

V1879

REPORT NO. TRC-92-N09

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

MITSUBISHI MOTORS CORPORATION
1993 MITSUBISHI MONTERO
SPECIAL PURPOSE VEHICLE
NHTSA NO. MP5601
TRC TEST NO. 930217

PREPARED BY:
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MARCH 12, 1993

FINAL REPORT

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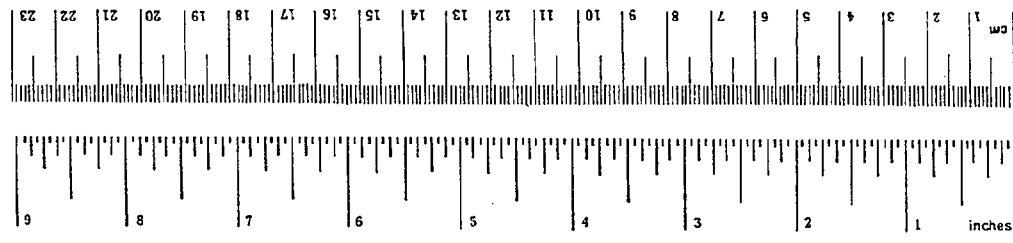
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16. Abstract A 56 kph (35 mph) frontal load cell barrier impact test was conducted on a 1993 Mitsubishi Montero special purpose vehicle, NHTSA No. MP5601, at Transportation Research Center Inc. on February 17, 1993. This test was conducted to obtain new car assessment and research data indicant of FMVSS 208, 212, 219 (partial), and 301 performance. The barrier impact velocity was 56.3 kph. The vehicle's maximum static crush was 533 millimeters. The ambient temperature was 22° C. The driver's head injury criteria (HIC) was 996. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 45.2 g. The driver's chest maximum deflection was 44 millimeters. The driver's left and right femur maximum axial forces were 607 N and 3703 N, respectively. The passenger's head injury criteria (HIC) was 527. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 48.8 g. The passenger's chest maximum deflection was 47 millimeters. The passenger's left and right femur maximum axial forces were 2698 N and 1814 N, respectively.			
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures			Approximate Conversions from Metric Measures					
Symbol	When You Know	Multiply by	To Find	Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH								
in	inches	2.54	centimeters	cm	millimeters	0.04	inches	in
ft	feet	30	centimeters	cm	centimeters	0.4	inches	in
yd	yards	0.9	meters	m	meters	3.3	feet	ft
mi	miles	1.6	kilometers	km	kilometers	1.1	yards	yd
AREA								
in ²	square inches	6.5	square centimeters	cm ²	square centimeters	0.16	square inches	in ²
ft ²	square feet	0.09	square meters	m ²	square meters	1.2	square yards	yd ²
yd ²	square yards	0.8	square meters	m ²	square kilometers	0.4	square miles	mi ²
mi ²	square miles	2.6	square kilometers	km ²	hectares (10,000 m ²)	0.4	acres	ac
MASS (weight)								
oz	ounces	28	grams	g	grams	0.035	ounces	oz
lb	pounds	0.45	kilograms	kg	kilograms	2.2	pounds	lb
	short tons (2000 lb)	0.9	tonnes	t	tonnes (1000 kg)	1.1	short tons	st
VOLUME								
tsp	teaspoons	5	milliliters	ml	milliliters	0.03	fluid ounces	fl oz
Tbsp	tablespoons	15	milliliters	ml	liters	2.1	pints	pt
fl oz	fluid ounces	30	milliliters	ml	liters	1.06	quarts	qt
c	cups	0.24	liters	l	liters	0.26	gallons	gal
pt	pints	0.47	liters	l	cubic meters	35	cubic feet	ft ³
qt	quarts	0.95	liters	l	cubic meters	1.3	cubic yards	yd ³
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	°C	9/5 (then add 32)	Fahrenheit temperature	°F



* 1 in = 2.54 (exact). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25, SD Catalog No. C 1310286.

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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 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 Mitsubishi Montero special purpose vehicle, NHTSA No. MP5601, 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"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity," 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 572E 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 February 17, 1993.

The test vehicle, a 1993 Mitsubishi Montero special purpose vehicle, NHTSA No. MP5601, was equipped with a 3.0-liter inline engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 2204 KG. The vehicle's impact speed was 56.3 kph. The vehicle sustained 533 mm of static crush during the impact.

The driver's head injury criteria (HIC) was 996. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 45.2 g. The driver's chest maximum deflection was 44 mm. The driver's left and right femur maximum axial forces were 607 N and 3703 N, respectively.

The passenger's HIC was 527. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 48.8 g. The passenger's chest maximum deflection was 47 mm. The passenger's left and right femur maximum axial forces were 2698 N and 1814 N, respectively.

The loss of windshield periphery retention length was 170 mm extending from 0 to 170 mm from the lower right corner, 405 mm extending from 300 to 705 mm from the lower right corner, 200 mm extending from 135 to 335 mm from the lower left corner, and 270 mm extending from 390 to 660 mm from the lower left corner.

There was no penetration through the windshield.

Following the impact, no fluid spilled from the vehicle's fuel system prior to the static rollover test or during any portion of the static rollover test.

DATA ACQUISITION EXPLANATIONS

The following data channels recorded multiple questionable data spikes after approximately 215 milliseconds. All data acquisitions circuits were checked following the test and appeared normal. No cause for the data spikes could be found.

NEKXF1, driver's neck X-axis shear force
NEKYF1, driver's neck Y-axis shear force
NEKZF1, driver's neck Z-axis axial force
NEKXM1, driver's neck moment about X-axis
NEKYM1, driver's neck moment about Y-axis
NEKZM1, driver's neck moment about Z-axis
CSTXD1, driver's chest deflection
LFMF1, driver's left femur force
RFMF1, driver's right femur force
HEDXG2, right front passenger's head X-axis acceleration
HEDZG2, right front passenger's head Z-axis acceleration
NEKYF2, right front passenger's neck Y-axis shear force
NEKXM2, right front passenger's neck moment about X-axis
NEKYM2, right front passenger's neck moment about Y-axis
CSTXD2, right front passenger's chest deflection
LFMF2, right front passenger's left femur force
RFMF2, right front passenger's right femur force
ENGXG1, engine top X-axis accelerometer
TLRXG1, left rear seat X-axis accelerometer

The right front passenger's head resultant acceleration calculation was affected by the data spikes in the right front passenger's head X- and Z-axis, HEDXG2 and HEDZG2, acceleration data. The left rear seat X-axis accelerometer, TLRXG1, velocity and displacement calculations were affected by the data spikes.

The engine bottom X-axis accelerometer, ENGXG2, lost data at 25 milliseconds as a result of the accelerometer being destroyed by the vehicle's crush on impact.

DATA ACQUISITION EXPLANATIONS, CONT'D.

The driver's lap belt outboard force load cell, LBOF1, recorded questionable data spikes at 55 and 82 milliseconds. The load cell also recorded multiple questionable data spikes at 220 milliseconds and after. The data acquisition circuit was checked following the test and appeared normal. No cause for the data spikes could be found.

The following load cell barrier force load cells did not return to zero following the impact event.

Position - Mnemonic

B4	- BB4F
B7	- BB7F
C4	- BC4F
C7	- BC7F

The load cell barrier force total calculations for groups number two, three, five, and six and the total load cell barrier force calculations were affected by the data not returning to zero.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: MP5601 TEST TYPE: Frontal Load Cell Barrier

TEST DATE: 02/17/93 TEST TIME: 1337 AMBIENT TEMP.: 22° C

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1993/Mitsubishi/Montero
special purpose vehicle

VEHICLE TEST WEIGHT (KG): 2204

IMPACT ANGLE (DEG)*: 0

IMPACT VELOCITY (KPH)**: PRIMARY = 56.3 SECONDARY = 56.3

MAXIMUM STATIC CRUSH (MM): 533

AVERAGE REBOUND (MM): 425

DUMMIES: Driver #142 Passenger #192

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: Mitsubishi Motors Corporation

MAKE/MODEL: Mitsubishi/Montero

VIN: JA4MR31H3PJ001459

BODY STYLE: special purpose vehicle

MODEL YEAR: 1993

NHTSA NO.: MP5601

COLOR: Green

ENGINE DATA: TYPE: inline

CYLINDERS: 6

DISPLACEMENT: 3.0-liter

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

DATE VEHICLE RECEIVED: 01/04/93

ODOMETER READING: 146.0

DEALER'S NAME AND ADDRESS: Jeff Wyler Mitsubishi

4360 Glen Willow Lake Lane

Batavia, OH 45103-0327

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 No
REAR WINDOW DEFROSTER Yes

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: Mitsubishi Motors Corporation

DATE OF MANUFACTURE: 08/92

VIN: JA4MR31H3PJ001459

GVWR: 2600 KG

GAWR: FRONT: 1200 KG, REAR: 1650 KG

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Michelin, Radial XLH4, P235/75R15

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 240 kPa
REAR: 240 kPa

SPARE TIRE (MFR., LINE, SIZE): Michelin, Radial XLH4, P235/75R15

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually-adjustable

MAXIMUM WIDTH: 1700 MM

WHEELBASE: 2712 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: 180 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 846; RF 832; LR 871; RR 880

PRE-TEST ATTITUDE: LF 830; RF 836; LR 847; RR 847

POST-TEST ATTITUDE: LF 824; RF 684; LR 874; RR 834

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	431 KG	RIGHT REAR	515 KG
LEFT FRONT	469 KG	LEFT REAR	506 KG
TOTAL FRONT WEIGHT	900 KG	(46.8% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1021 KG	(53.2% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	1921 KG		

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (1921 KG)

VCW = VEHICLE CAPACITY WEIGHT (NA KG)

DSC = DESIGNATED SEATING CAPACITY (NA)

RCLW* = VCW - 150 (DSC) = 136 KG

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

TARGET TEST WEIGHT = 1921 + 136 + 152

TARGET TEST WEIGHT = 2209 KG

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 131 KG OF CARGO WEIGHT:

RIGHT FRONT	610 KG	RIGHT REAR	638 KG
LEFT FRONT	502 KG	LEFT REAR	454 KG
TOTAL FRONT WEIGHT	1112 KG	(50.5% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1092 KG	(49.5% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	2204 KG	(0.2 KG UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE: 7 KG

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: None

CG = 1344 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: 930217 NHTSA NO.: MP5601
TEST DATE: 02/17/93 TEST TIME: 1337
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 = 56.3 KPH SECONDARY = 56.3 KPH

(SPECIFIED RANGE = 55.5 TO 57.1 KPH)

DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 356 MM
EXITING VELOCITY TRAP = 51 MM

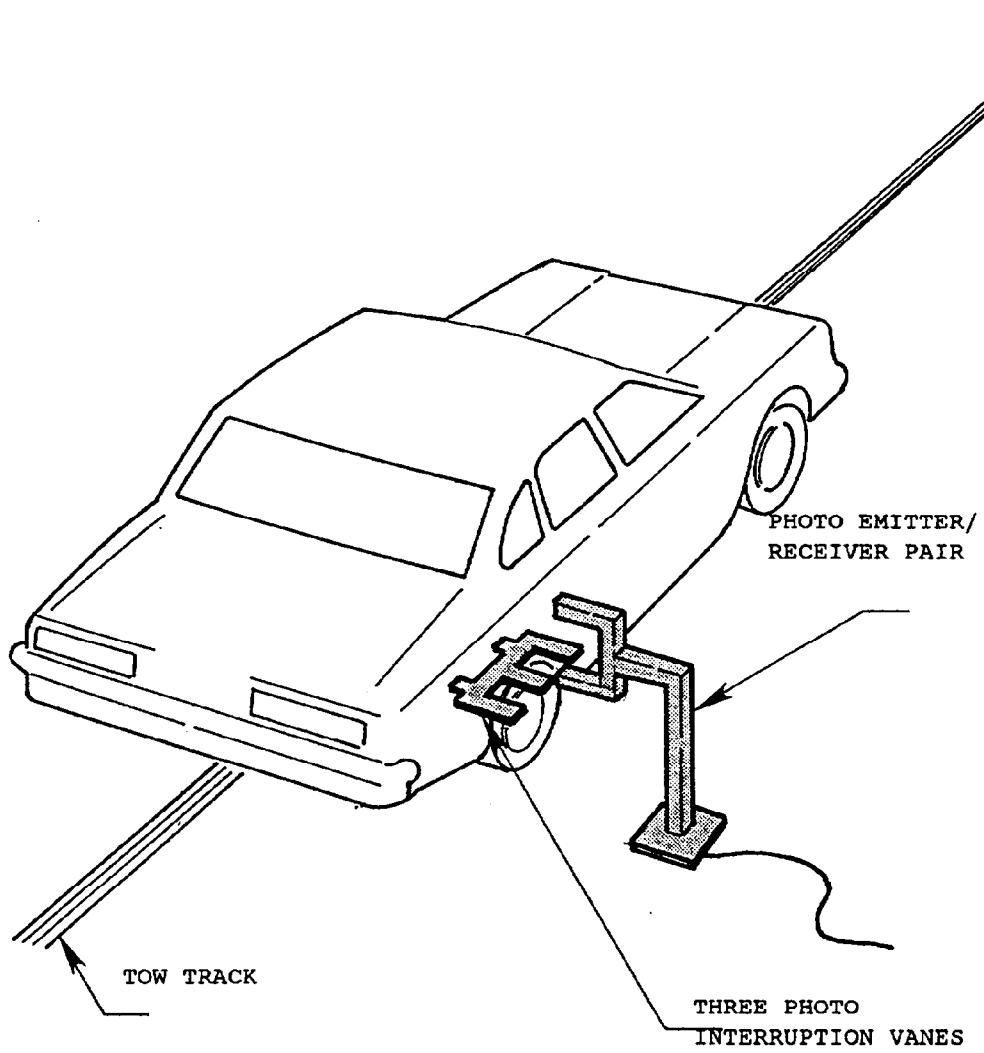
TEST VEHICLE STATIC CRUSH (ALL MEASUREMENTS ARE IN MILLIMETERS):

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 4567; C 4679; R 4572
POST-TEST: L 4170; C 4146; R 4115
TOTAL CRUSH: L 397; C 533; R 457
AVERAGE CRUSH: 462

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 502; C 408; R 365; AVG. 425

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: Mitsubishi/Montero/special purpose veh.

VEHICLE NHTSA NO.: MP5601; VIN: JA4MR31H3PJ001459

MODEL YEAR: 1993; BUILD DATE: 08/92; TEST DATE: 02/17/93

VEHICLE SIZE CATEGORY: Special purpose veh.; TEST WEIGHT: 2204 KG

VEHICLE WHEELBASE: 2712 MM

MAXIMUM WIDTH: 1700 MM

FRONT OVERHANG: 730 MM

COLLISION DEFORMATION
CLASSIFICATION (CDC) CODE: 12FDEW3

CRUSH DEPTH
MEASUREMENTS:

C1 =	<u>397</u>	MM
C2 =	<u>498</u>	MM
C3 =	<u>521</u>	MM
C4 =	<u>533</u>	MM
C5 =	<u>521</u>	MM
C6 =	<u>457</u>	MM

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE
(LONGITUDINAL)

LENGTH OF DAMAGED
REGION: L = 1524 MM

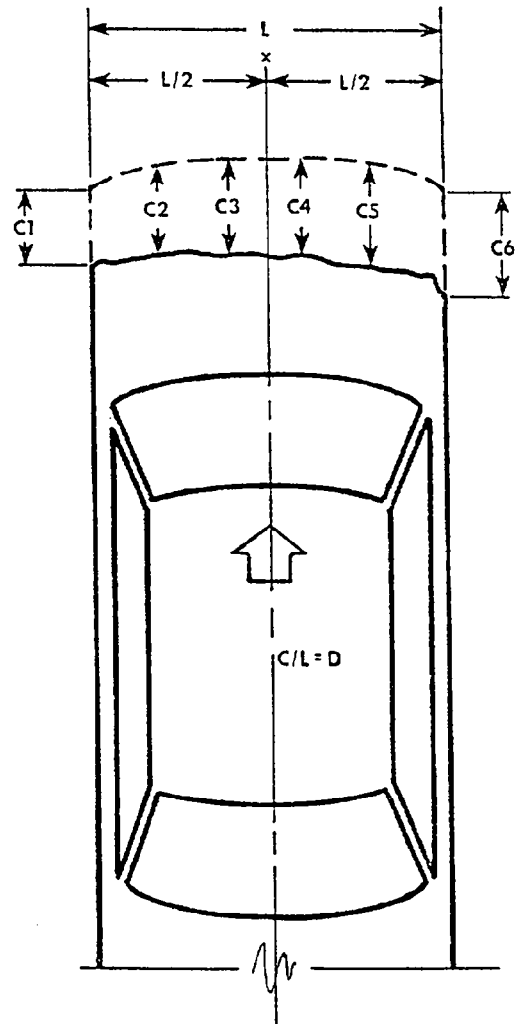
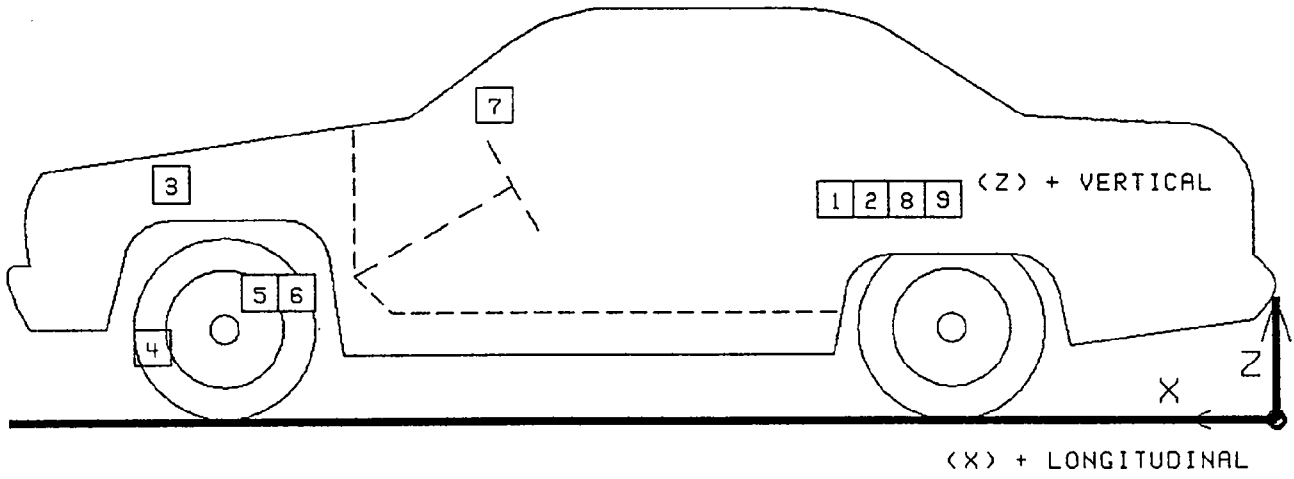
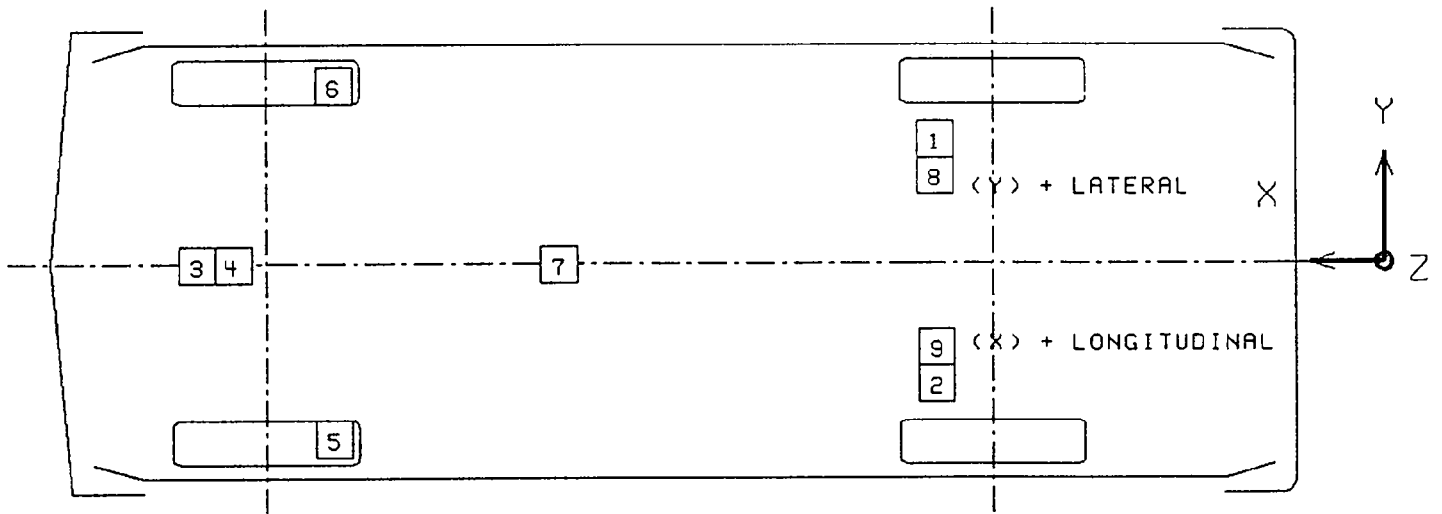


FIGURE 3

VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 930217

No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX G	MSEC	MAX G	MSEC
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	2954	510	660	2.1	219.1 ^Y	47.1	13.9 ^Y
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	2962	-510	665	1.7	172.8	47.7	14.0
3	ENGINE TOP LONGITUDINAL	1150	185	1035	42.4	52.6 ^Y	84.8	32.5 ^Y
4	ENGINE BOTTOM LONGITUDINAL	917	15	335	---	--- ^Y	---	---
5	RIGHT BRAKE CALIPER LONGITUDINAL	834	-595	307	71.1	20.8	182.6	26.9
6	LEFT BRAKE CALIPER LONGITUDINAL	834	595	318	86.0	20.4	166.7	27.1
7	INSTRUMENT PANEL CENTER LONGITUDINAL	1409	55	1170	24.0	67.6	72.2	59.6
8	LEFT REAR SEAT CROSSMEMBER REDUNDANT VERTICAL	2954	545	660	2.5	176.5	45.9	13.9
9	RIGHT REAR SEAT CROSSMEMBER REDUNDANT VERTICAL	2962	-545	665	1.9	172.5	48.2	14.1

* 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 5 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #142	PASSENGER #192
HEAD	<u>Steering wheel hub, upper rim, and left side header</u>	<u>Chest</u>
CHEST	<u>Steering 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>Easy</u>	<u>Easy</u>
REAR	<u>Easy</u>	<u>Easy</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 was cracked upon impact.

OTHER NOTABLE IMPACT EFFECTS:

Floorpan deformation caused both front seats to

tilt outward.

TABLE 6 FMVSS 208 DATA SUMMARY

VEH. YR./MAKE/MODEL/BODY STYLE: 1993/Mitsubishi/Montero/spec. purp.

VEH. NHTSA NO.: MP5601; TEST DATE: 02/17/93

<u>MAXIMUM ACCELERATIONS (G):</u>	<u>DRIVER DUMMY #142</u>	<u>PASSENGER DUMMY #192</u>
HEAD X-AXIS	-103.3	-33.6 Y
HEAD Y-AXIS	-12.8	-9.8
HEAD Z-AXIS	-54.6	-56.4 Y
HEAD RESULTANT	109.7	64.3 Y
CHEST X-AXIS	-47.3	-47.7
CHEST Y-AXIS	10.0	-7.3
CHEST Z-AXIS	-19.1	26.2
CHEST RESULTANT*	45.2	48.8
CHEST RESULTANT TIME INTERVAL (SEC.)*	.003	.003

HEAD INJURY CRITERIA (HIC) VALUES:

HIC**	996	527
HIC STARTING TIME (SEC.)	.066	.052
HIC ENDING TIME (SEC.)	.092	.088
AVG. HEAD RESULTANT ACCEL. DURING HIC TIME INTERVAL (G)	67.2	46.3

MAXIMUM CHEST DEFLECTIONS (MM):

CHEST X-AXIS	-44 Y	-47 Y
MAXIMUM CHEST DEFLECTION TIME (SEC)	.082	.075

MAXIMUM COMPRESSIVE FEMUR FORCES (N):

LEFT FEMUR	607 Y	2698 Y
RIGHT FEMUR	3703 Y	1814 Y

MAXIMUM SEAT BELT FORCES (N):

LAP BELT	9841 Y	9234
SHOULDER BELT	7354	7981

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.

Y See DATA ACQUISITION EXPLANATIONS

TABLE 7 HYBRID III NECK DATA SUMMARY

VEHICLE YR./MAKE/MODEL/BODY STYLE: 1993/Mitsubishi/Montero/spec. purp.

VEHICLE NHTSA NO.: MP5601; TEST DATE: 02/17/93

<u>MAXIMUM VALUES:</u>	<u>DRIVER</u> <u>DUMMY #142</u>	<u>PASSENGER</u> <u>DUMMY #192</u>
NECK X-AXIS FORCE (N)	990 Y	1297
NECK Y-AXIS FORCE (N)	-445 Y	374 Y
NECK Z-AXIS FORCE (N)	3934 Y	2505
NECK MOMENT ABOUT X AXIS (N-M)	21 Y	-28 Y
NECK MOMENT ABOUT Y AXIS (N-M)	98 Y	76 Y
NECK MOMENT ABOUT Z AXIS (N-M)	-12 Y	-12

NOTE: ALL VALUES LISTED MUST BE OCCURRING DURING PRIMARY IMPACT EVENT.
Y See DATA ACQUISITION EXPLANATIONS

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 rotating downward impacting the steering wheel hub and upper steering wheel rim. The driver dummy was restrained by the three-point unbelt. The dummy rebounded rearward and to the left into the seat back as the dummy's head rotated rearward impacting the head restraint and side header. 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 contacting the dummy's chest. The right front passenger dummy was restrained by the three-point unbelt. The dummy rebounded rearward into the seat as the dummy's head rotated rearward into the head restraint. The right front passenger dummy came to rest in the right front passenger's seat restrained by the three-point unbelt.

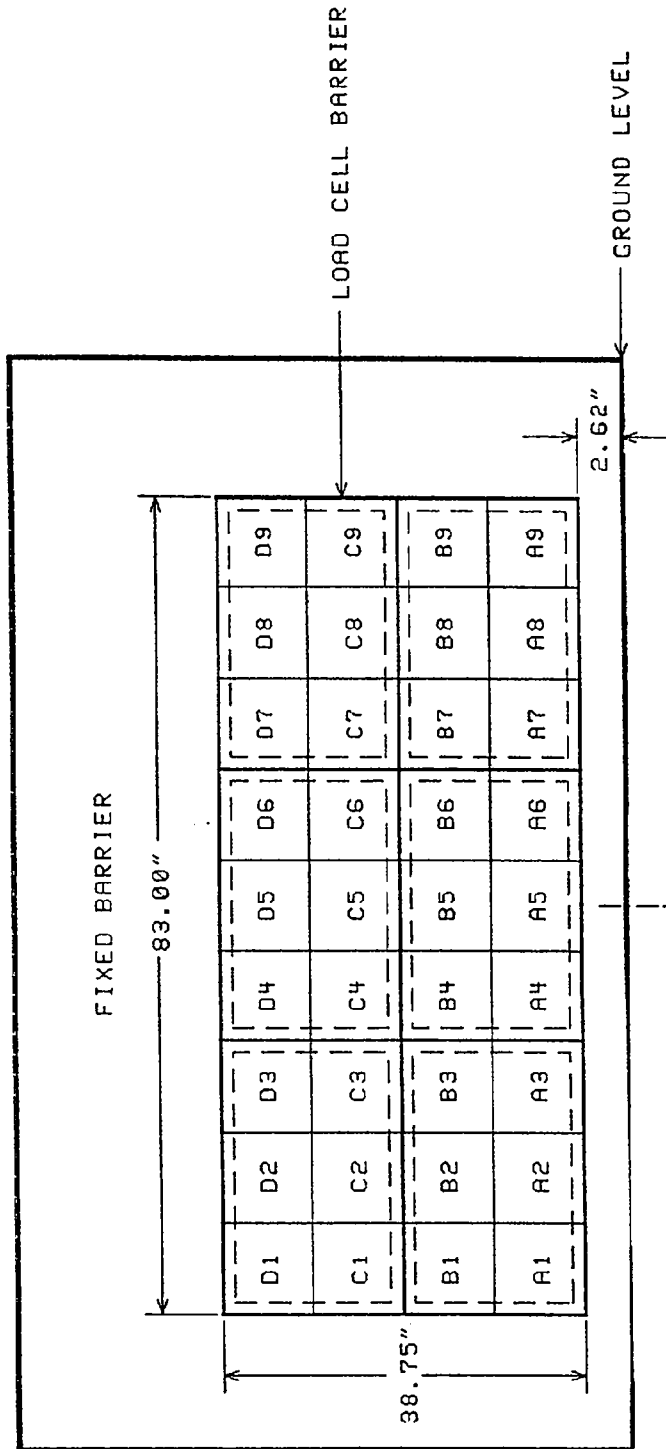
TABLE 8 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

	DRIVER	PASSENGER
<u>BELT LENGTH DATA:</u>		
BELT LENGTH FROM TRIM PANEL EXIT TO BOLT HOLE ANCHOR POINT FOR CONTINUOUS WEBBING SYSTEMS.	2564	2560
SHOULDER BELT LENGTH AS MEASURED ON PART 572 DUMMY.	880	880
LAP BELT LENGTH AS MEASURED ON PART 572 DUMMY.	910	900
<u>SHOULDER BELT SPOOL-OFF LENGTH:</u>		
AS DETERMINED BY FILM ANALYSIS	38	41
AS DETERMINED MECHANICALLY	36	57
AS DETERMINED ELECTRONICALLY	66	90
<u>BELT STRETCH LENGTH (MM/M):</u>		
AS MEASURED MECHANICALLY	14	3
AS MEASURED ELECTRONICALLY	0	18
<u>RETRACTOR LOCK-UP TIME (MS):</u>		
AS DETERMINED BY SHOULDER BELT SPOOL-OFF	66	68

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 9

LOAD CELL BARRIER DATA SUMMARY

TEST NUMBER 930217

LOCATION	POSITIVE DIRECTION		NEGATIVE DIRECTION	
	KN	MSEC	KN	MSEC
TOTAL GROUP 1	1.9	2.4	51.8	22.6
TOTAL GROUP 2	-0.1	2.4 Y	216.8	28.5 Y
TOTAL GROUP 3	-1.0	2.4 Y	300.5	22.8 Y
TOTAL GROUP 4	1.9	1.5	116.5	25.3
TOTAL GROUP 5	-3.0	1.5 Y	319.5	27.3 Y
TOTAL GROUP 6	-7.5	1.5 Y	177.2	24.6 Y
TOTAL LOAD CELL FORCE	-9.9	1.5 Y	1152.5	26.9 Y

TENSION IS POSITIVE
 COMPRESSION IS NEGATIVE

Y See DATA ACQUISITION EXPLANATIONS

SECTION 3.0

FMVSS 212, 219 (PARTIAL), AND 301 DATA

FIGURE 5 FMVSS 212 TEST DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

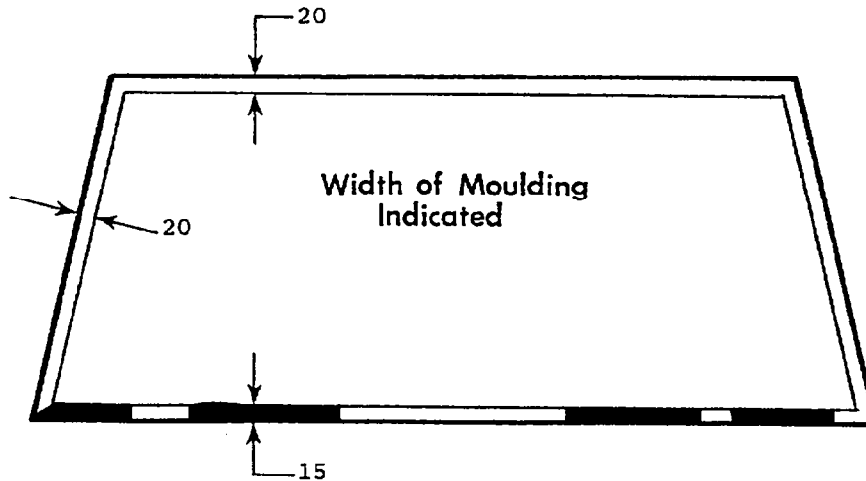
Plastic trim around outer perimeter, adhesive around inner perimeter.

FMVSS 212 REQUIREMENTS: The post-test periphery retention amount must be at least 75% of the pre-test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of windshield for vehicles equipped with automatic restraint systems for front occupants.

WINDSHIELD PERIPHERY MEASUREMENTS:

	PRE-TEST	POST-TEST	PERCENT RETENTION
RIGHT SIDE	1968	1393	70.8
LEFT SIDE	1968	1498	76.1
TOTAL	3936	2891	73.4

PRE-TEST WINDSHIELD MOUNTING MATERIAL TEMPERATURE: 22° C



FRONT VIEW OF WINDSHIELD*

LOSS OF WINDSHIELD RETENTION LENGTHS: The windshield loss of retention occurred from 0 to 170 mm and from 300 to 705 mm measured from the lower right corner. Retention loss also occurred from 135 to 335 mm and from 390 to 660 mm measured from the lower left corner. ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

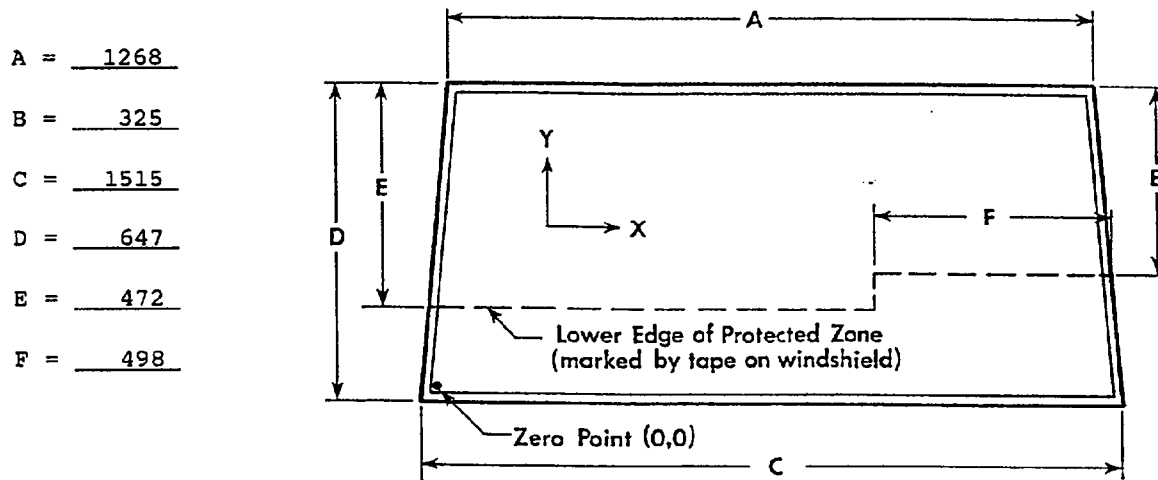
*INDICATE AREAS OF LOSS OF RETENTION, IF ANY, ON WINDSHIELD DIAGRAM.

FIGURE 6 FMVSS 219 TEST DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 165-millimeter diameter rigid sphere weighing 6.8 kg in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. Draw the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 13 millimeters from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

WINDSHIELD MEASUREMENTS:



- A = 1268
- B = 325
- C = 1515
- D = 647
- E = 472
- F = 498

FRONT VIEW

METHOD OF ADHERING PROTECTED ZONE TEMPLATE TO WINDSHIELD: NA

AREAS OF WINDSHIELD TEMPLATE PENETRATION
GREATER THAN 6.0 MM: NA

COORDINATES

	X	Y
1.		
2.		
3.		

AREAS OF WINDSHIELD PENETRATION, BELOW THE PROTECTED ZONE,
THROUGH THE INNER SURFACE OF THE WINDSHIELD: None

- 1.
- 2.
- 3.

ALL MEASUREMENTS ARE IN MILLIMETERS.

TABLE 10 FUEL SYSTEM DATA

MAKE/MODEL: Mitsubishi/Montero

NHTSA NO.: MP5601

FUEL SYSTEM CAPACITY: 92.0 LITERS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 92.0 LITERS (FURNISHED BY COTR)

TEST VOLUME RANGE: 84.6 LITERS TO 86.5 LITERS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 85.6 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 tank is located behind the rear axle.
The fuel filler is on the left. The fuel lines run along the left
frame rail to the front.

ELECTRIC FUEL PUMP: Yes FUEL INJECTION: Yes

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

TABLE 11 FMVSS 301 POST-IMPACT TEST DATA

TEST VEHICLE NHTSA NO.: MP5601 ; TEST DATE: 02/17/93
VEHICLE MAKE/MODEL/BODY STYLE: Mitsubishi/Montero
special purpose vehicle

TEST REQUIREMENTS:

Test vehicle fuel tank filled to 92 to 94% of manufacturer's usable capacity and with electric fuel pump operating (if it will operate without engine operation). Part 572 test dummies located at each front designated seating position.

TEST VEHICLE IMPACT TYPE:

- X FRONTAL (56 KPH)
- OBLIQUE (48 KPH) WITH ° BARRIER FACE
FIRST CONTACTING (DRIVER/PASS.) SIDE.
- REAR MOVING BARRIER (48 KPH)
- LATERAL MOVING BARRIER (32 KPH)

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

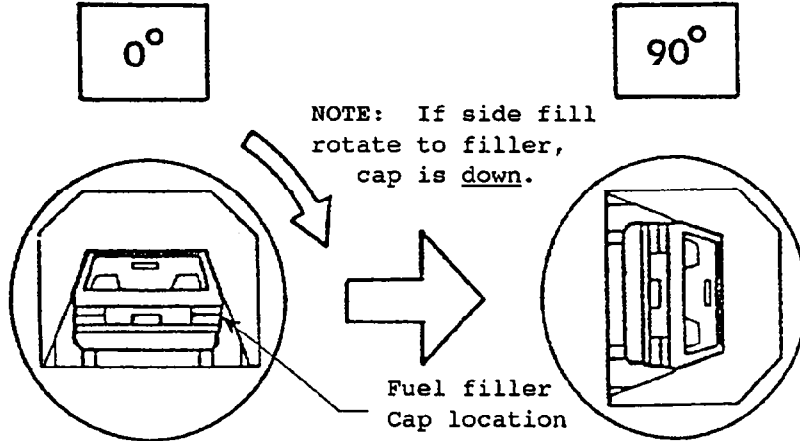
	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FROM IMPACT UNTIL VEHICLE MOTION CEASES - - -	0 G	28 G
2. 5 MINUTE PERIOD AFTER VEHICLE MOTION CEASES -	0 G	142 G
3. NEXT 25 MINUTES AFTER 5 MINUTE PERIOD - - - -	0 G	28 G/MN

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 7 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: MP5601
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
 FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
 TOTAL - - - - - = 7 minutes, 00 seconds
 NEXT WHOLE MINUTE INTERVAL - - - - = 7 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

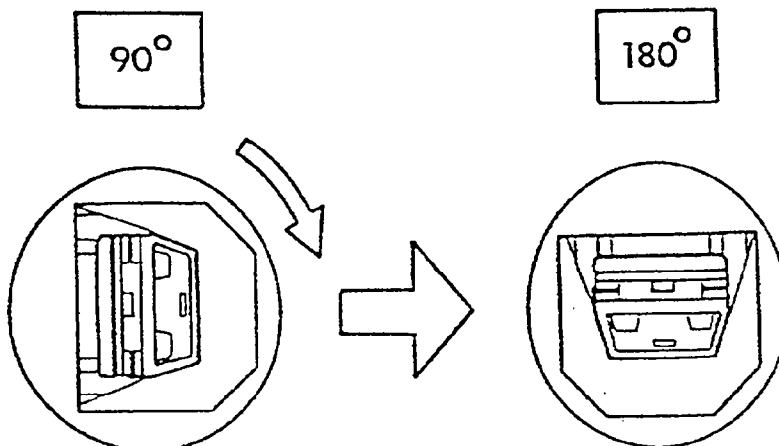
<u>0° TO 90° ROTATION (FUEL FILLER CAP DOWN)</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 7 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: MP5601
 TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
 FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
 TOTAL - - - - - = 7 minutes, 00 seconds
 NEXT WHOLE MINUTE INTERVAL - - - - = 14 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

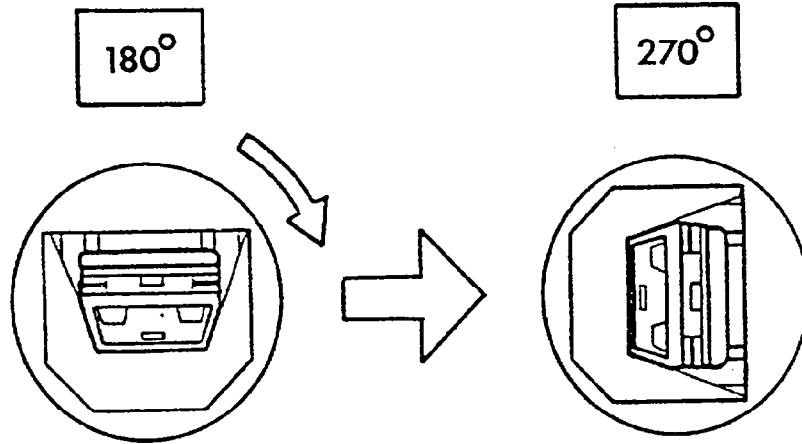
<u>90° TO 180° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 7 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: MP5601
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
 FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
 TOTAL - - - - - = 7 minutes, 00 seconds
 NEXT WHOLE MINUTE INTERVAL - - - - - = 21 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

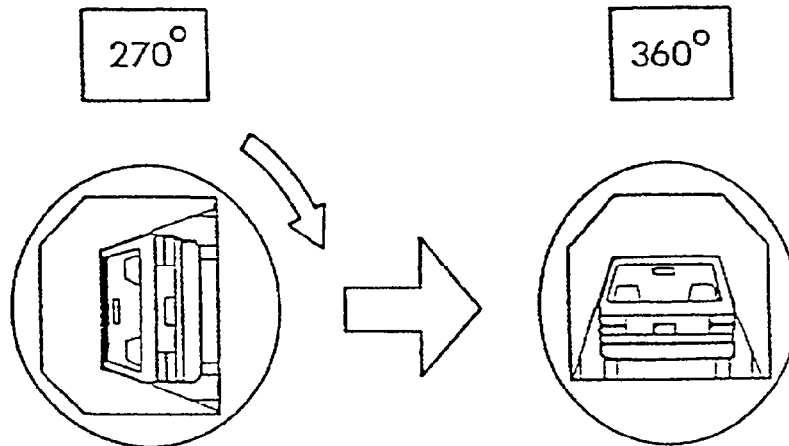
<u>180° TO 270° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 7 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: MP5601
 TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
 FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
 TOTAL - - - - - = 7 minutes, 00 seconds
 NEXT WHOLE MINUTE INTERVAL - - - - = 28 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

<u>270° TO 360° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

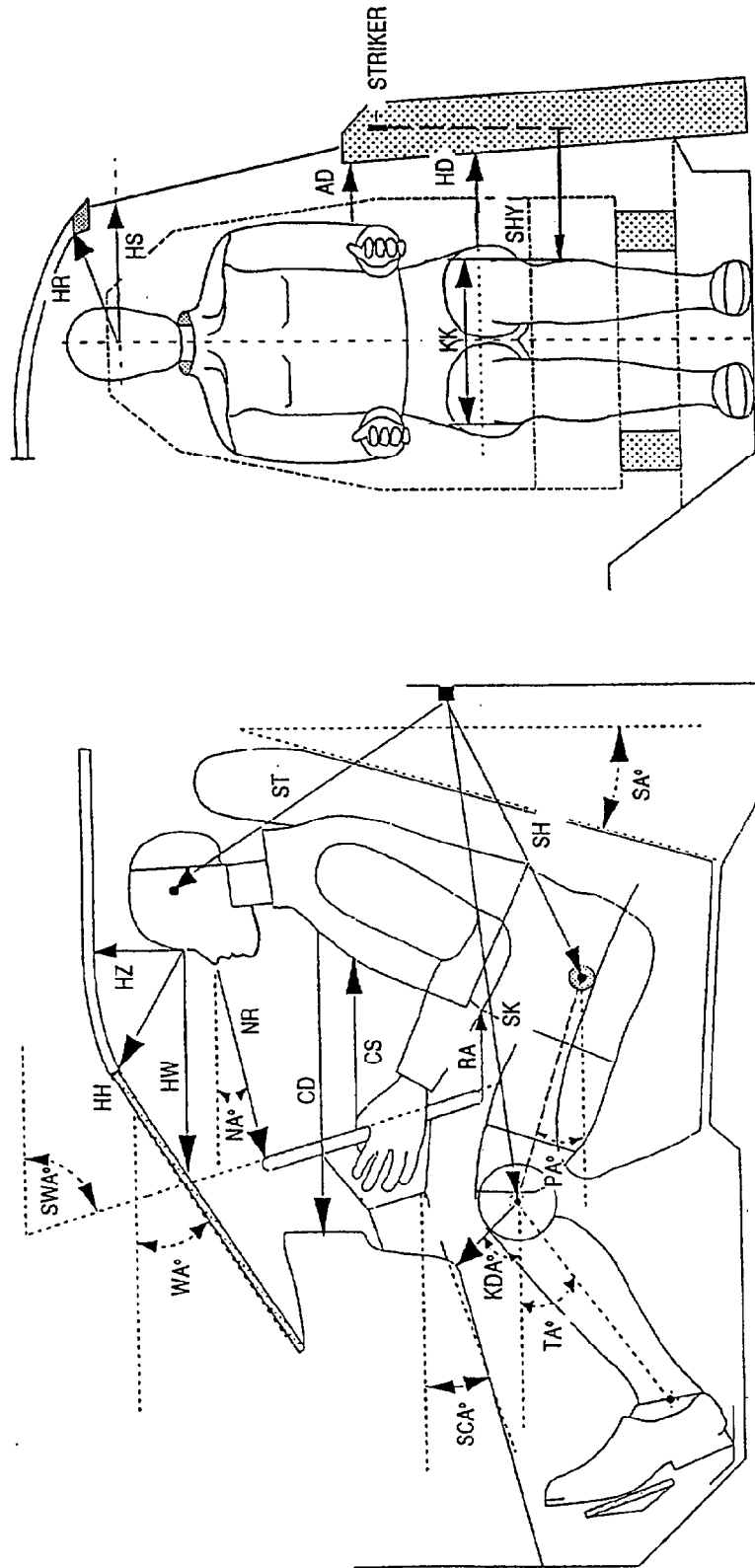
None

SECTION 4.0

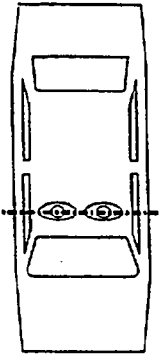
VEHICLE, OCCUPANT, AND CAMERA INFORMATION

FIGURE 8

DUMMY MEASUREMENT LOCATIONS FOR FRONT SEAT OCCUPANTS



VERTICAL TRANSVERSE PLANE



VERTICAL LONGITUDINAL PLANE

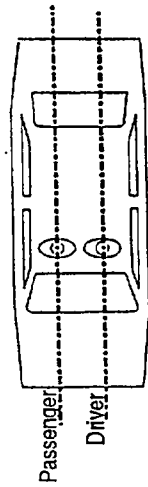
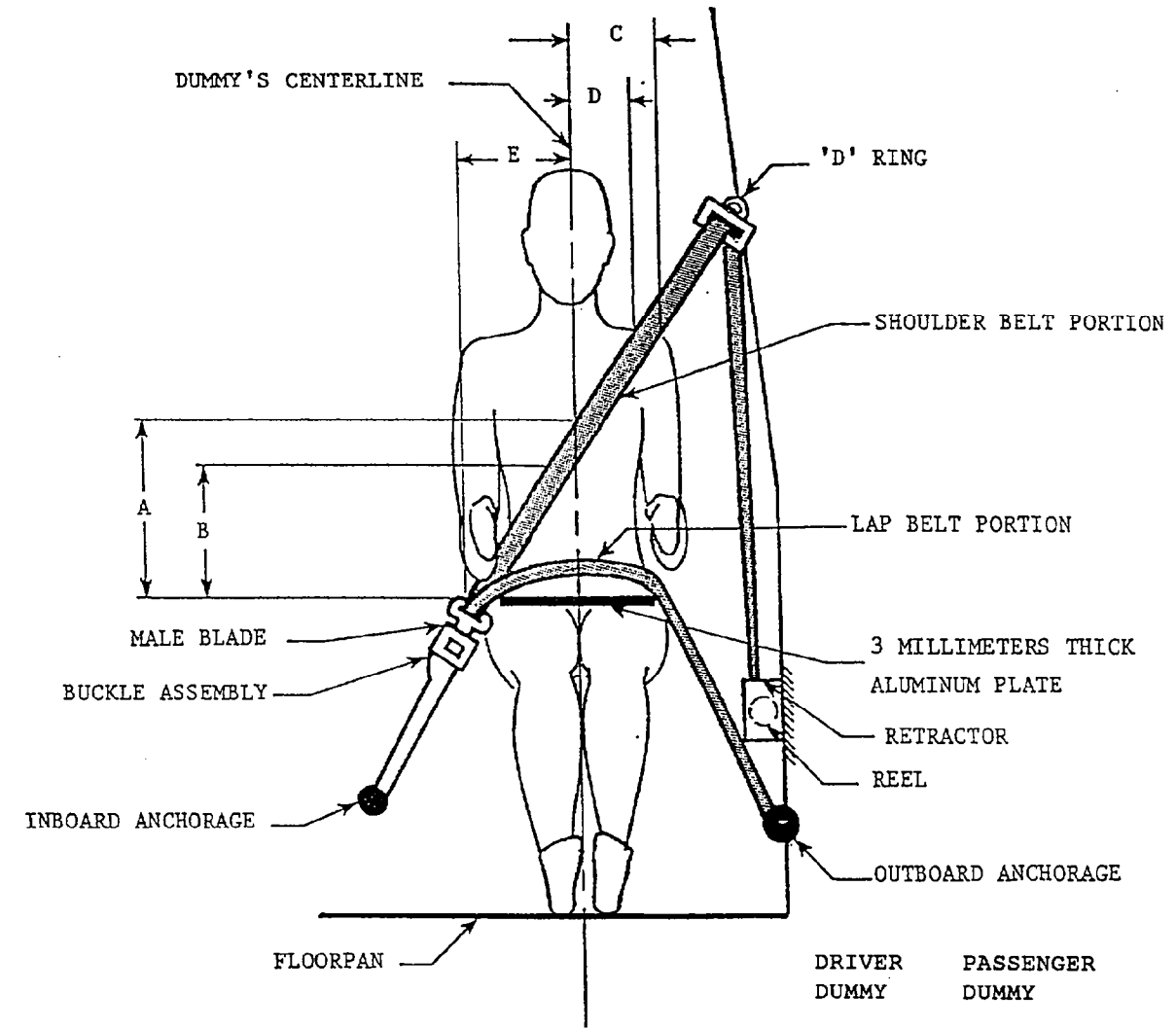


TABLE 12 DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS

DESIGNATION	TYPE OF MEASUREMENT	DRIVER (SERIAL #142)	PASSENGER (SERIAL #192)
WA°	WINDSHIELD ANGLE	45°	NA
SWA°	STEERING WHEEL ANGLE	56°	NA
SCA°	STEERING COLUMN ANGLE	36°	NA
SA°	SEAT BACK ANGLE	16°	16°
HZ	HEAD TO ROOF	245	220
HH	HEAD TO HEADER	473	456
HW	HEAD TO WINDSHIELD	585	573
HR	HEAD TO SIDE HEADER	265	212
NR	NOSE TO RIM	445	NA
NA	NOSE TO RIM ANGLE	24°	NA
CD	CHEST TO DASH	555	571
CS	STEERING WHEEL TO CHEST	350	NA
RA	RIM TO ABDOMEN	182	NA
KDL	LEFT KNEE TO DASH	176	157
KDR	RIGHT KNEE TO DASH	165	154
KDA	OUTBOARD KNEE TO DASH ANGLE	20°	24°
PA°	PELVIC ANGLE	21°	21°
TA°	TIBIAL ANGLE	51°	50°
KK	KNEE TO KNEE	345	295
ST	STRIKER TO HEAD	630	650
	STRIKER TO HEAD ANGLE	-81°	-80°
SK	STRIKER TO KNEE	630	660
	STRIKER TO KNEE ANGLE	-5°	-4°
SH	STRIKER TO H-POINT	230	255
	STRIKER TO H-POINT ANGLE	12°	10°
SHY	STRIKER TO H-POINT (Y DIR.)	185	165
HS	HEAD TO SIDE WINDOW	342	305
HD	H-POINT TO DOOR	117	105
AD	ARM TO DOOR	90	80

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

FIGURE 9 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUMINUM PLATE TO BELT UPPER EDGE	350	324
B - TOP SURFACE OF ALUMINUM PLATE TO BELT LOWER EDGE	270	235
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT		
AT CHEST FLESH TOP	120	140
D - DUMMY CENTERLINE TO INNER EDGE OF BELT		
AT CHEST FLESH TOP	60	80
LAPBELT TENSION (N)	18	18
SHOULDER BELT TENSION (N)	13	13

ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

FIGURE 10 CAMERA POSITIONS

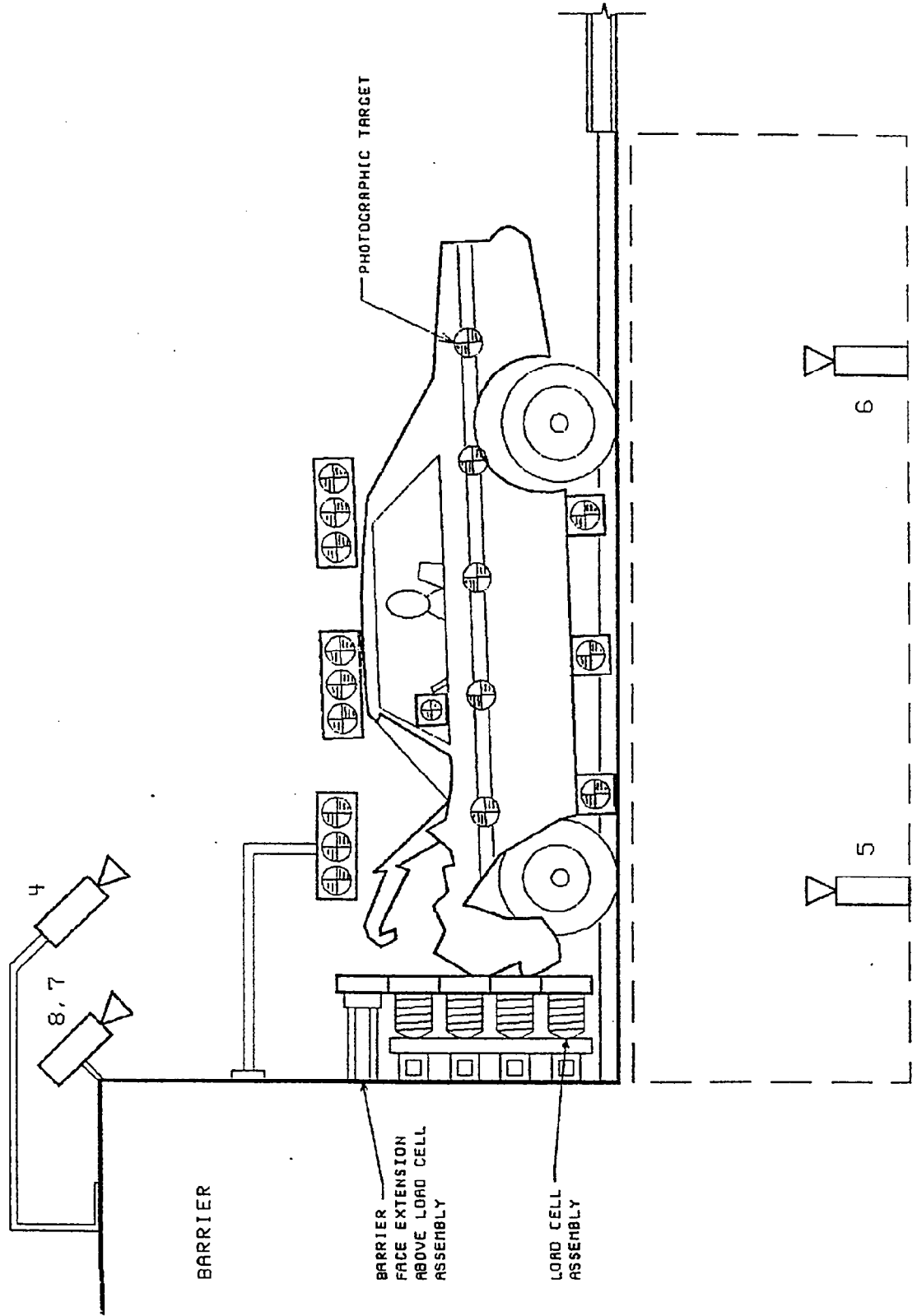


FIGURE 10 CAMERA POSITIONS, CONT'D.

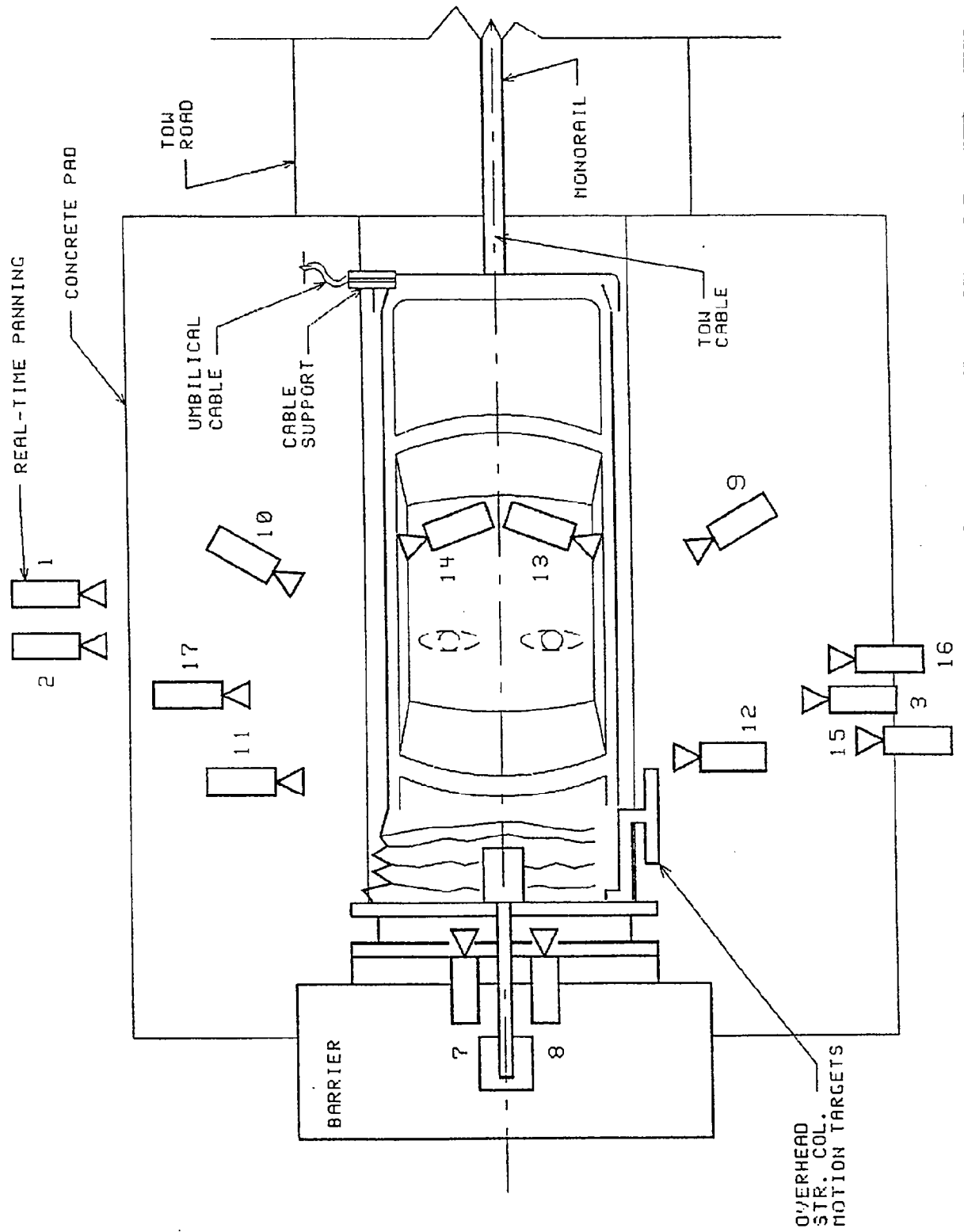


TABLE 13 MOTION PICTURE CAMERA LOCATIONS

TEST NO.:	930217	VEHICLE:	1993 Mitsubishi Montero special purpose vehicle			FILM PLANE		FILM SPEED (FPS)
			CAMERA POSITIONS (MM)*	ANGLE** (DEG)	TARGET (MM)	TO HEAD (MM)		
CAMERA NO.	VIEW	X	Y	Z				
1	Real-time panning	-3607	-12802	1549	NA	NA	16	24
2	Vehicle crush	-2065	-6767	942	-2	NA	13	498
3	Dummy kinematics	-1054	7493	1118	-12	5283	25	1022
4	Windshield damage	-925	0	2489	-40	NA	13	495
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	505
8	Driver kinematics	-173	368	2159	-41	NA	17	500
9	Driver kinematics	-4572	1854	2591	-27	2489	25	498
10	Passenger kinematics	-4674	-1880	2540	-26	1930	25	498
11	Windshield intrusion	-968	-7775	1118	0	NA	50	500
12	Windshield intrusion	-1346	7859	1074	0	NA	50	508
13	Driver seatbelt movement	NA	NA	NA	NA	NA	13	505
14	Passenger seatbelt movement	NA	NA	NA	NA	NA	13	500
15	Column movement	-2794	7264	2616	-14	NA	25	508
16	Column movement	-2794	7264	1908	-9	NA	25	505
17	Passenger kinematics	-986	-5354	1151	7	5715	25	1005

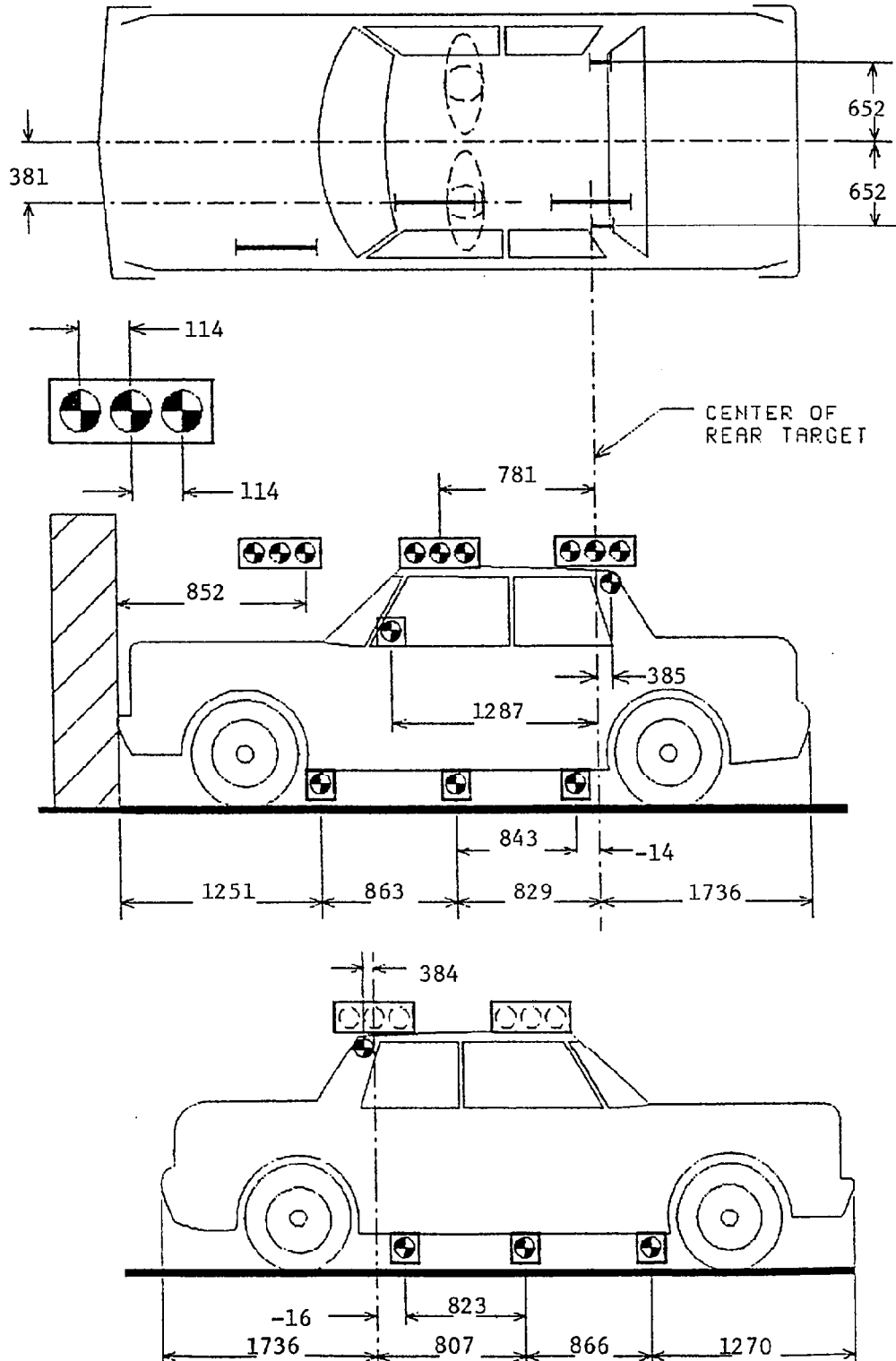
**X = Film plane forward of barrier face

+Y = Film plane to left of monorail centerline

+Z = Film plane above ground level

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

FIGURE 11
VEHICLE TARGET LOCATIONS



ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

FIGURE 12

PRE-TEST AND POST-TEST MEASUREMENT POINTS

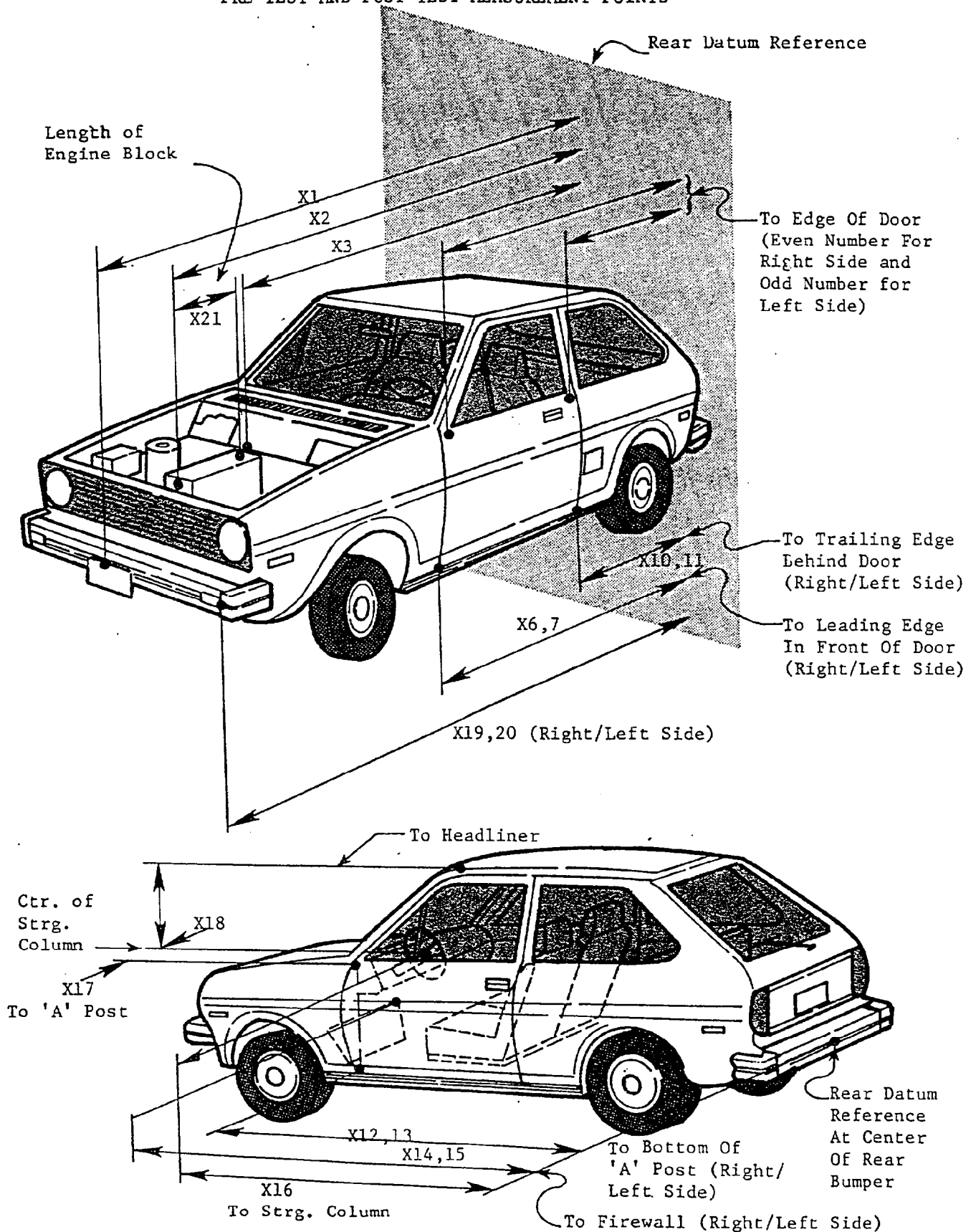


TABLE 14 IMPACTED VEHICLE MEASUREMENTS

NO.	TYPE OF MEASUREMENT	ALL MEASUREMENTS ARE IN MM		
		PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	4679	4146	533
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	4009	3771	238
X3	REAR SURFACE OF VEHICLE TO FIREWALL	3524	3346	178
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	3310	3300	10
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	3315	3288	27
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	3298	3248	50
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	3300	3250	50
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	2236	2224	12
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	2240	2213	27
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	2227	2183	44
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	2233	2180	53
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	3294	3256	38
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	3300	3252	48
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	3512	3362	150
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	3537	3445	92
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	2905	2785	120
X17	CENTER OF STEERING COLUMN TO "A" POST	295	210	85
X18	CENTER OF STEERING COLUMN TO HEADLINER	450	562	-112
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	4572	4115	457
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	4567	4170	397
X21	LENGTH OF ENGINE BLOCK	330	330	0

APPENDIX A

PHOTOGRAPHS

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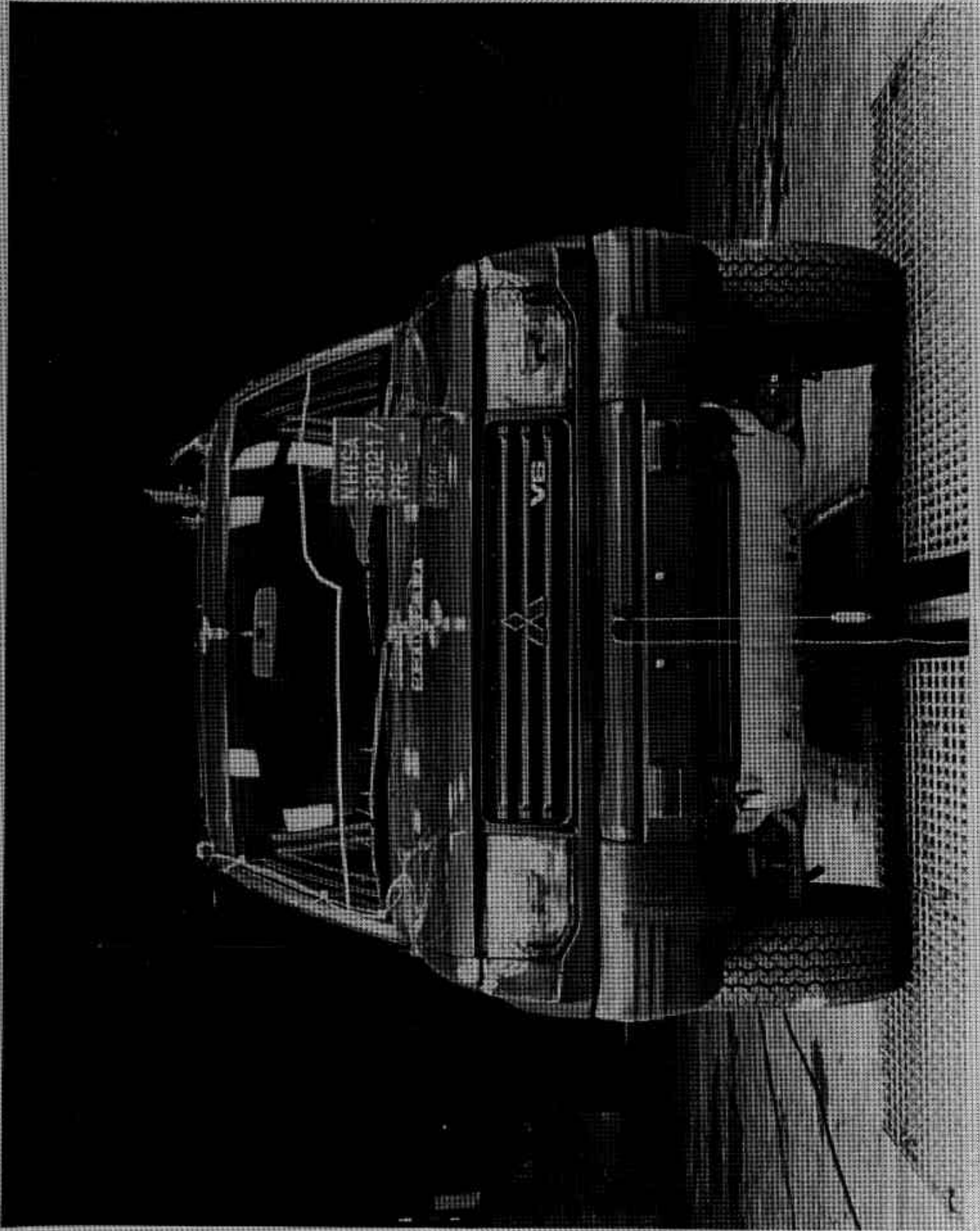


Figure A-1. PRE-TEST FRONT VIEW

A-2

930217

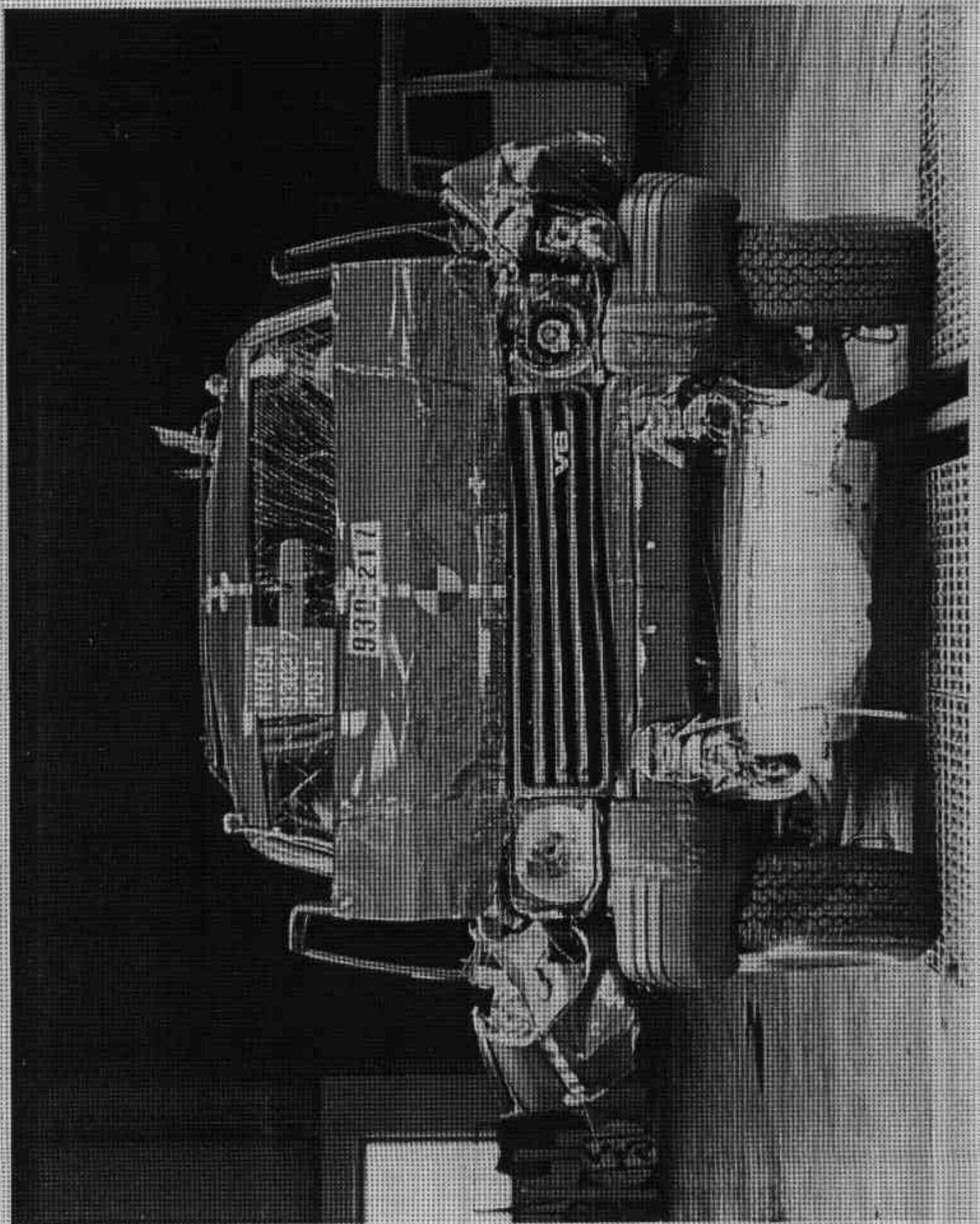


Figure A-2. POST-TEST FRONT VIEW
A-3

930217

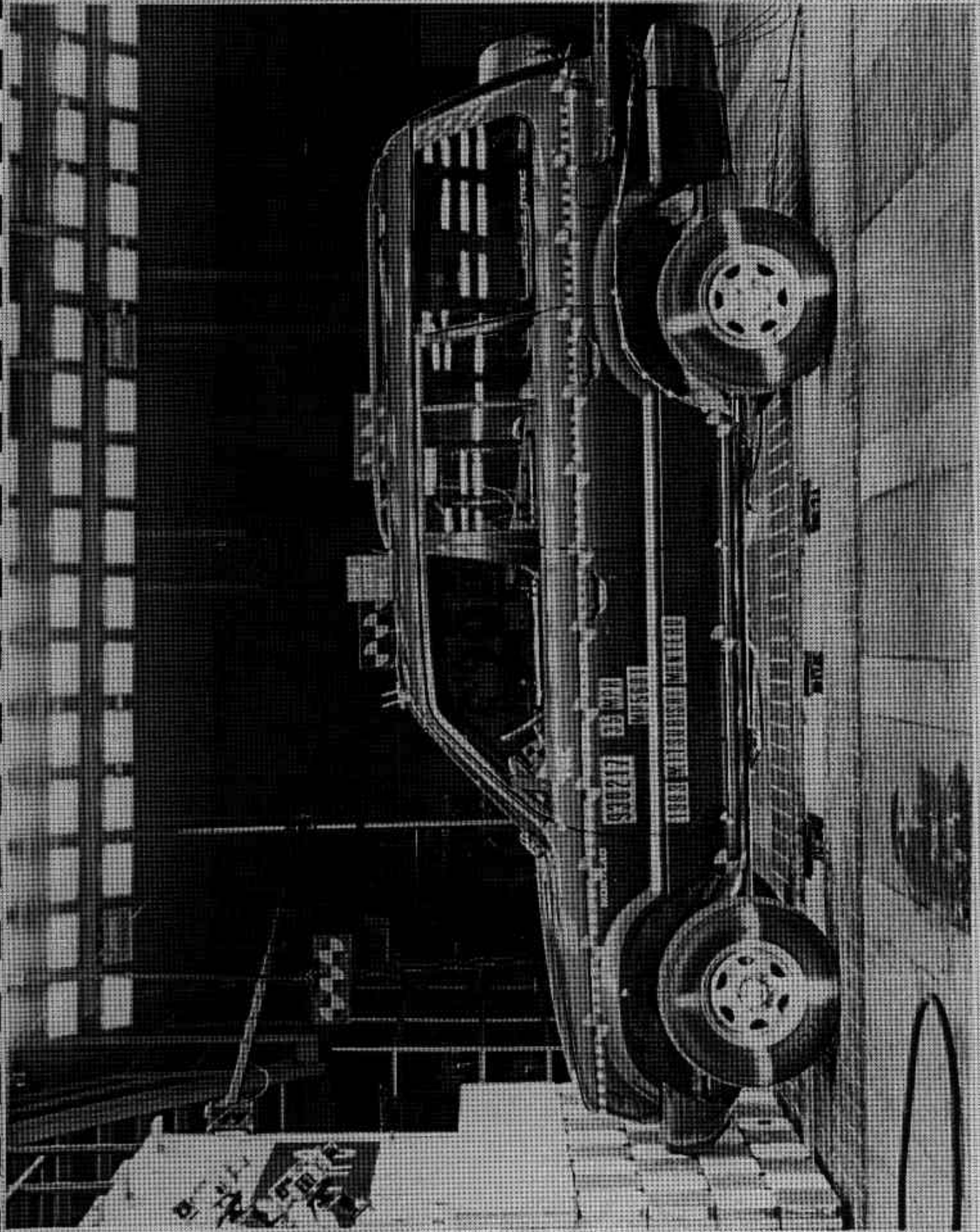


Figure A-3. PRE-TEST LEFT SIDE VIEW

A-4

930217

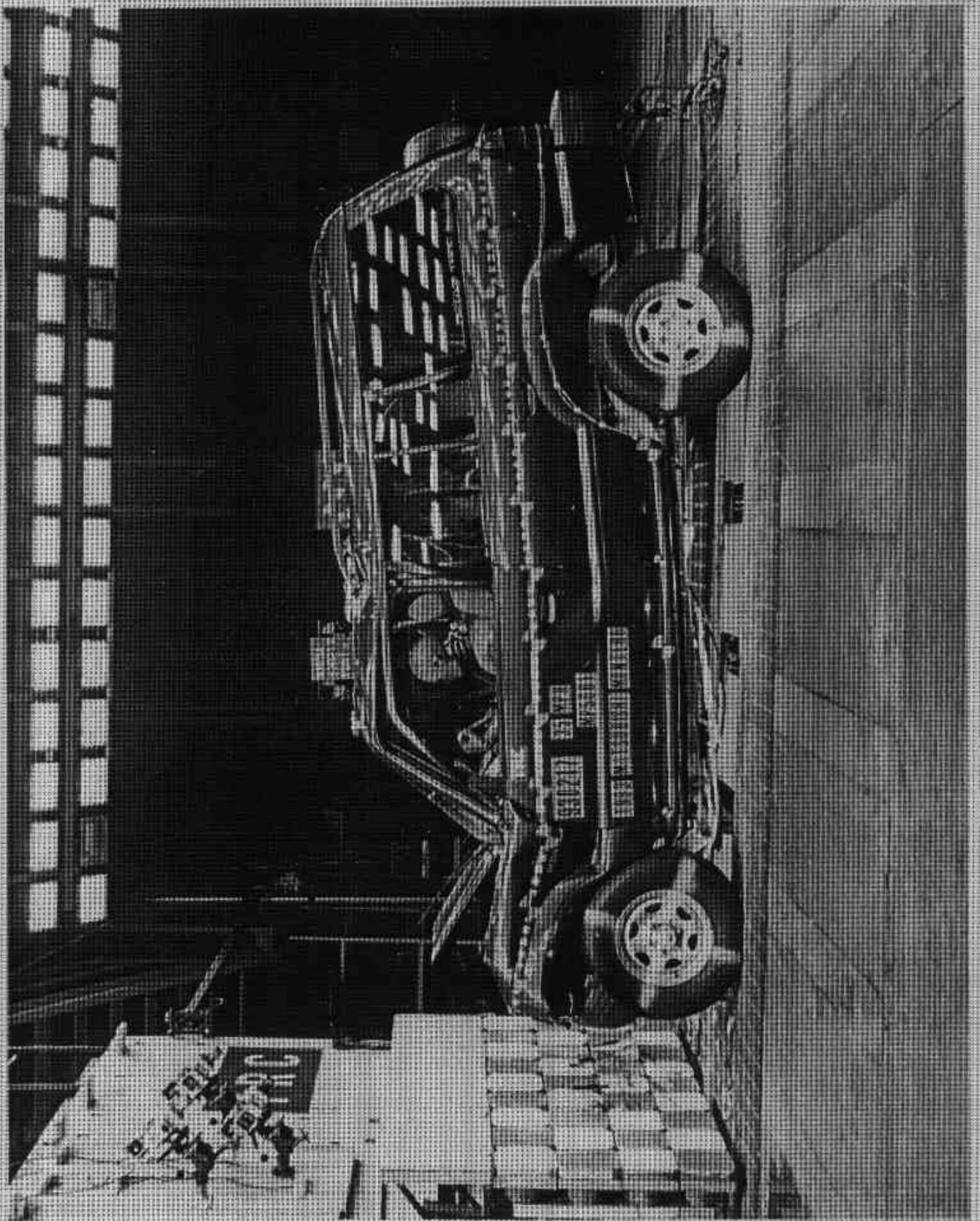


Figure A-4. POST-TEST LEFT SIDE VIEW
A-5

930217

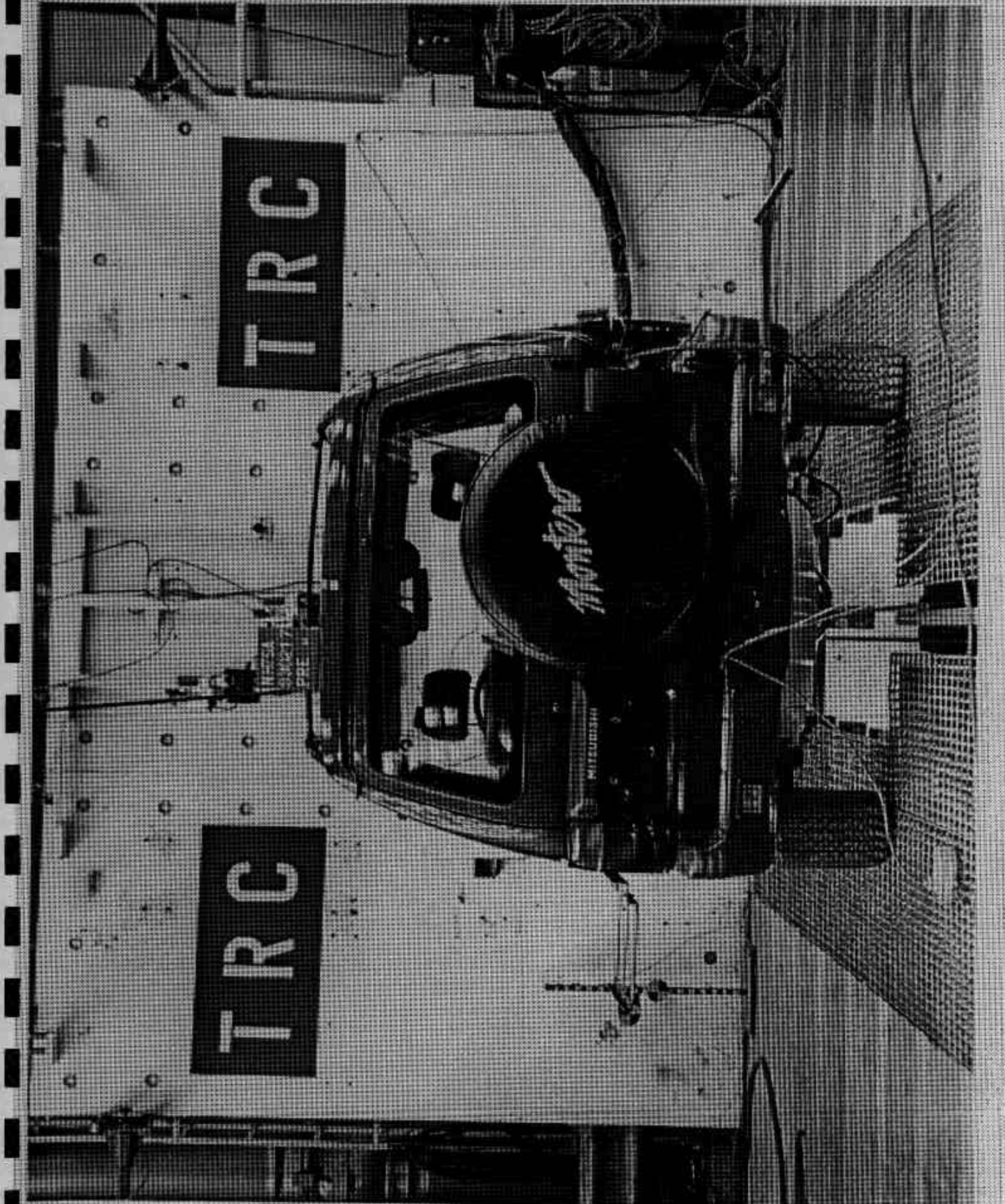


Figure A-5. PRE-TEST REAR VIEW

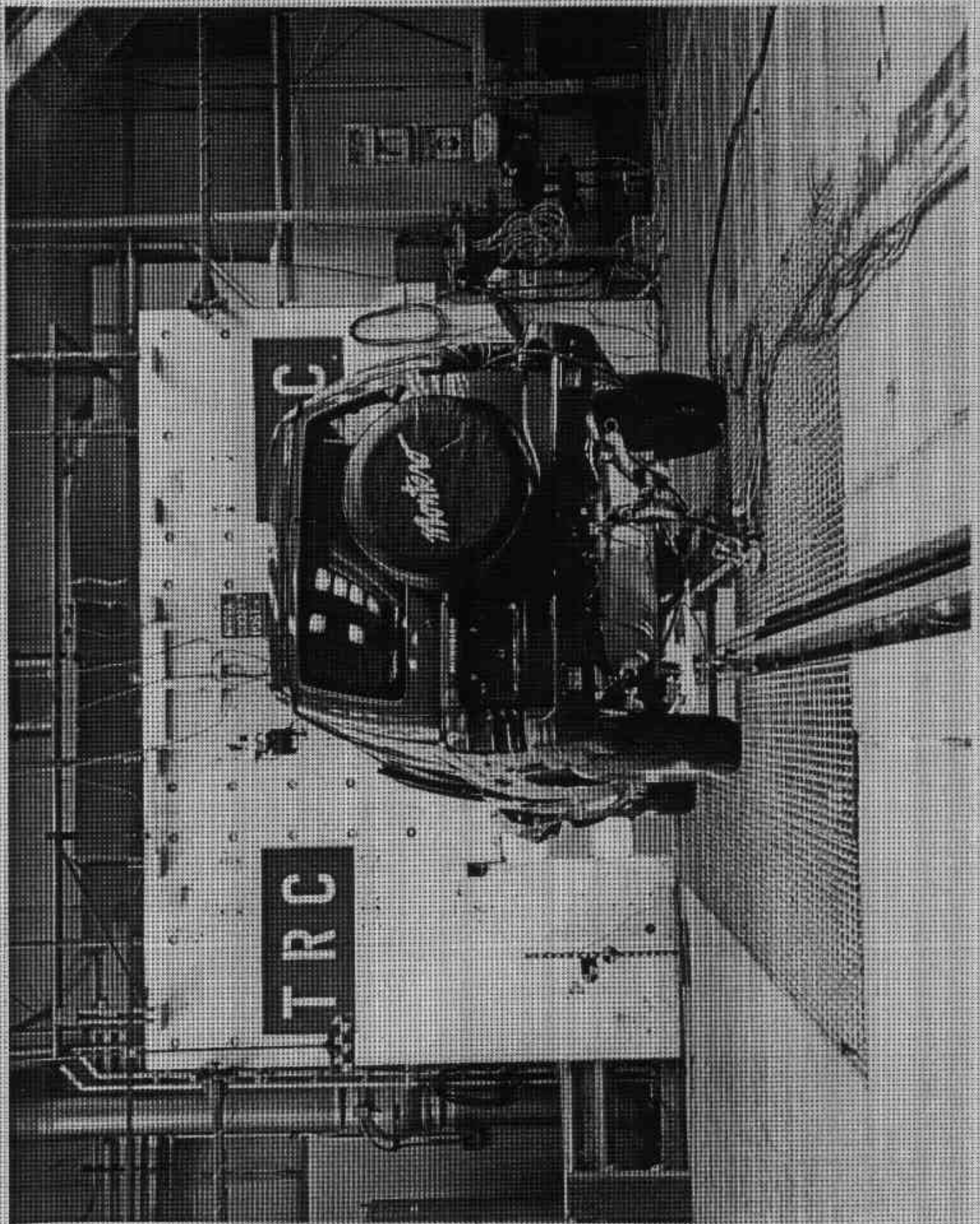


Figure A-6. POST-TEST REAR VIEW

A-7

930217

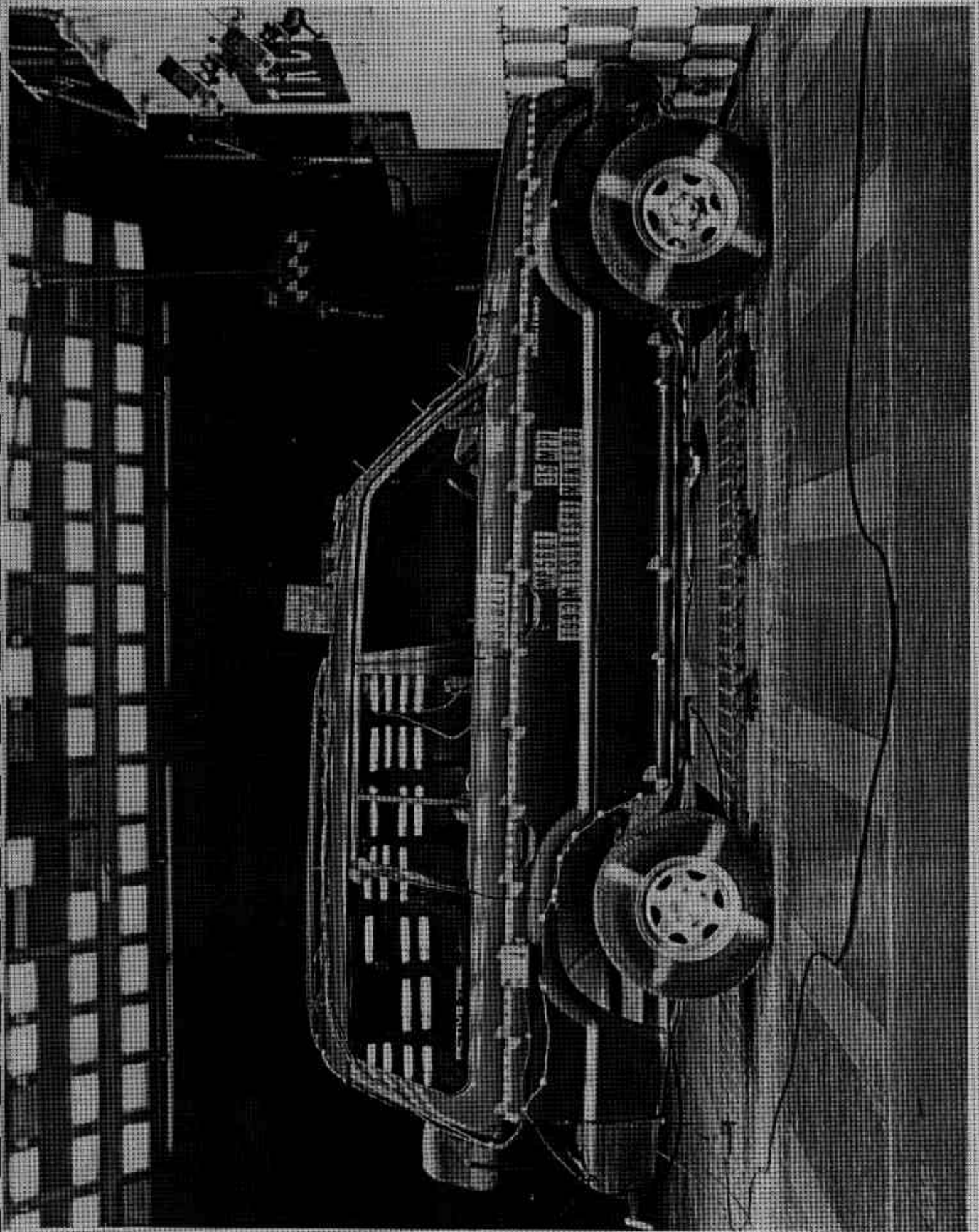


Figure A-7. PRE-TEST RIGHT SIDE VIEW

A-8

930217

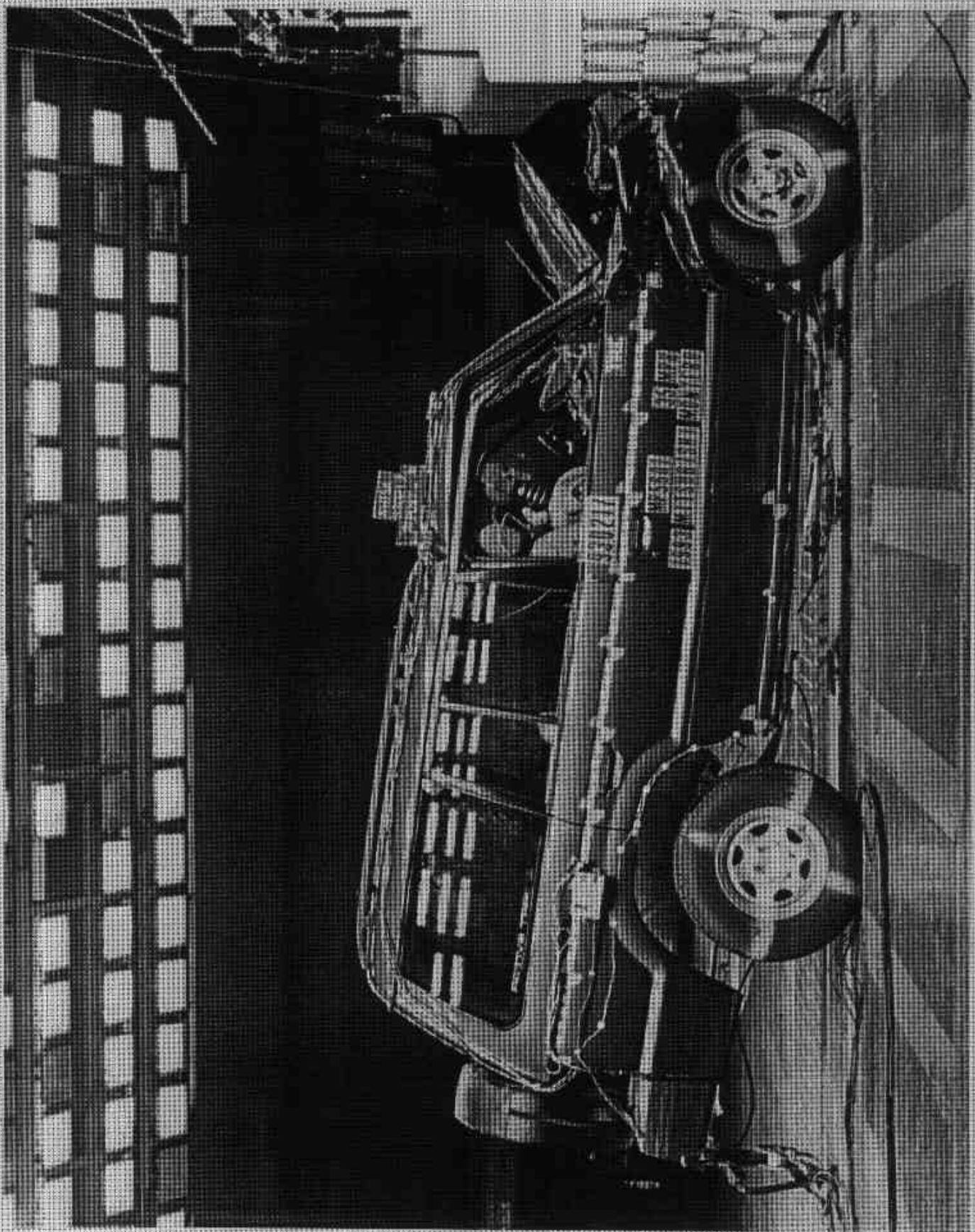


Figure A-8. POST-TEST RIGHT SIDE VIEW

A-9

930217

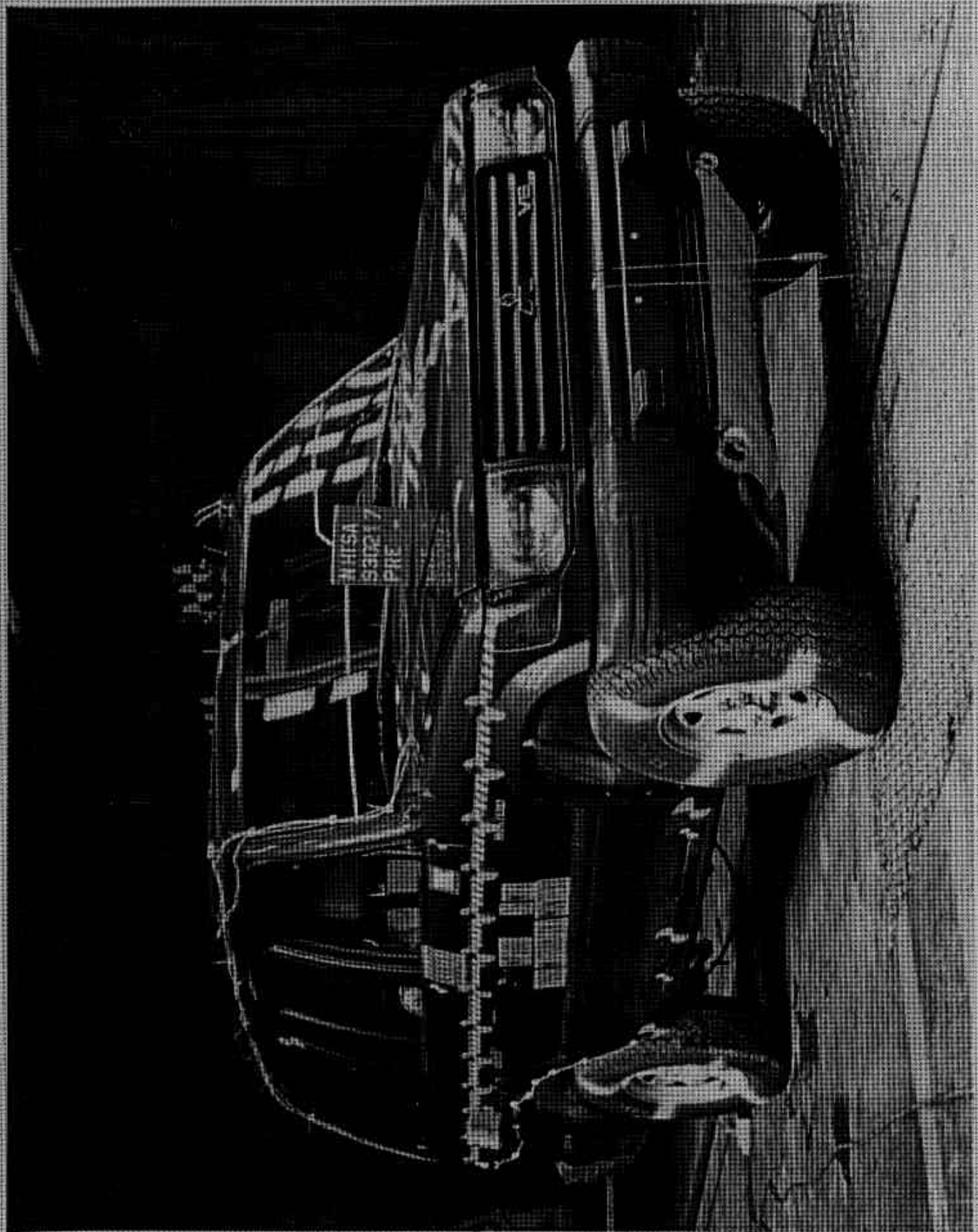


Figure A-9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

A-10

930217

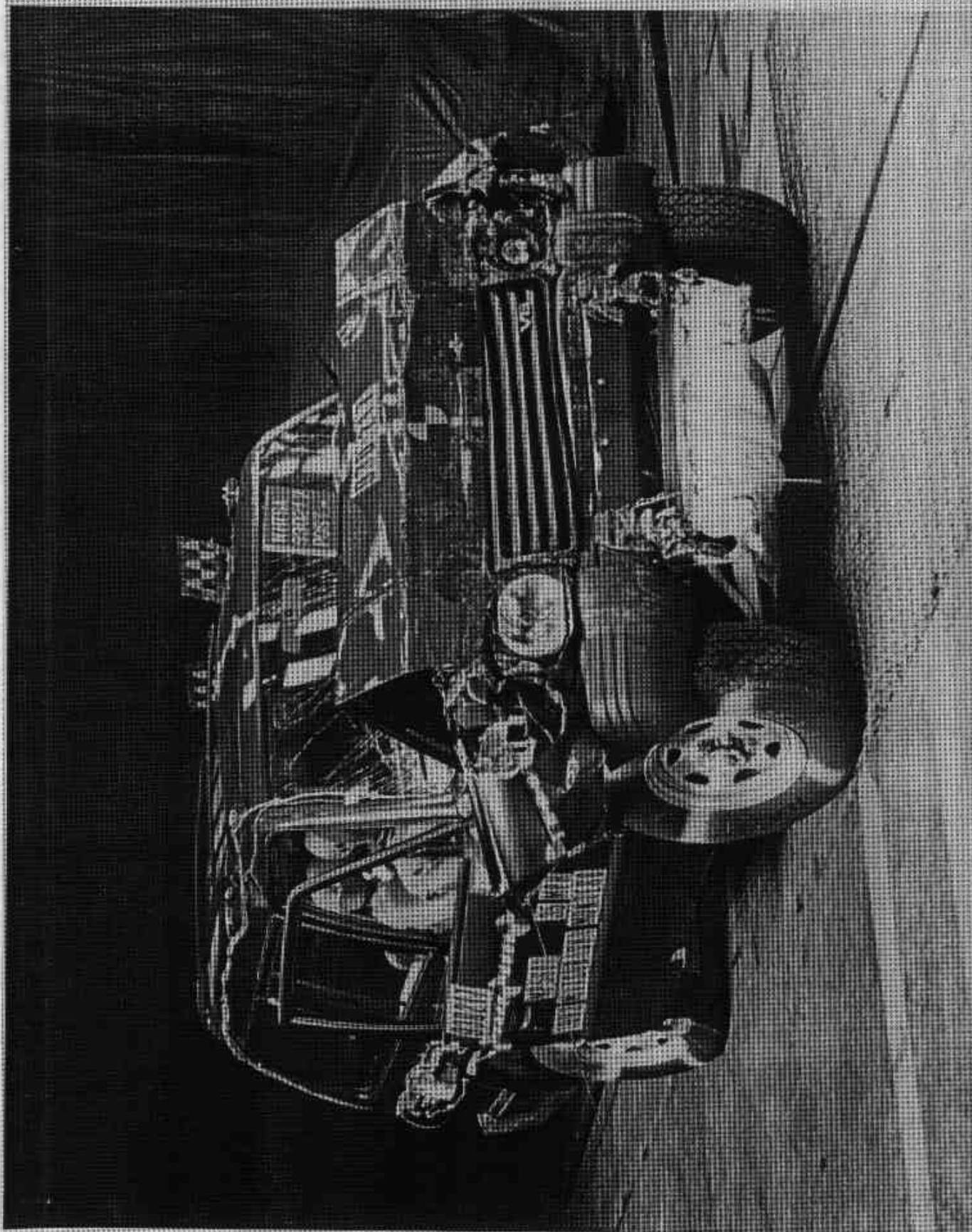


Figure A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

A-11

930217

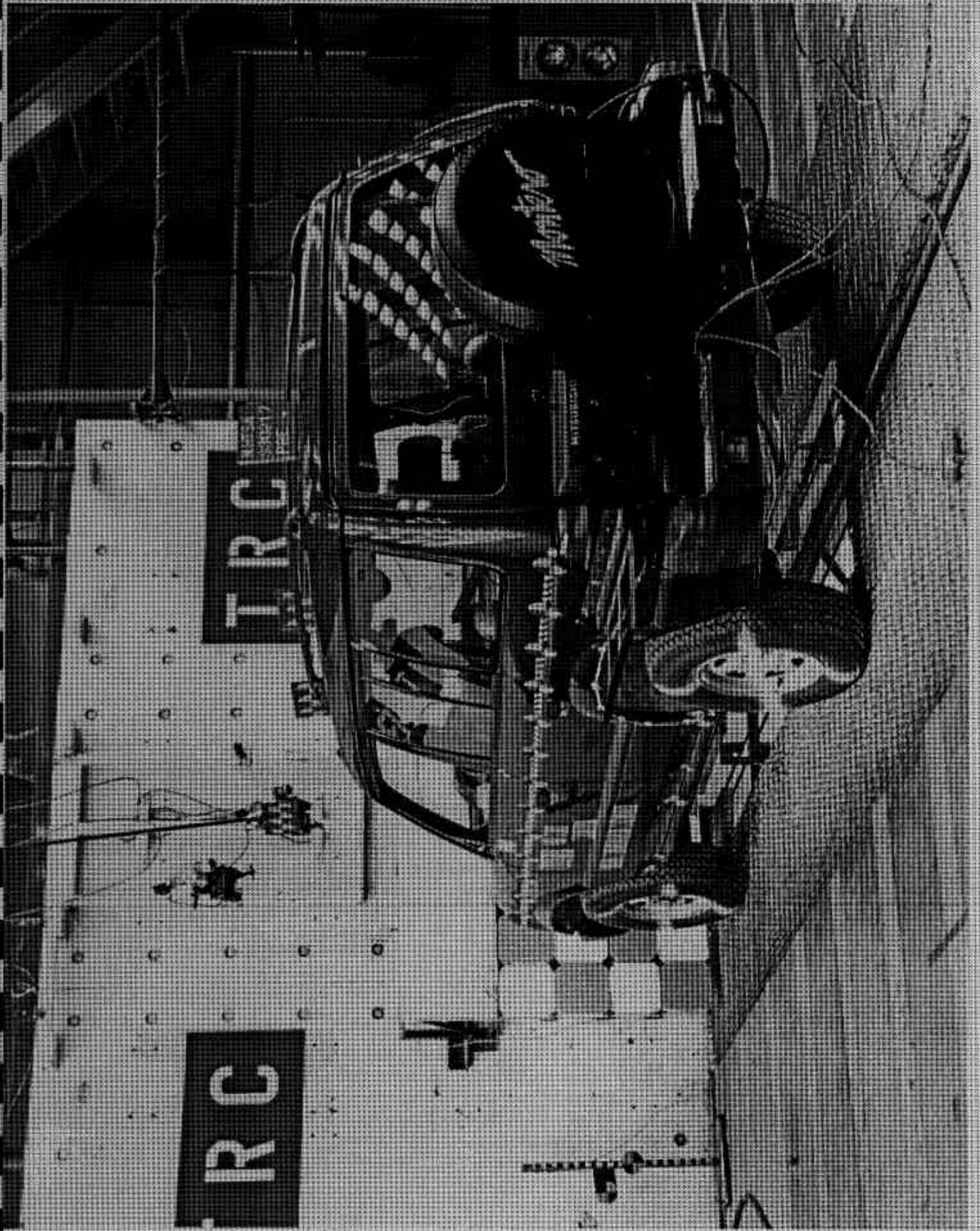


Figure A-11. PRE-TEST LEFT REAR THREE-QUARTER VIEW

A-12

930217

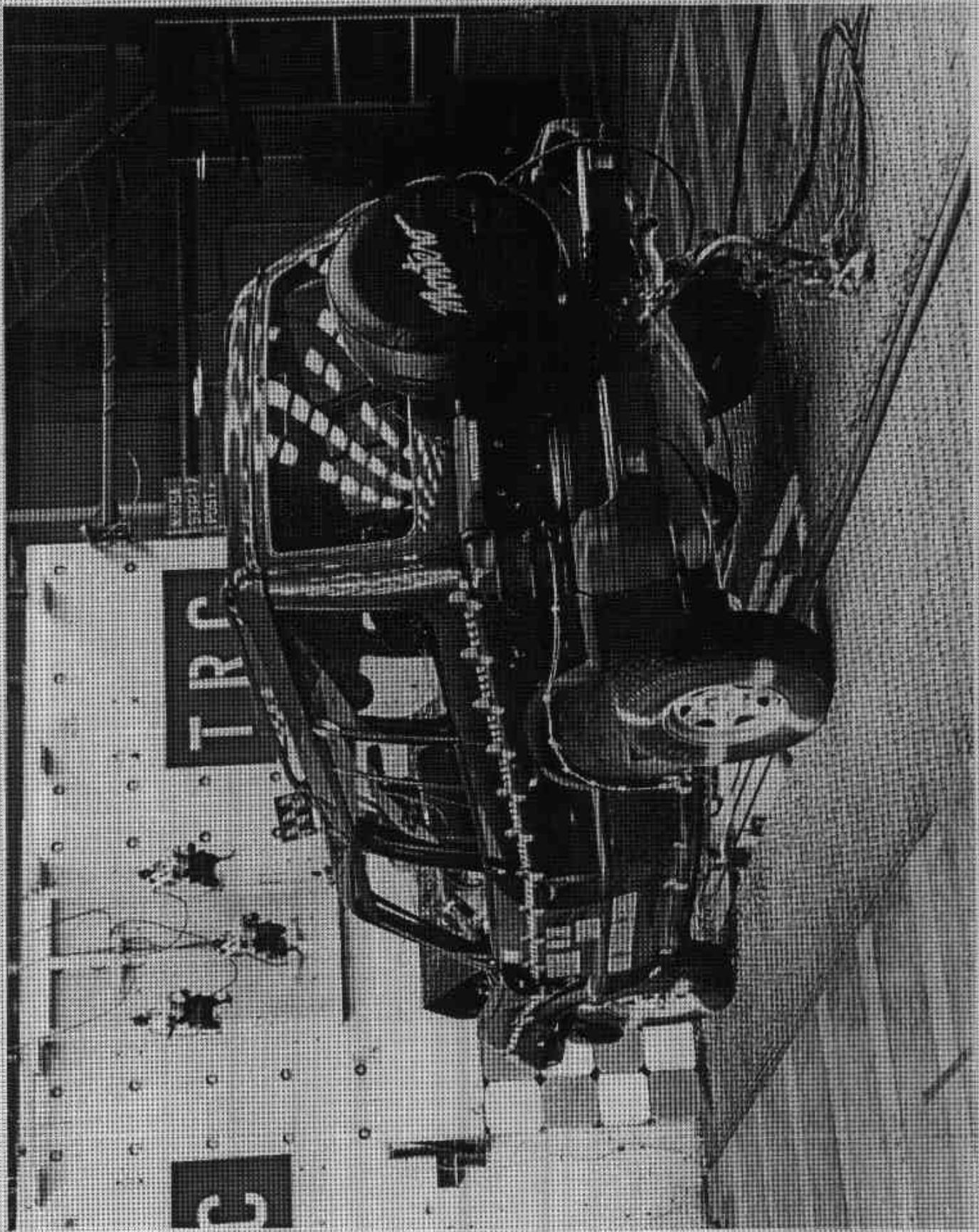


Figure A-12. POST-TEST LEFT REAR THREE-QUARTER VIEW

A-13

930217

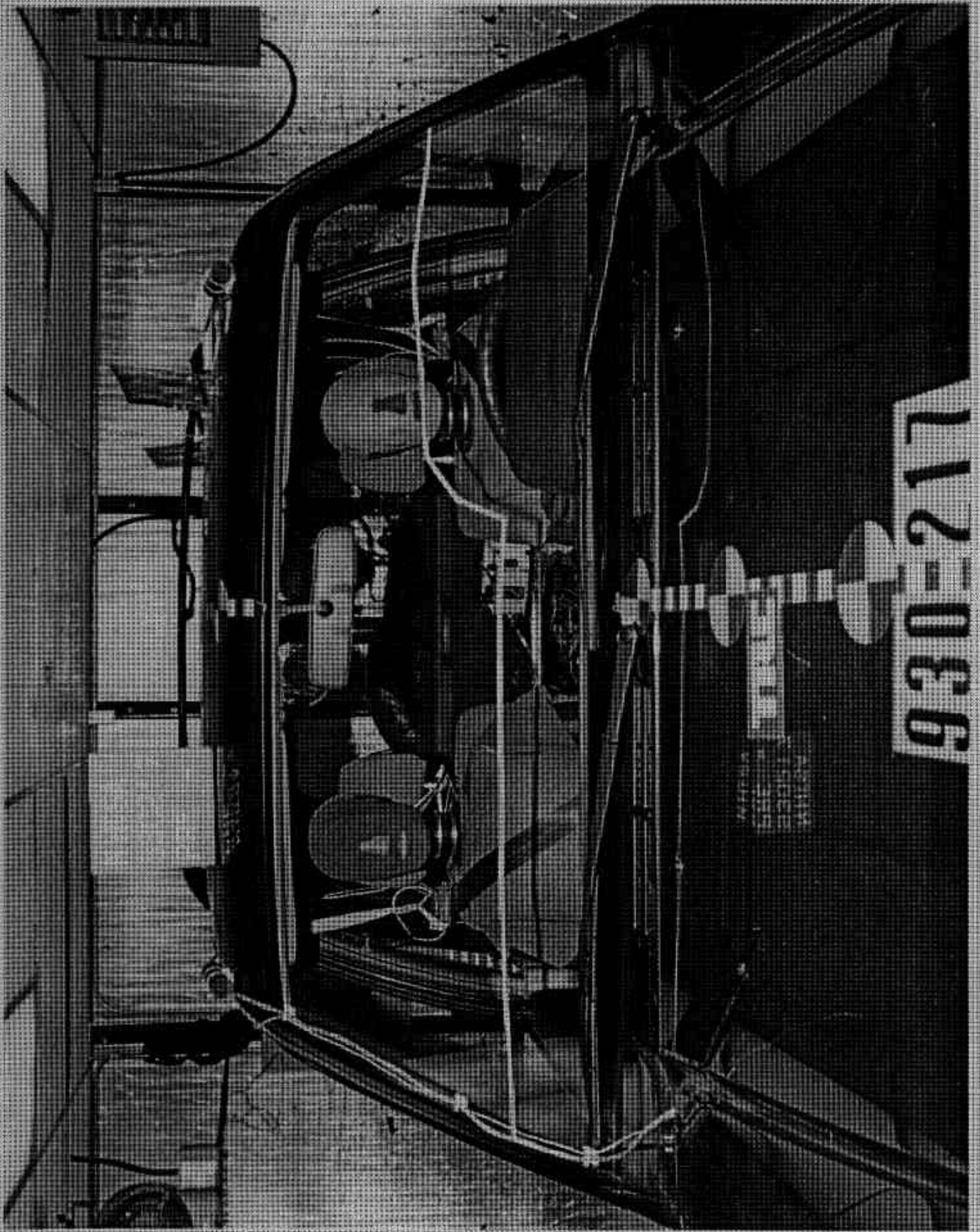


Figure A-13. PRE-TEST WINDSHIELD VIEW

A-14

930217

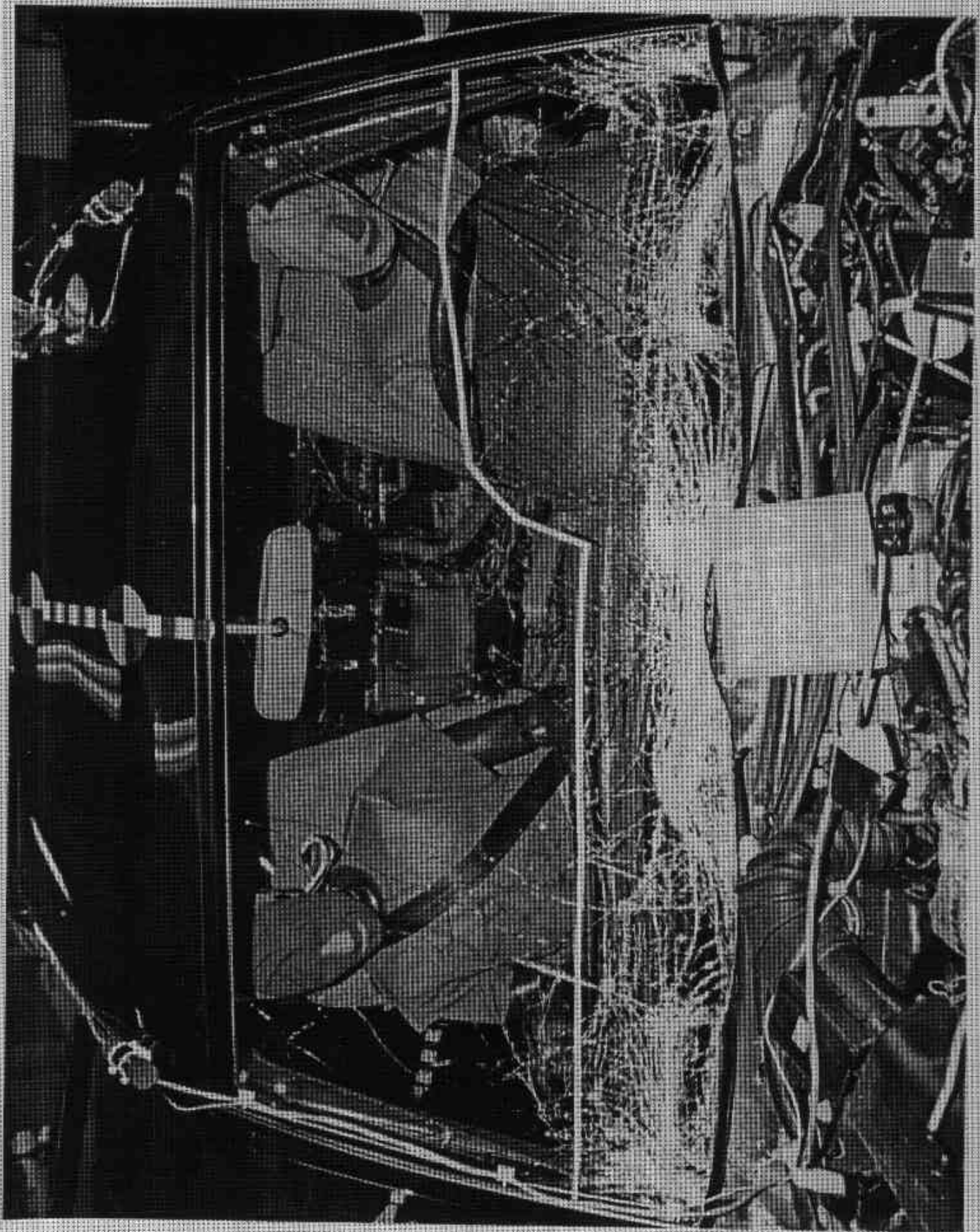


Figure A-14. POST-TEST WINDSHIELD VIEW
A-15

930217

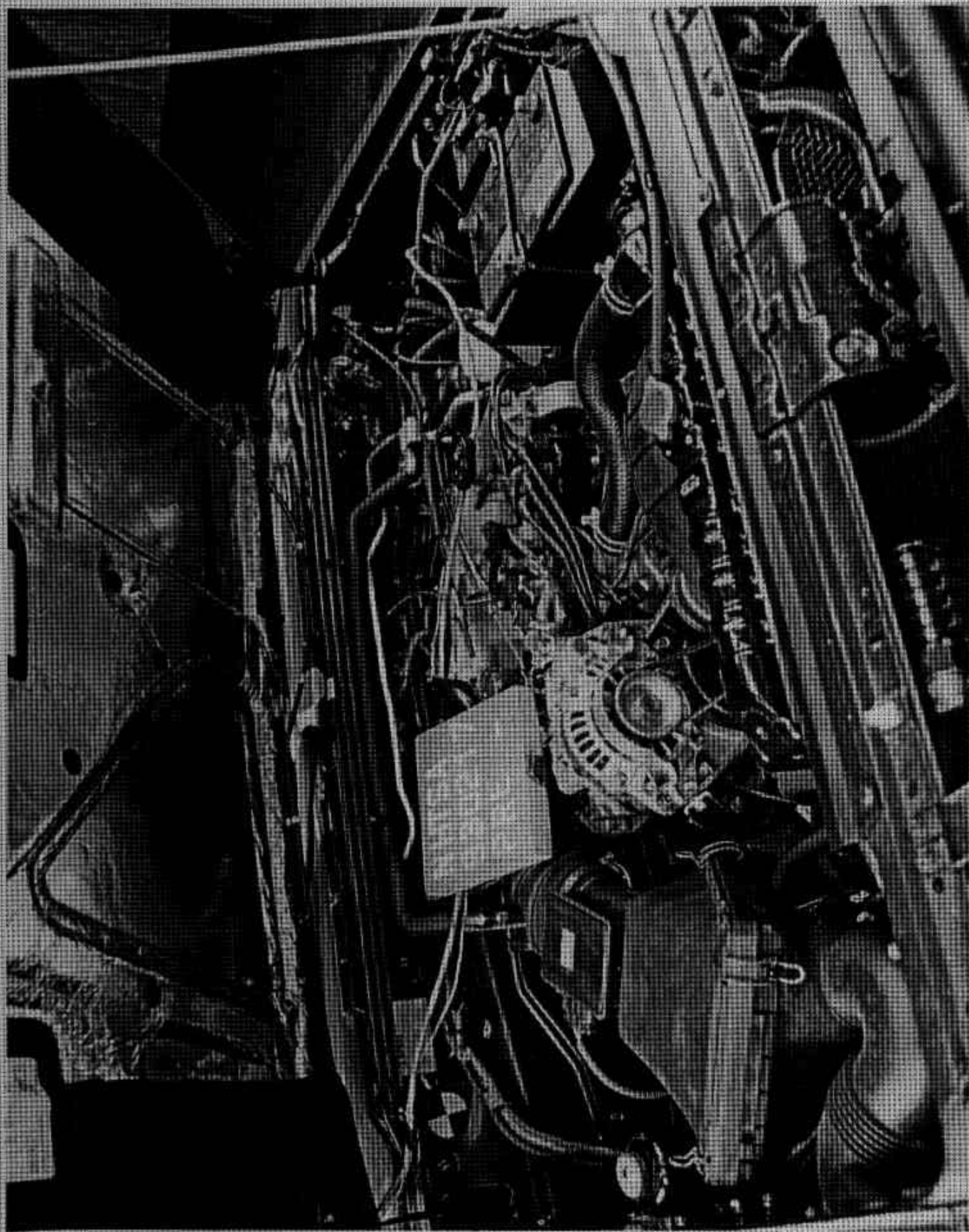


Figure A-15. PRE-TEST ENGINE COMPARTMENT VIEW

A-16

930217

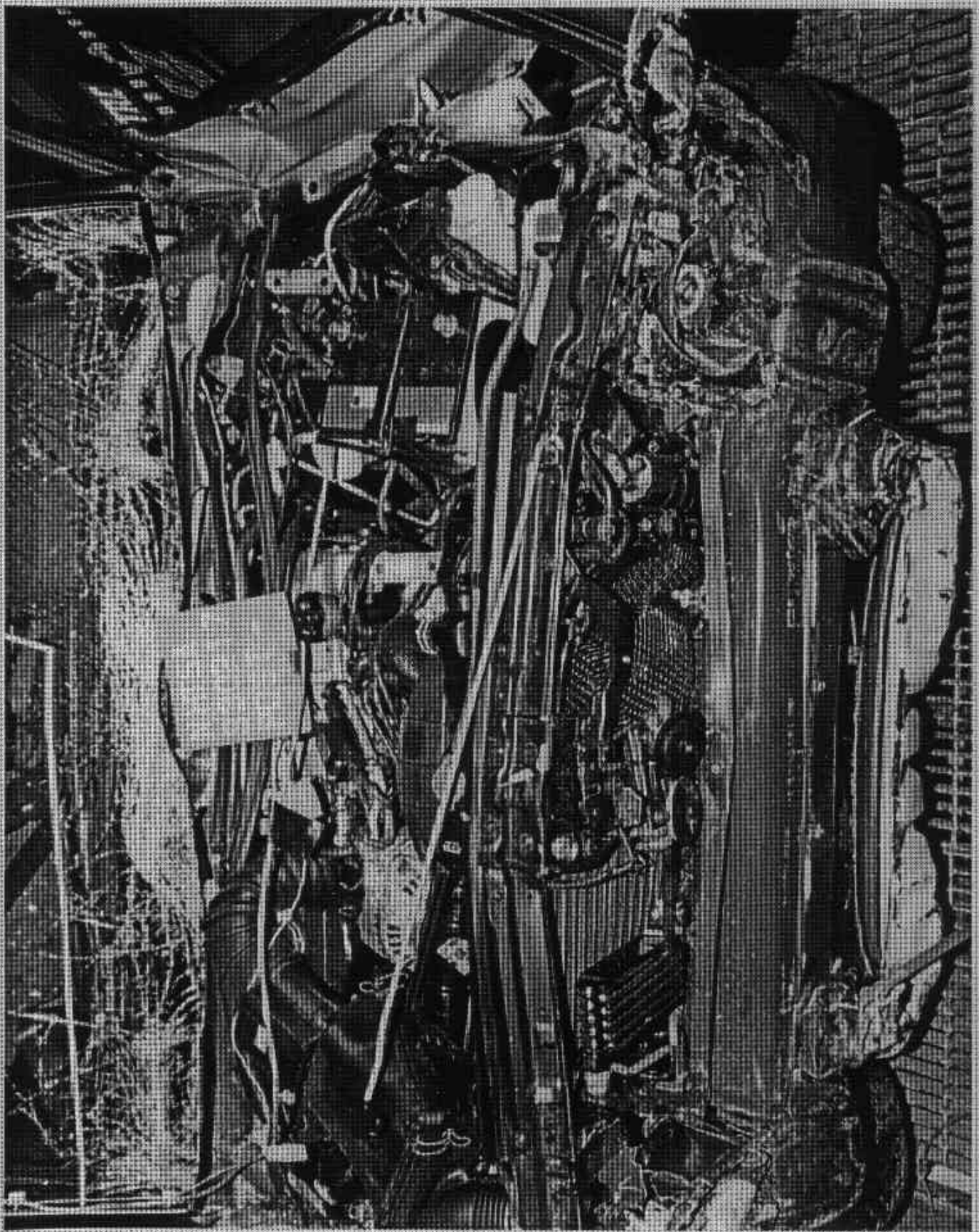


Figure A-16. POST-TEST ENGINE COMPARTMENT VIEW

A-17

930217

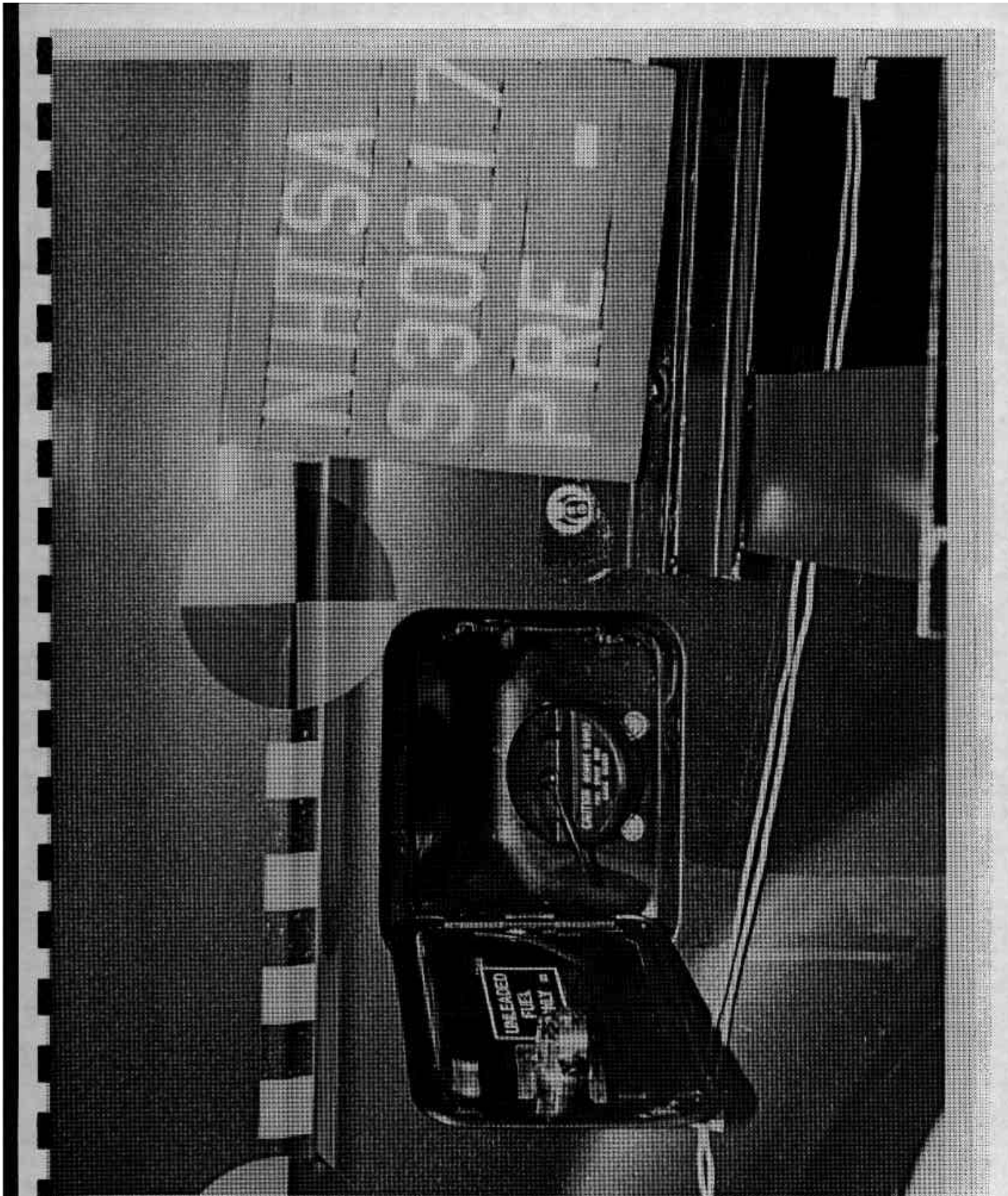


Figure A-17. PRE-TEST FUEL FILLER CAP VIEW

A-18

930217

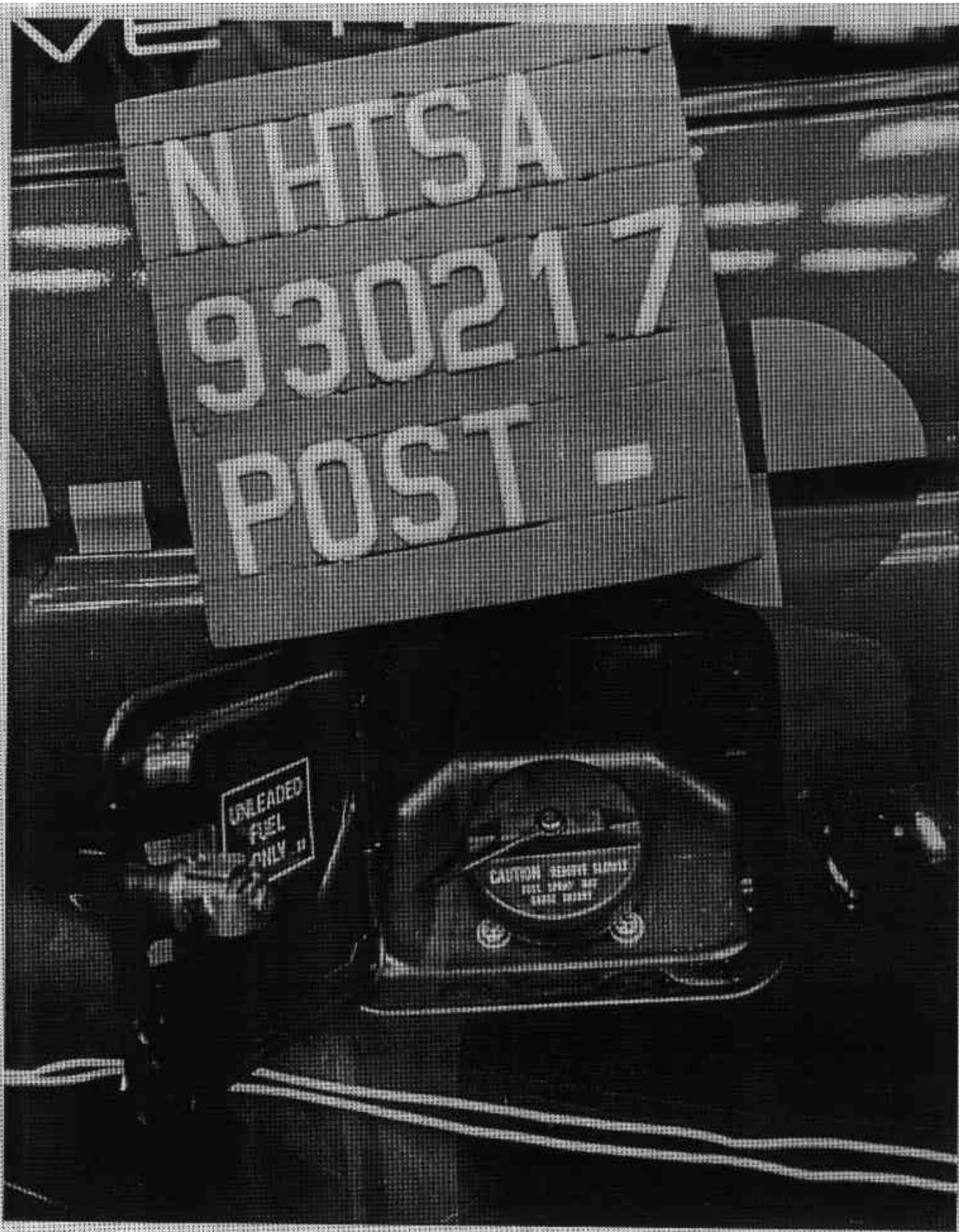


Figure A-18. POST-TEST FUEL FILLER CAP VIEW

A-19

930217



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

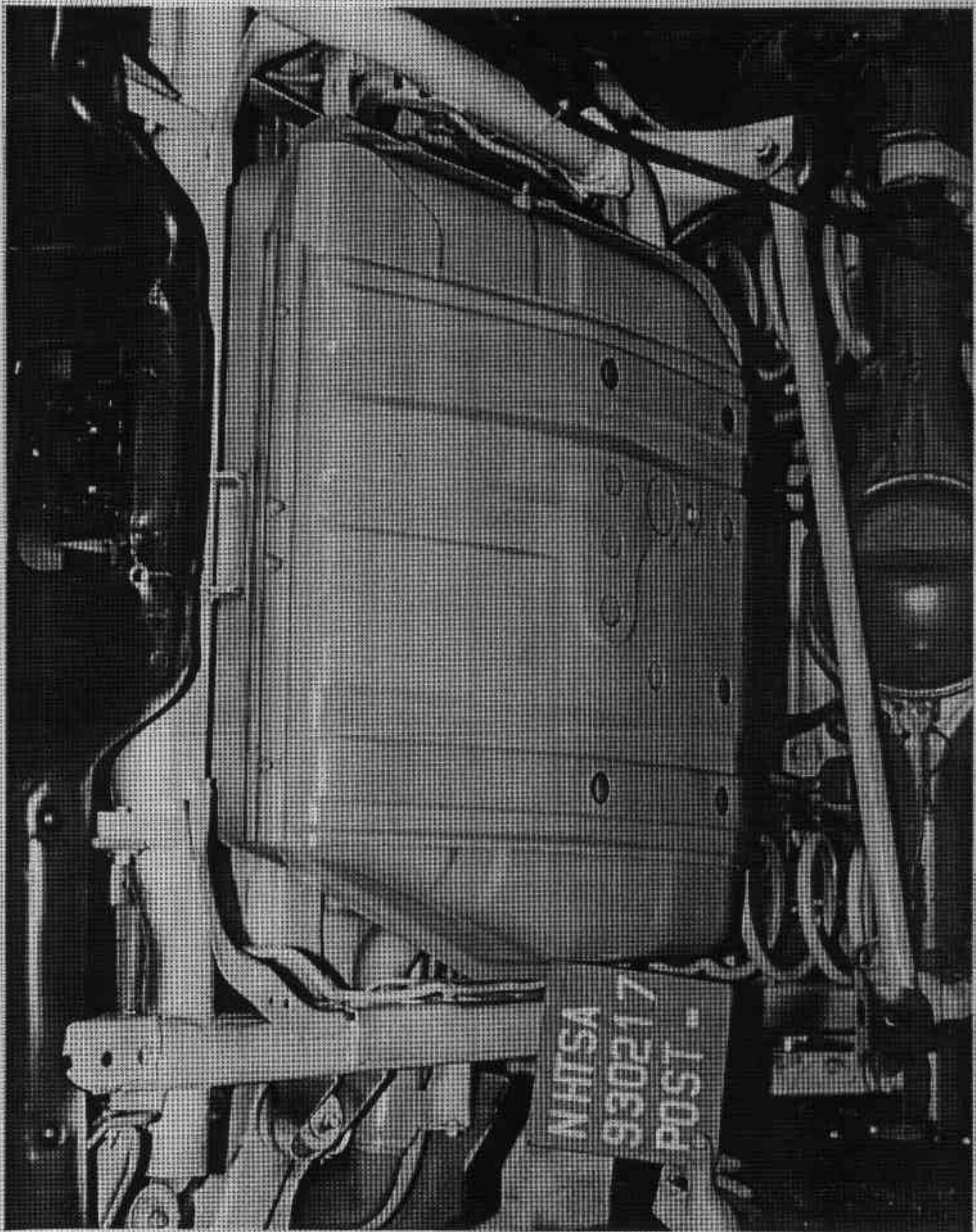


Figure A-20. POST-TEST FUEL TANK VIEW
A-21

930217



Figure A-21. PRE-TEST FRONT UNDERBODY VIEW

A-22

930217

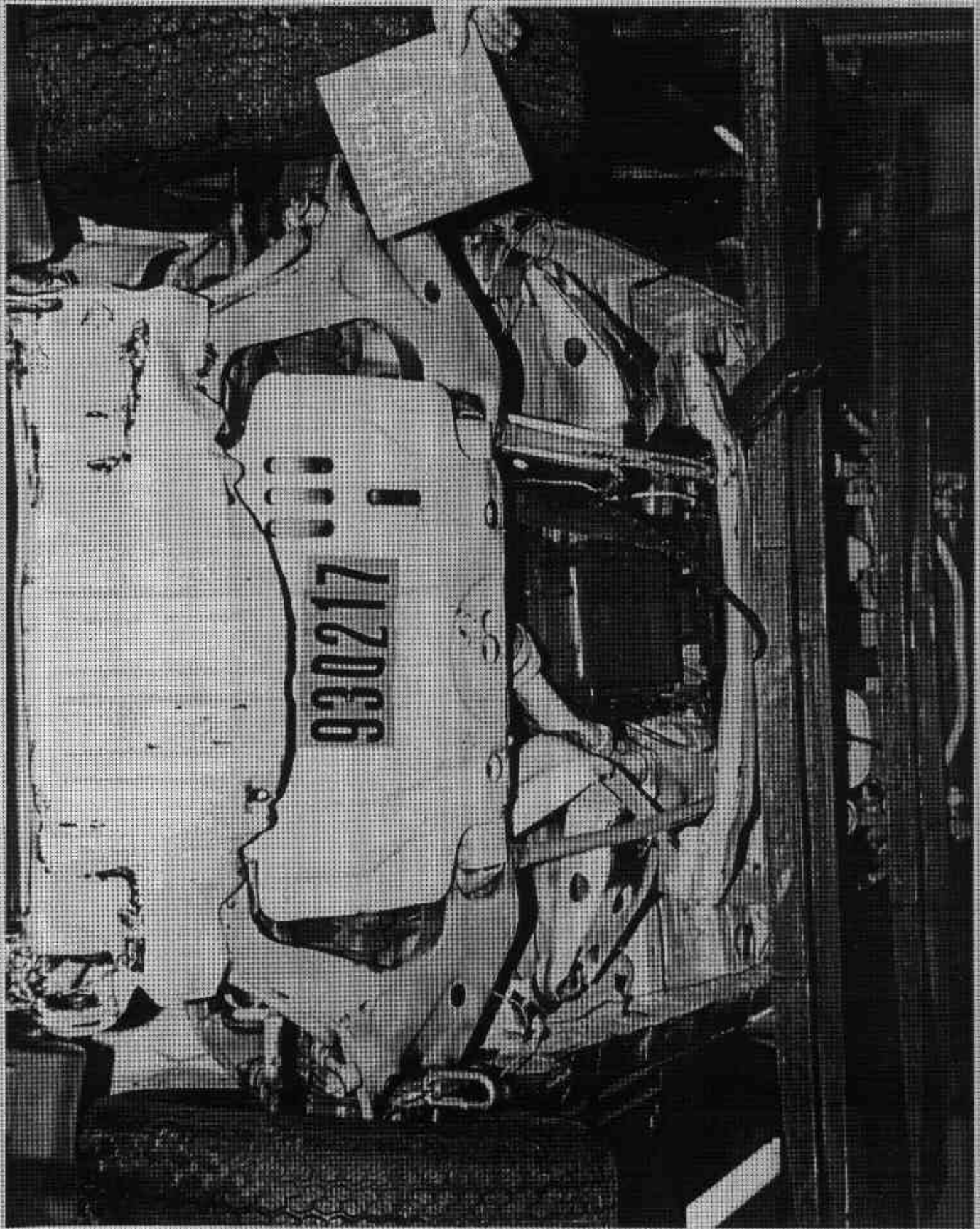


Figure A-22. POST-TEST FRONT UNDERBODY VIEW

A-23

930217

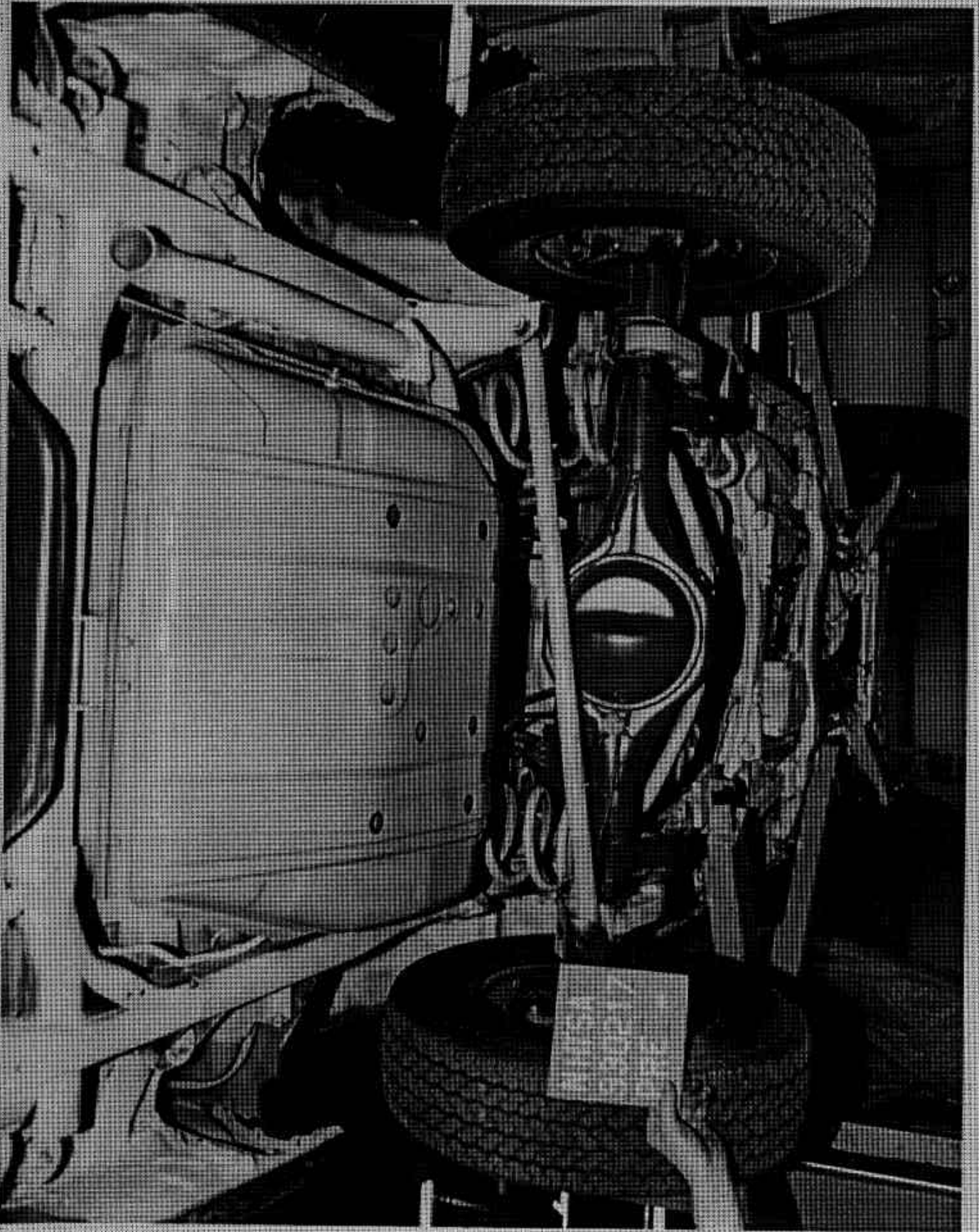


Figure A-23. PRE-TEST REAR UNDERBODY VIEW

A-24

930217

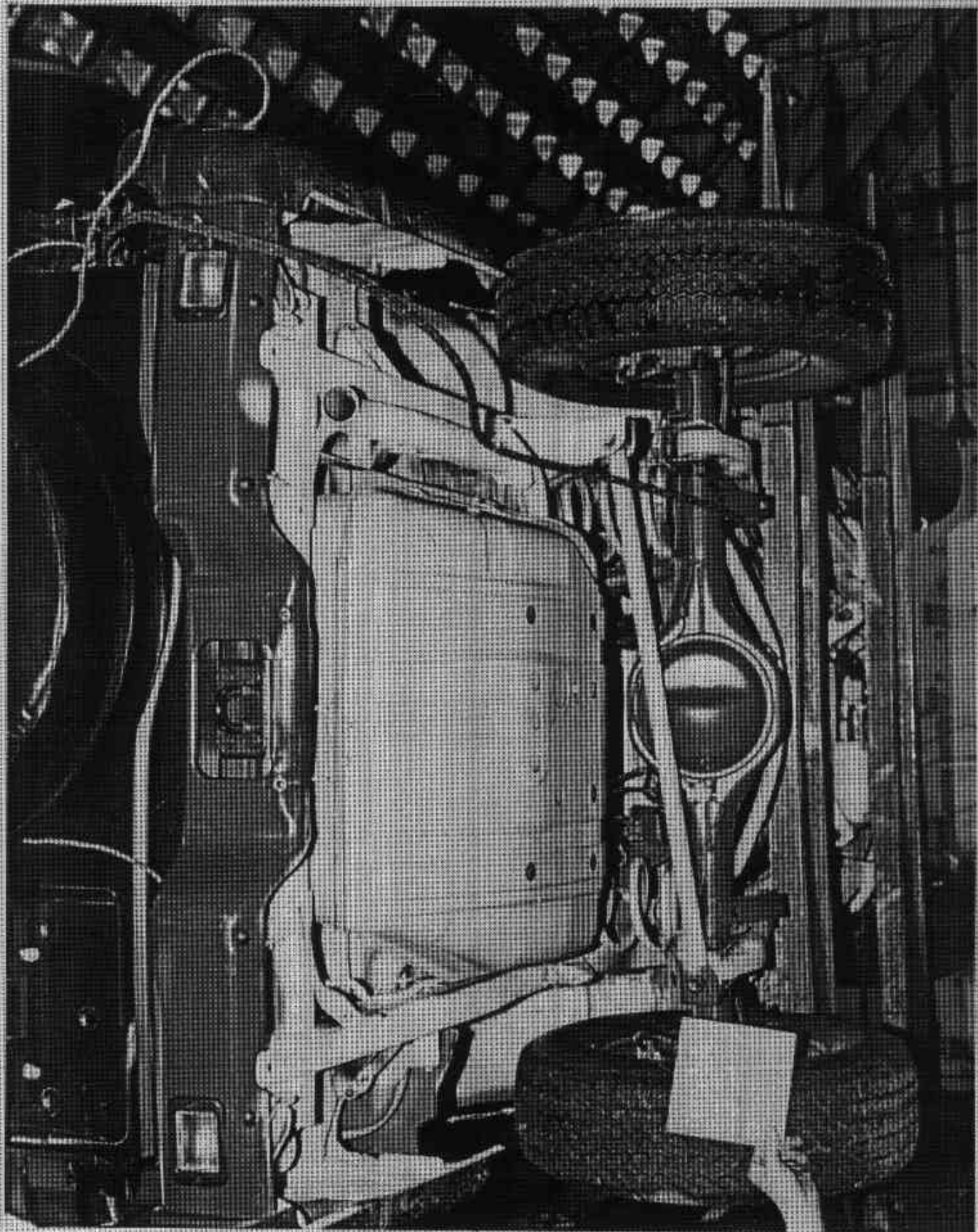


Figure A-24. POST-TEST REAR UNDERBODY VIEW

A-25

930217

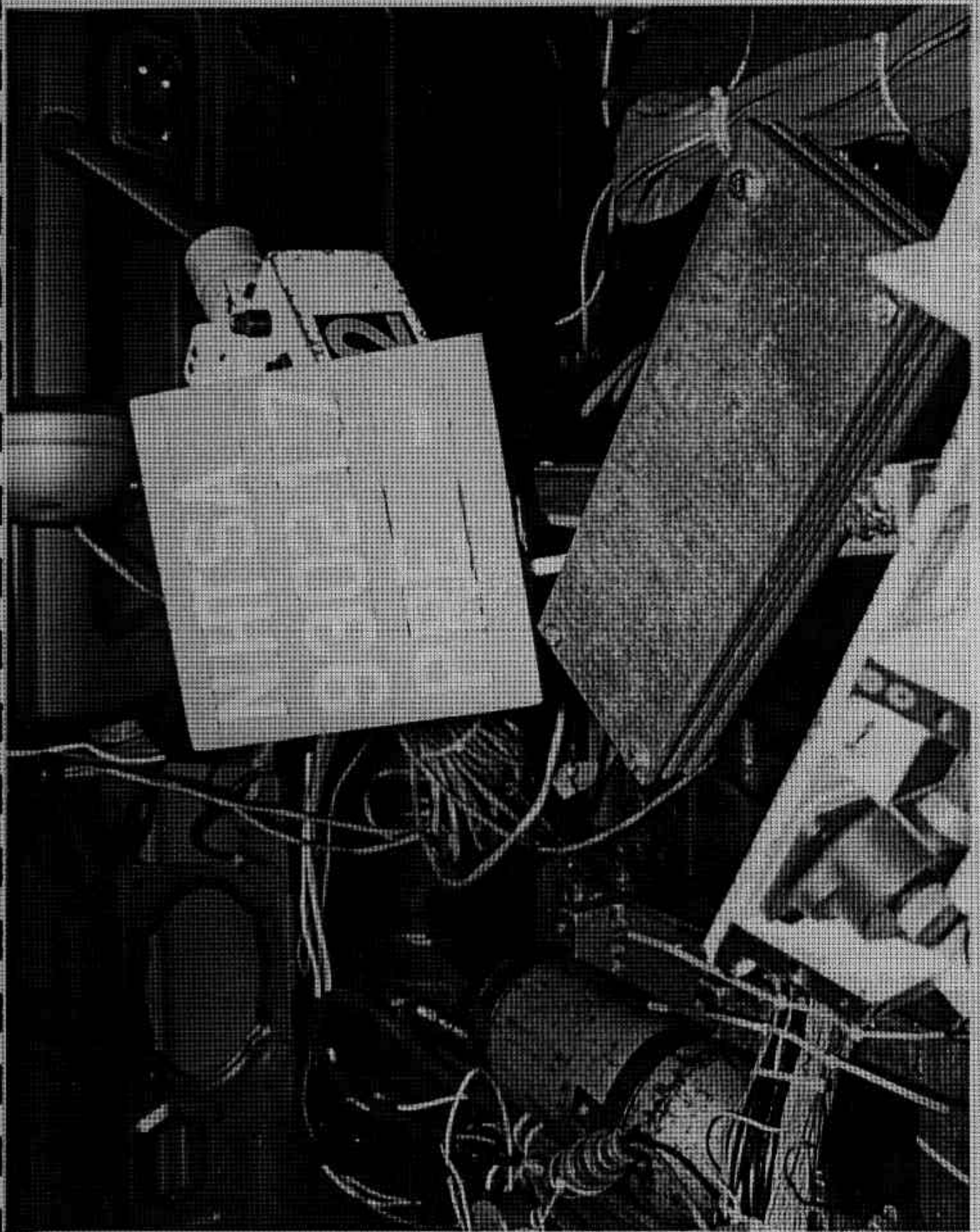


Figure A-25. PRE-TEST BALLAST LOCATION

A-26

930217

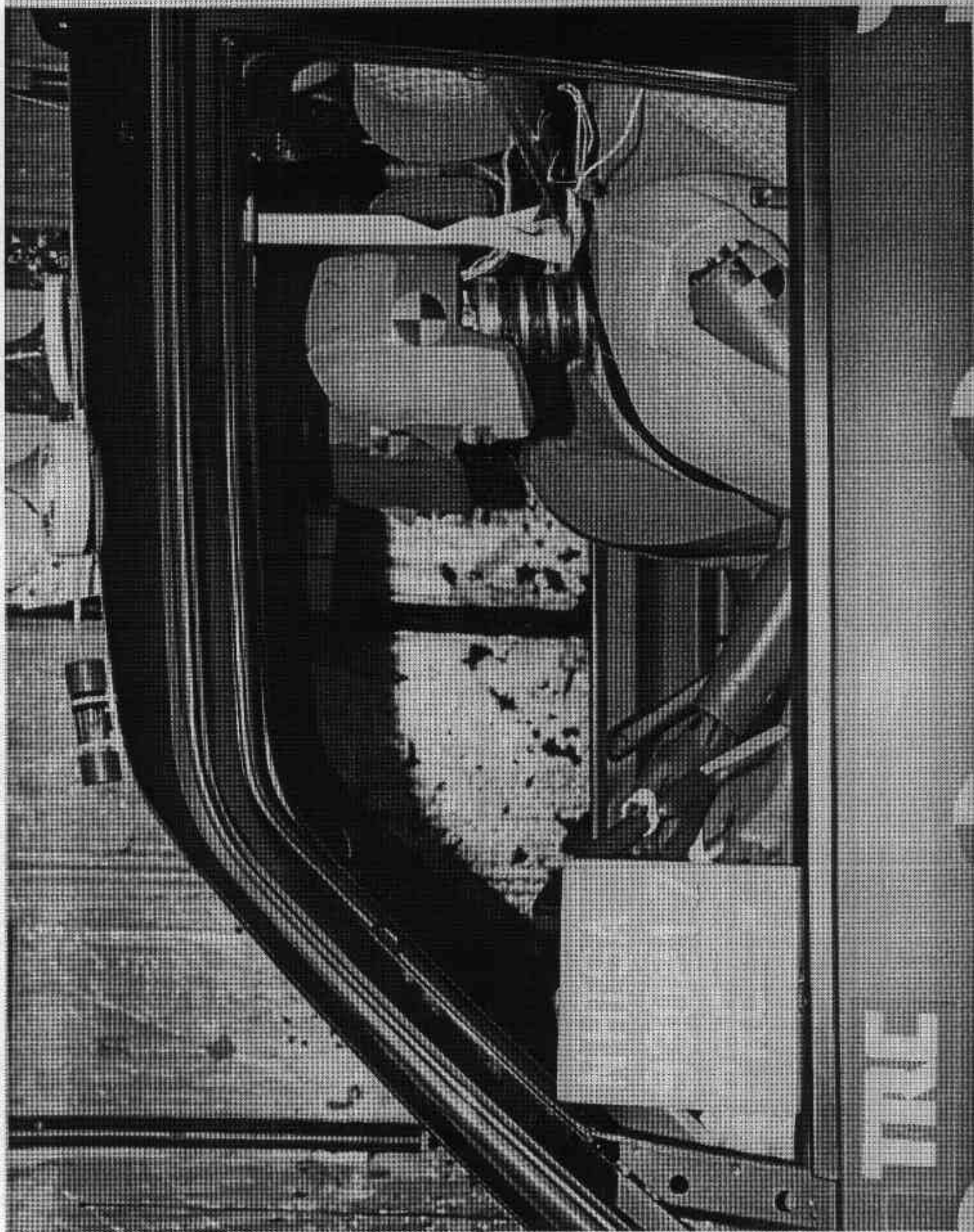


Figure A-26. PRE-TEST DRIVER DUMMY POSITION VIEW

A-27

930217

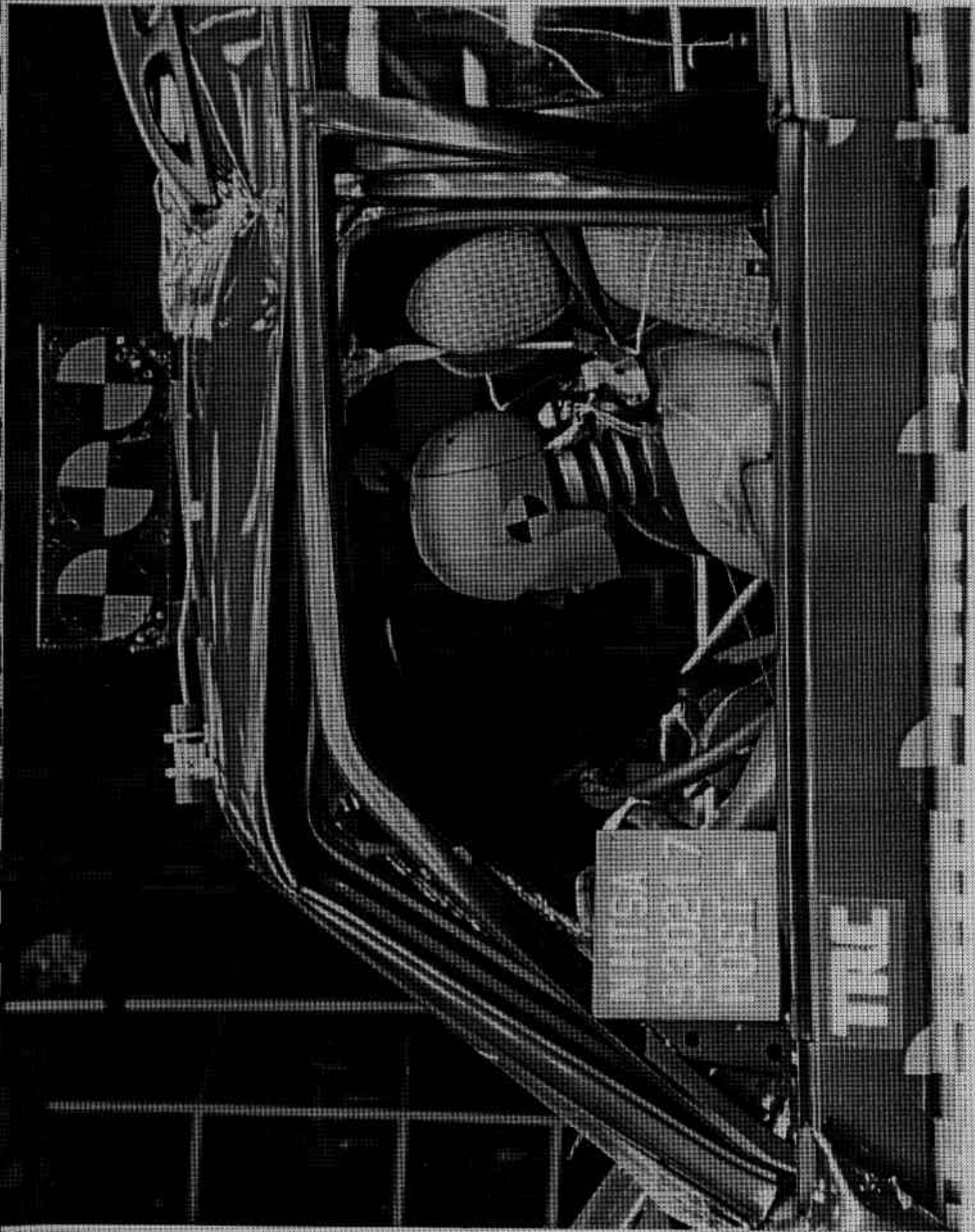


Figure A-27. POST-TEST DRIVER DUMMY POSITION VIEW

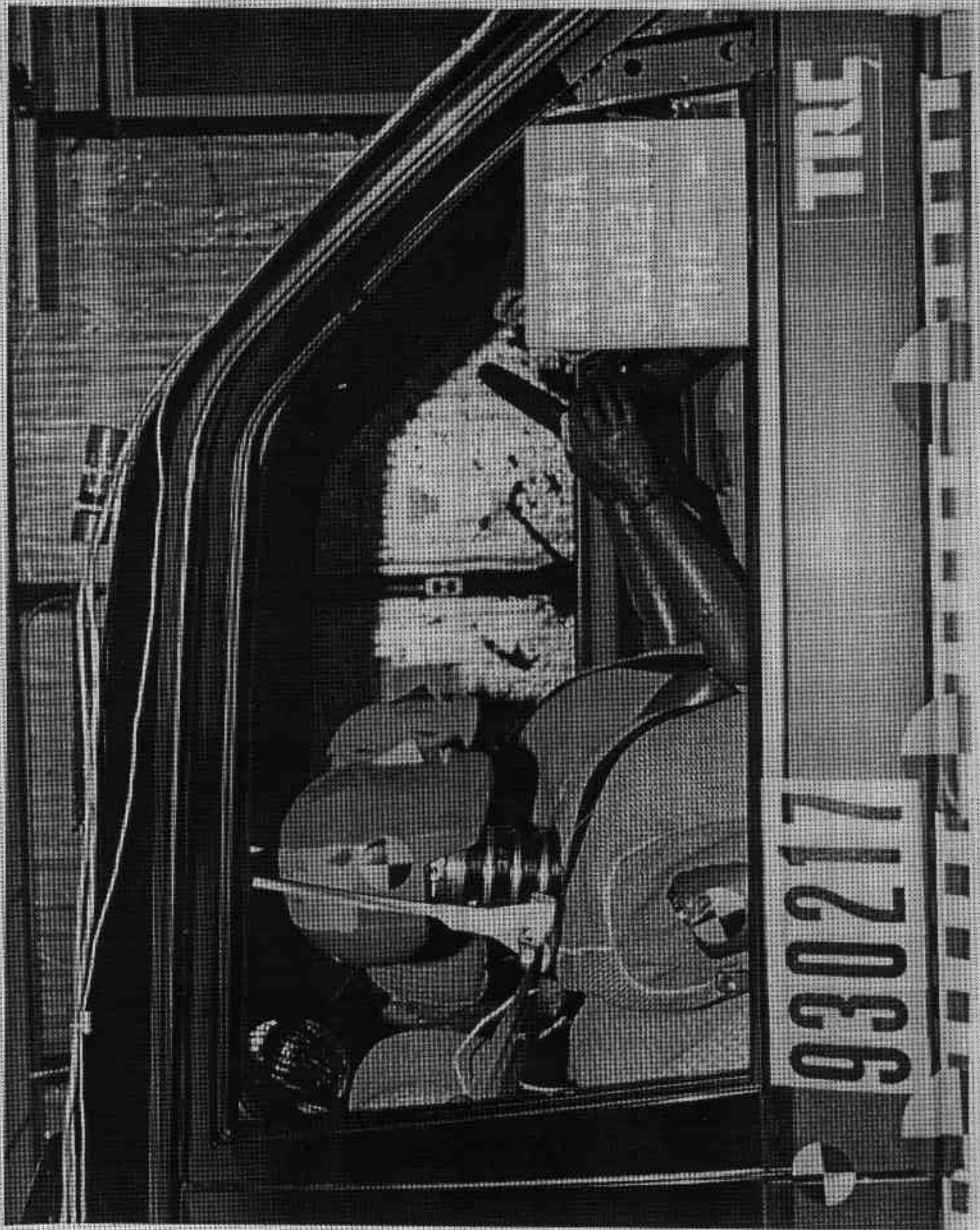


Figure A-28. PRE-TEST PASSENGER DUMMY POSITION VIEW

A-29

930217



Figure A-29. POST-TEST PASSENGER DUMMY POSITION VIEW



Figure A-30. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1
A-31 930217



Figure A-31. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

A-32

930217

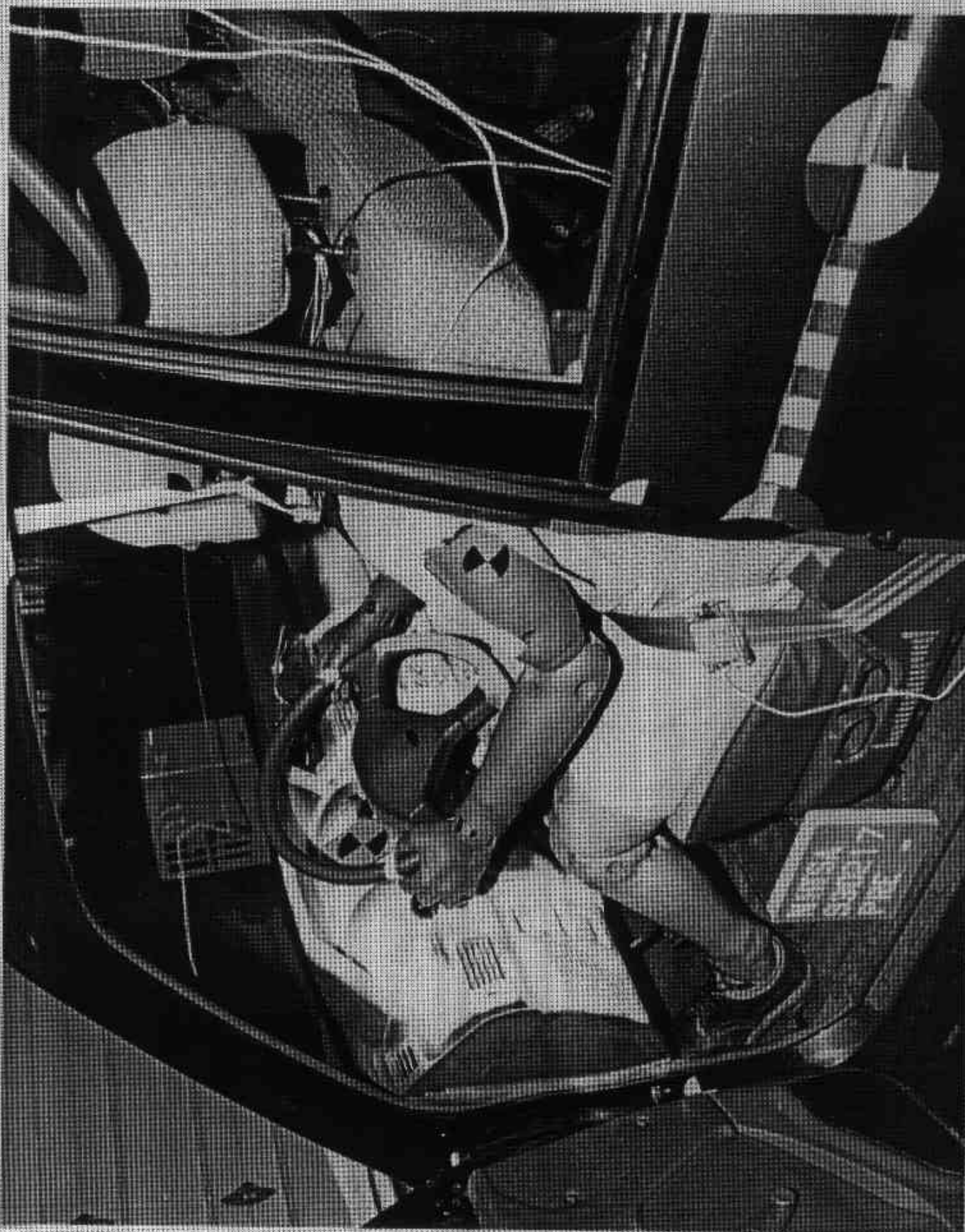


Figure A-32. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

A-33

930217

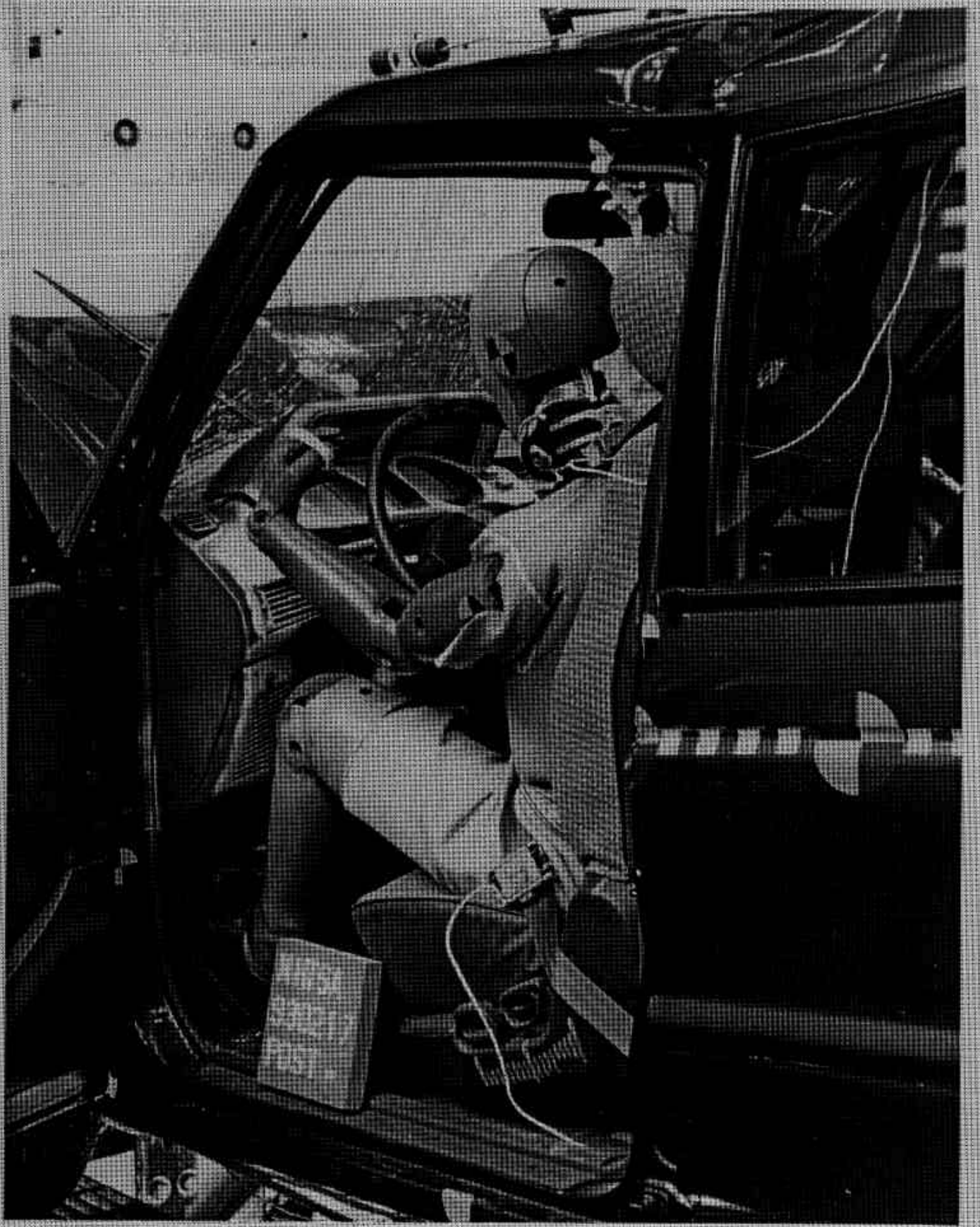


Figure A-33. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

A-34

930217



Figure A-34. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1
A-35 930217



Figure A-35. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1

A-36

930217

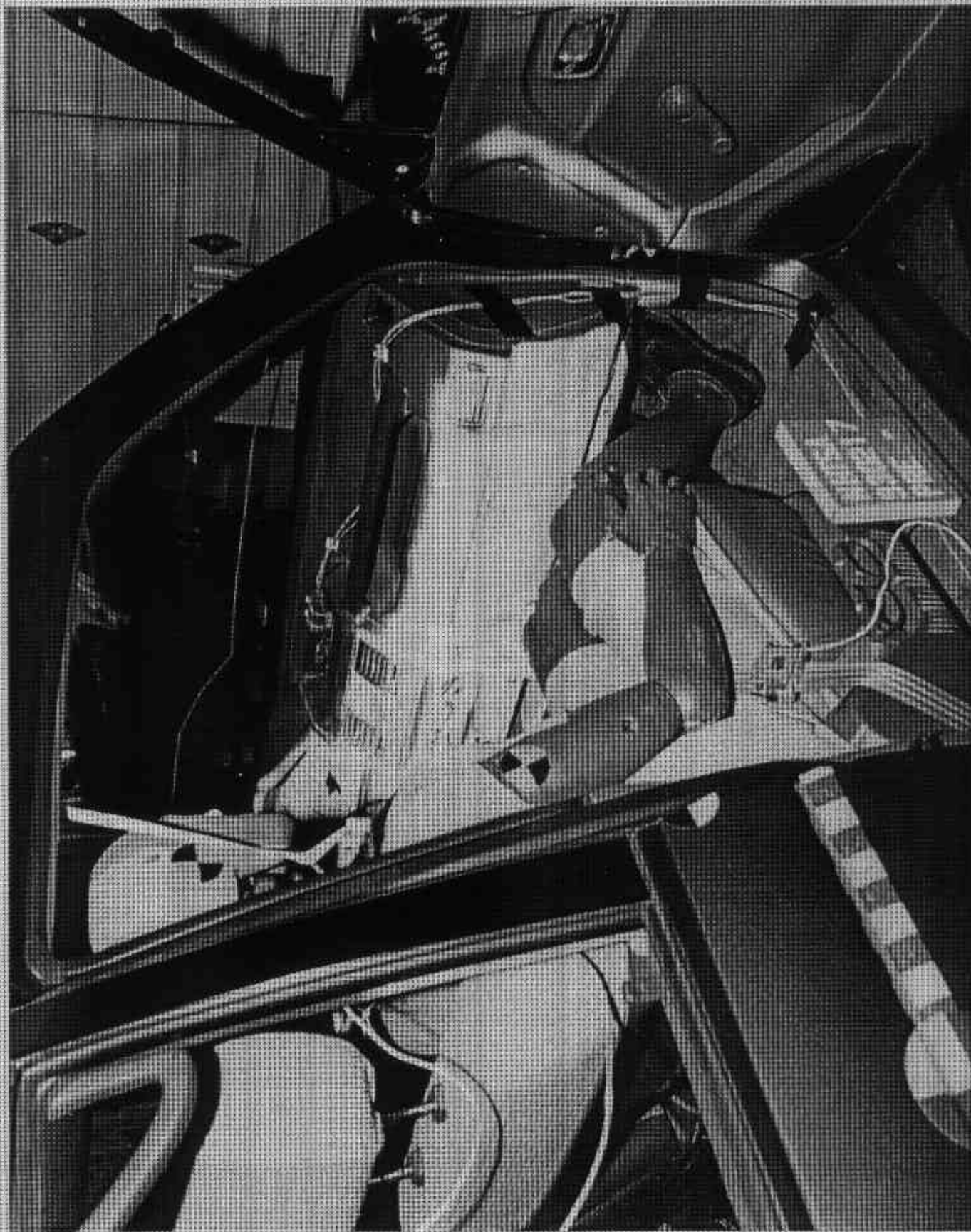


Figure A-36. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

A-37

930217

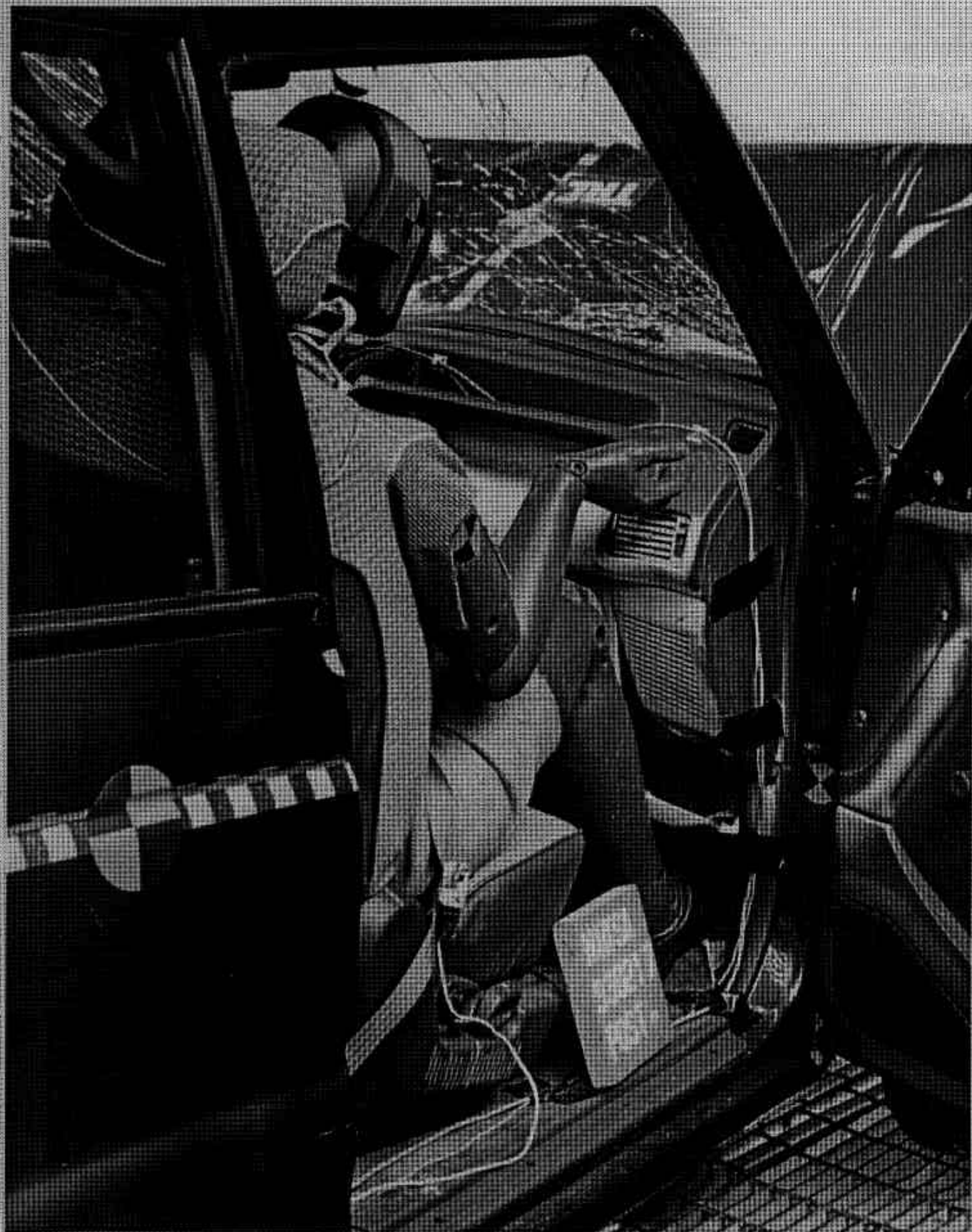


Figure A-37. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

A-38

930217

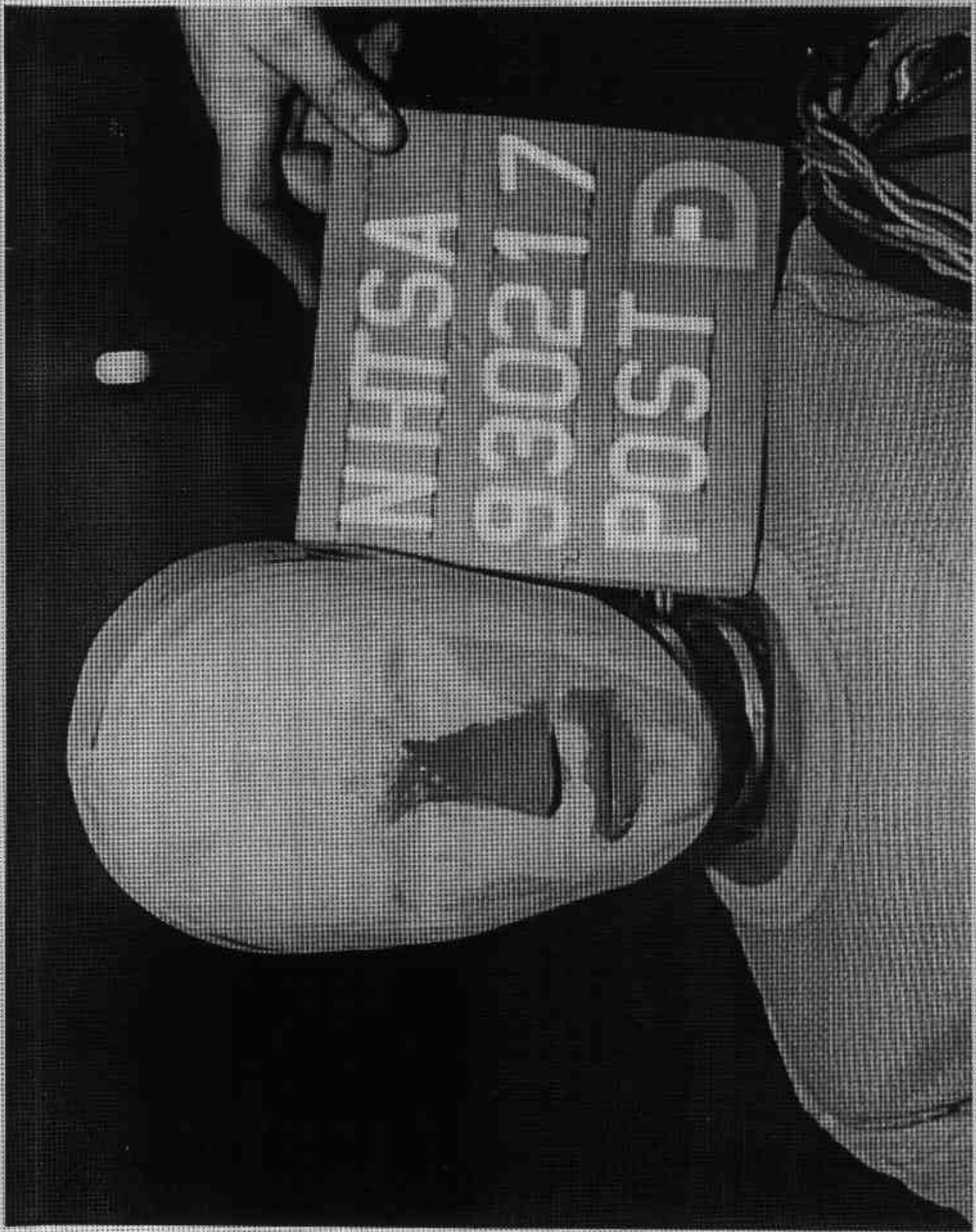


Figure A-38. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1

A-39

930217



Figure A-39. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 2



Figure A-40. POST-TEST DRIVER DUMMY HEAD & CHEST CONTACT VIEW

A-41

930217

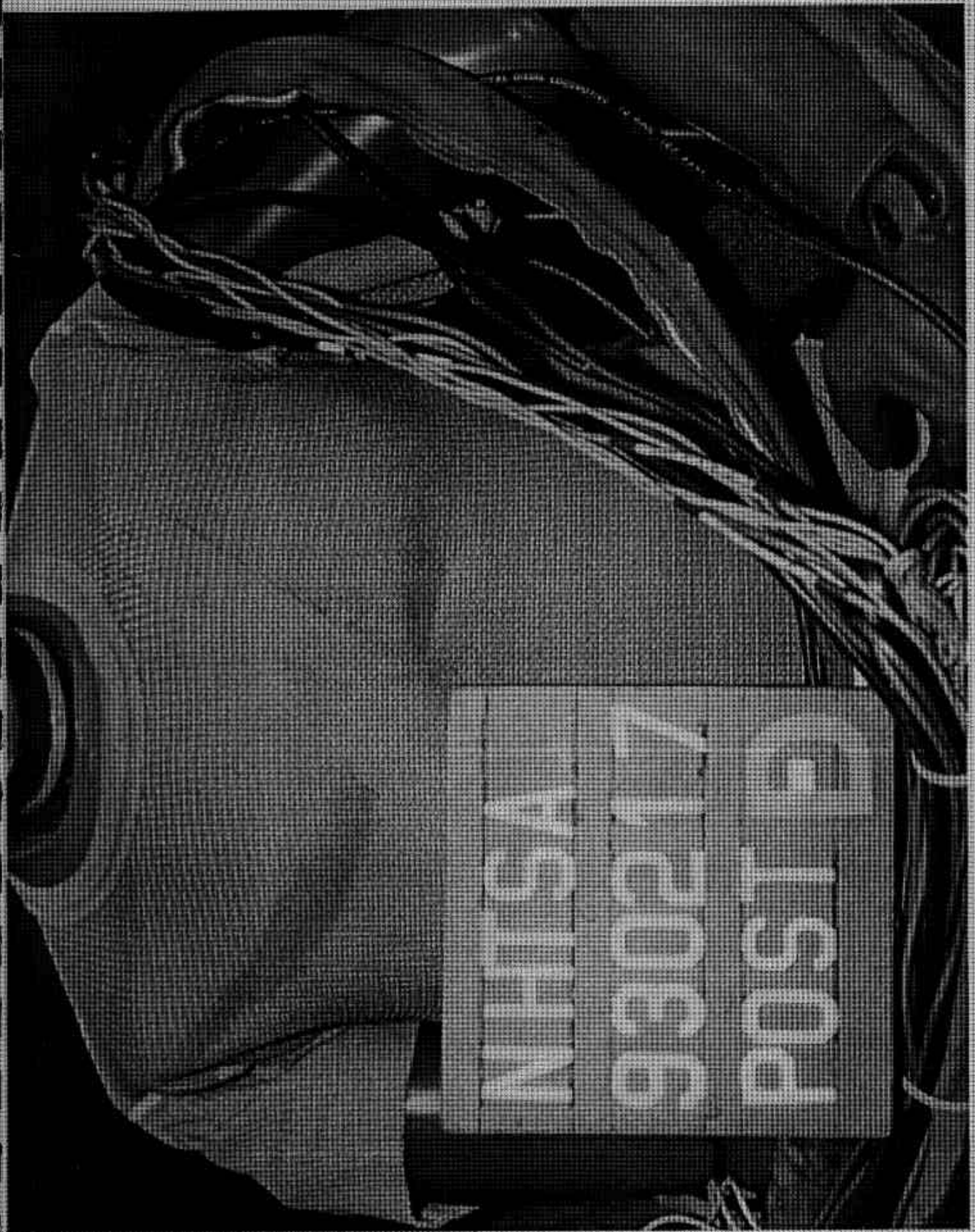


Figure A-41. POST-TEST DRIVER DUMMY CHEST CONTACT VIEW

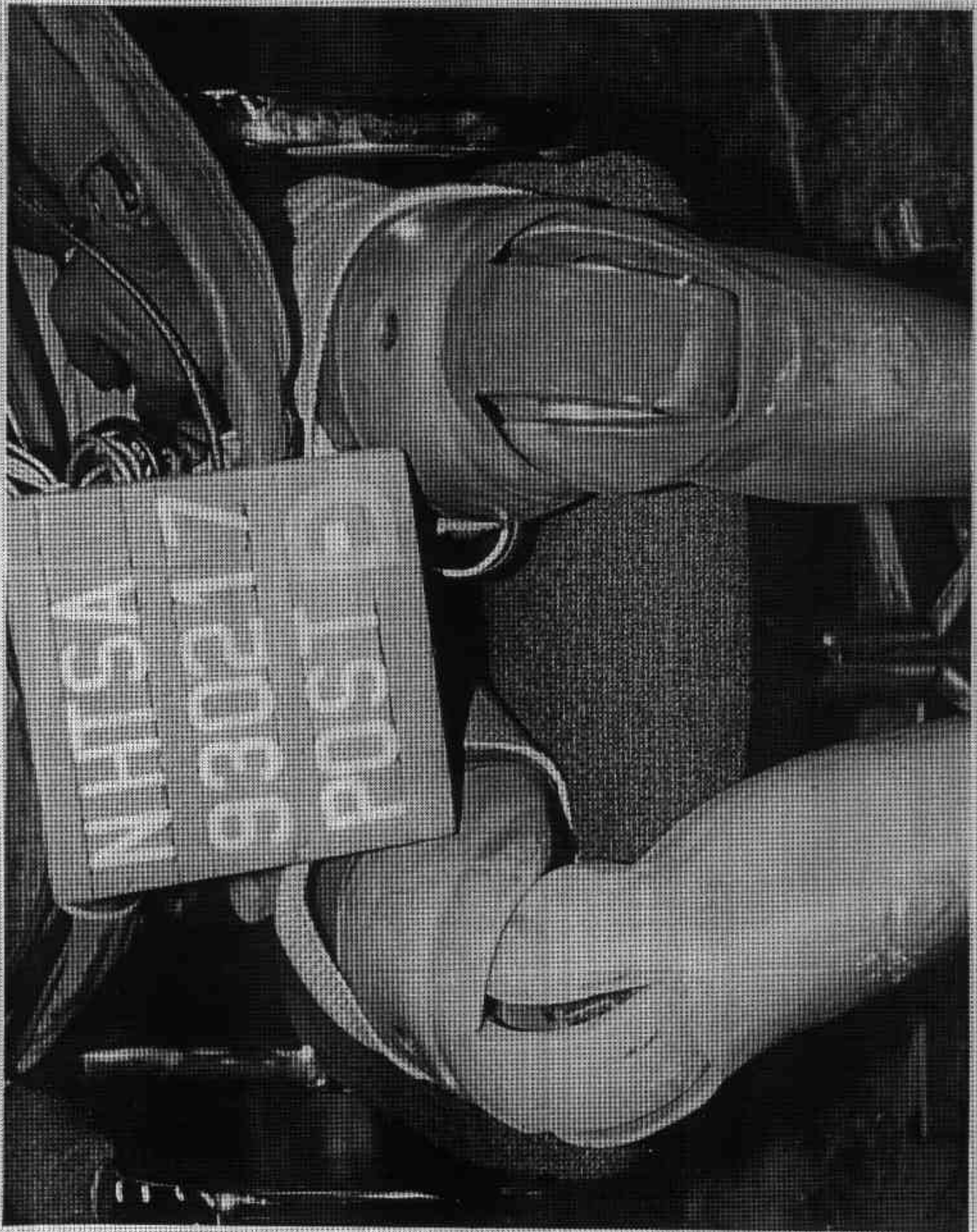


Figure A-42. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1

A-43

930217



Figure A-43. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

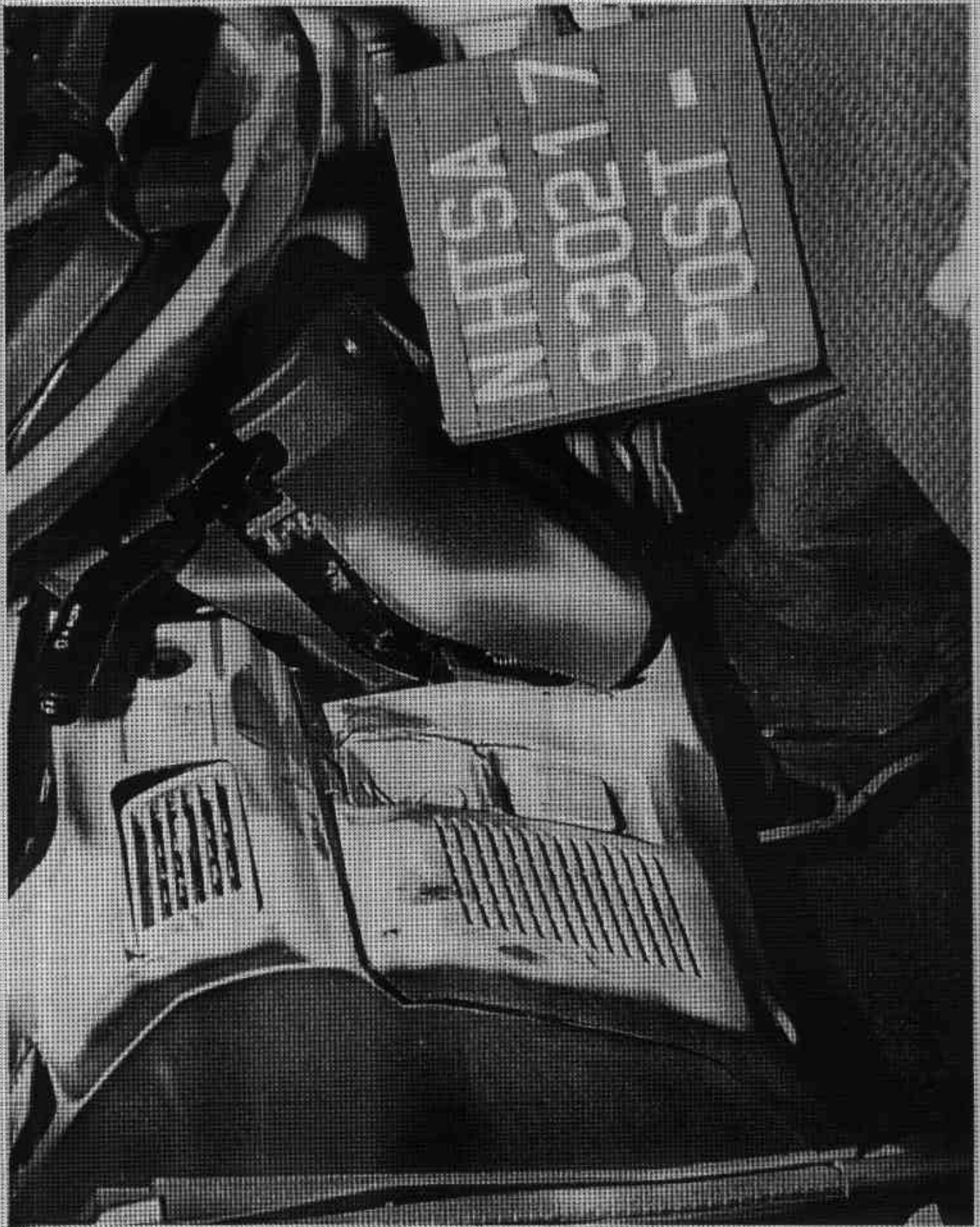


Figure A-44. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 3

A-45

930217

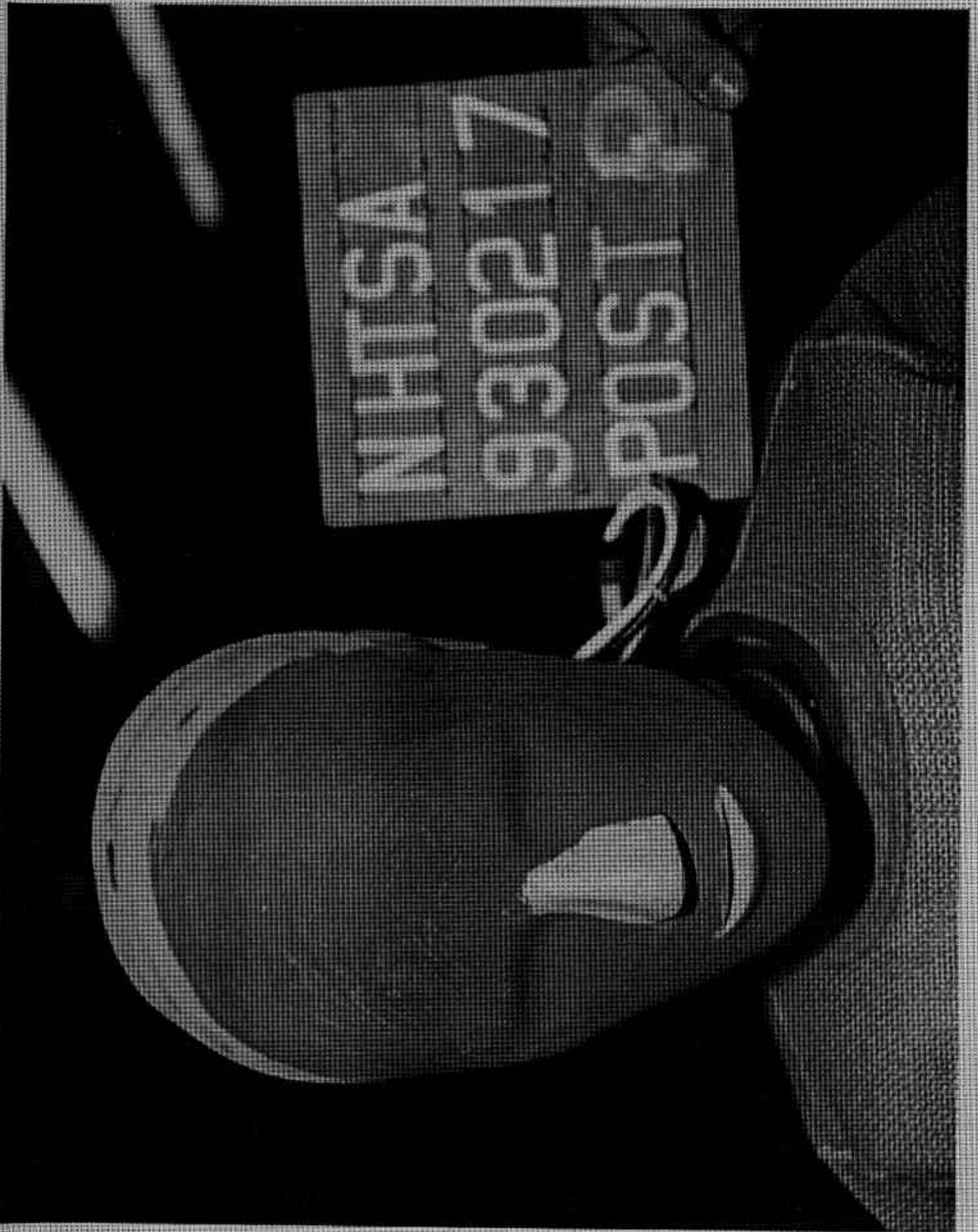


Figure A-45. POST-TEST PASSENGER DUMMY HEAD CONTACT VIEW

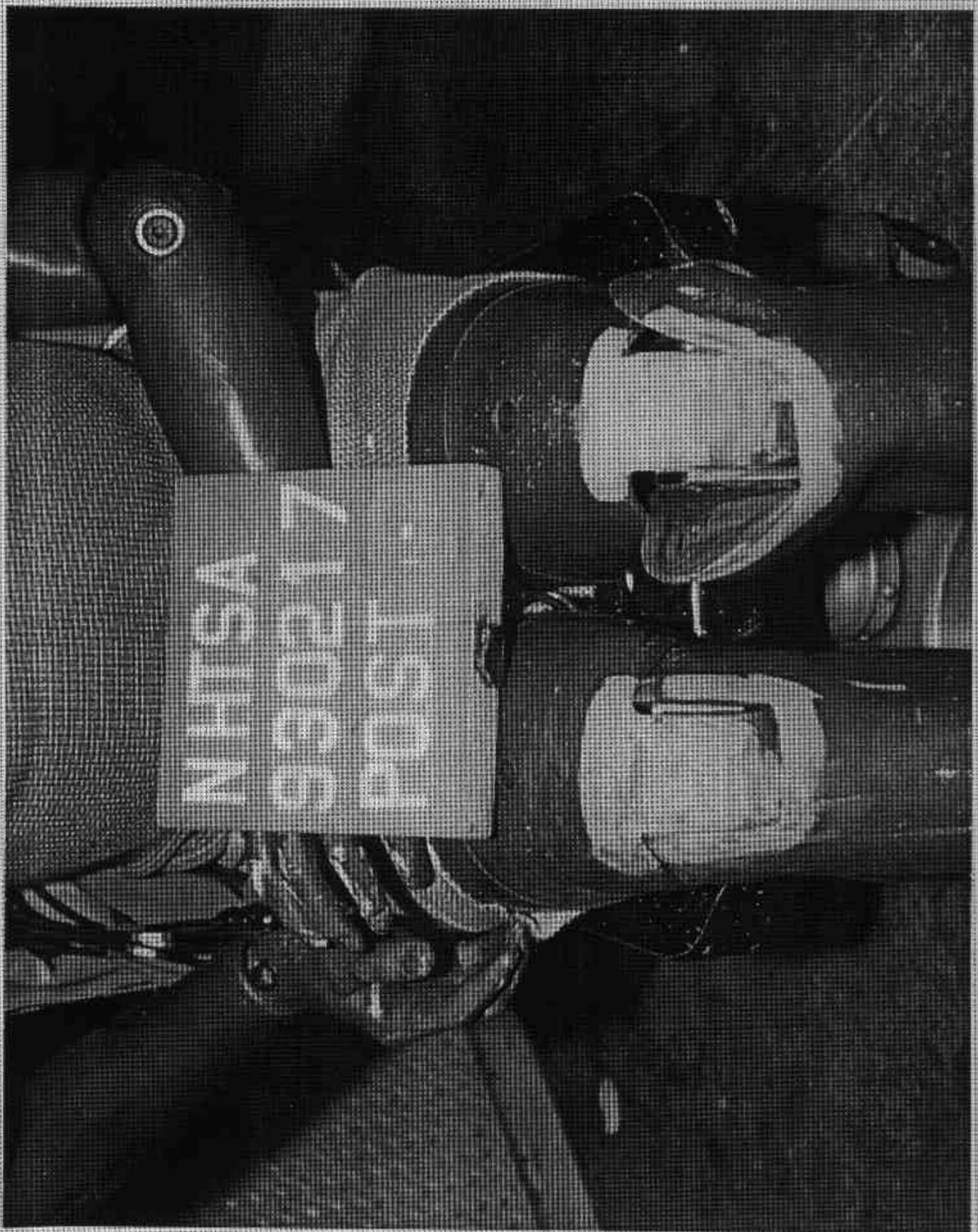


Figure A-46. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1
A-47 930217

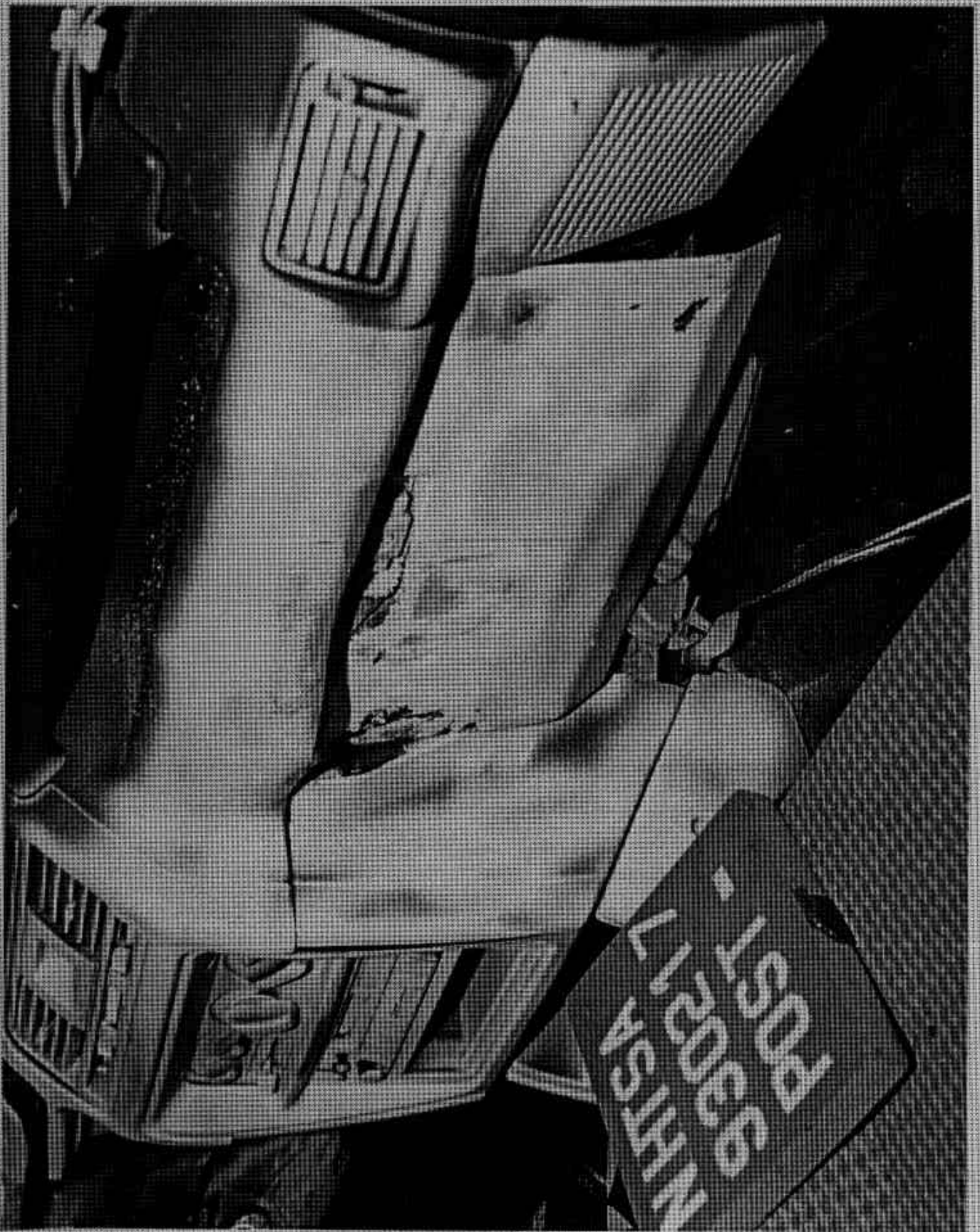


Figure A-47. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2

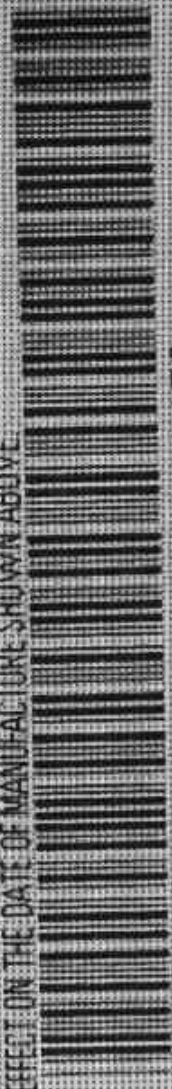
A-48

930217

MFD. BY MITSUBISHI MOTORS CORPORATION JAPAN
AUG 1992
TIRES
COLD
TIRES
COLD
TIRES
COLD
TIRES

GVWR 5730LBS/2600KG
GAWR 2645LBS/1200KG WITH P235/75R15
FR 15X6JJ RIMS AT 180KPa//26PSI
GAWR 3640LBS/1650KG WITH P235/75R15
RR 15X6JJ RIMS AT 240KPa//35PSI

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS
IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE



JA4MR31H3P J001459

VEHICLE TYPE: MPV

MU900 180

Fig. A-48. PRE-TEST VEHICLE CERT. & RECOMMENDED TIRE PRES. LABEL

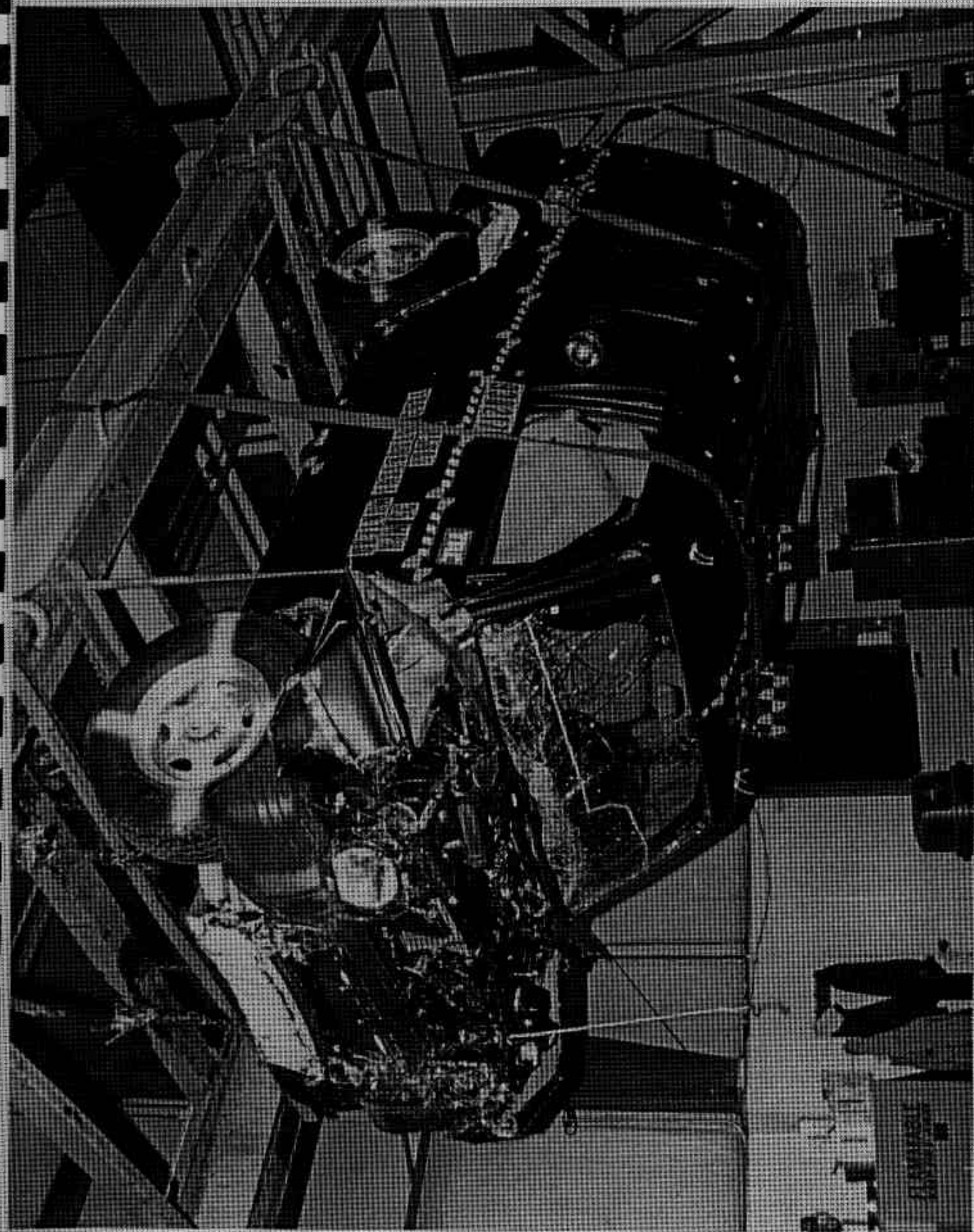


Figure A-49. POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE VIEW
A-50 930217

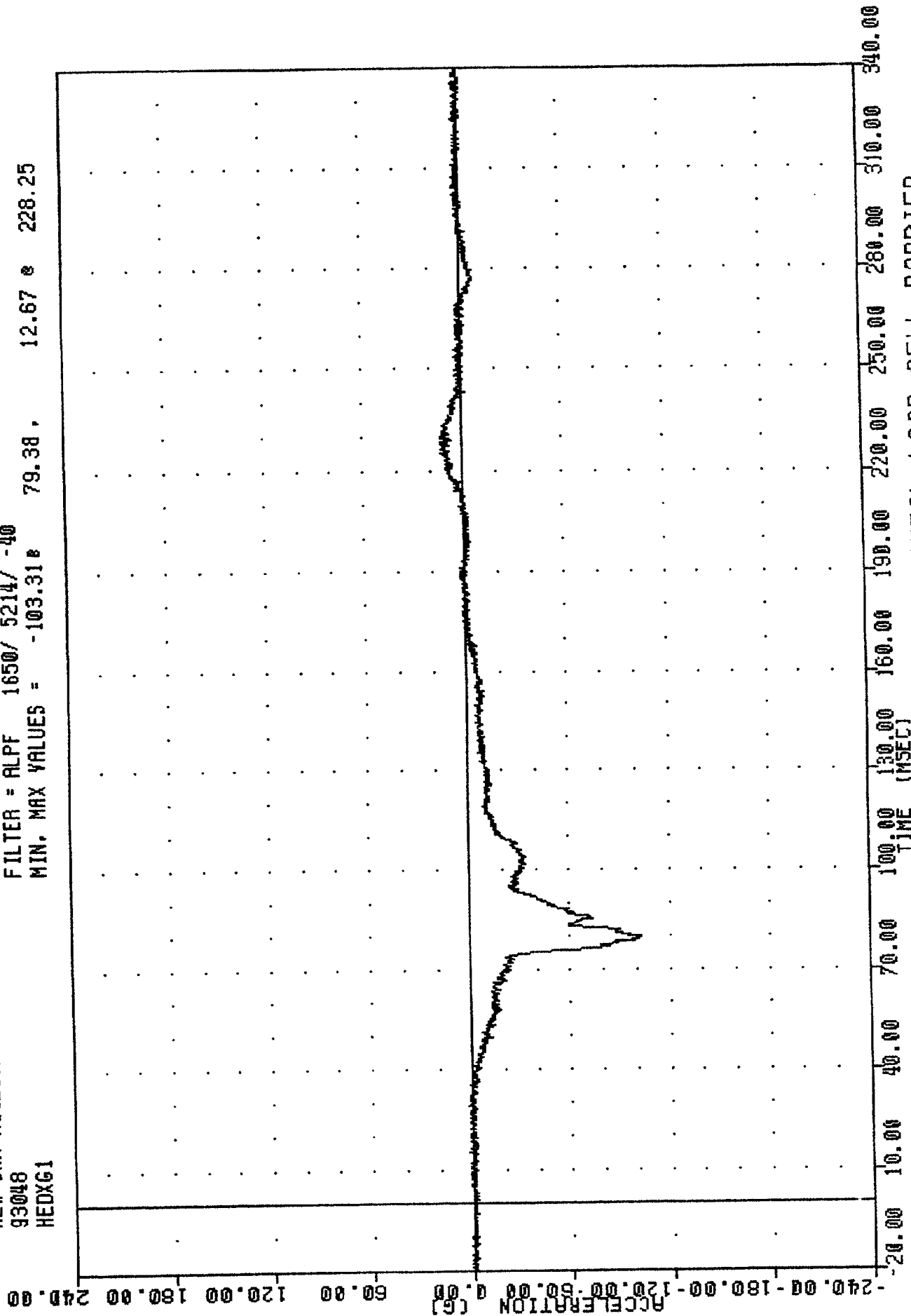
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APPENDIX B

DATA PLOTS

TRC 930217
NEW CAR ASSESSMENT PROGRAM
93048
HEDXG1

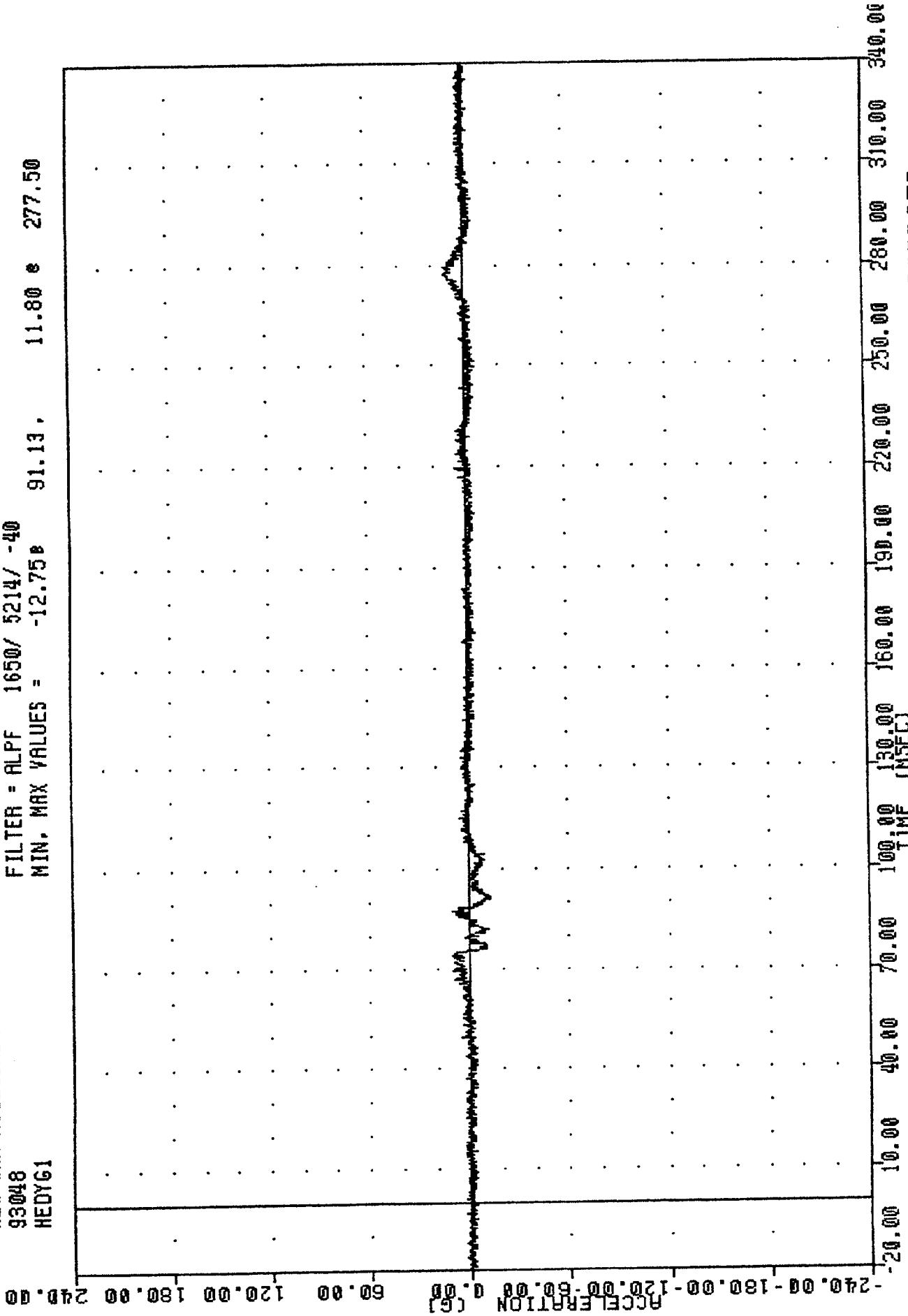
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -103.31 79.38 , 12.67 228.25



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
FRONT RAMP HEAD X AXIS ACCELERATION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
HEDYG1

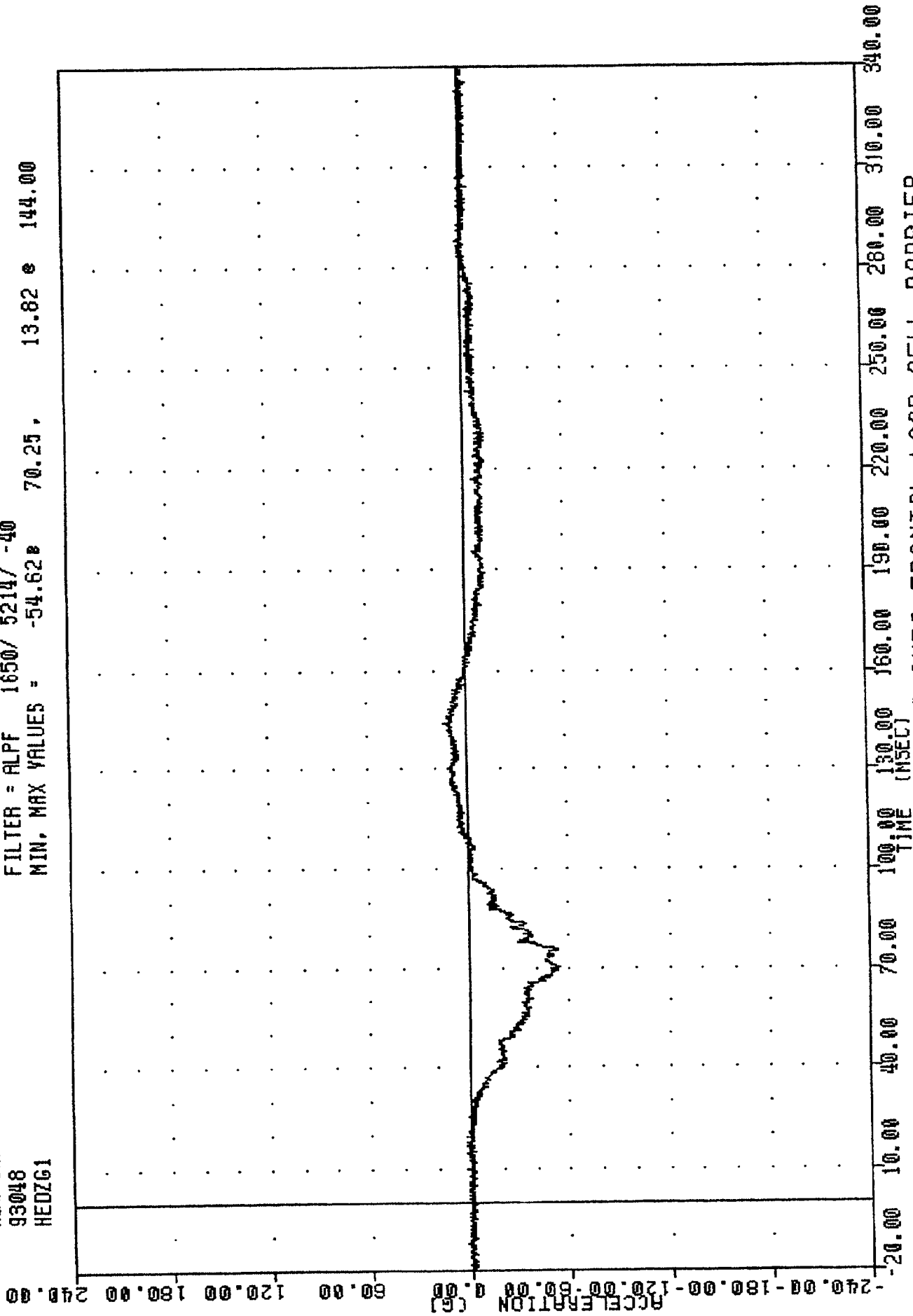
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -12.75 91.13, 11.80 e 277.50



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION

TAC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 HEDZG1

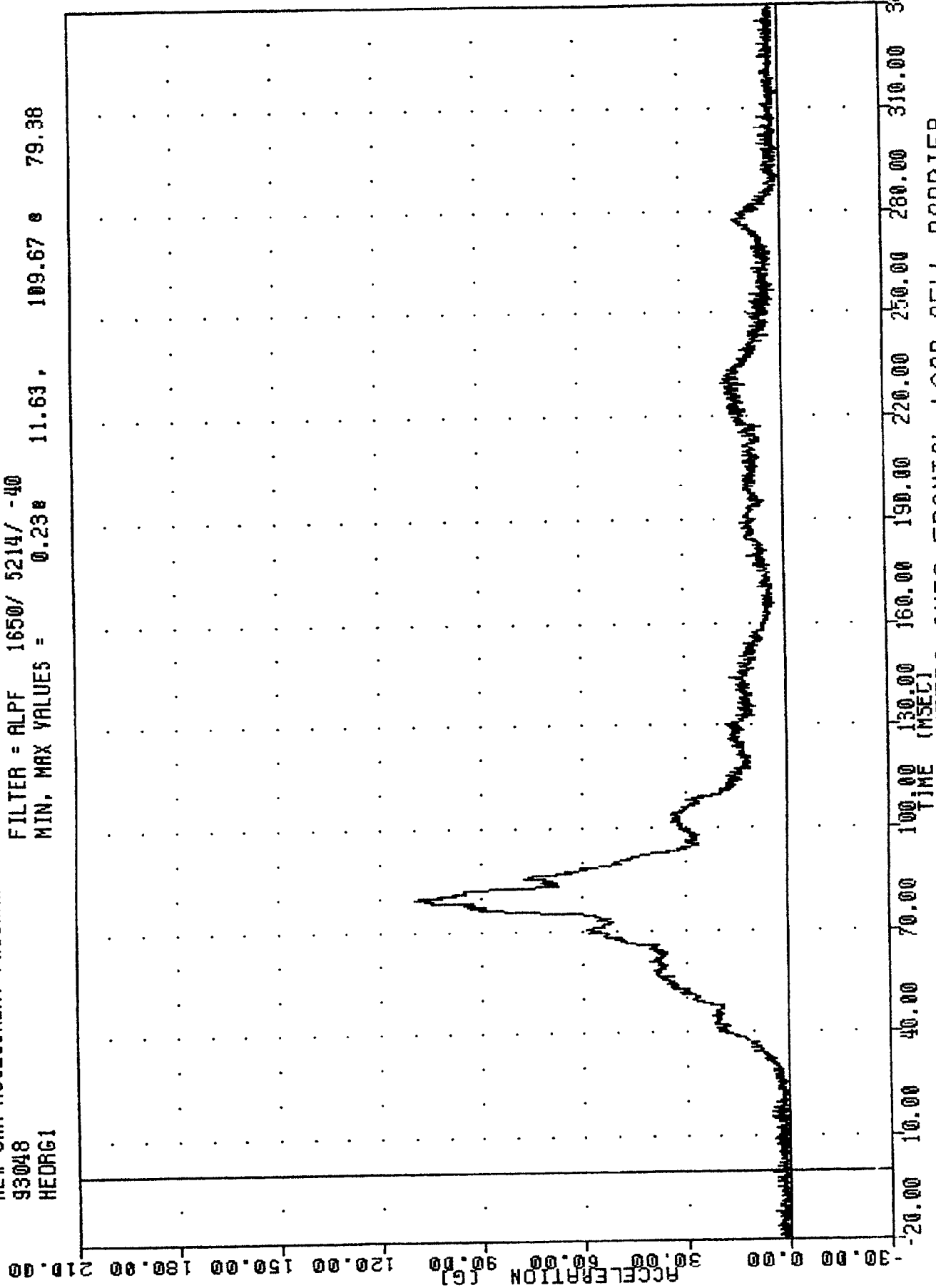
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1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD AXLE ACCELERATION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
HEDRG1

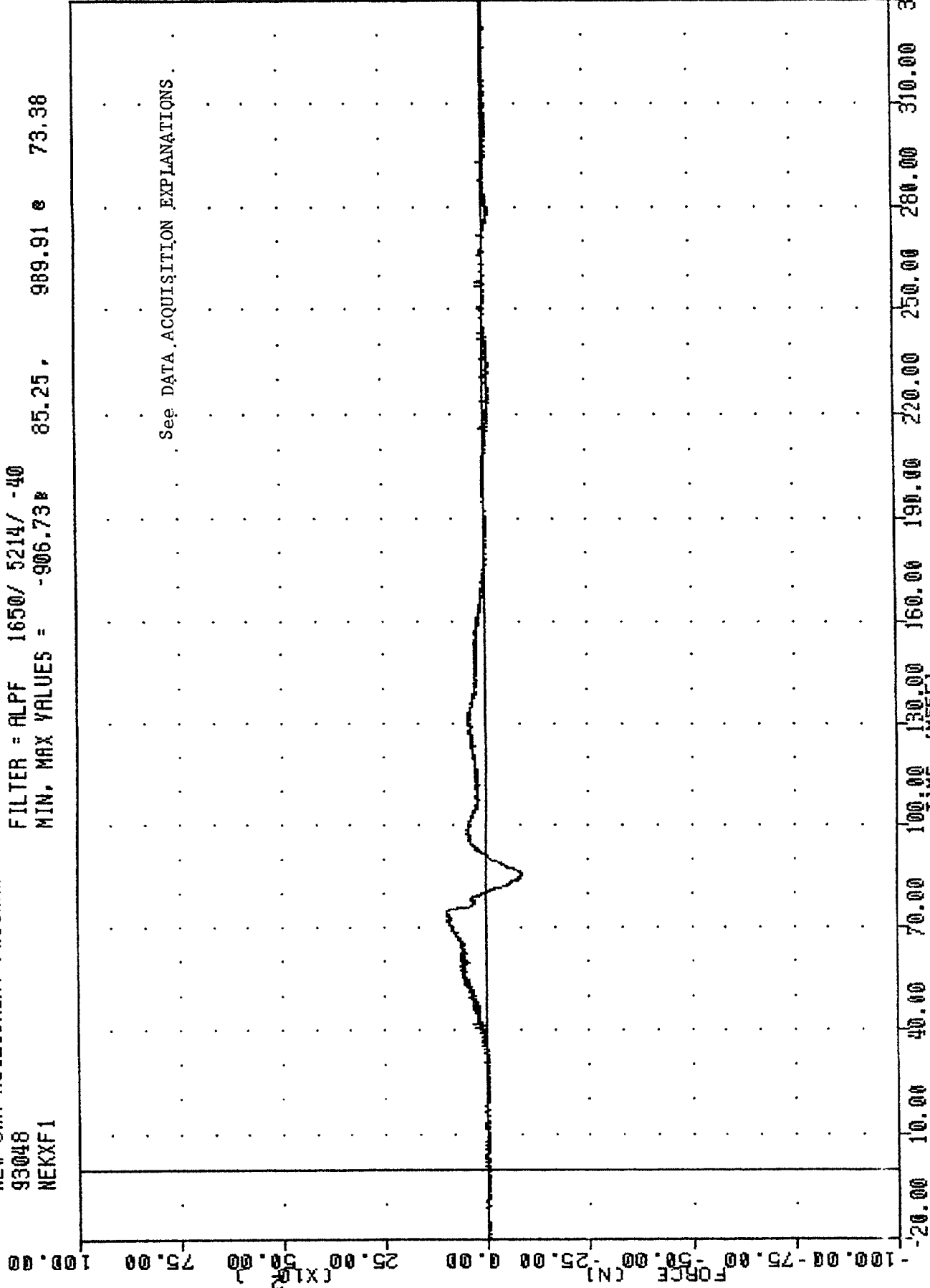
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = 0.23 11.63 109.67 79.38



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 NEKXF1

FILTER = ALPF 1650/ 5214/ -40
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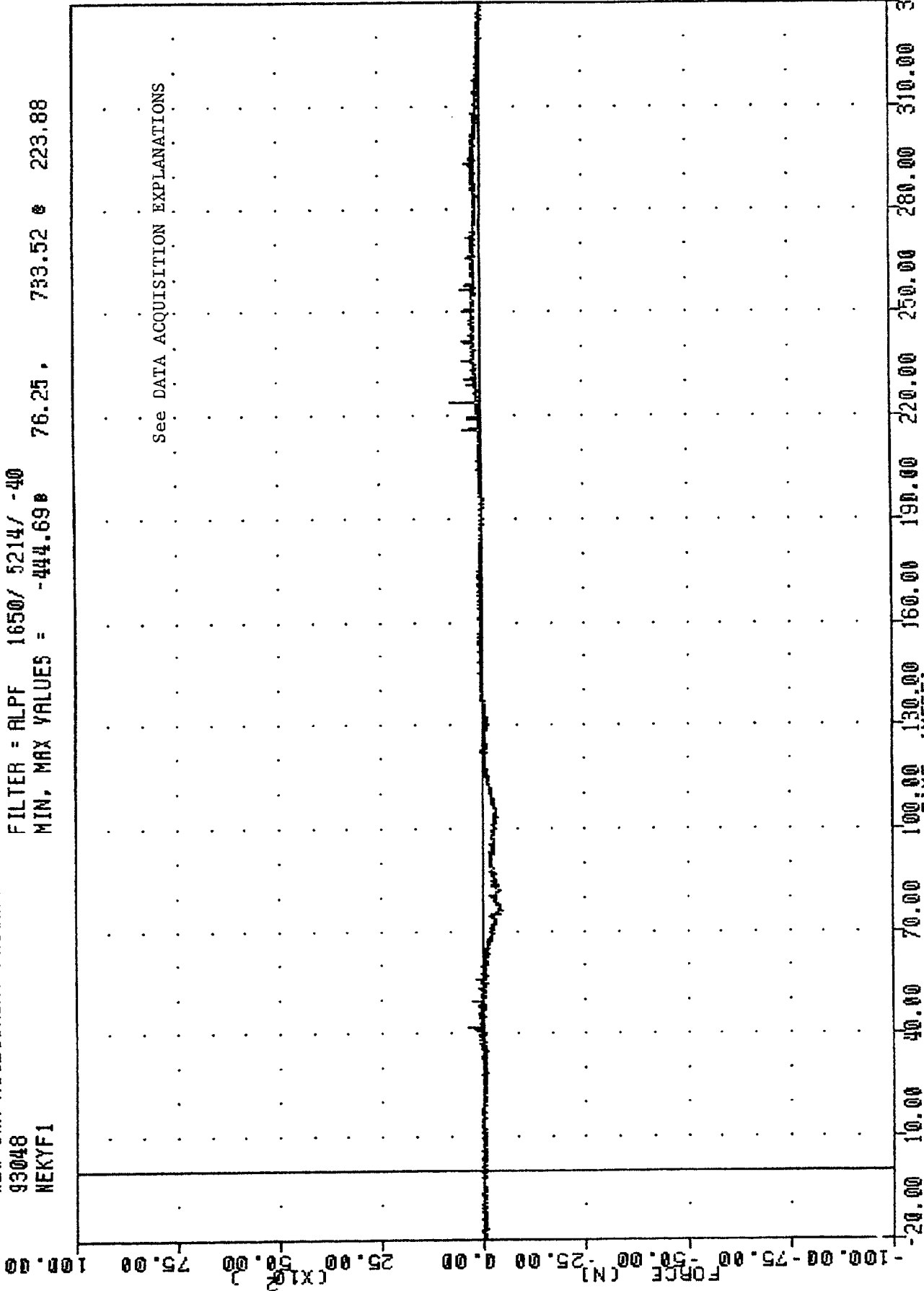
See DATA ACQUISITION EXPLANATIONS .

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK X AXIS SHEAR FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 NEKYF1

930217

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -444.690 76.25, 753.52 @ 223.88

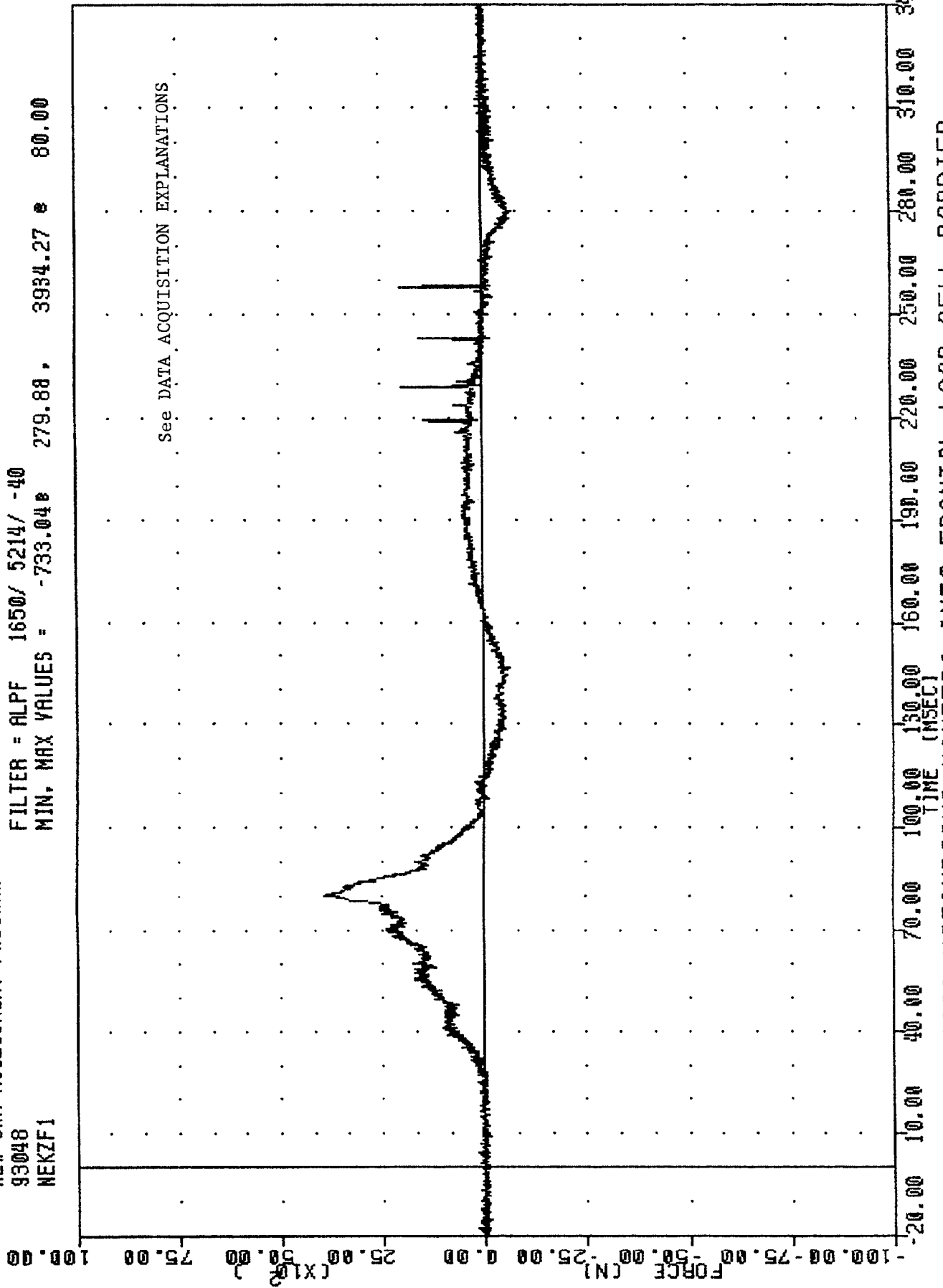


See DATA ACQUISITION EXPLANATIONS

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK Y-AXIS SHEAR FORCE

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
NEKZF1

FILTER = ALPF 1650/ 5214/ -40
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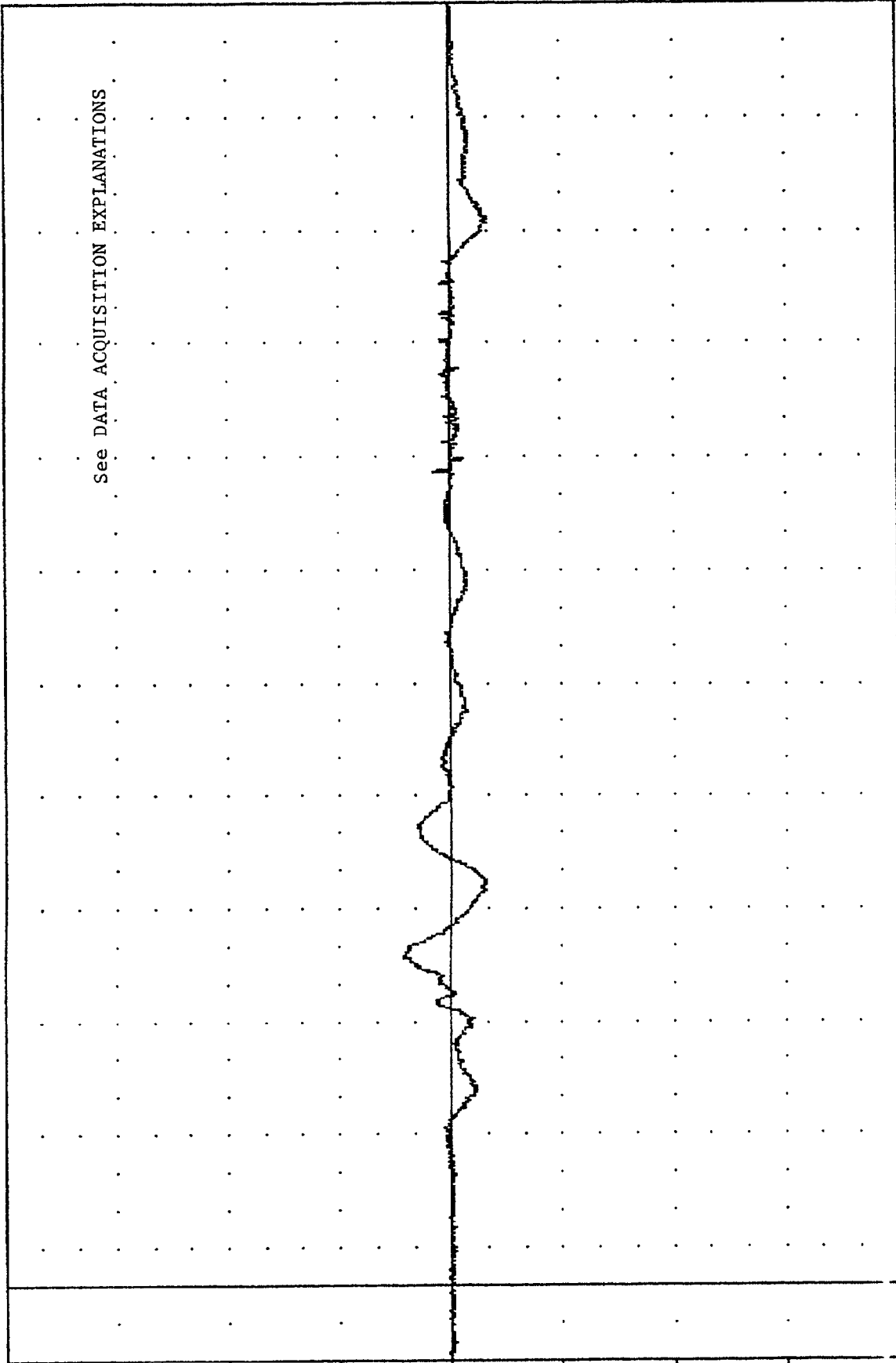
1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
DRAWER NECK-AXIS AXIAL FORCE

TRC
NEW CAR ASSESSMENT PROGRAM
93048
NEXXM1

930217

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TORQUE (N-M)

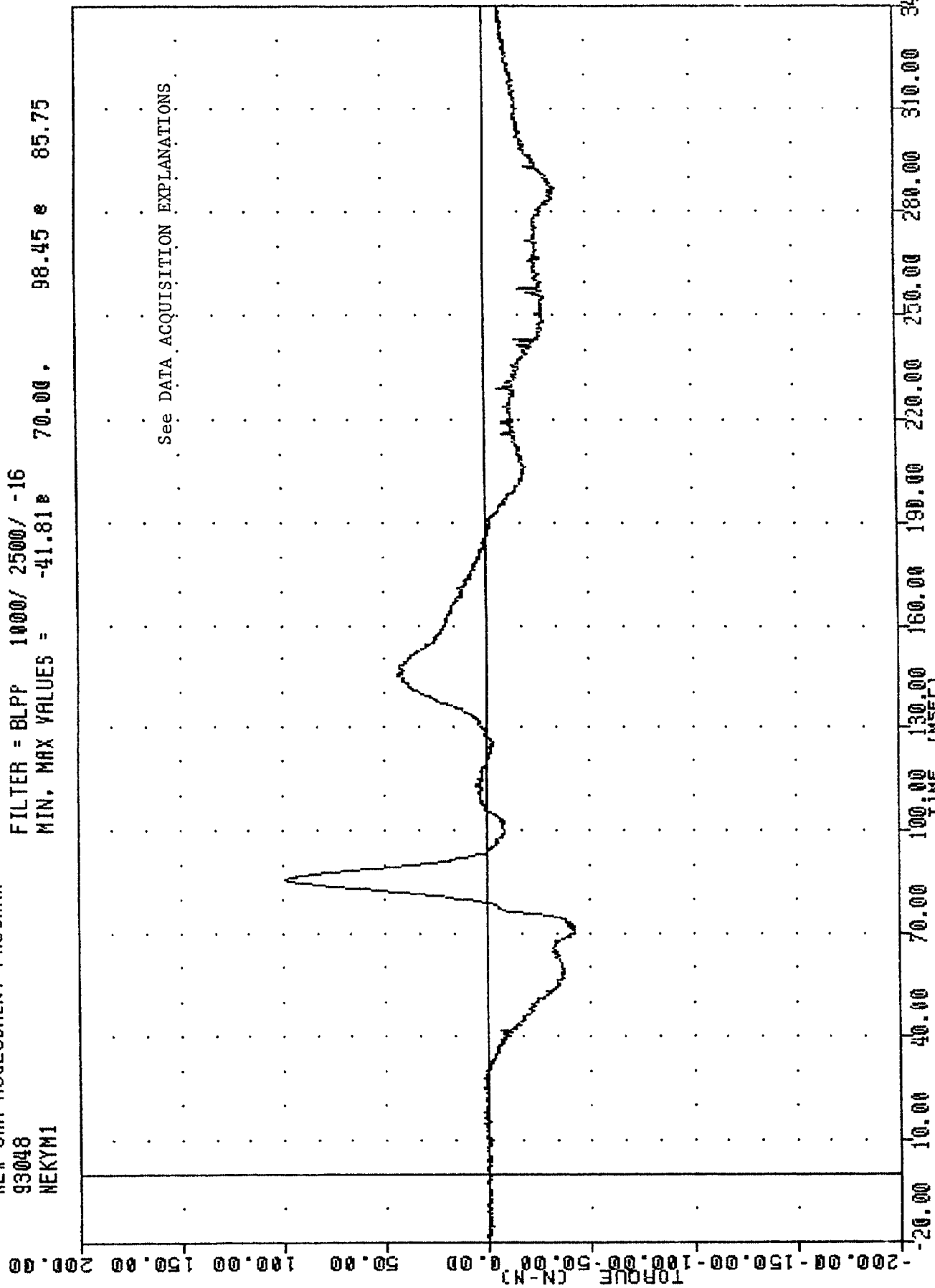


-200.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT X AXIS

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
NEKYM1

FILTER = BLPF 1000/ 2500/ -16
MIN. MAX VALUES = -41.81B 70.00. 98.45 e 85.75



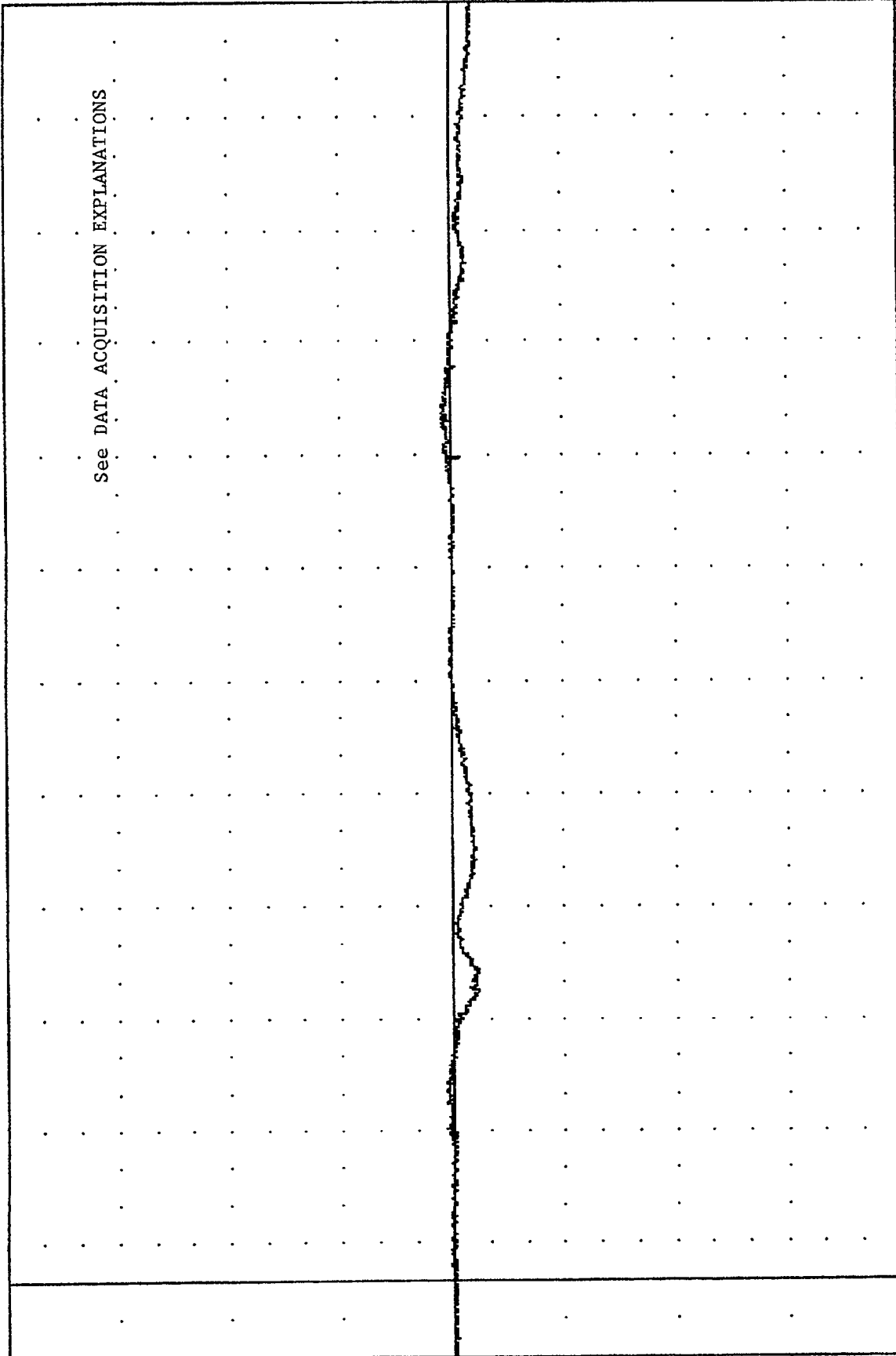
1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT Y AXIS

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 NEKZM1

, 930217

FILTER = BLPP 1000/ 2500/ -16
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TORQUE (N-N)



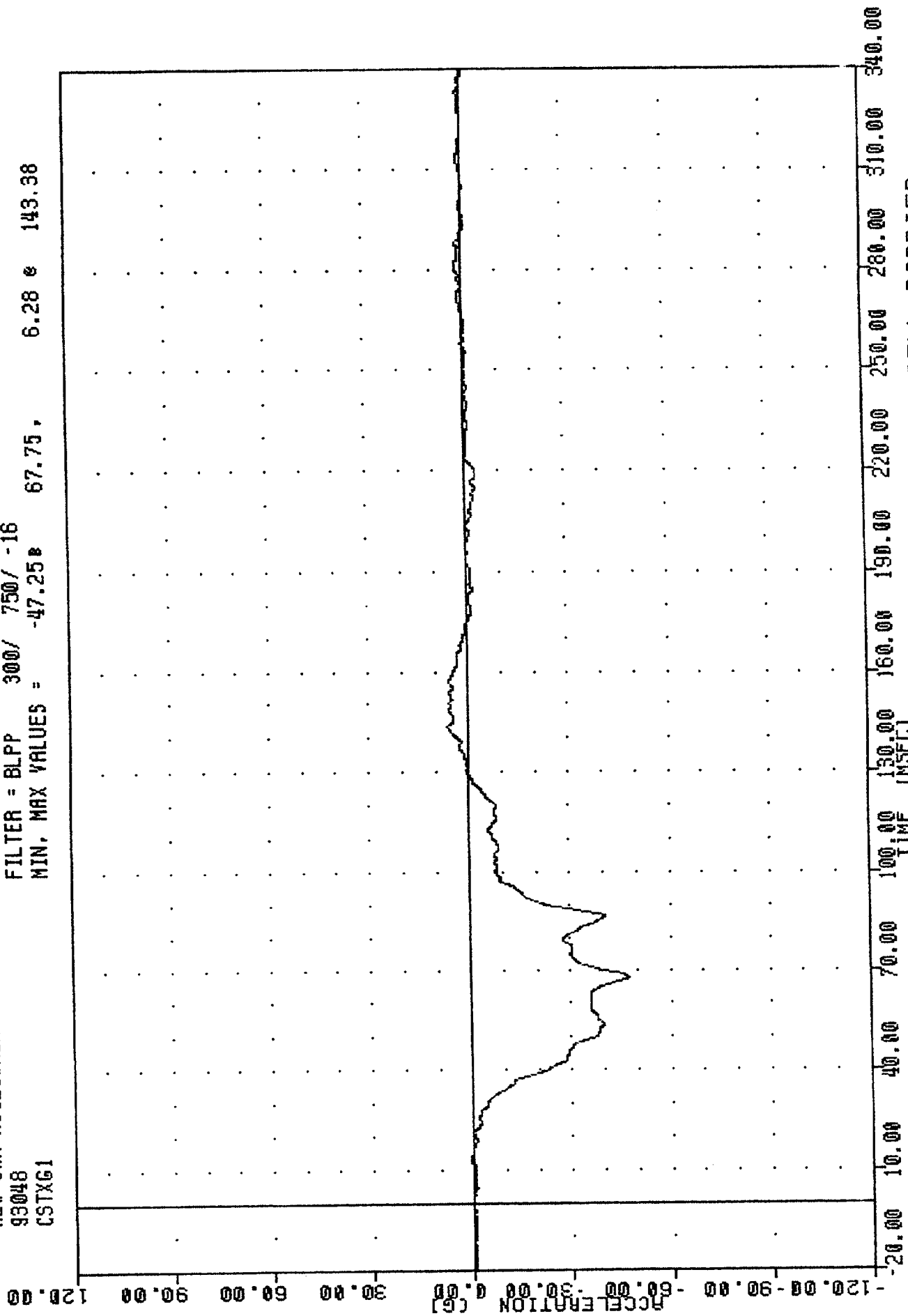
See DATA ACQUISITION EXPLANATIONS

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

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT Z AXIS

TRC . 930217
NEW CAR ASSESSMENT PROGRAM
93048
CSTXG1

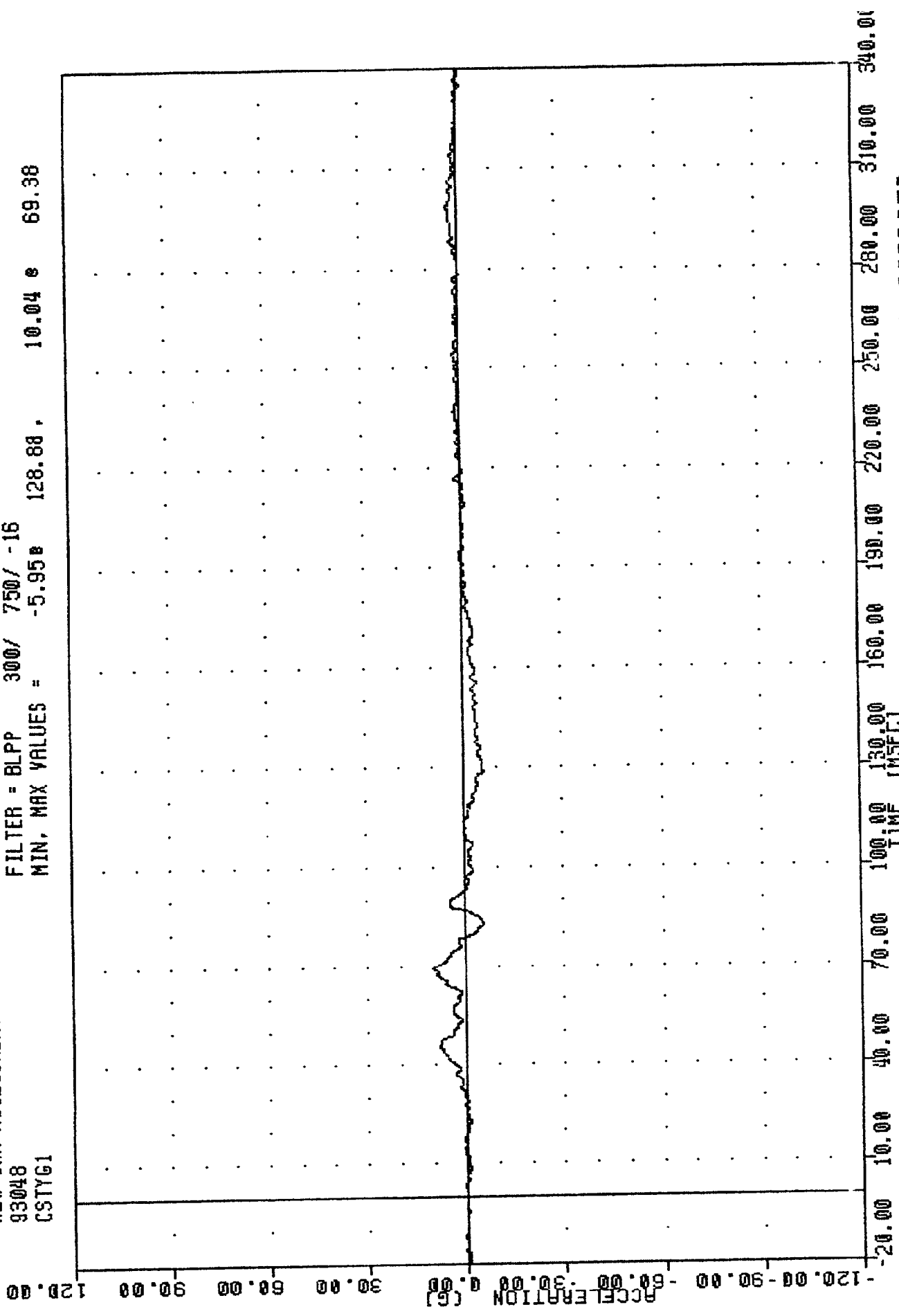
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -47.25 67.75, 6.28 e 143.38



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
AIRBAG TEST - AXES ACCELERATION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
CSTYG1

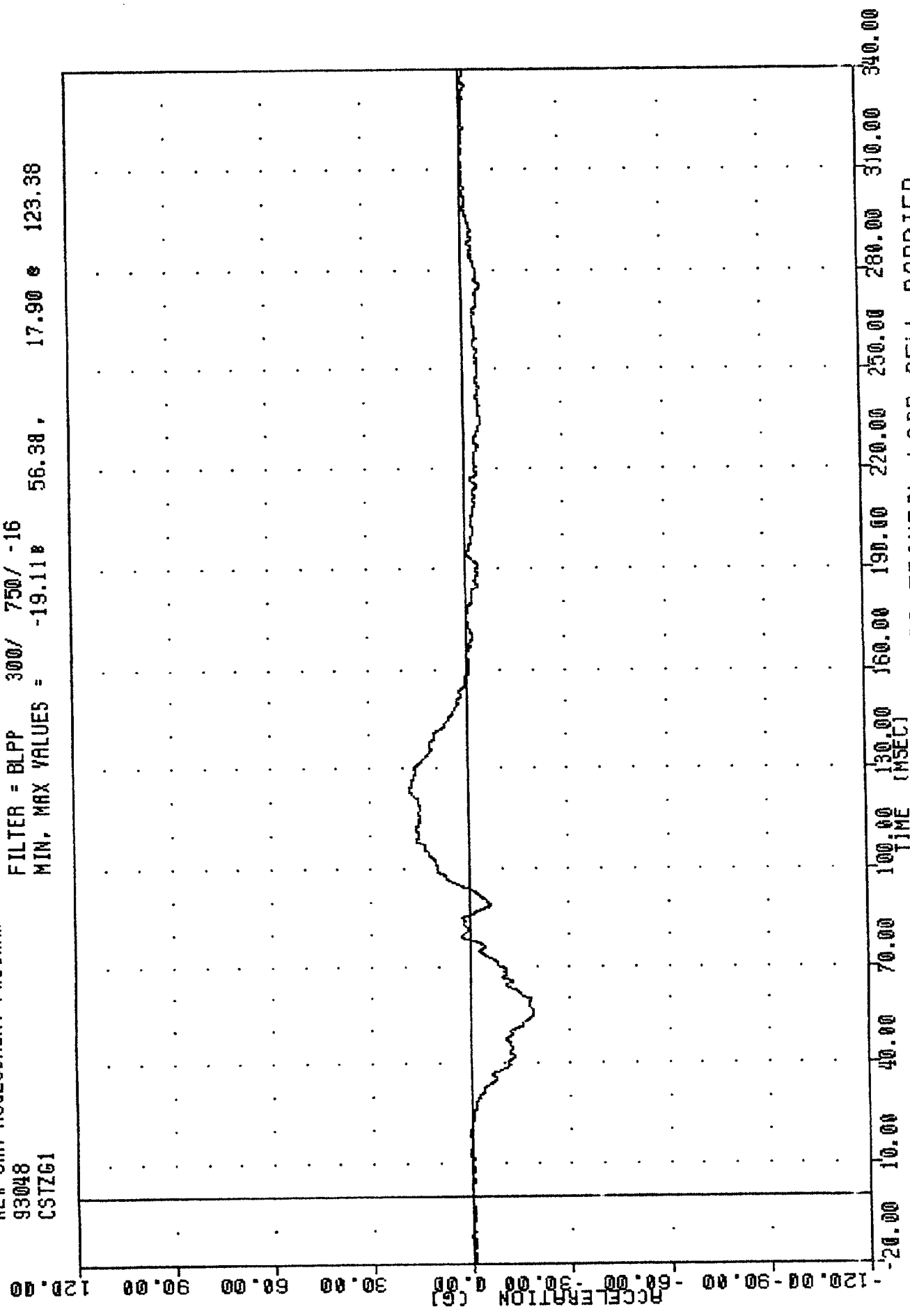
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -5.95e 128.88 , 10.04 e 69.38



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 CSTZG1

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -19.118 56.38 , 17.90 * 123.38

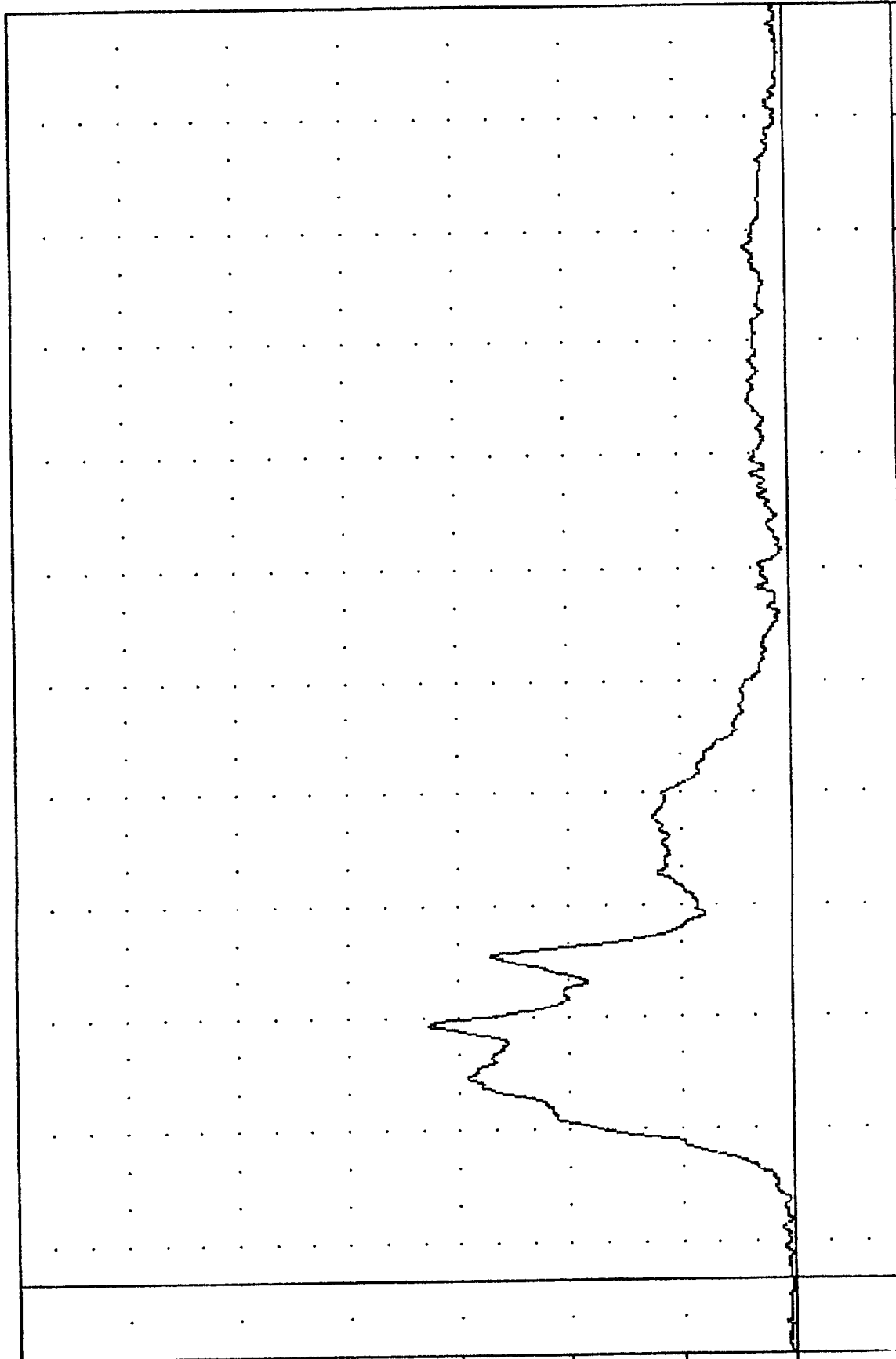


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST 2-RAYS ACCELERATION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 CSTRG1

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 0.06e -20.00, 49.18 e 67.75

ACCELERATION (G) 105.00 90.00 75.00 60.00 45.00 30.00 15.00 0.00 -15.00

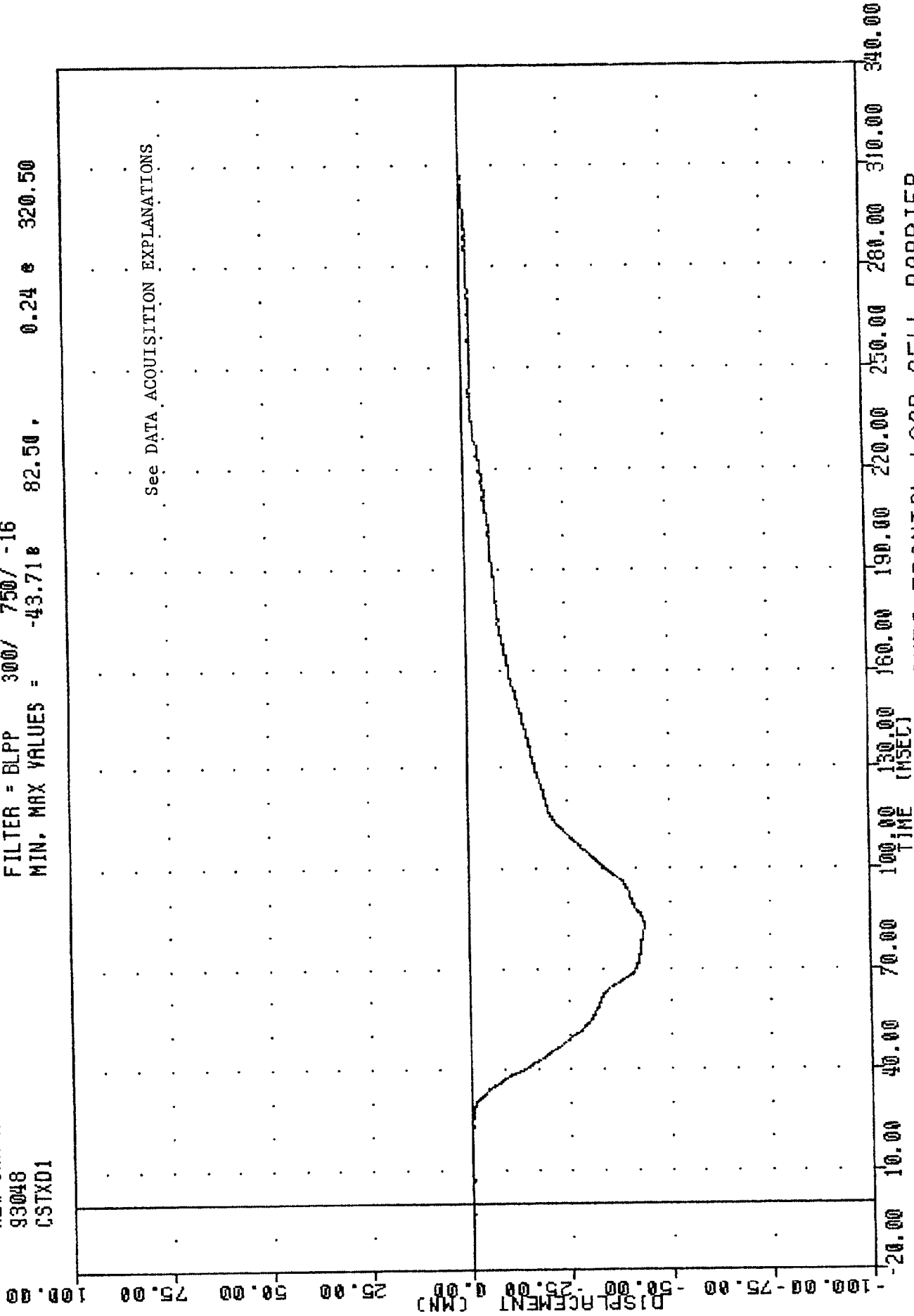


Time (msec) 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 CSTXD1

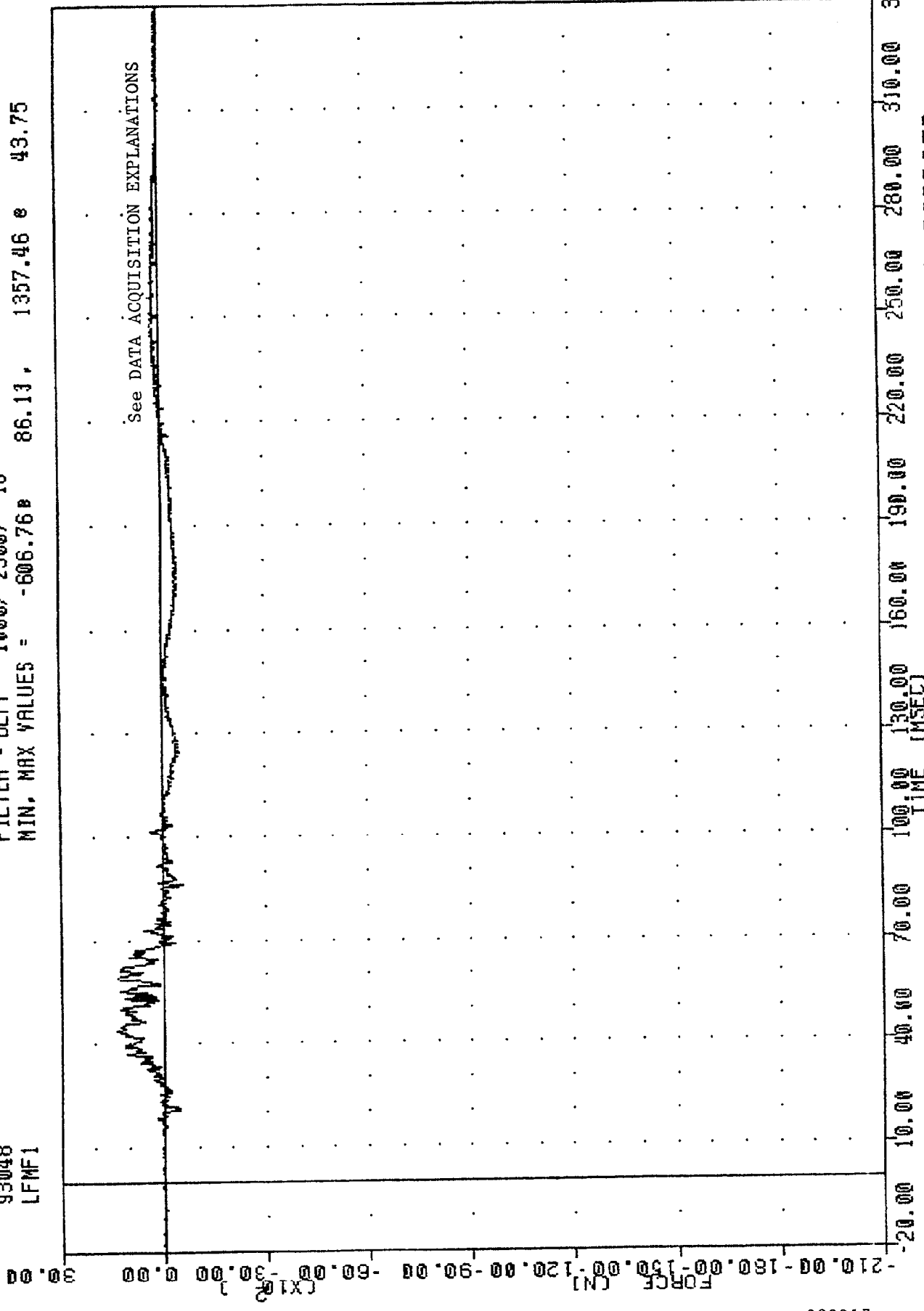
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -43.71 82.50 , 0.24 e 320.50



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER SEAT DEFORMATION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 LFMF1

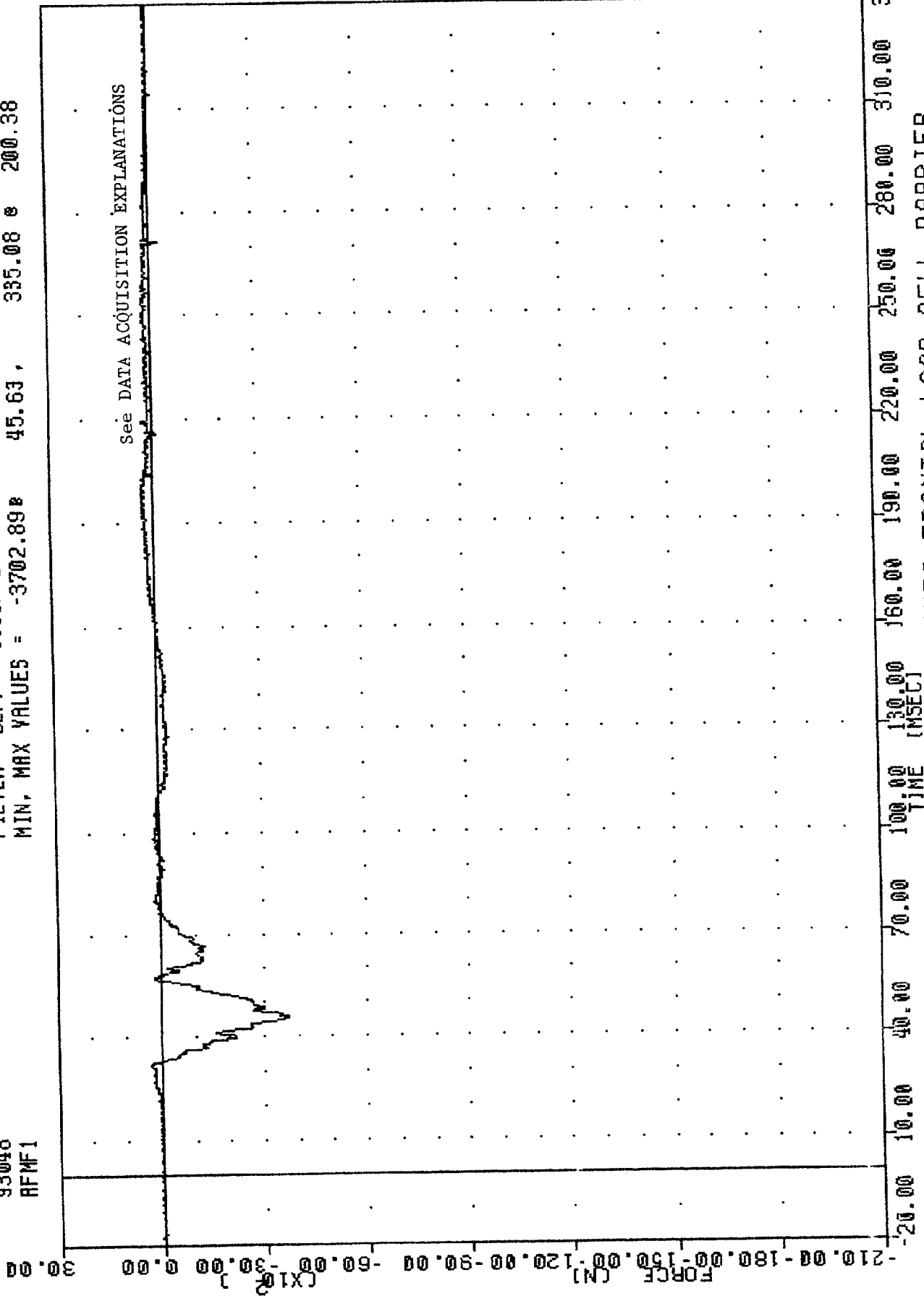
FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -606.76 86.13, 1357.46 43.75



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT FEMUR FORCE

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
RFMF1

FILTER = BLPP 1000/ 2500/ -16
MIN. MAX VALUES = -3702.89 45.63 , 335.08 200.38

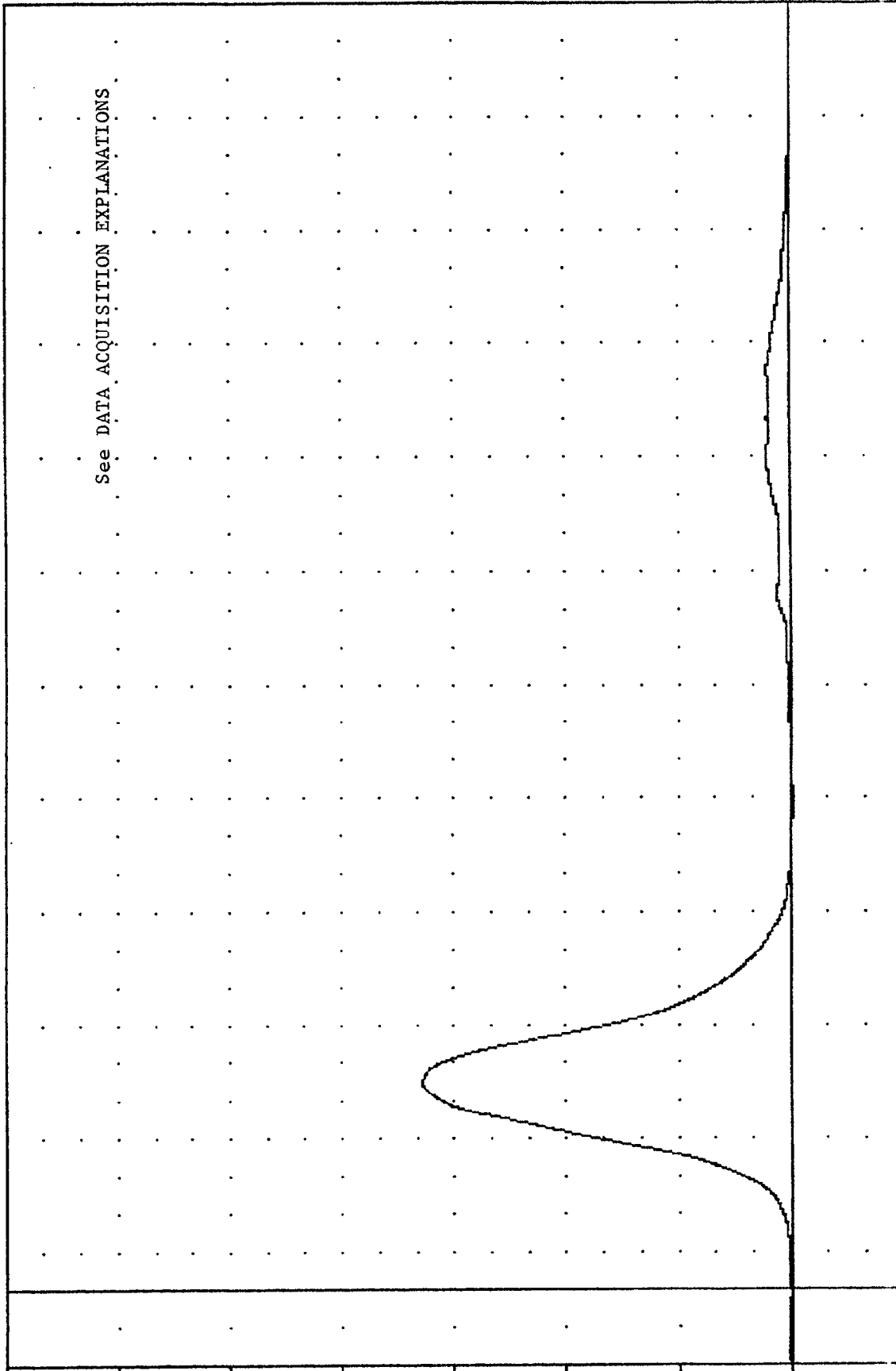


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
DRIVEN RIGHT SIDE FORWARD

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 LBOF1

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -62.65 129.38 9841.49 e 54.75

FORCE (N) (X10²)



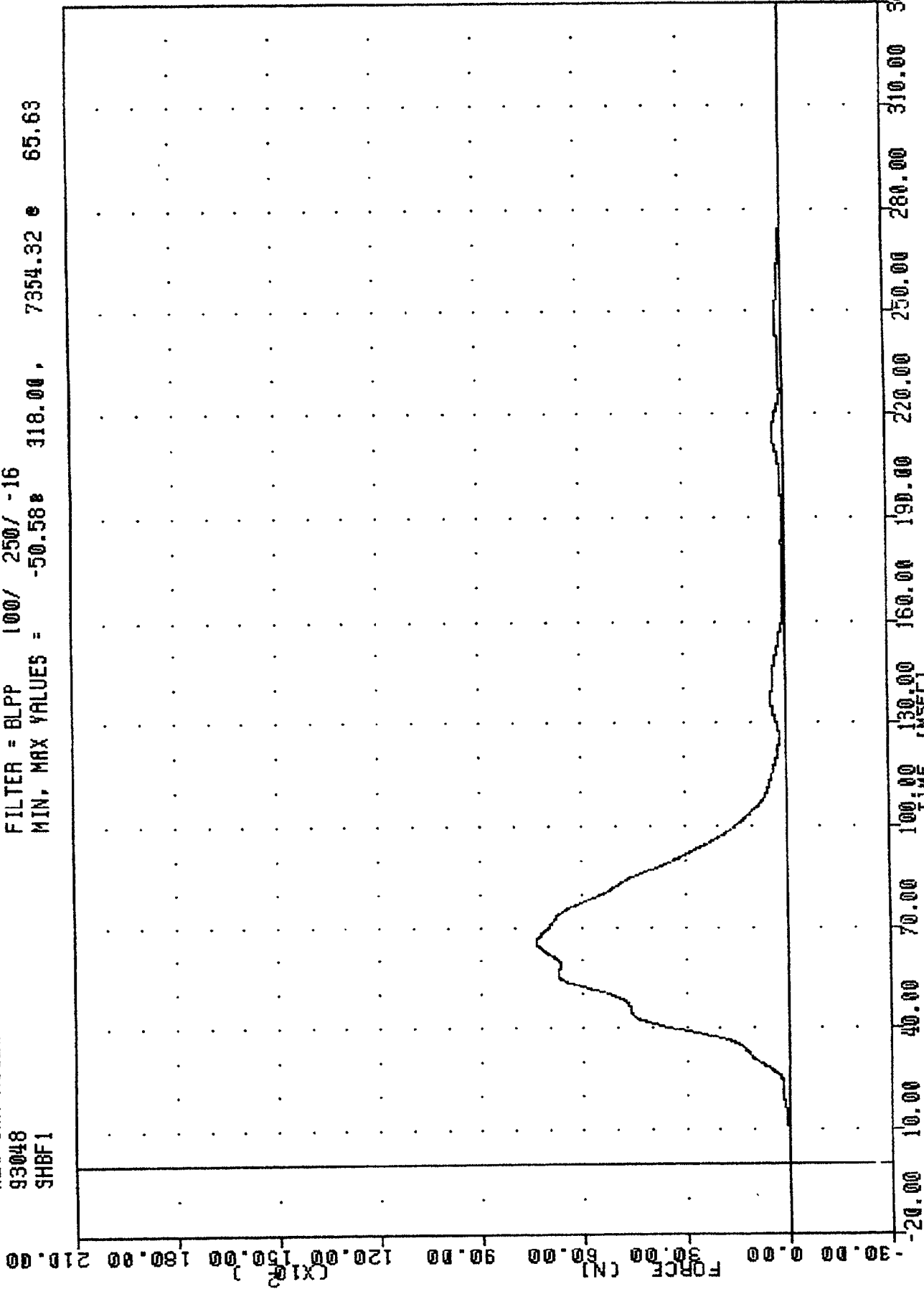
See DATA ACQUISITION EXPLANATIONS

-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 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER LAP BELT OUTBOARD FORCE

TRC , 930217
 NEY CAR ASSESSMENT PROGRAM
 93048
 SHBF1

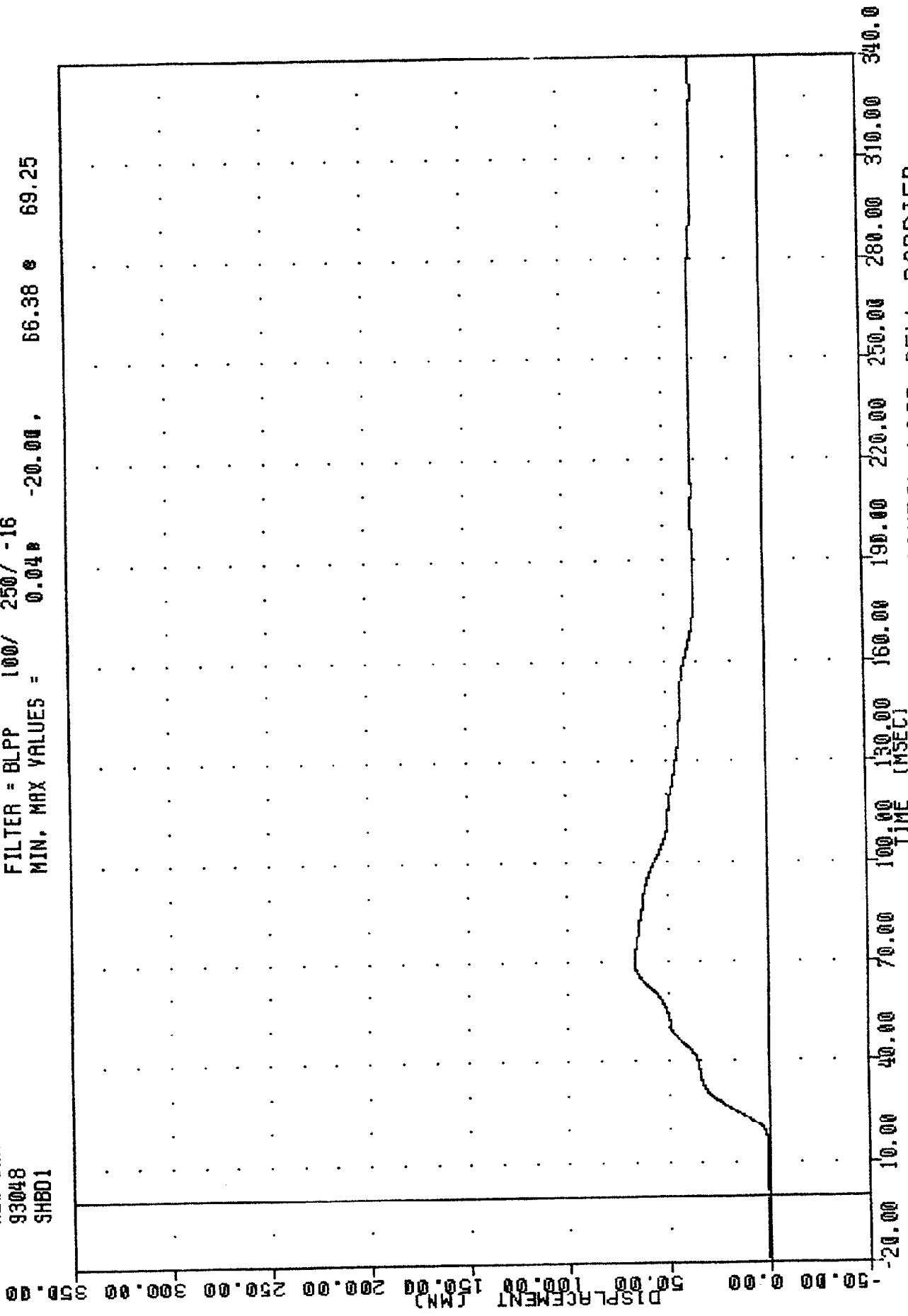
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -50.58 318.00, 7354.32 e 65.63



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 INVERSE SHIELD BEH FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 SHBD1

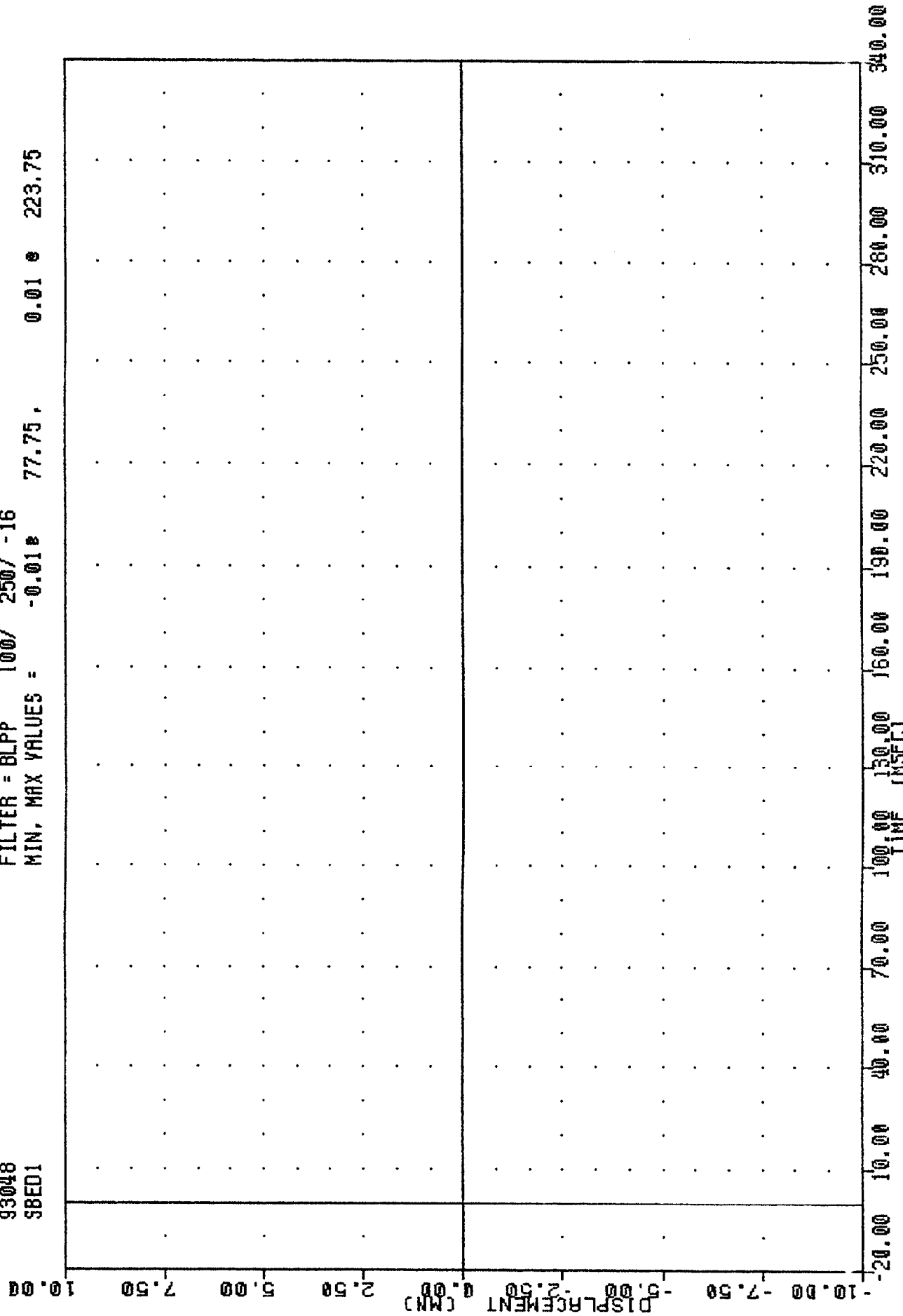
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = 0.04 e -20.00 , 66.38 e 69.25



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT DISPLACEMENT

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 SBED1

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -0.01 77.75, 0.01 223.75



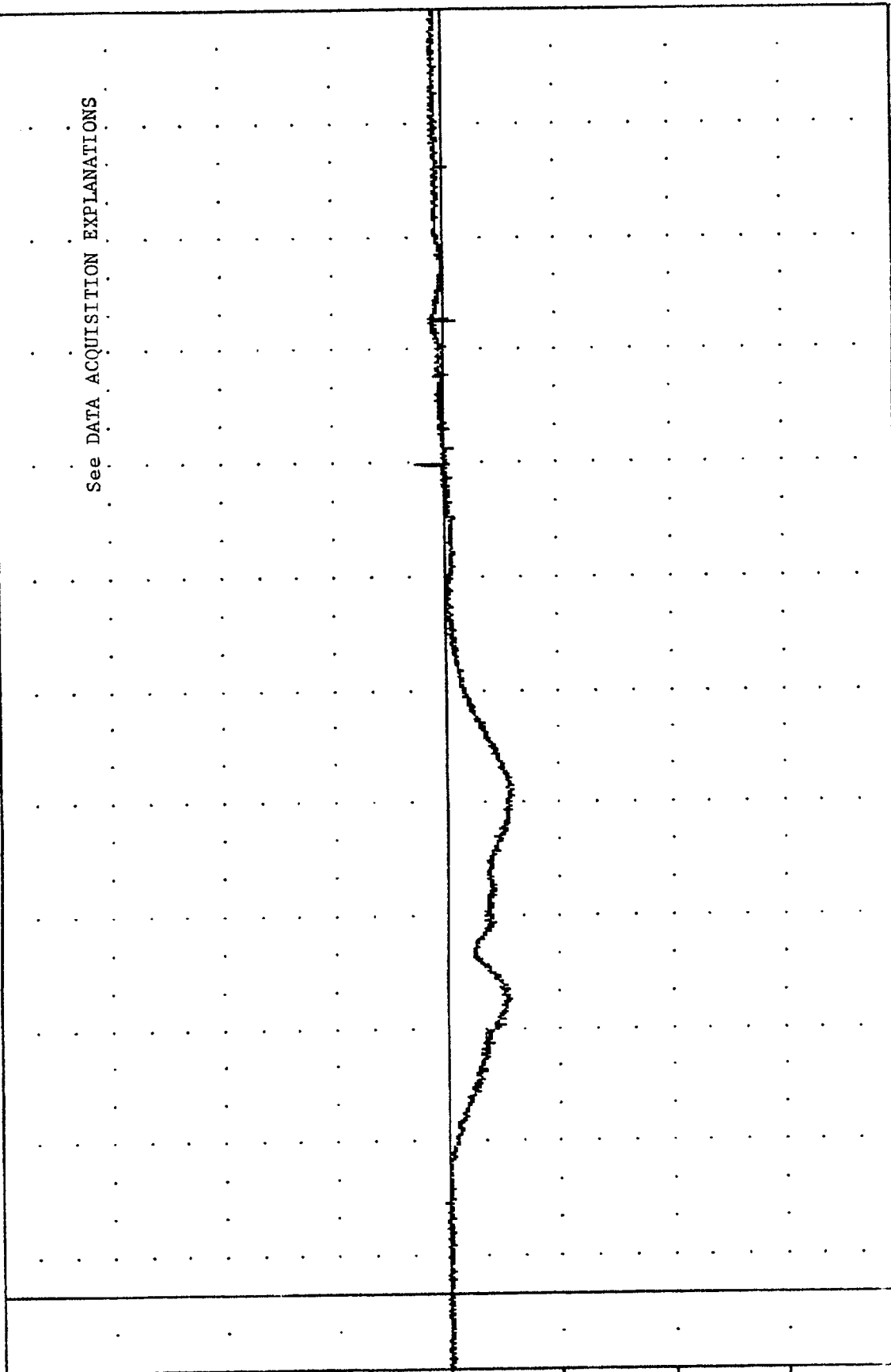
1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 BAR VELOCITY EXTENSION

TRC
NEW CAR ASSESSMENT PROGRAM
93048
HEDXG2

930217

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -34.76 131.88, 15.29 219.38

ACCELERATION (G)



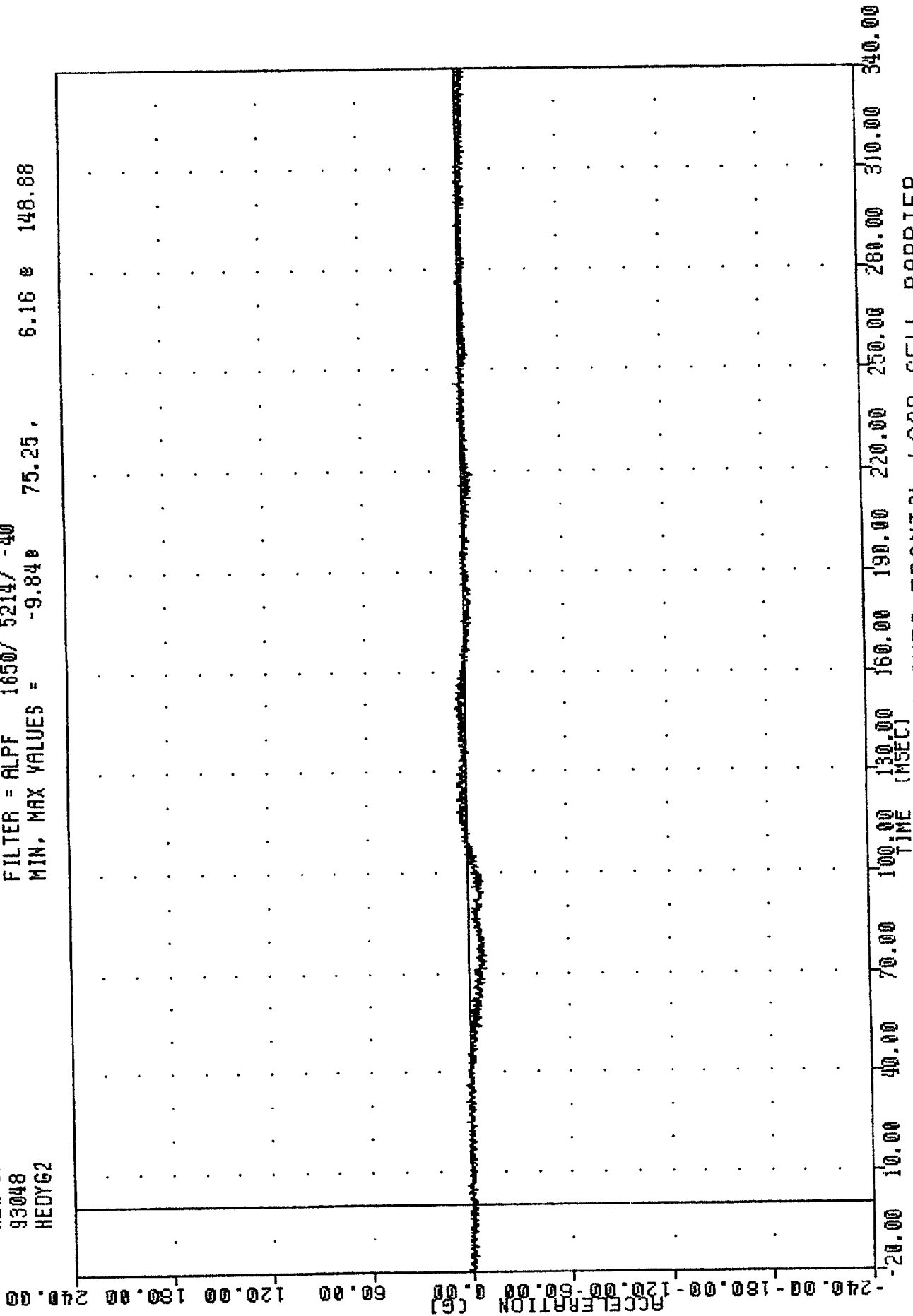
See DATA ACQUISITION EXPLANATIONS

240.00 180.00 120.00 60.00 0.00 -60.00 -120.00 -180.00 -240.00
-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 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 HEDYG2

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -9.84e 75.25, 6.16 e 148.88

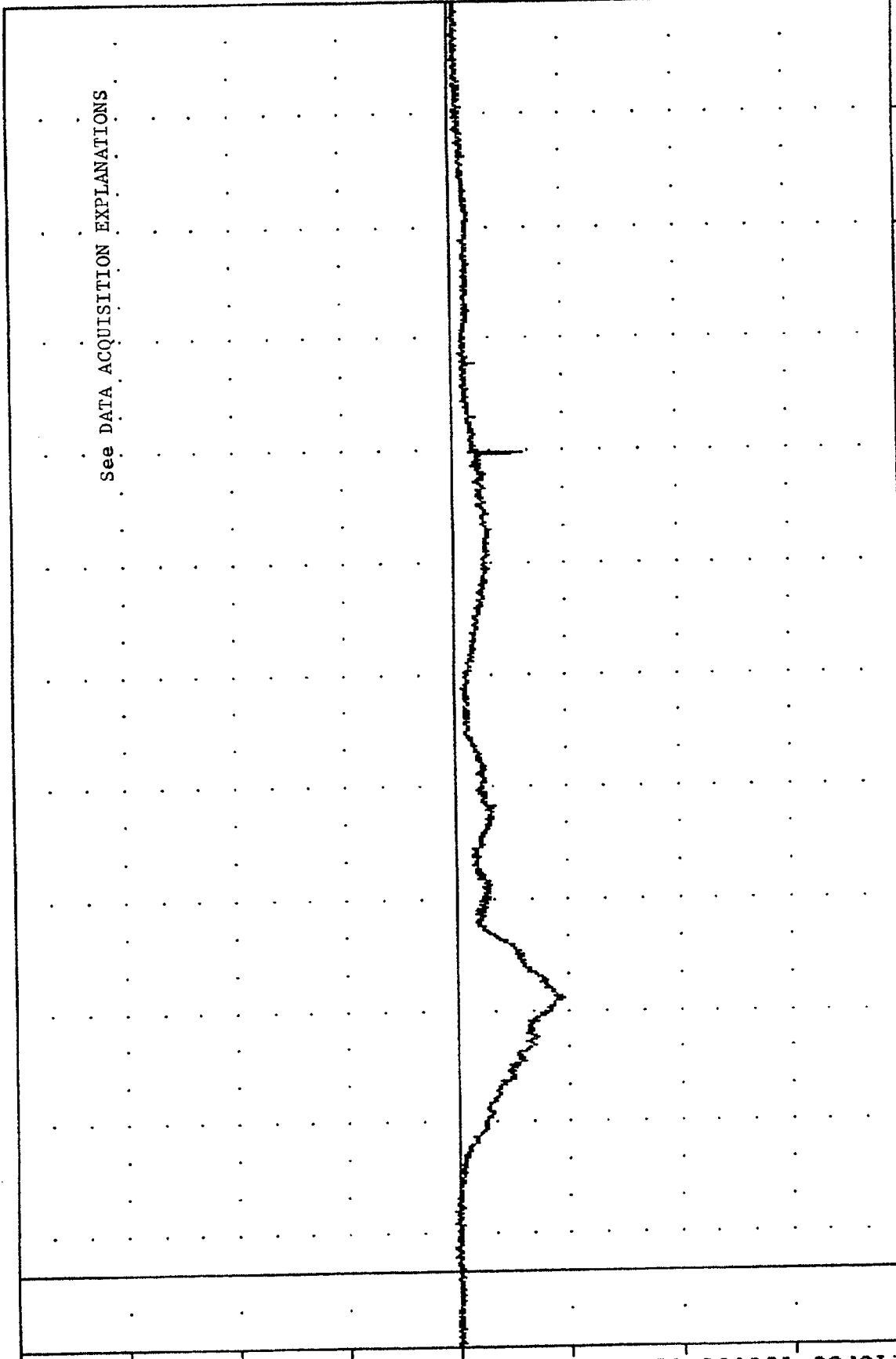


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 PASSENGER HEAD Y-AXIS ACCELERATION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
HEZG2

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -56.36 73.75 , 2.84 3.88

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

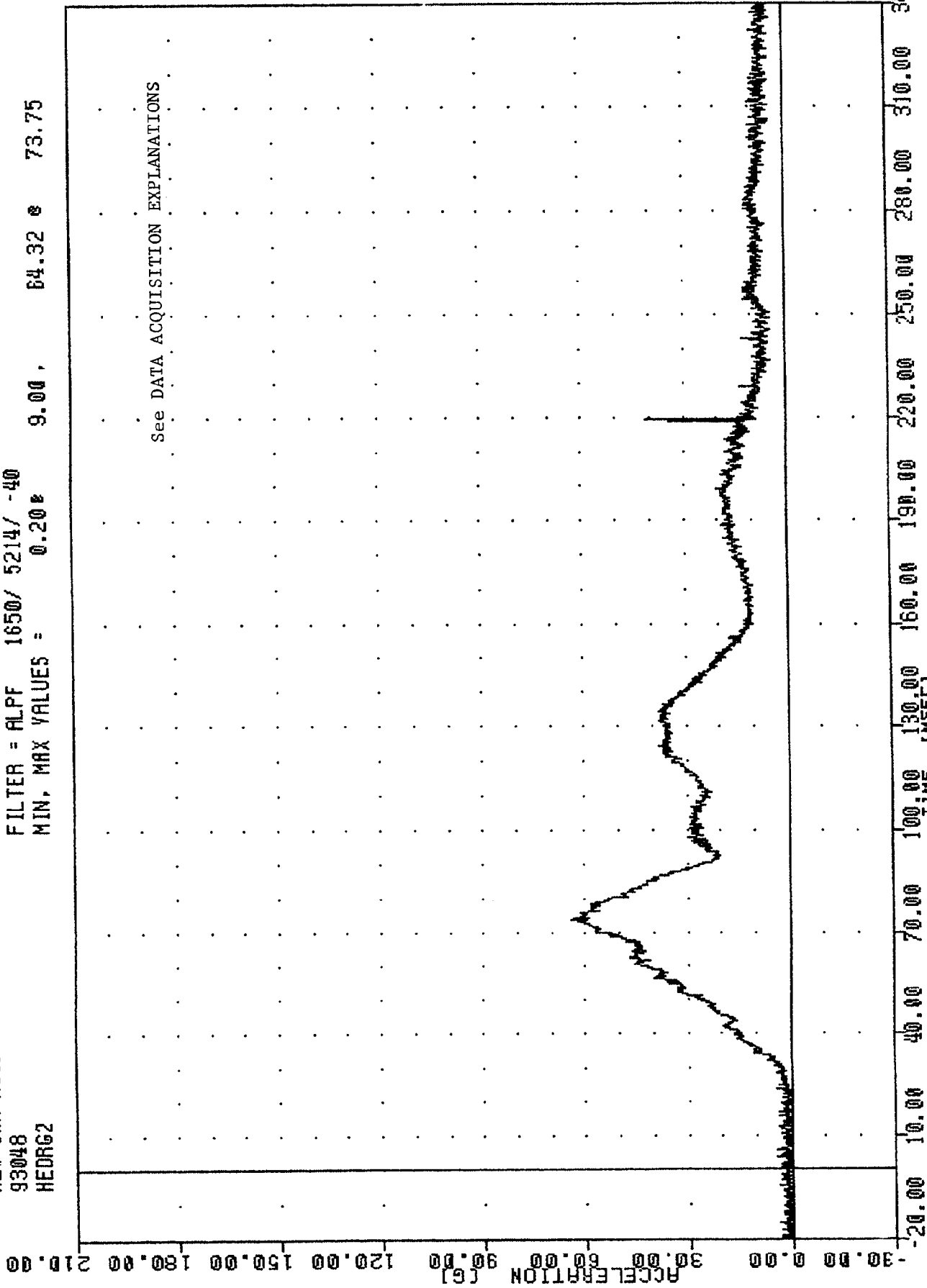


Time (MSEC) 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION

TRC 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 HEDRG2

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = 0.20 64.32 73.75

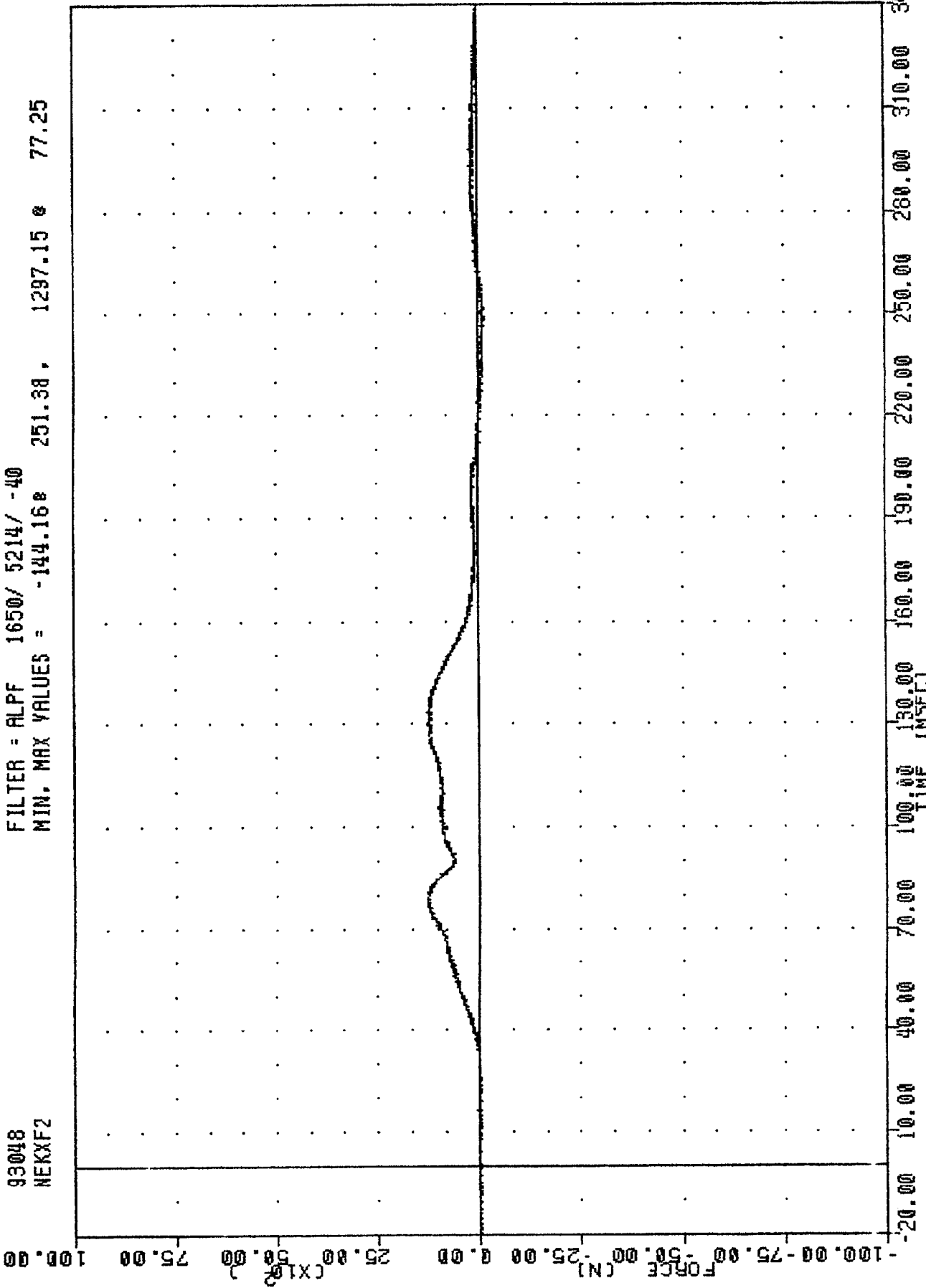


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 SENSOR HEAD RESURFACED

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 NEKXF2

930217

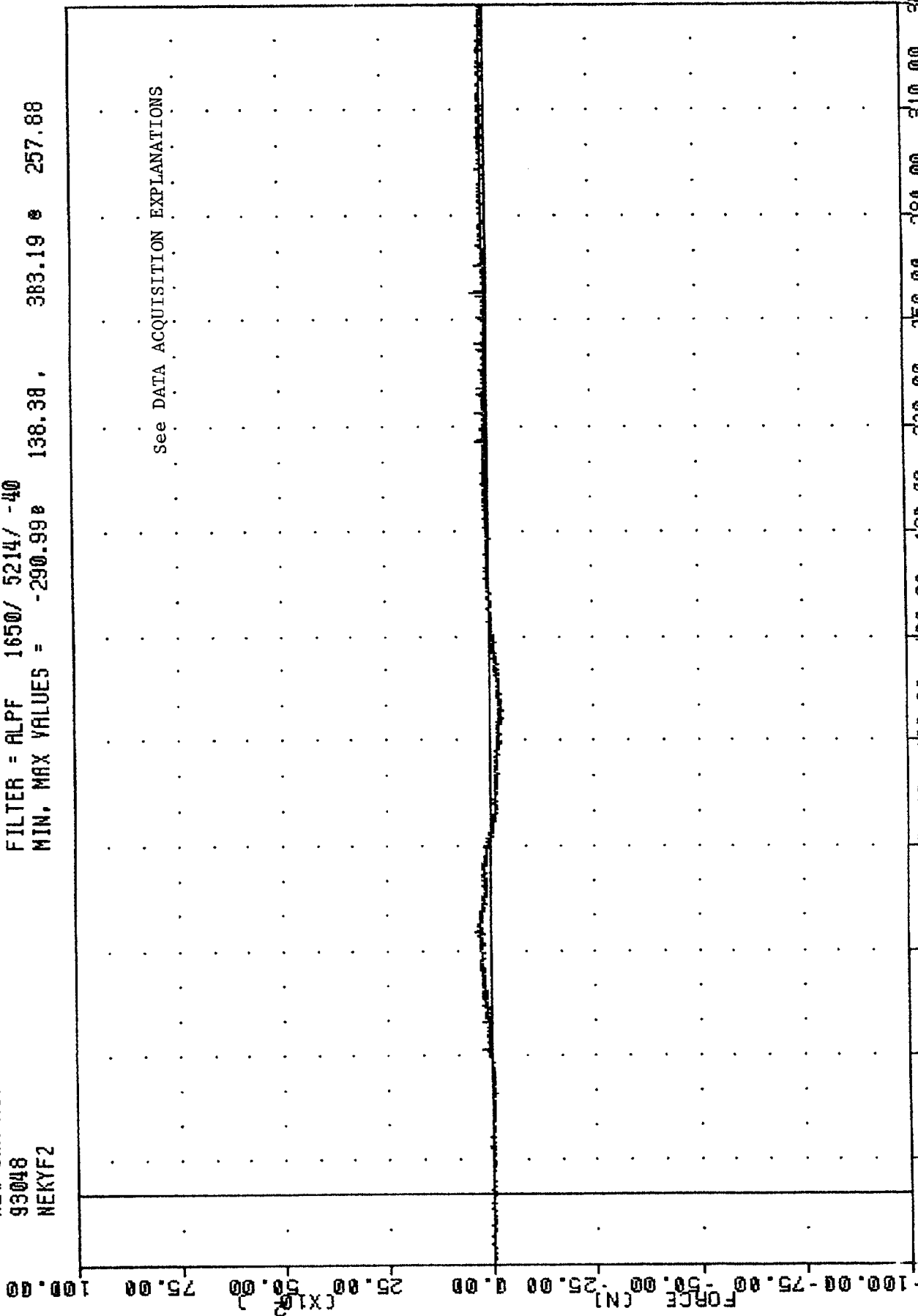
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -144.16e 251.38e 1297.15e 77.25



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK X-AXIS SHEAR FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 NEKYF2

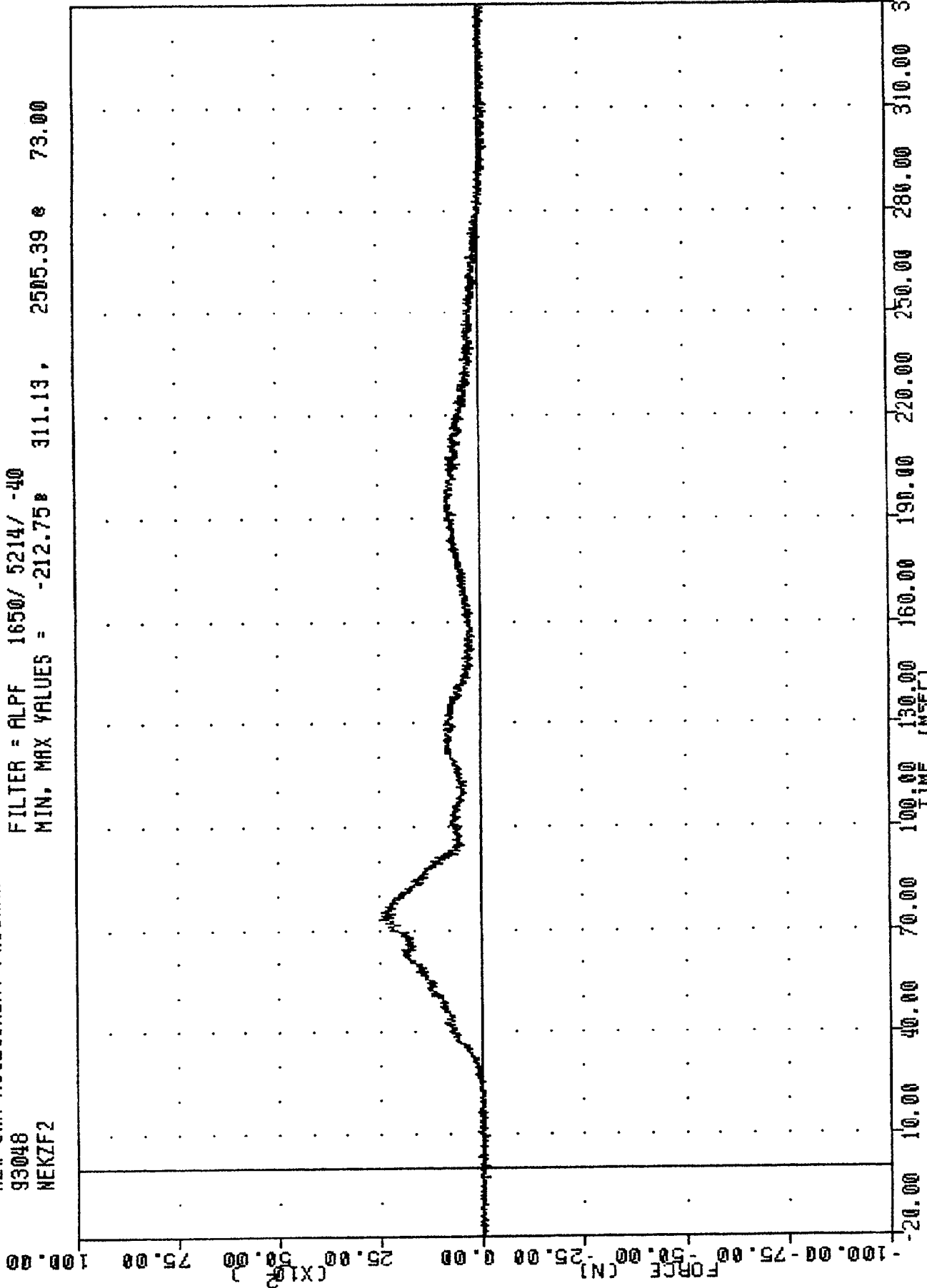
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -290.99 138.38 , 383.19 257.88



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 Y-Axis SHEAR FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 NEKZF2

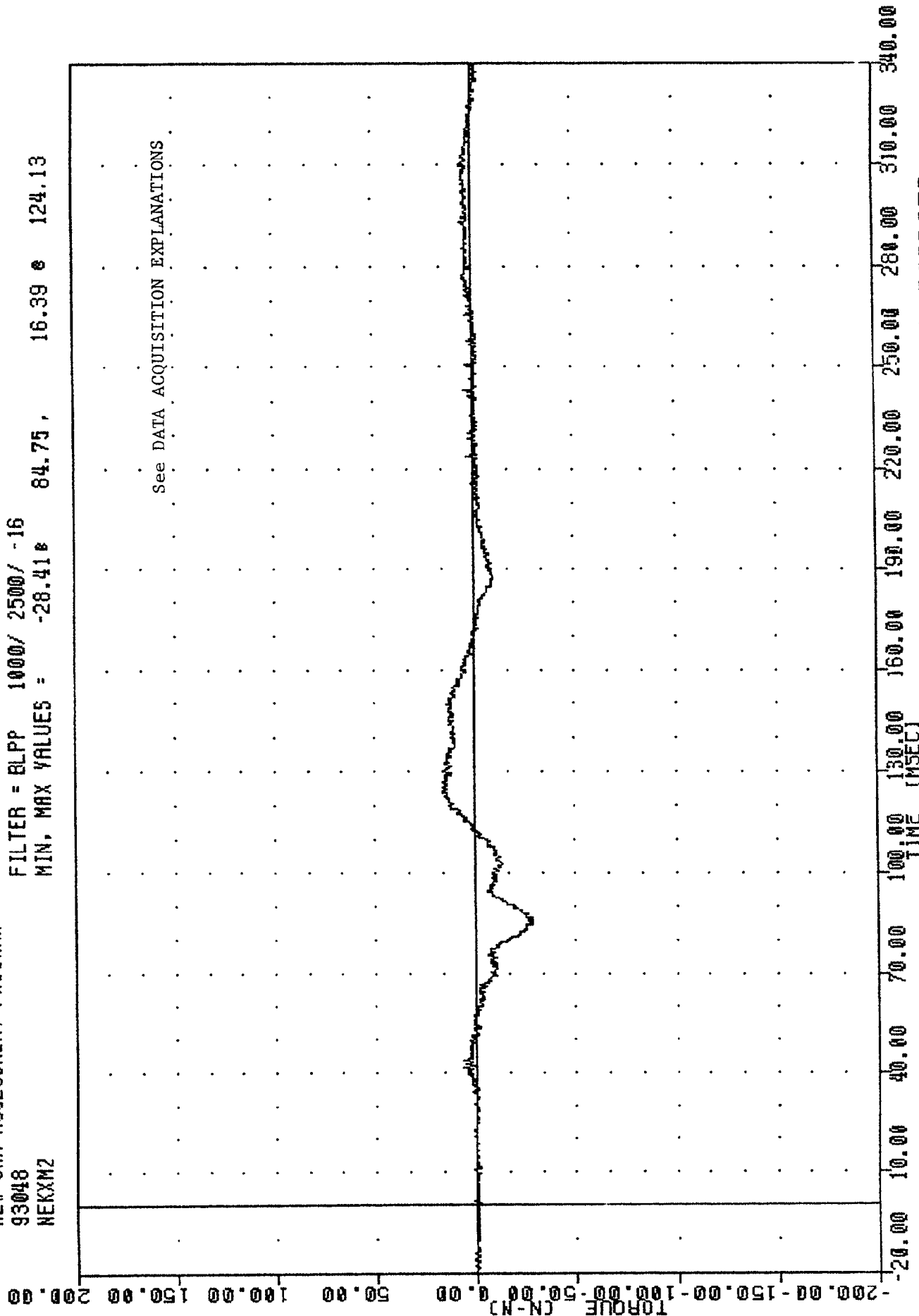
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -212.75 311.13 , 2505.39 e 73.00



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK Z-AXIS AXIAL FORCE

TRC , 930217
 NEY CAR ASSESSMENT PROGRAM
 93048
 NEKXM2

FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -28.418 84.75 , 16.39 e 124.13

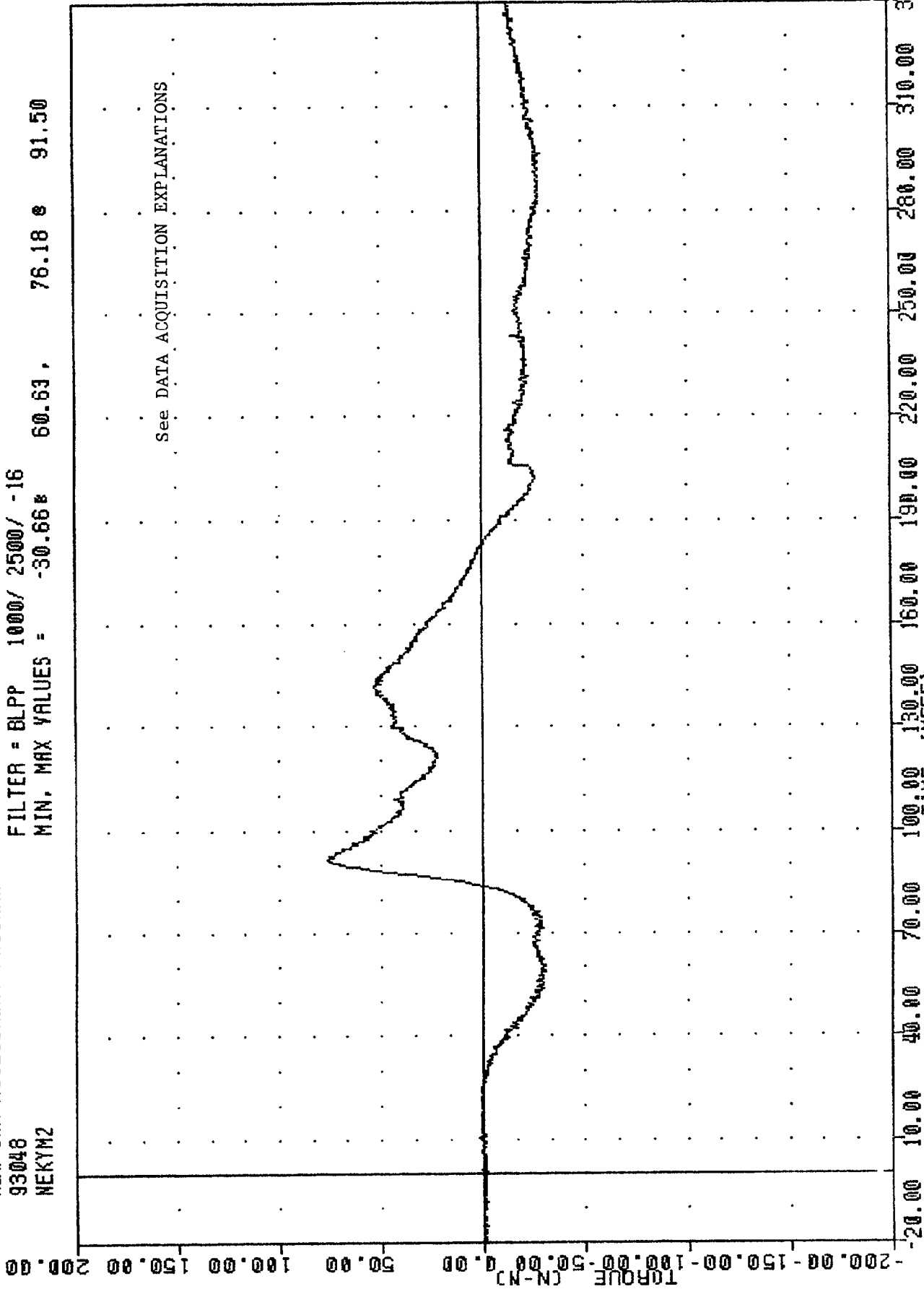


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK MOMENT ABOUT X AXIS

TRC
NEW CAR ASSESSMENT PROGRAM
93048
MEKYM2

930217

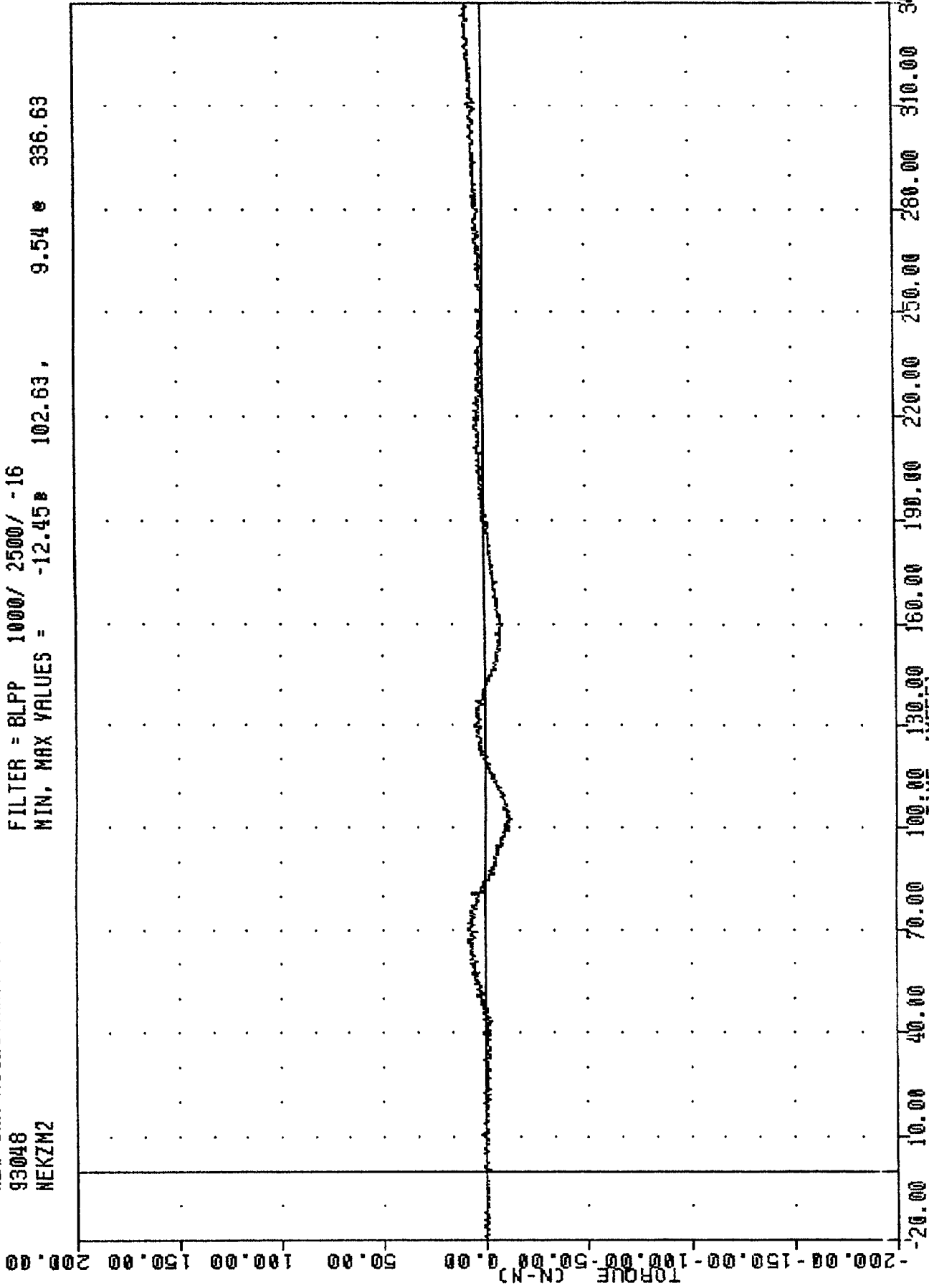
FILTER = BLPP 1000/ 2500/ -16
MIN. MAX VALUES = -30.66% 60.63, 76.18 & 91.50



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Y AXIS

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 NEKZM2

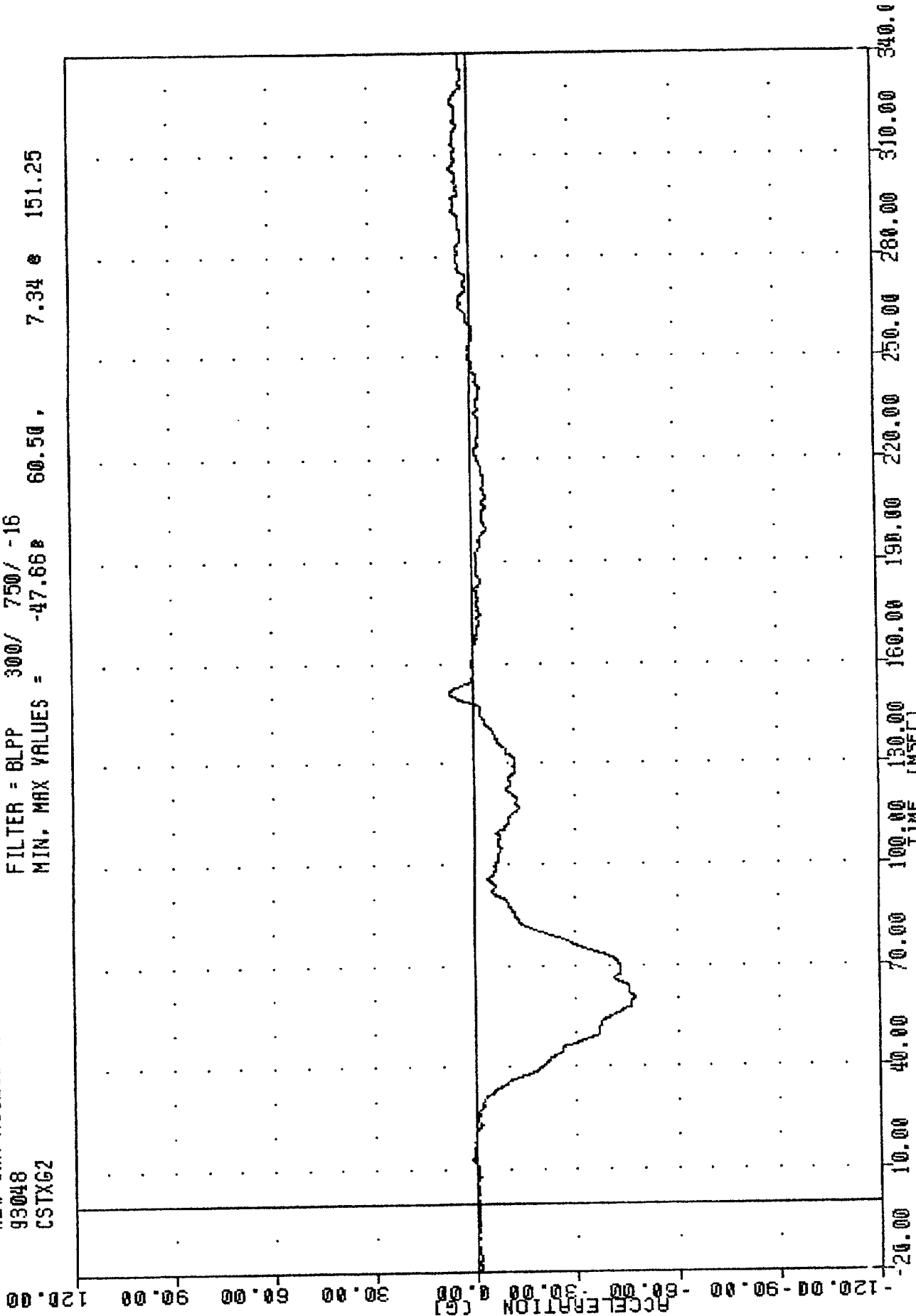
FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -12.45 102.63, 9.54 336.63



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK MOMENT ABOUT Z AXIS

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
CSTXG2

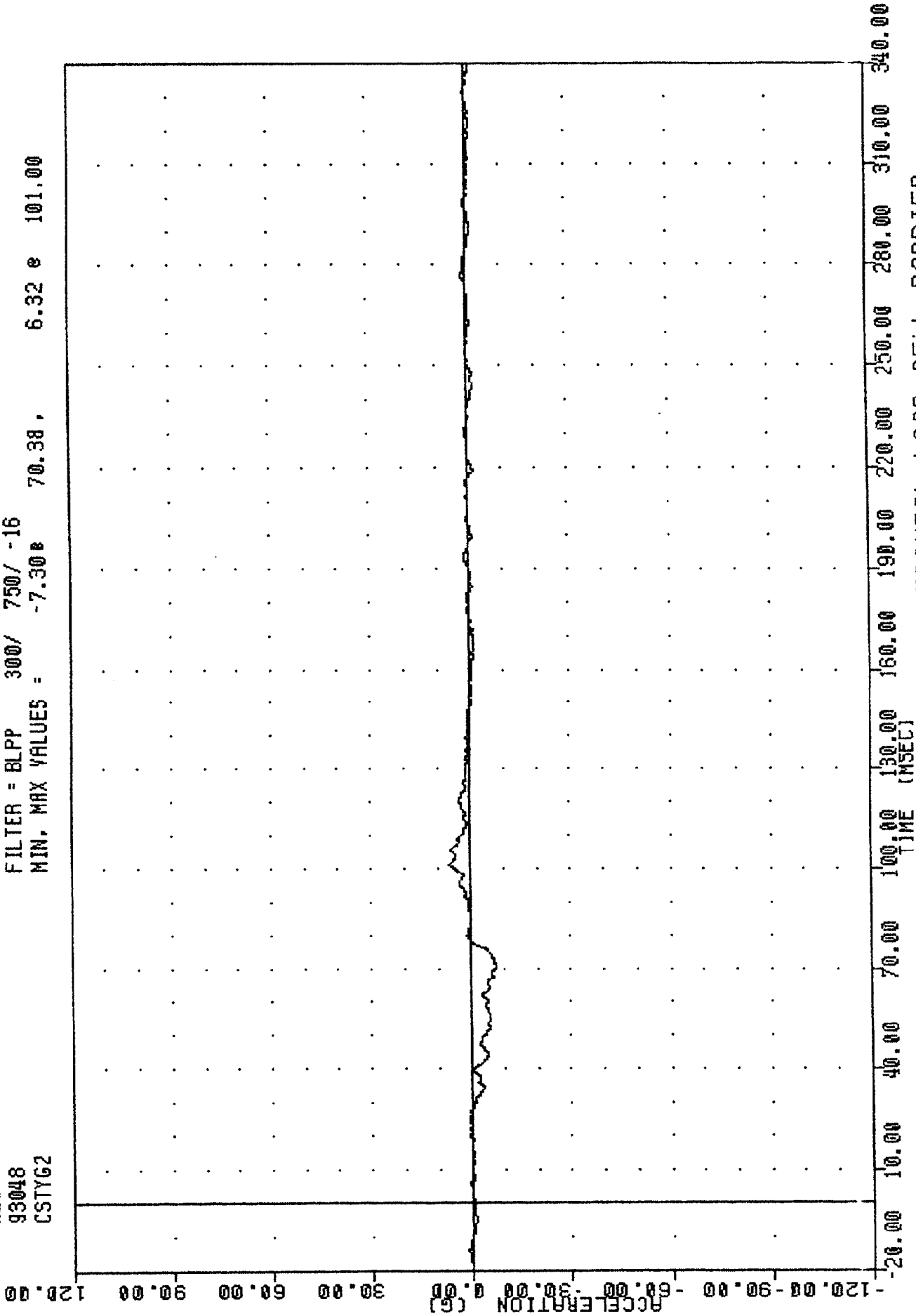
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -47.66 60.50 , 7.34 e 151.25



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
CSTYG2

FILTER = BLPP 300/ 750/ -16
MIN. MAX VALUES = -7.30e 70.38, 6.32 e 101.00

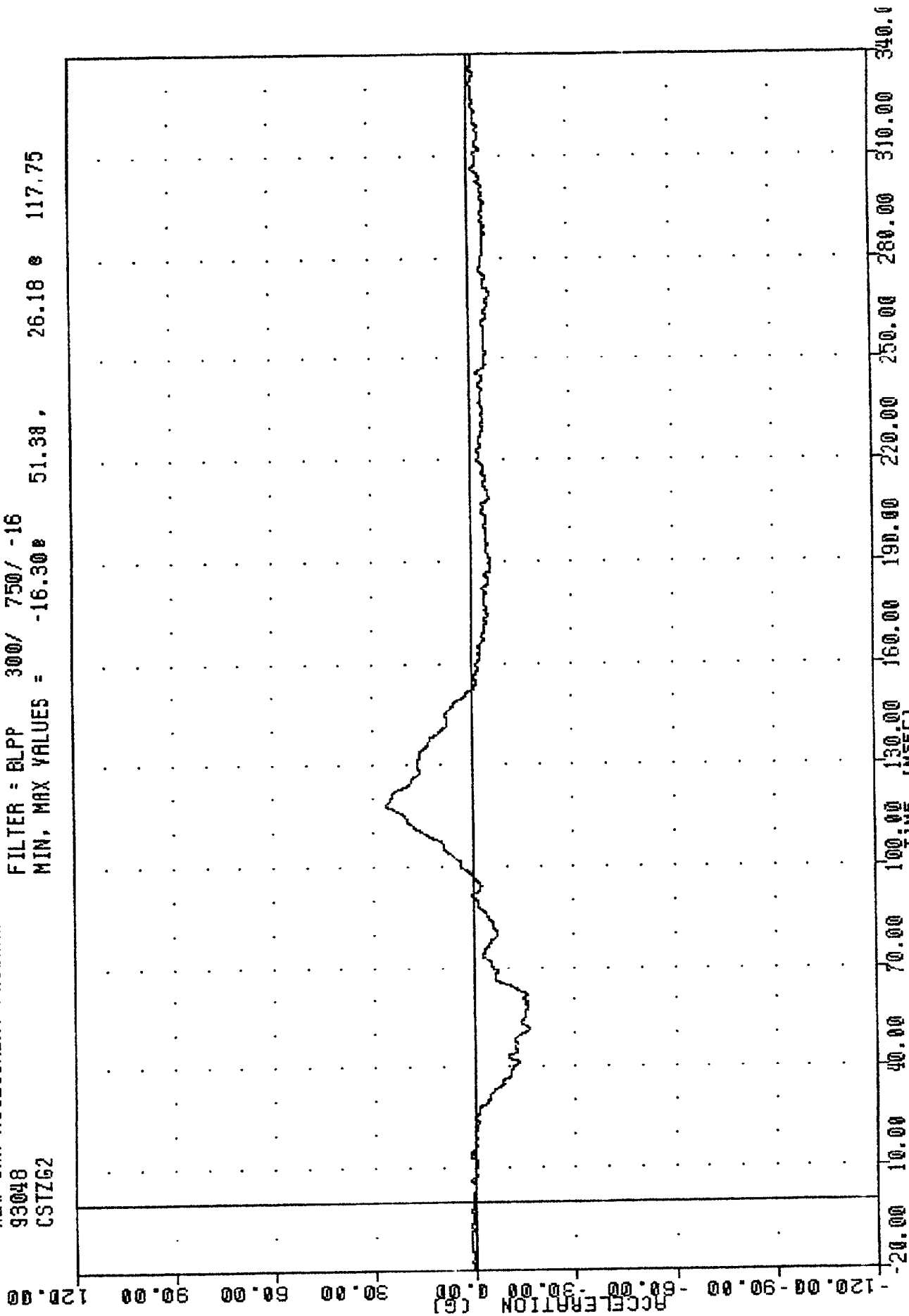


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
SENSOR HEAT Y AXIS ACCELERATION

TRC
NEW CAR ASSESSMENT PROGRAM
93048
CSTZG2

, 930217

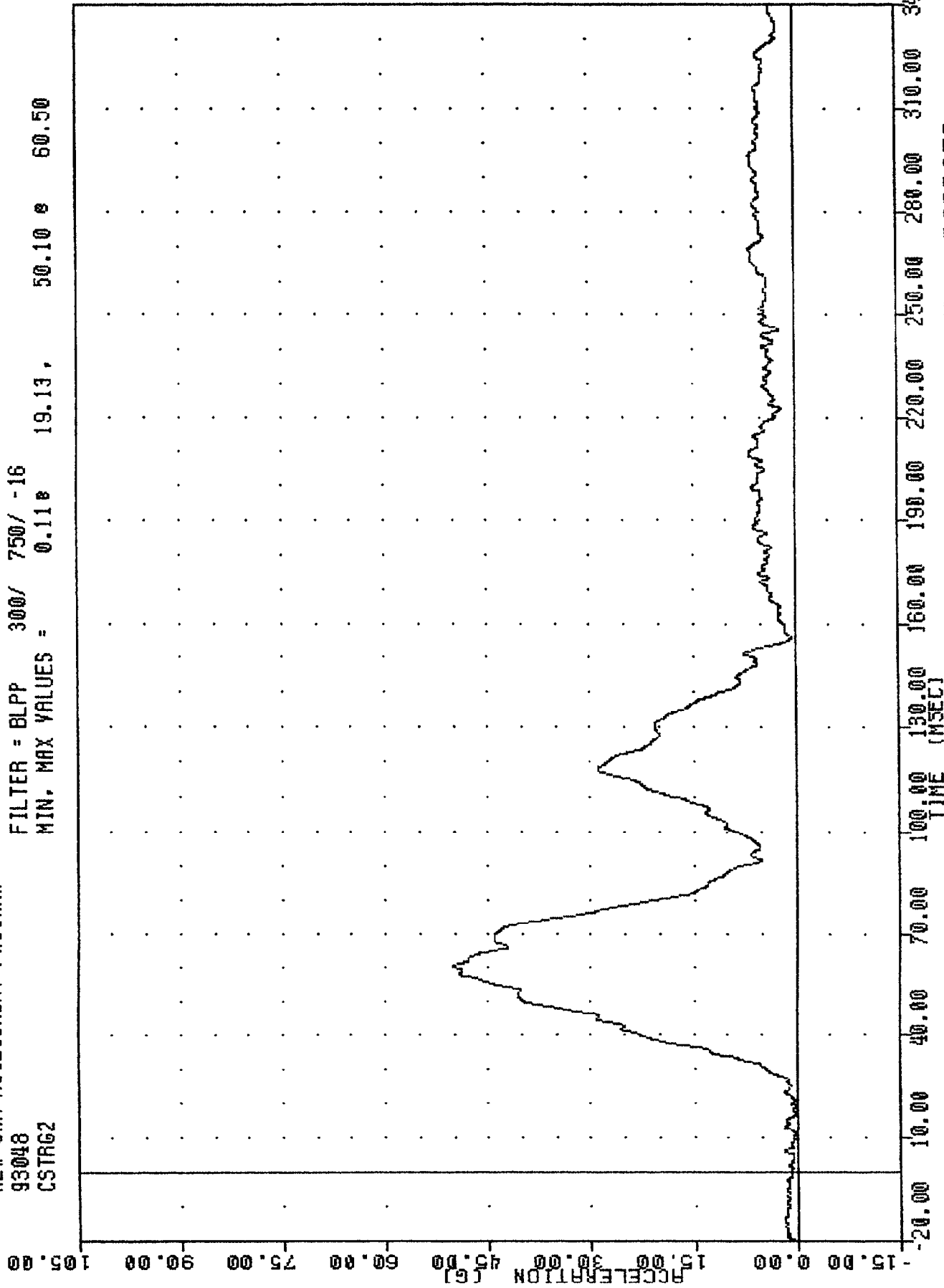
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -16.30e 51.38, 26.18 e 117.75



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 CSTR62

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = 0.11e 19.13, 50.10 e 60.50



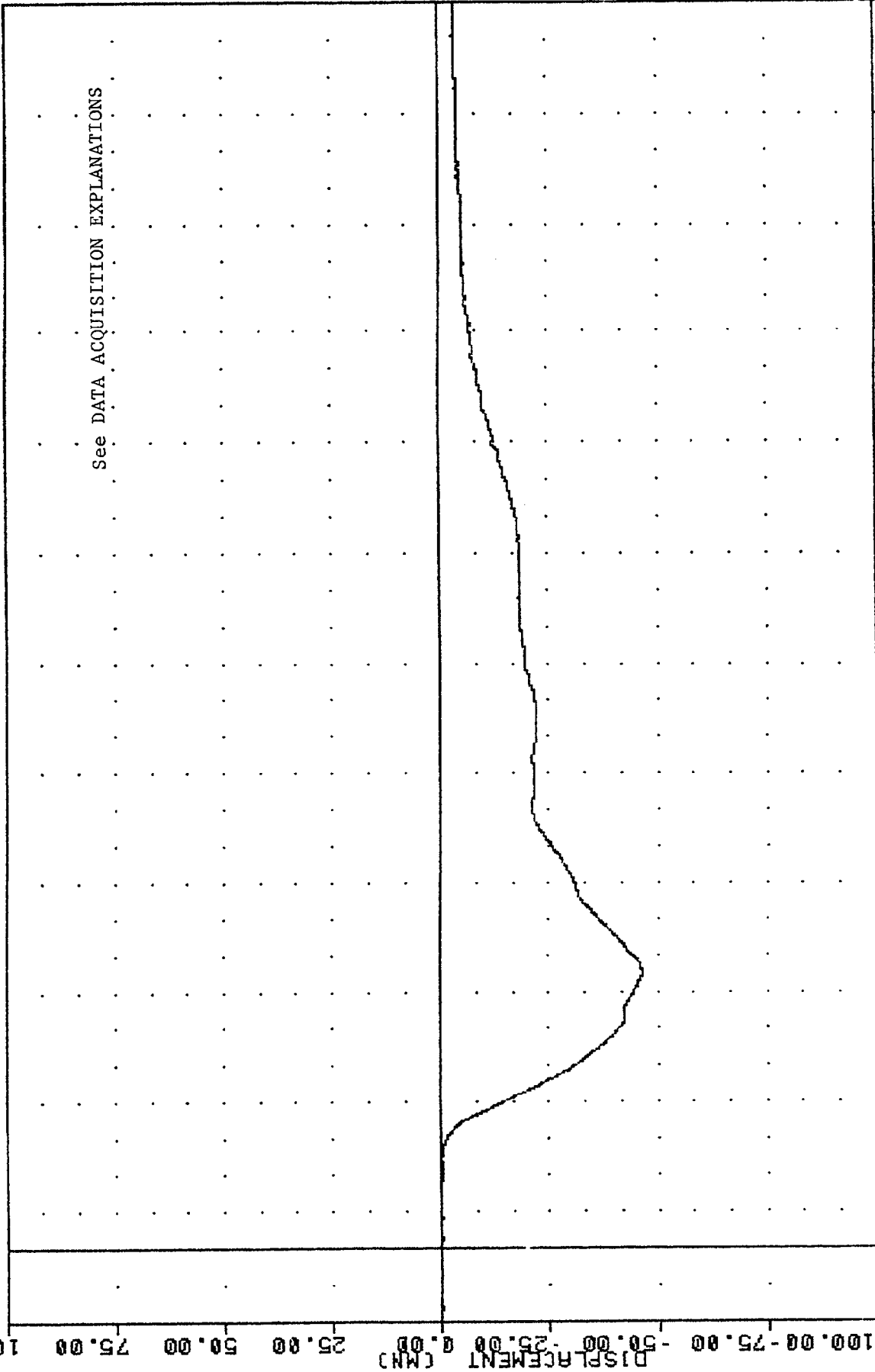
1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 RESISTANT ACCELERATION

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 CSTXD2

930217

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -46.50B 75.38. 0.27 e 4.25

100.00



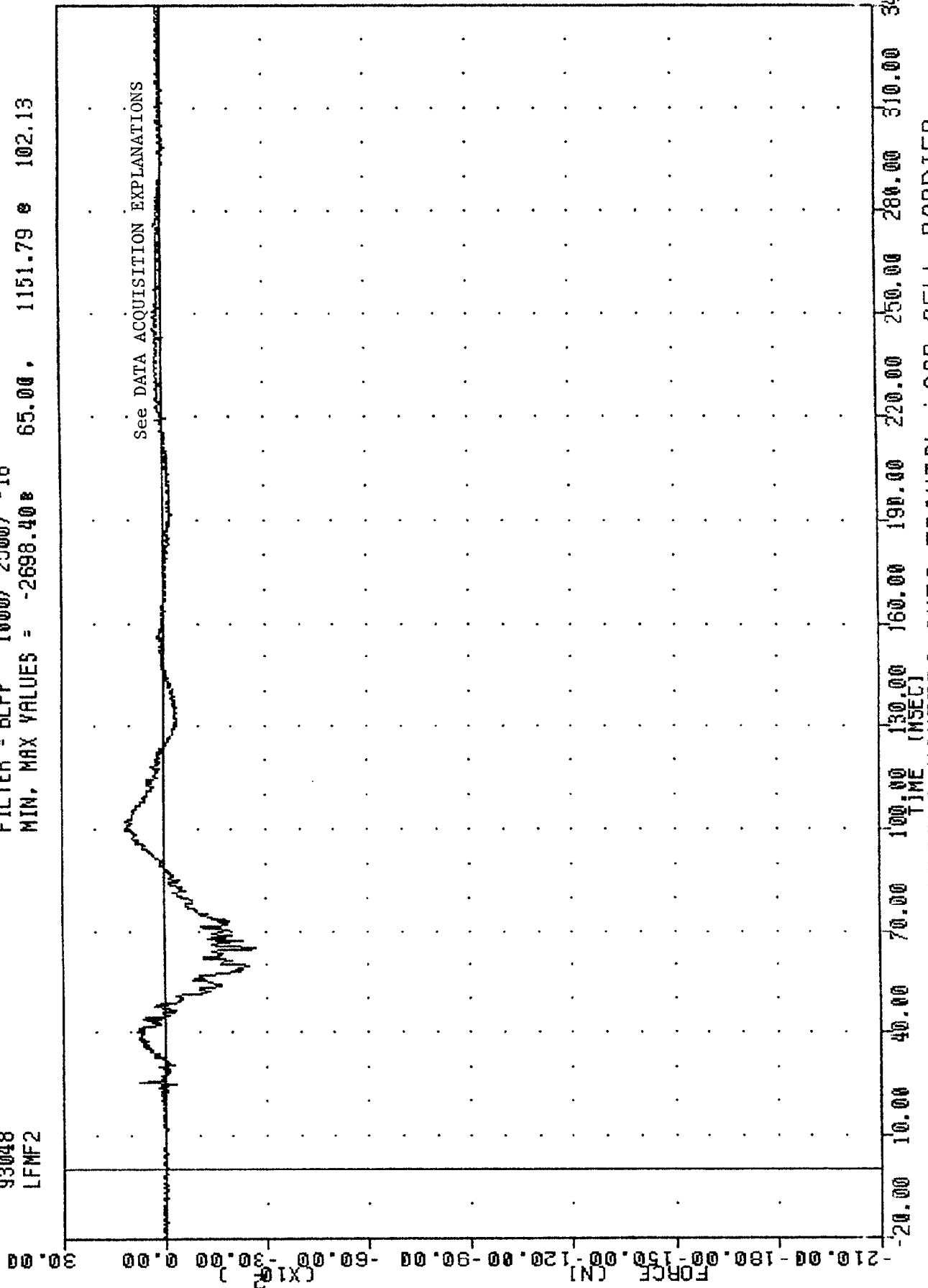
See DATA ACQUISITION EXPLANATIONS

-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 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST DEFLECTION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
LFMF2

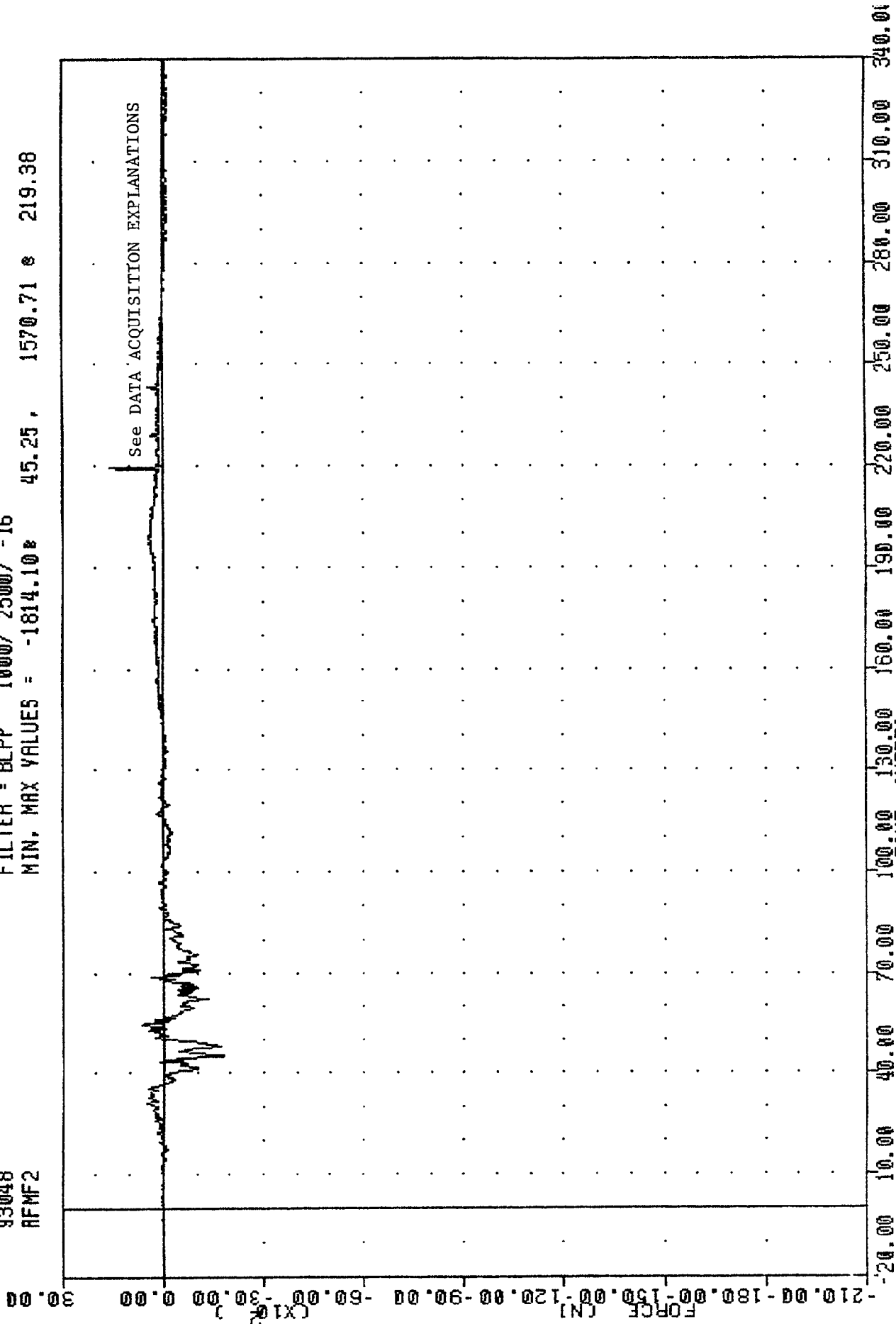
FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -2698.40 65.00 , 1151.79 e 102.13



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
PASSENGER SEAT BELT FORCE

TRC
 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 RFMF2

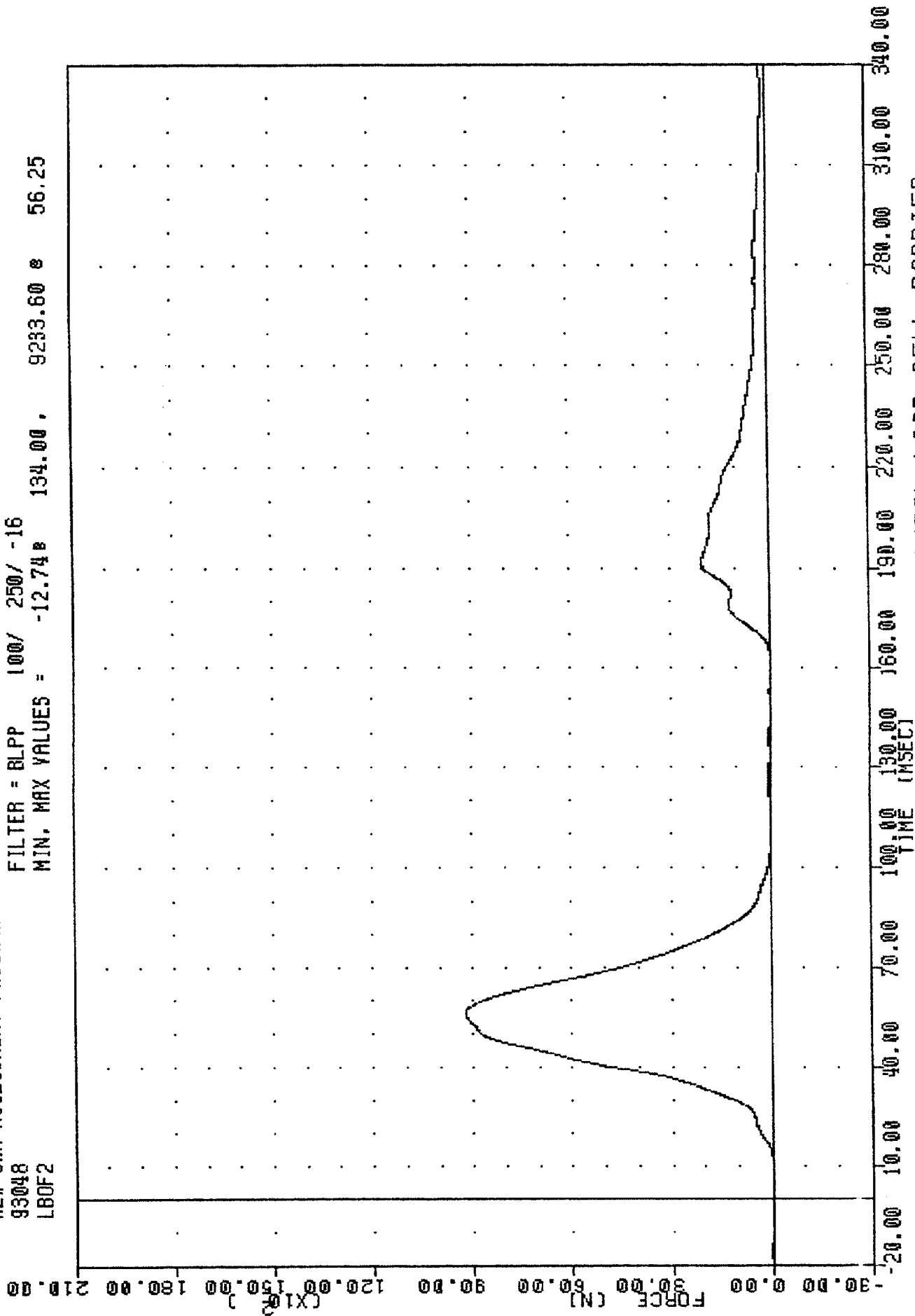
FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -1814.10E 45.25, 1570.71 e 219.38



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 PASSENGER RIGHT FEMUR FORCE

TRC . 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 LBOF2

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -12.74 134.00, 9233.60 56.25

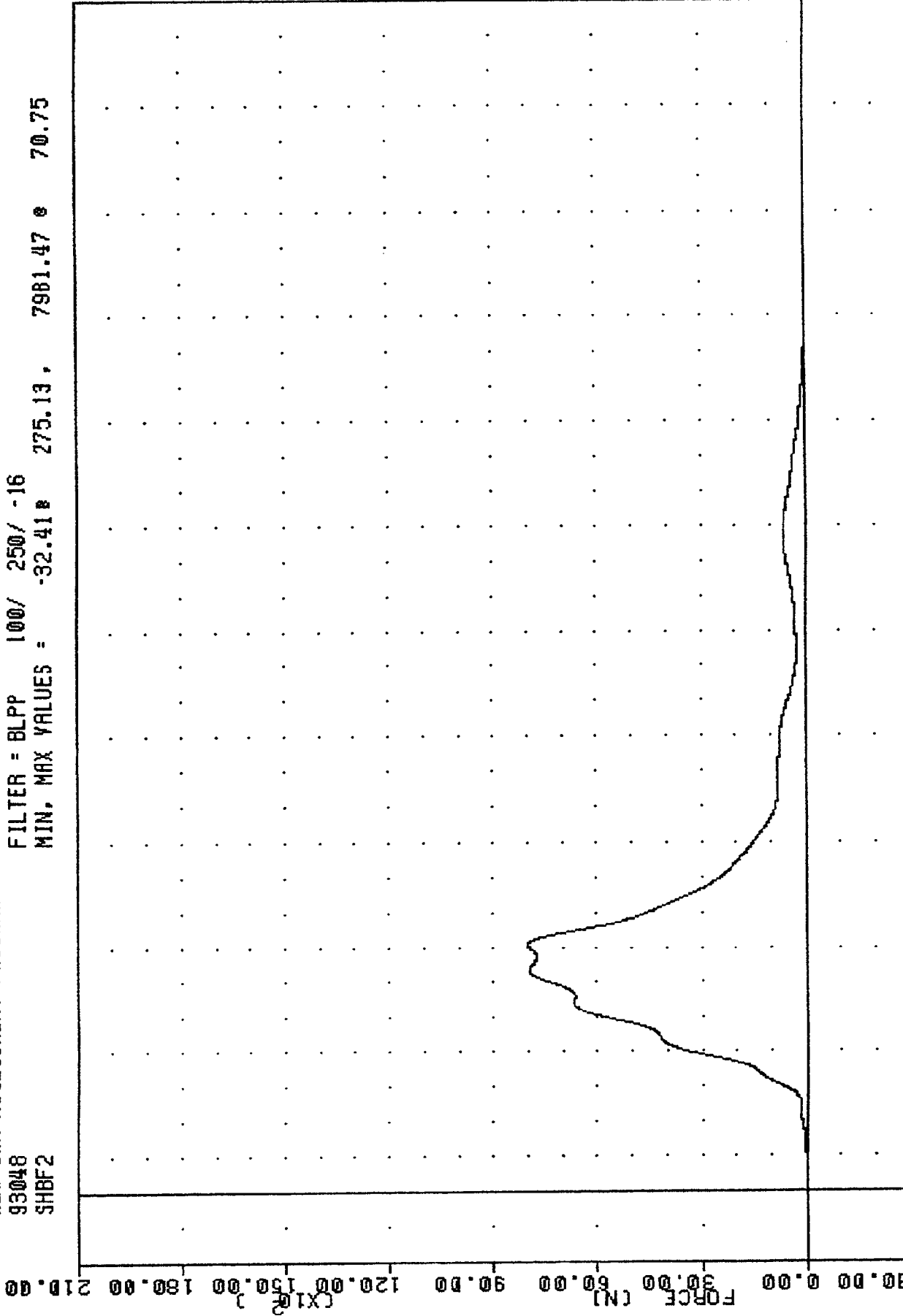


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER

RS-106 LFA BELT-OUTWARD FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 SHBF2

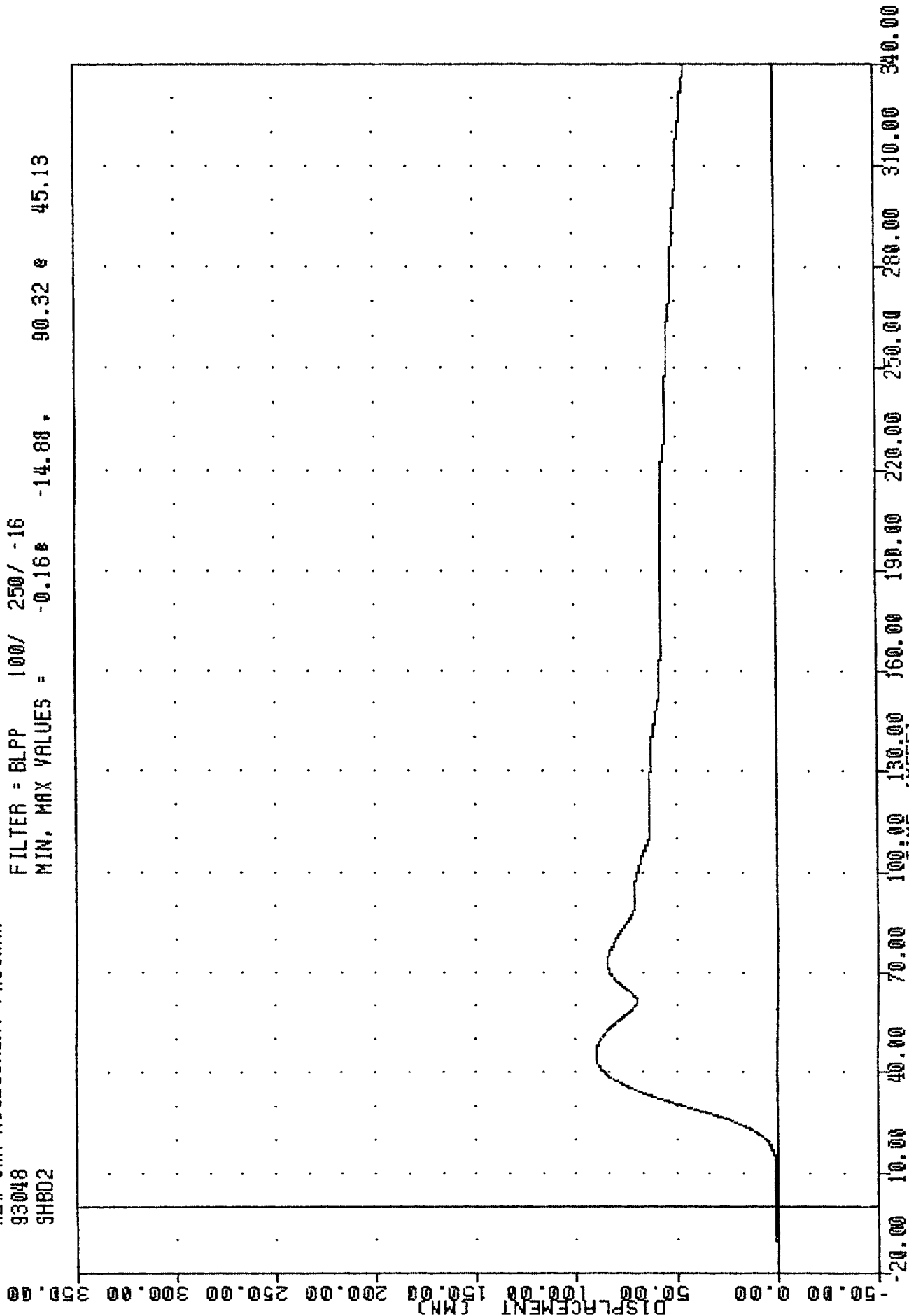
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -32.41 7981.47 @ 70.75



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SHOULDER BELT FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 SHB02

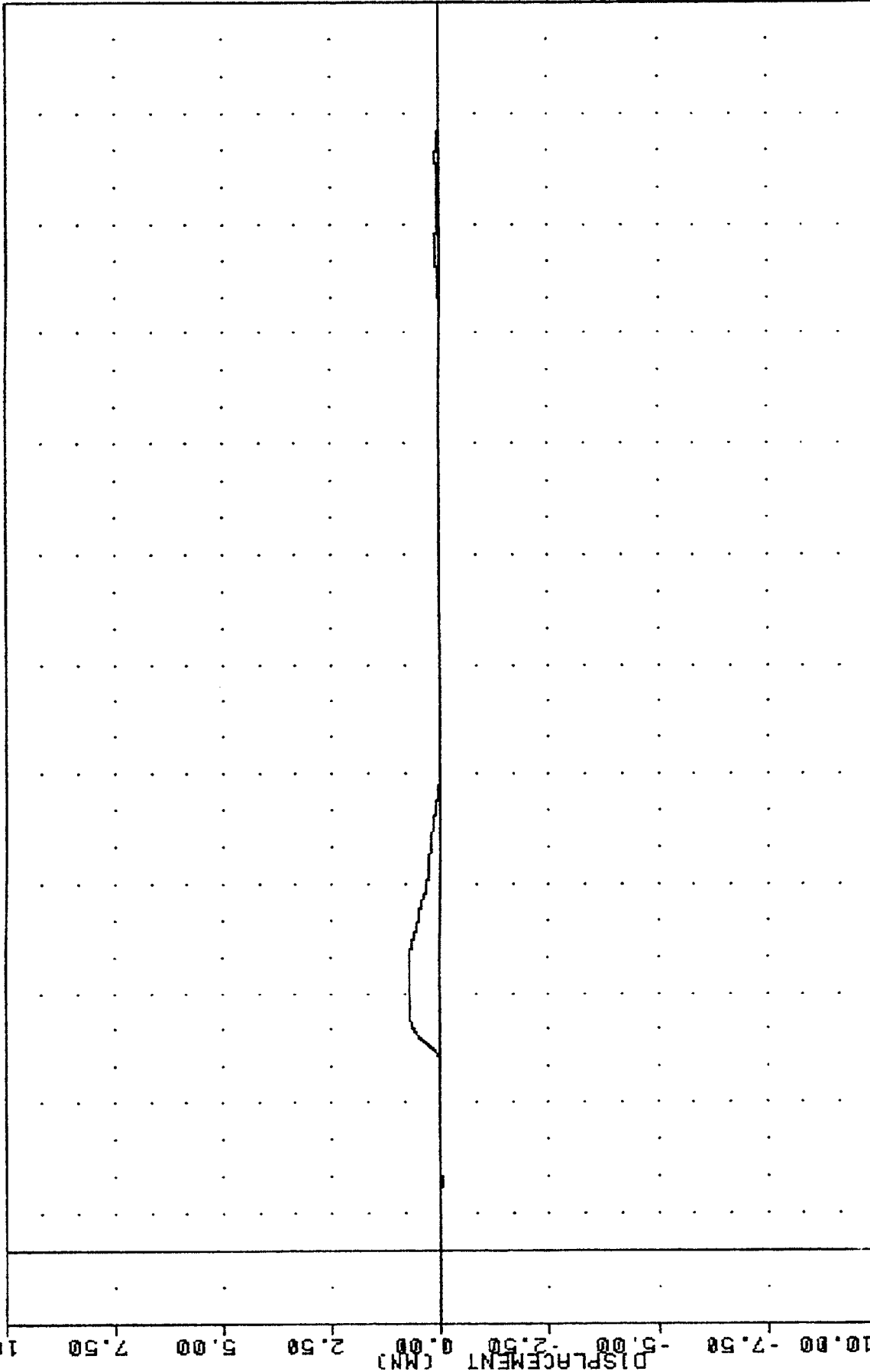
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -0.16 90.32 e 45.13
 -14.88 .



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 93048 SHB02

TRC
 NEY CAR ASSESSMENT PROGRAM
 93048
 SBED2

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -0.02e 18.38, 0.70 e 69.25



-10.00
-7.50
-5.00
-2.50
0.00
2.50
5.00
7.50
10.00

DISPLACEMENT (CMN)

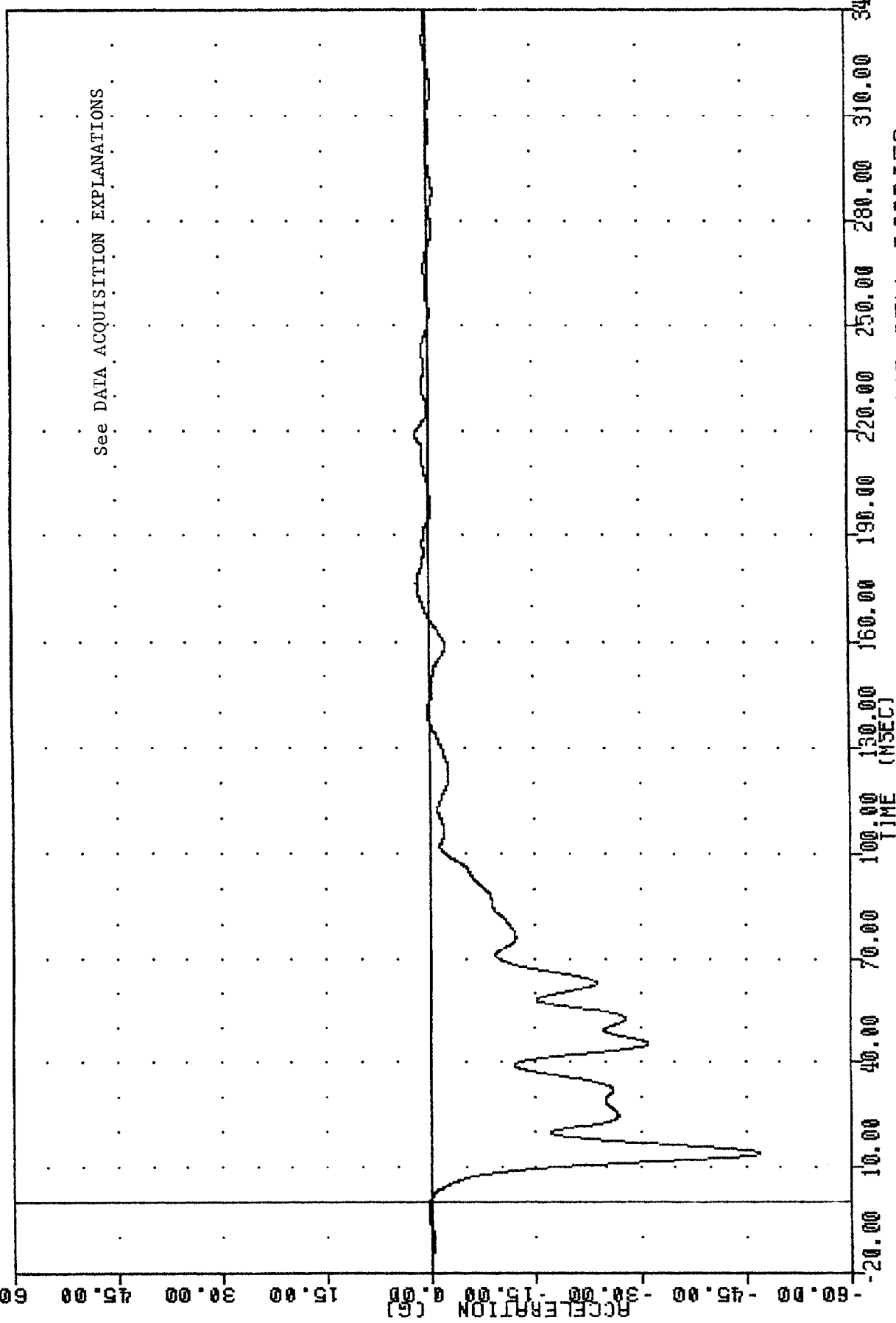
40.00 50.00 60.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

TIME (MSEC)

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SEAT BELT EXTENSION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 TLRXG1

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -47.07g 13.88g 2.05 e 219.13



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LEFT REAR SECT X-AXIS ACCELERATION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
TLRXV1

FILTER = BLPP 300/ 750/ -16
MIN. MAX VALUES = -7.27 165.25, 56.31 1.38

VELOCITY (KM/H)

60.00

45.00

30.00

15.00

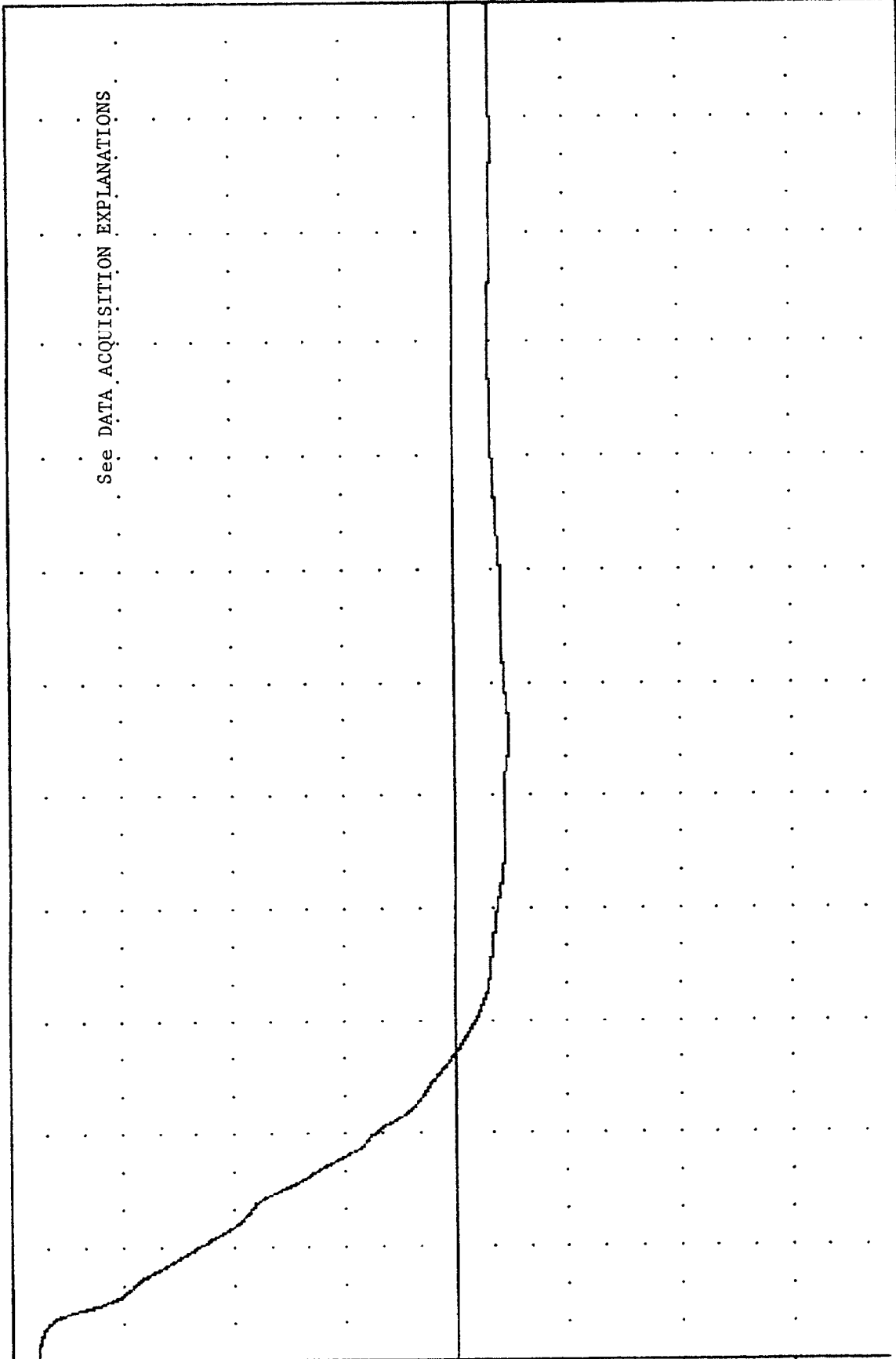
0.00

-15.00

-30.00

-45.00

-60.00



See DATA ACQUISITION EXPLANATIONS

60.00

45.00

30.00

15.00

0.00

-15.00

-30.00

-45.00

-60.00

0.00

30.00

60.00

90.00

120.00

150.00

180.00

210.00

240.00

270.00

300.00

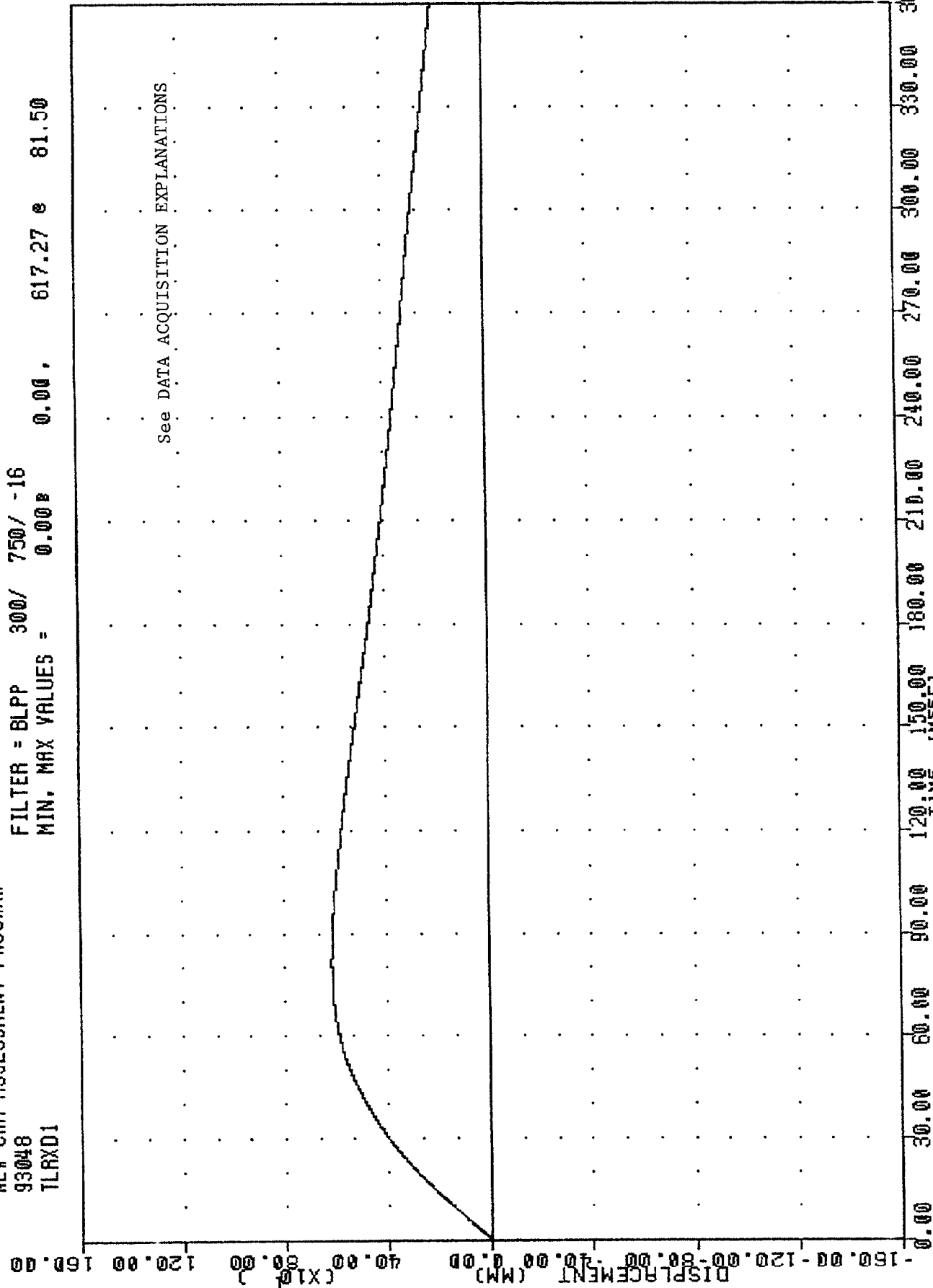
330.00

360.00

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS VELOCITY

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 TLX01

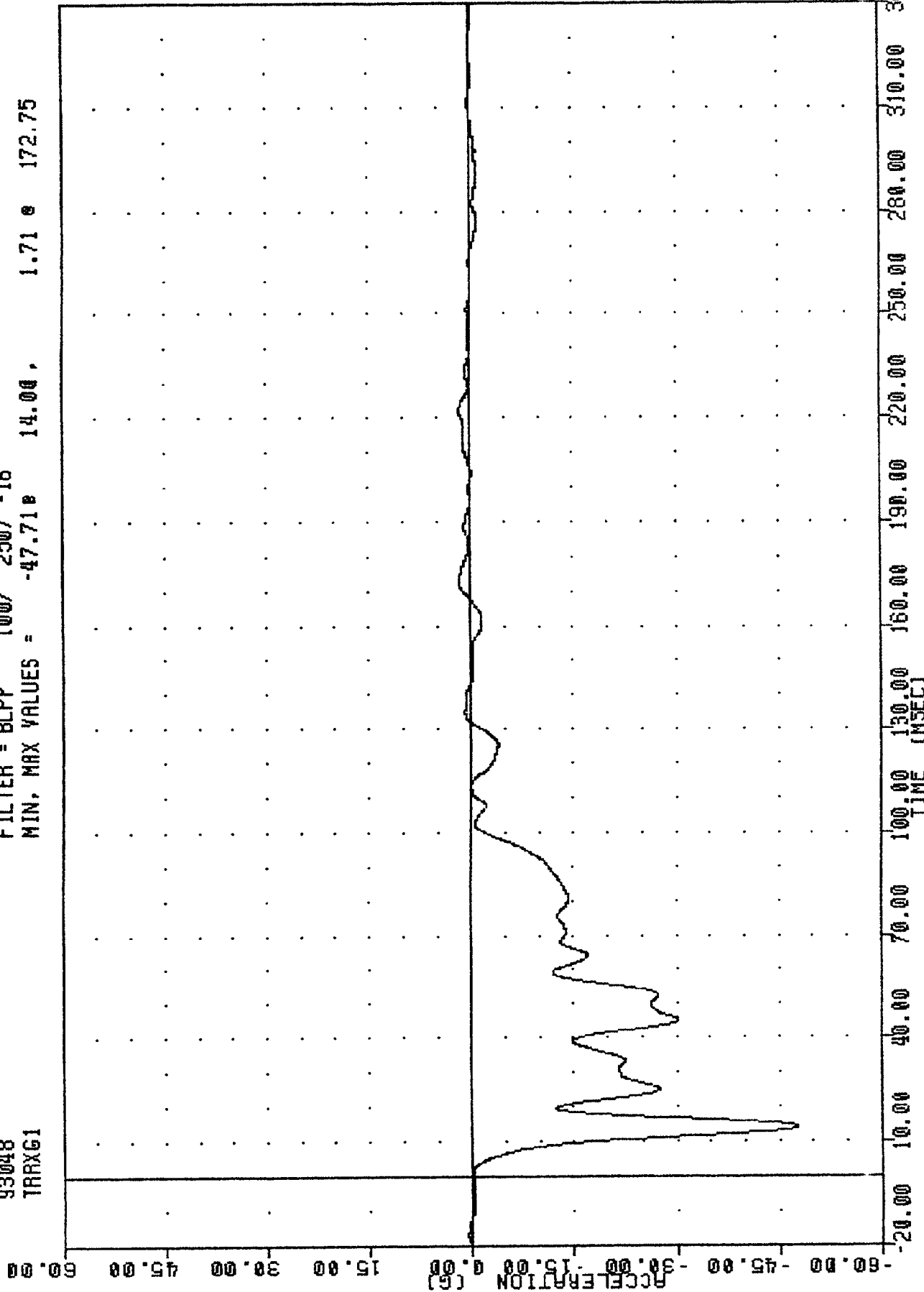
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = 0.00 0.00, 817.27 e 81.50



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LEFT REAR SECT X AXIS DISPLACEMENT

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
TRXG1

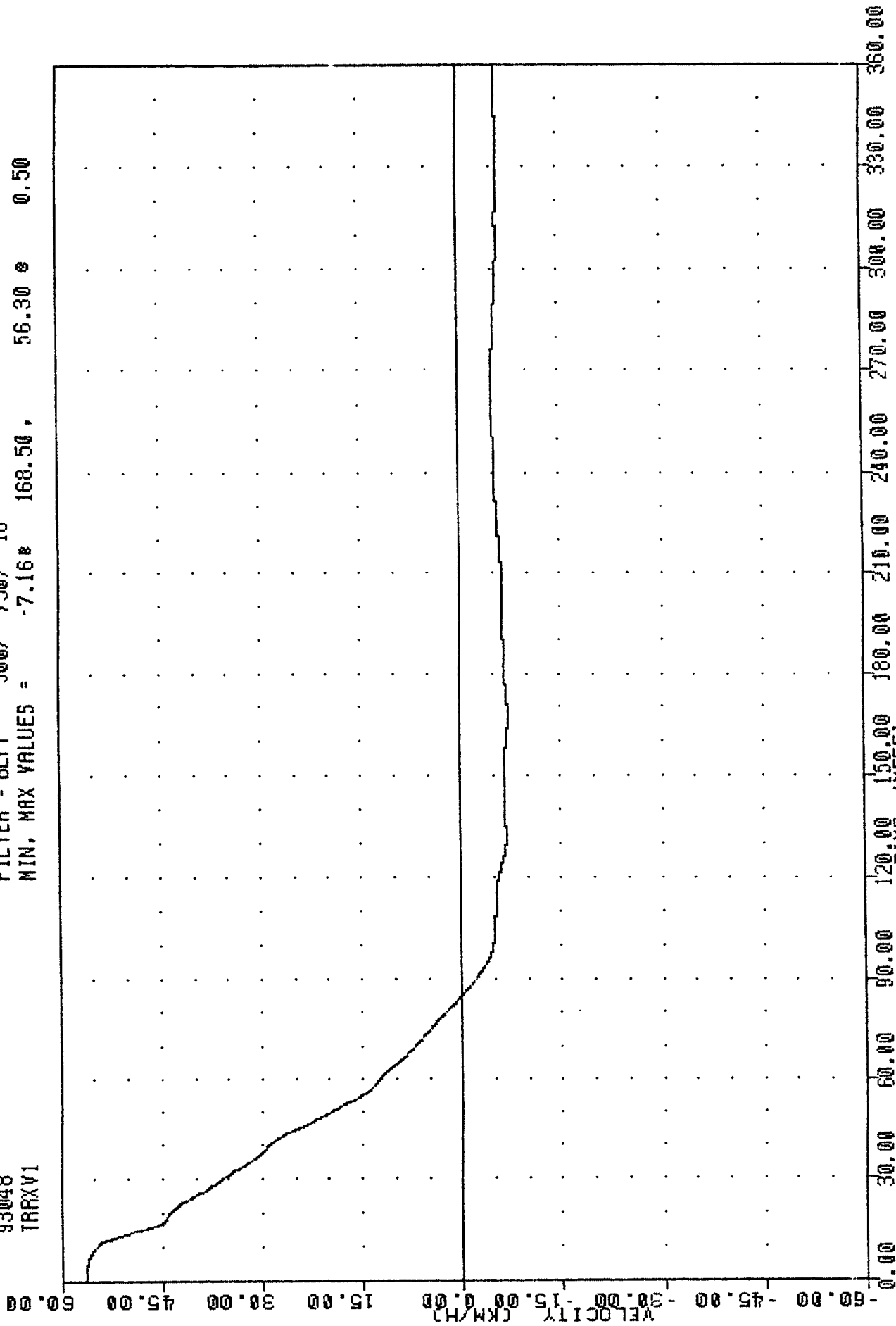
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -47.71 e 14.00 , 1.71 e 172.75



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 TRRXV1

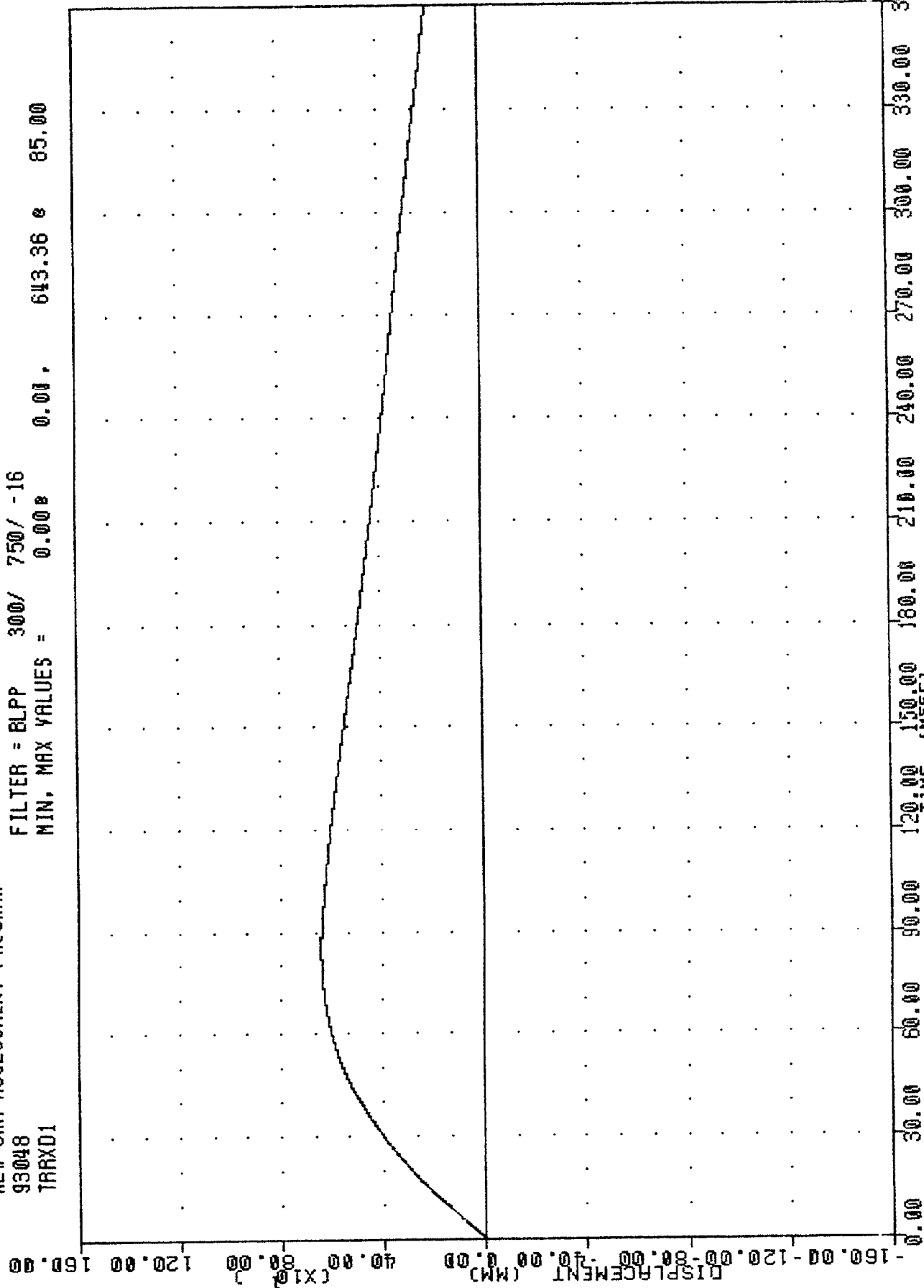
FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -7.16 168.50 , 56.30 0.50



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 RISE AT MAX VELOCITY

TRC
 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 TRRXD1

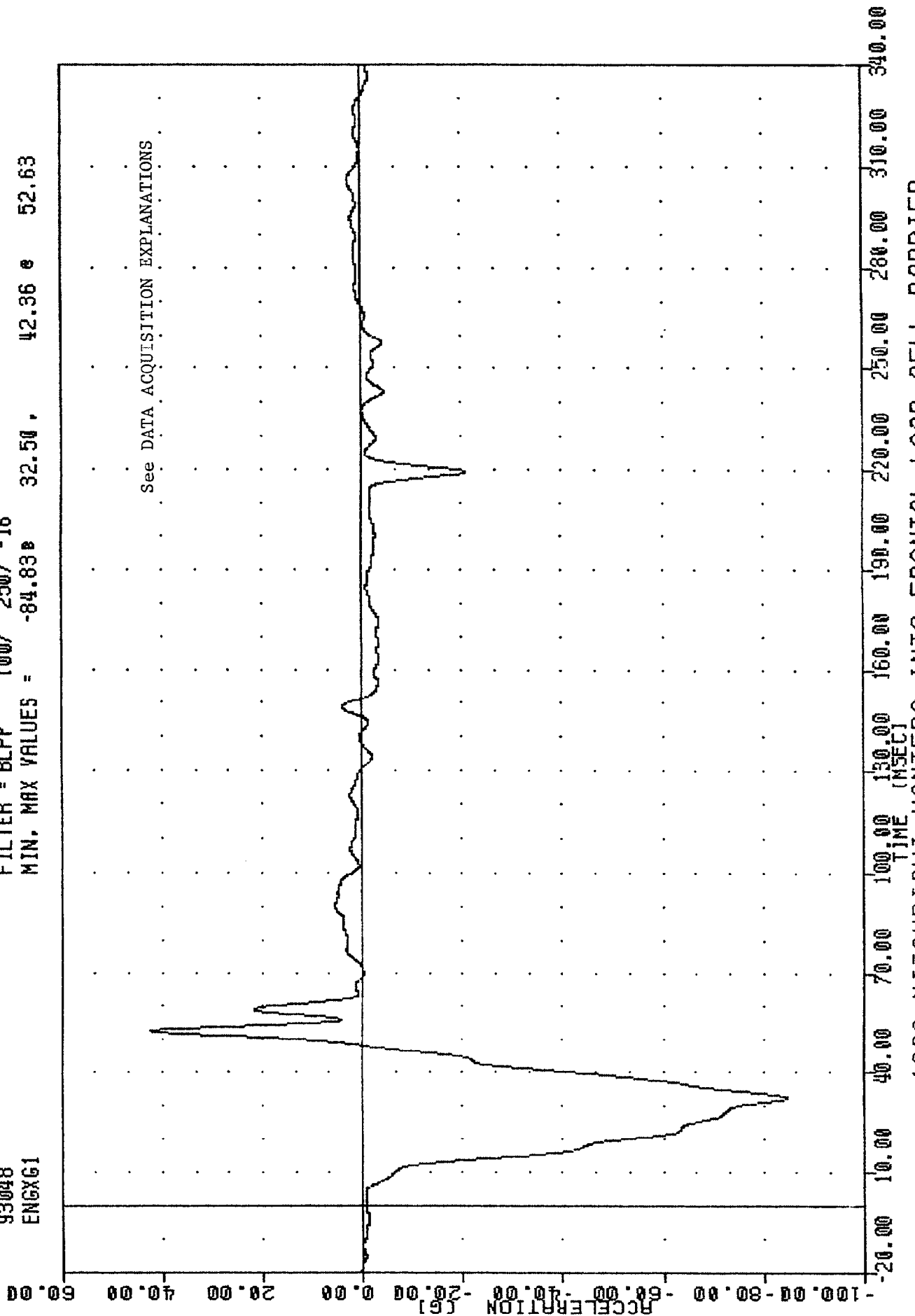
FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 0.00 e 643.36 e 85.00



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS DISPLACEMENT

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 ENG61

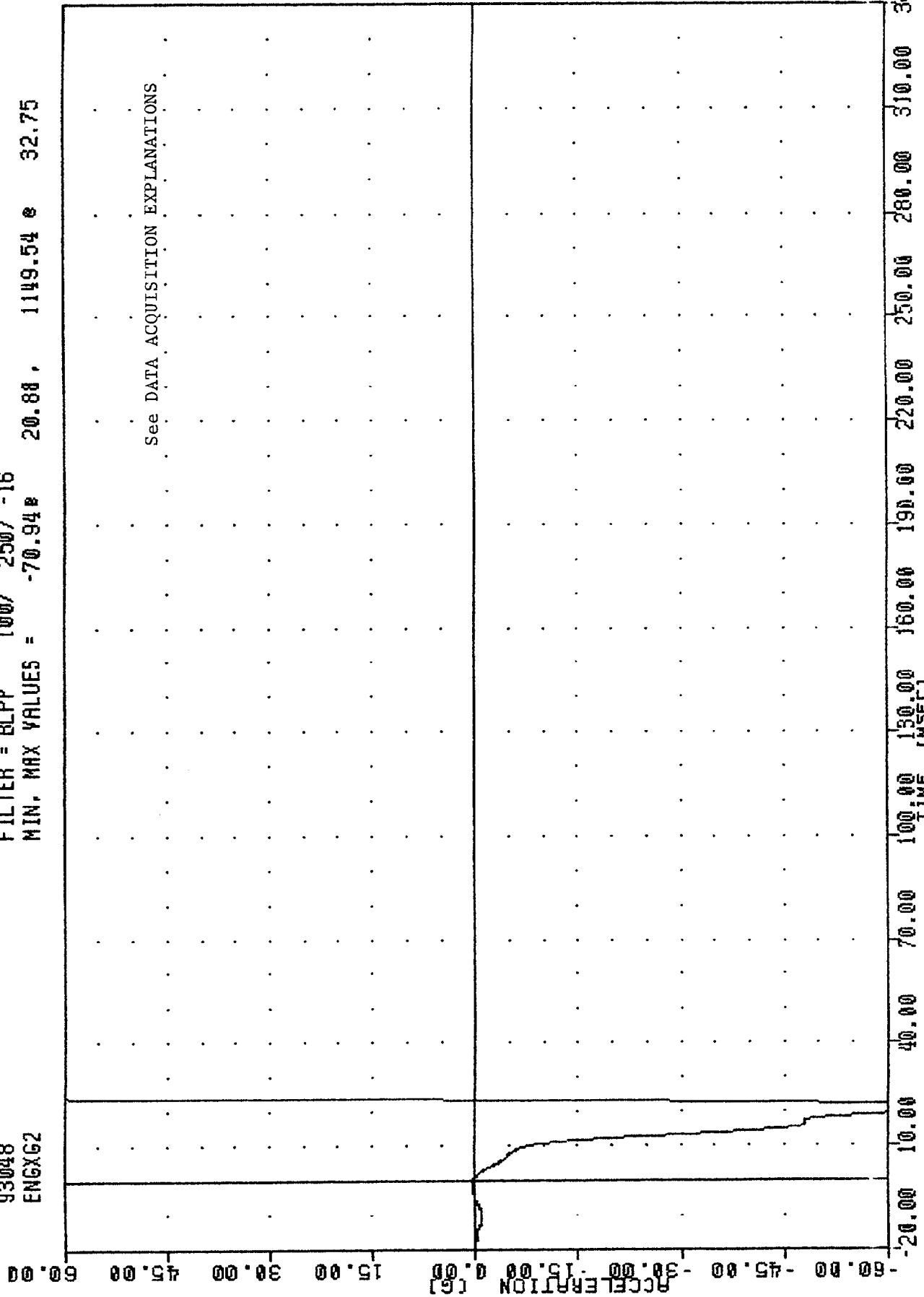
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -84.83 42.36 e 52.63



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ENGINE TOP MAXIMUM ACCELERATION

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 ENGCG2

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -70.94 e 20.88 , 1149.54 e 32.75

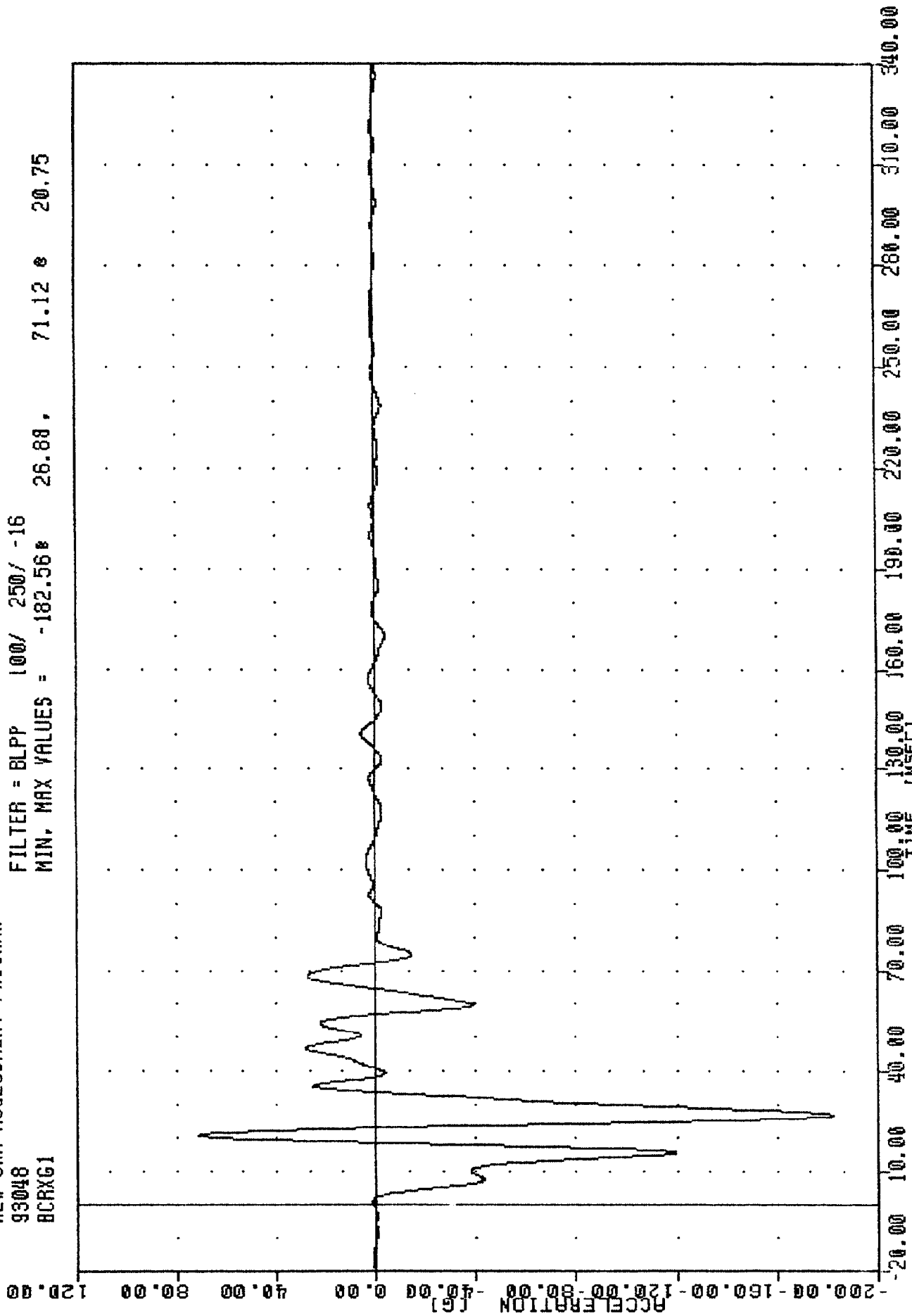


See DATA ACQUISITION EXPLANATIONS

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ENGINE BOTTOM X-AXIS ACCELERATION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
BCRXG1

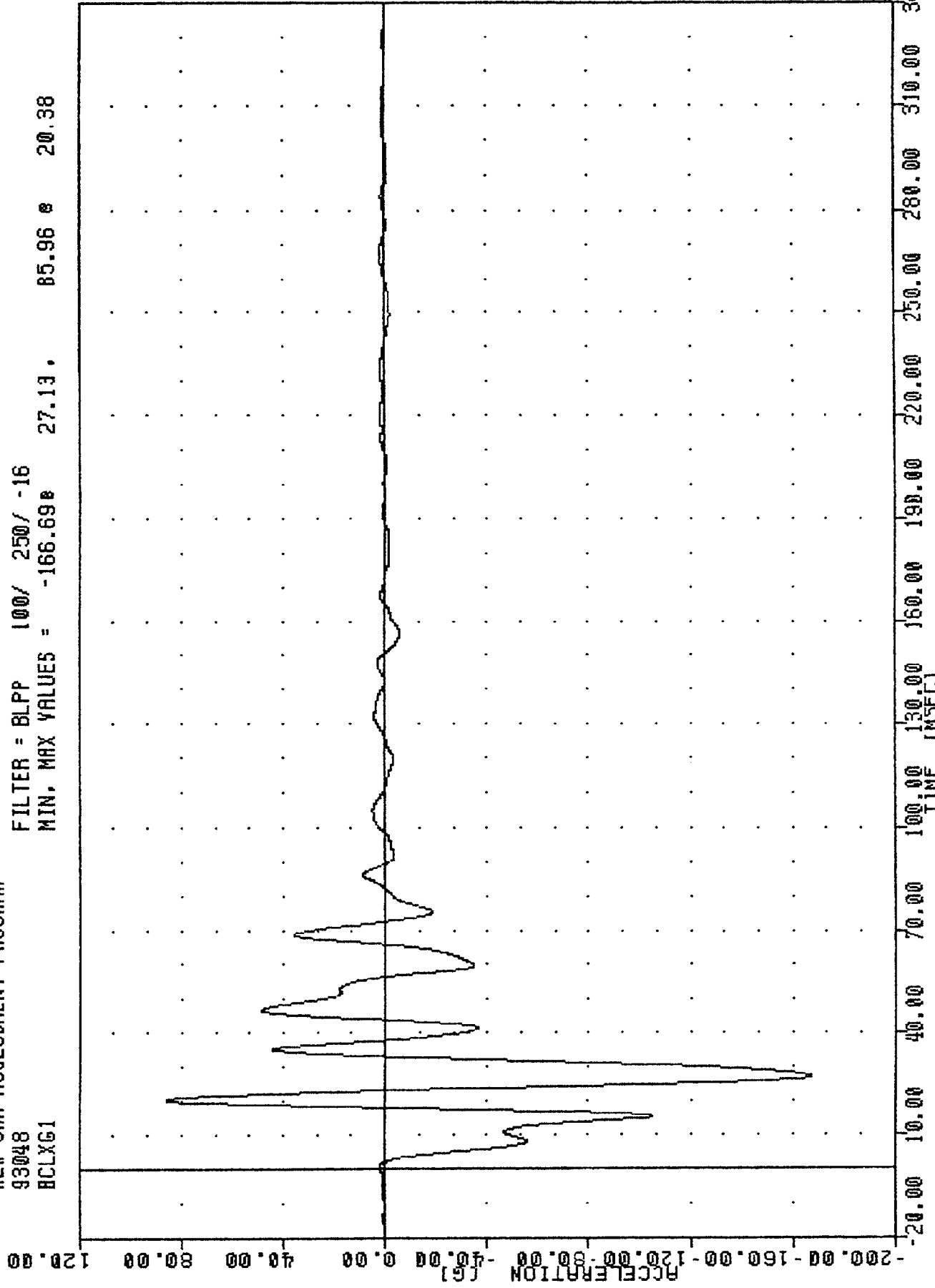
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -182.56 26.88 , 71.12 20.75



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
RIPIT CRASH CALIBER AXLE ASSEMBLY

TAC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
BCLXG1

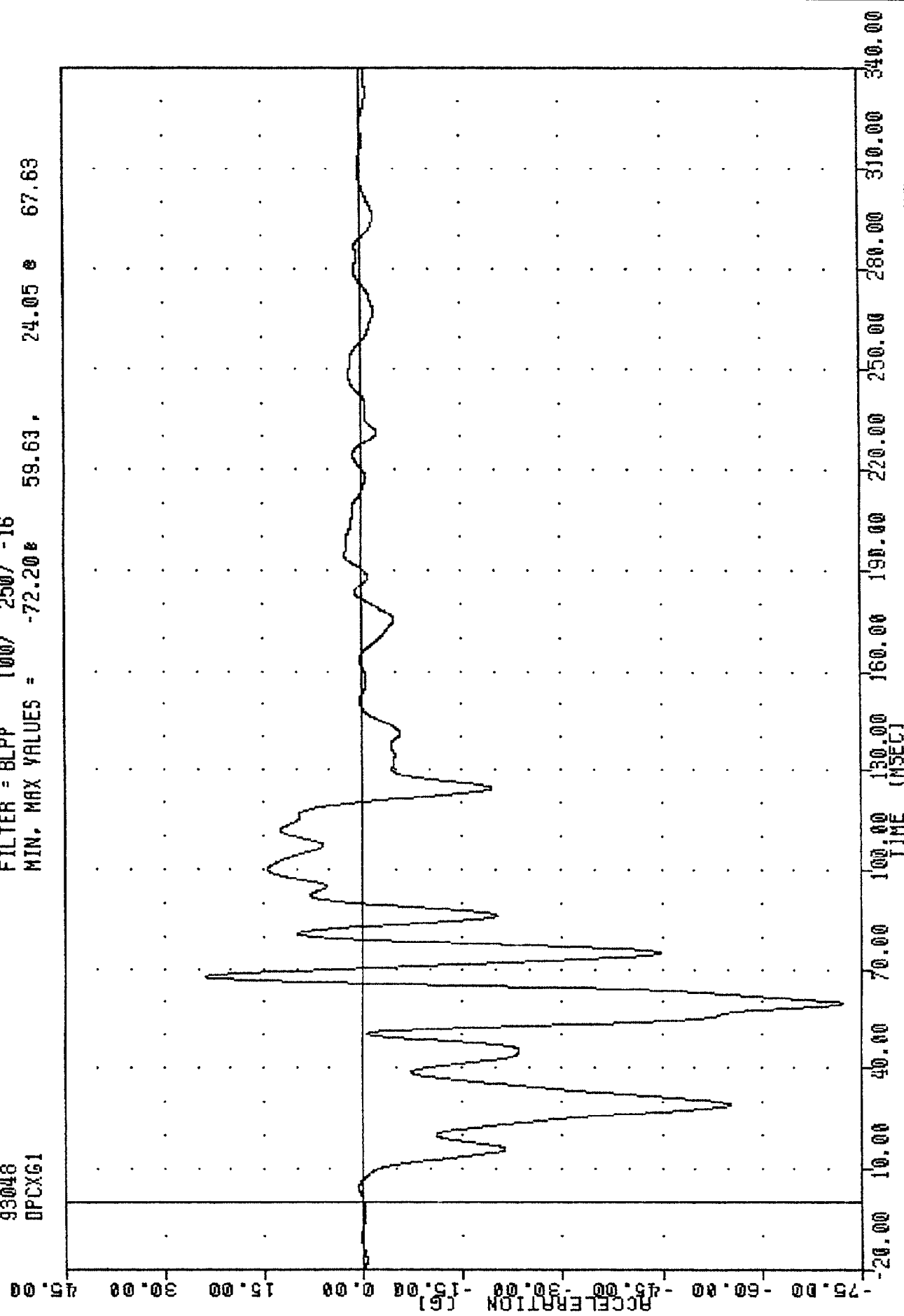
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -166.698 27.13, 85.96 e 20.38



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
DPCXG1

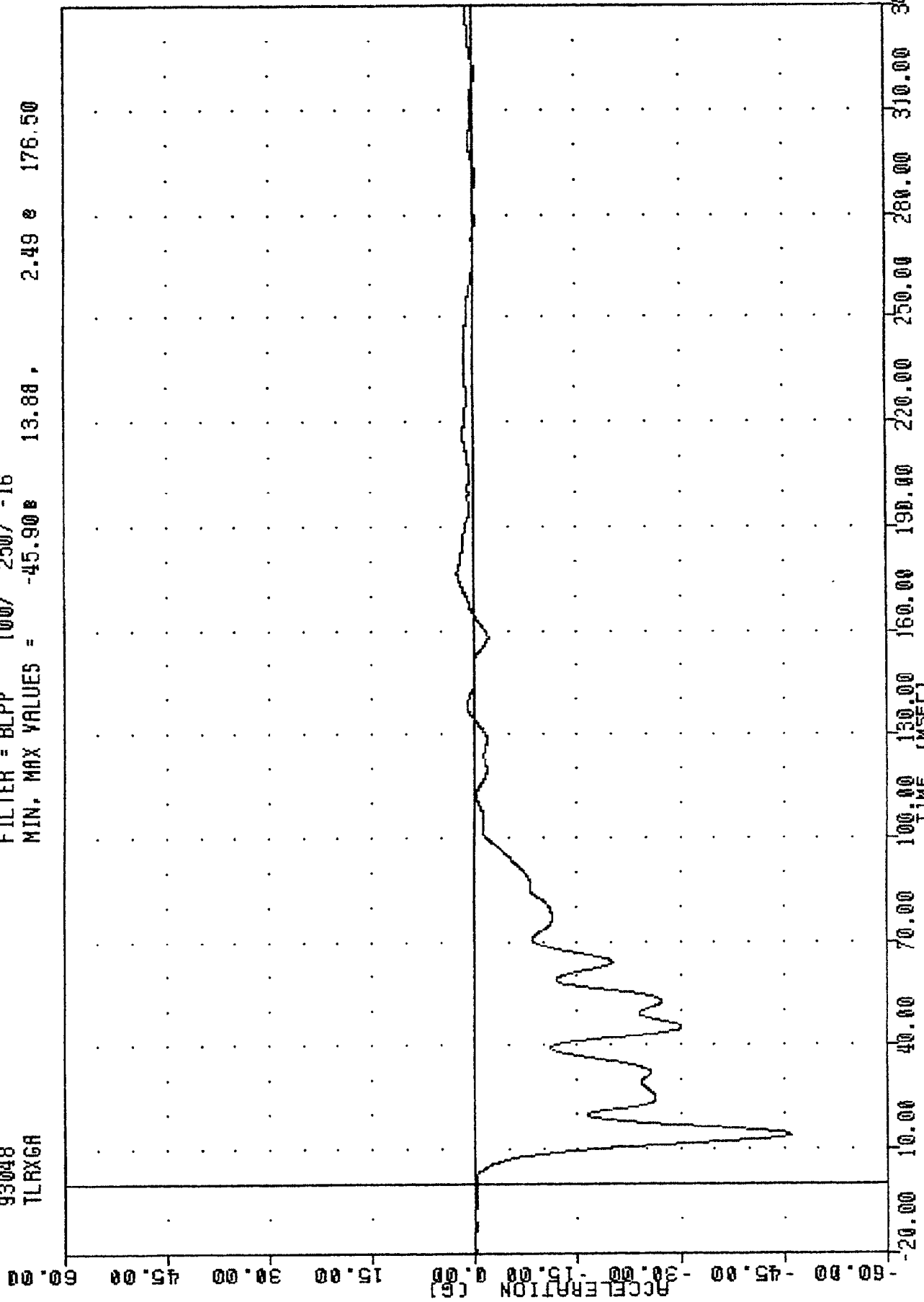
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -72.20 e 59.63 , 24.05 e 67.63



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
INSTRUMENT PANEL CENTER X AXIS ACCELERATION

TRC
NEW CAR ASSESSMENT PROGRAM
93048
TLRXGA

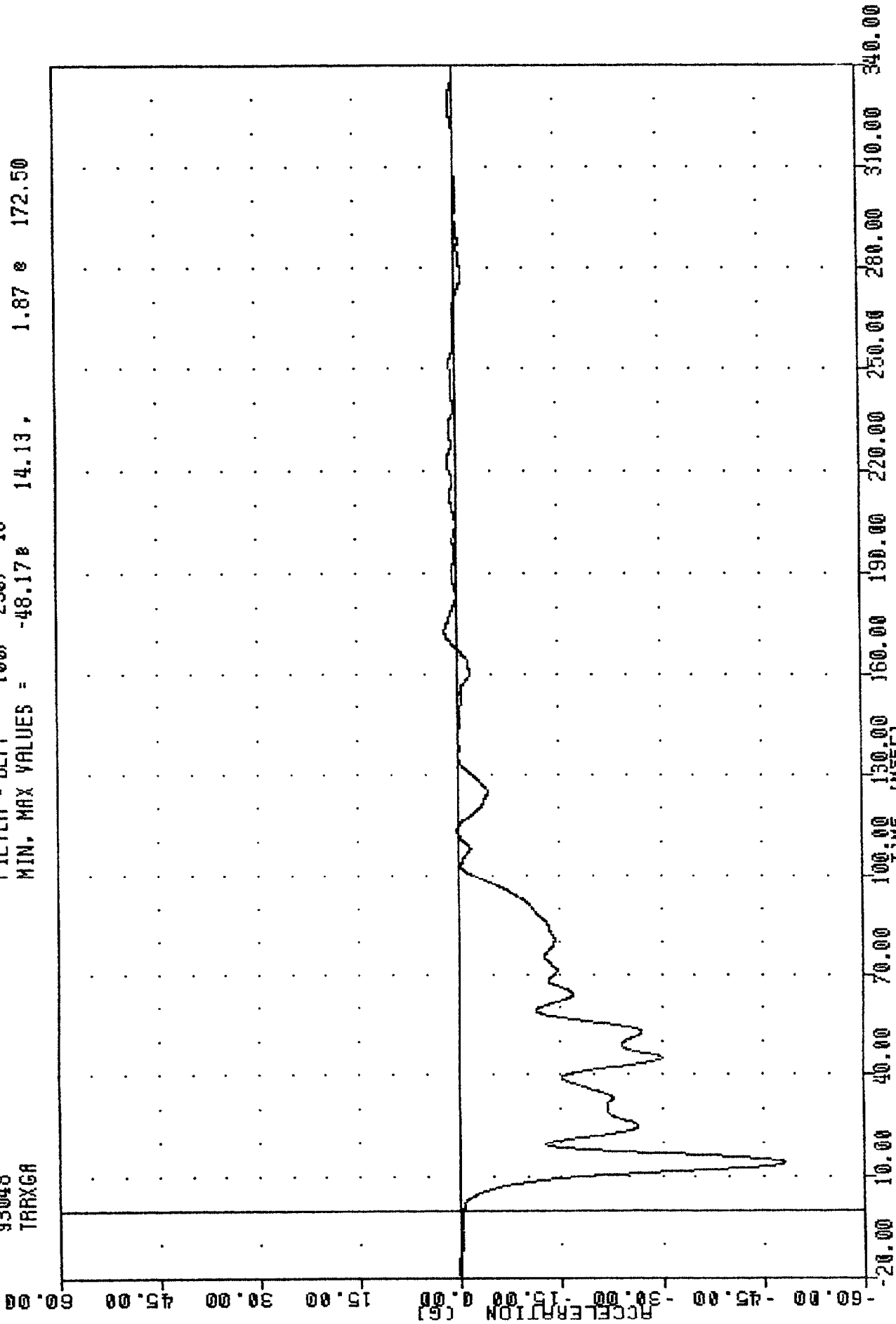
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -45.90B 13.88, 2.49 e 176.50



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
TRRX6A

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -48.17 14.13, 1.87 e 172.50

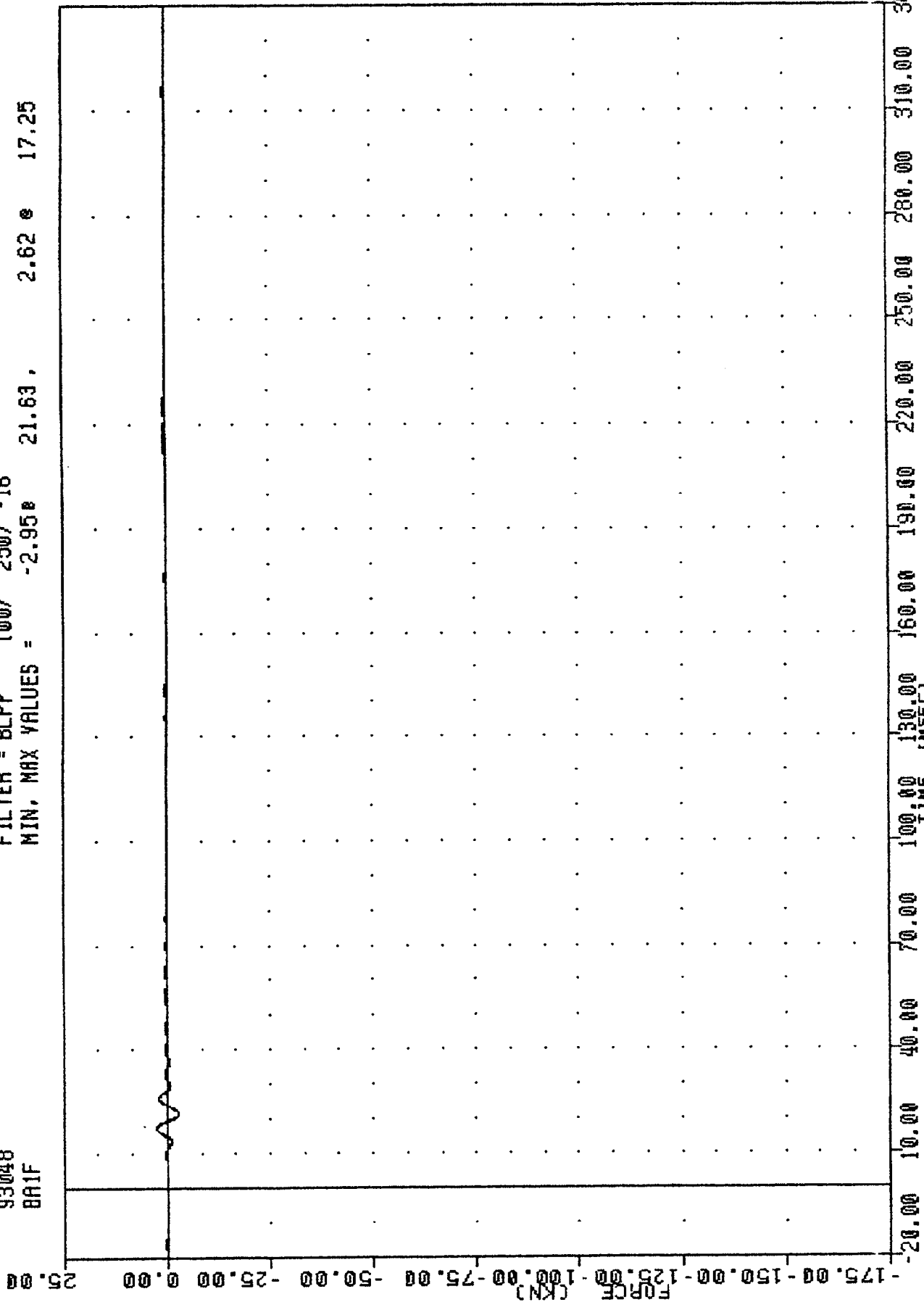


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT REBOUNDANT Y-Axis ACCELERATION

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 BR1F

, 930217

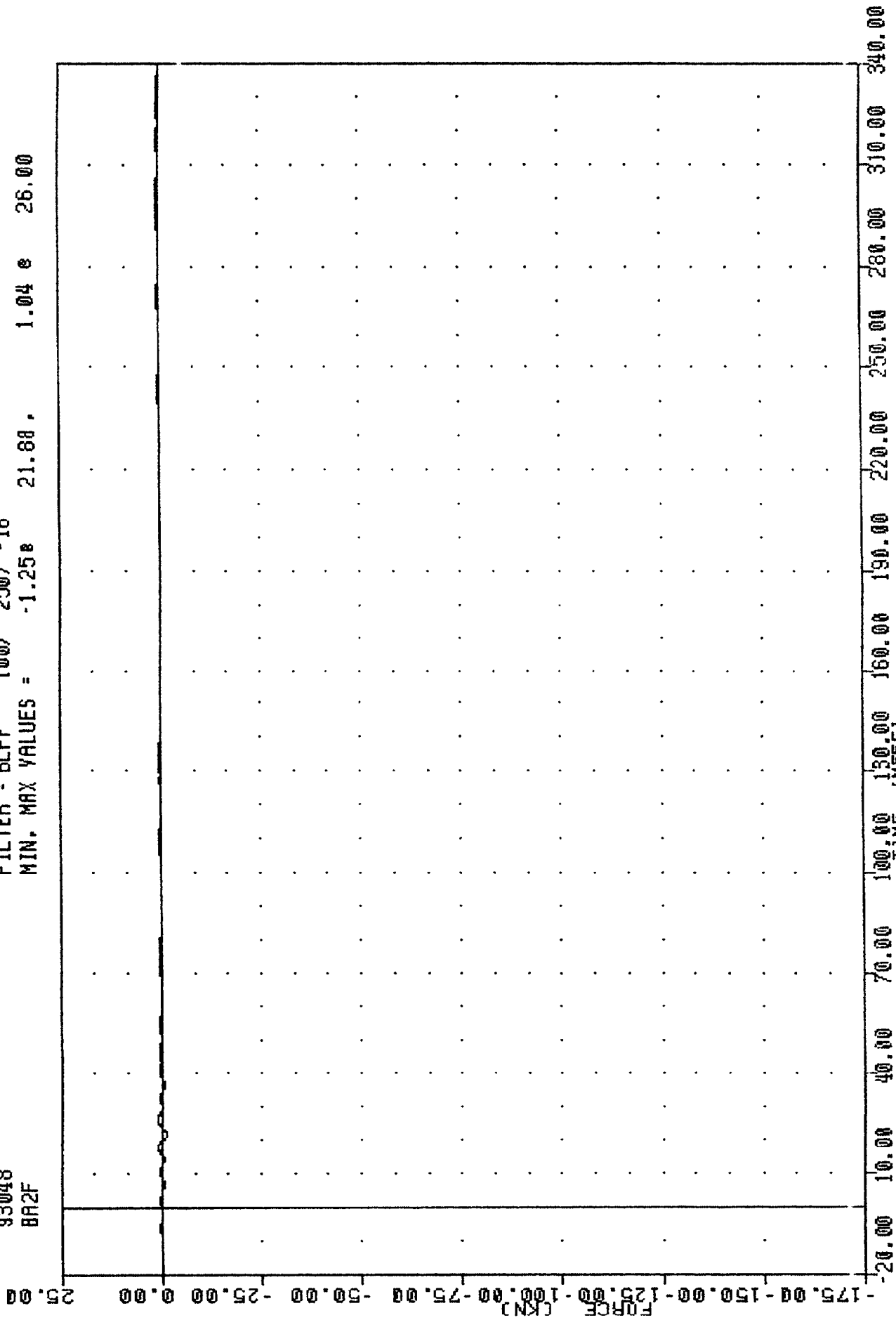
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -2.95e 21.63, 2.62 e 17.25



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A1 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BR2F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1.25e 21.80 . 1.04 e 26.00

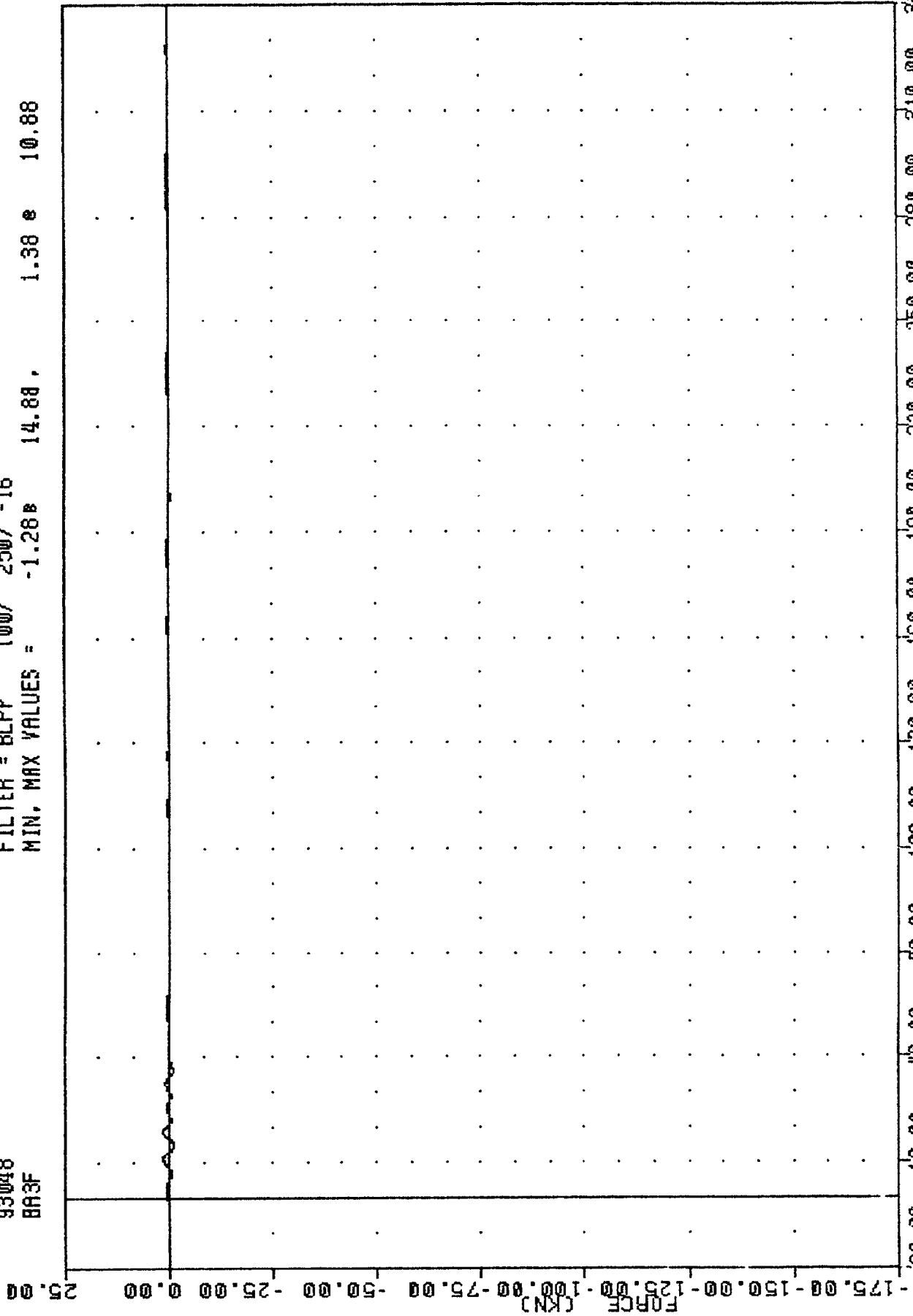


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ADVANCED BARRIER POSITION FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 930418
 BR3F

, 930217

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -1.288 14.88, 1.38 e 10.88

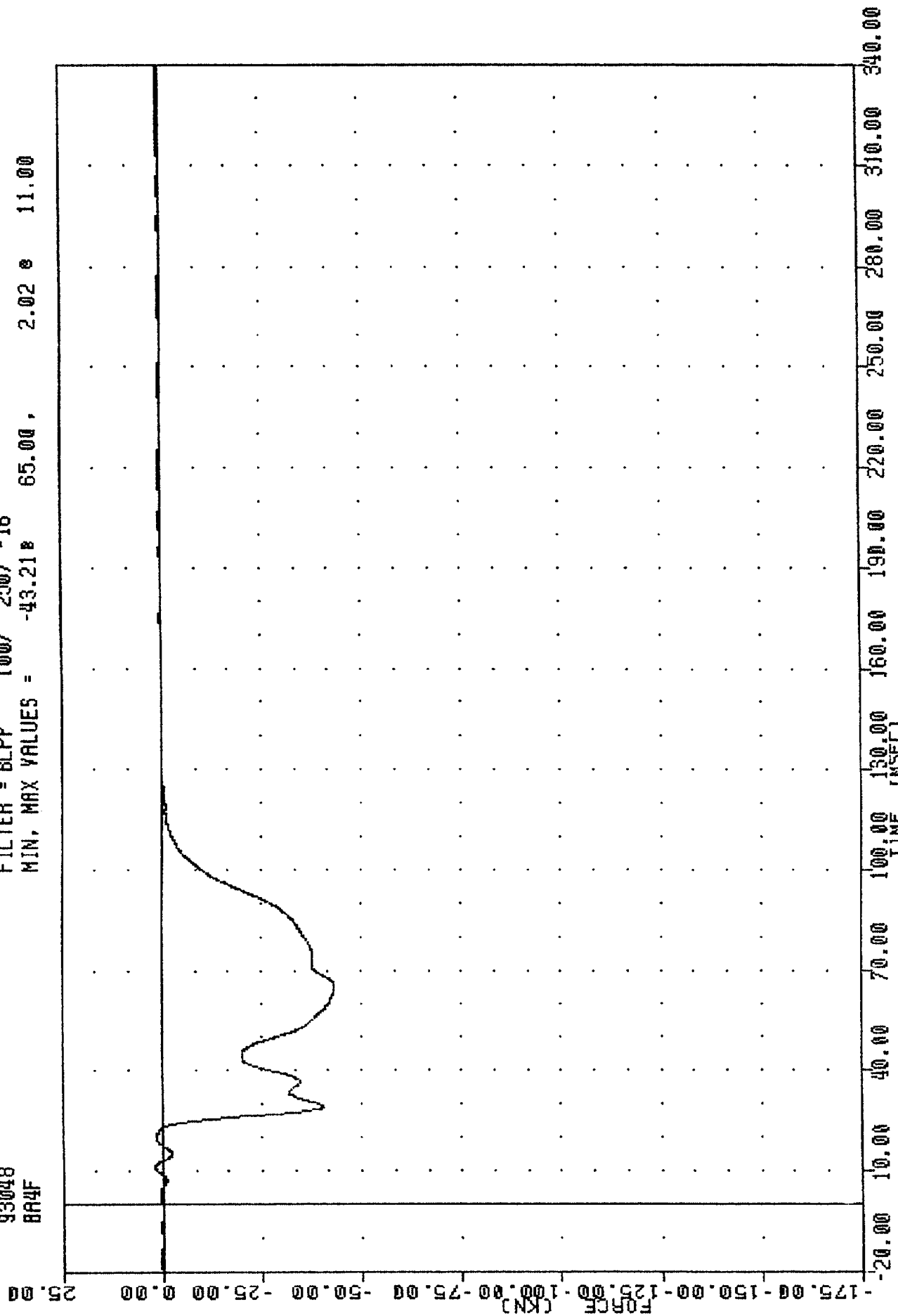


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A3 FORCE

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
BA4F

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -43.218 65.000, 2.02 11.00

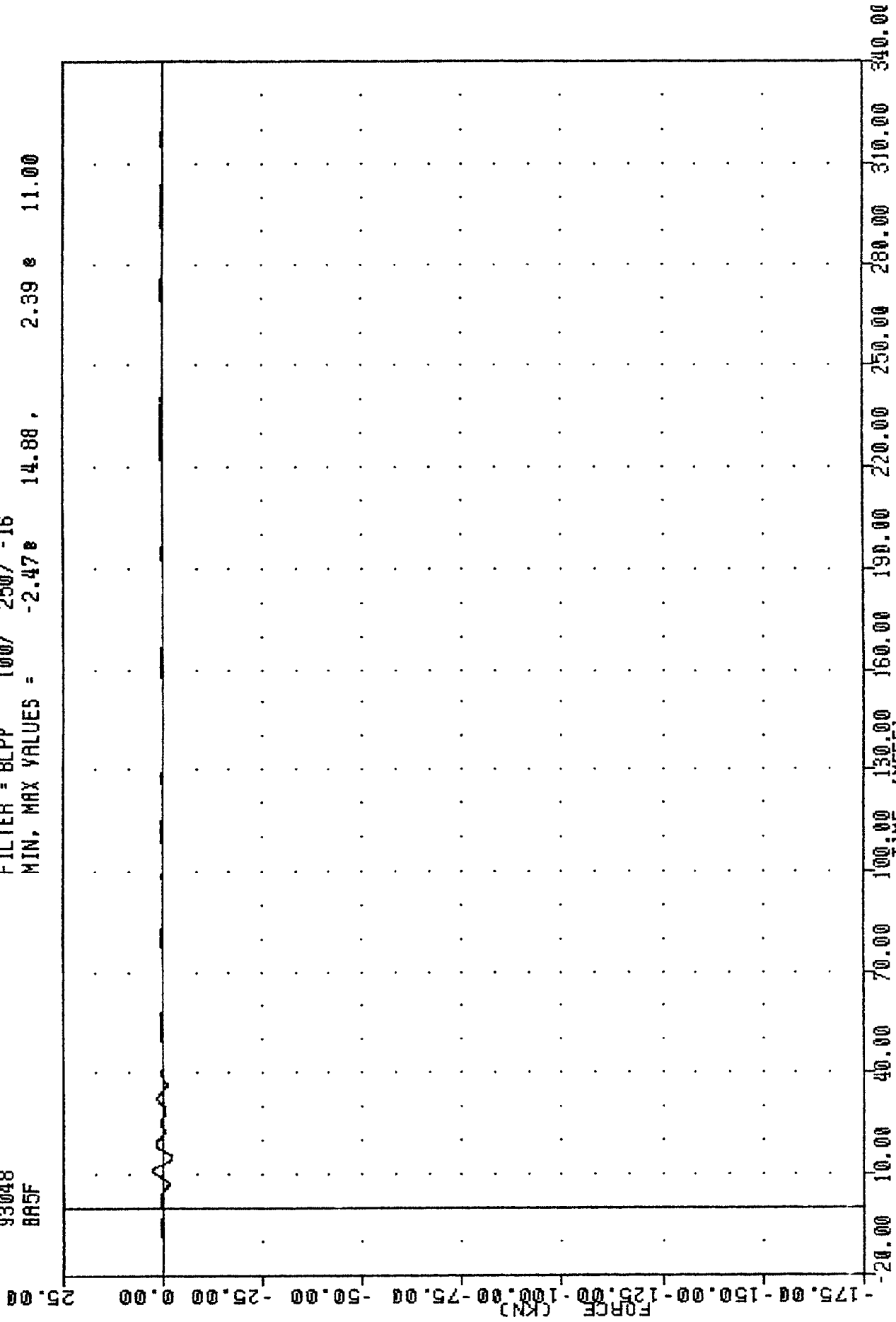


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
ADJUSTER POSITION ON FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 BA5F

930217

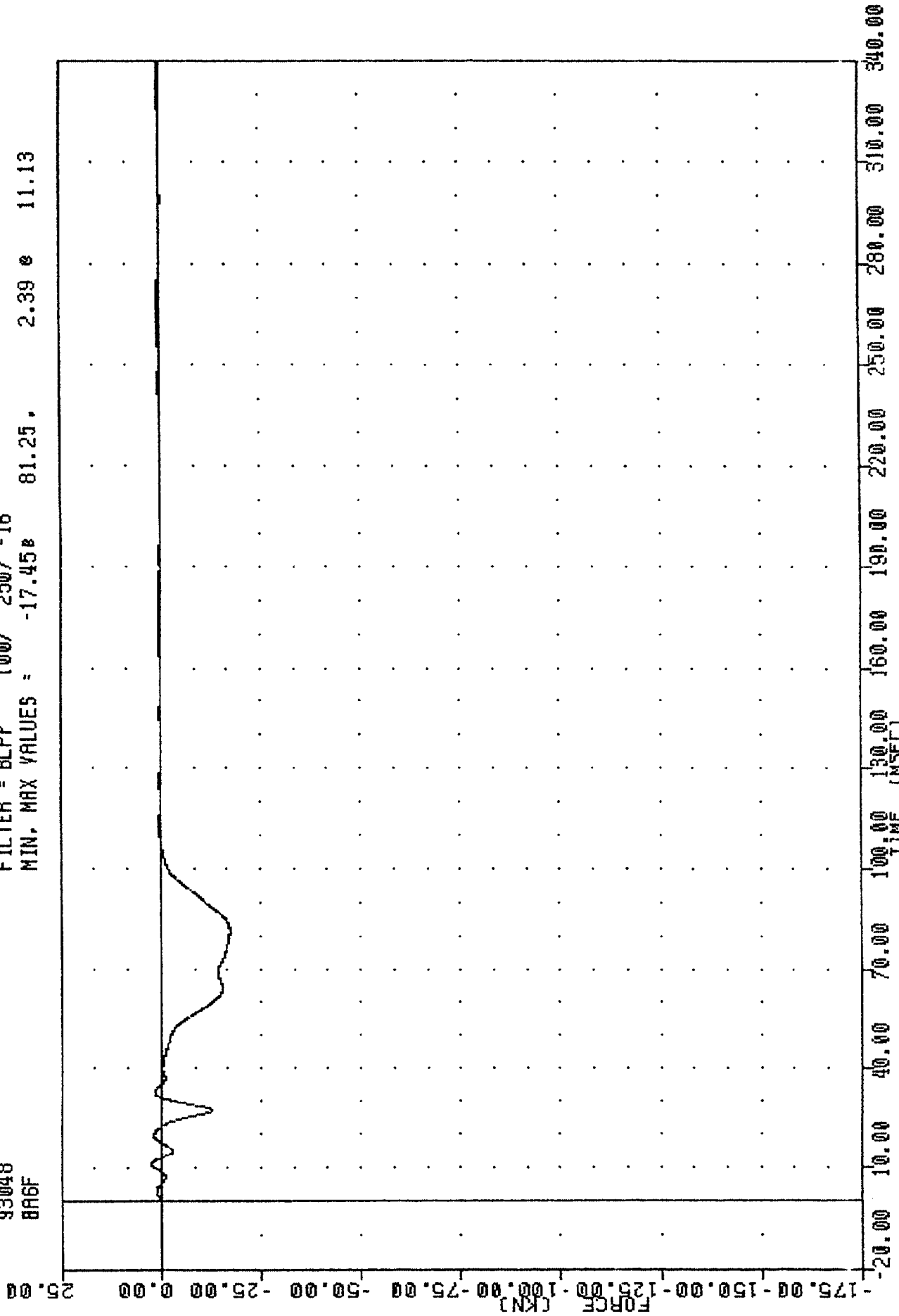
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -2.47e 14.88, 2.39 e 11.00



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A5 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BR6F

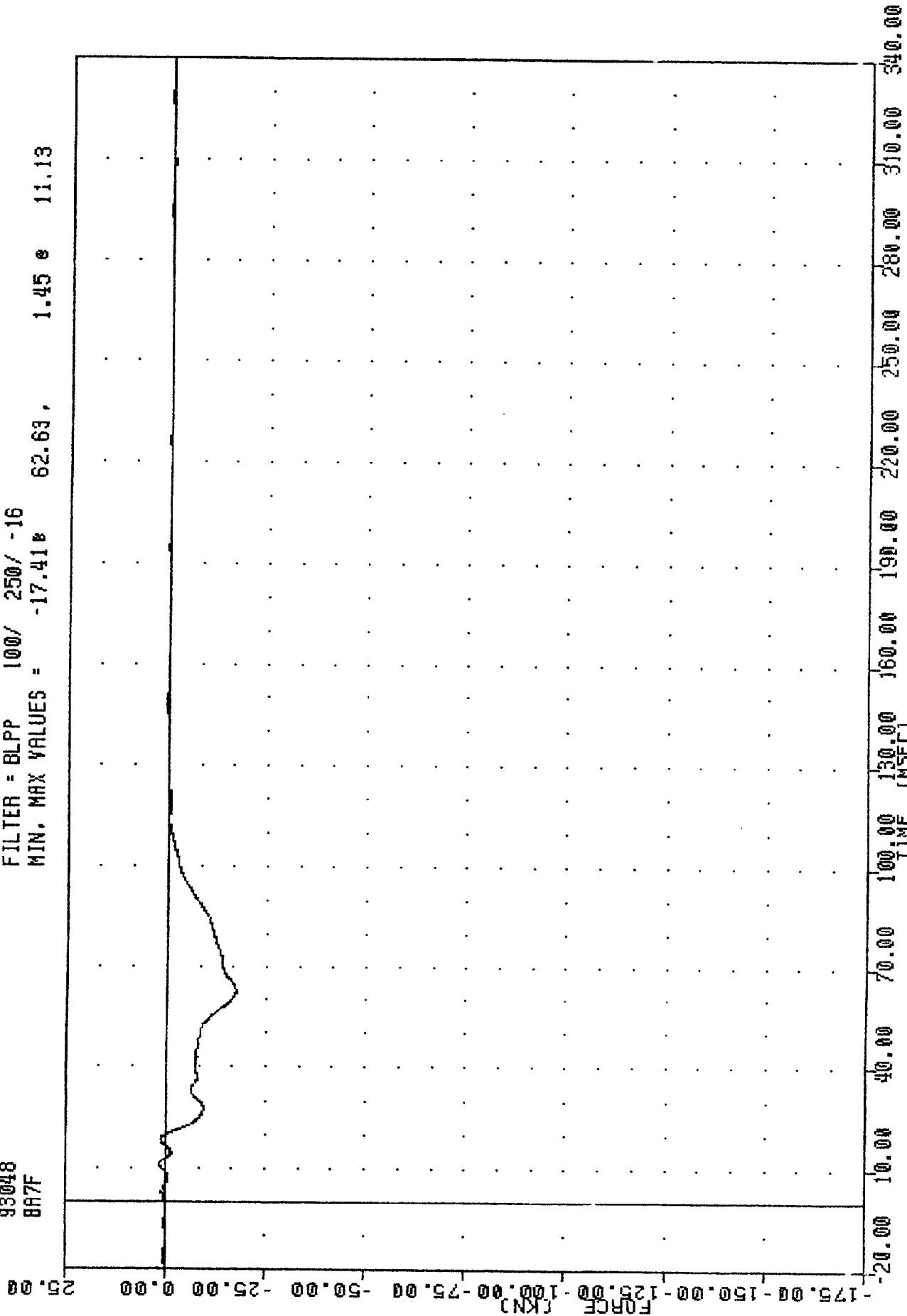
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -17.45 81.25 2.39 e 11.13



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 BARRIER POSITION FORCE

TRC
930217
NEW CAR ASSESSMENT PROGRAM
93048
8A7F

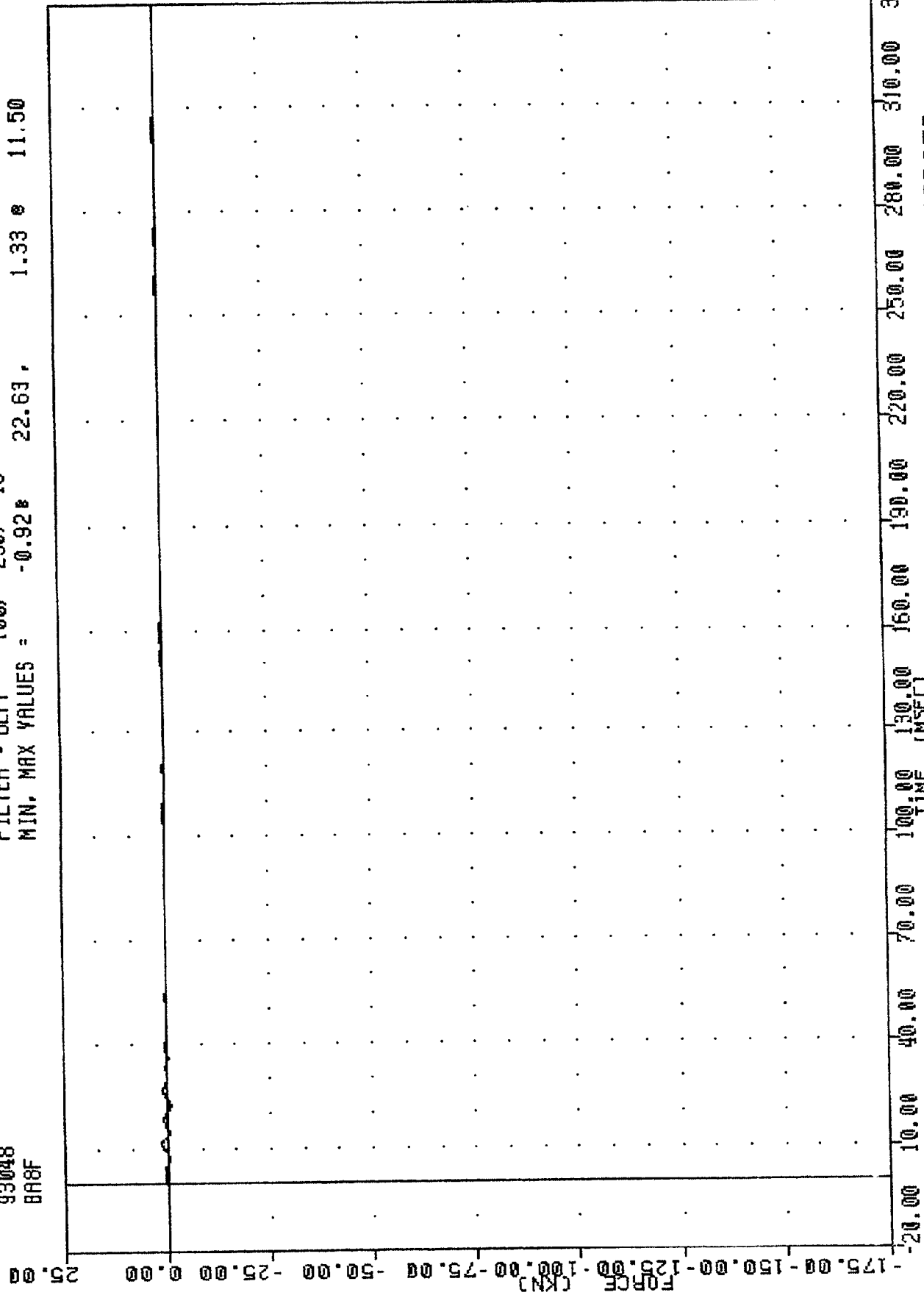
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -17.418 62.63, 1.45 e 11.13



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A7 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BARF

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -0.92 22.63 1.33 11.50

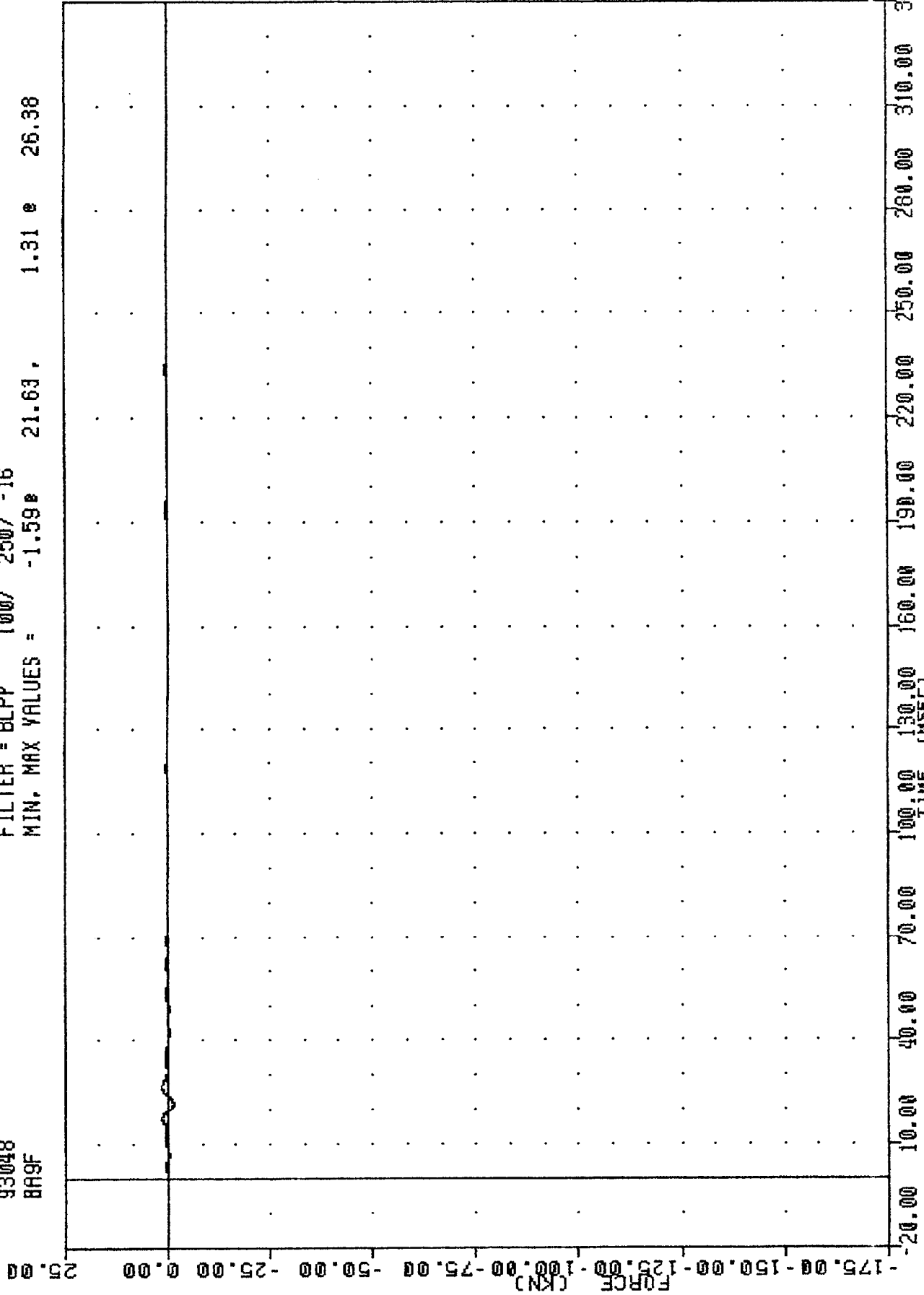


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 FORWARD BARRIER POSITION FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 BA9F

930217

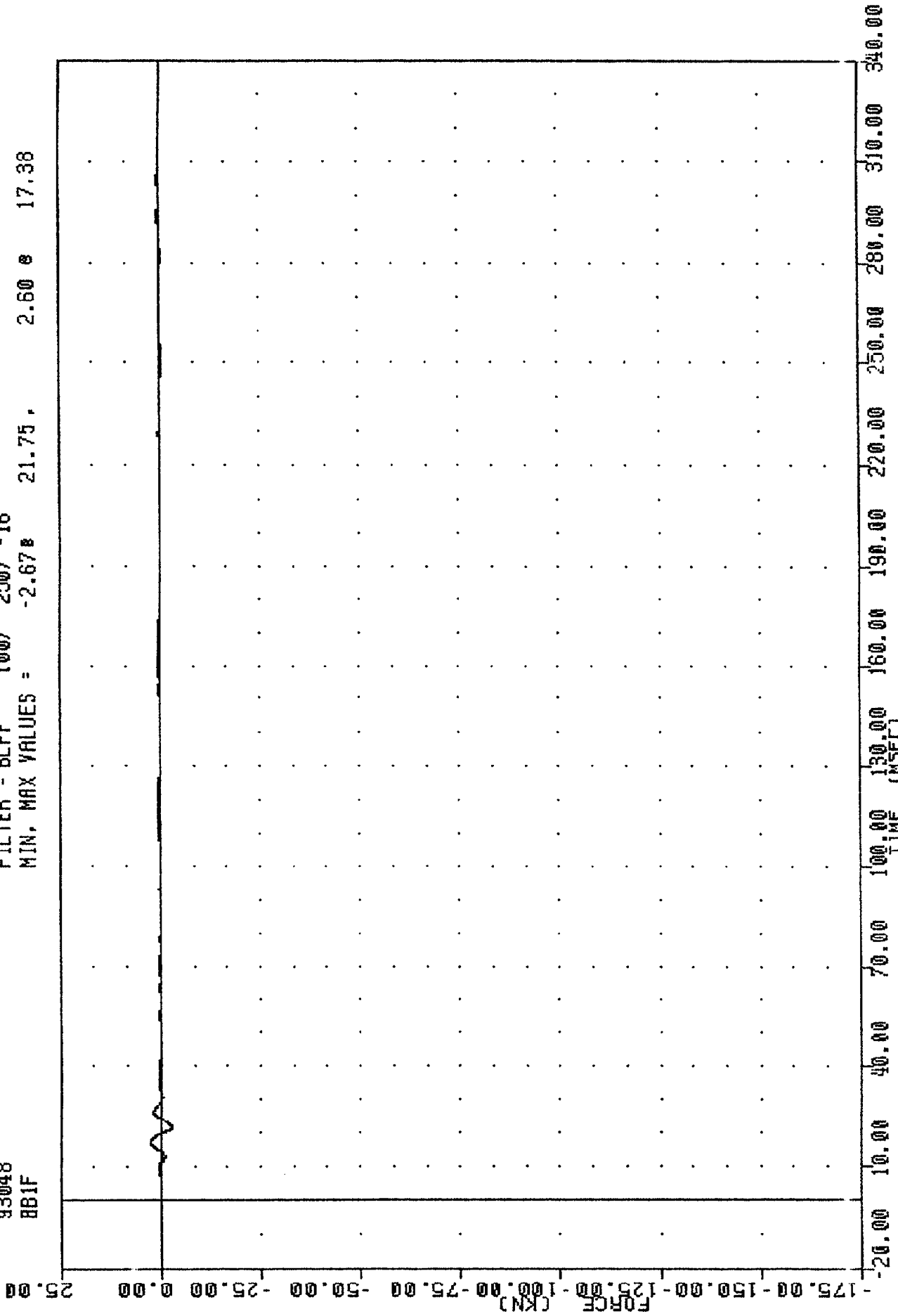
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1.59e 21.63, 1.31 e 26.38



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A9 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BBIF

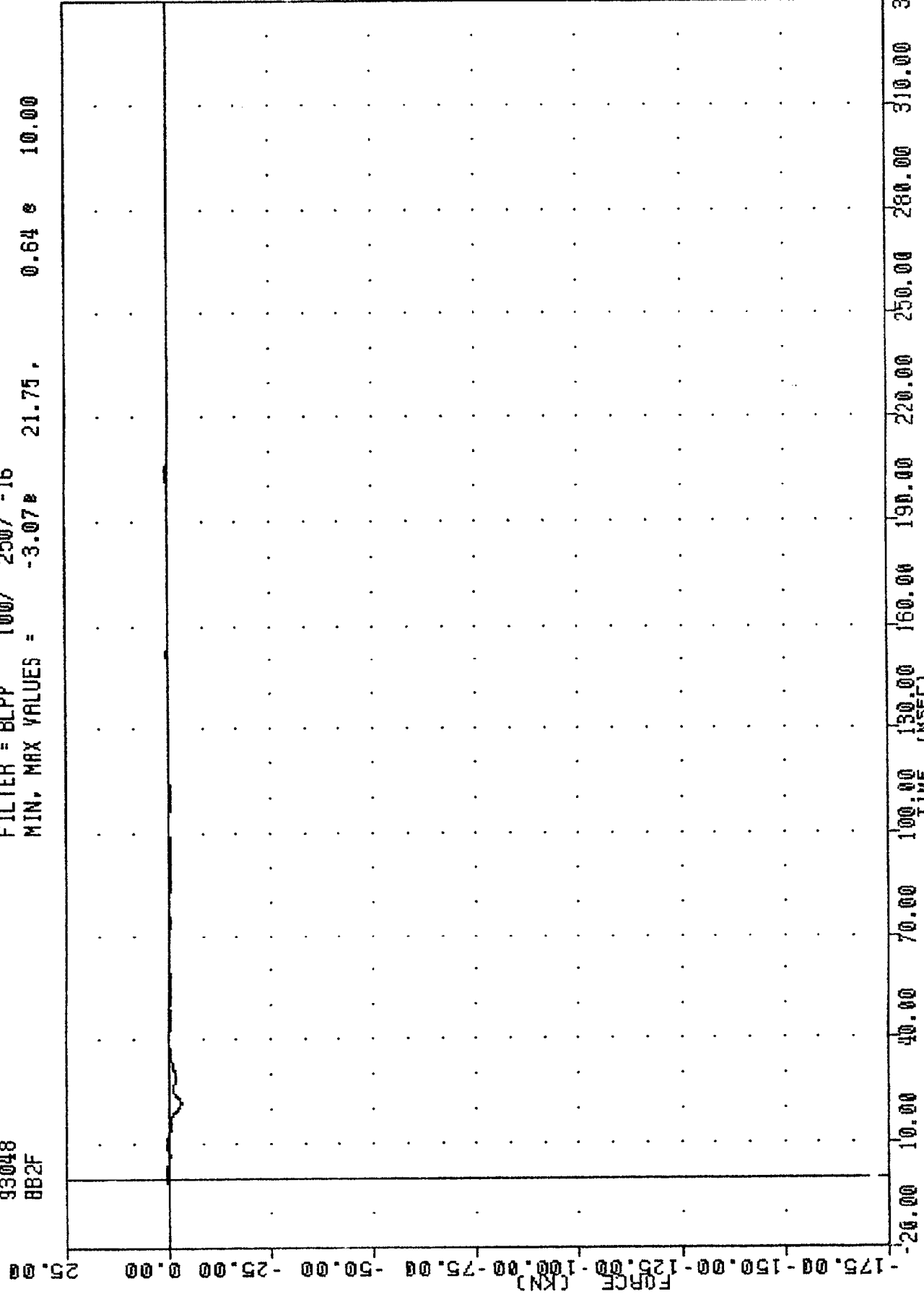
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -2.67 21.75 2.60 17.38



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ROADWELL BARRIER POSITION FORCE

TRC .930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BB2F

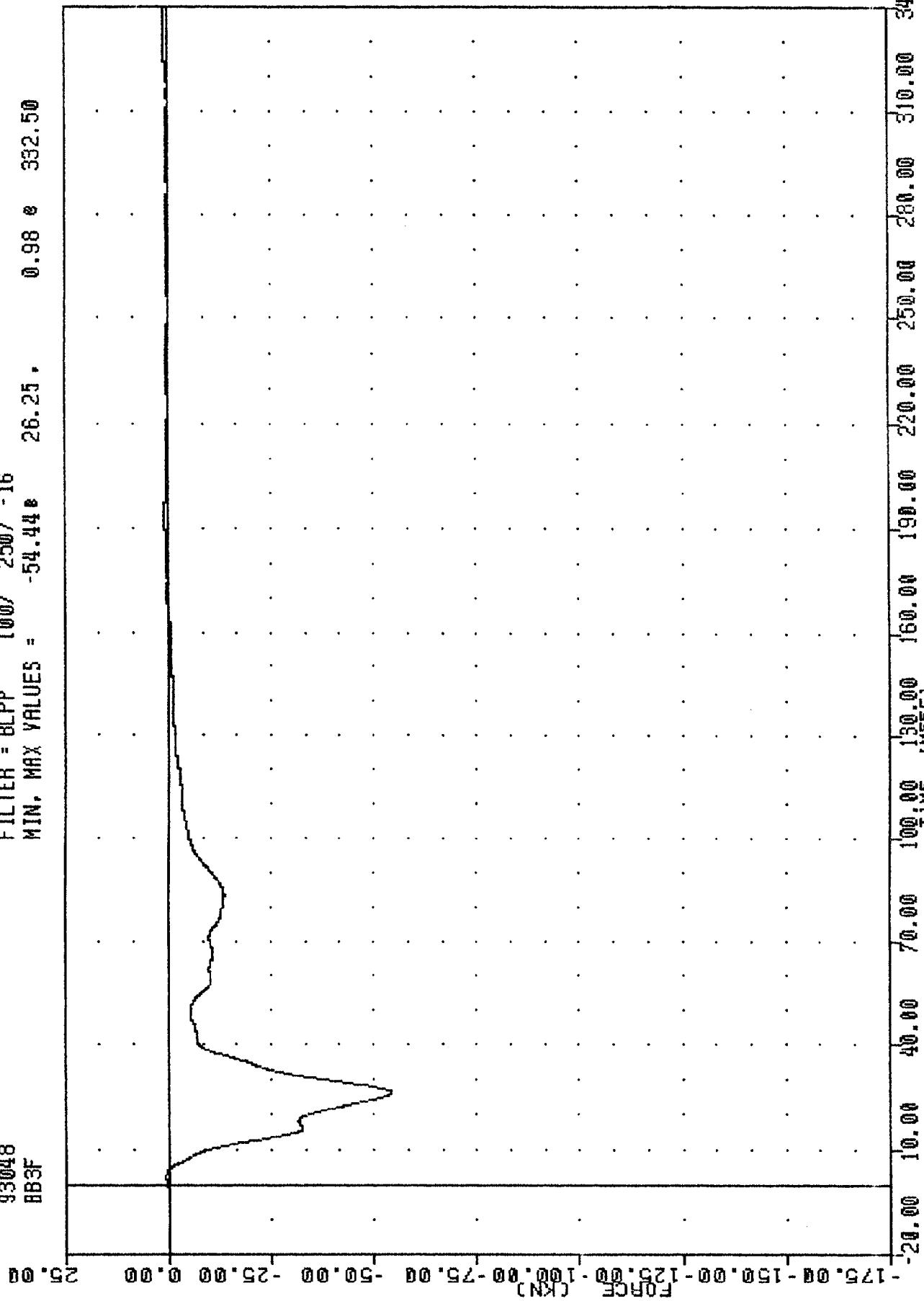
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -3.07% 21.75, 0.64% 10.00



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B2 FORCE

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
BB3F

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -54.44 e 26.25 . 0.98 e 332.50

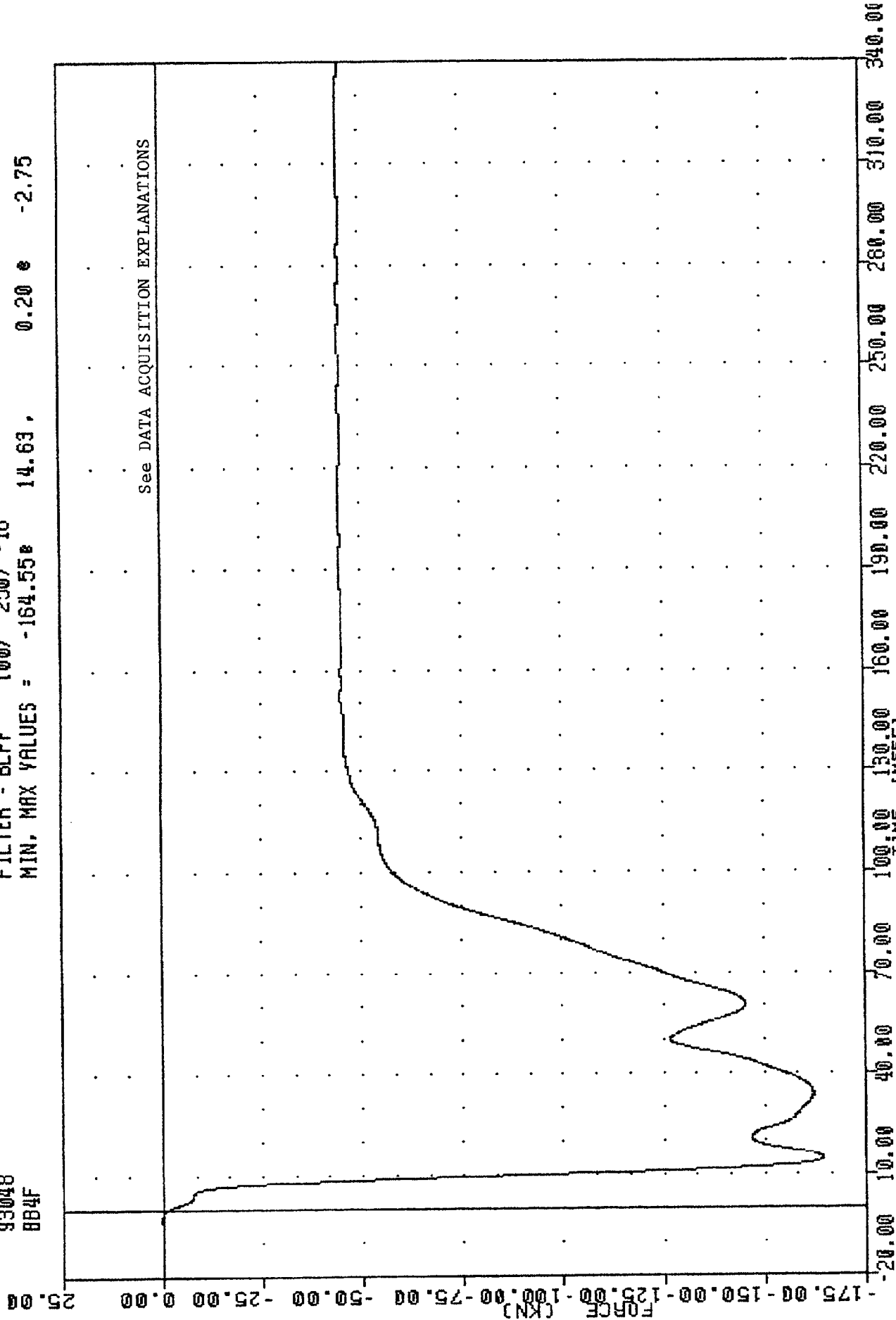


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
ADJ. BARRIER POSITION FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 BB4F

, 930217

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -164.55e 14.63, 0.20 e -2.75

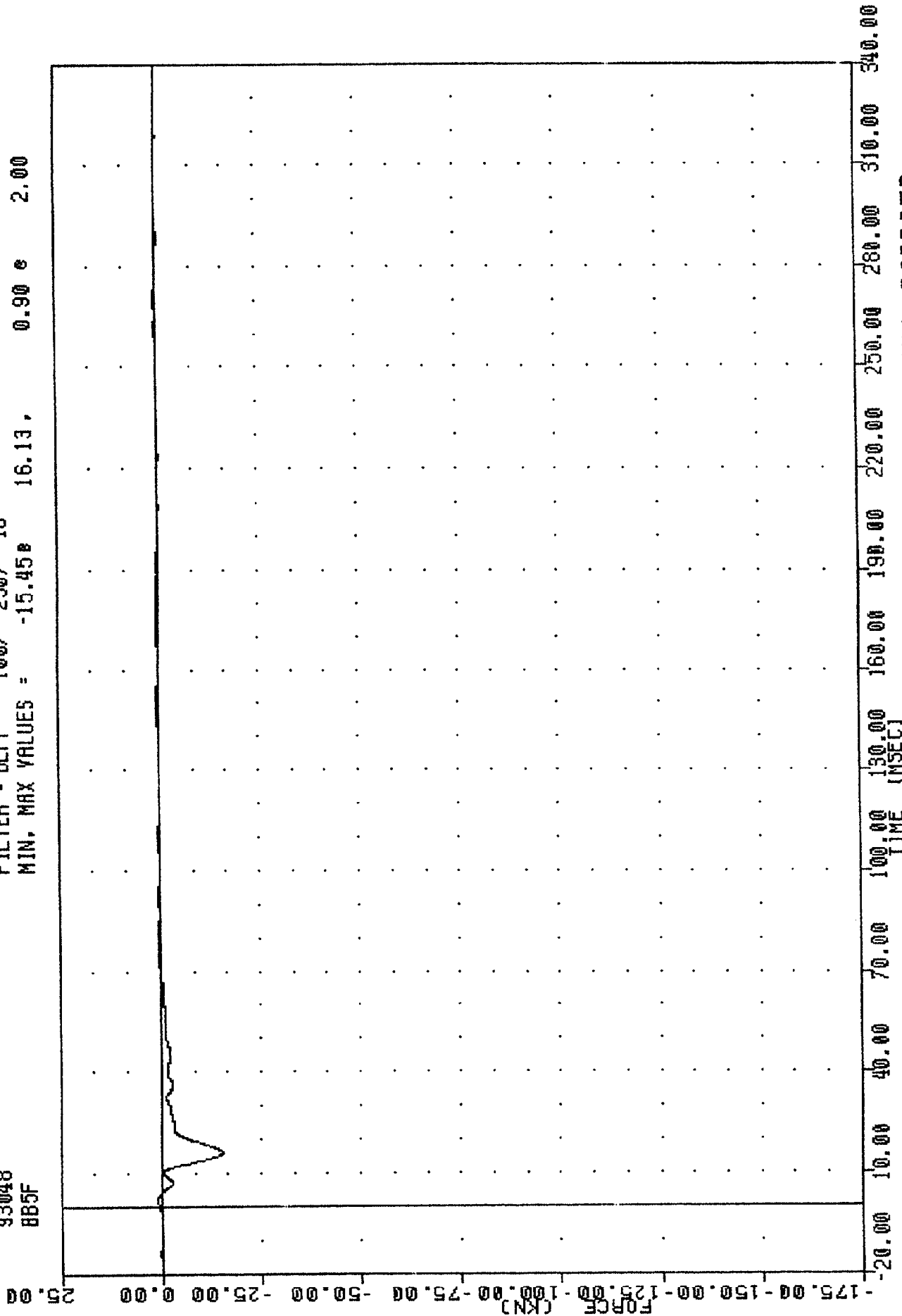


See DATA ACQUISITION EXPLANATIONS

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B4 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BB5F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -15.45 16.13 0.90 2.00



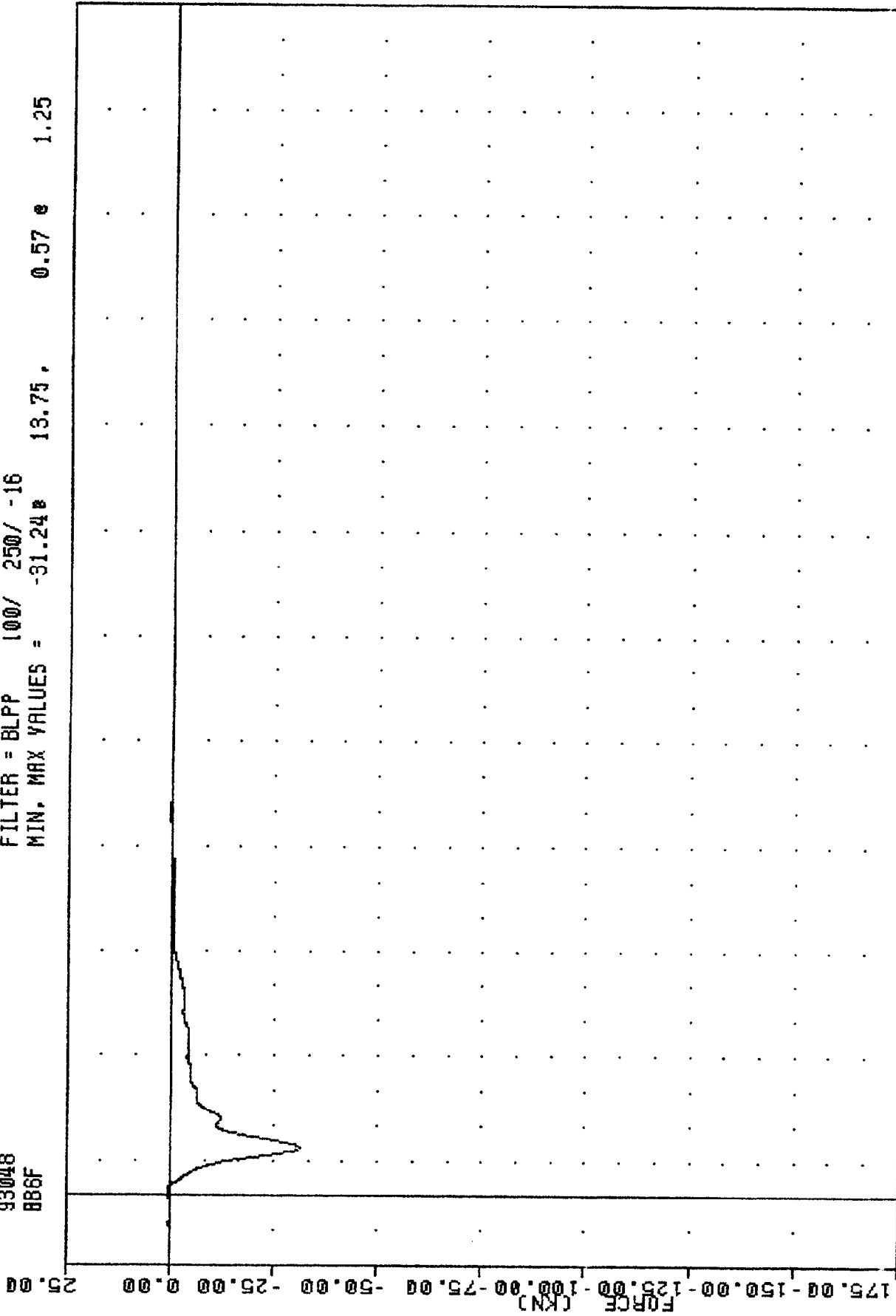
1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION FORCE

TRC
NEW CAR ASSESSMENT PROGRAM

, 930217

93048
886F

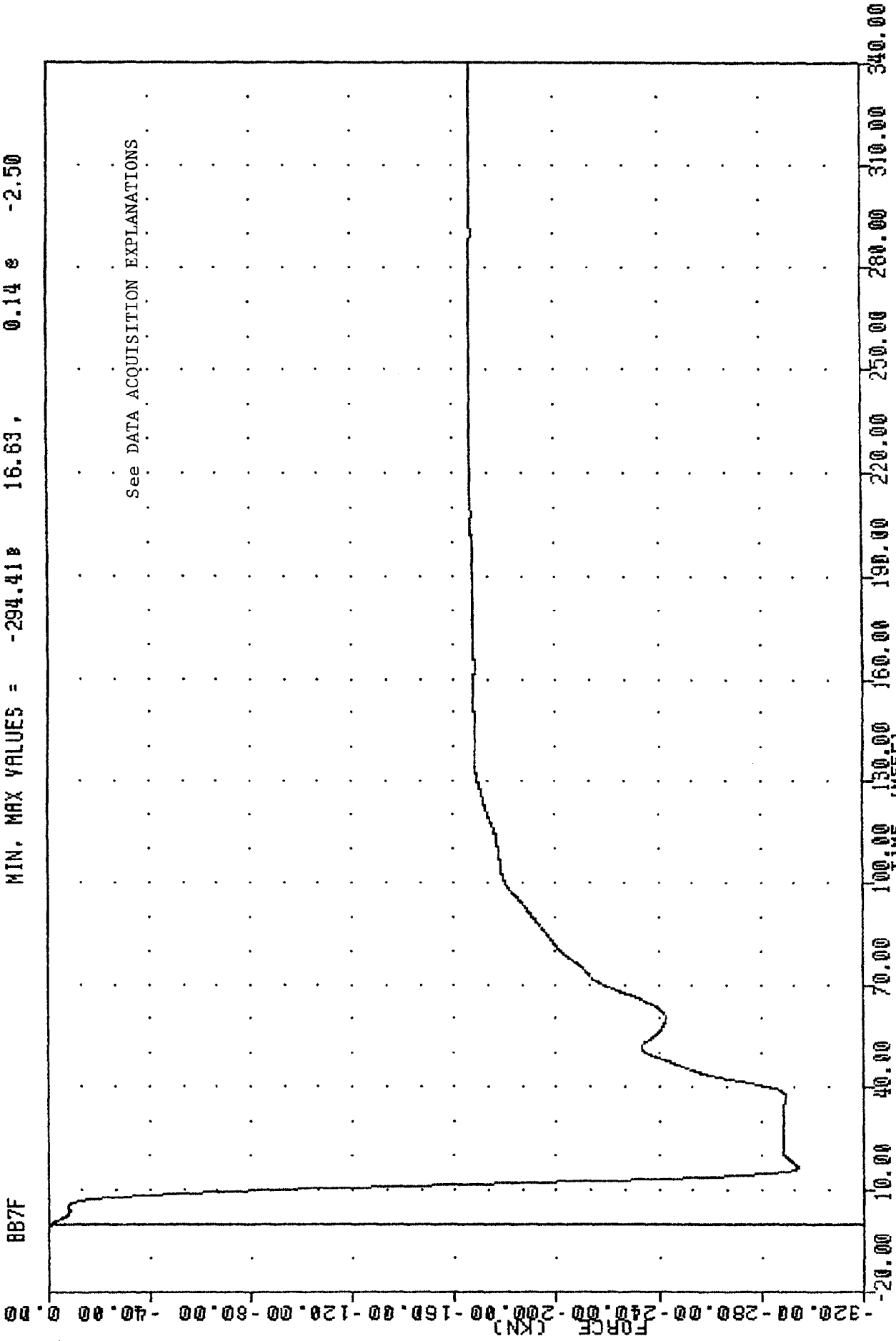
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -31.24 e 13.75, 0.57 e 1.25



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION 86 FORCE

TRC 930217
NEW CAR ASSESSMENT PROGRAM
93048
887F

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -294.41 16.63, 0.14 e -2.50

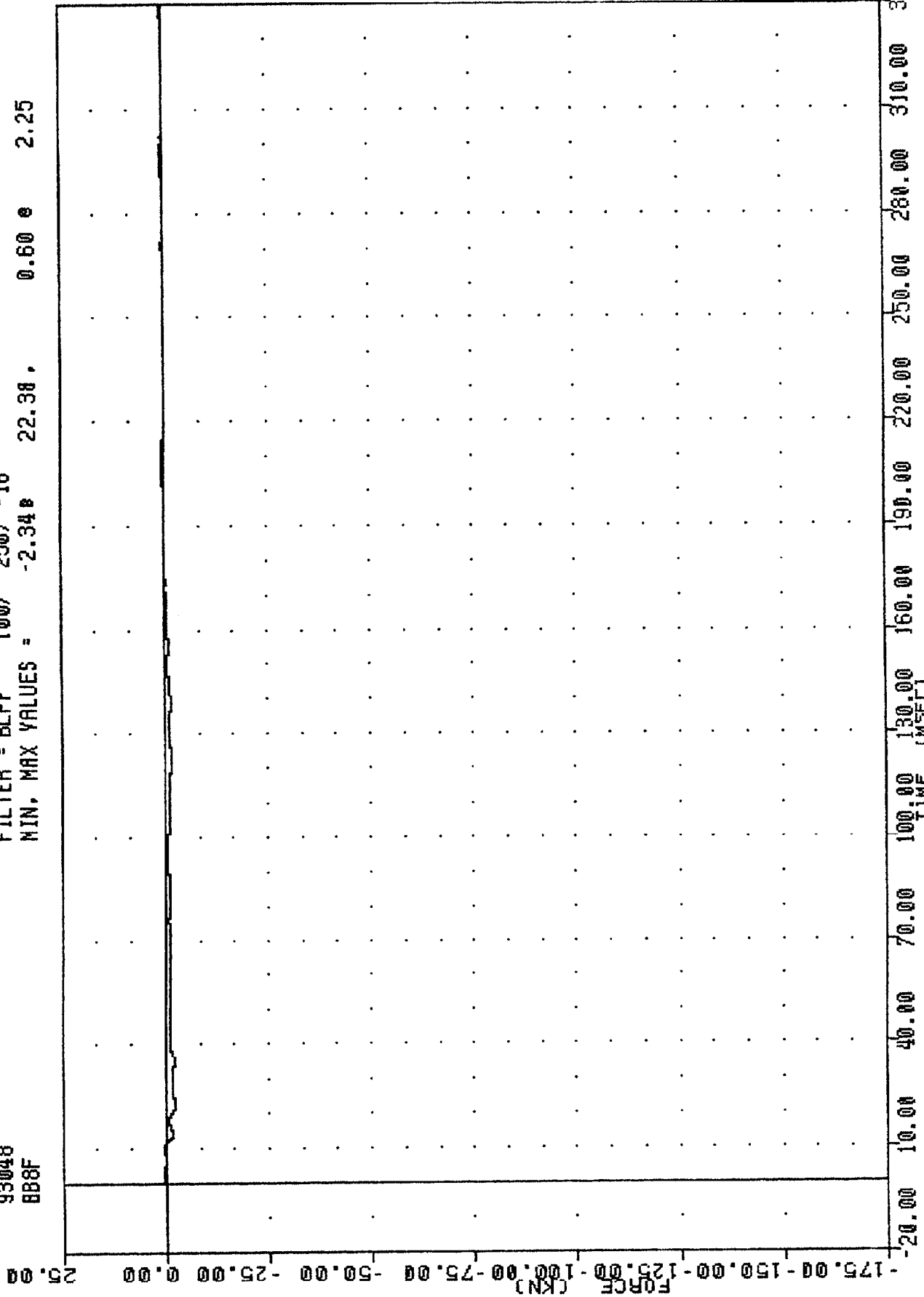


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 BB8F

930217

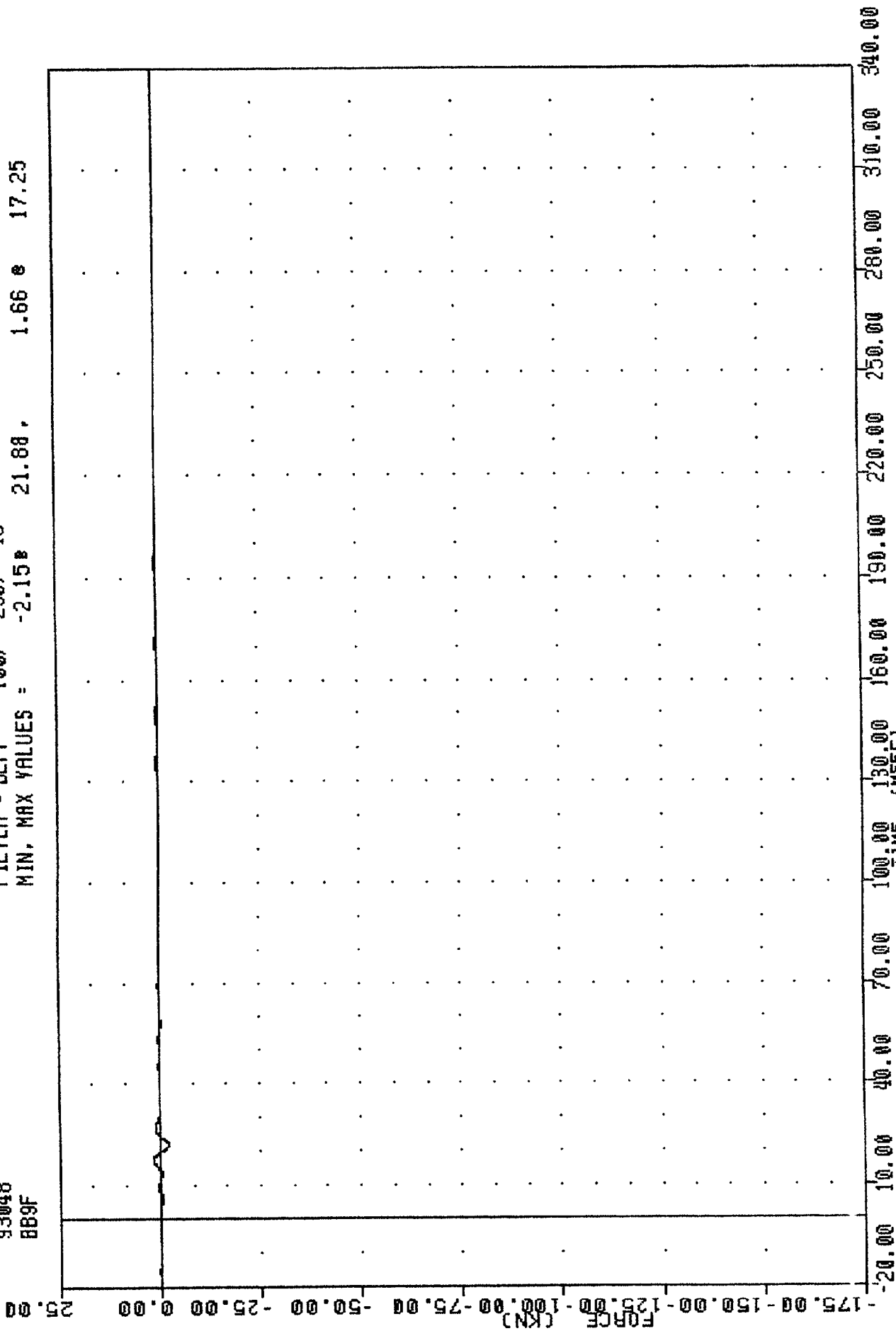
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -2.34 22.38 0.60 2.25



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION BB FORCE

TRC 930217
 NEY CAR ASSESSMENT PROGRAM
 93048
 BB9F

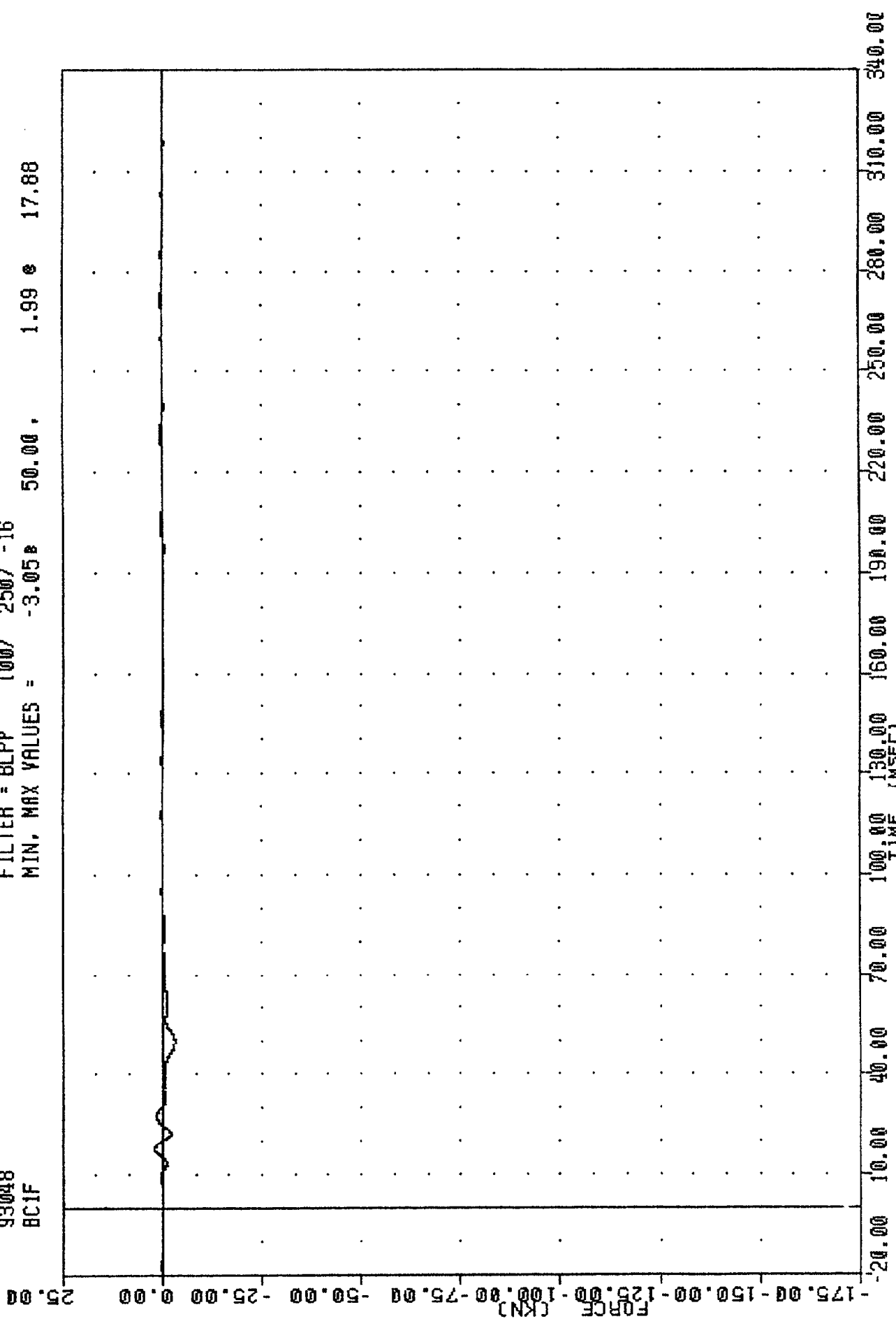
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -2.15 21.88 1.66 e 17.25



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ROAD CELL BARRIER SIMON FORCE

TRC
 93048
 BC1F
 NEW CAR ASSESSMENT PROGRAM
 , 930217

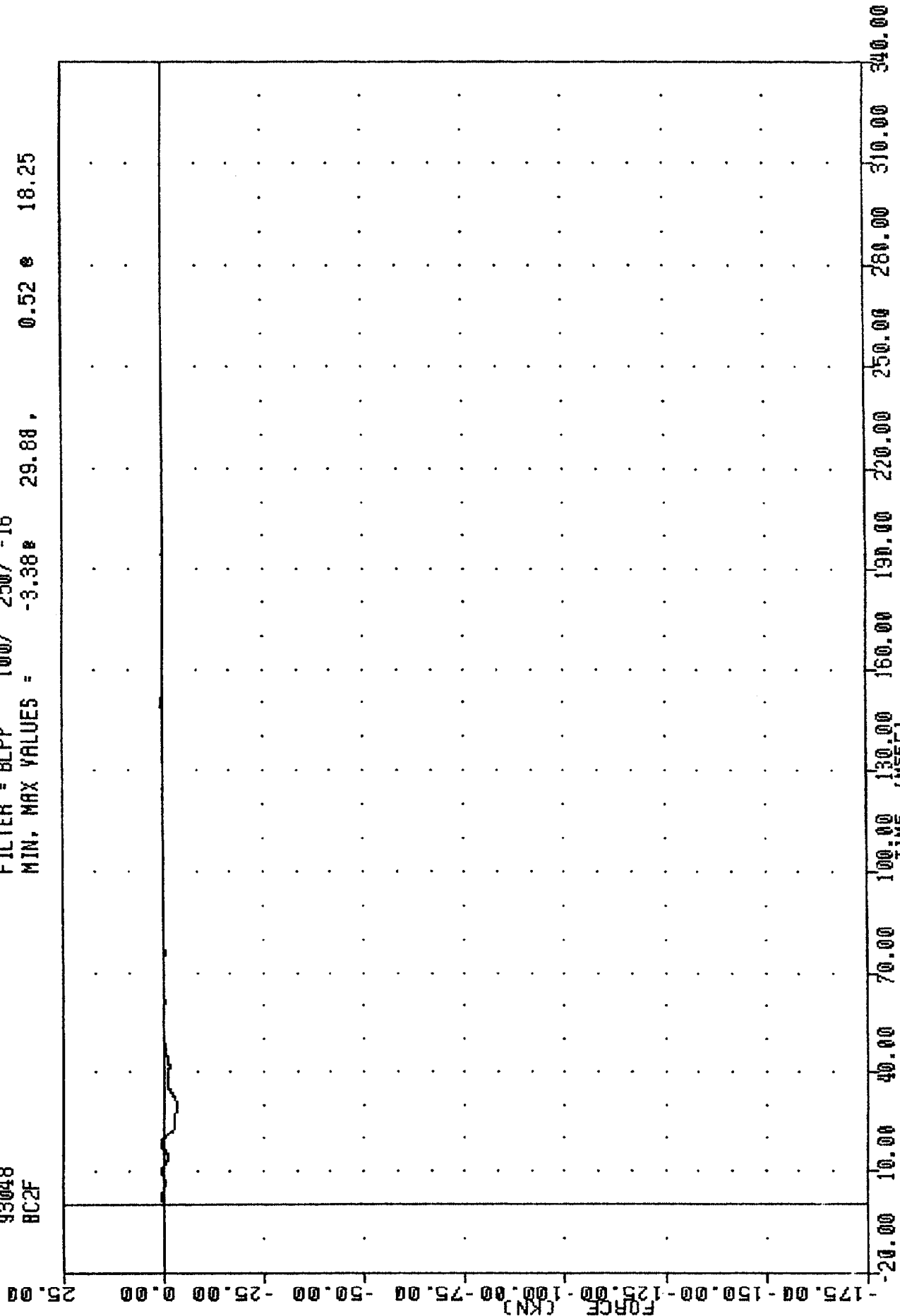
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -3.05 50.00 1.99 e 17.88



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C1 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BC2F

FILTER = BLP 100/ 250/ -16
 MIN. MAX VALUES = -3.38 29.88 0.52 18.25

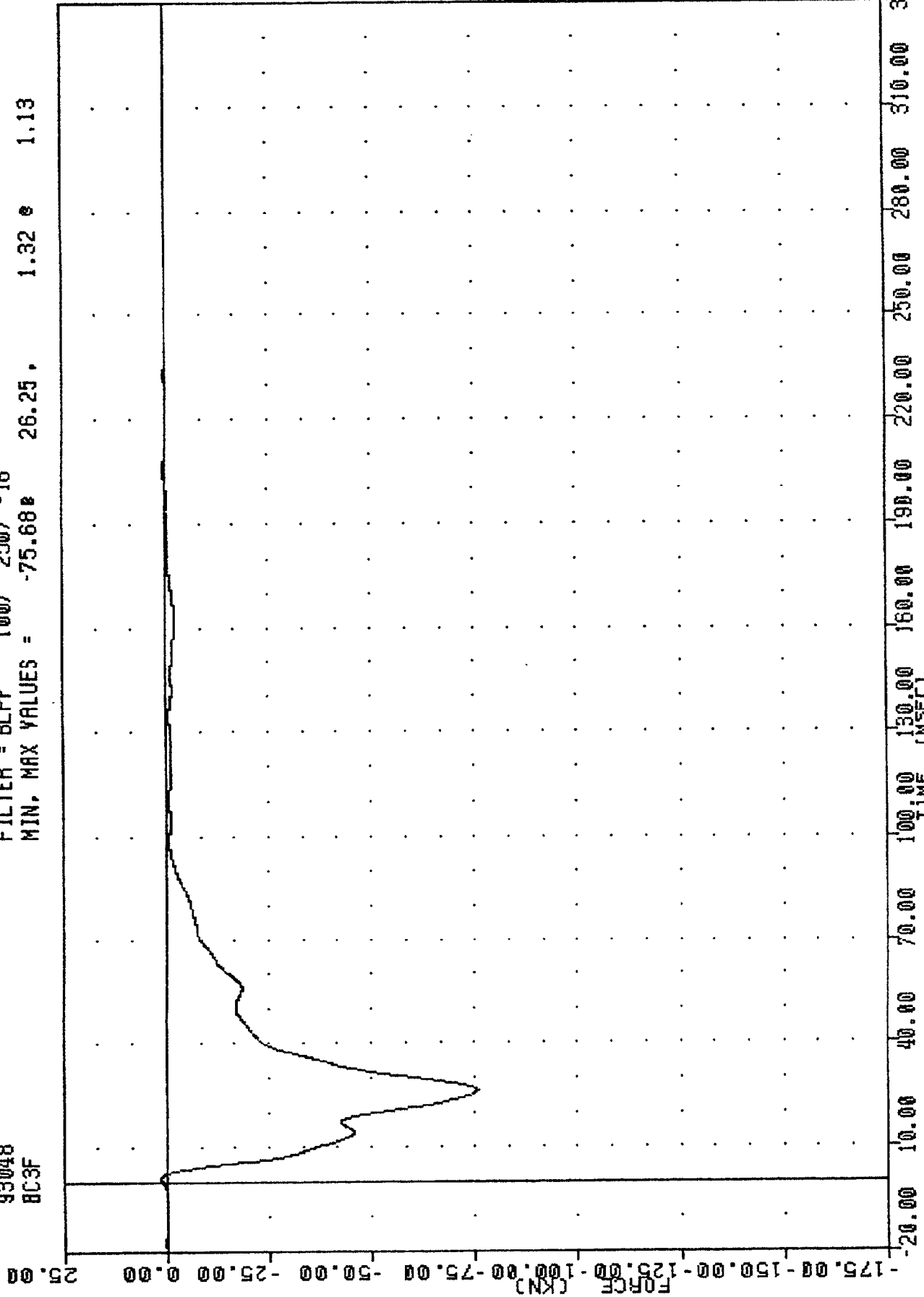


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ROAD CELL BARRIER POSITION FORCE

TRC
NEW CAR ASSESSMENT PROGRAM
93048
BC3F

, 930217

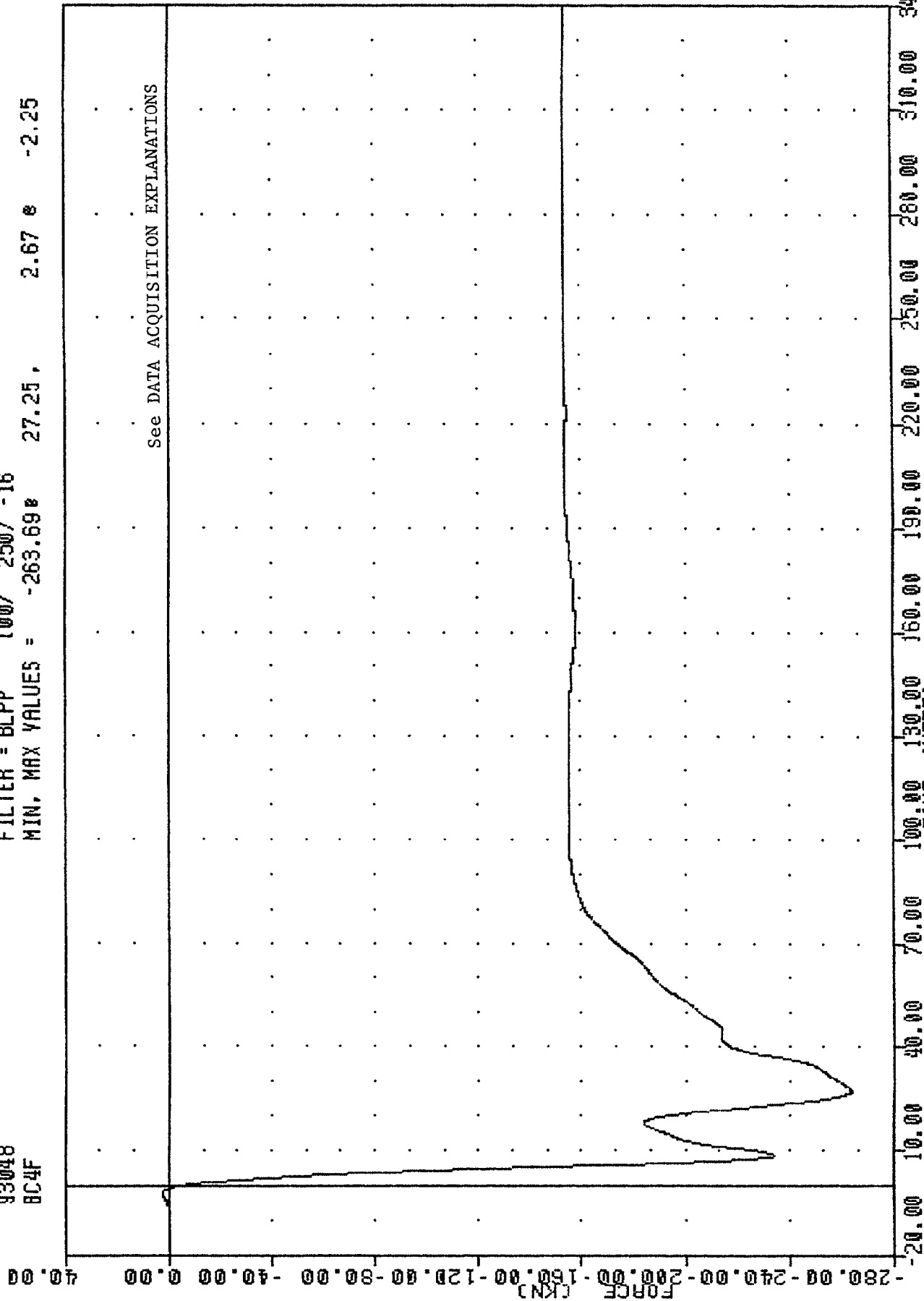
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -75.68 26.25, 1.32 1.13



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C3 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BC4F

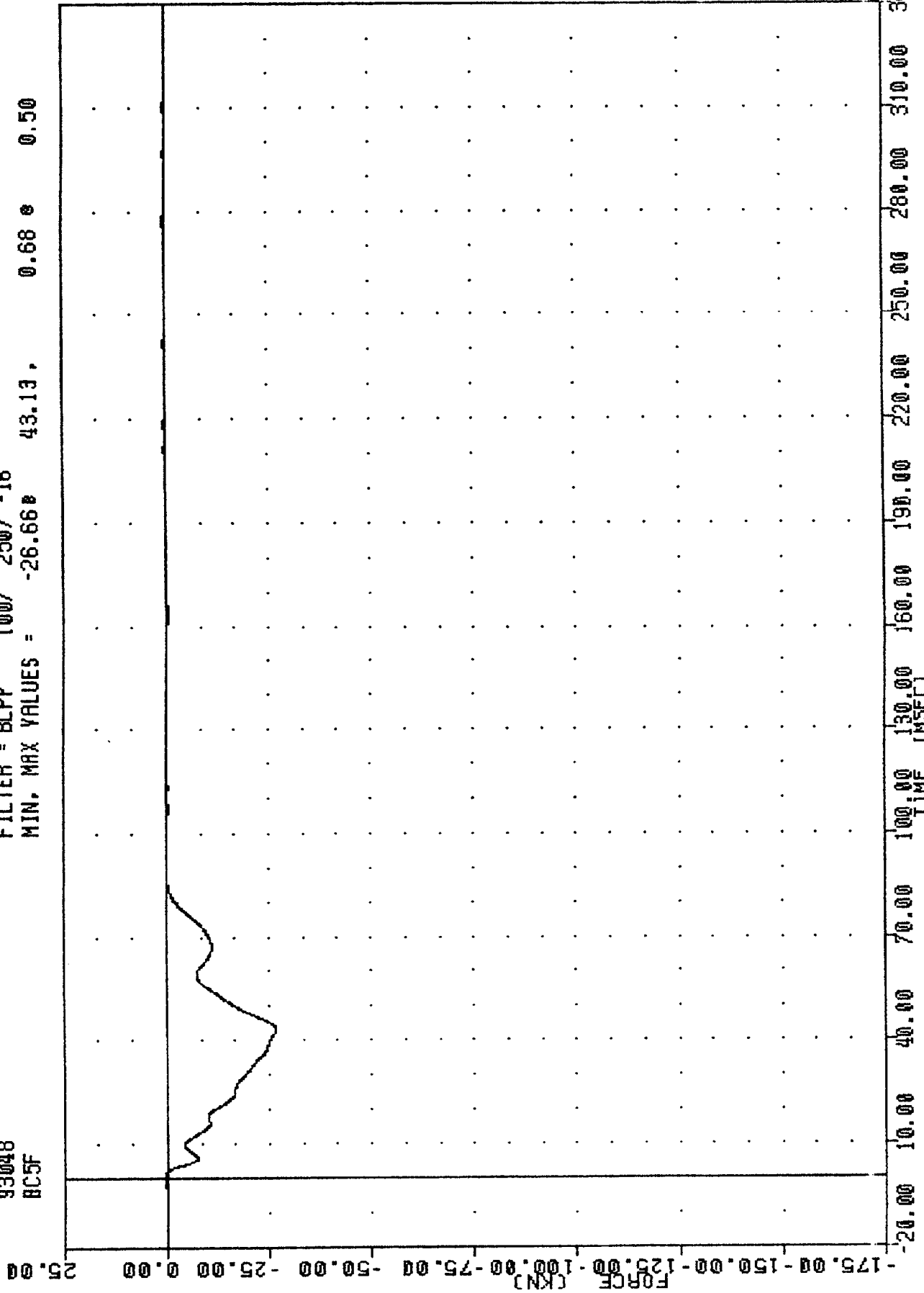
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -263.69 27.25, 2.67 e -2.25



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ROAD SELECTION FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BC5F

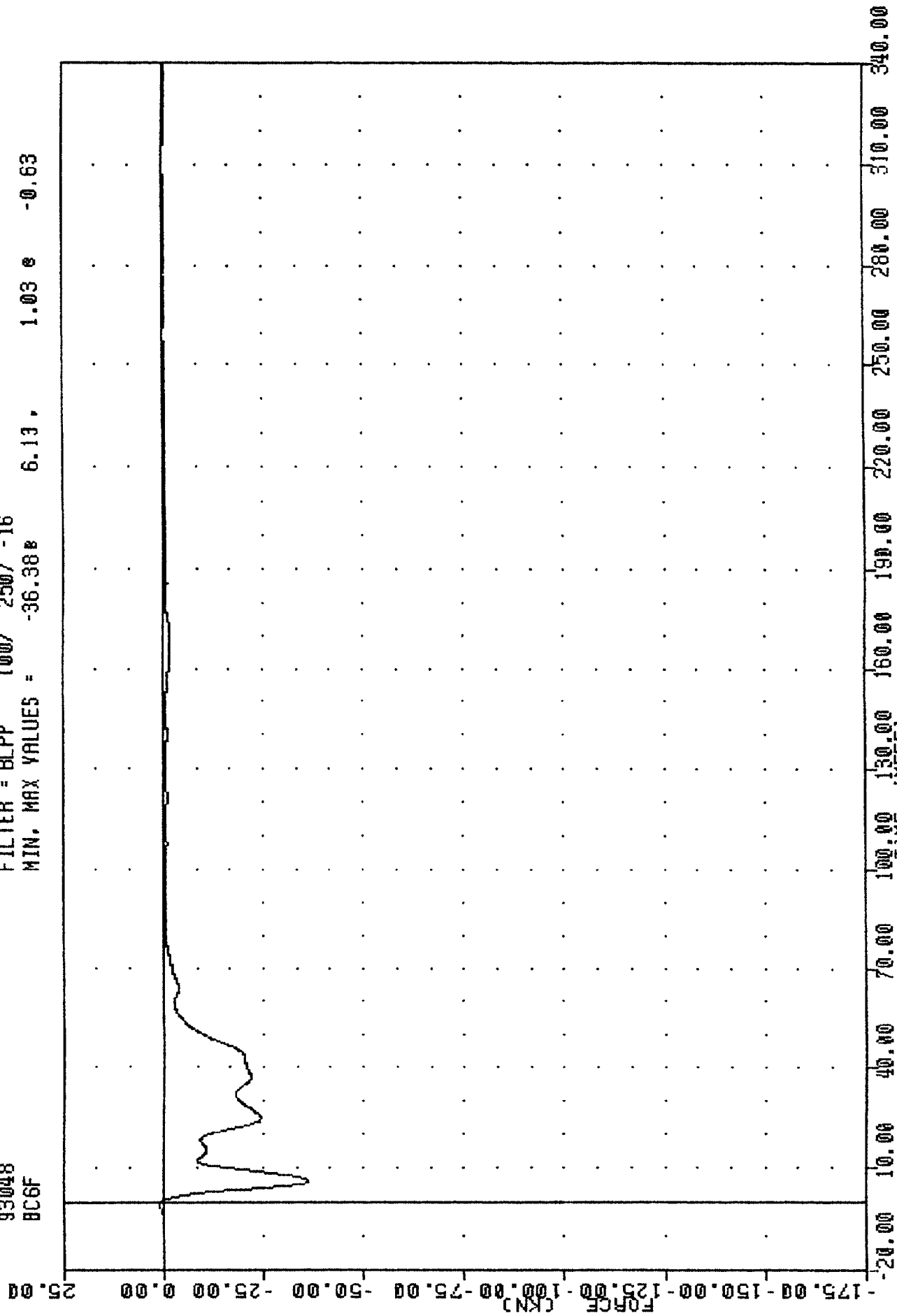
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -26.66 43.13 , 0.68 0.50



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C5 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BC6F

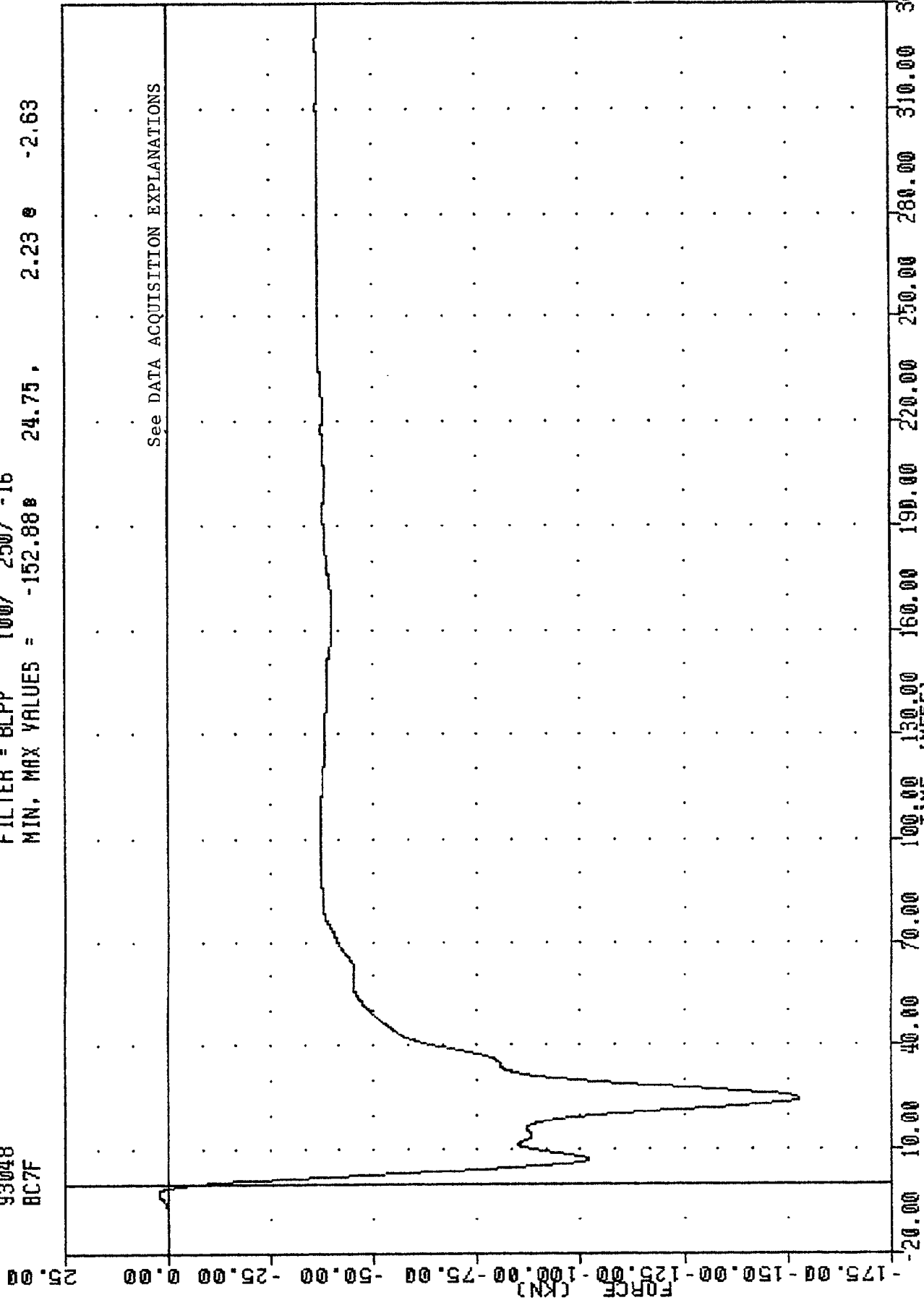
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -36.38 6.13 1.03 e -0.63



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ROAD SIDE BARRIER SIMULATION FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BC7F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -152.88B 24.75, 2.23 e -2.63



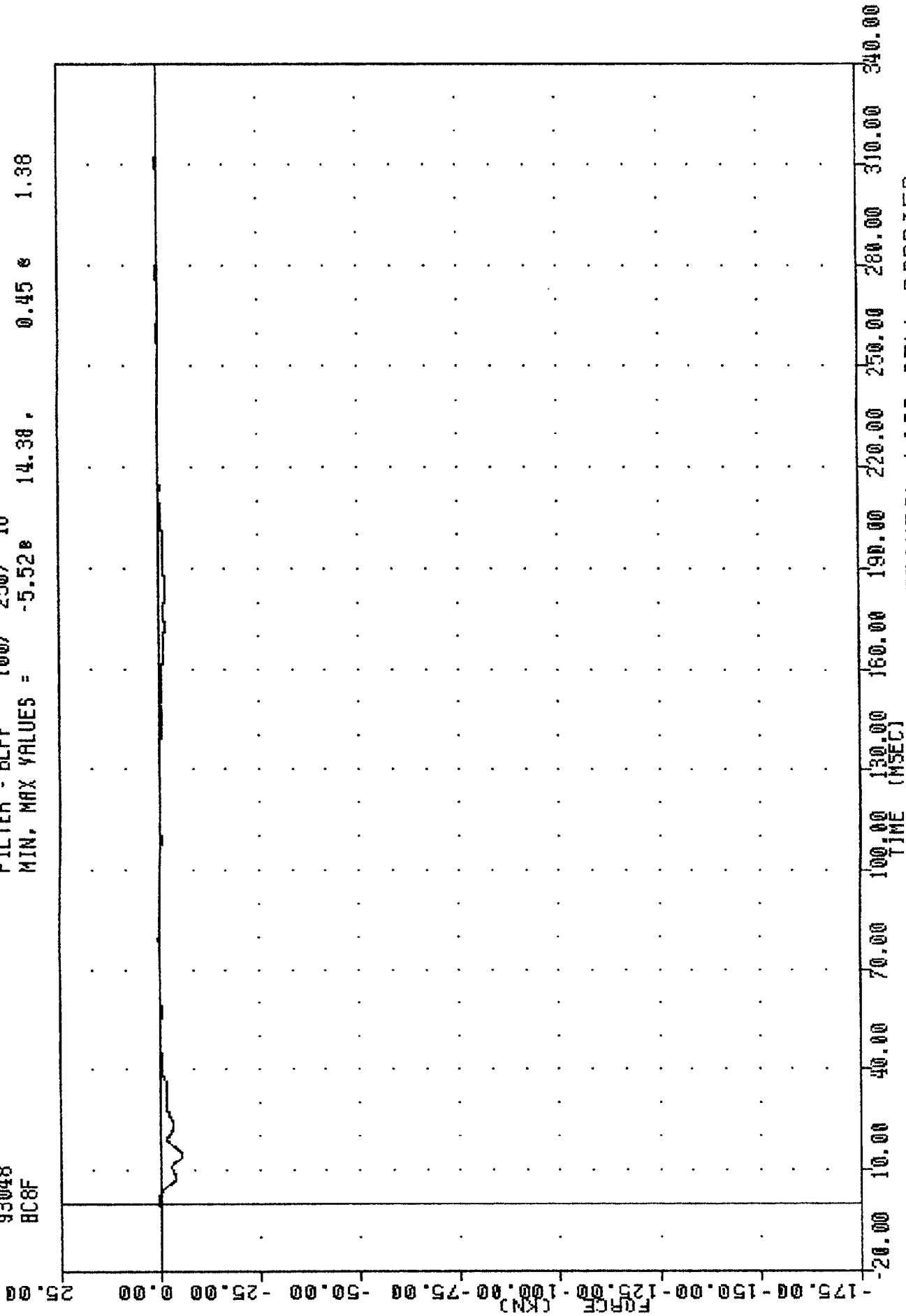
See DATA ACQUISITION EXPLANATIONS

-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 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C7 FORCE

TRC 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BC8F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -5.52 e 14.38 e 0.45 e 1.38

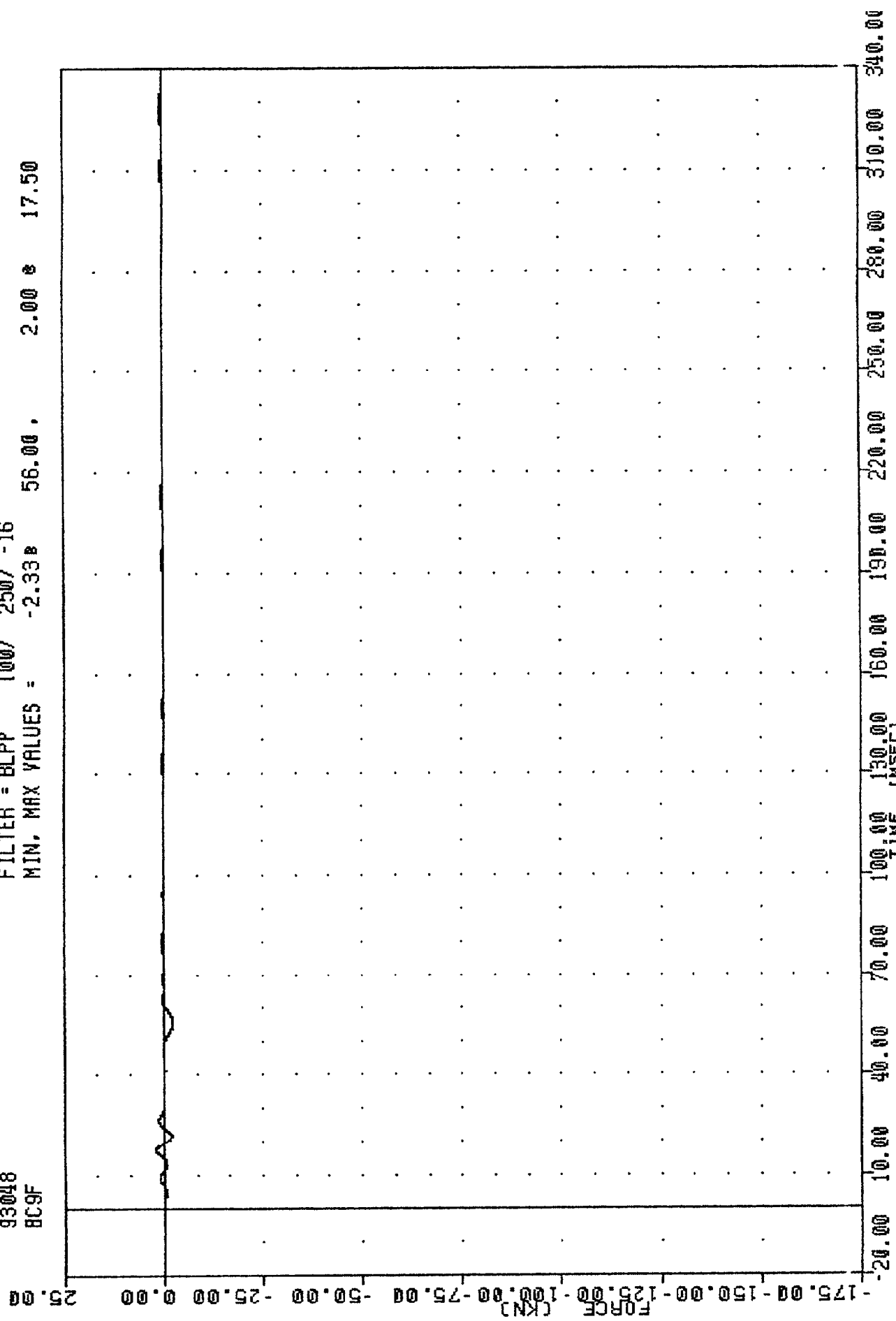


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LEAD CELL BARRIER POSITION FORCE

TRC
 93048
 BC9F
 NEW CAR ASSESSMENT PROGRAM

930217

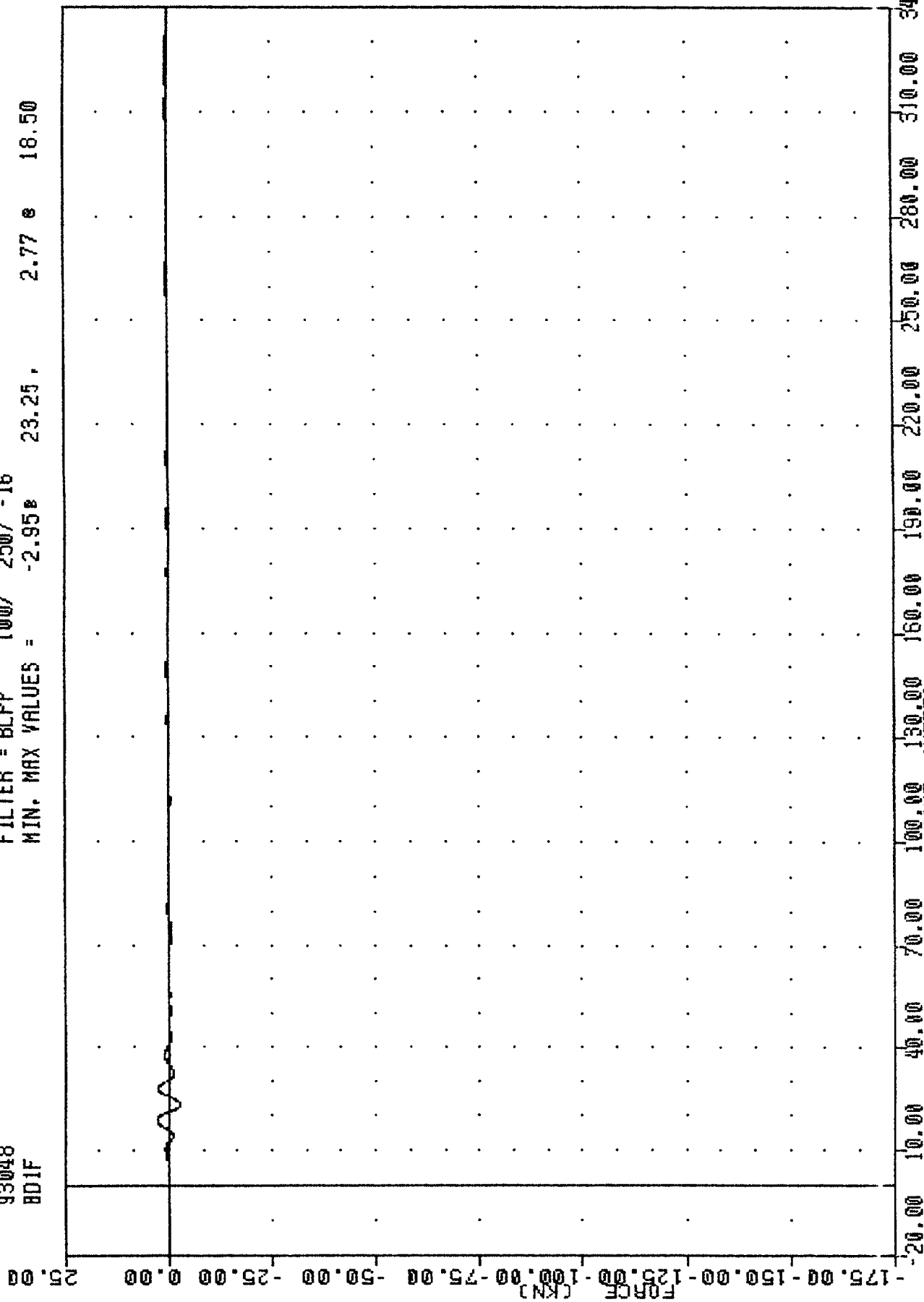
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -2.33 56.00 2.00 17.50



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C9 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BD1F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -2.95 23.25 2.77 18.50

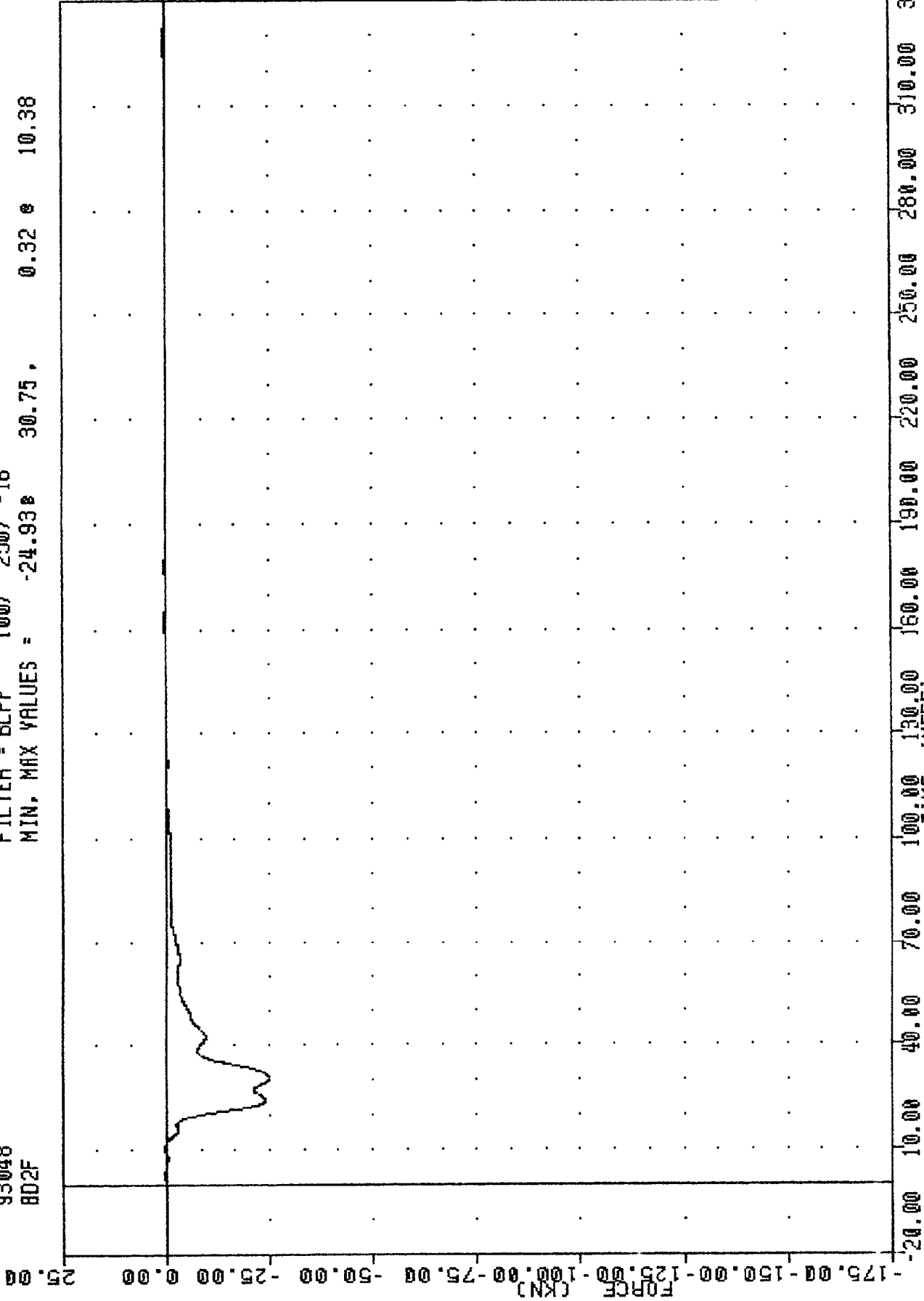


1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER POSITION FORCE

TRC
 93048
 BD2F
 NEW CAR ASSESSMENT PROGRAM

, 930217

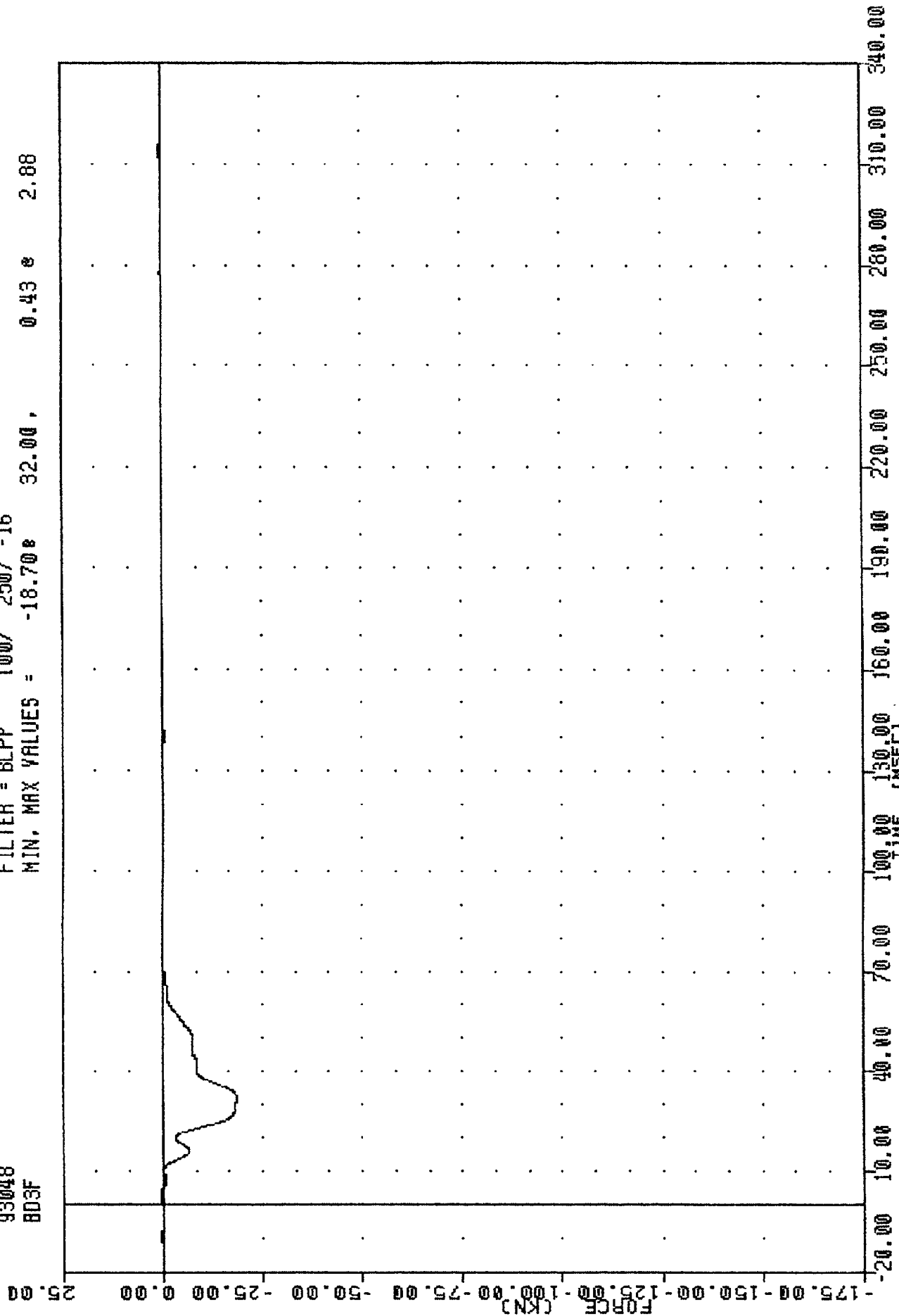
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -24.93 30.75, 0.32 10.38



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER:
 LOAD CELL BARRIER POSITION D2 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BD3F

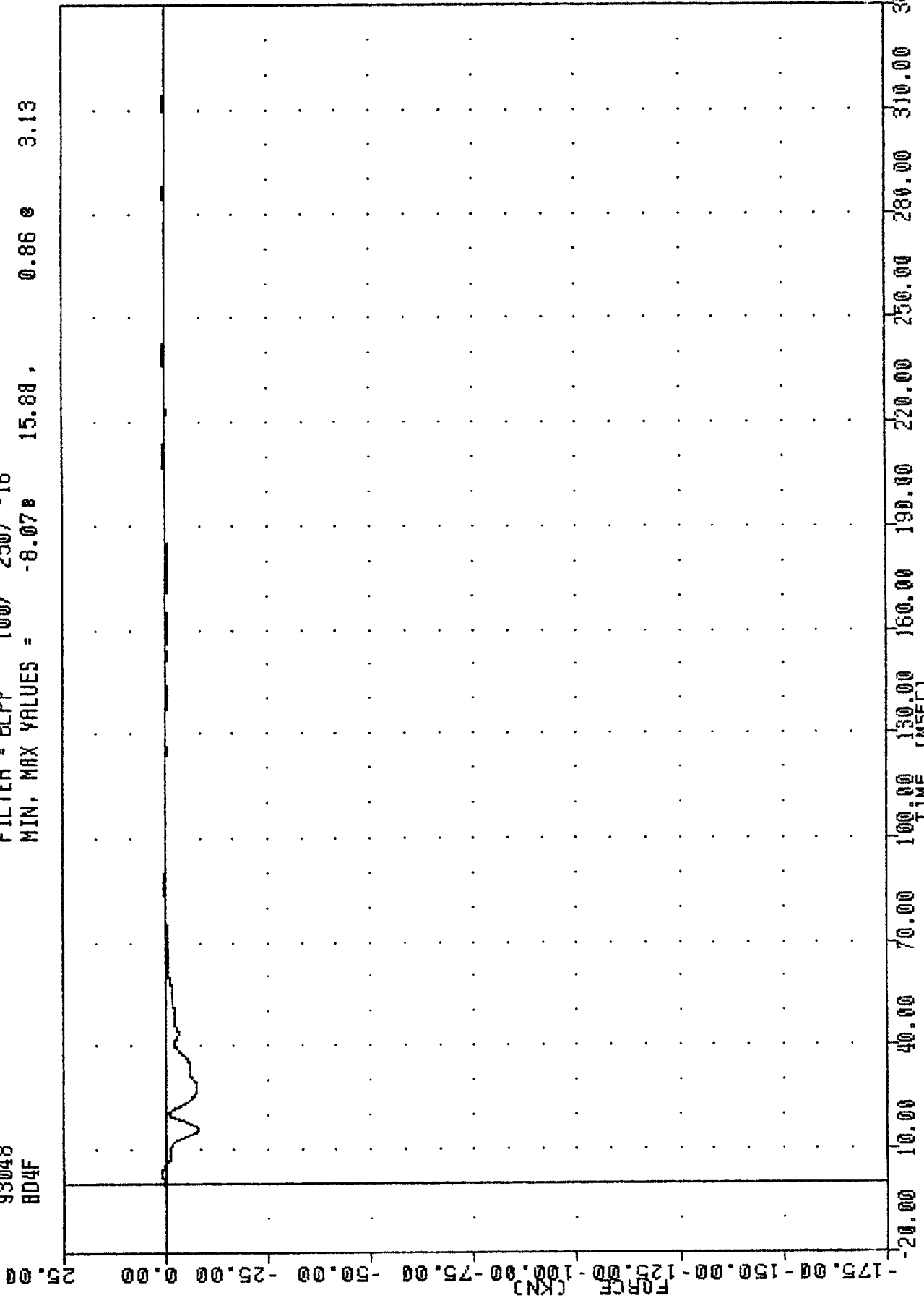
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -18.70e 32.00 , 0.43 e 2.88



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ROAD CELL BARRIER POSITION FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 BD4F

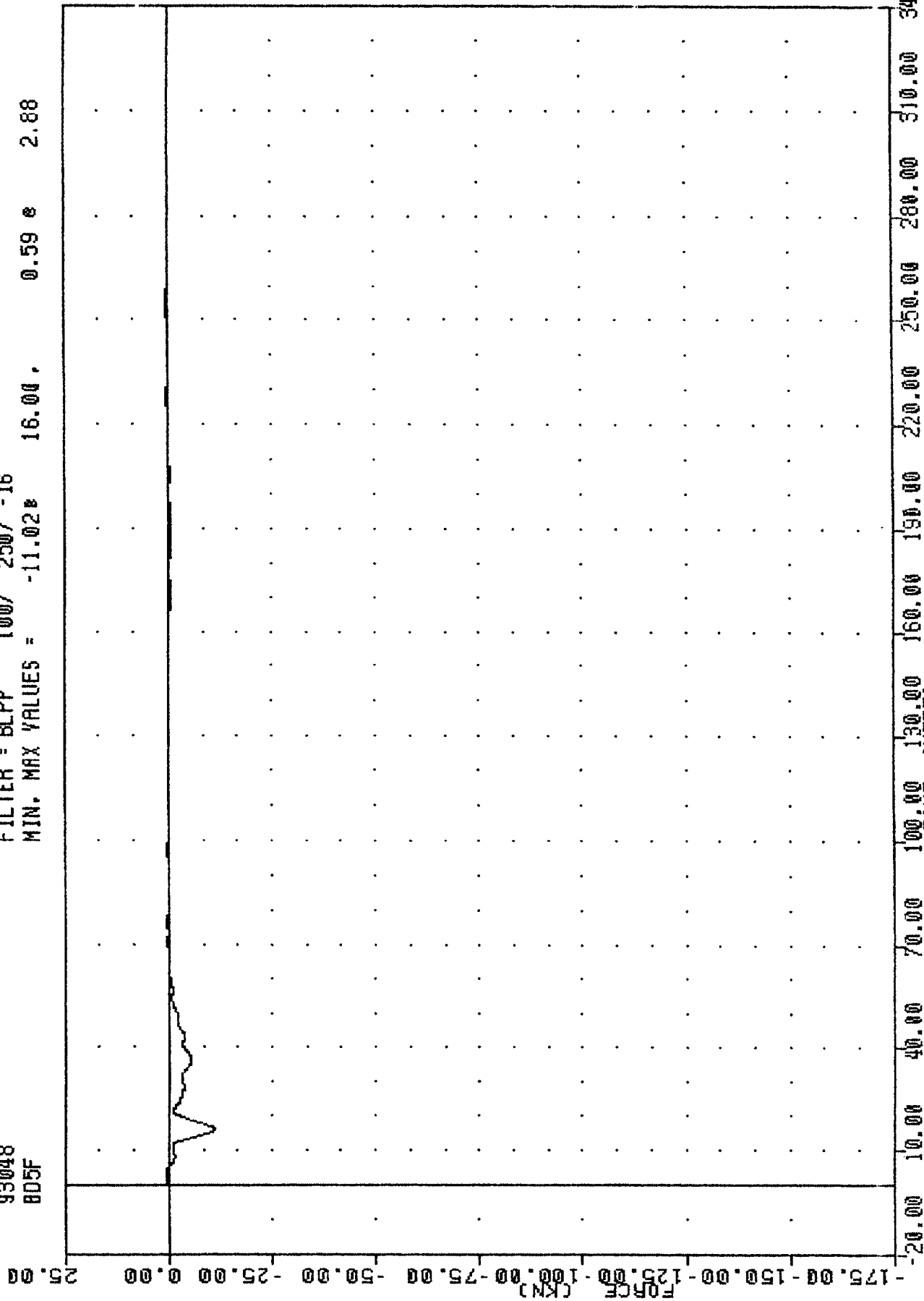
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -8.07 e 15.88 , 0.86 e 3.13



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 04 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 8D5F

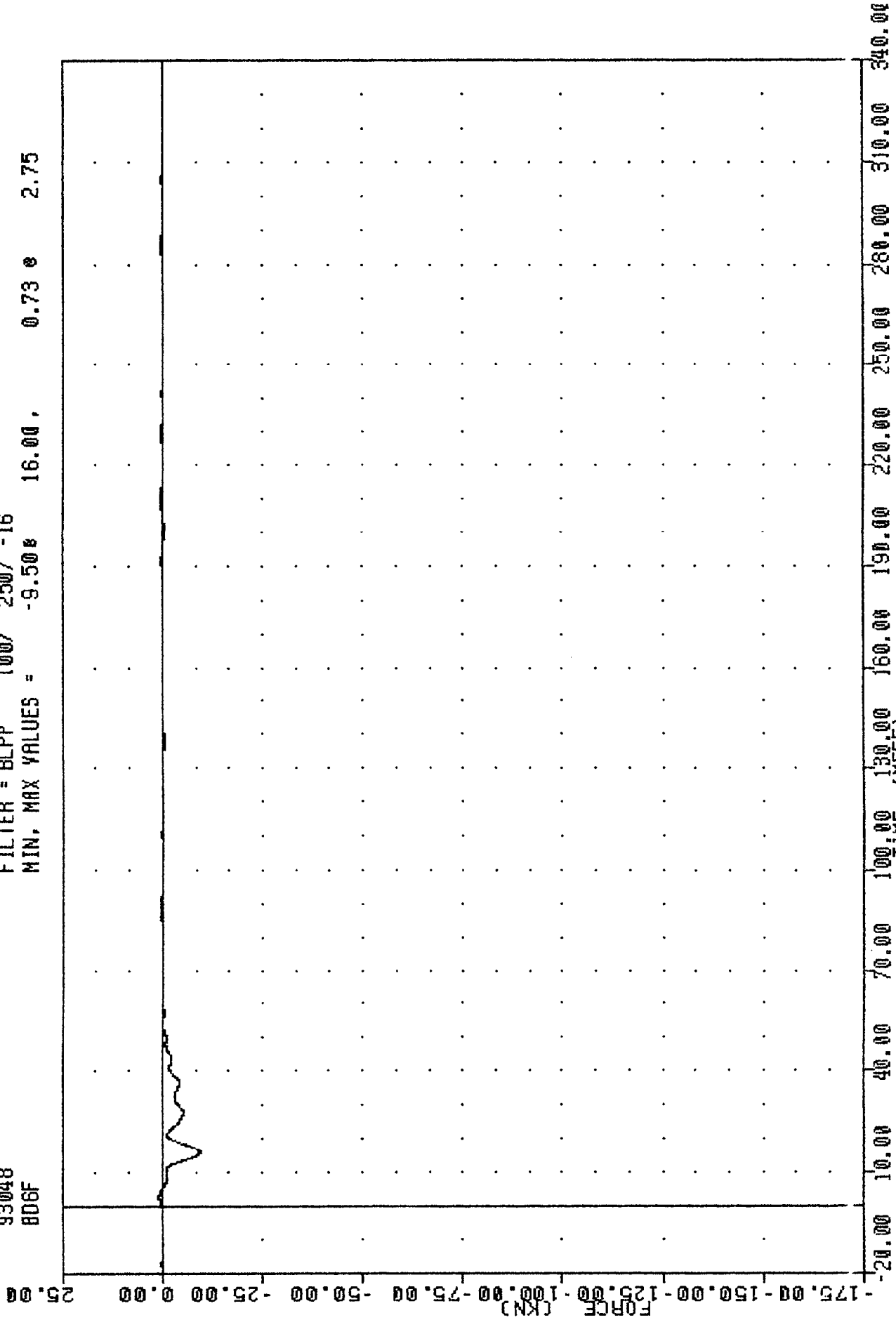
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -11.02 16.00 0.59 2.88



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 BOARD CELL BARRIER POSITION FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 806F

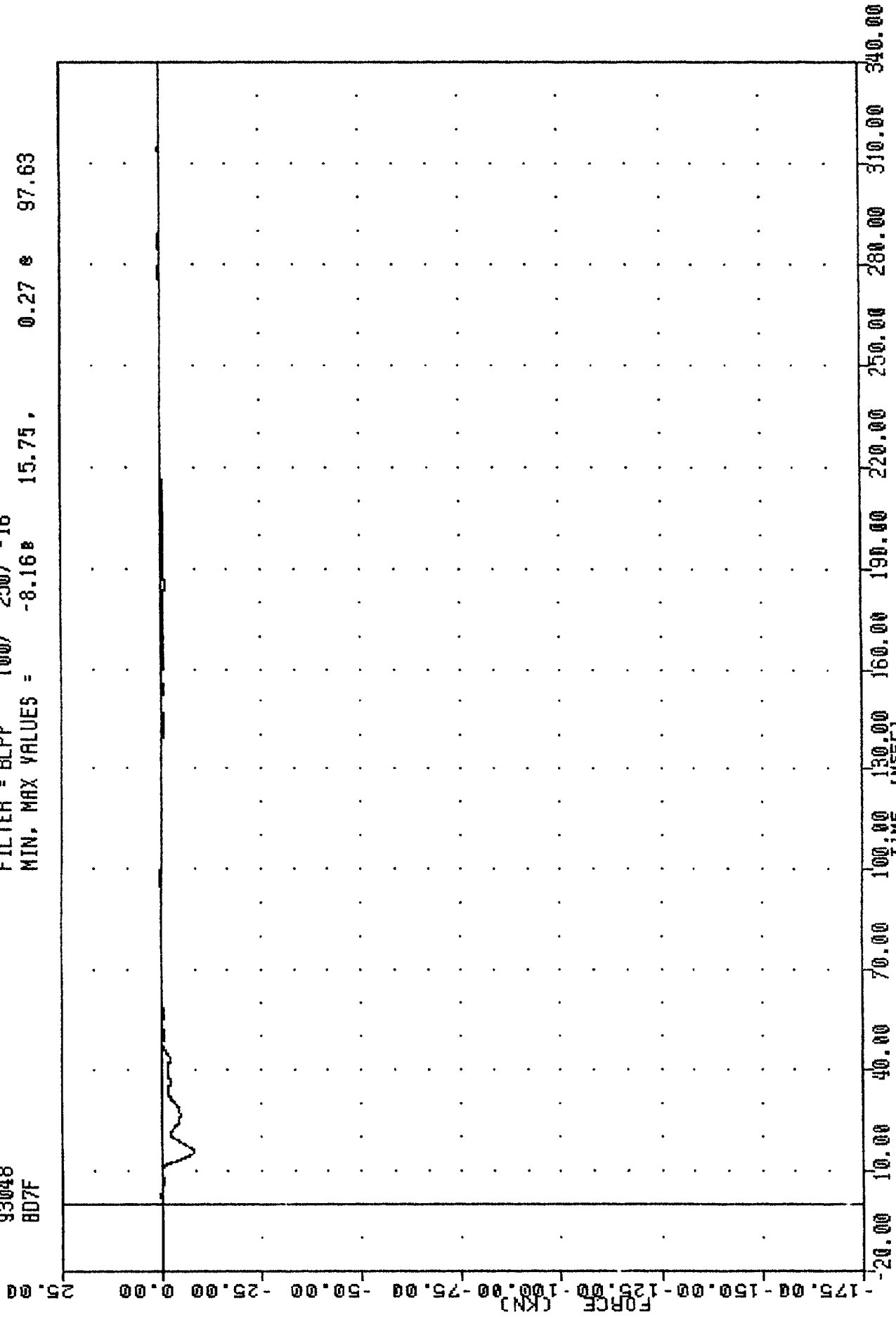
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -9.50 16.00 , 0.73 2.75



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 06 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 8D7F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -8.16e 15.75, 0.27 e 97.63



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 ROAD CELL BARRIER POSITION FORCE

TRC
 93048
 BD8F

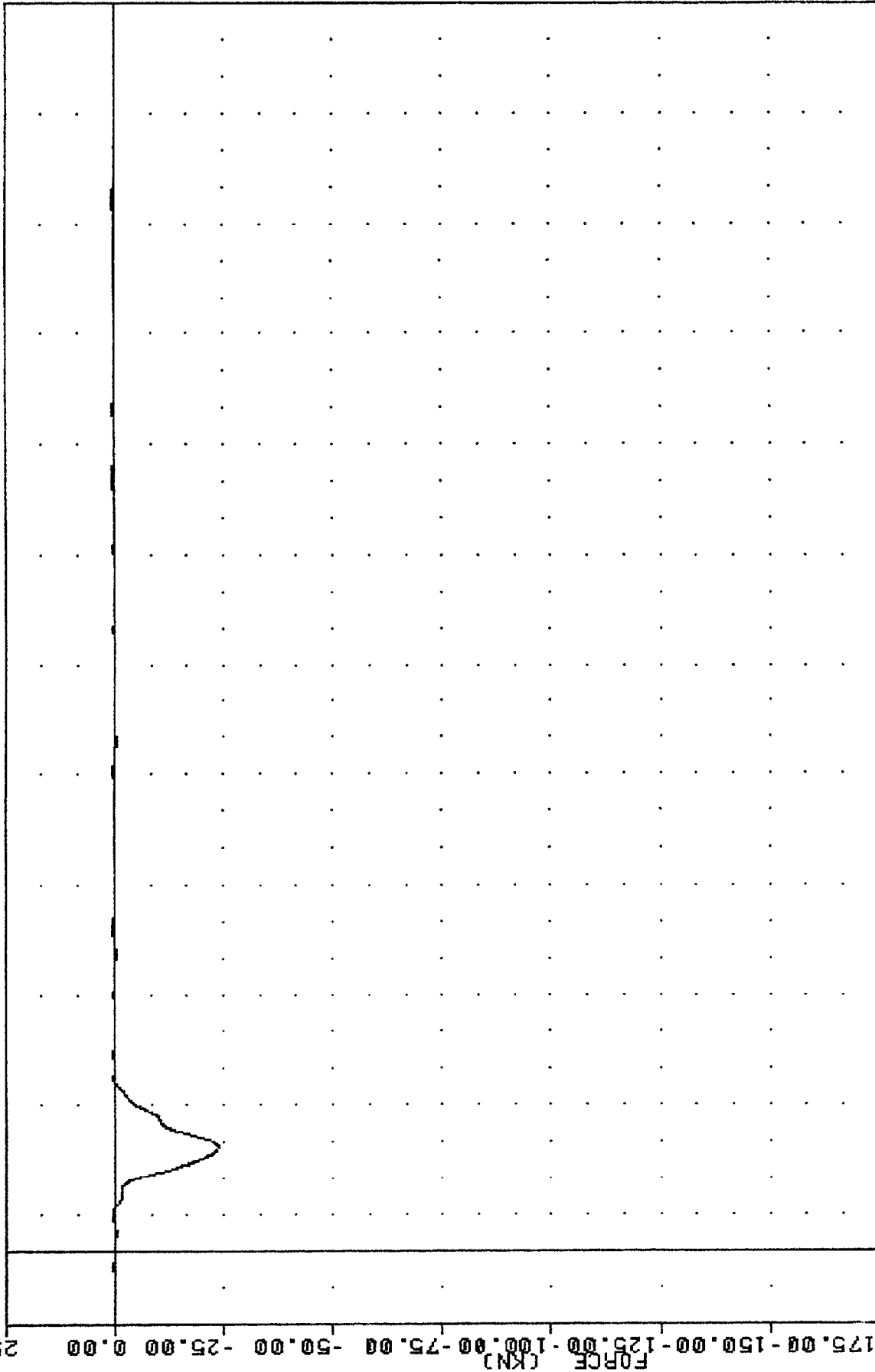
, 930217

NEW CAR ASSESSMENT PROGRAM

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -23.85 28.75 0.55 10.13

25.00



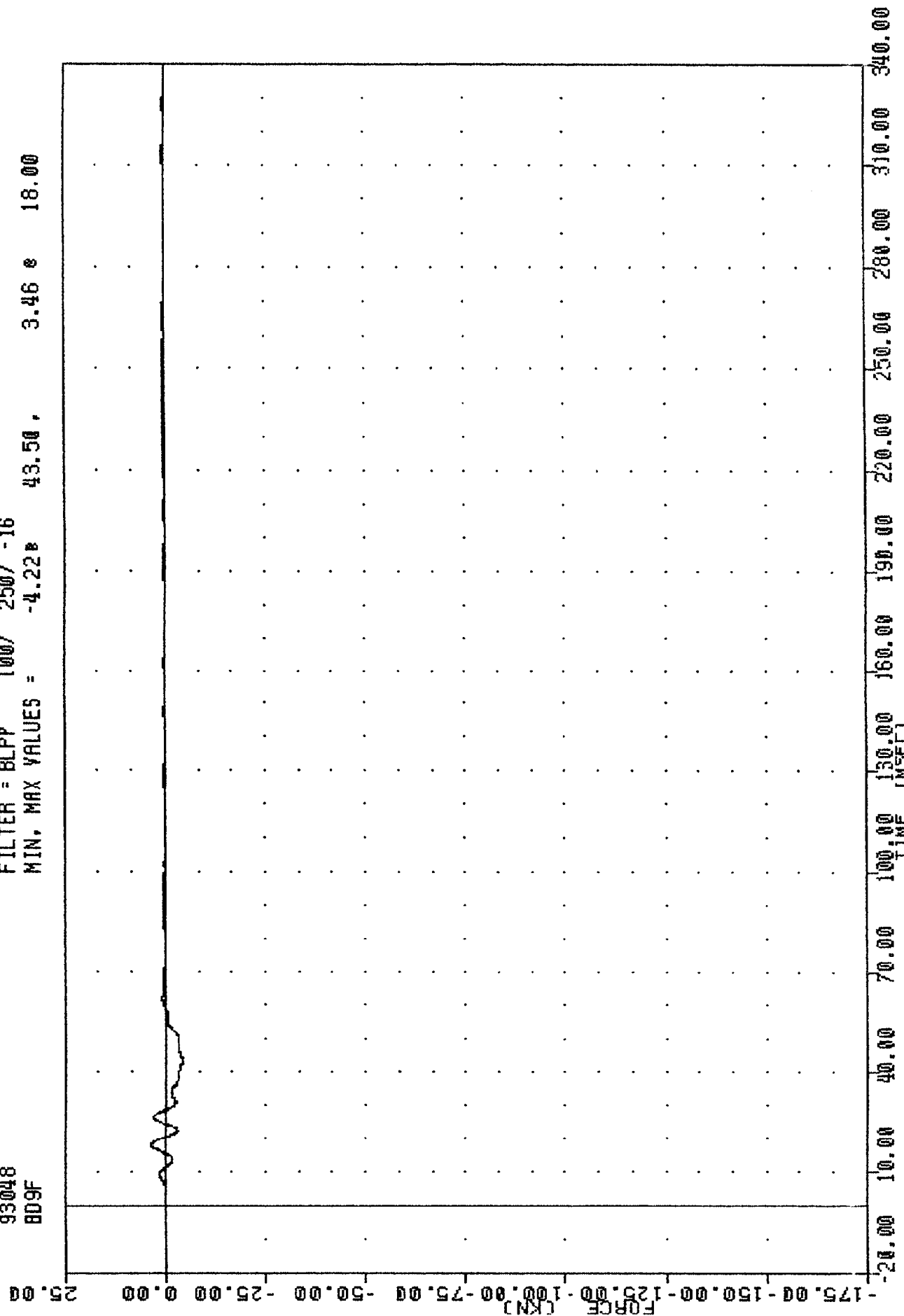
-175.00 -150.00 -125.00 -100.00 -75.00 -50.00 -25.00 0.00 25.00

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 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D8 FORCE

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 809F

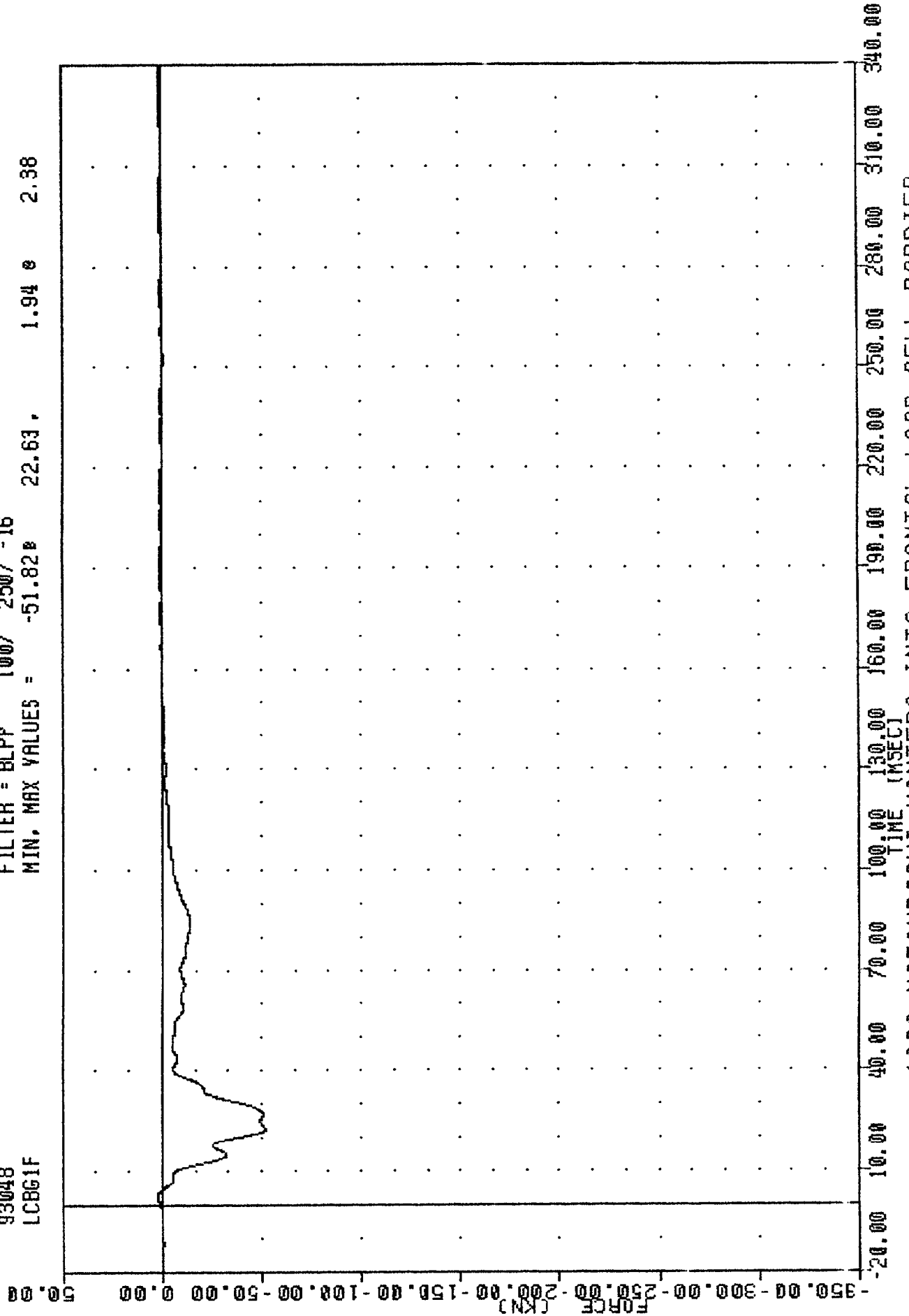
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -4.22 43.50 3.46 18.00



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 BOARD BEL BARRIER STATION FORCE

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
LCBG1F

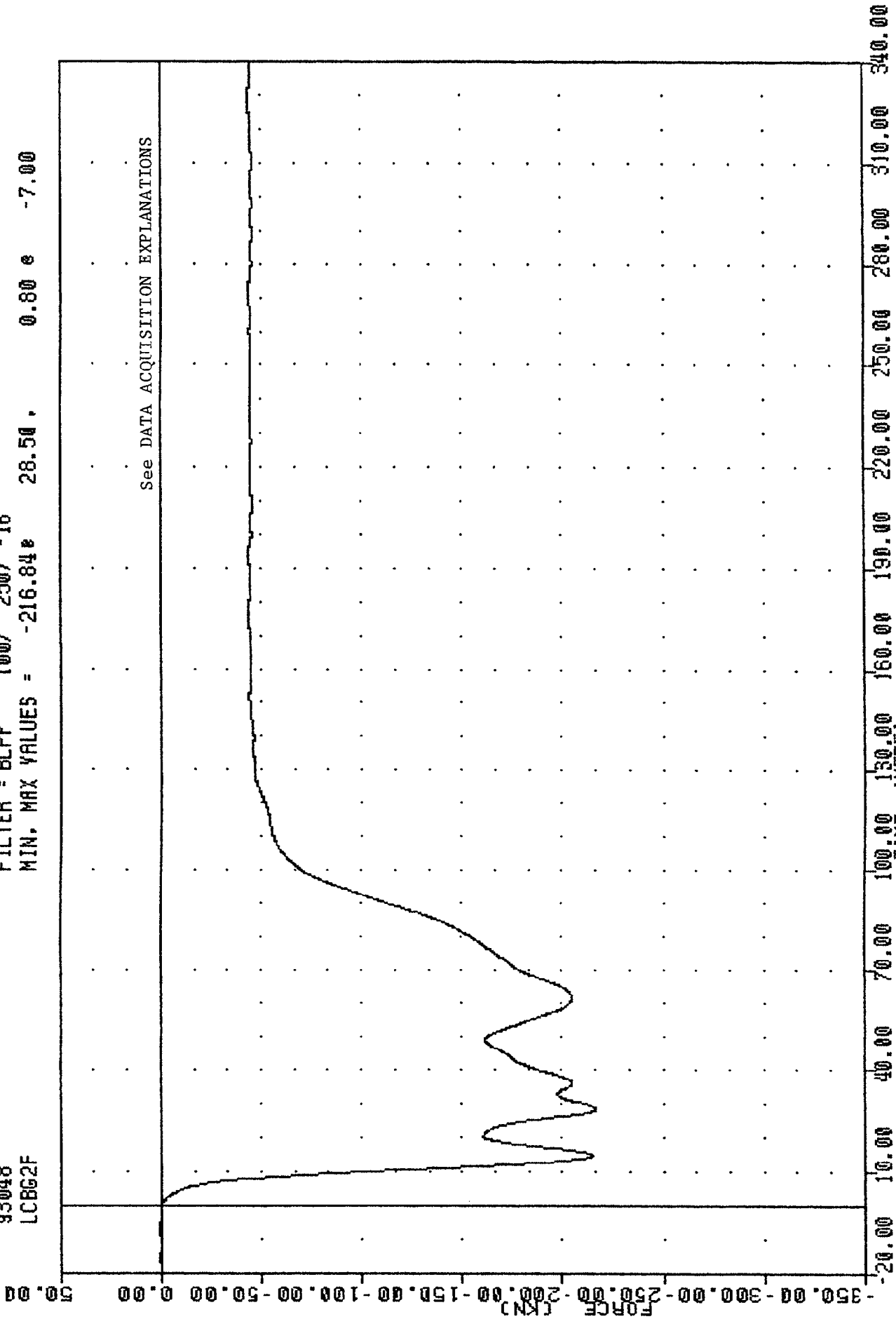
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -51.82 22.63 1.94 e 2.38



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 1 FORCE TOTAL

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 LCB62F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -216.84e 28.50 . 0.80 e -7.00



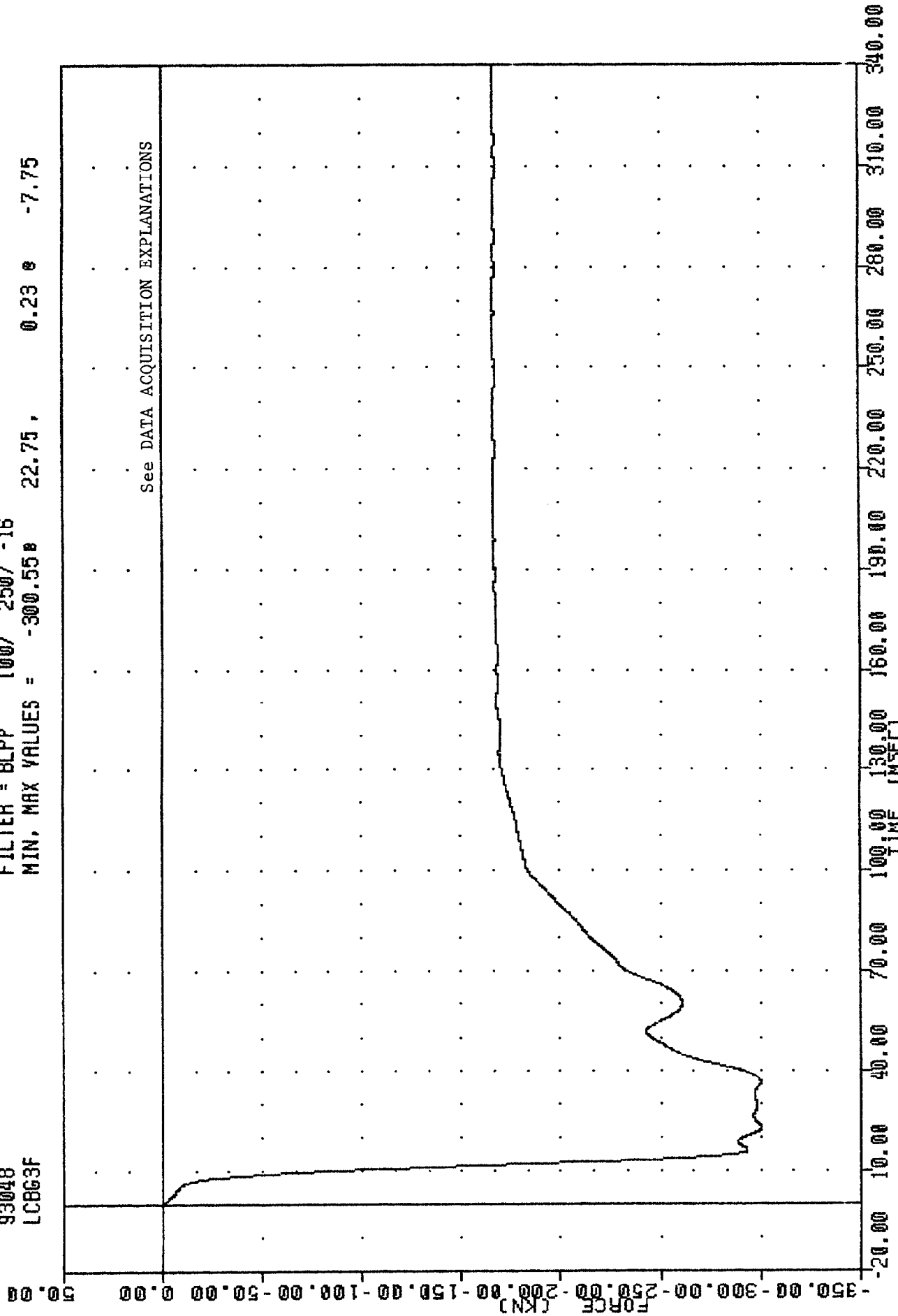
See DATA ACQUISITION EXPLANATIONS

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER GROUP 2 FORCE DETECTOR

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 LC863F

930217

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -300.55 22.75, 0.23 e -7.75

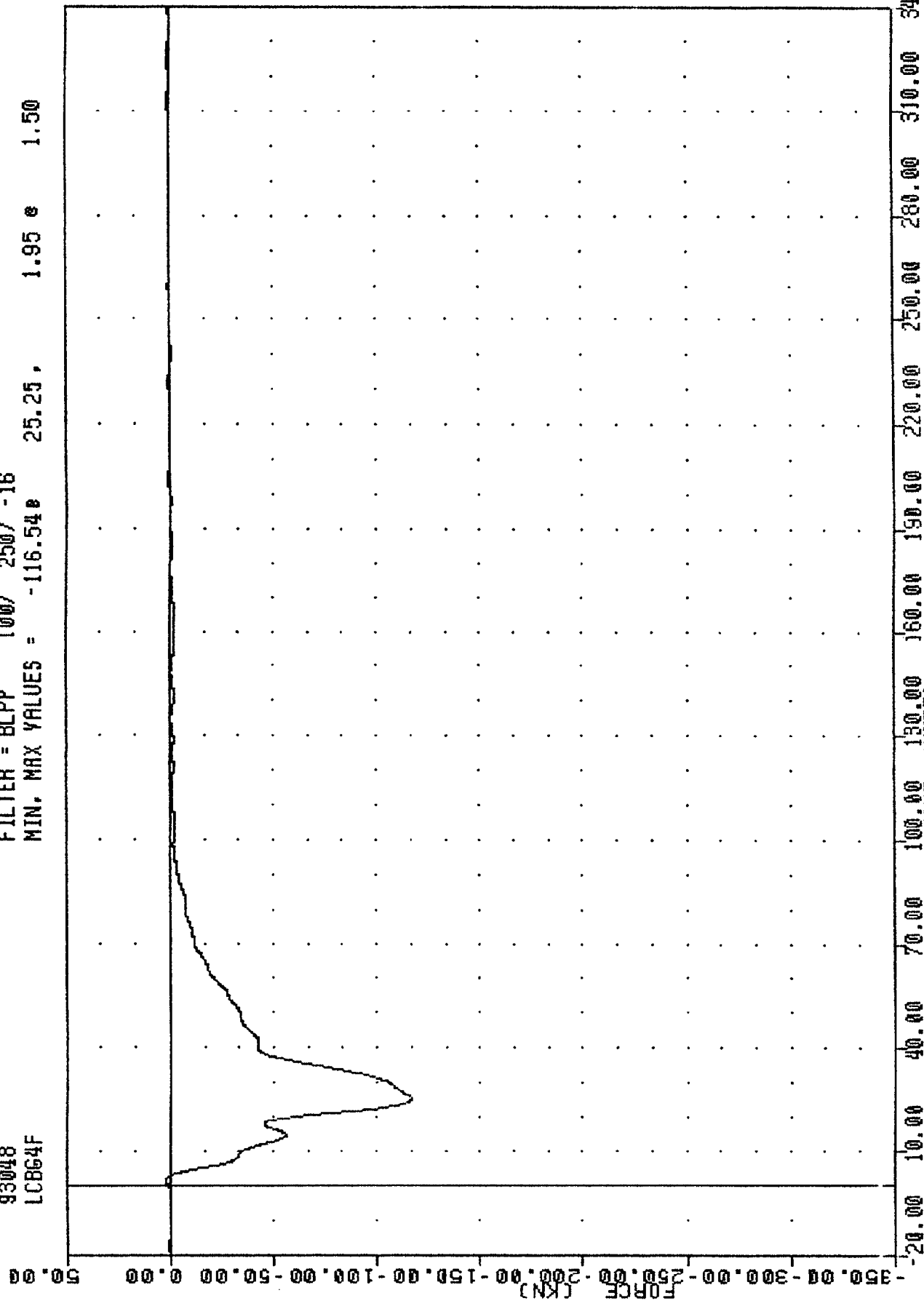


See DATA ACQUISITION EXPLANATIONS

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP - 3 FORCE TOTAL

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 LCBG4F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -116.54 e 25.25 , 1.95 e 1.50



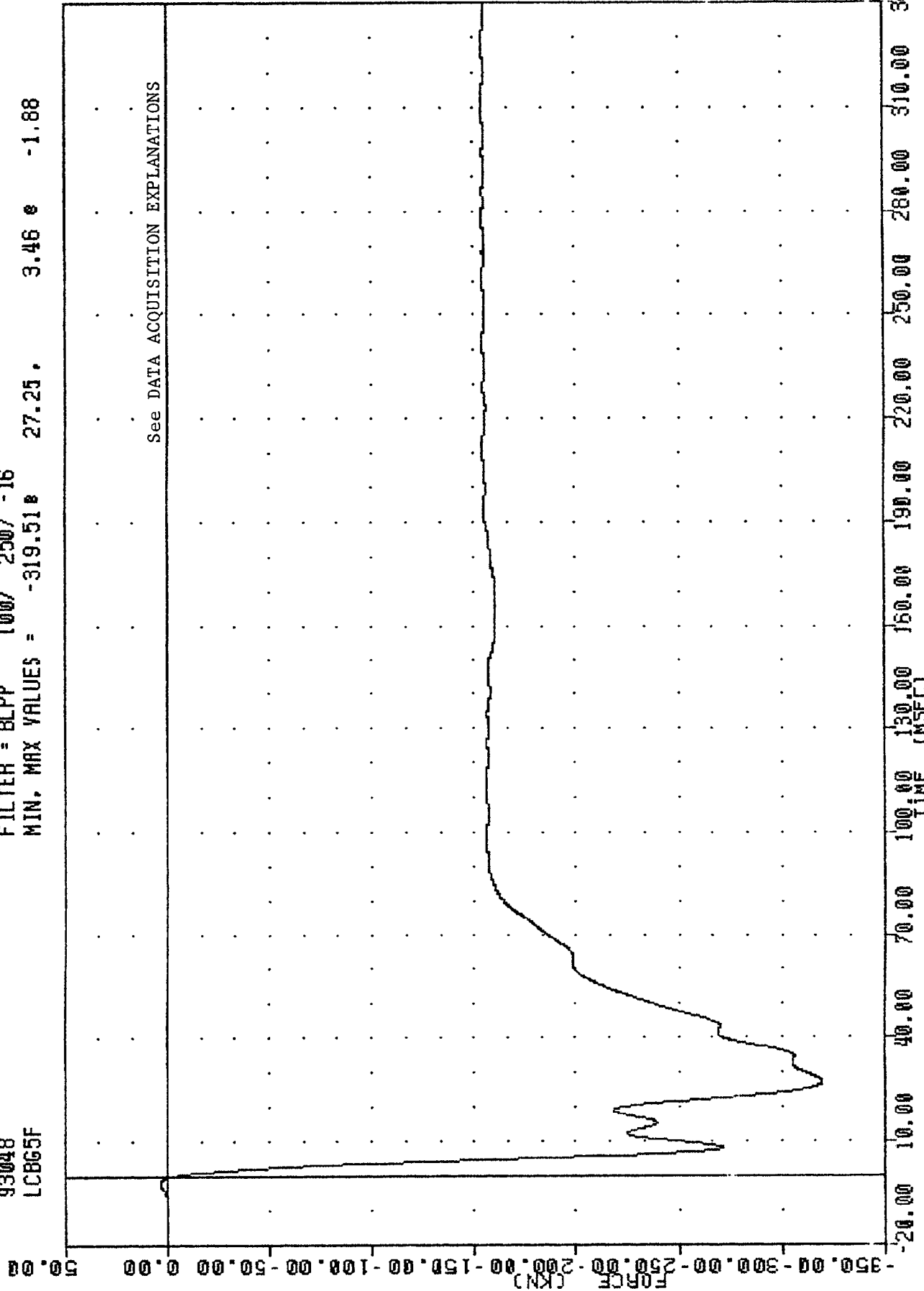
1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER

GROUP 4

TRC
 NEW CAR ASSESSMENT PROGRAM
 93048
 LCBG5F

930217

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -319.51 27.25 3.46 e -1.88

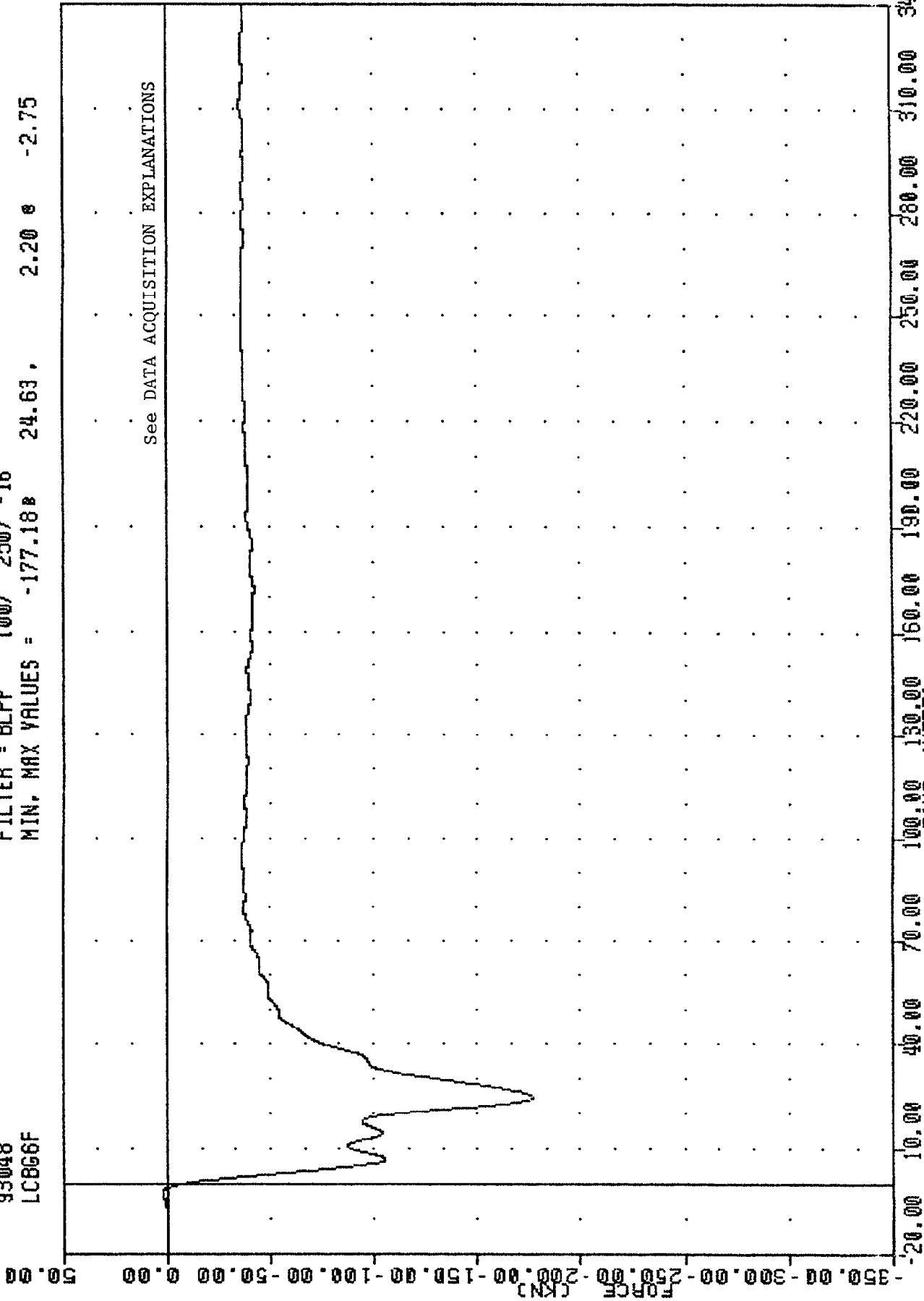


See DATA ACQUISITION EXPLANATIONS

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP - 5 FORCE TOTAL

TRC , 930217
 NEW CAR ASSESSMENT PROGRAM
 93048
 LC866F

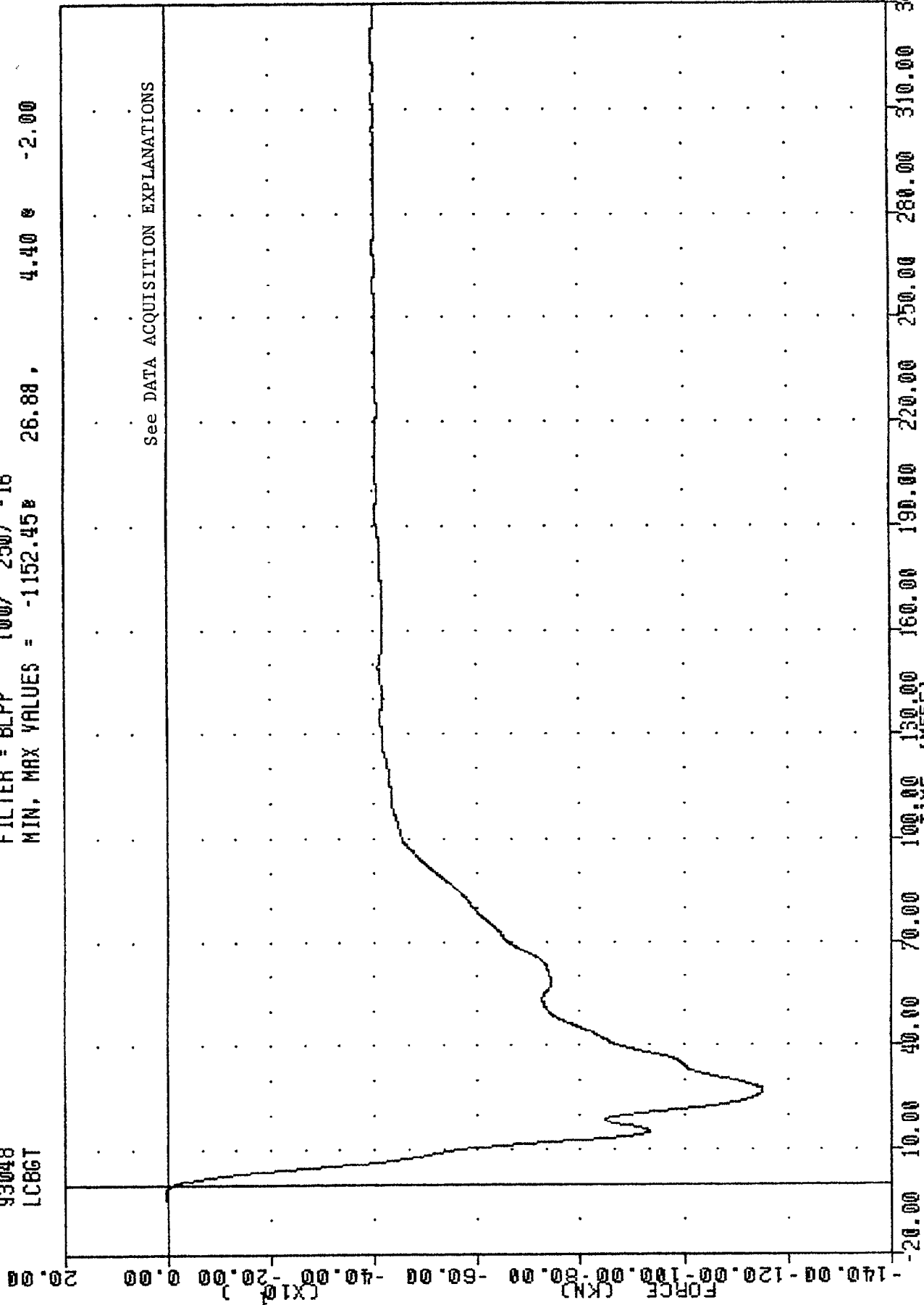
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -177.18 24.63 , 2.20 e -2.75



1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP 6 FORCE OUTPUT

TRC , 930217
NEW CAR ASSESSMENT PROGRAM
93048
LCBGT

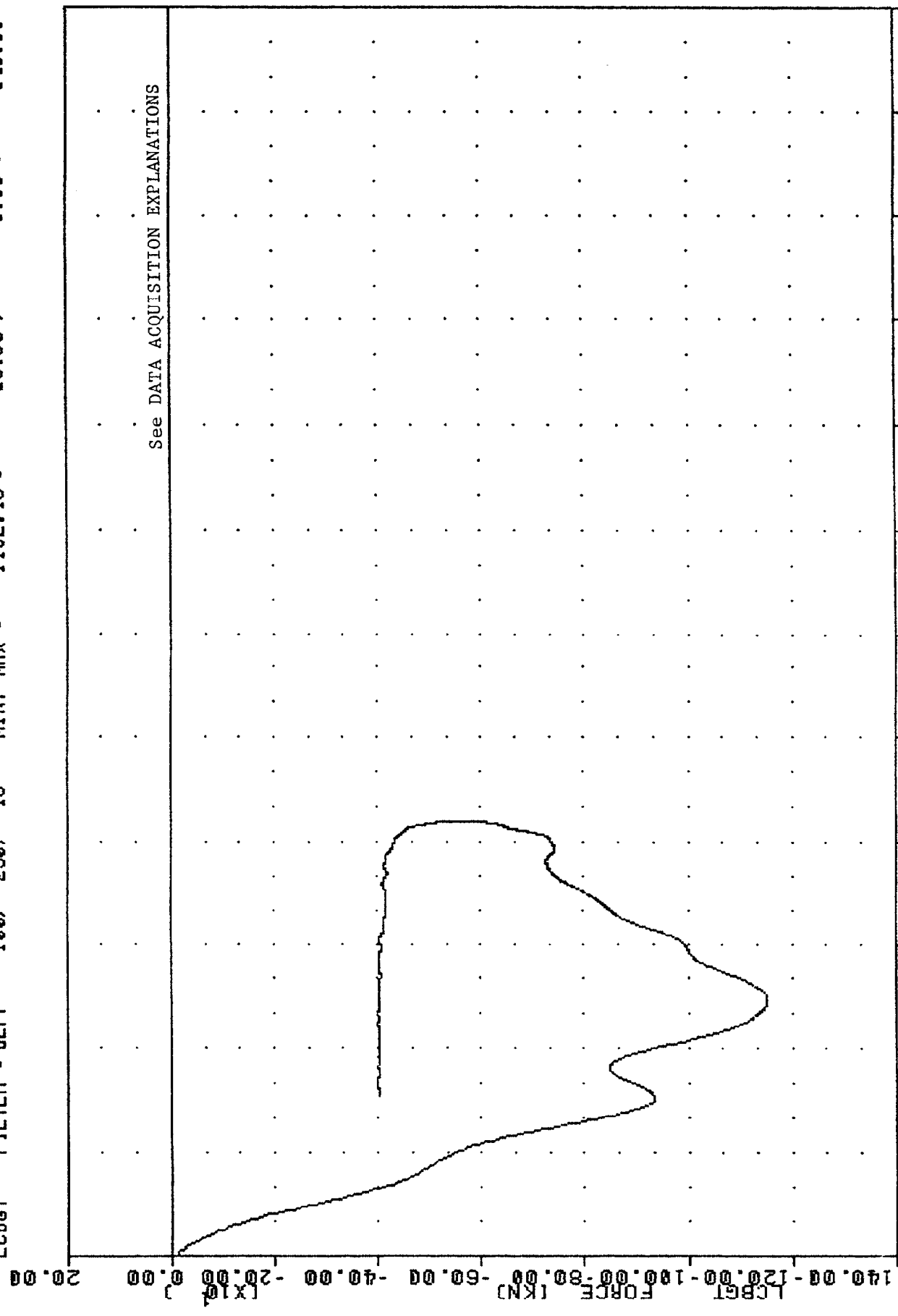
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -1152.45 26.88 , 4.40 -2.00



See DATA ACQUISITION EXPLANATIONS

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER
TOTAL LOAD CELL BARRIER FORCE

TRC
 OTHXD
 LC8GT
 930217
 FILTER = BLPP
 FILTER = BLPP
 NEY CAR ASSESSMENT PROGRAM
 300/ 750/ -16
 100/ 250/ -16
 MIN, MAX =
 MIN, MAX =
 93048
 0.00 B
 -1152.45 B
 630.13 e
 0.00 e
 83.50
 340.00



See DATA ACQUISITION EXPLANATIONS

0.00 15.00 30.00 45.00 60.00 75.00 90.00 105.00 120.00 135.00 150.00 165.00 180.00
 OTHXD DISPLACEMENT (MM)
 (x10¹)

1993 MITSUBISHI MONTERO INTO FRONTAL LOAD CELL BARRIER

TOTAL LOAD CELL BARRIER FORCE VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

APPENDIX C

DUMMY CERTIFICATION DATA

PRE-TEST CERTIFICATION DATA

DRIVER DUMMY S/N: 142

TRANSPORTATION RESEARCH CENTER OF OHIO
 HYBRID III EXTERNAL DIMENSIONS
 HUMANOID 142

2-DEC-92

TRC 142C13ED1 572E SN142 EXT. DIMENSION CAL13

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
TEMPERATURE			21.1 DEG. C
RELATIVE HUMIDITY			51.0 %
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 Chas Middlecott

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

2B-140-12

TRC

142C13HD2

572E BN142 HEAD DROP CAL 13

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10% - 70%	42.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	249.44 G
PEAK LATERAL ACCELERATION	15 G MAX	6.44 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

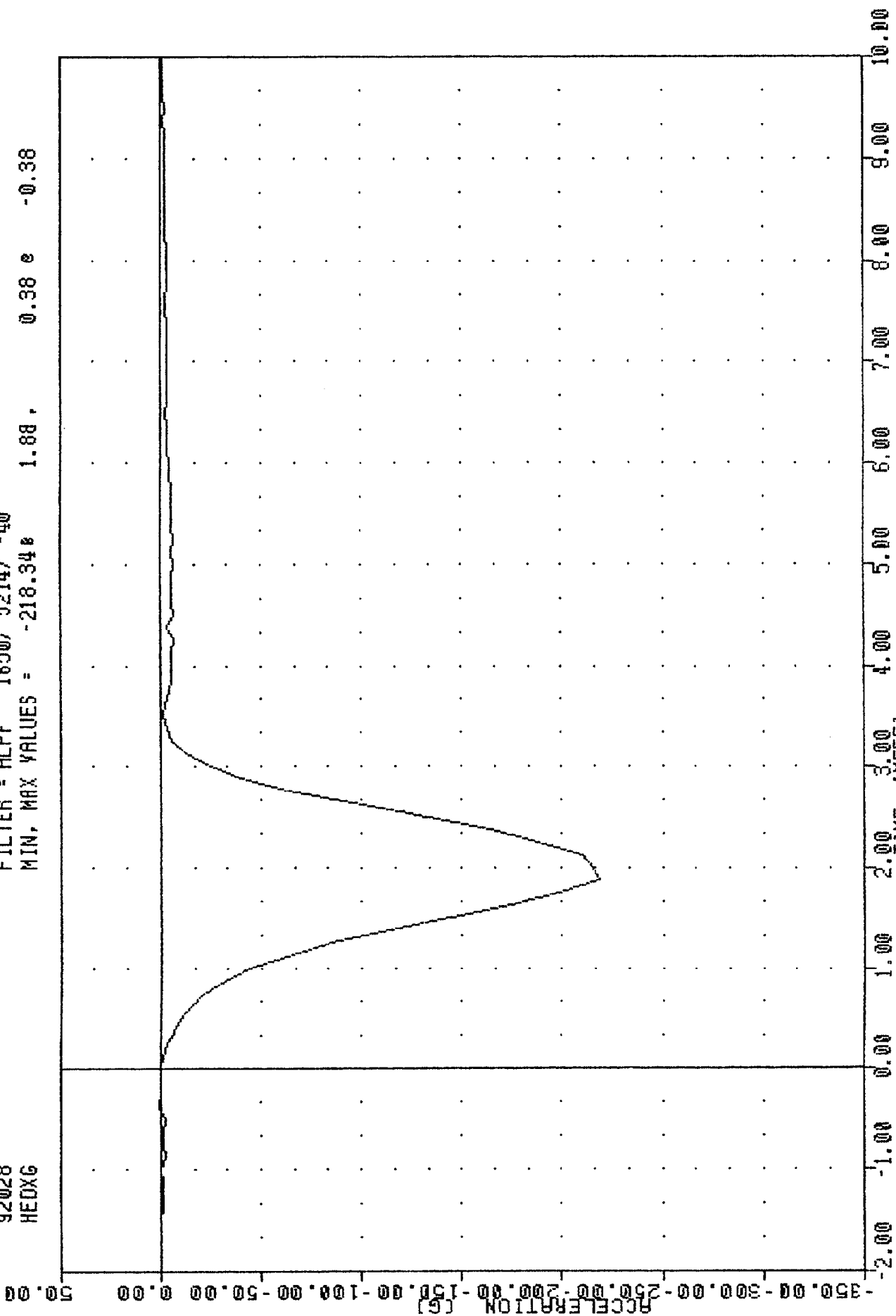
TRC
572E SN142 HEAD DROP CAL 13

92028
HEDXG

, 142C13HD2

FILTER = ALPF 1650/ 5214/ -40

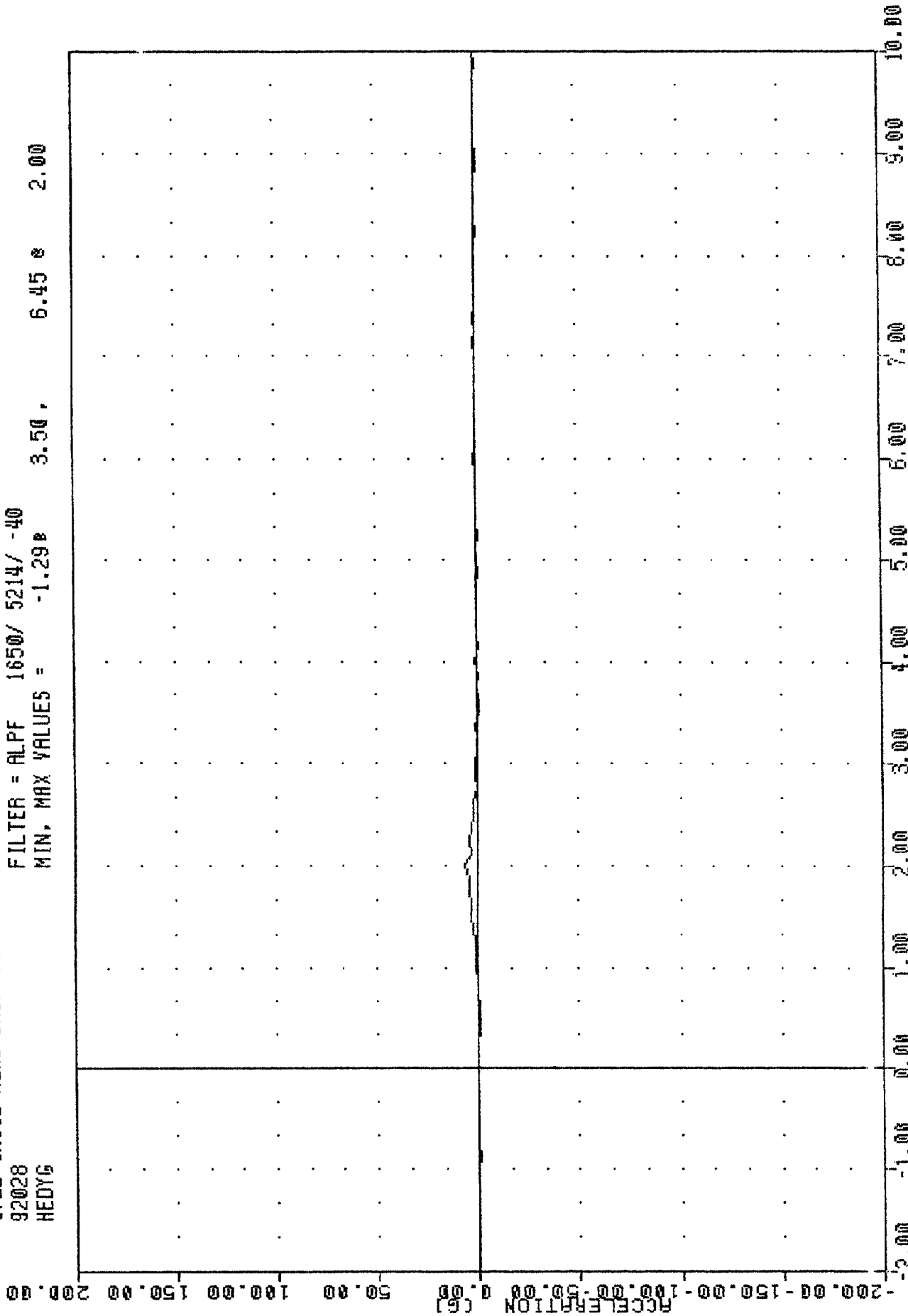
MIN, MAX VALUES = -218.34 e 1.88, 0.38 e -0.38



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

TRC , 142C13HD2
 572E SN142 HEAD DROP CAL 13
 92028
 HEDYG

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -1.29B 3.50 . 6.45 e 2.00

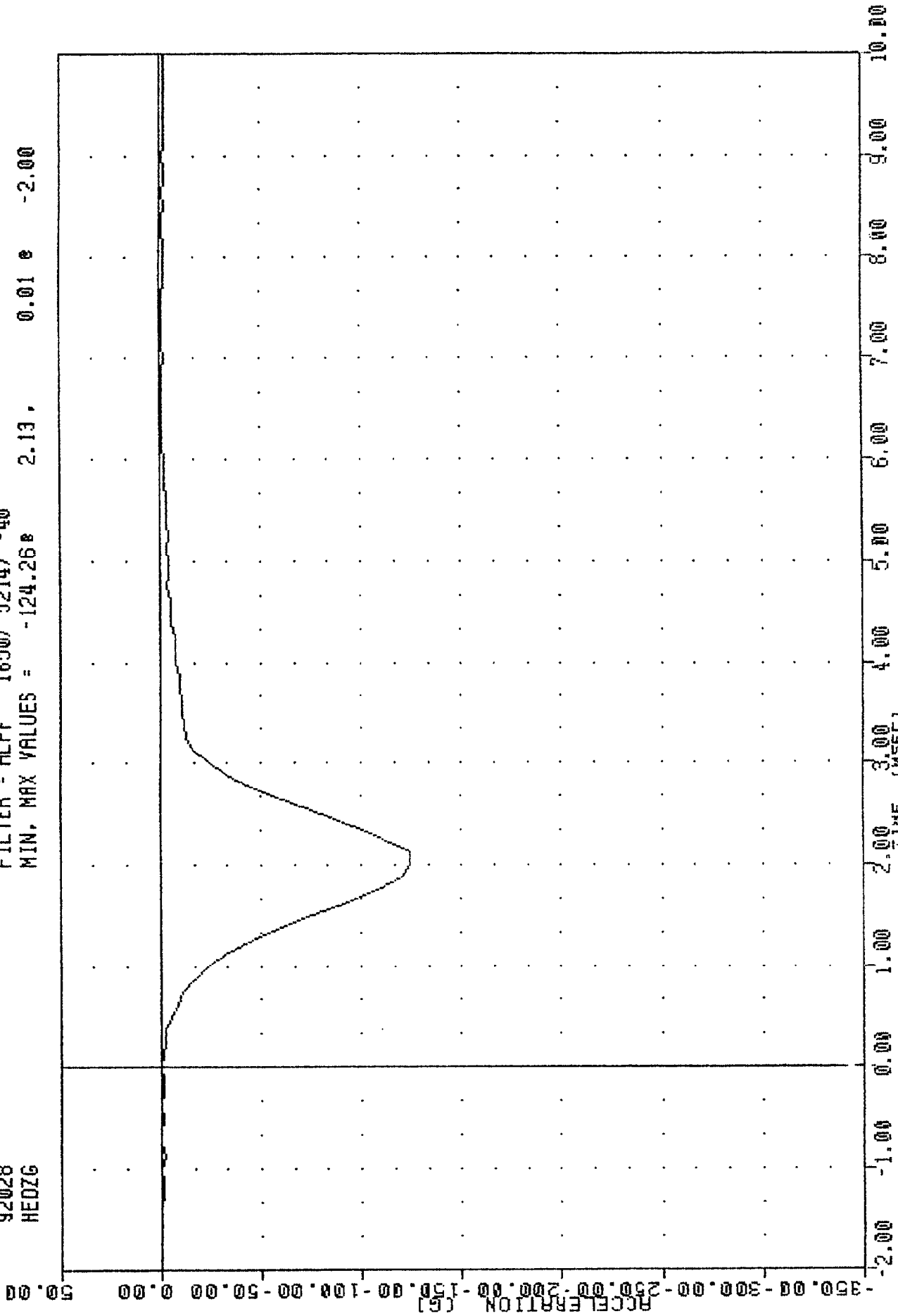


PART 572-E HYBRID III HEAD CALIBRATION
 HEAD ACCELERATION AXIS

TRC
572E SN142 HEAD DRDP CAL 13
92028
HEADZG

, 142C13HD2

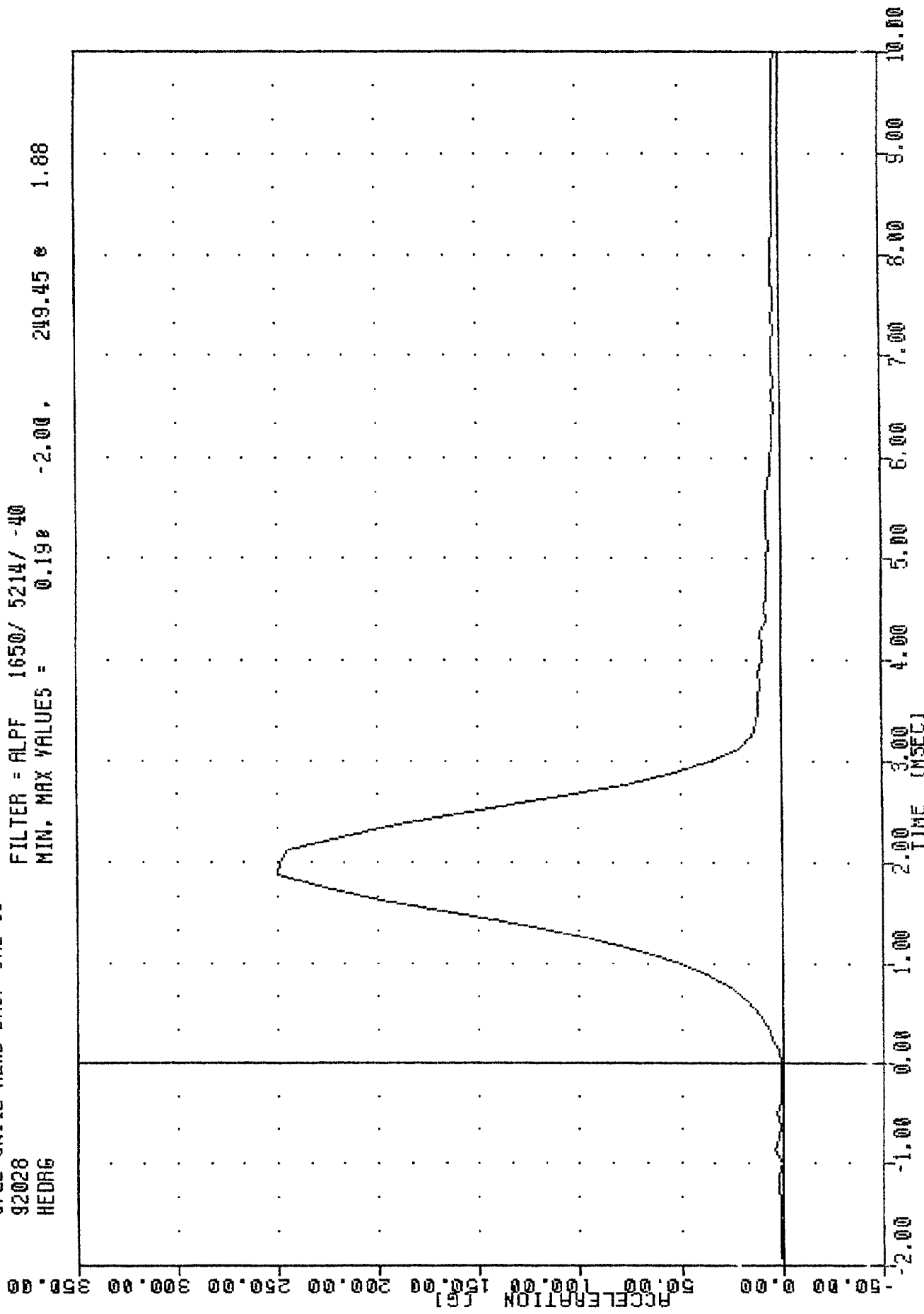
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -124.26 2.13, 0.01 e -2.00



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

TRC , 142C13HD2
 572E SN142 HEAD DRDP CAL 13
 92028
 HEDRG

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = 0.19e -2.00 , 249.45 e 1.88



PART 572-E HYBRID III HEAD CALIBRATION
 AFAN RESISTANT HEAD CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

02-DEC-92

6 AXIS NECK TRANSDUCER
TRC 142C13NF1

572E SN142 NECK FLEXION CAL13

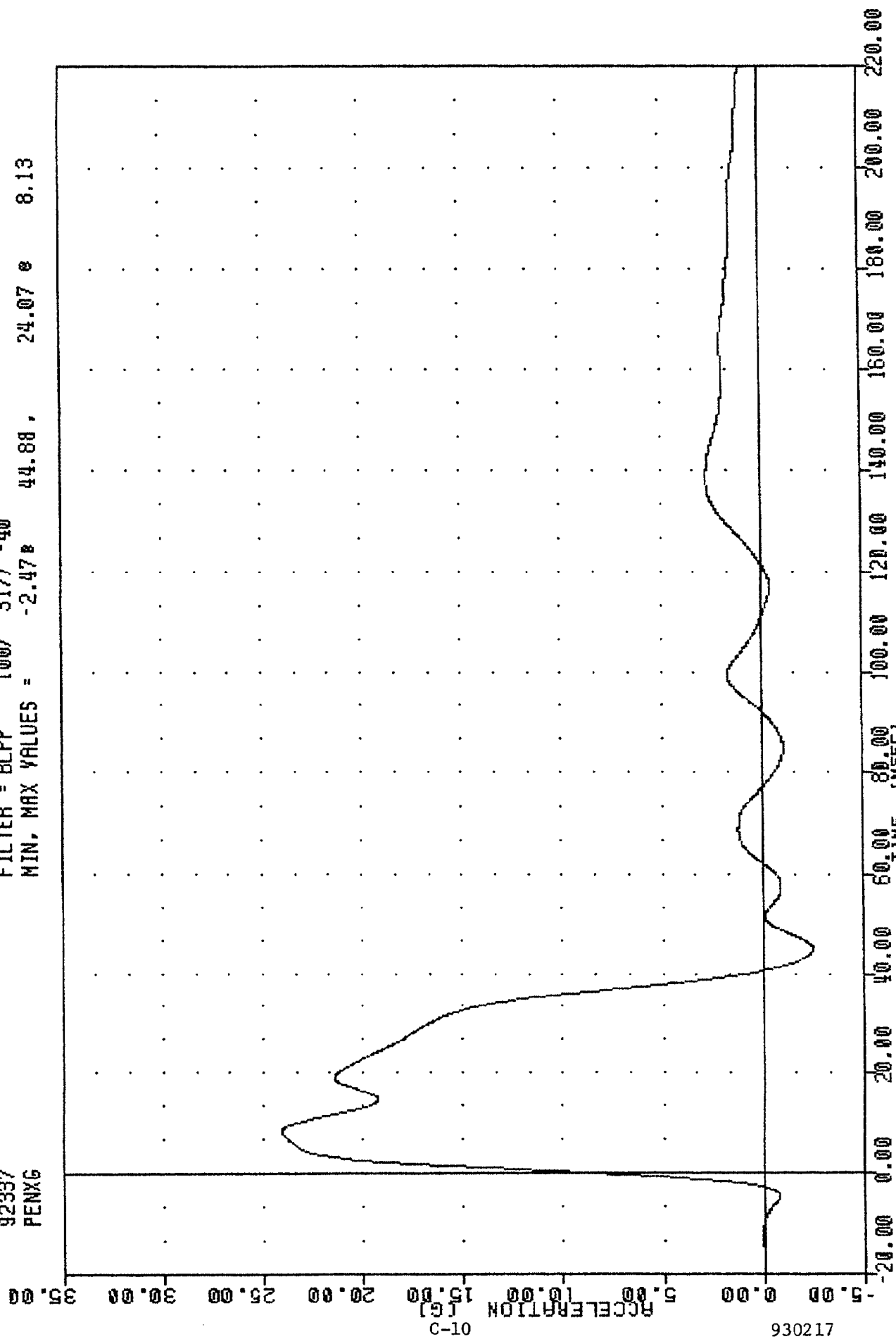
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
IMPACT VELOCITY	6.89 - 7.13 M/SEC	7.03 M/SEC
PENDULUM	10 MS 22.50 - 27.50 G	23.23 G
DECELERATION	20 MS 17.60 - 22.60 G	21.26 G
	30 MS 12.50 - 18.50 G	16.61 G
MAX PENDULUM G ABOVE 30 MS	29 G MAX	16.55 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 42 MS	37.75 MS
D PLANE	MAX 64 - 78 DEG.	74.83 DEG.
ROTATION	TIME 57 - 64 MS	59.13 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX 88.2 - 108.5 NM	93.13 NM
	TIME 47 - 58 MS	50.88 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	113 - 128 MS	115.88 MS
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	97 - 107 MS	106.25 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

TRC , 142C13NF1
572E SN142 NECK FLEXION CAL13
92337
PENXG

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -2.47 44.88 , 24.07 8.13



C-10

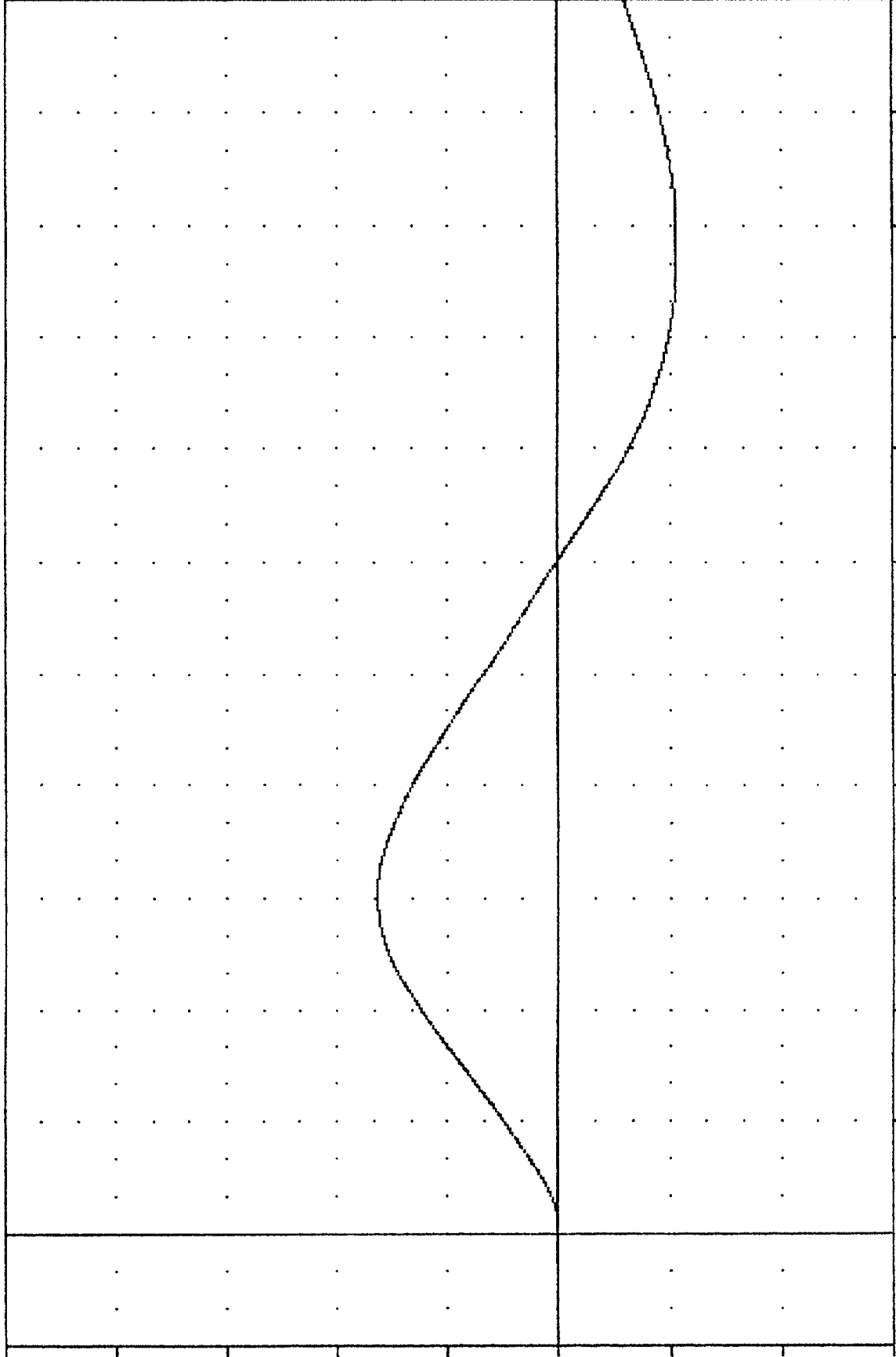
930217

PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENXG IN ACCELERATION

TRC , 142C13NF1
 572E SN142 NECK FLEXION CAL13
 92337
 BETA

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -21.13B 175.25 . 32.70 e 60.75

100.00



11-C

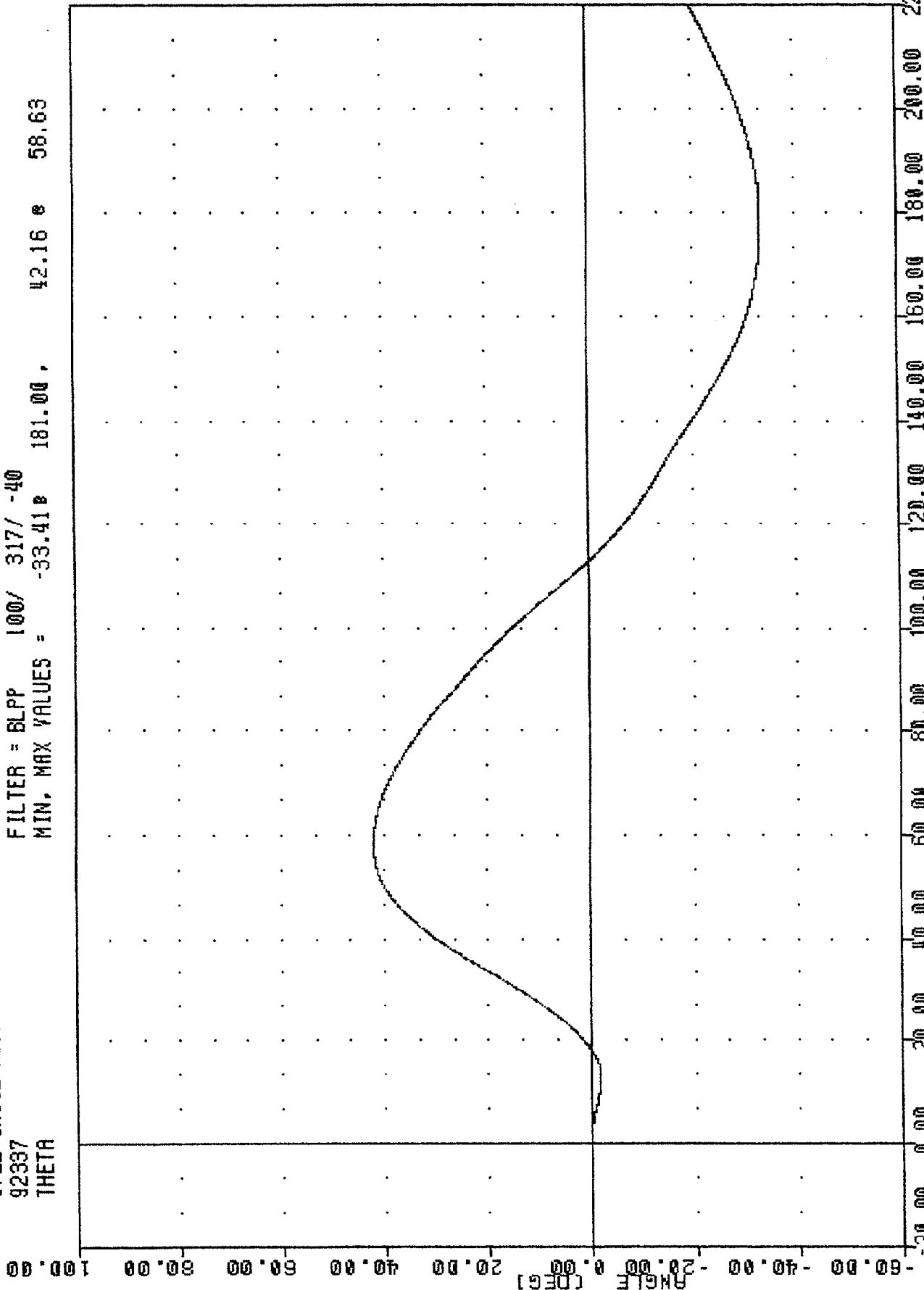
930217

-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00

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

TRC .142C13NF1
572E SN142 NECK FLEXION CAL19
92337
THETA

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -33.41e 181.00, 42.16 e 58.63



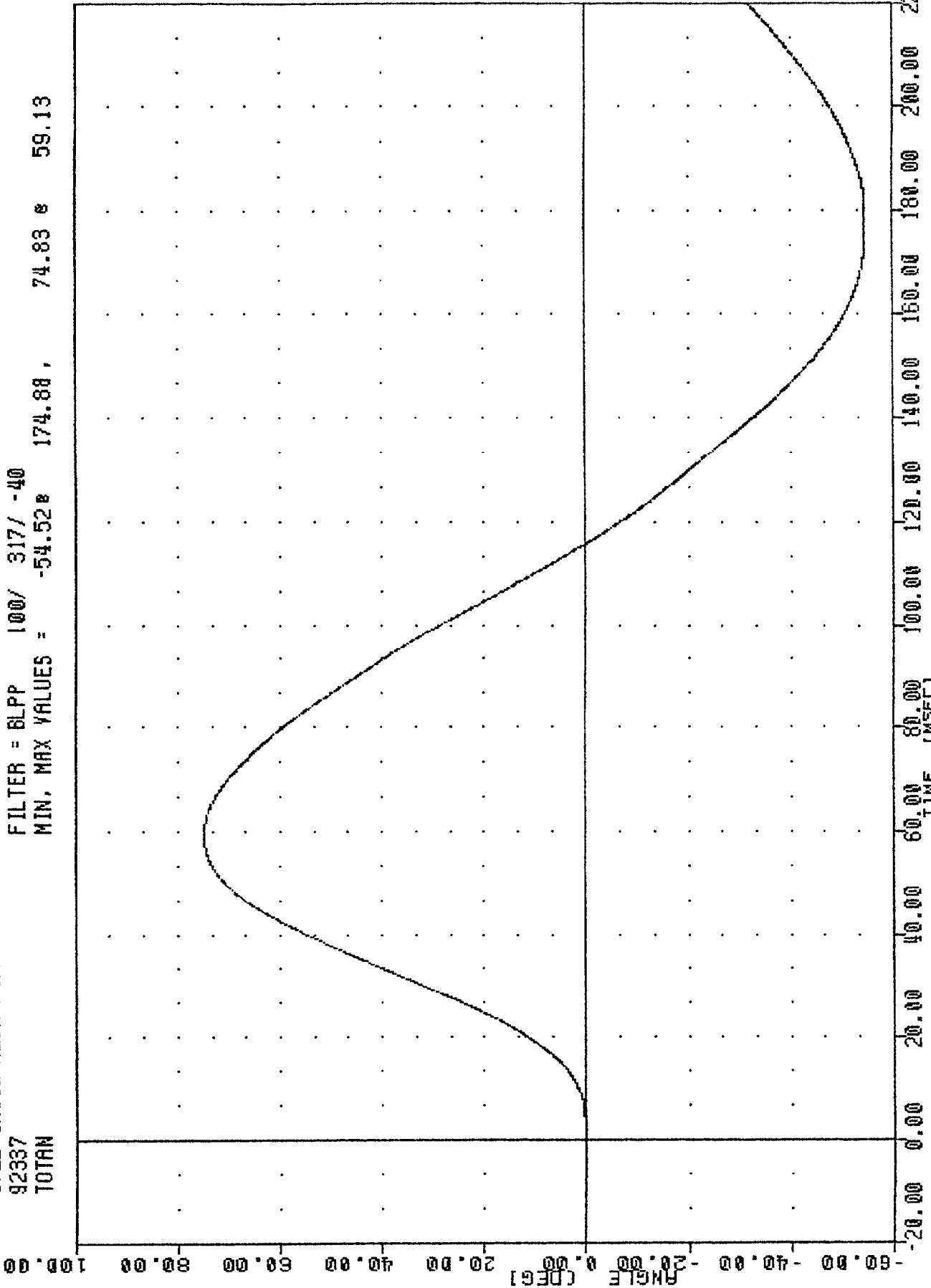
C-12

930217

PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION LIMIT [REDACTED] TA [REDACTED]

TRC , 142C13HF1
572E SN142 NECK FLEXION CAL19
92337
TOTAL

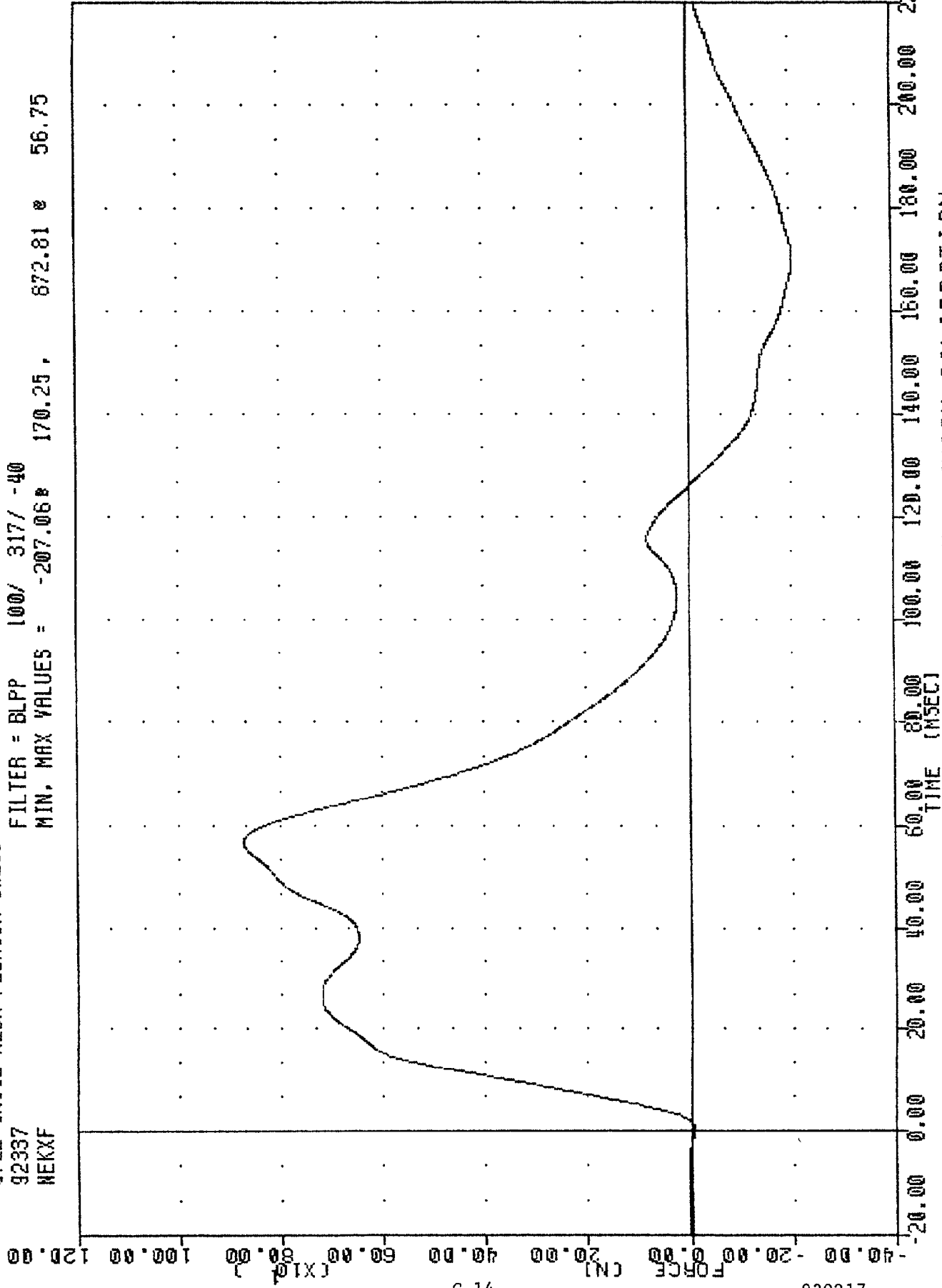
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -54.528 174.88 , 74.83 e 59.13



PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL ROTATION

TRC , 142C13NF1
 572E 9N142 NECK FLEXION CAL19
 92337
 NEKXF

FILTER = BLPP 100/ 317/ -40
 MIN, MAX VALUES = -207.06e 170.25e 872.81e 56.75



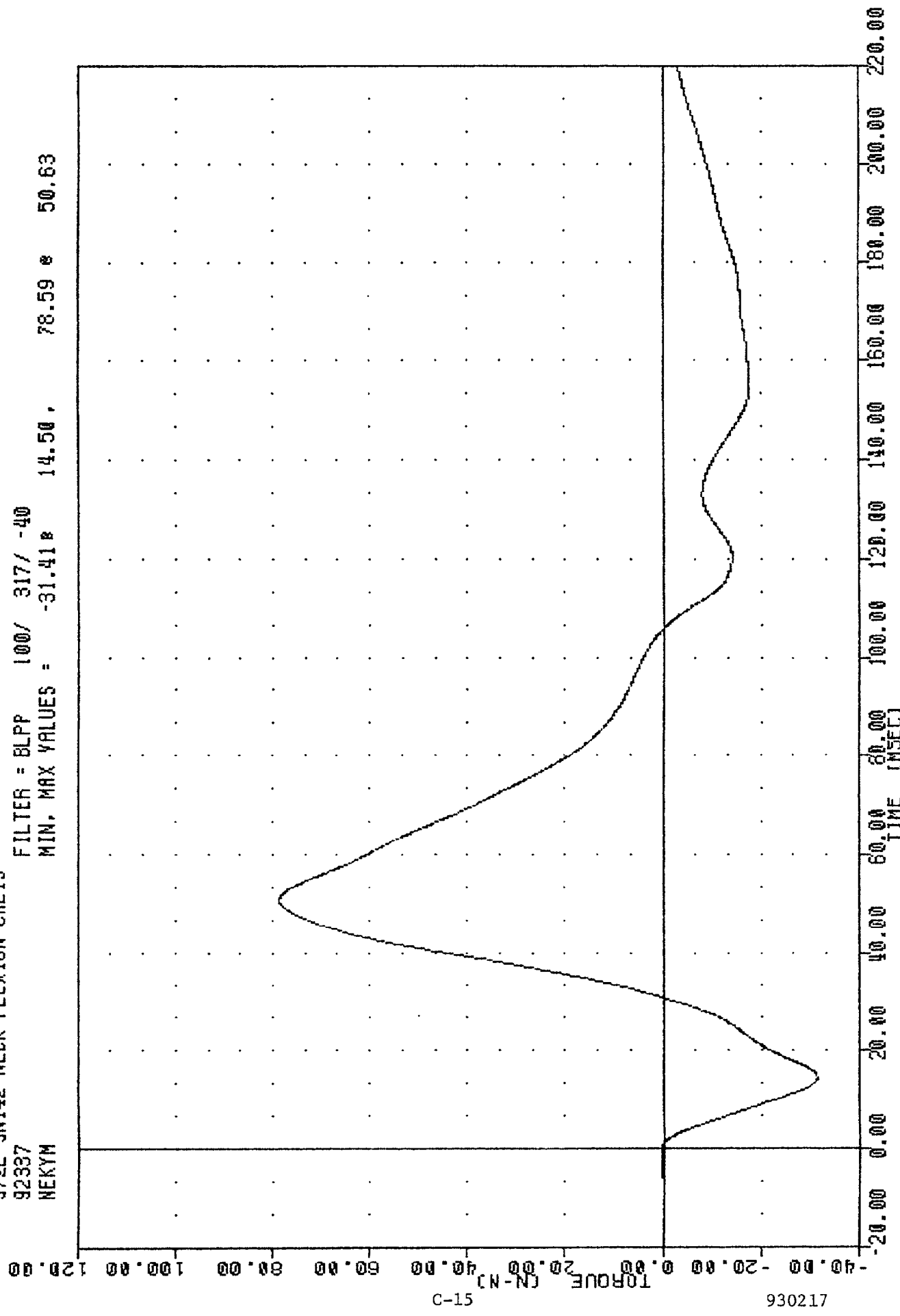
C-14

930217

PART 572-E HYBRID NECK FLEXION CALIBRATION

TRC , 142C13NF1
572E SN142 NECK FLEXION CAL19
92337
NEKYM

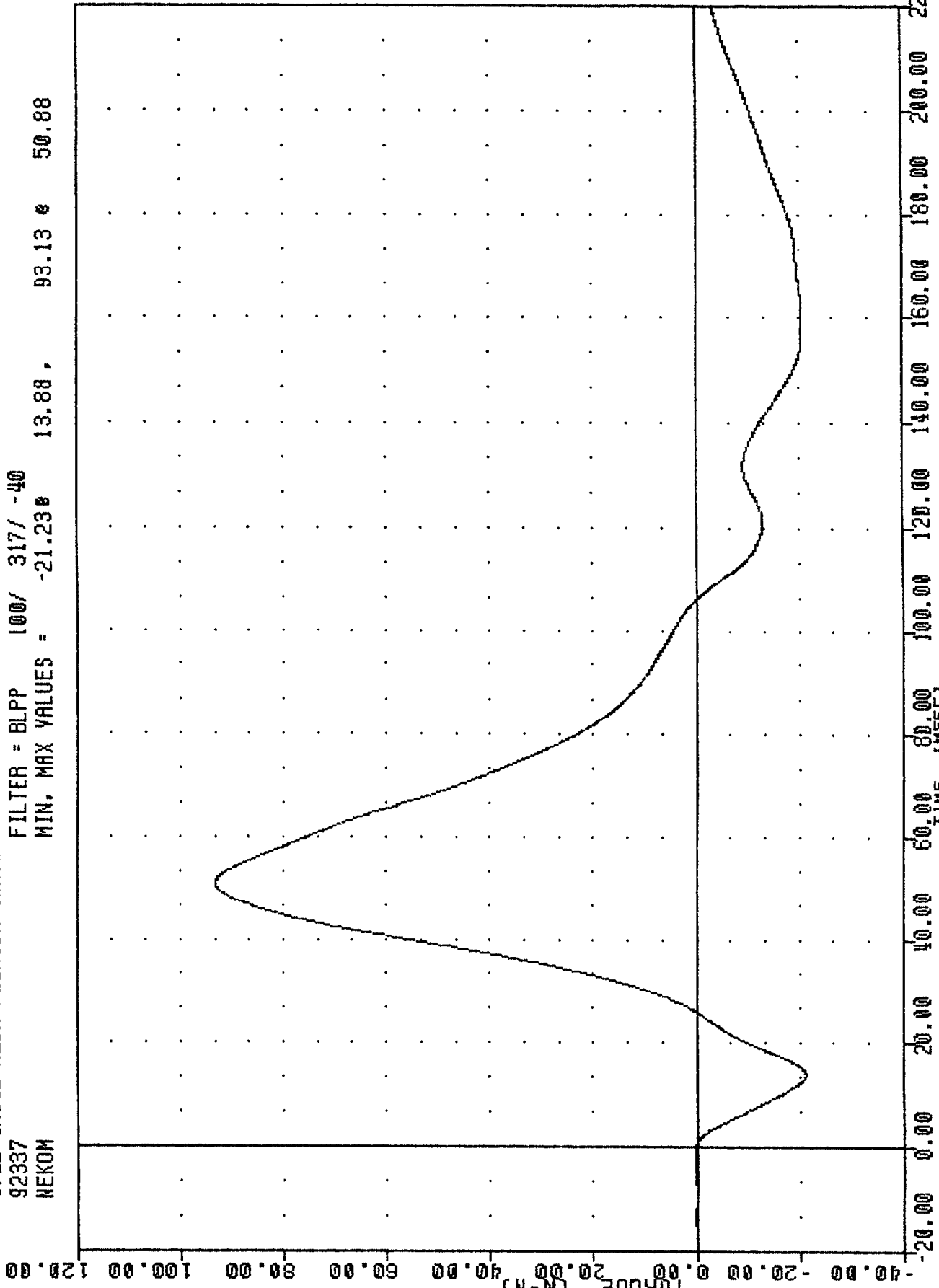
FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -31.418 14.50 78.59 e 50.63



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

TRC , 142C13NF1
572E SN142 NECK FLEXION CAL19
92337
NEKOM

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -21.23 13.88 , 93.13 50.88



PART 572-E HYBRID III NECK FLEXION CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

02-DEC-92

6 AXIS NECK TRANSDUCER
TRC 142C13NE1

572E SN142 NECK EXT. CAL13

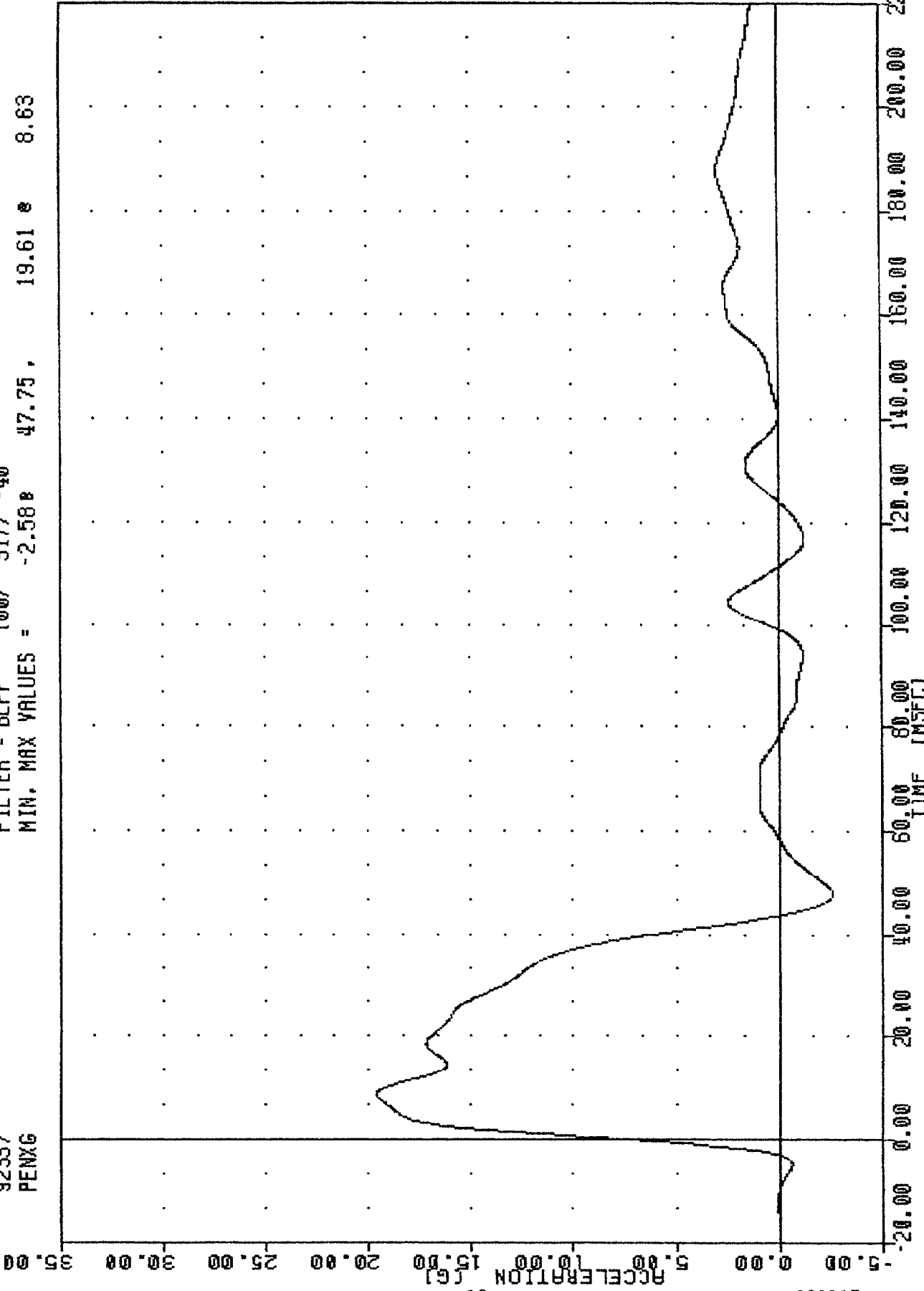
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
IMPACT VELOCITY	5.95 - 6.19 M/SEC	6.05 M/SEC
PENDULUM DECELERATION	10 MS 17.20 - 21.20 G	19.15 G
	20 MS 14.00 - 19.00 G	16.94 G
	30 MS 11.00 - 16.00 G	13.42 G
MAX PENDULUM G ABOVE 30 MS	22 G MAX	13.37 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G	38 - 46 MS	40.50 MS
D PLANE ROTATION	MAX 81 - 106 DEG.	98.87 DEG.
	TIME 72 - 82 MS	74.38 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN -80.0/-52.9 NM	-70.95 NM
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO	147 - 174 MS	154.88 MS
	NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO	120 - 148 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN *Chas. Middleton*

TRC , 142C13NE1
572E SN142 NECK EXT. CAL13
92337
PENXG

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -2.588 47.75, 19.61 e 8.63



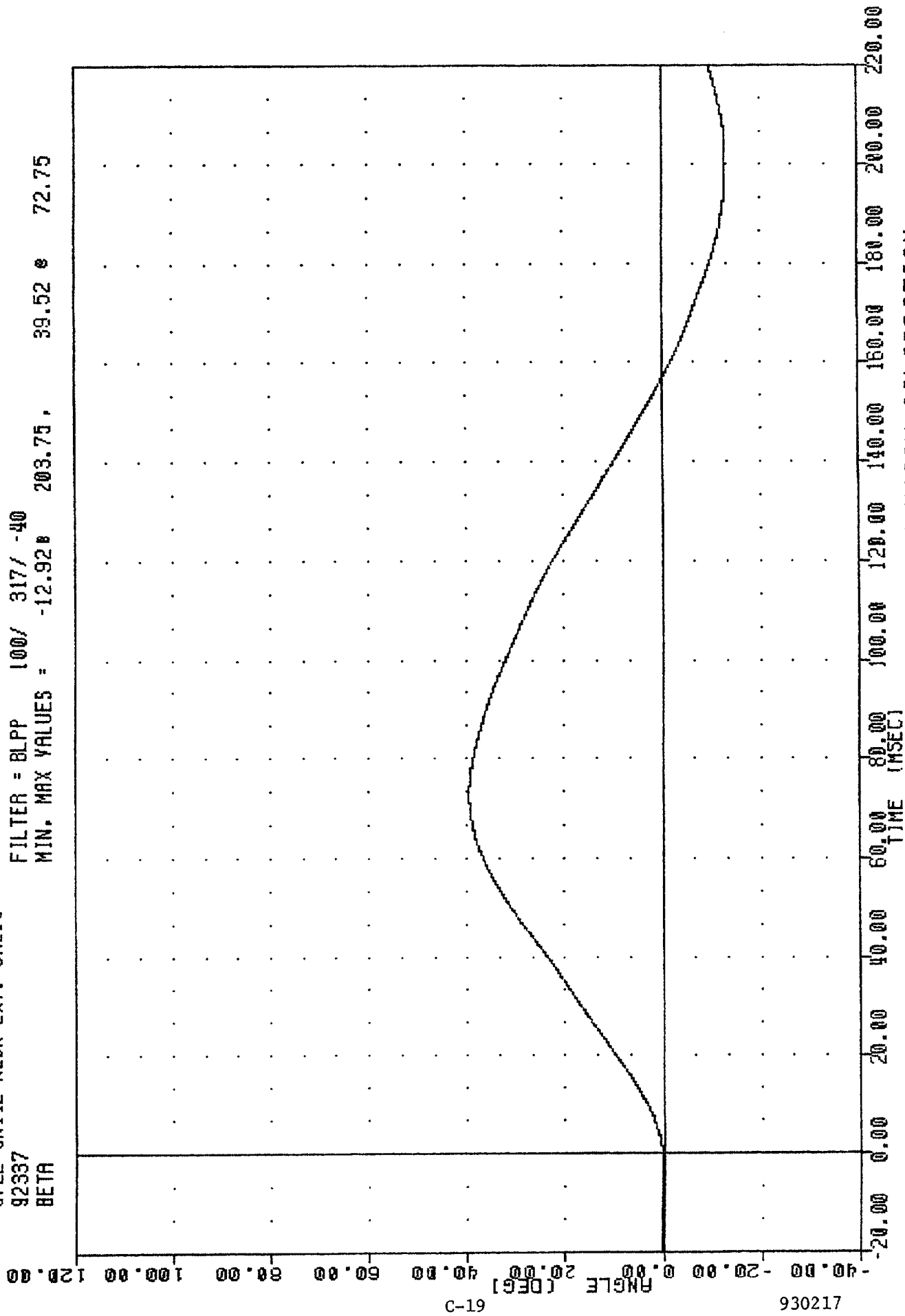
81-3

930217

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TRC
572E SN142 NECK EXT. CAL13
92337
BETA

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -12.92 203.75, 39.52 72.75



C-19

930217

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

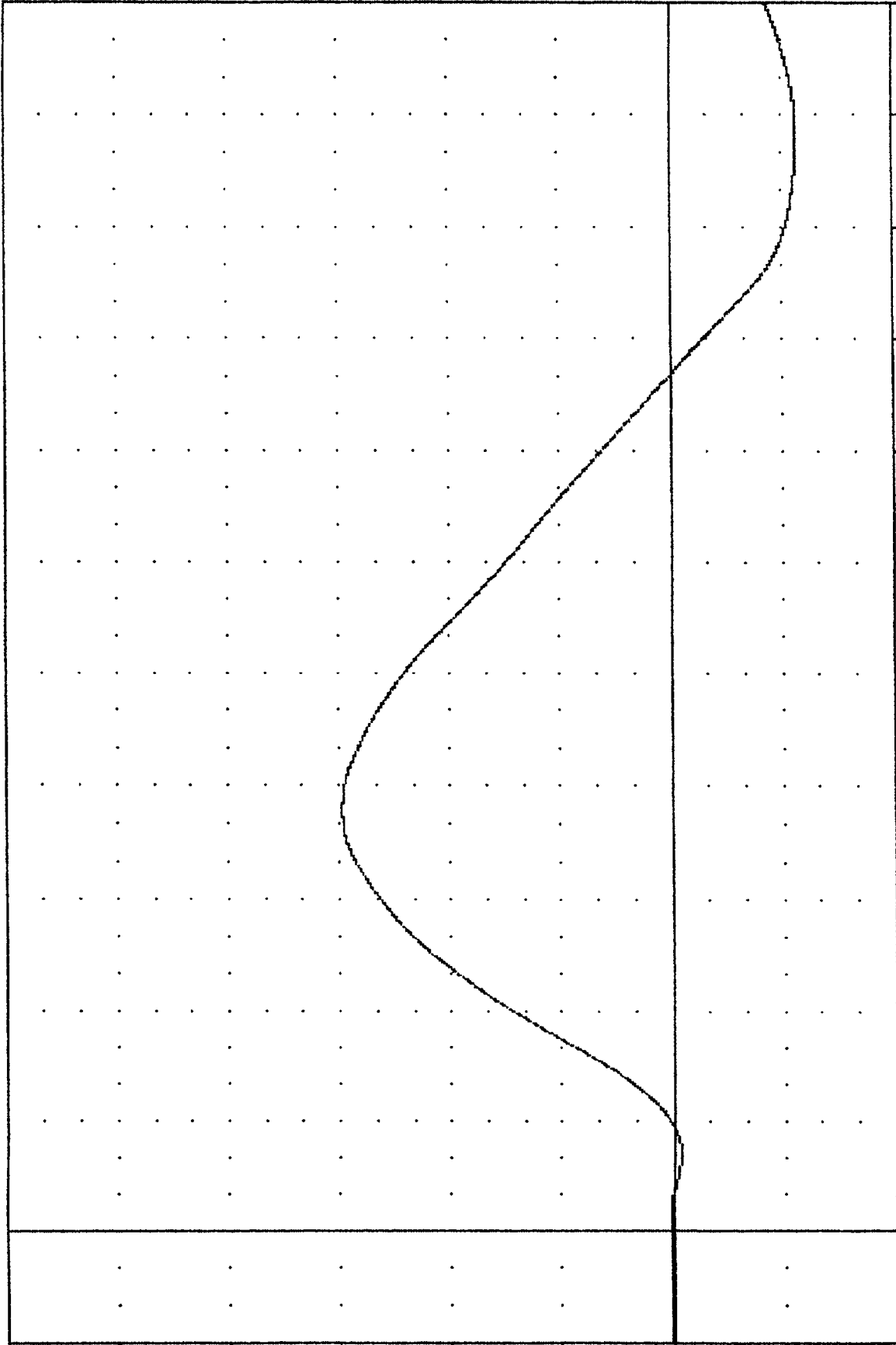
TRC , 142C13NE1
572E SN142 NECK EXT. CAL13
92337
THETA

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -22.70 197.38 . 59.44 75.63

ANGLE (DEG) 120.00 100.00 80.00 60.00 40.00 20.00 0.00 -20.00 -40.00

C-20

930217

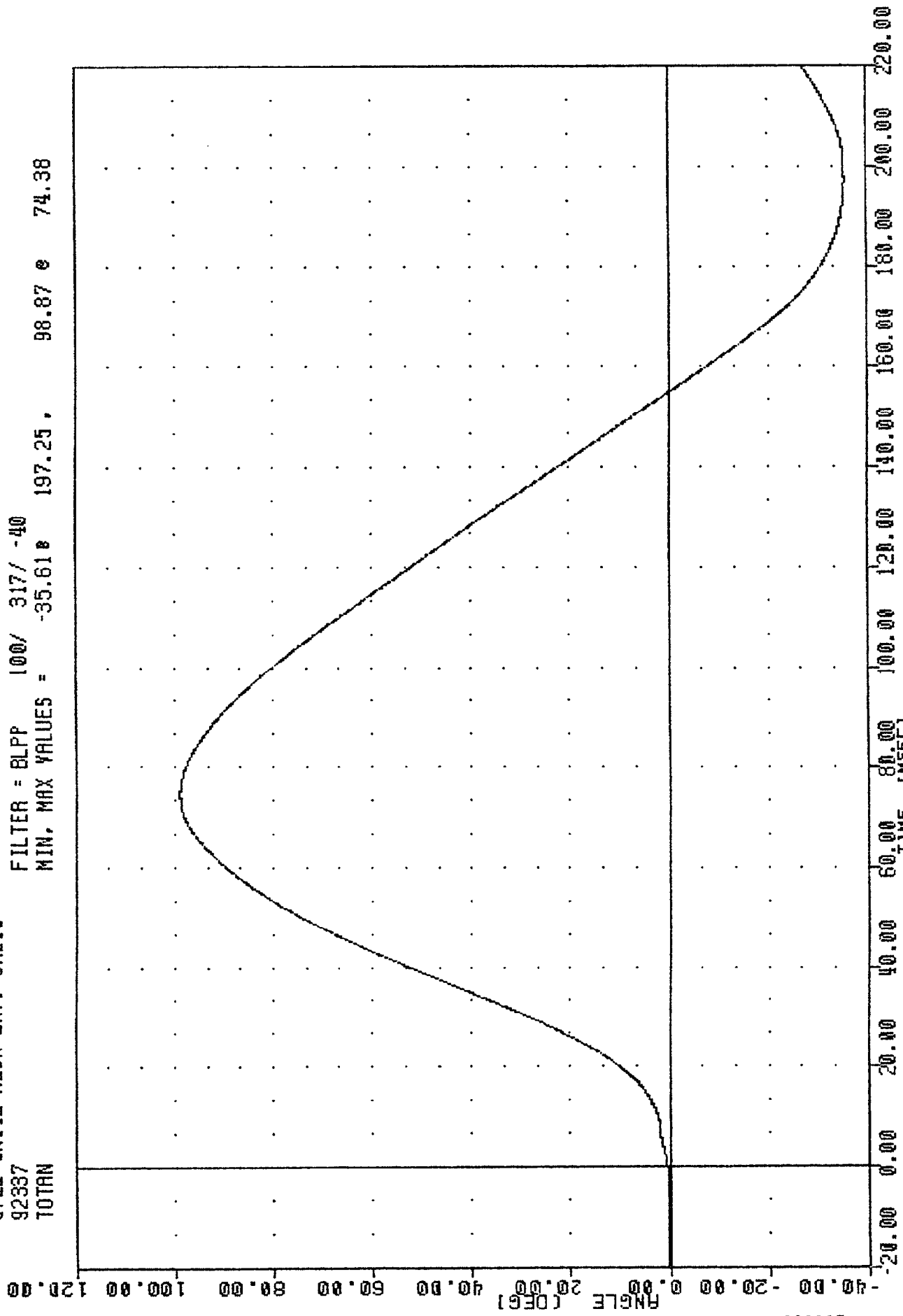


-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TRC
572E SNI42 NECK EXT. CAL13
92337
TOTAL

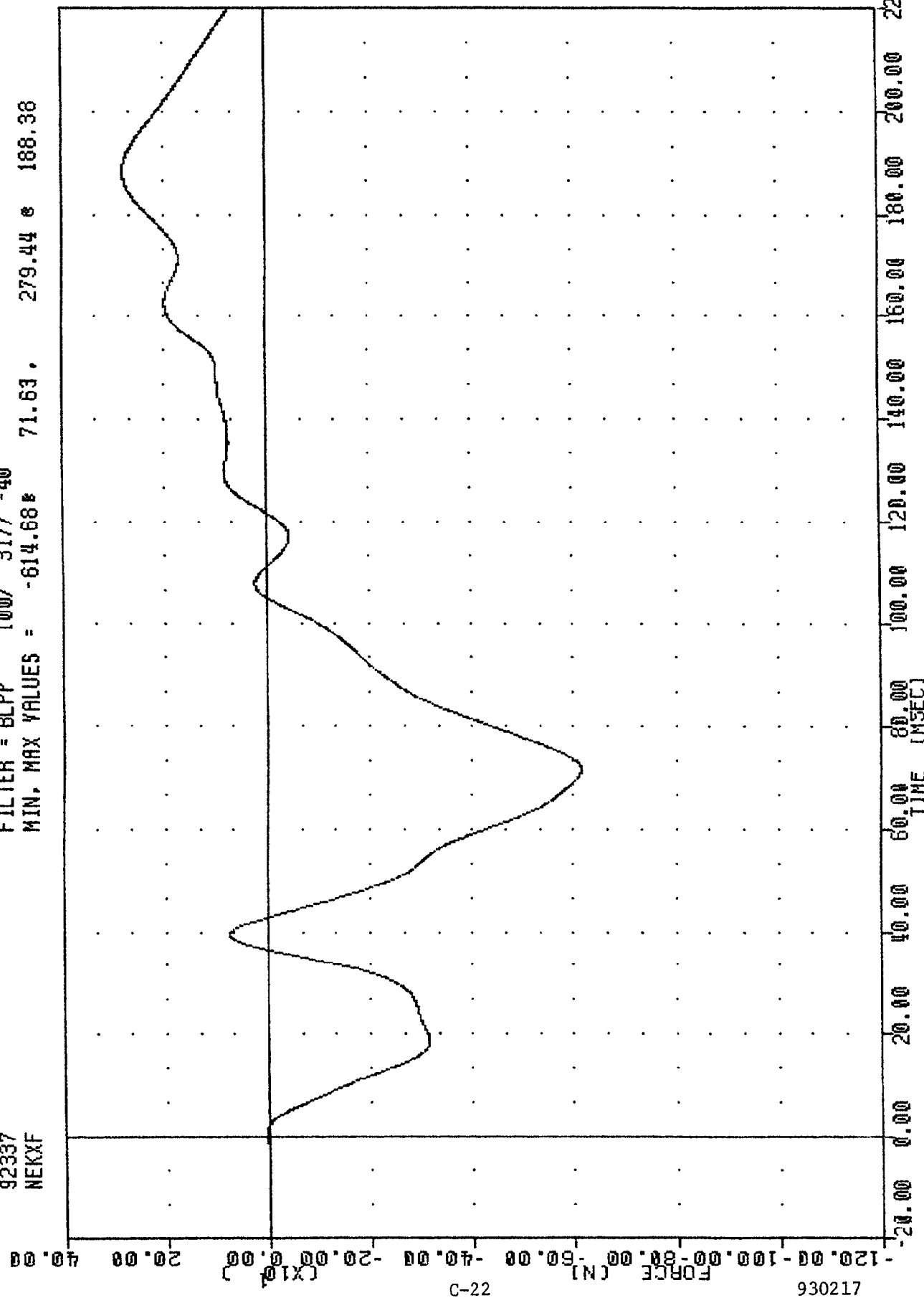
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -35.61 e 197.25, 98.87 e 74.38



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL ROTATION

TRC
572E SN142 NECK EXT. CAL13
92337
NEKXF

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -614.68 71.63 279.44 188.38



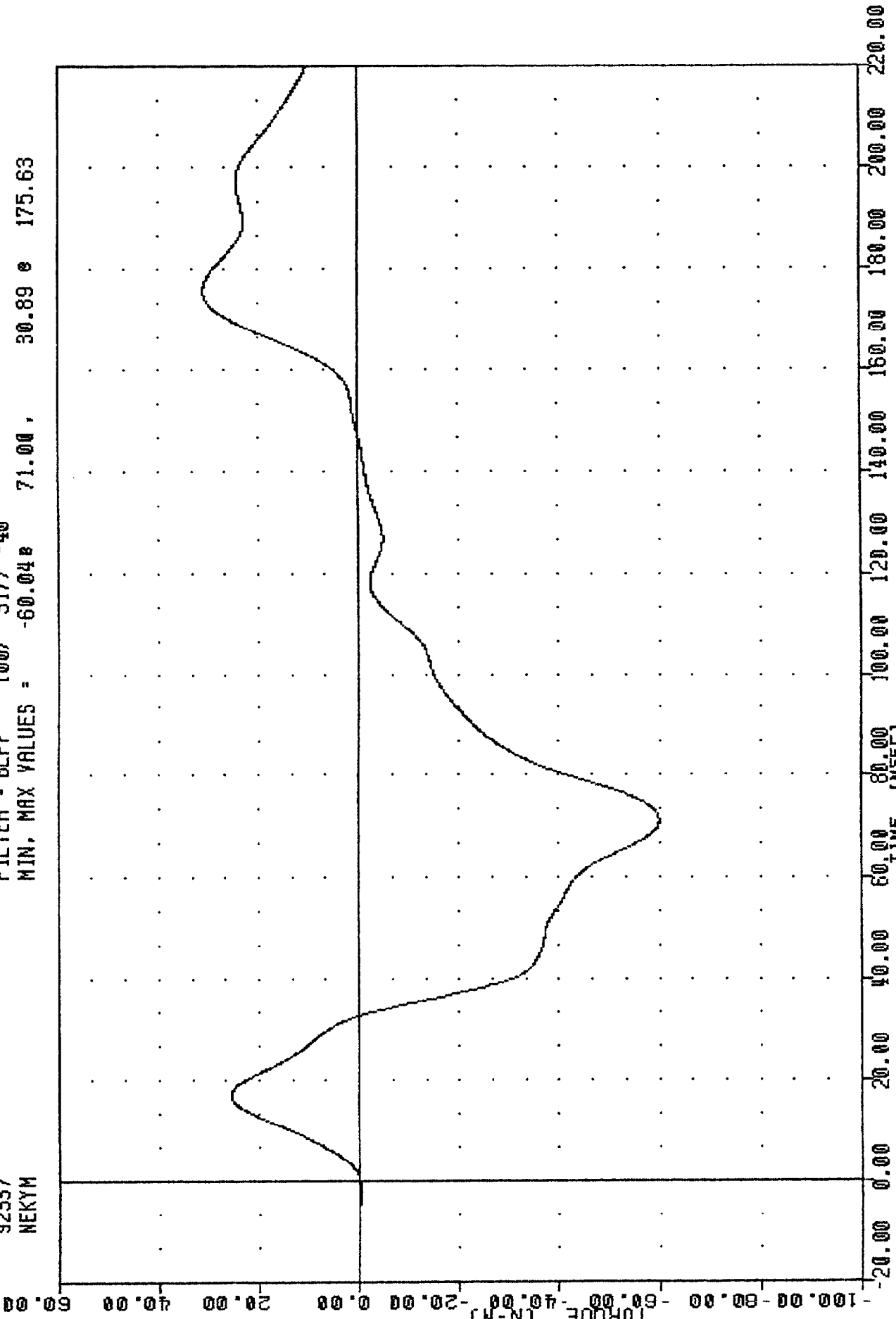
C-22

930217

PART 572-E HYBRID II NECK EXTENSION CALIBRATION
NPK FORCE X AXIS

TRC , 142C13NE1
572E SN142 NECK EXT. CAL13
92337
NEKYM

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -60.048 71.00 , 30.89 e 175.63



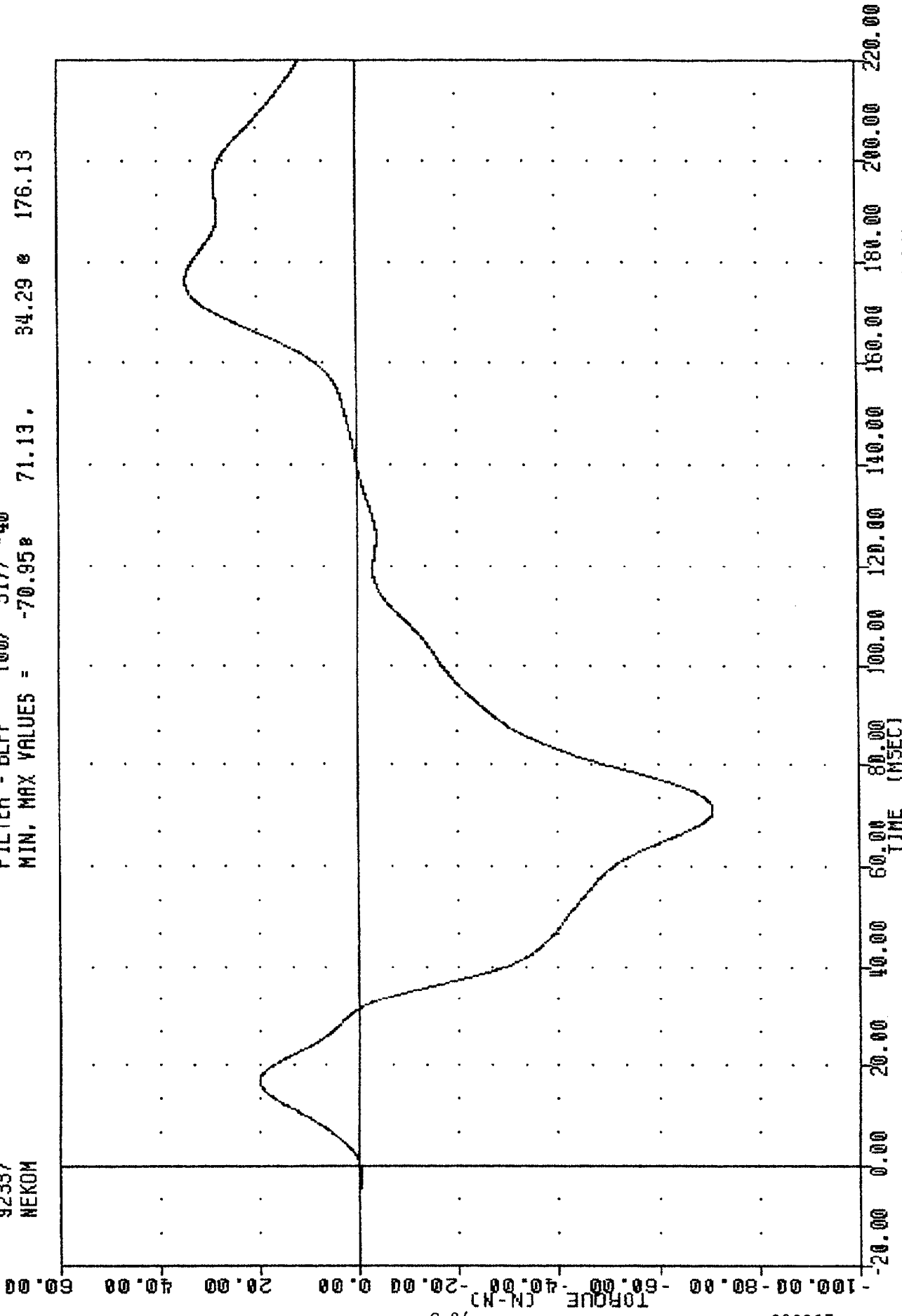
C-23

930217

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

TRC , 142C13NE1
572E SN142 NECK EXT. CAL13
92337
NEKOM

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -70.95 8 71.13 . 34.29 8 176.13



C-24

930217

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

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

28-JAN-93

TRC

142C13TH2

572E SN142 H.S.THORAX CAL13

HIGH SPEED TEST		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	42.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/SEC	6.63 M/SEC
MAXIMUM DEFLECTION	63.5 - 72.6 MM	71.0 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5423. N
INTERNAL HYSTERESIS	69% - 85%	70.8%

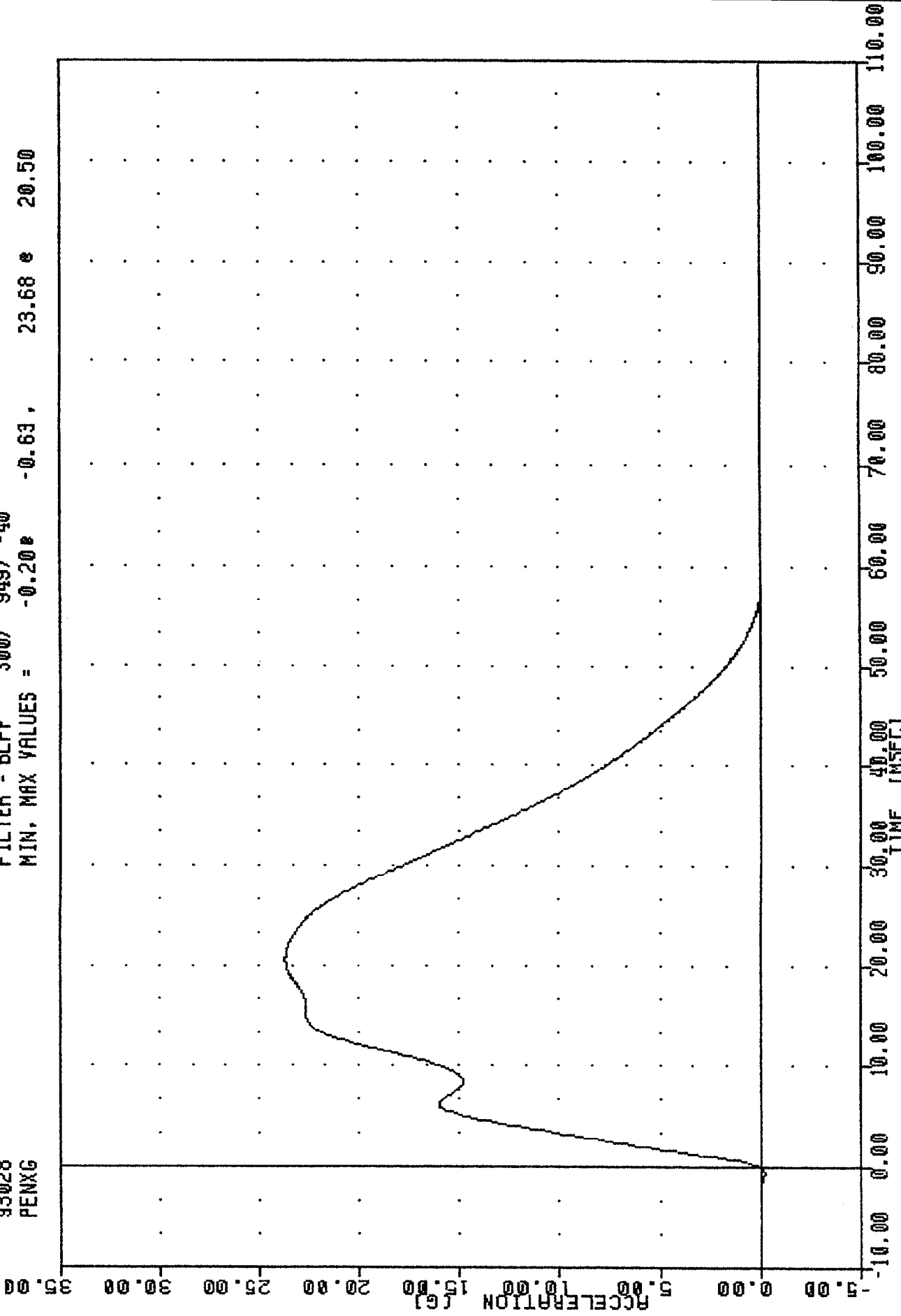
TEST MEETS SPECIFICATIONS

TECHNICIAN

Chas. Middleton

TRC , 142C13TH2
572E SN142 H.S. THORAX CRL13
93028
PENXG

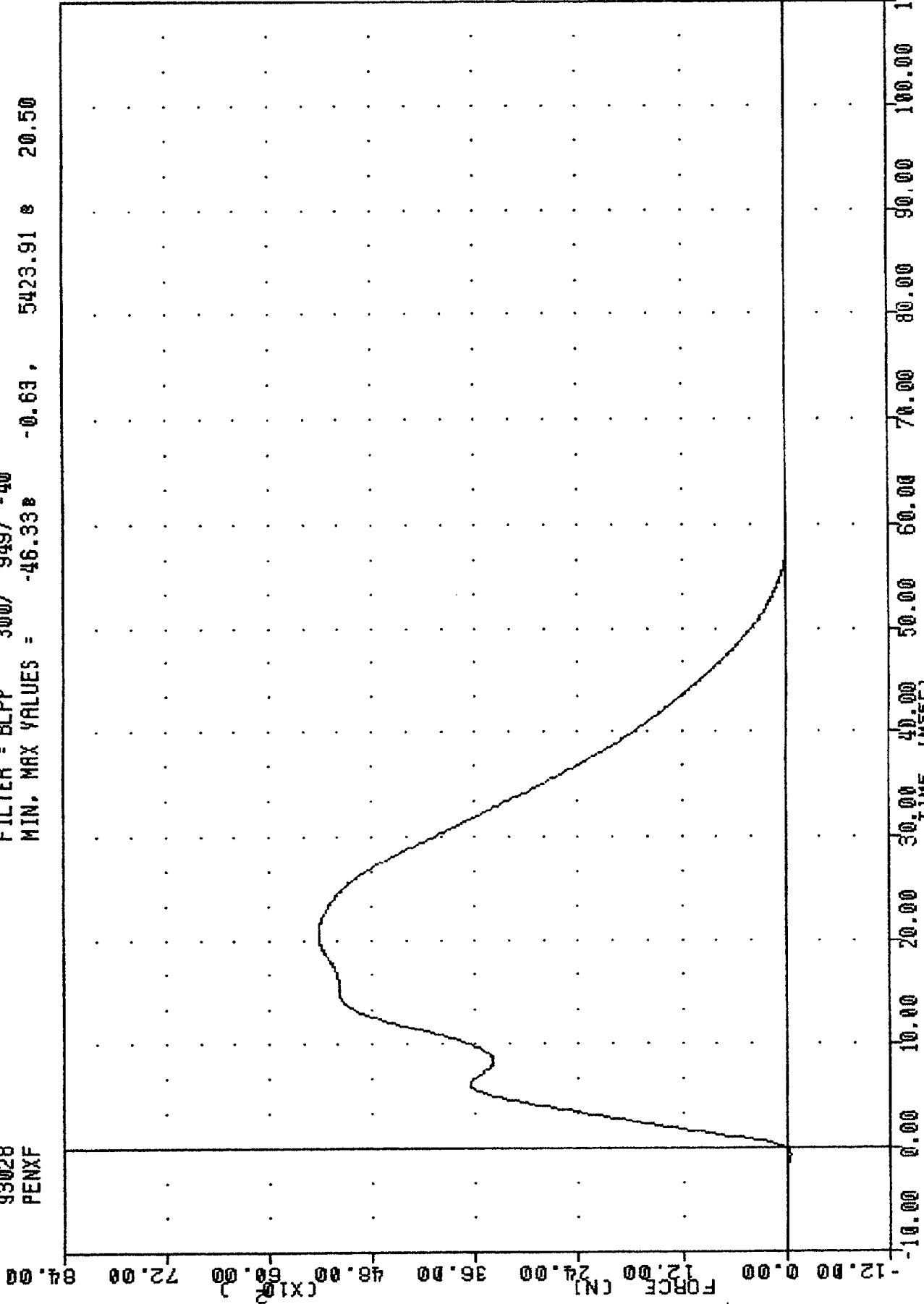
FILTER = BLPP 300/ 949/ -40
MIN. MAX VALUES = -0.20e -0.63, 23.68 e 20.50



PART 572-E HYBRID III THORAX CALIBRATION

TRC , 142C13TH2
572E SN142 H.S.THORAX CAL13
93028
PENXF

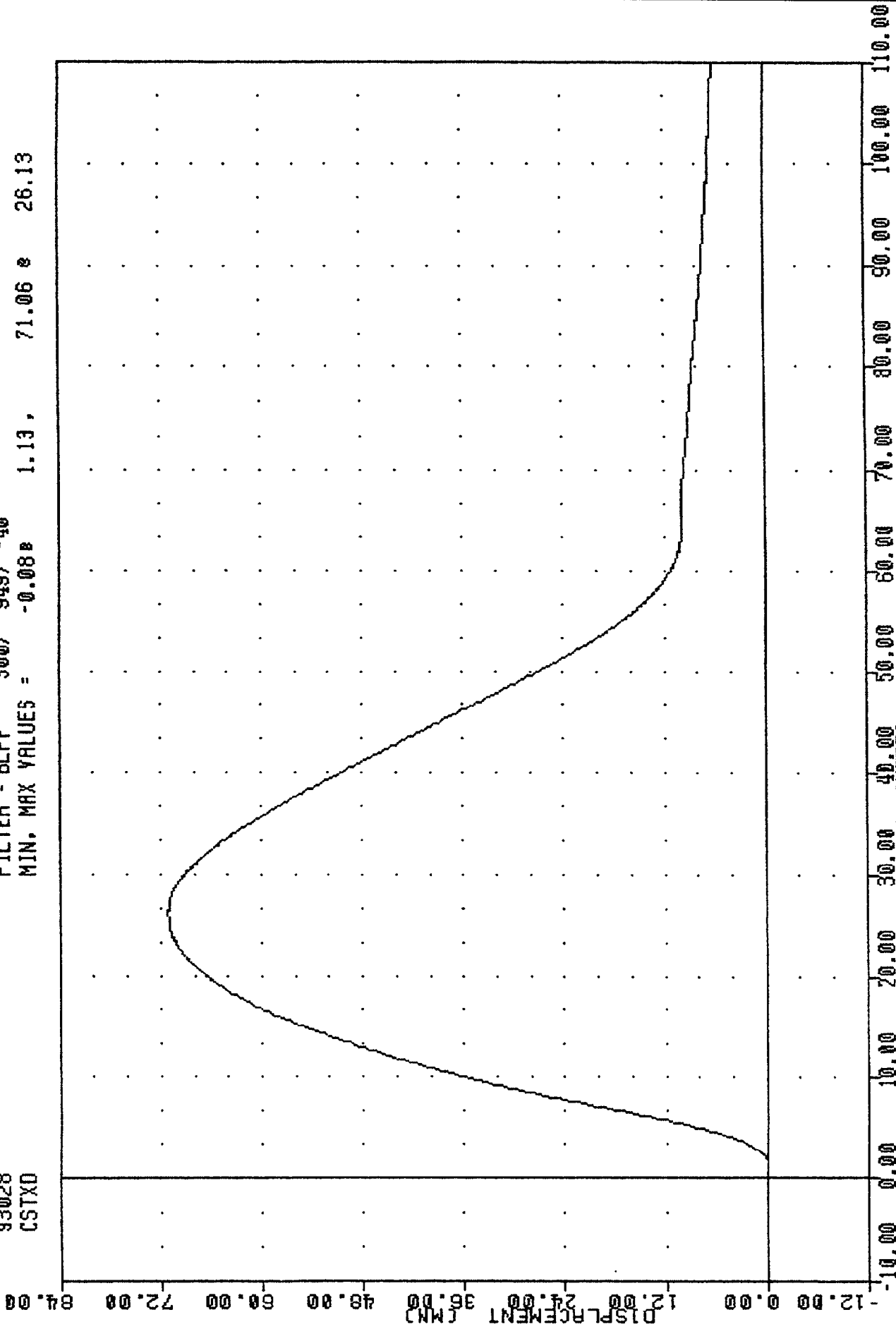
FILTER = BLPP 300/ 949/ -40
MIN. MAX VALUES = -46.338 -0.63, 5423.91 & 20.50



PART 572-E HYBRID III THORAX CALIBRATION
DENR1111M ENDFE

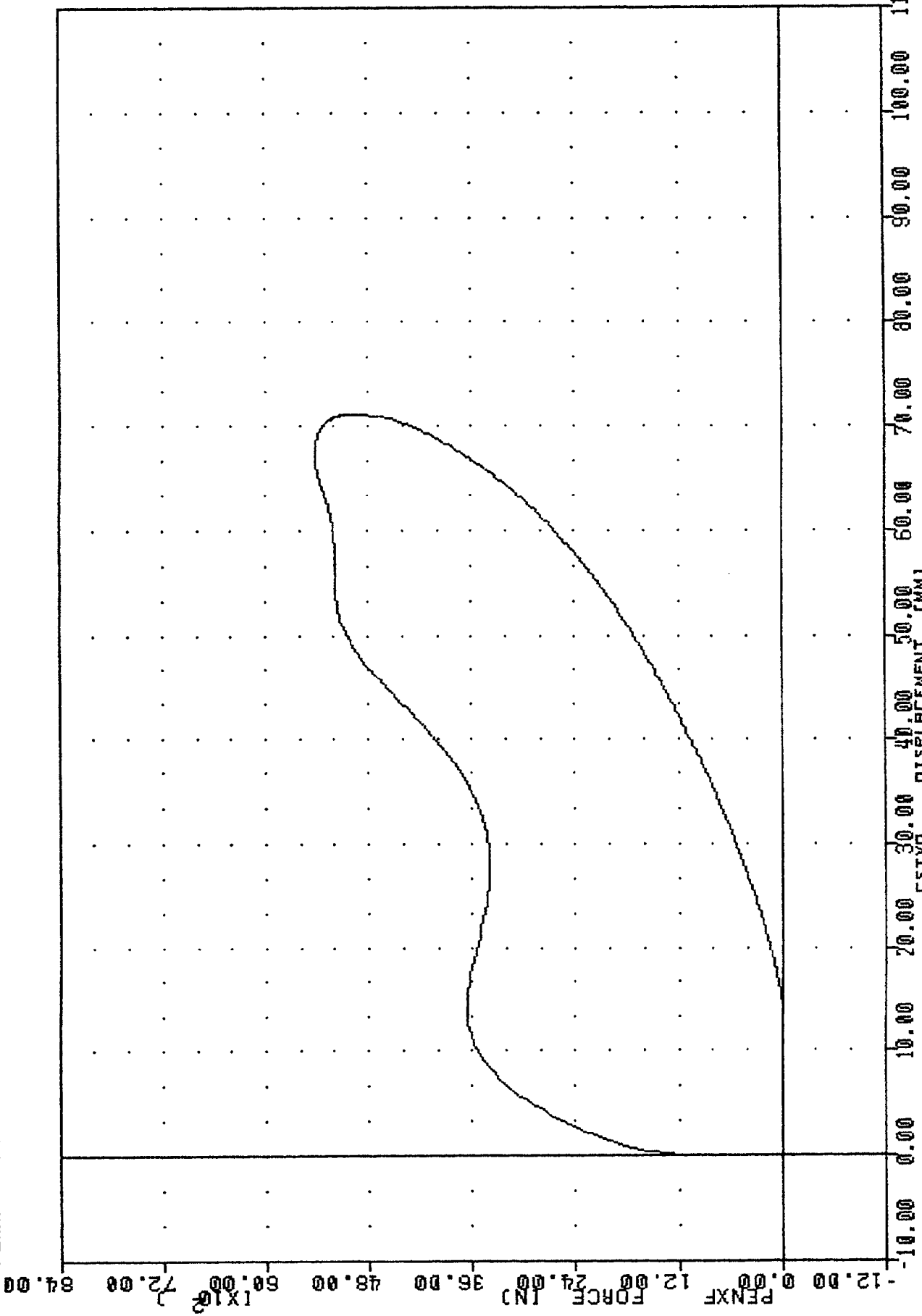
TAC , 142C13TH2
572E SN142 H.S. THORAX CAL13
93028
CSTXD

FILTER = BLPP 300/ 949/ -40
MIN. MAX VALUES = -0.08 71.06 e 26.13



TRC 142C13TH2 572E SN142 H.S. THORAX CAL13 93028
 CSTXD FILTER = BLPP 300/ 949/ -40 MIN, MAX = -0.08 #
 PENXF FILTER = BLPP 300/ 949/ -40 MIN, MAX = -46.33 #

1.13 # 71.06 # 26.13
 -0.63 # 5423.01 # 20.50



PART 572-E HYBRID III THORAX CALIBRATION
 SUBJECT: NTCBI ACCEMENT VS PENNIII IM FORCE

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

02-DEC-92

RIGHT KNEE

TRC

142C13RK1

572E SN142 RIGHT KNEE CAL 13

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	2.10 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5611.4 N
PROBE WEIGHT	5.0 KG	

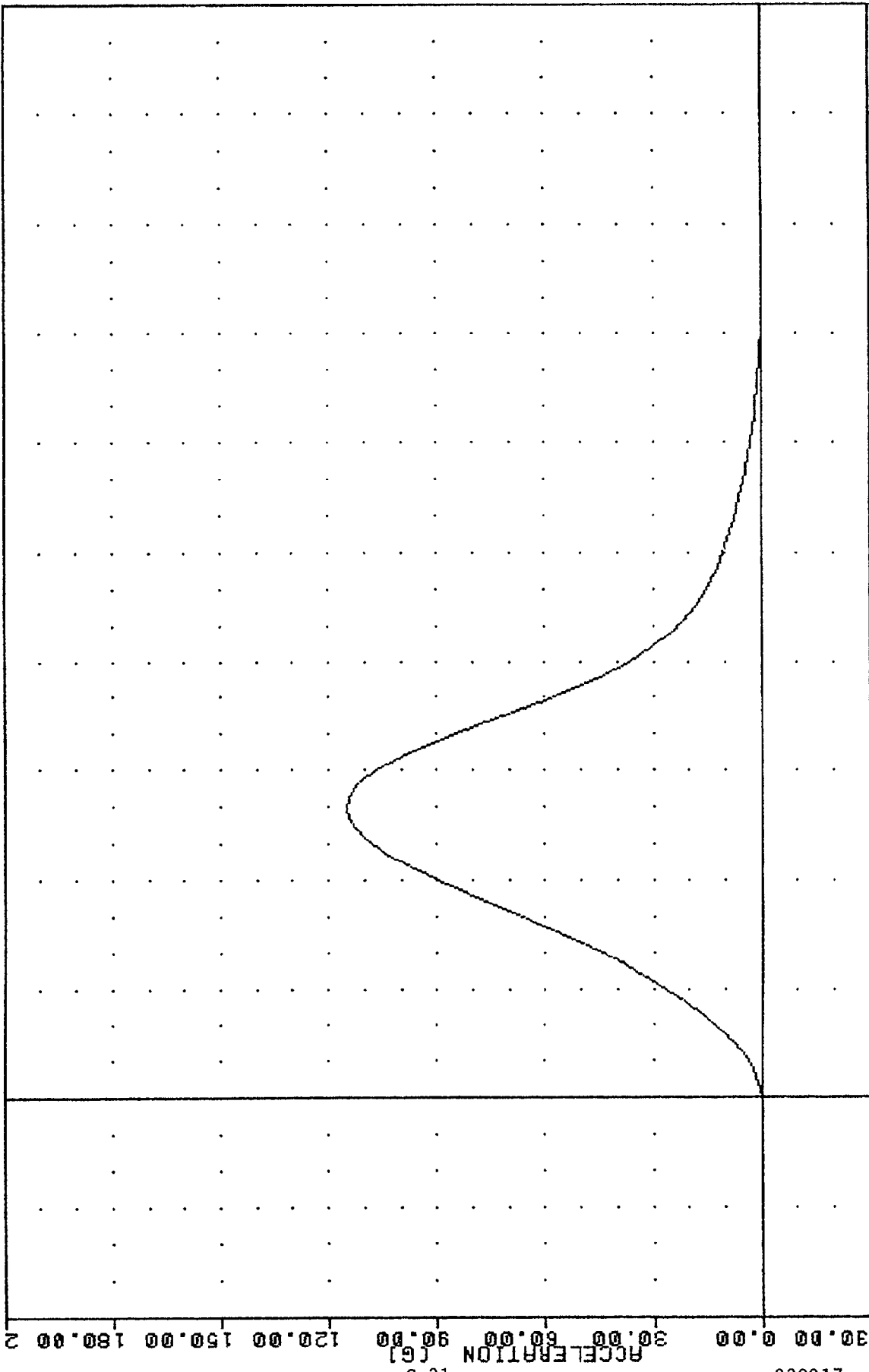
TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

TRC
 572E SN142 RIGHT KNEE CAL 13
 92337
 PENXG

FILTER = BLPP 1000/ 3162/ -40
 MIN. MAX VALUES = -0.50e 2.63
 7.63, 114.69 e 2.63

219.00



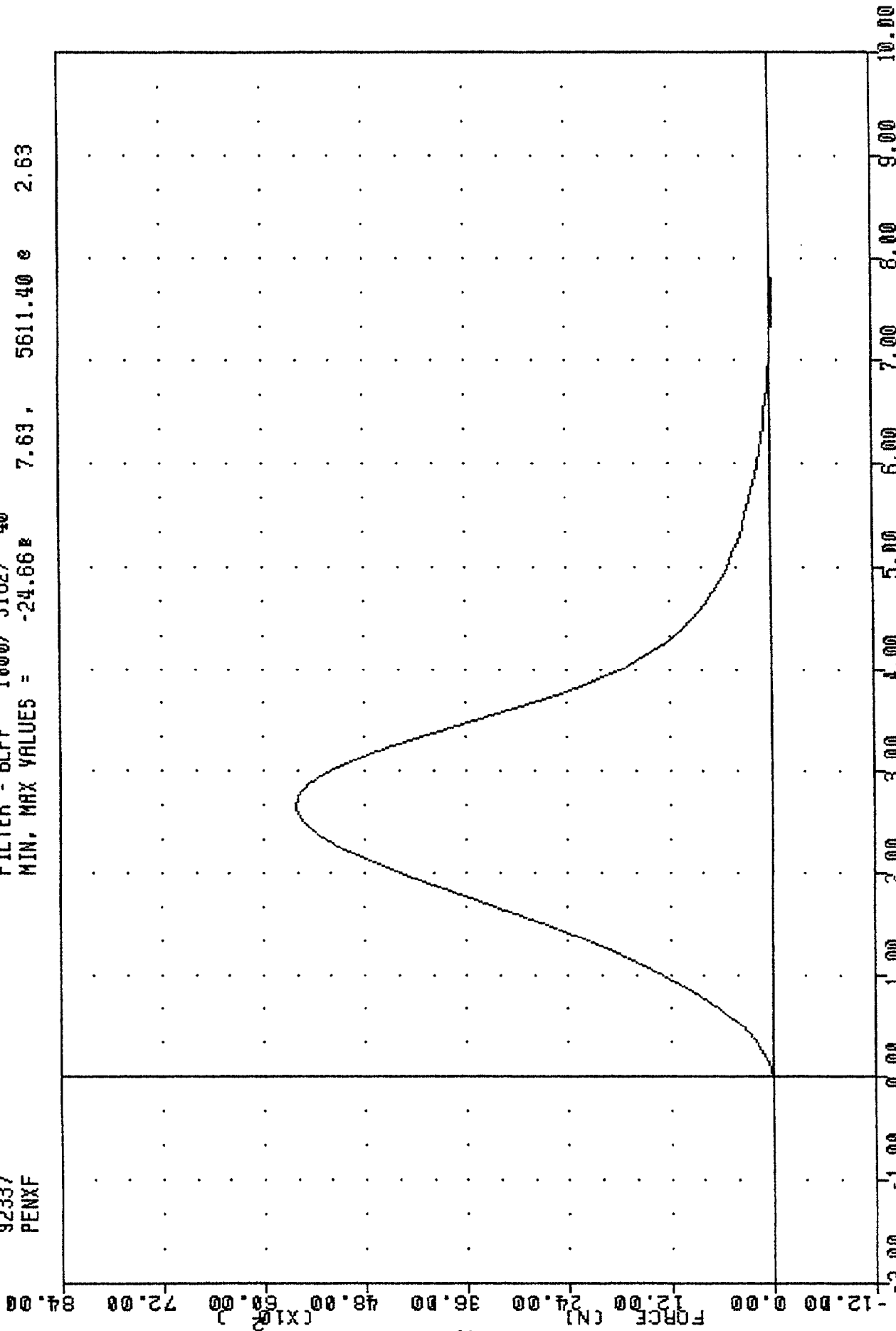
C-31

930217

PART 572-E HYBRID III RIGHT KNEE CALIBRATION
 PENNIII IM ACCELERATION (5 KG PEND.)

TRC
572E SN142 RIGHT KNEE CAL 13
92337
PENXF

FILTER = BLPP 1000/ 3162/ -40
MIN. MAX VALUES = -24.66 7.63 5611.40 e 2.63



C-32

930217

PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENXF

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

02-DEC-92

LEFT KNEE
TRC

142C13LK1

572E SN142 LEFT KNEE CAL 13

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	5379.8 N
PROBE WEIGHT	5.0 KG	

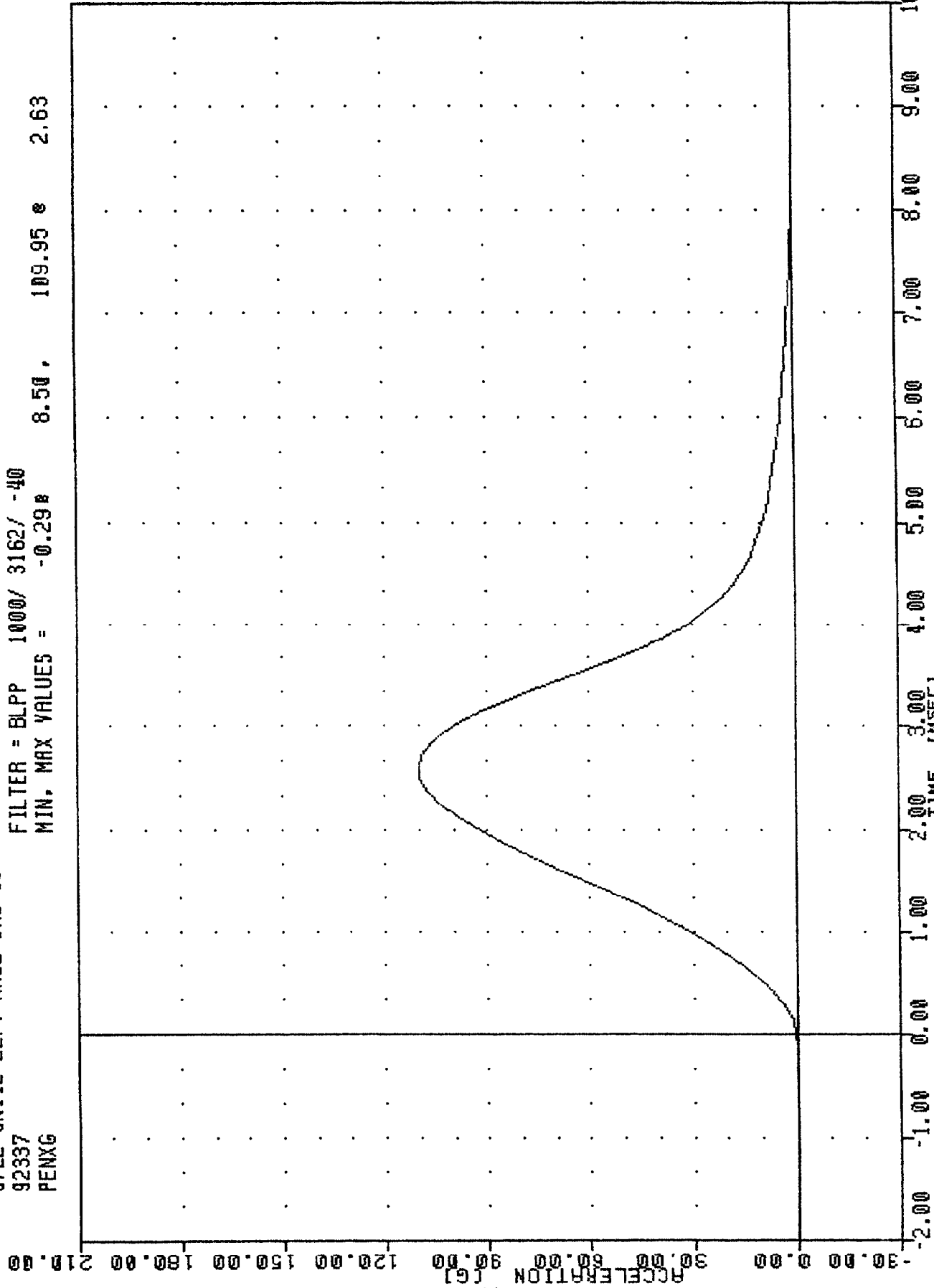
TEST MEETS SPECIFICATIONS

TECHNICIAN

Chas. Middel

TRC , 142C13LK1
572E SN142 LEFT KNEE CAL 19
92337
PENXG

FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -0.29 8.50 , 109.95 2.63

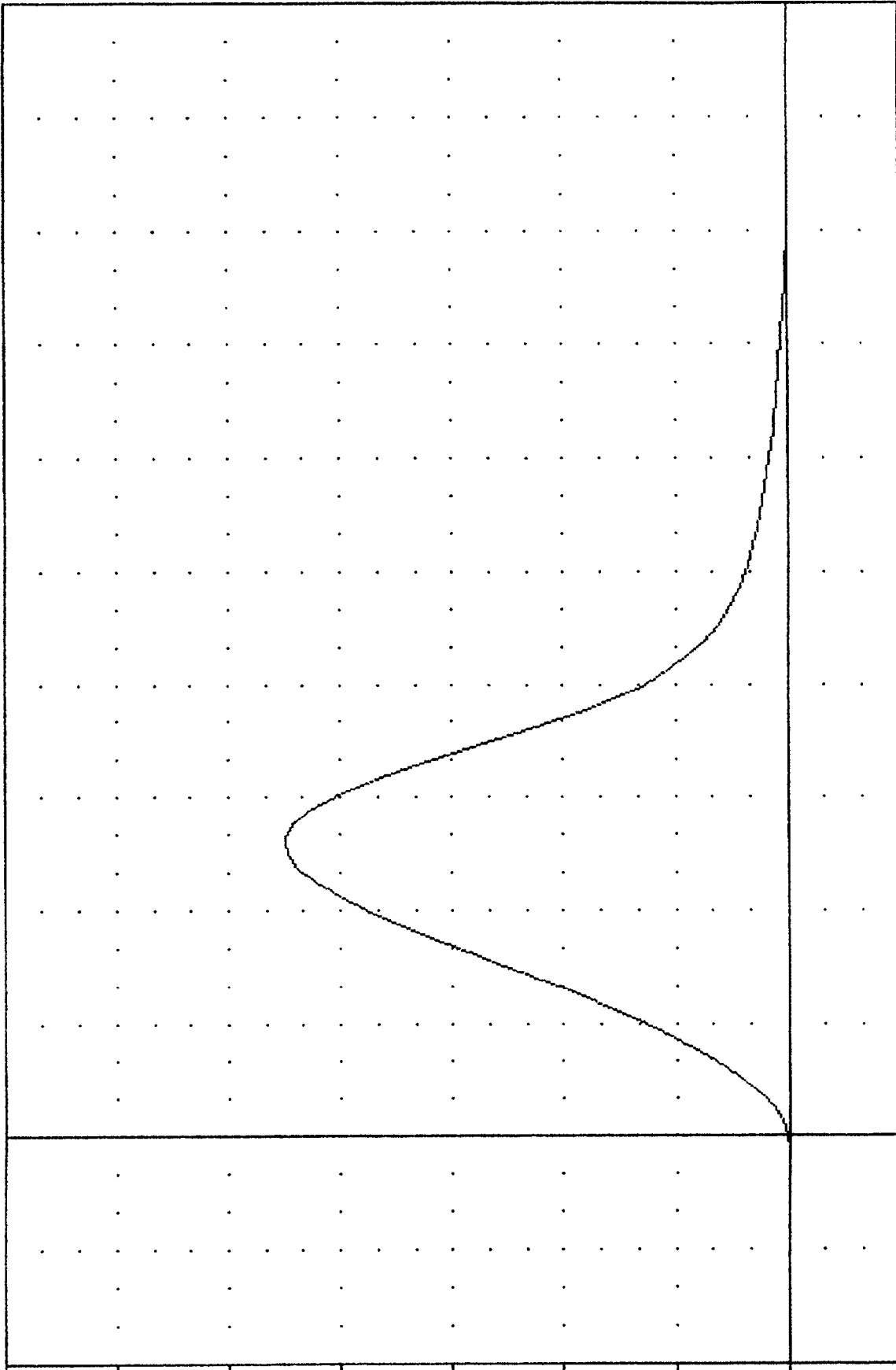


PART 572-E HYBRID III LEFT KNEE CALIBRATION

TRC
 572E SN142 LEFT KNEE CAL 13
 92337
 PENXF

FILTER = 8LPP 1000/ 3162/ -40
 MIN, MAX VALUES = -14.428 8.50, 5379.83 2.63

84.00



C-35

930217

PART 572-E HYBRID III LEFT KNEE CALIBRATION
 PFNDIII IM FORCE (5 KG PFND.1)

PRE-TEST CERTIFICATION DATA

PASSENGER DUMMY S/N: 192

TRANSPORTATION RESEARCH CENTER OF OHIO
 HYBRID III EXTERNAL DIMENSIONS
 ALDERSON 192

2-DEC-92

TRC	192C11ED1	572E SN192 EXT. DIMENSION CAL11
TEST PARAMETER	(DIMEN.)	SPECIFICATION TEST RESULTS
TEMPERATURE		21.1 DEG. C
RELATIVE HUMIDITY		51.0 %
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 (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 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 Chas Middlebro

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

27-JAN-92

TRC

192C11HD3

572E SN192 HEAD DROP CAL 11

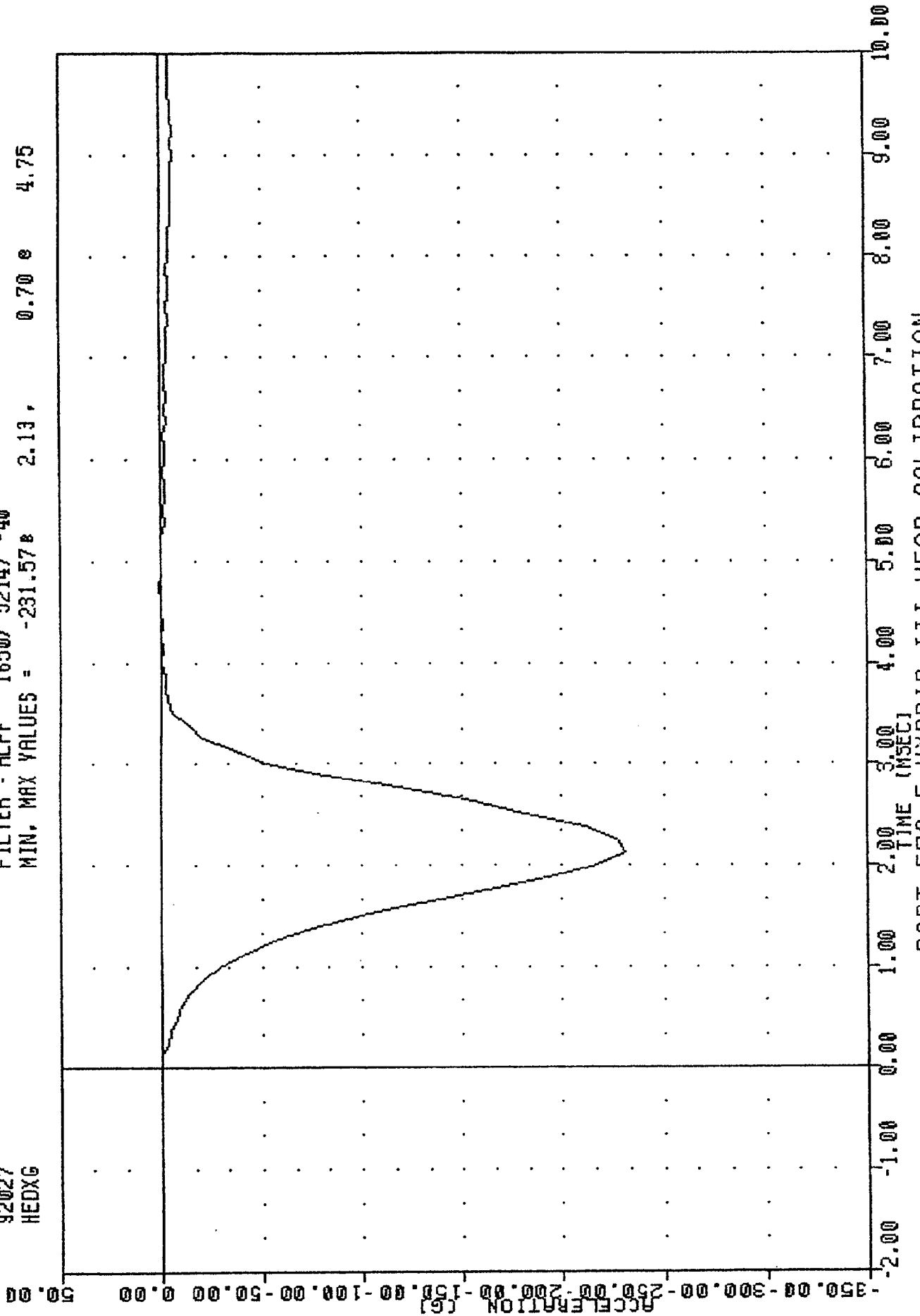
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10% - 70%	41.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	259.57 G
PEAK LATERAL ACCELERATION	15 G MAX	-2.68 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN *Clas. Middleton*

TRC
572E SN192 HEAD DRDP CAL 11
92027
HEDXG

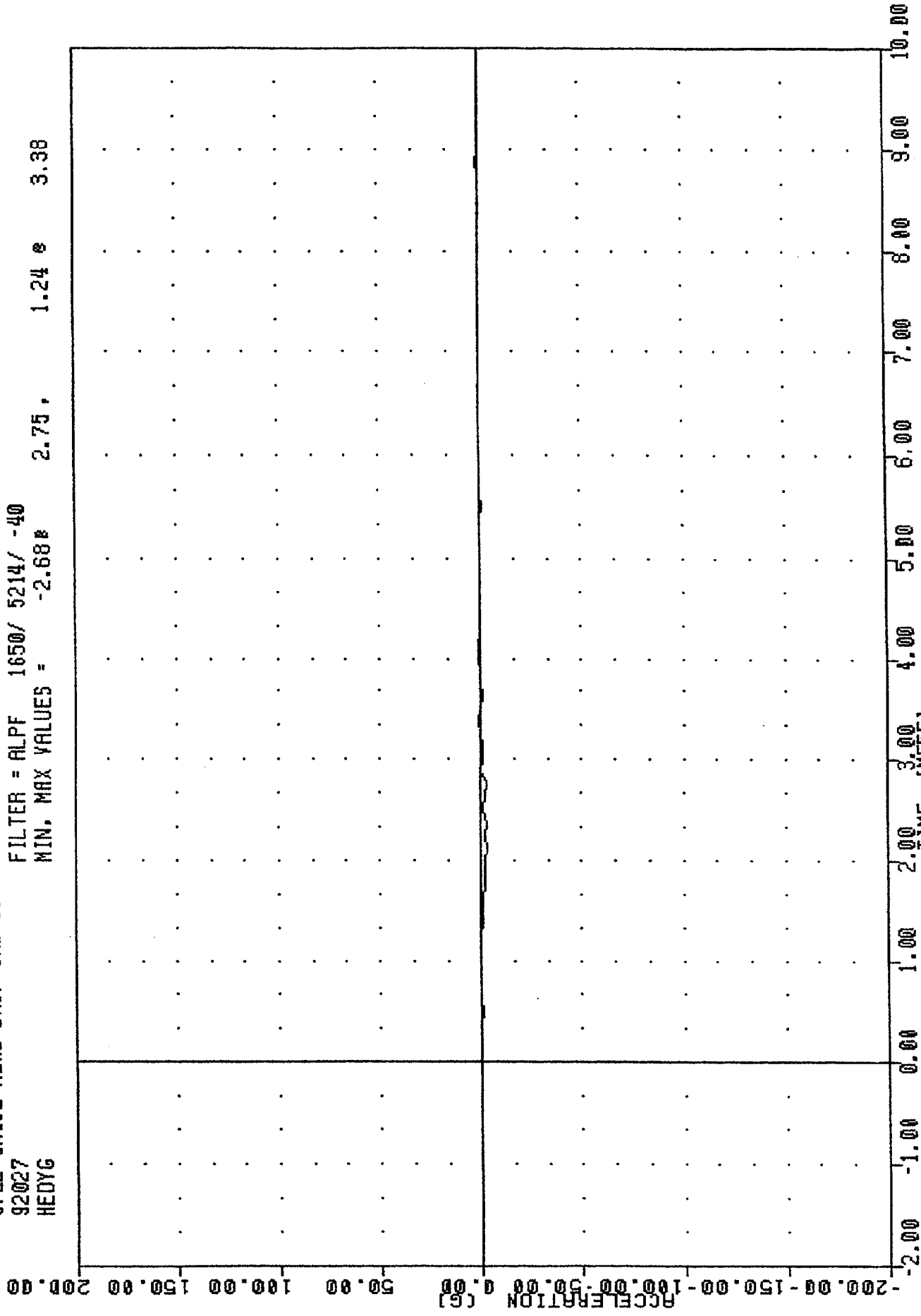
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -231.57 2.13, 0.70 e 4.75



PART 572-E HYBRID III HEAD CALIBRATION

TRC 192C11HD3
 572E SN192 HEAD DADP CAL 11
 92027
 HEDYG

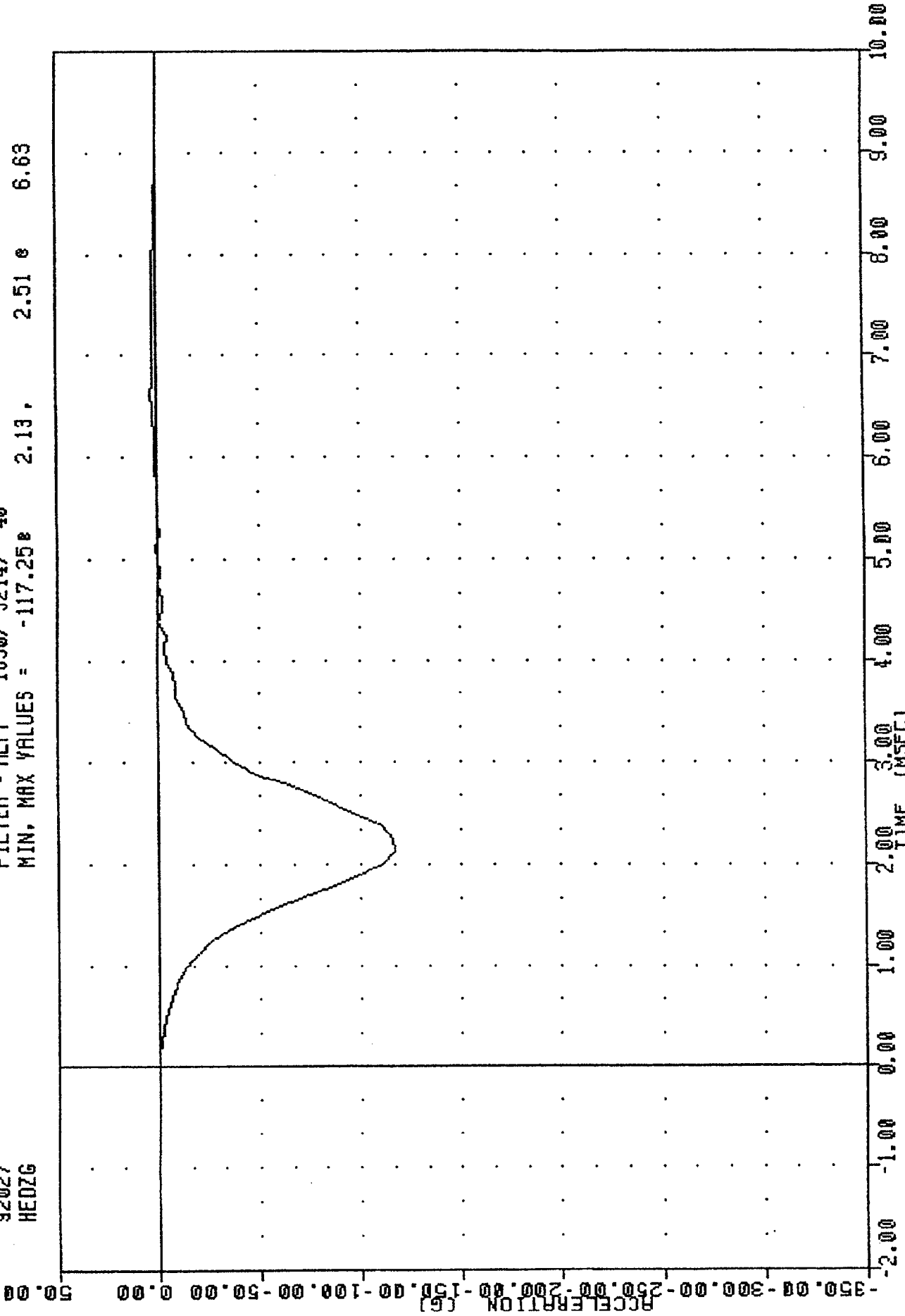
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -2.688 2.75 1.24 e 3.38



PARTE 572E SN192 HEAD CALIBRATION

TRC
572E SN192 HEAD DROP CAL 11
92027
HEDZG

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -117.25B 2.13, 2.51 e 6.63



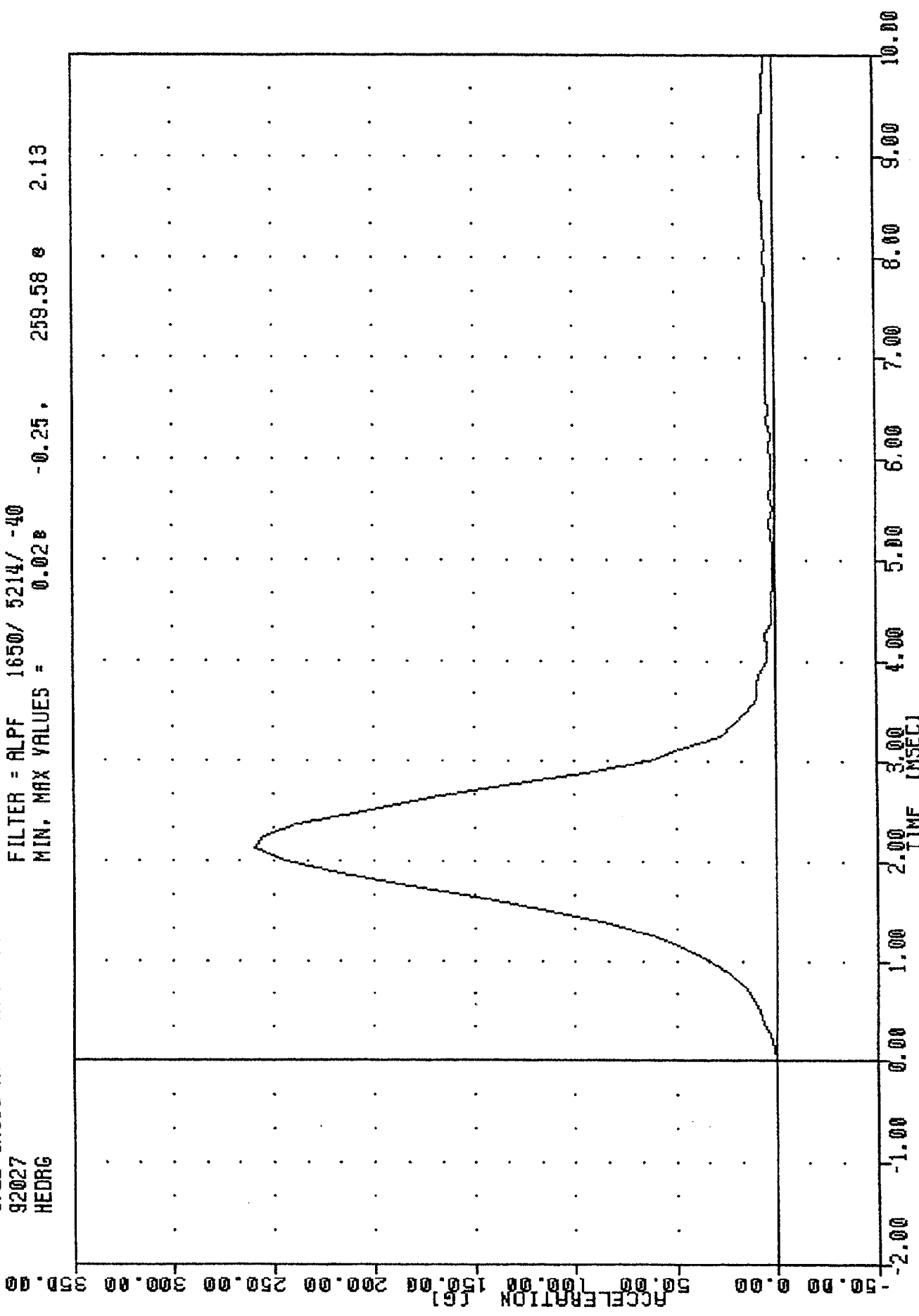
C-41

930217

PART 572-E HYBRID III HEAD CALIBRATION

TRC
 572E SN192 HEAD DRDP CAL 11
 92027
 HEDRG

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = 0.028 -0.25 259.58 e 2.13



572E SN192 HEAD DRDP CAL 11
 PART 572E SN192 HEAD DRDP CAL 11
 HEAD CALIBRATION
 HEAD CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

02-DEC-92

6 AXIS NECK TRANSDUCER
TRC 192C11NF1

572E SN192 NECK FLEXION CAL11

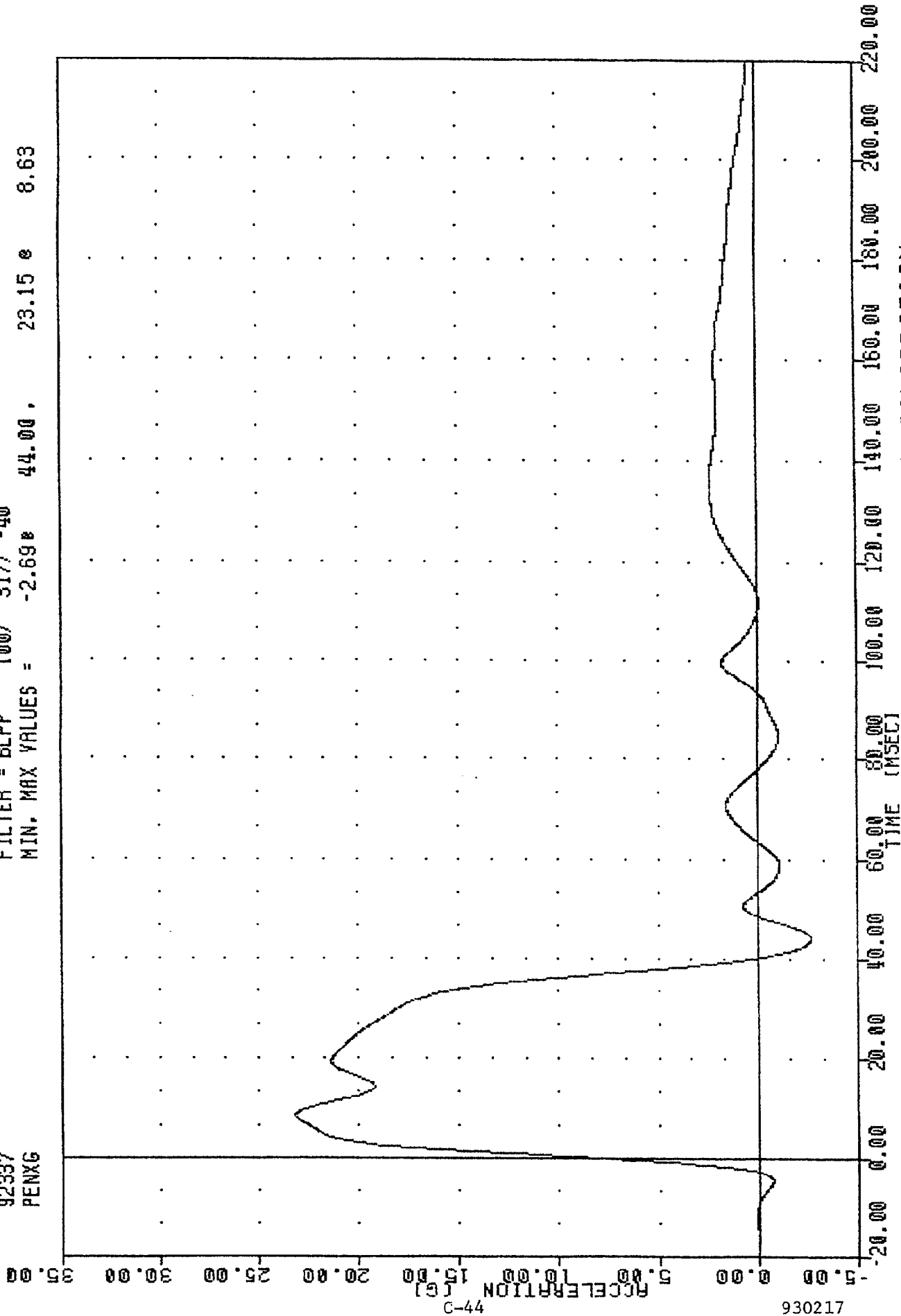
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
IMPACT VELOCITY	6.89 - 7.13 M/SEC	7.03 M/SEC
PENDULUM DECELERATION	10 MS 22.50 - 27.50 G	22.59 G
	20 MS 17.60 - 22.60 G	21.30 G
	30 MS 12.50 - 18.50 G	17.96 G
MAX PENDULUM G ABOVE 30 MS	29 G MAX	17.91 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 42 MS	37.75 MS
D PLANE	MAX 64 - 78 DEG.	67.96 DEG.
ROTATION	TIME 57 - 64 MS	58.25 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX 88.2 - 108.5 NM	93.21 NM
	TIME 47 - 58 MS	49.75 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	113 - 128 MS	114.50 MS
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	97 - 107 MS	101.25 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN_____

TRC . . . 192C11NF1
572E SN192 NECK FLEXION CAL11
92337
PENXG

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -2.69e 44.00 . 23.15 e 8.63



930217

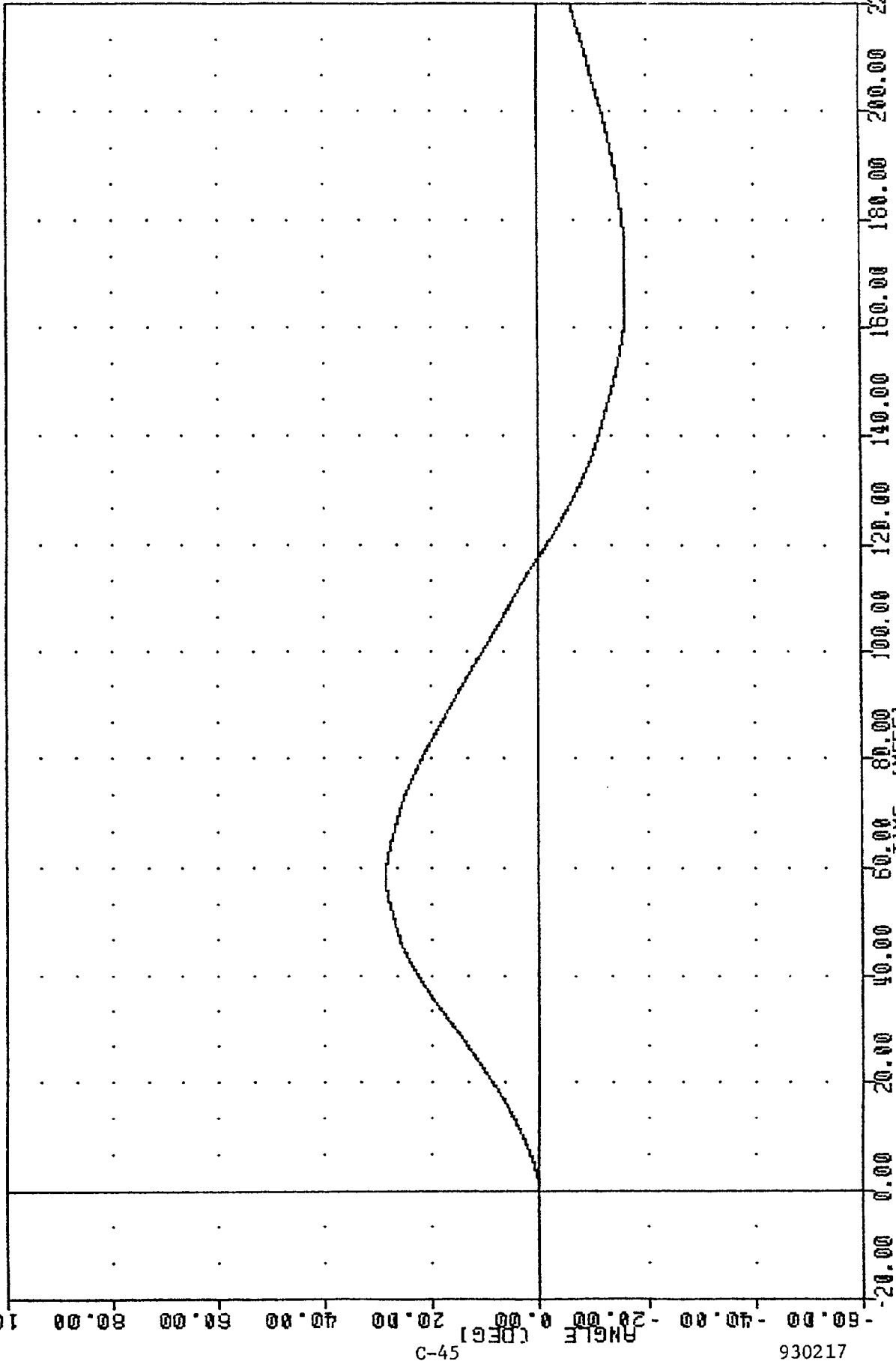
C-44

PART 572-E HYBRID III NECK FLEXION CALIBRATION

PENDULUM ACCELERATION

TRC
 572E SN192 NECK FLEXION CAL11
 92337
 BETA

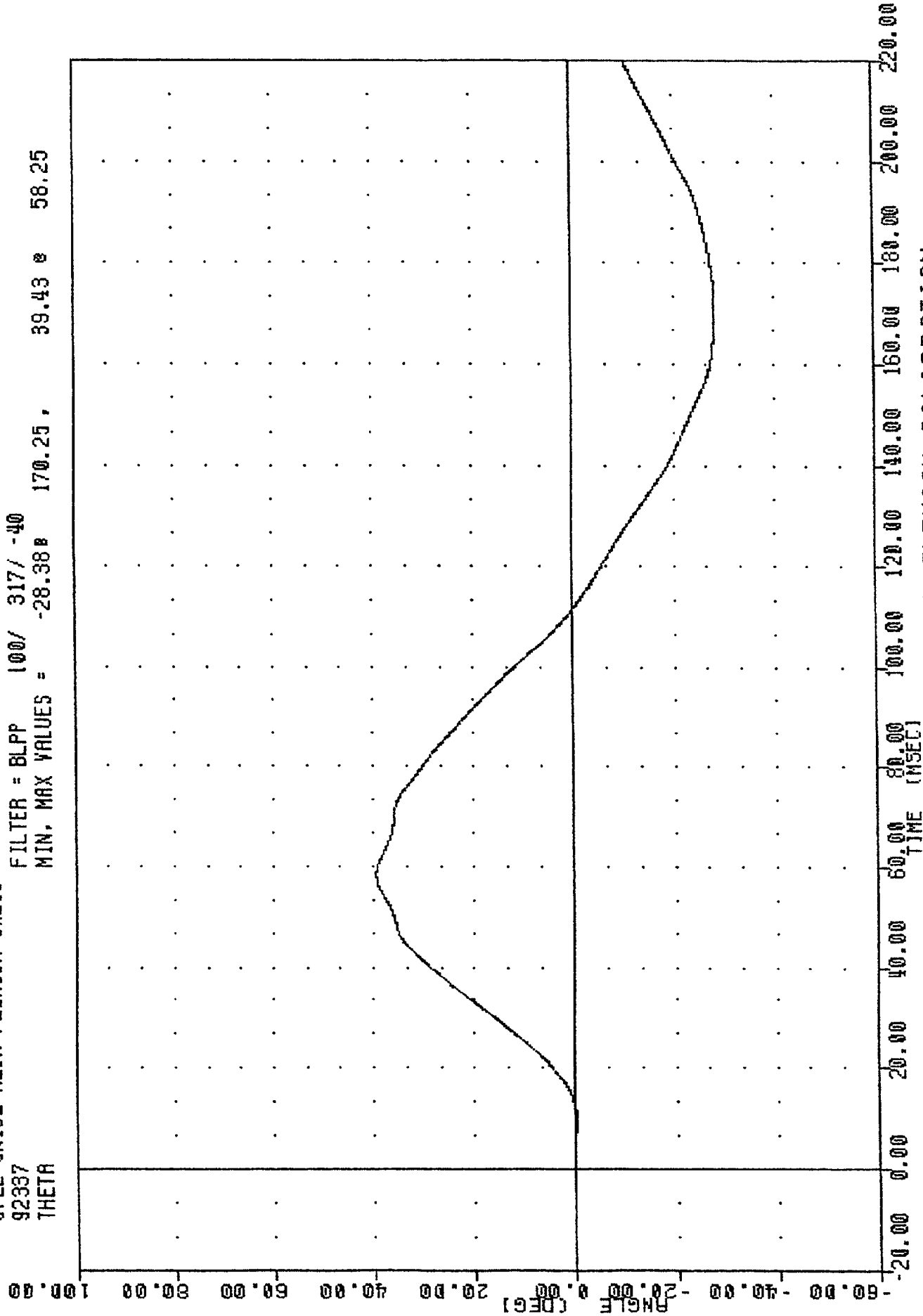
FILTER = BLPP 100/ 317/ -40
 MIN, MAX VALUES = -16.05e 167.75, 28.53 e 58.13



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

TRC , 192C11NF1
 572E SN192 NECK FLEXION CAL11
 92337
 THETA

FILTER = BLPP 100/ 317/ -40
 MIN, MAX VALUES = -28.38 170.25, 39.43 58.25

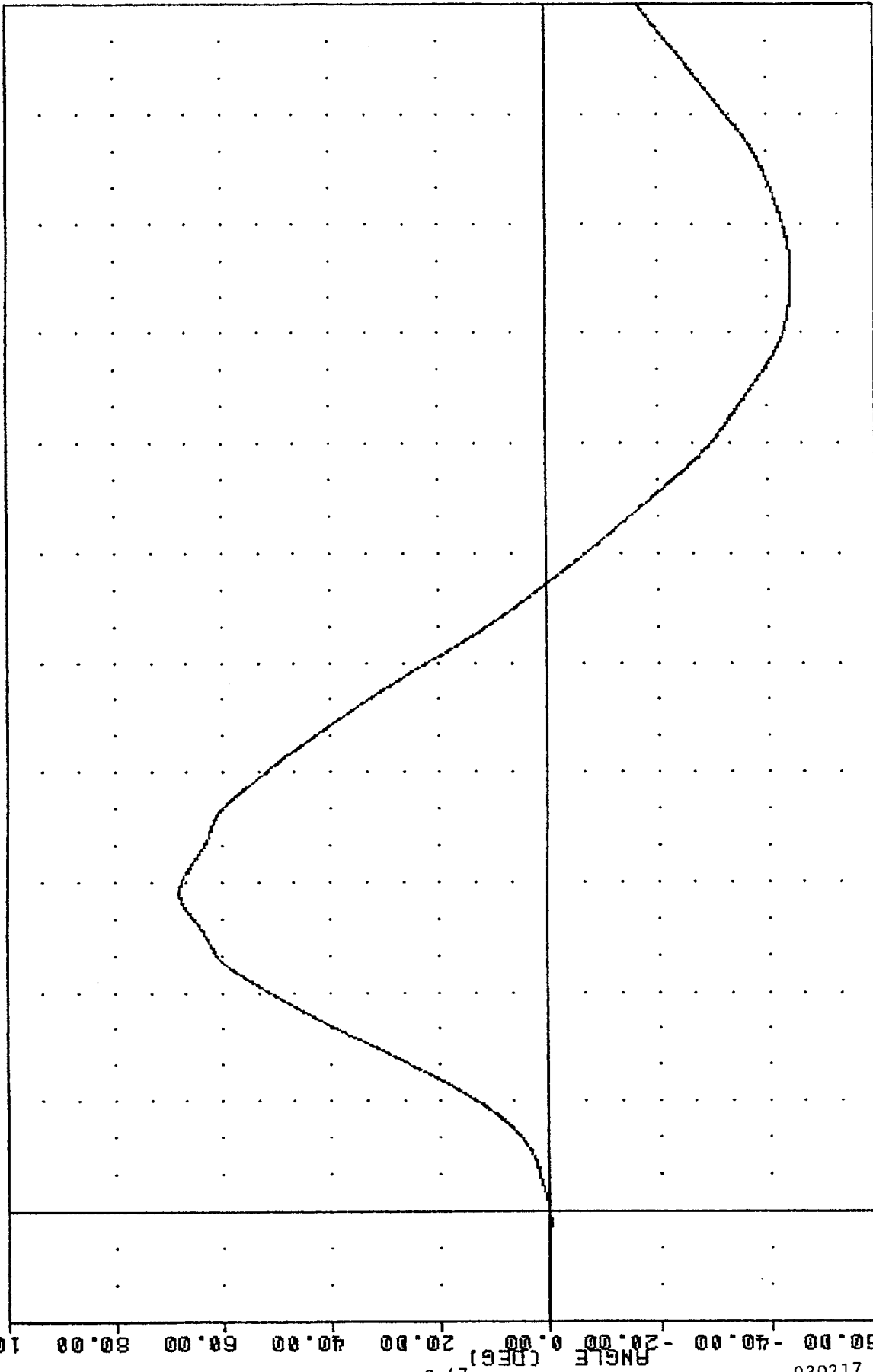


PART 572-E HYBRID III NECK FLEXION CALIBRATION
 ROTATION ABOUT THE COMPLE

TRC , 192C11NF1
572E SN192 NECK FLEXION CAL11
92337
TOTAN

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -44.43 169.38 , 67.97 58.25

100.00



C-47

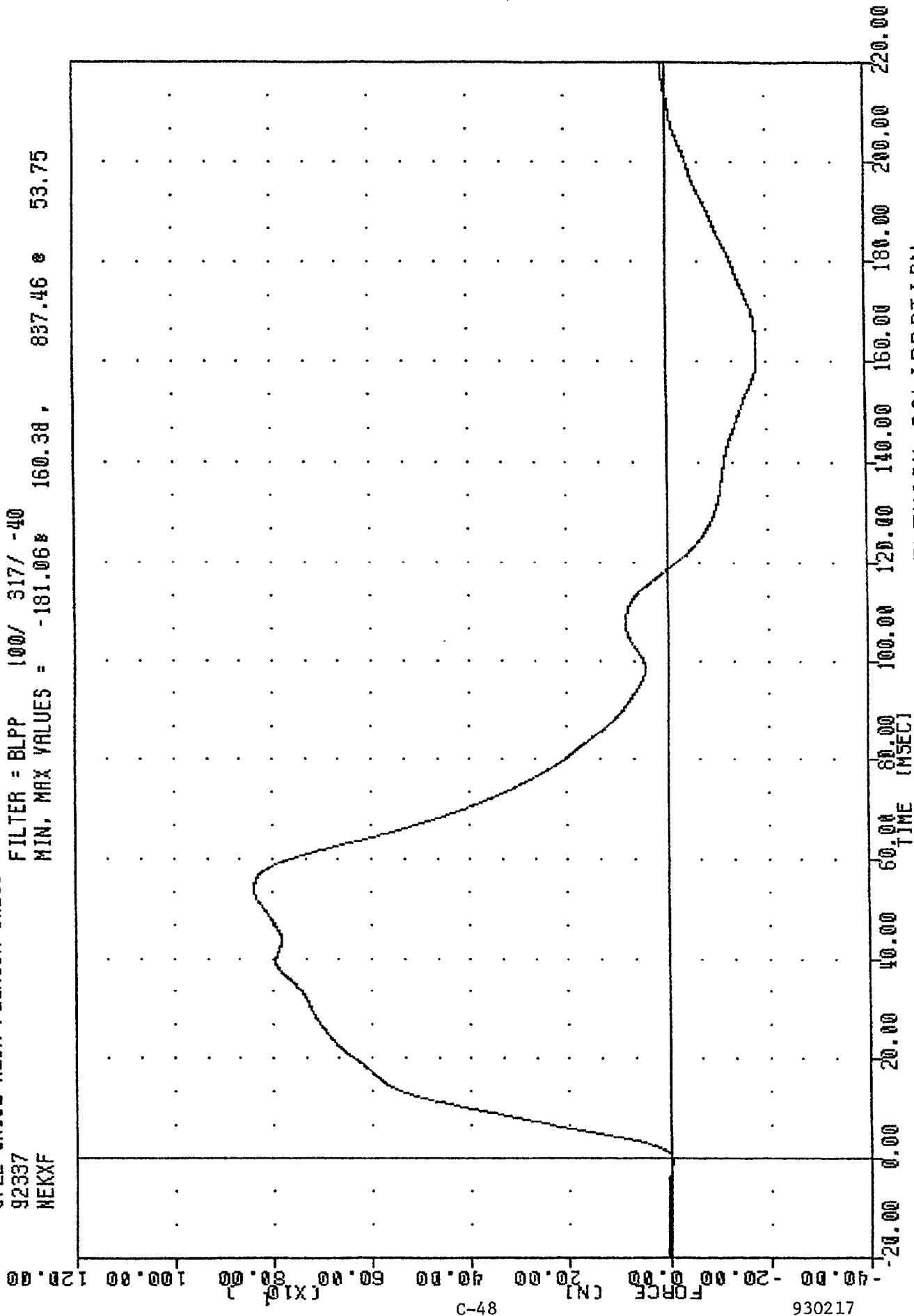
930217

-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)

PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL ROTATION

TRC . . . 192C11NF1
572E SN192 NECK FLEXION CAL11
92337
NEKXF

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -181.06 160.38 , 837.46 53.75



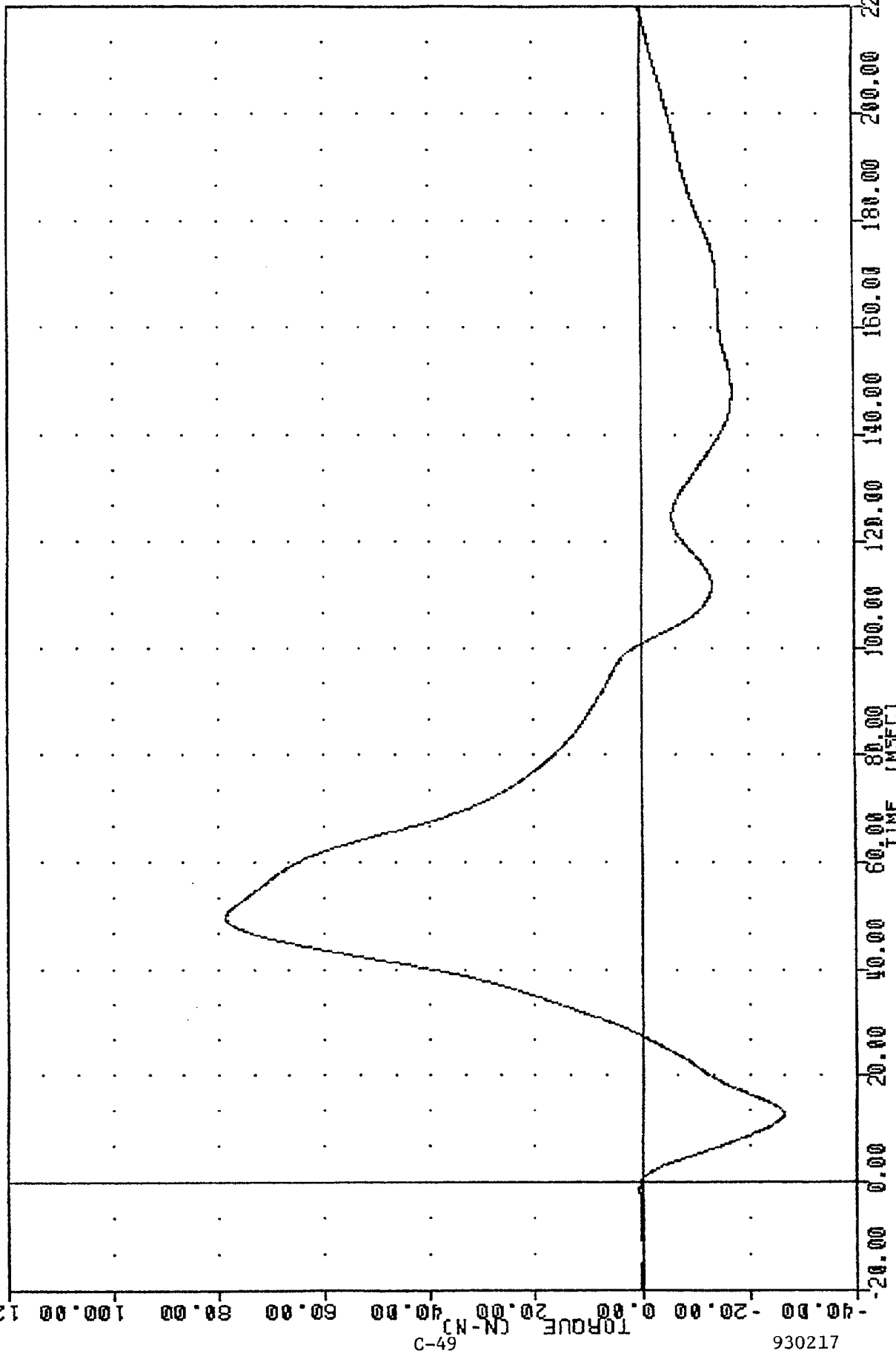
C-48

930217

PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK FORCE AXIS

TRC
572E SN192 NECK FLEXION CAL11
92337
NEKYM

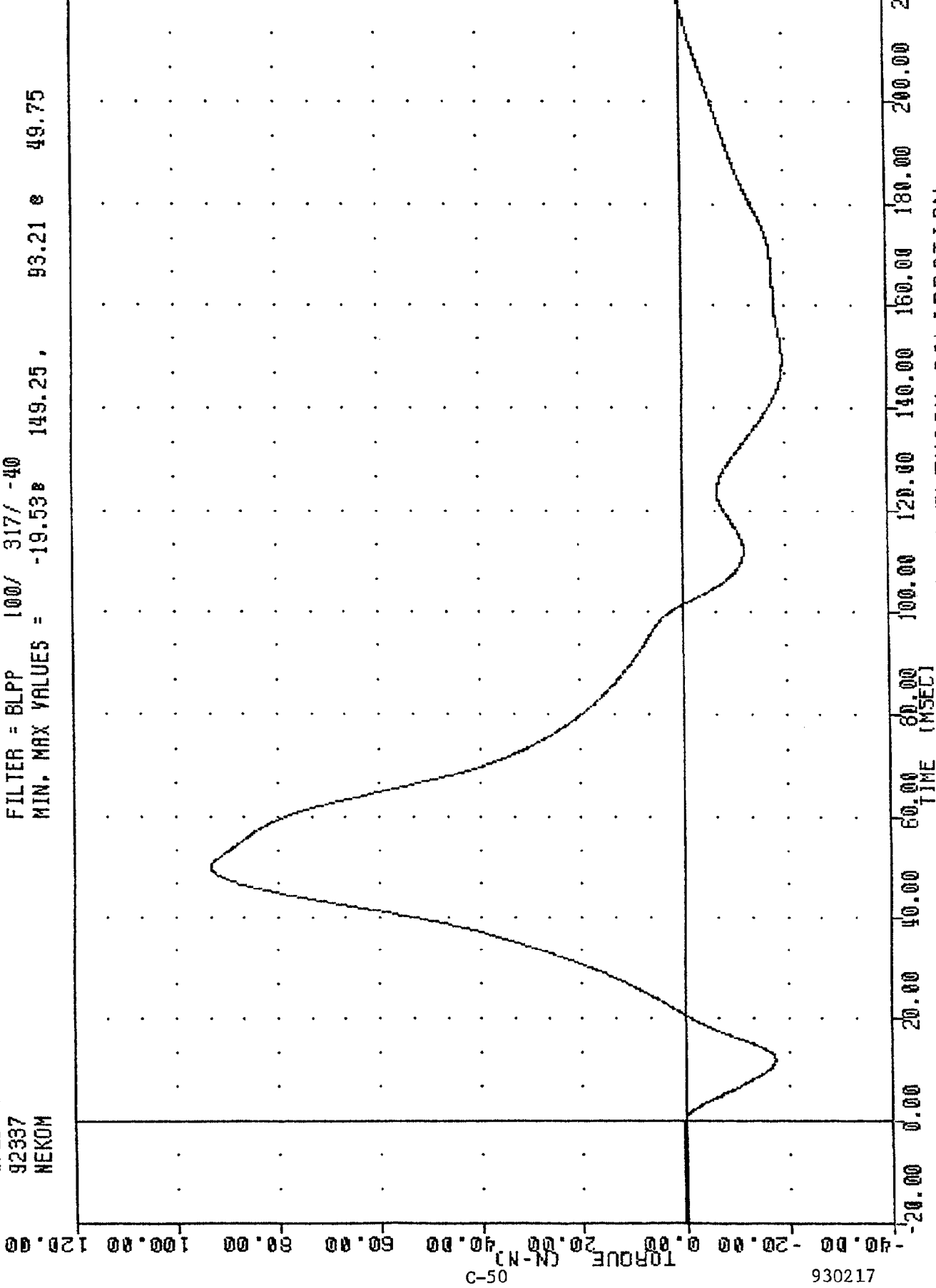
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -26.43e 78.69 e 49.63



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

TRC , 192C11MF1
572E SN192 NECK FLEXION CAL11
92337
NEKOM

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -19.53 149.25 , 93.21 e 49.75



930217

PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

02-DEC-92

6 AXIS NECK TRANSDUCER
TRC 192C11NE1

572E SN192 NECK EXT. CAL11

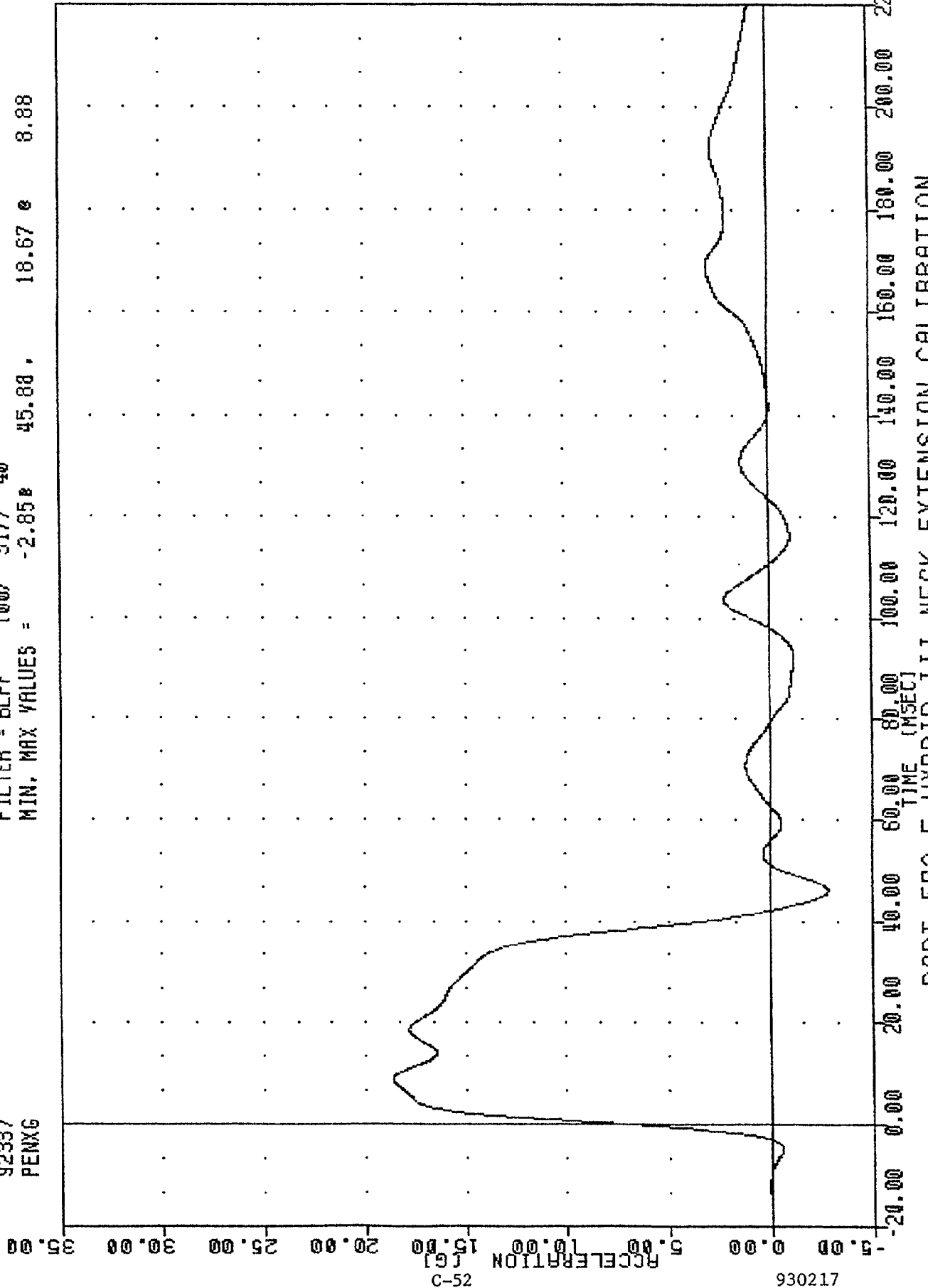
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
IMPACT VELOCITY	5.95 - 6.19 M/SEC	6.05 M/SEC
PENDULUM DECELERATION	10 MS 17.20 - 21.20 G	18.39 G
	20 MS 14.00 - 19.00 G	17.58 G
	30 MS 11.00 - 16.00 G	14.94 G
MAX PENDULUM G ABOVE 30 MS	22 G MAX	14.91 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G	38 - 46 MS	39.13 MS
D PLANE ROTATION	MAX 81 - 106 DEG. TIME 72 - 82 MS	93.25 DEG. 76.13 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN -80.0/-52.9 NM TIME 65 - 79 MS	-57.79 NM 70.25 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO	147 - 174 MS	158.38 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO	120 - 148 MS	136.63 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

TRC , 192C11HE1
572E SN192 NECK EXT. CAL11
92337
PENXG

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -2.85 45.88 18.67 8.88



PART 572E HYDRO ID 111 NECK EXTENSION CALIBRATION

TRC .192C11NE1
 572E SN192 NECK EXT. CAL11
 92337
 BETA

FILTER = BLPP 100/ 317/ -40
 MIN, MAX VALUES = -9.358 196.25, 35.76 73.50

120.00

100.00

80.00

60.00

40.00

20.00

0.00

-20.00

-40.00

-60.00

-80.00

-100.00

-120.00

C-53

ANGLE (DEG)

0.00

20.00

40.00

60.00

80.00

100.00

120.00

140.00

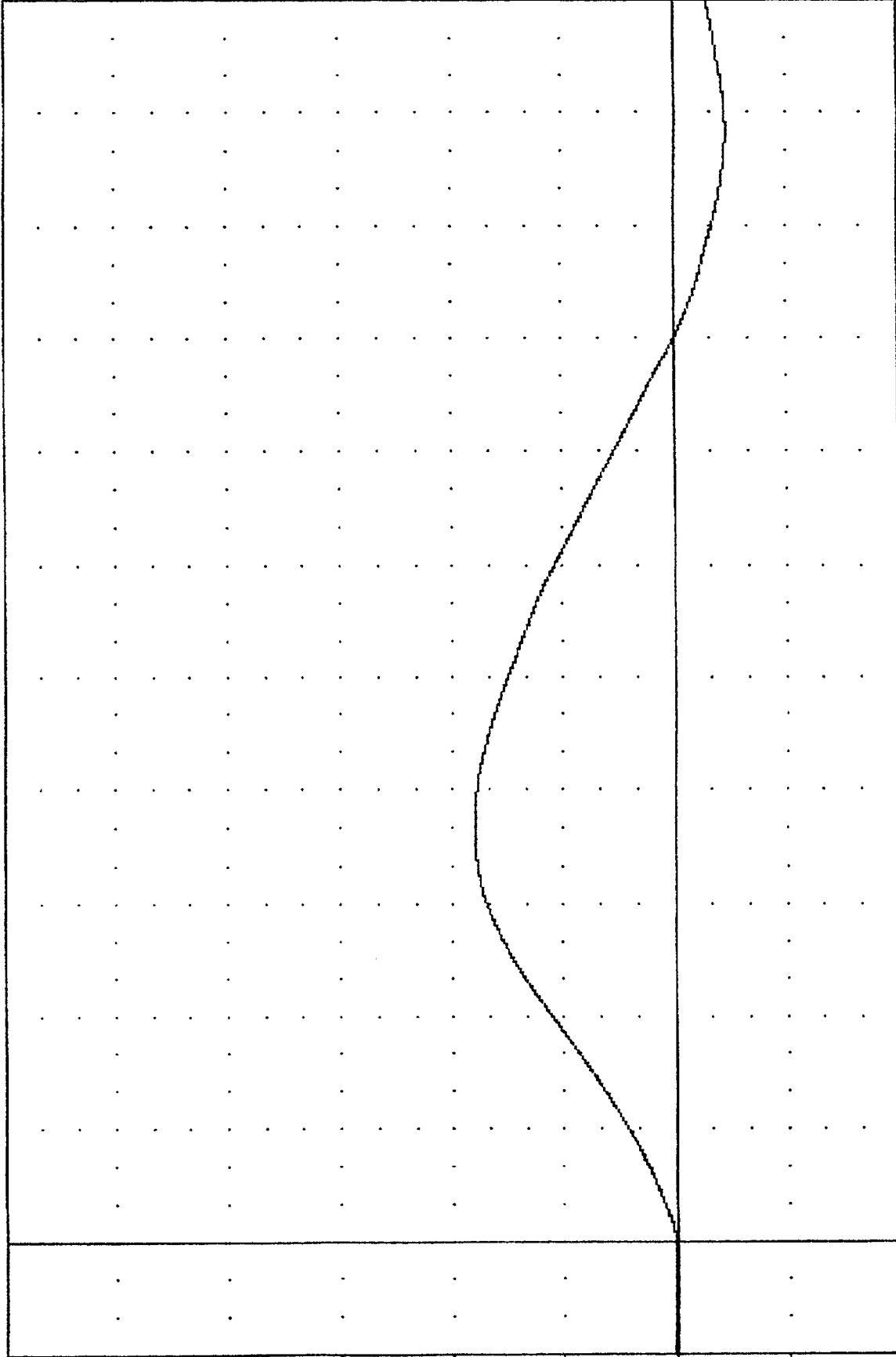
160.00

180.00

200.00

220.00

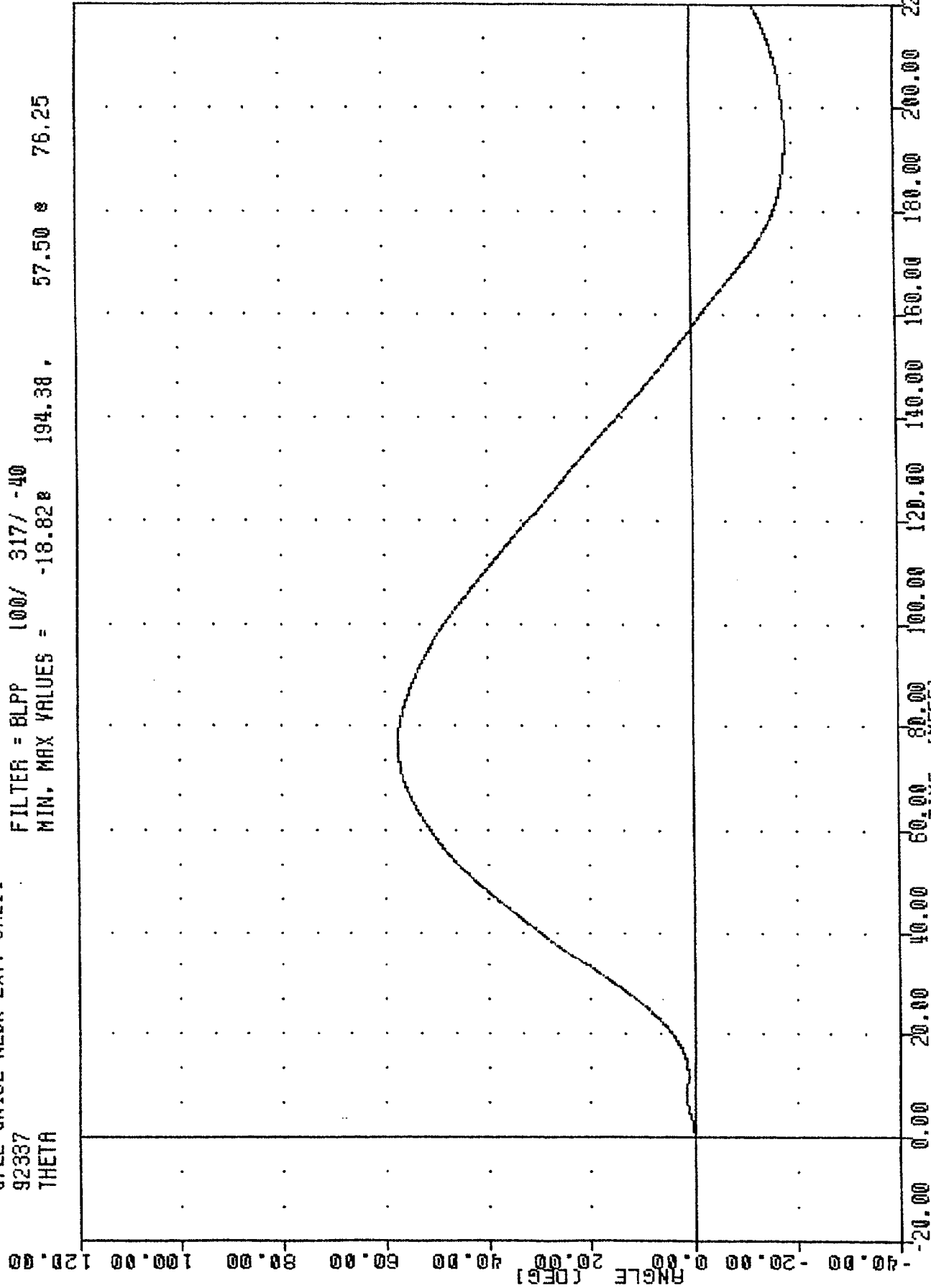
930217



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 DATATION OMIT BASE OF NECK

TAC , 192C11NE1
572E SM192 NECK EXT. CAL11
92337
THETA

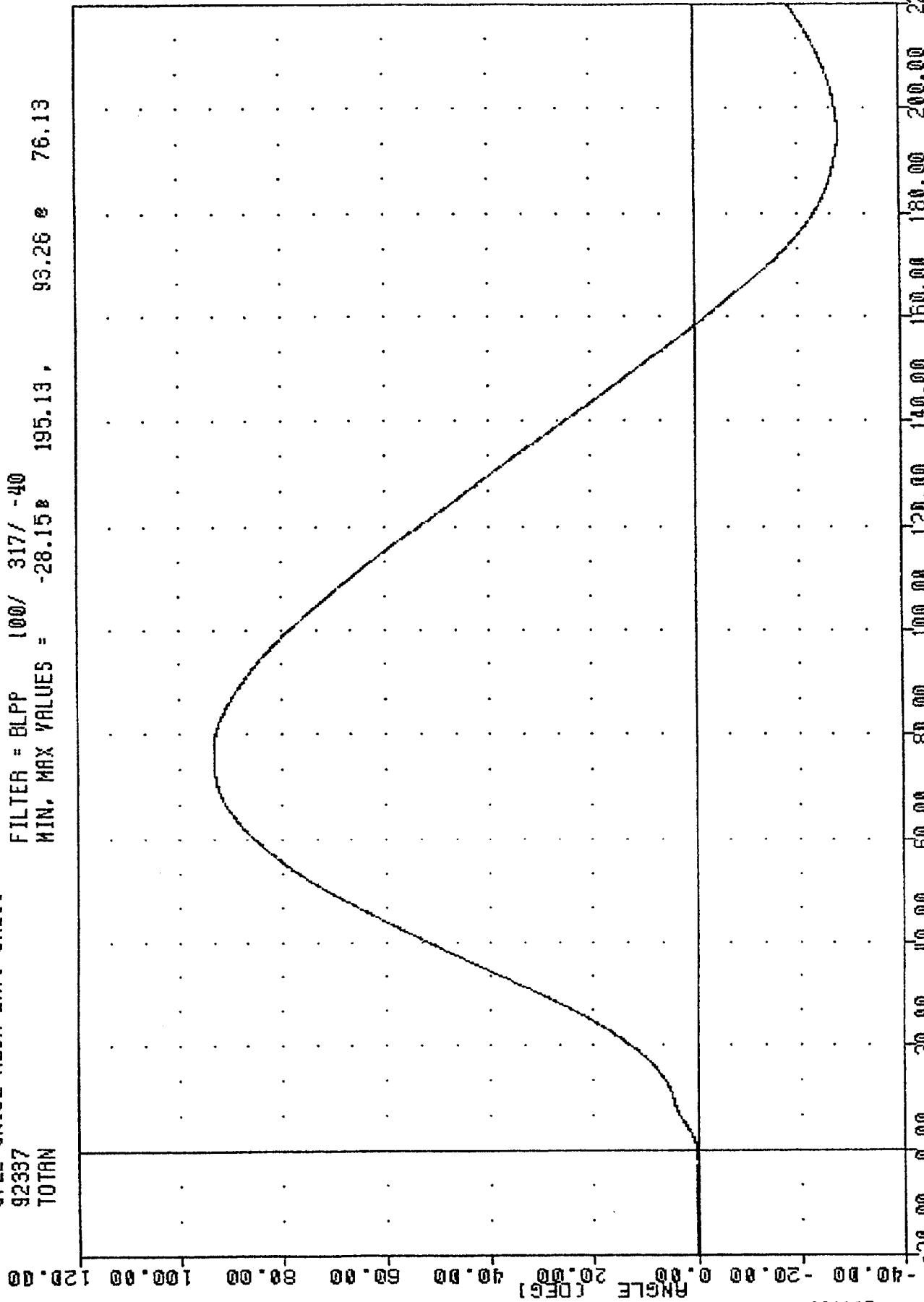
FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -18.828 194.38 , 57.50 e 76.25



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
REVISION 000101 000101 000101 000101

TRC . 192C11NE1
 572E SN192 NECK EXT. CAL11
 92337
 TOTAN

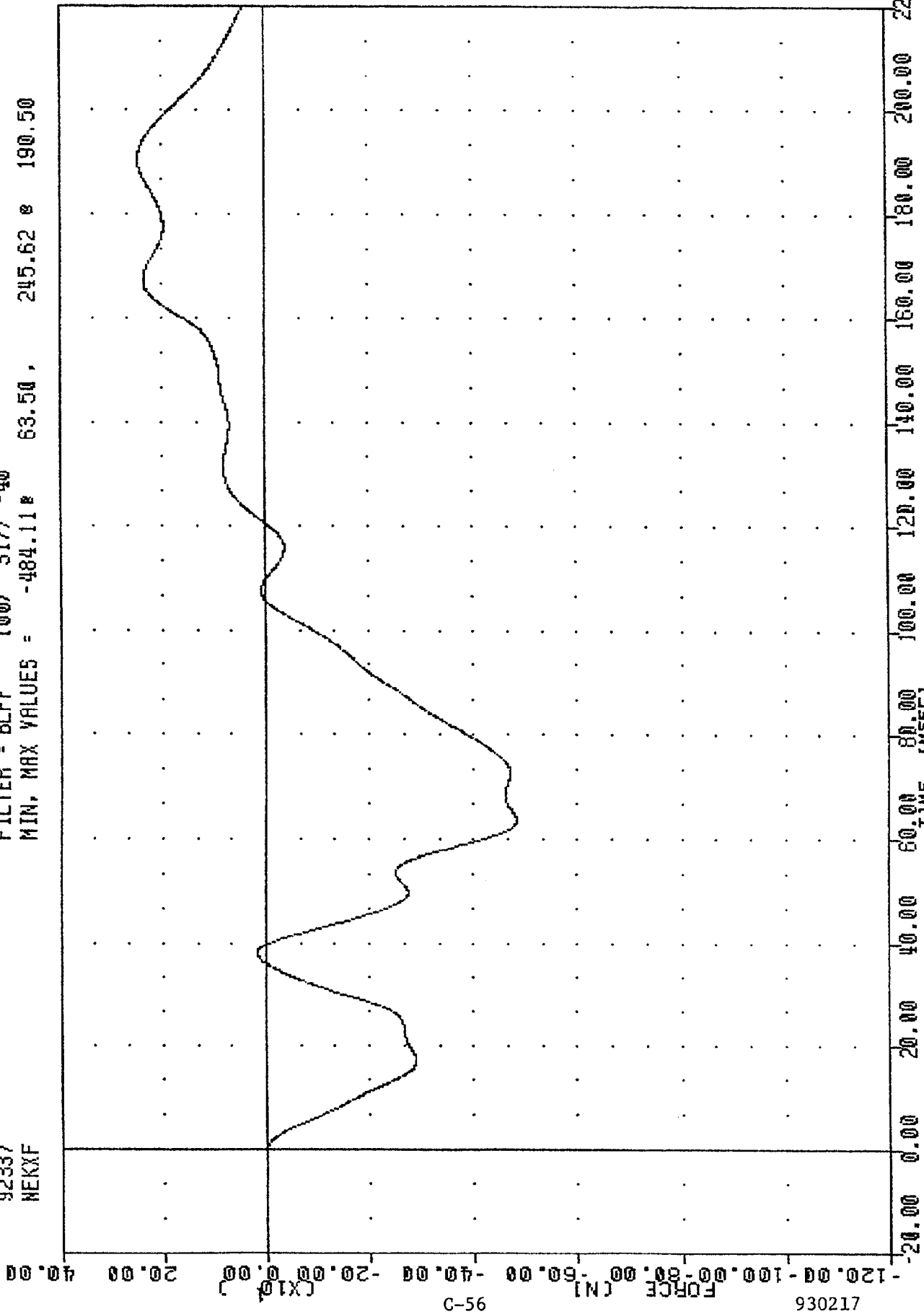
FILTER = BLPP 100/ 317/ -40
 MIN, MAX VALUES = -28.15 e 195.13 , 93.26 e 76.13



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 TOTAL ROTATION

TRC , 192C11ME1
572E SN192 NECK EXT. CAL11
92337
NEKXF

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -484.11# 63.50 , 245.62 @ 190.50

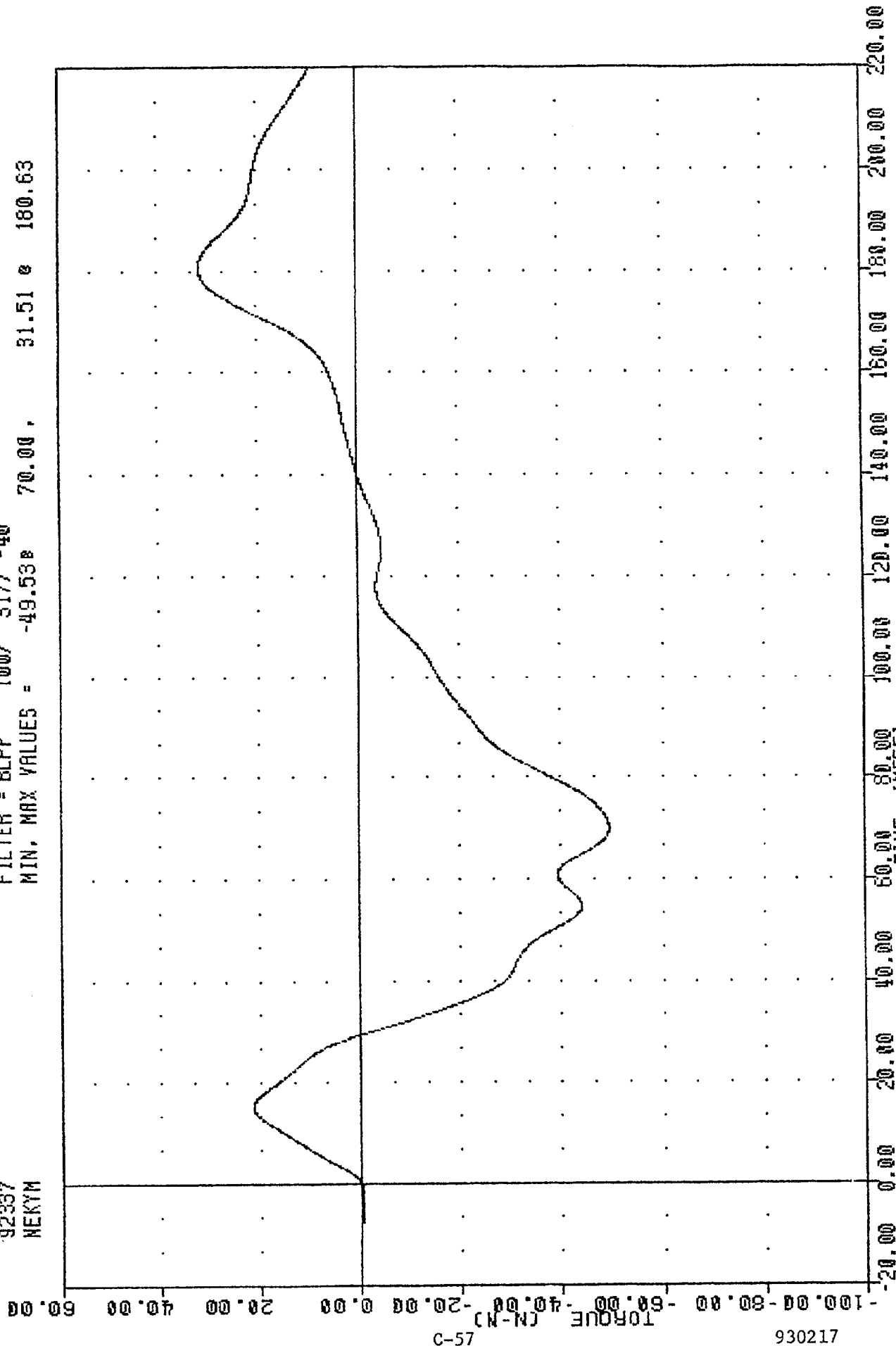


172069

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TRC . 192C11NE1
572E SN192 NECK EXT. CAL11
92337
NEKYM

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -49.538 70.00 , 31.51 e 180.63



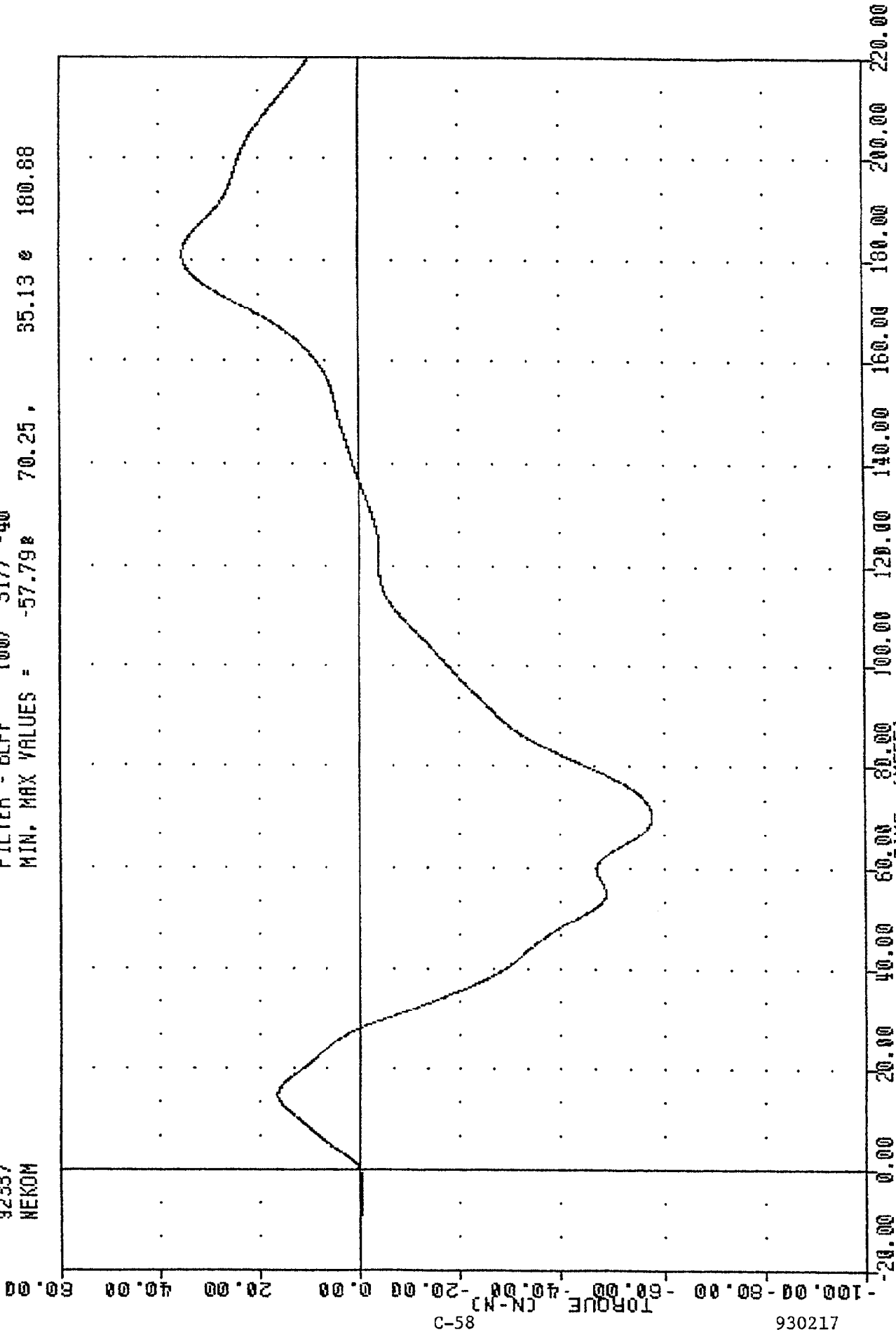
C-57

930217

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AYT5

TRC . , 192C11NE1
572E SN192 NECK EXT. CAL11
92337
NEKOM

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -57.79* 70.25 , 35.13 * 180.88



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PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

28-JAN-93

TRC

192C11TH2

572E SN192 H.S.THORAX CAL11

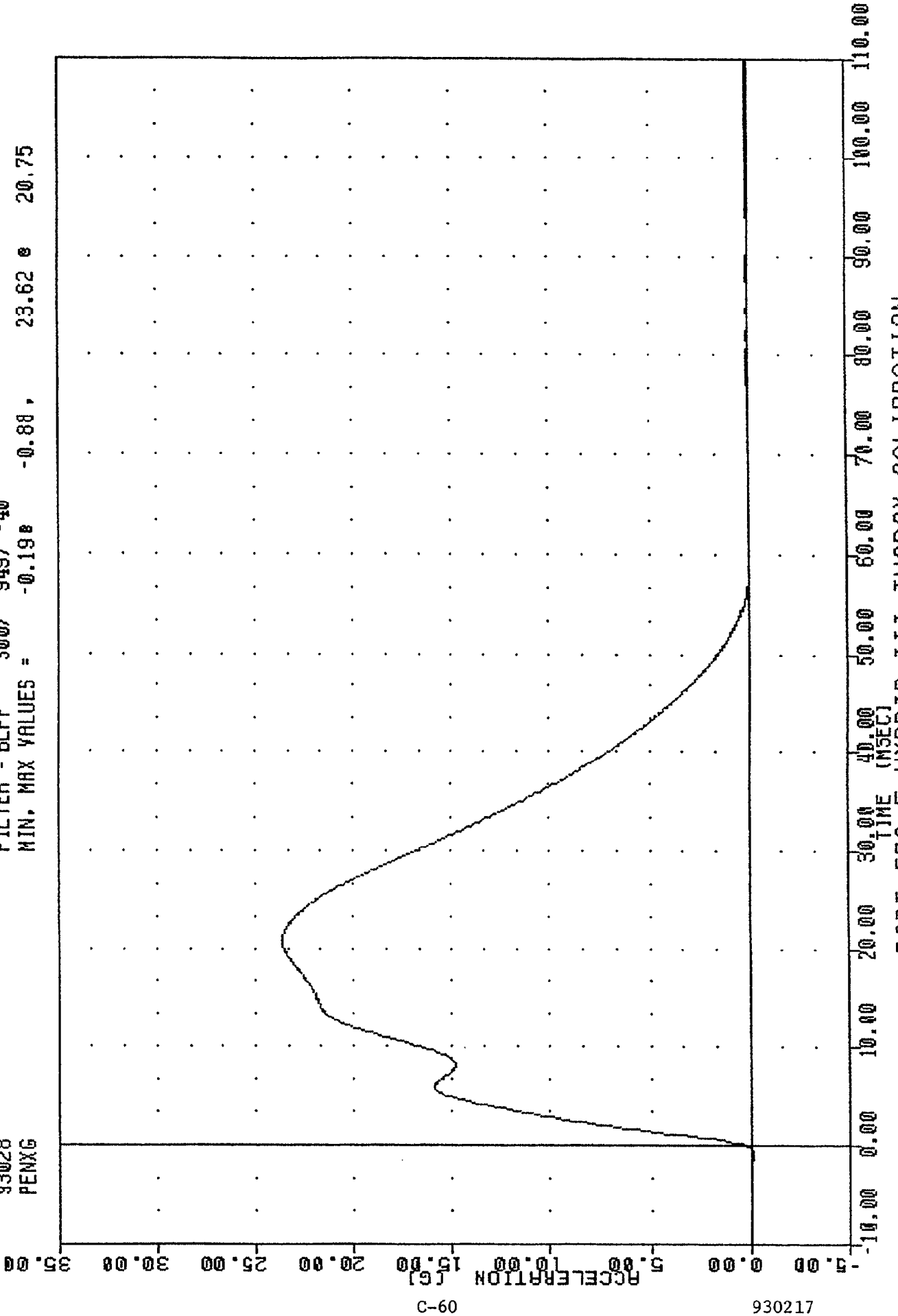
HIGH SPEED TEST		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	41.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/SEC	6.63 M/SEC
MAXIMUM DEFLECTION	63.5 - 72.6 MM	72.4 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5411. N
INTERNAL HYSTERESIS	69% - 85%	71.8%

TEST MEETS SPECIFICATIONS

TECHNICIAN *Chas. Middleton*

TRC
572E SN192 H.S. THORAX CAL11
93028
PENXG

FILTER = BLPP 300/ 949/ -40
MIN. MAX VALUES = -0.198 23.62 0 20.75



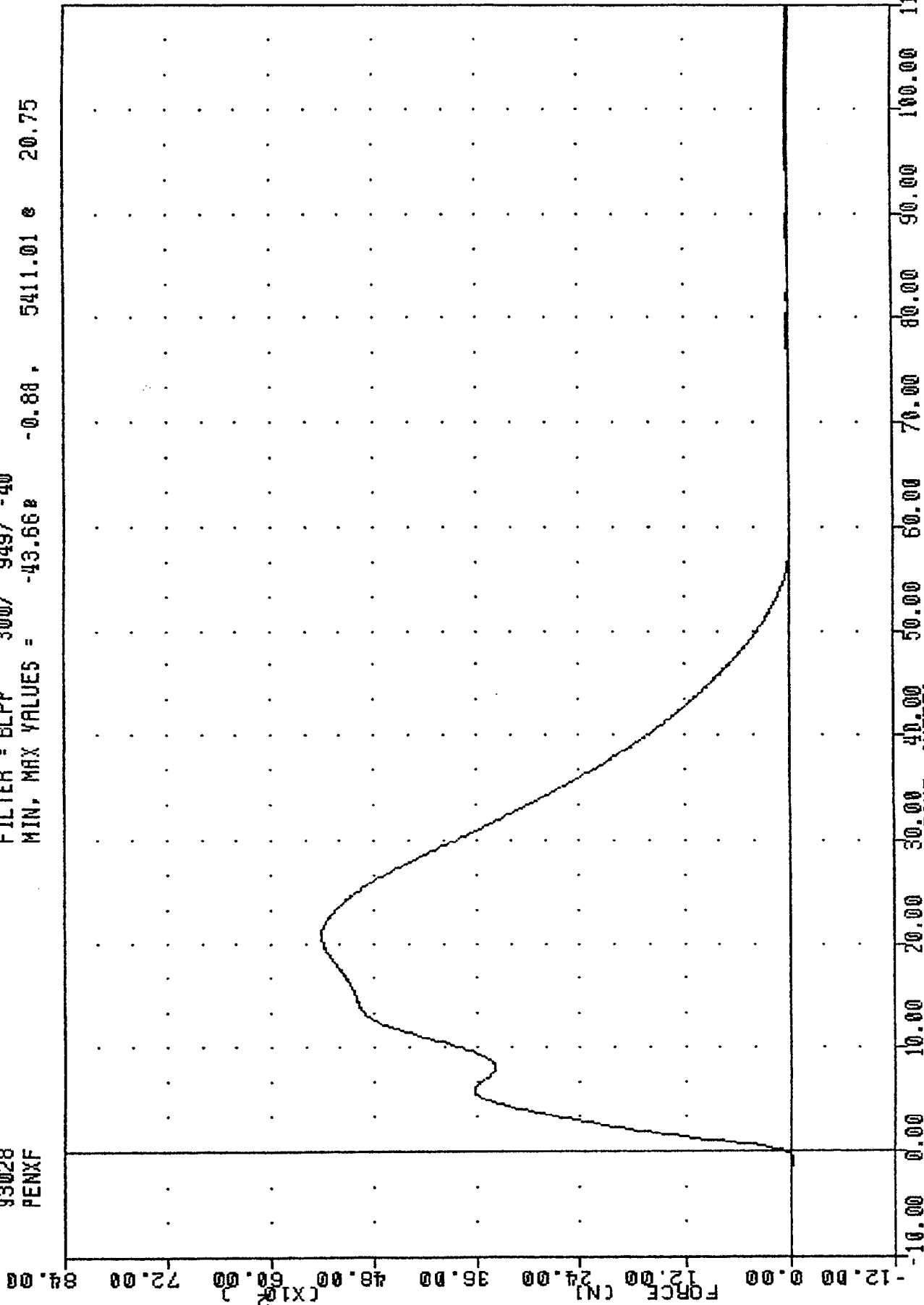
C-60

930217

PART 572E HYBRID I.D. THORAX CALIBRATION

TRC , 192C11TH2
 572E SN192 H.S. THORAX CAL11
 93028
 PENXF

FILTER = BLPP 300/ 949/ -40
 MIN, MAX VALUES = -43.66e -0.88. 5411.01 e 20.75



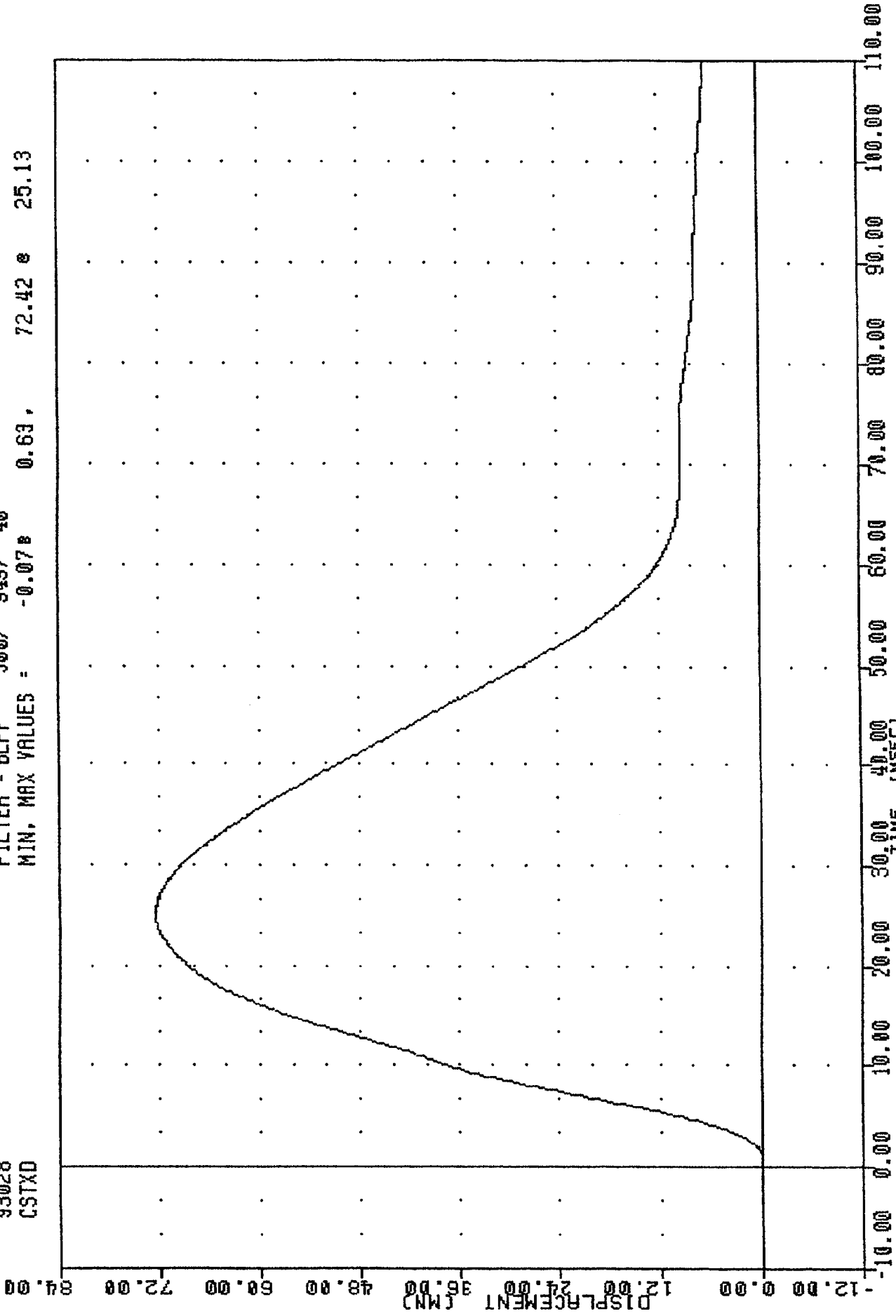
19-C

930217

PART 572-E HYBRID III THORAX CALIBRATION

TRC , 192C11TH2
572E SN192 H.S. THORAX CAL11
93028
CSTXD

FILTER = BLPP 300/ 949/ -40
MIN, MAX VALUES = -0.07 e 0.63, 72.42 e 25.13



HYBRID ILL THORAX CALIBRATION
PART 572E

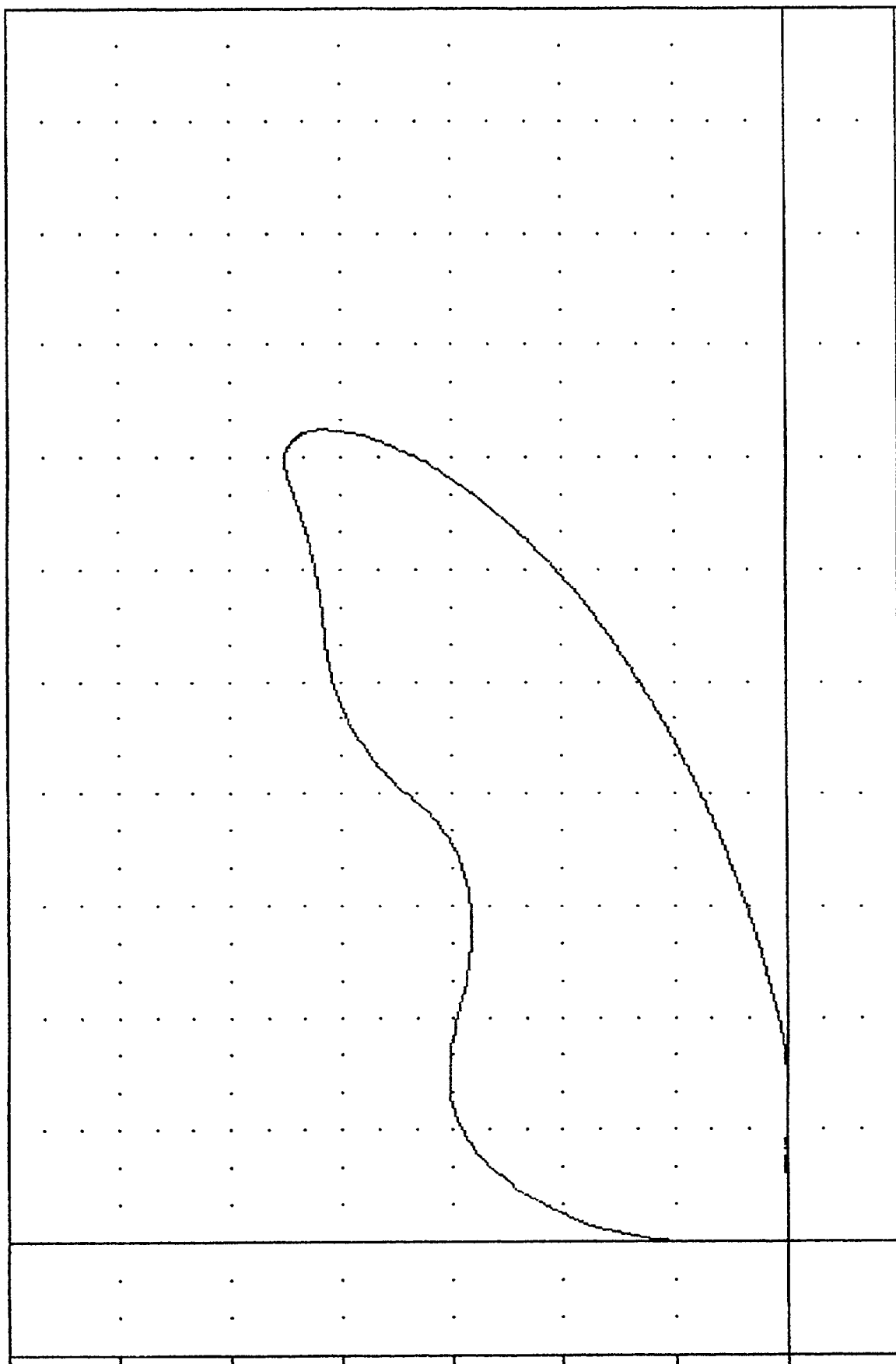
TBC
 CSTXD
 PENXF

192C11TH2
 FILTER = 8LPP
 FILTER = 8LPP

572E SN192 H.S. THORAX CAL11
 300/ 949/ -40
 300/ 949/ -40

93028
 -0.07 B
 -43.66 B
 0.63
 -0.88
 72.42
 5411.01
 25.13
 20.75

84.00
 82.00
 80.00
 78.00
 76.00
 74.00
 72.00
 70.00
 68.00
 66.00
 64.00
 62.00
 60.00
 58.00
 56.00
 54.00
 52.00
 50.00
 48.00
 46.00
 44.00
 42.00
 40.00
 38.00
 36.00
 34.00
 32.00
 30.00
 28.00
 26.00
 24.00
 22.00
 20.00
 18.00
 16.00
 14.00
 12.00
 10.00
 8.00
 6.00
 4.00
 2.00
 0.00
 -2.00
 -4.00
 -6.00
 -8.00
 -10.00



930217
 PART 572-E HYBRID III THORAX CALIBRATION
 SUBJECT: DISPLACEMENT VS. PENNAXIUM FORCE

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

02-DEC-92

RIGHT KNEE

TRC

192C11RK1

572E SN192 RIGHT KNEE CAL 11

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	2.11 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5664.1 N
PROBE WEIGHT	5.0 KG	

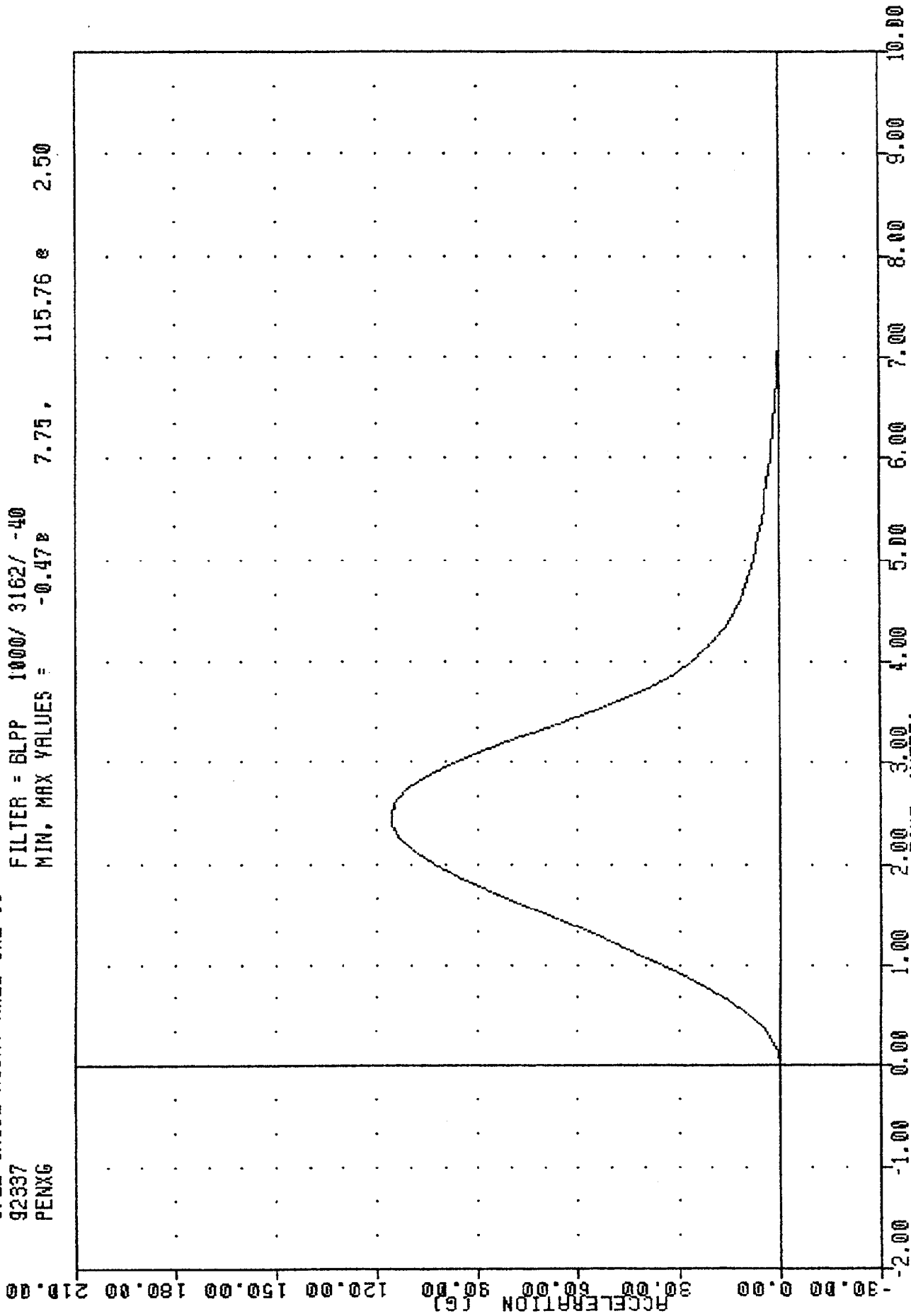
TEST MEETS SPECIFICATIONS

TECHNICIAN

Chan Middleton

TRC . 192C11RK1
572E SN192 RIGHT KNEE CAL 11
92337
PENXG

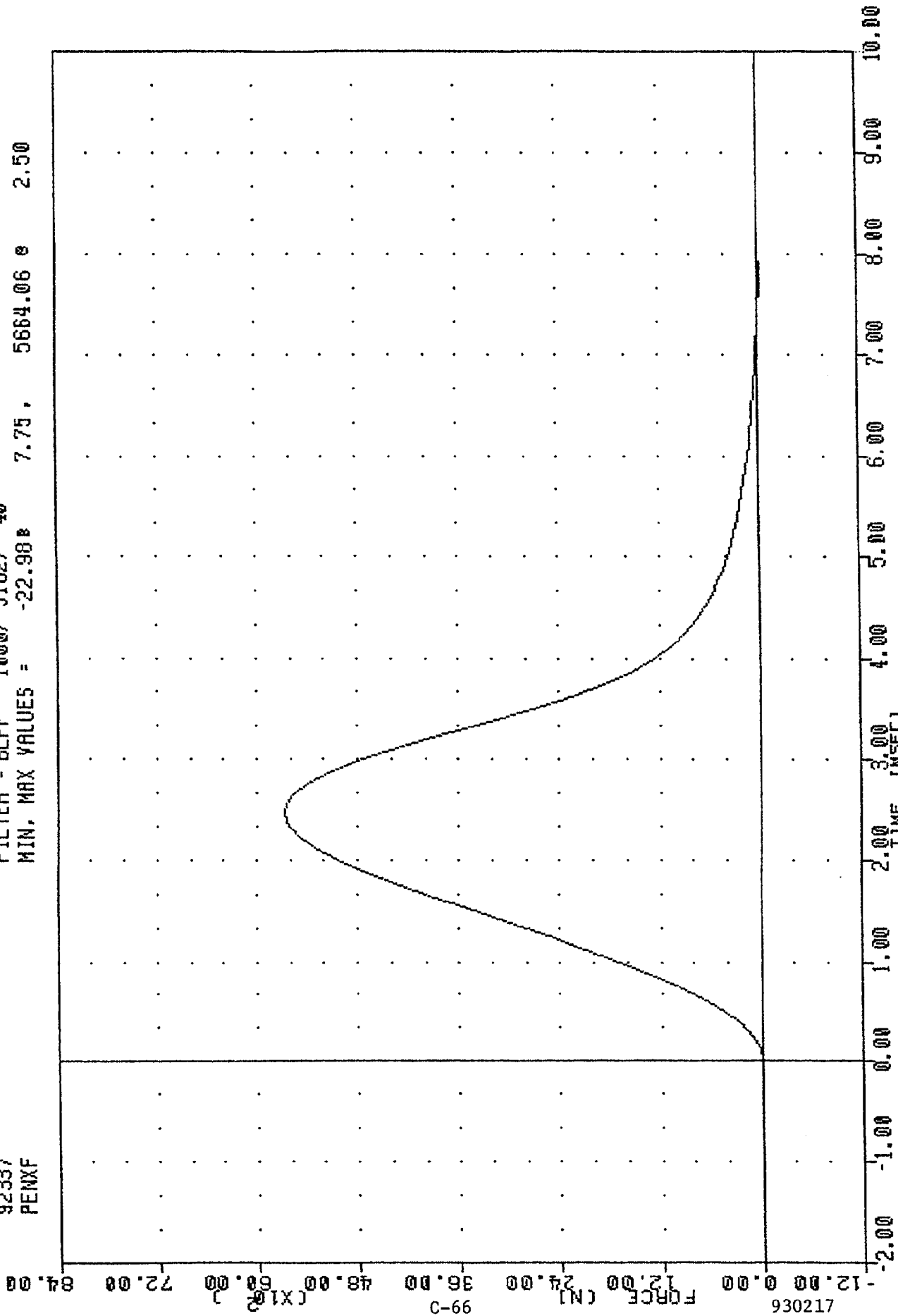
FILTER = BLPP 1000/ 3162/ -40
MIN. MAX VALUES = -0.47 7.75 115.76 e 2.50



PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENNIUM ACCELERATION (5 KC PENN)

TRC . 192C11RK1
572E SN192 RIGHT KNEE CAL 11
92337
PENXF

FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -22.988 7.75 5664.06 e 2.50



930217
PART 572-E HYBRID ILL RIGHT KNEE CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

02-DEC-92

LEFT KNEE

TRC

192C11LK1

572E SN192 LEFT KNEE CAL 11

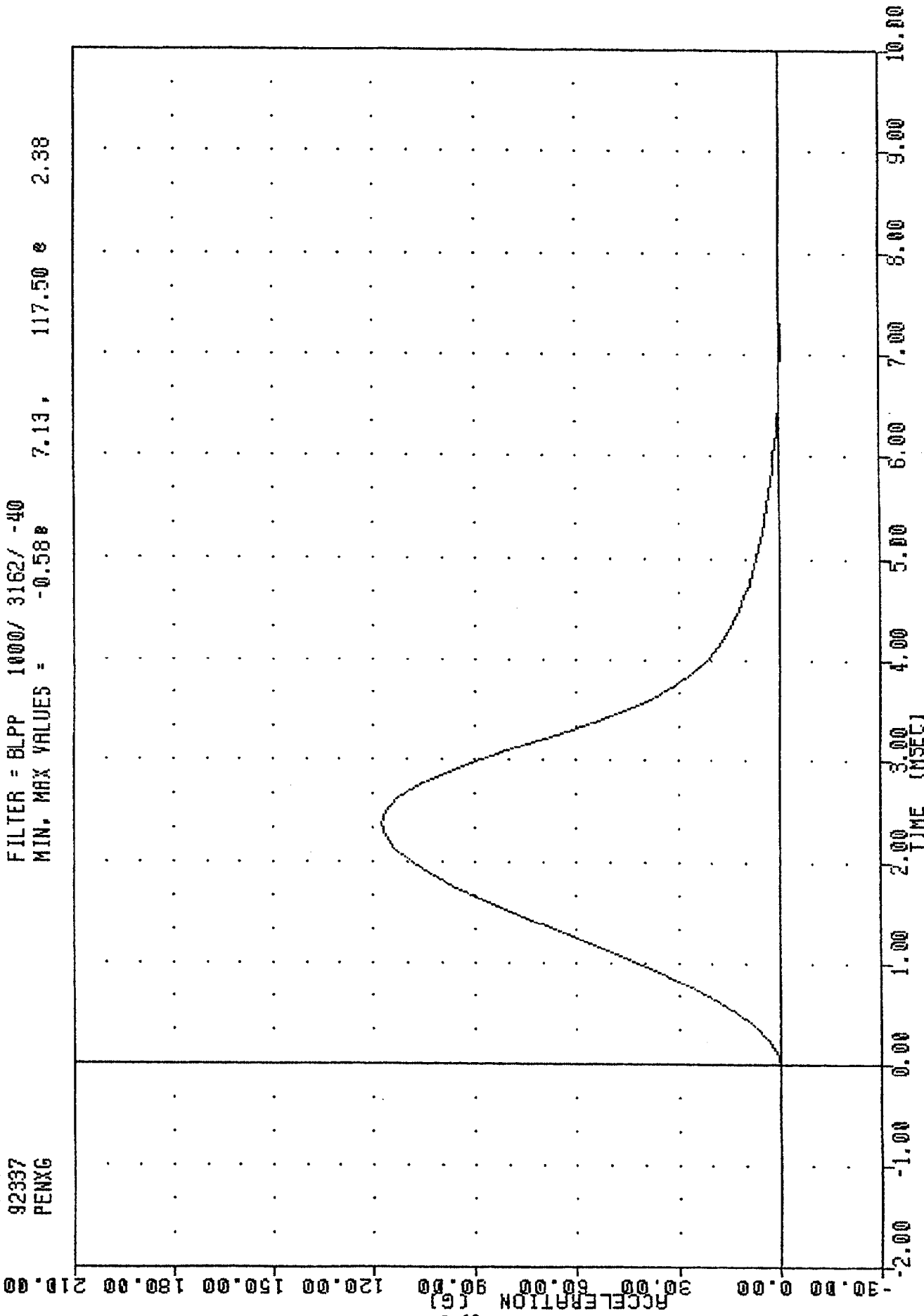
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PROBE VELOCITY	2.07 - 2.13 M/SEC	2.09 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5748.9 N
PROBE WEIGHT	5.0 KG	

TEST MEETS SPECIFICATIONS

TECHNICIAN *Chas. Middleton*

TRC , 192C11LK1
572E SN192 LEFT KNEE CAL 11
92337
PENXG

FILTER = BLPP 1000/ 3162/ -40
MIN. MAX VALUES = -0.58 7.13, 117.50 e 2.38



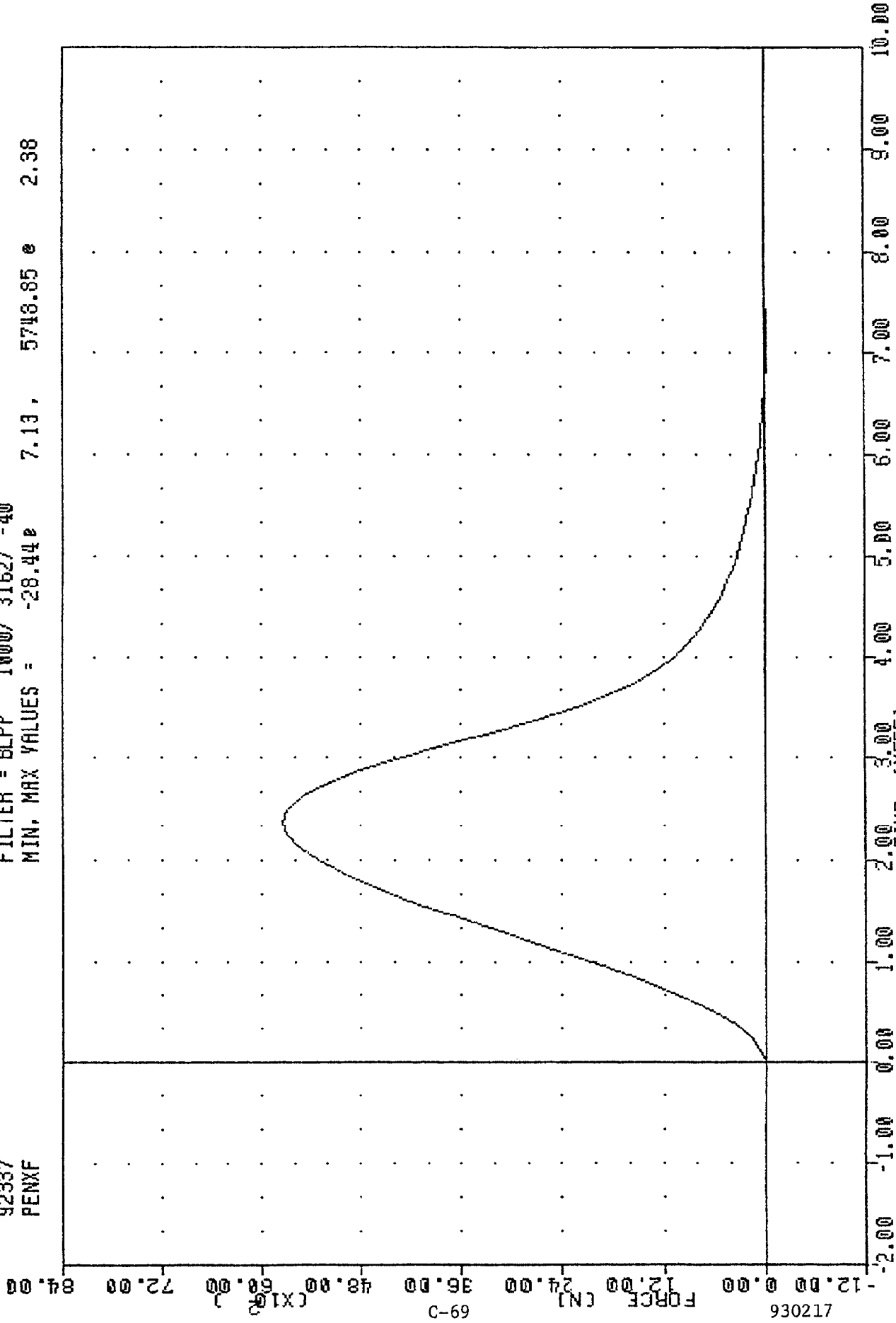
89-C

930217

PART 572-E HYBRID III LEFT KNEE CALIBRATION

TRC
 572E SN192 LEFT KNEE CAL 11
 92337
 PENXF

FILTER = BLPP 1000/ 3162/ -40
 MIN, MAX VALUES = -28.44e 7.13, 5748.85 e 2.38



PART 572-E HYBRID III LEFT KNEE CALIBRATION
 PENFIII IIN FORCE 15 KG PENF 1

APPENDIX D

MISCELLANEOUS TEST INFORMATION

DUMMY INSTRUMENT CALIBRATIONS

DRIVER DUMMY #142

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCEL.	CR59H	7264	ENDEVCO	01/25/93	07/25/93
Y-AXIS ACCEL.	CR99H	7264	ENDEVCO	01/25/93	07/25/93
Z-AXIS ACCEL.	CH44H	7264	ENDEVCO	01/25/93	07/25/93
CHEST X-AXIS ACCEL.	DA88H	7264	ENDEVCO	01/25/93	07/25/93
Y-AXIS ACCEL.	DT02JT	7264	ENDEVCO	01/25/93	07/25/93
Z-AXIS ACCEL.	CH74H	7264	ENDEVCO	01/25/93	07/25/93
LEFT FEMUR FORCE LOAD CELL	829	2430	GSE	01/26/93	07/26/93
RIGHT FEMUR FORCE LOAD CELL	610	2430	GSE	01/26/93	07/26/93
*NECK X-AXIS FORCE LOAD CELL	0280	1716	DENTON	01/27/93	07/27/93
Y-AXIS FORCE LOAD CELL	0280	1716	DENTON	01/27/93	07/27/93
Z-AXIS FORCE LOAD CELL	0280	1716	DENTON	01/27/93	07/27/93
*NECK MOMENT ABOUT X-AXIS LOAD CELL	0280	1716	DENTON	01/27/93	07/27/93
MOMENT ABOUT Y-AXIS LOAD CELL	0280	1716	DENTON	01/27/93	07/27/93
MOMENT ABOUT Z-AXIS LOAD CELL	0280	1716	DENTON	01/27/93	07/27/93
*CHEST DEFLECTION POTENTIOMETER	90320B	81422A	VERITECH	01/27/93	07/27/93
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-101-50A	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 #192

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCEL.	CY19H	7264	ENDEVCO	01/22/93	07/22/93
Y-AXIS ACCEL.	DH74J	7264	ENDEVCO	01/22/93	07/22/93
Z-AXIS ACCEL.	CW16H	7264	ENDEVCO	01/22/93	07/22/93
CHEST X-AXIS ACCEL.	DW04J	7264	ENDEVCO	01/22/93	07/22/93
Y-AXIS ACCEL.	DA15H	7264	ENDEVCO	01/22/93	07/22/93
Z-AXIS ACCEL.	DK56J	7264	ENDEVCO	01/22/93	07/22/93
LEFT FEMUR FORCE LOAD CELL	889	2430	GSE	01/26/93	07/26/93
RIGHT FEMUR FORCE LOAD CELL	827	2430	GSE	01/26/93	07/26/93
*NECK X-AXIS FORCE LOAD CELL	085	1716	DENTON	01/26/93	07/26/93
Y-AXIS FORCE LOAD CELL	085	1716	DENTON	01/26/93	07/26/93
X-AXIS FORCE LOAD CELL	085	1716	DENTON	01/26/93	07/26/93
*NECK MOMENT ABOUT X-AXIS LOAD CELL	085	1716	DENTON	01/26/93	07/26/93
MOMENT ABOUT Y-AXIS LOAD CELL	085	1716	DENTON	01/26/93	07/26/93
MOMENT ABOUT Z-AXIS LOAD CELL	085	1716	DENTON	01/26/93	07/26/93
*CHEST DEFLECTION POTENTIOMETER	87313-96	81422A	VERNITECH	01/27/93	07/27/93
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	CW79H	7264	ENDEVCO	01/20/93	07/20/93
LEFT REAR SEAT CROSSMEMBER X-AXIS REDUN	CN83H	7264	ENDEVCO	11/20/92	05/20/93
RIGHT REAR SEAT CROSSMEMBER X-AXIS	DG40J	7264	ENDEVCO	01/20/93	07/20/93
RIGHT REAR SEAT CROSSMEMBER X-AXIS REDUN	CL83H	7264	ENDEVCO	08/21/92	02/21/93
ENGINE TOP X-AXIS	BY03J	7264	ENDEVCO	11/20/92	05/20/93
ENGINE BOTTOM X-AXIS	CJ37H	7264	ENDEVCO	01/20/92	07/20/93
RIGHT BRAKE CALIPER X-AXIS	CR87H	7264	ENDEVCO	11/20/92	05/20/93
LEFT BRAKE CALIPER X-AXIS	CE72H	7264	ENDEVCO	11/20/92	05/20/93
INSTRUMENT PANEL CENTER X-AXIS	BW77J	7264	ENDEVCO	11/23/92	05/23/93

CALIBRATION LABORATORY INSTRUMENTS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
NECK BENDING PENDULUM ACCEL.	CC44	7232	ENDEVCO	10/06/92	04/06/93
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	10/06/92	04/06/93
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	10/06/92	04/06/93
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

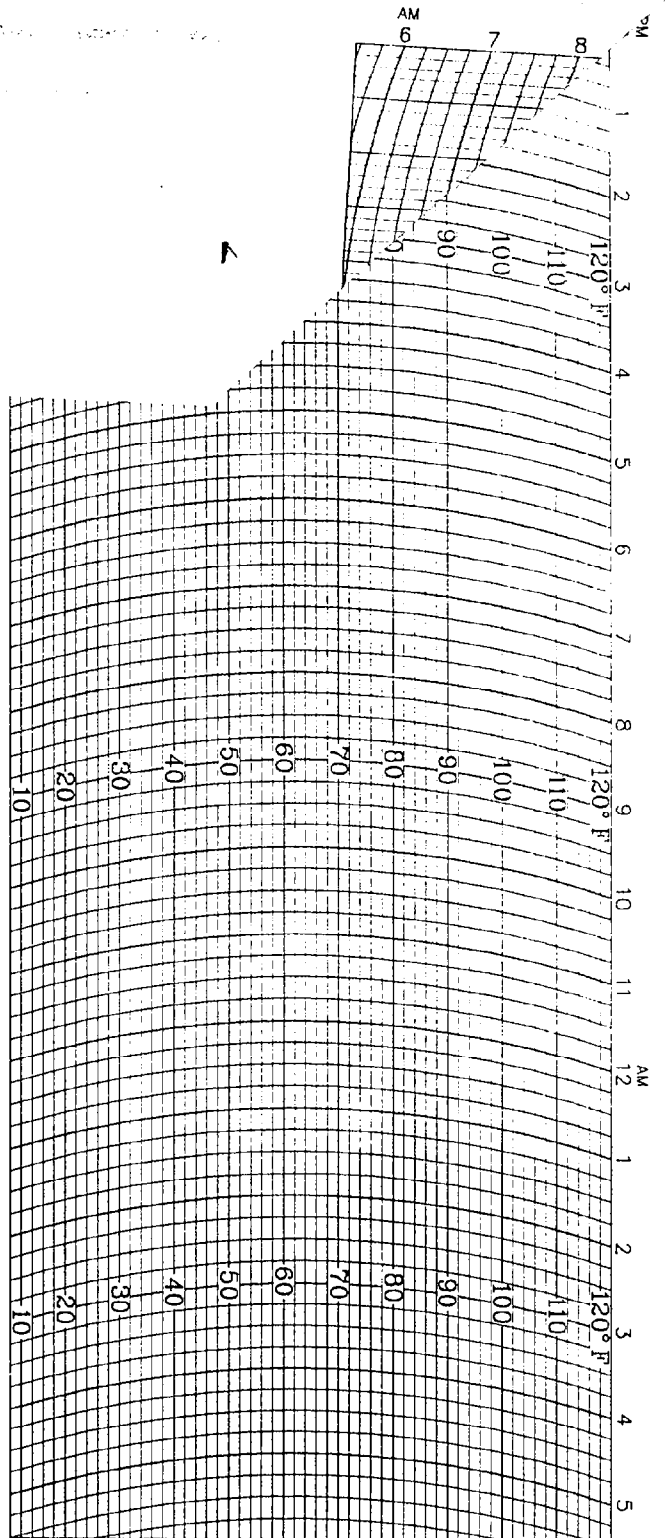
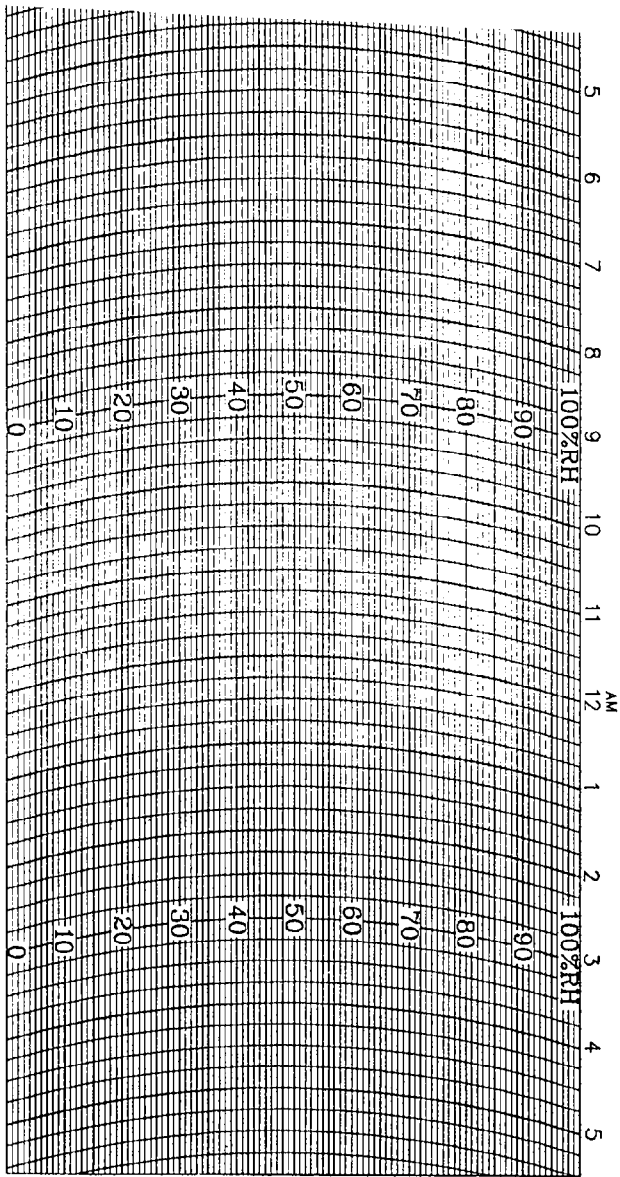
SAE J211 OCT88

TYPICAL TEST MEASUREMENTS

CHANNEL CLASS

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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WEATHERtronic
 Division of **QUALLMETRICS, Inc.**

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 SACRAMENTO, CA 95841
 PHONE: (916) 923-0055

HYGROTHERMOGRAPH
 1 DAY

CHART NO. M699123
 C311-D-HF
 ECN 2717
 6-9-87

STATION _____ DATE ON _____ DATE OFF _____

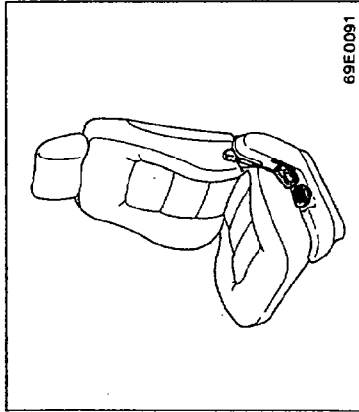
APPENDIX E

RESTRAINT SYSTEM INSTRUCTIONS FROM OWNER'S MANUAL

Seat and seat belt

Front seat adjustment	18
Rear seat	21
Making a full flat seat	23
Head restraints	24
Seat belts	26
Child restraint	31
Pregnant woman restraint	34
Maintenance and inspection of seat belts	35

SEAT AND SEAT BELT



69E0091

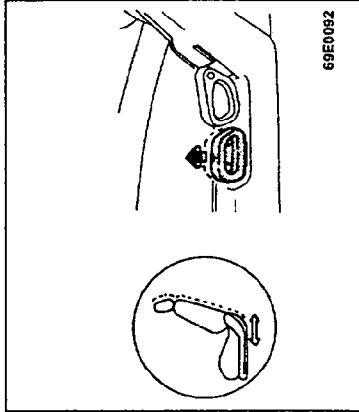
Front seat adjustment

ND01A-Ag

Adjust the driver's seat to the position that allows you to easily control the pedals, steering wheel and switches on the instrument panel, and provides a clear front view.

WARNING

- (1) Do not attempt to adjust the seat while driving. This can be dangerous.
- (2) After adjusting the seat, make sure that the seat is securely locked into position.



69E0082

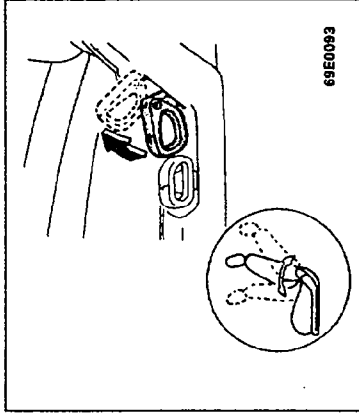
To adjust forward or backward

ND01B-Ae

Pull the seat adjusting lever and adjust the seat forward or backward to the desired position. After adjustment, release the adjusting lever to lock the seat in position.

WARNING

To ensure the seat is locked securely, attempt to move the seat forward or backward without using the adjusting lever.



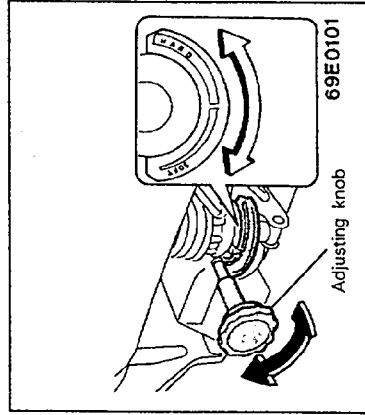
69E0093

To recline the seatback

ND01C-Ag

In order to recline the seatback, first lean your body forward slightly, pull the seatback lock lever up, and then lean backward to the desired position and release the lever. The seatback will lock in that position.

SEAT AND SEAT BELT



Seat height adjustment (if so equipped)

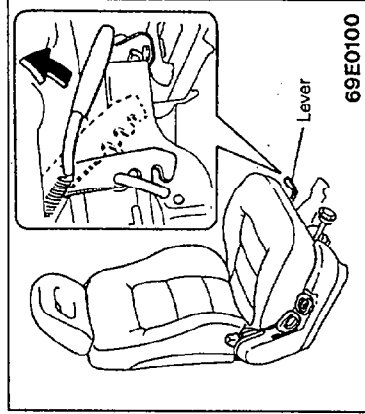
ND01D-0d

To adjust height and spring tension
When the vehicle is driven over rugged terrain or along rough roads, this seat absorbs the vehicle vibrations caused by the road surface, reducing driver fatigue and providing a comfortable ride.

Turn the adjusting knob to get the desired spring tension. The height and bounce of the seat can be adjusted by using this knob.

NOTE

To make it softer, set to "SOFT"; to make it harder, set to "HARD".



To adjust height

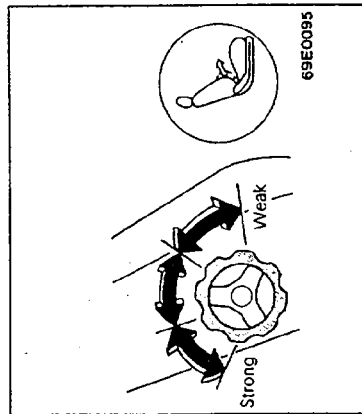
If seat bounce is not desired, the height can still be adjusted by operating the lever. Any one of three different heights can be selected.

NOTE

1. If the middle or bottom height level is desired, it will be easier to make the adjustment if the seat adjusting knob is first set to a low indication.
2. When driving along paved roads, lock the lever to prevent the seat from swaying when making a turn.

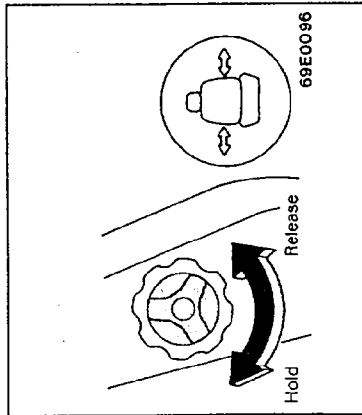
WARNING
To minimize risk of personal injury in the event of a collision or sudden stop, both the driver and passenger seatbacks should always be in a nearly upright position while the vehicle is in motion. The protection provided by the seat belts may be reduced significantly when the seatback is reclined. There is greater risk that the passenger will slide under the belt, resulting in serious injury, when the seatback is reclined.

SEAT AND SEAT BELT



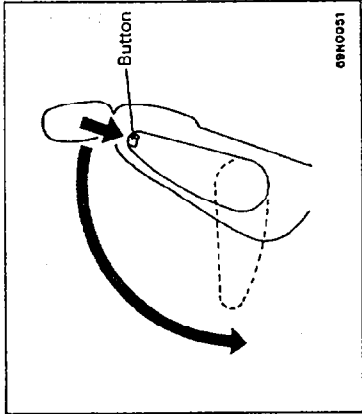
Lumbar support adjustment (if so equipped)

A lumbar support is included in the seatback. The support has a three position adjustment.



Side support adjustment (if so equipped)

The position of both sides of the seatback can be adjusted to increase or decrease the degree of lateral support.



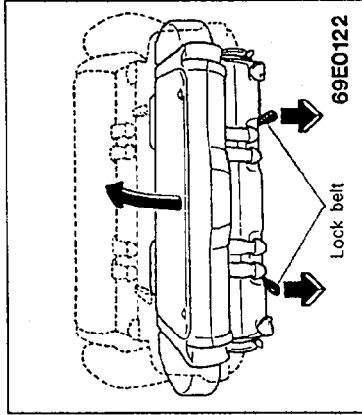
Armrest (if so equipped)

Press the button at the top of the armrest and fold the armrest down. And then adjust the armrest desired position. The armrest has a five position adjustment.

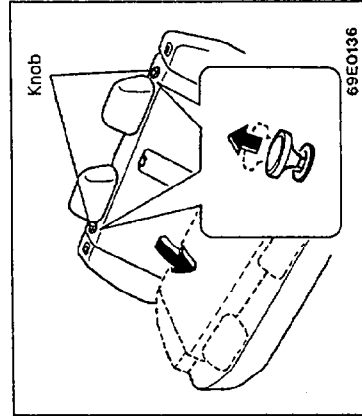
CAUTION

When storing the armrest, push it until a click is heard to prevent it from folding down while driving the vehicle.

SEAT AND SEAT BELT



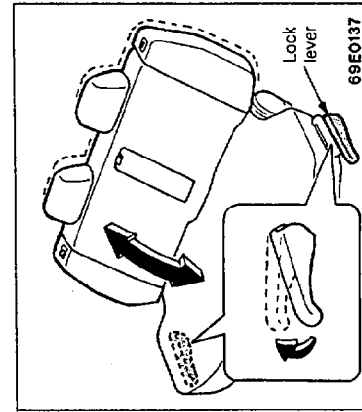
Pull the lock belt toward the rear of the vehicle and fold the whole seat upward and forward until it locks.



Folding the seat

ND02C-Hc

The rear seat can be folded forward to provide additional cargo area. Pull the release knob, and fold the rear seat back forward.



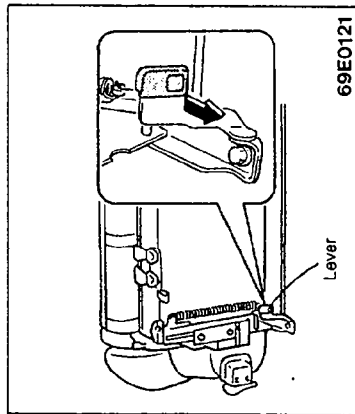
Rear seat

ND02B-B

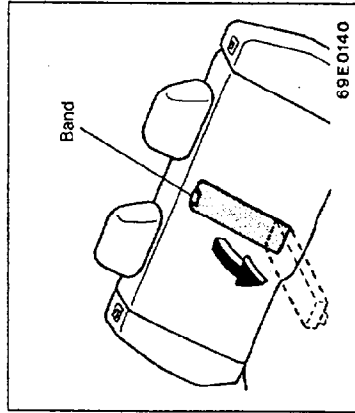
To recline the seatback (if so equipped)

In order to recline the seatback, first lean your body forward slightly and pull the seatback lock lever up, and then lean backward to the desired position and release the lever. The seatback will lock in that position.

SEAT AND SEAT BELT



To unfold the rear seat, fold the whole seat backward and downward while pulling the lever at the left of the seat. Raise the seatback.

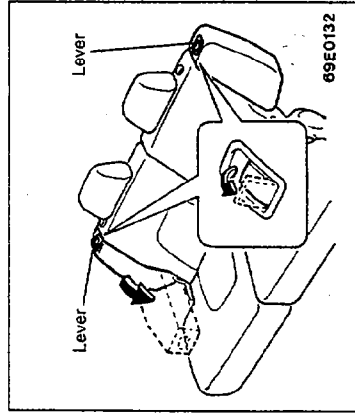


Armrest (if so equipped)

ND02GA

Center seatback

Pull the band at the top of the armrest forward.



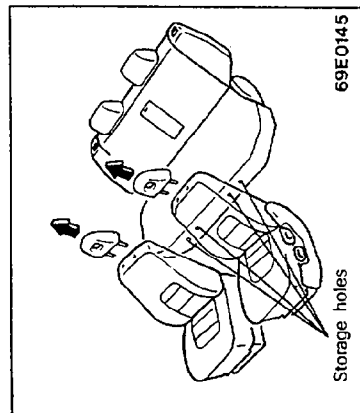
Side seatback

Fold the side seatback forward with its lever pulled up, and the side seatback will be used as a side armrest. It can also be used as a cup holder or tray.

WARNING

The cargo area in the rear of the vehicle should never be used as a play area by children. Children should be seated and seat belts fastened when the vehicle is in motion. Be sure that the rear seatbacks are returned to their fully upright position and locked in place.

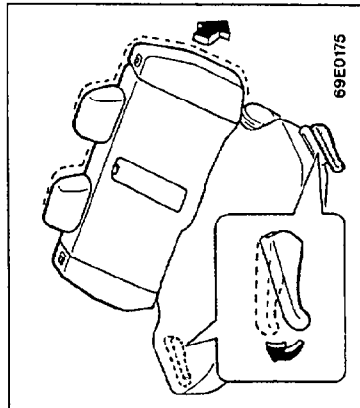
SEAT AND SEAT BELT



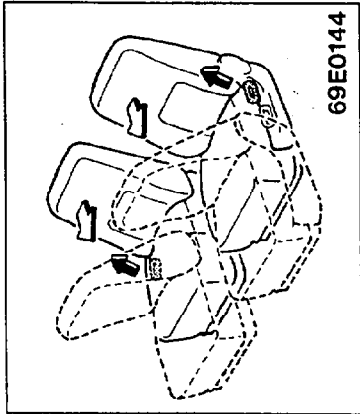
Making a full flat seat

ND02H-Ac

1. Remove the head restraints from front seats and store them in the storage holes at the foot of the rear seat. (Refer to the "Head restraints" on page 24.)

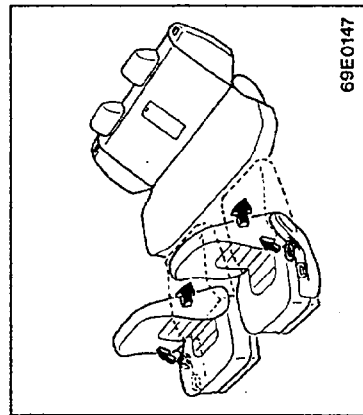


2. Recline the seatback of the rear seat all the way back (wagon only).



3. Move the front seats all the way forward.

SEAT AND SEAT BELT



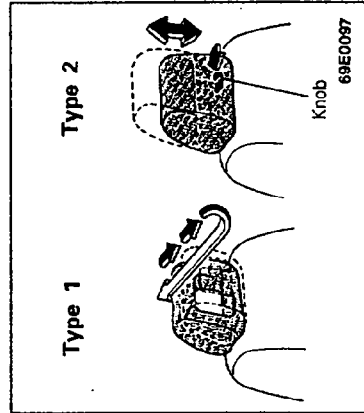
4. Recline the seatbacks of the front seats all the way back.

To return the seats to their original positions:

Return the seatbacks of the front and rear seats to their original positions and then remount the front head restraints.

WARNING

- (1) Do not drive the vehicle with the seats in a full flat seat position.
- (2) To make a full flat seat, stop the vehicle in a safe place.
- (3) Do not walk around on top of the seats after they have been made into a full flat seat.
- (4) To ensure the seats are locked securely, attempt to make into a full flat seat or return to the original seat position.



Head restraints

ND05A-M6

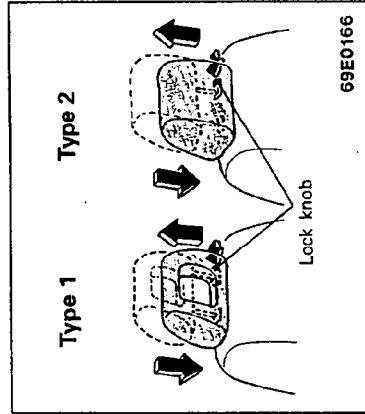
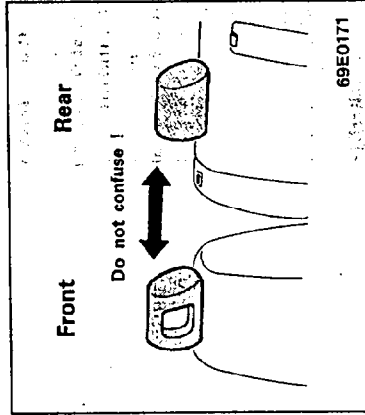
Padded head restraints for the seats may reduce the risk of whiplash injury in the event of impact from the rear.

Adjustment of the head restraint

Type 1

The head restraint can be tilted to either of two forward positions from the original position. If pushed forward further, it will return to the original position. The head restraint cannot be adjusted vertically. Push it down all the way for use.

SEAT AND SEAT BELT



Type 2

To reduce the chance of injury in the event of collision, adjust the head restraint height so that the center of the restraint is as close as possible to eye level.

To raise the restraint, pull the restraint straight up. To lower the restraint, push down on the restraint while pressing the height adjusting knob in the direction indicated by the arrow. After adjusting the height, push down on the restraint to confirm that it is locked in position.

Removal of the head restraint

ND05B-Ja

To remove the head restraints, press the lock knob in the direction indicated by the arrows and pull the head restraints up.

To remount the head restraints, first confirm that they are facing the correct direction, and then insert them into the seatback and push down while pressing the lock knob until they lock. Confirm that the lock knobs are correct as shown in the illustration, and also pull the head restraints up to confirm that they do not come out of the seatback.

WARNING

- (1) Driving with the head restraints removed is dangerous. Always have them mounted when operating the vehicle. Failure to having them properly mounted may increase the chance of injury in the event of a collision.
- (2) The head restraints for the front and rear seats differ in shape. When installing head restraints, be sure not to confuse the front and rear seat head restraints. The head restraints for the front seat are larger in both height and thickness.

SEAT AND SEAT BELT

Seat belts

ND06A-Bd

Seat belts are installed in your vehicle for the protection of the driver and passengers. Always use the seat belts. In the event of an accident, injury to the driver and passengers may be reduced if seat belts are properly used.

The following pages contain the recommended procedure for fastening, adjusting, and wearing of the belts for comfort and safety.

WARNING

- (1) Never use one seat belt for more than one occupant.
- (2) Never wear the shoulder portion of the seat belt behind your arm, under your arm or out of position.
Always wear both the seat and shoulder belt and in the proper position.
- (3) Do not make any modifications that could change the effectiveness of the seat belts.
- (4) Never attempt to repair or replace the seat belt assemblies on your own. All repairs and replacements should be made by an authorized dealer.

NOTE

Legislation in your state may require seat belt usage, but even if not required, they should always be worn.

Seat unbelt restraint system

ND06B-Mc

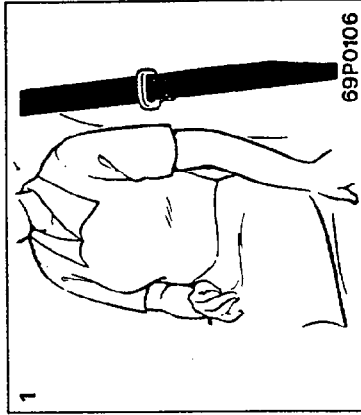
Front seats and both sides of the rear seat are equipped with a UNIBELT system which uses a single belt and an emergency locking retractor.

This system is designed to provide comfort and safety by permitting full extension and automatic retraction of the belts during normal vehicle operation.

A sensing device inside the belt retractor is designed to lock the retractor in the event of an abrupt change in vehicle motion.

NOTE

For instruction on how to install a child restraint system to the rear seat, see "installing a child restraint system to a UNIBELT" on page 32.



69P0106

Unibelt instructions

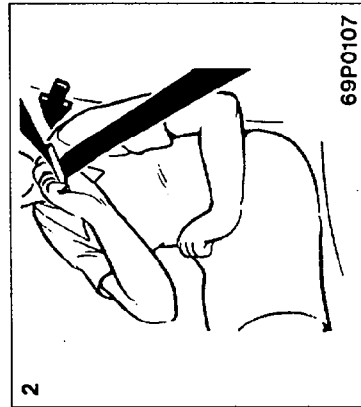
ND06D-Bg

1. Get in the vehicle and sit in the normal correct posture.

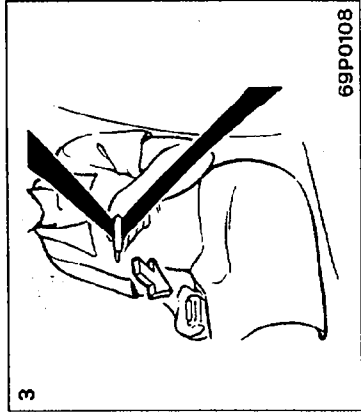
WARNING

To minimize risk of personal injury in the event of collision or sudden stop both the driver and passenger seatbacks should always be in a nearly upright position while the vehicle is in motion. The protection provided by the seat belts may be reduced significantly when the seatback is reclined. There is greater risk that the passenger will slide under the belt, resulting in serious injury, when the seatback is reclined.

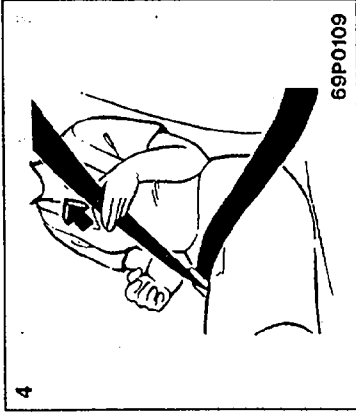
SEAT AND SEAT BELT



2. Grasp the movable latch plate and slide it up the webbing as far as necessary so that it will be easy to pull across your body. After a couple of tries, this will become an automatic one-handed operation.



3. Pull the webbing, and move the movable latch plate toward the buckle. This system will not lock up if you stop or hesitate, so relax and continue to "buckle-up". Push the latch plate into the buckle until a "click" is heard.



4. Pull up on the shoulder belt to ensure that there is no slack in the seat belt. The seat belt will not tighten during use; therefore you can set it once for safe, comfortable snugness.

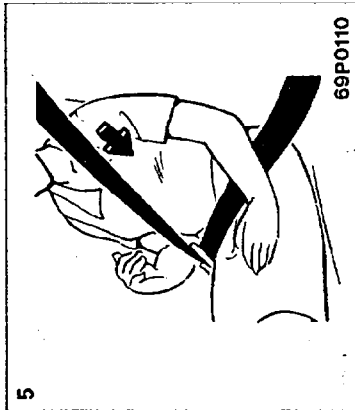
WARNING

Illustration

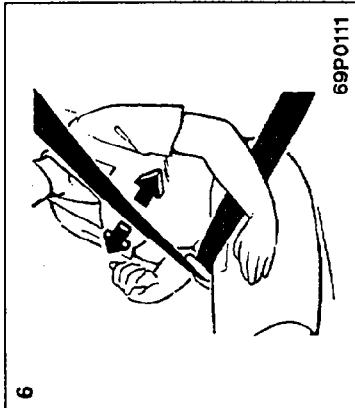
Be sure the seat belt portion is fitted snugly and as low as possible around the hips, not around the waist.

Failure to do so may increase the change or severity of injury in the event of a collision.

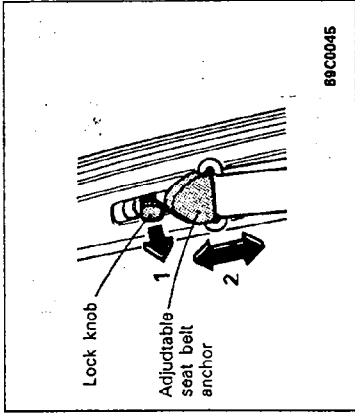
SEAT AND SEAT BELT



5. Check the belt slackness. The belt will retain the small amount of slack necessary for comfort when you return to your normal seating position. If the belt is still too tight, pull out 6" or 8" of webbing, let it return to your chest, and repeat the above motion.



6. The shoulder belt will allow unrestricted movement under normal conditions. The belt will lock in the event of an abrupt change in vehicle motion. To release the belt, push the button on the buckle. To return the belt to its stowed position, pull the shoulder belt down slightly and release immediately.



Adjustable seat belt anchor (front seats)

ND08E-A

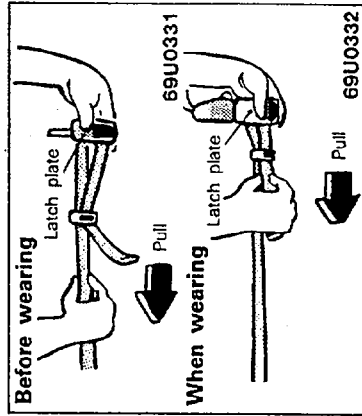
The seat belt anchor height can be adjusted.

- 1 - Pull the lock knob.
- 2 - Slide the seat belt anchor up or down to the position that best fits your body and release the knob. Make sure that a click is heard and that the seat belt anchor is locked firmly.

WARNING

Be sure to lock all doors before driving. Locking the doors and properly using the seat belts provided will minimize the risk of injury or ejection in an accident.

SEAT AND SEAT BELT



WARNING

When adjusting the seat belt anchor, set it at a position that is sufficiently high so that the belt will make full contact with your shoulder but will not touch your neck.

Rear seat lap belt

ND06C-Cd

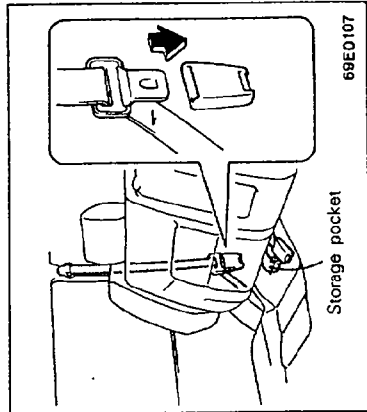
Center belt

The center belt should be adjusted by holding the belt and latch plate at right angles to each other, and then pulling the belt as illustrated above to a snug fit around the occupant.
NEVER USE THE SAME LAP BELT ON MORE THAN ONE PERSON AT A TIME.

NOTE

The buckle and plate of the center lap belt are marked with "CENTER". Be sure to check the marking before wearing the center lap belt. The outboard restraint system buckle and center restraint system tongue are not compatible and will not engage with one another.

SEAT AND SEAT BELT

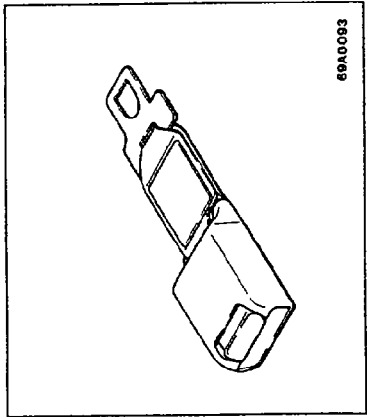


Storage pocket
69E0107

Rear seat belt pocket

ND061-Ca

When the seat belt is not in use, store it in the storage pocket. For compact storage of the center seat plate, coil it around the plate.



69A0093

Seat belt extender (for unbelt)

ND061-AC

If the seat belt is too short, even when fully extended, a seat belt extender is available from your dealer. The extender may be used for either front seating position.

This extender should only be used if the existing belt is not long enough. When not required, it must be removed and stowed because the use of the extender when not required may deactivate the seat belt locking mechanism.

WARNING
Persons who can use the standard seat belt should not use an extender. Such unnecessary use could result in serious personal injury in the event of an accident.

SEAT AND SEAT BELT

Child restraint

ND06FOV4D

When transporting children in your vehicle, some type of child restraint system should be used according to the size of the child. This is required by law in most states.

WARNING

- (1) Accident statistics indicates that children are safer when properly restrained in the rear seat rather than in the front seat. Accordingly, Mitsubishi Motor Sales of America, Inc. recommends the child be restrained in the rear seat.
- (2) Holding a child in your arms is no substitute for a restraint system. Failure to use a proper restraint system can result in severe or fatal injury to your child.

Infants and small children

For infants small enough for infants seats, an infant carrier should be used. For small children, a child seat should be used. Both types of seats are available from your authorized dealer.

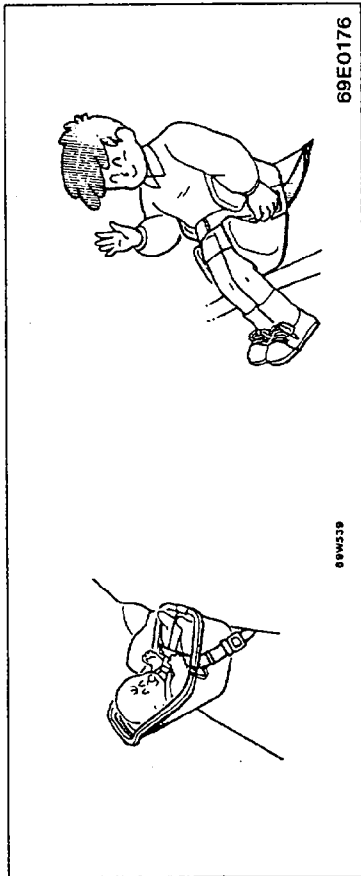
The child restraint system should be appropriate for your child's weight and height and properly fit the vehicle seat. For a higher degree of safety, THE CHILD RESTRAINT SYSTEM SHOULD BE INSTALLED IN THE REAR SEAT.

When installing a child restraint system, refer to the instructions provided by the manufacturer of the restraint system and follow the directions listed under the following illustrations. When not in use, keep your child or infant seat secured with the seat belt or remove it from the vehicle in order to prevent injury your child.

NOTE

Before purchasing a child seat or infant carrier, try installing it in the rear seat to ensure a good fit. Due to the location of the seat belt buckles in the seat cushion, it may be difficult to securely install some child restraint systems. If the child restraint system can be pulled forward easily on the seat cushion after the belt has been tightened, choose another child restraint system.

SEAT AND SEAT BELT

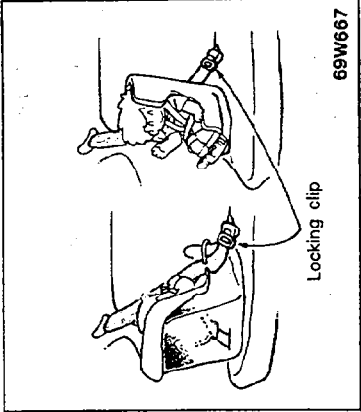


2. Pull the excess webbing through the belt's adjustment feature.
3. Push and pull the child restraint in all directions to be sure it is secure.

Installing a child restraint system to the rear center seat

- Installation:
1. Fasten the center seat belt to secure the child restraint system.

WARNING
For safety, an infant carrier should face backward; a child seat should face forward.



Installing a child restraint system to a UNIBELT (Combination lap/shoulder belt)

USE A LOCKING CLIP WHEN INSTALLING A CHILD RESTRAINT SYSTEM TO A UNIBELT.
If a locking clip has not been supplied with your child restraint system, it may be purchased from your authorized dealer.

SEAT AND SEAT BELT

4. Grasp the lap and shoulder portions of the seat belt as close to the latch plate as possible and unbuckle the seat belt.
5. Thread both the lap and shoulder belt portions through the locking clip.
6. Buckle the seat belt again and check that the seat belt is snug against the child restraint system.

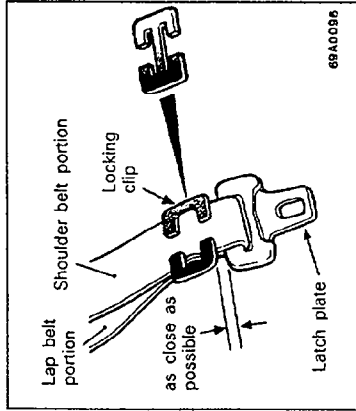
When your child restraint is not installed, remove the locking clip to permit normal use of the combination lap and shoulder belt.

Keep the locking clip in the glove box to help prevent its loss.

WARNING

To help avoid personal injury during a collision or sudden maneuver, always thread both the lap and shoulder belt through the locking clip when securing a child restraint to a UNIBELT.

If the locking clip is not used or not installed properly, the child restraint may move or tip over and may result in a severe or fatal injury to your child in the event of an accident.

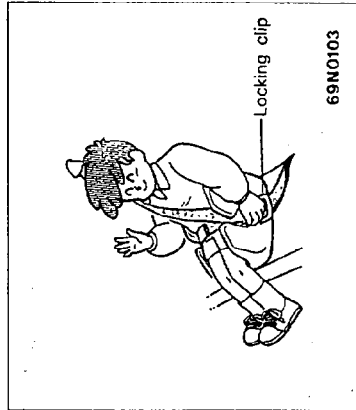


- Installation
1. Place the child restraint system on the seating position as shown in the illustration.

WARNING

For safety, an infant carrier should face backward; a child seat should face forward.

2. Fasten the seat belt around or through the child restraint system according to the restraint manufacturer's instructions.
3. Buckle the seat belt and keep all slack out of the lap portion of the belt.



To use the locking clip, install the child restraint system according to the instruction that comes with the child restraint system/locking clip.

SEAT AND SEAT BELT

Installing an infant carrier to the front passenger's seat - vehicles equipped with a UNIBELT

For instructions please refer to a previous section titled "Installing a child restraint system to a UNIBELT". Mitsubishi Motor Sales of America, Inc. recommends the child be restrained in the rear seat. Mitsubishi Motor Sales of America, Inc. also recommends that an adult be seated adjacent to an infant who is in an infant carrier. Therefore, if the driver is the only adult in the vehicle, the infant may be placed in the front seat and properly restrained.

Children who have outgrown child restraint system

Children who have outgrown child restraint system should be seated in the rear seat and wear combination lap shoulder belt. If the shoulder belt crosses the face or neck, place the child closer to the center of vehicle or use the lap belt at the center of the rear seat. The lap belt should be snug and positioned low on the abdomen so that it is below the top of the hipbone. Otherwise, the belt could intrude into the child's abdomen during an accident and cause personal injury.

WARNING

A child should never be left unattended in your vehicle.

Pregnant woman restraint

ND08G-E

WARNING

Mitsubishi Motor Sales of America, Inc. recommends that pregnant women use the available shoulder and seat belts. This will reduce the likelihood of injury to both the woman and the unborn child. The seat belt should be worn across the thighs and as snug against the hips as possible, but not across the waist.

The woman's doctor should be consulted if there are any questions.

Maintenance and inspection of seat belts

ND06H-F

The webbing used in belts may be cleaned with a hydrocarbon dry cleaner or with soap or detergent in water. Do not attempt to bleach or re-dye belts. The resulting color may rub off and webbing strength could be affected.

Regularly check seat belt buckles and release mechanisms for positive action.

Check that the anchor mounting bolts are tight. If the seat belt webbing shows obvious cuts, protruding broken fibers causing a local increase in webbing thickness, or severe fading which indicates weakening by exposure to sunlight, the seat belt should be replaced.

WARNING

All seat belt assemblies including retractors and attaching hardware should be inspected by an authorized dealer after any collision. We recommend that all seat belt assemblies in use during a collision be replaced unless the collision was minor and the belts show no damage and continue to operate properly.

Do not attempt to repair or replace any part of the seat or shoulder belt assemblies; that work should be done by an authorized dealer. Failure to have an authorized dealer perform the work could reduce the effectiveness of the belts and could result in serious injury in the event of a collision.