REPORT NUMBER: 5FEM-MGA-2001-022

35 MPH FRONTAL BARRIER IMPACT TEST

Daimler Chrysler Corporation
2001 Dodge Grand Caravan
NHTSA NUMBER: M10317

PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105

April 4, 2001

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
400 SEVENTH STREET, SW, ROOM 5311
WASHINGTON, D.C. 20590

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FINAL REPORT ACCEPTED BY:

_____
Manager

_____
Date of Acceptance

_____
COTR, Frontal Barrier Impact Program

_____
Date of Acceptance

Technical Report Documentation Page

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16. Abstract

A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2001 Dodge Grand Caravan at MGA Research Corporation on April 4, 2001. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity was 56.3 km/h. The ambient temperature at the barrier face at the time of impact was 21 degrees Celsius. The vehicle's maximum post test static crush was 562 mm located at the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and a second generation supplemental airbag in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:

Measurement Description	Units	Threshold	Driver ATD	Pass. ATD
Head Injury Criteria (HIC_{15})	N/A	700	345	430
N_{te}	N/A	1.0	0.2	0.7
N_{tf}	N/A	1.0	1.7	0.3
N_{ce}	N/A	1.0	0.0	0.2
N_{cf}	N/A	1.0	0.4	0.0
Neck Tension	Newtons	2620	779.3	107.2
Neck Compression	Newtons	2520	2172.1	1452.5
3 msec CLIP	N/A	60	63	57
Chest Deflection	mm	52	28	20
Left Femur	Newtons	6805	2677	3815
Right Femur	Newtons	6805	2060	2417

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SECTION 1

PURPOSE AND TEST PROCEDURE

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier crashworthiness evaluation program is sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract Number DTNH22-01-D-12005. The purpose of this test is to obtain vehicle crashworthiness, occupant restraint system performance, lower leg data, and child seat research data for a frontal barrier impact. The impact velocity used in this test is in excess of the current 30 mph (48.3 km/h) FMVSS 208/212/219/301 requirements.

1.2 TEST PROCEDURE

This 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Test Procedure, dated December 1999 and the corresponding MGA Research Corporation Test Procedure NHTSA3, dated January 5, 2001. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301, "Fuel System Integrity" performance. Procedures for receiving, inspection, and reporting of test results are described in the test procedures and are not repeated in this report.

The test was conducted at MGA Research Corporation on April 4, 2001 at a speed of 56.3 km/h. The test vehicle was instrumented with nine (9) accelerometers to measure longitudinal axis accelerations. The driver's and passenger's restraint systems were instrumented with two (2) seat belt load cells to measure lap belt tension. The specified impact velocity range was 55.5 to 57.1 km/h. The frontal barrier impact event was documented by one (1) real-time panning motion picture camera and sixteen (16) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The test vehicle contained four (4) anthropomorphic test devices (ATDs). Two (2) part 572O 5th percentile female ATDs and two (2) part 572P 3 year old ATDs. Both adult ATDs were instrumented with head, chest, and pelvic tri-axial accelerometers, left and right femur load cells, upper and lower tibia sensors, and foot accelerometers. In addition, chest displacement and upper neck six-axis force and moment sensors were utilized. The adult ATDs were positioned in the front outboard seating positions according to the dummy placement procedures specified in the Laboratory Indicant Test Procedure. Both child ATDs were instrumented with head, chest, and pelvic tri-axial accelerometers, and upper and lower neck load cells. The child ATDs were positioned according to the child seat manufacturer’s instructions. One hundred forty-one (141) channels of data were recorded with an EME on-board data acquisition system. The data was digitally sampled at 10,000 samples per second and processed per section IP11 of the Laboratory Test Procedure.

The driver (Serial No. 273) and the right-front passenger (Serial No. 288) were calibrated one test prior to this test. FMVSS 208 "Occupant Crash Protection" injury criteria were not exceeded by the passenger ATD during this frontal barrier impact test. The driver exceeded chest and neck injury criteria.

1.3 SUMMARY OF FRONTAL IMPACT TEST

A rigid load cell barrier was impacted by a 2001 Dodge Grand Caravan at a velocity of 56.3 km/h. The test vehicle weight was kilograms with two (2) part 572O 5th percentile female ATDs and two (2) part 572P 3 year old ATDs. Six (6) load cell barrier data channels were obtained in conducting the test. The test vehicle is equipped with a longitudinally mounted 3.3 -liter, 6 -cylinder engine and an automatic transmission.

The occupant injury criteria summary is as follows:

	Requirement	Driver	Passenger
Head Injury Criteria (HIC_{15})	700	345	430
N_{te}	1.0	0.2	0.7
N_{tf}	1.0	1.7	0.3
N_{ce}	1.0	0.0	0.2
N_{cf}	1.0	0.4	0.0
Neck Tension (N)	2620	779.3	107.2
Neck Compression (N)	2520	2172.1	1452.5
3 msec CLIP	60	63	57
Chest Deflection (mm)	52	28	20
Left Femur (N)	6805	2677	3815
Right Femur (N)	6805	2060	2417

There was 100 percent windshield retention (minimum 50 percent required for passive restraint systems). No intrusion occurred into the protected or unprotected zone of the windshield. No Stoddard Solvent leakage occurred after impact or during any phase of the rollover.

The test vehicle sustained a maximum static crush of 562 mm located at the vehicle centerline. Both the driver and passenger side doors opened without the aid of tools.

1.4 GENERAL COMMENTS

The 2001 Dodge Grand Caravan passed the requirements of FMVSS 208, FMVSS 212, FMVSS 219, and FMVSS 301-75. Data pertaining to these standards are presented in the data sheets.

The vehicle, occupant, camera, and measurement data are presented in Section 2. Appendix A contains the still photograph prints. Appendix B Contains the dummy and vehicle response data traces. Appendix C contains the dummy calibration data. Appendix D contains the instrumentation calibration data and Appendix E contains the owner's manual instructions for the occupant seating and restraint systems and Appendix F contains the child data and photos.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Old Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressure	lbf/in^2	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	=(tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

*Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1

CRASH TEST SUMMARY

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.3
Test Weight	kg	2122.8
Impact Angle	degrees	90
Average Rebound	mm	500
Maximum Static Crush	mm	562

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	yes	yes
Rear Door Opening	yes	yes
Seat Track Shift (mm)	0	0
Seat Back Failure	none	none

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 5th / 273	HIII 5th / 288
Head Contact	airbag, headrest	airbag, headrest
Chest Contact	airbag	airbag
Abdomen Contact	no contact	no contact
Left Knee Contact	knee bolster, steering column	glovebox
Right Knee Contact	knee bolster, steering column	glovebox

16mm MOVIE COVERAGE

High Speed	16
Real Time	1
Total	17

Driver ATD Sensors	42
Passenger ATD Sensors	42
Belt Assessment Sensors	2
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	6
Total	101

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

TEST VEHICLE INFORMATION

Manufacturer	DaimlerChrysler
Model	Grand Caravan
Body Style	Minivan
NHTSA No.	M10317
VIN	2B8GP44361R223944
Color	Inferno Red
Delivery Date	2/27/01
Odometer Reading (mile)	63
Dealer	Wilde Dodge
Transmission	Automatic
Final Drive	Front
Number of Cylinders	6
Engine Displacement (L)	3.3
Engine Placement	lateral

TEST VEHICLE OPTIONS

Driver Airbag	yes
Passenger Airbag	yes
Power Windows	yes
Power Steering	yes
Power Door Locks	yes
Tilt Wheel	yes
Air Conditioning	yes
Power Brakes	yes
Disc Brakes, Front	yes
Disc Brakes, Rear	no
Anti-lock Brakes	yes
AM/FM/Cassette	yes
Anti-theft System	yes
Cruise Control	yes

DATA FROM CERTIFICATION LABEL

Manufactured By	DaimlerChrysler Corporation
Date of Manufacture	12/00

GVWR (kg)	2495
GAWR Front (kg)	1293
GAWR Rear (kg)	1293

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	248	248
Cold Pressure (kPa)	248	248
Recommended Tire Size	P215/65R16	P215/65R16
Tire Size on Vehicle	P215/65R16	P215/65R16
Tire Manufacturer	Michelin	Michelin

Measured Parameter	Front	Rear	Third	Total
Type of Seats	bucket	bucket	bench	
Number of Occupants	2	2	3	7
Capacity Wt. (VCW) (kg)				521.6
Cargo Weight (RCLW) (kg)				45.4

DATA SHEET NO. 2...(continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	567.5	416.9		601.5	486.7	
Right	kg	530.7	414.6		562.9	471.1	
Ratio	%	56.9	43.1		54.9	45.1	
Totals	kg	1098.2	831.5	1929.7	1164.4	958.4	2122.8

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1929.7
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	45.4
Calculated Vehicle Target Weight (TVTW)	kg	2131.1

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	767	763	774	777	1306
As Tested	mm	761	760	737	745	1368
Post Test	mm	794	823	751	749	

Vehicle Wheelbase (mm): 3030

Weight of Ballast secured in cargo area (kg): 39.0

Vehicle Components Removed: Rear bumper, spare tire, jack, and third seat

Ballast weight does not include cameras, instrumentation, and brake abort system.

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 75.7

Usable Capacity Figure Furnished by COTR (L): 75.7

Actual Test Volume (L): 70.4

Test Fluid Type: Stoddard Solvent ; Specific Gravity: 0.77

Is Vehicle Fuel Pump Electric or Mechanical?: Electric

If electric, does pump operate with ignition switch "ON" & engine "OFF"?: Yes

Fuel System Particulars: _____

DATA SHEET NO. 3

POST IMPACT DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.5 - 57.1	56.3
Trap No. 1 Entry Distance	mm	<1524	1300
Trap No. 1 Exit Distance	mm	<1524	300
Trap No. 2 Velocity (Redundant)	km/h	55.5 - 57.1	56.3
Trap No. 2 Entry Distance	mm	<1524	1425
Trap No. 2 Exit Distance	mm	<1524	425

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4775	4356	419
Center	mm	4935	4373	562
Right Side	mm	4779	4408	371

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	480
Center	mm	470
Right Side	mm	551
Average	mm	500

DATA SHEET NO. 4

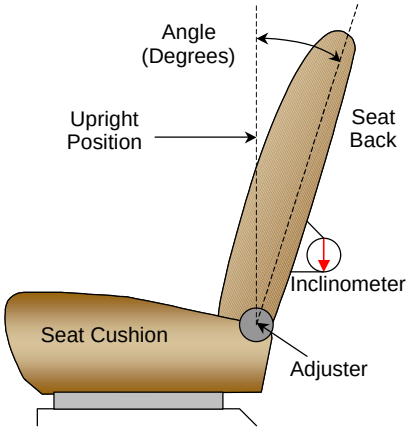
TEST VEHICLE INFORMATION

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

NORMAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned according to a draft procedure supplied to MGA by NHTSA.



FRONT SEAT ASSEMBLY

Driver seat back angle: 7.7 deg. on headrest post

Passenger seat back angle: 8.2 deg. on headrest post

SEAT FORE/AFT POSITIONS

Both driver and passenger seats have manual operated seats. The total travel on the driver is 220 mm and the passenger is 21 seat positions. The fore/aft position is set at the full forward position for both driver and passenger.

Driver seat fore/aft total travel: 220 mm

Passenger seat fore/aft total travel: 21 detents

Driver seat fore/aft position: Full forward

Passenger seat fore/aft position: Full forward

SEAT BELT UPPER ANCHORAGE

The test vehicle is equipped with adjustable anchorages for both the driver and passenger seat positions. The anchorages are placed in the full up position.

DATA SHEET NO. 4...(continued)

TEST VEHICLE INFORMATION

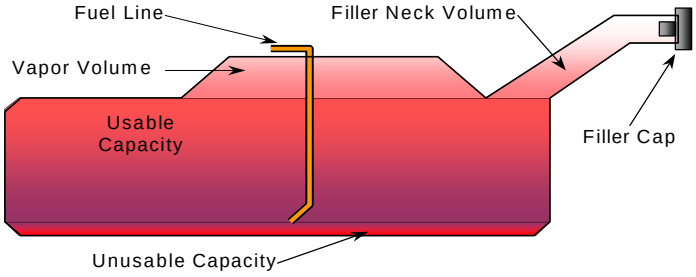
Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

FUEL TANK CAPACITY DATA

The "Usable Capacity" of the standard equipment fuel tank is:	75.7	liters
The "Usable Capacity" of any optional equipment fuel tank is:	N/A	liters
The "Usable Capacity" used for certification to FMVSS 301 requirements:	75.7	liters
Actual amount of Stoddard solvent added to vehicle for certification test:	70.4	liters

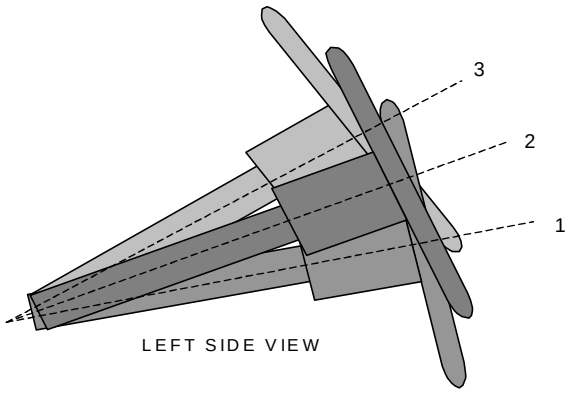
The test vehicle is equipped with an electric fuel pump. The fuel pump operates only when the engine is running. The fuel filler door is located on the left rear fender.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

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 motion. A metal plate is placed across the rim of the steering wheel, and inclinometer is placed onto the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

Lowermost, position 1:	18°
Geometric center, position 2:	25°
Uppermost, position 3:	36°

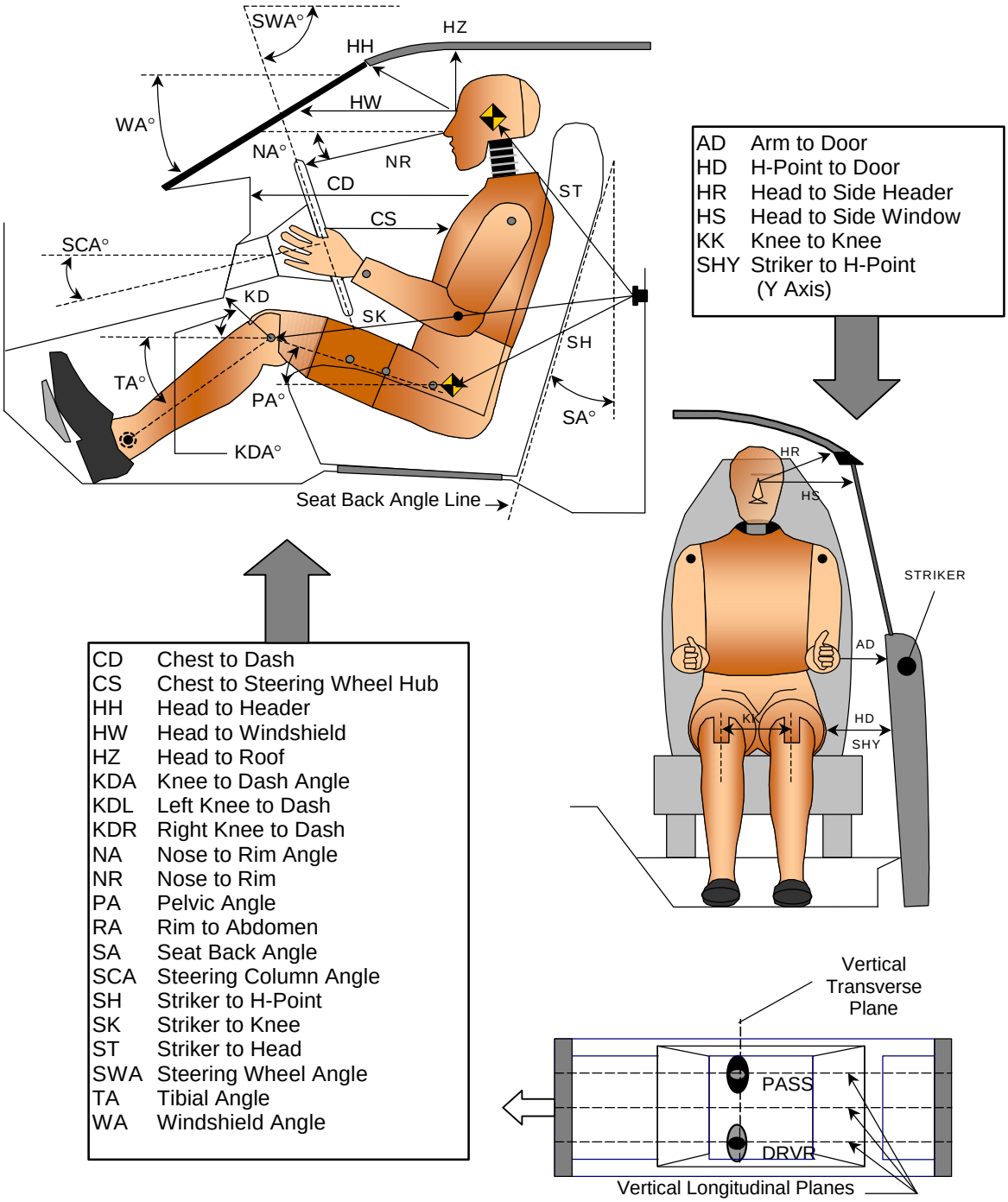
DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



DATA SHEET NO. 5...(continued)

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

TEST DUMMY POSITION MEASUREMENTS

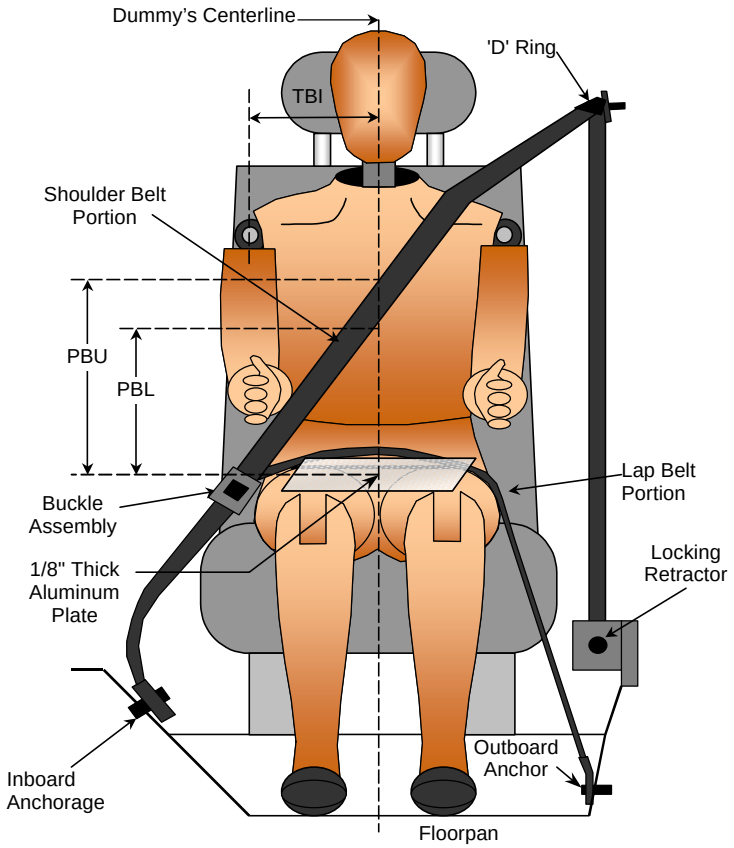
Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		29.3		
SWA	Steering Wheel Angle		65.0		
SCA	Steering Column Angle		23.1		
SA	Seat Back Angle (headrest post)		7.7		8.2
HZ	Head to Roof (Z)	235	90.0	202	90.0
HH	Head to Header	340	42.2	325	42.9
HW	Head to Windshield	752	0.0	667	0.0
HR	Head to Side Header (Y)	290		265	
NR	Nose to Rim	294	5.0		
CD	Chest to Dash	499		463	
CS	Chest to Steering Hub	224	1.0		
RA	Rim to Abdomen	96	0.0		
KDL	Left Knee to Dash	162	0.0	119	
KDR	Right Knee to Dash	155		128	1.2
PA	Pelvic Angle		23.0		19.9
TA	Tibia Angle		69.4		67.2
KK	Knee to Knee (Y)	223		165	
SK	Striker to Knee	662	81.7	694	82.7
ST	Striker to Head	568	15.2	631	22.3
SH	Striker to H-Point	280	82.0	285	84.3
SHY	Striker to H-Point (Y)	309		314	
HS	Head to Side Window	396		351	
HD	H-Point to Door (Y)	190		158	
AD	Arm to Door (Y)	182		156	
AA	Ankle to Ankle	245		166	

DATA SHEET NO. 6

SEAT BELT POSITIONING DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to shoulder bolt	mm	163	162
PBU - Top surface of reference to belt upper edge	mm	280	275
PBL - To surface of reference to belt lower edge	mm	200	205

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

VEHICLE X-AXIS ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

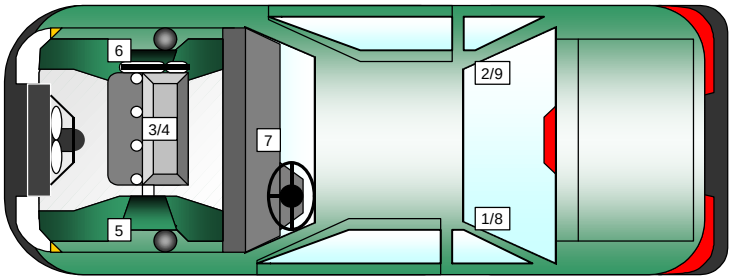
No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member (Primary)	2100	-635	492	G's	2.1	132	44.3	38
2	Right Rear X-Member (Primary)	2107	635	490	G's	2.0	126	38.0	38
3	Engine Top	4365	-32	870	G's	54.9	40	188.4	31
4	Engine Bottom	4275	0	290	G's	16.7	58	137.8	30
5	Left Brake Caliper	4030	-708	244	G's	56.3	60	130.1	37
6	Right Brake Caliper*	4026	708	240	G's	8.9	62	96.7	39
7	Instrument Panel	3365	10	1234	G's	53.3	37	72.0	44
8	Left Rear X-Member (Redundant)	2100	-635	492	G's	59.1	38	2.6	124
9	Right Rear X-Member (Redundant)	2107	635	490	G's	34.9	38	1.6	122

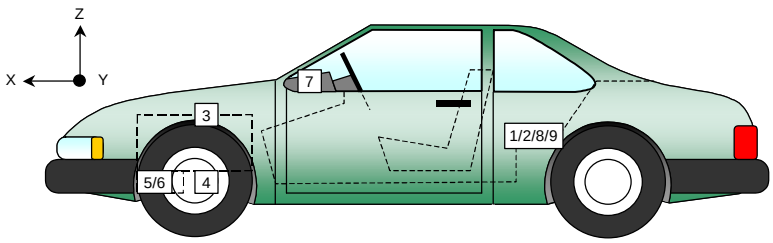
Reference Points: X - From Rear Surface of Vehicle (+ forward)

Y - Vehicle Centerline (+ to right)

Z - Ground Plane (+ up)

* Data not valid after approx. 184 msec.





DATA SHEET NO. 8

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	19.2	154	59.8	61	49.0	156	63.4	71
Head CG	Y	G's	4.0	55	3.6	155	37.0	157	22.7	84
Head CG	Z	G's	16.5	34	27.3	29	12.3	53	21.9	93
Head CG Resultant	N/A	G's	60.1	61			65.0	71		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	5.6	155	67.6	64	14.9	157	65.4	67
Chest CG	Y	G's	3.4	83	3.1	32	5.2	88	9.2	86
Chest CG	Z	G's	6.3	164	16.2	81	12.1	77	9.1	96
Chest CG Resultant	N/A	G's	67.9	64			65.5	67		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	1536	48	2678	65	319	43	3816	61
Right Femur	Z	Newtons	1686	53	2060	70	539	47	2417	61

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	3540	61			3065	60		
Shoulder Belt Force	N/A	Newtons	--	--			--	--		

HEAD INJURY CRITERIA (HIC_{15})

Location	Driver				Passenger			
	HIC	Avg G's	T^1	T^2	HIC	Avg G's	T^1	T^2
Head CG Primary	345	55.6	54.5	69.5	430	60.7	65.9	80.9

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Primary	63.0	62.4	65.5	56.7	65.9	69.0

NECK INJURY CRITERIA

Location	Driver	Passenger
N_{te}	0.2	0.7
N_{tf}	1.7	0.3
N_{ce}	0.0	0.2
N_{cf}	0.4	0.0

DATA SHEET NO. 8...(continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	3.6	92	57.7	62	5.7	107	70.0	61
Pelvis	Y	G's	7.0	88	12.1	53	9.4	62	5.8	51
Pelvis	Z	G's	5.7	165	32.2	77	5.6	162	22.9	62

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	236	23	2540	56	484	86	761	49
Neck Force	Y	Newtons	237	23	203	23	267	77	300	156
Neck Force	Z	Newtons	2172	61	779	167	1453	61	107	94
Neck Moment	X	N•m	13.0	64	3.8	23	6.8	161	17.5	138
Neck Moment	Y	N•m	150.5	56	0.3	1	15.9	155	52.8	52
Neck Moment	Z	N•m	7.0	22	3.8	23	19.5	97	3.7	150

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	230.3	51	26.2	75	263.6	50	20.4	71
Left Foot Aft	Z	G's	30.0	57	30.9	69	20.6	56	48.8	51
Left Foot Fore	Z	G's	99.8	70	186.8	53	138.9	47	104.5	55
Right Foot Aft	X	G's	360.3	52	141.5	74	209.6	49	13.1	67
Right Foot Aft	Z	G's	220.3	53	119.5	74	27.6	58	52.7	49
Right Foot Fore	Z	G's	469.9	52	343.5	48	118.1	48	68.3	57

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Lower Moment	X	N•m	9.7	73	47.7	54	14.4	48	5.2	53
Left Lower Moment	Y	N•m	44.0	71	137.0	53	5.9	46	120.9	50
Left Lower Force	Z	Newtons	1961	53	299	62	1947	52	203	105
Left Upper Moment	X	N•m	9.1	136	42.1	55	28.8	52	8.3	36
Left Upper Moment	Y	N•m	12.4	147	173.6	53	12.7	118	93.9	57
Left Upper Force	Z	Newtons	1309	53	316	58	1540	52	329	46
Right Lower Moment	X	N•m	56.8	57	30.0	93	40.7	52	3.1	37
Right Lower Moment	Y	N•m	401.5	57	135.0	75	4.9	113	156.7	51
Right Lower Force	Z	Newtons	3988	52	752	50	1356	50	136	63
Right Upper Moment	X	N•m	47.5	65	36.8	92	45.0	53	7.0	35
Right Upper Moment	Y	N•m	87.9	58	109.8	75	15.2	113	86.5	51
Right Upper Force	Z	Newtons	2927	52	459	50	1193	51	119	41

DATA SHEET NO. 8...(continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	mm			28.2	66			19.6	78

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	18.8	153	59.2	62	48.2	156	63.8	73
Head CG	Y	G's	6.2	57	4.2	154	36.3	156	20.6	83
Head CG	Z	G's	16.1	34	26.3	29	12.3	53	21.9	93
Head CG Resultant	N/A	G's	59.7	62			64.9	73		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	5.5	154	67.4	64	14.9	156	64.3	67
Chest CG	Y	G's	4.1	81	3.4	68	4.8	88	9.6	86
Chest CG	Z	G's	6.3	163	16.8	81	12.2	77	8.5	96
Chest CG Resultant	N/A	G's	67.7	64			64.5	67		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G's	T^1	T^2	HIC	Avg G's	T^1	T^2
Head CG Primary Redundant	337	55.0	54.5	69.5	412	59.6	65.5	80.5

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Primary Redundant	62.5	62.2	65.3	55.3	65.9	69.0

DATA SHEET NO. 9

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to shoulder bolt	mm	163	162
PBU - Top surface of reference to belt upper edge	mm	280	275
PBL - Top surface of reference to belt lower edge	mm	200	205

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to "D" ring	mm	645	641
Shoulder belt length as measured on ATD	mm	880	896
Lap belt length as measured on ATD	mm	987	1028
Total belt length for continuous webbing systems	mm	2512	2565

SHOULDER BELT SPOOL-OUT DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	N/A	N/A
As determined electronically	mm	N/A	N/A

DATA SHEET NO. 10

SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

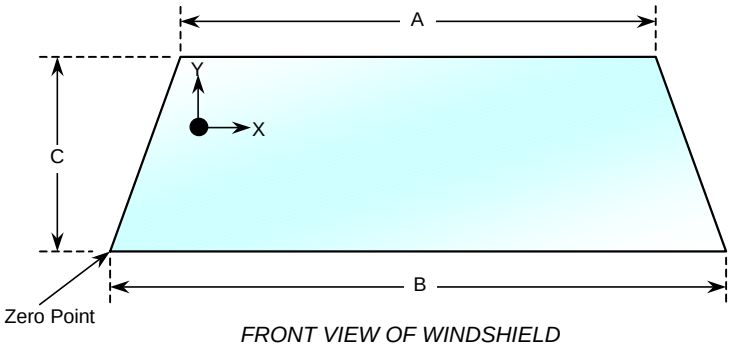
Windshield Mounting Details:
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles, which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2306	2306	100
Right Side	2314	2314	100
Total	4620	4620	100



FRONT VIEW OF WINDSHIELD

WINDSHIELD DIMENSIONS

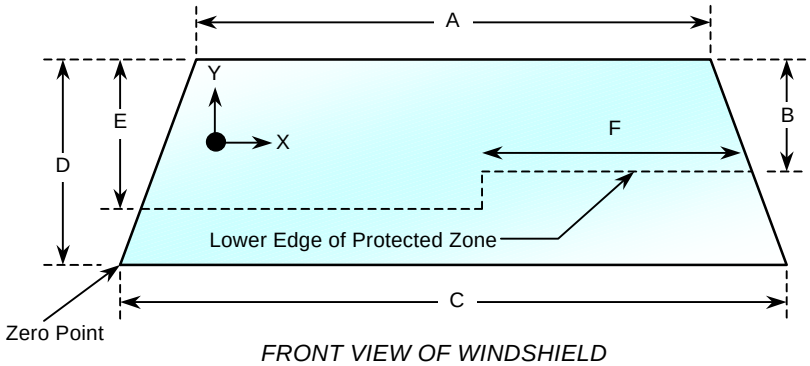
Item	Units	Segment Length	Molding Width
A	mm	1240	12
B	mm	1629	14
C	mm	870	11

DATA SHEET NO. 11

WINDSHIELD ZONE INTRUSION FMVSS 219 (Partial) DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1240
B	mm	508
C	mm	1629
D	mm	870
E	mm	560
F	mm	673

AREA OF PROTECTED ZONE FAILURES - NONE

A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield.

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

X	Y

DATA SHEET NO. 12

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

Test Time: 11:50 a.m. Temperature at Time of Impact: 21 °C

Stoddard Solvent Spillage Measurements

A. From impact until vehicle motion ceases: 0 oz.
(Maximum Allowable = 1 ounce)

B. For the 5 minute period after motion ceases: 0 oz.
(Maximum Allowable = 5 ounces)

C. For the following 25 minutes: 0 oz.
(Maximum Allowable = 1 oz./minute)

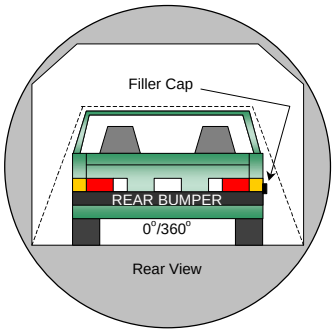
D. Spillage Details: None

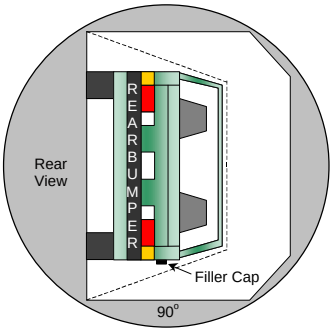
DATA SHEET NO. 13

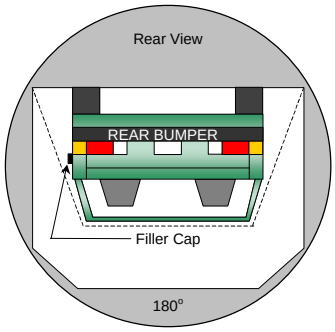
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

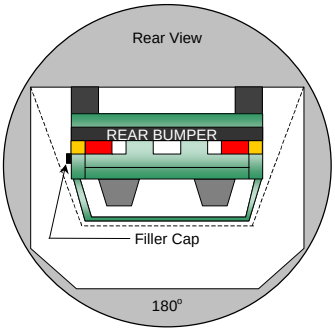
Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

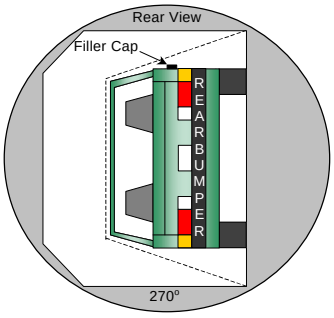


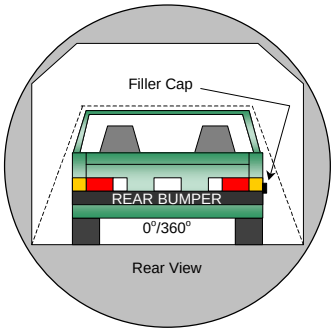




0° TO 90° 90° TO 180°







180° TO 270° 270° TO 360°

1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations: No Leakage

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	165	300	0
90° TO 180°	151	300	0
180° TO 270°	135	300	0
270° TO 360°	160	300	0

DATA SHEET NO. 14

VEHICLE MEASUREMENTS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4935	4373	562
2	RSOV to front of engine	mm	4410	4139	271
3	RSOV to firewall centerline	mm	4210	4034	176
4	RSOV to leading edge of right door	mm	3524	3518	6
5	RSOV to leading edge of left door	mm	3520	3517	3
6	RSOV to lower leading edge of right door	mm	3486	3483	3
7	RSOV to lower leading edge of left door	mm	3485	3485	0
8	RSOV to upper leading edge of right door	mm	2496	2488	8
9	RSOV to upper leading edge of left door	mm	2496	2488	8
10	RSOV to lower trailing edge of right door	mm	2487	2479	8
11	RSOV to lower trailing edge of left door	mm	2480	2480	0
12	RSOV to bottom of right 'A' pillar	mm	3487	3486	1
13	RSOV to bottom of left 'A' pillar	mm	3482	3481	1
14	RSOV to firewall on right side	mm	3866	3820	46
15	RSOV to firewall on left side	mm	3845	3832	13
16	RSOV to steering column	mm	3062	3055	7
17	Center of steering column to left 'A' pillar	mm	389	332	57
18	Center of steering column to headlining	mm	454	382	72
19	RSOV to right side of front bumper	mm	4779	4408	371
20	RSOV to left side of front bumper	mm	4775	4356	419
21	Length of engine block	mm	405	405	0
RD	RSOV to right side of dash panel	mm	3340	3333	7
CD	RSOV to center of dash panel	mm	3290	3262	28
LD	RSOV to left side of dash panel	mm	3275	3272	3

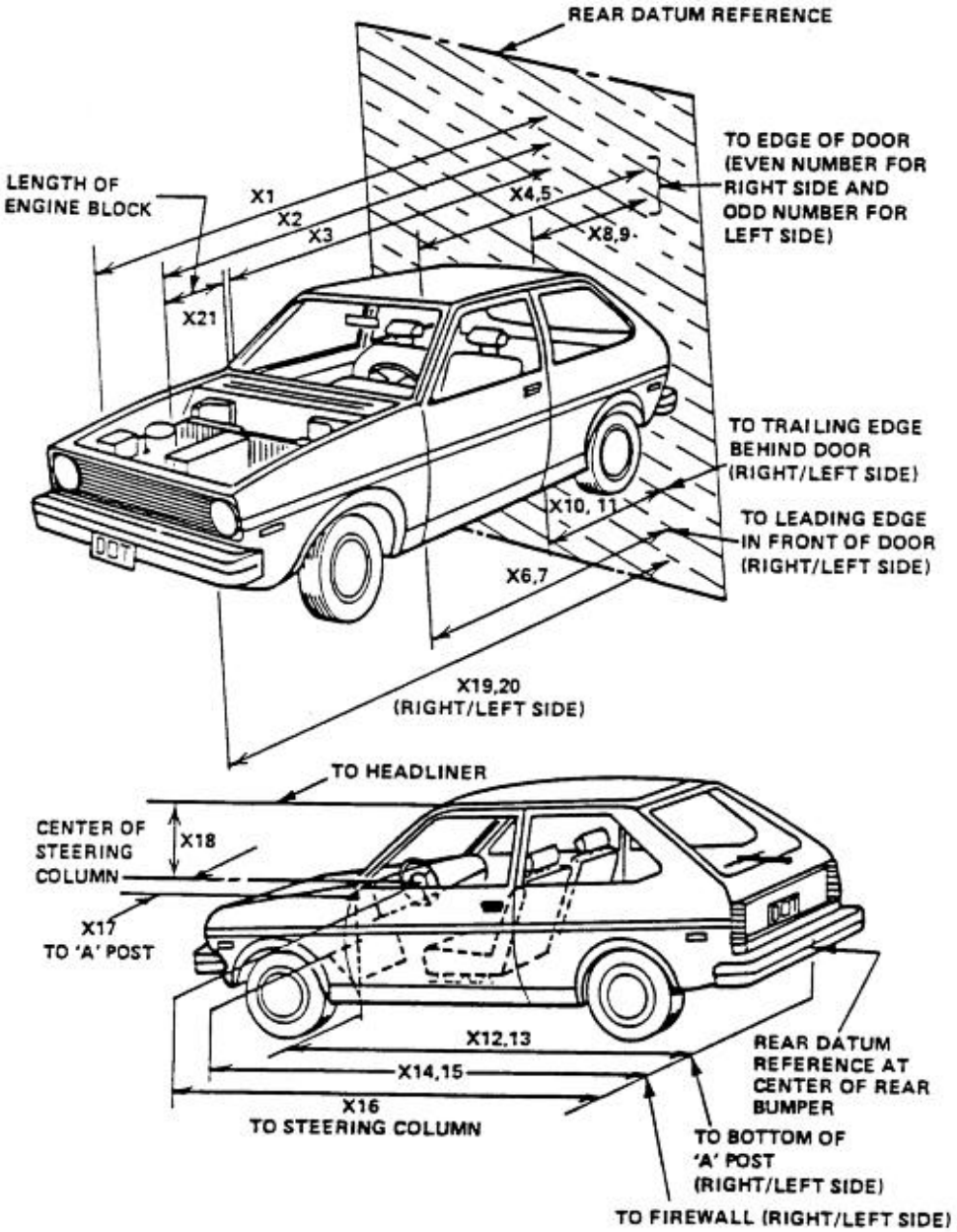
RSOV = Rear Surface of Vehicle

DATA SHEET NO. 1 4...(continued)

VEHICLE MEASUREMENTS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001



DATA SHEET NO. 15

CAMERA LOCATIONS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

No.	Camera View	Location (mm) *			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View				17	32
2	Left Front View	1000	-8220	1530	25	1010
3	Steering Column Top	2000	-7600	1569	25.4	1047
4	Steering Column Bottom	2004	-7600	1560	25	791
5	Driver Close-up	1410	-1066	1410	50	917
6	Driver Angle	4671	-5130	2030	50	995
7	Onboard Driver				8	514
8	Onboard Passenger				8	512
9	Right Overall	2100	7320	1444	13	1026
10	Right Passenger Half	1070	7620	1450	25	1020
11	Right Close-up	1520	8000	1390	50	866
12	Right Angle	1520	8009	1390	50	948
13	Windshield	-450	0	2310	13	909
14	Top Driver	70	440	1780	13	1005
15	Top Passenger	80	-400	1780	13	1036
16	Pit Front	970	0	-3200	13	1000
17	Pit Rear	2650	3	-3200	13	1020

*COORDINATES:

+X = film plane rearward of barrier

+Y = film plane to right of monorail centerline

+Z = film plane to above ground level

ORIGIN: For X and Y it is the Impact Point. For Z it is the Floor.

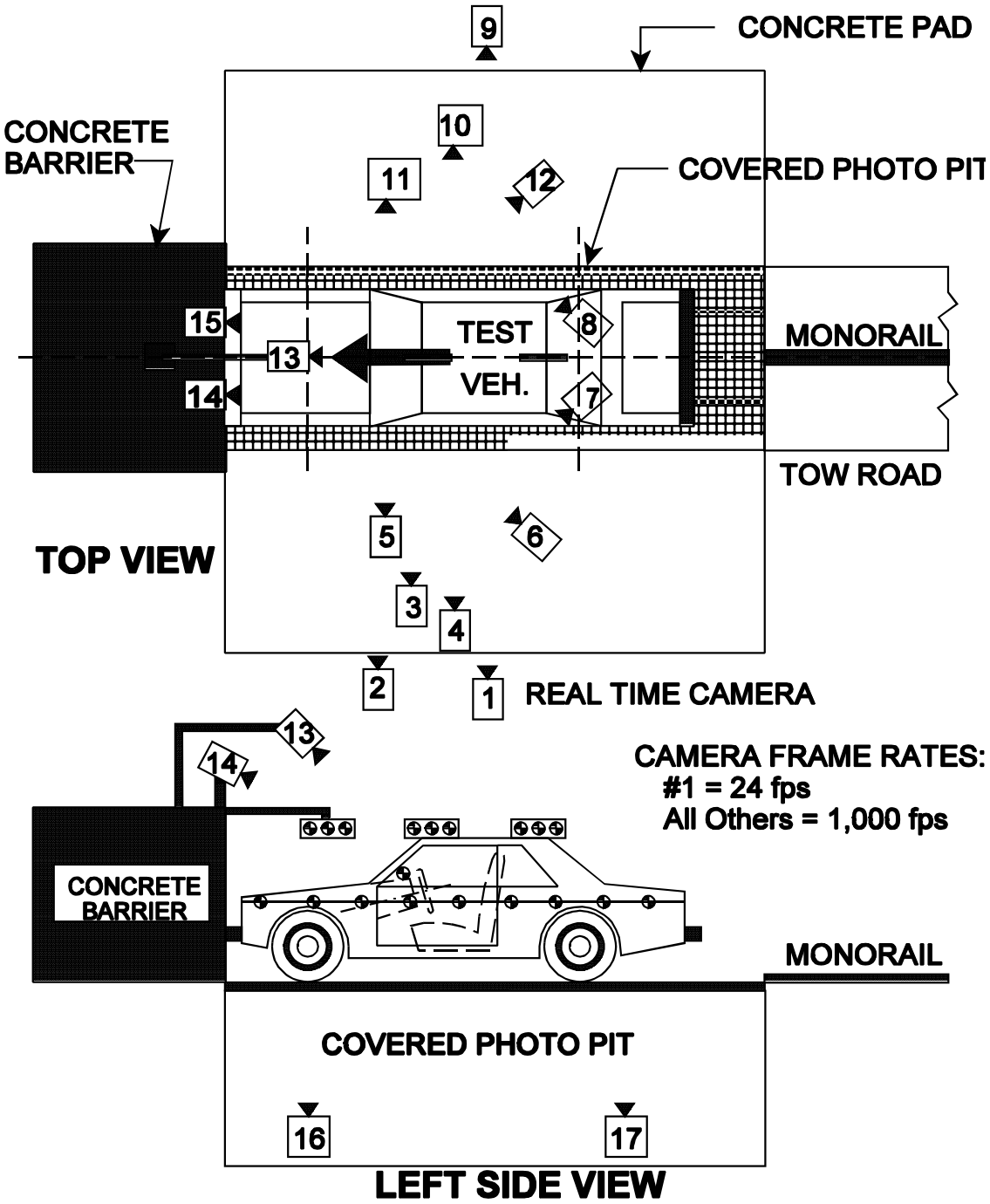
DATA SHEET NO. 15...(continued)

CAMERA LOCATIONS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

CAMERA POSITIONS FOR FRONTAL IMPACTS



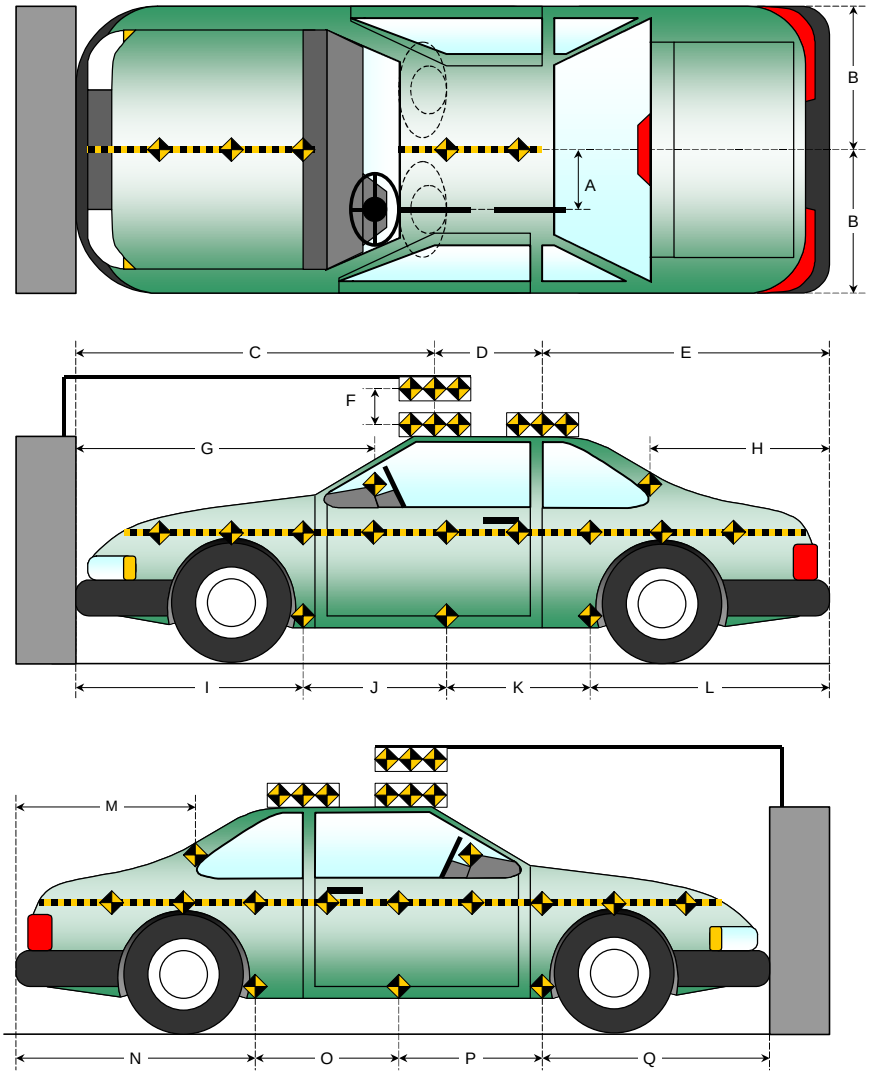
DATA SHEET NO. 16

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

Item	Value
A	387
B	892
C	2191
D	610
E	2134
F	610
G	1802
H	1506
I	1521
J	1022
K	1027
L	1381
M	1534
N	1416
O	1023
P	1023
Q	1490



DATA SHEET NO. 17

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

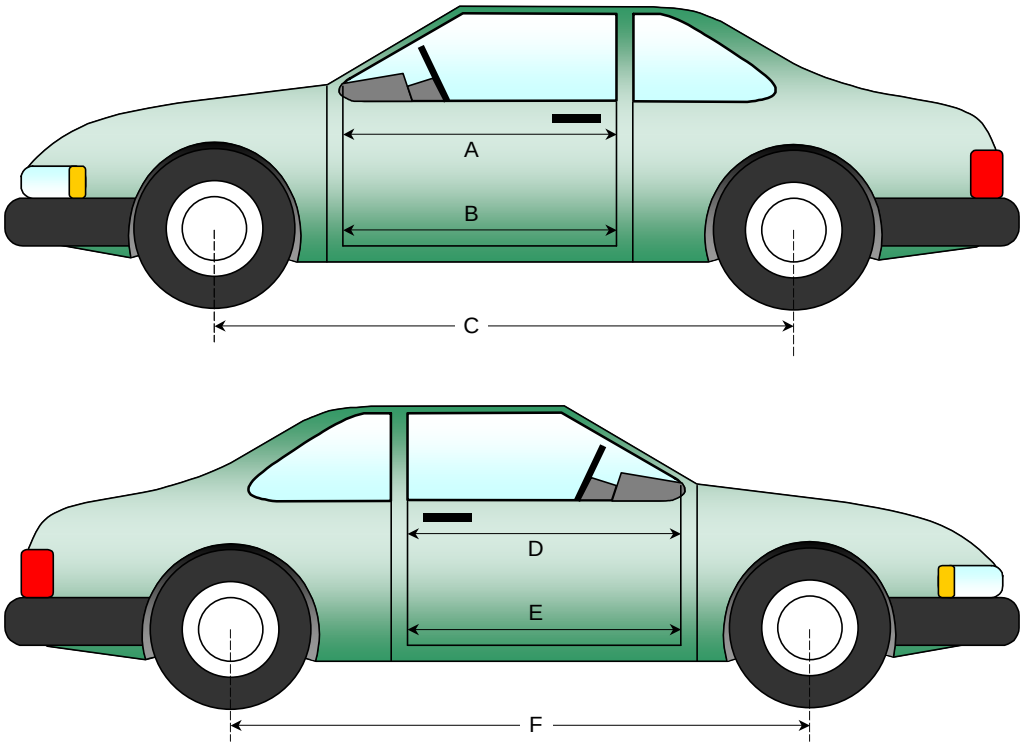
Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	925	915	-10
B	Left Side Lower	mm	933	930	-3
D	Right Side Upper	mm	926	925	-1
E	Right Side Lower	mm	944	937	-7

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3029	2910	-119
F	Right Side Wheelbase	mm	3030	2935	-95



DATA SHEET NO. 17...(continued)

VEHICLE INTRUSION MEASUREMENTS

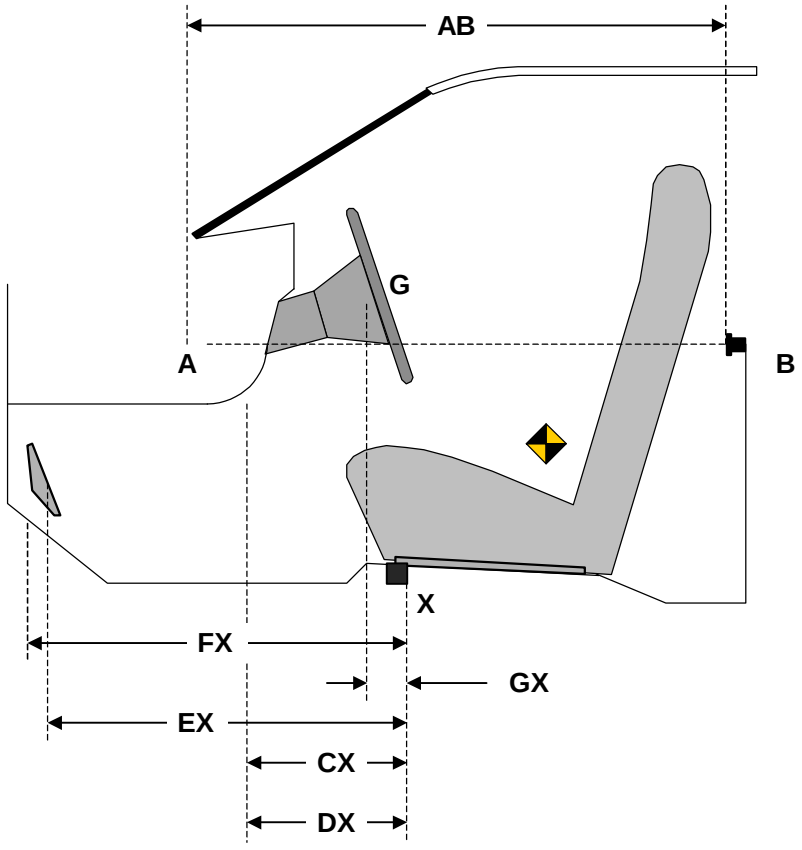
Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	872	872	0
CX	Left Knee Bolster to X	mm	397	369	28
DX	Right Knee Bolster to X	mm	423	381	42
EX	Brake Pedal to X	mm	618	447	171
FX	Foot Rest to X	mm	600	515	85
GX	Center of Steering Column Wheel Hub to X	mm	84	67	17

X = Left Front Seat Front Outboard Anchor Bolt Head



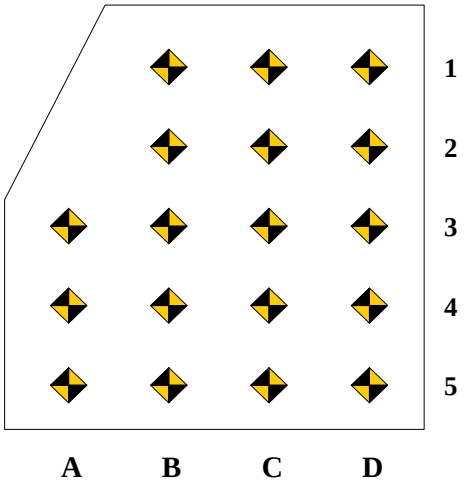
DRIVER COMPARTMENT

DATA SHEET NO. 17...(continued)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001



Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.

DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		687	683	684		495	502	482		192	181	202
2		636	632	635		485	498	483		151	134	152
3	580	574	559	555	543	504	469	483	37	70	90	72
4	486	481	473	470	445	473	458	448	41	8	15	22
5	364	365	353	353	355	355	340	338	9	10	13	15

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		-70	-71	-70		42	52	63		-112	-123	-133
2		-128	-122	-120		-41	-29	-11		-87	-93	-109
3	-147	-143	-120	-118	-140	-110	-88	-67	-7	-33	-32	-51
4	-141	-138	-140	-137	-147	-164	-167	-156	6	26	27	19
5	-133	-129	-130	-128	-132	-135	-139	-131	-1	6	9	3

DATA SHEET NO. 17...(continued)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

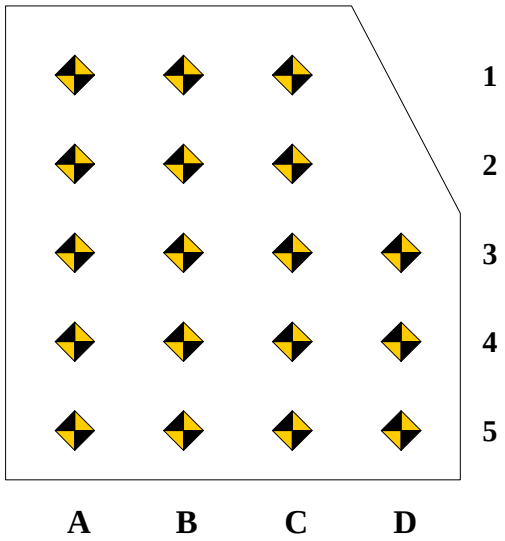
Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	718	712	710		540	530	560		178	182	150	
2	670	662	662		517	512	55		153	150	607	
3	599	603	605	603	466	512	560	572	133	91	45	31
4	494	498	497	505	435	490	493	500	59	8	4	5
5	425	430	426	426	416	420	421	421	9	10	5	5

PASSENGER FLOOR PAN Z-AXIS

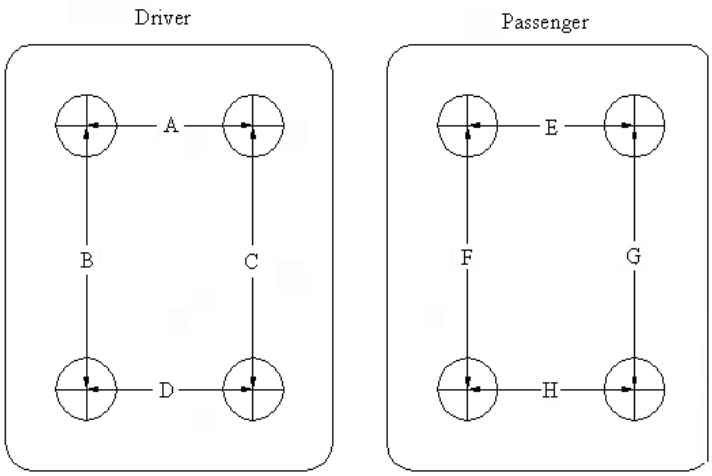
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-120	-125	-125		-34	-38	-42		-86	-87	-83	
2	-184	-189	-197		-127	-134	-135		-57	-55	-62	
3	-232	-232	-235	-249	-174	-196	-202	-200	-58	-36	-33	-49
4	-225	-231	-226	-240	-191	-237	-230	-228	-34	6	4	-12
5	-223	-224	-223	-233	-227	-224	-219	-217	4	0	-4	-16

DATA SHEET NO. 17...(continued)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001



UNDERBODY FLOORBOARD DEFORMATION

MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	207	N/A	N/A
B	333	N/A	N/A
C	342	N/A	N/A
D	228	223	5
E	N/A	N/A	N/A
F	N/A	N/A	N/A
G	346	N/A	N/A
H	214	214	0

Note: N/A Measurements, target was not visible for post test measurements.

DATA SHEET NO. 18

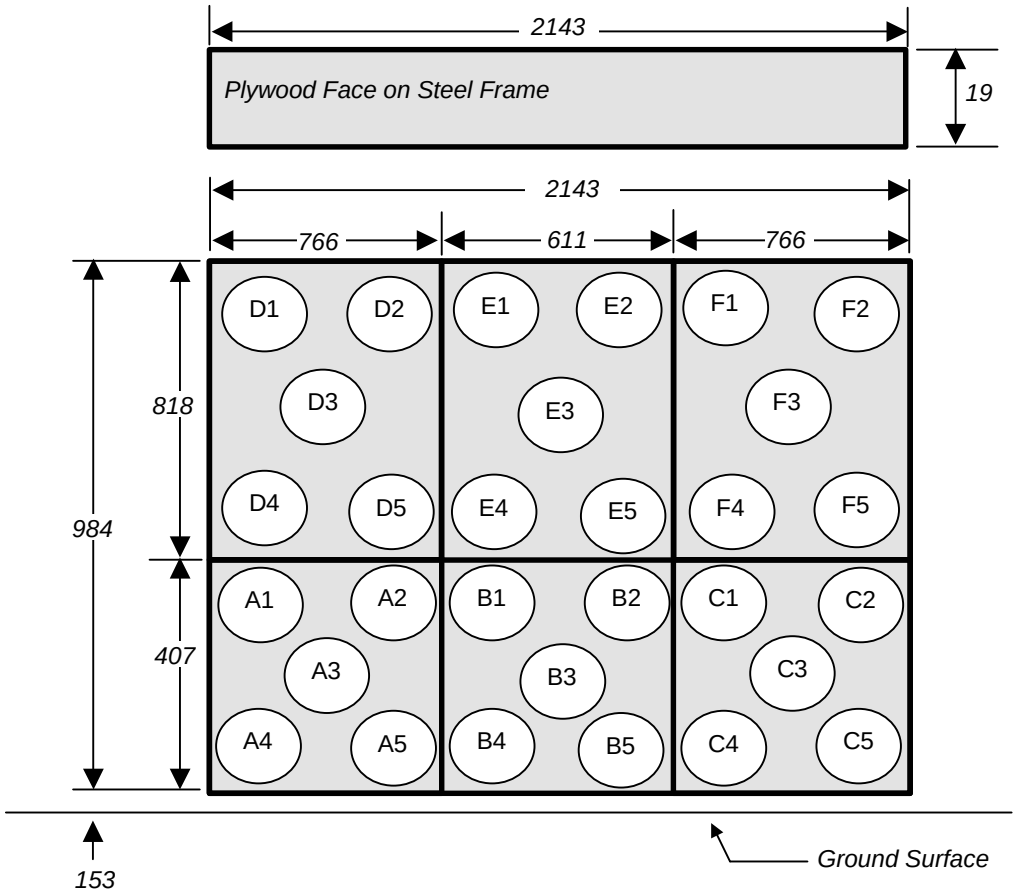
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

30 Load Cell Rigid Barrier

Load Cell Locations on Fixed Barrier



Group 4 D1-D5	Group 5 E1-E5	Group 6 F1-F5
Group 1 A1-A5	Group 2 B1-B5	Group 3 C1-C5

6 Groups of 5 Load Cells Each

The Data is presented in Appendix C with the following requirements:

1. Data from 30 individual load cells
2. Sum data from 6 groupings shown above (5 cells/group)
3. Total or sum of all 30 individual load cells

DATA SHEET NO. 19

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

VEHICLE INFORMATION

VIN: 2B8GP44361R223944 Wheelbase (mm): 3030

Vehicle Size Category: VAN Test Weight (kg): 2121 to 2126

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on page 13

Cal. Procedure/Interval: MGA procedure / 6 month

Integration Algorithm: Trapezoidal Linearity: >99.9%

Impact Velocity (km/h): 56.3

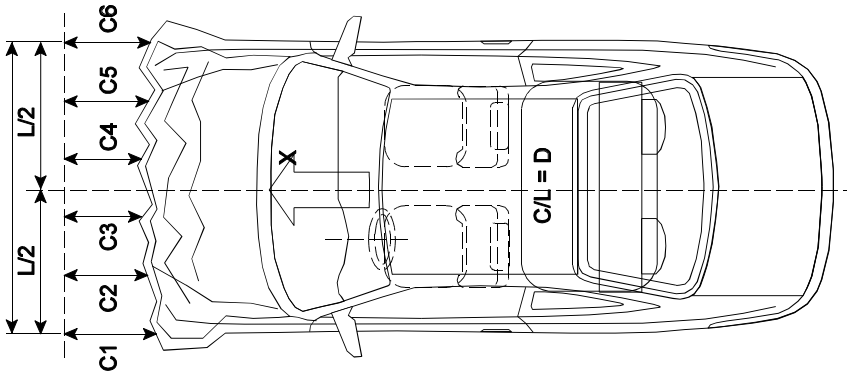
Velocity Change (km/h): 63.9 Time of Separation (msec): 142

CRUSH PROFILE

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline

Damage Region Length (mm): 1650 Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4775	4356	419
C2	Crush zone 2 at left side	mm	4864	4321	543
C3	Crush zone 3 at left side	mm	4919	4382	537
C4	Crush zone 4 at right side	mm	4918	4372	546
C5	Crush zone 5 at right side	mm	4865	4402	463
C6	Crush zone 6 at right side	mm	4779	4408	371

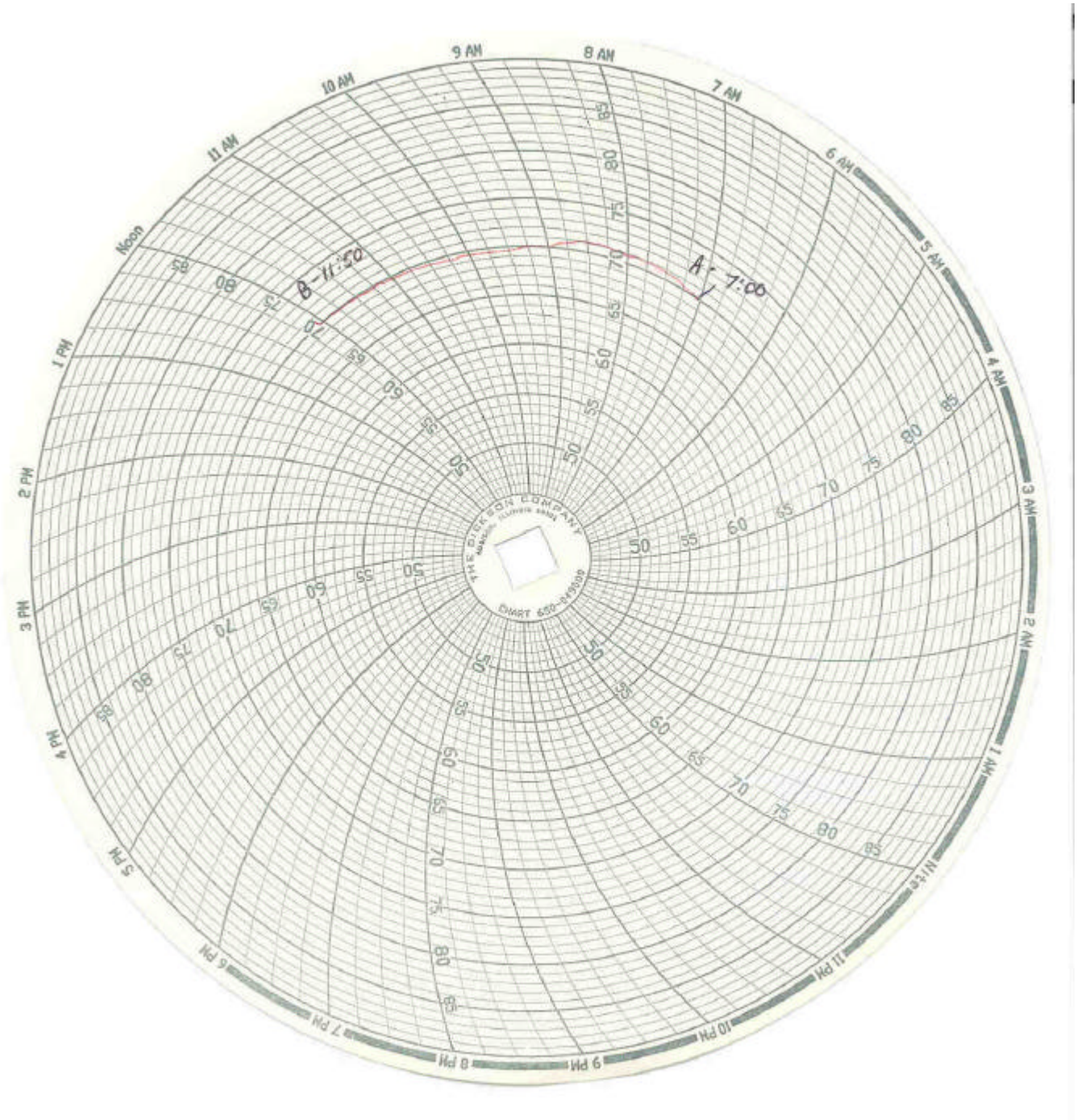


DATA SHEET NO. 20

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001



A = Dummies installed in vehicle at 7:00 a.m.

B = Test conducted at 11:50 a.m.

APPENDIX A

PHOTOGRAPHS

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Photo No. A-1 - Pre-Test Front View of Test Vehicle



Photo No. A-2 - Post-Test Front View of Test Vehicle



Photo No. A-3 - Pre-Test Rear View of Test Vehicle



Photo No. A-4 - Post-Test Rear View of Test Vehicle



Photo No. A-5 - Pre-Test Left Side View of Test Vehicle



Photo No. A-6 - Post-Test Left Side View of Test Vehicle



Photo No. A-7 - Pre-Test Left Rear Three-Quarter View of Test Vehicle



Photo No. A-8 - Post-Test Left Rear Three-Quarter View of Test Vehicle



Photo No. A-9 - Pre-Test Right Side View of Test Vehicle



Photo No. A-10 - Post-Test Right Side View of Test Vehicle



Photo No. A-11 - Pre-Test Right Front Three-Quarter View of Test Vehicle



Photo No. A-12 - Post-Test Right Front Three-Quarter View of Test Vehicle



A-13

Photo No. A-13 - Pre-Test Fuel Filler Cap View

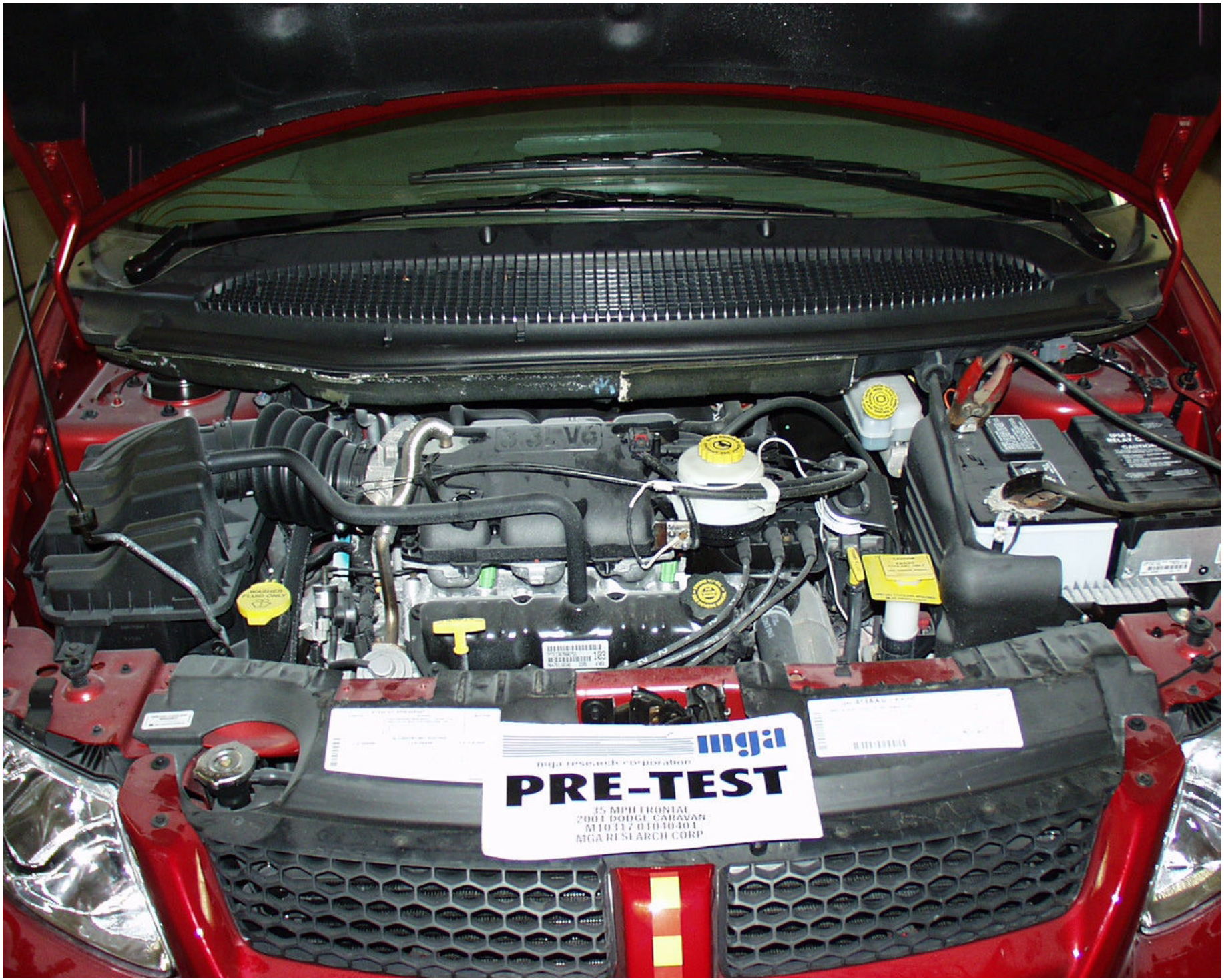


Photo No. A-14 - Pre-Test Engine Compartment View



Photo No. A-15 - Post-Test Engine Compartment View

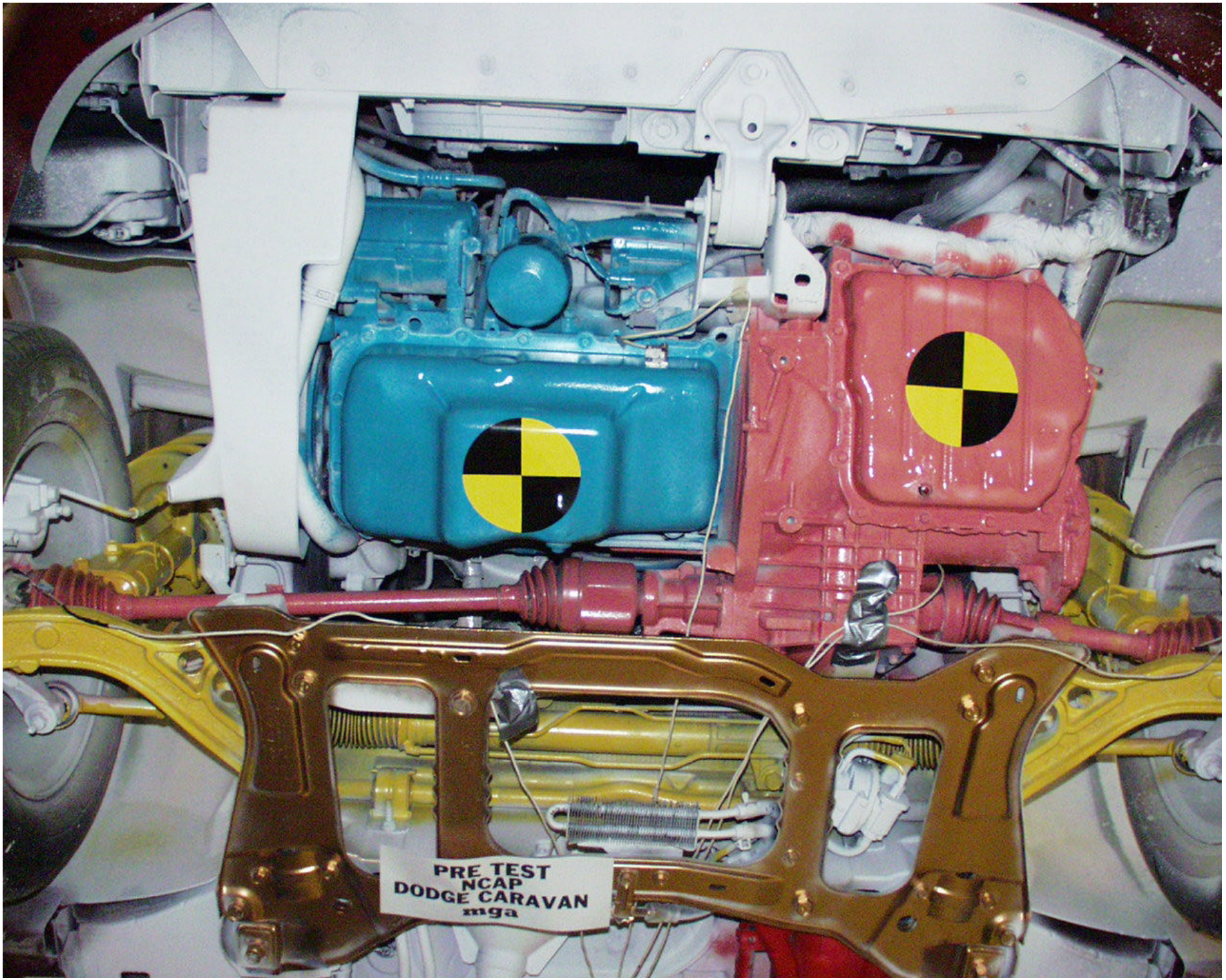


Photo No. A-16 - Pre-Test Front Underbody View

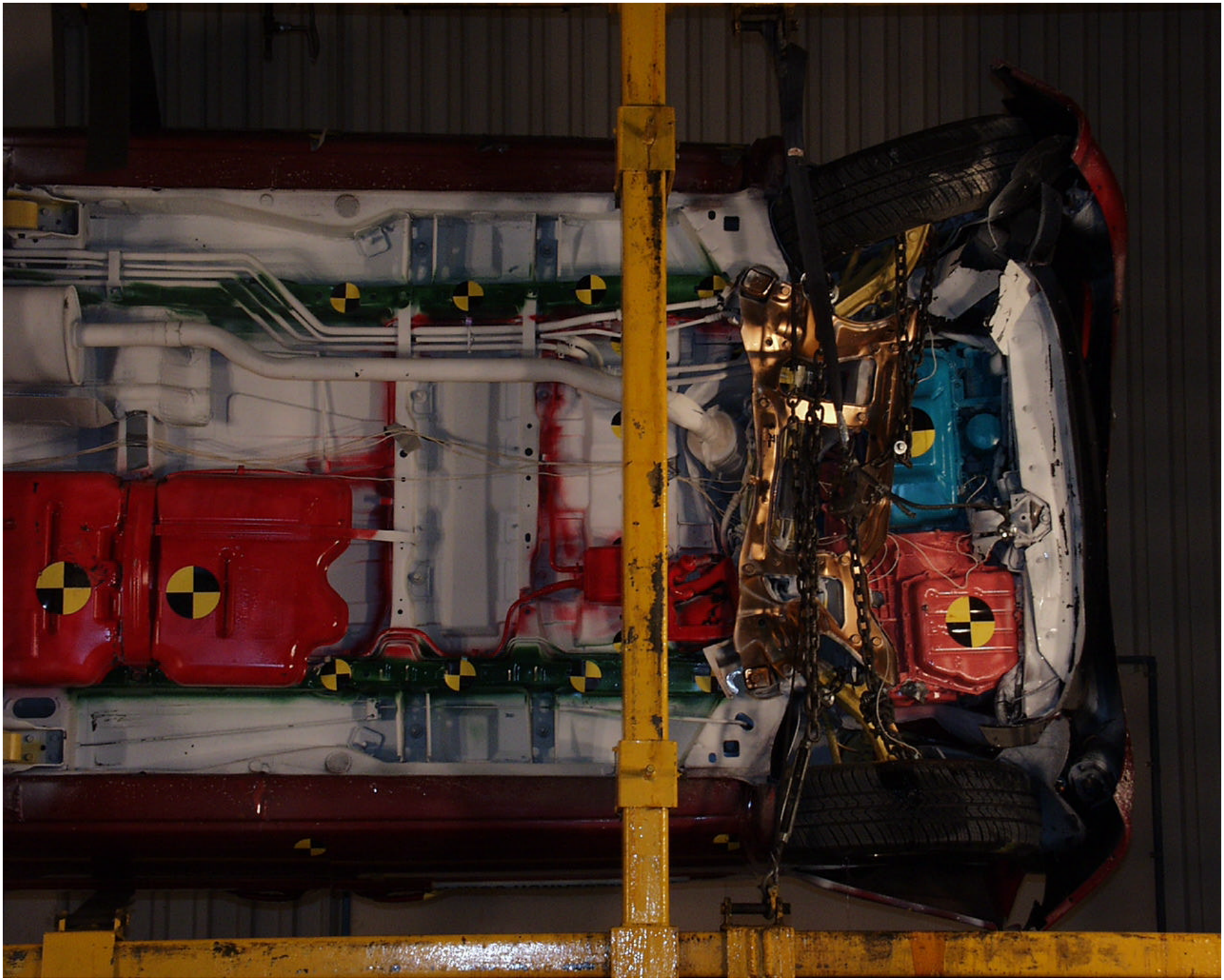


Photo No. A-17 - Post-Test Front Underbody View

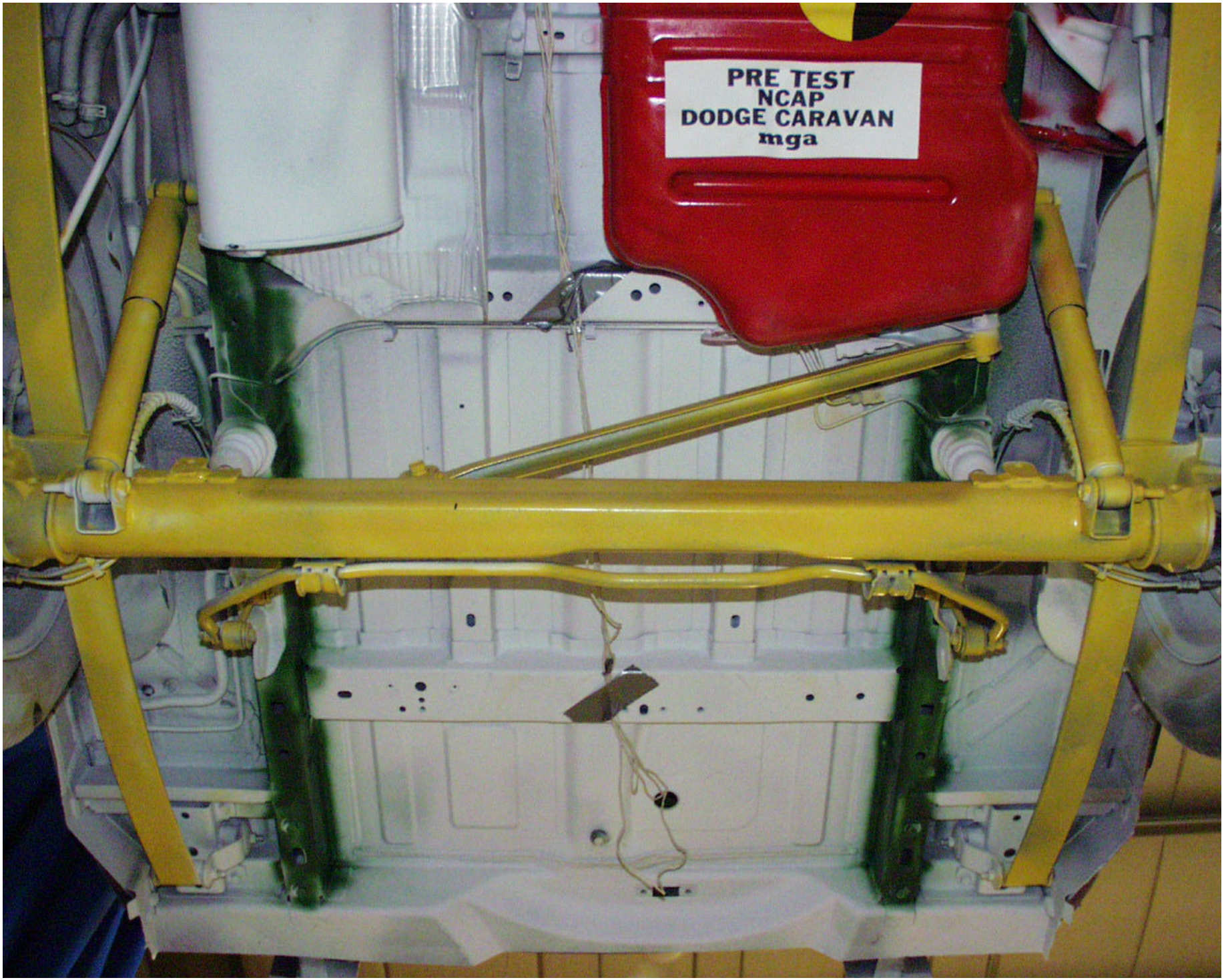


Photo No. A-18 - Pre-Test Rear Underbody View



Photo No. A-19 - Post-Test Rear Underbody View



A-20

Photo No. A-20 - Pre-Test Windshield View



Photo No. A-21 - Post-Test Windshield View



Photo No. A-22 - Pre-Test Driver Dummy Position Left Side View



Photo No. A-23 - Post-Test Driver Dummy Position Left Side View



Photo No. A-24 - Pre-Test Driver Dummy Position Left Side View (Door Open)



Photo No. A-25 - Post-Test Driver Dummy Position Left Side View (Door Open)



Photo No. A-26 - Pre-Test Driver Seat Position View



Photo No. A-27 - Post-Test Driver Seat Position View



Photo No. A-28 - Pre-Test Driver Dummy Knee Position



Photo No. A-29 - Post-Test Driver Dummy Knee Position



Photo No. A-30 - Post-Test Driver Airbag Contact



Photo No. A-31 - Post-Test Driver Knee Contact View



Photo No. A-32 - Pre-Test Driver Windshield View

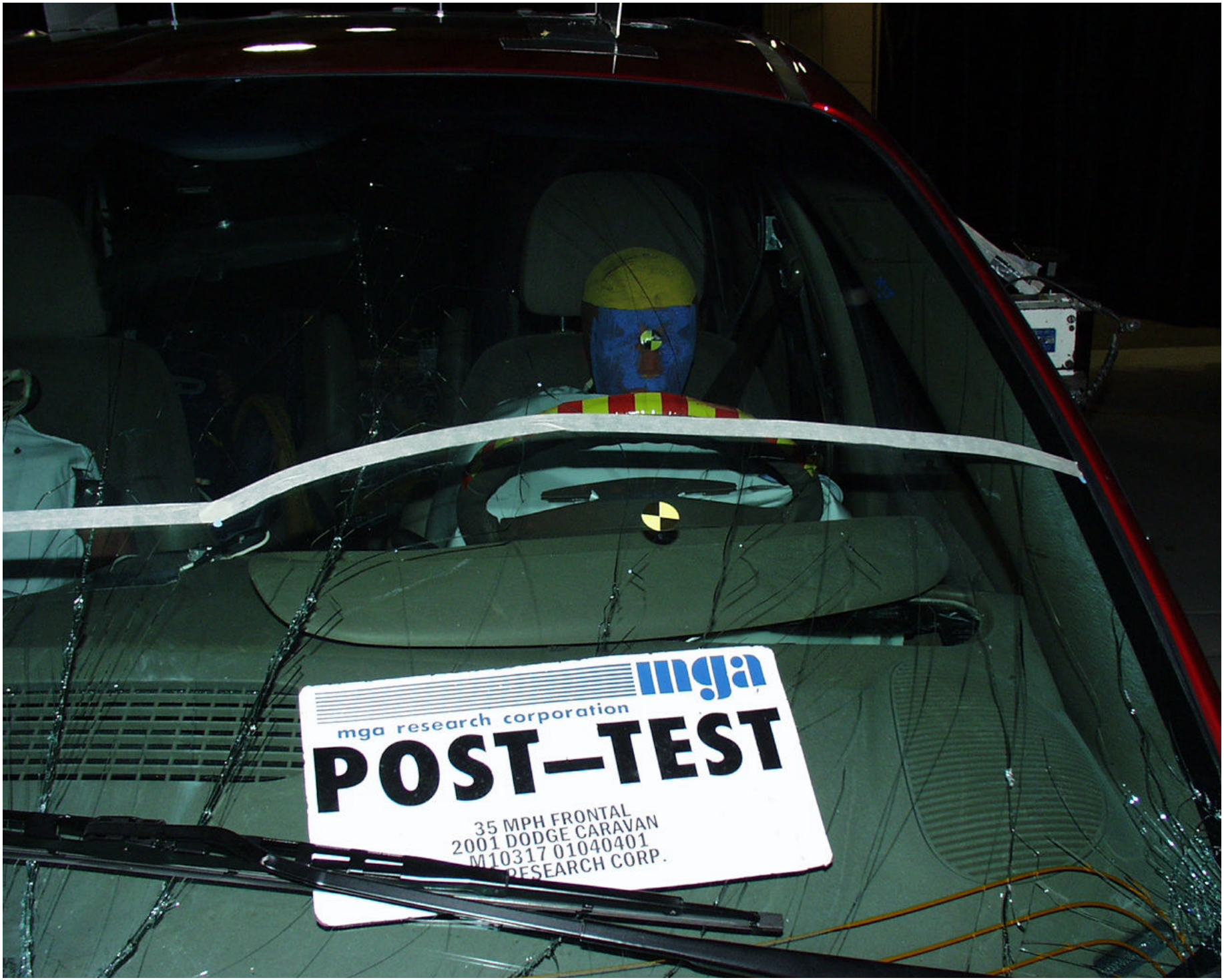


Photo No. A-33 - Post-Test Driver Windshield View



Photo No. A-34 - Pre-Test Passenger Dummy Position Right Side View



Photo No. A-35 - Post-Test Passenger Dummy Position Right Side View



Photo No. A-36 - Pre-Test Pass. Dummy Position Right Side View (Door Open)



Photo No. A-37 - Post-Test Pass. Dummy Position Right Side View (Door Open)



Photo No. A-38 - Pre-Test Passenger Seat Position View



Photo No. A-39 - Post-Test Passenger Seat Position View



Photo No. A-40 - Pre-Test Passenger Dummy Knee Position



Photo No. A-41 - Post-Test Passenger Dummy Knee Position



Photo No. A-42 - Post-Test Passenger Airbag Contact



Photo No. A-43 - Post-Test Passenger Knee Contact View

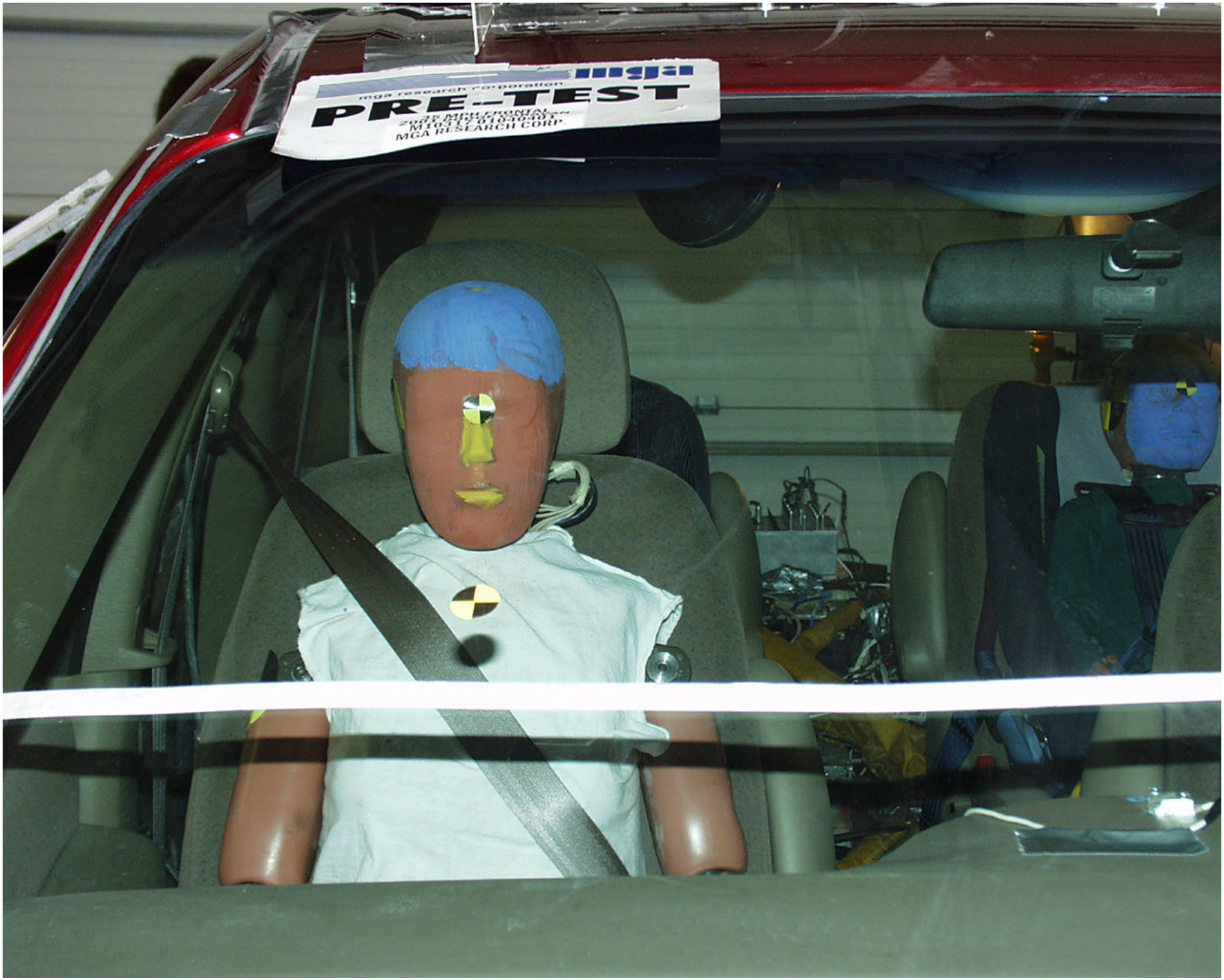
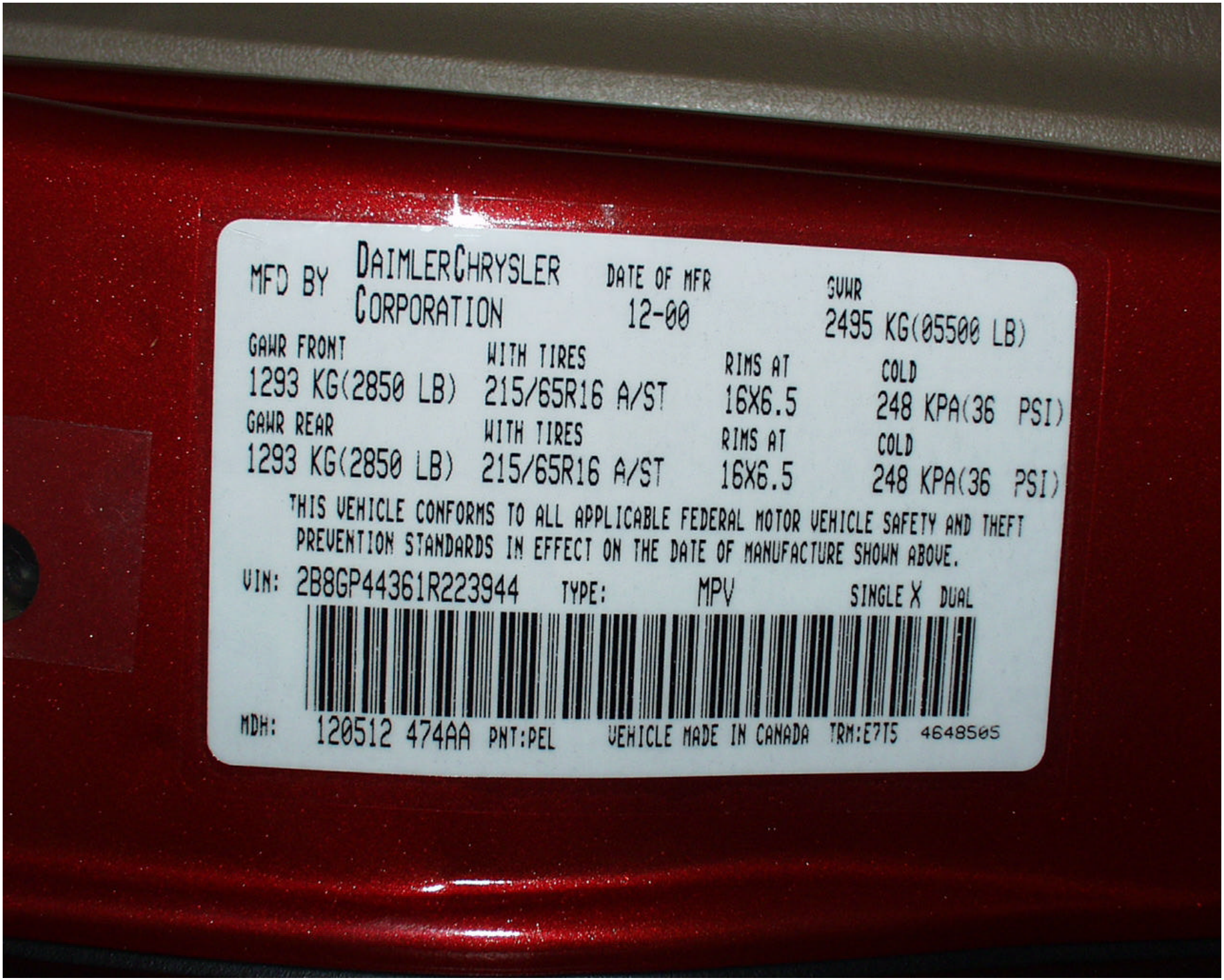


Photo No. A-44 - Pre-Test Passenger Windshield View



Photo No. A-45 - Post-Test Passenger Windshield View



A-46

Photo No. A-46 - Vehicle Certification / Tire Placard Label



Photo No. A-47 - Vehicle Impact

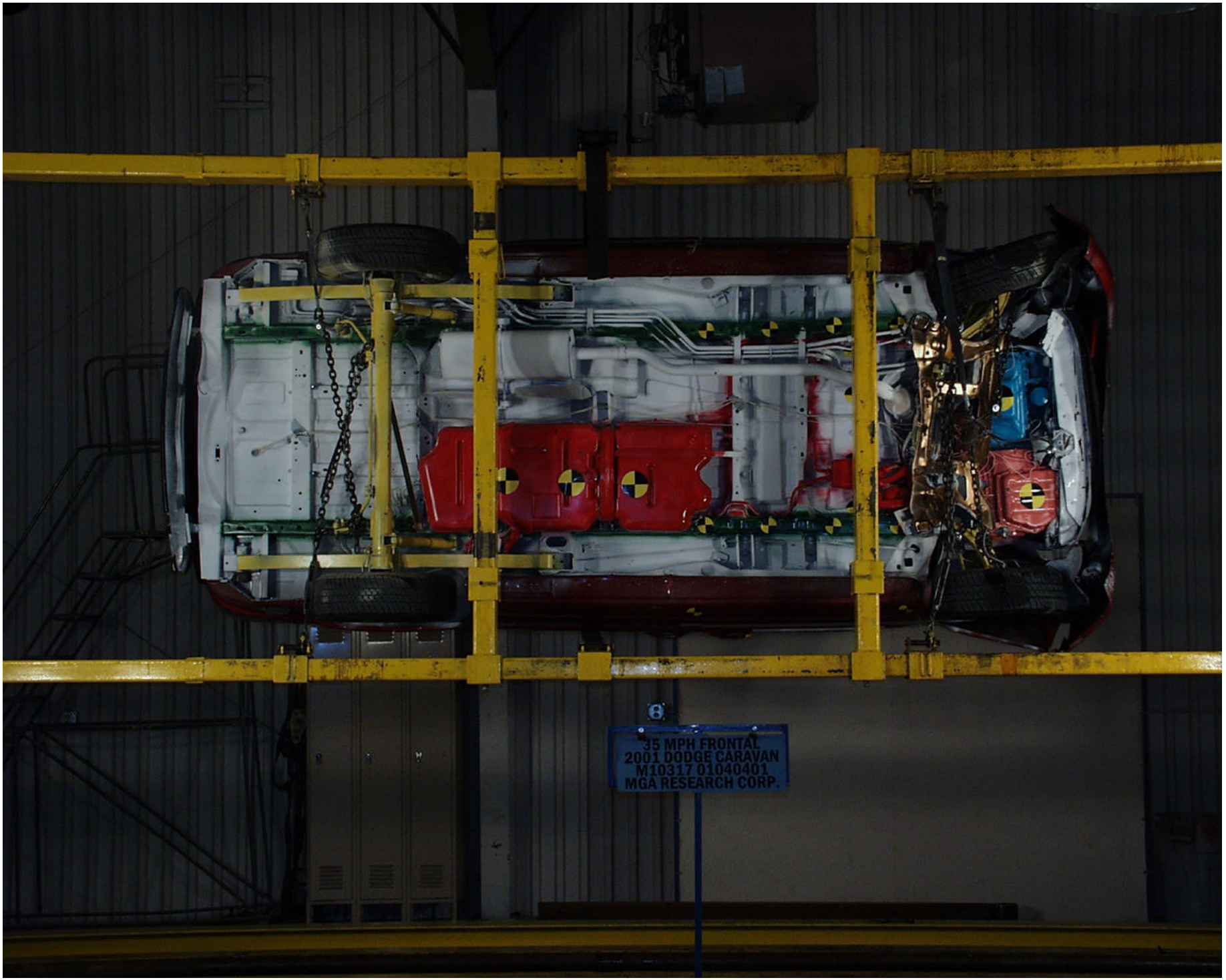


Photo No. A-48 - Rollover 90E



Photo No. A-49 - Rollover 180E

Photo No. A-50 - Rollover 270E



Photo No. A-51 - Rollover 360E

APPENDIX B

DUMMY AND VEHICLE RESPONSE DATA TRACES

TABLE OF DATA PLOTS

VEHICLE DATA FILTER CHANNEL CLASS

Head Accelerations 1000 (1650 Hz)

Chest Accelerations 180 (300 Hz)

Vehicle Accelerations 60 (100 Hz)

Barrier Load Cells 60 (100 Hz)

Femur Load Cells 600 (1000 Hz)

Lap and Torso Belts 60 (100 Hz)

Tibia Load Cells 600 (1000Hz)

Foot Accelerations 180 (300Hz)

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* Data not valid after approximately 184 msec.

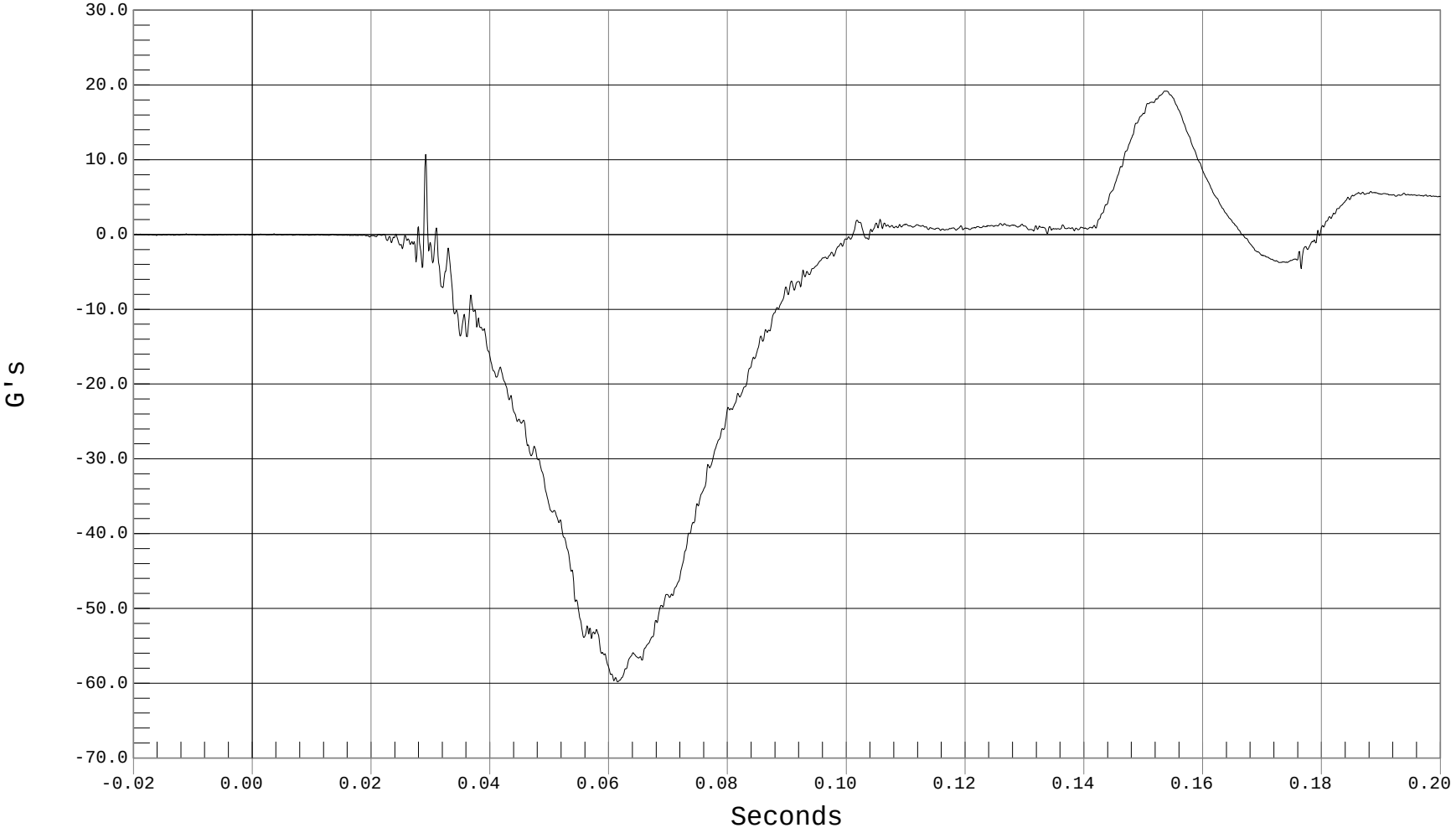
DRIVER HEAD X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER HEAD X, B01037AT.A01

Ymin = -59.82 G's @ 0.0614 Seconds, Ymax = 19.18 G's @ 0.1538 Seconds



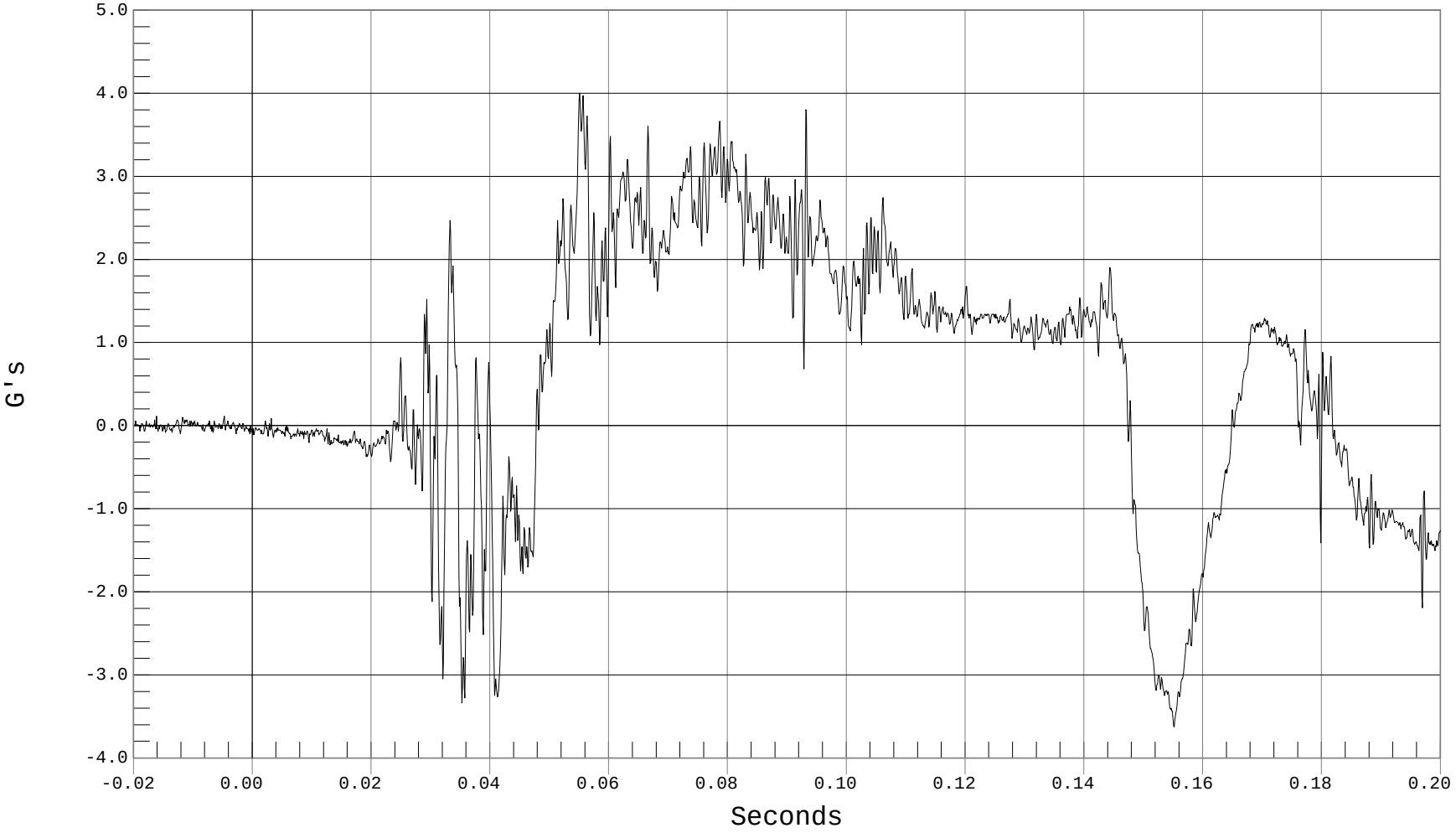
DRIVER HEAD Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER HEAD Y, B01037AT.A02

Ymin = -3.63 G's @ 0.1551 Seconds, Ymax = 4 G's @ 0.0550 Seconds



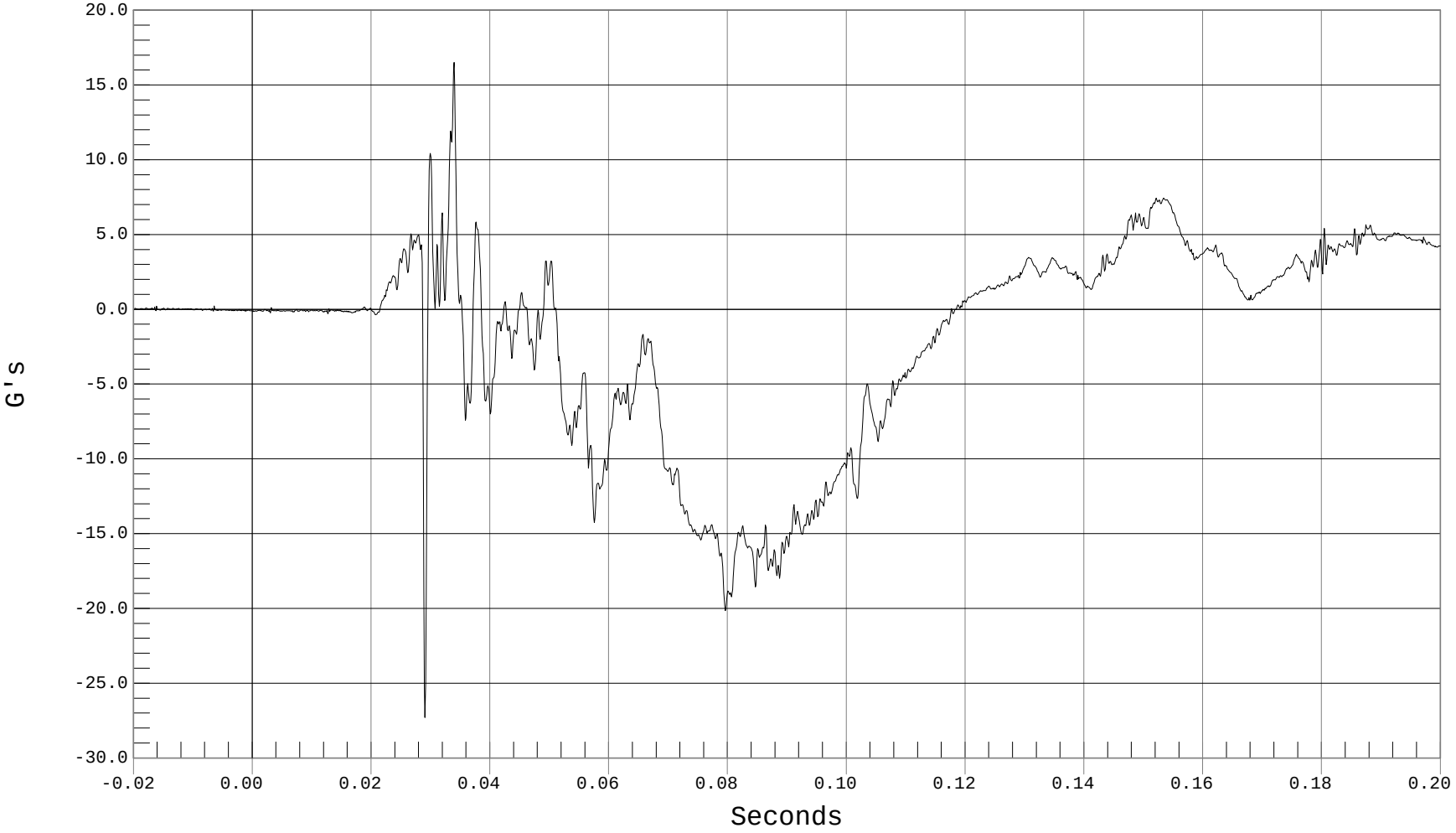
DRIVER HEAD Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER HEAD Z, B01037AT.A03

Ymin = -27.3 G's @ 0.0290 Seconds, Ymax = 16.51 G's @ 0.0339 Seconds



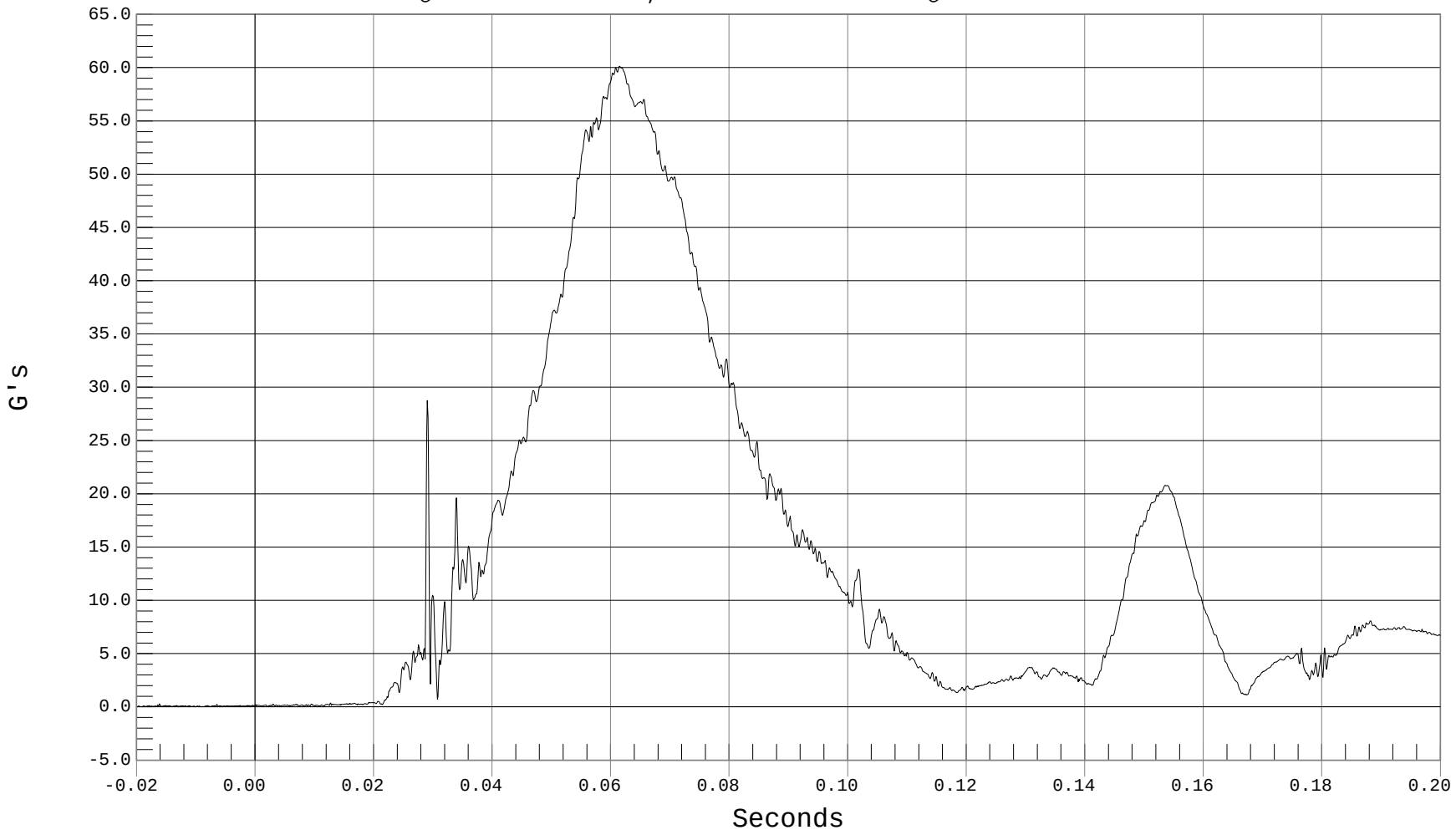
DRIVER HEAD RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER HEAD RESULTANT ACCELERATION, B01037AV.A01

Ymin = .01 G's @ -0.0091 Seconds, Ymax = 60.13 G's @ 0.0614 Seconds



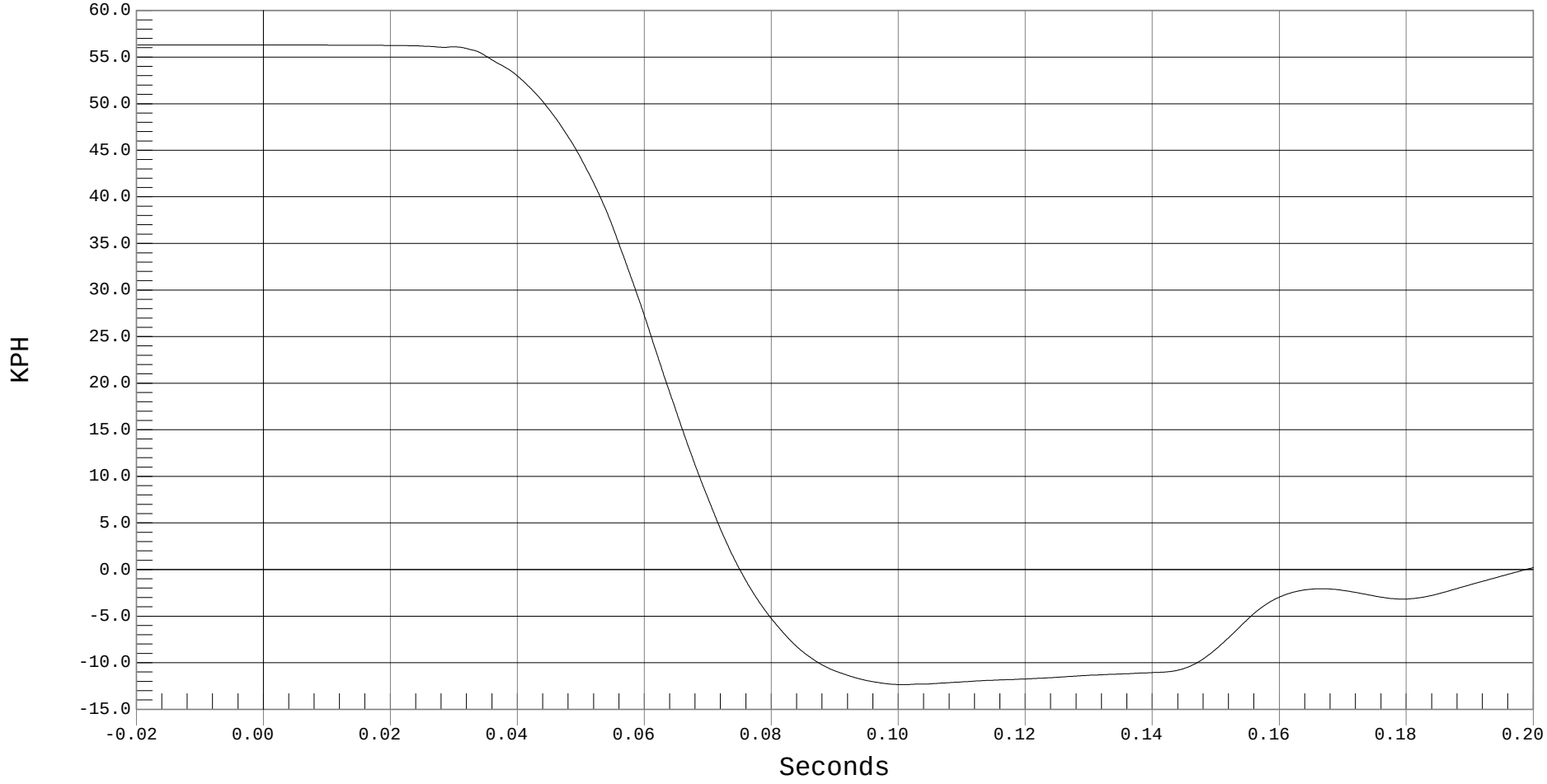
DRIVER HEAD X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER HEAD X VELOCITY, B01037AI.V01

Ymin = -12.36 KPH @ 0.1008 Seconds, Ymax = 56.3 KPH @ -0.0181 Seconds



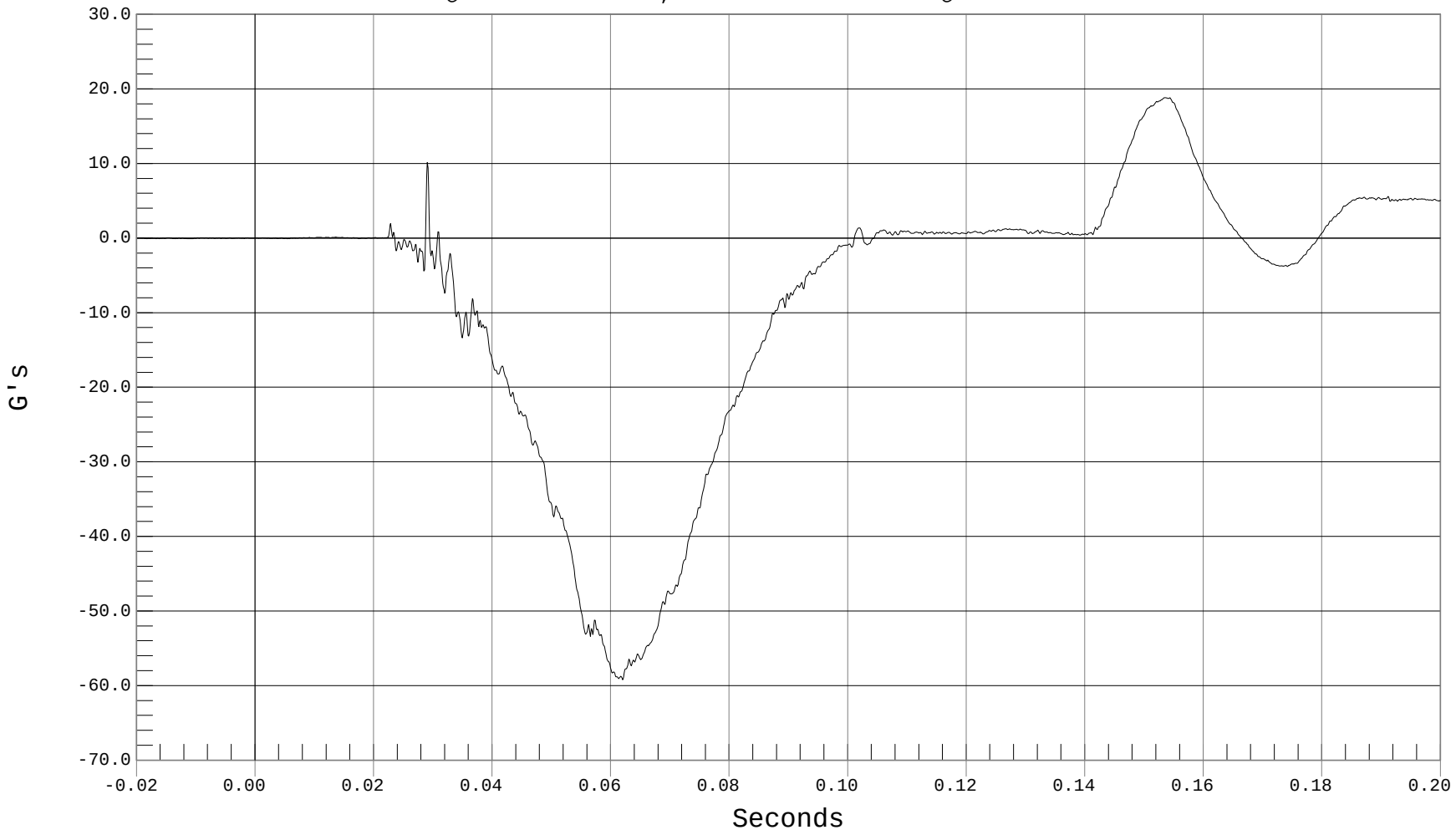
DRIVER HEAD REDUNDANT X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER HEAD Xr, B01037AT.A33

Ymin = -59.22 G's @ 0.0619 Seconds, Ymax = 18.83 G's @ 0.1533 Seconds



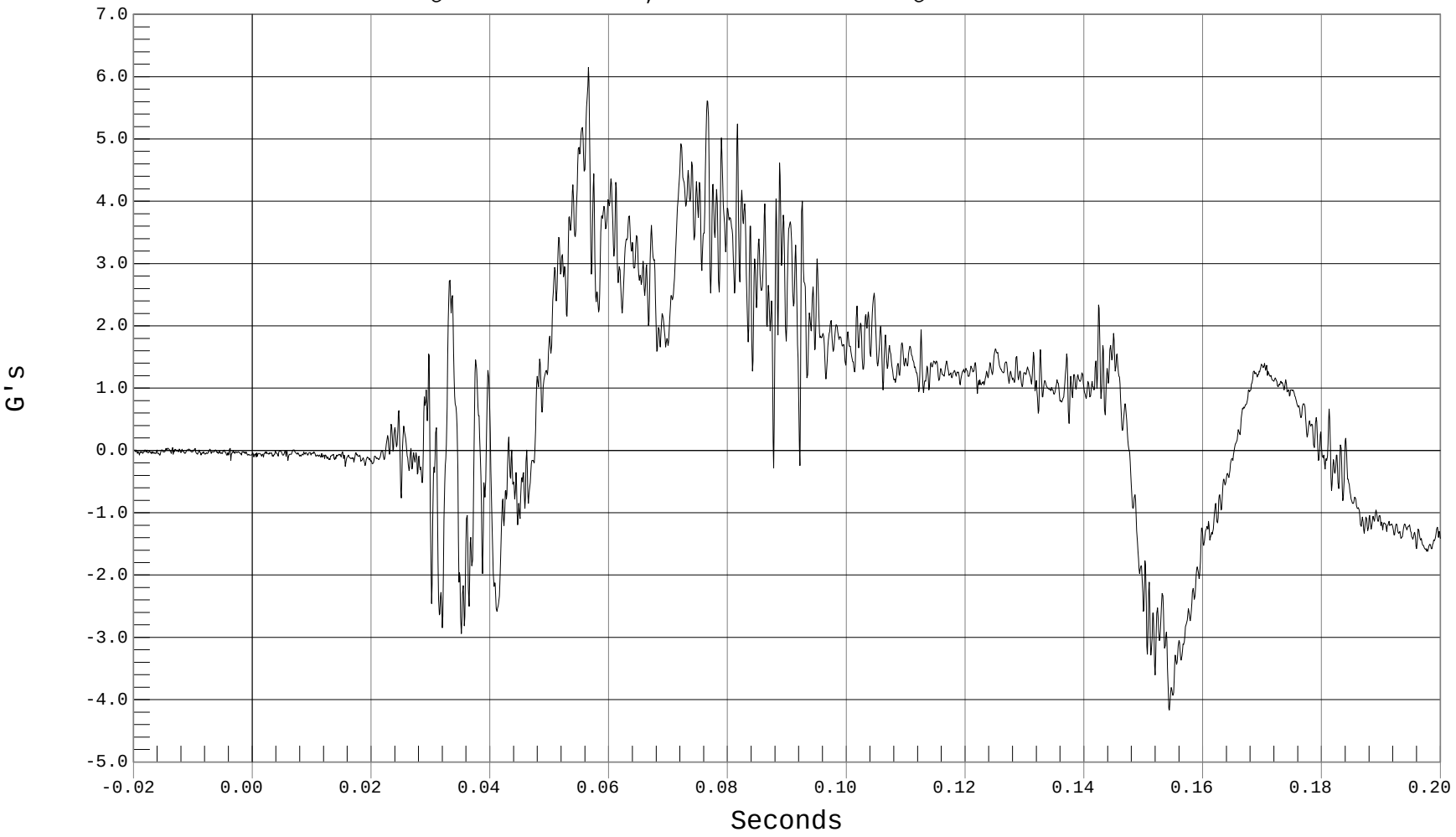
DRIVER HEAD REDUNDANT Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER HEAD Yr, B01037AT.A34

Ymin = -4.17 G's @ 0.1543 Seconds, Ymax = 6.15 G's @ 0.0565 Seconds



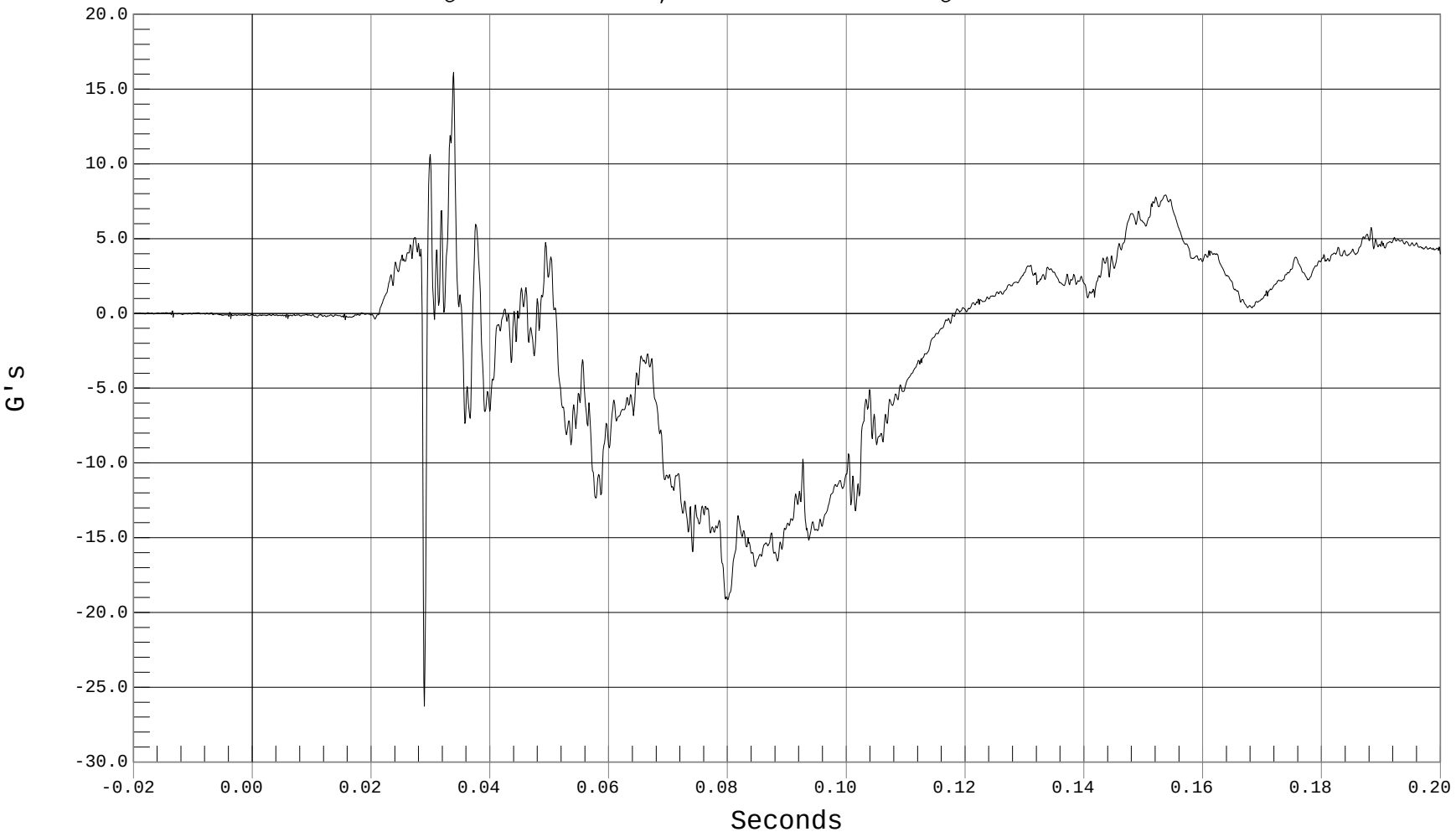
DRIVER HEAD REDUNDANT Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER HEAD Zr, B01037AT.A35

Ymin = -26.27 G's @ 0.0289 Seconds, Ymax = 16.14 G's @ 0.0338 Seconds



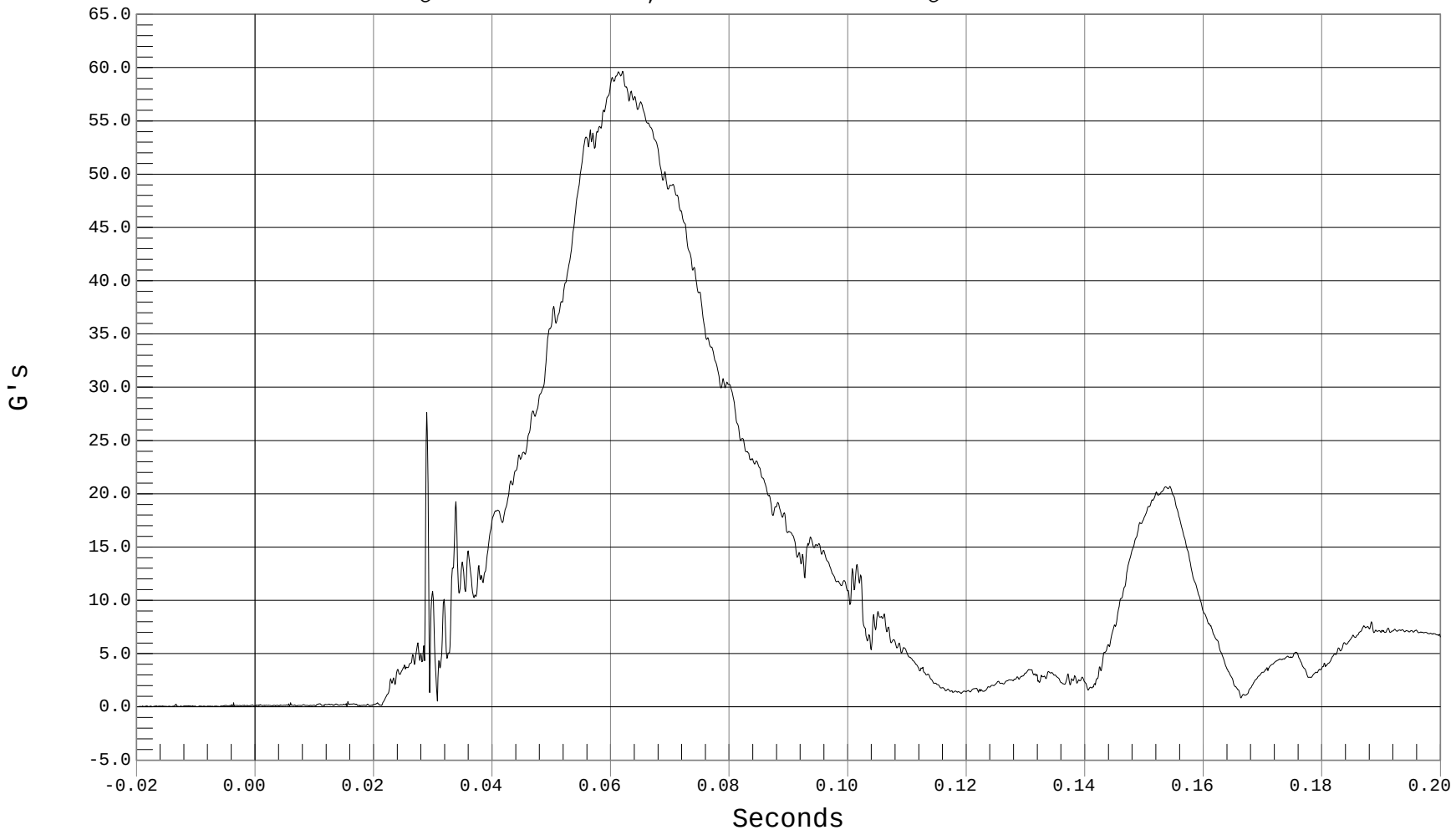
DRIVER HEAD REDUNDANT RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER HEAD REDUNDANT RESULTANT ACCELERATION, B01037AV.A33

Ymin = .01 G's @ -0.0099 Seconds, Ymax = 59.65 G's @ 0.0619 Seconds



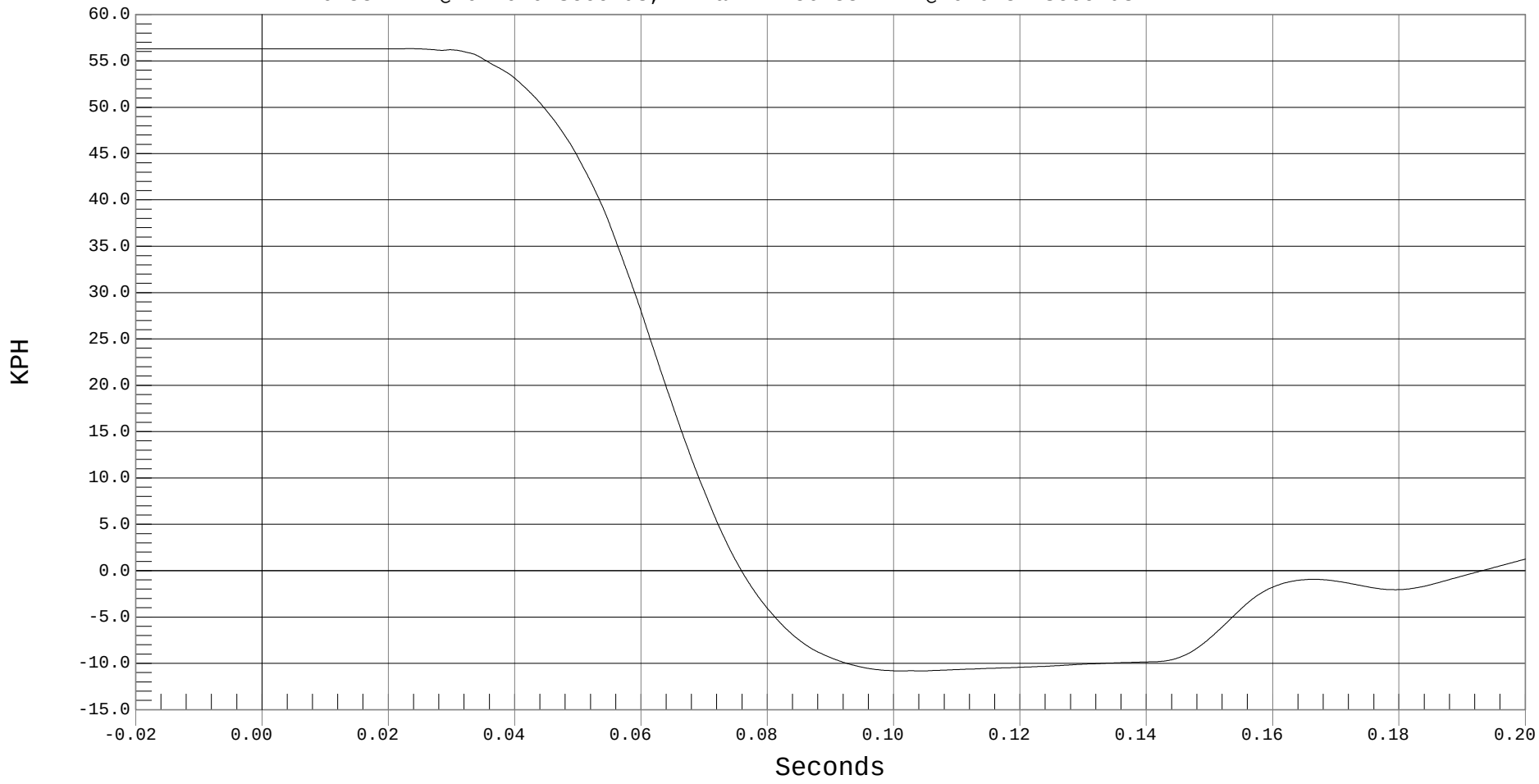
DRIVER HEAD REDUNDANT X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER HEAD REDUNDANT X VELOCITY, B01037AI.V33

Ymin = -10.83 KPH @ 0.1010 Seconds, Ymax = 56.33 KPH @ 0.0234 Seconds



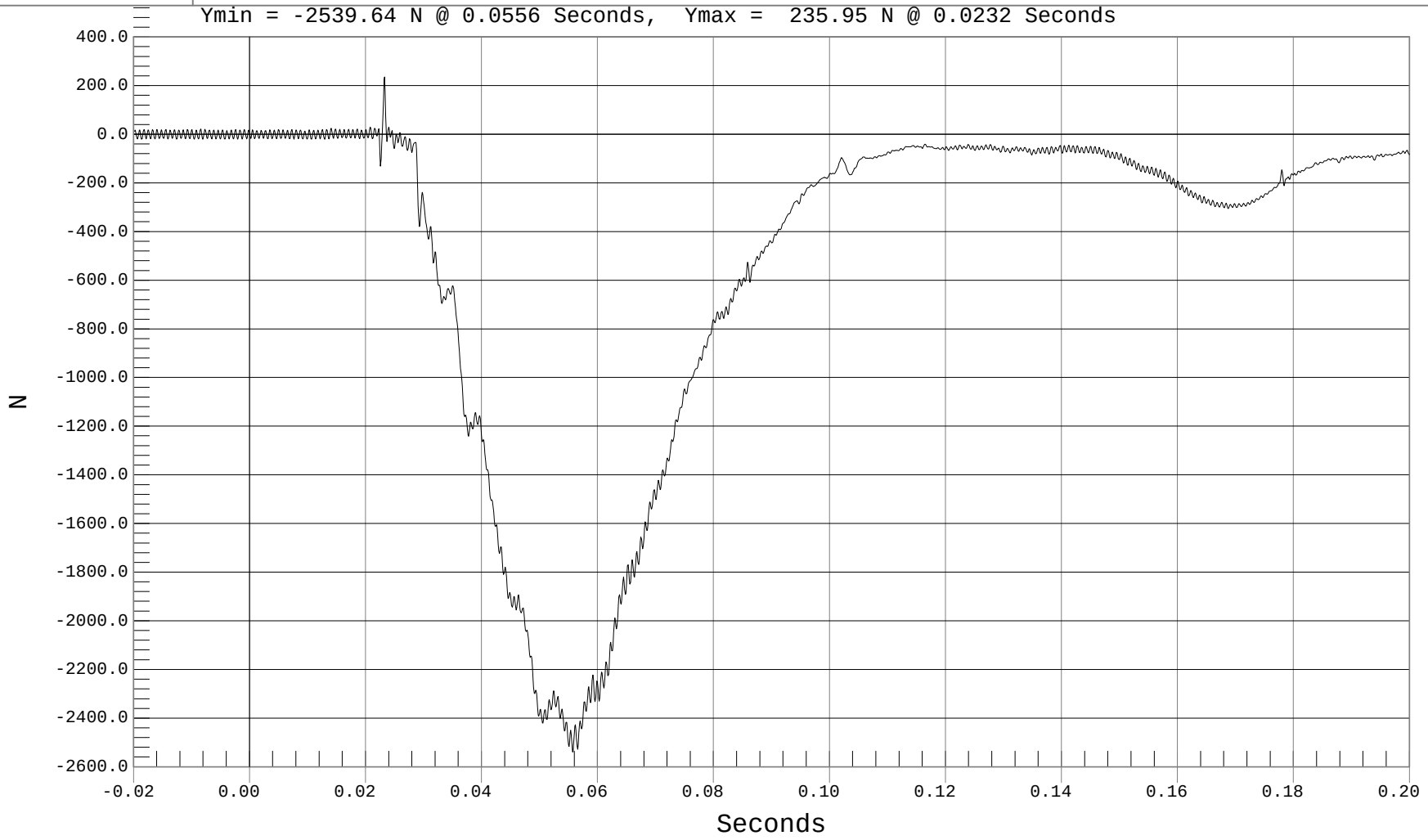
DRIVER NECK FORCE X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER NECK FX, B01037FT.F04

Ymin = -2539.64 N @ 0.0556 Seconds, Ymax = 235.95 N @ 0.0232 Seconds



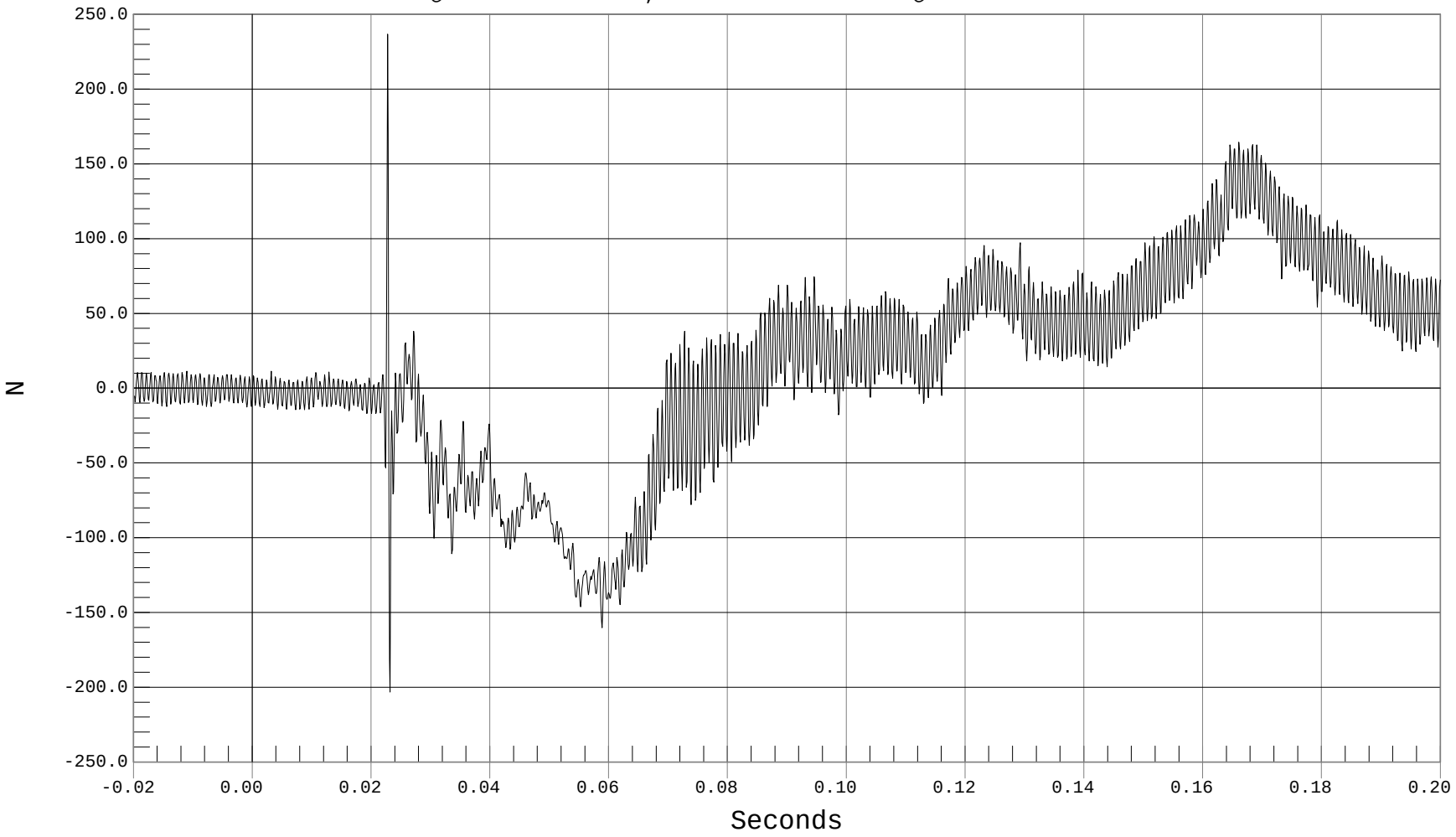
DRIVER NECK FORCE Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER NECK FY, B01037FT.F05

Ymin = -203.26 N @ 0.0231 Seconds, Ymax = 236.84 N @ 0.0227 Seconds



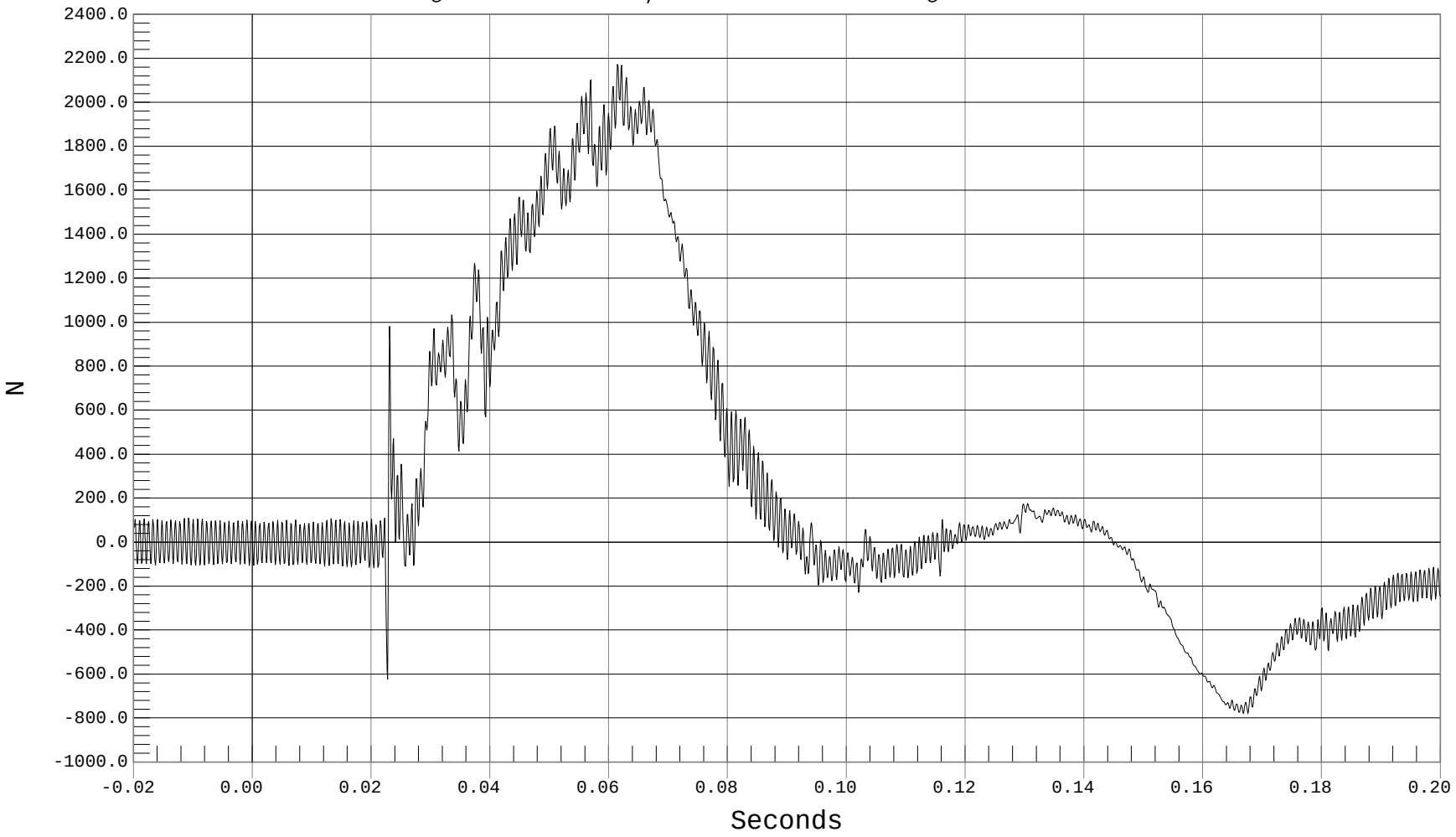
DRIVER NECK FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER NECK FZ, B01037FT.F06

Ymin = -779.28 N @ 0.1668 Seconds, Ymax = 2172.12 N @ 0.0614 Seconds



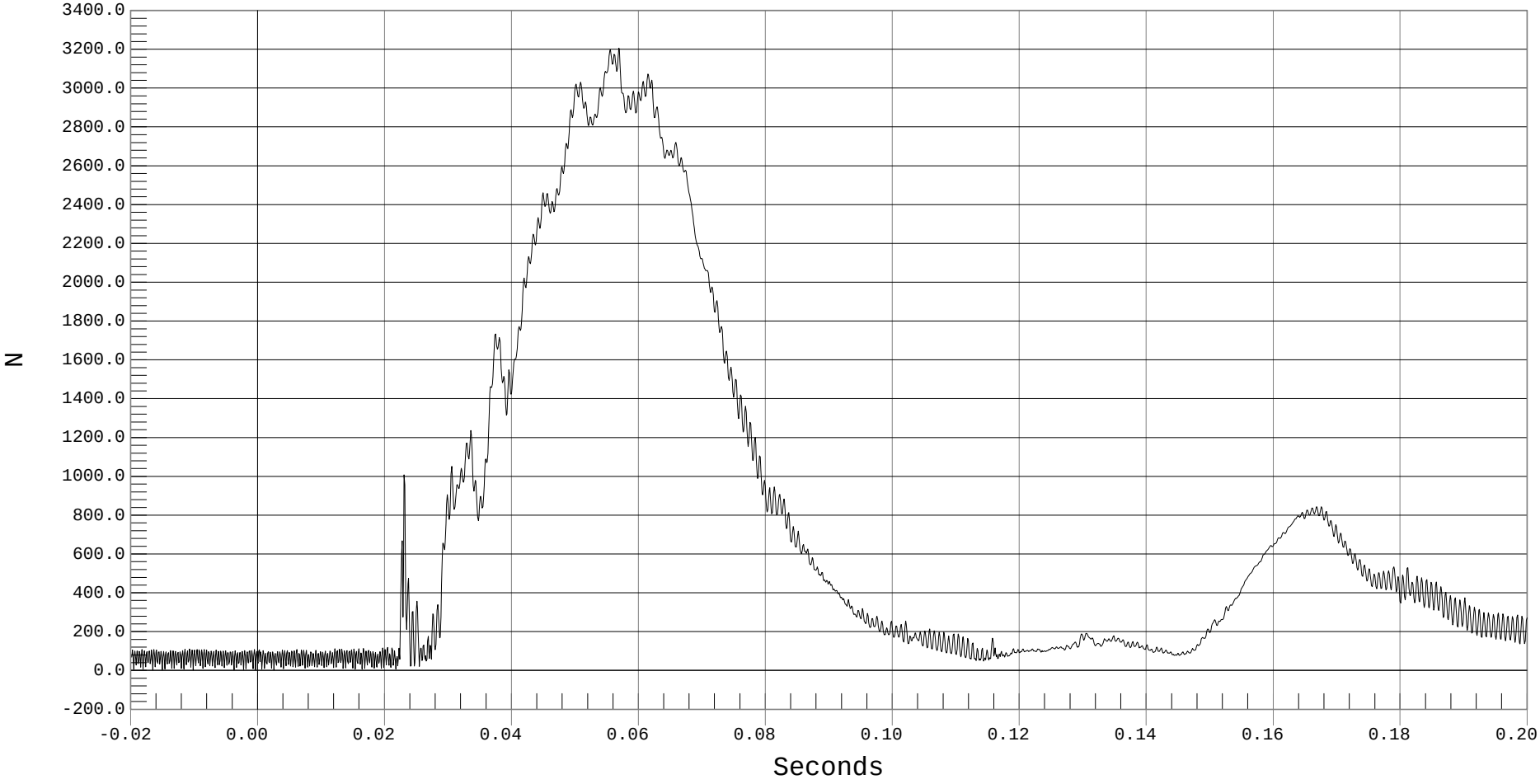
DRIVER NECK FORCE RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER NECK FORCE RESULTANT, B01037FV.F04

Ymin = 2.21 N @ -0.0102 Seconds, Ymax = 3205.6 N @ 0.0568 Seconds



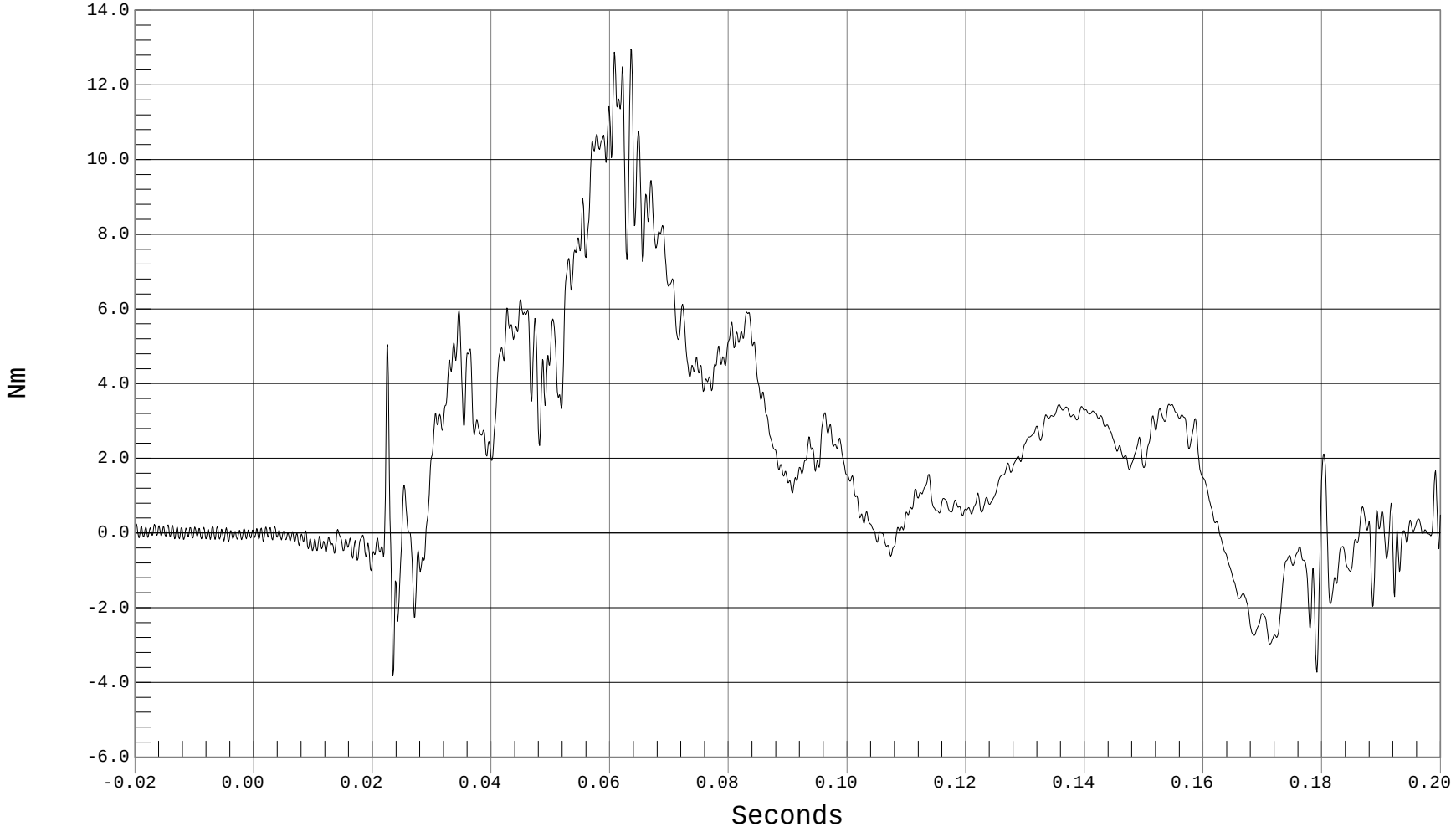
DRIVER NECK MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER NECK MX, B01037MF.M07

Ymin = -3.83 Nm @ 0.0234 Seconds, Ymax = 12.95 Nm @ 0.0635 Seconds



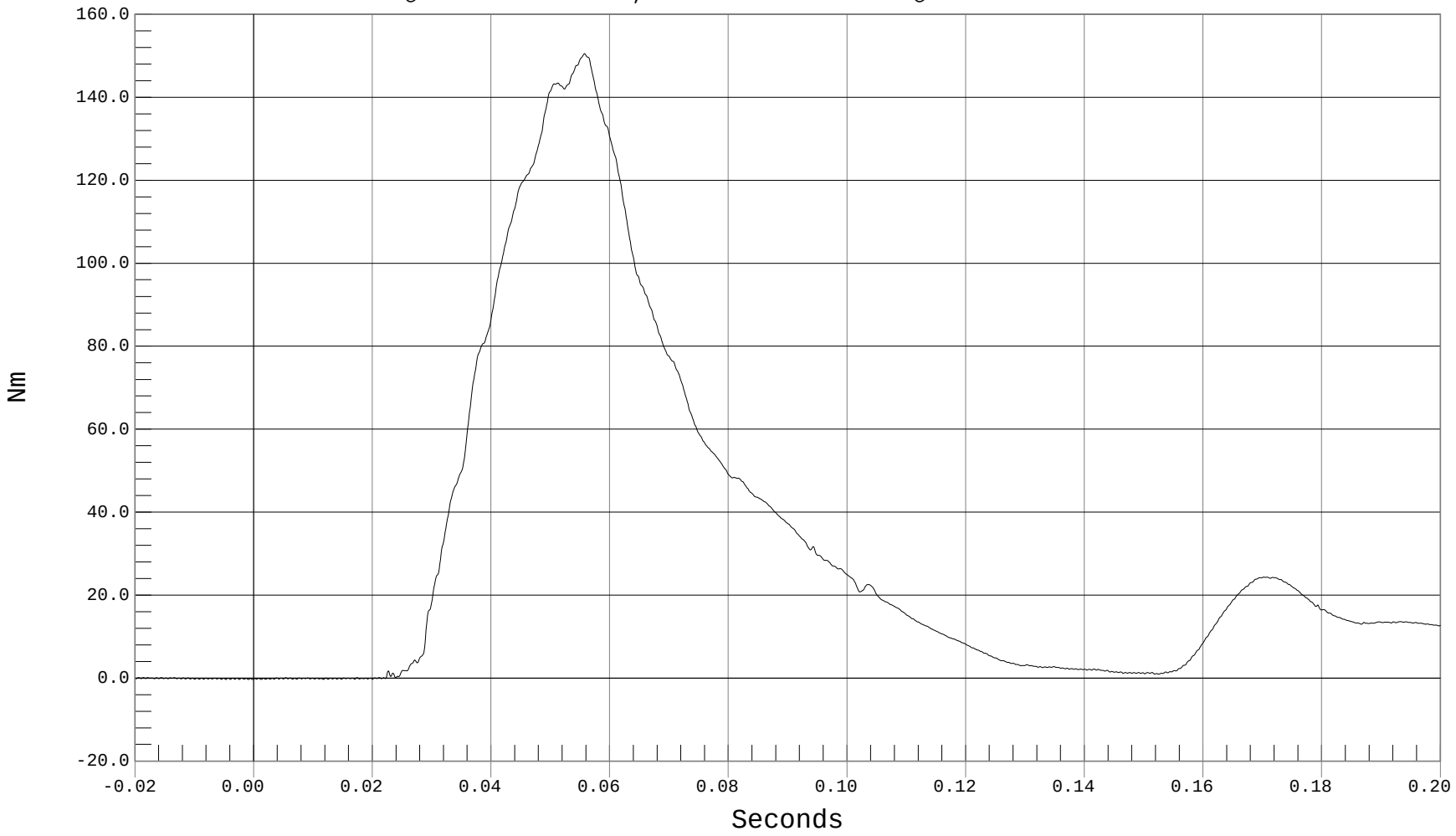
DRIVER NECK MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER NECK MY, B01037MF.M08

Ymin = -.34 Nm @ -0.0010 Seconds, Ymax = 150.52 Nm @ 0.0557 Seconds



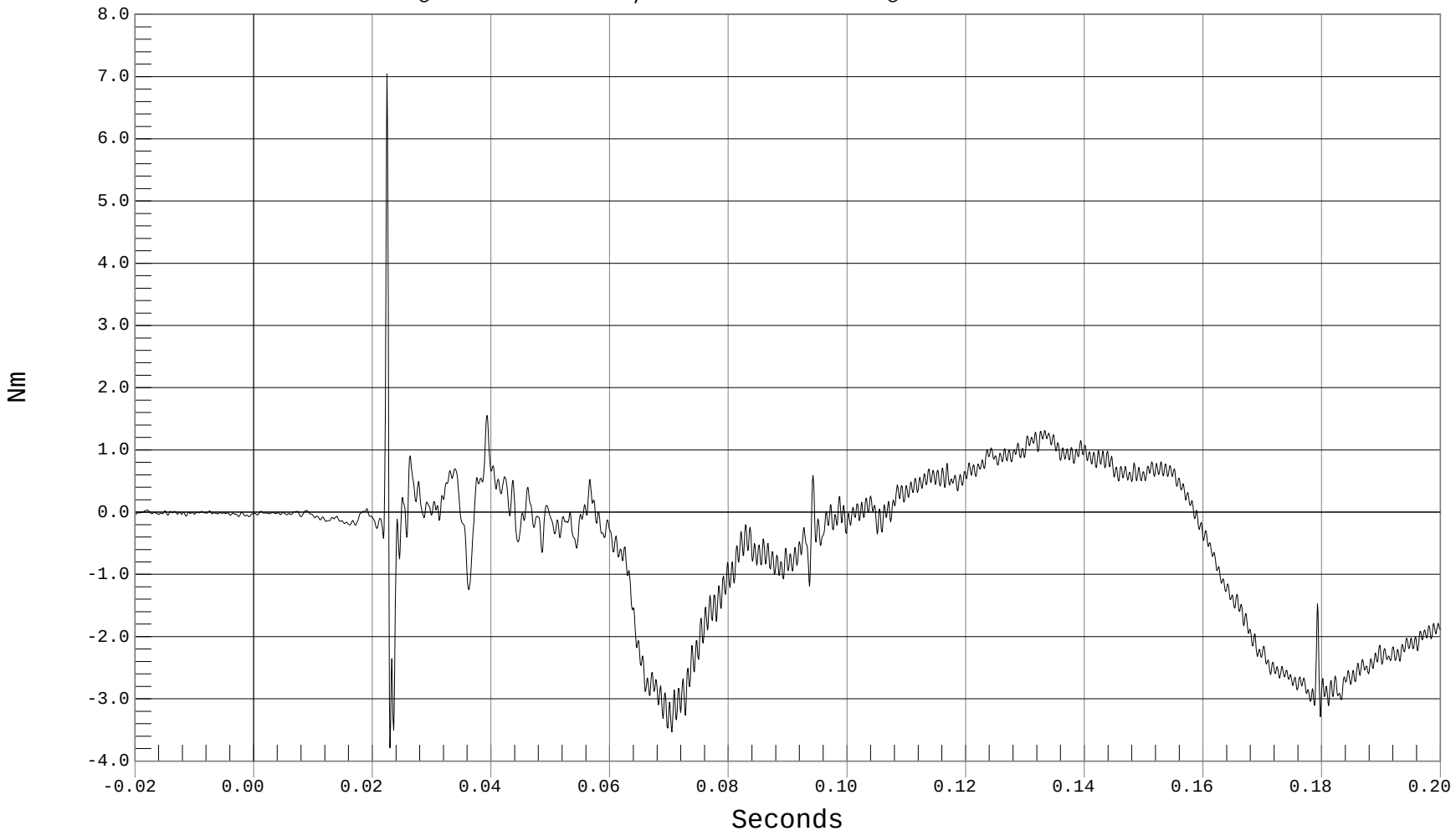
DRIVER NECK MOMENT Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER NECK MZ, B01037MF.M09

Ymin = -3.79 Nm @ 0.0229 Seconds, Ymax = 7.04 Nm @ 0.0224 Seconds



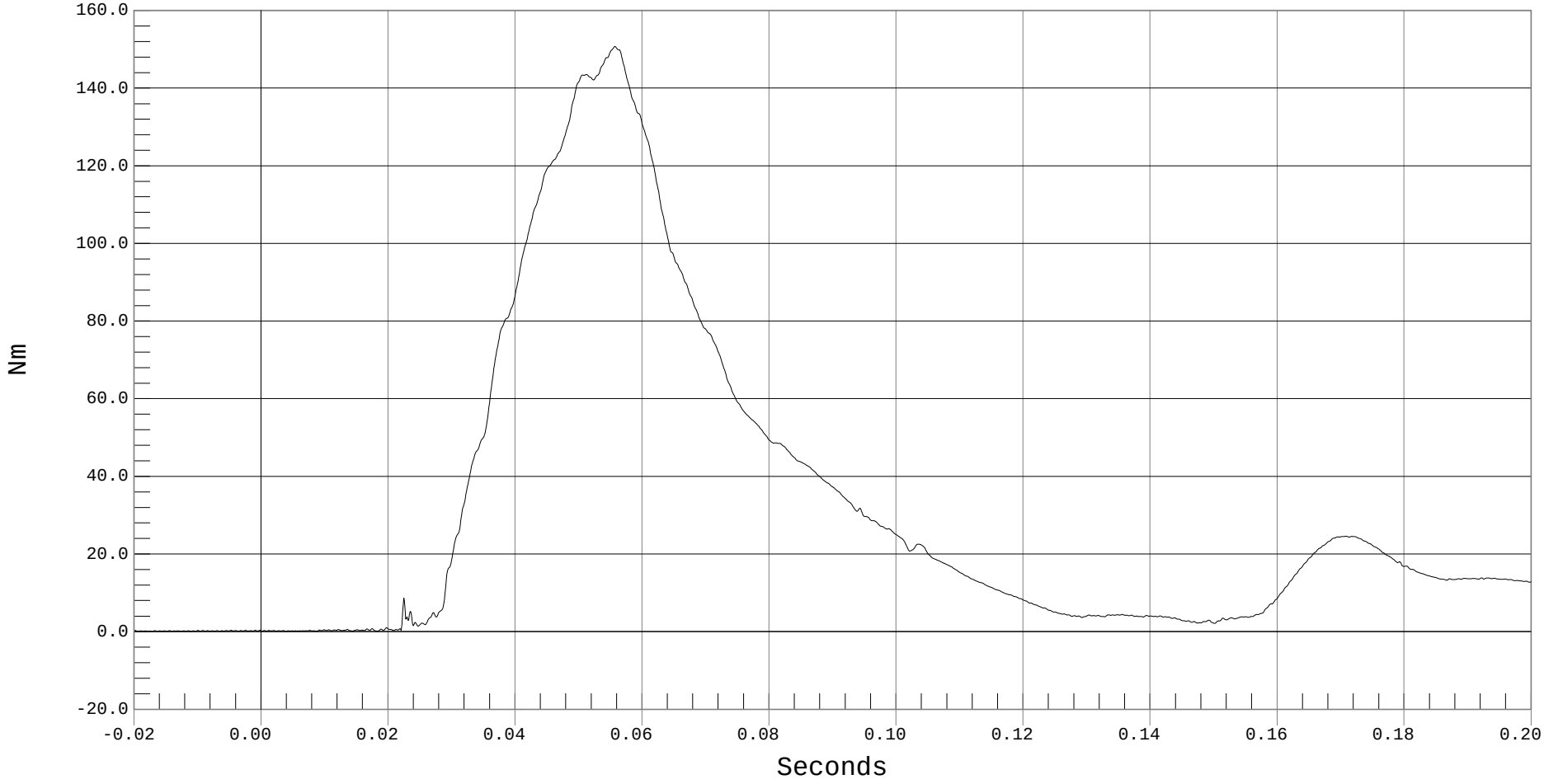
DRIVER NECK MOMENT RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER NECK MOMENT RESULTANT, B01037MV.M07

Ymin = .02 Nm @ -0.0143 Seconds, Ymax = 150.72 Nm @ 0.0557 Seconds



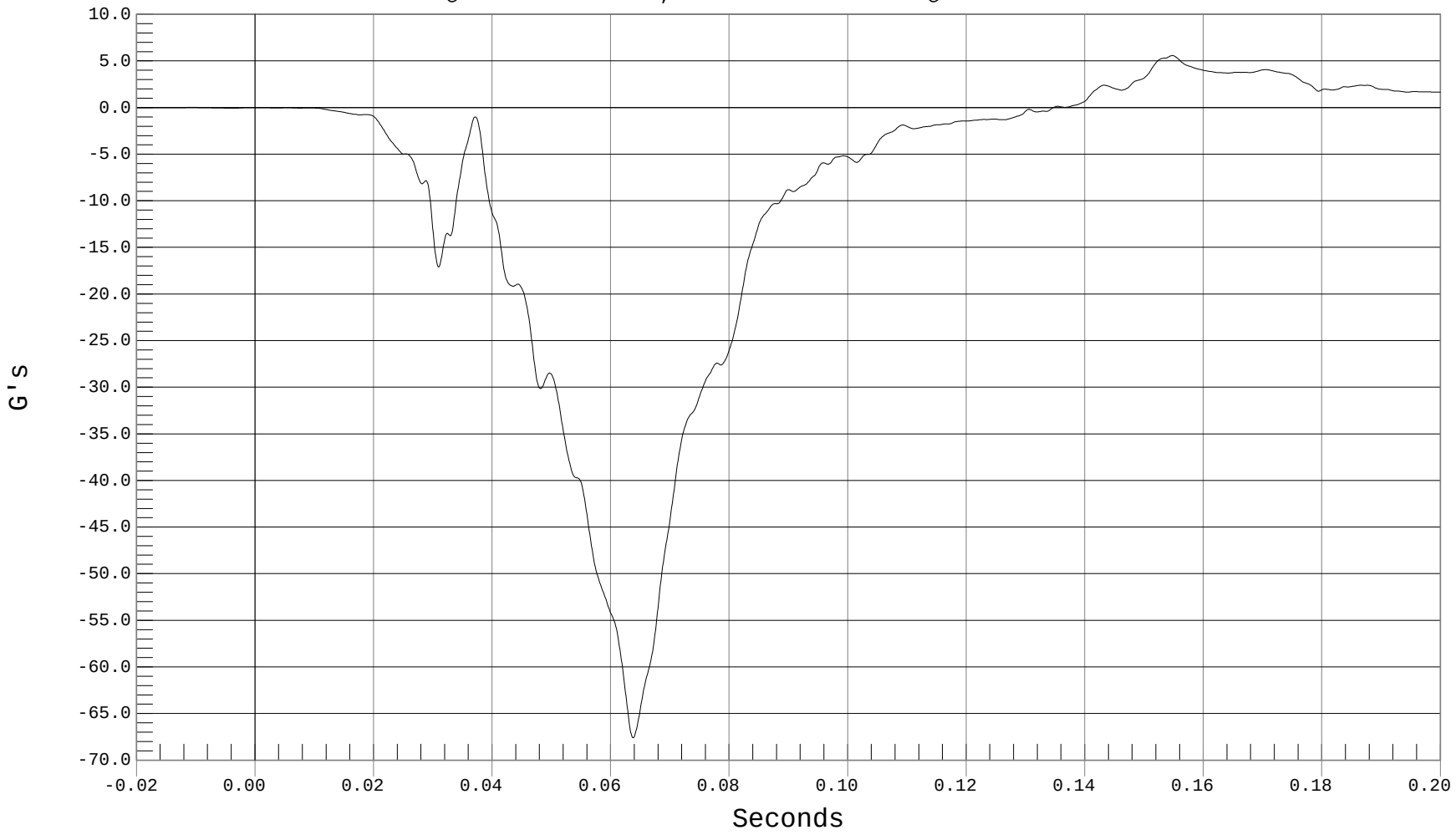
DRIVER CHEST X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST X, B01037AF.A10

Ymin = -67.61 G's @ 0.0637 Seconds, Ymax = 5.58 G's @ 0.1547 Seconds



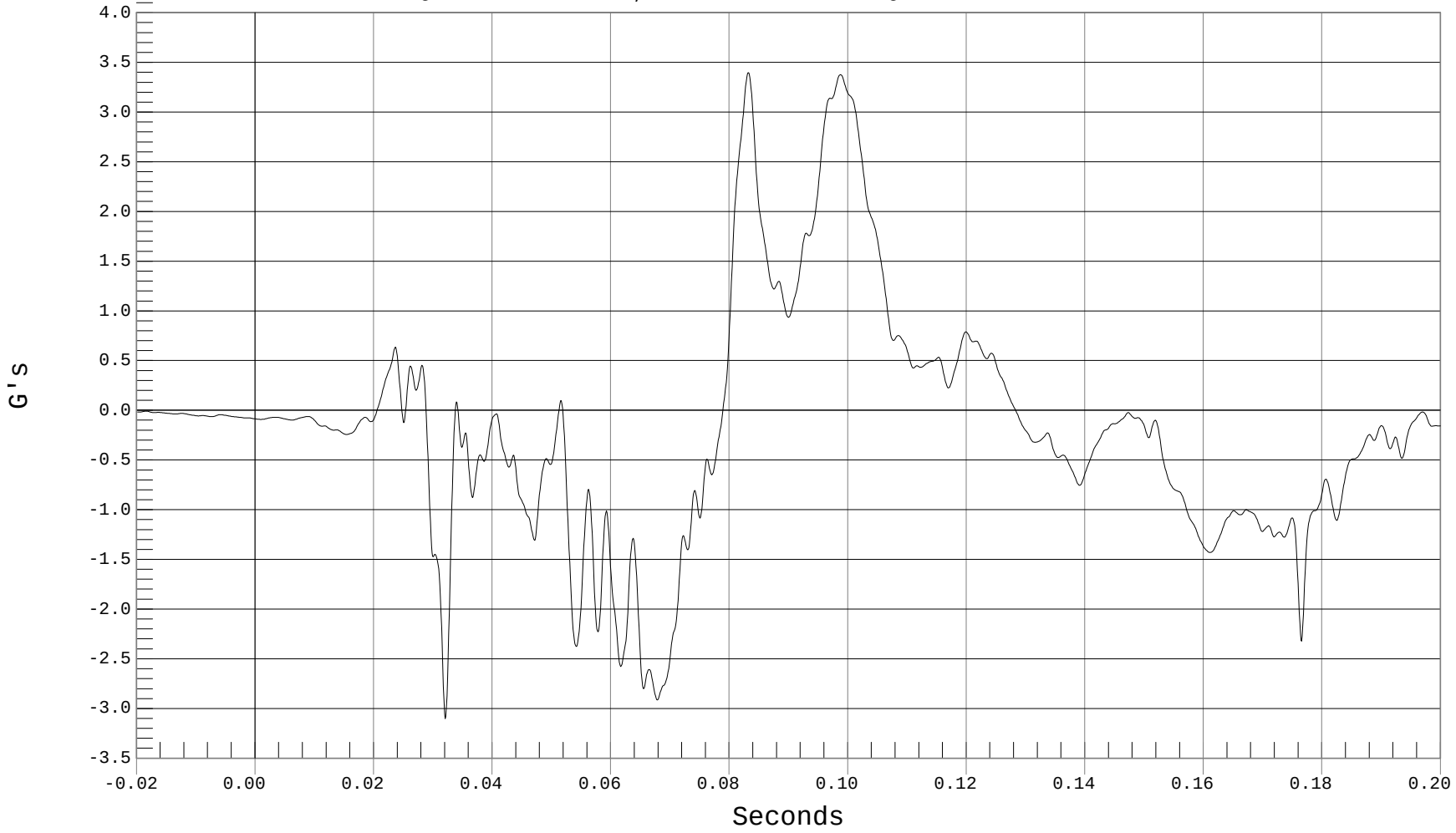
DRIVER CHEST Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST Y, B01037AF.A11

Ymin = -3.1 G's @ 0.0320 Seconds, Ymax = 3.4 G's @ 0.0831 Seconds



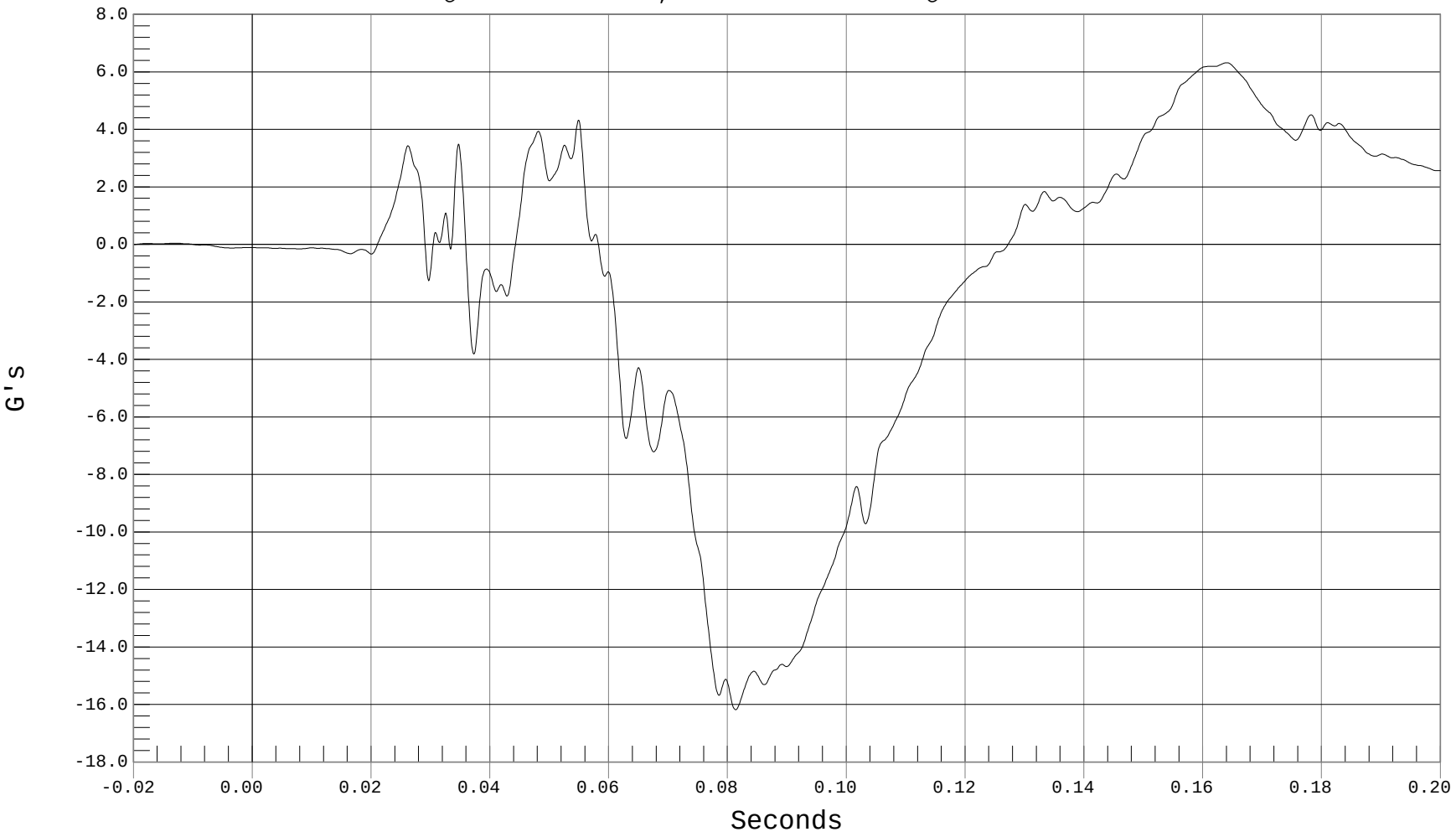
DRIVER CHEST Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST Z, B01037AF.A12

Ymin = -16.18 G's @ 0.0813 Seconds, Ymax = 6.32 G's @ 0.1640 Seconds



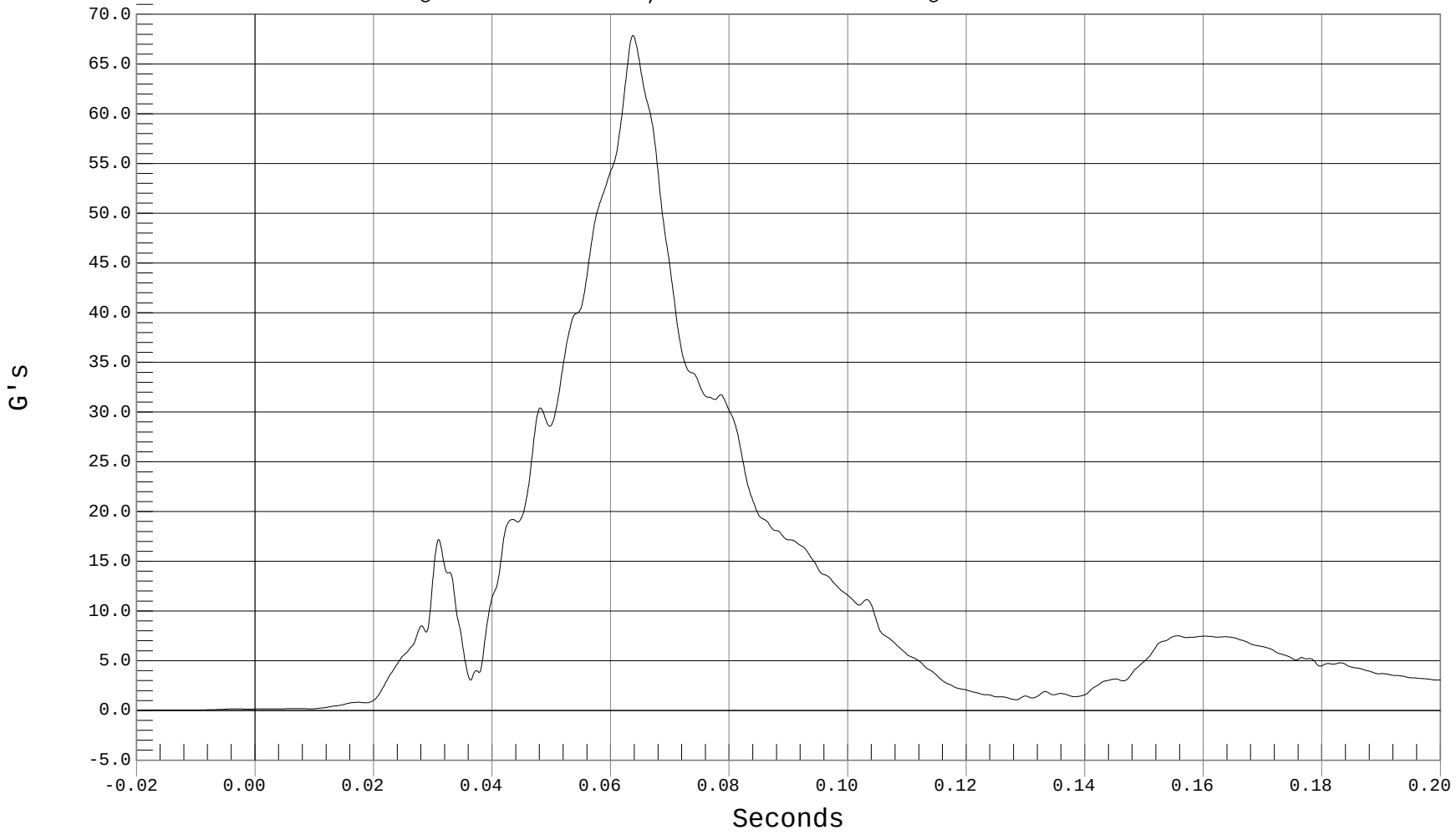
DRIVER CHEST RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST RESULTANT ACCELERATION, B01037AV.A10

Ymin = .02 G's @ -0.0194 Seconds, Ymax = 67.88 G's @ 0.0637 Seconds



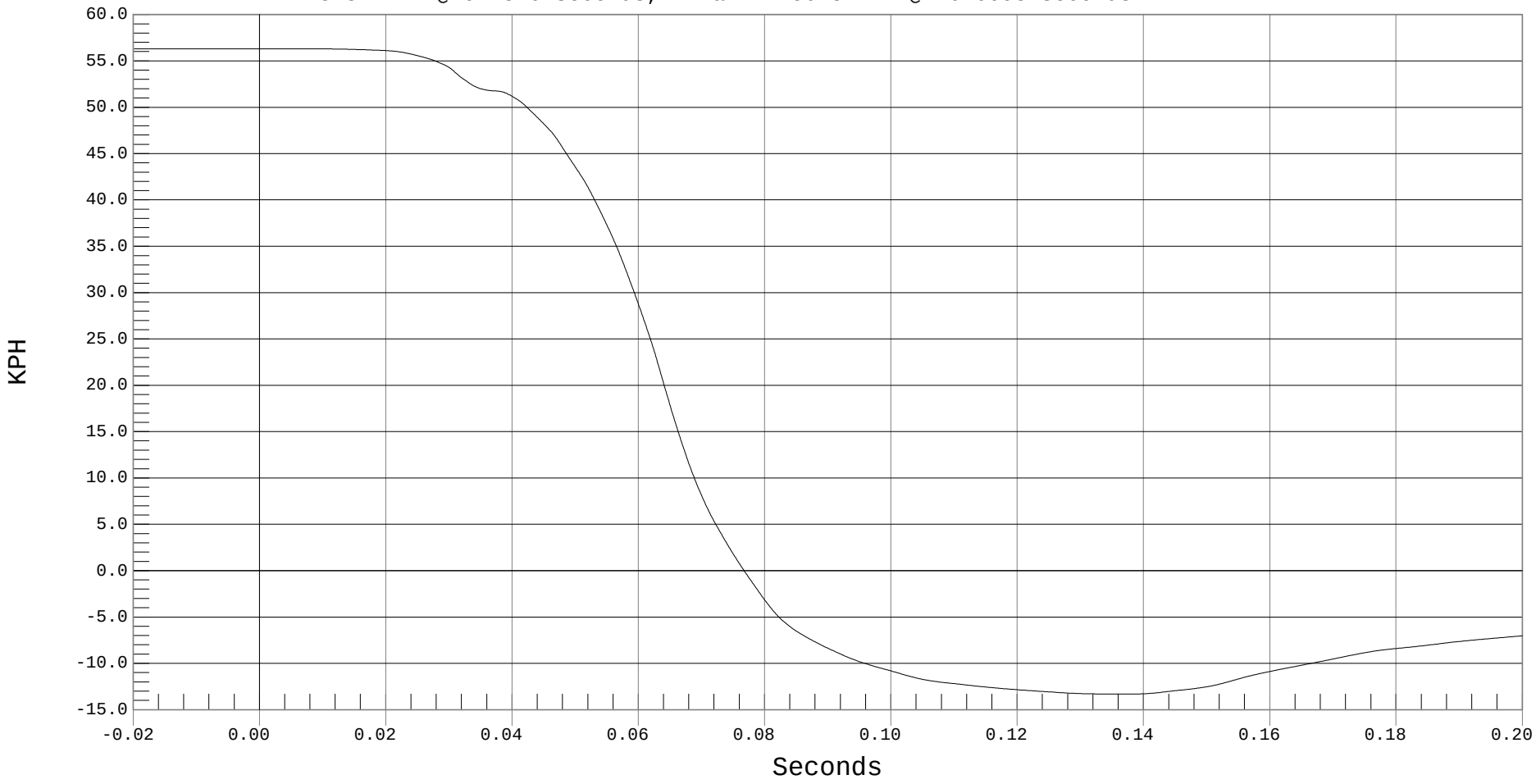
DRIVER CHEST X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST X VELOCITY, B01037AI.V10

Ymin = -13.32 KPH @ 0.1346 Seconds, Ymax = 56.3 KPH @ -0.0093 Seconds



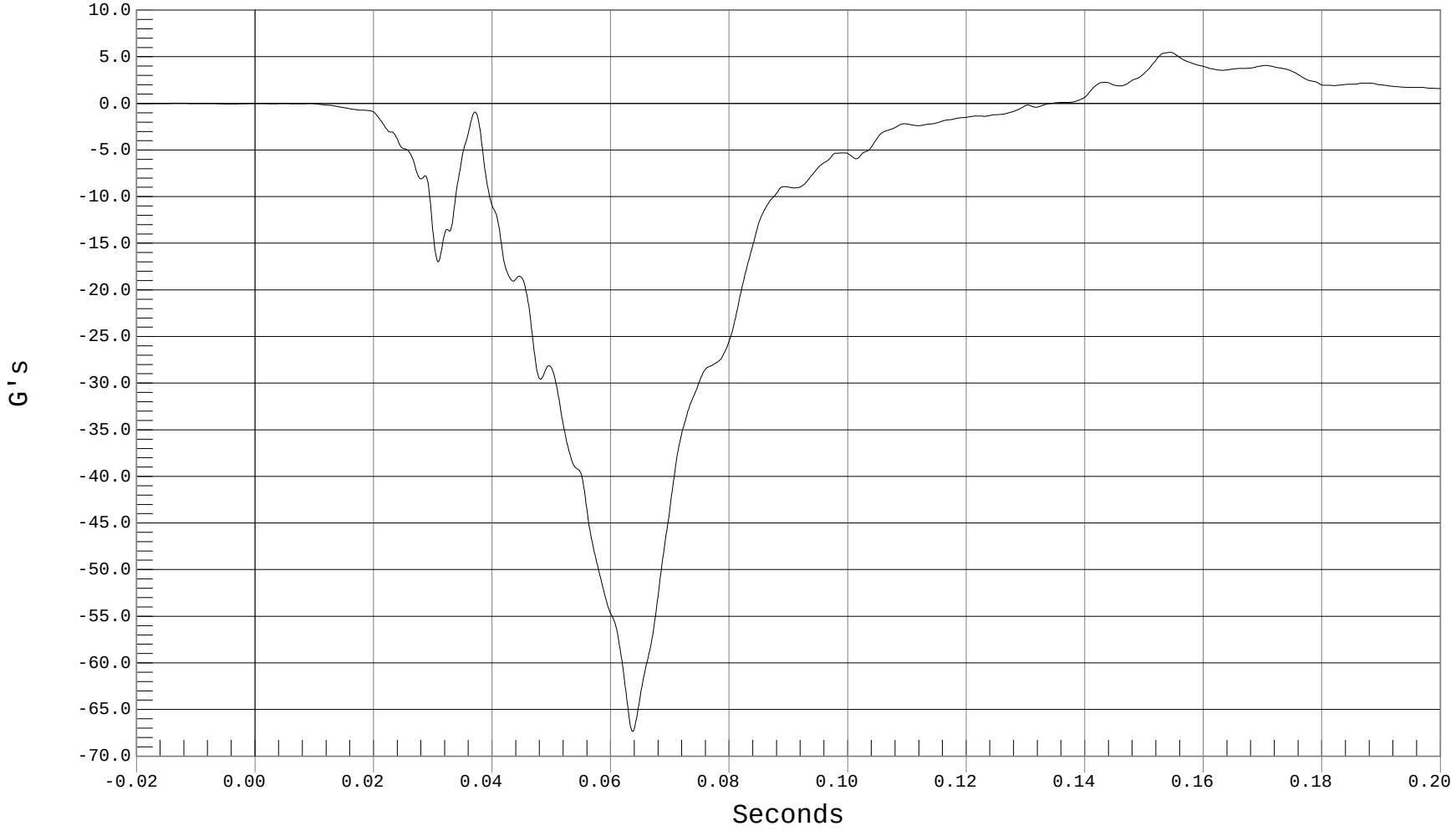
DRIVER CHEST REDUNDANT X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST Xr, B01037AF.A36

Ymin = -67.35 G's @ 0.0636 Seconds, Ymax = 5.48 G's @ 0.1543 Seconds



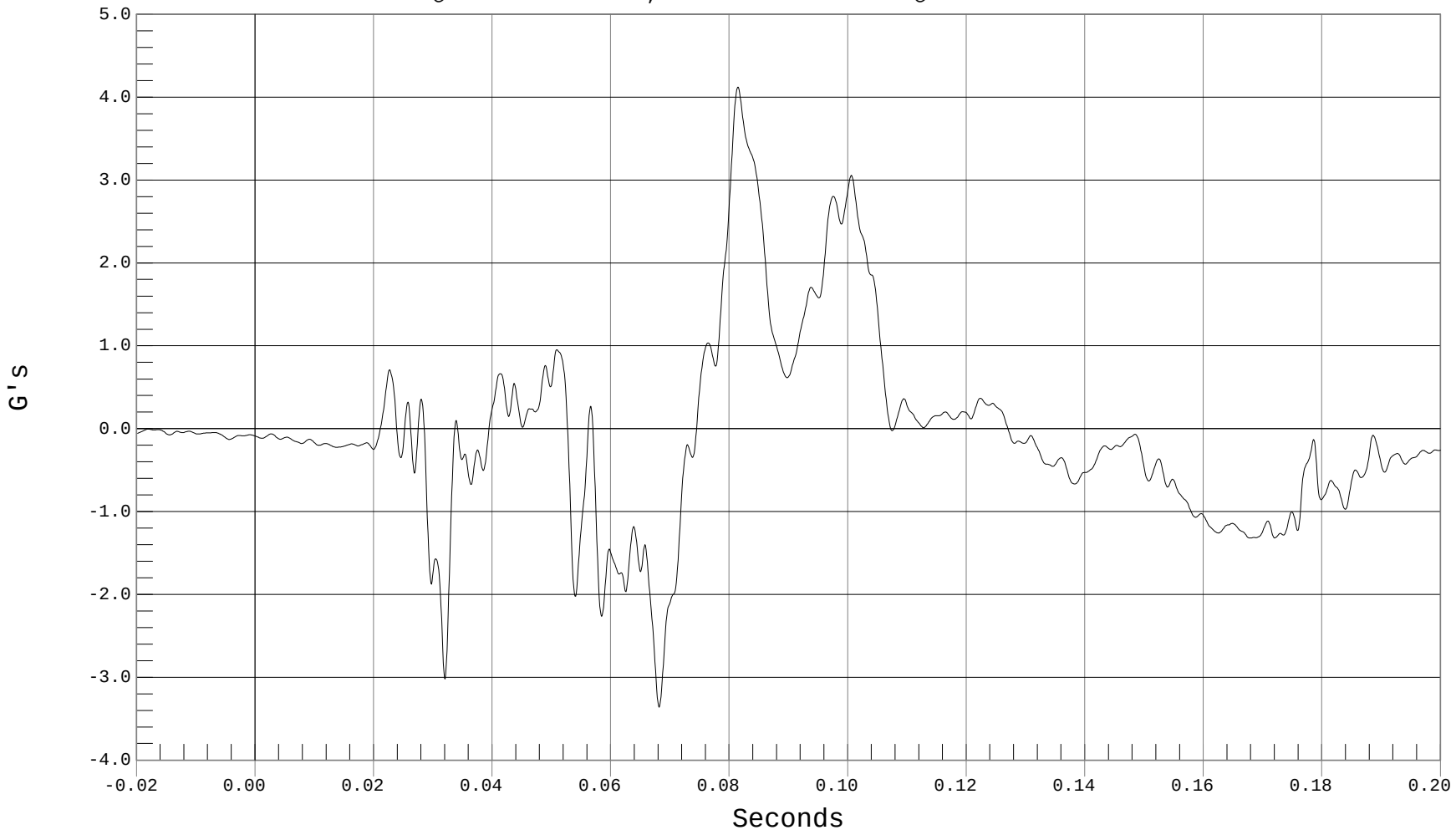
DRIVER CHEST REDUNDANT Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST Yr, B01037AF.A37

Ymin = -3.36 G's @ 0.0681 Seconds, Ymax = 4.12 G's @ 0.0814 Seconds



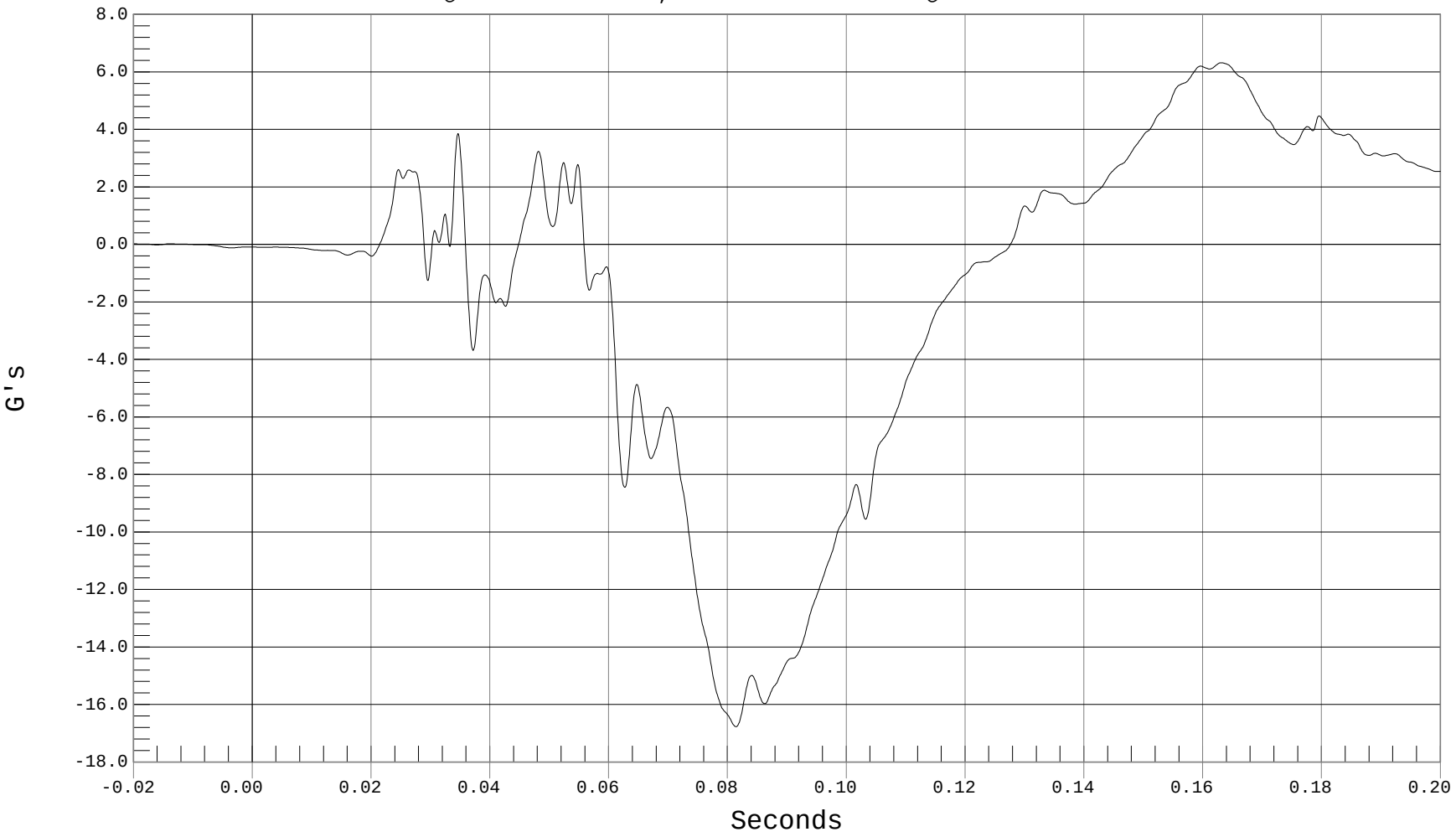
DRIVER CHEST REDUNDANT Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST Zr, B01037AF.A38

Ymin = -16.77 G's @ 0.0813 Seconds, Ymax = 6.32 G's @ 0.1630 Seconds



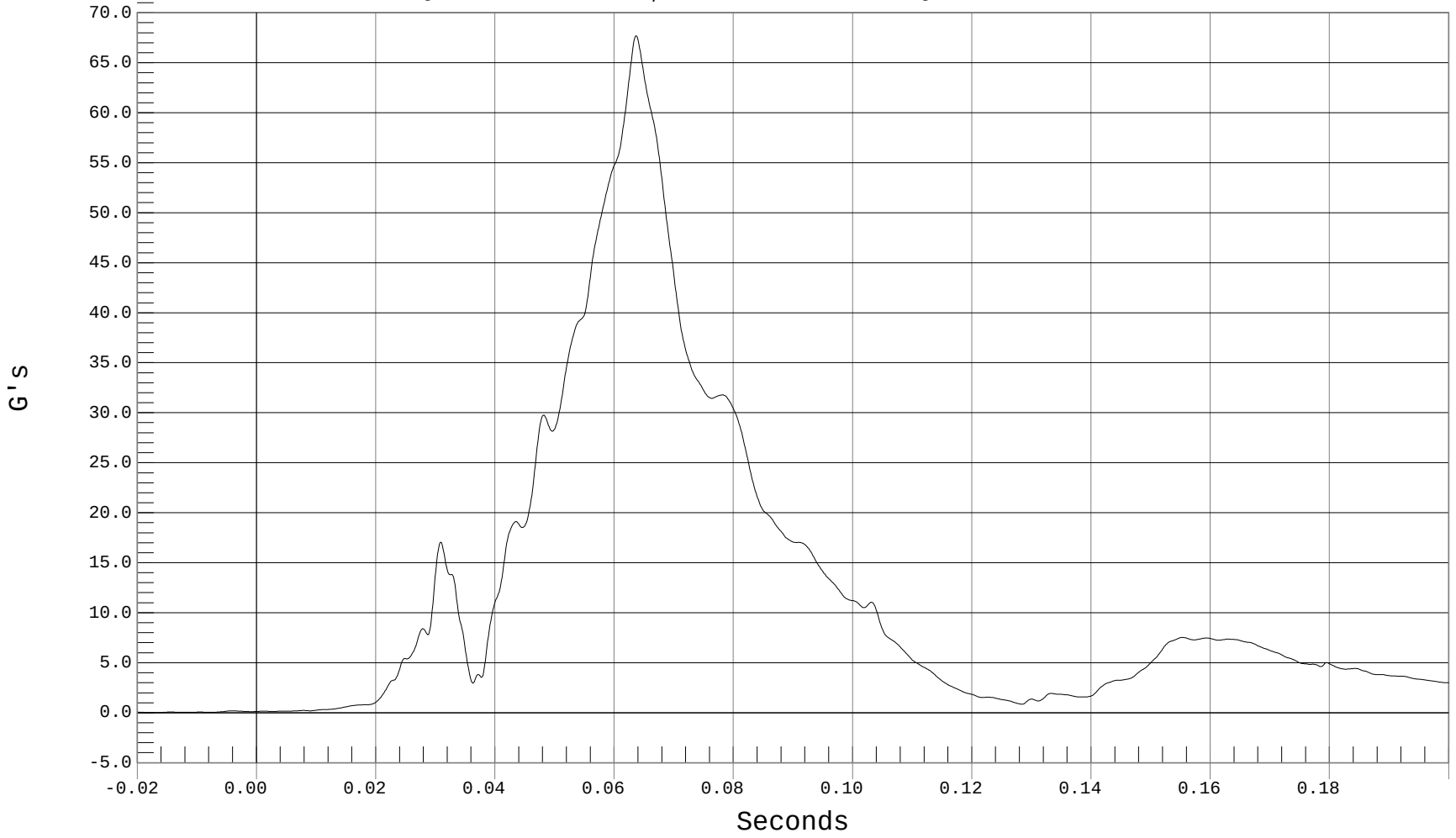
DRIVER CHEST REDUNDANT RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST REDUNDANT RESULTANT ACCELERATION, B01037AV.A36

Ymin = .01 G's @ -0.0182 Seconds, Ymax = 67.7 G's @ 0.0636 Seconds



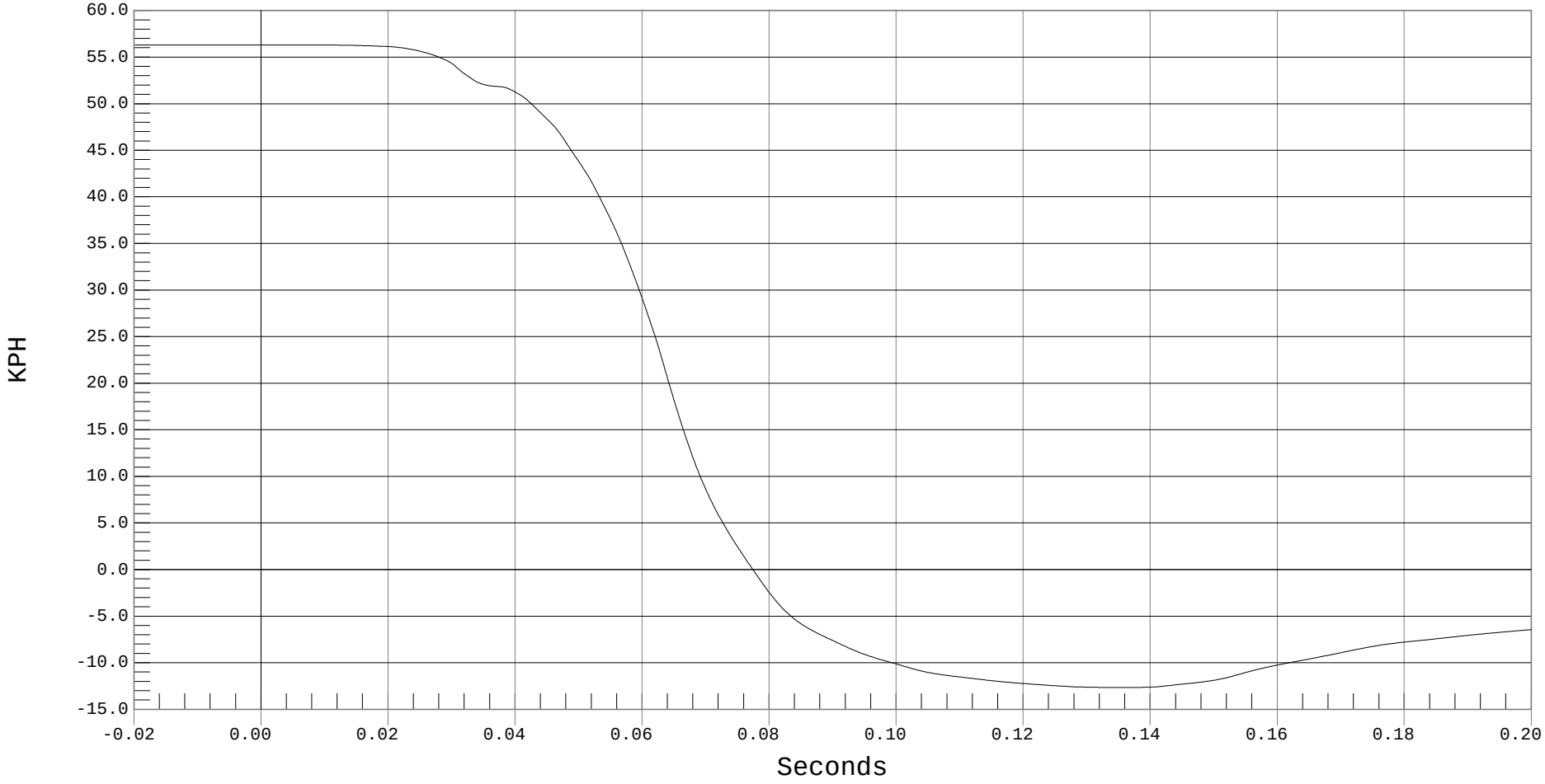
DRIVER CHEST REDUNDANT X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER CHEST REDUNDANT X VELOCITY, B01037AI.V36

Ymin = -12.66 KPH @ 0.1342 Seconds, Ymax = 56.3 KPH @ -0.0107 Seconds



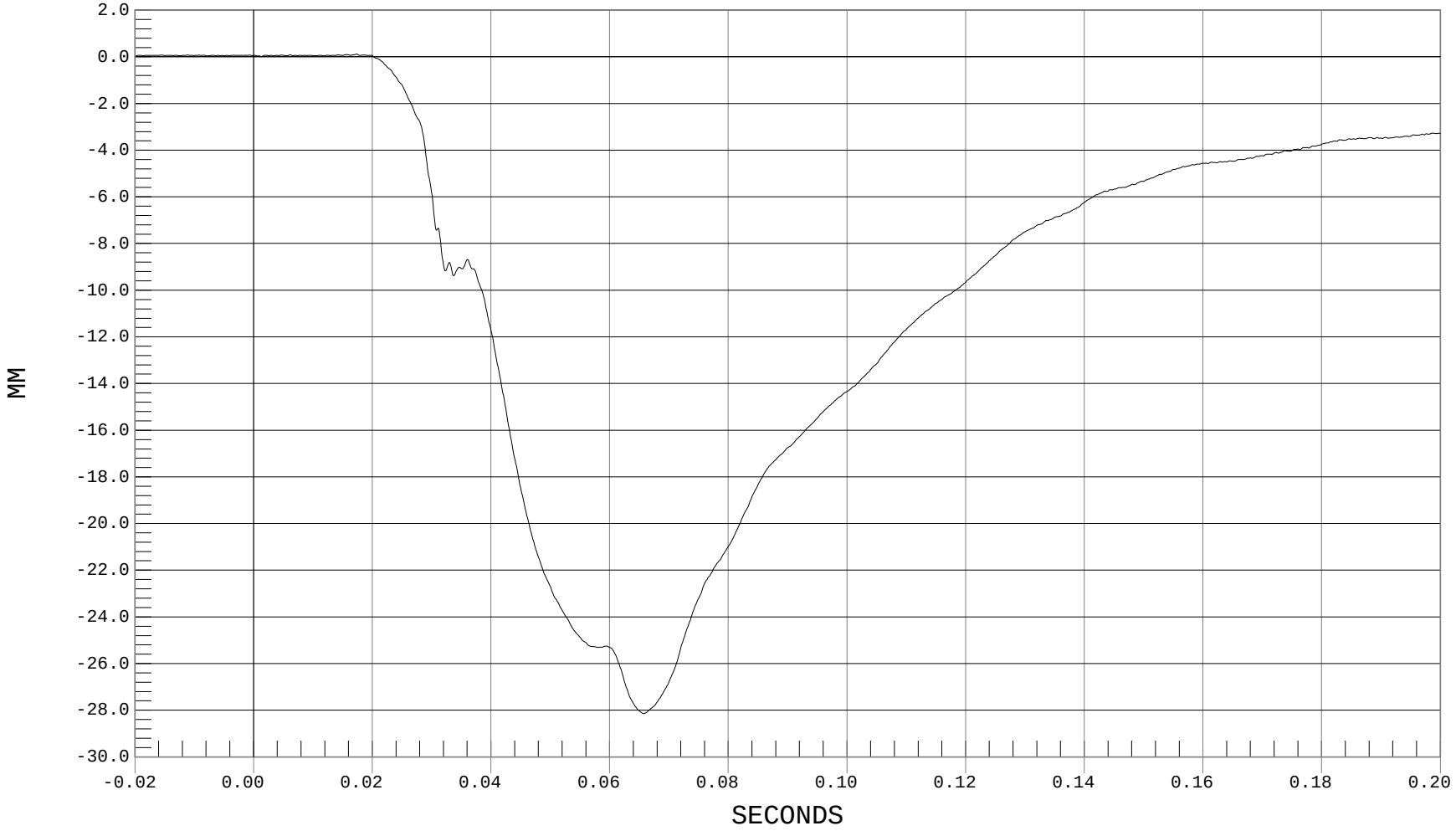
DRIVER CHEST COMPRESSION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DISPLACEMENT, B01037DF.D13

Ymin = -28.15 MM @ 0.0656 SECONDS, Ymax = .12 MM @ 0.0172 SECONDS



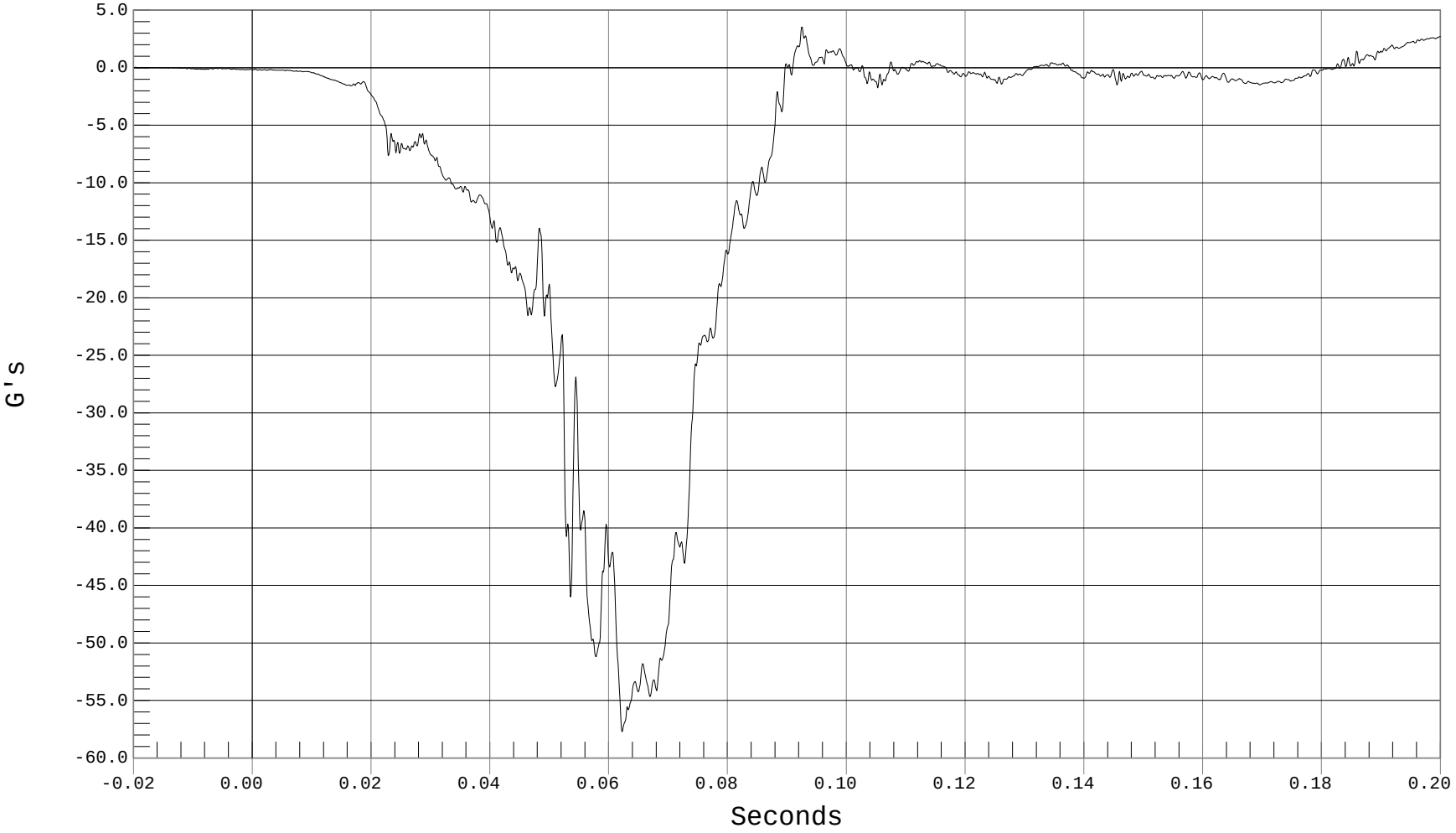
DRIVER PELVIS X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER PELVIS X, B01037AT.A14

Ymin = -57.74 G's @ 0.0622 Seconds, Ymax = 3.55 G's @ 0.0924 Seconds



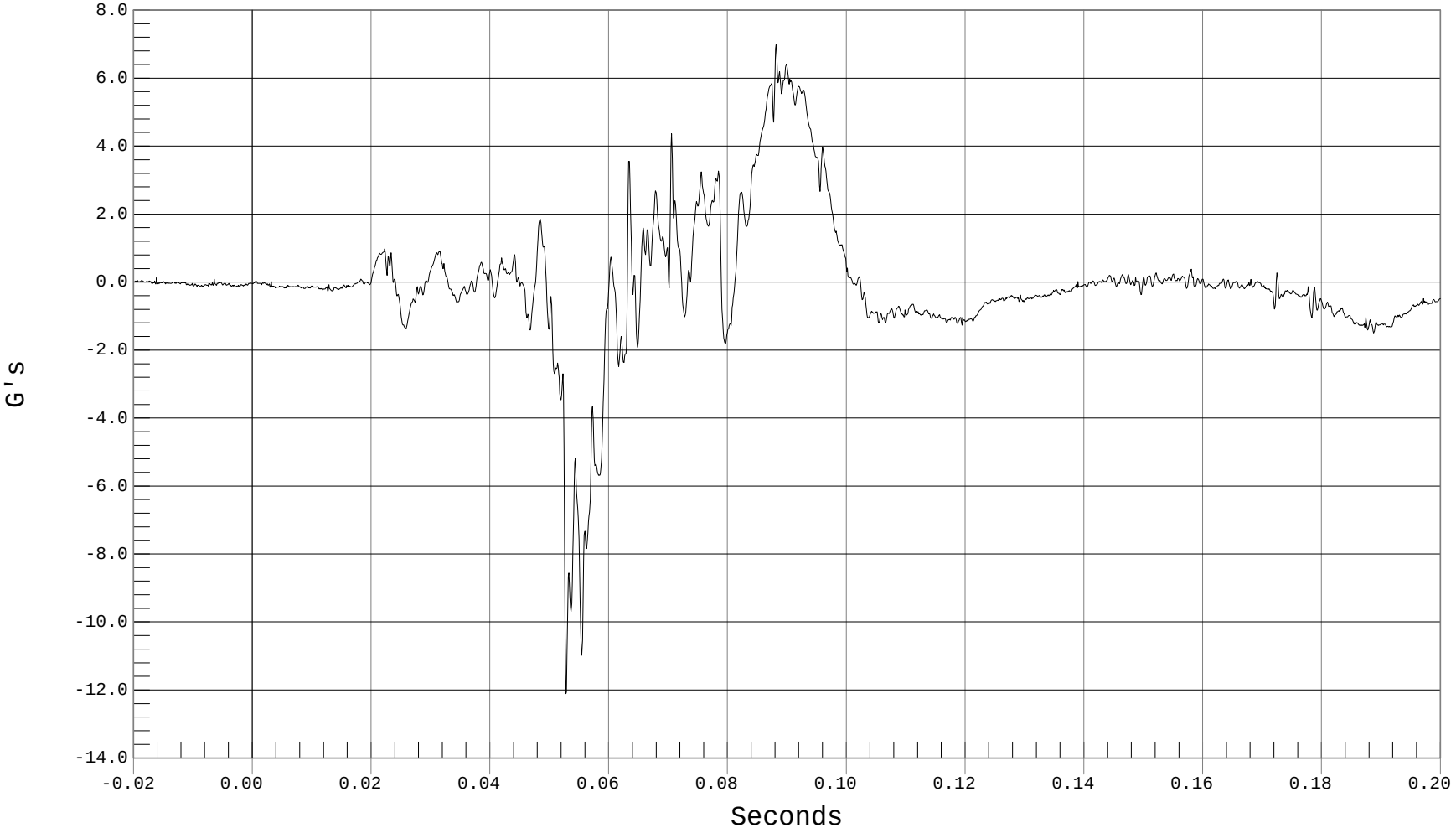
DRIVER PELVIS Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER PELVIS Y, B01037AT.A15

Ymin = -12.11 G's @ 0.0527 Seconds, Ymax = 6.98 G's @ 0.0881 Seconds



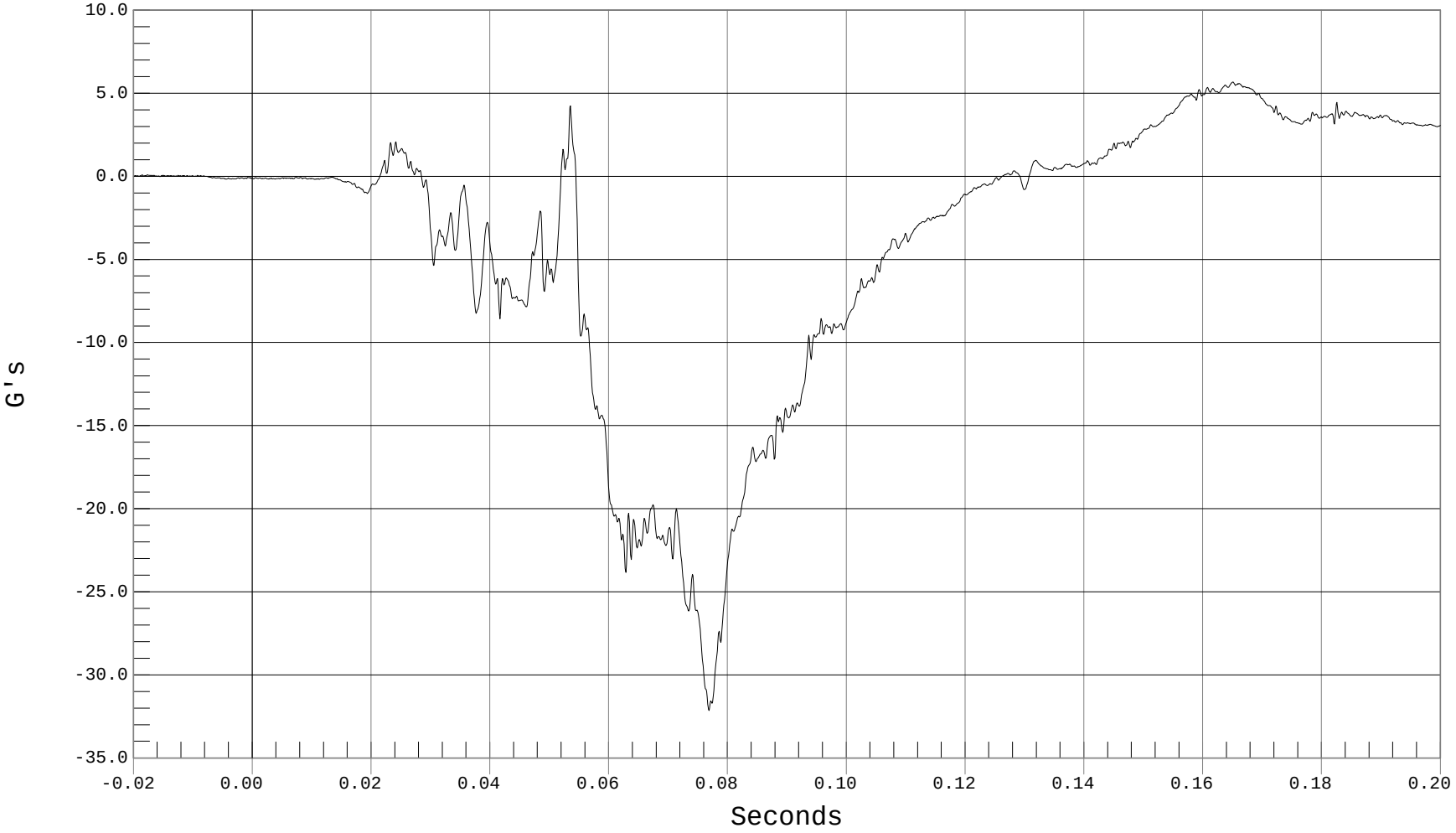
DRIVER PELVIS Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER PELVIS Z, B01037AT.A16

Ymin = -32.15 G's @ 0.0768 Seconds, Ymax = 5.68 G's @ 0.1650 Seconds



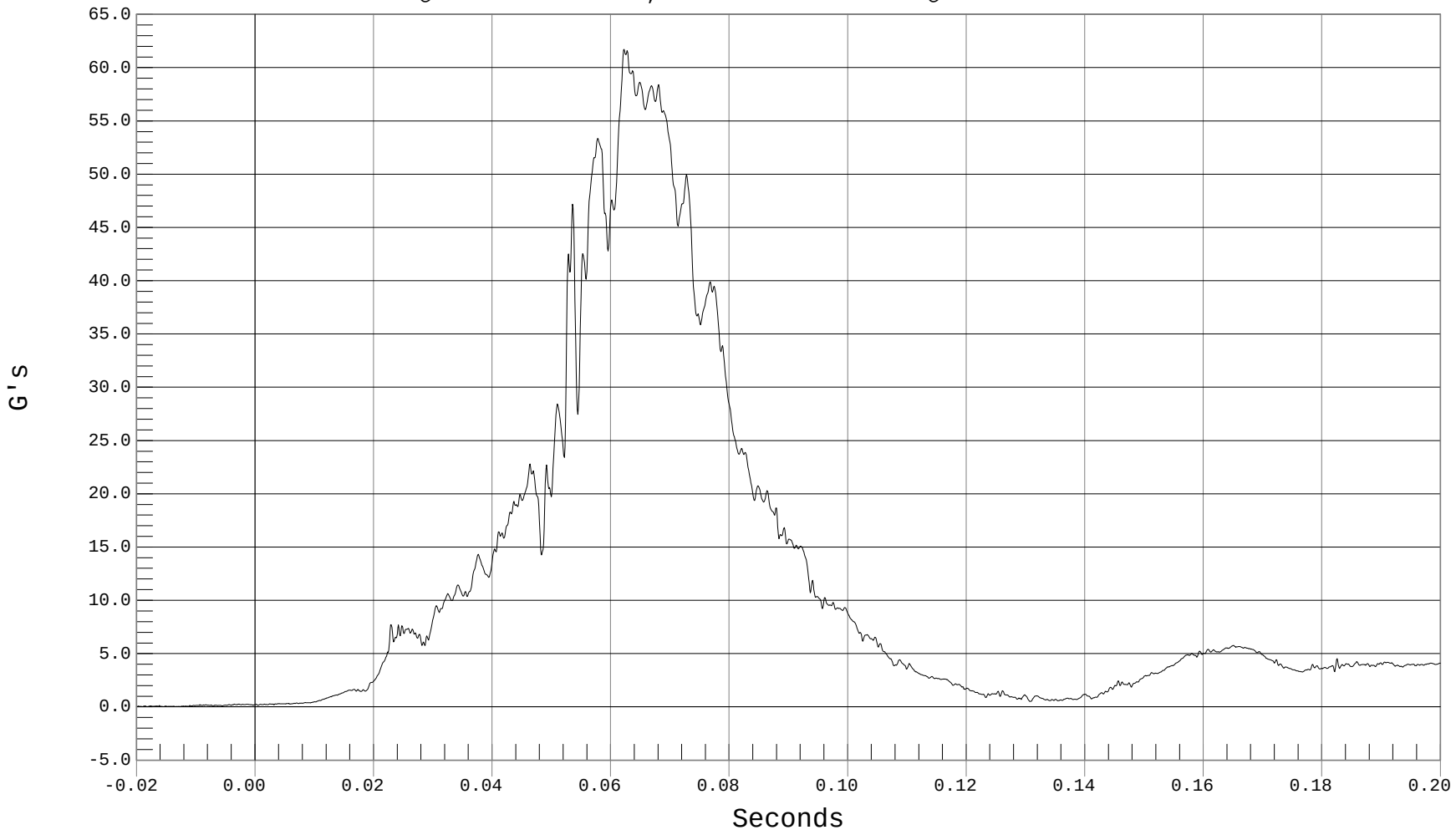
DRIVER PELVIS RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 DRIVER PELVIS RESULTANT ACCELERATION, B01037AV.A14

Ymin = .01 G's @ -0.0191 Seconds, Ymax = 61.72 G's @ 0.0622 Seconds



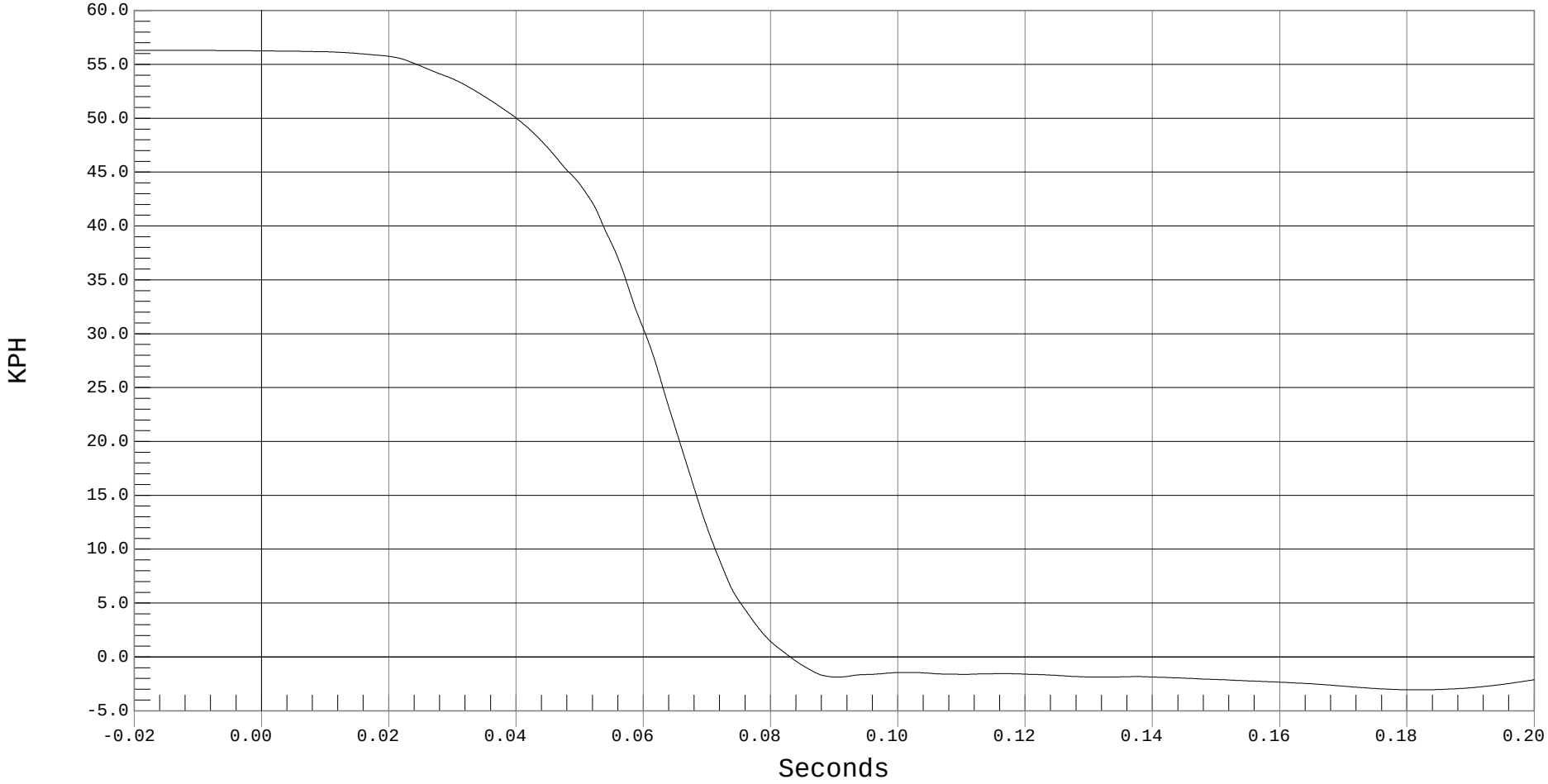
DRIVER PELVIS X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER PELVIS X VELOCITY, B01037AI.V14

Ymin = -3.05 KPH @ 0.1822 Seconds, Ymax = 56.3 KPH @ -0.0160 Seconds



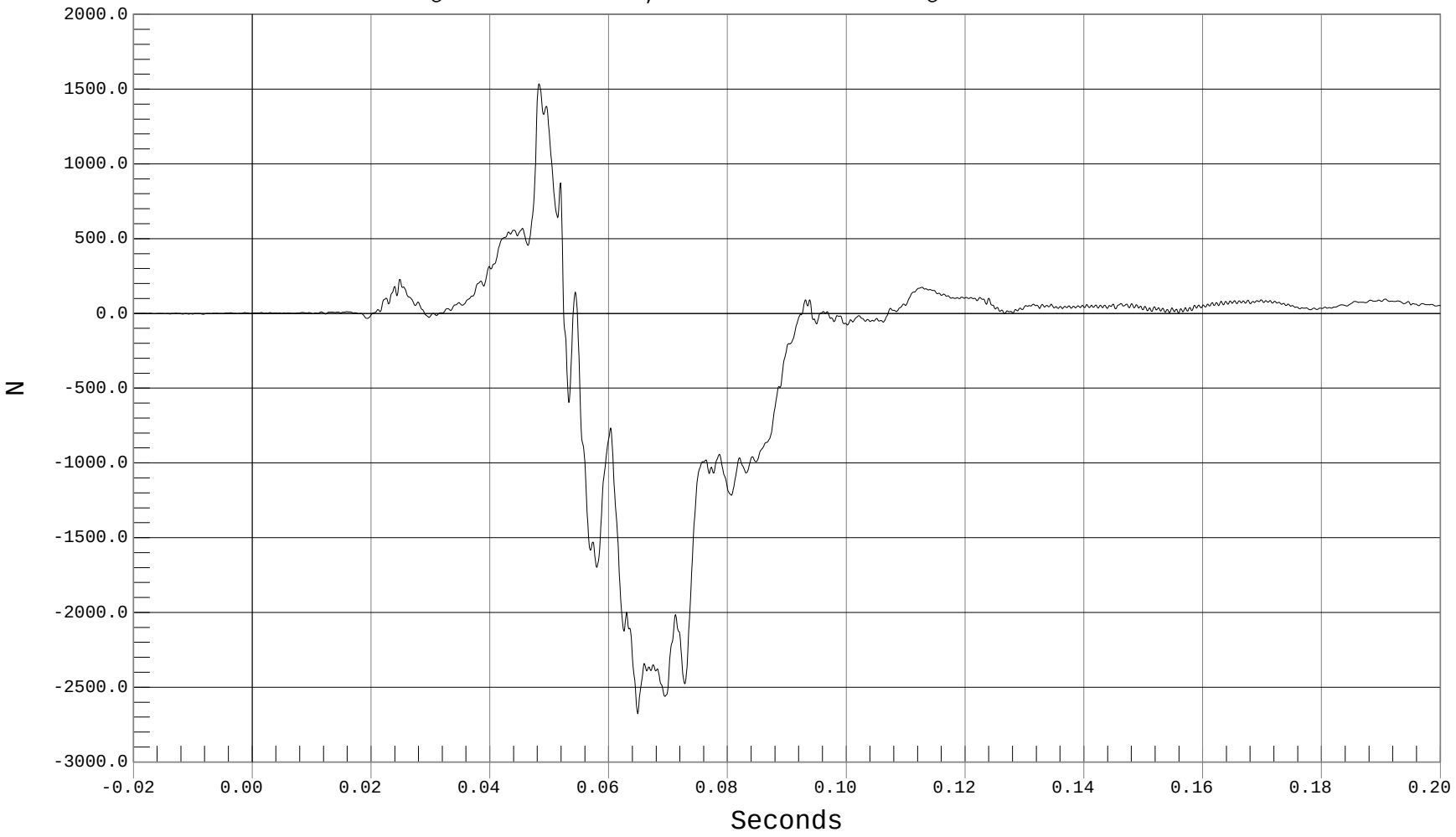
DRIVER LEFT FEMUR FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER LEFT FEMUR, B01037FF.F18

Ymin = -2677.8 N @ 0.0648 Seconds, Ymax = 1535.55 N @ 0.0482 Seconds



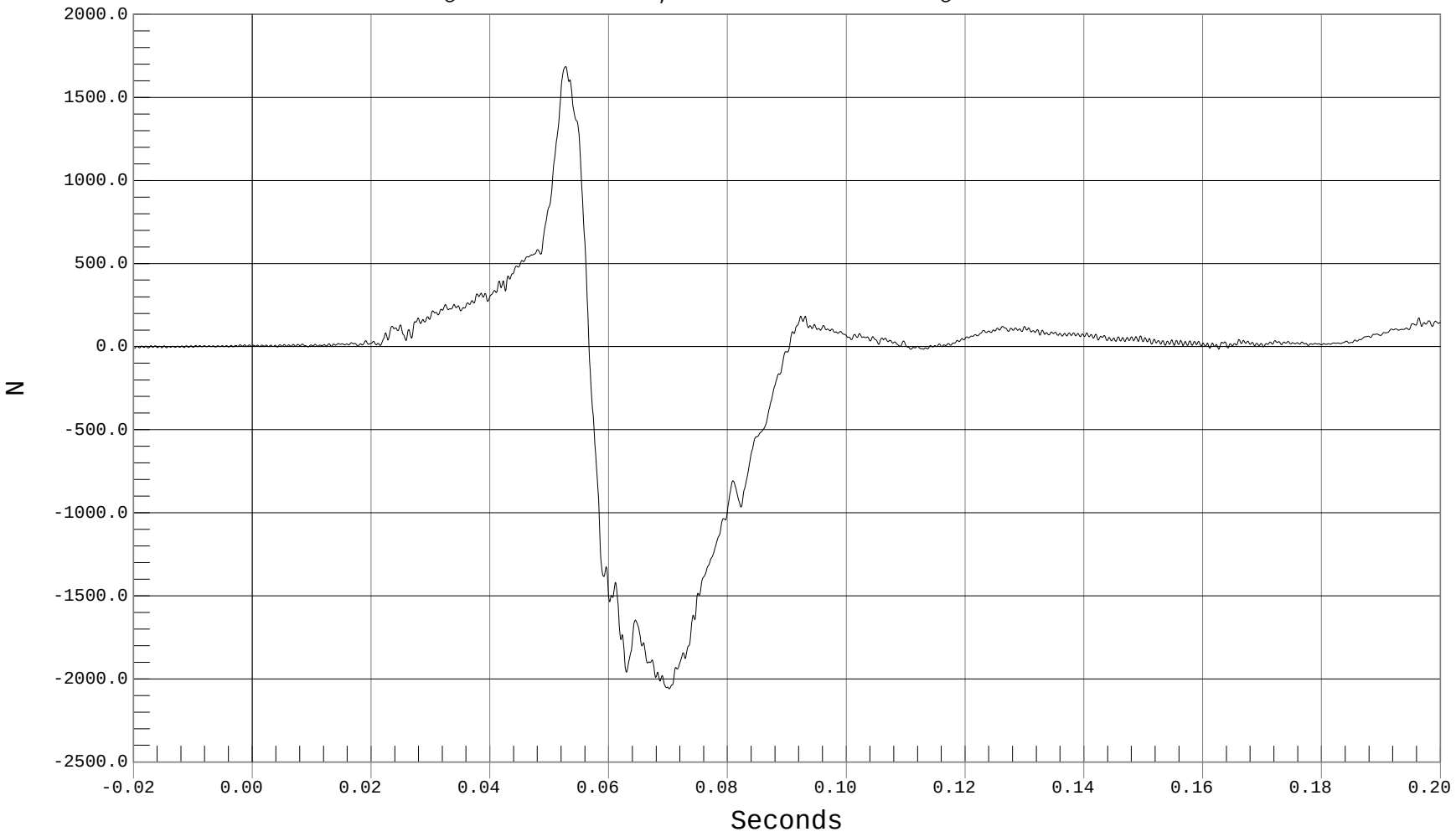
DRIVER RIGHT FEMUR FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER RIGHT FEMUR, B01037FF.F17

Ymin = -2060.39 N @ 0.0701 Seconds, Ymax = 1686.24 N @ 0.0527 Seconds



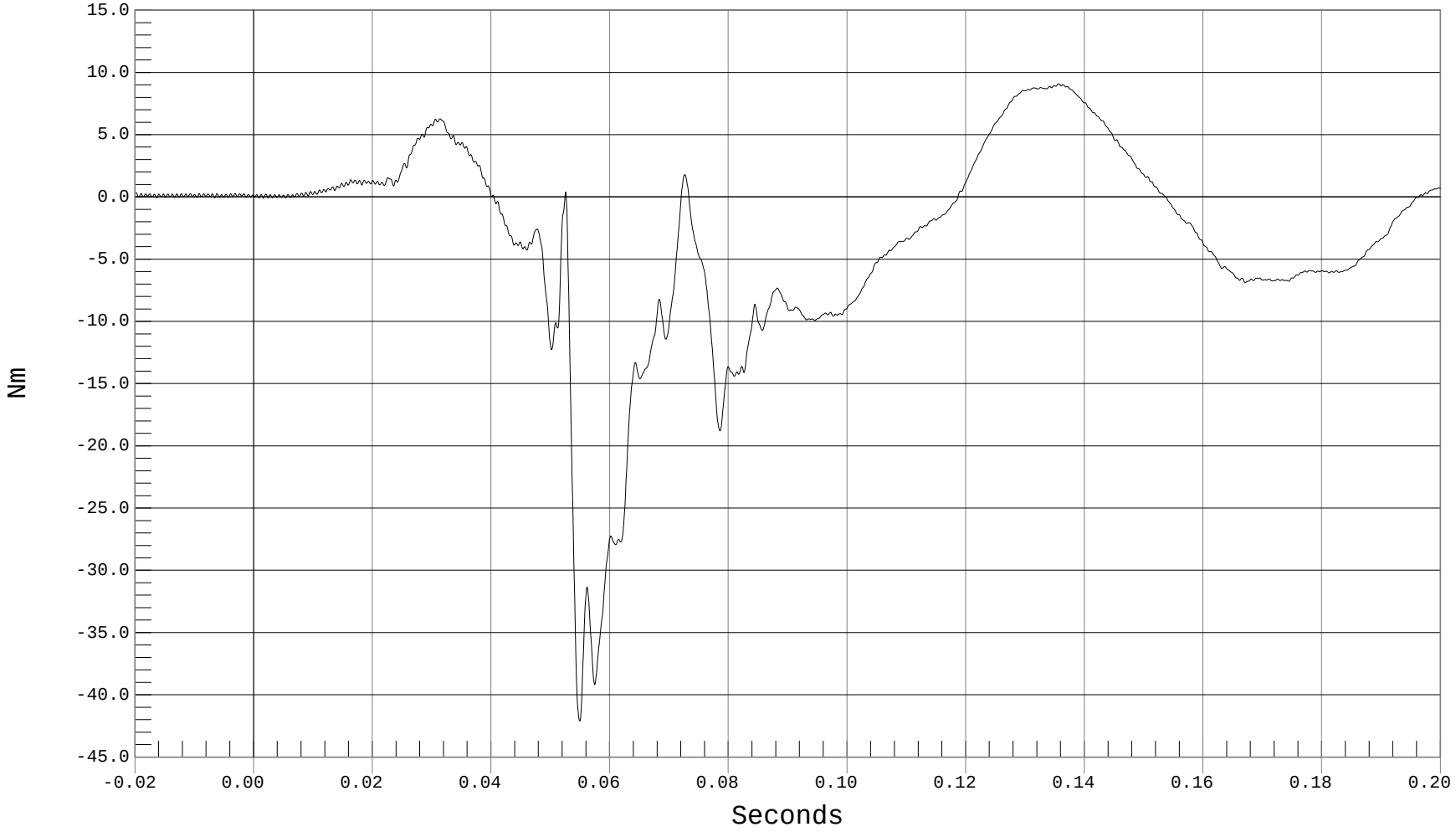
DRIVER LEFT UPPER TIBIA MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER LEFT UPPER TIBIA MX, B01037MF.M75

Ymin = -42.09 Nm @ 0.0549 Seconds, Ymax = 9.09 Nm @ 0.1356 Seconds



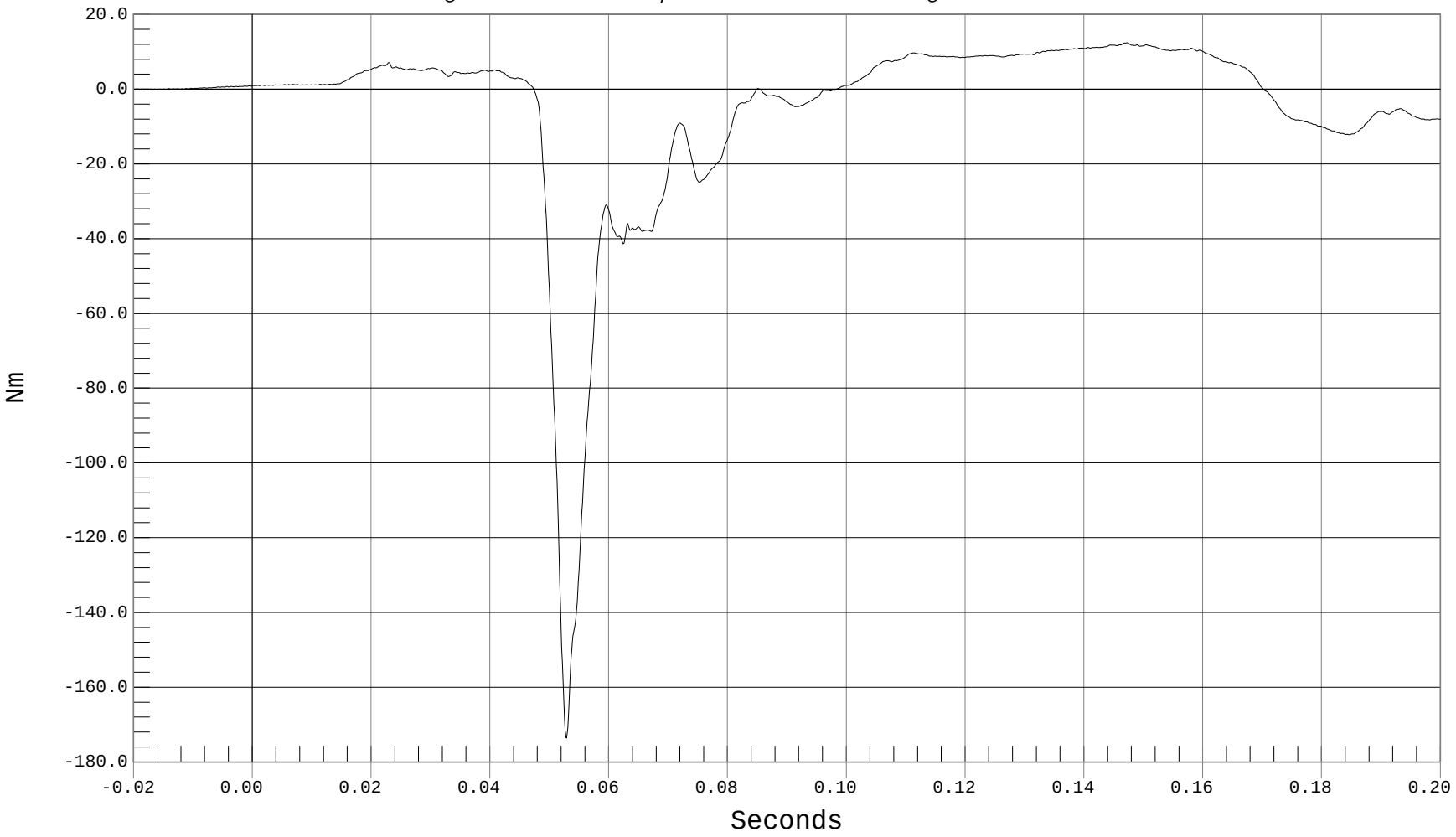
DRIVER LEFT UPPER TIBIA MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER LEFT UPPER TIBIA MY, B01037MF.M76

Ymin = -173.62 Nm @ 0.0528 Seconds, Ymax = 12.39 Nm @ 0.1472 Seconds



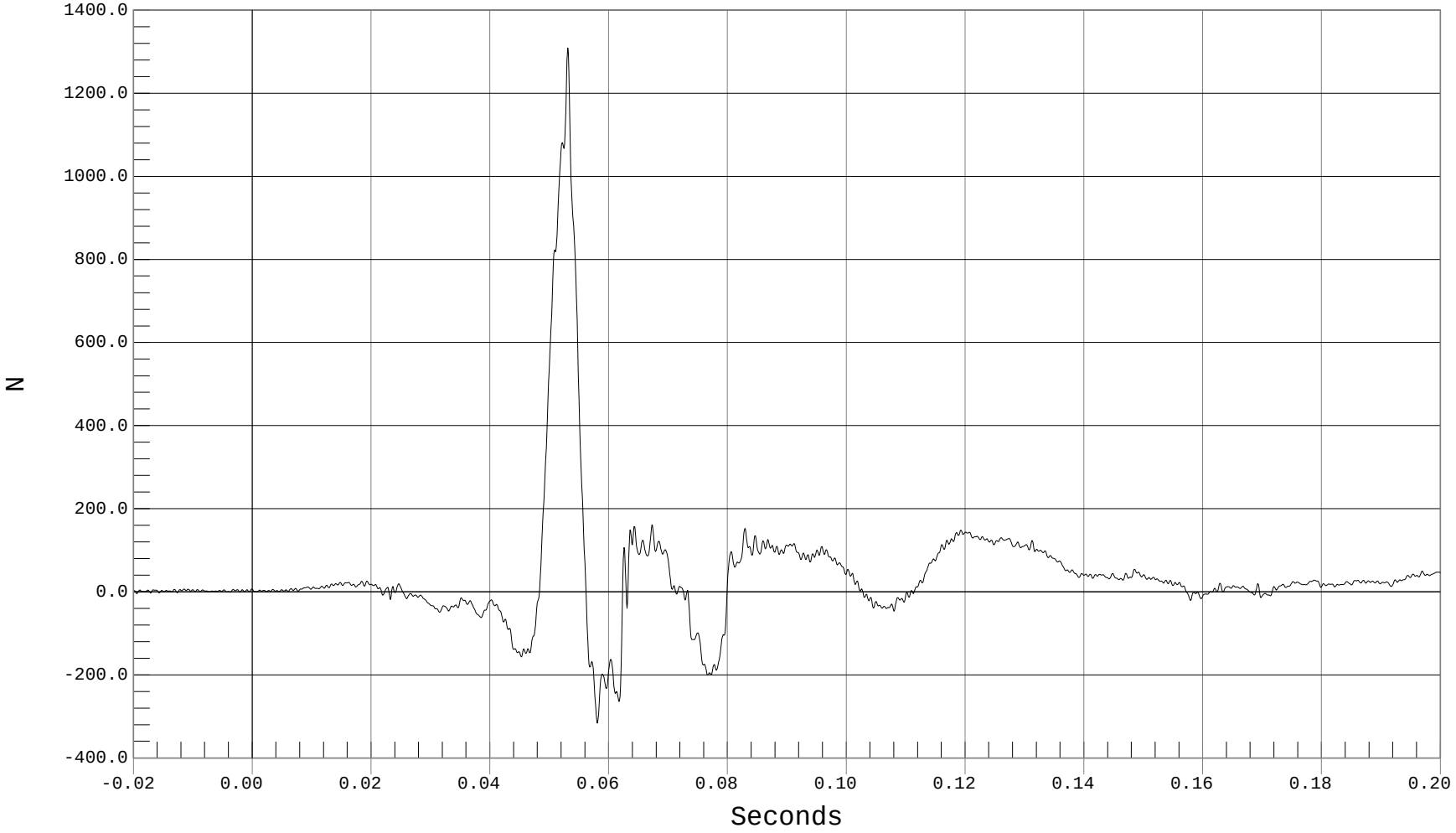
DRIVER LEFT UPPER TIBIA FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER LEFT UPPER TIBIA FZ, B01037FF.F77

Ymin = -315.98 N @ 0.0580 Seconds, Ymax = 1308.73 N @ 0.0530 Seconds



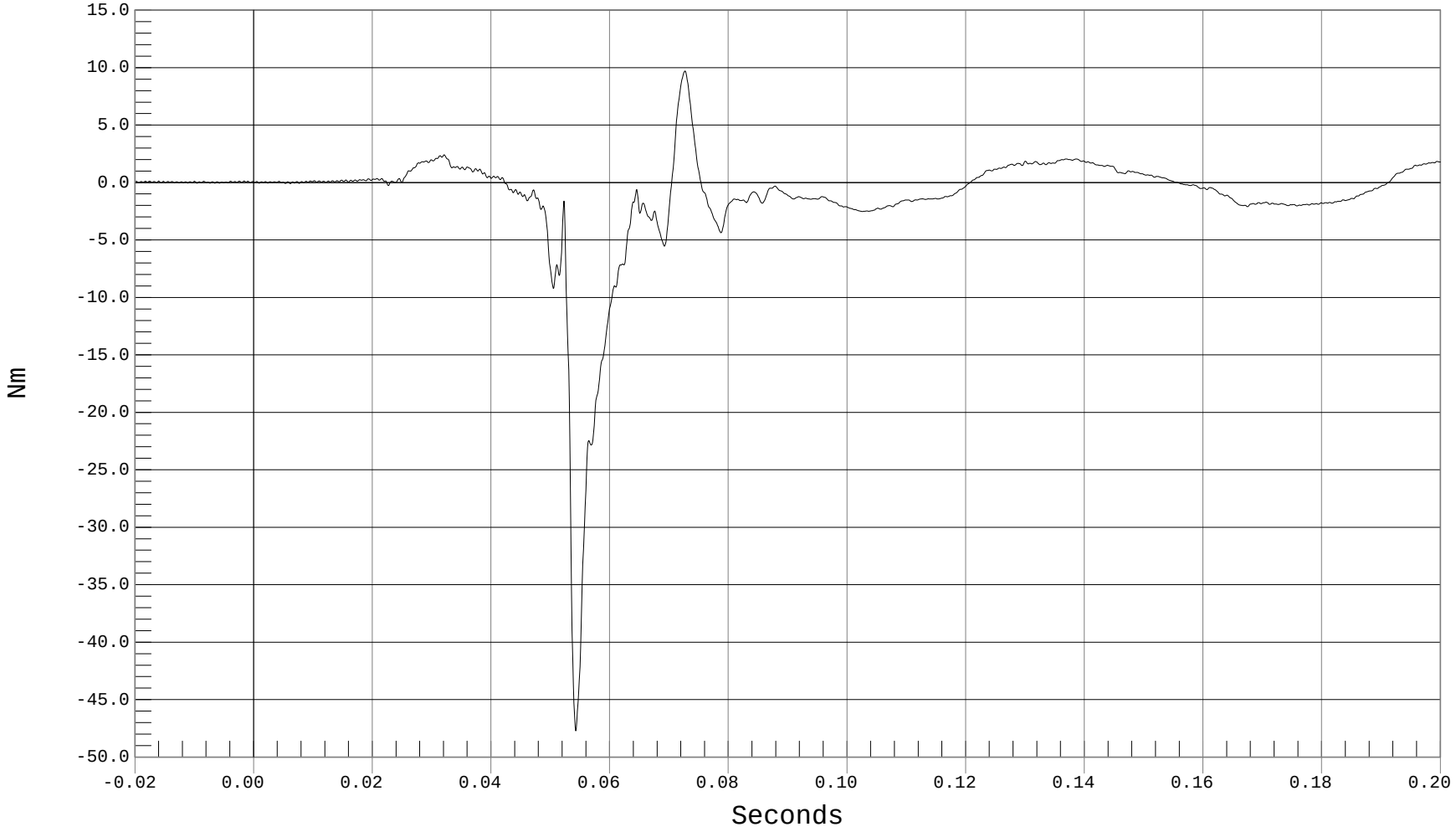
DRIVER LEFT LOWER TIBIA MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER LEFT LOWER TIBIA MX, B01037MF.M78

Ymin = -47.72 Nm @ 0.0542 Seconds, Ymax = 9.71 Nm @ 0.0726 Seconds



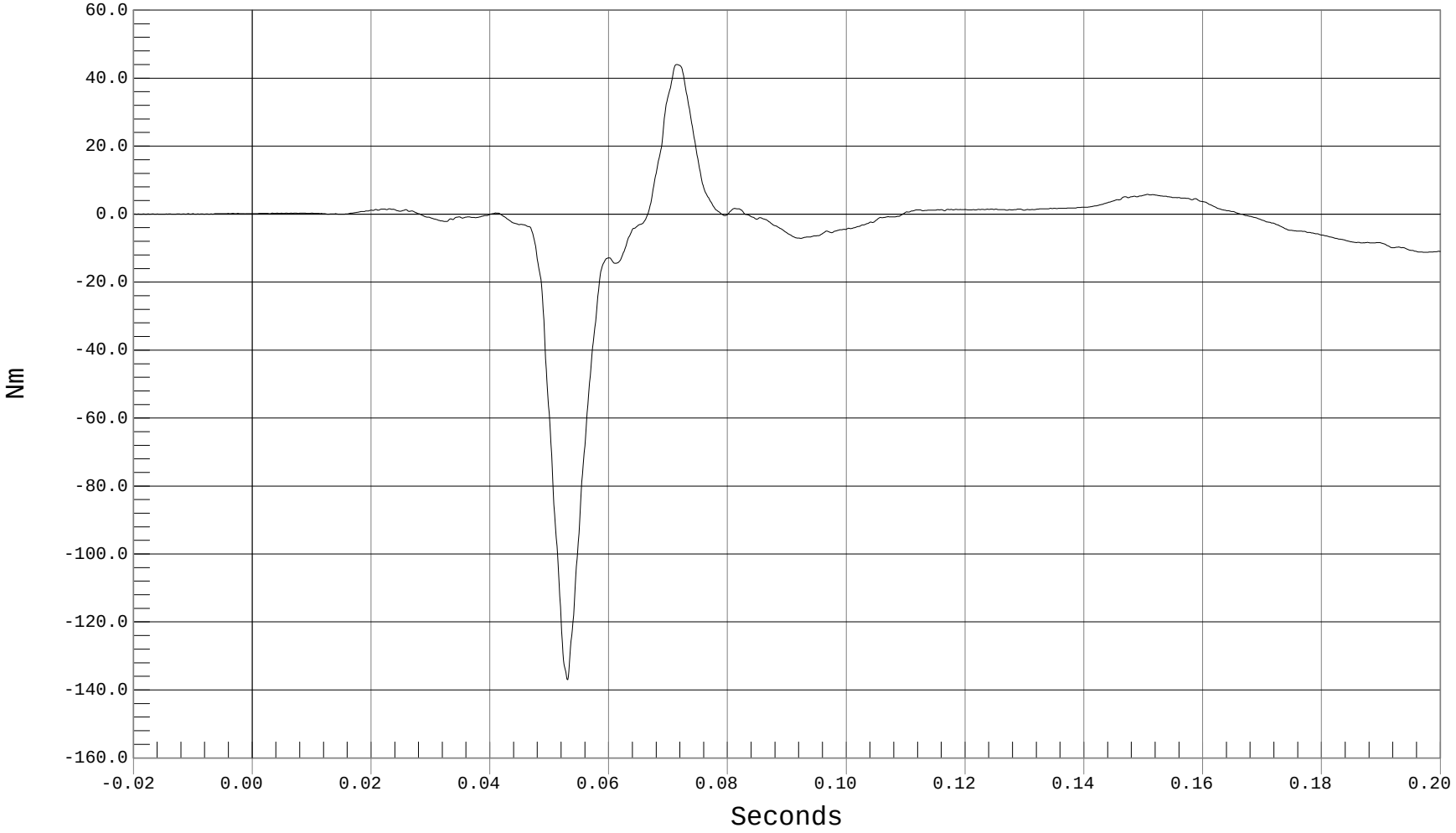
DRIVER LEFT LOWER TIBIA MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER LEFT LOWER TIBIA MY, B01037MF.M79

Ymin = -137.01 Nm @ 0.0530 Seconds, Ymax = 44.03 Nm @ 0.0714 Seconds



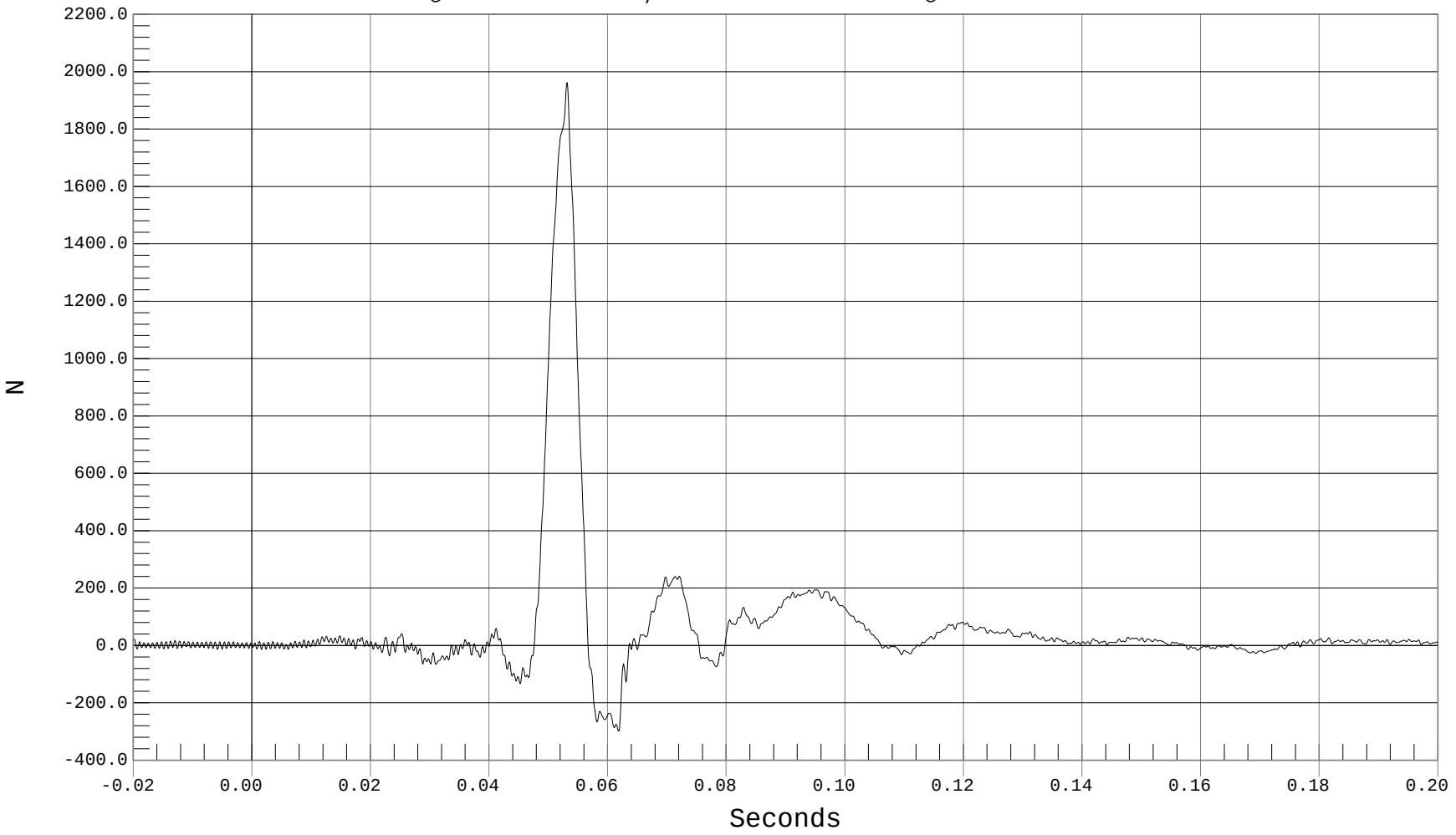
DRIVER LEFT LOWER TIBIA FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER LEFT LOWER TIBIA FZ, B01037FF.F80

Ymin = -298.94 N @ 0.0618 Seconds, Ymax = 1961.34 N @ 0.0531 Seconds



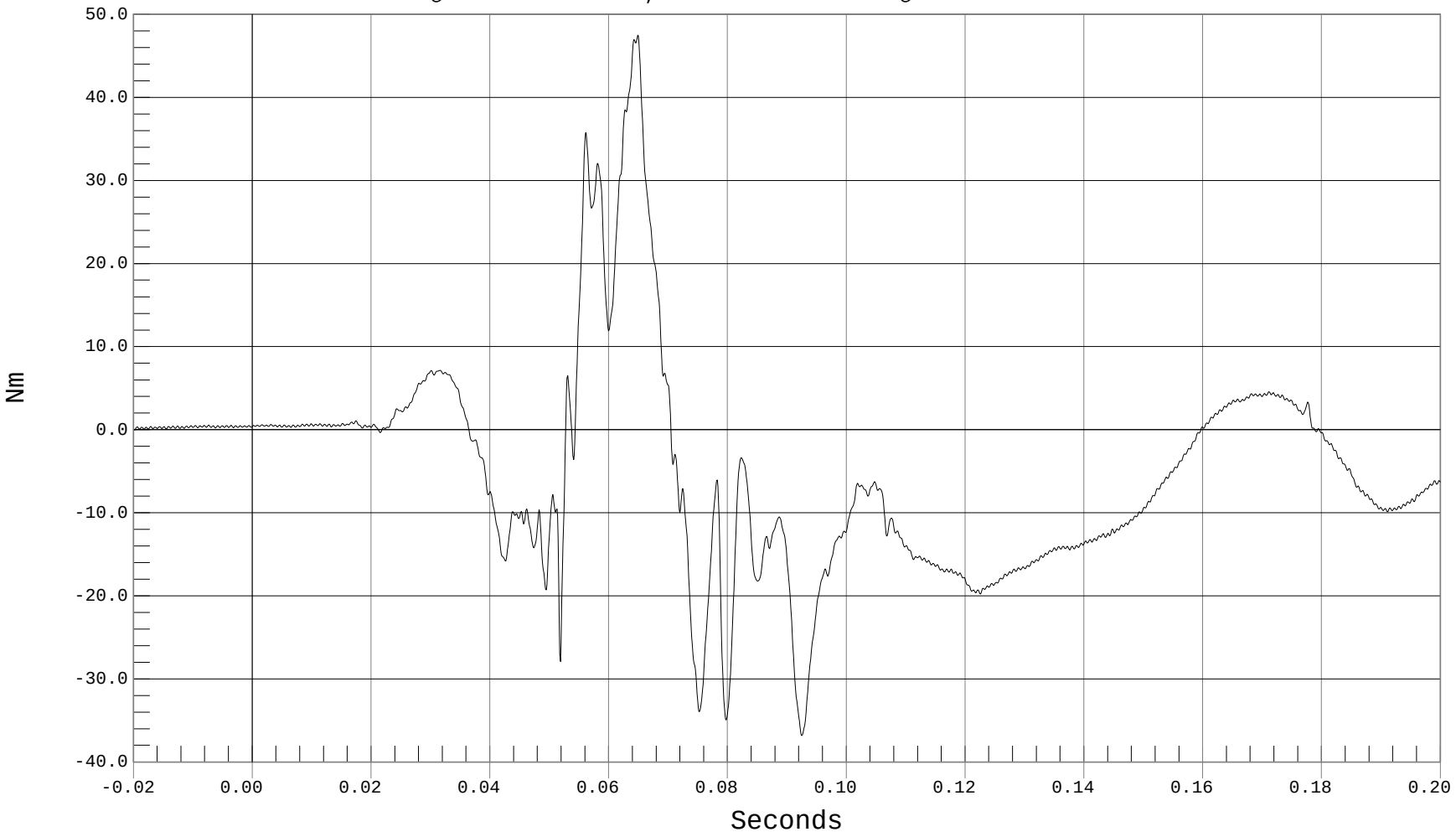
DRIVER RIGHT UPPER TIBIA MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER RIGHT UPPER TIBIA MX, B01037MF.M69

Ymin = -36.82 Nm @ 0.0924 Seconds, Ymax = 47.5 Nm @ 0.0648 Seconds



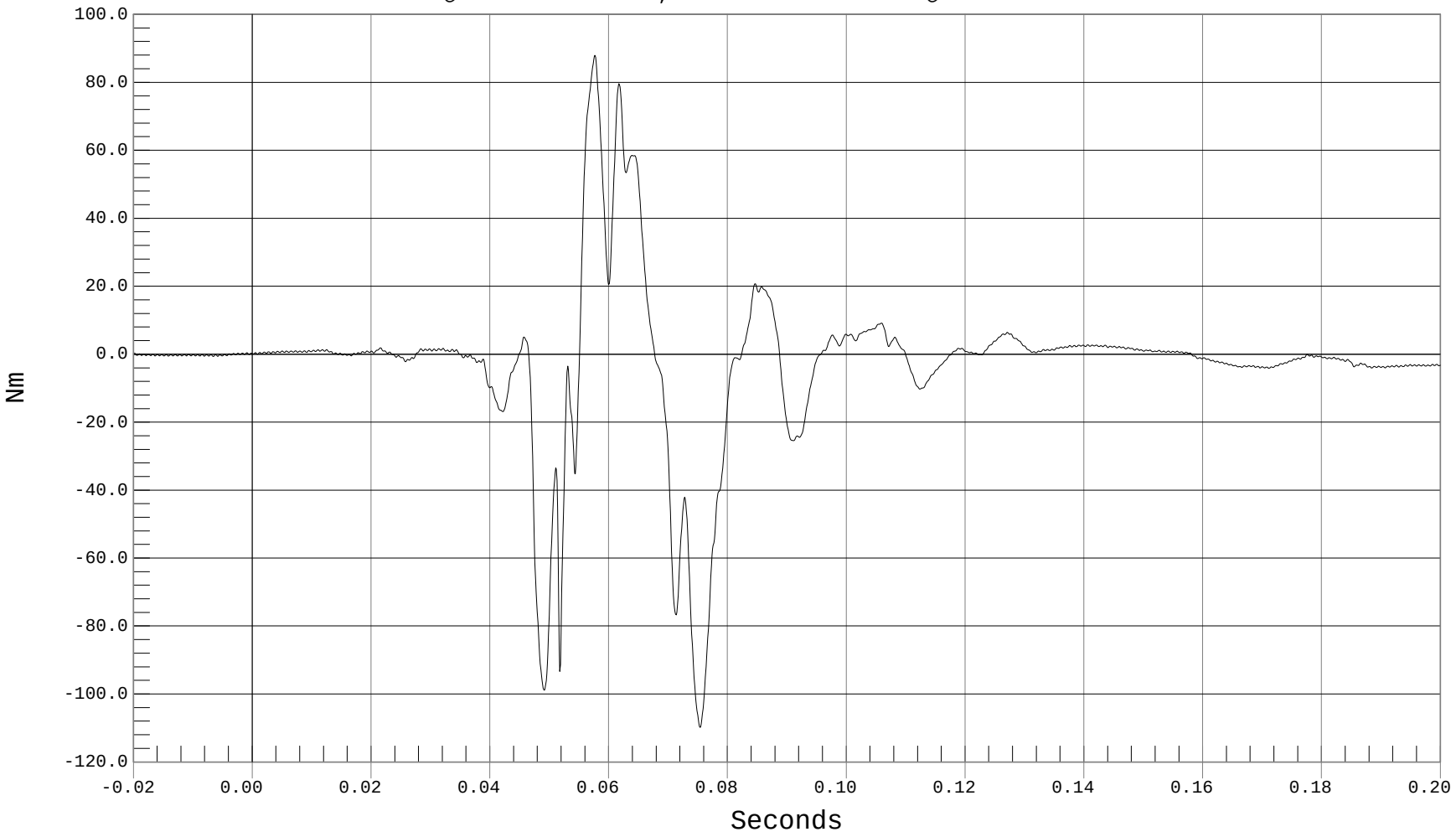
DRIVER RIGHT UPPER TIBIA MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER RIGHT UPPER TIBIA MY, B01037MF.M70

Ymin = -109.82 Nm @ 0.0753 Seconds, Ymax = 87.94 Nm @ 0.0576 Seconds



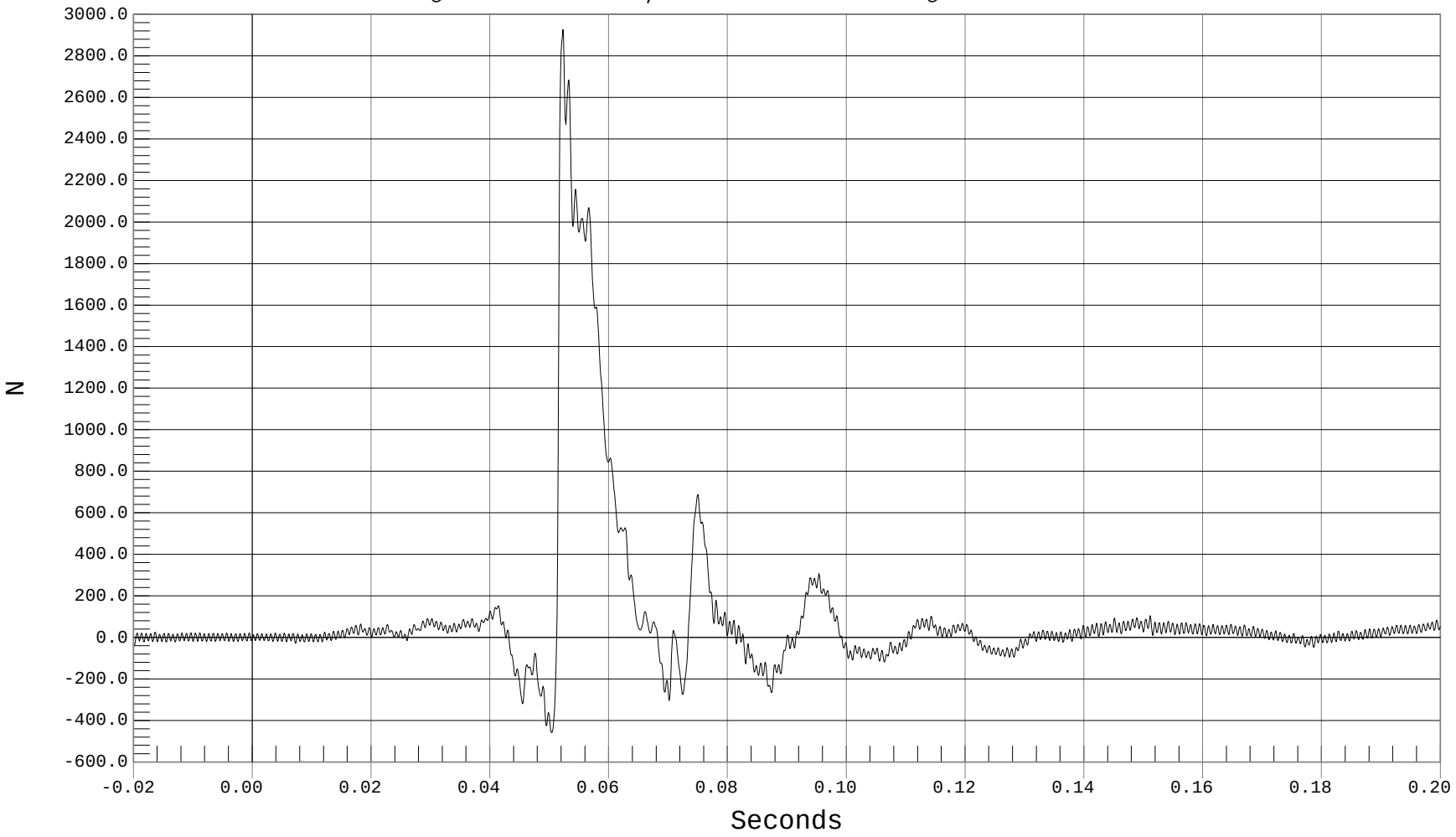
DRIVER RIGHT UPPER TIBIA FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER RIGHT UPPER TIBIA FZ, B01037FF.F71

Ymin = -458.66 N @ 0.0503 Seconds, Ymax = 2926.85 N @ 0.0522 Seconds



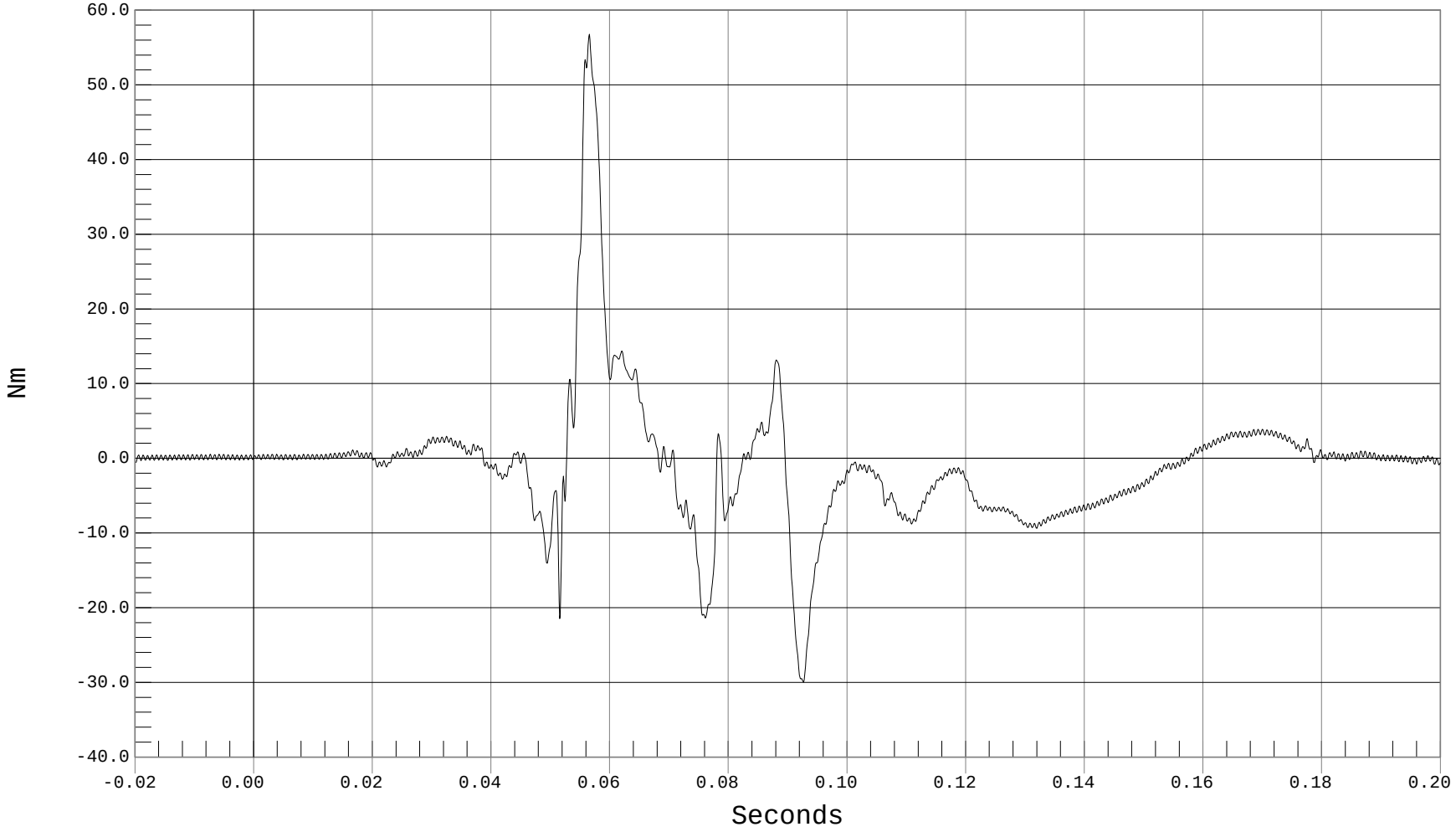
DRIVER RIGHT LOWER TIBIA MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER RIGHT LOWER TIBIA MX, B01037MF.M72

Ymin = -29.99 Nm @ 0.0926 Seconds, Ymax = 56.79 Nm @ 0.0565 Seconds



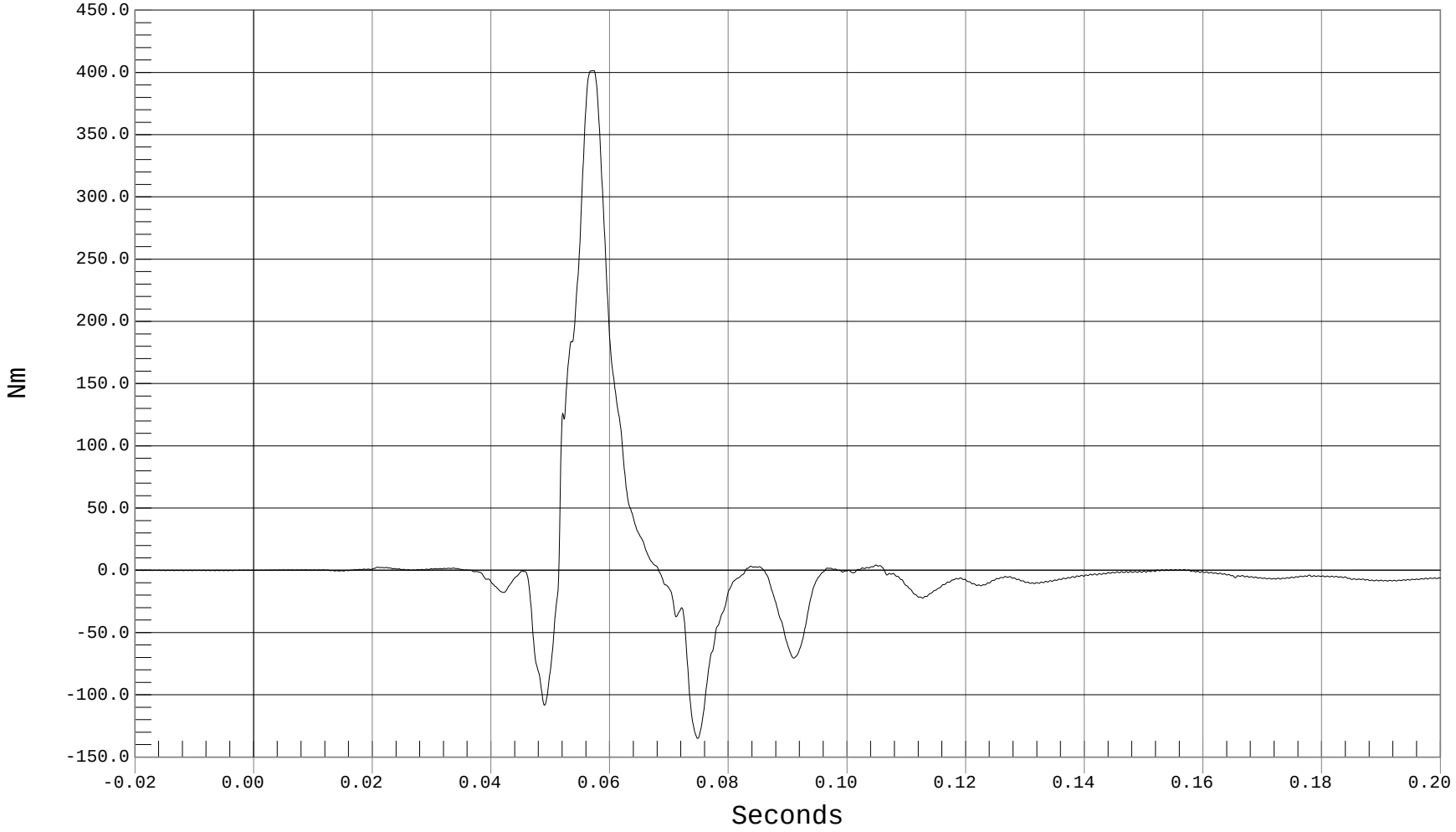
DRIVER RIGHT LOWER TIBIA MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER RIGHT LOWER TIBIA MY, B01037MF.M73

Ymin = -134.97 Nm @ 0.0748 Seconds, Ymax = 401.5 Nm @ 0.0572 Seconds



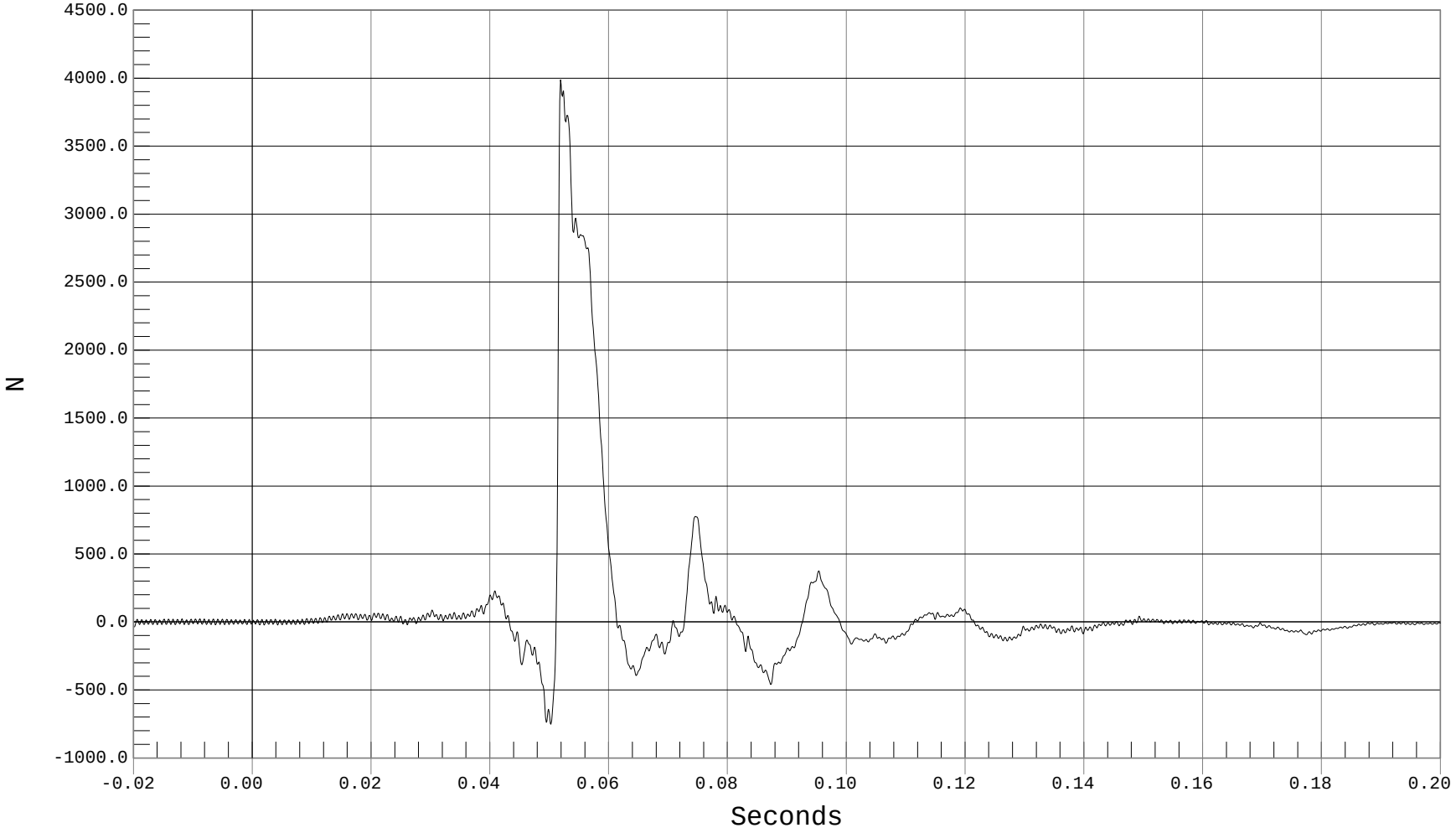
DRIVER RIGHT LOWER TIBIA FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DRIVER RIGHT LOWER TIBIA FZ, B01037FF.F74

Ymin = -751.91 N @ 0.0502 Seconds, Ymax = 3988.37 N @ 0.0518 Seconds



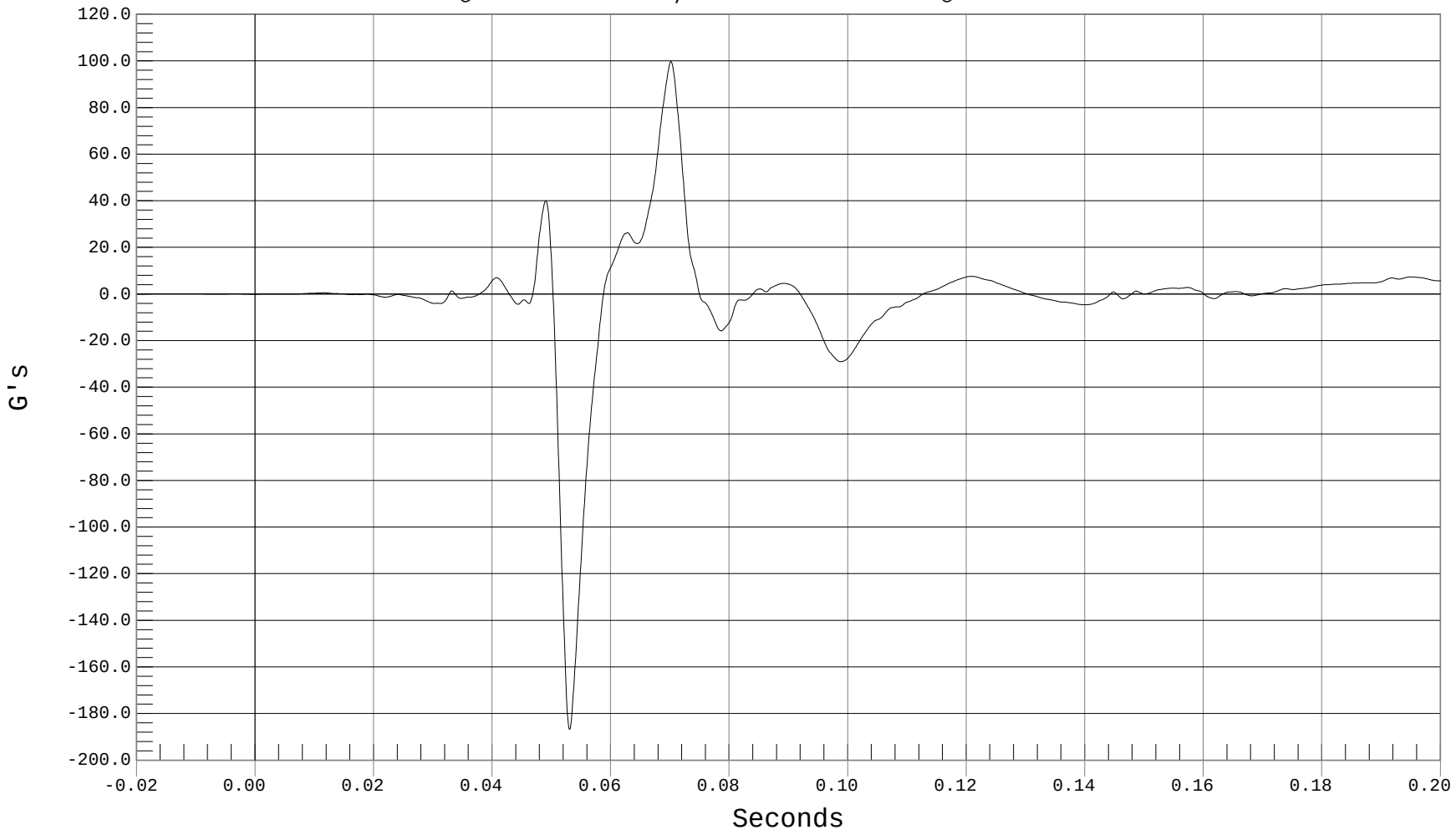
DRIVER LEFT FOOT @ BALL Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER LEFT FOOT @ BALL Z, B01037AF.A12

Ymin = -186.79 G's @ 0.0530 Seconds, Ymax = 99.8 G's @ 0.0701 Seconds



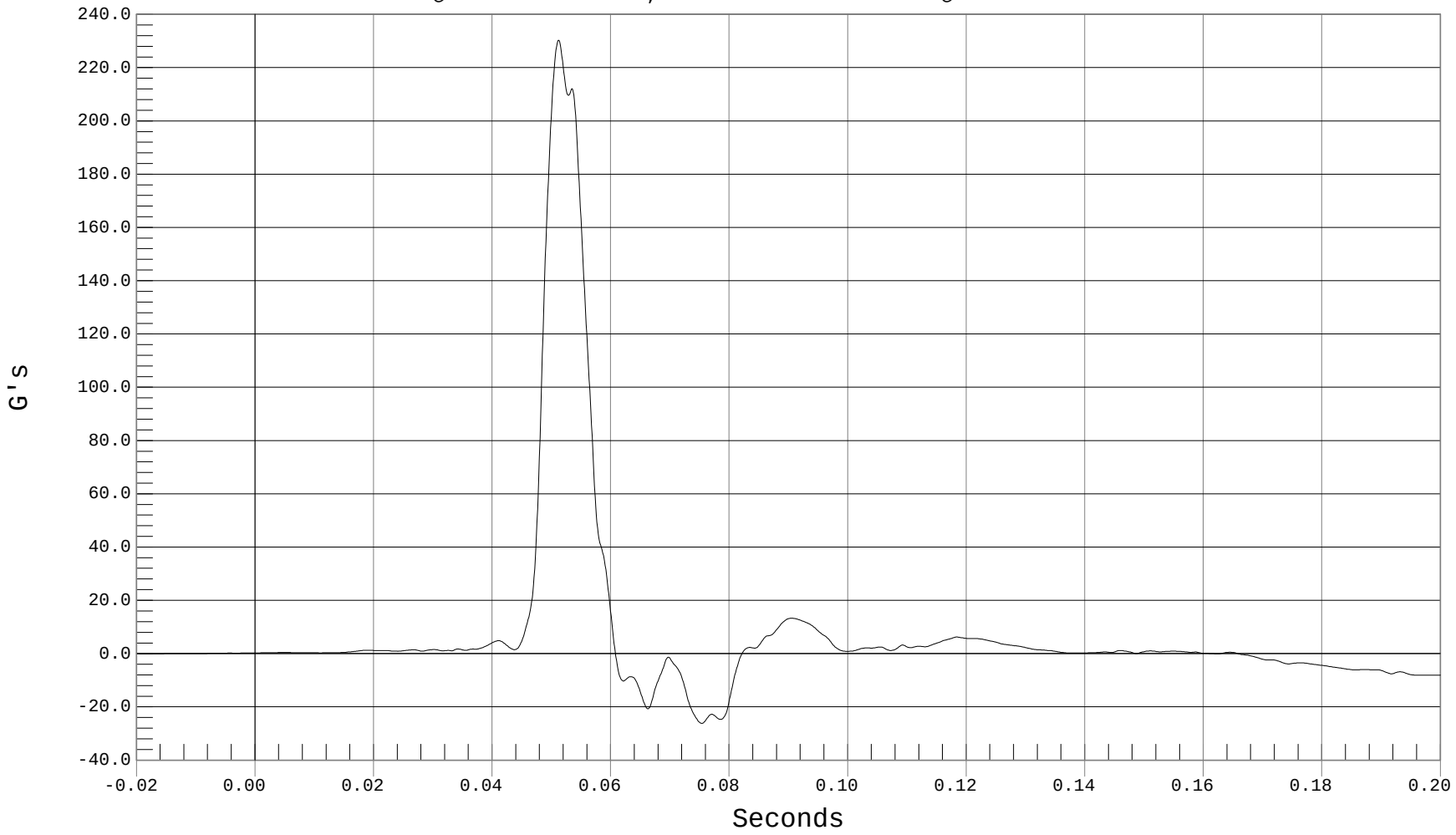
DRIVER LEFT FOOT @ HEEL X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER LEFT FOOT @ HEEL X, B01037AF.A10

Ymin = -26.2 G's @ 0.0753 Seconds, Ymax = 230.29 G's @ 0.0511 Seconds



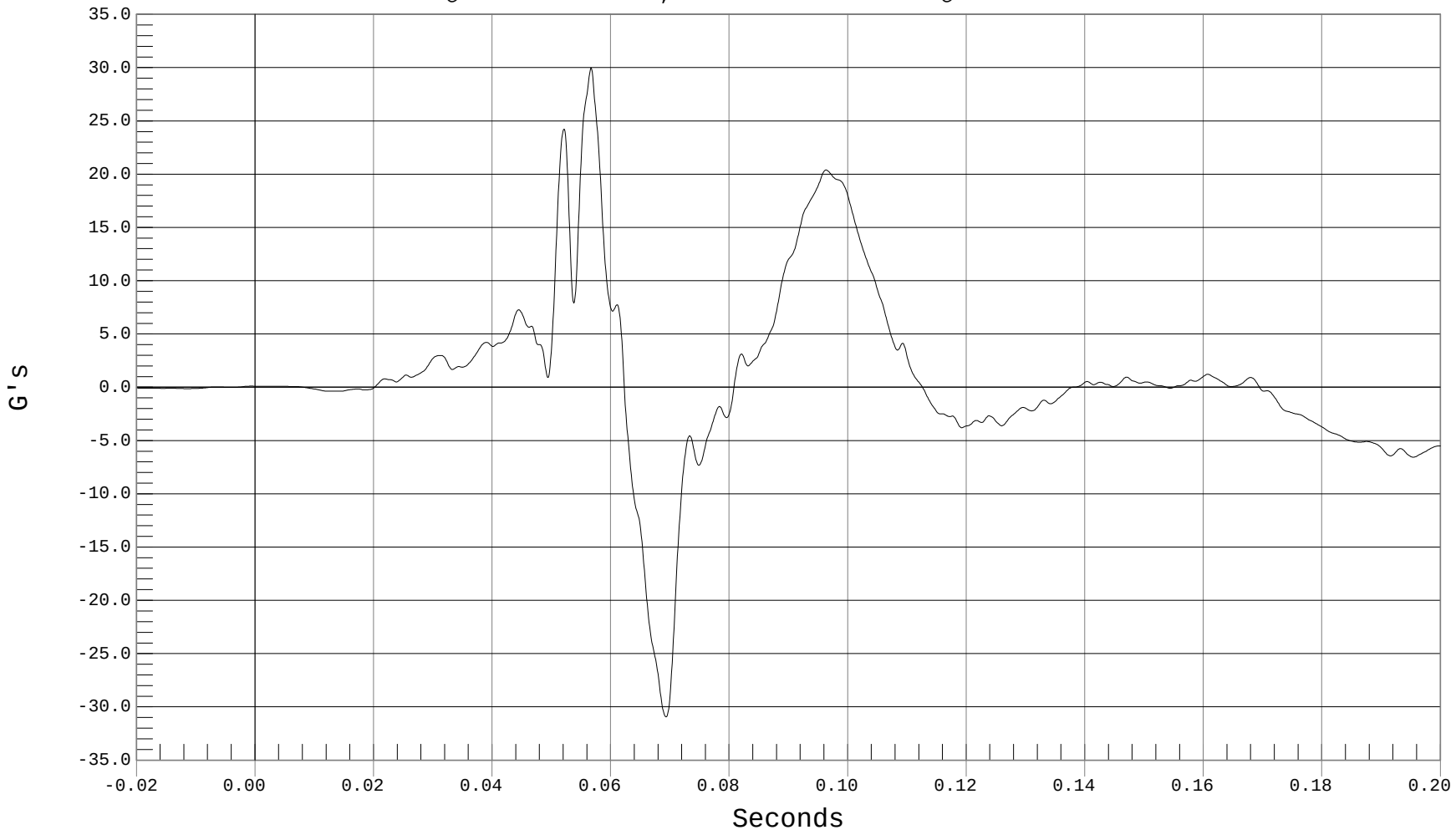
DRIVER LEFT FOOT @ HEEL Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER LEFT FOOT @ HEEL Z, B01037AF.A11

Ymin = -30.94 G's @ 0.0693 Seconds, Ymax = 29.98 G's @ 0.0566 Seconds



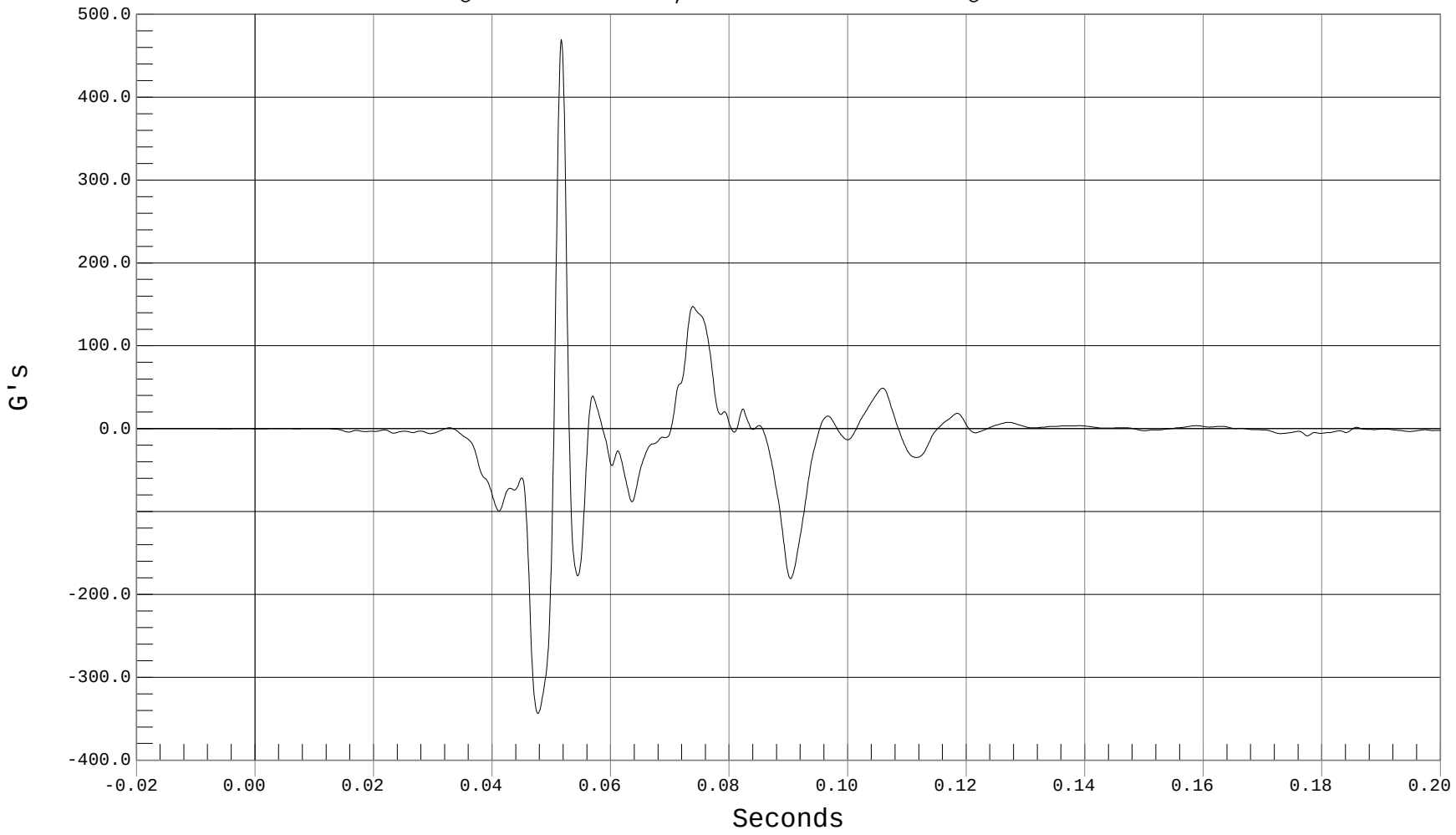
DRIVER RIGHT FOOT @ BALL Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER RIGHT FOOT @ BALL Z, B01037AF.A95

Ymin = -343.51 G's @ 0.0477 Seconds, Ymax = 469.92 G's @ 0.0516 Seconds



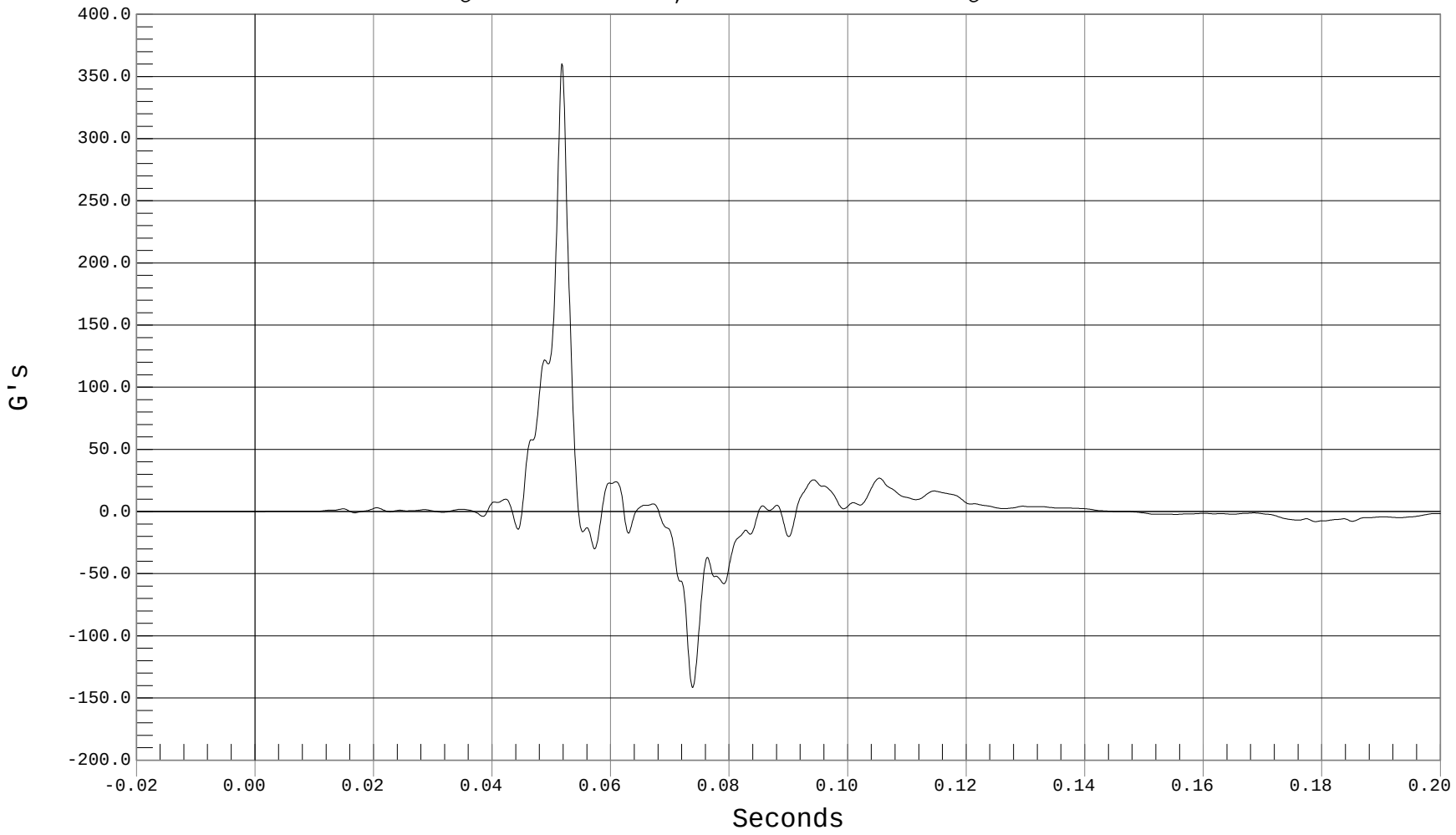
DRIVER RIGHT FOOT @ HEEL X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER RIGHT FOOT @ HEEL X, B01037AF.A93

Ymin = -141.53 G's @ 0.0737 Seconds, Ymax = 360.33 G's @ 0.0517 Seconds



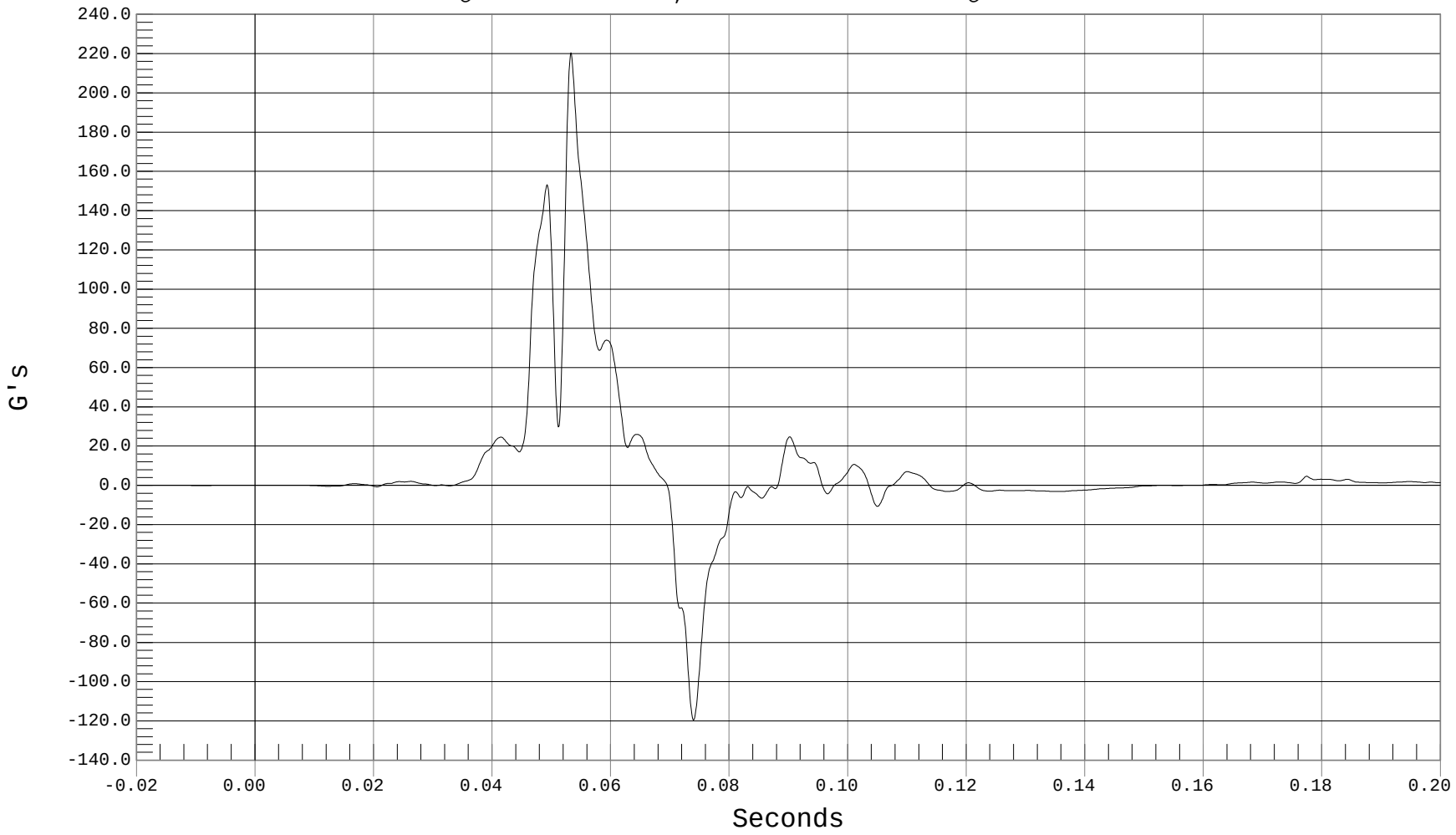
DRIVER RIGHT FOOT @ HEEL Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 DRIVER RIGHT FOOT @ HEEL Z, B01037AF.A94

Ymin = -119.53 G's @ 0.0739 Seconds, Ymax = 220.34 G's @ 0.0532 Seconds



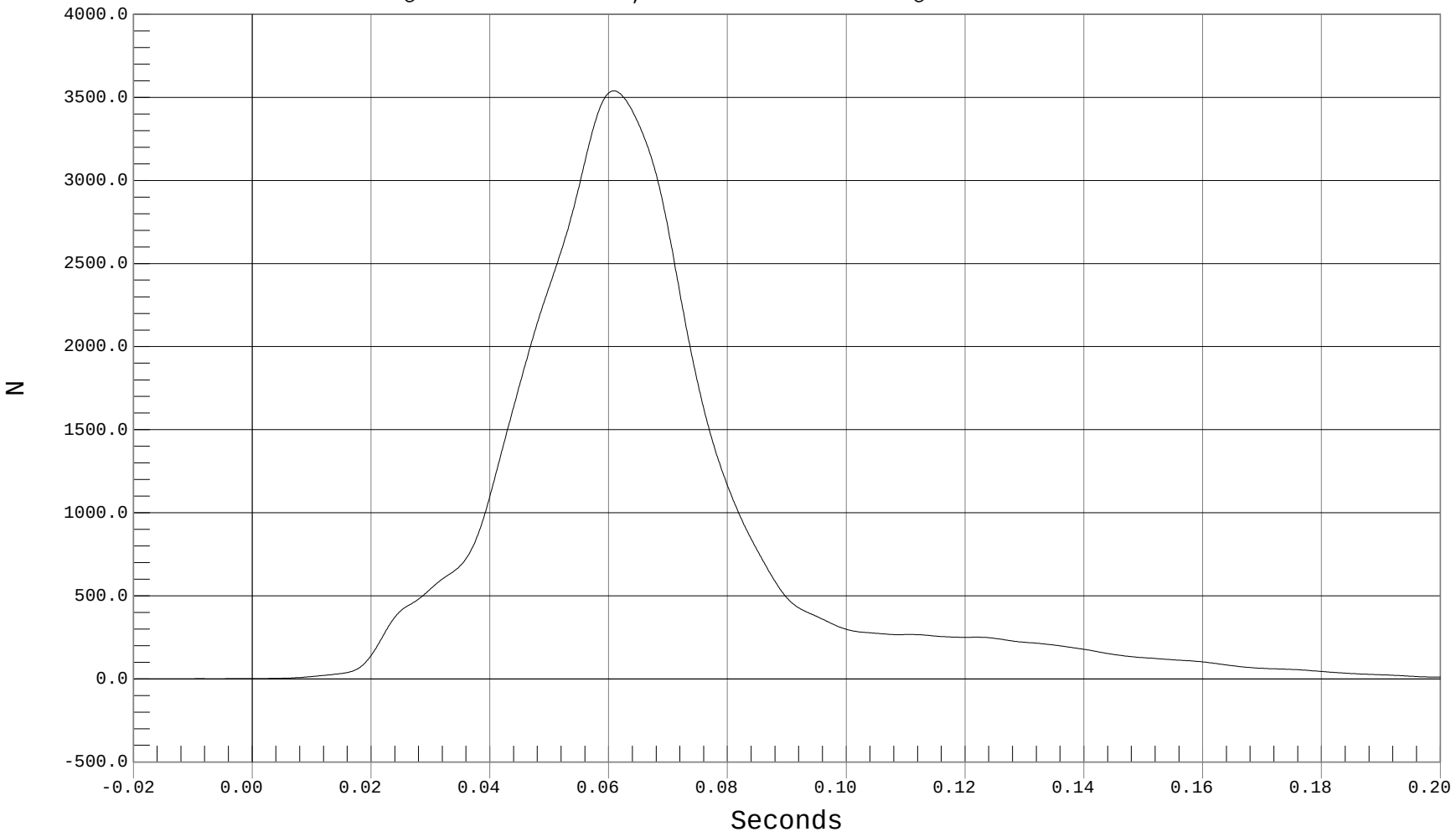
DRIVER LAP BELT FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 DRIVER LAP BELT, B01037FF.F66

Ymin = -1.39 N @ -0.0199 Seconds, Ymax = 3539.75 N @ 0.0608 Seconds



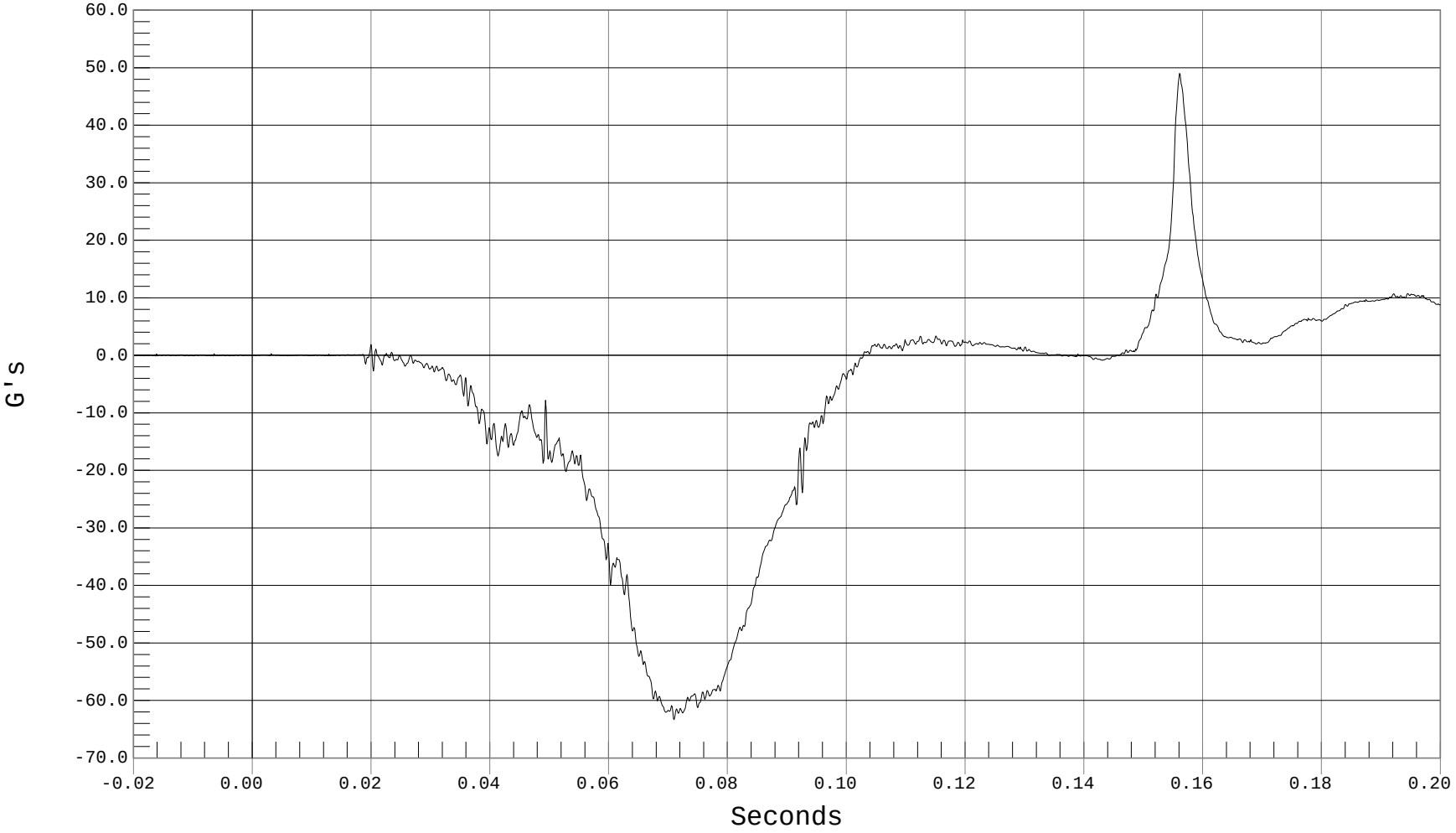
PASSENGER HEAD X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER HEAD X, B01037AT.A19

Ymin = -63.36 G's @ 0.0709 Seconds, Ymax = 49 G's @ 0.1560 Seconds



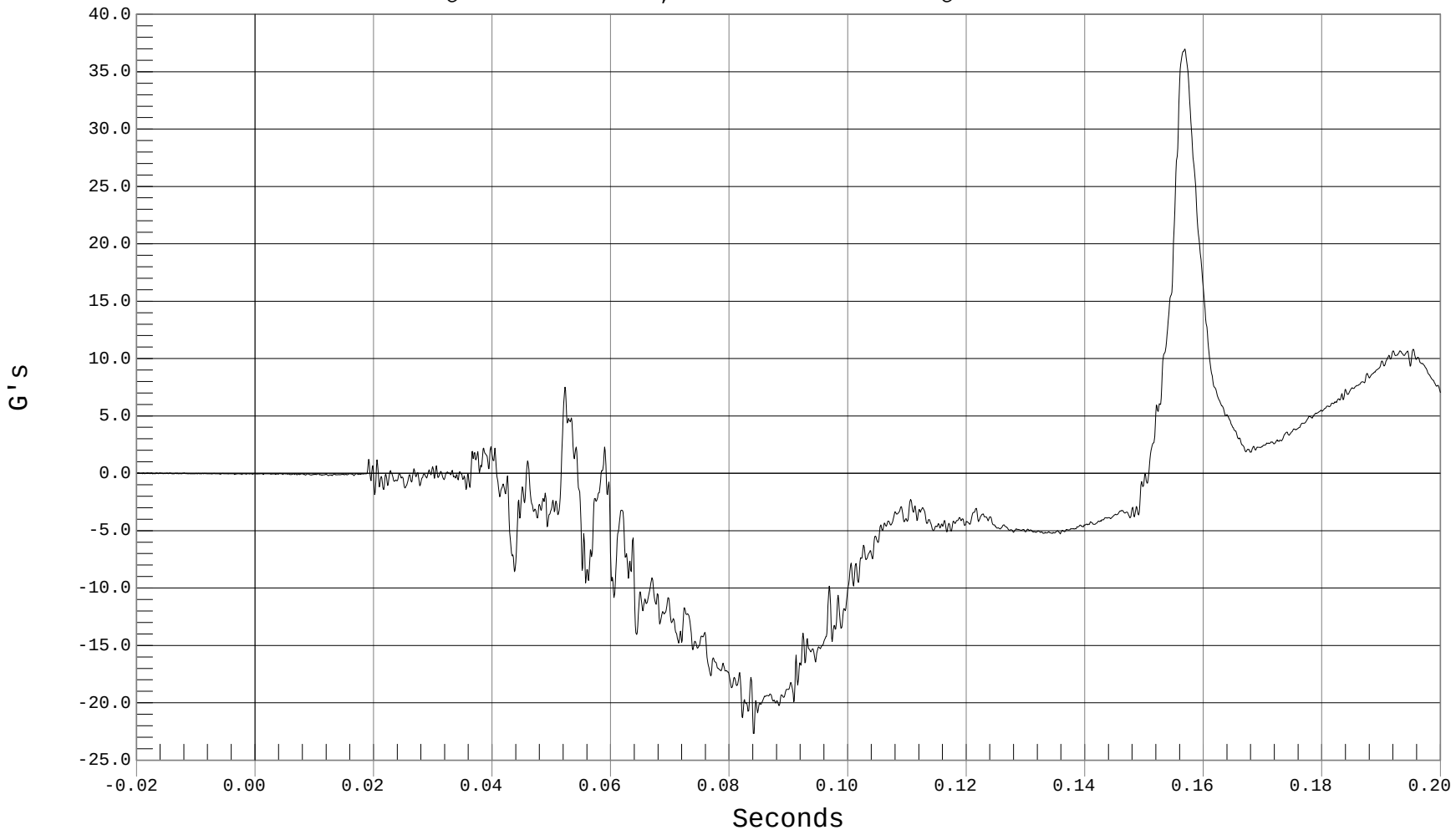
PASSENGER HEAD Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER HEAD Y, B01037AT.A20

Ymin = -22.69 G's @ 0.0841 Seconds, Ymax = 36.98 G's @ 0.1568 Seconds



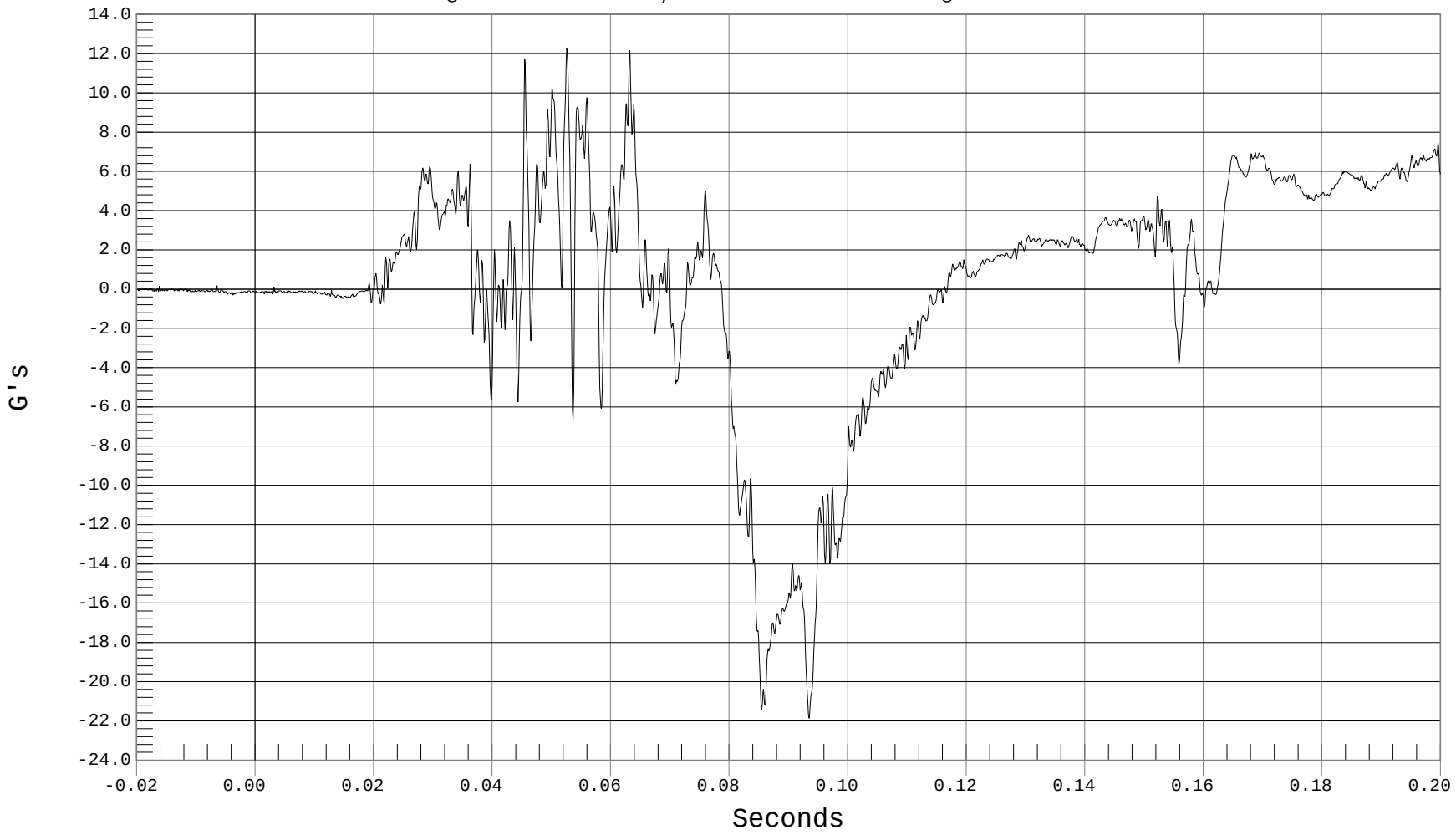
PASSENGER HEAD Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER HEAD Z, B01037AT.A21

Ymin = -21.87 G's @ 0.0934 Seconds, Ymax = 12.25 G's @ 0.0525 Seconds



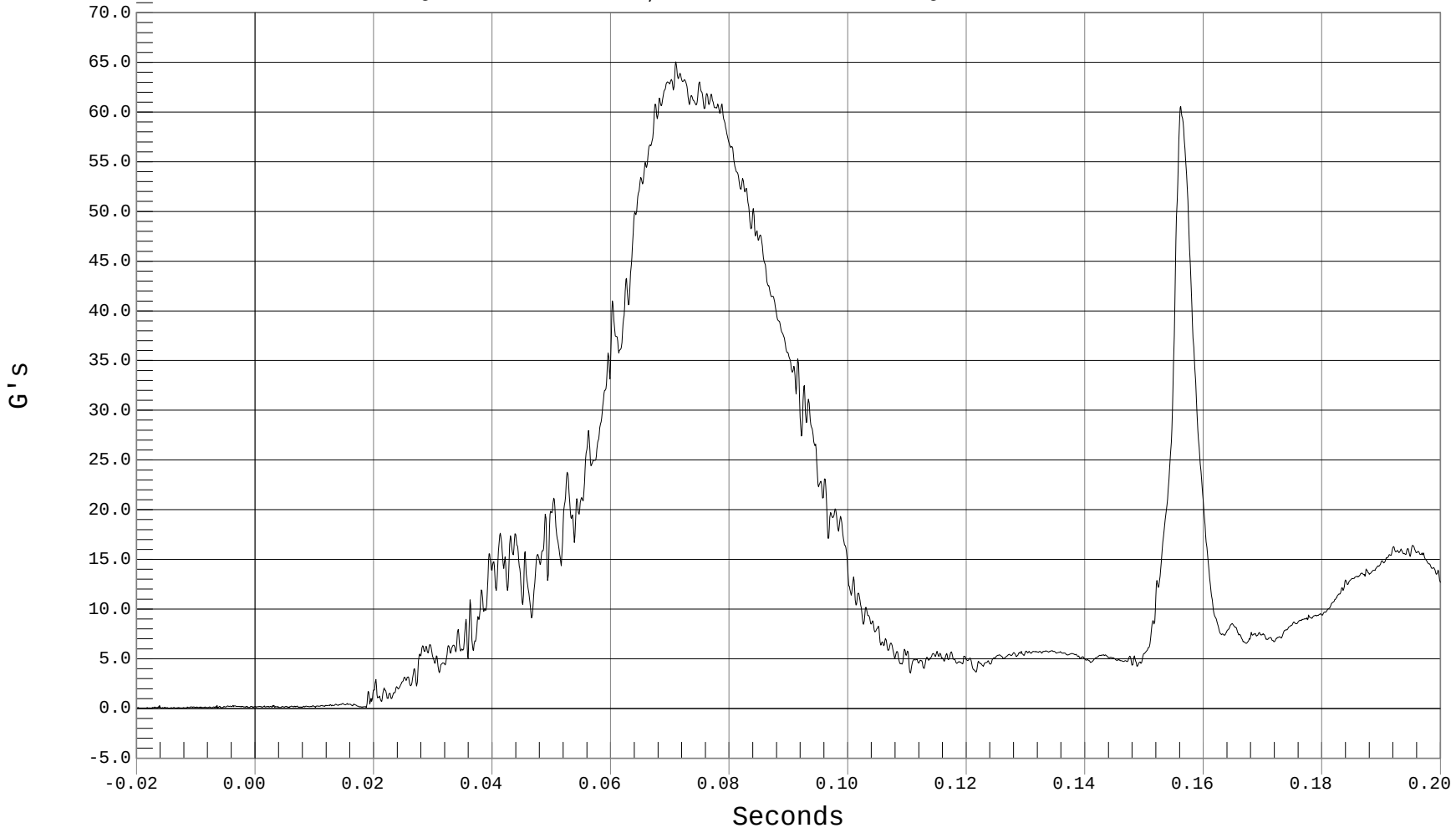
PASSENGER HEAD RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER HEAD RESULTANT ACCELERATION, B01037AV.A19

Ymin = .02 G's @ -0.0132 Seconds, Ymax = 65.04 G's @ 0.0709 Seconds



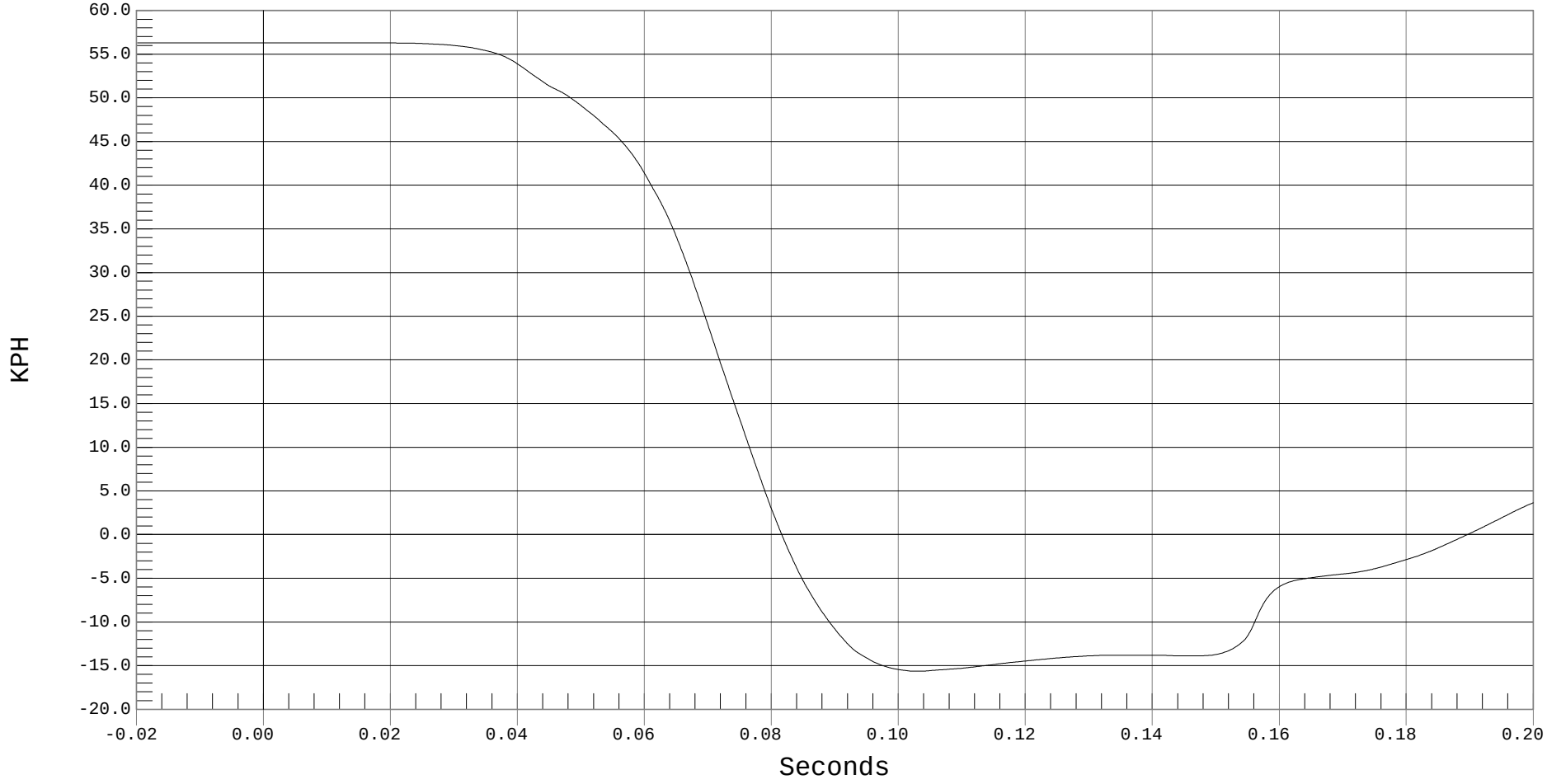
PASSENGER HEAD X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER HEAD X VELOCITY, B01037AI.V19

Ymin = -15.64 KPH @ 0.1028 Seconds, Ymax = 56.3 KPH @ 0.0180 Seconds



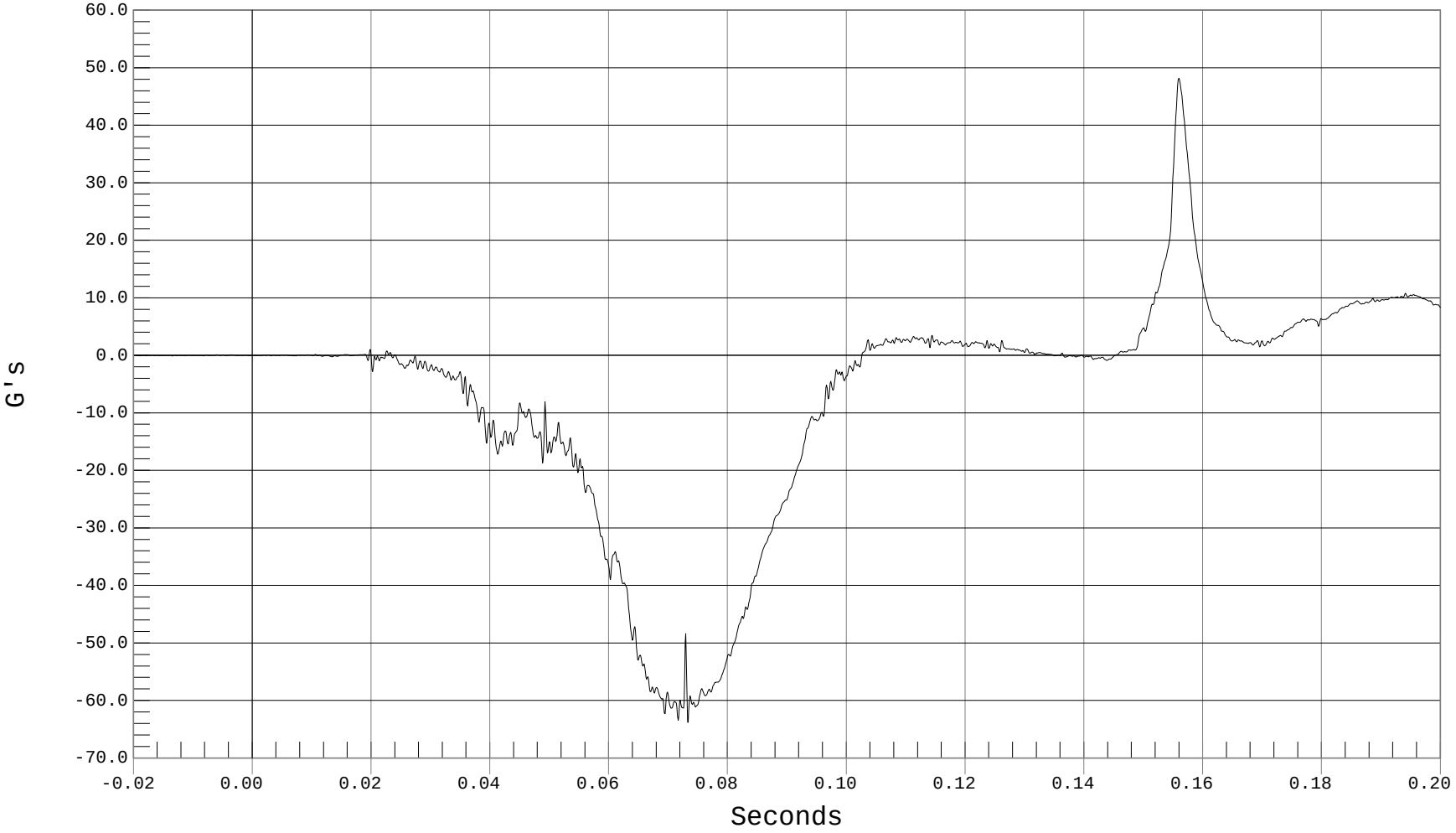
PASSENGER HEAD REDUNDANT X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER HEAD Xr, B01037AT.A41

Ymin = -63.81 G's @ 0.0733 Seconds, Ymax = 48.17 G's @ 0.1559 Seconds



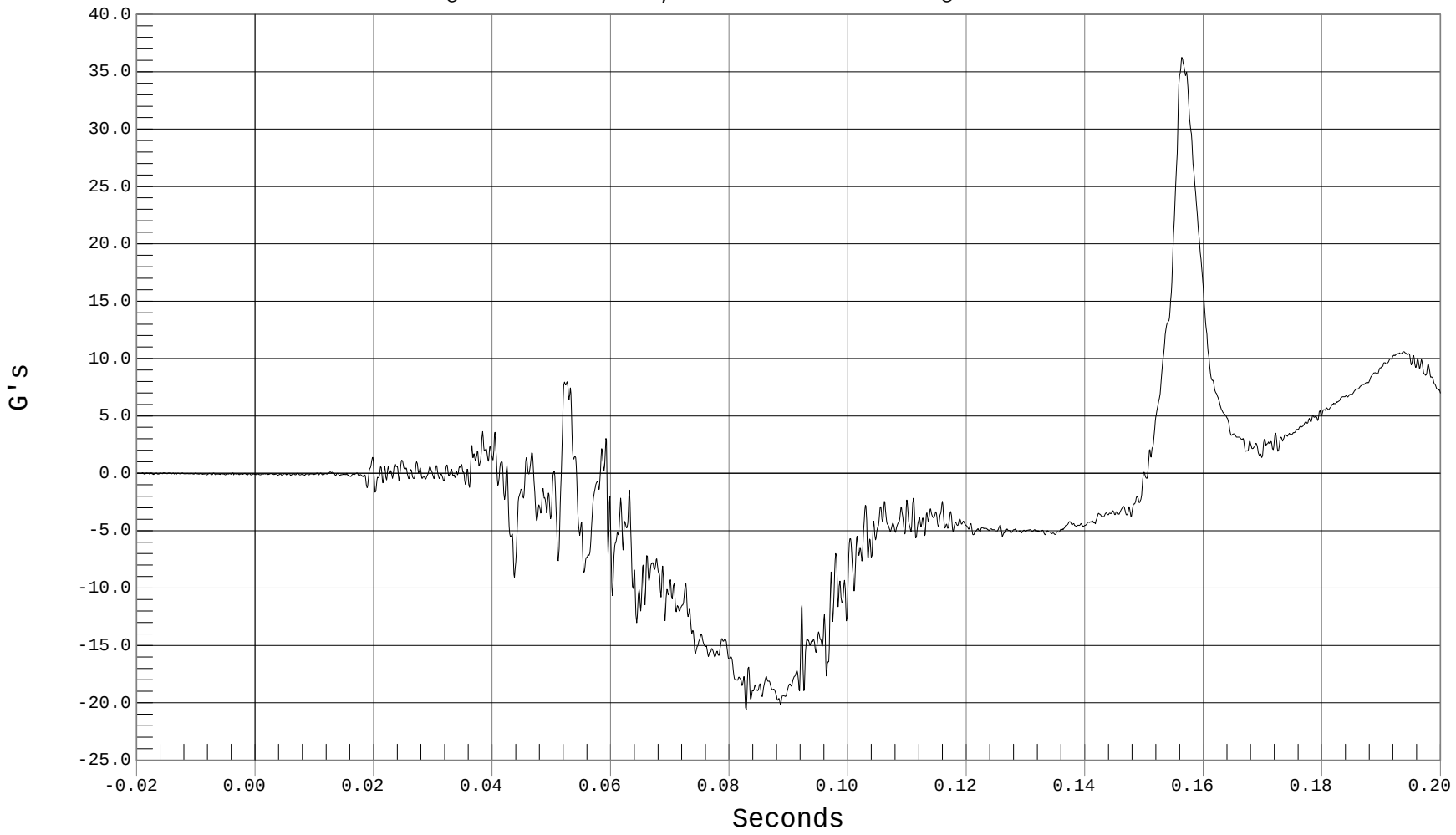
PASSENGER HEAD REDUNDANT Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER HEAD Yr, B01037AT.A42

Ymin = -20.58 G's @ 0.0828 Seconds, Ymax = 36.25 G's @ 0.1563 Seconds



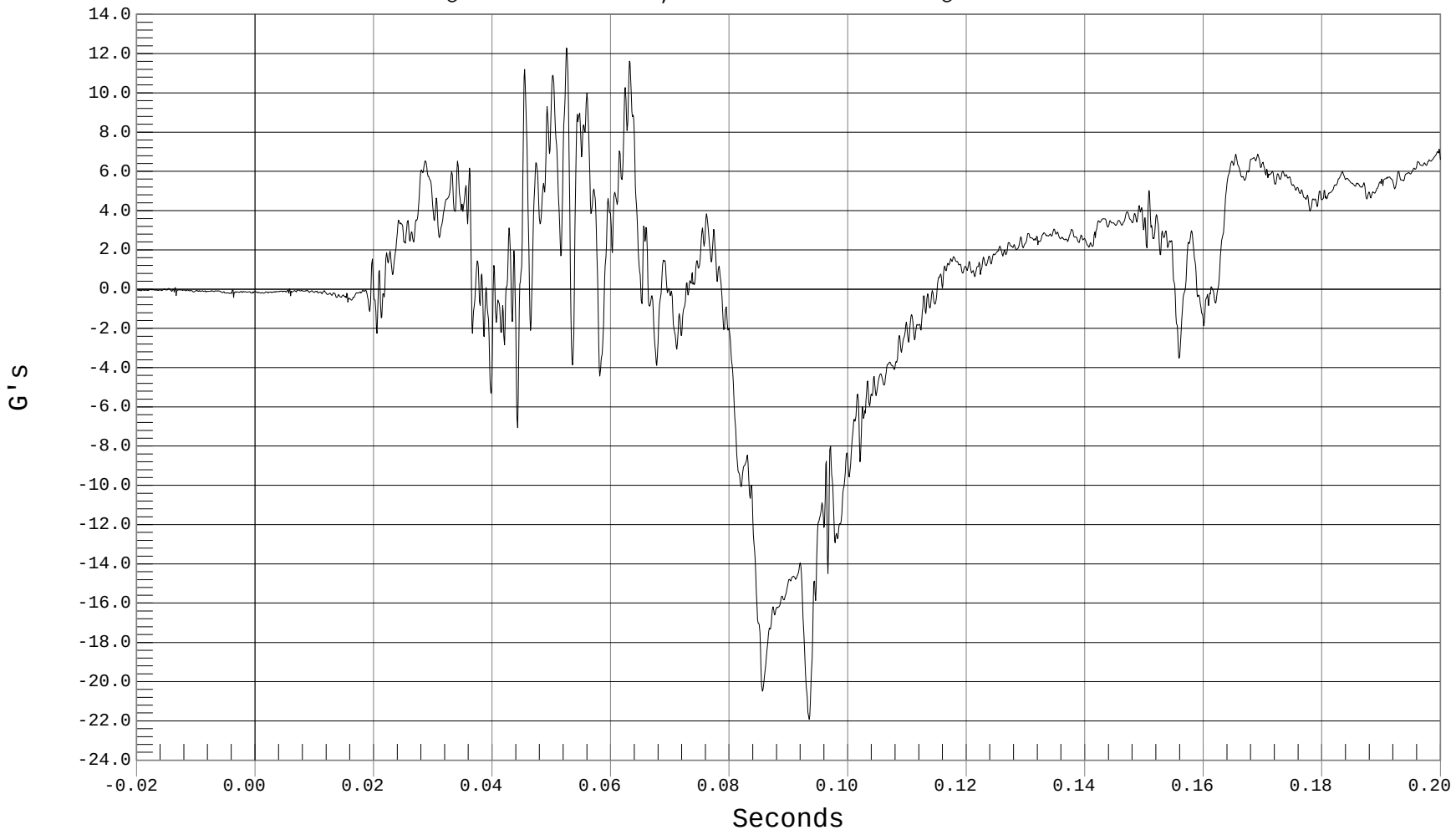
PASSENGER HEAD REDUNDANT Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER HEAD Zr, B01037AT.A43

Ymin = -21.93 G's @ 0.0934 Seconds, Ymax = 12.28 G's @ 0.0525 Seconds



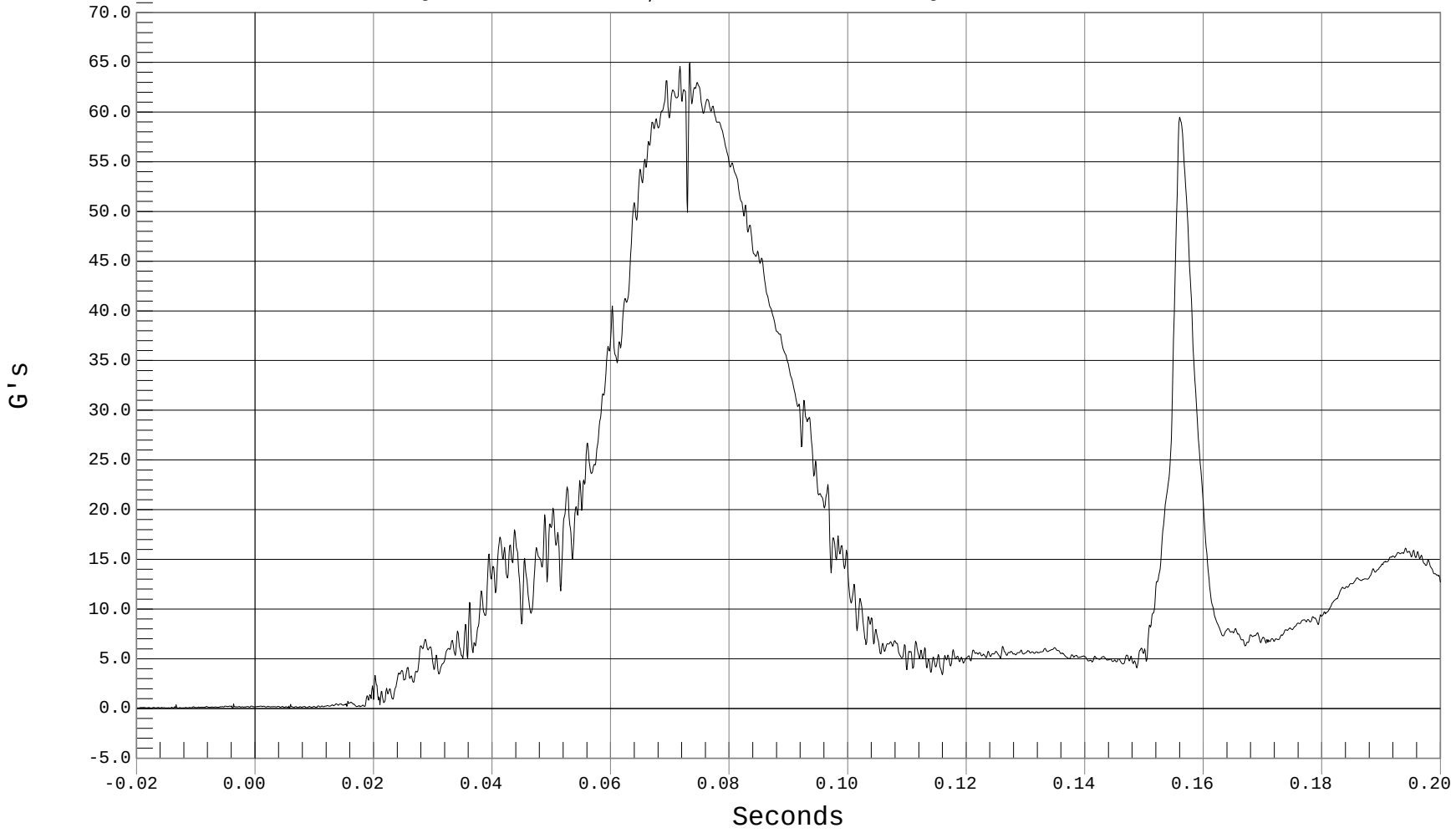
PASSENGER HEAD REDUNDANT RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER HEAD REDUNDANT RESULTANT ACCELERATION, B01037AV.A41

Ymin = .02 G's @ -0.0162 Seconds, Ymax = 64.92 G's @ 0.0733 Seconds



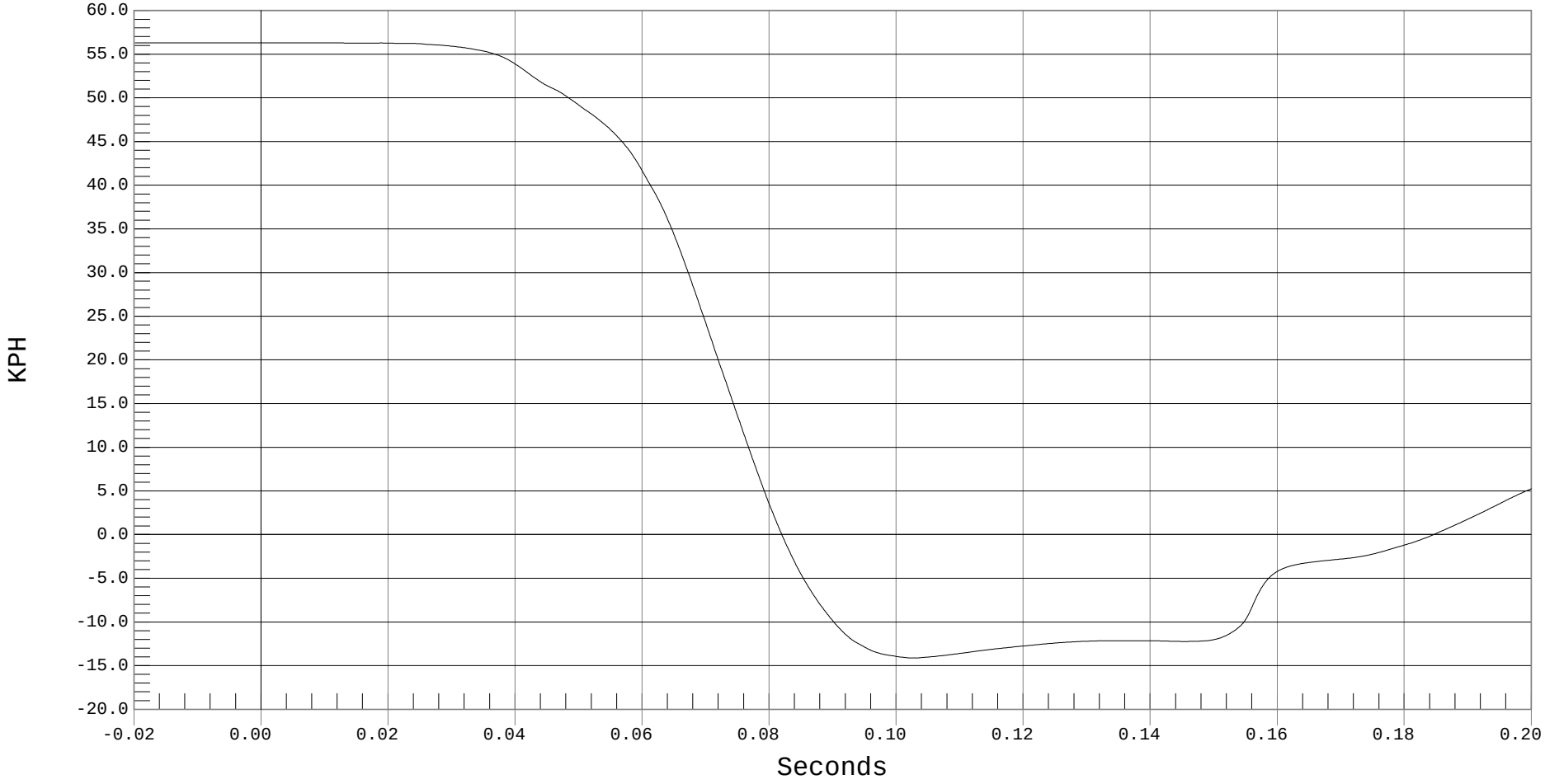
PASSENGER HEAD REDUNDANT X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER HEAD REDUNDANT X VELOCITY, B01037AI.V41

Ymin = -14.13 KPH @ 0.1027 Seconds, Ymax = 56.3 KPH @ -0.0199 Seconds



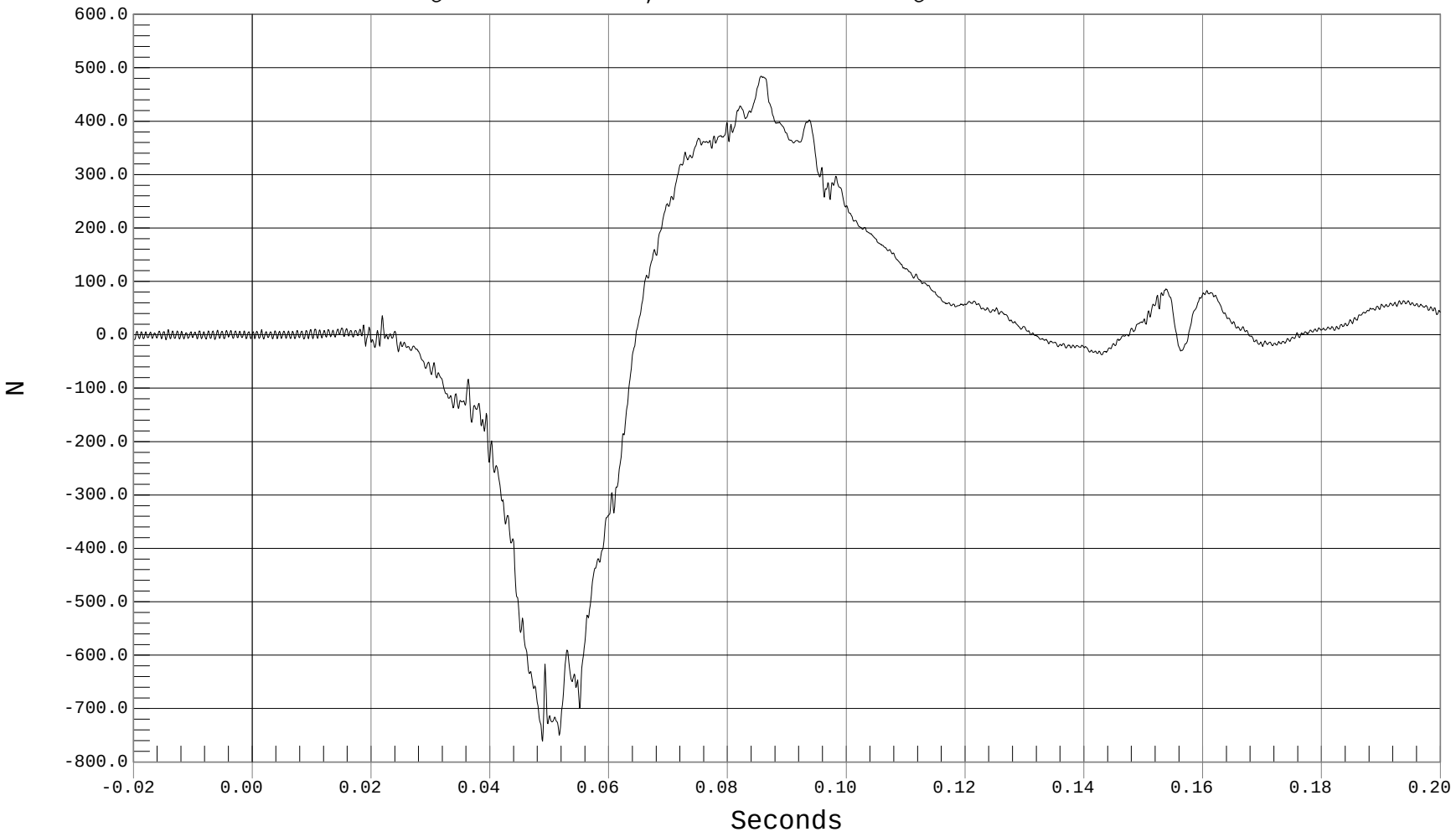
PASSENGER NECK FORCE X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER NECK FX, B01037FT.F44

Ymin = -761.07 N @ 0.0488 Seconds, Ymax = 483.91 N @ 0.0855 Seconds



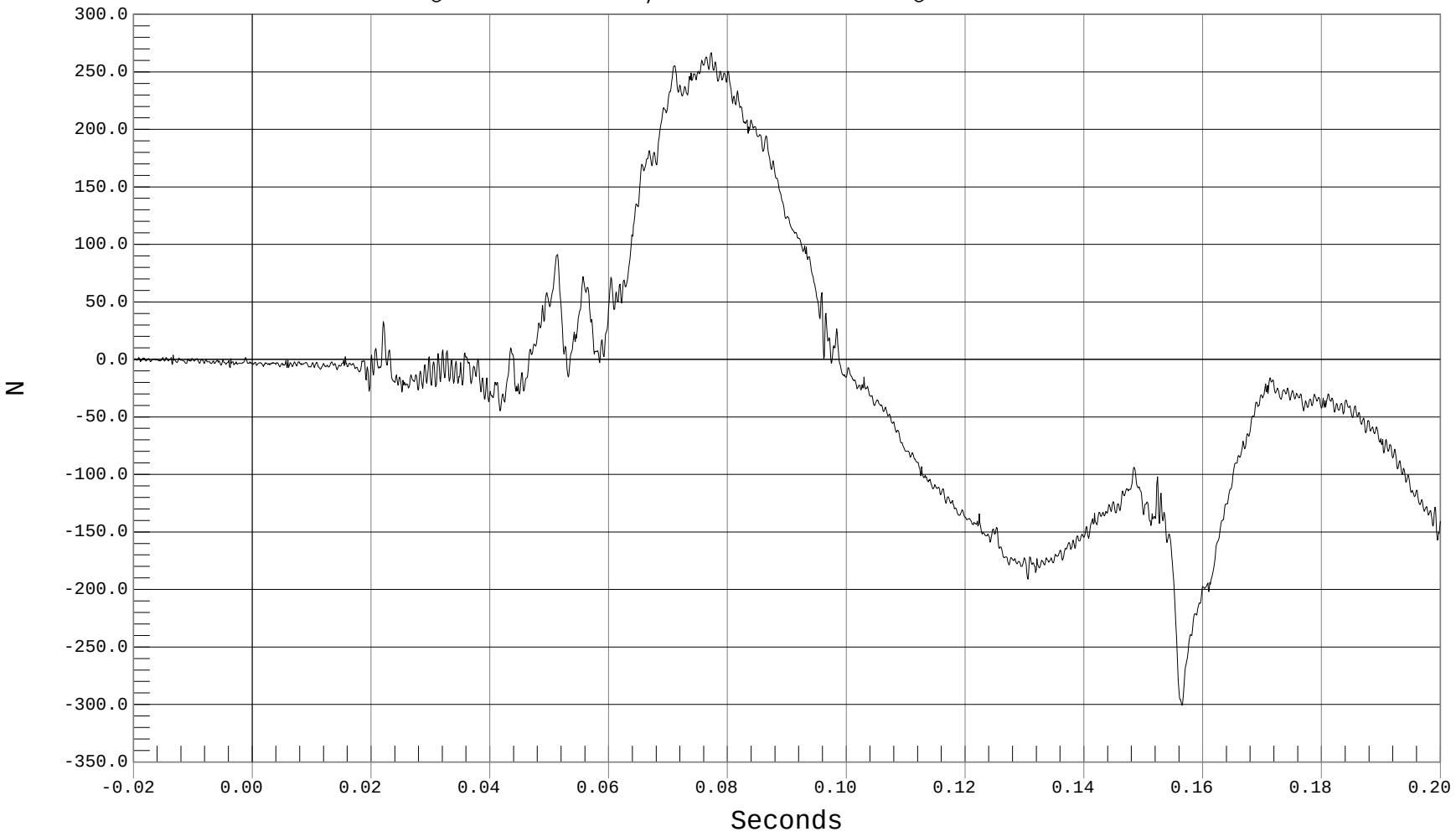
PASSENGER NECK FORCE Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER NECK FY, B01037FT.F45

Ymin = -300.65 N @ 0.1564 Seconds, Ymax = 266.75 N @ 0.0772 Seconds



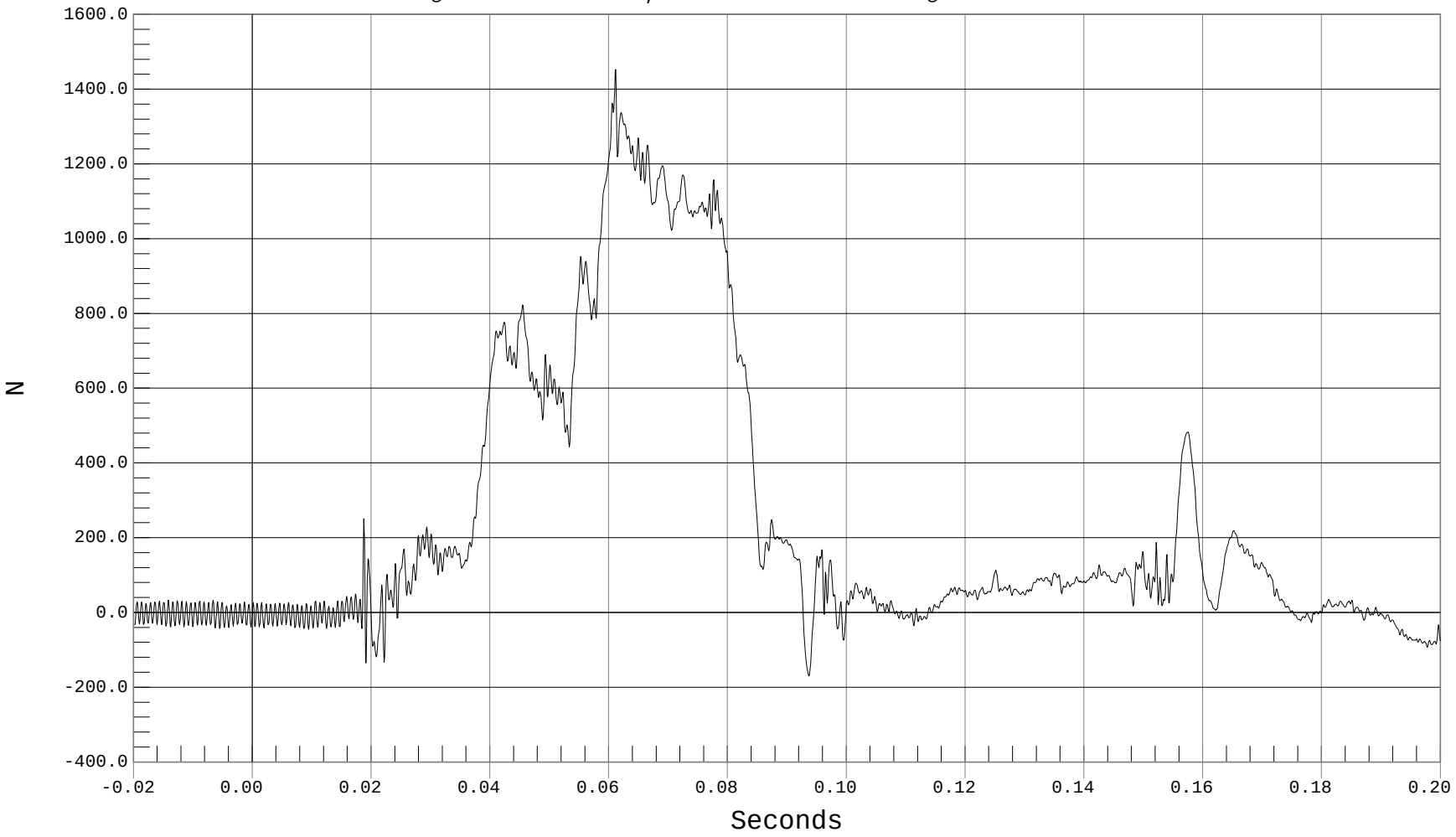
PASSENGER NECK FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER NECK FZ, B01037FT.F46

Ymin = -170.22 N @ 0.0936 Seconds, Ymax = 1452.45 N @ 0.0611 Seconds



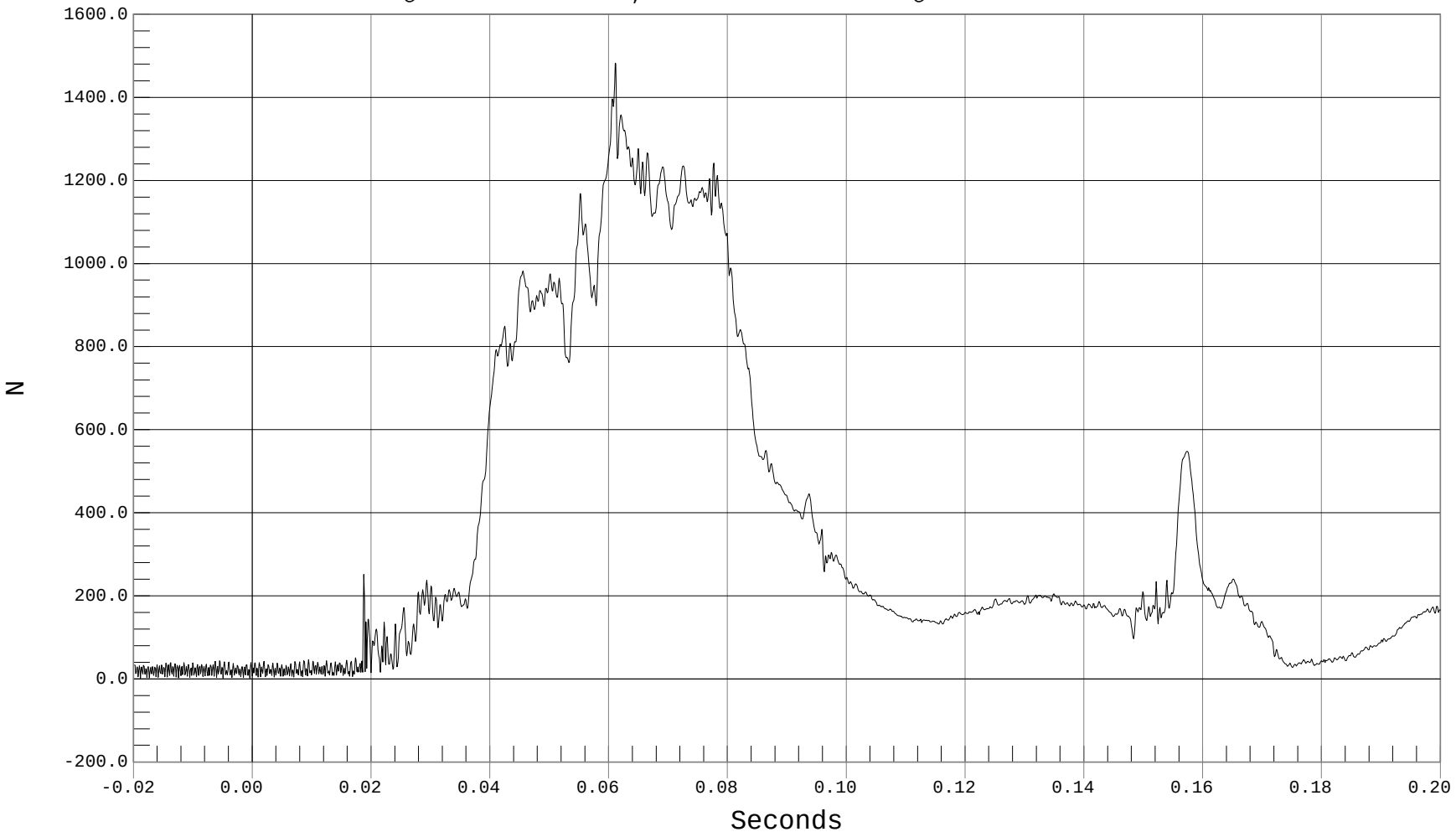
PASSENGER NECK FORCE RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER NECK FORCE RESULTANT, B01037FV.F44

Ymin = 1.45 N @ -0.0050 Seconds, Ymax = 1482.74 N @ 0.0610 Seconds



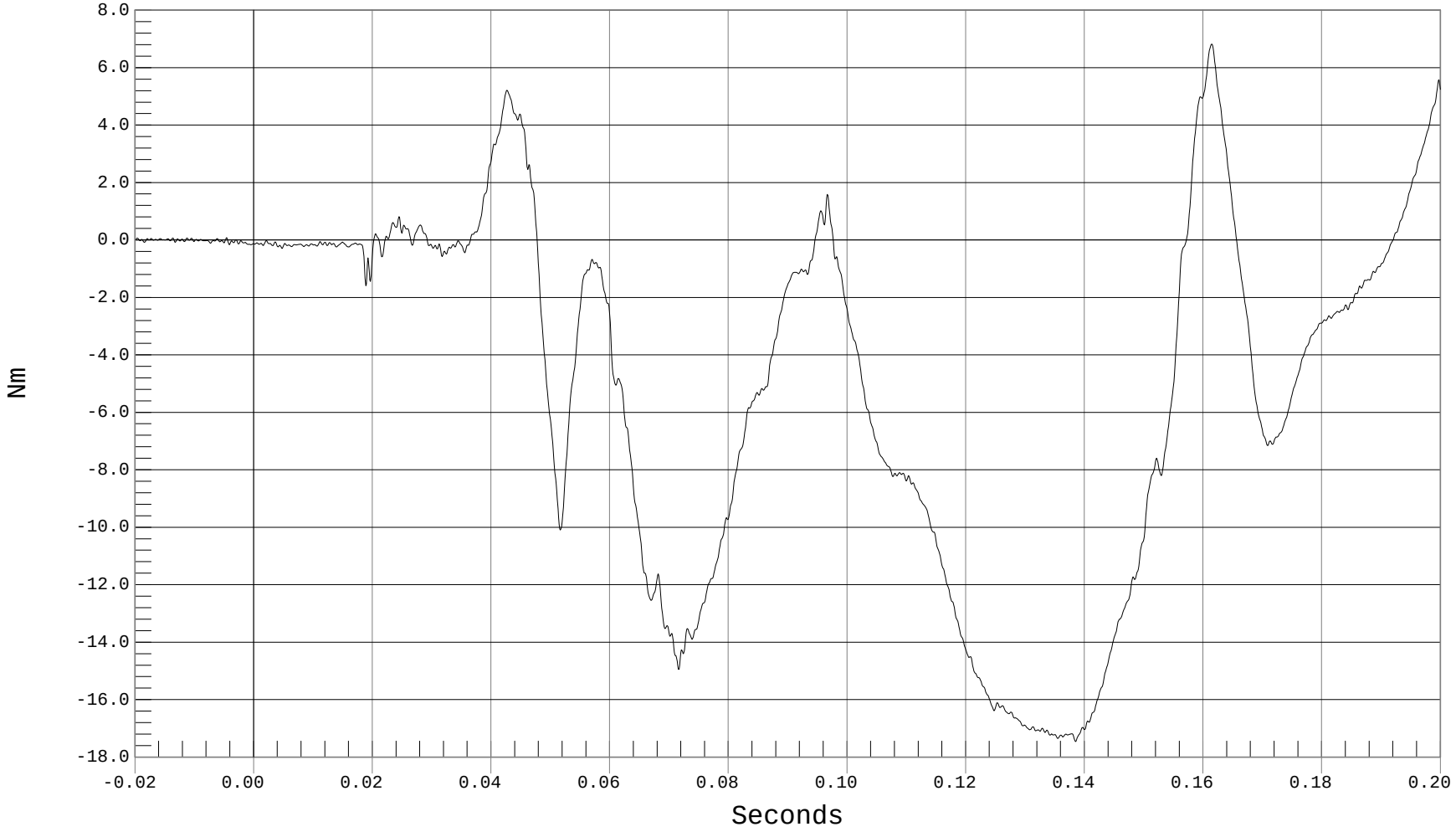
PASSENGER NECK MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER NECK MX, B01037MF.M47

Ymin = -17.47 Nm @ 0.1384 Seconds, Ymax = 6.82 Nm @ 0.1614 Seconds



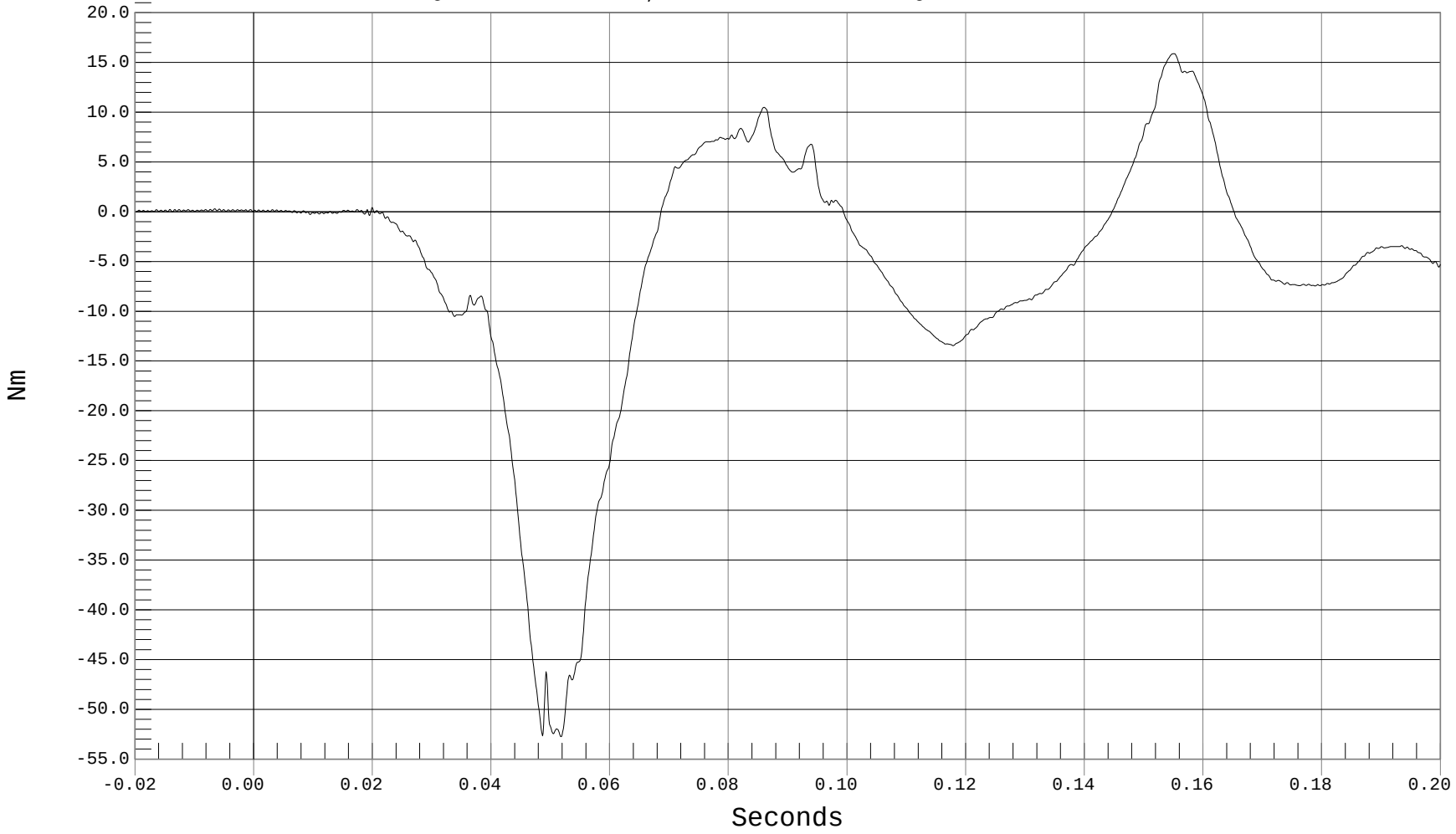
PASSENGER NECK MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER NECK MY, B01037MF.M48

Ymin = -52.75 Nm @ 0.0517 Seconds, Ymax = 15.89 Nm @ 0.1550 Seconds



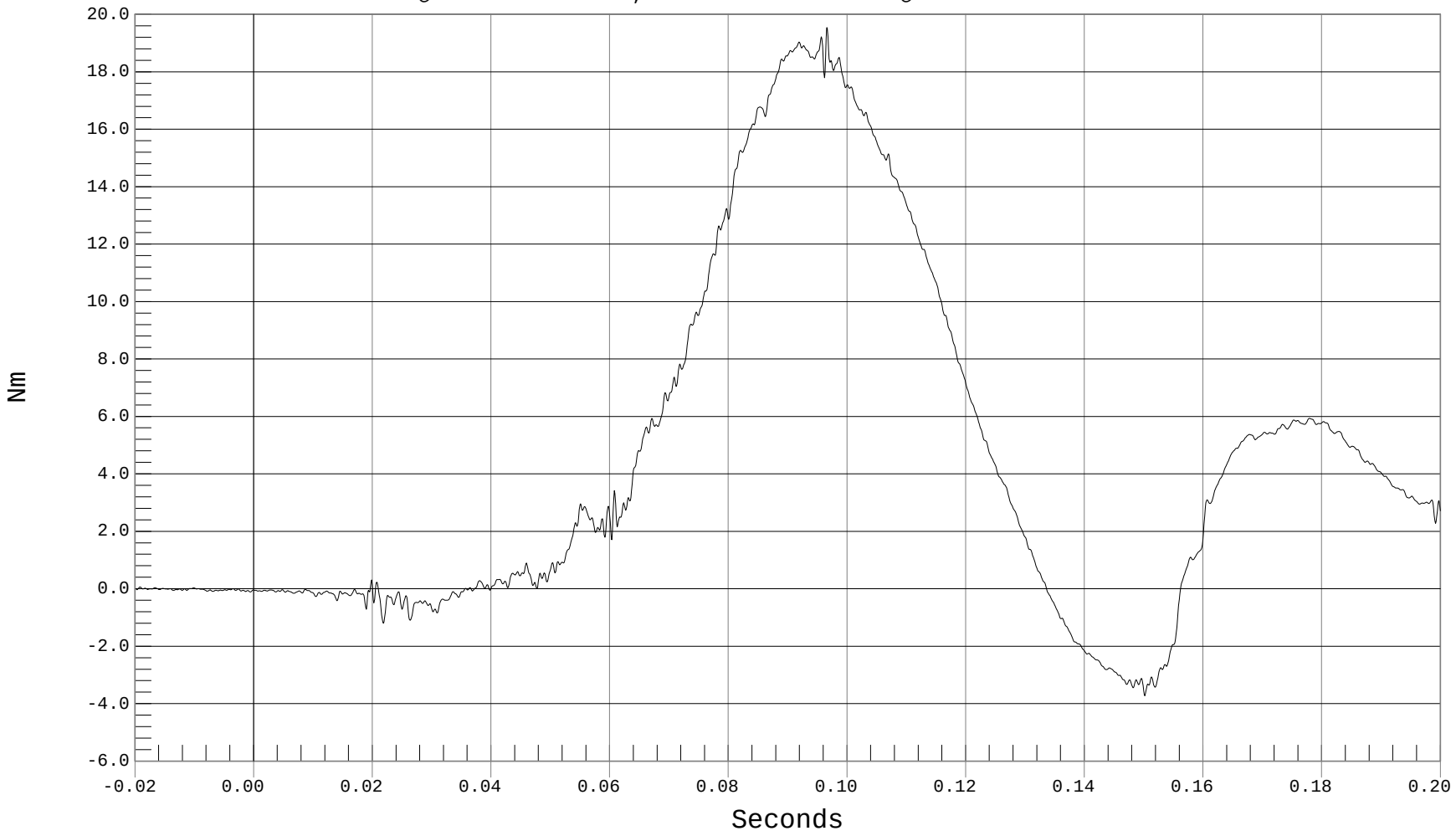
PASSENGER NECK MOMENT Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER NECK MZ, B01037MF.M49

Ymin = -3.73 Nm @ 0.1501 Seconds, Ymax = 19.54 Nm @ 0.0966 Seconds



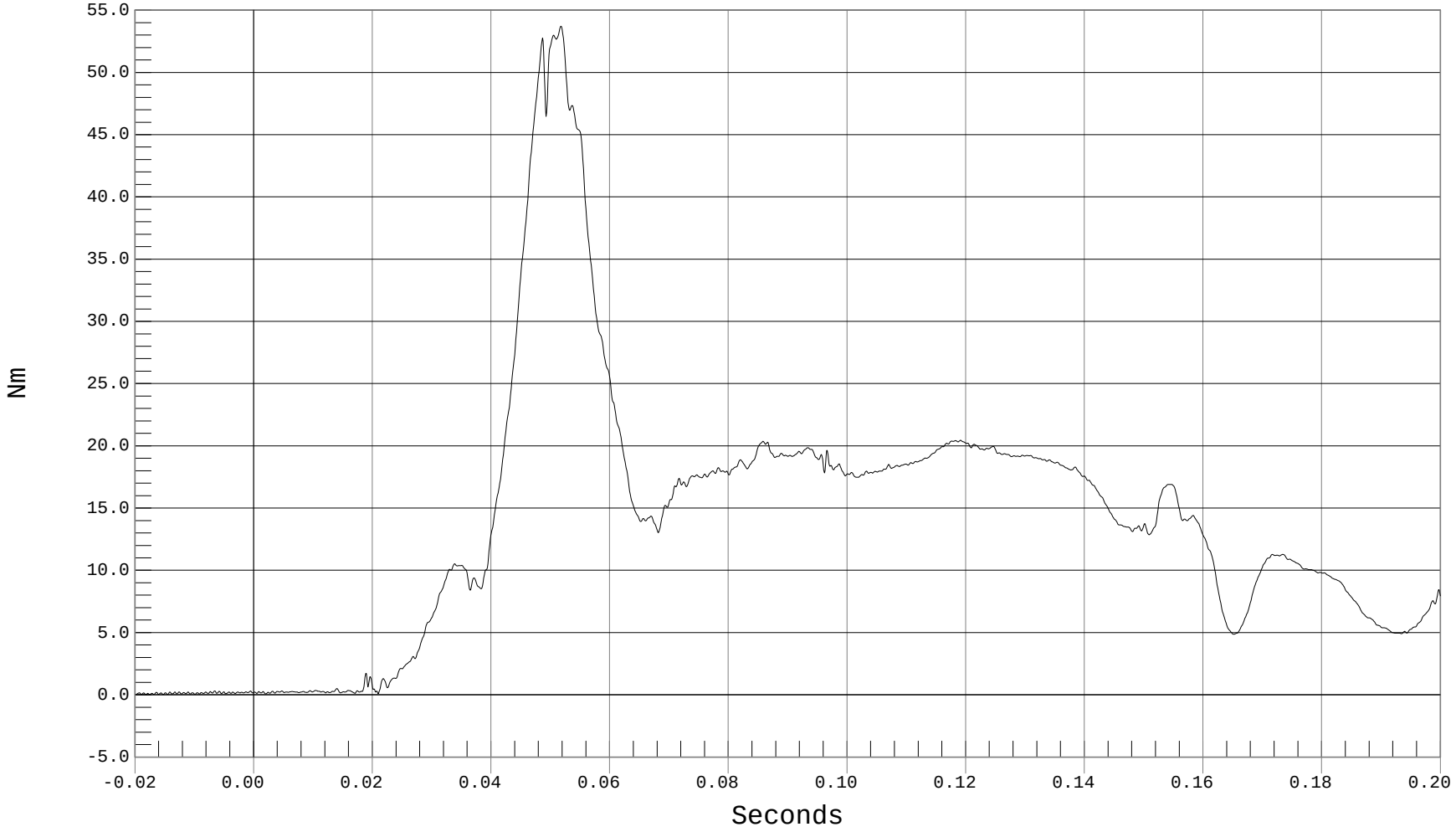
PASSENGER NECK MOMENT RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER NECK MOMENT RESULTANT, B01037MV.M47

Ymin = .01 Nm @ -0.0182 Seconds, Ymax = 53.71 Nm @ 0.0517 Seconds



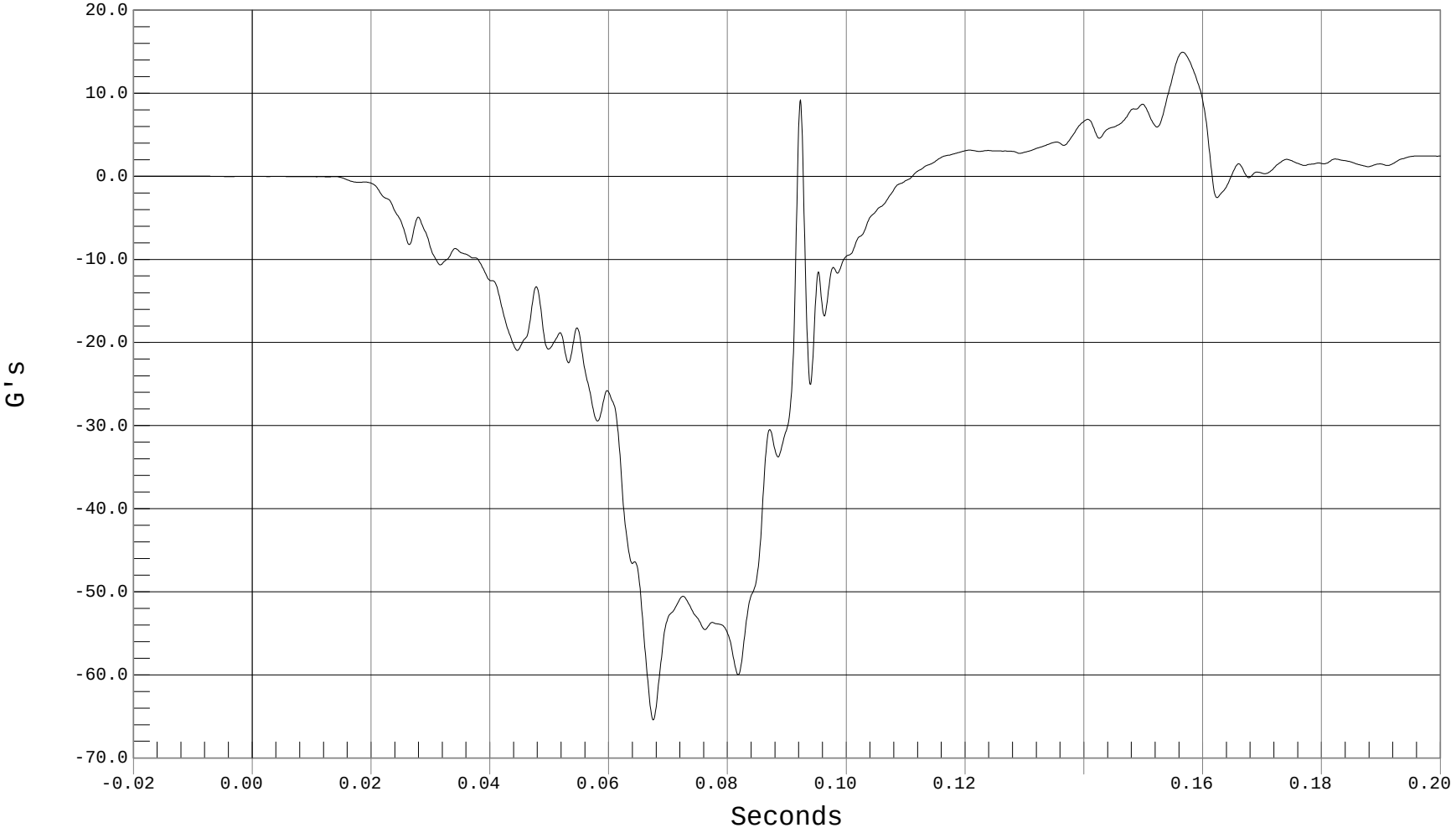
PASSENGER CHEST X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST X, B01037AF.A22

Ymin = -65.43 G's @ 0.0674 Seconds, Ymax = 14.94 G's @ 0.1565 Seconds



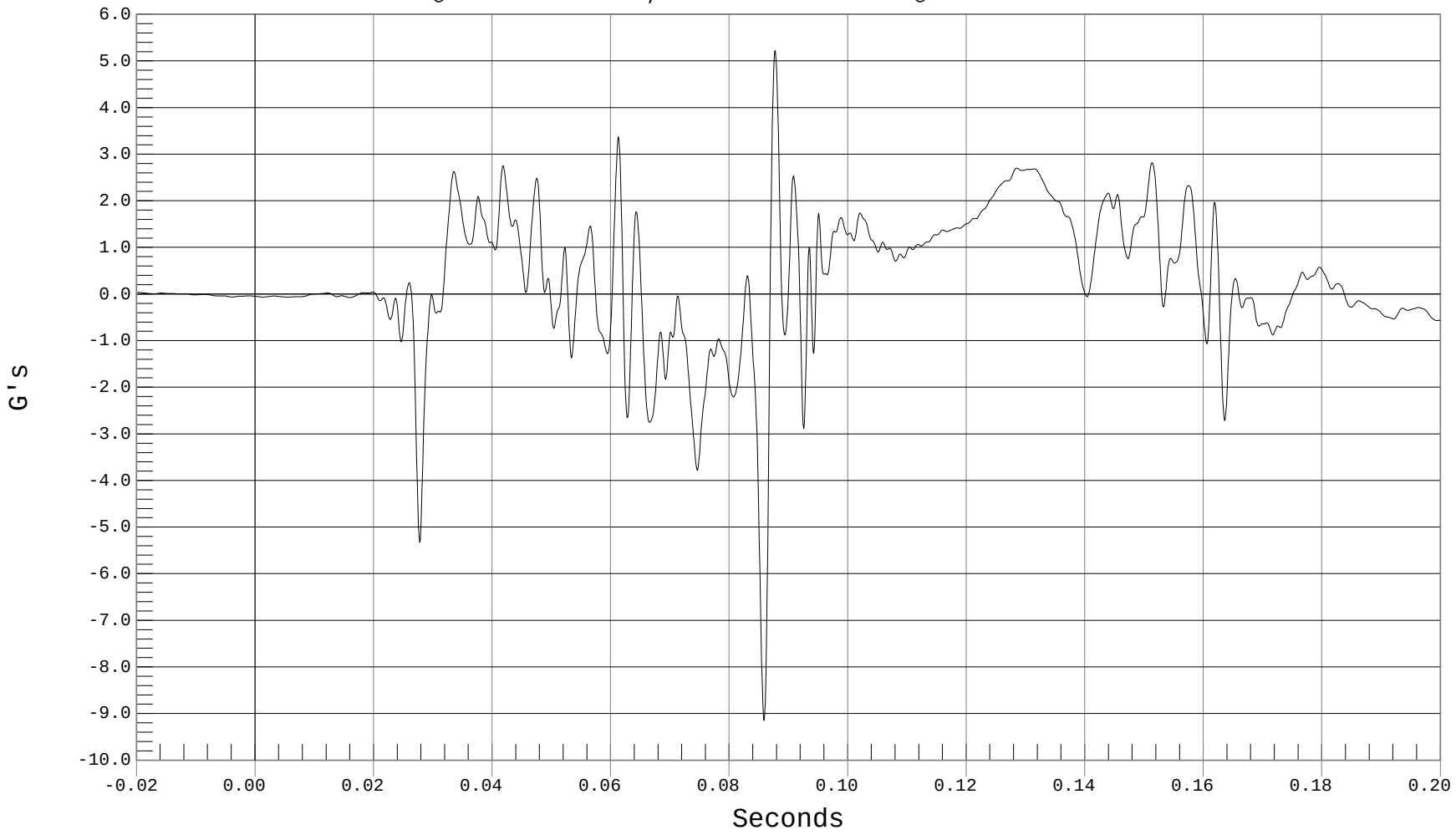
PASSENGER CHEST Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST Y, B01037AF.A23

Ymin = -9.15 G's @ 0.0858 Seconds, Ymax = 5.22 G's @ 0.0877 Seconds



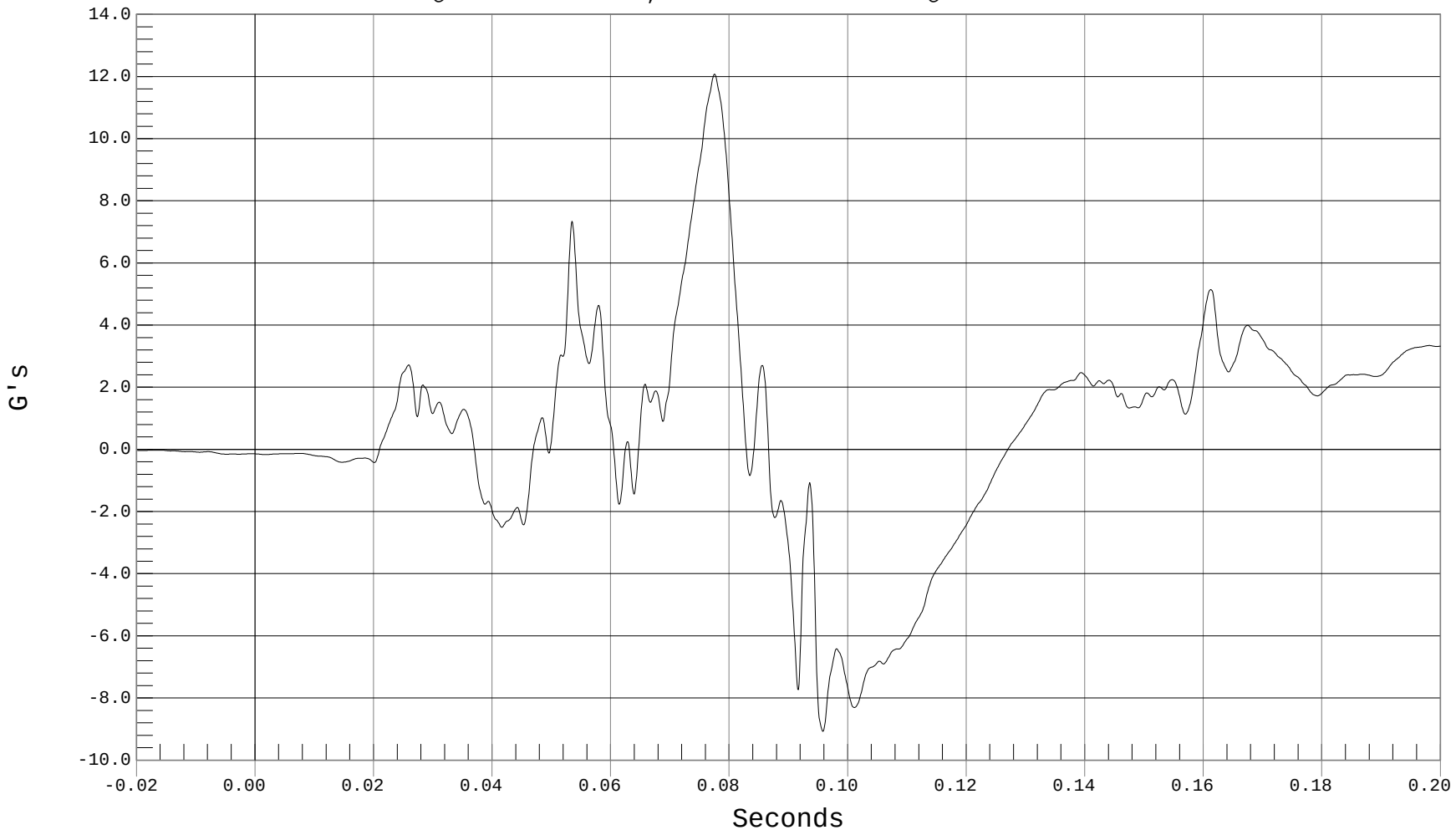
PASSENGER CHEST Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST Z, B01037AF.A24

Ymin = -9.07 G's @ 0.0957 Seconds, Ymax = 12.08 G's @ 0.0774 Seconds



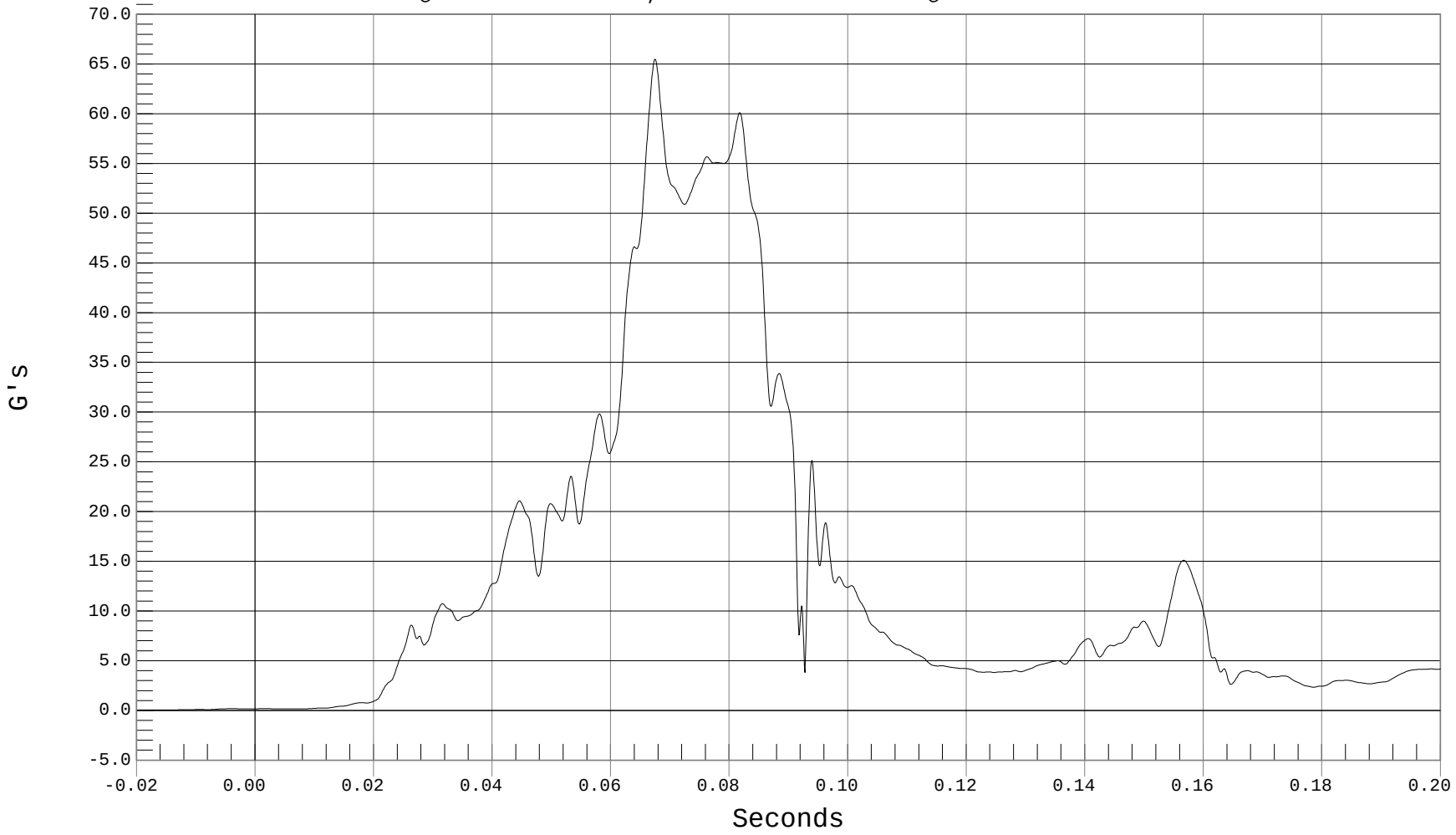
PASSENGER CHEST RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST RESULTANT ACCELERATION, B01037AV.A22

Ymin = .03 G's @ -0.0175 Seconds, Ymax = 65.49 G's @ 0.0674 Seconds



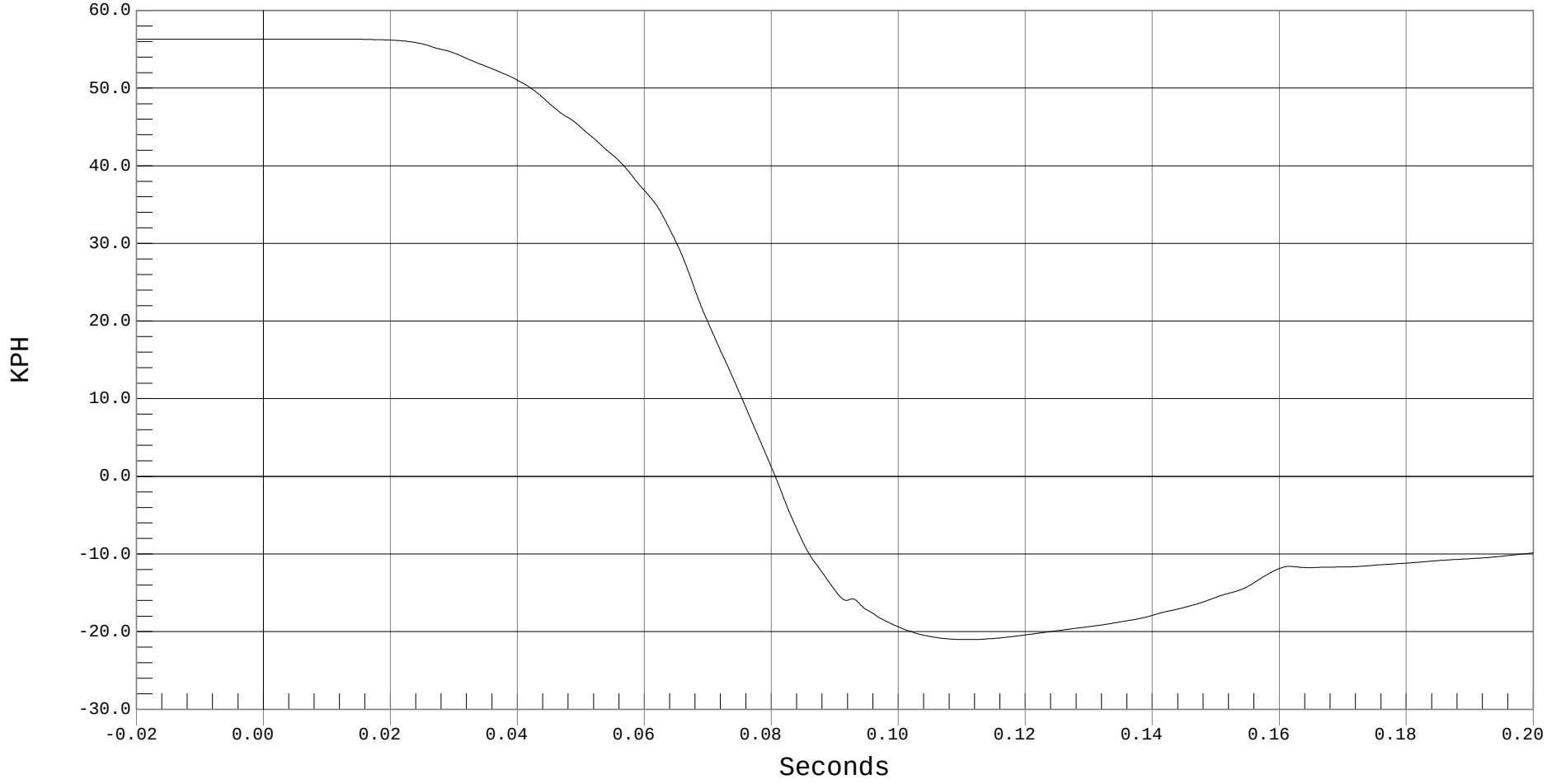
PASSENGER CHEST X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST X VELOCITY, B01037AI.V22

Ymin = -21.02 KPH @ 0.1110 Seconds, Ymax = 56.31 KPH @ -0.0067 Seconds



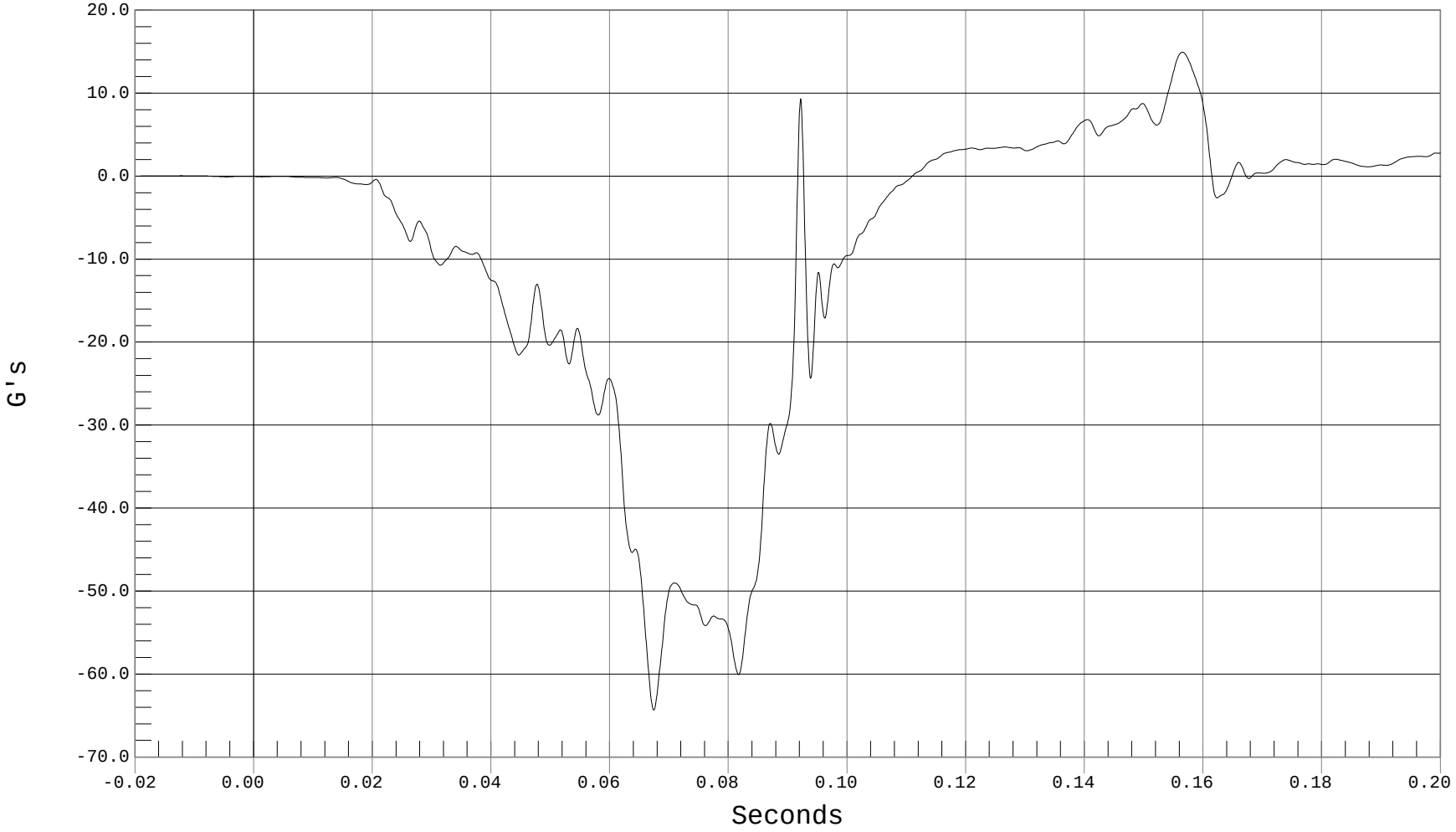
PASSENGER CHEST REDUNDANT X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST Xr, B01037AF.A50

Ymin = -64.33 G's @ 0.0673 Seconds, Ymax = 14.94 G's @ 0.1564 Seconds



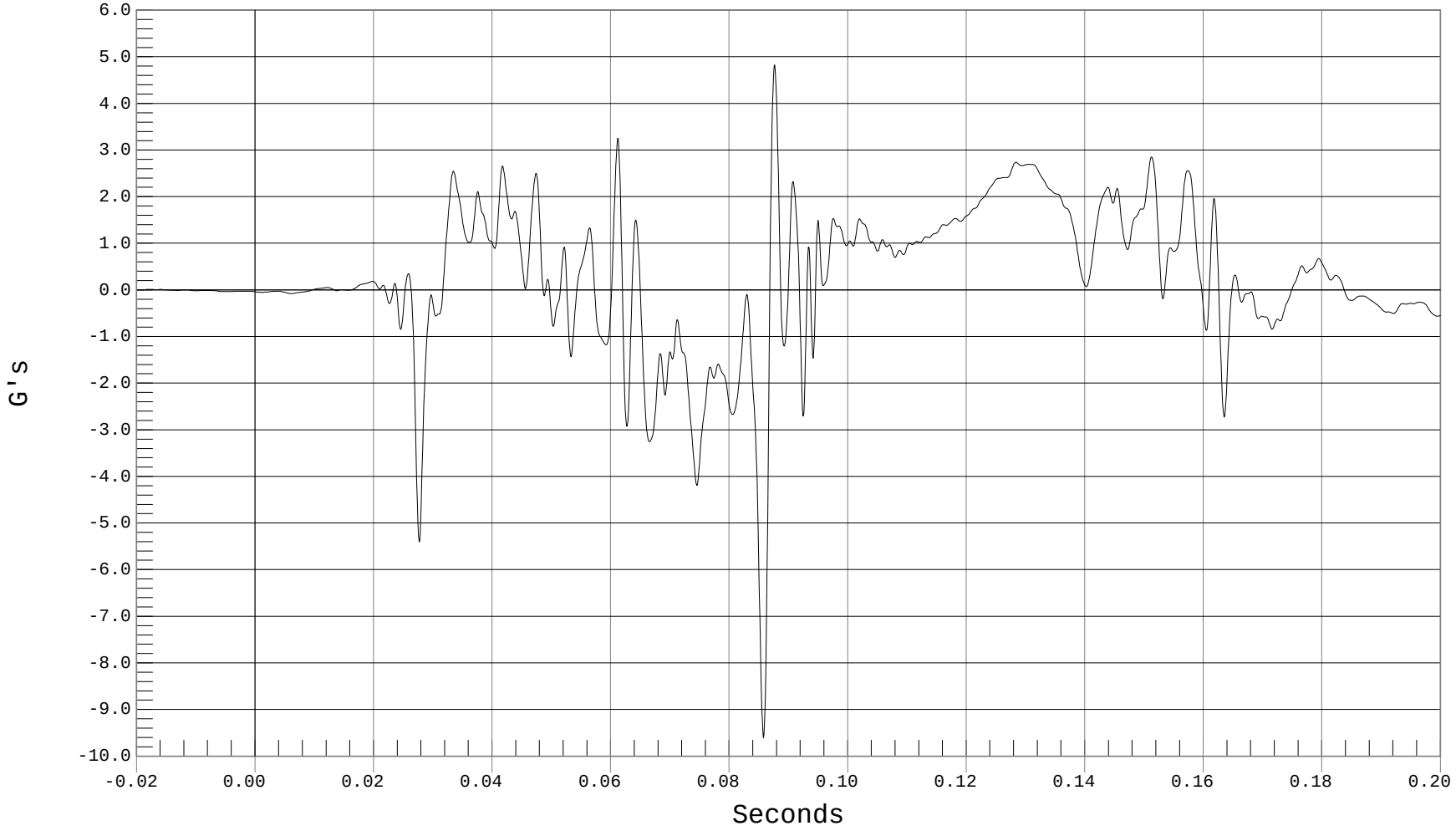
PASSENGER CHEST REDUNDANT Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST Yr, B01037AF.A51

Ymin = -9.61 G's @ 0.0857 Seconds, Ymax = 4.82 G's @ 0.0876 Seconds



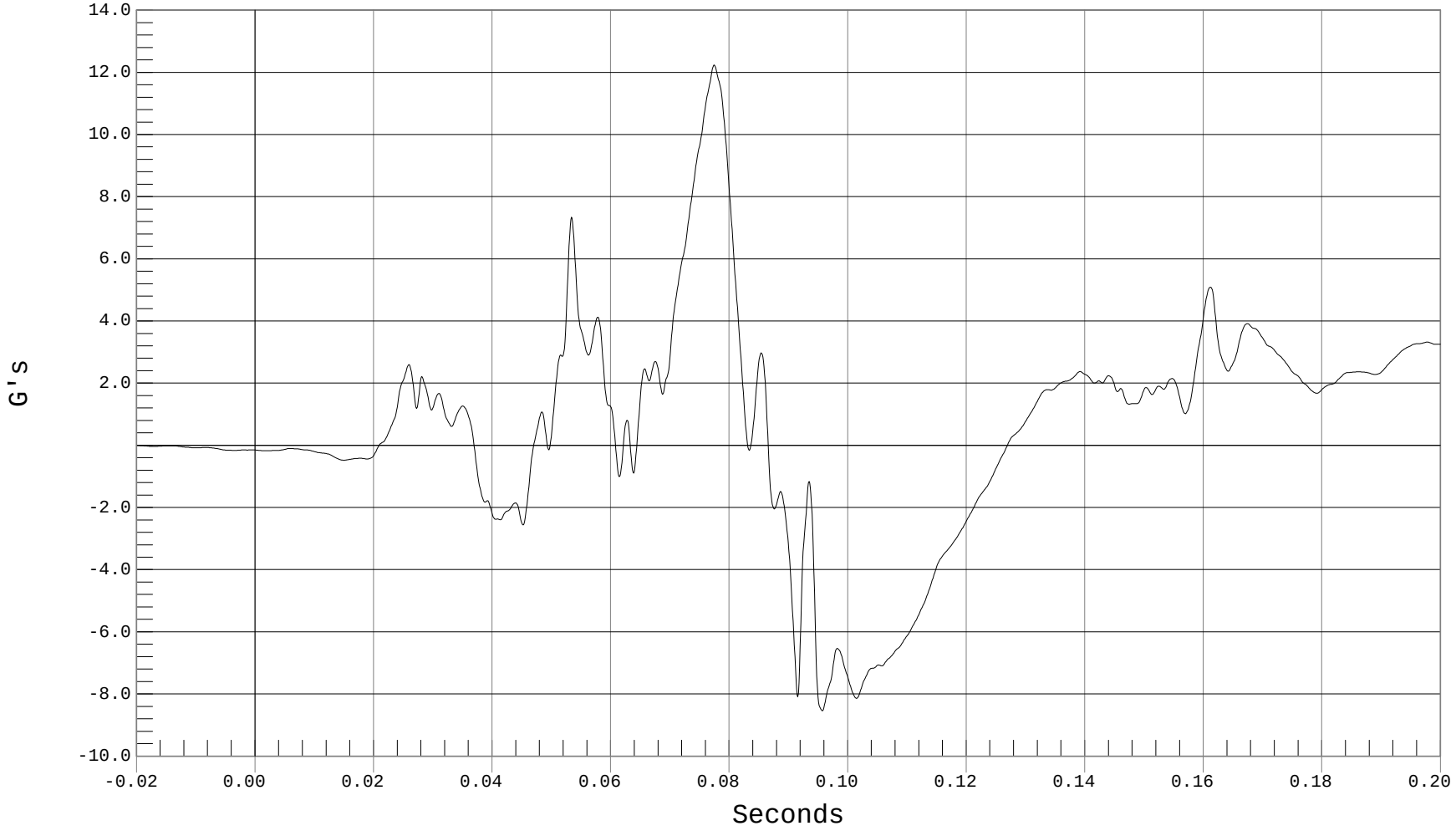
PASSENGER CHEST REDUNDANT Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST Zr, B01037AF.A52

Ymin = -8.54 G's @ 0.0956 Seconds, Ymax = 12.24 G's @ 0.0774 Seconds



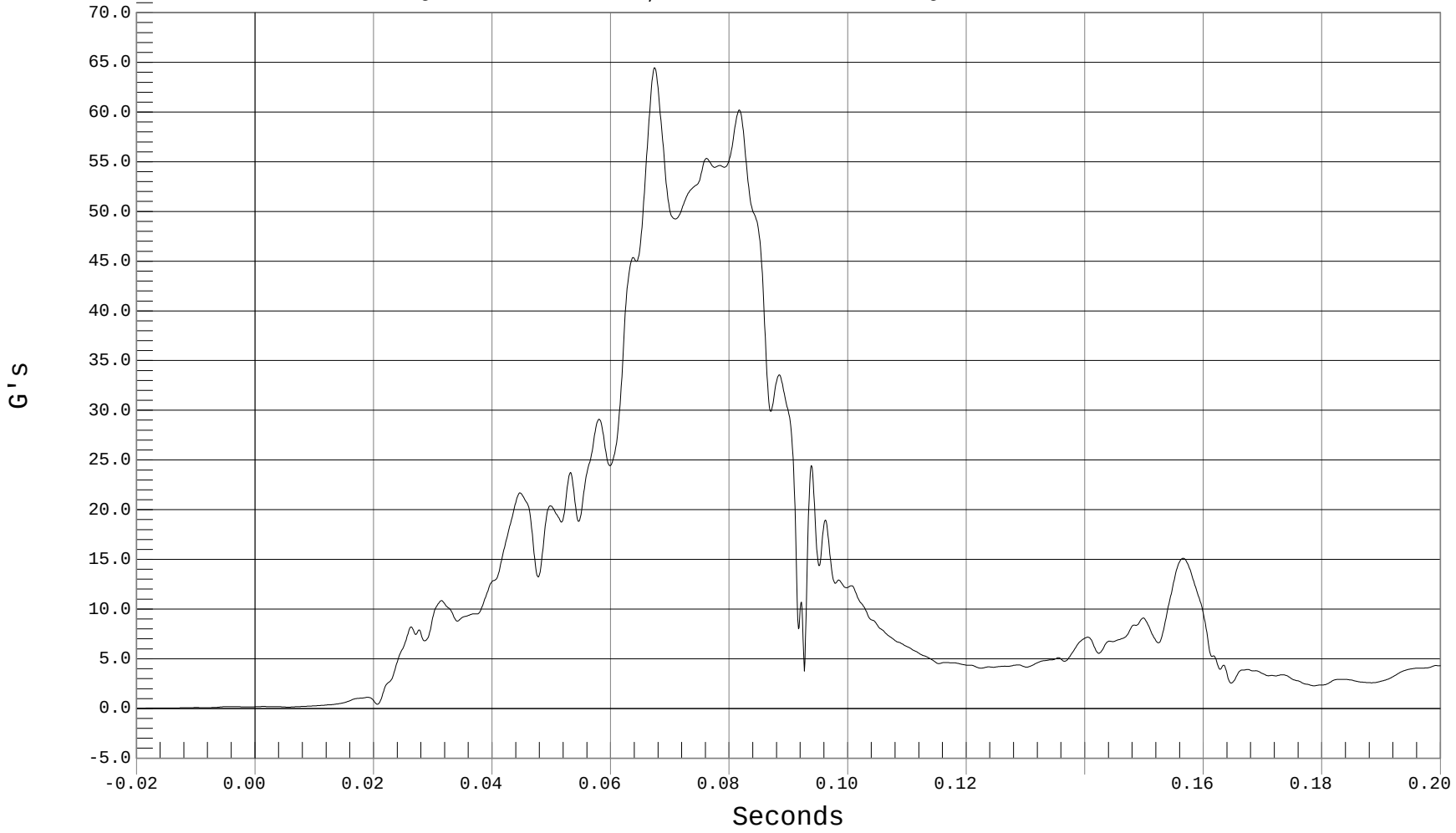
PASSENGER CHEST REDUNDANT RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST REDUNDANT RESULTANT ACCELERATION, B01037AV.A50

Ymin = .01 G's @ -0.0197 Seconds, Ymax = 64.45 G's @ 0.0673 Seconds



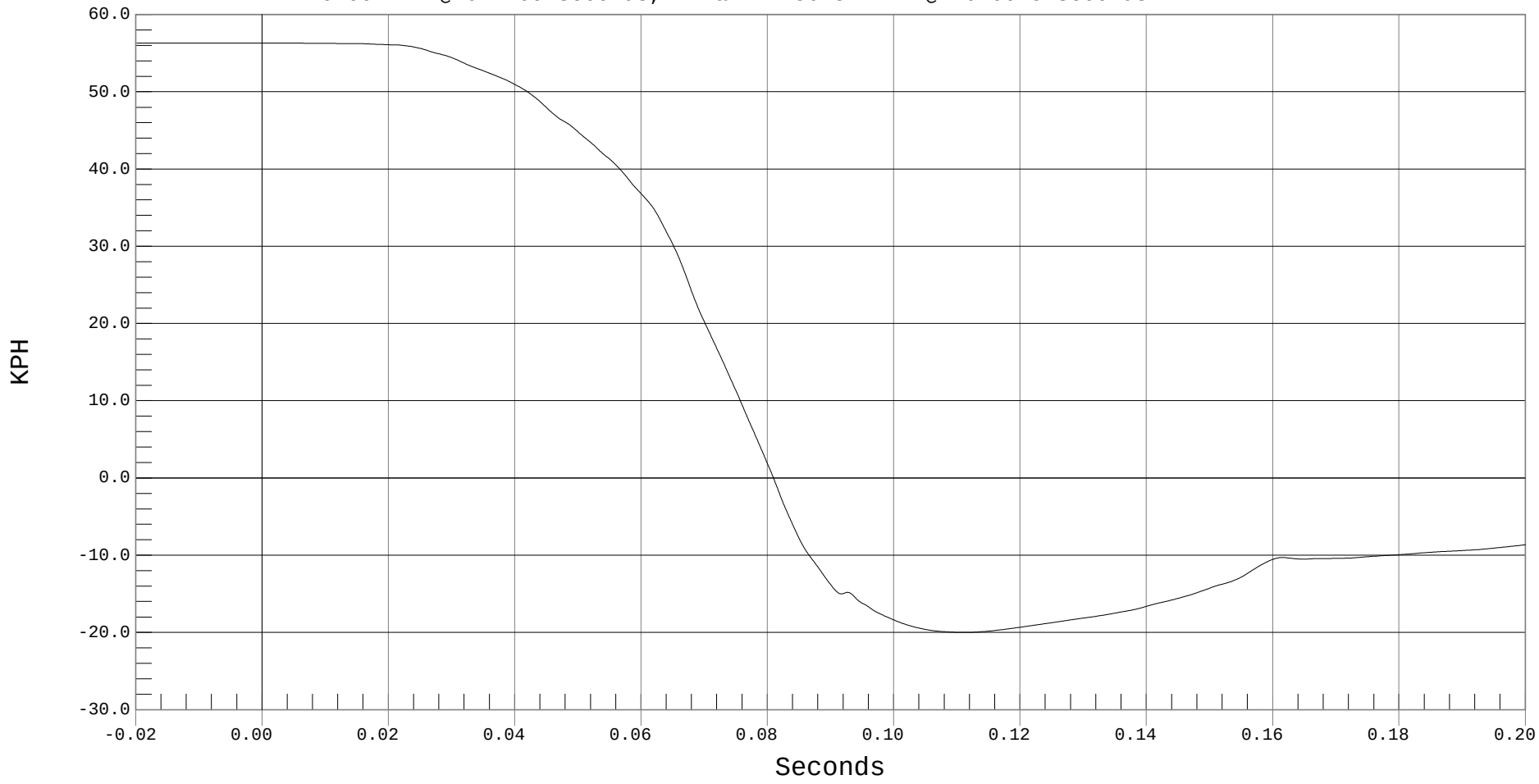
PASSENGER CHEST REDUNDANT X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER CHEST REDUNDANT X VELOCITY, B01037AI.V50

Ymin = -19.99 KPH @ 0.1109 Seconds, Ymax = 56.31 KPH @ -0.0075 Seconds



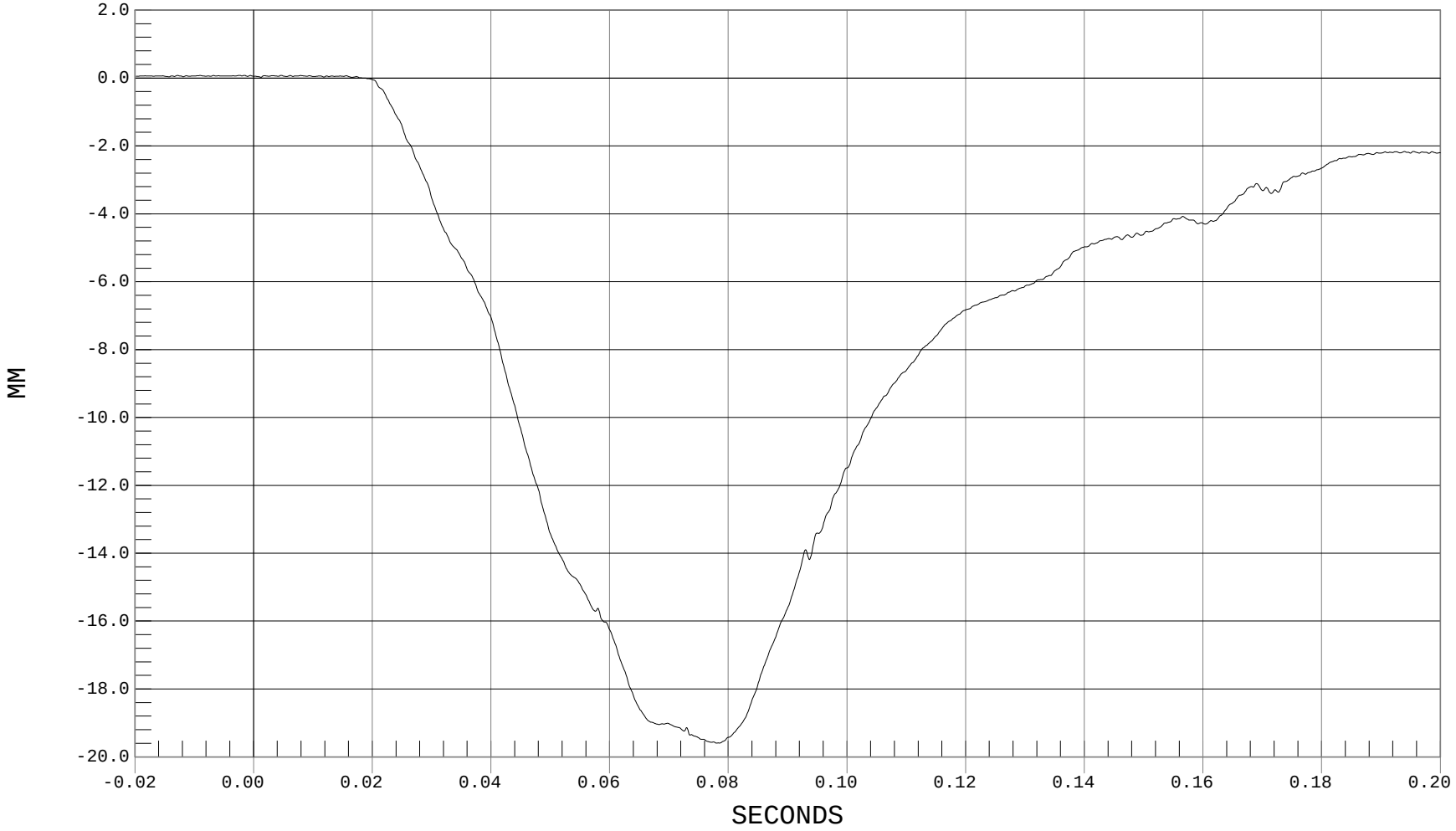
PASSENGER CHEST COMPRESSION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DISPLACEMENT, B01037DF.D25

Ymin = -19.6 MM @ 0.0779 SECONDS, Ymax = .08 MM @ 0.0046 SECONDS



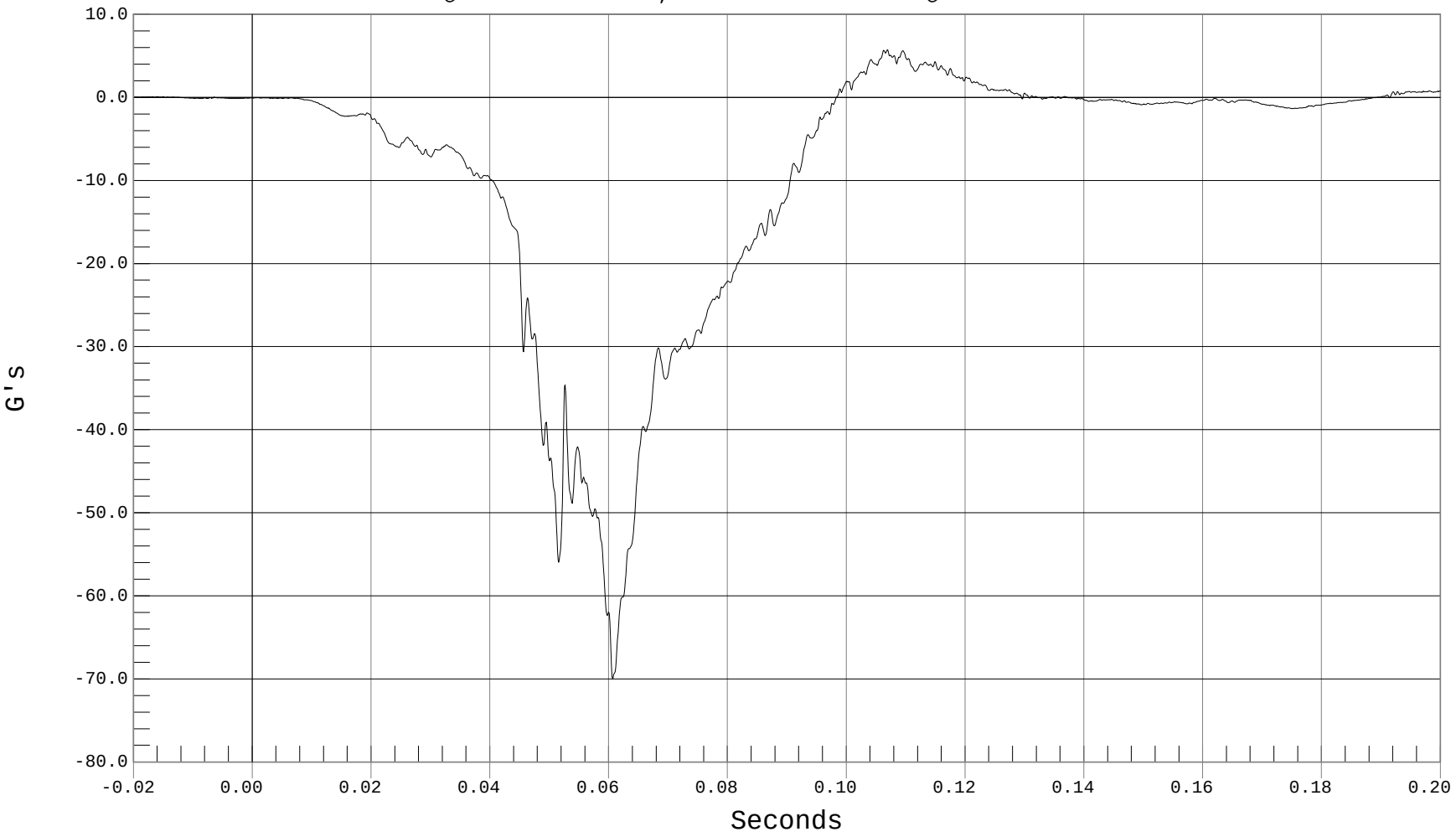
PASSENGER PELVIS X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER PELVIS X, B01037AT.A26

Ymin = -69.99 G's @ 0.0606 Seconds, Ymax = 5.73 G's @ 0.1068 Seconds



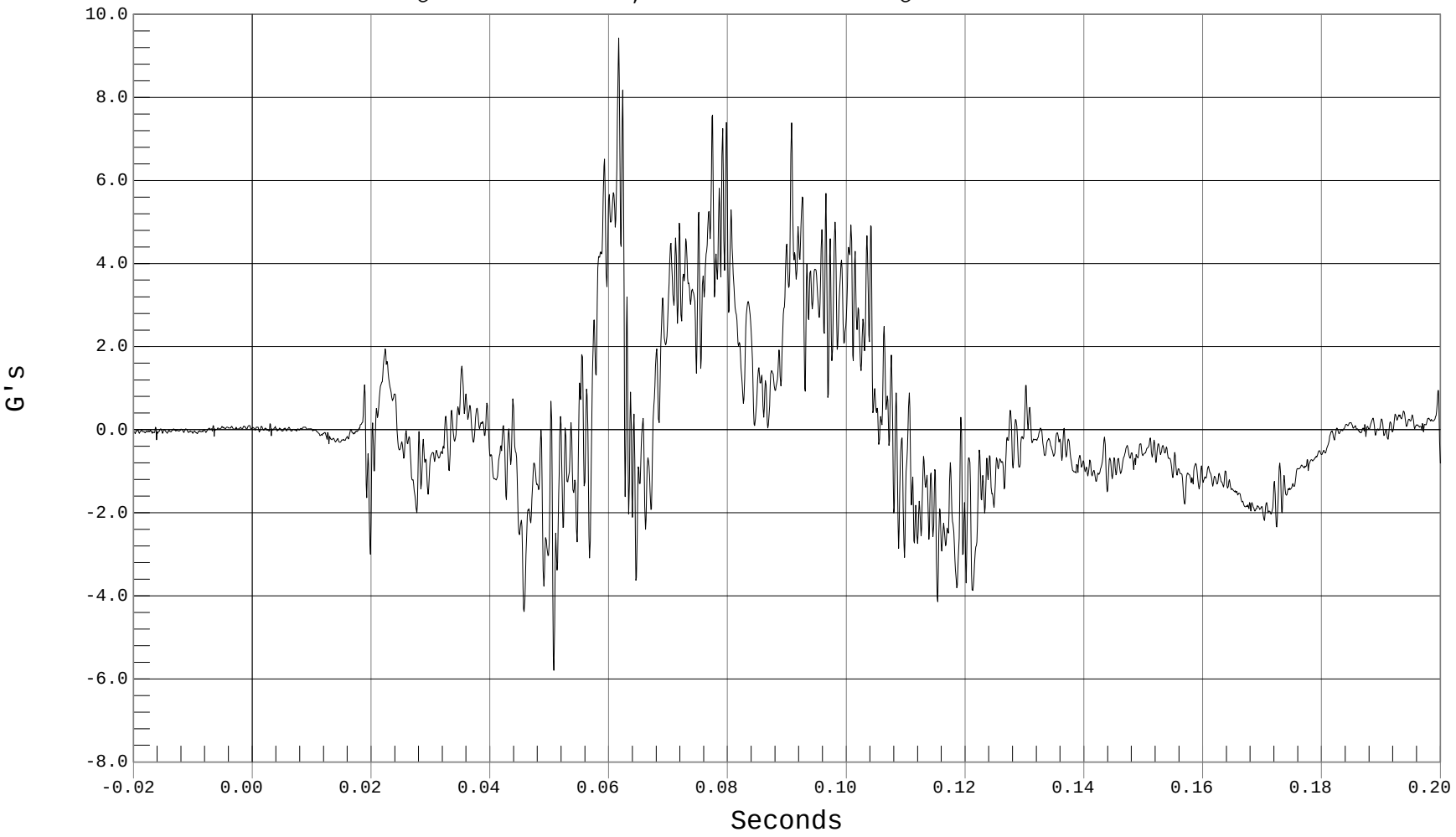
PASSENGER PELVIS Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER PELVIS Y, B01037AT.A27

Ymin = -5.8 G's @ 0.0507 Seconds, Ymax = 9.43 G's @ 0.0616 Seconds



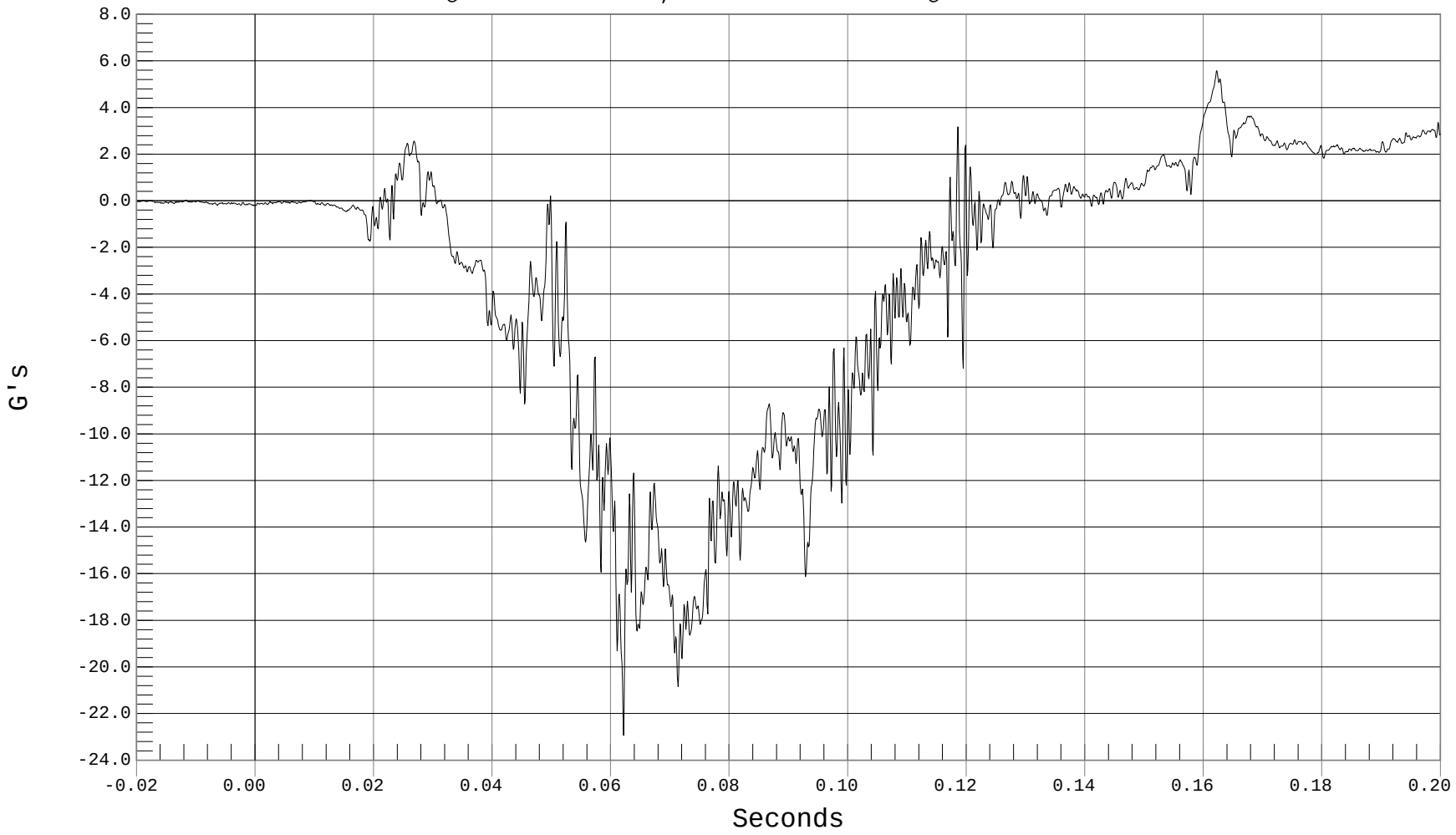
PASSENGER PELVIS Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER PELVIS Z, B01037AT.A28

Ymin = -22.94 G's @ 0.0621 Seconds, Ymax = 5.58 G's @ 0.1622 Seconds



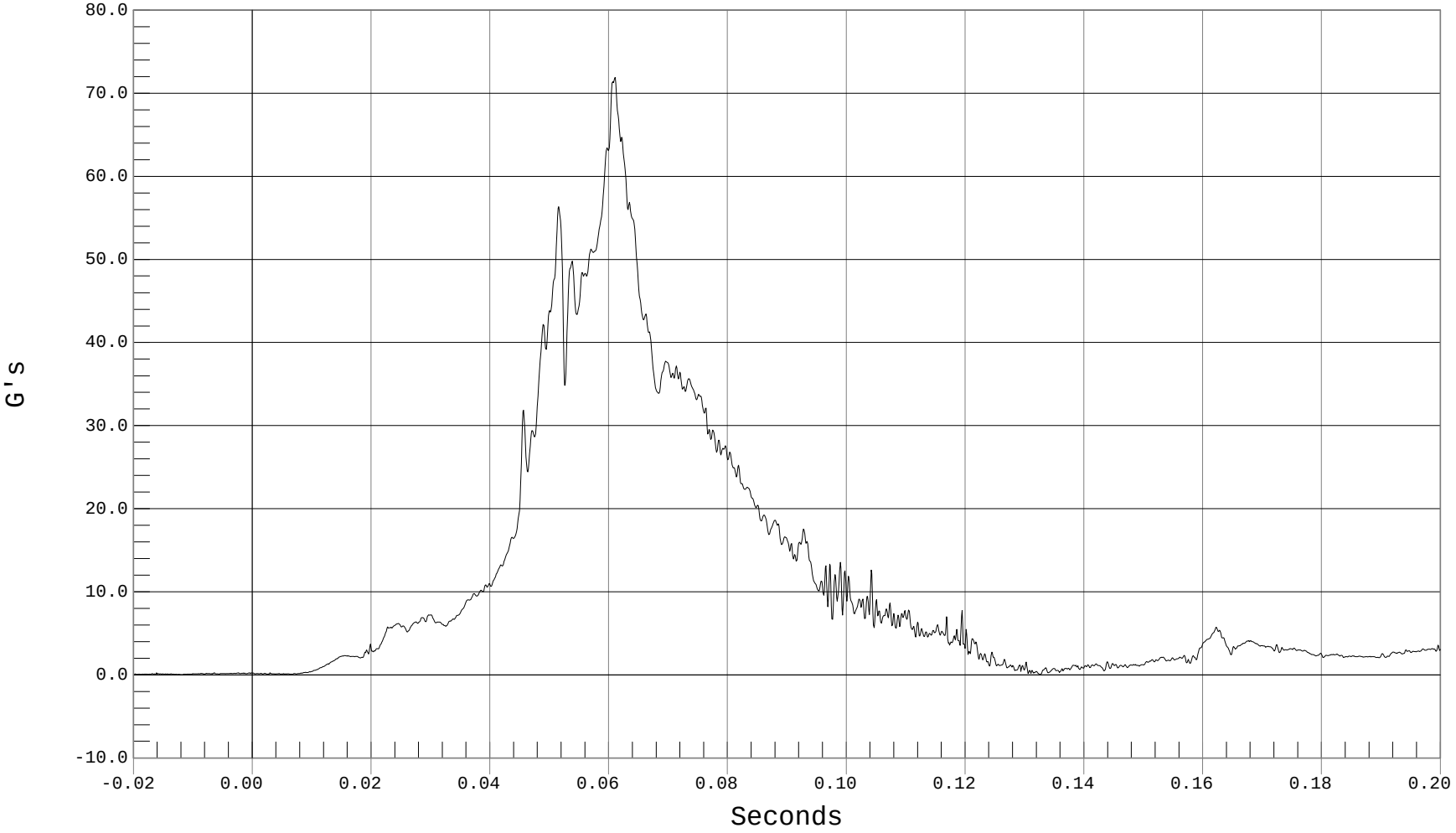
PASSENGER PELVIS RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 PASSENGER PELVIS RESULTANT ACCELERATION, B01037AV.A26

Ymin = .01 G's @ -0.0119 Seconds, Ymax = 71.92 G's @ 0.0610 Seconds



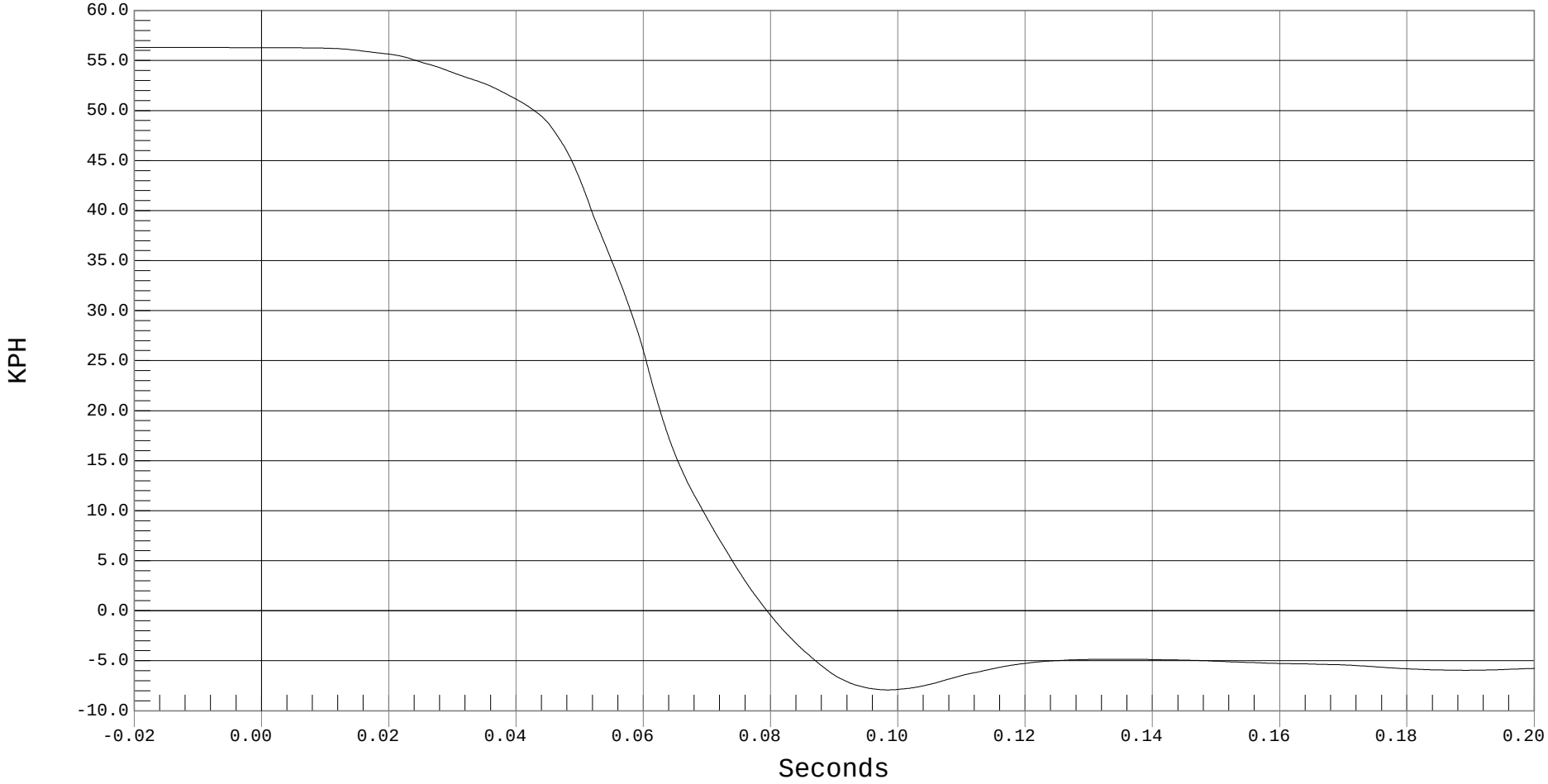
PASSENGER PELVIS X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER PELVIS X VELOCITY, B01037AI.V26

Ymin = -7.91 KPH @ 0.0983 Seconds, Ymax = 56.31 KPH @ -0.0124 Seconds



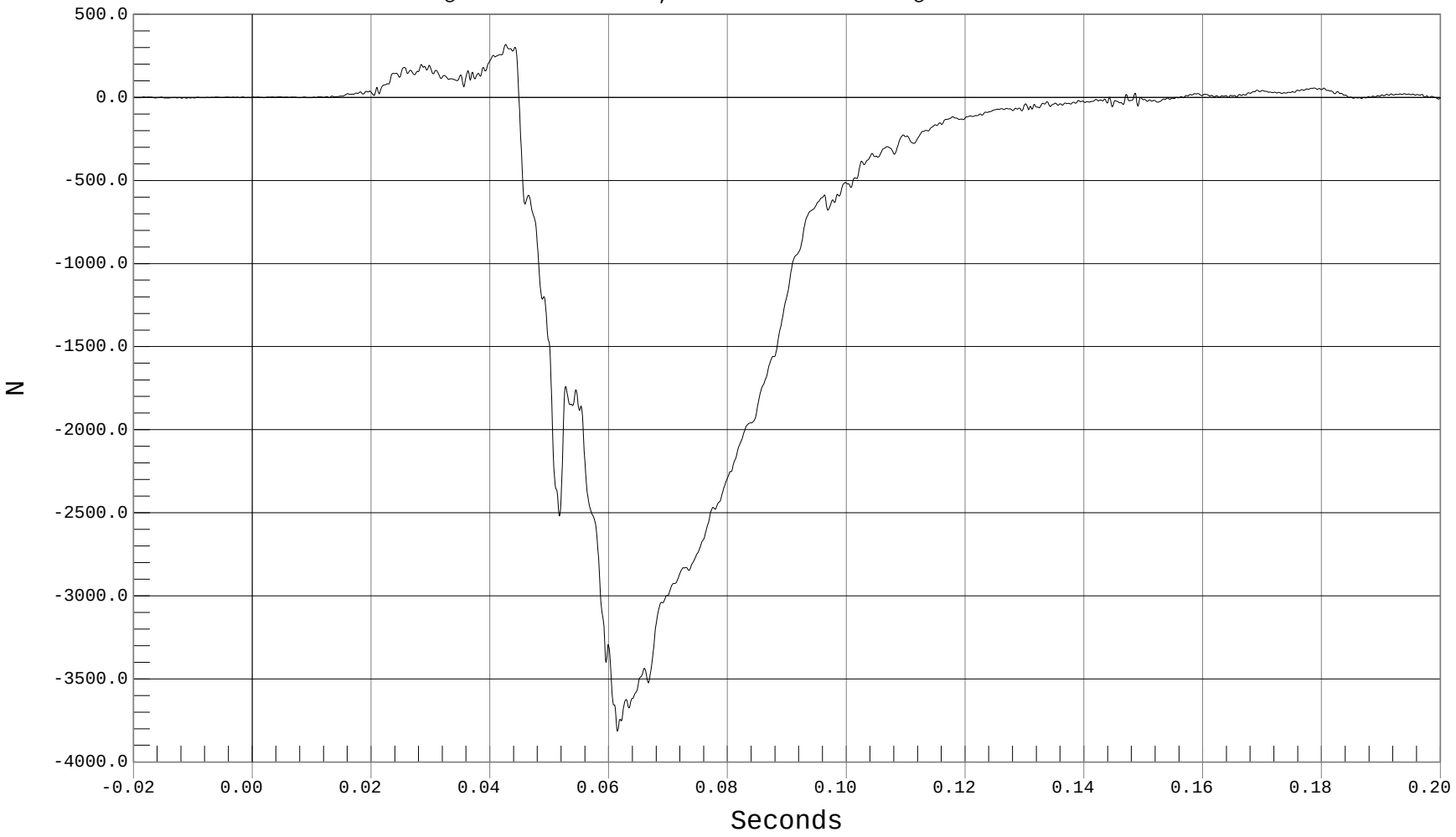
PASSENGER LEFT FEMUR FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER LEFT FEMUR Z, B01037FF.F30

Ymin = -3815.54 N @ 0.0614 Seconds, Ymax = 318.9 N @ 0.0426 Seconds



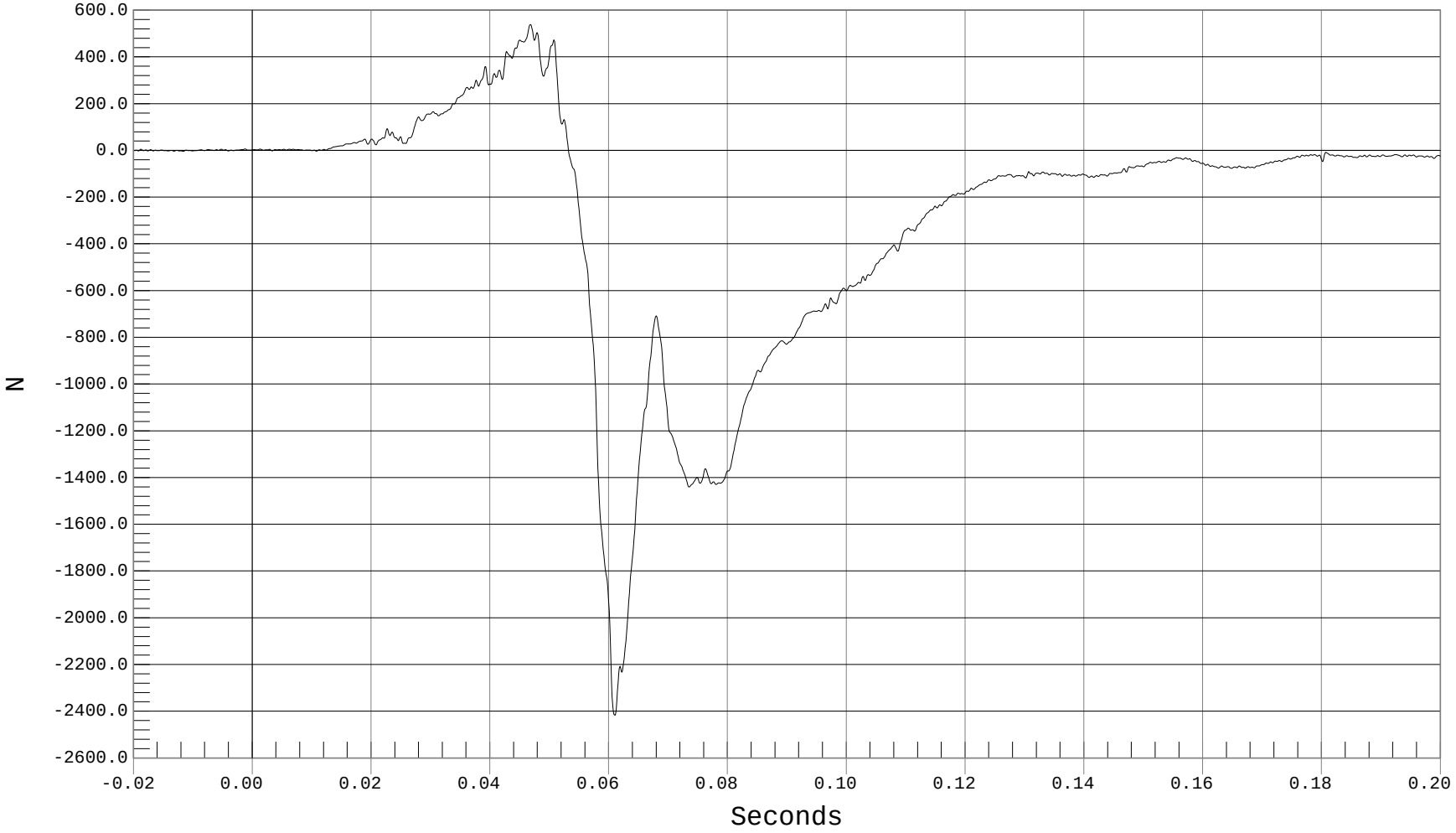
PASSENGER RIGHT FEMUR FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER RIGHT FEMUR Z, B01037FF.F29

Ymin = -2416.95 N @ 0.0609 Seconds, Ymax = 538.99 N @ 0.0467 Seconds



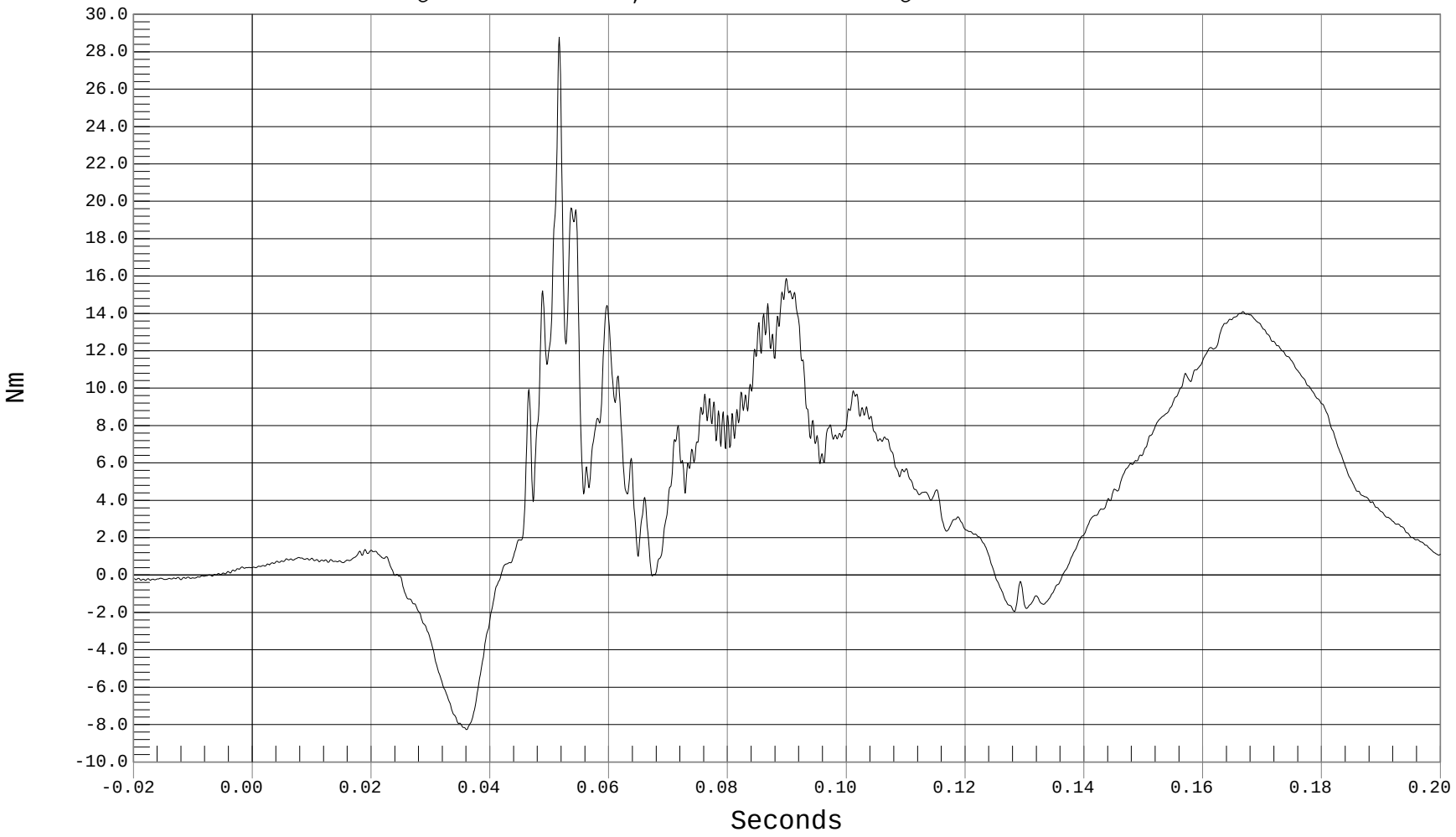
PASSENGER LEFT UPPER TIBIA MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER LEFT UPPER TIBIA MX, B01037MF.M87

Ymin = -8.27 Nm @ 0.0360 Seconds, Ymax = 28.76 Nm @ 0.0516 Seconds



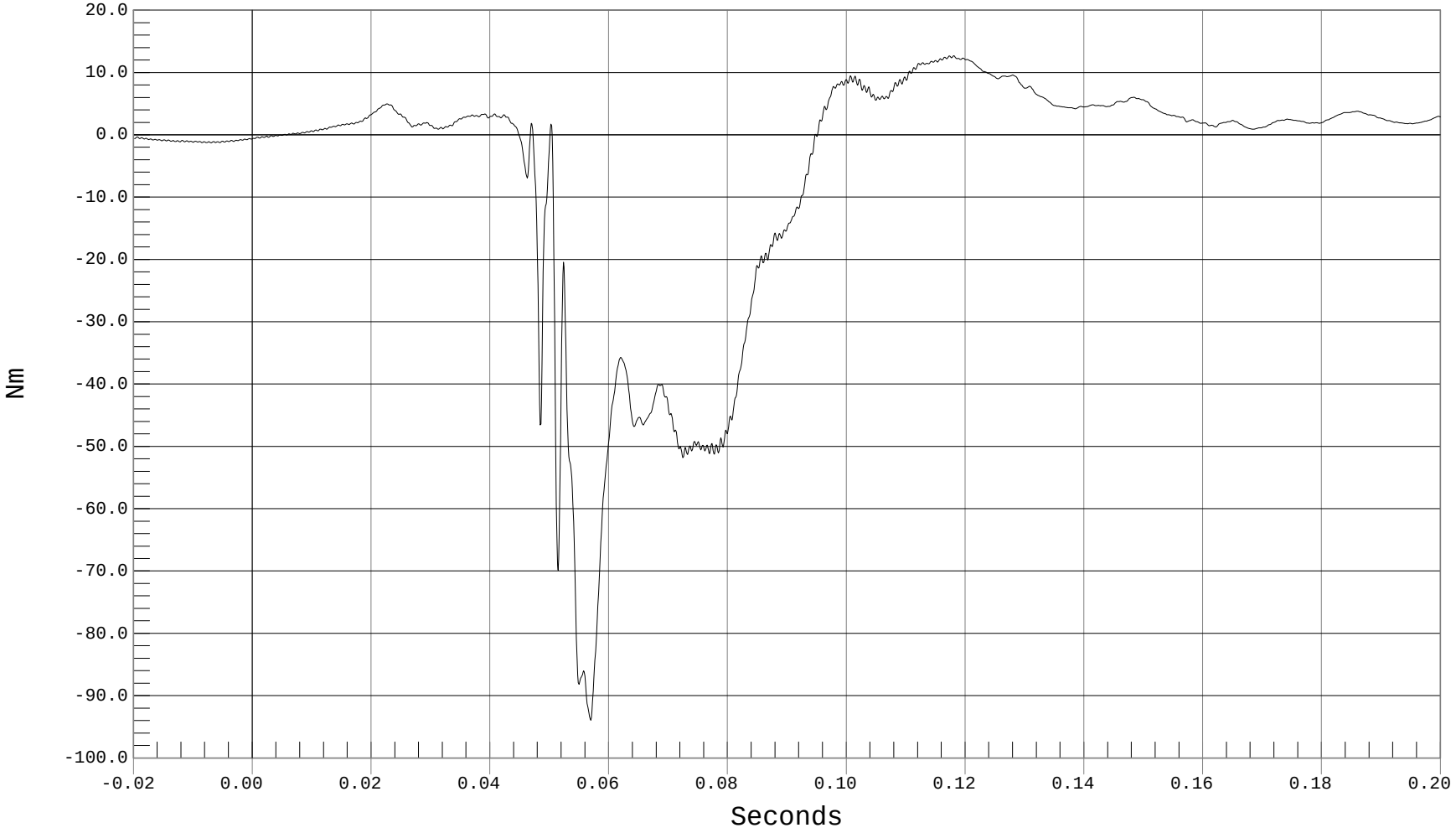
PASSENGER LEFT UPPER TIBIA MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER LEFT UPPER TIBIA MY, B01037MF.M88

Ymin = -93.93 Nm @ 0.0569 Seconds, Ymax = 12.68 Nm @ 0.1180 Seconds



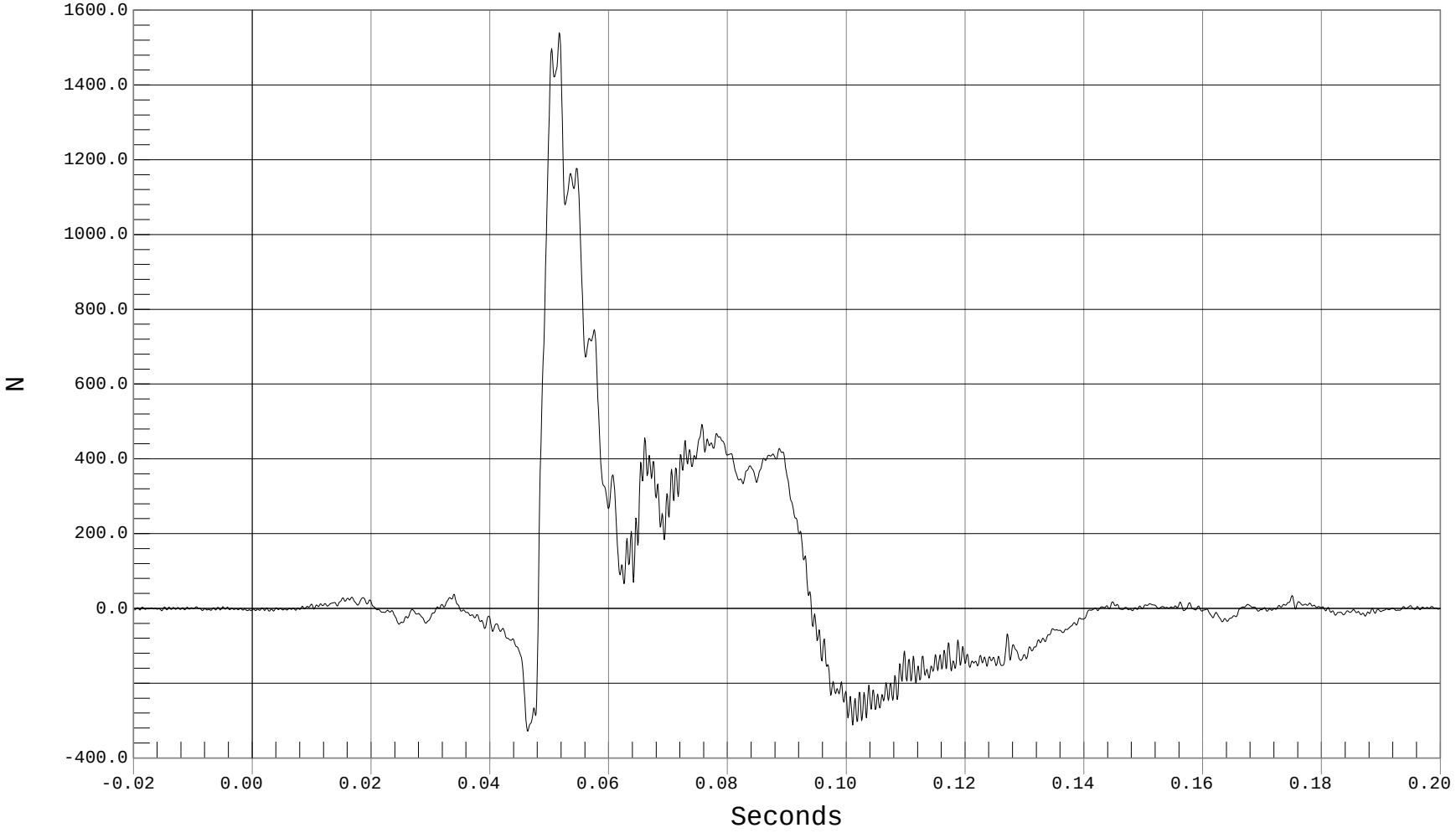
PASSENGER LEFT UPPER TIBIA FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER LEFT UPPER TIBIA FZ, B01037FF.F89

Ymin = -328.5 N @ 0.0463 Seconds, Ymax = 1540.24 N @ 0.0516 Seconds



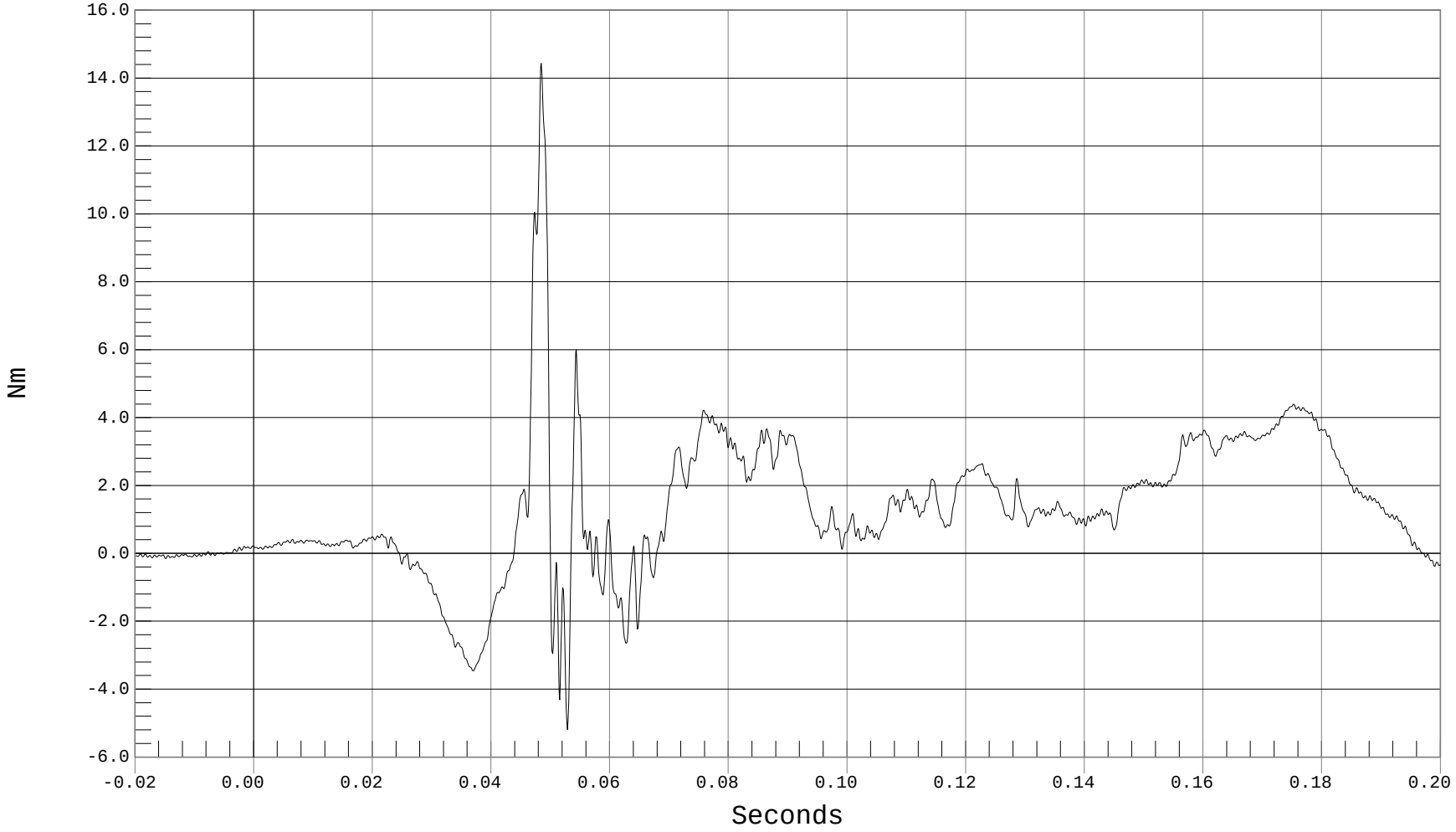
PASSENGER LEFT LOWER TIBIA MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER LEFT LOWER TIBIA MX, B01037MF.M90

Ymin = -5.19 Nm @ 0.0528 Seconds, Ymax = 14.43 Nm @ 0.0484 Seconds



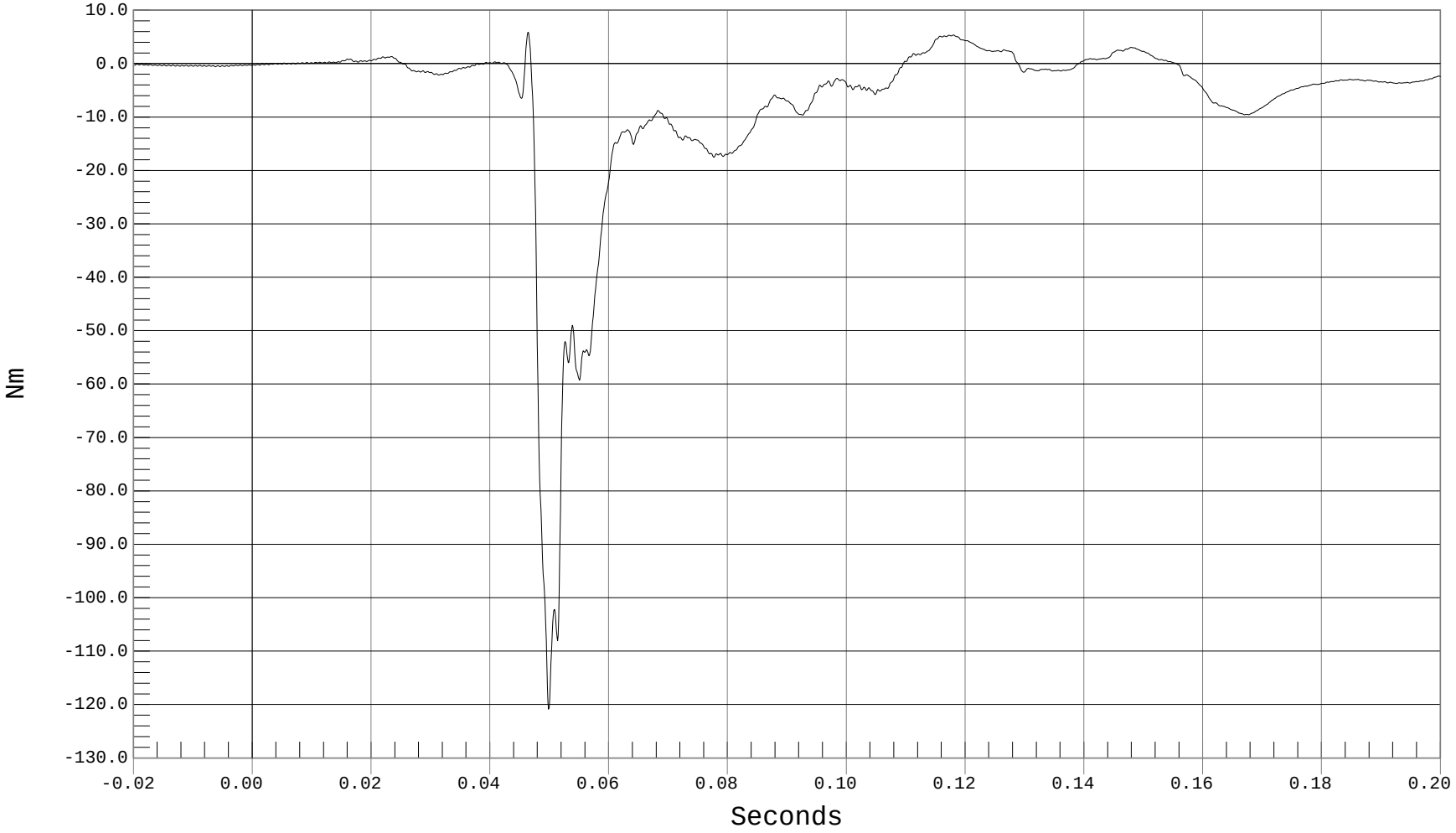
PASSENGER LEFT LOWER TIBIA MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER LEFT LOWER TIBIA MY, B01037MF.M91

Ymin = -120.9 Nm @ 0.0498 Seconds, Ymax = 5.86 Nm @ 0.0464 Seconds



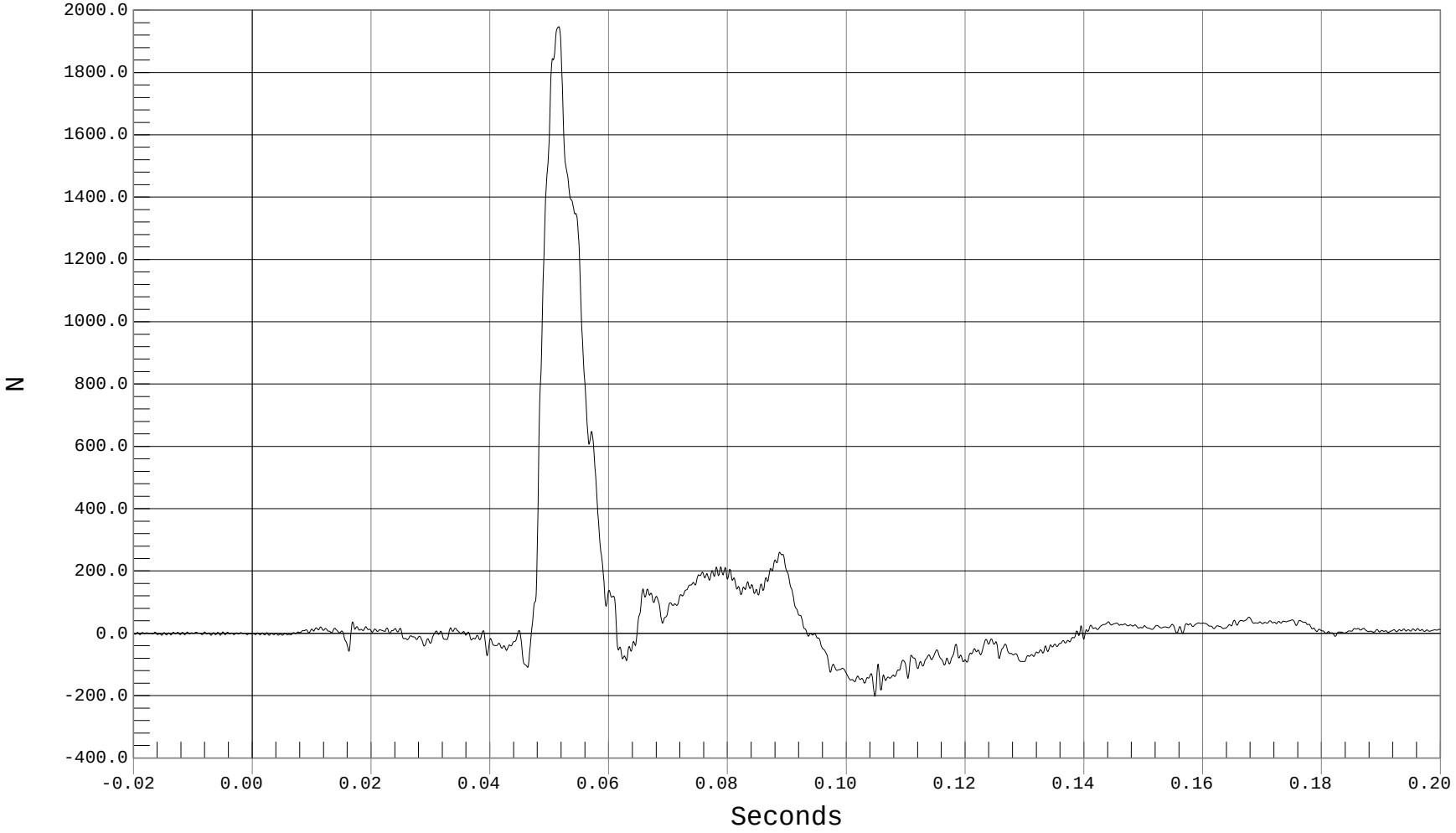
PASSENGER LEFT LOWER TIBIA FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER LEFT LOWER TIBIA FZ, B01037FF.F92

Ymin = -202.53 N @ 0.1047 Seconds, Ymax = 1947.13 N @ 0.0515 Seconds



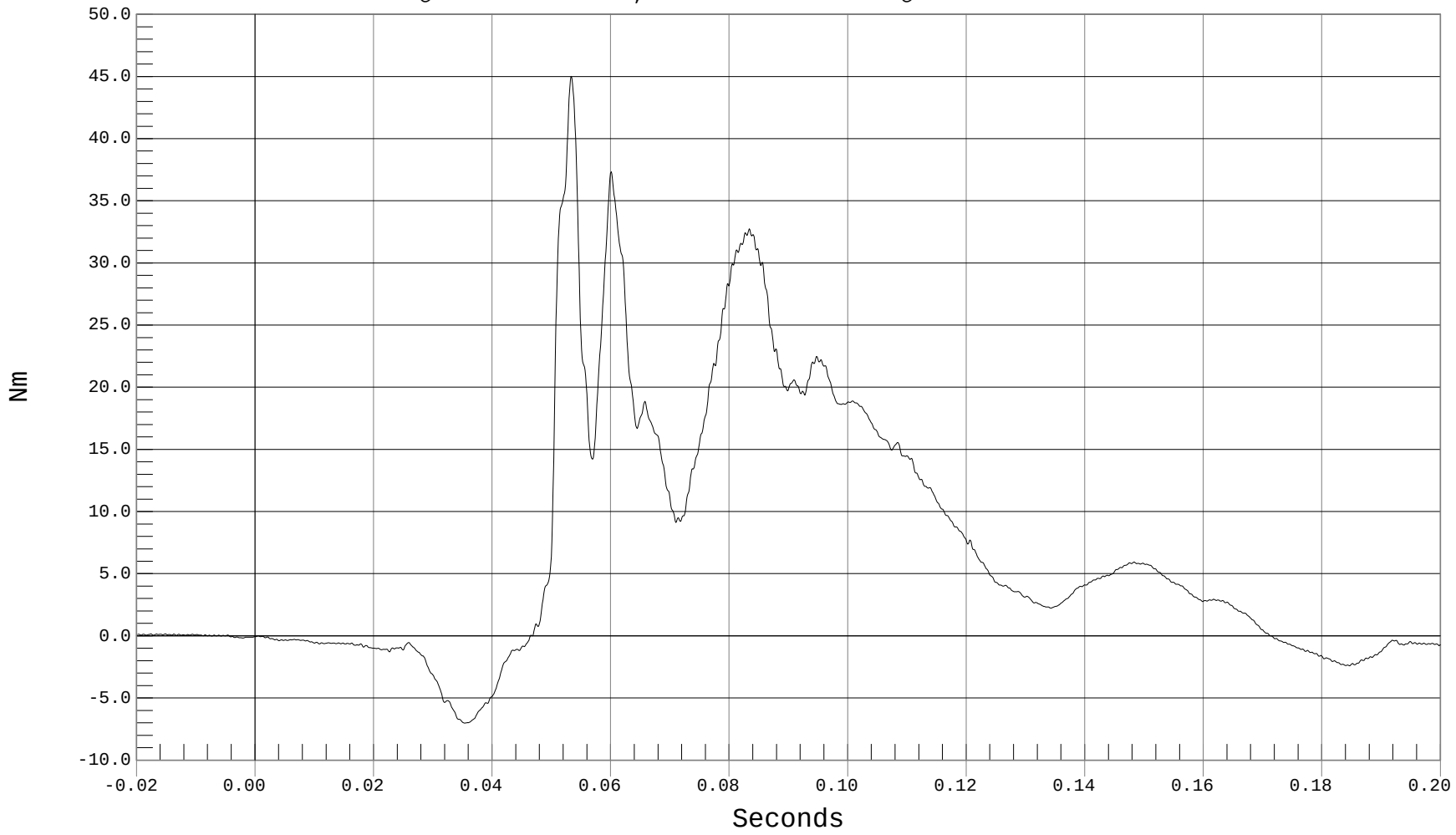
PASSENGER RIGHT UPPER TIBIA MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER RIGHT UPPER TIBIA MX, B01037MF.M81

Ymin = -7.02 Nm @ 0.0353 Seconds, Ymax = 45.01 Nm @ 0.0533 Seconds



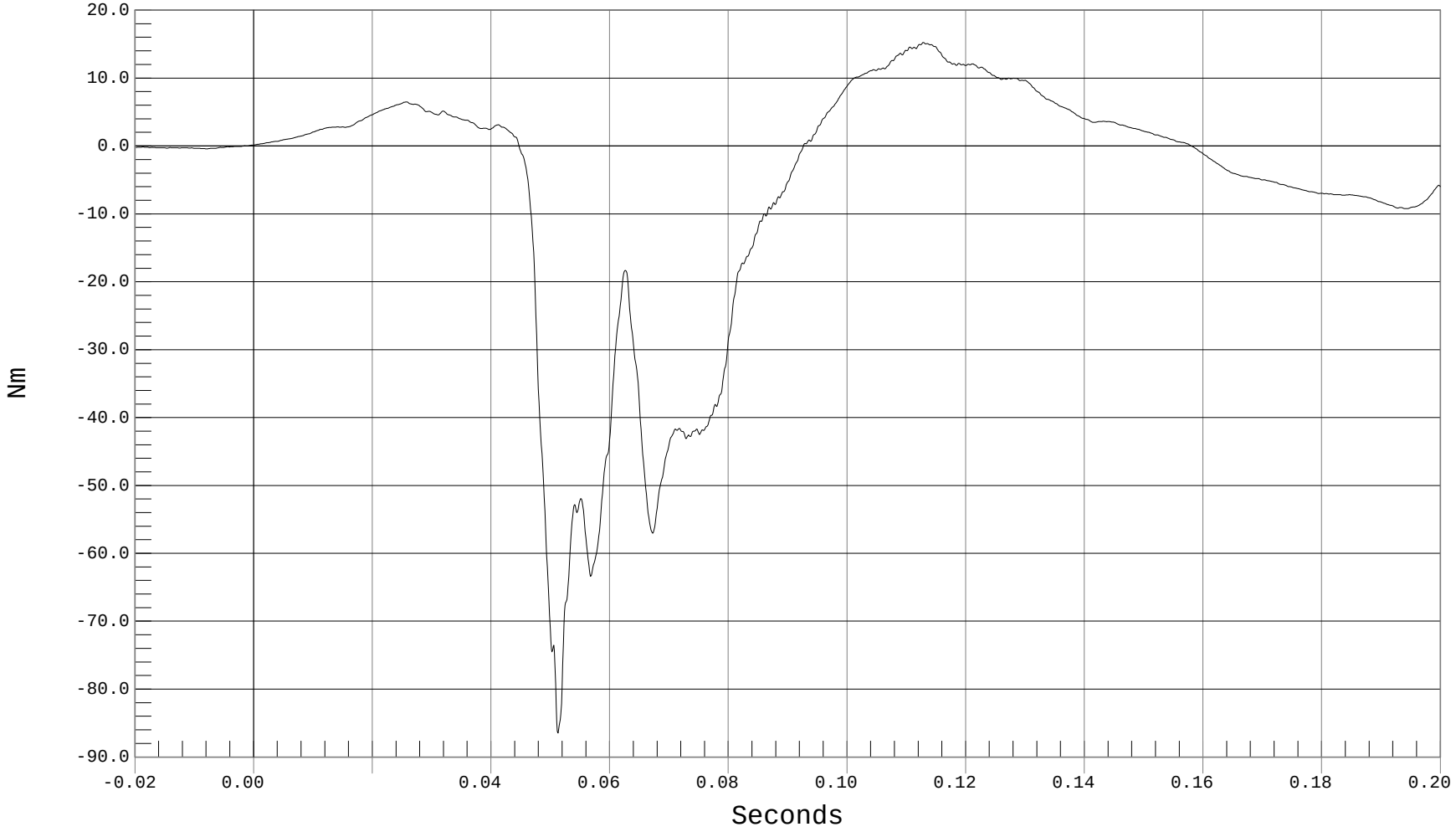
PASSENGER RIGHT UPPER TIBIA MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER RIGHT UPPER TIBIA MY, B01037MF.M82

Ymin = -86.45 Nm @ 0.0512 Seconds, Ymax = 15.24 Nm @ 0.1128 Seconds



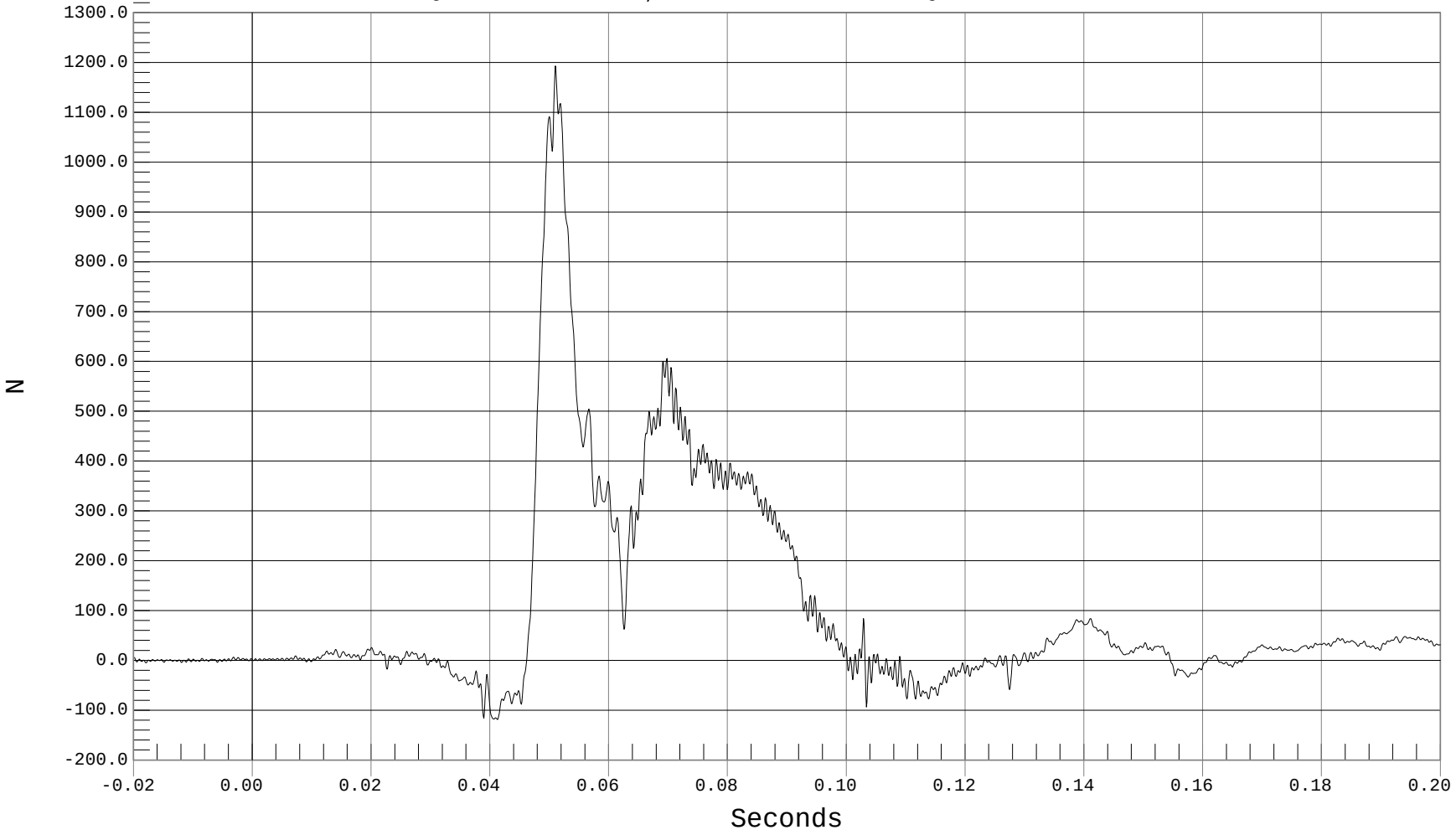
PASSENGER RIGHT UPPER TIBIA FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER RIGHT UPPER TIBIA FZ, B01037FF.F83

Ymin = -118.72 N @ 0.0412 Seconds, Ymax = 1193.38 N @ 0.0509 Seconds



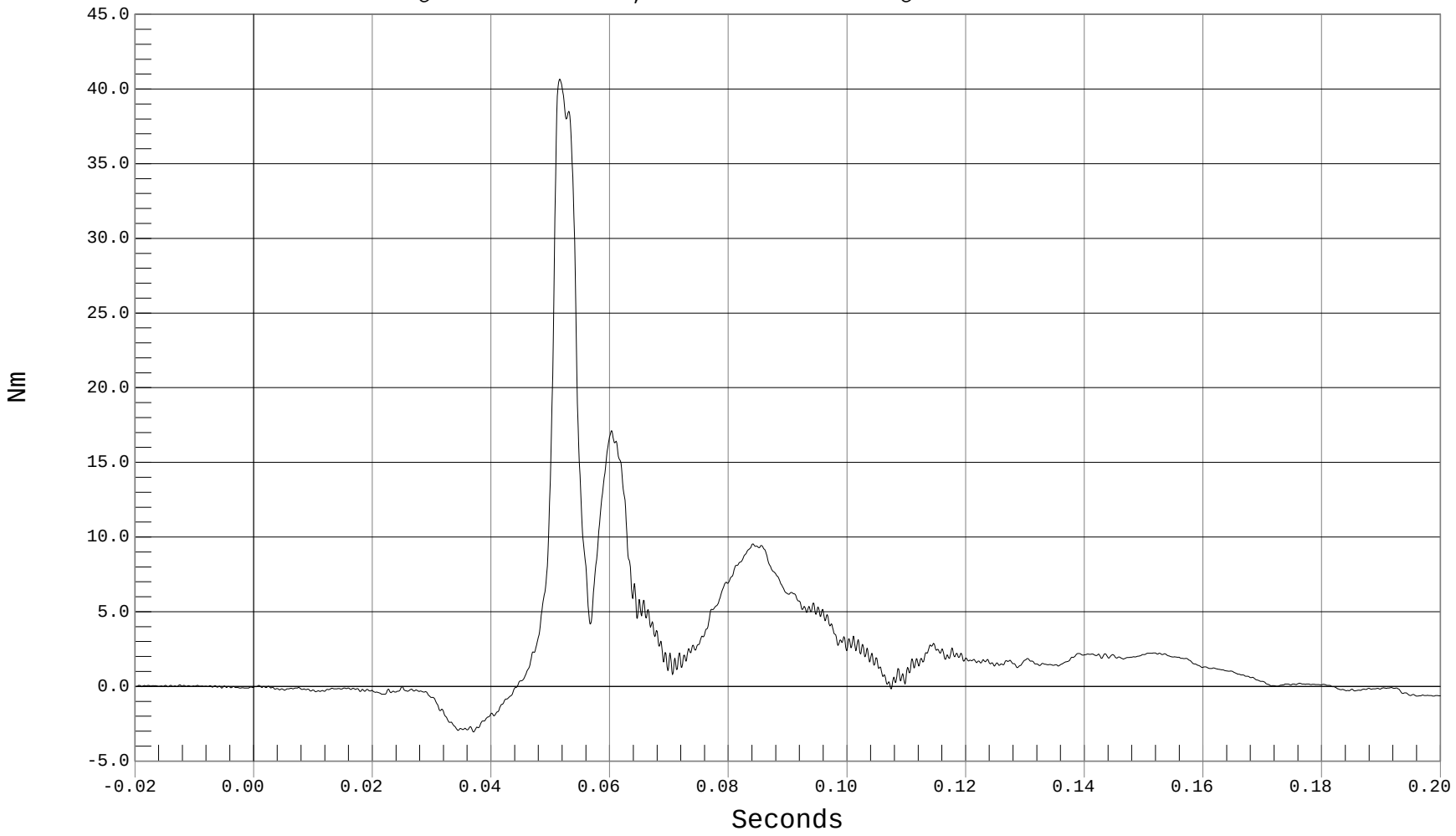
PASSENGER RIGHT LOWER TIBIA MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER RIGHT LOWER TIBIA MX, B01037MF.M84

Ymin = -3.05 Nm @ 0.0370 Seconds, Ymax = 40.66 Nm @ 0.0515 Seconds



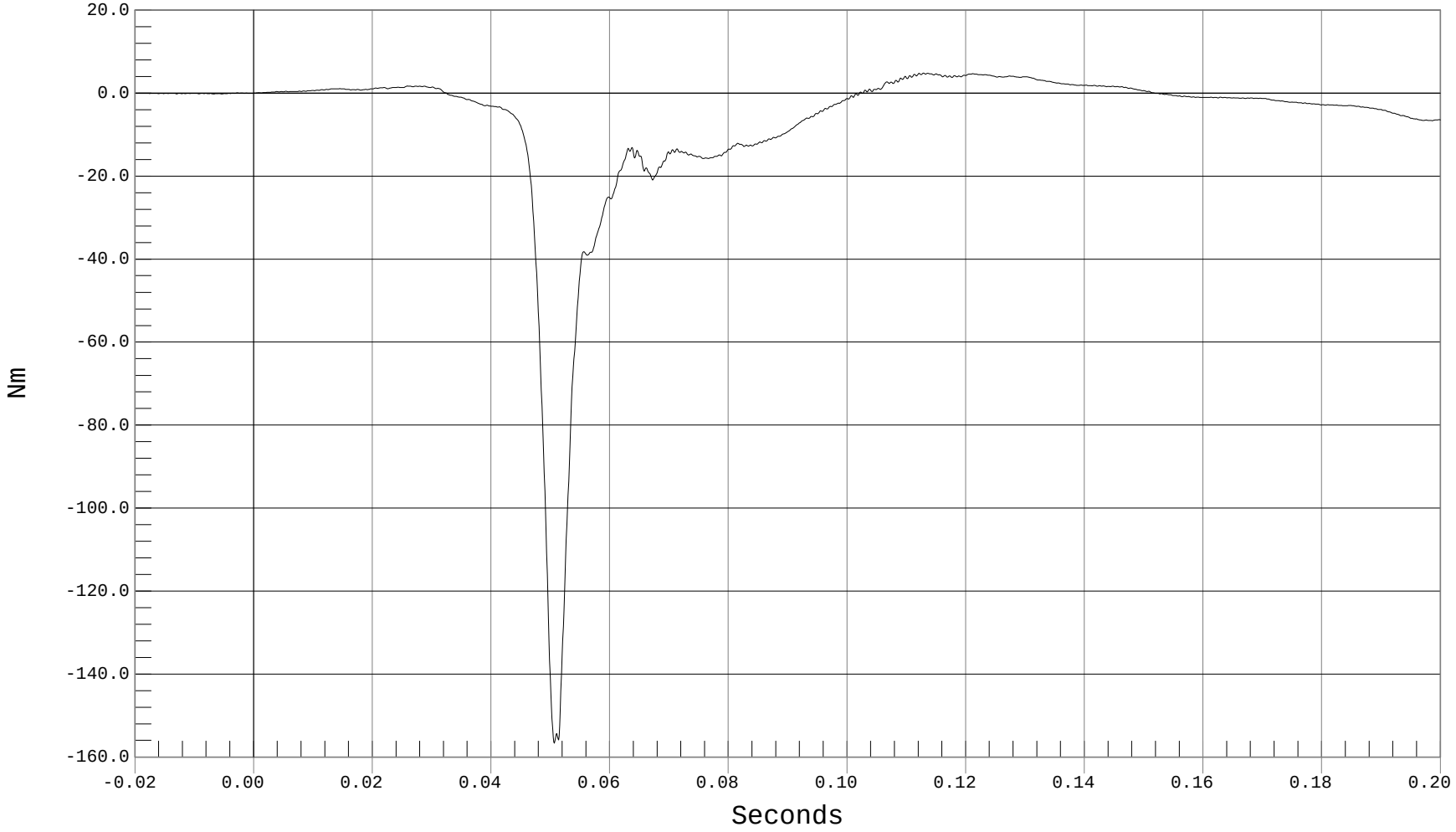
PASSENGER RIGHT LOWER TIBIA MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER RIGHT LOWER TIBIA MY, B01037MF.M85

Ymin = -156.69 Nm @ 0.0506 Seconds, Ymax = 4.85 Nm @ 0.1128 Seconds



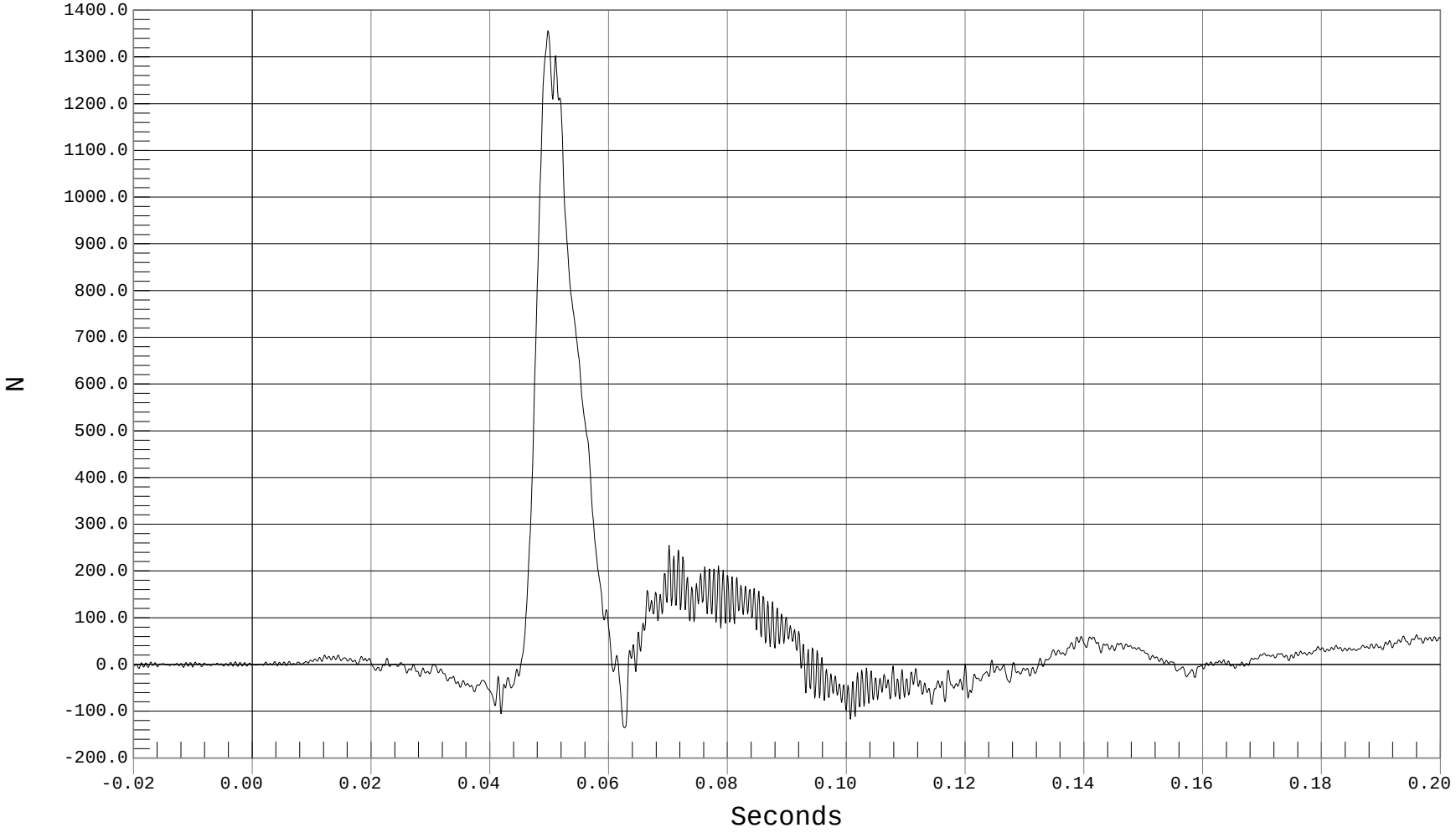
PASSENGER RIGHT LOWER TIBIA FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 PASSENGER RIGHT LOWER TIBIA FZ, B01037FF.F86

Ymin = -135.51 N @ 0.0626 Seconds, Ymax = 1355.77 N @ 0.0497 Seconds



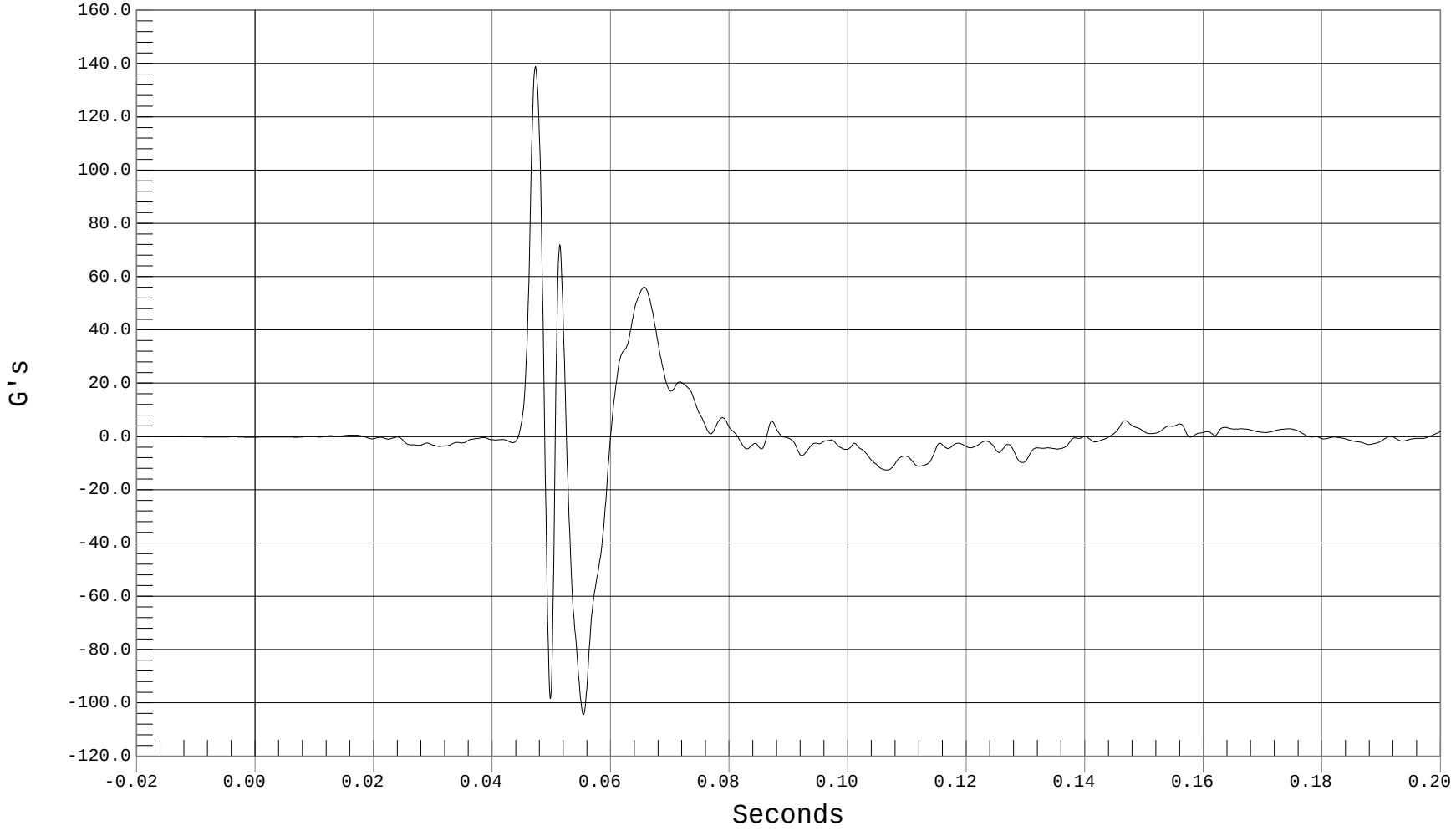
PASSENGER LEFT FOOT @ BALL Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER LEFT FOOT @ BALL Z, B01037AF.A09

Ymin = -104.47 G's @ 0.0553 Seconds, Ymax = 138.93 G's @ 0.0472 Seconds



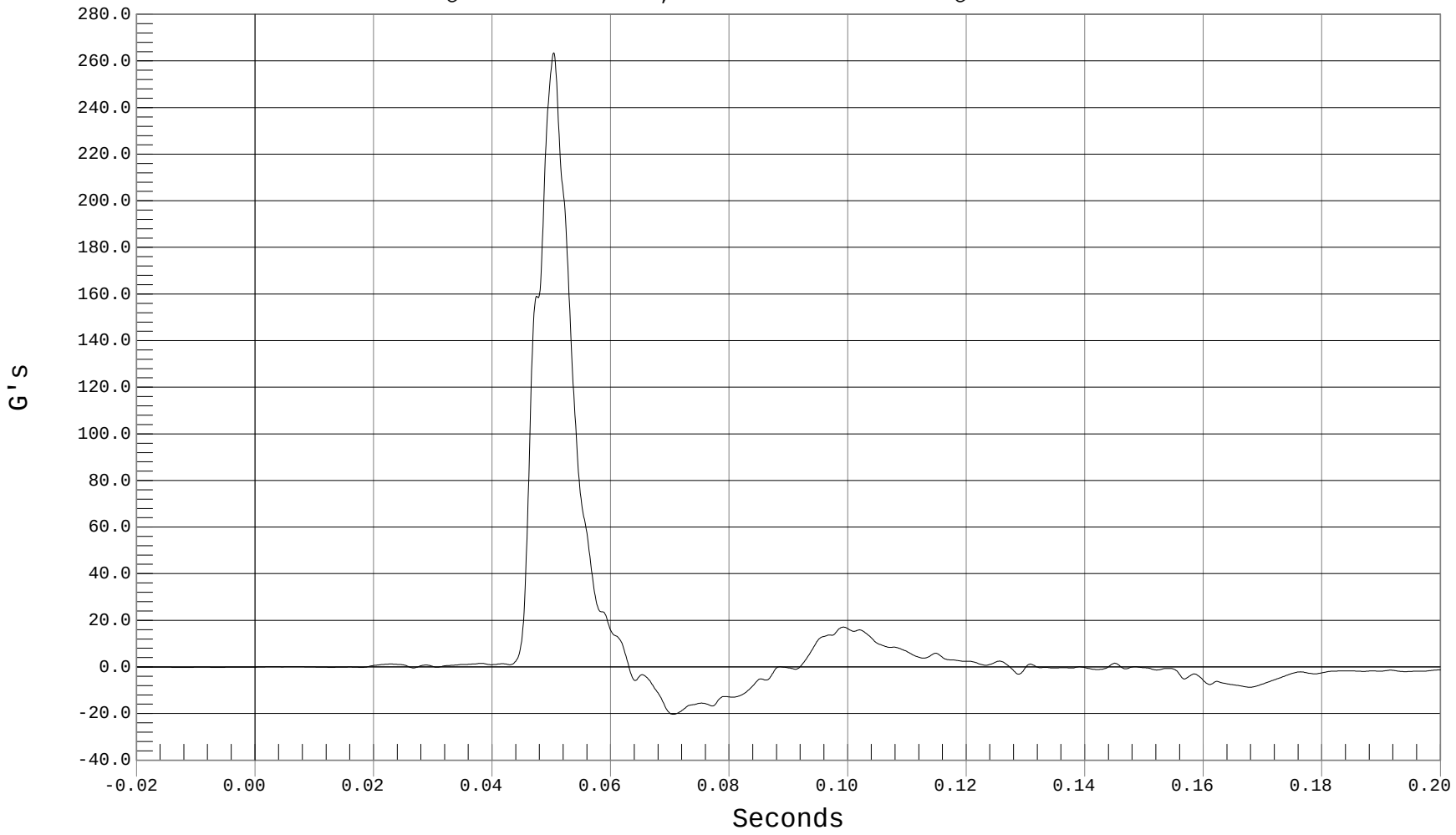
PASSENGER LEFT FOOT @ HEEL X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER LEFT FOOT @ HEEL X, B01037AF.A07

Ymin = -20.35 G's @ 0.0705 Seconds, Ymax = 263.57 G's @ 0.0503 Seconds



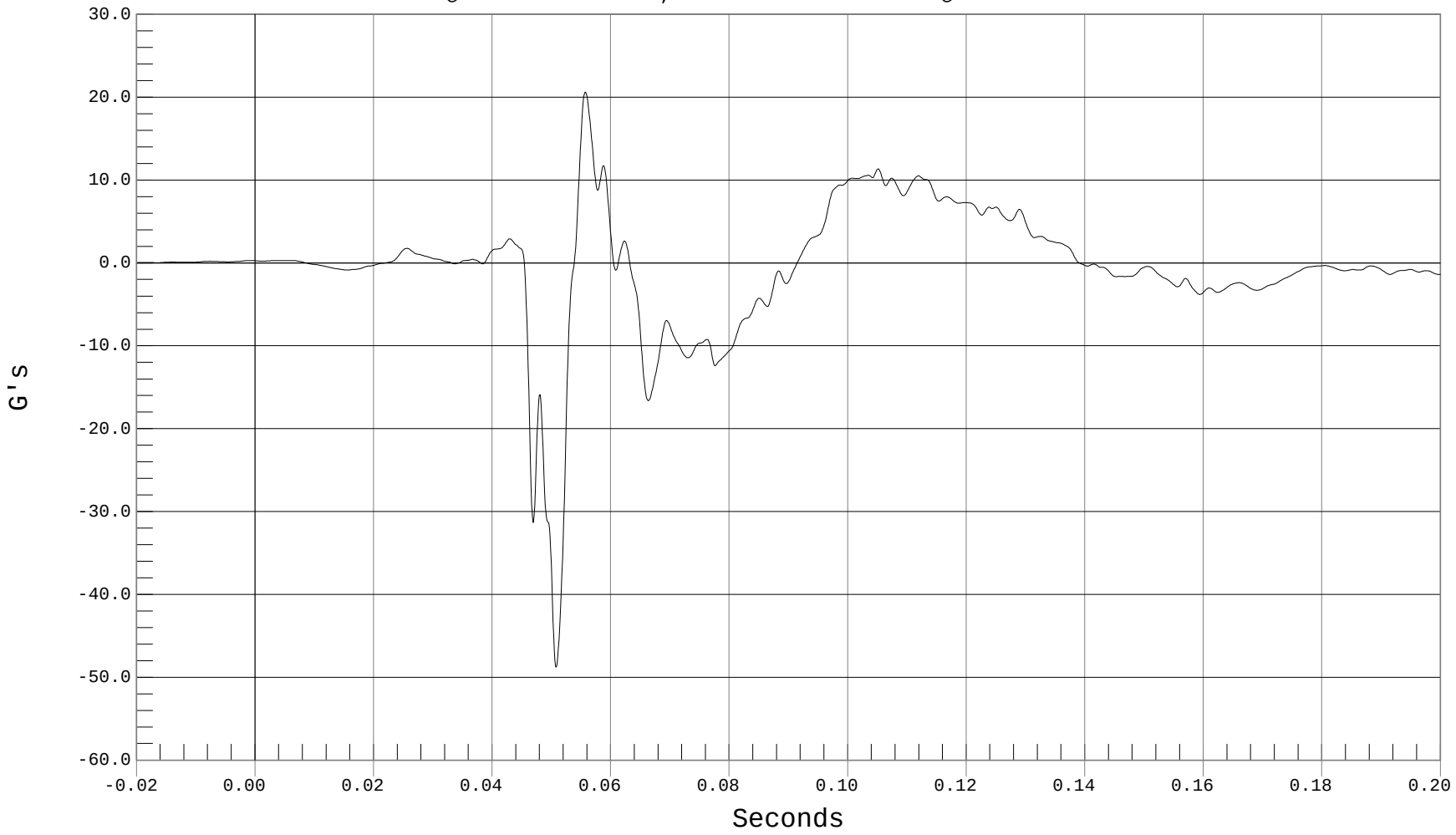
PASSENGER LEFT FOOT @ HEEL Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER LEFT FOOT @ HEEL Z, B01037AF.A08

Ymin = -48.79 G's @ 0.0507 Seconds, Ymax = 20.63 G's @ 0.0556 Seconds



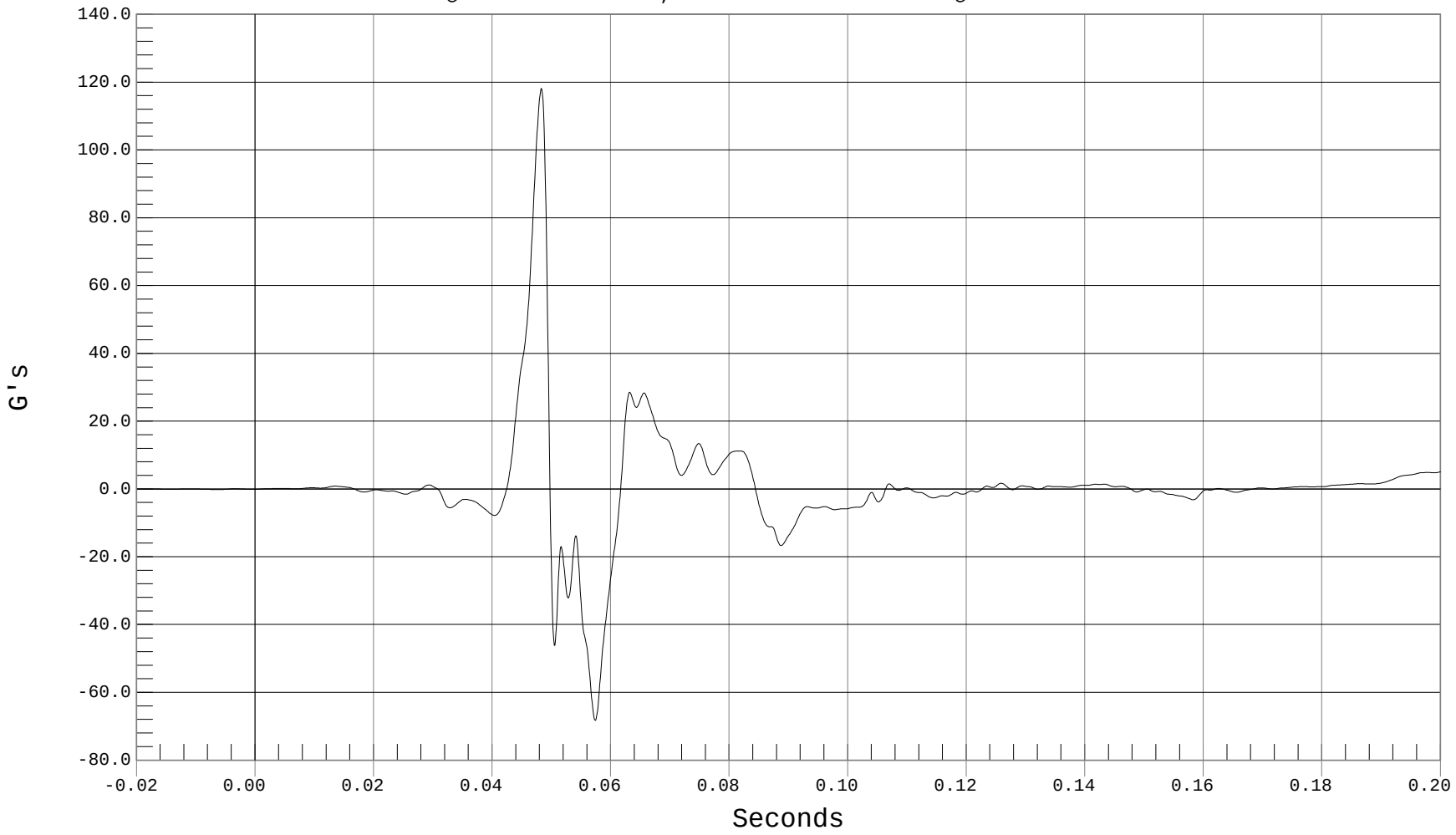
PASSENGER RIGHT FOOT @ BALL Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER RIGHT FOOT @ BALL Z, B01037AF.A06

Ymin = -68.29 G's @ 0.0573 Seconds, Ymax = 118.13 G's @ 0.0482 Seconds



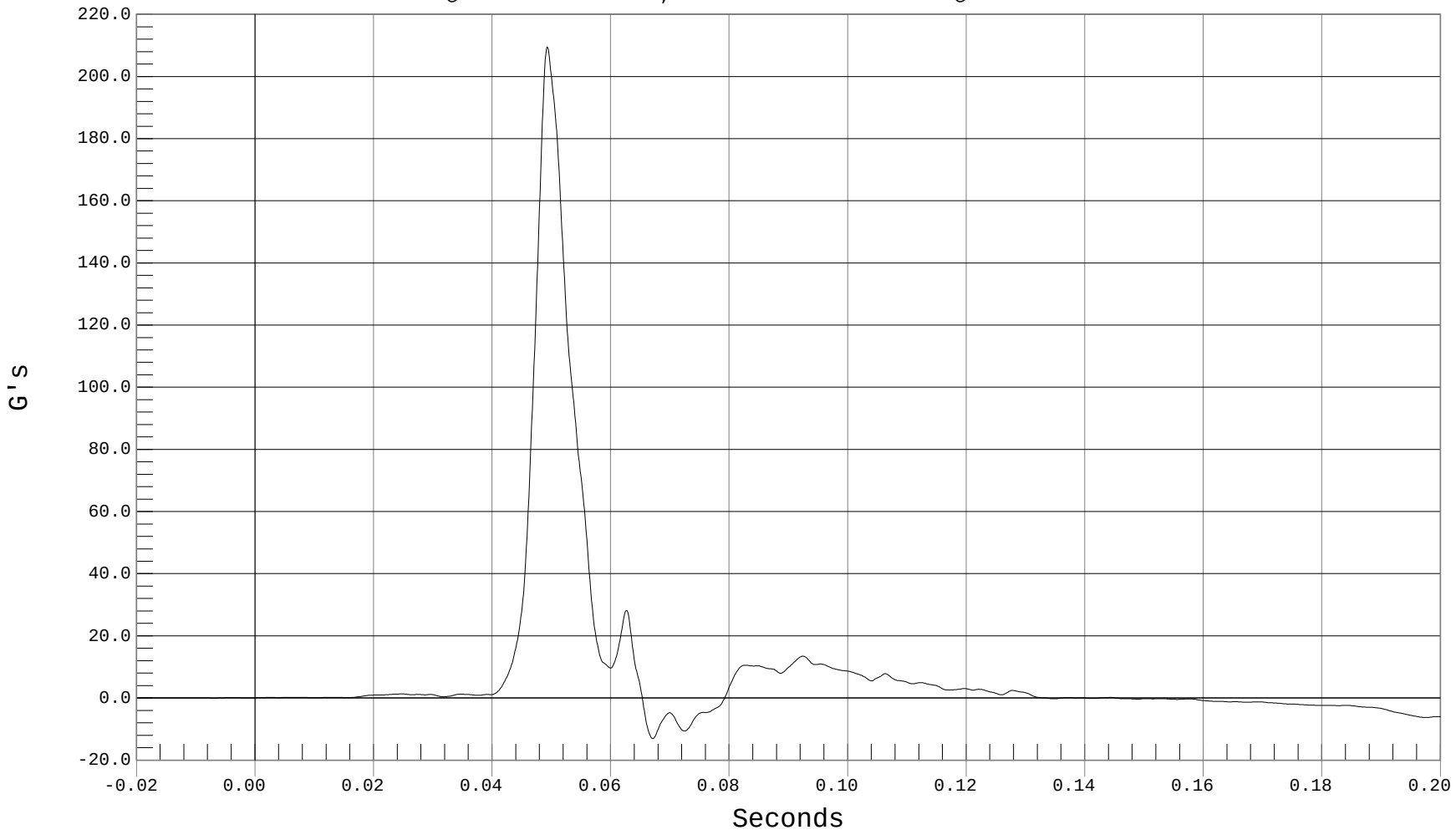
PASSENGER RIGHT FOOT @ HEEL X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER RIGHT FOOT @ HEEL X, B01037AF.A04

Ymin = -13.08 G's @ 0.0670 Seconds, Ymax = 209.55 G's @ 0.0492 Seconds



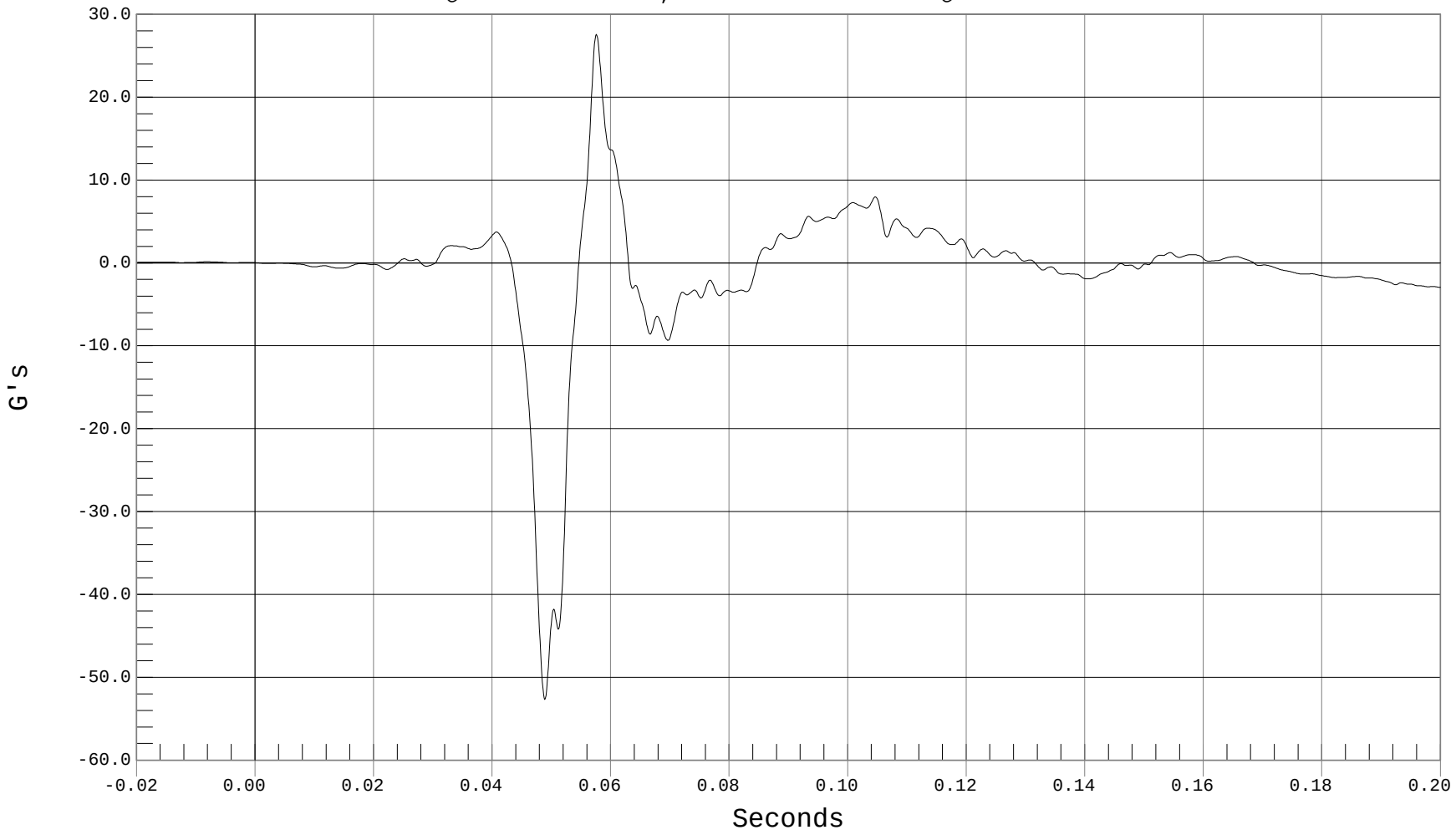
PASSENGER RIGHT FOOT @ HEEL Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 PASSENGER RIGHT FOOT @ HEEL Z, B01037AF.A05

Ymin = -52.68 G's @ 0.0488 Seconds, Ymax = 27.59 G's @ 0.0575 Seconds



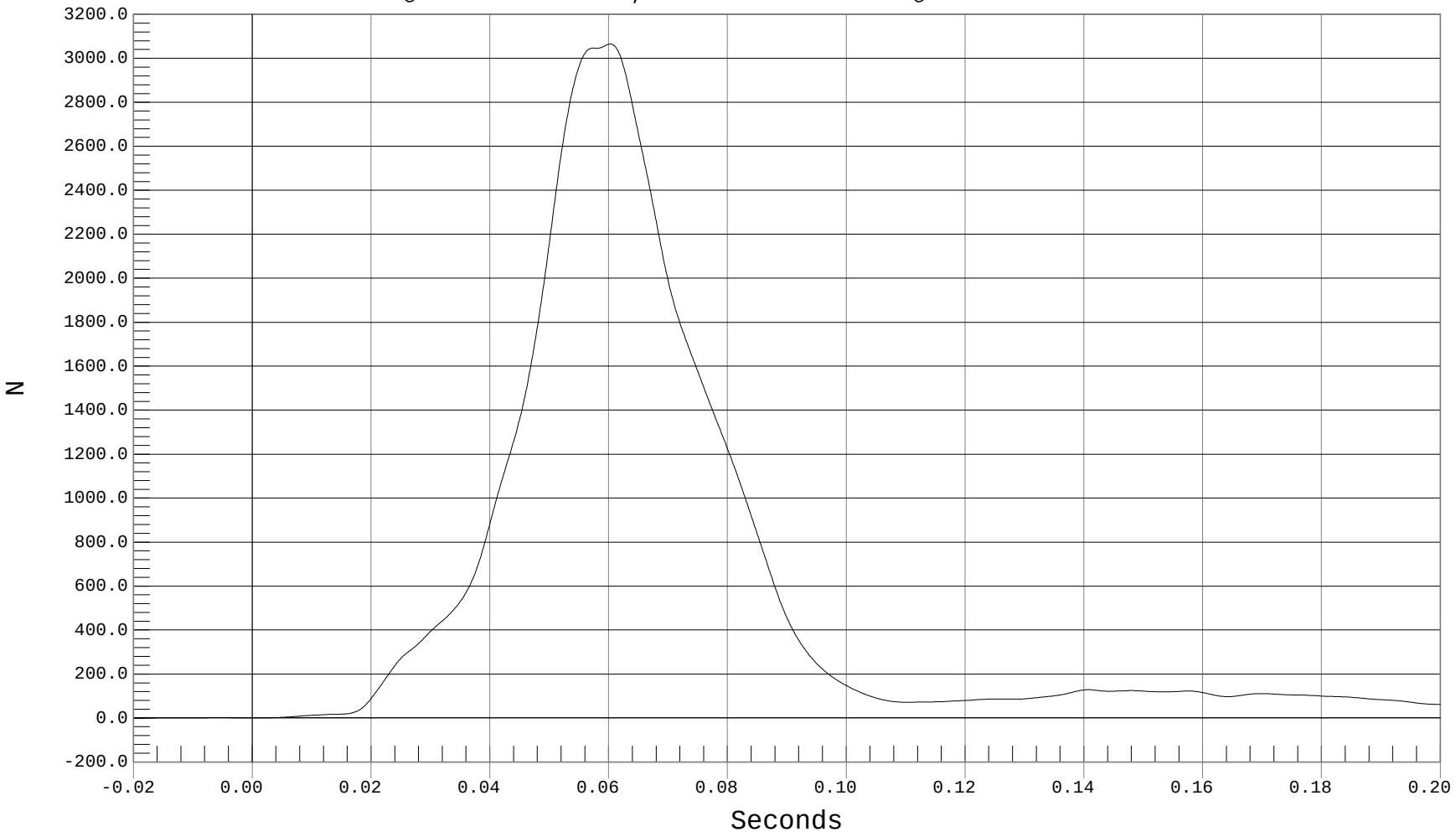
PASSENGER LAP BELT FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 PASSENGER LAP BELT, B01037FF.F68

Ymin = -2.55 N @ -0.0199 Seconds, Ymax = 3065.42 N @ 0.0602 Seconds



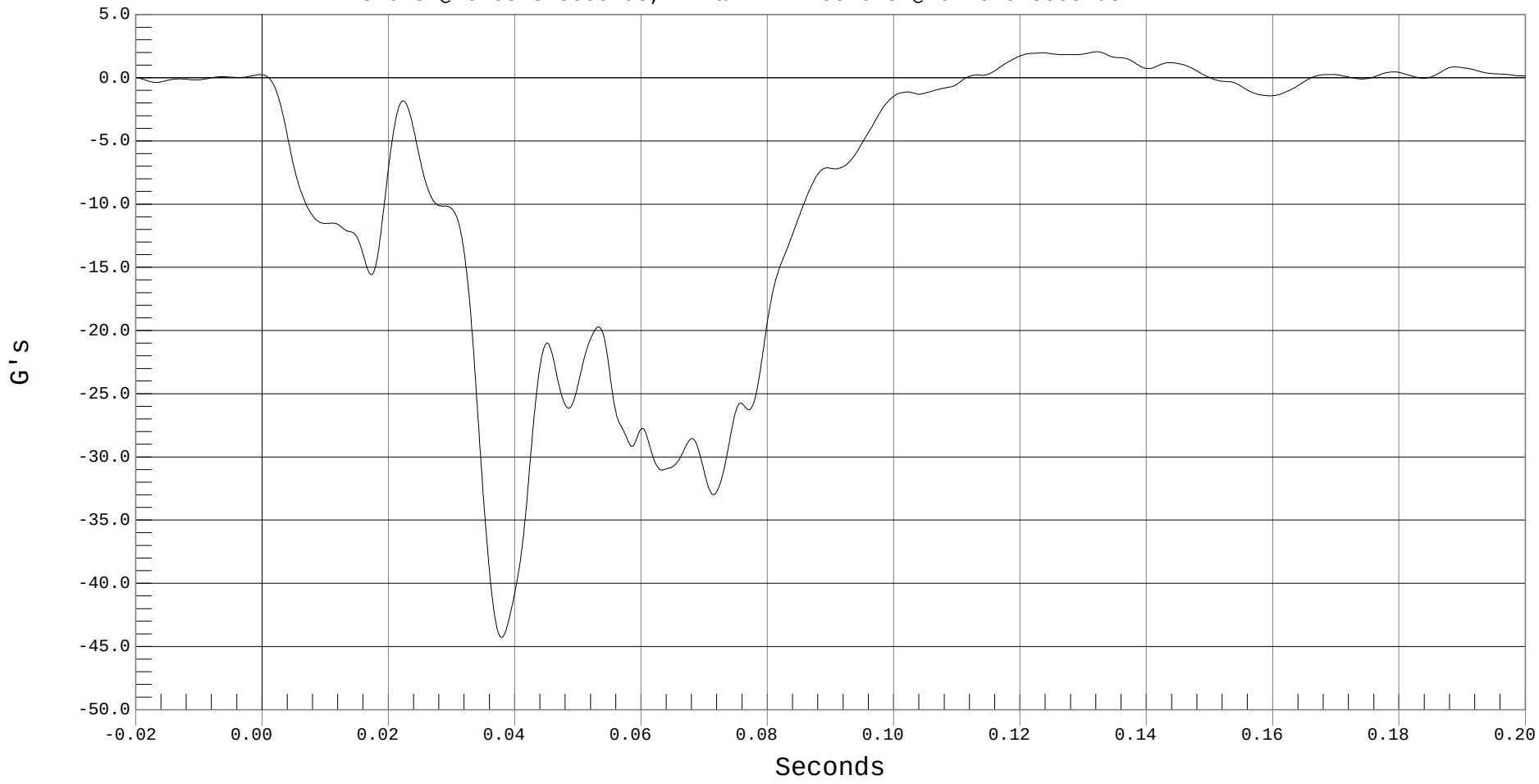
LEFT REAR SEAT CROSSMEMBER X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 LEFT REAR SEAT CROSSMEMBER X, B01037AF.A59

Ymin = -44.28 G's @ 0.0378 Seconds, Ymax = 2.06 G's @ 0.1320 Seconds



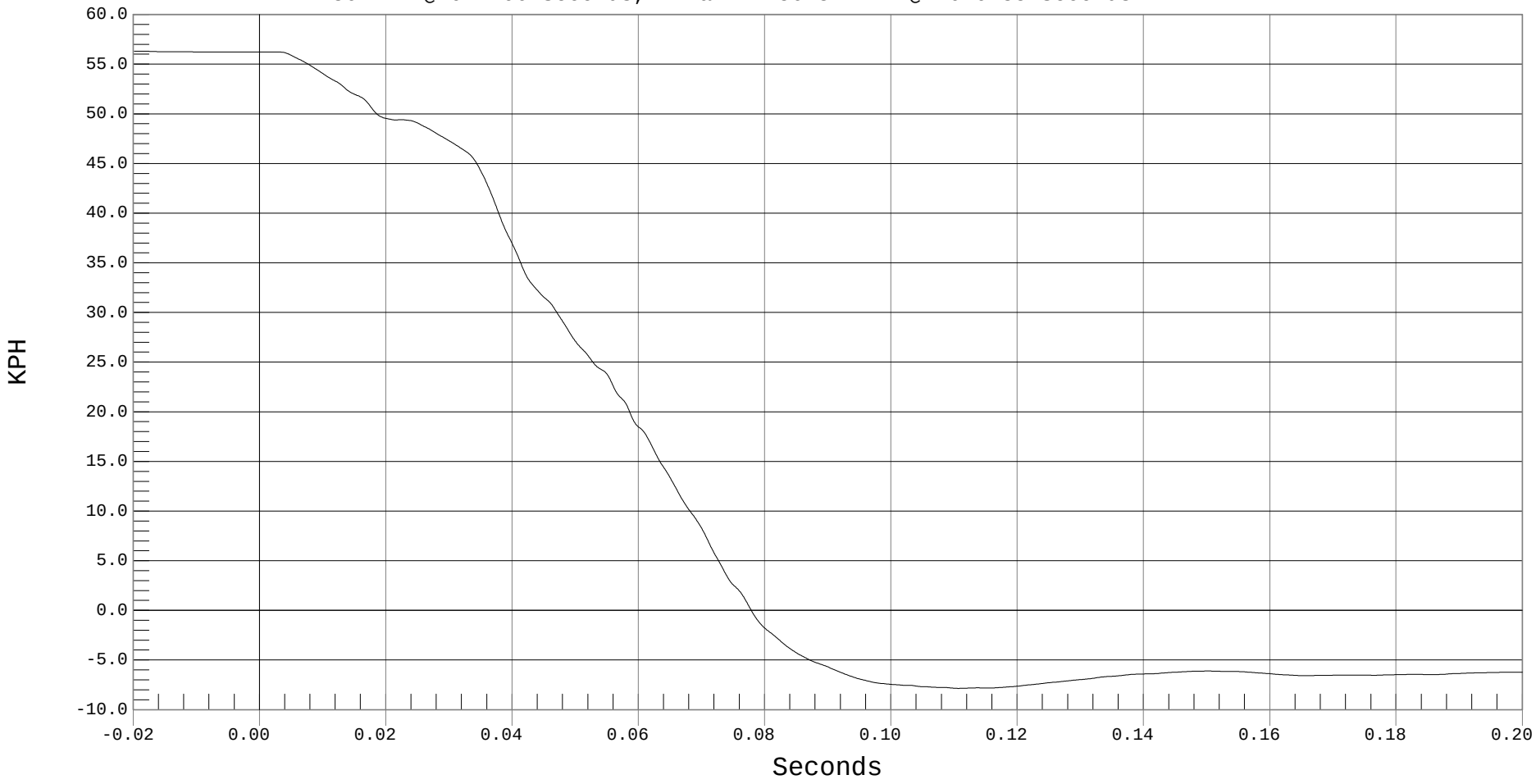
LEFT REAR SEAT CROSSMEMBER X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LEFT REAR SEAT CROSSMEMBER X VELOCITY, B01037AI.V59

Ymin = -7.86 KPH @ 0.1106 Seconds, Ymax = 56.31 KPH @ -0.0185 Seconds



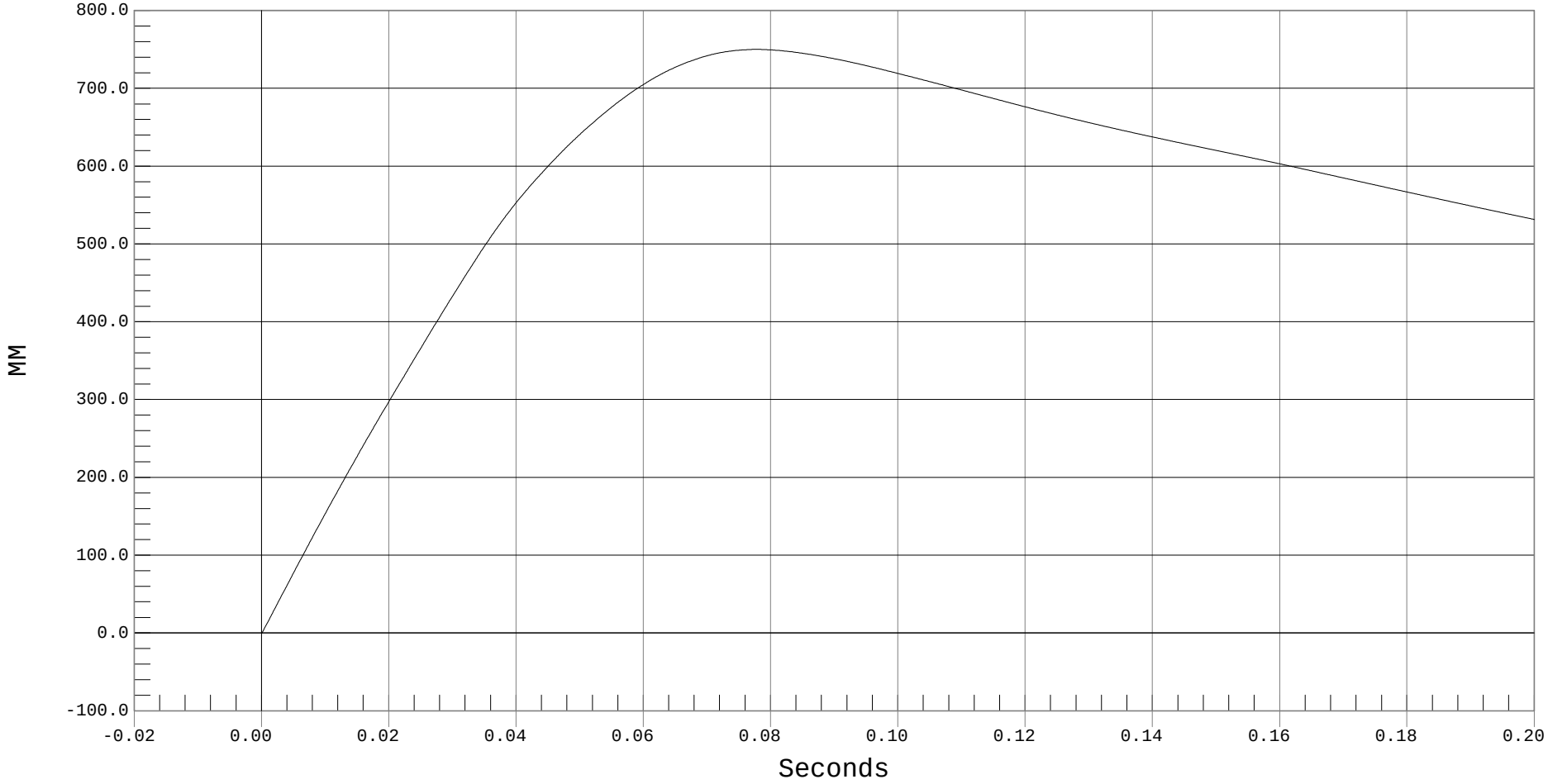
LEFT REAR SEAT CROSSMEMBER X DISPLACEMENT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LEFT REAR SEAT CROSSMEMBER X DISPLACEMENT, B01037AI.D59

Ymin = 0 MM @ 0.0000 Seconds, Ymax = 750.04 MM @ 0.0777 Seconds



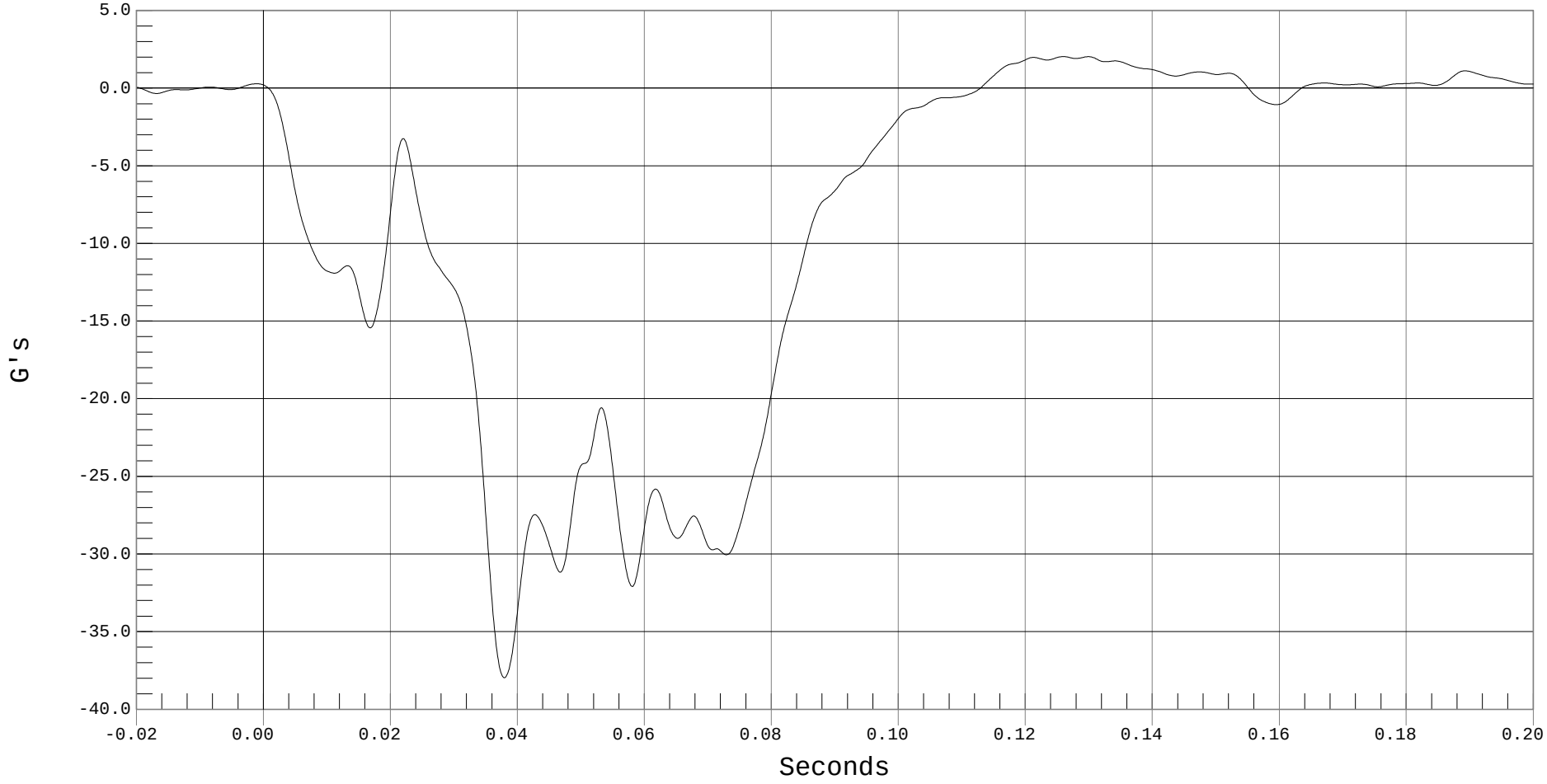
RIGHT REAR SEAT CROSSMEMBER X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 RIGHT REAR SEAT CROSSMEMBER X, B01037AF.A58

Ymin = -37.96 G's @ 0.0379 Seconds, Ymax = 2.03 G's @ 0.1259 Seconds



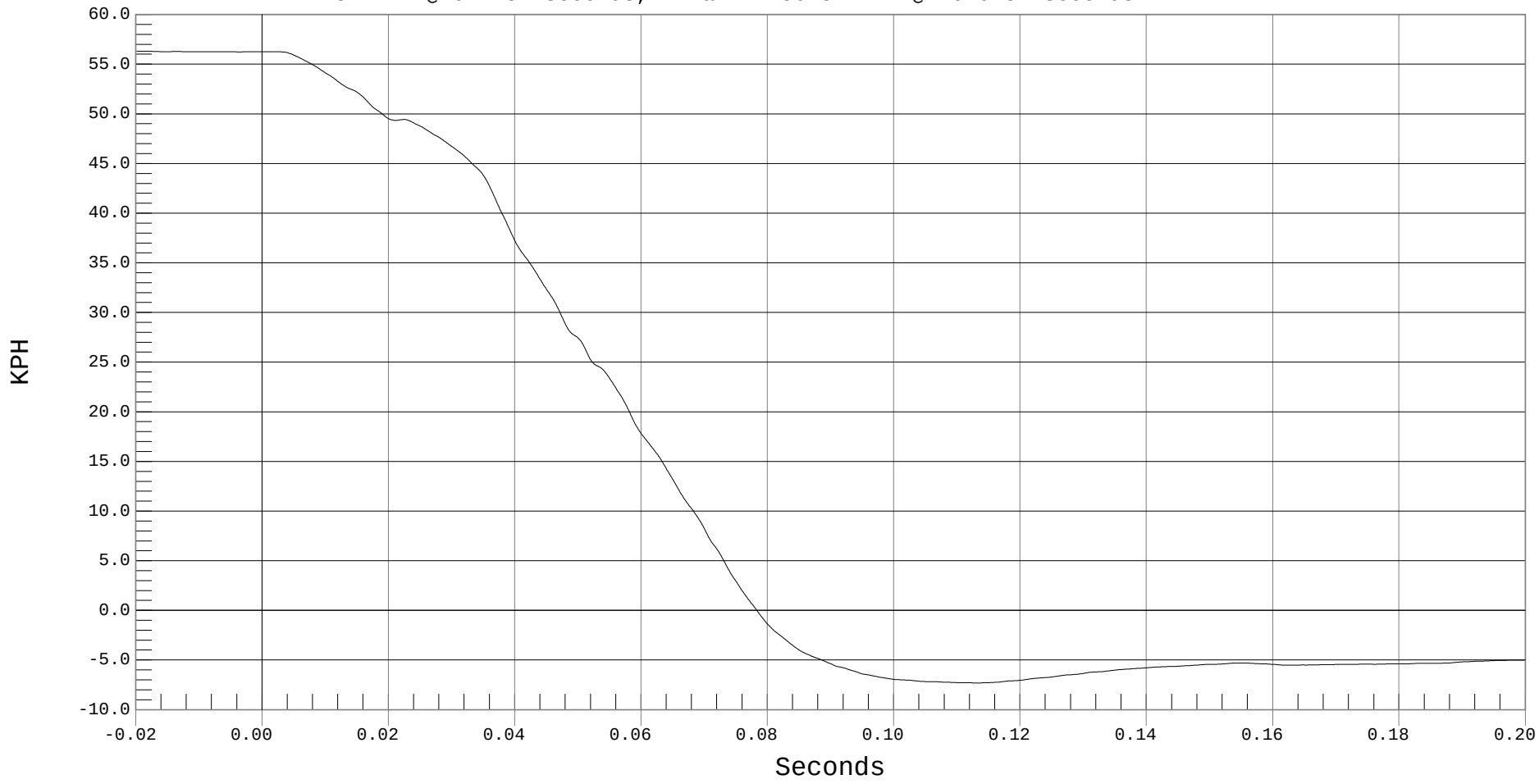
RIGHT REAR SEAT CROSSMEMBER X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RIGHT REAR SEAT CROSSMEMBER X VELOCITY, B01037AI.V58

Ymin = -7.32 KPH @ 0.1131 Seconds, Ymax = 56.31 KPH @ -0.0184 Seconds



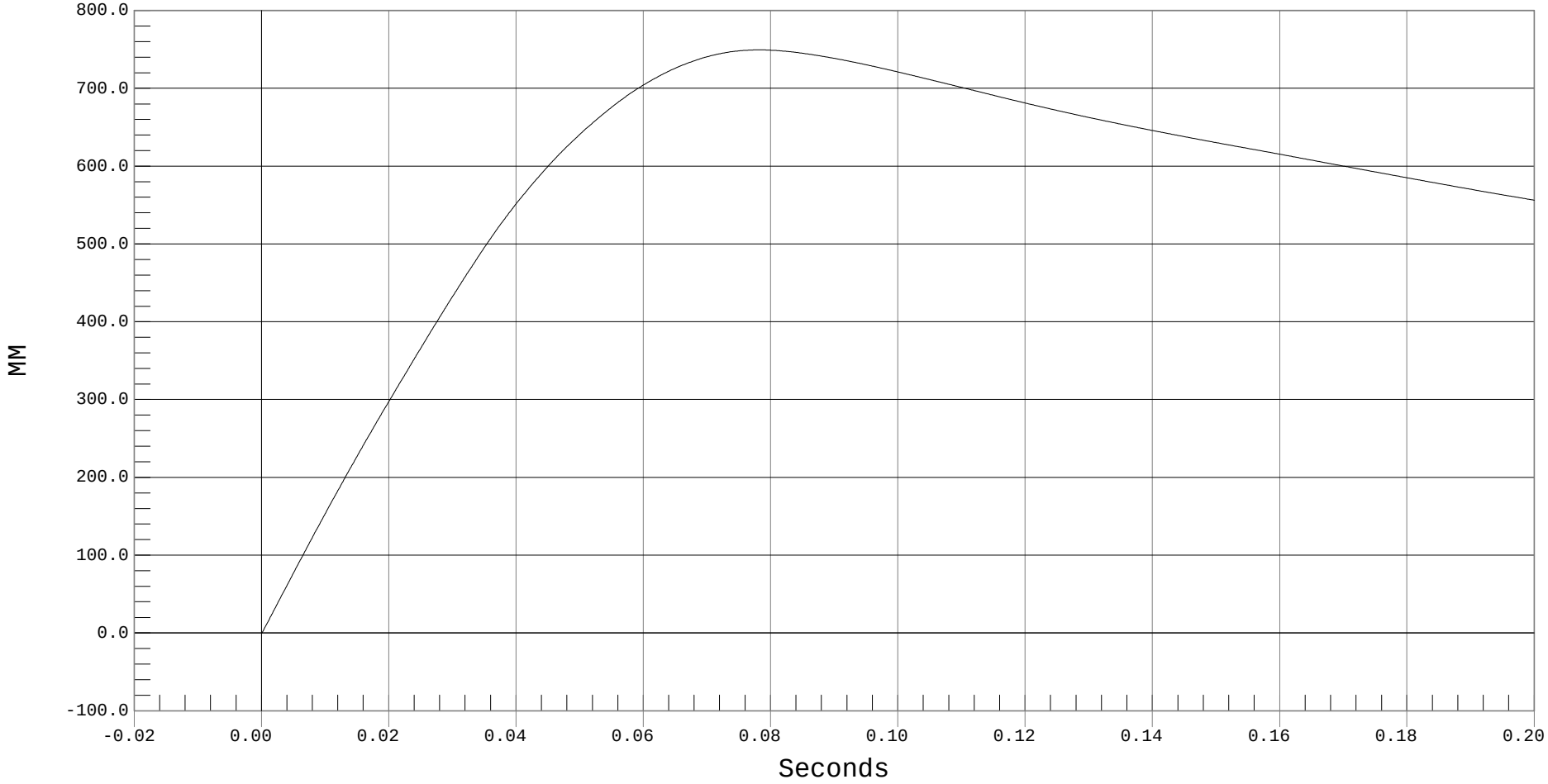
RIGHT REAR SEAT CROSSMEMBER X DISPLACEMENT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RIGHT REAR SEAT CROSSMEMBER X DISPLACEMENT, B01037AI.D58

Ymin = 0 MM @ 0.0000 Seconds, Ymax = 749.36 MM @ 0.0781 Seconds



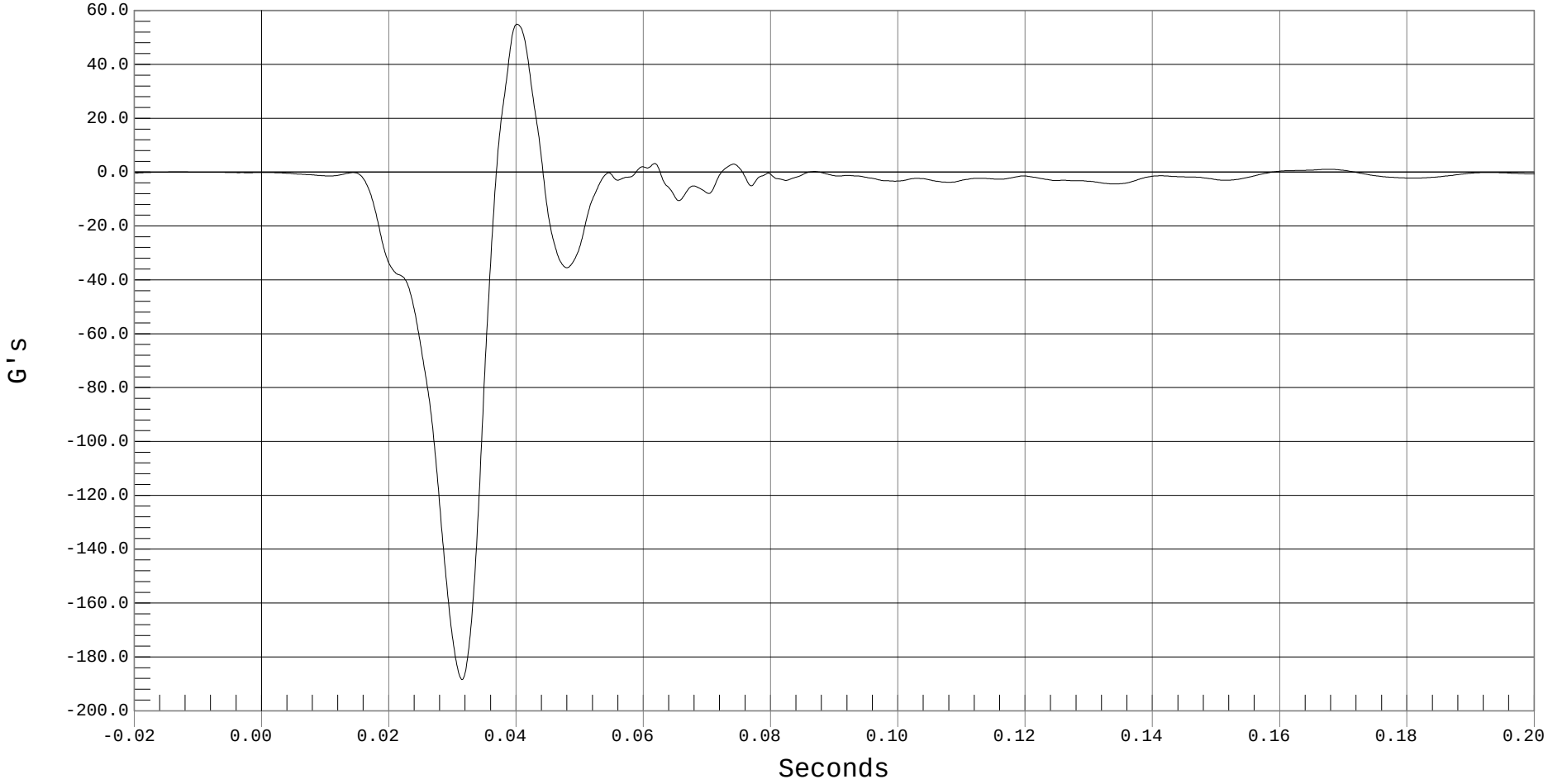
UPPER ENGINE X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 ENGINE UPPER X, B01037AF.A55

Ymin = -188.41 G's @ 0.0314 Seconds, Ymax = 54.92 G's @ 0.0401 Seconds



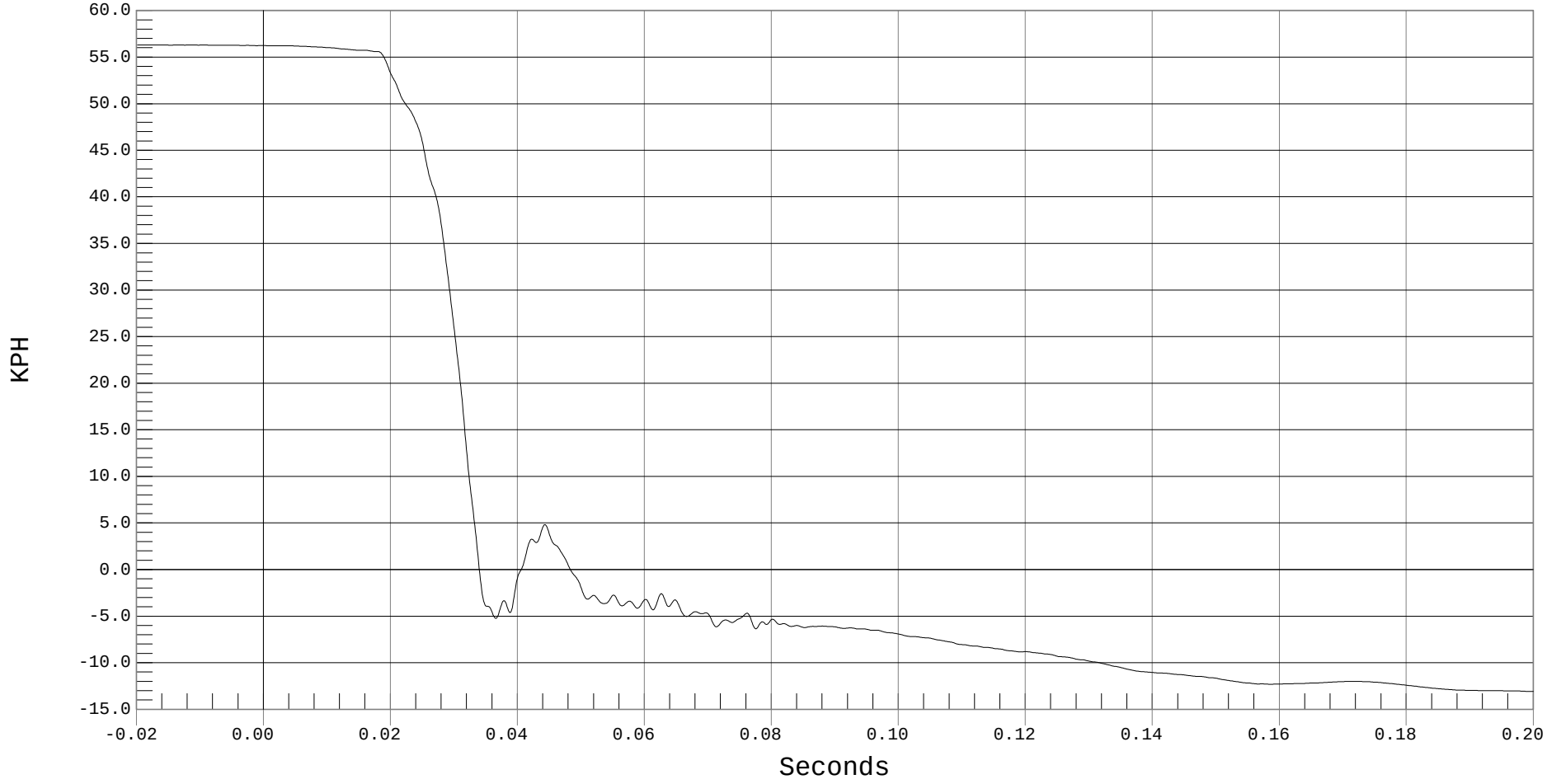
UPPER ENGINE X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 TOP OF ENGINE BLOCK X VELOCITY, B01037AI.V55

Ymin = -13.1 KPH @ 0.2000 Seconds, Ymax = 56.3 KPH @ -0.0181 Seconds



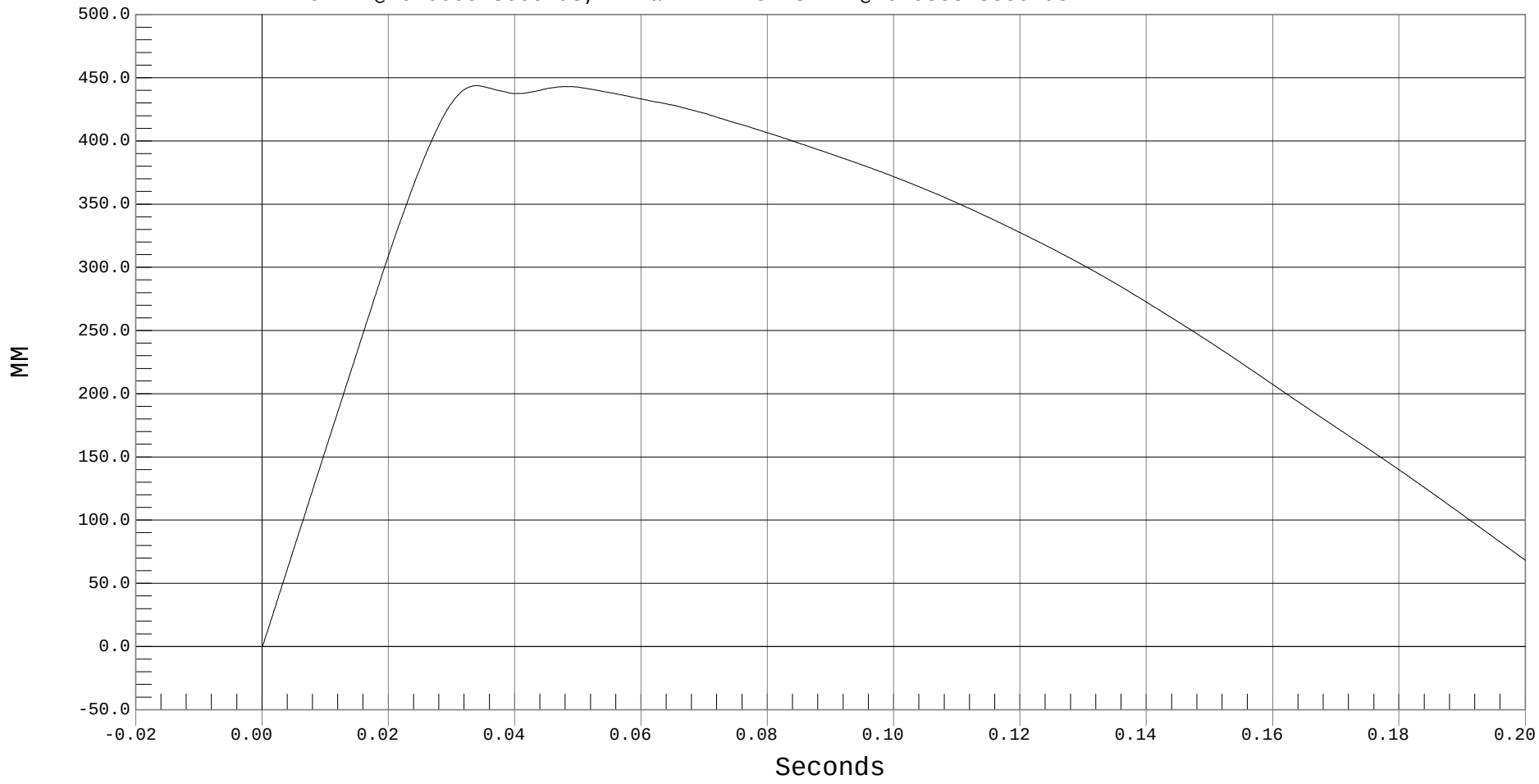
UPPER ENGINE X DISPLACEMENT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 TOP OF ENGINE BLOCK X DISPLACEMENT, B01037AI.D55

Ymin = 0 MM @ 0.0000 Seconds, Ymax = 443.75 MM @ 0.0338 Seconds



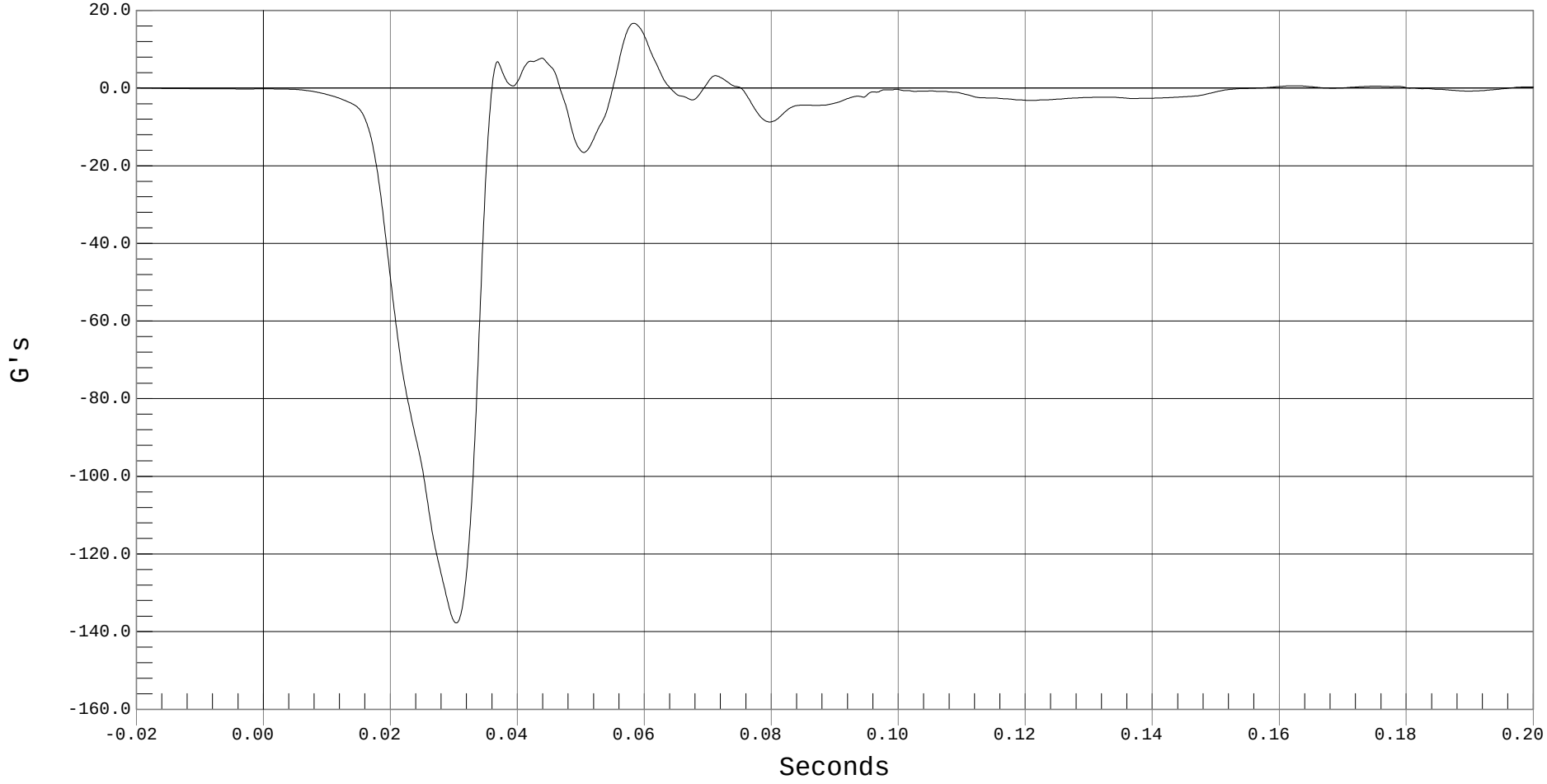
LOWER ENGINE X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 ENGINE LOWER X, B01037AF.A56

Ymin = -137.75 G's @ 0.0303 Seconds, Ymax = 16.73 G's @ 0.0582 Seconds



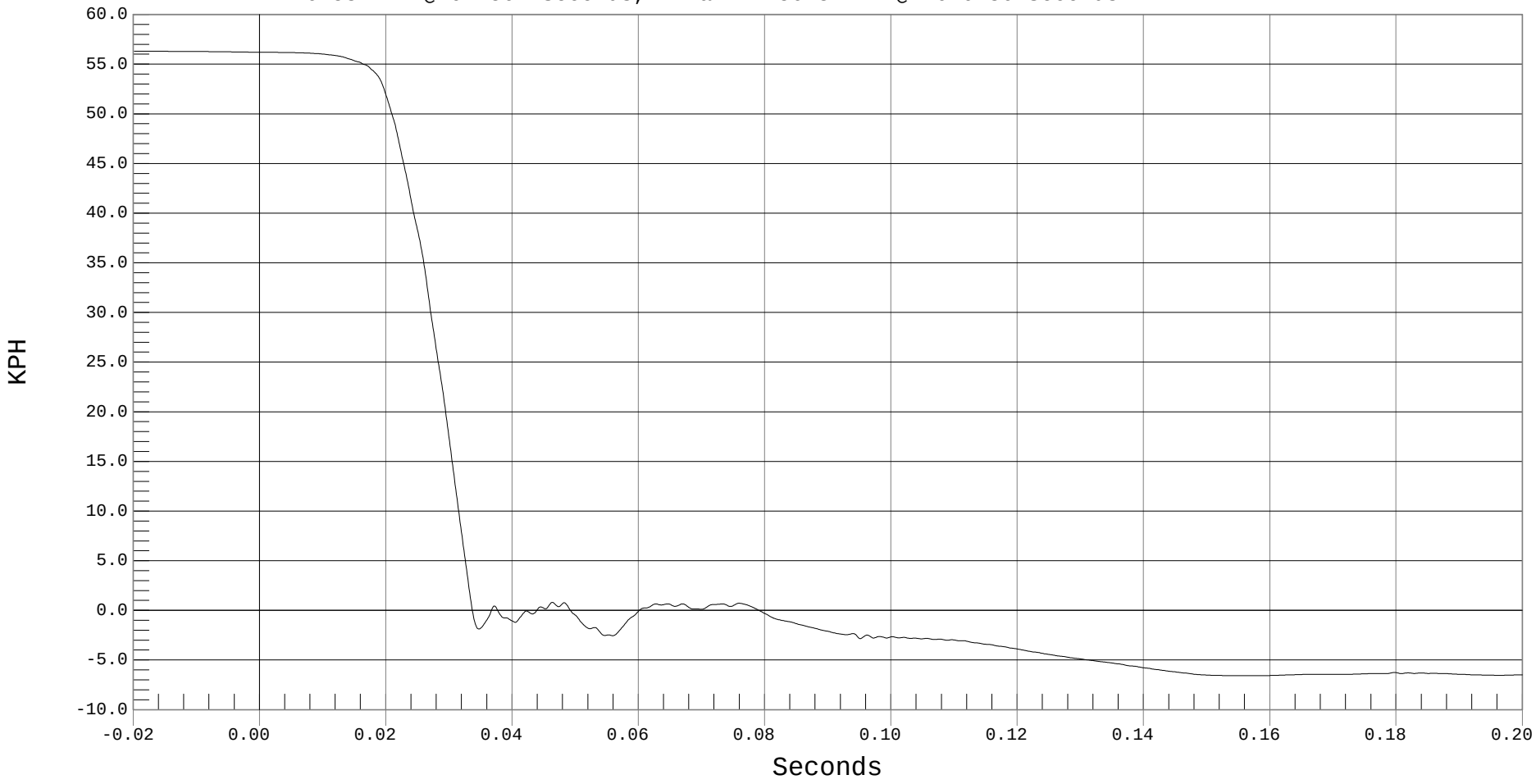
LOWER ENGINE X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 BOTTOM OF ENGINE X VELOCITY, B01037AI.V56

Ymin = -6.58 KPH @ 0.1567 Seconds, Ymax = 56.3 KPH @ -0.0186 Seconds



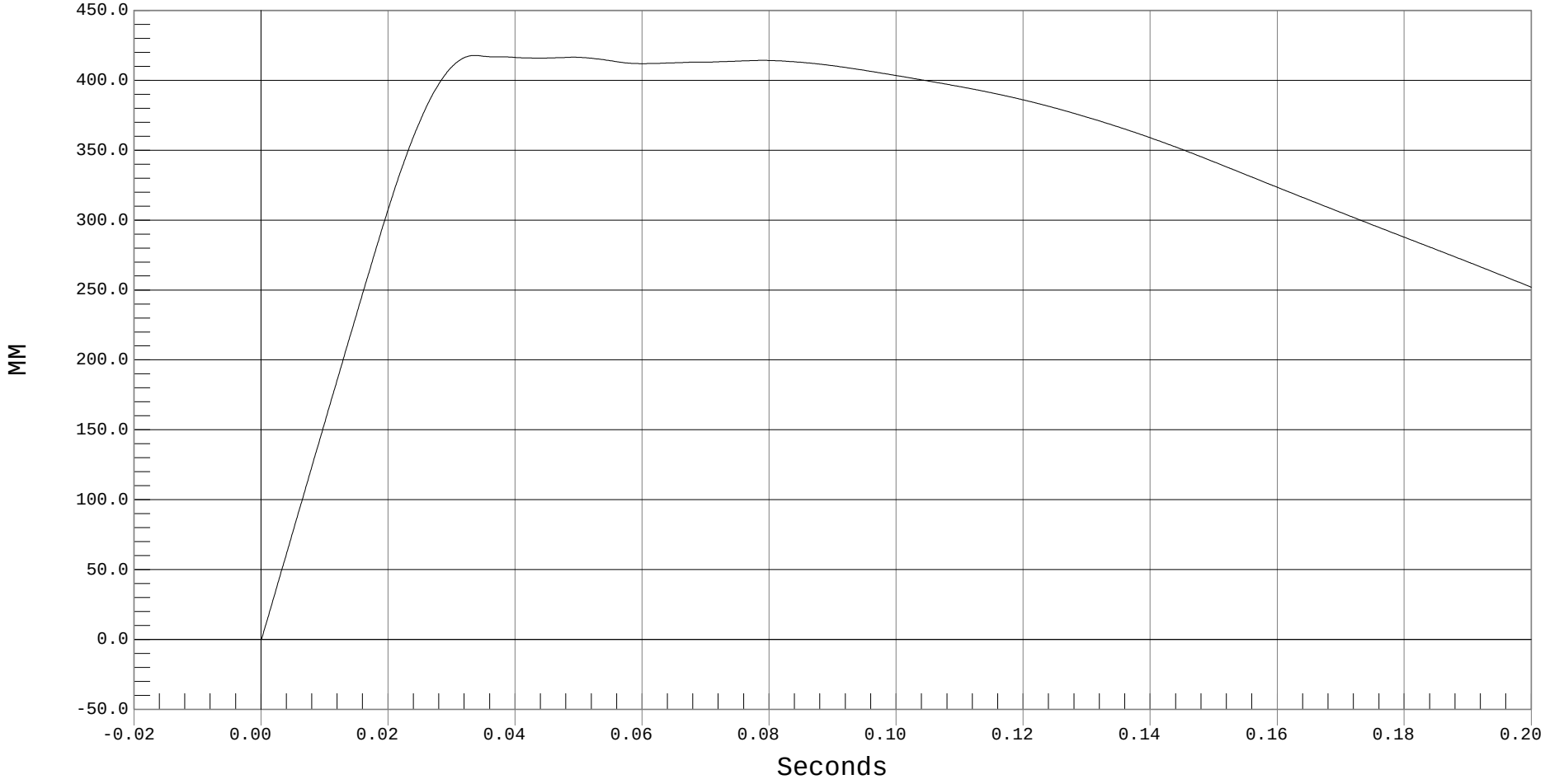
LOWER ENGINE X DISPLACEMENT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 BOTTOM OF ENGINE X DISPLACEMENT, B01037AI.D56

Ymin = 0 MM @ 0.0000 Seconds, Ymax = 417.83 MM @ 0.0335 Seconds



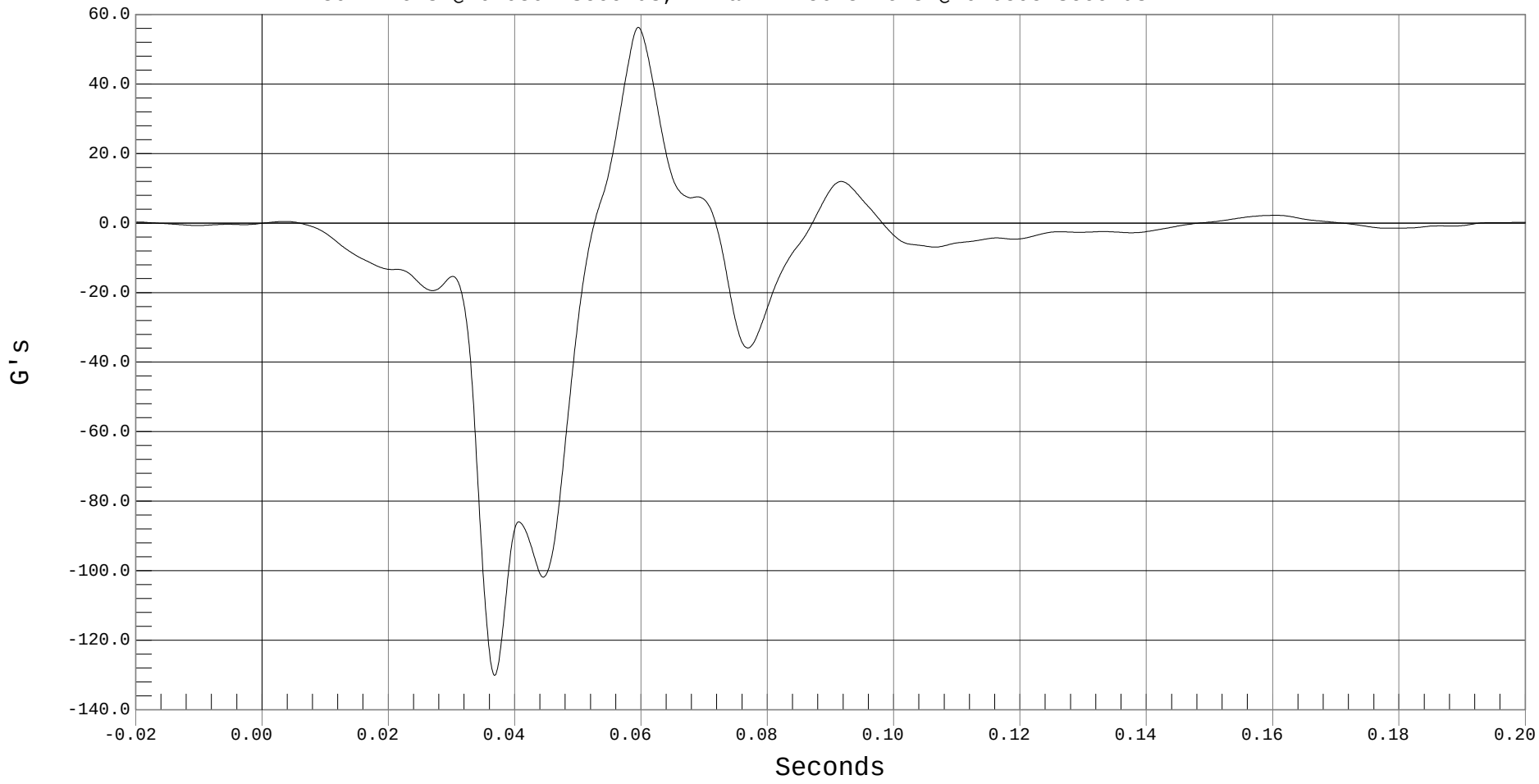
LEFT BRAKE CALIPER X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 LEFT BRAKE CALIPER X, B01037AF.A61

Ymin = -130.12 G's @ 0.0367 Seconds, Ymax = 56.31 G's @ 0.0595 Seconds



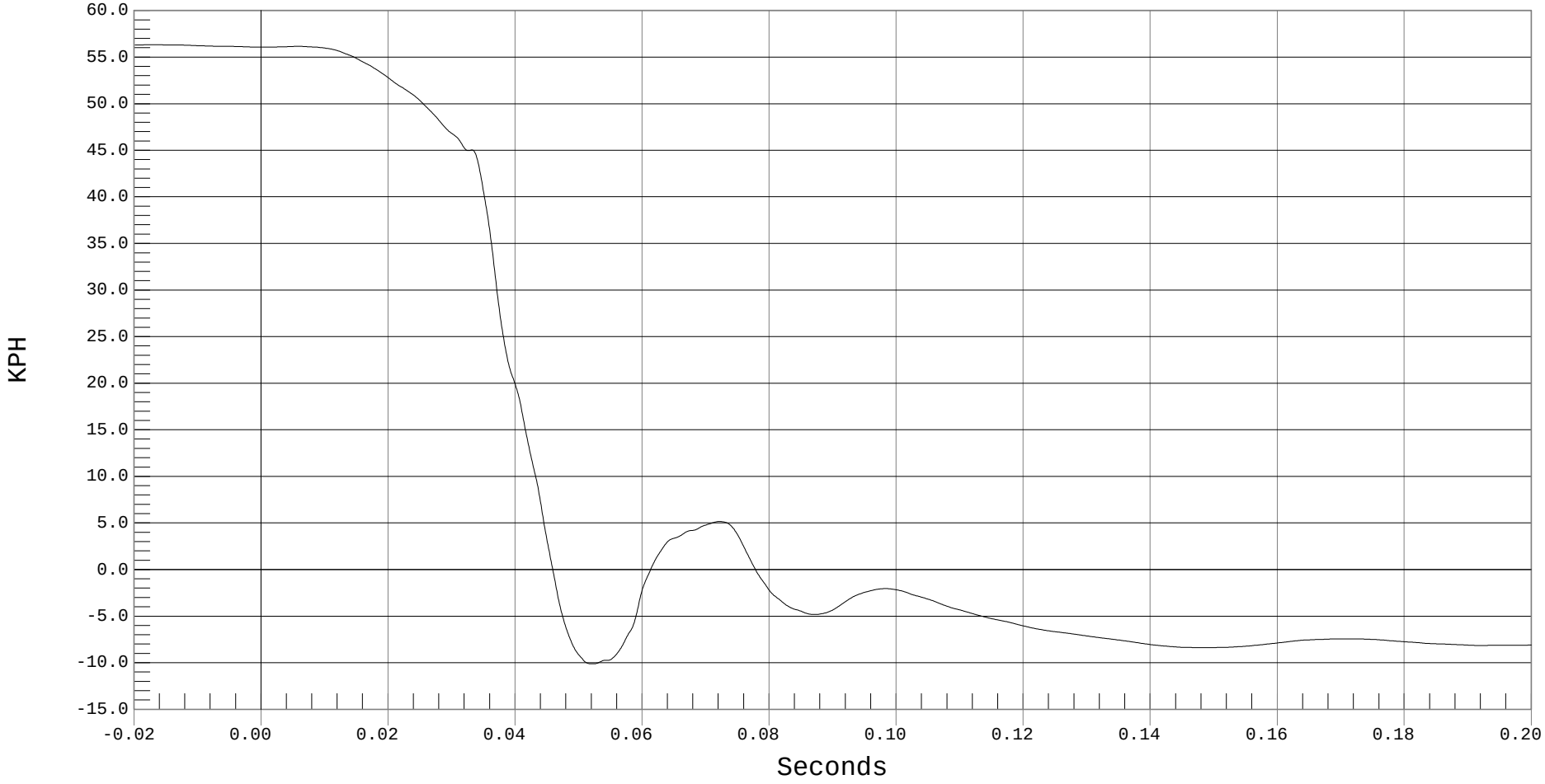
LEFT BRAKE CALIPER X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LEFT BRAKE CALIPER X VELOCITY, B01037AI.V61

Ymin = -10.13 KPH @ 0.0521 Seconds, Ymax = 56.32 KPH @ -0.0169 Seconds



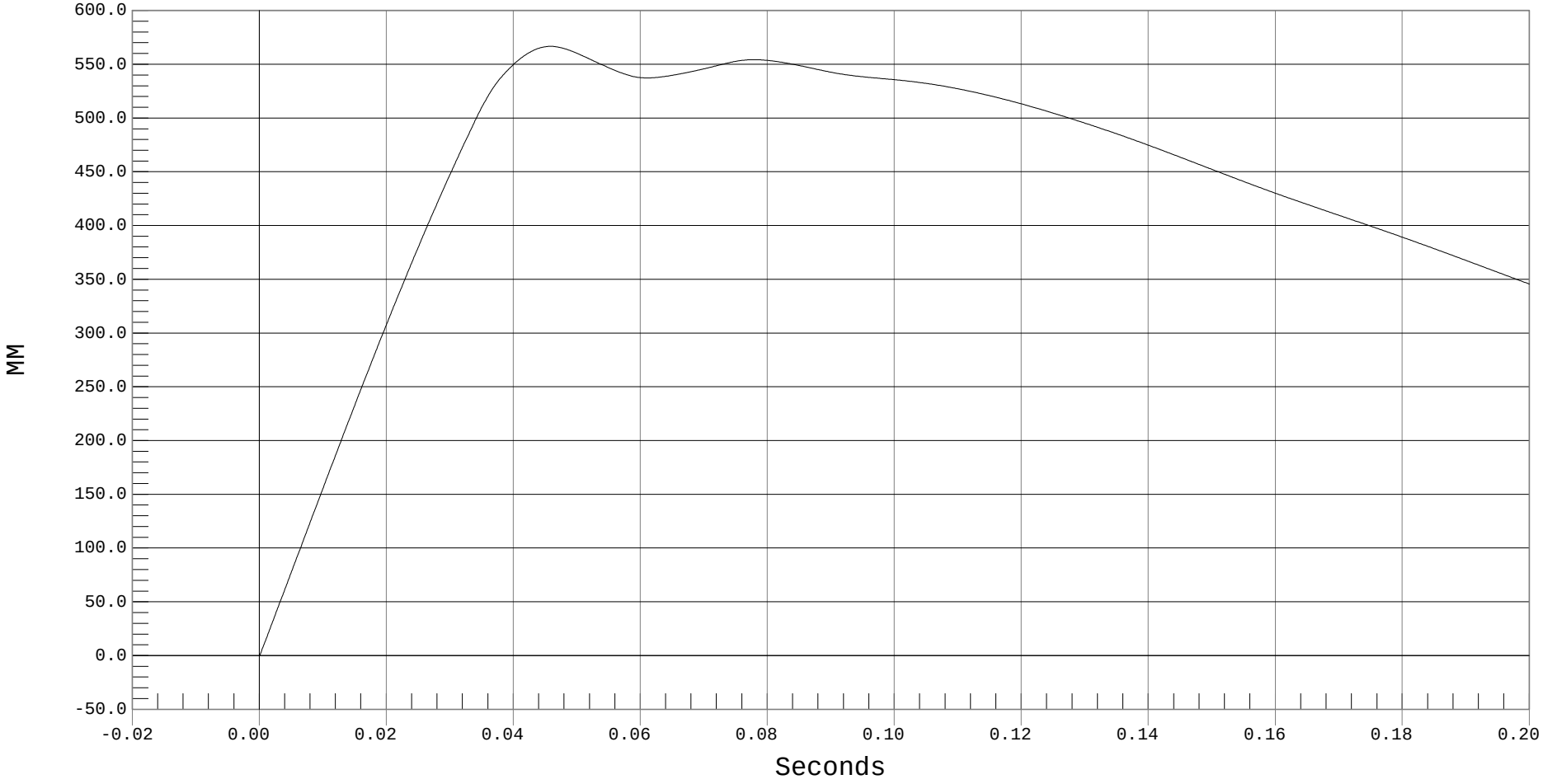
LEFT BRAKE CALIPER X DISPLACEMENT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LEFT BRAKE CALIPER X DISPLACEMENT, B01037AI.D61

Ymin = 0 MM @ 0.0000 Seconds, Ymax = 566.6 MM @ 0.0458 Seconds



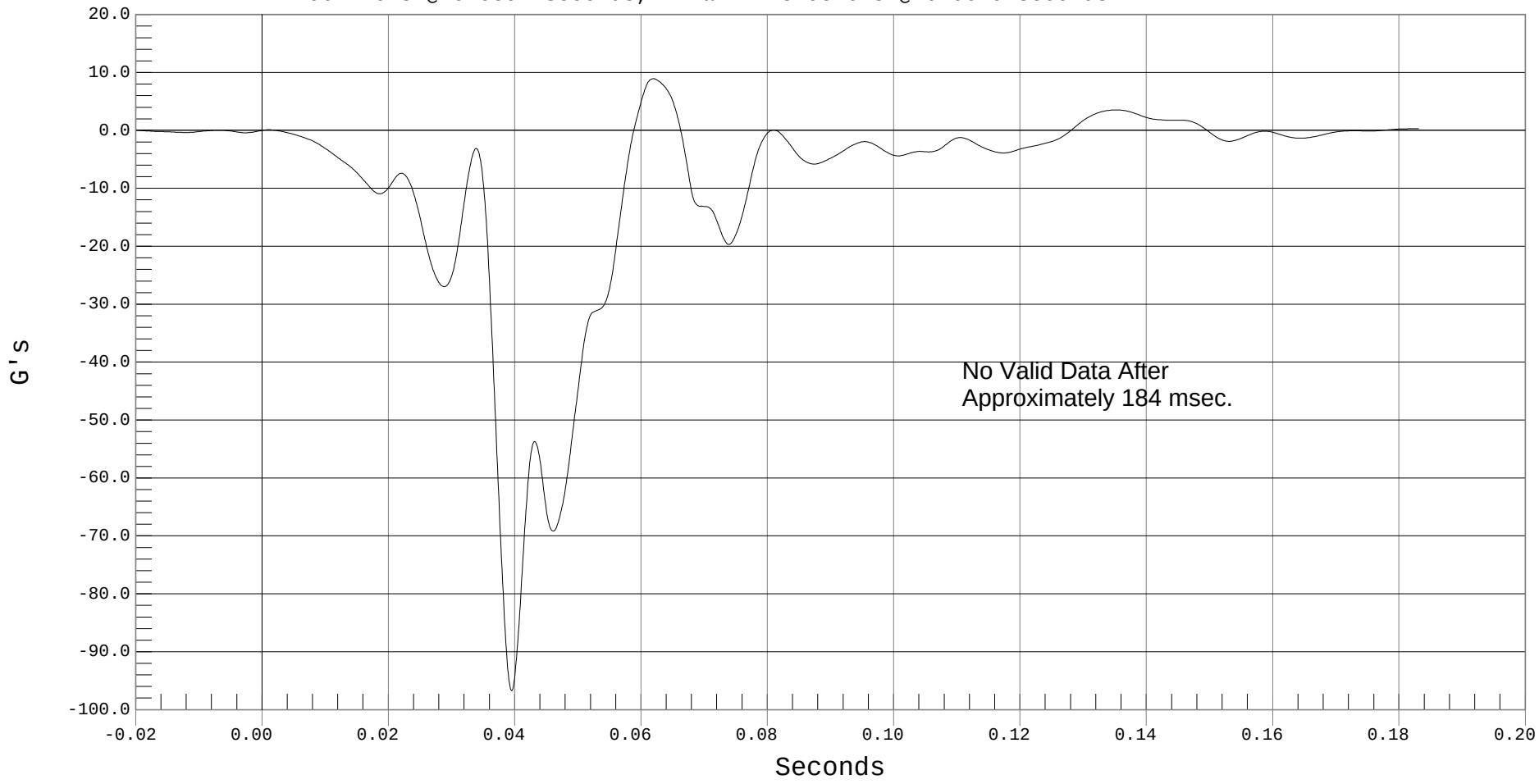
RIGHT BRAKE CALIPER X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 RIGHT BRAKE CALIPER X, B01037AF.A60

Ymin = -96.7 G's @ 0.0394 Seconds, Ymax = 8.93 G's @ 0.0619 Seconds



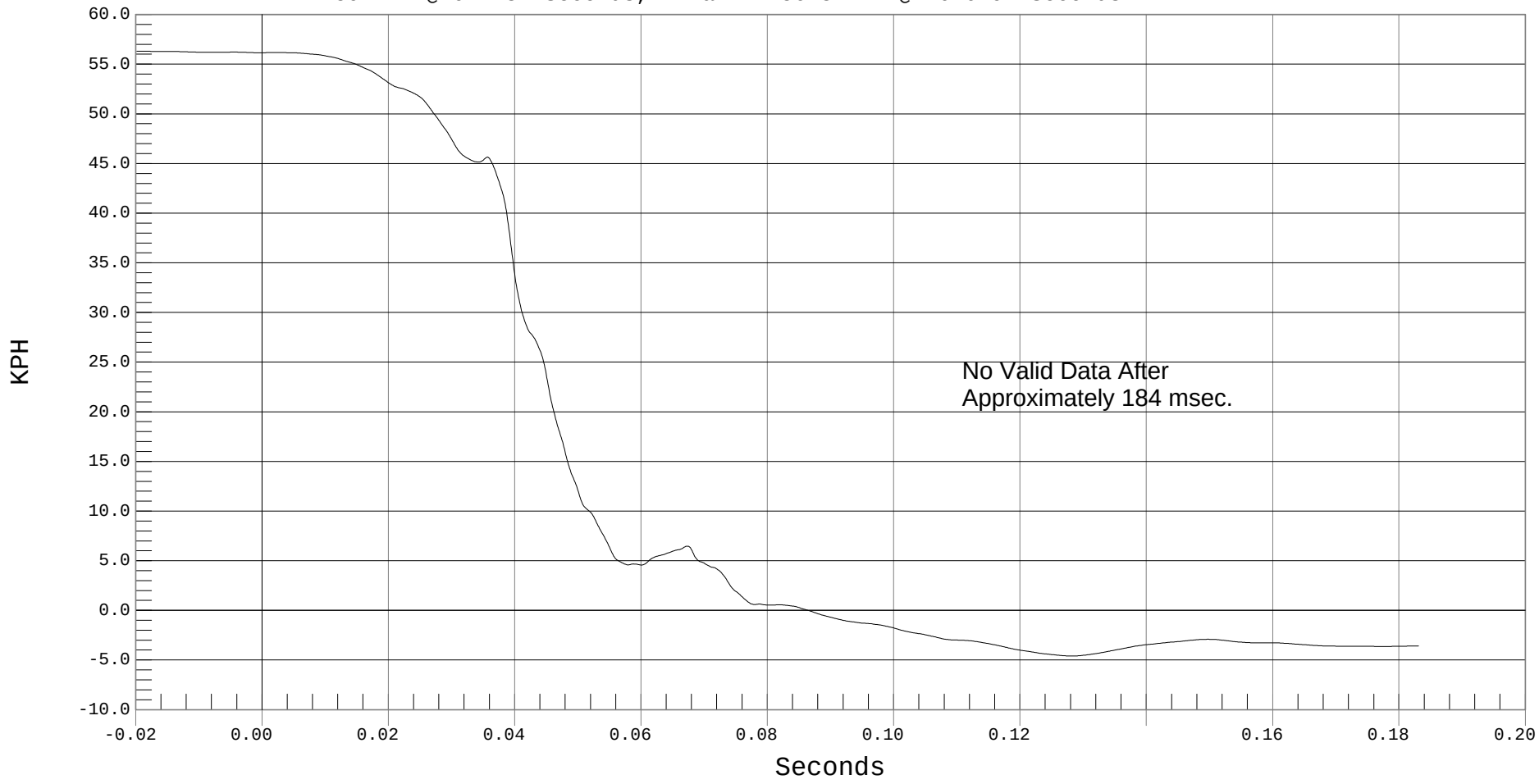
RIGHT BRAKE CALIPER X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RIGHT BRAKE CALIPER X VELOCITY, B01037AI.V60

Ymin = -4.59 KPH @ 0.1281 Seconds, Ymax = 56.3 KPH @ -0.0191 Seconds



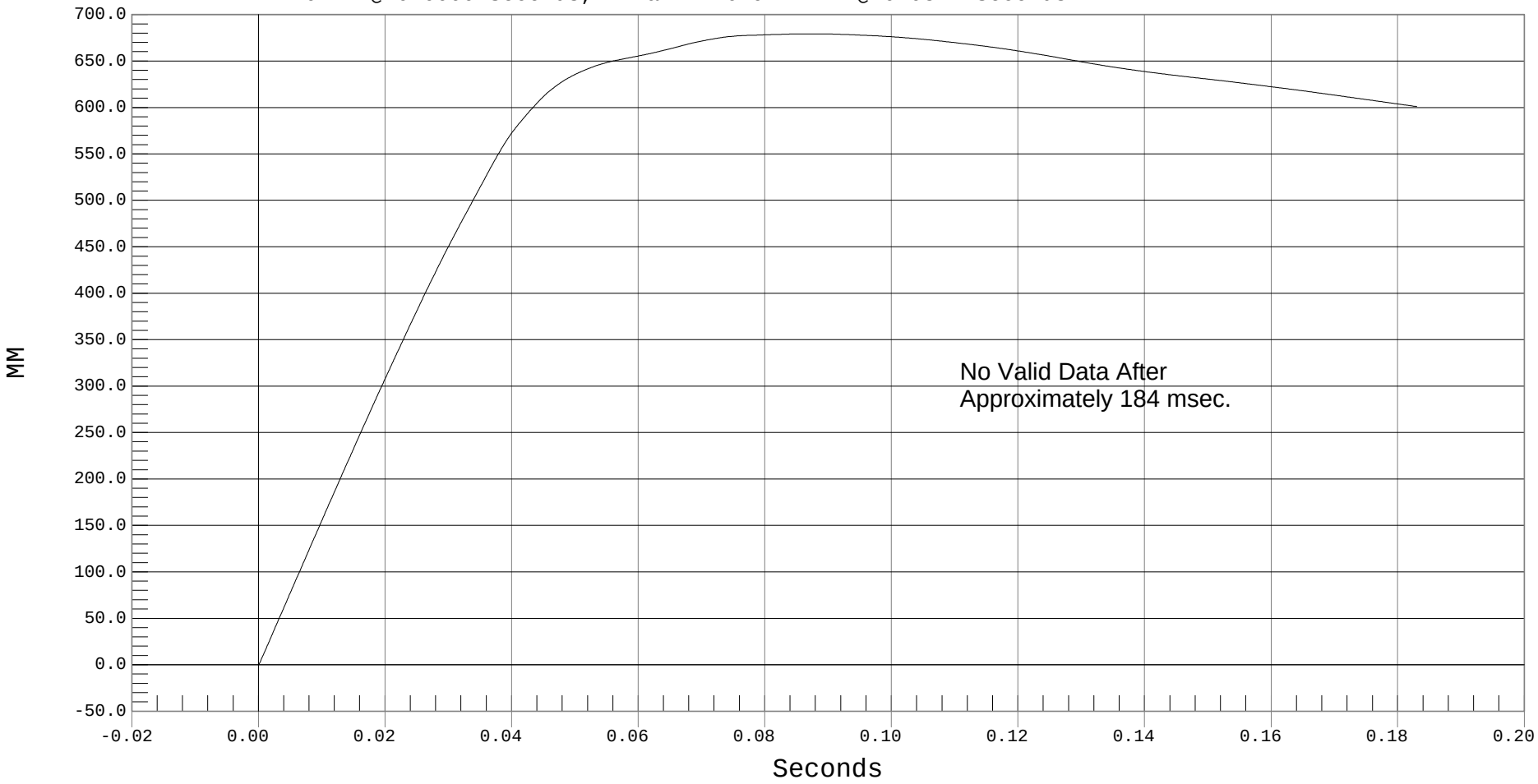
RIGHT BRAKE CALIPER X DISPLACEMENT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RIGHT BRAKE CALIPER X DISPLACEMENT, B01037AI.D60

Ymin = 0 MM @ 0.0000 Seconds, Ymax = 679.27 MM @ 0.0872 Seconds



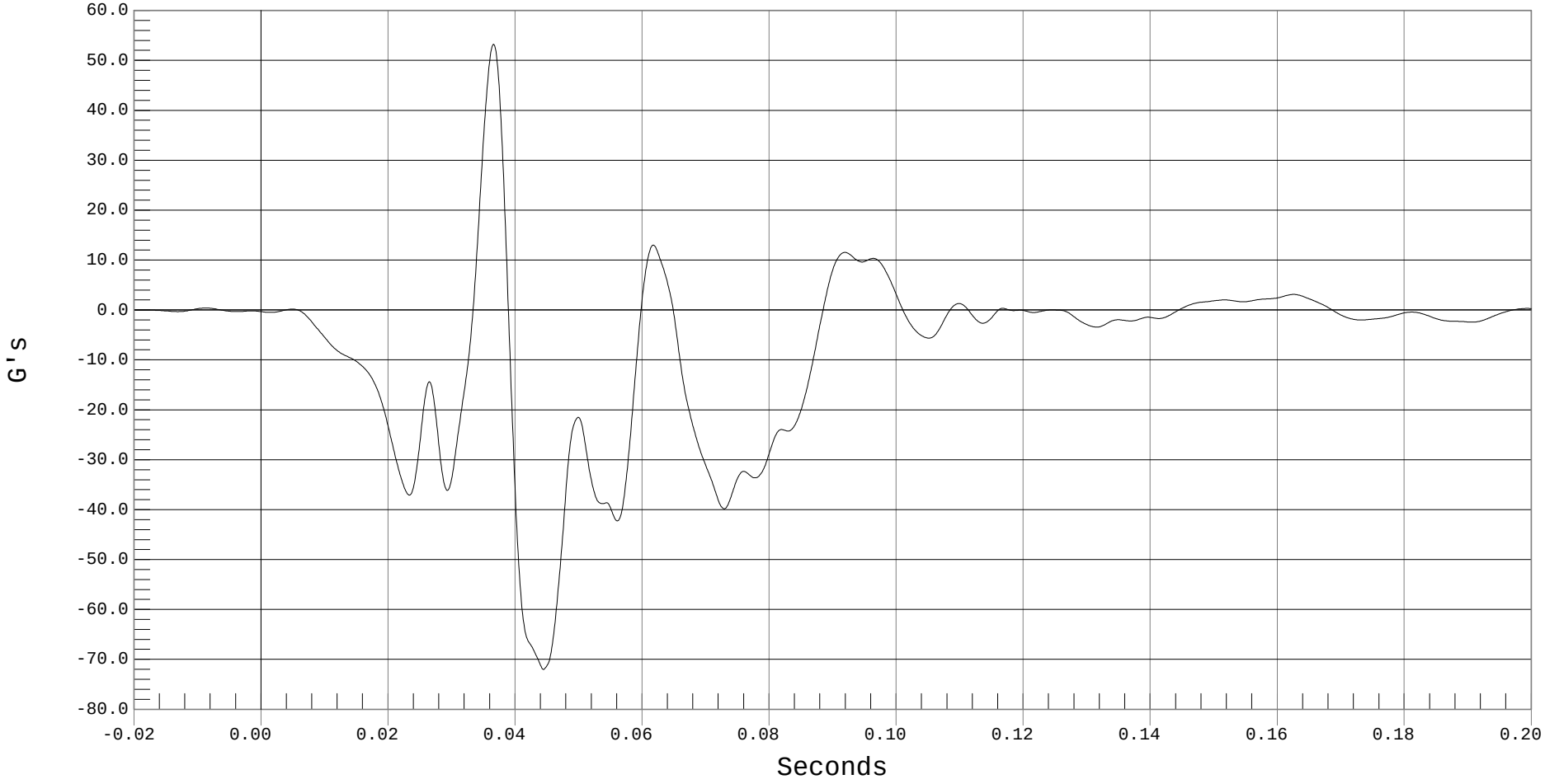
INSTRUMENT PANEL X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 INSTRUMENT PANEL X, B01037AF.A57

Ymin = -72.03 G's @ 0.0444 Seconds, Ymax = 53.25 G's @ 0.0365 Seconds



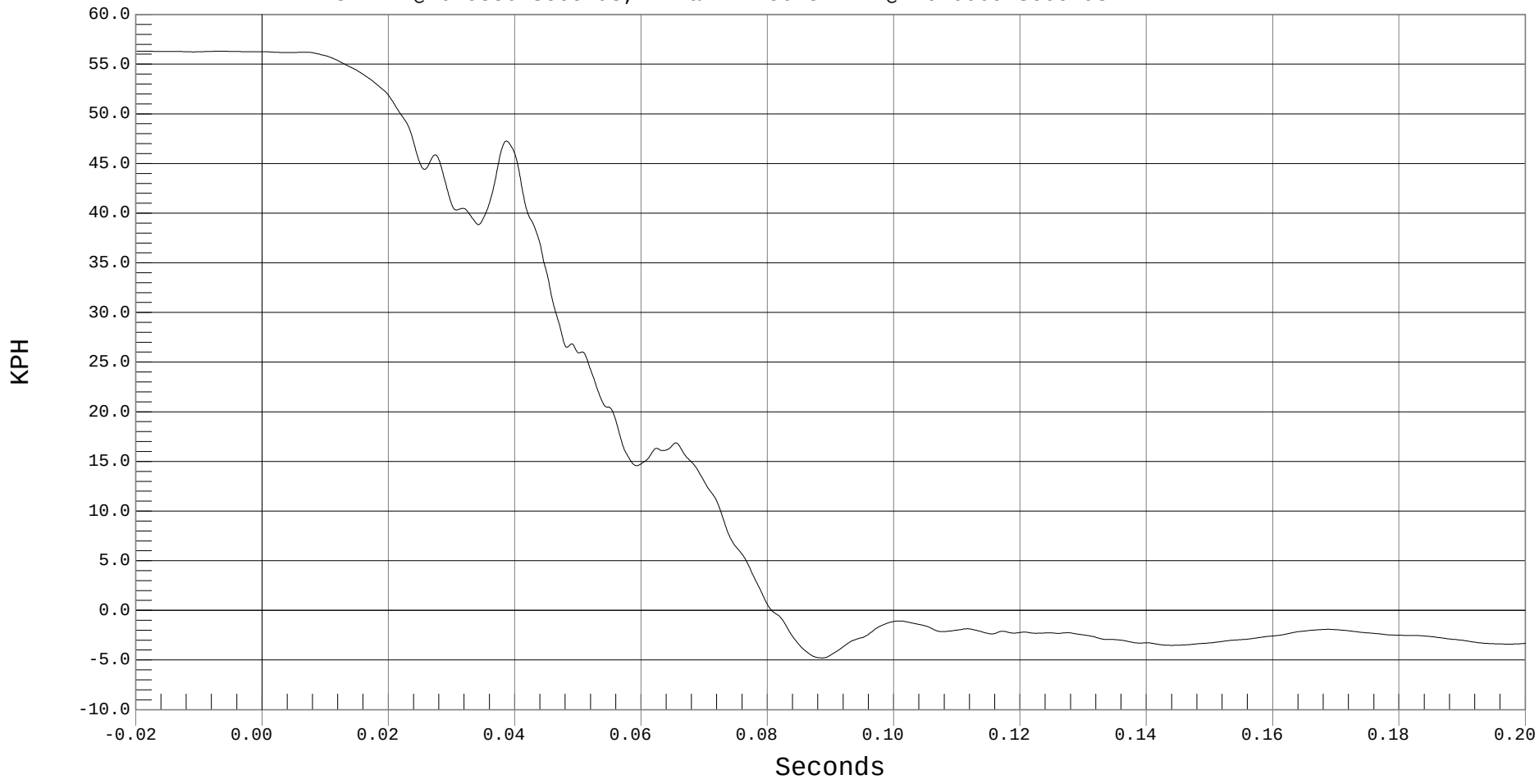
INSTRUMENT PANEL X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 INSTRUMENT PANEL X VELOCITY, B01037AI.V57

Ymin = -4.8 KPH @ 0.0886 Seconds, Ymax = 56.3 KPH @ -0.0069 Seconds



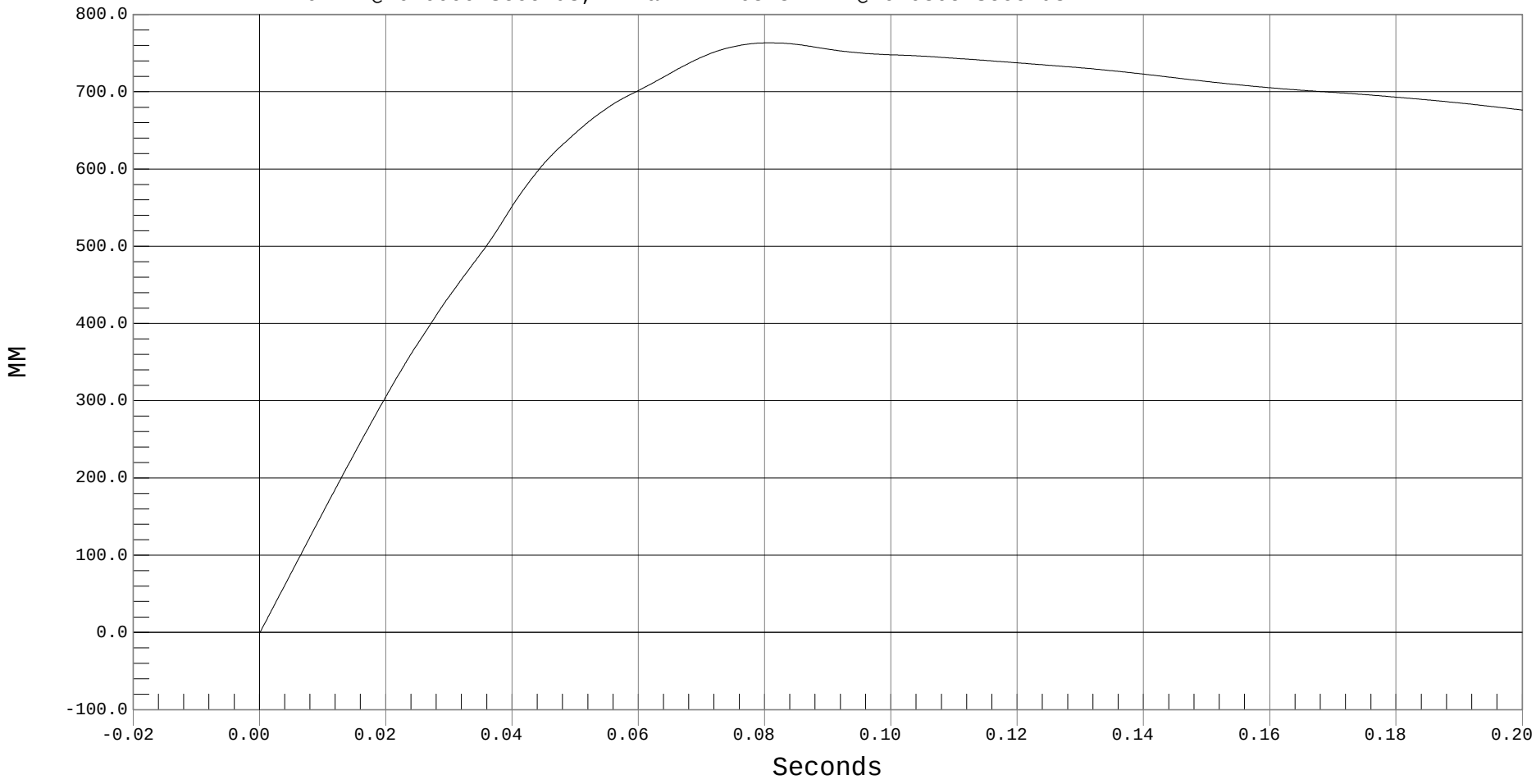
INSTRUMENT PANEL X DISPLACEMENT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 INSTRUMENT PANEL X DISPLACEMENT, B01037AI.D57

Ymin = 0 MM @ 0.0000 Seconds, Ymax = 763.34 MM @ 0.0805 Seconds



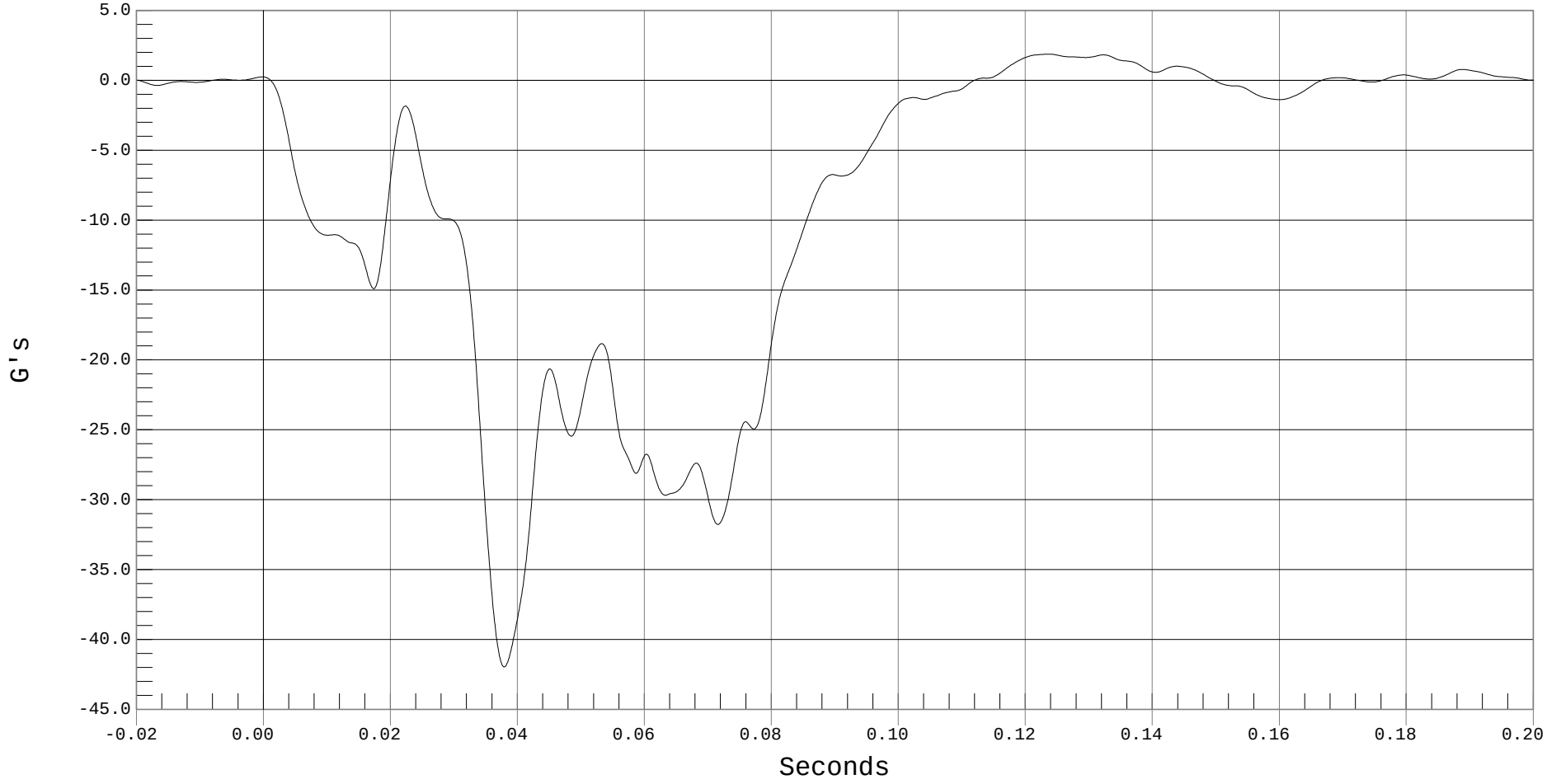
LEFT REAR SEAT CROSSMEMBER REDUNDANT X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 LEFT REAR SEAT X-MEMBER Xr, B01037AF.A03

Ymin = -41.97 G's @ 0.0378 Seconds, Ymax = 1.88 G's @ 0.1236 Seconds



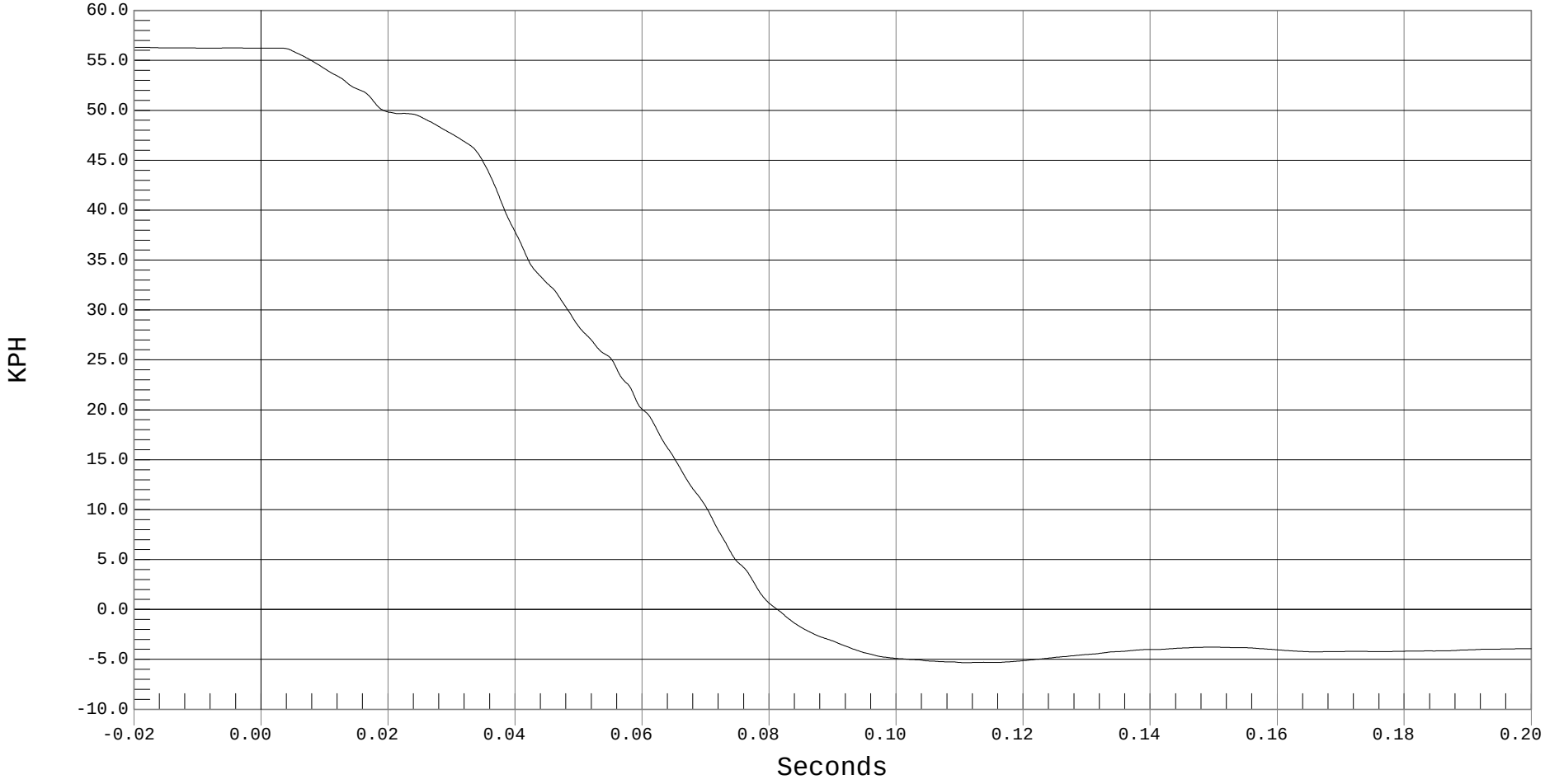
LEFT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LEFT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY, B01037AI.V03

Ymin = -5.34 KPH @ 0.1109 Seconds, Ymax = 56.31 KPH @ -0.0185 Seconds



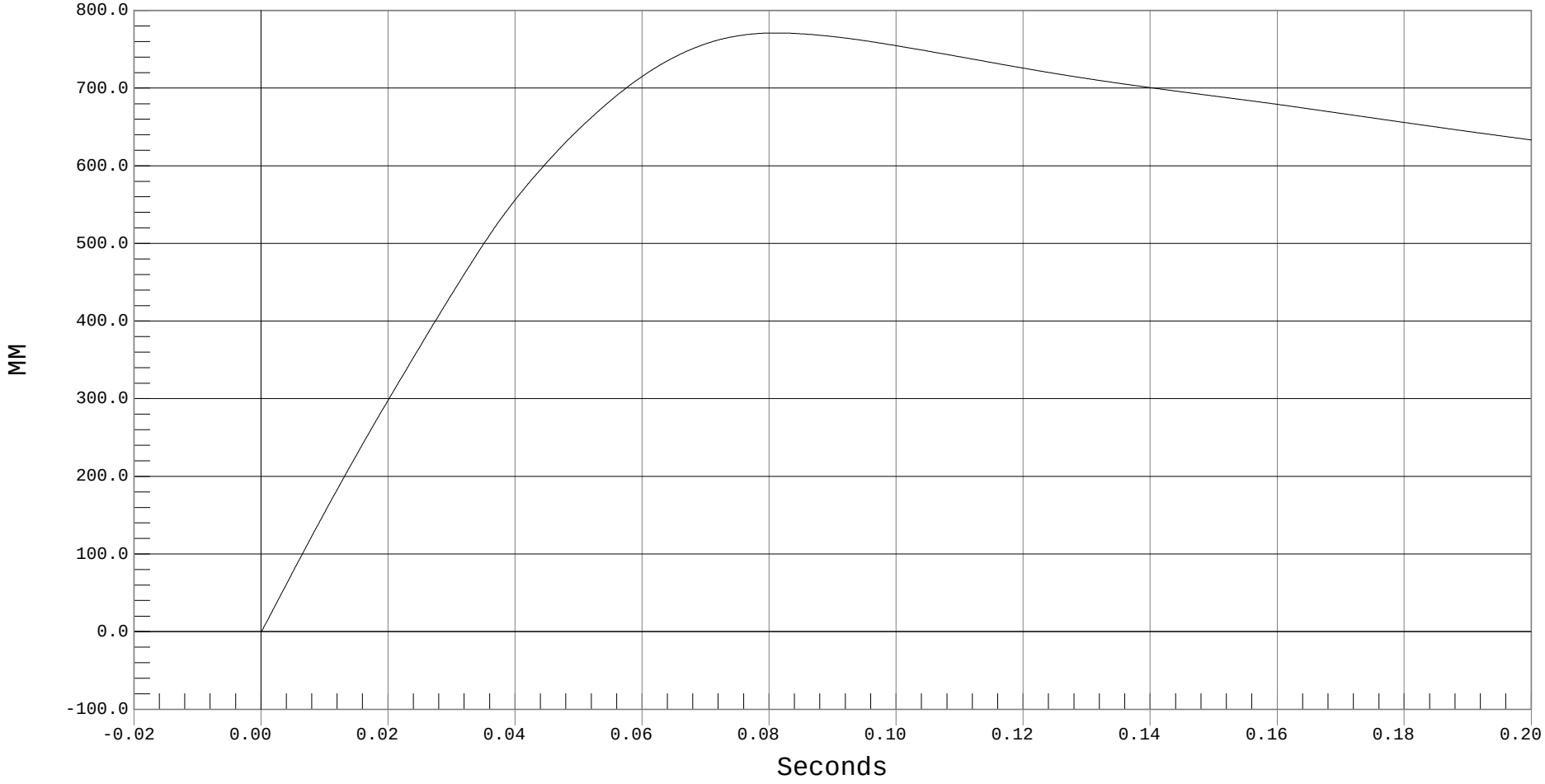
LEFT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LEFT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT, B01037AI.D03

Ymin = 0 MM @ 0.0000 Seconds, Ymax = 771 MM @ 0.0811 Seconds



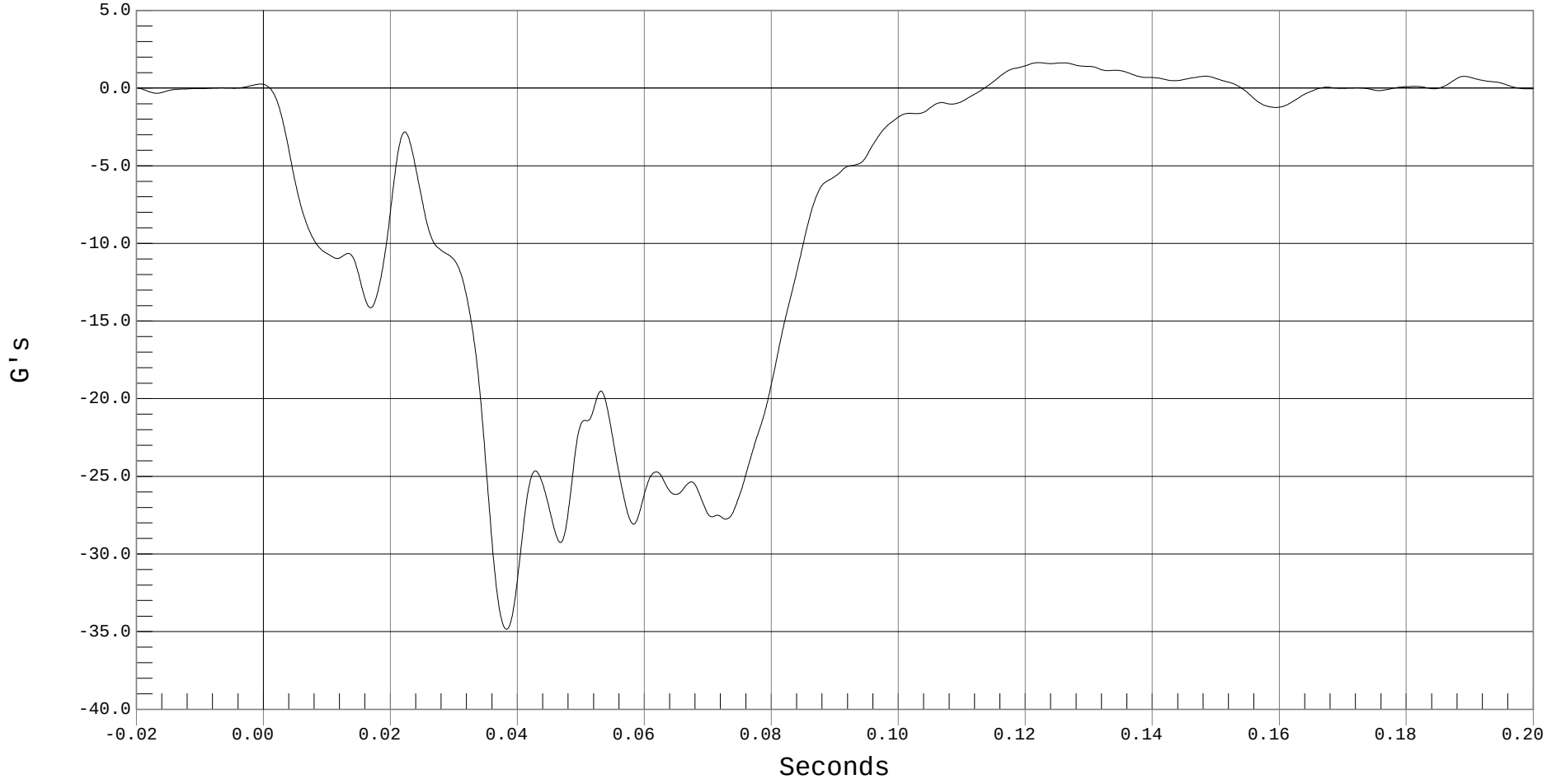
RIGHT REAR SEAT CROSSMEMBER REDUNDANT X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 RIGHT REAR SEAT X-MEMBER Xr, B01037AF.A02

Ymin = -34.85 G's @ 0.0382 Seconds, Ymax = 1.64 G's @ 0.1220 Seconds



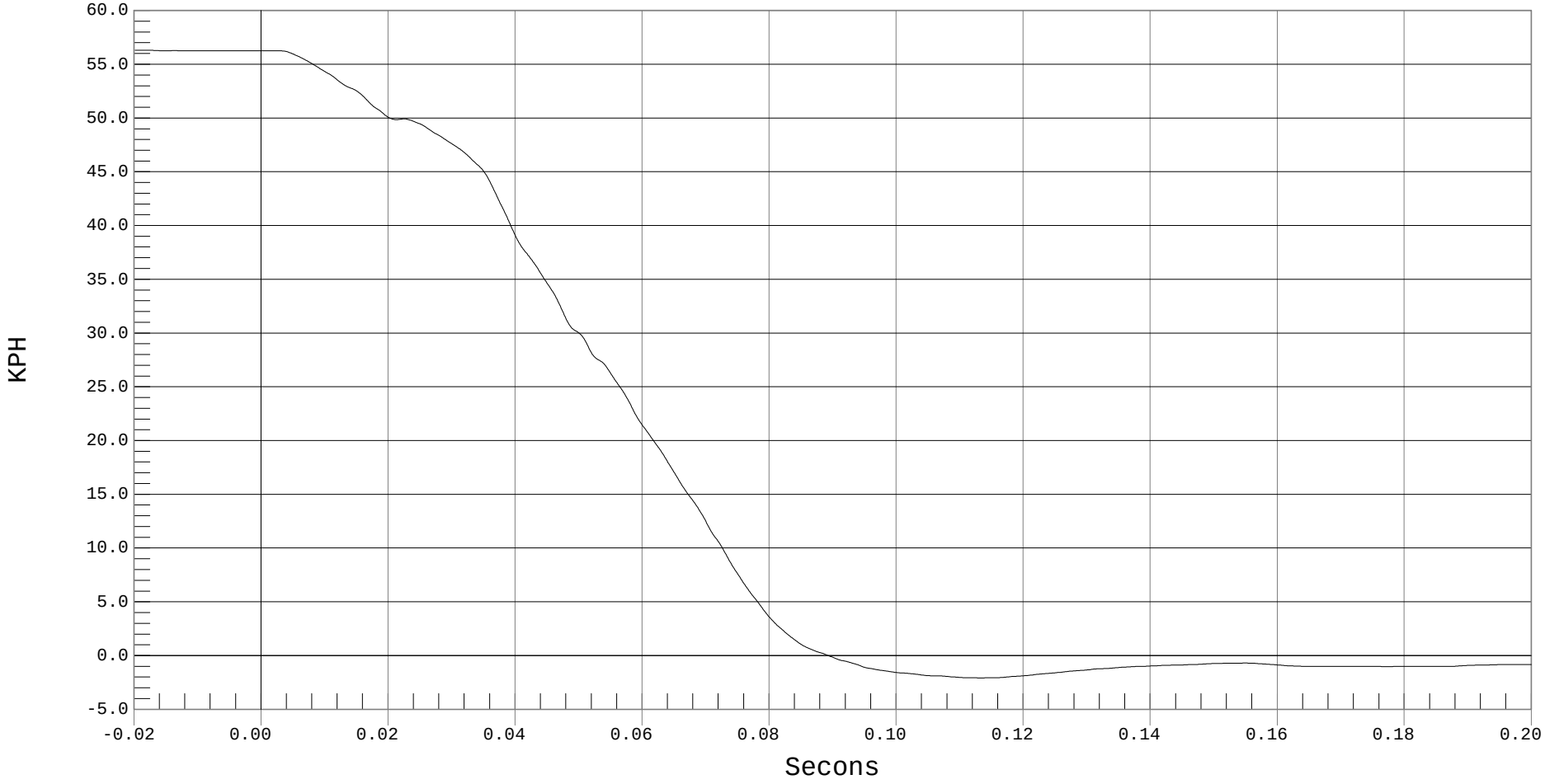
RIGHT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RIGHT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY, B01037AI.V02

Ymin = -2.08 KPH @ 0.1131 Secons, Ymax = 56.31 KPH @ -0.0184 Secons



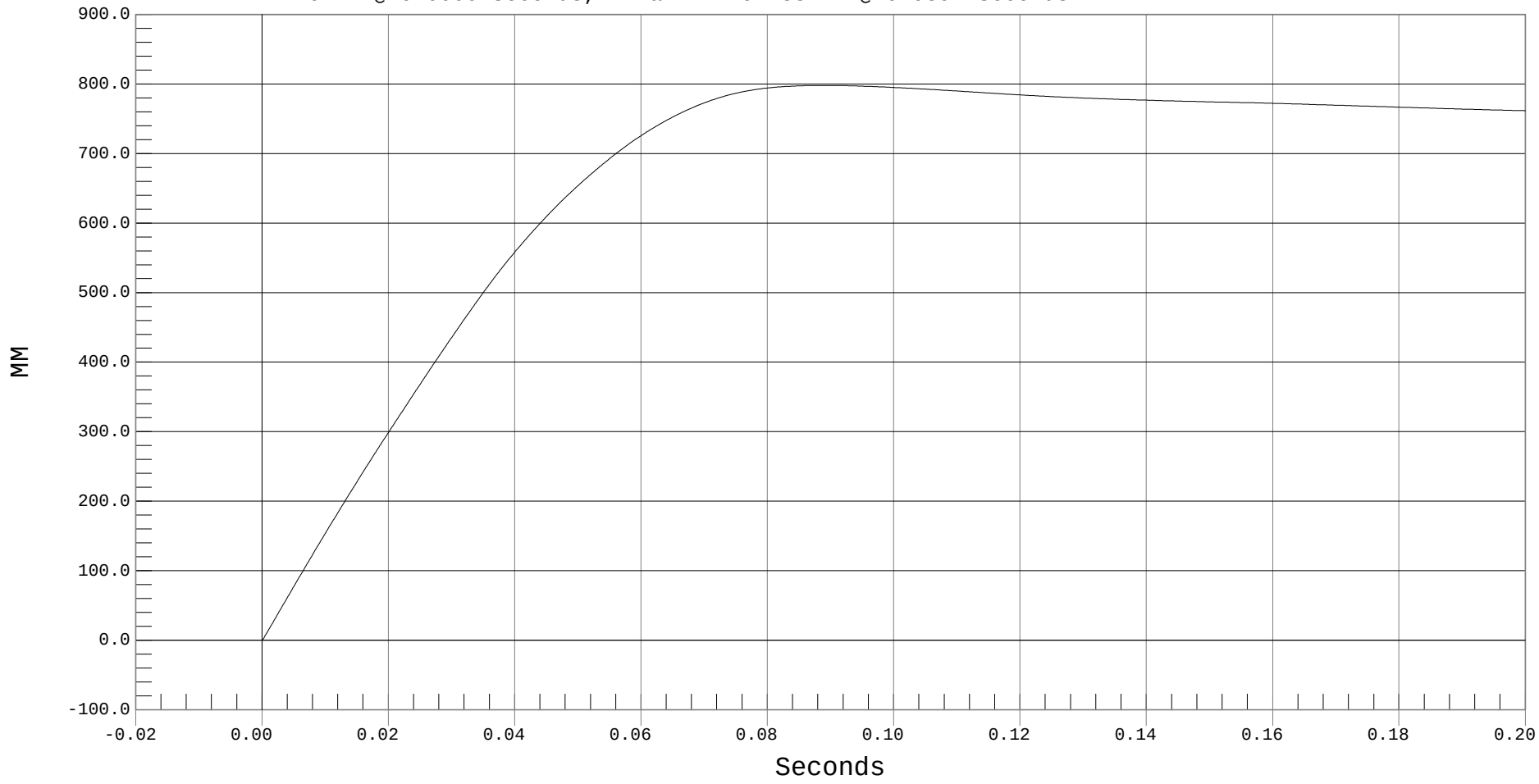
RIGHT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RIGHT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT, B01037AI.D02

Ymin = 0 MM @ 0.0000 Seconds, Ymax = 797.88 MM @ 0.0891 Seconds



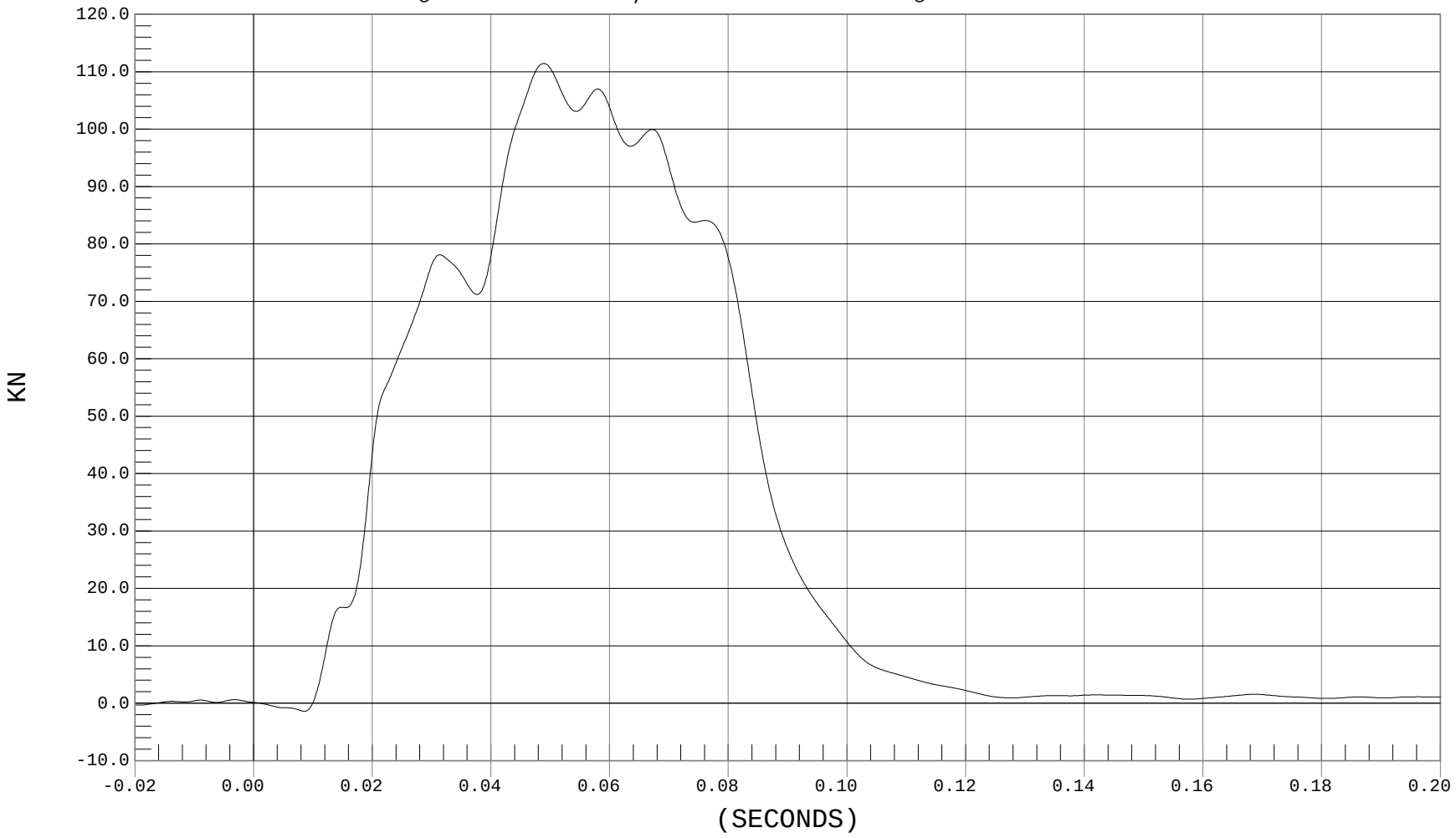
UPPER LEFT BARRIER FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 BARRIER UPPER LEFT, B01037FF.F02

Ymin = -1.41 KN @ 0.0084 SECONDS, Ymax = 111.46 KN @ 0.0488 SECONDS



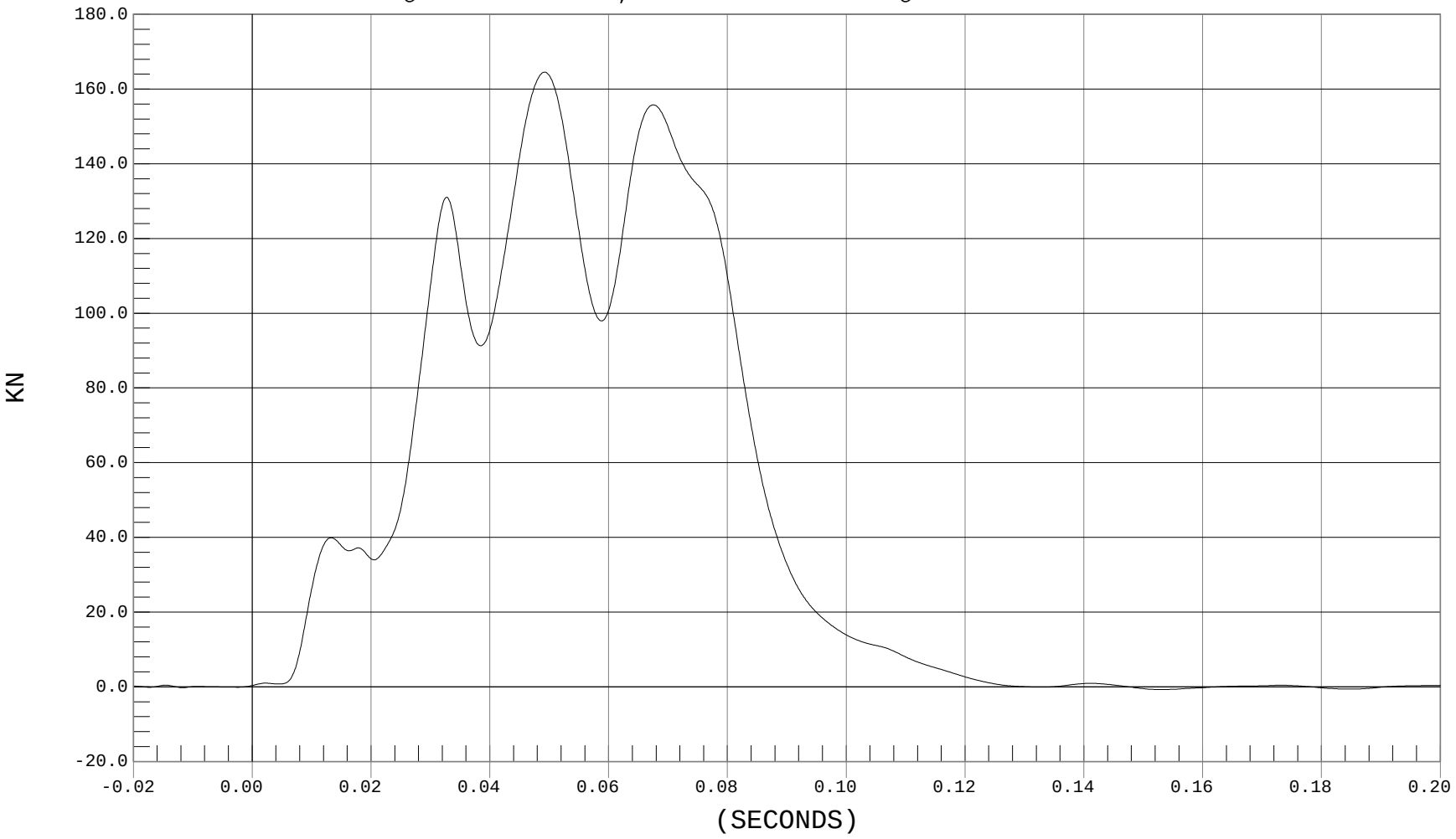
UPPER CENTER BARRIER FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 BARRIER UPPER CENTER, B01037FF.F03

Ymin = -.74 KN @ 0.1528 SECONDS, Ymax = 164.53 KN @ 0.0491 SECONDS



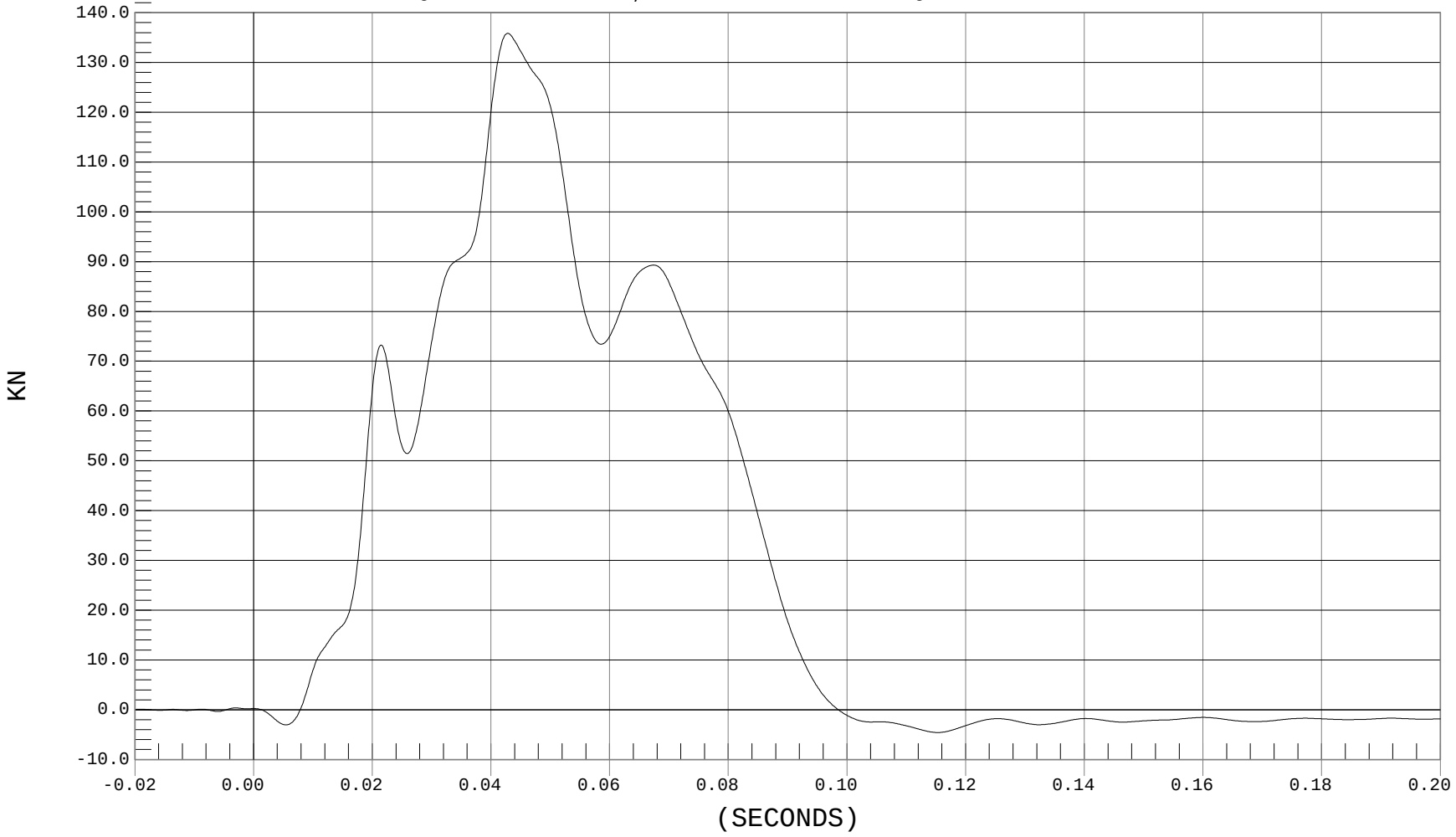
UPPER RIGHT BARRIER FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 BARRIER UPPER RIGHT, B01037FF.F04

Ymin = -4.58 KN @ 0.1152 SECONDS, Ymax = 135.86 KN @ 0.0427 SECONDS



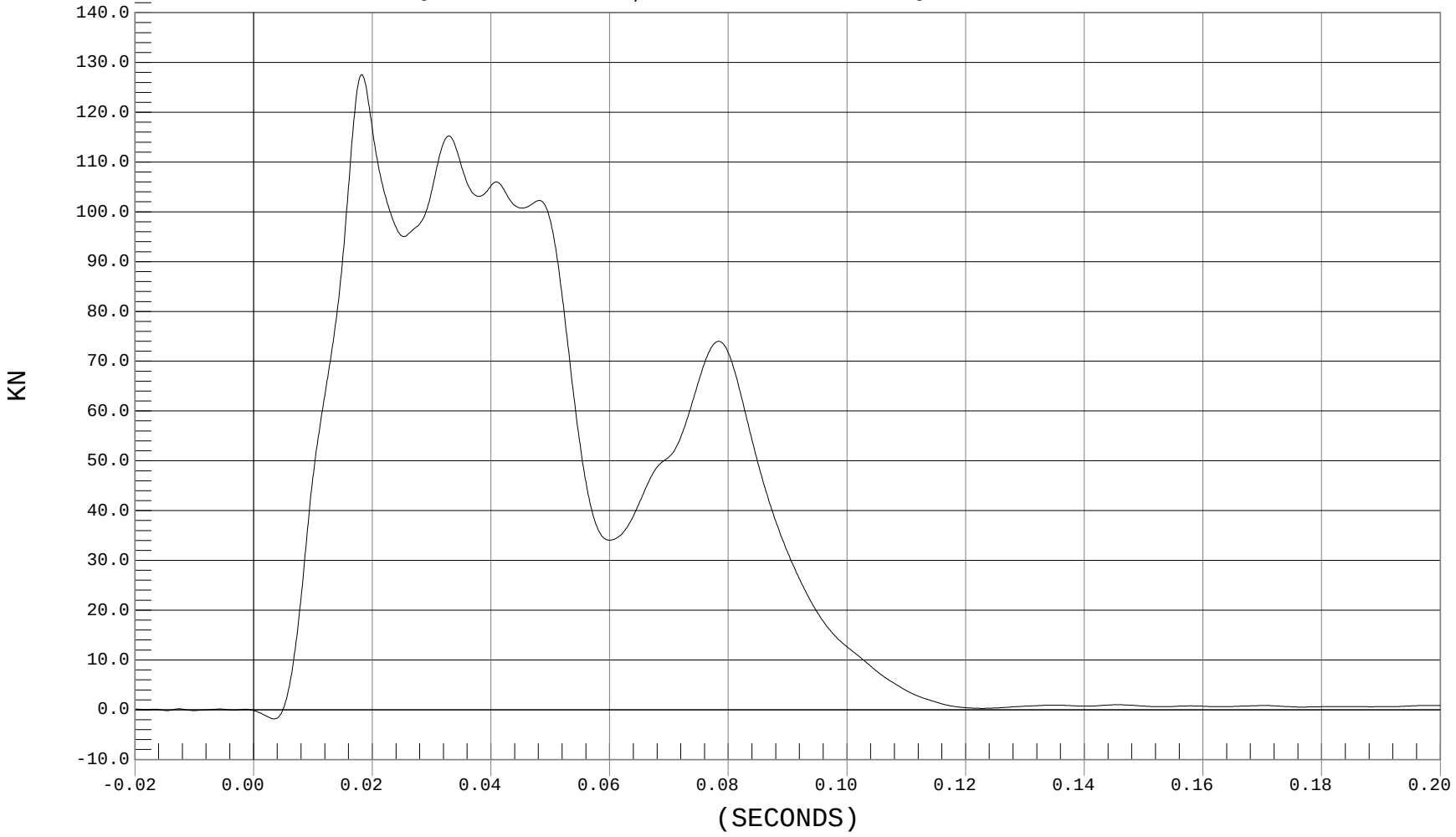
LOWER LEFT BARRIER FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 BARRIER LOWER LEFT, B01037FF.F05

Ymin = -1.84 KN @ 0.0034 SECONDS, Ymax = 127.57 KN @ 0.0181 SECONDS



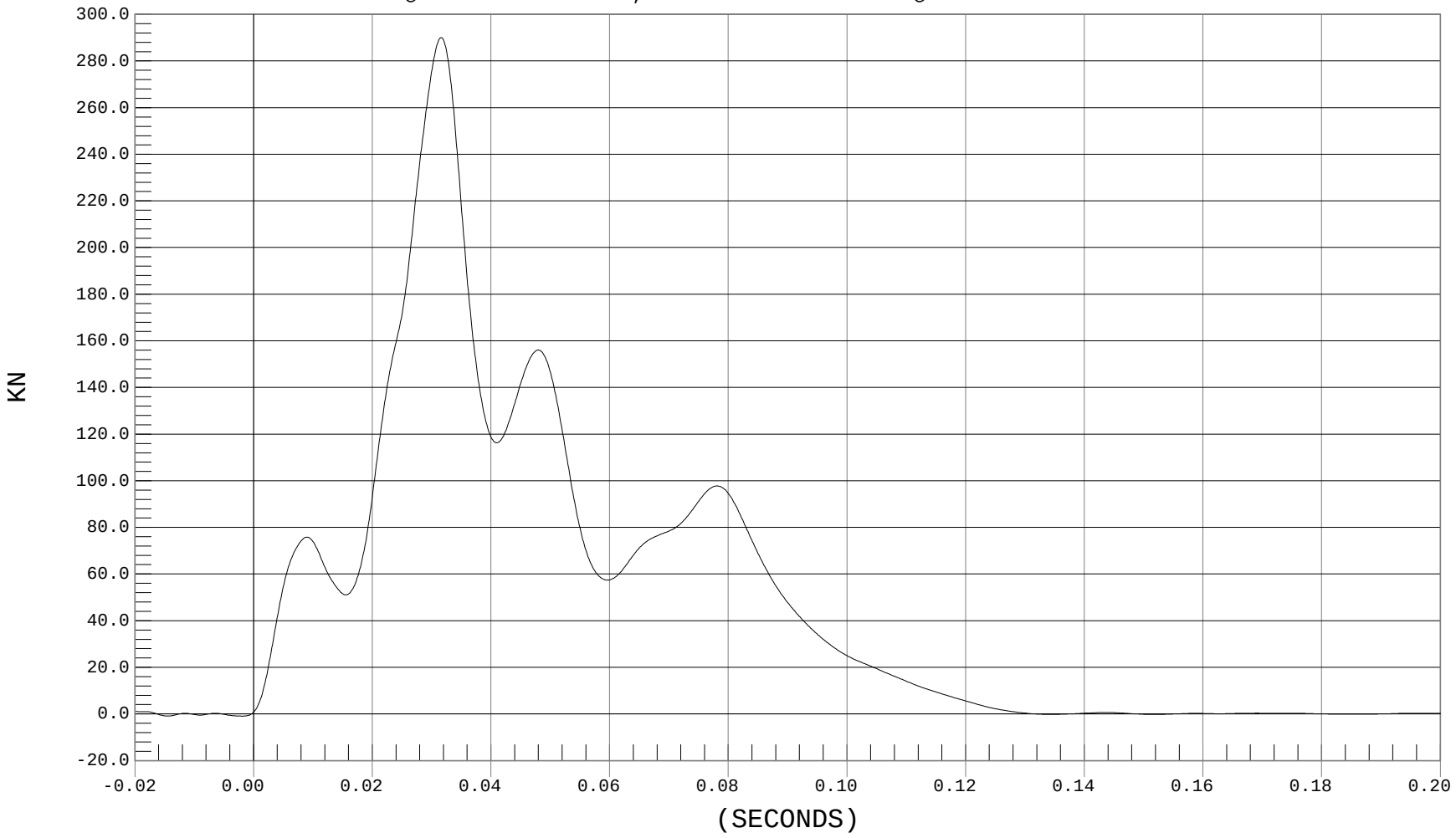
LOWER CENTER BARRIER FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 BARRIER LOWER CENTER, B01037FF.F06

Ymin = -.94 KN @ -0.0020 SECONDS, Ymax = 290.06 KN @ 0.0315 SECONDS



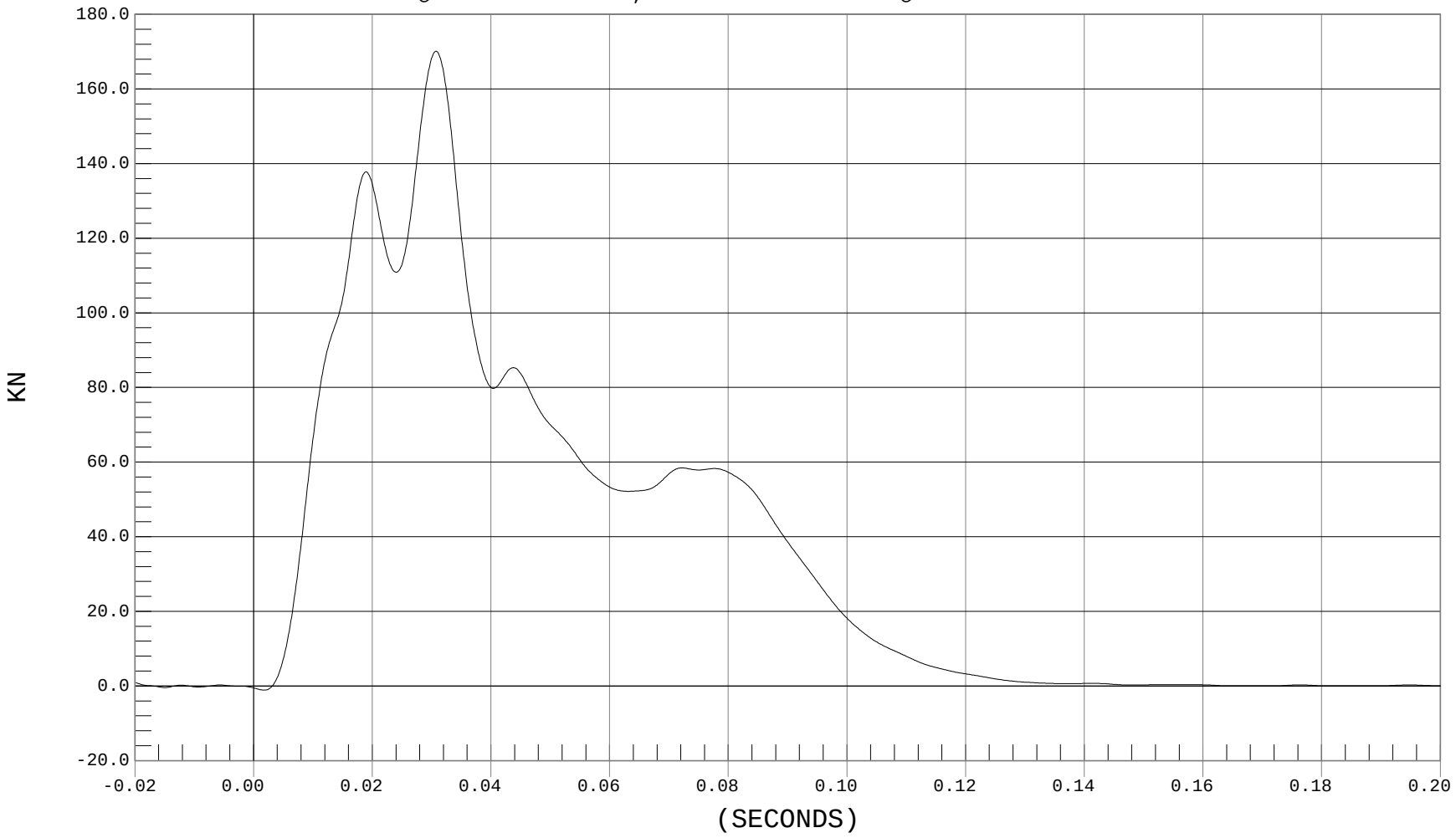
LOWER RIGHT BARRIER FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 BARRIER LOWER RIGHT, B01037FF.F07

Ymin = -1.12 KN @ 0.0017 SECONDS, Ymax = 170.1 KN @ 0.0307 SECONDS



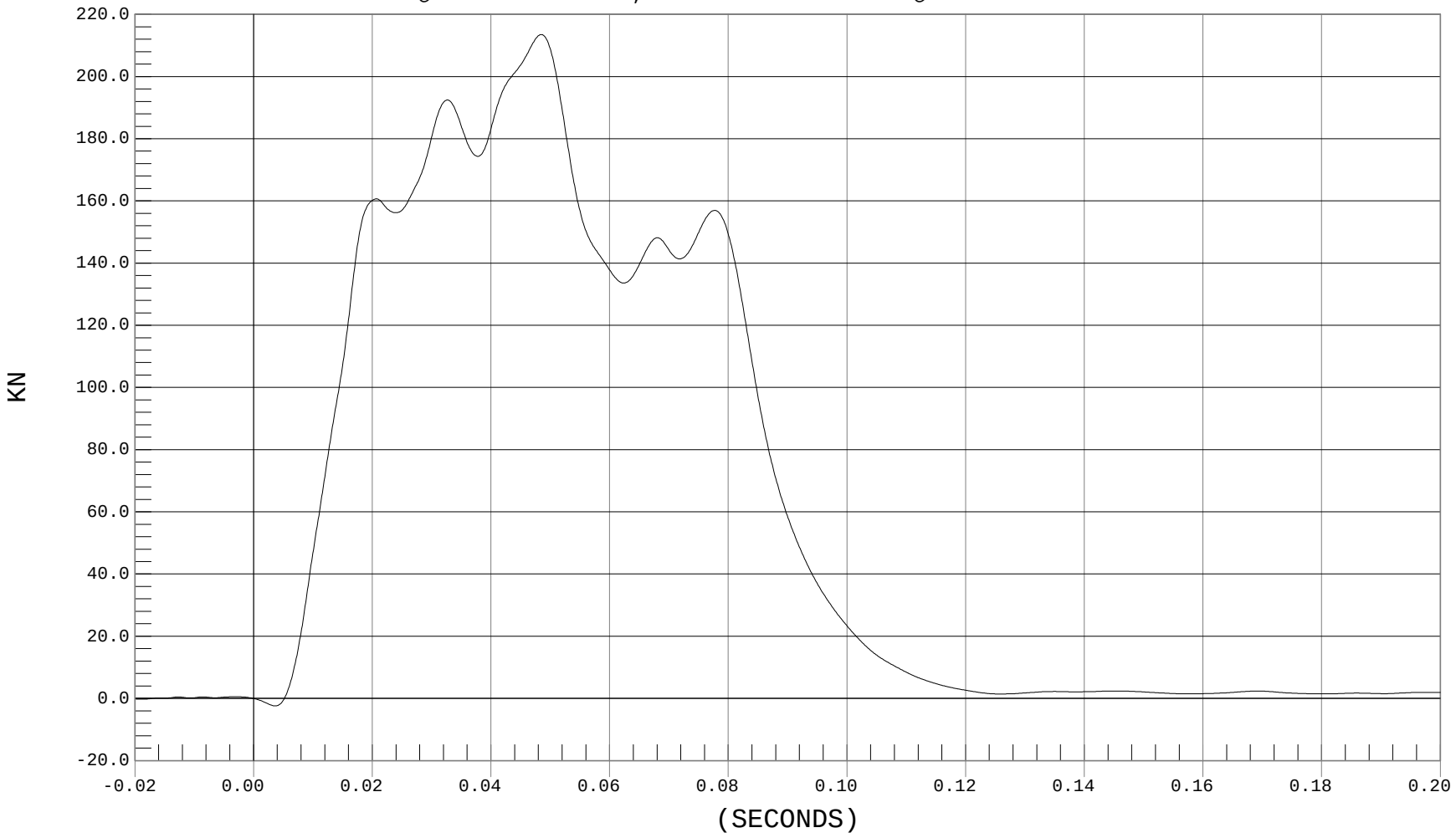
SUM OF LEFT BARRIER FORCES

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 SUM OF LEFT BARRIER FORCES, B01037FU.F02

Ymin = -2.42 KN @ 0.0036 SECONDS, Ymax = 213.51 KN @ 0.0484 SECONDS



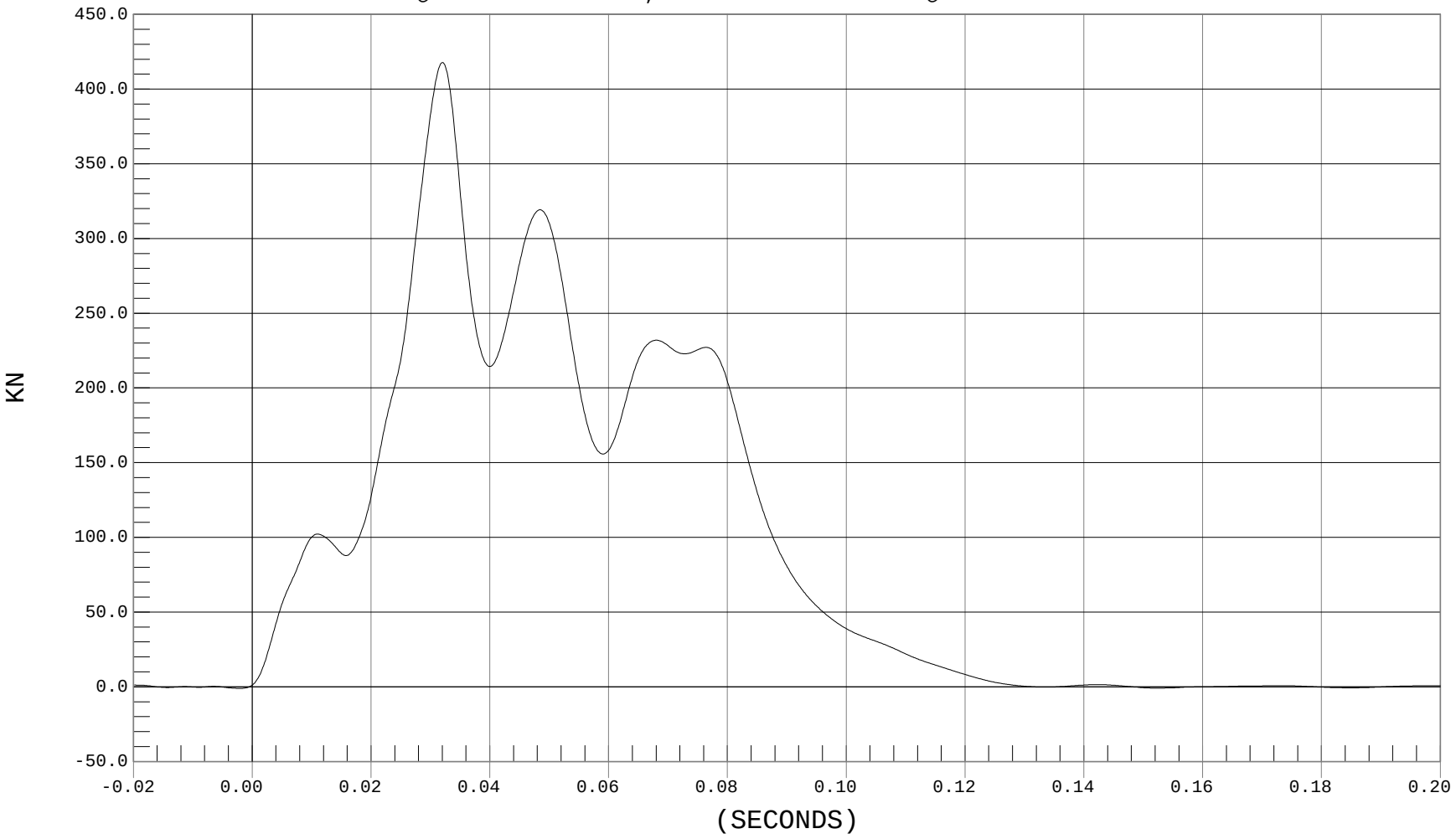
SUM OF CENTER BARRIER FORCES

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 SUM OF CENTER BARRIER FORCES, B01037FU.F03

Ymin = -1.07 KN @ -0.0022 SECONDS, Ymax = 417.83 KN @ 0.0319 SECONDS



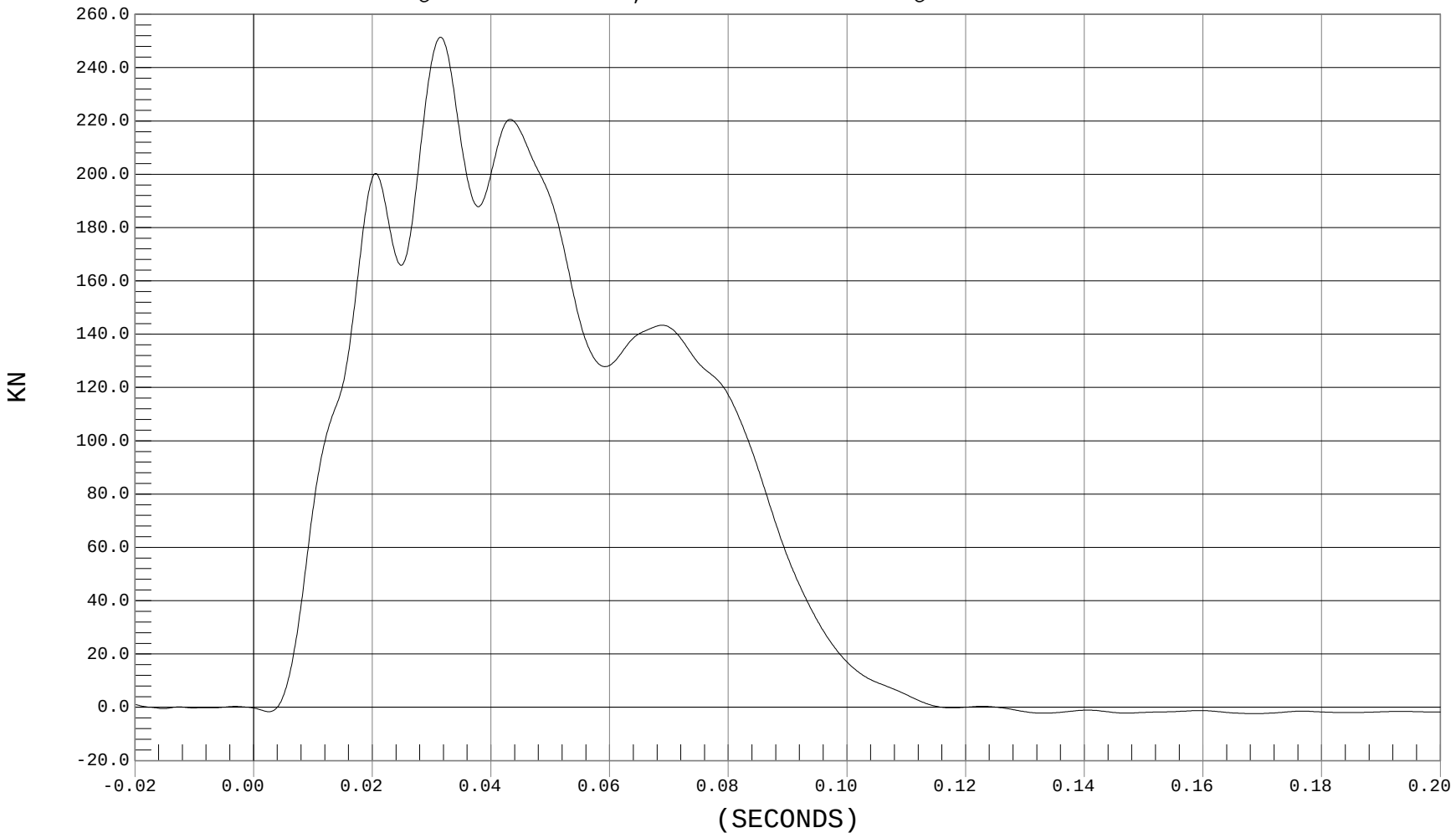
SUM OF RIGHT BARRIER FORCES

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 SUM OF RIGHT BARRIER FORCES, B01037FU.F04

Ymin = -2.37 KN @ 0.1686 SECONDS, Ymax = 251.41 KN @ 0.0314 SECONDS



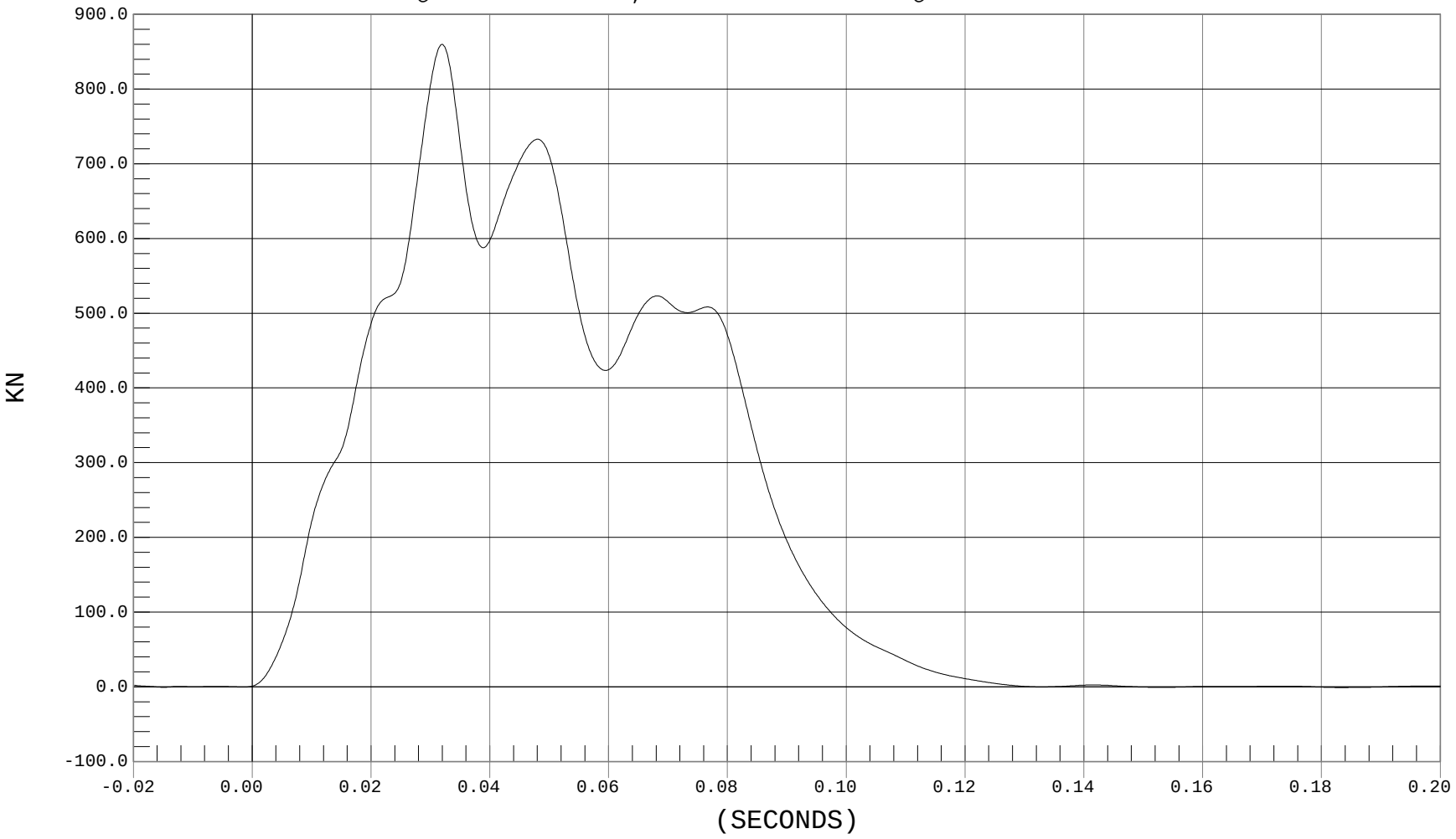
SUM OF BARRIER FORCES

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 SUM OF BARRIER FORCES, B01037FU.F05

Ymin = -1.02 KN @ 0.1832 SECONDS, Ymax = 859.87 KN @ 0.0319 SECONDS



APPENDIX C

DUMMY CALIBRATION DATA TRACES AND TABLES

Hybrid III Calibration Data Sheet

5th Percentile Female

Left Knee Impact Test

ATD Serial No.: 273 Test I.D.: D01406

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	kN	3.45 – 4.06	3.51	Pass
		Overall Test Results		Pass

3/30/01

Laboratory Technician Test Date

Approved By

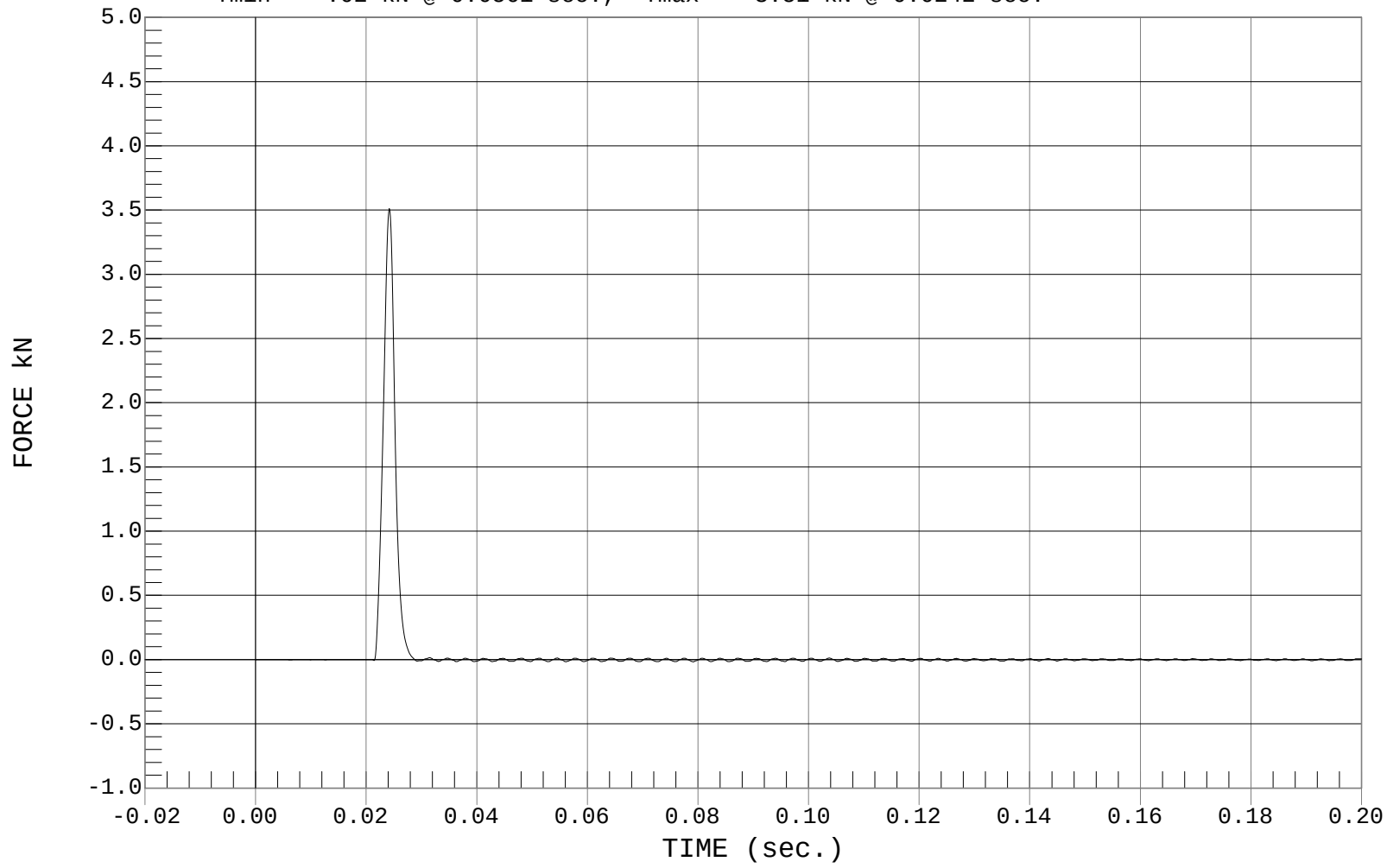
LEFT KNEE IMPACT

Test Desc.: Dummy Calibration - Left Knee Impact
Component: Dummy #273

Test Date: 03-30-01
Speed: 6.95 FT/SEC, 2.12 M/SEC

1 FORCE, D01406FF.F09

Ymin = -.02 kN @ 0.0561 sec., Ymax = 3.51 kN @ 0.0242 sec.



Hybrid III Calibration Data Sheet

5th Percentile Female

Right Knee Impact Test

ATD Serial No.: 273 Test I.D.: D01405

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	kN	3.45 – 4.06	3.53	Pass
		Overall Test Results		Pass

Laboratory Technician

3/30/01
Test Date

Approved By

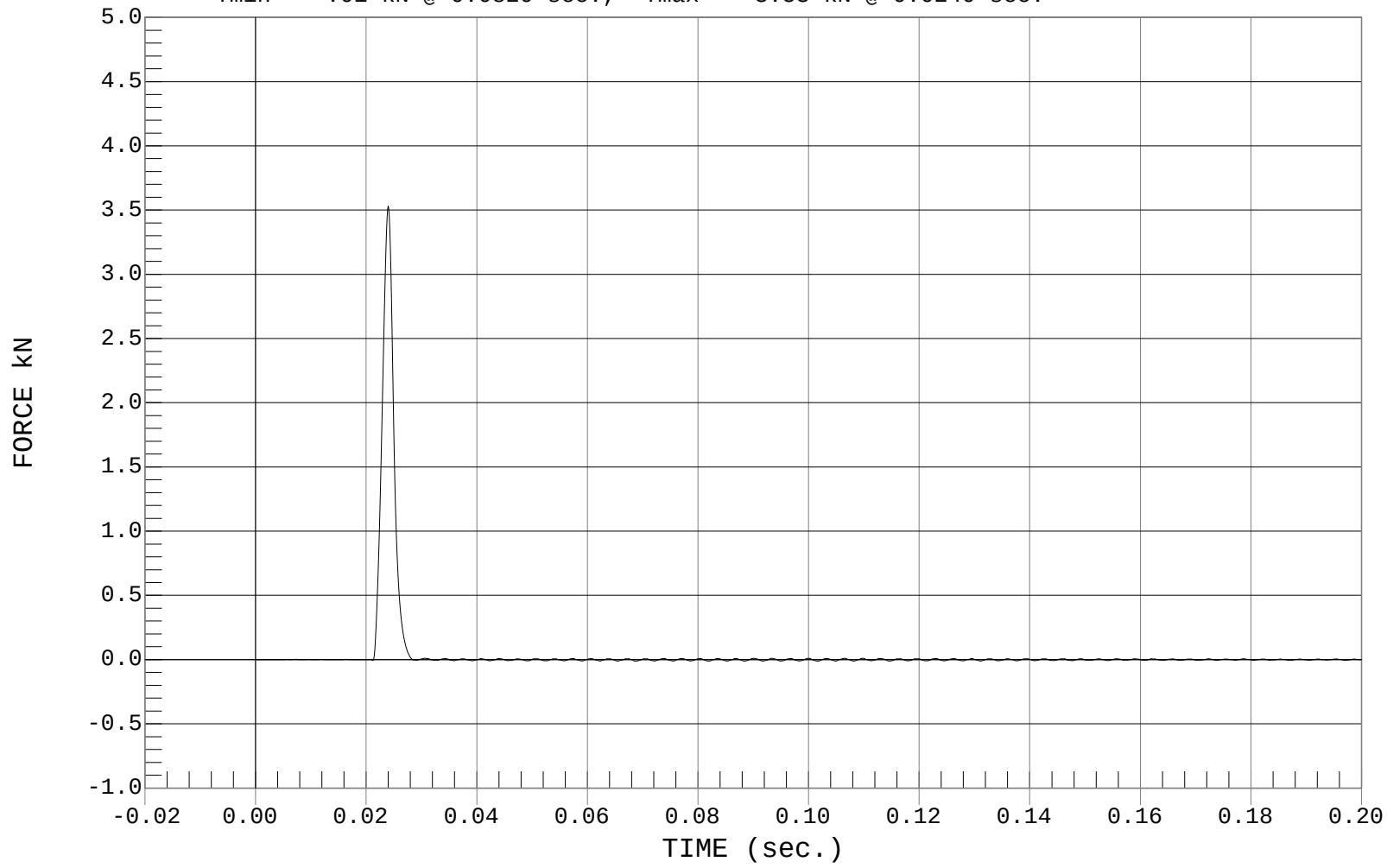
RIGHT KNEE IMPACT

Test Desc.: Dummy Calibration - Right Knee Impact
Component: Dummy #2783

Test Date: 03-30-01
Speed: 6.97 FT/SEC, 2.12 M/SEC

1 FORCE, D01405FF.F09

Ymin = -.01 kN @ 0.0820 sec., Ymax = 3.53 kN @ 0.0240 sec.



Hybrid III Calibration Data Sheet

5th Percentile Female

Head Drop Calibration

ATD Serial No.: 273 Test I.D.: D01401

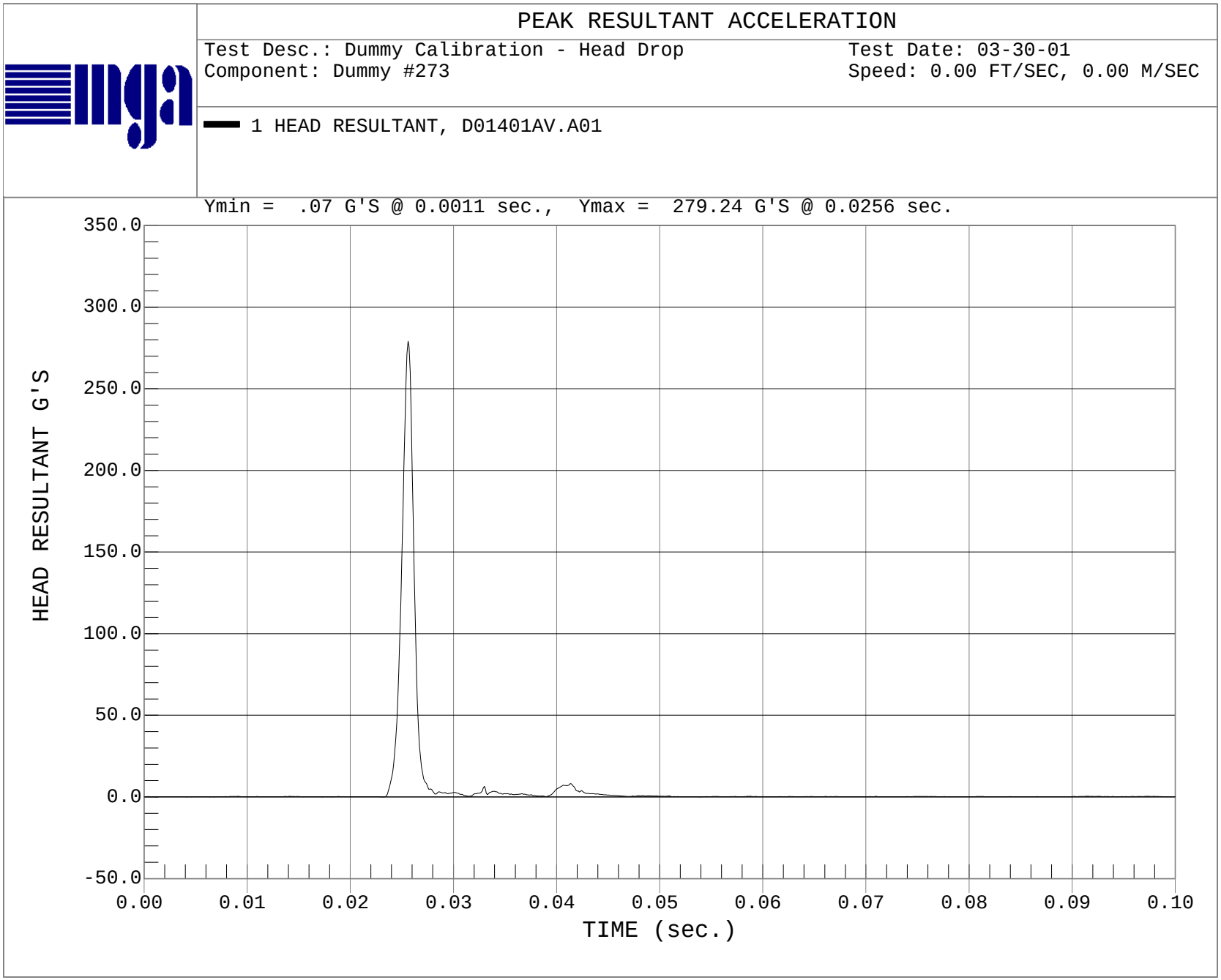
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	250 to 300	279	Pass
Peak Lateral Acceleration	G's	≤ ± 15.0	3.1	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
		Overall Test Results		Pass

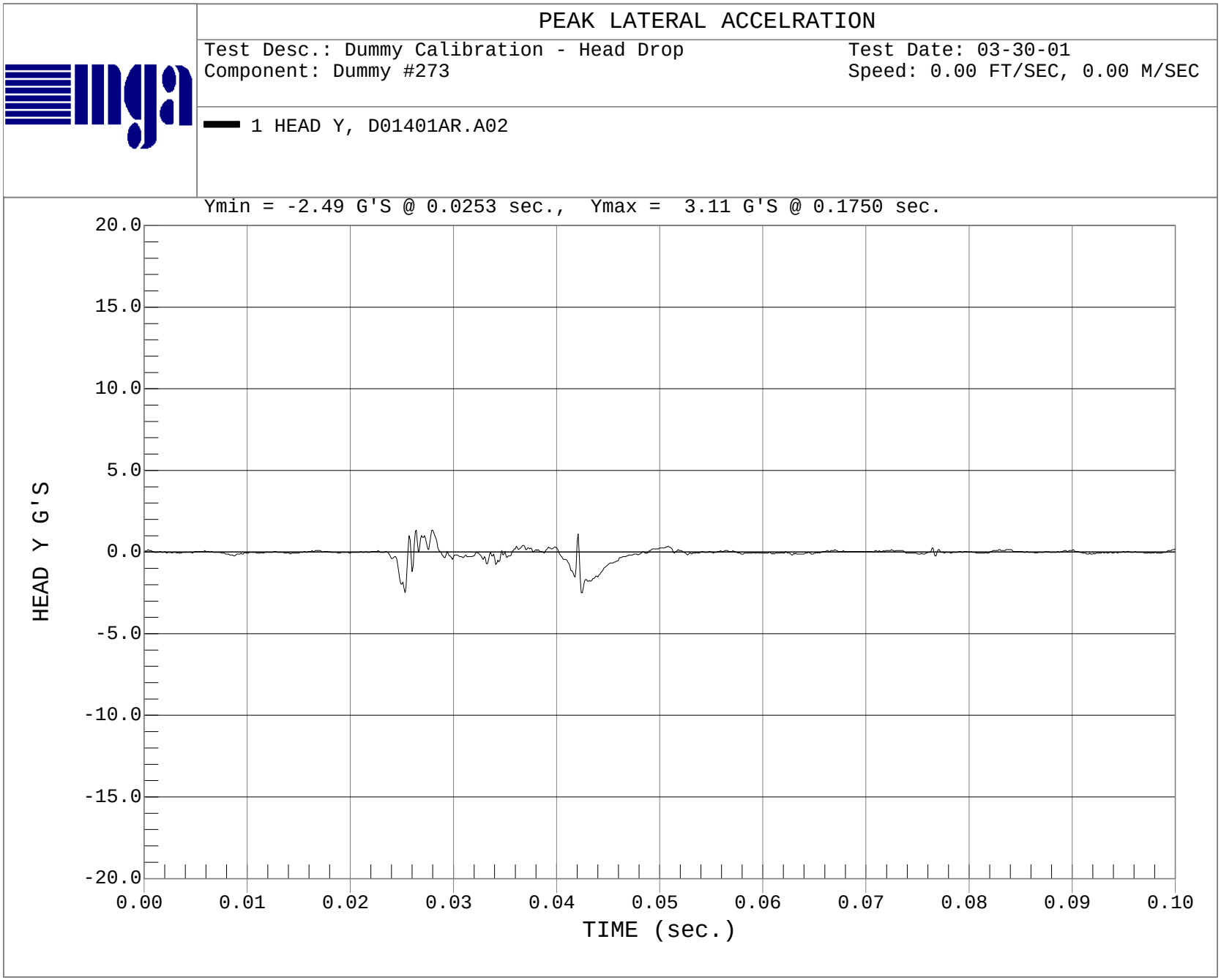
3/30/01

Laboratory Technician

Test Date

Approved By


PEAK RESULTANT ACCELERATION
Test Desc.: Dummy Calibration - Head Drop
Test Date: 03-30-01
Component: Dummy #273
Speed: 0.00 FT/SEC, 0.00 M/SEC
1 HEAD RESULTANT, D01401AV.A01
Ymin = .07 G'S @ 0.0011 sec., Ymax = 279.24 G'S @ 0.0256 sec.
HEAD RESULTANT G'S
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
-50.0
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
TIME (sec.)


PEAK LATERAL ACCELRATION
Test Desc.: Dummy Calibration - Head Drop
Test Date: 03-30-01
Component: Dummy #273
Speed: 0.00 FT/SEC, 0.00 M/SEC
1 HEAD Y, D01401AR.A02
Ymin = -2.49 G'S @ 0.0253 sec., Ymax = 3.11 G'S @ 0.1750 sec.
HEAD Y G'S
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
TIME (sec.)

Hybrid III Calibration Data Sheet

5th Percentile Female

Thorax Impact Test

ATD Serial No.: 273 Test I.D.: D01404

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	6.59 to 6.83	6.73	Pass
Peak Deflection	mm	50 – 58	51	Pass
Peak Resistive Force within Deflection Corridor	kN	3.9 – 4.4	4.3	Pass
Peak Force 18mm – 50mm	%	<105% of Peak Force in Deflection Corridor	100	Pass
Internal Hysteresis	%	69 to 85	73	Pass
		Overall Test Results		Pass

3/30/01

Laboratory Technician

Test Date

Approved By

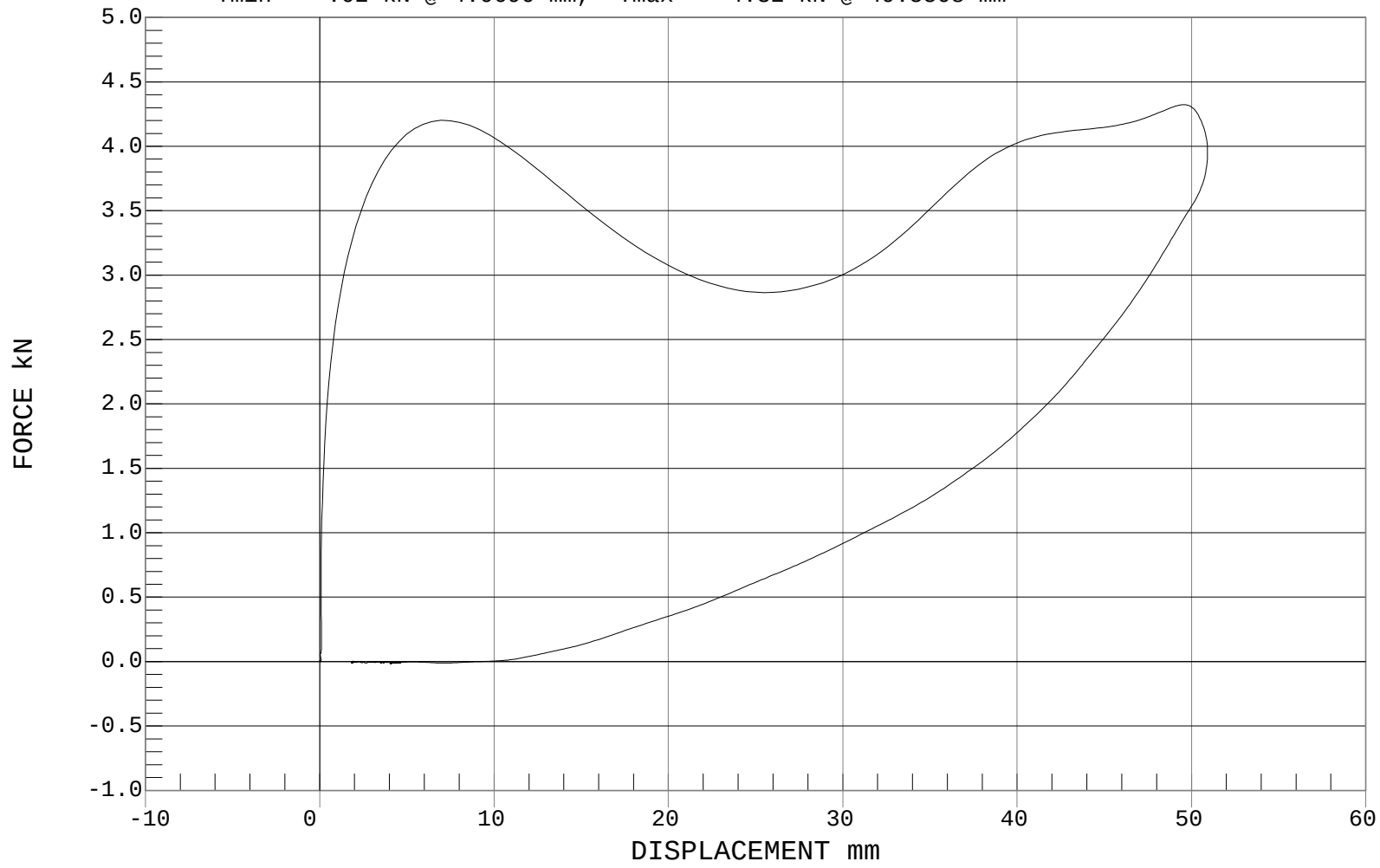
THORAX IMPACT

Test Desc.: Dummy Calibration - Chest Impact
Component: Dummy #273

Test Date: 03-30-01
Speed: 22.07 FT/SEC, 6.73 M/SEC

1 FORCE, D01404CH.FVD

Ymin = -.02 kN @ 4.0690 mm, Ymax = 4.32 kN @ 49.5508 mm



Hybrid III Calibration Data Sheet

5th Percentile Female

Neck Flexion Test

ATD Serial No.: 273 Test I.D.: D01402

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.08	Pass
Pendulum Deceleration	10 msec	m/s	2.1 to 2.5	2.2	Pass
	20 msec	m/s	4.0 to 5.0	4.4	Pass
	30 msec	m/s	5.8 to 7.0	6.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	77 – 91	85	Pass
Moment About Occipital Condyle within Deflection Corridor	Maximum	Nm	69 – 83	70	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 – 100	88	Pass
			Overall Test Results		Pass

Laboratory Technician

3/30/01
Test Date

Approved By

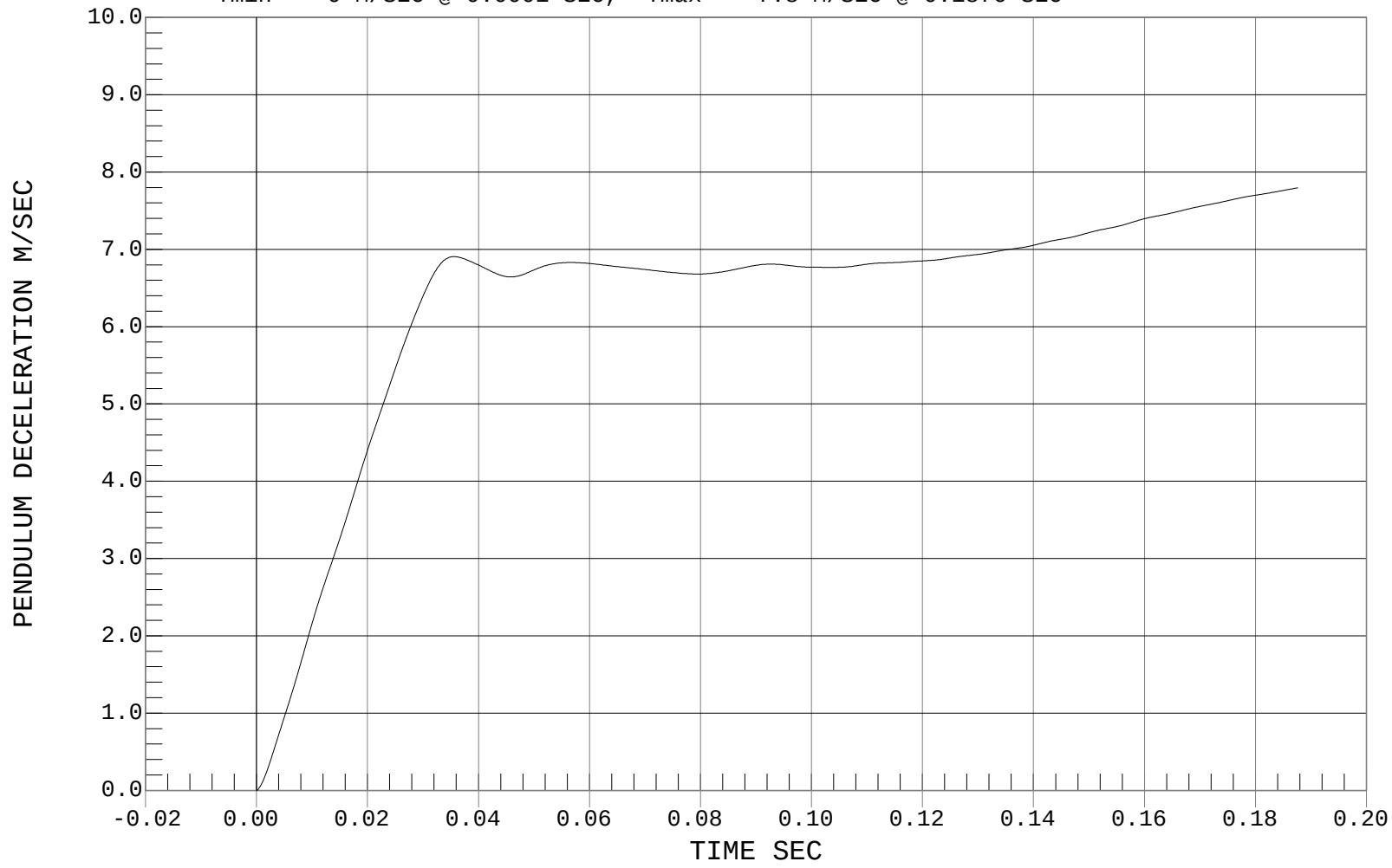
PENDULUM DECELERATION

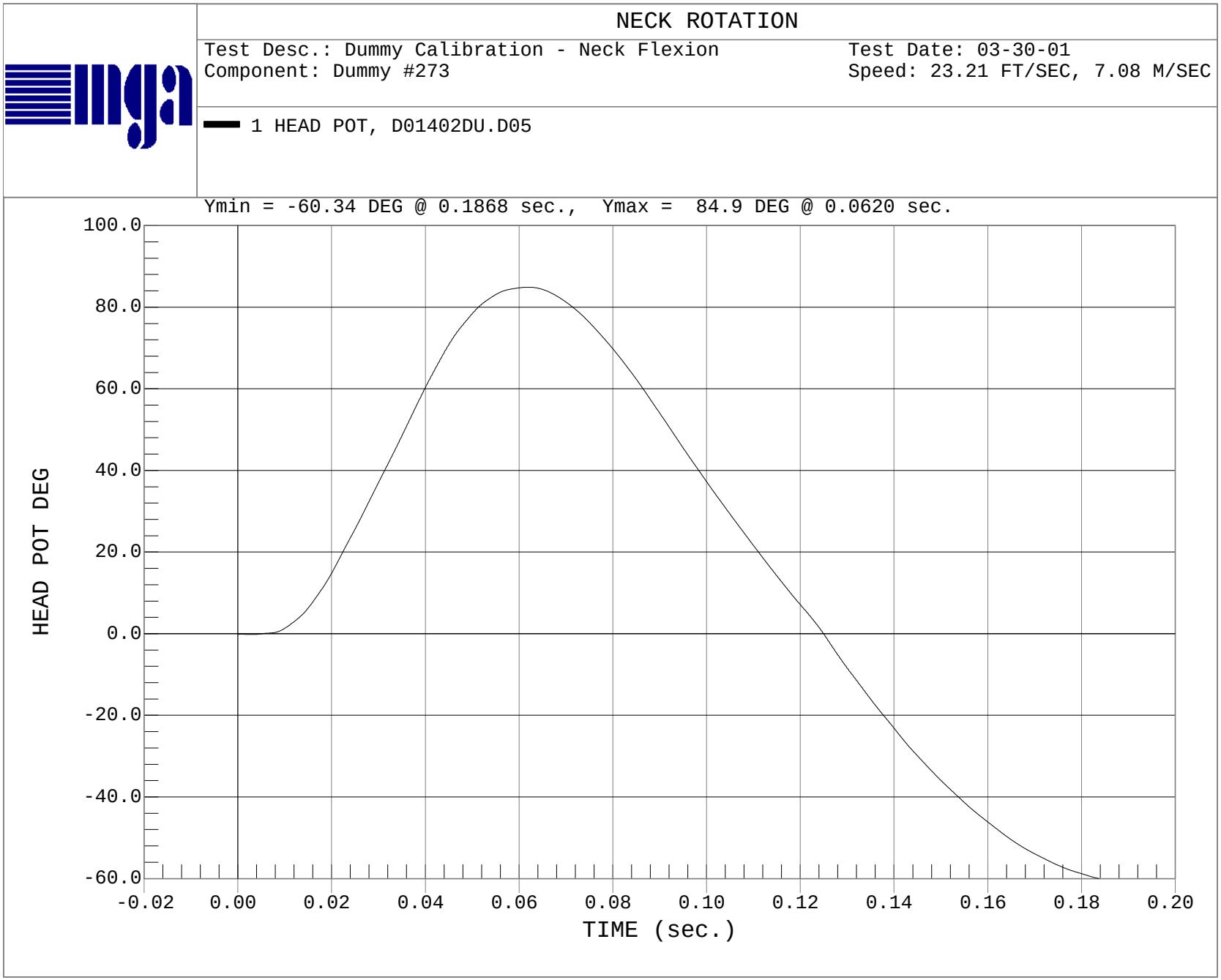
Test Desc.: Dummy Calibration - Neck Flexion
Component: Dummy #273

Test Date: 03-30-01
Speed: 23.21 FT/SEC, 7.08 M/SEC

1 PENDULUM DECELERATION, D01402AI.V04

Ymin = 0 M/SEC @ 0.0001 SEC, Ymax = 7.8 M/SEC @ 0.1876 SEC




NECK ROTATION
Test Desc.: Dummy Calibration - Neck Flexion
Test Date: 03-30-01
Component: Dummy #273
Speed: 23.21 FT/SEC, 7.08 M/SEC
1 HEAD POT, D01402DU.D05
Ymin = -60.34 DEG @ 0.1868 sec., Ymax = 84.9 DEG @ 0.0620 sec.
HEAD POT DEG
100.0
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-0.02
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.18
0.20
TIME (sec.)

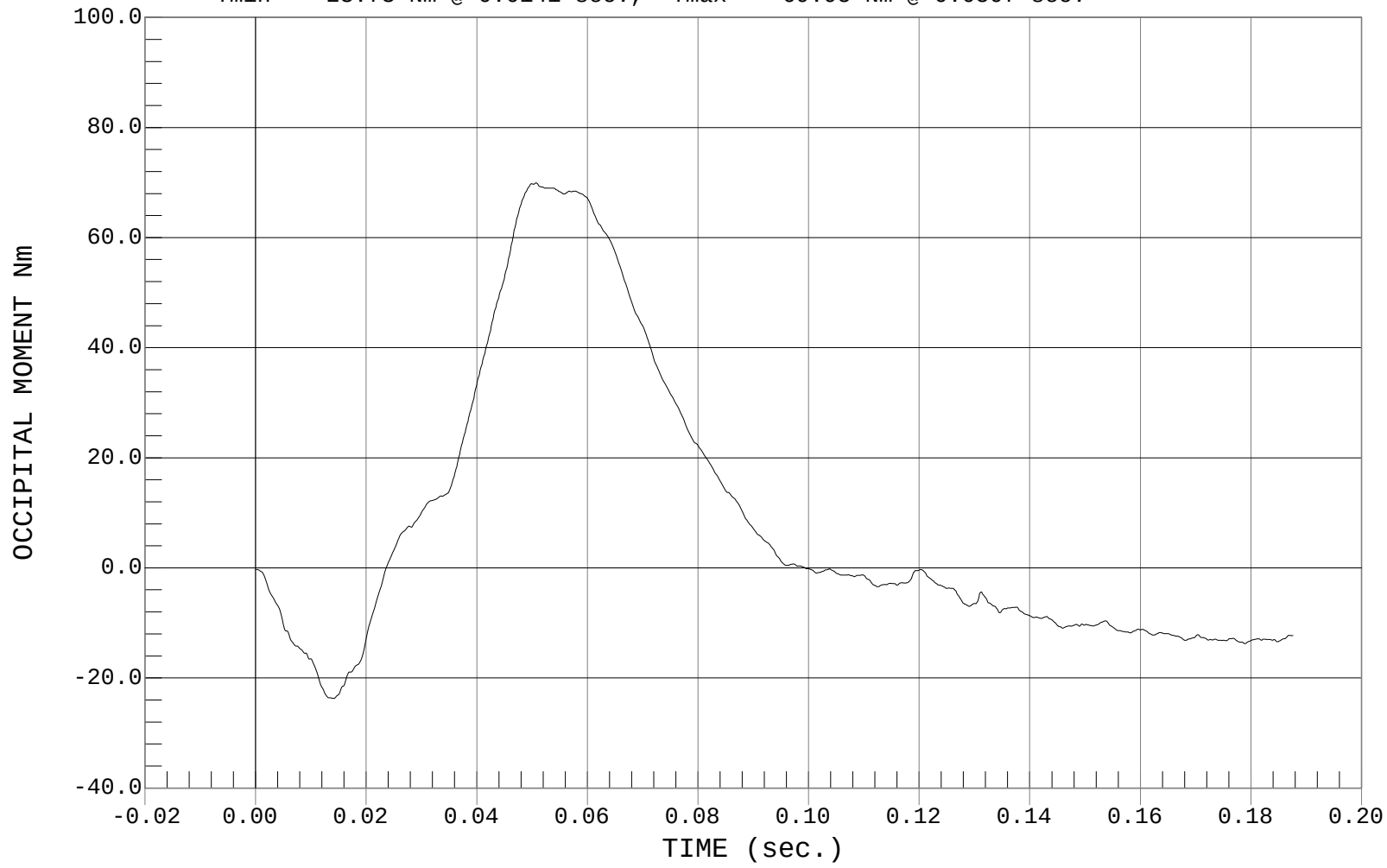
OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Flexion
Component: Dummy #273

Test Date: 03-30-01
Speed: 23.21 FT/SEC, 7.08 M/SEC

1 OCCIPITAL MOMENT, D01402NK.MNT

Ymin = -23.73 Nm @ 0.0141 sec., Ymax = 69.95 Nm @ 0.0507 sec.



Hybrid III Calibration Data Sheet

5th Percentile Female

Neck Extension Test

ATD Serial No.: 273 Test I.D.: D01403

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.13	Pass
Pendulum Deceleration	10 msec	m/sec	1.5 – 1.9	1.7	Pass
	20 msec	m/sec	3.1 – 3.9	3.6	Pass
	30 msec	m/sec	4.6 – 5.6	5.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	99 – 114	110	Pass
Moment About Occipital Condyle in Deflection Corridor	Minimum	Nm	-65 - -53	-53	Pass
Negative Moment Time Curve Decay to –10 Nm		msec	94 – 114	101	Pass
			Overall Test Results		Pass

Laboratory Technician

3/30/01
Test Date

Approved By

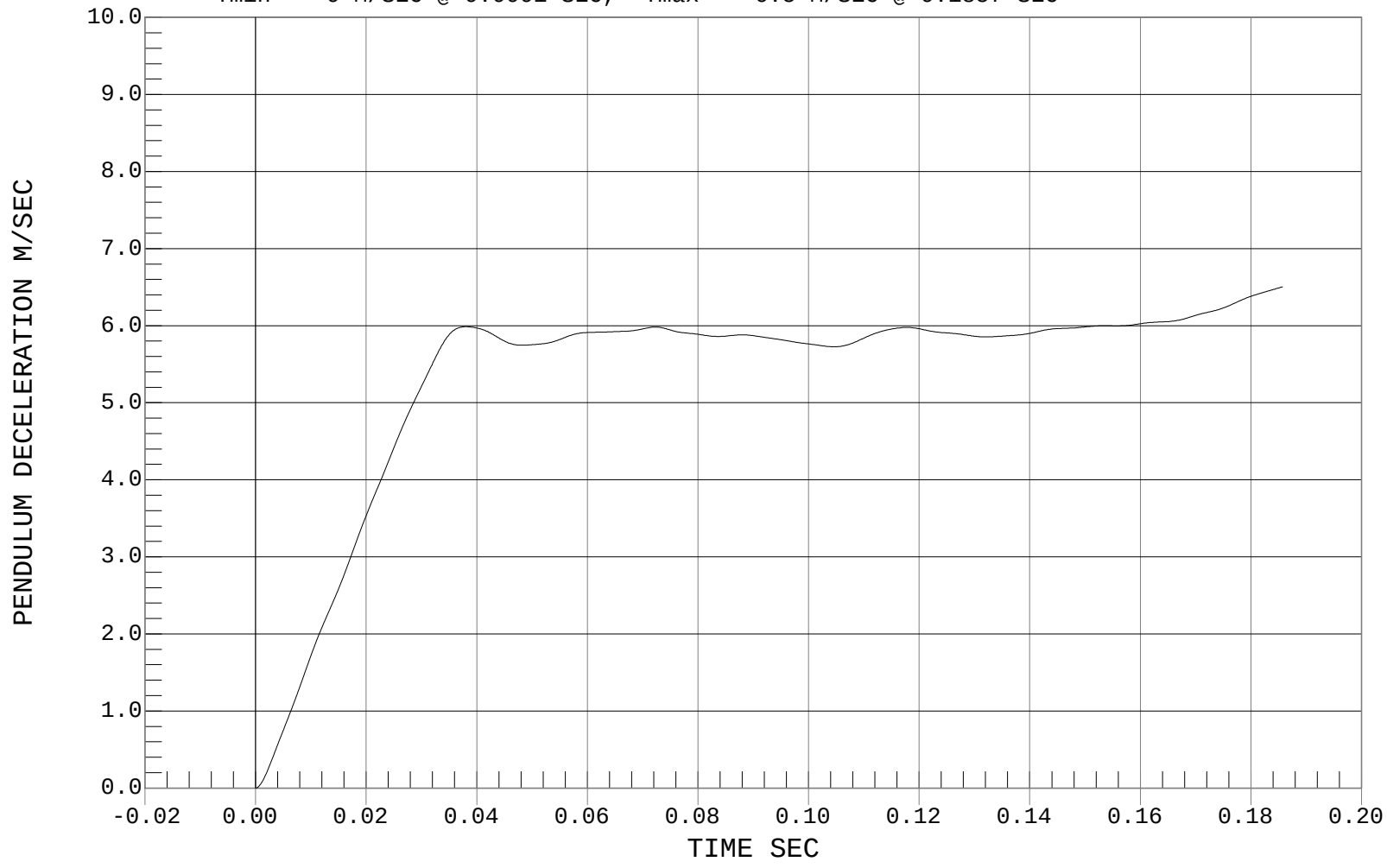
PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #273

Test Date: 03-30-01
Speed: 20.10 FT/SEC, 6.13 M/SEC

1 PENDULUM DECELERATION, D01403AI.V04

Ymin = 0 M/SEC @ 0.0001 SEC, Ymax = 6.5 M/SEC @ 0.1857 SEC



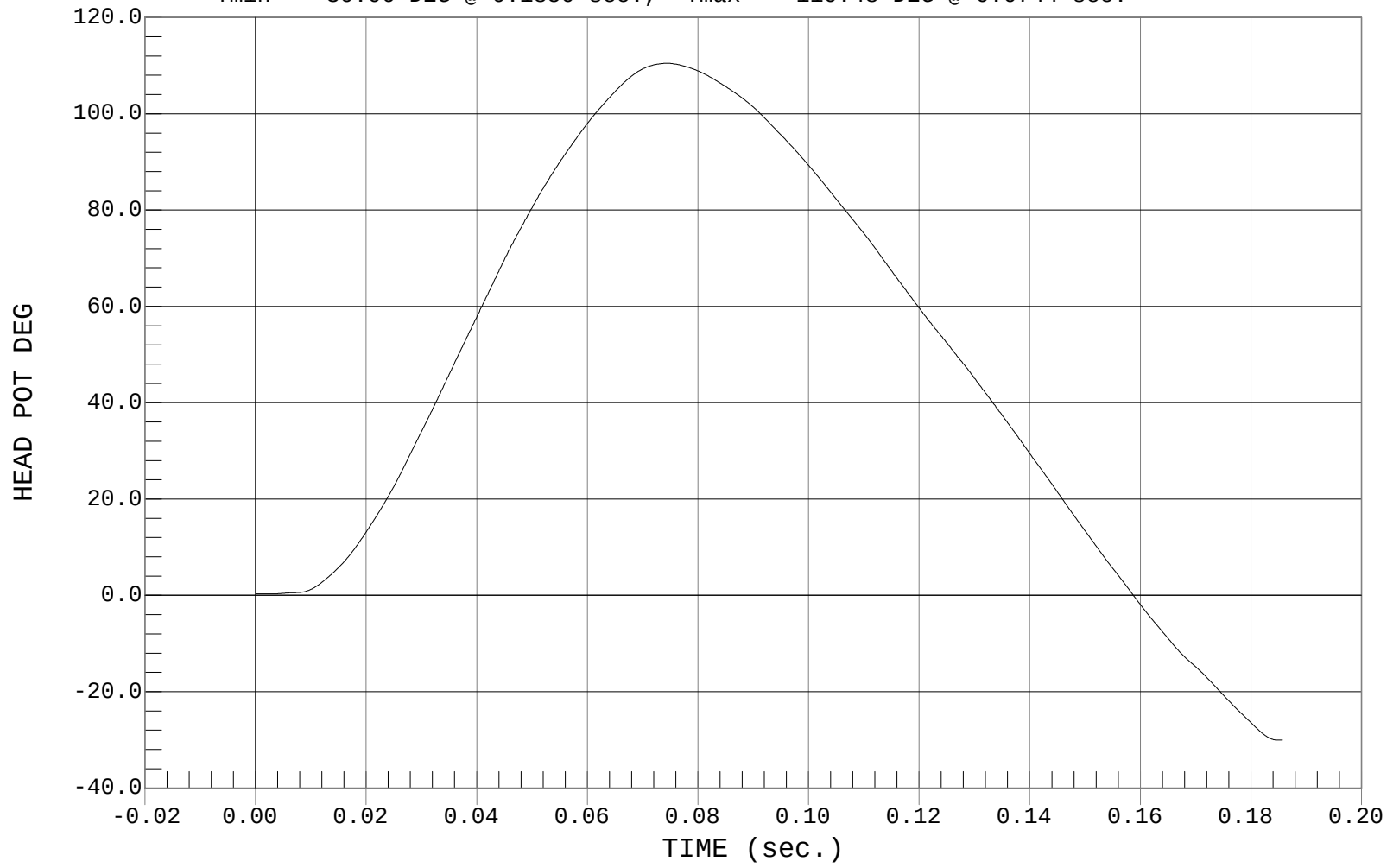
NECK ROTATION

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #273

Test Date: 03-30-01
Speed: 20.10 FT/SEC, 6.13 M/SEC

1 HEAD POT, D01403DU.D05

Ymin = -30.06 DEG @ 0.1850 sec., Ymax = 110.48 DEG @ 0.0744 sec.



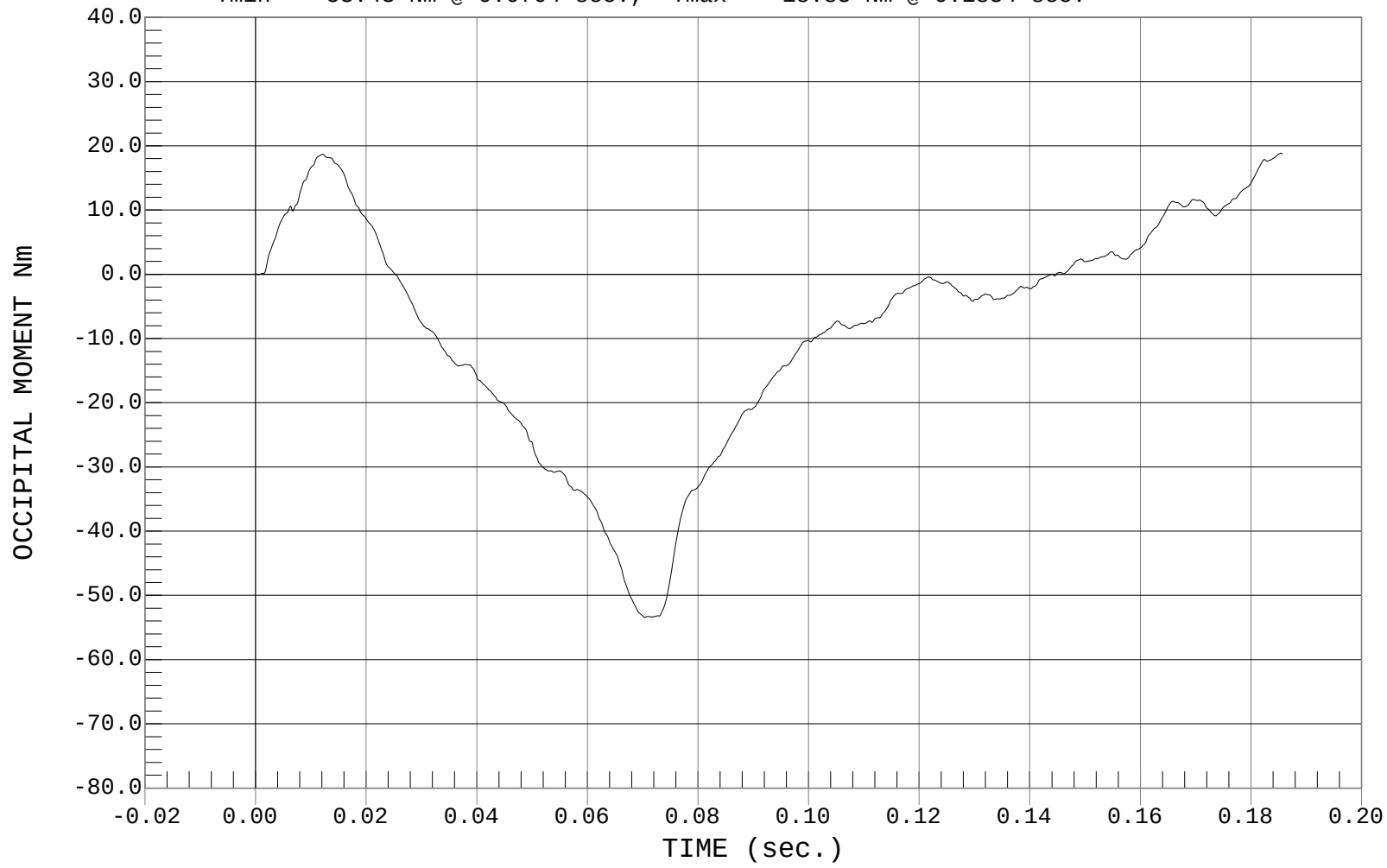
OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #273

Test Date: 03-30-01
Speed: 20.10 FT/SEC, 6.13 M/SEC

1 OCCIPITAL MOMENT, D01403NK.MNT

Ymin = -53.43 Nm @ 0.0704 sec., Ymax = 18.85 Nm @ 0.1854 sec.



Hybrid III Calibration Data Sheet

5th Percentile Female

Torso Flexion Test

ATD Serial No.: 273 Test I.D.: D0140A

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	°C	18.9 to 25.6	22.1	Pass
Relative Humidity	%	10 to 70	25	Pass
Initial Angle	Deg	0 – 20	10	Pass
Return Angle	Deg	0 – 8	5	Pass
Force @ 45°	N	320 – 390	358	Pass
		Overall Test Results		Pass

3/30/01

Laboratory Technician

Test Date

Approved By

Hybrid III Calibration Data Sheet

5th Percentile Female

External Measurements

ATD Serial No.: 273 Test I.D.: D0140

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6-22.2	21.8	Pass
Laboratory Relative Humidity	%	10-70	26	Pass
A – Total sitting height	mm	775 – 800	785	Pass
B – Shoulder pivot height	mm	432 – 457	442	Pass
C – "H" point height	mm	81 – 86	84	Pass
D – "H" point from back line	mm	145 – 150	147	Pass
E – Shoulder pivot from back line	mm	69 – 84	74	Pass
F – Thigh clearance	mm	119 – 135	125	Pass
G – Back of elbow to wrist pivot	mm	244 – 259	254	Pass
H – Head back from back line	mm	43 – 48	46	Pass
I – Shoulder to elbow length	mm	277 – 297	290	Pass
J – Elbow rest height	mm	183 – 203	196	Pass
K – Buttock to knee length	mm	521 – 546	536	Pass
L – Popliteal length	mm	356 – 376	366	Pass
M – Knee pivot height	mm	394 – 419	406	Pass
N – Buttock popliteal length	mm	414 – 439	432	Pass
O – Chest depth without jacket	mm	175 – 191	183	Pass
P – Foot length	mm	218 – 234	226	Pass
R – Buttock to knee pivot length	mm	457 – 483	470	Pass
S – Head breadth	mm	137 – 147	145	Pass
T – Head depth	mm	178 – 188	183	Pass
U – Hip breadth	mm	300 – 315	310	Pass
V – Shoulder breadth	mm	351 – 366	358	Pass
W – Foot breadth	mm	79 – 94	87	Pass
X – Head circumference	mm	528 – 549	536	Pass
Y – Chest circumference with jacket	mm	851 – 881	866	Pass
Z – Waist circumference	mm	759 – 790	775	Pass
AA – Location for chest circumference	mm	300 – 310	305	Pass
BB – Location for waist circumference	mm	160 – 170	165	Pass
		Overall Test Results		Pass

3/30/01

Laboratory Technician

Test Date

Approved By

Hybrid III Calibration Data Sheet

5th Percentile Female

Left Knee Impact Test

ATD Serial No.: 288 Test I.D.: D01416

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	kN	3.45 – 4.06	3.65	Pass
		Overall Test Results		Pass

3/30/01

Laboratory Technician

Test Date

Approved By

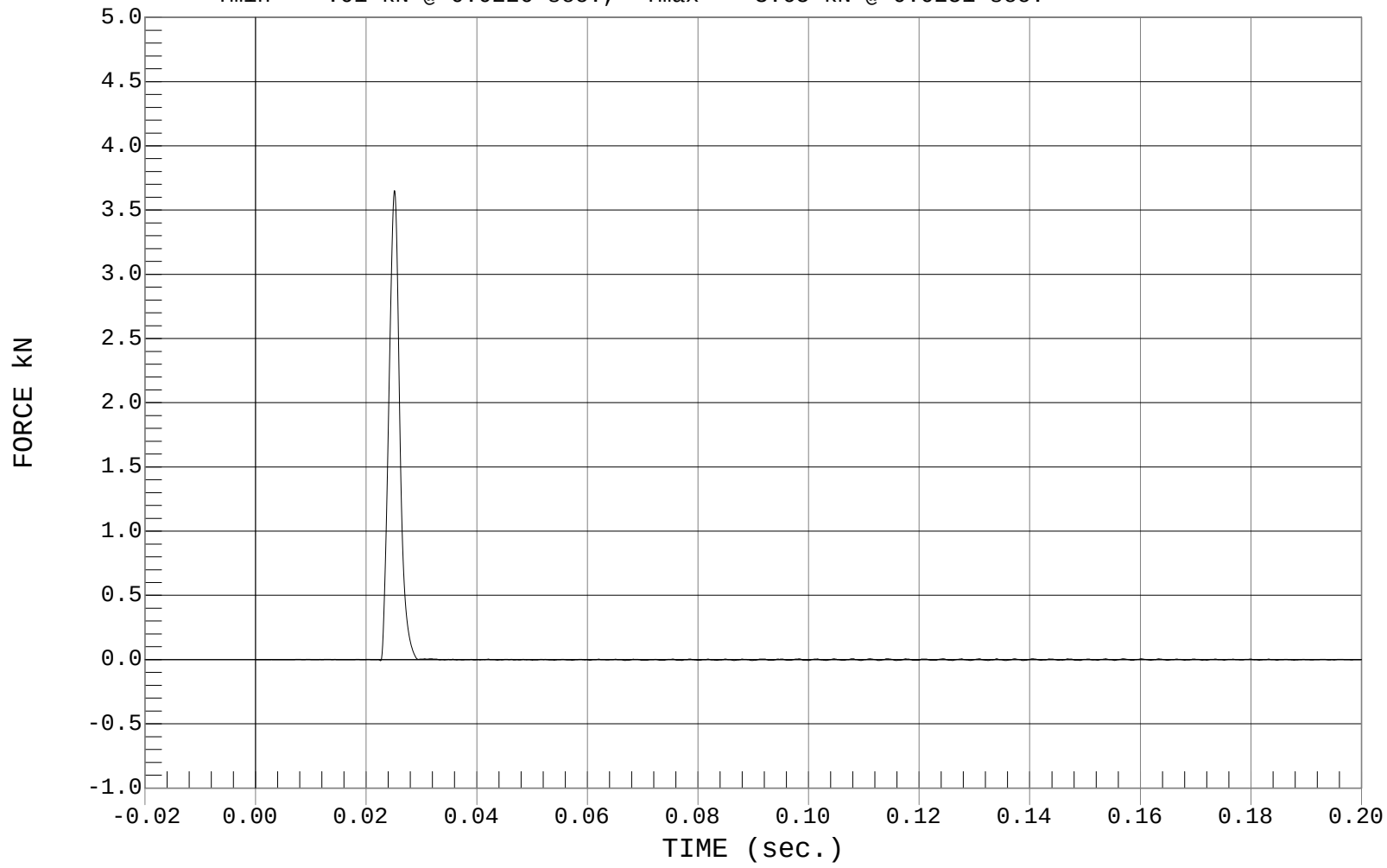
LEFT KNEE IMPACT

Test Desc.: Dummy Calibration - Left Knee Impact
Component: Dummy #288

Test Date: 03-30-01
Speed: 6.91 FT/SEC, 2.11 M/SEC

1 FORCE, D01416FF.F09

Ymin = -.01 kN @ 0.0226 sec., Ymax = 3.65 kN @ 0.0251 sec.



Hybrid III Calibration Data Sheet

5th Percentile Female

Right Knee Impact Test

ATD Serial No.: 288 Test I.D.: D01415

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	kN	3.45 – 4.06	3.71	Pass
		Overall Test Results		Pass

Laboratory Technician

3/30/01
Test Date

Approved By

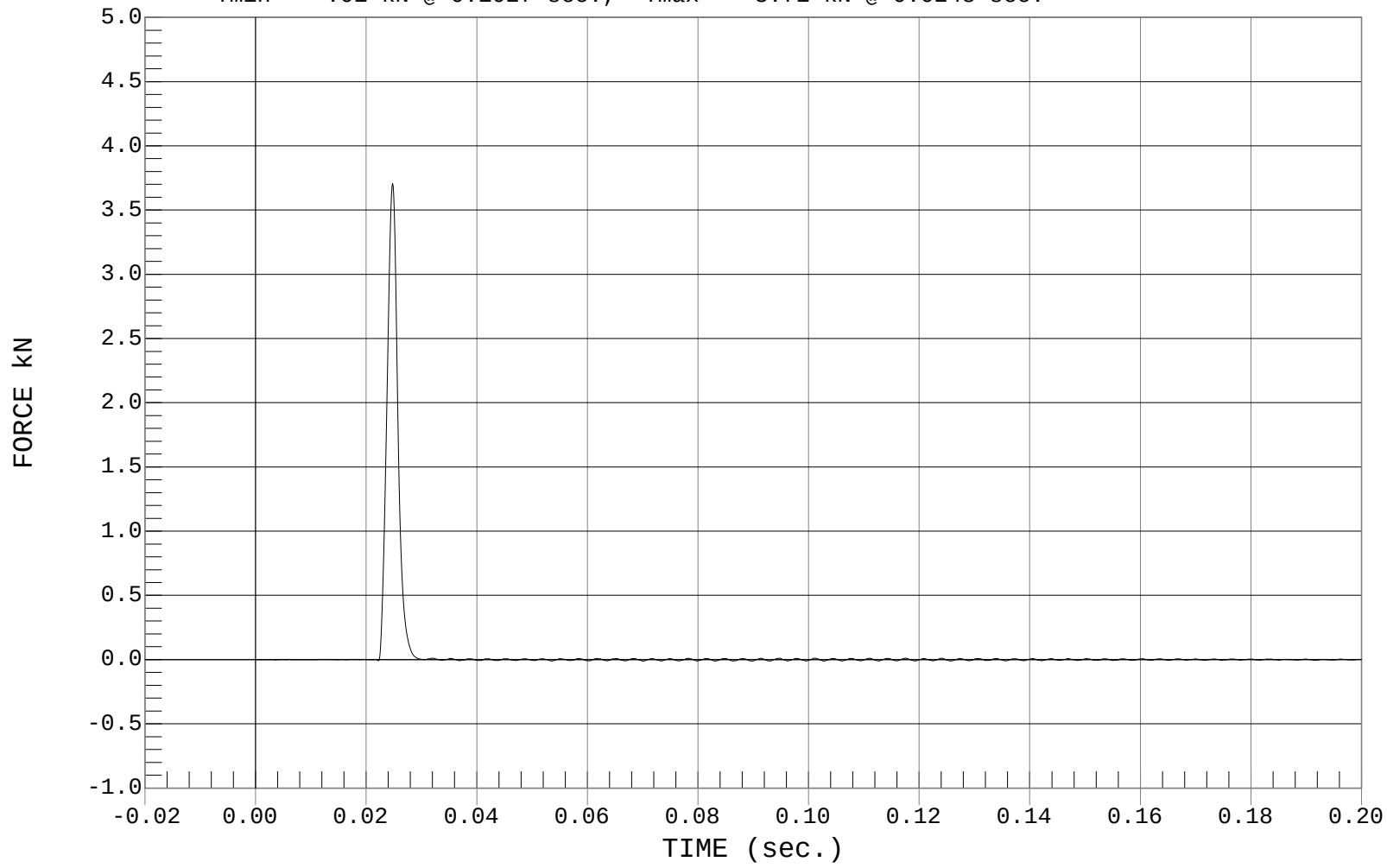
RIGHT KNEE IMPACT

Test Desc.: Dummy Calibration - Right Knee Impact
Component: Dummy #288

Test Date: 03-30-01
Speed: 6.93 FT/SEC, 2.11 M/SEC

1 FORCE, D01415FF.F09

Ymin = -.01 kN @ 0.1027 sec., Ymax = 3.71 kN @ 0.0248 sec.



Hybrid III Calibration Data Sheet

5th Percentile Female

Head Drop Calibration

ATD Serial No.: 288 Test I.D.: D01411

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	250 to 300	271	Pass
Peak Lateral Acceleration	G's	≤‡15.0	7	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
		Overall Test Results		Pass

3/30/01

Laboratory Technician

Test Date

Approved By

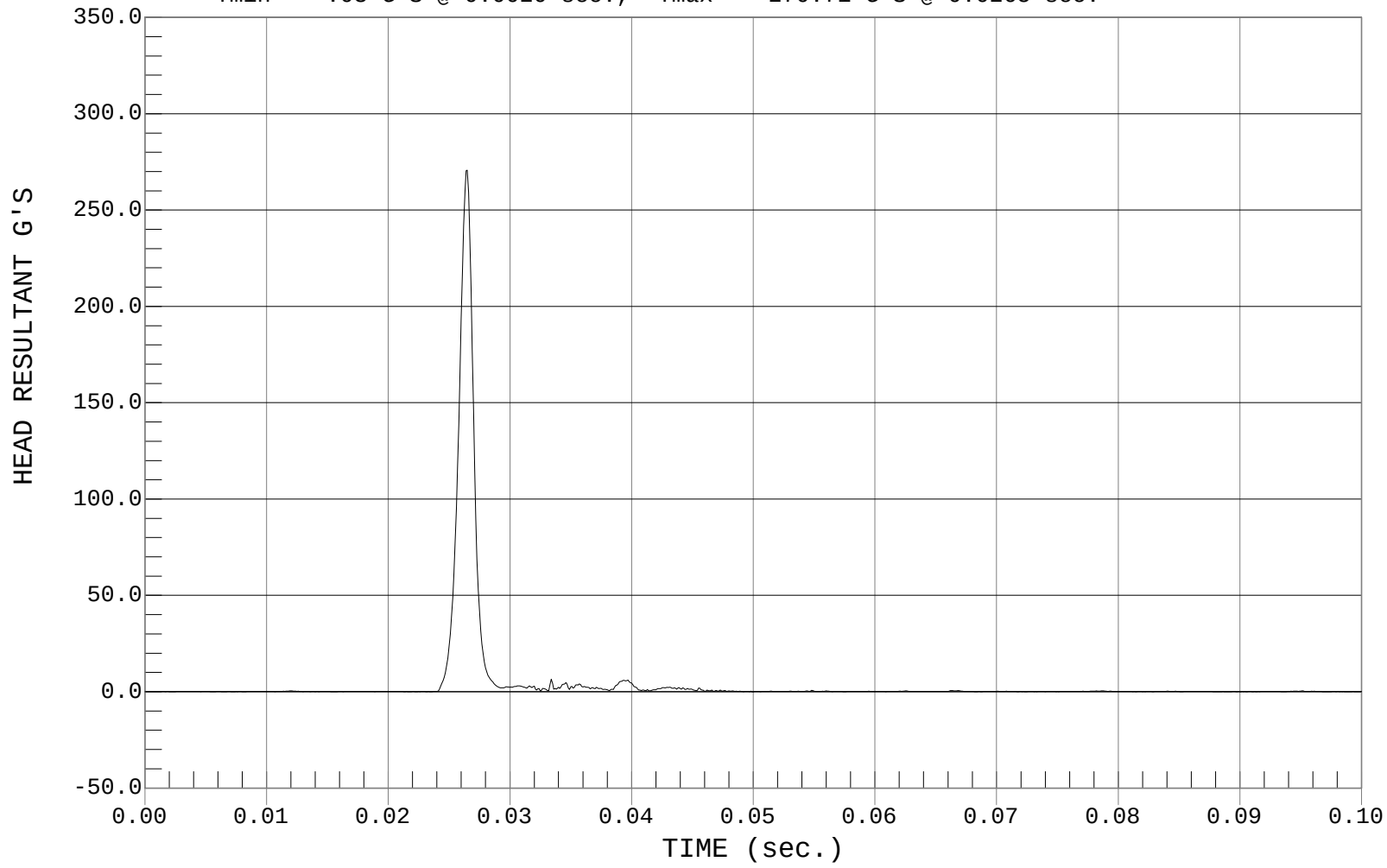
PEAK RESULTANT ACCELERATION

Test Desc.: Dummy Calibration - Head Drop
Component: Dummy #288

Test Date: 03-30-01
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 HEAD RESULTANT, D01411AV.A01

Ymin = .03 G'S @ 0.0020 sec., Ymax = 270.71 G'S @ 0.0265 sec.



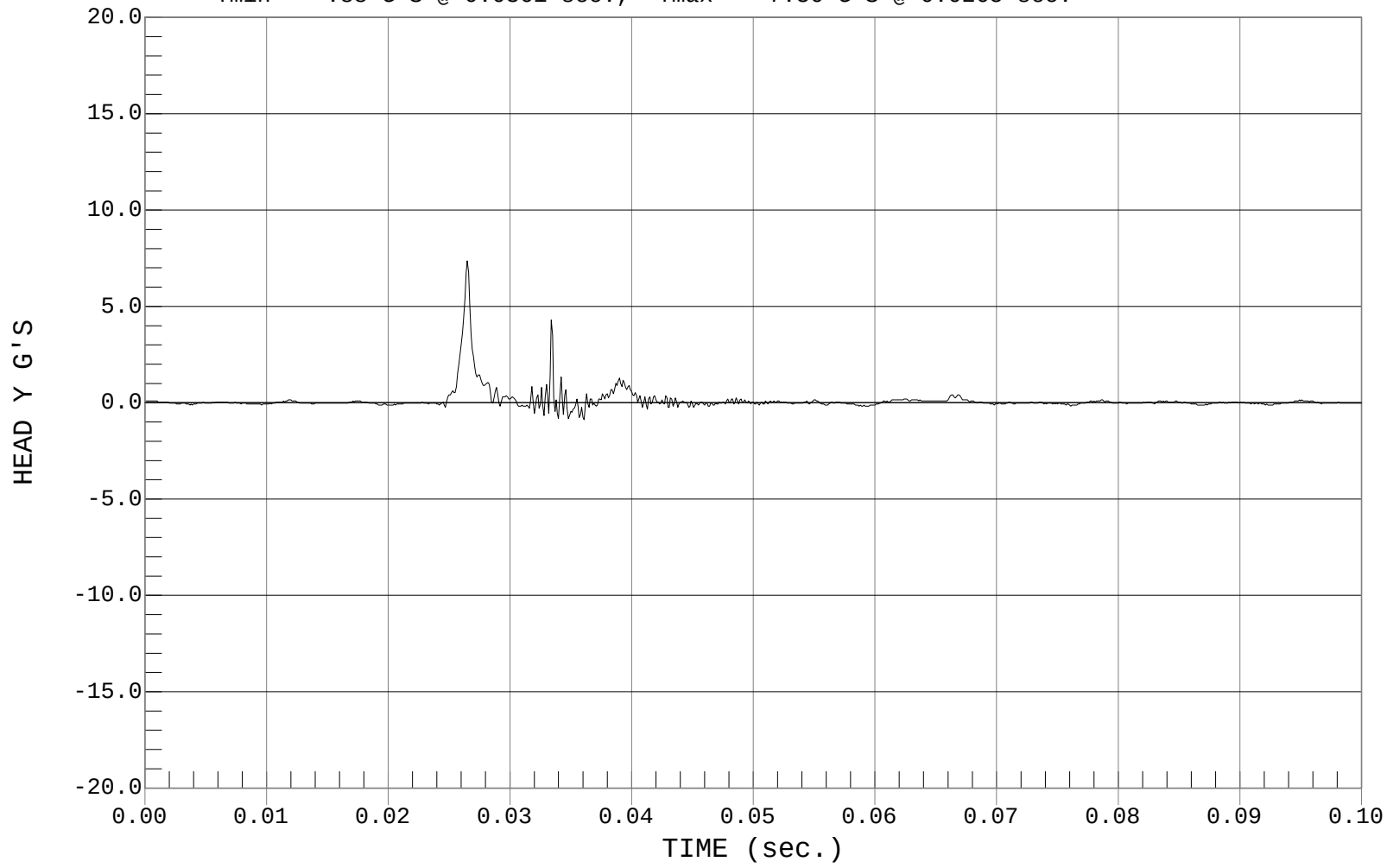
PEAK LATERAL ACCELRATION

Test Desc.: Dummy Calibration - Head Drop
Component: Dummy #288

Test Date: 03-30-01
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 HEAD Y, D01411AR.A02

Ymin = -.88 G'S @ 0.0361 sec., Ymax = 7.36 G'S @ 0.0265 sec.



Hybrid III Calibration Data Sheet

5th Percentile Female

Thorax Impact Test

ATD Serial No.: 288 Test I.D.: D01414

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	6.59 to 6.83	6.69	Pass
Peak Deflection	mm	50 – 58	52	Pass
Peak Resistive Force within Deflection Corridor	kN	3.9 – 4.4	4.2	Pass
Peak Force 18mm – 50mm	%	<105% of Peak Force in Deflection Corridor	100	Pass
Internal Hysteresis	%	69 to 85	73	Pass
		Overall Test Results		Pass

3/30/01

Laboratory Technician

Test Date

Approved By


THORAX IMPACT
Test Desc.: Dummy Calibration - Chest Impact
Test Date: 03-30-01
Component: Dummy #288
Speed: 21.96 FT/SEC, 6.69 M/SEC
1 FORCE, D01414CH.FVD
Ymin = 0 kN @ 5.5201 mm, Ymax = 4.24 kN @ 49.4785 mm
FORCE kN
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-10
0
10
20
30
40
50
60
DISPLACEMENT mm

Hybrid III Calibration Data Sheet

5th Percentile Female

Neck Flexion Test

ATD Serial No.: 288 Test I.D.: D01412

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.08	Pass
Pendulum Deceleration	10 msec	m/s	2.1 to 2.5	2.3	Pass
	20 msec	m/s	4.0 to 5.0	4.6	Pass
	30 msec	m/s	5.8 to 7.0	6.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	77 – 91	91	Pass
Moment About Occipital Condyle within Deflection Corridor	Maximum	Nm	69 – 83	70	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 – 100	89	Pass
			Overall Test Results		Pass

Laboratory Technician

3/30/01
Test Date

Approved By

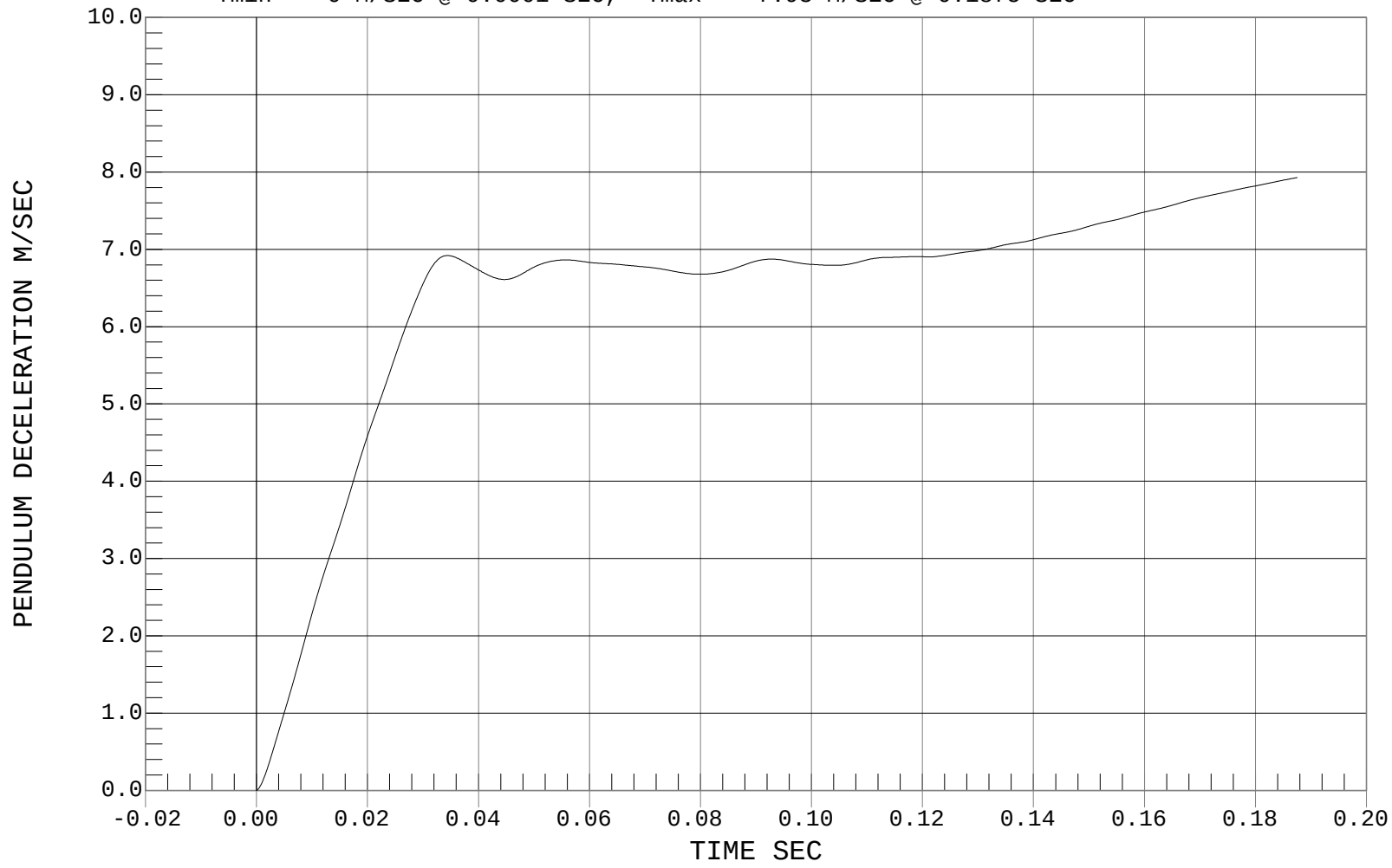
PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Flexion
Component: Dummy #288

Test Date: 03-30-01
Speed: 23.24 FT/SEC, 7.08 M/SEC

1 PENDULUM DECELERATION, D01412AI.V04

Ymin = 0 M/SEC @ 0.0001 SEC, Ymax = 7.93 M/SEC @ 0.1875 SEC



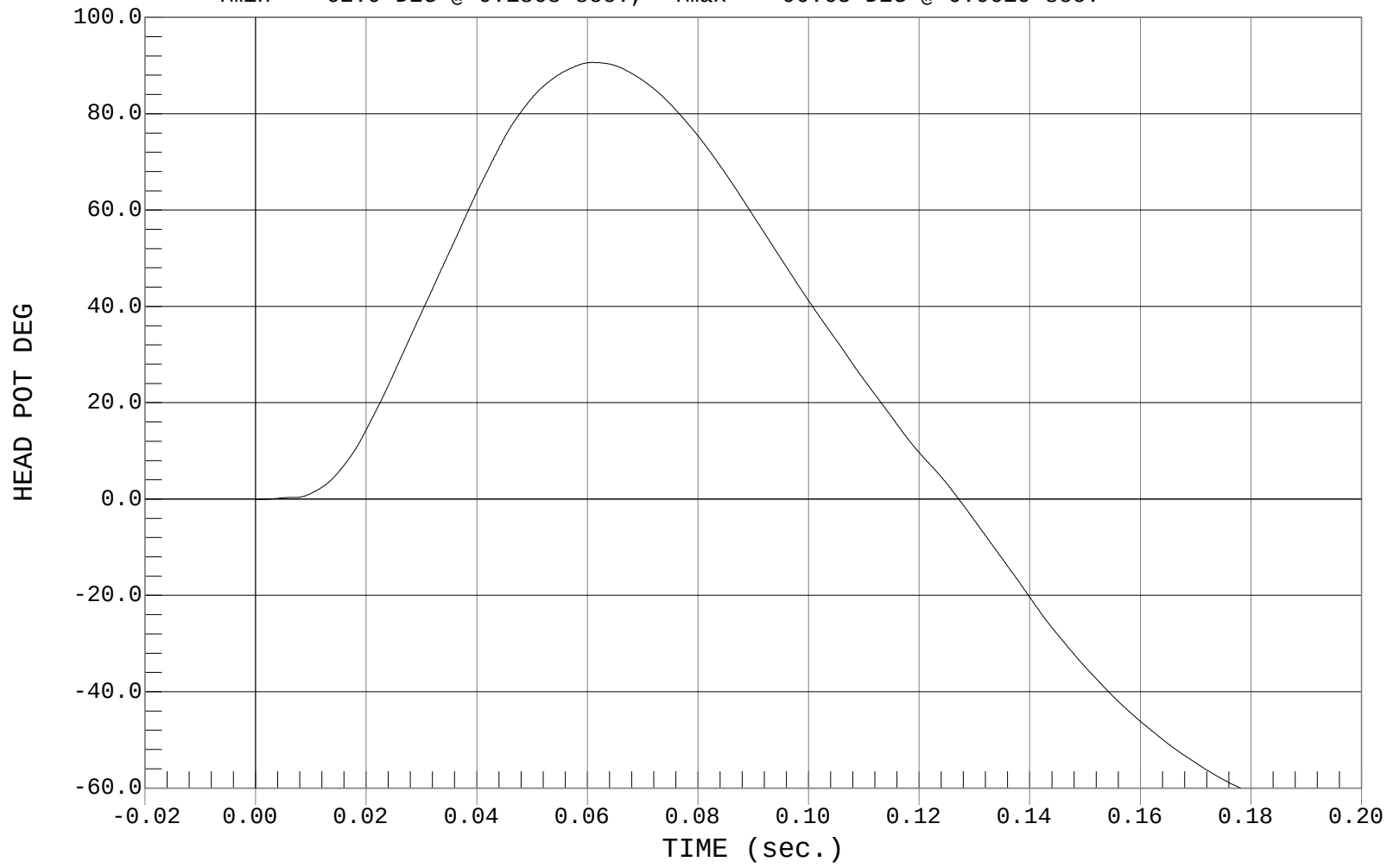
NECK ROTATION

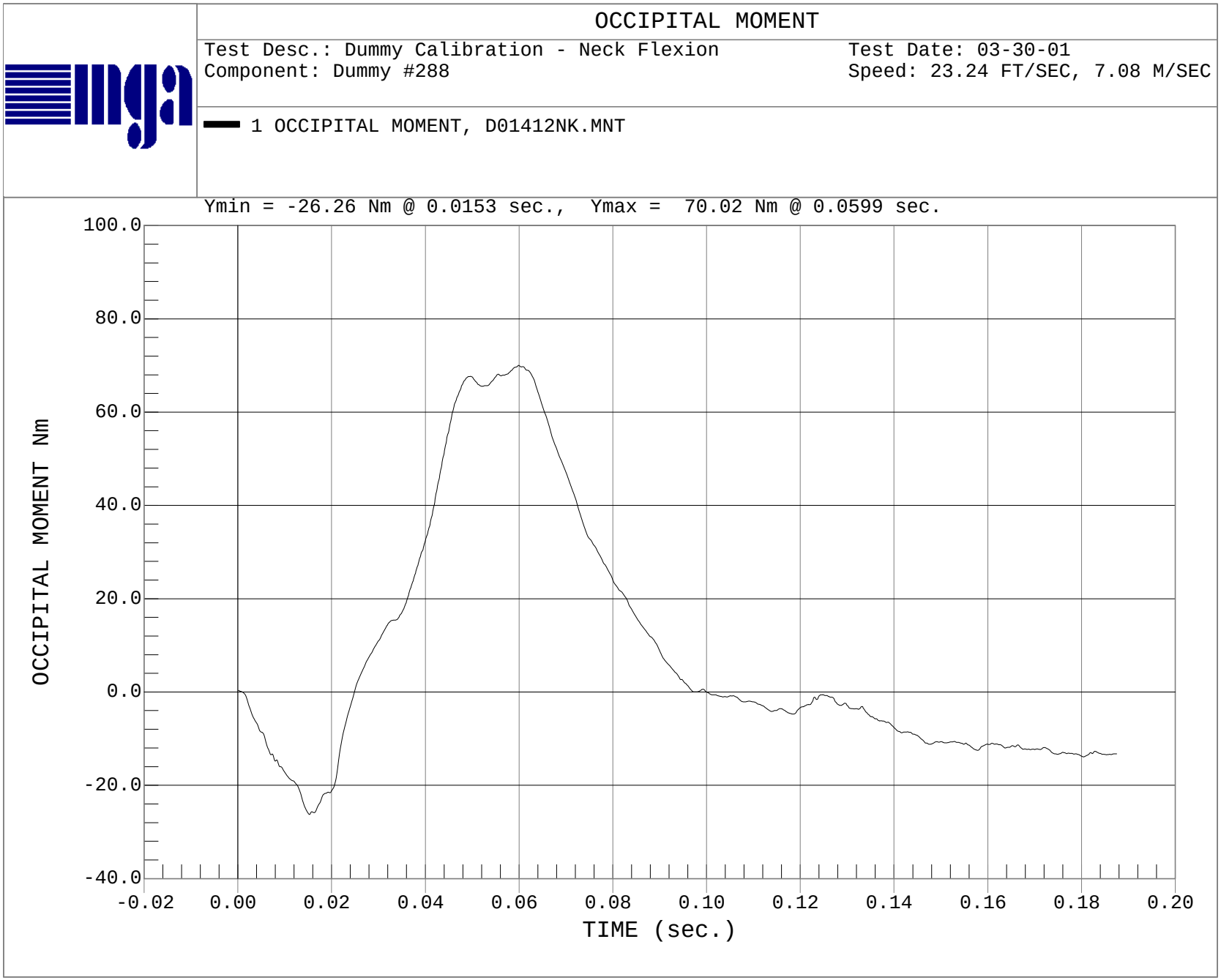
Test Desc.: Dummy Calibration - Neck Flexion
Component: Dummy #288

Test Date: 03-30-01
Speed: 23.24 FT/SEC, 7.08 M/SEC

1 HEAD POT, D01412DU.D05

Ymin = -62.9 DEG @ 0.1868 sec., Ymax = 90.65 DEG @ 0.0610 sec.




OCCIPITAL MOMENT
Test Desc.: Dummy Calibration - Neck Flexion
Test Date: 03-30-01
Component: Dummy #288
Speed: 23.24 FT/SEC, 7.08 M/SEC
1 OCCIPITAL MOMENT, D01412NK.MNT
Ymin = -26.26 Nm @ 0.0153 sec., Ymax = 70.02 Nm @ 0.0599 sec.
OCCIPITAL MOMENT Nm
100.0
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-0.02
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.18
0.20
TIME (sec.)

Hybrid III Calibration Data Sheet

5th Percentile Female

Neck Extension Test

ATD Serial No.: 288 Test I.D.: D01413

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.09	Pass
Pendulum Deceleration	10 msec	m/sec	1.5 – 1.9	1.9	Pass
	20 msec	m/sec	3.1 – 3.9	3.8	Pass
	30 msec	m/sec	4.6 – 5.6	5.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	99 – 114	111	Pass
Moment About Occipital Condyle in Deflection Corridor	Minimum	Nm	-65 - -53	-53	Pass
Negative Moment Time Curve Decay to –10 Nm		msec	94 – 114	98	Pass
			Overall Test Results		Pass

Laboratory Technician

3/30/01
Test Date

Approved By

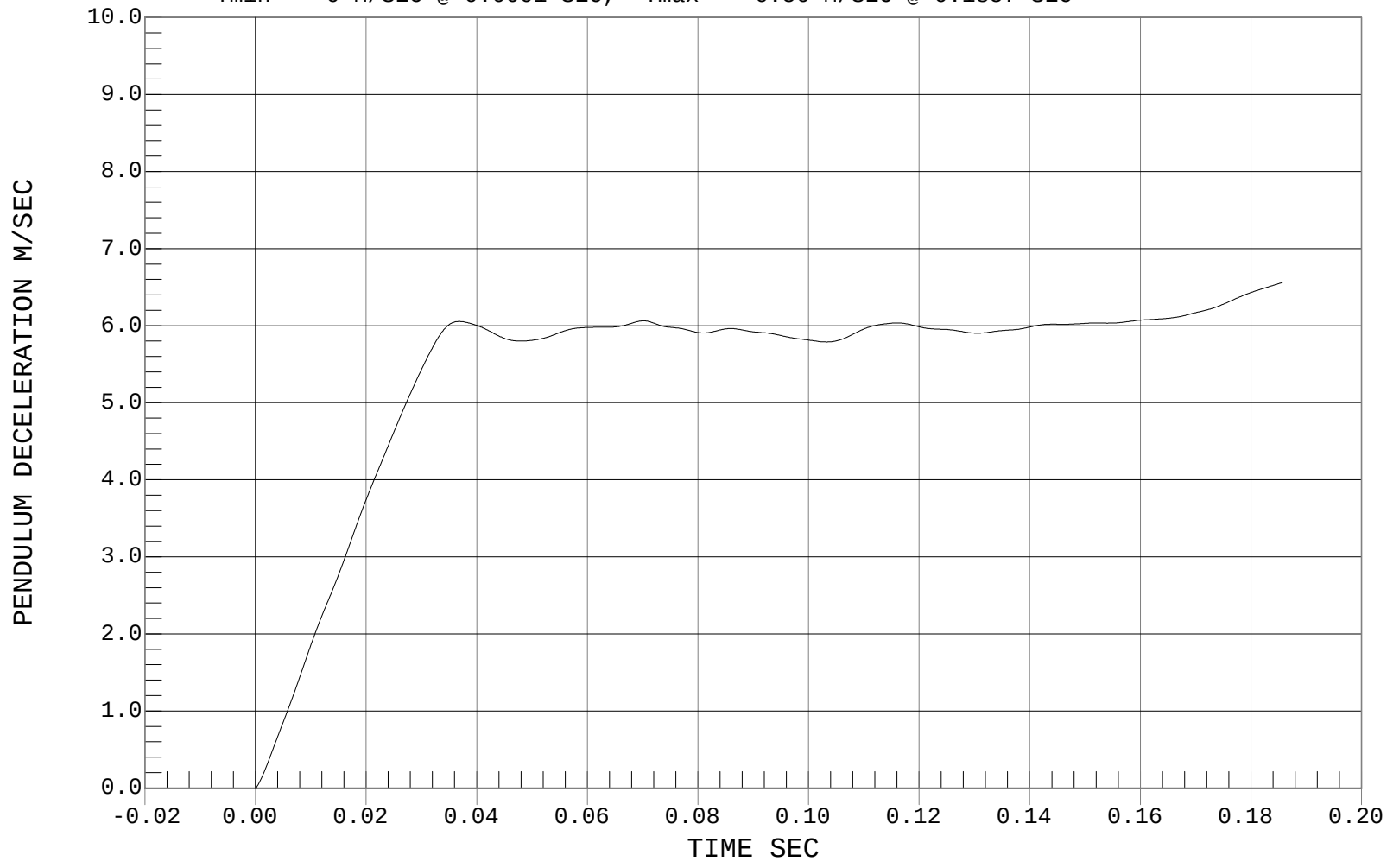
PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #288

Test Date: 03-30-01
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 PENDULUM DECELERATION, D01413AI.V04

Ymin = 0 M/SEC @ 0.0001 SEC, Ymax = 6.56 M/SEC @ 0.1857 SEC



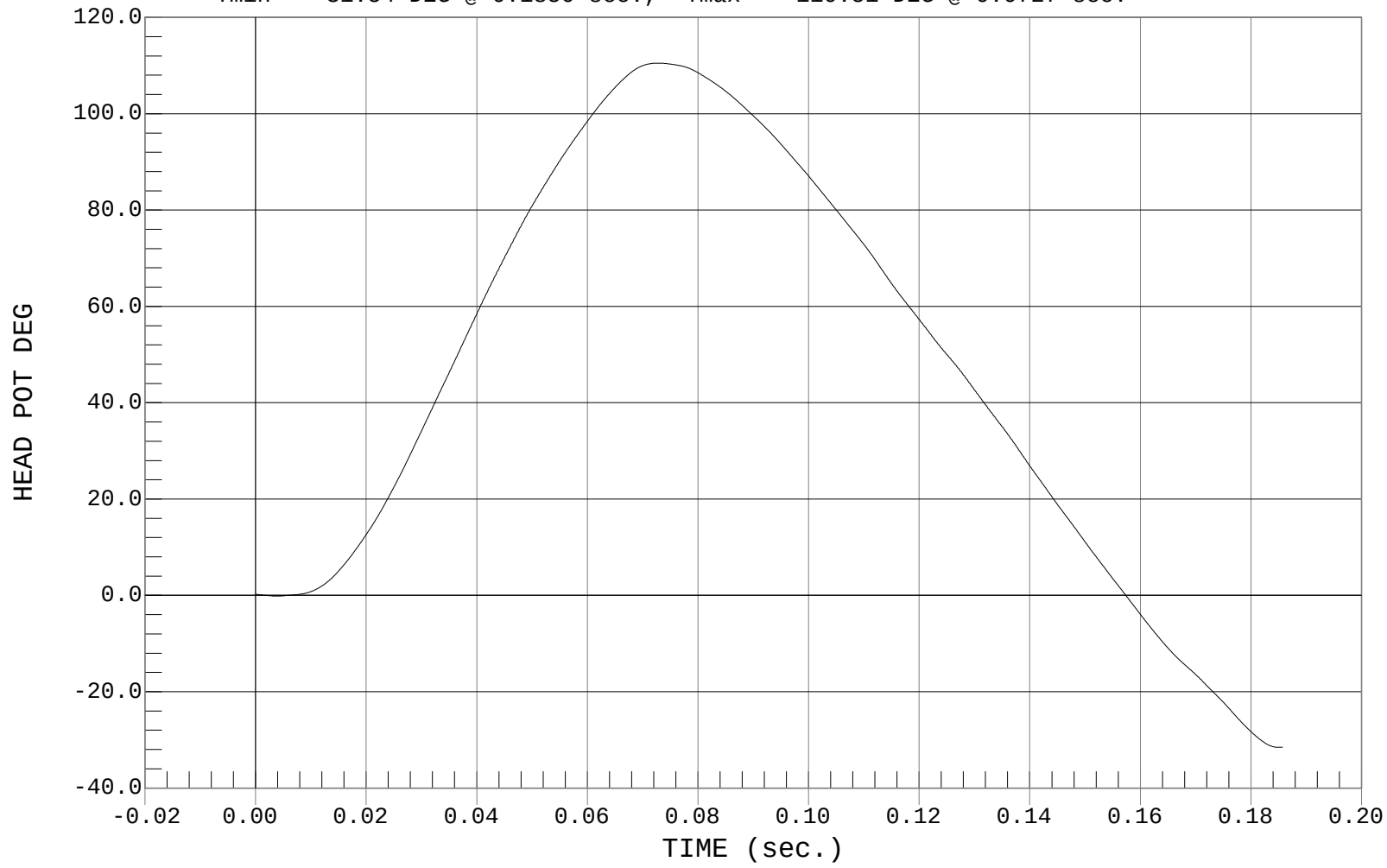
NECK ROTATION

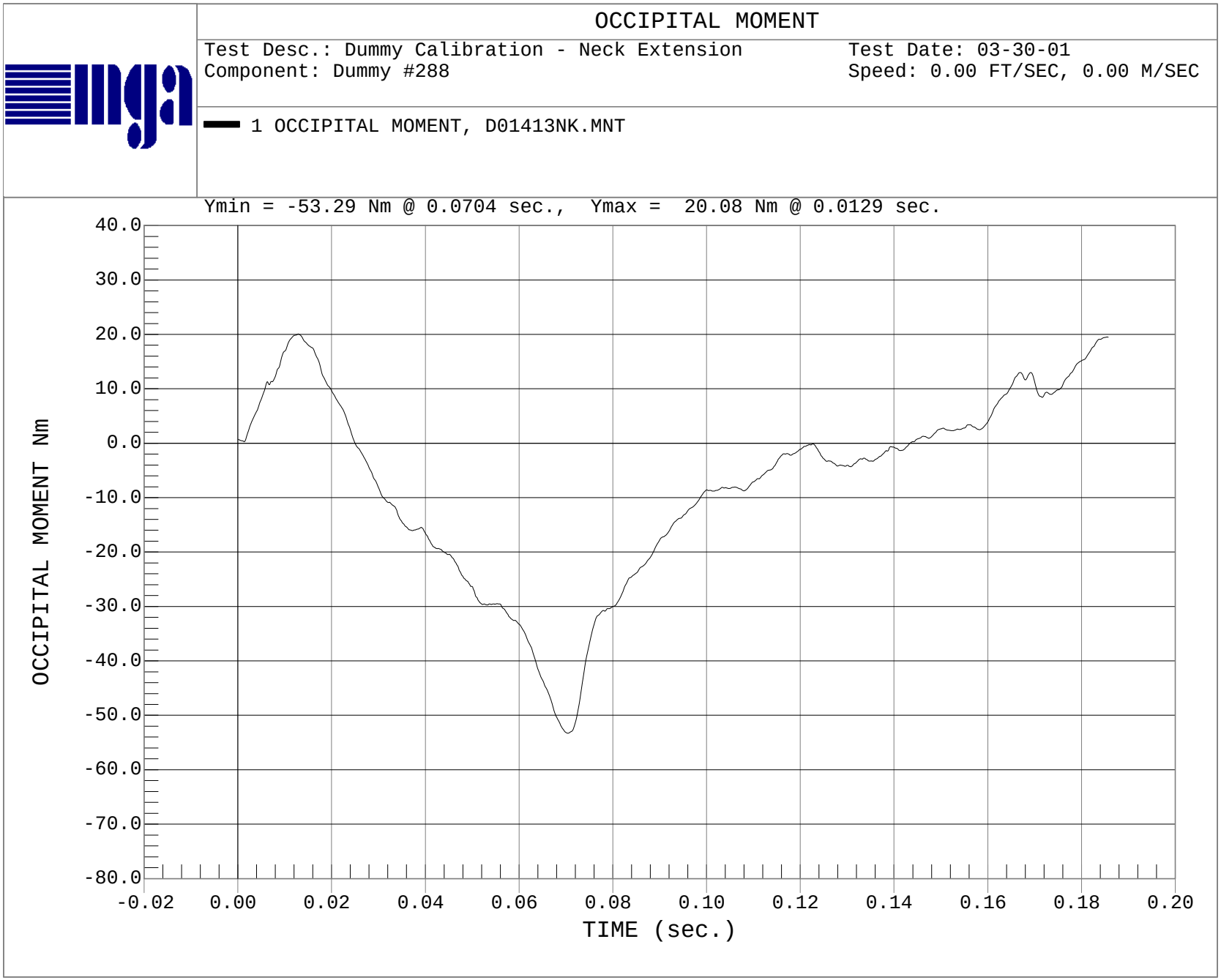
Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #288

Test Date: 03-30-01
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 HEAD POT, D01413DU.D05

Ymin = -31.54 DEG @ 0.1850 sec., Ymax = 110.51 DEG @ 0.0727 sec.




OCCIPITAL MOMENT
Test Desc.: Dummy Calibration - Neck Extension
Test Date: 03-30-01
Component: Dummy #288
Speed: 0.00 FT/SEC, 0.00 M/SEC
1 OCCIPITAL MOMENT, D01413NK.MNT
Ymin = -53.29 Nm @ 0.0704 sec., Ymax = 20.08 Nm @ 0.0129 sec.
OCCIPITAL MOMENT Nm
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-0.02
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.18
0.20
TIME (sec.)

Hybrid III Calibration Data Sheet

5th Percentile Female

Torso Flexion Test

ATD Serial No.: 288 Test I.D.: D0141A

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	°C	18.9 to 25.6	22.1	Pass
Relative Humidity	%	10 to 70	25	Pass
Initial Angle	Deg	0 – 20	11	Pass
Return Angle	Deg	0 – 8	7	Pass
Force @ 45°	N	320 – 390	329	Pass
		Overall Test Results		Pass

3/30/01

Laboratory Technician

Test Date

Approved By

Hybrid III Calibration Data Sheet

5th Percentile Female

External Measurements

ATD Serial No.: 288 Test I.D.: D0141

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6-22.2	21.8	Pass
Laboratory Relative Humidity	%	10-70	26	Pass
A – Total sitting height	mm	775 – 800	787	Pass
B – Shoulder pivot height	mm	432 – 457	446	Pass
C – "H" point height	mm	81 – 86	84	Pass
D – "H" point from back line	mm	145 – 150	147	Pass
E – Shoulder pivot from back line	mm	69 – 84	75	Pass
F – Thigh clearance	mm	119 – 135	128	Pass
G – Back of elbow to wrist pivot	mm	244 – 259	252	Pass
H – Head back from back line	mm	43 – 48	46	Pass
I – Shoulder to elbow length	mm	277 – 297	292	Pass
J – Elbow rest height	mm	183 – 203	191	Pass
K – Buttock to knee length	mm	521 – 546	537	Pass
L – Popliteal length	mm	356 – 376	362	Pass
M – Knee pivot height	mm	394 – 419	405	Pass
N – Buttock popliteal length	mm	414 – 439	422	Pass
O – Chest depth without jacket	mm	175 – 191	186	Pass
P – Foot length	mm	218 – 234	226	Pass
R – Buttock to knee pivot length	mm	457 – 483	471	Pass
S – Head breadth	mm	137 – 147	144	Pass
T – Head depth	mm	178 – 188	181	Pass
U – Hip breadth	mm	300 – 315	307	Pass
V – Shoulder breadth	mm	351 – 366	359	Pass
W – Foot breadth	mm	79 – 94	86	Pass
X – Head circumference	mm	528 – 549	535	Pass
Y – Chest circumference with jacket	mm	851 – 881	862	Pass
Z – Waist circumference	mm	759 – 790	772	Pass
AA – Location for chest circumference	mm	300 – 310	305	Pass
BB – Location for waist circumference	mm	160 – 170	165	Pass
		Overall Test Results		Pass

Laboratory Technician

3/30/01
Test Date

Approved By

APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

DUMMY, VEHICLE, AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 273

	INSTRUMENTS FOR DRIVER DUMMY NO. 273		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	J27523	Endevco	11/15/00
Head Y	J29023	Endevco	11/15/00
Head Z	J29006	Endevco	11/15/00
Head X Redundant	J35562	Endevco	11/15/00
Head Y Redundant	J27461	Endevco	11/15/00
Head Z Redundant	J27457	Endevco	11/15/00
Chest X	J27466	Endevco	11/15/00
Chest Y	J27470	Endevco	11/15/00
Chest Z	J27509	Endevco	11/15/00
Chest X Redundant	AAL32	Endevco	11/15/00
Chest Y Redundant	AGT82	Endevco	11/15/00
Chest Z Redundant	AGR67	Endevco	11/15/00
Right Femur Load Cell	259	Denton	10/13/00
Left Femur Load Cell	260	Denton	10/13/00
Pelvis X	AAKA1	Endevco	11/15/00
Pelvis Y	AF9Y5	Endevco	11/15/00
Pelvis Z	AAKA2	Endevco	11/15/00
Neck Force X	442	Denton	1/3/01
Neck Force Y	442	Denton	1/3/01
Neck Force Z	442	Denton	1/3/01
Neck Moment X	442	Denton	1/3/01
Neck Moment Y	442	Denton	1/3/01
Neck Moment Z	442	Denton	1/3/01
Chest Deflection Gauge	273	Servo	2/22/01
Lap Belt Load Cell	191	Denton	10/6/00

DUMMY, VEHICLE, AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 273

	INSTRUMENTS FOR DRIVER DUMMY NO. 273		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Right Tibia Moment X	694	Denton	12/8/00
Upper Right Tibia Moment Y	694	Denton	12/8/00
Upper Right Tibia Force Z	694	Denton	12/8/00
Lower Right Tibia Moment X	554	Denton	12/14/00
Lower Right Tibia Moment Y	554	Denton	12/14/00
Lower Right Tibia Force Z	554	Denton	12/14/00
Upper Left Tibia Moment X	695	Denton	12/8/00
Upper Left Tibia Moment Y	695	Denton	12/8/00
Upper Left Tibia Force Z	695	Denton	12/8/00
Lower Left Tibia Moment X	555	Denton	12/14/00
Lower Left Tibia Moment Y	555	Denton	12/14/00
Lower Left Tibia Force Z	555	Denton	12/14/00
Left Foot Ball Z Acceleration	AP2D6	Endevco	11/16/00
Left Heel X Acceleration	J11548	Endevco	11/16/00
Left Heel Z Acceleration	J10866	Endevco	11/16/00
Right Foot Ball Z Acceleration	AGMT2	Endevco	11/16/00
Right Heel X Acceleration	AH0A2	Endevco	11/16/00
Right Heel Z Acceleration	AJ837	Endevco	11/16/00

DUMMY, VEHICLE, AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 288

	INSTRUMENTS FOR PASSENGER DUMMY NO. 288		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	AJ9H0	Endevco	1/5/01
Head Y	ANAN3	Endevco	1/5/01
Head Z	ANAN6	Endevco	1/5/01
Head X Redundant	AP120	Endevco	1/5/01
Head Y Redundant	ALEK9	Endevco	1/5/01
Head Z Redundant	AP042	Endevco	1/5/01
Chest X	AMRR4	Endevco	1/8/01
Chest Y	ALCR0	Endevco	1/8/01
Chest Z	AMP44	Endevco	1/8/01
Chest X Redundant	AC9B7	Endevco	1/8/01
Chest Y Redundant	AMR94	Endevco	1/8/01
Chest Z Redundant	AMTB1	Endevco	1/8/01
Right Femur Load Cell	261	Denton	10/13/00
Left Femur Load Cell	262	Denton	10/13/00
Pelvis X	AHY98	Endevco	1/8/01
Pelvis Y	AHTW6	Endevco	1/8/01
Pelvis Z	AHWP2	Endevco	1/8/01
Neck Force X	443	Denton	11/11/00
Neck Force Y	443	Denton	11/11/00
Neck Force Z	443	Denton	11/11/00
Neck Moment X	443	Denton	11/11/00
Neck Moment Y	443	Denton	11/11/00
Neck Moment Z	443	Denton	11/11/00
Chest Deflection Gauge	288	Servo	3/9/01
Lap Belt Load Cell	196	Denton	10/6/00

DUMMY, VEHICLE, AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 288

	INSTRUMENTS FOR PASSENGER DUMMY NO. 288		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Right Tibia Moment X	696	Denton	12/8/00
Upper Right Tibia Moment Y	696	Denton	12/8/00
Upper Right Tibia Force Z	696	Denton	12/8/00
Lower Right Tibia Moment X	556	Denton	12/14/00
Lower Right Tibia Moment Y	556	Denton	12/14/00
Lower Right Tibia Force Z	556	Denton	12/14/00
Upper Left Tibia Moment X	705	Denton	1/10/01
Upper Left Tibia Moment Y	705	Denton	1/10/01
Upper Left Tibia Force Z	705	Denton	1/10/01
Lower Left Tibia Moment X	557	Denton	12/14/00
Lower Left Tibia Moment Y	557	Denton	12/14/00
Lower Left Tibia Force Z	557	Denton	12/14/00
Left Foot Ball Z Acceleration	AH0A5	Endevco	11/16/00
Left Heel X Acceleration	AJ9C4	Endevco	11/16/00
Left Heel Z Acceleration	AN8A4	Endevco	11/16/00
Right Foot Ball Z Acceleration	ALDD6	Endevco	11/16/00
Right Heel X Acceleration	J20392	Endevco	11/16/00
Right Heel Z Acceleration	AGT18	Endevco	11/16/00

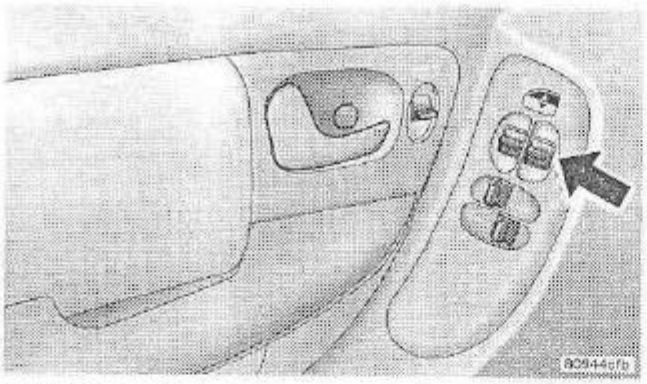
VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	J10-E03	Entran	12/14/00
Right Rear Seat Crossmember X	I18-E02	Entran	2/7/01
Top of Engine Block X	A08-A10	Entran	2/7/01
Bottom of Engine X	I25-F03	Entran	11/15/00
Left Brake Caliper X	D05-R11	Entran	12/13/00
Right Brake Caliper X	G13-B03	Entran	10/13/00
Instrument Panel X	H02-J14	Entran	2/7/01
Redundant Left Rear Seat Crossmember X	F18–G13	Entran	10/4/00
Redundant Right Rear Seat Crossmember X	D05-R10	Entran	2/15/01

	LABORATORY INSTRUMENTS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Neck Bending Pendulum Accelerometer	C12885	Endevco	1/17/01
Neck Bending Head Rotary Potentiometer	018	Spectrol	10/2/00
Neck Bending Pendulum Rotary Potentiometer	019	Spectrol	10/2/00
Chest Probe Accelerometer	J14396	Endevco	1/11/01
Knee Impact Accelerometer	J14398	Endevco	1/11/01

APPENDIX E

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT INSTRUCTIONS



Auto Down Feature

The driver's window switch has an auto down feature. Press the window switch past the detent, release, and the window will go down automatically.

To open the window part way, press the window switch part way and release it when you want the window to stop.

The power window switches remain active for up to 45 seconds after the ignition switch has been turned off. Opening a vehicle front door will cancel this feature.

OCCUPANT RESTRAINTS

Some of the most important safety features in your vehicle are the restraint systems. These include the front and rear seat belts for the driver and all passengers, front airbags for both the driver and front passenger and if equipped, window bags for both the driver and front passenger. If you will be carrying children too small for adult-size seat belts, your seat belts or the LATCH feature also, can be used to hold infant and child restraint systems.

Please pay close attention to the information in this section. It tells you how to use your restraint system properly to keep you and your passengers as safe as possible.

WARNING!

In a collision, you and your passengers can suffer much greater injuries if you are not properly buckled up. You can strike the interior of your vehicle or other passengers, or you can be thrown out of the vehicle. Always be sure you and others in your vehicle are buckled up properly.

Buckle up even though you are an excellent driver, even on short trips. Someone on the road may be a poor driver and cause a collision that includes you. This can happen far away from home or on your own street.

Research has shown that seat belts save lives, and they can reduce the seriousness of injuries in a collision. Some of the worst injuries happen when people are thrown from the vehicle. Seat belts reduce the possibility of ejection and the risk of injury caused by striking the inside of the vehicle. **Everyone** in a motor vehicle should be belted at all times.

Lap/Shoulder Belts

All the outboard seats in your vehicle are equipped with Lap/Shoulder Belts.

The belt webbing retractor is designed to lock during very sudden stops or collisions. This feature allows the shoulder part of the belt to move freely with you under normal conditions. But in a collision, the belt will lock and reduce the risk of your striking the inside of the vehicle or being thrown out.

WARNING!

- It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed.
- Do not allow people to ride in any area of your vehicle that is not equipped with seats and seat belts.
- Be sure everyone in your vehicle is in a seat and using a seat belt properly.

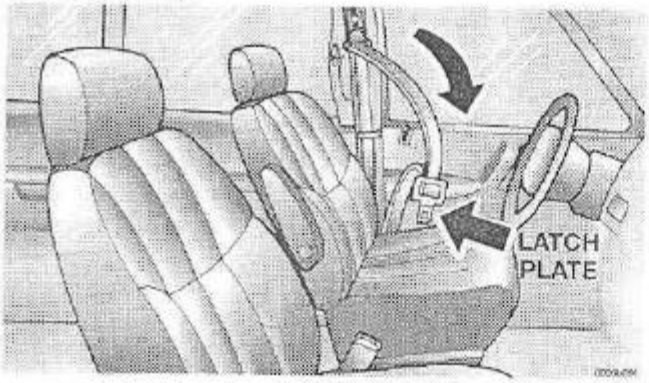
WARNING!

- Wearing a seat belt incorrectly is dangerous. Seat belts are designed to go around the large bones of your body. These are the strongest parts of your body and can take the forces of a collision the best.
- Wearing your belt in the wrong place could make your injuries in a collision much worse. You might suffer internal injuries, or you could even slide out of part of the belt. Follow these instructions to wear your seat belt safely and to keep your passengers safe, too.
- Two people should never be belted into a single seat belt. People belted together can crash into one another in a collision, hurting one another badly. Never use a lap/shoulder belt or lap belt for more than one person, no matter what their size.

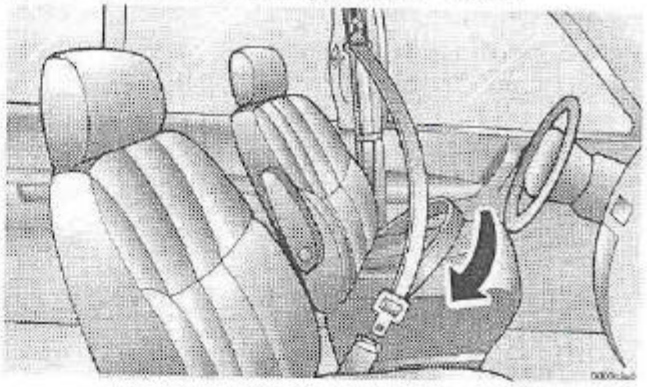
Lap/Shoulder Belt Operating Instructions

1. Enter the vehicle and close the door. Sit back and adjust the seat.

2. The seat belt latch plate is near the seatback of the front seats and next to your arm in the rear seats. Grasp the latch plate and pull out the belt. Slide the latch plate up the webbing as far as necessary to allow the belt to go around your lap.



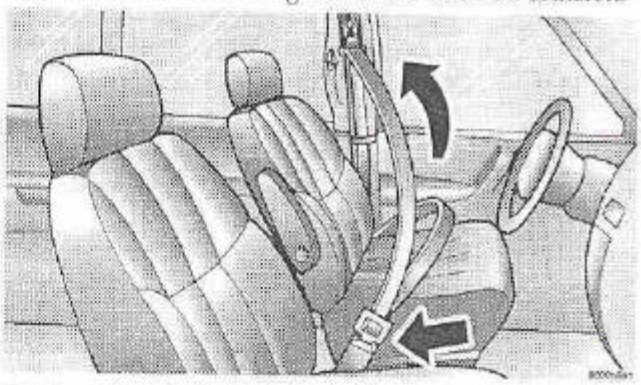
3. When the belt is long enough to fit, insert the latch plate into the buckle until you hear a "click".



WARNING!

- A belt that is buckled into the wrong buckle will not protect you properly. The lap portion could ride too high on your body, possibly causing internal injuries. Always buckle your belt into the buckle nearest you.
- A belt that is too loose will not protect you as well. In a sudden stop you could move too far forward, increasing the possibility of injury. Wear your seat belt snugly.
- A belt that is worn under your arm is very dangerous. Your body could strike the inside surfaces of the vehicle in a collision, increasing head and neck injury. A belt worn under the arm can cause internal injuries. Ribs aren't as strong as shoulder bones. Wear the belt over your shoulder so that your strongest bones will take the force in a collision.
- A shoulder belt placed behind will not protect you from injury during a collision. You are more likely to hit your head in a collision if you do not wear your shoulder belt. The lap and shoulder belt are meant to be used together.

4. Position the lap belt across your thighs, below your abdomen. To remove slack in the lap belt portion, pull up on the shoulder belt. To loosen the lap belt if it is too tight, tilt the latch plate and pull on the lap belt. A snug belt reduces the risk of sliding under the belt in a collision.



The instrument cluster turns on the seat belt light in the instrument cluster for 6 to 8 seconds when the ignition

switch is first turned on. If it detects that the driver's seat belt is not buckled the light will remain on until the driver's seat belt is buckled.

WARNING!

- A lap belt worn too high can increase the risk of internal injury in a collision. The belt forces won't be at the strong hip and pelvic bones, but across your abdomen. Always wear the lap belt as low as possible and keep it snug.
- A twisted belt can't do its job as well. In a collision it could even cut into you. Be sure the belt is straight. If you can't straighten a belt in your vehicle, take it to your dealer and have it fixed.

5. Position the shoulder belt on your chest so that it is comfortable and not resting on your neck. The retractor will withdraw any slack in the belt.

6. To release the belt, push the red button on the buckle. The belt will automatically retract to its stowed position. If necessary, slide the latch plate down the webbing to allow the belt to retract fully.

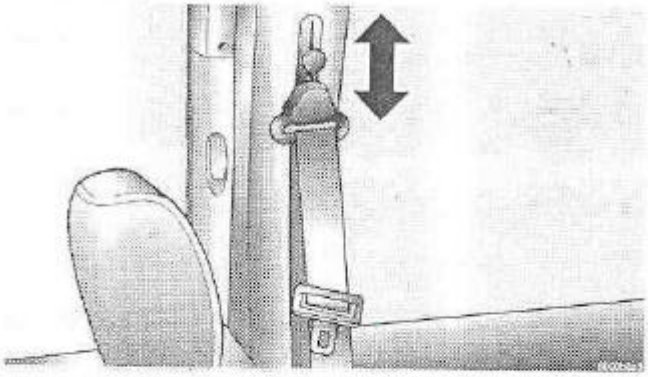
WARNING!

A frayed or torn belt could rip apart in a collision and leave you with no protection. Inspect the belt system periodically, checking for cuts, frays, or loose parts. Damaged parts must be replaced immediately. Do not disassemble or modify the system. Seat belt assemblies must be replaced after a collision if they have been damaged (bent retractor, torn webbing, etc.).

Adjustable Upper Shoulder Belt Anchorage

In the front seats and the second row outboard seats, the shoulder belt anchorage can be adjusted upward or

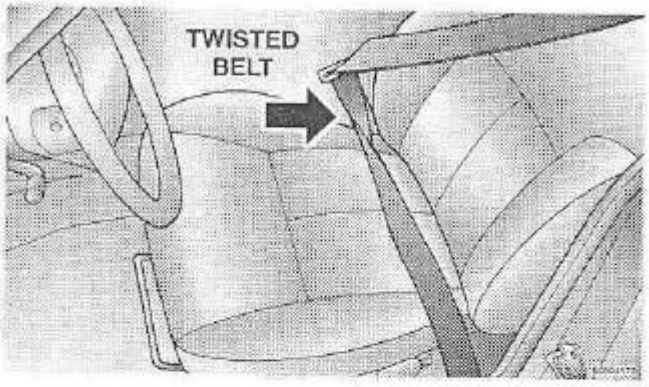
downward to help position the belt away from your neck. Push up or down on the release lever to release the anchorage, and then move it up or down to the position that serves you best.



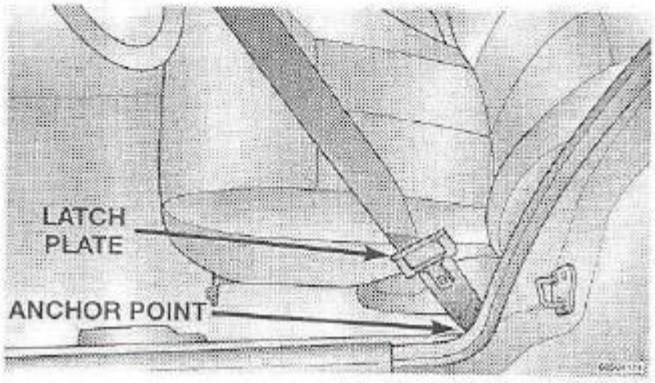
As a guide, if you are shorter than average, you will prefer a lower position, and if you are taller than average, you'll prefer a higher position. When you release the anchorage, try to move it up or down to make sure that it is locked in position.

Lap/Shoulder Belt Untwisting Procedure

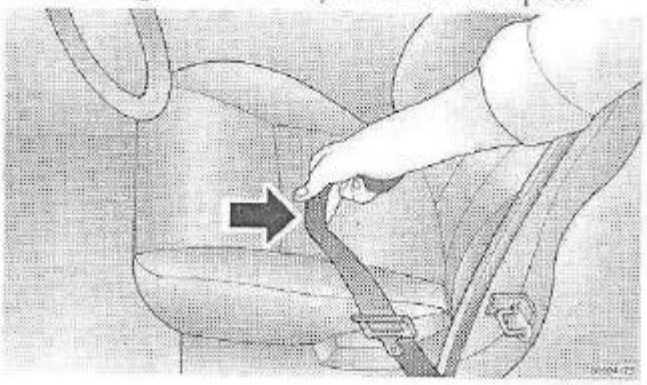
Use the following procedure to untwist a twisted lap/shoulder belt.



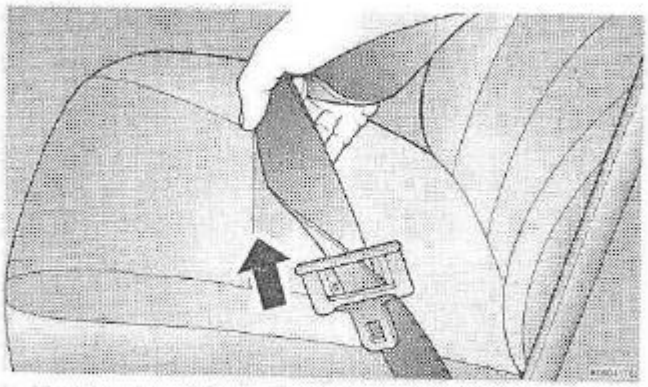
1. Position the latch plate as close as possible to the anchor point.



2. At about 6 to 12 inches (15 to 30 cm) above the latch plate, grasp and twist the belt webbing 180° to create a fold that begins immediately above the latch plate.



3. Slide the latch plate upward over the folded webbing. The folded webbing must enter the slot at the top of the latch plate.



4. Continue to slide the latch plate up until it clears the folded webbing.

Center Lap Belts

The center seating positions have a lap belt only. To fasten the lap belt, slide the latch plate into the buckle until you hear a "click". To lengthen the lap belt, tilt the latch plate and pull. To remove slack, pull the loose end of the webbing.

Wear the lap belt snug against the hips. Sit back and erect in the seat, then adjust the belt as tightly as is comfortable.

WARNING!

- **A lap belt worn too loose or too high is dangerous.**
- **A belt worn too loose can allow you to slip down and under the belt in a collision.**
- **A belt that is too high will apply crash forces to the abdomen, not to the stronger hip bones. In either case, the risk of internal injuries is greater. Wear a lap belt low and snug.**

Seat Belt Pretensioners

The seat belts for both front seating positions are equipped with pretensioning devices that are designed to remove slack from the seat belt in the event of a collision. These devices improve the performance of the seat belt by assuring that the belt is tight about the occupant early in a collision. Pretensioners work for all size occupants, including those in child restraint and will only deploy if the seat belt is buckled.

NOTE: These devices are not a substitute for proper seat belt placement by the occupant. The seat belt still must be worn snugly and positioned properly.

The pretensioners are triggered by the front airbag control module (see Airbag Section). Like the front airbags, the pretensioners are single use items. After a collision that is severe enough to deploy the airbags and pretensioners, both must be replaced.

Seat Belts and Pregnant Women

We recommend that pregnant women use the seat belts throughout their pregnancies. Keeping the mother safe is the best way to keep the baby safe.

Pregnant women should wear the lap part of the belt across the thighs and as snug across the hips as possible. Keep the belt low so that it does not come across the abdomen. That way the strong bones of the hips will take the force if there is a collision.

Seat Belt Extender

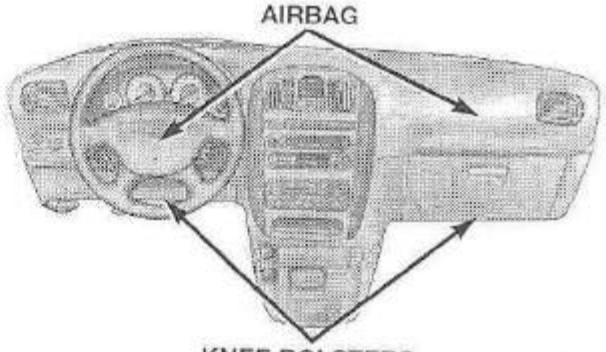
If a seat belt is too short, even when fully extended and when the adjustable upper shoulder belt anchorage (if equipped) is in its lowest position, your dealer can provide you with a seat belt extender. This extender should be used only if the existing belt is not long enough. When it is not required, remove the extender and stow it.

WARNING!

Using a seat belt extender when not needed can increase the risk of injury in a collision. Only use when the lap belt is not long enough when it is worn low and snug, and in the recommended seating positions. Remove and store the extender when not needed.

Driver and Front Passenger Supplemental Restraint System - Airbag

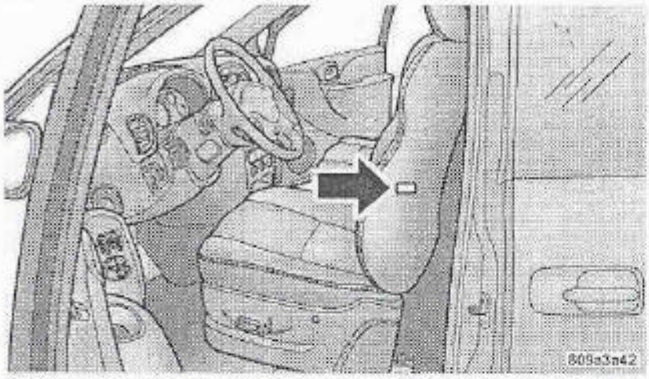
This vehicle has airbags for both the driver and front passenger as a supplement to the seat belt restraint systems. The driver's front airbag is mounted in the center of the steering wheel. The passenger's front airbag is mounted in the instrument panel, above the glove compartment. The words SRS AIRBAG are embossed on the airbag covers.



NOTE: The front airbags are certified to the Federal regulations that allow less forceful deployment in low speed collisions.

The front airbags have a multi stage inflator design. This allows the airbag to have different rates of inflation that are based on collision severity.

If the vehicle is equipped with window bags, they are located inside the driver and front passenger seatbacks, and their covers are labeled SRS AIRBAG.



WARNING!

- Do not put anything on or around the airbag covers or attempt to manually open them. You may damage the airbags and you could be injured because the airbags are not there to protect you. These protective covers for the airbag cushions are designed to open only when the airbags are inflating.
- If your vehicle is equipped with window bags, do not use accessory seat covers or place objects between you and the window bags; the performance could be adversely affected and/or objects could be pushed into you, causing serious injury.
- If your vehicle is equipped with window bags, do not attach cup holders or any other objects on or around the door. The inflating window bag could drive the object into occupants, causing serious injury.

2

Airbags inflate in moderate to high speed impacts. Along with seat belts and pretensioners, front airbags work with the instrument panel knee bolsters to provide improved protection for the driver and front passenger. window bags also work with seat belts to improve occupant protection.

The seat belts are designed to protect you in many types of collisions. The front airbags deploy in moderate to severe frontal collisions. If your vehicle is equipped, the window bag on the crash side of the vehicle is triggered in moderate to severe side collisions. In certain types of collisions, both the front and window bags may be triggered. But even in collisions where the airbags deploy, you need the seat belts to keep you in the right position for the airbags to protect you properly.

Here are some simple steps you can take to minimize the risk of harm from a deploying airbag.

1. **Children 12 years old and under should always ride buckled up in a rear seat.**

Infants in rear facing child restraints designed for children up to 9 kg (20 lbs) and less than one year old should NEVER ride in the front seat of a vehicle with a passenger front airbag. An airbag deployment can cause severe injury or death to infants in that position.

Children more than 18 kg (40 lbs) should be secured in the rear seat in child restraints or belt-positioning booster seats. Older children who do not use child restraints or belt-positioning booster seats should ride properly buckled up in the rear seat, and in the outboard seat if possible. Never allow children to slide the shoulder belt behind them or under their arm.

If a child from 1 to 12 years old must ride in the front passenger seat because the vehicle is crowded, move the seat as far back as possible, and use the proper child restraint. See the section on Child Restraint.

You should read the instructions provided with your child restraint belt-positioning booster seat to make sure that you are using it properly.

2. All occupants should wear their lap and shoulder belts properly.

3. The driver and front passenger seats should be moved back as far as practical to allow the front airbags room to inflate.

4. If your vehicle has window bags, do not lean against the door, airbags will inflate forcefully into the space between you and the door.

WARNING!

- Relying on the airbags alone could lead to more severe injuries in a collision. The airbags work with your seat belt to restrain you properly. In some collisions the airbags won't deploy at all. Always wear your seat belts even though you have airbags.
- Being too close to the steering wheel or instrument panel during front airbag deployment could cause serious injury. Airbags need room to inflate. Sit back, comfortably extending your arms to reach the steering wheel or instrument panel.
- If the vehicle has window bags, they also need room to inflate. Do not lean against the door. Sit upright in the center of the seat.

The front airbag system consists of the following:

- Front Airbag Control Module (with integrated impact sensor)
- AIRBAG Readiness Light
- Driver Airbag
- Passenger Airbag
- Steering Wheel and Column
- Instrument Panel
- Seat Belt Readiness Light
- Interconnecting Wiring
- Knee Impact Bolster

The window bag system, on vehicles equipped, consists of the following:

- AIRBAG Readiness Light (shared with the front airbag system)
- Window Bag in the driver's seat
- Window Bag in the passenger's seat
- Window Bag Control Module (with integrated impact sensor)
- Interconnecting Wiring

How The Front Airbag System Works

- The front airbag control module determines if a frontal impact is severe enough to require the airbags to inflate. Based on the level of collision severity, the front control module determines the proper rate of inflation. The front airbag inflators are designed to provide different

rates of airbag inflation. The front airbag control module will not detect side, roll over, or rear collisions.

The airbag control module also monitors the readiness of the electronic parts of the system whenever the ignition switch is in the START or ON positions. These include all of the items listed above except the knee bolster, instrument panel and the steering wheel and column. If the key is in the OFF position, in the ACC position, or not in the ignition switch, the front airbags are not on and will not inflate.



The front airbag control module sends a message to the instrument cluster to turn on the AIRBAG light in the instrument panel for 6 to 8 seconds when the ignition switch is first turned ON, then turns the light off. If the front or window bag control modules detect a malfunction in any part of the system, the airbag light will turn on either momentarily or continuously.

WARNING!

Ignoring the AIRBAG light in your instrument panel could mean you won't have the airbags to protect you in a collision. If the light does not come on, stays on after you start the vehicle, or if it comes on as you drive, have the airbag system checked right away.

- When the front airbag control module detects a collision requiring the front airbags, it signals the inflator units. A large quantity of nontoxic gas is generated to inflate the front airbags. Different airbag inflation rates are possible based on collision severity. These rates are determined by the front airbag control module based on collision severity. The front airbag covers separate and fold out of the way as the airbags inflate to their full size. The front airbags fully inflate in about 50 milliseconds. This is only about half of the time it takes you to blink your eyes. The airbags then quickly

deflate while helping to restrain the driver and front passenger. The driver's and passenger's front airbag gas is vented through the airbag material towards the instrument panel. In this way the airbags do not interfere with your control of the vehicle.

- **The Knee Impact Bolsters** help protect the knees and position you for the best interaction with the front airbags.

If A Front Deployment Occurs

The front airbag system is designed to deploy when the front airbag control module detects a moderate-to-severe frontal collision, to help restrain the driver and front passenger, and then immediately deflate.

NOTE: A frontal collision that is not severe enough to need front airbag protection will not activate the system. This does not mean something is wrong with the front airbag system.

If you do have a collision which deploys the airbag, any or all of the following may occur:

- The nylon airbag material may sometimes cause abrasions and/or skin reddening to the driver and front passenger as the airbags deploy and unfold. The abrasions are similar to friction rope burns or those you might get sliding along a carpet or gymnasium floor. They are not caused by contact with chemicals. They are not permanent and normally heal quickly. However, if you haven't healed significantly within a few days, or if you have any blistering, see your doctor immediately.
- As the front airbags deflate you may see some smoke-like particles. The particles are a normal by-product of the process that generates the nontoxic gas used for airbag inflation. These airborne particles may irritate the skin, eyes, nose, or throat. If you have skin or eye irritation, rinse the area with cool water. For nose or

throat irritation, move to fresh air. If the irritation continues, see your doctor. If these particles settle on your clothing, follow the garment manufacturer's instructions for cleaning.

- It is not advisable to drive your vehicle after the front airbags have deployed. If you are involved in another collision, the front airbags and seat belt pretensioners will not be in place to protect you.

WARNING!

Deployed airbags and seat belt pretensioners cannot protect you in another collision. Have the airbags and seat belt pretensioners replaced by an authorized dealer as soon as possible.

Window Bags Supplemental Restraint System (SRS) — If Equipped

The window bag control modules determines if a side collision is severe enough to require the window bags to inflate. The window bag control module will not detect roll over, front or rear collisions.

The window bag control modules monitor the readiness of the electronic parts of the system whenever the ignition switch is in the START or ON positions. These include all of the items listed under "The window bag system, on vehicles so equipped.

In moderate to severe side collisions, the window bag inflator on the crash side of the vehicle is triggered, releasing a quantity of nontoxic gas. The inflating window bag exits through the seat seam into the space between the occupant and the door. The window bag moves at a very high speed and with such a high force that it could injure you if you are not seated properly, or

if items are positioned in the area where the window bag inflates. This especially applies to children.

If A Side Deployment Occurs

The window bag system is designed to deploy when the window bag control module detects a moderate-to-severe side collision, to help restrain the driver and front passenger, and then immediately deflate.

NOTE: A side collision that is not severe enough to need window bag protection will not activate the system. This does not mean something is wrong with the window bag system.

If you do have a collision which deploys the window bag, any or all of the following may occur:

- The nylon airbag material may sometimes cause abrasions and/or skin reddening to the driver and front passenger as the airbags deploy and unfold. The abrasions are similar to friction rope burns or those you might get sliding along a carpet or gymnasium floor. They are not caused by contact with chemicals. They are not permanent and normally heal quickly. However, if you haven't healed significantly within a few days, or if you have any blistering, see your doctor immediately.
- As the window bags deflate you may see some smoke-like particles. The particles are a normal by-product of the process that generates the nontoxic gas used for airbag inflation. These airborne particles may irritate the skin, eyes, nose, or throat. If you have skin or eye irritation, rinse the area with cool water. For nose or throat irritation, move to fresh air. If the irritation continues, see your doctor. If these particles settle on your clothing, follow the garment manufacturer's instructions for cleaning.

- It is not advisable to drive your vehicle after the window bags have deployed. If you are involved in another collision, the window bags will not be in place to protect you.

WARNING!

Deployed airbags and seat belt pretensioners cannot protect you in another collision. Have the airbags and seat belt pretensioners replaced by an authorized dealer as soon as possible.

Enhanced Accident Response

If the airbags deploy after an impact and the electrical system remains functional, vehicles equipped with power door locks will unlock automatically. In addition, approximately 10 seconds after the vehicle has stopped moving, the interior lights will illuminate until the ignition switch is turned off.

Maintaining Your Airbag System

WARNING!

- **Modifications to any part of the airbag system could cause it to fail when you need it. You could be injured because the airbags are not there to protect you. Do not modify the components or wiring, including adding any kind of badges or stickers to the steering wheel hub trim cover or the upper right side of the instrument panel. Do not modify the front bumper, vehicle body structure, or frame.**
- **You need proper knee impact protection in a collision. Do not mount or locate any aftermarket equipment on or behind the knee bolsters.**
- **It is dangerous to try to repair any part of the airbag system yourself. Be sure to tell anyone who works on your vehicle that it has airbags.**

Airbag Light

You will want to have the airbags ready to inflate for your protection in a collision. While the airbag system is designed to be maintenance free, if any of the following occurs, have an authorized dealer service the system immediately.

- The AIRBAG light does not come on or flickers during the 6 to 8 seconds when the ignition switch is first turned on.
- The light remains on or flickers after the 6 to 8 second interval.
- The light flickers or comes on and remains on while driving.

DaimlerChrysler Corporation Integrated Child Seat — If Equipped

Operating instructions for this seat are included with the seat. If the instructions are not with the seat or in the Owner's Manual Package, replacement instructions can be obtained.

To obtain Integrated Child Seat replacement instructions:

Use the order form at the back of this manual and specify publication number 81-016-1950.

Child Restraint

Everyone in your vehicle needs to be buckled up at all times — babies and children, too. Every state in the United States and all Canadian provinces require that small children ride in proper restraint systems. This is the law, and you can be prosecuted for ignoring it.

Children 12 years and under should ride properly buckled up in a rear seat. According to crash statistics, children are safer when properly restrained in the rear seats, rather than in the front.

WARNING!

In a collision, an unrestrained child, even a tiny baby, can become a missile inside the vehicle. The force required to hold even an infant on your lap could become so great that you could not hold the child, no matter how strong you are. The child and others could be badly injured. Any child riding in your vehicle should be in a proper restraint for the child's size.

Infants and Small Children

There are different sizes and types of restraints for children from newborn size to the child almost large enough for an adult safety belt. Use the restraint that is correct for your child:

- The rearward-facing infant carrier is for babies weighing up to about 9 kg (20 lbs), and less than one year old. The infant carrier must NEVER be used in the front seat of a vehicle with a passenger airbag. An airbag deployment could cause severe injury or death to infants in this position. The infant carrier is held in the vehicle by the lap/shoulder belt or the LATCH child restraint anchorage system.
- Children under one year of age should continue to ride in a rear-facing infant seat, even if they weigh more than 9 kg (20 lbs). A "convertible" child seat, one that is designed to be used either rearward-facing or forward-facing, should be used for children who are too heavy for the infant carrier, but who are too young to face forward in the vehicle.
- The forward-facing child seat is for children from about 9 to 18 kg (20 to 40 lbs), and more than one year old. The child seat is held in the vehicle by the lap/shoulder belt or the LATCH child restraint anchorage system.

- The belt-positioning booster seat is for children weighing more than 18 kg (40 lbs). The child and booster seat are held in the vehicle by the lap/shoulder belt. (Some booster seats are equipped with a front shield and are held in the vehicle by the lap portion.)

WARNING!

- **Improper installation can lead to failure of an infant or child restraint. It could come loose in a collision. The child could be badly injured or killed. Follow the manufacturer's directions exactly when installing an infant or child restraint.**
- **A rearward facing infant restraint should only be used in a rear seat. A rearward facing infant restraint in the front seat may be struck by a deploying passenger airbag which may cause severe or fatal injury to the infant.**

Here are some tips on getting the most out of your child restraint:

- Before buying any restraint system, make sure that it has a label certifying that it meets all applicable Safety Standards. We also recommend that you make sure that you can install the child restraint in the vehicle where you will use it, before you buy it.
- The restraint must be appropriate for your child's weight and height. Check the label on the restraint for weight and height limits.
- Carefully follow the instructions that come with the restraint. If you install the restraint improperly, it may not work when you need it.

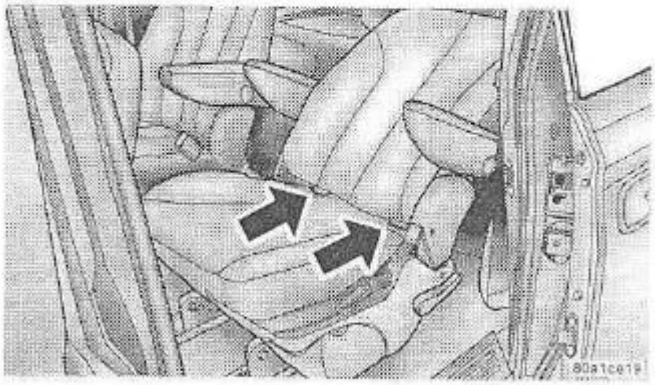
The passenger seat belts are equipped with cinching latch plates, which are designed to keep the lap portion tight around the child restraint so that it is not necessary to use a locking clip. Pulling up on the

shoulder portion of the lap/shoulder belt will tighten the belt. The cinching latch plate will keep the belt tight, however, any seat belt system will loosen with time, so check the belt occasionally and pull it tight if necessary.

- In the rear seat, you may have trouble tightening the lap/shoulder belt on the child restraint because the buckle or latch plate is too close to the belt path opening on the restraint. Disconnect the latch plate from the buckle and twist the short buckle end of the belt several times to shorten it. Insert the latch plate into the buckle with the release button facing out.
- If the belt still can't be tightened, or if by pulling and pushing on the restraint loosens the belt, disconnect the latch plate from the buckle, turn the buckle around, and insert the latch plate into the buckle again. If you still can't make the child restraint secure, try a different seating position.
- Buckle the child into the seat according to the child restraint manufacturer's directions.
- When your child restraint is not in use, secure it in the vehicle with the seat belt or remove it from the vehicle. Don't leave it loose in the vehicle. In a sudden stop or collision, it could strike the occupants or seatbacks and cause serious personal injury.

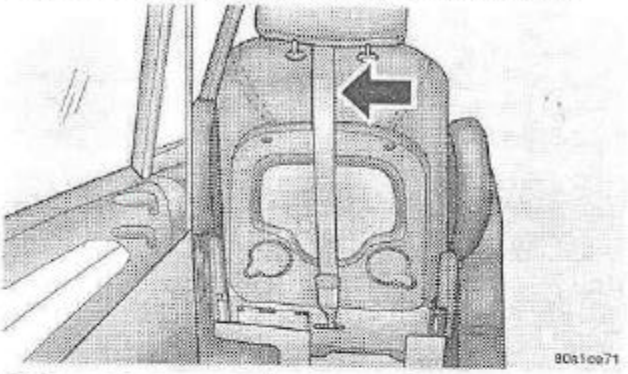
Lower Anchors and Tether for CHildren (LATCH)

Your vehicle is equipped with the child restraint anchorage system called LATCH, which stands for Lower Anchors and Tether for CHildren. The LATCH system provides for the installation of the child restraint without using the vehicle seat belt. All rear seating positions have exclusive lower anchorages located at the rear of the seat cushion. They are round bars, part of the seat frame at the back of the seat cushion, and are readily visible.



In addition, there are tether strap anchorages behind each rear seating position, located in the rear surface of the seatback. When using the tether anchorages in the outboard seating positions, ensure that the strap is routed over the top of the seatback and under the headrestraint between the headrestraint posts. When the tether anchor-

age is used in the center seating position, the strap should be positioned straight over the top of the seatback.



Child restraint systems having attachments designed to connect to the lower anchorages are now available. Child restraints having tether straps and hooks for connection to the seatback tether anchorage have been available for some time. In fact, many child restraint manufacturers will provide add-on tether strap kits for some of their older products.

The 3-passenger bench seat in the third position must be adjusted to the full rear position on the tracks when the LATCH system is used. Also, when using the LATCH system be sure the seatback is two clicks rear of its full upright position.

Because the lower anchorages are to be introduced to passenger carrying vehicles over a period of years, child restraint systems having attachments for those anchorages will continue to have features for installation in vehicles using the lap or lap/shoulder belt. They will also have tether straps, and you are urged to take advantage of all of the available attachments provided with your child restraint in any vehicle.

Installing the Child Restraint System

While there are LATCH anchorages at all the rear seating positions, do not install three child restraints at the same time in the rear most seat position. The anchorages in the rear most seat are not designed to restrain three child restraints at one time. Instead, you may install one child restraint at the center position, or one child restraint at each of the right and left positions.

WARNING!

Do not install child restraint systems equipped with LATCH attachments at all three rear seating positions in the rear most seat at one time. The LATCH anchorages in the rear most seat are designed to restrain no more than two child restraints at a time in the event of a collision.

We urge that you carefully follow the directions of the manufacturer when installing your child restraint. Many, but not all, restraint systems will be equipped with separate straps on each side, with each having a hook or connector and a means for adjusting the tension in the strap. Forward-facing toddler restraints and some rearward-facing infant restraints will also be equipped with a tether strap, a hook and means for adjusting the tension in the strap.

In general, you will first loosen the adjusters on the lower straps and tether straps so that you can more easily attach the hook or connector to the lower anchorages and tether anchorages. Then tighten all three straps as you push the child restraint rearward and downward into the seat.

Not all child restraint systems will be installed as we have described here. Again, carefully follow the instructions that come with the child restraint system.

WARNING!

Improper installation of a child restraint to the LATCH anchorages can lead to failure of an infant or child restraint. The child could be badly injured or killed. Follow the manufacturer's directions exactly when installing an infant or child restraint.

Children Too Large For Booster Seats

Children who are large enough to wear the shoulder belt comfortably, and whose legs are long enough to bend over the front of the seat when their back is against the seatback, should use the lap/shoulder belt in a rear seat.

- Make sure that the child is upright in the seat.
- The lap portion should be low on the hips and as snug as possible.
- Check belt fit periodically. A child's squirming or slouching can move the belt out of position.
- If the shoulder belt contacts the face or neck, move the child closer to the center of the vehicle. If this doesn't help, move the child to the center rear seating position and use the lap belt. Never allow a child to put the shoulder belt under an arm or behind their back.

Transporting Pets

Airbags deploying in the front seat could harm your pet. An unrestrained pet could be thrown about and possibly injured, or injure a passenger during panic braking or in a collision.

Pets should be restrained in the rear seat in pet harnesses or pet carriers that are secured by seat belts.

APPENDIX F

CHILD SEAT

POST-TEST OBSERVATIONS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

	Left Rear Passenger	Right Rear Passenger
Child Seat	Safe Embrace II Latch	Horizon V Latch
Child Seat Mass (kg)	5.0	5.0
Belt Fraying	none	none
Stress Marks	front lower edge	front lower edge
Cracks	none	none
Buckle Stress	none	none
Latch Hooks	yes	yes
Contact	feet to seat bact	feet to seat back

HYBRID III 3 YEAR OLD ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Left Rear Passenger				Right Rear Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	38.4	202	31.2	87	45.5	195	30.8	109
Head CG	Y	G's	9.5	202	5.9	73	11.6	109	7.6	197
Head CG	Z	G's	66.4	84	26.2	55	73.1	91	13.1	61
Head CG Resultant	N/A	G's	72.6	84			75.1	91		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Left Rear Passenger				Right Rear Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	11.6	221	40.2	91	10.8	175	34.5	90
Chest CG	Y	G's	4.9	105	10.8	66	8.8	94	4.0	65
Chest CG	Z	G's	15.0	91	49.3	63	26.9	96	44.2	62
Chest CG Resultant	N/A	G's	56.4	63			54.1	62		

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Left Rear Passenger				Right Rear Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Tether	N/A	Newtons	2333	83			2008	85		

HEAD INJURY CRITERIA (HIC)

Location	Left Rear Passenger				Right Rear Passenger			
	HIC	Avg G's	T^1	T^2	HIC	Avg G's	T^1	T^2
Head CG Primary (36 msec)	802	54.8	68.6	104.6	835	55.7	74.6	110.6
Head CG Primary (15 msec)	555	67.2	77.9	92.9	585	68.6	81.4	96.4

CHEST CLIP (3 MSEC)

Location	Left Rear Passenger			Right Rear Passenger		
	Clip	T^1	T^2	Clip	T^1	T^2
Chest CG Primary	55.6	62.8	65.8	51.5	60.7	63.8

HYBRID III 3 YEAR OLD ATD INJURY CRITERIA AND SENSOR DATA...(continued)

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Left Rear Passenger				Right Rear Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	9.8	107	49.1	71	13.3	126	47.5	69
Pelvis	Y	G's	8.2	93	8.9	60	8.3	73	7.0	59
Pelvis	Z	G's	12.8	206	52.2	62	19.1	200	48.9	69

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Left Rear Passenger				Right Rear Passenger			
			Max	Tim	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	10	25	780	87	138	178	605	109
Neck Force	Y	Newtons	35	200	120	78	116	90	48	177
Neck Force	Z	Newtons	2271	89	790	56	1897	91	415	61
Neck Moment	X	N"m	3.6	126	5.6	87	6.1	94	14.1	138
Neck Moment	Y	N"m	7.3	82	10.6	228	9.7	95	15.3	215
Neck Moment	Z	N"m	2.7	107	1.8	94	11.6	138	1.9	138

LOWER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Left Rear Passenger				Right Rear Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	355	203	1715	89	283	196	1368	91
Neck Force	Y	Newtons	94	105	53	217	176	243	127	174
Neck Force	Z	Newtons	967	89	987	56	1047	194	774	62
Neck Moment	X	N"m	3.0	124	16.8	83	19.9	95	6.2	177
Neck Moment	Y	N"m	154.6	89	19.0	202	16.7	196	110.4	94
Neck Moment	Z	N"m	2.2	122	5.5	81	14.2	91	3.3	178

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Left Rear Passenger				Right Rear Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	mm			17.2	97			17.8	102

DUMMY DIMENSIONS

Test Vehicle: 2001/Dodge/Grand Caravan NHTSA No.: M10317

Test Program: 35 mph Frontal Barrier Impact Test Date: April 4, 2001

Measurement Description	Left Rear Passenger	Right Rear Passenger
	Length (mm)	Length (mm)
Head to Roof (Z)	414	454
Head to Seatback (X)	775	788
Chest to Door (Y)	487	488
Left Foot to Seatback	220	200
Right Foot to Seatback	221	198

CHILD SEAT PHOTOGRAPHS

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Photo 1 - Pre-Test LRS 3 Year Old Left Side View



Photo 2 - Post-Test LRS 3 Year Old Left Side View



Photo 3 - Pre-Test LRS 3 Year Old Left Side View (Door Open)



Photo 4 - Post-Test LRS 3 Year Old Left Side View (Door Open)



Photo 5 - Post-Test LRS 3 Year Old Foot Contact View



Photo 6 - Pre-Test RRS 3 Year Old Right Side View



Photo 7 - Post-Test RRS 3 Year Old Right Side View



Photo 8 - Pre-Test RRS 3 Year Old Right Side View (Door Open)



Photo 9 - Post-Test RRS 3 Year Old Right Side View (Door Open)



Photo 10 - Post-Test RRS 3 Year Old Foot Contact View



Photo 11 - Pre-Test LRS Tether View



Photo 12 - Post-Test LRS Tether View



Photo 13 - Pre-Test RRS Tether View



Photo 14 - Post-Test RRS Tether View

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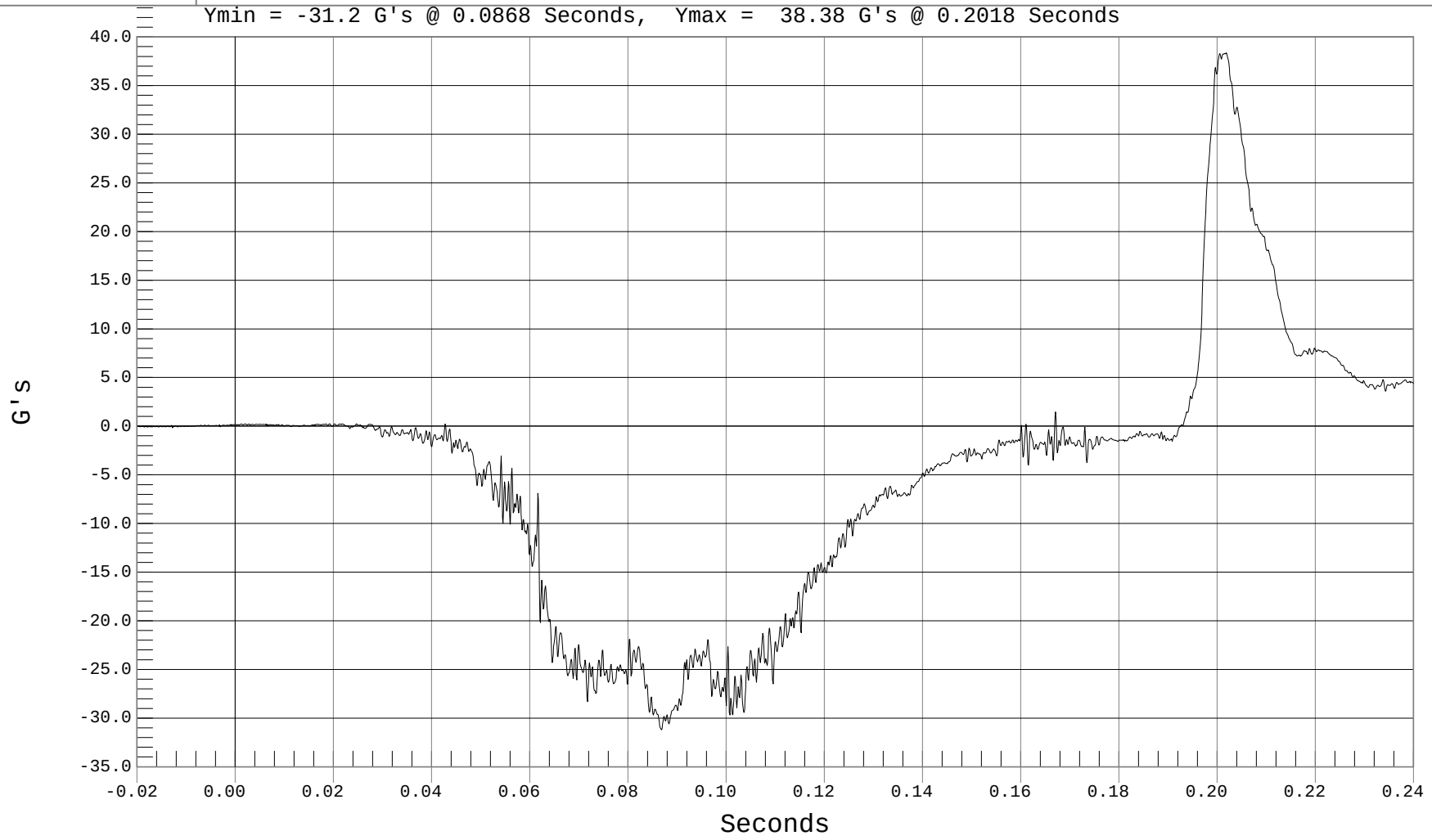
LRS 3 YR OLD HEAD X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD HEAD X, B01037AT.A13

Ymin = -31.2 G's @ 0.0868 Seconds, Ymax = 38.38 G's @ 0.2018 Seconds



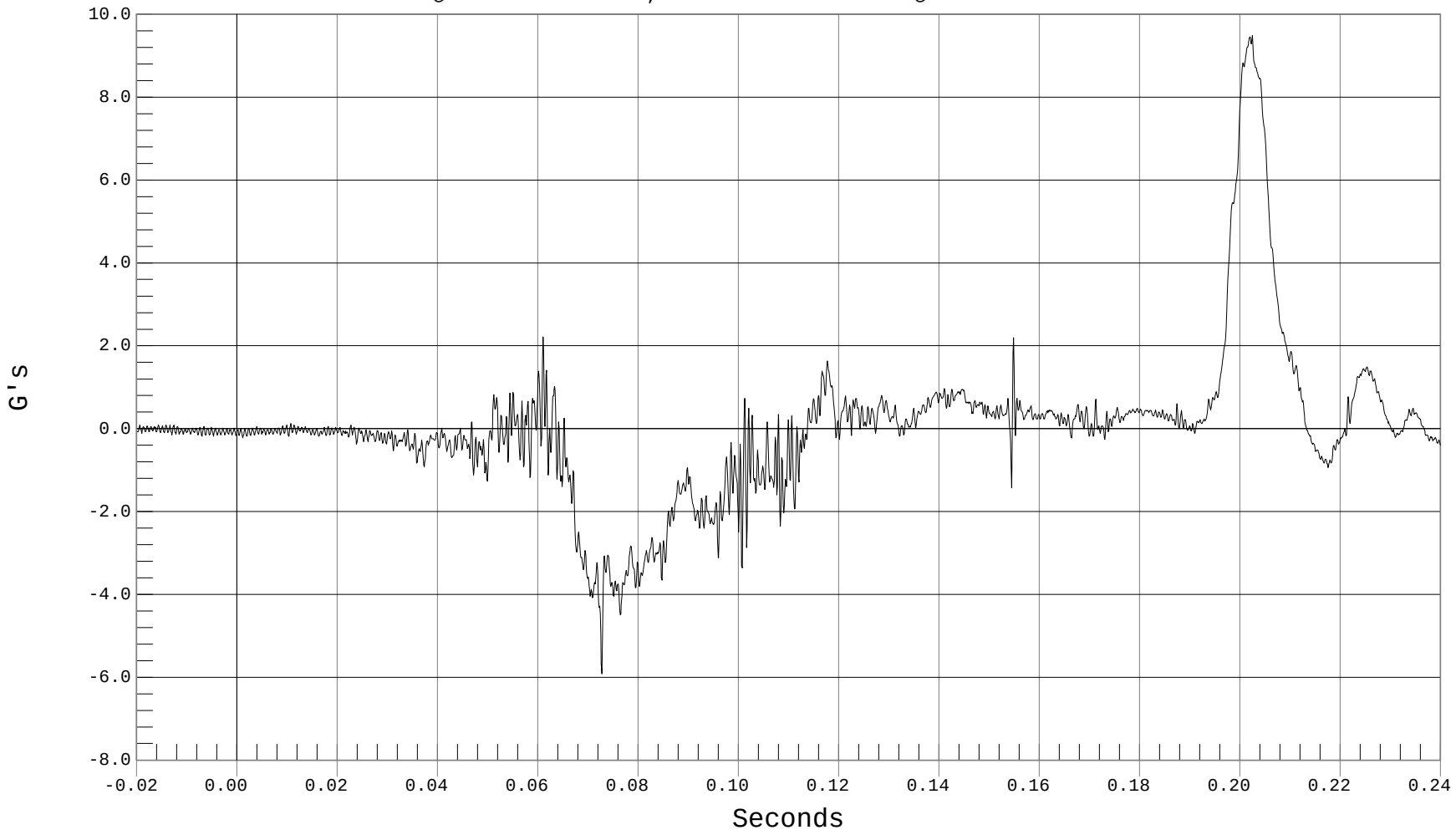
LRS 3 YR OLD HEAD Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD HEAD Y, B01037AT.A14

Ymin = -5.92 G's @ 0.0727 Seconds, Ymax = 9.49 G's @ 0.2024 Seconds



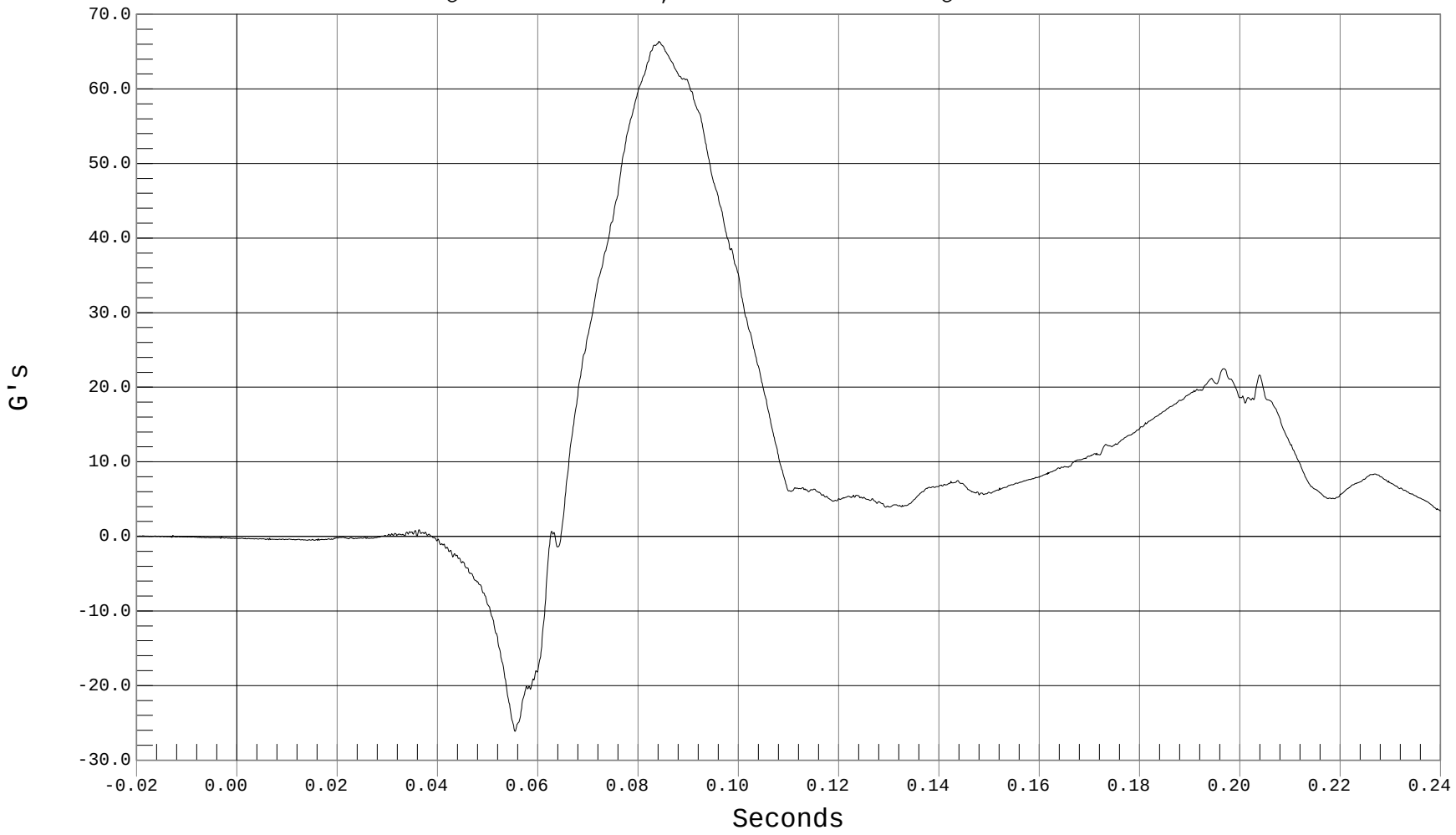
LRS 3 YR OLD HEAD Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD HEAD Z, B01037AT.A15

Ymin = -26.15 G's @ 0.0554 Seconds, Ymax = 66.38 G's @ 0.0841 Seconds



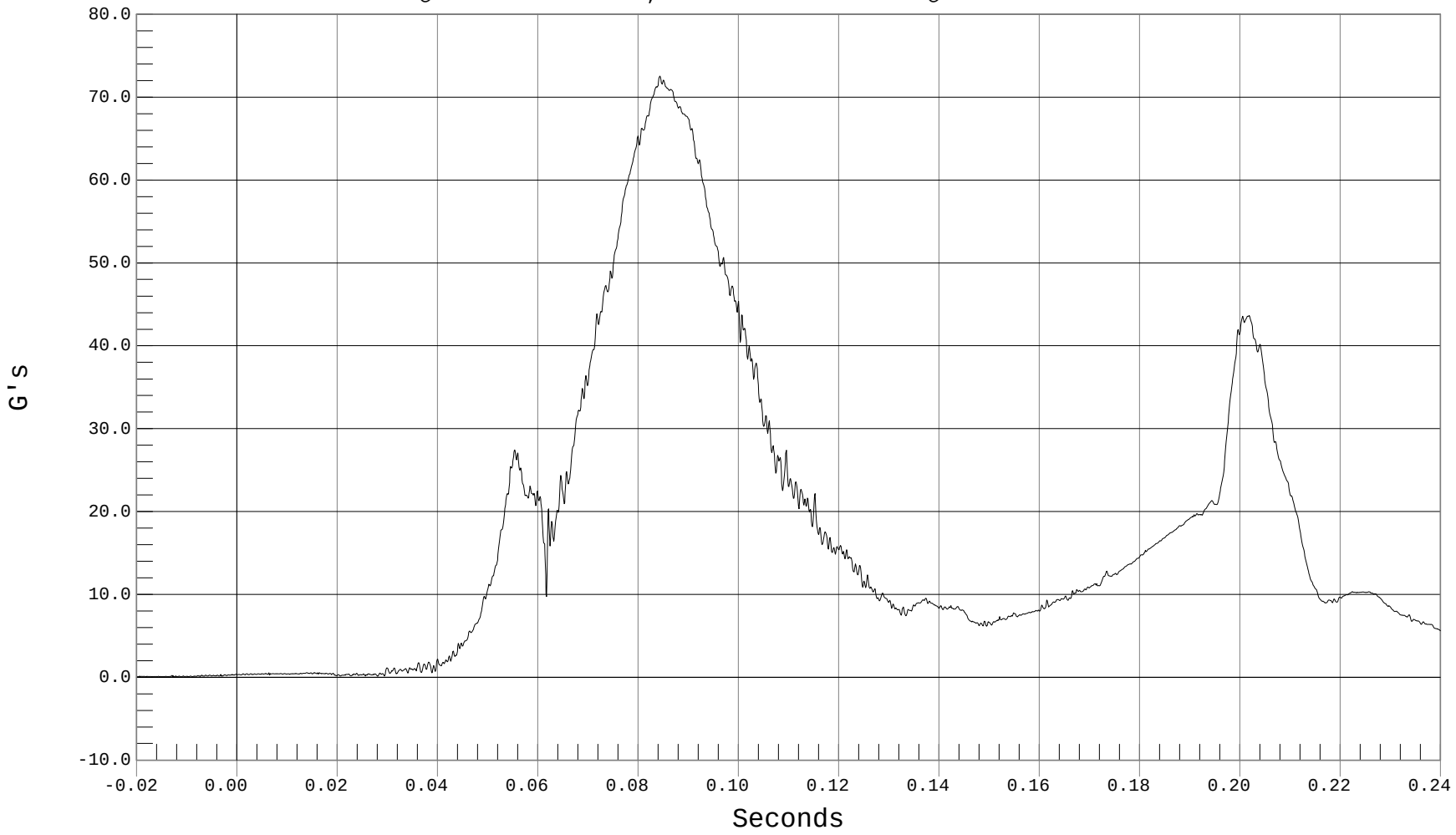
LRS 3 YR OLD HEAD RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS 3 YR OLD HEAD RESULTANT ACCELERATION, B01037AV.A13

Ymin = .02 G's @ -0.0159 Seconds, Ymax = 72.56 G's @ 0.0843 Seconds



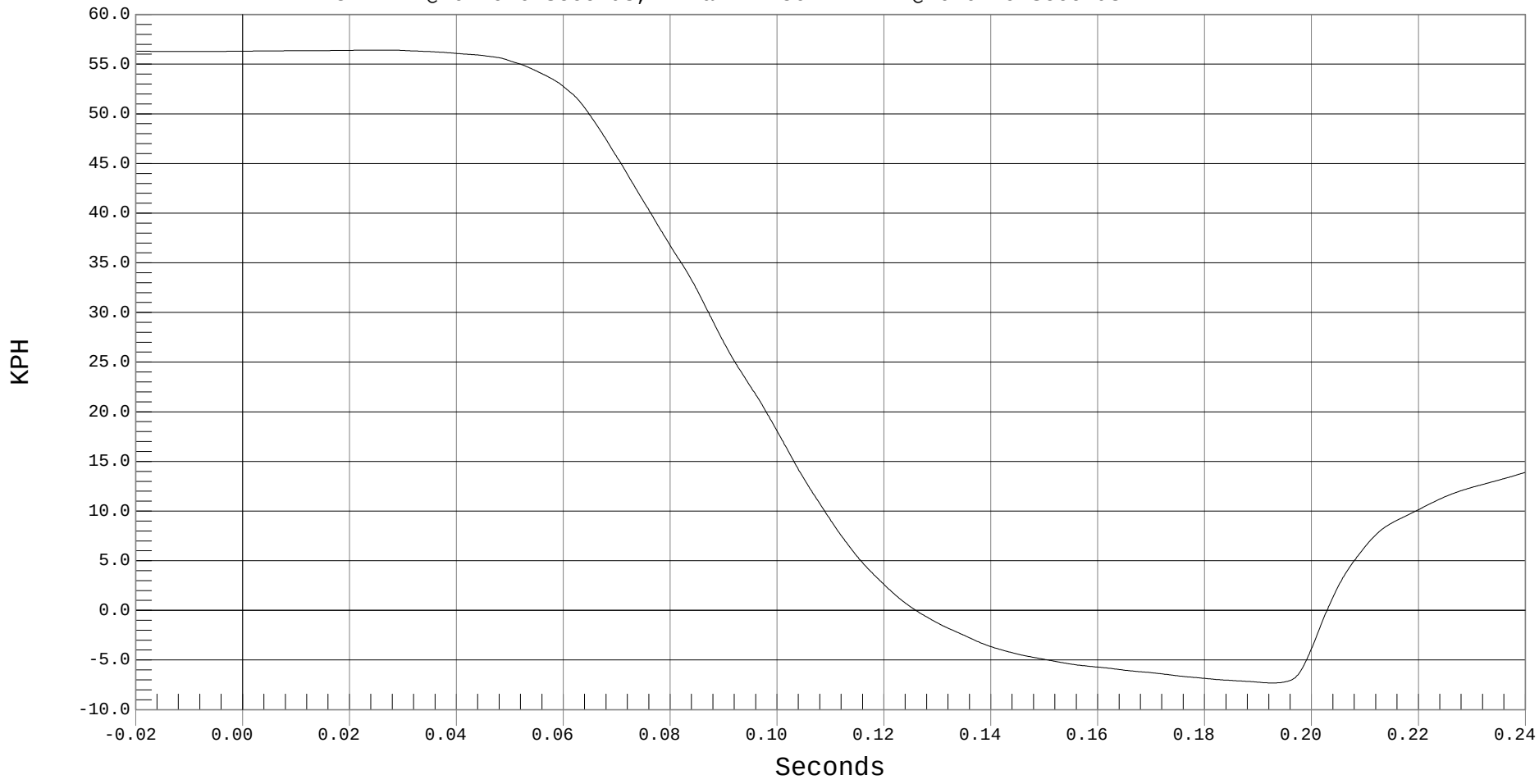
LRS 3 YR OLD HEAD X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LRS 3 YR OLD HEAD X VELOCITY, B01037AI.V13

Ymin = -7.32 KPH @ 0.1926 Seconds, Ymax = 56.41 KPH @ 0.0279 Seconds



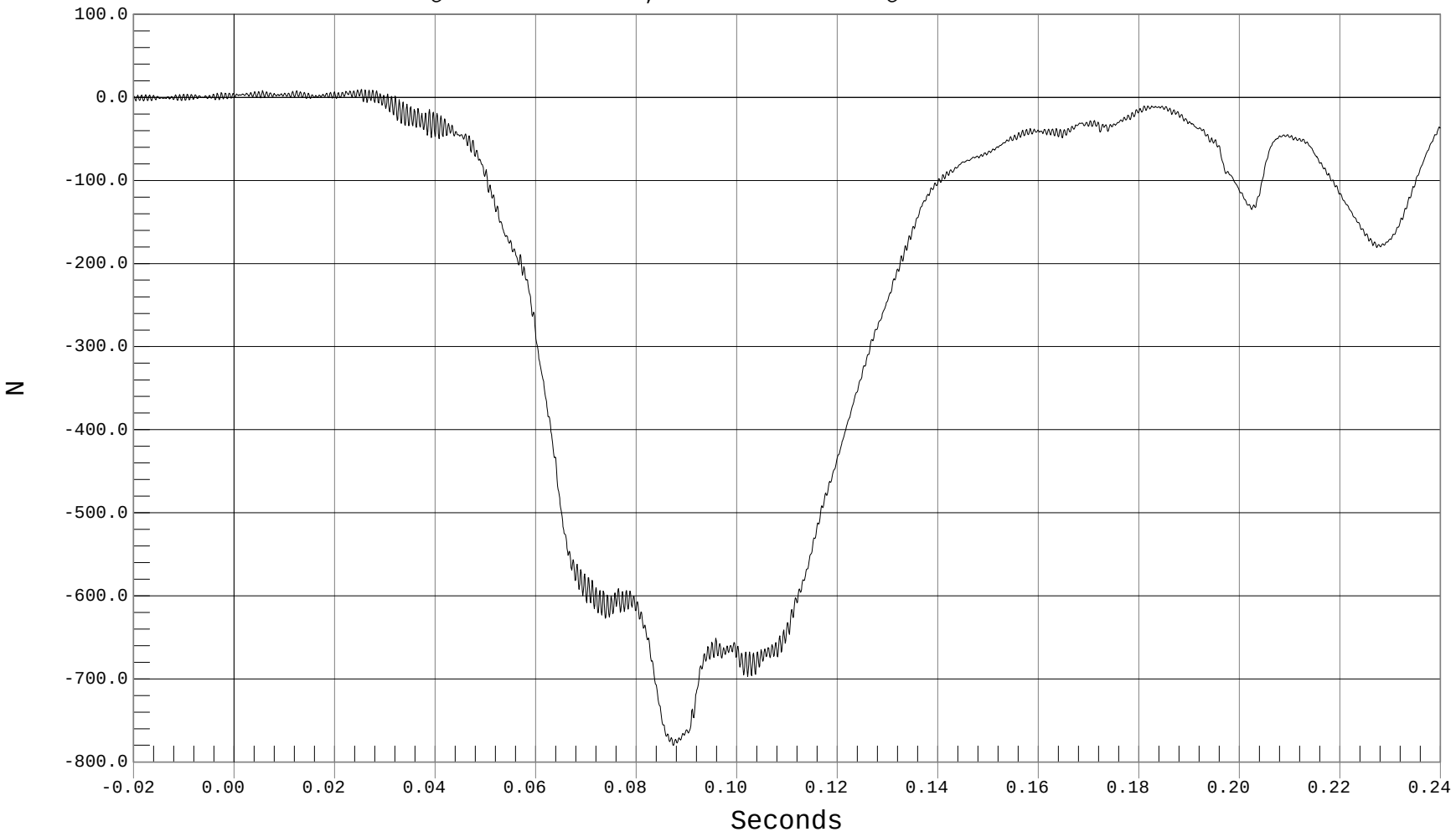
LRS 3 YR OLD UPPER NECK FORCE X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD UPPER NECK FORCE X, B01037FT.F16

Ymin = -780.15 N @ 0.0873 Seconds, Ymax = 9.59 N @ 0.0253 Seconds



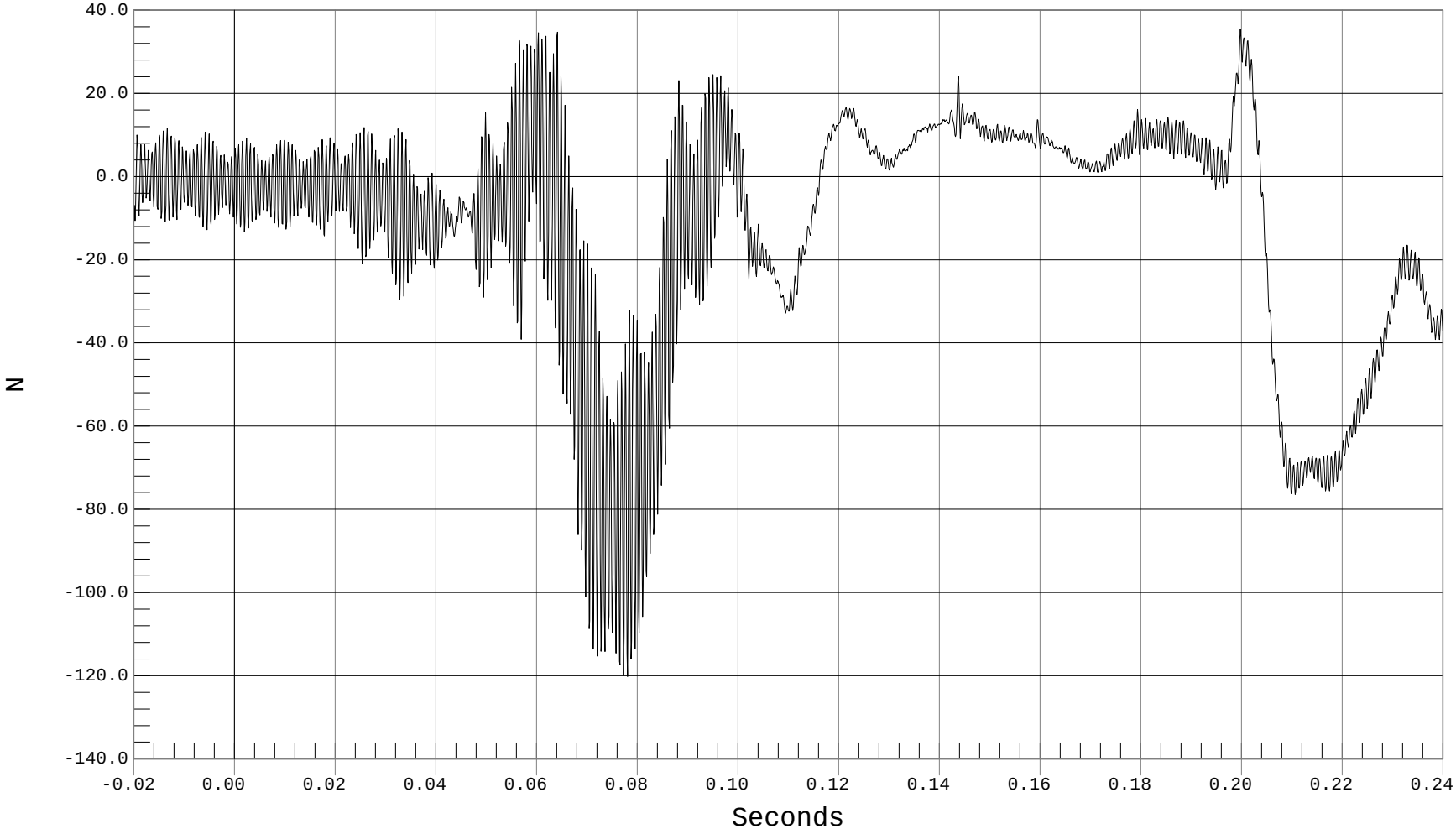
LRS 3 YR OLD UPPER NECK FORCE Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD UPPER NECK FORCE Y, B01037FT.F17

Ymin = -120.24 N @ 0.0780 Seconds, Ymax = 35.44 N @ 0.1997 Seconds



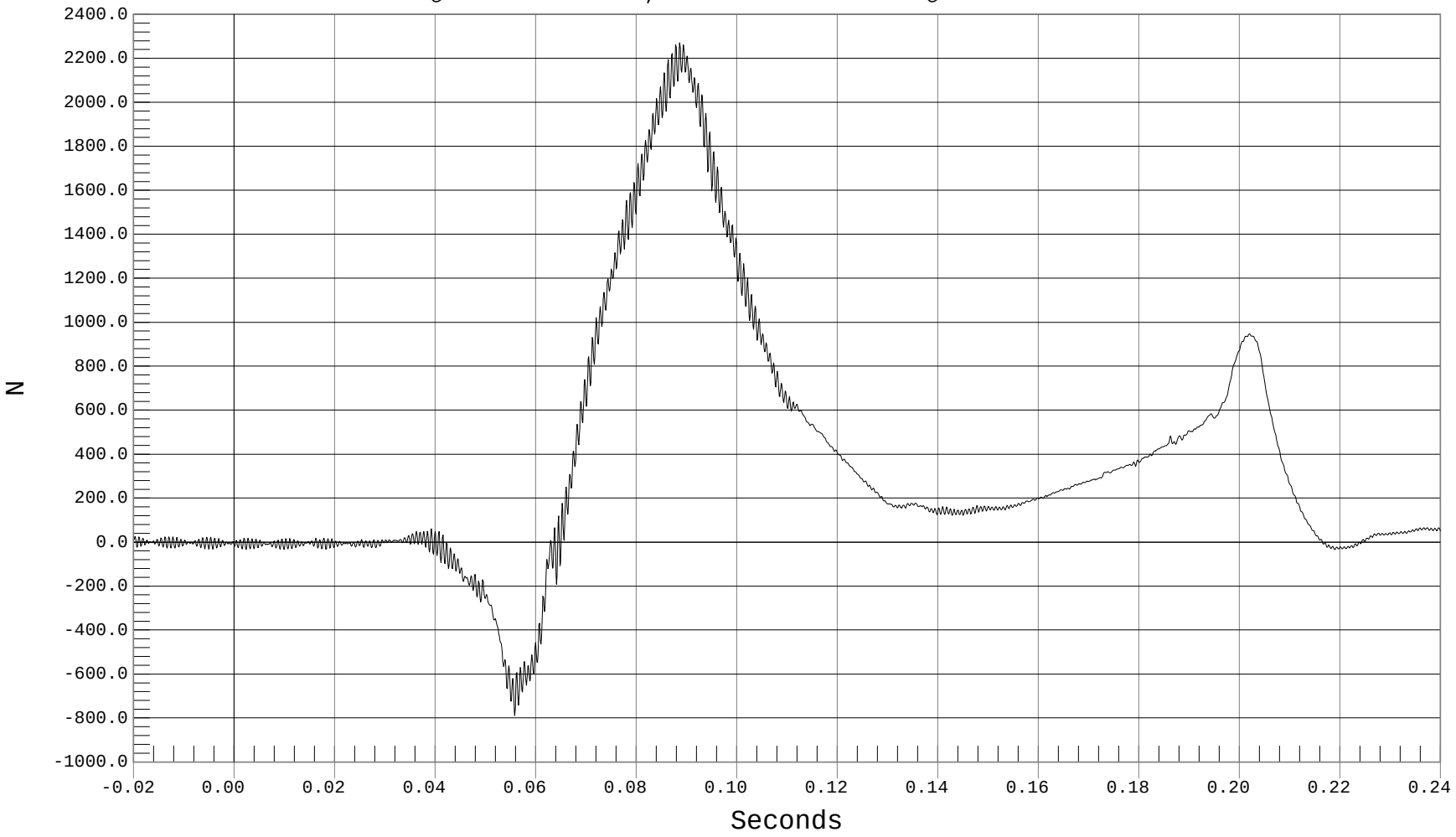
LRS 3 YR OLD UPPER NECK FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD UPPER NECK FORCE Z, B01037FT.F18

Ymin = -790.18 N @ 0.0558 Seconds, Ymax = 2271.04 N @ 0.0886 Seconds



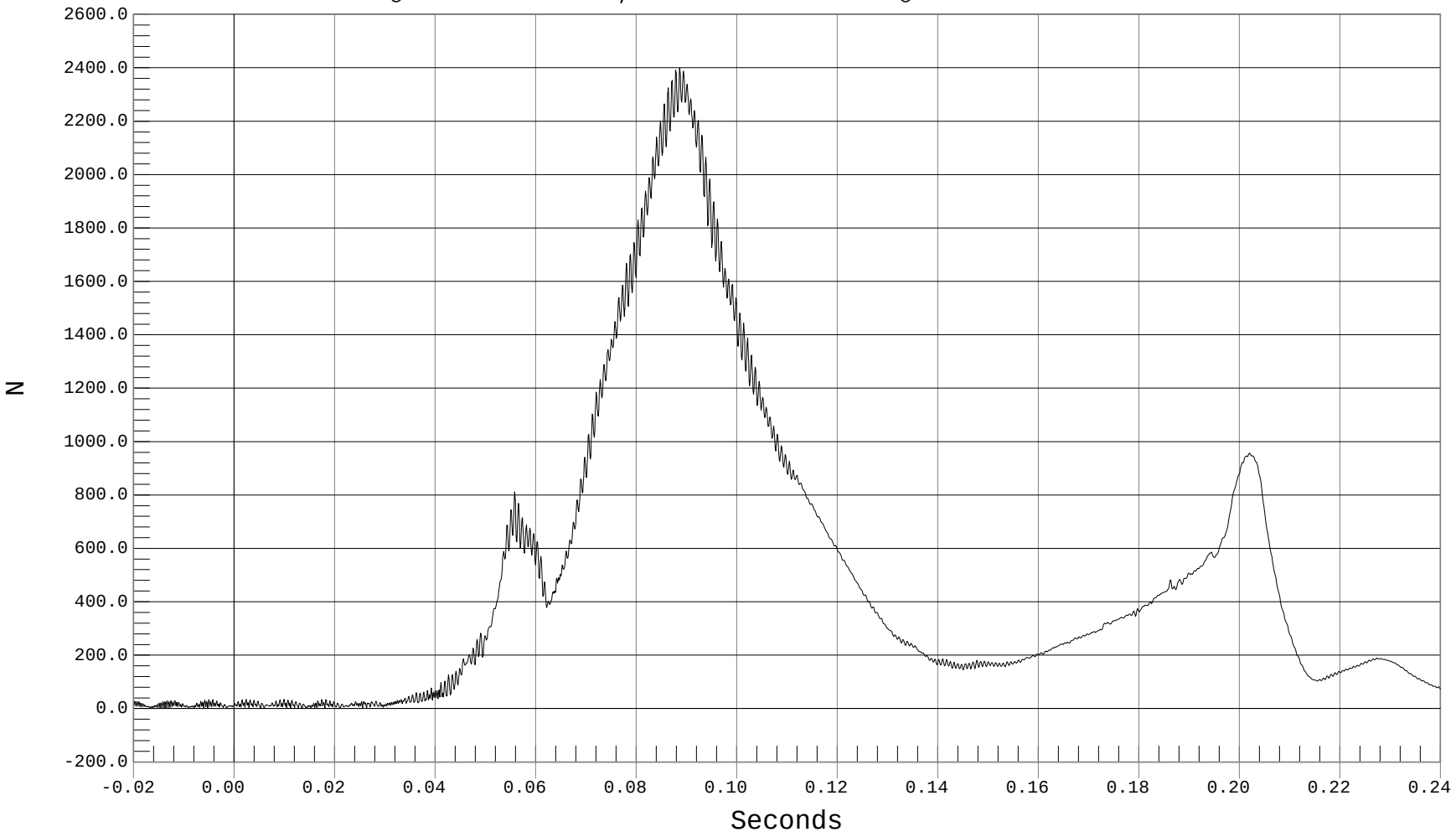
LRS 3 YR OLD UPPER NECK FORCE RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS 3 YR OLD UPPER NECK FORCE RESULTANT, B01037FV.F16

Ymin = .65 N @ -0.0080 Seconds, Ymax = 2398.99 N @ 0.0886 Seconds



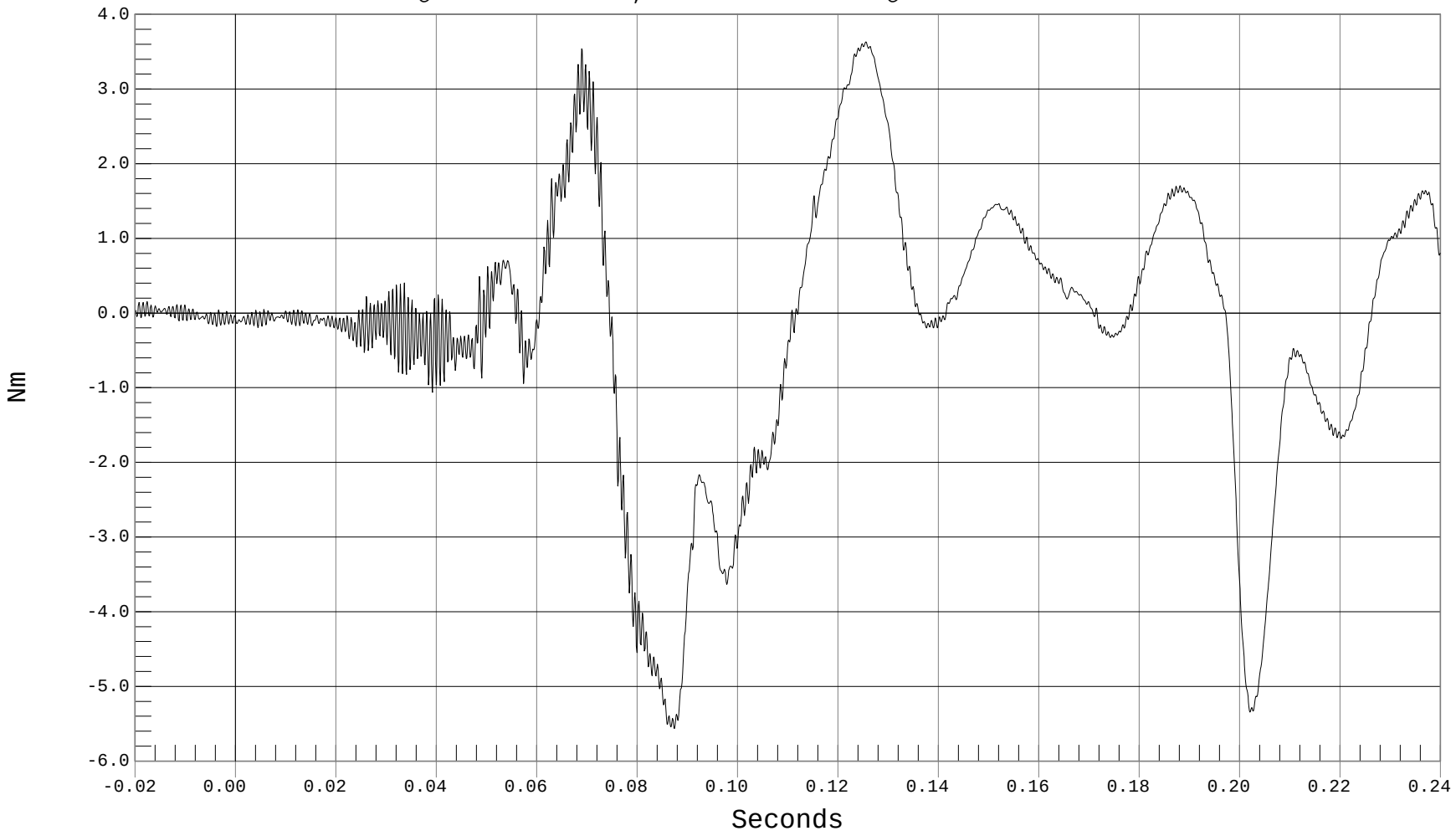
LRS 3 YR OLD UPPER NECK MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 LRS CHILD UPPER NECK MOMENT X, B01037MF.M19

Ymin = -5.57 Nm @ 0.0874 Seconds, Ymax = 3.63 Nm @ 0.1255 Seconds



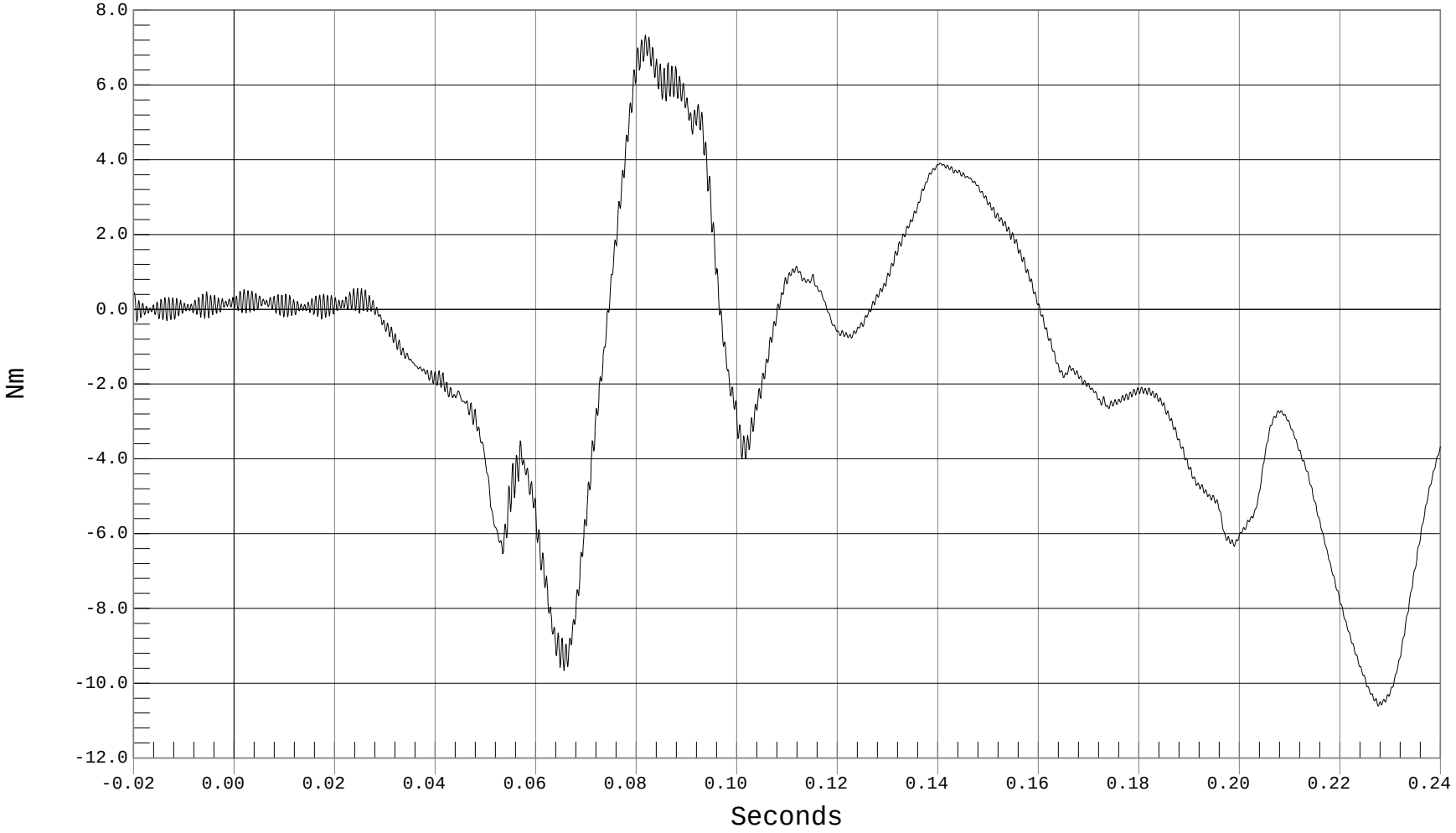
LRS 3 YR OLD UPPER NECK MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 LRS CHILD UPPER NECK MOMENT Y, B01037MF.M20

Ymin = -10.61 Nm @ 0.2275 Seconds, Ymax = 7.34 Nm @ 0.0818 Seconds



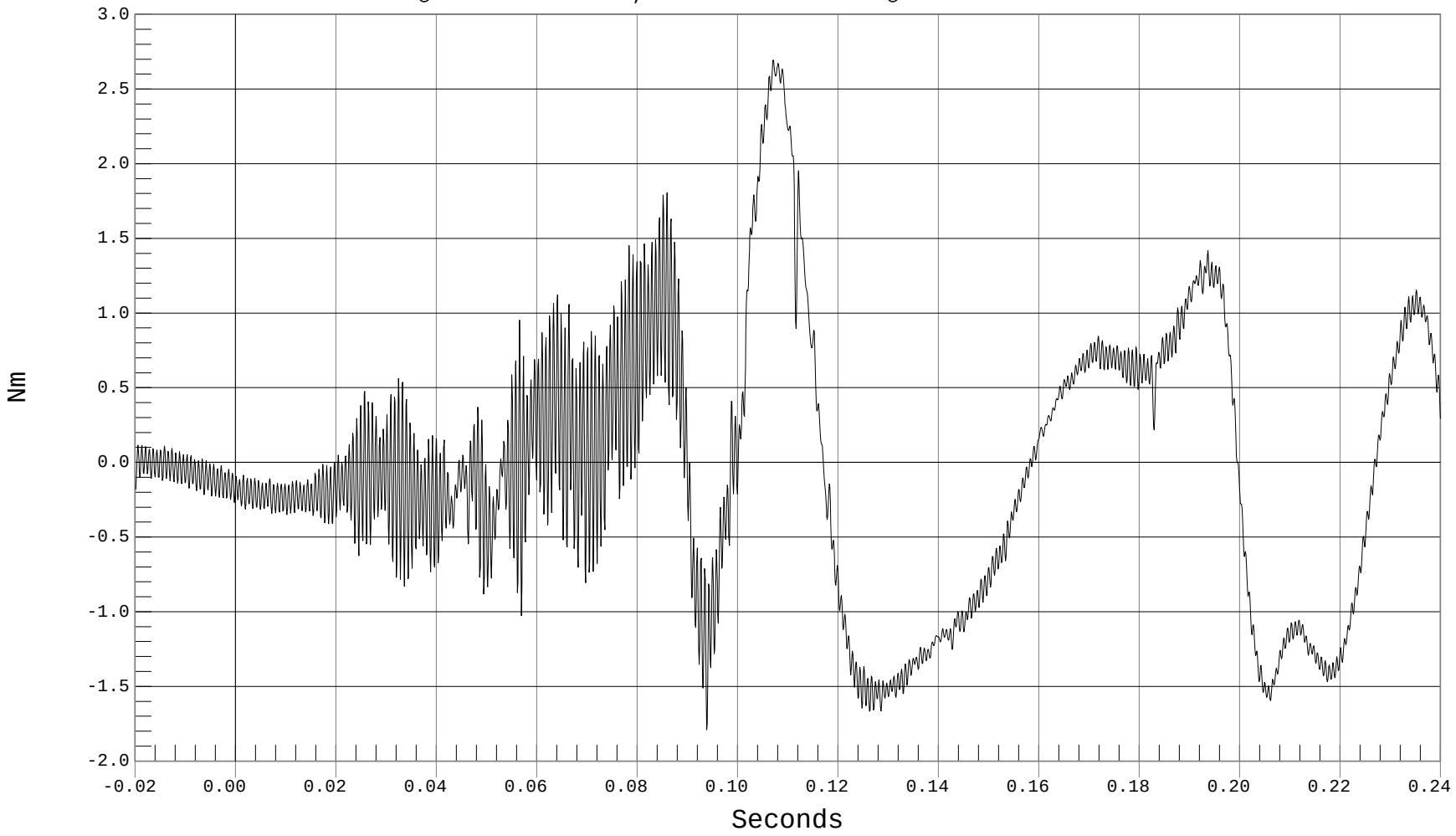
LRS 3 YR OLD UPPER NECK MOMENT Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 LRS CHILD UPPER NECK MOMENT Z, B01037MF.M21

Ymin = -1.79 Nm @ 0.0938 Seconds, Ymax = 2.69 Nm @ 0.1070 Seconds



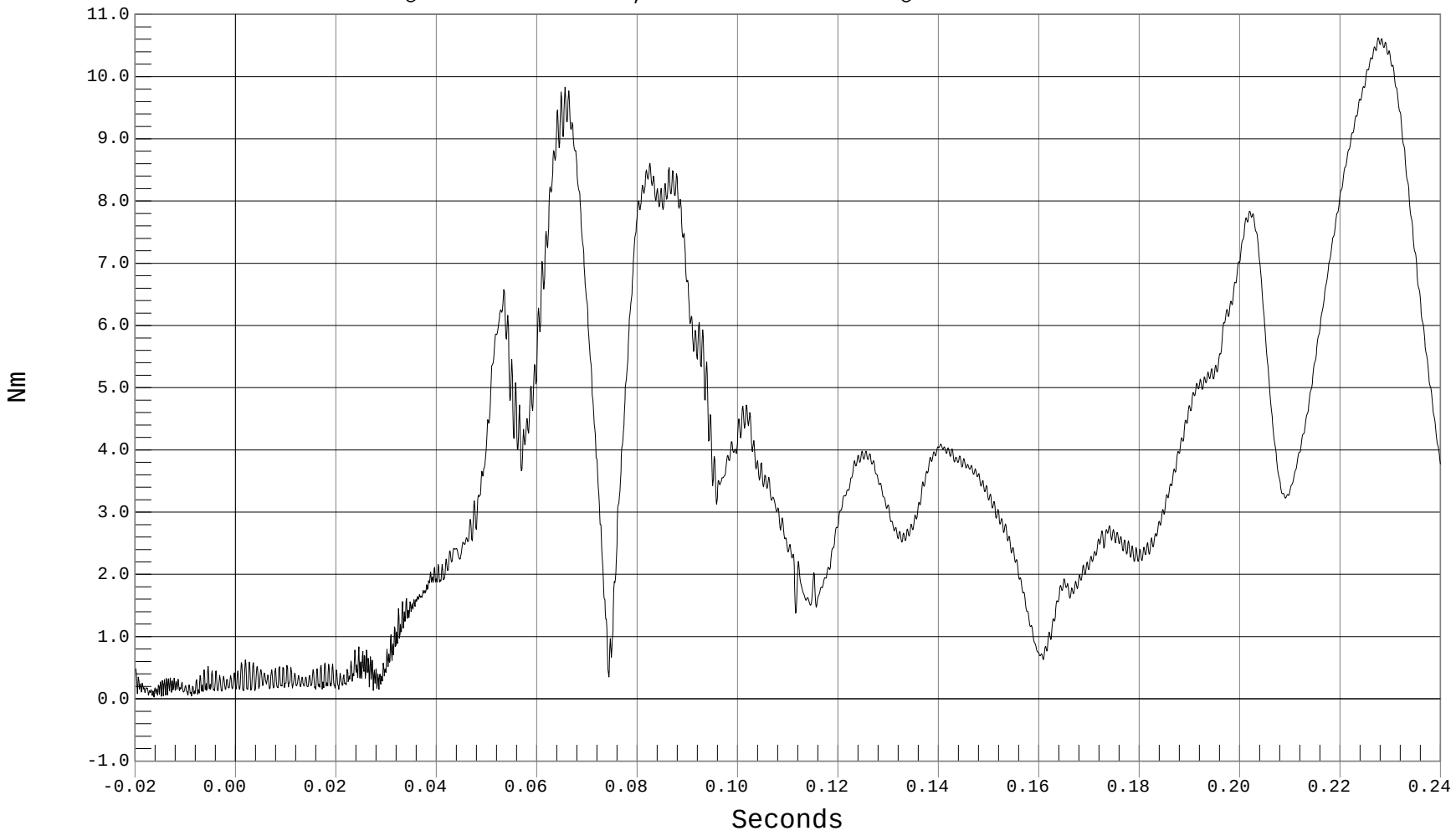
LRS 3 YR OLD UPPER NECK MOMENT RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 LRS 3 YR OLD UPPER NECK MOMENT RESULTANT, B01037MV.M19

Ymin = .03 Nm @ -0.0163 Seconds, Ymax = 10.62 Nm @ 0.2275 Seconds



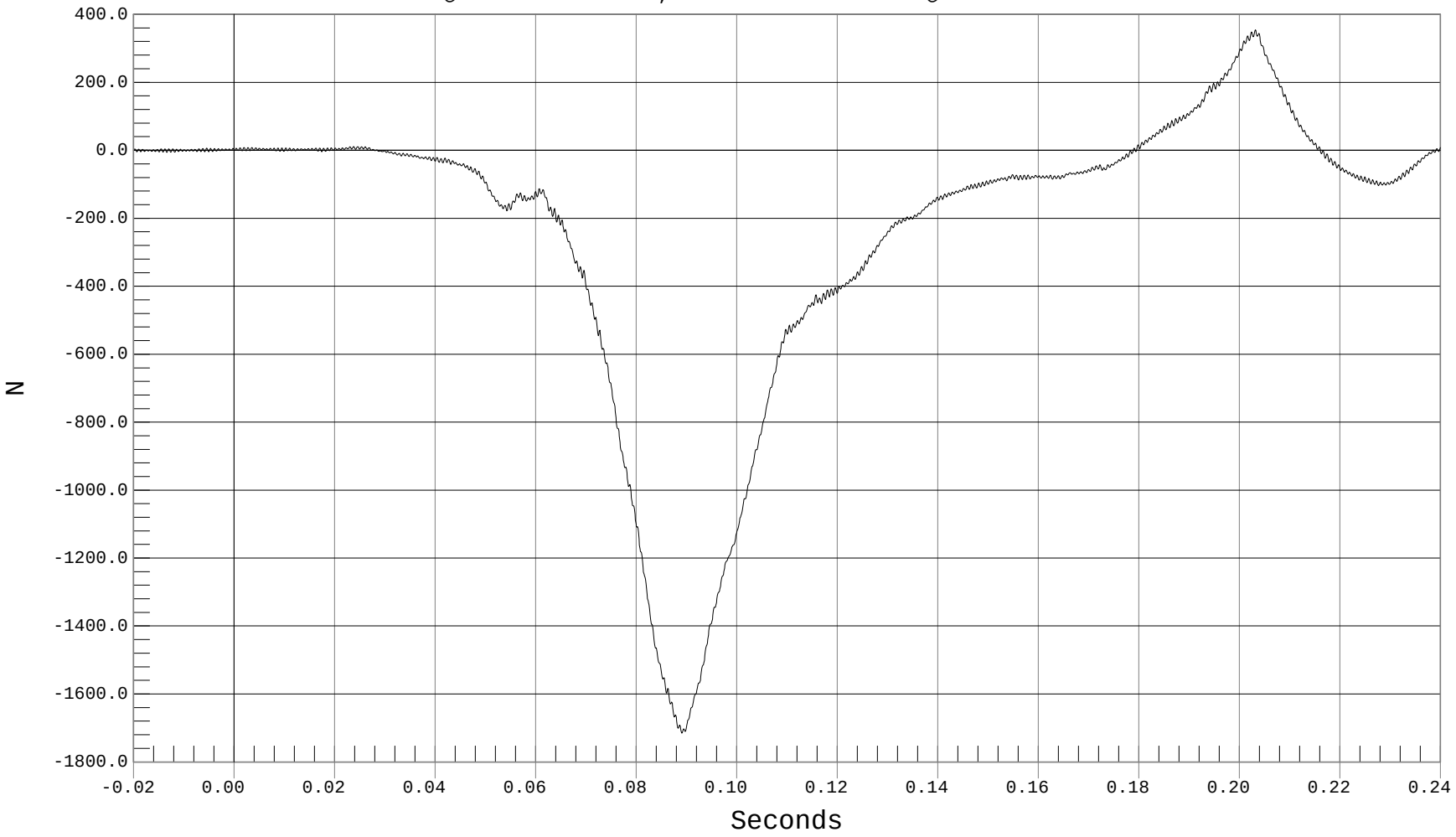
LRS 3 YR OLD LOWER NECK FORCE X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD LOWER NECK FORCE X, B01037FT.F22

Ymin = -1715.29 N @ 0.0890 Seconds, Ymax = 354.46 N @ 0.2031 Seconds



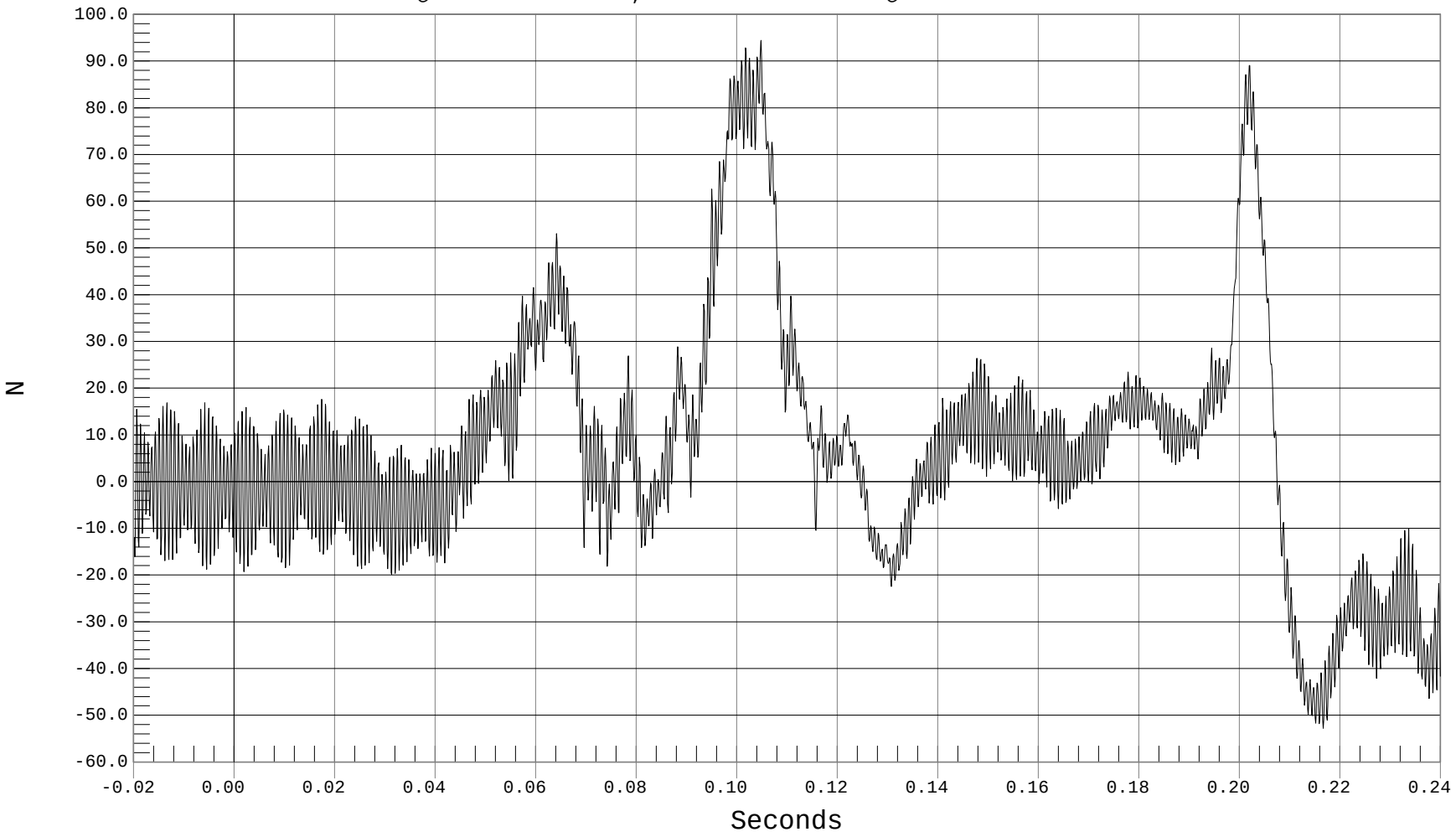
LRS 3 YR OLD LOWER NECK FORCE Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD LOWER NECK FORCE Y, B01037FT.F23

Ymin = -52.78 N @ 0.2166 Seconds, Ymax = 94.42 N @ 0.1048 Seconds



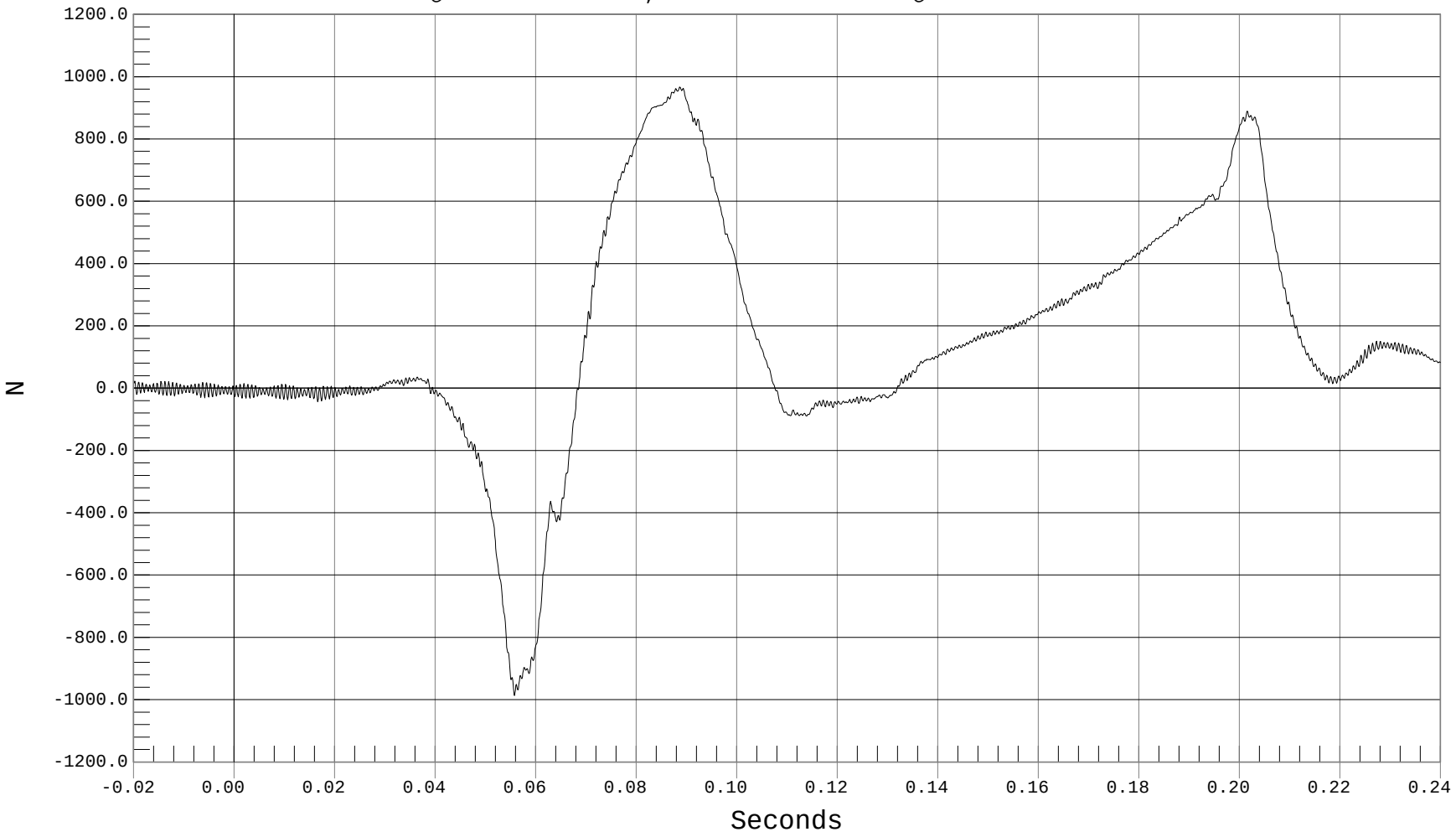
LRS 3 YR OLD LOWER NECK FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD LOWER NECK FORCE Z, B01037FT.F24

Ymin = -986.68 N @ 0.0557 Seconds, Ymax = 966.69 N @ 0.0886 Seconds



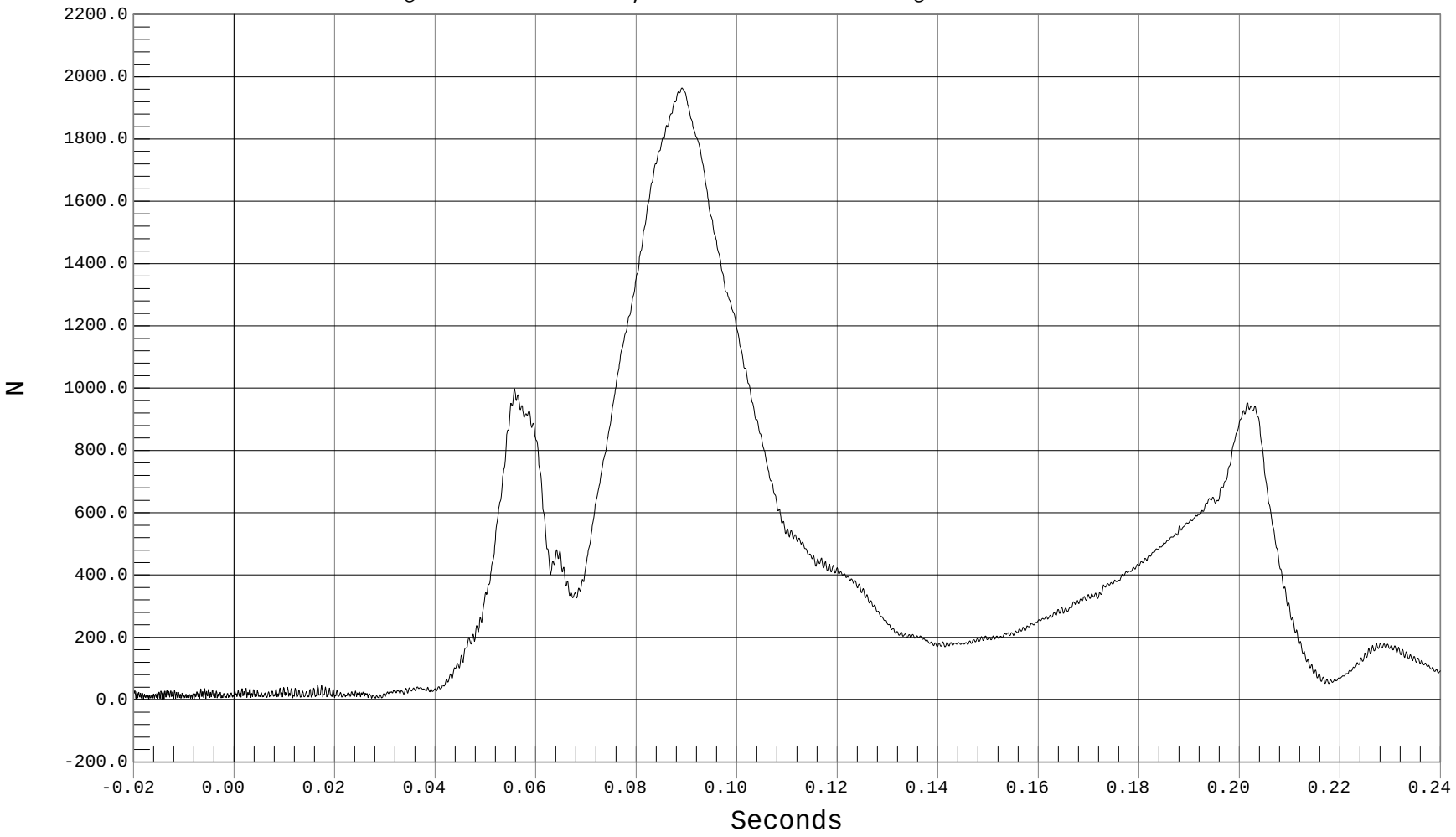
LRS 3 YR OLD LOWER NECK FORCE RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS 3 YR OLD LOWER NECK FORCE RESULTANT, B01037FV.F22

Ymin = 1.12 N @ -0.0080 Seconds, Ymax = 1963.55 N @ 0.0891 Seconds



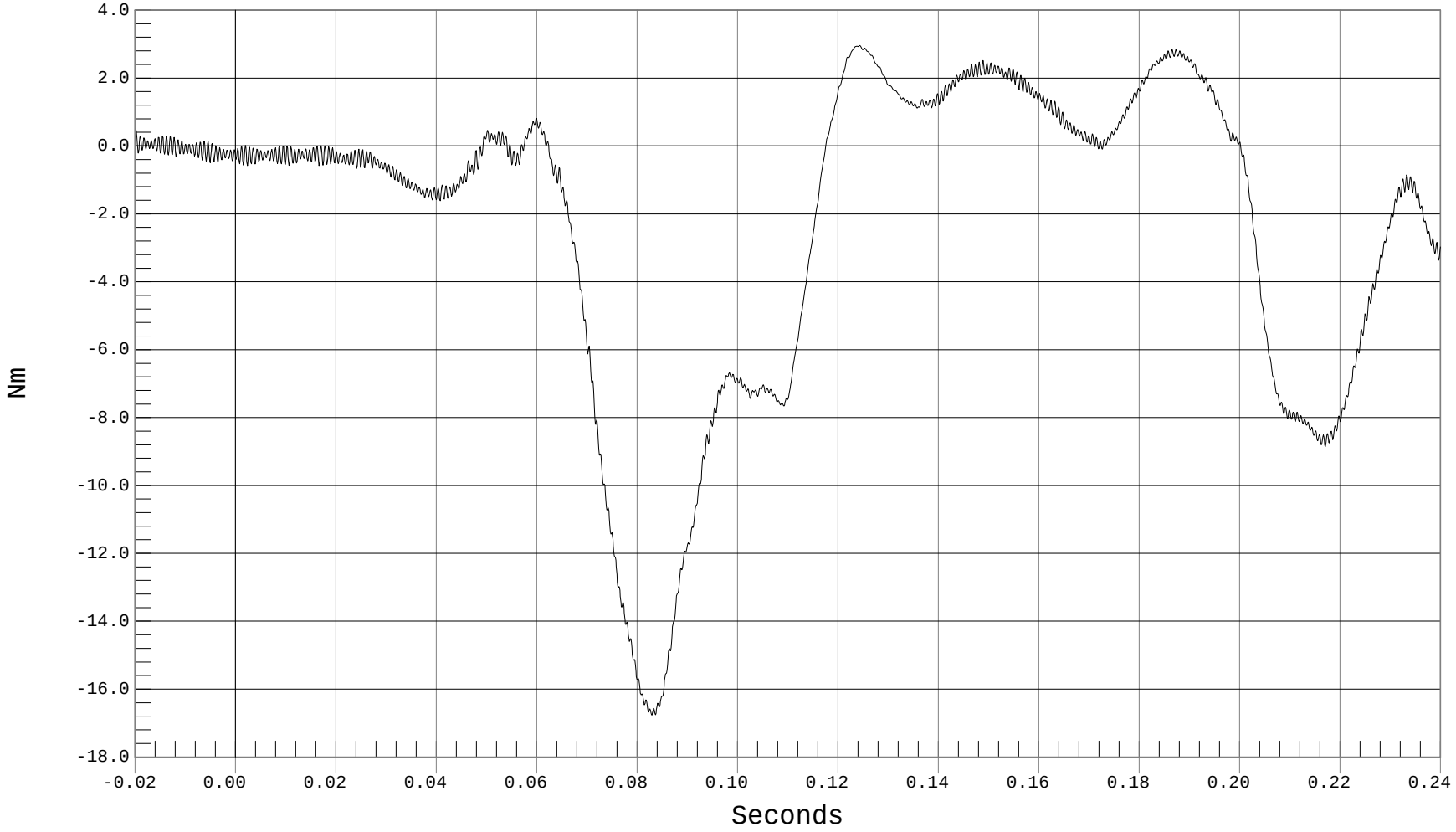
LRS 3 YR OLD LOWER NECK MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 LRS CHILD LOWER NECK MOMENT X, B01037MF.M25

Ymin = -16.77 Nm @ 0.0829 Seconds, Ymax = 2.96 Nm @ 0.1243 Seconds



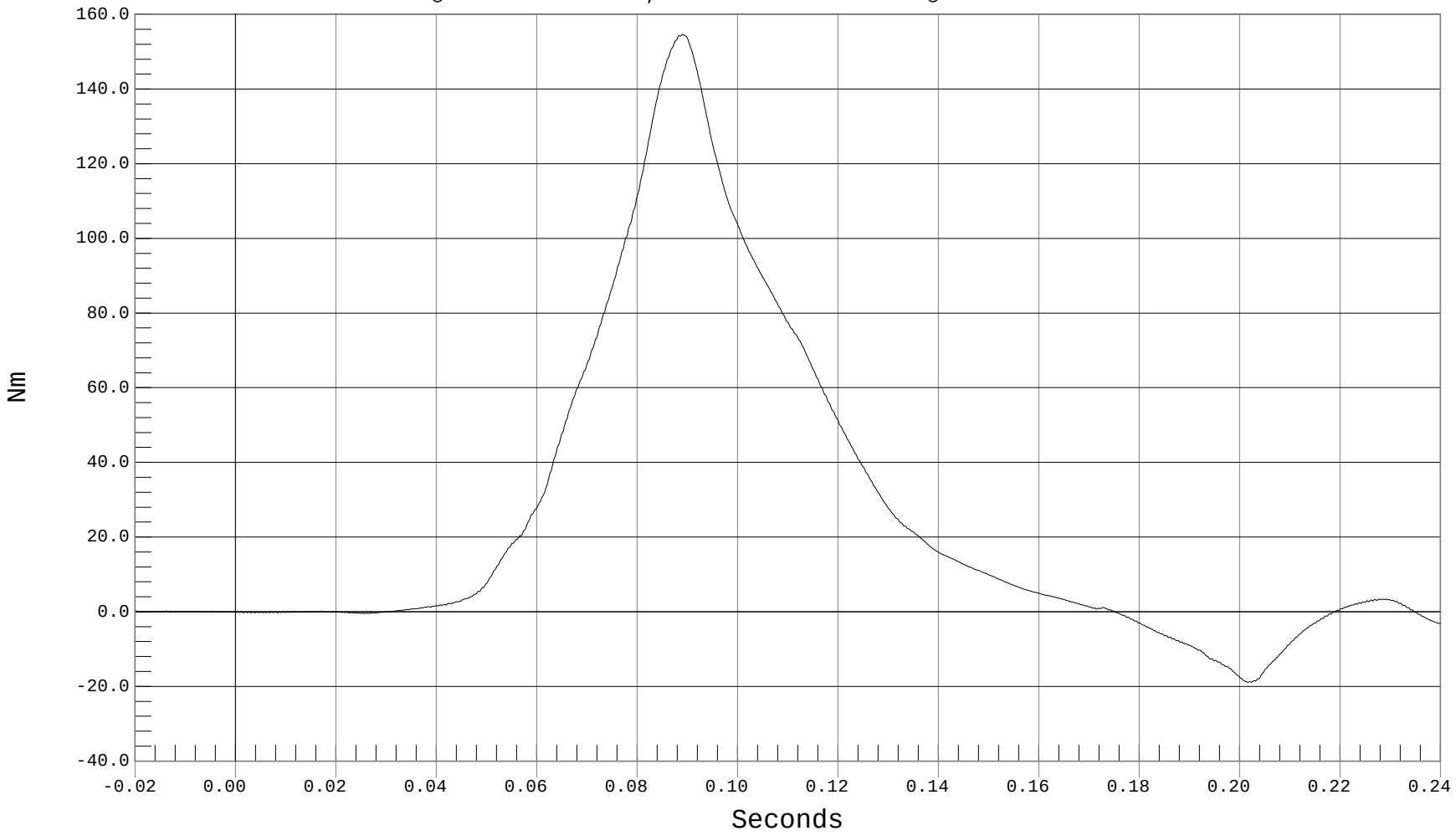
LRS 3 YR OLD LOWER NECK MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 LRS CHILD LOWER NECK MOMENT Y, B01037MF.M26

Ymin = -18.95 Nm @ 0.2016 Seconds, Ymax = 154.62 Nm @ 0.0890 Seconds



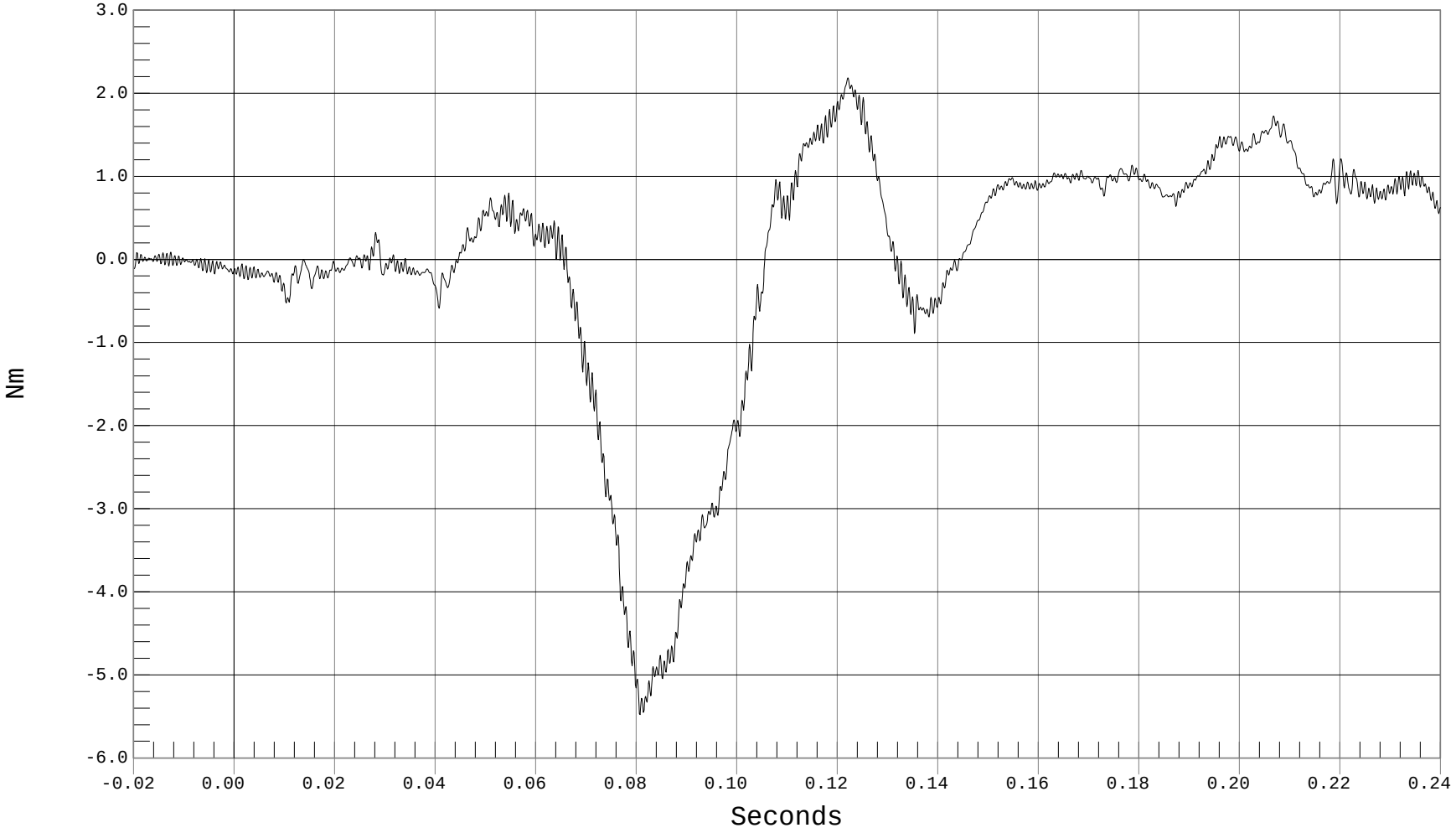
LRS 3 YR OLD LOWER NECK MOMENT Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 LRS CHILD LOWER NECK MOMENT Z, B01037MF.M27

Ymin = -5.48 Nm @ 0.0807 Seconds, Ymax = 2.19 Nm @ 0.1220 Seconds



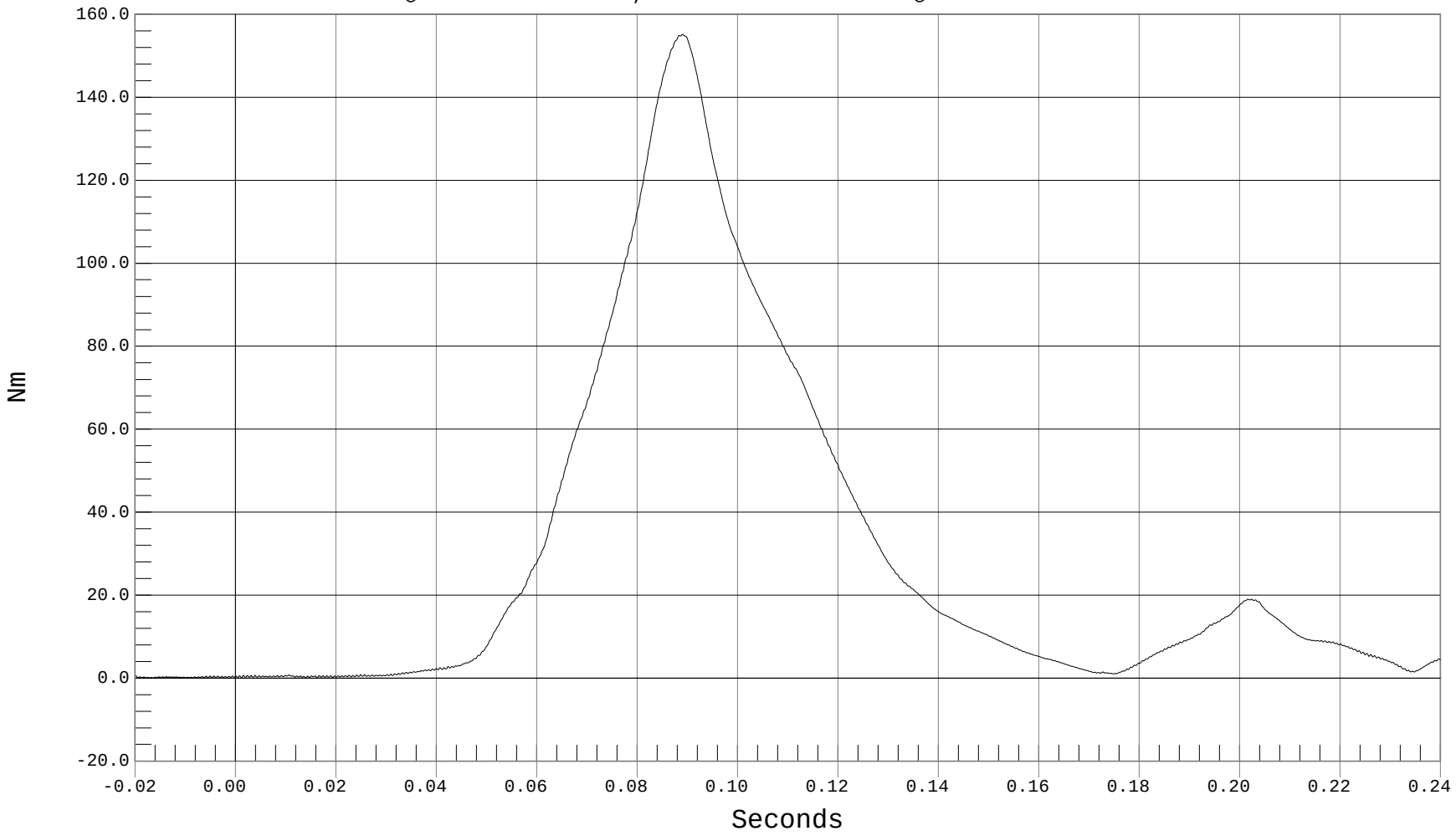
LRS 3 YR OLD LOWER NECK MOMENT RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 LRS 3 YR OLD LOWER NECK MOMENT RESULTANT, B01037MV.M25

Ymin = .01 Nm @ -0.0188 Seconds, Ymax = 155.17 Nm @ 0.0890 Seconds



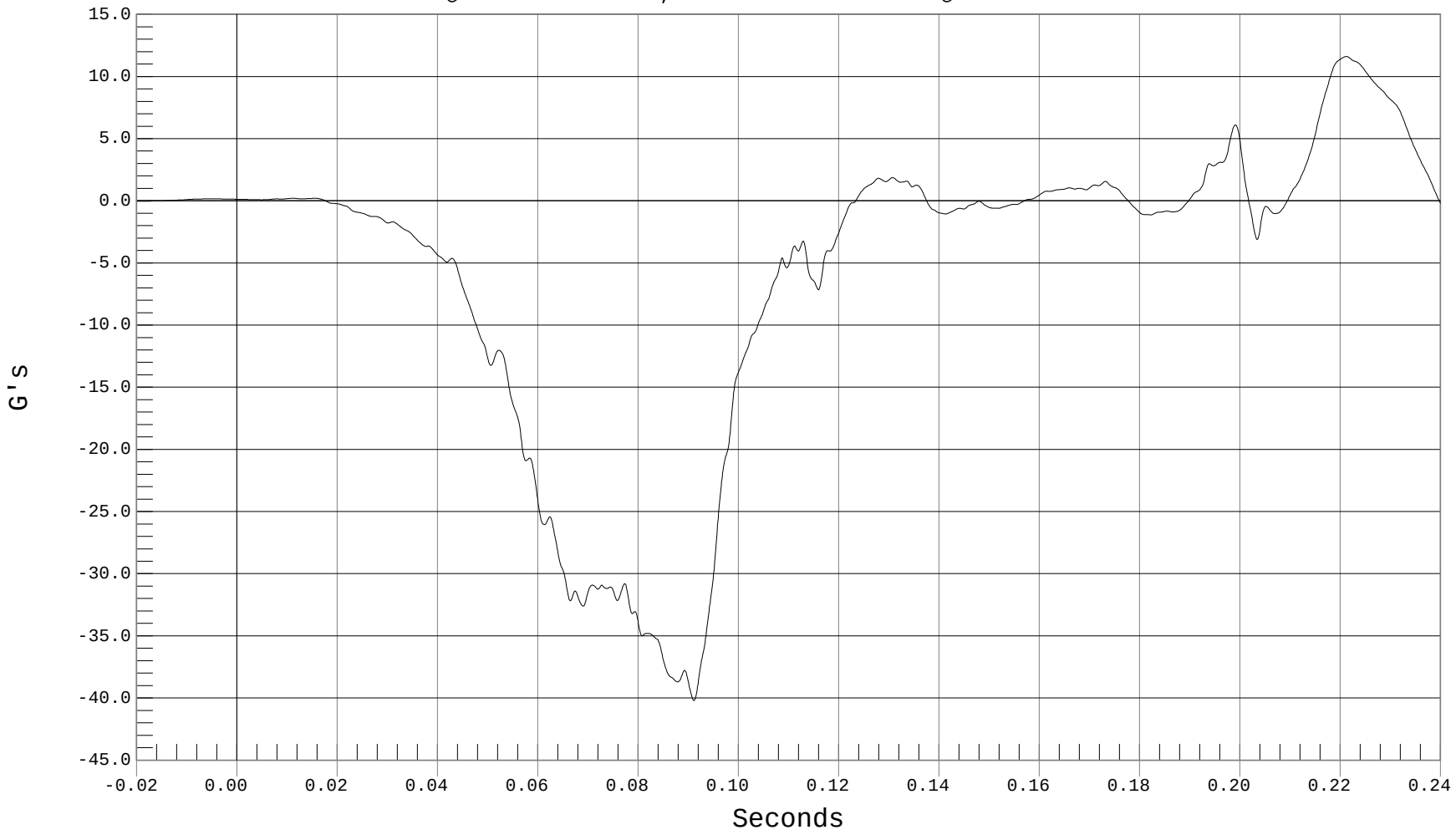
LRS 3 YR OLD CHEST X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LRS CHILD CHEST X, B01037AF.A28

Ymin = -40.21 G's @ 0.0911 Seconds, Ymax = 11.61 G's @ 0.2212 Seconds



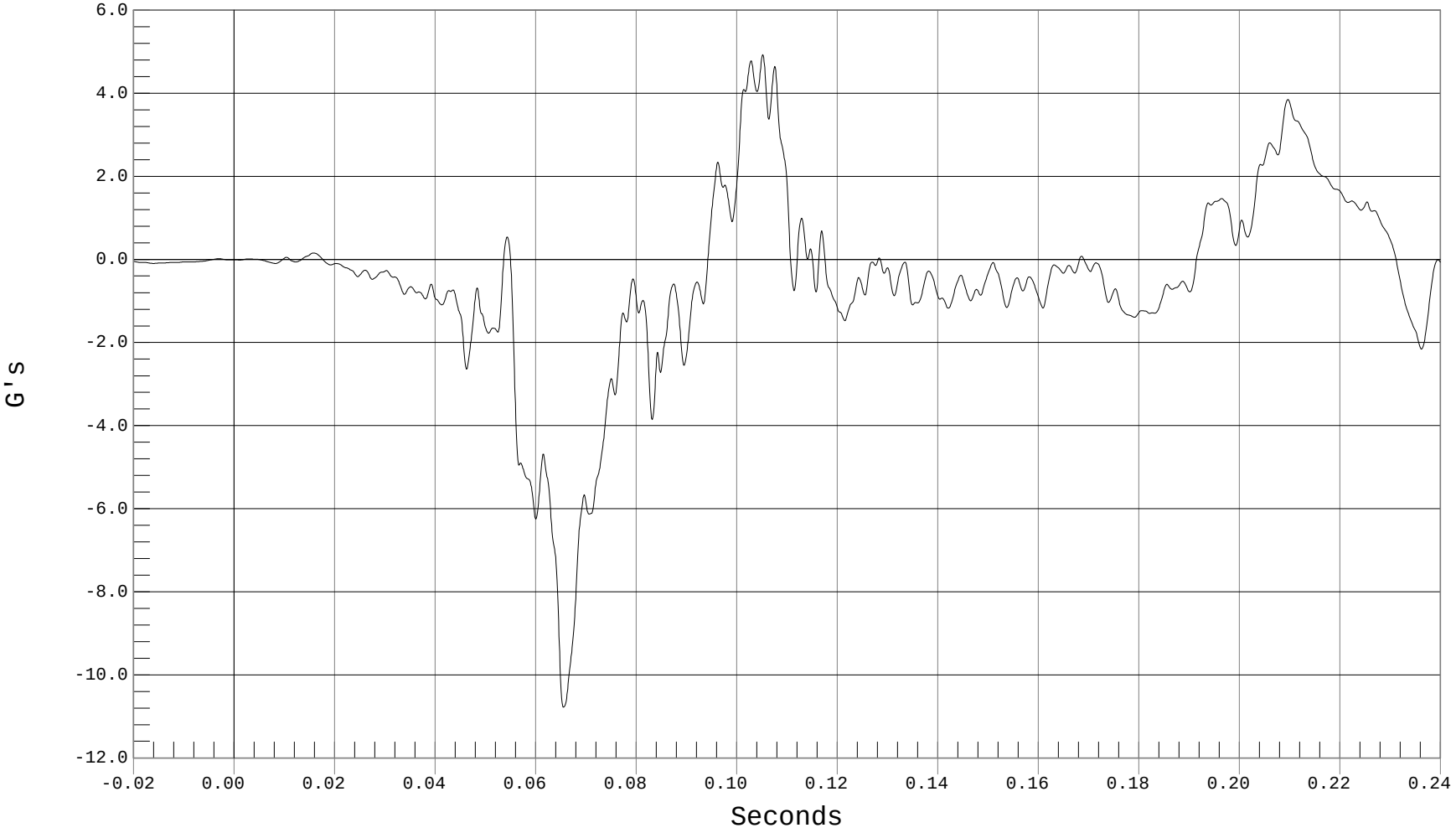
LRS 3 YR OLD CHEST Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LRS CHILD CHEST Y, B01037AF.A29

Ymin = -10.78 G's @ 0.0655 Seconds, Ymax = 4.93 G's @ 0.1051 Seconds



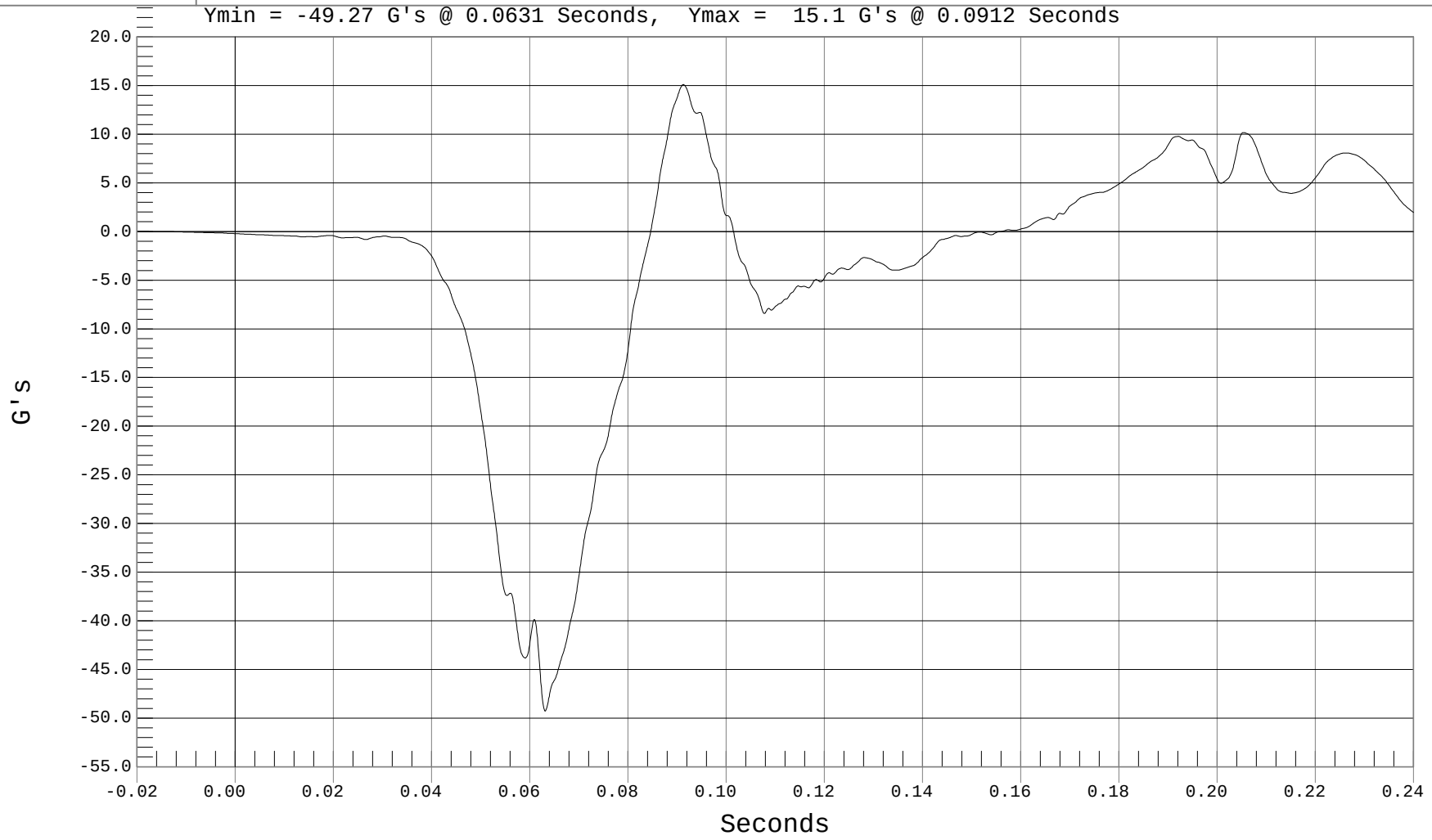
LRS 3 YR OLD CHEST Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LRS CHILD CHEST Z, B01037AF.A30

Ymin = -49.27 G's @ 0.0631 Seconds, Ymax = 15.1 G's @ 0.0912 Seconds



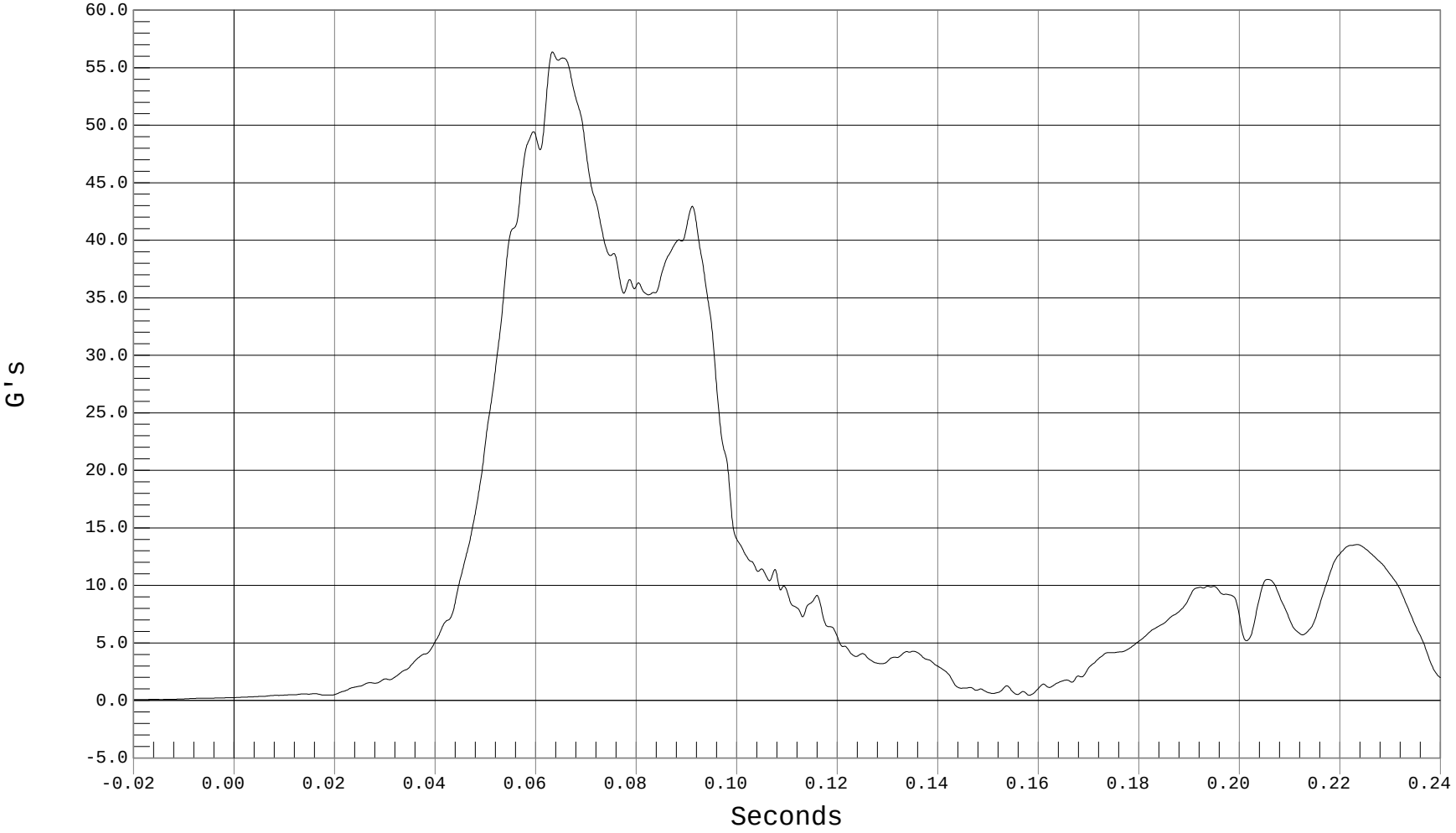
LRS 3 YR OLD CHEST RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LRS 3 YR OLD CHEST RESULTANT ACCELERATION, B01037AV.A28

Ymin = .07 G's @ -0.0199 Seconds, Ymax = 56.37 G's @ 0.0633 Seconds



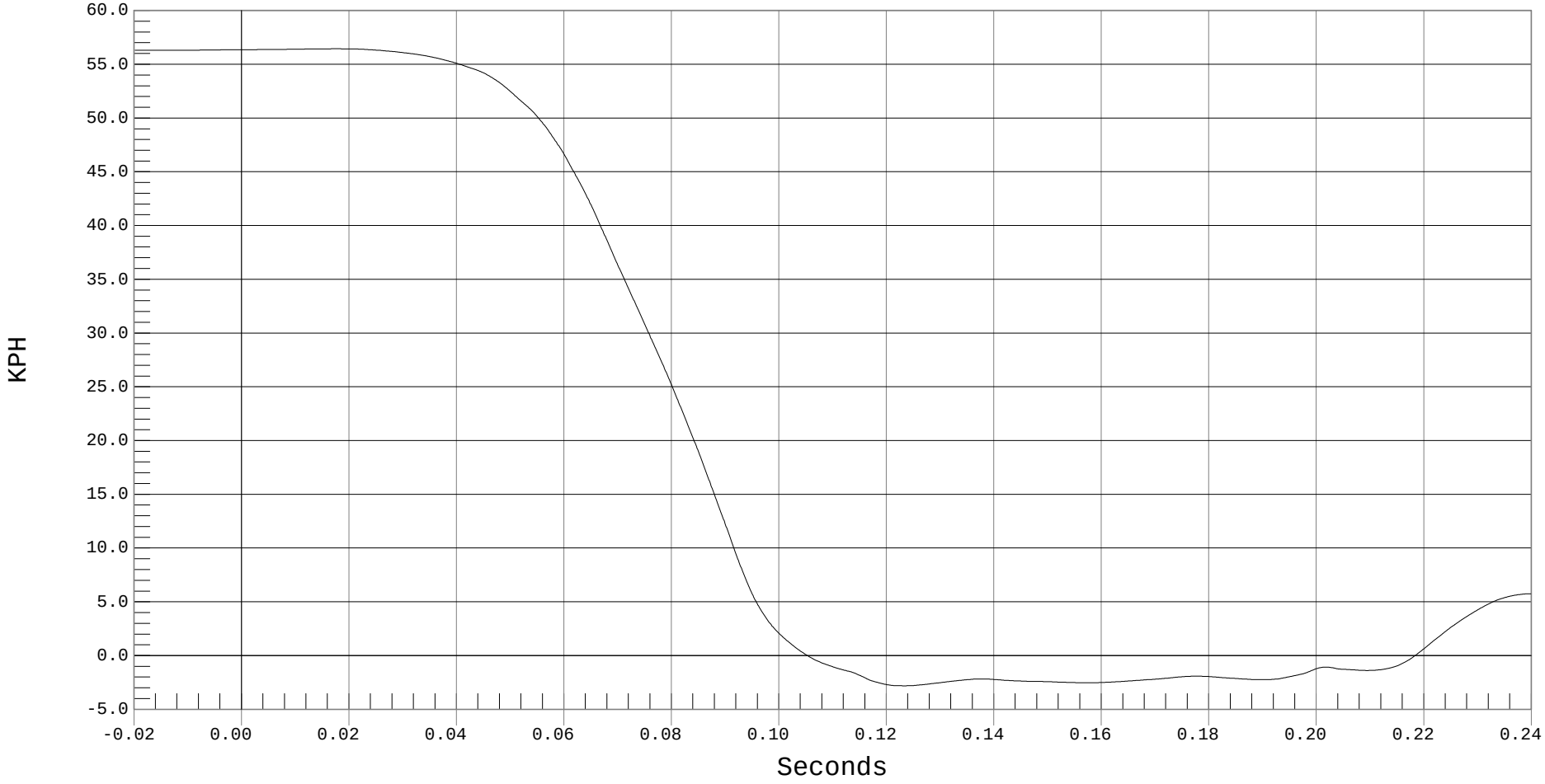
LRS 3 YR OLD CHEST X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 LRS 3 YR OLD CHEST X VELOCITY, B01037AI.V28

Ymin = -2.82 KPH @ 0.1233 Seconds, Ymax = 56.44 KPH @ 0.0176 Seconds



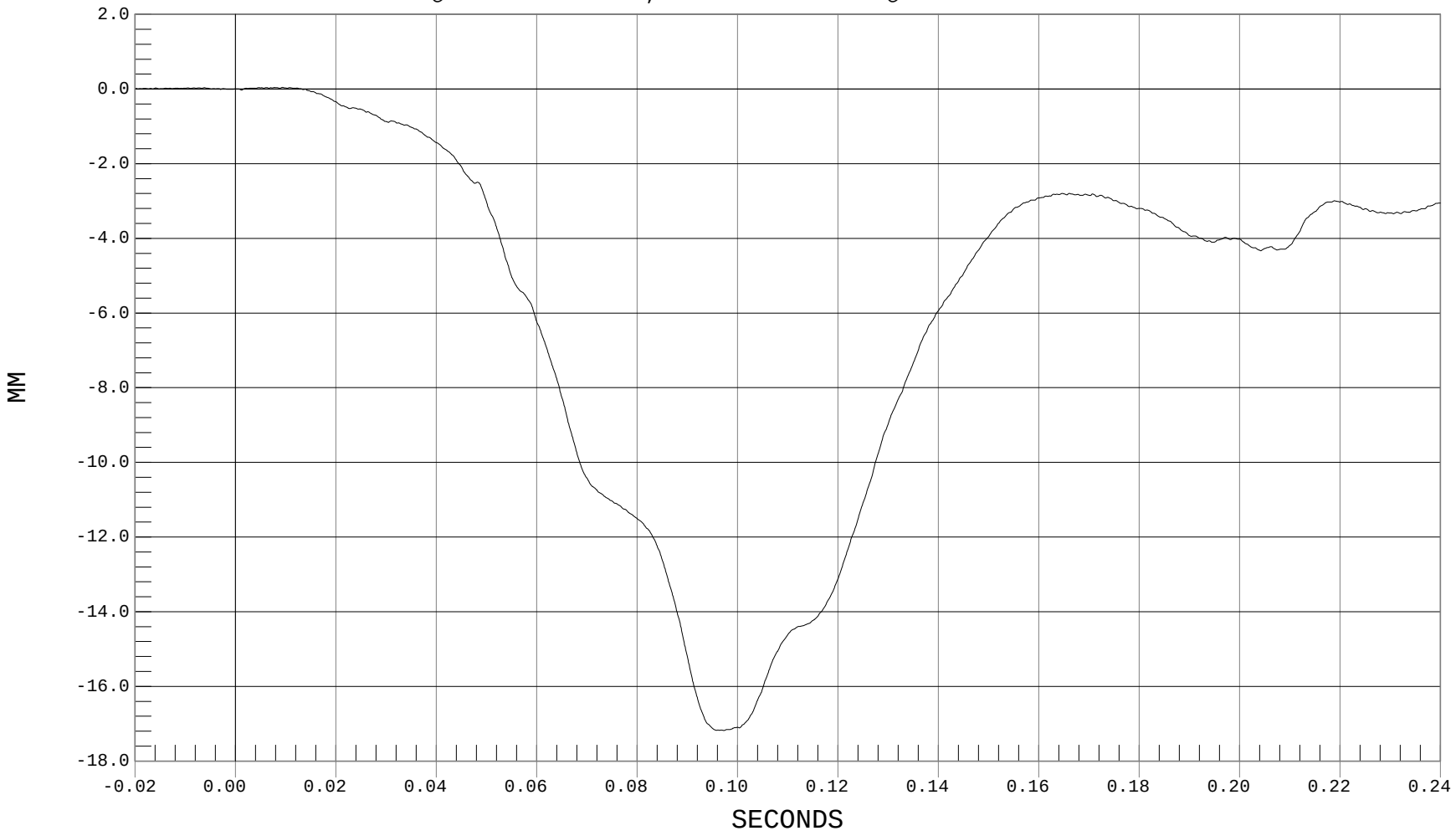
LRS 3 YR OLD CHEST COMPRESSION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DISPLACEMENT, B01037DF.D31

Ymin = -17.18 MM @ 0.0972 SECONDS, Ymax = .05 MM @ 0.0093 SECONDS



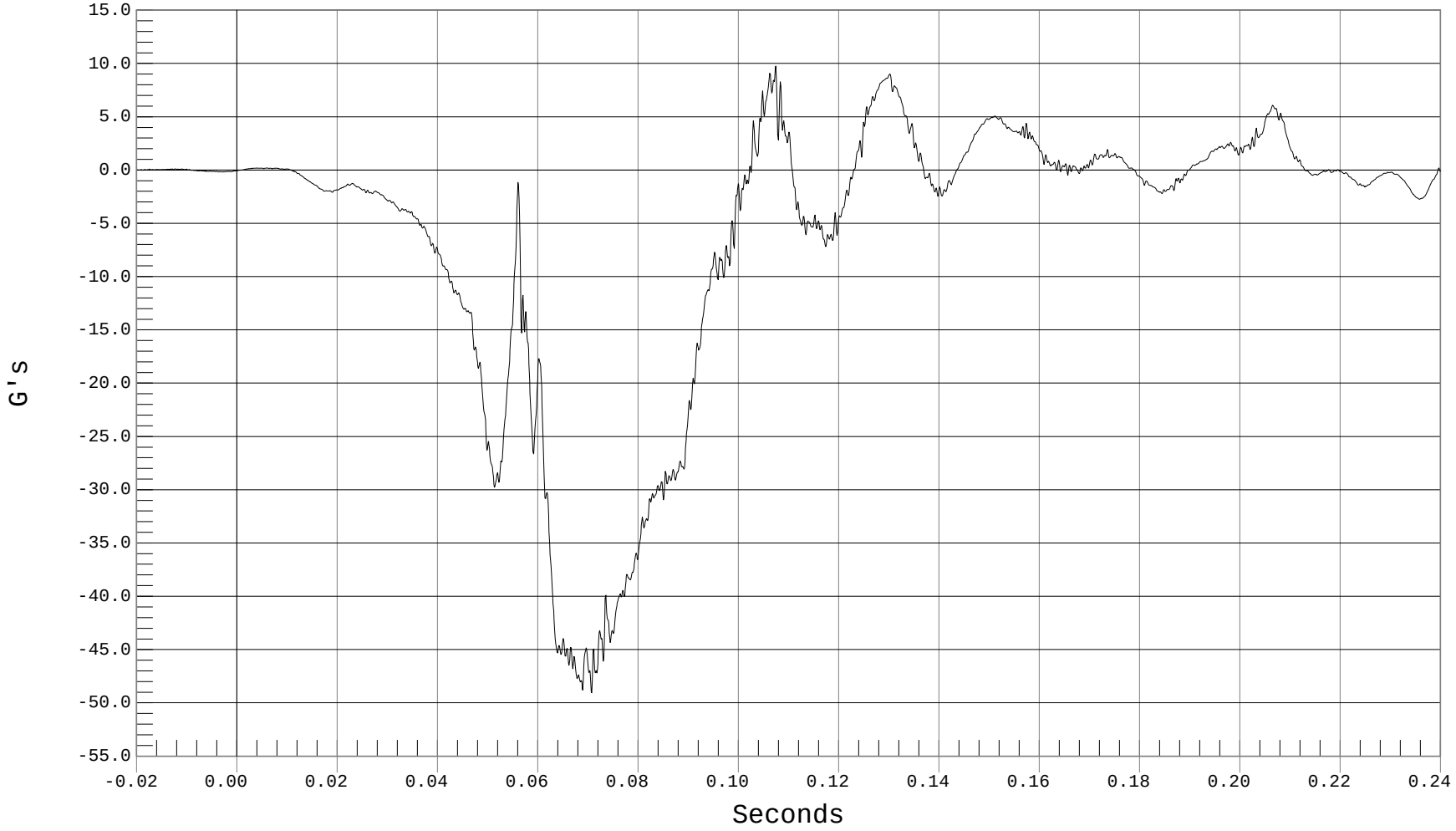
LRS 3 YR OLD PELVIS X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD PELVIS X, B01037AT.A34

Ymin = -49.07 G's @ 0.0707 Seconds, Ymax = 9.78 G's @ 0.1074 Seconds



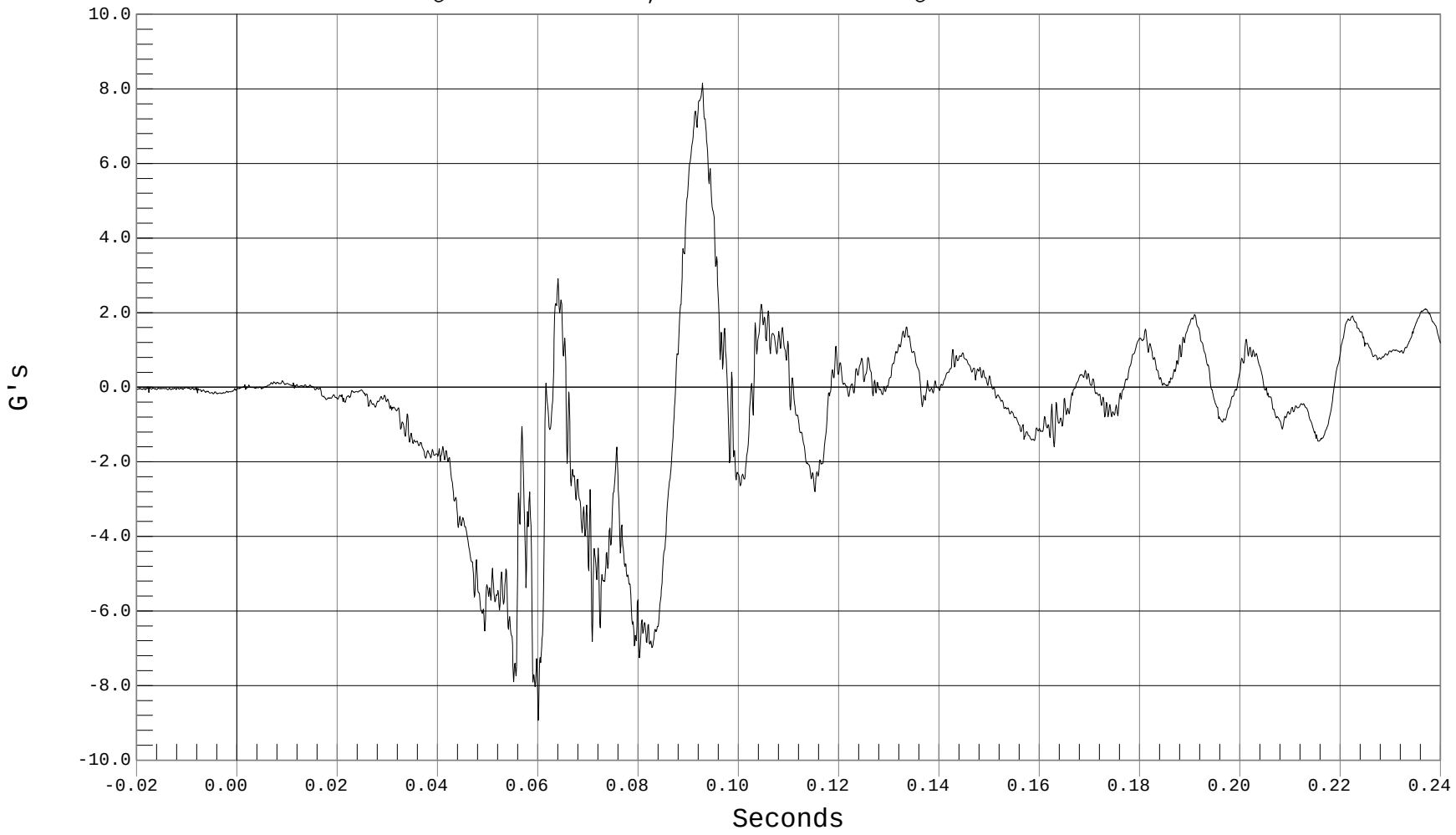
LRS 3 YR OLD PELVIS Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD PELVIS Y, B01037AT.A35

Ymin = -8.93 G's @ 0.0600 Seconds, Ymax = 8.16 G's @ 0.0928 Seconds



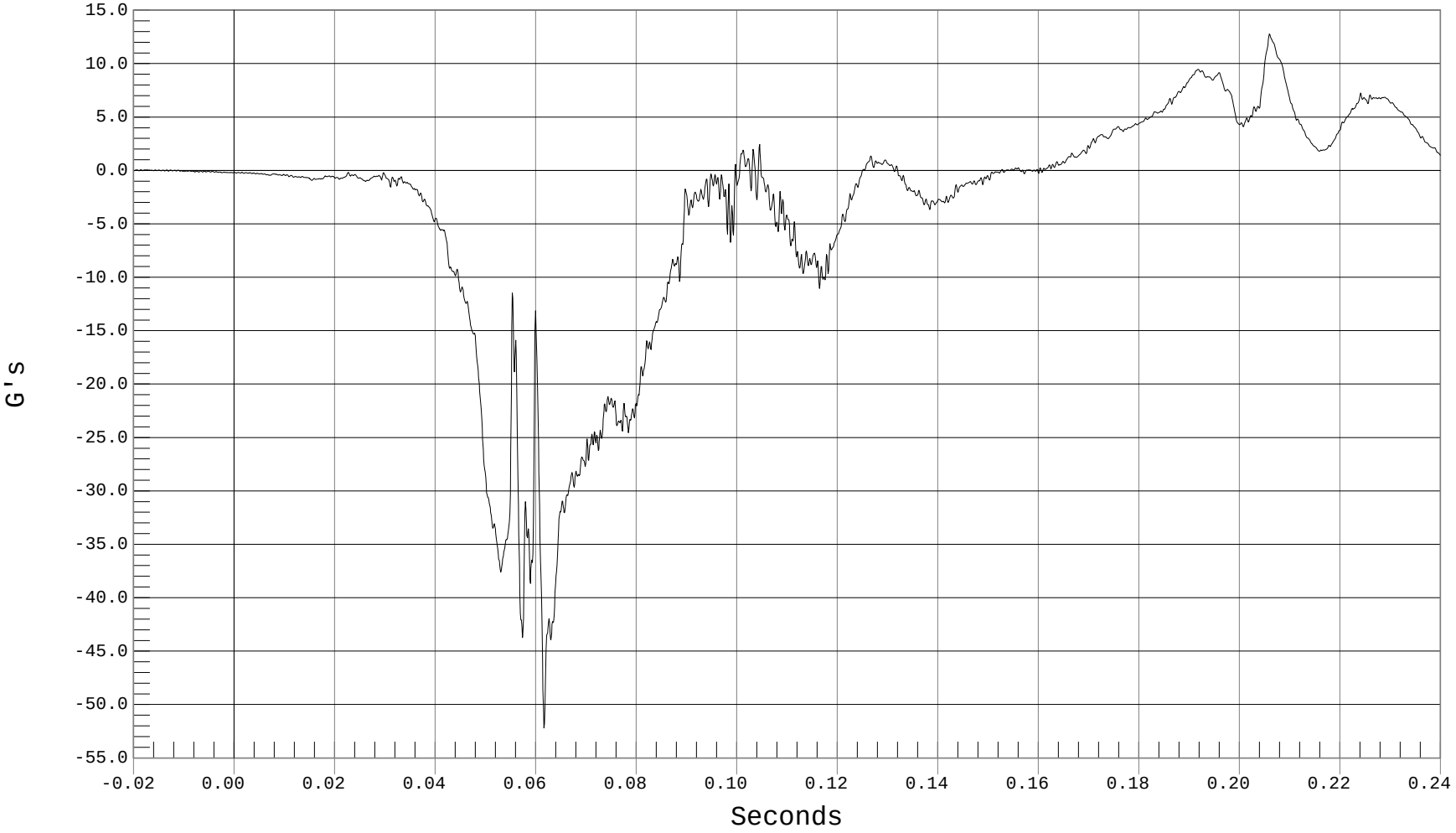
LRS 3 YR OLD PELVIS Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS CHILD PELVIS Z, B01037AT.A36

Ymin = -52.19 G's @ 0.0616 Seconds, Ymax = 12.76 G's @ 0.2059 Seconds



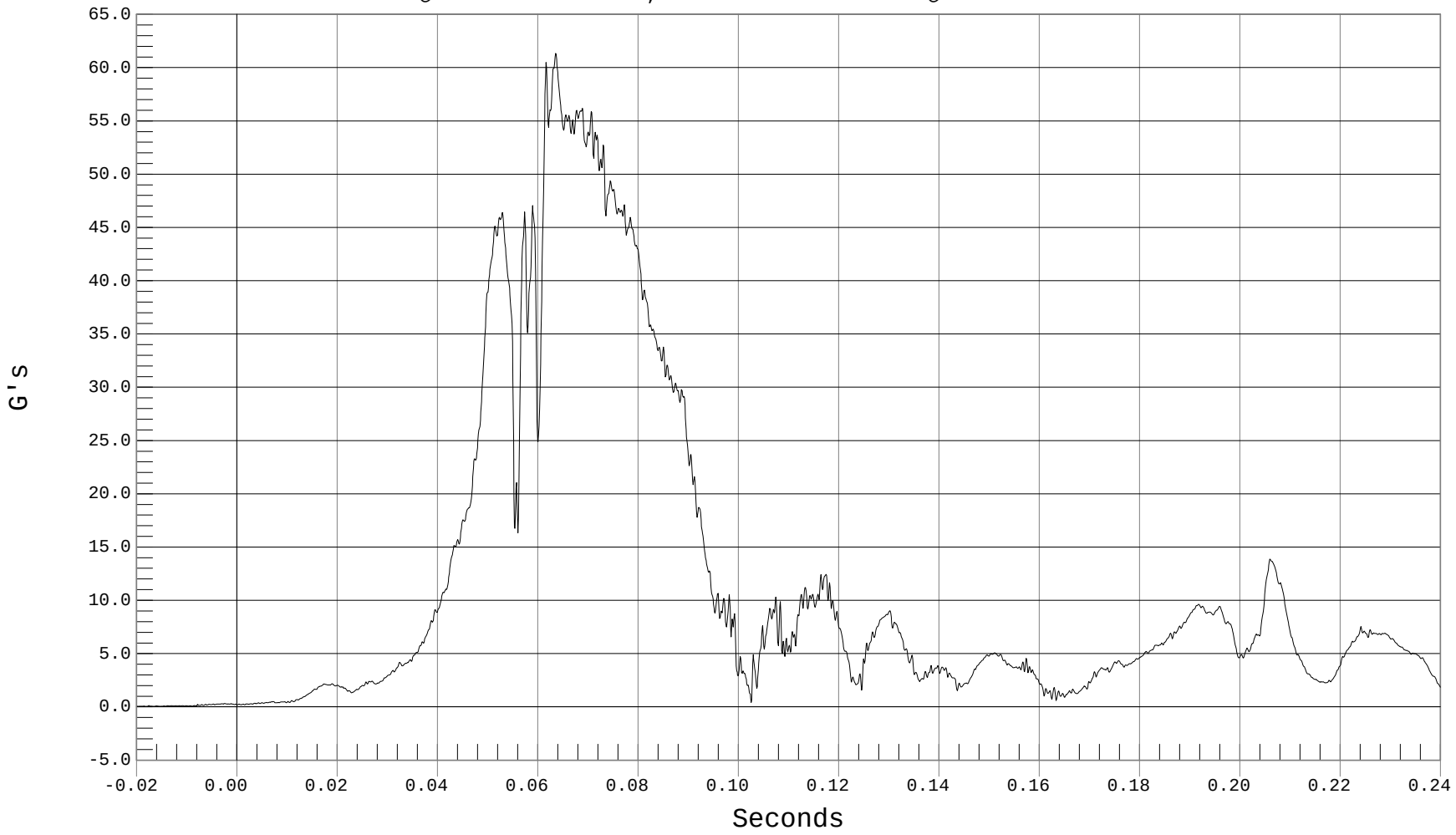
LRS 3 YR OLD PELVIS RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 LRS 3 YR OLD PELVIS RESULTANT ACCELERATION, B01037AV.A34

Ymin = .04 G's @ -0.0197 Seconds, Ymax = 61.33 G's @ 0.0635 Seconds



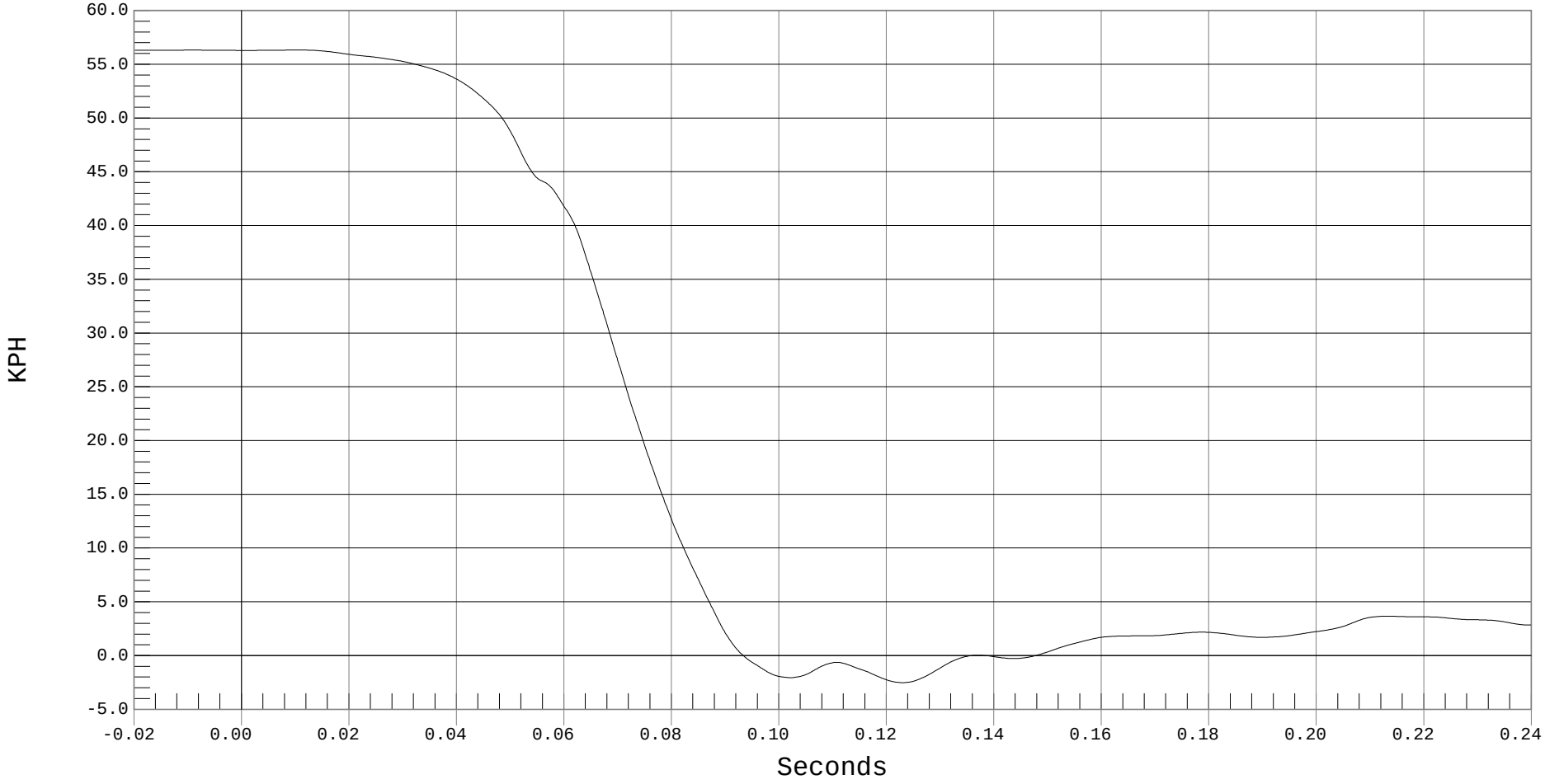
LRS 3 YR OLD PELVIS X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 3 YR OLD PELVIS X VELOCITY, B01037AI.V34

Ymin = -2.52 KPH @ 0.1229 Seconds, Ymax = 56.32 KPH @ 0.0107 Seconds



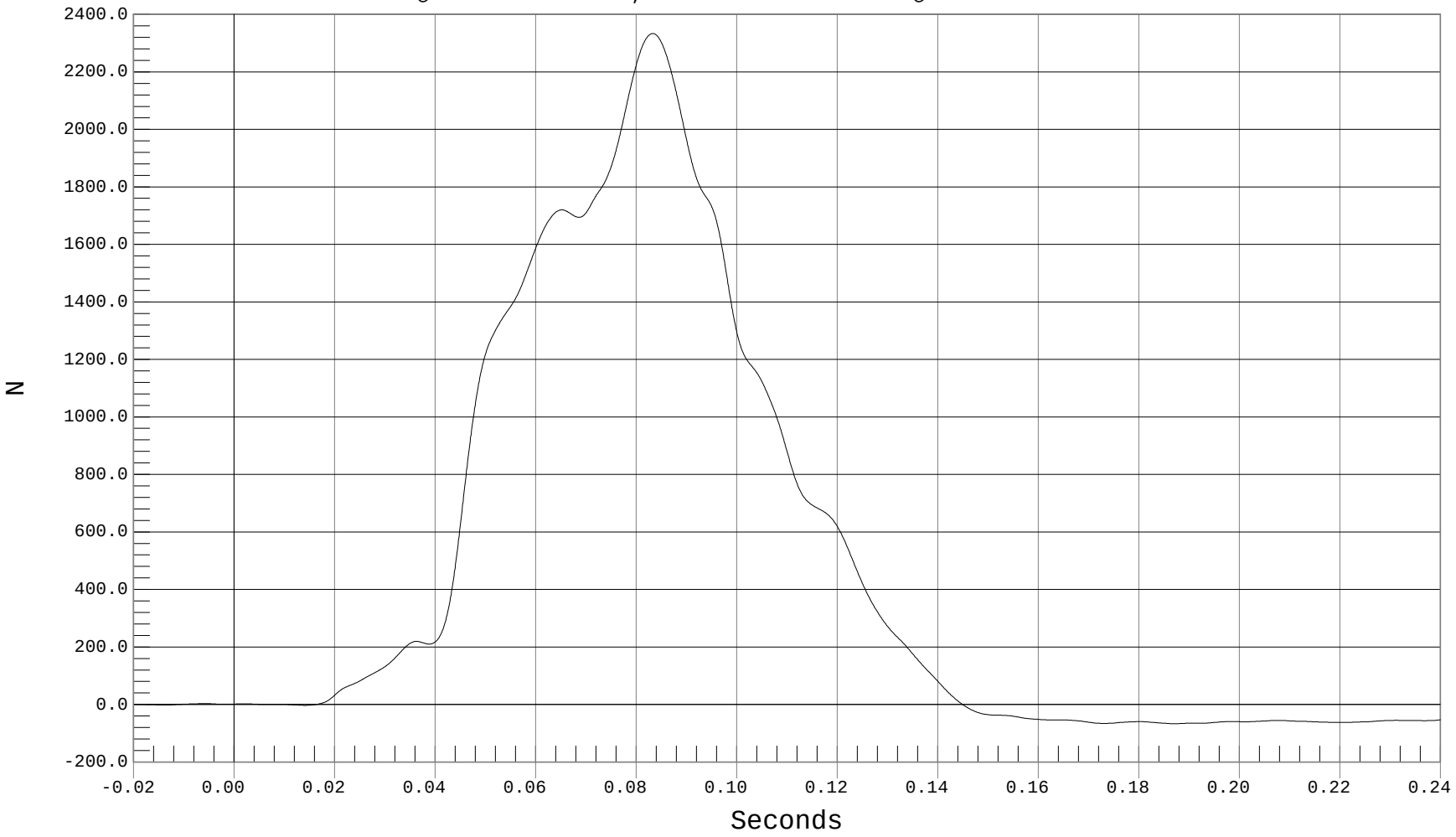
LRS TETHER FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 LRS TETHER FORCE, B01037ff.f62

Ymin = -66.88 N @ 0.1870 Seconds, Ymax = 2333.41 N @ 0.0832 Seconds



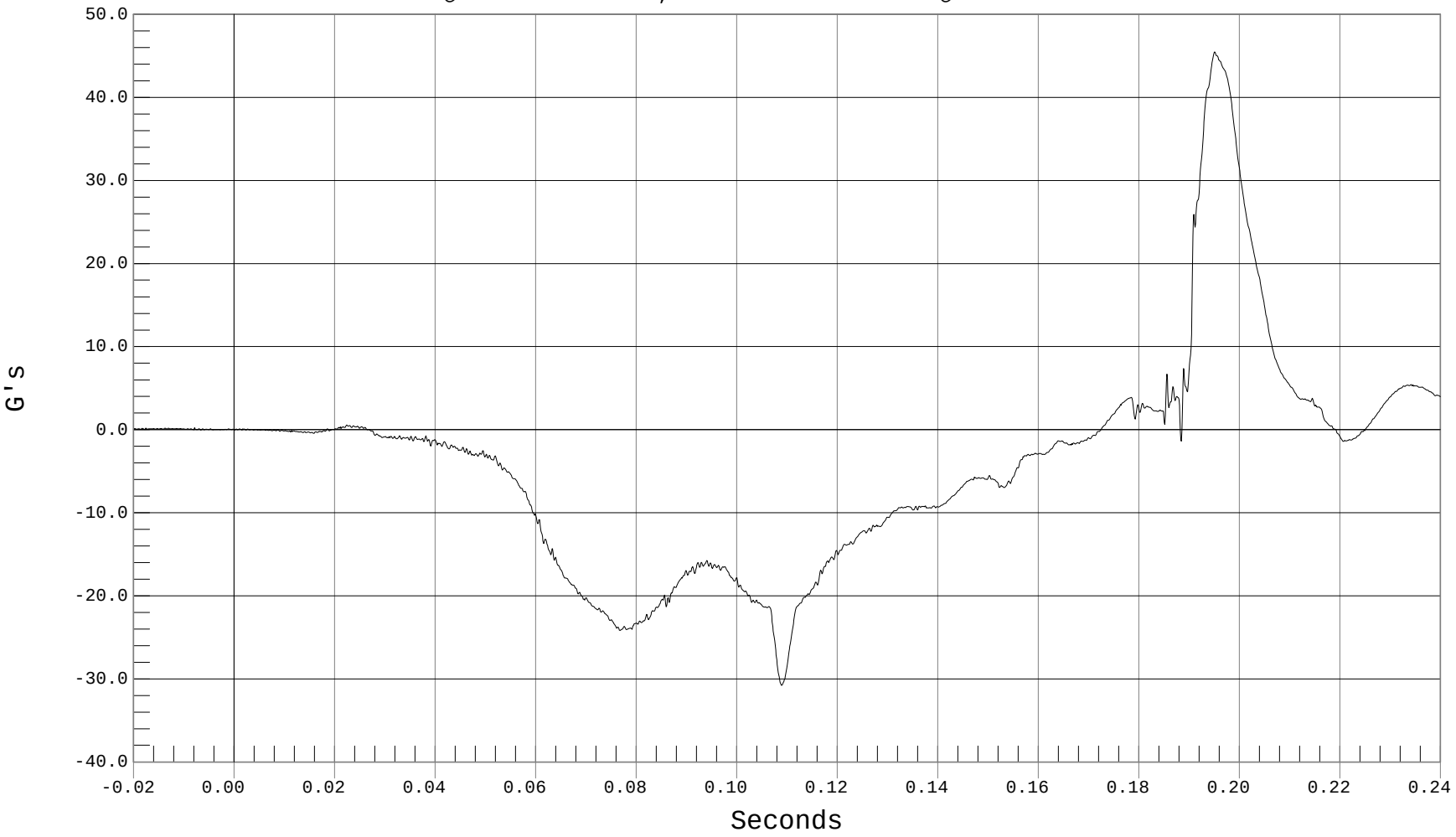
RRS 3 YR OLD HEAD X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD HEAD X, B01037AT.A37

Ymin = -30.77 G's @ 0.1089 Seconds, Ymax = 45.48 G's @ 0.1950 Seconds



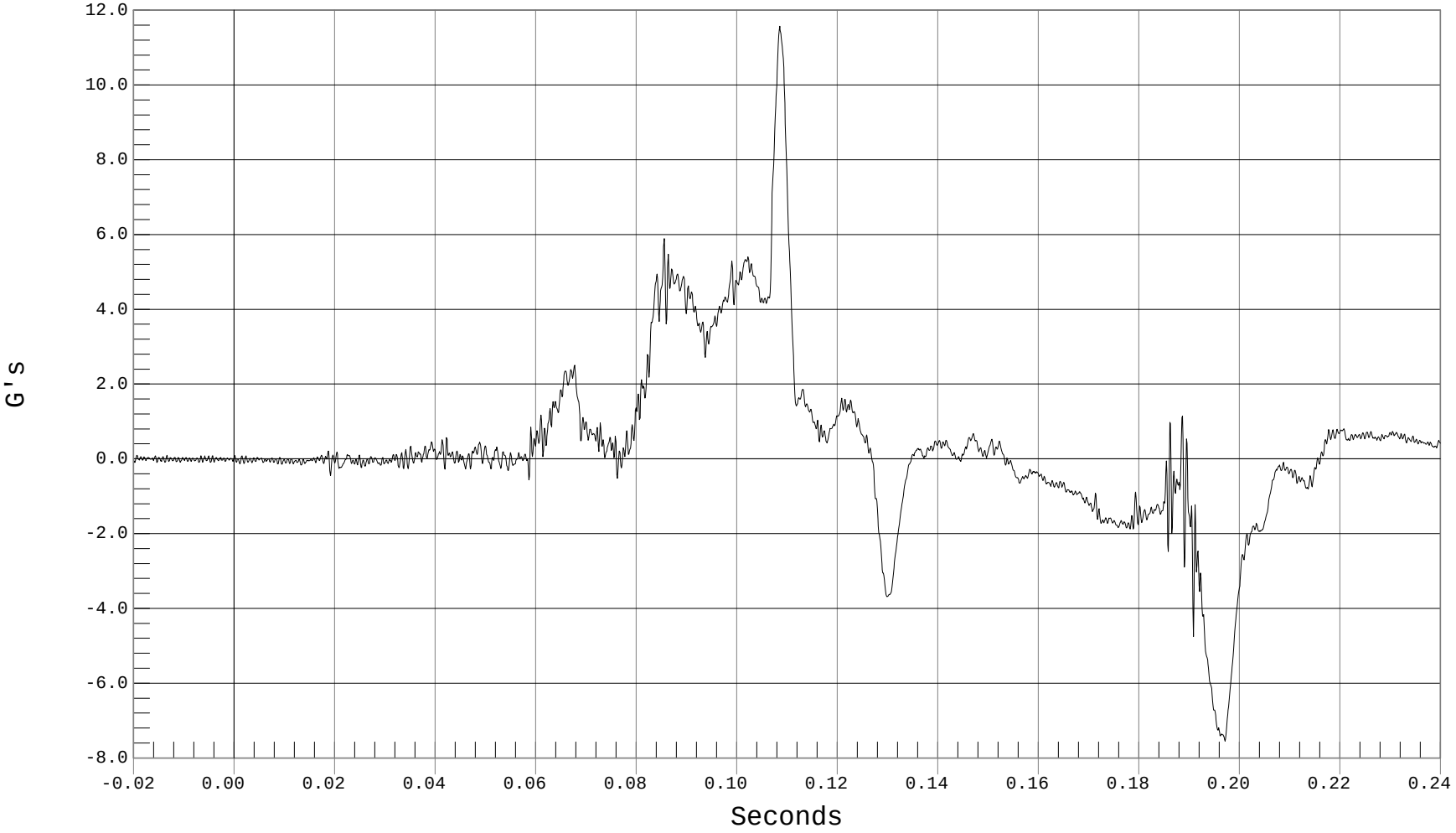
RRS 3 YR OLD HEAD Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD HEAD Y, B01037AT.A38

Ymin = -7.55 G's @ 0.1971 Seconds, Ymax = 11.57 G's @ 0.1085 Seconds



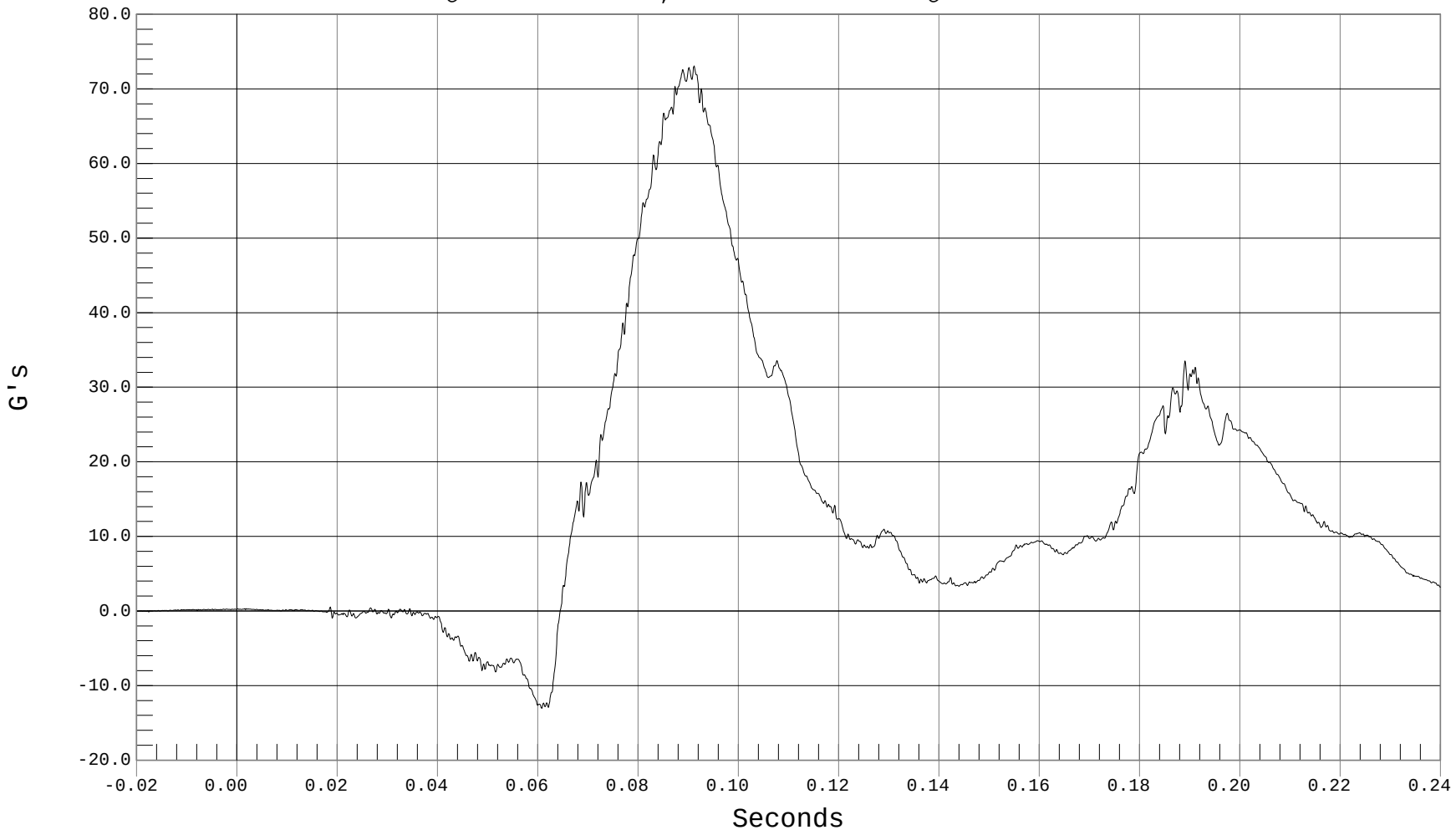
RRS 3 YR OLD HEAD Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD HEAD Z, B01037AT.A39

Ymin = -13.05 G's @ 0.0607 Seconds, Ymax = 73.1 G's @ 0.0911 Seconds



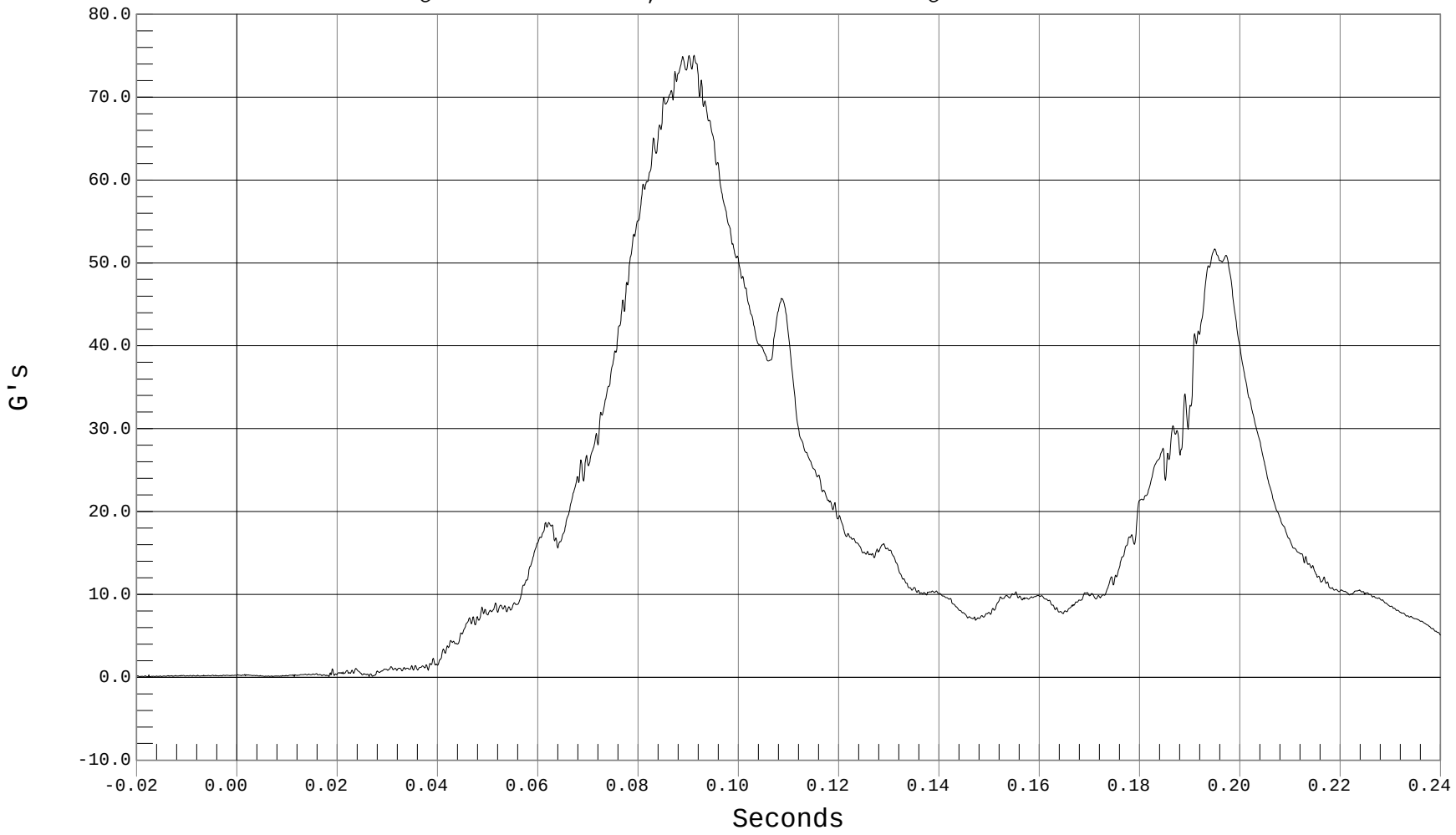
RRS 3 YR OLD HEAD RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS 3 YR OLD HEAD RESULTANT ACCELERATION, B01037AV.A37

Ymin = .03 G's @ -0.0178 Seconds, Ymax = 75.07 G's @ 0.0911 Seconds



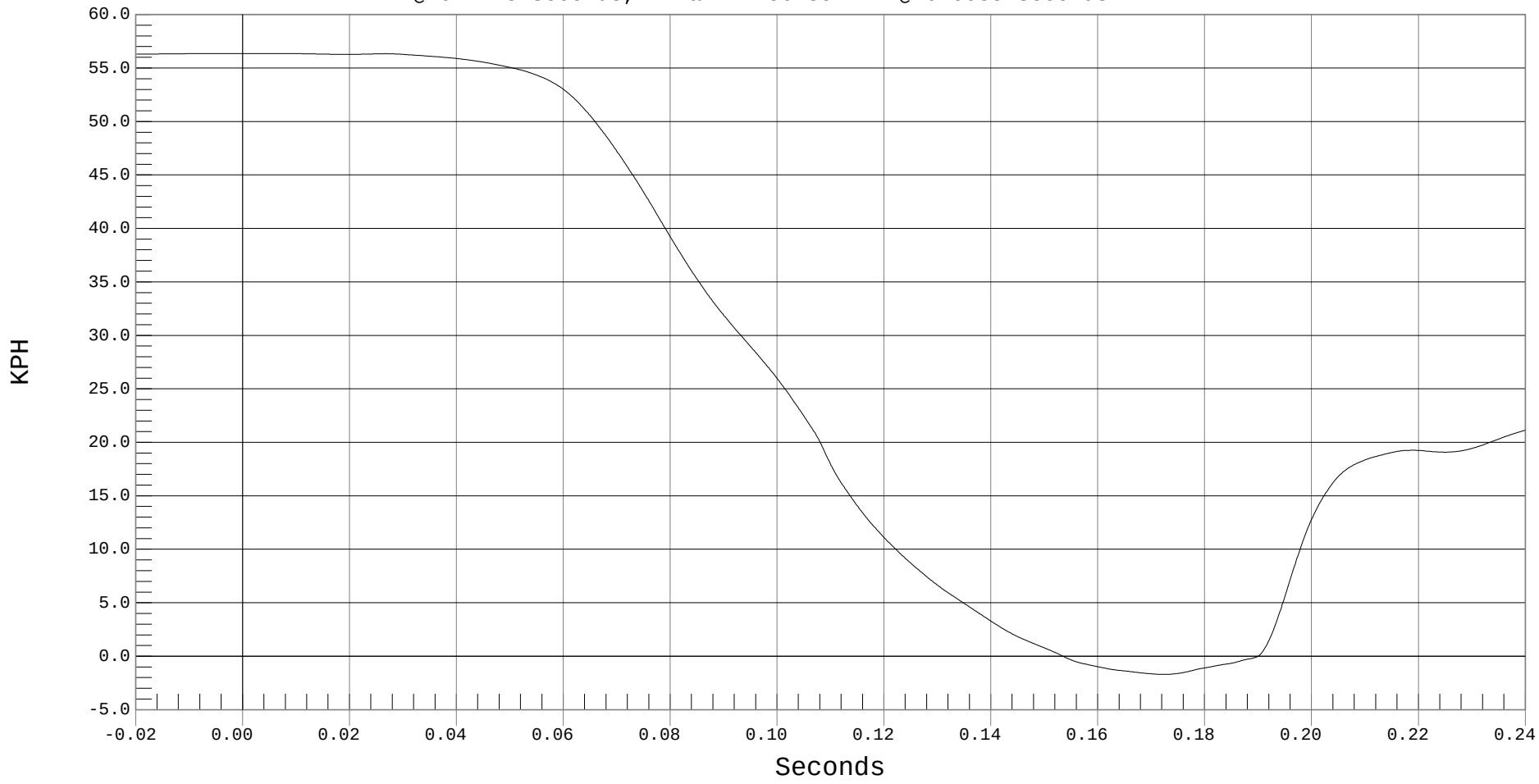
RRS 3 YR OLD HEAD X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RRS 3 YR OLD HEAD X VELOCITY, B01037AI.V37

Ymin = -1.7 KPH @ 0.1723 Seconds, Ymax = 56.35 KPH @ 0.0035 Seconds



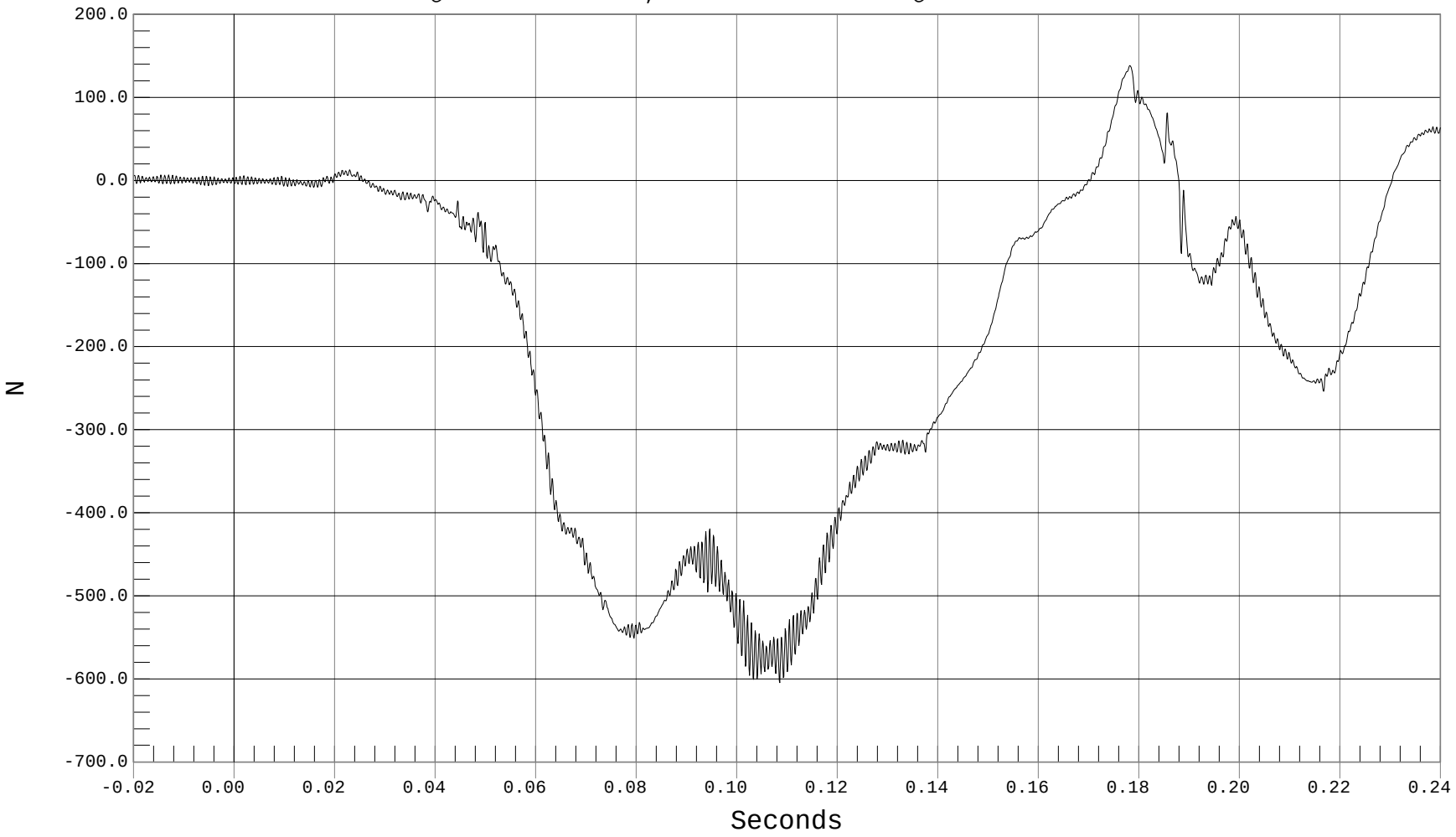
RRS 3 YR OLD UPPER NECK FORCE X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD UPPER NECK FORCE X, B01037FT.F40

Ymin = -604.54 N @ 0.1085 Seconds, Ymax = 138.36 N @ 0.1781 Seconds



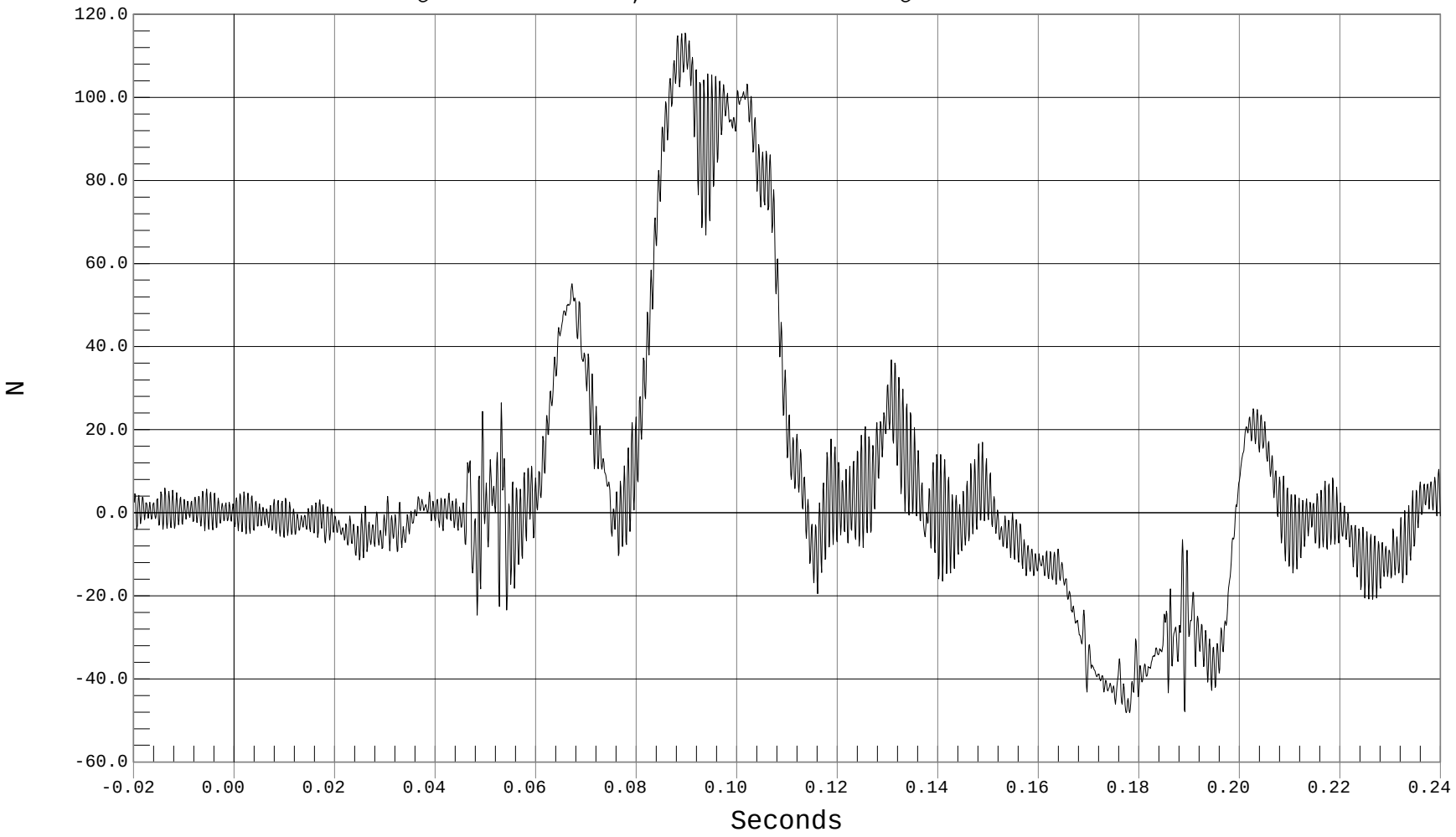
RRS 3 YR OLD UPPER NECK FORCE Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD UPPER NECK FORCE Y, B01037FT.F41

Ymin = -48.17 N @ 0.1774 Seconds, Ymax = 115.48 N @ 0.0897 Seconds



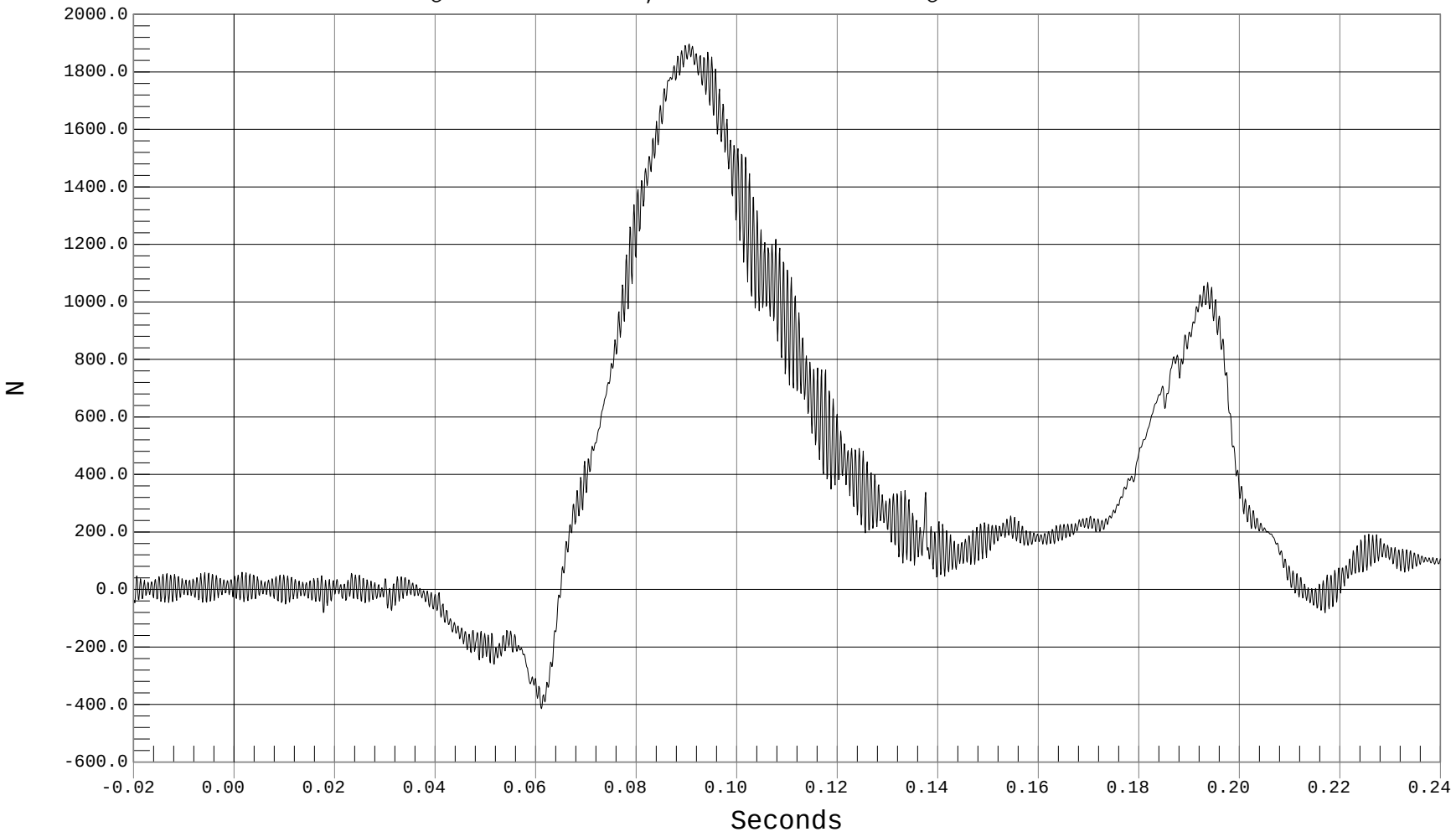
RRS 3 YR OLD UPPER NECK FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD UPPER NECK FORCE Z, B01037FT.F42

Ymin = -414.61 N @ 0.0611 Seconds, Ymax = 1896.85 N @ 0.0905 Seconds



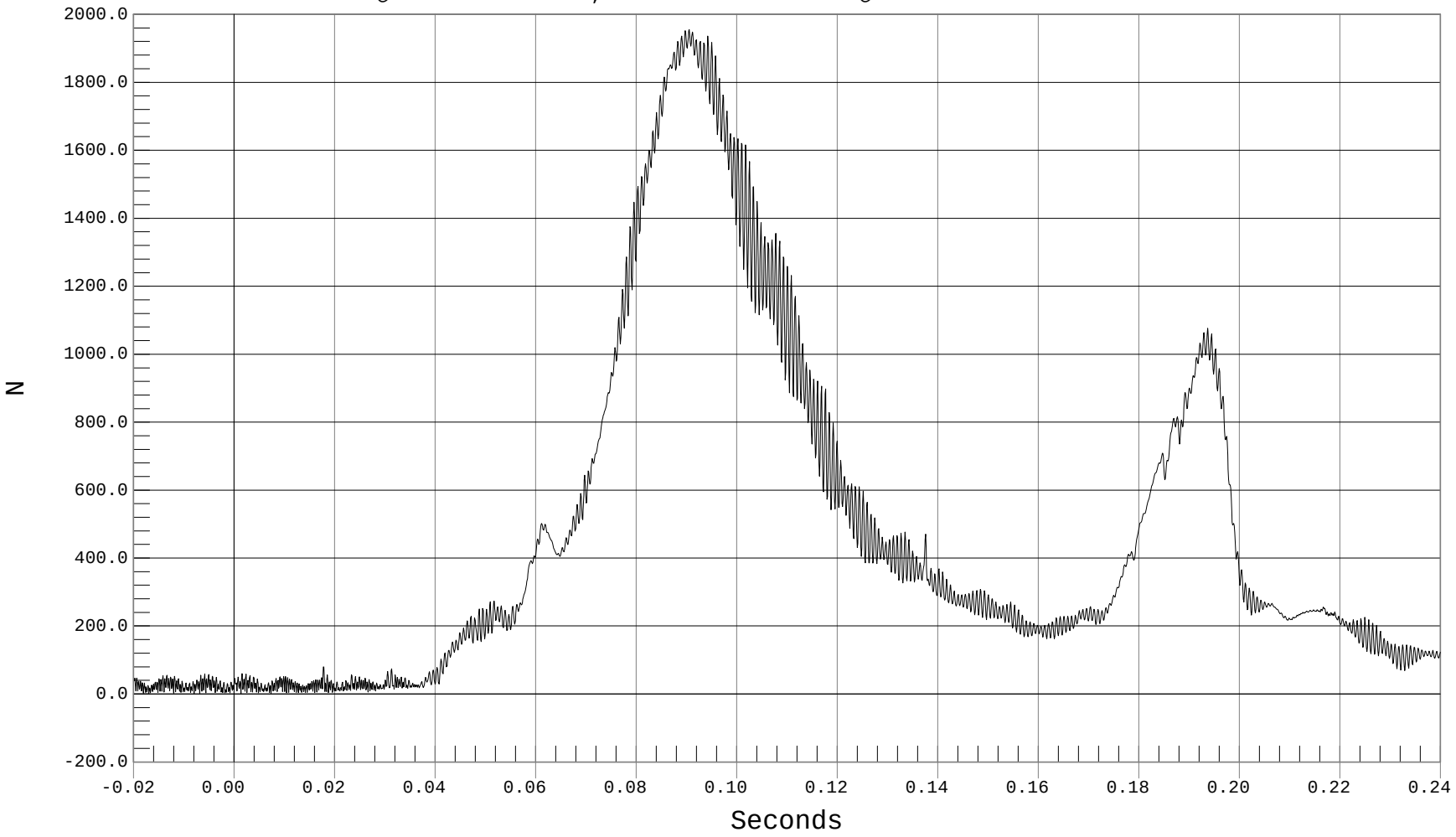
RRS 3 YR OLD UPPER NECK FORCE RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS 3 YR OLD UPPER NECK FORCE RESULTANT, B01037FV.F40

Ymin = 1.0 N @ -0.008 Seconds, Ymax = 1955.4 N @ 0.090 Seconds



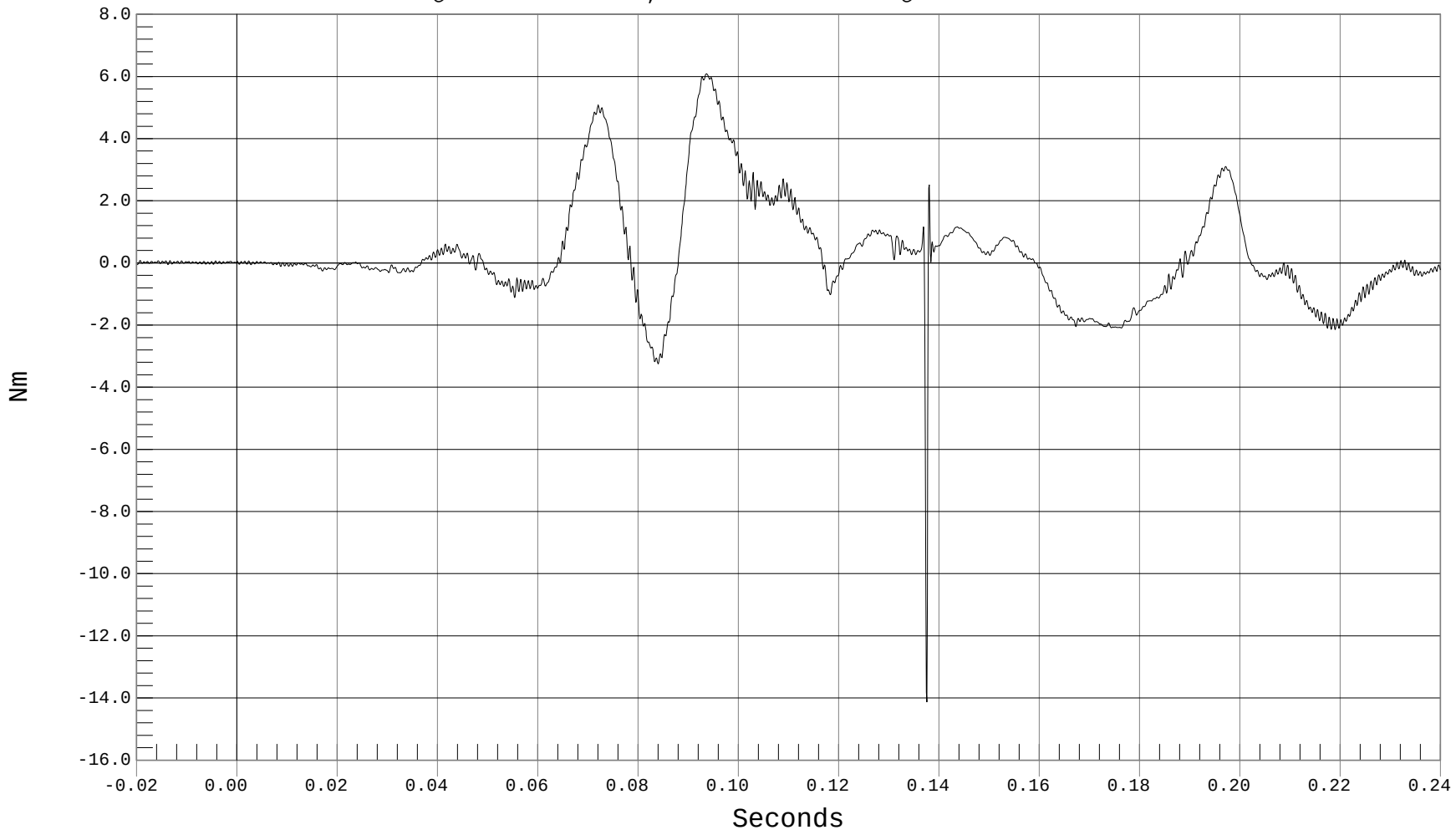
RRS 3 YR OLD UPPER NECK MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 RRS CHILD UPPER NECK MOMENT X, B01037MF.M43

Ymin = -14.13 Nm @ 0.1375 Seconds, Ymax = 6.09 Nm @ 0.0936 Seconds



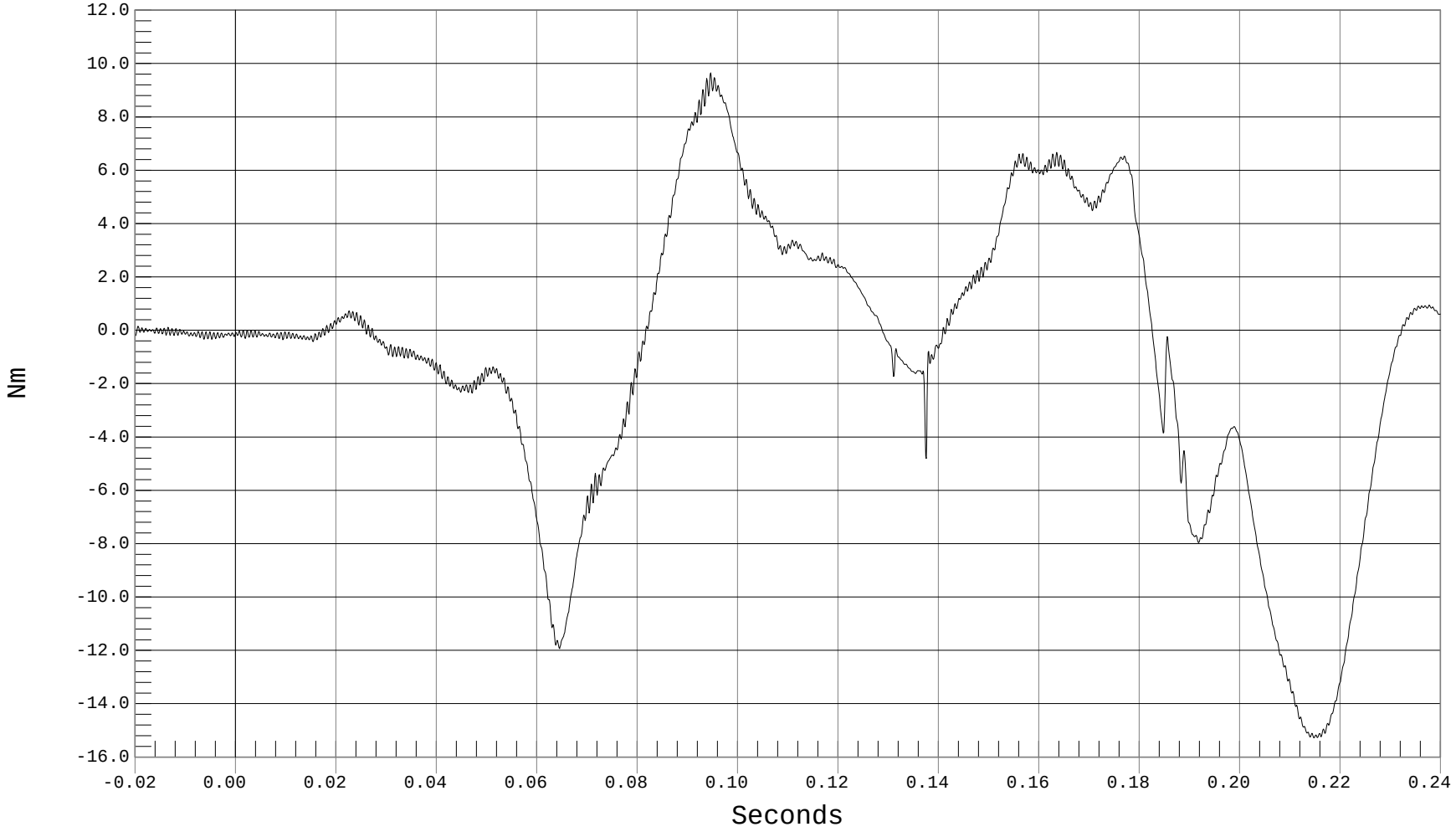
RRS 3 YR OLD UPPER NECK MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 RRS CHILD UPPER NECK MOMENT Y, B01037MF.M44

Ymin = -15.28 Nm @ 0.2147 Seconds, Ymax = 9.66 Nm @ 0.0946 Seconds



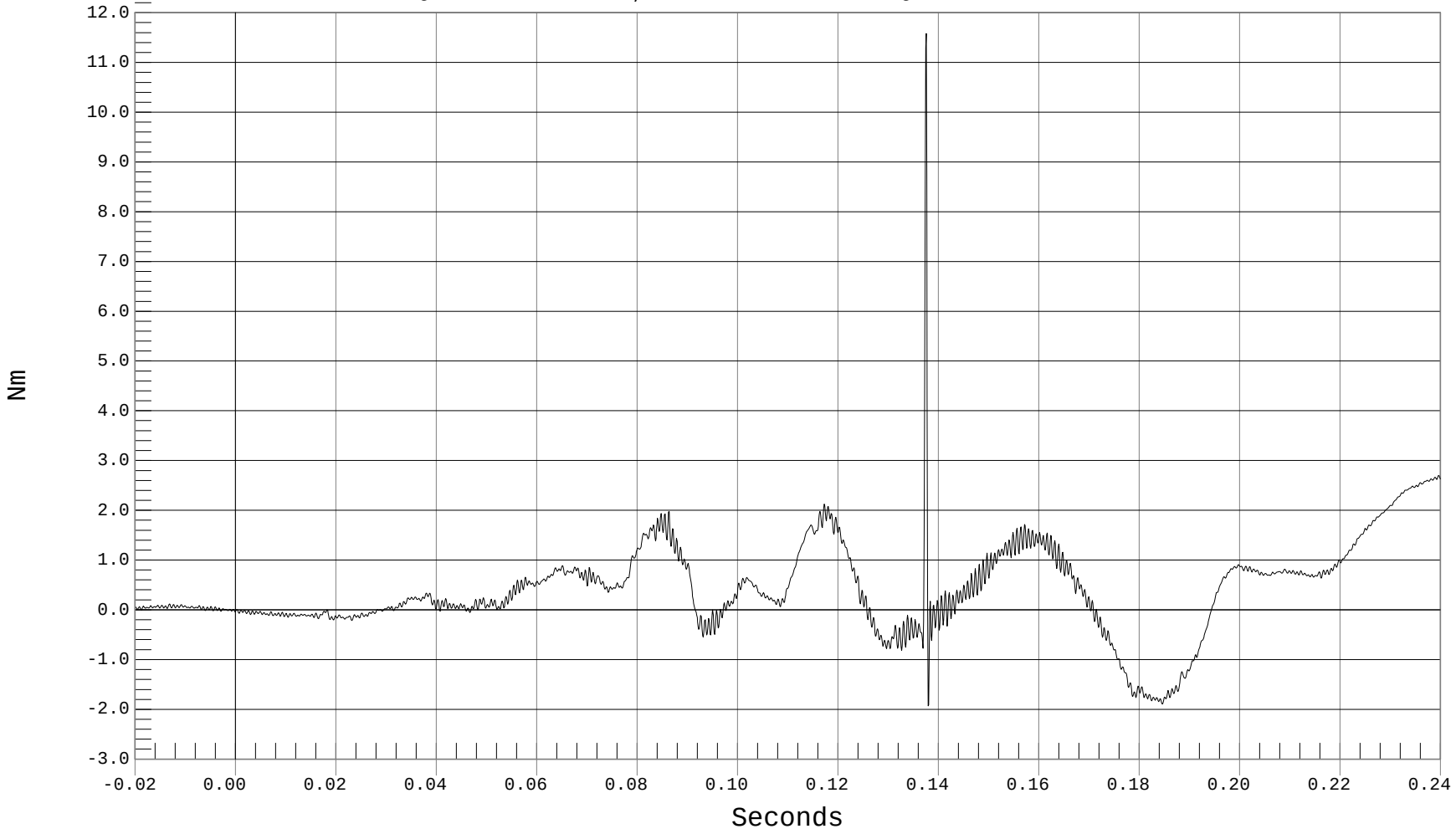
RRS 3 YR OLD UPPER NECK MOMENT Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 RRS CHILD UPPER NECK MOMENT Z, B01037MF.M45

Ymin = -1.93 Nm @ 0.1379 Seconds, Ymax = 11.58 Nm @ 0.1375 Seconds



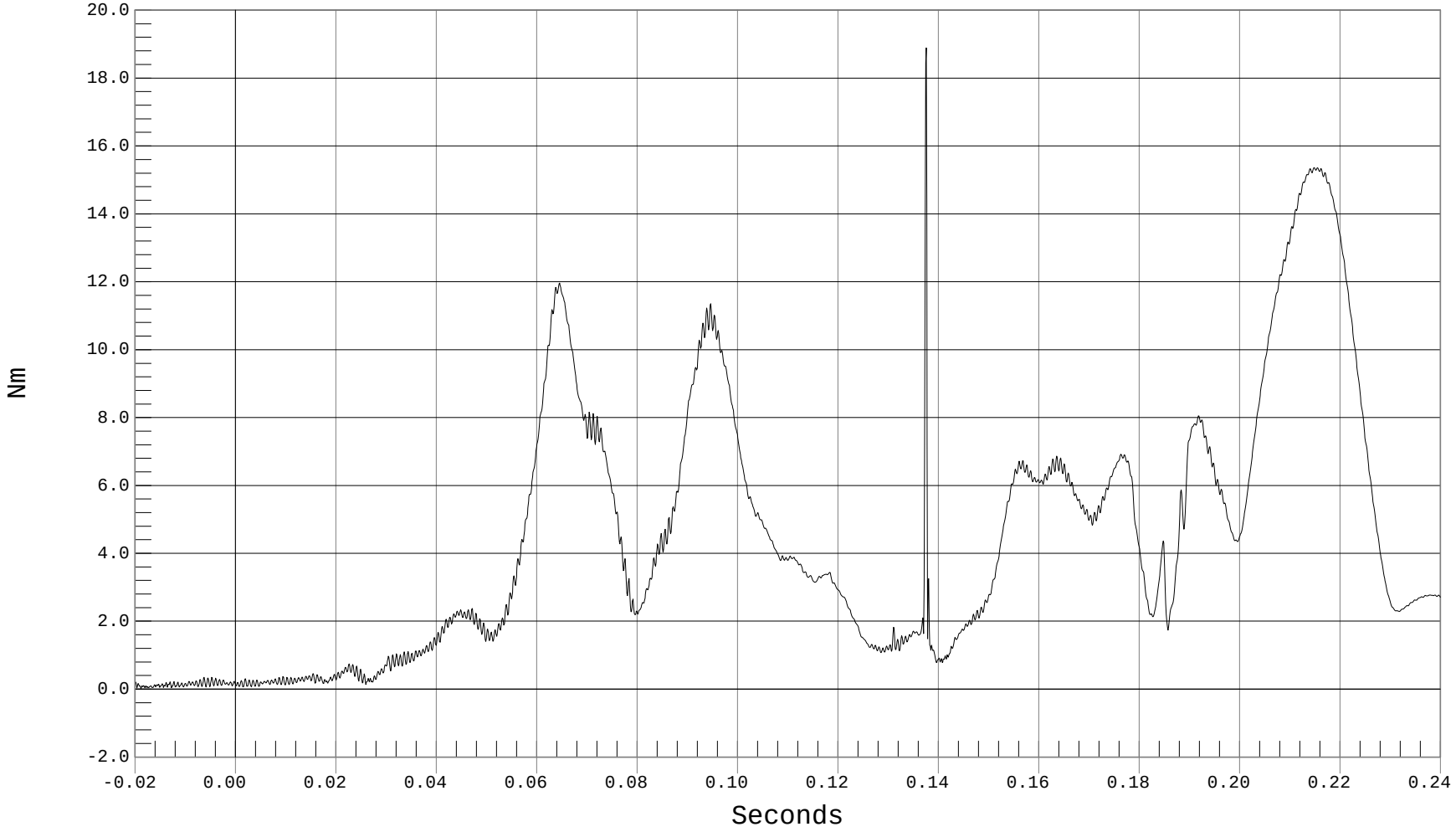
RRS 3 YR OLD UPPER NECK MOMENT RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 RRS 3 YR OLD UPPER NECK MOMENT RESULTANT, B01037MV.M43

Ymin = .02 Nm @ -0.0189 Seconds, Ymax = 18.89 Nm @ 0.1375 Seconds



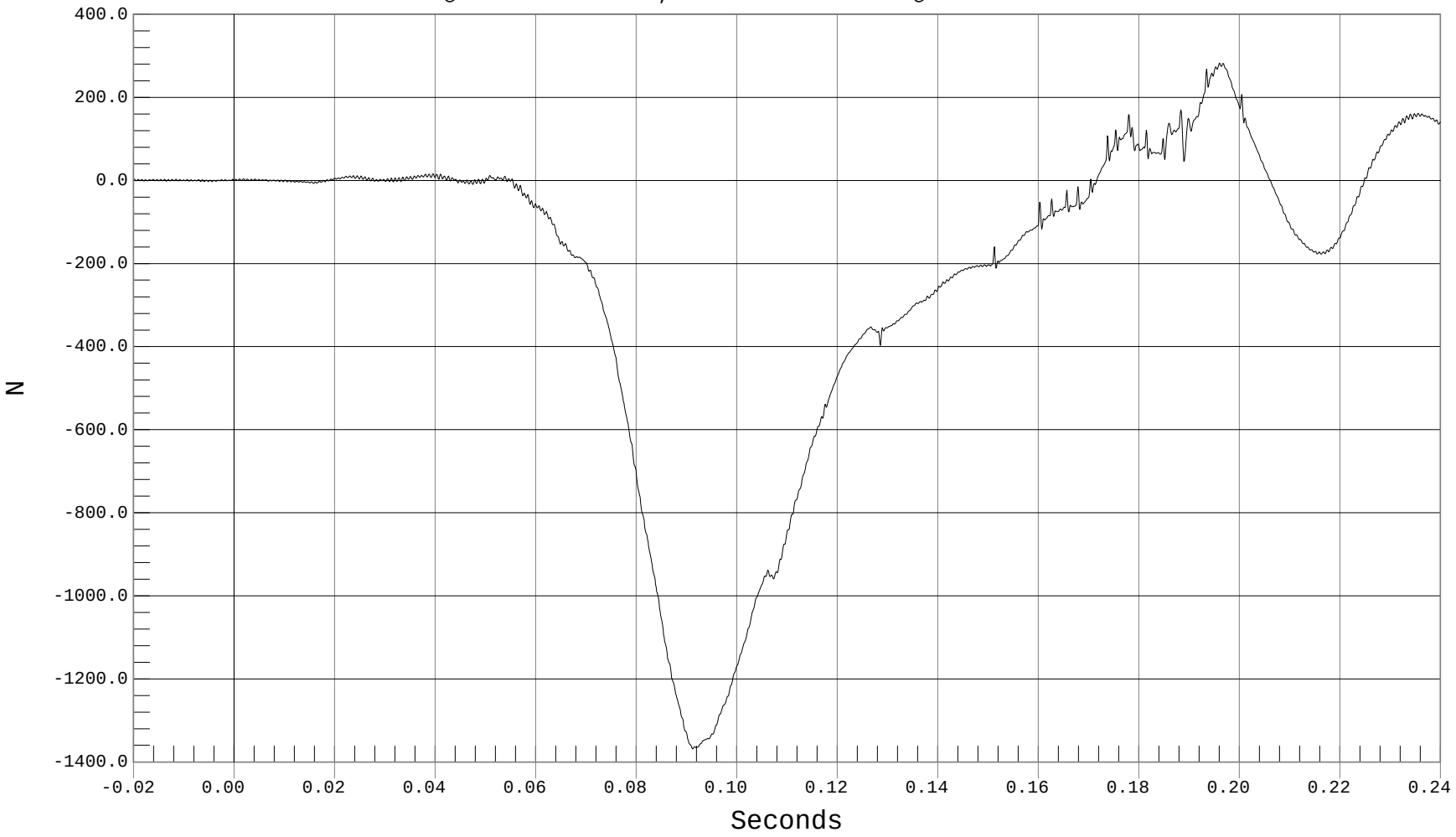
RRS 3 YR OLD LOWER NECK FORCE X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD LOWER NECK FORCE X, B01037FT.F46

Ymin = -1368.39 N @ 0.0912 Seconds, Ymax = 282.7 N @ 0.1960 Seconds



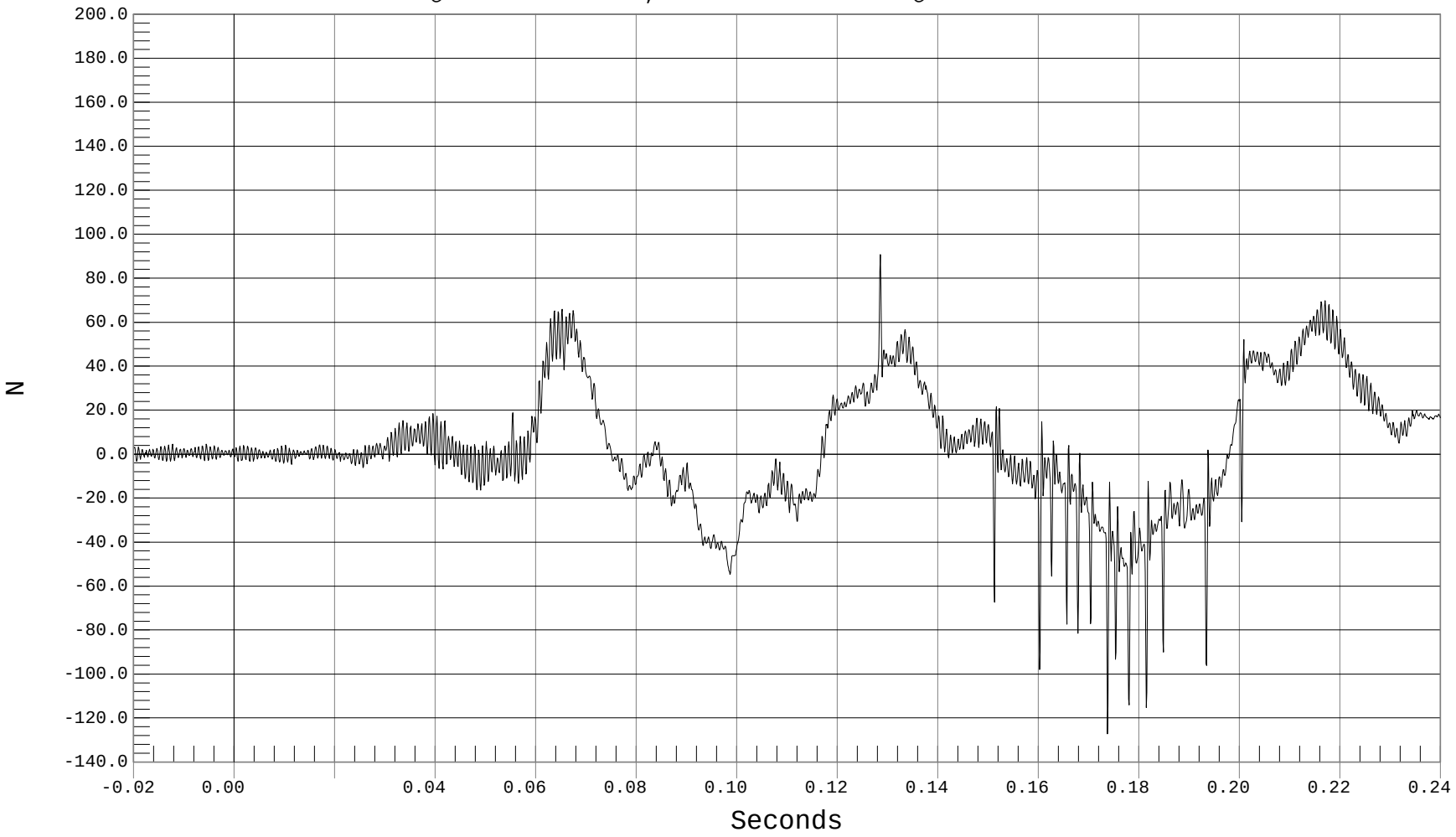
RRS 3 YR OLD LOWER NECK FORCE Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD LOWER NECK FORCE Y, B01037FT.F47

Ymin = -127.22 N @ 0.1737 Seconds, Ymax = 176.21 N @ 0.2430 Seconds



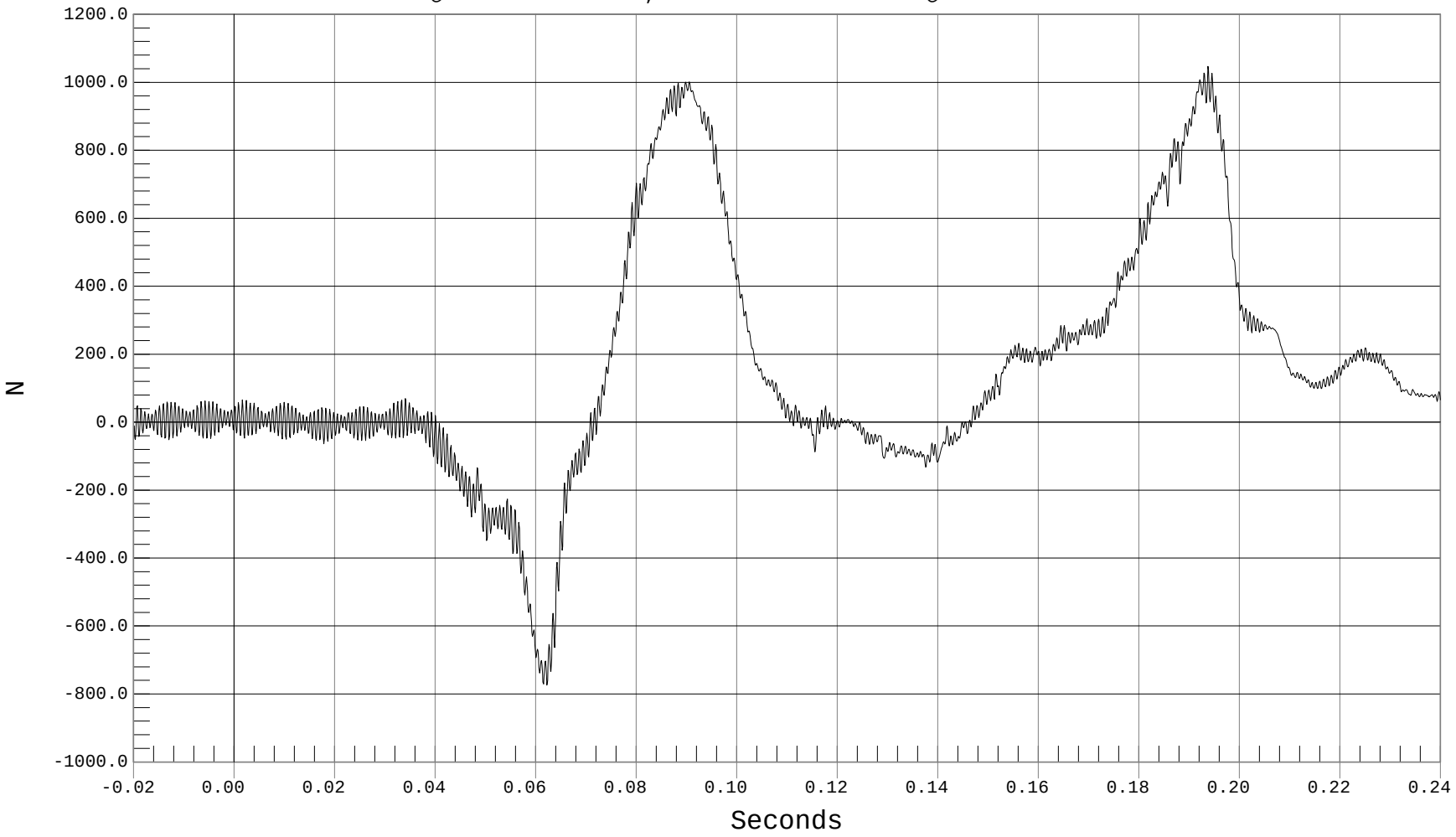
RRS 3 YR OLD LOWER NECK FORCE Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD LOWER NECK FORCE Z, B01037FT.F48

Ymin = -773.76 N @ 0.0622 Seconds, Ymax = 1047.23 N @ 0.1937 Seconds



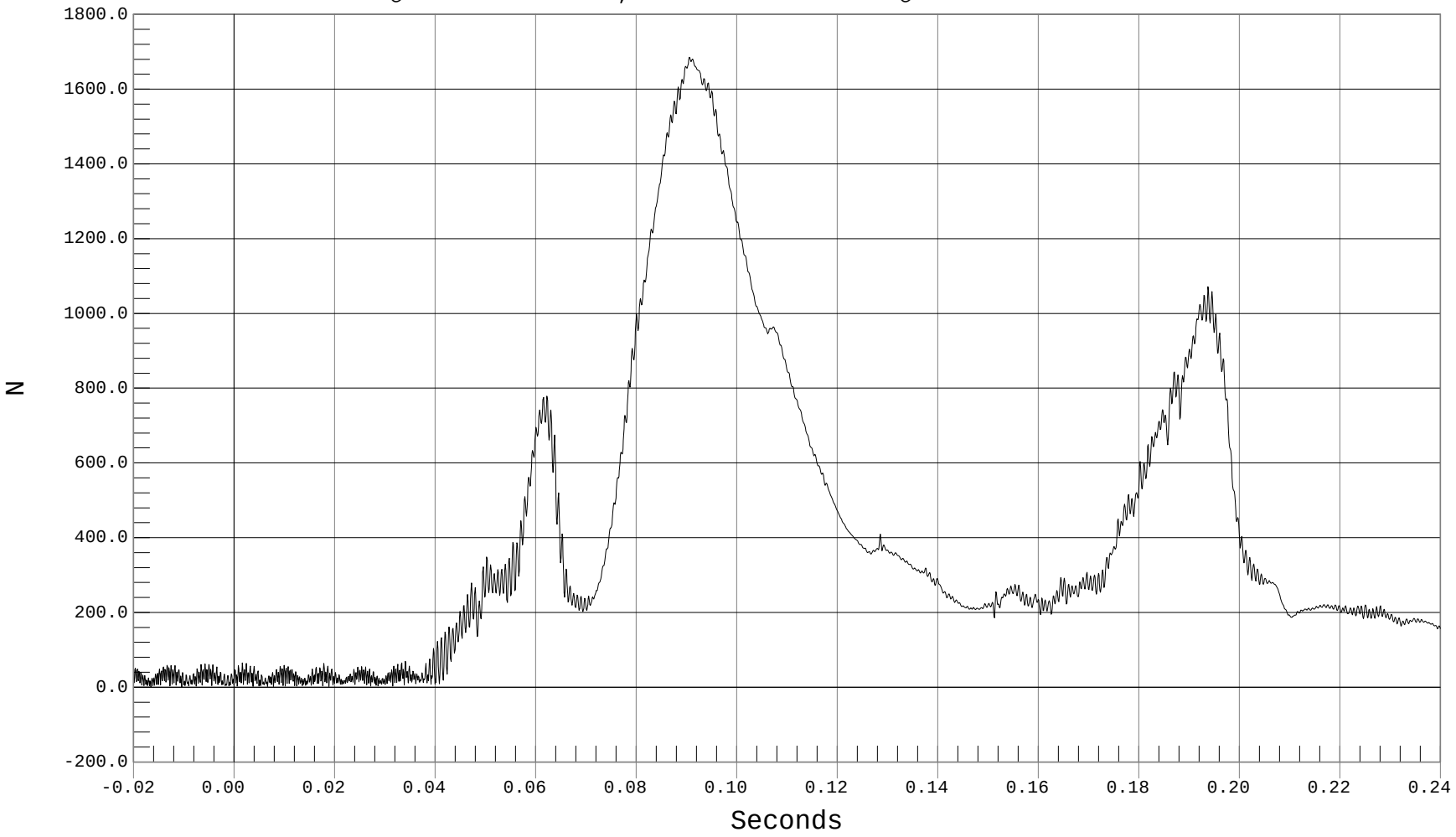
RRS 3 YR OLD LOWER NECK FORCE RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS 3 YR OLD LOWER NECK FORCE RESULTANT, B01037FV.F46

Ymin = .83 N @ -0.0166 Seconds, Ymax = 1685.24 N @ 0.0905 Seconds



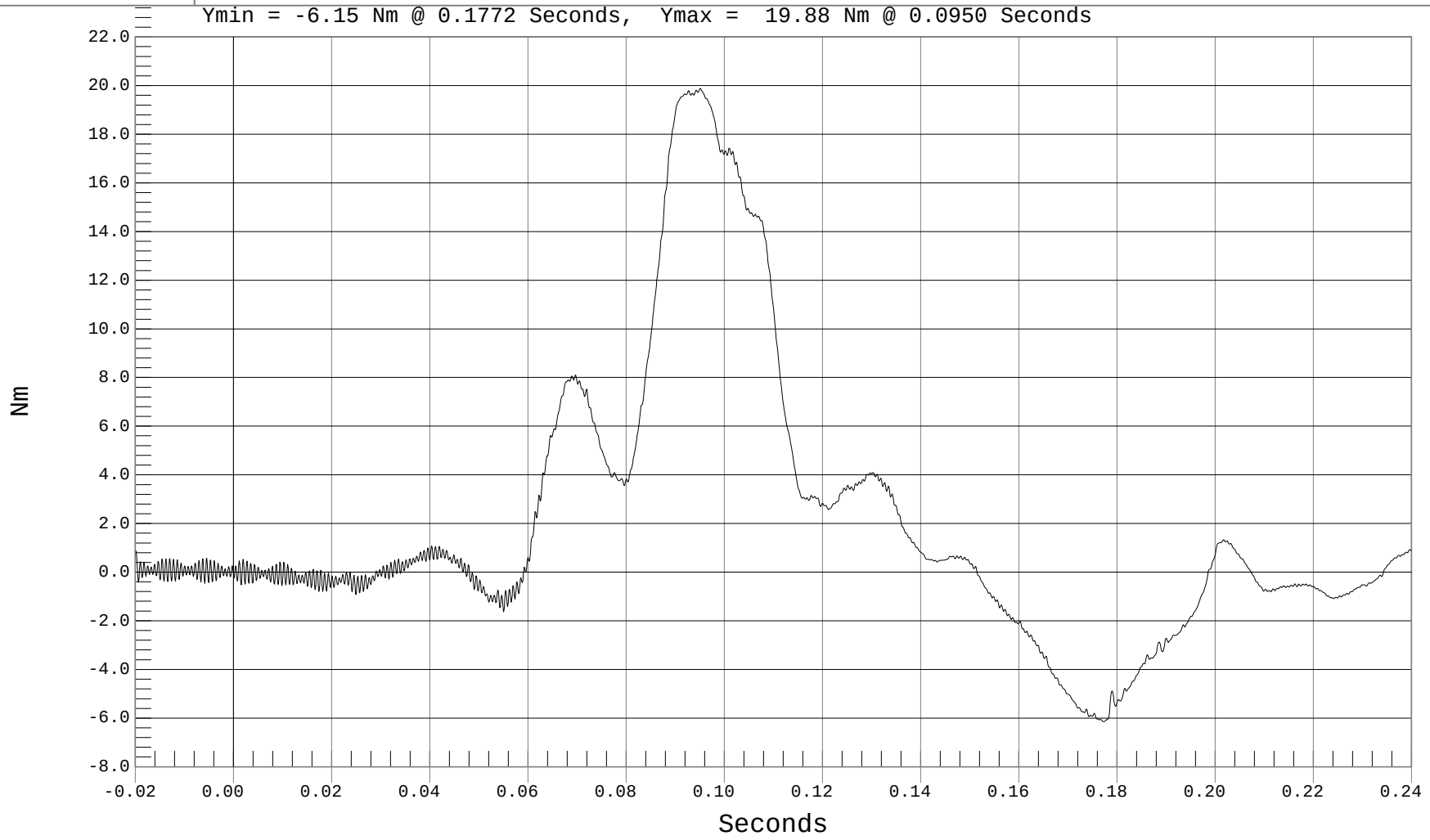
RRS 3 YR OLD LOWER NECK MOMENT X

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 RRS CHILD LOWER NECK MOMENT X, B01037MF.M49

Ymin = -6.15 Nm @ 0.1772 Seconds, Ymax = 19.88 Nm @ 0.0950 Seconds



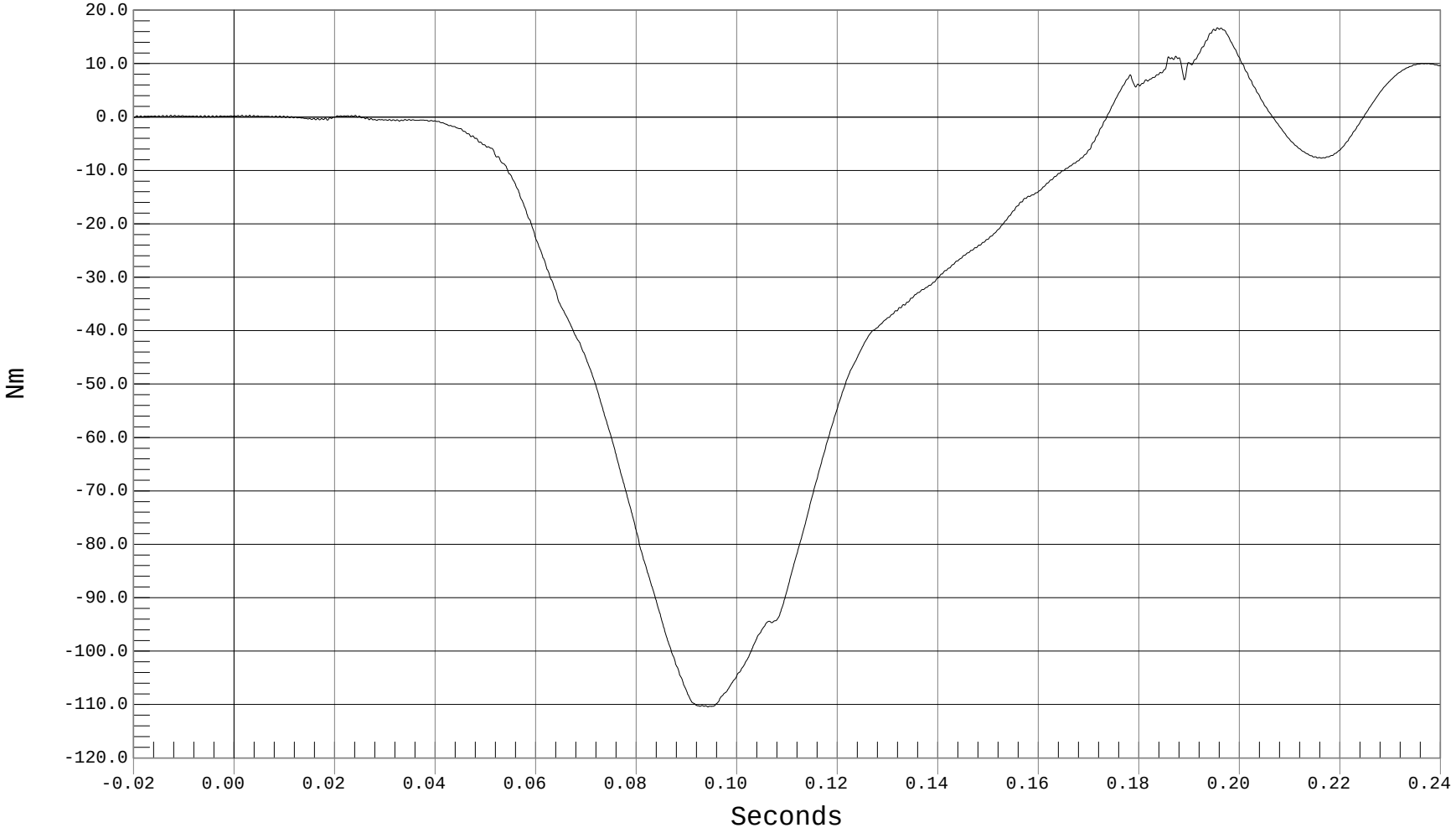
RRS 3 YR OLD LOWER NECK MOMENT Y

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 RRS CHILD LOWER NECK MOMENT Y, B01037MF.M50

Ymin = -110.44 Nm @ 0.0942 Seconds, Ymax = 16.7 Nm @ 0.1956 Seconds



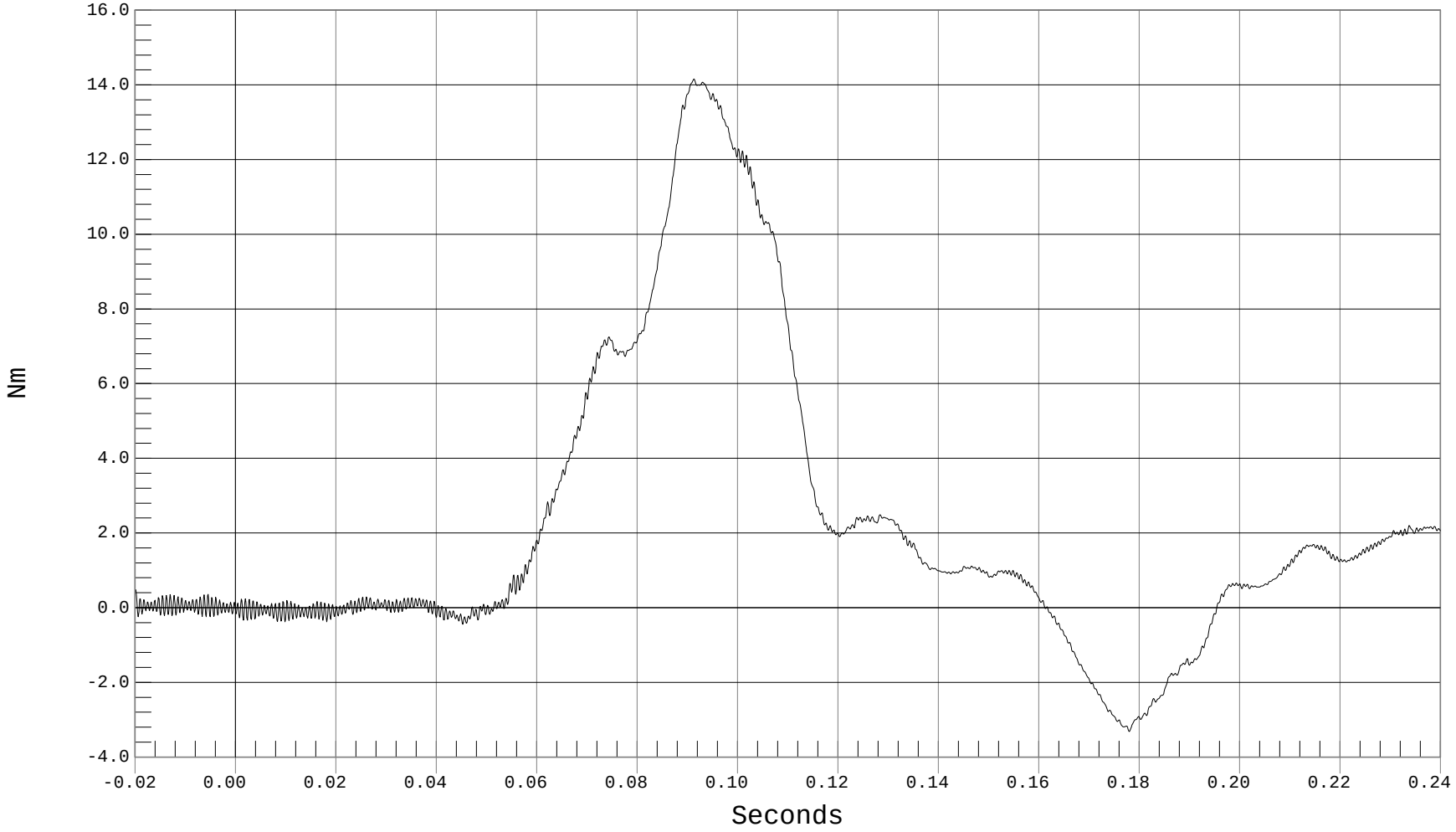
RRS 3 YR OLD LOWER NECK MOMENT Z

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 RRS CHILD LOWER NECK MOMENT Z, B01037MF.M51

Ymin = -3.31 Nm @ 0.1780 Seconds, Ymax = 14.16 Nm @ 0.0913 Seconds



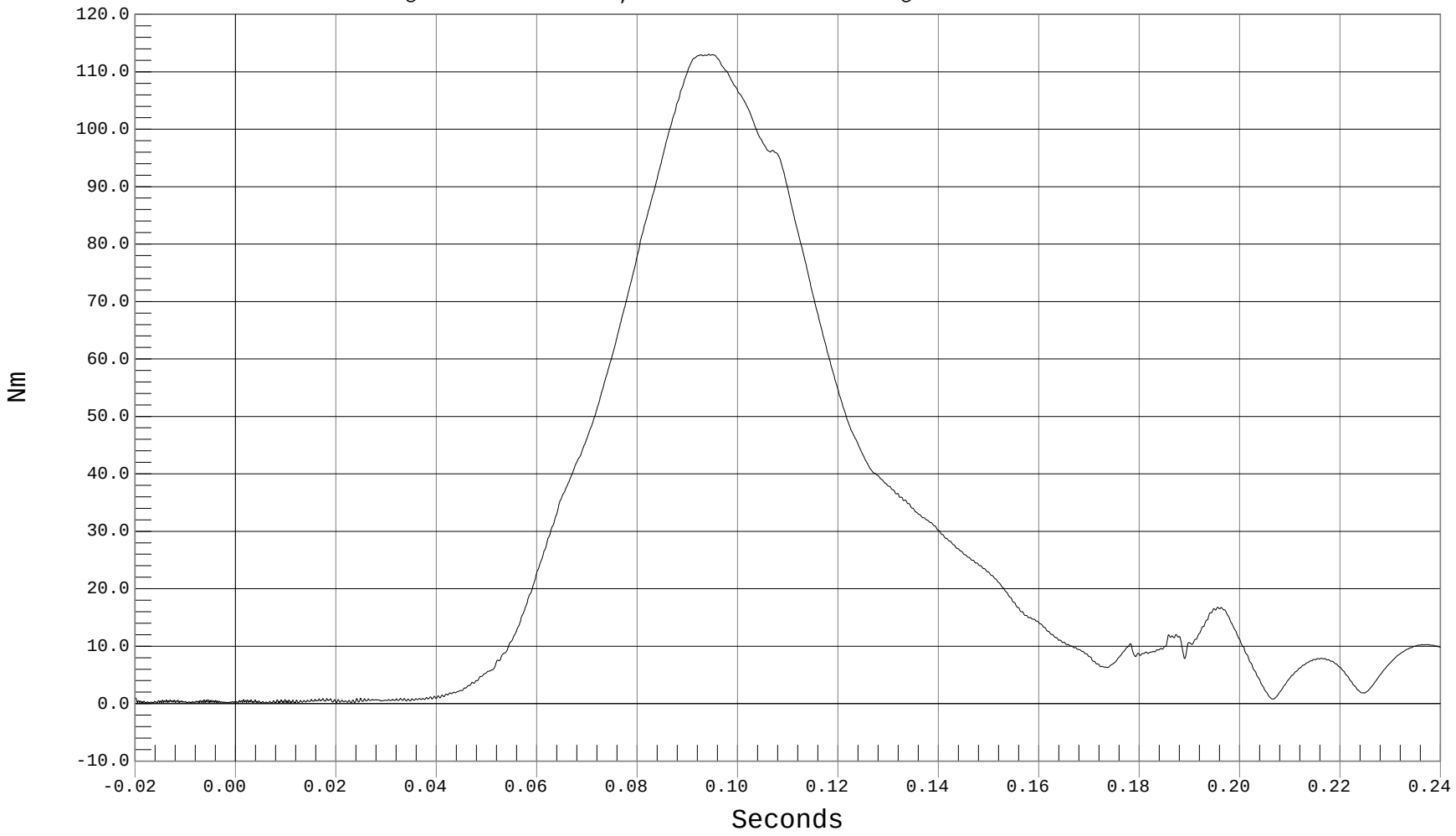
RRS 3 YR OLD LOWER NECK MOMENT RESULTANT

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 RRS 3 YR OLD LOWER NECK MOMENT RESULTANT, B01037MV.M49

Ymin = .06 Nm @ 0.0096 Seconds, Ymax = 113.05 Nm @ 0.0942 Seconds



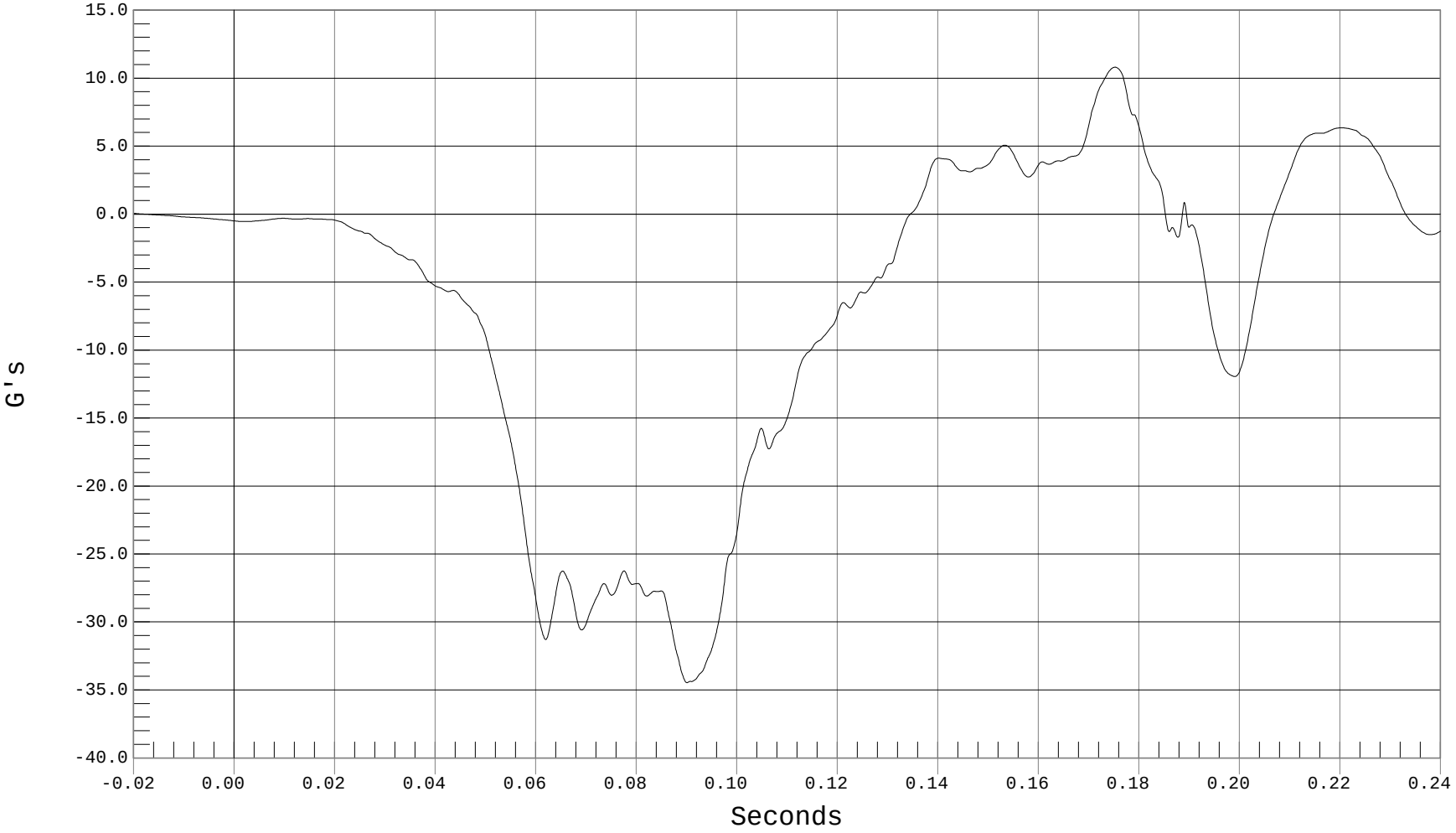
RRS 3 YR OLD CHEST X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RRS CHILD CHEST X, B01037AF.A52

Ymin = -34.46 G's @ 0.0900 Seconds, Ymax = 10.81 G's @ 0.1752 Seconds



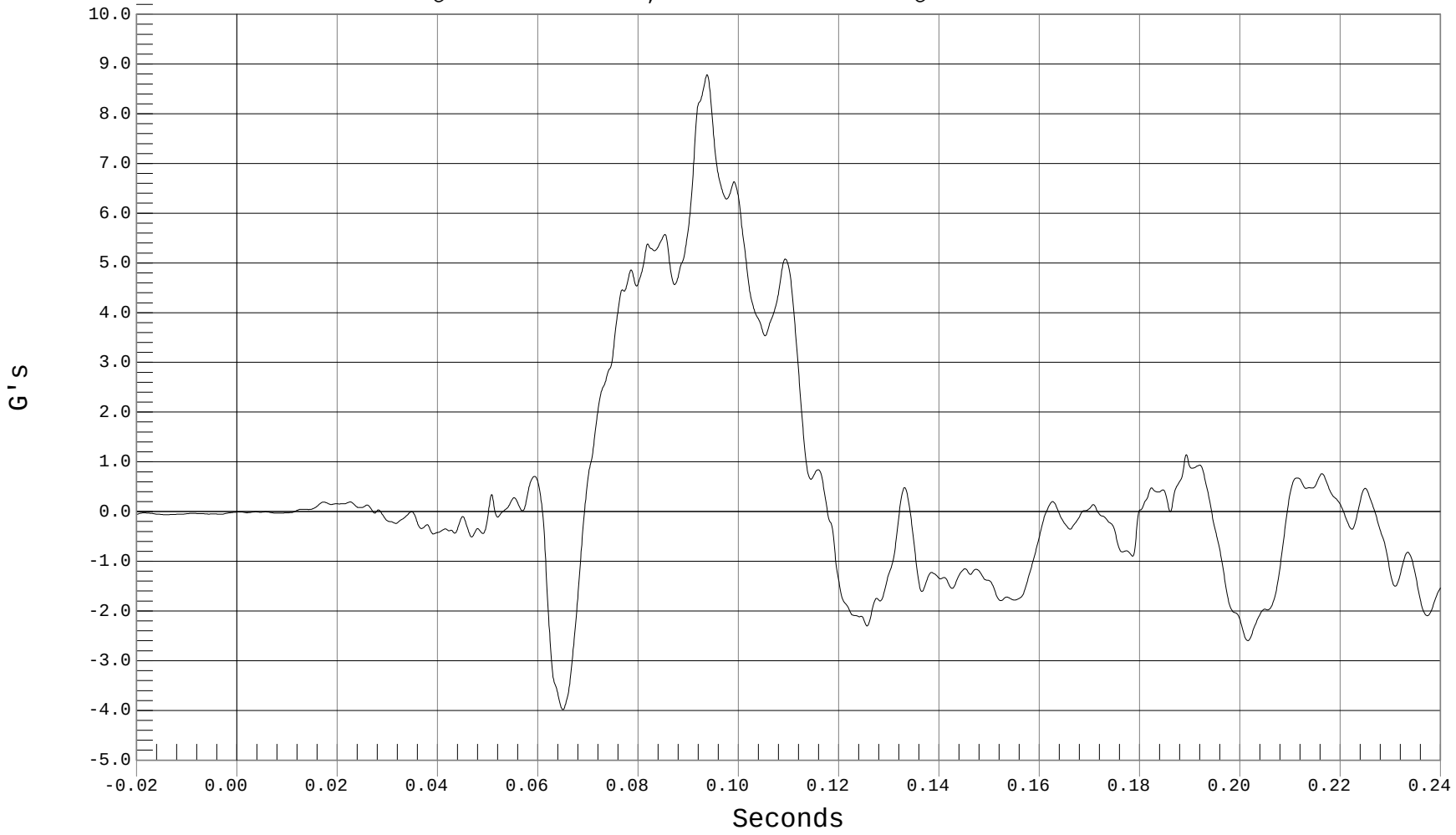
RRS 3 YR OLD CHEST Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RRS CHILD CHEST Y, B01037AF.A53

Ymin = -3.99 G's @ 0.0650 Seconds, Ymax = 8.78 G's @ 0.0937 Seconds



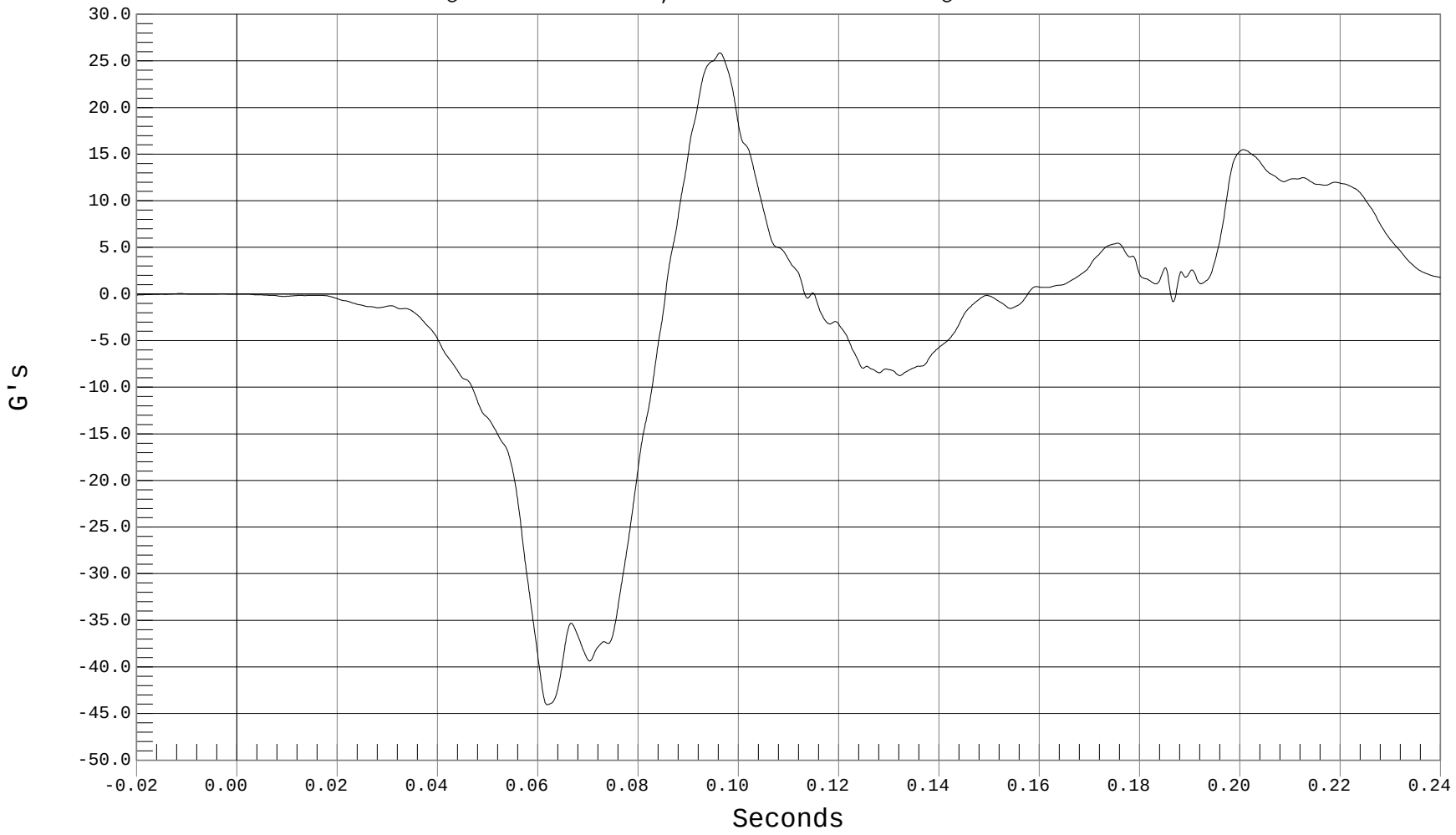
RRS 3 YR OLD CHEST Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RRS CHILD CHEST Z, B01037AF.A54

Ymin = -44.06 G's @ 0.0618 Seconds, Ymax = 25.87 G's @ 0.0963 Seconds



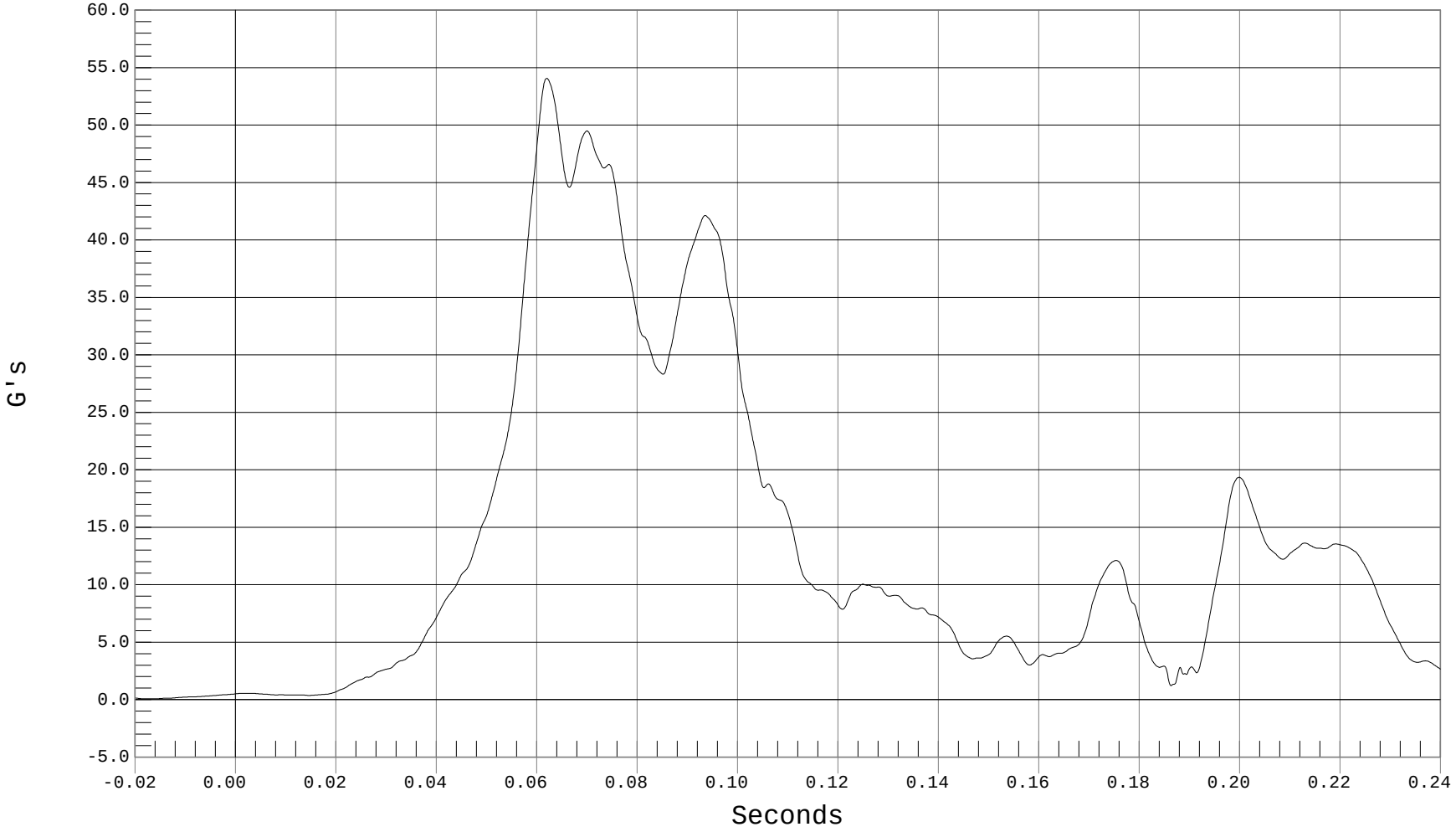
RRS 3 YR OLD CHEST RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RRS 3 YR OLD CHEST RESULTANT ACCELERATION, B01037AV.A52

Ymin = .06 G's @ -0.0174 Seconds, Ymax = 54.07 G's @ 0.0619 Seconds



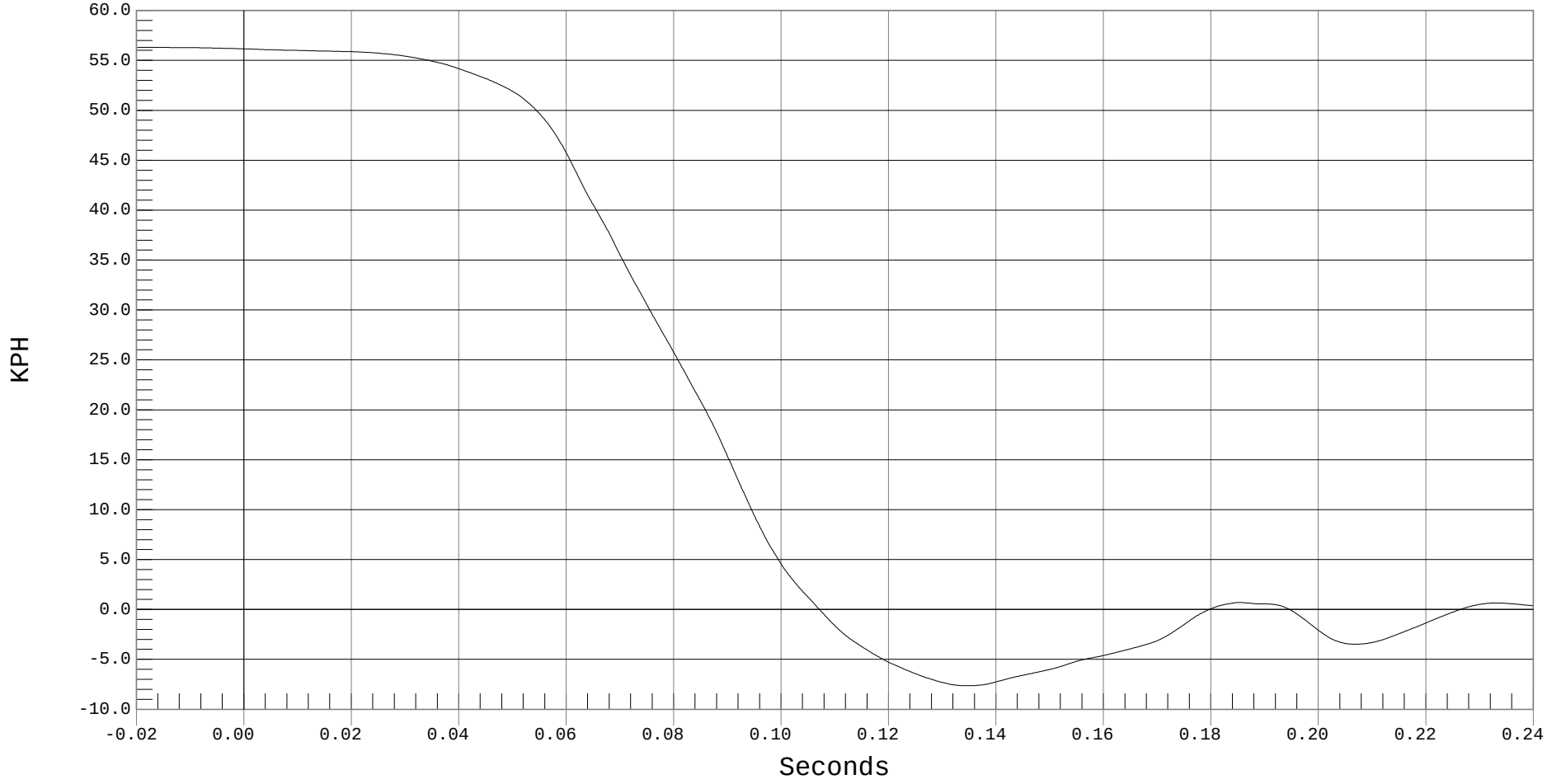
RRS 3 YR OLD CHEST X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RRS 3 YR OLD CHEST X VELOCITY, B01037AI.V52

Ymin = -7.63 KPH @ 0.1345 Seconds, Ymax = 56.3 KPH @ -0.0178 Seconds



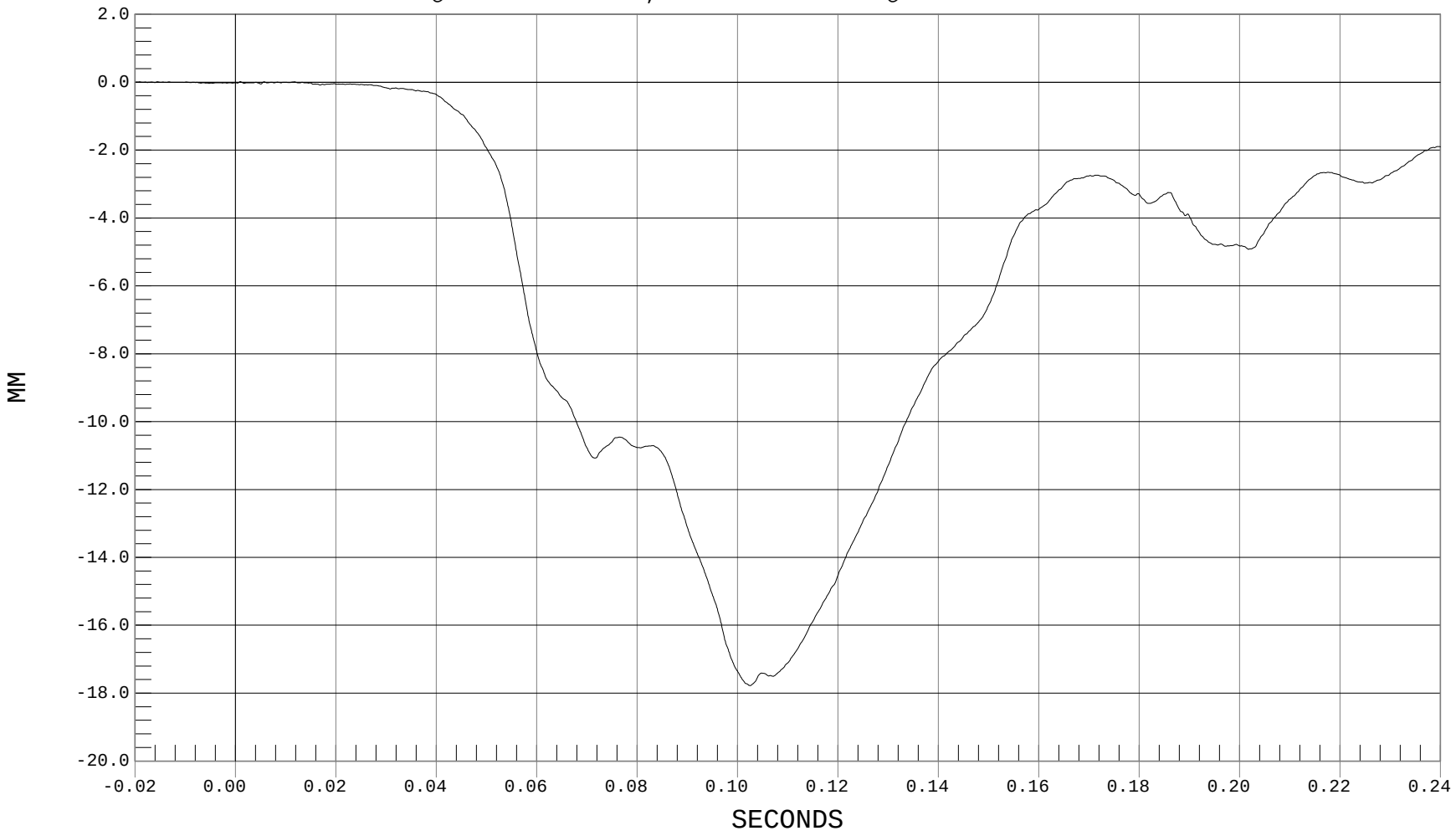
RRS 3 YR OLD CHEST COMPRESSION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 600

1 DISPLACEMENT, B01037DF.D55

Ymin = -17.78 MM @ 0.1024 SECONDS, Ymax = .02 MM @ 0.0009 SECONDS



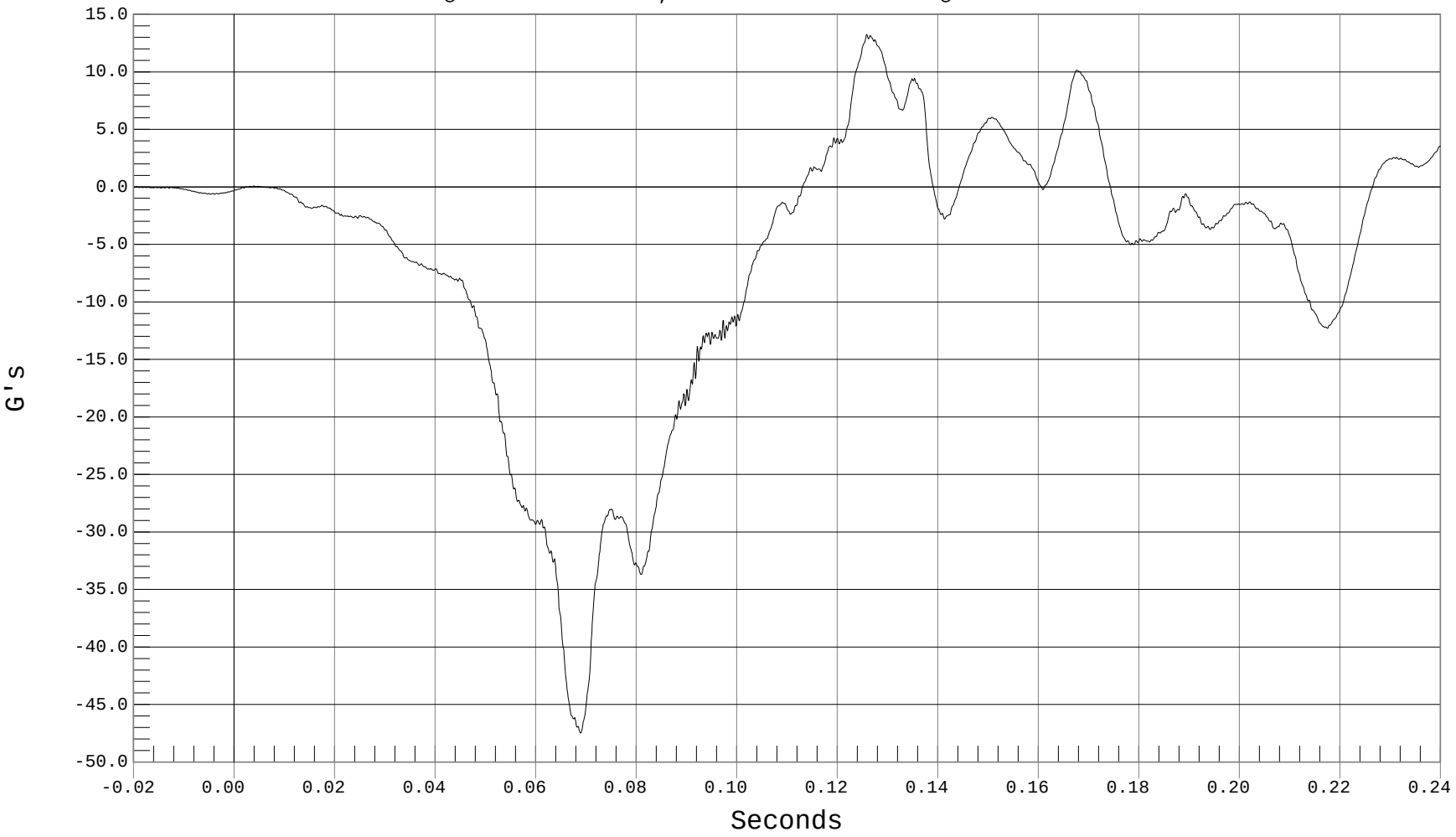
RRS 3 YR OLD PELVIS X ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD PELVIS X, B01037AT.A56

Ymin = -47.48 G's @ 0.0689 Seconds, Ymax = 13.26 G's @ 0.1258 Seconds



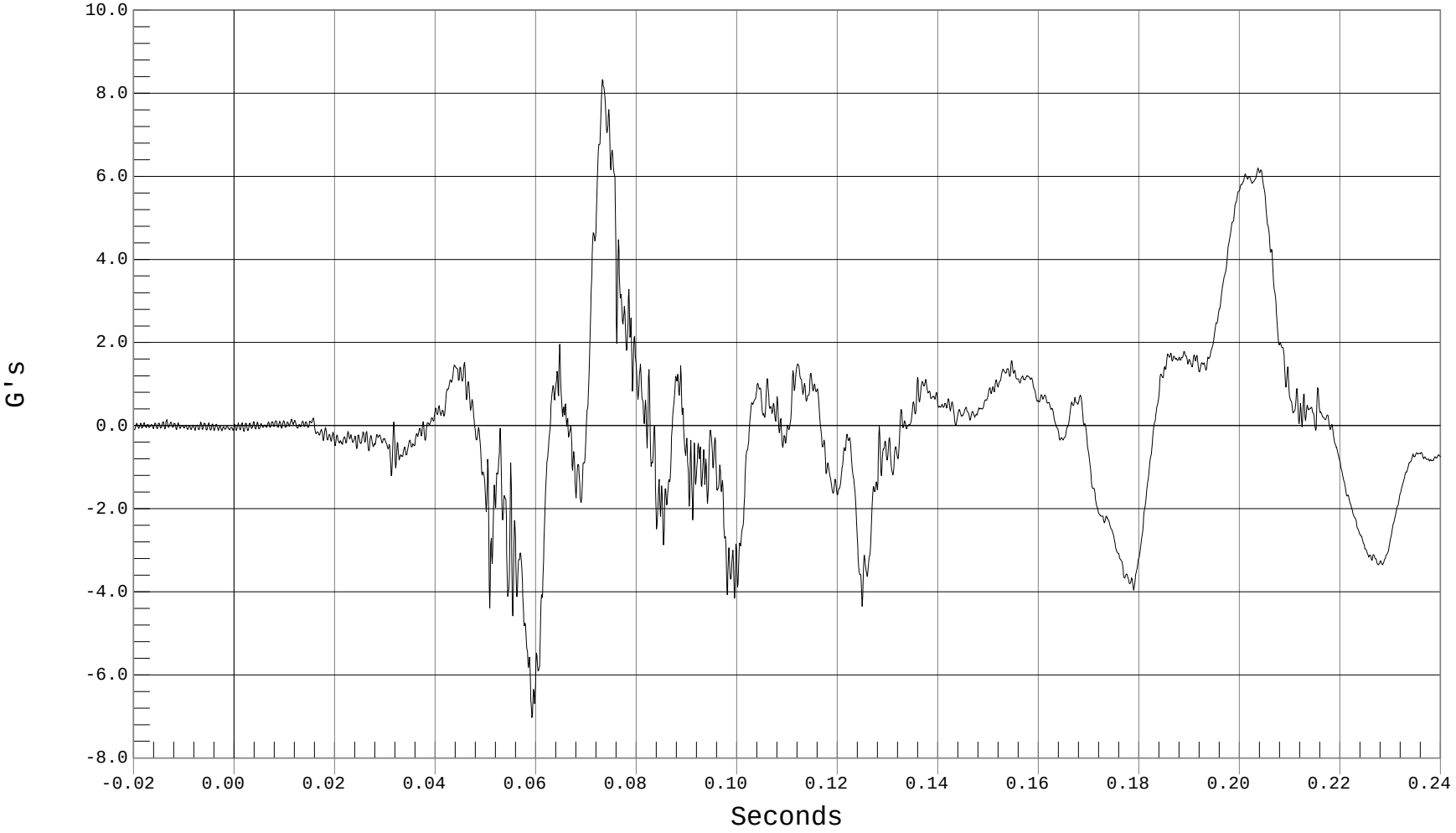
RRS 3 YR OLD PELVIS Y ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD PELVIS Y, B01037AT.A57

Ymin = -7.03 G's @ 0.0592 Seconds, Ymax = 8.33 G's @ 0.0732 Seconds



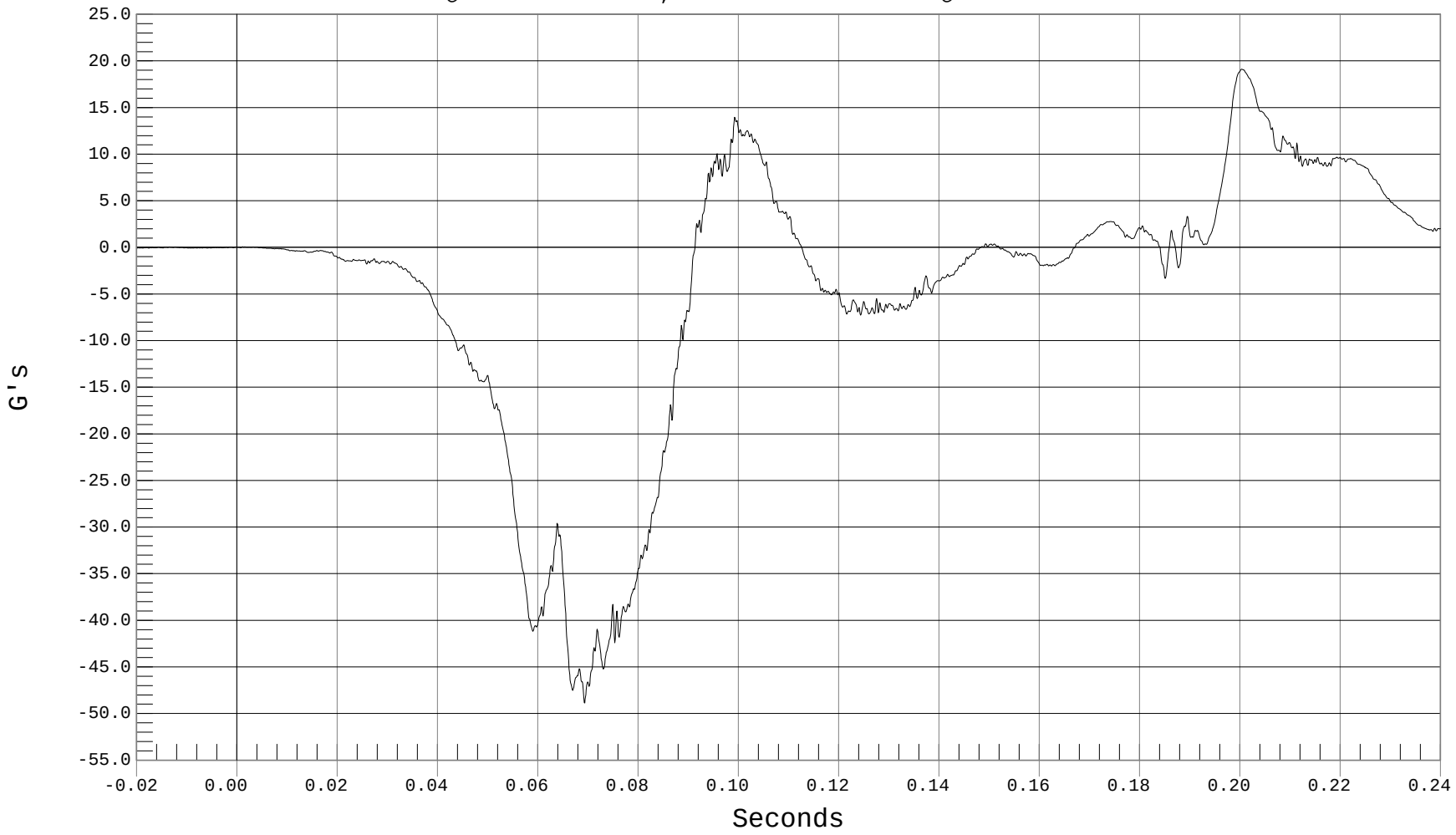
RRS 3 YR OLD PELVIS Z ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS CHILD PELVIS Z, B01037AT.A58

Ymin = -48.87 G's @ 0.0693 Seconds, Ymax = 19.13 G's @ 0.2003 Seconds



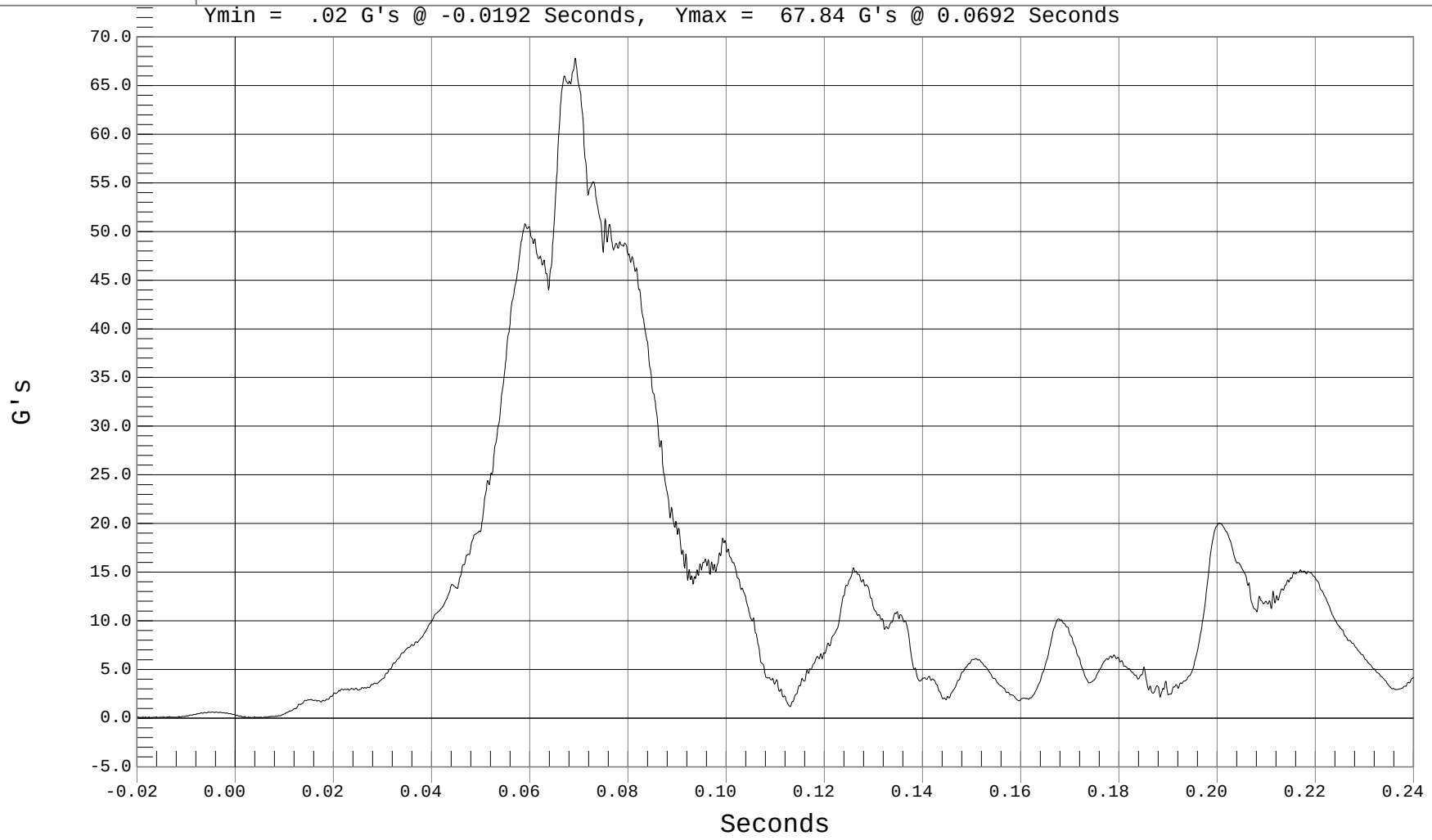
RRS 3 YR OLD PELVIS RESULTANT ACCELERATION

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 1000

1 RRS 3 YR OLD PELVIS RESULTANT ACCELERATION, B01037AV.A56

Ymin = .02 G's @ -0.0192 Seconds, Ymax = 67.84 G's @ 0.0692 Seconds



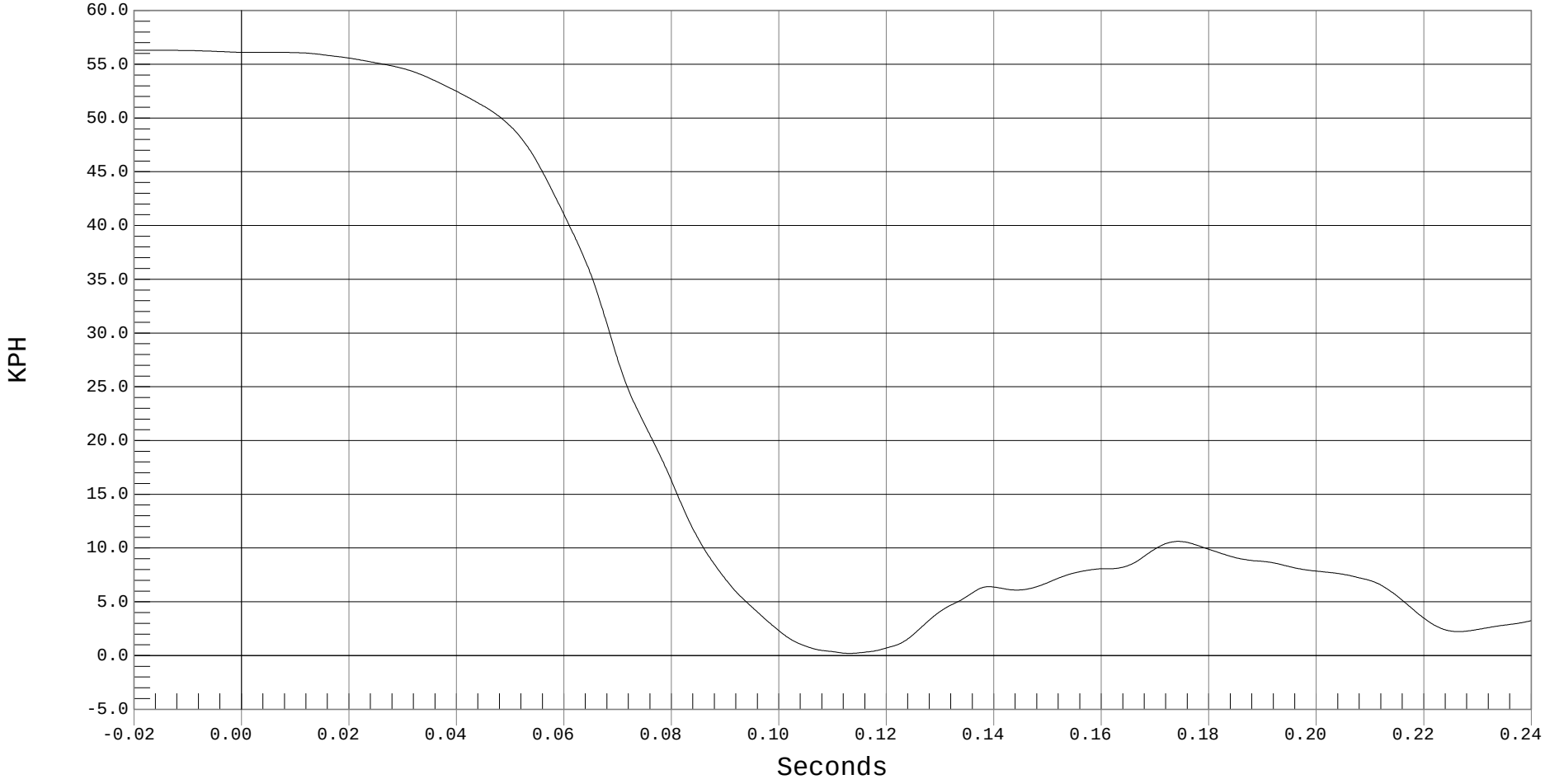
RRS 3 YR OLD PELVIS X VELOCITY

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 180

1 RRS 3 YR OLD PELVIS X VELOCITY, B01037AI.V56

Ymin = .19 KPH @ 0.1131 Seconds, Ymax = 56.3 KPH @ -0.0199 Seconds



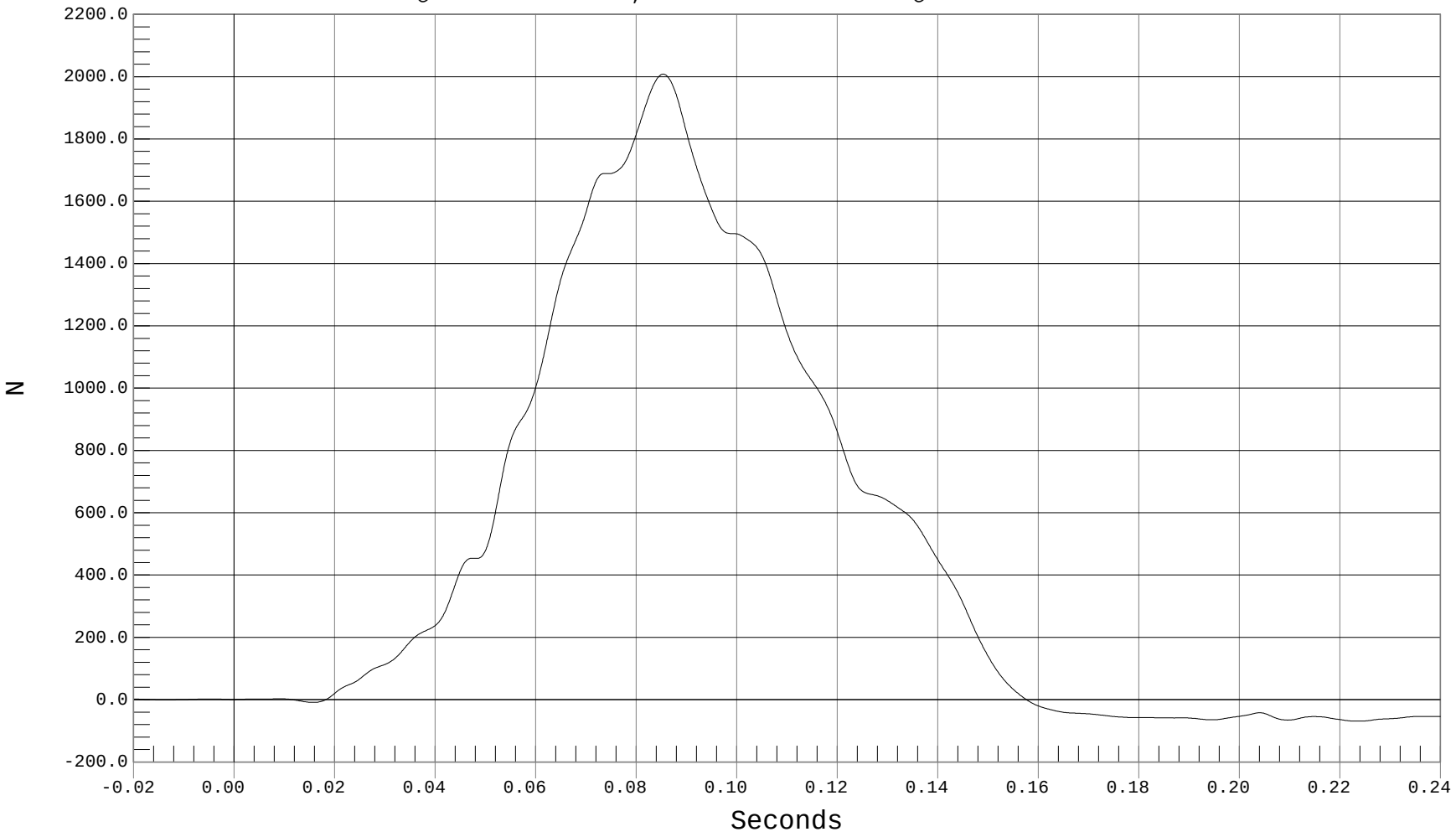
RRS TETHER FORCE

Test Desc.: 35 MPH FRONTAL IMPACT
Component: 2001 DODGE GRAND CARAVAN SPORT (M10317)
Other Info:

Test Date: 04-04-01
Speed: 35.0 MPH, 56.3 KPH
Filter Class: 60

1 RRS TETHER FORCE, B01037ff.f63

Ymin = -68.86 N @ 0.2235 Seconds, Ymax = 2008.22 N @ 0.0853 Seconds



CHILD DUMMY CALIBRATION DATA TRACES AND TABLES

Hybrid III Calibration Data Sheet

3 Year Old

Head Drop Calibration

ATD Serial No.: 139 Test I.D.: D01061

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.7	PASS
Laboratory Relative Humidity	%	10 to 70	23	PASS
Peak Resultant Acceleration	G's	250.0 to 280.0	261.7	PASS
Peak Lateral Acceleration	G's	≤ ±15.0	1.7	PASS
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	PASS
		Overall Test Results		PASS

1/11/01

Laboratory Technician

Test Date

Approved By

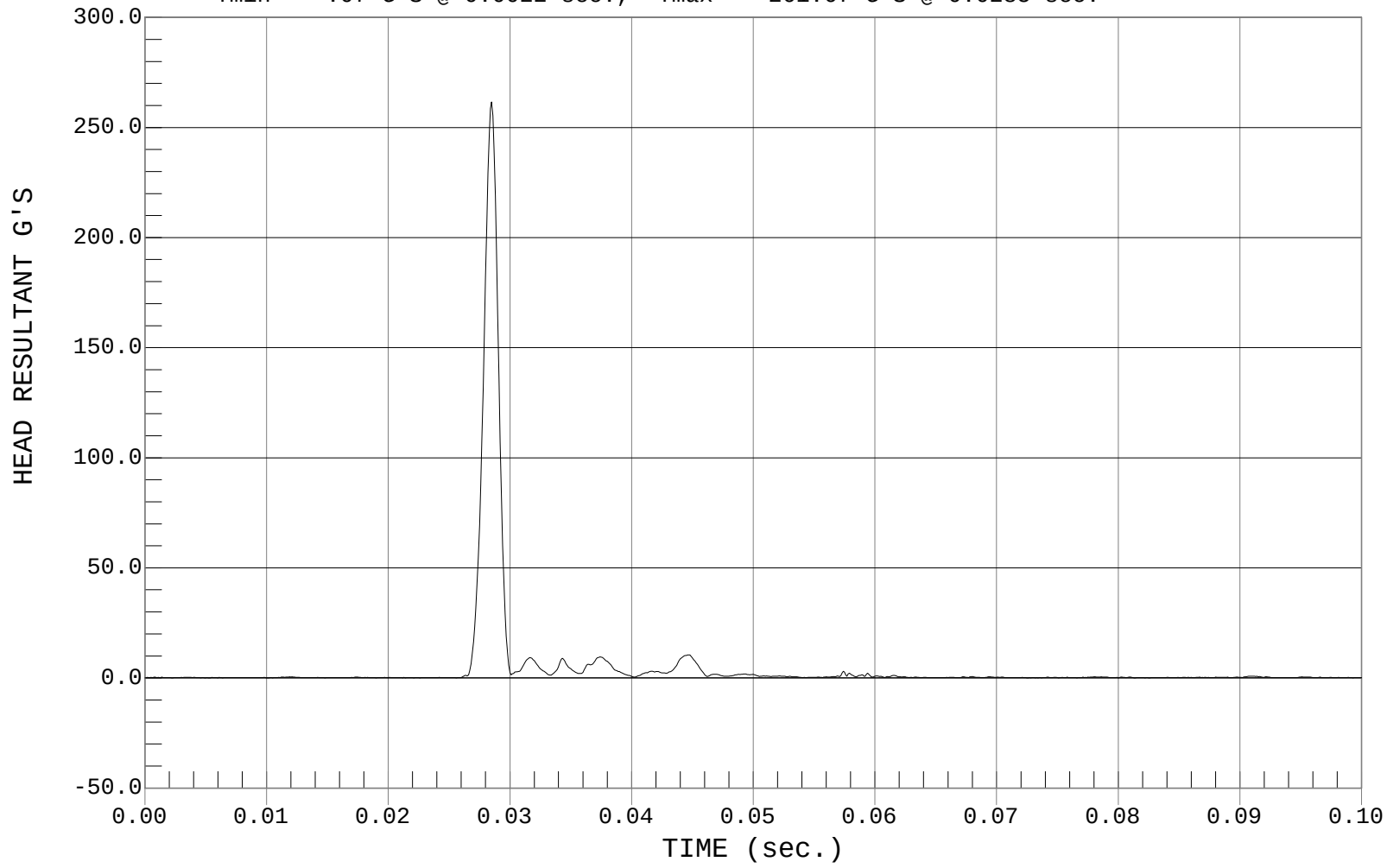
PEAK RESULTANT ACCELERATION

Test Desc.: Dummy Calibration - Head Drop
Component: Dummy #139

Test Date: 01-11-01
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 HEAD RESULTANT, D01061AV.A01

Ymin = .07 G'S @ 0.0022 sec., Ymax = 261.67 G'S @ 0.0285 sec.



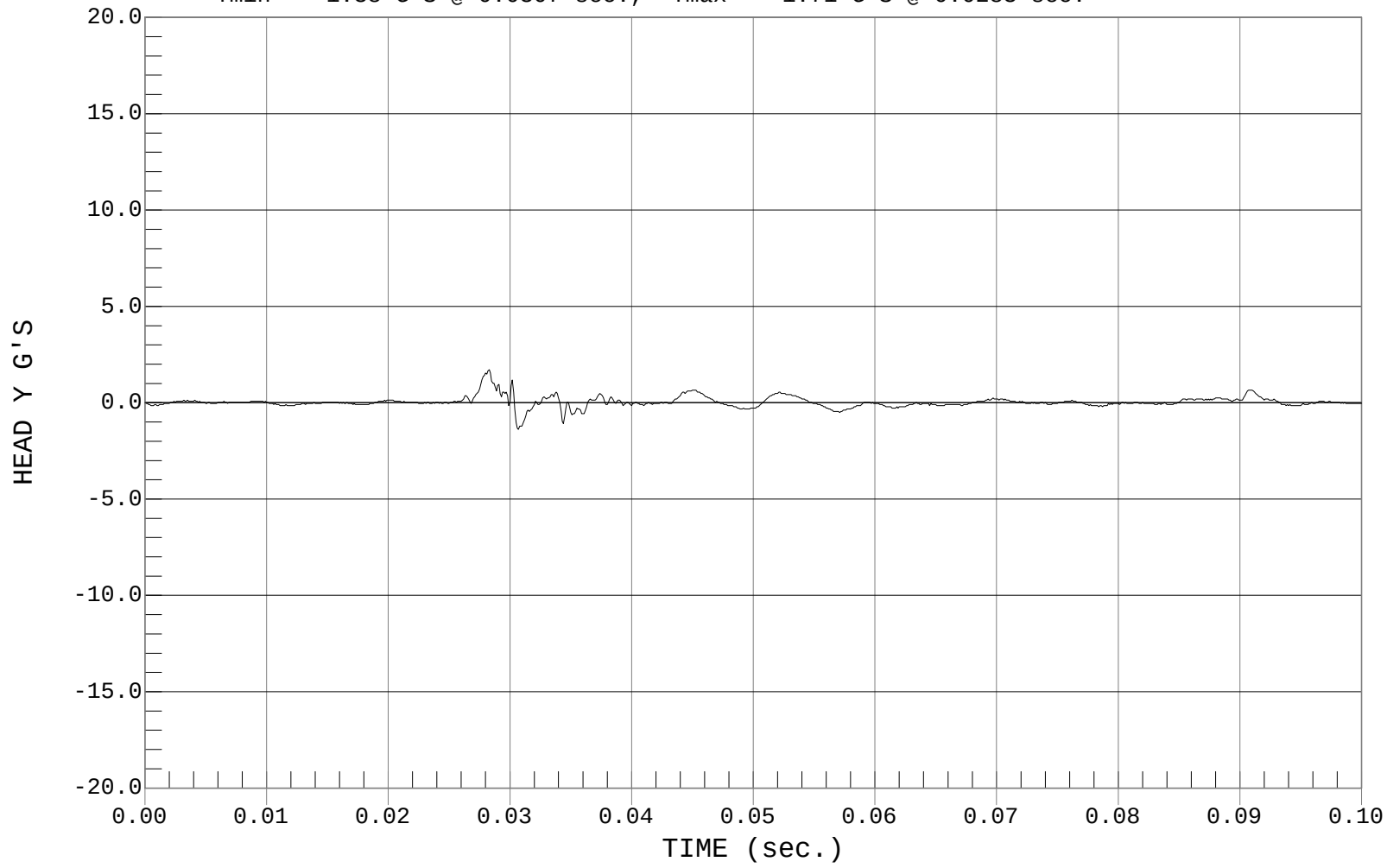
PEAK LATERAL ACCELRATION

Test Desc.: Dummy Calibration - Head Drop
Component: Dummy #139

Test Date: 01-11-01
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 HEAD Y, D01061AR.A02

Ymin = -1.38 G'S @ 0.0307 sec., Ymax = 1.71 G'S @ 0.0283 sec.



Hybrid III Calibration Data Sheet

3 Year Old

Thorax Impact Test

ATD Serial No.: 139 Test I.D.: D01064

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	PASS
Laboratory Relative Humidity	%	10 to 70	29	PASS
Probe Velocity	m/s	5.9 to 6.1	6.0	PASS
Peak Deflection	mm	32 to 38	33	PASS
Peak Resistive Force Within Deflection Corridor	kN	.68 to .81	.78	PASS
Internal Hysteresis	%	65 to 85	71	PASS
Max Force 12.5 mm – 32 mm Deflection	kN	Max .86	.83	PASS
		Overall Test Results		PASS

1/14/01

Laboratory Technician

Test Date

Approved By

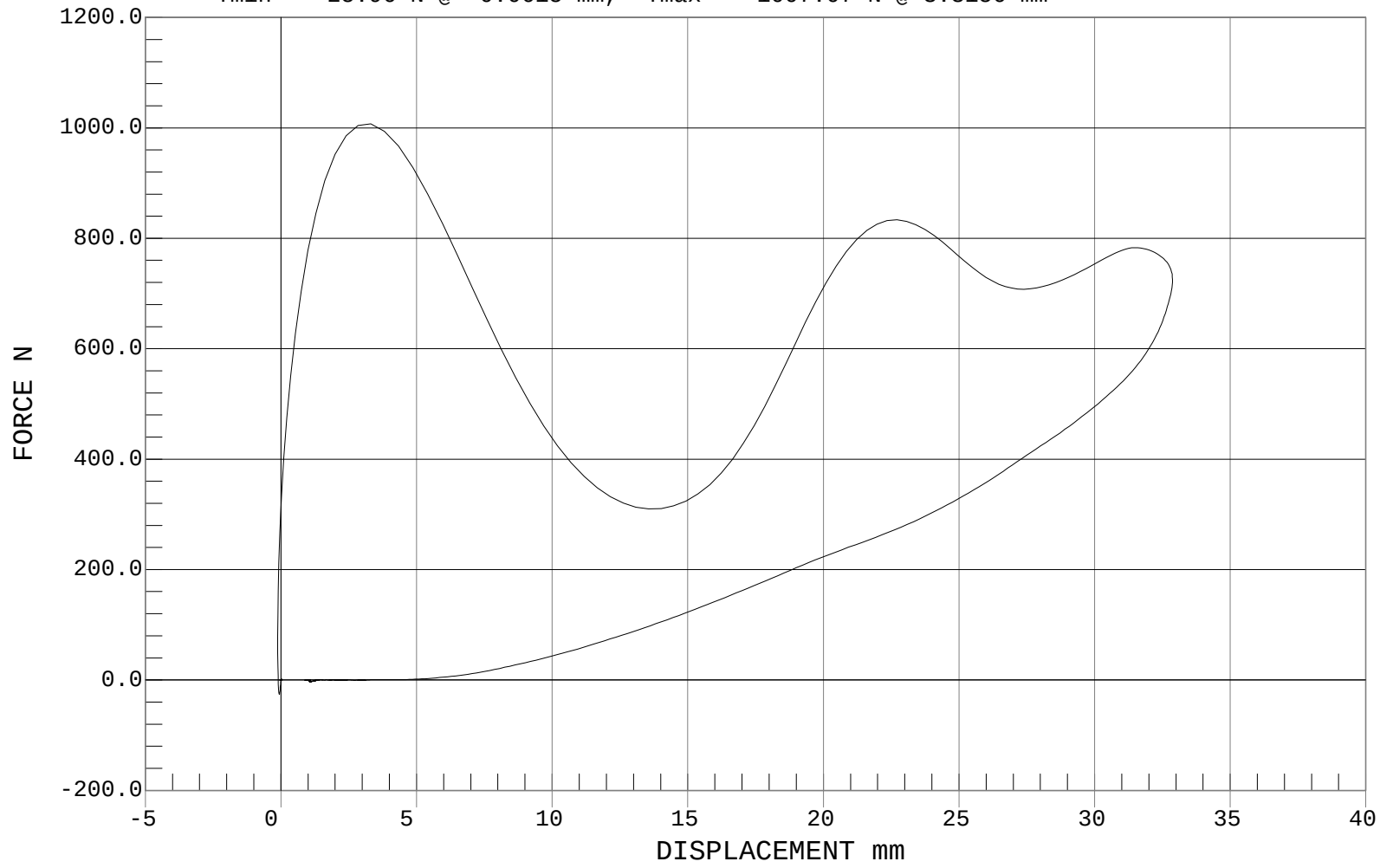
THORAX IMPACT

Test Desc.: Dummy Calibration - Chest Impact
Component: Dummy #139

Test Date: 01-14-01
Speed: 19.62 FT/SEC, 5.98 M/SEC

1 FORCE, D01064CH.FVD

Ymin = -25.96 N @ -0.0615 mm, Ymax = 1007.07 N @ 3.3156 mm



Hybrid III Calibration Data Sheet

3 Year Old

Neck Flexion Test

ATD Serial No.: 139 Test I.D.: D01062

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.7	PASS
Laboratory Relative Humidity		%	10 to 70	23	PASS
Pendulum Velocity		m/s	5.4 to 5.6	5.5	PASS
Pendulum Deceleration	10 Msec.	m/s	2.0 to 2.7	2.4	PASS
	15 Msec.	m/s	3.0 to 4.0	3.5	PASS
	20 Msec.	m/s	4.0 to 5.1	4.7	PASS
"D" Plane Rotation	Maximum	Deg.	70.0 to 82.0	73.1	PASS
Moment About Occipital Condyle	Maximum	Nm	42.0 to 53.0	43.4	PASS
Positive Moment Decay Time To 10 Nm		Msec.	60.0 to 80.0	71.3	PASS
			Overall Test Results		PASS

Laboratory Technician

1/11/01
Test Date

Approved By

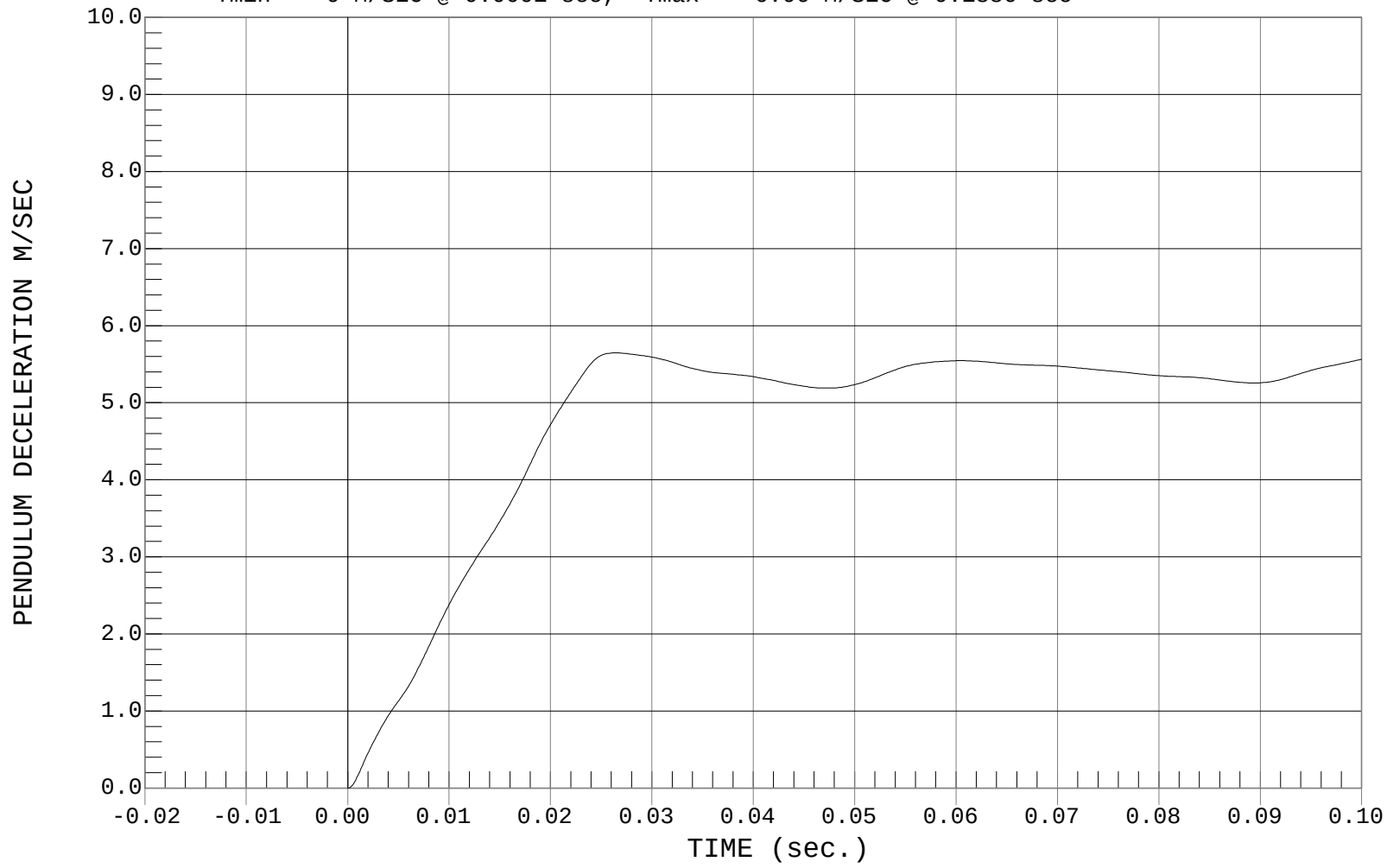
PENDULUM DECELERATION

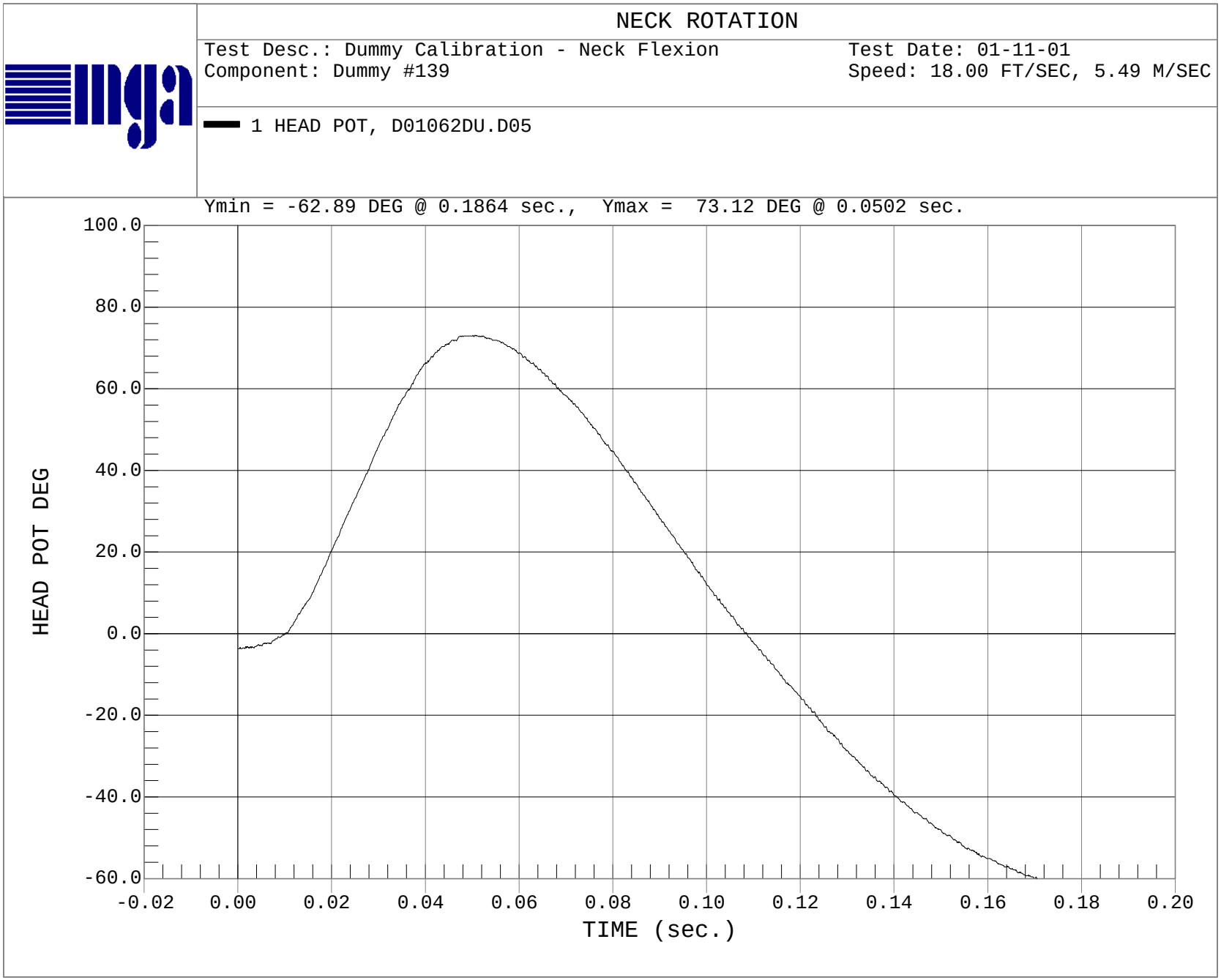
Test Desc.: Dummy Calibration - Neck Flexion
Component: Dummy #139

Test Date: 01-11-01
Speed: 18.00 FT/SEC, 5.49 M/SEC

1 PENDULUM DECELERATION, D01062AI.A04

Ymin = 0 M/SEC @ 0.0001 sec, Ymax = 6.06 M/SEC @ 0.1886 sec




NECK ROTATION
Test Desc.: Dummy Calibration - Neck Flexion
Test Date: 01-11-01
Component: Dummy #139
Speed: 18.00 FT/SEC, 5.49 M/SEC
1 HEAD POT, D01062DU.D05
Ymin = -62.89 DEG @ 0.1864 sec., Ymax = 73.12 DEG @ 0.0502 sec.
HEAD POT DEG
100.0
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-0.02
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.18
0.20
TIME (sec.)

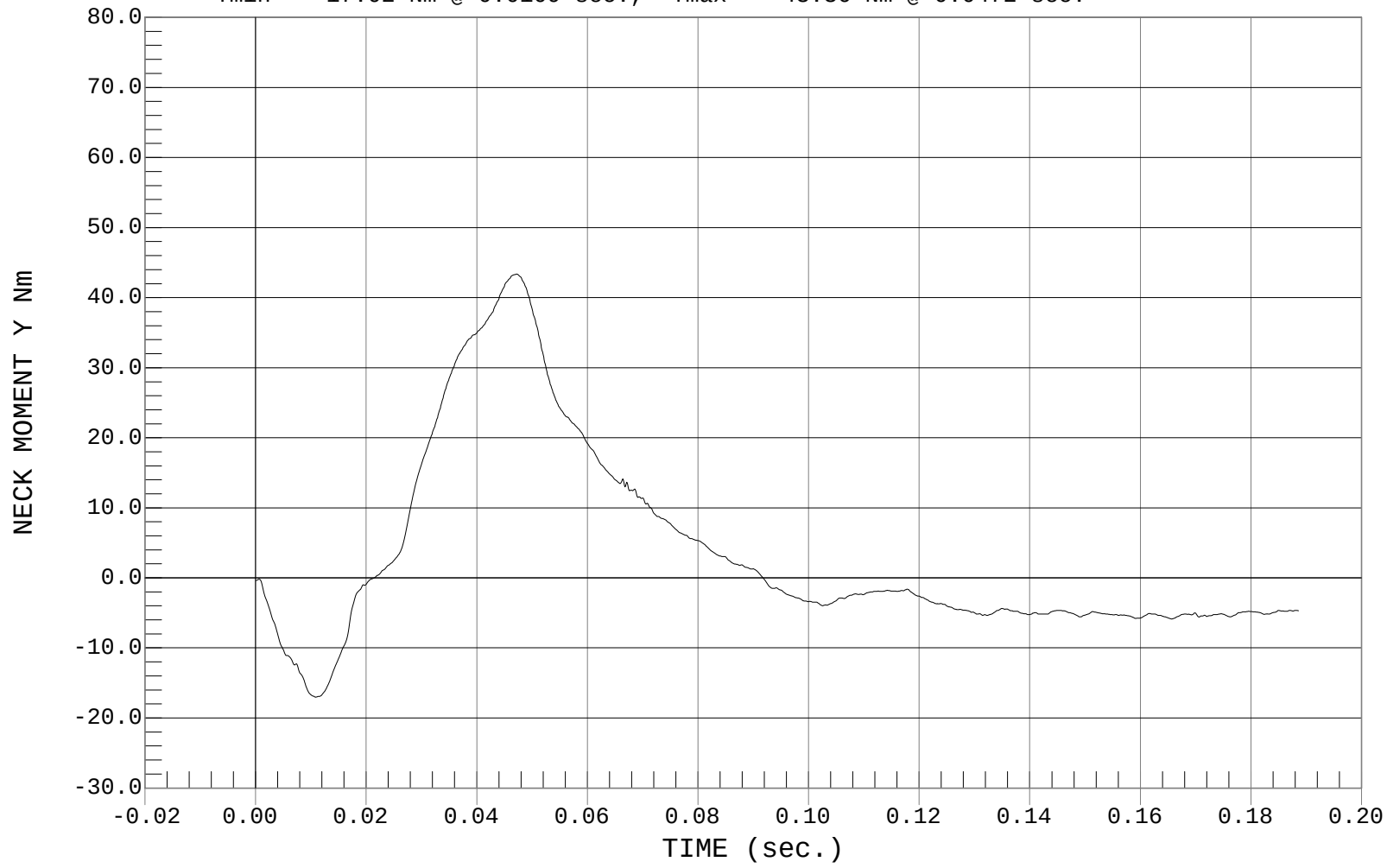
OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Flexion
Component: Dummy #139

Test Date: 01-11-01
Speed: 18.00 FT/SEC, 5.49 M/SEC

1 NECK MOMENT Y, D01062MF.M01

Ymin = -17.02 Nm @ 0.0109 sec., Ymax = 43.36 Nm @ 0.0472 sec.



Hybrid III Calibration Data Sheet

3 Year Old

Neck Extension Test

ATD Serial No.: 139 Test I.D.: D01063

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.5	PASS
Laboratory Relative Humidity		%	10 to 70	24	PASS
Pendulum Velocity		m/s	3.55 to 3.75	3.66	PASS
Pendulum Deceleration	6 Msec.	m/s	1.0 to 1.4	1.2	PASS
	10 Msec.	m/s	1.9 to 2.5	2.1	PASS
	14 Msec.	m/s	2.8 to 3.5	2.9	PASS
"D" Plane Rotation	Maximum	Deg.	83.0 to 93.0	88.5	PASS
Moment About Occipital Condyle	Minimum	Nm	-53.3 to -43.7	-46.4	PASS
Negative Moment Decay Time To -10Nm		Msec.	60.0 to 80.0	68.9	PASS
			Overall Test Results		PASS

Laboratory Technician

1/11/01
Test Date

Approved By

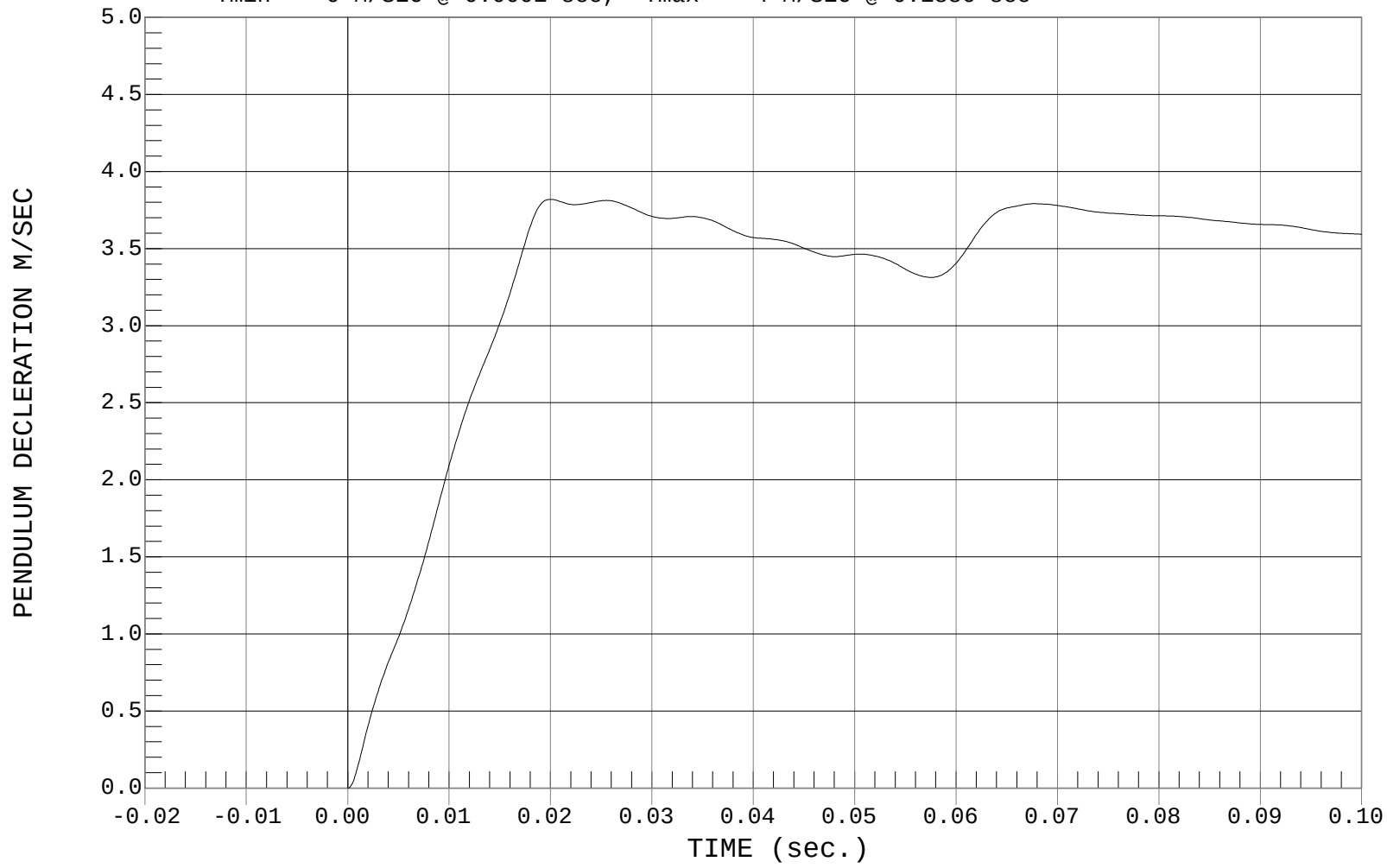
PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #139

Test Date: 01-11-01
Speed: 12.00 FT/SEC, 3.66 M/SEC

1 PENDULUM DECLERATION, D01063AI.A04

Ymin = 0 M/SEC @ 0.0001 sec, Ymax = 4 M/SEC @ 0.1886 sec



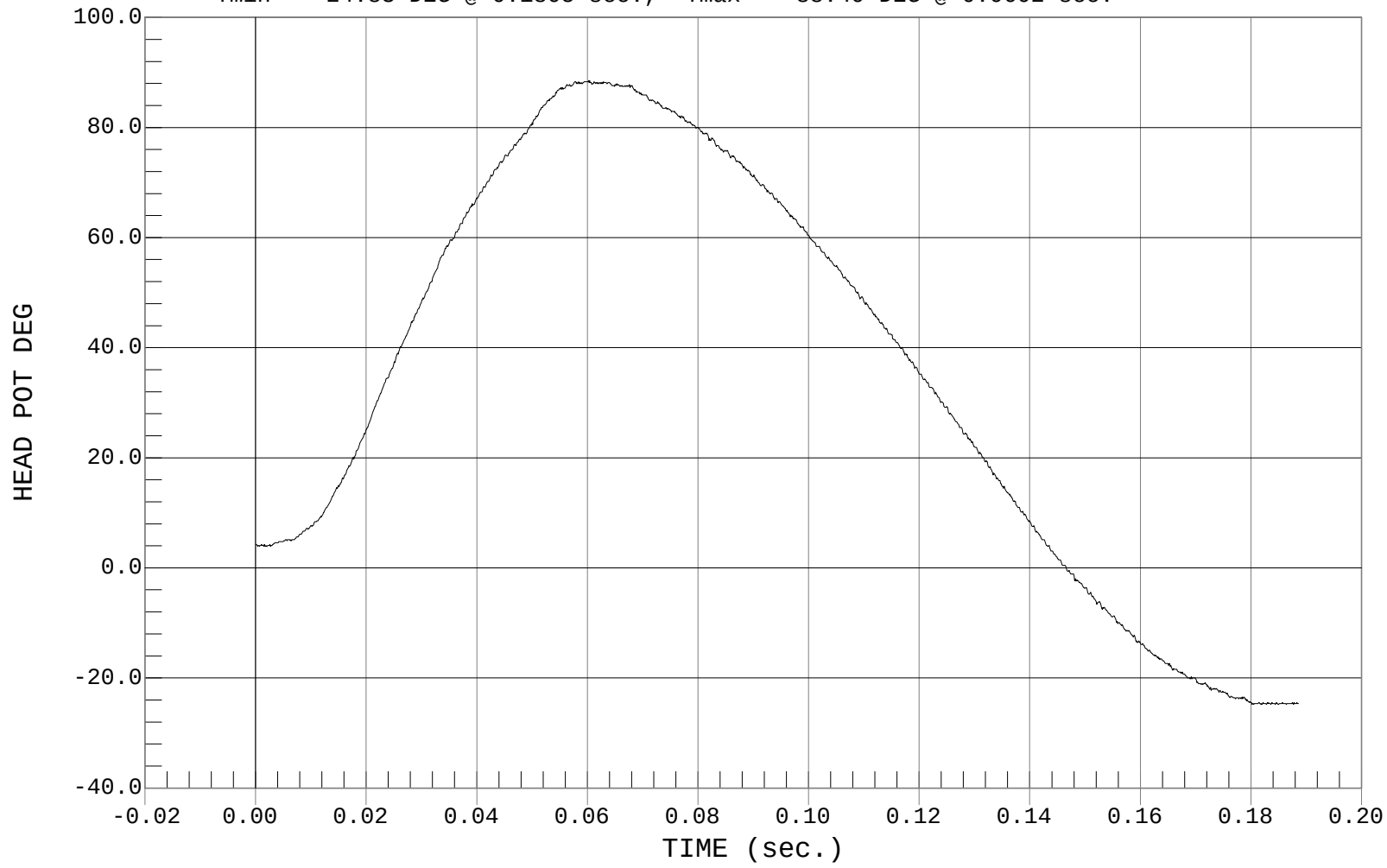
NECK ROTATION

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #139

Test Date: 01-11-01
Speed: 12.00 FT/SEC, 3.66 M/SEC

1 HEAD POT, D01063DU.D05

Ymin = -24.83 DEG @ 0.1805 sec., Ymax = 88.49 DEG @ 0.0602 sec.



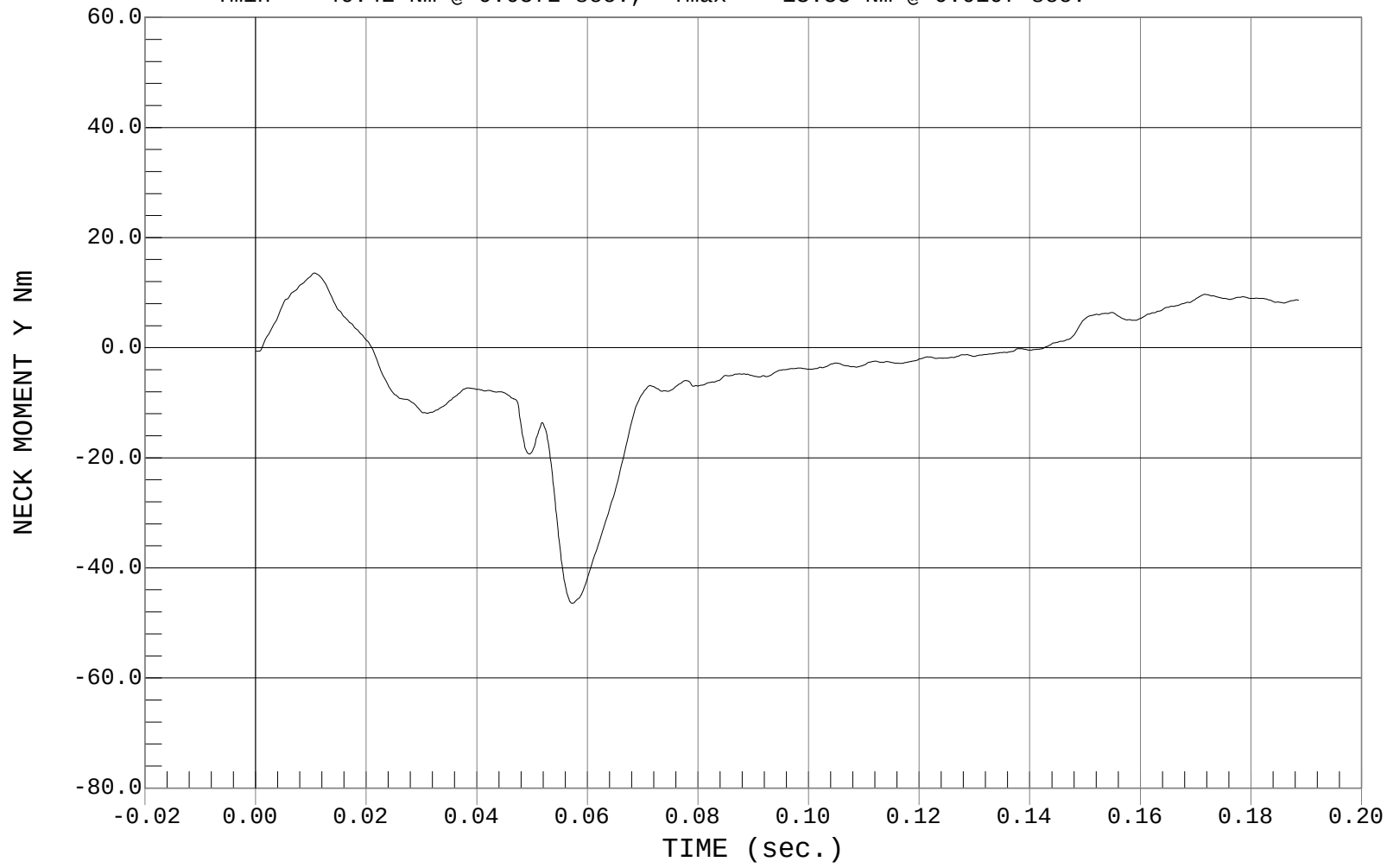
OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #139

Test Date: 01-11-01
Speed: 12.00 FT/SEC, 3.66 M/SEC

1 NECK MOMENT Y, D01063MF.M01

Ymin = -46.42 Nm @ 0.0572 sec., Ymax = 13.55 Nm @ 0.0107 sec.



Hybrid III Calibration Data Sheet

3 Year Old

Torso Flexion Test

ATD Serial No.: 139 Test I.D.: D01065

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	°C	18.9 to 25.6	21.4	PASS
Relative Humidity	%	10 to 70	24	PASS
Force @ 45°	N	130 to 180	161	PASS
Initial Angle	Deg	0-15	10	PASS
Return Angle	Deg	0-10	2	PASS
		Overall Test Results		PASS

Laboratory Technician

1/12/01
Test Date

Approved By

Hybrid III Calibration Data Sheet

3 Year Old

Head Drop Calibration

ATD Serial No.: 142C Test I.D.: D01071

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	22.1	PASS
Laboratory Relative Humidity	%	10 to 70	23	PASS
Peak Resultant Acceleration	G's	250.0 to 280.0	267.9	PASS
Peak Lateral Acceleration	G's	≤ ± 15.0	-4.0	PASS
Is Acceleration Unimodal?	Yes/No	<10% Peak	Yes	PASS
		Overall Test Results		PASS

1/11/01

Laboratory Technician Test Date

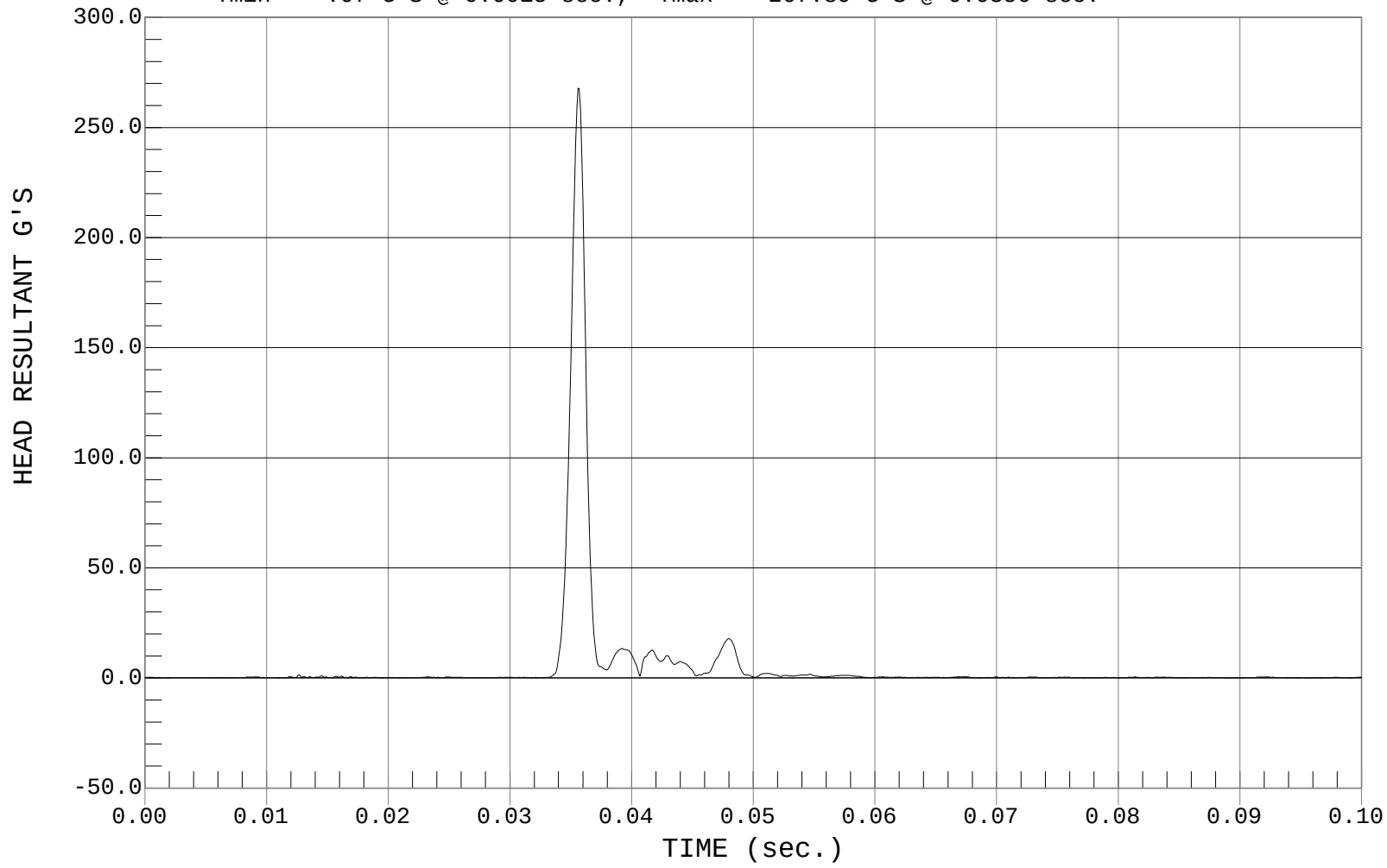
Approved By

PEAK RESULTANT ACCELERATION

Test Desc.: Dummy Calibration - Head Drop
Test Date: 01-11-01
Component: Dummy #142C
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 HEAD RESULTANT, D01071AV.A01

Ymin = .07 G'S @ 0.0015 sec., Ymax = 267.89 G'S @ 0.0356 sec.

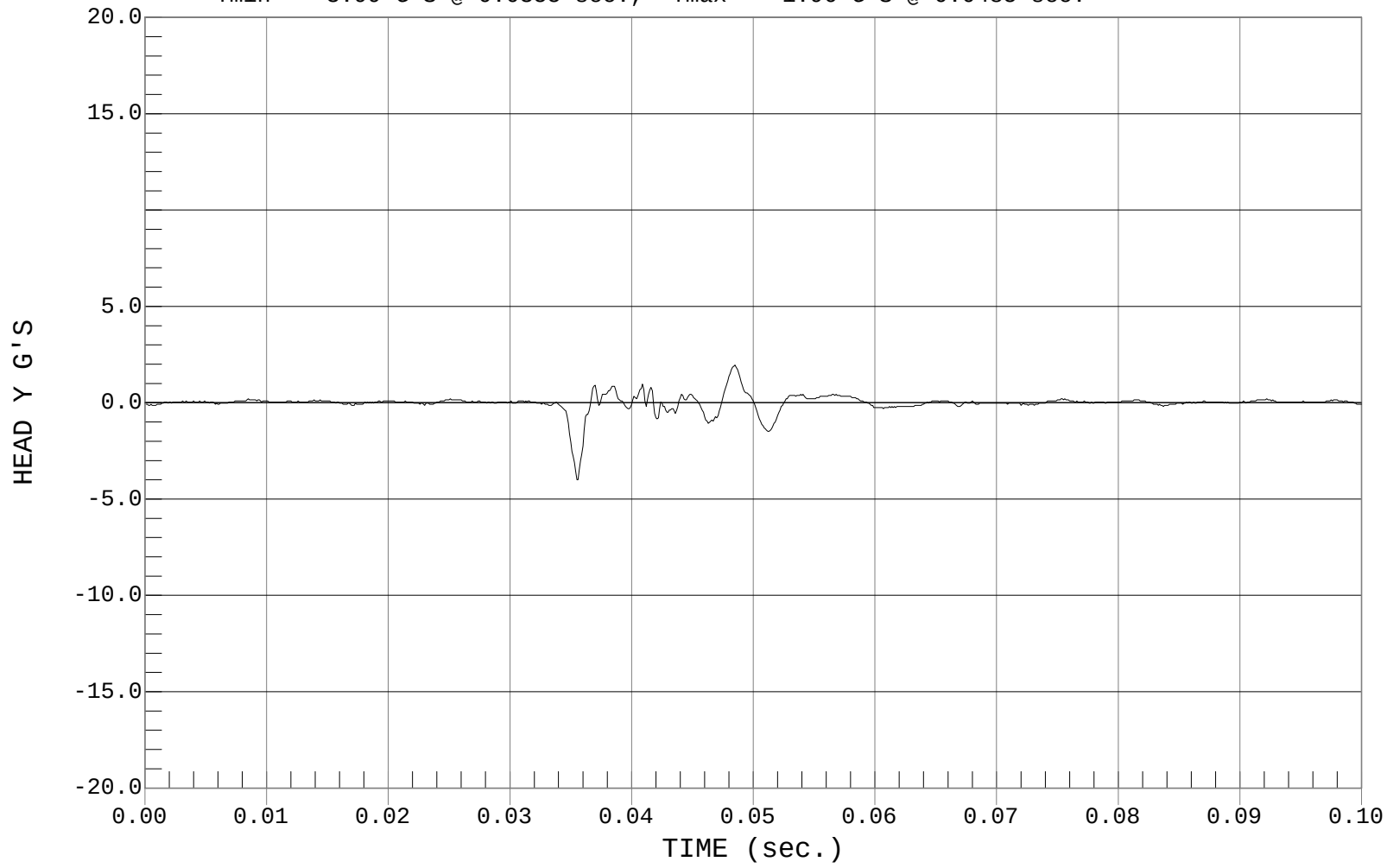


PEAK LATERAL ACCELRATION

Test Desc.: Dummy Calibration - Head Drop
Test Date: 01-11-01
Component: Dummy #142C
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 HEAD Y, D01071AR.A02

Ymin = -3.99 G'S @ 0.0355 sec., Ymax = 1.96 G'S @ 0.0485 sec.



Hybrid III Calibration Data Sheet

3 Year Old

Thorax Impact Test

ATD Serial No.: 142C Test I.D.: D01074

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	PASS
Laboratory Relative Humidity	%	10 to 70	29	PASS
Probe Velocity	m/s	5.9 to 6.1	6.0	PASS
Peak Resistive Force Within Deflection Corridor	kN	.68 to .81	.80	PASS
Internal Hysteresis	%	65 to 85%	73	PASS
Max Force 12.5 mm to 32 mm Deflection	kN	Max .86	.88*	FAIL
		Overall Test Results		FAIL

* TEST DOES NOT MEET SPECIFICATION

Laboratory Technician

1/14/01
Test Date

Approved By

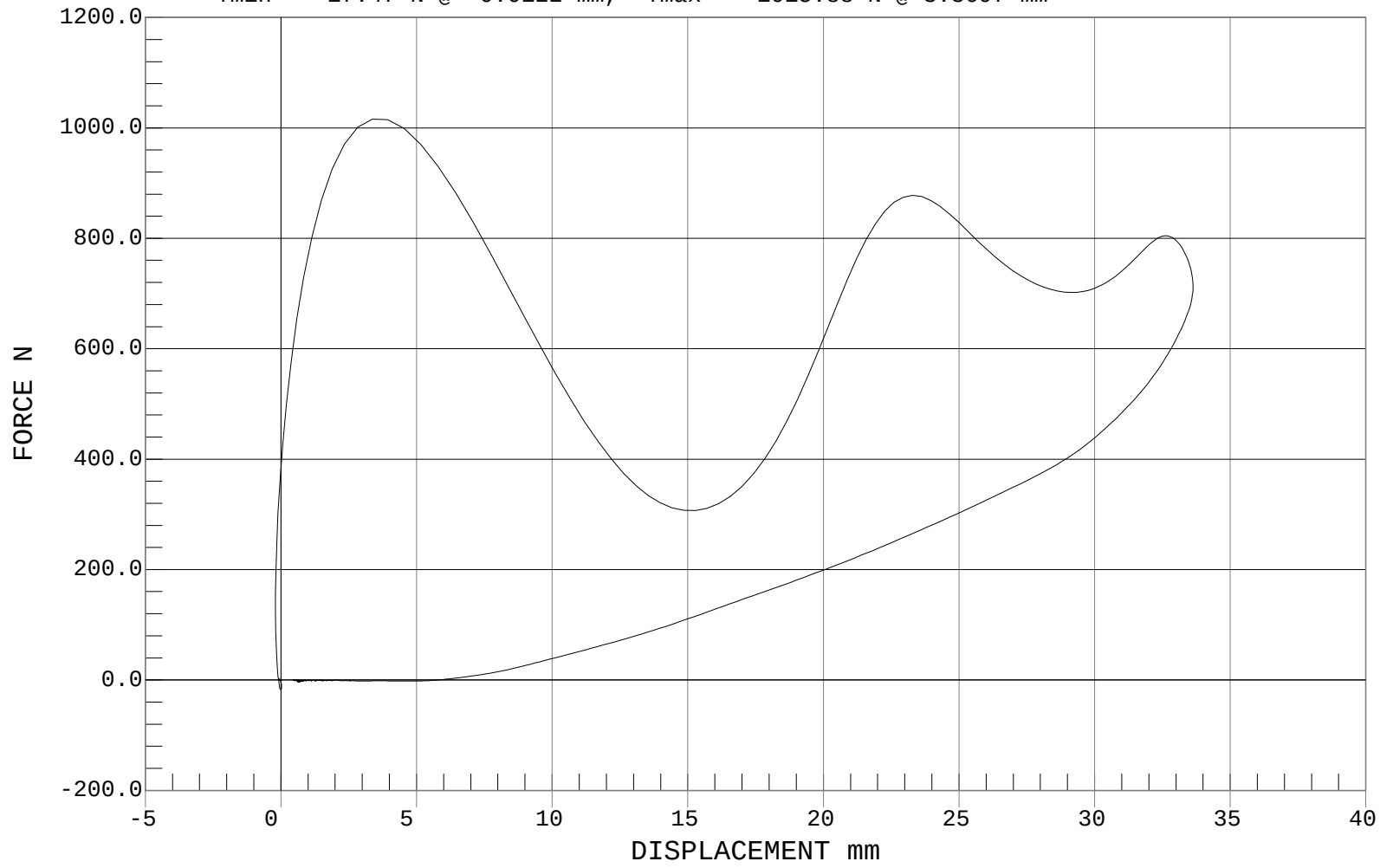
THORAX IMPACT

Test Desc.: Dummy Calibration - Chest Impact
Component: Dummy #142C

Test Date: 01-14-01
Speed: 19.72 FT/SEC, 6.01 M/SEC

1 FORCE, D01074CH.FVD

Ymin = -17.47 N @ -0.0122 mm, Ymax = 1015.88 N @ 3.3697 mm



Hybrid III Calibration Data Sheet

3 Year Old

Neck Flexion Test

ATD Serial No.: 142C Test I.D.: D01072

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.3	PASS
Laboratory Relative Humidity		%	10 to 70	22	PASS
Pendulum Velocity		m/s	5.4 to 5.6	5.5	PASS
Pendulum Deceleration	10 Msec.	m/s	2.0 to 2.7	2.4	PASS
	15 Msec.	m/s	3.0 to 4.0	3.4	PASS
	20 Msec.	m/s	4.0 to 5.1	4.6	PASS
"D" Plane Rotation	Maximum	Deg.	70.0 to 82.0	73.8	PASS
Moment About Occipital Condyle	Maximum	Nm	42.0 to 53.0	44.4	PASS
Positive Moment Decay Time to 10Nm		Msec.	60.0 to 80.0	73.4	PASS
			Overall Test Results		PASS

Laboratory Technician

1/12/01
Test Date

Approved By

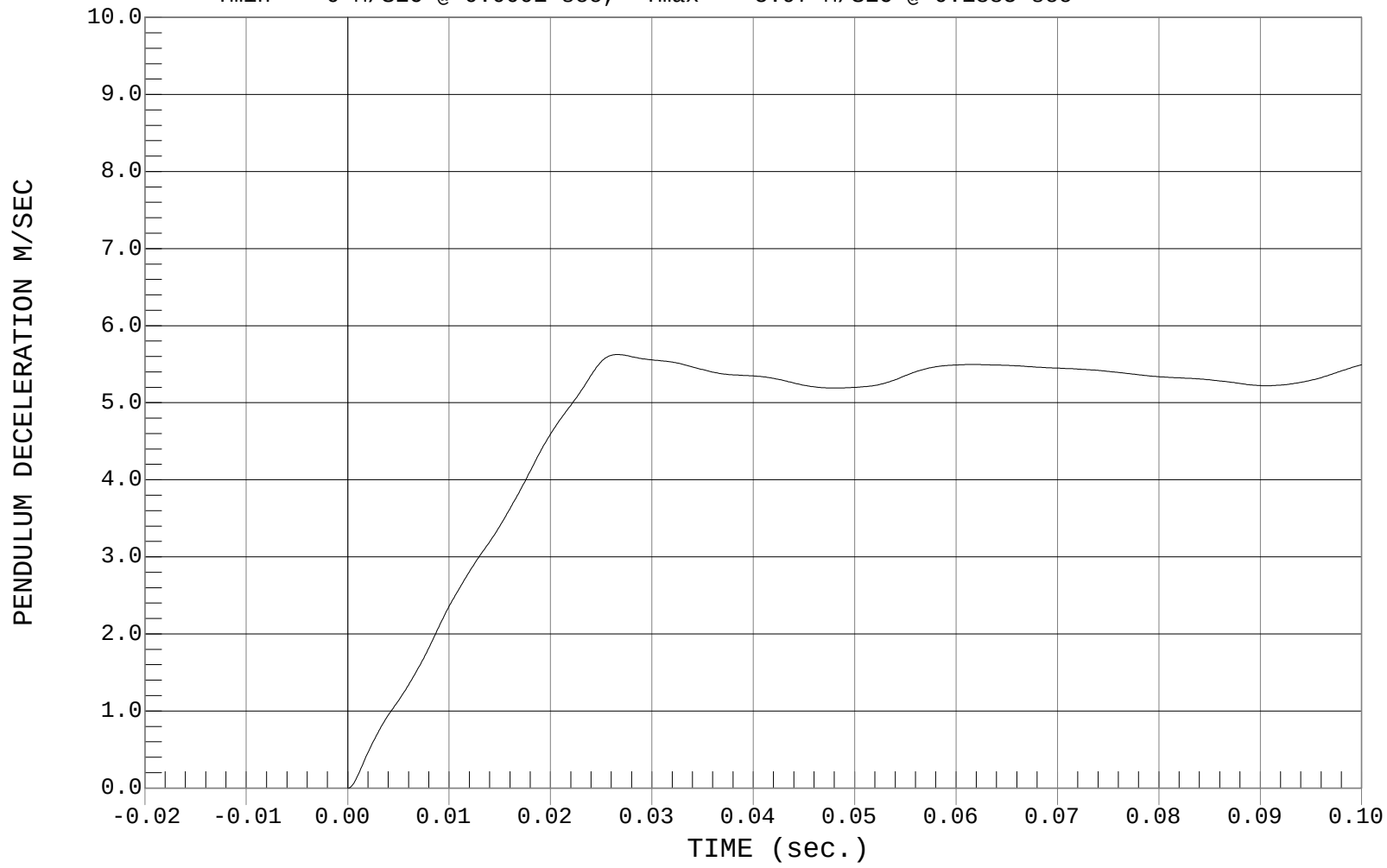
PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Flexion
Component: Dummy #142C

Test Date: 01-12-01
Speed: 18.00 FT/SEC, 5.49 M/SEC

1 PENDULUM DECELERATION, D01072AI.A04

Ymin = 0 M/SEC @ 0.0001 sec, Ymax = 5.97 M/SEC @ 0.1885 sec



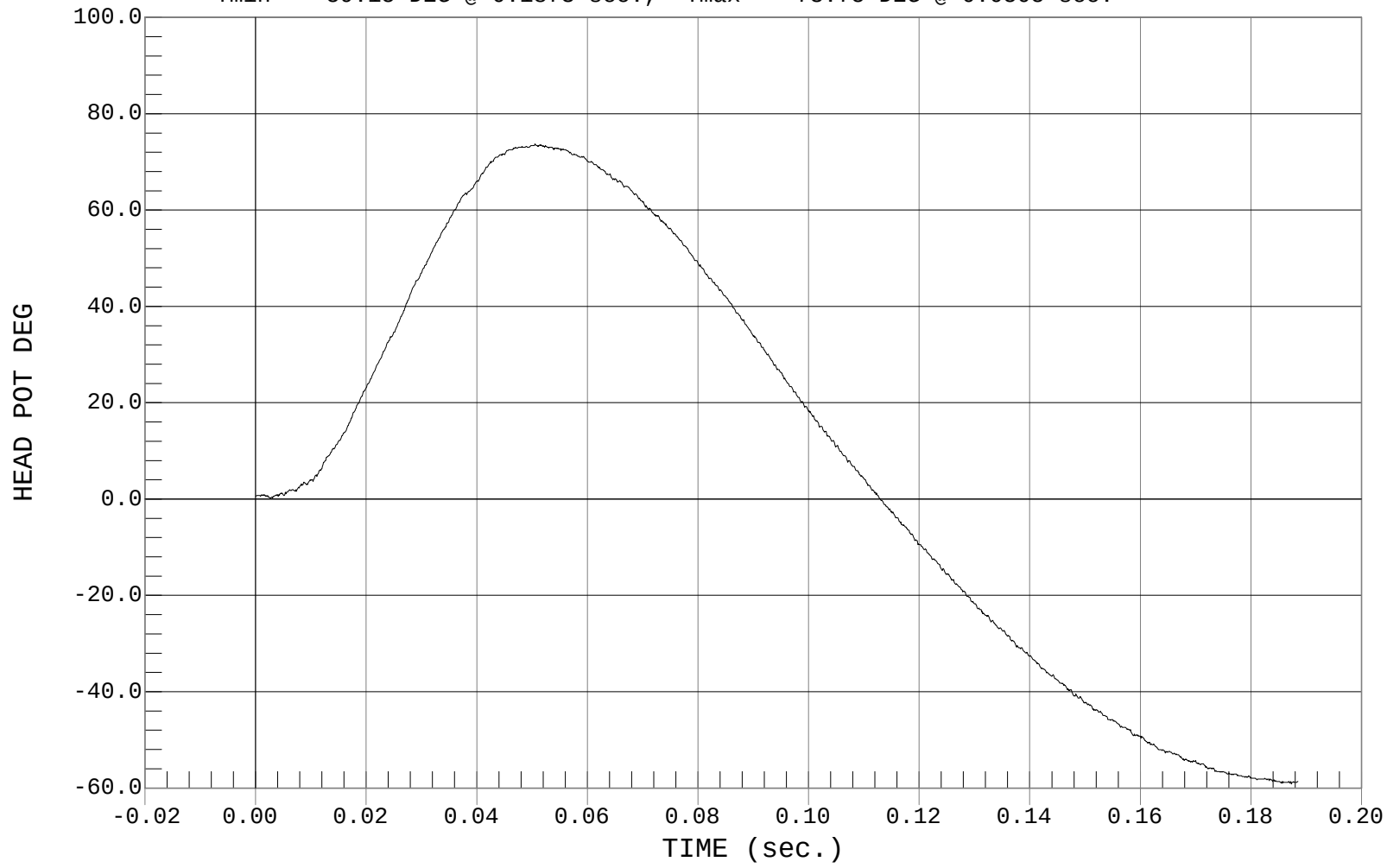
NECK ROTATION

Test Desc.: Dummy Calibration - Neck Flexion
Component: Dummy #142C

Test Date: 01-12-01
Speed: 18.00 FT/SEC, 5.49 M/SEC

1 HEAD POT, D01072DU.D05

Ymin = -59.15 DEG @ 0.1873 sec., Ymax = 73.75 DEG @ 0.0505 sec.



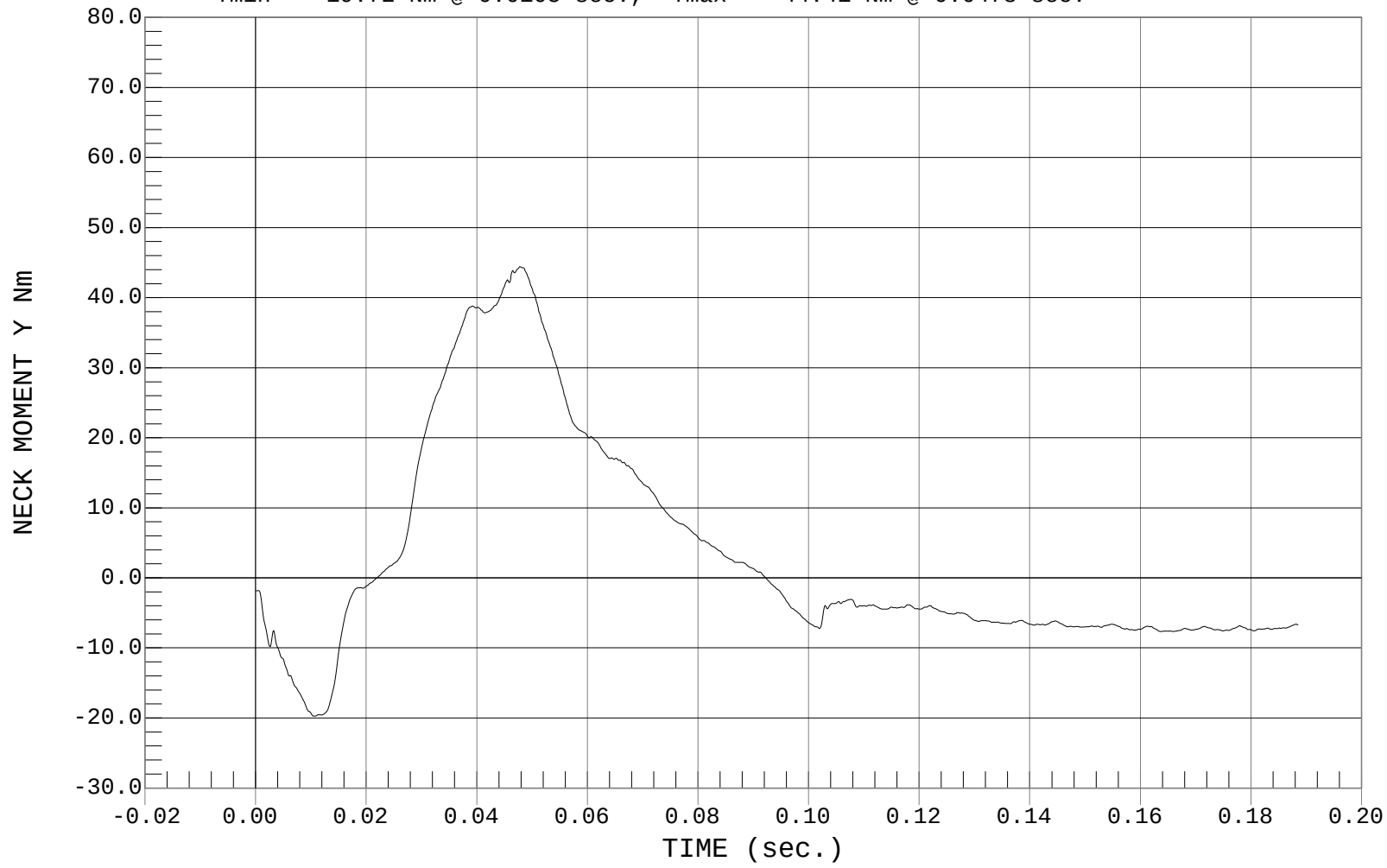
OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Flexion
Component: Dummy #142C

Test Date: 01-12-01
Speed: 18.00 FT/SEC, 5.49 M/SEC

1 NECK MOMENT Y, D01072MF.M01

Ymin = -19.72 Nm @ 0.0105 sec., Ymax = 44.41 Nm @ 0.0478 sec.



Hybrid III Calibration Data Sheet

3 Year Old

Neck Extension Test

ATD Serial No.: 142C Test I.D.: D01073

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.3	PASS
Laboratory Relative Humidity		%	10 to 70	22	PASS
Pendulum Velocity		m/s	3.55 to 3.75	3.66	PASS
Pendulum Deceleration	6 Msec.	m/s	1.0 to 1.4	1.2	PASS
	10 Msec.	m/s	1.9 to 2.5	2.1	PASS
	14 Msec.	m/s	2.8 to 3.5	2.9	PASS
"D" Plane Rotation	Maximum	Deg.	83.0 to 93.0	88.8	PASS
Moment About Occipital Condyle	Minimum	Nm	-53.3 to –43.7	-46.3	PASS
Negative Moment Decay Time to -10 Nm		Msec.	60.0 to 80.0	68.8	PASS
			Overall Test Results		PASS

1/12/01

Laboratory Technician Test Date

Approved By

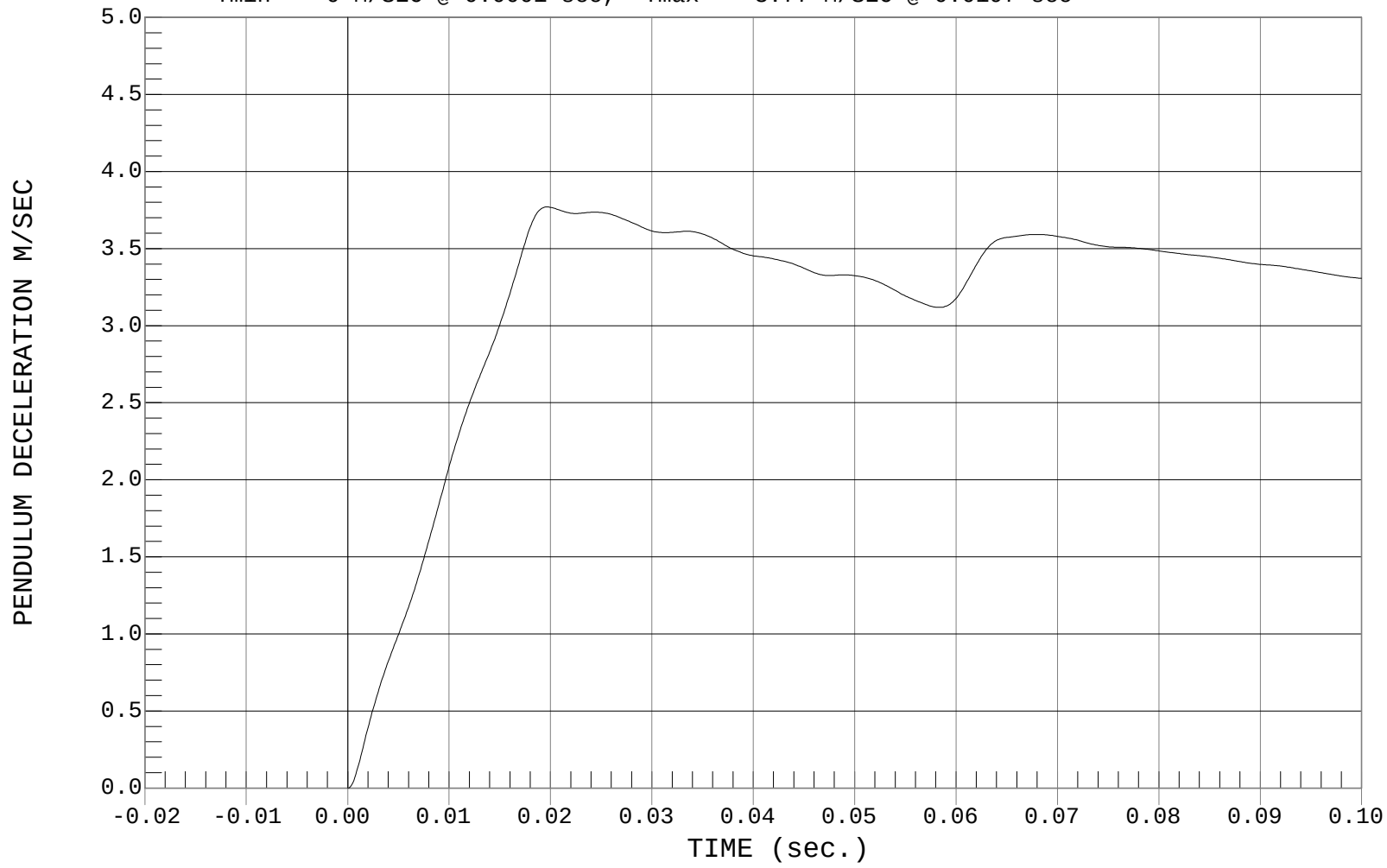
PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #142C

Test Date: 01-12-01
Speed: 12.00 FT/SEC, 3.66 M/SEC

1 PENDULUM DECELERATION, D01073AI.A04

Ymin = 0 M/SEC @ 0.0001 sec, Ymax = 3.77 M/SEC @ 0.0197 sec



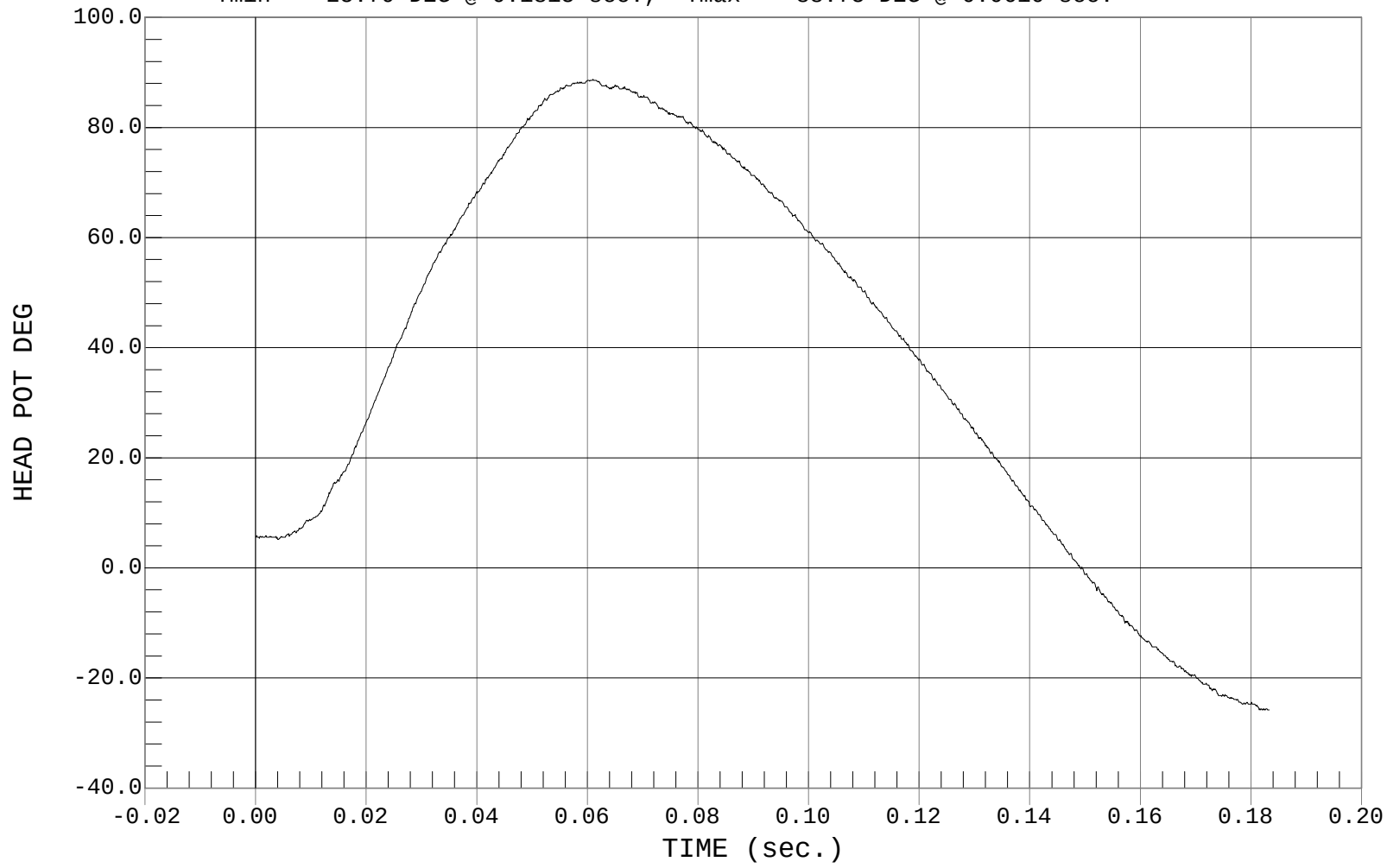
NECK ROTATION

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #142C

Test Date: 01-12-01
Speed: 12.00 FT/SEC, 3.66 M/SEC

1 HEAD POT, D01073DU.D05

Ymin = -25.79 DEG @ 0.1815 sec., Ymax = 88.75 DEG @ 0.0610 sec.



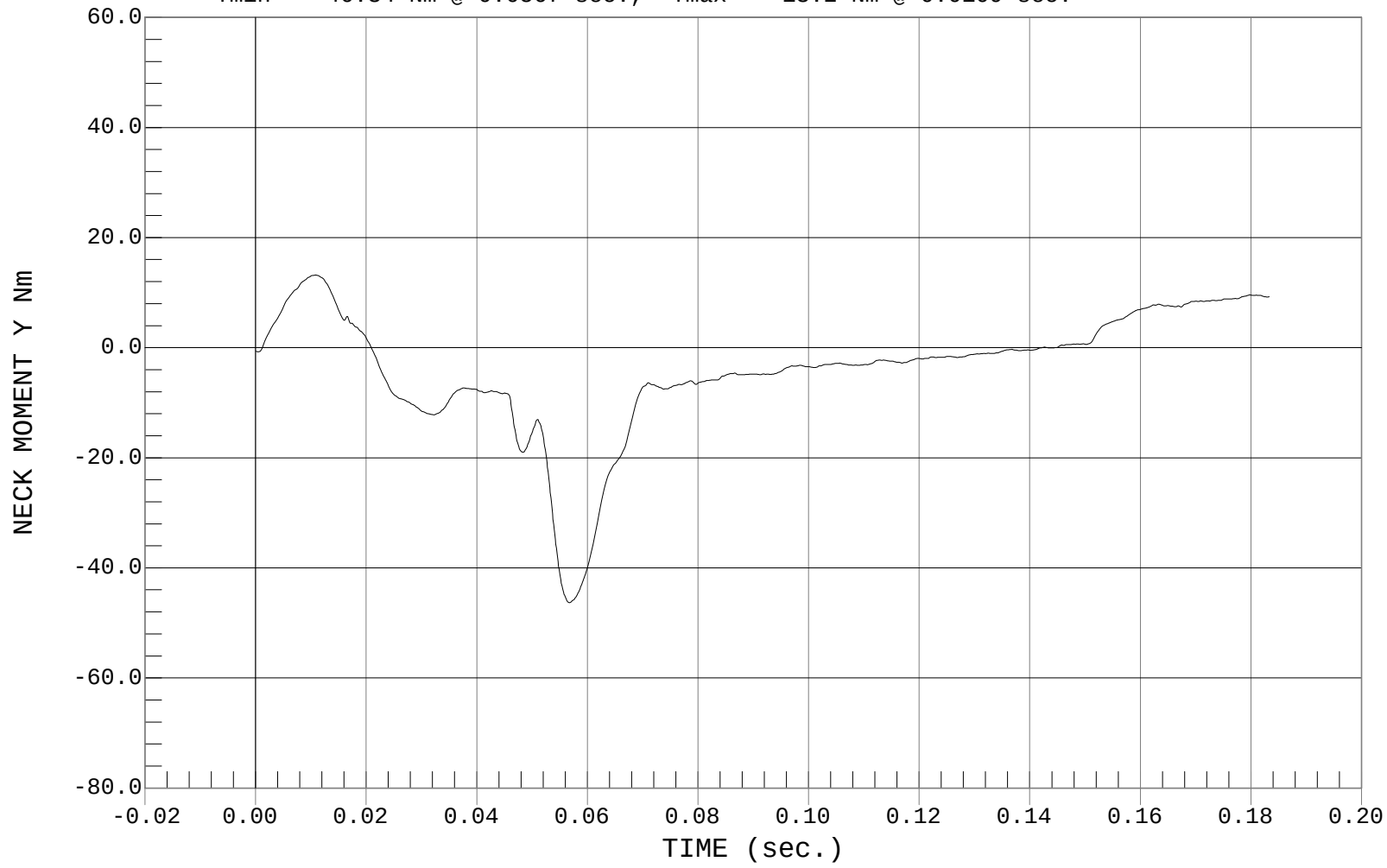
OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Extension
Component: Dummy #142C

Test Date: 01-12-01
Speed: 12.00 FT/SEC, 3.66 M/SEC

1 NECK MOMENT Y, D01073MF.M01

Ymin = -46.34 Nm @ 0.0567 sec., Ymax = 13.2 Nm @ 0.0109 sec.



Hybrid III Calibration Data Sheet

3 Year Old

Torso Flexion Test

ATD Serial No.: 142C Test I.D.: D01075

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	°C	18.9 to 25.6	21.4	PASS
Relative Humidity	%	10 to 70	25	PASS
Force @ 45°	N	130 to 180	158	PASS
Initial Angle	Deg	0 to 15	6	PASS
Return Angle	Deg	0 to 10	2	PASS
		Overall Test Results		PASS

1/12/01

Laboratory Technician Test Date

Approved By

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

DUMMY AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR CHILD DUMMY NO. 139

	INSTRUMENTS FOR DUMMY NO. 139		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	AJ7F6	Endevco	1/4/01
Head Y	J19843	Endevco	1/4/01
Head Z	J19244	Endevco	1/4/01
Chest X	AJ7F7	Endevco	1/4/01
Chest Y	AJ454	Endevco	1/4/01
Chest Z	J23757	Endevco	1/4/01
Pelvis X	AJ8C0	Endevco	1/4/01
Pelvis Y	J14189	Endevco	1/4/01
Pelvis Z	J23943	Endevco	1/4/01
Upper Neck Force X	114	FTSS	11/7/00
Upper Neck Force Y	114	FTSS	11/7/00
Upper Neck Force Z	114	FTSS	11/7/00
Upper Neck Moment X	114	FTSS	11/7/00
Upper Neck Moment Y	114	FTSS	11/7/00
Upper Neck Moment Z	114	FTSS	11/7/00
Lower Neck Force X	119	FTSS	11/8/00
Lower Neck Force Y	119	FTSS	11/8/00
Lower Neck Force Z	119	FTSS	11/8/00
Lower Neck Moment X	119	FTSS	11/8/00
Lower Neck Moment Y	119	FTSS	11/8/00
Lower Neck Moment Z	119	FTSS	11/8/00
Chest Deflection Gauge	139	Servo	1/8/01

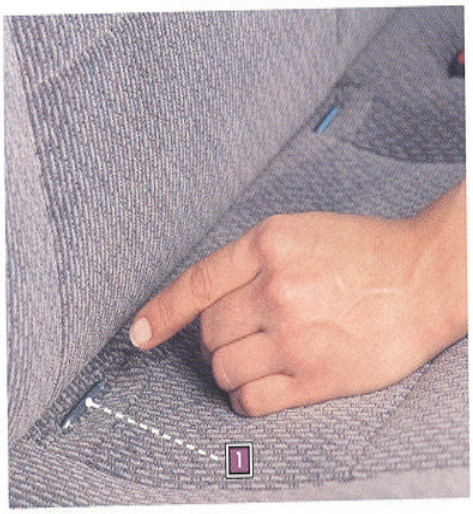
DUMMY AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR CHILD DUMMY NO. 142

	INSTRUMENTS FOR DUMMY NO. 142		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	J19927	Endevco	1/4/01
Head Y	J18736	Endevco	1/4/01
Head Z	J14674	Endevco	1/4/01
Chest X	J14235	Endevco	1/4/01
Chest Y	J18724	Endevco	1/4/01
Chest Z	AJ5R0	Endevco	1/4/01
Pelvis X	J19440	Endevco	1/4/01
Pelvis Y	AJ4W2	Endevco	1/4/01
Pelvis Z	J20093	Endevco	1/4/01
Upper Neck Force X	120	FTSS	11/6/00
Upper Neck Force Y	120	FTSS	11/6/00
Upper Neck Force Z	120	FTSS	11/6/00
Upper Neck Moment X	120	FTSS	11/6/00
Upper Neck Moment Y	120	FTSS	11/6/00
Upper Neck Moment Z	120	FTSS	11/6/00
Lower Neck Force X	121	FTSS	11/8/00
Lower Neck Force Y	121	FTSS	11/8/00
Lower Neck Force Z	121	FTSS	11/8/00
Lower Neck Moment X	121	FTSS	11/8/00
Lower Neck Moment Y	121	FTSS	11/8/00
Lower Neck Moment Z	121	FTSS	11/8/00
Chest Deflection Gauge	142	Servo	1/12/01

CHILD SEAT OWNER'S MANUAL RESTRAINT INSTRUCTIONS

Installing Your Car Seat in a Vehicle Using the Easy & Secure LATCH System

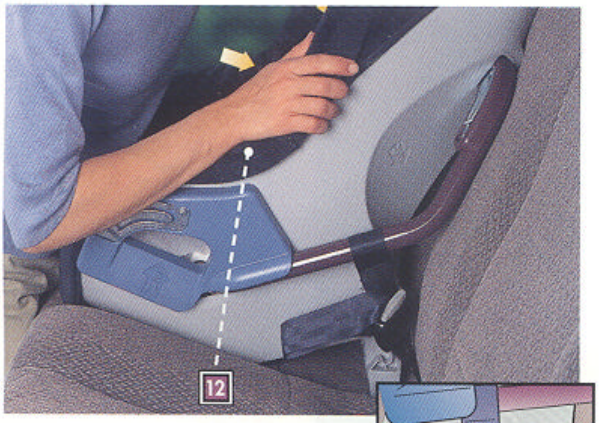


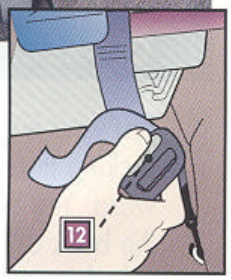
1 Once you have selected an acceptable seating location for the car seat (see car seat Owner's Manual), locate the special anchor points in your vehicle.

FORWARD-FACING POSITION 1 YEAR AND UP (22-40 LBS.)

FORWARD-FACING POSITION 1 YEAR AND UP (22-40 LBS.)

Installing Your Car Seat in a Vehicle Using the Easy & Secure LATCH System





12 **To remove the car seat from the vehicle:**
While pushing down on the car seat armrest, press the release button on the Easy & Secure LATCH System buckle to loosen the strap.

With the strap loose, unfasten the Easy & Secure LATCH System hook from the vehicle special anchor point.

Repeat this procedure to loosen and unfasten the other strap.

Installing Your Car Seat in a Vehicle

WARNING

ALWAYS secure this car seat with your vehicle belt system exactly as described in this manual. Refer also to your vehicle owner's manual for specific information on your vehicle belt system and specific instructions on how to install a car seat in your vehicle.

ALWAYS use the tether strap in the forward-facing position. Your child's safety is significantly enhanced in the event of a crash if the tether strap is used. The tether strap significantly reduces forward motion of your child's head during a crash, greatly reducing the likelihood of head injury.

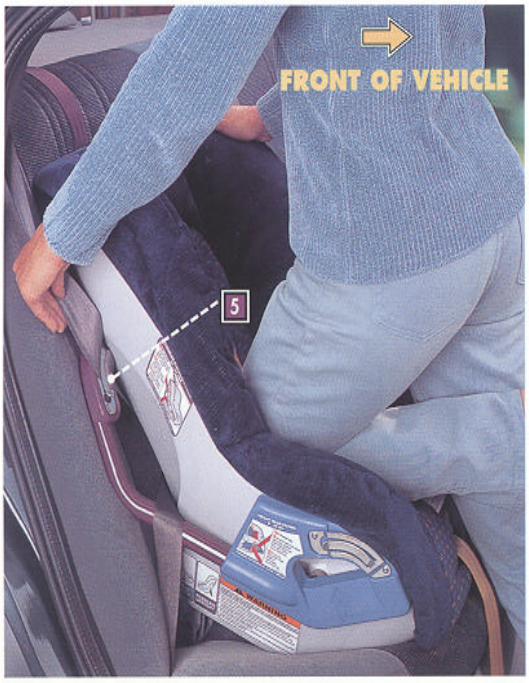
IMPORTANT!

When installing this car seat in your vehicle, only use the front seat when no acceptable rear seating location is available. If the front seating location is equipped with an airbag but must be used to install this car seat in the forward-facing position, adjust the vehicle seat as far back from the dashboard as possible. Consult your vehicle owner's manual regarding front seat, forward-facing child restraint use.

FORWARD-FACING POSITION 1 YEAR AND UP (22-40 LBS.)

FORWARD-FACING POSITION 1 YEAR AND UP (22-40 LBS.)

Installing Your Car Seat in a Vehicle



5 If you are using a vehicle seating location equipped with a shoulder belt, you must use **only one** forward-facing position locking clip on the car seat to prevent the vehicle belt system from loosening during use. With the vehicle belt system tight, fit the **shoulder belt** into the forward-facing position locking clip on the burgundy tube.

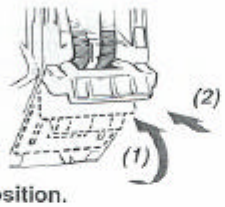
IMPORTANT!

Your car seat is equipped with two forward-facing position locking clips (one on each side of the seat). Use **only one** forward-facing position locking clip to install the car seat. Use the forward-facing position locking clip closest to where the vehicle shoulder belt is attached to the vehicle.

FORWARD-FACING TODDLER - MORE THAN 20 LBS. (9 KG)

✻ Car Seat MUST Be In Upright Position

- Rotate recline stand to upright position *(1)*.
- Push recline stand in *(2)*.



Be sure stand locks into position.

⚠ WARNING

When locking recline stand into upright position, make certain straps do not get pinched between recline stand and bottom of car seat, as this will prevent adjustment of harness system.

✻ Car Seat Installation

Never put car seat in a front vehicle seat unless recommended in vehicle owner's manual.

1 Place car seat forward-facing on vehicle seat firmly against vehicle seat back.

Belt here forward-facing



2 Thread vehicle seat belt through openings and behind harness straps as shown; then buckle vehicle seat belt.



3 Press down firmly in center of car seat to compress vehicle's cushion as you tighten vehicle lap belt.

HINT: Use your knee to press down in center of car seat.



FORWARD-FACING TODDLER - MORE THAN 20 LBS. (9 KG) continued

4 Test for secure installation:

- Pull front to back.
- Pull left to right.



If vehicle seat belt does not hold car seat securely, see "Vehicle Seat Belts" section or move car seat to another seating location and repeat steps 1 through 4.

✻ Placing Child In Car Seat

⚠ WARNING

Harness straps MUST be in the top slots for forward-facing use to prevent serious injury or death.

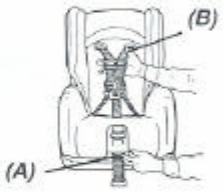
Do not use strap covers (shown), blankets, thick cushions, or padding under harness straps or child. They interfere with proper fit of harness straps and child could be ejected on impact.



1 Harness straps must be in the top slots. If straps must be moved, see "Changing Harness Strap Slots" section.

2 Loosen harness straps:

- Lift adjuster lever *(A)* to release harness straps.
- Pull harness straps *(B)*.



3 Unhook harness tie from harness strap on child's left.



Harness Tie

FORWARD-FACING TODDLER - MORE THAN 20 LBS. (9 KG) continued

4 Press red button *(C)* and remove harness tongues.



5 Place child in car seat. Child's bottom and back must be firmly against the car seat.



6 Place child's arms through harness srtaps and insert both tongues into buckle.

Make sure harness straps are not twisted.



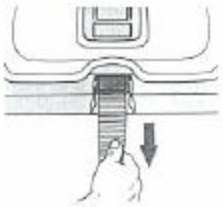
7 Pull up on tongues to be sure buckle is locked.



8 From back of harness tie, slide harness strap over harness tie tab.



9 Pull lower belt in front of car seat to tighten harness straps.



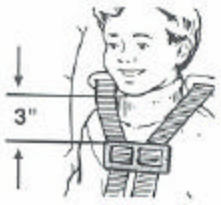
FORWARD-FACING TODDLER - MORE THAN 20 LBS. (9 KG) continued

⚠ WARNING

Do not use harness straps that are loose or unbuckled. Harness straps must be snug and positioned over shoulders or child could be seriously injured.

10 Position harness tie at mid chest or 3 inches (8 cm) below child's chin.

IMPORTANT: The harness tie keeps the harness straps close and snug on child's shoulders to help prevent ejection.



11 Harness straps must be snug against child with just enough room for you to insert one finger between each harness strap and child's chest.

NOTE: Forward-facing - **Must** use top slots only.



12 Be sure crotch strap is in the opening ***closest*** to but not under child. For children over 30 lbs. (13.6 kg) move the crotch strap to the forward opening. This will give a larger child more room and comfort. See "Changing Crotch Strap Slots" section.

VEHICLE SEAT BELTS

Identify your vehicle seat belt. Car seat must be used with a vehicle seat belt that will stay tight while driving. If vehicle does not have a lap belt that will stay tight, see dealer.

NOTE: #1 The locking latch plate on some seat belts may slip and loosen after being buckled through car seat. If this happens, flip latch plate over as shown and re-buckle. Test installation again to see if vehicle belt stays tight. If not, move car seat to another seating position.



* Combination Lap/Shoulder Belt with Locking Latch Plate



- Install car seat per instructions. See **NOTE #1** above.

* Lap-Only Belts



- Manually Adjustable Lap-Only Belts. See **NOTE #1** above.
- Retractor Lap-Only Belts.

To determine if a lap-only belt can be used, follow the steps below:



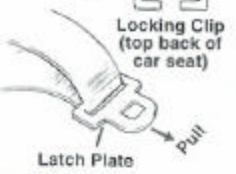
1) Pull on both halves of vehicle seat belts.
   - If one belt gets longer, see step 2.
   - If neither belt gets longer, install car seat according to instructions.
2) Pull end that gets longer all the way out, allow belt to retract 4 - 6 inches (10 - 15 cm) and pull again.
   - If belt gets longer, do not install car seat. Check vehicle owner's manual or contact auto dealer for options.
   - If belt does not get longer, install car seat per instructions on page 9 or page 13 substituting the instruction below for those in steps 3.
     - Pull lap belt that moves all the way out and thread through belt slots. Buckle lap belt. Release lap belt and remove slack in lap belt by pushing lap belt that moves into the retractor while pushing down on car seat to compress vehicle cushion.

VEHICLE SEAT BELTS continued

* Continuous Loop Combination Lap/Shoulder Belt with Sliding Latch Plate



Pull on latch plate. If belt slides freely through latch plate, a locking clip ***must*** be used (stored on top back of car seat).



⚠WARNING
Failure to use locking clip where required will result in car seat not being securely held in place and child being seriously injured or killed in a sudden stop or accident.

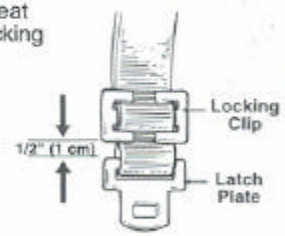
1 Place car seat in seating position to be used.

2 Thread vehicle seat belt through openings in car seat and tighten lap belt.

3 With vehicle lap belt properly tightened, hold the combination lap/shoulder belts together just behind the sliding latch plate, and unbuckle belt.



4 Continue holding vehicle seat belts together and slide locking clip on vehicle seat belt approximately 1/2 inch (1 cm) away from latch plate.



5 Rebuckle vehicle seat belt. **HINT:** It may be necessary to press car seat into vehicle cushion in order to rebuckle.

Test installation again to see if car seat is secure. If it is not, remove locking clip, adjust vehicle seat belt and re-attach locking clip.

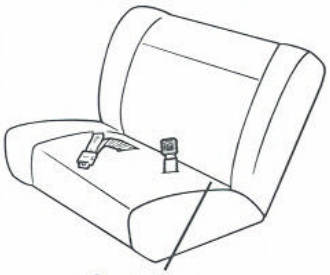
⚠ WARNING
Remove locking clip from vehicle seat belt when not being used with a car seat. The vehicle seat belt will not properly restrain an adult or child and serious injury could occur. Do not use locking clip as a vehicle seat belt shortener.

VEHICLE SEAT BELTS continued

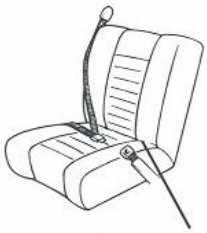
✻ Belts Anchored Forward of Seat Crease

Belts anchored forward of seat crease (as shown below) may not securely hold car seat. Check vehicle owner's manual or auto dealer.

- **Do not use unless approved by vehicle manufacturer.**
- **After installation, check that car seat stays securely fastened.**



Seat Crease



Seat Crease

✻ Do Not Use These Vehicle Seat Belts

The following vehicle seat belts ***MUST NOT*** be used. They will not restrain a car seat and child will be seriously Injured or killed.

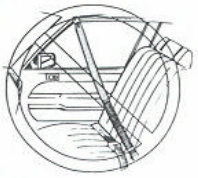
Lap/Shoulder Belt with Sewn Latch Plate

Do not use. This type of vehicle seat belt stays loose while driving. In a sudden stop or accident it will lock, but car seat may move forward and cause serious injury. See your vehicle dealer for options.



Automatic (Passive) Seat Belts

Do not use this type of vehicle seat belt to anchor your car seat.

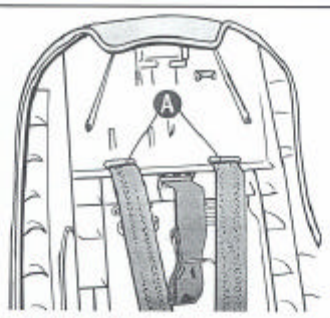


21

FORWARD FACING TODDLER USE

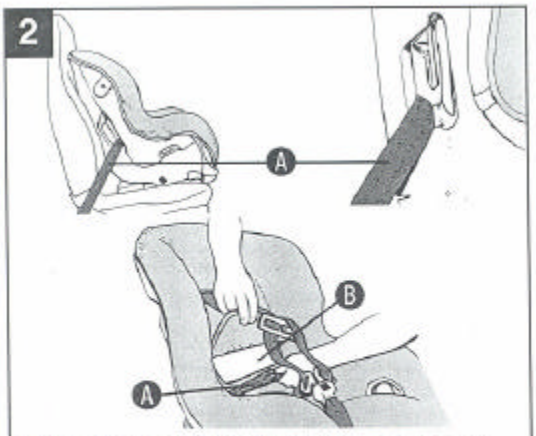
Weight: 20 to 40 pounds. (9 to 18 kg)
Maximum Height: 40 inches (101 cm) or if child's ears are at top of seat back.

1



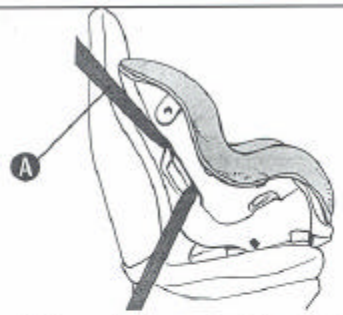
Adjust the child restraint to either the upright or recline position and **place the harness straps through the upper slots.**

2



Put the child restraint in your vehicle forward facing and buckle the vehicle seat belt Ⓐ as shown.
Use the "Belt Trac™" Ⓑ for easy access and seat belt routing.

3



If your vehicle seat belt has a shoulder belt Ⓐ it must be located as shown.
Note: See instructions under "Using a Metal Locking Clip", when using a lap/shoulder belt Ⓐ combination.

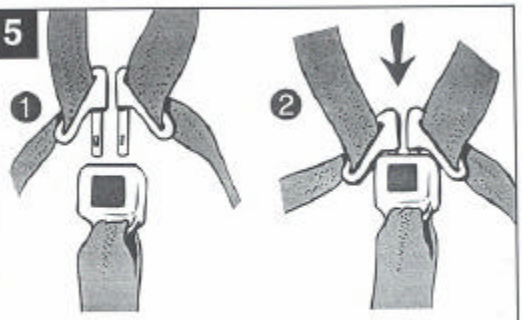
4



It is very important to put the vehicle seat belt in the right place. If the belt is put anywhere else, the child restraint will not protect your child in a crash. The seat belt must be as tight as possible. Using your knee, put your full weight on the seat as you tighten the belt.

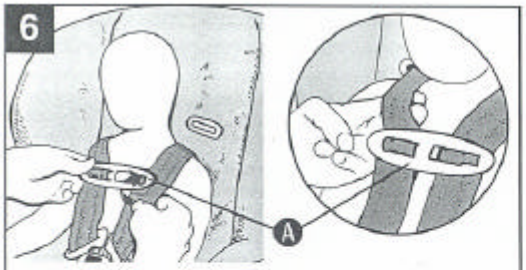
If you can pull the top of the child restraint more than one inch (25 mm) forward or 1 to 2 inches (25 mm - 50 mm) to the side, the belt is not tight enough. Tighten again, try a different seating position or see section titled "Tether Strap".

5



Place child in seat, place straps over shoulders and snap each of two tongues into crotch strap buckle as shown.
Check that the buckle has engaged by pulling up on the harness straps. Tighten the harness by pulling the strap at the front of the seat.

6



Position the harness tie on baby's chest at armpit level. The vehicle seat belt must be tight and the child restraint must be firmly secured to the vehicle seat. The child restraint harness must be fastened and tight with no more than two fingers-width of slack between the strap and child. The harness tie Ⓐ must be on and properly positioned at armpit level.

TETHER STRAP (Factory installed)

IMPORTANT INFORMATION ABOUT TETHER STRAP. PLEASE READ CAREFULLY.

Failure to properly follow these instructions could result in serious injury to your child or to other occupants in the vehicle.

- Your child restraint has been manufactured with a top tether strap to comply with new Federal regulations.

1



Use the tether strap only when using the child restraint in the forward-facing position.
A properly used top tether strap may help limit movement of the child's head in a crash, thereby reducing the risk of injury. A top tether strap must always be used with a vehicle whose lap belts only lock during a sudden stop or crash or seat belts with buckles located forward of the seat bight Ⓐ.

- The tether strap is to be used in addition to the vehicle seat belt system.
- The length of the tether strap has been developed using federal regulations. As a result, depending on your model of the vehicle, you may experience several inches or more of excess strap after connecting the tether strap to the anchor. Because you may wish to install the child restraint in more than one particular model of vehicle, DO NOT CUT off the excess length from the tether strap. If you do, you may not have enough length to attach the tether strap in a different model vehicle.

1



Excess tether strap can be a hazard to the child or others if not properly stored. Tightly fold or roll the excess tether strap and secure with Velcro™ fastener. When the tether strap is not in use, keep strap tightly rolled or folded with Velcro™ fastener. Keep tether clip and strap as close to the tether attachment point as possible.

- Strap should be wound as tight as possible to limit its size and limit its ability to swing around the child restraint in the event of a crash.
  This will help prevent the clip from becoming a projectile in the event of a crash or becoming a strangulation hazard.

Failure to properly store an unused tether could result in serious injury to the child or other occupants in the vehicle.

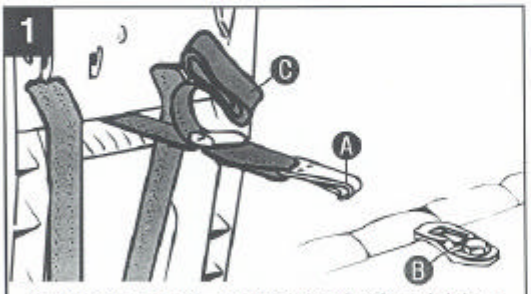
Please check the vehicle owner's manual to determine if an attachment point for a top tether has already been installed by the vehicle manufacturer. If your vehicle does not have an anchor bracket for attachment of the top tether strap to the vehicle, you must contact an authorized dealer of the vehicle manufacturer.

TOP TETHER STRAP INSTALLATION

- Install the child restraint per the instructions **FORWARD-FACING USE** in this booklet.
- See your vehicle owner's manual for location of the anchor bracket for attachment of the top tether strap to the vehicle. If there is no anchor bracket, please contact an authorized dealer of the vehicle manufacturer to have an anchor bracket installed.

WARNING: An improperly installed anchor can cause serious injury.

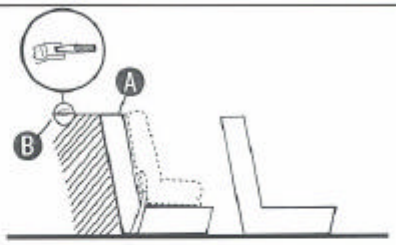
1



Attach tether clip Ⓐ to anchor bracket Ⓑ and tighten tether strap securely. Pull loose end of strap to tighten. Remove slack Ⓒ so that the tether strap does not move more than 1 inch (25 mm) forward or 1 to 2 inches (25 mm to 50 mm) to the side.

IMPORTANT: Fold into small loops or tightly roll the excess tether strap and secure it with attached Velcro™ fasteners. Then tuck the rolled excess strap between the child restraint and the vehicle seat to prevent access by the child or other vehicle occupants.

2

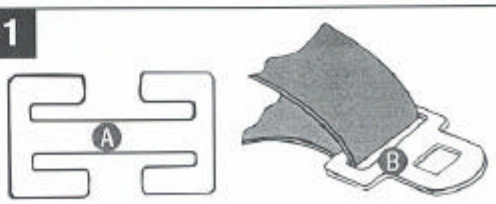


For typical installation of tether Ⓐ and anchor bracket Ⓑ system.

If there are any questions regarding the location of the anchor brackets which are not answered by the vehicle owner's manual, please contact an authorized dealer of vehicle manufacturer. If you still have questions, please call evenflo® at 1-800-233-5921.

USING A METAL LOCKING CLIP

1



You must use a metal locking clip Ⓐ with seat belt whose buckle tongue Ⓑ slides freely along the belt.

A metal locking clip Ⓐ is attached to the back of the child restraint.