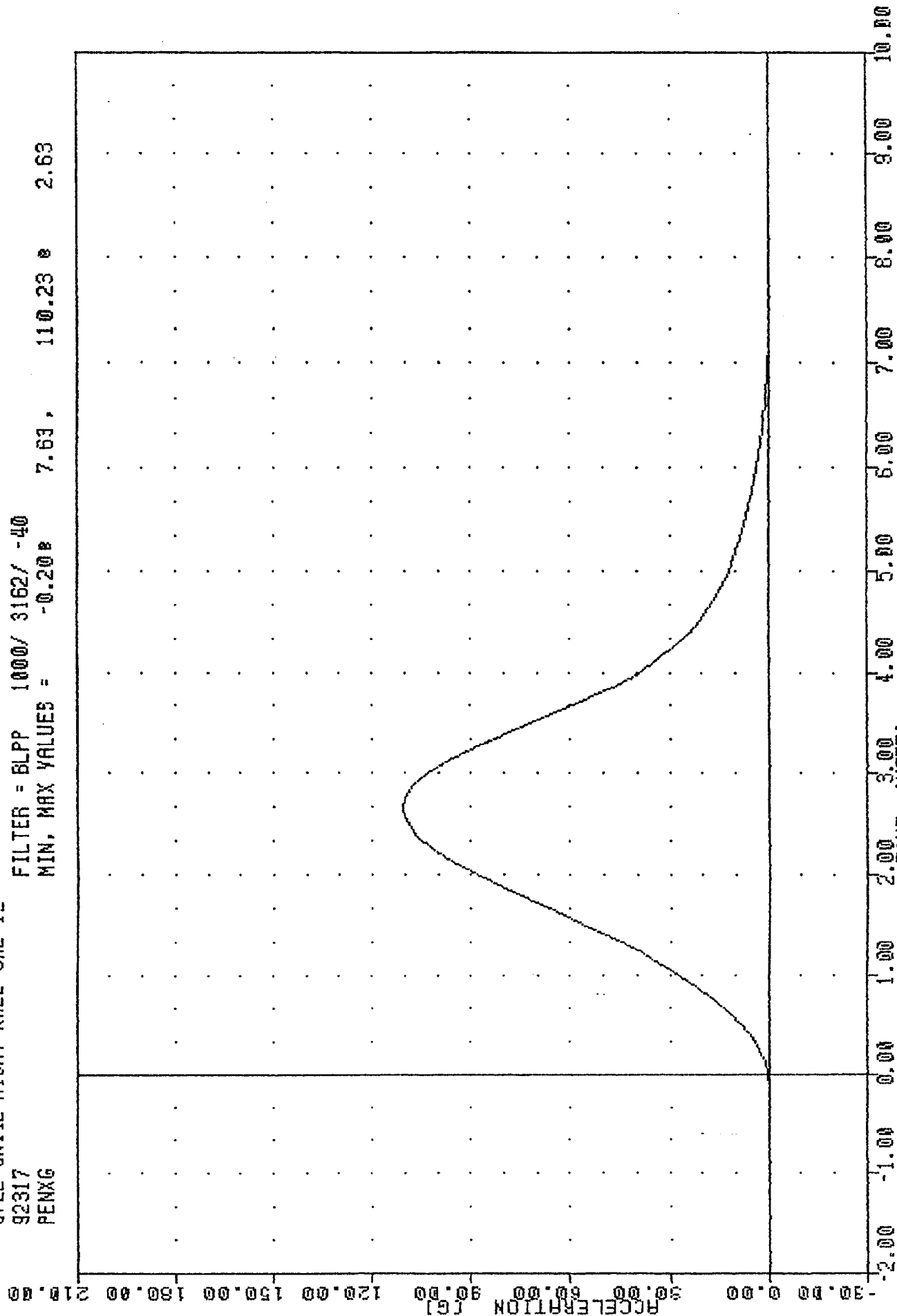
TEST MEETS SPECIFICATIONS

TECHNICIAN

Mike Font

TRC
 572E SN142 RIGHT KNEE CAL 12
 92317
 PENXG

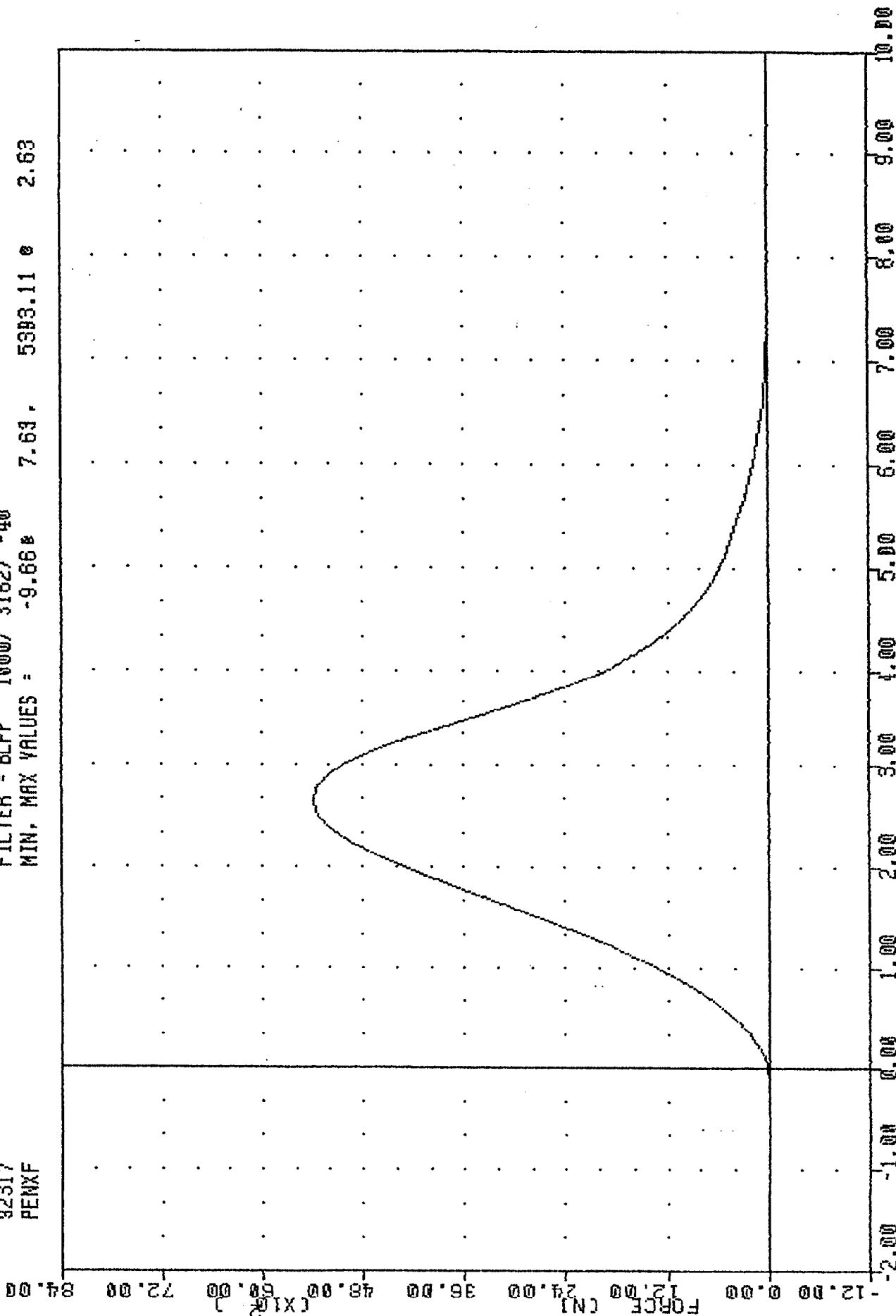
FILTER = BLPP 1000/ 3162/ -40
 MIN, MAX VALUES = -0.208 7.63, 110.23 2.63



PART 572-E HYBRID III RIGHT KNEE CALIBRATION
 PENNIII IM DECEMBER 1965 (5 KG PENN.)

TRC
572E SN142 RIGHT KNEE CAL 12
92317
PENXF

FILTER = BLPP 1000/ 3162/ -40
MIN. MAX VALUES = -9.66 7.63 5393.11 0 2.63



C-66

921124

PART 572-E HYBRID III RIGHT KNEE CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

12-NOV-92

LEFT KNEE
TRC

142C12LK1

572E SN142 LEFT KNEE CAL 12

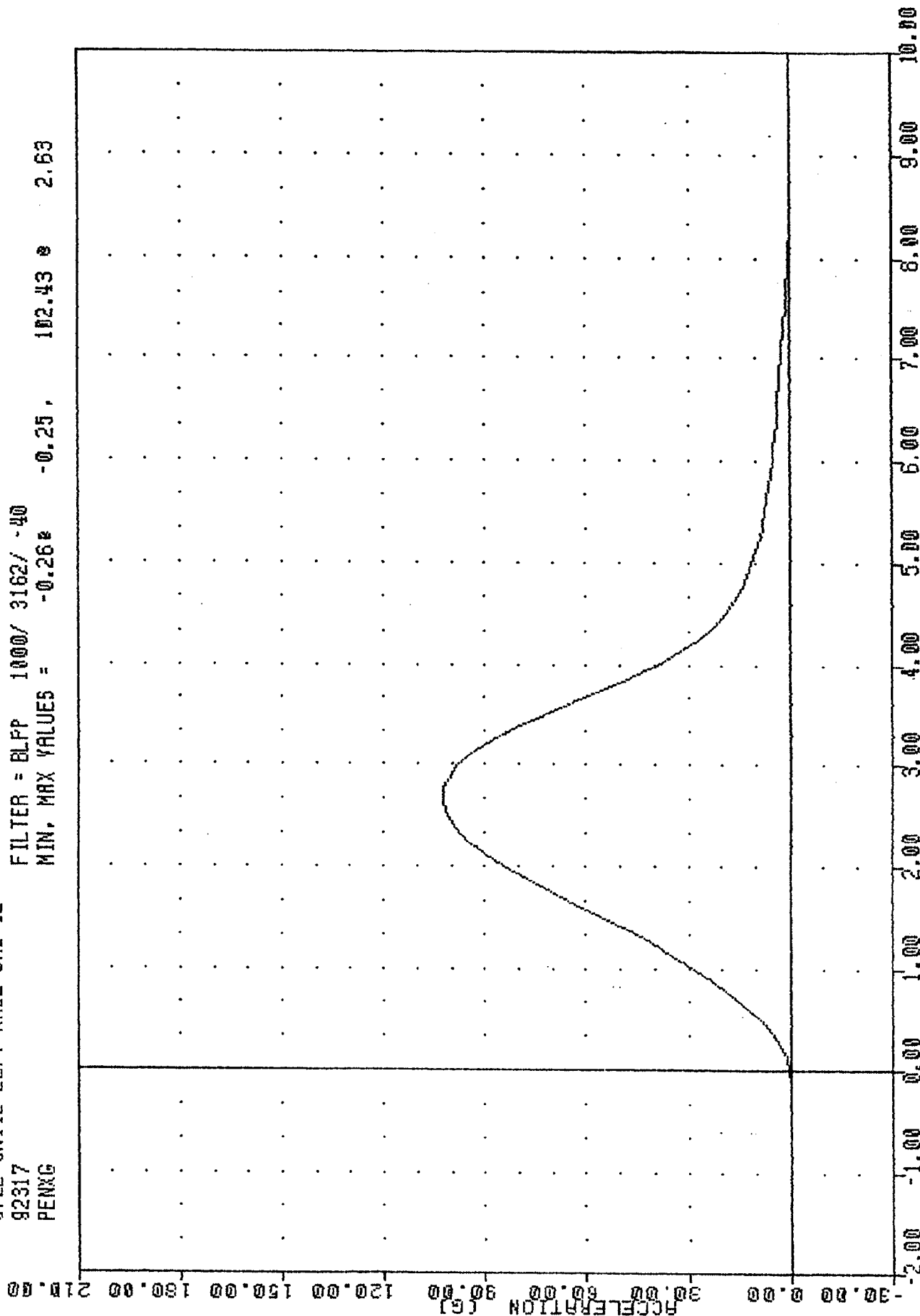
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PROBE VELOCITY	2.07 - 2.13 M/SEC	2.08 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5011.5 N
PROBE WEIGHT	5.0 KG	

TEST MEETS SPECIFICATIONS

TECHNICIAN *Pete Fount*

TRC
572E SN142 LEFT KNEE CAL 12
92317
PENXG

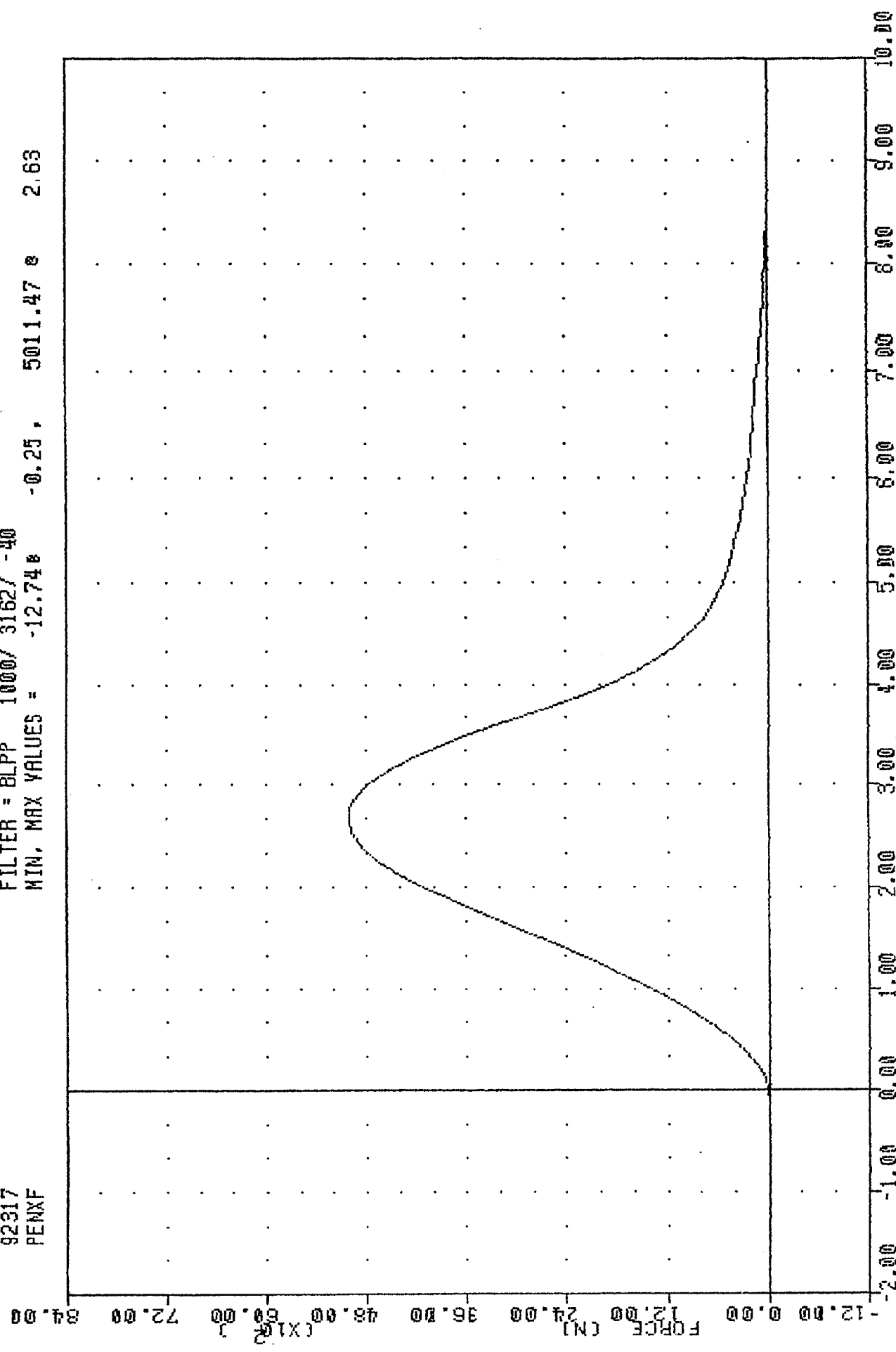
FILTER = BLPP 1000/ 3162/ -40
MIN. MAX VALUES = -0.26 102.43 2.63



PART 572-F HYBRID III LEFT KNEE CALIBRATION
PENNINGTON HETTINGER

TRC
 572E SN142 LEFT KNEE CAL 12
 92317
 PENXF

FILTER = BLPP 1000/ 3162/ -40
 MIN, MAX VALUES = -12.748 -0.25, 5011.47 0 2.63



PART 572-E HYBRID III LEFT KNEE CALIBRATION
 PENDULUM FORCE (5 KG PEND.)

APPENDIX D

MISCELLANEOUS TEST INFORMATION

DUMMY INSTRUMENT CALIBRATIONS

DRIVER DUMMY #192

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCEL.	CY19H	7264	ENDEVCO	07/28/92	01/28/93
Y-AXIS ACCEL.	DH74J	7264	ENDEVCO	07/28/92	01/28/93
Z-AXIS ACCEL.	A19FJ	7264	ENDEVCO	07/28/92	01/28/93
CHEST X-AXIS ACCEL.	DW04J	7264	ENDEVCO	07/30/92	01/30/93
Y-AXIS ACCEL.	A91CJ	7264	ENDEVCO	07/30/92	01/30/93
Z-AXIS ACCEL.	DK56J	7264	ENDEVCO	07/30/92	01/30/93
LEFT FEMUR FORCE LOAD CELL	889	2430	GSE	11/09/92	05/09/93
RIGHT FEMUR FORCE LOAD CELL	827	2430	GSE	08/03/92	02/03/93
*NECK X-AXIS FORCE LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
Y-AXIS FORCE LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
X-AXIS FORCE LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
*NECK MOMENT ABOUT X-AXIS LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
MOMENT ABOUT Y-AXIS LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
MOMENT ABOUT Z-AXIS LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
*CHEST DEFLECTION POTENTIOMETER	87313-96	81422A	VERNITECH	07/29/92	01/29/93
LAP BELT FORCE LOAD CELL	616	3419	LEBOW	10/06/92	04/06/93
SHOULDER BELT FORCE LOAD CELL	615	3419	LEBOW	10/06/92	04/06/93
SHOULDER BELT SPOOL-OUT POTENTIOMETER	A12889	PT-101-40A	CELESCO	10/28/92	04/28/93
SHOULDER BELT STRETCH POTENTIOMETER	2690	2051414101	BOURNES	10/28/92	04/28/93

*HYBRID III USE ONLY.

DUMMY INSTRUMENT CALIBRATIONS

PASSENGER DUMMY #142

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCEL.	CR59H	7264	ENDEVCO	07/28/92	01/28/93
Y-AXIS ACCEL.	CR99H	7264	ENDEVCO	07/28/92	01/28/93
Z-AXIS ACCEL.	CH44H	7264	ENDEVCO	07/28/92	01/28/93
CHEST X-AXIS ACCEL.	DA88H	7264	ENDEVCO	07/30/92	01/30/93
Y-AXIS ACCEL.	DT02JT	7264	ENDEVCO	08/04/92	02/04/93
Z-AXIS ACCEL.	CH74H	7264	ENDEVCO	07/30/92	01/30/93
LEFT FEMUR FORCE LOAD CELL	829	2430	GSE	08/03/92	02/03/93
RIGHT FEMUR FORCE LOAD CELL	610	2430	GSE	08/03/92	02/03/93
*NECK X-AXIS FORCE LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
Y-AXIS FORCE LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
Z-AXIS FORCE LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
*NECK MOMENT ABOUT X-AXIS LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
MOMENT ABOUT Y-AXIS LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
MOMENT ABOUT Z-AXIS LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
*CHEST DEFLECTION POTENTIOMETER	90320B	81422A	VERNITECH	07/29/92	01/29/93
LAP BELT FORCE LOAD CELL	127	3419	LEBOW	10/06/92	04/06/93
SHOULDER BELT FORCE LOAD CELL	571	3419	LEBOW	10/06/92	04/06/93
SHOULDER BELT SPOOL-OUT POTENTIOMETER	0586136	PT-101-40A	CELESCO	10/28/92	04/28/93
SHOULDER BELT STRETCH POTENTIOMETER	1291	2051414101	BOURNES	10/28/92	04/28/93

*HYBRID III USE ONLY.

VEHICLE AND CALIBRATION LABORATORY INSTRUMENT CALIBRATIONS

VEHICLE ACCELEROMETERS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
LEFT REAR SEAT CROSSMEMBER X-AXIS	CW63H	7264	ENDEVCO	06/20/92	12/20/92
LEFT REAR SEAT CROSSMEMBER X-AXIS REDUN	BY97H	7264	ENDEVCO	08/11/92	02/11/93
RIGHT REAR SEAT CROSSMEMBER X-AXIS	CP37H	7264	ENDEVCO	07/14/92	01/14/93
RIGHT REAR SEAT CROSSMEMBER X-AXIS REDUN	CC02H	7264	ENDEVCO	10/01/92	04/01/93
ENGINE TOP X-AXIS	CW79H	7264	ENDEVCO	07/14/92	01/14/93
ENGINE BOTTOM X-AXIS	DG40J	7264	ENDEVCO	07/14/92	01/14/93
RIGHT BRAKE CALIPER X-AXIS	CH24H	7264	ENDEVCO	06/22/92	12/22/92
LEFT BRAKE CALIPER X-AXIS	CJ37H	7264	ENDEVCO	07/22/92	01/22/93
INSTRUMENT PANEL CENTER X-AXIS	CL83H	7264	ENDEVCO	08/22/92	02/22/93

CALIBRATION LABORATORY INSTRUMENTS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
NECK BENDING PENDULUM ACCEL.	CC44	7232	ENDEVCO	10/05/92	04/05/93
NECK BENDING ROTARY POTENTIOMETER	NA	35435-1-102	BOURNES	MFR. SPECIFICATION	
NECK BENDING LINEAR POTENTIOMETER	NA	5184-2051846003	BOURNES	10/06/92	04/06/93
THORAX/HYBRID II FEMUR PEND. ACCEL.	CC64	7232	ENDEVCO	10/05/92	04/05/93
LUMBAR FLEXION FORCE GAUGE	NA	DPPH-50	CHATILLON	05/03/89	REPAIRED
LUMBAR FLEXION ROTATION GAUGE	CP17-0601-1	7020	HUMPHREY	MFR. SPECIFICATION	
ABDOMEN COMPRESSION DISPL. GAUGE	4075-172	80294-2051941504	BOURNES	10/06/92	04/06/93
ABDOMEN COMPRESSION FORCE GAUGE	1261	3167	LEBOW	10/05/92	04/05/93
HYBRID III FEMUR PEND. ACCEL.	CG83	7232	ENDEVCO	10/06/92	04/06/93

SIGN CONVENTION
NHTSA DATA TAPE REFERENCE GUIDE

ACCELEROMETERS:

+X: FORWARD
+Y: LEFTWARD
+Z: UPWARD

POTENTIOMETERS:

+CHEST LONGITUDINAL DEFLECTION: OUTWARD
+CHEST LATERAL DEFLECTION: LEFTWARD
+SEAT BELT DISPLACEMENT: OUTWARD
+SEAT BELT EXTENSION: ELONGATION
+KNEE SLIDER DISPLACEMENT: DISTANCE BETWEEN FEMUR
AND TIBIA INCREASED
(IN RELATION TO A
SEATED DUMMY)

LOAD CELLS:

+FEMUR FORCE: TENSION
+SEAT BELT FORCE: TENSION
+BARRIER FORCE: TENSION

NECK LOAD CELLS:

+X FORCE: HEAD PUSHED FORWARD
+Y FORCE: HEAD PUSHED LEFTWARD
+Z FORCE: HEAD PULLED UPWARD (TENSION ON NECK)
+X MOMENT: RIGHT EAR ROTATING TOWARD RIGHT SHOULDER
+Y MOMENT: CHIN ROTATING TOWARD CHEST
+Z MOMENT: CHIN ROTATING TOWARD LEFT SHOULDER

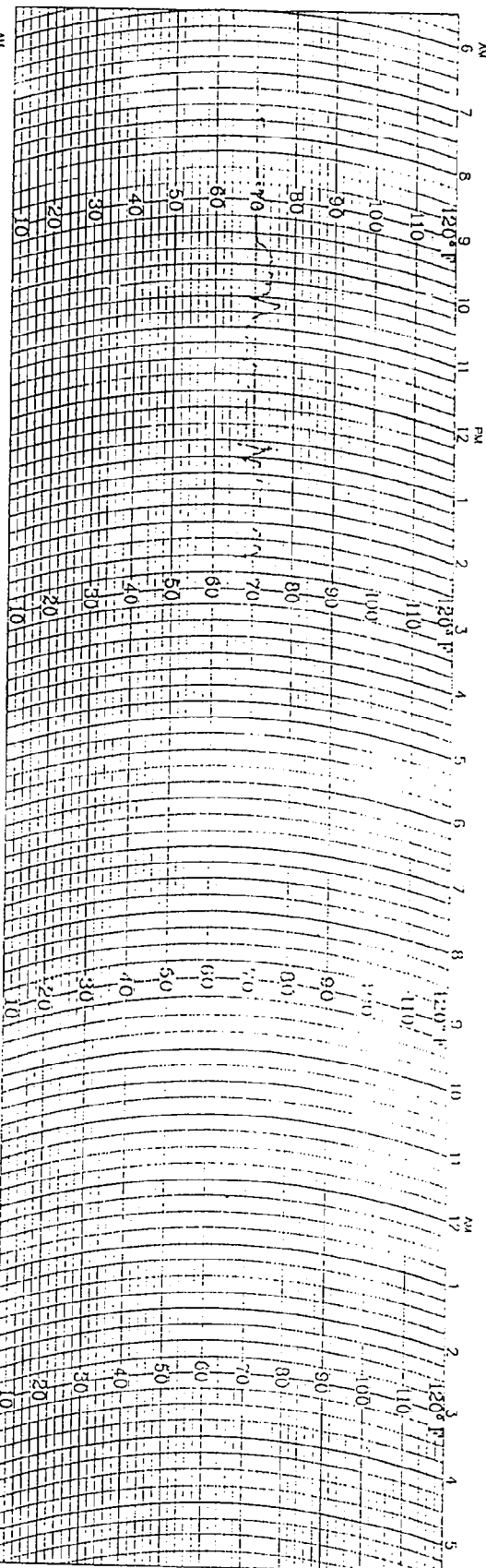
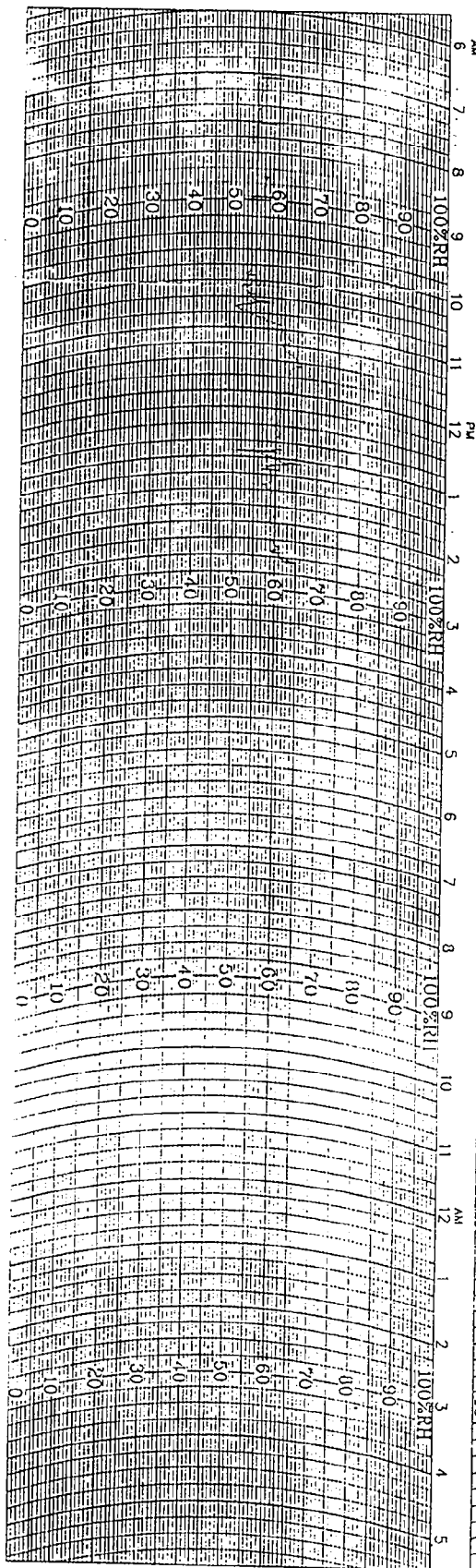
TIBIA LOAD CELLS:

+X FORCE: TENSION
+Y FORCE: TENSION
+Z FORCE: TENSION
+X MOMENT: BOTTOM OF TIBIA MOVING LEFTWARD
+Y MOMENT: BOTTOM OF TIBIA MOVING REARWARD

FREQUENCY RESPONSE CLASSES

SAE J211 OCT88

<u>TYPICAL TEST MEASUREMENTS</u>	<u>CHANNEL CLASS</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	180
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Headform Accelerations	1000



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 CS11-C-HF
 EGN 2/17
 6-9-87

STATION _____ DATE ON _____ DATE OFF _____

APPENDIX E

RESTRAINT SYSTEM INSTRUCTIONS FROM OWNER'S MANUAL

Seats & Safety Belts



Section

1

Here you'll find information about the seats in your vehicle and how to use your safety belts properly. You can also learn about some things you should **not** do with safety belts.

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Seats & Safety Belts

Seats and Seat Controls

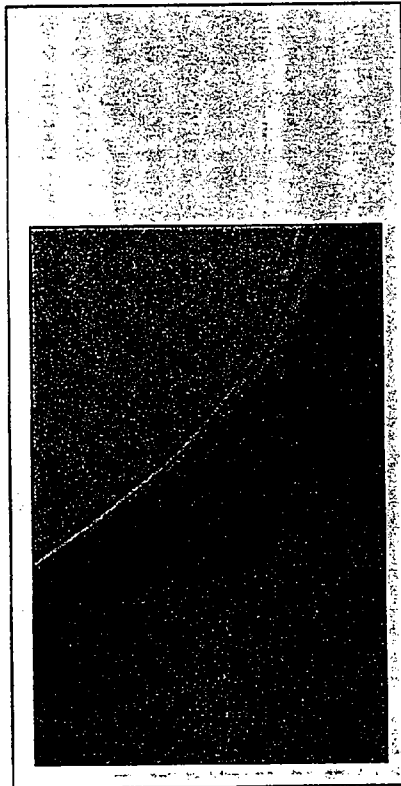
This section tells you about the seats—how to adjust them, and fold them up and down.

Front Seats

CAUTION

 You can lose control of the vehicle if you try to adjust a manual driver's seat while the vehicle is moving. The sudden movement could startle and confuse you, or make you push a pedal when you don't want to. Adjust the driver's seat only when the vehicle is not moving.

Manual Front Seat



K0302

Move the lever under the front of the seat toward your door to unlock it. Slide the seat to where you want it. Then release the lever and try to move the seat with your body, to make sure the seat is locked into place.

Reclining Front Seatbacks (Bucket Seats or 60/40 Split-Bench)



K0305

To adjust the seatback, lift the lever on the outer side of the seat. Release the lever to lock the seatback where you want it. Pull up on the lever and the seat will go to an upright position.

But don't have a seatback reclined if your vehicle is moving.

CAUTION

 Sitting in a reclined position when your vehicle is in motion can be dangerous. Even if you buckle up, your safety belts can't do their job when you're reclined like this.

The shoulder belt can't do its job because it won't be against your body. Instead, it will be in front of you. In a crash you could go into it, receiving neck or other injuries.

The lap belt can't do its job, either. In a crash the belt could go up over your abdomen. The belt forces would be there, not at your pelvic bones. This could cause serious internal injuries.

For proper protection when the vehicle is in motion, have the seatback upright. Then, sit well back in the seat and wear your safety belt properly.

Seats & Safety Belts



AN101021

Manual Lumbar Adjustment

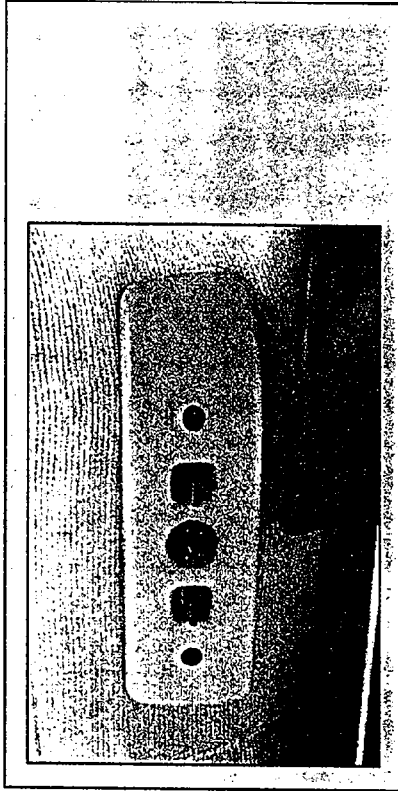


P0326

If you have this feature, there will be a knob with six settings on the outside of the driver and passenger bucket seats.

Turn the knob counter-clockwise to increase lumbar support and clockwise to decrease lumbar support.

Power Driver's Seat



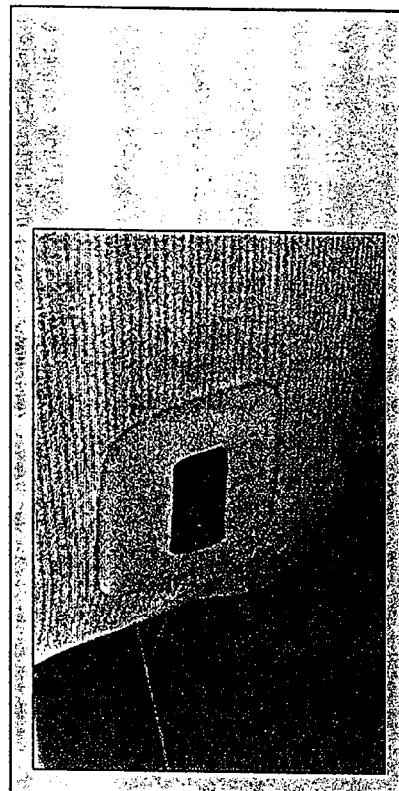
P0330

The left control makes the rear of the seat go up and down.

The right control makes the front of the seat go up and down.

The center control makes the whole seat go up and down or forward and rearward.

Power Lumbar Adjustment



P0331

If you have this feature, there will be a control on the front of your seat. Press and hold the right side until you have the desired lumbar support. To decrease lumbar support, press the left side of the control.

Seats & Safety Belts

Front Seatback Latches (Two-Door Models)

The front seatback folds forward to let people get into the back seat. Your seatback will move back and forth freely, unless you come to a sudden stop. Then it will lock in place.



K0303

There's one time the seatback may not fold without some help from you. That's if your vehicle is parked going down a fairly steep hill.

To fold a front seatback forward, push the seatback toward the rear as you lift this latch. Then the seatback will fold forward. The latch must be down for the seat to work properly.

Easy Entry Seat (Two-Door Models)



K0304

The right front seat of your vehicle makes it easy to get in and out of the rear vehicle area.

- When you tilt the right front seatback fully forward, the whole seat will slide forward.
- After someone gets into the rear seat area, move the right front seatback to its original position. Then move the seat rearward until it locks.

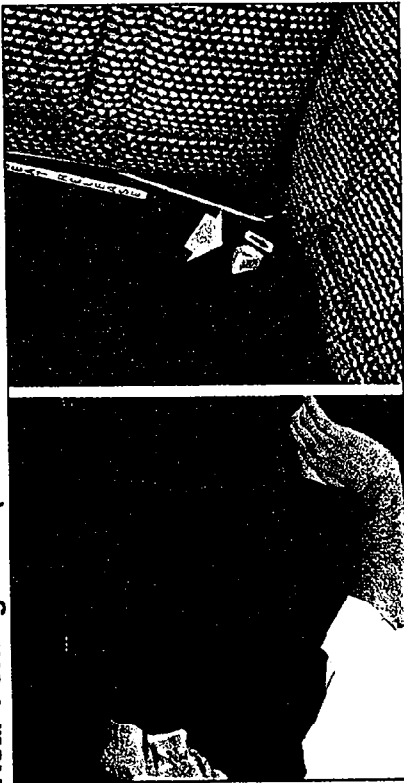
CAUTION

 If an easy entry right front seat isn't locked, it can move. In a sudden stop or crash, the person sitting there could be injured. After you've used it, be sure to push rearward on an easy entry seat to be sure it is locked.

- To get out, again tilt the seatback fully forward.

Seats & Safety Belts

Rear Folding Seat (Two-Door Models)



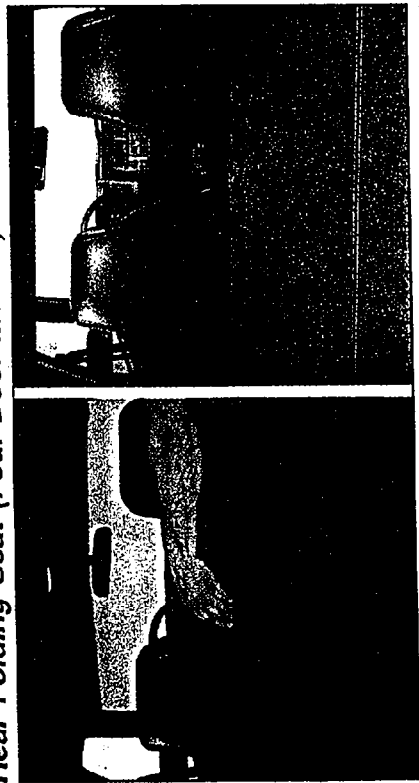
K0308

Your utility vehicle has a rear folding seat which lets you fold the seatback down for more cargo space. Push back on the seatback as you pull forward on the latch at the righthand side of the seat cushion. Then fold the seatback forward.

To raise it, lift up the seatback and push it until it locks in the upright position.

Your rear seatback has a mechanical latch on the righthand side, and an inertia latch on the lefthand side. Push and pull on the seatback to be sure that the right side has locked in the upright position. Have it fixed if it doesn't.

Rear Folding Seat (Four-Door Models)



K0311

1-8

Your utility vehicle has a folding rear seat which lets you fold the seatback down for more cargo space. The rear seat release handle is in the upper center of the rear of the seatback. Push back on the seatback as you pull up on the handle.

To raise it, just lift up the seatback and push it until it locks in the upright position.

Your rear seatback has mechanical latches on both sides. Push and pull on the seatback to check that both latches have locked in the upright position. If they haven't, have them fixed immediately.

Head Restraints



AN102017

Slide the head restraint up or down so that the top of the restraint is closest to the top of your ears. This position reduces the chance of a neck injury in a crash.

1-9

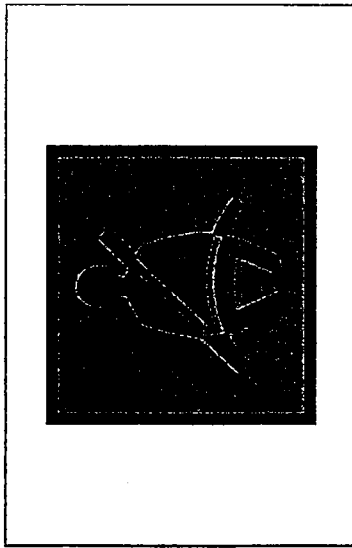
Seats & Safety Belts

Safety Belts: They're For Everyone

This part of the manual tells you how to use safety belts properly. It also tells you some things you should not do with safety belts.

CAUTION

⚠ Don't let anyone ride where they can't wear a safety belt properly. If you are in a crash and you're not wearing a safety belt, your injuries can be much worse. You can hit things inside the vehicle or be ejected from it. You can be seriously injured or killed. In the same crash, you might not be if you are buckled up. Always fasten your safety belt and check that your passengers' belts are fastened properly, too.



AM110001

This figure lights up when you turn the key to **RUN** or **START** when your safety belt isn't buckled, and you'll hear a chime, too. It's the reminder to buckle up. In many states and Canadian provinces, the law says to wear safety belts. Here's why: **They work.**

You never know if you'll be in a crash. If you do have a crash, you don't know if it will be a bad one.

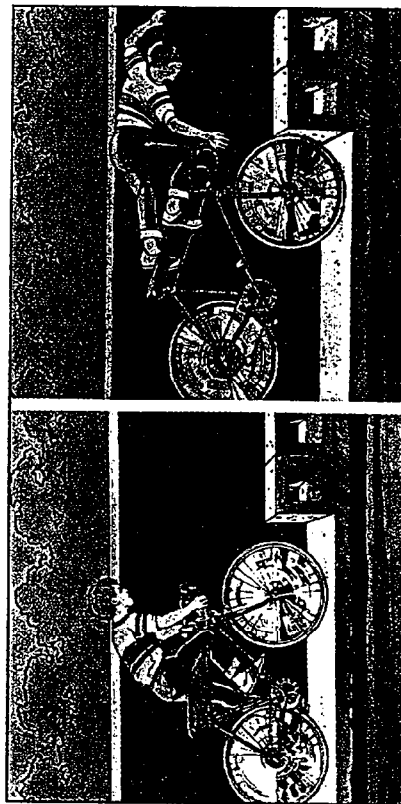
A few crashes are very mild. In them, you won't get hurt even if you're not buckled up. And some crashes can be so serious, like being hit by a train, that even buckled up a person wouldn't survive. But most crashes are in between. In many of them, people who buckle up can survive and sometimes walk away. Without belts they could be badly hurt or killed.

After 25 years of safety belts in vehicles, the facts are clear. In most crashes buckling up does matter . . . a lot!



AM110004

Why Safety Belts Work

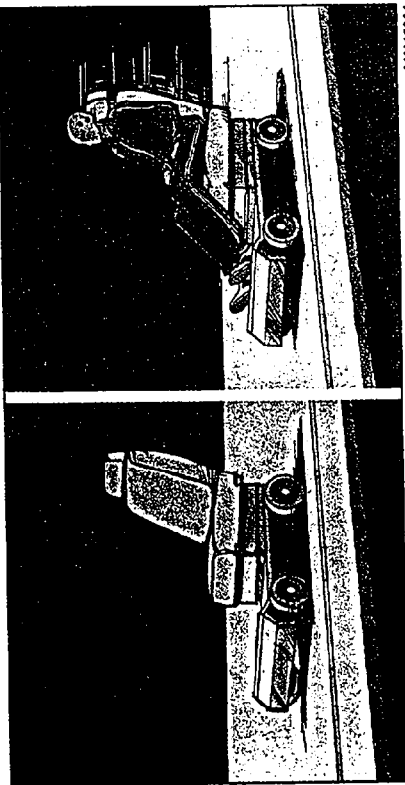


AM115001

AM115002

When you ride in or on anything, you go as fast as it goes. For example, if the bike is going 10 mph (16 km/h), so is the child. When the bike hits the block, it stops. But the child keeps going!

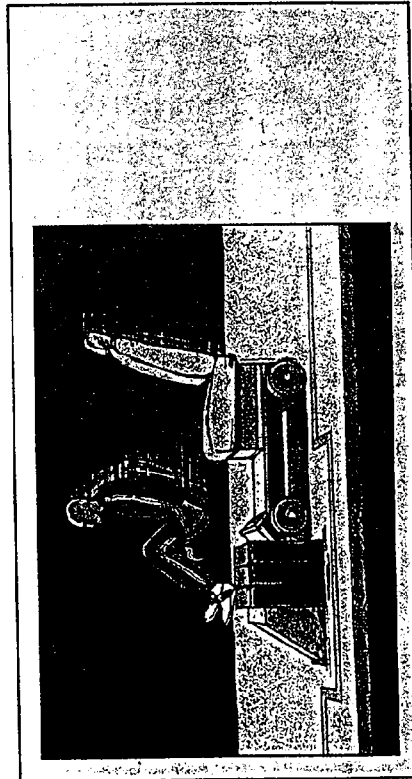
Seats & Safety Belts



AM115003

AM115004

Take the simplest "vehicle". Suppose it's just a seat on wheels. Put someone on it.



AM115005

Get it up to speed. Then stop the "vehicle". The rider doesn't stop.



AM115006

The person keeps going until stopped by something. In a real vehicle, it could be the windshield . . .



AM115007

or the instrument panel . . .

Seats & Safety Belts



AM115008

or the safety belts!

With safety belts, you slow down as the vehicle does. You get more time to stop. You stop over more distance, and your strongest bones take the forces. That's why safety belts make such good sense.

Here Are Questions Many People Ask About Safety Belts—and the Answers

Q: Won't I be trapped in the vehicle after an accident if I'm wearing a safety belt?

A: You could be—whether you're wearing a safety belt or not. But you can easily unbuckle a safety belt, even if you're upside down. And your chance of being conscious during and after an accident, so you can unbuckle and get out, is much greater if you are belted.

Q: Why don't they just put in air bags so people won't have to wear safety belts?

A: "Air bags," or Supplemental Inflatable Restraint systems, are in some vehicles today and will be in more of them in the future. But they are supplemental systems only - so they work with safety belts, not instead of them. Every "air bag" system ever offered for sale has required the use of safety belts. Even if you're in a vehicle that has "air bags," you still have to buckle up to get the most protection. That's true not only in frontal collisions, but especially in side and other collisions.

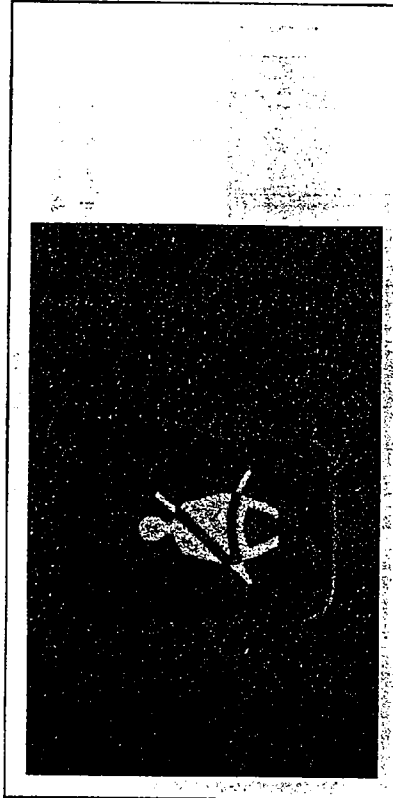
Q: If I'm a good driver, and I never drive far from home, why should I wear safety belts?

A: You may be an excellent driver, but if you're in an accident - even one that isn't your fault - you and your passengers can be hurt. Being a good driver doesn't protect you from things beyond your control, such as bad drivers.

Most accidents occur within 25 miles (40 km) of home. And the greatest number of serious injuries and deaths occur at speeds of less than 40 mph (65 km/h).

Safety belts are for everyone.

Safety Belt Reminder Light



K0285

When the key is turned to **RUN** or **START**, a light will come on for about eight seconds to remind people to fasten their safety belts. Unless the driver's safety belt is buckled, a chime will also sound.

Seats & Safety Belts

How To Wear Safety Belts Properly

Adults

This part is only for people of adult size.

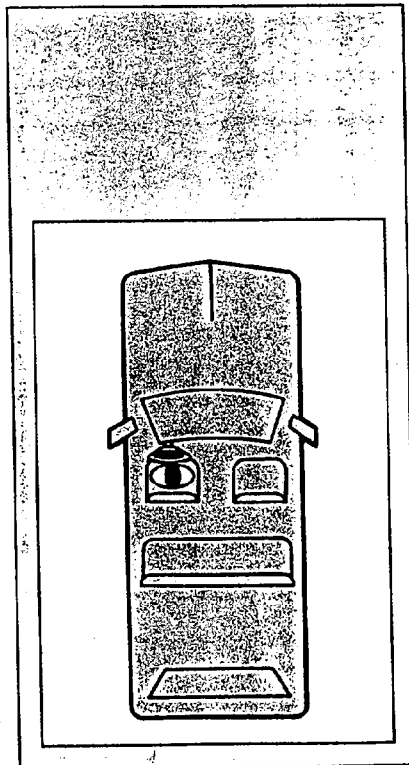
CAUTION

There are special things to know about safety belts and children. And there are different rules for babies and smaller children. If a child will be riding in your vehicle, see the part after this one, called "Children". Follow these rules for everyone's protection.

First, you'll want to know which restraint systems your vehicle has. We'll start with the driver position.

Driver Position

This part describes the driver's restraint system.



Lap-Shoulder Belt



The driver has a lap-shoulder belt. Here's how to wear it properly.

1. Close and lock the door.
2. Adjust the seat (to see how, see "Seats" in the Index) so you can sit up straight.

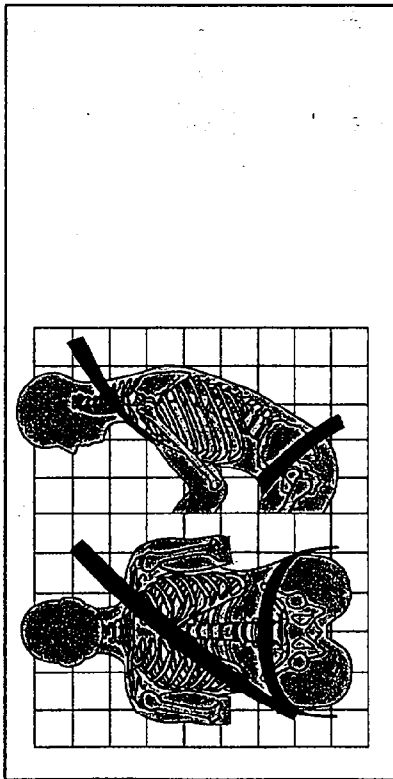


3. Pick up the latch plate and pull the belt across you. Don't let it get twisted.
4. Push the latch plate into the buckle until it clicks.

Seats & Safety Belts

If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle faces upward or outward so you would be able to unbuckle it quickly if you ever had to.



AM120007

The lap part of the belt should be low and snug below the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or a crash.

E-11

921124

Q: What's wrong with this?



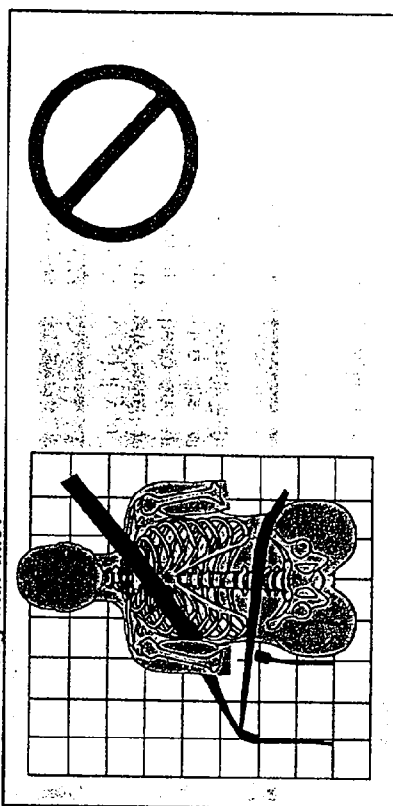
AM120015

A: The shoulder belt is too loose. It won't give nearly as much protection this way.

CAUTION

 You can be seriously hurt if your shoulder belt is too loose. In a crash you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

Q: What's wrong with this?



AM120016

A: The belt is buckled in the wrong place.

1-18

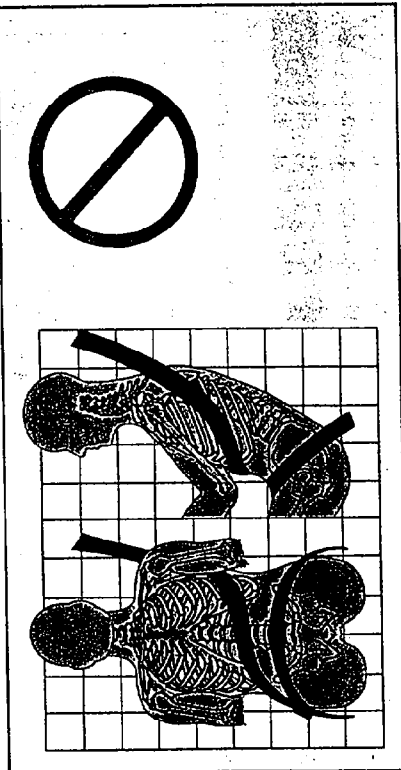
1-19

Seats & Safety Belts

CAUTION

 You can be seriously injured if your belt is buckled in the wrong place like this. In a crash, the belt would go up over your abdomen. The belt forces would be there, not at the pelvic bones. This could cause serious internal injuries. Always buckle your belt into the buckle nearest you.

Q: What's wrong with this?



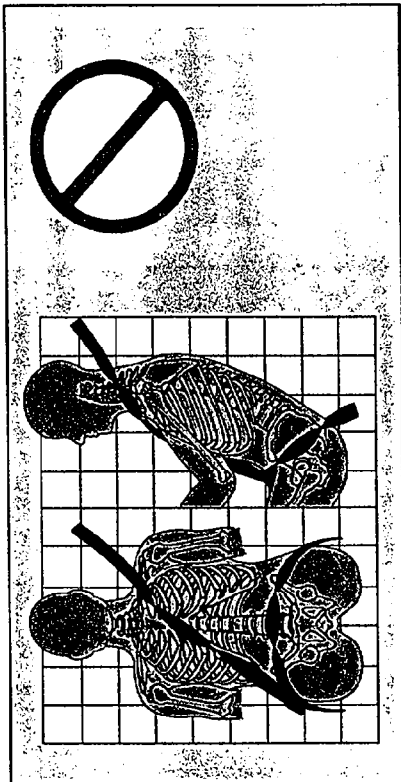
AM125001

A: The shoulder belt is worn under the arm. It should be worn over the shoulder at all times.

CAUTION

 You can be seriously injured if you wear the shoulder belt under your arm. In a crash, your body would move too far forward, which would increase the chance of head and neck injury. Also, the belt would apply too much force to the ribs, which aren't as strong as shoulder bones. You could also severely injure internal organs like your liver or spleen.

Q: What's wrong with this?



AM125002

A: The belt is twisted across the body.

CAUTION

 You can be seriously injured by a twisted belt. In a crash, you wouldn't have the full width of the belt to spread impact forces. If a belt is twisted, make it straight so it can work properly, or ask your dealer to fix it.

Seats & Safety Belts

To unlatch the belt, just push the button on the buckle. The belt should go back out of the way.



AM120060

Before you close the door, be sure the belt is out of the way. If you slam the door on it, you can damage both the belt and your vehicle.

Safety Belt Use During Pregnancy

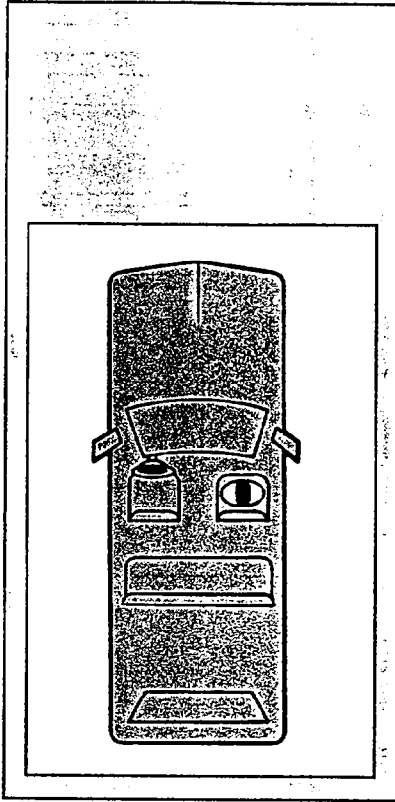


AM135001

Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they don't wear safety belts. A pregnant woman should wear a lap-shoulder belt and the lap portion should be worn as low as possible throughout the pregnancy.

The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it's more likely that the fetus won't be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.

Right Front Passenger Position



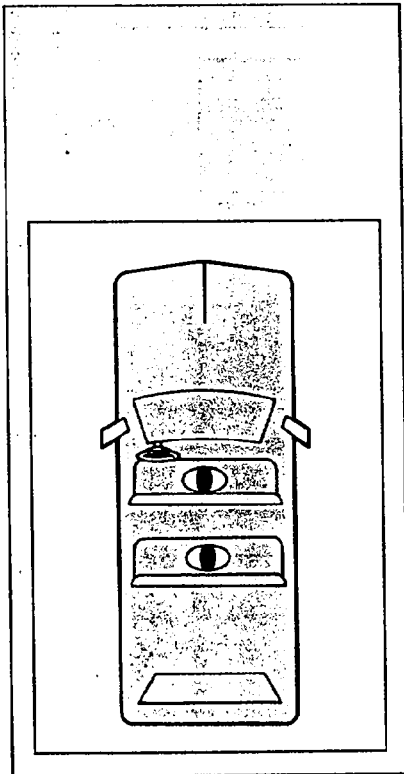
K0333

The right front passenger's safety belt works the same way as the driver's safety belt. See "Driver Position," earlier in this part.

When the lap portion of the belt is pulled out all the way, it will lock. If it does, let it go back all the way and start again.

Seats & Safety Belts

Center Passenger Position-Front and Rear (Four-Door Models)



If your vehicle has a front and rear bench seat, someone can sit in the center positions.

Lap Belt



When you sit in a center seating position, you have a lap safety belt, which has no retractor. To make the belt longer, tilt the latch plate and pull it along the belt.

To make the belt shorter, pull its free end as shown until the belt is snug.

Buckle, position and release it the same way as the lap part of a lap-shoulder belt.

If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

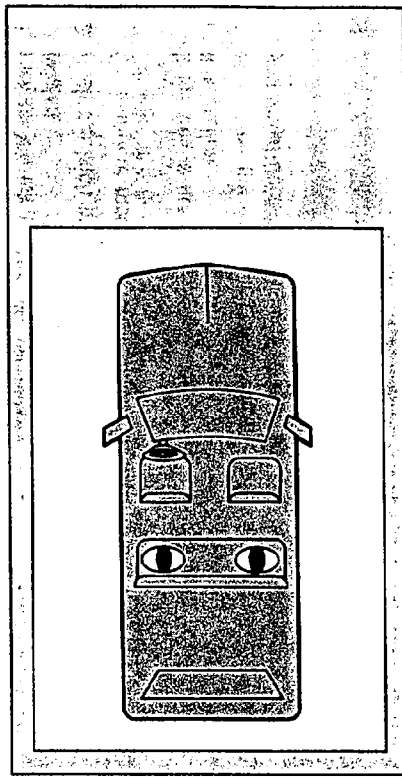
Make sure the release button on the buckle faces upward or outward so you would be able to unbuckle it quickly if you ever had to.

Rear Seat Passengers

It's very important for rear seat passengers to buckle up! Accident statistics show that unbelted people in the rear seat are hurt more often in crashes than those who are wearing safety belts.

Rear passengers who aren't safety belted can be thrown out of the vehicle in a crash. And they can strike others in the vehicle who are wearing safety belts.

Rear Seat Outside Passenger Positions



Seats & Safety Belts

The positions next to the windows have lap-shoulder belts. Here's how to wear one properly.



AM147119

1. Pick up the latch plate and pull the belt across you. Don't let it get twisted.

2. Push the latch plate into the buckle until it clicks.

On four-door models, when the shoulder belt is pulled out all the way, it will lock. If it does, let it go back all the way and start again.

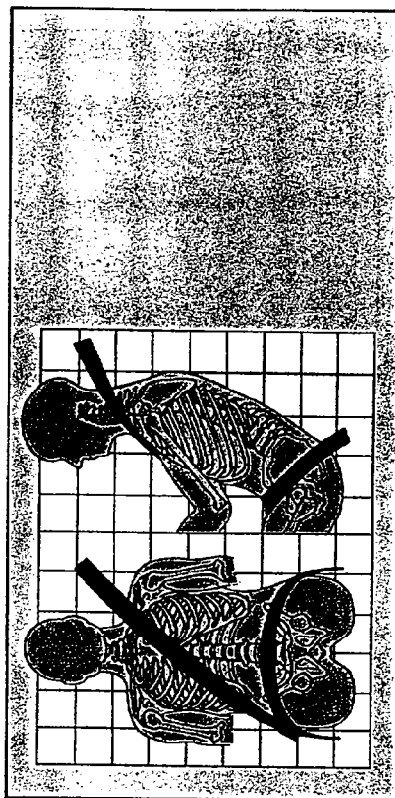
If the belt is not long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle faces upward or outward so you would be able to unbuckle it quickly if you ever had to.



AM147097R1

- To make the lap part tight, pull down on the buckle end of the belt as you pull up on the shoulder part.



AM120097

The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under a lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or a crash.

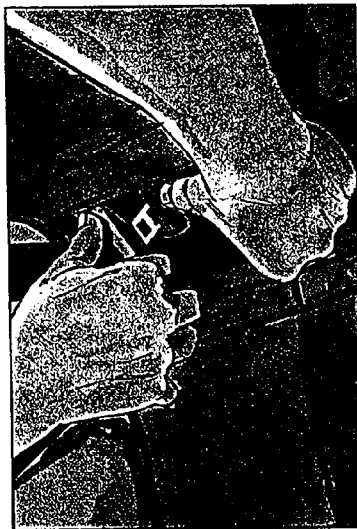
CAUTION



You can be seriously hurt if your shoulder belt is too loose. In a crash you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

Seats & Safety Belts

To unlatch the belt, just push the button on the buckle.



AM147089

Children



AM15003RT

Everyone in a vehicle needs protection! That includes infants and all children smaller than adult size. In fact, the law in every state and Canadian province says children up to some age must be restrained while in a vehicle.

Smaller Children and Babies

CAUTION

! Smaller children and babies should always be restrained in a child or infant restraint. The instructions for the restraint will say whether it is the right type and size for your child. A very young child's hip bones are so small that a regular belt might not stay low on the hips, as it should. Instead, the belt will likely be over the child's abdomen. In a crash the belt would apply force right on the child's abdomen, which could cause serious or fatal injuries. So, be sure that any child small enough for one is always properly restrained in a child or infant restraint.



AM15003S

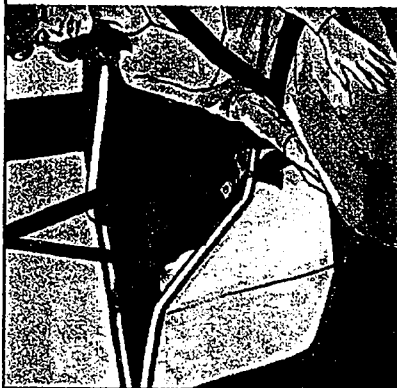
CAUTION

! Never hold a baby in your arms while riding in a vehicle. A baby doesn't weigh much—until a crash. During a crash a baby will become so heavy you can't hold it. For example, in a crash at only 25 mph (40 km/h), a 12-pound (5.5 kg) baby will suddenly become a 240-pound (110 kg) force on your arms. The baby would be almost impossible to hold.

Secure the baby in an infant restraint.

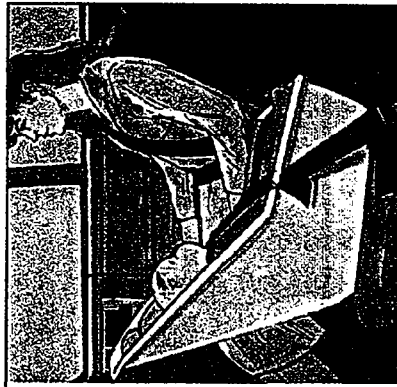
Seats & Safety Belts

Two-Door



AM150013R1

Four-Door



AM150028R1

Child Restraints

Be sure to follow the instructions for the restraint. You may find these instructions on the restraint itself or in a booklet, or both. These restraints use the belt system in your vehicle, but the child also has to be secured within the restraint to help reduce the chance of personal injury. The instructions that come with the infant or child restraint will show you how to do that.

Where to Put the Restraint

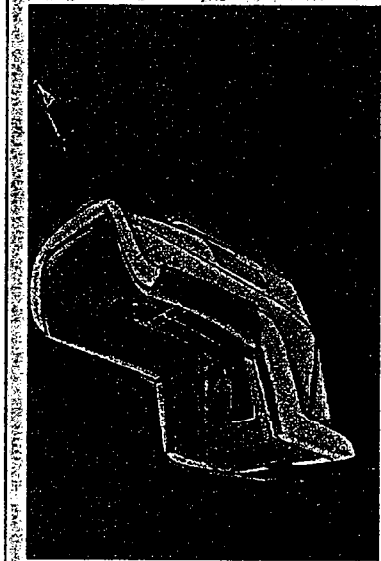
Accident statistics show that children are safer if they are restrained in the rear rather than the front seat. We at General Motors, therefore, recommend that you put your child restraint in the rear seat unless the child is an infant and you're the only adult in the vehicle. In that case, you might want to secure the restraint in the front seat where you can keep an eye on the baby. If you have the 60/40 split-bench seat, you must use the child restraint in the right front passenger seat. Wherever you install it, be sure to secure the child restraint properly.

CAUTION



An unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle—even when no child is in it.

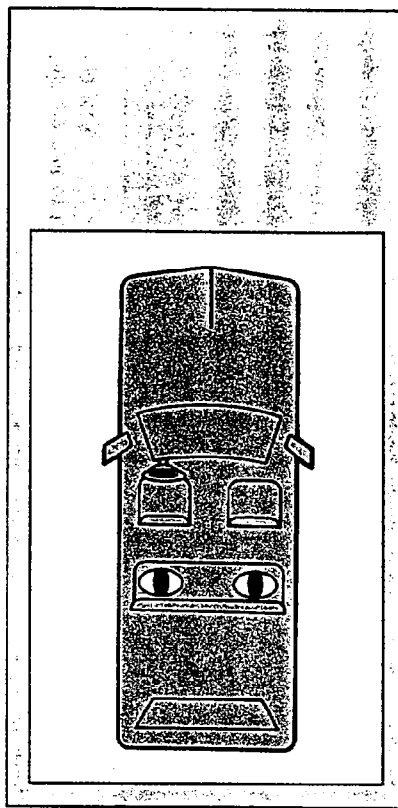
Top Strap



AM155001

If your child restraint has a top strap, it should be anchored. If you need to have an anchor installed, you can ask your GM dealer to put it in for you. If you want to install an anchor yourself, your dealer can tell you how to do it.

Securing a Child Restraint in a Rear Outside Position (Four-Door Models)



K0341

You'll be using the lap-shoulder belt. See the earlier part about the top strap, if the child restraint has one.

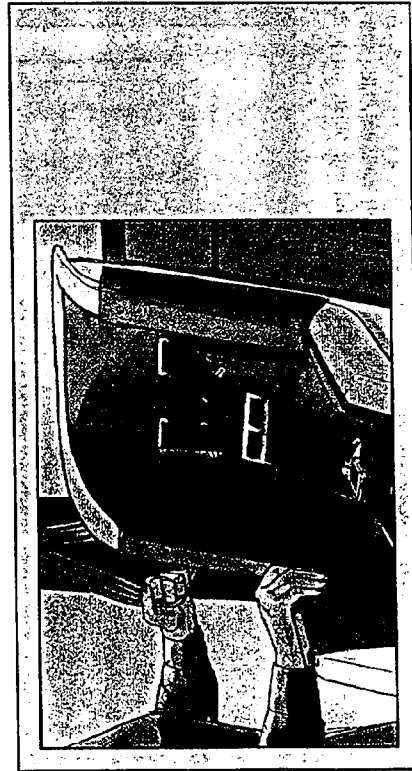
1. Put the restraint on the seat. Follow the instructions for the child restraint.

Seats & Safety Belts

2. Secure the child in the child restraint as the instructions say.
3. Pull out the vehicle's safety belt and run the lap part through or around the restraint. The child restraint instructions will show you how. See if the shoulder belt would go in front of the child's face or neck. If so, put it behind the child restraint.
4. Buckle the belt. Make sure the release button faces upward or outward, so you'll be able to unbuckle it quickly if you ever need to.

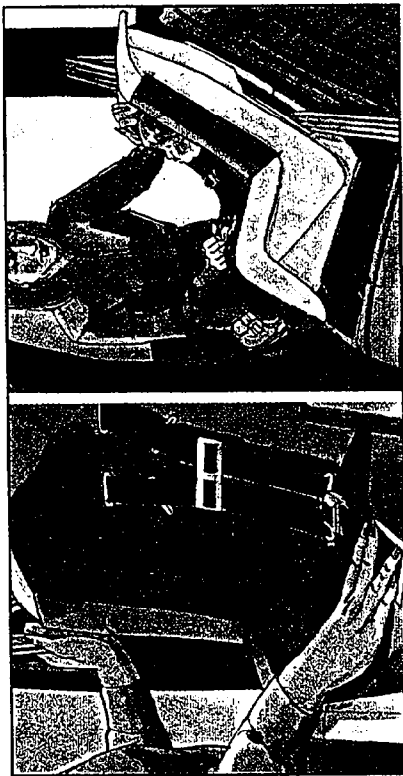


5. Pull the rest of the shoulder belt all the way out of the retractor to set the lock.



6. To tighten the belt, feed the shoulder belt into the retractor while you push down on the child restraint.

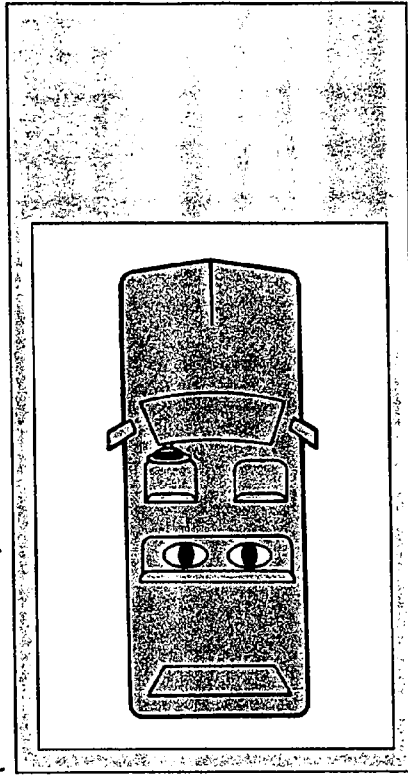
1-32



7. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

Securing a Child Restraint in a Rear Outside Position (Two-Door Models)



You'll be using the lap-shoulder belt. See the earlier part about the top strap, if the child restraint has one.

1. Put the restraint on the seat. Follow the instructions for the child restraint.

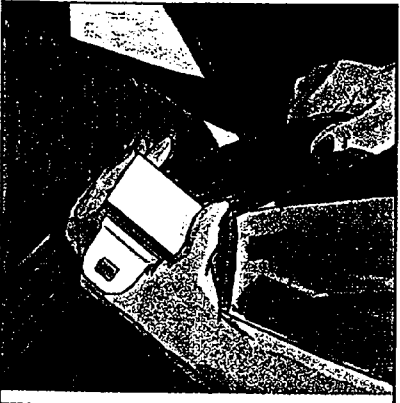
1-33

Seats & Safety Belts

When you secure a child restraint in a center seating position, you'll be using the lap belt. But don't use the rear center seat, unless the base of the child restraint is small enough to let you reach the buckle and latch plate easily. See the earlier part about the top strap if the child restraint has one.

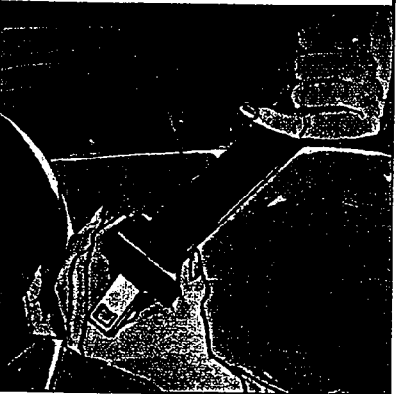
1. Make the belt as long as possible by tilting the latch plate and pulling it along the belt.

Four-Door Front



AM163060

Four-Door Rear



AM163010

2. Put the restraint on the seat. Follow the instructions for the child restraint.
3. Secure the child in the child restraint as the instructions say.
4. Run the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.

Four-Door Front



AM163051

Four-Door Rear



AM163017R1

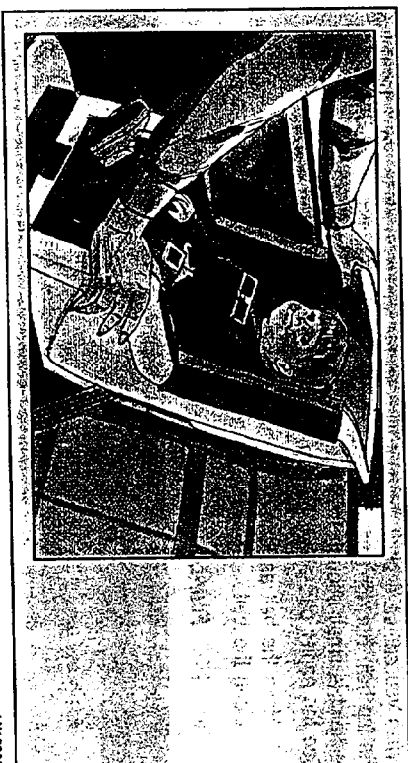
5. Buckle the belt. Make sure the release button faces upward or outward, so you'll be able to unbuckle it quickly if you ever need to.
 6. To tighten the belt, pull its free end while you push down on the child restraint.
 7. Push and pull the child restraint in different directions to be sure it is secure. If the child restraint isn't secure, turn the latch plate over and buckle it again. Then see if it is secure. If it isn't, secure the restraint in a different place in the vehicle and contact the child restraint maker for their advice.
- To remove the child restraint, just unbuckle the vehicle's safety belt. It will be ready to work for an adult or larger child passenger.

Seats & Safety Belts

2. Secure the child in the child restraint as the instructions say.
3. Pull out the vehicle's safety belt and run the lap part through or around the restraint. The child restraint instructions will show you how. See if the shoulder belt would go in front of the child's face or neck. If so, put it behind the child restraint.
4. Buckle the belt. Make sure the release button faces upward and outward, so you'll be able to unbuckle it quickly if you ever need to.



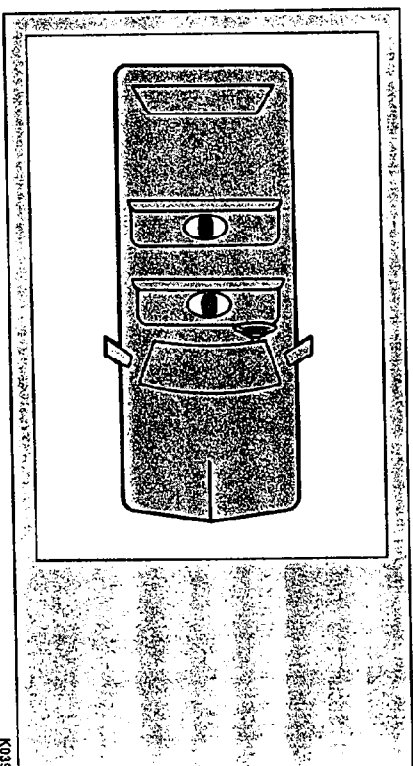
5. Press the "cinch" button on the retractor cover to set the lock.
6. To tighten the belt, feed the shoulder belt back into the retractor while you push down on the child restraint.



7. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

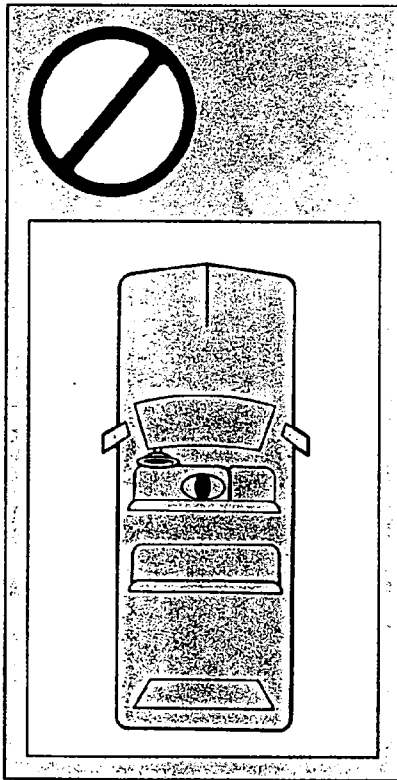
Securing a Child Restraint in a Center Seat Position
(Four-Door Models - Except 60/40 Split-Bench Seat)



Don't use child restraints in the center position of a 60/40 bench seat.

Seats & Safety Belts

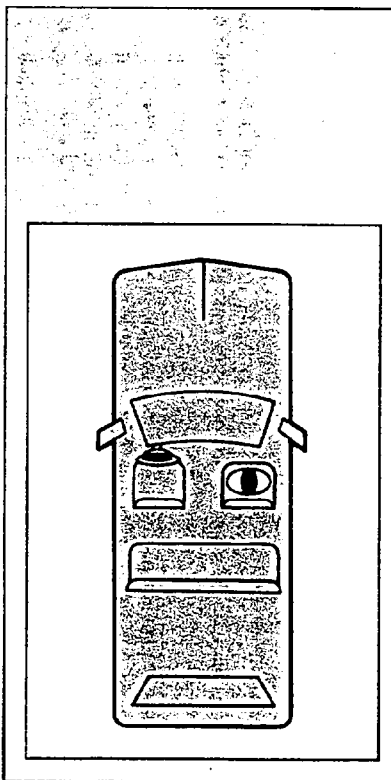
60/40 Split-Bench Seat



P0354

Don't use a child restraint in this position. The restraint won't work properly.

Securing a Child Restraint in the Right Front Seat Position



K0333

You'll be using the lap-shoulder belt. See the earlier part about the top strap if the child restraint has one.

1. Put the restraint on the seat. Follow the instructions for the child restraint.
2. Secure the child in the child restraint as the instructions say.

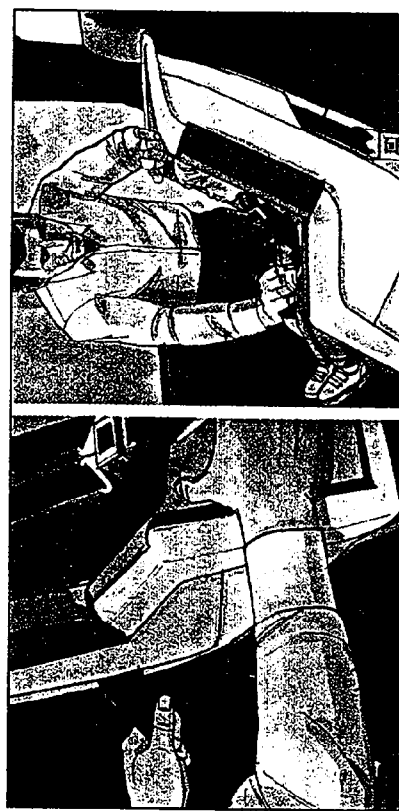
3. Pull out the vehicle's safety belt and run the lap part through or around the restraint. The child restraint instructions will show you how. See if the shoulder belt would go in front of the child's face or neck. If so, put it behind the child restraint.



AN165021

AN165148

4. Buckle the belt. Make sure the release button faces upward or outward, so you'll be able to unbuckle it quickly if you ever need to.
5. Pull the rest of the lap belt all the way out of the retractor to set the lock.



AN165027

AN165146

6. To tighten the belt, feed the lap belt back into the retractor while you push down on the child restraint.

Seats & Safety Belts

7. Push and pull the child restraint in different directions to be sure it is secure.

If you're using a bucket seat, adjust the seat forward until the lap portion of the safety belt holds the restraint firmly. But don't move it any more than needed to tighten the lap belt.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

Larger Children



AM170050

Children who have outgrown child restraints should wear the vehicle's safety belts. If you have the choice, a child should sit next to a window so the child can wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide.

- Children who aren't buckled up can be thrown out in a crash.



AM170008

- Children who aren't buckled up can strike other people who are.



AM170052

CAUTION



Never do this.

Here two children are wearing the same belt. The belt can't properly spread the impact forces. In a crash, the two children can be crushed together and seriously injured. A belt must be used by only one person at a time.

Seats & Safety Belts

Q: What if a child is wearing a lap-shoulder belt, but the child is so small that the shoulder belt is very close to the child's face or neck?

A: Move the child toward the center of the vehicle, but be sure that the shoulder belt still is on the child's shoulder, so that in a crash the child's upper body would have the restraint that belts provide. If the child is so small that the shoulder belt still is very close to the child's face or neck, you might want to place the child in seat that has a lap belt, if your vehicle has one.



AM170077

CAUTION

Never do this.

Here a child is sitting in a seat that has a lap-shoulder belt, but the shoulder part is behind the child. If the child wears the belt in this way, in a crash the child might slide under the belt. The belt's force would then be applied right on the child's abdomen. That could cause serious or fatal injuries.

Wherever the child sits, the lap portion of the belt should be worn low and snug on the hips, just touching the child's thighs. This applies belt force to the child's pelvic bones in a crash.

Safety Belt Extender

If the vehicle's safety belt will fasten around you, you should use it.

But if a safety belt isn't long enough to fasten, your dealer will order you an extender. It's free. When you go in to order it, take the heaviest coat you will wear, so the extender will be long enough for you. The extender will be just for you, and just for the seat in your vehicle that you choose. Don't let someone else use it, and use it only for the seat it is made to fit. To wear it, just attach it to the regular safety belt.

Checking Your Restraint Systems

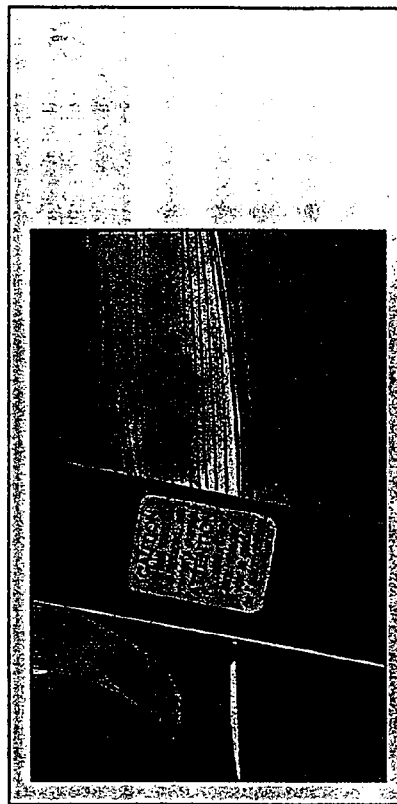
Now and then, make sure all your belts, buckles, latch plates, retractors, anchorages and reminder systems are working properly. Look for any loose parts or damage. If you see anything that might keep a restraint system from doing its job, have it repaired.

Replacing Safety Belts After a Crash

If you've had a crash, do you need new belts?

After a very minor collision, nothing may be necessary. But if the belts were stretched, as they would be if worn during a more severe crash, then you need new belts.

If you ever see a label on a right front safety belt that says to replace the belt, be sure to do so. Then it will be there to help protect you in an accident. You would see this label on the belt near the door opening.



AM177001

Seats & Safety Belts

If belts are cut or damaged, replace them. Collision damage also may mean you will have to have safety belt parts, like the retractor, replaced or anchorage locations repaired—even if the belt wasn't being used at the time of the collision.

Q: What's wrong with this?



AP125004

A: The belt is torn.

CAUTION

 Torn or frayed belts may not protect you in a crash. They can rip apart under impact forces. If a belt is torn or frayed, get a new one right away.

Before replacing any safety belt, see your dealer for the correct part number. You'll need the model year and model number for your vehicle. The model year is on your title and registration. And you can find the model number on the certification/tire label of your vehicle, located on the rear edge of the driver's door.



K2447

The model number on the replacement belt must be listed on the safety belt you want to replace.