

Insurance Institute for Highway Safety Crashworthiness Evaluation

Crash Test Report 2002 Mini Cooper (CEF0222)

Vehicle identification number: WMWRC33422TC34141
Body style: Small 2-door hatchback
Engine/transmission: Transverse 1.6-liter 4-cylinder, 5-speed manual, front-wheel drive

Standard crashworthiness features:

- Driver and right front passenger dual-stage front airbags with variable inflator output depending on crash severity and seat belt use
- Driver and right front passenger front airbags also have separate deployment thresholds for belted and unbelted occupants
- Driver and right front passenger seat-mounted side airbags (designed to protect thorax)
- Roof-mounted side airbags (front and rear seating positions, designed to protect head)
- Dual-locking shoulder belts (all four seating positions)
- Shoulder belt upper anchorage height adjusters (front seating positions only)
- Seat belt crash tensioners (pyrotechnic, front seating positions only)
- Seat belt force-limiting mechanisms (front seating positions only)
- Right front and both rear shoulder belt retractors are convertible from emergency to automatic locking for ease of child restraint use
- LATCH system (rigid lower anchorages and top tether attachments) for child restraints (both rear seating positions)

Other standard safety features:

- 4-wheel antilock brakes
- Flat tire monitoring system
- Daytime running lights (programmable by dealer)

Optional safety features:

- Electronic stability control
- Pyrotechnic battery cable disconnect system

Vehicle specifications (provided by manufacturer):

Wheelbase:	247 cm
Overall length:	363 cm
Overall width:	169 cm
Curb weight:	1,145 kg

Vehicle specifications (measured):

Front bumper to firewall:	90 cm
Curb weight:	1,132 kg
Test weight:	1,248 kg (58% front, 42% rear)
Overall width:	169 cm

Nominal test parameters:

40.0 mi/h (64.4 km/h), 40% overlap, deformable barrier face with slotted bumper

Crash test date:

November 6, 2002

Figure 1
Precrash and Postcrash Side Views — 2002 Mini Cooper



Summary

A 2002 Mini Cooper was crash tested on November 6, 2002 into a fixed deformable barrier at 40.0 mi/h (64.4 km/h) and a 40 percent overlap on the driver side. A Hybrid III 50th percentile male dummy was positioned in the driver seat with the lap/shoulder belt fastened.

Measures of intrusion taken after the crash indicated the lower instrument panel in front of the dummy moved rearward 2-4 cm. Resultant intrusion in the driver footwell measured 4 cm at the footrest and 3-5 cm at other places on the toepan. Both doors remained closed during the crash. After the crash, the driver door required some additional effort but no tools to open. The right door opened with ease.

The driver dummy was restrained by a three-point lap/shoulder belt and an airbag. During the crash, the belt crash tensioner on the buckle end of the belt activated and shortened the buckle by 4 cm. A total amount of 25 cm of webbing spooled off the retractor, including 4 cm pulled out by the shortening of the buckle and about 19 cm from the force-limiting mechanism. As the dummy's head loaded the airbag, the head rolled to the left and then leaned partway beyond the precrash plane of the side window. After the crash, the upper end of the steering column had moved upward 1 cm but not forward or rearward.

None of the injury measures exceeded published threshold values.

Test Conditions

This vehicle had been tested previously in the Institute's Low-Speed Crash Test Program and subjected to front and rear impacts at 5 mi/h (8 km/h) into a full-width flat barrier. All structural damage on the front was repaired prior to this test (see Appendix, Low-Speed Crash Test Damage Repair Estimate).

This test was conducted according to the procedures specified in the IIHS Offset Barrier Crash Test Protocol (Version IX). The Hybrid III dummy positioned in the driver seat was equipped with instrumented lower legs that included feet modified to include two accelerometers and to have a 45 degree dorsiflexion range with soft stops at all extremes of foot-ankle motion. All dummy seating parameters were set according to the procedures specified for Federal Motor Vehicle Safety Standard 208 compliance testing (49 *CFR* Part 571.208 § 11). The dummy's left foot was placed just above the footrest (no contact) with the back of the heel resting on the floorpan.

Seat back, shoulder belt upper anchorage, steering column, and foot pedal adjustments (where applicable) were set according to the manufacturer's specifications for government crash testing. Other adjustments were set according to the procedure specified for Federal Motor Vehicle Safety Standard 208 compliance testing (49 *CFR* Part 571.208 § 7 and 8). After final positioning of the dummy, measurements from various parts of the dummy to a number of vehicle interior points were made. These measurements and the seat back, shoulder belt upper anchorage,

steering column, and foot pedal adjustments are described in the Appendix, Dummy Clearance Measurements.

Vehicle acceleration measurements were made by a triaxial arrangement of accelerometers mounted on the vehicle's longitudinal centerline and 63 cm behind its center of gravity (166 cm behind the front axle). The vehicle speed recorded just prior to impact was 40.0 mi/h (64.4 km/h), and the actual overlap was 40 percent.

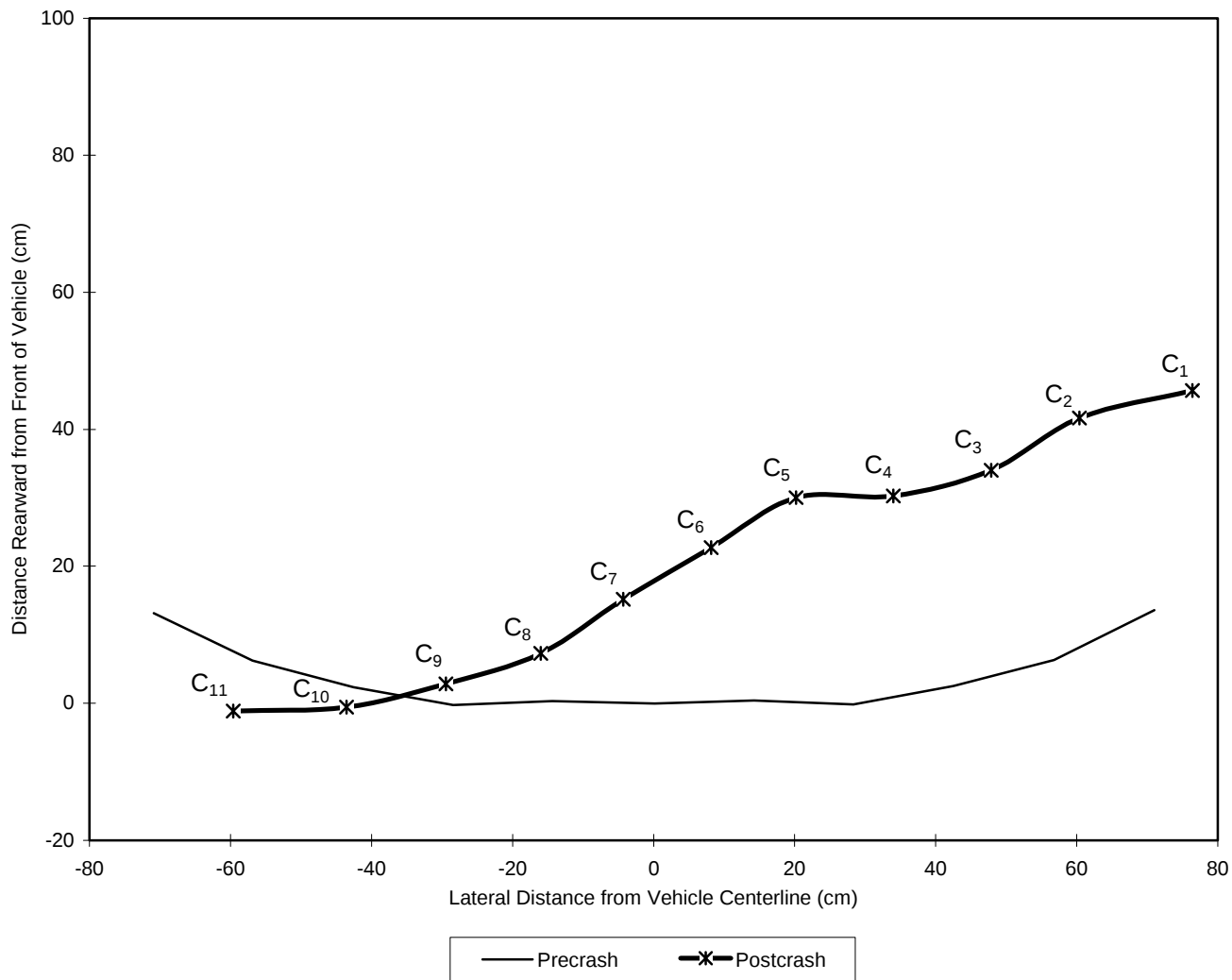
Structural Performance

Both doors remained closed during the crash. The driver door aperture shortened 5 cm, as measured at the lower edge of the window. After the crash, the driver door required some additional effort but no tools to open. The right door opened with ease.

No fuel system leaks were observed after the crash.

Figure 2 illustrates the precrash and postcrash contour measures of the front bumper cover profile and the resulting permanent crush.

Figure 2
Front Bumper Cover Crush Contour — 2002 Mini Cooper



	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀	C ₁₁
Postcrash Contour (cm)	46	42	34	30	30	23	15	7	3	-1	-1
Precrash Contour (cm)	14	6	3	0	0	0	0	0	2	6	13
Resulting Crush (cm)	32	36	31	30	30	23	15	7	1	-7	-14

The length of the reference line was 142 cm precrash and 136 cm postcrash.

Various measures of intrusion were made after the crash. These residual measures of intrusion typically are less than the maximum deformation that occurs during the crash. The coordinate reference system for these measures is described in the IIHS Offset Barrier Crash Test Protocol (Version IX). The measures of deformation shown in Table 1 have been adjusted to better reflect the displacement of the various target locations relative to the driver, based on the locations of the four driver seat-attachment bolts. The average displacement of the seat-attachment bolts relative to the reference system also is shown in Table 1.

Table 1 Residual Measurements of Intrusion Relative to Driver Seat — 2002 Mini Cooper				
Selected Locations*	Longitudinal	Lateral	Vertical	Resultant
Steering column (cm)	0	–3	1	3
Left lower instrument panel (cm)	–4	–2	–1	5
Right lower instrument panel (cm)	–2	–3	–1	3
Brake pedal (cm)	–3	–1	–3	4
Left toepan (cm)	–4	–2	0	4
Center toepan (cm)	–4	–2	0	5
Right toepan (cm)	–3	–1	0	3
Footrest (cm)	–3	–2	0	4
Average displacement of the four seat-attachment bolts relative to reference system (cm)	–1	0	–1	n/a

* All measurements taken on driver side. From the driver's position, positive is forward, left, and up.

Restraint System Performance

Airbags

Driver: The uninflated driver airbag is approximately 56 cm in diameter and is untethered. The airbag is vented by two holes located at positions corresponding to 10 and 2 o'clock on the forward-facing surface of the airbag. Analysis of the high-speed film taken from camera position D indicated the airbag deployed at 18 ms into the crash and appeared to be fully inflated at 42 ms. The seat-mounted and roof-mounted side airbags did not deploy during the crash.

Passenger: The mid-mounted passenger airbag deployed rearward and is untethered. The cylinder-shaped airbag is vented by two holes located at the lateral ends. Analysis of the high-speed film taken from camera position B indicated the passenger airbag deployed at the same time as the driver airbag. The airbag did not contribute to windshield damage during deployment. The seat-mounted and roof-mounted side airbags did not deploy during the crash.

Seat Belts

The front seat belt inboard lower anchorage points are attached to and move with the seats. The webbing at the outboard end of the lap portion of each front belt is sewn around a steel rod, which in turn is bolted to the floor. This rod permits the belt webbing to be slid out of the way for easier access to the rear seat. The front belts are equipped with pyrotechnic crash tensioners on the buckle ends and mechanical force-limiting mechanisms in the retractors. During the crash, the belt crash tensioner on the buckle end of the belt activated, and 4 cm of the driver's shoulder belt webbing was pulled toward the buckle through the D-ring, as determined by film analysis of the movement of a tape strip on the belt webbing near the dummy's shoulder. After the crash, the seat belt buckle on the driver side was found shortened by the same amount (4 cm), compared with the precrash length of the buckle. A total amount of 25 cm of webbing (including the 4 cm pulled out as a result of the buckle shortening) was pulled from the retractor through the D-ring, as indicated by scuffing of the webbing as it passed through the D-ring. Postcrash investigation of the force-limiting torsion bar within the retractor spool indicated it was twisted about 420 degrees from its precrash orientation. This measure, combined with the estimated diameter of the retractor spool and stowed webbing (54 mm), suggested the force limiter contributed about 19 cm of webbing to the total amount pulled through the D-ring.

Seat

Postcrash examination of the driver seat rails indicated no discernible movement of the seat in its tracks during the crash. The seat was tipped slightly outboard and pitched slightly forward.

Steering Column

The upper end of the steering column moved upward 1 cm but not forward or rearward relative to the driver seat.

Dummy Kinematics

Head, Neck, and Torso

Analysis of the high-speed film taken from camera position D indicated that the dummy's face began to load the airbag at 40 ms, 2 ms before the airbag became fully inflated. Paint transferred from the dummy's face indicated the nose loaded the airbag about 7 cm below and 1 cm to the left of its center. As the head loaded the airbag, it rolled around to the left. During rebound, the head moved downward, and the dummy's left forearm contacted the top left rear of the head at 122 ms, according to the head acceleration data. The head then leaned out partway beyond the precrash plane of the side glass as it moved rearward and upward. The head did not contact the B-pillar. Table 2 provides the timing of these events.

Table 2 Restraint System Performance and Dummy Kinematics — 2002 Mini Cooper	
Event	Time (ms)
Deployment of driver and passenger front airbags	18
Face begins to load airbag	40
Airbag fully inflated	42
Head reaches maximum forward excursion	102
Left forearm contacts top left rear of head	122

Figure 3
Dummy and Vehicle Interior, Postcrash — 2002 Mini Cooper



Figure 4
Dummy Left Knee/Shin Contacts, Postcrash — 2002 Mini Cooper



Figure 5
Dummy Right Knee/Shin Contacts, Postcrash — 2002 Mini Cooper

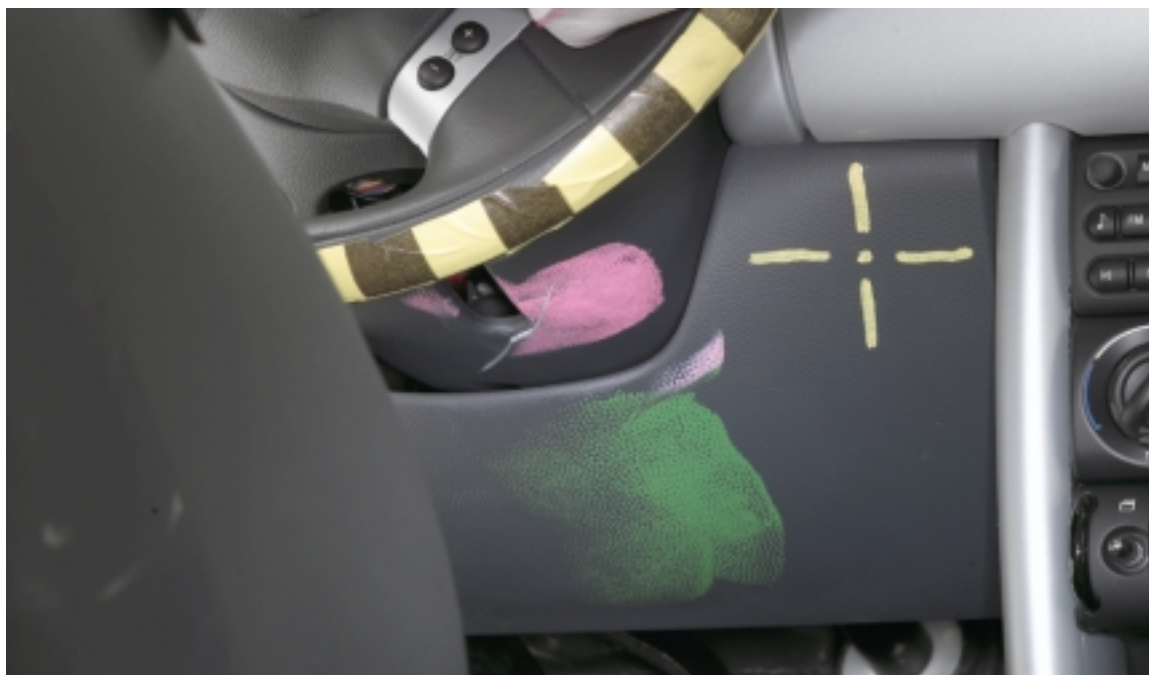


Figure 6
Dummy Feet Positions, Postcrash — 2002 Mini Cooper



Dummy Injury Measures

Head

The maximum vector resultant head accelerations were recorded and the HICs were calculated during an interval that corresponds with the dummy's head excursion into the airbag. Table 3 provides a summary of the maximum head injury measurements recorded during the crash.

Table 3 Head Injury Measurements — 2002 Mini Cooper			
Measure	Published Tolerance Threshold	Result	Time (ms)
Vector resultant acceleration (g)	80	48	86
Vector resultant acceleration — 3 ms clip (g)	80	47	84-87
Head injury criterion (HIC)	1000	371	68-104
Head injury criterion — 15 ms interval (HIC-15)	700	205	77-92

Neck

Table 4 provides a summary of the maximum neck injury measurements recorded during the crash. None of the recorded neck force measures exceeded the magnitude-duration injury criteria (Figures A-13 to A-16).

Table 4 Neck Injury Measurements — 2002 Mini Cooper			
Measure	Published Tolerance Threshold	Result	Time (ms)
A-P shear force (kN)	±3.1	0.6	85
Axial compression force (kN)	4.0	0.5	129
Axial tension force (kN)	3.3	1.7	87
N _{ij} tension-extension	1.00	0.27	212
N _{ij} tension-flexion	1.00	0.30	86
N _{ij} compression-extension	1.00	0.21	222
N _{ij} compression-flexion	1.00	0.17	111
Flexion bending moment (Nm)		40	111
Extension bending moment (Nm)		29	222

Chest

Table 5 provides a summary of the maximum chest injury measurements recorded during the crash.

Table 5 Chest Injury Measurements — 2002 Mini Cooper			
Measure	Published Tolerance Threshold	Result	Time (ms)
Vector resultant spine acceleration — 3 ms clip (g)	60	46	87-90
Rib compression (mm)	-50	-31	80
Viscous criteria (m/s)	1.0	0.2	73
Sternum deflection rate (m/s)	-8.2	-1.0	42

Legs and Feet

Table 6 provides a summary of the maximum leg and foot injury measurements recorded during the crash.

Table 6
Leg and Foot Injury Measurements — 2002 Mini Cooper

Measure	Published Tolerance Threshold	Left		Right	
		Result	Time (ms)	Result	Time (ms)
Femur axial force (kN)	−9.1*	−3.0	79	−3.8	75
Tibia-femur displacement (mm)	−15	−10	78	−11	70
Upper Tibia					
L-M moment (Nm)	±225	84	61	−61	64
A-P moment (Nm)	±225	155	77	154	68
Vector resultant moment (Nm)	225	157	77	163	68
Index	1.00	0.71	77	0.73	68
Lower Tibia					
L-M moment (Nm)	±225**	−37	100	52	84
A-P moment (Nm)	±225**	−48	55	69	86
Vector resultant moment (Nm)	225**	60	101	85	84
Axial force (kN)	−8.0**	−3.6	57	−3.2	52
Index	1.00	0.33	55	0.44	86
Foot					
A-P acceleration (g)	±150	−85	51	−75	53
I-S acceleration (g)	±150	−54	55	−62	66
Vector resultant acceleration (g)	150	94	57	82	54

* This critical value is for instantaneous loading. Femur loads are compared with magnitude-duration injury criteria in Figures A-24 and A-37.

** These published thresholds are for fractures of the tibia. Ankle and foot injuries have been associated with bending moments as low as 50-100 Nm, and heel fractures have been associated with axial forces as low as −6.0 kN.

References

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Appendix

Low-Speed Crash Test Damage Repair Estimate

Dummy Clearance Measurements

Graph Index — index to graphs of time plots of dummy and vehicle data

Manufacturer's window sticker

Low-Speed Crash Test Damage Repair Estimate

2002 Mini Cooper Small Two-Door Hatchback: 5 mi/h Front into Barrier

Test Number: LF02017

VIN: WMWRC33422TC34141

Mileage: 179

Features: Driver and passenger front airbags, head protection system for front and rear seats, driver and front passenger seat-mounted side impact airbags, four-wheel antilock brakes, electronic stability control, air conditioning, manual transmission, power mirrors, power door locks, power windows, heated back glass, tilt steering wheel, cruise control, front fog lamps, two-stage paint.

Description	Part		Labor	
	Mfg. No	Price	Operation	Hours
Cover rub molding, center front upper	51117032900	\$24.25	Replace*	0.1
Bumper reinforcement, front	51117056709	130.00	Replace*	1.6
Bumper mounting plate/shim, right front	51117053000	2.45	Replace*	
Radiator support	51711174299	179.00	Replace*	5.2
Fan warning label, radiator support	Replace OEM	1.75	Replace	
A/C info label, radiator support	Replace OEM	2.90	Replace	
Bumper mounting arm, left front lower			Remove/reinstall	0.2
Bumper mounting arm, right front lower			Remove/reinstall	0.2
Fog lamp assembly, right			Remove/reinstall	0.3
Fog lamp assembly, right			Remove/reinstall	0.3
Fog lamps			Aim	0.3
Horns, high and low note			Remove/reinstall	0.3
Air intake duct			Remove/reinstall	1.0
Air conditioning condenser			Remove/reinstall	
Bracket, air conditioning dryer	64506931588	4.50	Replace*	0.1
Air conditioning system			Evacuate/recover/ recharge	1.9
Refrigerant, R-134, 1 pound		8.00	Replace	
Radiator			Remove/reinstall	
Antifreeze, 1 gallon		12.00	Replace	
Frame sidemember end, left front			Repair*	0.5
Frame sidemember end, right front			Repair*	0.5
Frame sidemember ends, front			Anti-corrosion	0.2
Paint and materials		4.00		
Total Parts		\$368.85		
Total Labor		469.90		12.7
Grand Total		\$838.75		

* This item was repaired or replaced as indicated before the 40 mi/h frontal offset test.

Dummy Clearance Measurements

Test Number: CEF0222
Vehicle Make/Model: Mini Cooper
Vehicle Model Year: 2002
Seat Type: Manually adjusted bucket seat (fore/aft, height, and seat back angle)

Manufacturer's Specifications

Seat Back Information: Reclined to 16°, as measured on head restraint post
Upper Belt Anchorage: Set to midpoint of 3 positions
Steering Column Adjustment: Set to midpoint of tilt adjustment range
Foot Pedal Adjustment: Fixed

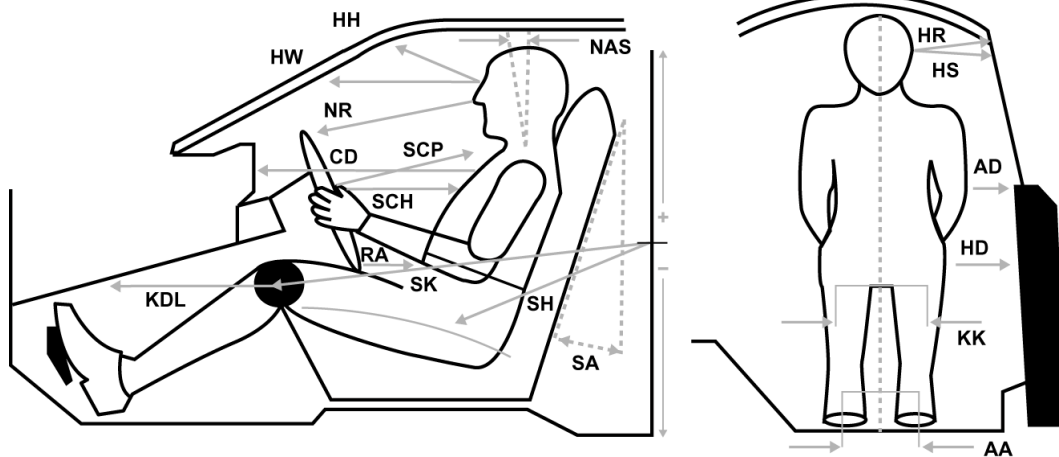
Location	Code	Measure	Location	Code	Measure
Head to header	HH	627	Neck angle, torso 90	NAT90	21.0°
Head to windshield	HW	767	Neck angle, seated	NAS	7.4°
Nose to rim	NR	421	Torso angle (NAT90 – NAS)	TA	13.6°
Chest to dash*	CD	410	Striker to knee***	SK	703
Rim to abdomen	RA	262	Striker to knee angle***	SKA	-10.1°
Knee to dash, left	KDL	300	Striker to H-point, horizontal	SHH	322
Knee to dash, right	KDR	295	Striker to H-point, vertical	SHV	-235
Steering wheel to chest, horizontal	SCH	355	Ankle to ankle	AA	273
Steering wheel to chest, perpendicular	SCP	390	Knee to knee	KK	305
Steering wheel to chest, reference	SCR	392	Arm to door	AD	57
Hub to chest, minimum	HCM	307	H-point to door	HD	190
Pelvic angle	PA	24.9°	Head to A-pillar	HA	707
Seat back angle**	SA	16°	Head to roof	HR	227
			Head to side window	HS	218

All distance measurements are in millimeters (mm).

* Chest to dash measure was interrupted by the steering wheel hub and as such reflects chest to hub measure only.

** Indicated value is from vertical, as measured on head restraint post

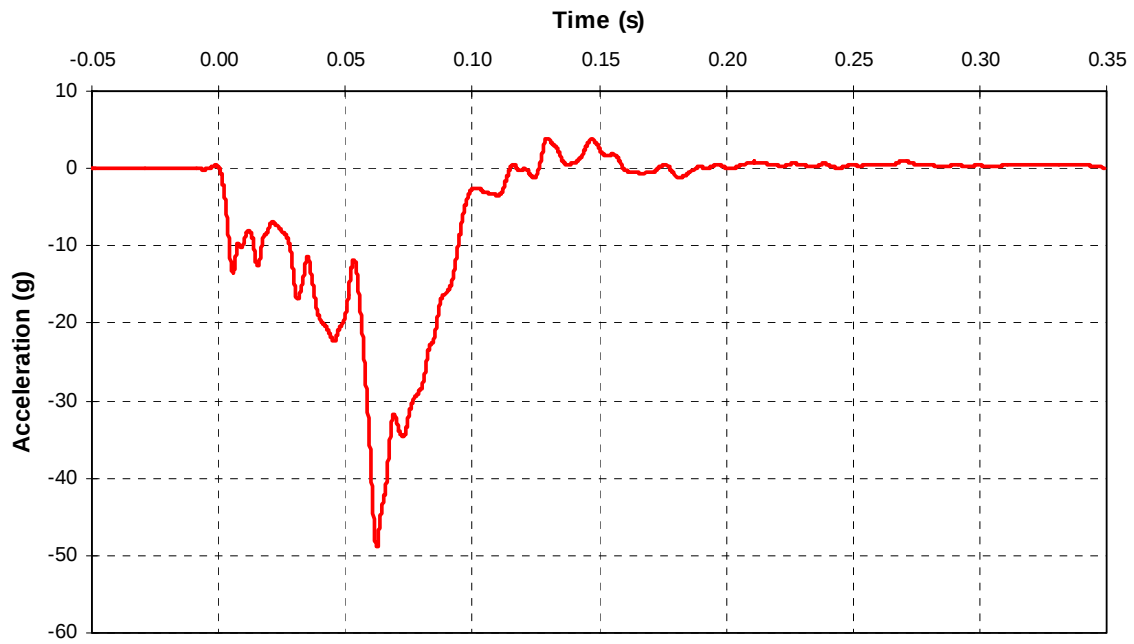
*** These measurements were made in a vertical plane containing the striker and parallel to the driver door sill.



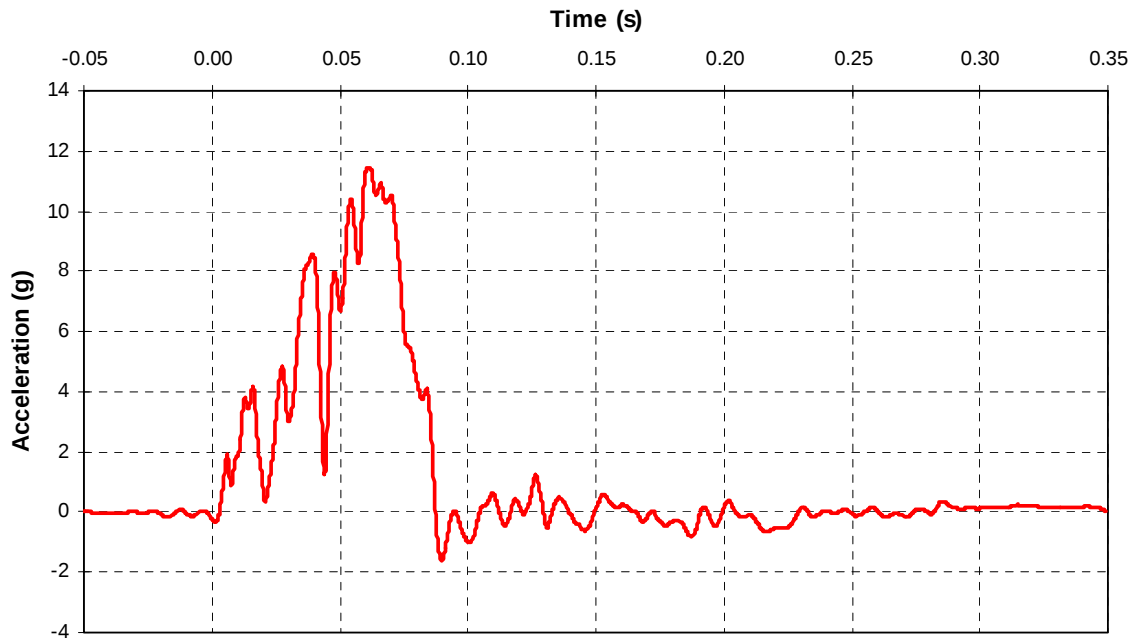
Graph Index

A-1	Vehicle longitudinal acceleration (X)
A-2	Vehicle lateral acceleration (Y)
A-3	Vehicle vertical acceleration (Z)
A-4	Vehicle vector resultant acceleration
A-5	Integration of vehicle longitudinal acceleration (X)
A-6	Head A-P acceleration (X)
A-7	Head L-M acceleration (Y)
A-8	Head I-S acceleration (Z)
A-9	Head vector resultant acceleration
A-10	Neck A-P force (X)
A-11	Neck axial force
A-12	Neck occipital A-P bending moment
A-13	Neck tension — force by duration analysis
A-14	Neck compression — force by duration analysis
A-15	Neck shear (positive) — force by duration analysis
A-16	Neck shear (negative) — force by duration analysis
A-17	Chest compression
A-18	Chest A-P acceleration (X)
A-19	Chest lateral acceleration (Y)
A-20	Chest I-S acceleration (Z)
A-21	Chest vector resultant acceleration
A-22	Sternum deflection rate
A-23	Left femur axial force
A-24	Left femur — force by duration analysis
A-25	Left tibia-femur displacement
A-26	Left upper tibia L-M bending moment
A-27	Left upper tibia A-P bending moment
A-28	Left upper tibia vector resultant bending moment
A-29	Left lower tibia L-M bending moment
A-30	Left lower tibia A-P bending moment
A-31	Left lower tibia vector resultant bending moment
A-32	Left lower tibia axial force
A-33	Left foot vector resultant acceleration
A-34	Left foot A-P acceleration
A-35	Left foot I-S acceleration
A-36	Right femur axial force
A-37	Right femur — force by duration analysis
A-38	Right tibia-femur displacement
A-39	Right upper tibia L-M bending moment
A-40	Right upper tibia A-P bending moment
A-41	Right upper tibia vector resultant bending moment
A-42	Right lower tibia L-M bending moment
A-43	Right lower tibia A-P bending moment
A-44	Right lower tibia vector resultant bending moment
A-45	Right lower tibia axial force
A-46	Right foot vector resultant acceleration
A-47	Right foot A-P acceleration
A-48	Right foot I-S acceleration

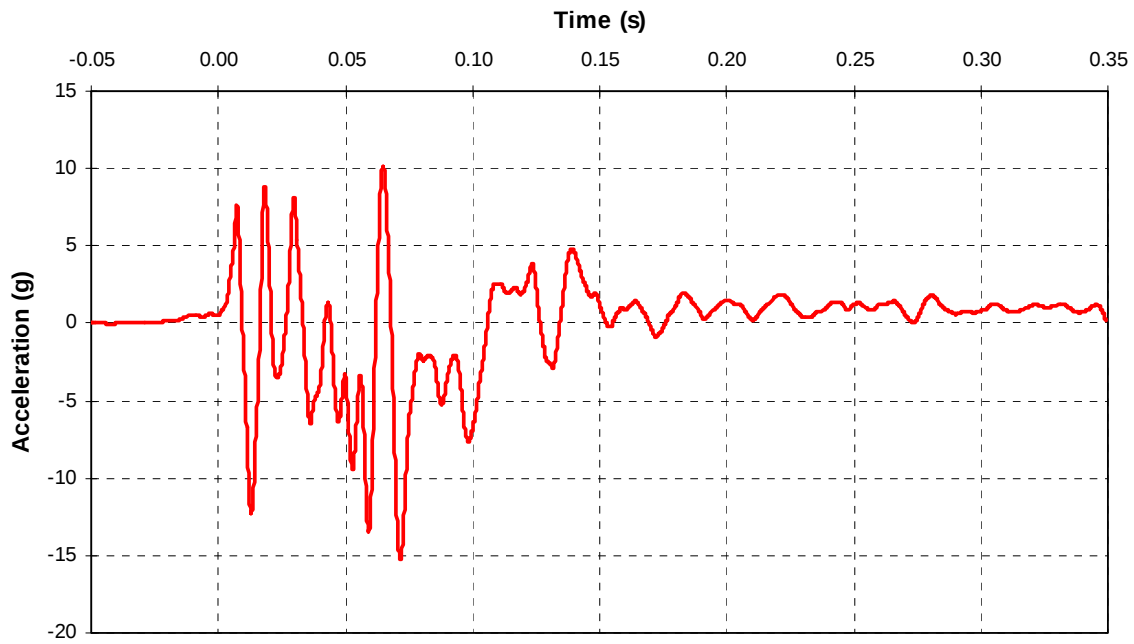
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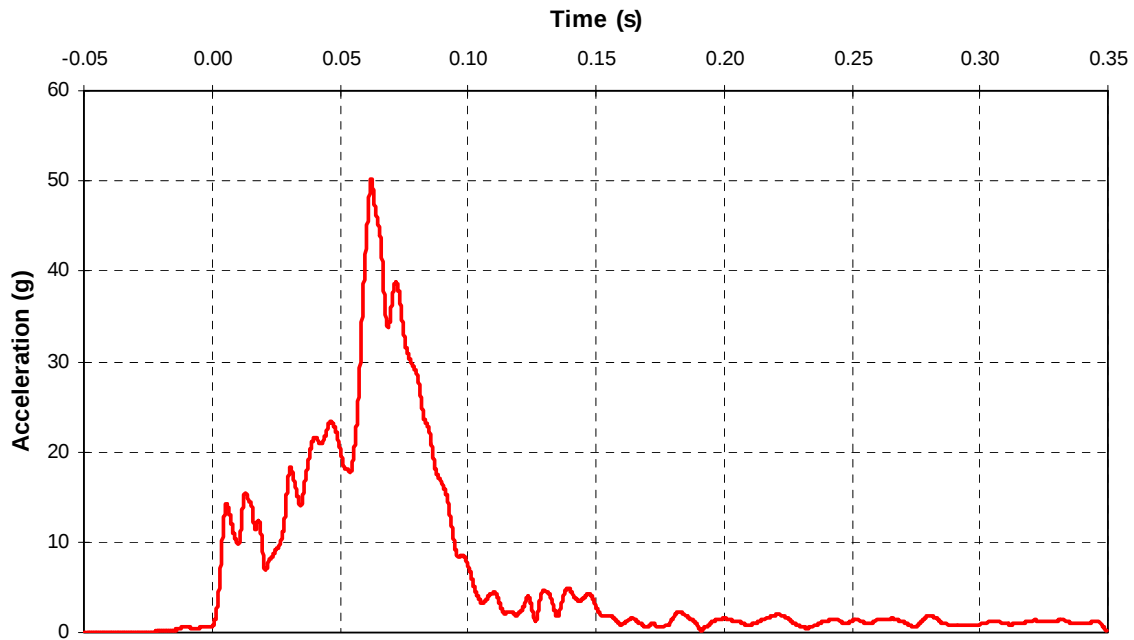
A- 2 CEF0222 2002 Mini Cooper Vehicle Lateral Acceleration



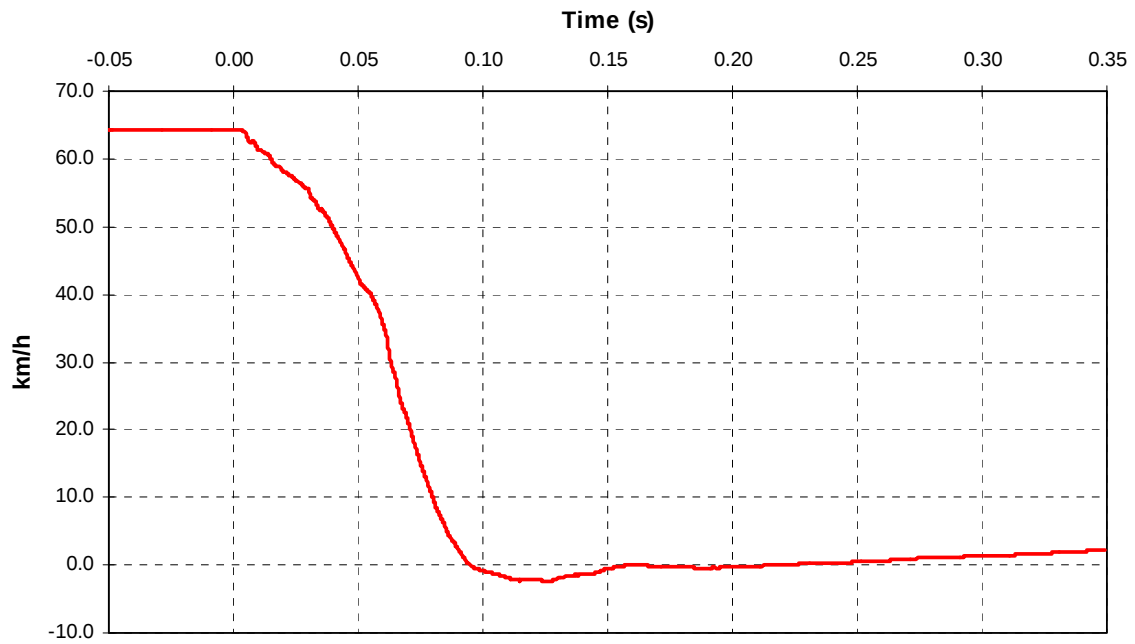
A- 3 CEF0222 2002 Mini Cooper Vehicle Vertical Acceleration



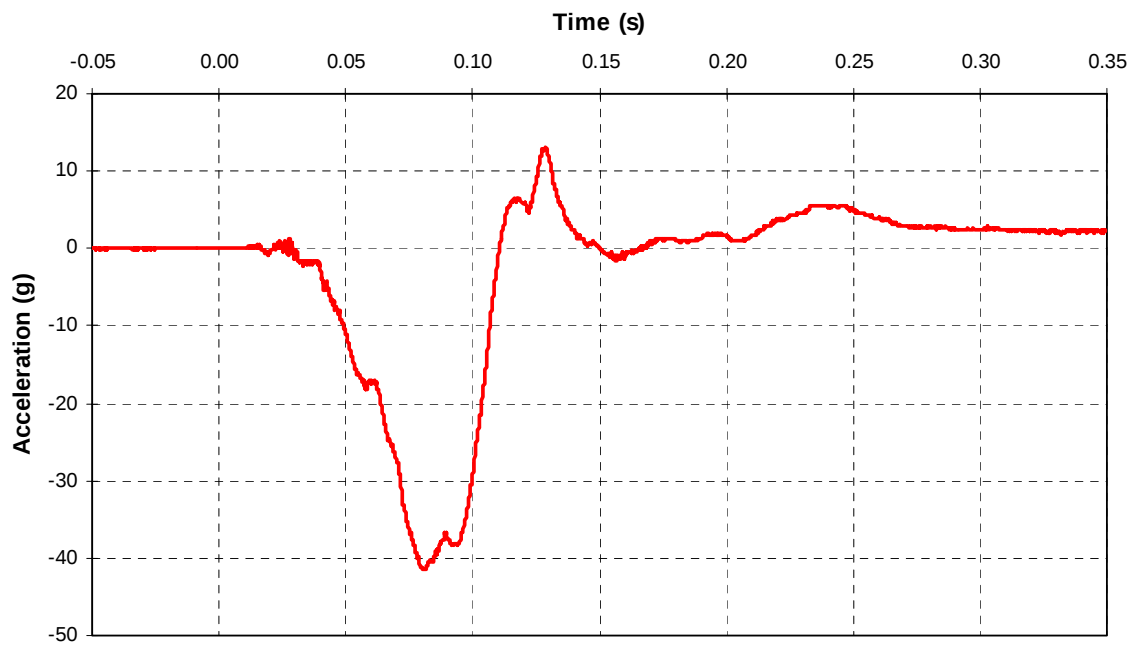
A- 4 CEF0222 2002 Mini Cooper Vehicle Vector Resultant Acceleration



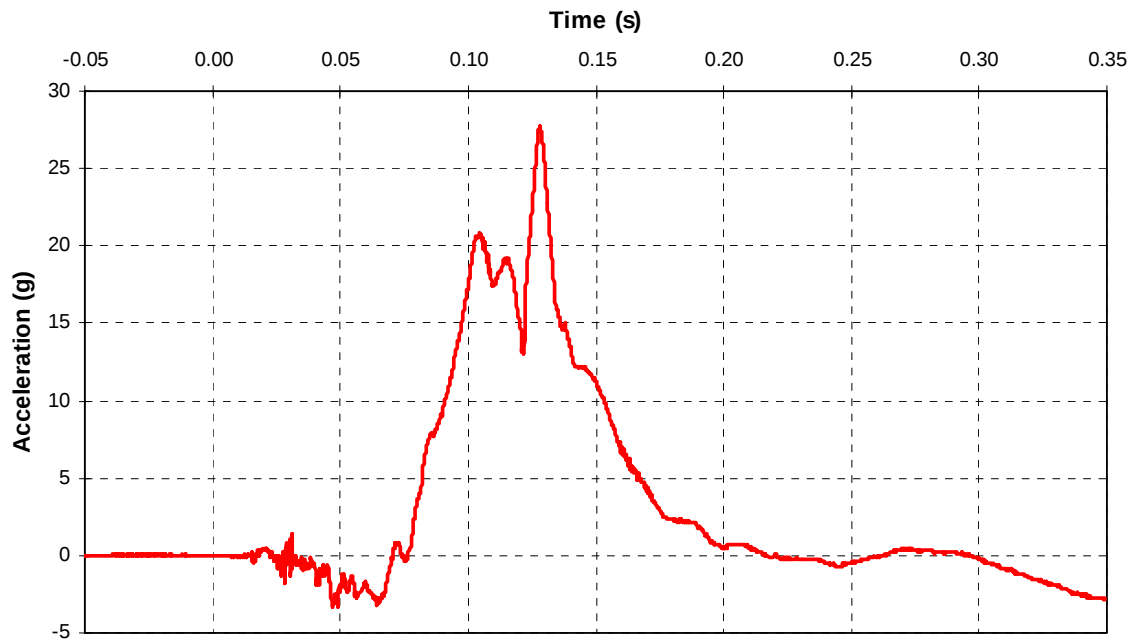
A- 5 CEF0222 2002 Mini Cooper Integration of Vehicle Longitudinal Acceleration



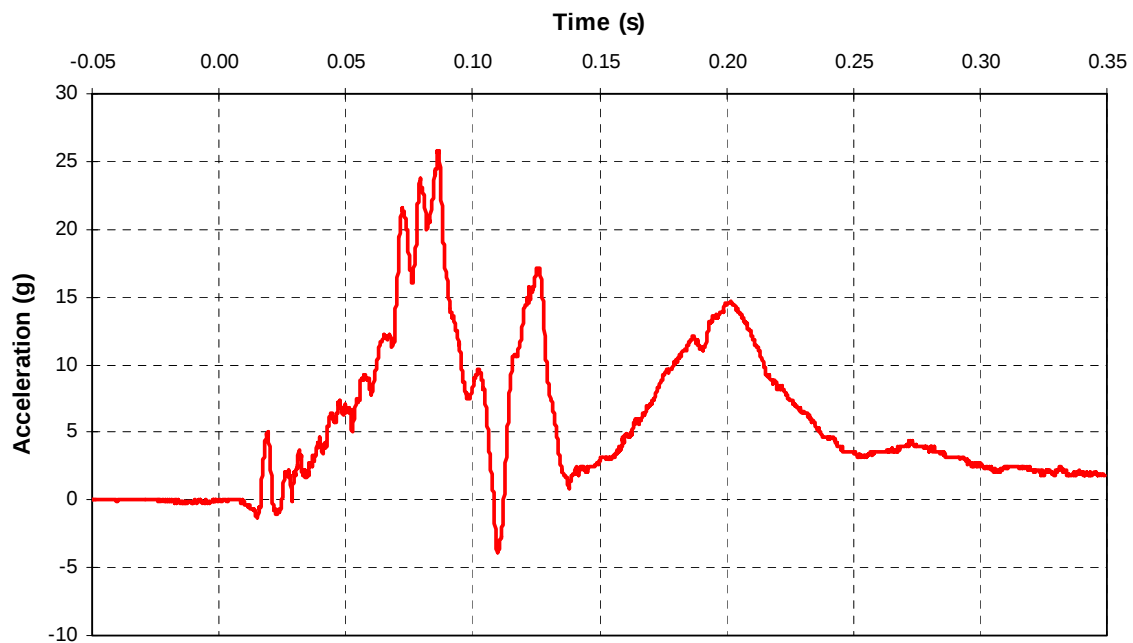
A- 6 CEF0222 2002 Mini Cooper Head A-P Acceleration



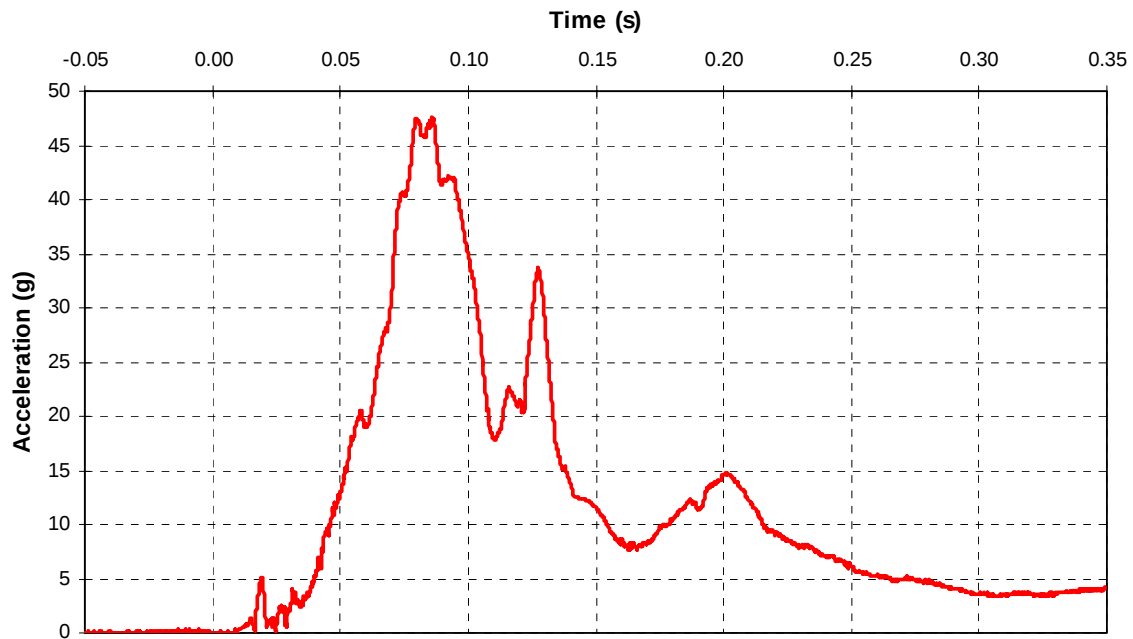
A- 7 CEF0222 2002 Mini Cooper Head L-M Acceleration



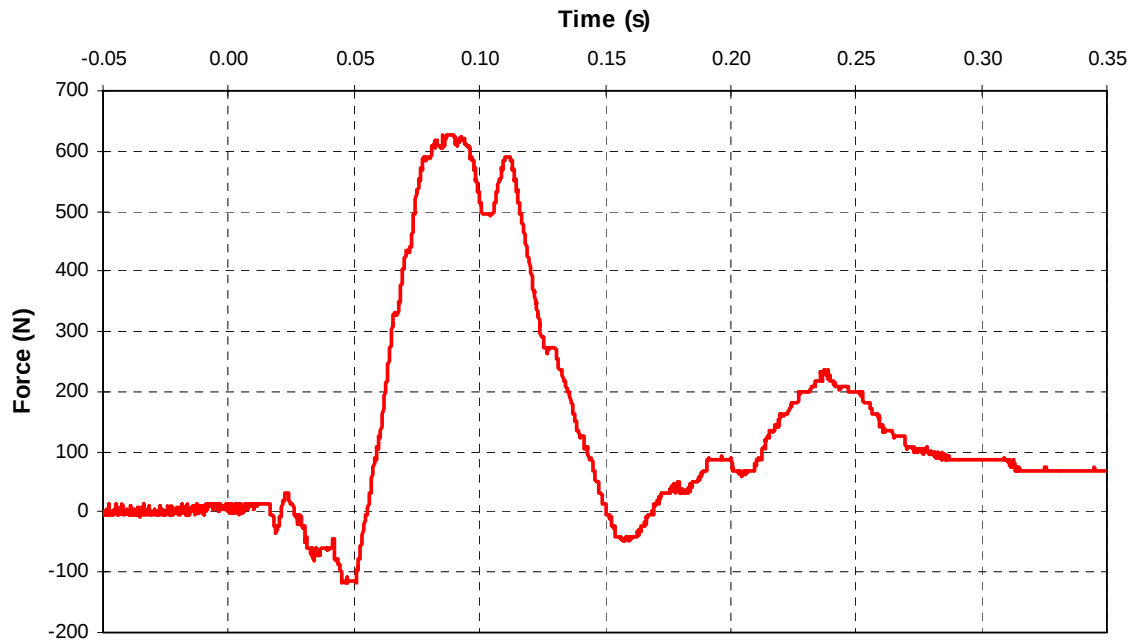
A- 8 CEF0222 2002 Mini Cooper Head I-S Acceleration



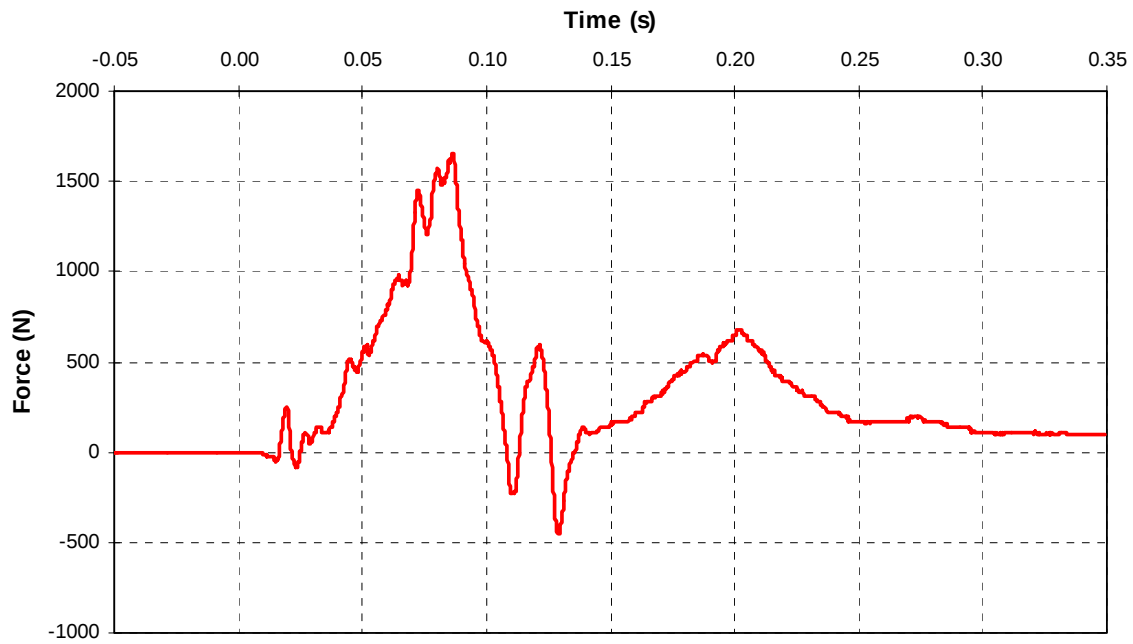
A- 9 CEF0222 2002 Mini Cooper Head Vector Resultant Acceleration



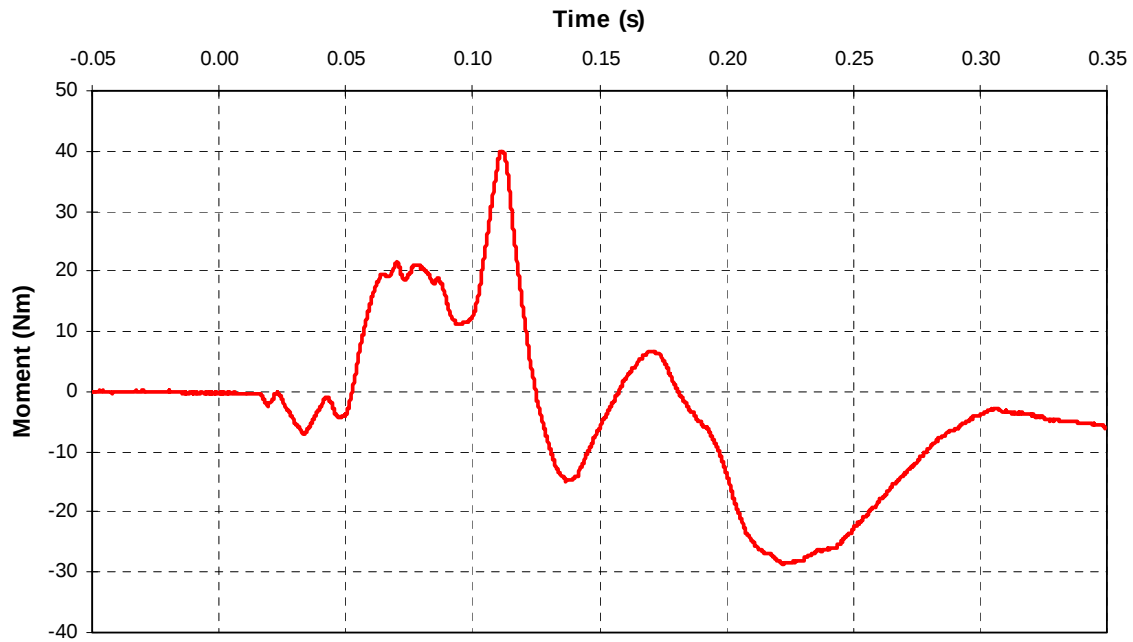
A- 10 CEF0222 2002 Mini Cooper Neck A-P Shear Force



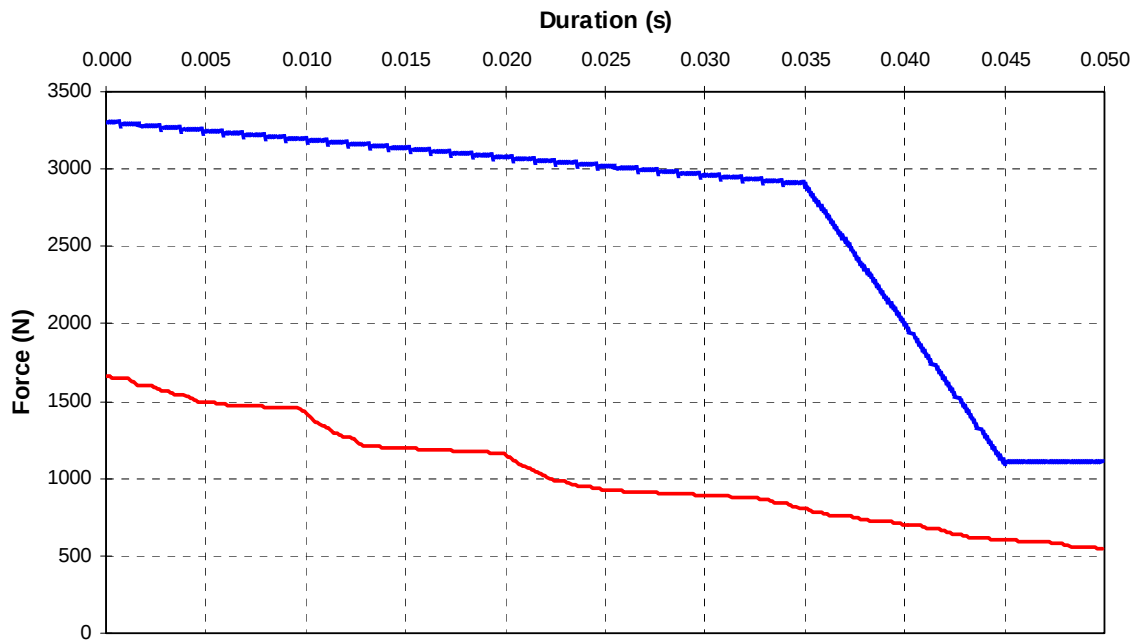
A- 11 CEF0222 2002 Mini Cooper Neck Axial Force



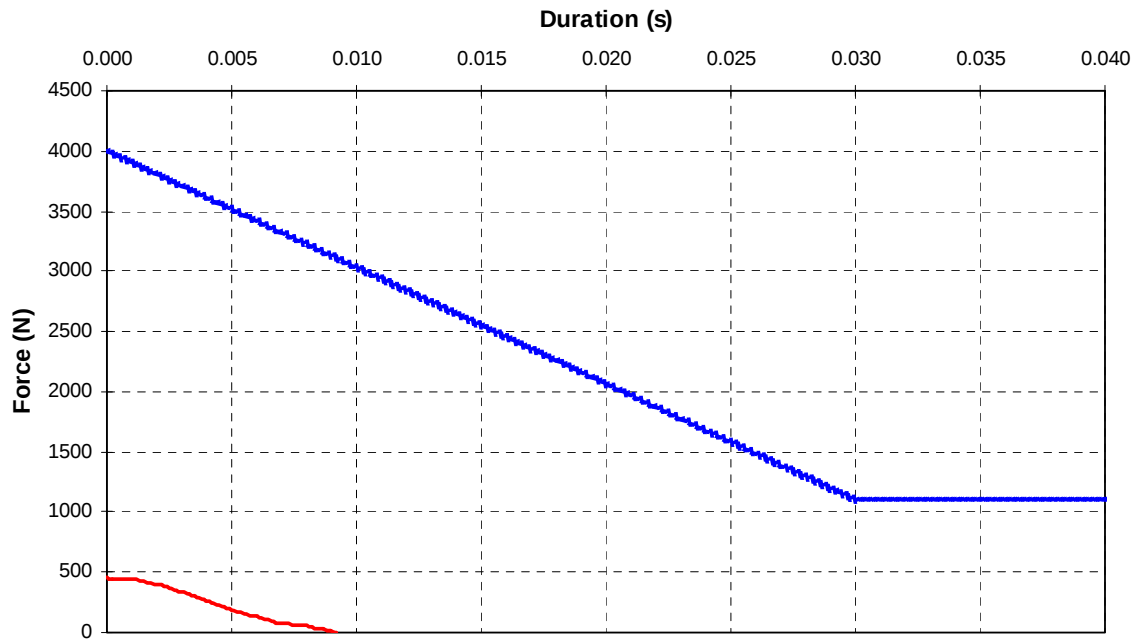
A- 12 CEF0222 2002 Mini Cooper Neck Occipital A-P Moment



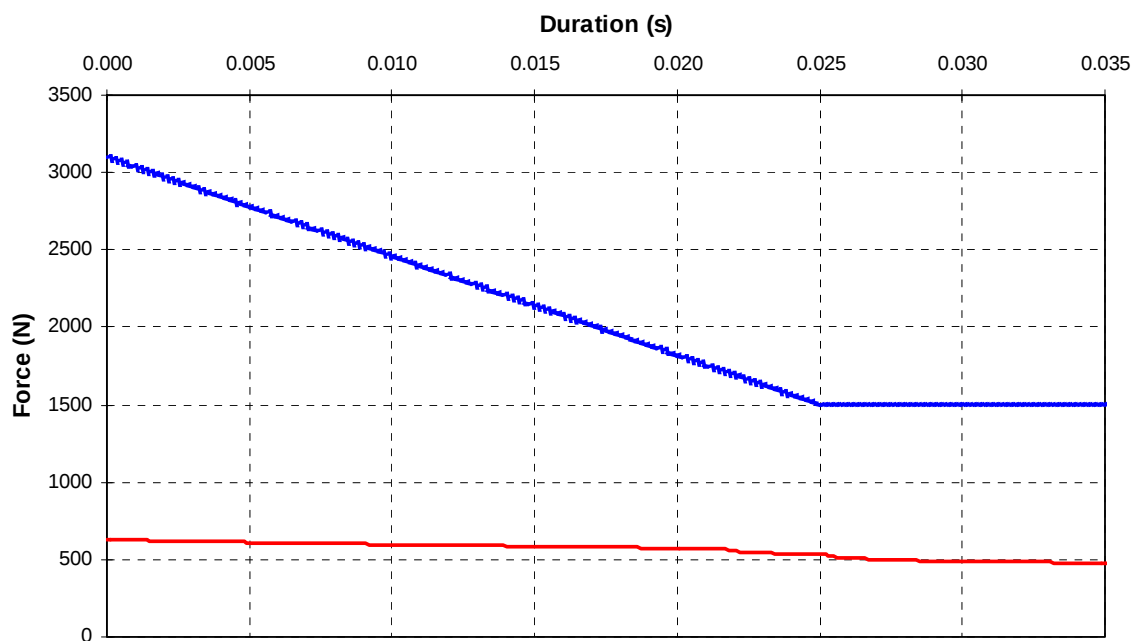
A- 13 CEF0222 2002 Mini Cooper Neck Tension Analysis



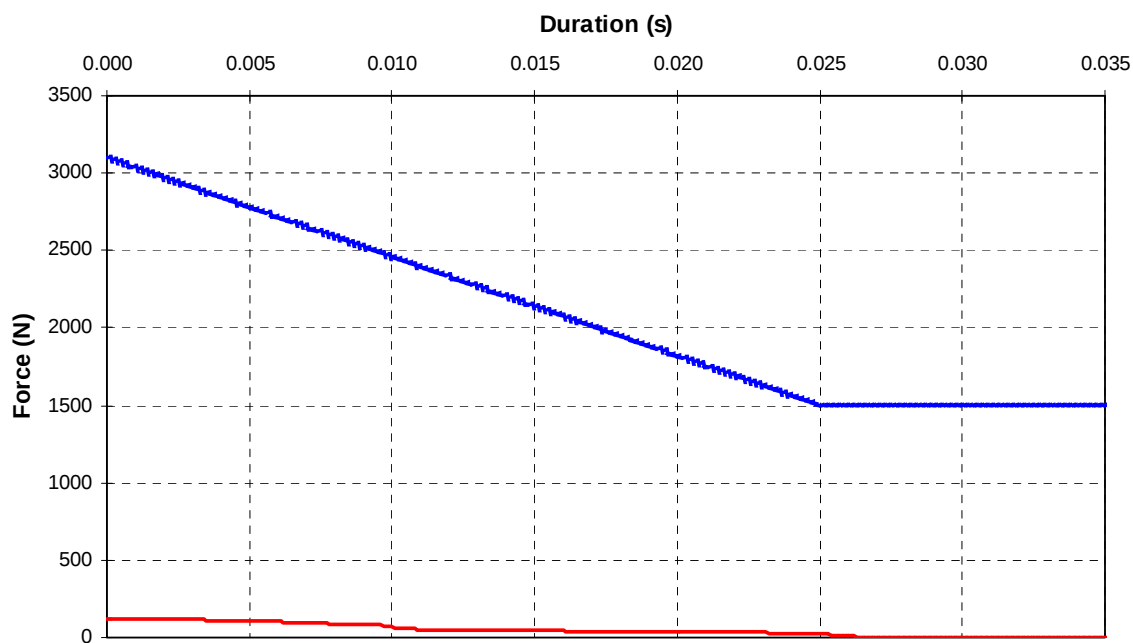
A- 14 CEF0222 2002 Mini Cooper Neck Compression Analysis



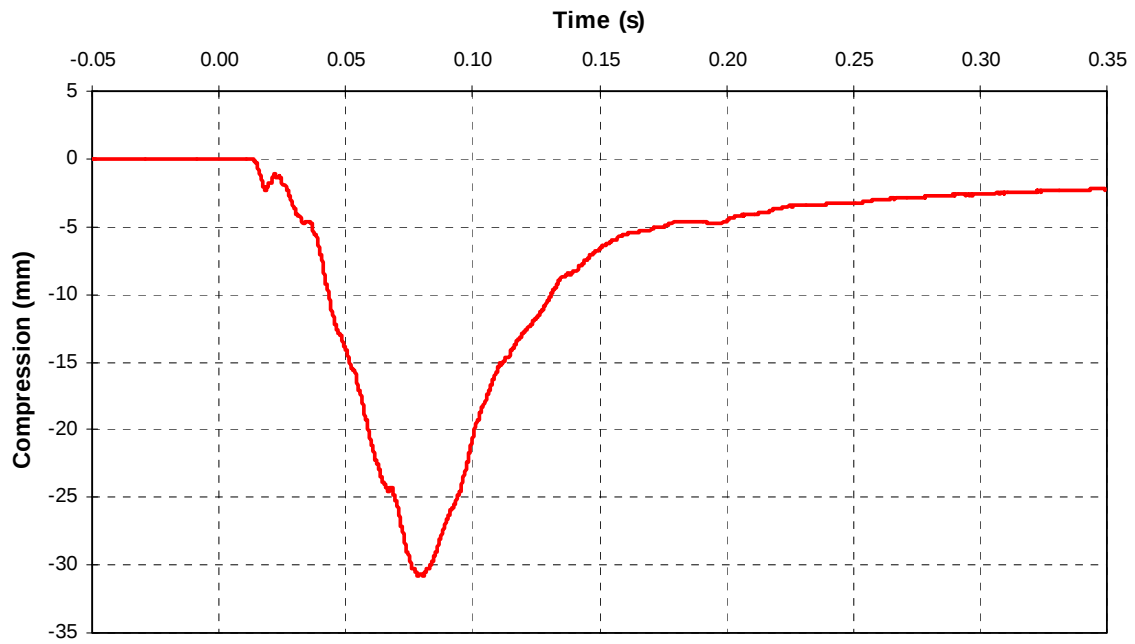
A- 15 CEF0222 2002 Mini Cooper Neck A-P Shear (Positive) Analysis



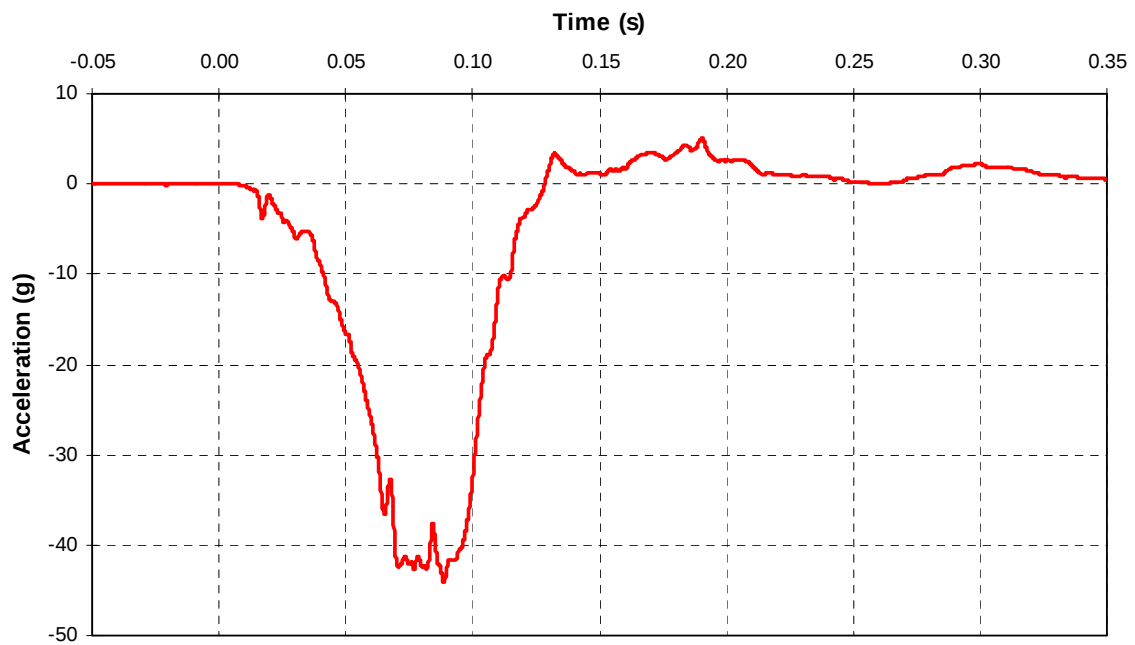
A- 16 CEF0222 2002 Mini Cooper Neck A-P Shear (Negative) Analysis



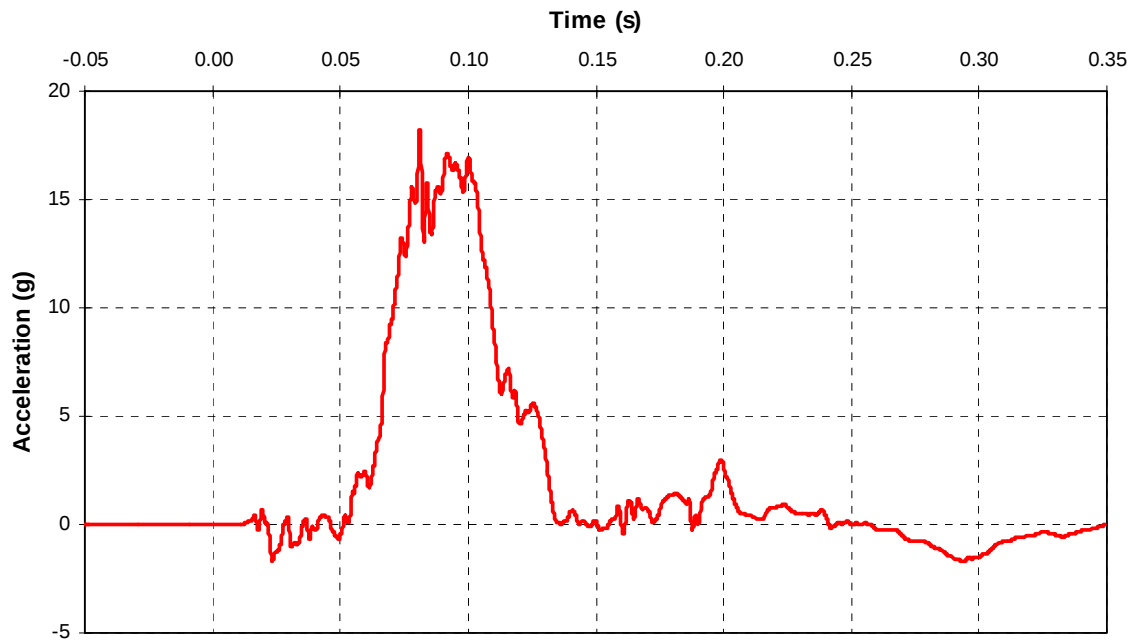
A- 17 CEF0222 2002 Mini Cooper Chest Compression



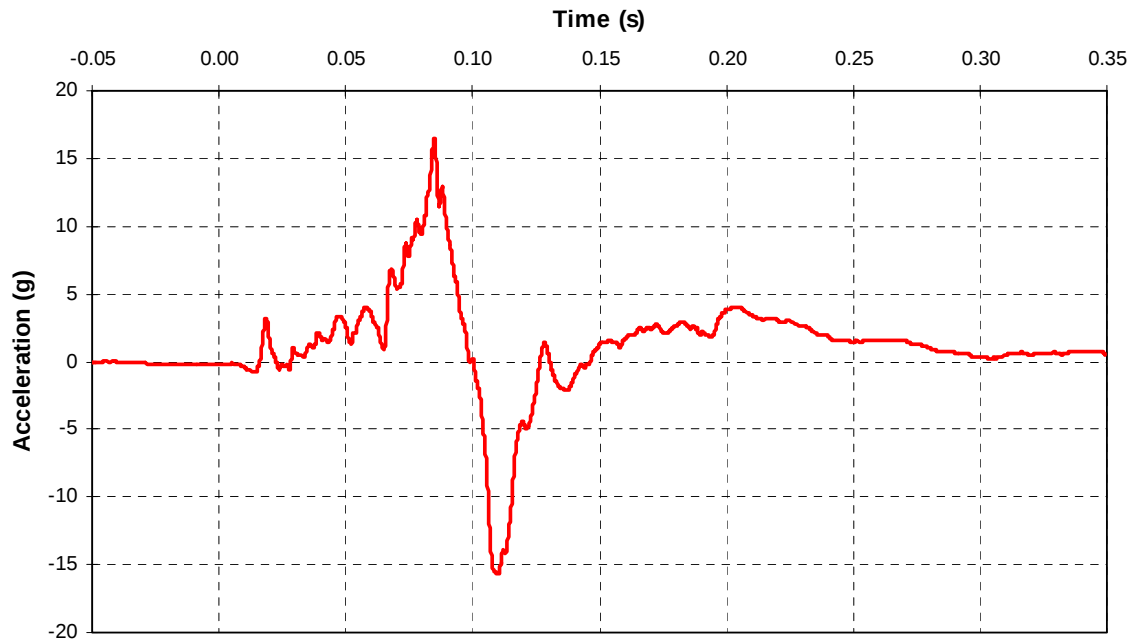
A- 18 CEF0222 2002 Mini Cooper Chest A-P Acceleration



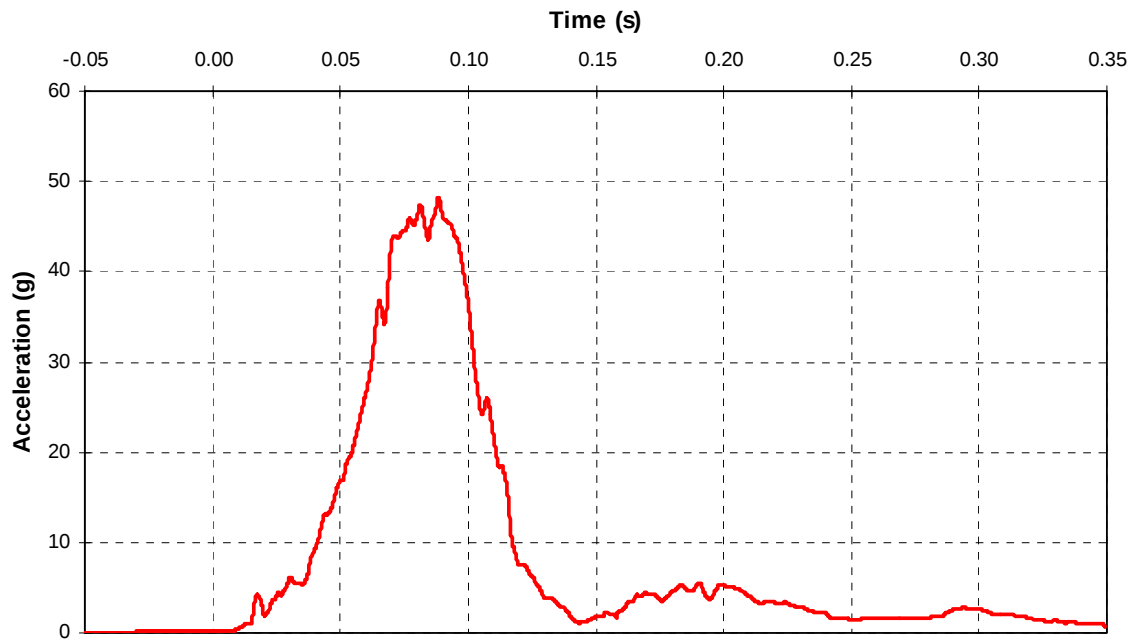
A- 19 CEF0222 2002 Mini Cooper Chest L-M Acceleration



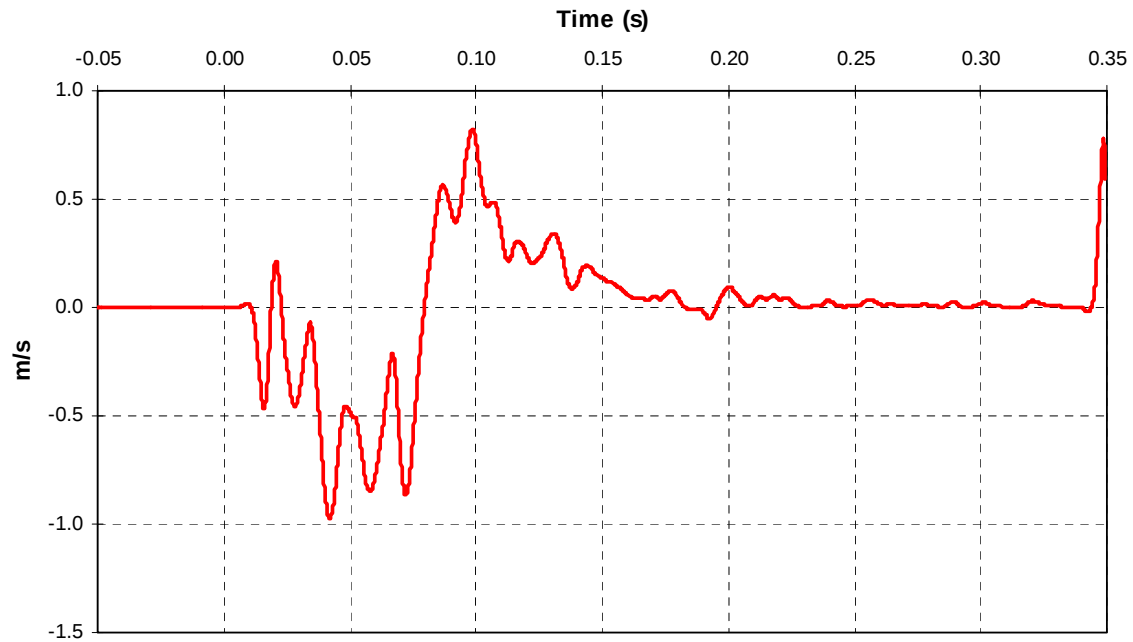
A- 20 CEF0222 2002 Mini Cooper Chest I-S Acceleration



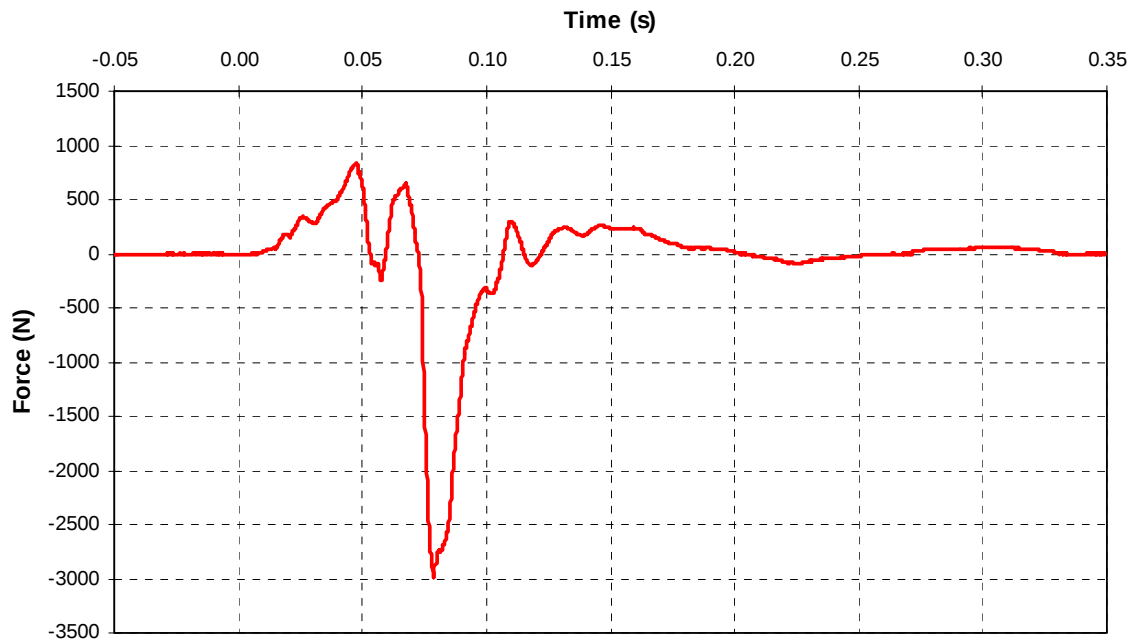
A- 21 CEF0222 2002 Mini Cooper Chest Vector Resultant Acceleration



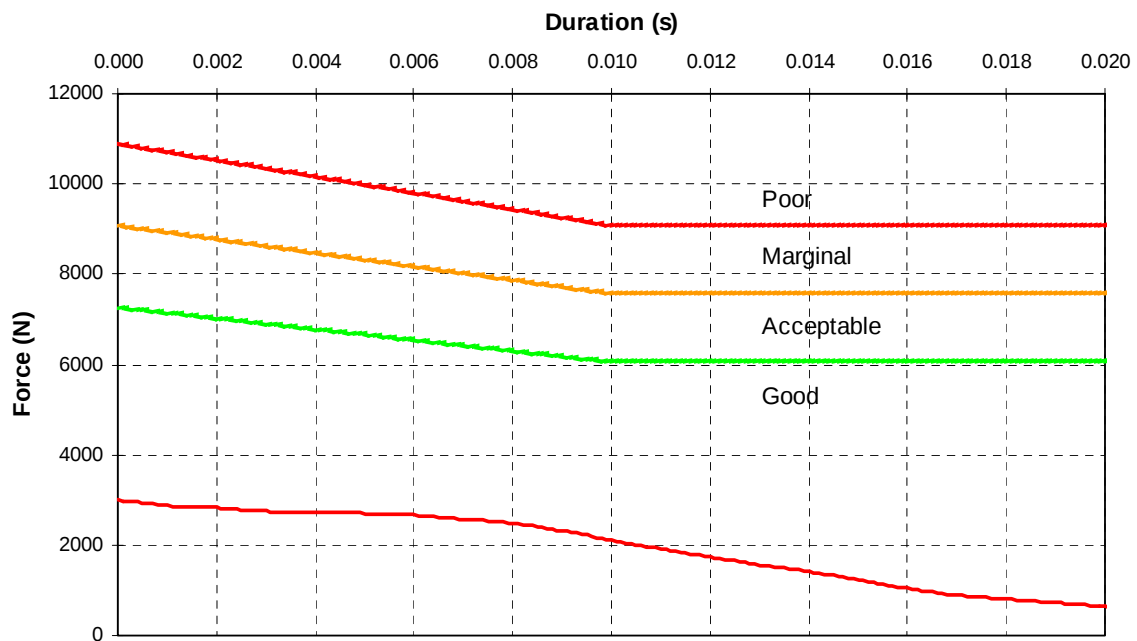
A- 22 CEF0222 2002 Mini Cooper Sternum Deflection Rate



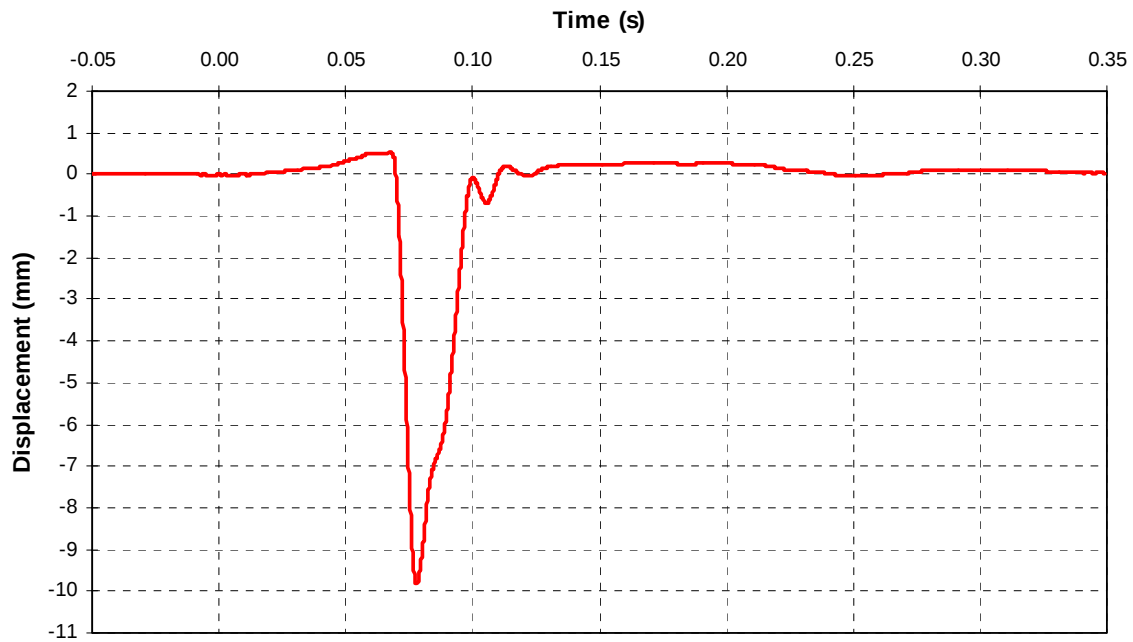
A- 23 CEF0222 2002 Mini Cooper Left Femur Axial Force



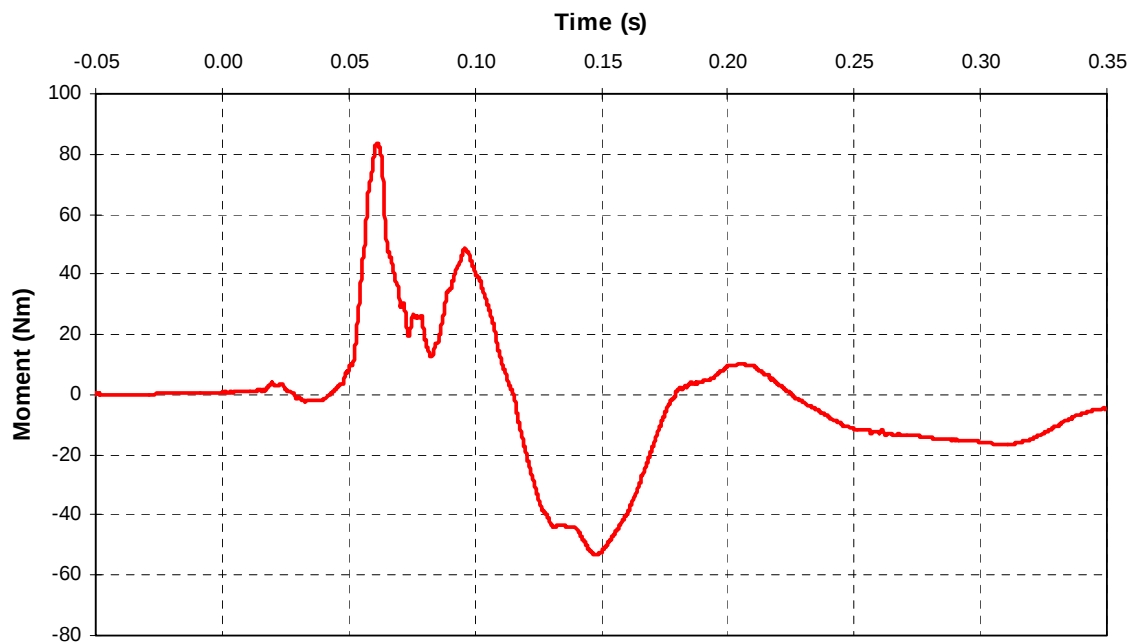
A- 24 CEF0222 2002 Mini Cooper Left Femur Axial Force Analysis



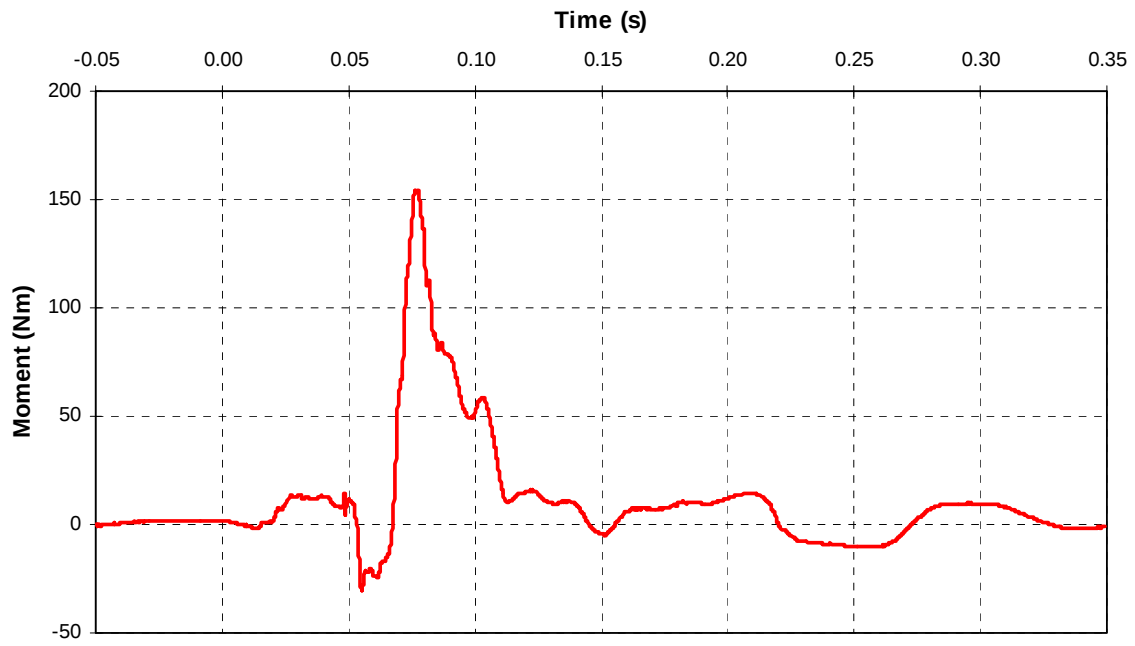
A- 25 CEF0222 2002 Mini Cooper Left Tibia-Femur Displacement



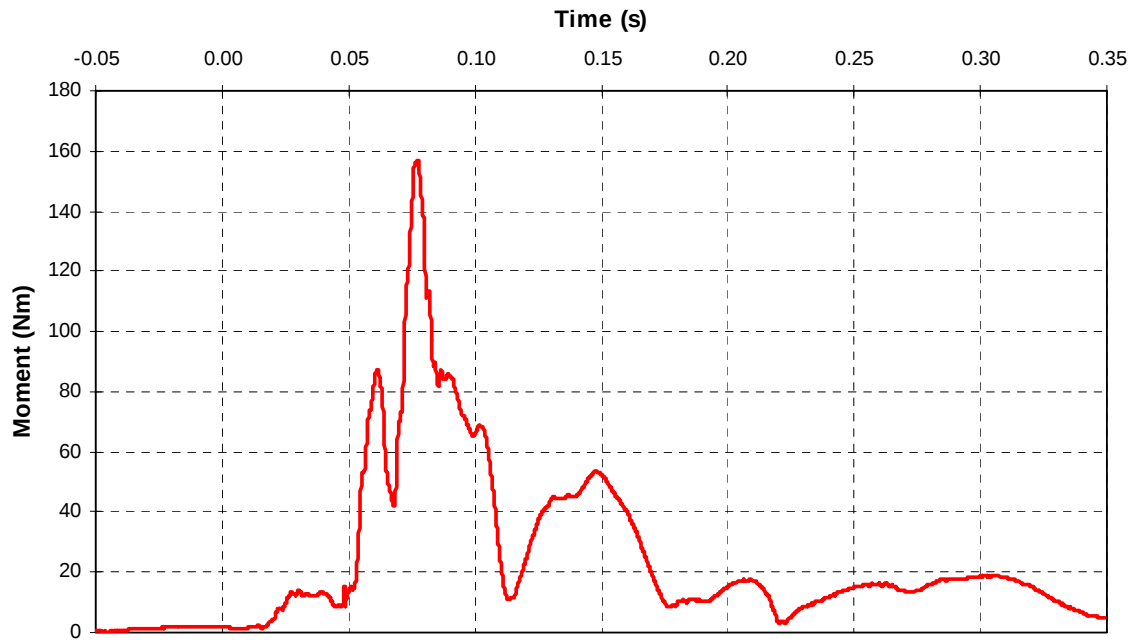
A- 26 CEF0222 2002 Mini Cooper Left Upper Tibia L-M Moment



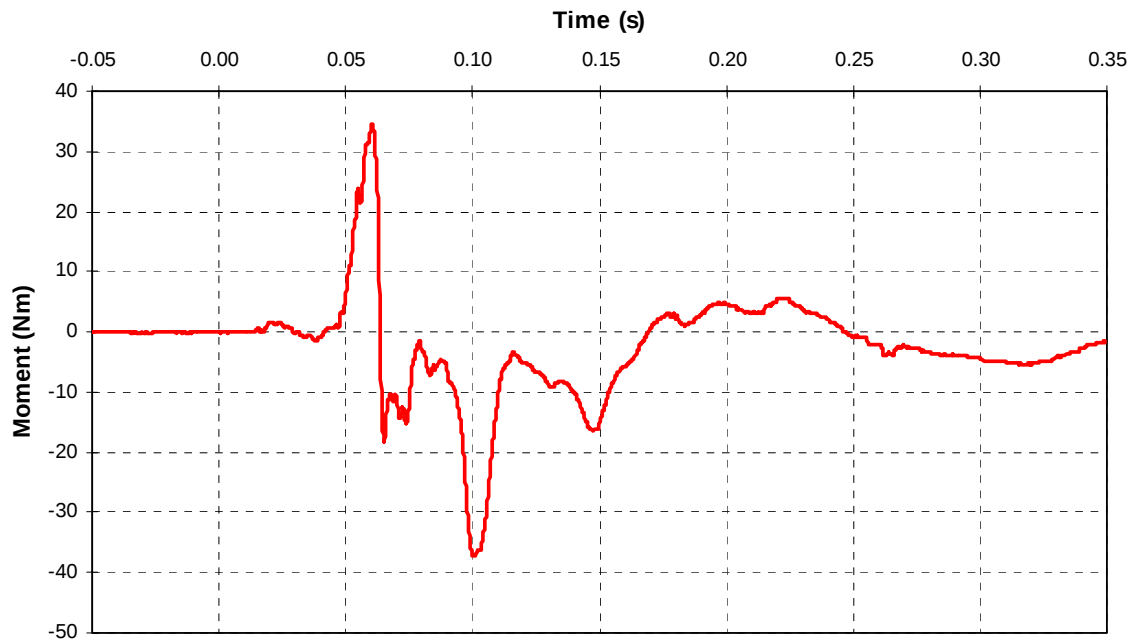
A- 27 CEF0222 2002 Mini Cooper Left Upper Tibia A-P Moment



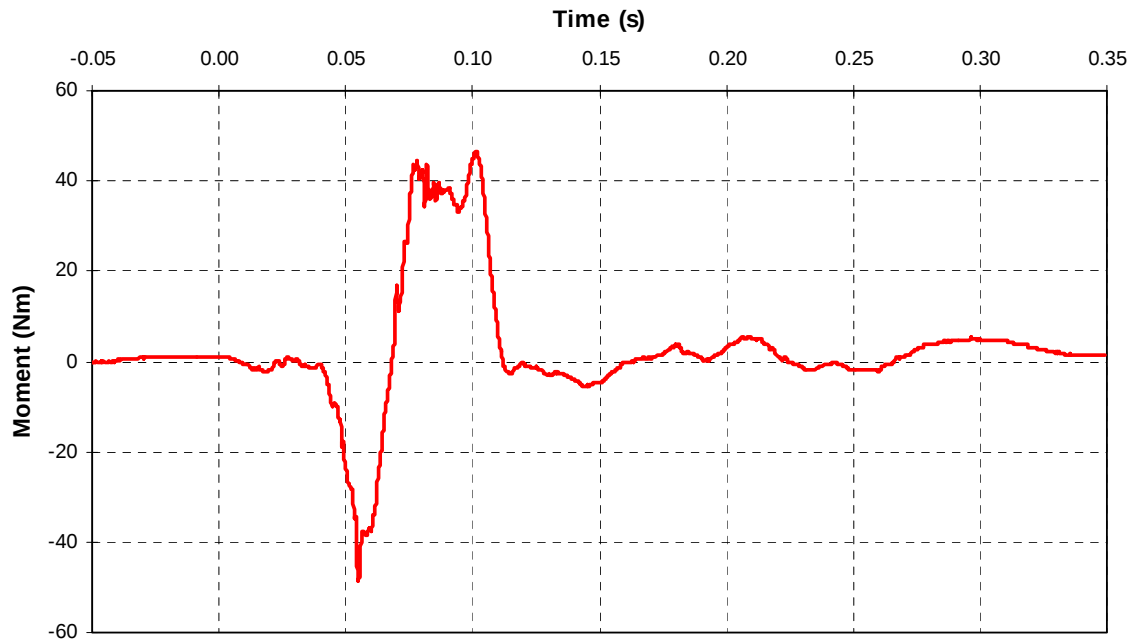
A- 28 CEF0222 2002 Mini Cooper Left Upper Tibia Vector Resultant Moment



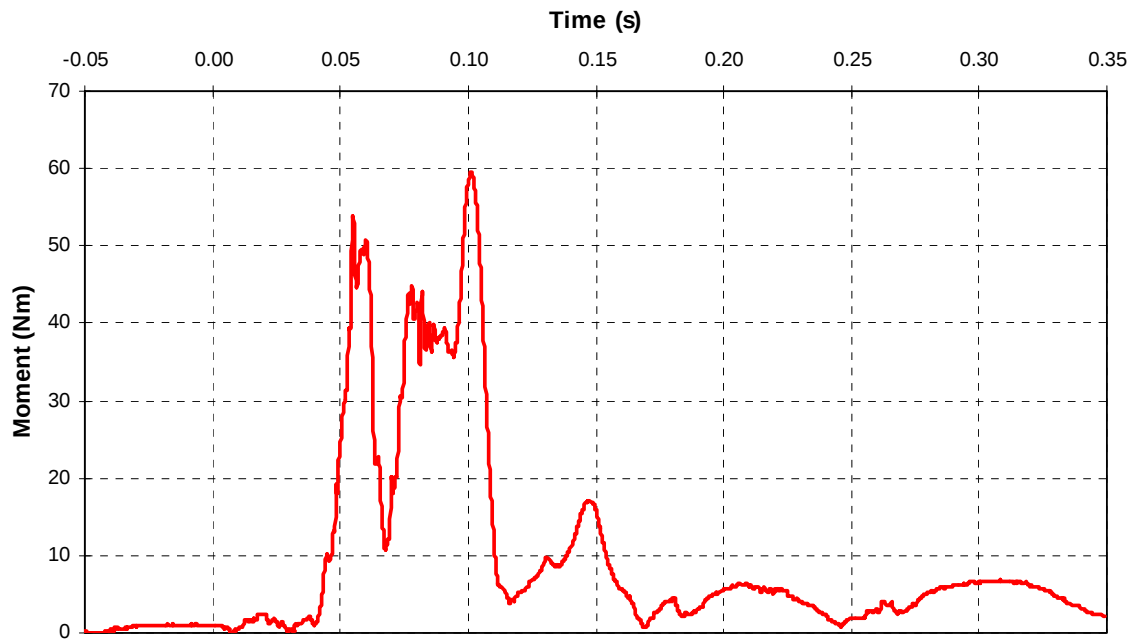
A- 29 CEF0222 2002 Mini Cooper Left Lower Tibia L-M Moment



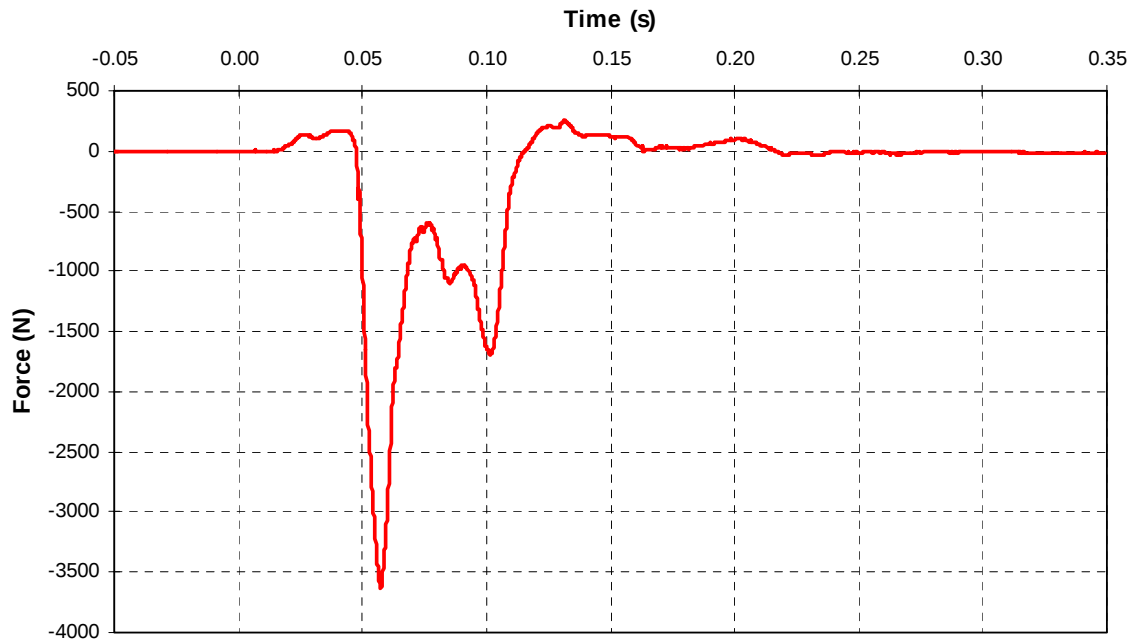
A- 30 CEF0222 2002 Mini Cooper Left Lower Tibia A-P Moment



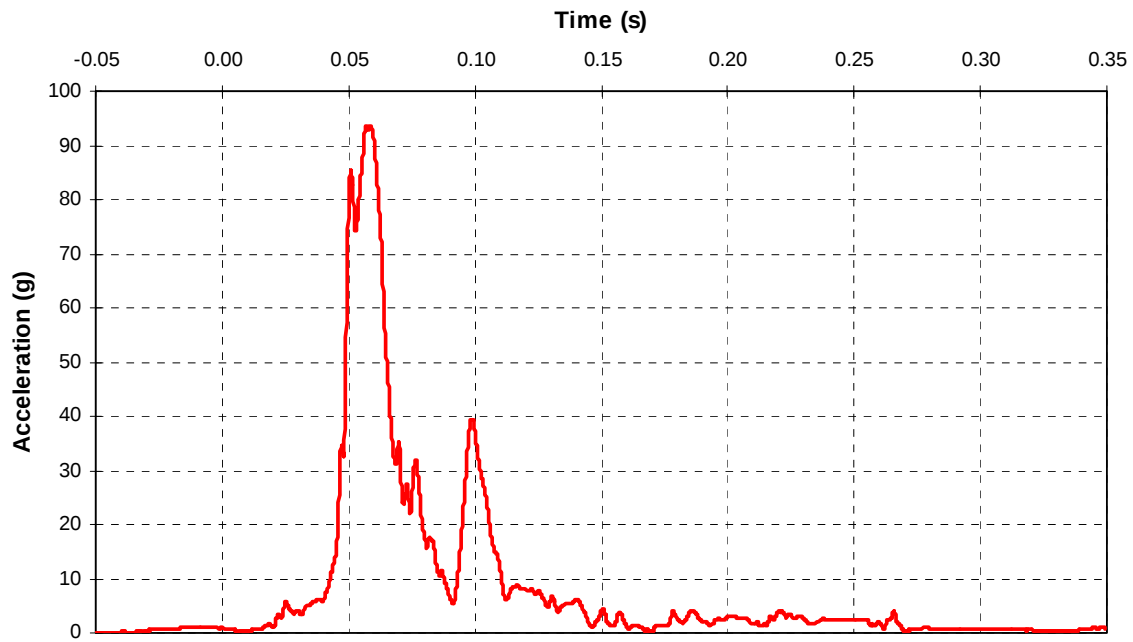
A- 31 CEF0222 2002 Mini Cooper Left Lower Tibia Vector Resultant Moment



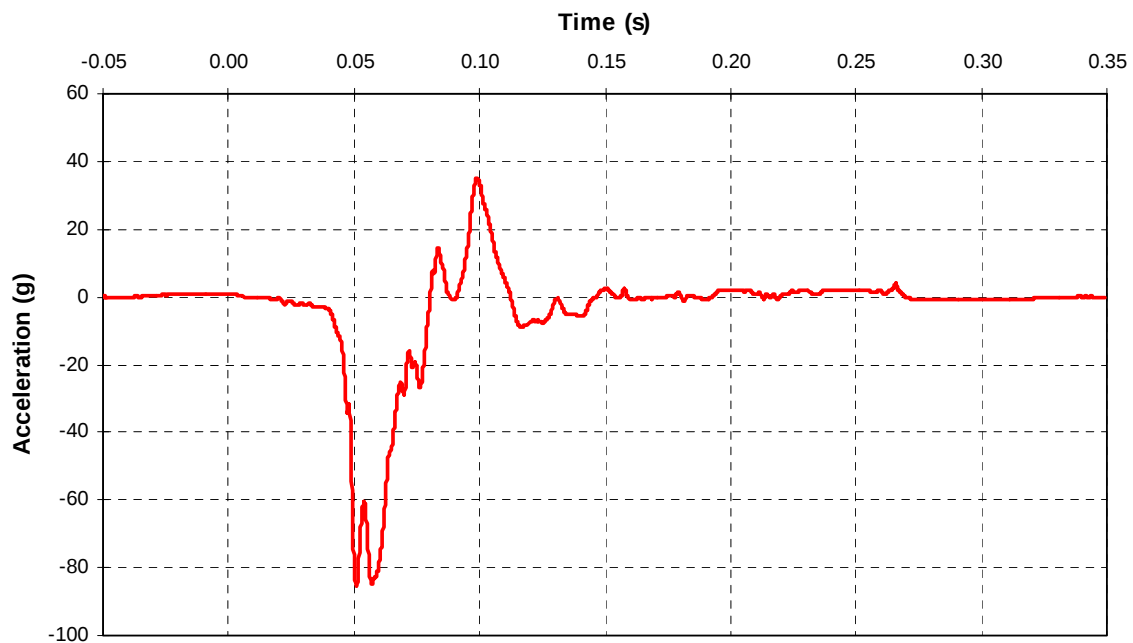
A- 32 CEF0222 2002 Mini Cooper Left Lower Tibia Axial Force



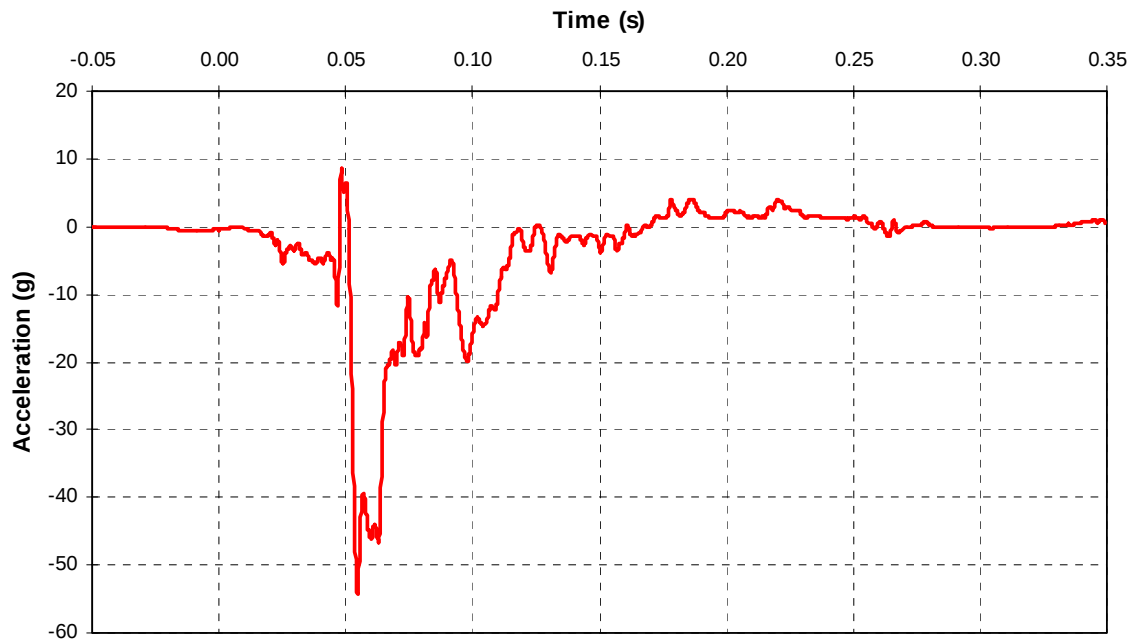
A- 33 CEF0222 2002 Mini Cooper Left Foot Vector Resultant Acceleration



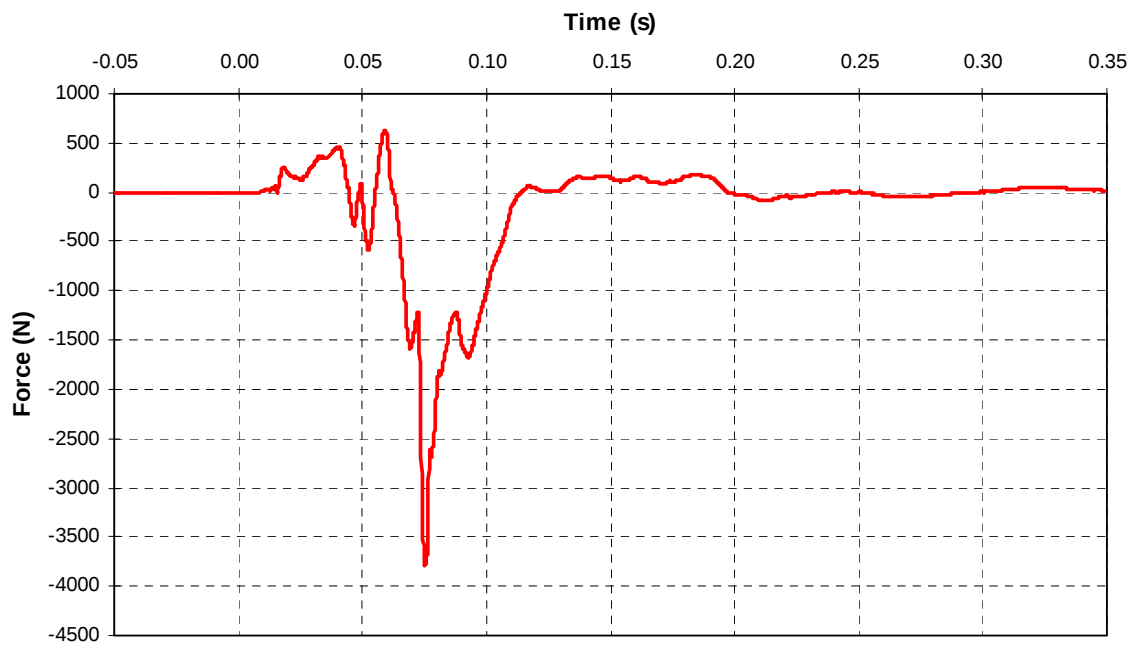
A- 34 CEF0222 2002 Mini Cooper Left Foot A-P Acceleration



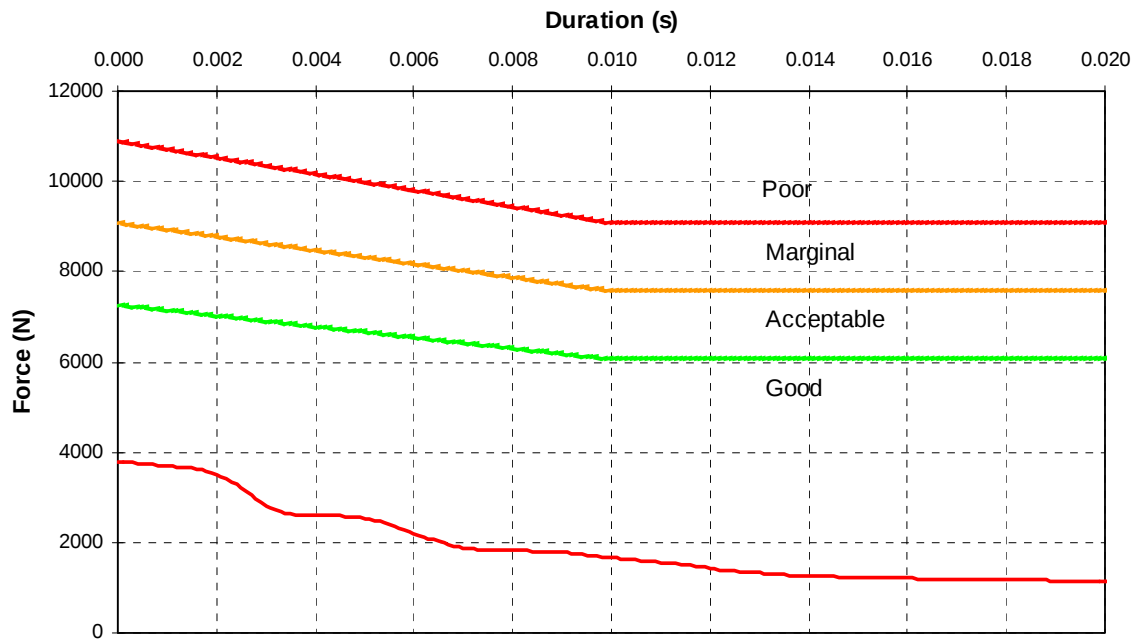
A- 35 CEF0222 2002 Mini Cooper Left Foot I-S Acceleration



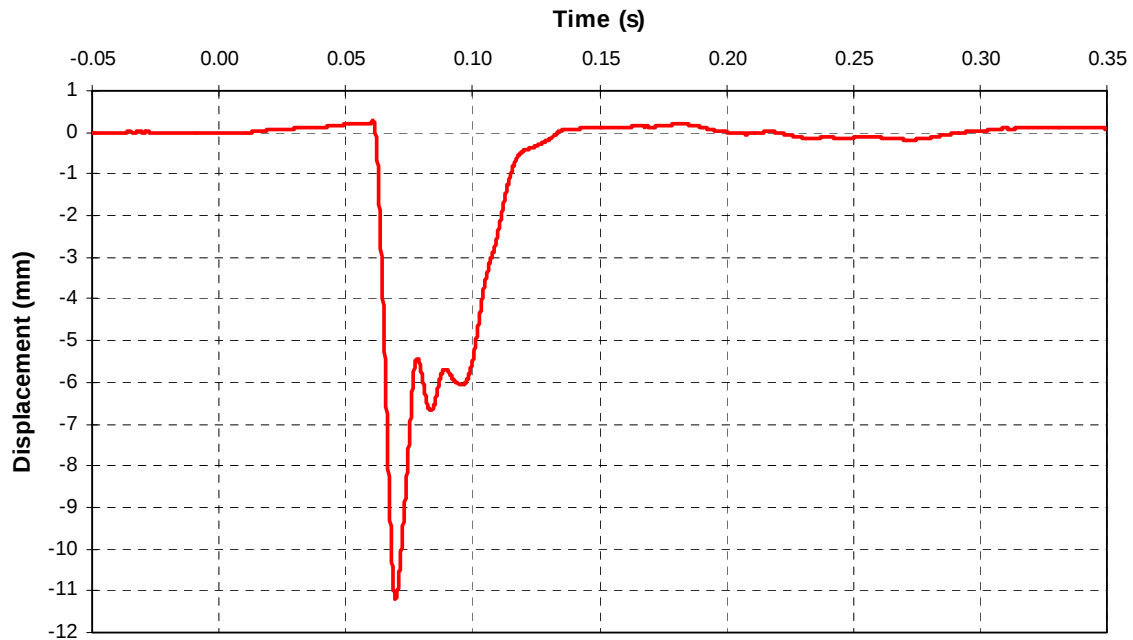
A- 36 CEF0222 2002 Mini Cooper Right Femur Axial Force



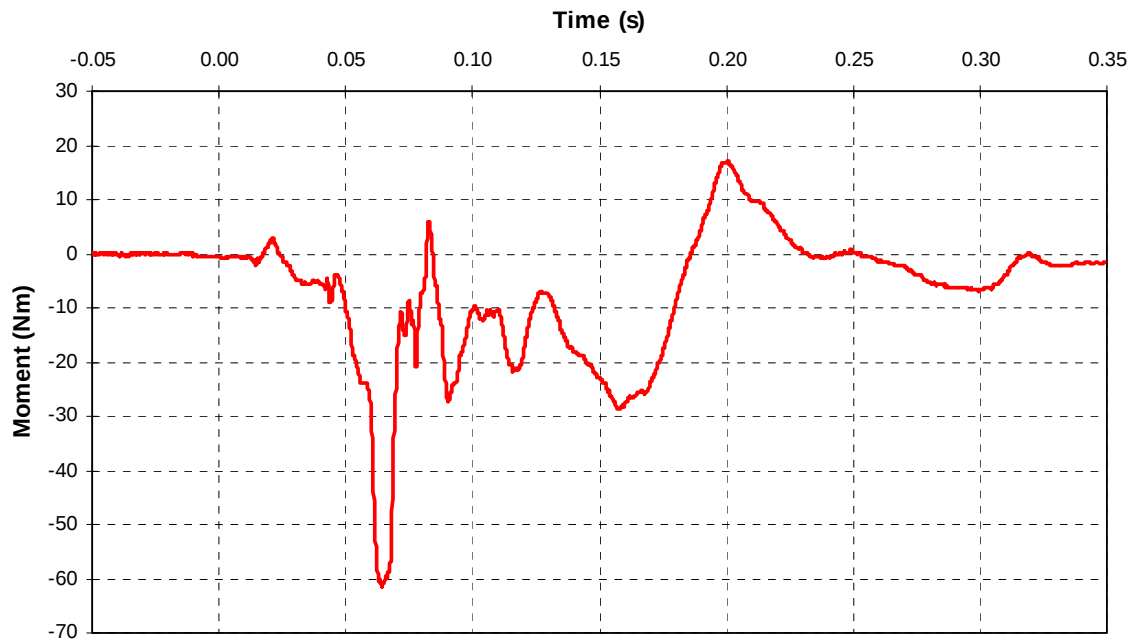
A- 37 CEF0222 2002 Mini Cooper Right Femur Axial Force Analysis



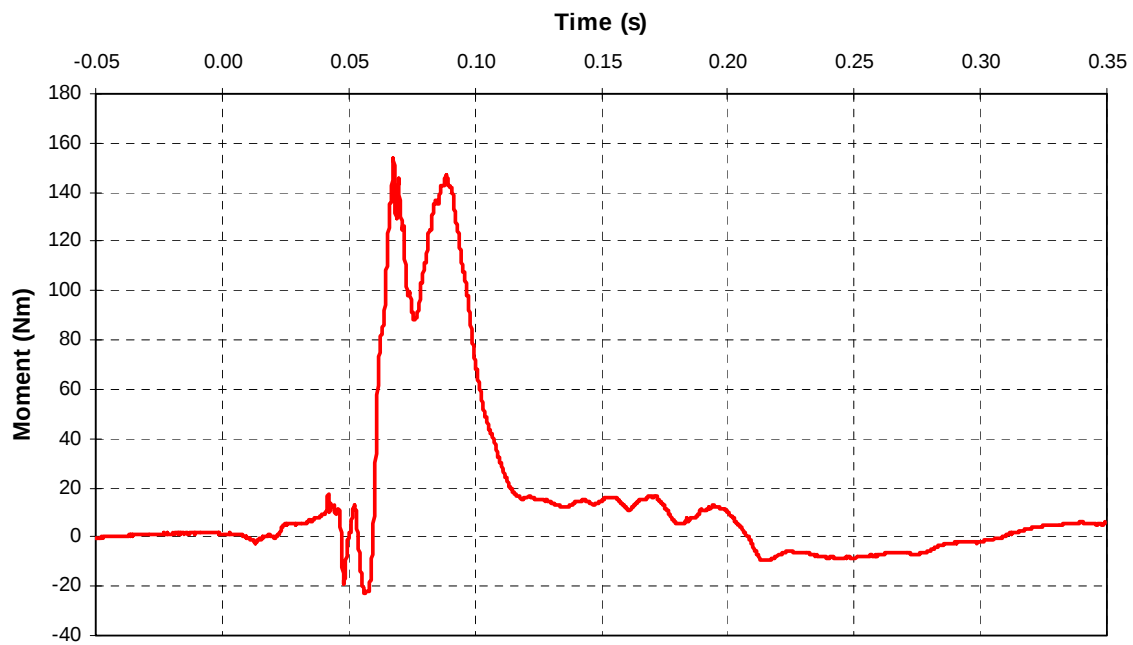
A- 38 CEF0222 2002 Mini Cooper Right Tibia-Femur Displacement



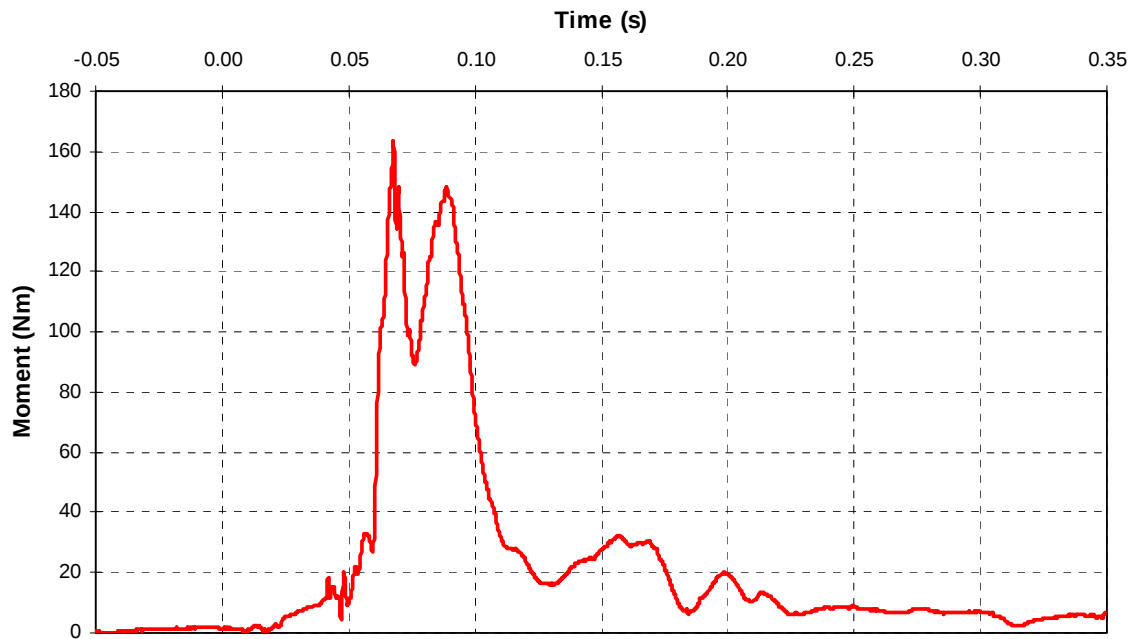
A- 39 CEF0222 2002 Mini Cooper Right Upper Tibia L-M Moment



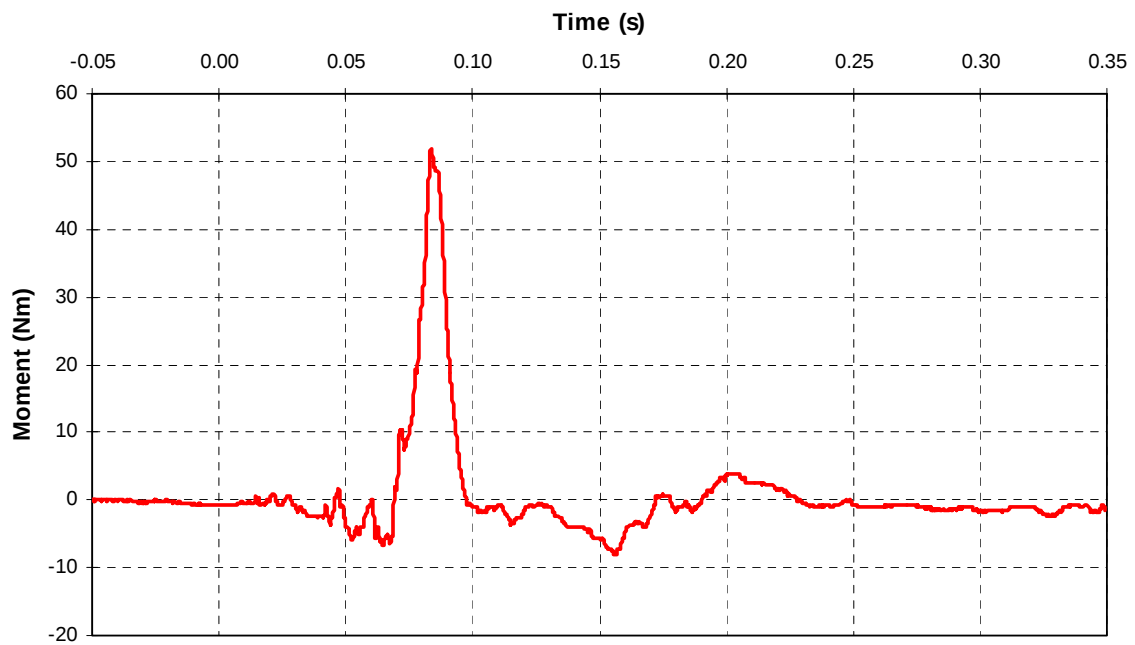
A- 40 CEF0222 2002 Mini Cooper Right Upper Tibia A-P Moment



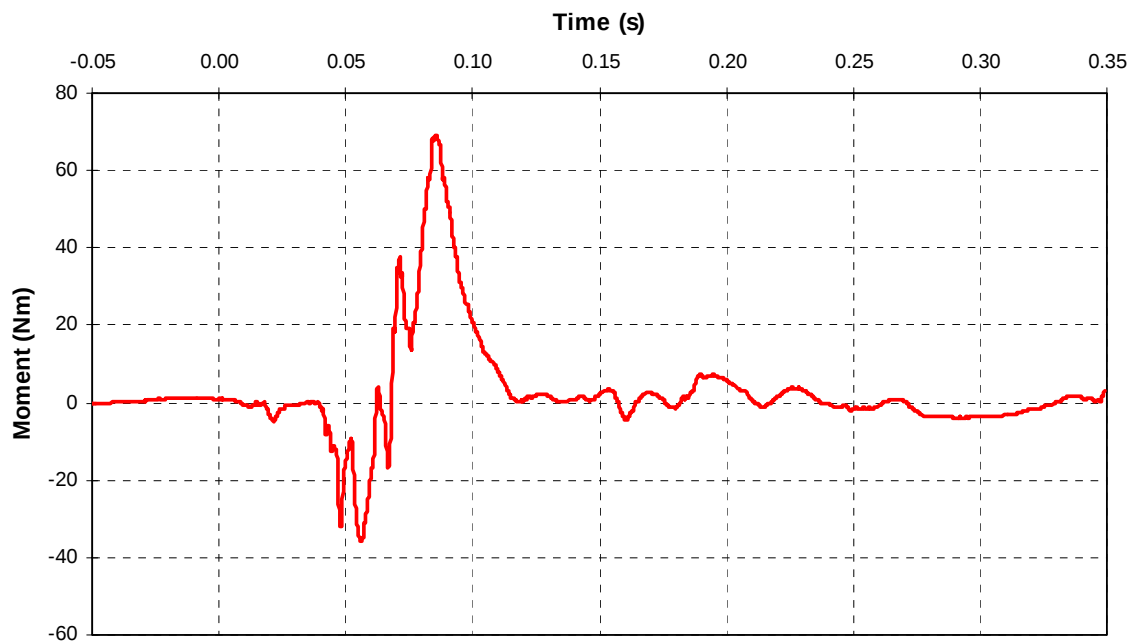
A- 41 CEF0222 2002 Mini Cooper Right Upper Tibia Vector Resultant Moment



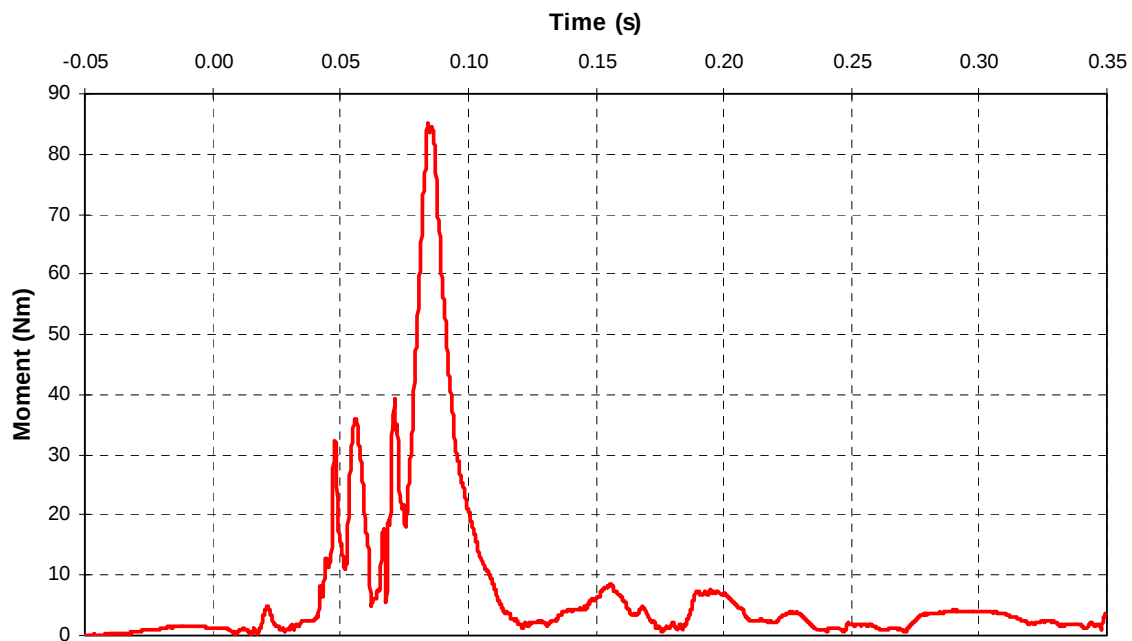
A- 42 CEF0222 2002 Mini Cooper Right Lower Tibia L-M Moment



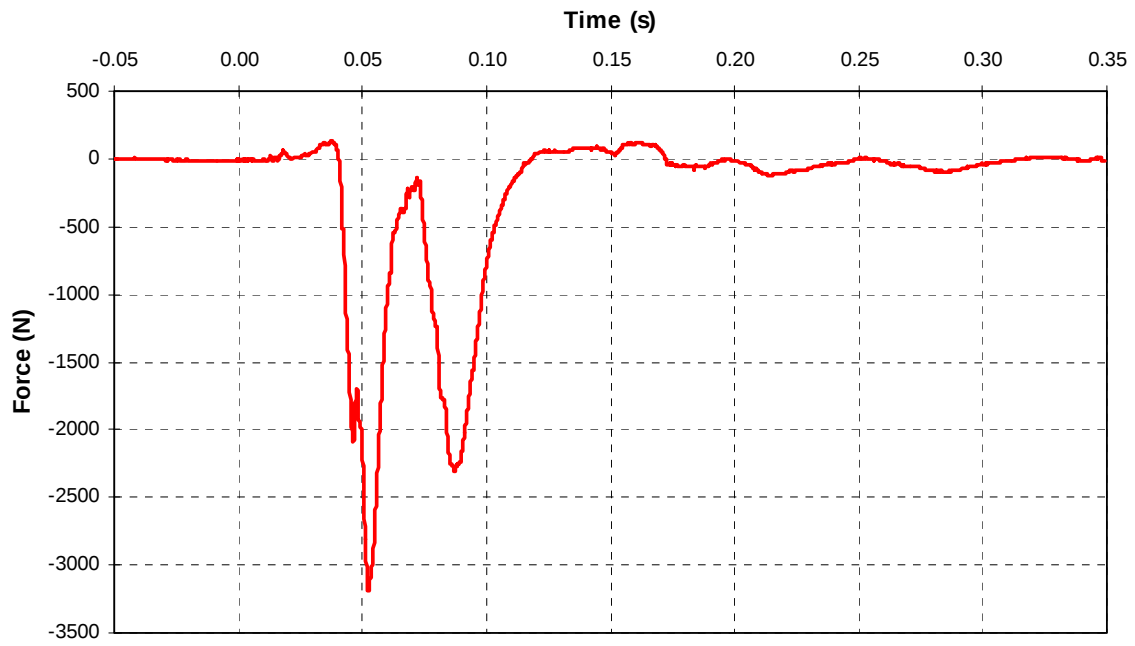
A- 43 CEF0222 2002 Mini Cooper Right Lower Tibia A-P Moment



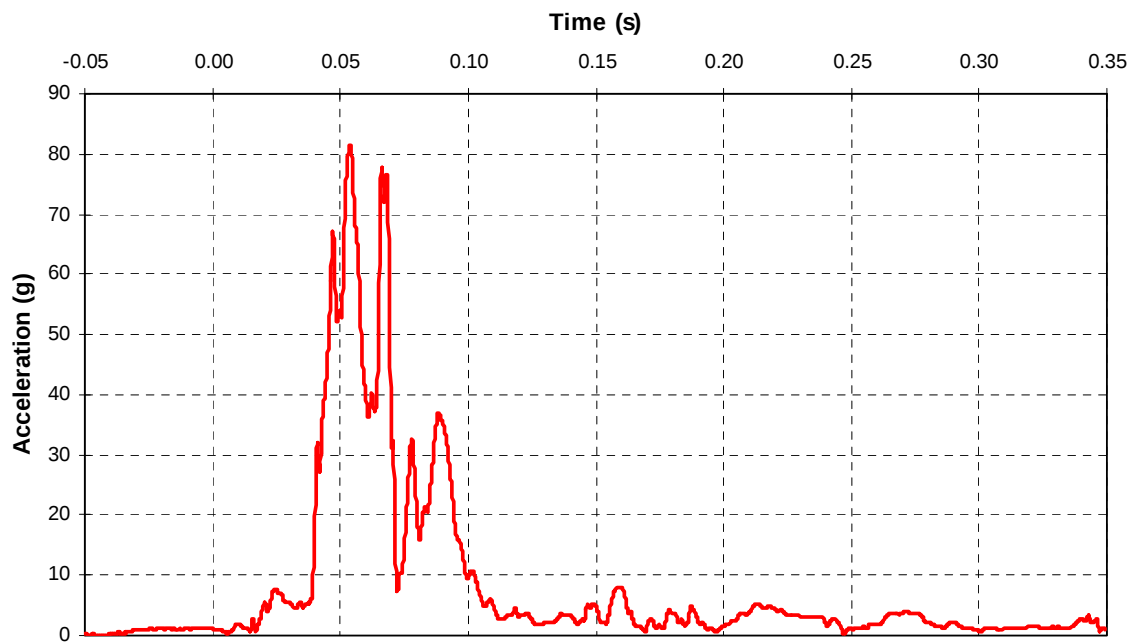
A- 44 CEF0222 2002 Mini Cooper Right Lower Tibia Vector Resultant Moment



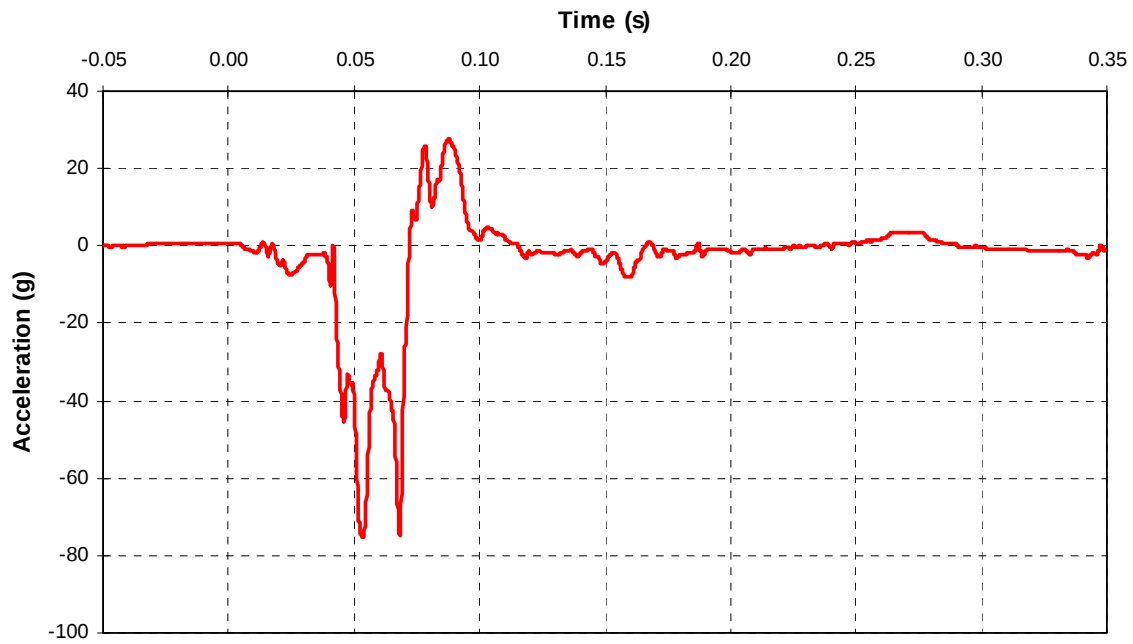
A- 45 CEF0222 2002 Mini Cooper Right Lower Tibia Axial Force



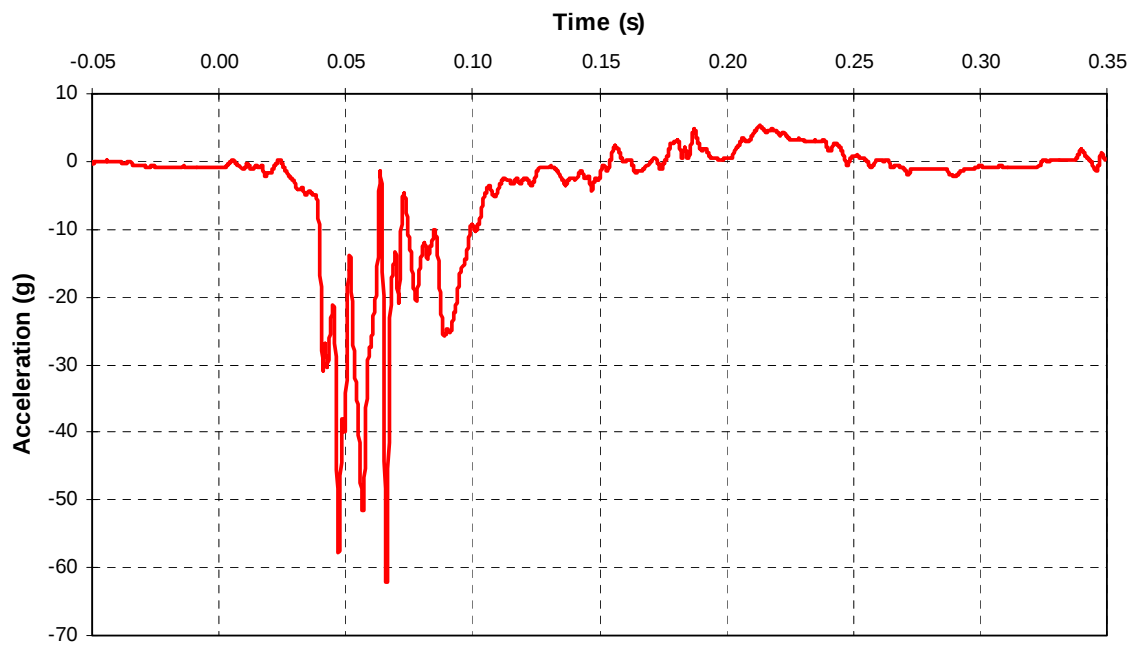
A- 46 CEF0222 2002 Mini Cooper Right Foot Vector Resultant Acceleration



A- 47 CEF0222 2002 Mini Cooper Right Foot A-P Acceleration



A- 48 CEF0222 2002 Mini Cooper Right Foot I-S Acceleration



LET'S MOTOR®

2002 MINI Cooper



Manufacturer's Suggested Retail Price	\$ 16,300.00
Options and Additional Charges: (Optional equipment may supercede standard equipment; check with your authorized Dealer).	
Chili Red	Included
Black Leatherette w/Black Interior	Included
Dynamic Stability Control (DSC)	\$ 500.00
Leather Steering Wheel	Included
Multifunction Steering Wheel w/Cruise & Audio Controls	\$ 350.00
Chrome Line Exterior	\$ 120.00
Roof & Mirror Caps In White	Included
Front fog lamps	\$ 140.00
Destination Charge	\$ 550.00
Total Suggested Retail Price	\$ 17,960.00

Standard Features

Engineering and Safety Features

- 1.6-liter overhead cam (OHC), 16-valve inline 4-cylinder engine (115 hp)
- 5-speed manual transmission
- MacPherson strut front suspension w/Multi-link rear suspension
- Electro-hydraulic, engine-speed-sensitive, power steering
- 4-wheel anti-lock disc brakes (front vented/rear solid)
- Sport Suspension w/front and rear anti-roll (stabilizer) bar
- 15" alloy wheels, 175/65R-15 all-season tires
- Space saver spare
- Driver and front passenger airbags - Supplemental Restraint System (SRS) with "smart" dual-threshold, dual-stage deployment
- Driver/front passenger seat-mounted, side-impact airbags
- Advanced Head Protection System (AHPS II)
- Height-adjustable front safety belts
- Contrasting roof and mirror caps (black or white)
- 6-way adjustable seats (manual) w/driver and passenger height adjustment
- Center-mounted speedometer
- Steering column-mounted tachometer
- Anti-lock Braking System (ABS)
- Corner Brake Control (CBC)
- Electronic Brakeforce Distribution (EBD)
- Flat Tire Monitor
- Side-impact door beams w/interlocking anchoring system
- Engine Immobilizer with Coded Driveway Protection

Comfort and Convenience Features

- Air Conditioning with microfilter and air-recirculation
- Remote entry, including 2-step unlocking and remote trunk release
- Anti-theft CD audio system with AM/FM radio, 6 speakers, presets and pre-wired for 6-disc CD changer
- Speed-sensitive intermittent windshield wipers
- Power Windows with "one-touch" down operation
- Service Interval Indicator with miles-to-service readout
- Check control vehicle monitor system with pictogram display
- Split fold down rear seats for expandable cargo space
- Power exterior mirror control
- Xenon interior lighting
- Climate controlled glovebox

The MINI Advantage

- 3 year/36,000 mile Full Maintenance Program
- 4 year/50,000 mile limited warranty
- Six year limited rust perforation warranty
- MINI Roadside Assistance Program - 4 years/50,000 miles

MINI Delivery Quality Assurance

This MINI vehicle has been designed, engineered and manufactured under strict quality control guidelines. It has been prepared and inspected to ensure that it is free of defects in workmanship and materials in accordance with the MINI New Passenger Car Limited Warranty issued by the MINI Division of BMW of North America, LLC

PARTS CONTENT INFORMATION

For Vehicles in this Car Line:

U.S./Canadian Parts Content: **5%**

Major Source of Foreign Parts Content: **GREAT BRITAIN: 55%**

GERMANY: 15%

Note: Parts content does not include final assembly, distribution, or other non-parts costs.

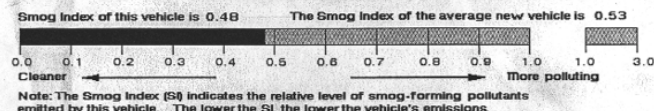
For This Vehicle:

Final Assembly Point: **OXFORD, GR. BRITAIN**

Country of Origin:

Engine: **BRAZIL**

Transmission: **GREAT BRITAIN**



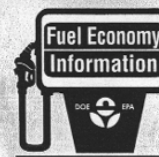
Compare this vehicle to others in the FREE FUEL ECONOMY GUIDE available at the MINI dealer.

CITY MPG

28

Actual Mileage will vary with options, driving conditions, driving habits and vehicle's condition. Results reported to EPA indicate that the majority of vehicles with these estimates will achieve between

23 and **33** mpg in the city and between **31** and **43** mpg on the highway



2002 MINI Cooper

0210
1.6-liter overhead cam, 16-valve inline 4-cyl. engine, 5-Speed Manual Transmission, Feedback Fuel System, Fuel Injection, Three Way Catalyst

Estimated Annual Fuel Cost:
\$ 772.00

HIGHWAY MPG

37

For Comparison Shopping, all vehicle's classified as: **Four Seater** have been issued mileage ratings ranging from

15 and **28** mpg city and **22** and **37** mpg highway

See the EPA/DOE web site at www.fueleconomy.gov

VIN: **WMWRC33422TC34141**

Port of Entry: **JERSEY CITY, NEW JERSEY**
VPC Location: **PORT JERSEY, NJ**

20020910

Sold To:

Checkered Flag MINI
5225 Virginia Beach Blvd
Virginia Beach

(757) 490-1111 23462

Carrier: **BAVARIAN MOTOR TRANSPORT**

Ship To:

Checkered Flag MINI
2865 Virginia Beach Blvd
Virginia Beach

(757) 490-1111 23452

VA

This vehicle is equipped with a front bumper that has been tested at an impact speed of 2.5 miles per hour and a rear bumper that has been tested at an impact speed of 2.5 miles per hour, and has sustained no damage to the vehicle's body and minimal damage to the bumper and attachment hardware. Minimal damage to the bumper means damage that can be repaired with the use of common repair materials and without replacing any parts. The stronger the bumper, the less likely the car will require repair after a low-speed collision.

MINI Division of
BMW of North America, LLC
Woodcliff Lake, NJ 07677