REPORT NO. 207-KAR-09-003

COMPLIANCE TESTING FOR FMVSS 207

SEATING SYSTEMS

2009 NISSAN ROGUE S
5-DOOR MPV

NHTSA NO.C95205

PREPARED BY:
KARCO ENGINEERING, LLC
9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301

August 10, 2009

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NVS-221
1200 NEW JERSEY AVE SE, ROOM W43-498
WASHINGTON, D.C. 20590

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract DTNH22-01-C-31025.

Prepared by: _____ Date: August 10, 2009
Mr. Mark Kratzke, Project Engineer
KARCO Engineering, LLC

Reviewed by: _____ Date: August 10, 2009
Mr. Mike Dunlap, Project Manager
KARCO Engineering, LLC

Approved by: _____ Date: August 10, 2009
Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC

FINAL REPORT ACCEPTED BY:

Accepted By: Edward E. Chan

Digitally signed by Edward E. Chan
DN: cn=Edward E. Chan, email=ed.chan@nhtsa.dot.gov, o=National Highway Traffic Safety Administration, ou=Office of Vehicle Safety Compliance, c=US
Date: 2009.09.25 13:42:02 -04'00'

Acceptance Date: 10/28/09

Technical Report Documentation Page

1. *Report No.* 207-KAR-09-003	2. *Government Accession No.*	3. *Recipient's Catalog No.*	
4. *Title and Subtitle* Final Report of FMVSS 207 Compliance Testing of a 2009 Nissan Rogue S 5-Door MPV NHTSA NO. C95205		5. *Report Date* August 10, 2009	
		6. *Performing Organization Code* KAR	
7. *Author(s)* Mr. Mike Dunlap, Director of Operations, KARCO Mr. Mark Kratzke, Project Engineer, KARCO		8. *Performing Organization Report No.* 207-KAR-09-003	
9. *Performing Organization Name and Address* KARCO Engineering, LLC 9270 Holly Road Adelanto, California 92301		10. *Work Unit No.*	
		11. *Contract or Grant No.* DTNH22-01-C-31025	
12. *Sponsoring Agency Name and Address* U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance Mail Code: NVS-221 1200 New Jersey Ave SE, Room W43-410 Washington, D.C. 20590		13. *Type of Report and Period* August 7 thru August 10, 2009	
		14. *Sponsoring Agency Code* NVS-221	
15. *Supplementary Notes*			
16. *Abstract* Compliance tests were conducted on the subject 2009 Nissan Rogue S 5-Door MPV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-207-09 for the determination of FMVSS 207 Compliance. Test failures identified were as follows: None.			
17. *Key Words* Compliance Testing Safety Engineering FMVSS 207		18. *Distribution Statement* Copies of this report are available from: National Highway Traffic Safety Admin. Technical Information Services (TIS) Mail Code: NVS-221 1200 New Jersey Ave SE, Room W43-410 Washington, D.C. 20590	
19. *Security Classification (of this report)* UNCLASSIFIED	20. *Security Classification (of this page)* UNCLASSIFIED	21. *No. of Pages* 97	22. *Price*

Form DOT F1700.7 (8-72)

TABLE OF CONTENTS

LIST OF DATA SHEETS

LIST OF PHOTOGRAPHS

LIST OF PHOTOGRAPHS (Continued)

LIST OF PHOTOGRAPHS (Continued)

LIST OF PHOTOGRAPHS (Continued)

LIST OF DATA PLOTS

SECTION 1

PURPOSE OF COMPLIANCE TEST

SECTION 2

COMPLIANCE TEST PROCEDURE and DATA SUMMARY

1. PURPOSE OF COMPLIANCE TEST

Tests were conducted on a 2009 Nissan Rogue S 5-Door MPV, manufactured by Nissan Motor Corp. to determine FMVSS 207, “Seating Systems” Compliance data. The purpose of this standard is to reduce the number of deaths and injuries that may be caused by the failure of seats, their attachment hardware, and their installation when said failure results from the forces on the seat in a vehicle impact.

All tests were conducted based on the current National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC) Laboratory Procedures, TP-207-09, dated June 18, 1992, and corresponding KARCO Engineering, LLC test procedure KTP-207, dated August 2, 2002. Detailed procedures for receiving, inspecting, testing and reporting of test results are described in the test procedures and are not repeated in this report.

This report is organized in sections containing pertinent test information and data tables as follows:

Section 2	-	Compliance Test Procedure and Data Summary
Section 3	-	Compliance Test Data
Section 4	-	Non Compliance Data (if applicable)
Appendix A	-	Photographs
Appendix B	-	Data Plots
Appendix C	-	Test Equipment List and Calibration Information

2. COMPLIANCE TEST PROCEDURE AND DATA SUMMARY

A 2009 Nissan Rogue S 5-Door MPV was subjected to FMVSS 207 Compliance testing on August 7 thru August 10, 2009. All tests were conducted at KARCO Engineering, LLC in Adelanto, California. Summary data is shown on Data Sheet No. 2. The following tests were performed:

- Receiving inspection
- Aft moment tests on front seat backs
- Aft load tests on front seat frames and adjusters
- Forward load tests on front seat frames and adjusters
- Forward load tests on front seat frames and adjusters, including FMVSS 210 Loads
- Aft moment tests on rear seat back
- Forward load tests on rear seat back and seat cushion
- Aft load tests on rear seat back and seat cushion

The tests were conducted per the FMVSS 207 test procedure. The significant aspects of the test procedure are described in the following paragraphs.

2.1 Test Vehicle Inspection. The test vehicle was inspected to verify that all seat, restraint systems and seat belt assembly anchorage systems are complete and the seat adjusting mechanisms are working properly.

2.2 Test Vehicle Preparation and Pre-test Measurements. The test vehicle was securely mounted to the test fixture and connected to the appropriate number of hydraulic actuators. Lateral spacing of the individual seat anchorages were measured and all other angular and dimensional measurements were verified to be in Compliance with the requirements of the subject safety standards. The components were weighed and their centers of gravity determined.

2.3 Static Load Tests-General Performance Requirements.

When tested in accordance with S5, each occupant seat, other than a side-facing seat or a passenger seat on a bus, shall withstand the following forces:

(a) In any position to which it can be adjusted — 20 times the weight of the seat applied in a forward longitudinal direction;

2. (Continued)

(b) In any position to which it can be adjusted — 20 times the weight of the seat applied in a rearward longitudinal direction;

(c) For a seat belt assembly attached to the seat — the force specified in subparagraph (a), if it is a forward facing seat, or subparagraph (b), if it is a rearward facing seat, in each case applied simultaneously with the forces imposed on the seat by the seat belt assembly when it is loaded in accordance with section S4.2 of Federal Motor Vehicle Safety Standard No. 210; and

(d) In its rearmost position — a force that produces a 3,300 inch-pound moment about the seating reference point (SRP) for each designated seating position (DSP) that the seat provides, applied to the upper cross-member of the seat back or the upper seat back, in a rearward longitudinal direction for forward-facing seats and in a forward longitudinal direction for rearward-facing seats.

(e) To meet FMVSS 210 requirements, the anchorages, attachment hardware, and attachment bolts for all Type 2 and automatic seat belt assemblies that are installed to comply with Standard No. 208 (49 CFR 571.208) shall withstand 3,000 pound forces when tested in accordance with S5.2.

SECTION 3

COMPLIANCE TEST DATA

3. COMPLIANCE TEST DATA

The results of FMVSS 207 Compliance tests that were conducted on the 2009 Nissan Rogue S 5-Door MPV on August 7 thru August 10, 2009, to determine Compliance with FMVSS 207, “Seating Systems” are presented in this section. No performance failures were identified with the vehicle tested.

DATA SHEET NO. 1

TEST VEHICLE RECEIVING INSPECTION

VEHICLE			
YEAR	**2009**	MAKE	**Nissan**
MODEL	**Rogue S**	BODY STYLE	**5-Door MPV**
NHTSA NO.	**C95205**	VIN	**JN8AS58T59W320598**
BUILD DATE	**7/08**	TEST DATE	**8/7/09 to 8/10/09**
TEST LABORATORY		**KARCO Engineering, LLC.**	

1. First Compliance test by laboratory for this vehicle is S207 test.

   ____ Yes **X** No (Go to item 2)

   ***** 1.1 Label test vehicle with NHTSA Number

   ***** 1.2 Verify all options on the "window sticker" are present on the vehicle

   ***** 1.3 Verify tires and wheel rims are new and the same as listed

   ***** 1.4 Verify there are no dents or other interior or exterior flaws

   ***** 1.5 Verify the glove box contains an owner's manual, warranty document, consumer information, and extra keys

   ***** 1.6 Verify the vehicle is equipped with the proper fuel filler cap

   ***** 1.7 If the vehicle has been delivered from the dealer, verify the vehicle has been properly prepared and is in running condition

2. Verify seat adjusters are working

   X Yes ____ No

3. Verify there is a seat belt at each seating position

   X Yes ____ No

4. Without disturbing the integrity of each seat belt and anchorage, verify that each seat belt is attached to the anchorage. For seat belts that are attached to the seat, also verify the seats are attached to the seat anchors and the seat anchors are attached to the vehicle.

   X Yes ____ No

RESULTS OR RECEIVING INSPECTION:

PASS - - **X**

FAIL - - ____

CONDITIONAL - - ____

REMARKS:

* Vehicle had previously been tested to FMVSS 111.

RECORDED BY: **Mark Kratzke** DATE: **8/10/09**

APPROVED BY: **Mike Dunlap** DATE: **8/10/09**

DATA SHEET NO. 2

SEATING SYSTEM TEST RESULTS

VEHICLE			
YEAR	**2009**	MAKE	**Nissan**
MODEL	**Rogue S**	BODY STYLE	**5-Door MPV**
NHTSA NO.	**C95205**	VIN	**JN8AS58T59W320598**
BUILD DATE	**7/08**	TEST DATE	**8/7/09 to 8/10/09**
TEST LABORATORY		**KARCO Engineering, LLC.**	

LEGEND: Wa - Weight of Seat Assembly

Wb - Weight of Seat Back

Wc - Weight of Seat Cushion

Z - Distance from Seat SRP to Uppermost Crossmember = 16.0 "

FOR FRONT BUCKET SEATS - - LEFT SIDE

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	PEAK MOMENT (in-lbs)	ATTACHMENT (PASS/FAIL)
Seat Back	Forward	Wb=**N/A**	20 x Wb = **N/A**	**N/A**	**N/A**	**N/A**
Seat Assy.	Forward	Wa = 50	20 x Wa = 1000	**1011.9**	**N/A**	**PASS**
	Rearward	Wa = 50	20 x Wa = 1000	**1009.2**	**N/A**	**PASS**
Seat Back Moment	Rearward	**N/A**	3275 in-lb/Z	**210.2**	**3362.2**	**PASS**

FOR FRONT BUCKET SEATS - - RIGHT SIDE

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	PEAK MOMENT (in-lbs)	ATTACHMENT (PASS/FAIL)
Seat Back	Forward	Wb=**N/A**	20 x Wb = **N/A**	**N/A**	**N/A**	**N/A**
Seat Assy.	Forward	Wa = 50	20 x Wa = 1000	**1008.2**	**N/A**	**PASS**
	Rearward	Wa = 50	20 x Wa = 1000	**1010.1**	**N/A**	**PASS**
Seat Back Moment	Rearward	**N/A**	3275 in-lb/Z	**209.5**	**3352**	**PASS**

DATA SHEET NO. 2 (Continued)

FOR FRONT BUCKET SEATS - - COMBINED

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	ATTACHMENT (PASS/FAIL)
Driver Lap Belt	Forward	**N/A**	3,000 lbs, +0, -50	**3022.1**	**PASS**
Driver Shoulder Belt	Forward	**N/A**	3,000 lbs, +0, -50	**3021.4**	**PASS**
Passenger Lap Belt	Forward	**N/A**	3,000 lbs, +0, -50	**3031.4**	**PASS**
Passenger Shoulder Belt	Forward	**N/A**	3,000 lbs, +0, -50	**3025.4**	**PASS**
Driver Seat Assembly	Forward	Wa = 50	20 x Wa = 1000	**1005.2**	**PASS**
Passenger Seat Assembly	Forward	Wa = 50	20 x Wa = 1000	**1010.5**	**PASS**

LEGEND: Wa - Weight of Seat Assembly

Wb - Weight of Seat Back

Wc - Weight of Seat Cushion

Z - Distance from Seat SRP to Uppermost Crossmember = 16.0 "

FOR REAR BENCH SEAT:-

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	PEAK MOMENT (in-lbs)	ATTACHMENT (PASS/FAIL)
Seat Back Left	Forward	Wb = 20	20 x Wb = 400	**402.1**	**N/A**	**PASS**
Seat Back Right	Forward	Wb = 10	20 x Wa = 200	**205.5**	**N/A**	**PASS**
Seat Cushion	Forward	Wa = 11	20 x Wa = 220	**219.2**	**N/A**	**PASS**
Seat Back Left	Rearward	Wa = 20	20 x Wa = 400	**404.7**	**N/A**	**PASS**
Seat Back Right	Rearward	Wa = 10	20 x Wa = 200	**207.7**	**N/A**	**PASS**
Seat Cushion	Rearward	Wa = 11	20 x Wa = 220	**219.2**	**N/A**	**PASS**
Seat Back Moment Left	Rearward	**N/A**	3275 in-lb/Z	**205.6**	**3289.6**	**PASS**
Seat Back Moment Right	Rearward	**N/A**	3275 in-lb/Z	**207.1**	**3313.6**	**PASS**

COMMENTS: - None

DATA SHEET NO. 3

SEAT BACK ANGLES

VEHICLE			
YEAR	**2009**	MAKE	**Nissan**
MODEL	**Rogue S**	BODY STYLE	**5-Door MPV**
NHTSA NO.	**C95205**	VIN	**JN8AS58T59W320598**
BUILD DATE	**7/08**	TEST DATE	**8/7/09 to 8/10/09**
TEST LABORATORY		**KARCO Engineering, LLC.**	

LAP BELT ANCHORAGES:

SEAT	SEATING POSITION	SPECIFIED ANGLE RANGE ABOVE HORIZONTAL	MEASURED ANGLE		DOES BELT SECURELY FIT ON PELVIS?
			I/B	**O/B**	
FRONT	Left	30 to 75 degrees	**45**	**48**	**YES**
	Center	30 to 75 degrees	**N/A**	**N/A**	**N/A**
	Right	30 to 75 degrees	**52**	**50**	**YES**
REAR	Left	30 to 75 degrees	**N/A**	**N/A**	**N/A**
	Center	30 to 75 degrees	**N/A**	**N/A**	**N/A**
	Right	30 to 75 degrees	**N/A**	**N/A**	**N/A**

SHOULDER BELT ANCHORAGES:

SEAT	SEATING POSITION	SPECIFIED ANGLE RANGE ABOVE OR BELOW HORIZONTAL	MEASURED ANGLE
FRONT	Left	0 – 80 degrees above	**56.0º**
		0 – 40 degrees below	
	Right	0 – 80 degrees above	**58.0º**
		0 – 40 degrees below	
REAR	Left	0 – 80 degrees above	**N/A**
		0 – 40 degrees below	**N/A**
	Center	0 – 80 degrees above	**N/A**
		0 – 40 degrees below	**N/A**
	Right	0 – 80 degrees above	**N/A**
		0 – 40 degrees below	**N/A**

RECORDED BY: **Mark Kratzke** DATE: **8/10/09**

APPROVED BY: **Mike Dunlap** DATE: **8/10/09**

DATA SHEET NO. 4

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

The following vehicle has been subjected to Compliance testing for FMVSS No. **207**

VEHICLE			
NHTSA NO.	**C95205**	TEST DATE	**8/7/09 to 8/10/09**
CONTRACT NO.	**DTNH22-01-C-31025**	VIN	**JN8AS58T59W320598**
SEAT CONFIGURATION			
VEHICLE OR SEAT MANUFACTURER		**Nissan Motor Corp.**	
TEST LABORATORY		**KARCO Engineering, LLC.**	

The vehicle was inspected upon arrival at the laboratory for the test and found to contain all of the equipment listed below. All variances have been reported within 2 working days of vehicle arrival, by letter, to the NHTSA Industrial Property Manager (NAD-30), with a copy to the OVSC COTR. The vehicle is again inspected, after the above test has been conducted, and all changes are noted below. The final condition of the vehicle is also noted in detail.

TEST VEHICLE INFORMATION			
Manufacturer	**Nissan Motor Corp.**	VIN	**JN8AS58T59W320598**
Manufacturing Date	**7/08**	Delivery Date	**8/2/09**
Dealer	**U/N**	NHTSA No.	**C95205**
Odometer Reading (mi.)	**229**	Fuel Type	**GAS**
Engine Displacement	**3.7 LITER**	Cylinders	**V-6**
Transmission	**4-Speed Automatic**	Final Drive	**4wd**
Engine Placement	**Transverse**	Color	**Black**
Tire Press./Max. Cap. Front	**44 PSI**	Cold Tire Press. Front	**33 PSI**
Tire Press./Max. Cap. Rear	**44 PSI**	Cold Tire Press. Rear	**33 PSI**
Recommend Tire Size	**P215/70R16**	Type of Spare	**T155/90/D16**
Tire Size on Vehicle	**P215/70R16**	Manufacturer	**Continental**
GVWR	**1920 Kg.**	Cargo Capacity	**408**
GAWR Front	**1016 Kg.**	GAWR Rear	**911 Kg.**
Air Conditioning	**YES**	Power Steering	**YES**
Power Brakes	**YES**	AM/FM/Cassette	**YES**
Disc Brakes (Front)	**YES**	Disc Brakes (Rear)	**YES**
Power Windows	**YES**	Tilt Steering	**YES**
Anti-lock Brakes (ABS)	**YES**	Power Seats	**NO**
Driver Airbag	**YES**	Passenger Airbag	**YES**

Test Vehicle Condition at the end of testing: **FRONT OF VEHICLE WAS REMOVED, SEATS WERE TESTED.**

RECORDED BY: **Mark Kratzke** DATE: **8/10/09**

APPROVED BY: **Mike Dunlap** DATE: **8/10/09**

APPENDIX A

PHOTOGRAPHS

FIGURE 1. Right Front ¾ View, As Received

FIGURE 2. Left Side, As Received

FIGURE 3. Left Rear ¾ View, As Received

FIGURE 4. Right Side, As Received

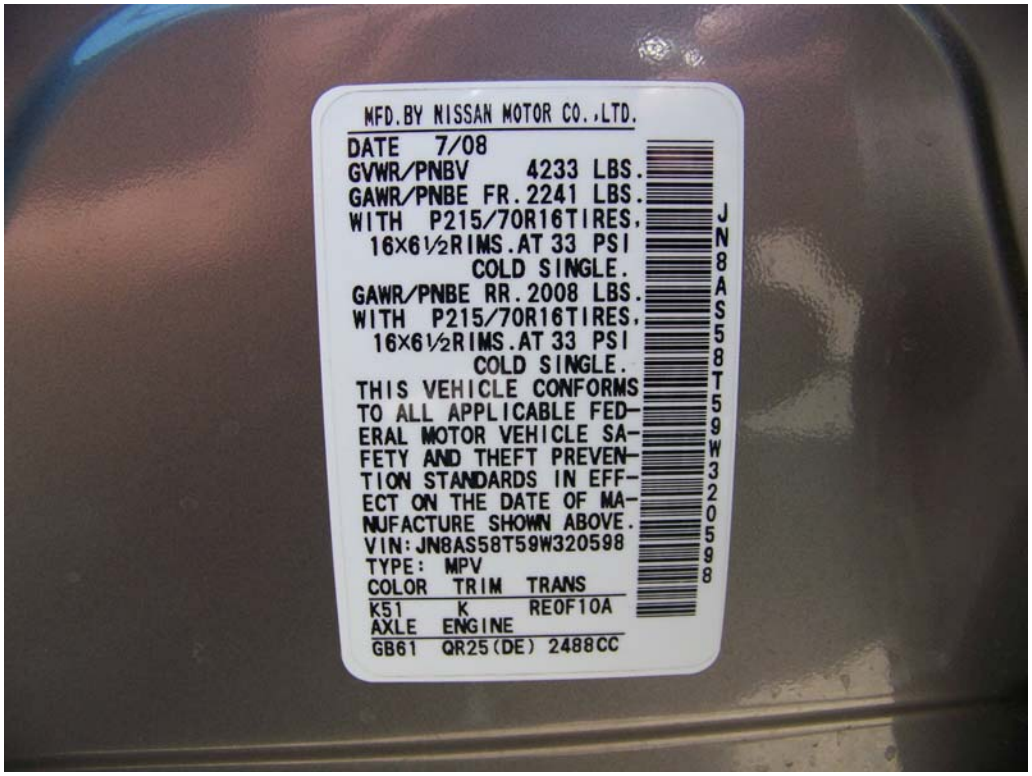


FIGURE 5. Manufacturer's Label

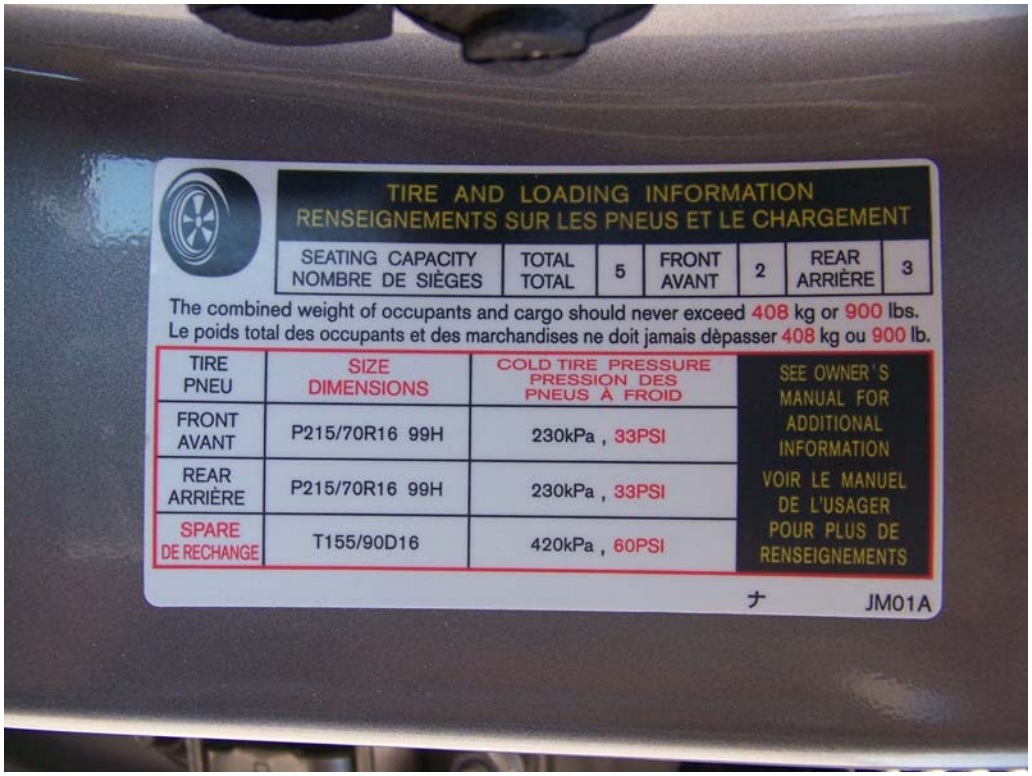


FIGURE 6. Vehicle Tire Placard

FIGURE 7. Vehicle Mounted in Test Fixture

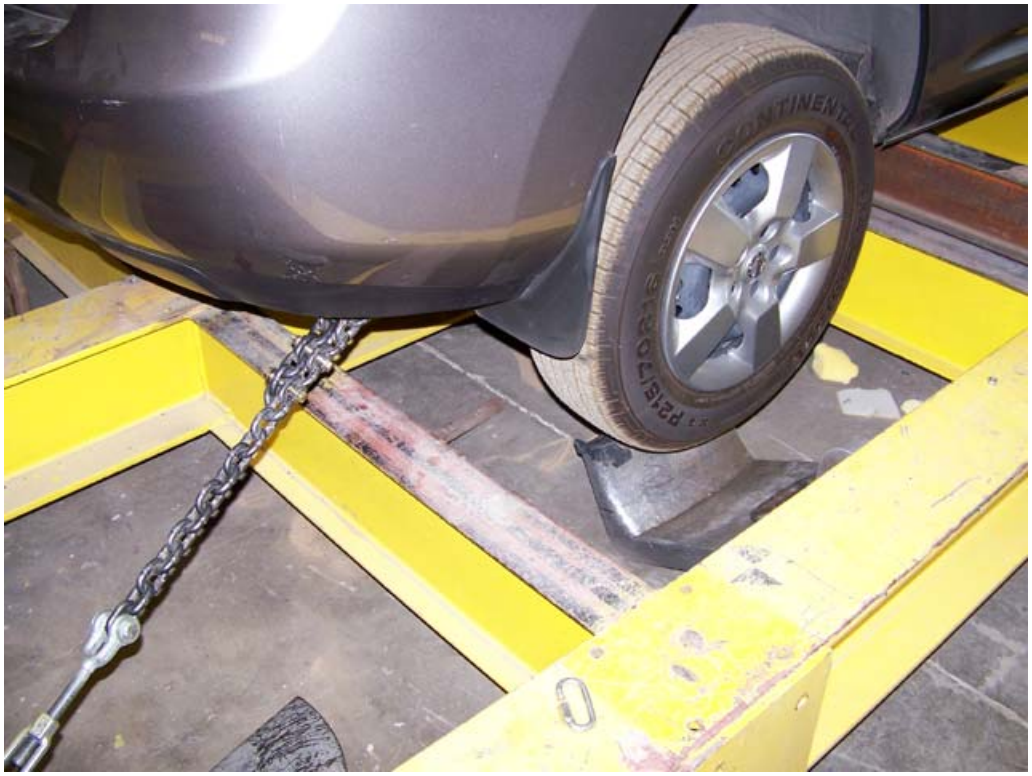


FIGURE 8. Vehicle Mounted in Test Fixture

FIGURE 9. Vehicle Mounted in Test Fixture

FIGURE 10. Vehicle Mounted in Test Fixture

FIGURE 11. Aft Moment on Seat Back, P1, Pre-Test

FIGURE 12. Aft Moment on Seat Back, P1, Post-Test

FIGURE 13. Aft Moment on Seat Back, P2, Pre-Test

FIGURE 14. Aft Moment on Seat Back, P2, Post-Test

FIGURE 15. Forward Load on Seat Frame and Adjusters, P1, Pre-Test

FIGURE 16. Forward Load on Seat Frame and Adjusters, P1, Post-Test

FIGURE 17. Forward Load on Seat Frame and Adjusters, P2, Pre-Test

FIGURE 18. Forward Load on Seat Frame and Adjusters, P2, Post-Test

FIGURE 19. Aft Load on Seat Frame and Adjusters, P1, Pre-Test

FIGURE 20. Aft Load on Seat Frame and Adjusters, P1, Post-Test

FIGURE 21. Aft Load on Seat Frame and Adjusters, P2, Pre-Test

FIGURE 22. Aft Load on Seat Frame and Adjusters, P2, Post-Test

FIGURE 23. 207/210 Forward Load on Seat Frame and Adjusters, P1, Pre-Test

FIGURE 24. 207/210 Forward Load on Seat Frame and Adjusters, P1, Post-Test

FIGURE 25. 207/210 Forward Load on Seat Frame and Adjusters, P2, Pre-Test

FIGURE 26. 207/210 Forward Load on Seat Frame and Adjusters, P2, Post-Test

FIGURE 27. Aft Moment on Seat Back, P4, Pre-Test

FIGURE 28. Aft Moment on Seat Back, P4, Post-Test

FIGURE 29. Aft Moment on Seat Back, P3, Pre-Test

FIGURE 30. Aft Moment on Seat Back, P3, Post-Test

FIGURE 31. Forward Load on Seat Back on Seat Cushion, P4, Pre-Test

FIGURE 32. Forward Load on Seat Back on Seat Cushion, P4, Post-Test

FIGURE 33. Forward Load on Seat Back on Seat Cushion, P3, Pre-Test

FIGURE 34. Forward Load on Seat Back on Seat Cushion, P3, Post-Test

FIGURE 35. Aft Load on Seat Back and Seat Cushion, P4, Pre-Test

FIGURE 36. Aft Load on Seat Back and Seat Cushion, P4, Post-Test

FIGURE 37. Aft Load on Seat Back and Seat Cushion, P3, Pre-Test

FIGURE 38. Aft Load on Seat Back and Seat Cushion, P3, Post-Test

FIGURE 39. Floor Pan Anchors, P1 Overall, Pre-Test

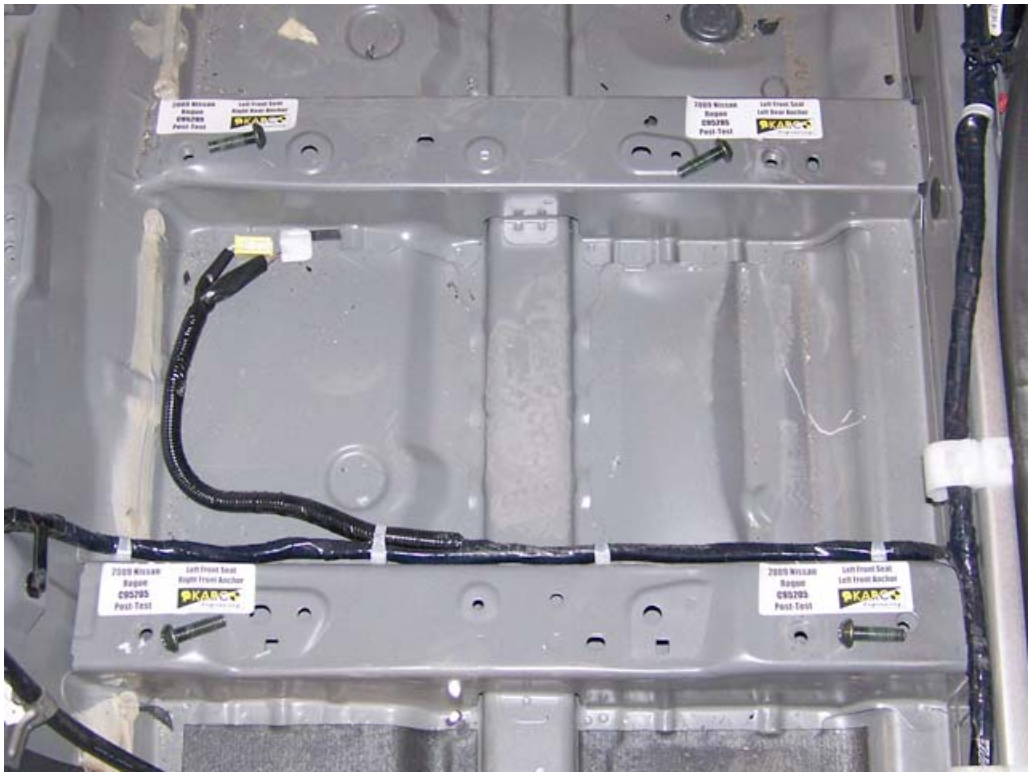


FIGURE 40. Floor Pan Anchors, P1 Overall, Post-Test

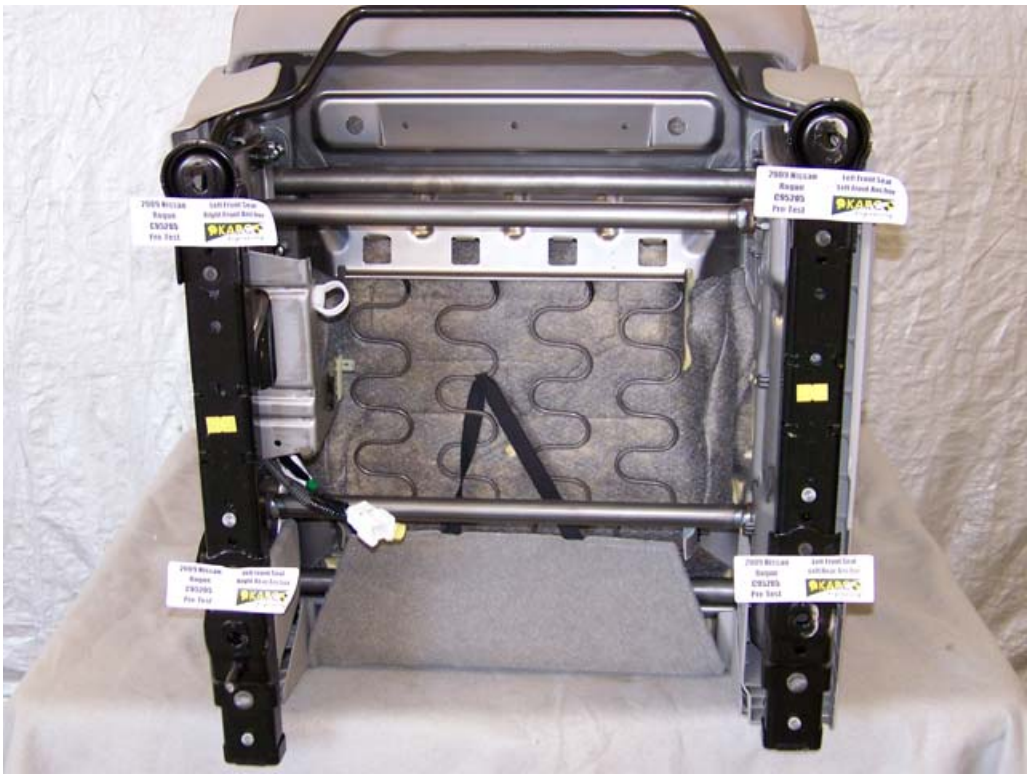


FIGURE 41. Seat Anchors, P1 Overall, Pre-Test

FIGURE 42. Seat Anchors, P1 Overall, Post-Test

FIGURE 43. Floor Pan Anchor, P1, Pre-Test

FIGURE 44. Floor Pan Anchor, P1, Post-Test

FIGURE 45. Seat Anchor, P1, Pre-Test

FIGURE 46. Seat Anchor, P1, Post-Test

FIGURE 47. Floor Pan Anchor, P1, Pre-Test

FIGURE 48. Floor Pan Anchor, P1, Post-Test

FIGURE 49. Seat Anchors, P1, Pre-Test

FIGURE 50. Seat Anchors, P1, Post-Test

FIGURE 51. Floor Pan Anchor, P1, Pre-Test

FIGURE 52. Floor Pan Anchor, P1, Post-Test

FIGURE 53. Seat Anchor, P1, Pre-Test

FIGURE 54. Seat Anchor, P1, Post-Test

FIGURE 55. Floor Pan Anchor, P1, Pre-Test

FIGURE 56. Floor Pan Anchor, P1, Post-Test

FIGURE 57. Seat Anchor, P1, Pre-Test

FIGURE 58. Seat Anchor, P1, Post-Test

FIGURE 59. Shoulder Belt Anchor, P1, Pre-Test

FIGURE 60. Shoulder Belt Anchor, P1, Post-Test

FIGURE 61. Shoulder Belt Anchor, P1, Pre-Test

FIGURE 62. Shoulder Belt Anchor, P1, Post-Test

FIGURE 63. Belt Anchor, P1, Pre-Test

FIGURE 64. Belt Anchor, P1, Post-Test

FIGURE 65. Belt Anchor, P1, Pre-Test

FIGURE 66. Belt Anchor, P1, Post-Test

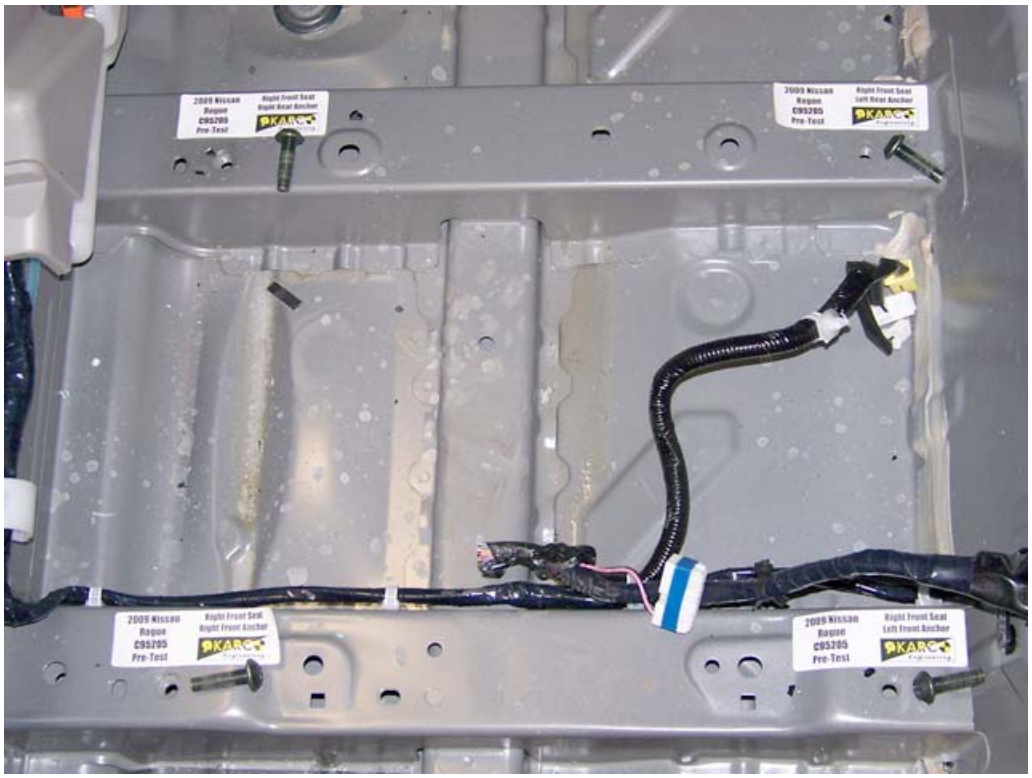


FIGURE 67. Floor Pan Anchors, P2 Overall, Pre-Test

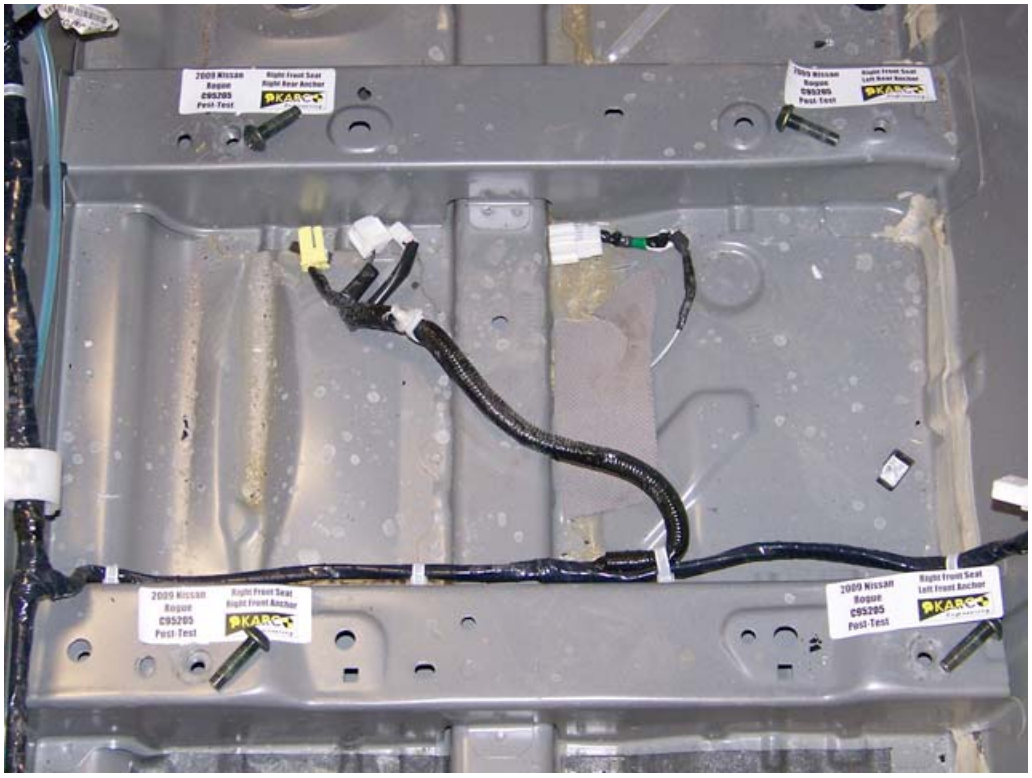


FIGURE 68. Floor Pan Anchors, P2 Overall, Post-Test

FIGURE 69. Seat Anchors, P2 Overall, Pre-Test

FIGURE 70. Seat Anchors, P2 Overall, Post-Test

FIGURE 71. Floor Pan Anchors, P2, Pre-Test

FIGURE 72. Floor Pan Anchors, P2, Post-Test

FIGURE 73. Seat Anchors, P2, Pre-Test

FIGURE 74. Seat Anchors, P2, Post-Test

FIGURE 75. Floor Pan Anchors, P2, Pre-Test

FIGURE 76. Floor Pan Anchors, P2, Post-Test

FIGURE 77. Seat Anchors, P2, Pre-Test

FIGURE 78. Seat Anchors, P2, Post-Test

FIGURE 79. Floor Pan Anchor, P2, Pre-Test

FIGURE 80. Floor Pan Anchor, P2, Post-Test

FIGURE 81. Seat Anchor, P2, Pre-Test

FIGURE 82. Seat Anchor, P2, Post-Test

FIGURE 83. Floor Pan Anchor, P2, Pre-Test

FIGURE 84. Floor Pan Anchor, P2, Post-Test

FIGURE 85. Seat Anchor, P2, Pre-Test

FIGURE 86. Seat Anchor, P2, Post-Test

FIGURE 87. Shoulder Belt Anchor, P2, Pre-Test

FIGURE 88. Shoulder Belt Anchor, P2, Post-Test

FIGURE 89. Shoulder Belt Anchor, P2, Pre-Test

FIGURE 90. Shoulder Belt Anchor, P2, Post-Test

FIGURE 91. Belt Anchor, P2, Pre-Test

FIGURE 92. Belt Anchor, P2, Post-Test

FIGURE 93. Belt Anchor, P2, Pre-Test

FIGURE 94. Belt Anchor, P2, Post-Test

FIGURE 95. Floor Pan Anchors, P3-P4 Overall, Pre-Test

FIGURE 96. Floor Pan Anchors, P3-P4 Overall, Post-Test

FIGURE 97. Seat Back Anchors, P3-P4Overall, Pre-Test

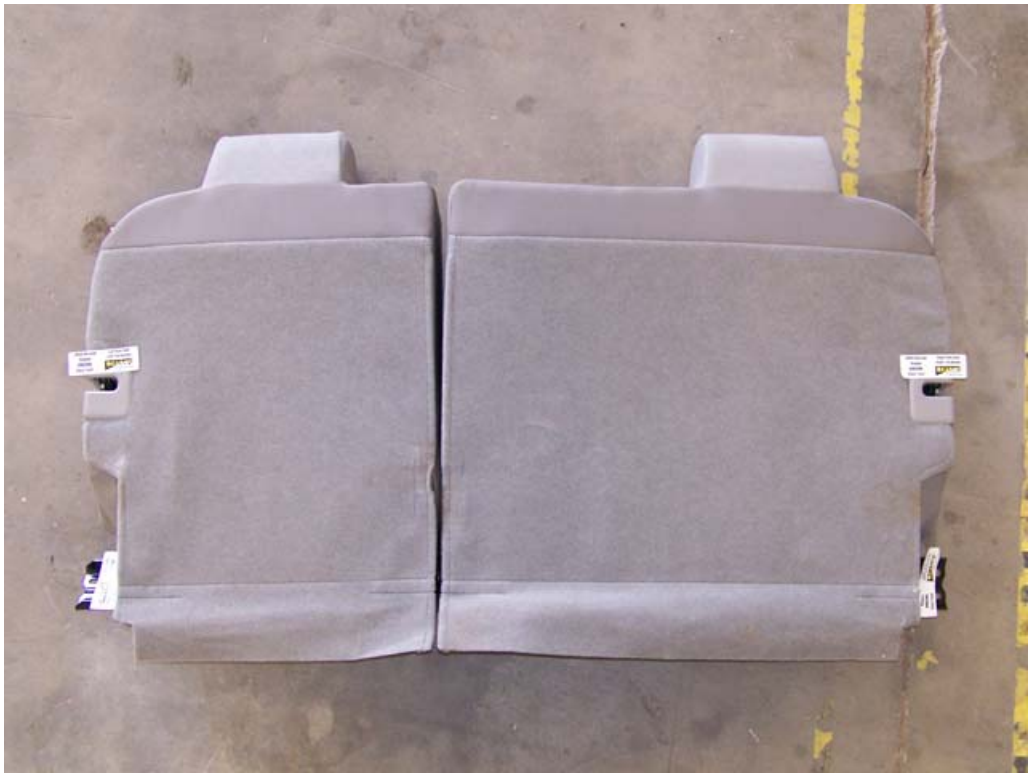


FIGURE 98. Seat Back Anchors, P3-P4 Overall, Post-Test

FIGURE 99. Floor Pan Anchor, P4, Pre-Test

FIGURE 100. Floor Pan Anchor, P4, Post-Test

FIGURE 101. Seat Back Anchor, P4, Pre-Test

FIGURE 102. Seat Back Anchor, P4, Post-Test

FIGURE 103. Floor Pan Anchor, P4, Pre-Test

FIGURE 104. Floor Pan Anchor, P4, Post-Test

FIGURE 105. Seat Back Anchor, P4, Pre-Test

FIGURE 106. Seat Back Anchor, P4, Post-Test

FIGURE 107. Floor Pan Anchor, P3, Pre-Test

FIGURE 108. Floor Pan Anchor, P3, Post-Test

FIGURE 109. Seat Back Anchor, P3, Pre-Test

FIGURE 110. Seat Back Anchor, P3, Post-Test

FIGURE 111. Floor Pan Anchor, P3, Pre-Test

FIGURE 112. Floor Pan Anchor, P3, Post-Test

FIGURE 113. Seat Back Anchor, P3, Pre-Test

FIGURE 114. Seat Back Anchor, P3, Post-Test

FIGURE 115. Seat Cushion Anchors, P3-P4 Overall, Pre-Test

FIGURE 116. Seat Cushion Anchors, P3-P4 Overall, Post-Test

FIGURE 117. Floor Pan Anchor, P4, Pre-Test

FIGURE 118. Floor Pan Anchor, P4, Post-Test

FIGURE 119. Seat Cushion Anchor, P4, Pre-Test

FIGURE 120. Seat Cushion Anchor, P4, Post-Test

FIGURE 121. Floor Pan Anchor, P3, Pre-Test

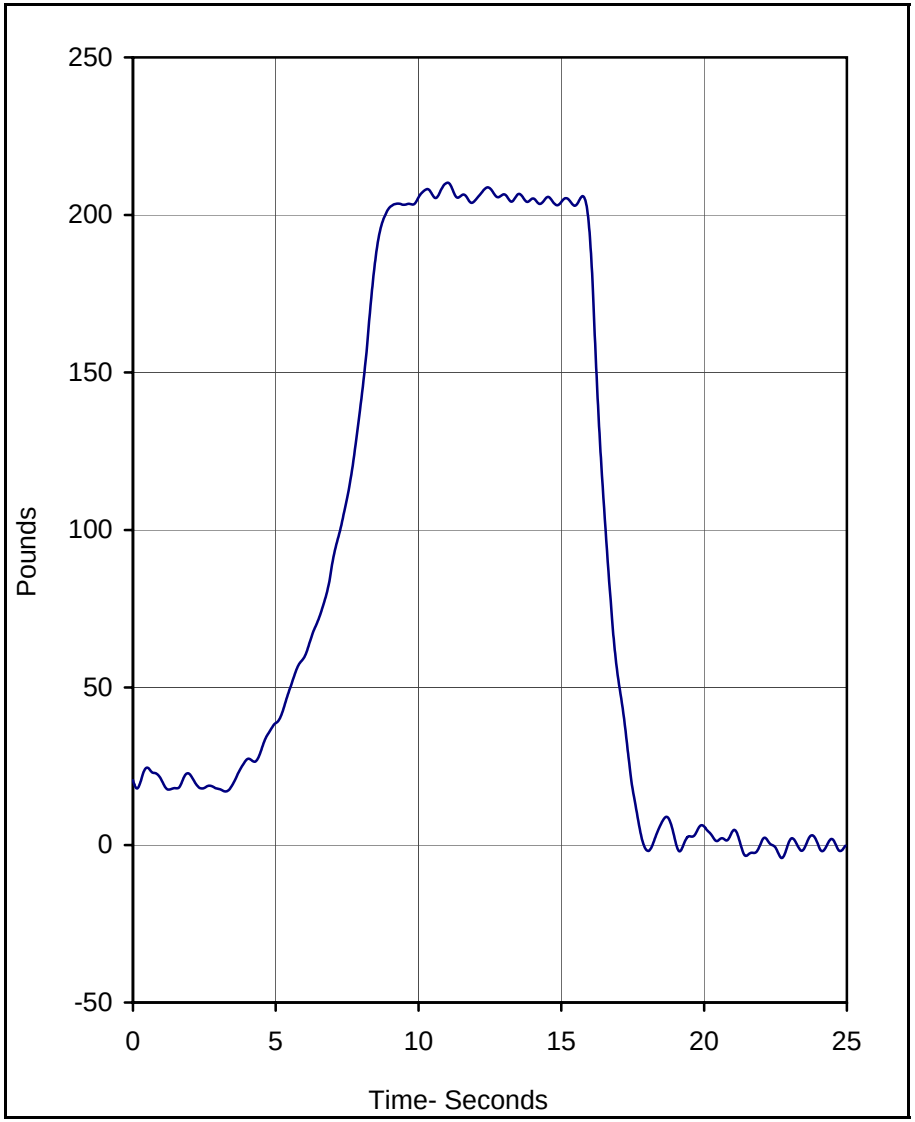
FIGURE 122. Floor Pan Anchor, P3, Post-Test

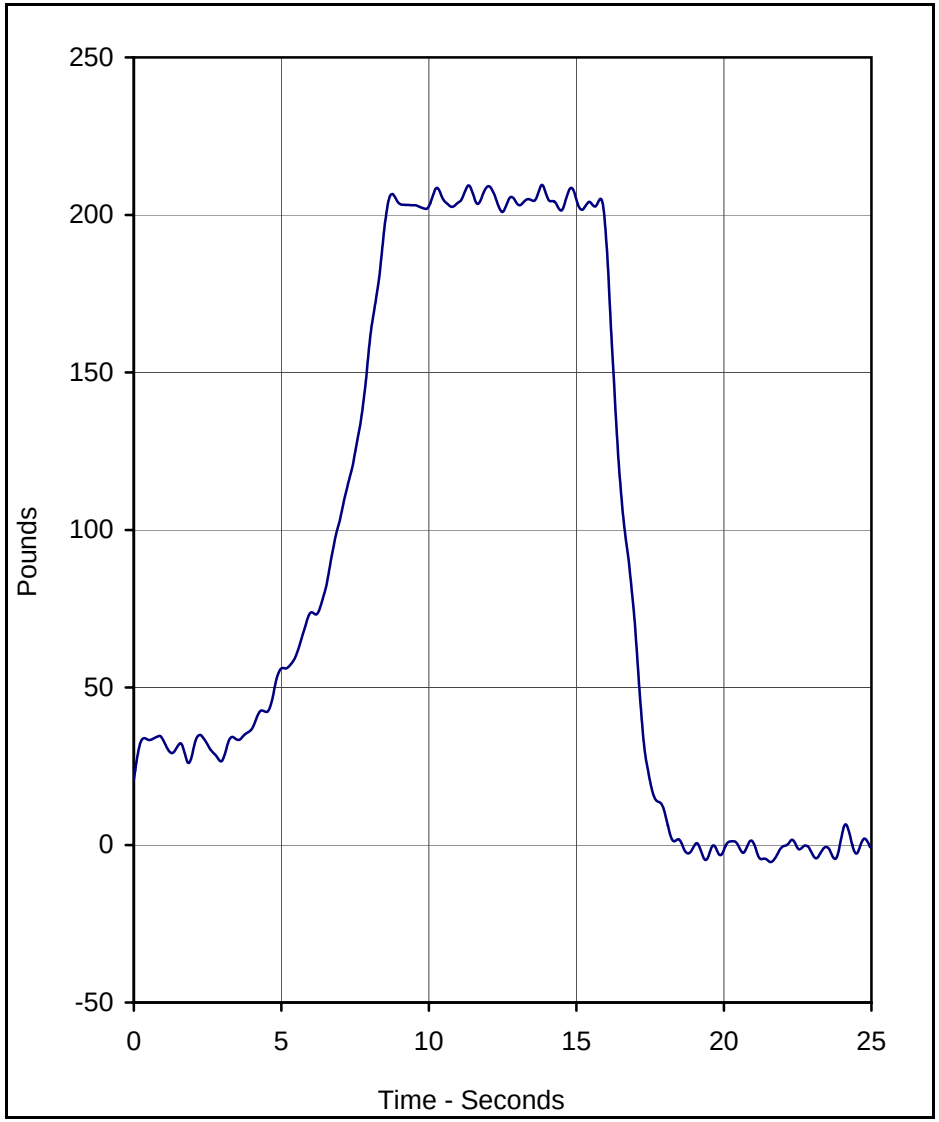
FIGURE 123. Seat Cushion Anchor, P3, Pre-Test

FIGURE 124. Seat Cushion Anchor, P3, Post-Test

APPENDIX B

DATA PLOTS





Curve Description	CURNO	Type
Driver Seat	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	210.2	11.0	-4.1	22.7	1

Curve Description	CURNO	Type
Passenger Seat	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	209.5	13.9	-5.4	21.6	1

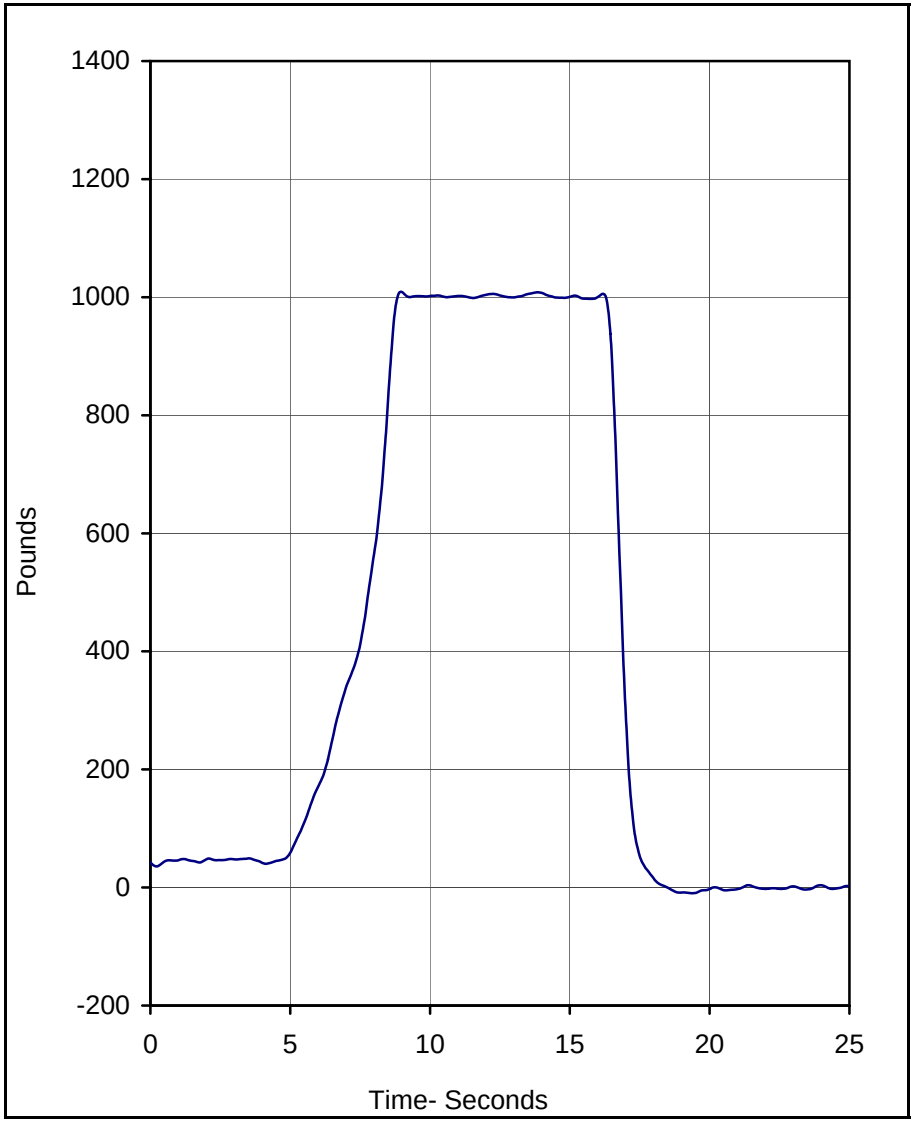
Test Program: FMVSS 207 Aft Moment (Front)

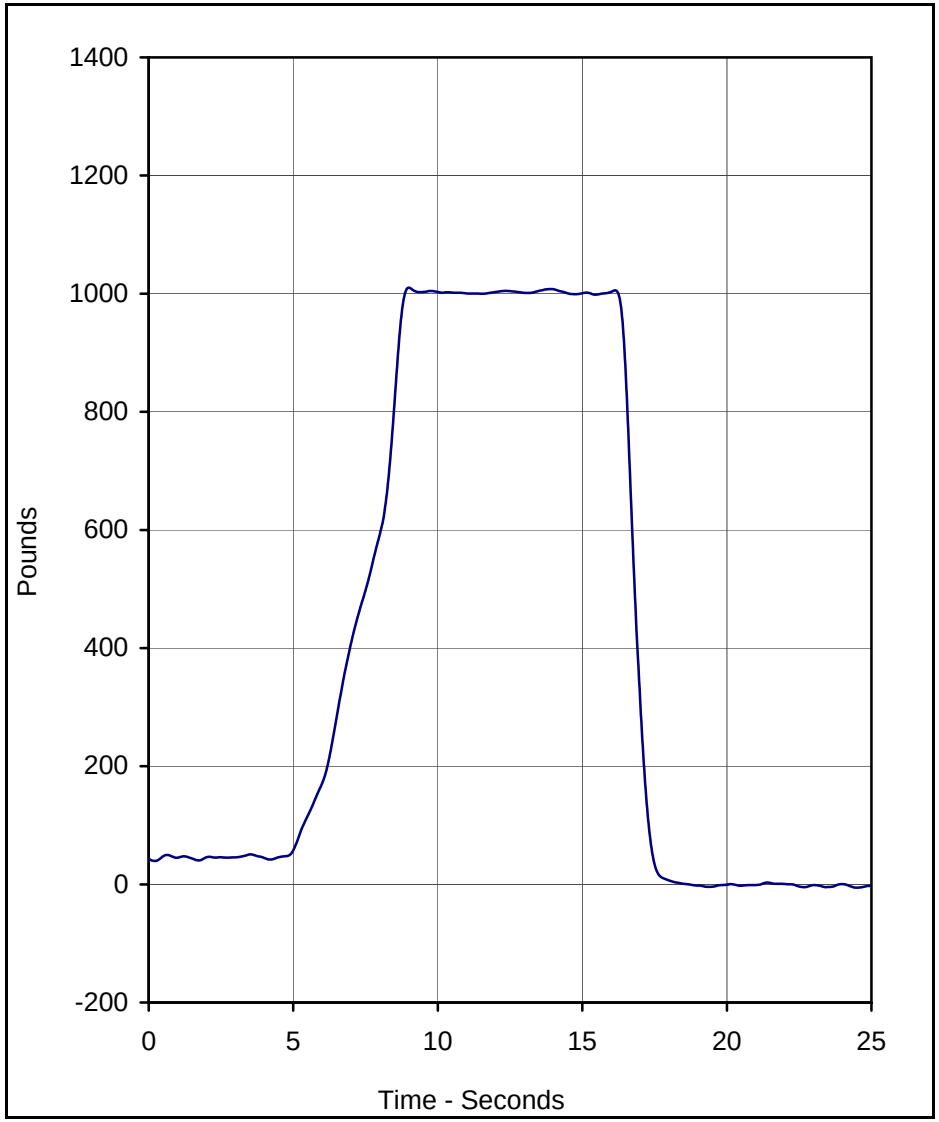
Test Vehicle: 2009 Nissan Rogue S 5-Door MPV

Test Date: 8/7/09

Project No.: C95205

KARCO Engineering LLC





Curve Description	CURNO	Type
Driver Seat	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	1009.2	9.0	-9.7	19.4	1

Curve Description	CURNO	Type
Passenger Seat	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	1010.1	9.0	-5.6	24.5	1

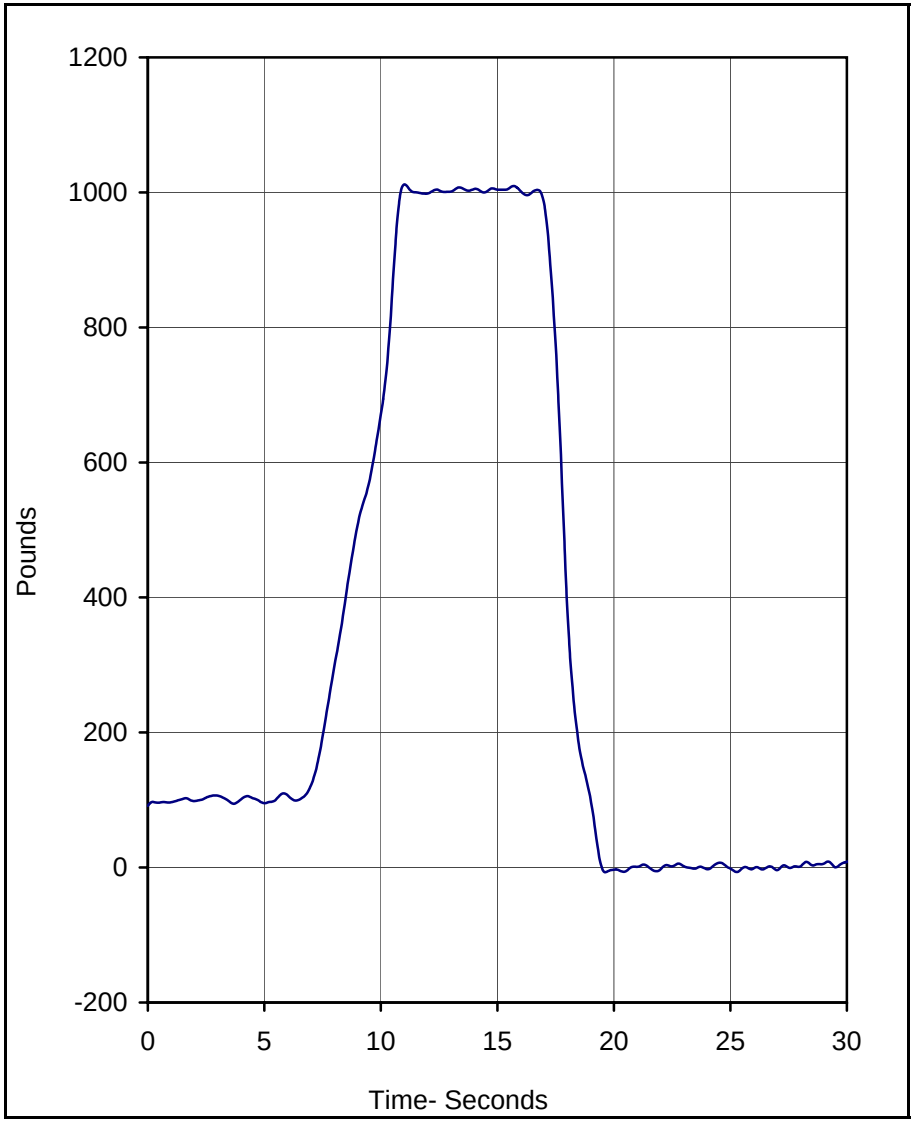
Test Program: FMVSS Aft Seat Frame and Adj. (Front)

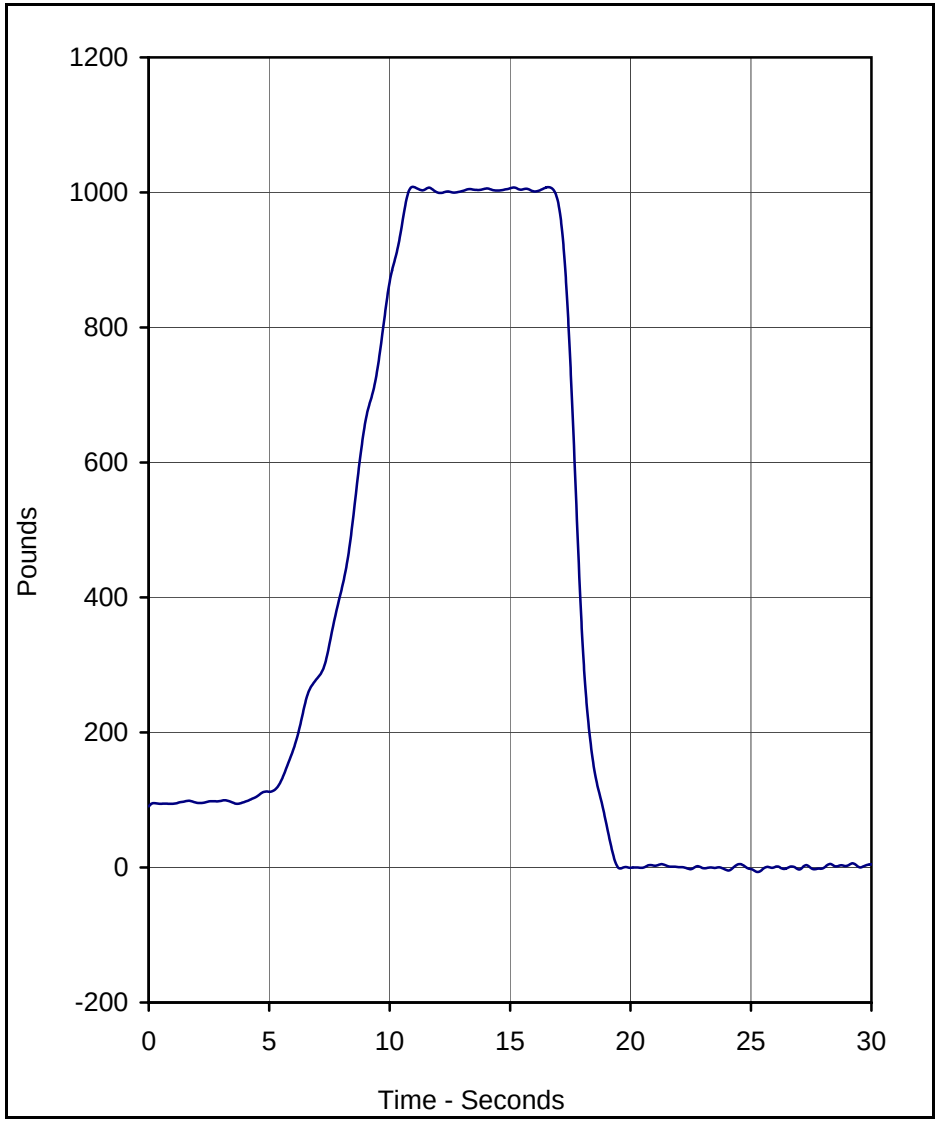
Test Vehicle: 2009 Nissan Rogue S 5-Door MPV

Test Date: 8/7/09

Project No.: C95205

KARCO Engineering LLC





Curve Description	CURNO	Type
Driver Seat	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	1011.9	11.0	-7.0	19.7	1

Curve Description	CURNO	Type
Passenger Seat	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	1008.2	11.0	-4.5	24.1	1

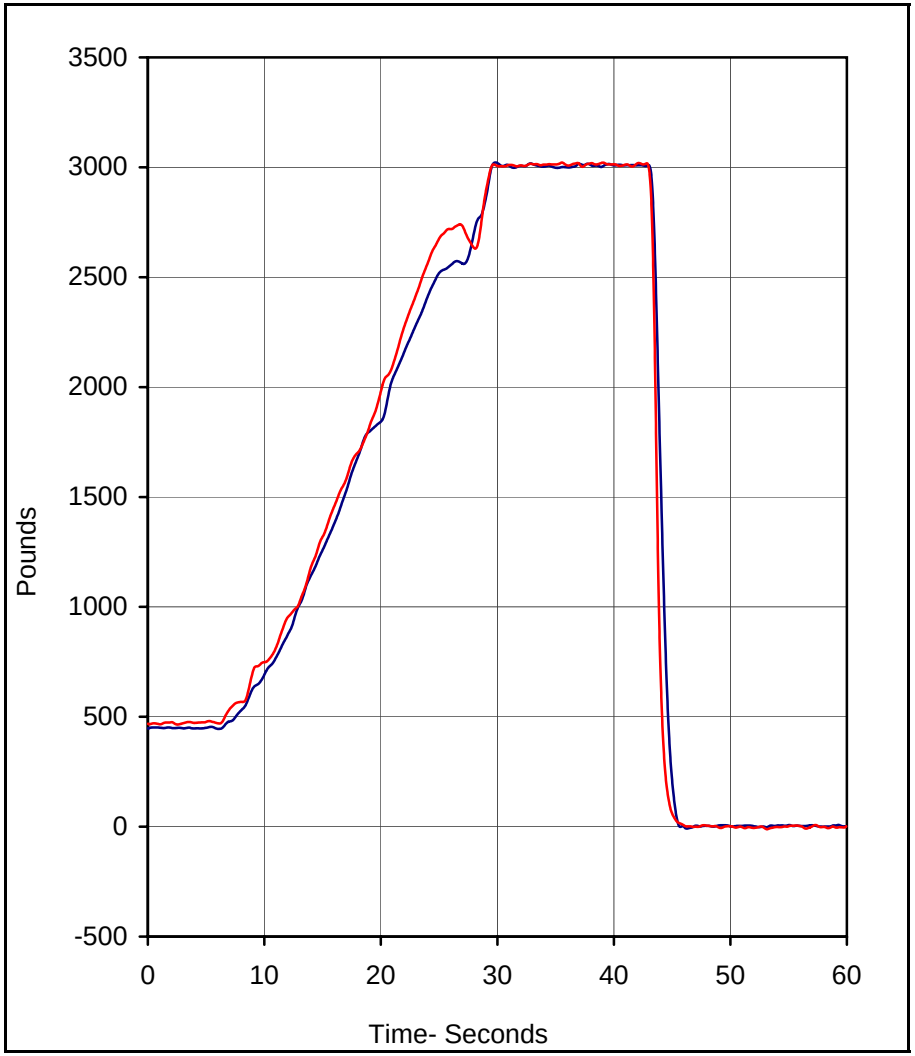
Test Program: FMVSS 207 Fwd Seat Frame and Adj. (Front)

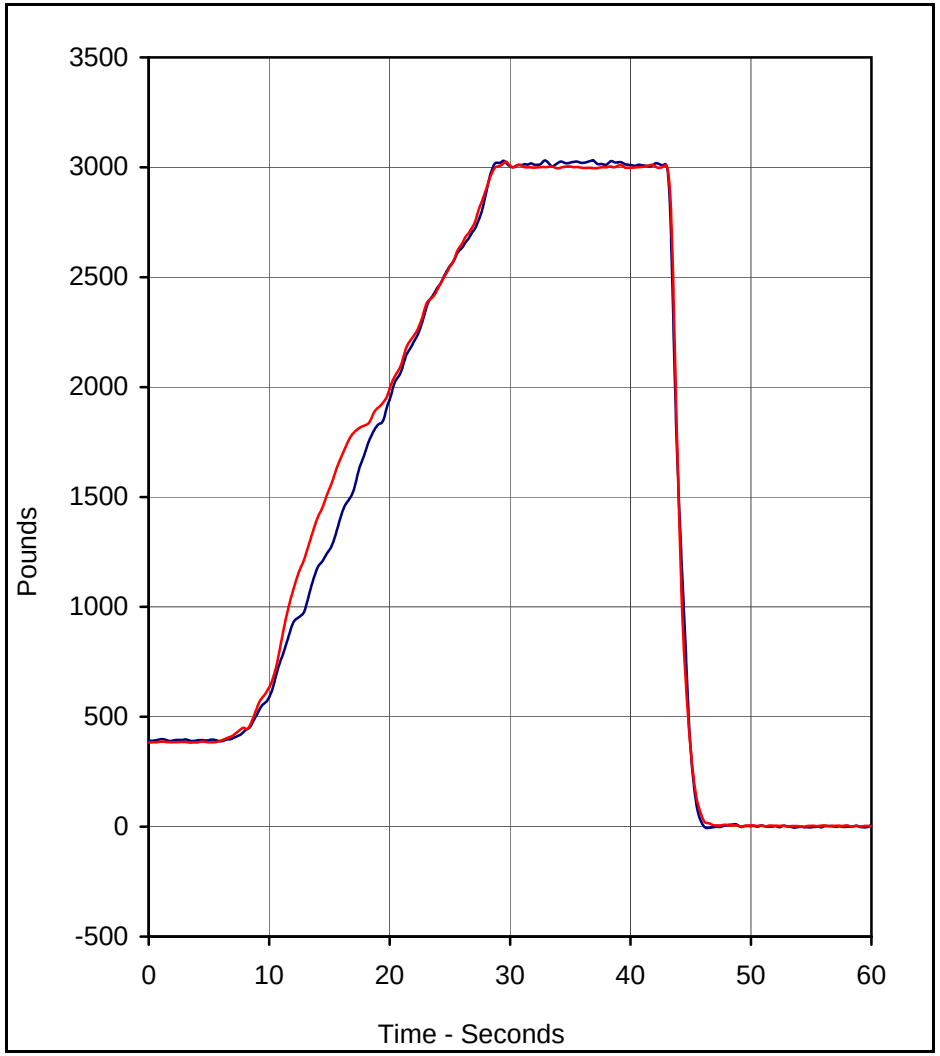
Test Vehicle: 2009 Nissan Rogue S 5-Door MPV

Test Date: 8/7/09

Project No.: C95205

KARCO Engineering LLC





Curve Description	CURNO	Type
Driver Lap Force	001	FIL
Driver Shoulder Force	002	FIL

Curve Description	CURNO	Type
Passenger Lap Force	004	FIL
Passenger Shoulder Force	005	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	3022.1	29.9	-8.8	46.3	1
Pounds	3021.4	35.6	-11.6	53.2	1

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	3031.4	36.9	-6.1	46.4	1
Pounds	3025.4	29.7	0.0	54.4	1

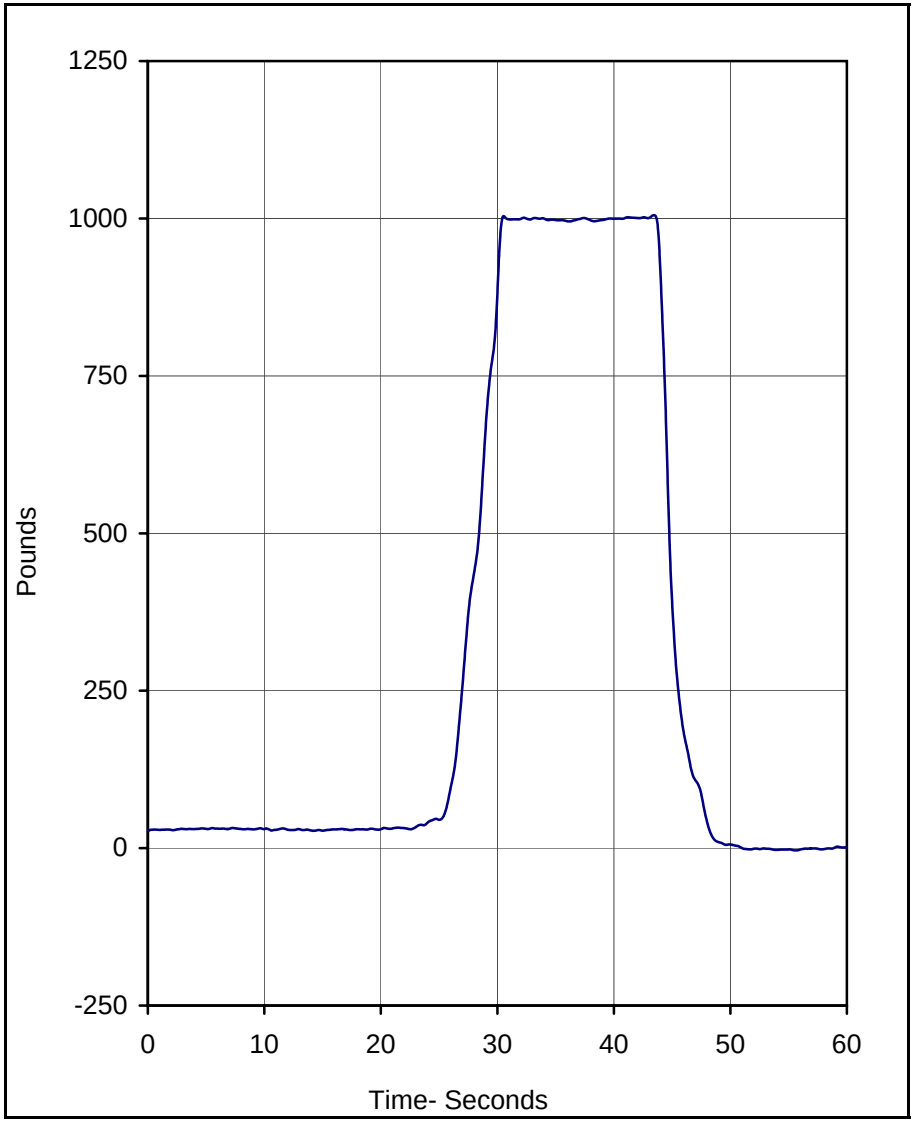
Test Program: FMVSS 207/210 Front Seats

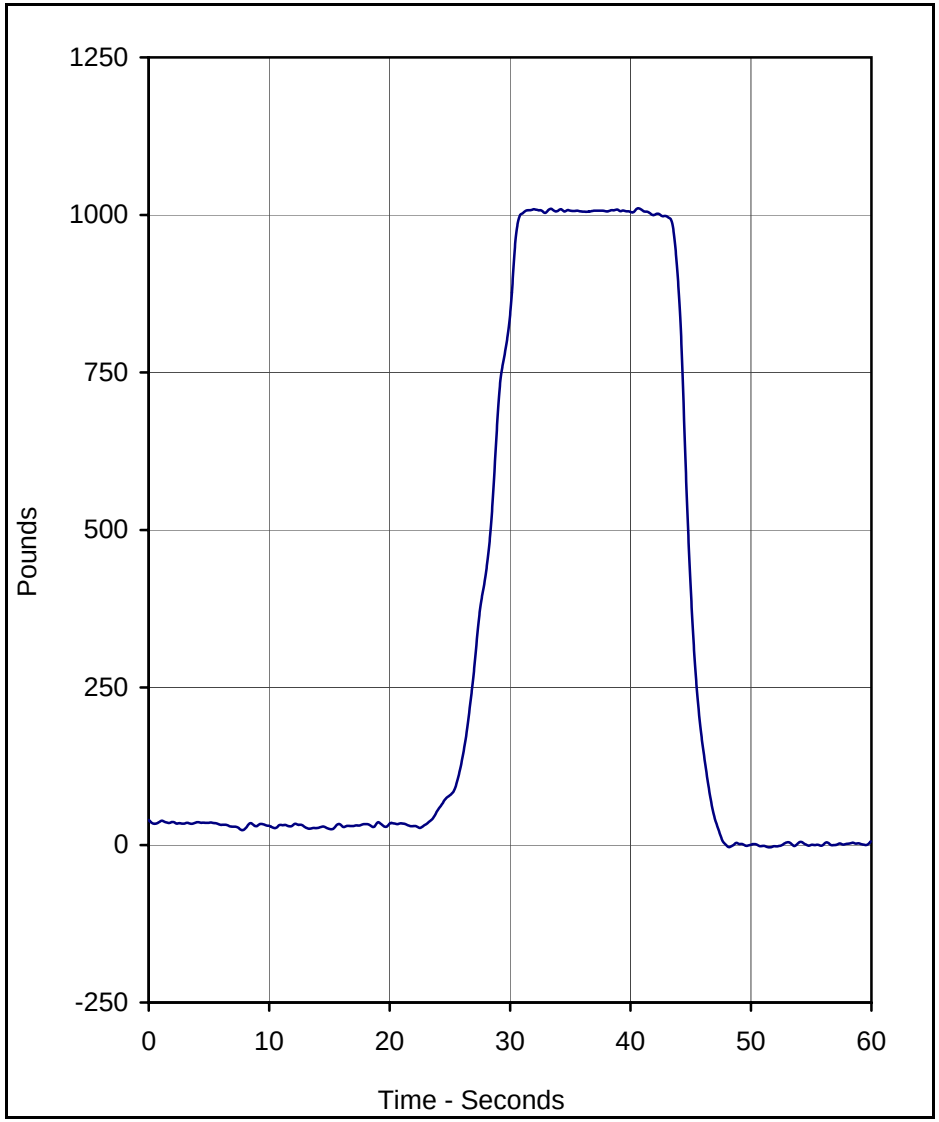
Test Vehicle: 2009 Nissan Rogue S 5-Door MPV

Test Date: 8/7/09

Project No.: C95205

KARCO Engineering LLC





Curve Description	CURNO	Type
Driver Seat Force	003	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	1005.2	43.5	-3.5	55.5	1

Curve Description	CURNO	Type
Passenger Seat Force	006	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	1010.5	40.7	-3.6	51.5	1

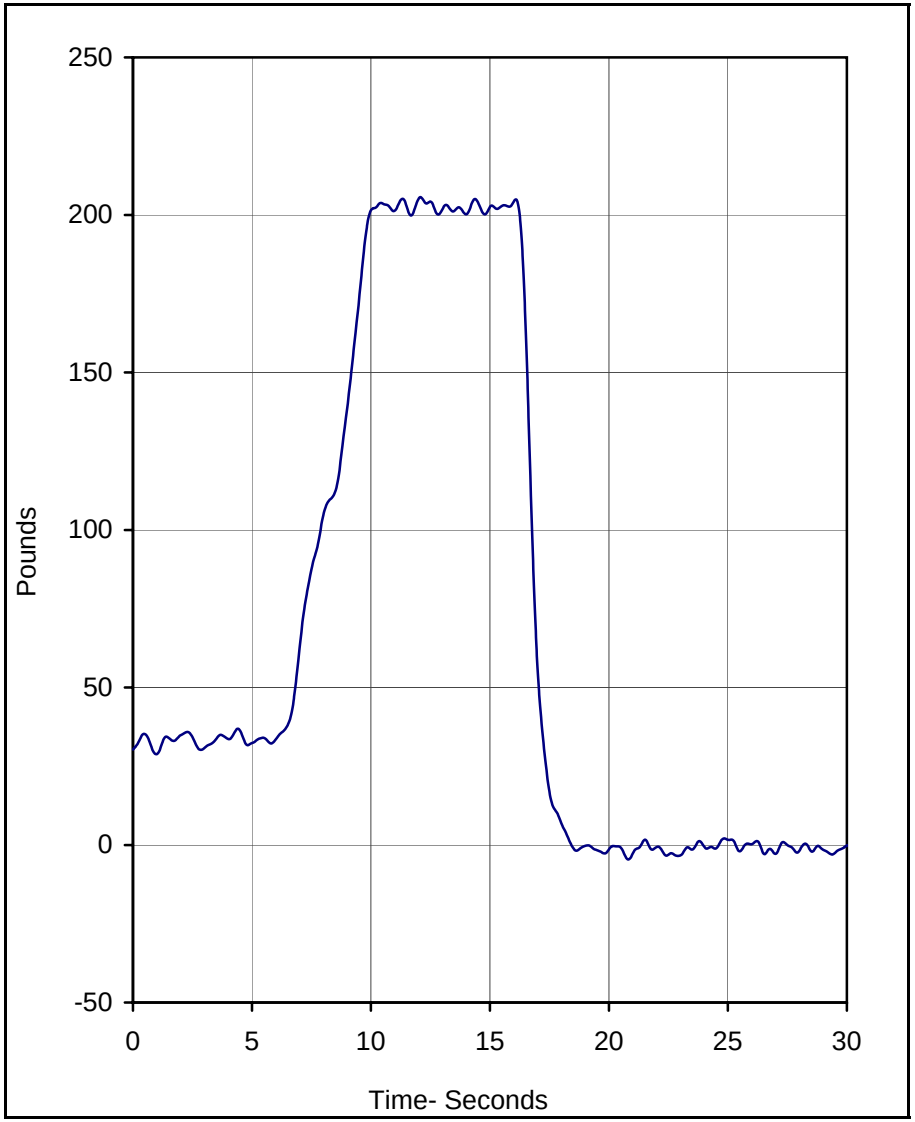
Test Program: FMVSS 207/210 Front Seats

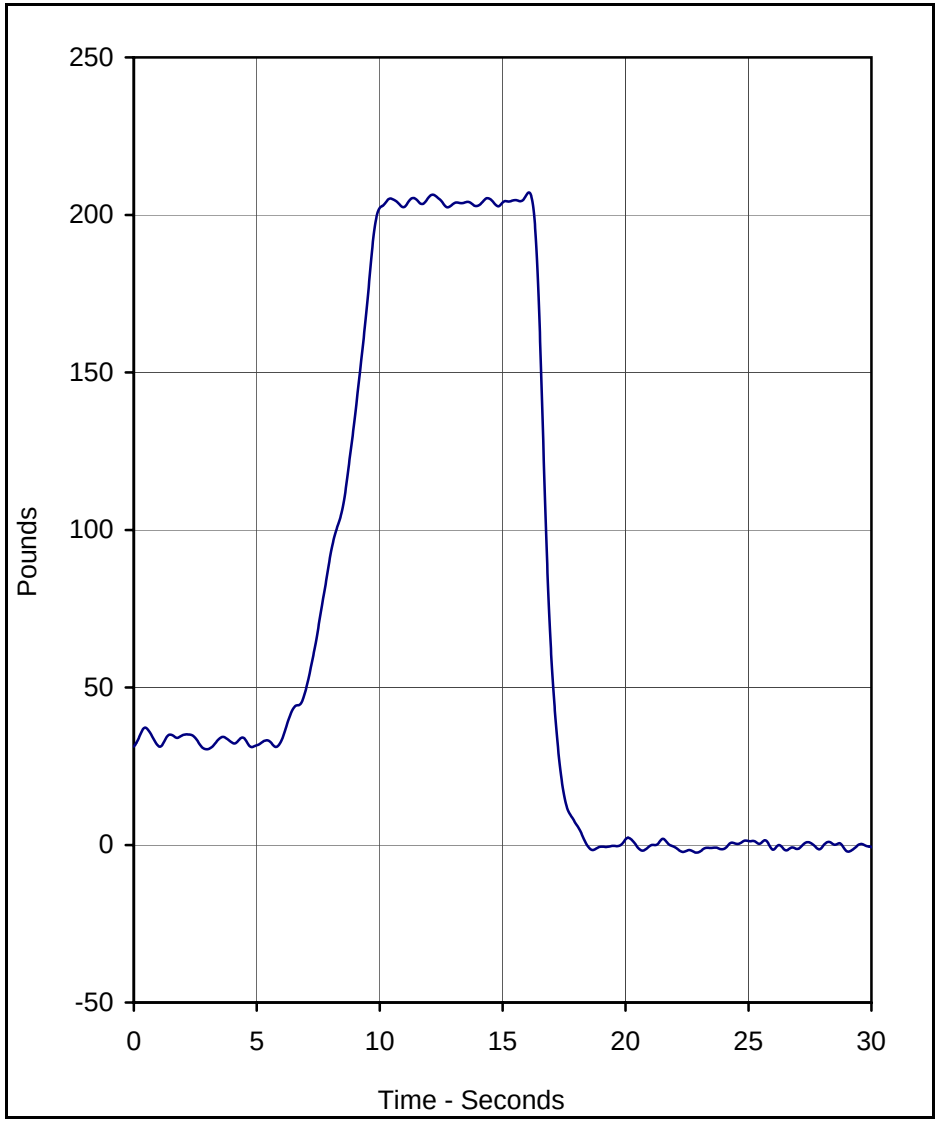
Test Vehicle: 2009 Nissan Rogue S 5-Door MPV

Test Date: 8/7/09

Project No.: C95205

KARCO Engineering LLC





Curve Description	CURNO	Type
Left Rear Seat	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	205.6	12.1	-4.6	20.8	1

Curve Description	CURNO	Type
Right Rear Seat	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	207.1	16.1	-2.4	22.9	1

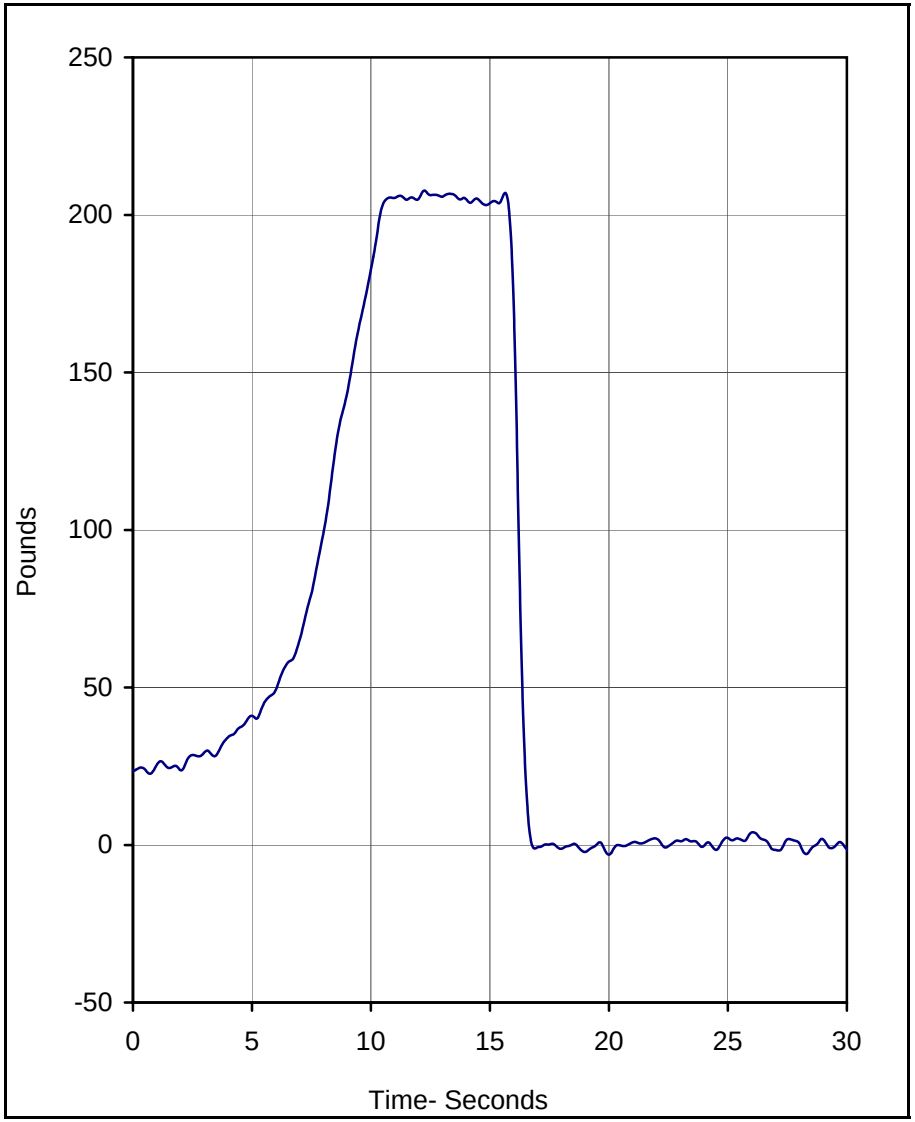
Test Program: FMVSS 207 Aft Moment (Rear Seats)

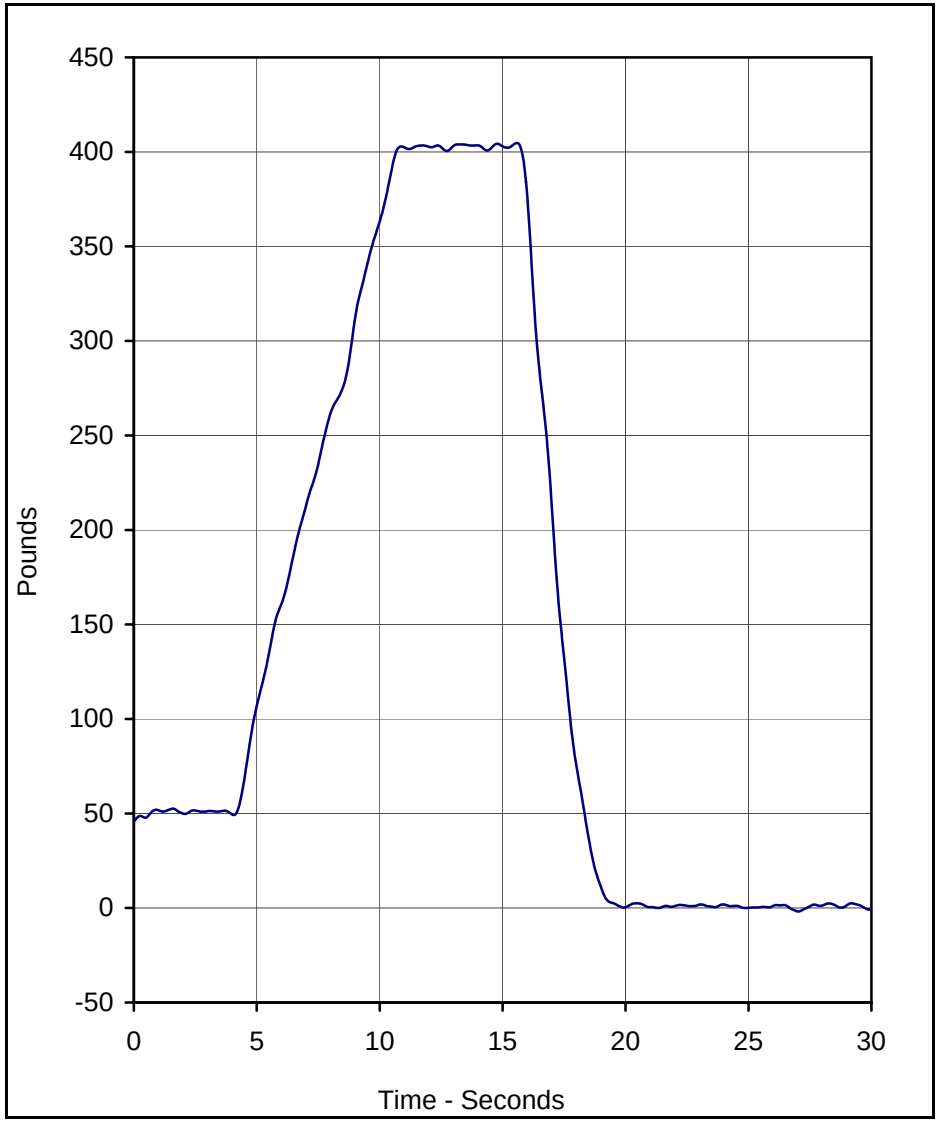
Test Vehicle: 2009 Nissan Rogue S 5-Door MPV

Test Date: 8/10/09

Project No.: C95205

KARCO Engineering LLC





Curve Description	CURNO	Type
Left Rear Seat	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	207.7	12.3	-3.1	20.0	1

Curve Description	CURNO	Type
Right Rear Seat	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	404.7	15.6	0.0	24.9	1

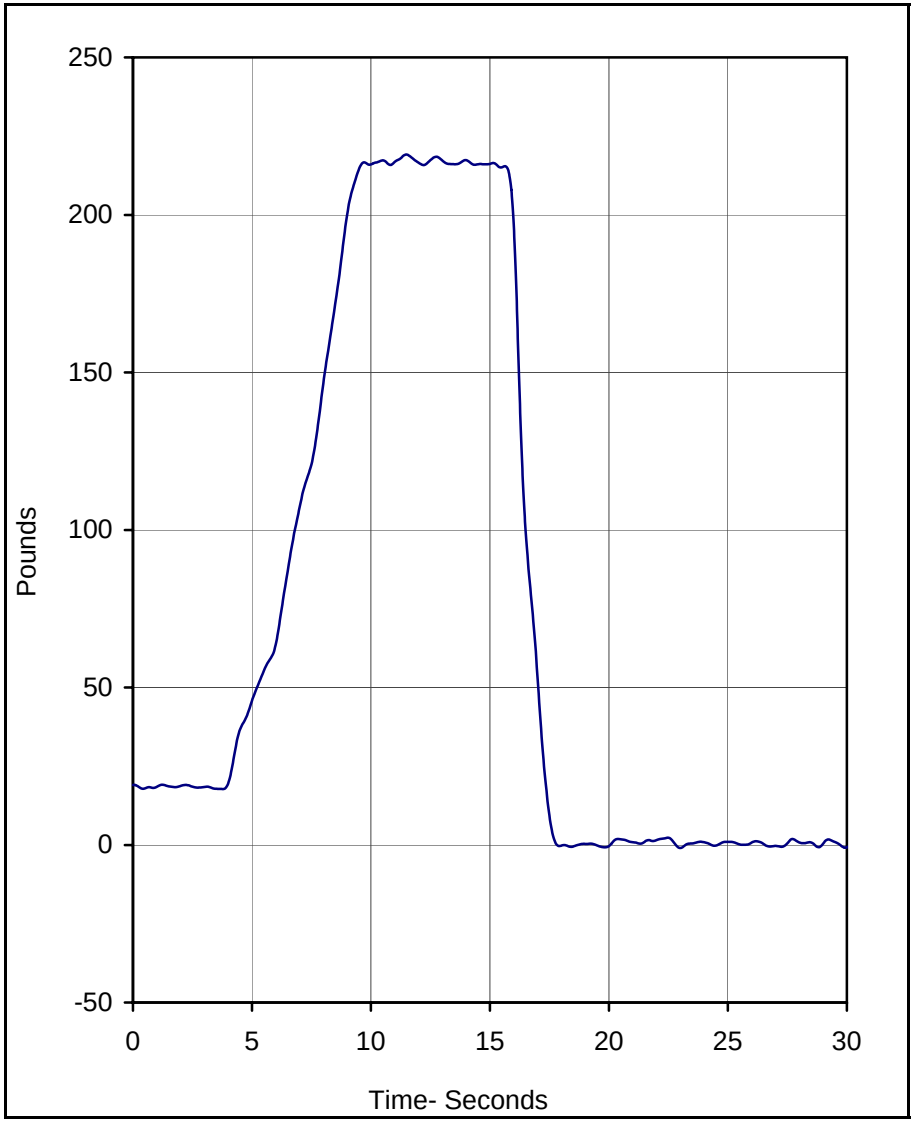
Test Program: FMVSS 207 Aft Load Seat Back (Rear)

Test Vehicle: 2009 Nissan Rogue S 5-Door MPV

Test Date: 8/10/09

Project No.: C95205

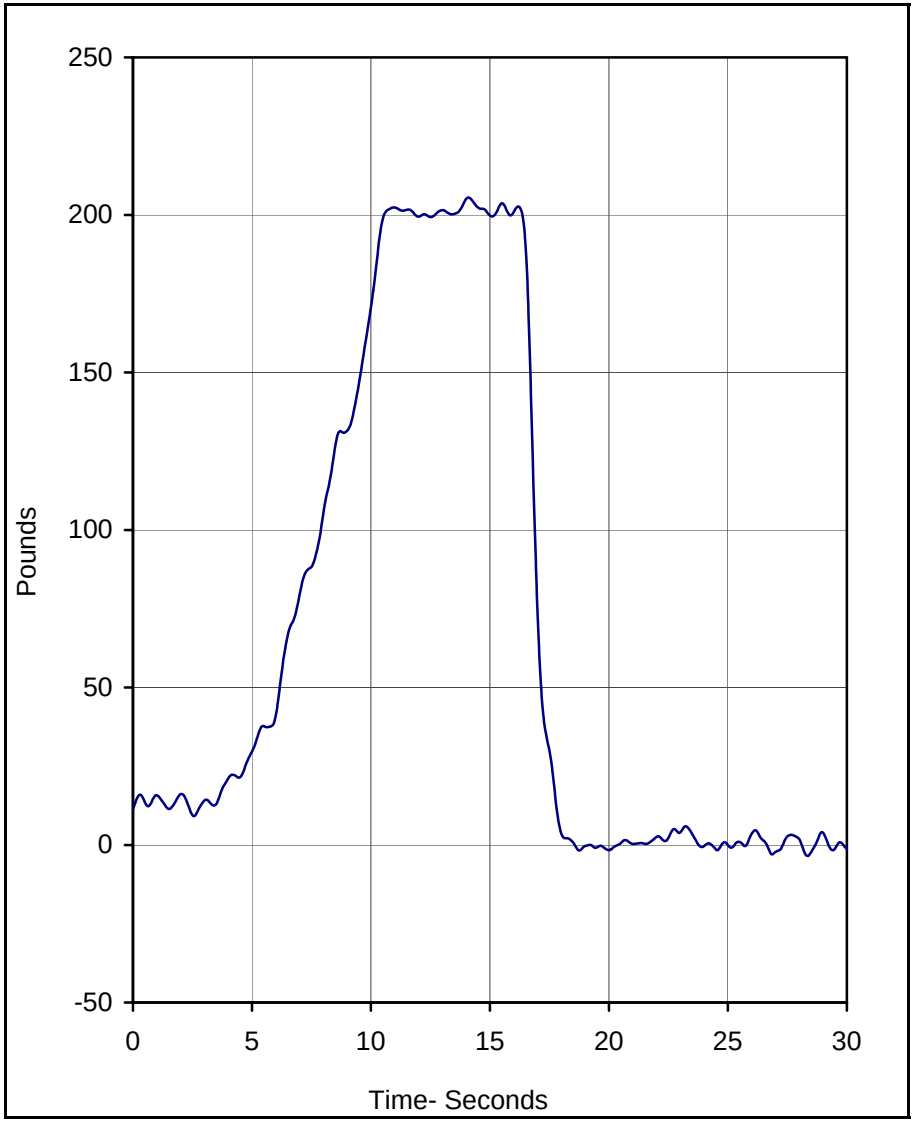
KARCO Engineering LLC

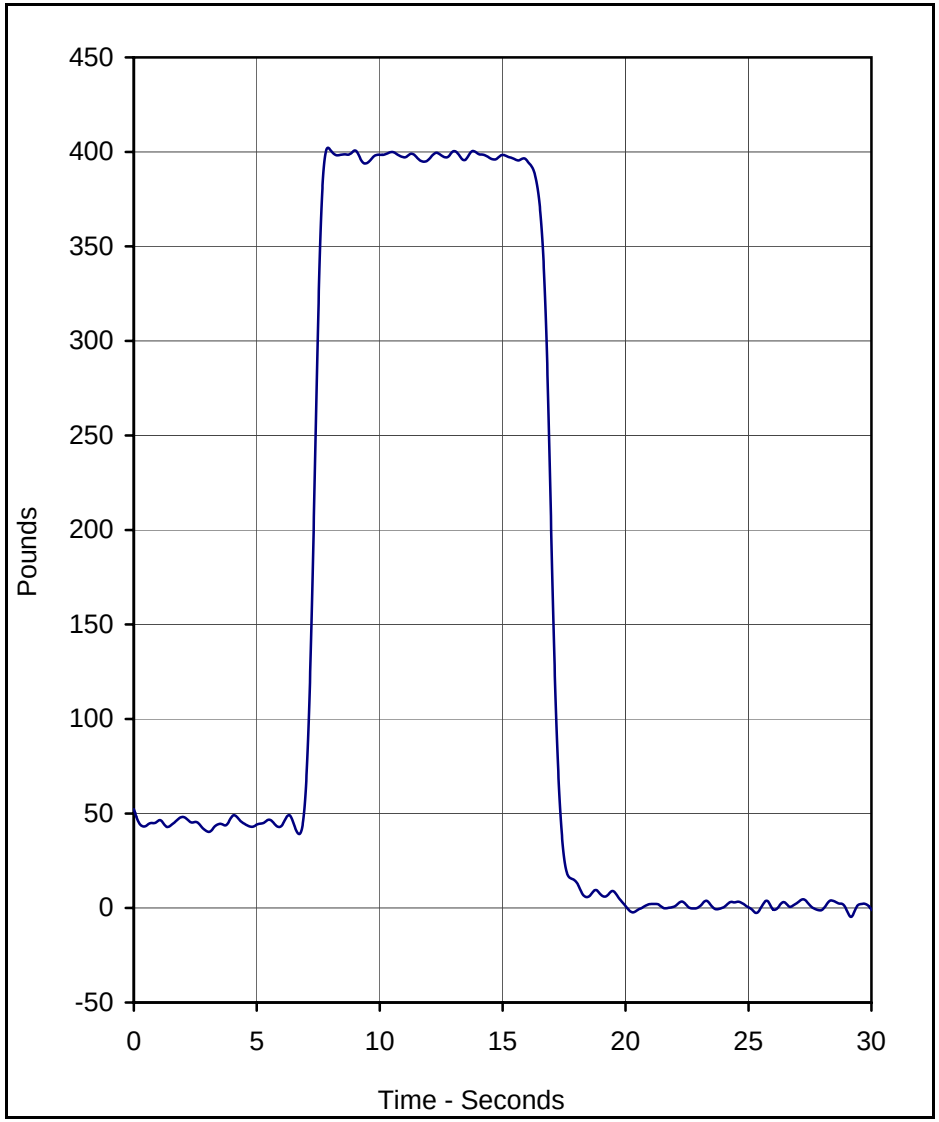


Curve Description	CURNO	Type
Seat Cushion	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	219.2	11.5	-1.0	23.0	1

Test Program:	FMVSS 207 Aft Load Seat Back (Rear)	Test Date:	8/10/09
Test Vehicle:	2009 Nissan Rogue S 5-Door MPV	Project No.:	C95205





Curve Description	CURNO	Type
Left Rear Seat	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	205.5	14.1	-1.7	18.8	1

Curve Description	CURNO	Type
Right Rear Seat	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	402.1	7.9	-2.3	20.3	1

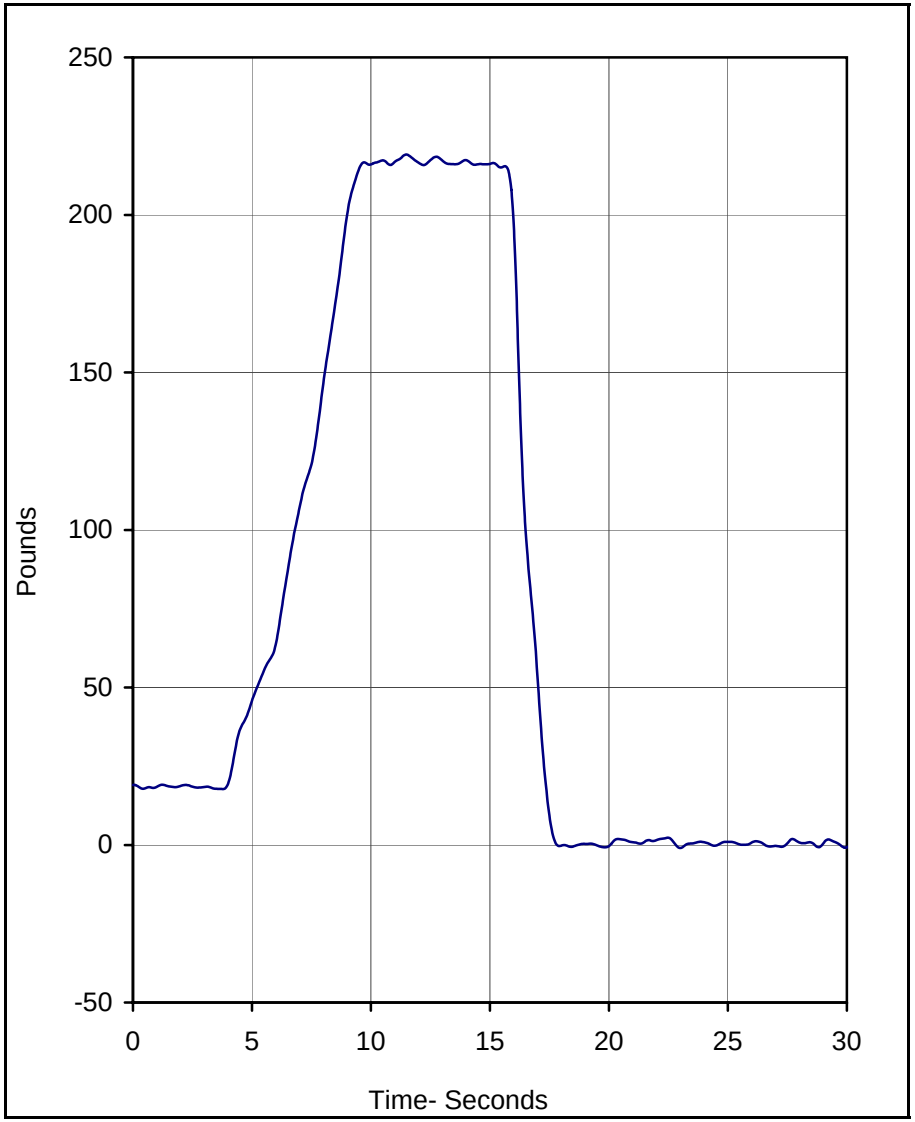
Test Program: FMVSS 207 Fwd Load Seat Back (Rear)

Test Vehicle: 2009 Nissan Rogue S 5-Door MPV

Test Date: 8/10/09

Project No.: C95205

KARCO Engineering LLC



Curve Description	CURNO	Type
Seat Cushion	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	219.2	11.5	-1.0	23.0	1

Test Program:	FMVSS 207 Fwd Load Seat Back (Rear)	Test Date:	8/10/09
Test Vehicle:	2009 Nissan Rogue S 5-Door MPV	Project No.:	C95205

APPENDIX C

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

FMVSS 207

Test Equipment List

8/7/09

2009 Nissan Rogue S 5-Door MPV

Description	Manufacturer	Model No.	Serial No.	Limit	Accuracy	Cal. Date	Due Cal.
Hydraulic Pump	Lincoln	T-3825-C	2460952	8 gpm @ 2700 psi			
Computer	Panasonic	CF-71	8IMAA01852	N/A	N/A	N/A	N/A
TDAS	DTS	TDAS	DM0103	N/A	SAE J211	11/14/08	11/14/09
Load Cell	Interface	1220-FS	50k1	50K	± 1.0%	5/20/09	11/18/09
Load Cell	Interface	1220-FS	50k2	50K	± 1.0%	5/20/09	11/18/09
Load Cell	BLH	U3G1	49296	3K	± 1.0%	5/22/09	11/20/09
Load Cell	BLH	U-1C	N873	6K	± 1.0%	5/20/09	11/18/09
Load Cell	BLH	U-1C	11139	12K	± 1.0%	5/20/09	11/18/09
Load Cell	Alinco	342-E	22438-B	10K	± 1.0%	5/22/09	11/20/09
Load Cell	Alinco	342-E	22440-A	10K	± 1.0%	5/22/09	11/20/09
Load Cell	BLH	U3G1	81711A	10K	± 1.0%	5/22/09	11/20/09