**REPORT NUMBER: SideNCAPMDB-KAR-24-011**

# NEW CAR ASSESSMENT PROGRAM (NCAP)
# MOVING DEFORMABLE BARRIER SIDE IMPACT TEST

**SUBARU CORPORATION**

**2025 SUBARU FORESTER 5-DOOR MPV**

**NHTSA No: O20255502**


**PREPARED BY:**

**APPLUS+ IDIADA KARCO ENGINEERING, LLC.**

**9270 HOLLY ROAD**

**ADELANTO, CA 92301**


**DECEMBER 11, 2024**

**FINAL REPORT**

**PREPARED FOR:**

**U.S. DEPARTMENT OF TRANSPORTATION**

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

**OFFICE OF CRASHWORTHINESS STANDARDS**

**MAIL CODE: NRM-100**

**1200 NEW JERSEY AVE, SE**

**WASHINGTON, D.C. 20590**

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By: 

Mr. Rushlan Amin, Project Engineer
Applus+ IDIADA KARCO Engineering, LLC.

Reviewed By: 

Mr. René Molina Serrano, Laboratory Manager
Applus+ IDIADA KARCO Engineering, LLC.

Approved By: 

Mr. Michael L. Dunlap, Director of Operations
Applus+ IDIADA KARCO Engineering, LLC.

Approval Date: December 11, 2024

FINAL REPORT ACCEPTANCE BY OCWS:

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date:

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date:

# TECHNICAL REPORT DOCUMENTATION PAGE

| 1. Report No. | 2. Government Accession No. | 3. Recipient's Catalog No. |
|---|---|---|
| SideNCAPMDB-KAR-24-011 | | |

| 4. Title and Subtitle | 5. Report Date |
|---|---|
| Final Report of New Car Assessment Program<br>Side Impact MDB Testing of a 2025 Subaru Forester 5-Door MPV<br>NHTSA No. O20255502 | December 11, 2024 |
| | **6. Performing Organization Code**<br>KAR |
| **7. Authors**<br>Mr. Rushlan Amin, Project Engineer, Applus+ IDIADA KARCO Engineering, LLC<br>Mr. René Molina Serrano, Laboratory Manager, Applus+ IDIADA KARCO Engineering, LLC | **8. Performing Organization Report No.**<br>TR-P44317-01-NC |
| **9. Performing Organization Name and Address**<br>Applus+ IDIADA KARCO Engineering, LLC.<br>9270 Holly Rd.<br>Adelanto, CA 92301 | **10. Work Unit No.**<br><br>**11. Contract or Grant No.**<br>693JJ920D000015 |
| **12. Sponsoring Agency Name and Address**<br>U. S. Department of Transportation<br>National Highway Traffic Safety Administration<br>Office of Crashworthiness Standards (NRM-100)<br>1200 New Jersey Ave., SE<br>Washington, D.C. 20590 | **13. Type of Report and Period Covered**<br>Final Test Report, November 20 - December 11, 2024<br>**14. Sponsoring Agency Code**<br>NRM-100 |

**15. Supplementary Notes**

**16. Abstract**

A 61.9 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2025 Subaru Forester 5-Door MPV in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at the Applus IDIADA KARCO Engineering, LLC. facility in Adelanto, California on November 20, 2024.

The impact velocity of the Moving Deformable Barrier was 61.76 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 24.4°C. The target vehicle's maximum post-test static crush was 161 mm located at level 3. The test vehicle's occupant performance data is as follows:

| Measurement Description | Driver ATD (ES-2re) | | |
|---|---|---|---|
| | Units | IARV | Result |
| Head Injury Criteria ($HIC_{36}$) | | 1000 | 59.598 |
| Maximum Thoracic Rib Deflection | mm | 44 | 10.548 |
| Total Abdominal Force | N | 2500 | 373.720 |
| Pubic Symphysis Force | N | 6000 | 1554.472 |

| Measurement Description | Passenger ATD (SID-IIs) | | |
|---|---|---|---|
| | Units | IARV | Result |
| Head Injury Criteria ($HIC_{36}$) | | 1000 | 207.756 |
| Resultant Lower Spine Acceleration | g | 82 | 58.279 |
| Total Pelvic Force (Sum of Acetubular and Iliac Forces) | N | 5525 | 2845.520 |
| Maximum Thoracic Rib Deflection | mm | 38* | 8.458 |
| Maximum Abdominal Rib Deflection | mm | 45* | 10.541 |

| 17. Key Words | 18. Distribution Statement |
|---|---|
| New Car Assessment Program (NCAP)<br>Side Impact<br>Moving Deformable Barrier (MDB)<br>ES-2re<br>SID-IIs | Copies of this report are available from:<br>National Highway Traffic Safety Admin.<br>Technical Reference Division<br>1200 New Jersey Ave., SE<br>Washington, DC 20590 |

| 19. Security Classification of this report | 20. Security Classification of this page | 21. No. of Pages | 22. Price |
|---|---|---|---|
| UNCLASSIFIED | UNCLASSIFIED | 152 | |

**Proposed IARV*

## TABLE OF CONTENTS

## SECTION 1
## TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2024 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number 693JJ920D000015. The purpose of this test is to generate comparative side impact performance in a 2025 Subaru Forester 5-Door MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated March 2020.

## SECTION 2
## SUMMARY OF TEST RESULTS

A 2025 Subaru Forester 5-Door MPV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.76 km/h (38.38 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by Applus IDIADA KARCO Engineering, LLC. in Adelanto, California, on November 20, 2024. Pre- and post-test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in Appendix A of this report.

Dummies were placed in the driver and left rear designated seating position according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated March 2020. The side impact event was documented by 11 cameras. Camera locations are included in Data Sheet No. 5 of this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)
Primary and redundant head CG tri-axial accelerometers
Chest upper rib, middle rib and lower rib y-axis displacement potentiometers
Abdomen forward, middle, and rear y-axis load cells
Lower spine (12) tri-axial accelerometers
Pubic symphysis y-axis load cell

PASSENGER ATD (SID-IIs)
Primary and redundant head CG tri-axial accelerometers
Head triaxial angular rate sensors
Chest upper rib, middle rib and lower rib y-axis displacement potentiometers
Abdomen upper rib and lower rib y-axis displacement potentiometers
Lower spine (12) tri-axial accelerometers
Acetabulum and iliac wing y-axis load cells

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D of this report contains the test equipment and instrumentation calibration data.

Dummy injury readings were recorded as follows:

| Measurement Description | Units | Driver ATD (ES-2re) | |
|---|---|---|---|
| | | Threshold | Result |
| Head Injury Criteria ($HIC_{36}$) | | 1000 | 59.598 |
| Maximum Thoracic Rib Deflection | mm | 44 | 10.548 |
| Combined Abdominal Force | N | 2500 | 373.720 |
| Pubic Symphysis Force | N | 6000 | 1554.472 |
| Lower Spine (T12) Resultant Acceleration | g | 82* | 18.694 |

**Proposed IARV*

| Measurement Description | Units | Passenger ATD (SID-IIs) | |
|---|---|---|---|
| | | Threshold | Result |
| Head Injury Criteria ($HIC_{36}$) | | 1000 | 207.756 |
| Lower Spine (T12) Resultant Acceleration | g | 82 | 58.279 |
| Total Pelvic Force (sum of acetabular and iliac forces | N | 5525 | 2845.520 |
| Maximum Thoracic Rib Deflection | mm | 38* | 8.458 |
| Maximum Abdominal Rib Deflection | mm | 45* | 10.541 |

**Proposed IARV*

Supplemental restraint information is given below:

| Restraint Type | Left Front (Driver) Occupant Location 1 | | Left Rear (Passenger) Occupant Location 4 | |
|---|---|---|---|---|
| | Mounted | Deployed | Mounted | Deployed |
| Frontal Air Bag | Yes | No | | |
| Knee Air Bag | Yes | No | | |
| Side Air Bag 1 (Curtain) | Yes | Yes | Yes | Yes |
| Side Air Bag 2 (Torso/Pelvis) | Yes | Yes | No | |
| Seat Belt Pretensioner | Yes | Yes | Yes | Yes |
| Seat Belt Load Limiter | Yes | Yes | Yes | Yes |
| Other | | | | |

**GENERAL COMMENTS:**

None.

## SECTION 3

## OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### CONVERSION FACTORS

| Quantity | Typical Application | Std Units | Metric Unit | Multiply By |
|---|---|---|---|---|
| Mass | Vehicle Weight | lb | kg | 0.4536 |
| Linear Velocity | Impact Velocity | miles/hr | km/hr | 1.609344 |
| Length or Distance | Measurements | in | mm | 25.4 |
| Volume | Fuel Systems | gal | liter | 3.785 |
| Volume | Small Fluids | oz | mL | 29.574 |
| Pressure | Tire Pressures | $lbf/in^2$ | kPa | 6.895 |
| Temperature | General Use | $^oF$ | $^oC$ | =(Tf -32)/1.8 |
| Force | Dynamic Forces | lbf | N | 4.448 |
| Moment | Torque | lbf-ft | N•m | 1.355 |

## DATA SHEET NO. 1

## GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### TEST VEHICLE INFORMATION AND OPTIONS

| | |
|---|---|
| NHTSA Number | O20255502 |
| Model Year | 2025 |
| Make | Subaru |
| Model | Forester |
| Body Style | 5-Door MPV |
| VIN | JF2SLDACXSH452706 |
| Body Color | Magnetite Gray Metallic |
| Odometer Reading (km / mi) | 16/10 |
| Engine Displacement (L) | 2.5 |
| Type / No. of Cylinders | 4 Cylinder |
| Engine Placement | Inline |
| Transmission Type | Lineartronic CVT |
| Transmission Speeds | 8 |
| Overdrive | Yes |
| Final Drive | AWD |
| Roof Rack | No |
| Sunroof / T-Top | No |
| Running Boards | No |
| Tilt Steering Wheel | Yes |
| Power Seats | No |
| Anti-Lock Brakes (ABS) | Yes |

| | |
|---|---|
| Traction Control System (TCS) | Yes |
| Auto-Leveling System | No |
| Automatic Door Locks | Yes |
| Power Window Auto-Reverse | Yes |
| Other Optional Feature | No |
| Driver Front Air Bag | Yes |
| Driver Curtain Air Bag | Yes |
| Driver Head/Torso Air Bag | No |
| Driver Torso Air Bag | No |
| Driver Torso/Pelvis Air Bag | Yes |
| Driver Pelvis Air Bag | No |
| Driver Knee Air Bag | Yes |
| Rear Pass. Curtain Air Bag | Yes |
| Rear Pass. Head/Torso Air Bag | No |
| Rear Pass. Torso Air Bag | No |
| Rear Pass. Torso/Pelvis Air Bag | No |
| Rear Pass. Pelvis Air Bag | No |
| Driver Seat Belt Pretensioner | Yes |
| Rear Pass. Seat Belt Pretensioner | Yes |
| Driver Load Limiter | Yes |
| Rear Pass. Load Limiter | Yes |
| Other Safety Restraint | None |

Does Owner's Manual provide instructions to turn off automatic door locks? Yes; Page 231

### DATA FROM CERTIFICATION LABEL

| | |
|---|---|
| Manufactured By | Subaru Corporation |
| Date of Manufacture | 07/24 |
| Vehicle Type | MPV |

| | |
|---|---|
| GVWR (kg) | 2223 |
| GAWR Front (kg) | 1302 |
| GAWR Rear (kg) | 1130 |

### VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

| Measured Parameter | Front | Rear | Third | Total | |
|---|---|---|---|---|---|
| Designated Seating Capacity | 2 | 3 | | 5 | |
| Capacity Weight (VCW) (kg) | | | | 408.0 | *A* |
| DSC x 68 (kg) | | | | 340.0 | *B* |
| Cargo Weight (RCLW) (kg) | | | | 68.0 | *A-B** |

**For trucks or MPVs, if A-B>136, RCLW=136 kg

### VEHICLE SEAT TYPE

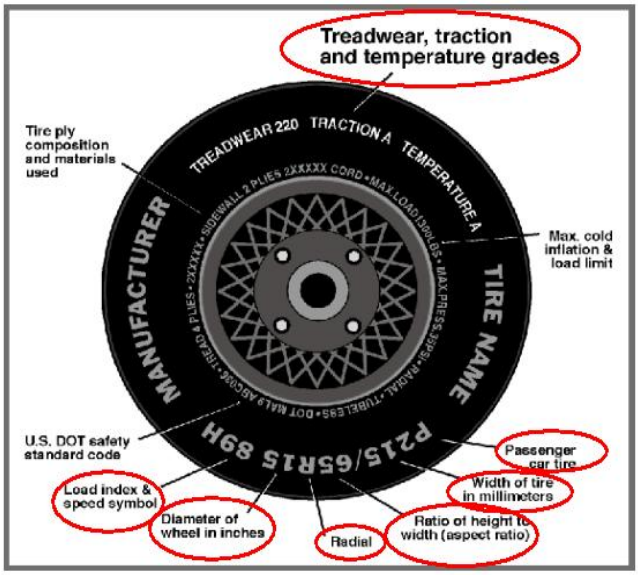
| Seating Location | Type of Seat Pan | | | | Type of Seat Back | | |
|---|---|---|---|---|---|---|---|
| | Bucket | Bench | Split Bench | Contoured | Fixed | Adjustable w/ Lever | Adjustable w/ Knob |
| Front Seat | Yes | | | | | Yes | |
| Rear or Second Row Seat | | | Yes | | | Yes | |
| Third Row Seat | | | | | | | |

**DATA SHEET NO. 1 … (CONTINUED)**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




| Measured Parameter | Front | Rear |
|---|---|---|
| Max. Tire Pressure (kpa) | 350 | 350 |
| Cold Pressure (kPa) | 230 | 220 |
| Recommended Tire Size | 225/60 R17 | 225/60 R17 |
| Tire Size on Vehicle | 225/60 R17 | 225/60 R17 |
| Tire Manufacturer | Yokohama | Yokohama |
| Tire Model | Geolandar | Geolandar |
| Treadware | 280 | 280 |
| Traction Grade | B | B |
| Temperature Grade | A | A |
| Tire Plies Sidewall | 1 Polyester | 1 Polyester |
| Tire Plies Body | 1 Polyester, 2 Steel, 1 Nylon | 1 Polyester, 2 Steel, 1 Nylon |
| Load Index/Speed Symbol | 99H | 99H |
| Tire Material | Rubber | Rubber |
| DOT Safety Code Left | 1DF FCYL16 2624 | 1DF FCYL16 2624 |
| DOT Safety Code Right | 1DF FCYL16 2624 | 1DF FCYL16 2624 |

## DATA SHEET NO. 1 … (CONTINUED)

## GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### TIRE PRESSURES

| | Units | LF | RF | LR | RR |
|---|---|---|---|---|---|
| As Delivered | kPa | 230 | 230 | 220 | 220 |
| Tire Placard | kPa | 230 | 230 | 220 | 220 |
| Owner's Manual | kPa | 230 | 230 | 220 | 220 |
| As Tested | kPa | 230 | 230 | 220 | 220 |

### MDB TIRE SPECIFICATIONS

| | Units | Requirement | LF | RF | LR | RR |
|---|---|---|---|---|---|---|
| Tire Size | | P205/75R15 | P205/75R15 | P205/75R15 | P205/75R15 | P205/75R15 |
| Tire Pressure | kPa | 200 ± 21 | 220 | 220 | 220 | 220 |

### TEST VEHICLE AXLE WEIGHTS

| | | As Delivered Weights (UVW) | | | As Tested Weights (ATW) | | |
|---|---|---|---|---|---|---|---|
| | Units | Front Axle | Rear Axle | Total | Front Axle | Rear Axle | Total |
| Left | kg | 469.0 | 340.5 | | 507.5 | 441.5 | |
| Right | kg | 450.5 | 330.0 | | 449.0 | 376.5 | |
| Ratio | % | 57.8% | 42.2% | 100.0% | 53.9% | 46.1% | 100.0% |
| Total | kg | 919.5 | 670.5 | 1590.0 | 956.5 | 818.0 | 1774.5 |

### TARGET TEST WEIGHT CALCULATION

| Measured Parameter | Units | Value | |
|---|---|---|---|
| Total Delivered Weight (UVW) | kg | 1590.0 | A |
| Sum of Actual Weight of 2 P572 ATD Used | kg | 125.0 | B |
| Rated Cargo/Luggage Weight (RCLW) | kg | 68.0 | C |
| Calculated Target Vehicle Test Weight (TVTW) | kg | 1783.0 | A+B+C |

**Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight -4.5 kg to -9.0 kg)?** ☒ **Yes** ☐ **No**

### TEST VEHICLE ATTITUDE AND CG

| Measurement Description | Units | Fully Loaded | As Tested | Meets Requirement*** |
|---|---|---|---|---|
| LF | mm | 775 | 766 | Yes |
| RF | mm | 784 | 775 | Yes |
| LR | mm | 773 | 776 | Yes |
| RR | mm | 778 | 776 | Yes |
| Vehicle CG (Aft of Front Axle) | mm | 1240 | 1230 | |
| Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline) | mm | 35 | 55 | |

***The “As Tested” vehicle attitude measurements must be equal to or within ±10 mm of the “Fully Loaded” vehicle attitude measurements at each wheel well. Indicate “Yes” or “No” for “Meets Requirement”

## DATA SHEET NO. 1 … (CONTINUED)

## GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

| Test Height Adjustable Setting (If Applicable) | |
|---|---|

### WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

| Component Description | Weight (kg) |
|---|---|
| Spare Tire and Tools Removed | 14.5 |
| Rear Trim Removed | 3.5 |

### TEST SURFACE MARKINGS

| | Distance from 63° Impact Angle Line (mm) |
|---|---|
| Fore 25 mm target | 0 |
| Aft 25 mm target | 0 |
| Pre-Impact Angle Line | 63° |

| Parallel Track Target | X Location (mm) | Y Location (mm) |
|---|---|---|
| A | 0 | 0 |
| B | 1355 | 689 |
| C | 1355 | 3756 |
| D | 0 | 3059 |

## DATA SHEET NO. 2

## SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, mid-angle position. The struck side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rearmost, lowest, mid-angle position.

### SCRL ANGLE RANGE

| Seat | SCRL (°) | | |
|---|---|---|---|
| | Max | Min | Mid |
| Driver Seat | 13.9 | 9.7 | 11.8 |
| Front Passenger Seat | 13.7 | 9.9 | 11.5 |
| Front Center Seat | | | |
| Struck Side Rear Seat | Fixed | Fixed | Fixed |
| Non-Struck Side Rear Seat | Fixed | Fixed | Fixed |
| Rear Center Seat | Fixed | Fixed | Fixed |

### SEAT HEIGHT AND ANGLE

| Seat | As Tested SCRL Angle (Mid) (°) | As Tested SCRP Height (mm) | SCRP Height Position | SCRP Height (mm) | | |
|---|---|---|---|---|---|---|
| | | | | Rearmost | Mid Fore/Aft | Forwardmost |
| Driver Seat | 11.8 | 608 | Max | | | |
| | | | Mid | 606 | 608 | 613 |
| | | | Min | | | |
| Front Passenger Seat | 11.5 | 605 | Max | | | |
| | | | Mid | 600 | 605 | 609 |
| | | | Min | | | |
| Front Center Seat | | | Max | | | |
| | | | Mid | | | |
| | | | Min | | | |
| Struck Side Rear Seat | Fixed | Fixed | Max | Fixed | Fixed | Fixed |
| | | | Mid | Fixed | Fixed | Fixed |
| | | | Min | Fixed | Fixed | Fixed |
| Non-Struck Side Rear Seat | Fixed | Fixed | Max | Fixed | Fixed | Fixed |
| | | | Mid | Fixed | Fixed | Fixed |
| | | | Min | Fixed | Fixed | Fixed |
| Rear Center Seat | Fixed | Fixed | Max | Fixed | Fixed | Fixed |
| | | | Mid | Fixed | Fixed | Fixed |
| | | | Min | Fixed | Fixed | Fixed |

**DATA SHEET NO. 2 … (CONTINUED)**

**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA**

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

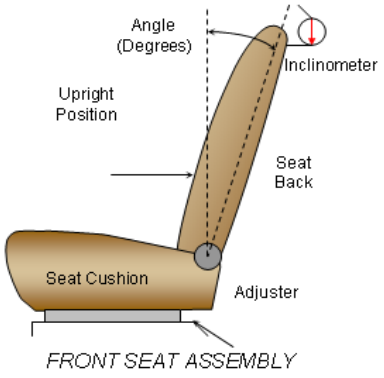
**SEAT FORE/AFT POSITION**

| Seat | Total Fore/Aft Travel | | Test Position From Forwardmost Position | |
|---|---|---|---|---|
| | mm | Detents* | mm | Detent* |
| Driver Seat | 260 | 26 | 130 | 13 |
| Front Passenger Seat | 260 | 26 | 130 | 13 |
| Front Center Seat | | | | |
| Struck Side Rear Seat | Fixed | Fixed | Fixed | Fixed |
| Non-Struck Side Rear Seat | Fixed | Fixed | Fixed | Fixed |
| Rear Center Seat | Fixed | Fixed | Fixed | Fixed |

*Detent zero (0) is the forward most detent

**SEAT BACK ADJUSTMENT**

The driver's seat back is positioned to the manufacturer's designated design angle. The right front passenger's seat back is positioned in a similar manner as the driver's seat back. The struck side rear seat back is not adjustable. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck side rear seat back. Seat back angle is measured at the head rest post.




**SEAT BACK POSITION**

| Seat | Total Seat Back Angle Range | | Test Position from Most Upright | |
|---|---|---|---|---|
| | Degrees | Detents* | Degree | Detent* |
| Driver Seat w/ Seated Dummy | 65.5 | 38 | 3.4 | |
| Front Passenger Seat | 75.8 | 38 | 3.1 | |
| Front Center Seat | | | | |
| Struck Side Rear Seat w/ Seated Dummy | Fixed | Fixed | Fixed | Fixed |
| Non-Struck Side Rear Seat | Fixed | Fixed | Fixed | Fixed |
| Rear Center Seat | Fixed | Fixed | Fixed | Fixed |

*Detent zero (0) is the forward most detent

## DATA SHEET NO. 2 … (CONTINUED)

## SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. The positions are marked H, M2, M1, L from top to bottom.

| | Total No. of Positions | Placed in Position |
|---|---|---|
| Driver Seat | 4 | M2 |
| Rear Seat | Fixed | Fixed |

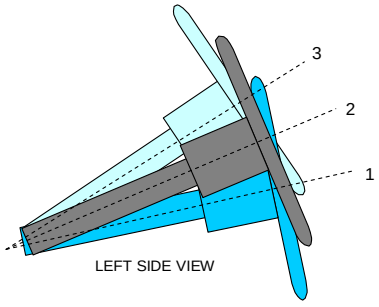
### HEAD RESTRAINT ADJUSTMENT

The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

| | Total No. of Positions | Placed in Position |
|---|---|---|
| Driver Seat | 4 | H |
| Rear Seat | Fixed | Fixed |

### STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.




*STEERING COLUMN ASSEMBLY*

**STEERING COLUMN POSITIONING**

| | Degrees | Fore-Aft Position (mm) |
|---|---|---|
| Lowermost Position, No. 1 | 25.8 | 77 |
| Geometric Center Position, No. 2 | 27.5 | 104 |
| Uppermost Position, No. 3 | 29.1 | 130 |
| Telescoping Steering Wheel Travel | | 53 |
| Test Position | 27.5 | 104 |

## DATA SHEET NO. 2 … (CONTINUED)

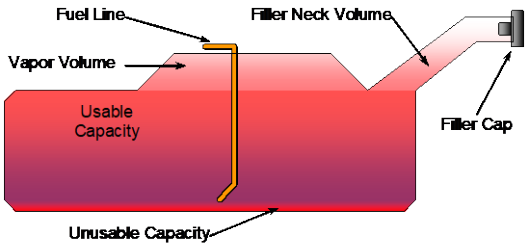
## SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### FUEL PUMP

The vehicle is equipped with an electric fuel pump. The pump will work at “ignition on” until pressure in the system has reached working pressure in the system; then it will stop pumping fuel until the engine has been started.




*VEHICLE FUEL TANK ASSEMBLY*

### FUEL TANK CAPACITY

| Description | Liters |
|---|---|
| Usable Capacity of "Standard Tank" (see Form No. 1) | 62.84 |
| Usable Capacity of "Optional Tank" (see Form No. 1) | |
| Usable Capacity of "Standard Tank" (see Owner's Manual) | 62.84 |
| Usable Capacity of "Optional Tank" (see Owner's Manual) | |
| 93% of Usable Capacity | 58.29 |
| Actual Amount of Solvent Used in Test | 58.29 |
| 1/3 of Usable Capacity | 20.95 |

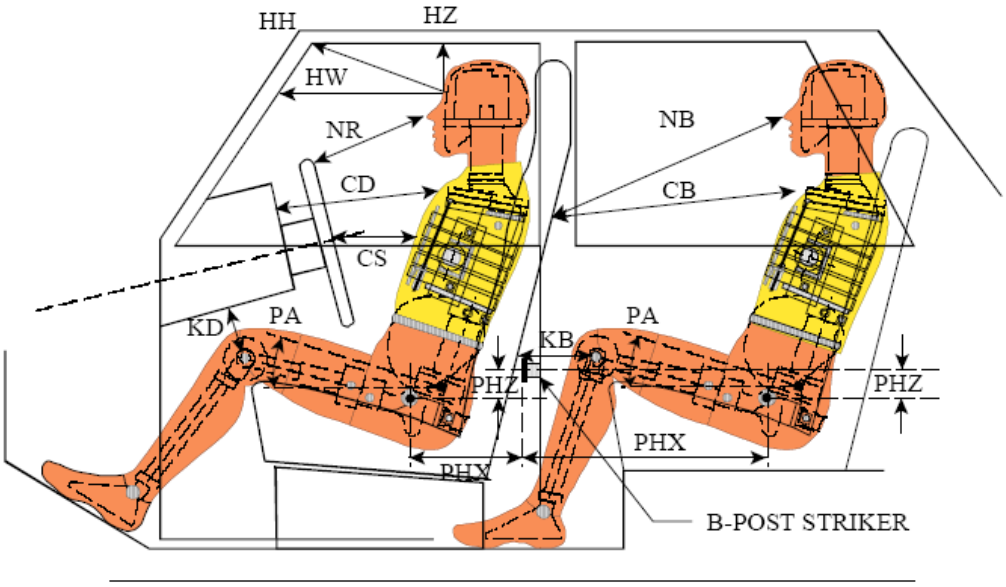
Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in the Form No. 1? ☒ **Yes** ☐ **No**

**DATA SHEET NO. 3**

**DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




NOTE: 2-DOOR VEHICLE SHOWN. REAR DUMMY PHX & PHZ MEASUREMENTS FOR A 4-DOOR VEHICLE WOULD USE THE C-POST STRIKER AS A REFERENCE POINT

**LEFT SIDE VIEW**

**DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION**

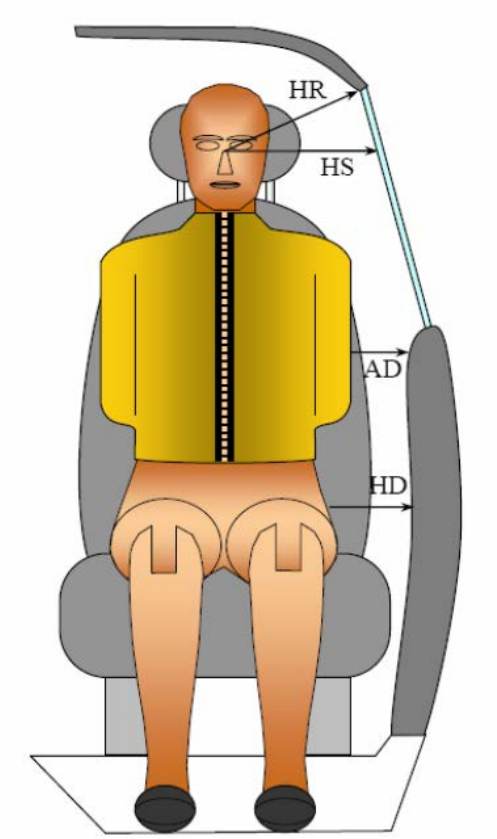
| Driver Code | Pass. Code | Description | Driver | | Passenger | |
|---|---|---|---|---|---|---|
| | | | Length (mm) | Angle (º) | Length (mm) | Angle (º) |
| HH | | Head to Header | 400 | | | |
| HW | | Head to Windshield | 601 | | | |
| HZ | HZ | Head to Roof | 202 | | 315 | |
| NR | NB | Nose to Rim/Seat Back | 487 | | 604 | |
| CD | CB | Chest to Dash/Seat Back | 580 | | 602 | |
| CS | | Chest to Steering Wheel | 195 | | | |
| KD(L)/KDA(L)° | KB(L)/KBA(L)° | Left Knee to Dash/Seat Back | 181 | 16.9 | 350 | 3.3 |
| KD(R)/KDA(R)° | KB(R)/KBA(R)° | Right Knee to Dash/Seat Back | 163 | 29.7 | 351 | 13.2 |
| PAX° | PAX° | Pelvic Tilt Angle X | | | | |
| | PAY° | Pelvic Tilt Angle Y | | 0.0 | | 0.0 |
| PHX | PHX | Hip Point to Striker (x-axis) | 217 | | 257 | |
| PHZ | PHZ | Hip Point to Striker (z-axis) | 184 | | 280 | |

## DATA SHEET NO. 4

## DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




### DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

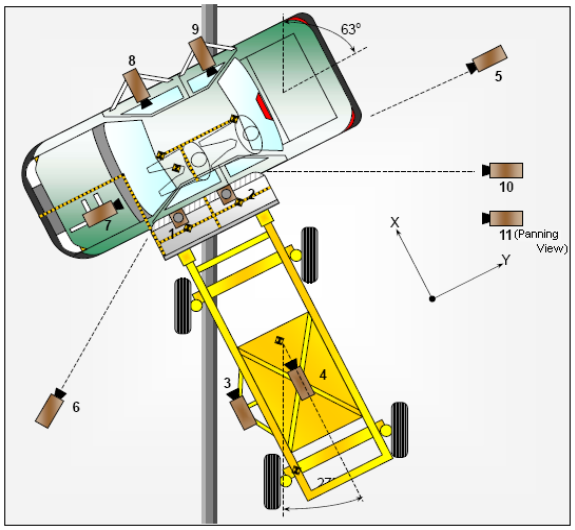
| Code | Measurement Description | Units | Driver | Passenger |
|---|---|---|---|---|
| HR | Head to Side Header | mm | 260 | 298 |
| HS | Head to Side Window | mm | 350 | 375 |
| AD | Arm to Door | mm | 70 | 164 |
| HD | H-Point to Door | mm | 166 | 168 |

## DATA SHEET NO. 5

## CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




### CAMERA LOCATIONS AND DATA

| No. | View | Coordinates (mm) | | | Lens Length (mm) | Operating Frame Rate (fps) |
|---|---|---|---|---|---|---|
| | | X | Y | Z | | |
| 1 | Overhead Overall | 1220 | 2287 | -5486 | 14 | 1000 |
| 2 | Overhead Close-Up | 609 | 2287 | -5102 | 35 | 1000 |
| 3 | Left Impact Point (MDB) | -2134 | 0 | -1143 | 25 | 1000 |
| 4 | Side Overall (MDB) | -3912 | 838 | -1829 | 12.5 | 1000 |
| 5 | Rear | -64 | 2485 | -1348 | 85 | 1000 |
| 6 | Left Front | -2266 | -3564 | -1475 | 24 | 1000 |
| 7 | Driver Front (On-Board) | 316 | -1424 | 608 | 8.5 | 1000 |
| 8 | Driver Side (On-Board) | 435 | -1451 | 576 | 8 | 1000 |
| 9 | Passenger Side (On-Board) | 342 | -1418 | 650 | 8 | 1000 |
| 10 | Real Time Overall | | | | Zoom | 30 |
| 11 | Real Time Inrun | | | | Zoom | 30 |

Reference: Impact Point Projected to Ground; +X = To Front of MDB, +Y = To Right of MDB, +Z = Down

*All measurements accurate to ±6 mm

### INSTRUMENTATION

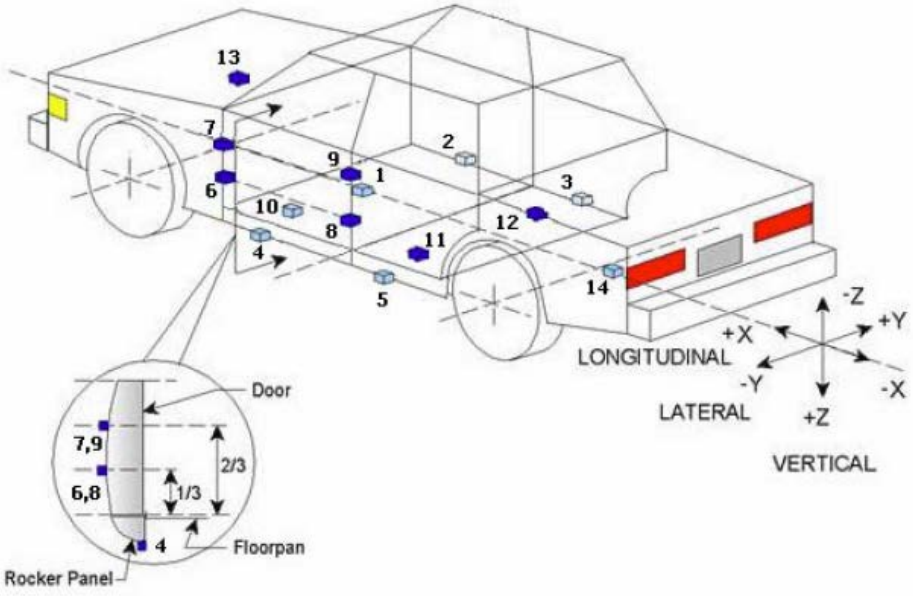
| | |
|---|---|
| Driver Dummy Channels | 16 |
| Passenger Dummy Channels | 19 |
| Vehicle Structure Accelerometers | 23 |
| MDB Channels | 5 |
| Total | 63 |

**DATA SHEET NO. 6**

**TEST VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




**VEHICLE ACCELEROMETER PRE-TEST LOCATIONS**

| Loc. No. | Sensor Description | Coordinates (mm) | | |
|---|---|---|---|---|
| | | X | Y | Z |
| 1 | Vehicle CG | 1800 | 0 | -450 |
| 2 | Right Sill at Front Seat | 2550 | 740 | -300 |
| 3 | Right Sill at Rear Seat | 1720 | 740 | -300 |
| 4 | Left Sill at Front Door | 2650 | -740 | -300 |
| 5 | Left Sill at Rear Door | 1720 | -740 | -250 |
| 6 | A-Pillar Lower | 3500 | -750 | -770 |
| 7 | A-Pillar Middle | 3500 | -750 | -960 |
| 8 | B-Pillar Lower | 1900 | -730 | -660 |
| 9 | B-Pillar Middle | 1900 | -730 | -900 |
| 10 | Front Seat Track | 2370 | -620 | -490 |
| 11 | Rear Seat Structure | 1710 | -320 | -380 |
| 12 | Right Rear Occupant Compartment | 1725 | 370 | -260 |
| 13 | Engine Block | 398 | -20 | -690 |
| 14 | Rear Floorpan Above Axle | 930 | 0 | -670 |

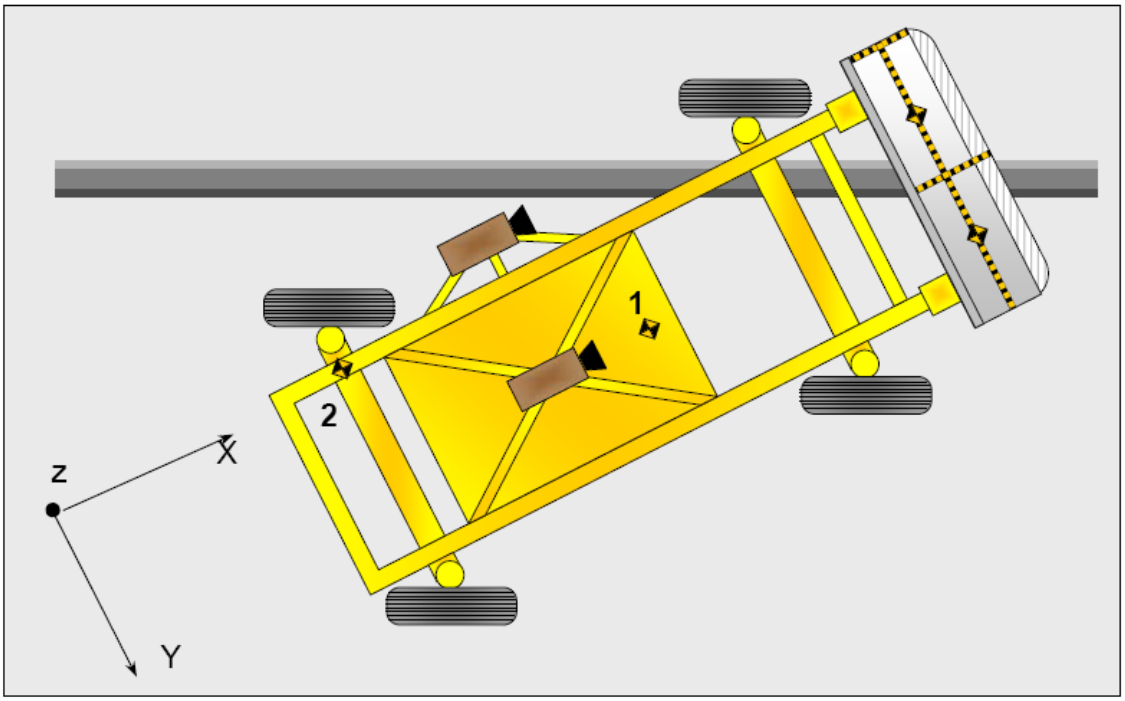
Reference: X – Rear surface of vehicle (+ forward)
Y – Vehicle centerline (+ to right)
Z – Ground plane (+ down)

**DATA SHEET NO. 7**

**MDB ACCELEROMETER LOCATIONS**

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




**MDB ACCELEROMETER LOCATIONS**

| Loc. No. | Accelerometer Location | Coordinates (mm) | | |
|---|---|---|---|---|
| | | X | Y | Z |
| 1 | MDB CG | -1195 | 0 | -430 |
| 2 | MDB Rear | -2642 | -593 | -608 |

Reference: X – Face of MDB (+ forward)
Y – MDB centerline (+ to right)
Z – Ground plane (+ down)

| | | |
|---|---|---|
| Width between left and right MDB contact switches | mm | |

## DATA SHEET NO. 8

## POST-TEST OBSERVATIONS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### TEST DUMMY INFORMATION AND CONTACT POINTS

| Dummy Body Part | Front Seat Dummy (ES-2re) | Rear Seat Dummy (SID-IIs) |
|---|---|---|
| Face | Curtain Air Bag | Curtain Air Bag |
| Top of Head | Curtain Air Bag, Headliner | Curtain Air Bag, Headrest |
| Left Side of Head | Curtain Air Bag | Curtain Air Bag |
| Back of Head | Headrest | Headrest, Curtain Air Bag |
| Left Shoulder | Curtain Air Bag | Door Panel |
| Upper Torso | Torso/Pelvis Air Bag, Seatback | Door Panel |
| Lower Torso | Torso/Pelvis Air Bag, Seatback | Door Panel |
| Left Hip | Torso/Pelvis Air Bag, Seatback | Seat Pan, Door Panel |
| Left Knee | None | None |

### POST-TEST DOOR PERFORMANCE

| Description | Struck Side | | Non-Struck Side | | Rear Hatch/Other |
|---|---|---|---|---|---|
| | Front | Rear | Front | Rear | |
| Remained Closed and Operational | No | No | Yes | Yes | Yes |
| Total Separation from Vehicle at Hinges or Latches | No | No | No | No | No |
| Latch or Hinge System Pulled Out of Their Anchorages | No | No | No | No | No |
| Disengaged from Latched Position | No | No | No | No | No |
| Latch Separated from Striker | No | No | No | No | No |
| Jammed Shut | Yes | Yes | No | No | No |
| If Door Opened at Striker, Record Width of Opening at Striker (mm) | N/A | N/A | N/A | N/A | N/A |

## DATA SHEET NO. 8 … (CONTINUED)

## POST-TEST OBSERVATIONS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### POST-TEST SEAT PERFORMANCE

| Description | Struck Side | | Non-Struck Side | |
|---|---|---|---|---|
| | Front | Rear | Front | Rear |
| Seat Movement Along Seat Track | No | No | No | No |
| Seat Disengagement from Floor Pan | No | No | No | No |
| Seat Back Movement from Initial Position | No | No | No | No |
| Seat Back Collapse | No | No | No | No |

### POST-TEST STRUCTURAL OBSERVATIONS

| Critical Areas of Performance | Observations and Conclusions |
|---|---|
| Pillar Performance | Good |
| Sill Separation | None |
| Windshield Damage | None |
| Side Window Damage | None |
| Other Notable Effects | None |

**DATA SHEET NO. 8 … (CONTINUED)**

**POST-TEST OBSERVATIONS**

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

| Restraint Type | Struck Side Driver | | Struck Side Rear Passenger | |
|---|---|---|---|---|
| | Mounted | Deployed | Mounted | Deployed |
| Frontal Air Bag | Yes | No | | |
| Knee Air Bag | Yes | No | | |
| Side Air Bag 1 (Curtain) | Yes | Yes | Yes | Yes |
| Side Air Bag 2 (Torso/Pelvis) | Yes | Yes | No | |
| Seat Belt Pretensioner | Yes | Yes | Yes | Yes |
| Seat Belt Load Limiter | Yes | Yes | Yes | Yes |
| Other | | | | |

**IMPACT POINT LOCATION DATA**

| Measured Parameter | Units | Tolerance | Value |
|---|---|---|---|
| Vehicle Wheelbase | mm | | 2669 |
| Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point) | mm | | 395 |
| Actual Impact Point (Aft of Front Axle) | mm | | 398 |
| Horizontal Offset (+ forward / - rearward) | mm | ± 50 of Intended Impact Point | -3 |
| Vertical Offset (+ down / - up) | mm | ± 20 of Intended Impact Point | 12 |

## DATA SHEET NO. 9

## MDB SUMMARY OF RESULTS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### MDB SPECIFICATIONS

| Measurement Description | Length (mm) |
|---|---|
| Overall Width of Framework Carriage | 1251 |
| Overall Length Including Honeycomb Face | 4115 |
| Wheelbase of Framework Carriage | 2595 |
| CG location aft of Front Axle | 1118 |

### MDB WEIGHTS

| | Units | Front Axle | Rear Axle | Total |
|---|---|---|---|---|
| Left | kg | 402.0 | 297.5 | 699.5 |
| Right | kg | 377.0 | 290.0 | 667.0 |
| Ratio | % | 57.0% | 43.0% | 100.0% |
| Totals | kg | 779.0 | 587.5 | 1366.5 |

### SPEED AND IMPACT DATA

| Measured Parameter | Units | Requirement | Value |
|---|---|---|---|
| Trap No. 1 Velocity (Primary) | km/h | 61.1 to 62.7 | 61.76 |
| Trap No. 2 Velocity (Redundant) | km/h | 61.1 to 62.7 | 61.79 |
| MDB CL to Target Vehicle CL | degrees | 88.5 to 91.5 | 90.5 |
| MDB Forward Line of Motion to Target Vehicle CL | degrees | 62.5 to 63.5 | 63.0 |
| MDB Crabbed Angle to MDB Forward Line of Motion | degrees | 26.0 to 28.0 | 27.5 |

### MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

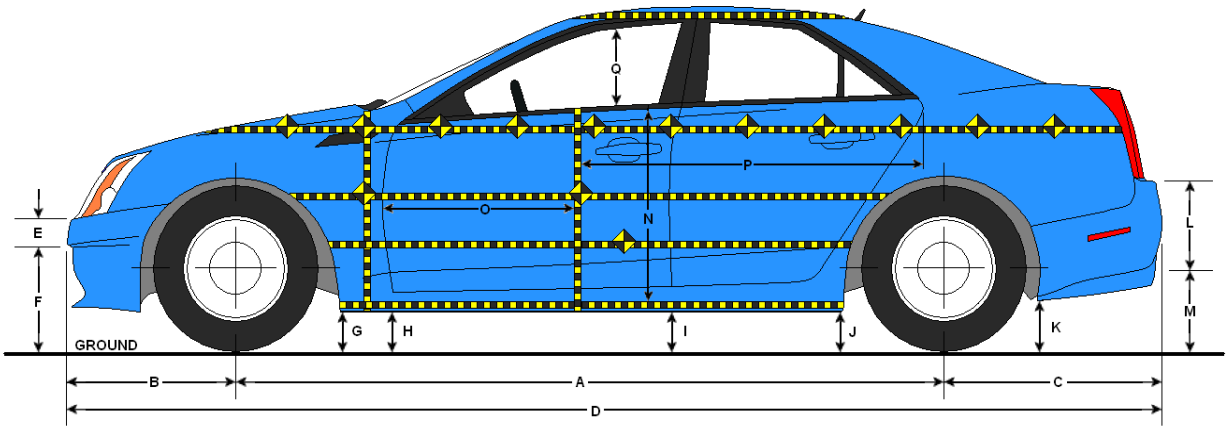
| Vertical Location | | | From Centerline | | Max. Crush (mm) |
|---|---|---|---|---|---|
| Row | Description | Height (mm) | Distance (mm) | Direction | |
| A | Center of Bumper | 432 | 800 | Right | 241 |
| B | Top of Bumper | 533 | 800 | Right | 171 |
| C | Mid Level | 686 | 800 | Left | 143 |
| D | Top of Stack | 813 | 800 | Left | 155 |

## DATA SHEET NO. 10

## TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




**LEFT SIDE VIEW**

### VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

| Code | Description | Pre-Test | Post-Test | Change |
|---|---|---|---|---|
| A | Wheelbase | 2669 | 2665 | -4 |
| B | Front Axle to FSOV | 985 | 976 | -9 |
| C | Rear Axle to RSOV | 987 | 995 | 8 |
| D | Total Length at Centerline | 4644 | 4636 | -8 |
| E | Front Bumper Thickness | 262 | 262 | 0 |
| F | Front Bumper Bottom to Ground | 343 | 337 | -6 |
| G | Sill Height at Front Wheel Well | 389 | 390 | 1 |
| H | Sill Height at Front Door Leading Edge | 394 | 381 | -13 |
| I | Sill Height at B-Pillar | 459 | 465 | 6 |
| J1 | Sill Height at Rear Wheel Well | 420 | 459 | 39 |
| J2 | Pinch Weld Height at Rear Wheel Well | 280 | 283 | 3 |
| K | Sill Height Aft of Rear Wheel Well | 479 | 483 | 4 |
| L | Rear Bumper Thickness | 233 | 234 | 1 |
| M | Rear Bumper Bottom to Ground | 415 | 416 | 1 |
| N | Sill Height to Bottom of Front Window Sill | 713 | 708 | -5 |
| O | Front Door Leading Edge to Impact CL | 745 | 743 | -2 |
| P | Rear Door Trailing Edge to Impact CL | 1310 | 1287 | -23 |
| Q | Front Window Opening | 458 | 490 | 32 |
| R | Right Side Length | 3408 | 3399 | -9 |
| S | Left Side Length | 3408 | 3401 | -7 |
| T | Vehicle Width at B-Pillar | 1829 | 1760 | -69 |

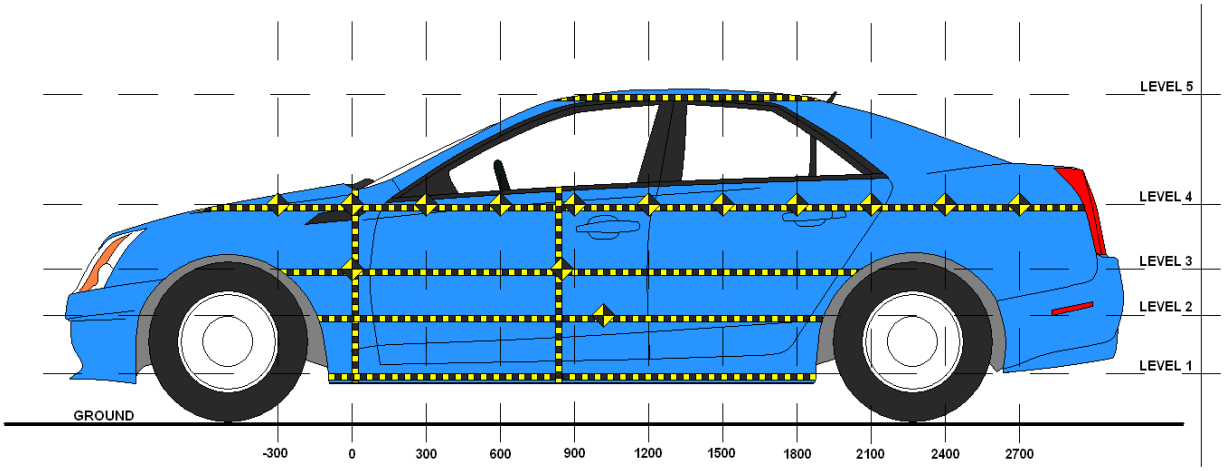
All measurements in mm with tolerance of ± 3mm

## DATA SHEET NO. 11

## TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




**LEFT SIDE VIEW**

| Level | Description | Height Above Ground (mm) | Maximum Exterior Static Crush | Distance from Impact |
|---|---|---|---|---|
| 1 | Sill Top | 348 | 41 | 1200 |
| 2 | Occupant H-Point | 692 | 154 | 450 |
| 3 | Mid-Door | 746 | 161 | 600 |
| 4 | Window Sill | 1088 | 0 | -150 |
| 5 | Window Top | 1628 | -3 | 750 |

## DATA SHEET NO. 11 … (CONTINUED)

## TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

### EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

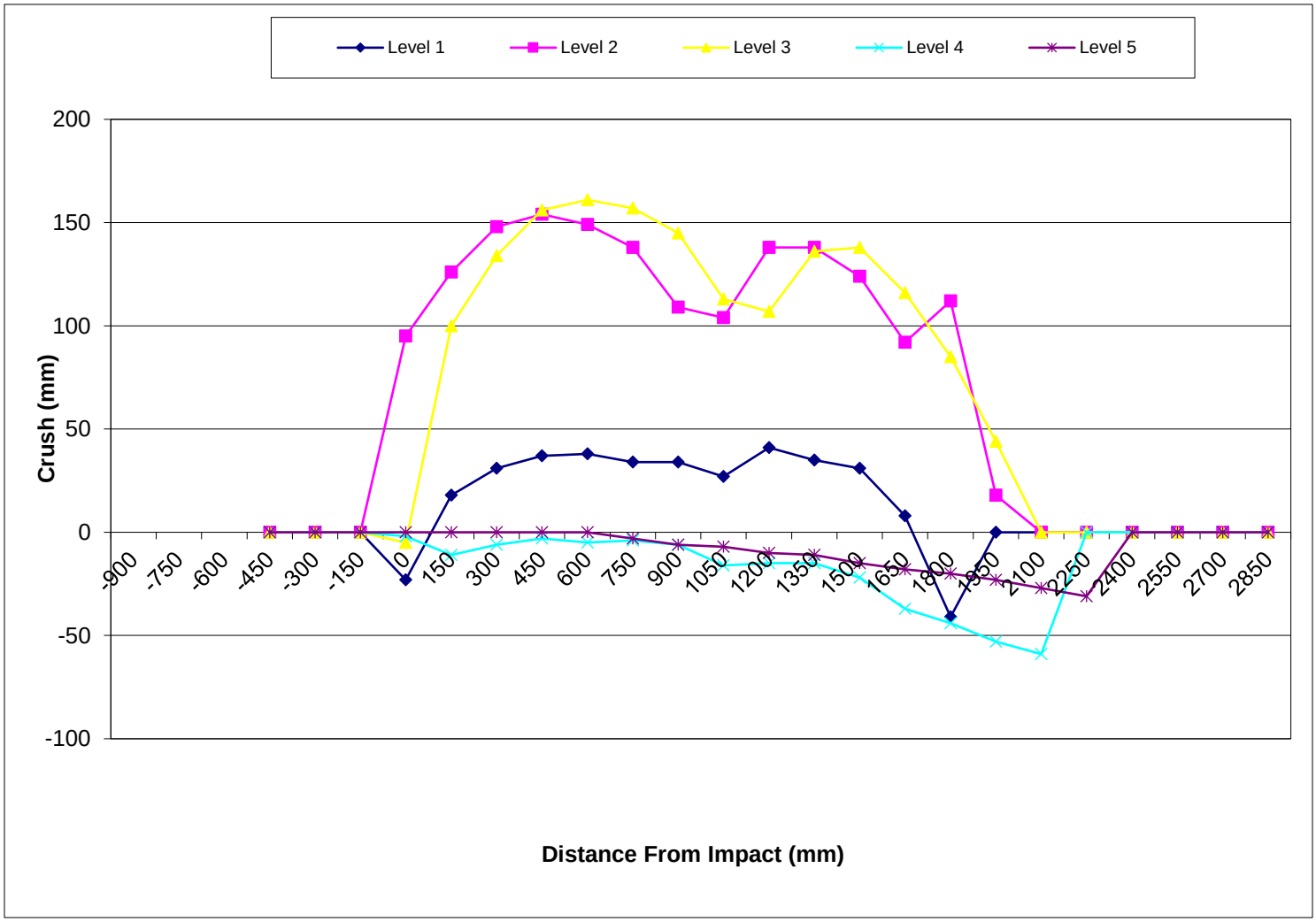
| | Pre-Test (mm) | | | | | Post-Test (mm) | | | | | Crush (mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| -900 | | | | | | | | | | | | | | | |
| -750 | | | | | | | | | | | | | | | |
| -600 | | | | | | | | | | | | | | | |
| -450 | | | | | | | | | | | | | | | |
| -300 | | | | | | | | | | | | | | | |
| -150 | | | | 680 | | | | | 680 | | | | | 0 | |
| 0 | 620 | 587 | 588 | 674 | | 597 | 682 | 583 | 672 | | -23 | 95 | -5 | -2 | |
| 150 | 624 | 589 | 590 | 670 | | 642 | 715 | 690 | 659 | | 18 | 126 | 100 | -11 | |
| 300 | 611 | 591 | 591 | 684 | | 642 | 739 | 725 | 678 | | 31 | 148 | 134 | -6 | |
| 450 | 605 | 591 | 590 | 681 | | 642 | 745 | 746 | 678 | | 37 | 154 | 156 | -3 | |
| 600 | 603 | 590 | 589 | 679 | | 641 | 739 | 750 | 674 | | 38 | 149 | 161 | -5 | |
| 750 | 603 | 590 | 588 | 675 | 893 | 637 | 728 | 745 | 671 | 890 | 34 | 138 | 157 | -4 | -3 |
| 900 | 602 | 590 | 589 | 674 | 889 | 636 | 699 | 734 | 668 | 883 | 34 | 109 | 145 | -6 | -6 |
| 1050 | 603 | 592 | 590 | 670 | 888 | 630 | 696 | 703 | 654 | 881 | 27 | 104 | 113 | -16 | -7 |
| 1200 | 602 | 594 | 592 | 668 | 889 | 643 | 732 | 699 | 653 | 879 | 41 | 138 | 107 | -15 | -10 |
| 1350 | 605 | 597 | 595 | 666 | 890 | 640 | 735 | 731 | 651 | 879 | 35 | 138 | 136 | -15 | -11 |
| 1500 | 607 | 599 | 597 | 665 | 892 | 638 | 723 | 735 | 643 | 877 | 31 | 124 | 138 | -22 | -15 |
| 1650 | 616 | 598 | 597 | 664 | 893 | 624 | 690 | 713 | 627 | 875 | 8 | 92 | 116 | -37 | -18 |
| 1800 | 624 | 588 | 590 | 663 | 894 | 583 | 700 | 675 | 619 | 874 | -41 | 112 | 85 | -44 | -20 |
| 1950 | | 587 | 586 | 665 | 896 | | 605 | 630 | 612 | 873 | | 18 | 44 | -53 | -23 |
| 2100 | | | | 667 | 899 | | | | 608 | 872 | | | | -59 | -27 |
| 2250 | | | | | 903 | | | | | 872 | | | | | -31 |
| 2400 | | | | | | | | | | | | | | | |
| 2550 | | | | | | | | | | | | | | | |
| 2700 | | | | | | | | | | | | | | | |
| 2850 | | | | | | | | | | | | | | | |

## DATA SHEET NO. 11 … (CONTINUED)

## TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

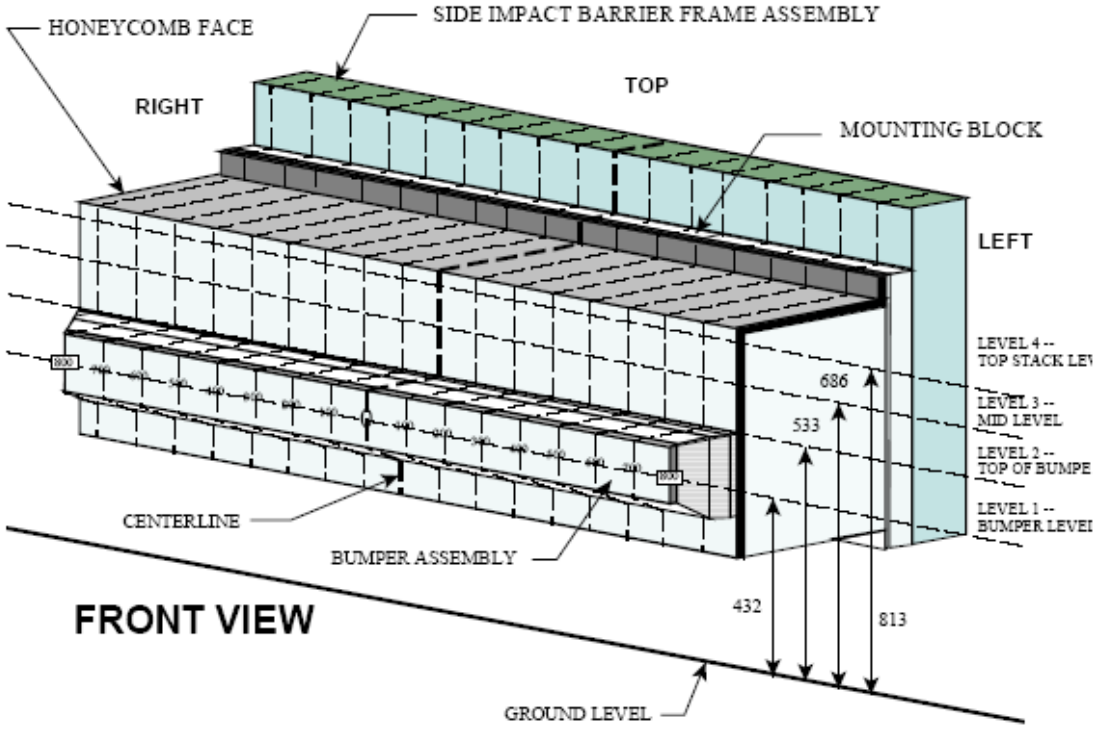


**DATA SHEET NO. 12**

**MDB EXTERIOR STATIC CRUSH MEASUREMENTS**

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




NOTE: Dimensions are shown in millimeters, mm

**DEFORMABLE BARRIER STATIC CRUSH**

| Stack Level | Distance Right of Center | | | | | | | | C/L | Distance Left of Center | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 800 | 700 | 600 | 500 | 400 | 300 | 200 | 100 | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 |
| 1 | 241 | 226 | 229 | 228 | 225 | 223 | 222 | 219 | 211 | 212 | 212 | 208 | 208 | 208 | 209 | 218 | 236 |
| 2 | 171 | 160 | 164 | 158 | 148 | 137 | 142 | 140 | 131 | 135 | 134 | 137 | 139 | 139 | 140 | 143 | 167 |
| 3 | 83 | 80 | 77 | 88 | 80 | 92 | 107 | 86 | 68 | 62 | 59 | 55 | 56 | 63 | 79 | 101 | 143 |
| 4 | 110 | 83 | 73 | 74 | 84 | 103 | 126 | 95 | 80 | 68 | 59 | 61 | 67 | 71 | 89 | 111 | 155 |

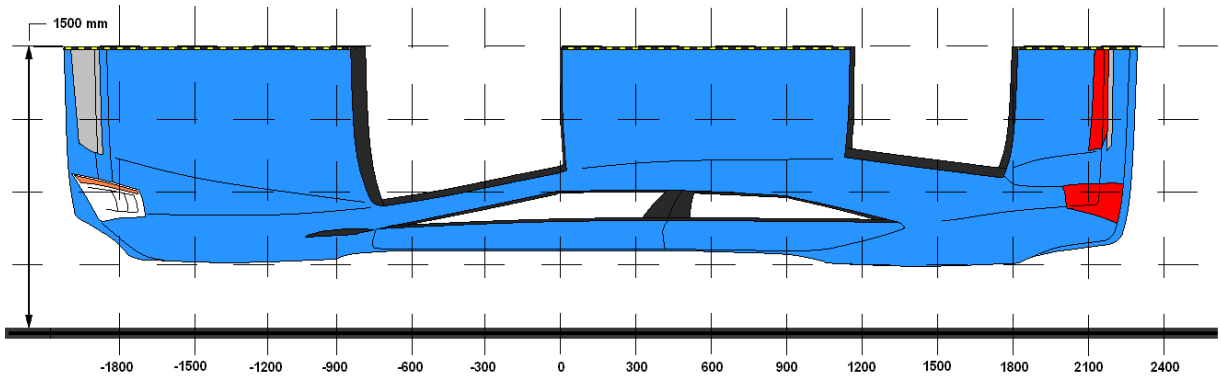
All dimensions in millimeters.

## DATA SHEET NO. 13

## VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24




### VEHICLE DAMAGE PROFILE DISTANCES

| DPD | Distance From Impact Point (mm) | Level | Pre-Test (mm) | Post-Test (mm) | Crush (mm) |
|---|---|---|---|---|---|
| 1 | 2250 | 5 | 903 | 872 | -31 |
| 2 | 1800 | 2 | 588 | 700 | 112 |
| 3 | 1200 | 2 | 594 | 732 | 138 |
| 4 | 750 | 3 | 588 | 745 | 157 |
| 5 | 300 | 2 | 591 | 739 | 148 |
| 6 | -150 | 4 | 680 | 680 | 0 |

### MDB DAMAGE PROFILE DISTANCES

| DPD | From MDB Centerline | | Level | Crush (mm) |
|---|---|---|---|---|
| | Distance (mm) | Direction | | |
| 1 | 800 | Left | 1 | 236 |
| 2 | 500 | Left | 1 | 208 |
| 3 | 200 | Left | 1 | 212 |
| 4 | 200 | Right | 1 | 222 |
| 5 | 500 | Right | 1 | 228 |
| 6 | 800 | Right | 1 | 241 |

## DATA SHEET NO. 14

## FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24

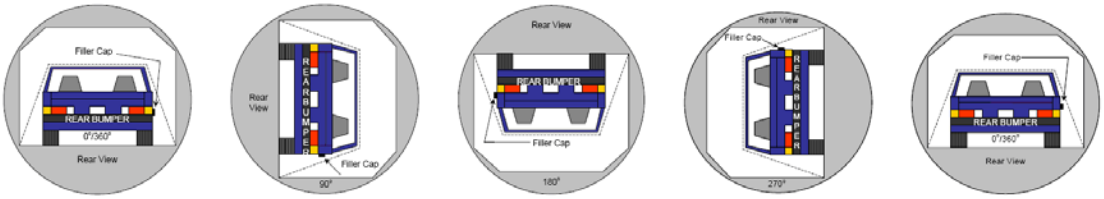
Temperature at Time of Impact: 24.4°C Test Time: 1:15 P.M.

A. From impact until vehicle motion ceases: N/A oz.
(Maximum allowable = 1 oz.)

B. For the 5 minute period after motion ceases: N/A oz.
(Maximum allowable = 5 oz.)

C. For the following 25 minutes: N/A oz.
(Maximum allowable = 1 oz./minute)

D. Spillage Details: No spillage.




0° TO 90° 90° TO 180° 180° TO 270° 270° TO 360°

### SOLVENT COLLECTION TIME TABLE IN SECONDS

| Test Phase | Rotation Time | Hold Time | Total Time |
|---|---|---|---|
| 0° To 90° | 83 | 300 | 383 |
| 90° To 180° | 81 | 300 | 381 |
| 180° To 270° | 80 | 300 | 380 |
| 270° To 360° | 85 | 300 | 385 |

### FMVSS 301 SPILLAGE TABLE

| Test Phase | First 5 Minutes | Sixth Minute | Seventh Minute | Eighth Minute |
|---|---|---|---|---|
| 0° To 90° | | | | |
| 90° To 180° | | | | |
| 180° To 270° | | | | |
| 270° To 360° | | | | |

### SOLVENT SPILLAGE LOCATION TABLE

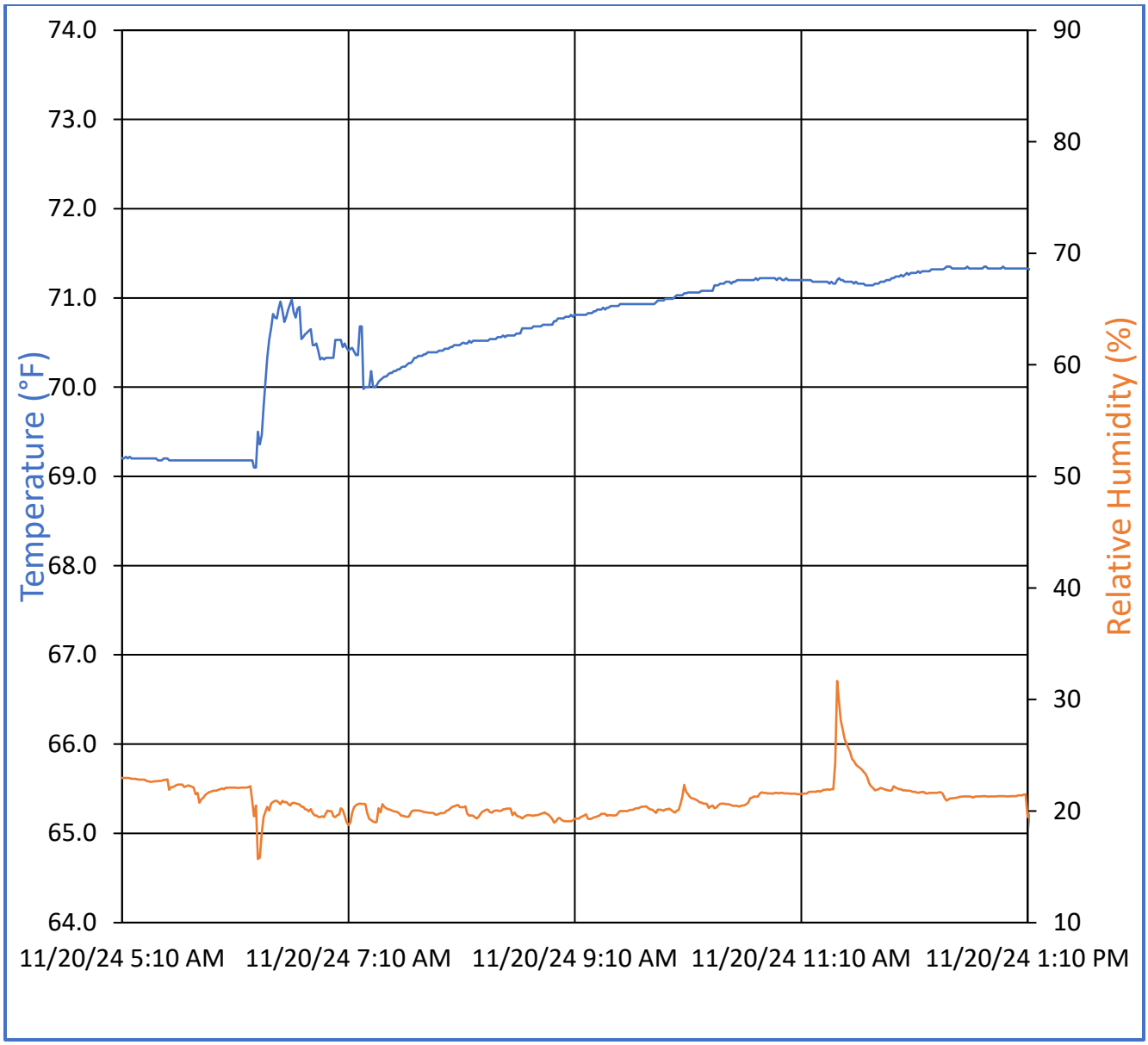
| Test Phase | Spillage Location |
|---|---|
| 0° To 90° | |
| 90° To 180° | |
| 180° To 270° | |
| 270° To 360° | |

**DATA SHEET NO. 15**

**DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION**

Test Vehicle: 2025 Subaru Forester 5-Door MPV NHTSA No. O20255502

Test Program: NCAP MDB Side Impact Test Test Date: 11/20/24



**APPENDIX A**

**PHOTOGRAPHS**

## TABLE OF PHOTOGRAPHS

## TABLE OF PHOTOGRAPHS … (CONTINUED)

## TABLE OF PHOTOGRAPHS … (CONTINUED)

FIGURE 1. As-Delivered Right Front 3/4 View of Test Vehicle

FIGURE 2. As-Delivered Left Rear 3/4 View of Test Vehicle


FIGURE 3. Pre-Test Frontal View of Test Vehicle


FIGURE 4. Post-Test Frontal View of Test Vehicle


FIGURE 5. Pre-Test Left Front 3/4 View of Test Vehicle


FIGURE 6. Post-Test Left Front 3/4 View of Test Vehicle


FIGURE 7. Pre-Test Left Side View of Test Vehicle


FIGURE 8. Post-Test Left Side View of Test Vehicle


FIGURE 9. Pre-Test Left Rear 3/4 View of Test Vehicle


FIGURE 10. Post-Test Left Rear 3/4 View of Test Vehicle


FIGURE 11. Pre-Test Rear View of Test Vehicle


FIGURE 12. Post-Test Rear View of Test Vehicle


FIGURE 13. Pre-Test Right Side View of Test Vehicle


FIGURE 14. Post-Test Right Side View of Test Vehicle


FIGURE 15. Pre-Test Overhead View of Test Area

FIGURE 16. Post-Test Overhead View of Test Area


FIGURE 17. Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle


FIGURE 18. Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle


FIGURE 19. Pre-Test Close-Up View of Impact Point Target


FIGURE 20. Post-Test Close-Up View of Impact Point Target


FIGURE 21. Pre-Test Left Front Door Latch Close-Up


FIGURE 22. Post-Test Left Front Door Latch Close-Up


FIGURE 23. Pre-Test Left Rear Door Latch Close-Up


FIGURE 24. Post-Test Left Rear Door Latch Close-Up


FIGURE 25. Pre-Test Front Close-Up View of Driver Dummy


FIGURE 26. Post-Test Front Close-Up View of Driver Dummy


FIGURE 27. Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking


FIGURE 28. Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View

FIGURE 29. Post-Test Left Side View of Driver Dummy Shoulder and Door Top View

FIGURE 30. Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning


FIGURE 31. Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint


FIGURE 32. Pre-Test Overhead View of Driver Seat Pan Prior to Dummy Positioning


FIGURE 33. Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan


FIGURE 34. Pre-Test Placement of Driver Dummy's Feet


FIGURE 35. Pre-Test View of Belt Anchorage for Driver Dummy


FIGURE 36. Pre-Test Left Side View of Steering Wheel


FIGURE 37. View of Disengaged Parking Brake


FIGURE 38. Pre-Test View of Parking Brake


FIGURE 39. Pre-Test Close-Up Left Side View of Driver Seat Track


FIGURE 40. Pre-Test Close-Up Left Side View of Driver Seat Back


FIGURE 41. Pre-Test Close-Up View of Driver Seat Back or Head Restraint


FIGURE 42. Pre-Test Driver Dummy and Door Clearance View


FIGURE 43. Post-Test Driver Dummy and Door Clearance View


FIGURE 44. Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment


FIGURE 45. Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment


FIGURE 46. Pre-Test Driver Inner Door Panel View


FIGURE 47. Post-Test Driver Inner Door Panel View


FIGURE 48. Post-Test Driver Dummy Close-Up Head Contact with Vehicle Interior View


FIGURE 49. Post-Test Driver Dummy Close-Up Head Contact with Side Air Bag View


FIGURE 50. Post-Test Driver Dummy Close-Up Torso Contact With Vehicle Interior View

FIGURE 51. Post-Test Driver Dummy Close-Up Torso Contact With Side Air Bag View

FIGURE 52. Post-Test Driver Dummy Close-Up Pelvis Contact With Vehicle Interior View


FIGURE 53. Post-Test Driver Dummy Close-Up Pelvis Contact With Side Air Bag View

# Photograph Not Applicable

## No Driver Dummy Close-Up Knee Contact

FIGURE 54. Post-Test Driver Dummy Close-Up Knee Contact View

FIGURE 55. Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking


FIGURE 56. Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View


FIGURE 57. Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View


FIGURE 58. Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning

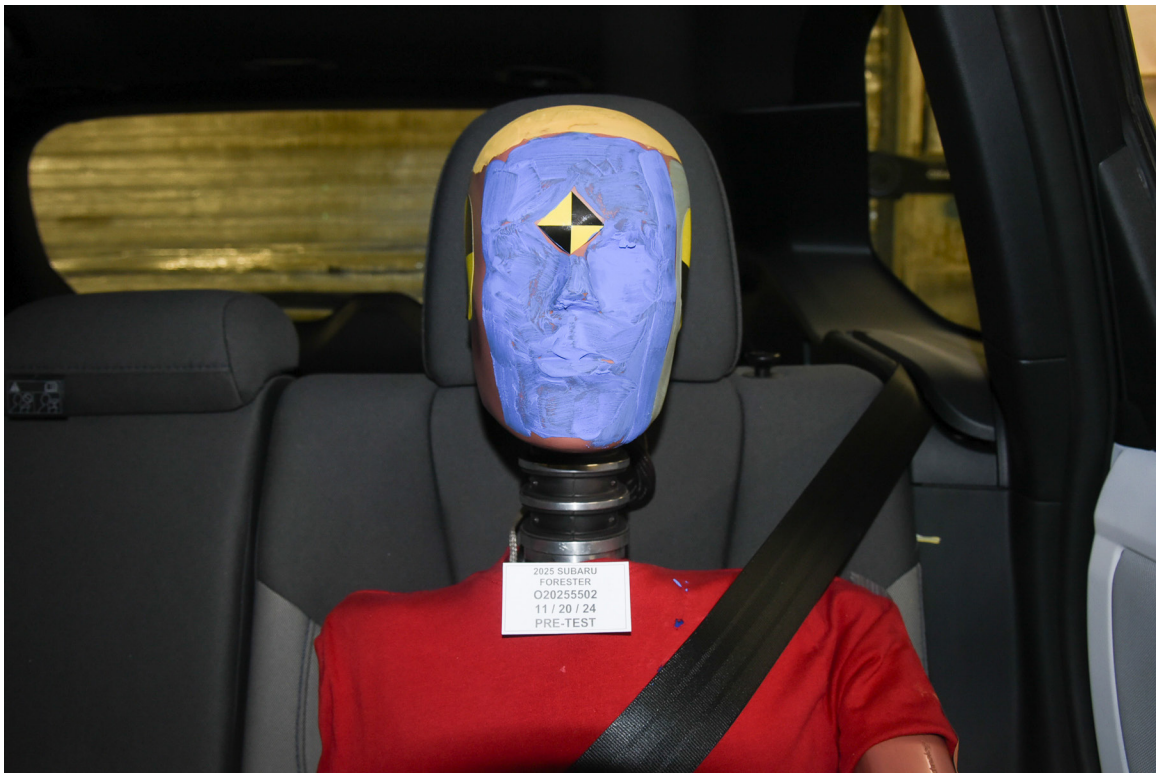



FIGURE 59. Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint


FIGURE 60. Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning


FIGURE 61. Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan


FIGURE 62. Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket


FIGURE 63. Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level


FIGURE 64. Pre-Test Placement of Rear Passenger Dummy's Feet


FIGURE 65. Pre-Test View of Belt Anchorage for Rear Passenger Dummy


FIGURE 66. Pre-Test Close-Up Left Side View of Rear Passenger Seat Track


FIGURE 67. Pre-Test Close-Up Left Side View of Rear Passenger Seat Back


FIGURE 68. Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint


FIGURE 69. Pre-Test Rear Passenger Dummy and Door Clearance View


FIGURE 70. Post-Test Rear Passenger Dummy and Door Clearance View


FIGURE 71. Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment


FIGURE 72. Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment


FIGURE 73. Pre-Test Rear Passenger Inner Door Panel View


FIGURE 74. Post-Test Rear Passenger Inner Door Panel View


FIGURE 75. Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle Interior View

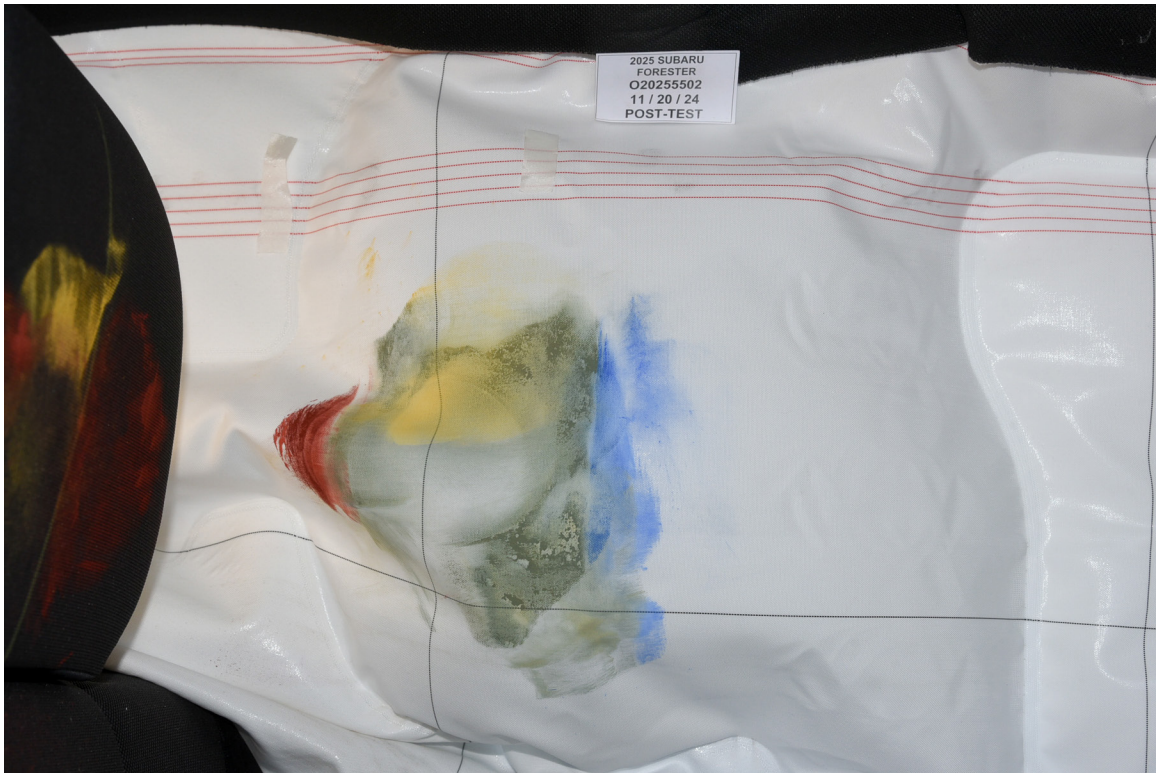



FIGURE 76. Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Air Bag View


FIGURE 77. Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View

# Photograph Not Applicable

Vehicle Not Equipped With Rear Passenger Side Airbag

FIGURE 78. Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Side Air Bag View


FIGURE 79. Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Vehicle Interior View

# Photograph Not Applicable

Vehicle Not Equipped With Rear Passenger Side Airbag

FIGURE 80. Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Air Bag View

# Photograph Not Applicable
## No Passenger Dummy Close-Up Knee Contact

FIGURE 81. Post-Test Rear Passenger Dummy Close-Up Knee Contact View


FIGURE 82. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck


FIGURE 83. Post-Test View of Fuel Filler Cap or Fuel Filler Neck


FIGURE 84. Pre-Test Front View of MDB Impactor Face


FIGURE 85. Post-Test Front View of MDB Impactor Face


FIGURE 86. Pre-Test Top View of MDB Impactor Face


FIGURE 87. Post-Test Top View of MDB Impactor Face


FIGURE 88. Pre-Test Left Side View of MDB Impactor Face


FIGURE 89. Post-Test Left Side View of MDB Impactor Face


FIGURE 90. Pre-Test Right Side View of MDB Impactor Face


FIGURE 91. Post-Test Right Side View of MDB Impactor Face


FIGURE 92. Close-Up View of Vehicle's Certification Label

FIGURE 93. Close-Up View of Vehicle's Tire Information Placard or Label

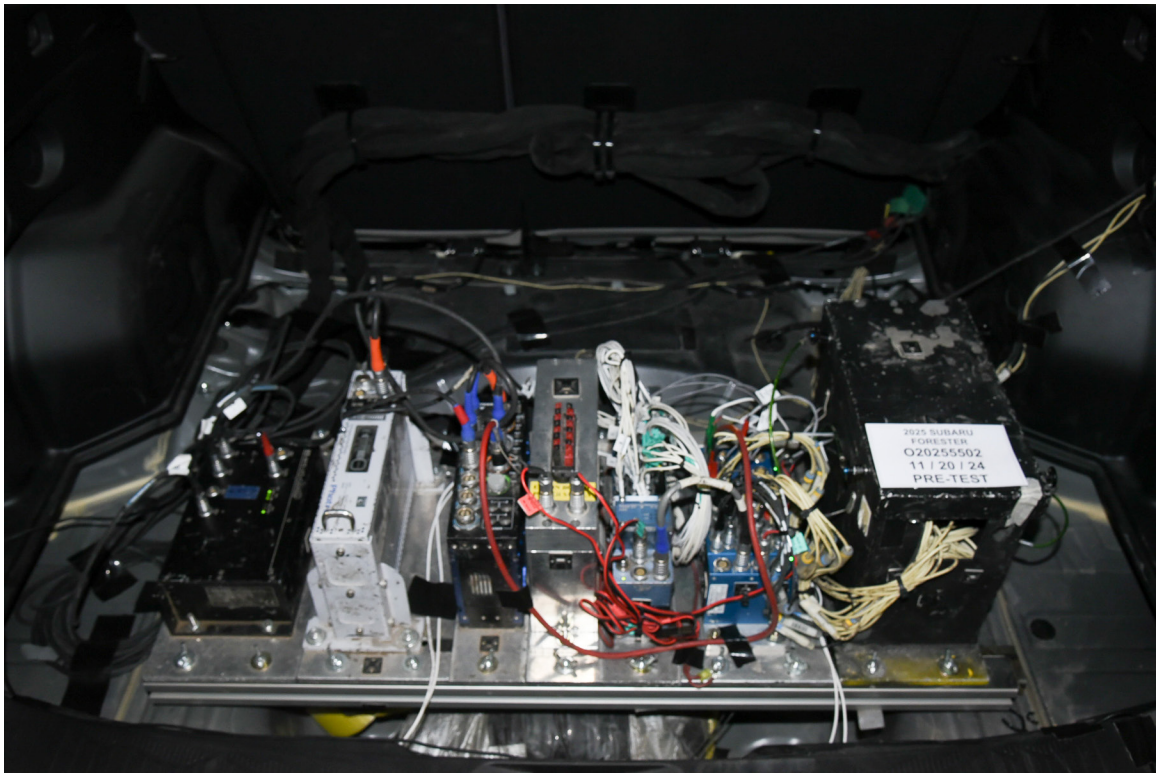


FIGURE 94. Pre-Test Ballast View

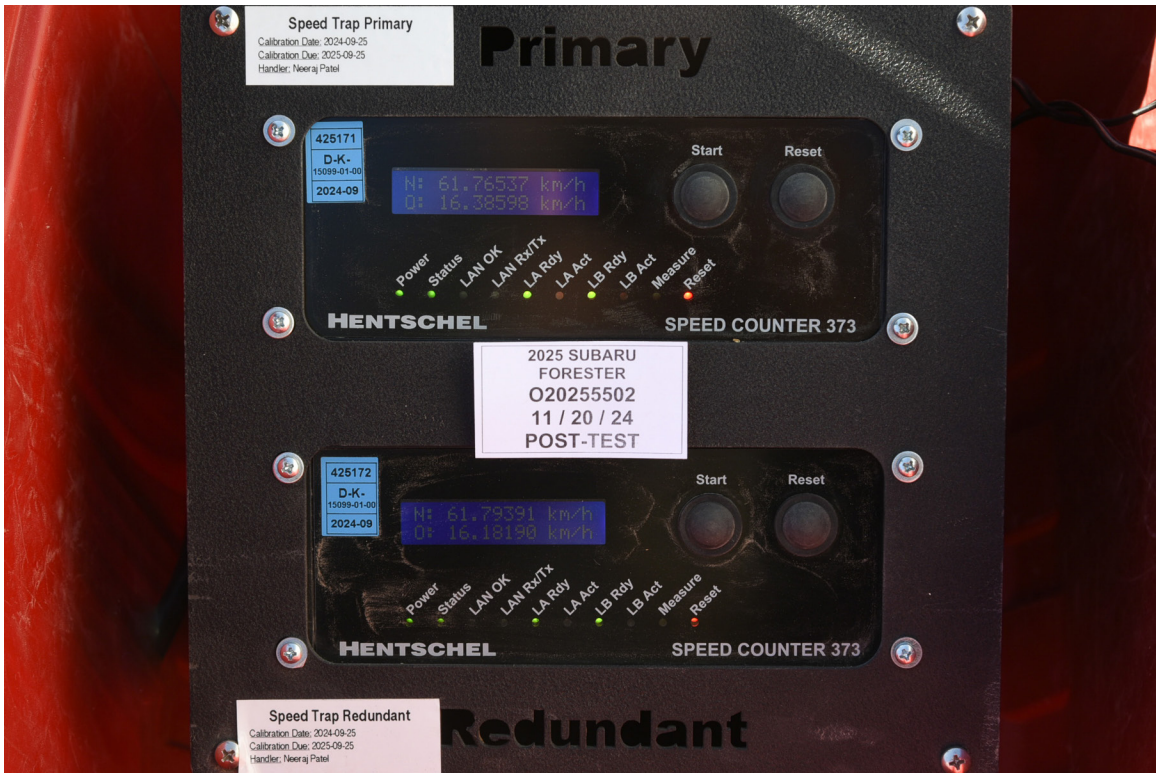



FIGURE 95. Post-Test Primary and Redundant Speed Trap Read-Out


FIGURE 96. FMVSS No. 301 Static Rollover 0 Degrees

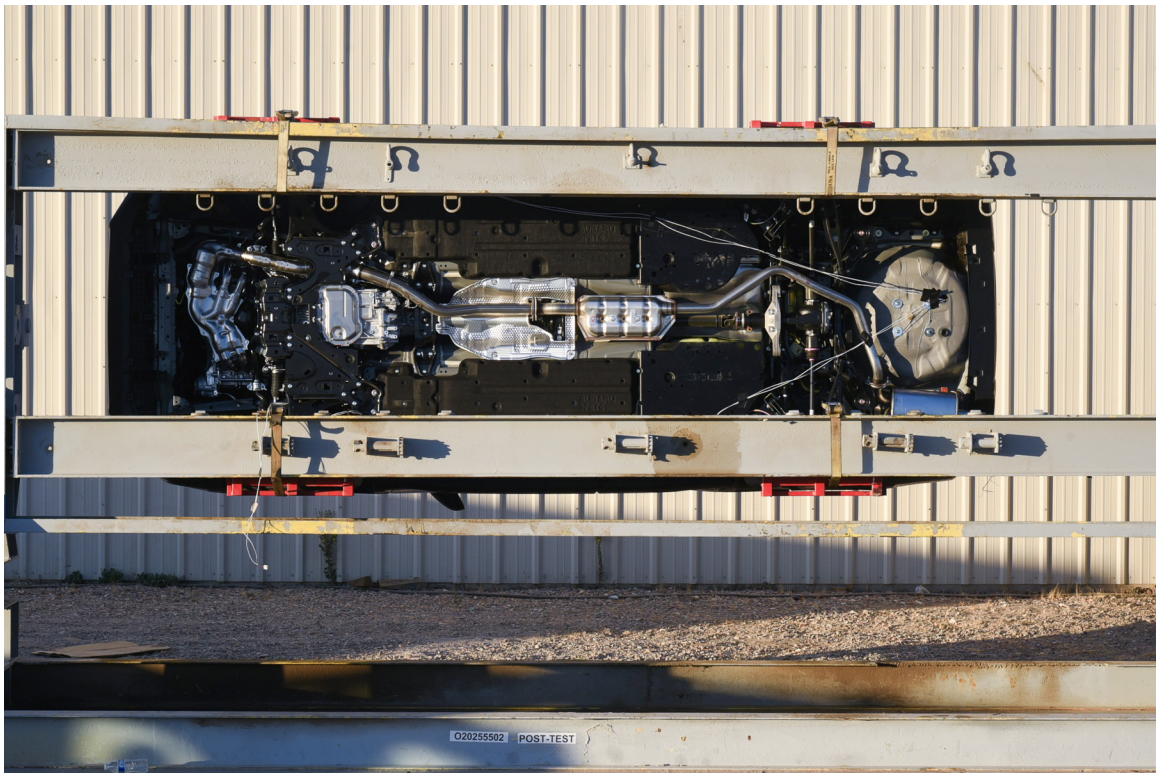



FIGURE 97. FMVSS No. 301 Static Rollover 90 Degrees


FIGURE 98. FMVSS No. 301 Static Rollover 180 Degrees


FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees


FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees


FIGURE 101. Impact Event

FORESTER

VIN JF2SLDACXSH452706
Model/Code 2025 SUBARU FORESTER/SFB
Port/Assembly HUNEMME
Deliver by/Carrier TRUCK / 456

**GOVERNMENT 5-STAR SAFETY RATINGS**

| | | |
|---|---|---|
| **Overall Vehicle Score** | | **Not Rated** |
| Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight. | | |
| **Frontal Crash** | Driver | **Not Rated** |
| | Passenger | **Not Rated** |
| Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight. | | |
| **Side Crash** | Front seat | **Not Rated** |
| | Rear seat | **Not Rated** |
| Based on the risk of injury in a side impact. | | |
| **Rollover** | | **Not Rated** |
| Based on the risk of rollover in a single-vehicle crash. | | |

Star ratings range from 1 to 5 stars ( ★★★★★ ) with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

CR Consumer Reports RECOMMENDED

Subaru Added Security* The Only Extended Service Agreement Backed By Subaru™
- Protection designed to fit your driving needs, up to 10 years/100,000 miles of coverage
- We only use Genuine Subaru replacement parts
- We use Subaru-trained technicians - those who know your vehicle best
- Towing and rental car reimbursements during covered repairs
- Transferable coverage to the next owner

Scan the QR code or ask your sales representative for more details

EPA DOT **Fuel Economy and Environment** — Gasoline Vehicle

Fuel Economy
**29** MPG combined city/hwy
26 city
33 highway
**3.4** gallons per 100 miles

Small SUVs range from 14 to 118 MPG. The best vehicle rates 140 MPGe.

You **save $500** in fuel costs over 5 years compared to the average new vehicle.

Annual fuel **cost $1,800**

Fuel Economy & Greenhouse Gas Rating (tailpipe only): 6 (1 – 10, Best)
Smog Rating (tailpipe only): 6 (1 – 10, Best)

This vehicle emits 310 grams $CO_2$ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creates emissions; learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 28 MPG and costs $9,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $3.50 per gallon. MPGe is miles per gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

**fueleconomy.gov**
Calculate personalized estimates and compare vehicles

Smartphone Shortcode

**PARTS CONTENT INFORMATION**

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 0%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: JAPAN: 85%

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT: OTA, GUNMA, JAPAN
COUNTRY OF ORIGIN:
ENGINE:JAPAN
TRANSMISSION:JAPAN

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

SHIP TO: 090796
SUBARU OF GLENDALE
1308 S BRAND BLVD
GLENDALE CA 91204

SOLD TO: 090796
SUBARU OF GLENDALE
1308 S BRAND BLVD
GLENDALE CA 91204

SUBARU

**STANDARD EQUIPMENT**

**SAFETY**
Symmetrical All-Wheel Drive (AWD)
Vehicle Dynamics Control (VDC)
EyeSight Driver-Assist System
Subaru Advanced Frontal Airbag System
Side-Curtain Airbags w/ Rollover Sensor
Driver's Side Knee Airbag & Front Seat Side-Impact Airbags
Whiplash Protection Front Seats
4-Wheel Disc Brakes w/ Brake Assist
Anti-Lock Braking System (ABS)
Electronic Brake-Force Distribution
Brake Override System & Safety Pedal System
Daytime Running Lights (DRL)
Anti-Theft Alarm & Immobilizer System
Rear Vision Camera w/ Dynamic Guidelines

**PERFORMANCE & EXTERIOR**
2.5L DOHC SUBARU BOXER Engine w/ Auto Start Stop
Lineartronic CVT w/ Low Shift Mode / SI-DRIVE
Four-Wheel Independent Raised Suspension
8.7" Ground Clearance
17" Alloy Wheels, Dark Metallic w/ Machine Finish
225/60 R17 All-Season Tires
Variable Intermittent Windshield Wipers
Dual-Pinion Electric Power-Assisted Steering
Black Folding Power Mirrors
Roof Rails: Raised Ladder Type w/ 700lb Static Load Capacity
LED Steering Responsive Headlights w/ High Beam Assist
Rear Roof Spoiler

**COMFORT, CONVENIENCE & INTERIOR**
Dual-Zone Automatic Climate Control w/ Air Filtration System
SUBARU STARLINK Dual 7.0" Multimedia Audio System
USB Port
Apple CarPlay & Android Auto
Bluetooth Hands-Free Phone Connectivity
Tilt/Telescopic Steering Wheel w/ Bluetooth & Audio Switches
Advanced Adaptive Cruise Control w/ Lane Centering
Power Door Locks w/ Automatic Lock/Unlock System
Remote Keyless Entry System
Power Windows w/ Driver's Auto Up/Down
Retained Accessory Power for Audio System & Power Driver's Window
60/40 Split Fold-Down Rear Seatback
LED Dome Light / LED Front Map Lights / LED Cargo Area Light
Cargo Area Utility Hook Screw-In Anchor Points
Multi-Function Display

**LIMITED WARRANTY/ROADSIDE ASSISTANCE**
3 Years / 36,000 Miles Basic
5 Years / 60,000 Miles Powertrain
5 Years / Unlimited Mileage Rust Perforation
3 Years / 36,000 24/7 Roadside Assistance
See Owner Info Kit&Warranty For Details

Privacy Notice
www.subaru.com/company/privacy.html

**OPTIONAL EQUIPMENT AND OTHER ITEMS**

| | |
|---|---|
| Manufacturer's Suggested Retail Price | $29,695.00 |
| Exterior Color: Magnetite Gray Metallic | |
| Full Tank of Gas | INCLD |
| **Standard Option: 01** | |
| Auto-Dimming Mirror with Compass and Homelink | $413.00 |
| **Destination and Delivery** | $1,420.00 |
| **Total Suggested Retail Price** | $31,528.00 |

THIS LABEL HAS BEEN APPLIED PURSUANT TO FEDERAL LAW. DO NOT REMOVE OR ALTER PRIOR TO THE DELIVERY TO THE ULTIMATE PURCHASER.

FIGURE 102. Monroney Label

2. Unlock the driver's door by pressing the "🔓" button or touching the sensor behind the door handle.

3. Open the driver's door.

A chirp will sound and the seat and angle of the outside mirrors moves to the registered position.

When the select lever is moved to the "R" position, the outside mirror will move to the registered reverse tilt-down position.

*NOTE*

- *A retrieved seat position might deviate as the function is used continuously over time.*
- *A retrieved seat position might deviate if you attempt to continue operating the registered seat in the same direction when the registered seat is already at the farthest possible point of adjustment in any direction.*
- *If the registered memory position cannot be retrieved after performing the previous procedures, try the following procedures.*
  *(1) Press the "SET" button on the driver's door.*
  *(2) Press the "🔓" button on the access key fob or the door lock button to lock the doors.*
  *(3) Perform the prior procedures again.*
- *If the keyless access function is disabled, the memory position cannot be retrieved by touching the sensor behind the driver's door handle. However, the memory position can still be retrieved by pressing the "🔓" button on the access key fob. For information about how to enable/disable the keyless access function, refer to "Disabling Keyless Access Function" ☞P127.*
- *If a new position is registered for the same access key fob, the previously registered memory position data will be deleted.*
- *If you are carrying 2 or more access keys, seat position retrieval may not be possible.*
- *If, while carrying an access key, 45 seconds passed after you enter the operating range of the keyless access function, it may not be possible to retrieve the registered memory position even if the door is open. For the operating range of the keyless access function, refer to "Locking and Unlocking with "Keyless Access" Entry Function" ☞P120.*

### Clearing the registered seat position with access key fob

1. Close the driver's door.
2. Hold the access key fob and press and hold the "SET" button, then press the "🔓" button on the access key fob.

A chirp will sound, and the registered seat position and outside mirror angle on the passenger's side will be cleared.

*NOTE*

*After deleting the seat position, wait for a few moments before registering a new seat position.*

## HEAD RESTRAINT ADJUSTMENT

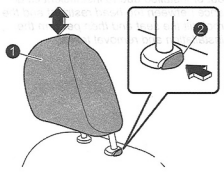
**⚠ WARNING**

- Never drive the vehicle with the head restraints removed because they are designed to reduce the risk of serious neck injury in the event that the vehicle is struck from the rear. Also, never install the head restraints backwards. Doing so will prevent the head restraints from functioning as intended. Therefore, when the head restraints are removed, all head restraints must be reinstalled properly to protect vehicle occupants.
- All occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the head restraints are placed in their proper positions in order to minimize the risk of neck injury in the event of a crash.
- The front seat head restraints are designed to be installed into the front seats only. The rear seat head restraints are designed to be installed into the rear seats only. Do not attempt to install the front seat head restraints into the rear seats, or the rear seat head restraints into the front seats.



Both the driver's seat and front passenger's seat are equipped with head restraints. Both head restraints are adjustable in the following ways.

### Head restraint height adjustment



❶ Head restraint
❷ Release button

**To raise:**

Pull the head restraint up.

**To lower:**

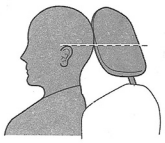
Push the head restraint down while pressing the release button.

**To remove:**

Pull out the head restraint while pressing the release button.

**To install:**

Press and hold the release button while pushing the head restraint in until it locks in place.



Each head restraint should be adjusted so that the center of the head restraint is closest to the top of the occupant's ears.

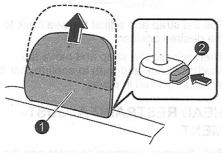
FIGURE 103. Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



**⚠ WARNING**

- Never drive the vehicle with the head restraints removed because they are designed to reduce the risk of serious neck injury in the event that the vehicle is struck from the rear. Therefore, when the head restraints are removed, all head restraints must be reinstalled properly to protect vehicle occupants.
- All occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the head restraints are placed in their proper positions in order to minimize the risk of neck injury in the event of a crash.
- The front seat head restraints are designed to be installed into the front seats only. The rear seat head restraints are designed to be installed into the rear seats only. Do not attempt to install the front seat head restraints into the rear seats, or the rear seat head restraints into the front seats.

### Rear windows side seating position



❶ Head restraint
❷ Release button

**To remove:**

While pressing the release button, pull out the head restraint.

**To install:**

Install the head restraint into the holes that are located on the top of the seatback until the head restraint locks. Press and hold the release button to lower the head restraint.

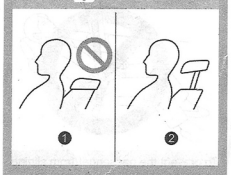
After installing the head restraint, make sure it is securely locked.

*NOTE*

*When the head restraint cannot be pulled out or installed due to insufficient clearance between the head restraint and the roof, tilt the seat and then perform the installation and removal tasks.*

### Rear center seating position

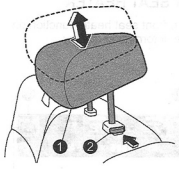
**⚠ CAUTION**



❶ Incorrect (retracted position)
❷ Correct (extended position)

The head restraint is not intended to be used in the retracted position. Before sitting on the seat, raise the head restraint to the extended position.





❶ Head restraint
❷ Release button

**To raise:**

Pull the head restraint up.

**To lower:**

Push the head restraint down while pressing the release button on the top of the seatback.

**To remove:**

While pressing the release button, pull out the head restraint.

**To install:**

Install the head restraint into the holes that are located on the top of the seatback until the head restraint locks. Press and hold the release button to lower the head restraint.

When the rear-center seating position is occupied, raise the head restraint to the extended position. When the rear center seating position is not occupied, lower the head restraint to improve rearward visibility.

### ARMREST (If Equipped)

To lower the armrest, pull the armrest's top edge.

**⚠ WARNING**

- Make sure to have the rear passengers wear the seatbelts before lowering the armrest. If the rear passengers wear the seatbelts after lowering the armrest, seatbelts cannot provide maximum restraint, causing serious injuries.
- To avoid serious injury, never allow passengers to sit on the center armrest while the vehicle is in motion.

FIGURE 104. Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

# APPENDIX B
# VEHICLE AND DUMMY RESPONSE DATA PLOTS

## TABLE OF DATA PLOTS



**The following additional data for this test can be obtained from the Research and Development section of the NHTSA website (www.NHTSA.gov)**

**Additional Driver & Passenger Dummy Instrumentation Data**

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)

**Vehicle Instrumentation Data**

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)

Engine Block (X)

Engine Block (Y)

Rear Floorpan Above Axle Acceleration (X)

Rear Floorpan Above Axle Acceleration (Y)

Rear Floorpan Above Axle Acceleration (Z)

**MDB Instrumentation Data**

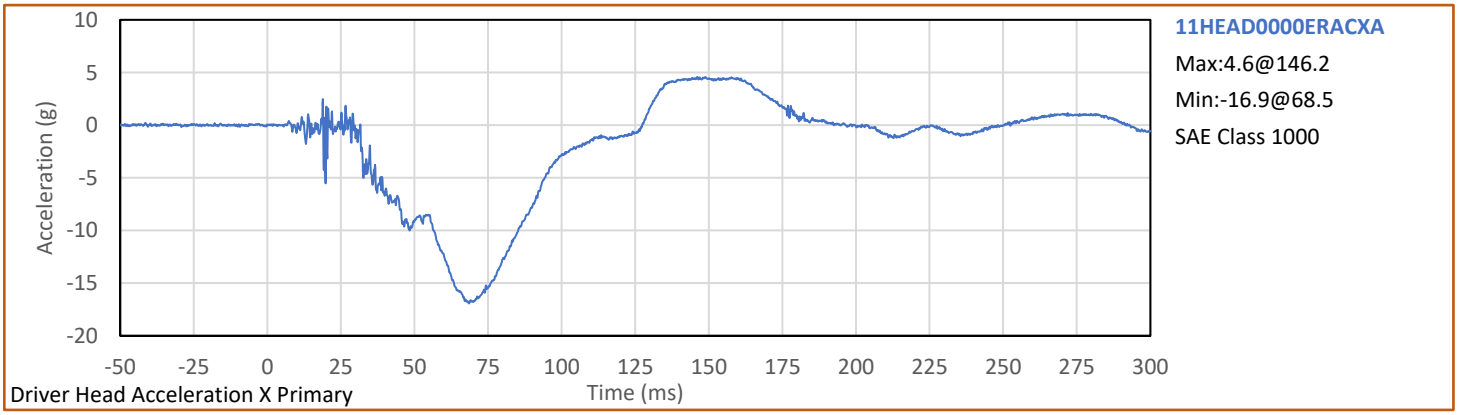
MDB Center of Gravity Acceleration (X)

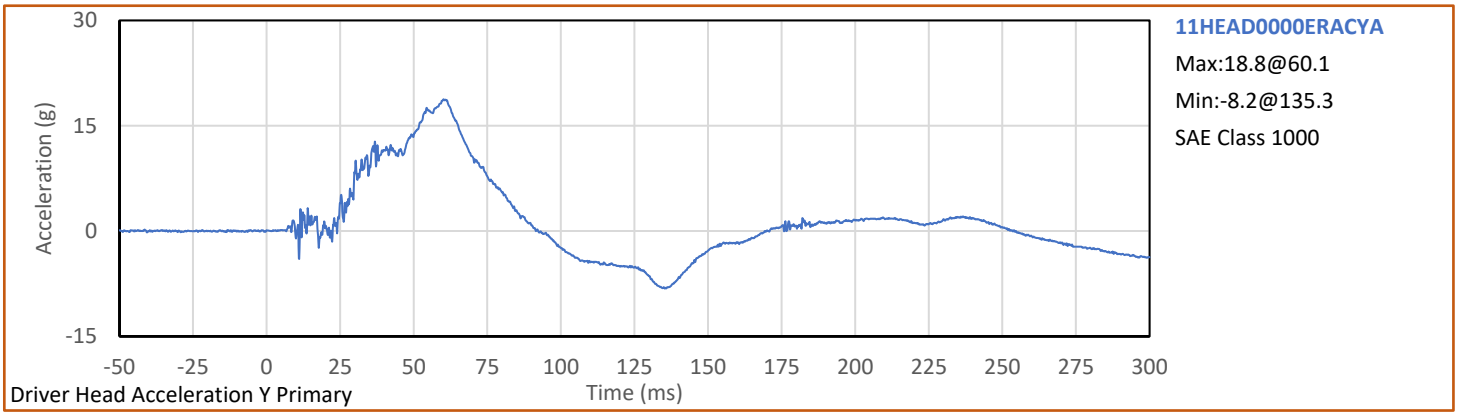
MDB Center of Gravity Acceleration (Y)

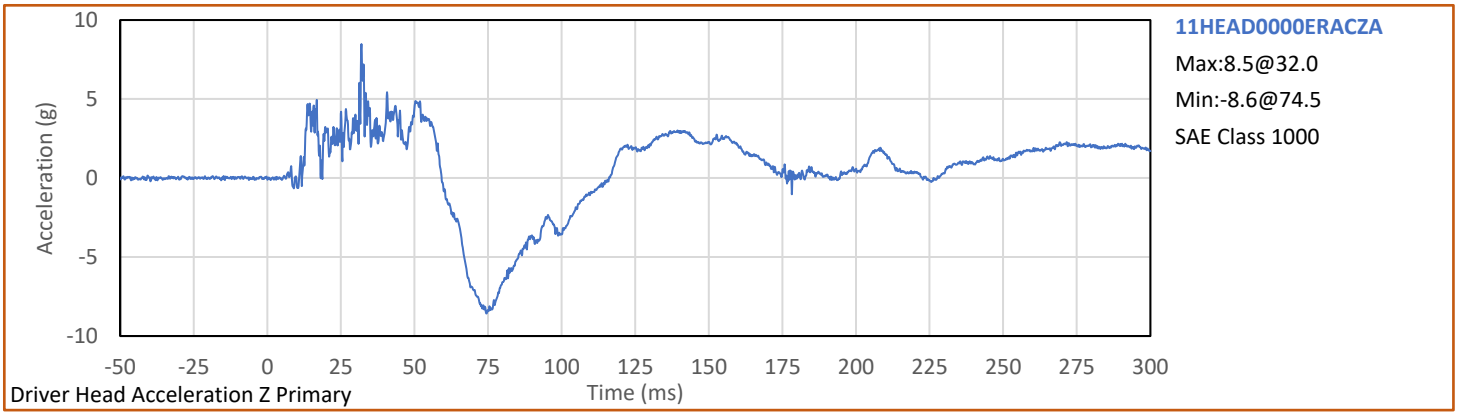
MDB Center of Gravity Acceleration (Z)

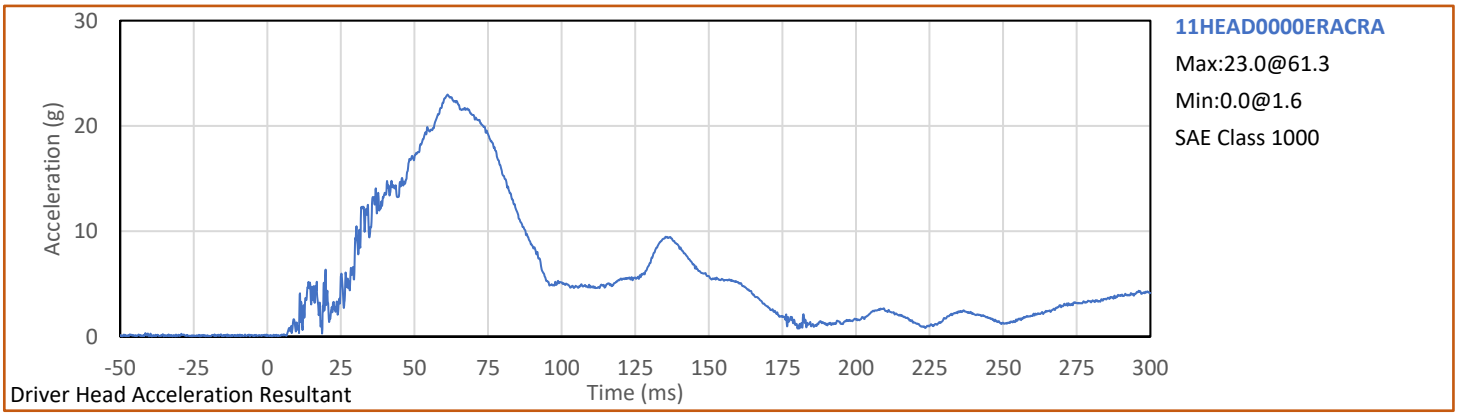
MDB Rear Acceleration (X)

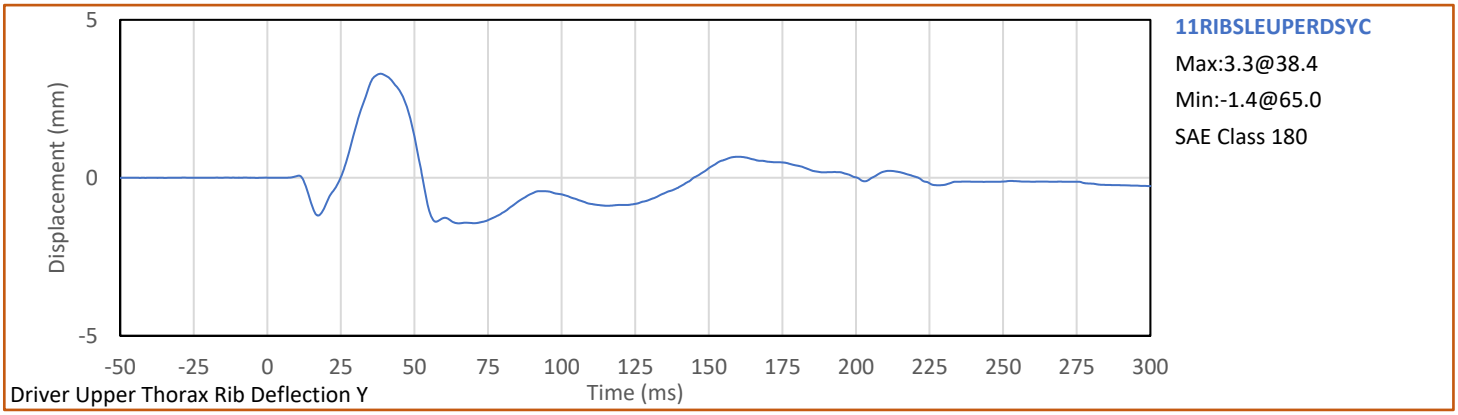
MDB Rear Acceleration (Y)

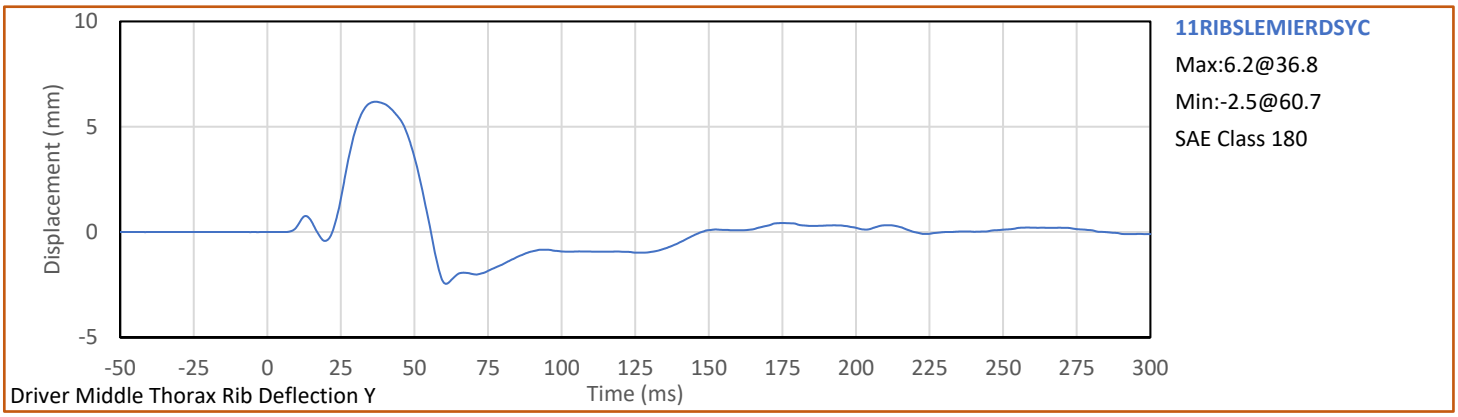

11HEAD0000ERACXA
Max:4.6@146.2
Min:-16.9@68.5
SAE Class 1000
Acceleration (g)
Time (ms)
Driver Head Acceleration X Primary

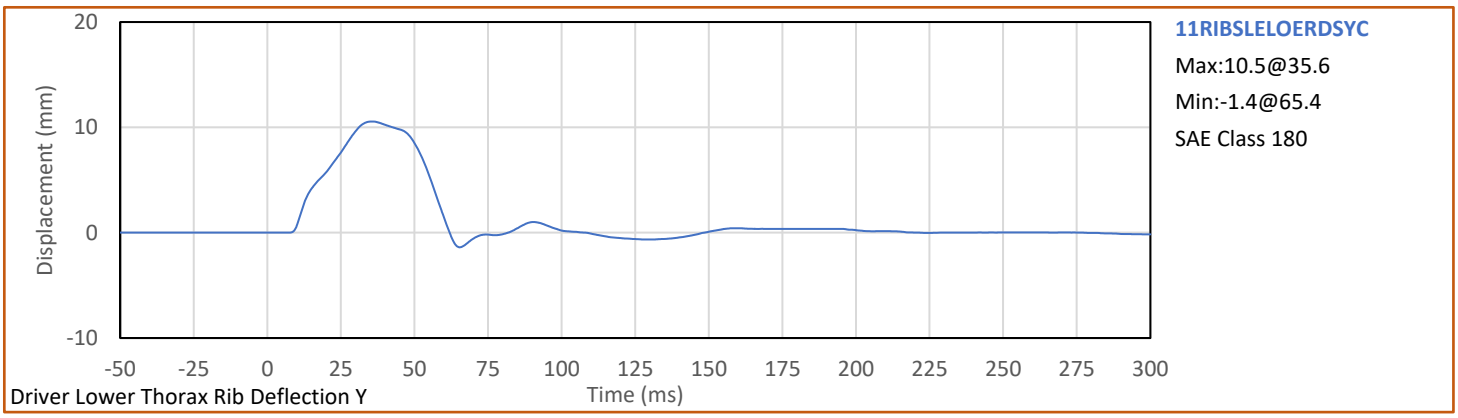

11HEAD0000ERACYA
Max:18.8@60.1
Min:-8.2@135.3
SAE Class 1000
Acceleration (g)
Time (ms)
Driver Head Acceleration Y Primary

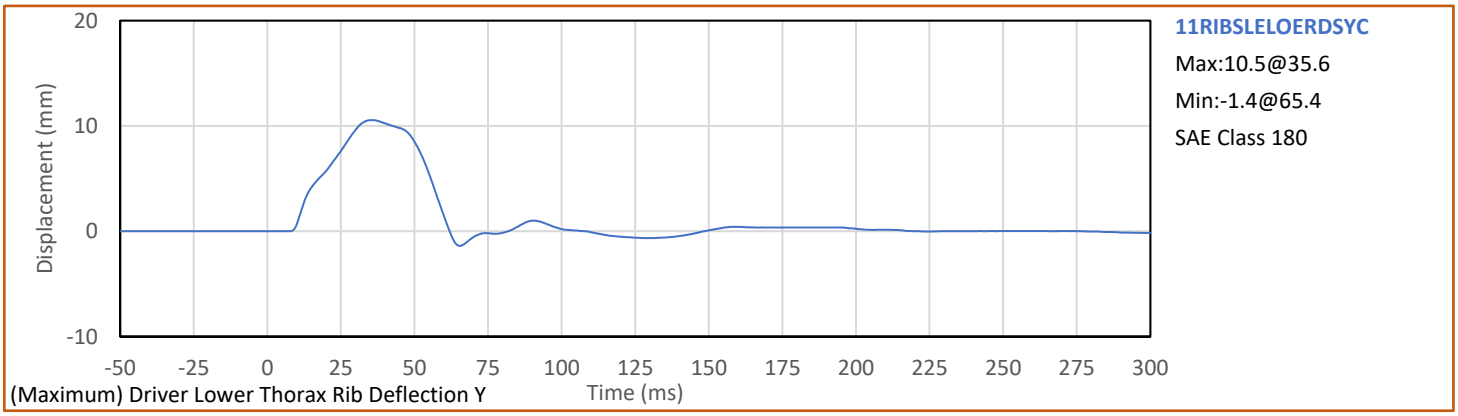

11HEAD0000ERACZA
Max:8.5@32.0
Min:-8.6@74.5
SAE Class 1000
Acceleration (g)
Time (ms)
Driver Head Acceleration Z Primary

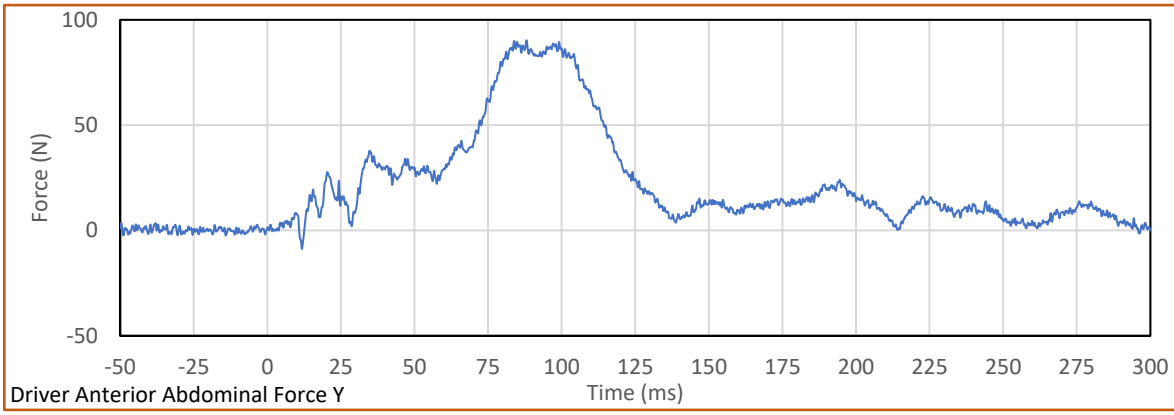

11HEAD0000ERACRA
Max:23.0@61.3
Min:0.0@1.6
SAE Class 1000
Acceleration (g)
Time (ms)
Driver Head Acceleration Resultant


Displacement (mm)
Time (ms)
Driver Upper Thorax Rib Deflection Y
11RIBSLEUPERDSYC
Max:3.3@38.4
Min:-1.4@65.0
SAE Class 180


Displacement (mm)
Time (ms)
Driver Middle Thorax Rib Deflection Y
11RIBSLEMIERDSYC
Max:6.2@36.8
Min:-2.5@60.7
SAE Class 180

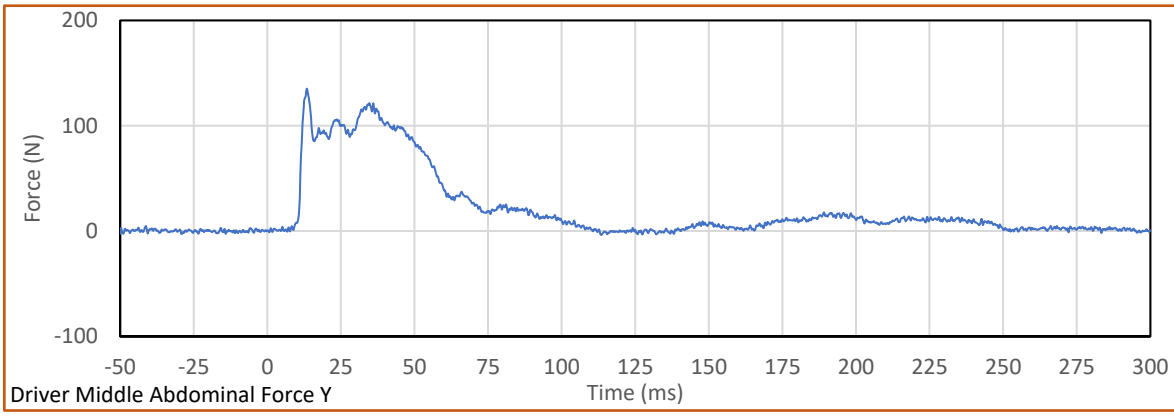

Displacement (mm)
Time (ms)
Driver Lower Thorax Rib Deflection Y
11RIBSLELOERDSYC
Max:10.5@35.6
Min:-1.4@65.4
SAE Class 180


Displacement (mm)
Time (ms)
(Maximum) Driver Lower Thorax Rib Deflection Y
11RIBSLELOERDSYC
Max:10.5@35.6
Min:-1.4@65.4
SAE Class 180



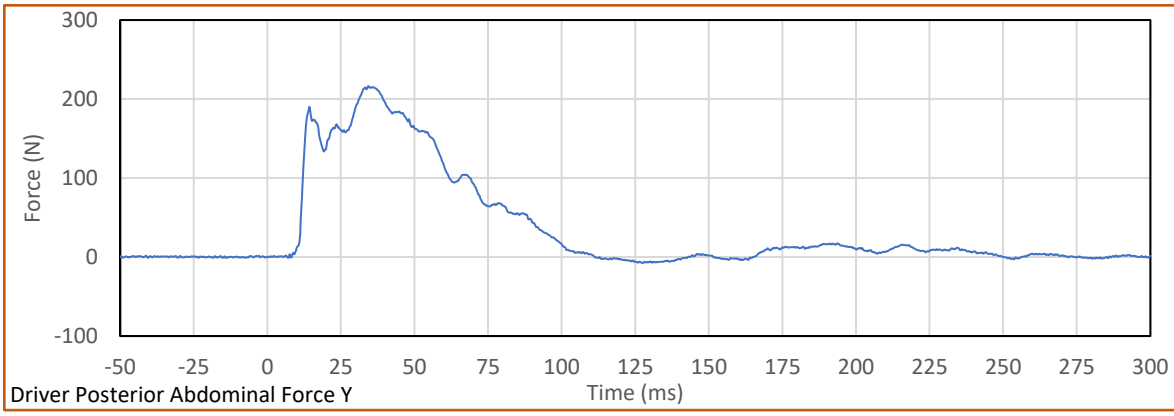

Driver Anterior Abdominal Force Y

**11ABDOLEFRERFOYB**
Max:90.3@88.1
Min:-8.8@11.8
SAE Class 600



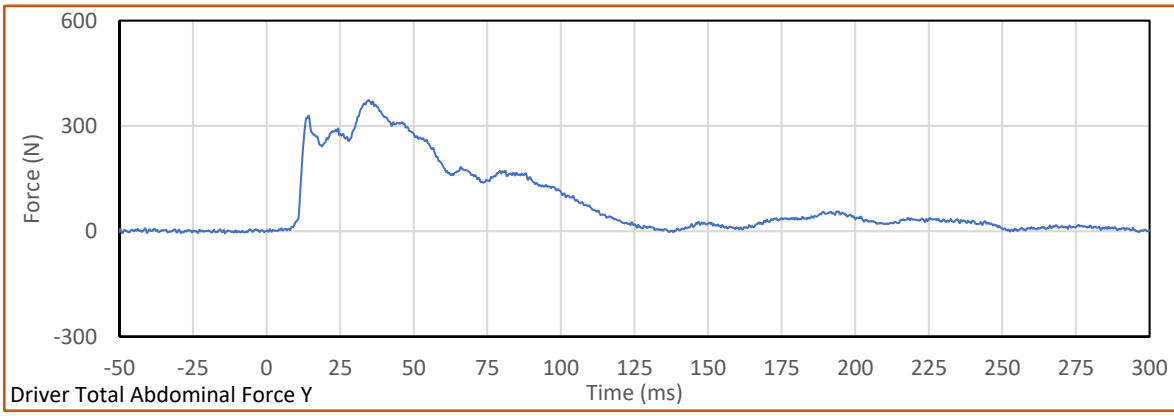

Driver Middle Abdominal Force Y

**11ABDOLEMIERFOYB**
Max:135.1@13.4
Min:-3.8@113.5
SAE Class 600



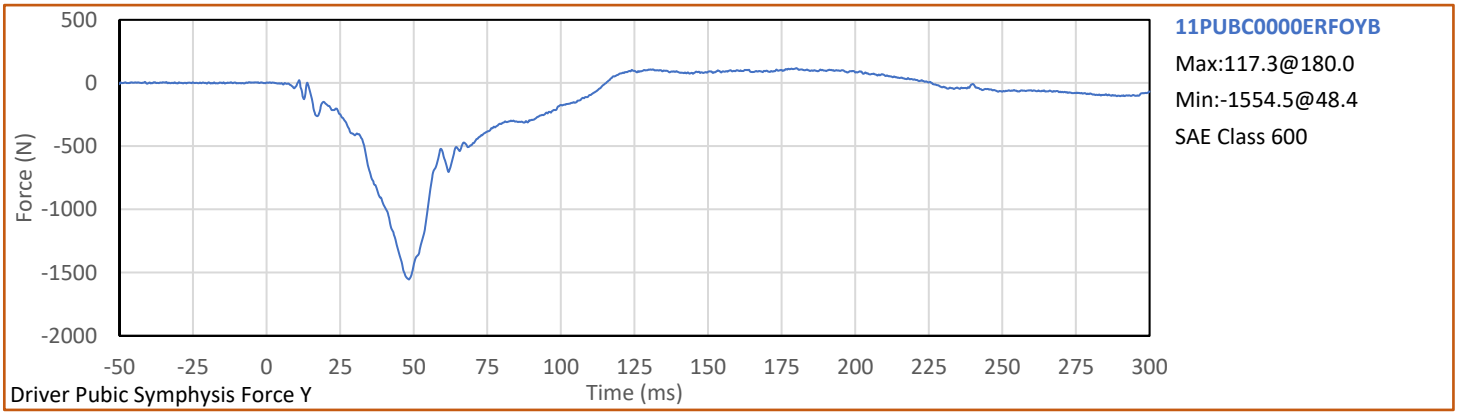

Driver Posterior Abdominal Force Y

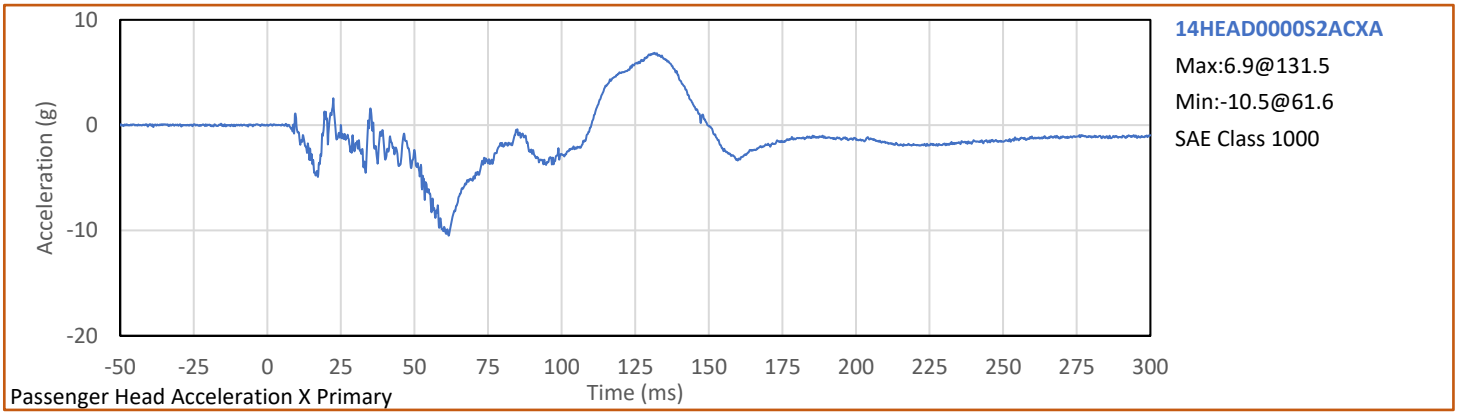
**11ABDOLEREERFOYB**
Max:216.3@34.3
Min:-7.8@127.6
SAE Class 600

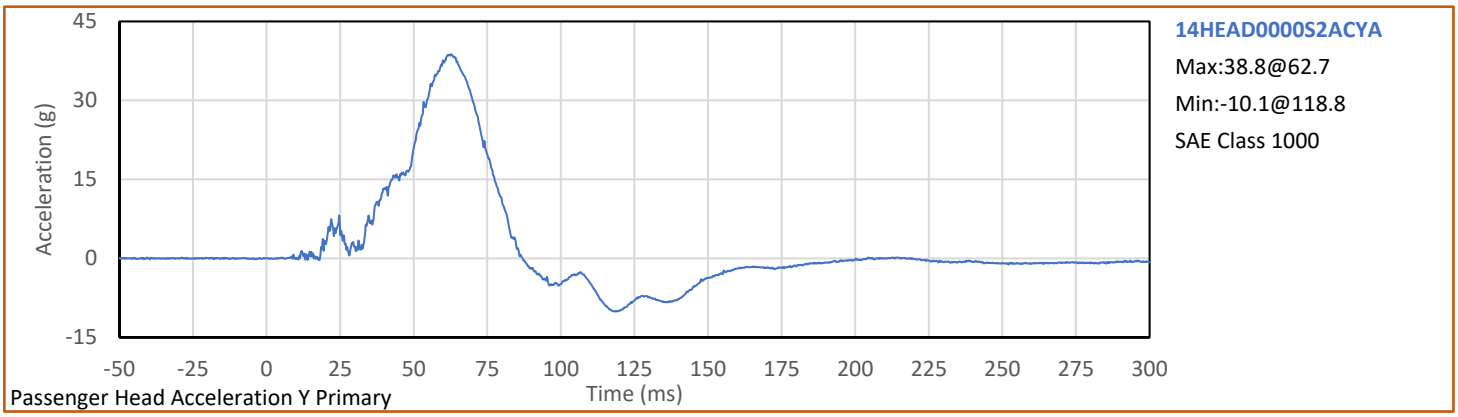


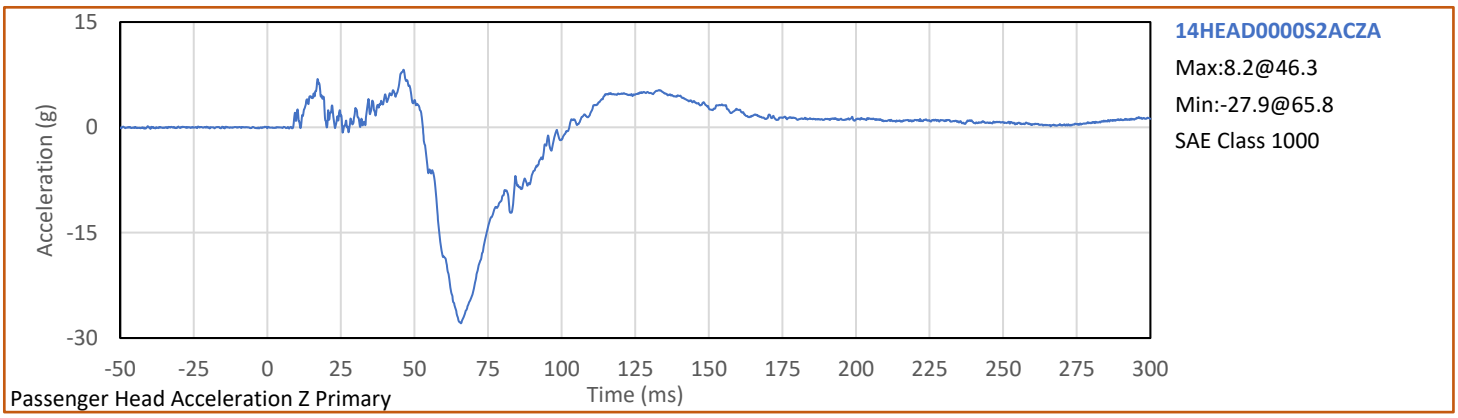

Driver Total Abdominal Force Y

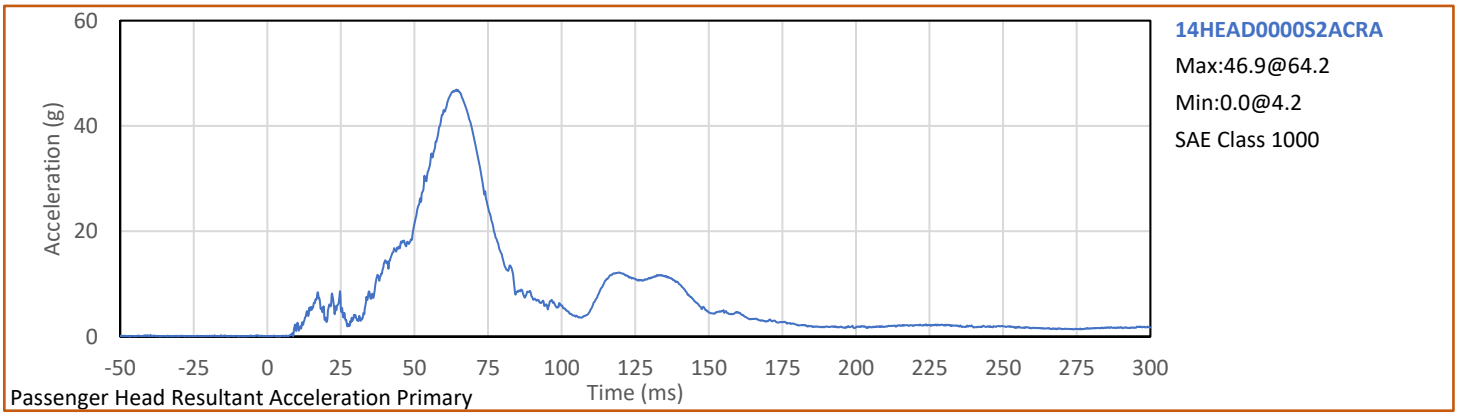
**11ABDOLESUERFOYB**
Max:373.7@34.7
Min:-2.8@138.2
SAE Class 600

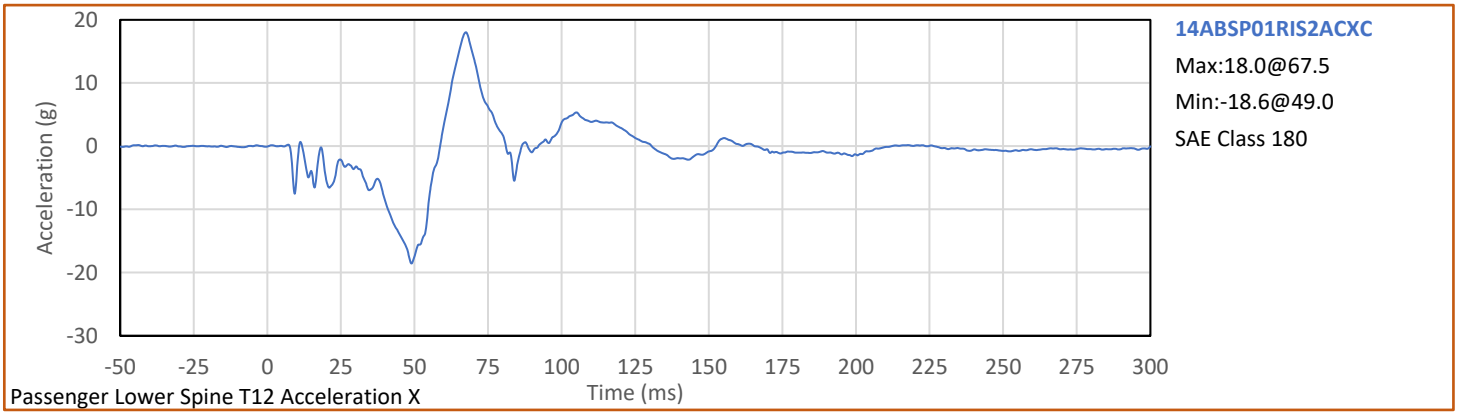

500
0
-500
-1000
-1500
-2000
Force (N)
-50
-25
0
25
50
75
100
125
150
175
200
225
250
275
300
Time (ms)
Driver Pubic Symphysis Force Y
11PUBC0000ERFOYB
Max:117.3@180.0
Min:-1554.5@48.4
SAE Class 600


14HEAD0000S2ACXA
Max:6.9@131.5
Min:-10.5@61.6
SAE Class 1000
Acceleration (g)
Time (ms)
Passenger Head Acceleration X Primary

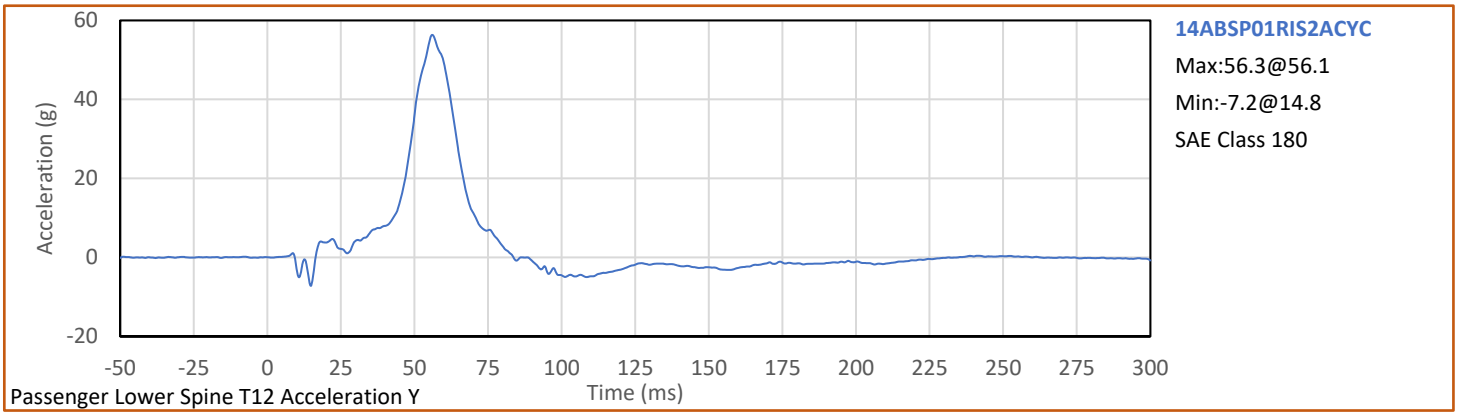

14HEAD0000S2ACYA
Max:38.8@62.7
Min:-10.1@118.8
SAE Class 1000
Acceleration (g)
Time (ms)
Passenger Head Acceleration Y Primary


14HEAD0000S2ACZA
Max:8.2@46.3
Min:-27.9@65.8
SAE Class 1000
Acceleration (g)
Time (ms)
Passenger Head Acceleration Z Primary

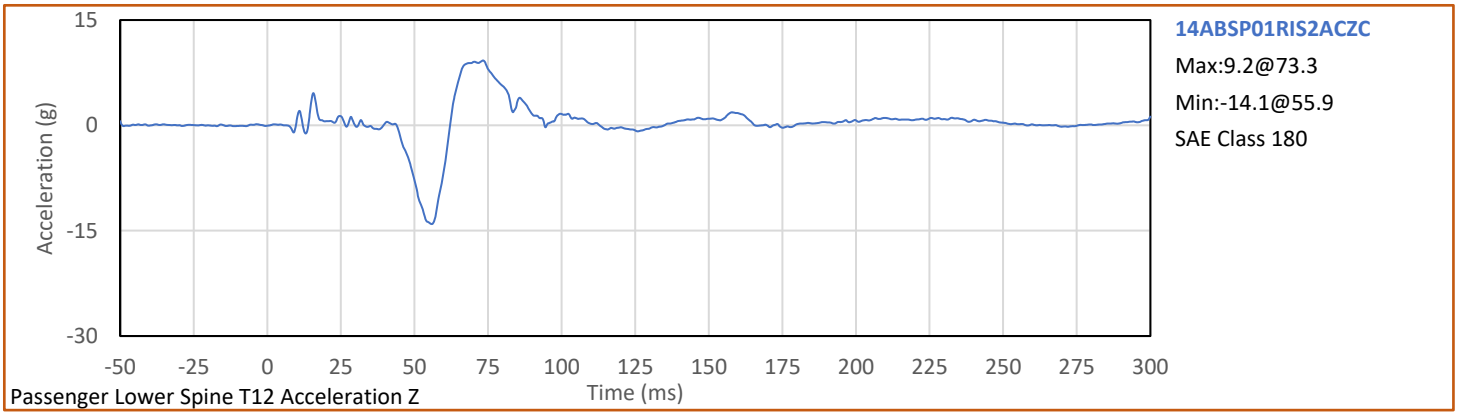

14HEAD0000S2ACRA
Max:46.9@64.2
Min:0.0@4.2
SAE Class 1000
Acceleration (g)
Time (ms)
Passenger Head Resultant Acceleration Primary



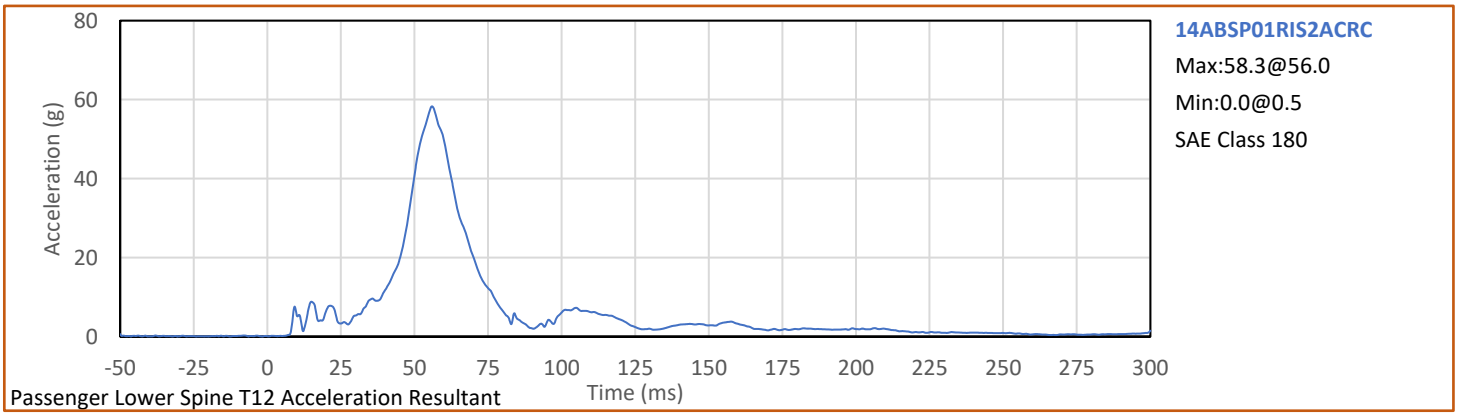
Passenger Lower Spine T12 Acceleration X



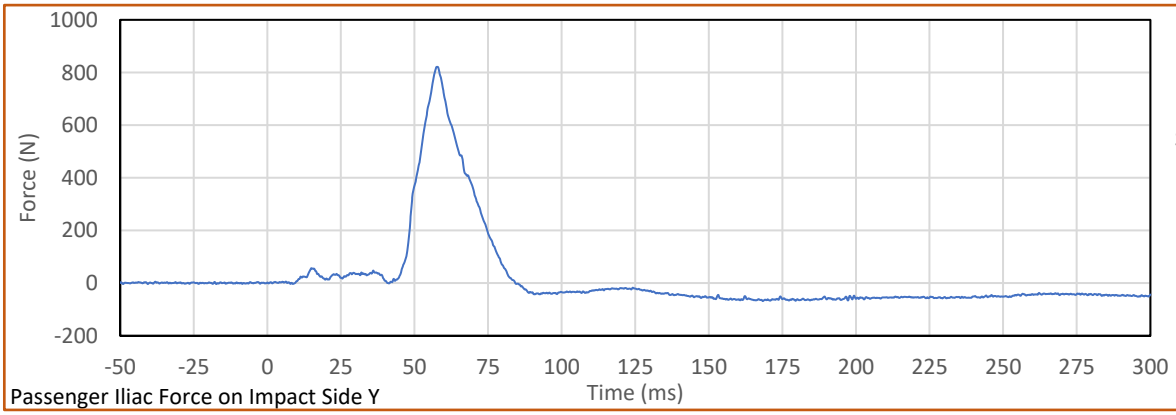
Passenger Lower Spine T12 Acceleration Y



Passenger Lower Spine T12 Acceleration Z

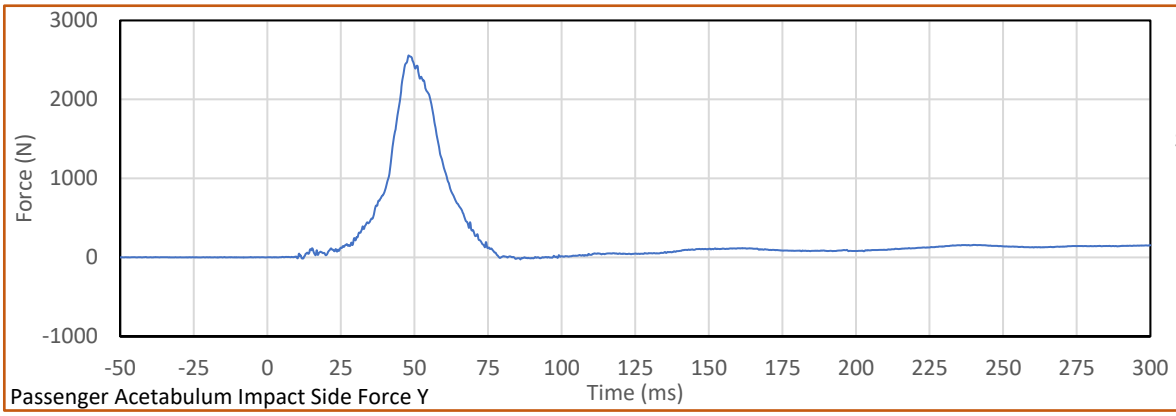


Passenger Lower Spine T12 Acceleration Resultant



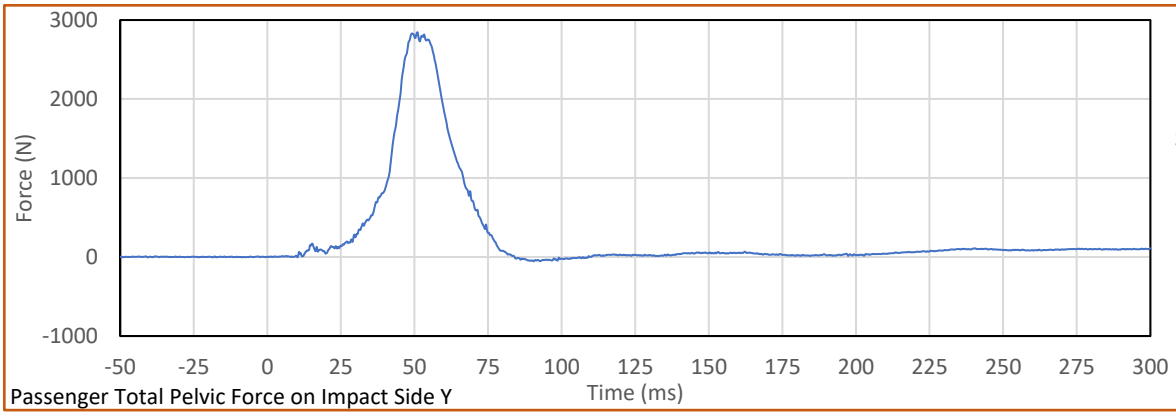

Passenger Iliac Force on Impact Side Y

**14ILACLE00S2FOYB**
Max:821.3@57.8
Min:-68.0@168.4
SAE Class 600




Passenger Acetabulum Impact Side Force Y

**14ACTBLE00S2FOYB**
Max:2556.7@48.0
Min:-26.1@86.0
SAE Class 600




Passenger Total Pelvic Force on Impact Side Y

**14PELVLE00S2FOYB**
Max:2845.5@51.0
Min:-55.4@90.5
SAE Class 600

# APPENDIX C
# ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

**APPENDIX C**
**Pre-Test ATD Qualification and Performance Verification**
**ES-2re 50th Male Side Impact ATD, Left Side Configuration**
**S/N: F037**

Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## External Measurements

ATD Serial No.: F037 Test Date: 2024-11-07

| Tested Parameter | Units | Spec Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 40 | Pass |
| 1 - Sitting Height | mm | 900 | 918 | 912 | Pass |
| 2 - Seat to Shoulder Joint | mm | 558 | 572 | 566 | Pass |
| 3 - Seat to Lower Face of Thoracic Spine Box | mm | 346 | 356 | 350 | Pass |
| 4 - Seat to Hip Joint (bolt center) | mm | 97 | 103 | 100 | Pass |
| 5 - Sole to Seat, Sitting | mm | 433 | 451 | 440 | Pass |
| 6 - Head Width | mm | 152 | 158 | 155 | Pass |
| 7 - Shoulder/Arm Width | mm | 461 | 479 | 474 | Pass |
| 8 - Thorax Width | mm | 322 | 332 | 325 | Pass |
| 9 - Abdomen Width | mm | 273 | 287 | 276 | Pass |
| 10 - Pelvis Lap Width | mm | 359 | 373 | 364 | Pass |
| 11 - Head Depth | mm | 196 | 206 | 203 | Pass |
| 12 - Thorax Depth | mm | 262 | 272 | 267 | Pass |
| 13 - Abdomen Depth | mm | 194 | 204 | 201 | Pass |
| 14 - Pelvis Depth | mm | 235 | 245 | 240 | Pass |
| 15 - Back of Buttocks to Hip Joint (bolt Center) | mm | 150 | 160 | 156 | Pass |
| 16 - Back of Buttocks to Front Knee | mm | 597 | 615 | 610 | Pass |
| | | | Overall Test Results | | Pass |

Technician: J. Coronel

Approved By: J. Hernandez

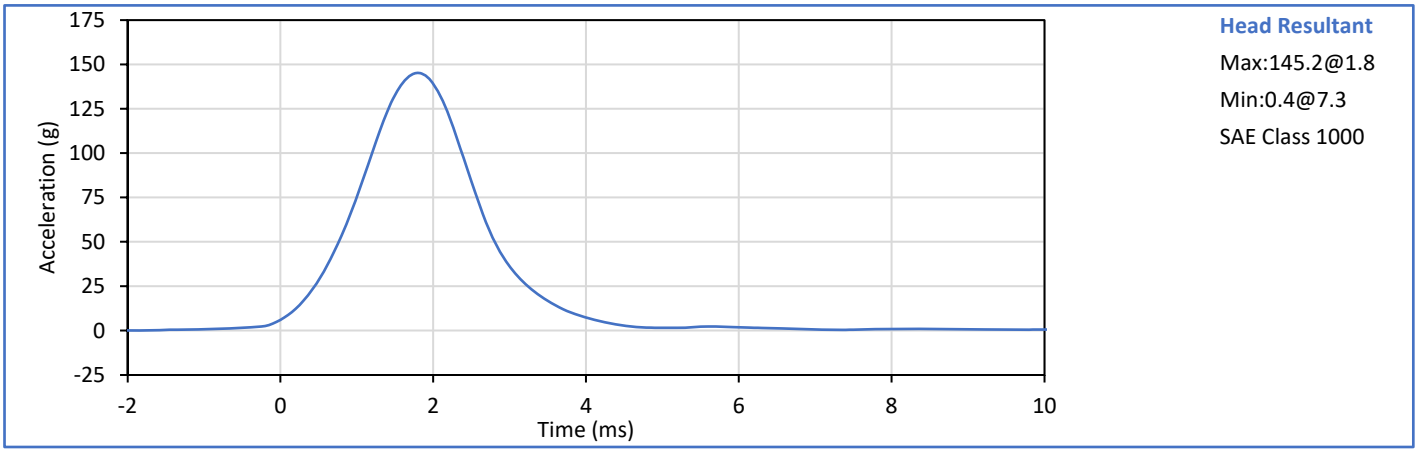
Applus IDIADA KARCO

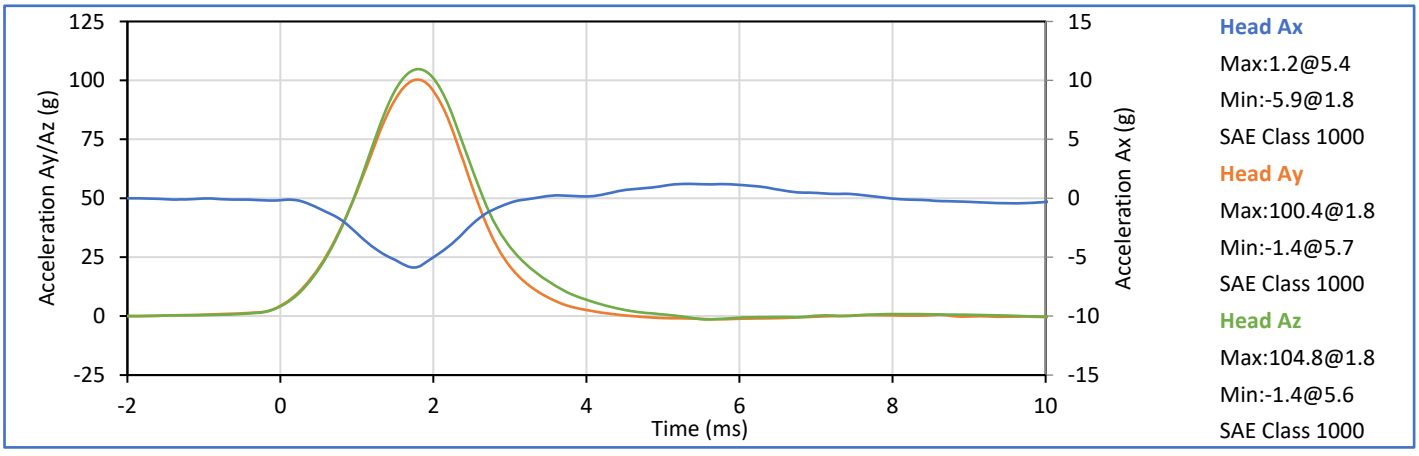
# ES-2re 50th Male Side Impact ATD
## Head Drop

ATD Serial No.: F037

Test Date: 2024-11-08

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 18.9 | 25.6 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 40 | Pass |
| Peak Resultant Acceleration | g | 125.0 | 155.0 | 145.2 | Pass |
| Peak Head Ax | g | -15.0 | 15.0 | 1.2 | Pass |
| Oscillations After Main Pulse | % | 0.0 | 15.0 | 1.4 | Pass |
| Is Acceleration Unimodal? | Yes/No | Yes | | Yes | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

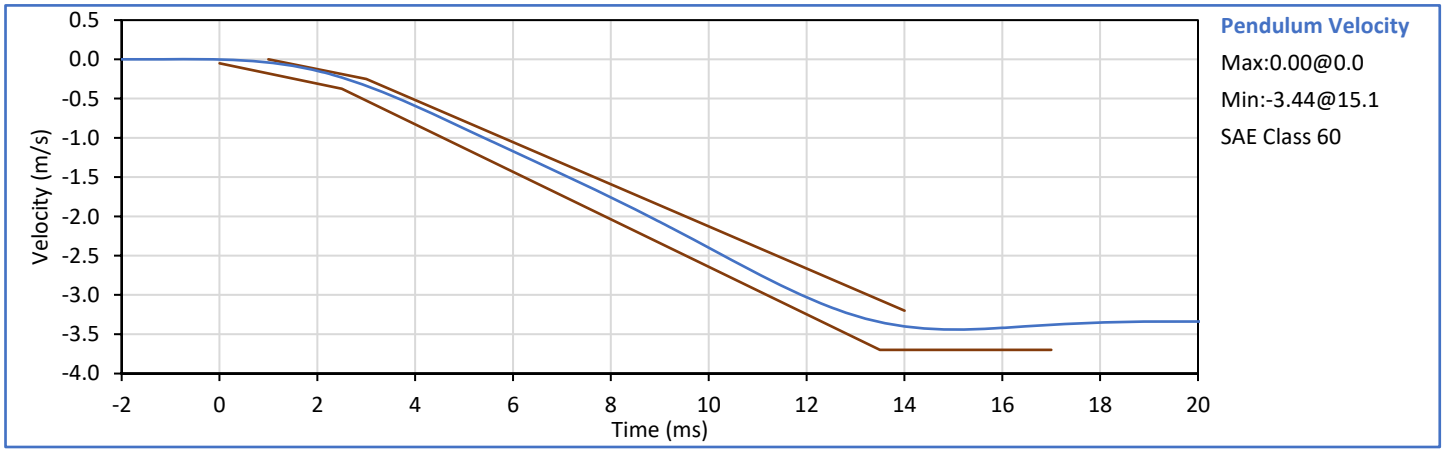
Approved By: J. Hernandez

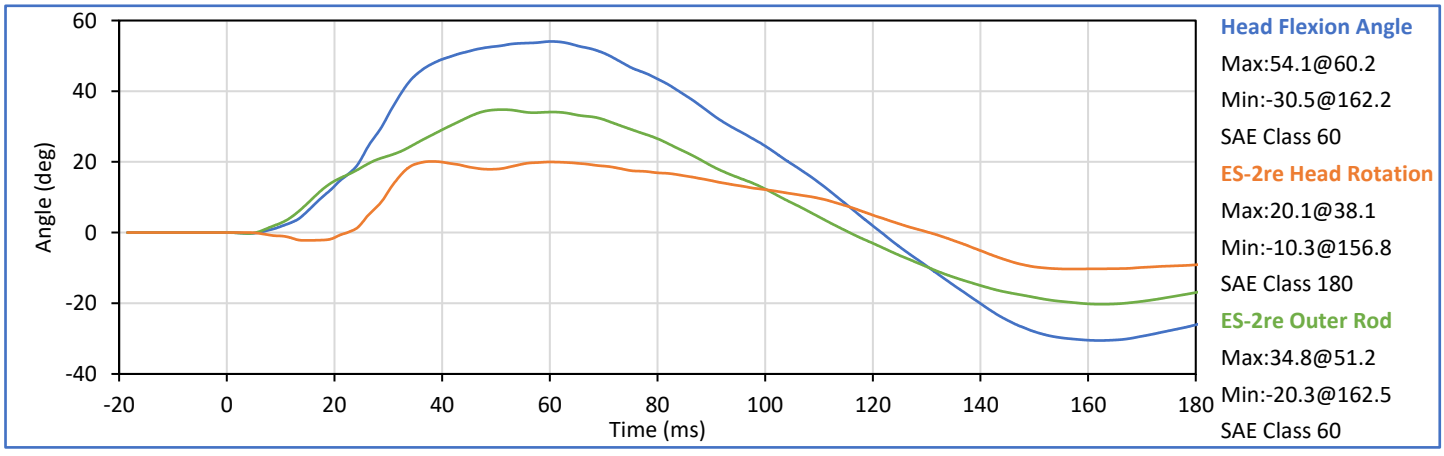
Applus IDIADA KARCO

# ES-2re 50th Male Side Impact ATD
## Neck Flexion

ATD Serial No.: F037 Test Date: 2024-11-09

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 40 | Pass |
| Pendulum Velocity | m/s | 3.30 | 3.50 | 3.37 | Pass |
| Peak Headform Flexion | deg | 49.0 | 59.0 | 54.1 | Pass |
| Time of Peak Headform Flexion | ms | 54.0 | 66.0 | 60.2 | Pass |
| Flexion Decay (Peak to zero) | ms | 53.0 | 88.0 | 61.4 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

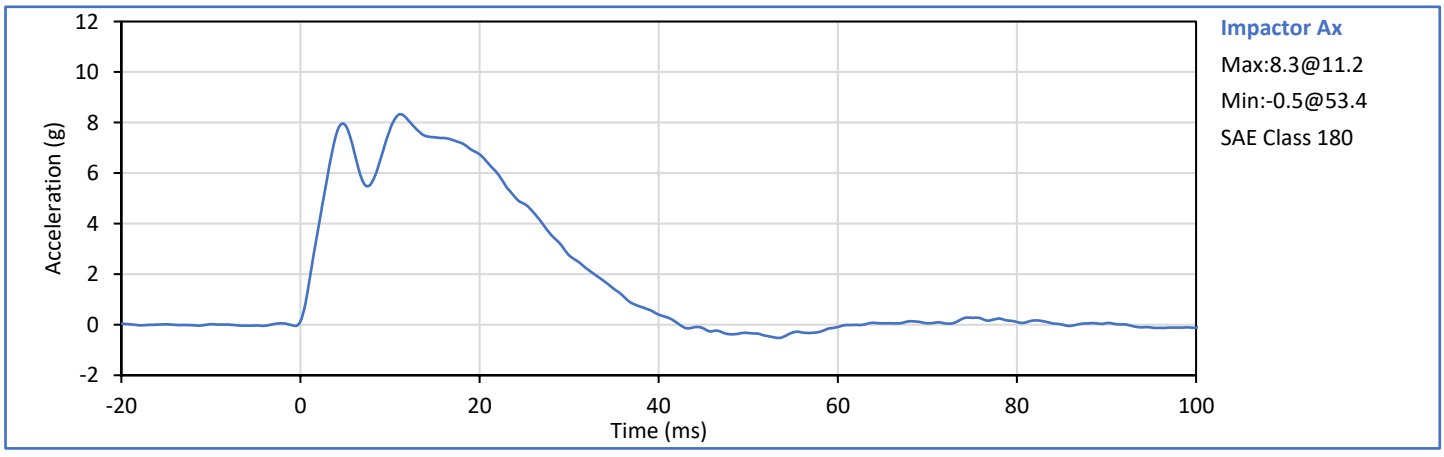
Applus IDIADA KARCO

**ES-2re 50th Male Side Impact ATD**
**Shoulder Impact Test**

ATD Serial No.: F037

Test Date: 2024-11-07

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 39 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.32 | Pass |
| Peak Impactor Ax | g | 7.5 | 10.5 | 8.3 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

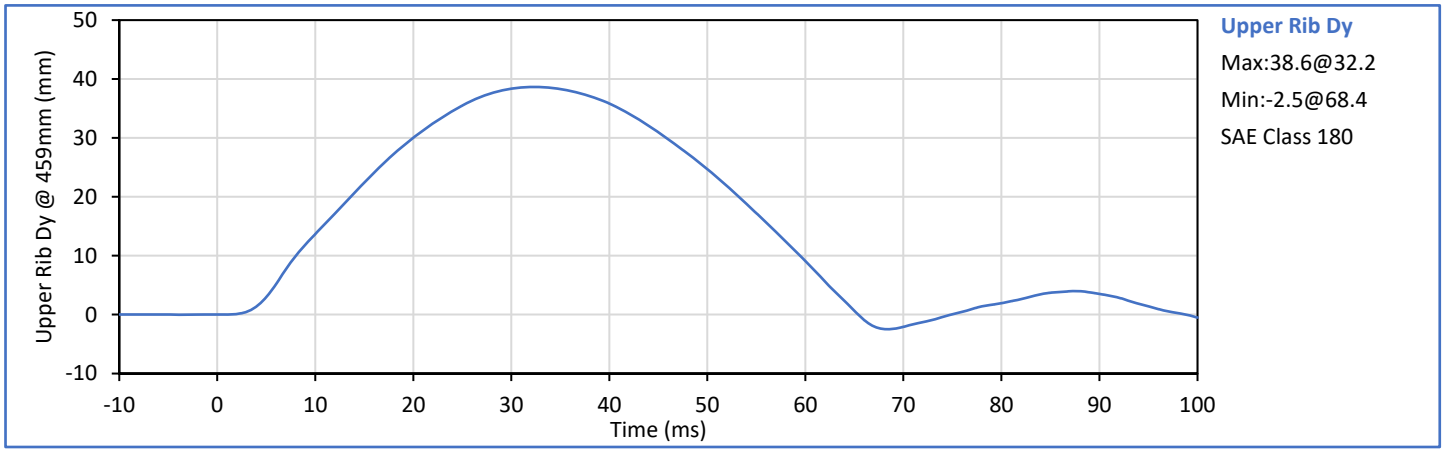
Applus IDIADA KARCO

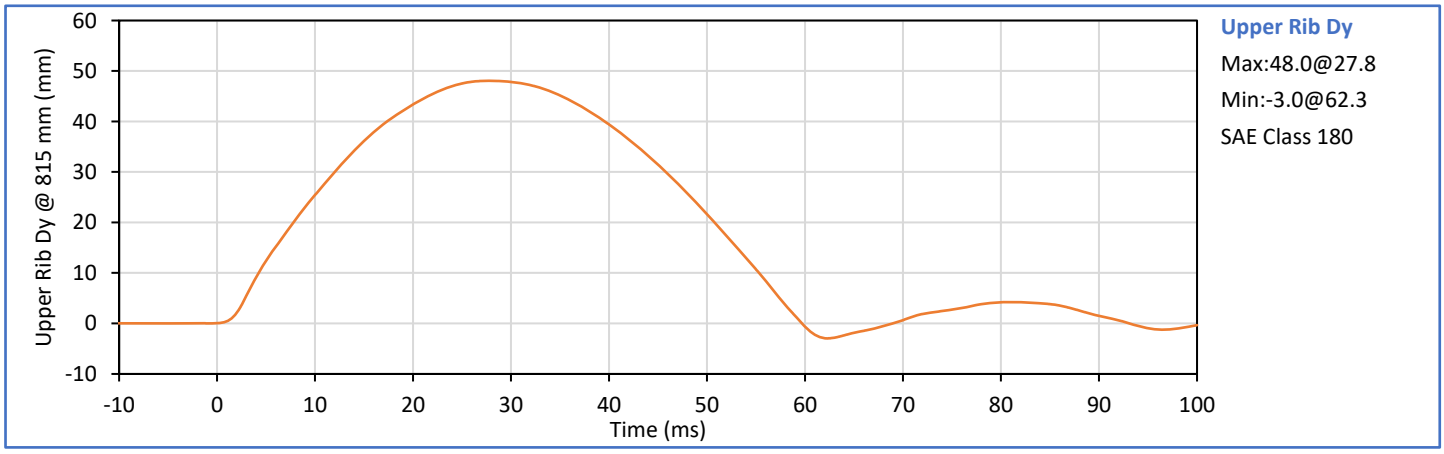
## ES-2re 50th Male Side Impact ATD
## Upper Rib Drop Test

ATD Serial No.: F037

Test Date: 2024-11-08

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.6 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 40 | Pass |
| Upper Rib Dy @ 459mm | mm | 36.0 | 40.0 | 38.6 | Pass |
| Upper Rib Dy @ 815mm | mm | 46.0 | 51.0 | 48.0 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

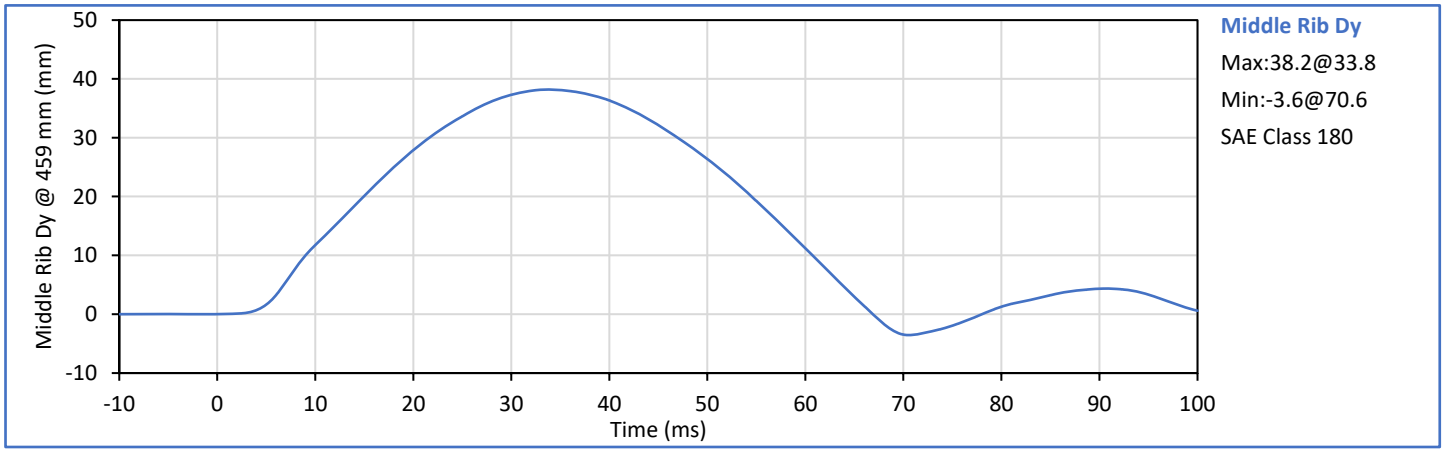
Applus IDIADA KARCO

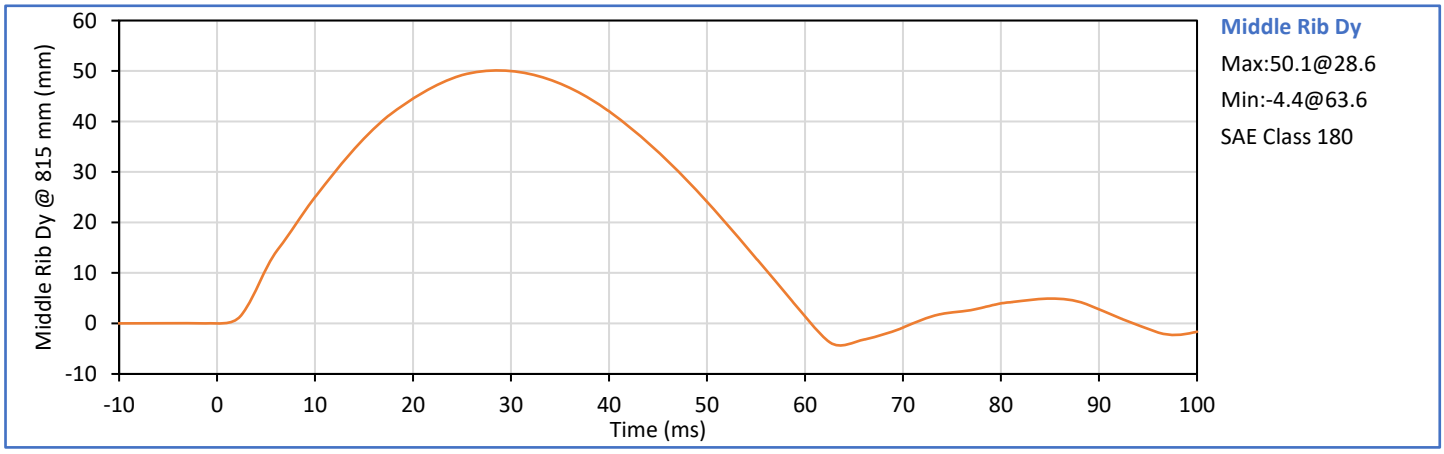
## ES-2re 50th Male Side Impact ATD
## Middle Rib Drop Test

ATD Serial No.: F037

Test Date: 2024-11-08

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 40 | Pass |
| Middle Rib Dy @ 459mm | mm | 36.0 | 40.0 | 38.2 | Pass |
| Middle Rib Dy @ 815mm | mm | 46.0 | 51.0 | 50.1 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

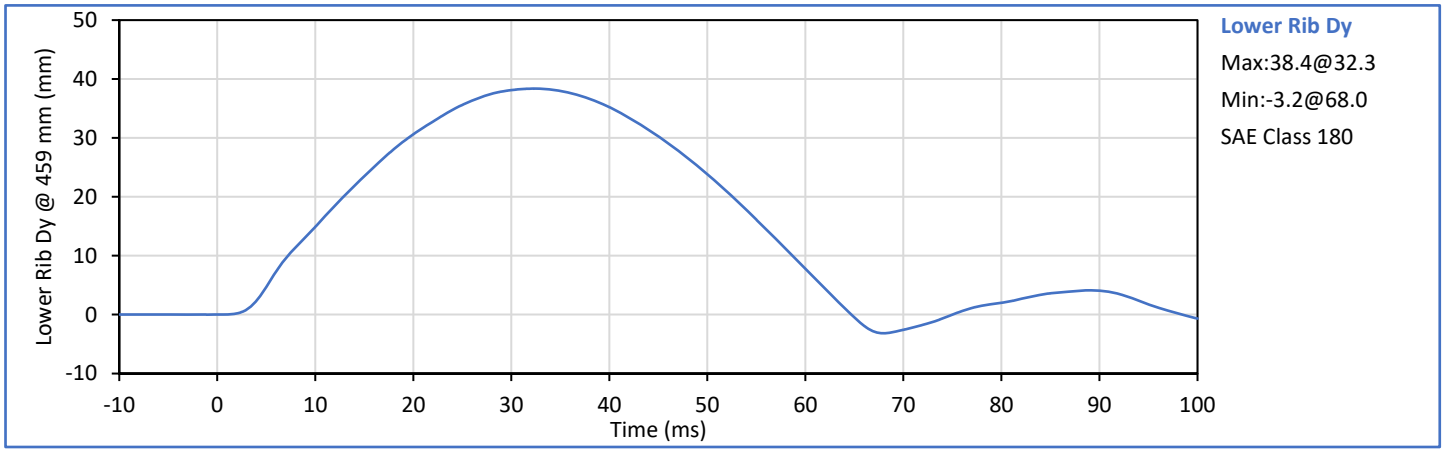
Applus IDIADA KARCO

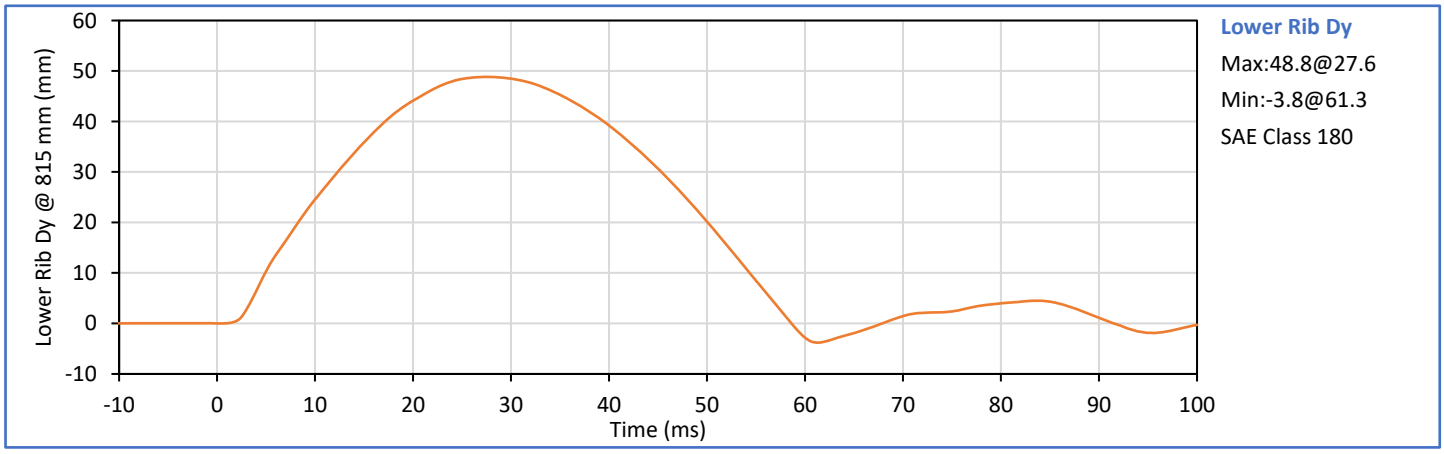
## ES-2re 50th Male Side Impact ATD
## Lower Rib Drop Test

ATD Serial No.: F037

Test Date: 2024-11-08

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.7 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 40 | Pass |
| Lower Rib Dy @ 459mm | mm | 36.0 | 40.0 | 38.4 | Pass |
| Lower Rib Dy @ 815mm | mm | 46.0 | 51.0 | 48.8 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

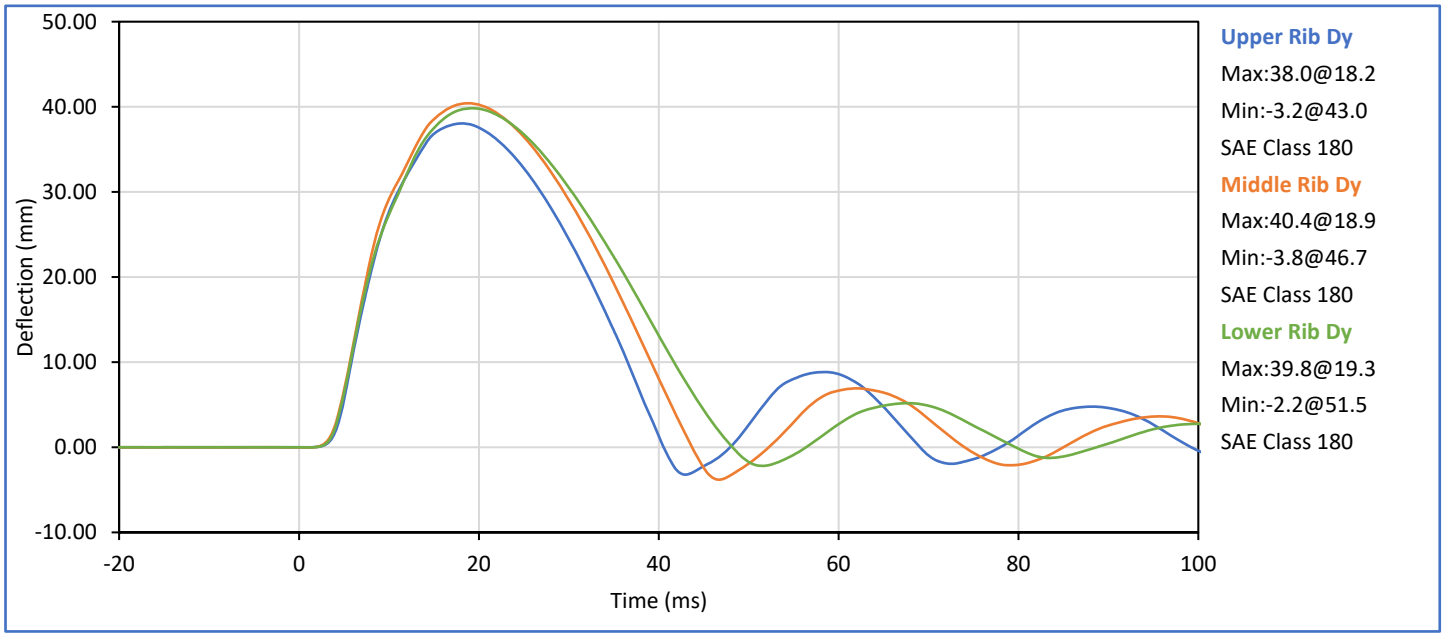
Approved By: J. Hernandez

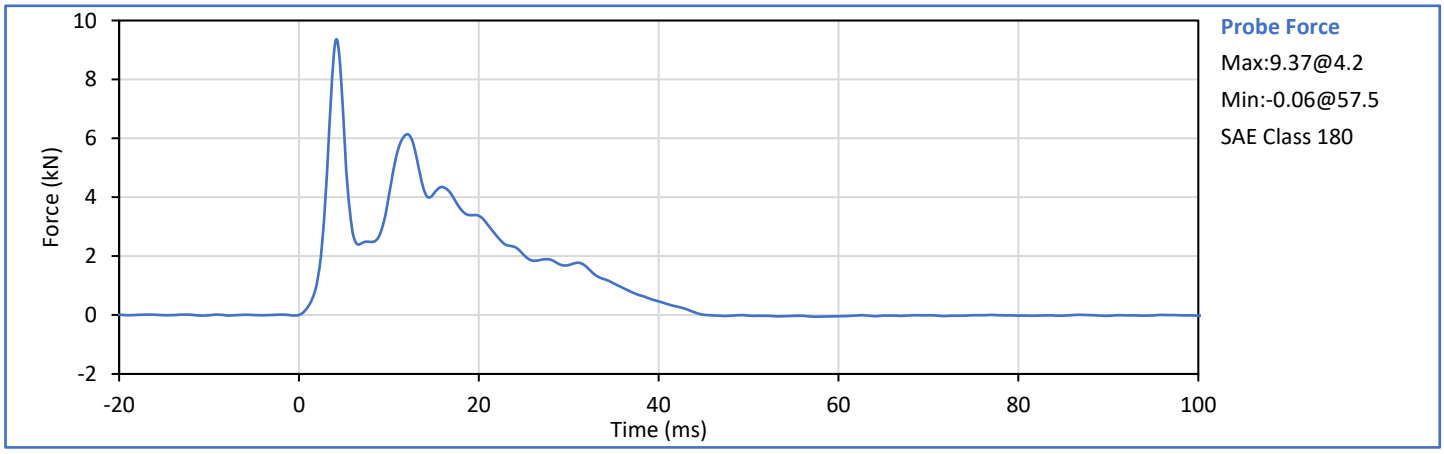
Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Thorax Impact (Full Body)

ATD Serial No.: F037 Test Date: 2024-11-07

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 20.8 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 43 | Pass |
| Impactor Velocity | m/s | 5.40 | 5.60 | 5.46 | Pass |
| Peak Upper Rib Dy | mm | 34.0 | 41.0 | 38.0 | Pass |
| Peak Middle Rib Dy | mm | 37.0 | 45.0 | 40.4 | Pass |
| Peak Lower Rib Dy | mm | 37.0 | 44.0 | 39.8 | Pass |
| Peak Impactor Force After 6 ms | kN | 5.10 | 6.20 | 6.14 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

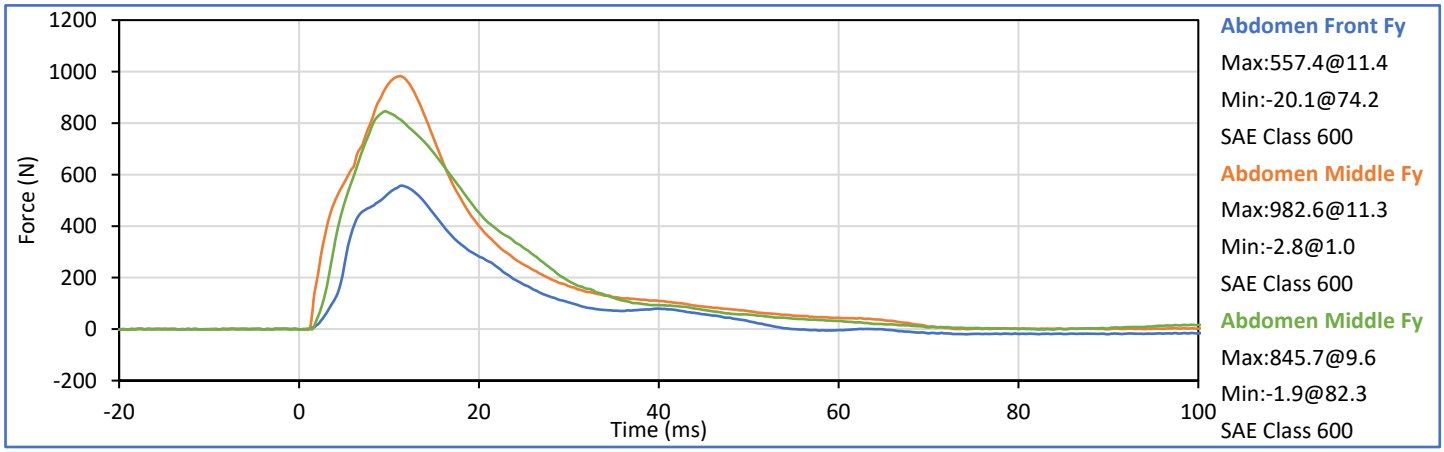
Approved By: J. Hernandez

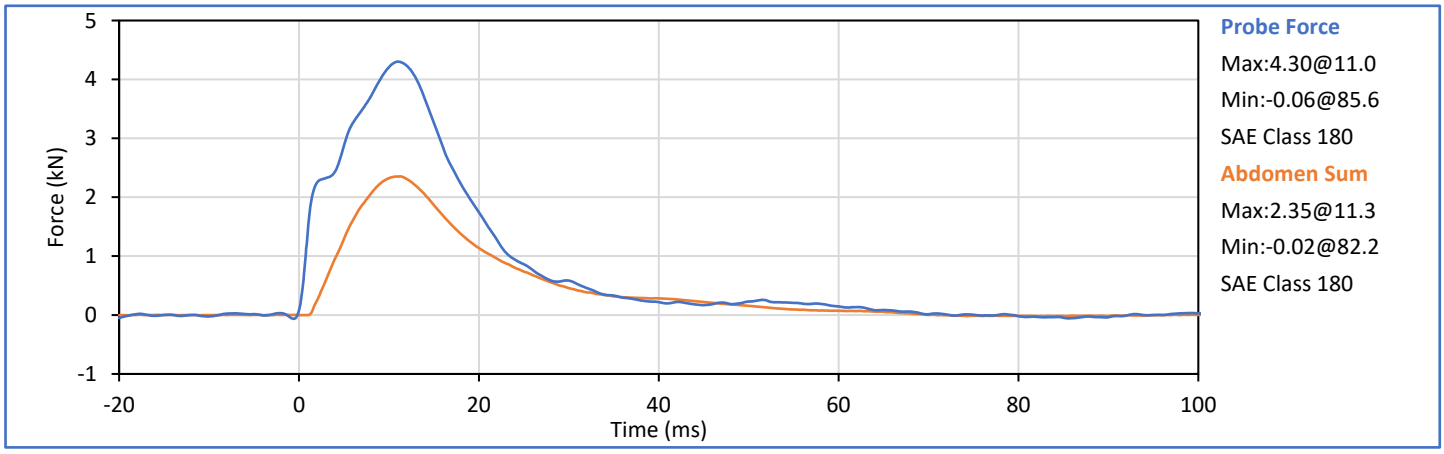
Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Abdomen Impact

ATD Serial No.: F037 Test Date: 2024-11-07

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.1 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 40 | Pass |
| Impactor Velocity | m/s | 3.90 | 4.10 | 4.00 | Pass |
| Peak Impactor Force | kN | 4.00 | 4.80 | 4.30 | Pass |
| Time of Peak Impactor Force | ms | 10.6 | 13.0 | 11.0 | Pass |
| Sum of Abdomen Forces | kN | 2.20 | 2.70 | 2.35 | Pass |
| Time of Peak Sum Abdomen Force | ms | 10.0 | 12.3 | 11.3 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

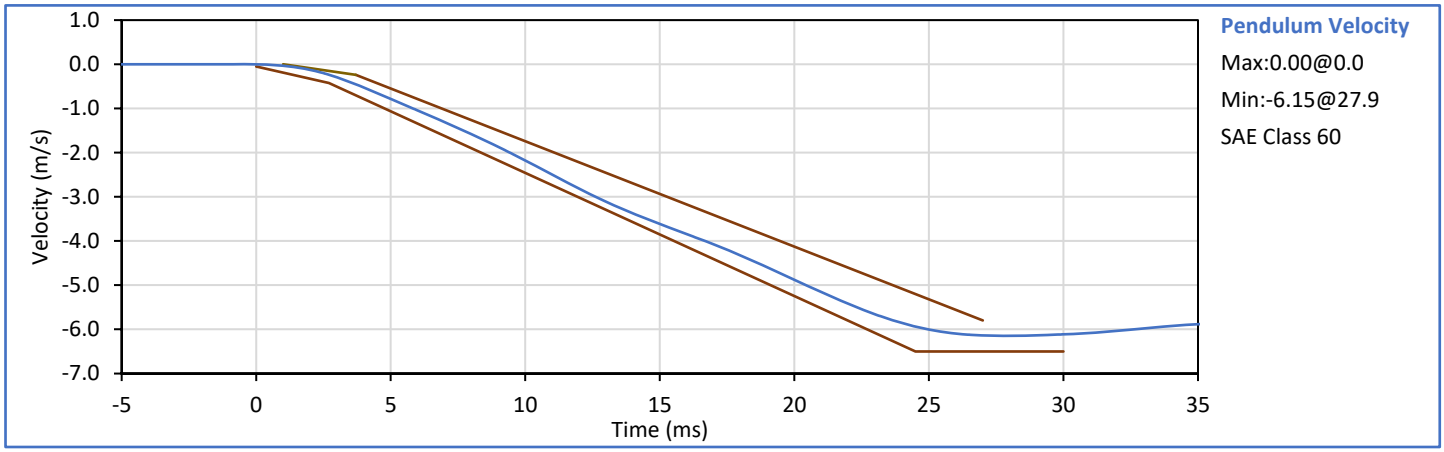
Approved By: J. Hernandez

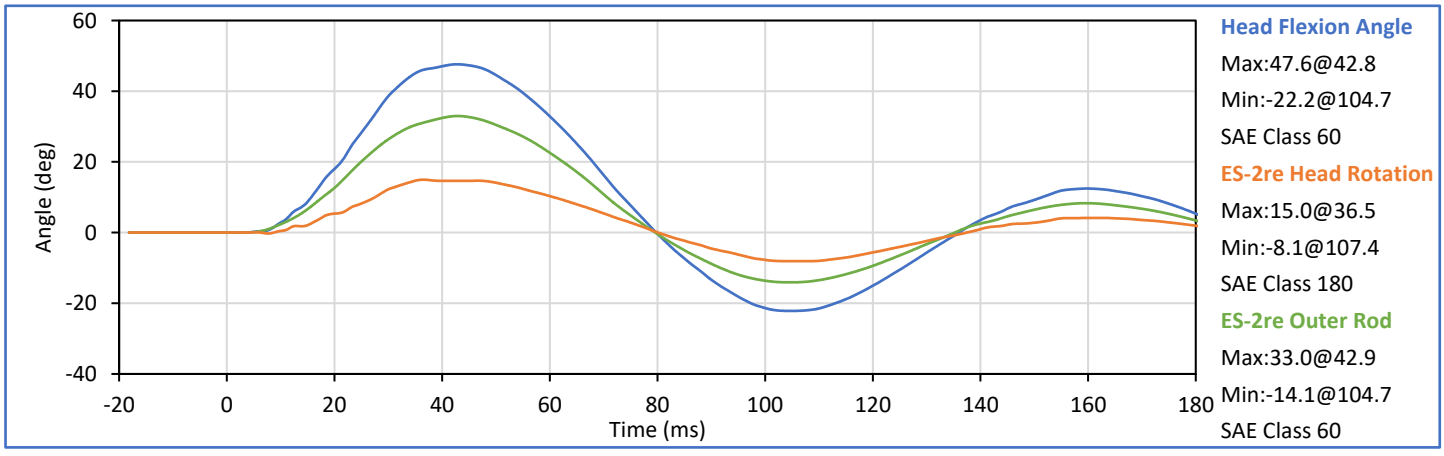
Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Lumbar Spine Flexion

ATD Serial No.: F037 Test Date: 2024-11-09

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 39 | Pass |
| Pendulum Velocity | m/s | 5.95 | 6.15 | 6.02 | Pass |
| Peak Headform Flexion | deg | 45.0 | 55.0 | 47.6 | Pass |
| Time of Peak Headform Flexion | ms | 39.0 | 53.0 | 42.8 | Pass |
| Flexion Decay (Peak to zero) | ms | 37.0 | 57.0 | 37.0 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

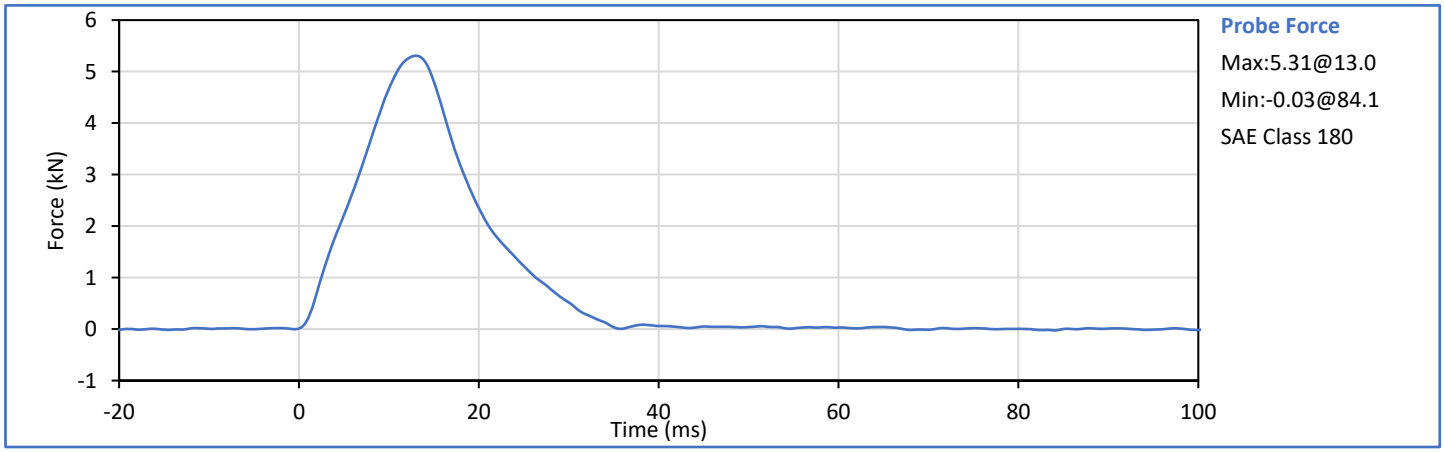
Approved By: J. Hernandez

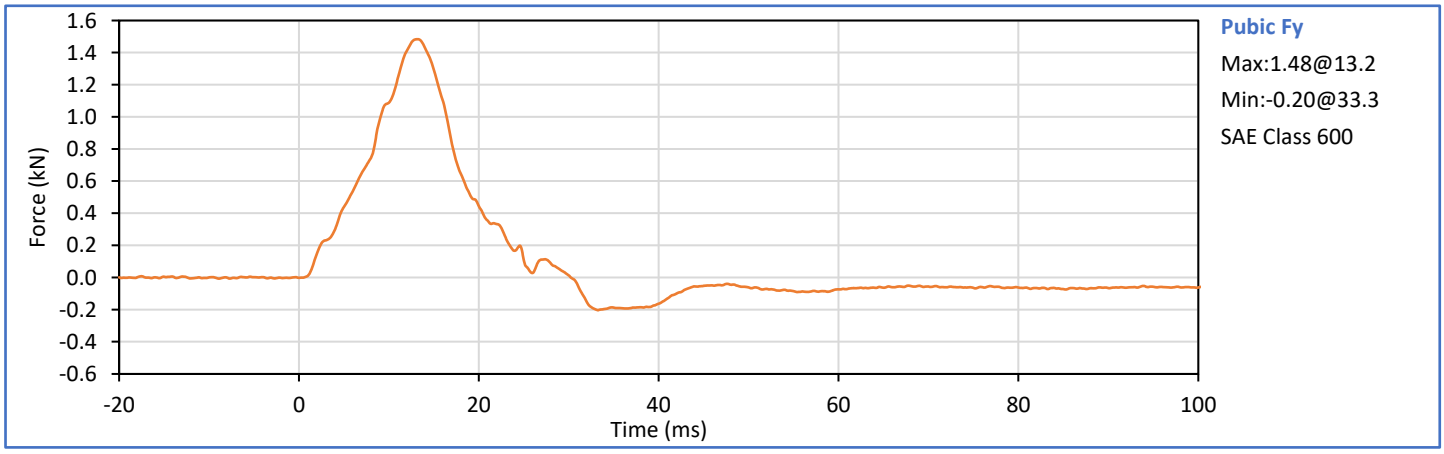
Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Pelvis Impact

ATD Serial No.: F037 Test Date: 2024-11-07

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 36 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.34 | Pass |
| Peak Impactor Force | kN | 4.70 | 5.40 | 5.31 | Pass |
| Time of Peak Impactor Force | ms | 11.8 | 16.1 | 13.0 | Pass |
| Pubic Symphysis Fy | kN | 1.23 | 1.59 | 1.48 | Pass |
| Time of Peak Pubic Symphysis Fy | ms | 12.2 | 17.0 | 13.2 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

**APPENDIX C**
**Pre-Test ATD Qualification and Performance Verification**
**SID-IIs Small Side Impact ATD, Left Side Configuration**
**S/N: 308**

Applus IDIADA
KARCO

**SID-IIs Small Side Impact ATD**
**External Measurements**

ATD Serial No.: 308 Test Date: 2024-11-07

| Tested Parameter | Units | Spec Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.2 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 38 | Pass |
| A - Sitting Height | mm | 772 | 788 | 784 | Pass |
| B - Shoulder Pivot Height | mm | 437 | 453 | 450 | Pass |
| C - Hpoint Height | mm | 79 | 89 | 85 | Pass |
| D - H Point From Seatback | mm | 141 | 151 | 144 | Pass |
| E - Shoulder Pivot From Backline | mm | 97 | 107 | 101 | Pass |
| F - Thigh Clearance | mm | 119 | 135 | 127 | Pass |
| G - Head Breadth | mm | 140 | 148 | 144 | Pass |
| H - Head Back From Backline | mm | 40 | 46 | 43 | Pass |
| I - Head Depth | mm | 178 | 188 | 184 | Pass |
| J - Head Circumference | mm | 541 | 551 | 546 | Pass |
| K - Buttock To Knee Length | mm | 514 | 540 | 526 | Pass |
| L - Popliteal Height | mm | 343 | 369 | 358 | Pass |
| K - Knee Pivot To Floor Height | mm | 392 | 409 | 404 | Pass |
| N - Buttock Popliteal Length | mm | 416 | 442 | 426 | Pass |
| O - Chest Depth W/O Jacket | mm | 195 | 211 | 206 | Pass |
| P - Foot Length | mm | 216 | 232 | 226 | Pass |
| Q - Hip Breadth (W/Pelvic Plugs) | mm | 313 | 323 | 317 | Pass |
| R - Arm Length | mm | 249 | 259 | 256 | Pass |
| S - Knee Joint To Seatback | mm | 477 | 493 | 489 | Pass |
| V - Shoulder Width | mm | 341 | 357 | 353 | Pass |
| W - Foot Width | mm | 78 | 94 | 84 | Pass |
| Y - Chest Circumference W/Jacket | mm | 851 | 881 | 865 | Pass |
| Z - Waist Circumference | mm | 761 | 791 | 770 | Pass |
| | | | Overall Test Results | | Pass |

Technician: J. Coronel

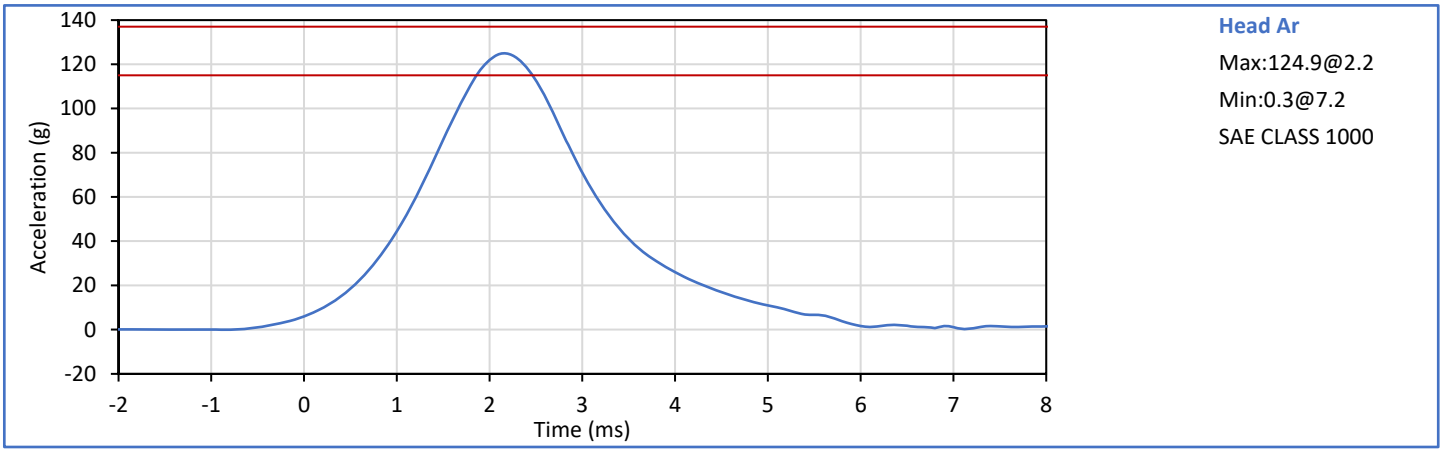
Approved By: J. Hernandez

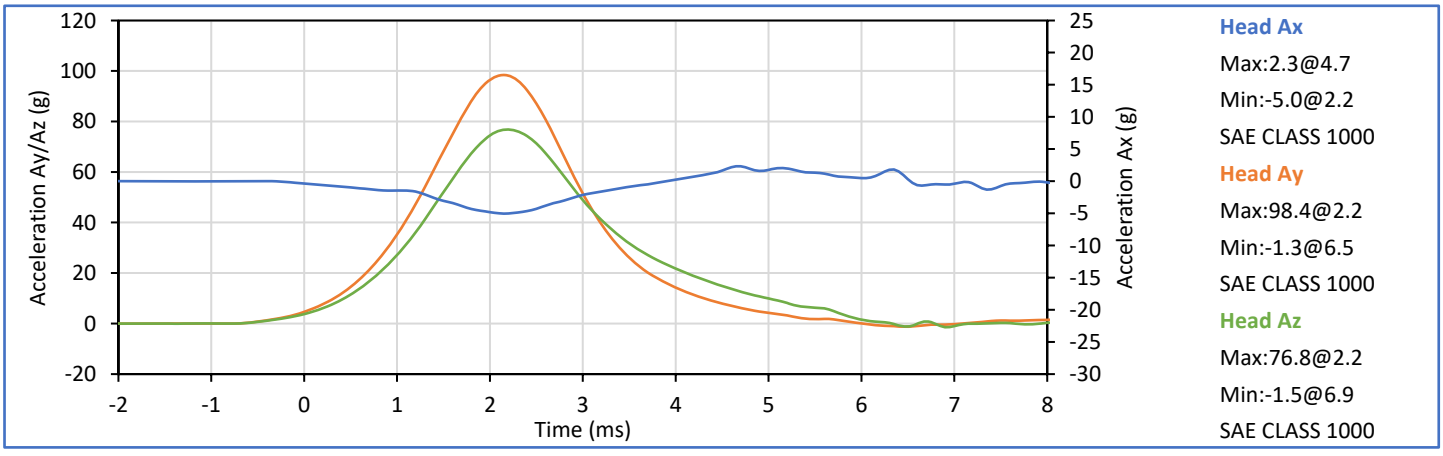
Applus IDIADA KARCO

## SID-IIs Small Side Impact ATD
## Head Drop

ATD Serial No.: 308 Test Date: 2024-11-09

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 18.9 | 25.6 | 21.2 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 37 | Pass |
| Peak Resultant Acceleration | g | 115.0 | 137.0 | 124.9 | Pass |
| Peak Head Ax | g | -15.0 | 15.0 | -5.0 | Pass |
| Oscillations After Main Pulse | % | 0.0 | 15.0 | 2.0 | Pass |
| Is Acceleration Unimodal? | Yes/No | Yes | | Yes | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

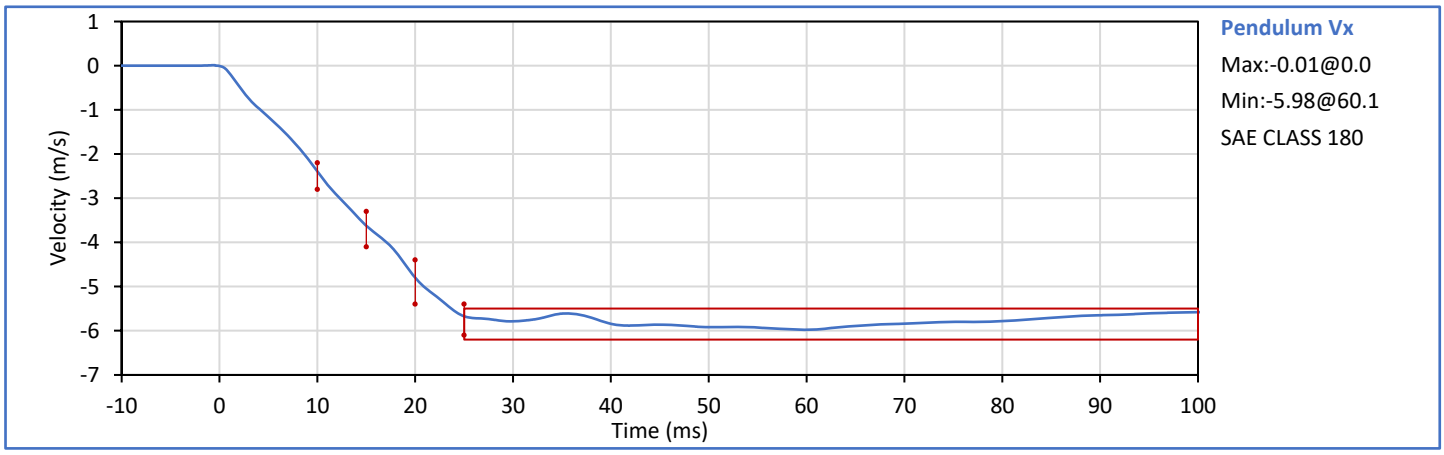
Approved By: J. Hernandez

Applus IDIADA KARCO

## SID-IIs Small Side Impact ATD
## Neck Flexion

ATD Serial No.: 308 Test Date: 2024-11-09

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 38 | Pass |
| Pendulum Velocity | m/s | 5.51 | 5.63 | 5.57 | Pass |
| Pendulum Decel at 10 ms | m/s | -2.80 | -2.20 | -2.39 | Pass |
| Pendulum Decel at 15 ms | m/s | -4.10 | -3.30 | -3.62 | Pass |
| Pendulum Decel at 20 ms | m/s | -5.40 | -4.40 | -4.80 | Pass |
| Pendulum Decel at 25 ms | m/s | -6.10 | -5.40 | -5.67 | Pass |
| Pendulum Decel from 25-100 ms | m/s | -6.20 | -5.50 | -5.98/-5.58 | Pass |
| Peak "D" Plane Rotation | deg | -81.0 | -71.0 | -78.2 | Pass |
| Time of Peak "D" Plane Rotation | ms | 50.0 | 70.0 | 59.6 | Pass |
| Peak Occ. Condyle Moment | Nm | 36.0 | 44.0 | 41.5 | Pass |
| Time of Moment Decay to 0 Nm | ms | 102.0 | 126.0 | 111.8 | Pass |
| | | | Overall Test Results | | Pass |



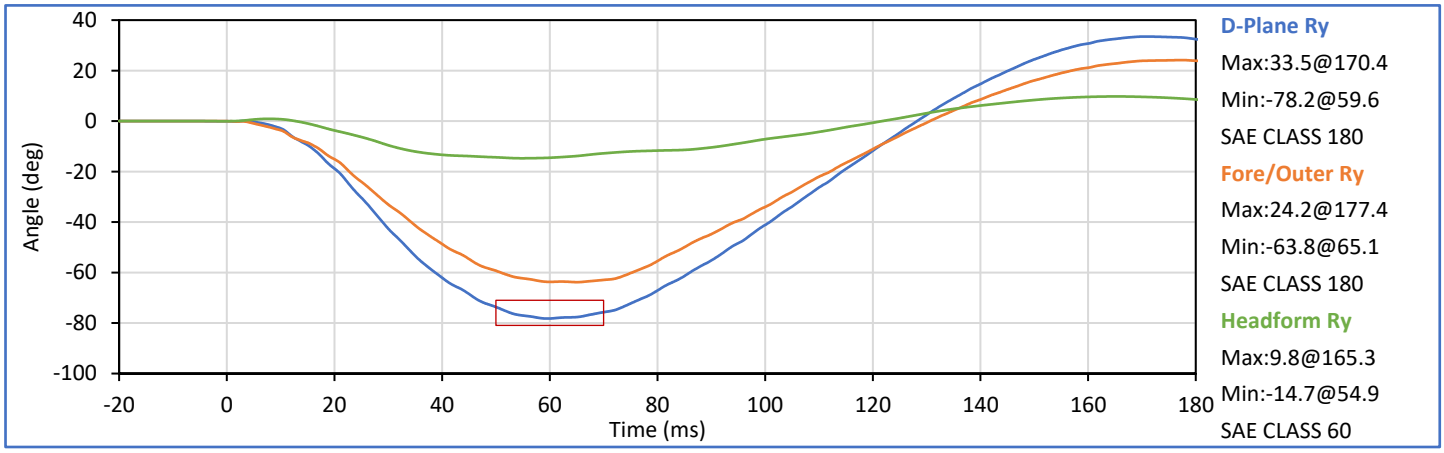

Technician: J. Coronel

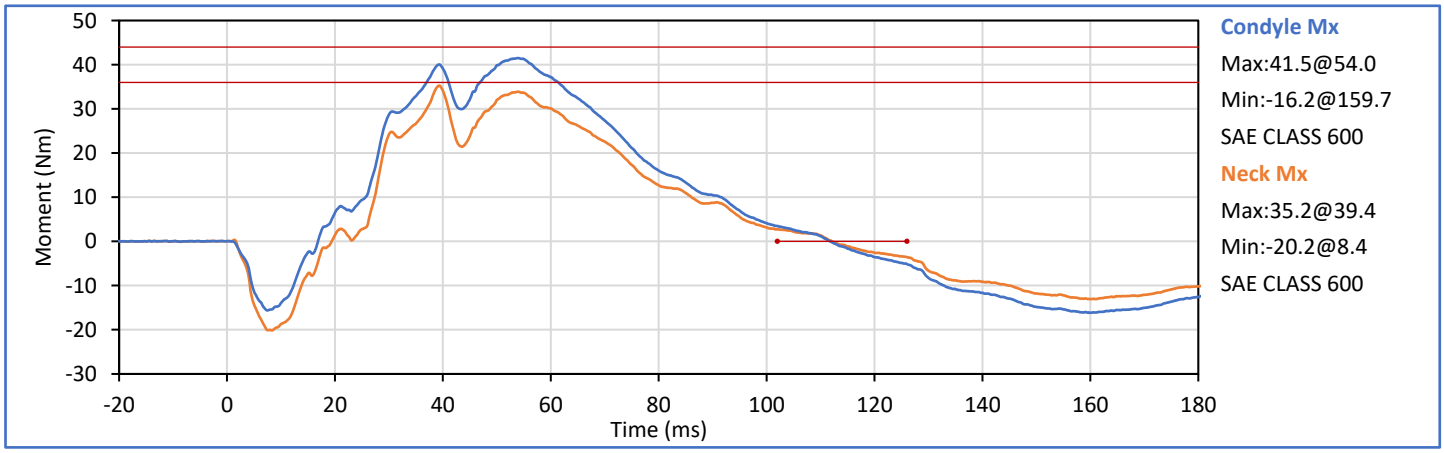
Approved By: J. Hernandez

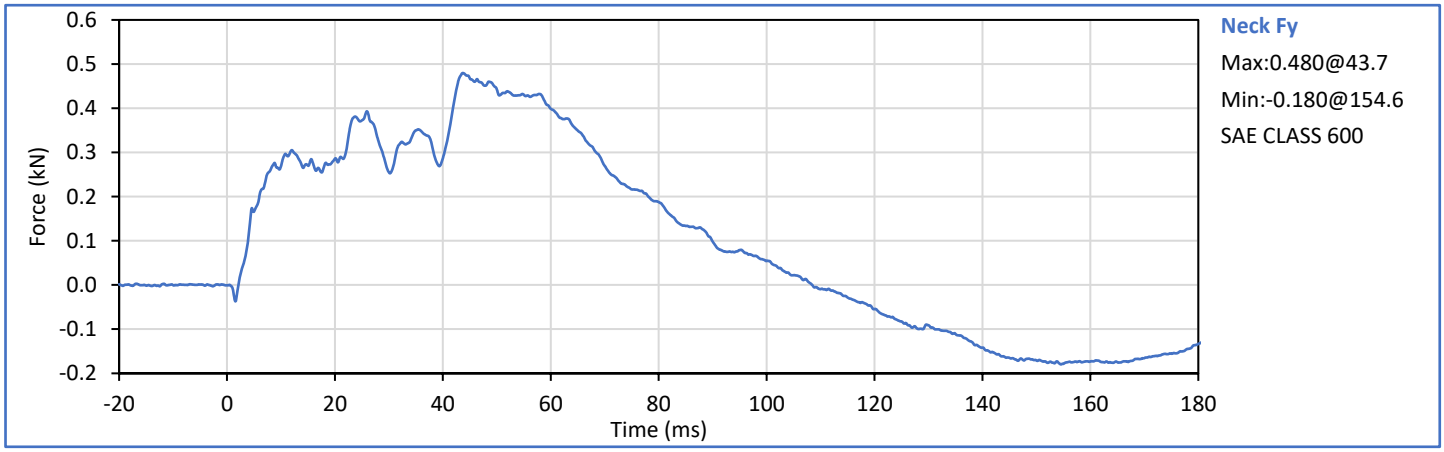
Applus IDIADA
KARCO

**SID-IIs Small Side Impact ATD**
**Neck Flexion**

ATD Serial No.: 308 Test Date: 2024-11-09



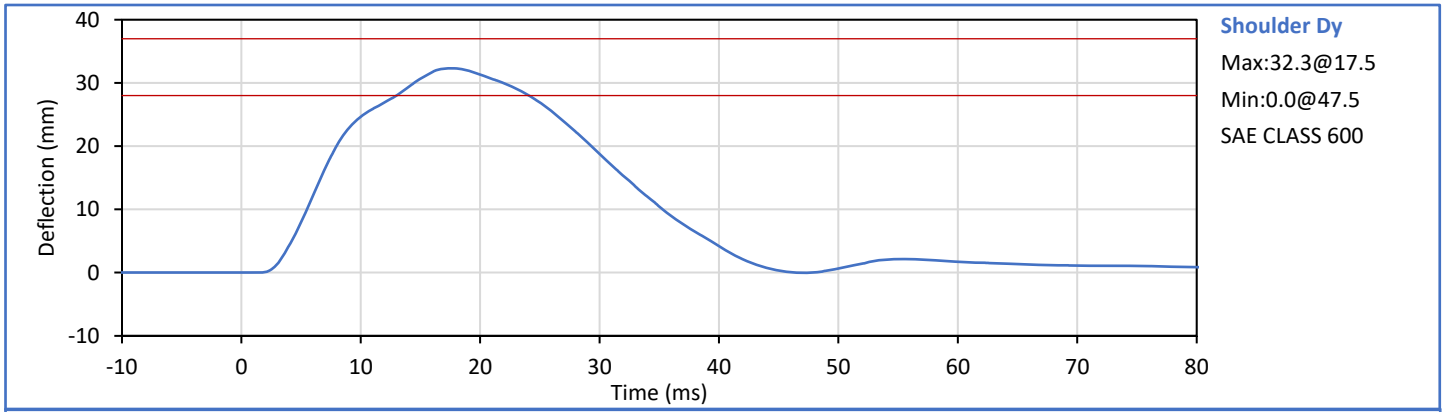



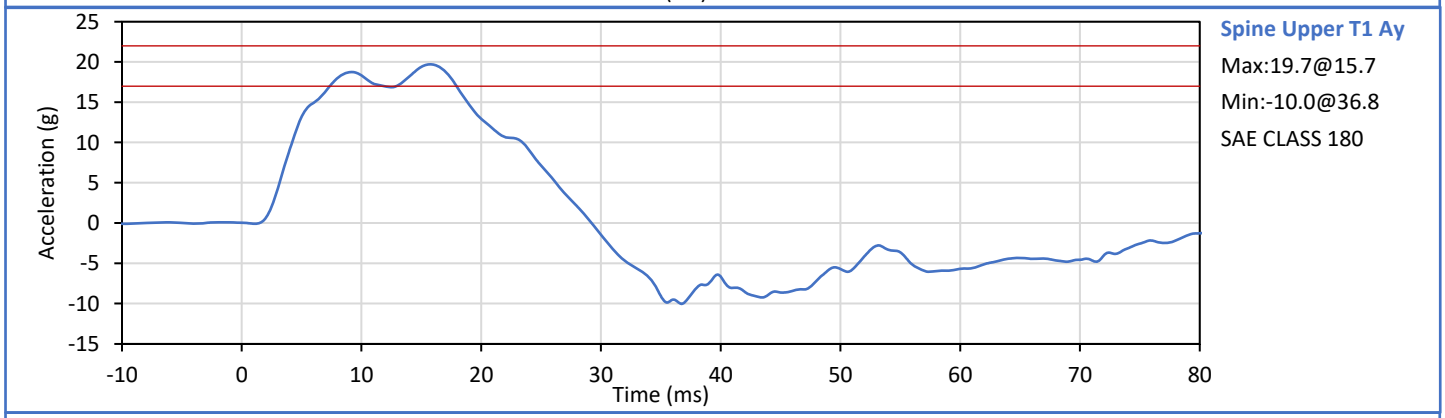
Applus IDIADA KARCO

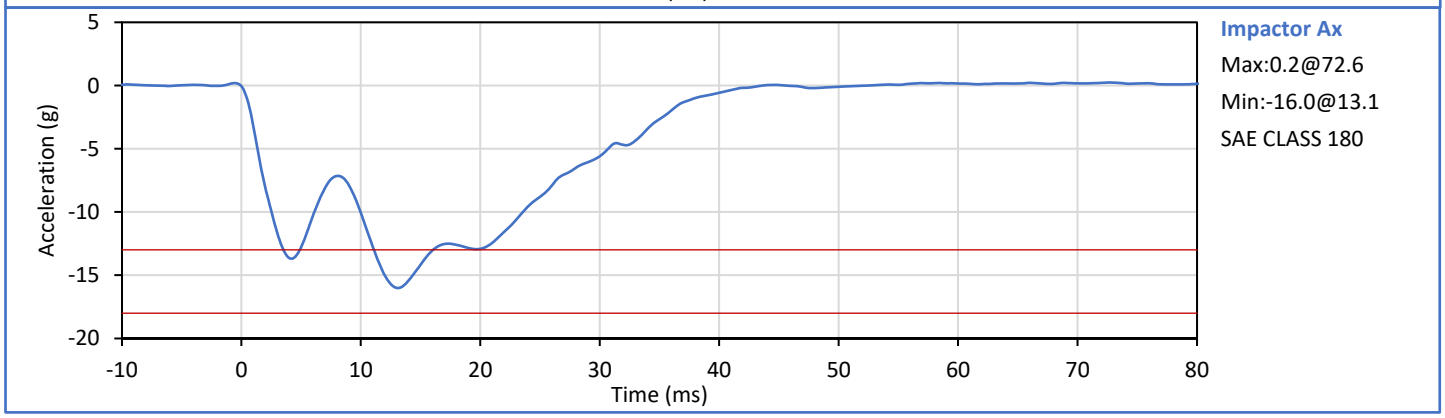
## SID-IIs Small Side Impact ATD
## Shoulder Impact Test

ATD Serial No.: 308 Test Date: 2024-11-07

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.1 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 39 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.34 | Pass |
| Peak Shoulder Dy | mm | 28.0 | 37.0 | 32.3 | Pass |
| Peak Upper Spine (T1) Ay | g | 17.0 | 22.0 | 19.7 | Pass |
| Peak Impactor Ax | g | -18.0 | -13.0 | -16.0 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

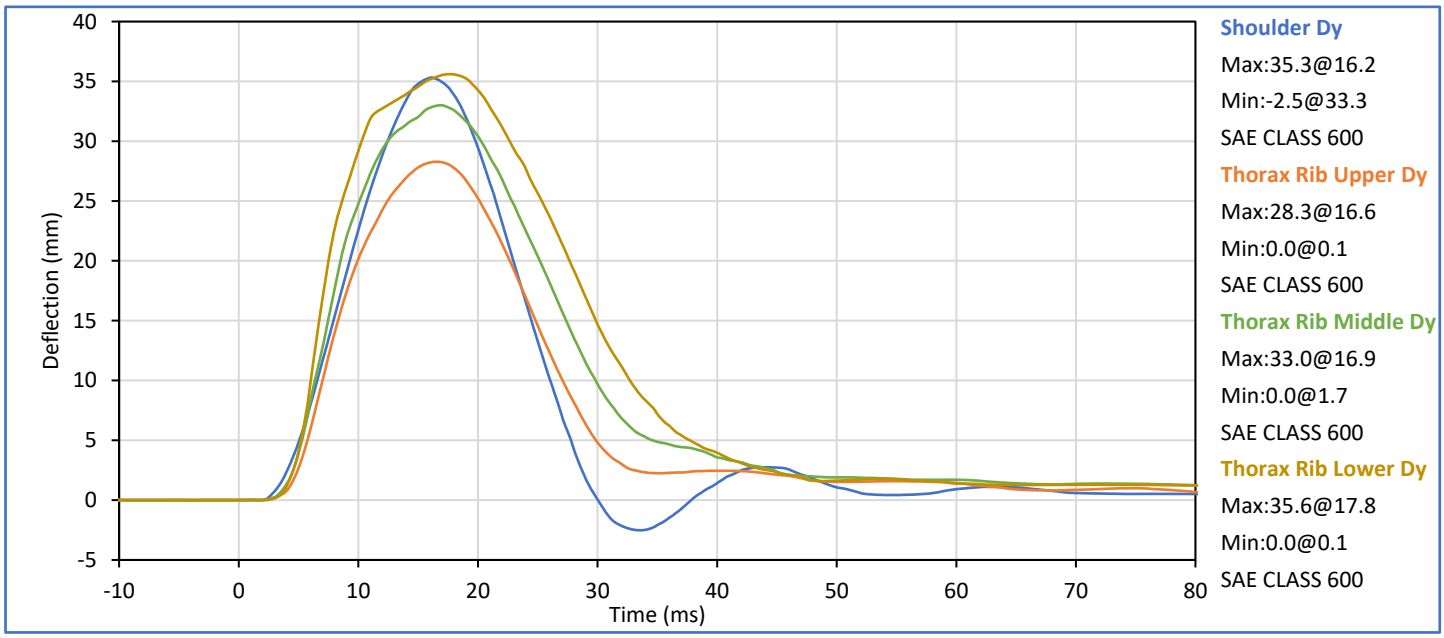
Approved By: J. Hernandez

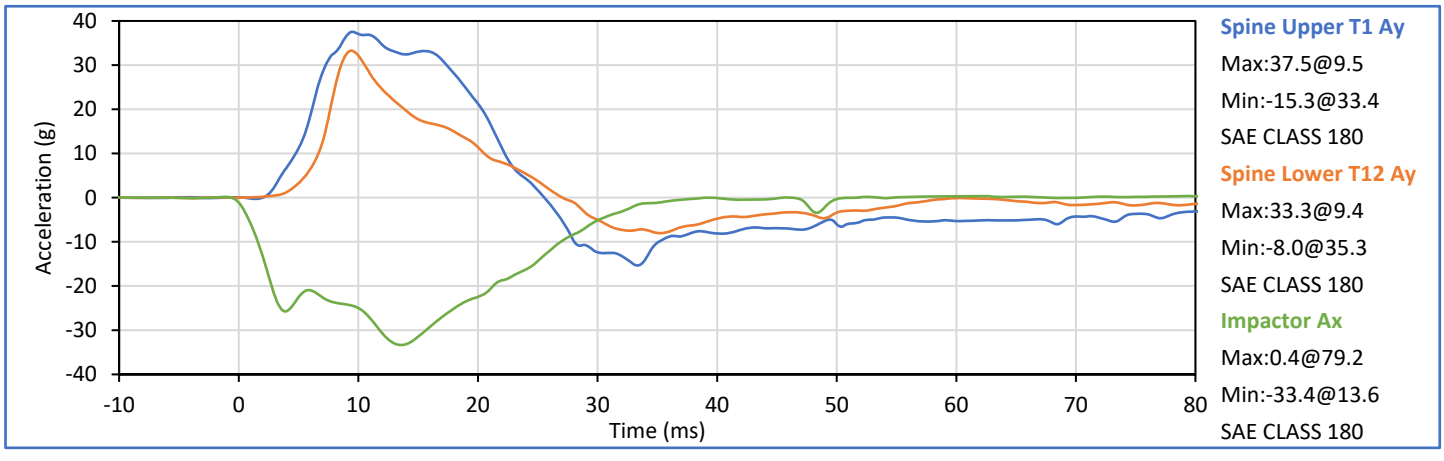
Applus IDIADA KARCO

## SID-IIs Small Side Impact ATD
## Thorax (With Arm)

ATD Serial No.: 308 Test Date: 2024-11-07

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.2 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 40 | Pass |
| Impactor Velocity | m/s | 6.60 | 6.80 | 6.71 | Pass |
| Peak Shoulder Dy | mm | 31.0 | 40.0 | 35.3 | Pass |
| Peak Upper Rib Dy | mm | 25.0 | 32.0 | 28.3 | Pass |
| Peak Middle Rib Dy | mm | 30.0 | 36.0 | 33.0 | Pass |
| Peak Lower Rib Dy | mm | 32.0 | 38.0 | 35.6 | Pass |
| Peak Upper Spine (T1) Ay | g | 34.0 | 43.0 | 37.5 | Pass |
| Peak Lower Spine (T12) Ay | g | 29.0 | 37.0 | 33.3 | Pass |
| Peak Impactor Ax | g | -36.0 | -30.0 | -33.4 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

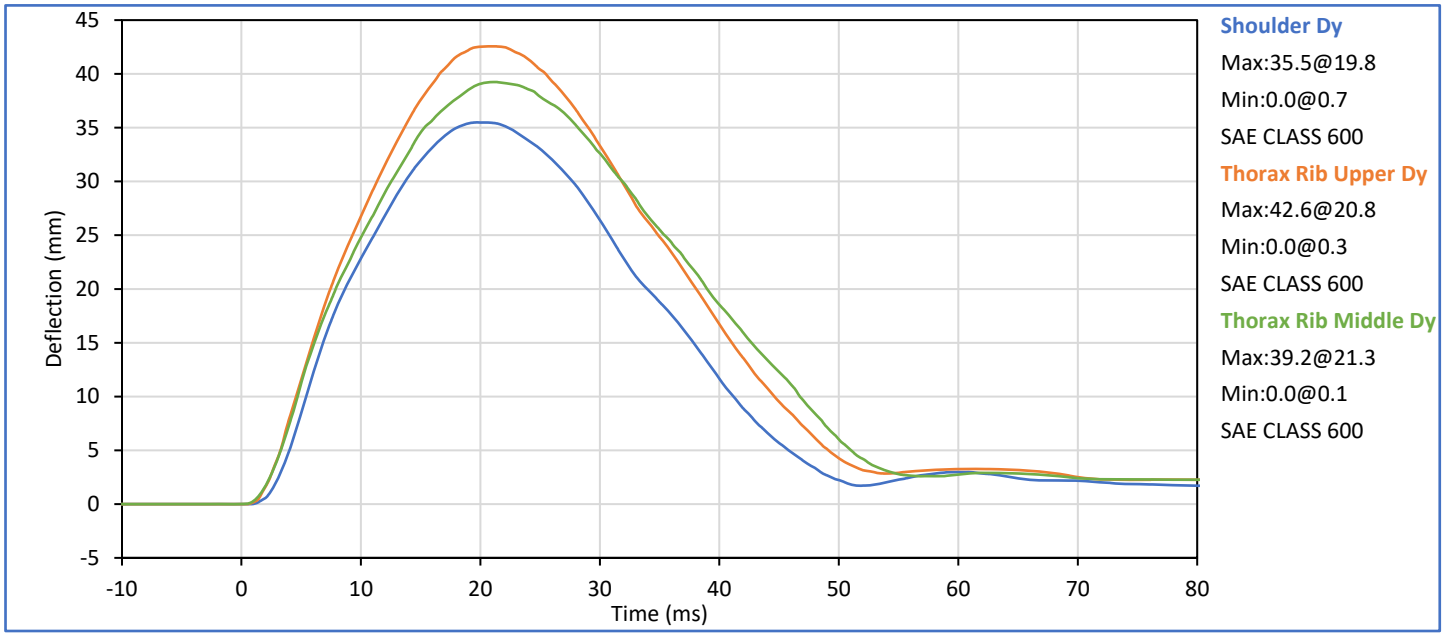
Approved By: J. Hernandez

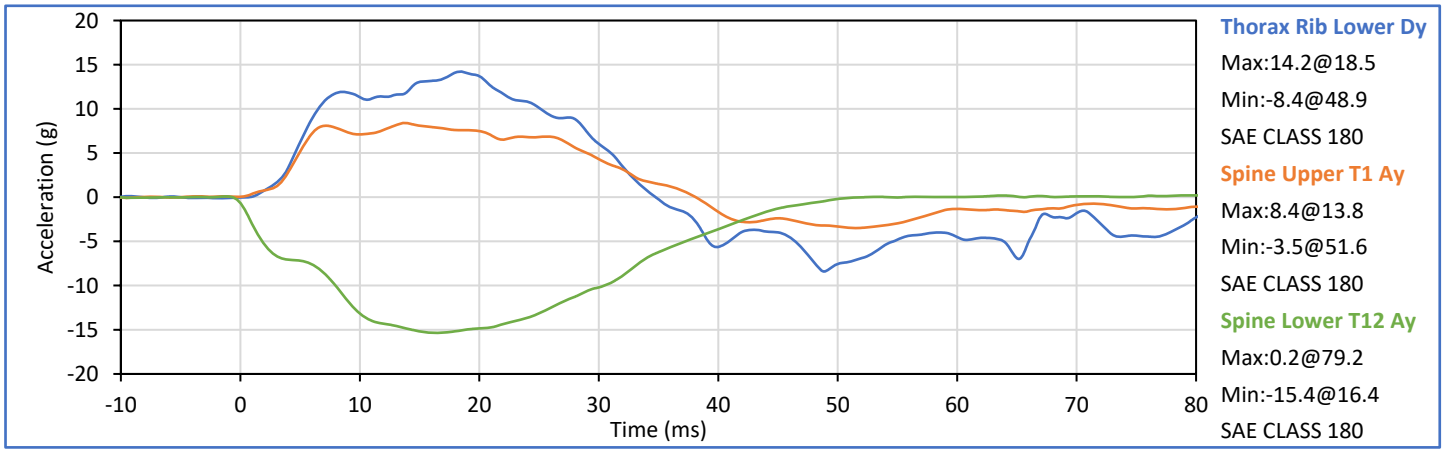
Applus IDIADA KARCO

## SID-IIs Small Side Impact ATD
## Thorax (No Arm)

ATD Serial No.: 308 Test Date: 2024-11-07

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.1 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 42 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.34 | Pass |
| Peak Thorax Rib Upper Dy | mm | 32.0 | 40.0 | 35.5 | Pass |
| Peak Thorax Rib Middle Dy | mm | 39.0 | 45.0 | 42.6 | Pass |
| Peak Thorax Rib Lower Dy | mm | 35.0 | 43.0 | 39.2 | Pass |
| Peak Spine Upper T1 Ay | g | 13.0 | 17.0 | 14.2 | Pass |
| Peak Spine Lower T12 Ay | g | 7.0 | 11.0 | 8.4 | Pass |
| Peak Impactor Ax | g | -18.0 | -14.0 | -15.4 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

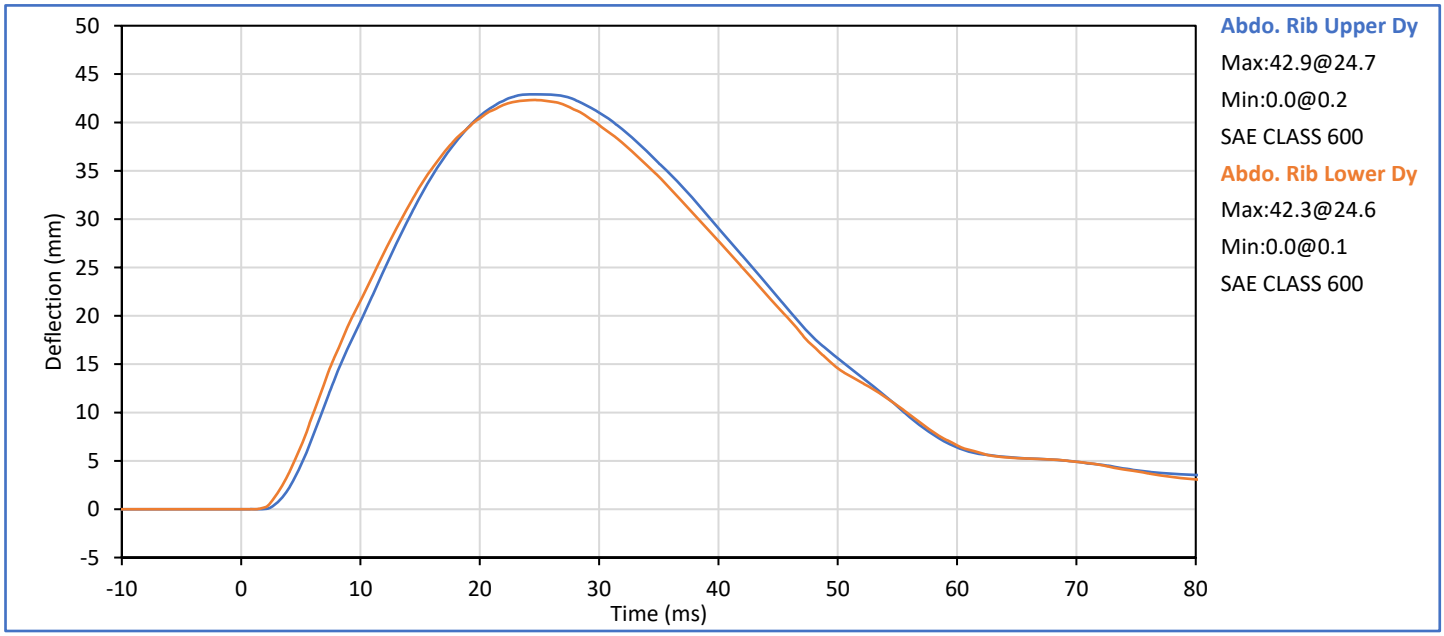
Approved By: J. Hernandez

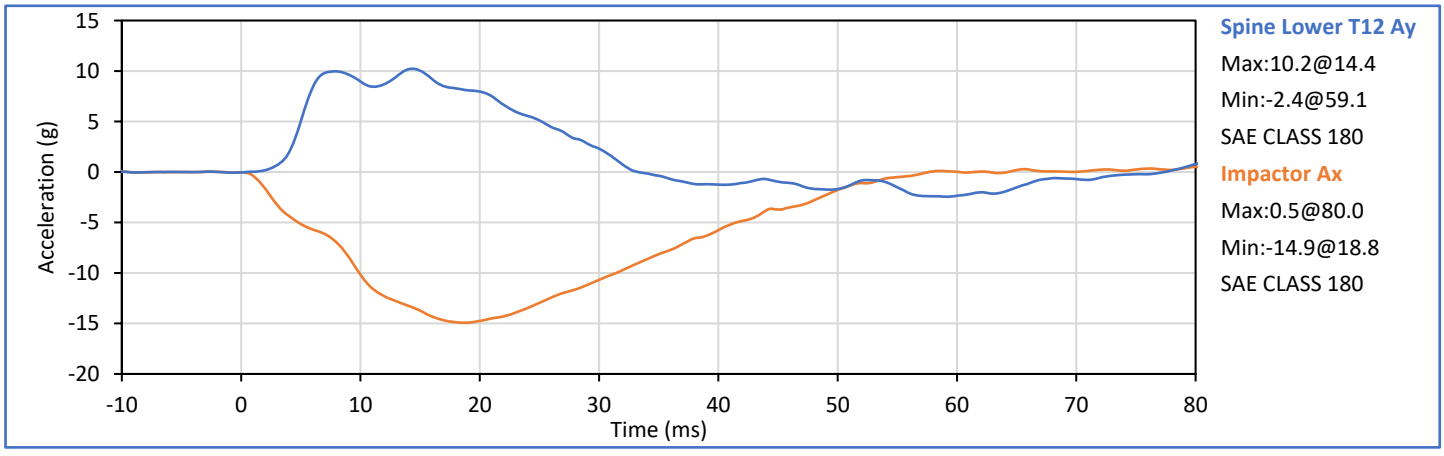
Applus IDIADA KARCO

## SID-IIs Small Side Impact ATD
## Abdomen Impact

ATD Serial No.: 308 Test Date: 2024-11-07

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.5 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 20 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.33 | Pass |
| Peak Upper Abdomen Rib Dy | mm | 36.0 | 47.0 | 42.9 | Pass |
| Peak Lower Abdomen Rib Dy | mm | 33.0 | 44.0 | 42.3 | Pass |
| Peak Lower Spine T12 Ay | mm | 9.0 | 14.0 | 10.2 | Pass |
| Peak Impactor Ax | g | -16.0 | -12.0 | -14.9 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

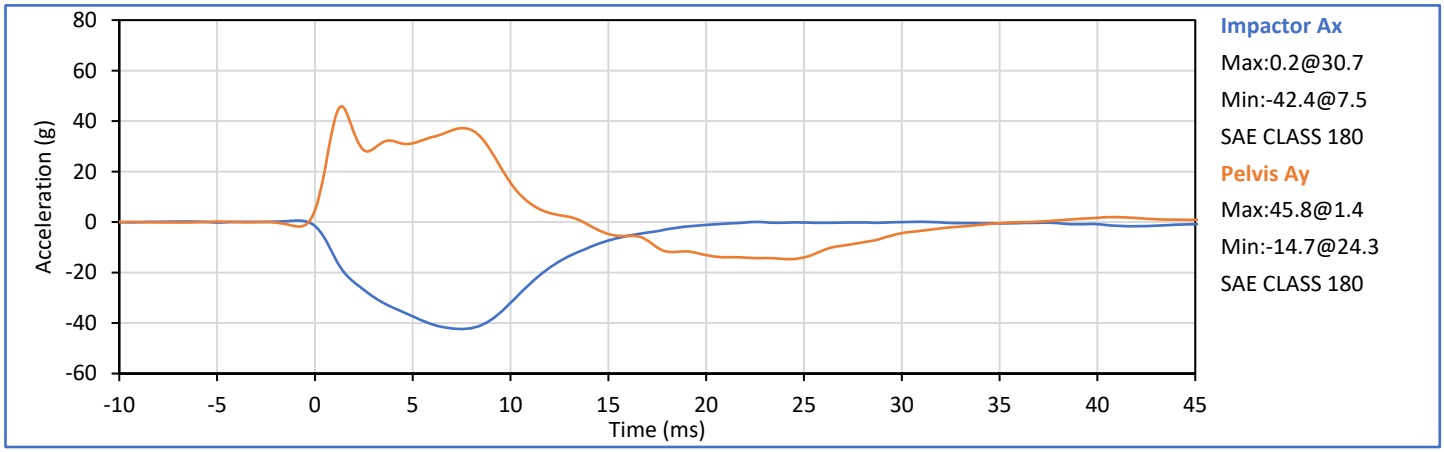
Applus IDIADA KARCO

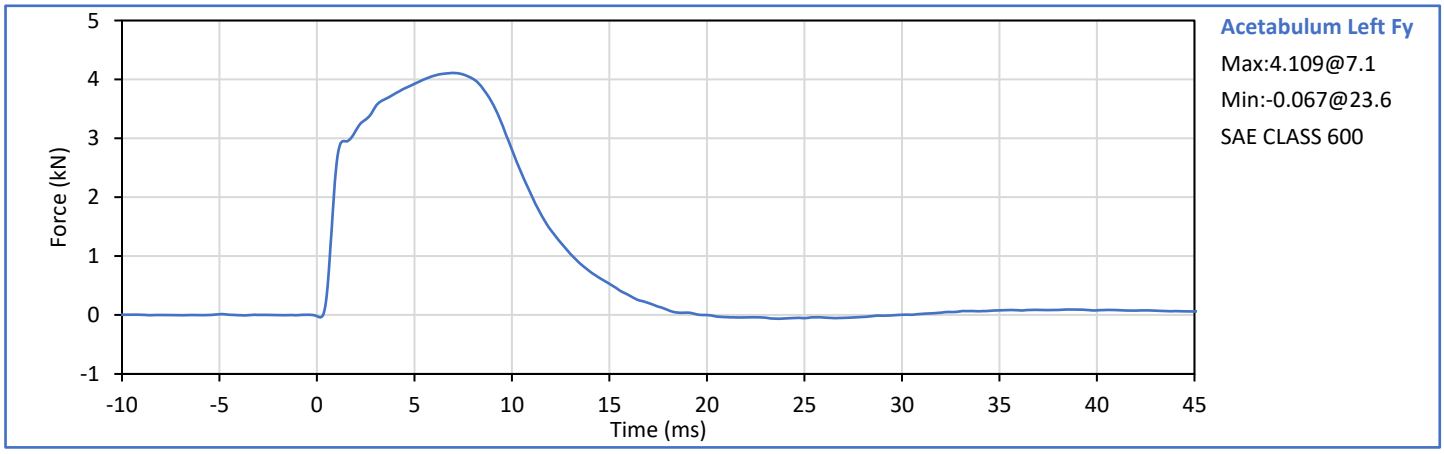
## SID-IIs Small Side Impact ATD
## Pelvis Acetabulum Impact

ATD Serial No.: 308 Test Date: 2024-11-08

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.6 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 40 | Pass |
| Impactor Velocity | m/s | 6.60 | 6.80 | 6.71 | Pass |
| Peak Acetabulum Fy | kN | 3.60 | 4.30 | 4.11 | Pass |
| Pelvis Ay after 6ms | g | 34.0 | 42.0 | 37.2 | Pass |
| Peak Impactor Ax | g | -47.0 | -38.0 | -42.4 | Pass |
| | | | Overall Test Results | | Pass |

Pelvis Plug S/N: 16823




Technician: J. Coronel

Approved By: J. Hernandez

ATD Serial No.: 308 Test Date: 2024-11-08

Pelvis Plug S/N: 16823

SACO RESEARCH

**SID-IIs Pelvis Plug Certification Test**

Plug S/N 16823
Test Number 23634
Report Number 23691
Test Date 7/25/2022 9:59:14 AM

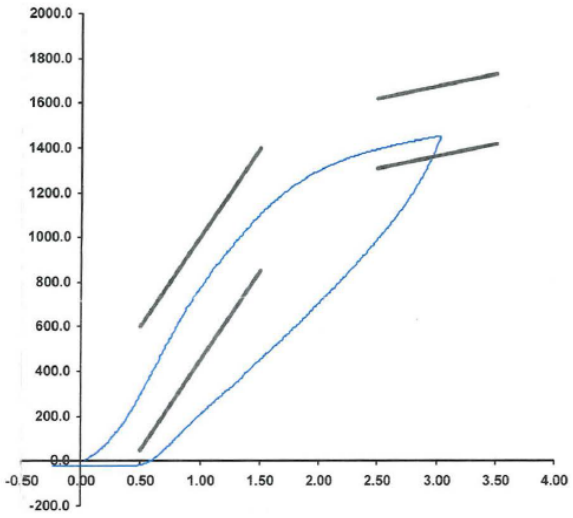
| | Test Results | Spec Min | Spec Max |
|---|---|---|---|
| Force @ 0.5 mm (N) | 302 | 50 | 600 |
| Force @ 1.5 mm (N) | 1,105 | 850 | 1,400 |
| Force @ 2.5 mm (N) | 1,394 | 1,306 | 1,618 |
| Force @ 3.0 mm (N) | 1,450 | 1,361 | 1,673 |

Testing Machine STM-20 5965542
Load Cell S/N (FI360947), Units (LBS ) 1000

Crosshead Speed ( mm / min ) or Rate 12.7
Extension or Position Measured by XHD_100 ( XHD100 )

Notes:

Force (-N) vs Extension (-mm)




Operator

Part Number 180-4450

Template No 107 25-Jul-22
SACO Research

By : DC Date : 7/25/22

SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

Applus IDIADA KARCO

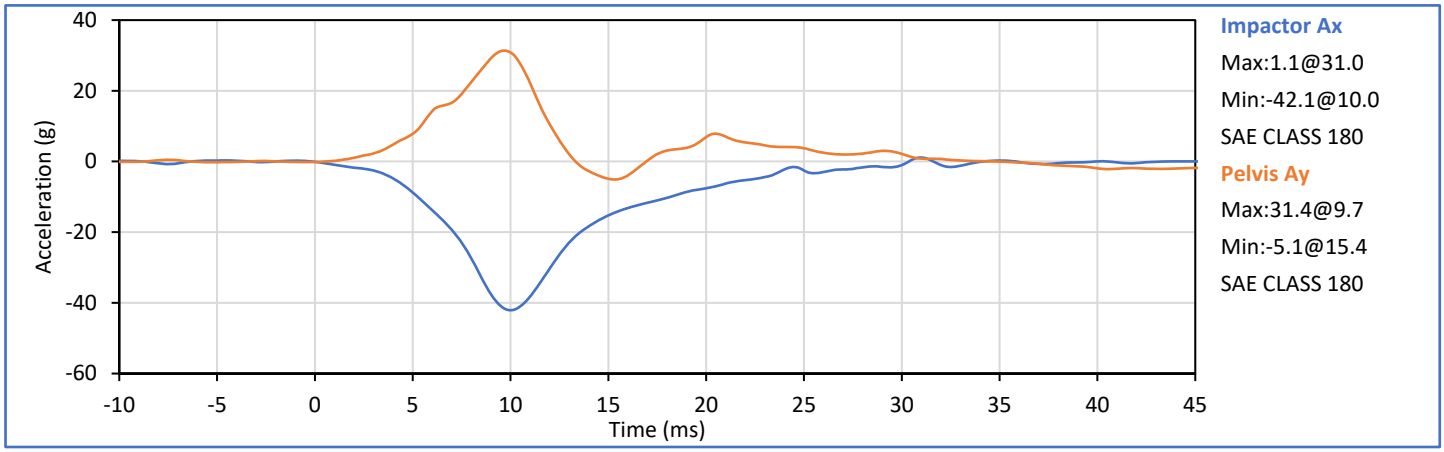
## SID-IIs Small Side Impact ATD
## Pelvis Iliac Impact

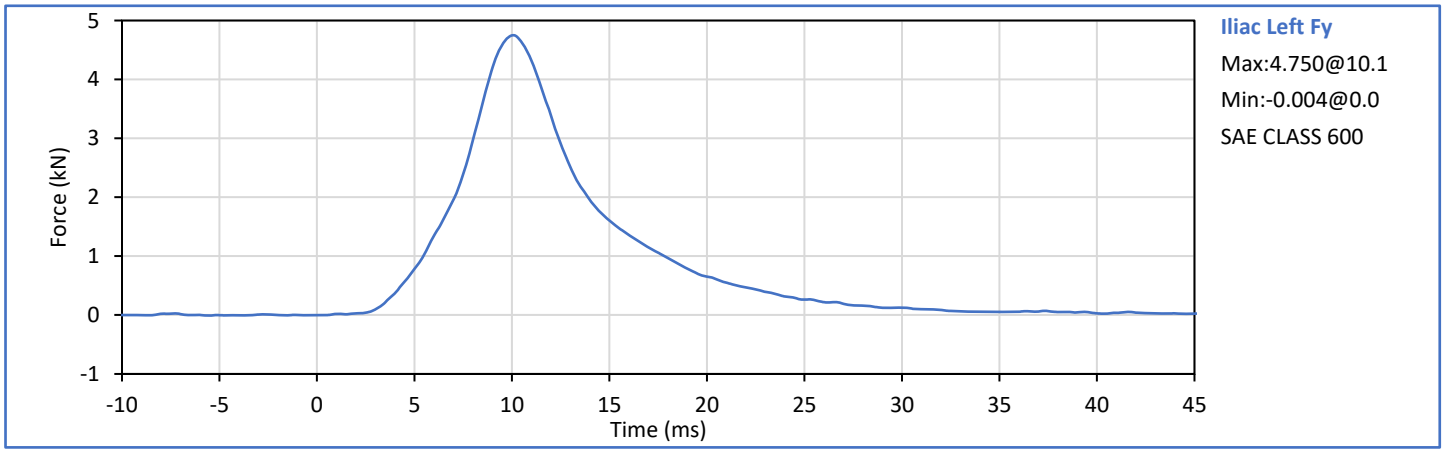
ATD Serial No.: 308 Test Date: 2024-11-10

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 38 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.32 | Pass |
| Peak Iliac Fy | kN | 4.10 | 5.10 | 4.75 | Pass |
| Peak Pelvis Ay | g | 28.0 | 39.0 | 34.7 | Pass |
| Peak Impactor Ax | g | -45.0 | -36.0 | -42.1 | Pass |
| | | | Overall Test Results | | Pass |

Pelvis Plug S/N: 16490 *

* Plug is not impacted and remains certified




Technician: J. Coronel

Approved By: J. Hernandez

**APPENDIX C**
**Post-Test ATD Qualification and Performance Verification**
**ES-2re 50th Male Side Impact ATD, Left Side Configuration**
**S/N: F037**

Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## External Measurements

ATD Serial No.: F037 Test Date: 2024-12-02

| Tested Parameter | Units | Spec Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.5 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 28 | Pass |
| 1 - Sitting Height | mm | 900 | 918 | 912 | Pass |
| 2 - Seat to Shoulder Joint | mm | 558 | 572 | 566 | Pass |
| 3 - Seat to Lower Face of Thoracic Spine Box | mm | 346 | 356 | 349 | Pass |
| 4 - Seat to Hip Joint (bolt center) | mm | 97 | 103 | 101 | Pass |
| 5 - Sole to Seat, Sitting | mm | 433 | 451 | 440 | Pass |
| 6 - Head Width | mm | 152 | 158 | 157 | Pass |
| 7 - Shoulder/Arm Width | mm | 461 | 479 | 471 | Pass |
| 8 - Thorax Width | mm | 322 | 332 | 329 | Pass |
| 9 - Abdomen Width | mm | 273 | 287 | 282 | Pass |
| 10 - Pelvis Lap Width | mm | 359 | 373 | 371 | Pass |
| 11 - Head Depth | mm | 196 | 206 | 200 | Pass |
| 12 - Thorax Depth | mm | 262 | 272 | 269 | Pass |
| 13 - Abdomen Depth | mm | 194 | 204 | 203 | Pass |
| 14 - Pelvis Depth | mm | 235 | 245 | 243 | Pass |
| 15 - Back of Buttocks to Hip Joint (bolt Center) | mm | 150 | 160 | 158 | Pass |
| 16 - Back of Buttocks to Front Knee | mm | 597 | 615 | 609 | Pass |
| | | | Overall Test Results | | Pass |

Technician: J. Coronel

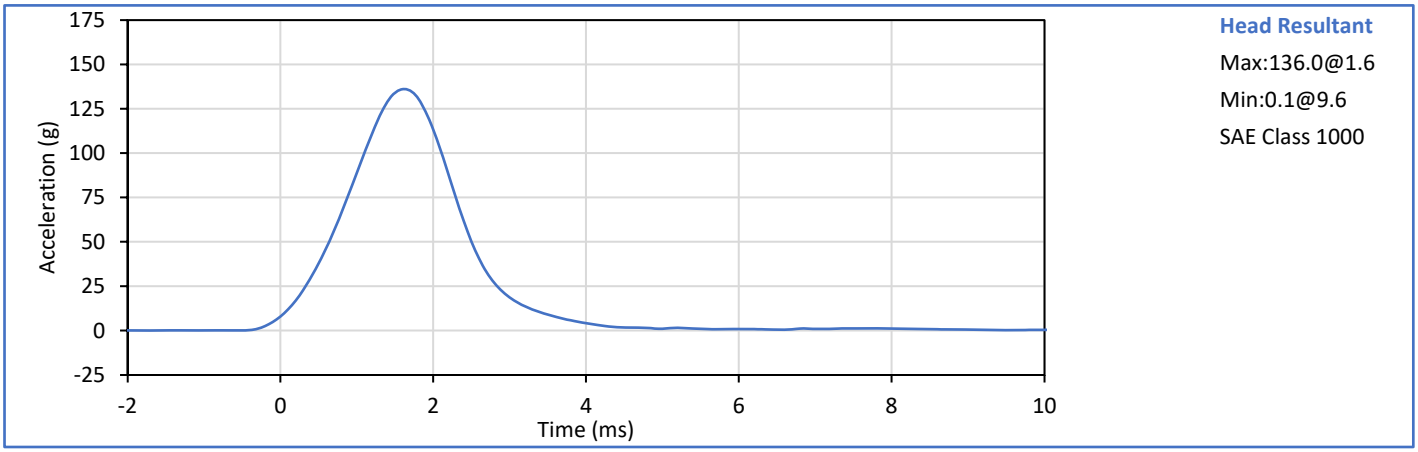
Approved By: J. Hernandez

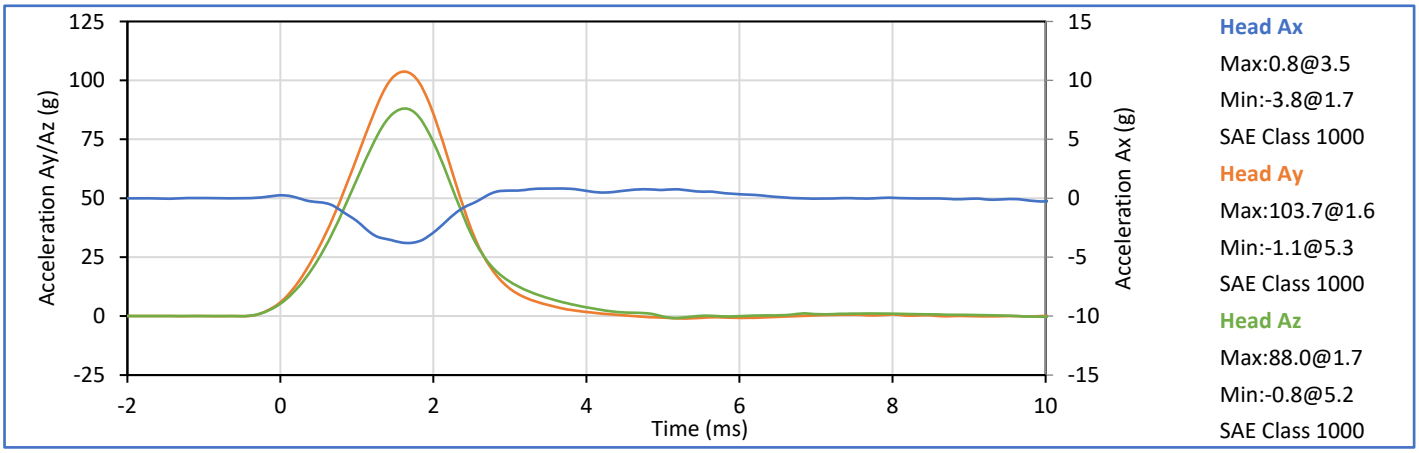
Applus IDIADA KARCO

# ES-2re 50th Male Side Impact ATD
## Head Drop

ATD Serial No.: F037 Test Date: 2024-12-03

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 18.9 | 25.6 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 29 | Pass |
| Peak Resultant Acceleration | g | 125.0 | 155.0 | 136.0 | Pass |
| Peak Head Ax | g | -15.0 | 15.0 | 0.8 | Pass |
| Oscillations After Main Pulse | % | 0.0 | 15.0 | 0.9 | Pass |
| Is Acceleration Unimodal? | Yes/No | Yes | | Yes | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

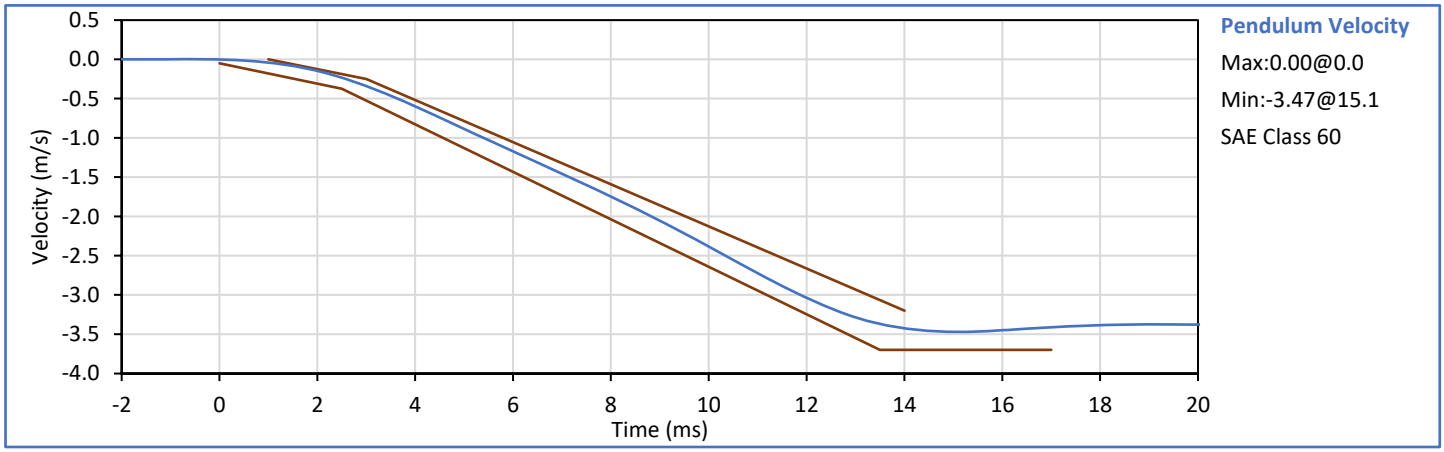
Approved By: J. Hernandez

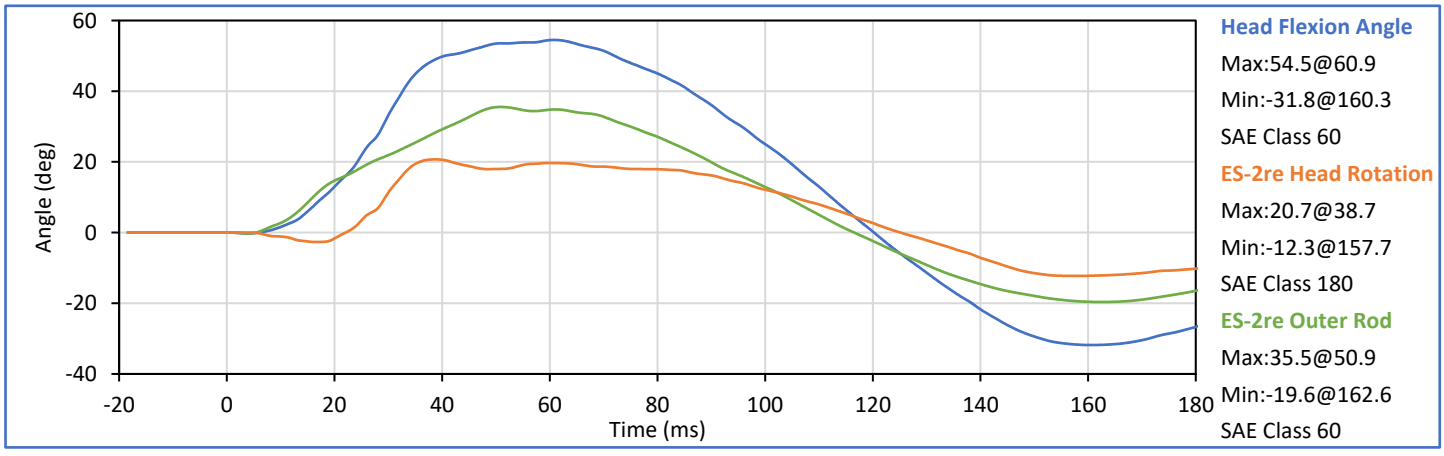
Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Neck Flexion

ATD Serial No.: F037 Test Date: 2024-12-10

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 28 | Pass |
| Pendulum Velocity | m/s | 3.30 | 3.50 | 3.37 | Pass |
| Peak Headform Flexion | deg | 49.0 | 59.0 | 54.5 | Pass |
| Time of Peak Headform Flexion | ms | 54.0 | 66.0 | 60.9 | Pass |
| Flexion Decay (Peak to zero) | ms | 53.0 | 88.0 | 59.4 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

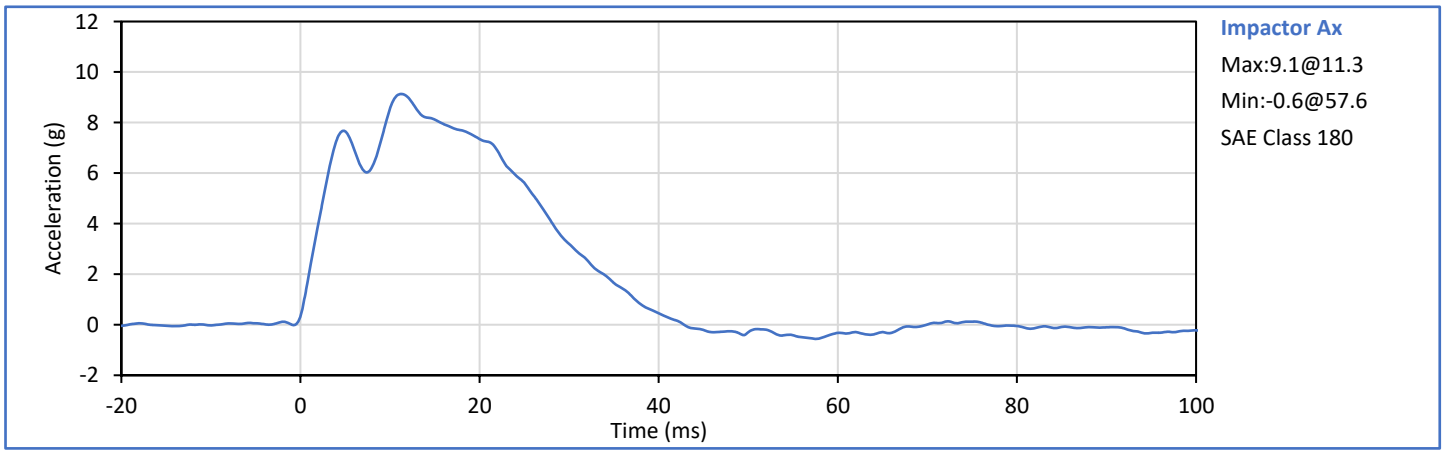
Approved By: J. Hernandez

Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Shoulder Impact Test

ATD Serial No.: F037 Test Date: 2024-12-02

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.1 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 30 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.34 | Pass |
| Peak Impactor Ax | g | 7.5 | 10.5 | 9.1 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

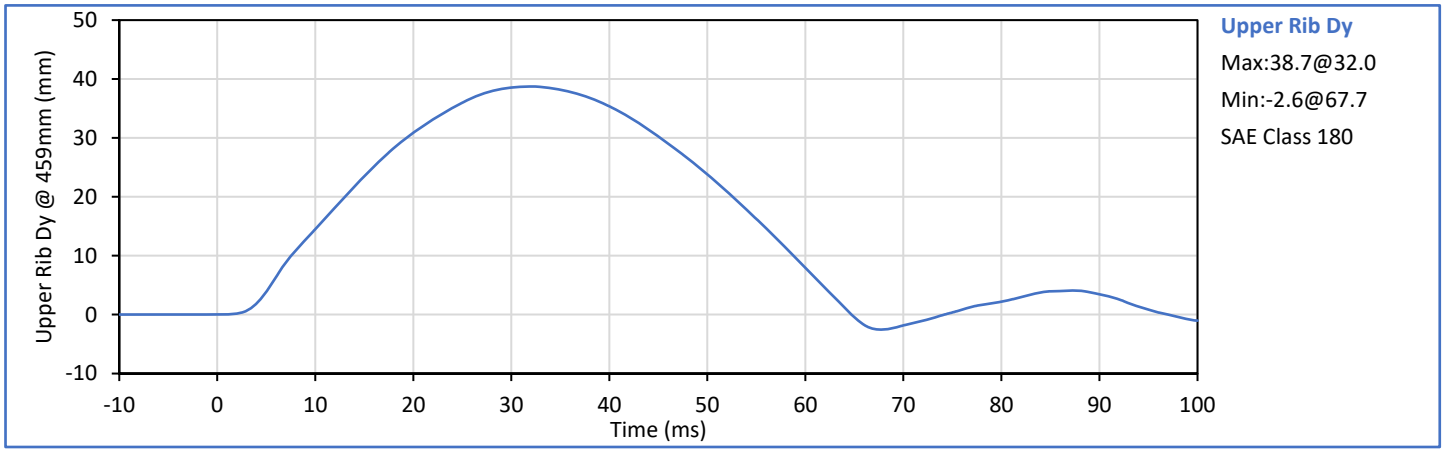
Applus IDIADA KARCO

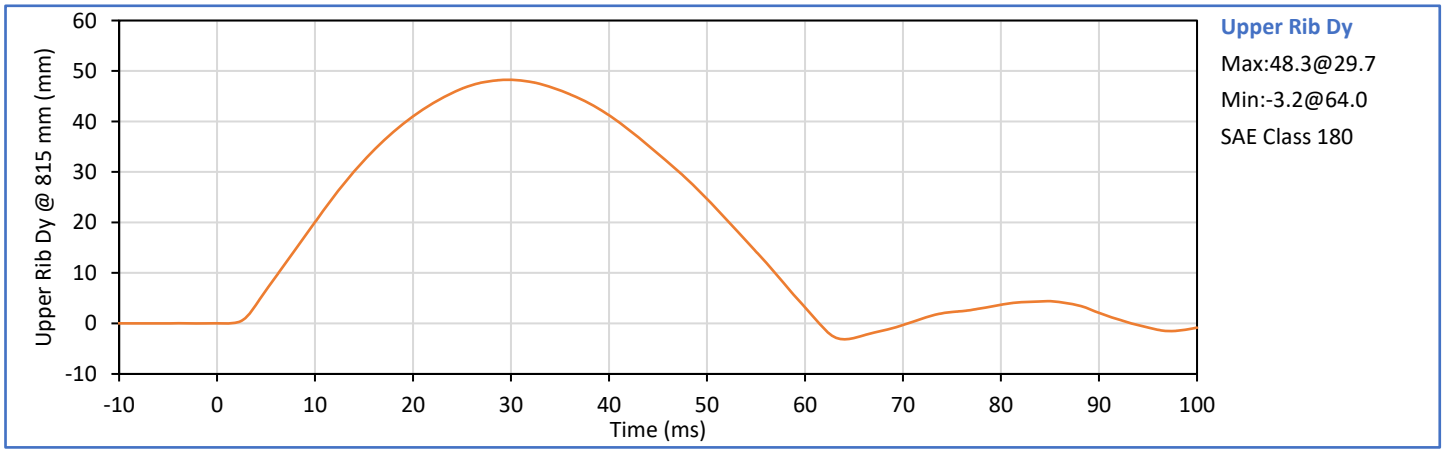
## ES-2re 50th Male Side Impact ATD
## Upper Rib Drop Test

ATD Serial No.: F037

Test Date: 2024-12-10

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.1 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 31 | Pass |
| Upper Rib Dy @ 459mm | mm | 36.0 | 40.0 | 38.7 | Pass |
| Upper Rib Dy @ 815mm | mm | 46.0 | 51.0 | 48.3 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

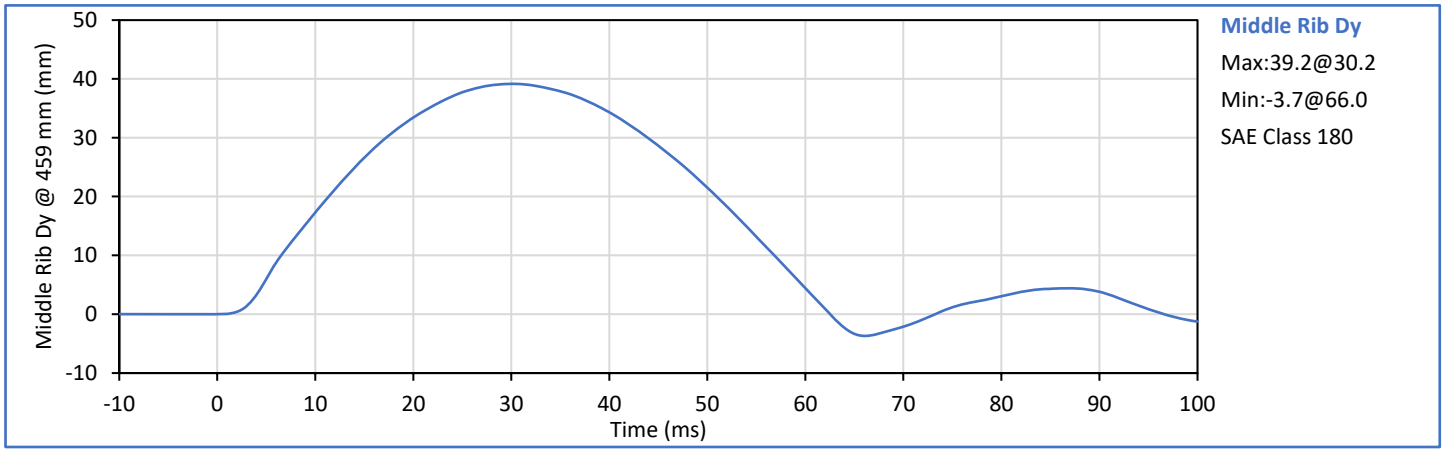
Applus IDIADA KARCO

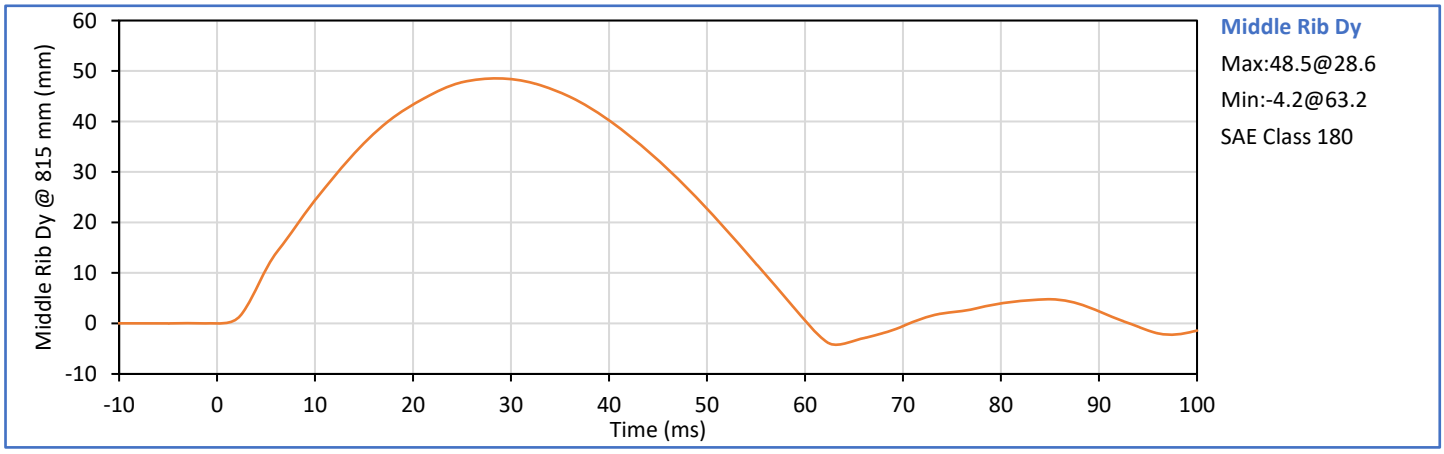
## ES-2re 50th Male Side Impact ATD
## Middle Rib Drop Test

ATD Serial No.: F037

Test Date: 2024-12-10

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.6 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 30 | Pass |
| Middle Rib Dy @ 459mm | mm | 36.0 | 40.0 | 39.2 | Pass |
| Middle Rib Dy @ 815mm | mm | 46.0 | 51.0 | 48.5 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

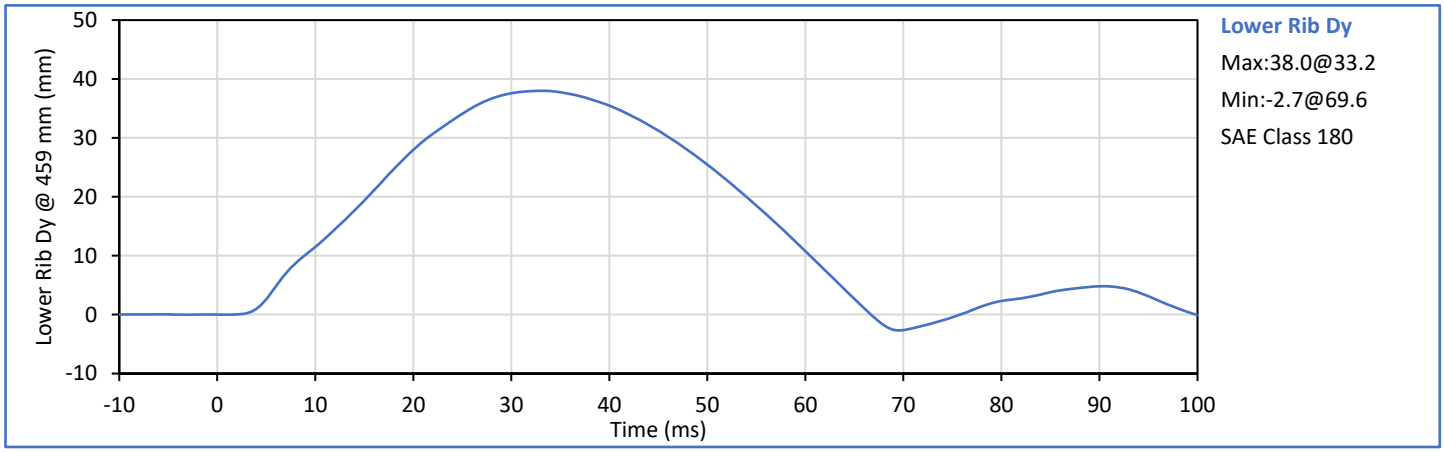
Applus IDIADA KARCO

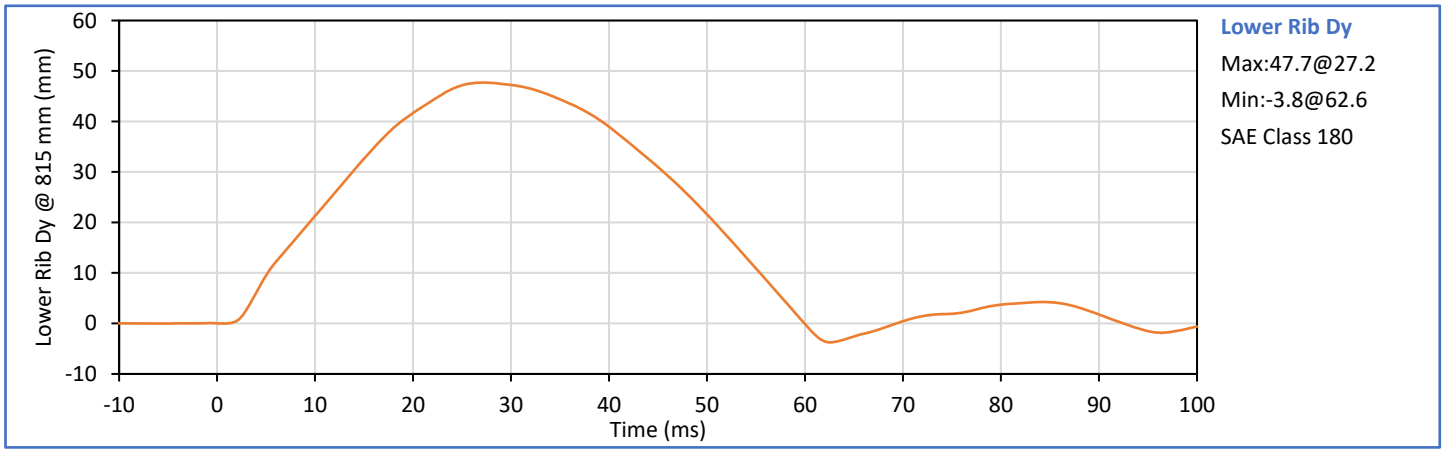
## ES-2re 50th Male Side Impact ATD
## Lower Rib Drop Test

ATD Serial No.: F037

Test Date: 2024-12-10

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 29 | Pass |
| Lower Rib Dy @ 459mm | mm | 36.0 | 40.0 | 38.0 | Pass |
| Lower Rib Dy @ 815mm | mm | 46.0 | 51.0 | 47.7 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

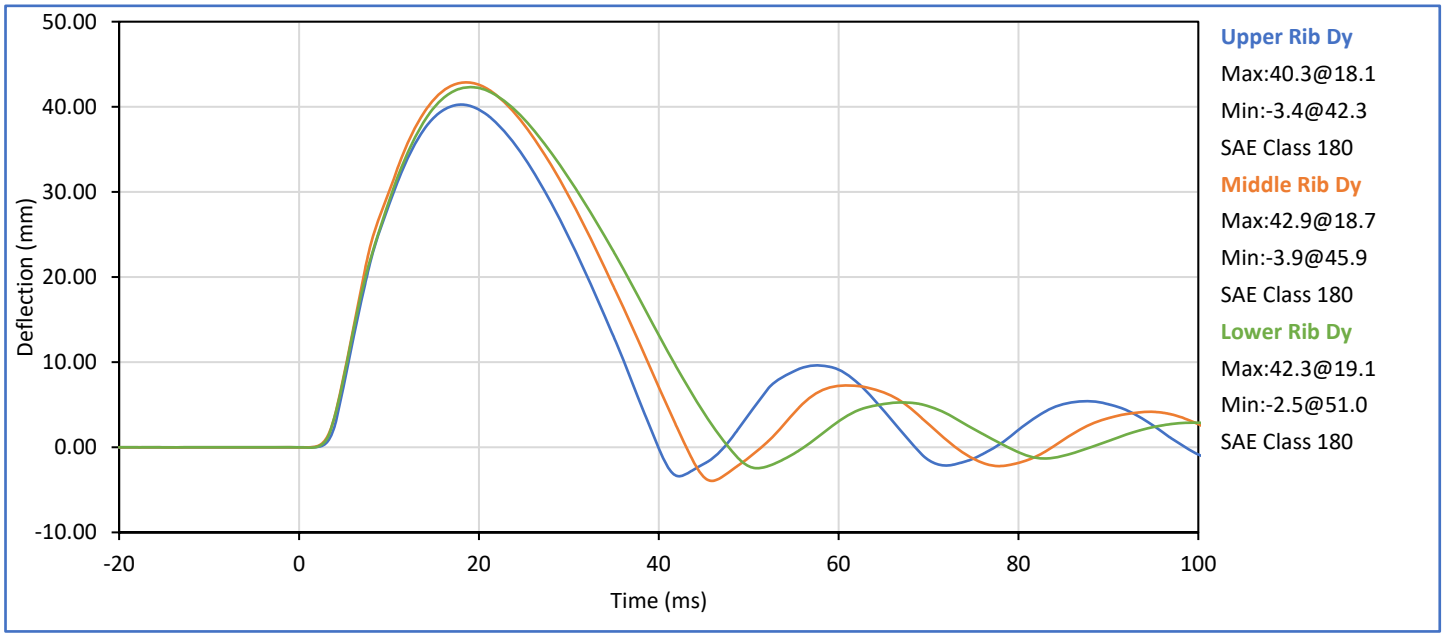
Approved By: J. Hernandez

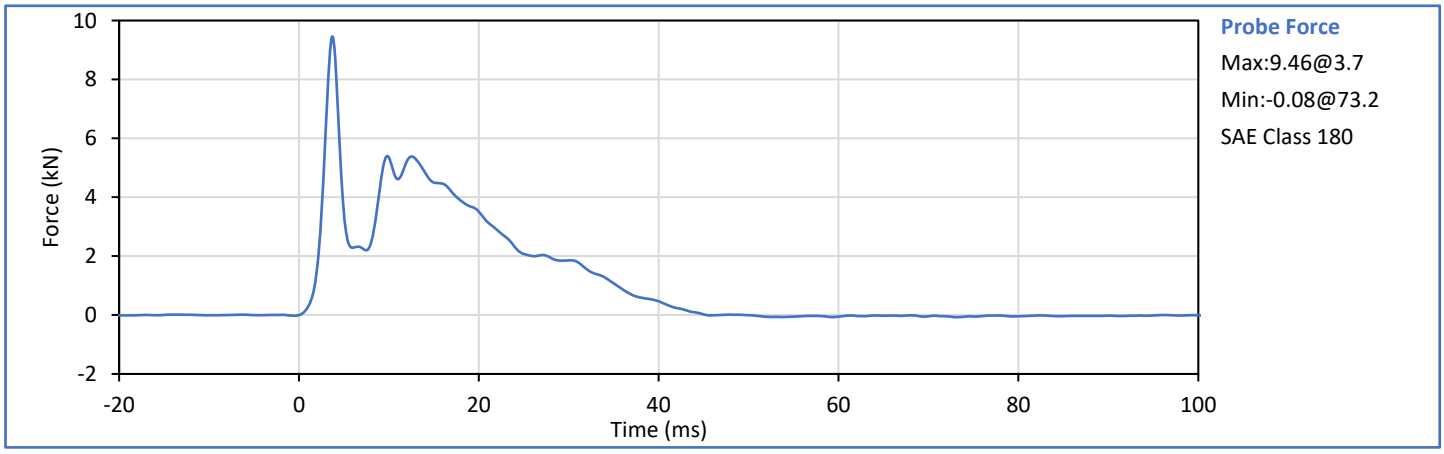
Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Thorax Impact (Full Body)

ATD Serial No.: F037 Test Date: 2024-12-02

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 20.8 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 28 | Pass |
| Impactor Velocity | m/s | 5.40 | 5.60 | 5.48 | Pass |
| Peak Upper Rib Dy | mm | 34.0 | 41.0 | 40.3 | Pass |
| Peak Middle Rib Dy | mm | 37.0 | 45.0 | 42.9 | Pass |
| Peak Lower Rib Dy | mm | 37.0 | 44.0 | 42.3 | Pass |
| Peak Impactor Force After 6 ms | kN | 5.10 | 6.20 | 5.40 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

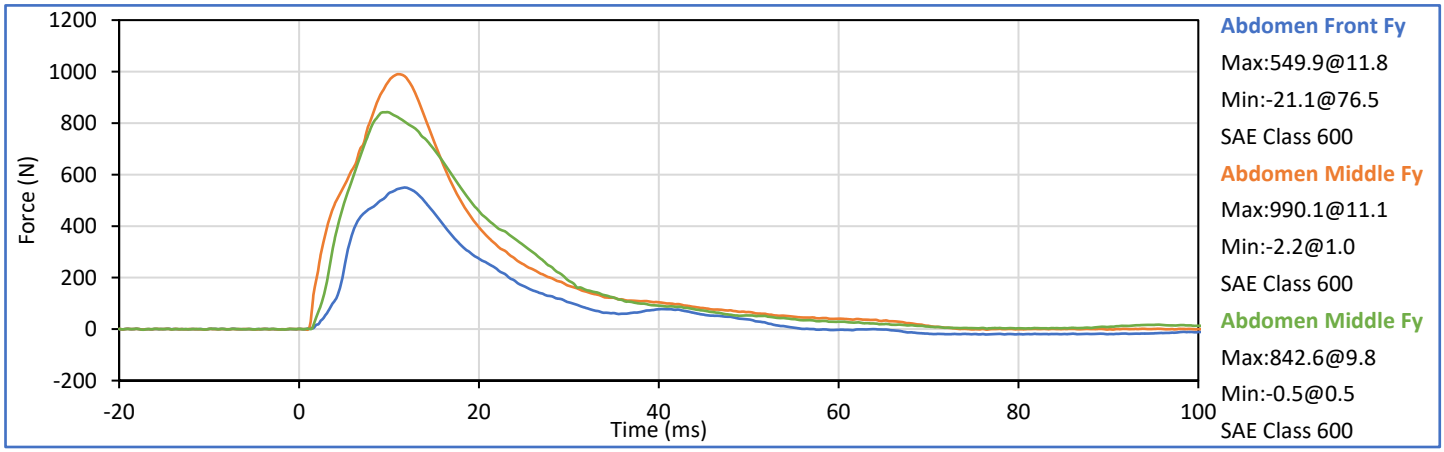
Approved By: J. Hernandez

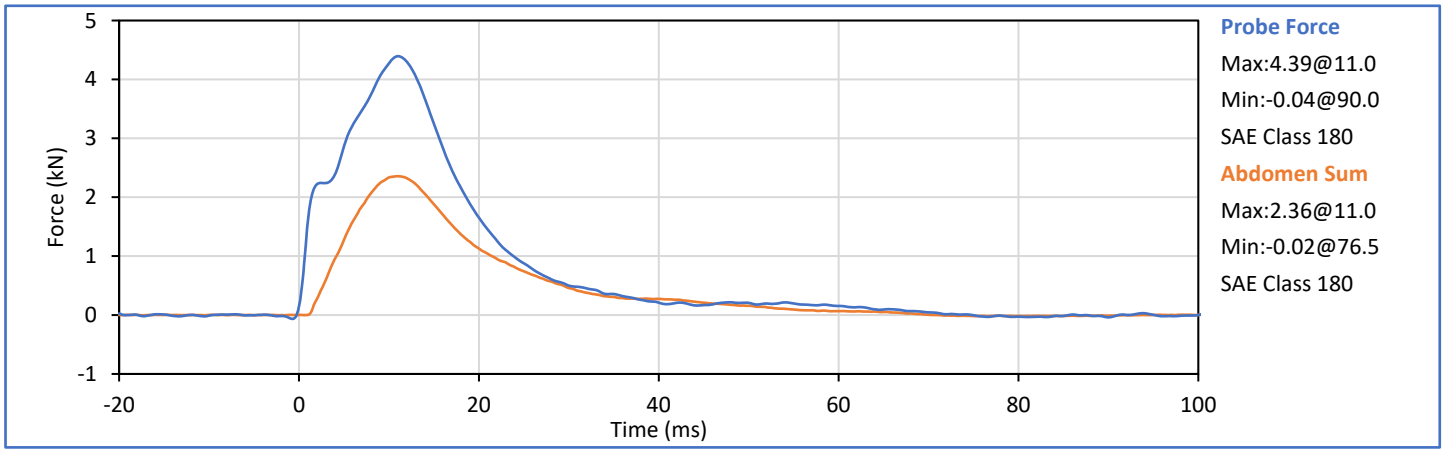
Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Abdomen Impact

ATD Serial No.: F037 Test Date: 2024-12-02

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.5 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 27 | Pass |
| Impactor Velocity | m/s | 3.90 | 4.10 | 4.00 | Pass |
| Peak Impactor Force | kN | 4.00 | 4.80 | 4.39 | Pass |
| Time of Peak Impactor Force | ms | 10.6 | 13.0 | 11.0 | Pass |
| Sum of Abdomen Forces | kN | 2.20 | 2.70 | 2.36 | Pass |
| Time of Peak Sum Abdomen Force | ms | 10.0 | 12.3 | 11.0 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

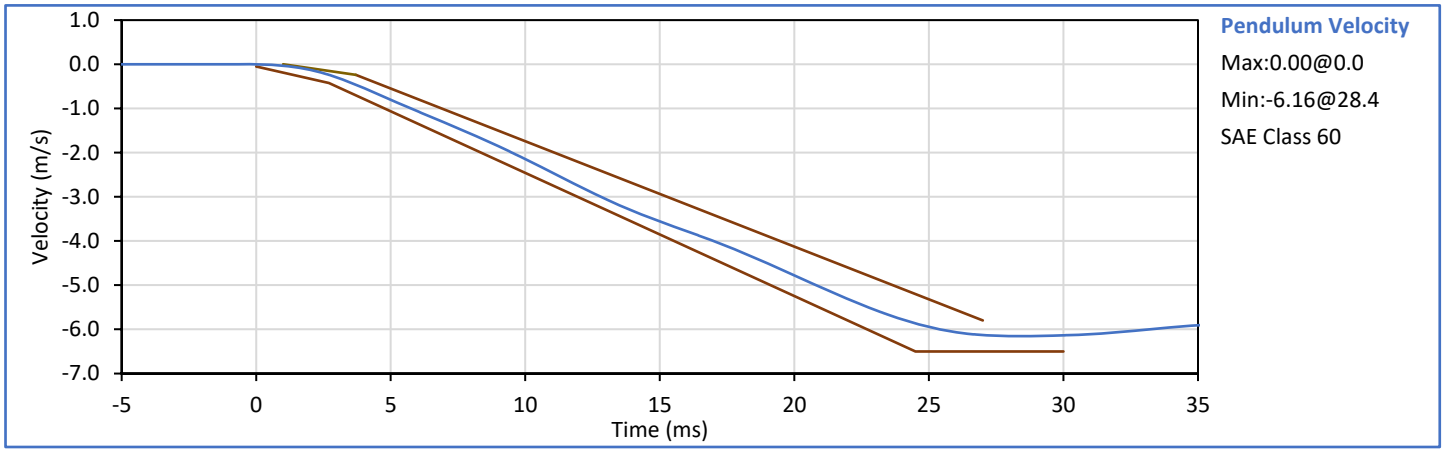
Approved By: J. Hernandez

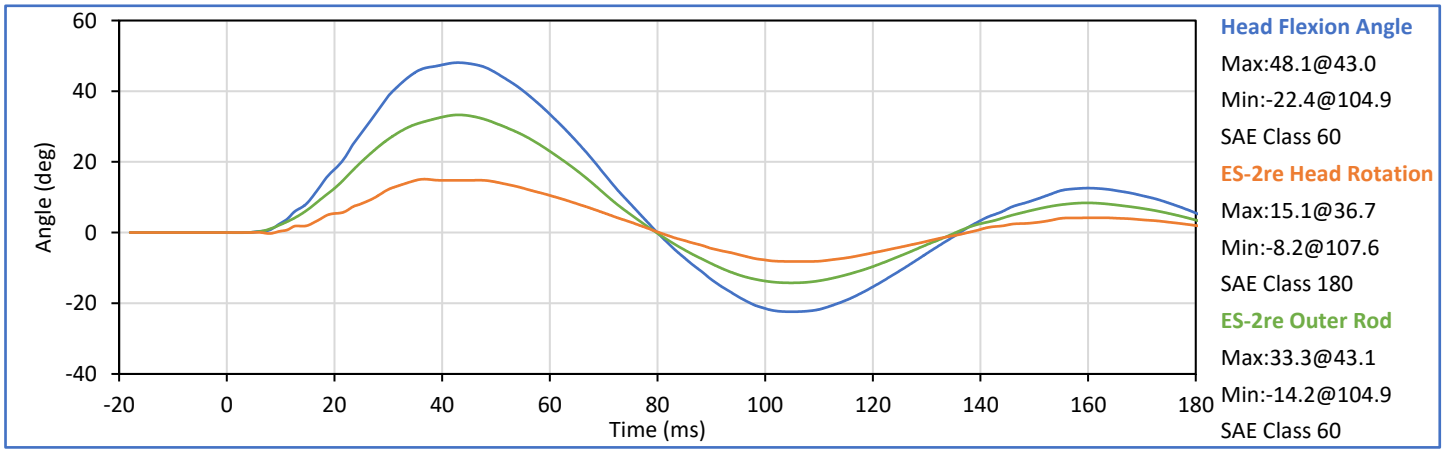
Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Lumbar Spine Flexion

ATD Serial No.: F037 Test Date: 2024-12-11

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 29 | Pass |
| Pendulum Velocity | m/s | 5.95 | 6.15 | 6.10 | Pass |
| Peak Headform Flexion | deg | 45.0 | 55.0 | 48.1 | Pass |
| Time of Peak Headform Flexion | ms | 39.0 | 53.0 | 43.0 | Pass |
| Flexion Decay (Peak to zero) | ms | 37.0 | 57.0 | 37.0 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

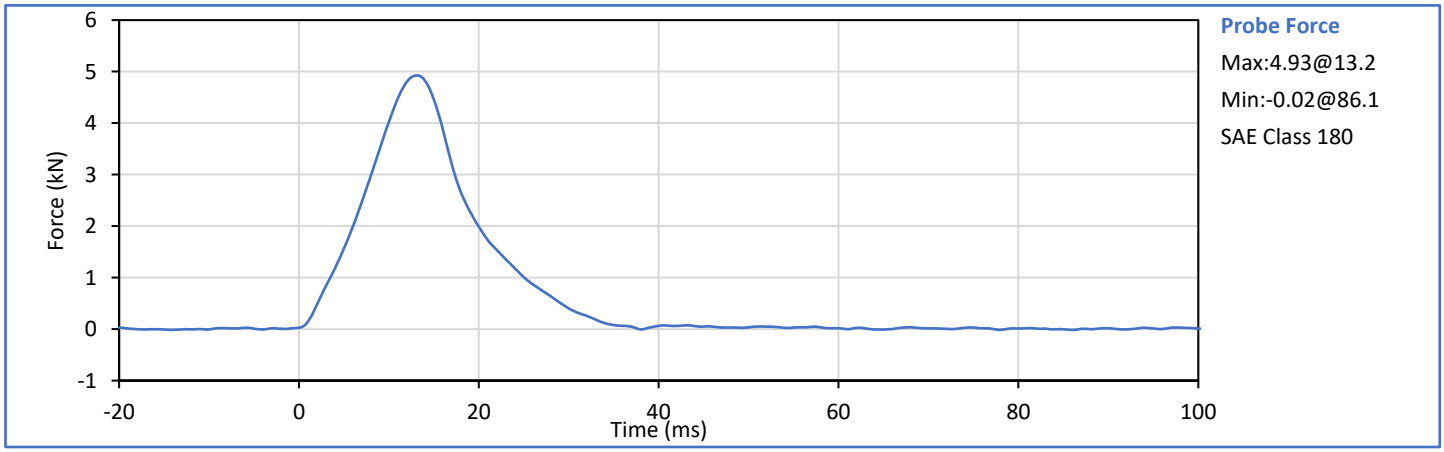
Approved By: J. Hernandez

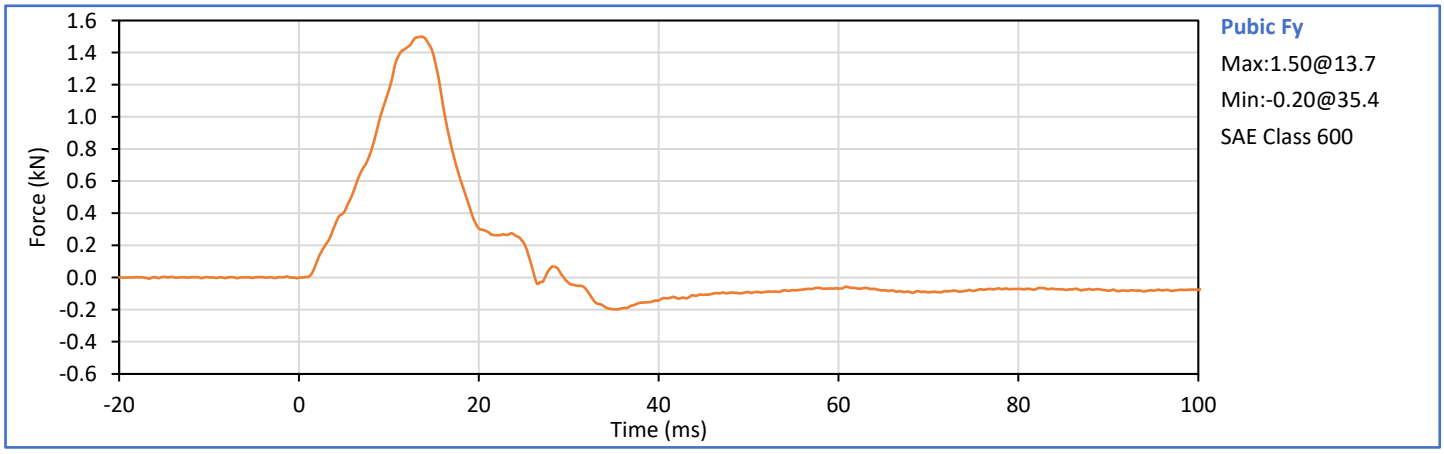
Applus IDIADA KARCO

## ES-2re 50th Male Side Impact ATD
## Pelvis Impact

ATD Serial No.: F037 Test Date: 2024-12-02

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 20.8 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 28 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.33 | Pass |
| Peak Impactor Force | kN | 4.70 | 5.40 | 4.93 | Pass |
| Time of Peak Impactor Force | ms | 11.8 | 16.1 | 13.2 | Pass |
| Pubic Symphysis Fy | kN | 1.23 | 1.59 | 1.50 | Pass |
| Time of Peak Pubic Symphysis Fy | ms | 12.2 | 17.0 | 13.7 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

**APPENDIX C**
**Post-Test ATD Qualification and Performance Verification**
**SID-IIs Small Side Impact ATD, Left Side Configuration**
**S/N: 308**

Applus IDIADA
KARCO

## SID-IIs Small Side Impact ATD
## External Measurements

ATD Serial No.: 308 Test Date: 2024-12-02

| Tested Parameter | Units | Spec Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.6 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 30 | Pass |
| A - Sitting Height | mm | 772 | 788 | 781 | Pass |
| B - Shoulder Pivot Height | mm | 437 | 453 | 450 | Pass |
| C - Hpoint Height | mm | 79 | 89 | 86 | Pass |
| D - H Point From Seatback | mm | 141 | 151 | 146 | Pass |
| E - Shoulder Pivot From Backline | mm | 97 | 107 | 102 | Pass |
| F - Thigh Clearance | mm | 119 | 135 | 132 | Pass |
| G - Head Breadth | mm | 140 | 148 | 143 | Pass |
| H - Head Back From Backline | mm | 40 | 46 | 45 | Pass |
| I - Head Depth | mm | 178 | 188 | 182 | Pass |
| J - Head Circumference | mm | 541 | 551 | 549 | Pass |
| K - Buttock To Knee Length | mm | 514 | 540 | 528 | Pass |
| L - Popliteal Height | mm | 343 | 369 | 359 | Pass |
| K - Knee Pivot To Floor Height | mm | 392 | 409 | 399 | Pass |
| N - Buttock Popliteal Length | mm | 416 | 442 | 431 | Pass |
| O - Chest Depth W/O Jacket | mm | 195 | 211 | 203 | Pass |
| P - Foot Length | mm | 216 | 232 | 223 | Pass |
| Q - Hip Breadth (W/Pelvic Plugs) | mm | 313 | 323 | 320 | Pass |
| R - Arm Length | mm | 249 | 259 | 254 | Pass |
| S - Knee Joint To Seatback | mm | 477 | 493 | 487 | Pass |
| V - Shoulder Width | mm | 341 | 357 | 348 | Pass |
| W - Foot Width | mm | 78 | 94 | 84 | Pass |
| Y - Chest Circumference W/Jacket | mm | 851 | 881 | 863 | Pass |
| Z - Waist Circumference | mm | 761 | 791 | 785 | Pass |
| | | | Overall Test Results | | Pass |

Technician: J. Coronel

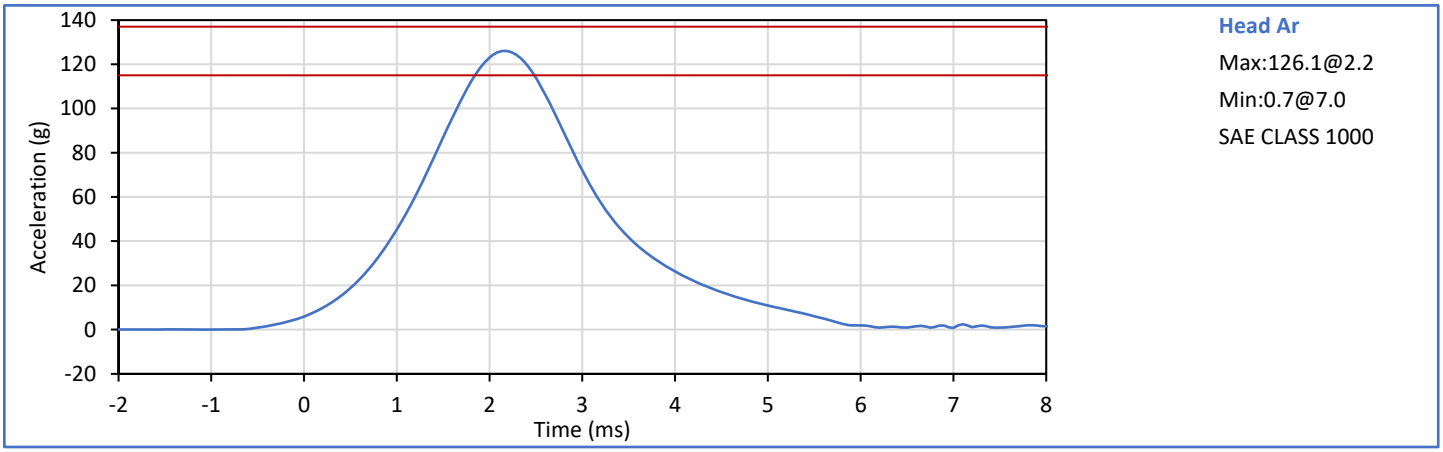
Approved By: J. Hernandez

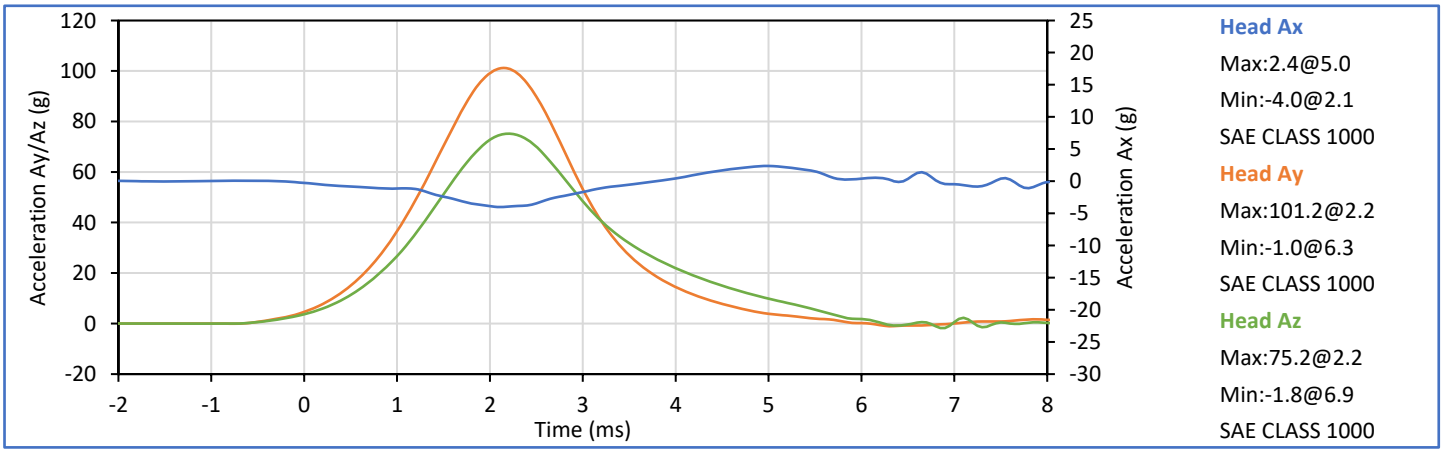
Applus IDIADA
KARCO

## SID-IIs Small Side Impact ATD
## Head Drop

ATD Serial No.: 308 Test Date: 2024-12-05

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 18.9 | 25.6 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 32 | Pass |
| Peak Resultant Acceleration | g | 115.0 | 137.0 | 126.1 | Pass |
| Peak Head Ax | g | -15.0 | 15.0 | -4.0 | Pass |
| Oscillations After Main Pulse | % | 0.0 | 15.0 | 1.9 | Pass |
| Is Acceleration Unimodal? | Yes/No | Yes | | Yes | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

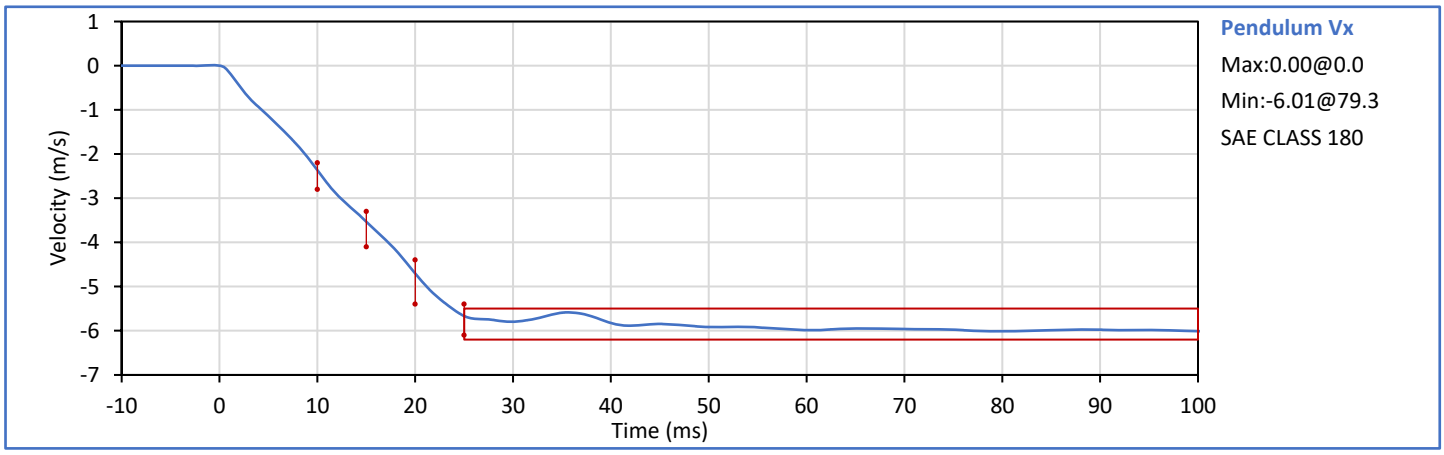
Approved By: J. Hernandez

Applus IDIADA KARCO

## SID-IIs Small Side Impact ATD
## Neck Flexion

ATD Serial No.: 308 Test Date: 2024-12-05

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 41 | Pass |
| Pendulum Velocity | m/s | 5.51 | 5.63 | 5.59 | Pass |
| Pendulum Decel at 10 ms | m/s | -2.80 | -2.20 | -2.36 | Pass |
| Pendulum Decel at 15 ms | m/s | -4.10 | -3.30 | -3.53 | Pass |
| Pendulum Decel at 20 ms | m/s | -5.40 | -4.40 | -4.70 | Pass |
| Pendulum Decel at 25 ms | m/s | -6.10 | -5.40 | -5.67 | Pass |
| Pendulum Decel from 25-100 ms | m/s | -6.20 | -5.50 | -6.01/-5.59 | Pass |
| Peak "D" Plane Rotation | deg | -81.0 | -71.0 | -76.5 | Pass |
| Time of Peak "D" Plane Rotation | ms | 50.0 | 70.0 | 61.0 | Pass |
| Peak Occ. Condyle Moment | Nm | 36.0 | 44.0 | 41.9 | Pass |
| Time of Moment Decay to 0 Nm | ms | 102.0 | 126.0 | 113.7 | Pass |
| | | | Overall Test Results | | Pass |



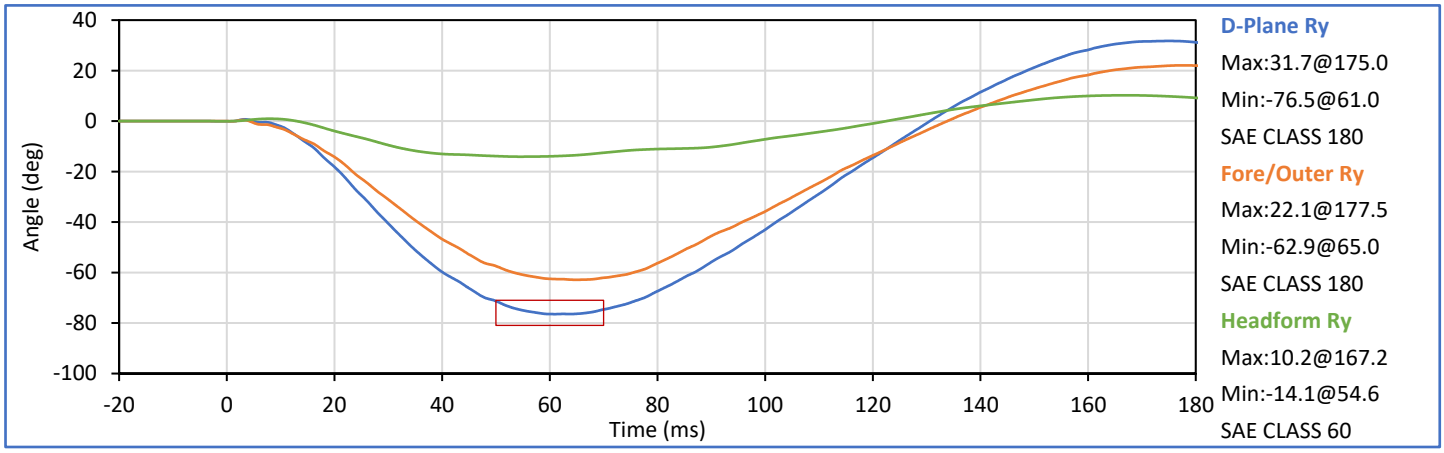

Technician: J. Coronel

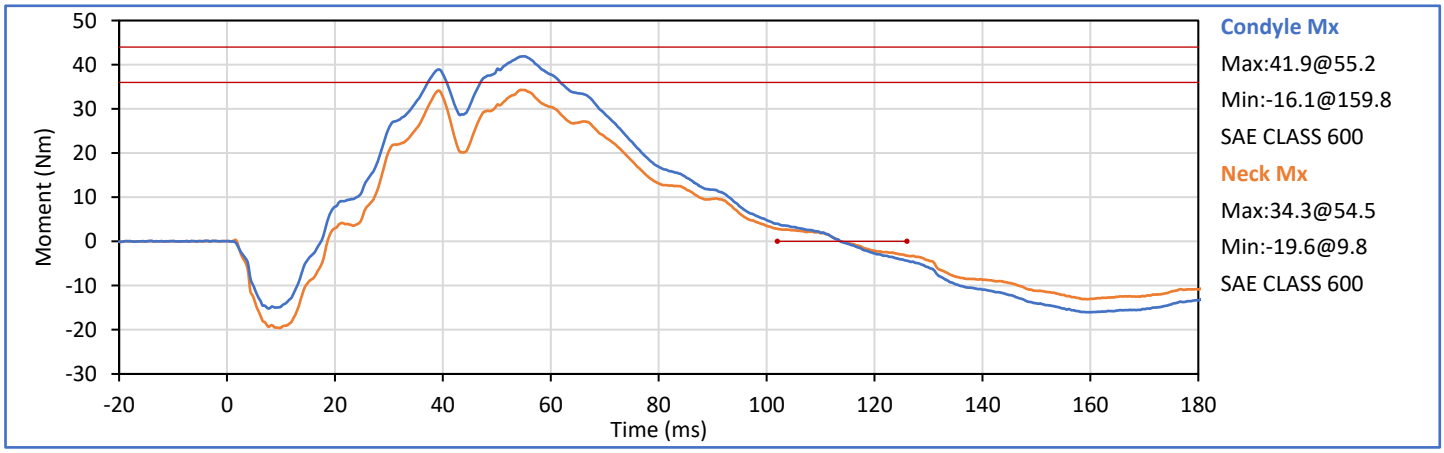
Approved By: J. Hernandez

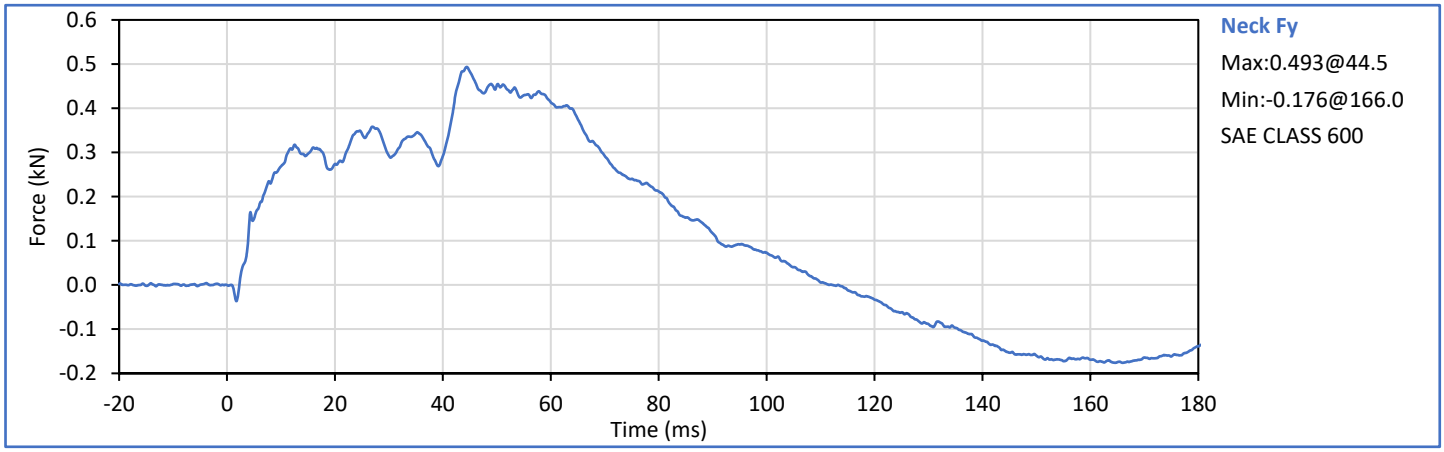
Applus IDIADA
KARCO

# SID-IIs Small Side Impact ATD
## Neck Flexion

ATD Serial No.: 308 Test Date: 2024-12-05



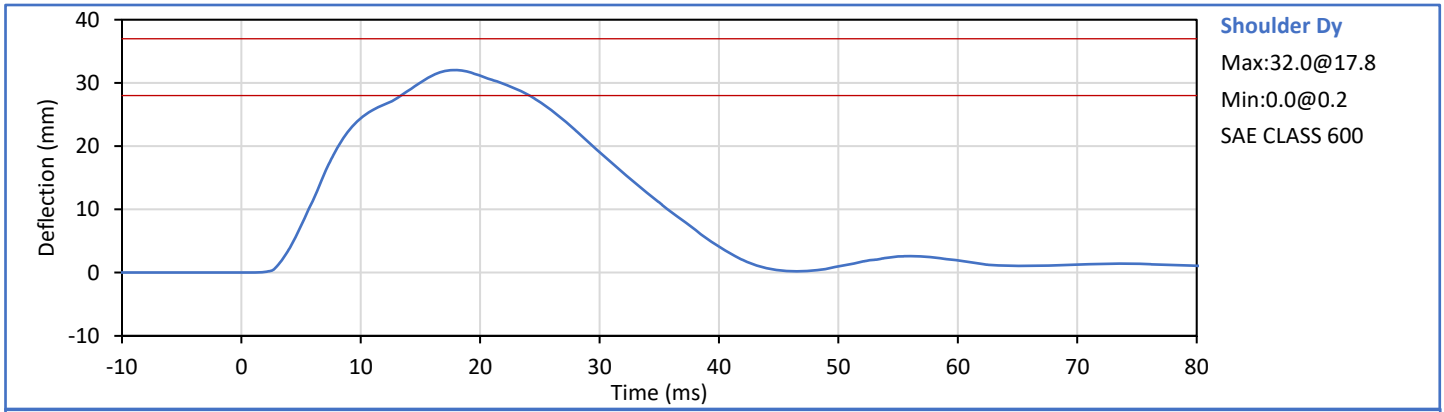



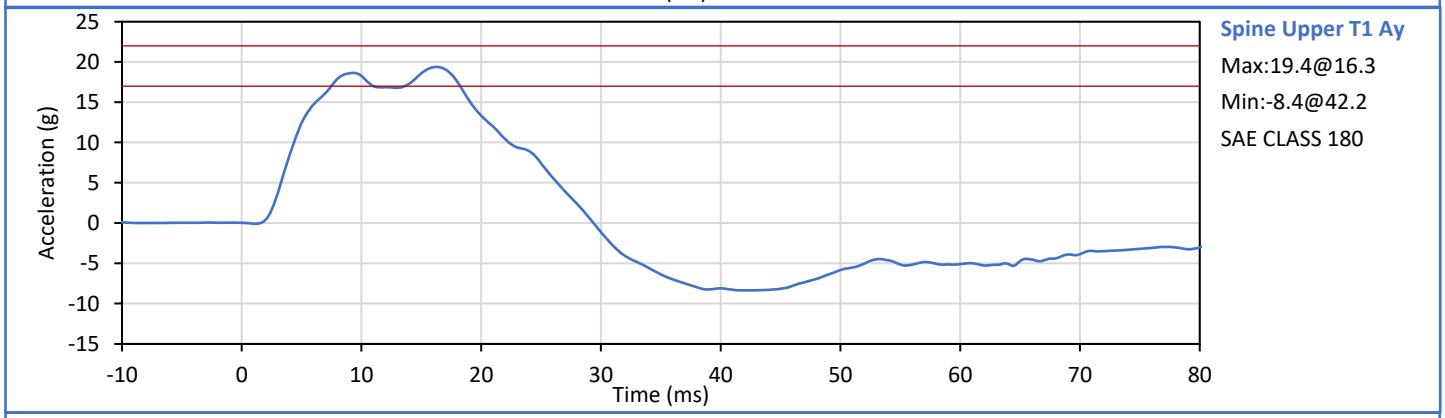
Applus IDIADA KARCO

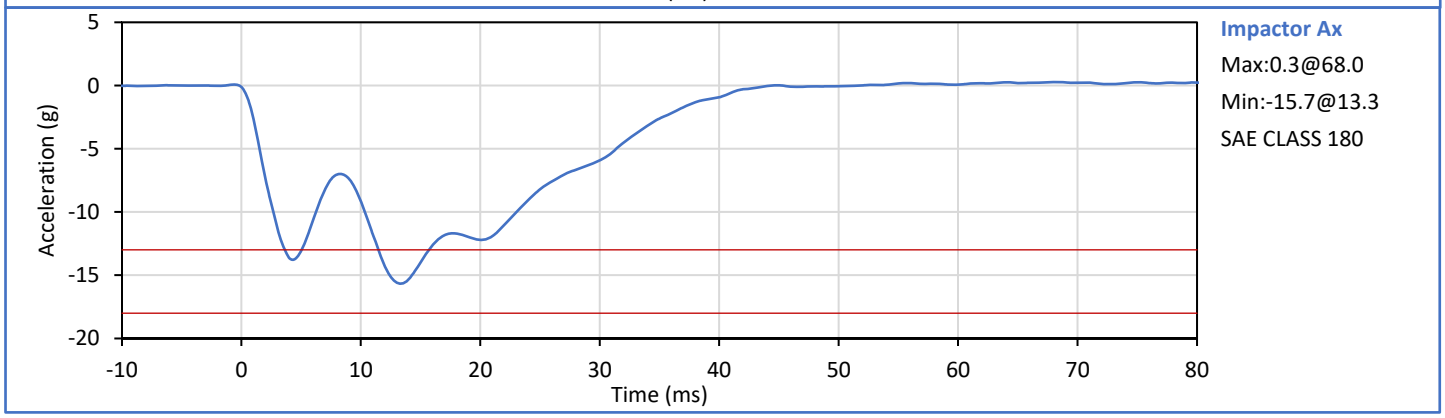
## SID-IIs Small Side Impact ATD
## Shoulder Impact Test

ATD Serial No.: 308 Test Date: 2024-12-02

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.5 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 30 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.33 | Pass |
| Peak Shoulder Dy | mm | 28.0 | 37.0 | 32.0 | Pass |
| Peak Upper Spine (T1) Ay | g | 17.0 | 22.0 | 19.4 | Pass |
| Peak Impactor Ax | g | -18.0 | -13.0 | -15.7 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

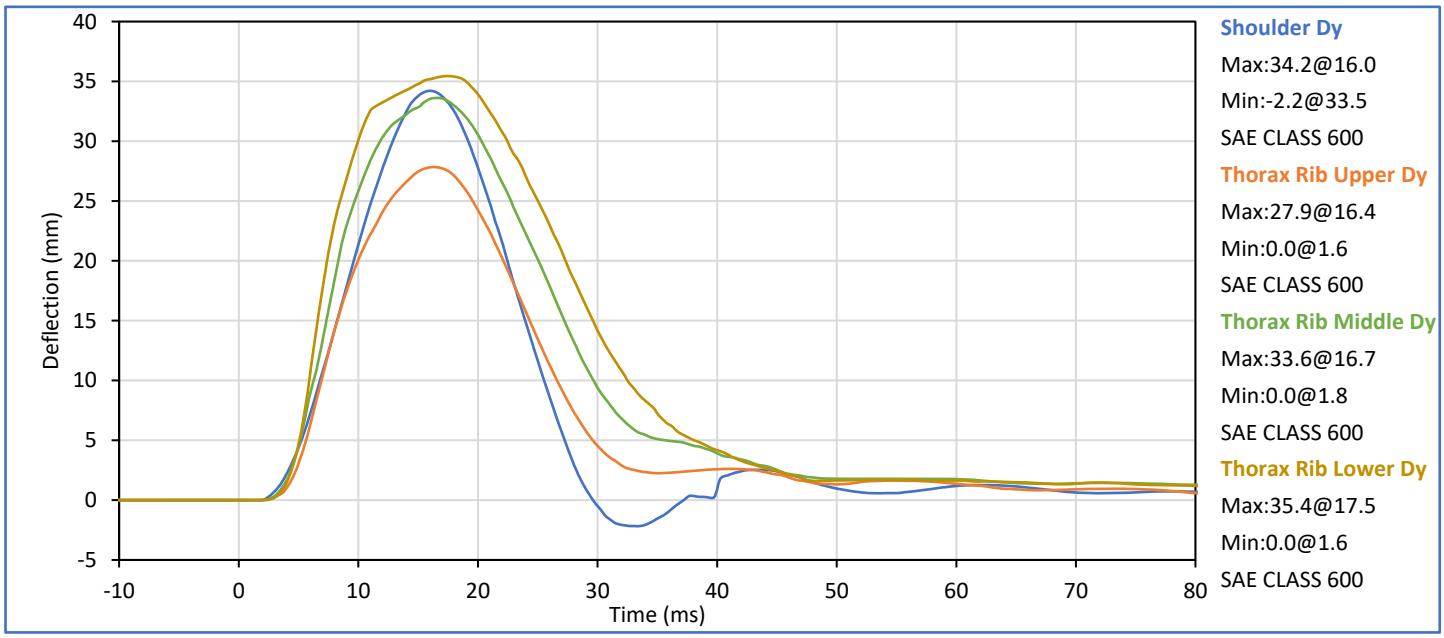
Approved By: J. Hernandez

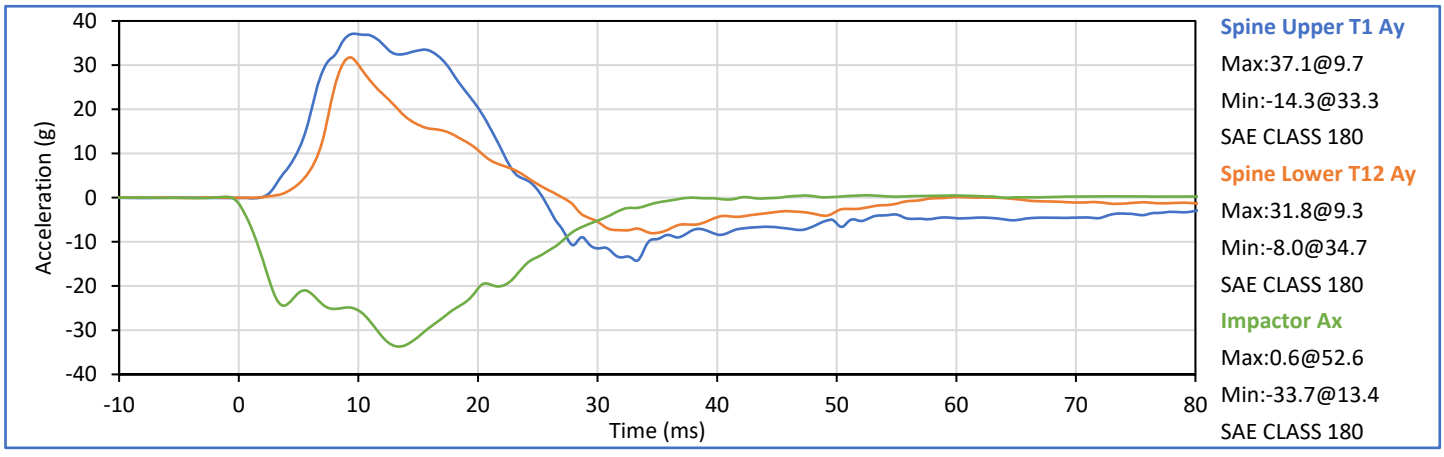
Applus IDIADA KARCO

## SID-IIs Small Side Impact ATD
## Thorax (With Arm)

ATD Serial No.: 308 Test Date: 2024-12-02

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.2 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 32 | Pass |
| Impactor Velocity | m/s | 6.60 | 6.80 | 6.69 | Pass |
| Peak Shoulder Dy | mm | 31.0 | 40.0 | 34.2 | Pass |
| Peak Upper Rib Dy | mm | 25.0 | 32.0 | 27.9 | Pass |
| Peak Middle Rib Dy | mm | 30.0 | 36.0 | 33.6 | Pass |
| Peak Lower Rib Dy | mm | 32.0 | 38.0 | 35.4 | Pass |
| Peak Upper Spine (T1) Ay | g | 34.0 | 43.0 | 37.1 | Pass |
| Peak Lower Spine (T12) Ay | g | 29.0 | 37.0 | 31.8 | Pass |
| Peak Impactor Ax | g | -36.0 | -30.0 | -33.7 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

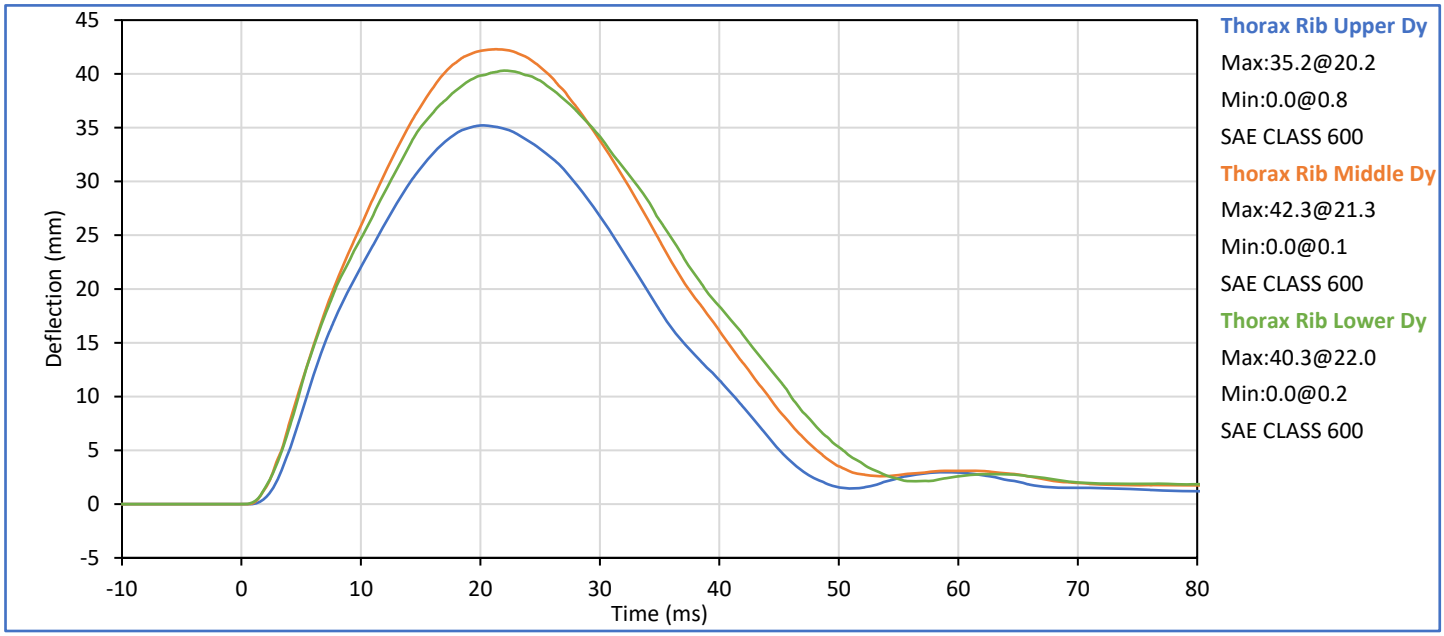
Approved By: J. Hernandez

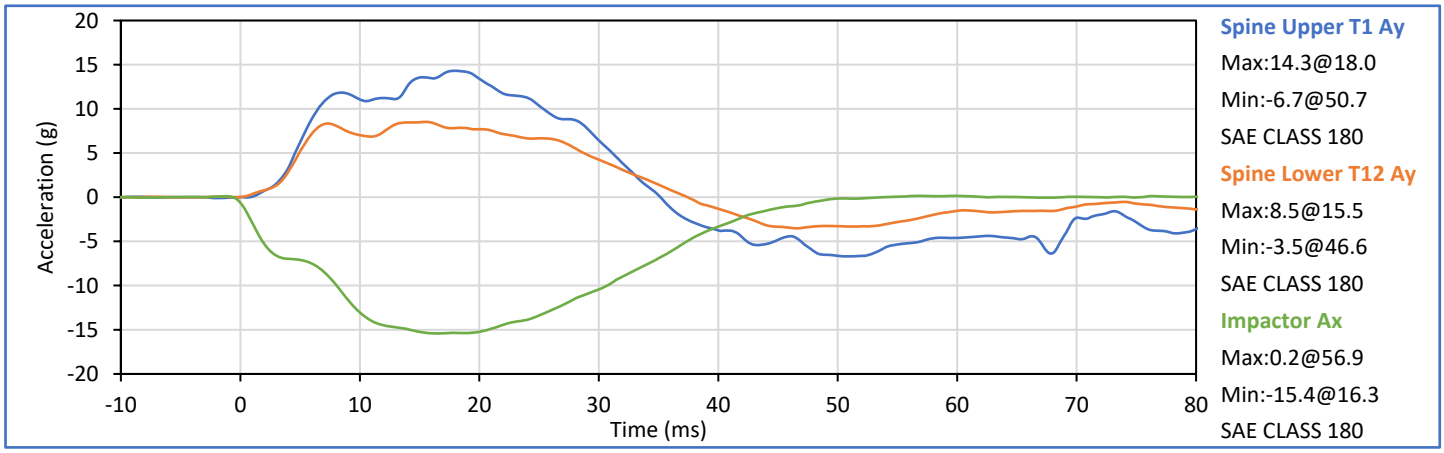
Applus IDIADA KARCO

## SID-IIs Small Side Impact ATD
## Thorax (No Arm)

ATD Serial No.: 308 Test Date: 2024-12-02

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 31 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.34 | Pass |
| Peak Thorax Rib Upper Dy | mm | 32.0 | 40.0 | 35.2 | Pass |
| Peak Thorax Rib Middle Dy | mm | 39.0 | 45.0 | 42.3 | Pass |
| Peak Thorax Rib Lower Dy | mm | 35.0 | 43.0 | 40.3 | Pass |
| Peak Spine Upper T1 Ay | g | 13.0 | 17.0 | 14.3 | Pass |
| Peak Spine Lower T12 Ay | g | 7.0 | 11.0 | 8.5 | Pass |
| Peak Impactor Ax | g | -18.0 | -14.0 | -15.4 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

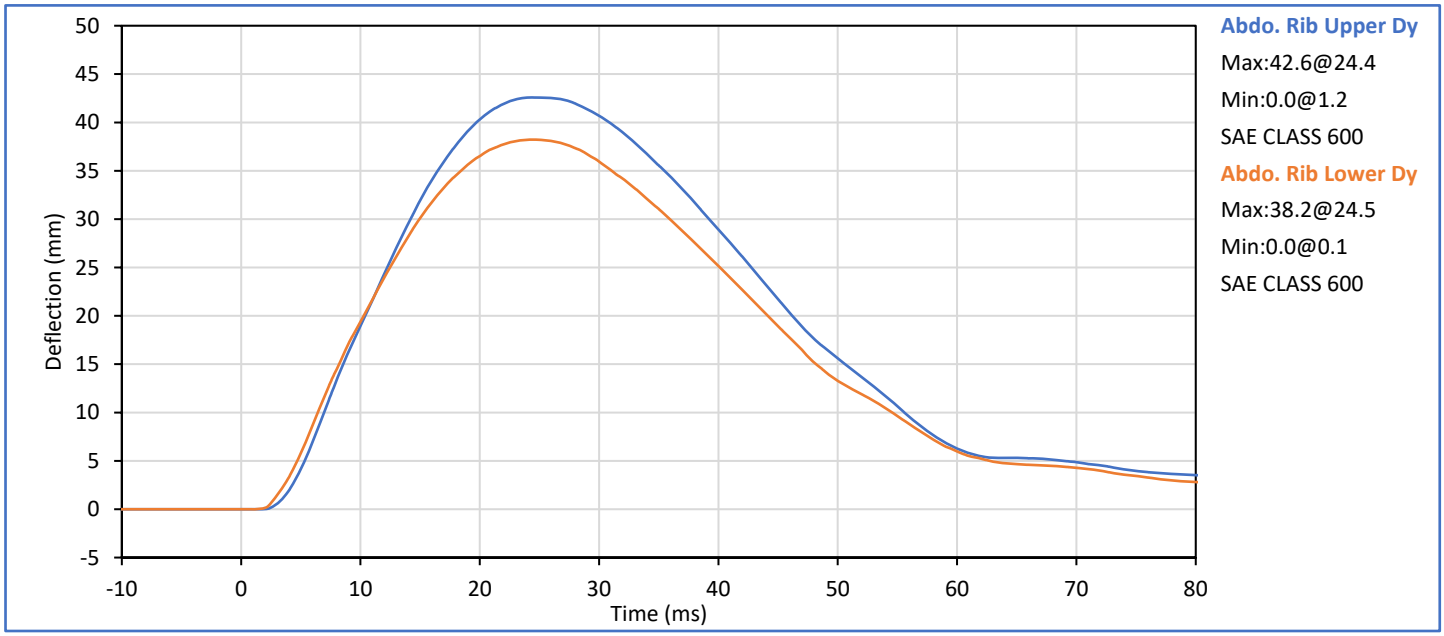
Approved By: J. Hernandez

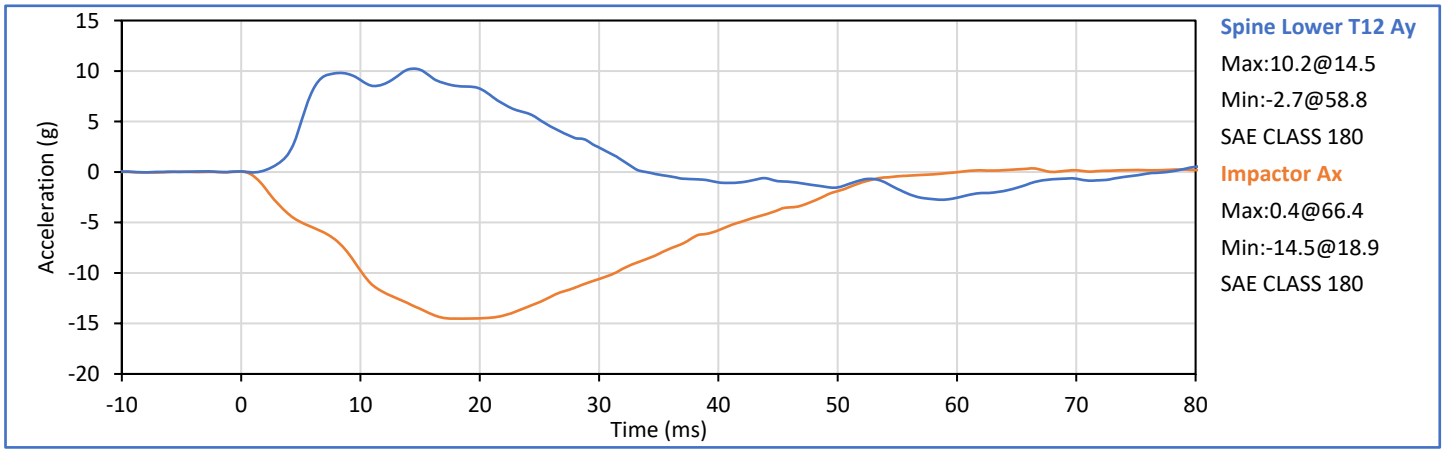
Applus IDIADA KARCO

## SID-IIs Small Side Impact ATD
## Abdomen Impact

ATD Serial No.: 308 Test Date: 2024-12-03

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 32 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.33 | Pass |
| Peak Upper Abdomen Rib Dy | mm | 36.0 | 47.0 | 42.6 | Pass |
| Peak Lower Abdomen Rib Dy | mm | 33.0 | 44.0 | 38.2 | Pass |
| Peak Lower Spine T12 Ay | mm | 9.0 | 14.0 | 10.2 | Pass |
| Peak Impactor Ax | g | -16.0 | -12.0 | -14.5 | Pass |
| | | | Overall Test Results | | Pass |




Technician: J. Coronel

Approved By: J. Hernandez

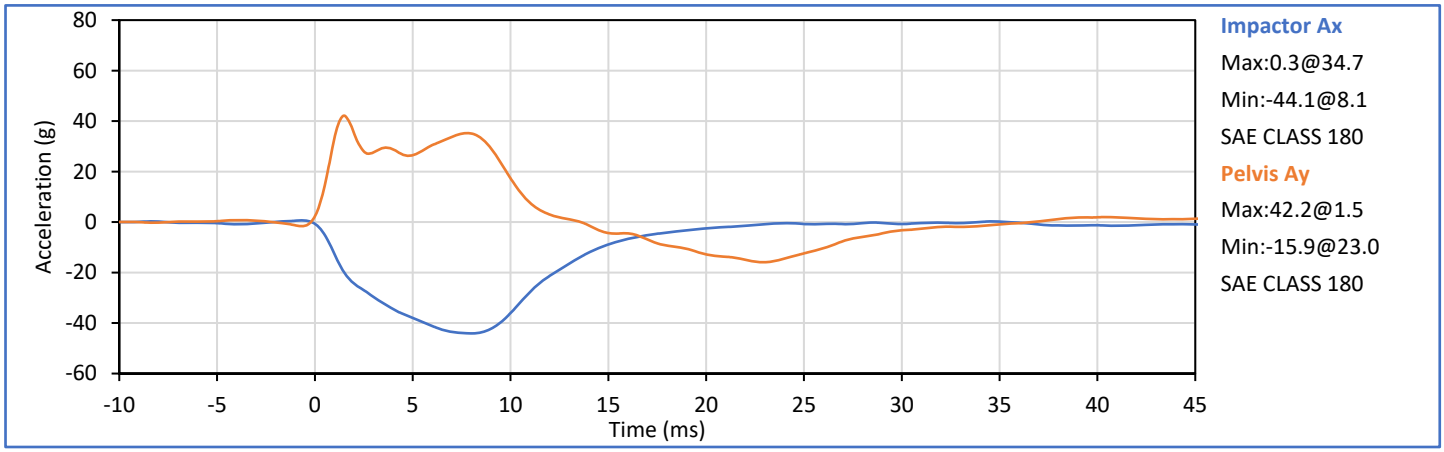
Applus IDIADA KARCO

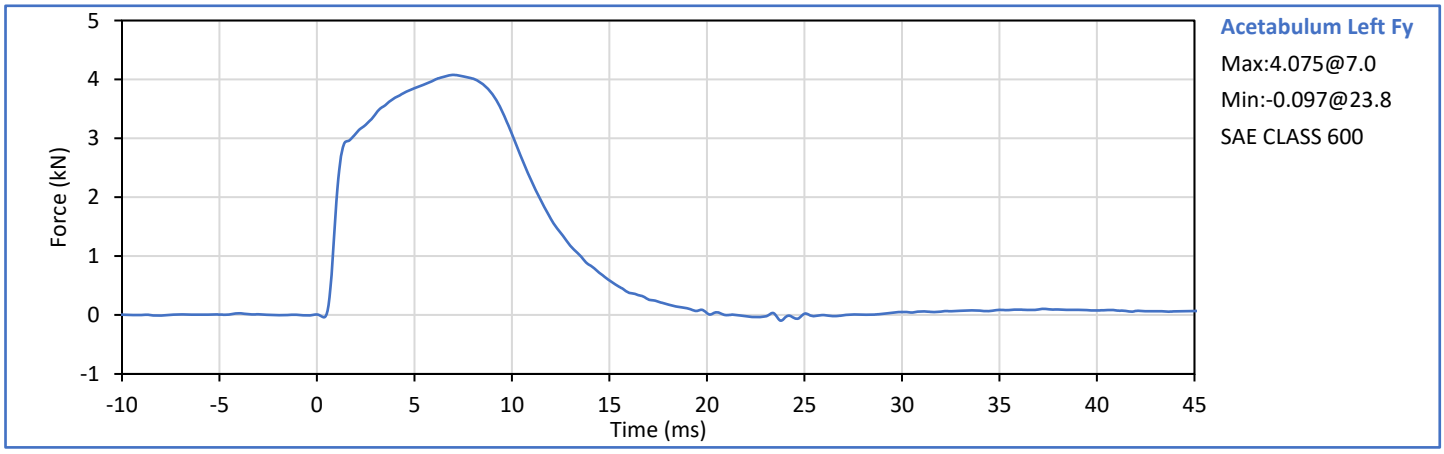
## SID-IIs Small Side Impact ATD
## Pelvis Acetabulum Impact

ATD Serial No.: 308 Test Date: 2024-12-03

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.7 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 33 | Pass |
| Impactor Velocity | m/s | 6.60 | 6.80 | 6.69 | Pass |
| Peak Acetabulum Fy | kN | 3.60 | 4.30 | 4.08 | Pass |
| Pelvis Ay after 6ms | g | 34.0 | 42.0 | 35.2 | Pass |
| Peak Impactor Ax | g | -47.0 | -38.0 | -44.1 | Pass |
| | | | Overall Test Results | | Pass |

Pelvis Plug S/N: 16649




Technician: J. Coronel

Approved By: J. Hernandez

ATD Serial No.: 308 Test Date: 2024-12-03

Pelvis Plug S/N: 16649

SACO RESEARCH

**SID-IIs Pelvis Plug Certification Test**

Plug S/N 16649
Test Number 23424
Report Number 23481
Test Date 7/21/2022 11:10:37 AM

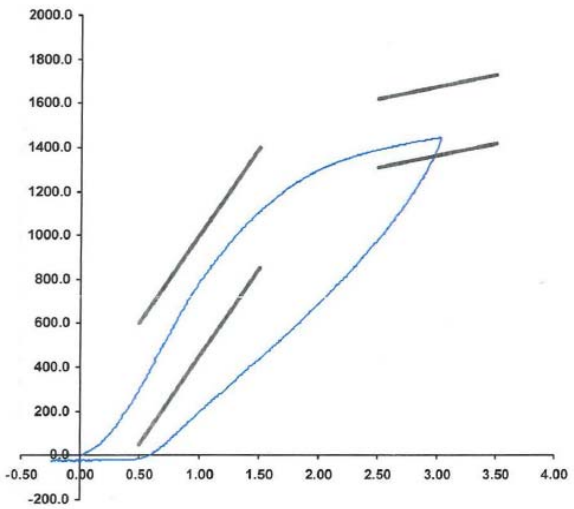
| | Test Results | Spec Min | Spec Max |
|---|---|---|---|
| Force @ 0.5 mm (N) | 301 | 50 | 600 |
| Force @ 1.5 mm (N) | 1,109 | 850 | 1,400 |
| Force @ 2.5 mm (N) | 1,388 | 1,306 | 1,618 |
| Force @ 3.0 mm (N) | 1,442 | 1,361 | 1,673 |

Testing Machine STM-20 5965542
Load Cell S/N (FI360947), Units (LBS ) 1000

Crosshead Speed ( mm / min ) or Rate 12.7
Extension or Position Measured by XHD_100 ( XHD100 )

Notes:

Force (-N) vs Extension (-mm)




Operator

Part Number 180-4450

Template No 107 21-Jul-22
SACO Research

By : DC Date : 7/21/22

SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

Applus IDIADA KARCO

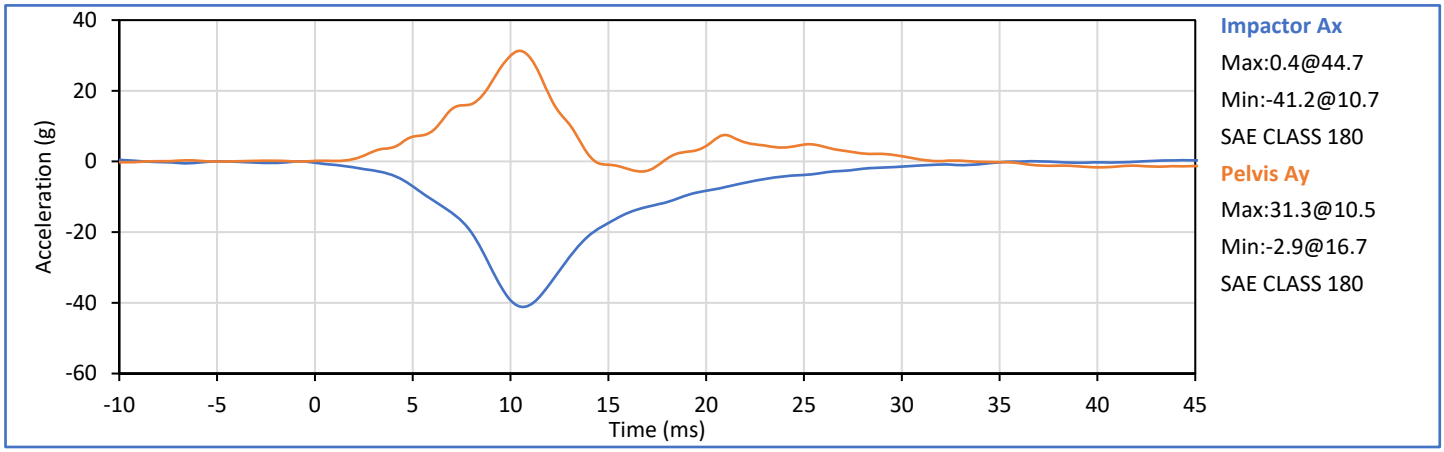
## SID-IIs Small Side Impact ATD
## Pelvis Iliac Impact

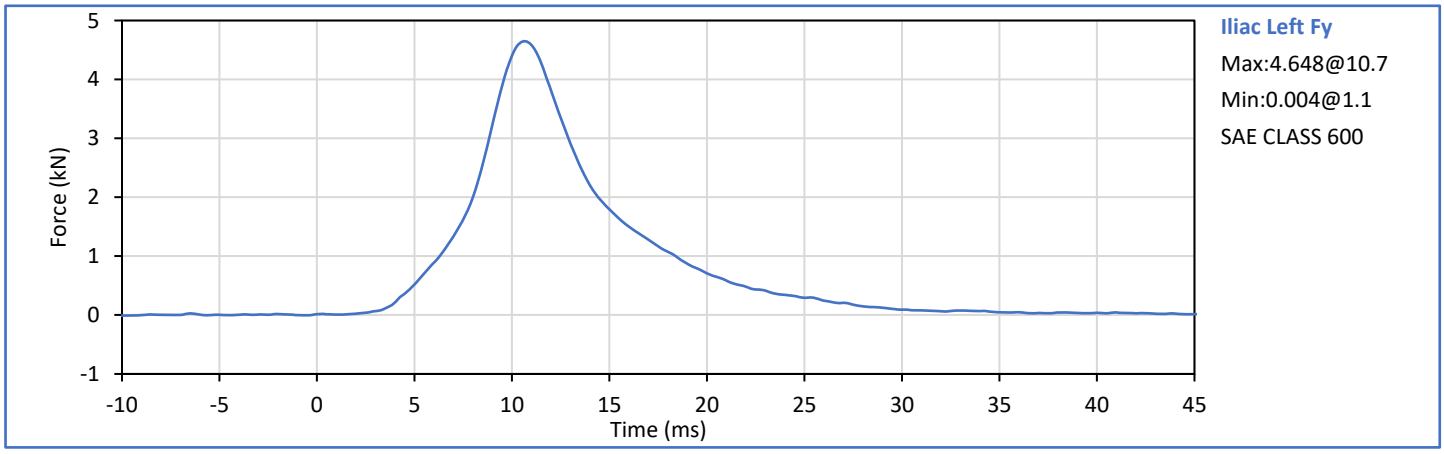
ATD Serial No.: 308 Test Date: 2024-12-10

| Tested Parameter | Units | Spec. Low | Spec. High | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | °C | 20.6 | 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 | 70 | 30 | Pass |
| Impactor Velocity | m/s | 4.20 | 4.40 | 4.34 | Pass |
| Peak Iliac Fy | kN | 4.10 | 5.10 | 4.65 | Pass |
| Peak Pelvis Ay | g | 28.0 | 39.0 | 34.7 | Pass |
| Peak Impactor Ax | g | -45.0 | -36.0 | -41.2 | Pass |
| | | | Overall Test Results | | Pass |

Pelvis Plug S/N: 16490 *

* Plug is not impacted and remains certified




Technician: J. Coronel

Approved By: J. Hernandez

# APPENDIX D
# TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

ES-2re ATD S/N: F037

**Table 1 - Driver ATD Instrumentation**

| Sensor Location | Sensor S\N | Mfr | Model | Cal Date |
|---|---|---|---|---|
| Head Acceleration X Primary | P58858 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration Y Primary | P58865 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration Z Primary | P58867 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration X Redundant | P58859 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration Y Redundant | P58866 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration Z Redundant | P58873 | Endevco | 7264C-2k | 2024-06-04 |
| Upper Thorax Rib Deflection Y | 209 (ES-2 Rib) | Honeywell | F38000203 | 2024-10-09 |
| Middle Thorax Rib Deflection Y | 210 (ES-2 Rib) | Honeywell | F38000203 | 2024-10-09 |
| Lower Thorax Rib Deflection Y | 207 (ES-2 Rib) | Honeywell | F38000203 | 2024-10-09 |
| Anterior Abdominal Force Y | 1504 Fy | R.A. Denton | 2631J | 2024-05-28 |
| Middle Abdominal Force Y | 1505 Fy | R.A. Denton | 2631J | 2024-05-28 |
| Posterior Abdominal Force Y | 1506 Fy | R.A. Denton | 2631J | 2024-05-28 |
| Lower Spine T12 Acceleration X | P63856 | Endevco | 7264C-2k | 2024-06-04 |
| Lower Spine T12 Acceleration Y | P50063 | Endevco | 7264C-2k | 2024-06-04 |
| Lower Spine T12 Acceleration Z | P51880 | Endevco | 7264C-2k | 2024-06-04 |
| Pubic Symphysis Force Y | DG6834 Fy | FTSS | IF-556 | 2024-05-24 |

SID-IIs ATD S/N: 308

**Table 2 - Left Rear Passenger ATD Instrumentation**

| Sensor Location | Sensor S\N | Mfr | Model | Cal Date |
|---|---|---|---|---|
| Head Acceleration X Primary | P63980 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration Y Primary | P58861 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration Z Primary | P51261 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration X Redundant | P58808 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration Y Redundant | P63310 | Endevco | 7264C-2k | 2024-06-04 |
| Head Acceleration Z Redundant | P49189 | Endevco | 7264C-2k | 2024-06-04 |
| Head Rotation Rate X | ARS7367 | DTS | ARS PRO-8k (2kHz) | 2024-07-31 |
| Head Rotation Rate Y | ARS7377 | DTS | ARS PRO-8k (2kHz) | 2024-07-31 |
| Head Rotation Rate Z | ARS7498 | DTS | ARS PRO-8k (2kHz) | 2024-07-31 |
| Upper Thorax Rib Deflection Y | 1249 | Servo | 08TCI-3725 | 2024-06-04 |
| Middle Thorax Rib Deflection Y | 1219 | Servo | 08TCI-3725 | 2024-06-04 |
| Lower Thorax Rib Deflection Y | 1221 | Servo | 08TCI-3725 | 2024-06-04 |
| Upper Abdomen Rib Deflection Y | 1252 | Servo | 08TCI-3725 | 2024-06-04 |
| Lower Abdomen Rib Deflection Y | 1233 | Servo | 08TCI-3725 | 2024-06-04 |
| Lower Spine T12 Acceleration X | P52108 | Endevco | 7264C-2k | 2024-06-04 |
| Lower Spine T12 Acceleration Y | P63970 | Endevco | 7264C-2k | 2024-06-04 |
| Lower Spine T12 Acceleration Z | P51712 | Endevco | 7264C-2k | 2024-06-04 |
| Iliac Wing Impact Side Force Y | 289 (Iliac) | R.A. Denton | 3228J | 2024-05-24 |
| Acetabulum Impact Side Force Y | 277 (Acetabulum) | R.A. Denton | 3249J | 2024-05-24 |

**Table 3 - Vehicle Instrumentation**

| Sensor Location | Sensor S\N | Mfr | Model | Cal Date |
|---|---|---|---|---|
| Vehicle CG Ax | M14401 | Endevco | 758H-2k | 2024-07-25 |
| Vehicle CG Ay | M14404 | Endevco | 7264HM6-2k-360 | 2024-07-25 |
| Vehicle CG Az | M11052 | Endevco | 758H-2k | 2024-07-12 |
| Right Side Sill at Front Seat Ax | M14058 | Endevco | 7264HM6-2k-360 | 2024-07-09 |
| Right Side Sill at Front Seat Ay | M13727 | Endevco | 758H-2k | 2024-07-30 |
| Right Side Sill at Front Seat Az | M14378 | Endevco | 7264HM6-2k-360 | 2024-07-25 |
| Right Side Sill at Rear Seat Ax | M11069 | Endevco | 758H-2k | 2024-07-24 |
| Right Side Sill at Rear Seat Ay | M11184 | Endevco | 758H-2k | 2024-07-11 |
| Right Side Sill at Rear Seat Az | M13704 | Endevco | 758H-2k | 2024-07-29 |
| Left Side Sill at Front Seat Ay | 220270 | BST | 11CF-2k | 2024-08-14 |
| Left Side Sill at Rear Seat Ay | 220275 | BST | 11CF-2k | 2024-08-13 |
| Left Lower A-Pillar Ay | 223138 | BST | 11CF-2k | 2024-08-24 |
| Left Middle A-Pillar Ay | 223282 | BST | 11CF-2k | 2024-08-24 |
| Left Lower B-Pillar Ay | 223091 | BST | 11CF-2k | 2024-08-15 |
| Left Middle B-Pillar Ay | 223221 | BST | 11CF-2k | 2024-07-31 |
| Driver Seat Track at H-Point Ay | 223198 | BST | 11CF-2k | 2024-08-26 |
| Rear Seat Structure Ay | M11273 | Endevco | 758H-2k | 2024-07-27 |
| Right Rear Occupant Comp. Ay | M11242 | Endevco | 758H-2k | 2024-07-27 |
| Engine Block Top Ax | M10904 | Endevco | 758H-2k | 2024-07-27 |
| Engine Block Top Ay | M11117 | Endevco | 758H-2k | 2024-07-27 |
| Rear Floopan Above Axle Ax | M11081 | Endevco | 758H-2k | 2024-07-12 |
| Rear Floopan Above Axle Ay | M10908 | Endevco | 758H-2k | 2024-07-12 |
| Rear Floopan Above Axle Az | M11123 | Endevco | 758H-2k | 2024-07-26 |

**Table 4 - Moving Deformable Barrier (MDB) Instrumentation**

| Sensor Location | Sensor S\N | Mfr | Model | Cal Date |
|---|---|---|---|---|
| MDB CG Ax | M14429 | Endevco | 758H-2k | 2024-08-10 |
| MDB CG Ay | M11140 | Endevco | 758H-2k | 2024-07-17 |
| MDB CG Az | M11087 | Endevco | 758H-2k | 2024-07-12 |
| MDB Left Side at Rear Axle Ax | M11235 | Endevco | 758H-2k | 2024-07-23 |
| MDB Left Side at Rear Axle Ay | M10906 | Endevco | 758H-2k | 2024-10-12 |