V2708

REPORT NUMBER: CAL-98-7

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

FORD MOTOR CO. INC.
1998 FORD CONTOUR
4-DOOR SEDAN

NHTSA NUMBER: MW0201

CALSPAN TEST NUMBER: 8413-6

CALSPAN SRL CORPORATION
TRANSPORTATION SCIENCE CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225

October 17,1997

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
Mail Code: NPS-10
400 Seventh Street, SW, Room No. 5313
Washington, DC 20590

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Approval Date: October 30, 1997

FINAL REPORT ACCEPTANCE BY OCS:

_____

Manager, New Car Assessment Program (NCAP)
NHTSA, Office of Crashworthiness Standards

_____

Date of Report Acceptance

_____

COTR, New Car Assessment Program (NCAP)
NHTSA, Office of Crashworthiness Standards

_____

Date of Report Acceptance

TECHNICAL REPORT STANDARD TITLE PAGE

1. *Report No.* CAL-98-7	2. *Government Accession No.*	3. *Recipient's Catalog No.*
4. *Title and Subtitle* Final Report of NEW CAR ASSESSMENT PROGRAM (NCAP) Testing of a 1998 Ford Contour 4-Door Sedan NHTSA No. MW0201		5. *Report Date* October 17,1997 6. *Performing Organization Code* CAL
7. *Author(s)* David J. Travale, Program Manager James A. Czarnecki, Project Engineer		8. *Performing Organization Report No.* 8413-6
9. *Performing Organization Name and Address* Calspan SRL Corporation 4455 Genesee Street Buffalo, New York 14225		10. *Work Unit No.* 11. *Contract or Grant No.* DTNH22-96-D-02010
12. *Sponsoring Agency Name and Address* U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworithness Standards Mail Code: NPS-10 400 Seventh , SW, Room 5313 Washington, D.C. 20590		13. *Type of Report and Period Covered* Final Report October 1997 14. *Sponsoring Agency Code* NPS-10
15. *Supplementary Notes*		

16. *Abstract*

A frontal barrier test of a 1998 Ford Contour 4-Door Sedan was performed at Calspan SRL Corporation crash test facility in Buffalo, New York, on October 17,1997.

The impact velocity was 56.3 kph and the temperature at the barrier face was 20.5□C. The maximum post-test vehicle crush was 360 mm. The test vehicle was equipped with a 3-point belt system and supplemental airbags at both front outboard seating positions.

With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appear to comply with the head, chest and femur requirements.

17. *Key Words* 56 kph Frontal Barrier Impact test New Car Assessment Program (NCAP)	18. *Distribution Statement* Copies of this report are available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, DC 20590		
19. *Security Classif. (of this report)* UNCLASSIFIED	20. *Security Classif. (of this page)* UNCLASSIFIED	21. *No. of Pages*	22. *Price*

Form DOT F1700.7 (8-69)

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Section 1

PURPOSE AND SUMMARY OF TEST MW0201

PURPOSE

This 56.3 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-96-D-02010. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.3 kph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test procedure.

SUMMARY

A barrier was impacted by a 1998 Ford Contour 4-Door Sedan at a velocity of 56.3 kph. The test was performed at the Calspan SRL Corporation on October 17,1997. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by 1 real-time camera and 16 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head, chest, and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 245) was used for one previous test (MW0210) and the right-front passenger (position 2) ATD (Serial No. 064) was used for two previous tests (MW0100 and MW0100) prior to being used for this test. Injury criteria for ATD's No. 245 and 064 were not exceeded in previous tests . Certification details, along with instrumentation calibration data, are found in Appendix C.

The 97 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle and dummy response data traces. The left brake caliper accelerometer data is questionable after 55 msec. Load cell barrier data was not requested for this test.

The driver's HIC was 513.9. The maximum chest deceleration over 3 milliseconds was 42.2 g's and maximum chest deflection was 41.4 mm. Femur loads were -4680.2 Newtons on the left and -2868.9 Newtons on the right.

The right front passenger's HIC was 617.3. Maximum chest deceleration over 3 milliseconds was 49.4 g's and maximum chest deflection was 29.4 mm. Femur loads were -5516.5 Newtons on the left and -4441.5 Newtons on the right.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No. : MW0201 Test Mode : 56 kph Frontal Barrier

Test Date : October 17,1997 Time: 14:00 Temperature : 20.5 °C

Vehicle Make/Model/Body Style : 1998 Ford Contour 4-Door Sedan

Vehicle Test Weight : 1501 kg

Vehicle/Barrier Impact Angle : 0 °

Impact Velocity : 56.3 kph

Maximum Static Crush : 360 mm

Vehicle Rebound : 290.7 mm

DUMMIES:	DRIVER	PASSENGER
Type :	572E	572E
Restraint System :	Airbag with 3 point belt system	Airbag with 3 point belt system

Number of Data Channels : 97

Number of Cameras : 1 Real Time

16 High Speed

DOOR OPENING DATA : Closed/Operable - Left Front

Closed/Operable - Right Front

Front Seat(s) Data :	DRIVER	PASSENGER
Seat Track Failure :(mm of shift)	0 mm	0 mm
Seat Back Failure :	None	None

VISIBLE DUMMY CONTACT POINTS :	DRIVER	PASSENGER
Head :	Airbag/Back of head to headrest	Airbag
Abdomen :	-	-
Chest	Airbag	Airbag
Knees	Knee Bolster	Knee Bolster

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 1998 Ford Contour 4-Door Sedan

NHTSA No. : MW0201 ; VIN: 3FAFP6533WH118227 ; Color : Green

Engine Data: 4 cylinders; - CID; 2.0 Liters; - cc

Placement : - Longitudinal or In-Line; x Transverse of Lateral

Transmission Data : 3 speeds; - Manual; x Automatic; x Overdrive

Final Drive : - Rear Wheel Drive; x Front Wheel Drive; - Four Wheel Drive

Major Options : x A/C; x Pwr.Strg.; x Pwr. Brakes

- Pwr. Windows; - Pwr. Door Locks; x Tilt Wheel

Date Received : 9/24/97 ; Odometer Reading 28 km

Selling Dealer : West Herr Ford Inc.

& Address: S 5025 Camp Rd, Hamburg, N.Y. 14075

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : Ford Motor Co. Inc.

Date of Manufacture 8/97

GVWR : 1850 kg; GAWR: 999 kg FRONT; 886 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 235 kpa FRONT

235 kpa REAR

Recommended Tire Size : P185/70R14

* Recommended Cold Tire Pressure : 235 kpa FRONT; 235 kpa REAR

Size of Tires on Test Vehicle: P185/70R14 ; Manufacturer: Goodyear

Vehicle Capacity Data :

Type of Front Seats: - Bench; x Bucket; - Split Bench

Number of Occupants: 2 Front; 3 Rear; 5 Total

Vehicle Capacity Weight (VCW) = 400 kg

No. of Occupants x 68 kg = 340 kg

Rated Cargo/Luggage Weight (RCLW) = 60 kg

*Tire pressure used for test

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

Right Front =	419	kg	Right Rear =	222.5	kg
Left Front =	412	kg	Left Rear =	243.5	kg
TOTAL FRONT =	831.0	kg	TOTAL REAR =	466.0	kg

TOTAL DELIVERED WEIGHT = 1,297.0 kg

% of Total Front of Vehicle Weight = 64.1 % of Total Rear Weight = 35.9 %

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight (UDW) =	1,297.0	kg
Rated Cargo/Luggage Weight (RCLW) =	60.0	kg
Weight of 2 p.572 Dummies @ 76 each =	152	kg
TARGET TEST WEIGHT =	1,509.0	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 53 KG OF CARGO WEIGHT:

Right Front =	452.5	kg	Right Rear =	284	kg
Left Front =	442	kg	Left Rear =	323	kg
TOTAL FRONT =	894.5	kg	TOTAL REAR =	607.0	kg

TOTAL TEST WEIGHT = 1,501.5 kg

% of Total Front Weight = 59.6 % % of Total Rear Weight = 40.4 %

Weight of Ballast Secured in Vehicle Trunk Area = 0 kg

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED :	RF	694	LF	693	RR	695	LR	690
FULLY LOADED :	RF	675	LF	675	RR	648	LR	643
AS TESTED :	RF	683	LF	685	RR	653	LR	650

Vehicle's Wheel Base : 2675 mm

Location of Vehicle's C.G. : 1,081.4 mm rearward of front wheel center.

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual = 54.9 liters

Usable Capacity Figure Furnished by COTR = 54.9 liters

Test Volume Range (92 to 94% of Usable Capacity) = 50.5 to 51.6 liters

ACTUAL TEST VOLUME= 50.7 liters (with entire fuel system filled)

Test Fluid Type: Stoddard Solution ; Spec. Grav. = 0.764

Kinematic Viscosity = 0.96 centistokes; Color = Orange

Type of Fuel Pump: Electric- x ; Mechanical- -

Does Electric Pump operate with ignition switch "ON" & engine "OFF" Yes- x No- -

Details of Fuel System Fuel filler is aft of axle on right side, tank is fore of axle with fuel lines running along right side

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°

Test Date : October 17,1997 Time: 14:00 Temperature: 20.5 °C

Vehicle NHTSA No. : MW0201

Required Impact Velocity Range : 55.7 to 57.1 kph

BARRIER IMPACT VELOCITY : (Speed traps within 5 feet of impact plane.)

Trap No. 1 = 56.3 kph; Trap No. 2 = 56.3 kph

Distance from vehicle to barrier : (1) entering trap = 1321 mm

(2) exiting trap = 305 mm

VEHICLE STATIC CRUSH: (mm) (For frontal and rear impacts only.)

Vehicle Length:

Pre-Test	Right =	4635	; C/L =	4695	; Left =	4630
Post-Test	Right =	4290	; C/L =	4335	; Left =	4300
Crush	Right =	345.0	; C/L =	360.0	; Left =	330.0
AVERAGE	=	345.0	mm			

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

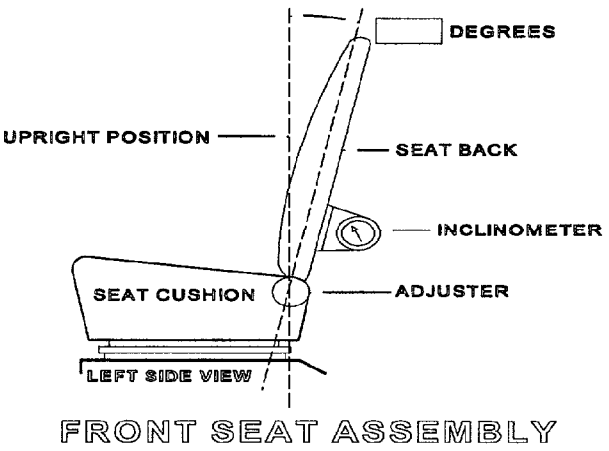
	Right =	254	; C/L =	287	; Left =	331
AVERAGE	=	290.7	mm			

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1998 Vehicle Model: Ford Contour Body Style : 4-Door Sedan

1. Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat : 19

Measurement instructions : Measured at headrests , 19 degrees back from a 0 degrees sill measurement

Seat back angle for passenger's seat : 19

Measurement instructions : Measured at headrests , 19 degrees back from a 0 degrees sill measurement

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : 15 notches placed on 8th , midposition

Positioning of the passenger's seat (if applicable) : 15 notches placed on 8th , midposition

3. Fuel Tank Capacity Data

3.1

A. "Usable Capacity" of the standard equipment fuel tank is 54.9 liters

B. "Usable Capacity" of the optional equipment fuel tank is - liters

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 54.9 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 50.7 liters

3.3 Is vehicle equipped with electric fuel pump? Yes- x ; No- -

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

With ignition turned on.

4. STEERING COLUMN ADJUSTMENTS :

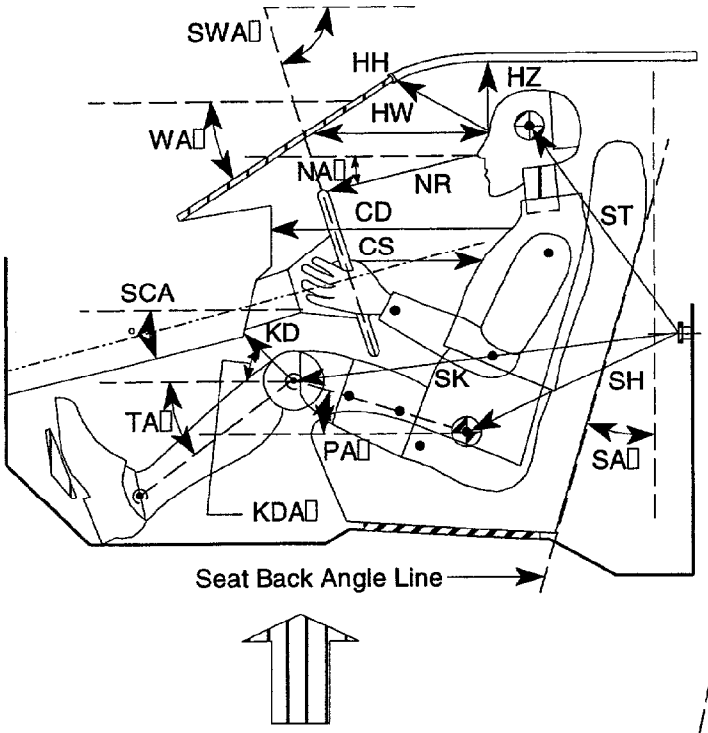
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions: Midposition

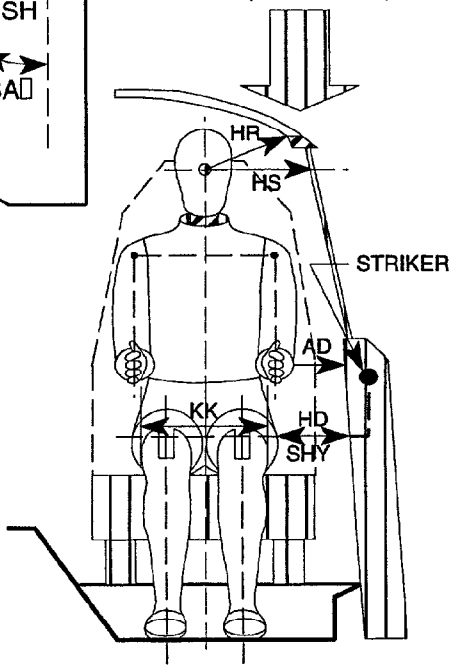
5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: 4 notches placed in 2nd with top most being position 1

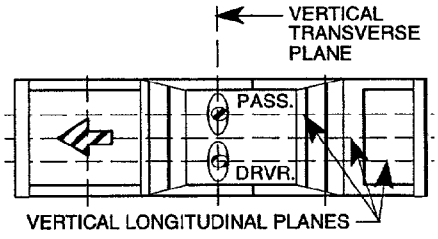
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



AD - Arm to Door
HD - H-Point to Door
HR - Head to Side Header
HS - Head to Side Window
KK - Knee to Knee
SHY- Striker to H-Point (Y Direction)



CD - Chest to Dash
CS - Steering Wheel to Chest
HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
KDA- Knee to Dash Angle
KDL - Left Knee to Dash
KDR- Right Knee to Dash
NA - Nose to Rim Angle
NR - Nose to Rim
PA - Pelvic Angle
RA - Rim to Abdomen
SA - Seat Back Angle
SCA- Steering Column Angle
SH - Striker to H-Point
SK - Striker to Knee
ST - Striker to Head
SWA- Steering Wheel Angle
TA - Tibial Angle
WA - Windshield Angle



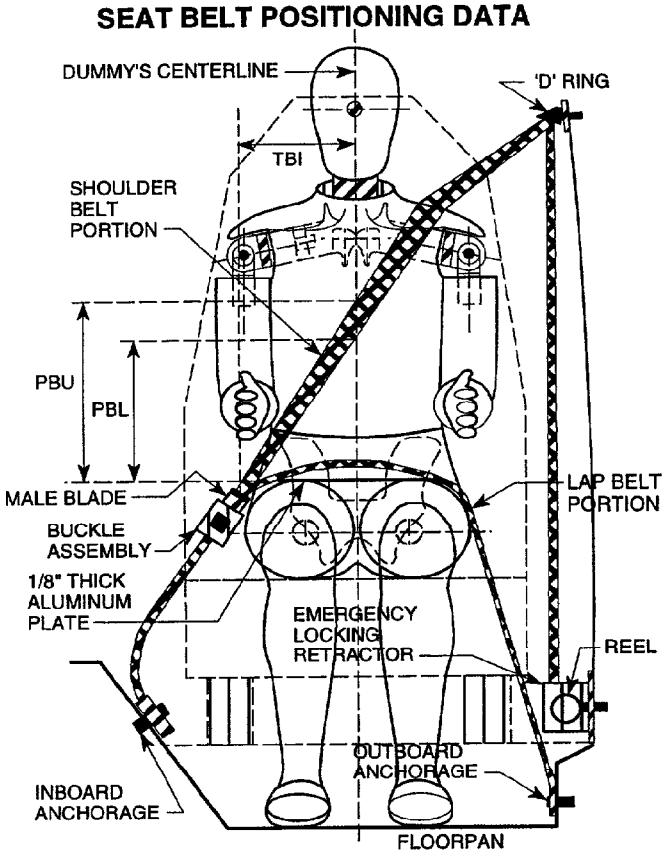
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITONING MEASUREMENTS IN VEHICLE

	DRIVER (Serial #245)			PASS. (Serial # 064)		
WA°	28 deg.			N/A		
SWA°	23 deg.			N/A		
SCA°	67 deg.			N/A		
SA°	19 deg.			19 deg.		
HZ	141			137		
HH	294			286		
HW	524			519		
HR	227			231		
NR	356	Angle	13 deg.	N/A		
CD	514			499		
CS	283			N/A		
RA	175			N/A		
KDL	142	Angle (KDA)	35 deg.	141		
KDR	141			145	Angle (KDA)	38 deg.
PA°	23 deg.			22 deg.		
TA°	46 deg.			40 deg.		
KK	270			281		
ST	575	Angle	12 deg.	569	Angle	8 deg.
SK	612	Angle	95 deg.	634	Angle	90 deg.
SH	259	Angle	129 deg.	253	Angle	125 deg.
SHY	235			227		
HS	271			271		
HD	129			117		
AD	87			82		

Dimensions in millimeters

DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

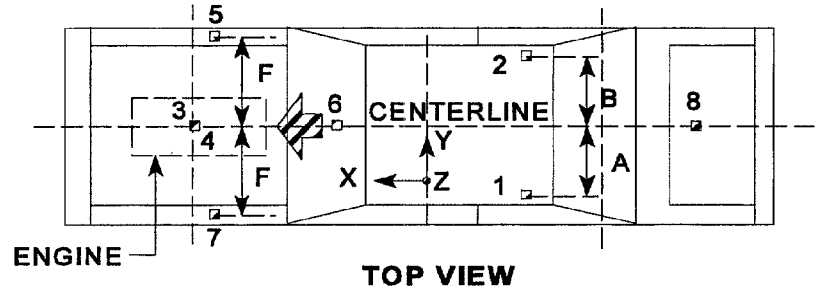
SEAT BELT POSITIONING DATA



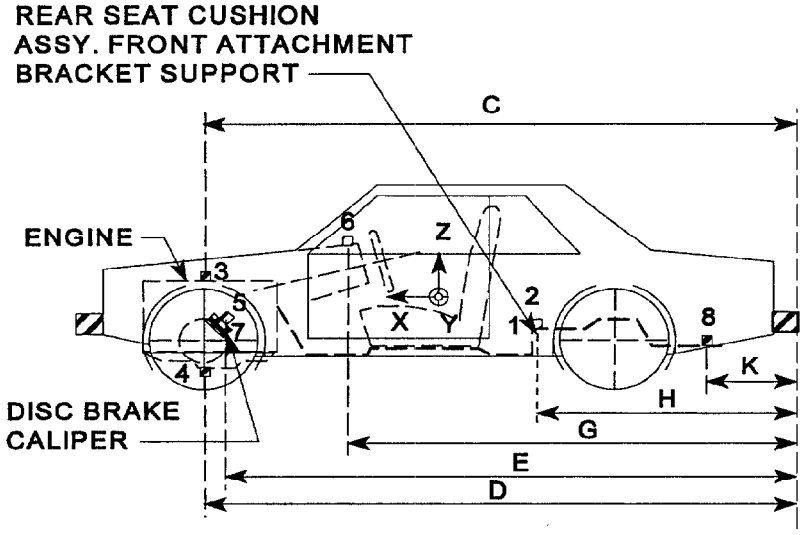
FRONT VIEW OF DUMMY

	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	292	301
PBL-- Top surface of alum. plate to belt lower edge	213	220
LAP BELT TENSION	10 nwt	10 nwt
SHOULDER BELT TENSION	Retractor	Retractor

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



TOP VIEW



LEFT SIDE VIEW

Note: Vehicle accelerometer location and data summary shown in DATA SHEET NO. 7

DATA SHEET NO. 7 VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

DIMENSION	LENGTH (mm)	
	PRE-TEST VALUES	
A Left Rear Seat Crossmember Y	595	595 redundant
B Right Rear Seat Crossmember Y	590	590 redundant
C Top of Engine X	3943	
D Bottom of Engine X	3859	
E Disc Brake Calipers X	3754	
F Disc Brake Calipers Y	586	
G Instrument Panel X	2843	
H Rear Seat Crossmembers X	2100	2145 redundant

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	5.4	121.8	-31.4	44.8
2	Rear Seat X-Member @ Right Side	3.7	131.3	-32.0	47.4
3	Top of Engine Block	54.9	39.5	-114.6	29.3
4	Bottom of Engine	25.3	39.8	-109.6	29.1
5	Disc Brake Caliper @ Right Side	33.4	57.3	-90.3	35.0
6	Instrument Panel	36.2	65.6	-89.4	39.0
7	Disc Brake Caliper @ Left Side	*	*	*	*
8	Rear Seat X-Member @ Left-Redundant	4.1	134.9	-28.3	43.6
9	Rear Seat X-Member @ Right-Redundant	3.9	117.4	-31.1	44.9

* Data questionable after 55 msec

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

NHTSA Test No.: MW0201 Vehicle: 1998 Ford Contour 4-Door Sedan

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec.	Neg.	msec.
Pos. 1 Head X	**g's**	7.8	229.8	-53.9	70.1
Pos. 1 Head Y	**g's**	5.5	82.6	-7.8	55.9
Pos. 1 Head Z	**g's**	21.9	53.1	-5	97.6
Pos. 1 Head Resultant	**g's**	55.4	69	0.1	-23.3
Pos. 2 Head X	**g's**	9.4	282.7	-54.6	72.1
Pos. 2 Head Y	**g's**	4.2	51.1	-13.7	83.3
Pos. 2 Head Z	**g's**	35.9	67.5	-1.5	108.9
Pos. 2 Head Resultant	**g's**	63.3	70.5	0	-31
Pos. 1 Chest X	**g's**	3.7	273.8	-42.6	66.4
Pos. 1 Chest Y	**g's**	2.1	109.9	-7.1	44.3
Pos. 1 Chest Z	**g's**	8.8	44.8	-8.7	85.6
Pos. 1 Chest Resultant	**g's**	43.2	66.4	0	-26.3
Pos. 1 Chest Displacement	**mm**	.0	0	-41.4	67.2
Pos. 2 Chest X	**g's**	3.7	238	-49.6	65.4
Pos. 2 Chest Y	**g's**	9.6	60.8	-2.8	101.5
Pos. 2 Chest Z	**g's**	13.1	69.1	-2.8	109.6
Pos. 2 Chest Resultant	**g's**	51.2	65.5	0	-31.7
Pos. 2 Chest Displacement	**mm**	.1	11.3	-29.4	71.8
Pos. 1 Left Femur	**N**	154.4	115.6	-4680.2	53.2
Pos. 1 Right Femur	**N**	659.0	107.9	-2868.9	51.3
Pos. 2 Left Femur	**N**	133.0	117.1	-5516.5	40.5
Pos. 2 Right Femur	**N**	381.2	75.4	-4441.5	52.1
Pos. 1 Left Belt Load	**N**	3795.5	51.8	-21.9	282.3
Pos. 1 Torso Belt Load	**N**	6137.3	49.2	-80.7	203.9
Pos. 2 Right Belt Load	**N**	3618.3	54.8	-13.2	200.9
Pos. 2 Torso Belt Load	**N**	6467.0	65.5	-83.5	198.6

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)

NHTSA Test No.: MW0201 Vehicle: 1998 Ford Contour 4-Door Sedan

	HEAD INJURY CRITERIA (HIC)			
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	513.9	45.9	81.9	45.90
Position #2 - Passenger	617.3	57.7	89.8	51.71

** HIC is as defined in FMVSS 208. The maximum time interval from t_1 to t_2 is 36 milliseconds.

	CLIP SUMMARY*			
	CLIP (g's)	t_1 (msec)	t_2 (msec)	CSI
Position #1 - Driver	42.2	64.9	67.9	414.9
Position #2 - Passenger	49.4	64.3	67.3	503.4

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
HYBRID III NECK AND PELVIC DATA SHEET

Vehicle Year/Make/Model/Body Style: 1998 Ford Contour 4-Door Sedan

NHTSA Test No.: MW0201 Test Date: October 17,1997

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Upper Neck Fx	N	316.1	70.9	-338.8	47.7
Pos. 1 Upper Neck Fy	N	88.2	79.9	-105.4	55.9
Pos. 1 Upper Neck Fz	N	1974.3	57.3	-178.9	22.2
Pos. 1 Neck Force Result	N	1974.8	57.3	4.9	-28.7
Pos. 1 Upper Neck Mx	N-m	10.2	54.2	-11.6	79.4
Pos. 1 Upper Neck My	N-m	49.4	66.8	-12.3	207.4
Pos. 1 Upper Neck Mz	N-m	3.6	243.6	-10.7	65.7
Pos. 1 Neck Moment Result	N-m	50.4	66.8	0	-36.2
Pos. 2 Upper Neck Fx	N	666.5	75.9	-325.6	106.7
Pos. 2 Upper Neck Fy	N	279	77.2	-155.1	150
Pos. 2 Upper Neck Fz	N	1367.5	67.2	-64.9	113.3
Pos. 2 Neck Force Result	N	1406.3	67.2	2	-9.2
Pos. 2 Upper Neck Mx	N-m	26.1	82.2	-7.2	151.9
Pos. 2 Upper Neck My	N-m	72.8	75.8	-8.8	183.3
Pos. 2 Upper Neck Mz	N-m	34.9	90.8	-13	140.7
Pos. 2 Neck Moment Result	N-m	76.7	75.9	0	-36.5
Pos. 1 Pelvic (X)	g's	2.3	285	-54.7	52.6
Pos. 1 Pelvic (Y)	g's	7.3	92.4	-13	57.5
Pos. 1 Pelvic (Z)	g's	3.1	208.8	-23.1	64.2
Pos. 1 Pelvic (R)	g's	55.8	52.6	0	-28.1
Pos. 2 Pelvic (X)	g's	3.2	247.1	-50.6	52.5
Pos. 2 Pelvic (Y)	g's	11.6	43.7	-7.1	52.2
Pos. 2 Pelvic (Z)	g's	2.7	37.5	-12.3	68.3
Pos. 2 Pelvic (R)	g's	51	52.5	0.1	-18.9

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
HYBRID III LOWER LEG DATA SHEET

Vehicle Year/Make/Model/Body Style: 1998 Ford Contour 4-Door Sedan

NHTSA Test No.: MW0201 Test Date: October 17,1997

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
P1 Lt Upper Tibia Mx	N-m	117.1	53.2	-31.3	42.6
P1 Lt Upper Tibia My	N-m	17.4	233.4	-210.3	38.2
P1 Lt Lower Tibia Fx	N	105.7	203.4	-2598.5	55.6
P1 Lt Lower Tibia Fz	N	279.5	198.1	-5121.4	56.5
P1 Lt Lower Tibia My	N-m	495.6	53.3	-89.5	37.4
P1 Rt Upper Tibia Mx	N-m	49.0	41.4	-14.9	67.3
P1 Rt Upper Tibia My	N-m	96.6	32.5	-76.6	50.4
P1 Rt Lower Tibia Fx	N	122	188.9	-2403.9	49.1
P1 Rt Lower Tibia Fz	N	252.5	206.7	-3853.6	48.1
P1 Rt Lower Tibia My	N-m	404.6	47.9	-47.4	41
Pos. 2 Lt Upper Tibia Mx	N-m	31.3	37.3	-62.7	56.7
Pos. 2 Lt Upper Tibia My	N-m	6.3	139.8	-246.9	42.1
Pos. 2 Lt Lower Tibia Fx	N	99.5	216.5	-1777.4	64.2
Pos. 2 Lt Lower Tibia Fz	N	232.7	192.3	-4479.9	40.6
Pos. 2 Lt Lower Tibia My	N-m	293.1	62.8	-98.4	41.8
Pos. 2 Rt Upper Tibia Mx	N-m	73.3	36.2	-79.8	68.3
Pos. 2 Rt Upper Tibia My	N-m	23.1	223.6	-163.6	34.7
Pos. 2 Rt Lower Tibia Fx	N	1434.1	2.7	-8766.1	176.9
Pos. 2 Rt Lower Tibia Fz	N	233.4	177	-6041.3	34.3
Pos. 2 Rt Lower Tibia My	N-m	382.3	60.5	-12.3	31.1

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
HYBRID III ANKLE DATA SHEET

Vehicle Year/Make/Model/Body Style: 1998 Ford Contour 4-Door Sedan

NHTSA Test No.: MW0201 Test Date: October 17,1997

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Left Ankle X	**g's**	86.1	52	-146.7	38.1
Pos. 1 Left Ankle Z	**g's**	174.4	44.4	-160.3	44.7
Pos. 1 Left Toe Z	**g's**	257.7	50.8	-219.8	35.9
Pos. 1 Right Ankle X	**g's**	36.7	60.2	-106.4	40.1
Pos. 1 Right Ankle Z	**g's**	37.1	63.3	-215.8	39.7
Pos. 1 Right Toe Z	**g's**	112.6	47.1	-278.6	39.7
Pos. 2 Left Ankle X	**g's**	101.3	53.8	-137.8	39.6
Pos. 2 Left Ankle Z	**g's**	67.3	54.1	-127.6	40.4
Pos. 2 Left Toe Z	**g's**	127.3	45.5	-186.2	40.5
Pos. 2 Right Ankle X	**g's**	96.1	57.7	-135.5	35.8
Pos. 2 Right Ankle Z	**g's**	110.7	35.7	-154.3	37.1
Pos. 2 Right Toe Z	**g's**	96.5	49.7	-104.9	38.4

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
REDUNDANT DUMMY DATA

NHTSA Test No.: MW0201 Vehicle: 1998 Ford Contour 4-Door Sedan

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Head X(R)	g's	8.2	226.3	-54.7	69.7
Pos. 1 Head Y(R)	g's	9.8	48.6	-6	56.5
Pos. 1 Head Z(R)	g's	23.9	53.5	-2.8	116.8
Pos. 1 Head Resultant(RR)	g's	55.7	69.7	0.1	-36.6
Pos. 2 Head X(R)	g's	9.6	282.7	-61.7	72
Pos. 2 Head Y(R)	g's	6.7	50.8	-17.4	81.4
Pos. 2 Head Z(R)	g's	37	66.8	-2.4	99.8
Pos. 2 Head Resultant(RR)	g's	69.8	68.1	0	-15.5
Pos. 1 Chest X(R)	g's	9.3	172.7	-45	66.2
Pos. 1 Chest Y(R)	g's	3.6	106.3	-5.9	44.3
Pos. 1 Chest Z(R)	g's	8.1	45.4	-8.8	85.9
Pos. 1 Chest Resultant(RR)	g's	45.6	66.1	0.1	-37.4
Pos. 2 Chest X(R)	g's	3.8	238.2	-50.3	66
Pos. 2 Chest Y(R)	g's	8	61.4	-3	87.2
Pos. 2 Chest Z(R)	g's	12.6	69.4	-2.7	110.5
Pos. 2 Chest Resultant(RR)	g's	52	66	0	-34.6

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
REDUNDANT DUMMY DATA

NHTSA Test No.: MW0201 Vehicle: 1998 Ford Contour 4-Door Sedan

	HEAD INJURY CRITERIA (HIC) **REDUNDANT**			
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	560.7	45.5	81.5	47.53
Position #2 - Passenger	800.9	53.7	89.7	54.82

** HIC is as defined in FMVSS 208. The maximum time interval from t_1 to t_2 is 36 milliseconds.

	CLIP SUMMARY* **REDUNDANT**			
	CLIP (g's)	t_1 (msec)	t_2 (msec)	CSI
Position #1 - Driver	44.1	64.7	97.7	438.1
Position #2 - Passenger	49.2	64.4	67.4	489.9

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

DATA SHEET NO. 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:	Driver	Passenger
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	1493	1560
Shoulder belt length as measured on Part 572 Dummy.	872	891
Lap belt length as measured on Part 572 Dummy.	611	669
SHOULDER BELT SPOOL-OFF DATA:		
As determined by film analysis.	*	*
As determined mechanically.	*	*
As determined electronically.	*	*
BELT STRETCH DATA:		
Measured electronically between shoulder belt load cell and the "D" ring.	36.3 mm/ M	64.9 mm/M
Measured mechanically.	1 mm	1 mm

Dimensions in millimeters

B-pillar molding length and D-ring location would not allow belt spool-off instrumentation.

DATA SHEET NO.10 SUMMARY OF FMVSS 212 DATA

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA

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

Windshield is bonded in place and covered with 20 mm molding.

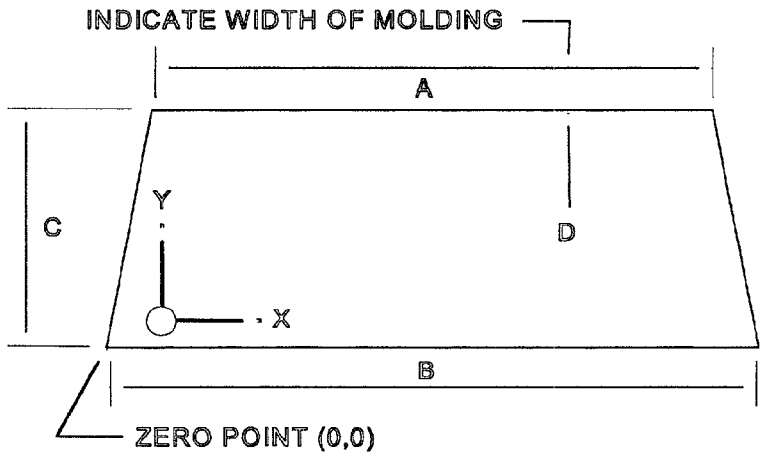
FMVSS 212 REQUIREMENTS:

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 the windshield for vehicles equipped with automatic restraint systems for front occupants,

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		
	PRE-TEST (mm)	POST-TEST(mm)	% OF RETENTION
RIGHT SIDE	2096	2096	100
LEFT SIDE	2096	2096	100
TOTAL	4,192	4,192	100

AREA OF RETENTION FAILURE:



FRONT VIEW OF WINDSHIELD

DIMENSIONS (mm)	
A	1100
B	1480
C	806
D	20

FAILURE DETAILS: None

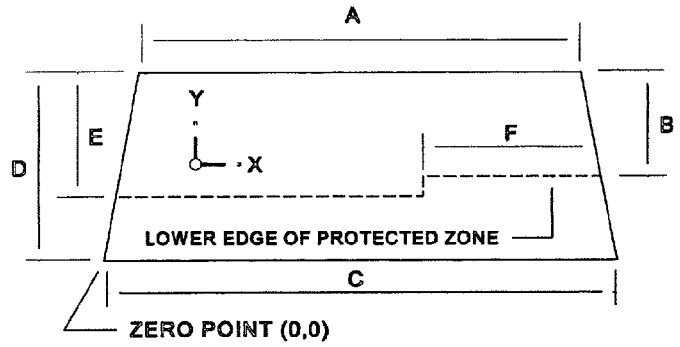
DATA SHEET NO. 11 FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 165 mm 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. The locus of points is drawn on the inner surface of the windshield contacted 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, then draw a line on the inner surface of the windshield below and 13 mm distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield.

FMVSS 219 TEST DATA:

(Dimensions in mm)



FRONT VIEW OF WINDSHIELD

DIMENSIONS	
A	1100
B	450
C	1480
D	806
E	522
F	700

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm:

(Show location of penetration on the above sketch)

	COORDINATES	
	X	Y
1.		
2.		
3.		
4.		

DATA SHEET NO. 12 FMVSS NO. 301-75 "FUEL SYSTEM INTEGRITY" POST IMPACT TEST DATA

NHTSA TEST No.: MW0201 TEST DATE: October 17,1997

VEHICLE MAKE/MODEL: 1998 Ford Contour

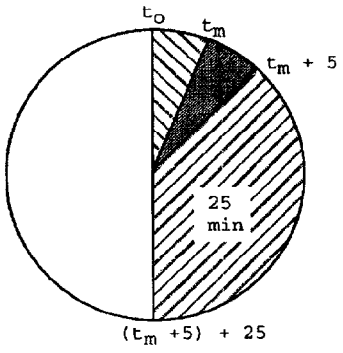
The test vehicle was filled from 92% to 94% of the manufacture's "usable" capacity. The electric fuel pump was operating if it will operate without engine operation. Two Part 572 anthropomorphic test devices were located at each of the front designated seating positions.

==========

TEST VEHICLE IMPACT TYPE:

X	Frontal (56 kph)
	Oblique (48 kph) with _____ deg. barrier face first contacting _____
-	(driver/passenger) side
-	Rear Moving Barrier (48 kph)
-	Lateral Moving Barrier (32 kph)

FUEL SPILLAGE MEASUREMENT:



1. From impact until vehicle motion ceases
2. For 5 minute period after vehicle motion ceases
3. For next 25 minutes

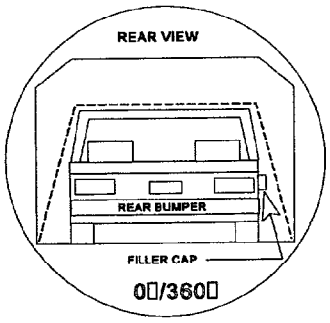
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

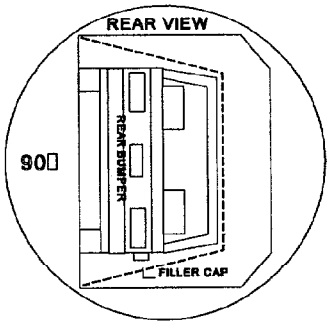
SOLVENT SPILLAGE DETAILS:
None

DATA SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:
0-90 deg.

NHTSA Test No.:
MW0201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	16	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	16	seconds
Next whole minute interval	7	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a

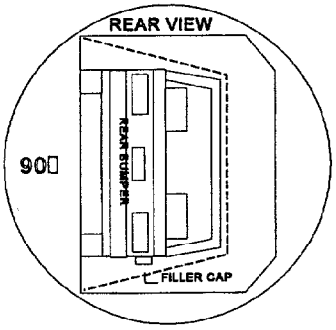
Note: Record spillage for whole minute intervals only as determined above.

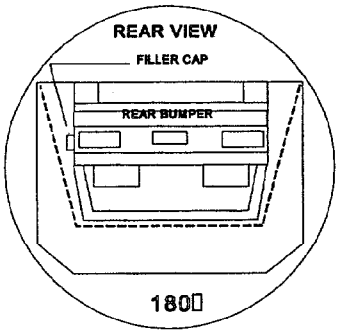
IV. SOLVENT SPILLAGE LOCATION(S):
None

TEST SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
90-180 deg.

NHTSA Test No.:
MW0201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	2	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	2	seconds
Next whole minute interval	7	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a

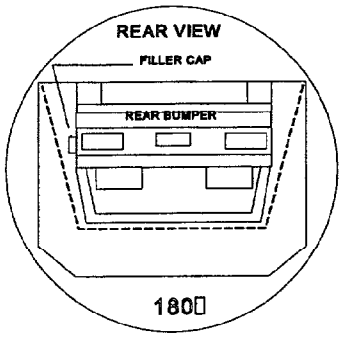
Note: Record spillage for whole minute intervals only as determined above.

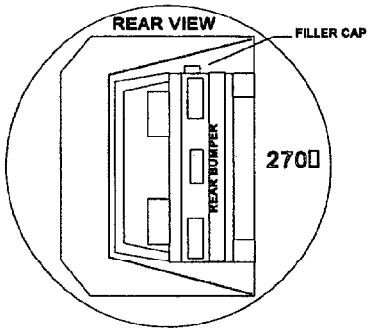
IV. SOLVENT SPILLAGE LOCATION(S):
None

TEST SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
180-270 deg.

NHTSA Test No.:
MW0201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	1	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	1	seconds
Next whole minute interval	7	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a

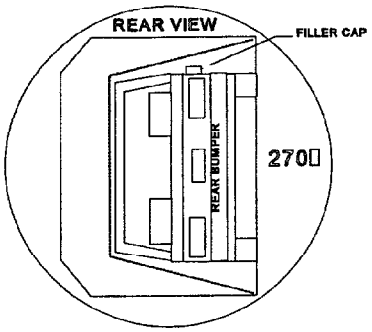
Note: Record spillage for whole minute intervals only as determined above.

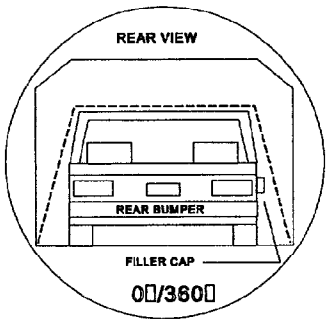
IV. SOLVENT SPILLAGE LOCATION(S):
None

TEST SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
270-360 deg.

NHTSA Test No.:
MW0201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	5	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	5	seconds
Next whole minute interval	7	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g

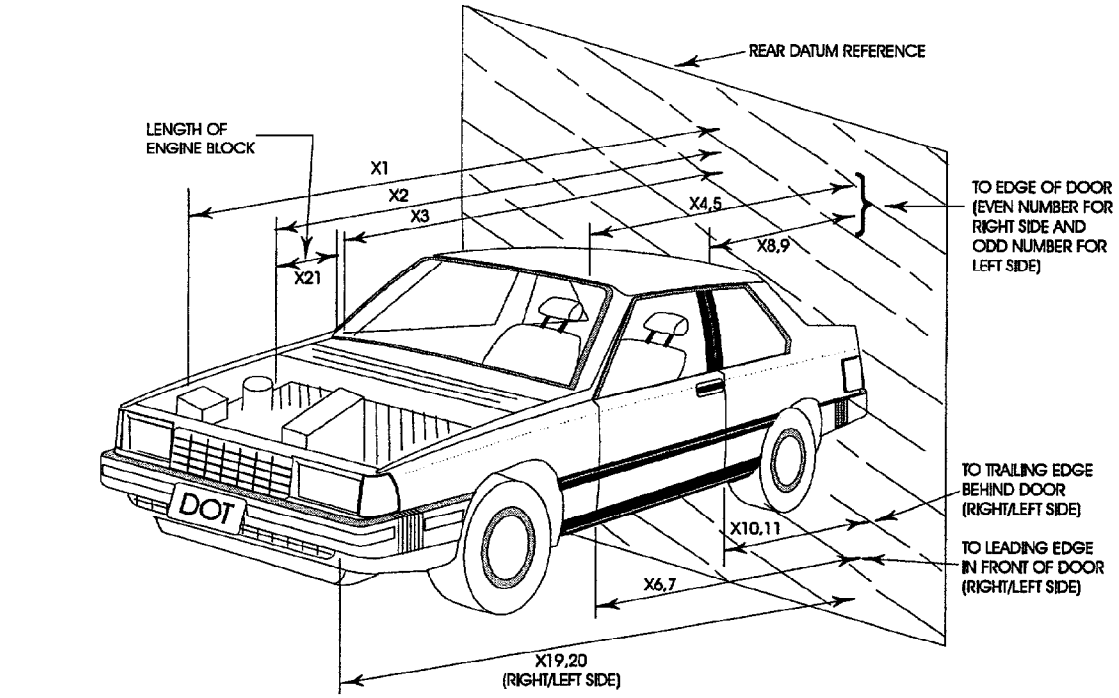
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

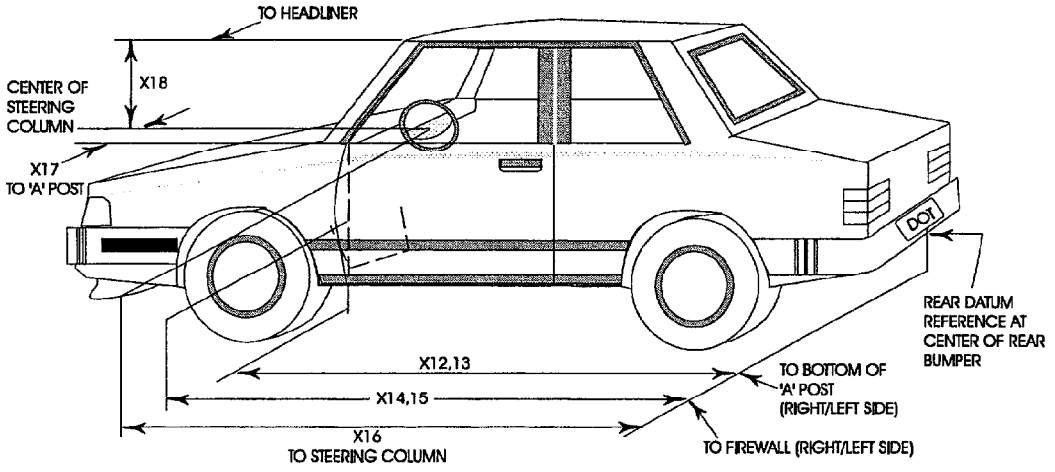
0	0	0	n/a

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S):
None

TEST VEHICLE MEASUREMENTS





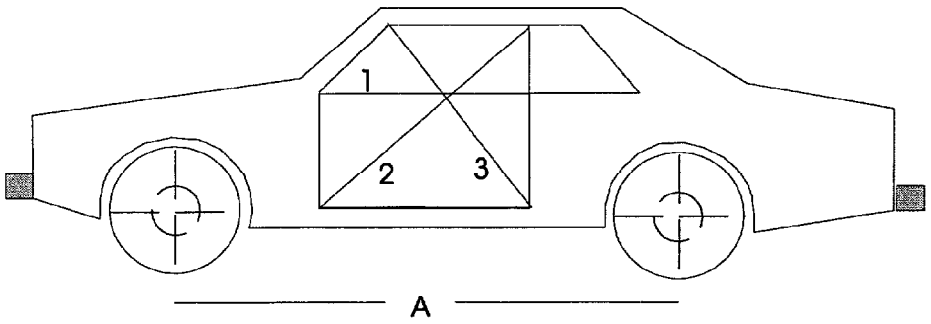
DATA SHEET NO.14 VEHICLE MEASUREMENTS

No.		All Dimensions in mm		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	4695	4335	360
X2	Rear Surface of Vehicle to Front of Engine	4120	3875	245
X3	Rear Surface of Vehicle to Firewall	3620	3465	155
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3260	3228	32
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3249	3224	25
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3225	3182	43
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3210	3186	24
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2150	2114	36
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2137	2118	19
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2124	2077	47
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2107	2080	27
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3206	3160	46
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3197	3173	24
X14	Rear Surface of Vehicle to Firewall, Right Side	3590	3465	125
X15	Rear Surface of Vehicle to Firewall, Left Side	3570	3445	125
X16	Rear Surface of Vehicle to Steering Column	2710	2720	-10
X17	Center of Steering Column to "A" Post	420	435	-15
X18	Center of Steering Column to Headliner	415	415	0
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4635	4290	345
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4630	4300	330
X21	Length of Engine Block	470	470	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2950	2950	0
CD	Rear Surface of Vehicle to Center of Dash Panel	2885	2900	-15
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2900	2900	0

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

DOOR OPENING WIDTH



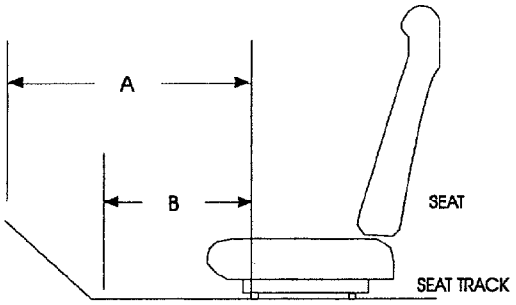
UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	1030	1485	1025	1035	1500	1020
AFTER TEST	1030	1505	1030	1030	1510	1025
DIFFERENCE	0	-20	-5	5	-10	-5

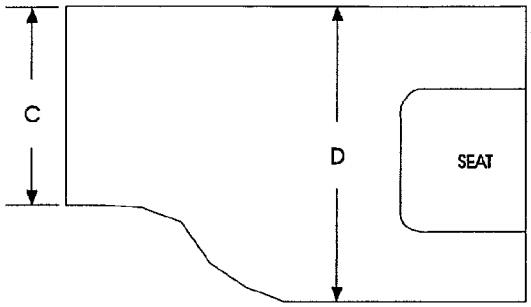
UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2695	2695
AFTER TEST	2585	2560
DIFFERENCE	110	135

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

STATIC FOOTWELL DEFORMATION





DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	590	525	65
B	490	470	20
C	370	365	5
D	460	440	20

PASSENGER

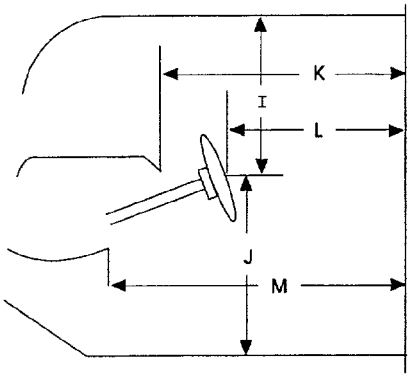
Measurement	Pre-Test	Post-Test	Difference
A	630	540	90
B	530	510	20
C	365	370	-5
D	425	420	5

Units = mm

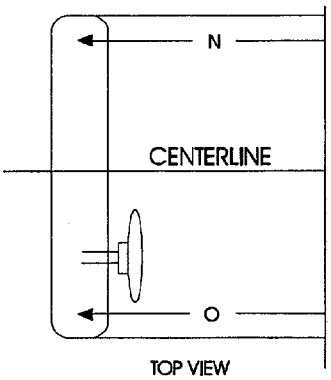
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

STATIC PASSENGER COMPARTMENT INTRUSION

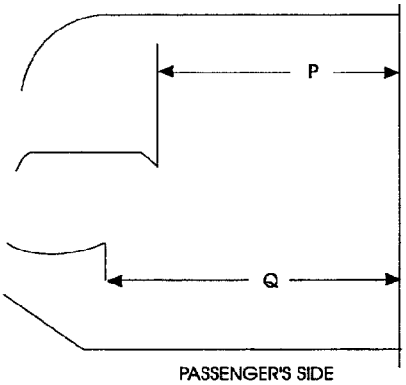


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS FROM C-PILLAR BELT ANCHORAGE



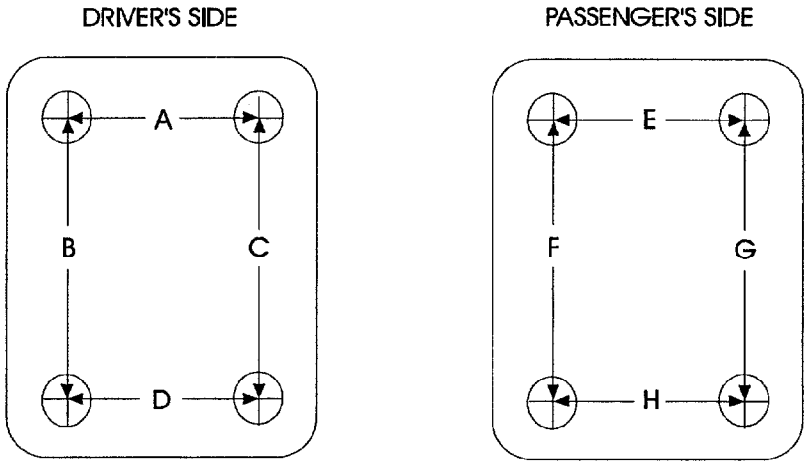
PASSENGER'S SIDE

Measurement	Pre-Test	Post-Test	Difference
I	405	400	5
J	630	635	-5
K	780	795	-15
L	540	550	-10
M	785	795	-10
N	780	780	0
O	730	730	0
P = K (PASS.)	755	765	-10
Q = M (PASS.)	730	750	-20

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

FLOORBOARD DEFORMATION



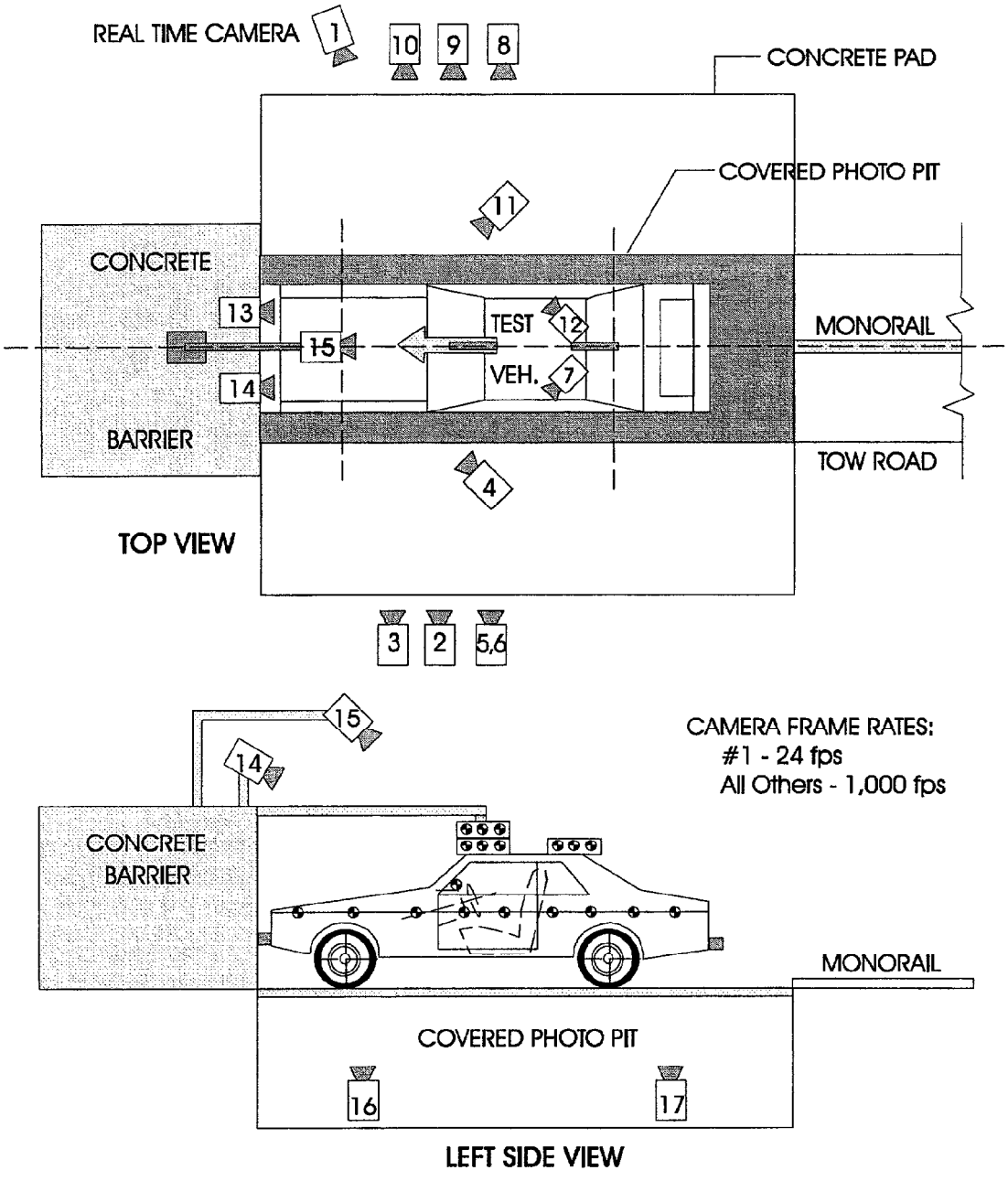
TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	425	430	-5
B	670	670	0
C	705	700	5
D	460	455	5
E	425	430	-5
F	695	700	-5
G	660	670	-10
H	385	385	0

Units = mm

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera information shown in DATA SHEET NO. 15.



DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

NHTSA Test No.: MW0201 Vehicle: 1998 Ford Contour 4-Door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)* X	Y	Z	ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	6341	1720	1091	-4	5984	12.5	1000
3	Left Side View	7693	1132	1102	-3	7336	25	1000
4	Driver and Interior View	5135	1846	1919	-9	-	25	1000
5	Steering Column (Bottom)	7382	2087	1165	-5	7025	25	1000
6	Steering Column (Top)	7382	2087	1776	-9	7025	25	1000
7	Left Belt	-	-	-	-	-	8	-
8	Overall Right Side	6562	2032	1045	-3	6205	13	1000
9	Right Side View	7650	1602	1087	-2	7293	25	1000
10	Right Passenger View	7692	2017	1399	-3	7335	35	1000
11	Passenger and Interior View	5116	3014	1874	-11	-	25	1010
12	Right Belt	-	-	-	-	-	8	-
13	Passenger Front View	580	0	2000	-52	-	8	1010
14	Driver Front View	580	0	2000	-46	-	8	n.t.
15	Windshield View	0	530	3048	-57	-	8	-
16	Pit View of Engine	0	950	-3048	90	-	13	1000
17	Pit View of Fuel Tank	0	2864	-3048	90	-	13	1010

*X = film plane to monorail centerline

Y = film plane to impact location

Z = film plane to ground

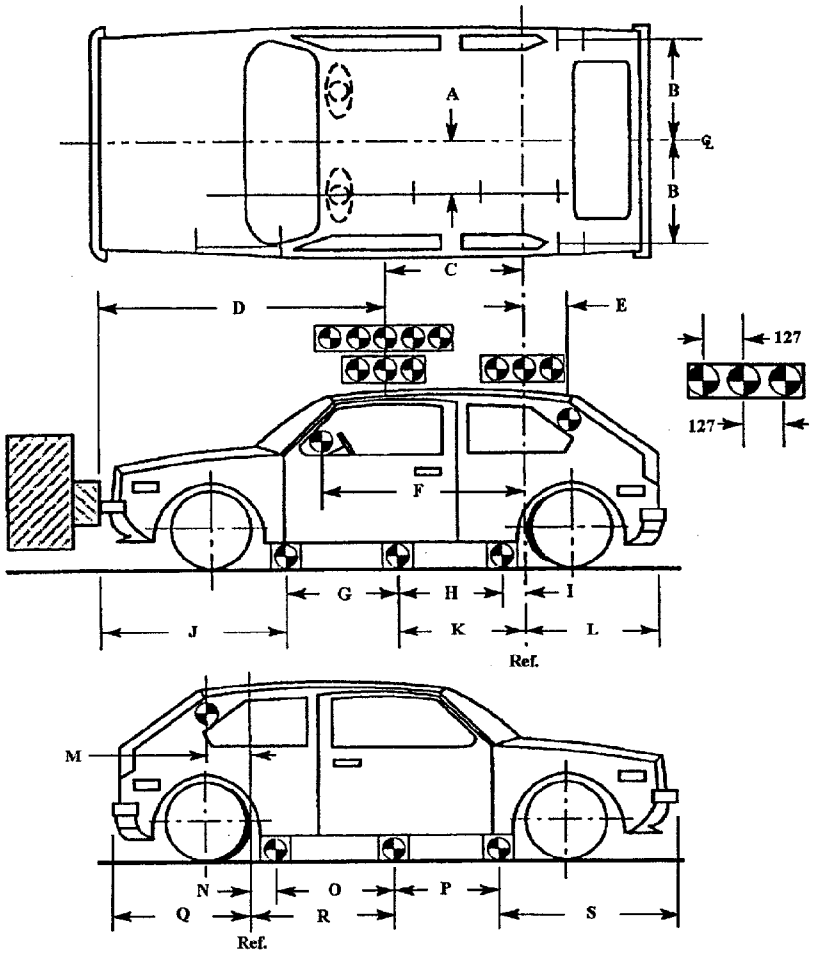
** = referenced to horizontal plane

N.T. indicates No Timing

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

(Dimensions in millimeters)

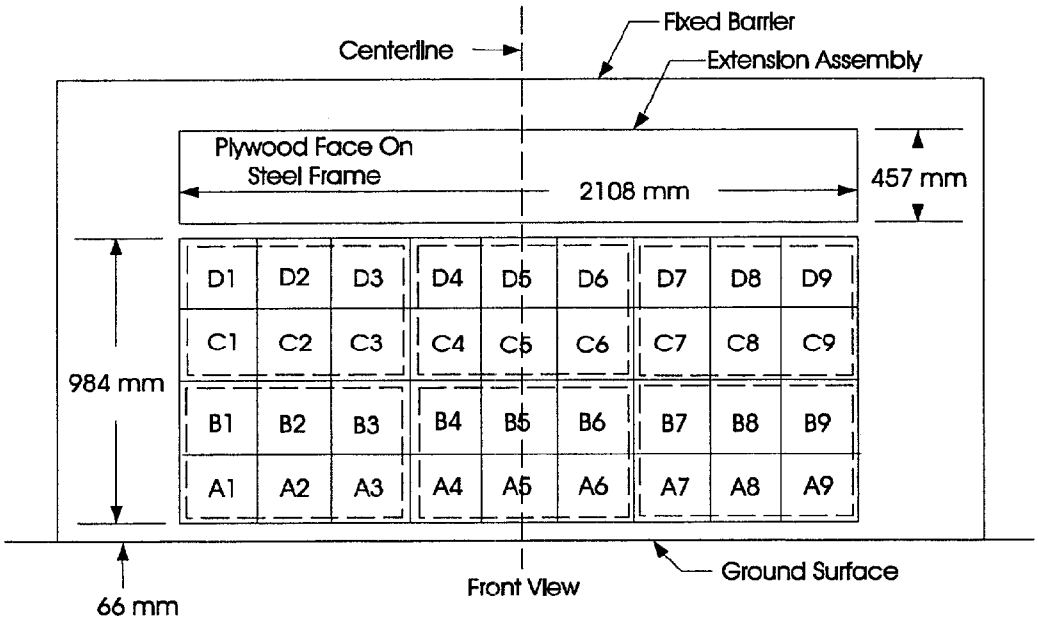
A	281
B	1296
C	1220
D	2326
E	305
F	1545
G	915
H	915
I	102
J	1406
K	1017
L	1464
M	305
N	102
O	915
P	915
Q	1464
R	1017
S	1406



DATA SHEET NO. 17 LOAD CELL LOCATIONS ON FIXED BARRIER

LOAD CELL BARRIER NOT REQUESTED FOR THIS TEST

36 Load Cells
4 Rows
9 Columns
6 Groupings (6 cells/group)



6 GROUPS OF 6 LOAD CELLS EACH

Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

The following data is presented in Appendix B:

(1)Data from 36 individual load cells
(2)Total or Sum of 36 individual load cells
(3)Data from 6 Groupings shown above (6 cells/group)

DATA SHEET NO. 18 POST TEST AIR BAG DATA

NHTSA No. : MW0201; Test Date: October 17,1997; Technician: J. Cz.

Vehicle Model Year/Make/Model: 1998 Ford Contour

A. No. of vent holes: 2 -Driver 1 -Passenger

B. Size of vent holes: (mm^2) 20 -Driver 30 -Passenger

C. Total vent area: (mm^2) 40 -Driver 20 -Passenger

D. Deflated air bag length and width dimensions or, if round,diameter. (mm)

Driver: - -Length; - -Width; 55 -Diameter

Passenger: 500 -Height; 680 -Width; 500 -Depth

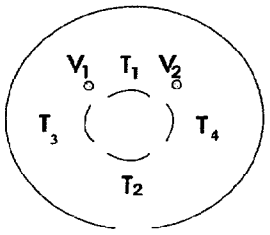
E. Is the air bag tethered?

Driver: x -Yes; - -No; If yes, record length of tether- 300

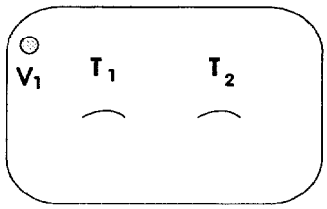
Passenger: x -Yes; - -No; If yes, record length of tether- 350

Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.
(Note: Not to scale; V_n = Vent hole$_n$, T_n = Tether$_n$).

DRIVER
vents underneath bag



PASSENGER
vents underneath bag



F. Record part numbers and manufacturer name of the air bag and gas generator.

Driver: Air bag: -

Generator: X2JX202K10191

Passenger: Air bag: -

Generator: 98BBF042B84AA

DATA SHEET NO.19 ACCIDENT INVESTIGATION DIVISION DATA

FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Ford Contour 4-Door Sedan

NHTSA Test No.: MW0201 VIN: 3FAFP6533WH118227

Model Year: 1998 Build Date: 8/97 Test Date: October 17,1997

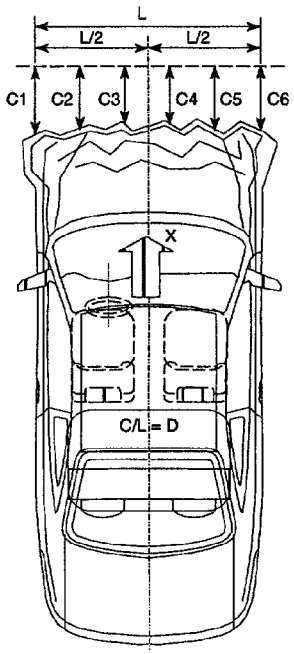
Vehicle Size Category: Sedan Test Weight: 1501 kg

Vehicle Wheelbase: 2675 mm; Front Overhang: 1406 mm; Overall Width: 1751 mm

Collision Deformation Classification (CDC) Code: 12FDEW2

Crush Depth Dimensions;

	PRE	POST	DIFF	
C1 =	4440	4155	-285	mm
C2 =	4655	4290	-365	mm
C3 =	4695	4310	-385	mm
C4 =	4695	4315	-380	mm
C5 =	4655	4310	-345	mm
C6 =	4435	4130	-305	mm



Midpoint of Damage: D = Vehicle Centerline (Longitud.)

Longitude Length of Damaged Region: L1= 1730 mm

L2= 865 mm

L3= 346 mm

Appendix A

PHOTOGRAPHS

PHOTOGRAPHS

PHOTOGRAPHS (continued)

PHOTOGRAPH NOT AVAILABLE

Figure A-1 LOAD CELL LOCATIONS

Figure A-2 PRE-TEST FRONT VIEW

Figure A-3 POST-TEST FRONT VIEW

Figure A-4 PRE-TEST LEFT SIDE VIEW

Figure A-5 POST-TEST LEFT SIDE VIEW

Figure A-6 PRE-TEST RIGHT SIDE VIEW

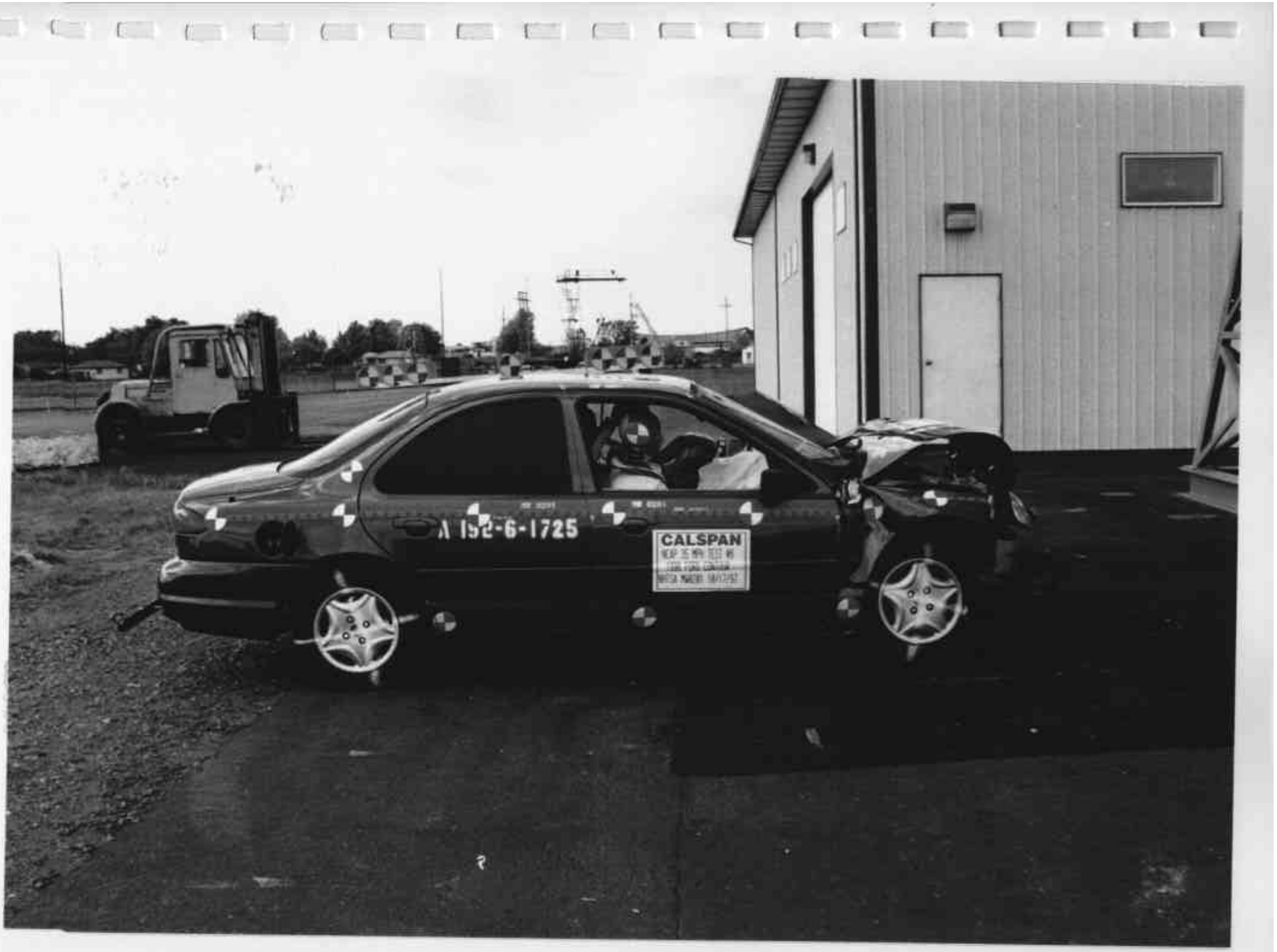


Figure A-7 POST-TEST RIGHT SIDE VIEW

Figure A-8 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

Figure A-9 POST-TEST RIGHT FRONT THREE-QUARTER VIEW

PHOTOGRAPH NOT AVAILABLE

Figure A-10 PRE-TEST LEFT REAR THREE-QUARTER VIEW

Figure A-11 POST-TEST LEFT REAR THREE-QUARTER VIEW

8413-6

Figure A-12 PRE-TEST WINDSHIELD VIEW

Figure A-13 POST-TEST WINDSHIELD VIEW

Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

Figure A-15 FUEL CAP VIEW

Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

Figure A-17 POST-TEST FRONT UNDERBODY VIEW

Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW

Figure A-20 PRE-TEST REAR UNDERBODY VIEW

Figure A-21 POST-TEST REAR UNDERBODY VIEW

Figure A-22 PRE-TEST DRIVER POSITION VIEW

Figure A-23 POST-TEST DRIVER POSITION VIEW

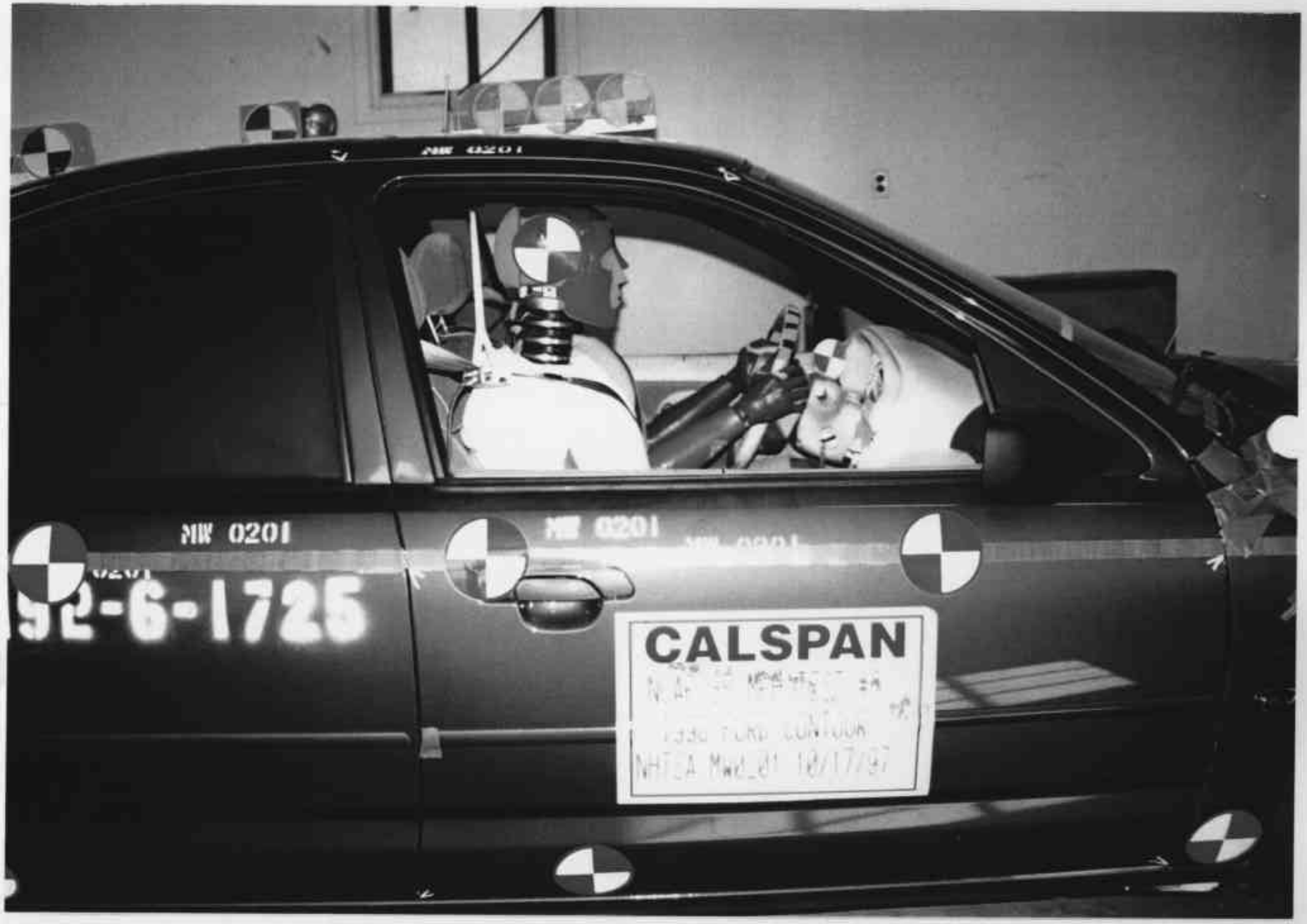


Figure A-24 PRE-TEST PASSENGER POSITION VIEW

8413-6

Figure A-25 POST-TEST PASSENGER POSITION VIEW

Figure A-26 PRE-TEST DRIVER AND INTERIOR VIEW

Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW

Figure A-28 PRE-TEST PASSENGER AND INTERIOR VIEW

Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW

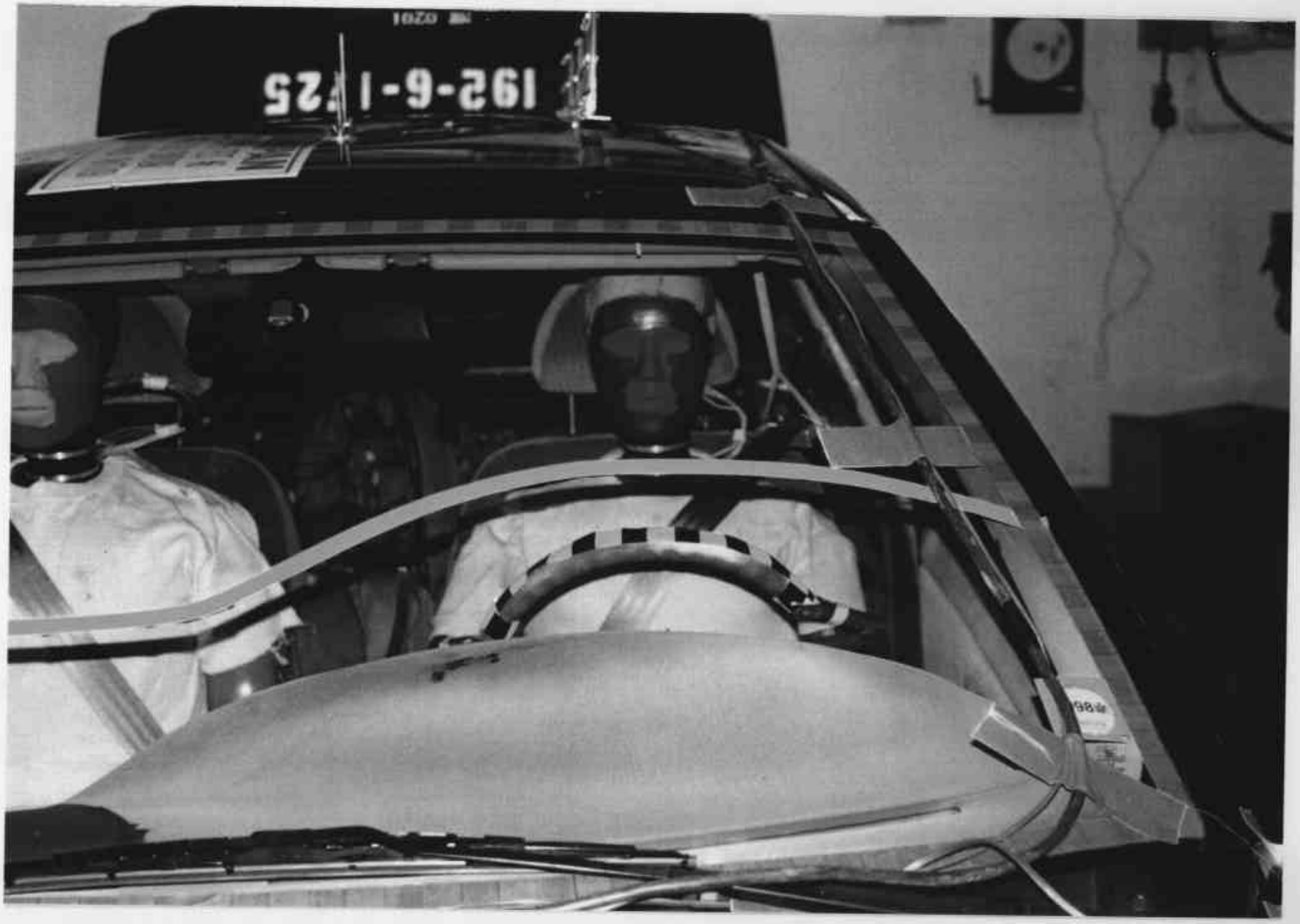


Figure A-30 PRE-TEST DRIVER HEAD LOCATION

Figure A-31 POST-TEST DRIVER HEAD LOCATION

Figure A-32 PRE-TEST PASSENGER HEAD LOCATION

Figure A-33 POST-TEST PASSENGER HEAD LOCATION

Figure A-34 PRE-TEST DRIVER FLOOR PAN VIEW

Figure A-35 POST-TEST DRIVER FLOOR PAN VIEW

Figure A-36 PRE-TEST PASSENGER FLOOR PAN VIEW

Figure A-37 POST-TEST PASSENGER FLOOR PAN VIEW

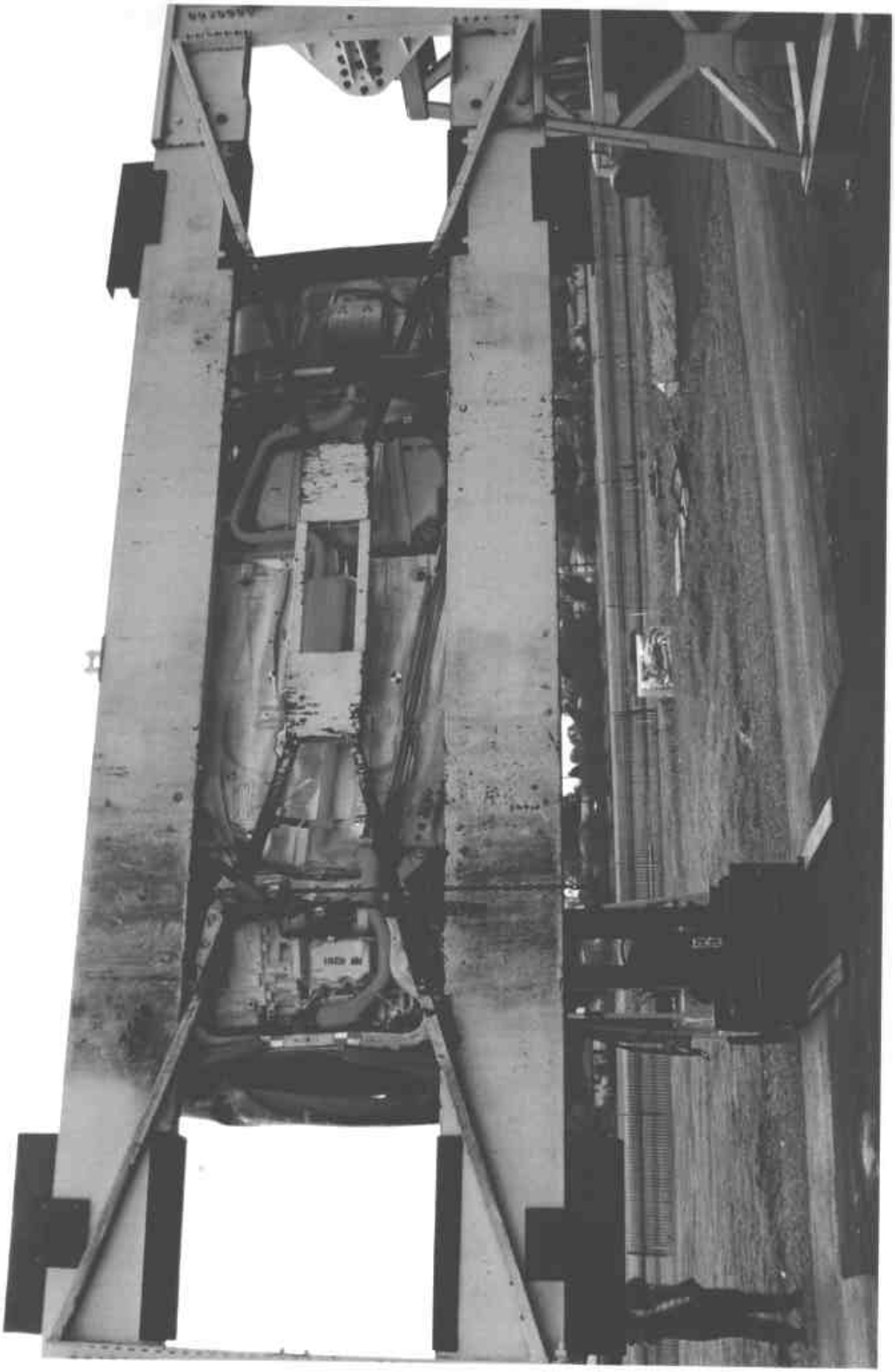


Figure A-38 ROLLOVER VIEW

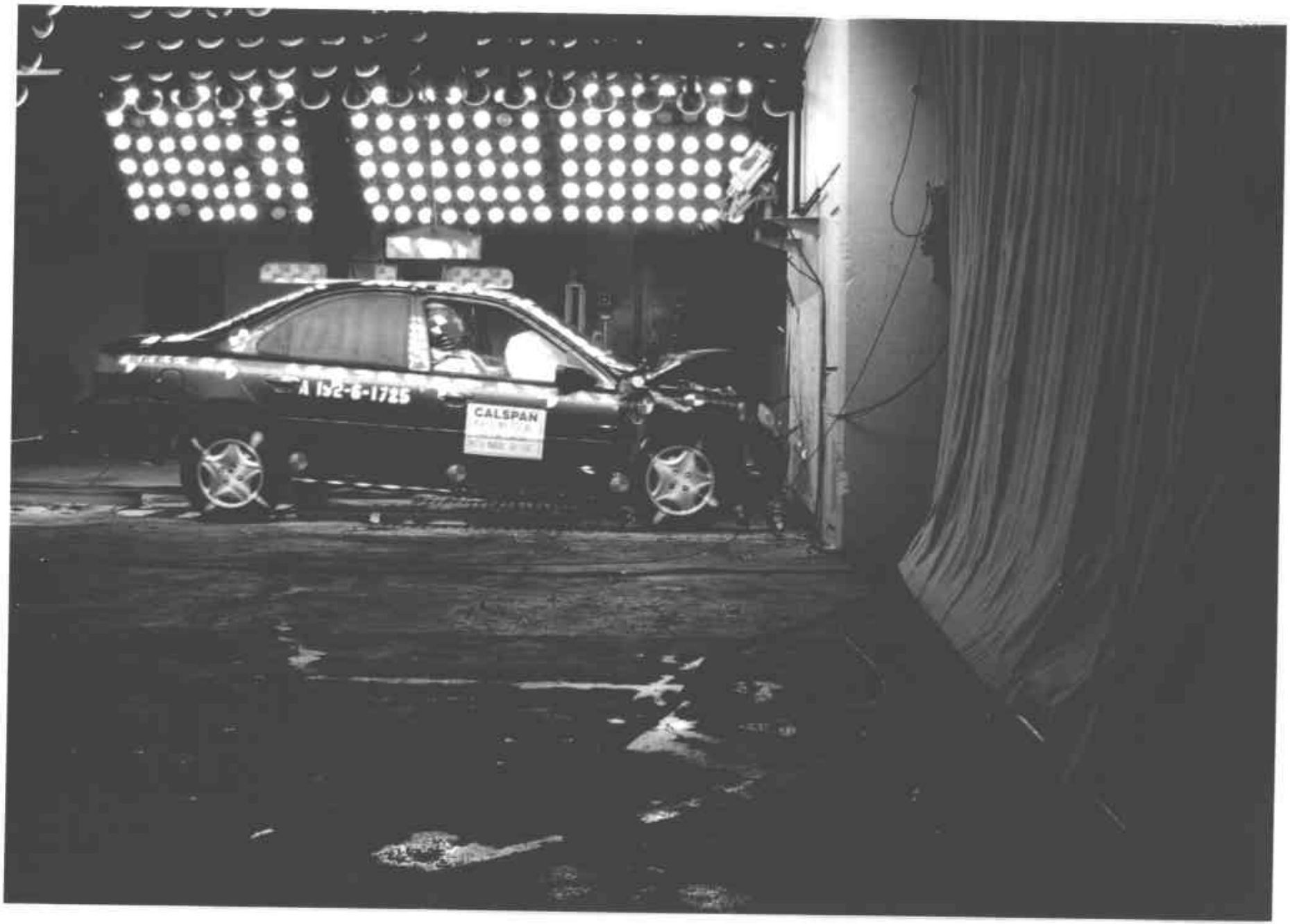


Figure A-39 IMPACT VIEW

Appendix B

DUMMY AND VEHICLE RESPONSE DATA

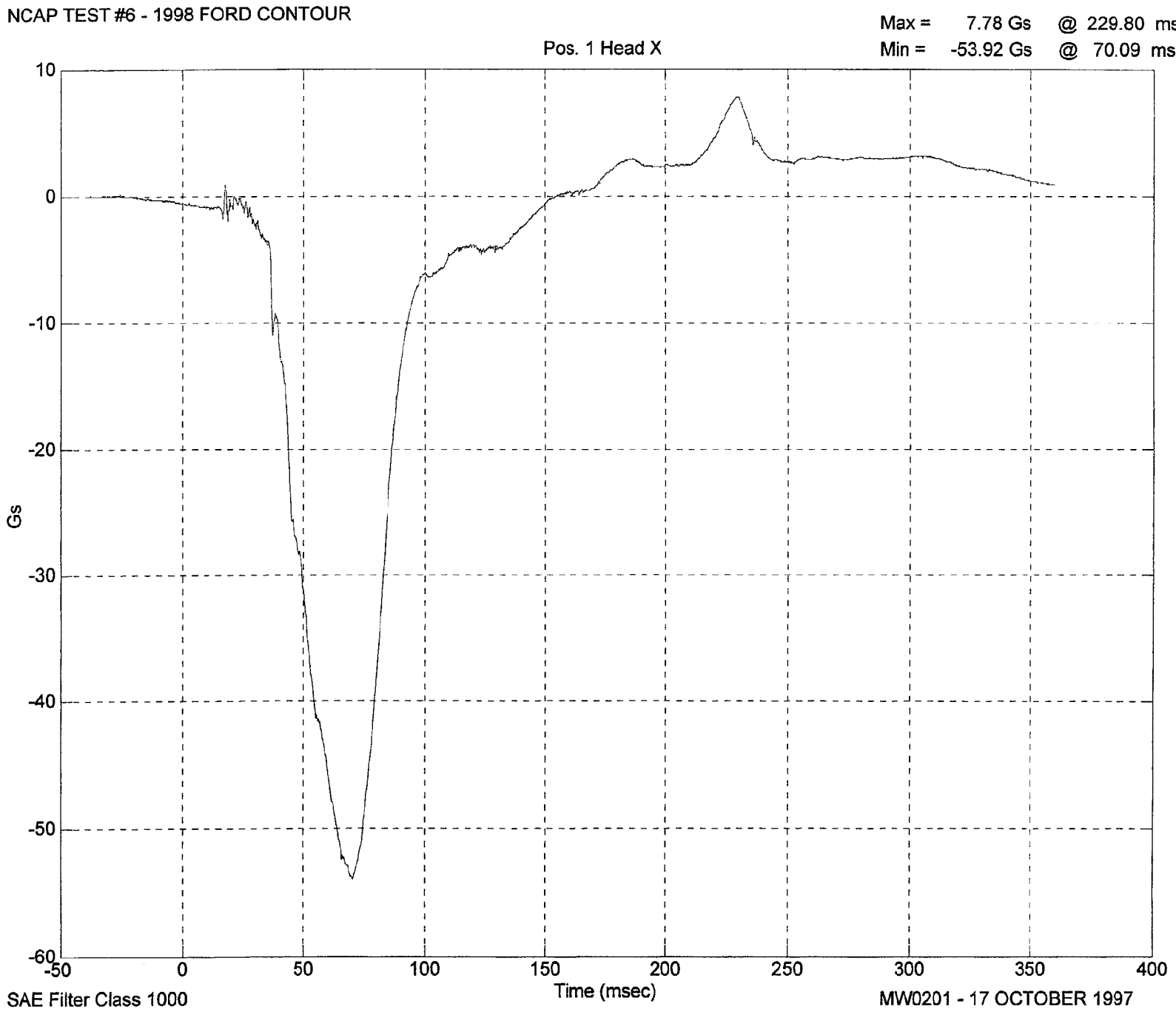
NHTSA TEST NO. MW0201

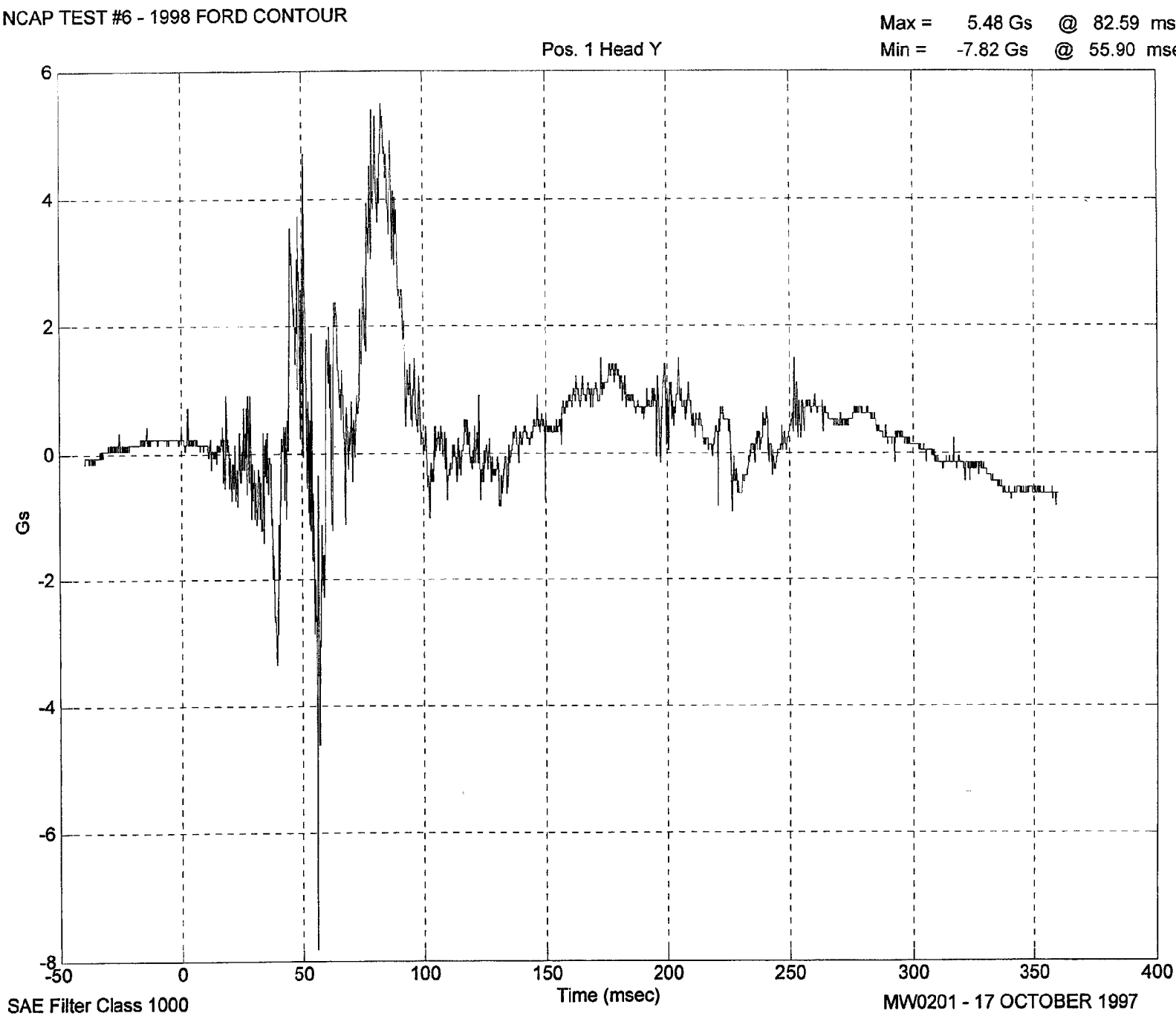
DUMMY DATA

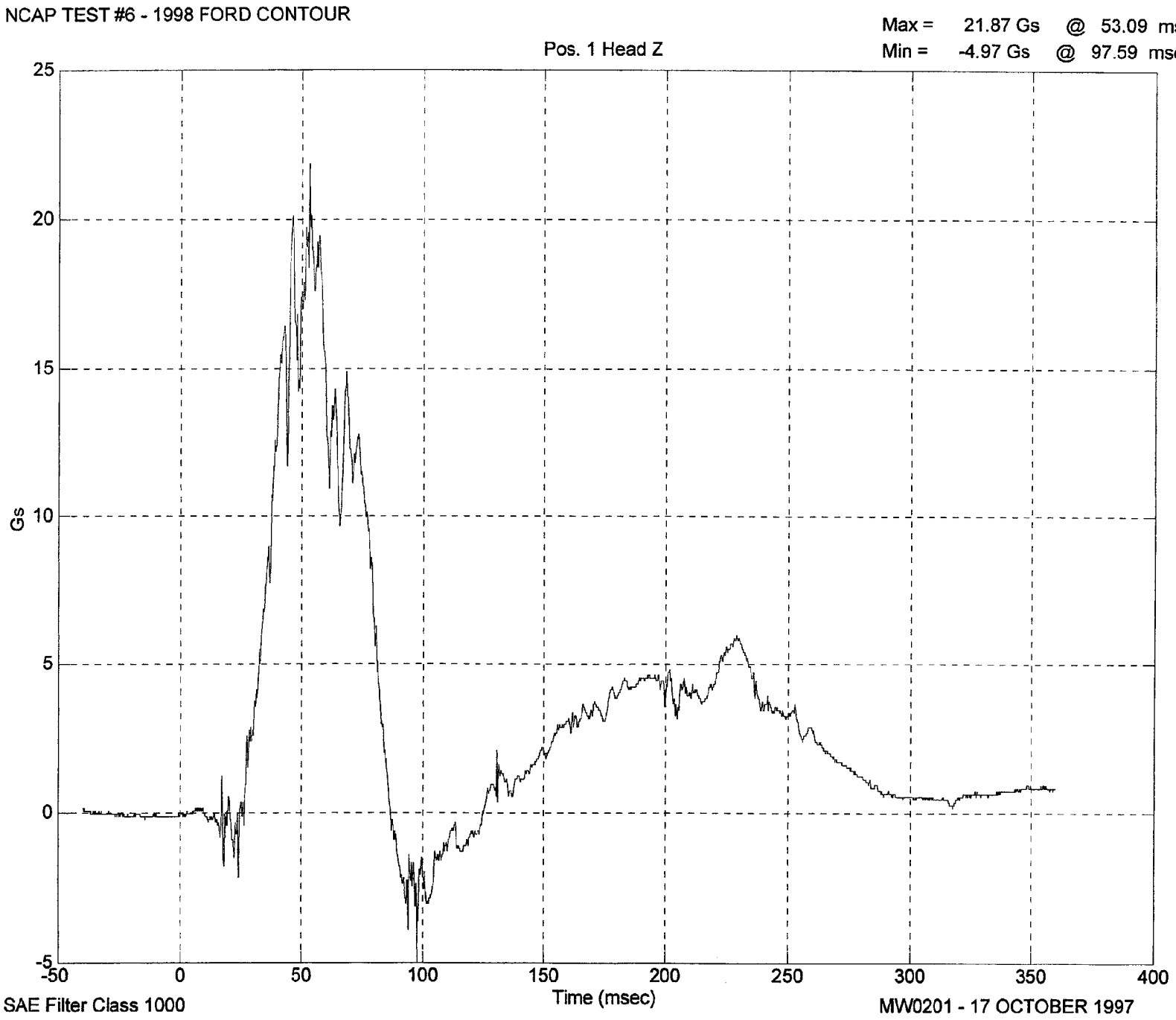
CLASS	FILTER CHANNEL
Head Accelerations	1000
Chest Accelerations	180
Chest Displacements	60
Femur Forces	600
Belt Loads	60
Belt Displacements	180
Neck Forces	1000
Neck Moments	600

Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers

Transducer	DOT/NHTSA Sign Convention (positive unless noted)
Upper Neck Load Cell	Fx Head forward Fy Head left Fz Neck in tension Mx Right ear to right shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower Lumbar)	Fx Chest forward Fy Chest left Fz Spine in tension
Femur Load Cell	Compression is negative
Upper Tibia Load Cell (right and left leg)	Mx Support tibia, load right side center My Support tibia, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fy Foot right w/r to left Fz Tibia in tension Mx Support tibia, press right side center


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Head X
Max = 7.78 Gs @ 229.80 msec
Min = -53.92 Gs @ 70.09 msec
10
0
-10
-20
-30
-40
-50
-60
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Head Y
Max = 5.48 Gs @ 82.59 msec
Min = -7.82 Gs @ 55.90 msec
Gs
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

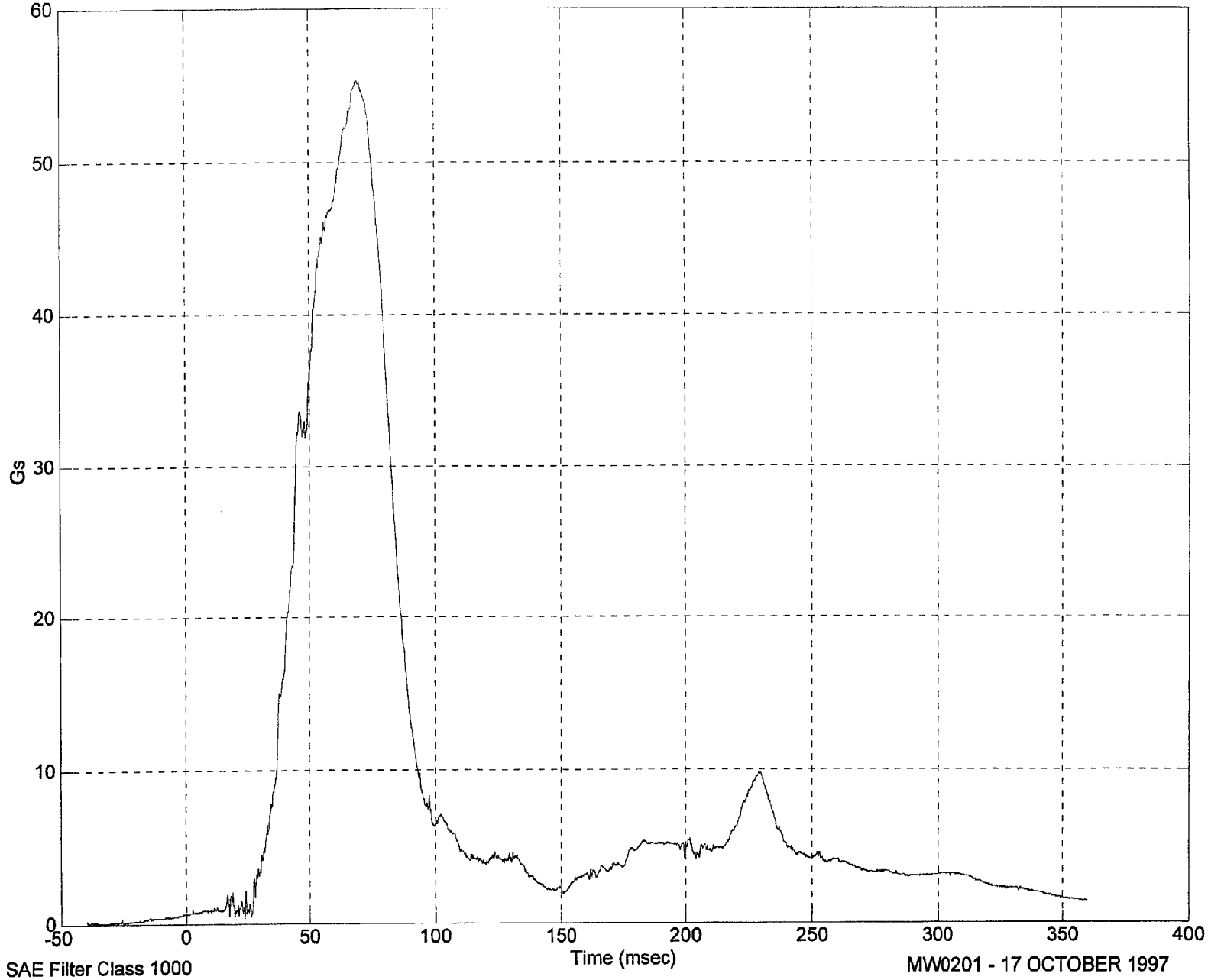

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Head Z
Max = 21.87 Gs @ 53.09 msec
Min = -4.97 Gs @ 97.59 msec
Gs
25
20
15
10
5
0
-5
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR

Max = 55.35 Gs @ 69.00 msec

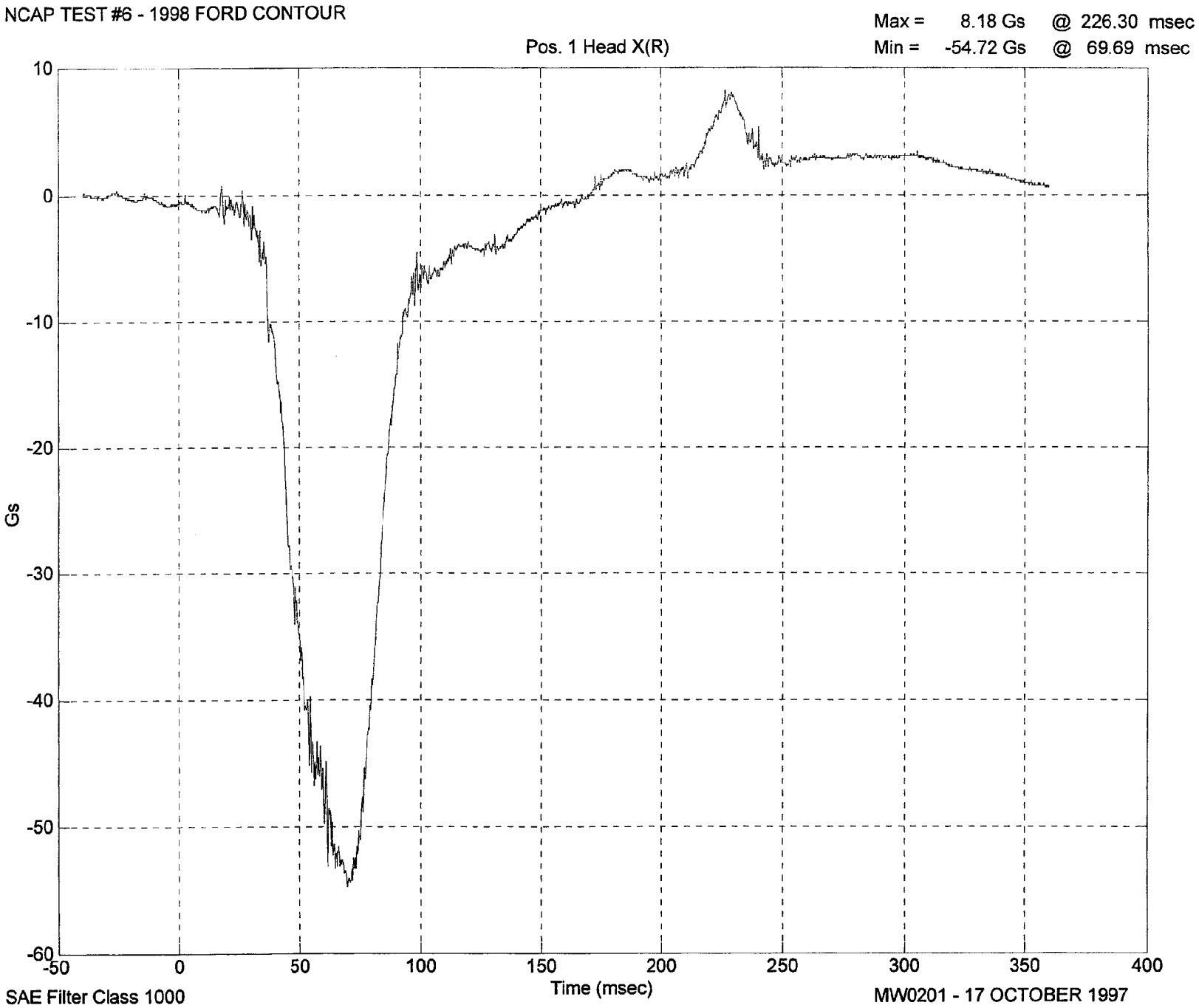
Pos. 1 Head Resultant

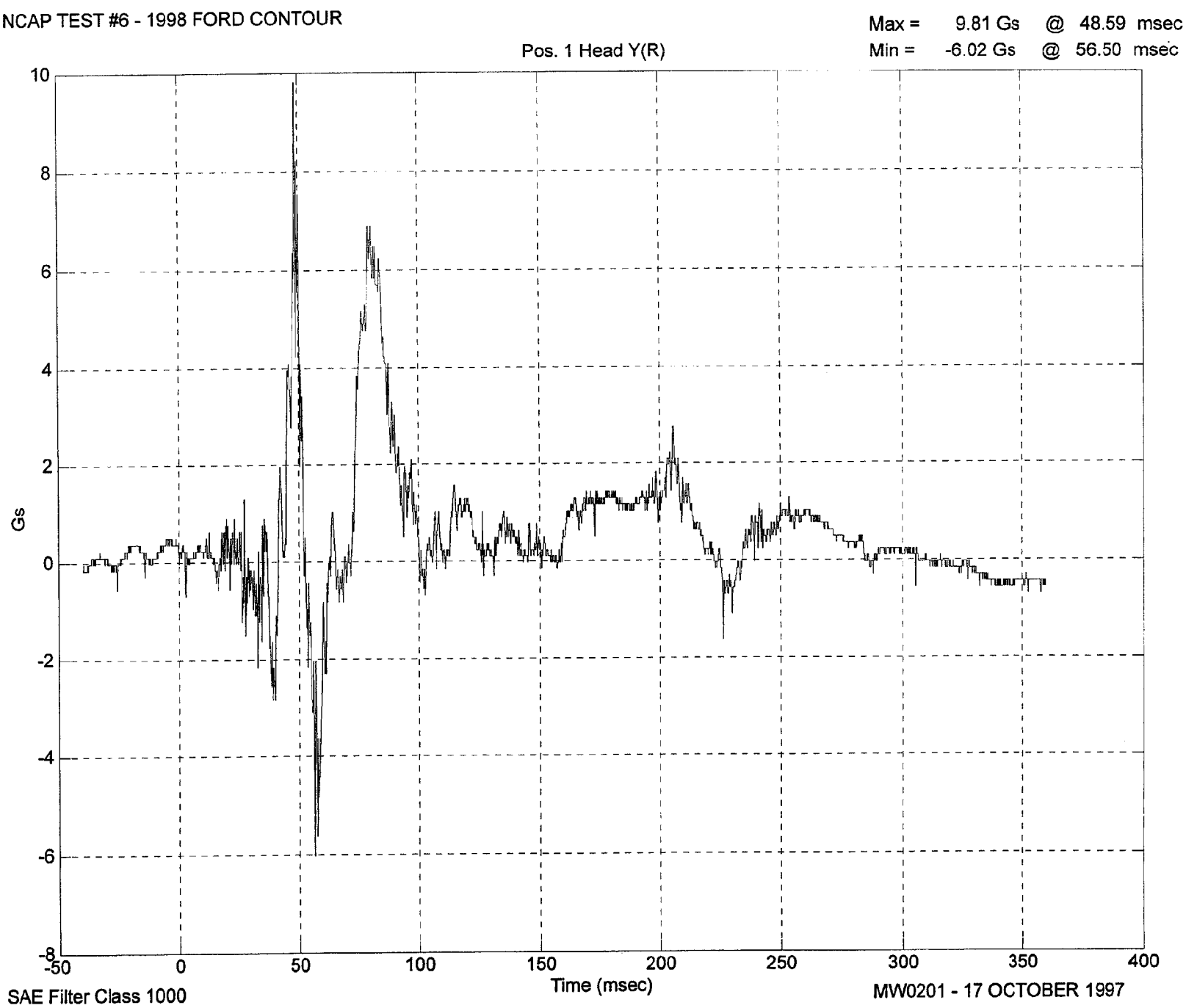
Min = .05 Gs @ -23.29 msec

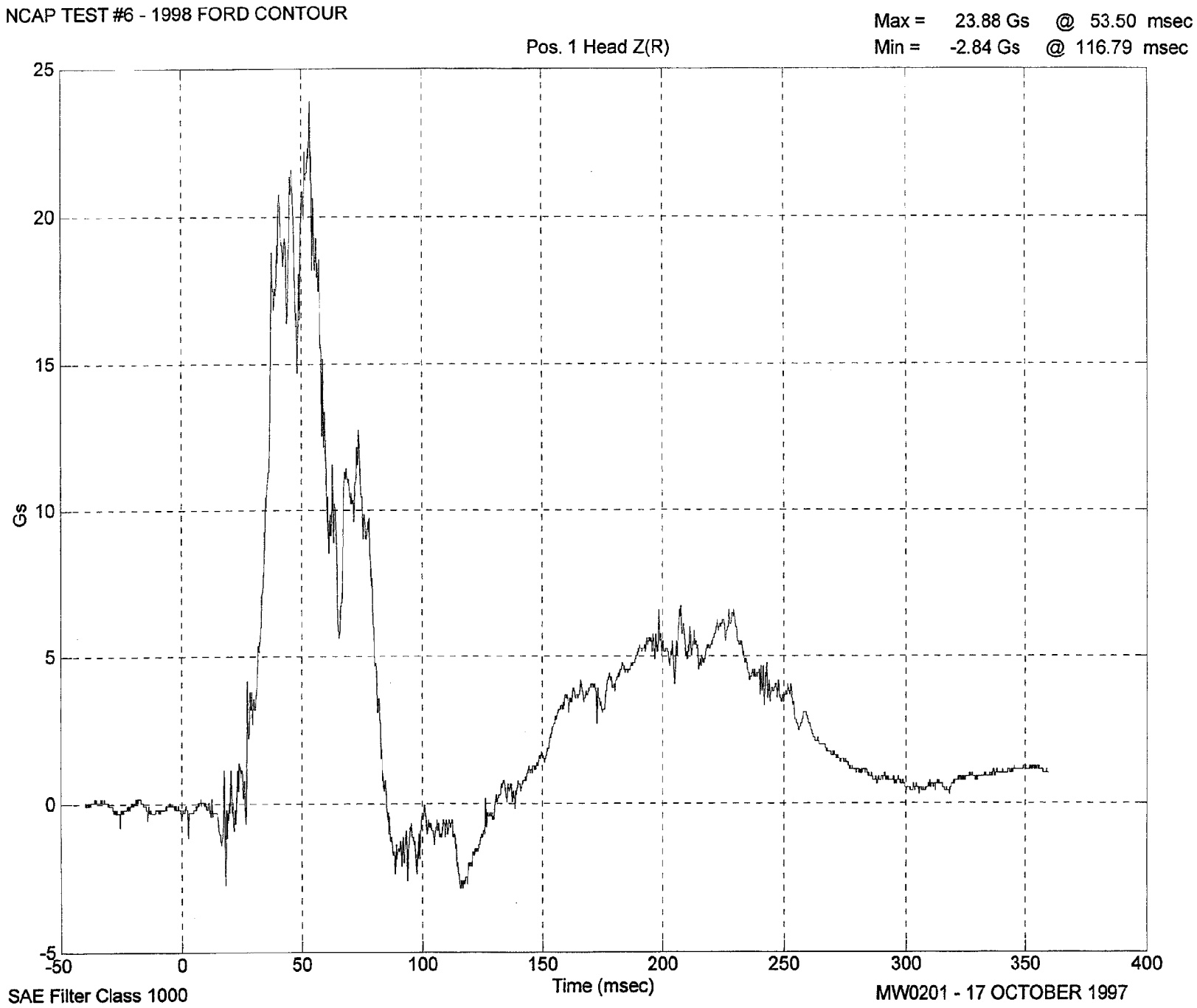


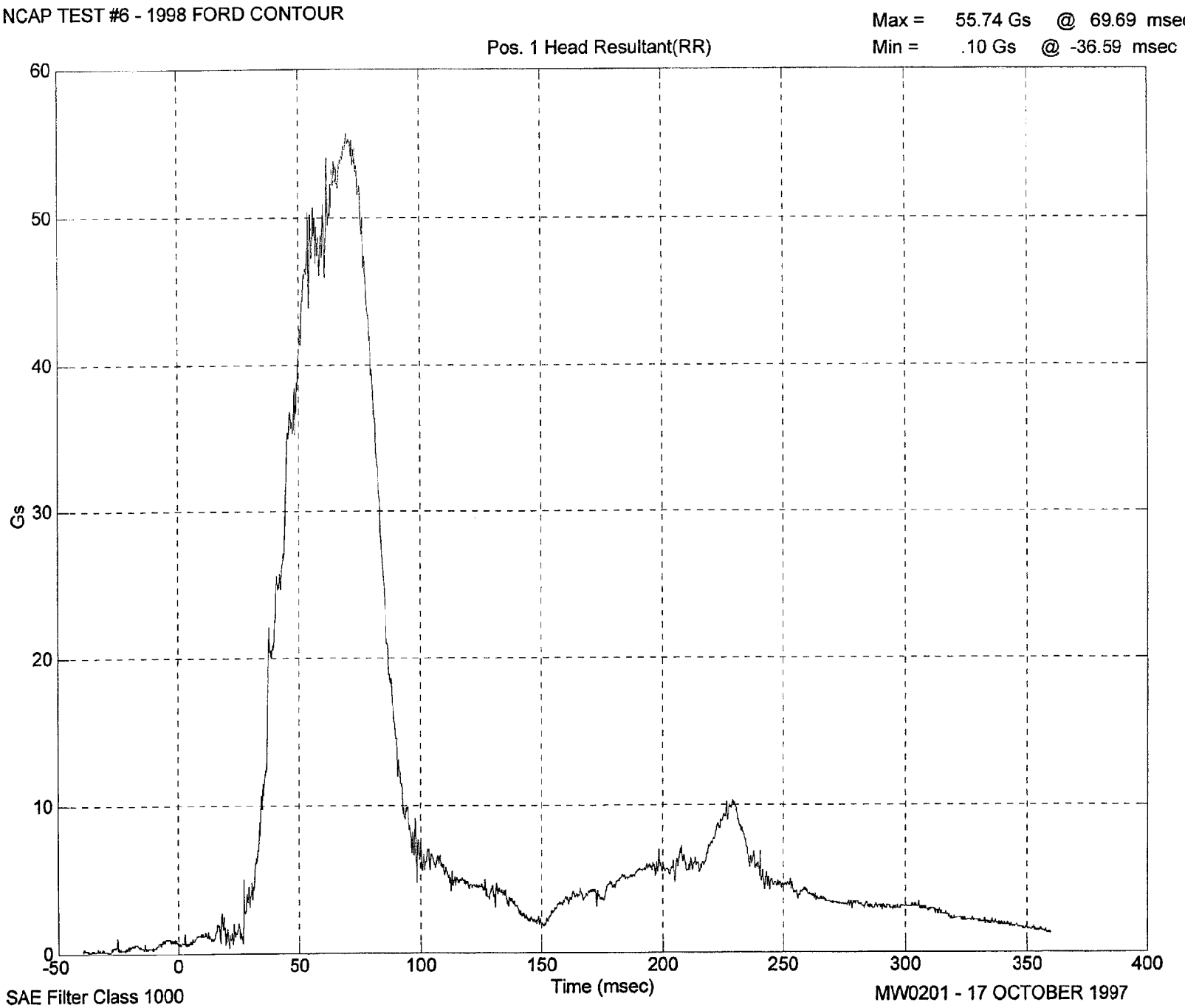
SAE Filter Class 1000

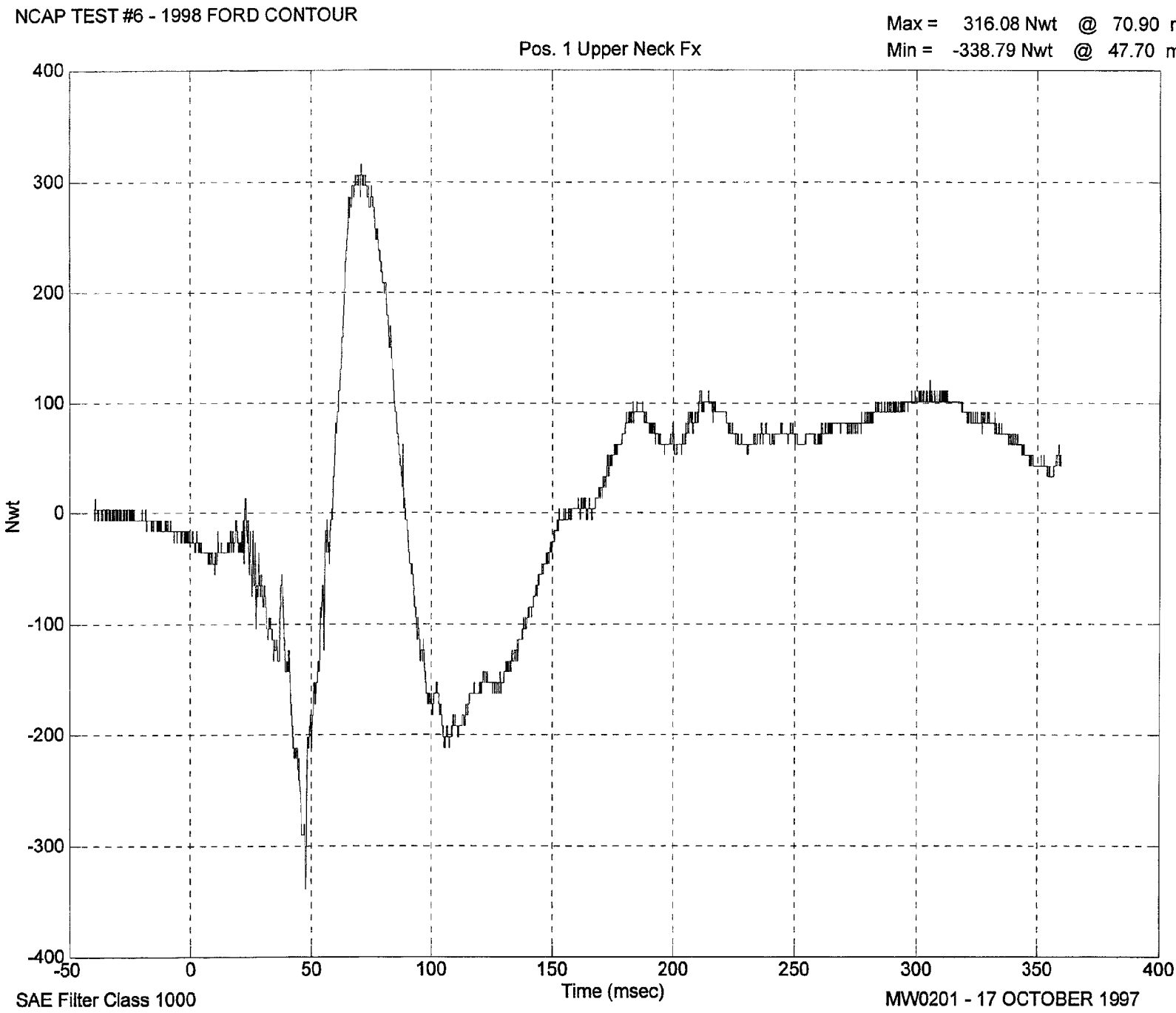
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Head X(R)
Max = 8.18 Gs @ 226.30 msec
Min = -54.72 Gs @ 69.69 msec
10
0
-10
-20
-30
-40
-50
-60
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

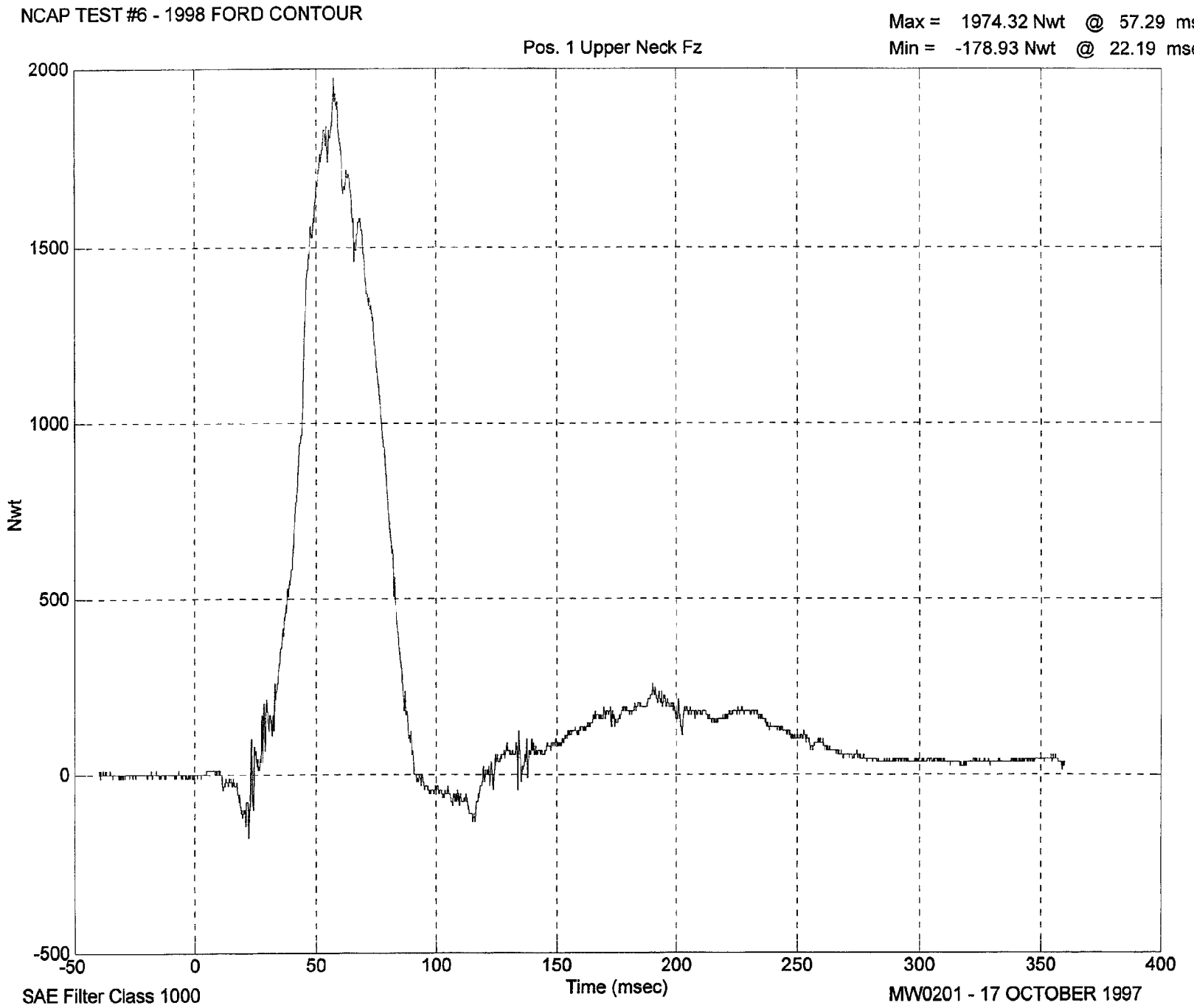

NCAP TEST #6 - 1998 FORD CONTOUR
Max = 9.81 Gs @ 48.59 msec
Min = -6.02 Gs @ 56.50 msec
Pos. 1 Head Y(R)
Gs
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

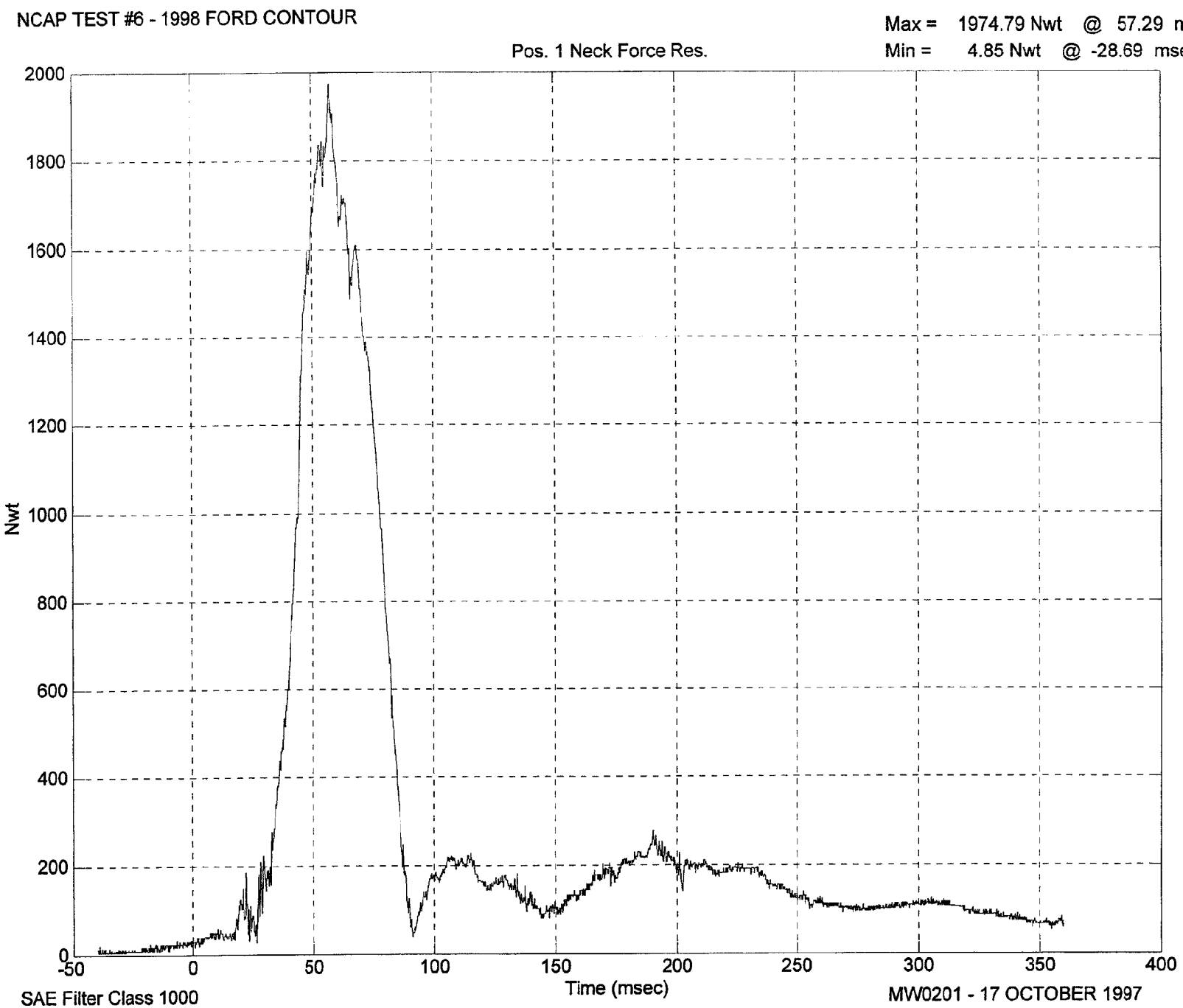

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Head Z(R)
Max = 23.88 Gs @ 53.50 msec
Min = -2.84 Gs @ 116.79 msec
Gs
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

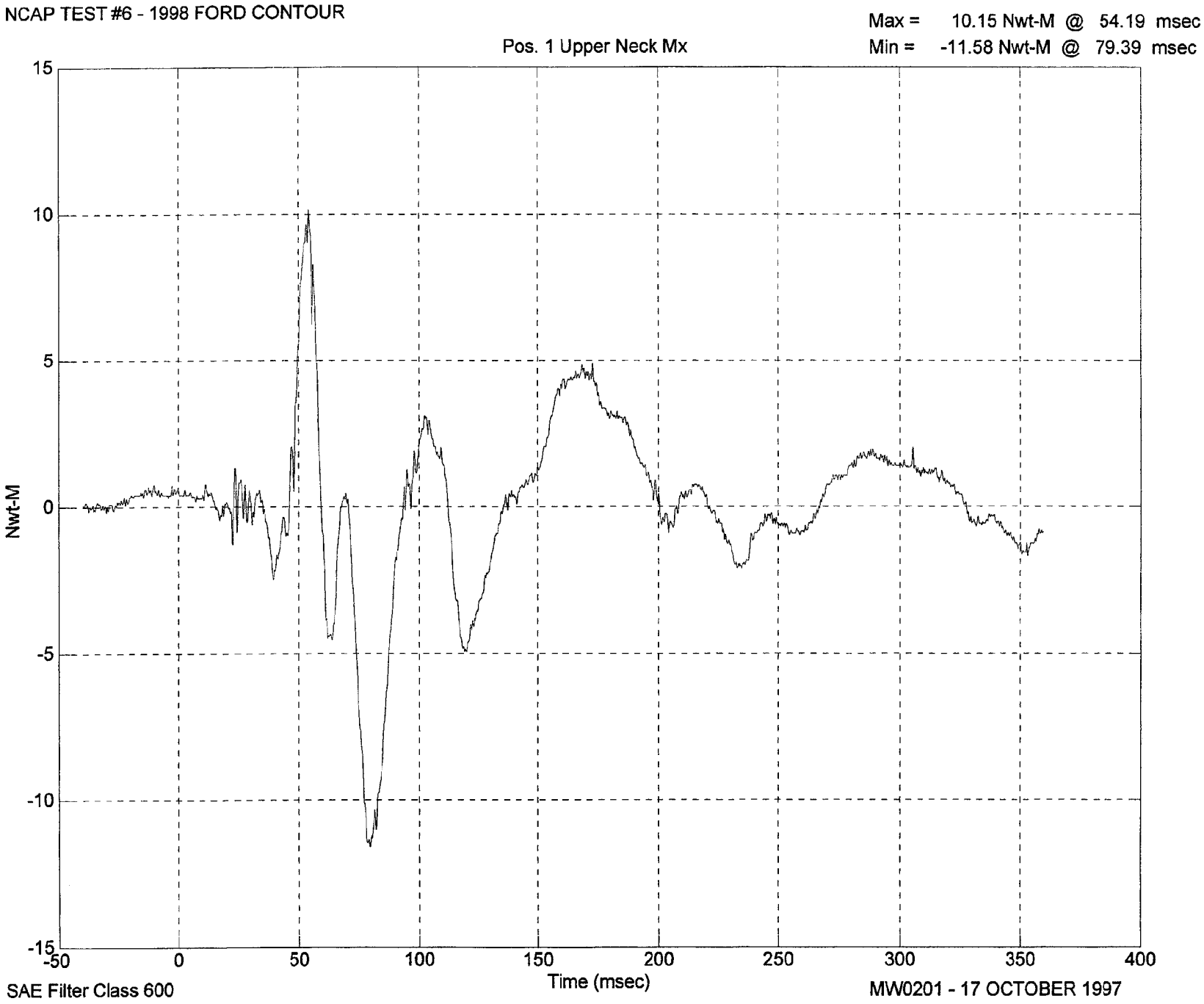

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Head Resultant(RR)
Max = 55.74 Gs @ 69.69 msec
Min = .10 Gs @ -36.59 msec
Gs
60
50
40
30
20
10
0
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

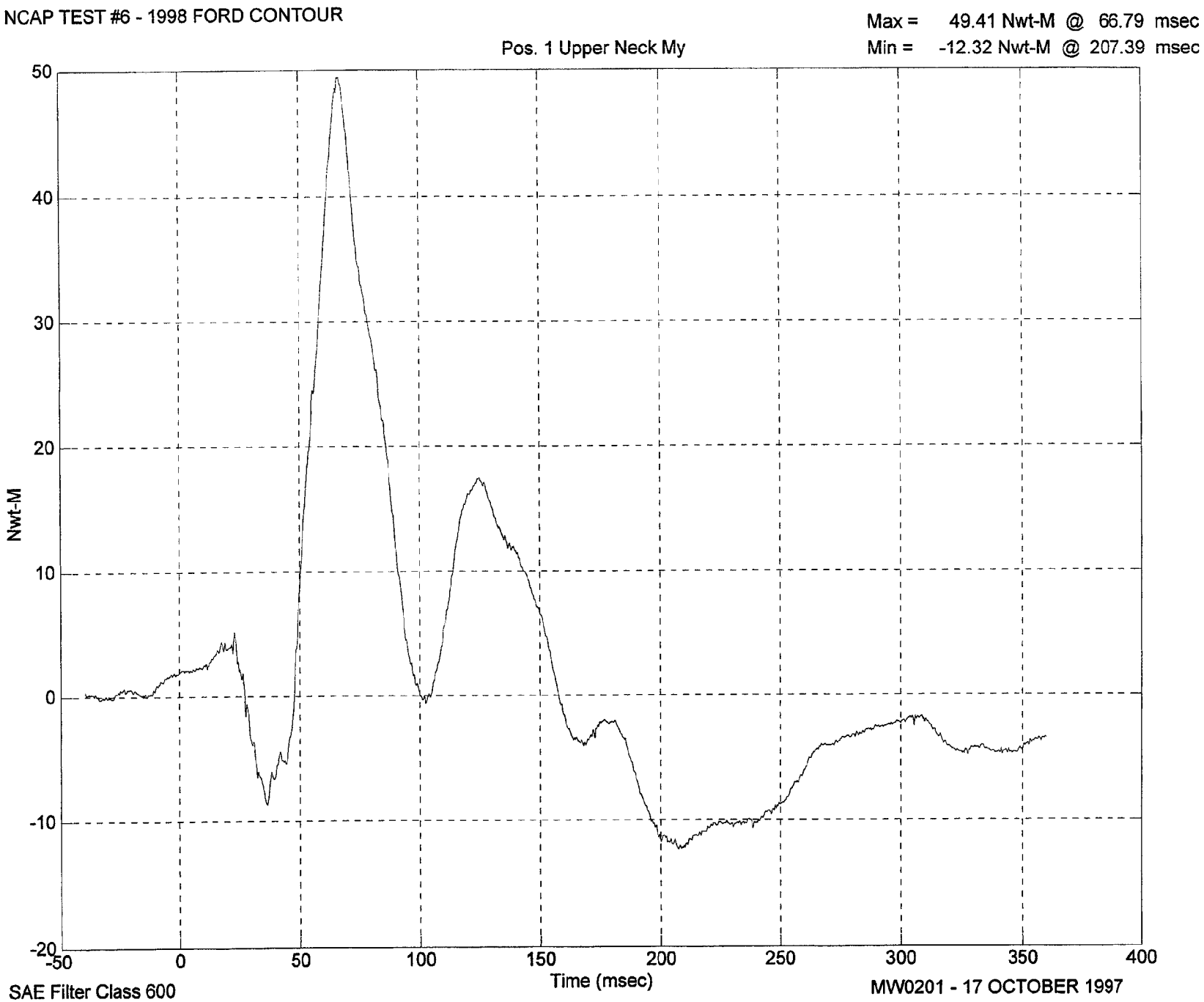

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Upper Neck Fx
Max = 316.08 Nwt @ 70.90 msec
Min = -338.79 Nwt @ 47.70 msec
Nwt
400
300
200
100
0
-100
-200
-300
-400
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

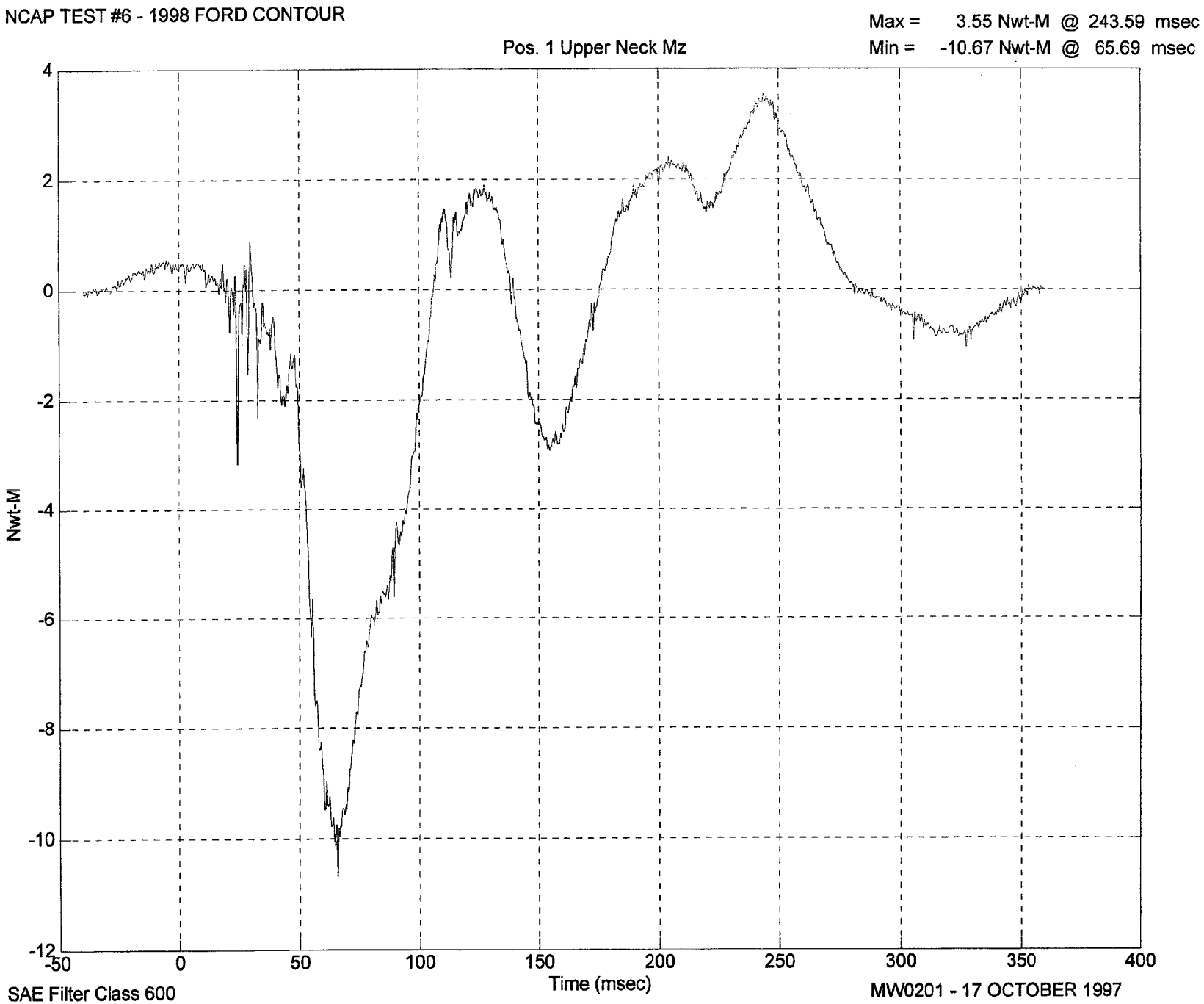

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Upper Neck Fy
Max = 88.15 Nwt @ 79.89 msec
Min = -105.38 Nwt @ 55.90 msec
100
50
0
-50
-100
-150
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Upper Neck Fz
Max = 1974.32 Nwt @ 57.29 msec
Min = -178.93 Nwt @ 22.19 msec
2000
1500
1000
500
0
-500
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Neck Force Res.
Max = 1974.79 Nwt @ 57.29 msec
Min = 4.85 Nwt @ -28.69 msec
Nwt
2000
1800
1600
1400
1200
1000
800
600
400
200
0
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Upper Neck Mx
Max = 10.15 Nwt-M @ 54.19 msec
Min = -11.58 Nwt-M @ 79.39 msec
Nwt-M
15
10
5
0
-5
-10
-15
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Upper Neck My
Max = 49.41 Nwt-M @ 66.79 msec
Min = -12.32 Nwt-M @ 207.39 msec
Nwt-M
50
40
30
20
10
0
-10
-20
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

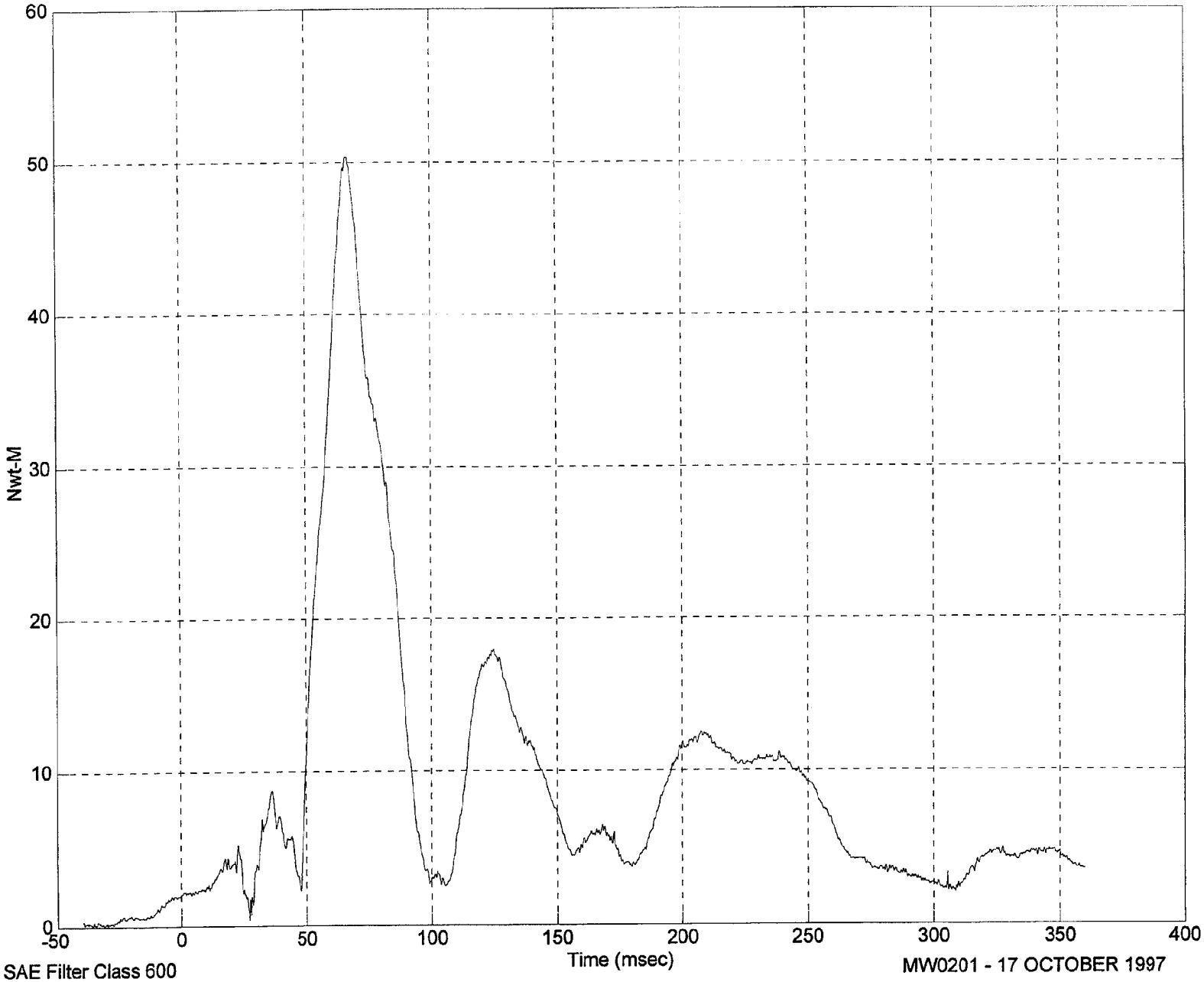

NCAP TEST #6 - 1998 FORD CONTOUR
Max = 3.55 Nwt-M @ 243.59 msec
Pos. 1 Upper Neck Mz
Min = -10.67 Nwt-M @ 65.69 msec
4
2
0
-2
-4
-6
-8
-10
-12
Nwt-M
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR

Max = 50.36 Nwt-M @ 66.79 msec

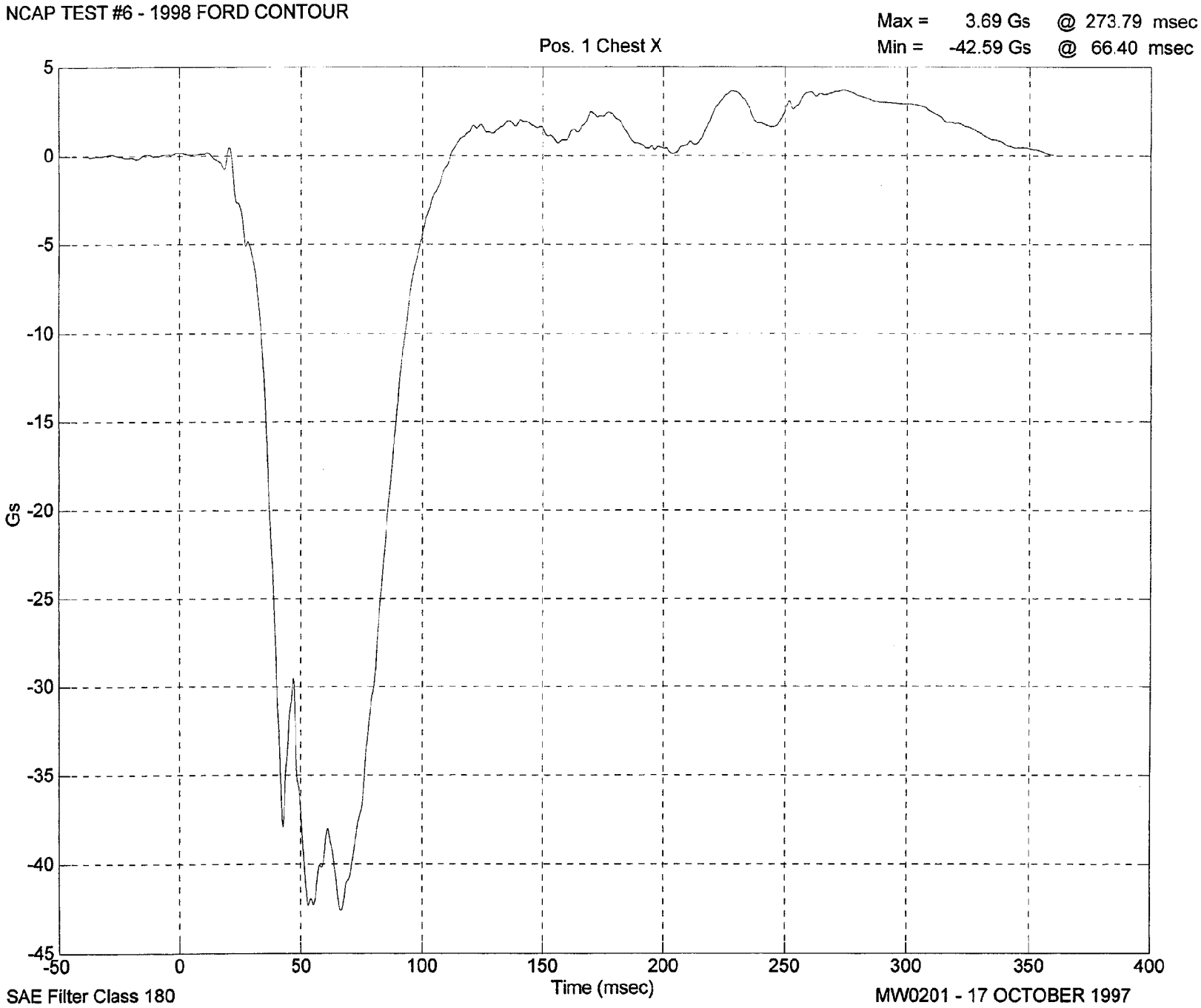
Pos. 1 Neck Moment Res.

Min = .02 Nwt-M @ -36.19 msec



SAE Filter Class 600

MW0201 - 17 OCTOBER 1997

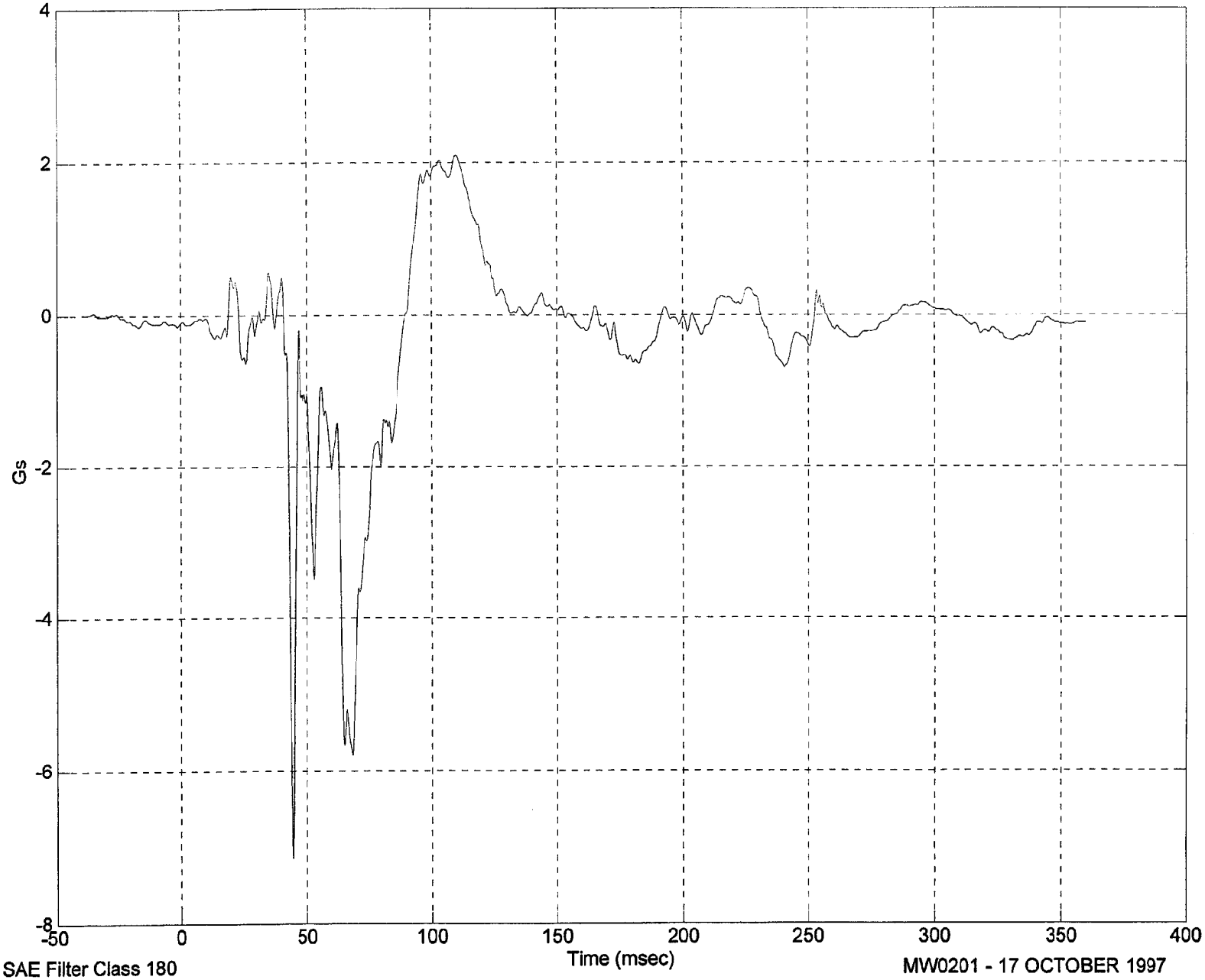

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Chest X
Max = 3.69 Gs @ 273.79 msec
Min = -42.59 Gs @ 66.40 msec
Gs
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR

Pos. 1 Chest Y

Max = 2.09 Gs @ 109.89 msec

Min = -7.14 Gs @ 44.29 msec



SAE Filter Class 180

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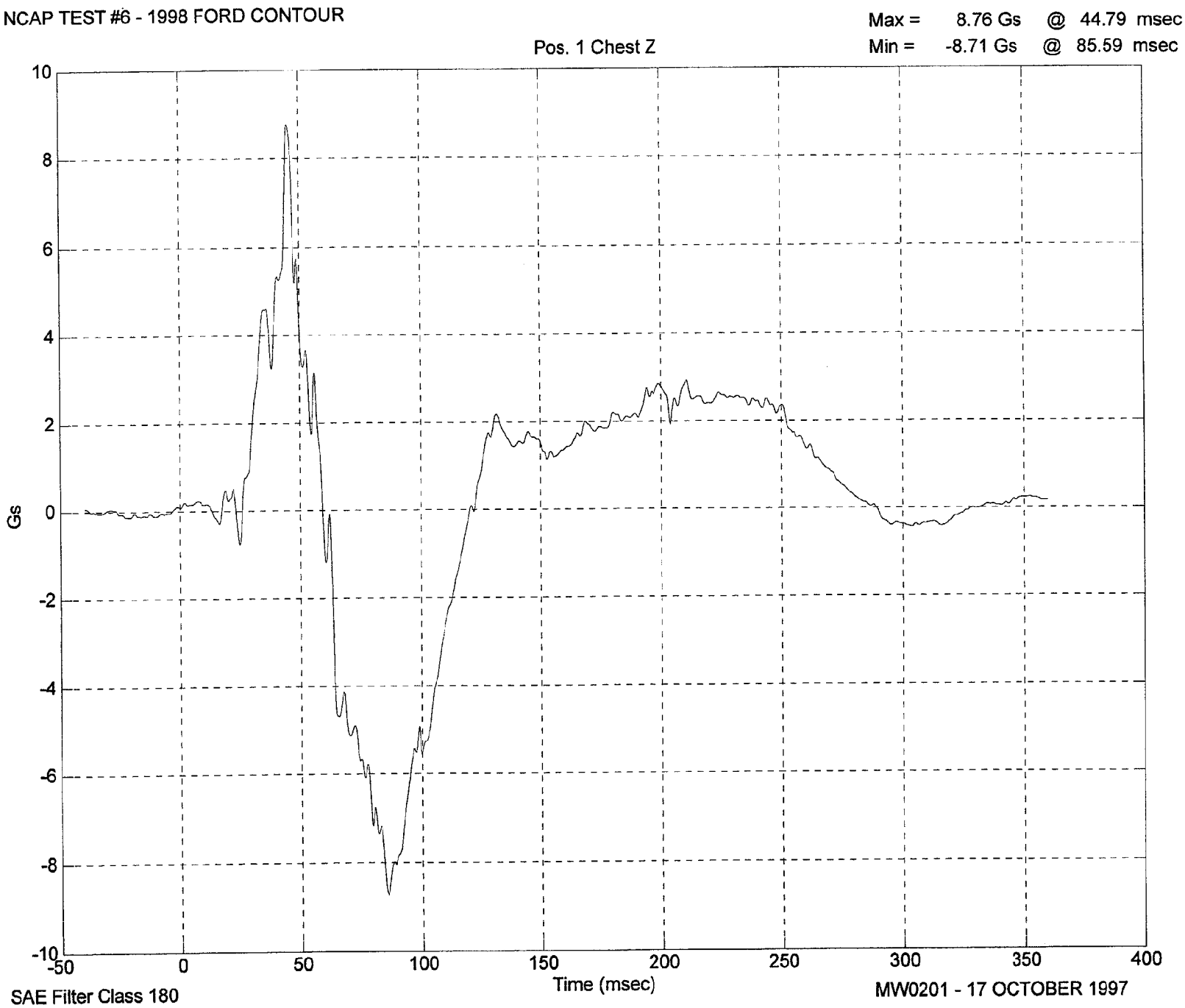
NCAP TEST #6 - 1998 FORD CONTOUR
Max = 8.76 Gs @ 44.79 msec
Pos. 1 Chest Z
Min = -8.71 Gs @ 85.59 msec
10
8
6
4
2
0
-2
-4
-6
-8
-10
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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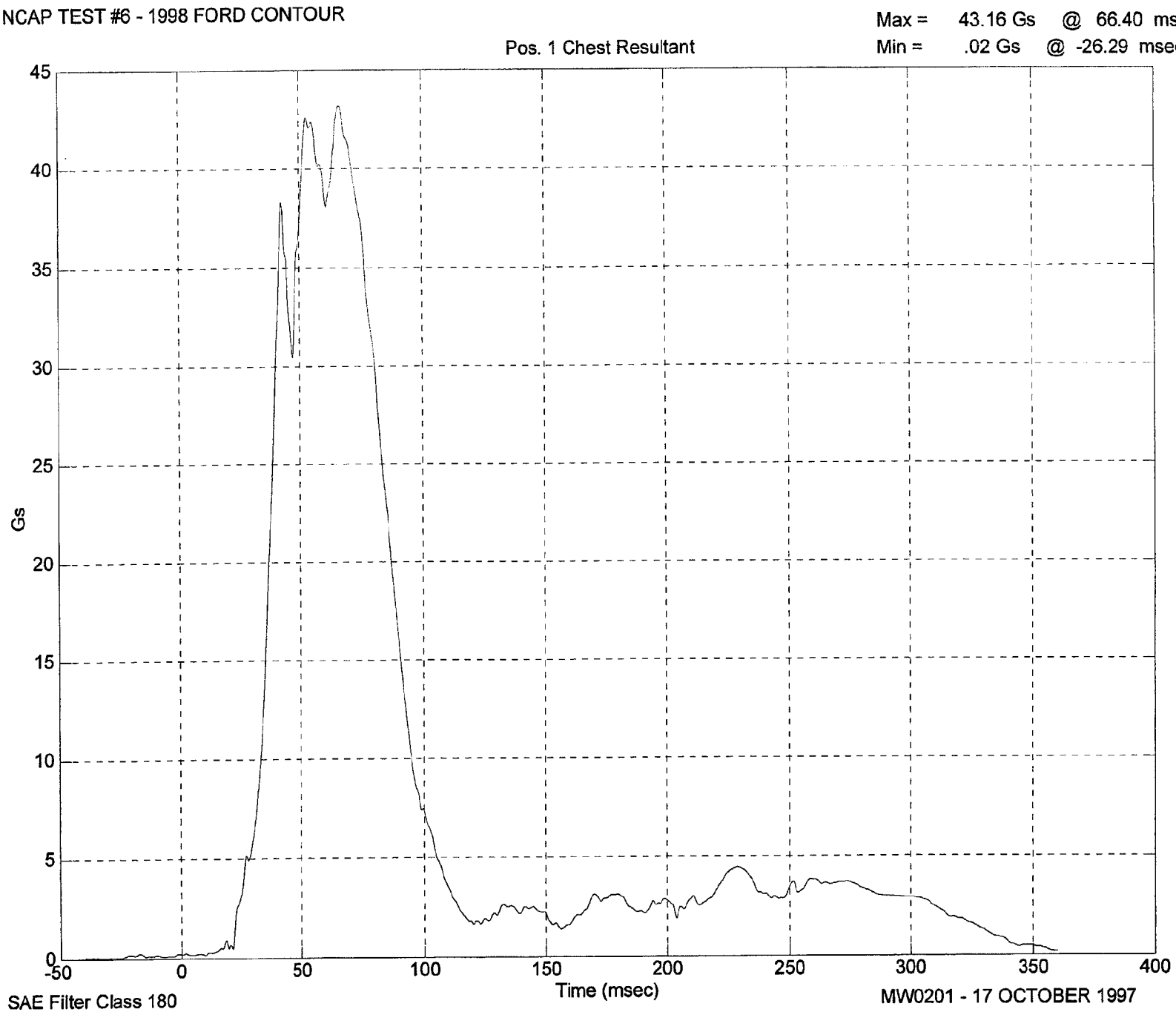
NCAP TEST #6 - 1998 FORD CONTOUR
Max = 43.16 Gs @ 66.40 msec
Pos. 1 Chest Resultant
Min = .02 Gs @ -26.29 msec
45
40
35
30
25
20
15
10
5
0
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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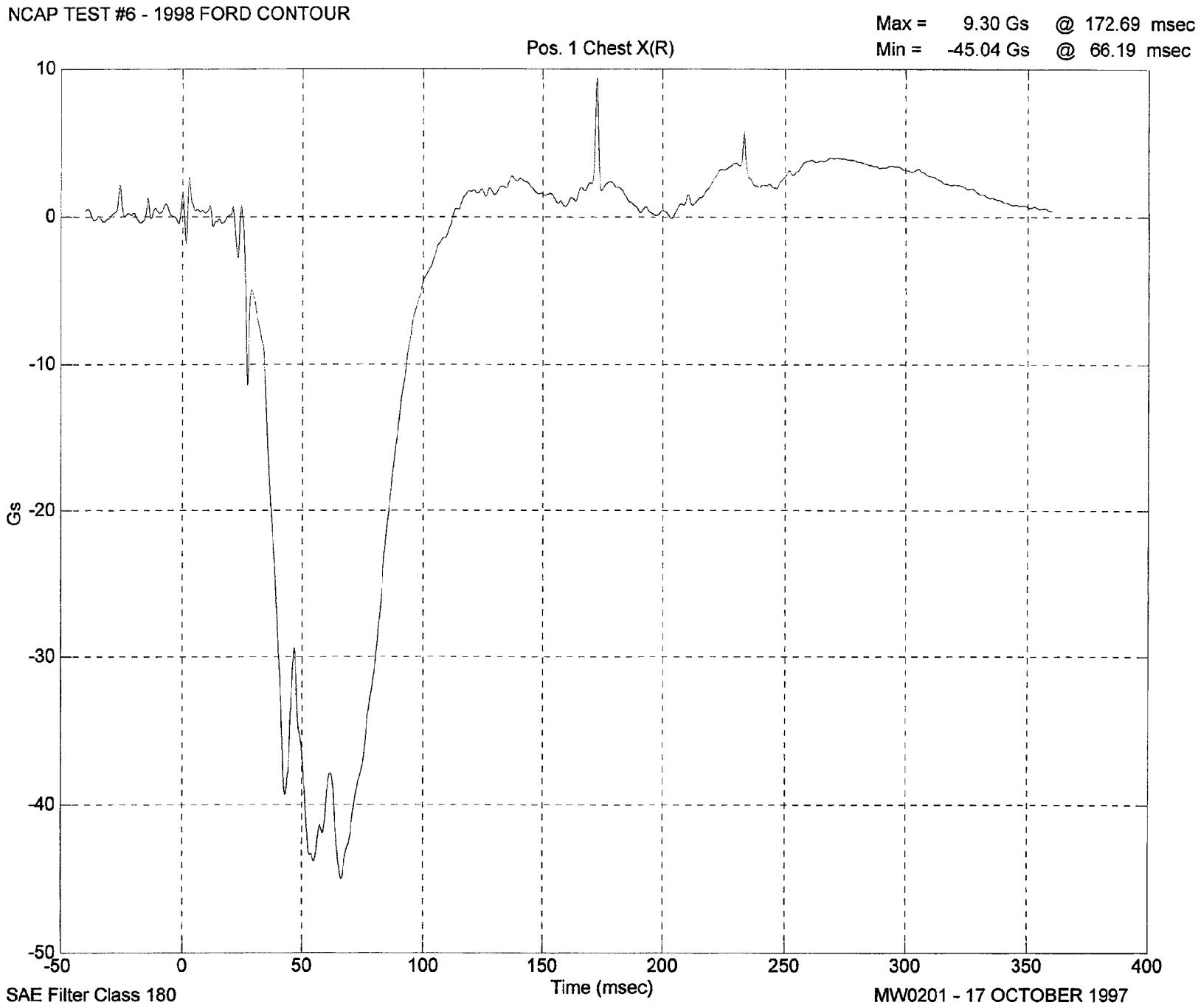
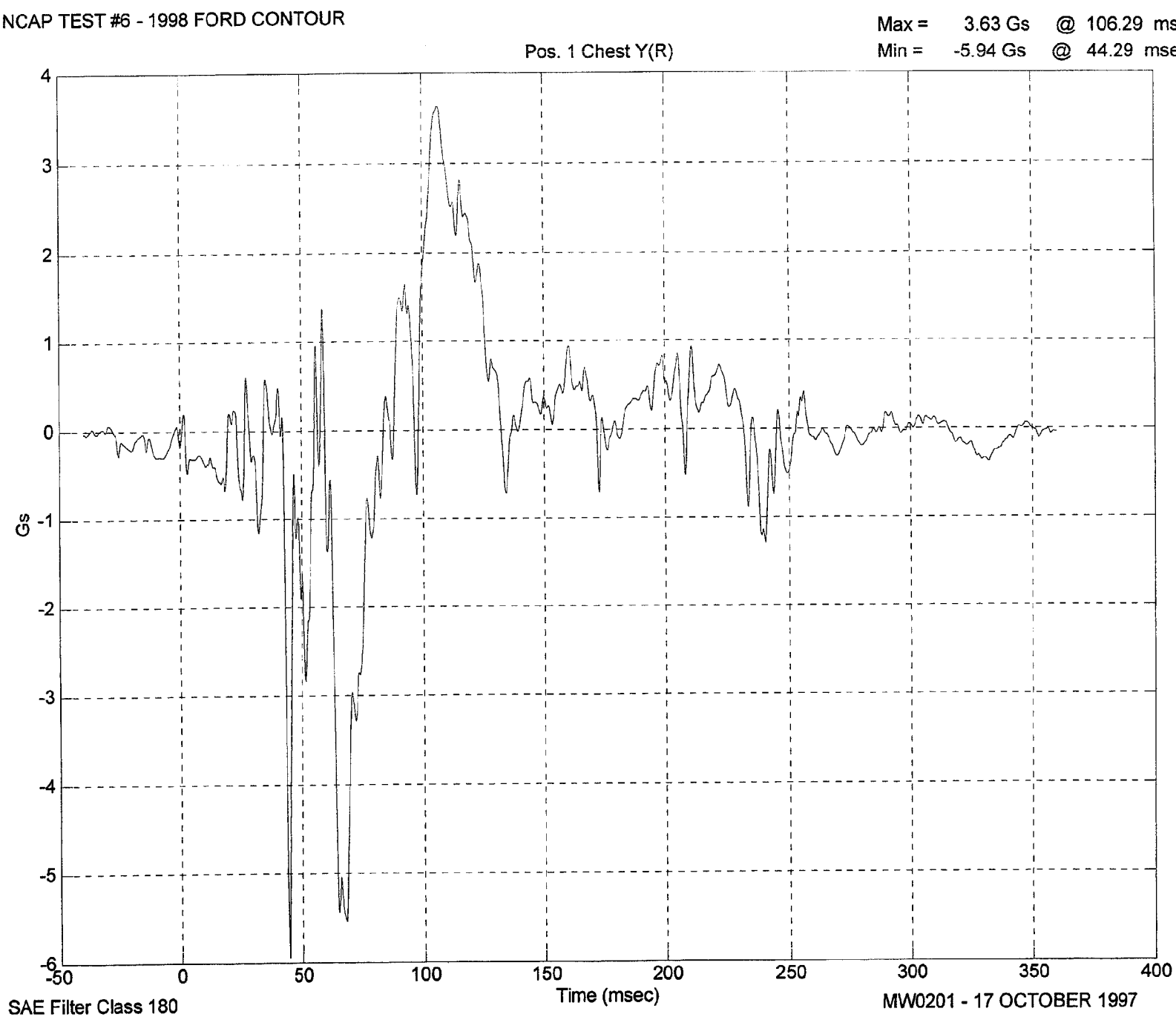
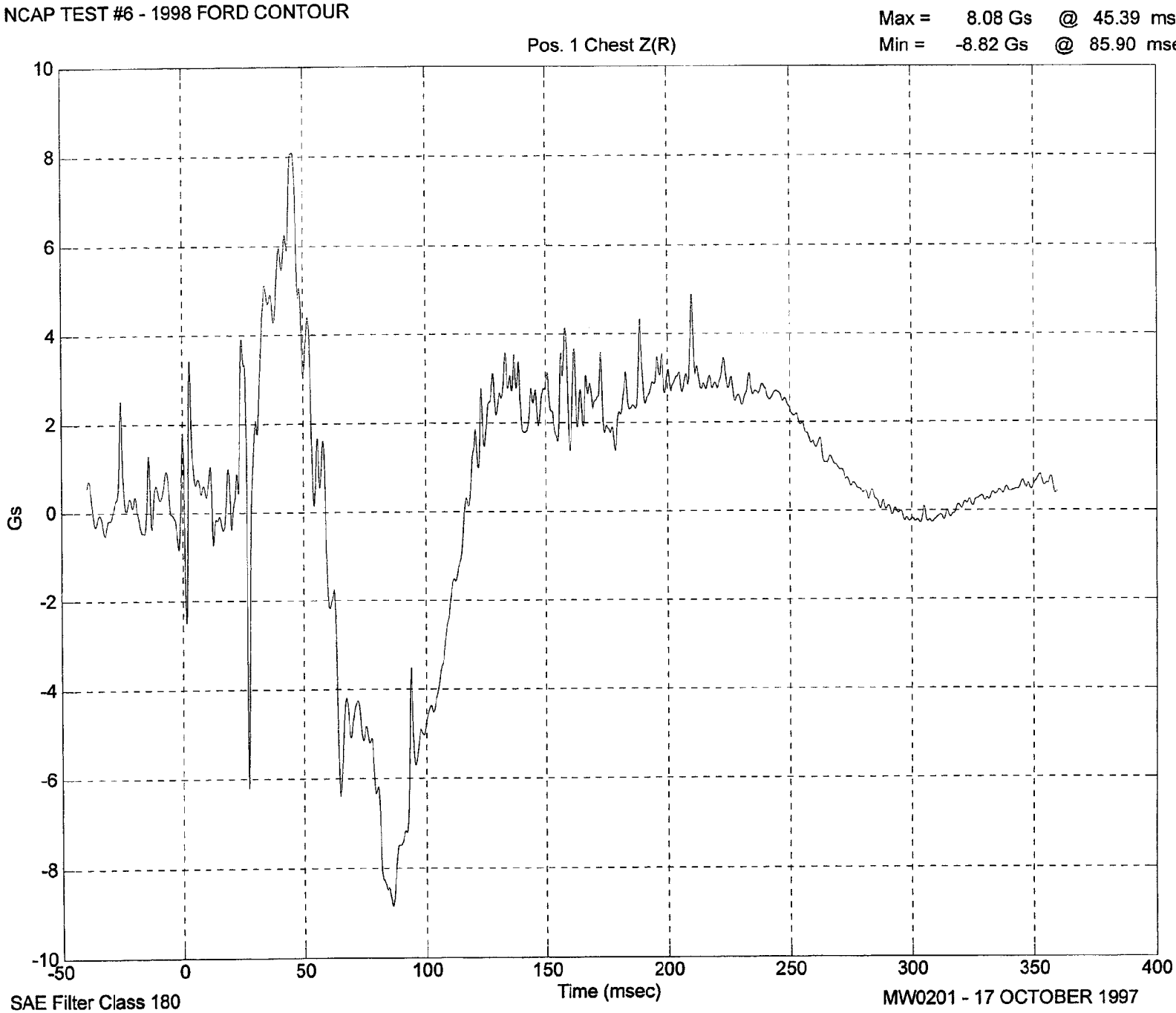
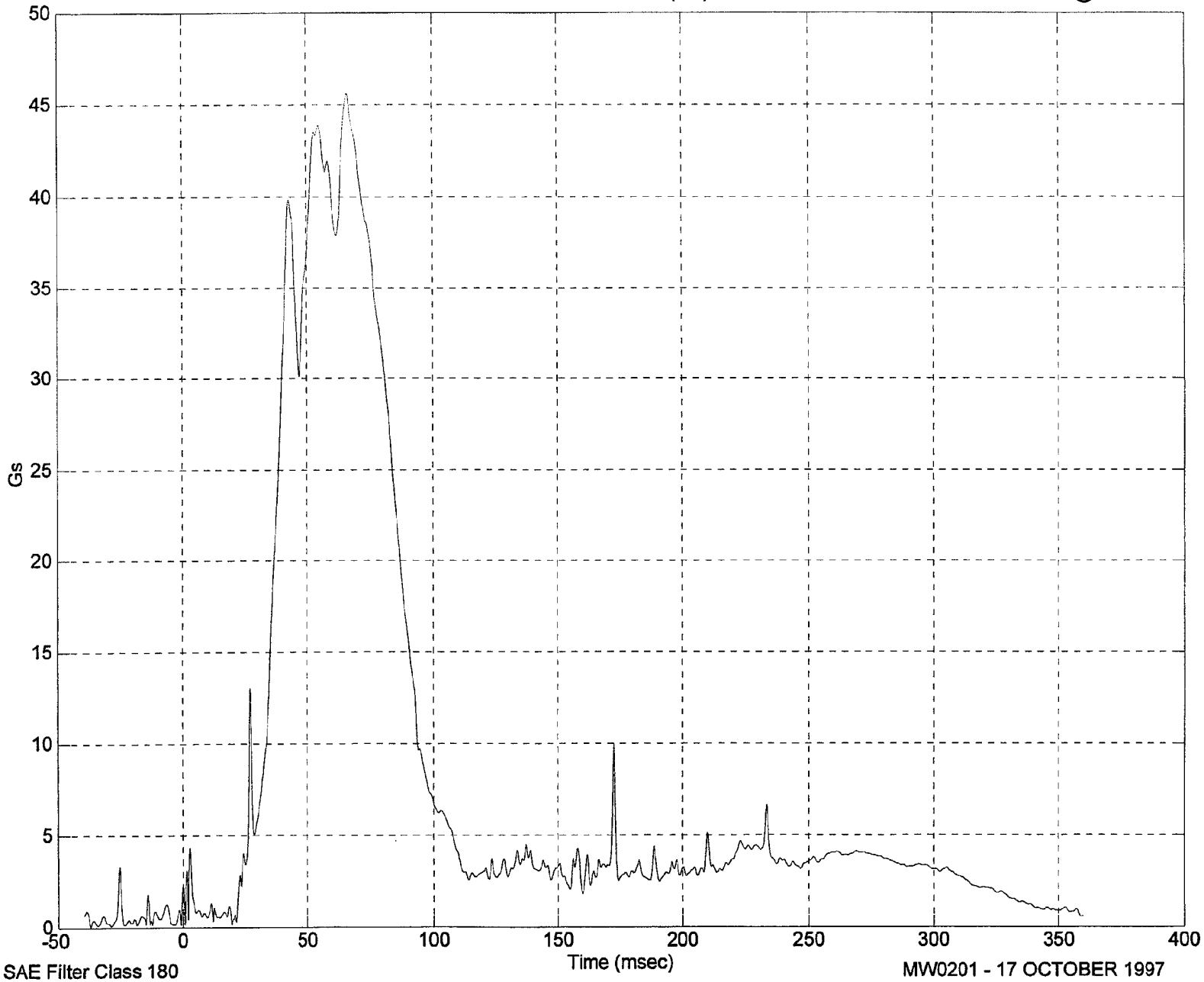

NCAP TEST #6 - 1998 FORD CONTOUR
Max = 9.30 Gs @ 172.69 msec
Min = -45.04 Gs @ 66.19 msec
Pos. 1 Chest X(R)
10
0
-10
-20
-30
-40
-50
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Chest Y(R)
Max = 3.63 Gs @ 106.29 msec
Min = -5.94 Gs @ 44.29 msec
Gs
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Max = 8.08 Gs @ 45.39 msec
Min = -8.82 Gs @ 85.90 msec
Pos. 1 Chest Z(R)
Gs
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR

Max = 45.58 Gs @ 66.09 msec
Min = .05 Gs @ -37.40 msec



SAE Filter Class 180

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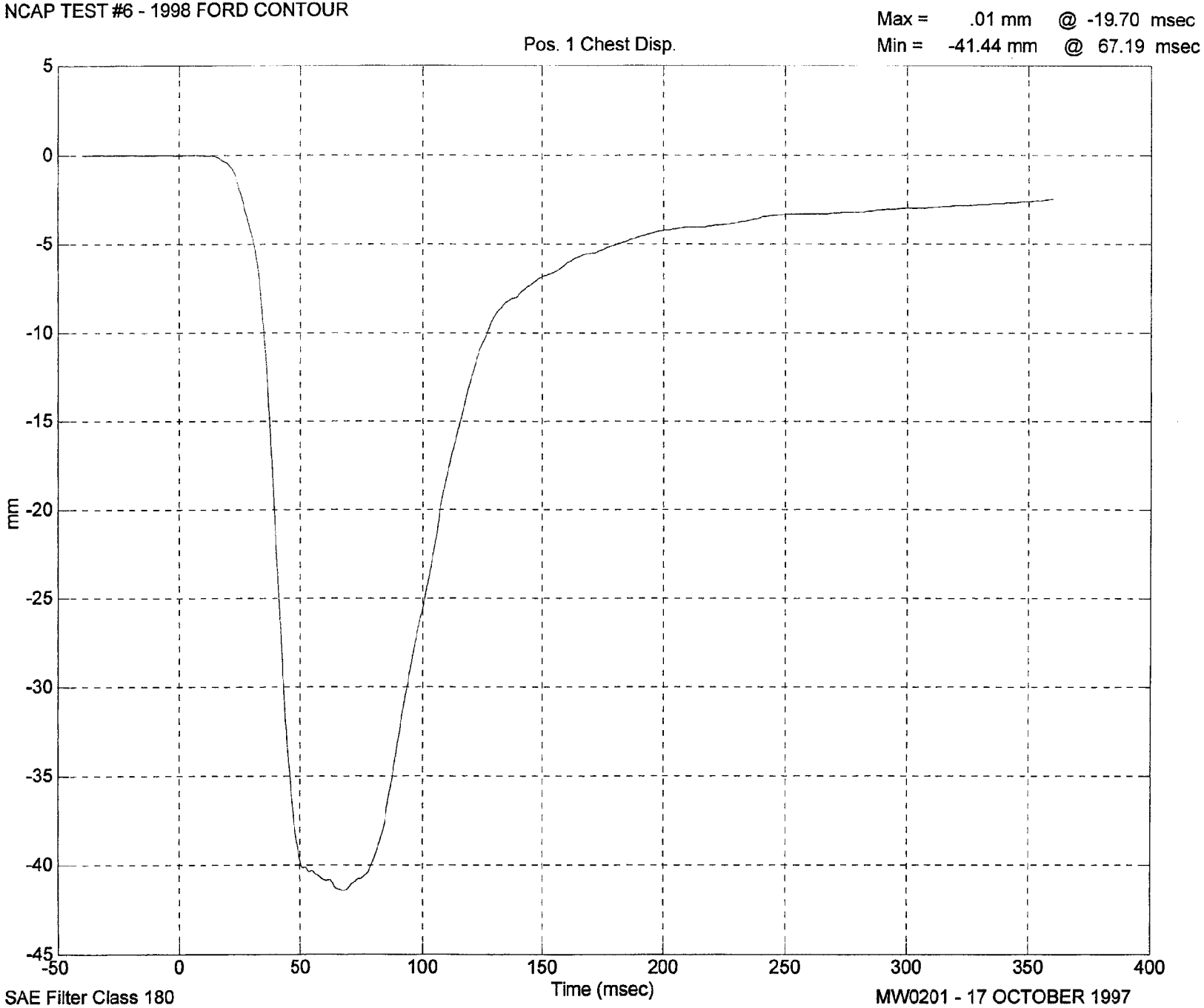
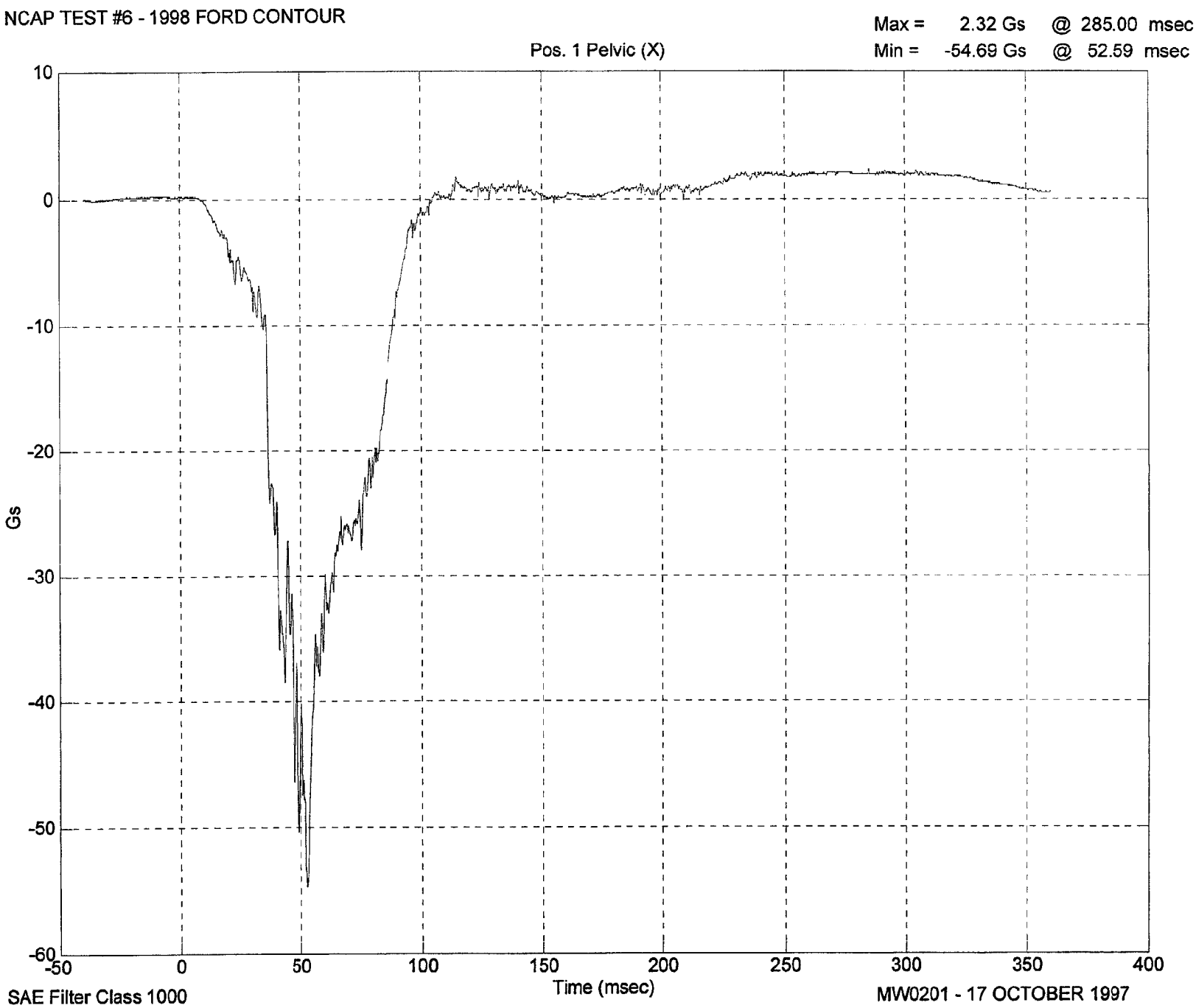
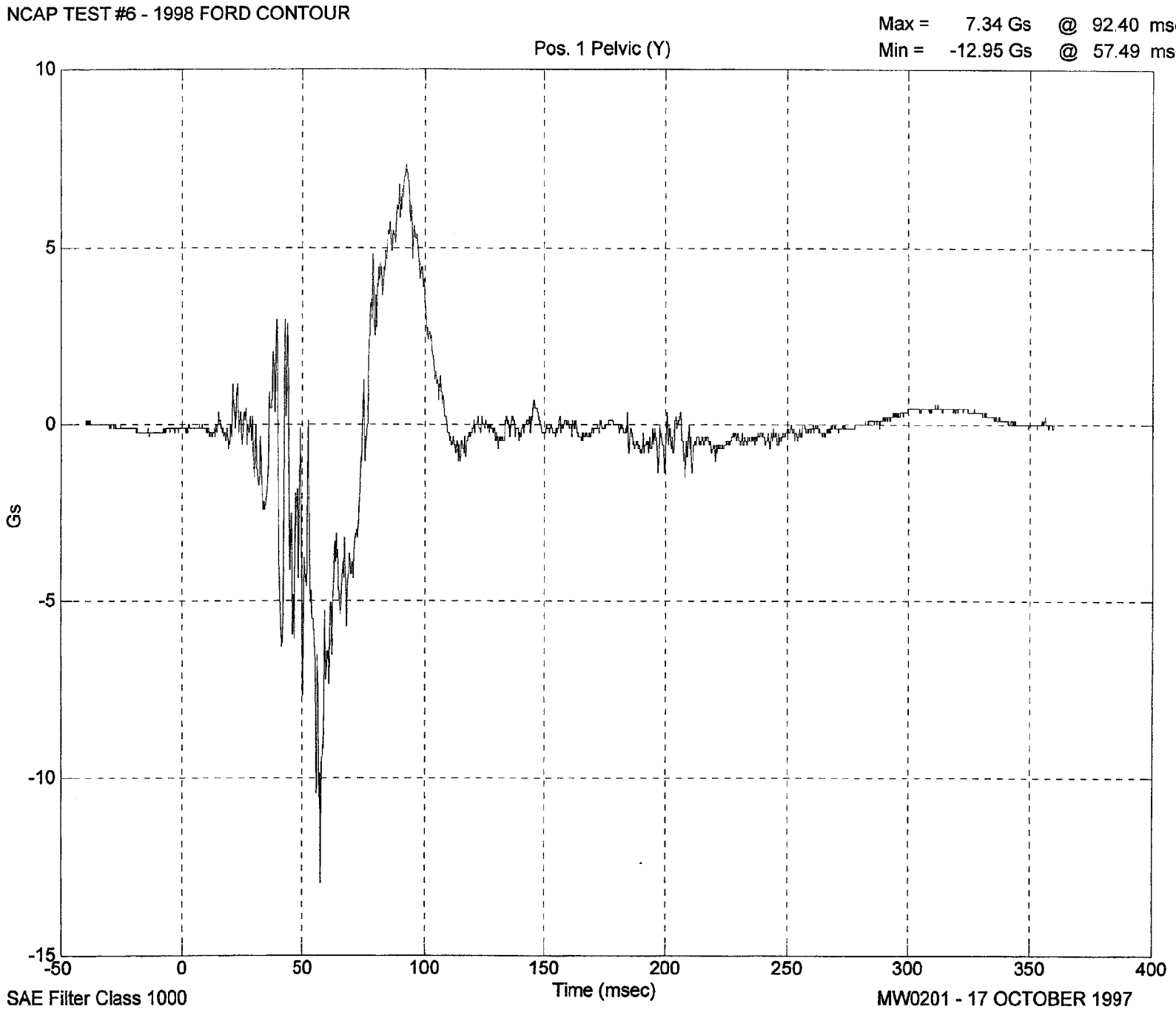
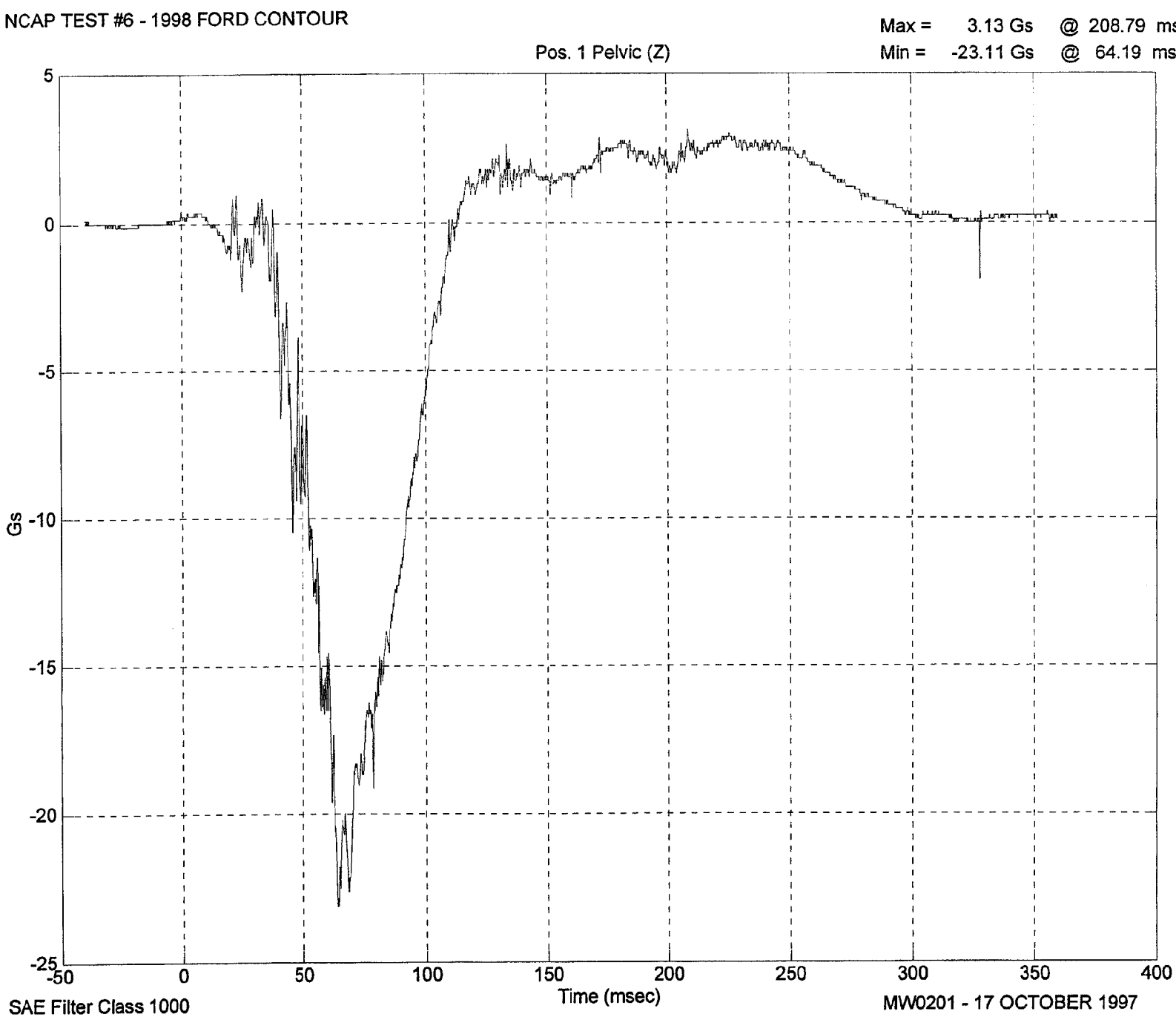
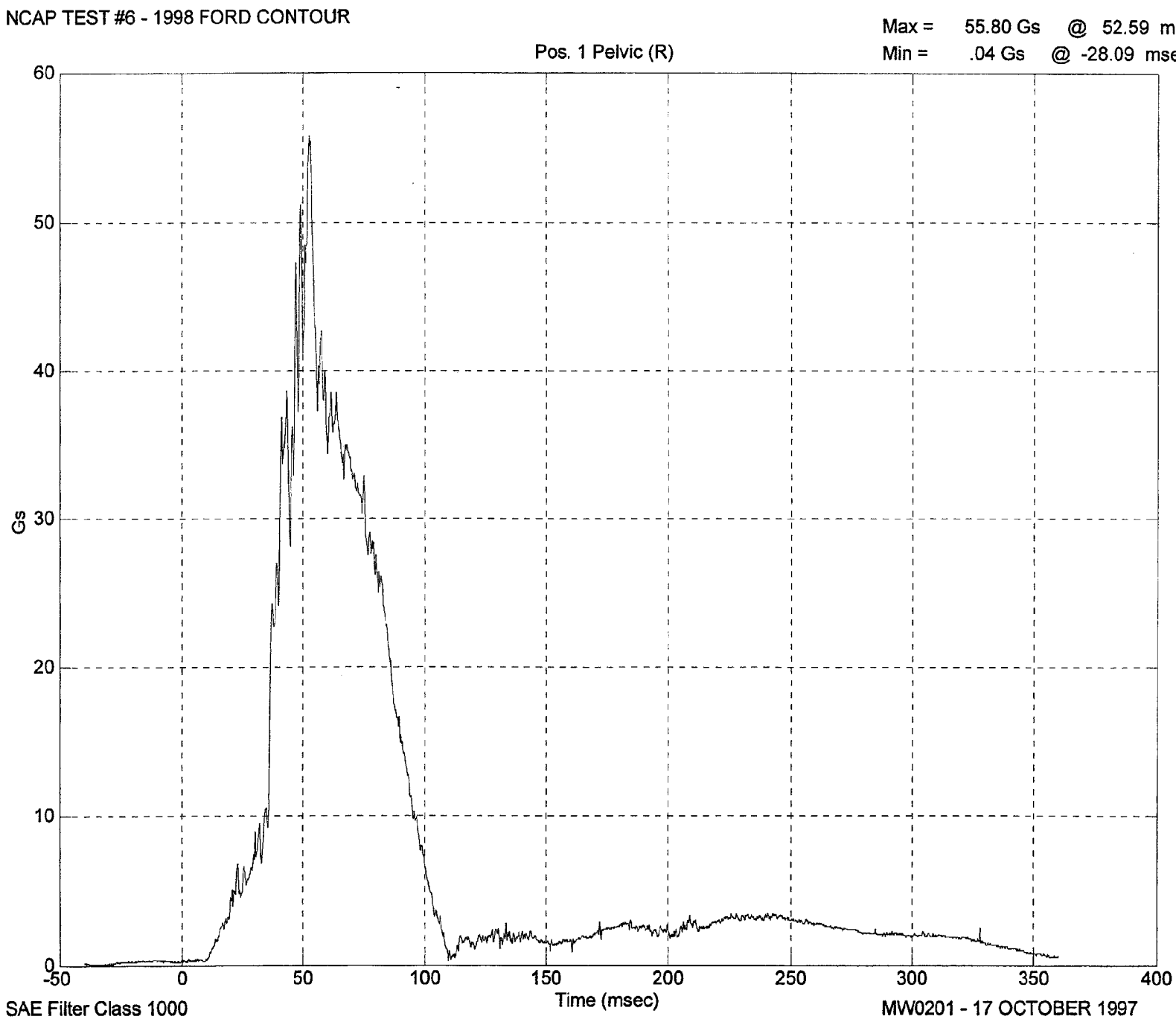
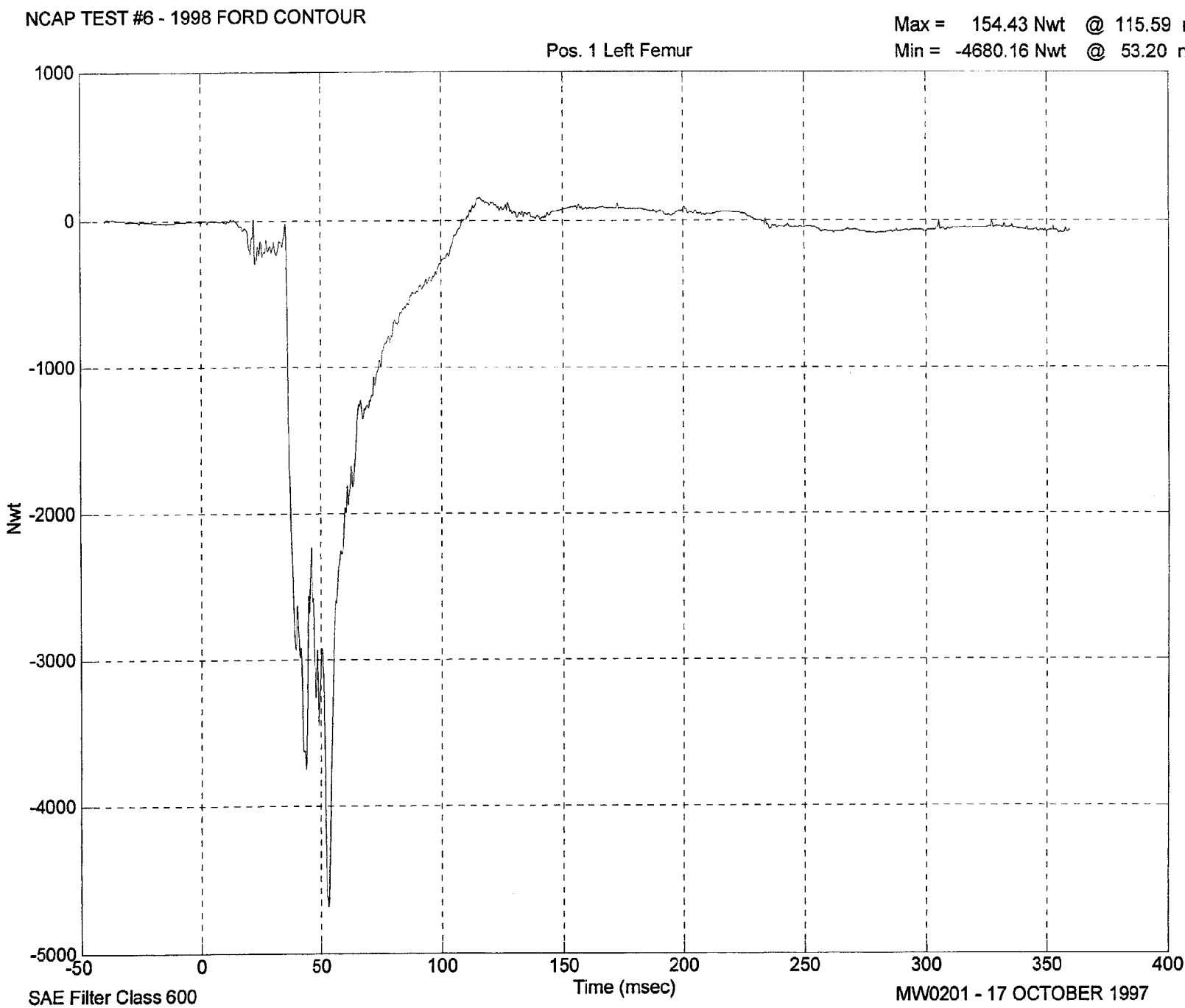

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Chest Disp.
Max = .01 mm @ -19.70 msec
Min = -41.44 mm @ 67.19 msec
mm
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997

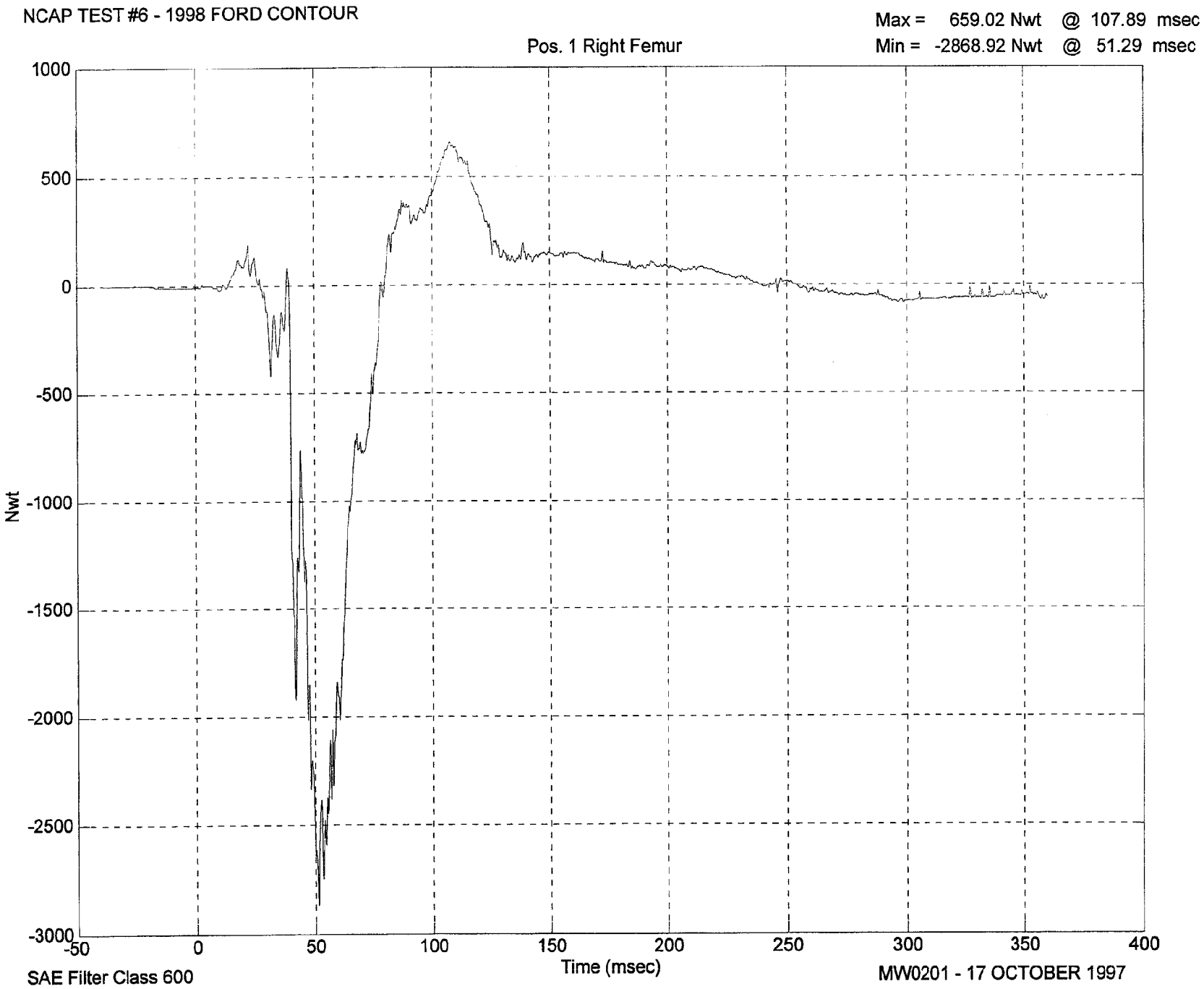

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Pelvic (X)
Max = 2.32 Gs @ 285.00 msec
Min = -54.69 Gs @ 52.59 msec
10
0
-10
-20
-30
-40
-50
-60
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Max = 7.34 Gs @ 92.40 msec
Min = -12.95 Gs @ 57.49 msec
Pos. 1 Pelvic (Y)
10
5
0
-5
-10
-15
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Pelvic (Z)
Max = 3.13 Gs @ 208.79 msec
Min = -23.11 Gs @ 64.19 msec
5
0
-5
-10
-15
-20
-25
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Pelvic (R)
Max = 55.80 Gs @ 52.59 msec
Min = .04 Gs @ -28.09 msec
Gs
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Left Femur
Max = 154.43 Nwt @ 115.59 msec
Min = -4680.16 Nwt @ 53.20 msec
1000
0
-1000
-2000
-3000
-4000
-5000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

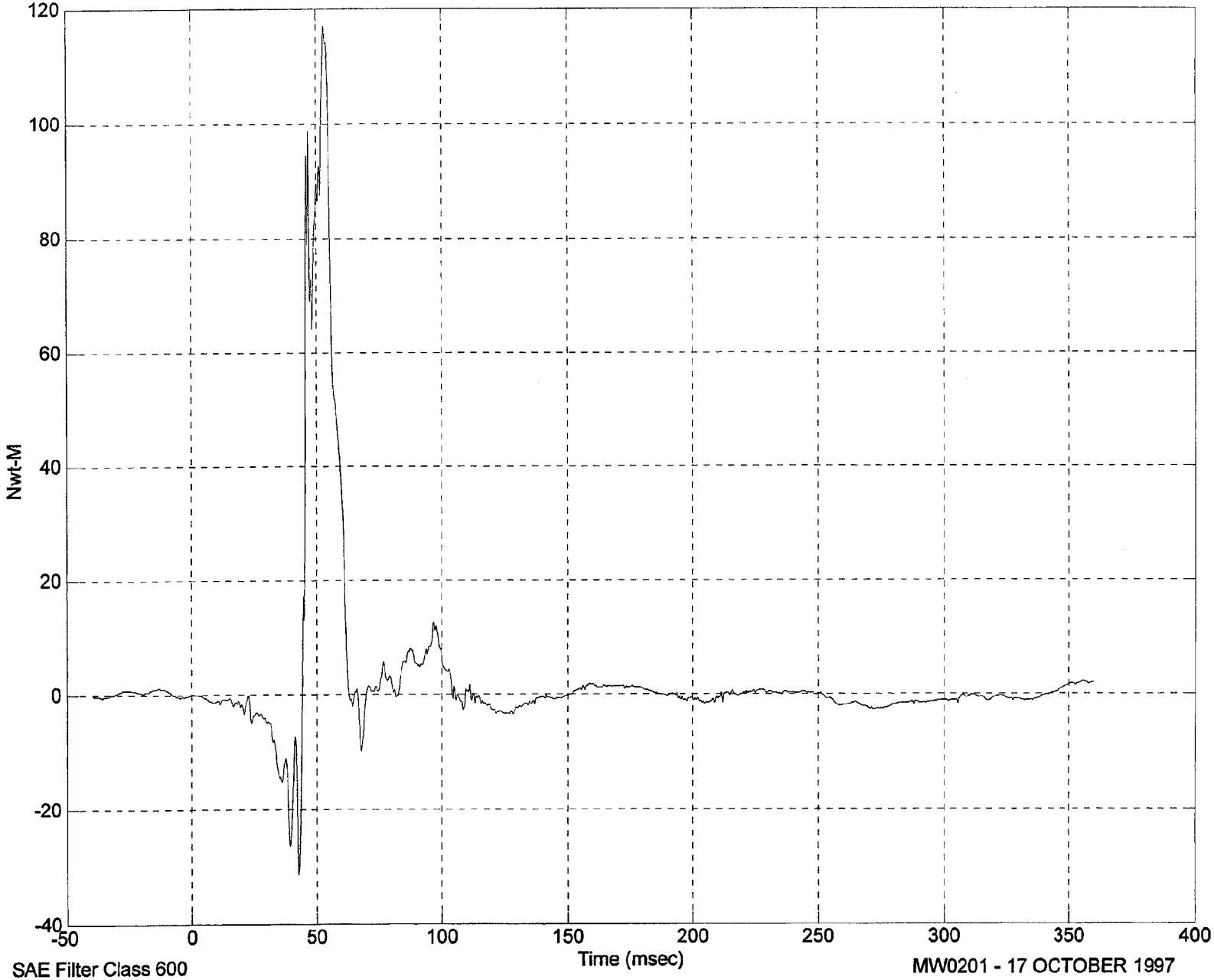

NCAP TEST #6 - 1998 FORD CONTOUR
Max = 659.02 Nwt @ 107.89 msec
Min = -2868.92 Nwt @ 51.29 msec
Pos. 1 Right Femur
1000
500
0
-500
-1000
-1500
-2000
-2500
-3000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR

Max = 117.06 Nwt-M @ 53.20 msec

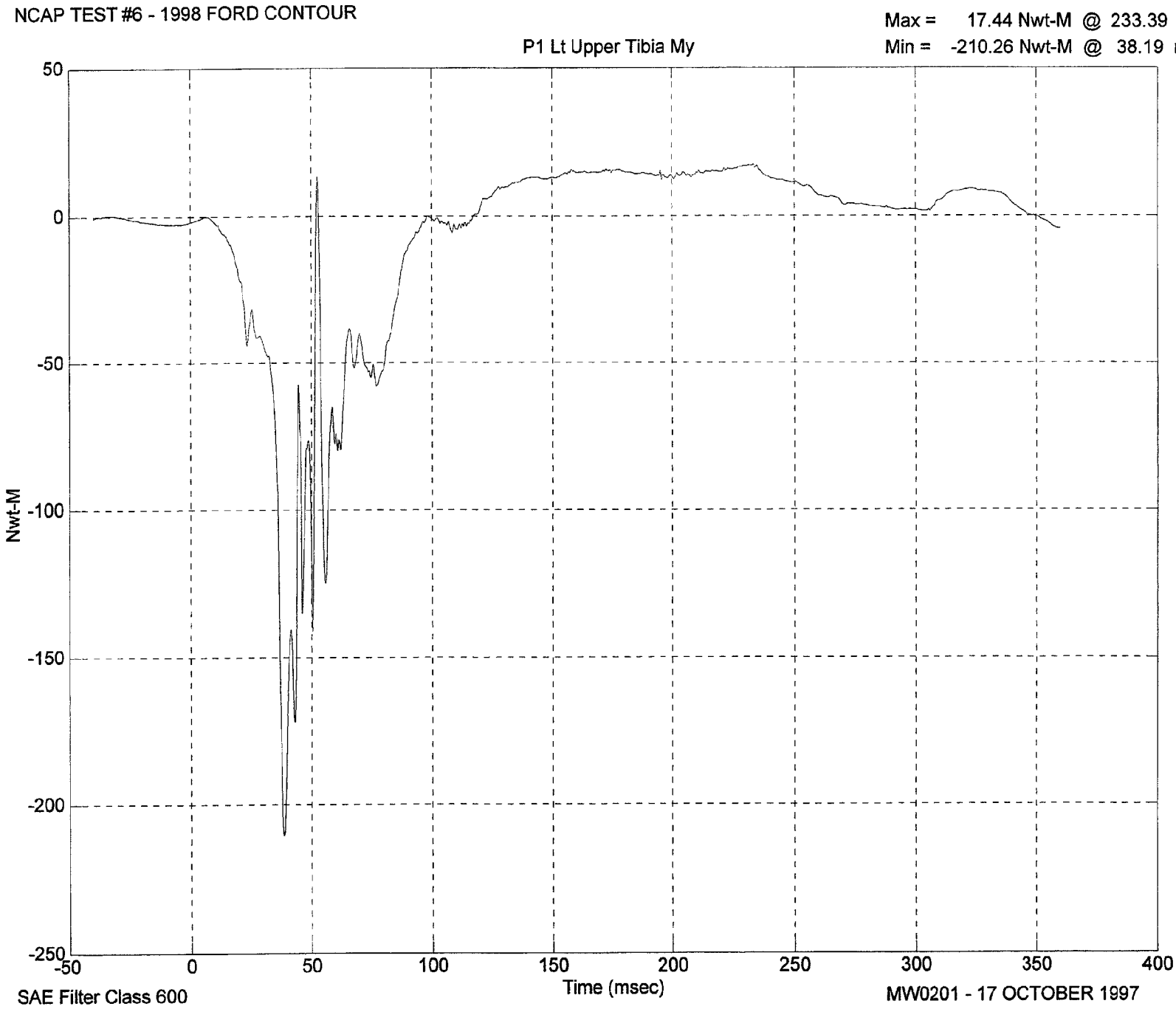
P1 Lt Upper Tibia Mx

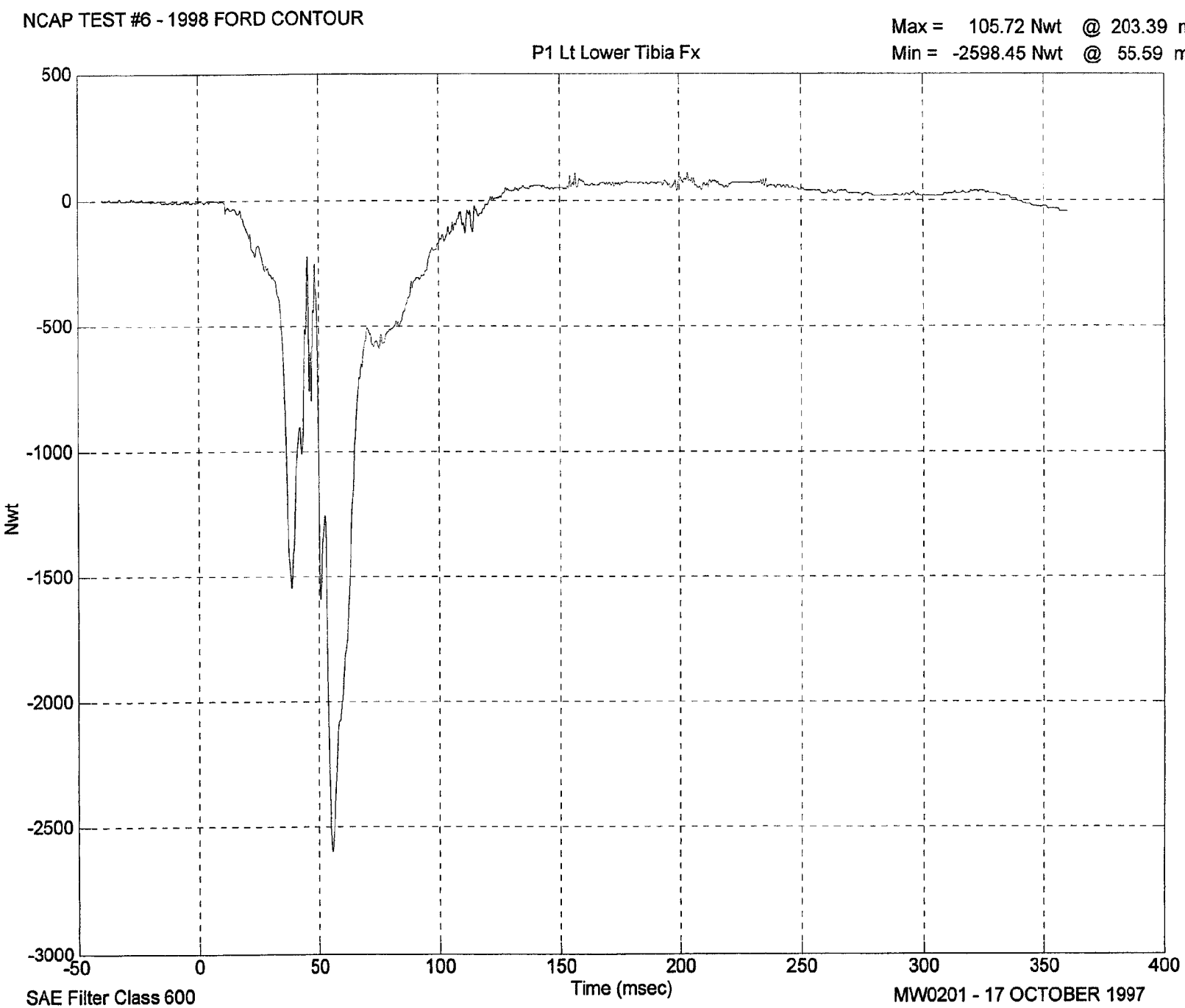
Min = -31.30 Nwt-M @ 42.59 msec

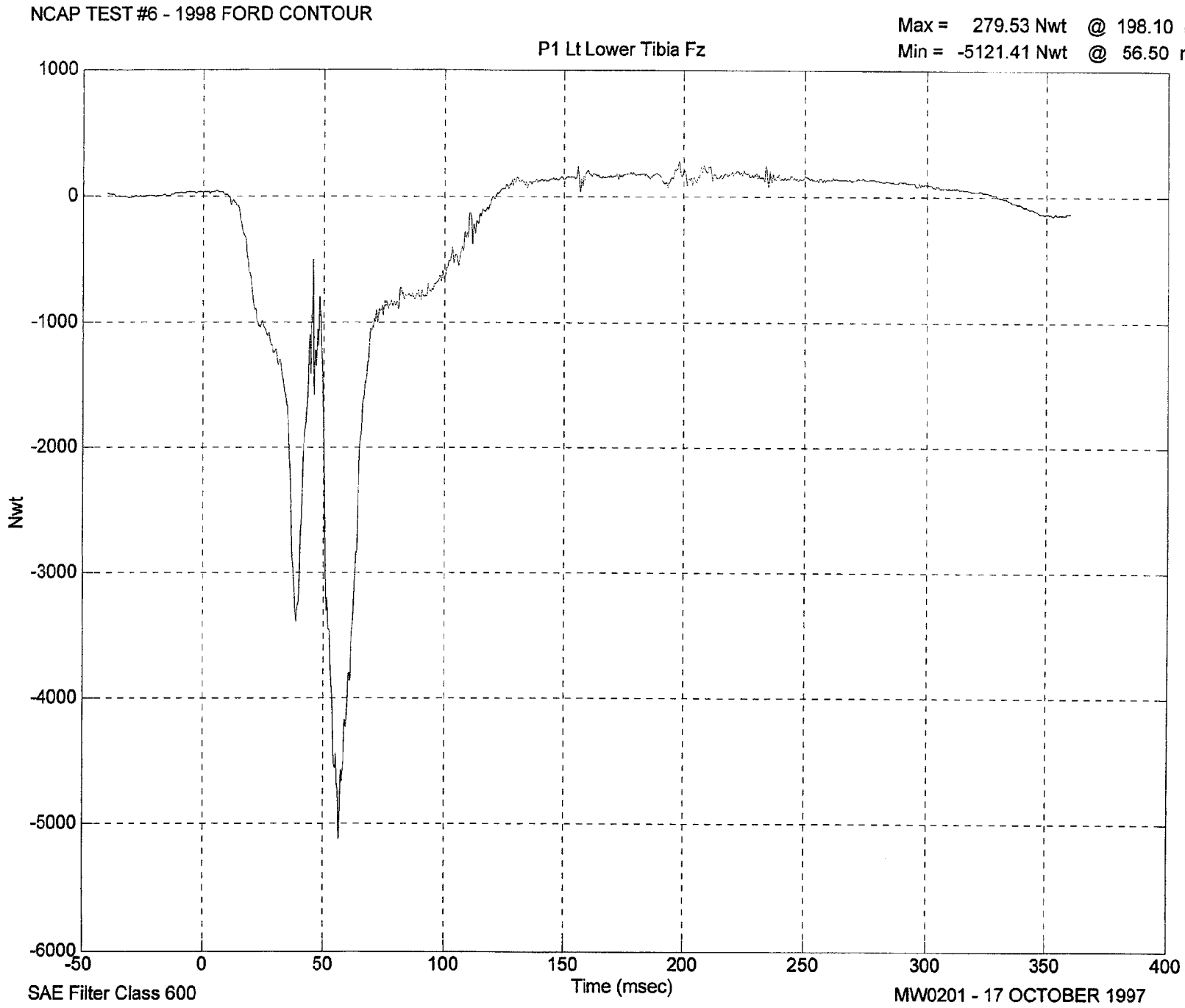


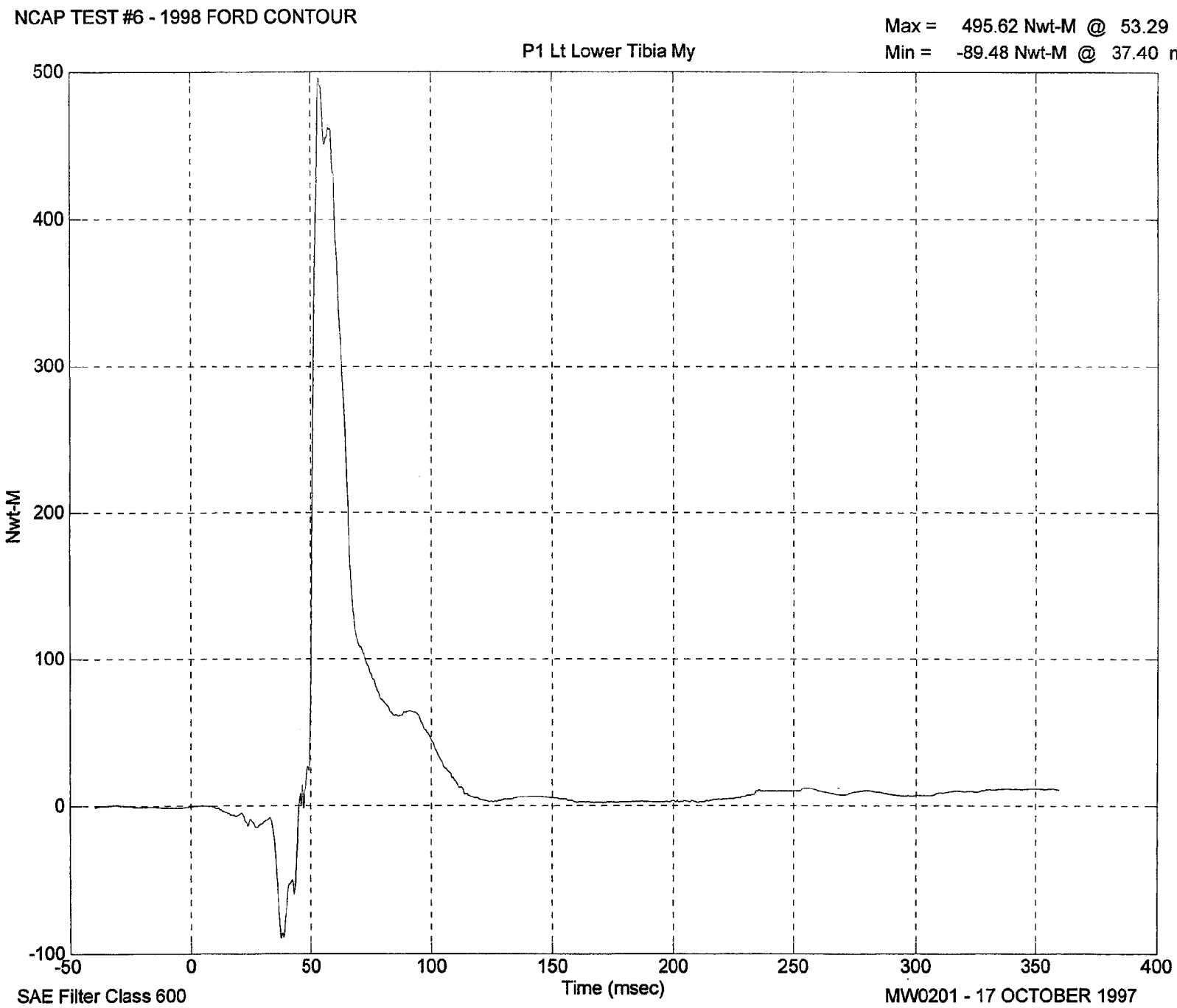
SAE Filter Class 600

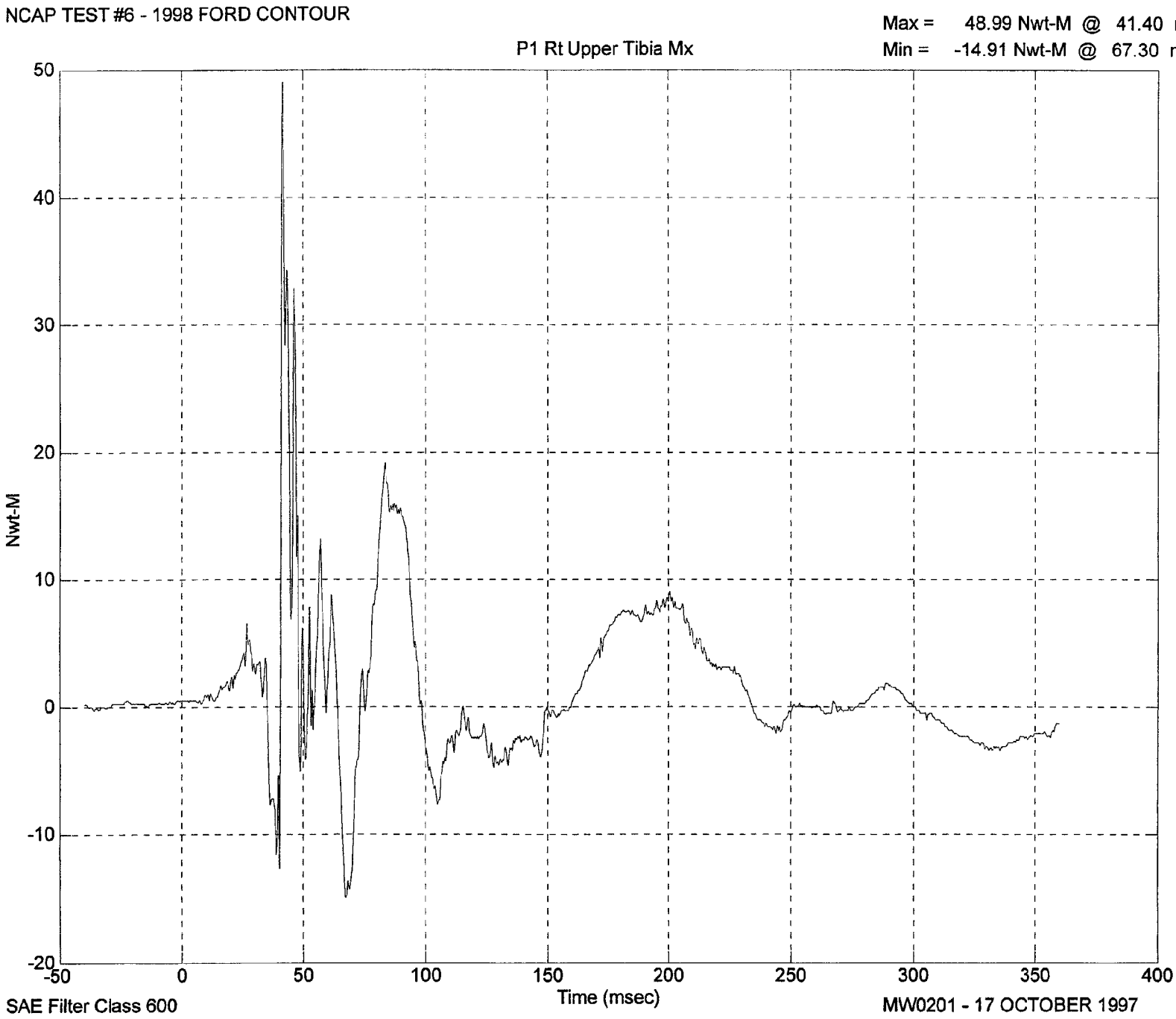
MW0201 - 17 OCTOBER 1997

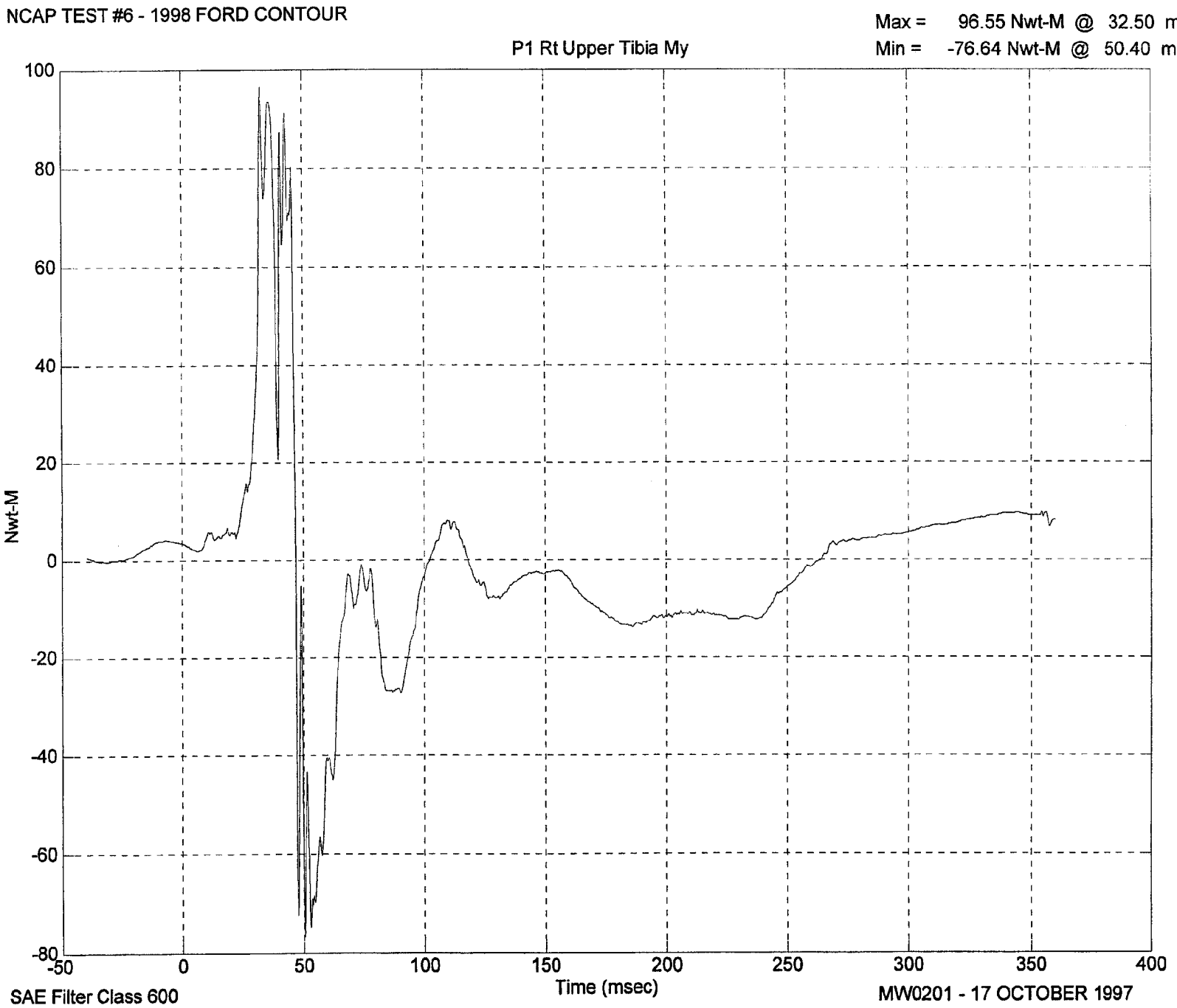

NCAP TEST #6 - 1998 FORD CONTOUR
P1 Lt Upper Tibia My
Max = 17.44 Nwt-M @ 233.39 msec
Min = -210.26 Nwt-M @ 38.19 msec
Nwt-M
50
0
-50
-100
-150
-200
-250
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

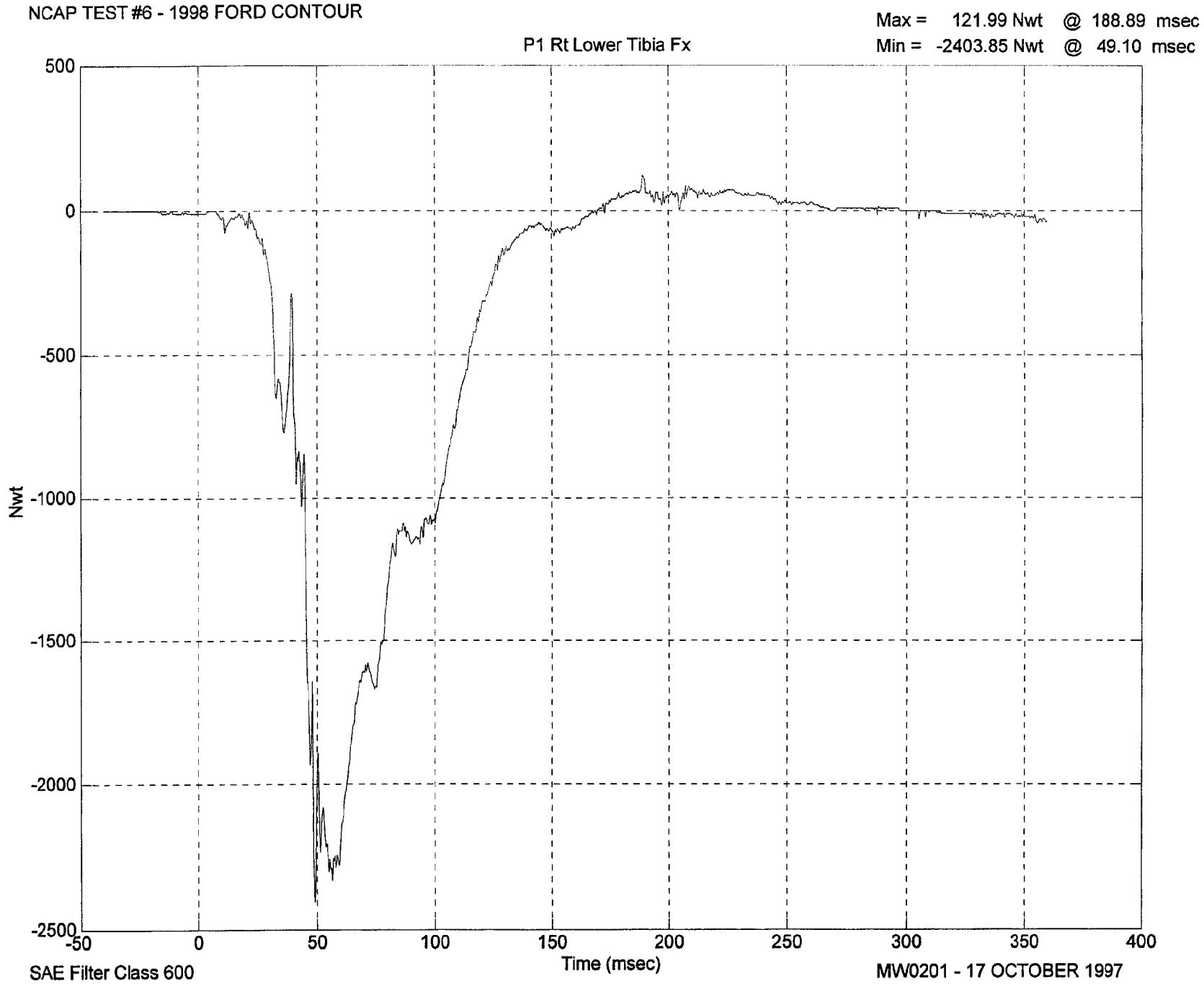

NCAP TEST #6 - 1998 FORD CONTOUR
P1 Lt Lower Tibia Fx
Max = 105.72 Nwt @ 203.39 msec
Min = -2598.45 Nwt @ 55.59 msec
500
0
-500
-1000
-1500
-2000
-2500
-3000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

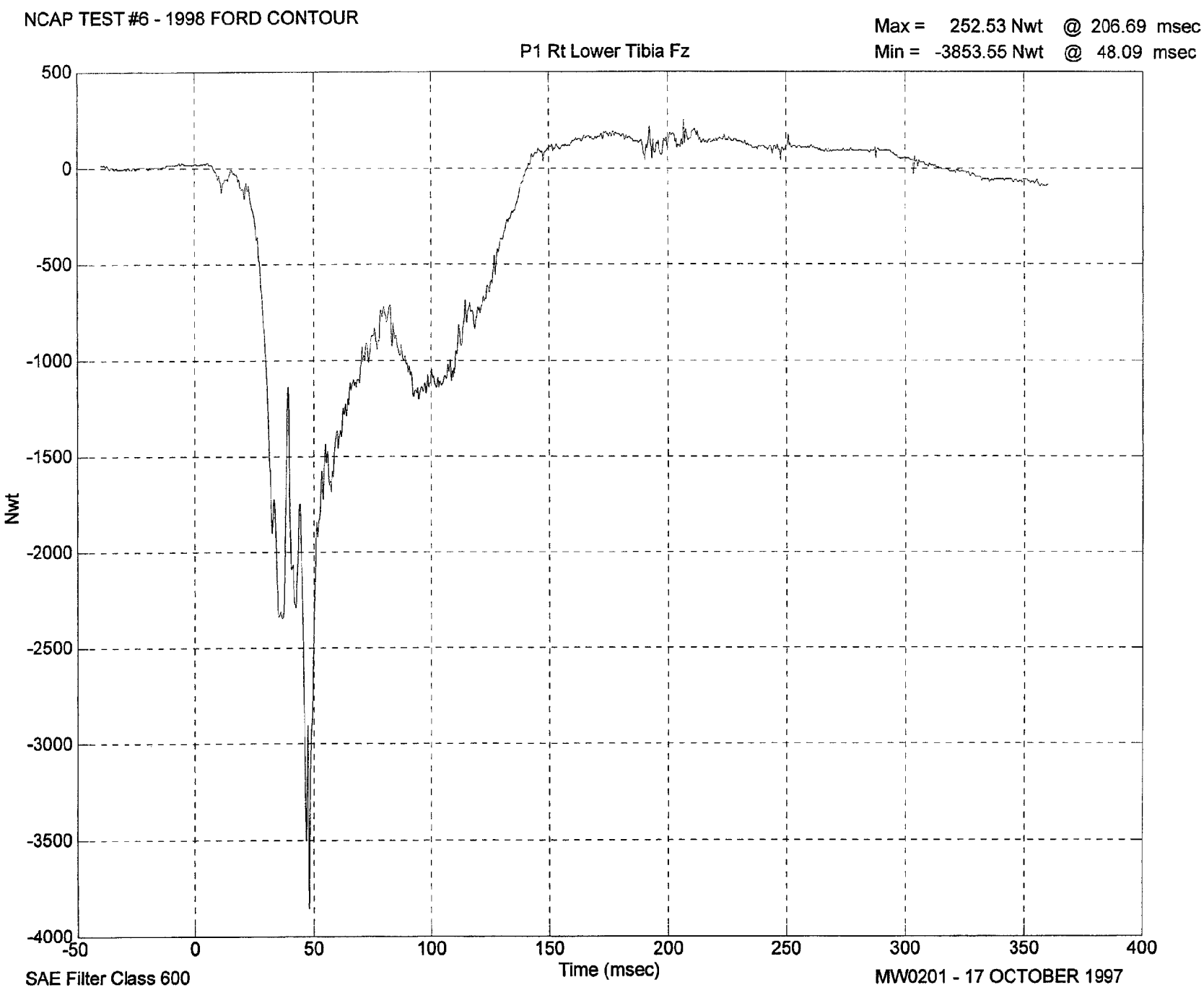

NCAP TEST #6 - 1998 FORD CONTOUR
P1 Lt Lower Tibia Fz
Max = 279.53 Nwt @ 198.10 msec
Min = -5121.41 Nwt @ 56.50 msec
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

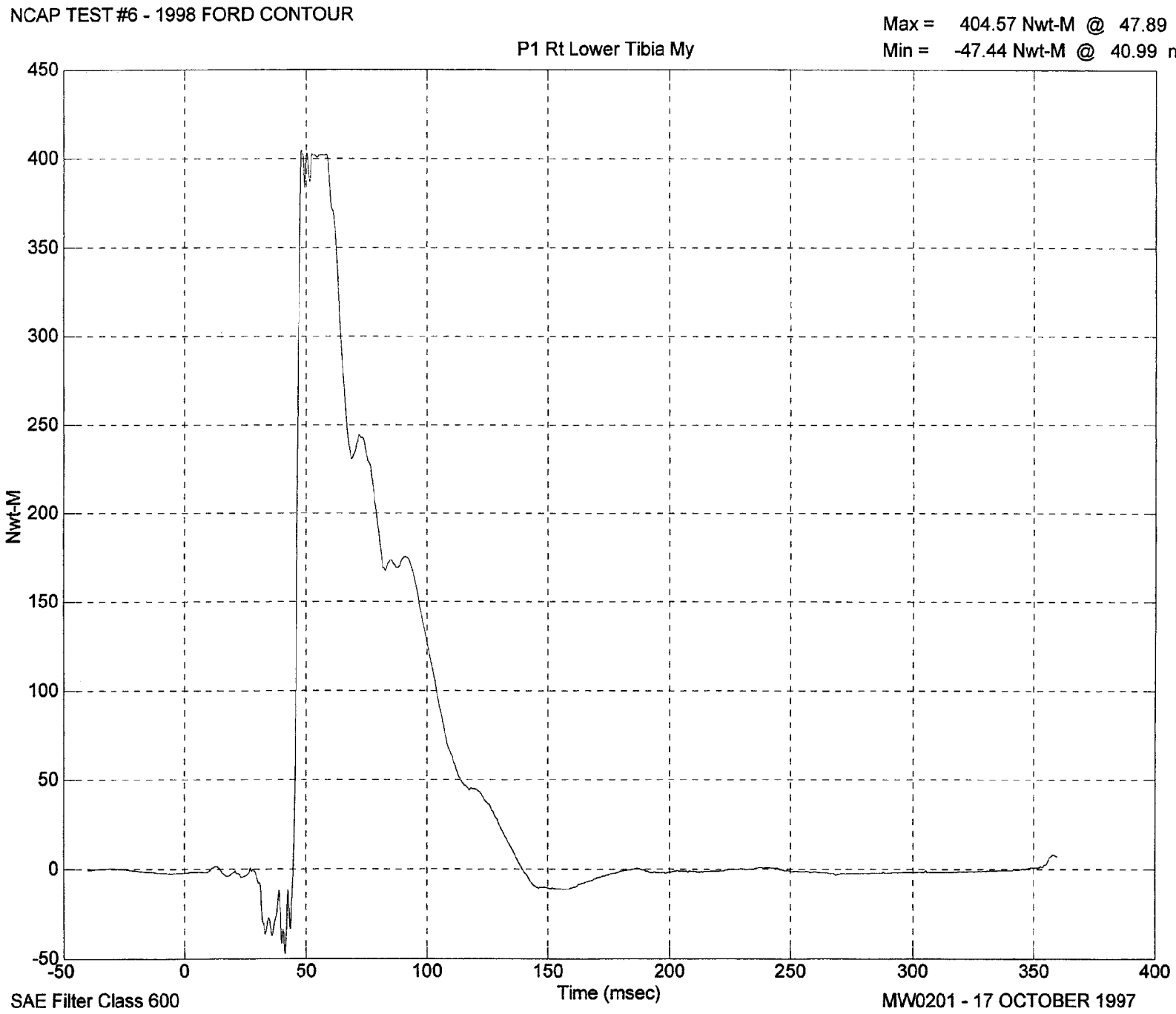

NCAP TEST #6 - 1998 FORD CONTOUR
P1 Lt Lower Tibia My
Max = 495.62 Nwt-M @ 53.29 msec
Min = -89.48 Nwt-M @ 37.40 msec
Nwt-M
500
400
300
200
100
0
-100
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

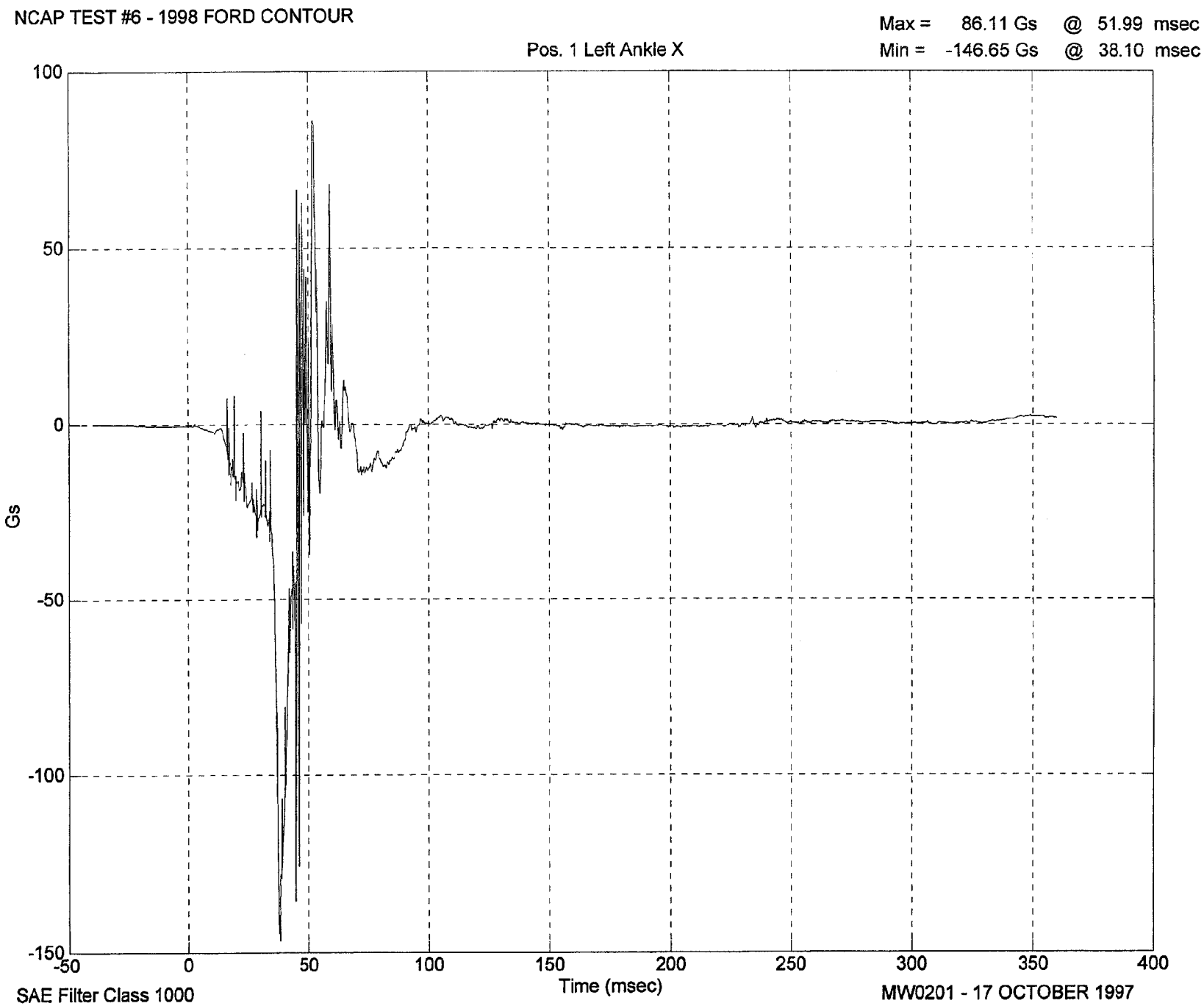

NCAP TEST #6 - 1998 FORD CONTOUR
P1 Rt Upper Tibia Mx
Max = 48.99 Nwt-M @ 41.40 msec
Min = -14.91 Nwt-M @ 67.30 msec
Nwt-M
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

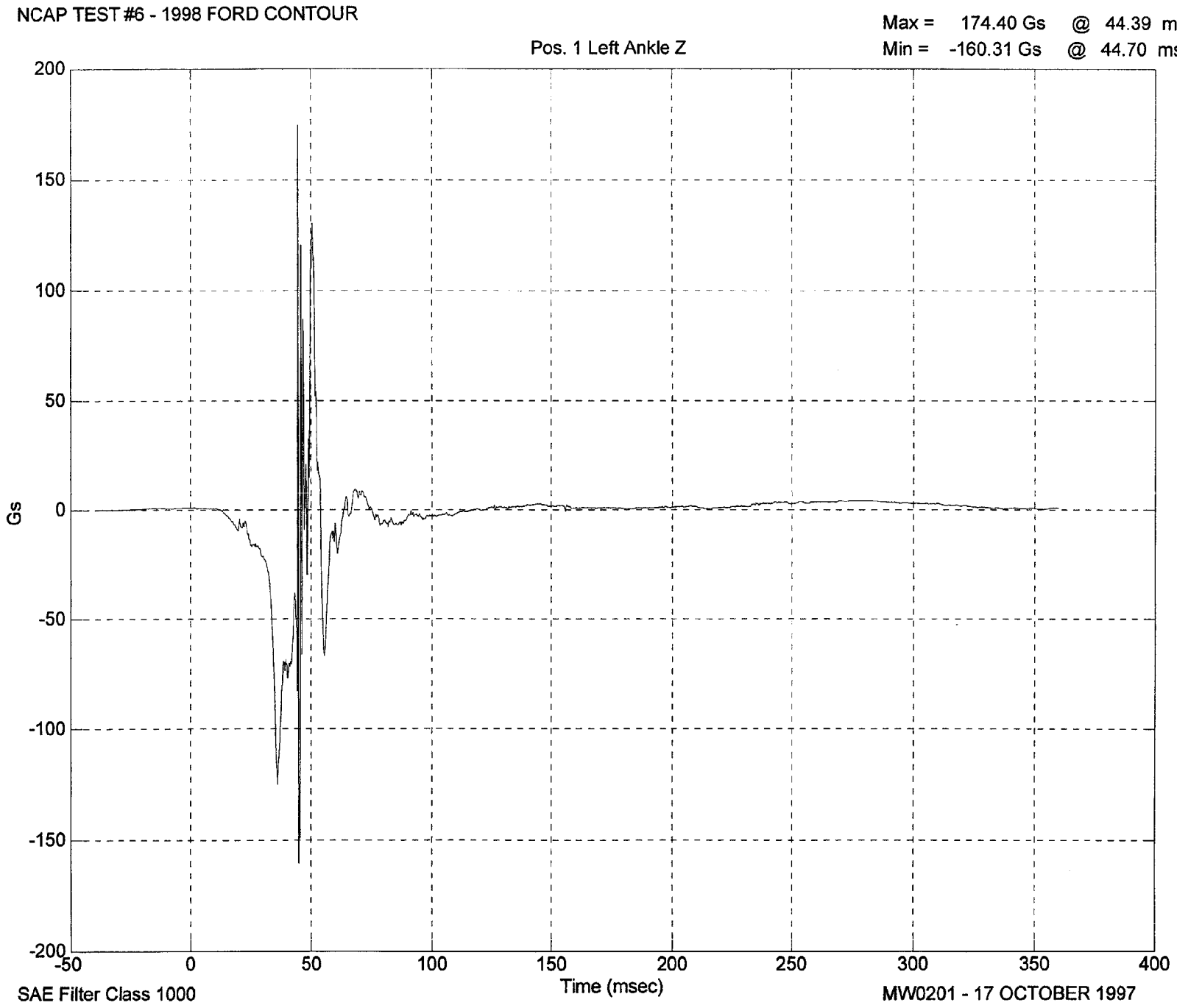

NCAP TEST #6 - 1998 FORD CONTOUR
P1 Rt Upper Tibia My
Max = 96.55 Nwt-M @ 32.50 msec
Min = -76.64 Nwt-M @ 50.40 msec
Nwt-M
100
80
60
40
20
0
-20
-40
-60
-80
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

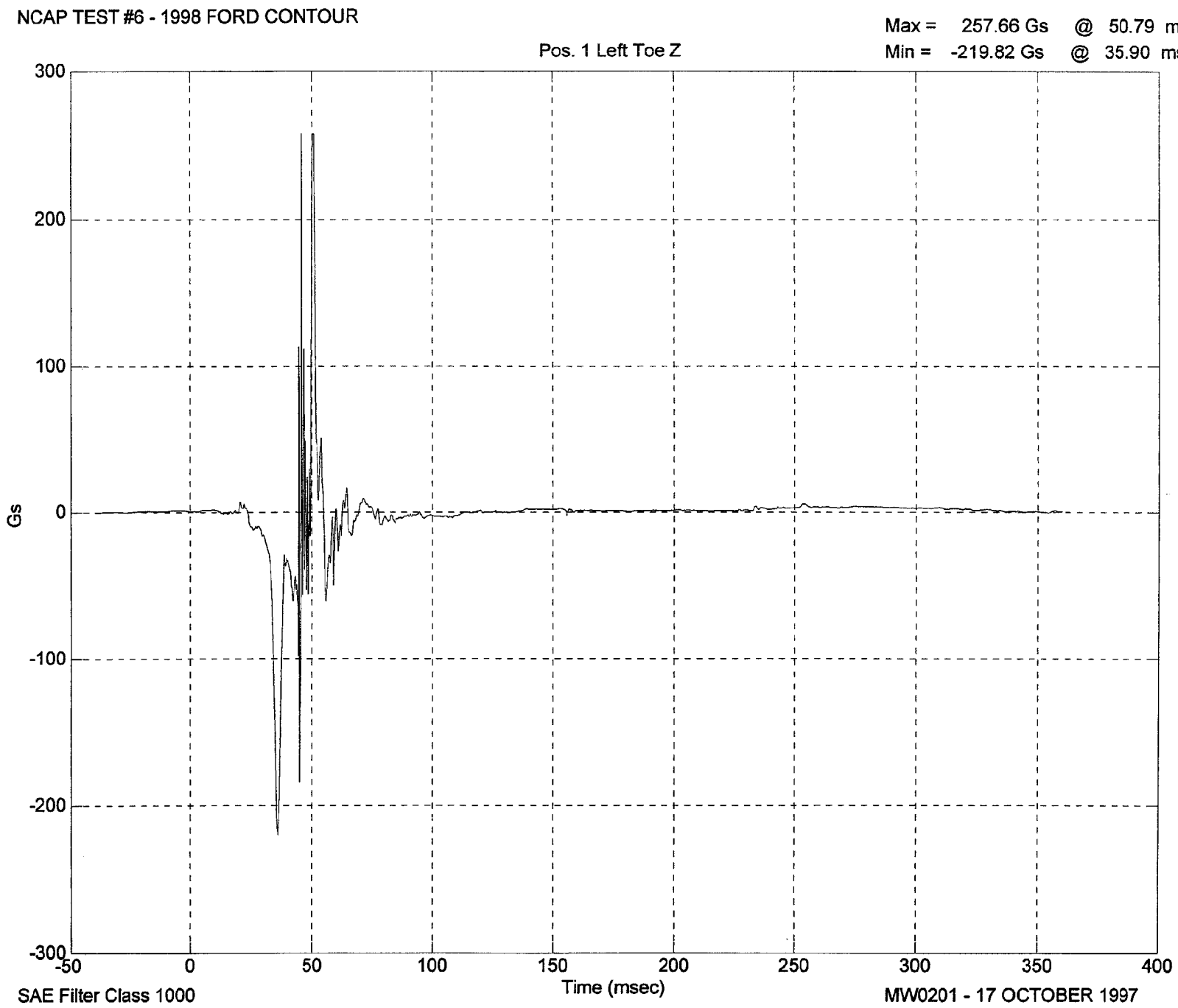

NCAP TEST #6 - 1998 FORD CONTOUR
P1 Rt Lower Tibia Fx
Max = 121.99 Nwt @ 188.89 msec
Min = -2403.85 Nwt @ 49.10 msec
500
0
-500
-1000
-1500
-2000
-2500
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

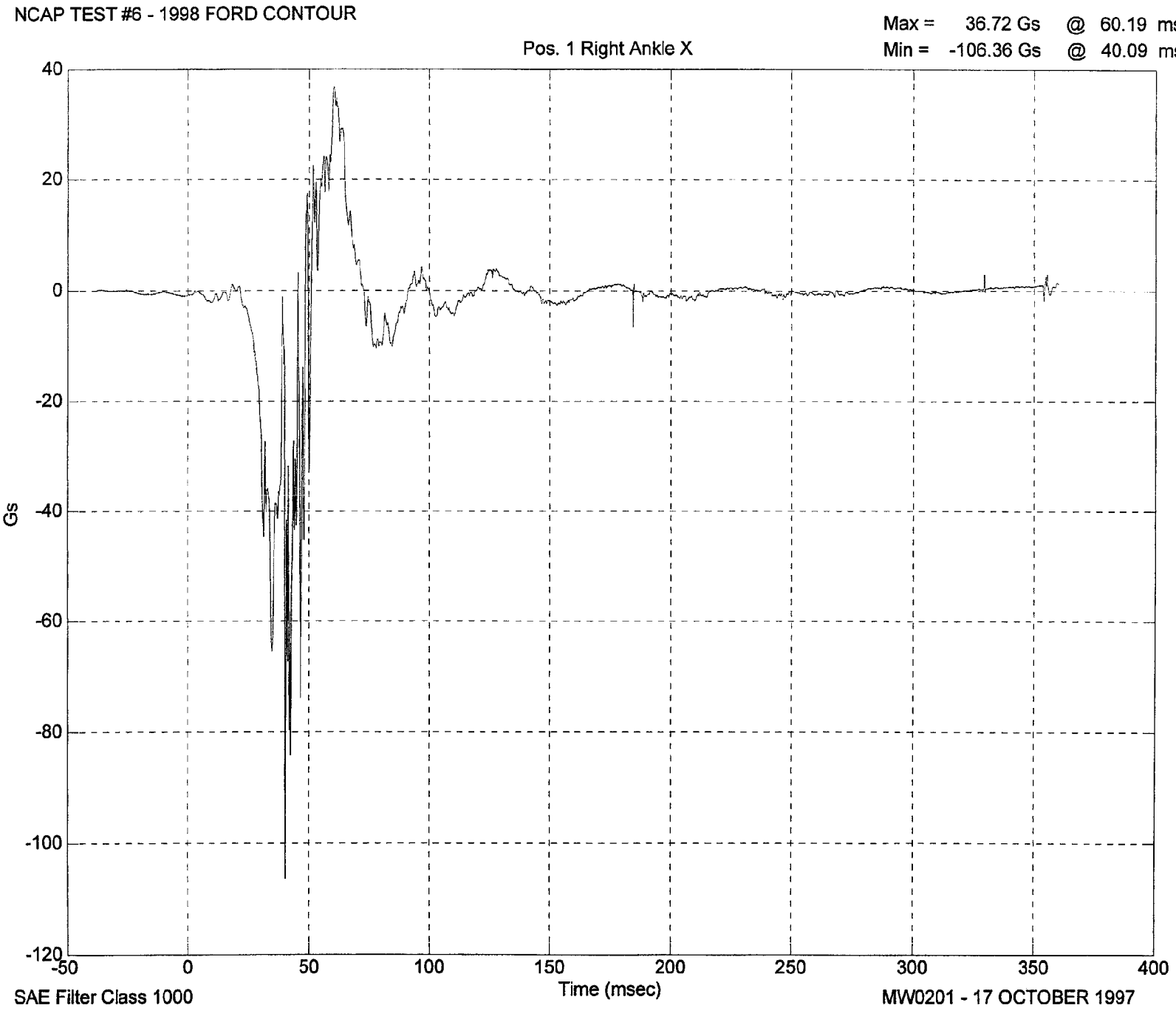

NCAP TEST #6 - 1998 FORD CONTOUR
P1 Rt Lower Tibia Fz
Max = 252.53 Nwt @ 206.69 msec
Min = -3853.55 Nwt @ 48.09 msec
500
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
-4000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

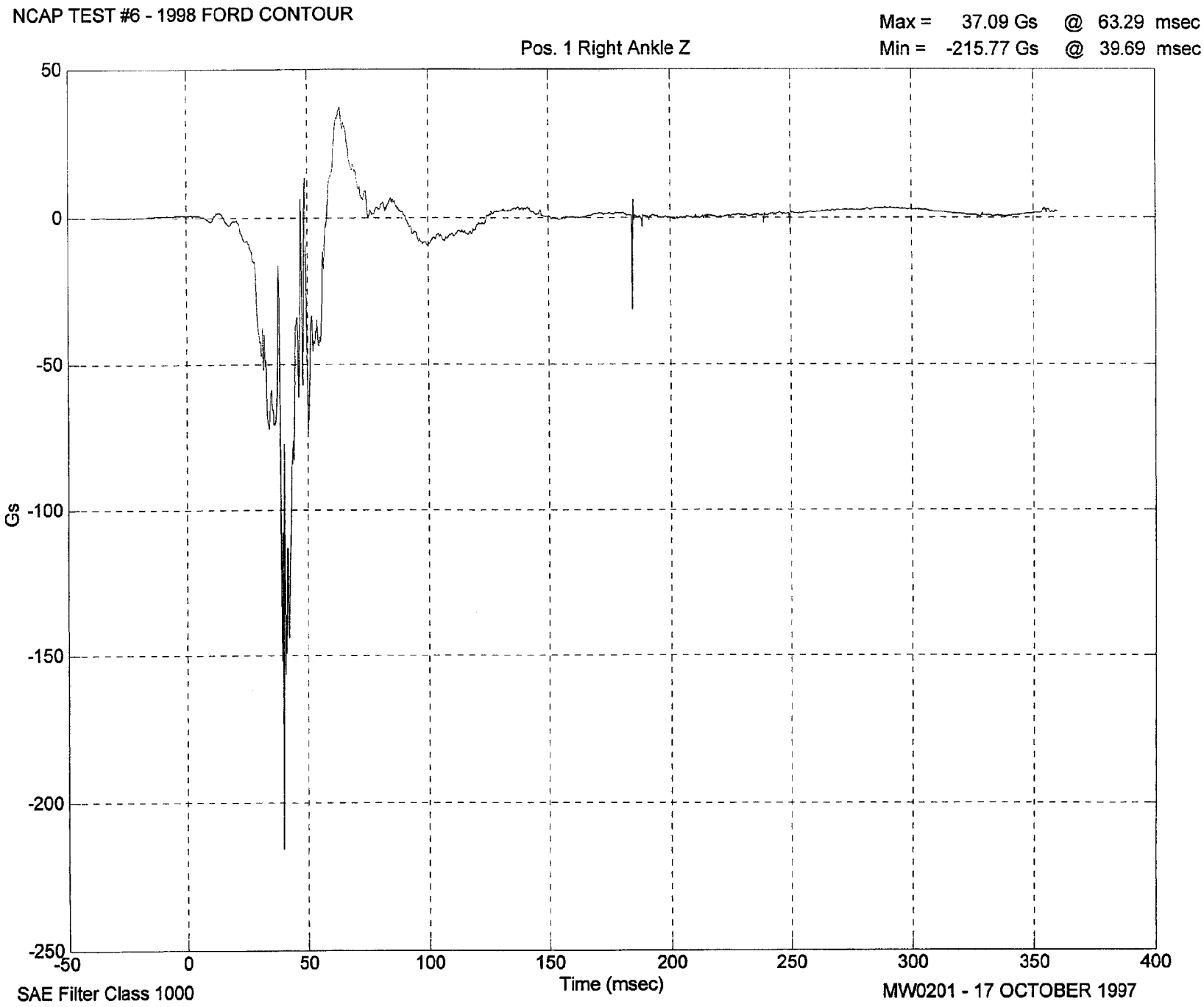

NCAP TEST #6 - 1998 FORD CONTOUR
P1 Rt Lower Tibia My
Max = 404.57 Nwt-M @ 47.89 msec
Min = -47.44 Nwt-M @ 40.99 msec
Nwt-M
450
400
350
300
250
200
150
100
50
0
-50
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

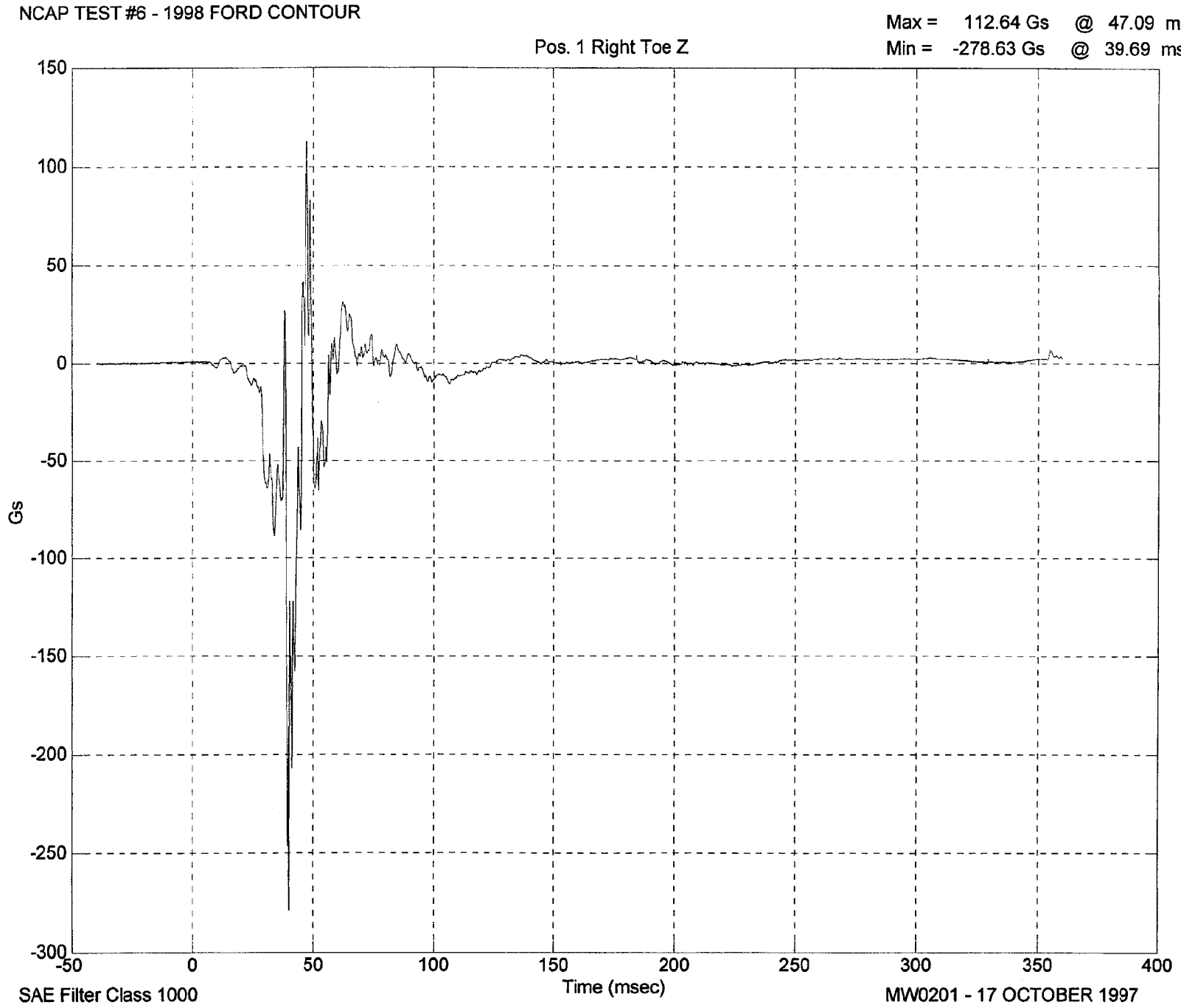

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Left Ankle X
Max = 86.11 Gs @ 51.99 msec
Min = -146.65 Gs @ 38.10 msec
100
50
0
-50
-100
-150
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

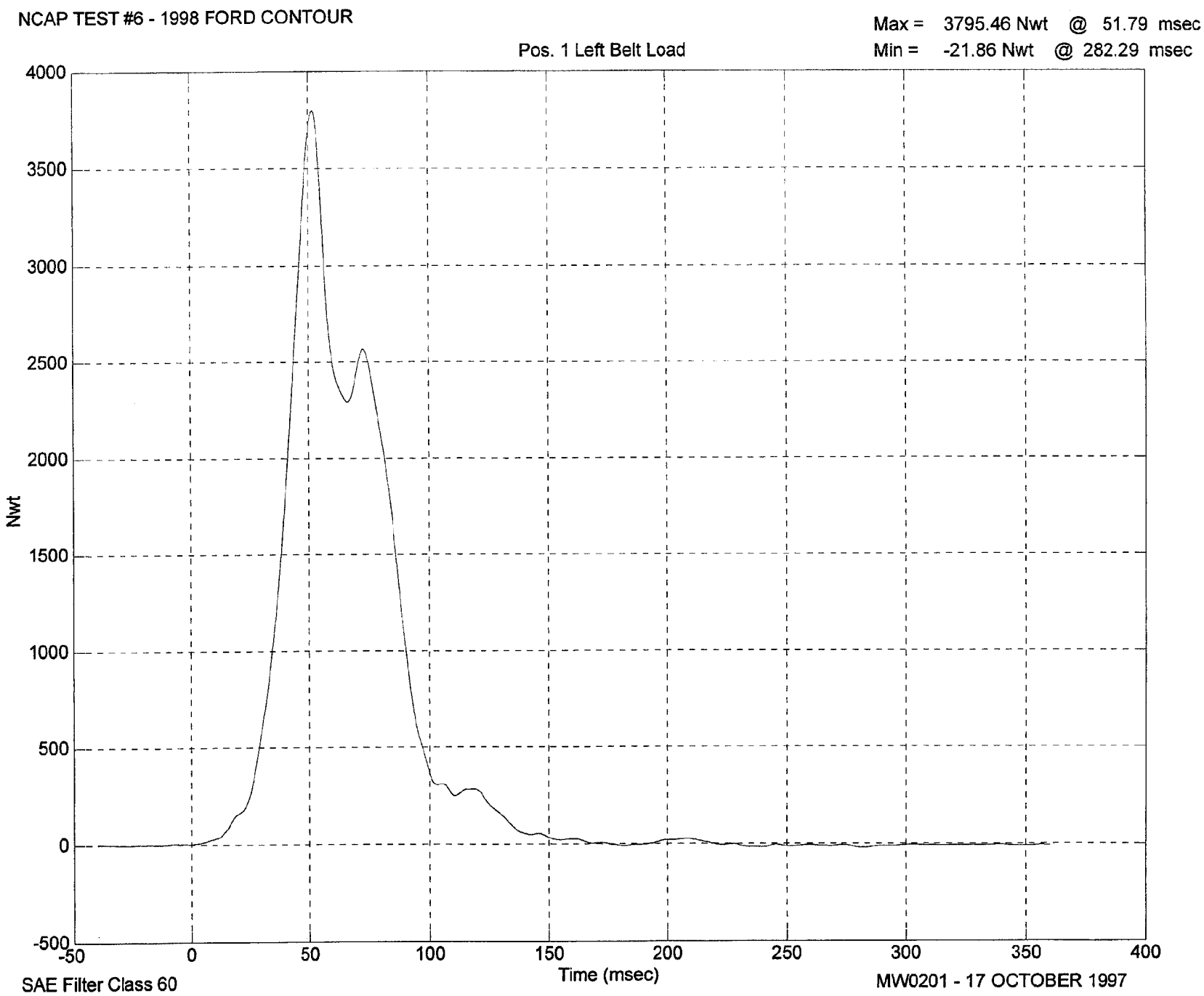

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Left Ankle Z
Max = 174.40 Gs @ 44.39 msec
Min = -160.31 Gs @ 44.70 msec
Gs
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

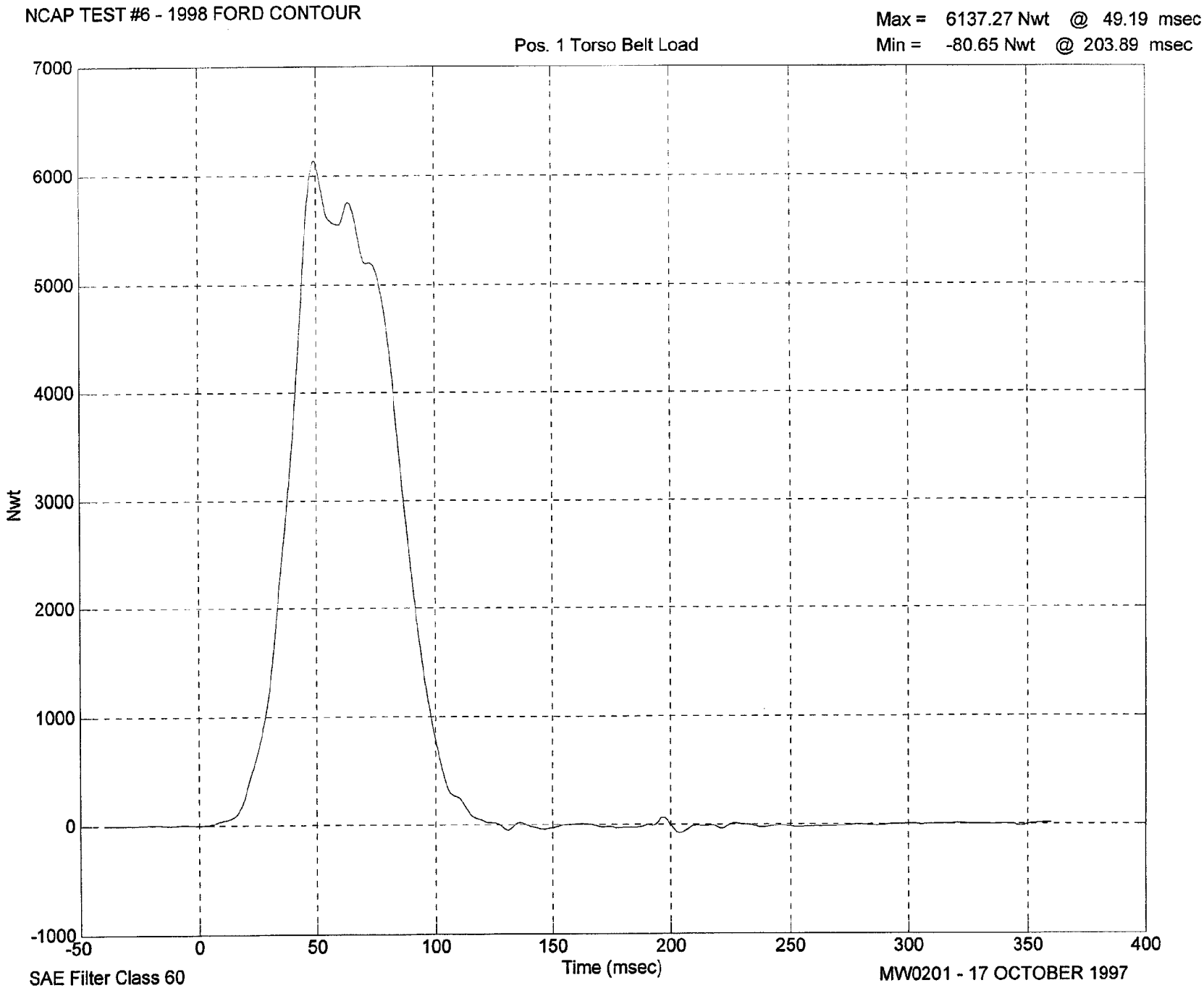

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Left Toe Z
Max = 257.66 Gs @ 50.79 msec
Min = -219.82 Gs @ 35.90 msec
300
200
100
0
-100
-200
-300
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Right Ankle X
Max = 36.72 Gs @ 60.19 msec
Min = -106.36 Gs @ 40.09 msec
Gs
40
20
0
-20
-40
-60
-80
-100
-120
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Right Ankle Z
Max = 37.09 Gs @ 63.29 msec
Min = -215.77 Gs @ 39.69 msec
50
0
-50
-100
-150
-200
-250
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Right Toe Z
Max = 112.64 Gs @ 47.09 msec
Min = -278.63 Gs @ 39.69 msec
150
100
50
0
-50
-100
-150
-200
-250
-300
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Left Belt Load
Max = 3795.46 Nwt @ 51.79 msec
Min = -21.86 Nwt @ 282.29 msec
Nwt
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
MW0201 - 17 OCTOBER 1997

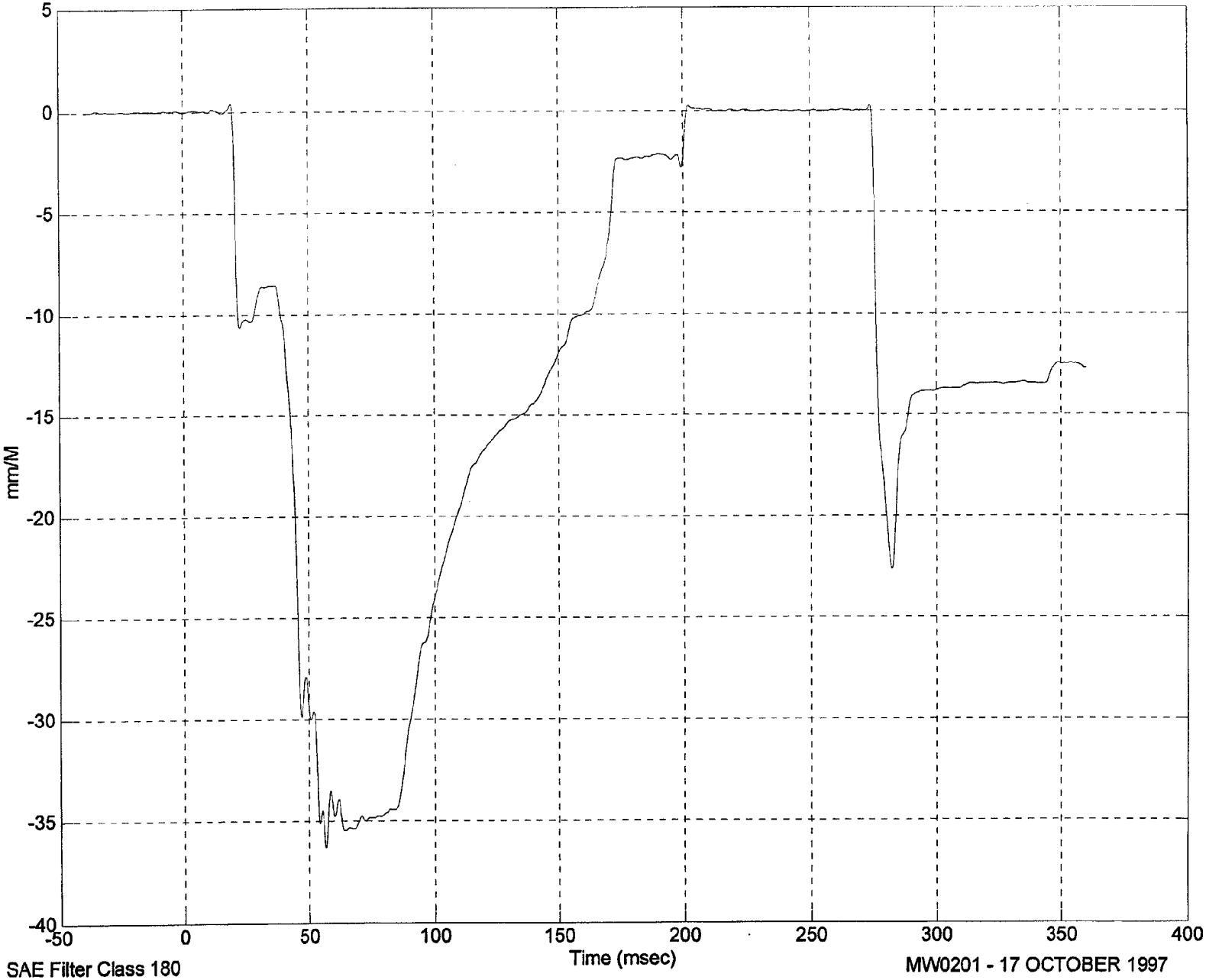

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 1 Torso Belt Load
Max = 6137.27 Nwt @ 49.19 msec
Min = -80.65 Nwt @ 203.89 msec
7000
6000
5000
4000
3000
2000
1000
0
-1000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR

Max = .39 mm/M @ 19.39 msec

Pos. 1 Belt Elongation

Min = -36.29 mm/M @ 56.79 msec



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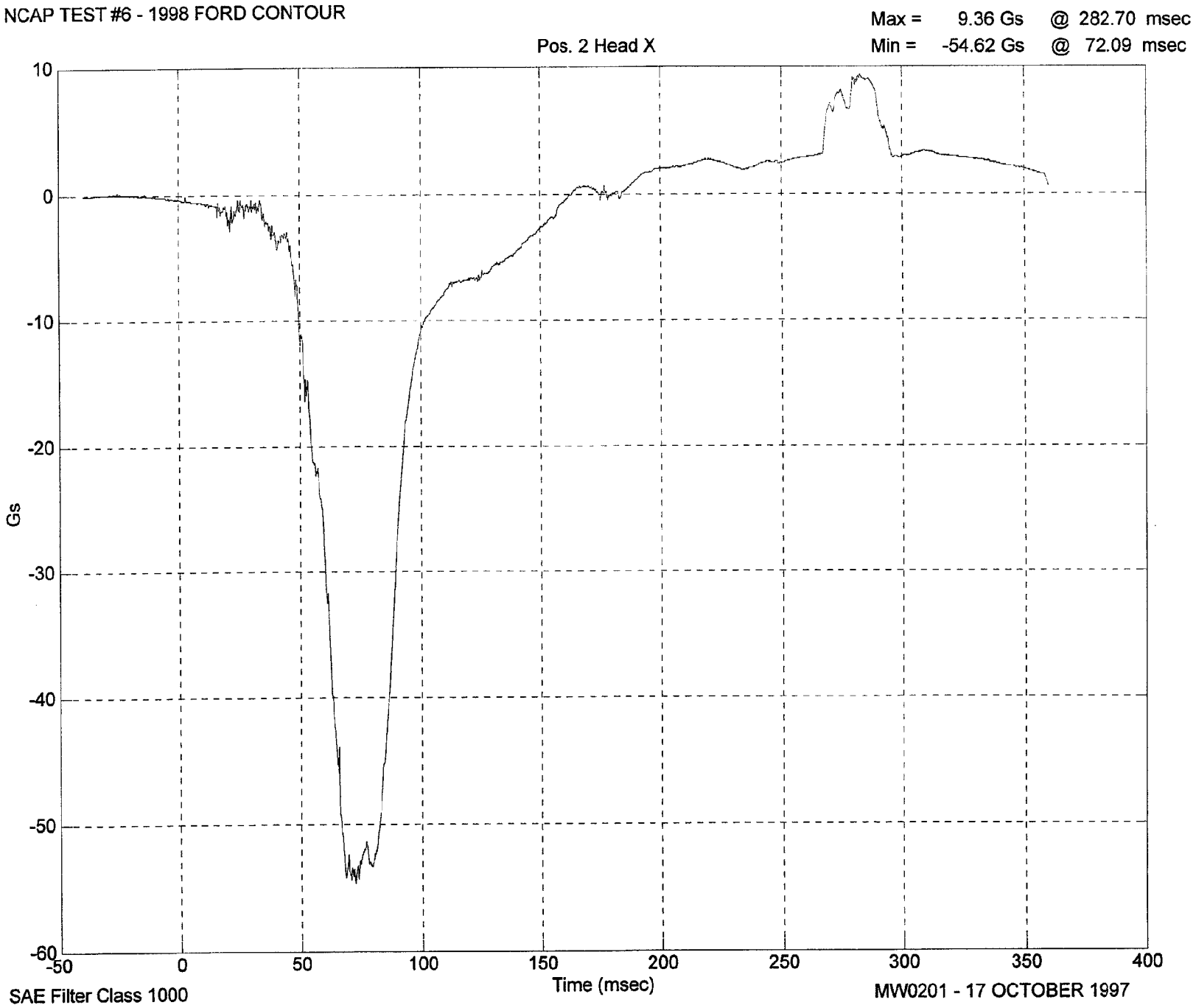
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Head X
Max = 9.36 Gs @ 282.70 msec
Min = -54.62 Gs @ 72.09 msec
10
0
-10
-20
-30
-40
-50
-60
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
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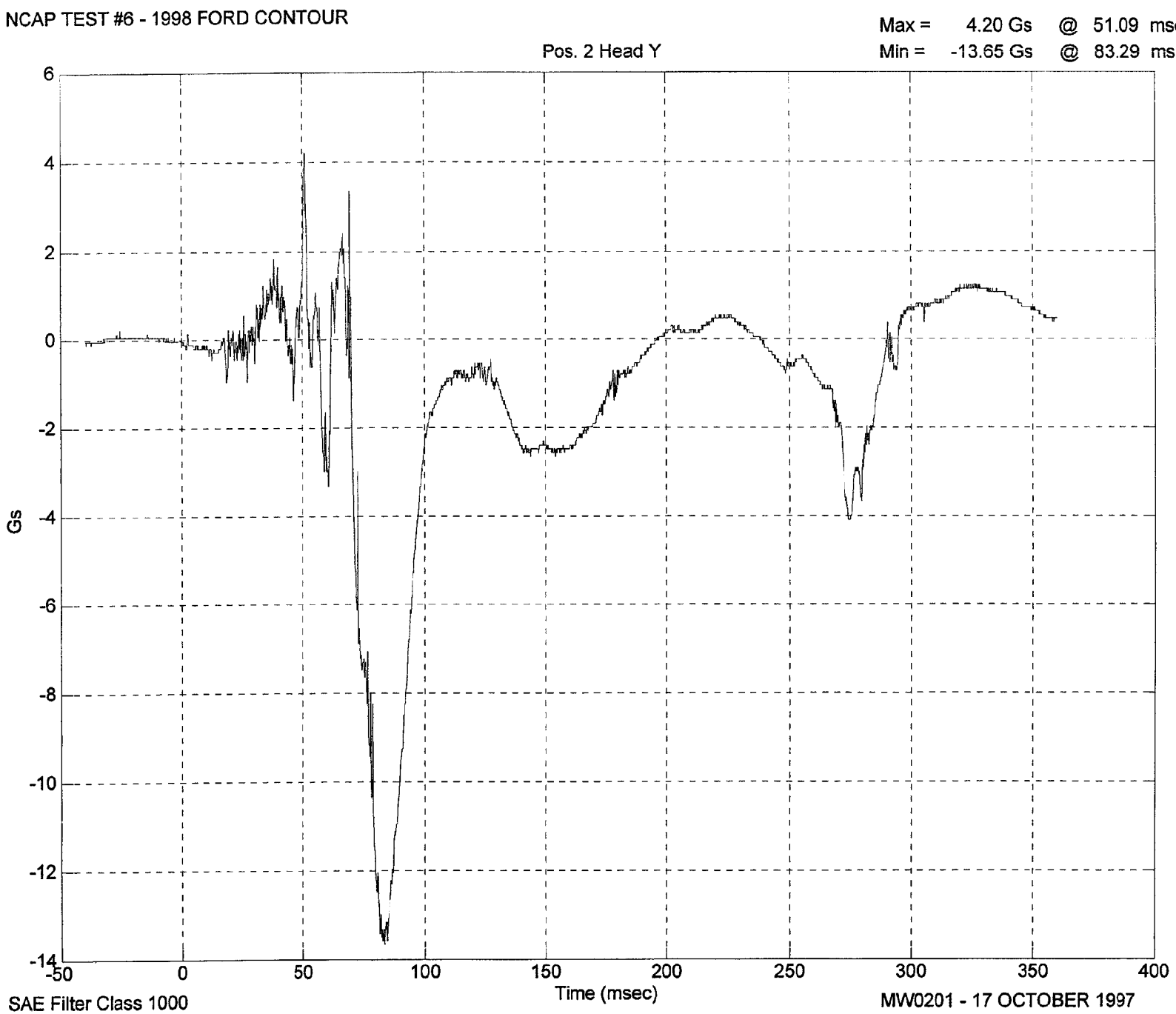
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Head Y
Max = 4.20 Gs @ 51.09 msec
Min = -13.65 Gs @ 83.29 msec
Gs
Time (msec)
SAE Filter Class 1000
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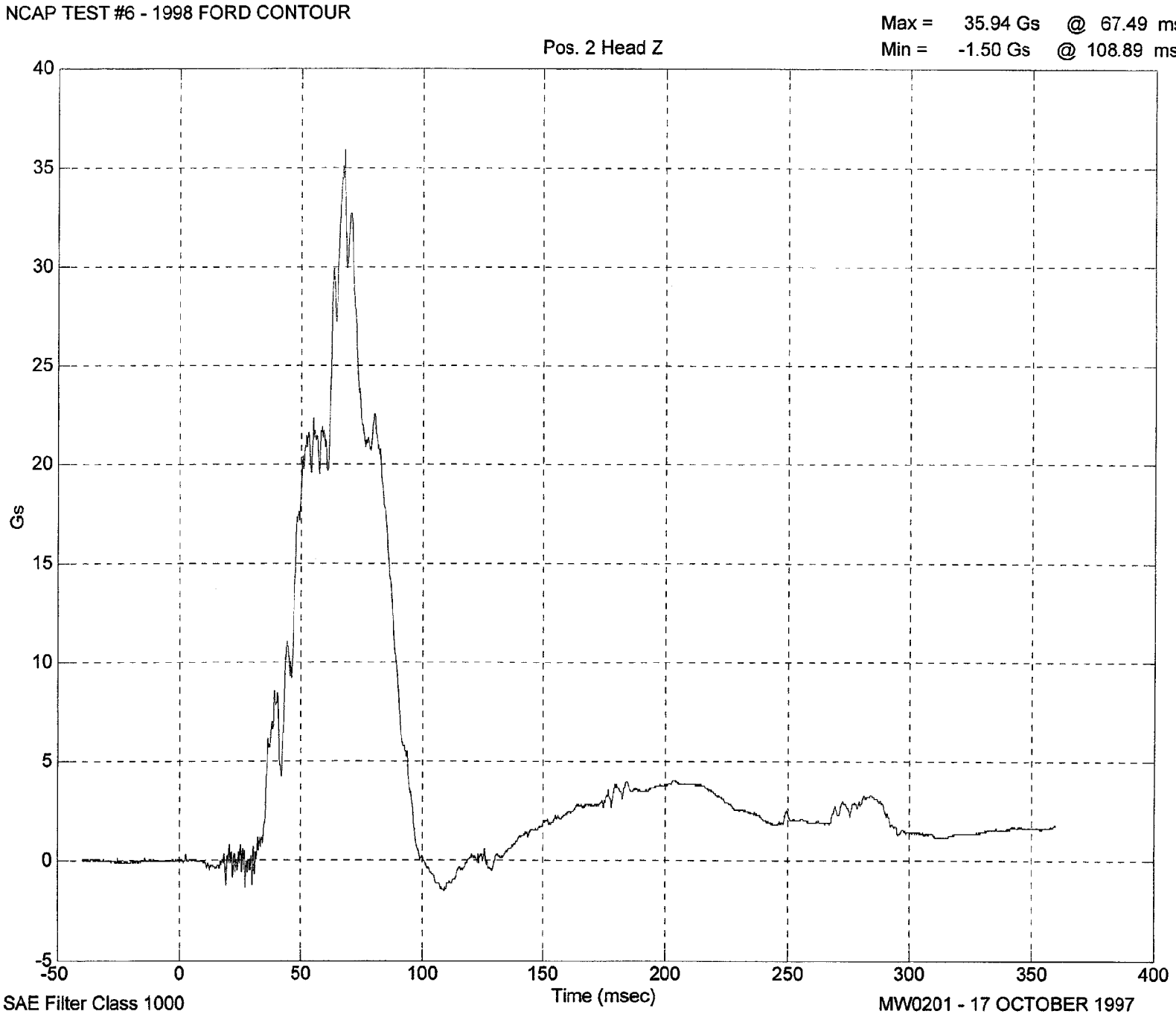
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Head Z
Max = 35.94 Gs @ 67.49 msec
Min = -1.50 Gs @ 108.89 msec
Gs
Time (msec)
SAE Filter Class 1000
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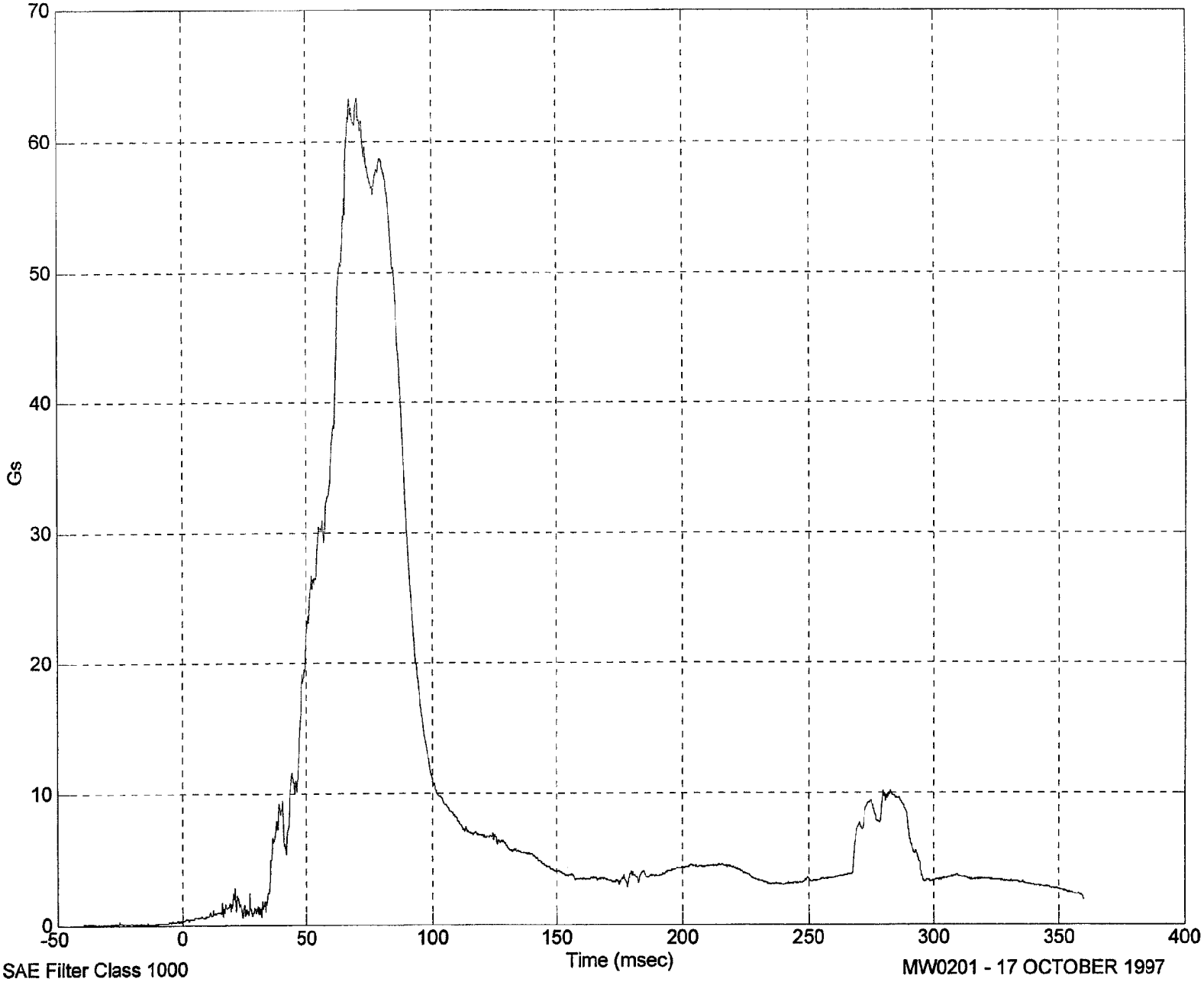
NCAP TEST #6 - 1998 FORD CONTOUR

Max = 63.33 Gs @ 70.50 msec

Pos. 2 Head Resultant

Min = .04 Gs @ -31.00 msec



SAE Filter Class 1000

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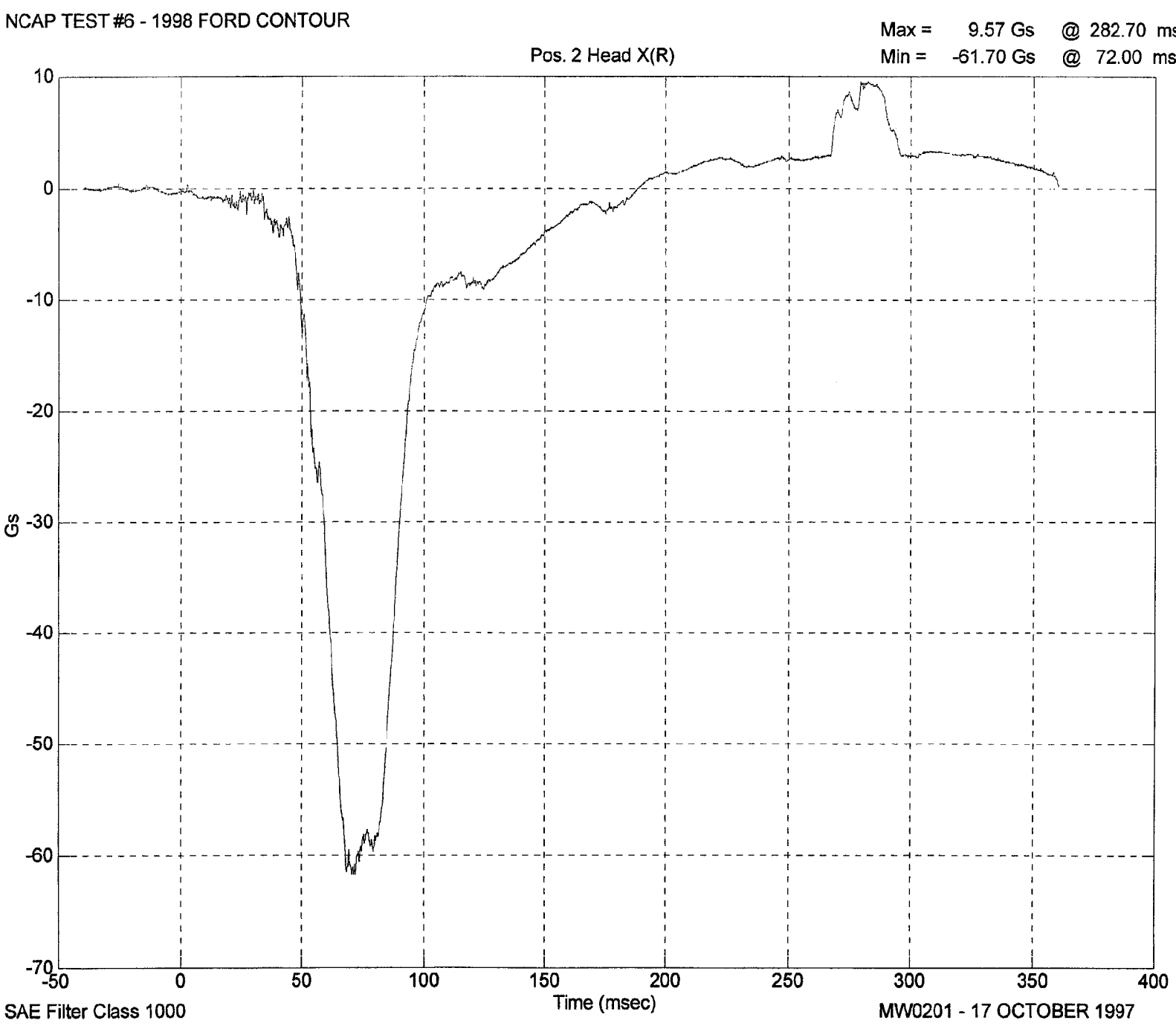
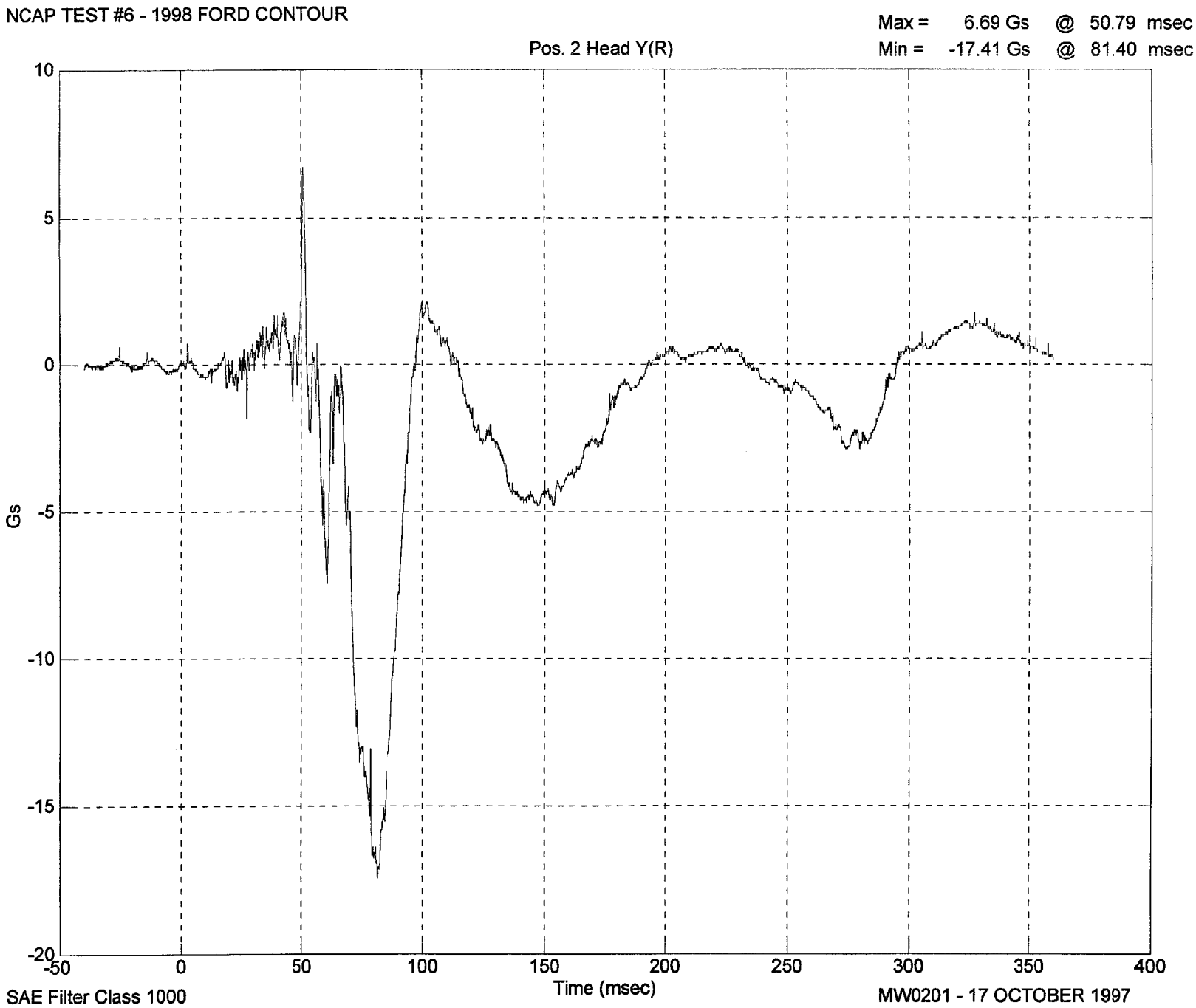
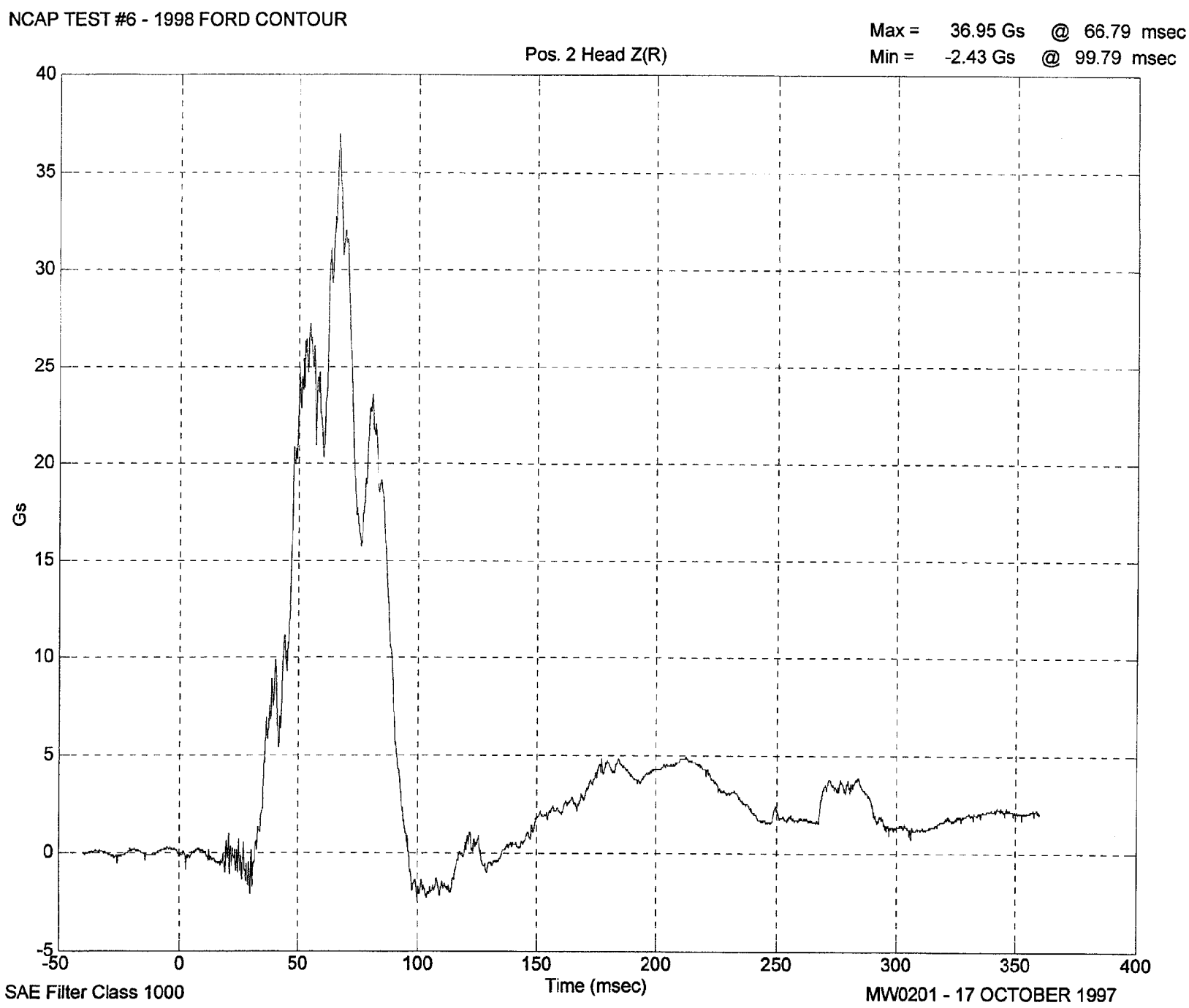

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Head X(R)
Max = 9.57 Gs @ 282.70 msec
Min = -61.70 Gs @ 72.00 msec
Gs
10
0
-10
-20
-30
-40
-50
-60
-70
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Head Y(R)
Max = 6.69 Gs @ 50.79 msec
Min = -17.41 Gs @ 81.40 msec
10
5
0
-5
-10
-15
-20
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Max = 36.95 Gs @ 66.79 msec
Min = -2.43 Gs @ 99.79 msec
Pos. 2 Head Z(R)
Gs
Time (msec)
SAE Filter Class 1000
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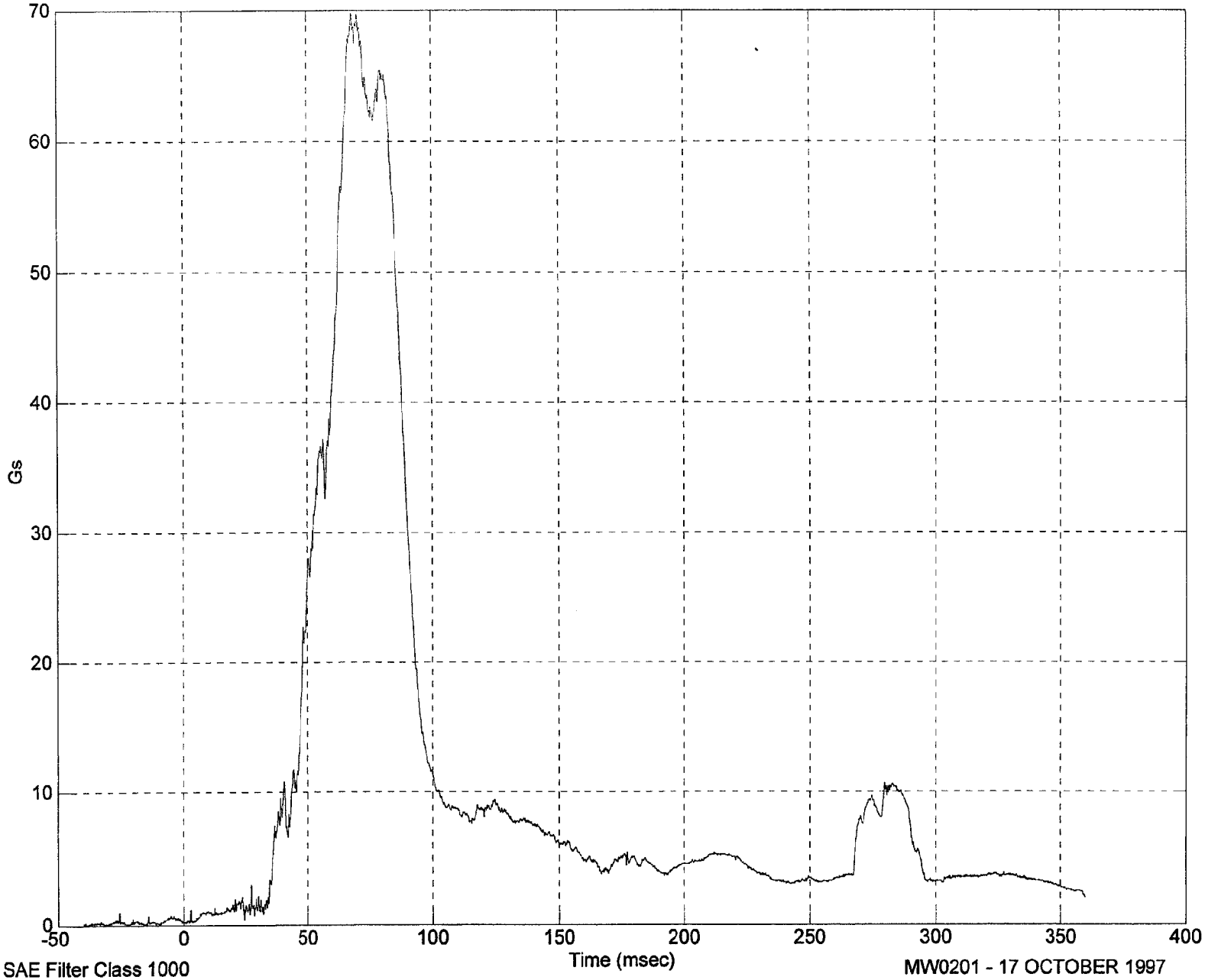
NCAP TEST #6 - 1998 FORD CONTOUR

Max = 69.76 Gs @ 68.09 msec

Pos. 2 Head Resultant(RR)

Min = .04 Gs @ -15.50 msec



SAE Filter Class 1000

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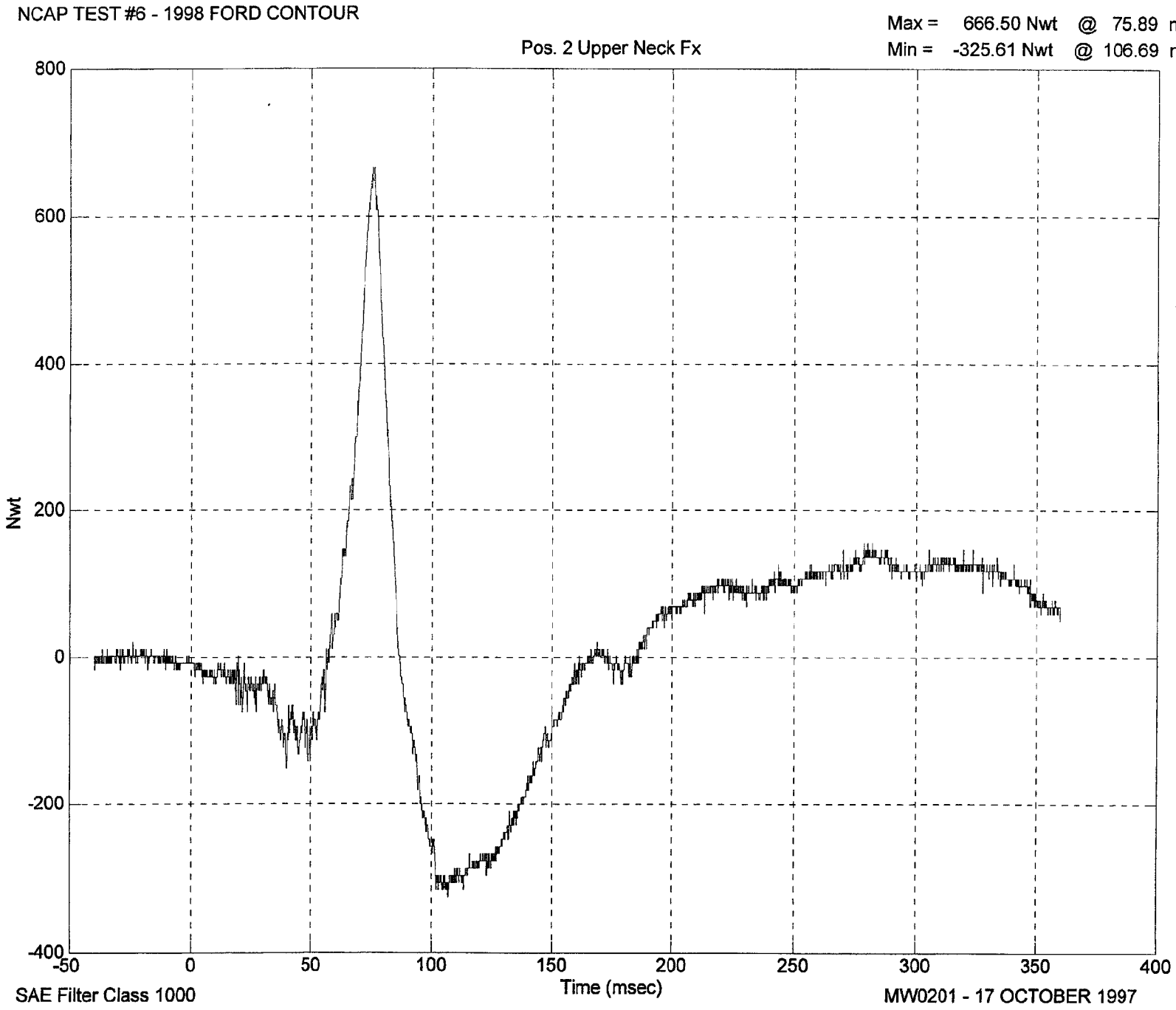
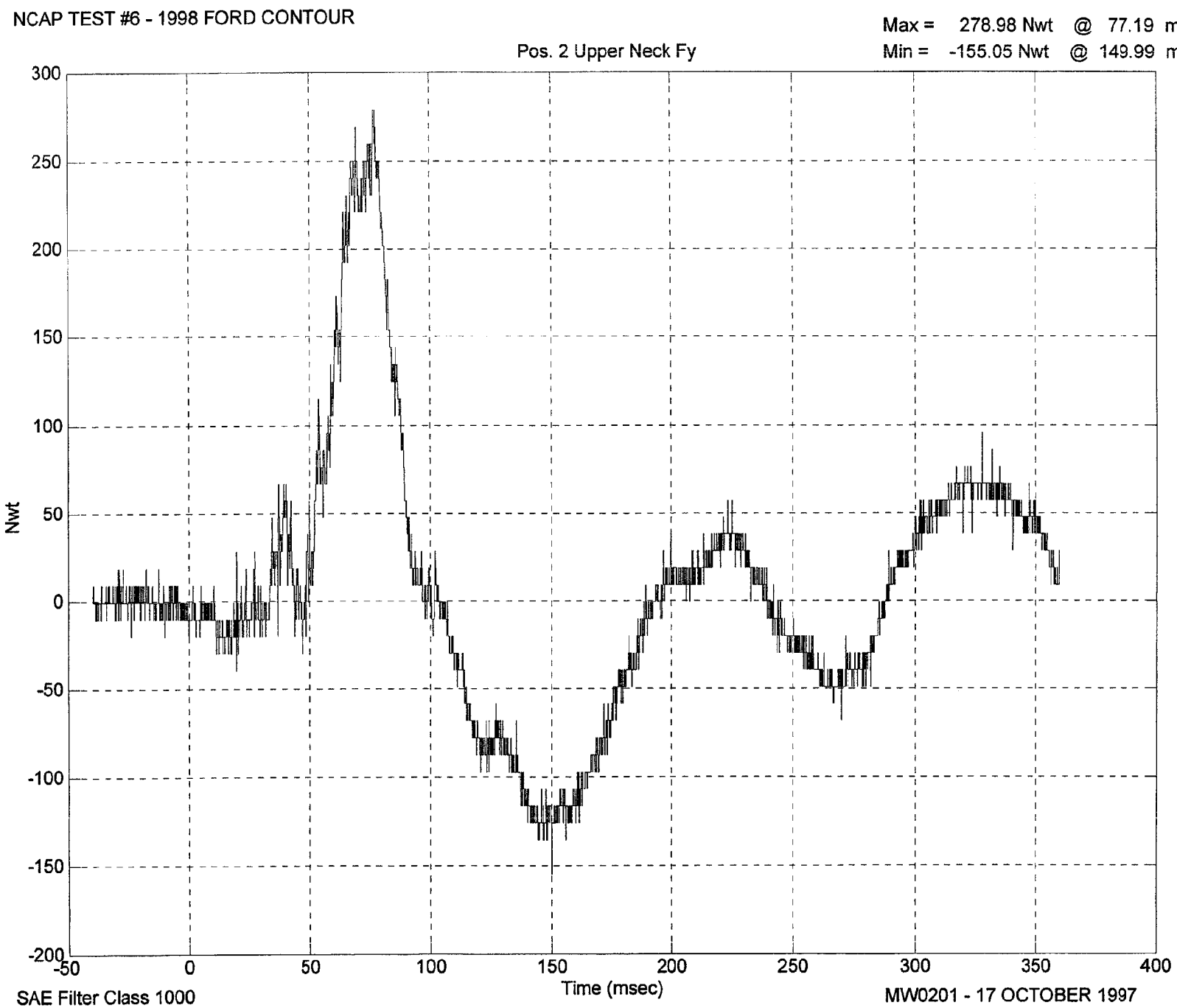
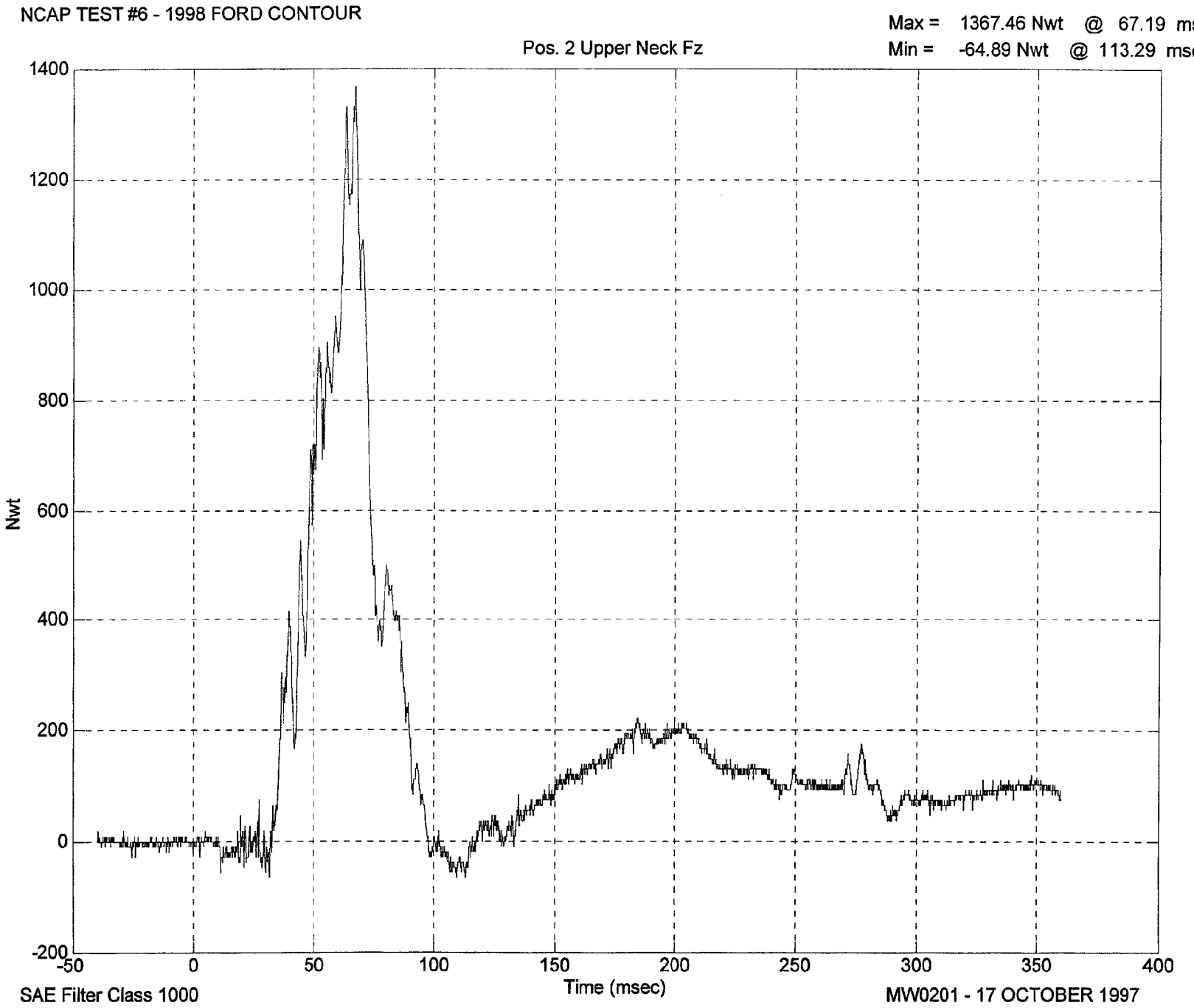
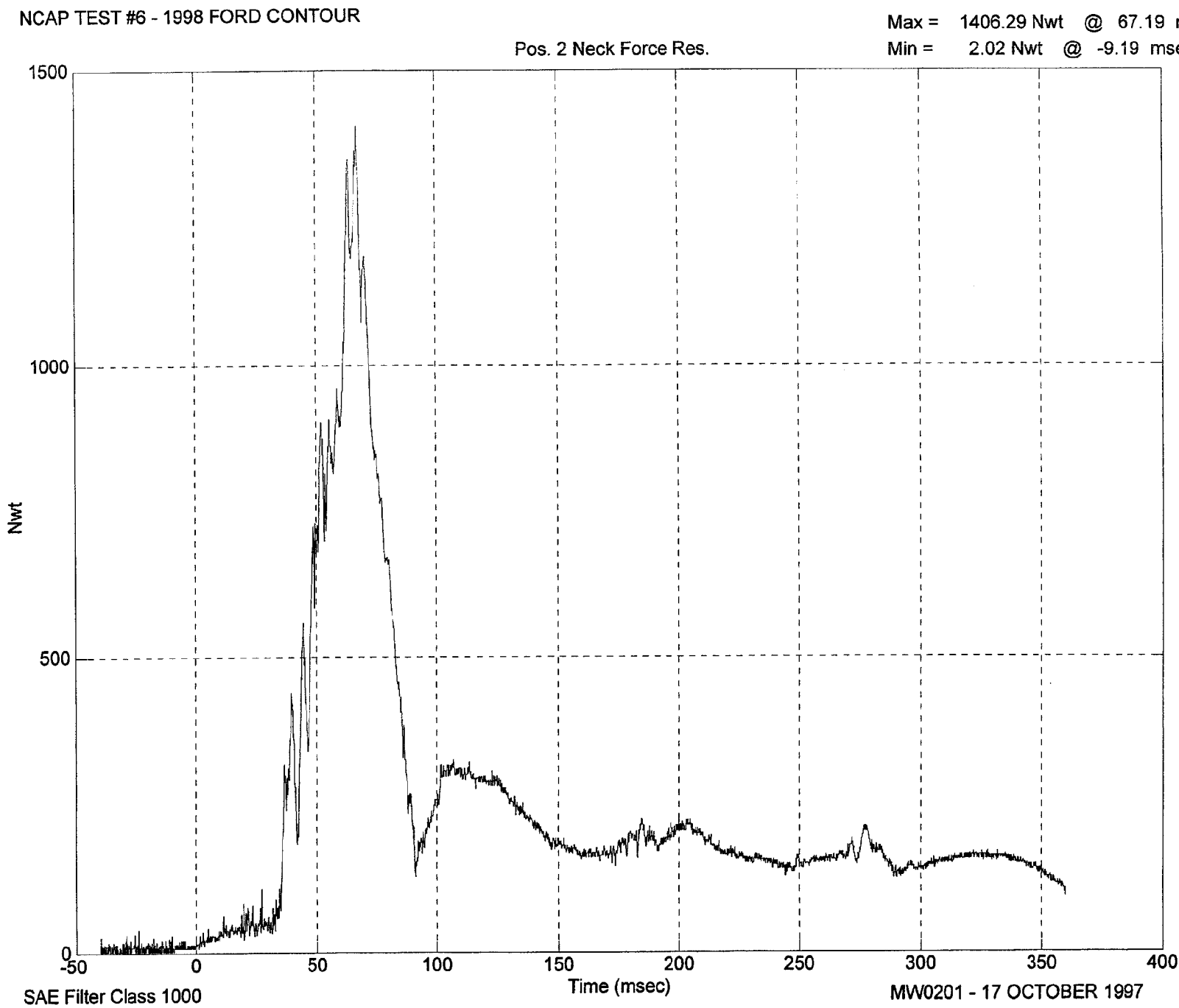

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Upper Neck Fx
Max = 666.50 Nwt @ 75.89 msec
Min = -325.61 Nwt @ 106.69 msec
800
600
400
200
0
-200
-400
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

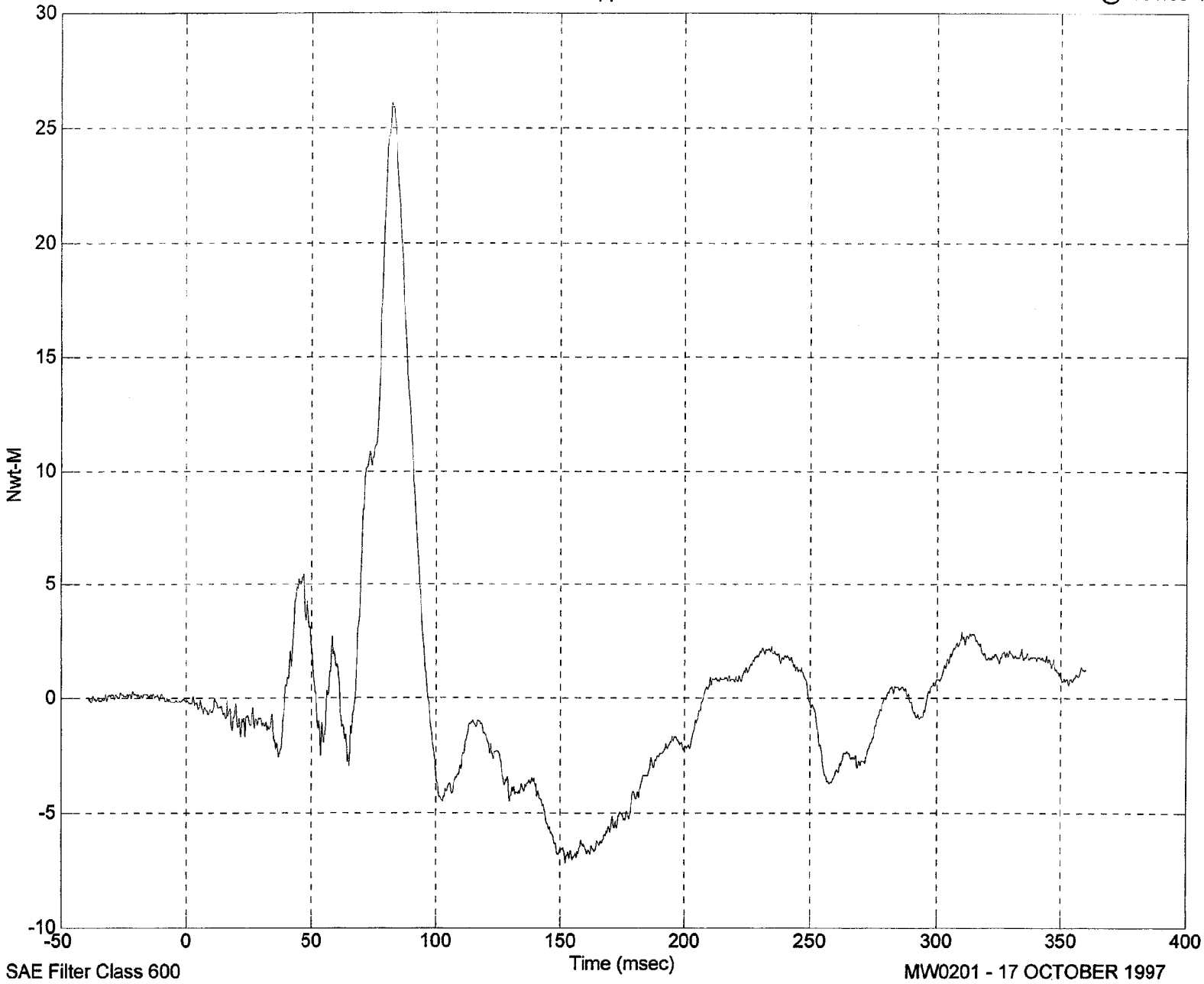

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Upper Neck Fy
Max = 278.98 Nwt @ 77.19 msec
Min = -155.05 Nwt @ 149.99 msec
Nwt
300
250
200
150
100
50
0
-50
-100
-150
-200
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Upper Neck Fz
Max = 1367.46 Nwt @ 67.19 msec
Min = -64.89 Nwt @ 113.29 msec
Nwt
1400
1200
1000
800
600
400
200
0
-200
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Neck Force Res.
Max = 1406.29 Nwt @ 67.19 msec
Min = 2.02 Nwt @ -9.19 msec
1500
1000
500
0
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

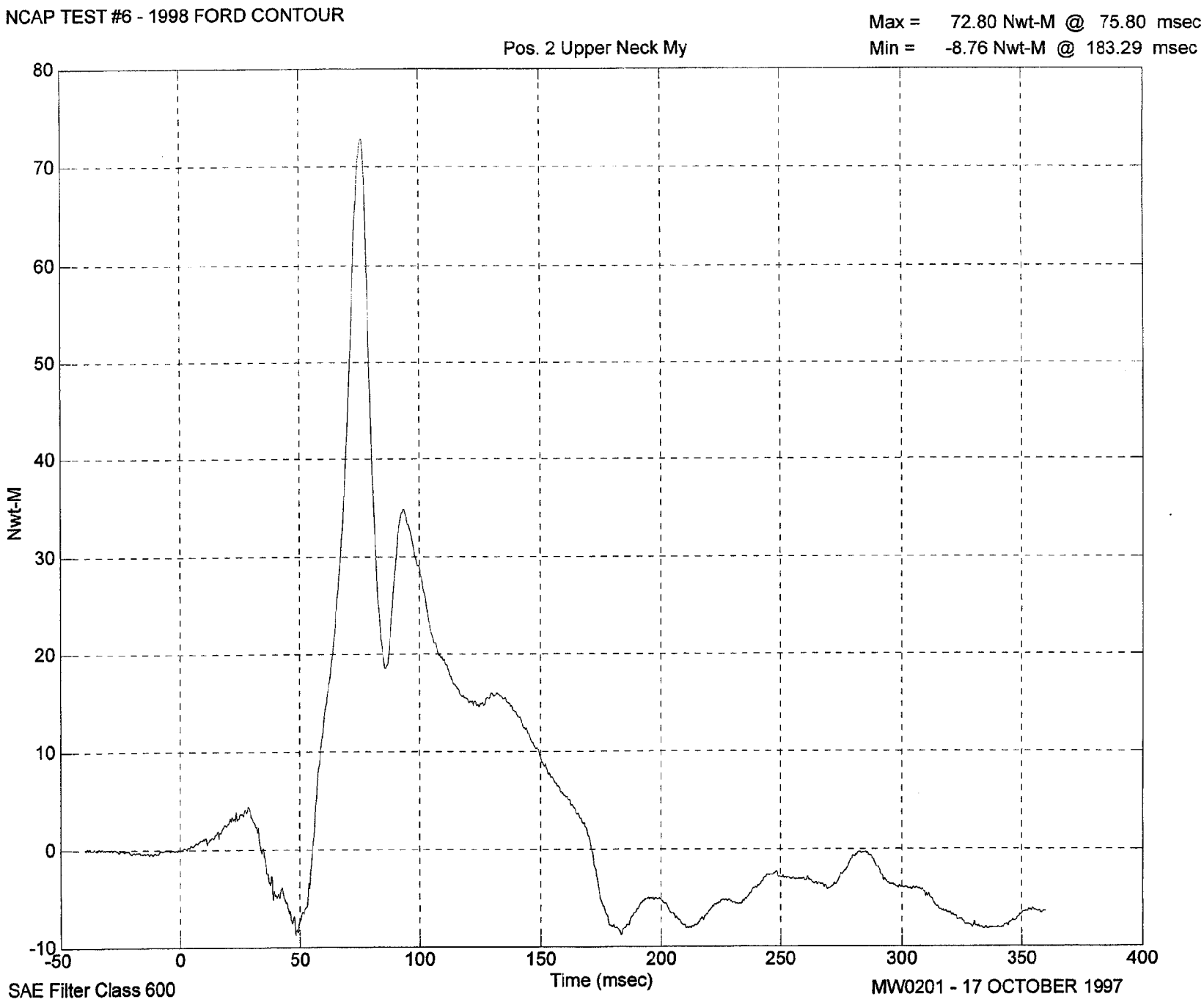
NCAP TEST #6 - 1998 FORD CONTOUR

Max = 26.10 Nwt-M @ 82.19 msec
Min = -7.15 Nwt-M @ 151.89 msec



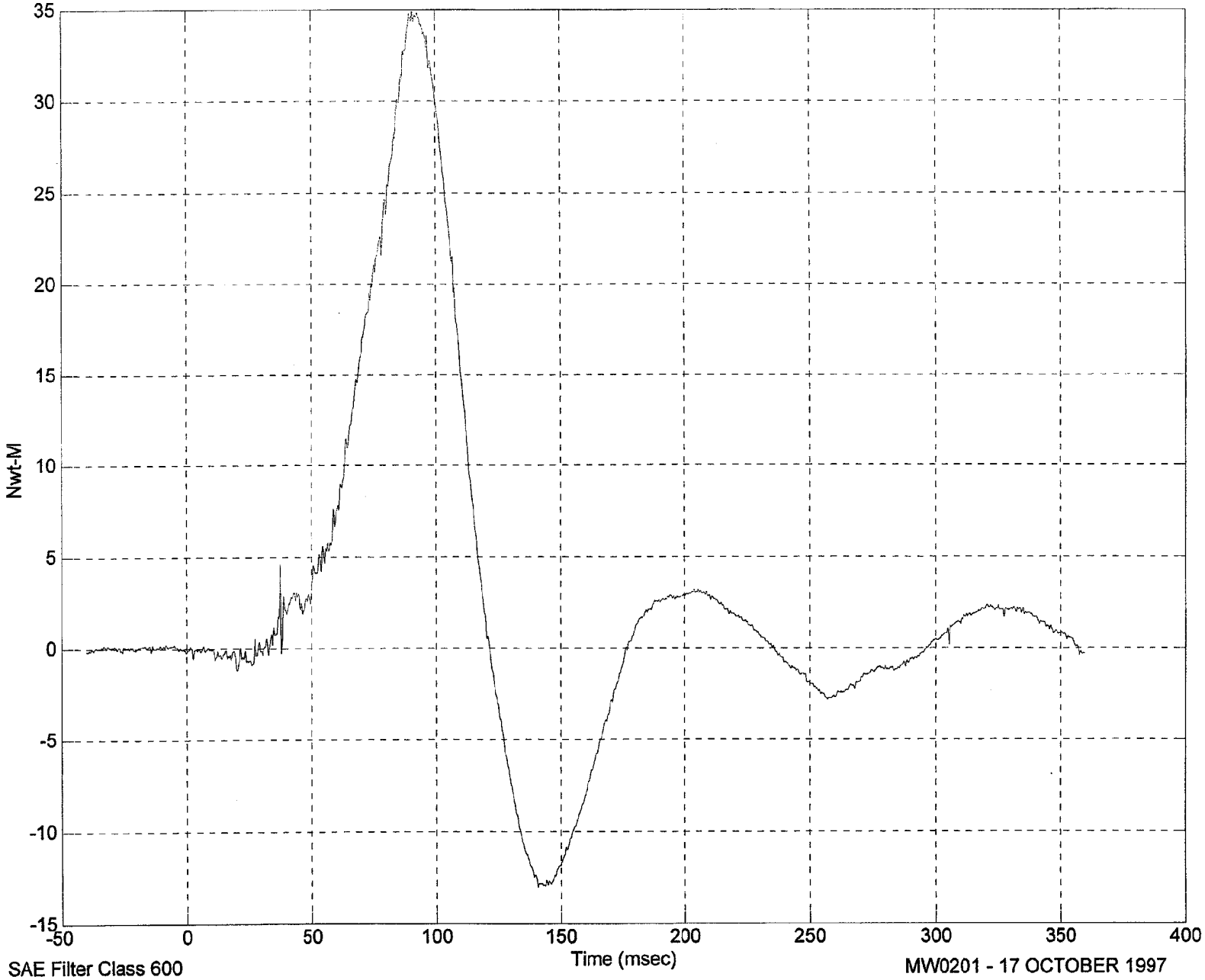
SAE Filter Class 600

MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Upper Neck My
Max = 72.80 Nwt-M @ 75.80 msec
Min = -8.76 Nwt-M @ 183.29 msec
Nwt-M
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR

Max = 34.87 Nwt-M @ 90.79 msec
Min = -13.01 Nwt-M @ 140.69 msec



SAE Filter Class 600

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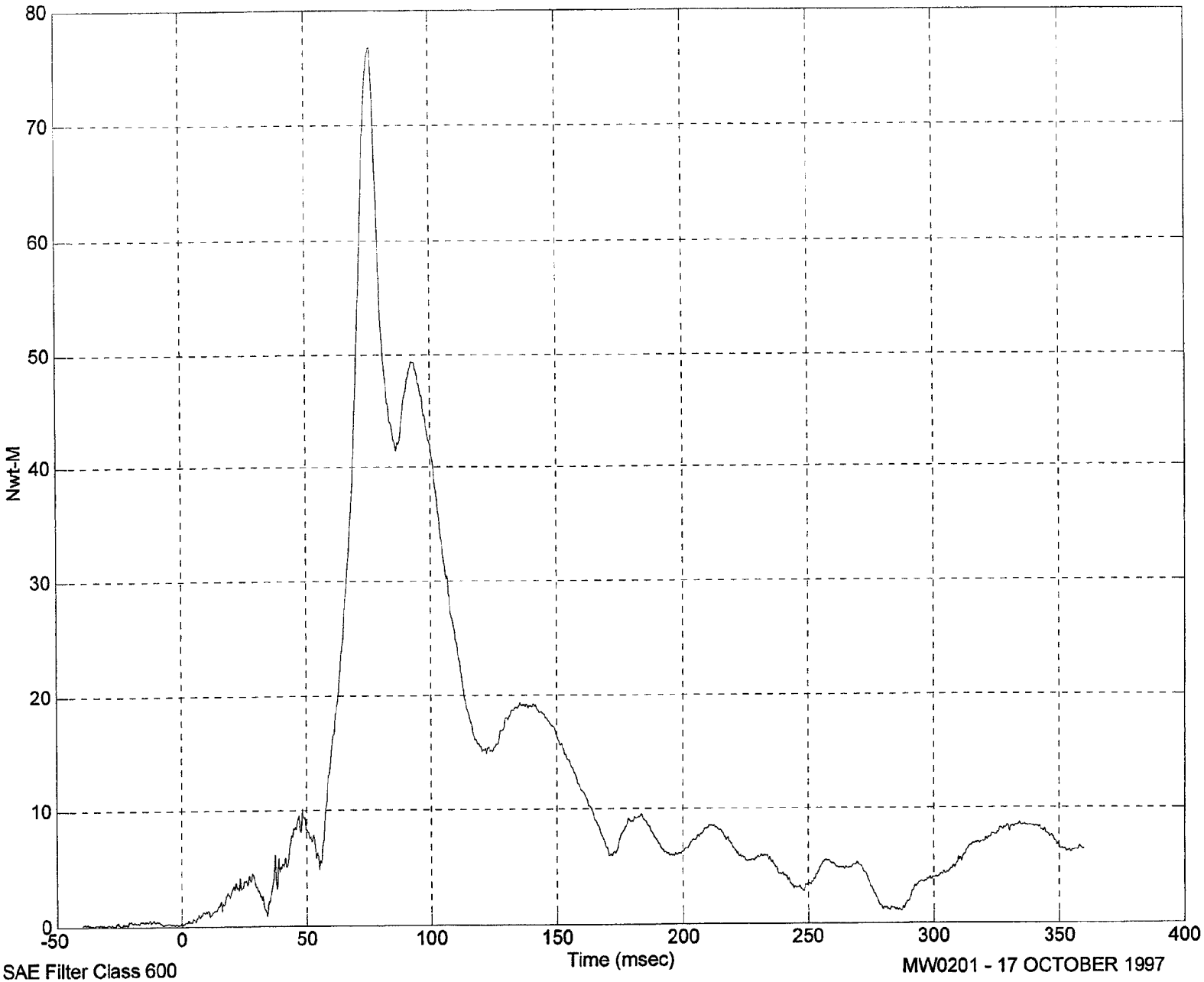
NCAP TEST #6 - 1998 FORD CONTOUR

Max = 76.73 Nwt-M @ 75.89 msec

Pos. 2 Neck Moment Res.

Min = .02 Nwt-M @ -36.50 msec



SAE Filter Class 600

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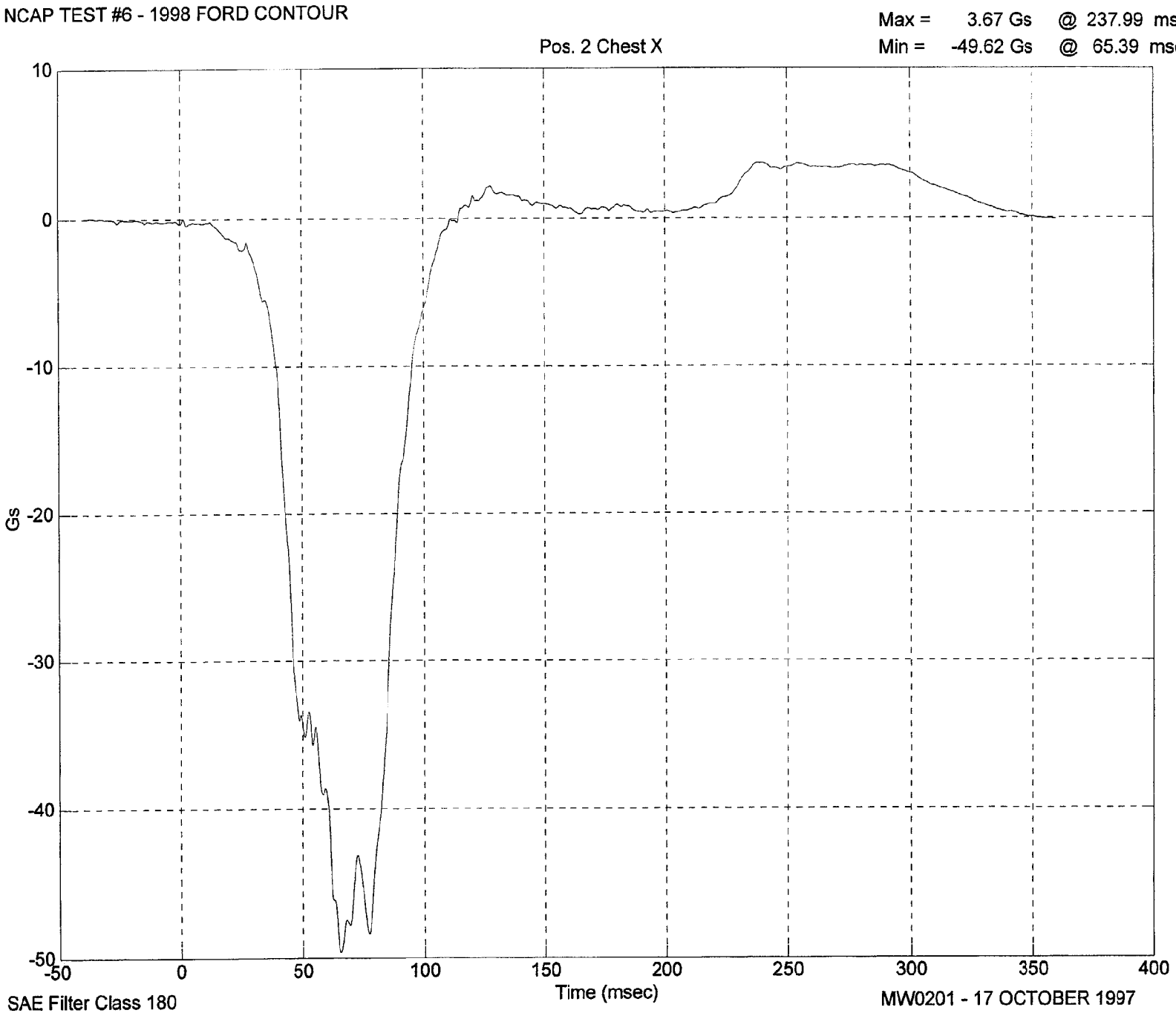
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Chest X
Max = 3.67 Gs @ 237.99 msec
Min = -49.62 Gs @ 65.39 msec
10
0
-10
-20
-30
-40
-50
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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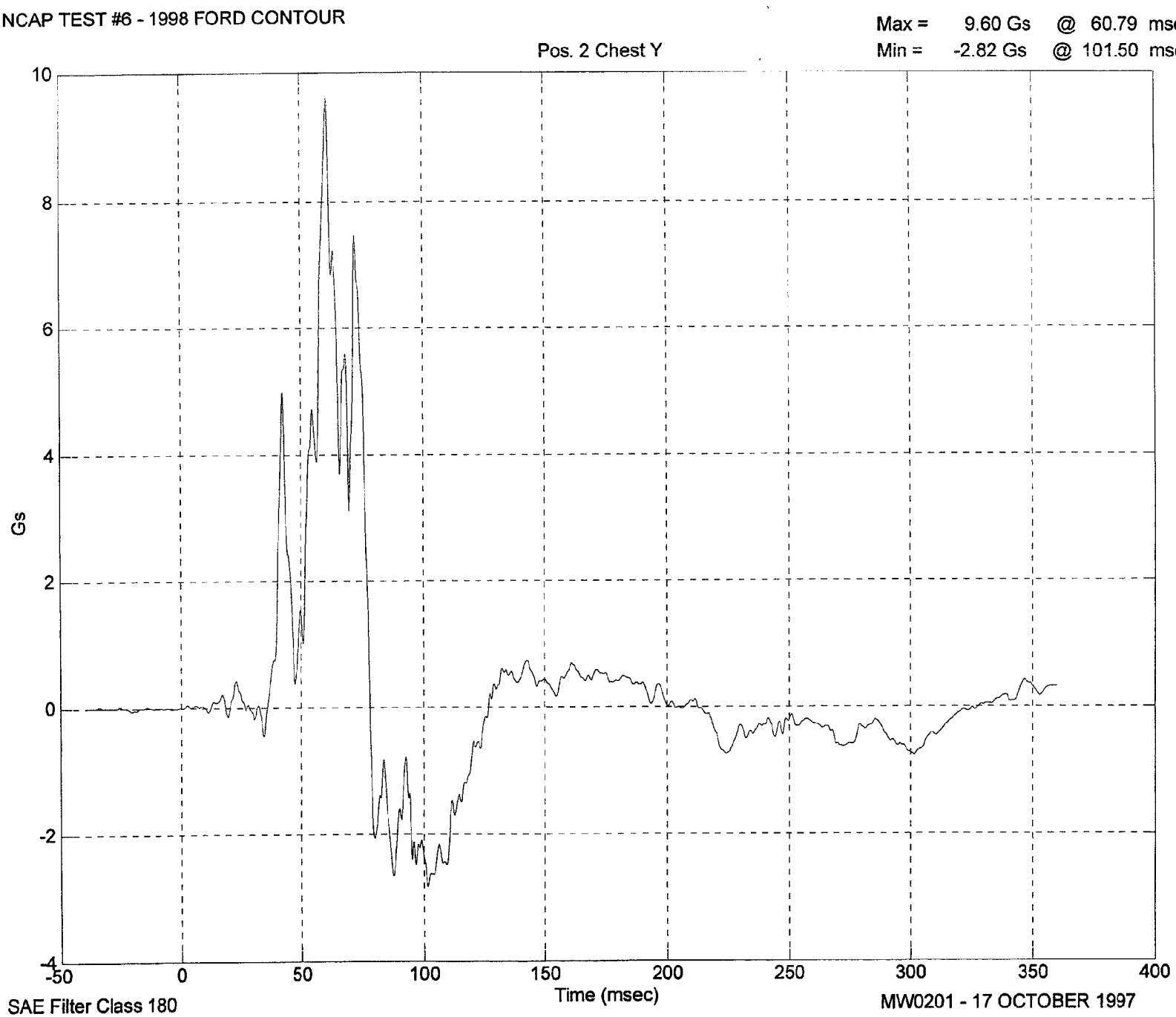
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Chest Y
Max = 9.60 Gs @ 60.79 msec
Min = -2.82 Gs @ 101.50 msec
Gs
Time (msec)
SAE Filter Class 180
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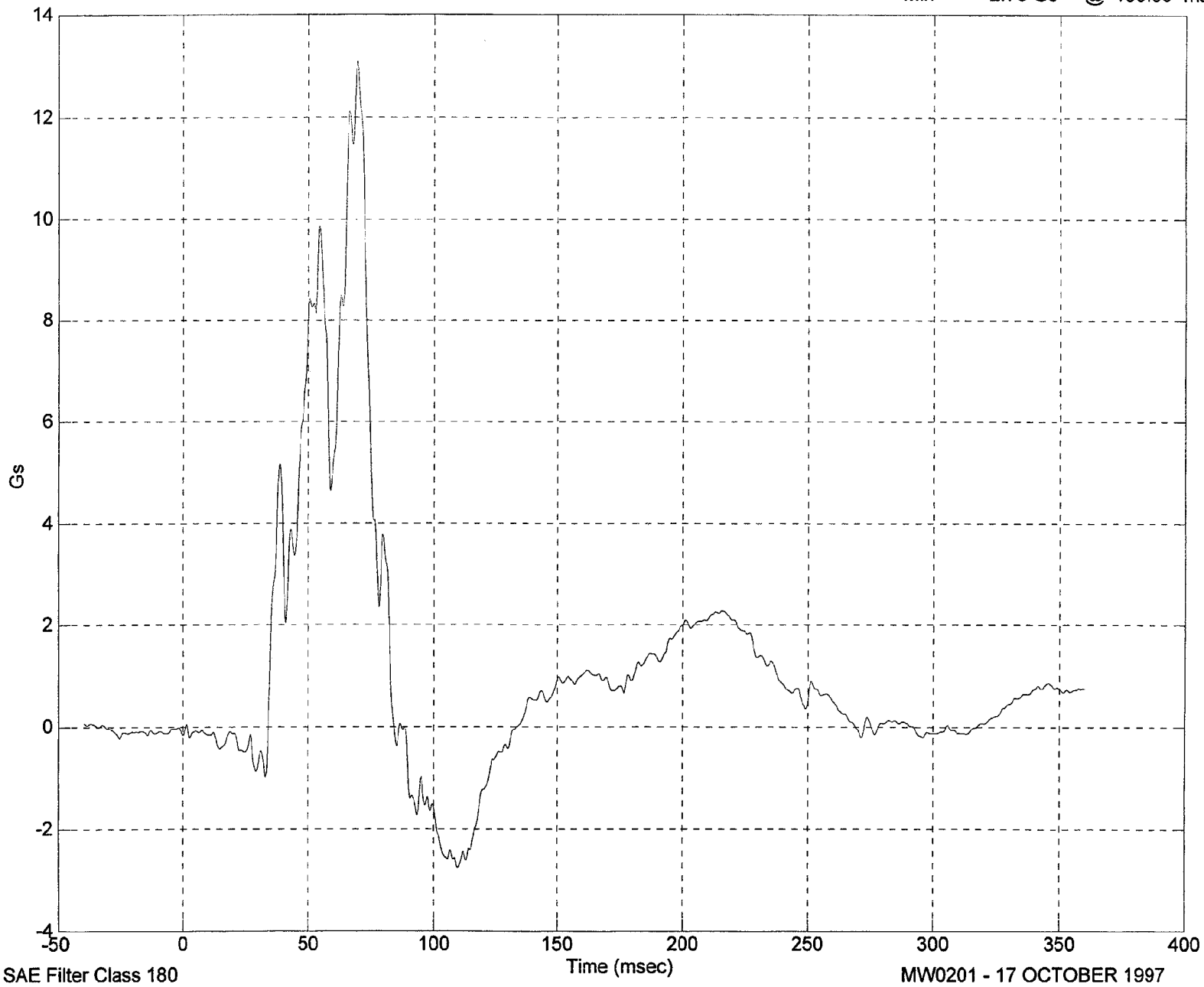
NCAP TEST #6 - 1998 FORD CONTOUR

Pos. 2 Chest Z

Max = 13.08 Gs @ 69.09 msec
Min = -2.75 Gs @ 109.59 msec



SAE Filter Class 180

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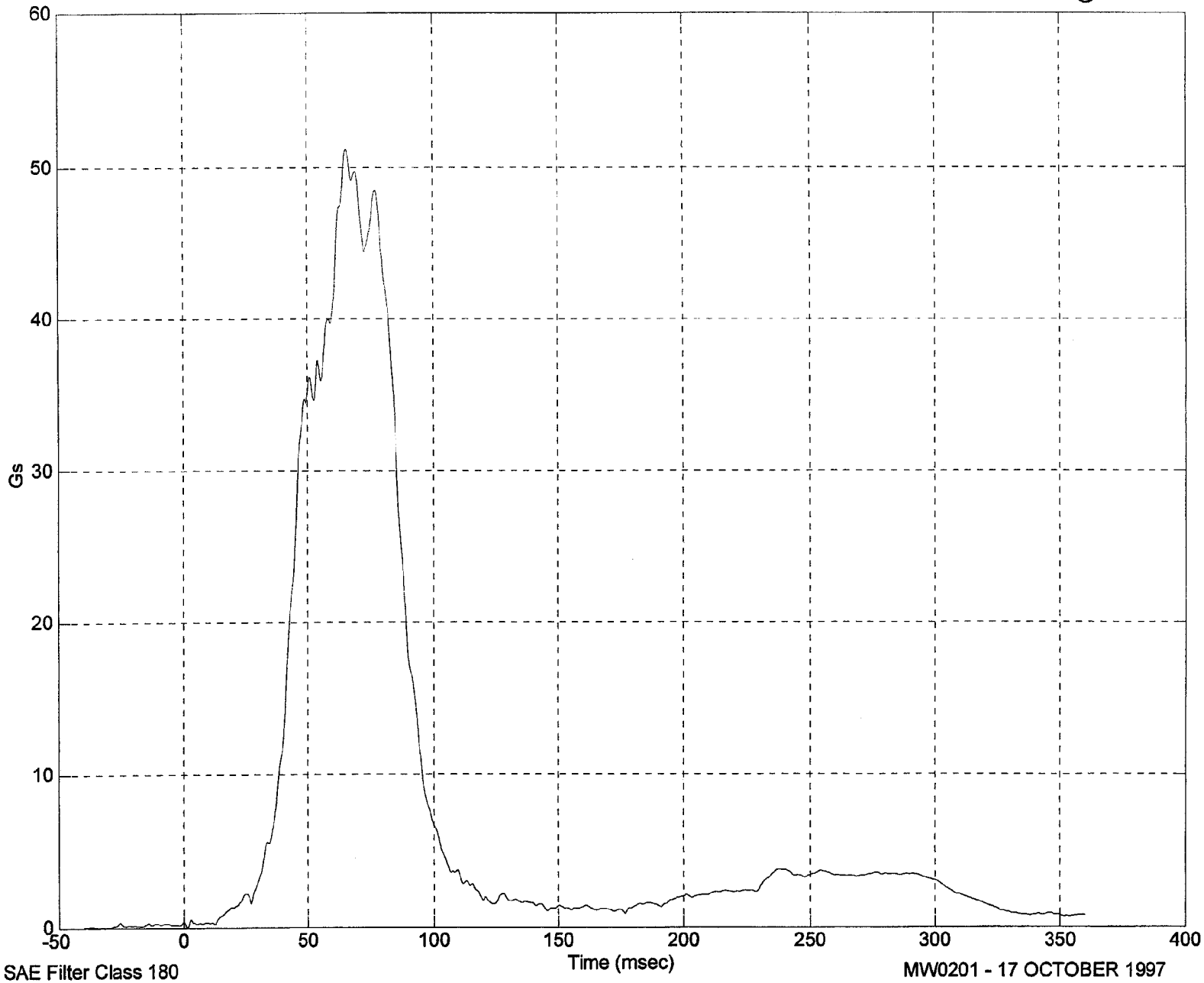
NCAP TEST #6 - 1998 FORD CONTOUR

Pos. 2 Chest Resultant

Max = 51.15 Gs @ 65.50 msec

Min = .00 Gs @ -31.70 msec



SAE Filter Class 180

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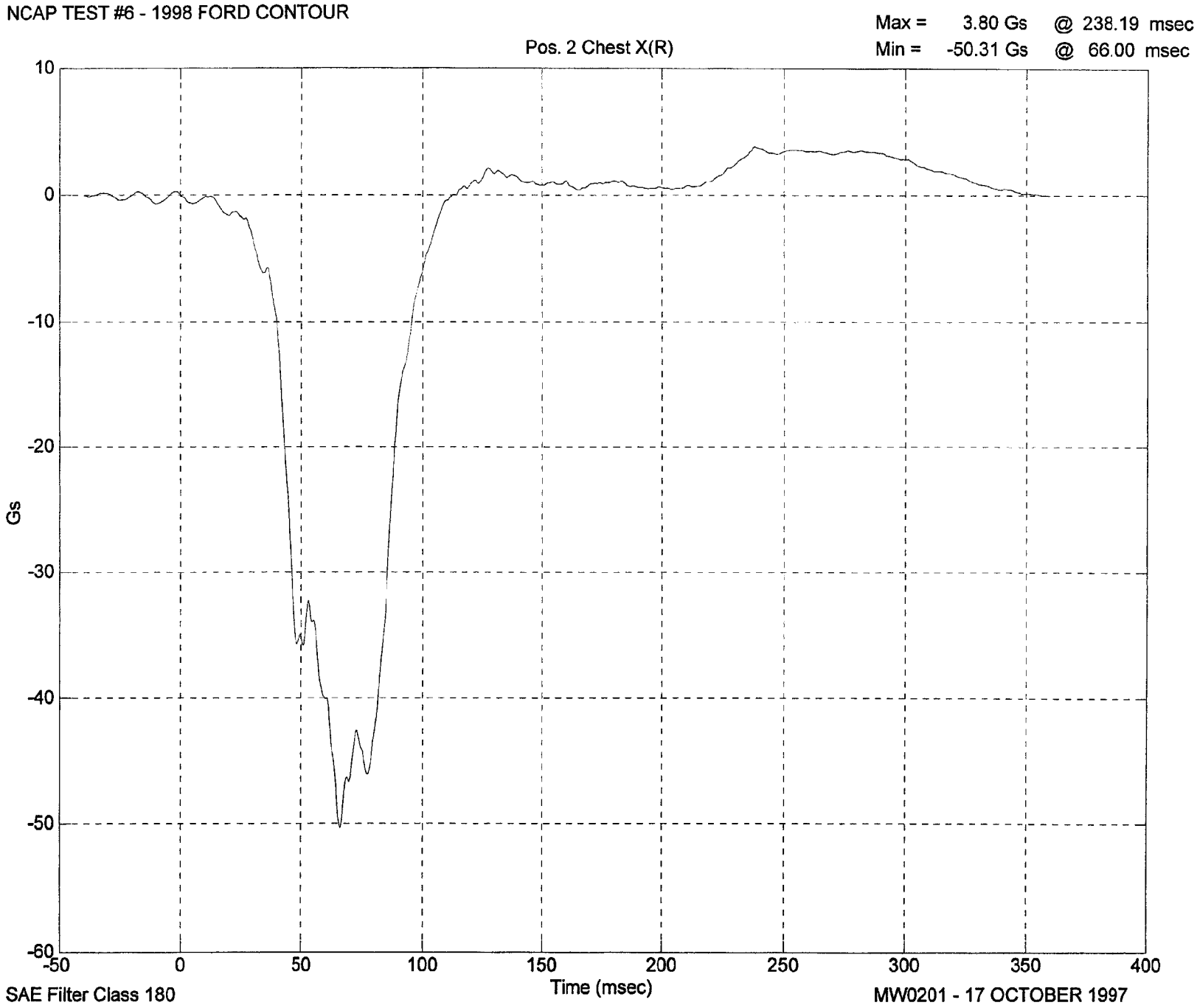
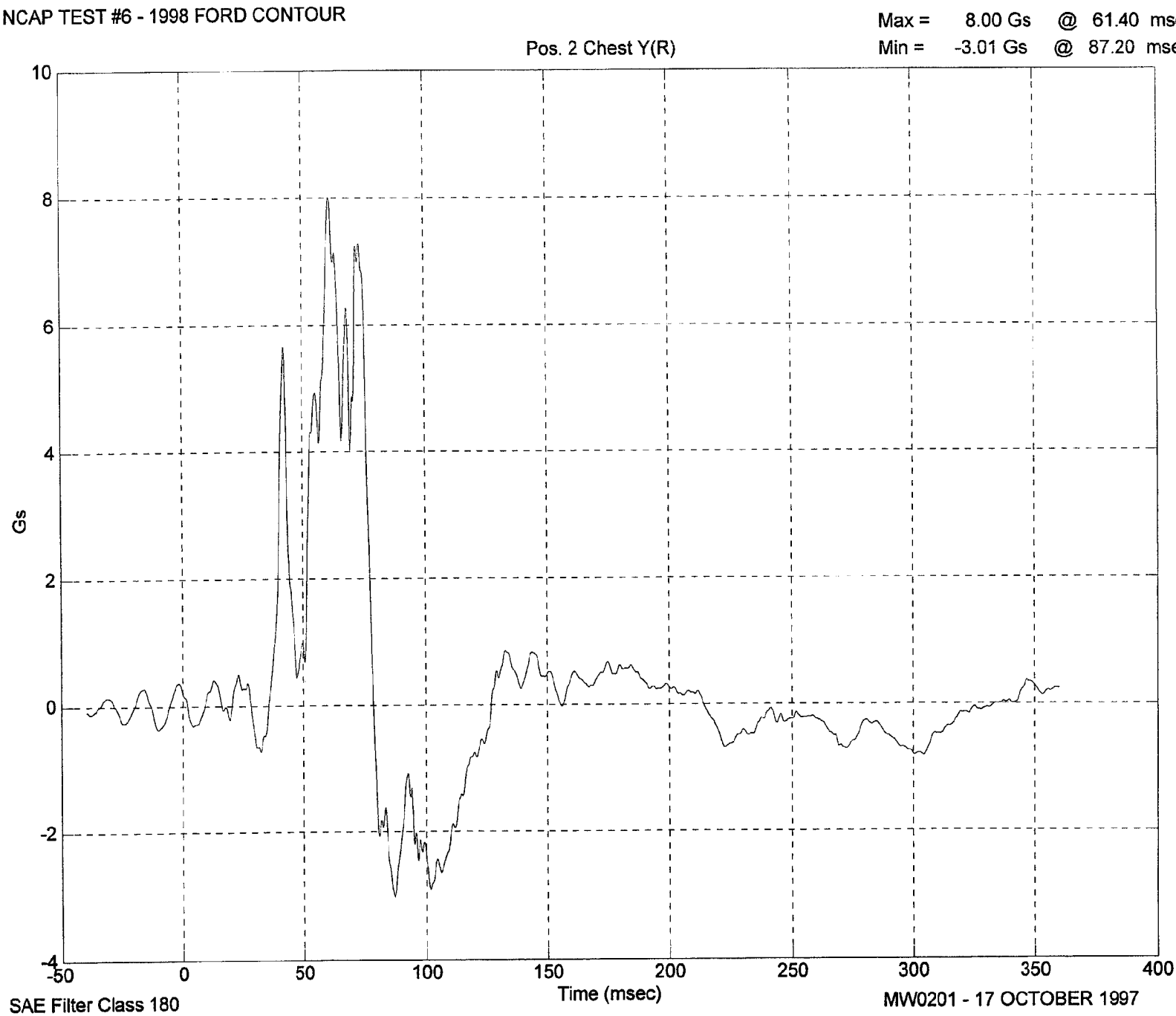

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Chest X(R)
Max = 3.80 Gs @ 238.19 msec
Min = -50.31 Gs @ 66.00 msec
10
0
-10
-20
-30
-40
-50
-60
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Chest Y(R)
Max = 8.00 Gs @ 61.40 msec
Min = -3.01 Gs @ 87.20 msec
Gs
Time (msec)
SAE Filter Class 180
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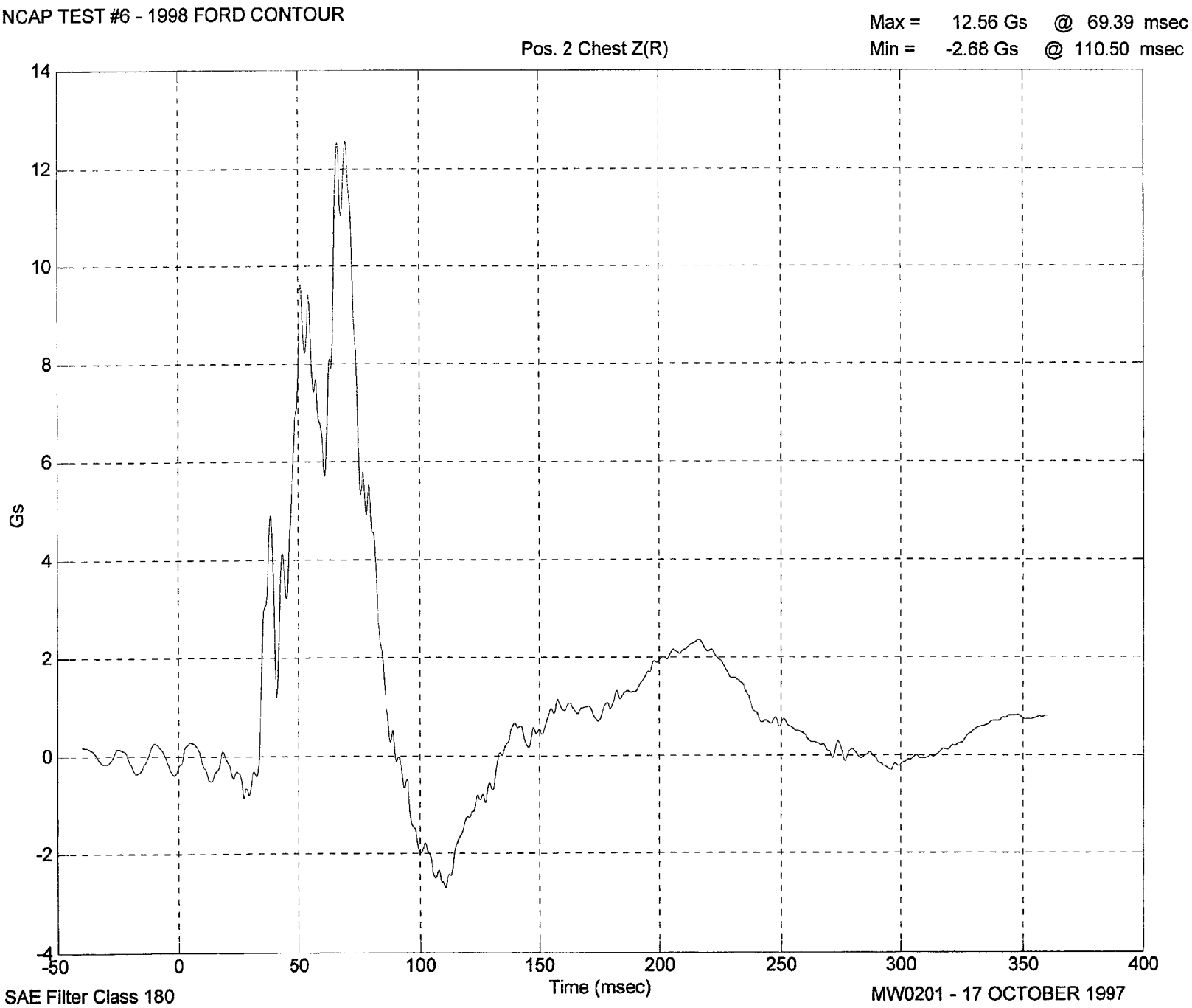
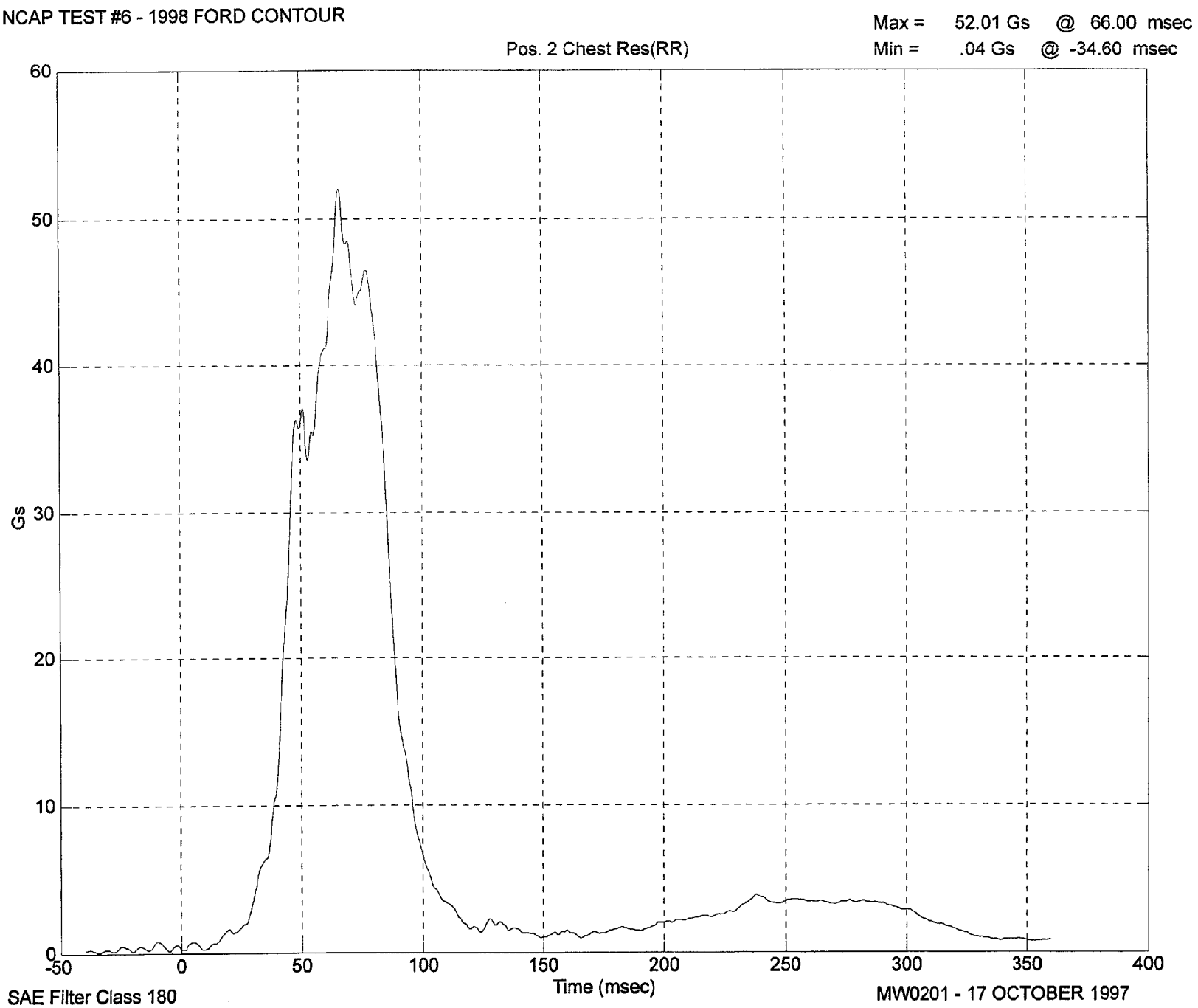

NCAP TEST #6 - 1998 FORD CONTOUR
Max = 12.56 Gs @ 69.39 msec
Min = -2.68 Gs @ 110.50 msec
Pos. 2 Chest Z(R)
Gs
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Chest Res(RR)
Max = 52.01 Gs @ 66.00 msec
Min = .04 Gs @ -34.60 msec
Gs
60
50
40
30
20
10
0
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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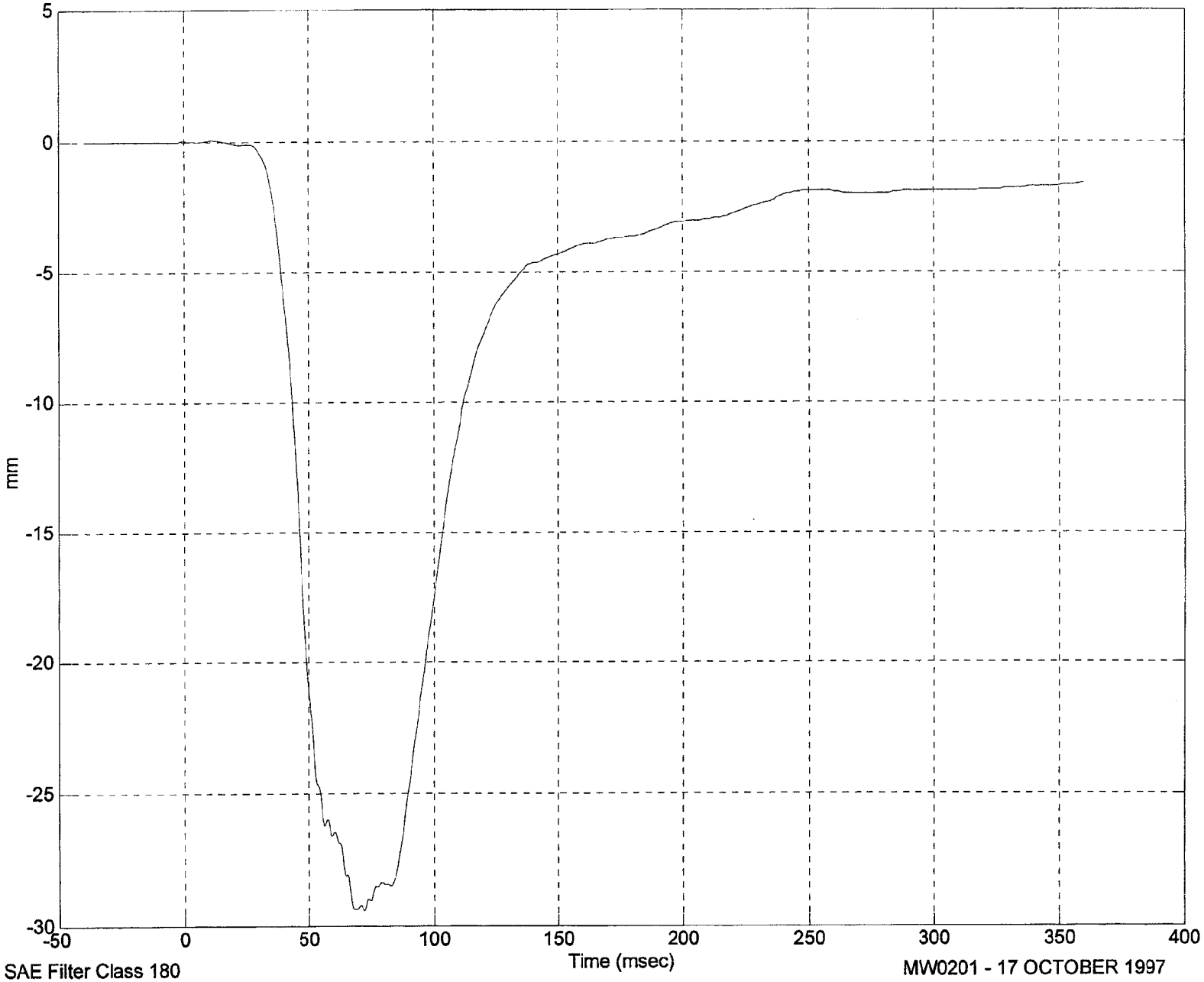
NCAP TEST #6 - 1998 FORD CONTOUR

Max = .06 mm @ 11.29 msec

Pos. 2 Chest Disp.

Min = -29.39 mm @ 71.80 msec



SAE Filter Class 180

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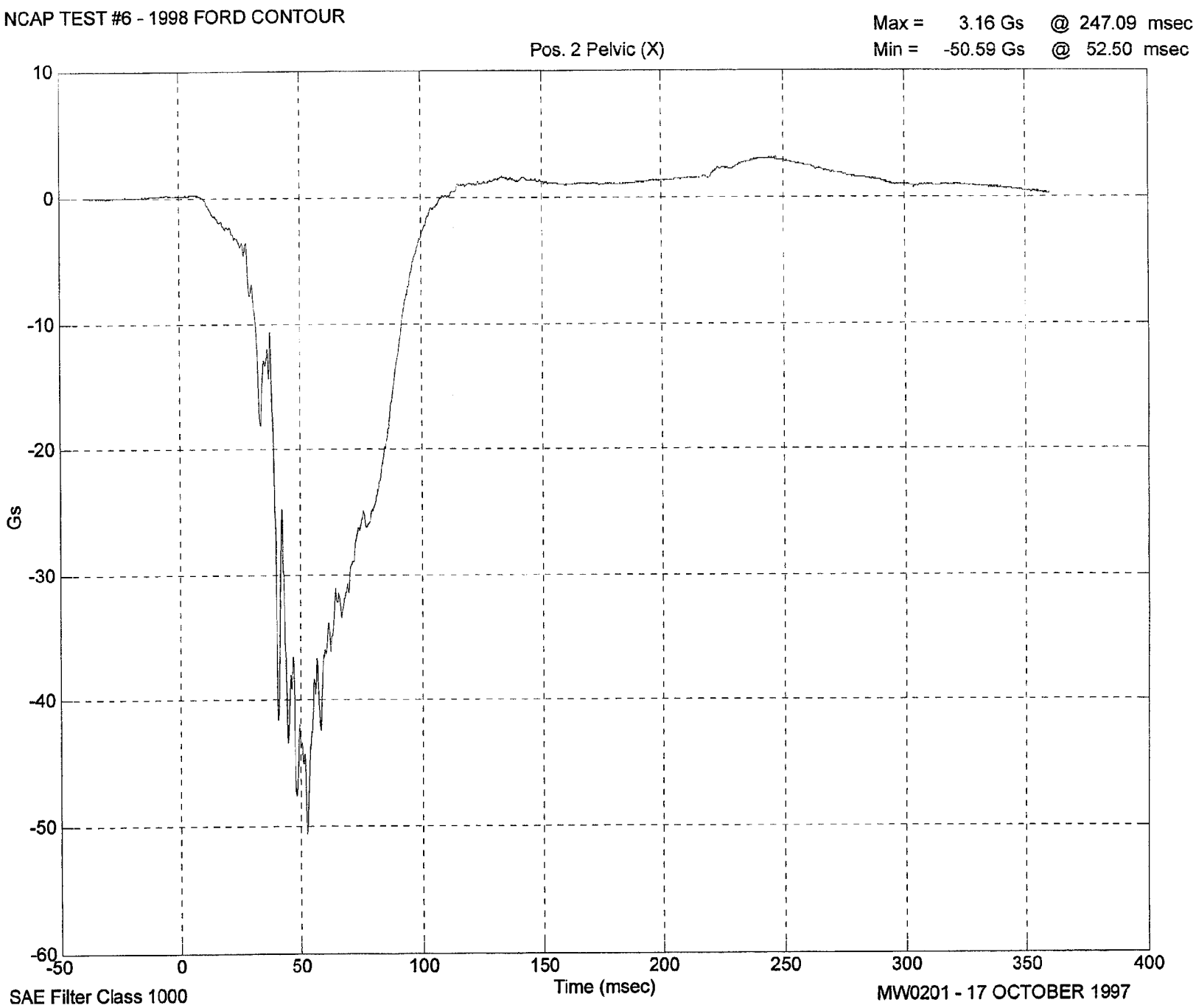
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Pelvic (X)
Max = 3.16 Gs @ 247.09 msec
Min = -50.59 Gs @ 52.50 msec
10
0
-10
-20
-30
-40
-50
-60
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
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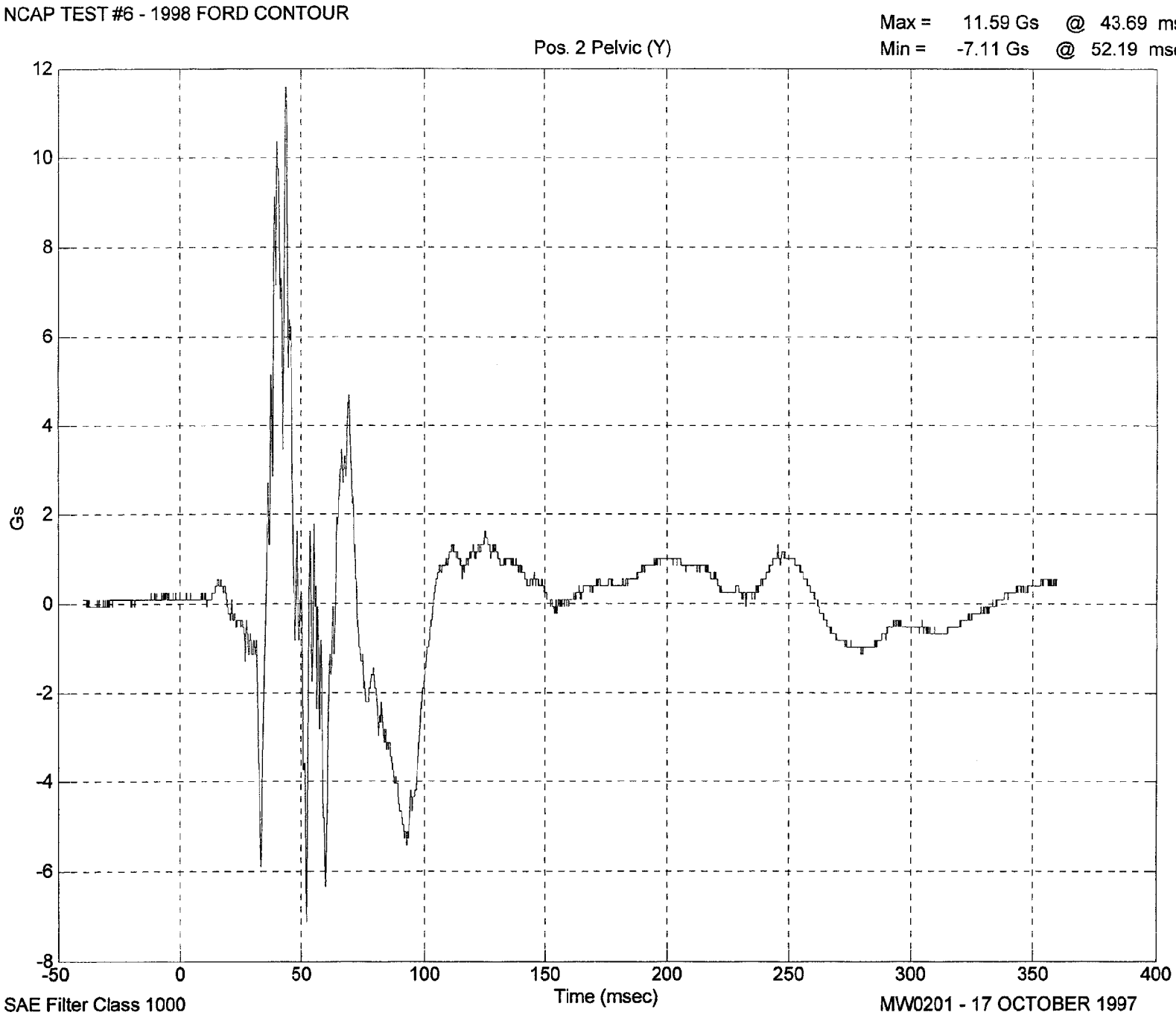
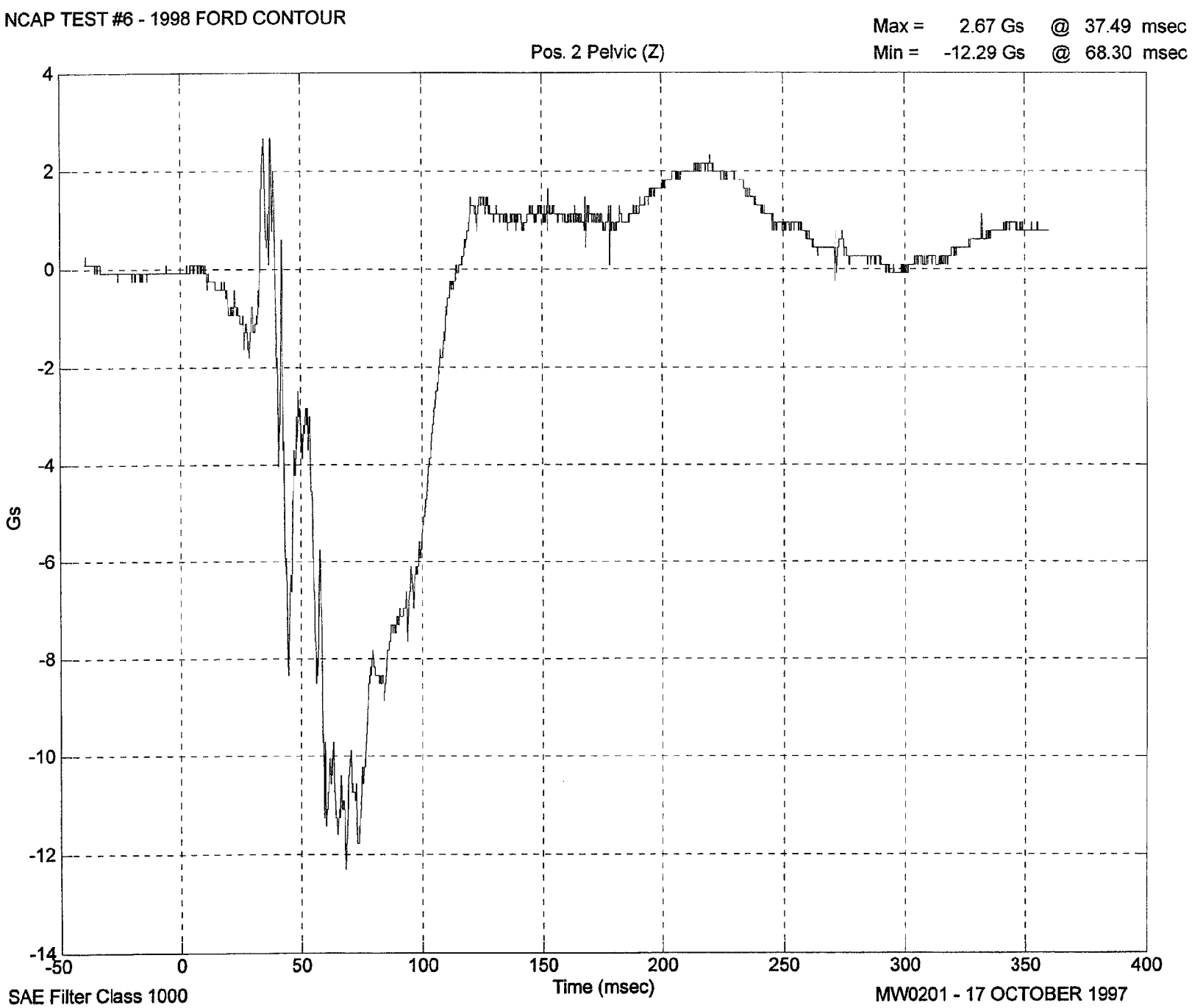

NCAP TEST #6 - 1998 FORD CONTOUR
Max = 11.59 Gs @ 43.69 msec
Min = -7.11 Gs @ 52.19 msec
Pos. 2 Pelvic (Y)
12
10
8
6
4
2
0
-2
-4
-6
-8
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Pelvic (Z)
Max = 2.67 Gs @ 37.49 msec
Min = -12.29 Gs @ 68.30 msec
Gs
Time (msec)
SAE Filter Class 1000
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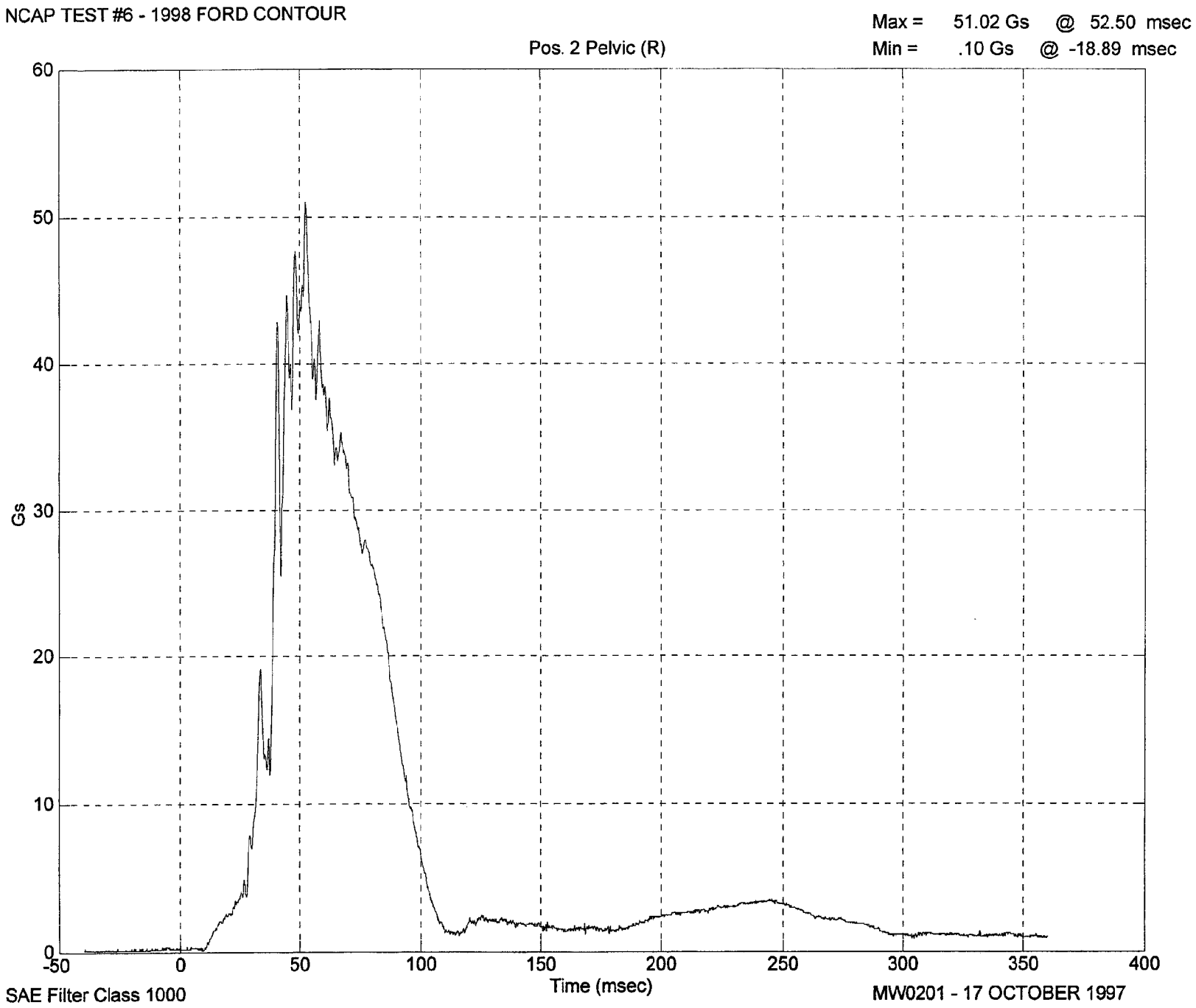
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Pelvic (R)
Max = 51.02 Gs @ 52.50 msec
Min = .10 Gs @ -18.89 msec
Gs
Time (msec)
SAE Filter Class 1000
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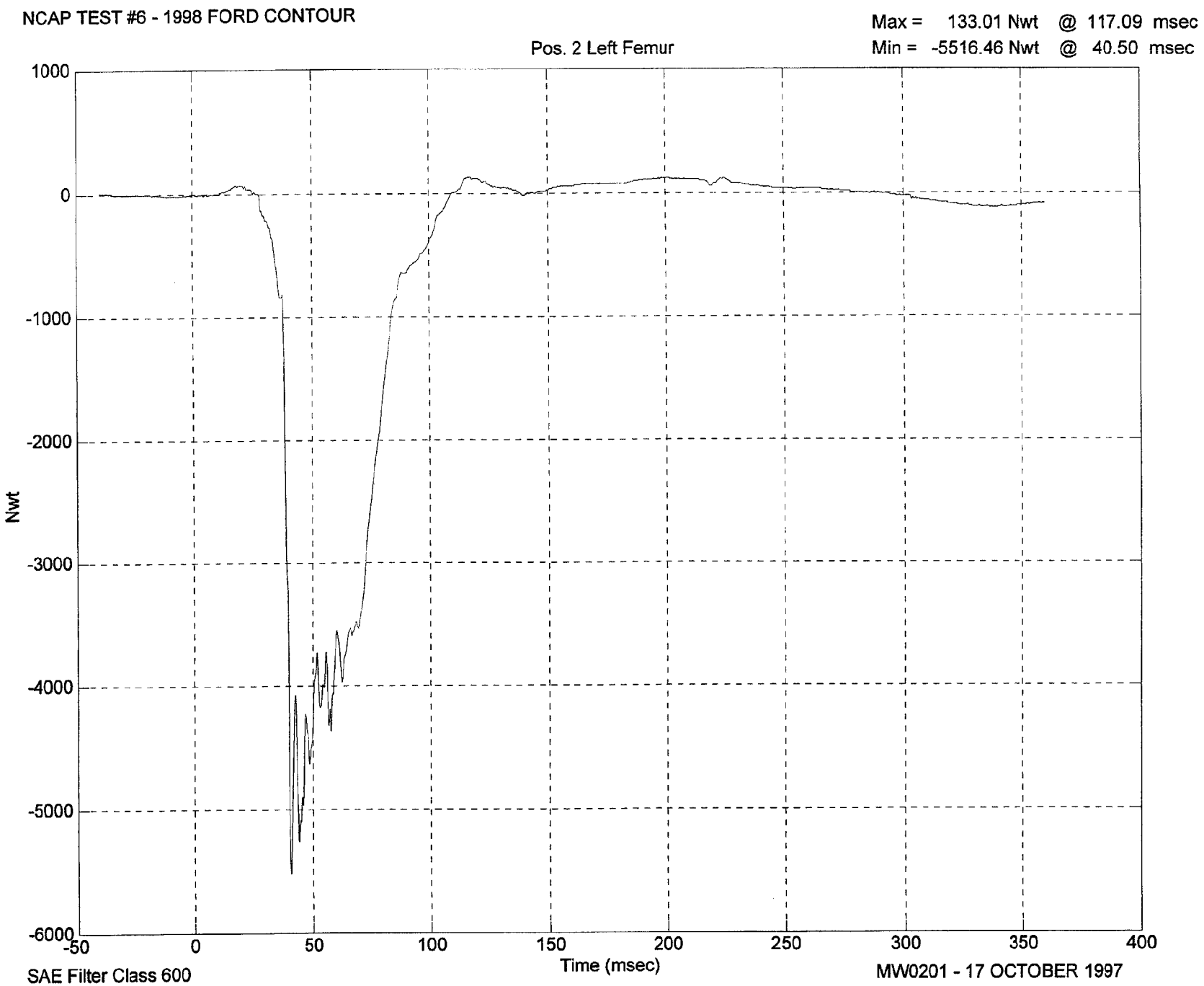
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Left Femur
Max = 133.01 Nwt @ 117.09 msec
Min = -5516.46 Nwt @ 40.50 msec
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
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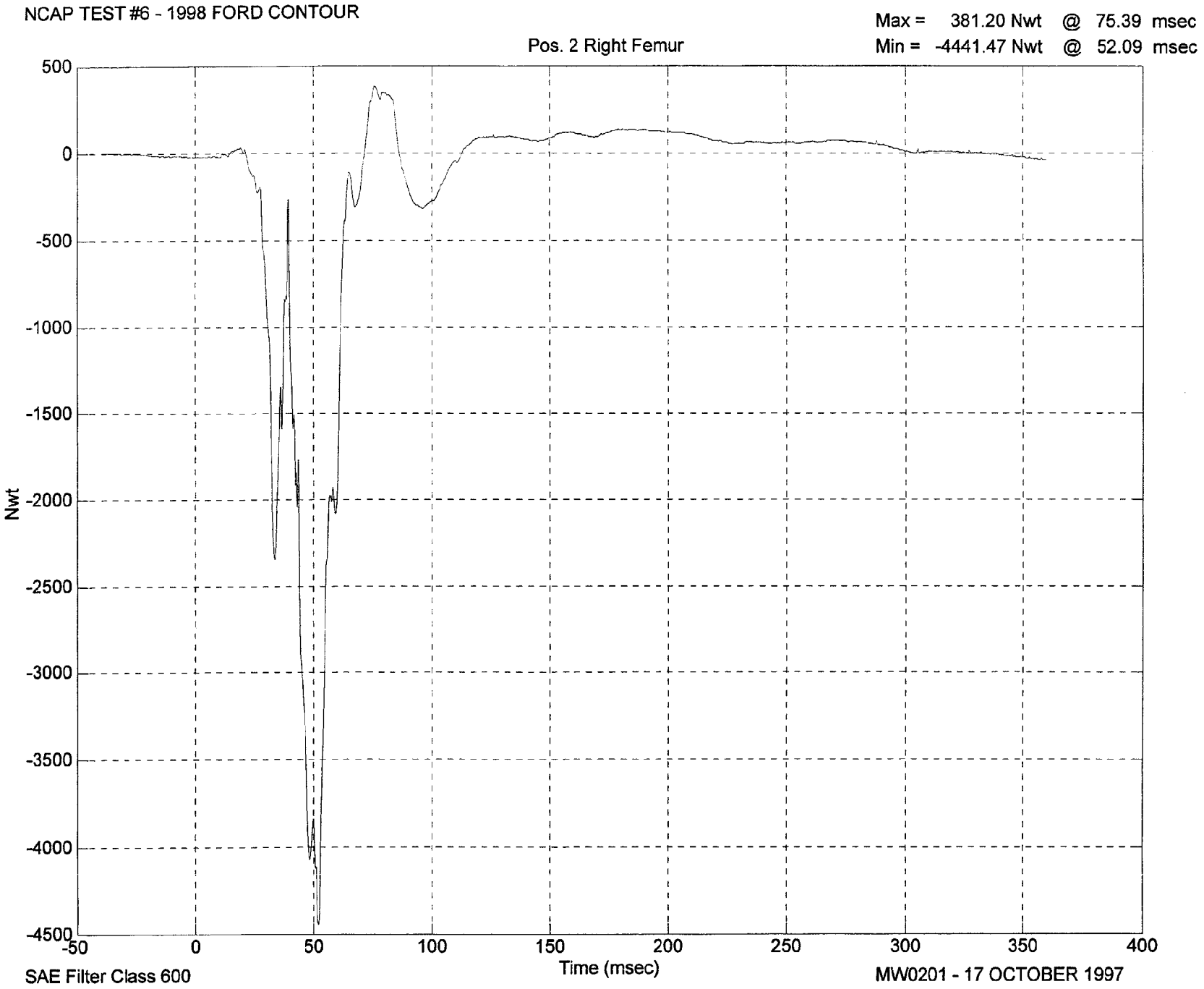
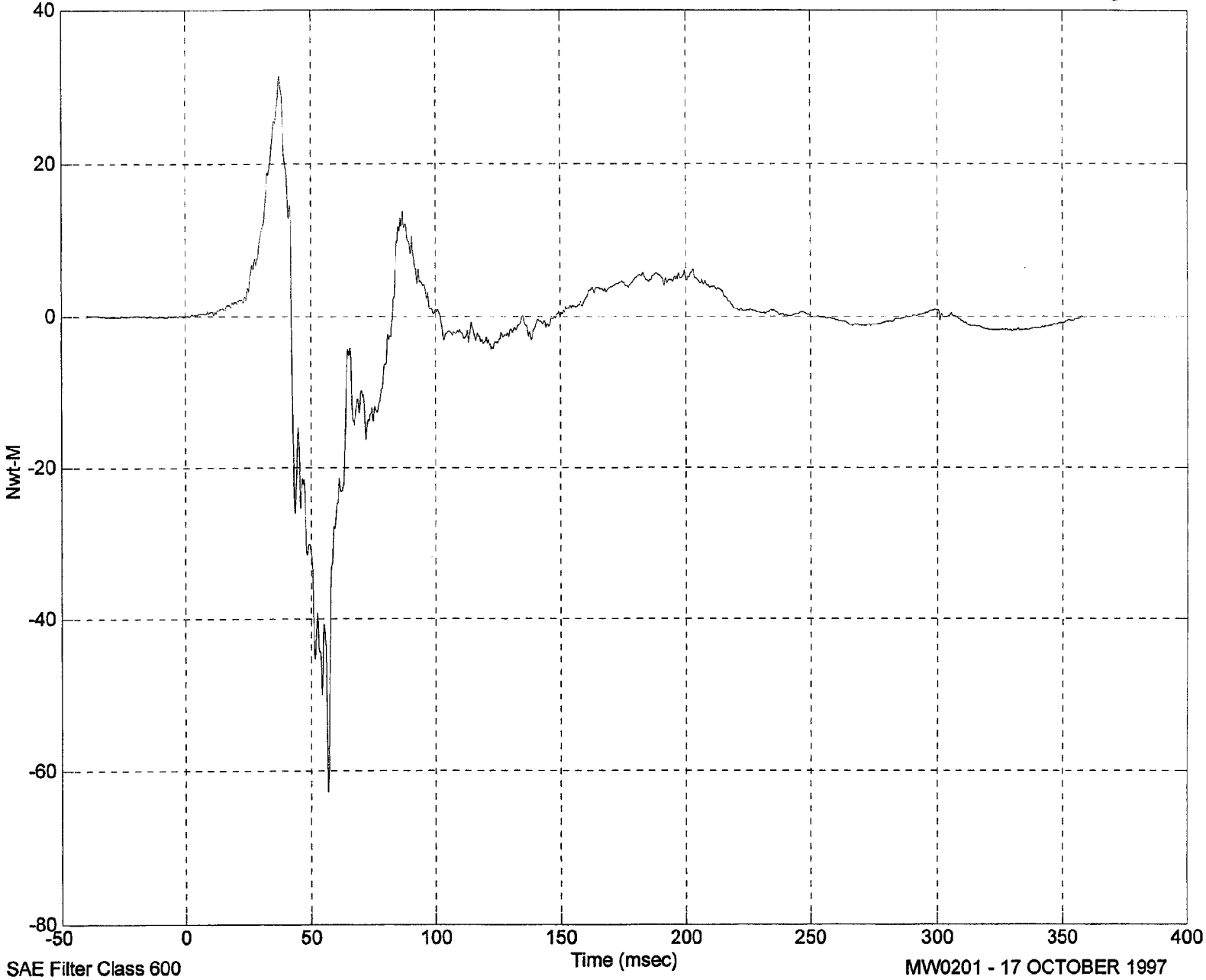

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Right Femur
Max = 381.20 Nwt @ 75.39 msec
Min = -4441.47 Nwt @ 52.09 msec
500
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
-4000
-4500
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR

Max = 31.28 Nwt-M @ 37.29 msec
Min = -62.73 Nwt-M @ 56.69 msec



SAE Filter Class 600

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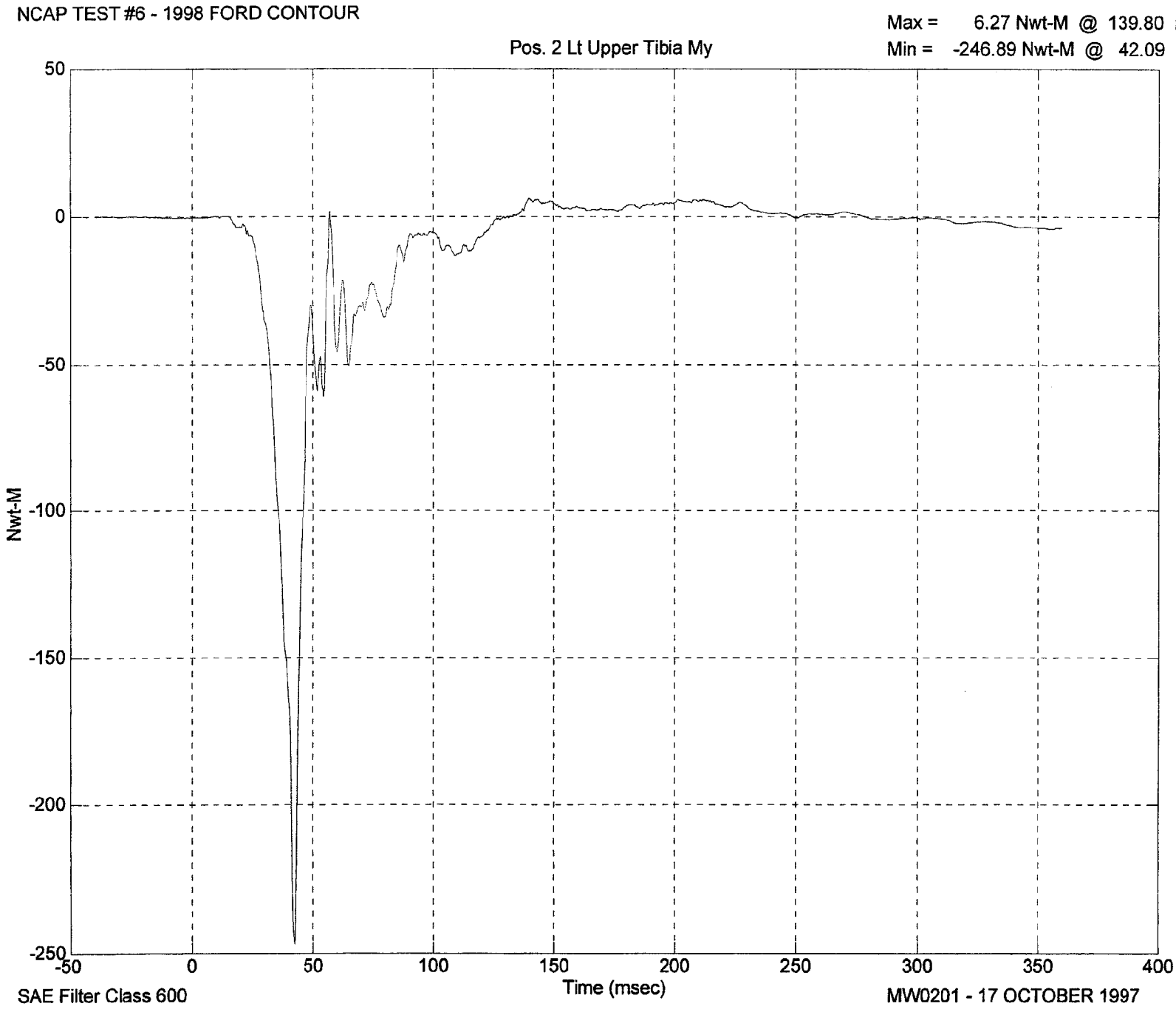
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Lt Upper Tibia My
Max = 6.27 Nwt-M @ 139.80 msec
Min = -246.89 Nwt-M @ 42.09 msec
Nwt-M
Time (msec)
SAE Filter Class 600
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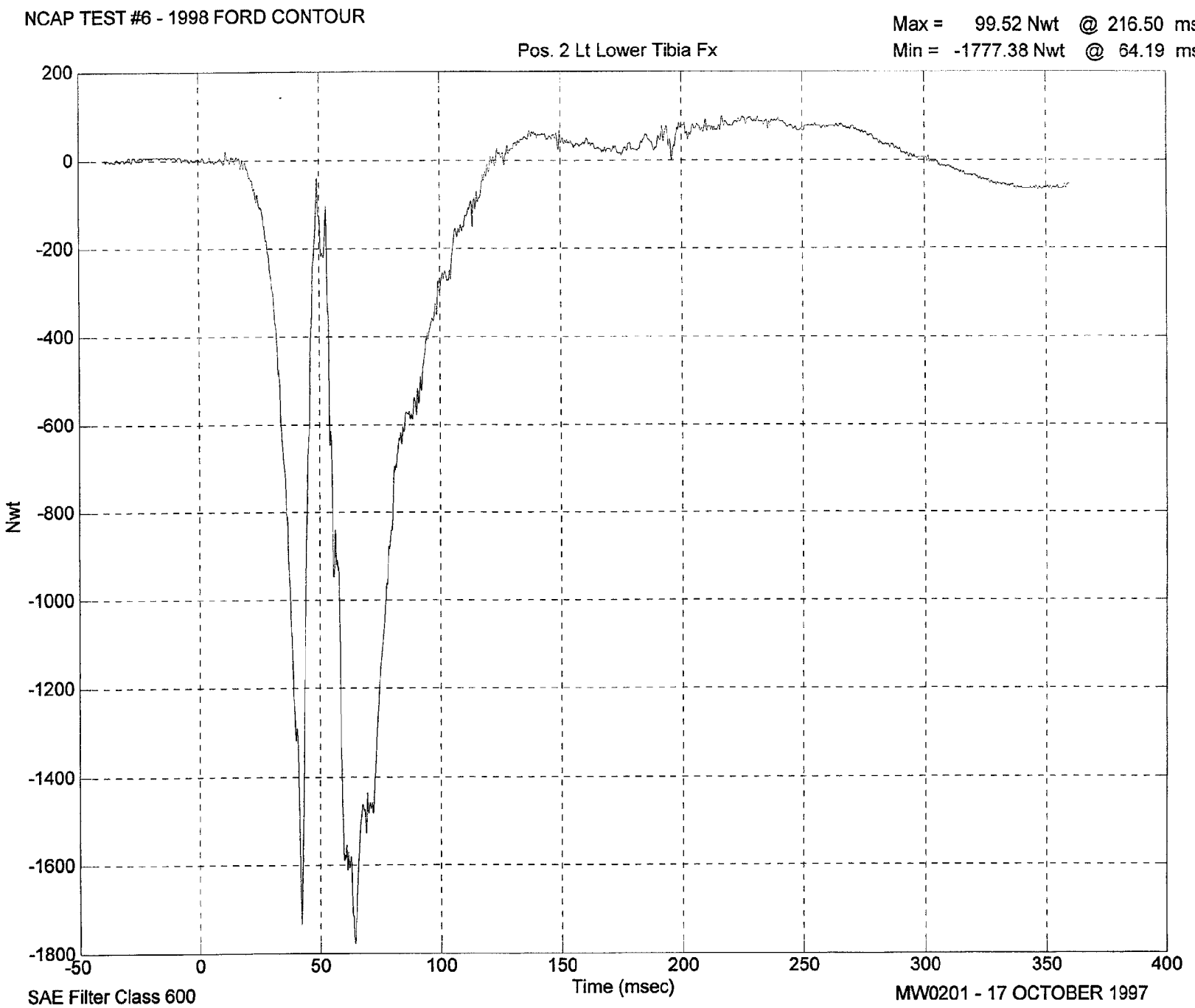
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Lt Lower Tibia Fx
Max = 99.52 Nwt @ 216.50 msec
Min = -1777.38 Nwt @ 64.19 msec
200
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
-1800
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
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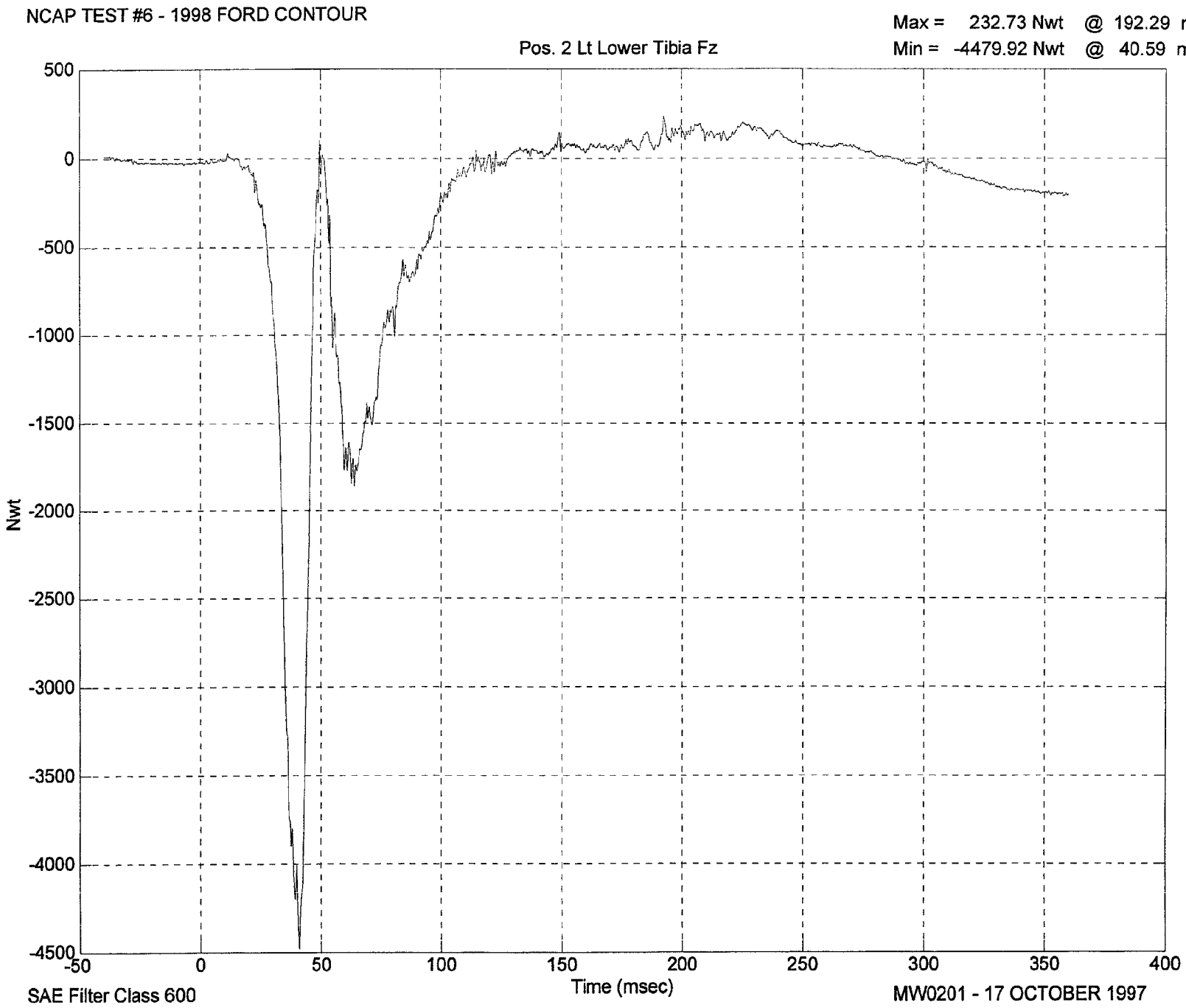
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Lt Lower Tibia Fz
Max = 232.73 Nwt @ 192.29 msec
Min = -4479.92 Nwt @ 40.59 msec
500
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
-4000
-4500
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
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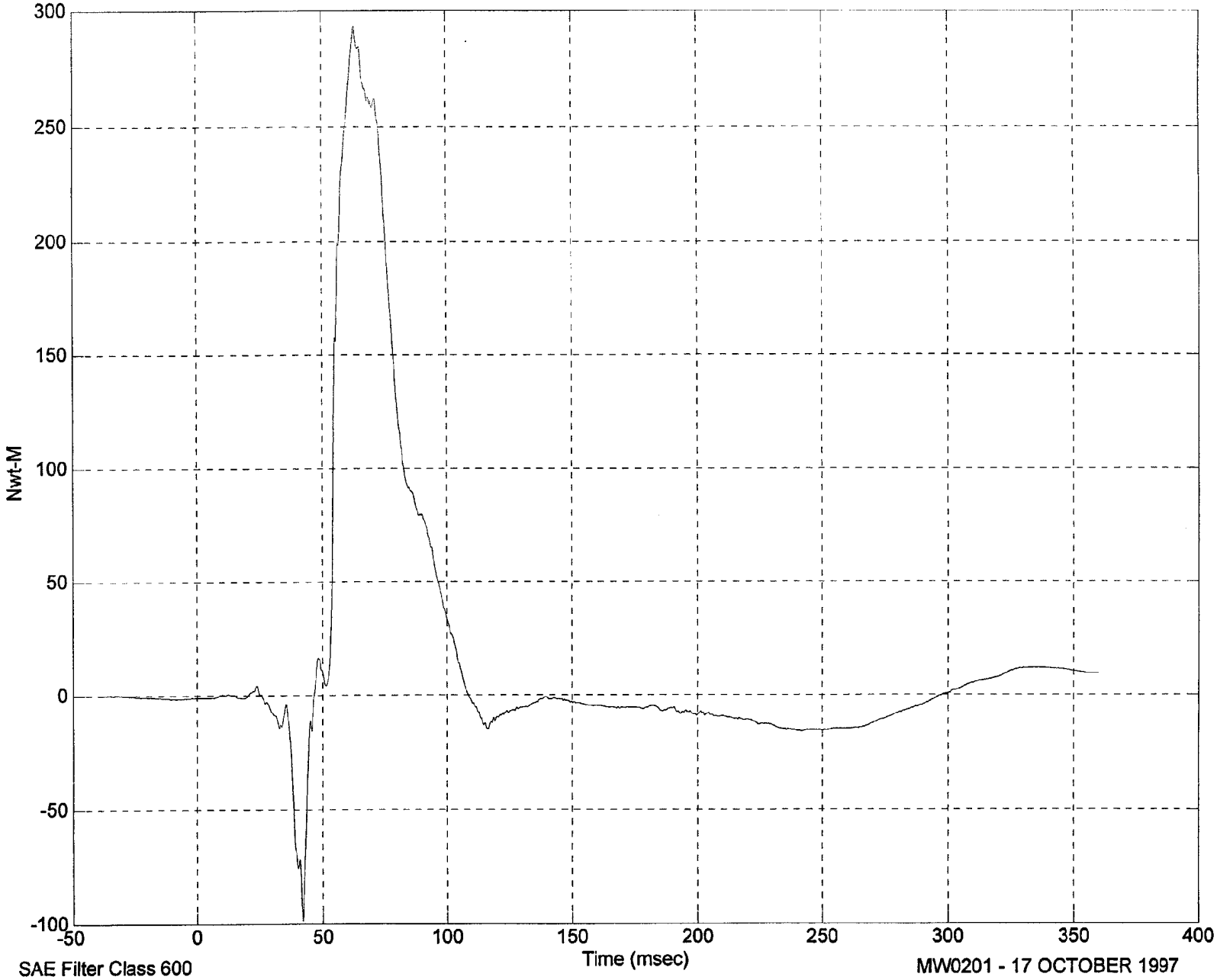
NCAP TEST #6 - 1998 FORD CONTOUR

Max = 293.09 Nwt-M @ 62.79 msec

Pos. 2 Lt Lower Tibia My

Min = -98.43 Nwt-M @ 41.79 msec



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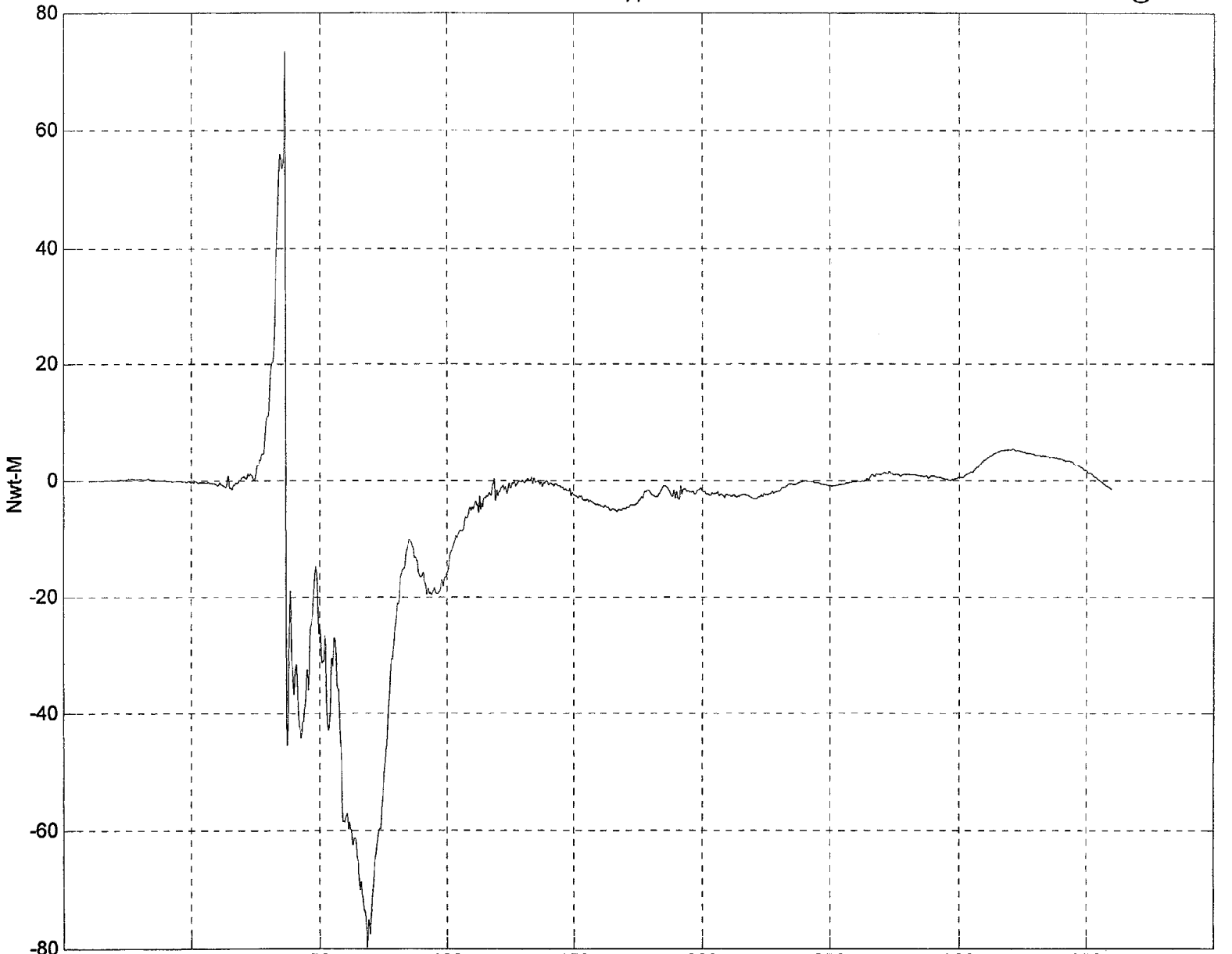
NCAP TEST #6 - 1998 FORD CONTOUR

Max = 73.31 Nwt-M @ 36.19 msec
Min = -79.81 Nwt-M @ 68.30 msec



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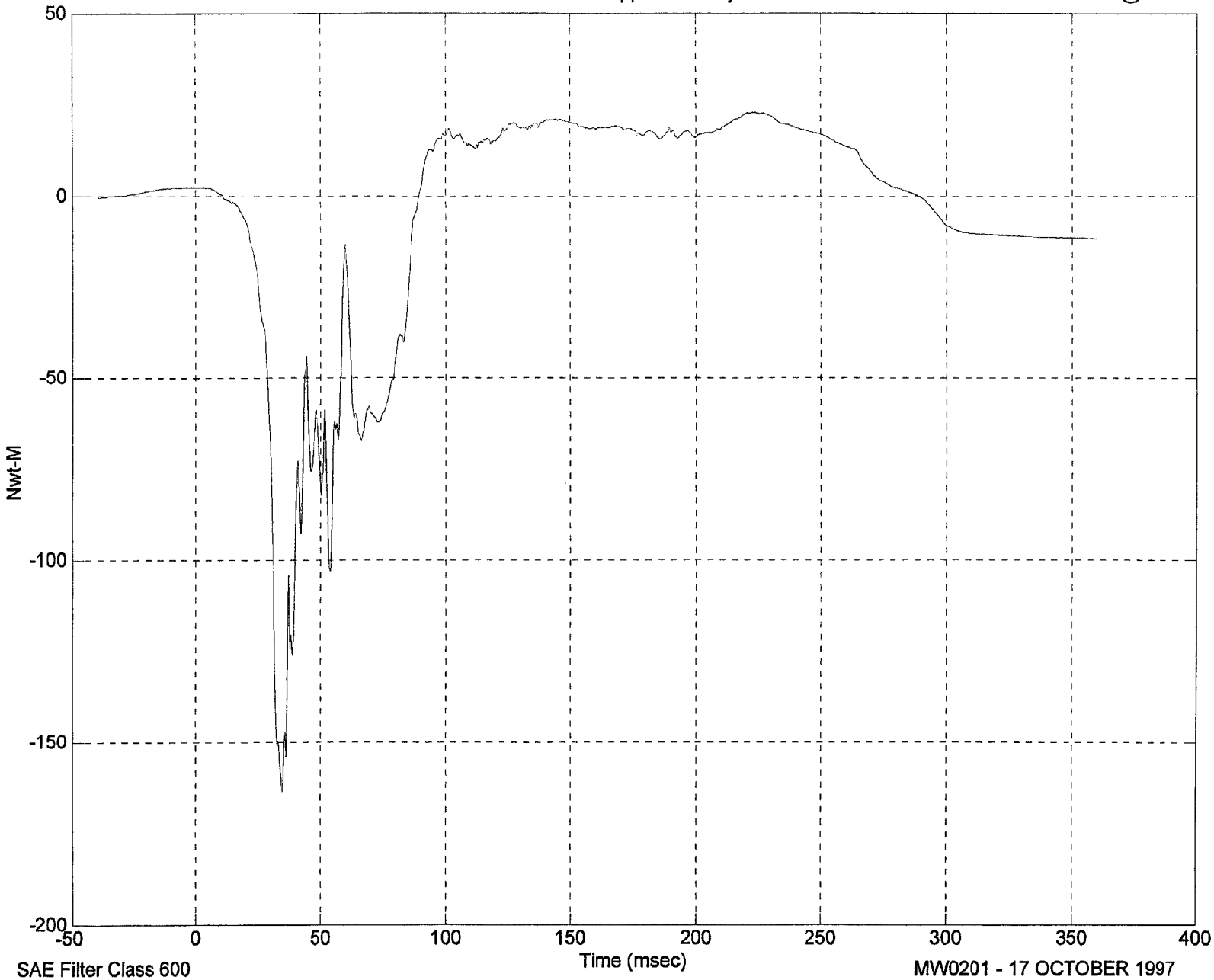
NCAP TEST #6 - 1998 FORD CONTOUR

Max = 23.08 Nwt-M @ 223.60 msec
Min = -163.63 Nwt-M @ 34.69 msec

Pos. 2 Rt Upper Tibia My



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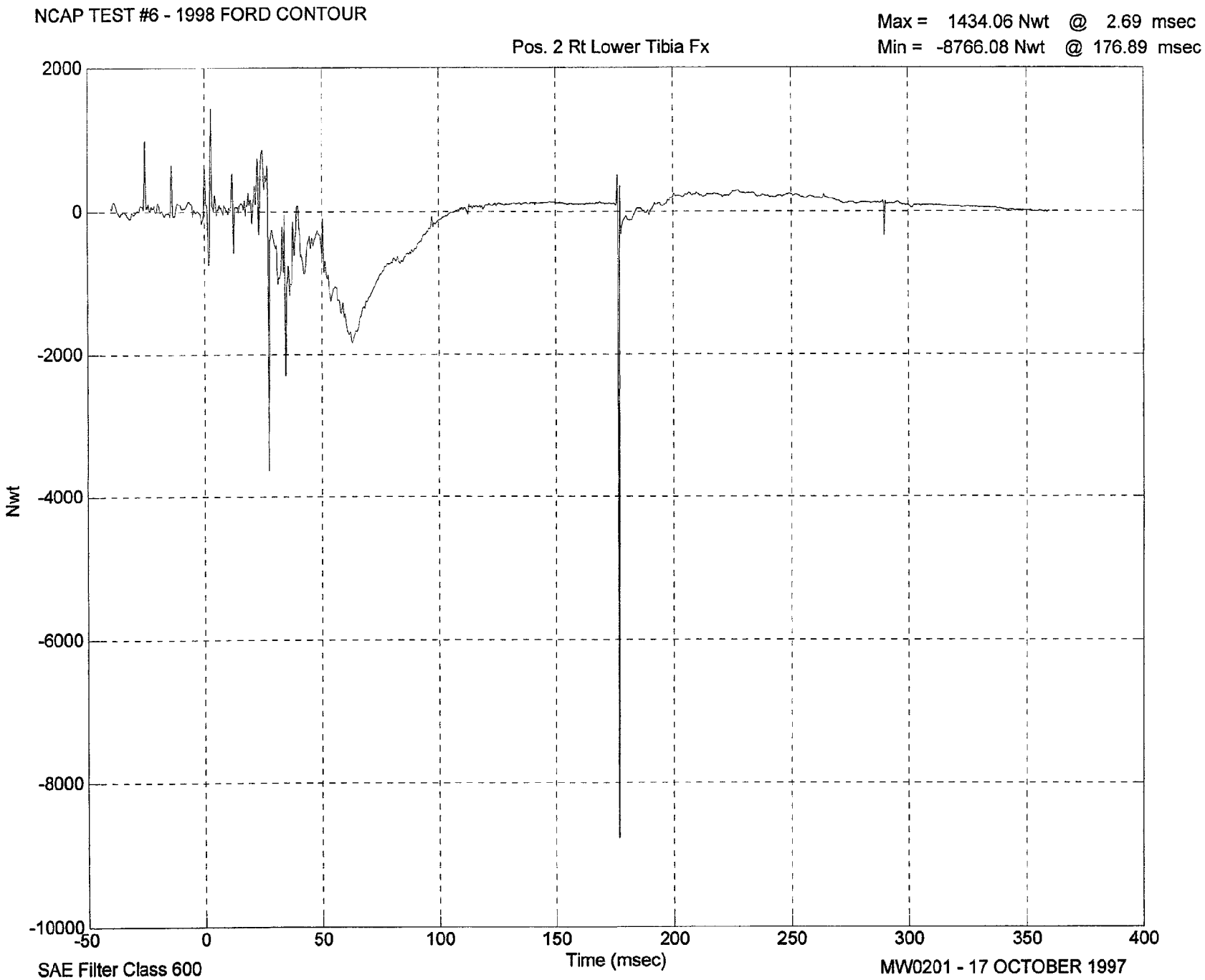
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Rt Lower Tibia Fx
Max = 1434.06 Nwt @ 2.69 msec
Min = -8766.08 Nwt @ 176.89 msec
2000
0
-2000
-4000
-6000
-8000
-10000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
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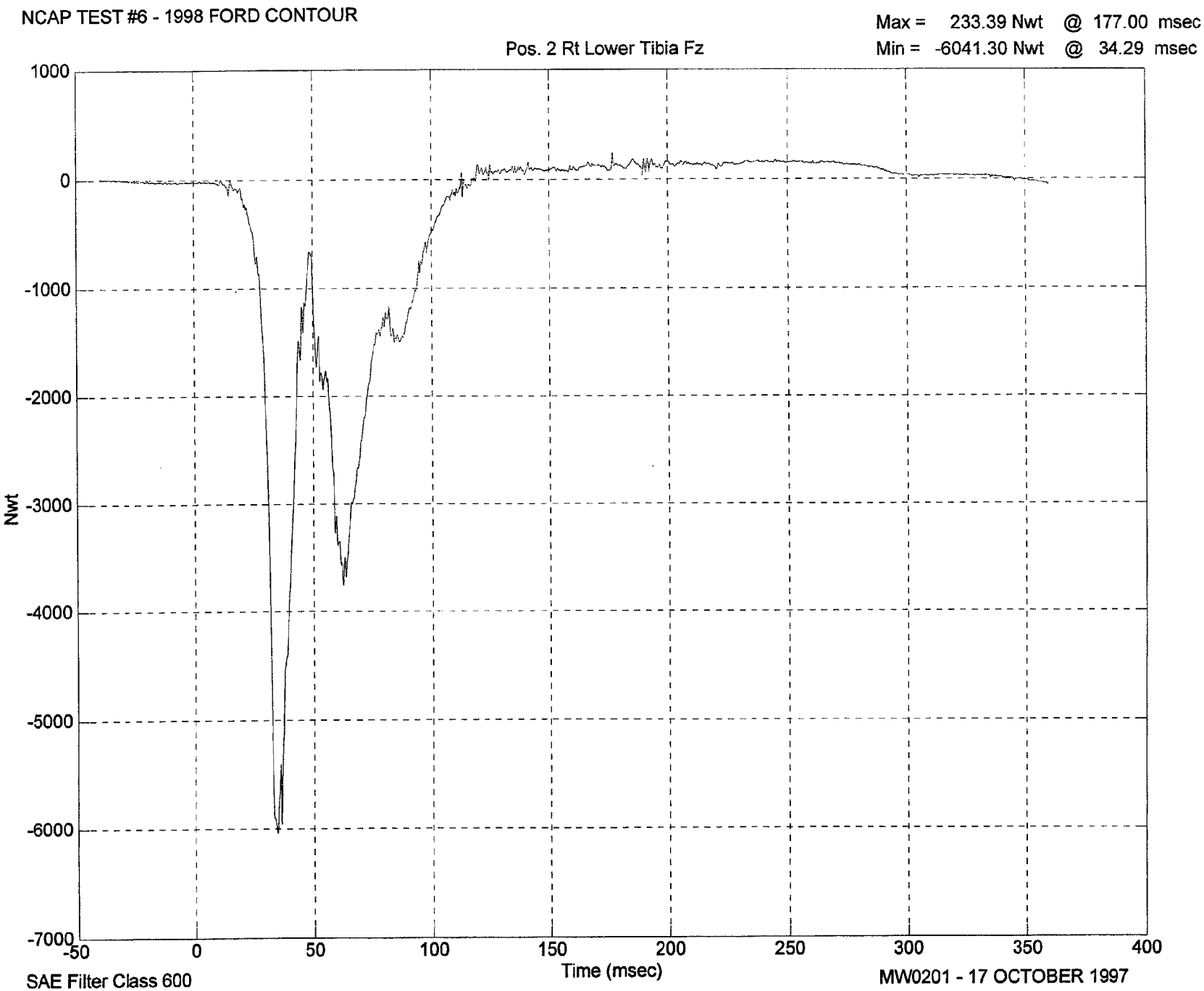
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Rt Lower Tibia Fz
Max = 233.39 Nwt @ 177.00 msec
Min = -6041.30 Nwt @ 34.29 msec
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
-7000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 600
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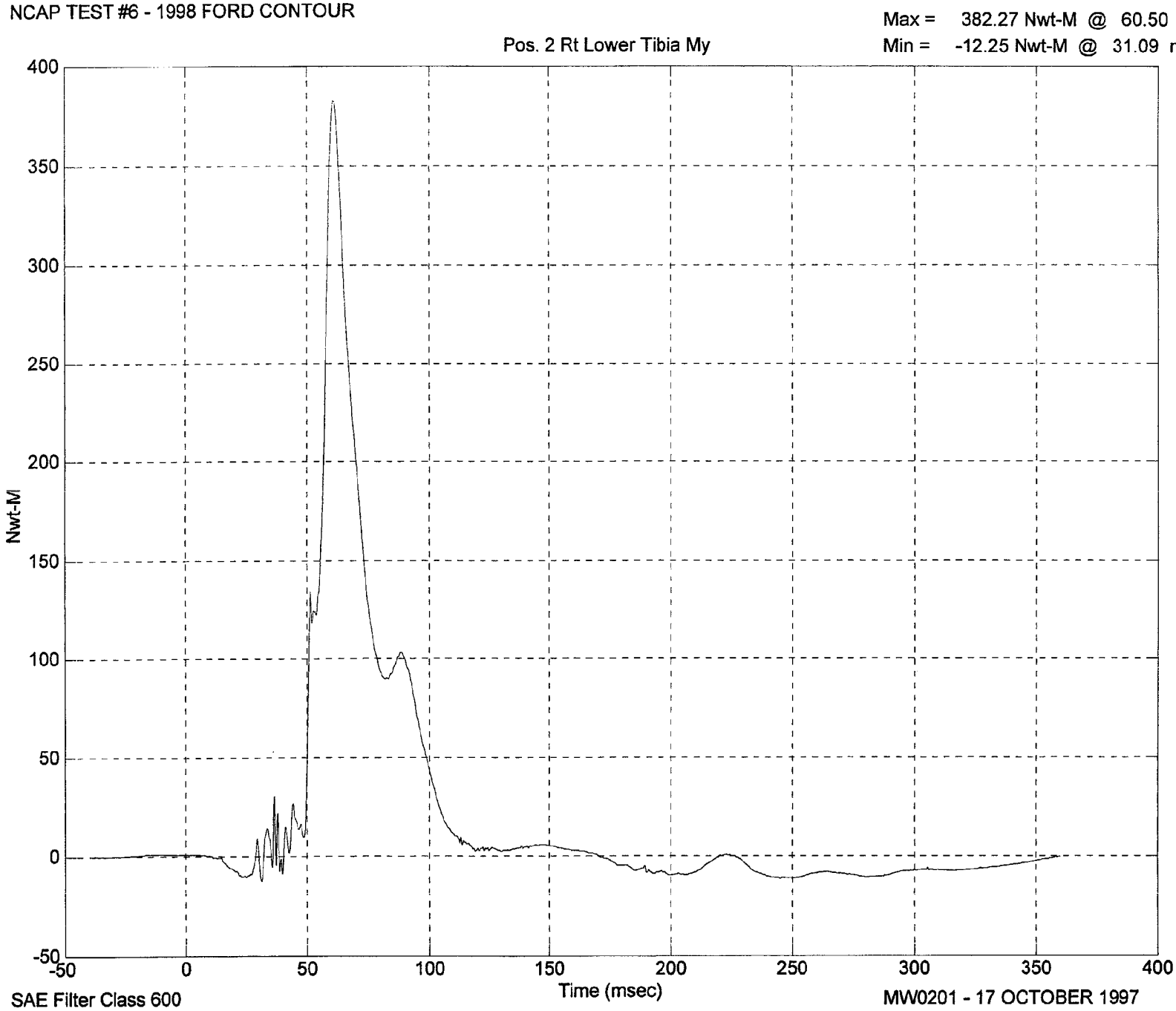
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Rt Lower Tibia My
Max = 382.27 Nwt-M @ 60.50 msec
Min = -12.25 Nwt-M @ 31.09 msec
Nwt-M
Time (msec)
400
350
300
250
200
150
100
50
0
-50
-50
0
50
100
150
200
250
300
350
400
SAE Filter Class 600
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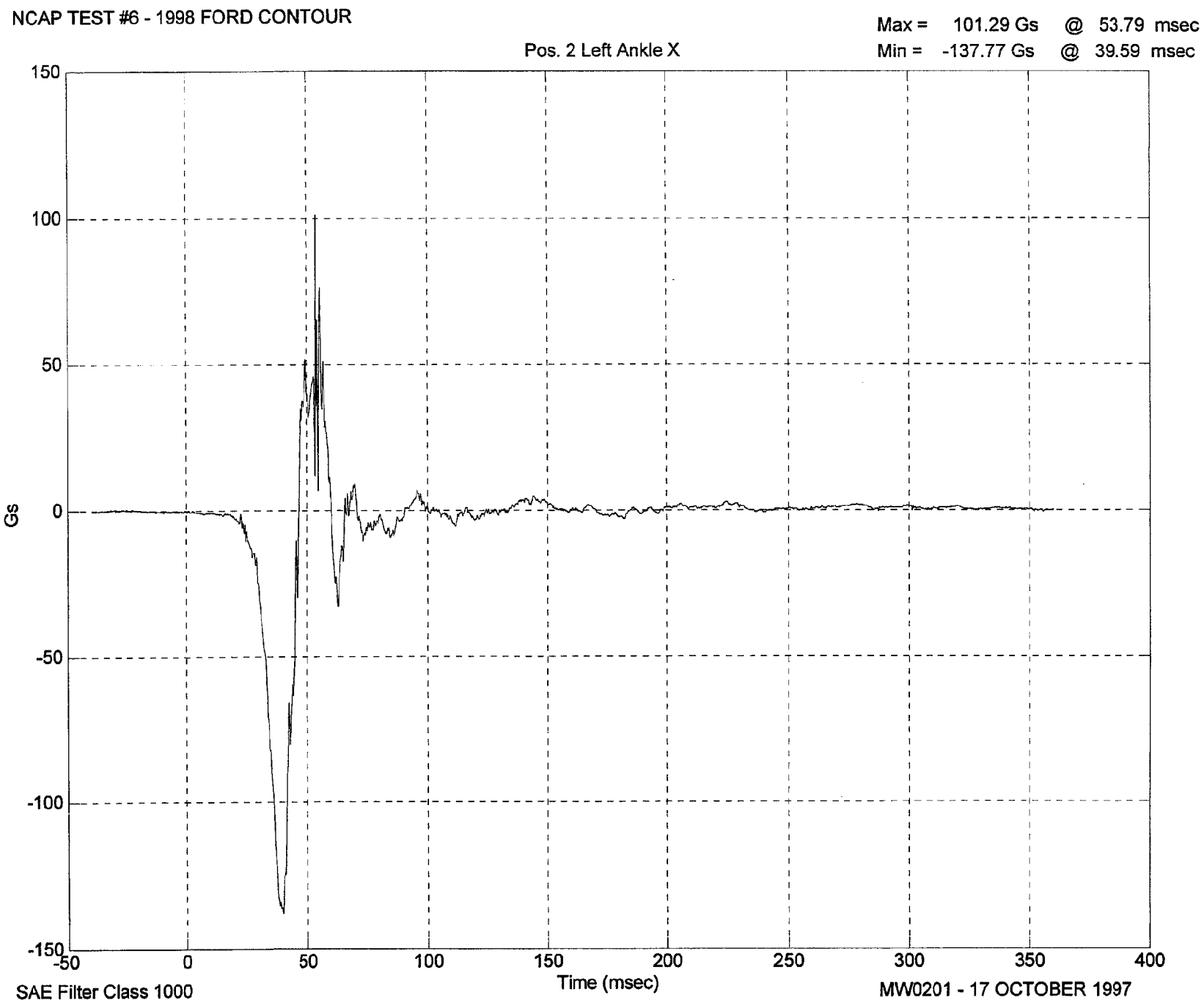
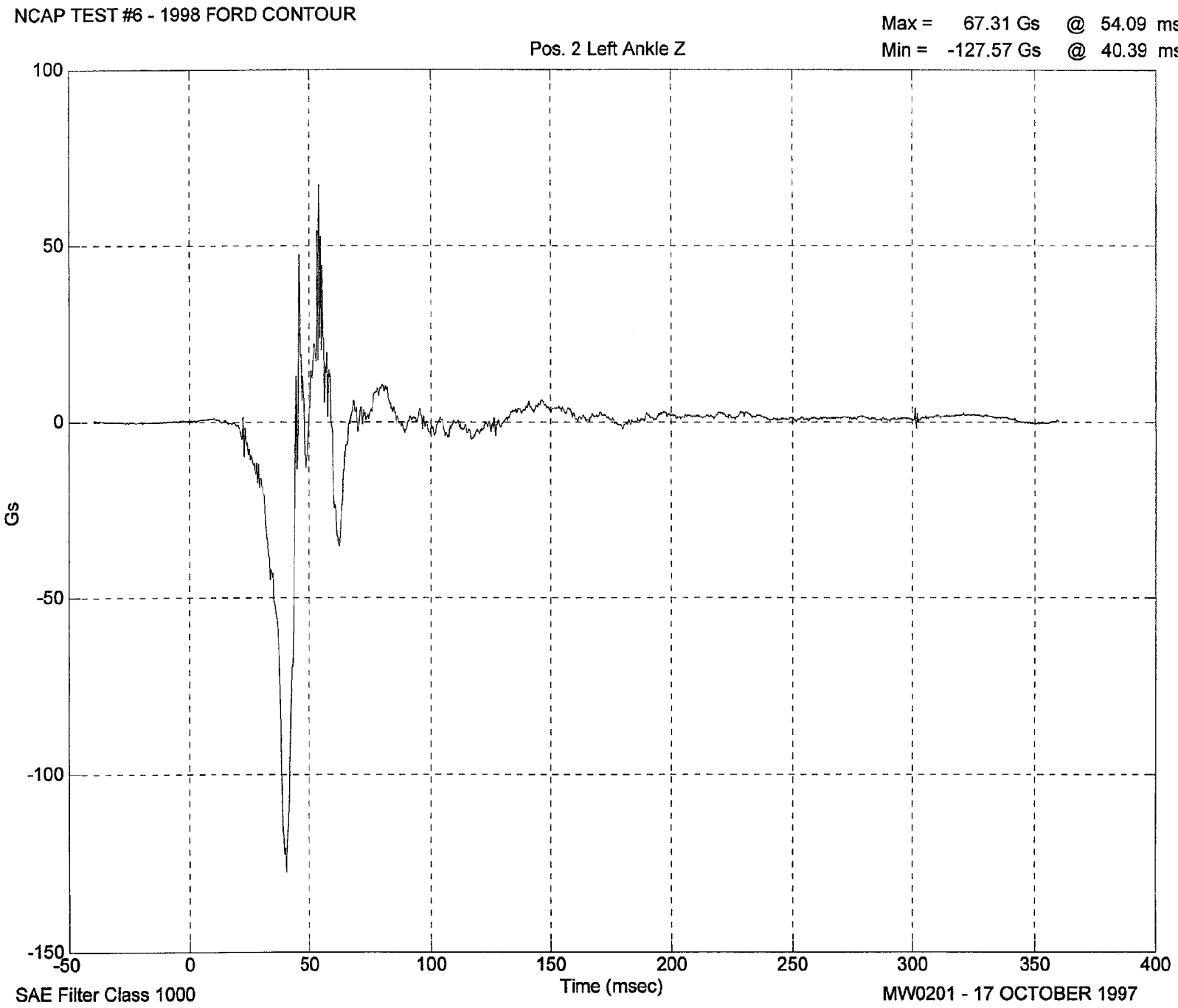
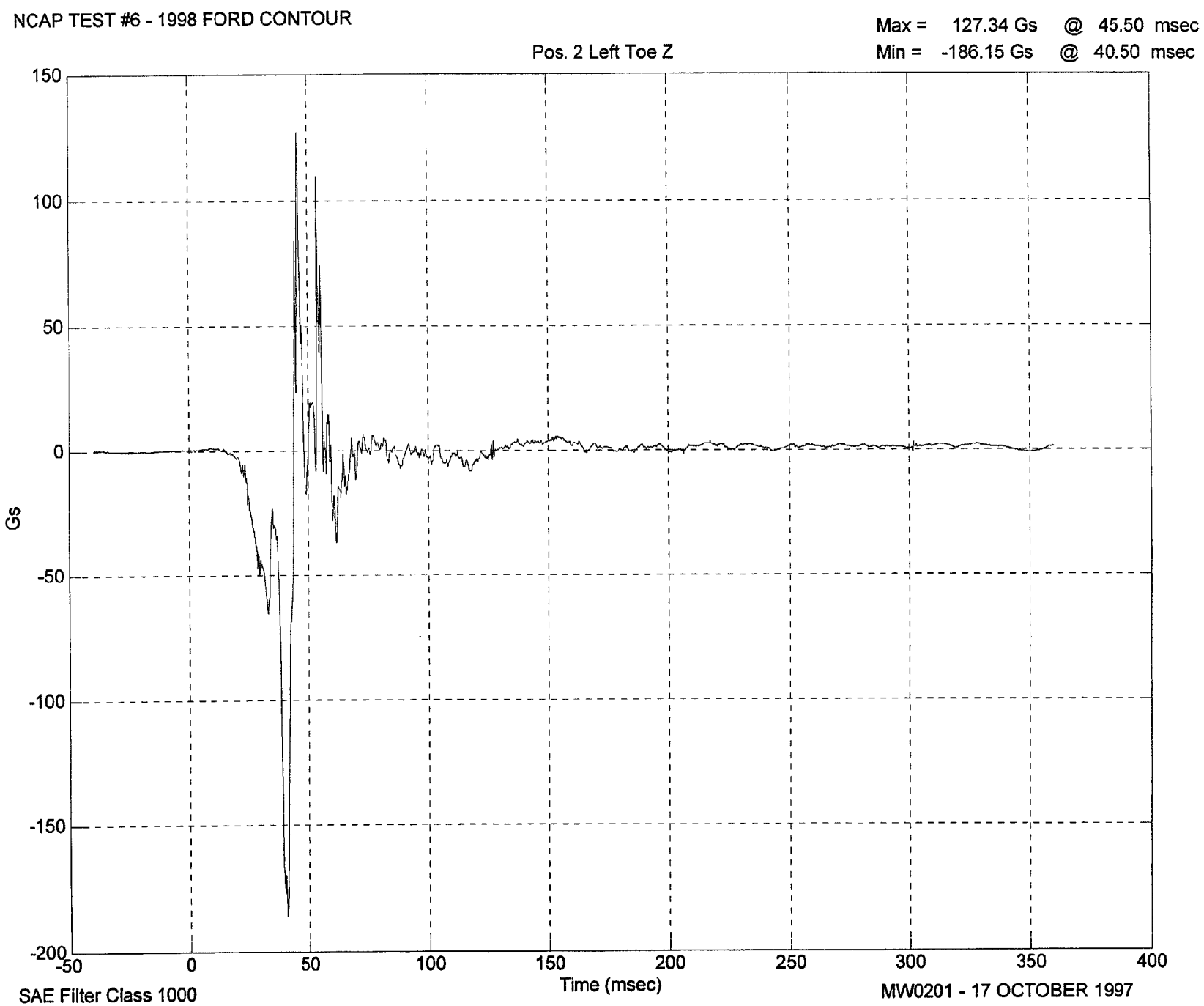
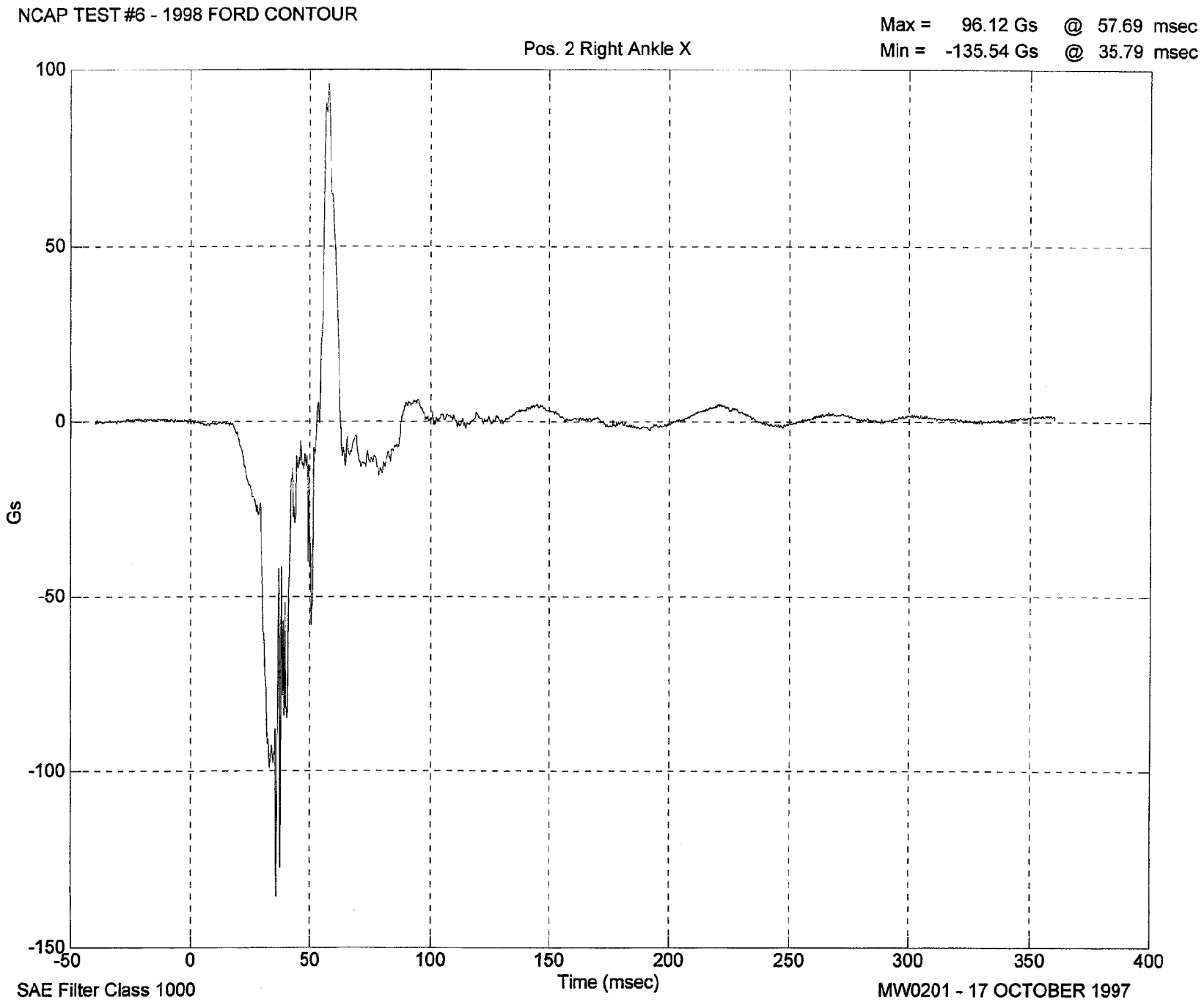
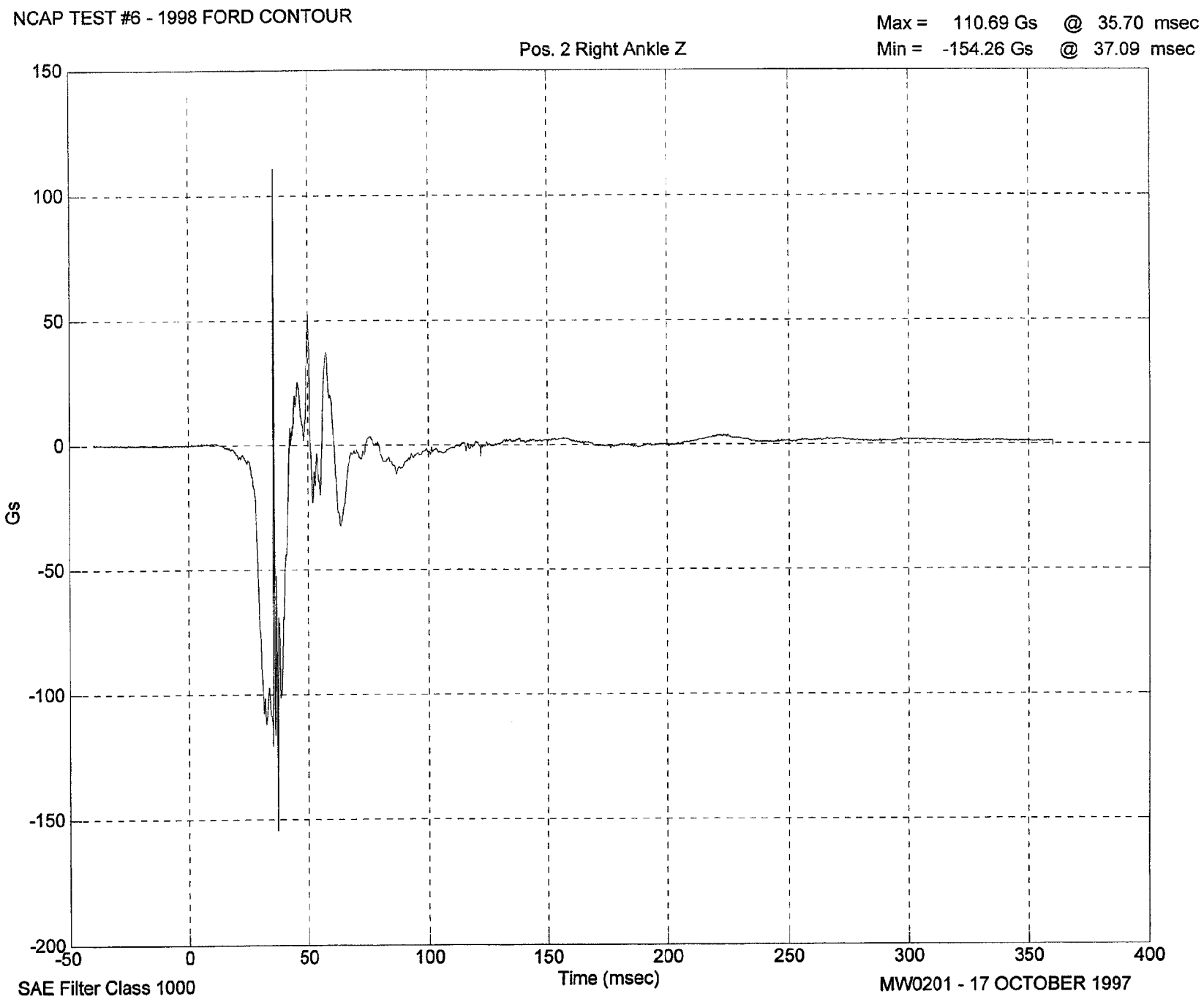
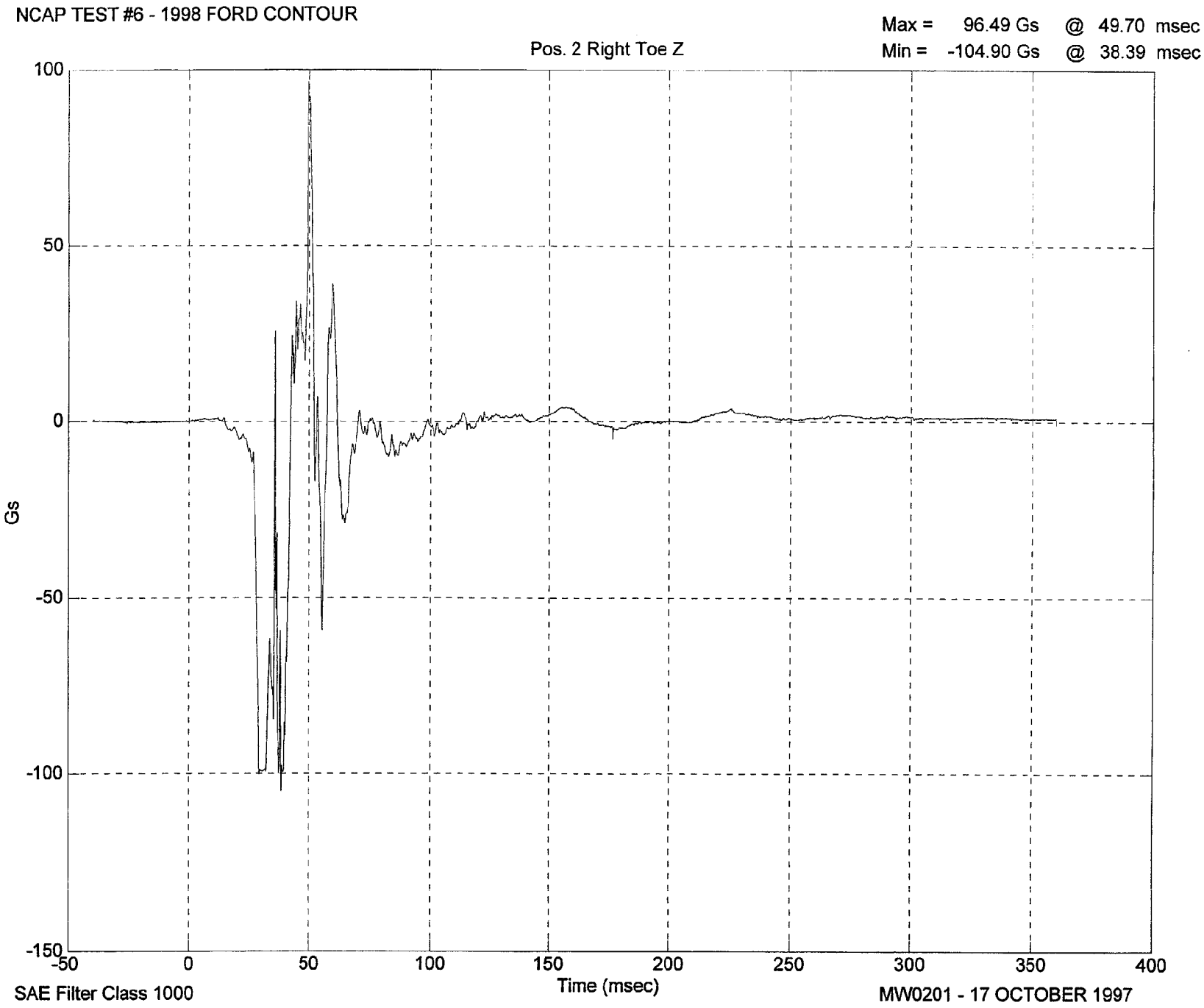

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Left Ankle X
Max = 101.29 Gs @ 53.79 msec
Min = -137.77 Gs @ 39.59 msec
150
100
50
0
-50
-100
-150
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997

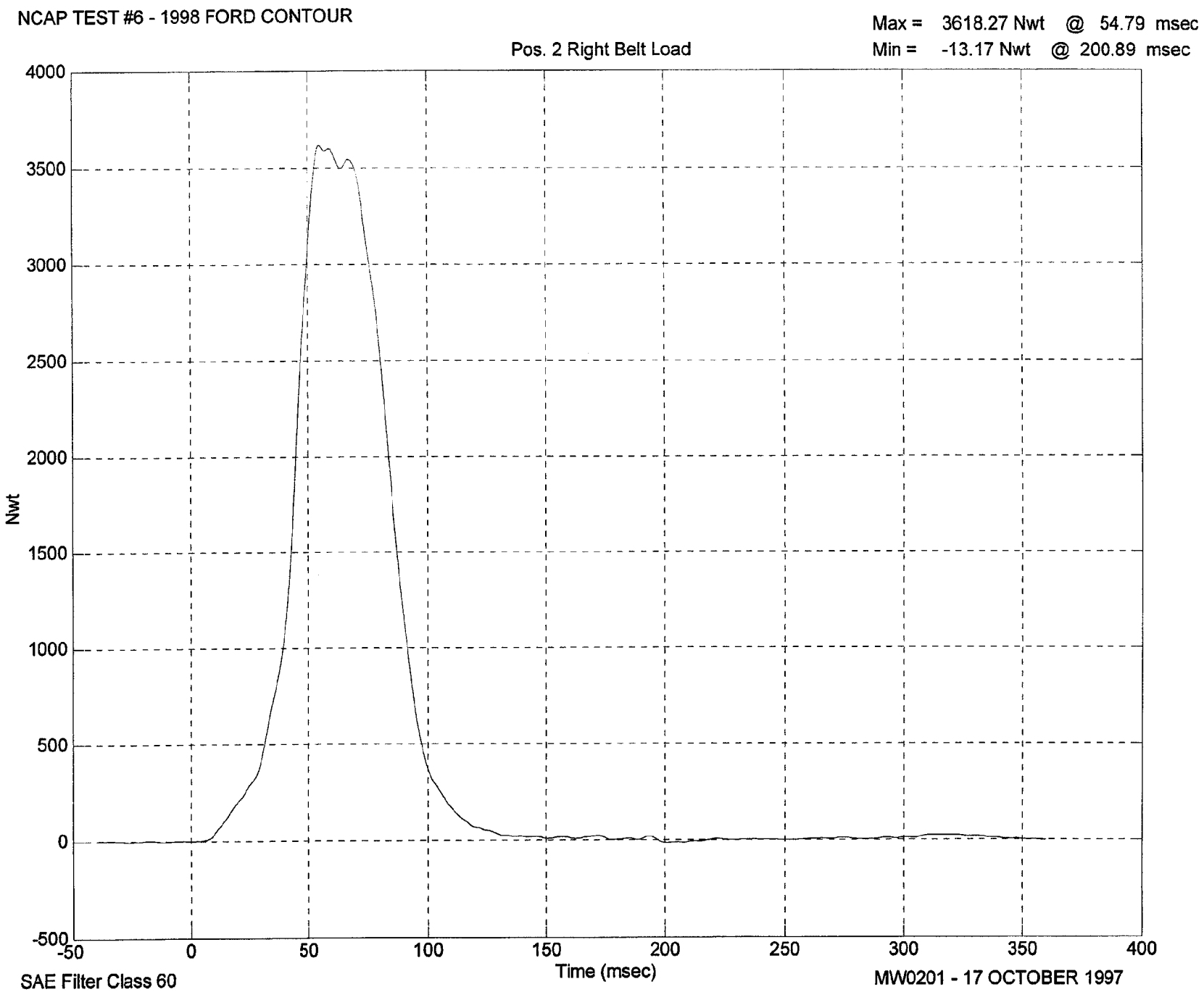

NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Left Ankle Z
Max = 67.31 Gs @ 54.09 msec
Min = -127.57 Gs @ 40.39 msec
100
50
0
-50
-100
-150
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Left Toe Z
Max = 127.34 Gs @ 45.50 msec
Min = -186.15 Gs @ 40.50 msec
Gs
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Right Ankle X
Max = 96.12 Gs @ 57.69 msec
Min = -135.54 Gs @ 35.79 msec
100
50
0
-50
-100
-150
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Right Ankle Z
Max = 110.69 Gs @ 35.70 msec
Min = -154.26 Gs @ 37.09 msec
150
100
50
0
-50
-100
-150
-200
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Right Toe Z
Max = 96.49 Gs @ 49.70 msec
Min = -104.90 Gs @ 38.39 msec
100
50
0
-50
-100
-150
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 1000
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Right Belt Load
Max = 3618.27 Nwt @ 54.79 msec
Min = -13.17 Nwt @ 200.89 msec
Nwt
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
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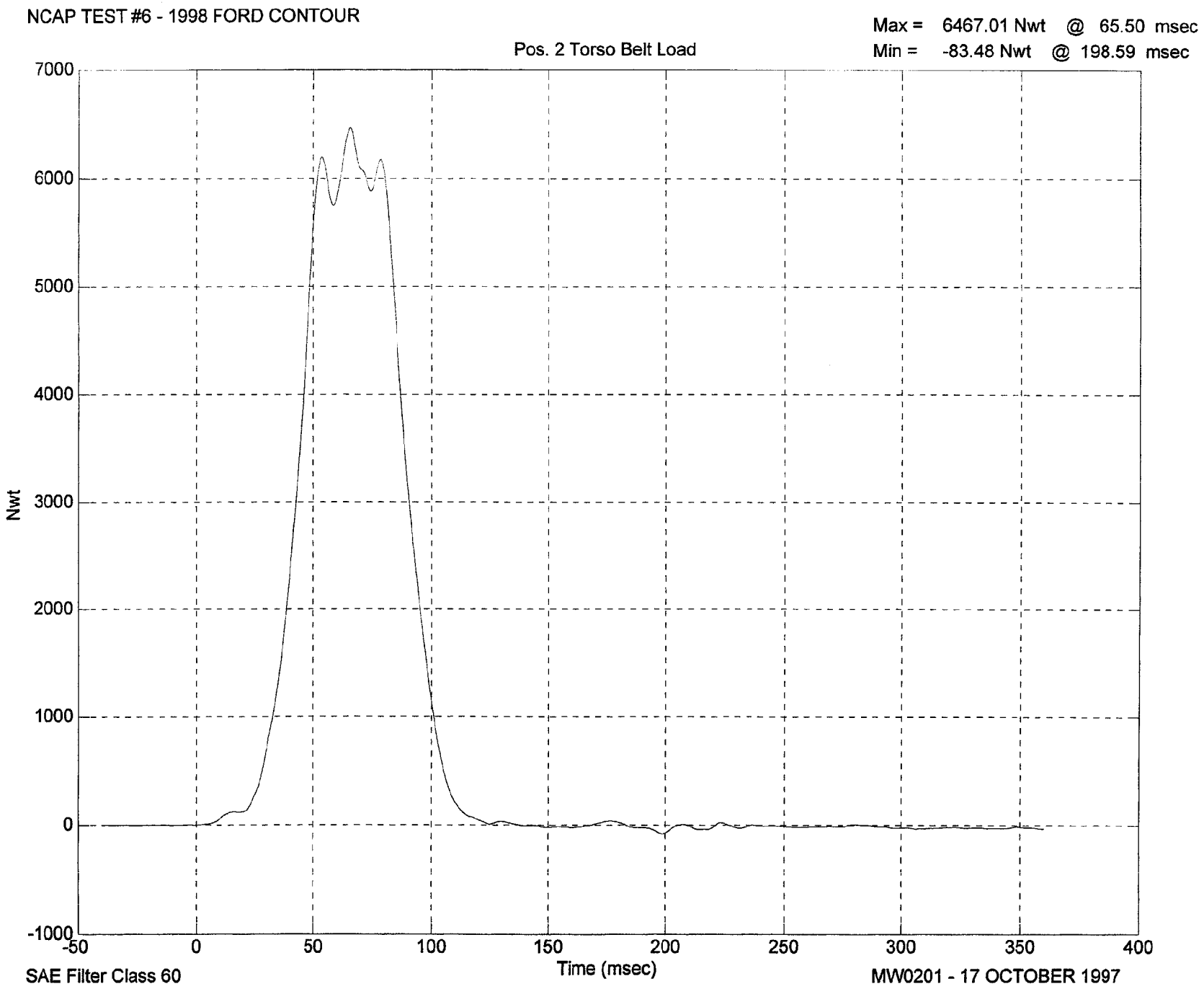
NCAP TEST #6 - 1998 FORD CONTOUR
Pos. 2 Torso Belt Load
Max = 6467.01 Nwt @ 65.50 msec
Min = -83.48 Nwt @ 198.59 msec
7000
6000
5000
4000
3000
2000
1000
0
-1000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
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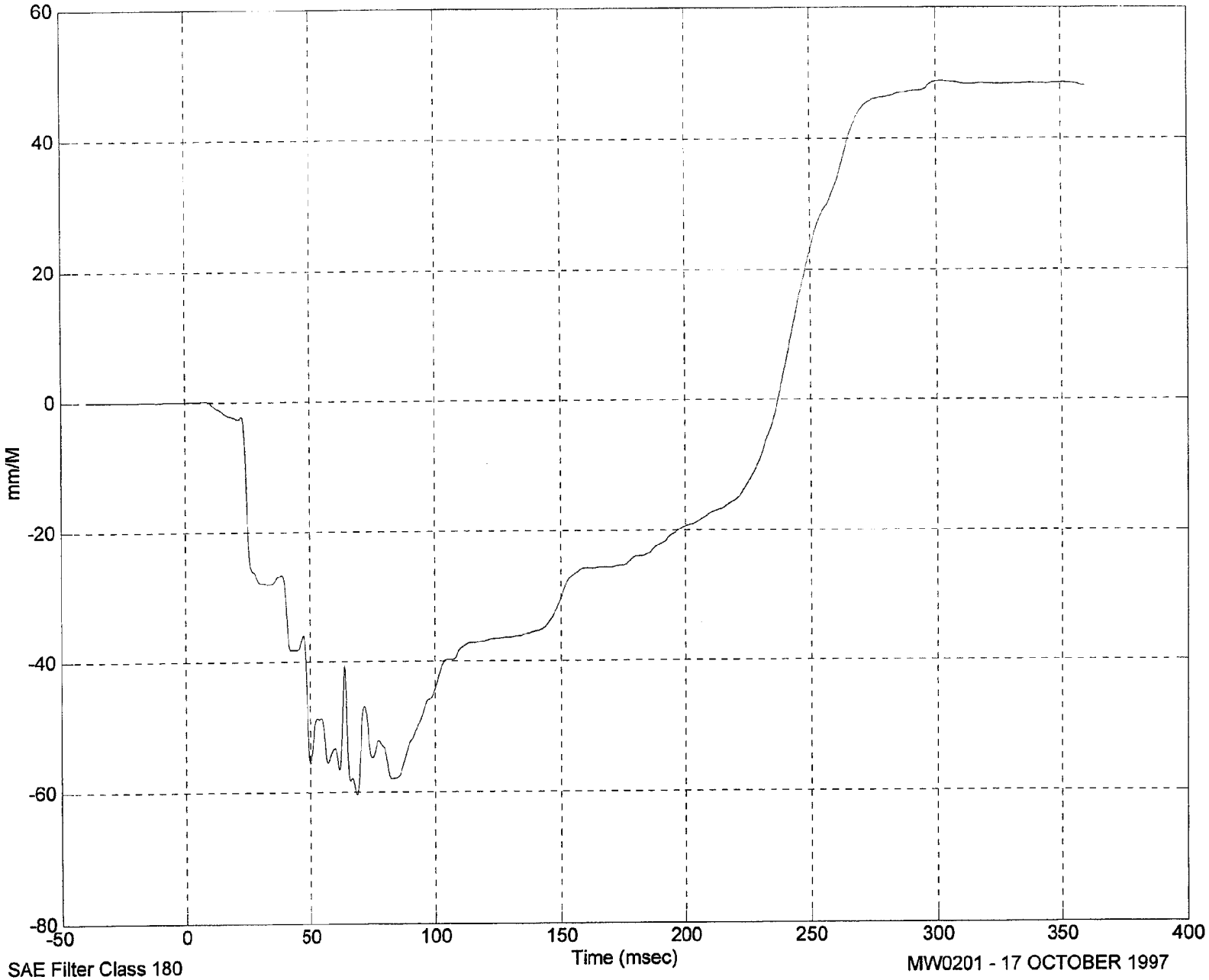
NCAP TEST #6 - 1998 FORD CONTOUR

Max = 48.72 mm/M @ 302.00 msec
Min = -60.34 mm/M @ 68.59 msec



SAE Filter Class 180

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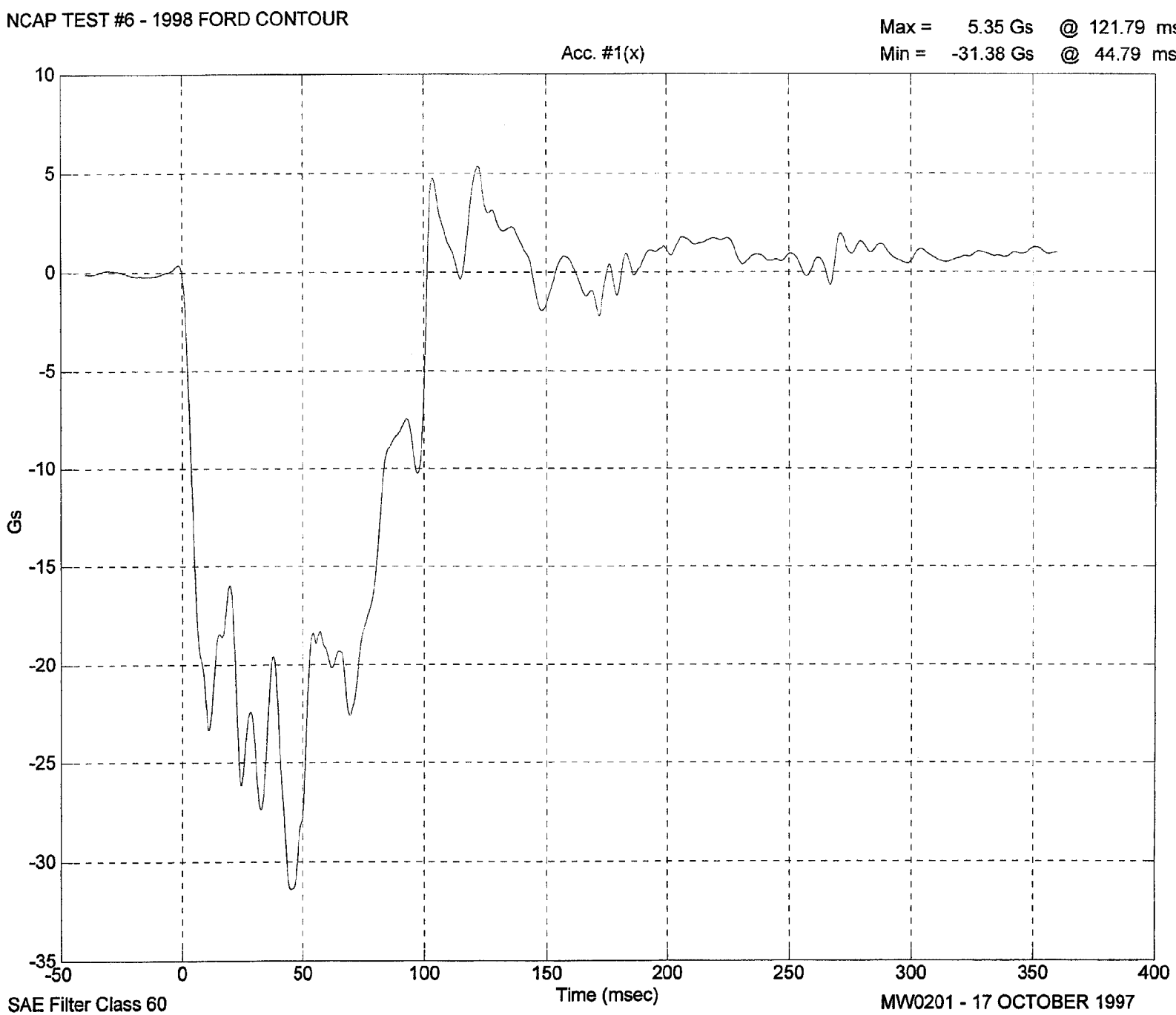
NHTSA TEST NO. MW0201

VEHICLE DATA	FILTER CHANNEL CLASS
Acceleration	60
Velocity	180
Displacement	180


NCAP TEST #6 - 1998 FORD CONTOUR
Max = 5.35 Gs @ 121.79 msec
Min = -31.38 Gs @ 44.79 msec
Acc. #1(x)
10
5
0
-5
-10
-15
-20
-25
-30
-35
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
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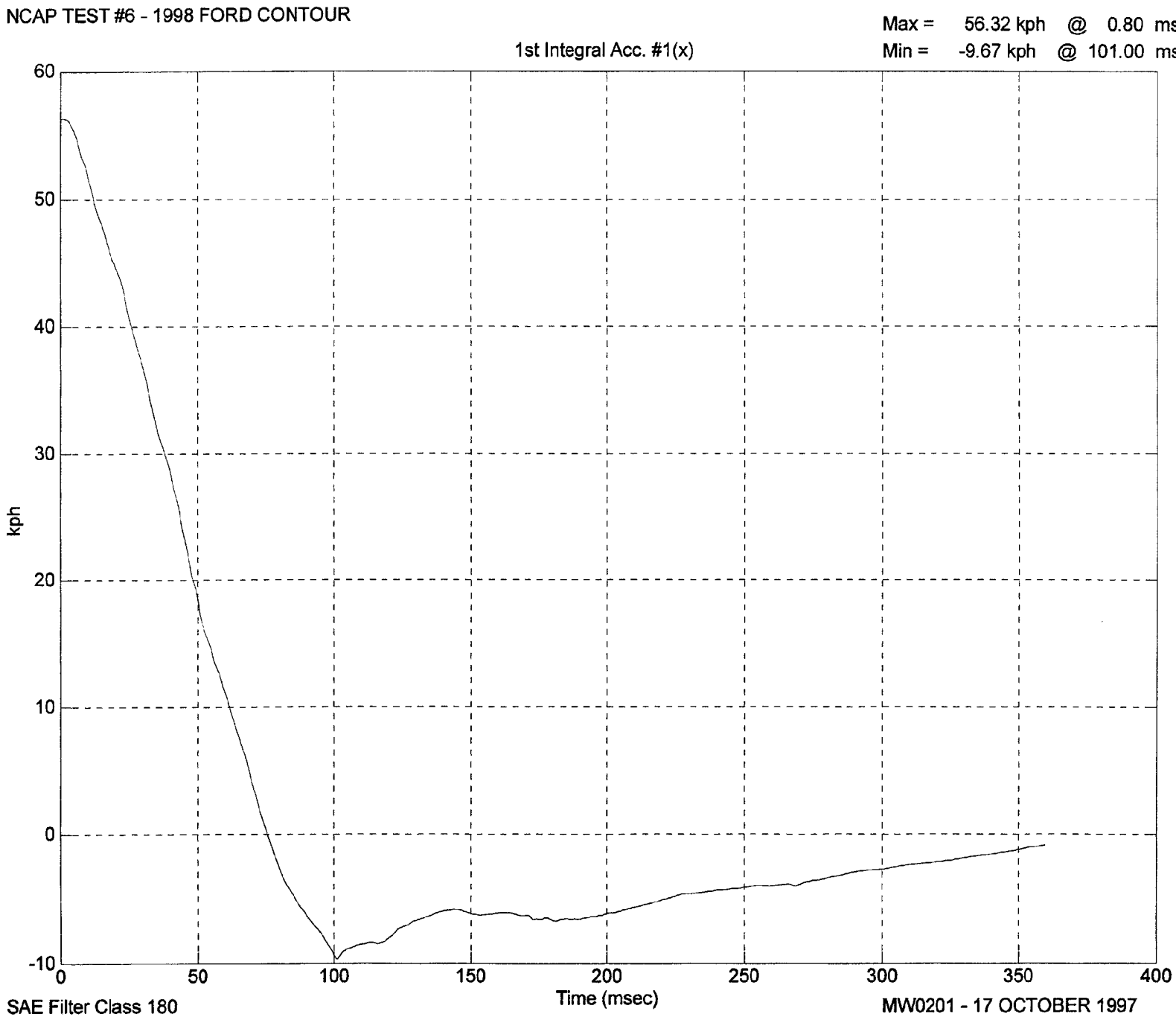
NCAP TEST #6 - 1998 FORD CONTOUR
1st Integral Acc. #1(x)
Max = 56.32 kph @ 0.80 msec
Min = -9.67 kph @ 101.00 msec
kph
60
50
40
30
20
10
0
-10
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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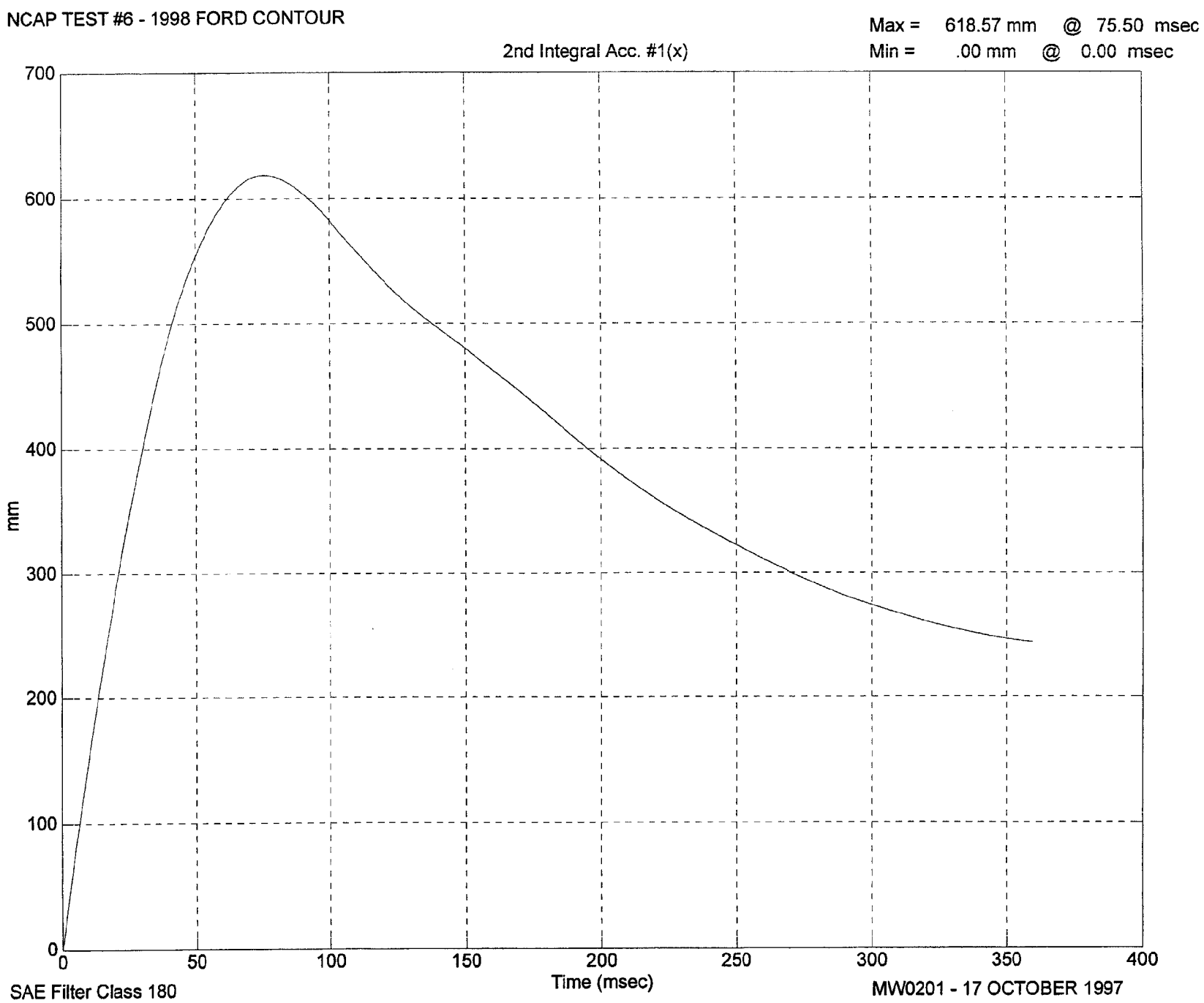
NCAP TEST #6 - 1998 FORD CONTOUR
2nd Integral Acc. #1(x)
Max = 618.57 mm @ 75.50 msec
Min = .00 mm @ 0.00 msec
700
600
500
400
300
200
100
0
mm
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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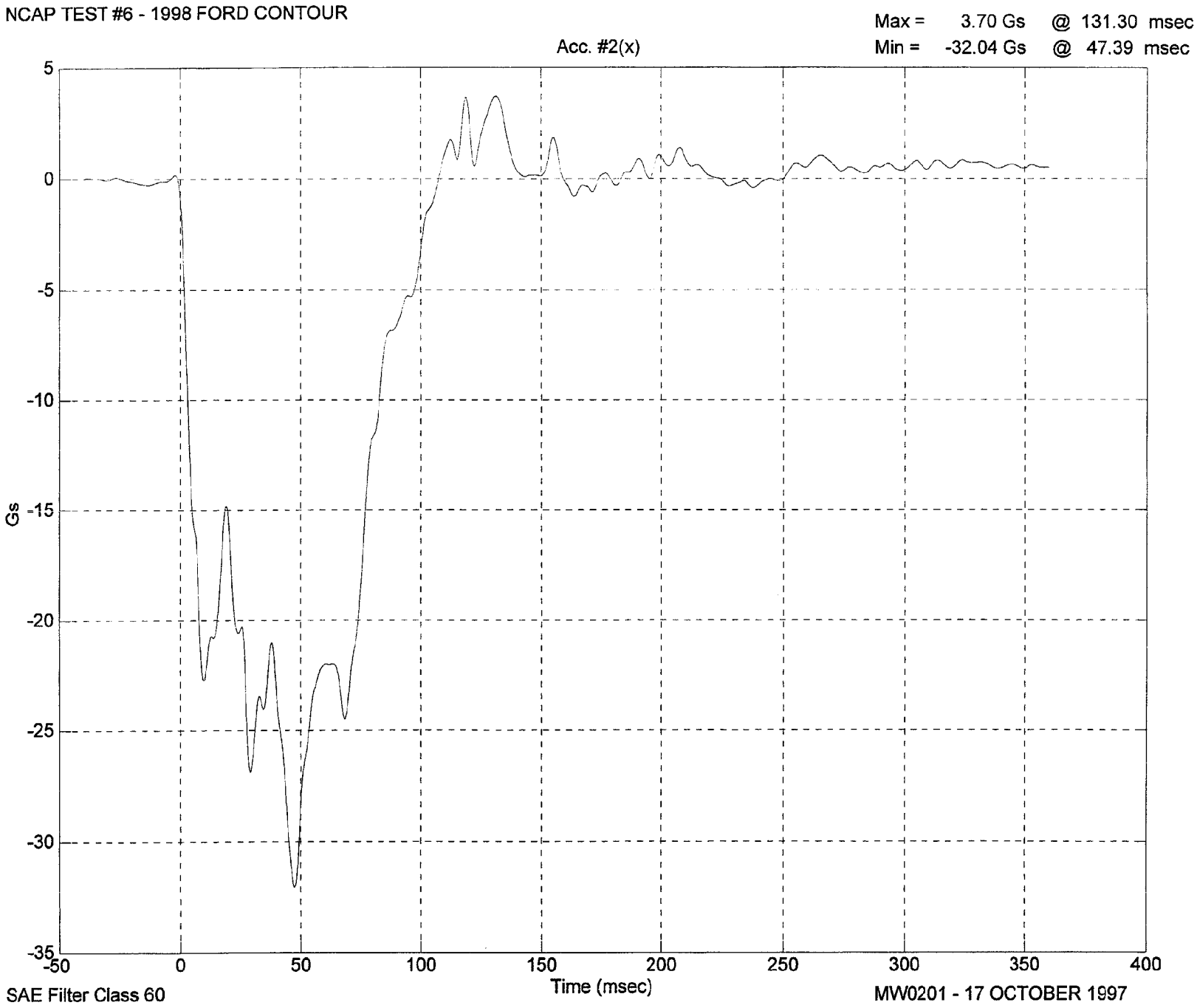
NCAP TEST #6 - 1998 FORD CONTOUR
Max = 3.70 Gs @ 131.30 msec
Min = -32.04 Gs @ 47.39 msec
Acc. #2(x)
5
0
-5
-10
-15
-20
-25
-30
-35
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
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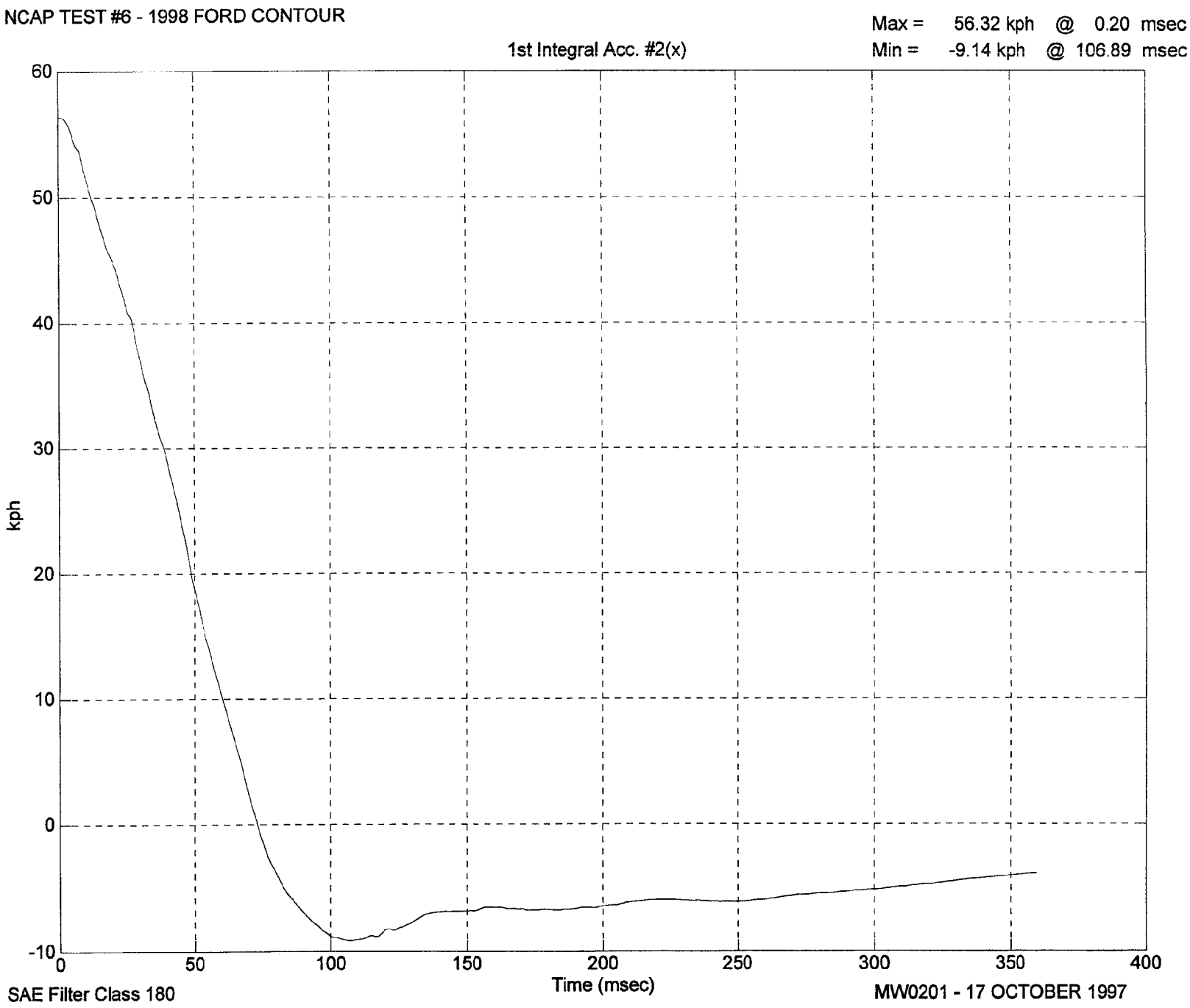
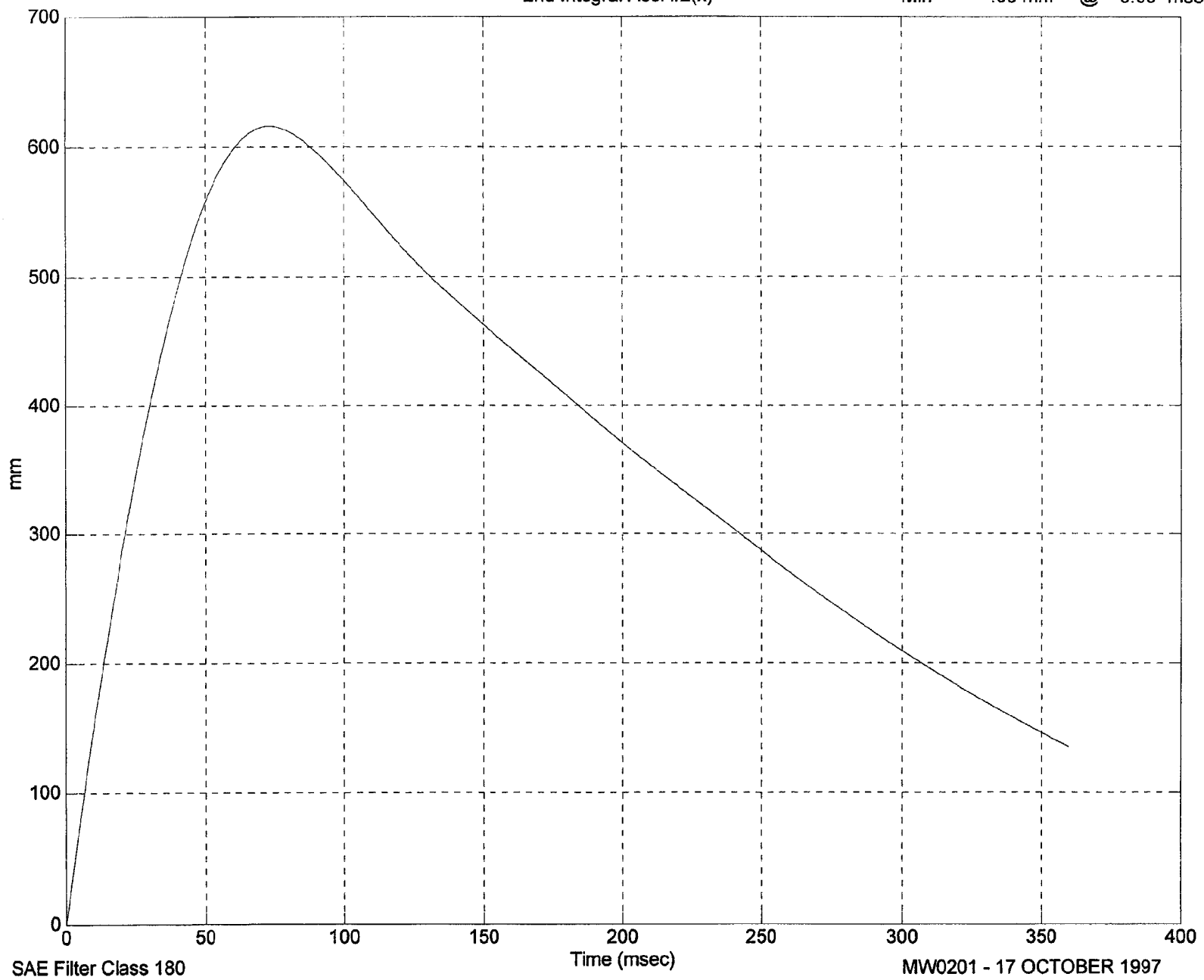

NCAP TEST #6 - 1998 FORD CONTOUR
1st Integral Acc. #2(x)
Max = 56.32 kph @ 0.20 msec
Min = -9.14 kph @ 106.89 msec
60
50
40
30
20
10
0
-10
kph
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR

Max = 616.02 mm @ 72.89 msec
Min = .00 mm @ 0.00 msec



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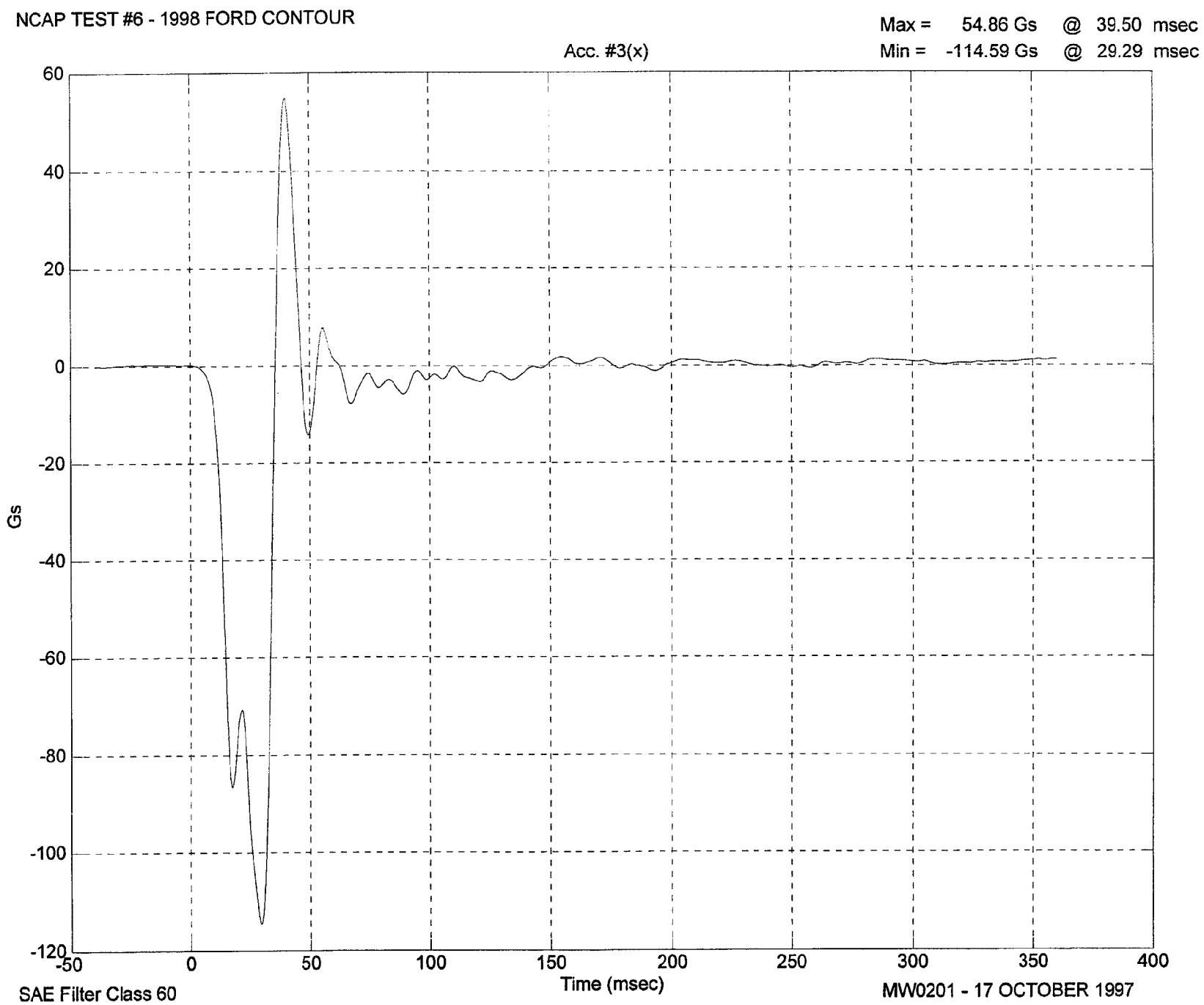
NCAP TEST #6 - 1998 FORD CONTOUR
Max = 54.86 Gs @ 39.50 msec
Min = -114.59 Gs @ 29.29 msec
Acc. #3(x)
60
40
20
0
-20
-40
-60
-80
-100
-120
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
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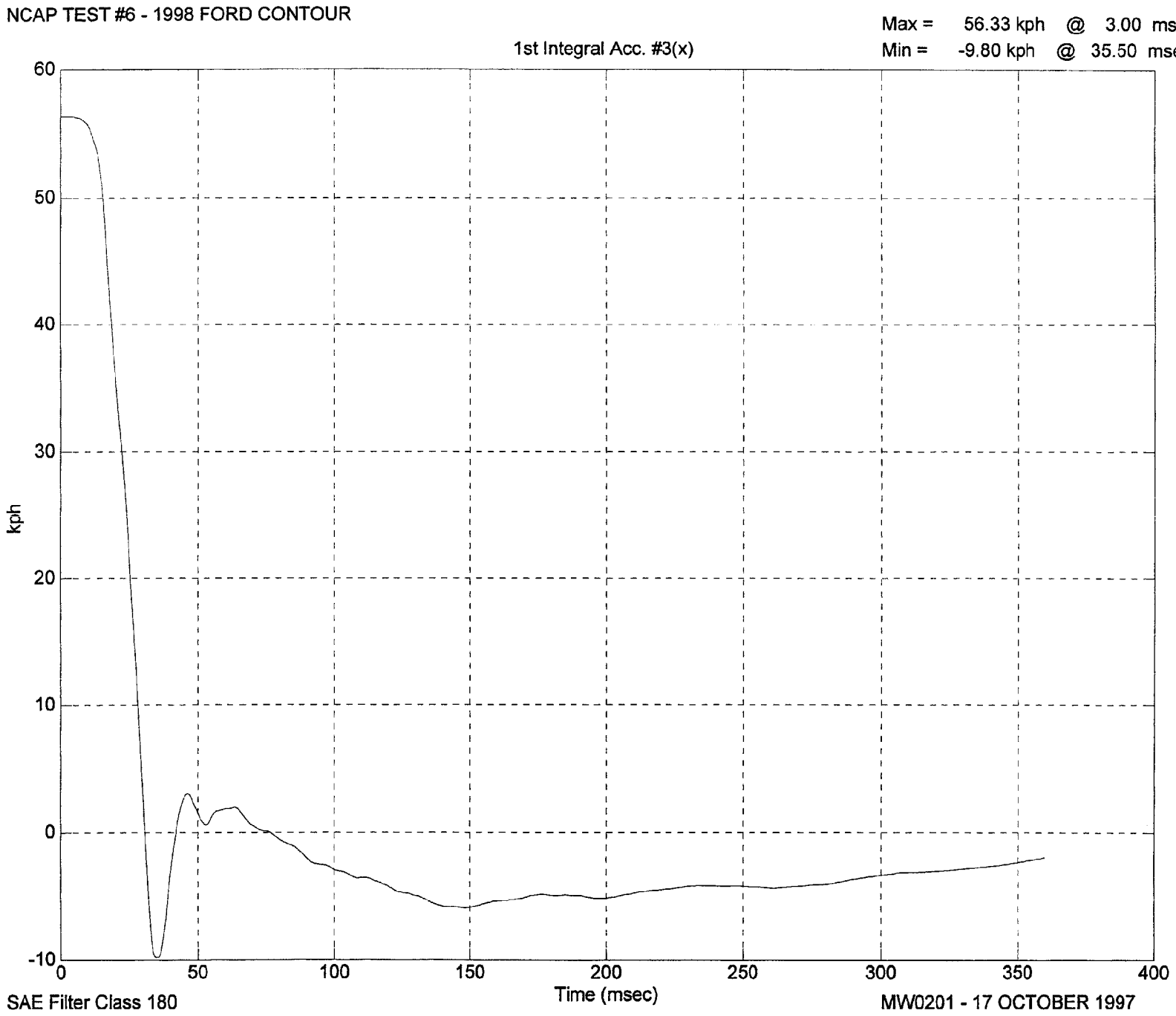
NCAP TEST #6 - 1998 FORD CONTOUR
1st Integral Acc. #3(x)
Max = 56.33 kph @ 3.00 msec
Min = -9.80 kph @ 35.50 msec
60
50
40
30
20
10
0
-10
kph
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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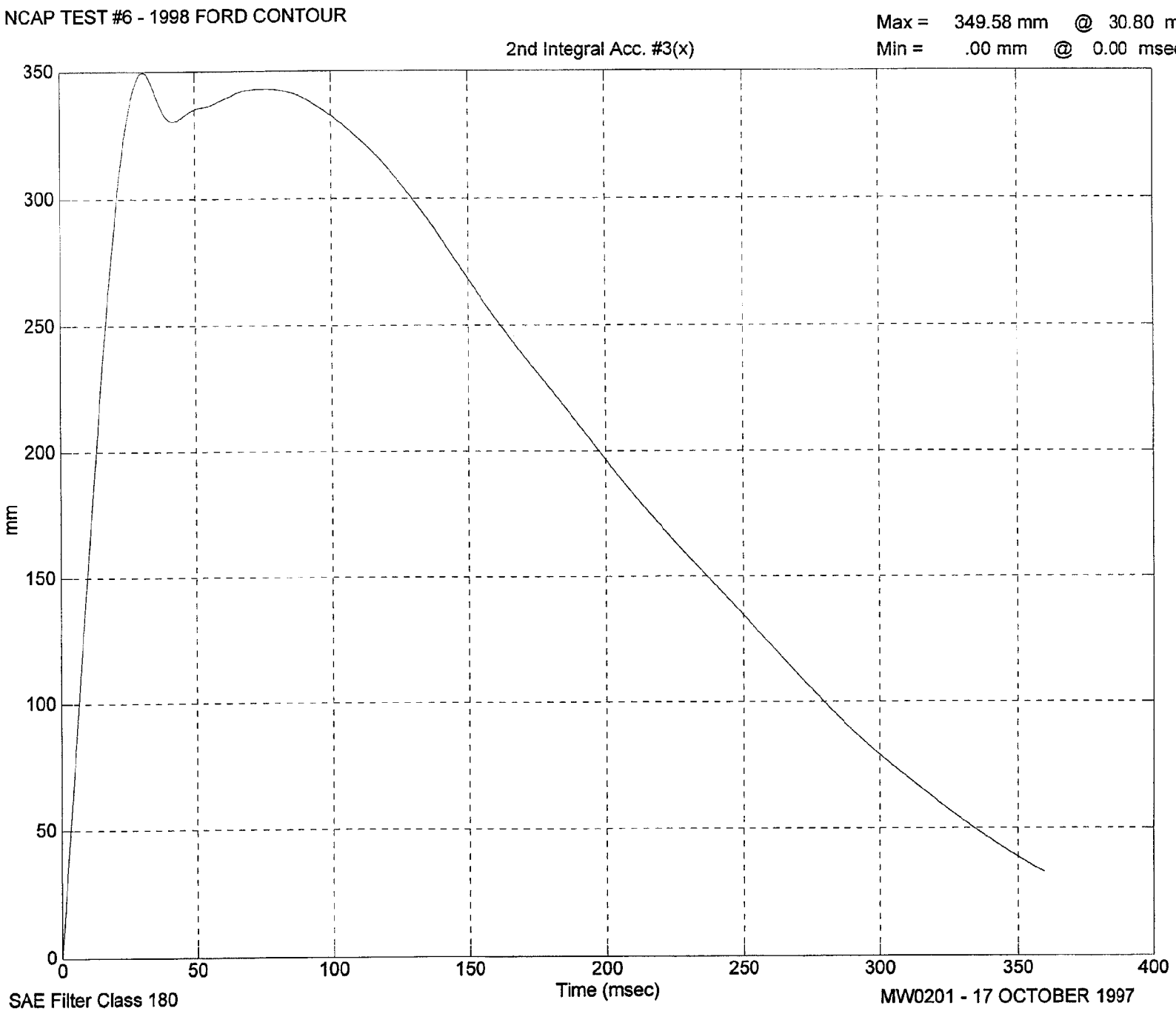
NCAP TEST #6 - 1998 FORD CONTOUR
2nd Integral Acc. #3(x)
Max = 349.58 mm @ 30.80 msec
Min = .00 mm @ 0.00 msec
350
300
250
200
150
100
50
0
mm
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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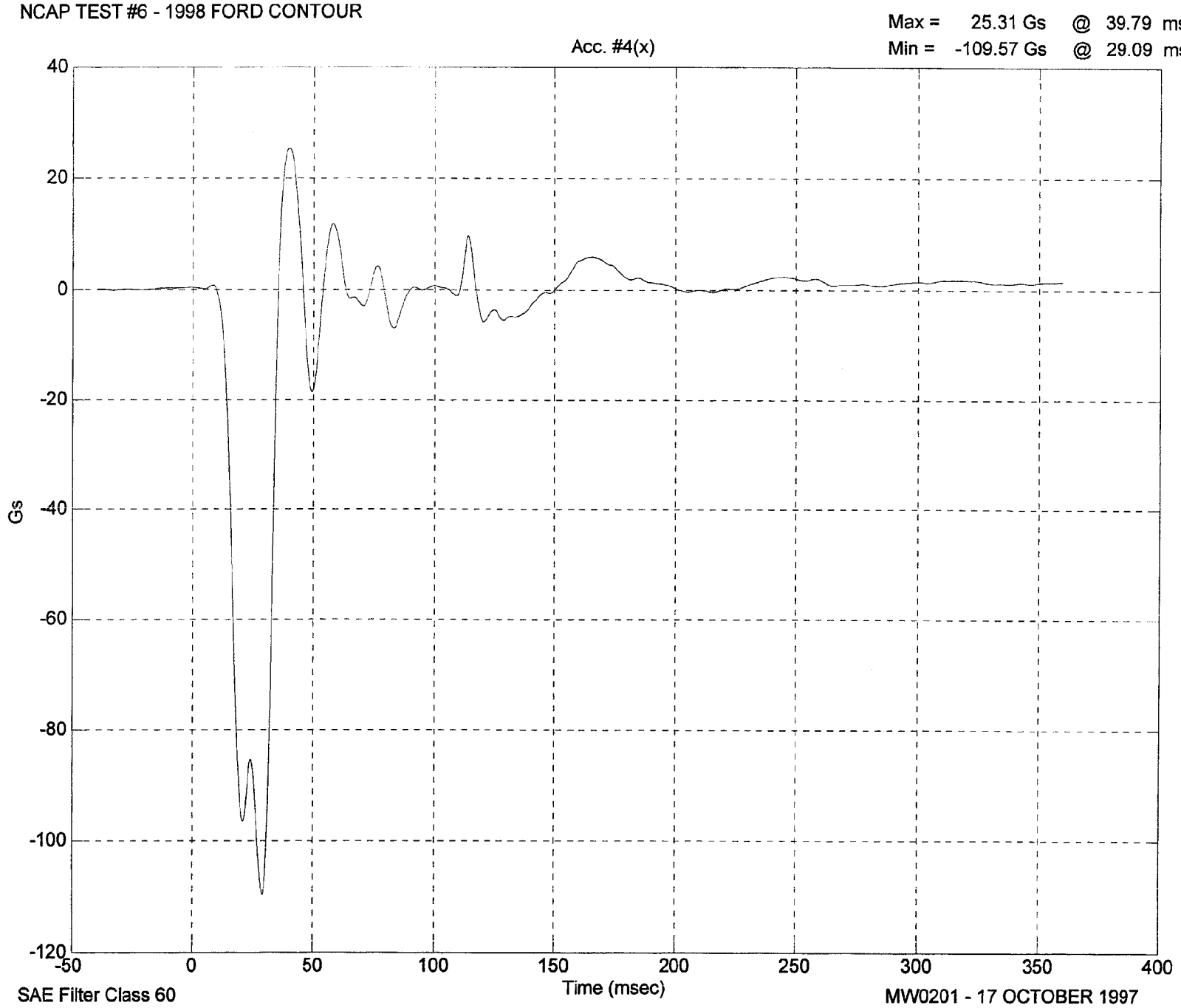
NCAP TEST #6 - 1998 FORD CONTOUR
Max = 25.31 Gs @ 39.79 msec
Min = -109.57 Gs @ 29.09 msec
Acc. #4(x)
40
20
0
-20
-40
-60
-80
-100
-120
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
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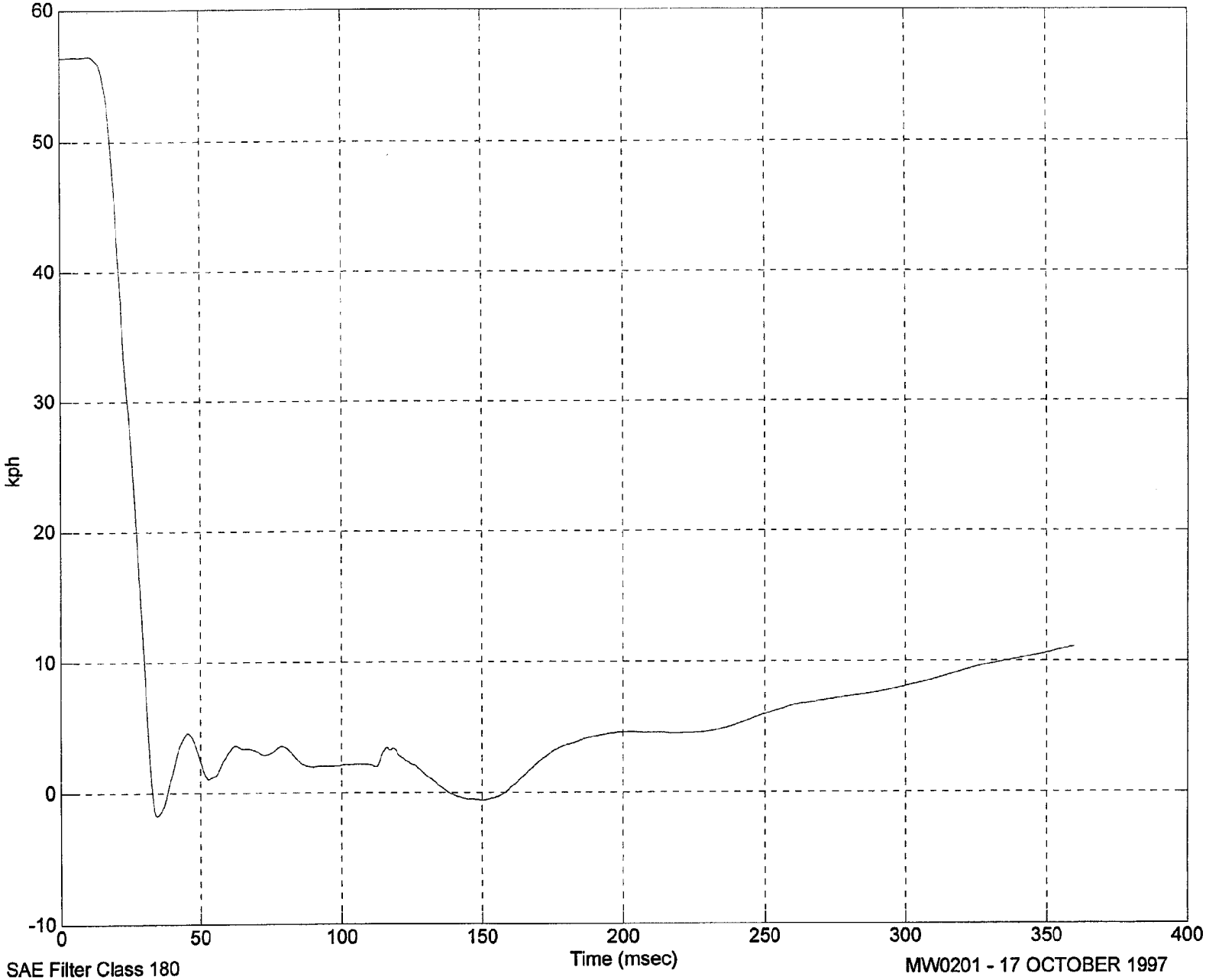
NCAP TEST #6 - 1998 FORD CONTOUR

1st Integral Acc. #4(x)

Max = 56.44 kph @ 10.30 msec
Min = -1.71 kph @ 34.60 msec



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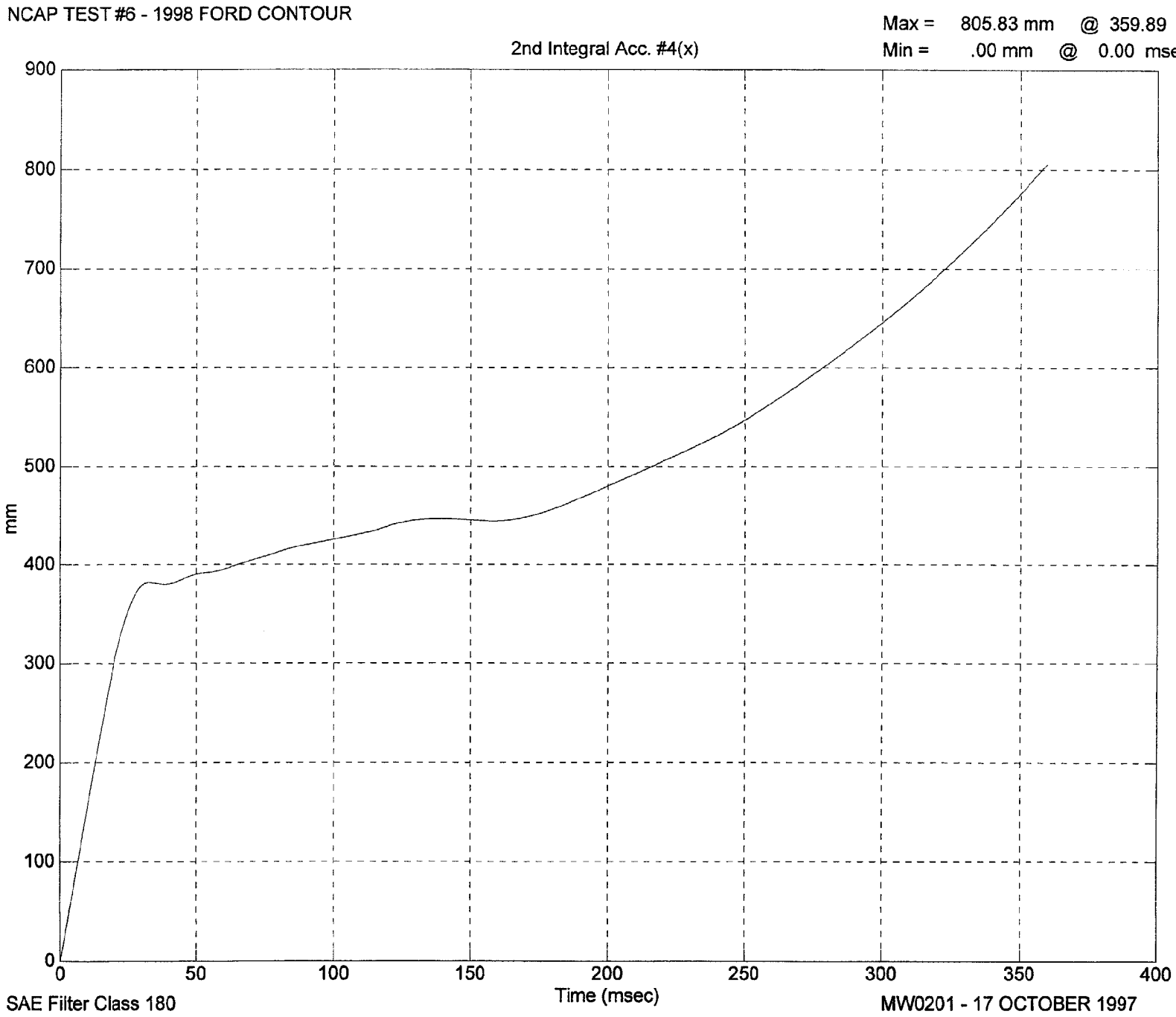
NCAP TEST #6 - 1998 FORD CONTOUR
2nd Integral Acc. #4(x)
Max = 805.83 mm @ 359.89 msec
Min = .00 mm @ 0.00 msec
900
800
700
600
500
400
300
200
100
0
mm
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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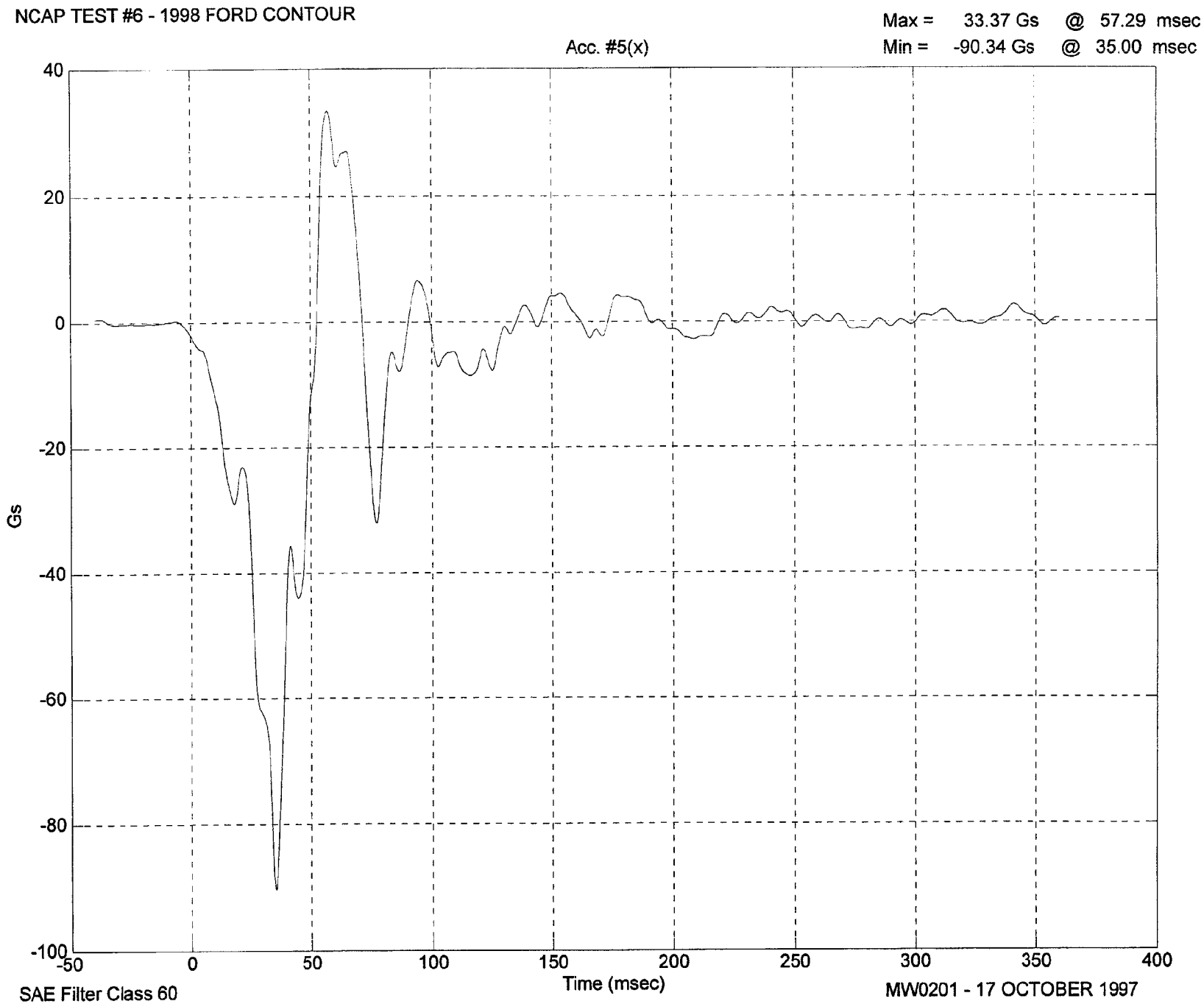
NCAP TEST #6 - 1998 FORD CONTOUR
Max = 33.37 Gs @ 57.29 msec
Min = -90.34 Gs @ 35.00 msec
Acc. #5(x)
40
20
0
-20
-40
-60
-80
-100
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
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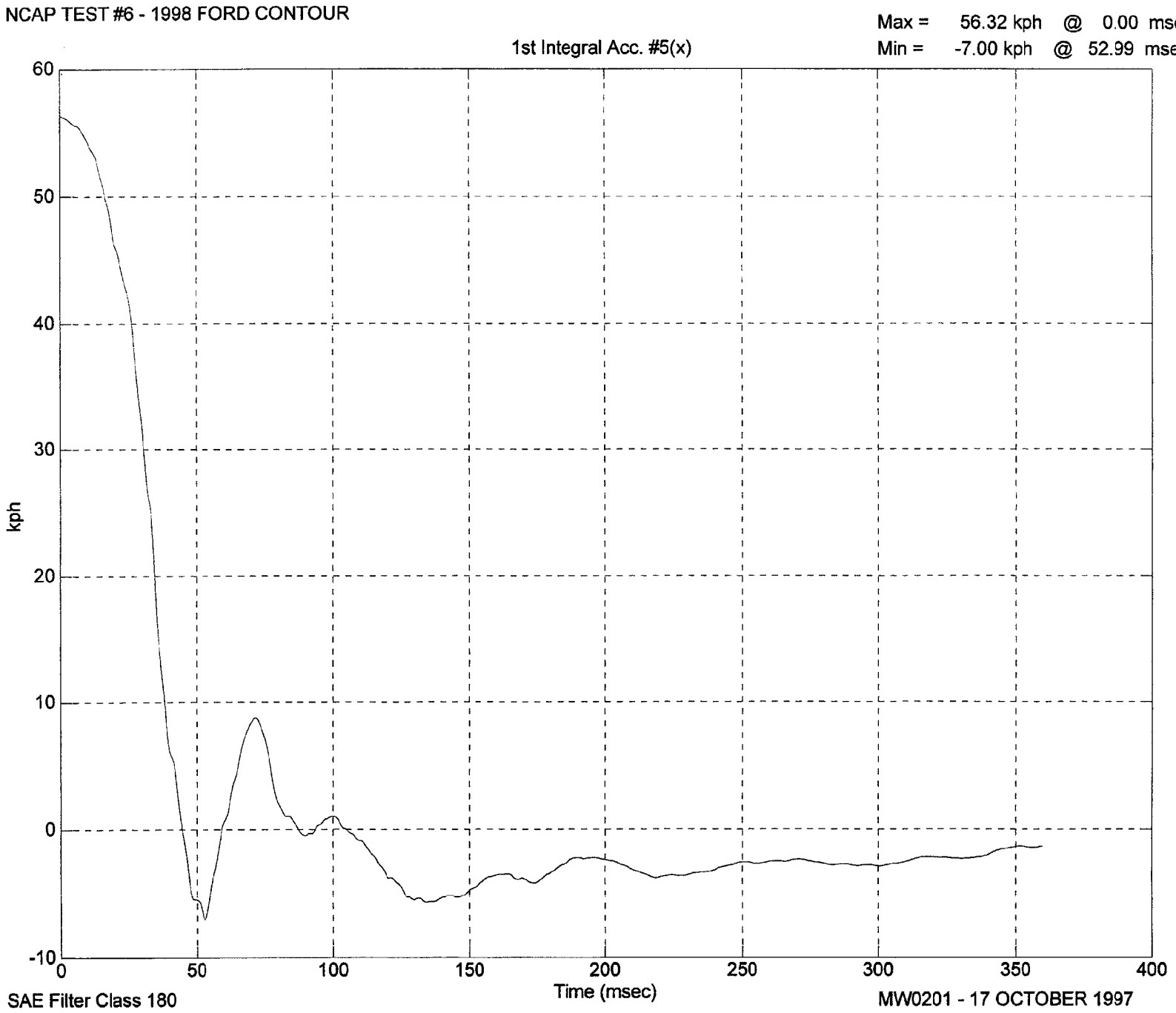
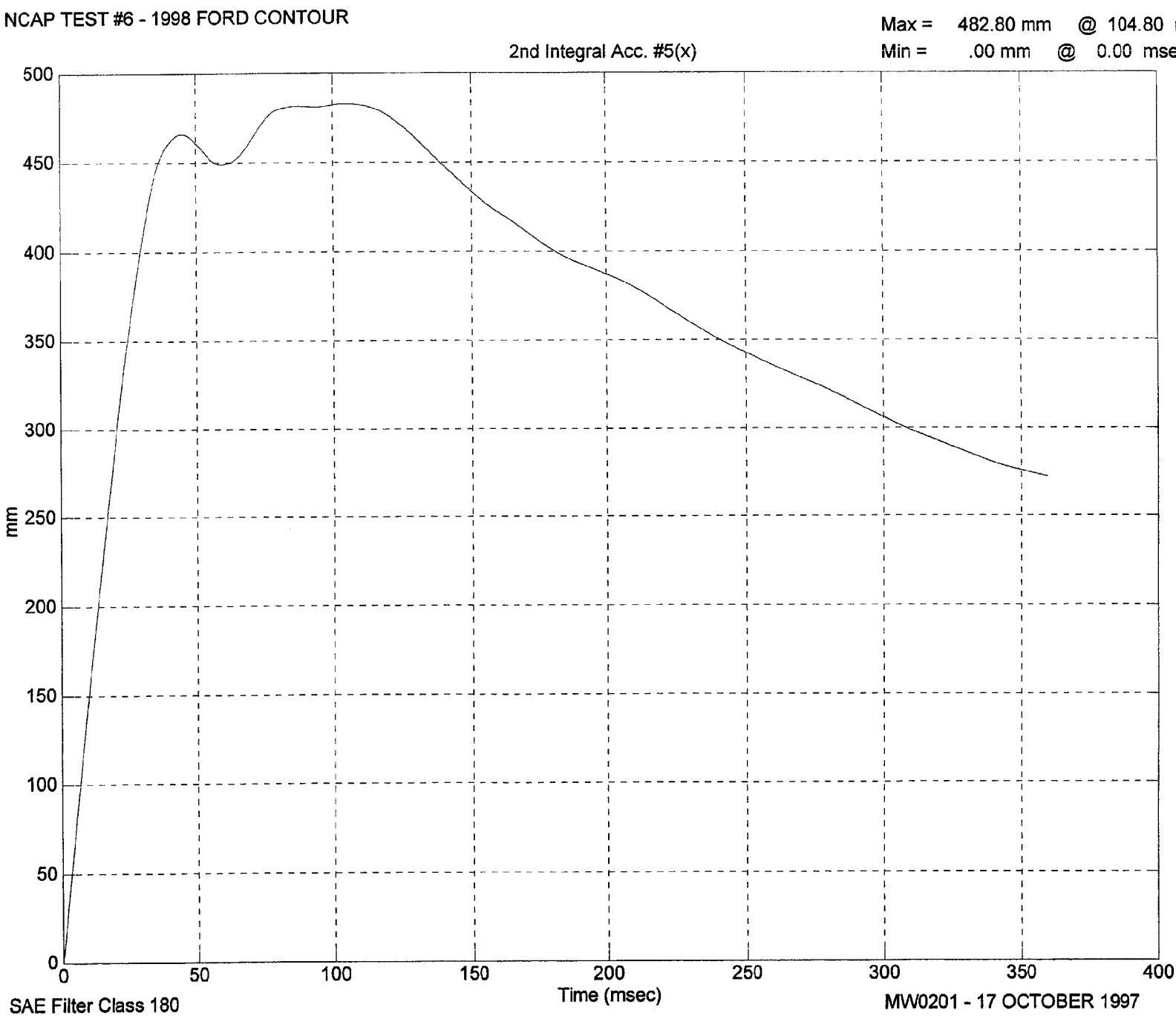

NCAP TEST #6 - 1998 FORD CONTOUR
1st Integral Acc. #5(x)
Max = 56.32 kph @ 0.00 msec
Min = -7.00 kph @ 52.99 msec
kph
60
50
40
30
20
10
0
-10
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
2nd Integral Acc. #5(x)
Max = 482.80 mm @ 104.80 msec
Min = .00 mm @ 0.00 msec
500
450
400
350
300
250
200
150
100
50
0
mm
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
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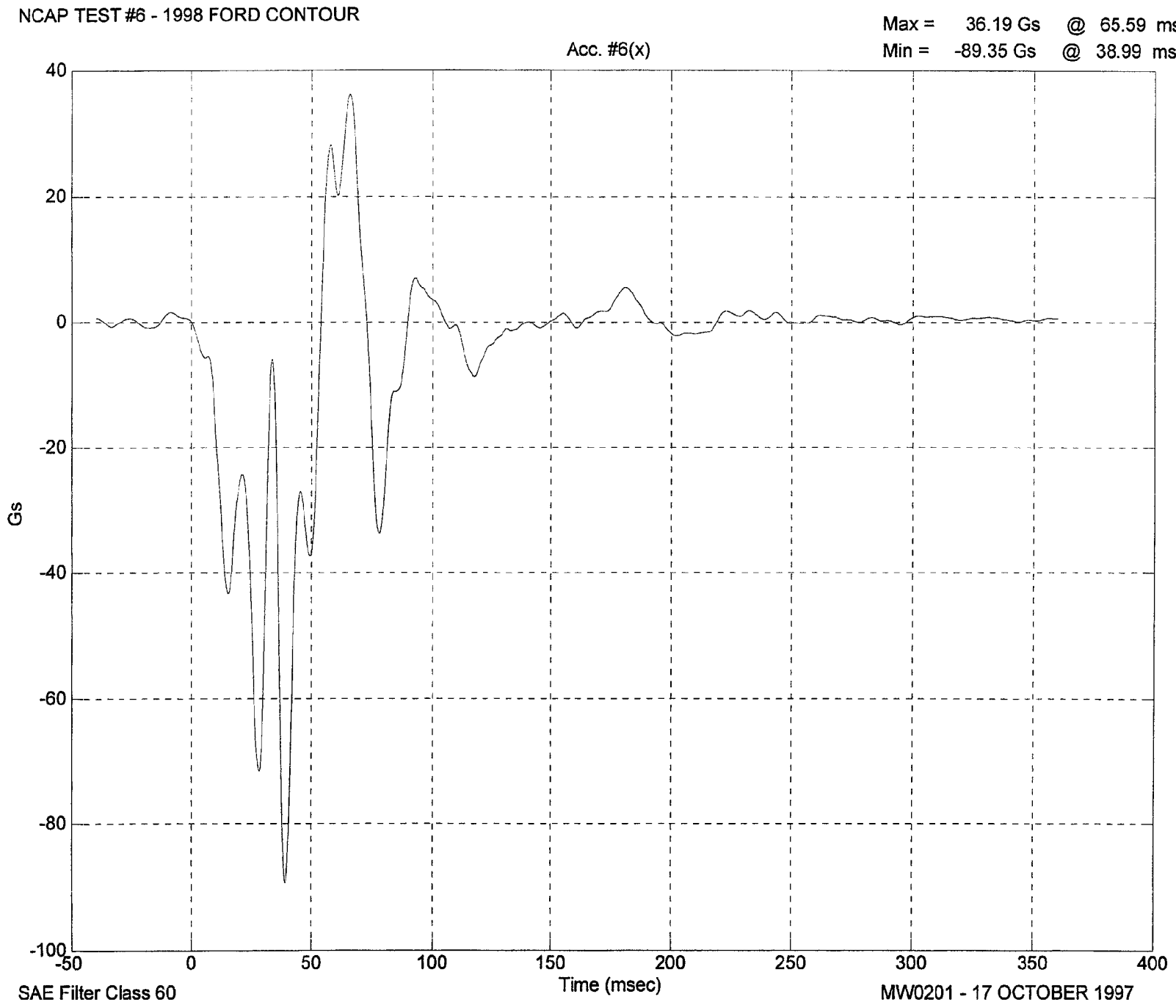
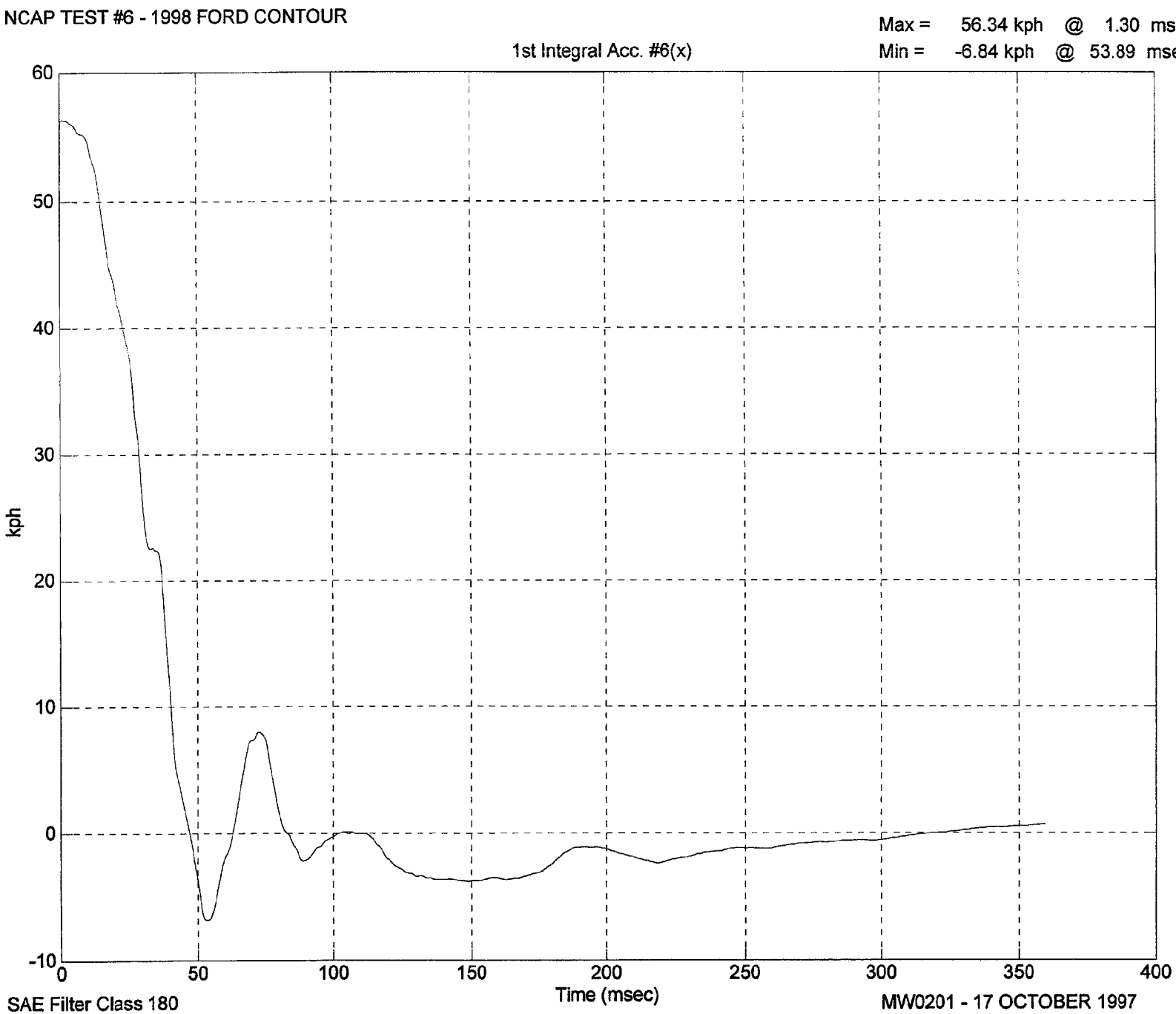
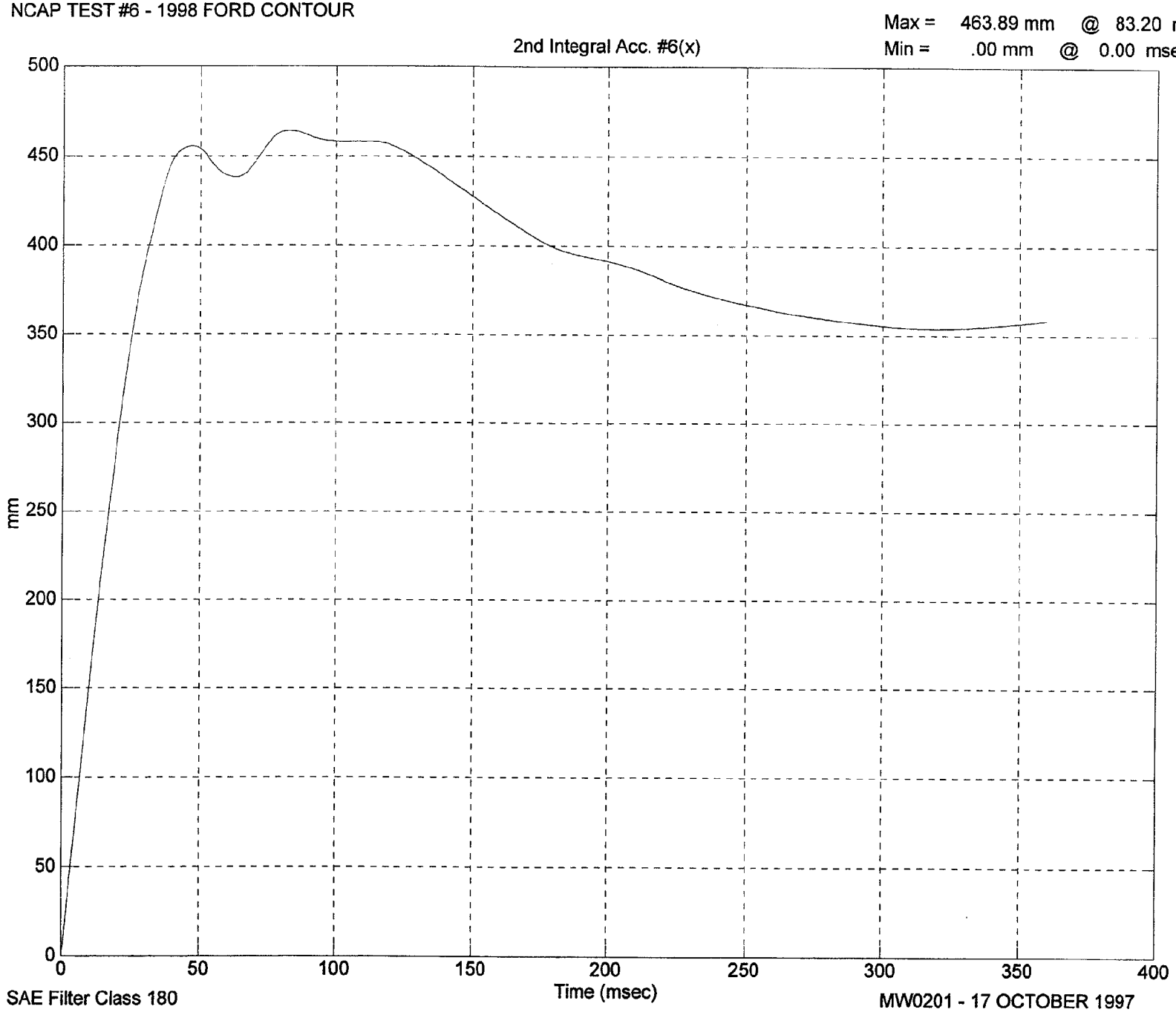
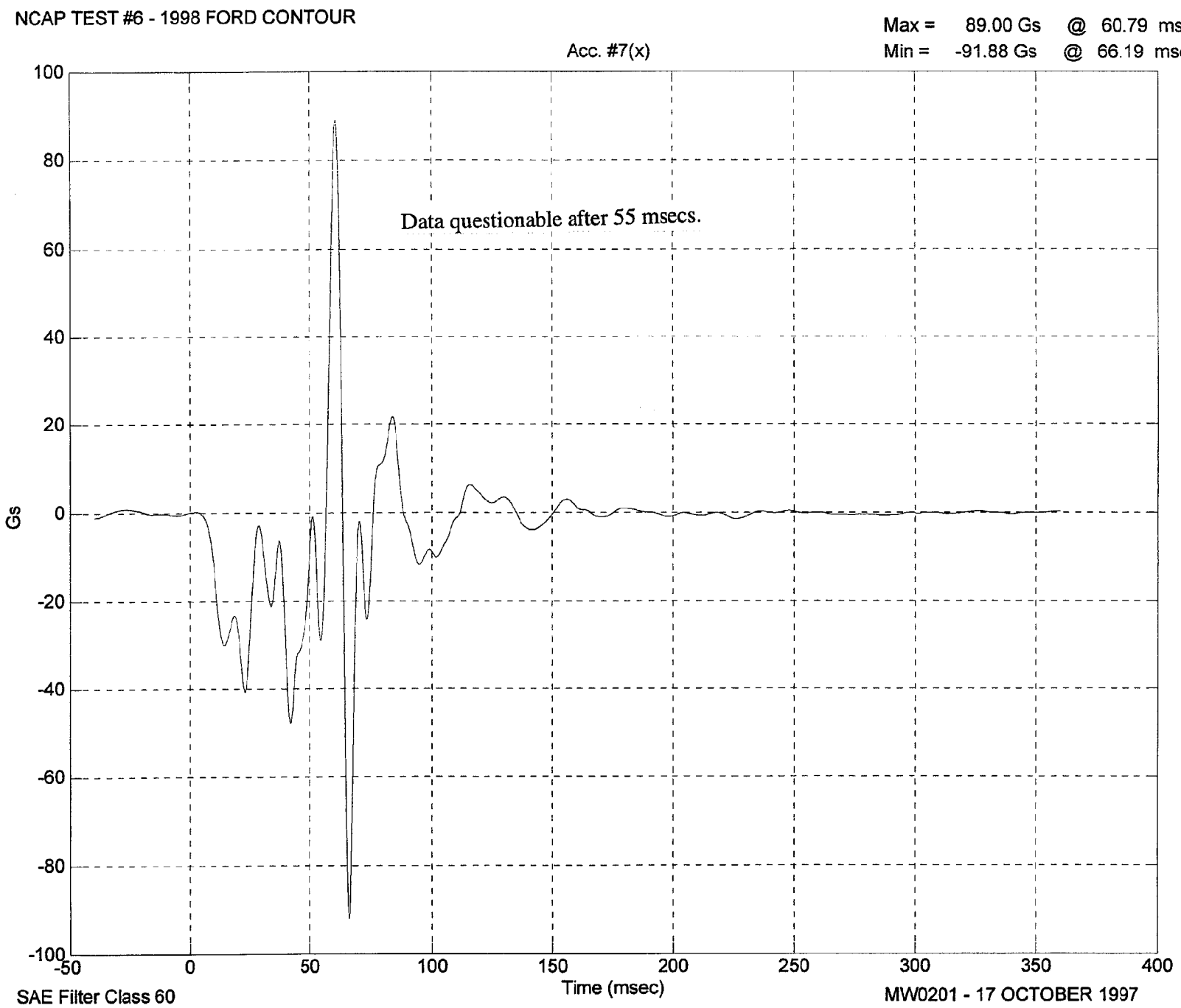

NCAP TEST #6 - 1998 FORD CONTOUR
Max = 36.19 Gs @ 65.59 msec
Min = -89.35 Gs @ 38.99 msec
Acc. #6(x)
40
20
0
-20
-40
-60
-80
-100
Gs
-50
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 60
MW0201 - 17 OCTOBER 1997


NCAP TEST #6 - 1998 FORD CONTOUR
1st Integral Acc. #6(x)
Max = 56.34 kph @ 1.30 msec
Min = -6.84 kph @ 53.89 msec
60
50
40
30
20
10
0
-10
kph
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997

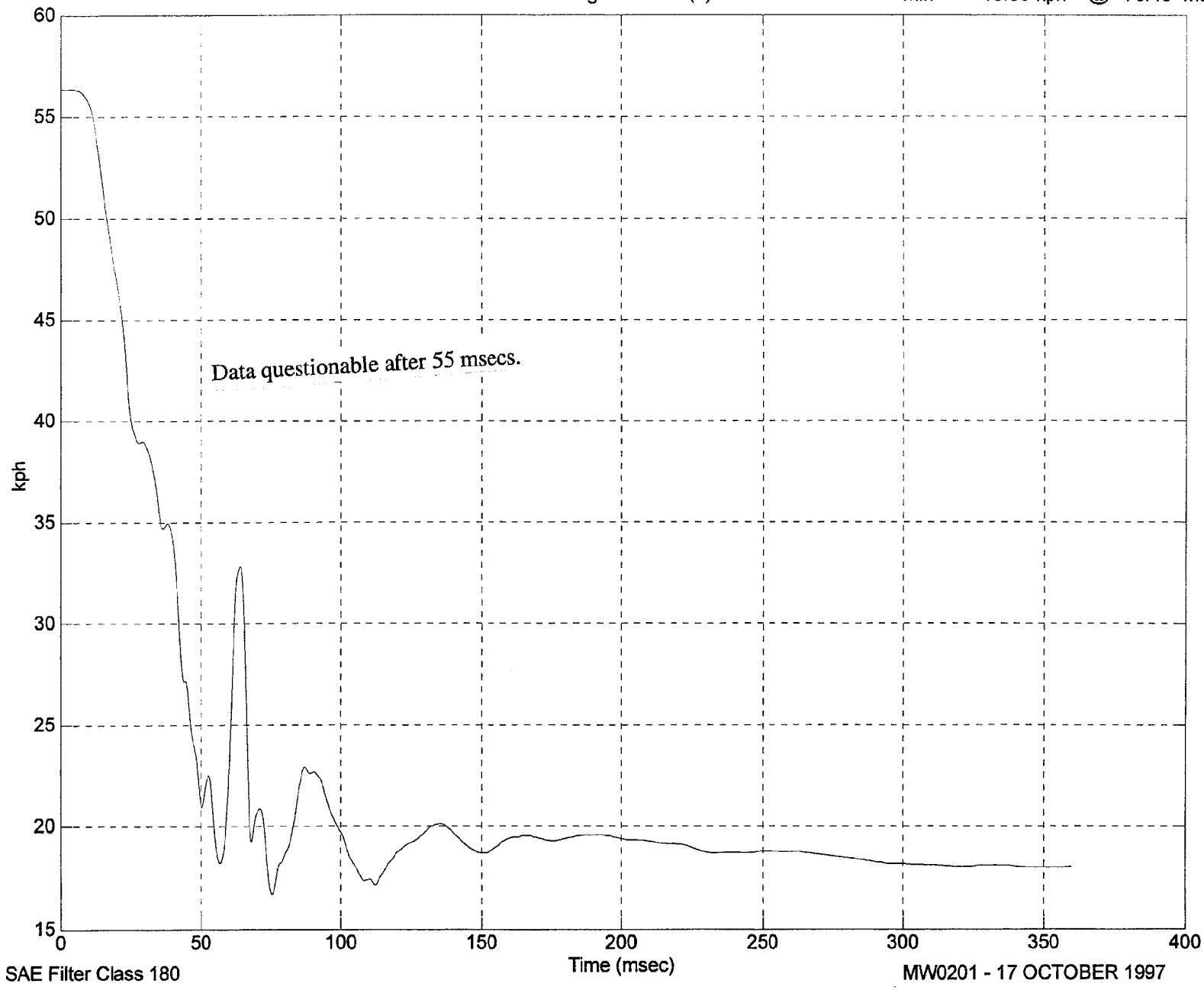
NCAP TEST #6 - 1998 FORD CONTOUR




NCAP TEST #6 - 1998 FORD CONTOUR
Max = 89.00 Gs @ 60.79 msec
Min = -91.88 Gs @ 66.19 msec
Acc. #7(x)
Data questionable after 55 msecs.
Gs
Time (msec)
SAE Filter Class 60
MW0201 - 17 OCTOBER 1997

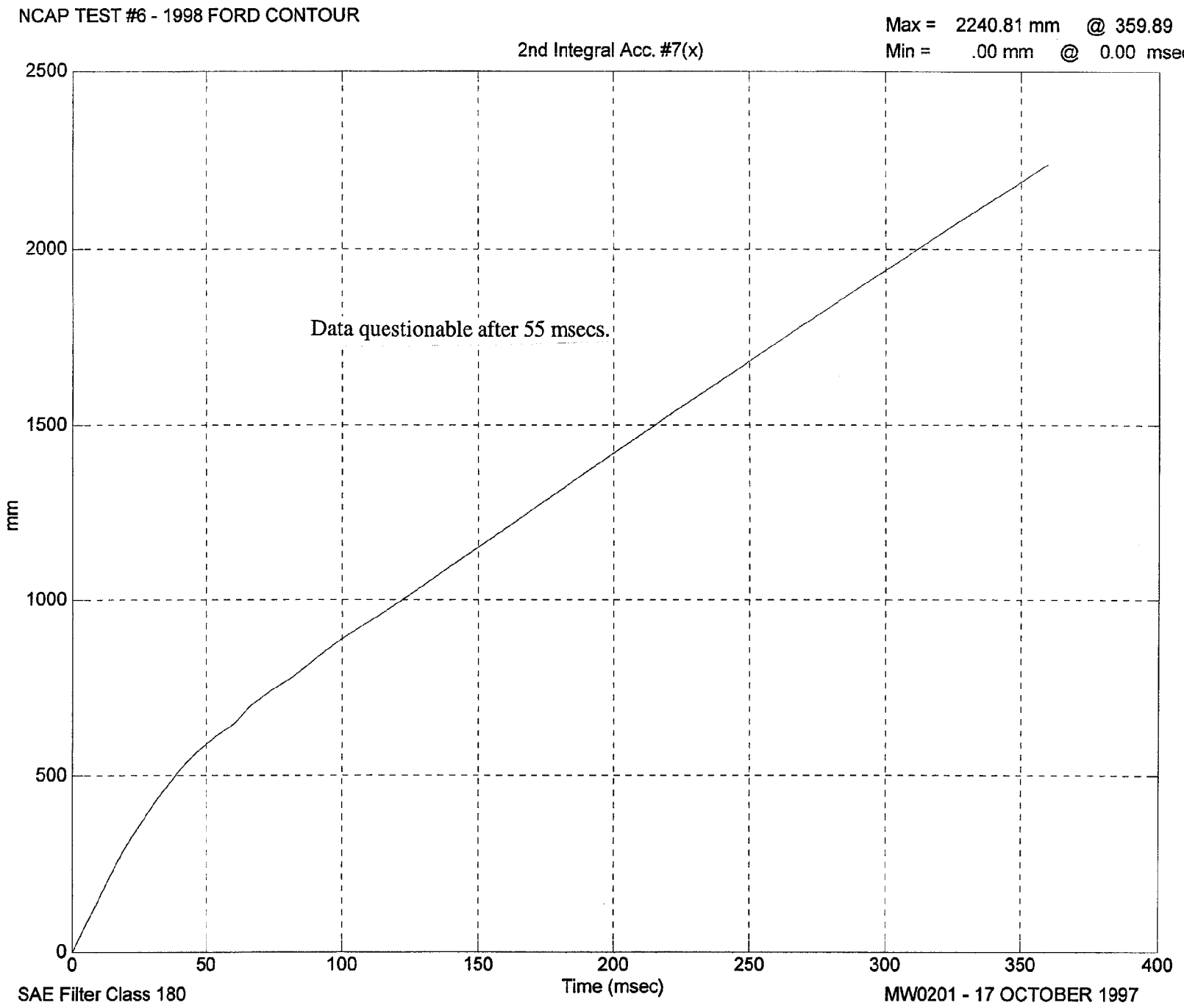
NCAP TEST #6 - 1998 FORD CONTOUR

Max = 56.34 kph @ 4.00 msec
Min = 16.68 kph @ 75.40 msec

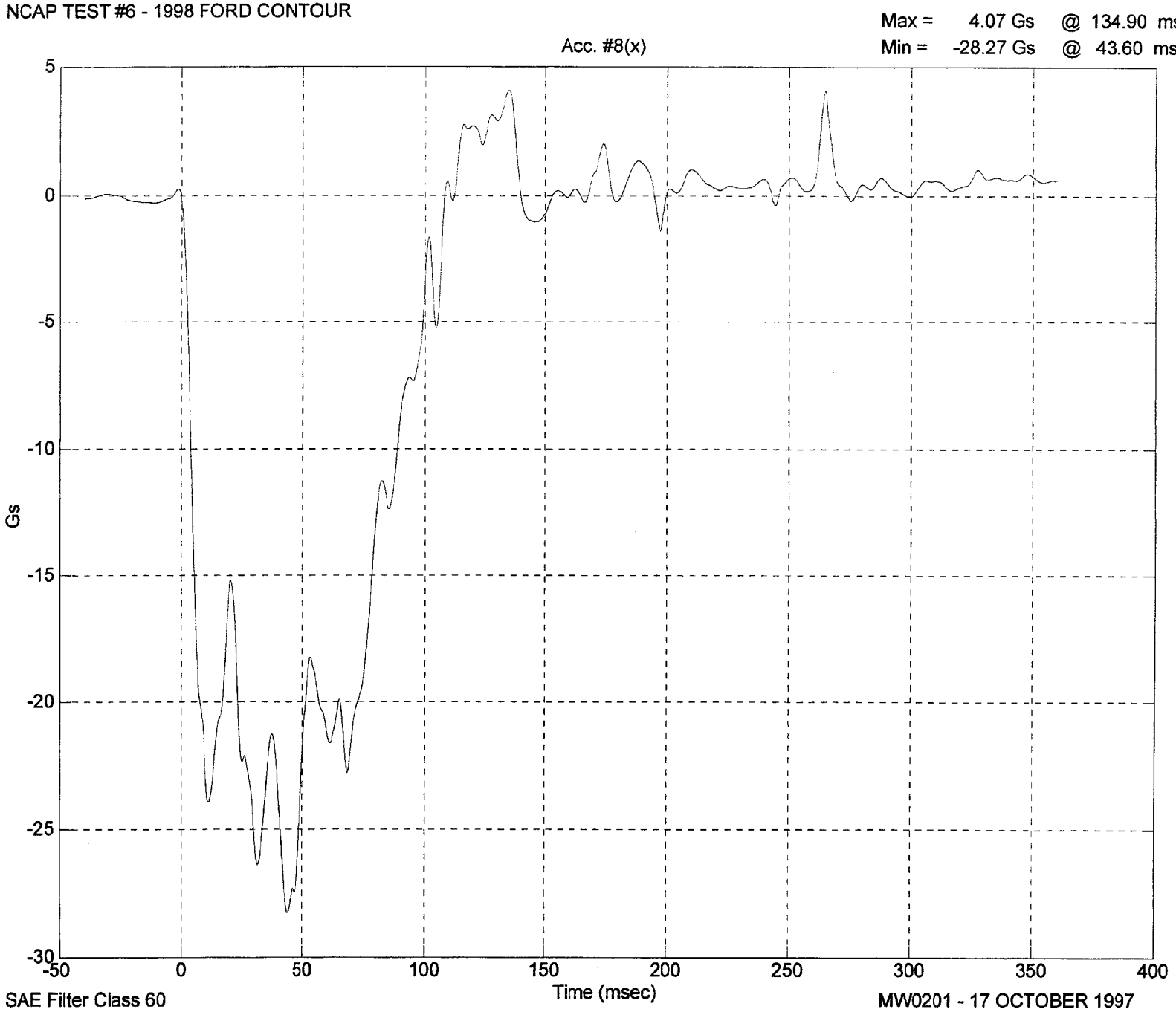


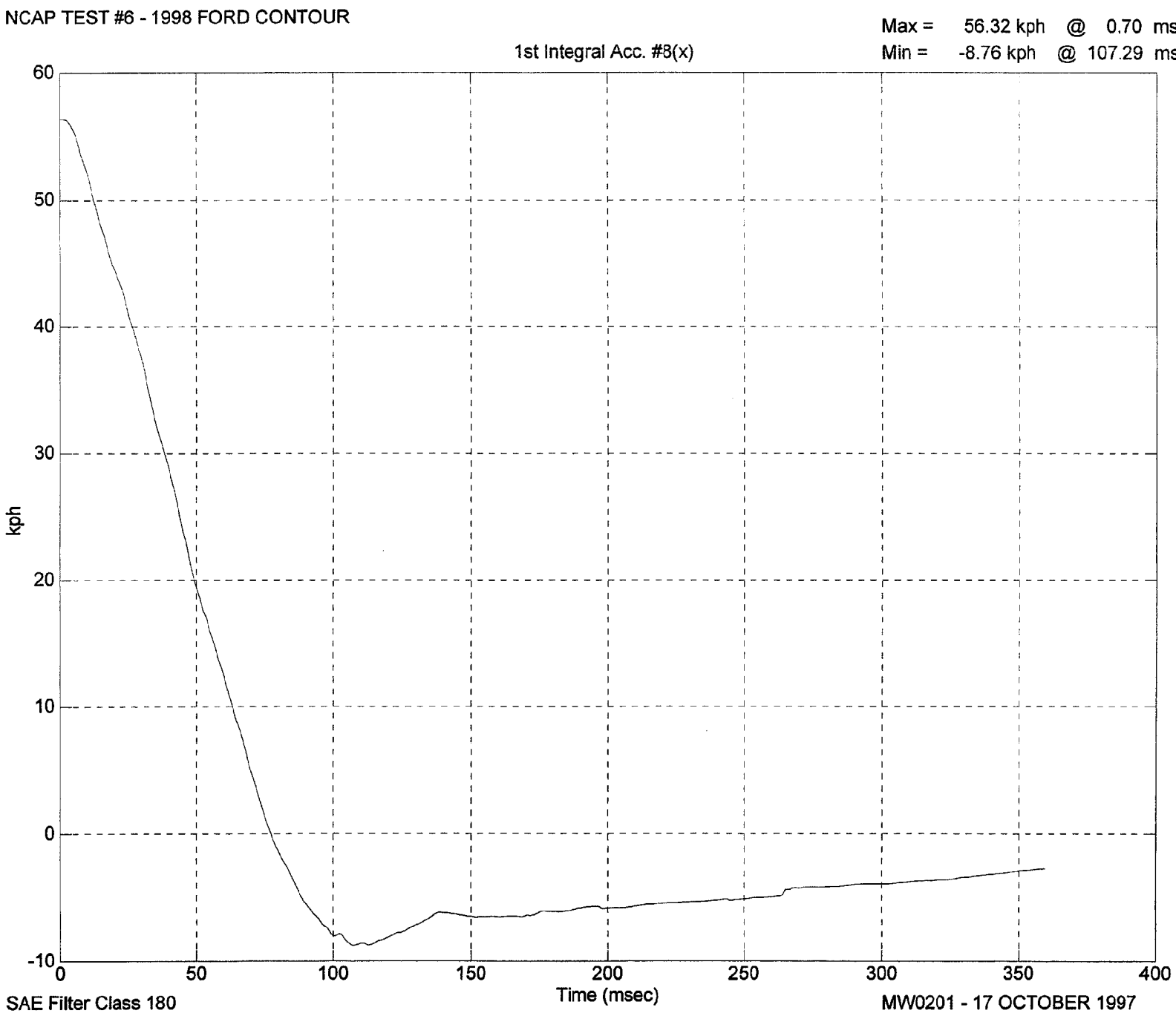
SAE Filter Class 180

MW0201 - 17 OCTOBER 1997

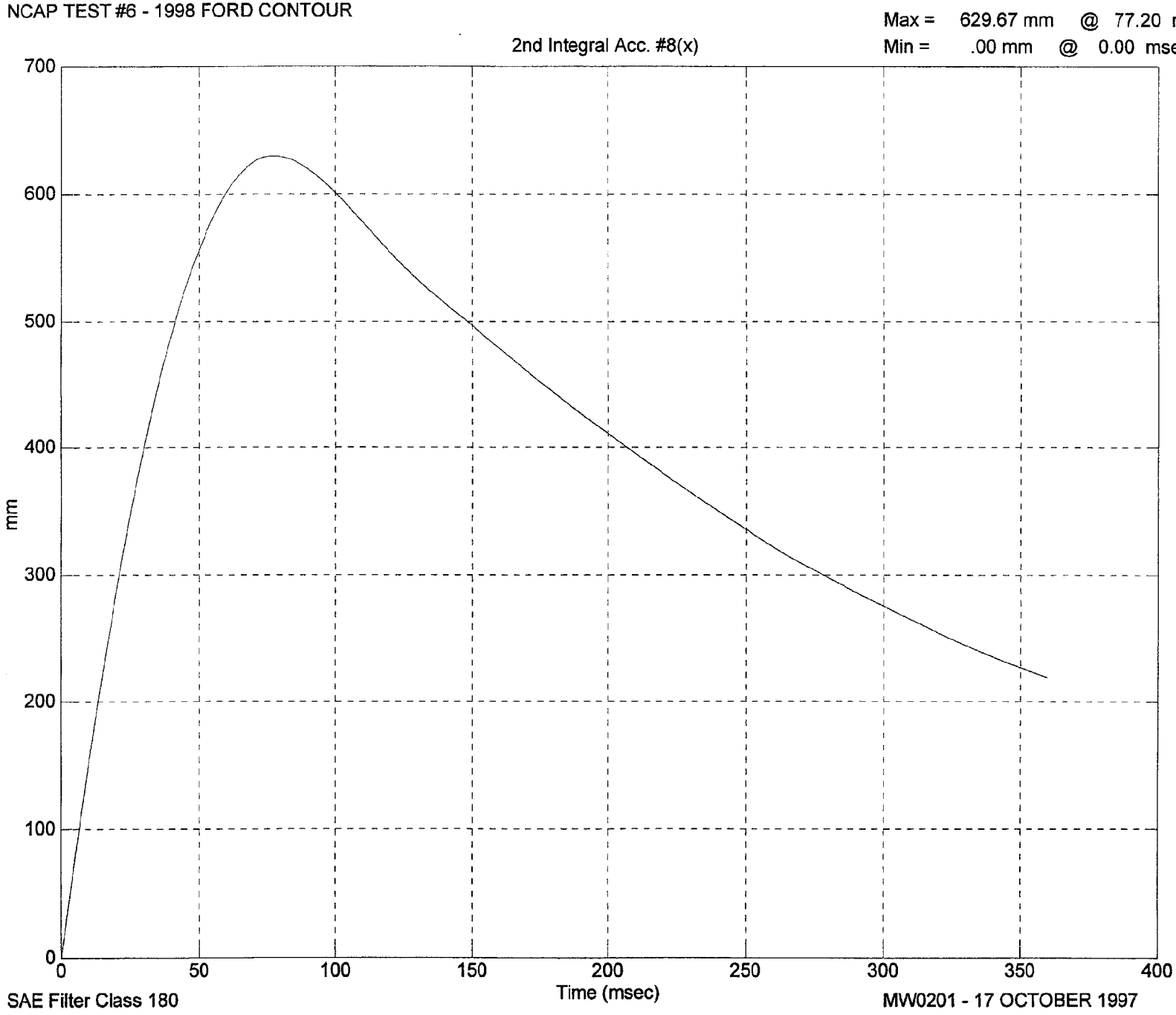

NCAP TEST #6 - 1998 FORD CONTOUR
2nd Integral Acc. #7(x)
Max = 2240.81 mm @ 359.89 msec
Min = .00 mm @ 0.00 msec
Data questionable after 55 msecs.
mm
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR



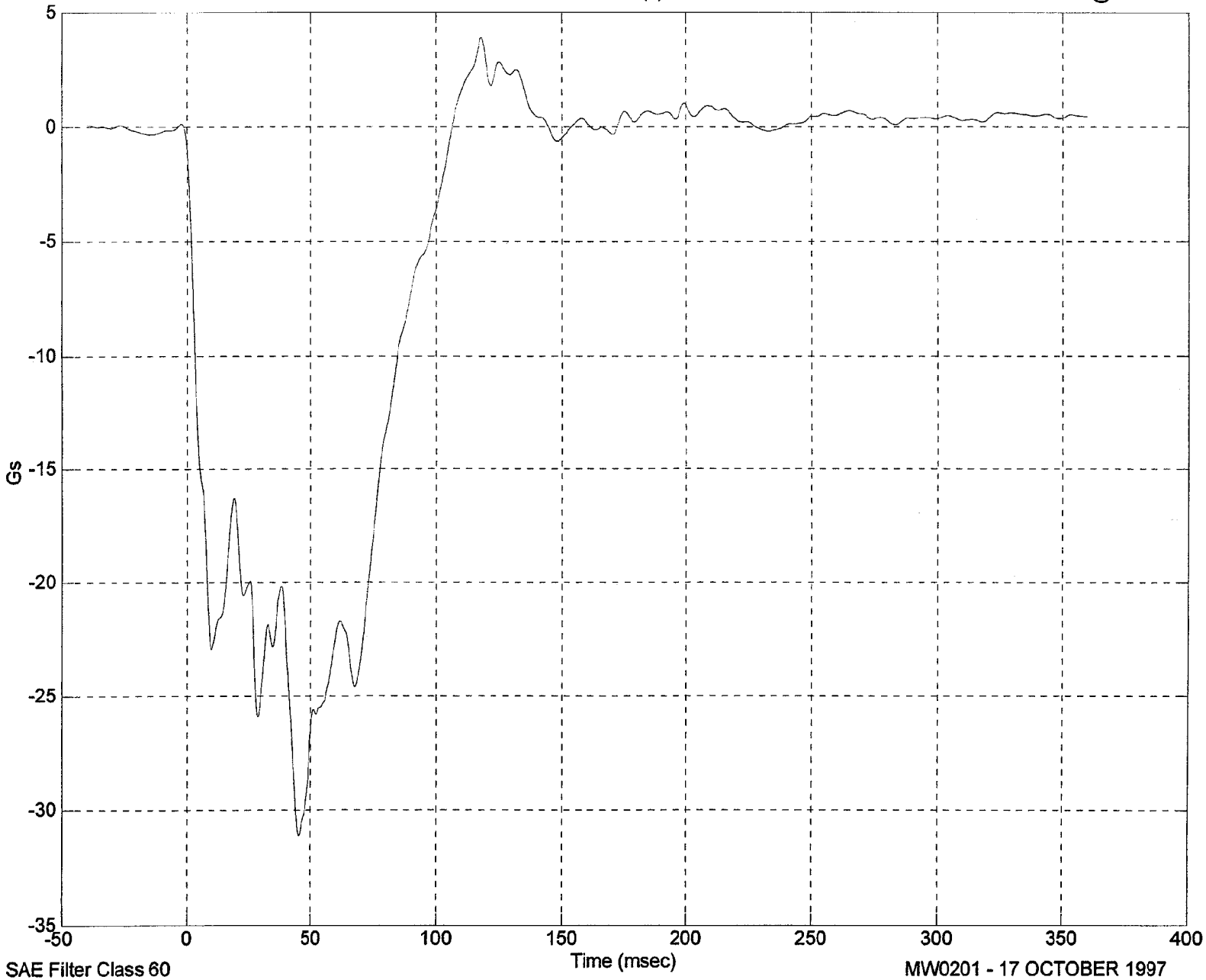

NCAP TEST #6 - 1998 FORD CONTOUR
1st Integral Acc. #8(x)
Max = 56.32 kph @ 0.70 msec
Min = -8.76 kph @ 107.29 msec
60
50
40
30
20
10
0
-10
kph
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR



NCAP TEST #6 - 1998 FORD CONTOUR

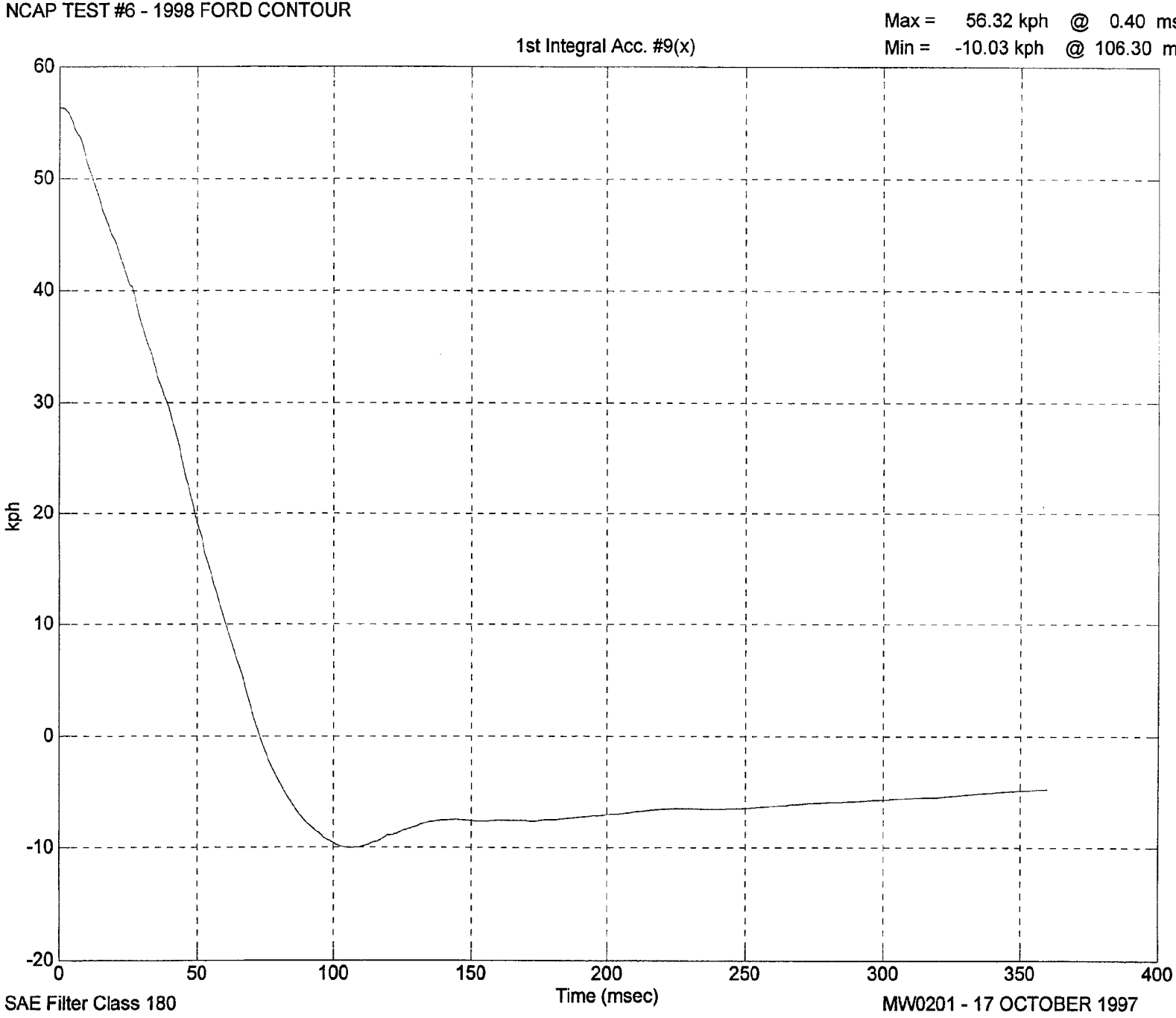
Max = 3.89 Gs @ 117.40 msec
Min = -31.10 Gs @ 44.90 msec

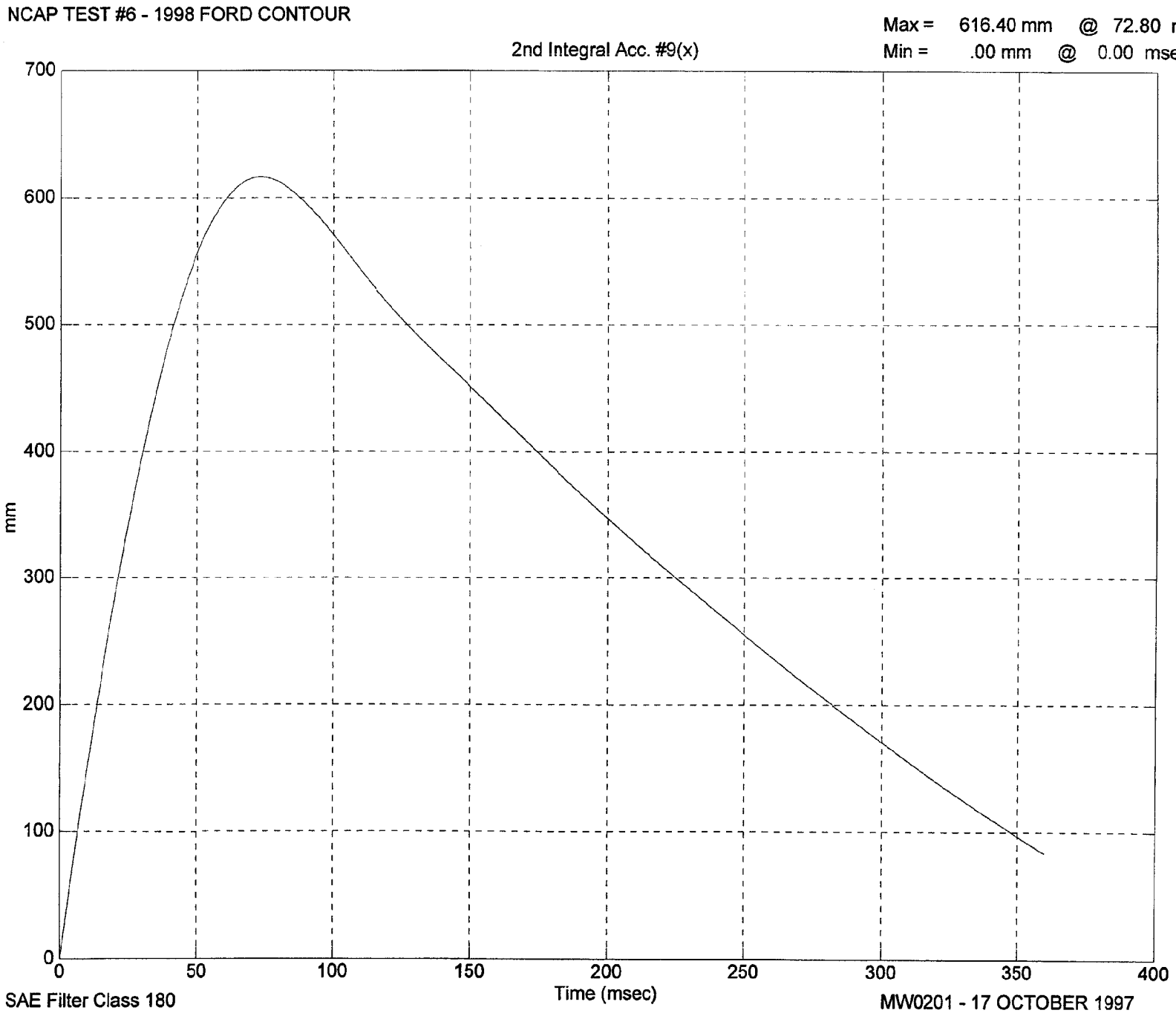


SAE Filter Class 60

MW0201 - 17 OCTOBER 1997

NCAP TEST #6 - 1998 FORD CONTOUR




NCAP TEST #6 - 1998 FORD CONTOUR
2nd Integral Acc. #9(x)
Max = 616.40 mm @ 72.80 msec
Min = .00 mm @ 0.00 msec
700
600
500
400
300
200
100
0
mm
0
50
100
150
200
250
300
350
400
Time (msec)
SAE Filter Class 180
MW0201 - 17 OCTOBER 1997

Appendix C

PART 572B/E DUMMY CONFIGURATION

AND PERFORMANCE VERIFICATION DATA SHEETS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of Calspan SRL Corporation. A summary of the test results, and Part 572 specifications are included in this Appendix.

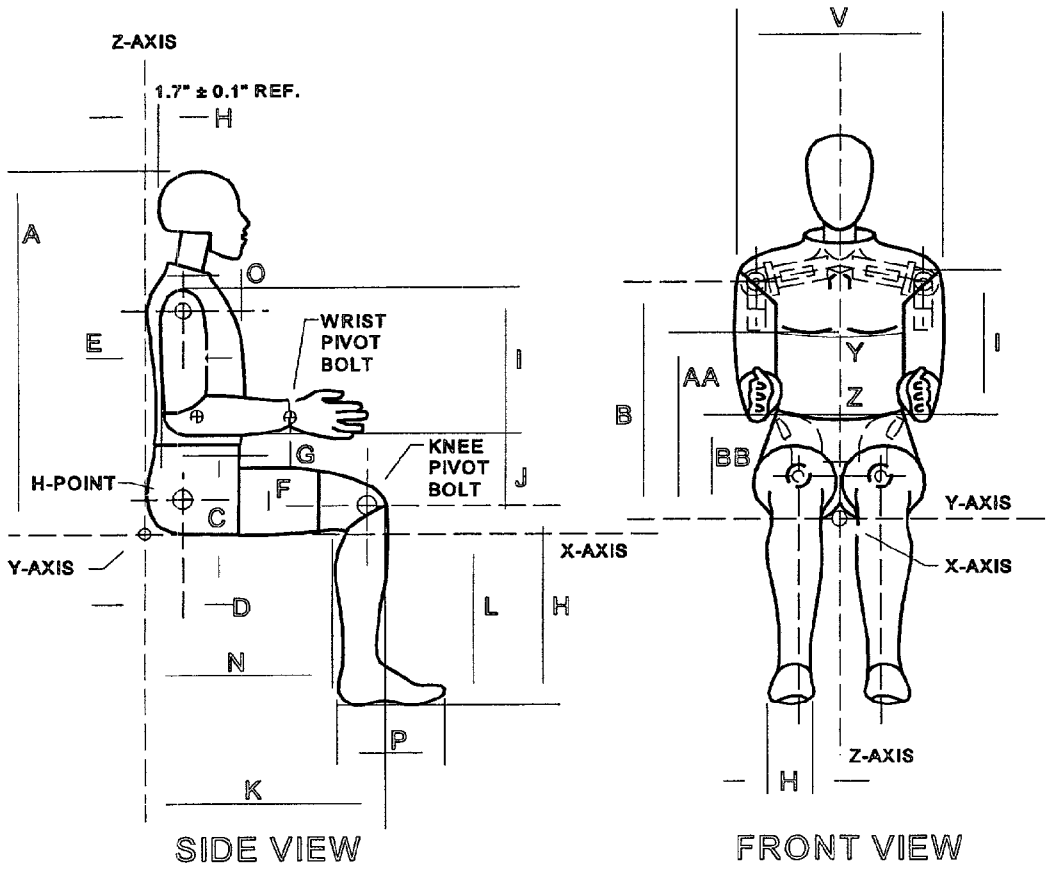
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	245	10/8/97
#2/Right Front Passenger	064	10/1/97

Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Indicant Testing Final Report No. 6525-V-1.

EXTERNAL DIMENSIONS SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude. (REF: S572.31(A)(6))

PART 572E
HEAD DROP TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	10/06/97
Workfile	245497.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	73
Relative Humidity	10% - 70%	33
Peak Resultant Acceleration	225-275 G's	242.5
Peak Lateral Acceleration	15 G's Max	2.8
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	10/07/97
Workfile	245497.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71
Relative Humidity		10% - 70%	42
Impact Velocity		22.60 - 23.40 Ft/s	23.17
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.47
	20 ms	17.60 - 22.60 G's	19.71
	30 ms	12.50 - 18.50 G's	15.25
Max Pendulum G's Above 30 ms		29 G's Max	15.25
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	40.25
D Plane Rotation	Max	64 - 78 Deg	69.63
	Time	57 - 64 ms	62.13
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	71.57
	Time	47 - 58 ms	54.75
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	123.13
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.25

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	10/07/97
Workfile	245497.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71
Relative Humidity		10% - 70%	33
Impact Velocity		19.50 - 20.30 Ft/s	19.65
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.11
	20 ms	14.00 - 19.00 G's	17.35
	30 ms	11.00 - 16.00 G's	14.26
Max Pendulum G's Above 30 ms		22 G's Max	14.26
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	42.88
D Plane Rotation	Max	81 - 106 Deg	96.09
	Time	72 - 82 ms	74.13
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-50.48
	Time	65 - 79 ms	69.75
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	151.75
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	133.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	10/08/97
Workfile	245497.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	71
Relative Humidity	10% - 70%	33
Pendulum Velocity	21.6 - 22.4 Ft/s	21.74
Maximun Deflection	2.50 - 2.86 in	2.52
Maximum Resistive Force	1160 - 1325 Lbs	1284.65
Internal Hysteresis	69 - 85 %	75.5

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	245
Calspan Sequential Test Number	4
Date	10/08/97
Workfile	245497

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	71
Relative Humidity	10% - 70%	33
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1113.0
RIGHT KNEE		
Temperature	66 - 78 Deg F	71
Relative Humidity	10% - 70%	33
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1160.0

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 245
Calspan Sequential Test Number 4
Date 10/08/97

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			71
Relative Humidity			33
Location for Chest Circumference	AA	16.9 -17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.0
Waist Circumference	Z	32.9 - 34.1 in	33.7
Chest Depth	O	8.4 - 9.0 in	8.4
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.9
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.3
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number	064
Calspan Sequential Test Number	3
Date	09/30/97
Workfile	064397.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	30
Peak Resultant Acceleration	225-275 G's	273.5
Peak Lateral Acceleration	15 G's Max	13.9
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064
Calspan Sequential Test Number	3
Date	09/30/97
Workfile	064397.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	30
Impact Velocity		22.60 - 23.40 Ft/s	23.20
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.56
	20 ms	17.60 - 22.60 G's	19.16
	30 ms	12.50 - 18.50 G's	14.63
Max Pendulum G's Above 30 ms		29 G's Max	14.63
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	41.00
D Plane Rotation	Max	64 - 78 Deg	66.48
	Time	57 - 64 ms	60.13
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	77.06
	Time	47 - 58 ms	53.75
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	114.88
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	101.25

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064
Calspan Sequential Test Number	3
Date	09/30/97
Workfile	064397.nxt

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	30
Impact Velocity		19.50 - 20.30 Ft/s	19.70
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.00
	20 ms	14.00 - 19.00 G's	15.84
	30 ms	11.00 - 16.00 G's	12.93
Max Pendulum G's Above 30 ms		22 G's Max	12.93
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	43.13
D Plane Rotation	Max	81 - 106 Deg	93.65
	Time	72 - 82 ms	74.38
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-53.68
	Time	65 - 79 ms	71.63
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	147.88
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	143.38

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	064
Calspan Sequential Test Number	3
Date	10/01/97
Workfile	064397.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	30
Pendulum Velocity	21.6 - 22.4 Ft/s	21.63
Maximun Deflection	2.50 - 2.86 in	2.51
Maximum Resistive Force	1160 - 1325 Lbs	1323.21
Internal Hysteresis	69 - 85 %	73.1

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	064
Calspan Sequential Test Number	3
Date	10/02/97
Workfile	064397

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	30
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1124.0
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	30
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1093.0

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Calspan Sequential Test Number 3
Date 10/01/97

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			30
Location for Chest Circumference	AA	16.9 -17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.8
Waist Circumference	Z	32.9 - 34.1 in	33.4
Chest Depth	O	8.4 - 9.0 in	8.6
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.3
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Appendix D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 245)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	ADL98	ENDEVCO	8/97	2/98
	Y	AE8K0	ENDEVCO	8/97	2/98
	Z	ADMB6	ENDEVCO	8/97	2/98
Chest	X	A26A	ENDEVCO	8/97	2/98
	Y	A27A	ENDEVCO	8/97	2/98
	Z	A51A	ENDEVCO	8/97	2/98
Right Femur Load Cell		951	GSE	9/97	3/98
Left Femur Load Cell		952	GSE	9/97	3/98
Neck Load Cell	X	440	DENTON	8/97	2/98
	Y	440	DENTON	8/97	2/98
	Z	440	DENTON	8/97	2/98
Neck Moment	X	440	DENTON	8/97	2/98
	Y	440	DENTON	8/97	2/98
	Z	440	DENTON	8/97	2/98
Chest Deflection Gauge		245	HUMANOID	10/97	4/98
Hybrid III Use Only					
Lap Belt Load Cells		706	LEBOW	6/97	12/97
Shoulder Belt Load Cells		707	LEBOW	6/97	12/97
Spool-Out Potentiometer		-	MAGNETEK	-	-
Belt Stretch Transducer		E1	CALSPAN	9/97	3/98

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	AP1A0	ENDEVCO	8/97	2/98
	Y (R)	AC8F6	ENDEVCO	8/97	2/98
	Z (R)	ACCW0	ENDEVCO	8/97	2/98
Chest	X (R)	AHRC9	ENDEVCO	8/97	2/98
	Y (R)	AC7W8	ENDEVCO	8/97	2/98
	Z (R)	ACC06	ENDEVCO	8/97	2/98
Pelvic	X	AL6N5	ENDEVCO	8/97	2/98
	Y	AL6R7	ENDEVCO	8/97	2/98
	Z	A12C	ENDEVCO	8/97	2/98
Left Upper Tibia	Mx	038	DENTON	4/97	10/97
Left Upper Tibia	My	038	DENTON	4/97	10/97
Left Lower Tibia	Fy	032	DENTON	4/97	10/97
Left Lower Tibia	Fz	032	DENTON	4/97	10/97
Left Lower Tibia	Mx	032	DENTON	4/97	10/97
Right Upper Tibia	Mx	045	DENTON	4/97	10/97
Right Upper Tibia	My	045	DENTON	4/97	10/97
Right Lower Tibia	Fy	041	DENTON	4/97	10/97
Right Lower Tibia	Fz	041	DENTON	4/97	10/97
Right Lower Tibia	Mx	041	DENTON	4/97	10/97

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacture	Calibration	
				Last	Next
Left Foot Front	Z	A14150	ENDEVCO	9/97	3/98
Left Foot Rear	X	A13929	ENDEVCO	9/97	3/98
Left Foot Rear	Z	A14058	ENDEVCO	9/97	3/98
Right Foot Front	Z	A14126	ENDEVCO	9/97	3/98
Right Foot Rear	X	A14181	ENDEVCO	9/97	3/98
Right Foot Rear	Z	A14124	ENDEVCO	9/97	3/98

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	AF5B3	ENDEVCO	8/97	2/98
	Y	AF5F7	ENDEVCO	8/97	2/98
	Z	AF5E1	ENDEVCO	8/97	2/98
Chest	X	A08A	ENDEVCO	8/97	2/98
	Y	ADL42	ENDEVCO	8/97	2/98
	Z	A28F	ENDEVCO	8/97	2/98
Right Femur Load Cell		231	GSE	9/97	3/98
Left Femur Load Cell		232	GSE	9/97	3/98
Neck Load Cell	X	076	DENTON	10/97	4/98
	Y	076	DENTON	10/97	4/98
	Z	076	DENTON	10/97	4/98
Neck Moment	X	076	DENTON	10/97	4/98
	Y	076	DENTON	10/97	4/98
	Z	076	DENTON	10/97	4/98
Chest Deflection Gauge		064	HUMANOID	10/97	4/98
Hybrid III Use Only					
Lap Belt Load Cells		635	LEBOW	6/97	12/97
Shoulder Belt Load Cells		711	LEBOW	6/97	12/97
Spool-Out Potentiometer		-	MAGNETEK	-	-
Belt Stretch Transducer		E2	CALSPAN	9/97	3/98

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	J17965	ENDEVCO	8/97	2/98
	Y (R)	J18649	ENDEVCO	8/97	2/98
	Z (R)	J18400	ENDEVCO	8/97	2/98
Chest	X (R)	B11407	ENDEVCO	6/97	12/97
	Y (R)	B11073	ENDEVCO	6/97	12/97
	Z (R)	B11408	ENDEVCO	6/97	12/97
Pelvic	X	C14953	ENDEVCO	8/97	2/98
	Y	C14966	ENDEVCO	8/97	2/98
	Z	C14968	ENDEVCO	8/97	2/98
Left Upper Tibia	Mx	015	DENTON	4/97	10/97
Left Upper Tibia	My	015	DENTON	4/97	10/97
Left Lower Tibia	Fy	011	DENTON	4/97	10/97
Left Lower Tibia	Fz	011	DENTON	4/97	10/97
Left Lower Tibia	Mx	011	DENTON	4/97	10/97
Right Upper Tibia	Mx	016	DENTON	4/97	10/97
Right Upper Tibia	My	016	DENTON	4/97	10/97
Right Lower Tibia	Fy	012	DENTON	4/97	10/97
Right Lower Tibia	Fz	012	DENTON	4/97	10/97
Right Lower Tibia	Mx	012	DENTON	4/97	10/97

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacture	Calibration	
				Last	Next
Left Foot Front	Z	A12268	ENDEVCO	9/97	3/98
Left Foot Rear	X	A13506	ENDEVCO	9/97	3/98
Left Foot Rear	Z	A13011	ENDEVCO	9/97	3/98
Right Foot Front	Z	AKD92	ENDEVCO	8/97	2/98
Right Foot Rear	X	AEWK1	ENDEVCO	8/97	2/98
Right Foot Rear	Z	J18418	ENDEVCO	8/97	2/98

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	D36	ICS	9/97	3/98
Right Rear Seat Crossmember	D74	ICS	10/97	4/98
Top of Engine	D31	ICS	10/97	4/98
Bottom of Engine	Y18	ICS	10/97	4/98
Left Disc Brake Caliper	D32	CEC	9/97	3/98
Right Disc Brake Caliper	D75	CEC	10/97	4/98
Instrument Panel	A129	CEC	5/97	11/97
Left Seat Rear Crossmember (R)	D22	ICS	10/97	4/98
Right Seat Rear Crossmember (R)	Y112	ICS	9/97	3/98