REPORT NO. 301-TRC-86-004

1047

VEHICLE SAFETY COMPLIANCE TESTING FOR FMVSS 301-75 FOR FUEL SYSTEM INTEGRITY

MAZDA MOTOR CORPORATION

1986 MAZDA 323

3-DOOR HATCHBACK

NHTSA NO. G5401

TRCO TEST NO. 870707

THE TRANSPORTATION RESEARCH CENTER OF OHIO

ST. RT. 33, LOGAN COUNTY

EAST LIBERTY, OHIO 43319

JULY 1987

TEST REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

VEHICLE SAFETY COMPLIANCE

400 SEVENTH STREET, S.W.

ROOM NO. 6113 (NEF-31)

WASHINGTON, DC 20590

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July 30, 1987

Date of Report Acceptance

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
301-TRC-86-004		

4. Title and Subtitle	5. Report Date
FINAL REPORT OF FMVSS NO. 301-75 COMPLIANCE TESTING OF A 1986 MAZDA 323 3 DOOR HATCHBACK NHTSA NO. G5401	JULY 1987
	6. Performing Organization Code: TRC
	8. Performing Organization Report No.: TRC-OVSC-04
7. Author(s): J.C. STULTZ, Project Engineer, TRCO	
9. Performing Organization Name and Address: Transportation Research Center of Ohio, U.S. Route 33, Logan County, East Liberty, Ohio 43319	10. Work Unit No. (TRAIS): TRC-86-DOT-04
	11. Contract or Grant No.: DTNH22-84-R-11149
	13. Type of Report and Period Covered: TEST REPORT JULY 1987
12. Sponsoring Agency Name and Address: U.S. Department of Transportation, National Highway Traffic Safety Administration, Office of Market Incentives (NRM-22), 400 Seventh St., S.W., Washington, DC 20590	14. Sponsoring Agency Code: DOT/NHTSA/RM/OVSC

15. Supplementary Notes

16. Abstract

Vehicle safety compliance test on a 1986 Mazda 323 3-door hatchback, VIN JM1BF2328G0162582, NHTSA NO. G5401, conducted at the Transportation Research Center of Ohio test facility in East Liberty, Ohio, to determine compliance with the performance requirements of Federal Motor Vehicle Safety Standard (FMVSS) No. 301-75, "Fuel System Integrity".

The test mode was a moving barrier rear impact and the test speed was 29.5 mph.

The test date was July 7, 1987 and the ambient temperature was 84°.

The subject test vehicle appears to comply with all the requirements of FMVSS No. 301-75.

17. Key Words	18. Distribution Statement
30 mph Vehicle Safety Compliance Test FMVSS 301-75 Indicant Testing Rear Impact	Available from: National Technical Information Service Springfield, Virginia 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	47	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

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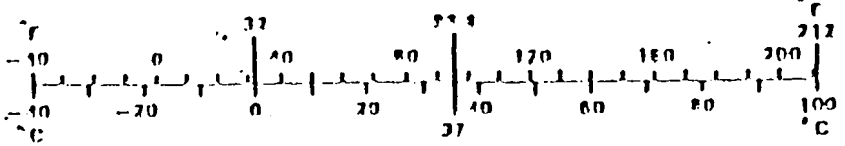
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

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

Approximate Conversions from Metric Measures

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



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SECTION 1.0

PURPOSE AND TEST SUMMARY

The purpose of this 30 mph moving barrier rear impact compliance test was to determine whether the subject vehicle, a 1986 Mazda 323 3-door hatchback, meets the requirements of FMVSS No. 301-75, "Fuel System Integrity". This compliance test was conducted using the requirements found in OVSC Laboratory Test Procedure No. TP-219-02 dated January 9, 1979.

The 1986 Mazda 323 3-door hatchback was equipped with a 98 CID transverse 4 cylinder gasoline engine with 4-speed manual transmission and power brakes. The total test weight of the vehicle including two Part 572 dummies and cargo ballast was 2469 pounds. The test vehicle was impacted in the rear by a 3953 pound moving barrier travelling at 29.5 mph. The test vehicle appeared to comply with the performance requirements of FMVSS No. 301-75 since there was no Stoddard solvent spillage after impact or during the static rollover.

The test vehicle sustained 14.1 inches of static crush.

SECTION 2.0

SUMMARY OF MOVING BARRIER REAR IMPACT TEST NO. G5401

A 1986 Mazda 323 3-door hatchback was subjected to a moving barrier impact and static rollover test in accordance with OVSC Laboratory Test Procedure No. TP-219-02 dated January 9, 1979. The moving barrier impacted the rear of the test vehicle at 29.5 mph. The test date was July 7, 1987 and the ambient temperature was 84°F.

The test vehicle contained two uninstrumented Part 572 anthropomorphic test devices (ATDs). The ATDs were placed in the driver and right front passenger designated seating positions.

The crash event was recorded by two real-time 16mm cameras and seven high-speed 16mm cameras. Camera locations and other pertinent camera information are found in Section 4.0 of this report.

Six channels of data were recorded on one 14 track tape drive. Appendix B contains the vehicle and moving barrier data plots.

CRASH TEST SUMMARY

TEST NO. 870707 PROJECT: G5401

DATE: July 7, 1987 TIME: 1520 TEMP: 84°F

VEHICLE: 1986 Mazda 323 3-door hatchback

TEST WEIGHT (LBS): 2469

IMPACT ANGLE (DEG)*: 180

IMPACT VELOCITY (MPH)**: 29.5

MAX CRUSH (IN) STATIC: 14.1

DUMMIES:	Driver	Passenger
TYPE:	Part 572	Part 572
LOCATION:	Front Left	Front Right
RESTRAINT:	3-pt. Production Seat Belt	3-pt. Production Seat Belt

NUMBER OF DATA CHANNELS: 6

NUMBER OF HIGH SPEED CAMERAS: 7 and 2 real-time cameras

*With respect to tow track centerline.
**Speed trap measurement (± .05% accuracy).

GENERAL COMMENTS

The 1986 Mazda 323 3-door hatchback was equipped with a 98 CID transverse 4 cylinder gasoline engine with 4-speed manual transmission and power brakes. The total test weight with two 50th percentile male dummies, instrumentation and sand ballast was 2469 pounds.

The test vehicle was impacted in the rear by a moving barrier at a velocity of 29.5 mph and appeared to comply with FMVSS No. 301-75, "Fuel System Integrity". There was no Stoddard solvent leakage after impact or during the static rollover.

The vehicle sustained 14.1 inches of static crush.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Mazda Motor Corporation

MAKE/MODEL: Mazda 323 VIN: JM1BF2328G0162582

BODY STYLE: 3-door hatchback MODEL YEAR: 1986

NHTSA NO.: G5401 COLOR: Charcoal

ENGINE DATA: TYPE: Transverse CYLINDERS: 4 DISPLACEMENT: 98 CID

__X__ GAS, ____ DIESEL, ____ TURBOCHARGE

TRANSMISSION DATA: __4__ SPEED, __X__ MANUAL, ____ AUTOMATIC, __X__ FWD ____ RWD

DATE VEHICLE RECEIVED: 5/29/87 ODOMETER READING: 1423

DEALER'S NAME AND ADDRESS: Anaheim Mazda
601 South Anaheim Blvd.
Anaheim, CA 92805

ACCESSORIES:

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

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

VEHICLE MANUFACTURED BY: Mazda Motor Corporation

DATE OF MANUFACTURE: 3/86

GVWR: 3085 LBS.,

GAWR: FRONT 1700 LBS., REAR 1460 LBS.

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

VEHICLE LOAD (UP TO CAPACITY): FRONT 29 psi; REAR 26 psi

RECOMMENDED TIRE SIZE: 155SR13 LOAD RANGE X B, C, D

TIRES ON VEHICLE (MFGR., LINE, SIZE): Bridgestone RD-108 Steel 155SR13

IS SPARE TIRE A "SPACE SAVER": Yes

IS SPARE TIRE STANDARD EQUIPMENT: Yes

VEHICLE CAPACITY: TYPES OF SEATS Front - Bucket
Rear - Bench

TYPE OF FRONT SEAT BACKS Adjustable, Manual

NUMBER OF OCCUPANTS 2 FRONT 2 REAR 4 TOTAL

CARGO LOAD 80 LBS. TOTAL 680 LBS.

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

RIGHT FRONT	633	LBS.	RIGHT REAR	416	LBS.
LEFT FRONT	626	LBS.	LEFT REAR	404	LBS.
TOTAL FRONT WEIGHT	1259	LBS.	(60.6 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	820	LBS.	(39.4 % OF TOTAL VEHICLE WEIGHT)		
TOTAL DELIVERED WEIGHT	2079	LBS.			

CALCULATION FOR TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT

UDW = UNLOADED DELIVERED WEIGHT (2079 LBS)

VCW = VEHICLE CAPACITY WEIGHT (680 LBS)

DSC = DESIGNATED SEATING CAPACITY (4)

RCLW = VCW - 150 (DCS) =

= 680 - 600 = 80 LBS

TARGET TEST WEIGHT = UDW + RCLW + (2 DUMMIES X 164 LBS/DUMMY)

= 2079 + 80 + 328 LBS

TARGET TEST WEIGHT = 2487 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 62 LBS. CARGO:

RIGHT FRONT	737	LBS.	RIGHT REAR	466	LBS.
LEFT FRONT	770	LBS.	LEFT REAR	496	LBS.

TOTAL FRONT WEIGHT 1507 LBS. (61.0 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 962 LBS. (39.0 % OF TOTAL VEHICLE WEIGHT)

TOTAL TEST WEIGHT 2469 LBS. (0.7 % UNDER TARGET WEIGHT)

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 0 LBS.

COMPONENTS REMOVED TO MEET TARGET WEIGHT: None

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 25.1	;LF 25.1	;RR 25.1	;LR 25.1
PRE-TEST ATTITUDE:	RF 24.6	;LF 24.4	;RR 24.7	;LR 24.9
POST-TEST ATTITUDE:	RF 24.5	;LF 24.3	;RR 26.2	;LR 26.1

WHEELBASE: 94.5 INCHES

CG = 36.8 INCHES REARWARD OF FRONT WHEEL CENTERLINE

TEST CONDITIONS

TEST NUMBER: 870707

DATE OF TEST: July 7, 1987 TIME OF TEST: 1520

TYPE OF TEST: Rear Moving Barrier Impact IMPACT ANGLE: 180 °

AMBIENT TEMPERATURE AT IMPACT AREA: 84°F

IMPACT VELOCITY: PRIMARY = 29.5 MPH

(SPECIFIED RANGE = 28.9 TO 29.9 MPH)

VEHICLE REBOUND AND CRUSH (ALL DIMENSIONS IN INCHES)

OVERALL LENGTH OF TEST VEHICLE:	PRE-TEST:	R 159.5	;C 162.2	;L 159.5
	POST-TEST:	R 147.0	;C 148.5	;L 145.4
	TOTAL CRUSH:	R 12.5	;C 13.7	;L 14.1

SECTION 3.0

SUMMARY OF RESULTS FOR FMVSS 301-75, "Fuel System Integrity"

SUMMARY OF FMVSS NO. 301-75 DATA

PRE-IMPACT DATA

MAKE/MODEL: Mazda 323

BODY STYLE: 3-door hatchback MODEL YEAR: 1986

NHTSA NO.: G5401 COLOR: Charcoal

DATA FROM CERTIFICATION LABEL

VEHICLE MANUFACTURER: Mazda Motor Corporation

DATE OF MANUFACTURE: 3/86 VIN: JM1BF2328G0162582

GVWR: 3085 LBS., GAWR: FRONT 1700 LBS., REAR 1460 LBS.

POST-IMPACT DATA

TYPE OF TEST: Rear Moving Barrier Impact

DATE OF TEST: 7/7/87 TIME: 1520 TEMP: 84°F

REQUIRED IMPACT VELOCITY RANGE: 28.9 MPH TO 29.9 MPH

IMPACT VELOCITY: PRIMARY = 29.5 MPH

TEST WEIGHT = 2469 LBS., STATIC CRUSH MAX. = 14.1 IN.

FUEL SYSTEM DATA

TEST FLUID TYPE: PURPLE STODDARD SOLVENT #2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY*: 11.9 GALLONS (FURNISHED BY CTM)

TEST VOLUME: 11.1 GALLONS (92-94% OF USEABLE)

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 11.9 GALLONS

DETAILS OF FUEL SYSTEM: Tank centrally located beneath rear seat, fuel filler cap located behind left rear wheel housing, fuel filler neck enters tank at rear.

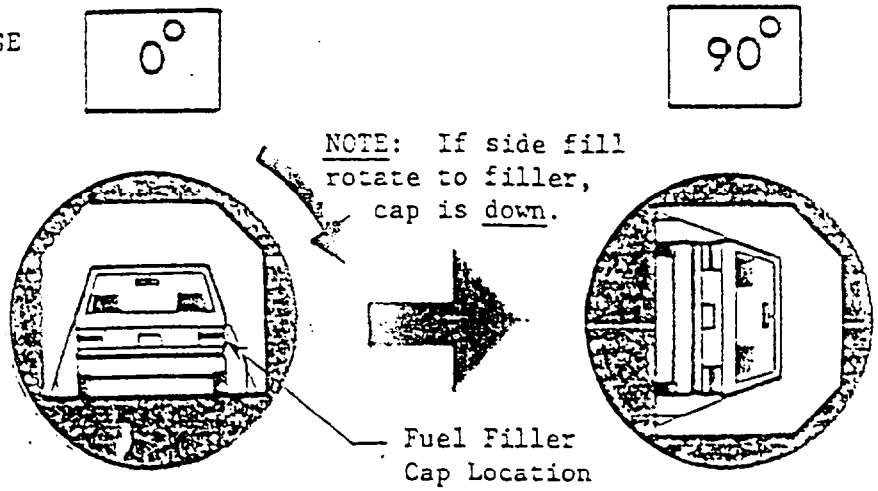
ELECTRIC FUEL PUMP: Yes FUEL INJECTION: No

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

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

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE



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

Time req. for machine to rotate 90° = 2 minutes, 00 seconds

FMVSS 301-75 Position Hold Time = 5 minutes, 00 seconds

TOTAL - - - - - - - - = 7 minutes, 00 seconds

Next Whole Minute Interval - - - - = 7 minutes

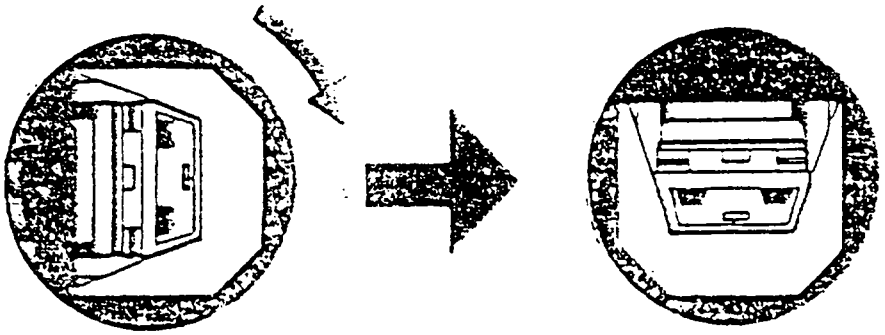
FMVSS 301-75 REQUIREMENTS

	First 5 Minutes FROM ONSET OF ROTATION	6th Minute	7th Minute
Maximum Allowable Solvent Spillage - -	5 oz.	1 oz.	1 oz.
0 to 90° (filler cap down) - - - - -	0 oz.	0 oz.	0 oz.

SOLVENT SPILLAGE LOCATION(S)

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE 90° 180°



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

Time req. for machine to rotate 90° = 2 minutes, 00 seconds

FMVSS 301-75 Position Hold Time = 5 minutes, 00 seconds

TOTAL - - - - - - - - = 7 minutes, 00 seconds

Next Whole Minute Interval - - - - = 14 minutes

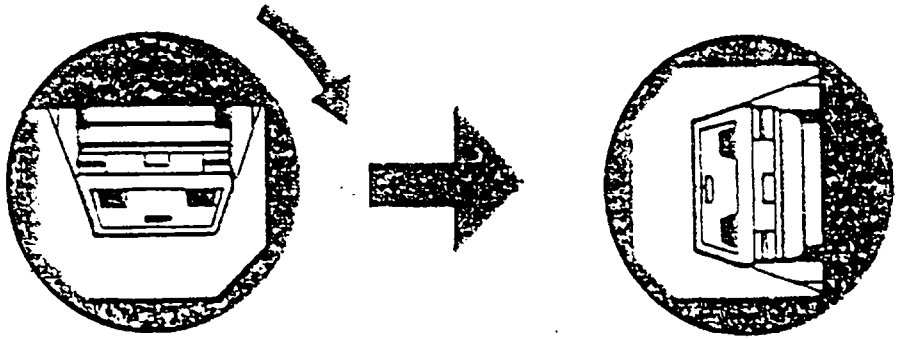
FMVSS 301-75 REQUIREMENTS

	First 5 Minutes FROM ONSET OF ROTATION	6th Minute	7th Minute
Maximum Allowable Solvent Spillage -	5 oz.	1 oz.	1 oz.
90° to 180° - - - - - - - - - - - - - - - -	0 oz.	0 oz.	0 oz.

SOLVENT SPILLAGE LOCATION(S)

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE 180° 270°



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

Time req. for machine to rotate 90° = 2 minutes, 00 seconds

FMVSS 301-75 Position Hold Time = 5 minutes, 00 seconds

TOTAL - - - - - - - - = 7 minutes, 00 seconds

Next Whole Minute Interval - - - - = 21 minutes

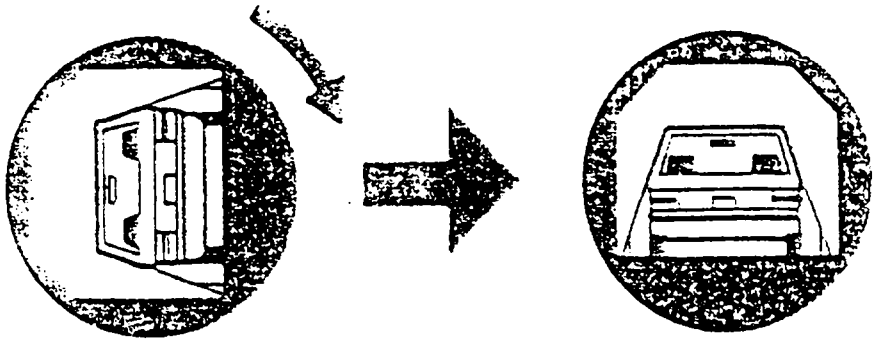
FMVSS 301-75 REQUIREMENTS

	First 5 Minutes FROM ONSET OF ROTATION	6th Minute	7th Minute
Maximum Allowable Solvent Spillage - -	5 oz.	1 oz.	1 oz.
180° to 270° - - - - - - - - - - - - - -	0 oz.	0 oz.	0 oz.

SOLVENT SPILLAGE LOCATION(S)

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE 270° 360°



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

Time req. for machine to rotate 90° = 2 minutes, 00 seconds

FMVSS 301-75 Position Hold Time = 5 minutes, 00 seconds

TOTAL - - - - - - - - = 7 minutes, 00 seconds

Next Whole Minute Interval - - - - = 28 minutes

FMVSS 301-75 REQUIREMENTS

	First 5 Minutes FROM ONSET OF ROTATION	6th Minute	7th Minute
Maximum Allowable Solvent Spillage - -	5 oz.	1 oz.	1 oz.
270° to 360°- - - - - - - - - - - - - -	0 oz.	0 oz.	0 oz.

SOLVENT SPILLAGE LOCATION(S)

_____

_____

_____

_____

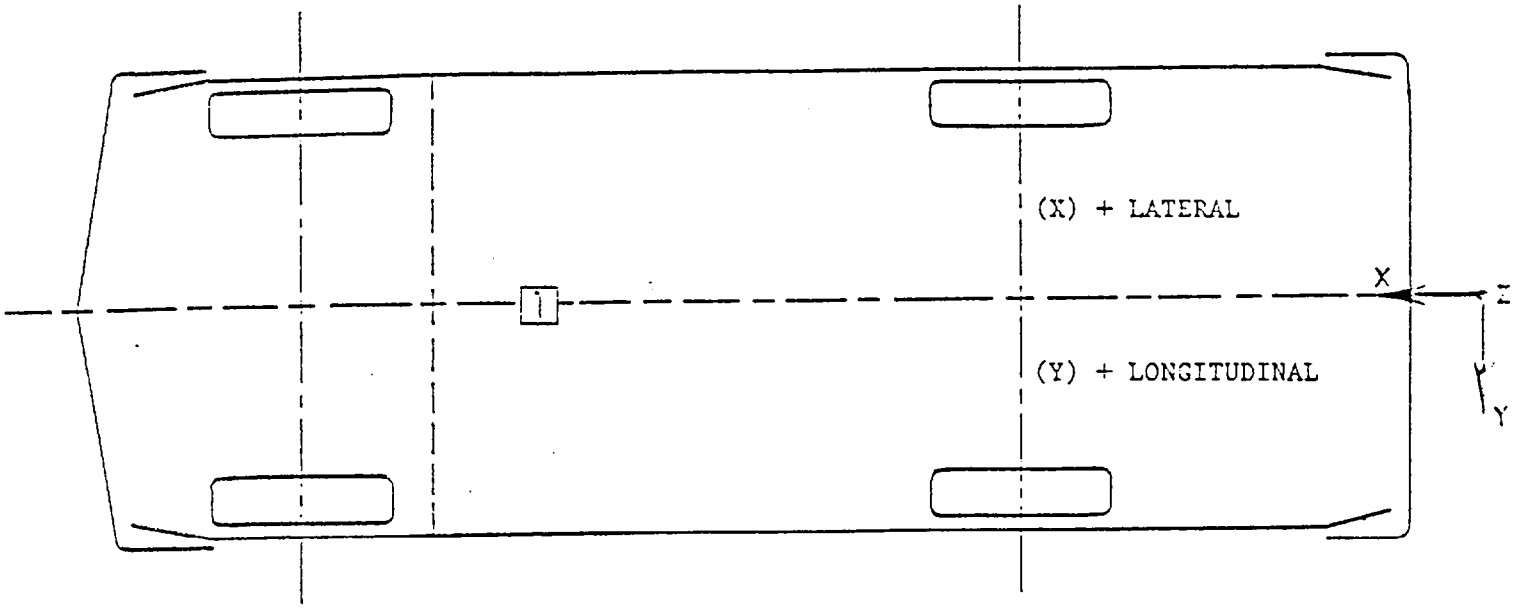
VEHICLE STATIC ROLLOVER DATA SUMMARY:

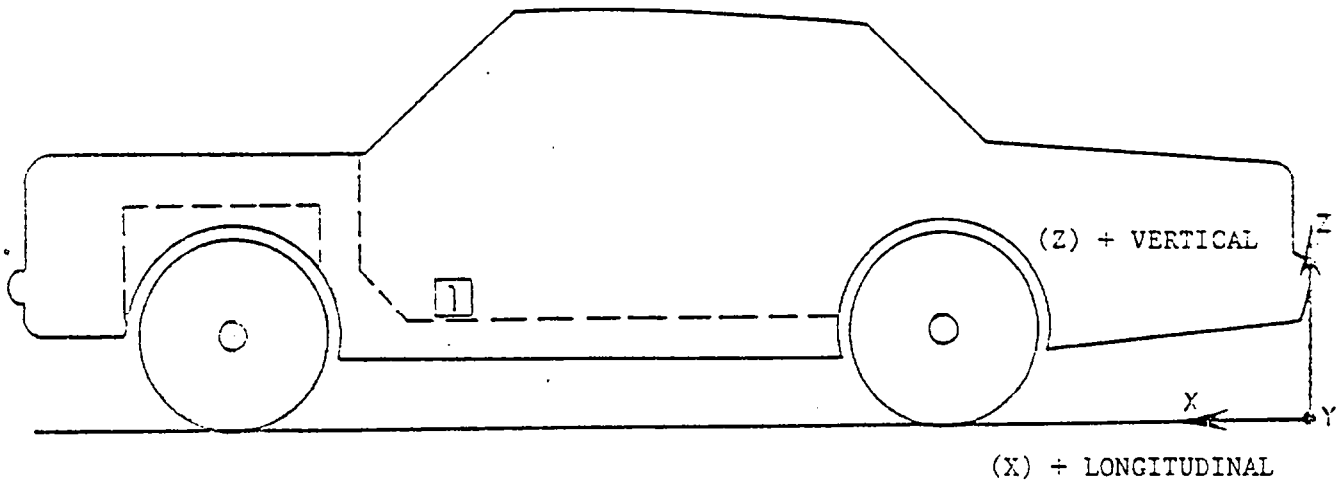
MAXIMUM ALLOWABLE SOLVENT SPILLAGE	FIRST 5 MINUTES FROM ONSET OF ROTATION 5 OZ	6TH MIN. 1 OZ	7TH MIN. 1 OZ
0 TO 90° (FILLER CAP DOWN) - - - - - - -	0	0	0
90 TO 180° - - - - - - - - - - - - - - -	0	0	0
180 to 270° - - - - - - - - - - - - - - -	0	0	0
270 to 360° - - - - - - - - - - - - - - -	0	0	0

SECTION 4.0

VEHICLE, MOVING BARRIER AND CAMERA INFORMATION

VEHICLE ACCELEROMETER LOCATIONS





VEHICLE AND MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION** MAX (g)	POSITIVE DIRECTION** TIME (msec)	NEGATIVE DIRECTION** MAX (g)	NEGATIVE DIRECTION** TIME (msec)
	VEHICLE CENTER OF GRAVITY	73.9	0.0	13.8				
	LONGITUDINAL	V = 20.5 mph @ 111.6 msec			22.2	6.5	1.7	161.8
	LATERAL				6.7	33.4	3.7	15.5
	VERTICAL				11.4	40.1	13.8	20.8
	RESULTANT					23.0 g @	6.6 msec	
	MOVING BARRIER CENTER OF GRAVITY	77.2	0.0	11.8				
	LONGITUDINAL	V = -13.1 mph @ 111.6 msec			1.5	108.8	13.4	9.6
	LATERAL				4.5	37.6	3.9	45.0
	VERTICAL				7.0	87.1	5.5	149.4
	RESULTANT					13.6 g @	9.6 msec	

* X + Forward from rear bumper of vehicle or rear edge of moving barrier
  Y + Left of vehicle or moving barrier centerline
  Z + Up from Ground

** Longitudinal: Forward
   Lateral: Leftward
   Vertical: Upward

All measurements in inches

ACCIDENT INVESTIGATION DIVISION DATA

FOR 30 MPH REAR MOVING BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Mazda 323 2-Door Coupe

VEH. NHTSA NO.: G5401 ; VIN: JM1BF2328G0162582

MODEL YEAR: 1986 ; BUILD DATE: 3/86 ; TEST DATE 7/7/87

VEH. SIZE CATEGORY: Compact ; TEST WEIGHT: 2469

VEH. WHEELBASE; 94.5

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE: 06BDAW2

R (Rear)

CRUSH DEPTH DIMENSIONS:

C1 = 14.1 inches

C2 = 13.8 inches

C3 = 14.0 inches

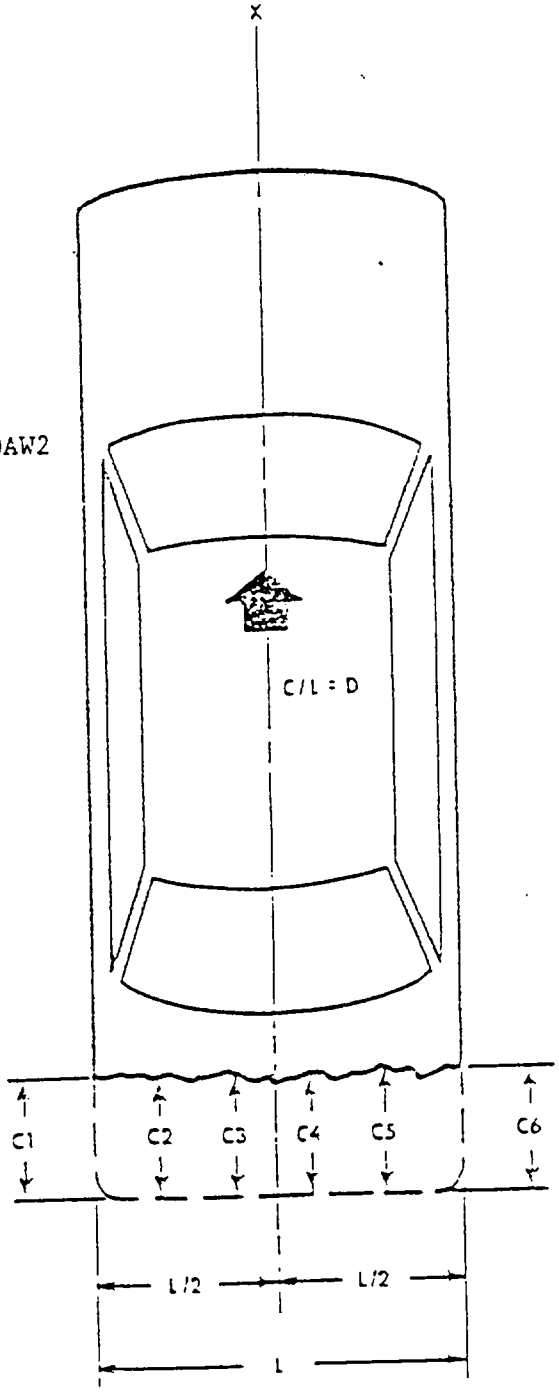
C4 = 13.9 inches

C5 = 13.4 inches

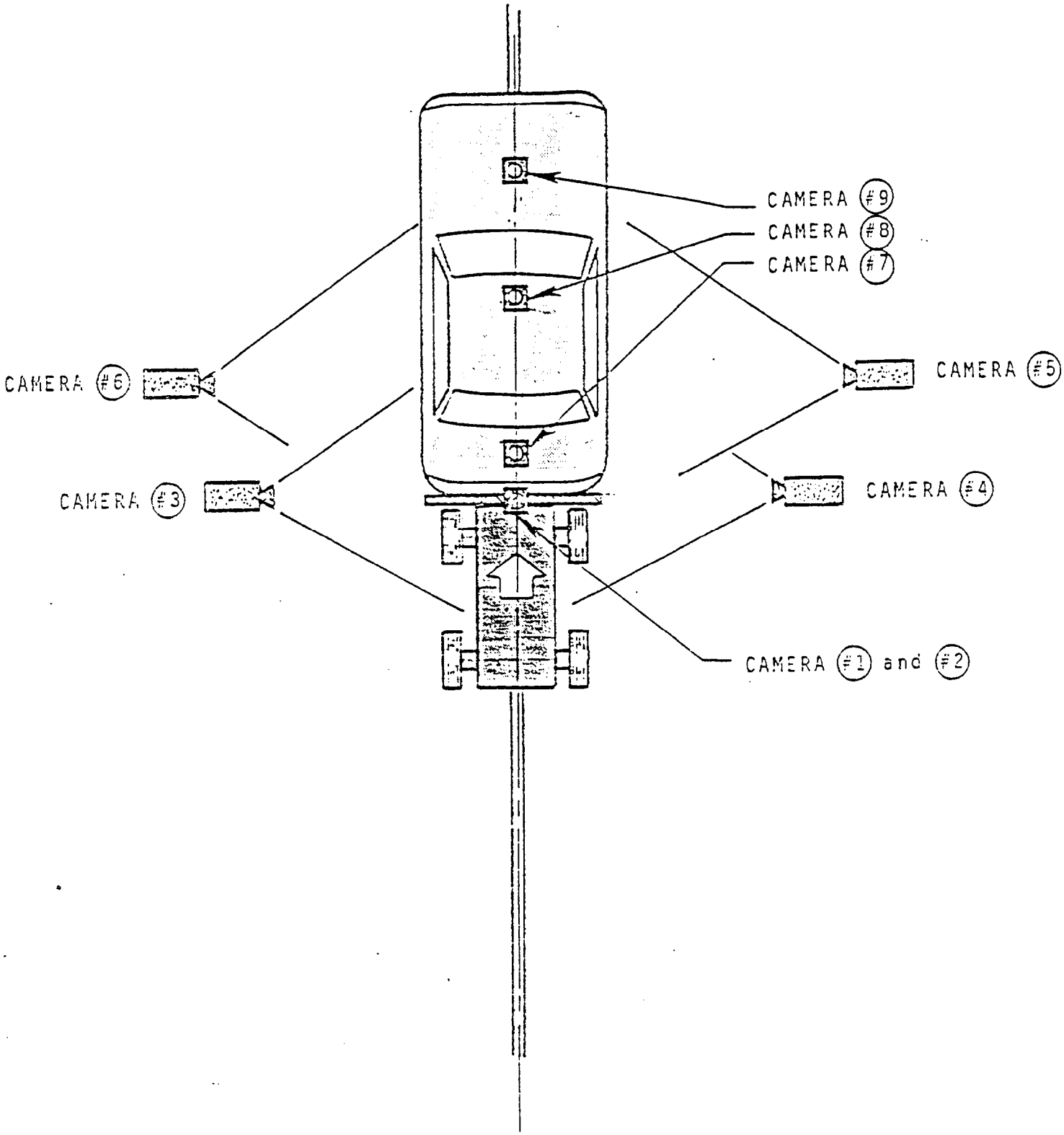
C6 = 12.5 inches

MIDPOINT OF DAMAGE: D = Vehicle Centerline (Longitudinal)

LENGTH OF DAMAGED REGION: L = 58.8. inches



CAMERA POSITIONS



HIGH SPEED CAMERA LOCATIONS

TEST NO.: G5401 | VEHICLE: Mazda 323 3-door Hatchback

CAMERA NO.	VIEW	CAMERA POSITIONS (IN)* X	Y	Z	ANGLE ** (DEG)	FILM PLANE TO HEAD TARGET	LENS (MM)	SPEED (FPS)
1	Onboard Moving Barrier	DNA	DNA	DNA	-90	DNA	13	998
2	Overhead Overall	41.0	11.0	284.0	-90	DNA	8	495
3	Left Overall	79.2	349.6	32.5	0	DNA	13	498
4	Right Overall	80.5	-375.0	32.0	0	DNA	25	493
5	Panning Real Time	DNA	DNA	DNA	DNA	DNA	25	24
6	Real Time Fuel Collection	DNA	DNA	DNA	DNA	DNA	16-25	24
7	Pit Rear Position	15.0	1.5	-112.0	90	DNA	17	800
8	Pit Mid Position	65.2	1.5	-112.0	90	DNA	25	798
9	Pit Front Position	114.7	1.5	-112.0	90	DNA	17	798

* +X = Film plane forward of impact
+Y = Film plane to left of monorail centerline
+Z = Film plane above ground
** Referenced to horizontal plane

APPENDIX A

PHOTOGRAPHS

1. PRE-TEST FRONT VIEW
2. POST-TEST FRONT VIEW
3. PRE-TEST RIGHT SIDE VIEW
4. POST-TEST RIGHT SIDE VIEW
5. PRE-TEST REAR VIEW
6. POST-TEST REAR VIEW
7. PRE-TEST LEFT SIDE VIEW
8. POST-TEST LEFT SIDE VIEW
9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW
10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW
11. PRE-TEST LEFT REAR THREE-QUARTER VIEW
12. POST-TEST LEFT REAR THREE-QUARTER VIEW
13. POST-TEST TOP VIEW (VEHICLE ON ROLLOVER MACHINE)
14. PRE-TEST FRONT UNDERBODY VIEW
15. POST-TEST FRONT UNDERBODY VIEW
16. PRE-TEST REAR UNDERBODY VIEW
17. POST-TEST REAR UNDERBODY VIEW
18. PRE-TEST FILLER NECK VIEW
19. POST-TEST FILLER NECK VIEW

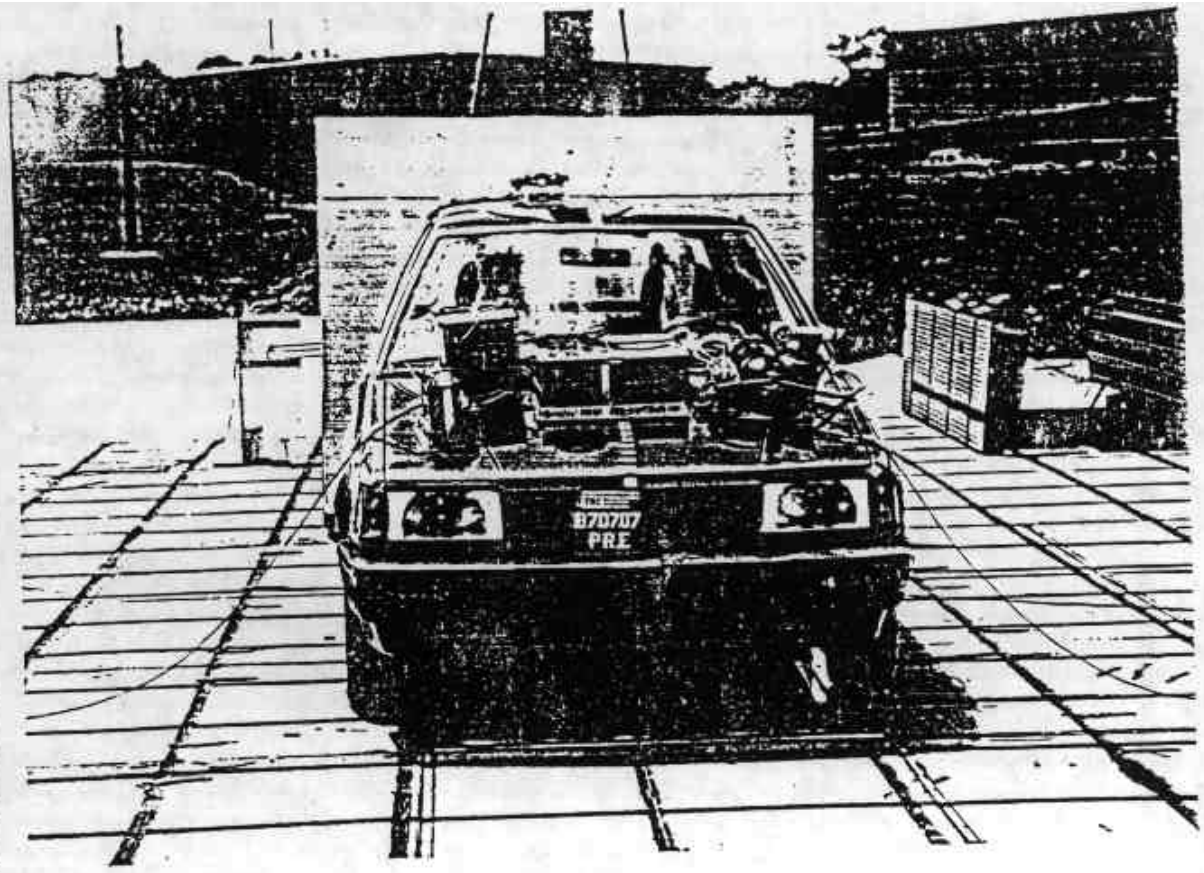


Figure 1. PRE-TEST FRONT VIEW

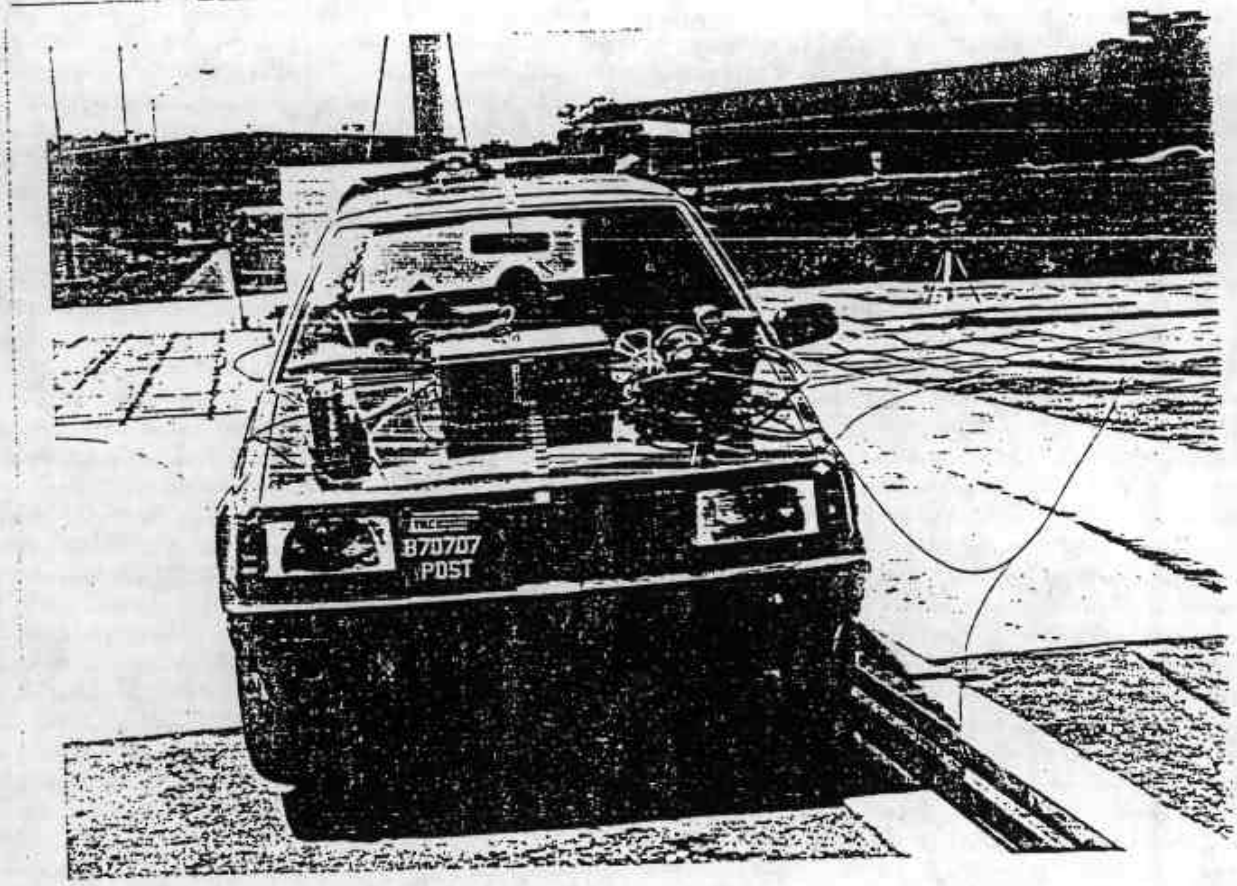


Figure 2. POST-TEST FRONT VIEW

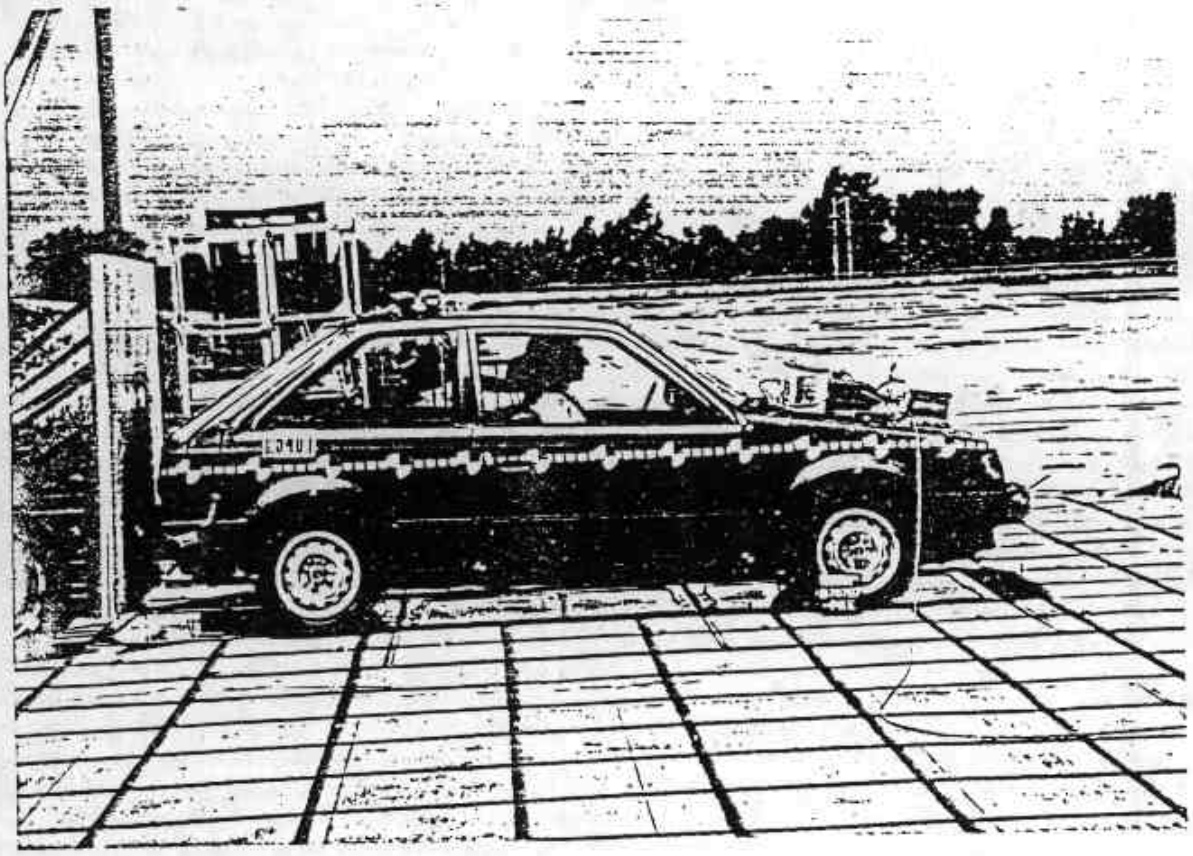


Figure 3. PRE-TEST RIGHT SIDE VIEW

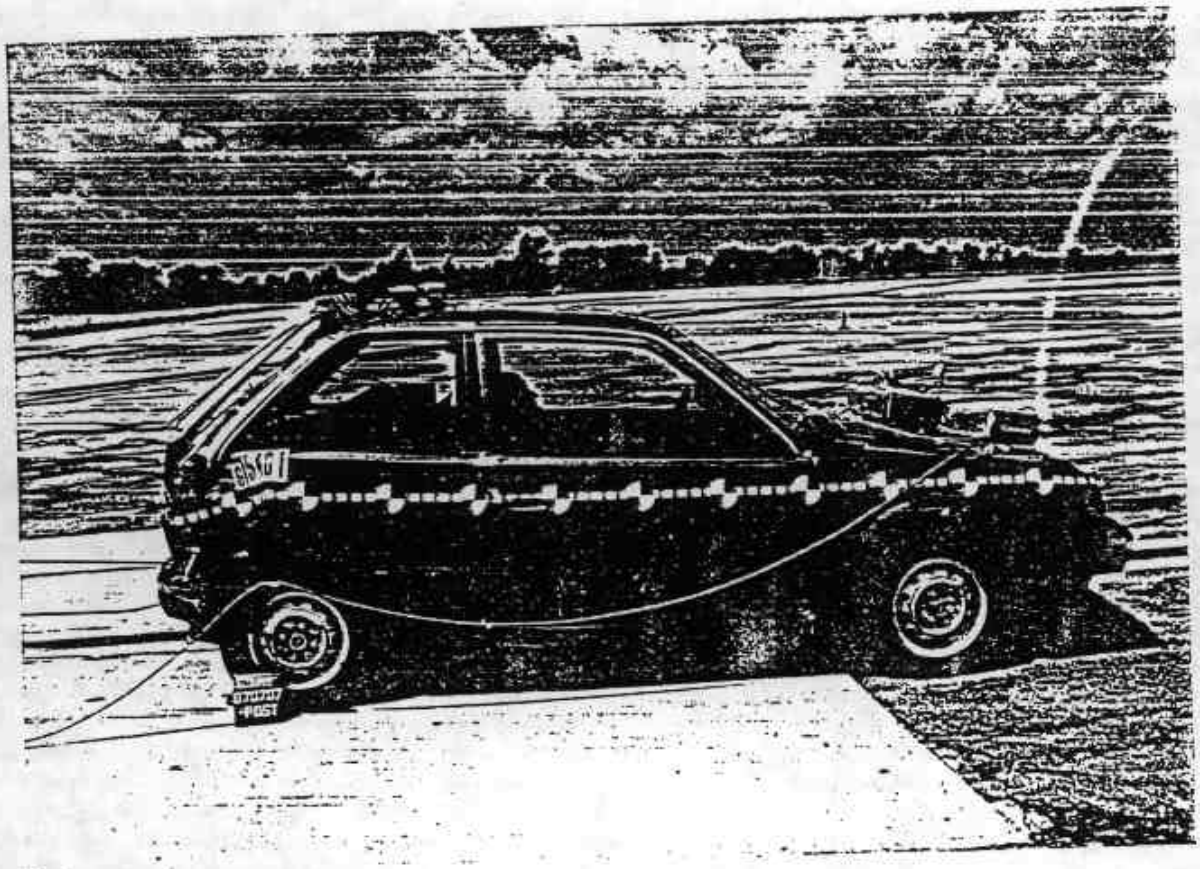


Figure 4. POST-TEST RIGHT SIDE VIEW

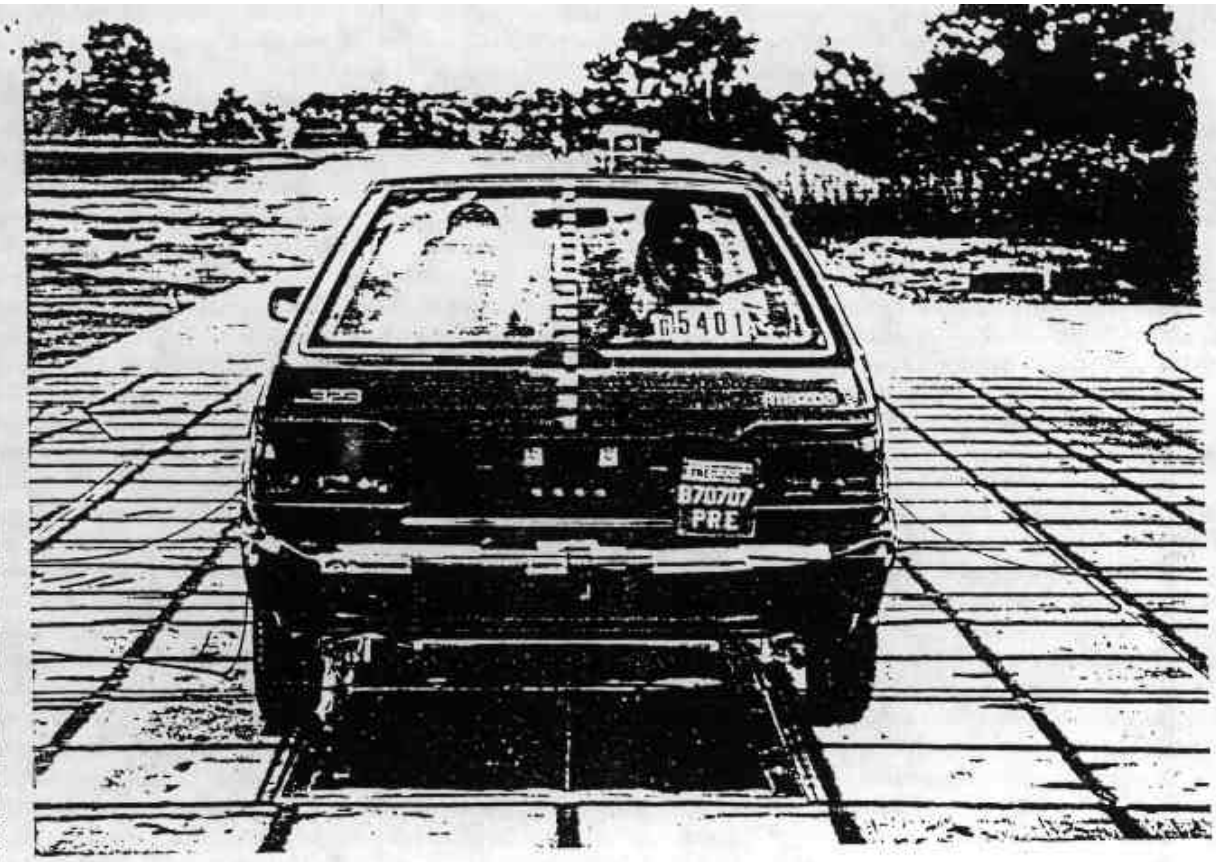


Figure 5. PRE-TEST REAR VIEW

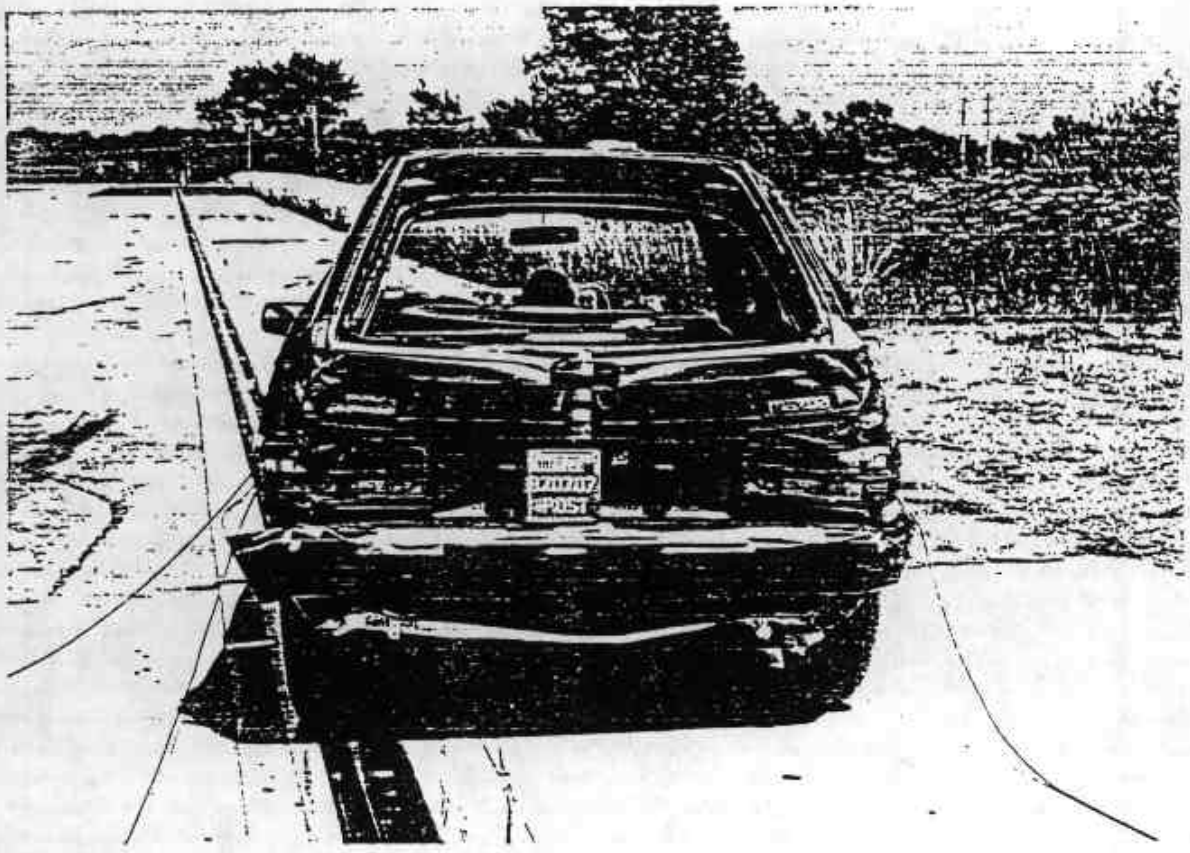


Figure 6. POST-TEST REAR VIEW

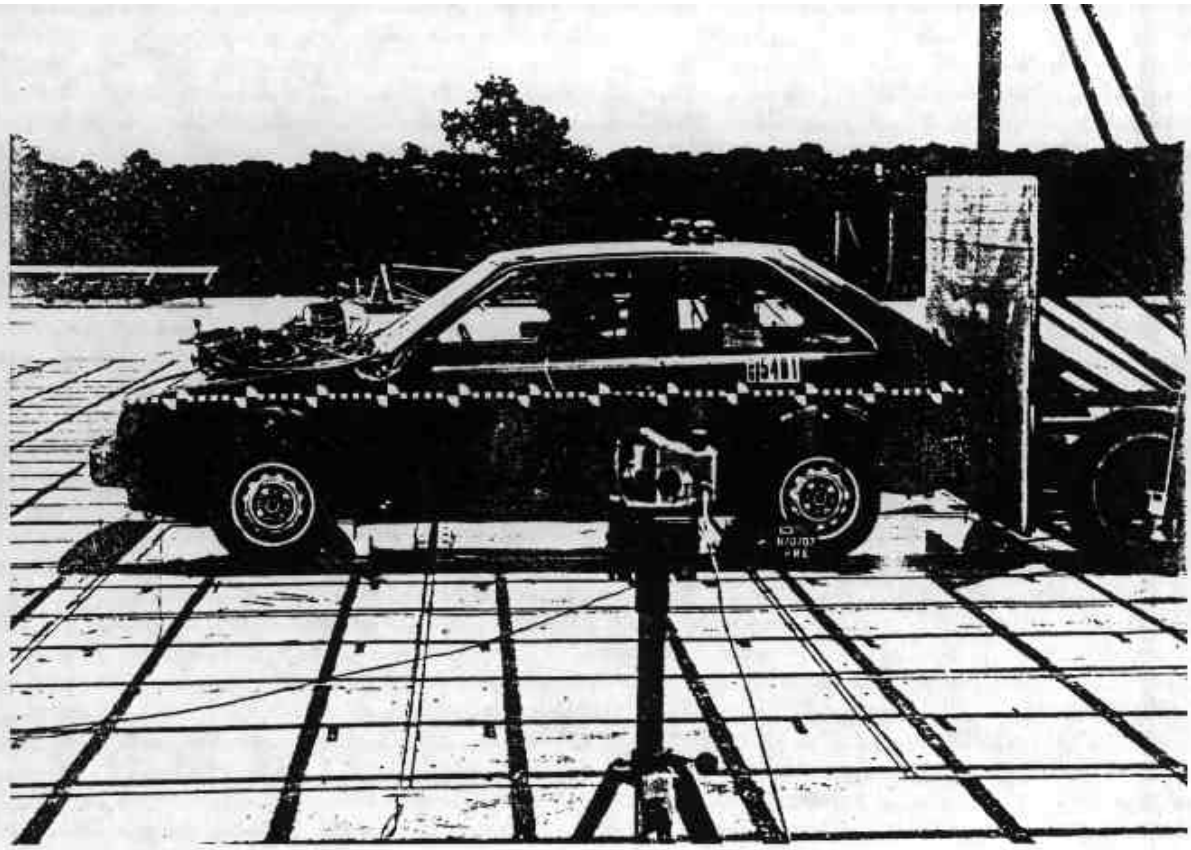


Figure 7. PRE-TEST LEFT SIDE VIEW

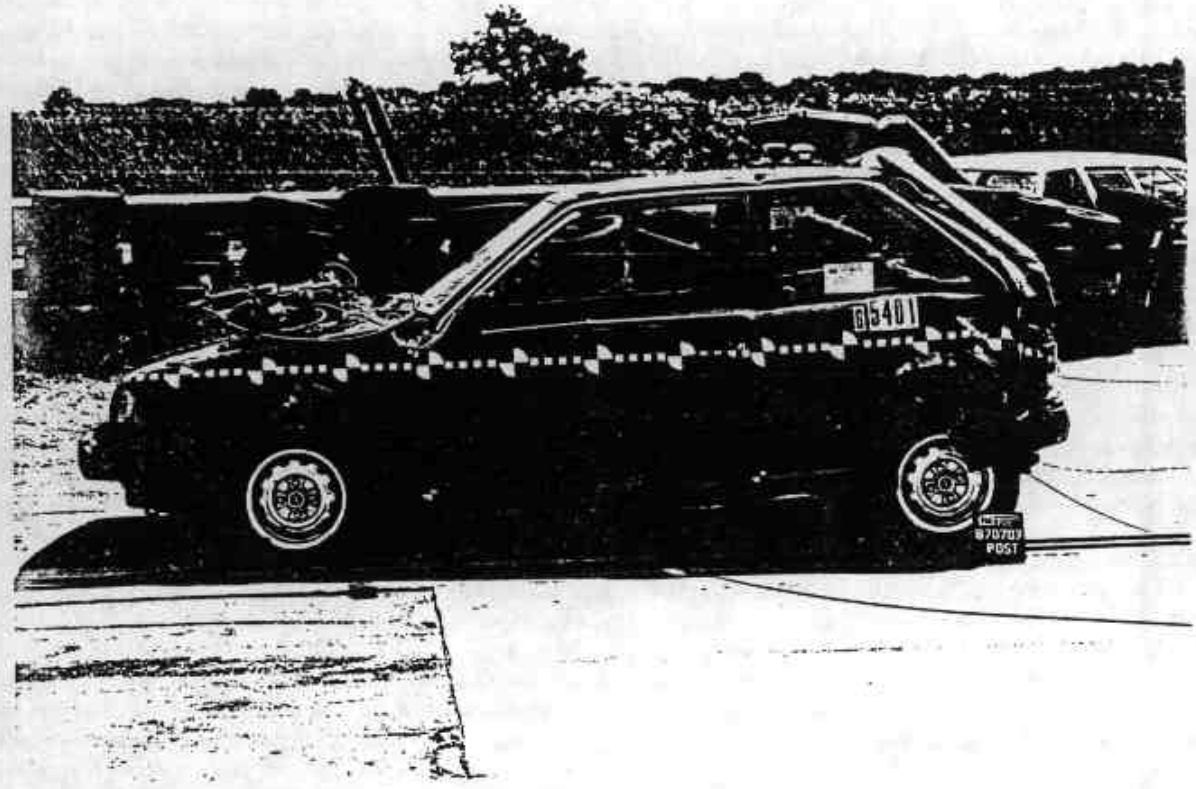


Figure 8. POST-TEST LEFT SIDE VIEW

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

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

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

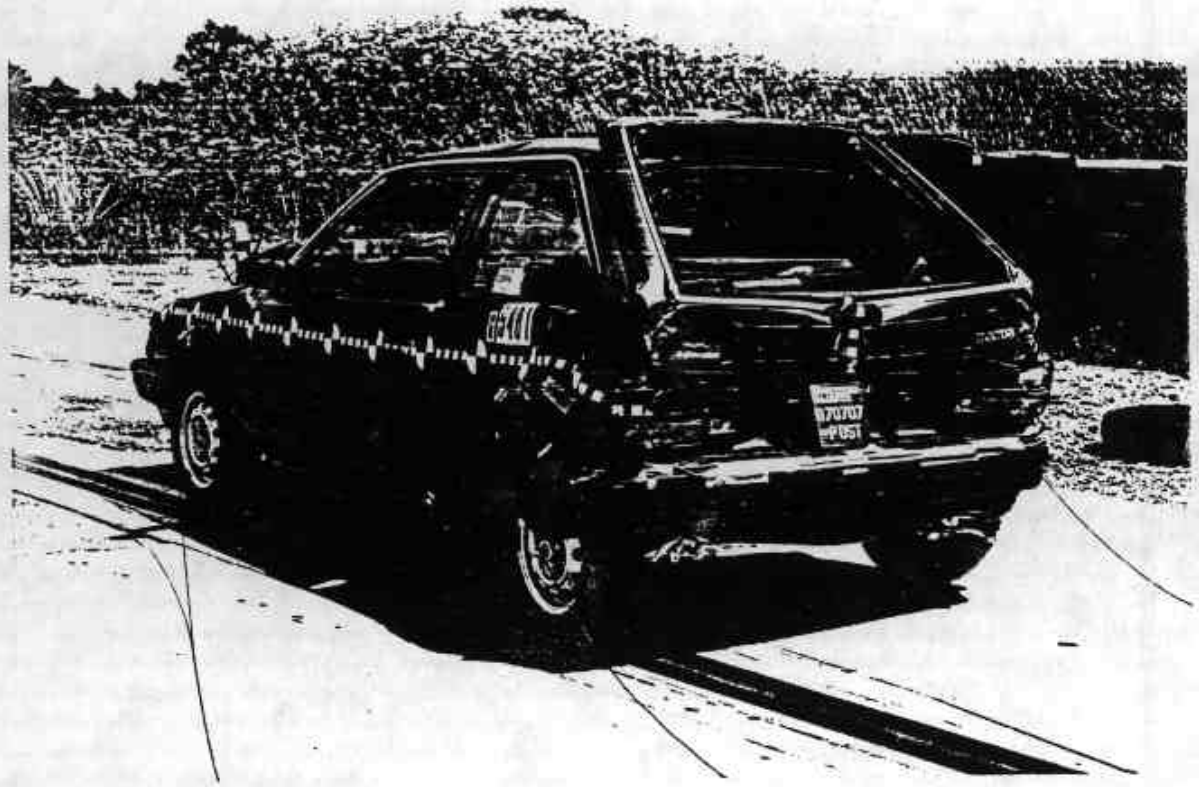


Figure 12. POST-TEST LEFT REAR THREE-QUARTER VIEW

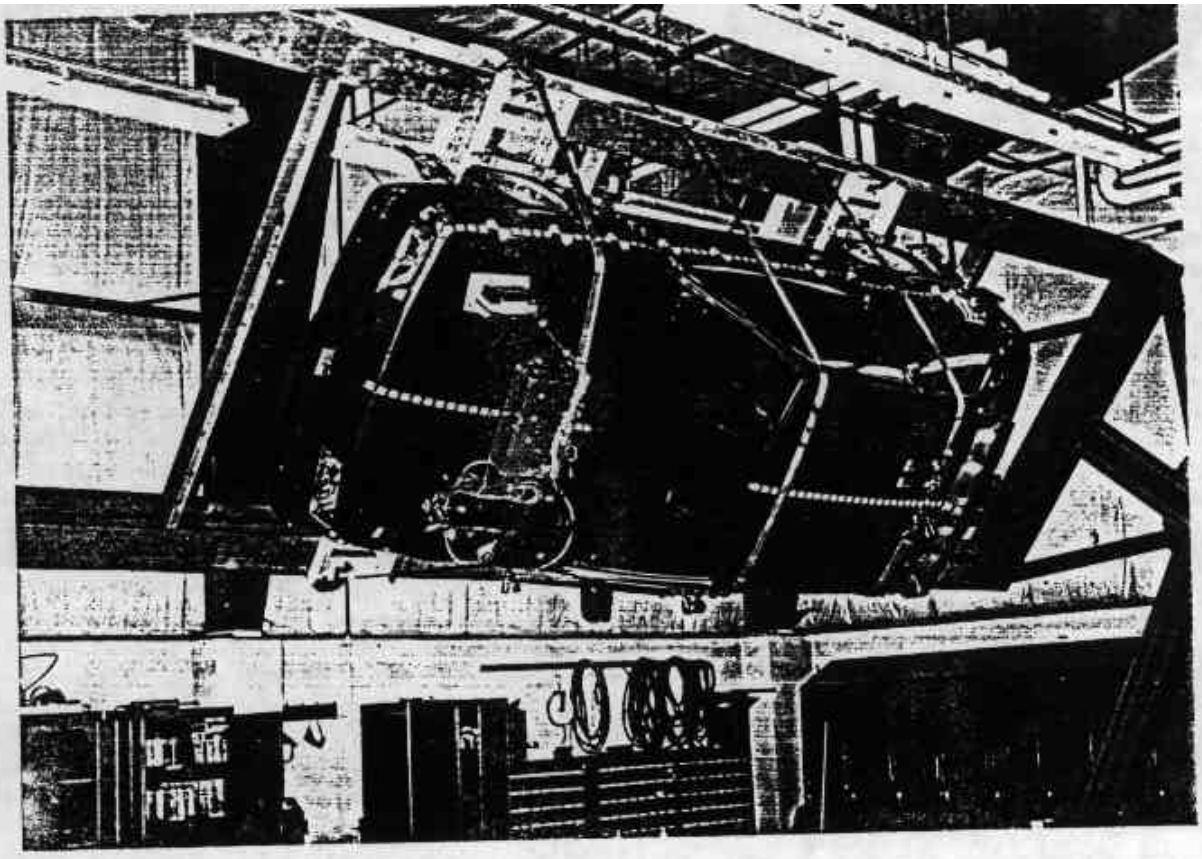


Figure 13. POST-TEST TOP VIEW (VEHICLE ON ROLLOVER MACHINE)

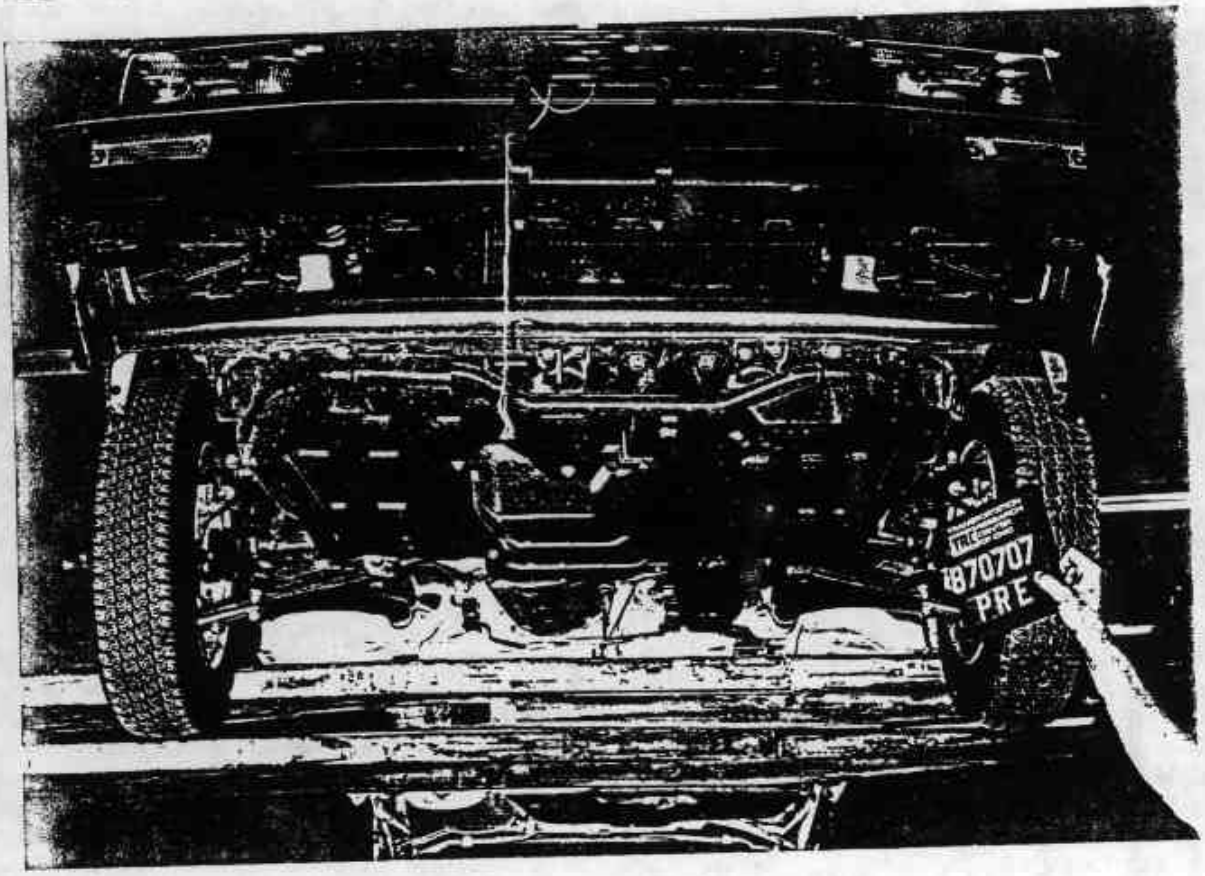


Figure 14. PRE-TEST FRONT UNDERBODY VIEW

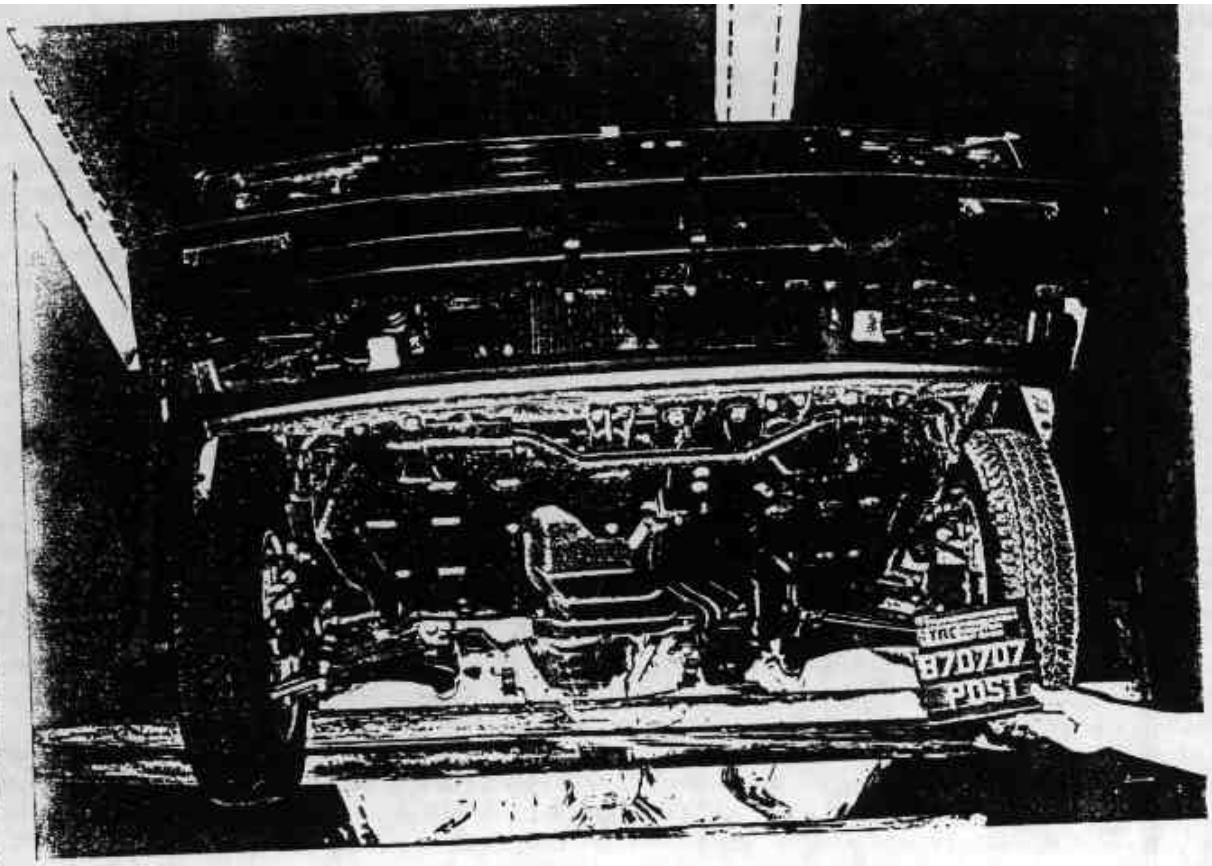


Figure 15. POST-TEST FRONT UNDERBODY VIEW

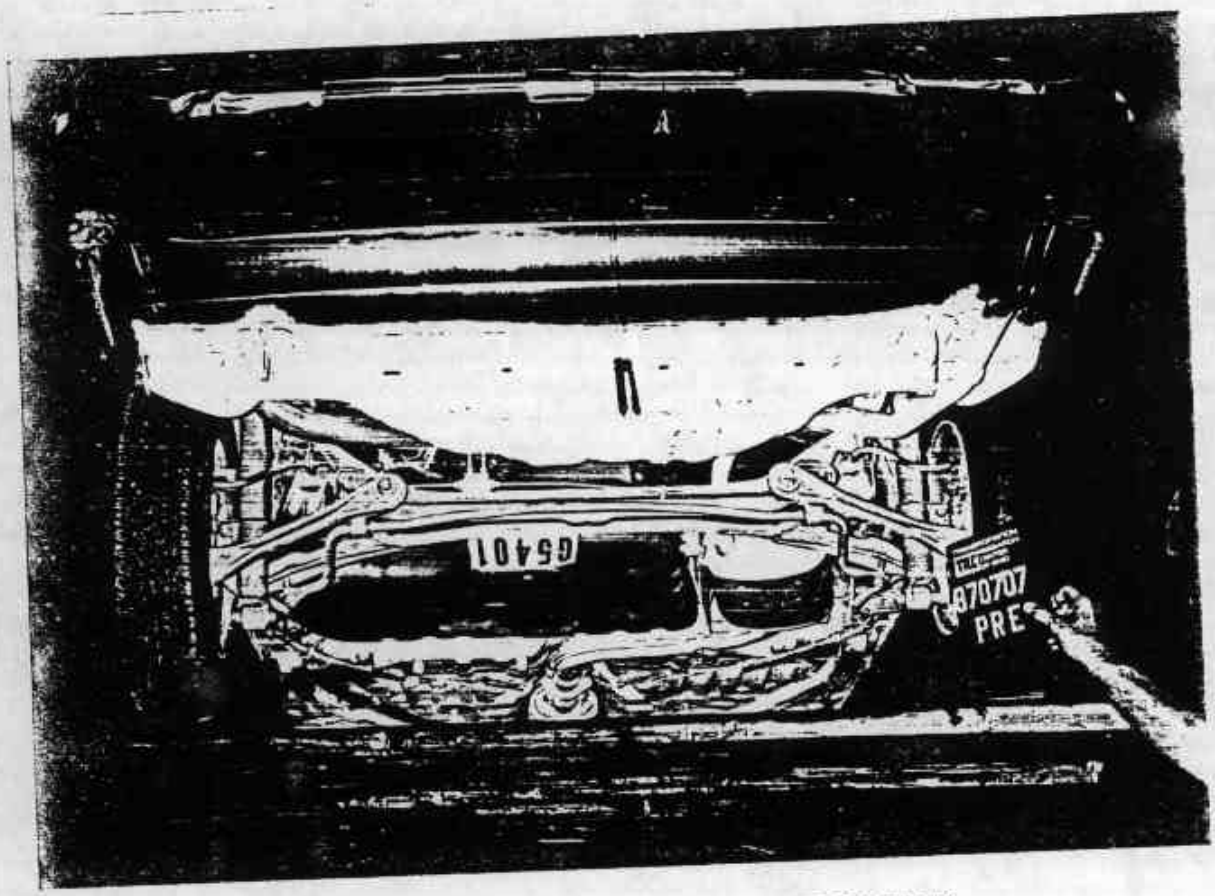


Figure 16. PRE-TEST REAR UNDERBODY VIEW

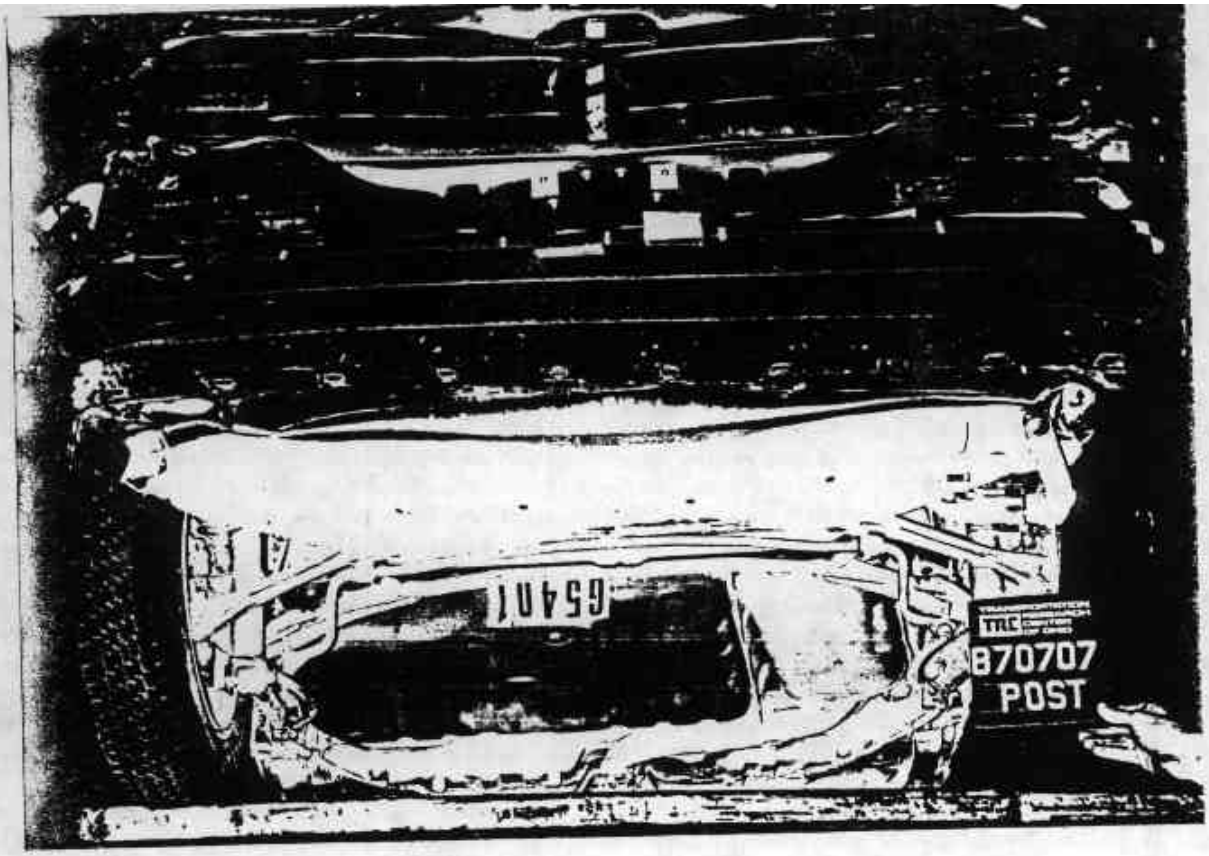


Figure 17. POST-TEST REAR UNDERBODY VIEW

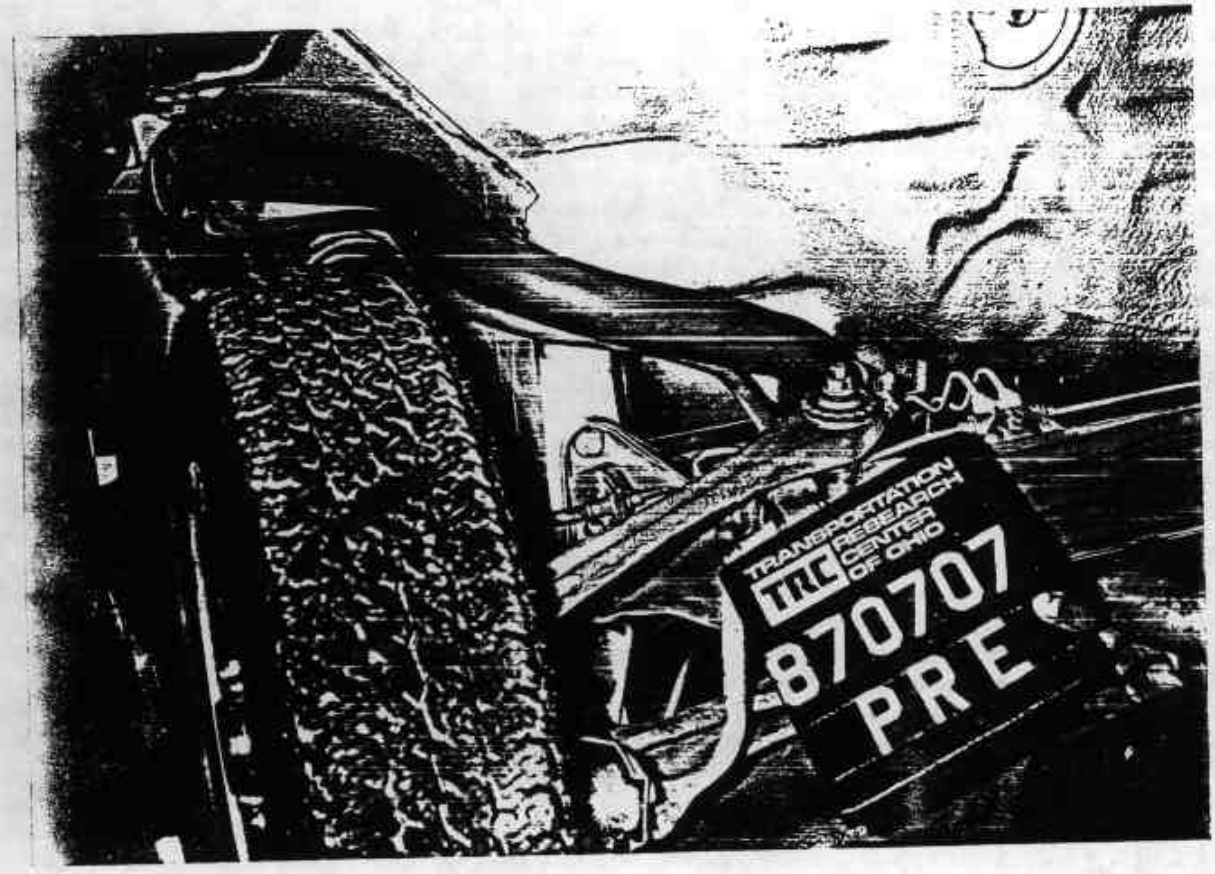


Figure 18. PRE-TEST FILLER NECK VIEW

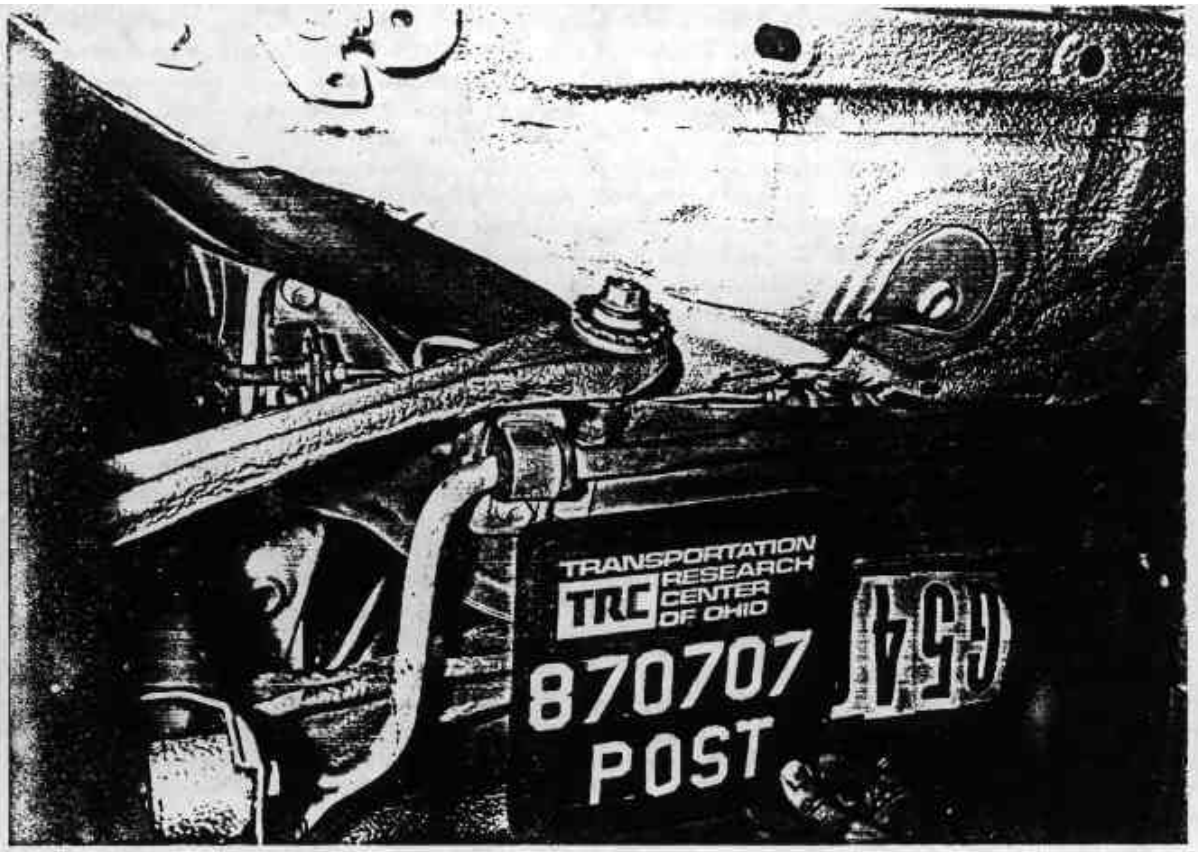
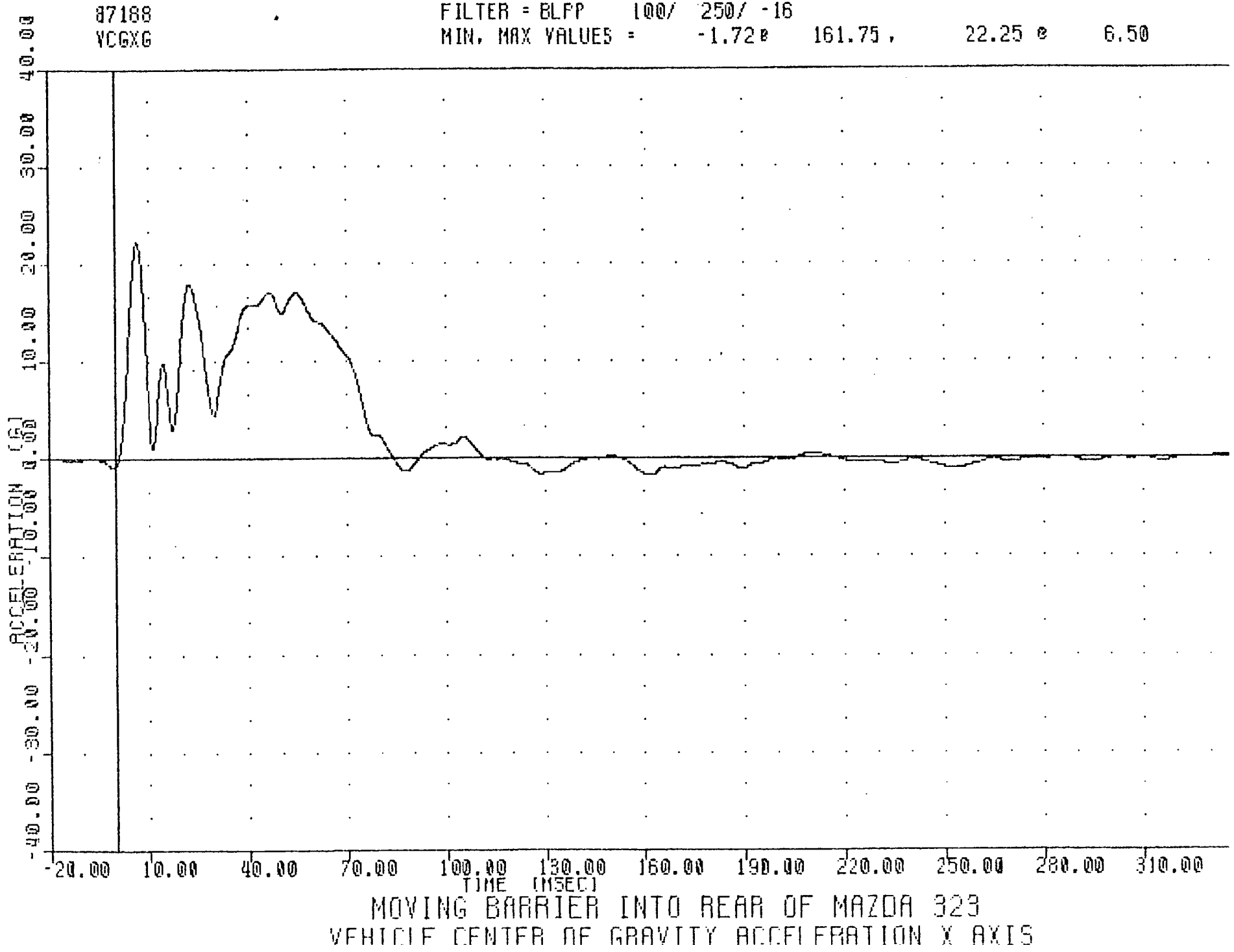


Figure 19. POST-TEST FILLER NECK VIEW

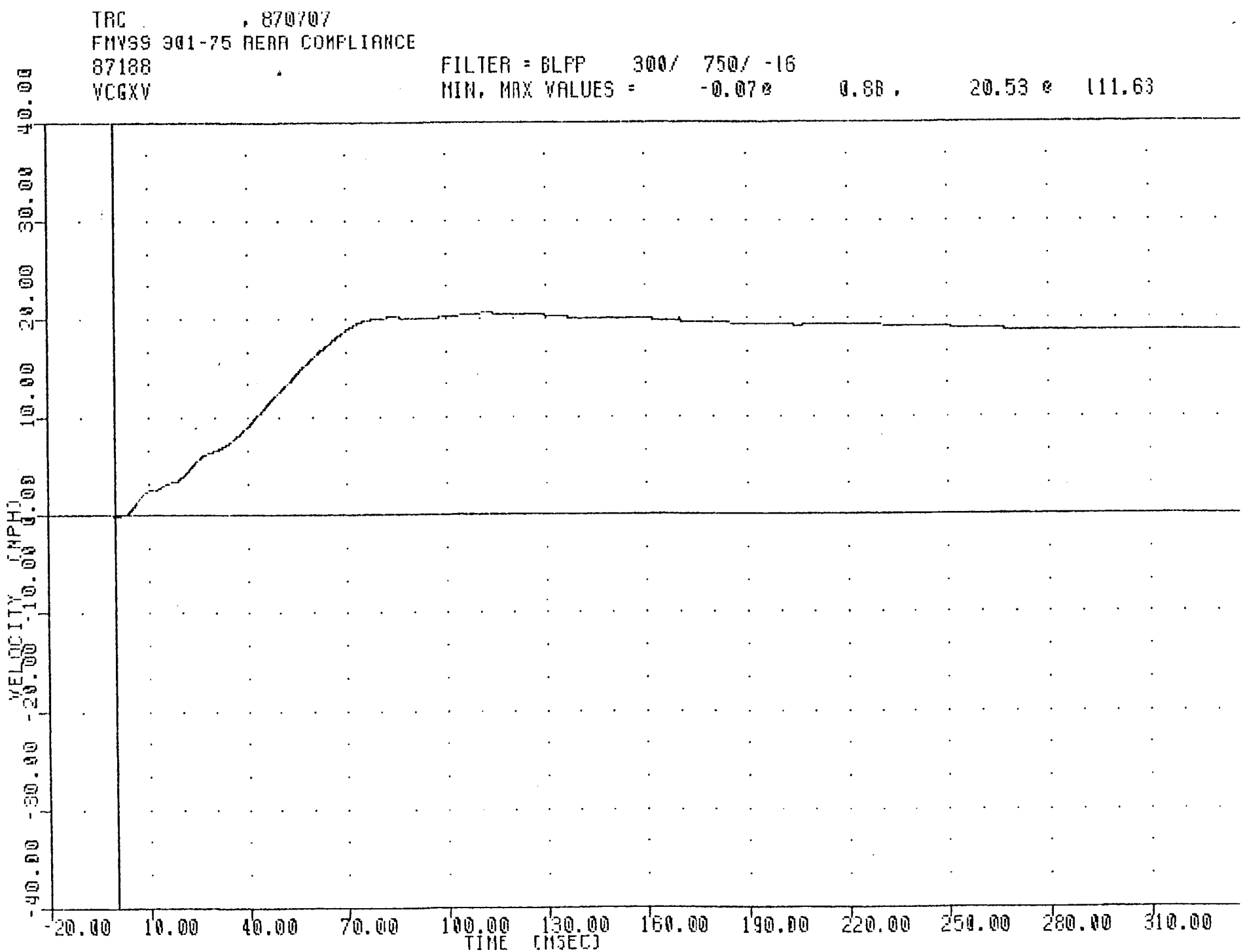
APPENDIX B

DATA PLOTS

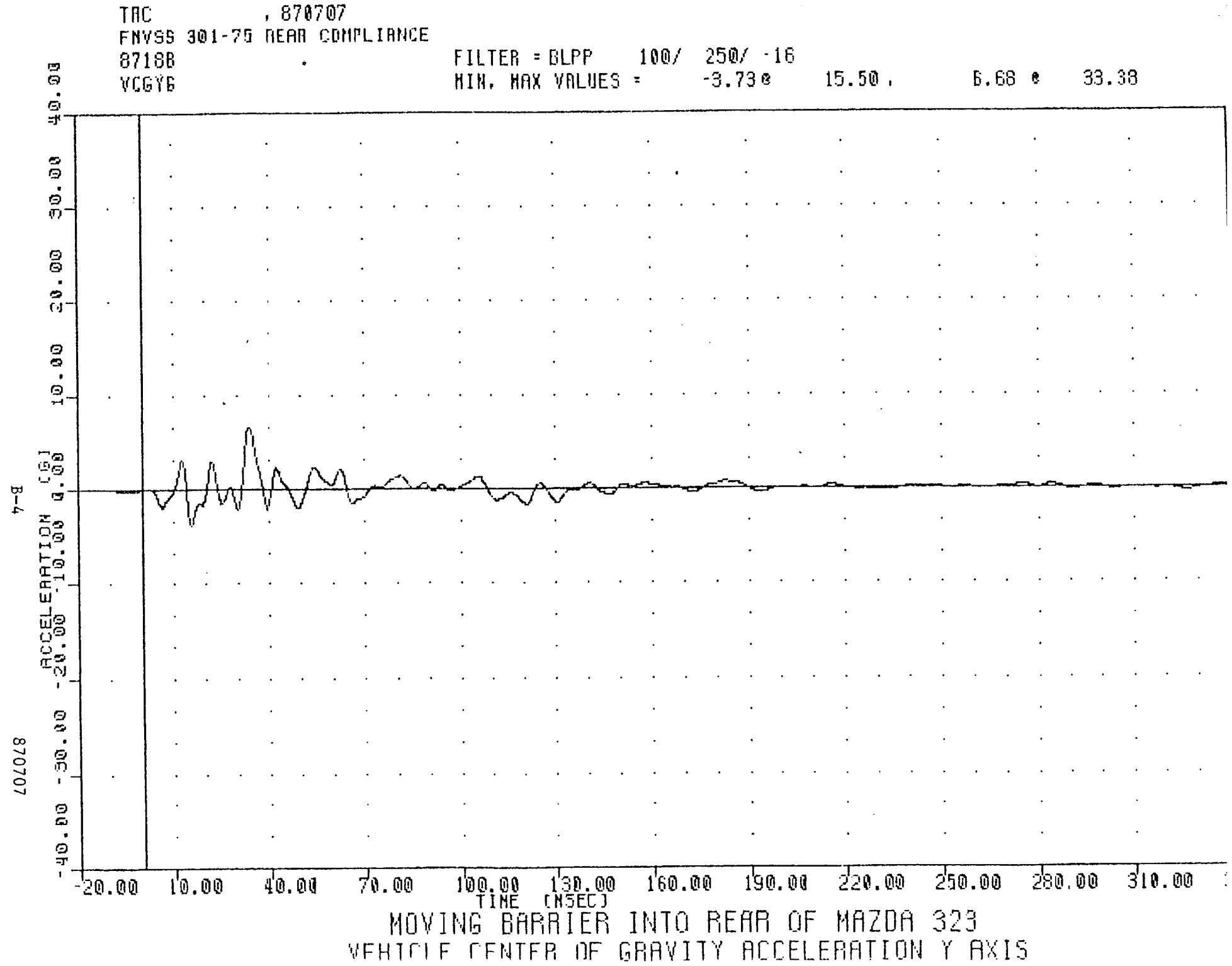


MOVING BARRIER INTO REAR OF MAZDA 323

VEHICLE CENTER OF GRAVITY ACCELERATION X AXIS

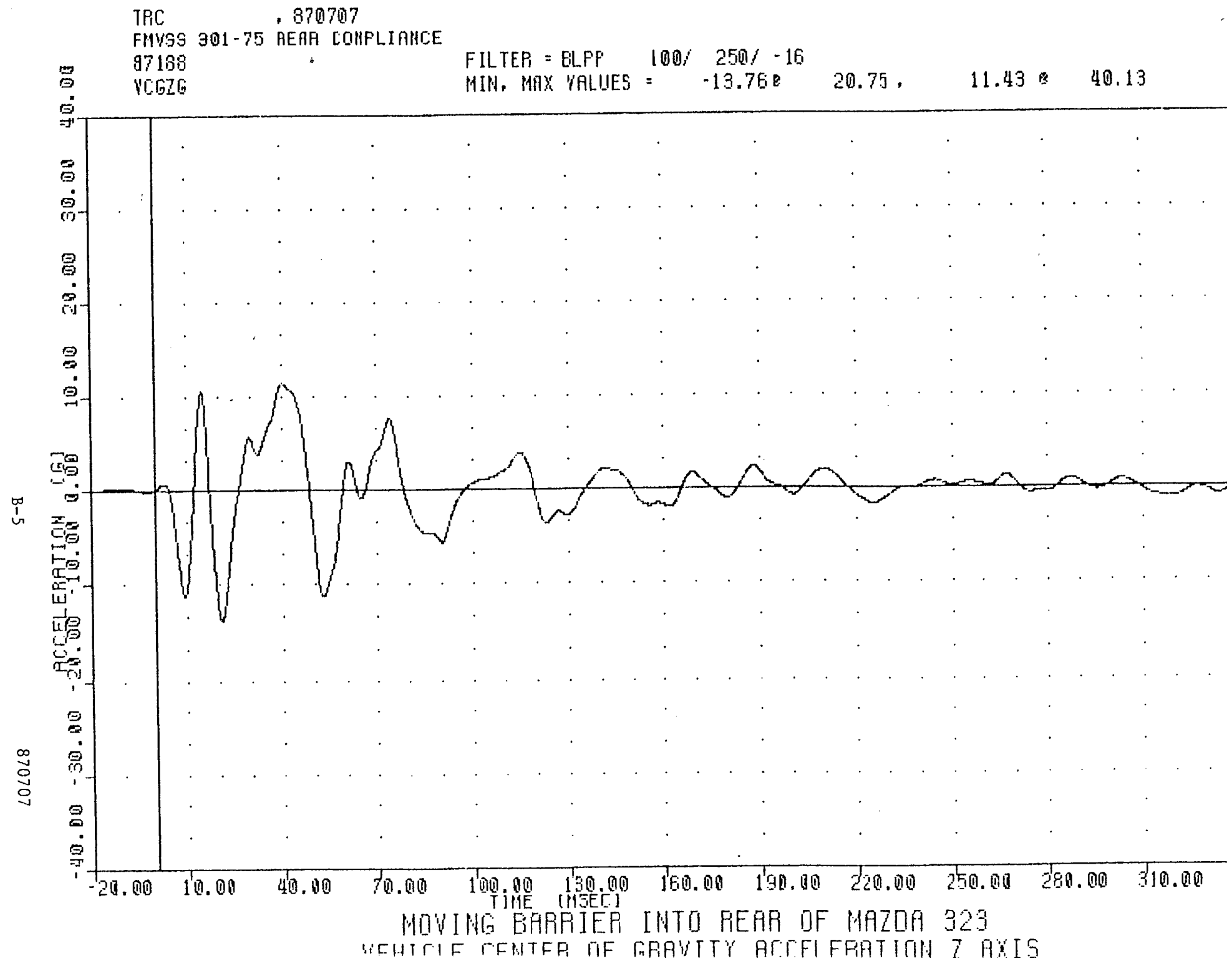


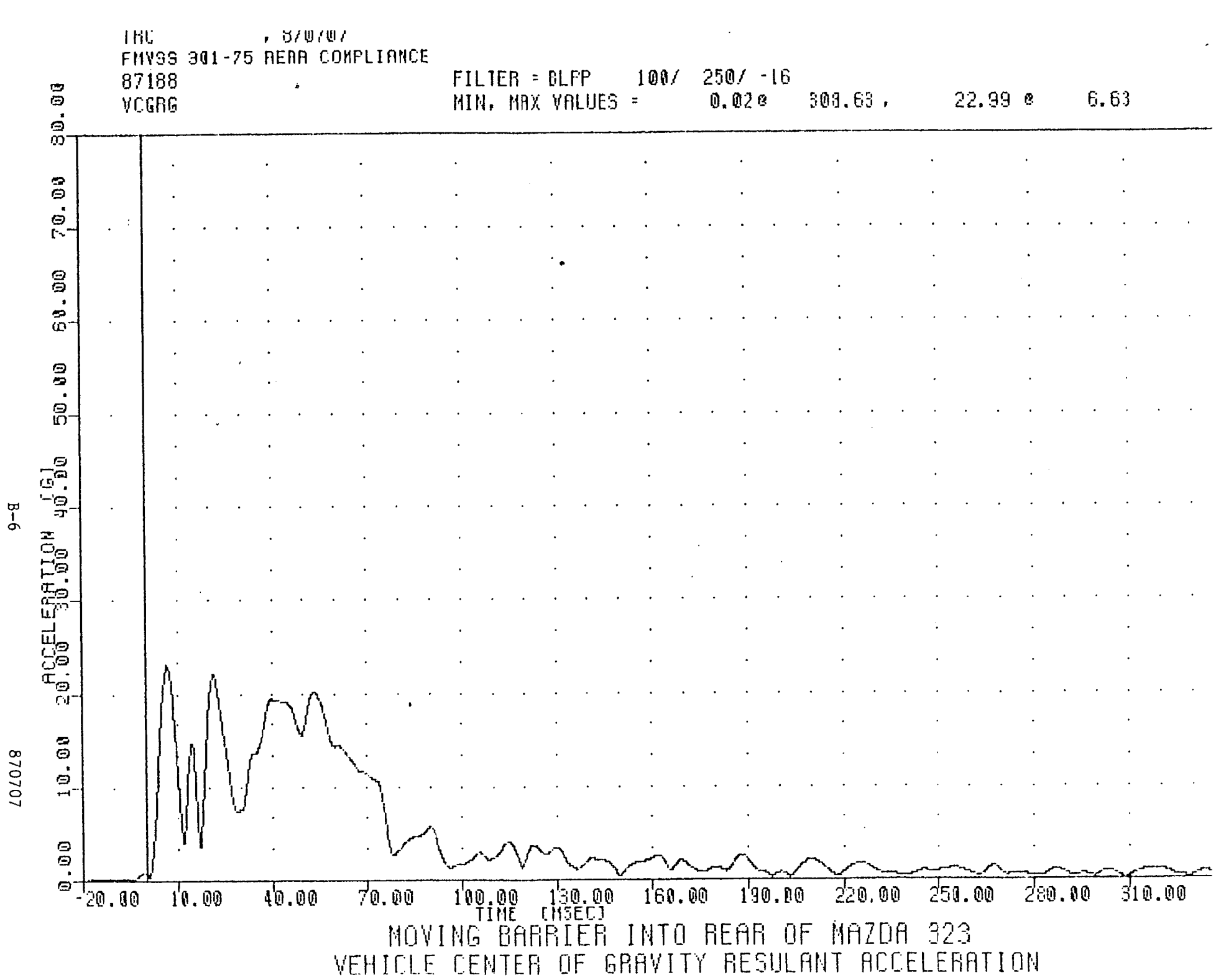
MOVING BARRIER INTO REAR OF MAZDA 323
VEHICLE CENTER OF GRAVITY VELOCITY X AXIS

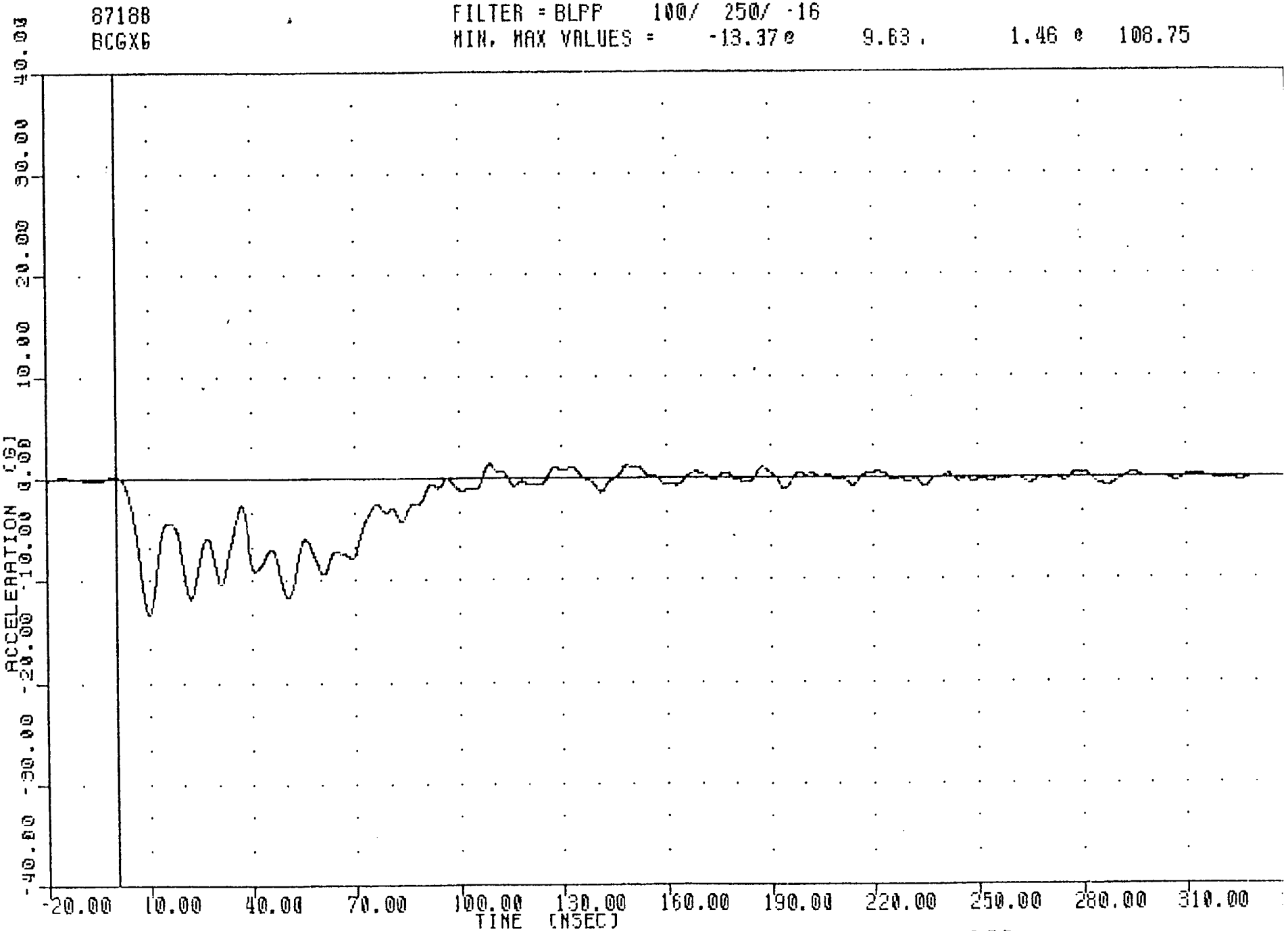


MOVING BARRIER INTO REAR OF MAZDA 323

VEHICLE CENTER OF GRAVITY ACCELERATION Y AXIS

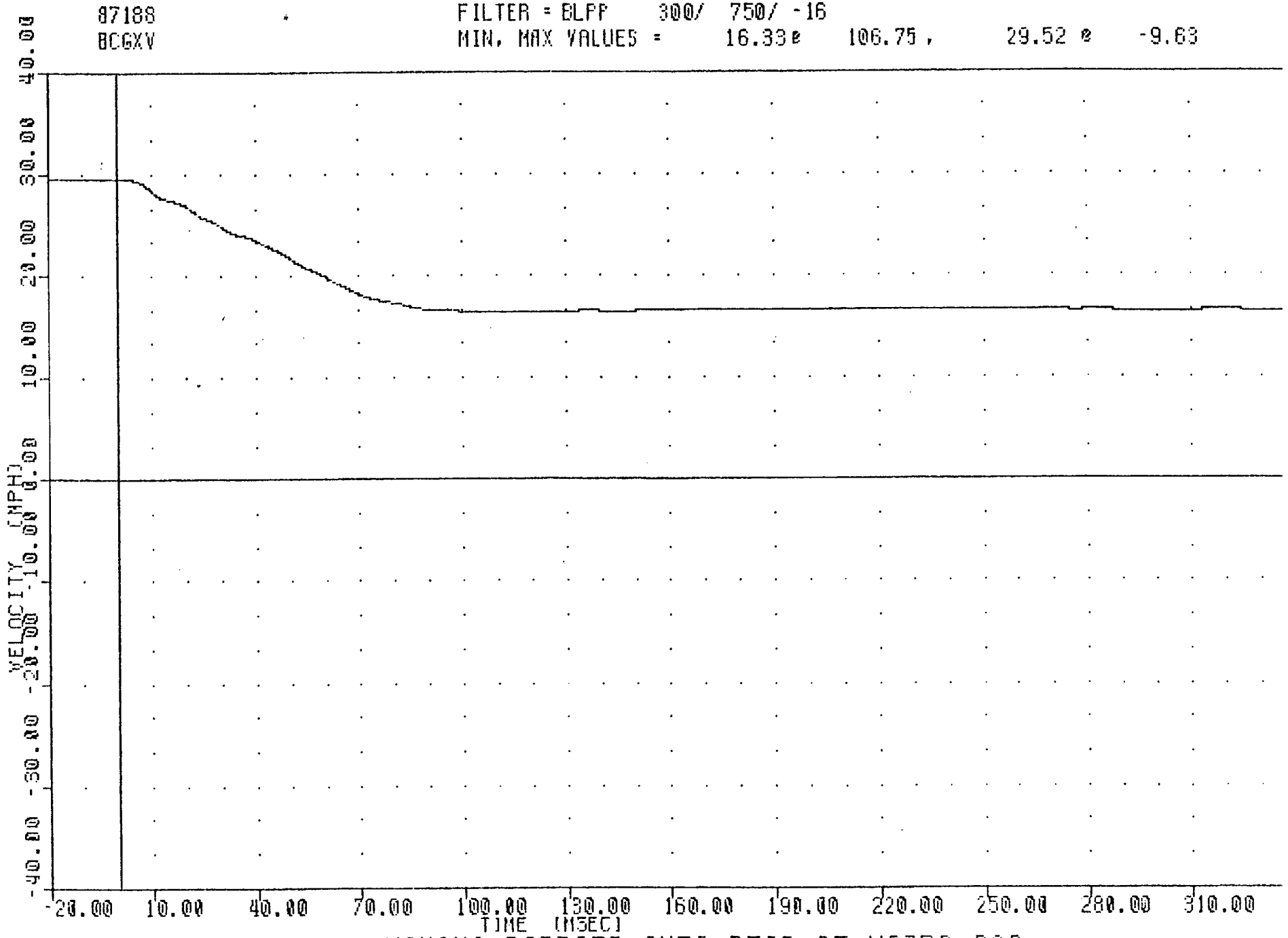

TRC , 870707
FMVSS 301-75 REAR COMPLIANCE
87188
VCGZG
FILTER = BLPF 100/ 250/ -16
MIN, MAX VALUES = -13.76 @ 20.75 , 11.43 @ 40.13
ACCELERATION (G)
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
TIME (MSEC)
MOVING BARRIER INTO REAR OF MAZDA 323
VEHICLE CENTER OF GRAVITY ACCELERATION Z AXIS


INC , 8/8/87
FMVSS 301-75 REAR COMPLIANCE
87188
VCGRG
FILTER = BLFP 100/ 250/ -16
MIN, MAX VALUES = 0.02 @ 308.63 , 22.99 @ 6.63
ACCELERATION (G)
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
TIME (MSEC)
MOVING BARRIER INTO REAR OF MAZDA 323
VEHICLE CENTER OF GRAVITY RESULANT ACCELERATION



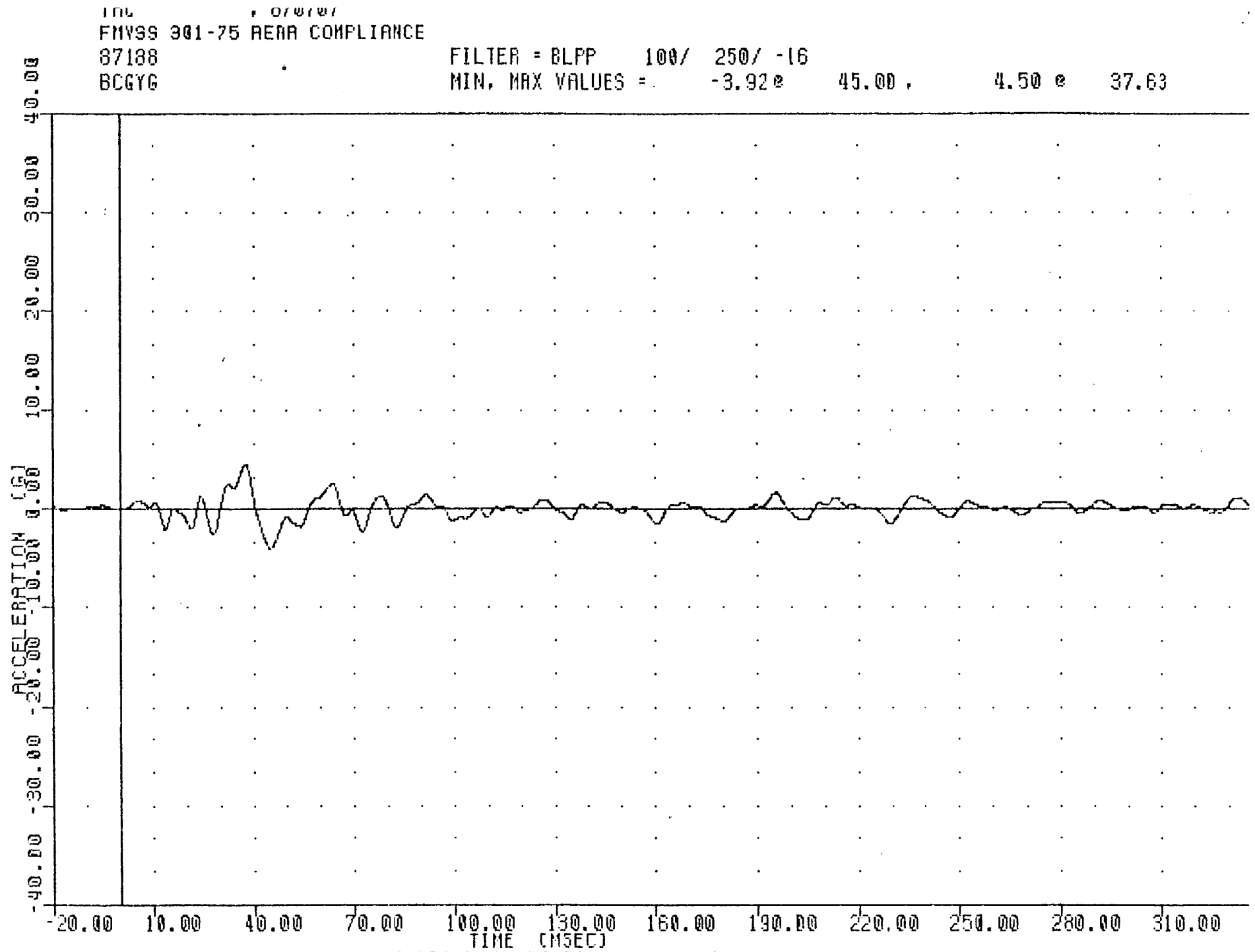
MOVING BARRIER INTO REAR OF MAZDA 323

MOVING BARRIER CENTER OF GRAVITY ACCELERATION X AXIS



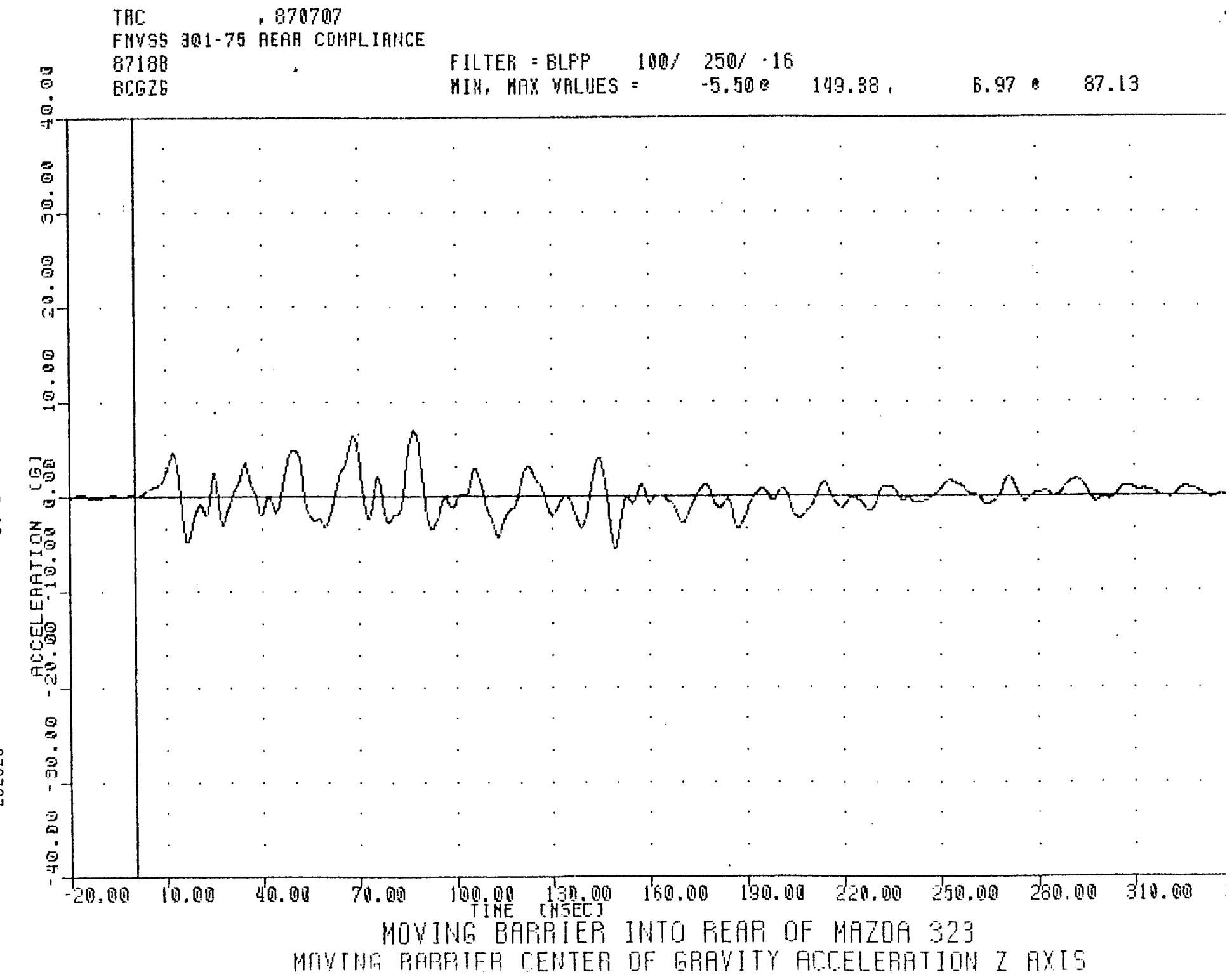
MOVING BARRIER INTO REAR OF MAZDA 323

MOVING BARRIER CENTER OF GRAVITY VELOCITY X AXIS



MOVING BARRIER INTO REAR OF MAZDA 323

MOVING BARRIER CENTER OF GRAVITY ACCELERATION Y AXIS



MOVING BARRIER INTO REAR OF MAZDA 323

MOVING BARRIER CENTER OF GRAVITY ACCELERATION Z AXIS