REPORT NUMBER: 213-MGA-19-004

SAFETY COMPLIANCE TESTING FOR FMVSS 213
CHILD RESTRAINT SYSTEMS

Britax Child Safety, Inc.
Marathon Click Tight, Model E1A388C

PREPARED BY:
MGA Research Corporation
11480 Robertson Drive
Manassas, VA 20109

Report Date: May 22, 2019

FINAL REPORT

PREPARED FOR:
U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
Mail Code: NVS-220, W43-481
1200 New Jersey Avenue, SE
Washington, DC 20590

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Prepared By: Pam Delaney

Approved By: Matthew James

Approval Date: June 12, 2019

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: ZACHARY R FRASER Digitally signed by ZACHARY R FRASER Date: 2019.09.23 11:37:50 -04'00'

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Technical Report Documentation Page

1. Report No. 213-MGA-19-004	*2. Government Accession No.*	*3. Recipient's Catalog No.*	
4. Title and Subtitle Final Report of FMVSS 213 Compliance Testing of Britax Child Safety, Inc. Marathon Click Tight, Model E1A388C		*5. Report Date* May 22, 2019 *6. Performing Organization Code* MGA Research Corporation	
7. Author(s) Matt James, Project Engineer		*8. Performing Organization Report No.* 213-MGA-19-004	
9. Performing Organization Name and Address MGA Research Corporation 11480 Robertson Drive Manassas, VA 20109		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-17-D-00080	
12. Sponsoring Agency Name and Address U. S. DEPARTMENT OF TRANSPORTATION National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance Mail Code: NVS-220, W43-481 1200 New Jersey Avenue, SE Washington, DC 20590		*13. Type of Report and Period Covered* Final Test Report December 3, 2018 to May 9, 2019 *14. Sponsoring Agency Code* NVS-220	
15. Supplementary Notes			
16. Abstract Compliance tests were conducted on the Britax Child Safety, Inc., Marathon Click Tight, Model E1A388C child restraint systems in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-213-10. Test failures identified were as follows: None			
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Form DOT F1700.7 (8-72)

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SECTION 1
PURPOSE AND TEST PROCEDURE

PURPOSE

The tests performed are part of the safety compliance program for the National Highway Traffic Safety Administration (NHTSA) by MGA Research Corporation under Contract No. DTNH22-17-D-00080. The purpose of the testing is to determine whether production child restraint systems meet the minimum inspection and dynamic test requirements of TP-213-10, “Child Restraint Systems”.

TEST PROCEDURE

The MGA Research Corporation Test Procedure for FMVSS 213, submitted and approved by the Office of Vehicle Safety Compliance, National Highway Traffic Safety Administration, contains the specific procedures used to conduct this test. This procedure shall not be interpreted to be in conflict with any portion of FMVSS 213 and amendments in effect as noted in the applicable contract.

SECTION 2
INTRODUCTION AND SUMMARY

This report presents all of the FMVSS 213 compliance inspection and test data obtained on the Britax Child Safety, Inc. Marathon Click Tight, Model E1A388C, child restraint system. The restraint was dynamically tested in the following configurations:

- Newborn Infant, rear facing, other configuration, lower anchor, tether free, and reclined
- 12 month old, CRABI, rear facing, other configuration, lower anchor, tether free, and reclined
- 12 month old, CRAB, forward facing, other configuration, lower anchor, tether, and upright
- 3 year old, Hybrid III, forward facing, other configuration, lower anchor, tether, and upright
- 6 year old, Hybrid II, forward facing, other configuration, lap belt, tether, and upright
- 6 year old weighted, Hybrid III, forward facing, other configuration, lap belt, tether, and upright

Inversion testing was performed in both the forward Y-axis rotation and in the lateral X-axis rotation for the following configurations:

- Newborn Infant, rear facing, other configuration, lap belt, tether free, and reclined
- 12 month old, CRABI, forward facing, other configuration, lap belt, tether free, and upright
- 3 year old, Hybrid III, forward facing, other configuration, lap belt, tether free, and upright

The inspection and/or testing of the Britax Child Safety, Inc., Marathon Click Tight, E1A388C child restraint was conducted in accordance with TP-213-10 in the configurations and conditions documented in this report and no test failures were identified.

Restraint system inspection, dynamic sled testing, and inversion testing were performed by MGA Research Corporation in Manassas, Virginia. Compliance test data sheets for all tests are found in Section 5 of this report.

SECTION 3

CHILD RESTRAINT SYSTEM IDENTIFICATION

Report No. 213-MGA-19-004

Manufacturer:	Britax Child Safety, Inc.
Place of Manufacture per S5.5.2(d):	Fort Mill, SC
Model No.	E1A388C
Group No.	2

1	Item Code	004-BE1A388C-01-12CRNLFR
	Date of Manufacture	10/2018
	Sled Test No.	V19324F
2	Item Code	004-BE1A388C-02-NINRNLFR
	Date of Manufacture	10/2018
	Sled Test No.	V19029R
3	Item Code	004-BE1A388C-03-12CFNLTU
	Date of Manufacture	10/2018
	Sled Test No.	V19034F
4	Item Code	004-BE1A388C-04-3H3FNLTU
	Date of Manufacture	10/2018
	Sled Test No.	V19034R
5	Item Code	004-BE1A388C-05-6H2FN2TU
	Date of Manufacture	10/2018
	Sled Test No.	V19066F
6	Item Code	004-BE1A388C-06-6W3FN2TU
	Date of Manufacture	10/2018
	Sled Test No.	V19066R

SECTION 4

DYNAMIC TEST RESULTS DATA SUMMARY

Child Restraint System - Britax Child Safety, Inc. / Marathon Click Tight / E1A388C										
Item Code	**Sled Test No.**	**Dummy and CRS Test Mode***	**Lower Anchors Used? Y/N**	**Tether Used? Y/N**	**HIC (1000 max)**	**Chest g clip (60 g max)**	**Head Excursion (720 mm max - or 813 mm max w/o tether)**	**Knee Excursion (915 mm max)**	**Seat Back Angle (70 deg max)**	**Pass/ Fail**
004-BE1A388C-01-12CRNLFR	V19324F	12 mo (RF) (R)	Y	N	366	55	N/A	N/A	63	Pass
004-BE1A388C-02-NINRNLFR	V19029R	NIN (RF) (R)	Y	N	N/A	N/A	N/A	N/A	56	Pass
004-BE1A388C-03-12CFNLTU	V19034F	12 mo (FF) (U)	Y	Y	184	47	575	579	N/A	Pass
004-BE1A388C-04-3H3FNLTU	V19034R	3 yo (FF) (U)	Y	Y	328	47	625	692	N/A	Pass
004-BE1A388C-05-6H2FN2TU	V19066F	6 yo (FF) (U)	N	Y	400	54	556	805	N/A	Pass
004-BE1A388C-06-6W3FN2TU	V19066R	6 yo weighted (FF) (U)	N	Y	N/A	N/A	N/A	N/A	N/A	Pass

*Test Mode:

RF- Rear facing
FF- Forward facing
SF- Side facing
U- Upright
R- Reclined
B- Backed Booster
N- No Back Booster
F- Flat

SECTION 5
DATA

LABELING

(FMVSS 213, S5.3, S5.5)

Report No.:	213-MGA-19-004
Test Date:	3/9/2019

Model No.:	E1A388C

Requirement	Pass/Fail
The labels on the subject child restraint system were inspected and compared to the requirements of FMVSS No. 213 S5.3.1(b) and S5.5, as applicable.	Pass (1)(2)

Remarks:

(1) S5.5.2(c) The word “in” is omitted in the required statement.
(2) S5.5.2(f)(4) The words “with a” are used in the place of the word “whose” before the phrase “height is between” in the required statement.

Photographs of the labels are included in Section 9.

Recorded by: Corey Barlet Date: 3/9/2019

PRINTED INSTRUCTIONS FOR PROPER USE

(FMVSS 213, S5.6)

Report No.:	213-MGA-19-004
Test Date:	3/9/2019

Model No.:	E1A388C

Requirement	Pass/Fail
The printed instructions accompanying the subject child restraint system were inspected and compared to the requirements of FMVSS No. 213 S5.6, as applicable.	Pass

Remarks:

None

Recorded by: Corey Barlet

Date: 3/9/2019

REGISTRATION FORM

(FMVSS 213, S5.8)

Report No.:	213-MGA-19-004
Test Date:	3/9/2019

Model No.:	E1A388C

Requirement	Pass/Fail
The printed registration form accompanying the subject child restraint system and the electronic registration form were inspected and compared to the requirements of FMVSS No. 213 S5.8.	Pass (1)(2)

Remarks:

(1) S5.8.1(b)(2) The word “registration” is omitted from “manufacturer’s registration website” and the phrase “Tear off and mail this part” is replaced with “Tear here” on the attached registration form.
(2) S5.8.2(c) A reCAPTCHA field and a drop down banner to select a language appear on the electronic registration form.

Recorded by: Corey Barlet Date: 3/9/2019

MAXIMUM CHILD WEIGHT FOR LOWER ANCHOR USE

(S213, S5.5.2(l)(3))

Report No.:	213-MGA-19-004
Test Date:	3/9/2019

Model No.:	E1A388C

For child restraints manufactured on or after February 27, 2015:

Installation Mode	A Max Child Weight is Required for this Installation Mode (Y or N)	Installation Diagram Shown (Y or N)	Max Child Weight Indicated on Installation Diagram (lb)
Rear Facing	Y	Y	35
Forward Facing	Y	Y	40

CRS Weight (lb)	Child Weight (CW) Calculation (lb)	Rounded CW Limit permitted under S5.5.2(l)(3)(i)
26.9	Rear Facing 60-CRS Weight = 33.1	35
	Forward Facing 65-CRS Weight = 38.1	40

Calculated CW	Rounded CW
15 < CW ≤ 20	20
20 < CW ≤ 25	25
25 < CW ≤ 30	30
30 < CW ≤ 35	35
35 < CW ≤ 40	40
40 < CW ≤ 45	45
45 < CW ≤ 50	50
50 < CW ≤ 55	55
55 < CW ≤ 60	60

Section	Requirement	Pass/Fail
S5.5.2(l)(3)(i)	A maximum child weight is required on an installation diagram when the CRS+child weight is greater than 65 lb for CRS that are used with the internal harness and installed with lower anchors. The maximum weight on the label conforms to the limits established in S5.5.2(l)(3)(i)	Pass
S5.5.2(l)(3)(ii)	For CRS that can be used both forward and rear-facing, either: (1) separate diagrams are provided and labeled; or (2) only one diagram is applicable, provided, and labeled; or (3) two diagrams are applicable and the diagram shown contains the lesser of the permitted weights	Pass

Remarks:

None

Recorded by: Corey Barlet Date: 3/9/2019

ATTACHMENT TO ANCHORAGE SYSTEM

(S213, S5.9)

Report No.:	213-MGA-19-004
Test Date:	3/9/2019

Model No.:	E1A388C

Section	Requirement	Pass/Fail
S5.9(a)	This add-on child restraint system (excluding car beds, harnesses, and belt-positioning seats) has a permanently attached anchorage system having components that enable the restraint to be securely fastened to the lower anchorages.	Pass
	The anchorage system has components which can only be removed with a tool, such as a screwdriver.	Pass
	Note: If this is a rear-facing child restraint system with a detachable base, then only the base is required to have the components.	N/A
S5.9(b)	This child restraint system has components for attaching the system to a tether anchorage, and those components include a tether hook that conforms to the configuration and geometry specified in Figure 22.	Pass
S5.9(c)	This child restraint system has adjustable components for attaching the system to a tether anchorage or to lower anchors to allow the restraint to be tightened to the vehicle.	Pass
S5.9(d)	If the anchorage system on this child restraint system has components, other than hooks, that enable the restraint to be securely fastened to the lower anchorages, it provides either an indication when each attachment to the lower anchorage becomes fully latched or attached, or provides a visual indication that all attachments to the lower anchorages are fully latched or attached.	Pass
	Visual indications are detectable under normal daylight lighting conditions.	N/A

Remarks:

None

Recorded by: Corey Barlet Date: 3/9/2019

INSTALLATION

(S213-S5.3)

Report No.:	213-MGA-19-004
Test Date:	3/9/2019

Model No.:	E1A388C

Section	Requirement						Pass/Fail
S5.3.1	Add-on child restraints meet either (a) or (b) as appropriate						Pass
S5.3.1(a)	Except for components designed to attach a child restraint anchorage system, this add-on child restraint does not have any means designed for attaching the system to a vehicle seat cushion or vehicle seat back and any component (except belts) that is designed to be inserted between the vehicle seat cushion and vehicle seat back.						Pass
S5.3.1(b)	Harnesses manufactured for use on school bus seats must meet S5.3.1(a) unless labeled appropriately. Refer to the labeling data sheet for the specific requirements.						N/A
S5.3.2	This child restraint system is capable of being installed as required by Table S5.3.2 of FMVSS No. 213. Shaded sections indicate installation means required by standard.						
		Lap Belt	*Lap Belt & Tether (if needed)*	*Lower Anchors*	*Lap & Shoulder Belt*	*Seat back Mount*	
	Harnesses per S5.3.1(b)(1)-(3) and Fig. 12						N/A
	Other Harnesses						N/A
	Car Beds						N/A
	Rear-Facing Restraints	X		X	X		Pass
	Belt Positioning Seats						N/A
	Other	X	X	X	X		Pass
S5.3.3	If a car bed, this child restraint system is designed to be installed laterally.						N/A

Remarks:

None

Recorded by: Corey Barlet

Date: 3/9/2019

MINIMUM HEAD SUPPORT SURFACE

(FMVSS 213, S5.2.1)

Report No.:	213-MGA-19-004
Test Date:	3/9/2019

Model No.:	E1A388C

Section	Requirement	
S5.2.1.2	The child restraint system is exempt from S5.2.1.1 if it is a forward facing restraint and the target points on either side of the dummy's head (using the largest test dummy specified in S7, excluding the 6-year-old) is below the top of the test seat.	
S5.2.1.1.(a)	**Maximum Recommended Child Weight**	**Minimum Seat Back Height Required**
	≤ 18 kg (39.7 lb)	500 mm (19.7 in)
	> 18 kg (39.7 lb)	560 mm (22.0 in)
S5.2.1.1(b)	**Side Wing Depth**	**Minimum Back Support Width**
	< 102 mm (4.0 in)	203 mm (8.0 in)
	≥ 102 mm (4.0 in)	152 mm (6.0 in)

The child restraint system is **exempt** from S5.2.1.1 NO

Back Support Height

Manufacturer's Recommended Maximum Child Weight kg (lb)	Measured Height mm (in)	Pass/Fail
29.4 (65)	790 (31.1)	Pass

Back Support Width

Measured Side Wing Depth mm (in)	Measured Width mm (in)	Pass/Fail
120 (4.7)	380 (15.0)	Pass

Remarks:

None

Recorded by: Corey Barlet Date: 3/9/2019

TORSO IMPACT PROTECTION

(FMVSS 213, S5.2.2)

Report No.:	213-MGA-19-004
Test Date:	3/9/2019

Model No.:	E1A388C

Section	Surface Requirement	Contour Requirement	Other Requirement
S5.2.2.1(a)	Back Support Surface	flat or concave	Continuous surface area of ≥ 85 in²
S5.2.2.1(b)	Side Support Surface	flat or concave	Continuous surface area of ≥ 24 in² for restraints having a recommended child weight ≥ 20 lb
		flat or concave	Continuous surface area of ≥ 48 in² for restraints having a recommended child weight < 20 lb
S5.2.2.1(c)	Horizontal Cross Sections of Surfaces Restraining Torso Forward Movement	flat or concave	
	Vertical Longitudinal Cross Sections of Surfaces Restraining Torso Forward Movement	flat or convex	Radius of curvature ≥ 2 in
S5.2.2.2	Fixed or movable surface forward of dummy		Must be used to restrain dummy and allow compliance with injury & excursion criteria

Support Surface- Results

Surface	Contour	Measured Area	Pass/Fail
Back Support Surface	Flat	≥ 85 in²	Pass
Side Support Surface	Concave	≥ 24 in²	Pass

Surfaces Restraining Torso Forward Movement- Results

	Contour	Radius of Curvature	Pass/Fail
Horizontal Cross Section	N/A	N/A	Pass
Vertical Cross Section	N/A	N/A	Pass

Fixed or Movable Surfaces Forward of Dummy- Results

Yes/No	Pass/Fail
No	Pass

Remarks:

None

Recorded by: Corey Barlet

Date: 3/9/2019

PROTRUSION LIMITATION

(FMVSS 213, S5.2.4)

Report No.:	213-MGA-19-004
Test Date:	3/9/2019

Model No.:	E1A388C

S5.2.4. Any portion of a rigid structural component within or underlying a contactable surface is subject to the protrusion limitations described below.

Test	Compliance Requirement	Result	Pass/Fail
Height	≤ 3/8 in. (9.53 mm)	≤ 3/8 in. (9.53 mm)	Pass
Edge Radius	≥ 1/4 in. (6.35 mm)	≥ 1/4 in. (6.35 mm)	Pass

Remarks:

None

Recorded by: Corey Barlet

Date: 3/9/2019

DYNAMIC IMPACT TEST CONDITIONS - TEST 1

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	5/9/2019

Sled Test No.	V19324
Item Code	004-BE1A388C-01-12CRNLFR

Pulse:

Test Configuration (I or II)	I
Nominal Velocity (km/h)	48 (+0/-3)

Laboratory Ambient Conditions During Testing:

Temperature (ºC)	22.0
Relative Humidity (%)	50

Dummy:

Dummy Description	CRABI 12 Month Old (Part 572R)
Dummy Serial Number	083

Restraint Installation:

Installed Direction	Rear-Facing
Base Usage	Other Configuration
Attachment Method	Lower Anchor
Tether Usage	No
Seat Back Position	Reclined
Shoulder Harness Position	Slot 6 of 14 Counted from the Bottom
Buckle Harness Position	Slot 1 of 2, Counted from the Seat Back Outward
Recline Position	Position 7 of 7, Counted from Most Upright
Lock-offs Used	Center
Positioning Pillow	Removed
Shoulder Harness Covers	Installed
Impact Absorbing Pads	Installed
Harness Length	Shortened

Remarks:

Pre-test and post-test photographs are presented in Section 9.

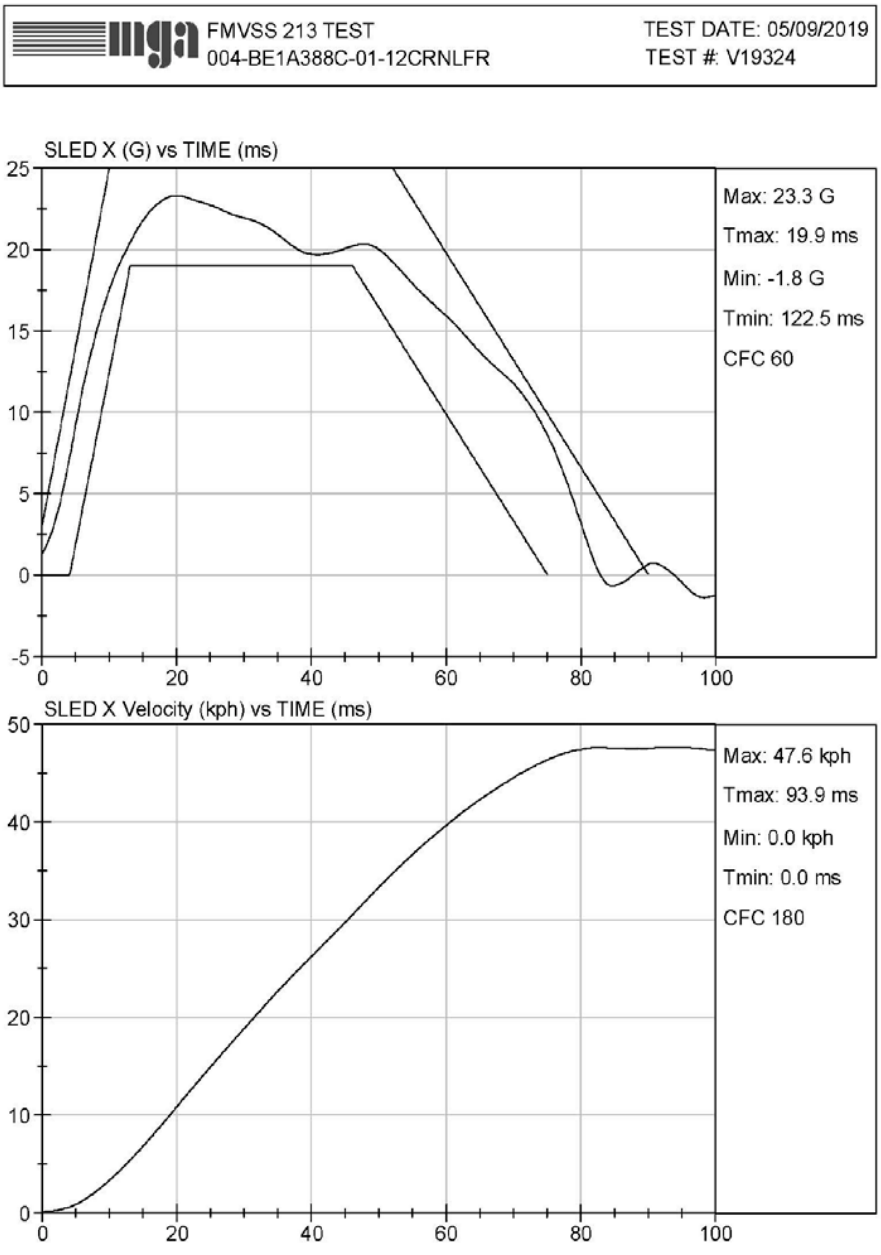
Recorded by: Corey Barlet Date: 5/9/2019

DYNAMIC IMPACT SLED PULSE - TEST 1

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	5/9/2019

Sled Test No.	V19324
Item Code	004-BE1A388C-01-12CRNLFR



BELT RESTRAINT - TEST 1

(FMVSS 213, S5.4.3)

Report No.:	213-MGA-19-004
Test Date:	5/9/2019

Sled Test No.	V19324
Item Code	004-BE1A388C-01-12CRNLFR

Section	Requirement	Pass/Fail
S5.4.3.1	**Snug Fit of Belts**. Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturer's installation instructions.	Pass

Section	Requirement	Yes/No	Pass/Fail
S5.4.3.2	**Direct Restraint**. Belts impose no loads on the child resulting from the mass of the system or the test seat.		Pass
	This restraint has one or more belts that contact the dummy for restraint.	No	If all are "yes," restraint fails S5.4.3.2.
	This restraint has a rigid structure behind the dummy.	Yes	
	The restraint could move relative to the belt.	No	

Section	Requirement	Pass/Fail
S5.4.3.3	**Seating Systems**. Except for harnesses and infant restraints for children up to 10 kg (22 lb), each restraint designed for a child in a seated position and having belts shall provide:	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass/Fail
S5.4.3.4	**Harnesses**. Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap and crotch restraint)	N/A
S5.4.3.3(c)	Prevent standing	N/A

Remarks:

None

Recorded by: Brian Lovelace-Murray Date: 5/9/2019

BUCKLE RELEASE - TEST 1

(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-MGA-19-004
Test Date:	5/9/2019

Sled Test No.	V19024
Item Code	004-BE1A388C-01-12CRNLFR

Section	Requirement	Measurement	Pass/Fail
S5.4.3.5(a)	**Pre-Impact Release Force**— Releases under 40-62 N (9-14 lb)	L: 51 N (11.5 lb) R: 51 N (11.5 lb)	Pass (1)
S5.4.3.5(b)	**Post-Impact Release Force***— Releases ≤ 71 N (16 lb)	L: 55 N (12.4 lb) R: 55 N (12.4 lb)	Pass (1)
S5.4.3.5(c)	**Minimum Surface Area of Buckle**- ≥ 0.6 in^2 (3.9 cm^2)	0.7 in^2 (4.4 cm^2)	Pass
S5.4.3.5(e)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks:

(1) The buckle is comprised of right and left buckle tangs that do not always release at the same force.

Recorded by: Brian Lovelace-Murray Date: 5/9/2019

SYSTEM INTEGRITY - TEST 1

(FMVSS 213, S5.1.1)

Report No.:	213-MGA-19-004
Test Date:	5/9/2019

Sled Test No.	V19324
Item Code	004-BE1A388C-01-12CRNLFR

S5.1.1 When dynamically tested, the child restraint system shall:

Section	Requirement	Pass/Fail
S5.1.1(a)	**Structural Integrity-** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation exposing surfaces with a radius of less than ¼ in (9.53 mm)	Pass
	Exhibit no partial separation exposing surfaces with protrusions greater than 3/8 in (6.35 mm)	Pass
S5.1.1(b)(1)	**Adjustment Position-** Remain in the same adjustment position during the test that it was in immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings-** Have no exposed opening larger than ¼ inch (9.53 mm) before the test become smaller during the testing as a result of the movement of the seating surface relative to the restraint system as a whole	Pass
S5.1.1(c)	**Seating Surface Angle-** Forward facing restraints do not allow the angle between the system's back support surface and seating surface to be less than 45 degrees at the completion of the test.	N/A

Remarks:

None

Recorded by: Brian Lovelace-Murray Date: 5/9/2019

INJURY CRITERIA - TEST 1

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	1/22/2019

Sled Test No.	V19324
Item Code	004-BE1A388C-01-12CRNLFR

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion**- The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion**- The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds.

Head Injury Criterion Results

Calculated HIC36	Pass/Fail
366	Pass

Chest Injury Criterion Results

Max acceleration lasting 3 ms (g)	Pass/Fail
55	Pass

Remarks:

None

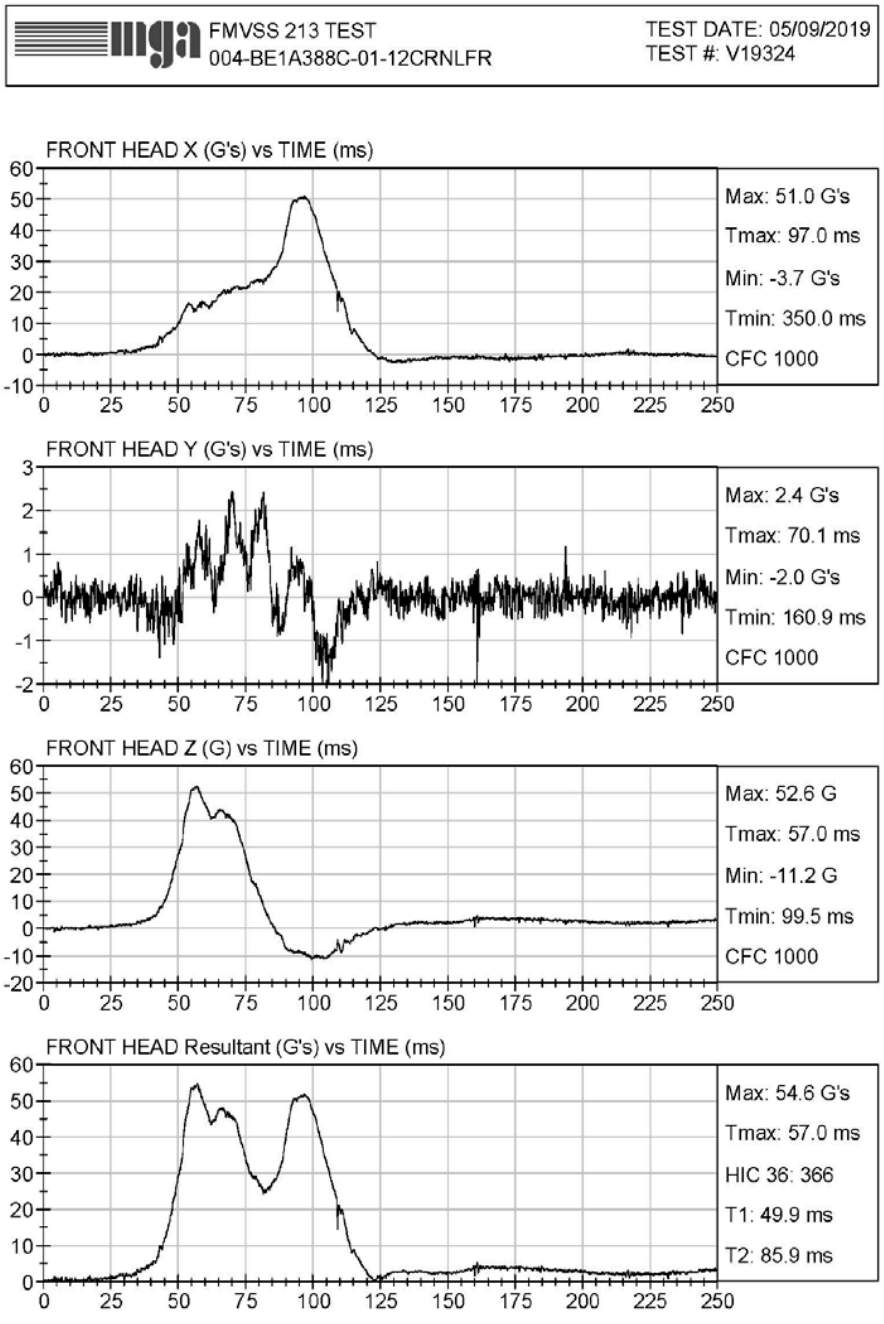
Recorded by: Brian Lovelace-Murray Date: 5/9/2019

INJURY CRITERIA - HEAD ACCELERATION PLOTS - TEST 1

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	5/9/2019

Sled Test No.	V190324
Item Code	004-BE1A388C-01-12CRNLFR

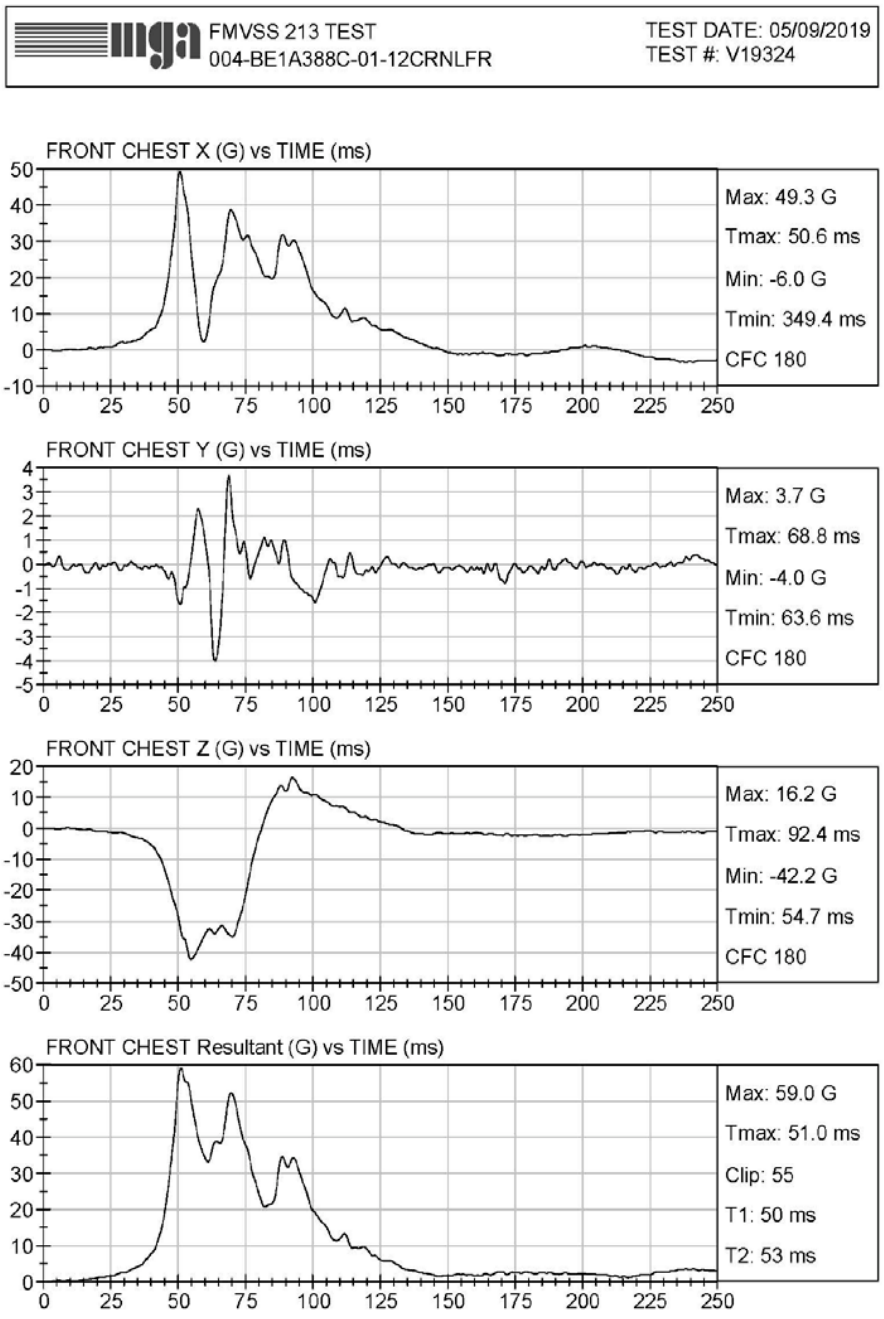


INJURY CRITERIA - CHEST ACCELERATION PLOTS - TEST 1

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	5/9/2019

Sled Test No.	V19324
Item Code	004-BE1A388C-01-12CRNLFR



OCCUPANT EXCURSION - TEST 1

(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-MGA-19-004
Test Date:	5/9/2019

Sled Test No.	V19324
Item Code	004-BE1A388C-01-12CRNLFR

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.1	***Torso retention***—CRS shall retain the torso within system		N/A
S5.1.3.1(a)(1)	***Head excursion***- ≤ 720 mm (28 in) with tether ≤ 813 mm (32 in) no tether	N/A	N/A
S5.1.3.1(a)(2)	***Knee target excursion***- ≤ 915 mm (36 in)	N/A	N/A
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	N/A	N/A

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.2	***Torso retention***—CRS shall retain the torso within system		Pass
S5.1.3.2	***Head target excursion***-Not beyond restraint's top and forward edge		Pass
S5.1.4	***Back support angle***- Angle between the back support surface and the vertical ≤ 70º	63º	Pass
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	≤ 45º	Pass

Remarks:

Excursion camera locations (distance forward of point Z) = 813 mm, camera speeds = 1,000 frames per second, and lens focal lengths = 15 mm.

.

Recorded by: Brian Loveless Murray Date: 5/9/2019

DYNAMIC IMPACT TEST CONDITIONS - TEST 2

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	1/22/2019

Sled Test No.	V19029R
Item Code	004-BE1A388C-02-NINRNLFR

Pulse:

Test Configuration (I or II)	I
Nominal Velocity (km/h)	48 (+0/-3)

Laboratory Ambient Conditions During Testing:

Temperature (ºC)	21.8
Relative Humidity (%)	17

Dummy:

Dummy Description	CAMI Newborn (Part 572K)
Dummy Serial Number	004

Restraint Installation:

Installed Direction	Rear-Facing
Base Usage	Other Configuration
Attachment Method	Lower Anchor
Tether Usage	No
Seat Back Position	Reclined
Shoulder Harness Position	Slot 1 of 14, Counted from the Bottom
Buckle Harness Position	Slot 1 of 2, Counted from the Seat Back Outward
Recline Position	Position 7 of 7, Counted from Most Upright
Lock-Offs Used	Center
Positioning Pillow	Installed
Shoulder Harness Covers	Installed
Impact Absorbing Pads	Removed
Harness Length	Shortened

Remarks:

Pre-test and post-test photographs are presented in Section 9.

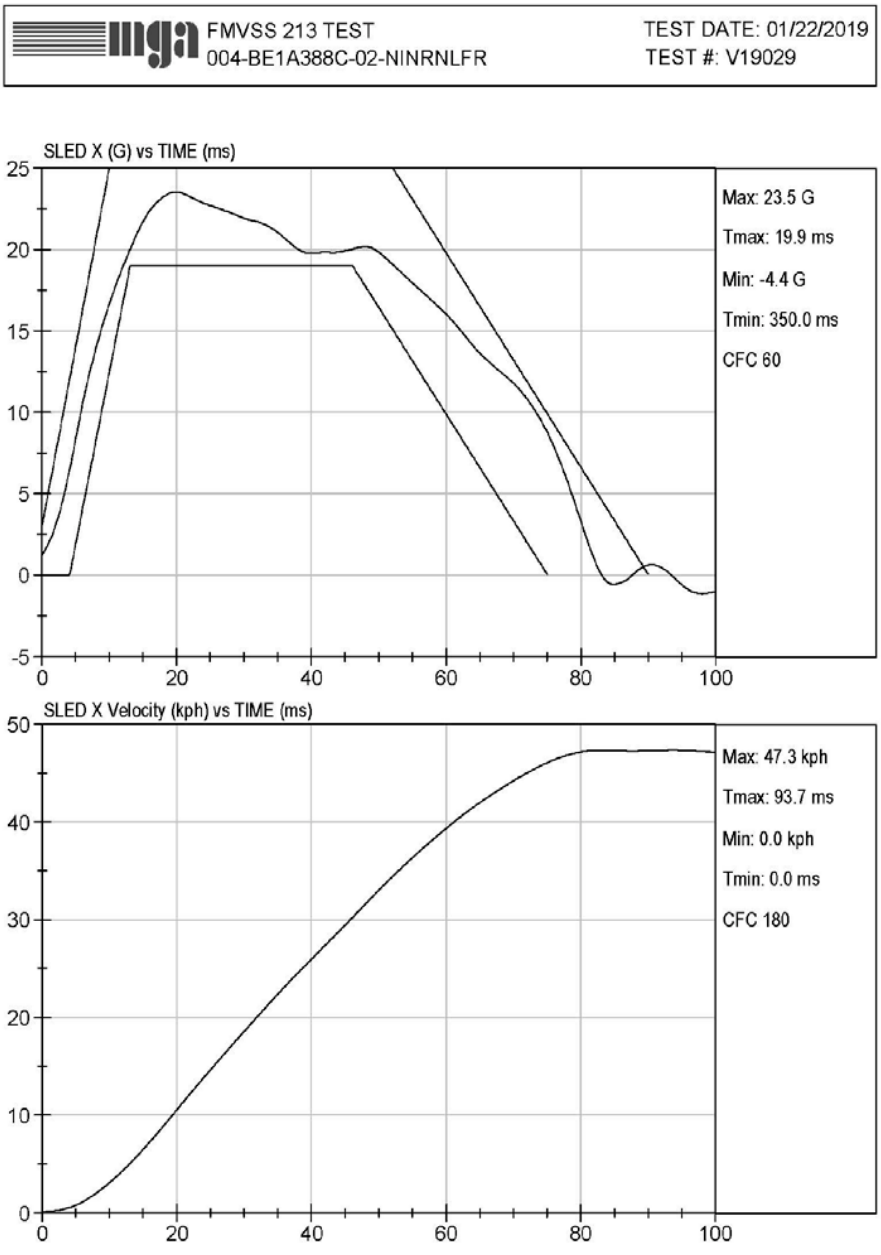
Recorded by: Brian Lovelace Murray Date: 1/22/2019

DYNAMIC IMPACT SLED PULSE - TEST 2

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	1/22/2019

Sled Test No.	V19029R
Item Code	004-BE1A388C-02-NINRNLFR



BELT RESTRAINT - TEST 2

(FMVSS 213, S5.4.3)

Report No.:	213-MGA-19-004
Test Date:	1/22/2019

Sled Test No.	V19029R
Item Code	004-BE1A388C-02-NINRNLFR

Section	Requirement	Pass/Fail
S5.4.3.1	**Snug Fit of Belts**. Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturer's installation instructions.	Pass

Section	Requirement	Yes/No	Pass/Fail
S5.4.3.2	**Direct Restraint**. Belts impose no loads on the child resulting from the mass of the system or the test seat.		Pass
	This restraint has one or more belts that contact the dummy for restraint.	No	If all are "yes," restraint fails S5.4.3.2.
	This restraint has a rigid structure behind the dummy.	Yes	
	The restraint could move relative to the belt.	No	

Section	Requirement	Pass/Fail
S5.4.3.3	**Seating Systems**. Except for harnesses and infant restraints for children up to 10 kg (22 lb), each restraint designed for a child in a seated position and having belts shall provide:	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass/Fail
S5.4.3.4	**Harnesses**. Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap and crotch restraint)	N/A
S5.4.3.3(c)	Prevent standing	N/A

Remarks:

None

Recorded by: Brian Loveless Murray Date: 1/22/2019

BUCKLE RELEASE - TEST 2

(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-MGA-19-004
Test Date:	1/22/2019

Sled Test No.	V19029R
Item Code	004-BE1A388C-02-NINRNLFR

Section	Requirement	Measurement	Pass/Fail
S5.4.3.5(a)	**Pre-Impact Release Force**— Releases under 40-62 N (9-14 lb)	L: 53 N (11.9.lb) R: 53 N (11.69lb)	Pass (1)
S5.4.3.5(b)	**Post-Impact Release Force***— Releases ≤ 71 N (16 lb)	L: 58 N (13.0 lb) R: 58 N (13.0 lb)	Pass (1)
S5.4.3.5(c)	**Minimum Surface Area of Buckle**- ≥ 0.6 in^2 (3.9 cm^2)	0.7 in^2 (4.4 cm^2)	Pass
S5.4.3.5(e)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks:

(1) The buckle is comprised of right and left buckle tangs that do not always release at the same force.

Recorded by: Brian Lovelace Murray Date: 1/22/2019

SYSTEM INTEGRITY - TEST 2

(FMVSS 213, S5.1.1)

Report No.:	213-MGA-19-004
Test Date:	1/22/2019

Sled Test No.	V19029R
Item Code	004-BE1A388C-02-NINRNLFR

S5.1.1 When dynamically tested, the child restraint system shall:

Section	Requirement	Pass/Fail
S5.1.1(a)	**Structural Integrity-** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation exposing surfaces with a radius of less than ¼ in (9.53 mm)	Pass
	Exhibit no partial separation exposing surfaces with protrusions greater than 3/8 in (6.35 mm)	Pass
S5.1.1(b)(1)	**Adjustment Position-** Remain in the same adjustment position during the test that it was in immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings-** Have no exposed opening larger than ¼ inch (9.53 mm) before the test become smaller during the testing as a result of the movement of the seating surface relative to the restraint system as a whole	Pass
S5.1.1(c)	**Seating Surface Angle-** Forward facing restraints do not allow the angle between the system's back support surface and seating surface to be less than 45 degrees at the completion of the test.	N/A

Remarks:

None

Recorded by: Brian Lovelace Murray Date: 1/22/2019

INJURY CRITERIA - TEST 2

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	1/22/2019

Sled Test No.	V19029R
Item Code	004-BE1A388C-02-NINRNLFR

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion**- The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion**- The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds.

Head Injury Criterion Results

Calculated HIC36	Pass/Fail
N/A	N/A

Chest Injury Criterion Results

Max acceleration lasting 3 ms (g)	Pass/Fail
N/A	N/A

Remarks:

None

Recorded by: Brian Lovelace Murray

Date: 1/22/2019

OCCUPANT EXCURSION - TEST 2

(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-MGA-19-004
Test Date:	1/22/2019

Sled Test No.	V19029R
Item Code	004-BE1A388C-02-NINRNLFR

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.1	***Torso retention***—CRS shall retain the torso within system		N/A
S5.1.3.1(a)(1)	***Head excursion***- ≤ 720 mm (28 in) with tether ≤ 813 mm (32 in) no tether	N/A	N/A
S5.1.3.1(a)(2)	***Knee target excursion***- ≤ 915 mm (36 in)	N/A	N/A
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	N/A	N/A

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.2	***Torso retention***—CRS shall retain the torso within system		Pass
S5.1.3.2	***Head target excursion***-Not beyond restraint's top and forward edge		Pass
S5.1.4	***Back support angle***- Angle between the back support surface and the vertical ≤ 70º	56º	Pass
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	≤ 45º	Pass

Remarks:

Excursion camera locations (distance forward of point Z) = 813 mm, camera speeds = 1,000 frames per second, and lens focal lengths = 15 mm.

Recorded by: Matthew James Date: 1/22/2019

DYNAMIC IMPACT TEST CONDITIONS - TEST 3

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034F
Item Code	004-BE1A388C-03-12CFNLTU

Pulse:

Test Configuration (I or II)	I
Nominal Velocity (km/h)	48 (+0/-3)

Laboratory Ambient Conditions During Testing:

Temperature (ºC)	21.0
Relative Humidity (%)	19

Dummy:

Dummy Description	12 Month Old (Part 572R)
Dummy Serial Number	083

Restraint Installation:

Installed Direction	Forward-Facing
Base Usage	Other Configuration
Attachment Method	Lower Anchor
Tether Usage	Yes
Seat Back Position	Upright
Shoulder Harness Position	Slot 7 of 14, Counted from the Bottom
Buckle Harness Position	Slot 1 of 2, Counted from the Seat Back Outward
Recline Position	Position 1 of 7, Counted from Most Upright
Positioning Pillow	Removed
Shoulder Harness Covers	Installed
Lock-Offs Used	Center
Impact Absorbing	Installed
Chest Pads	Installed

Remarks:

Pre-test and post-test photographs are presented in Section 9.

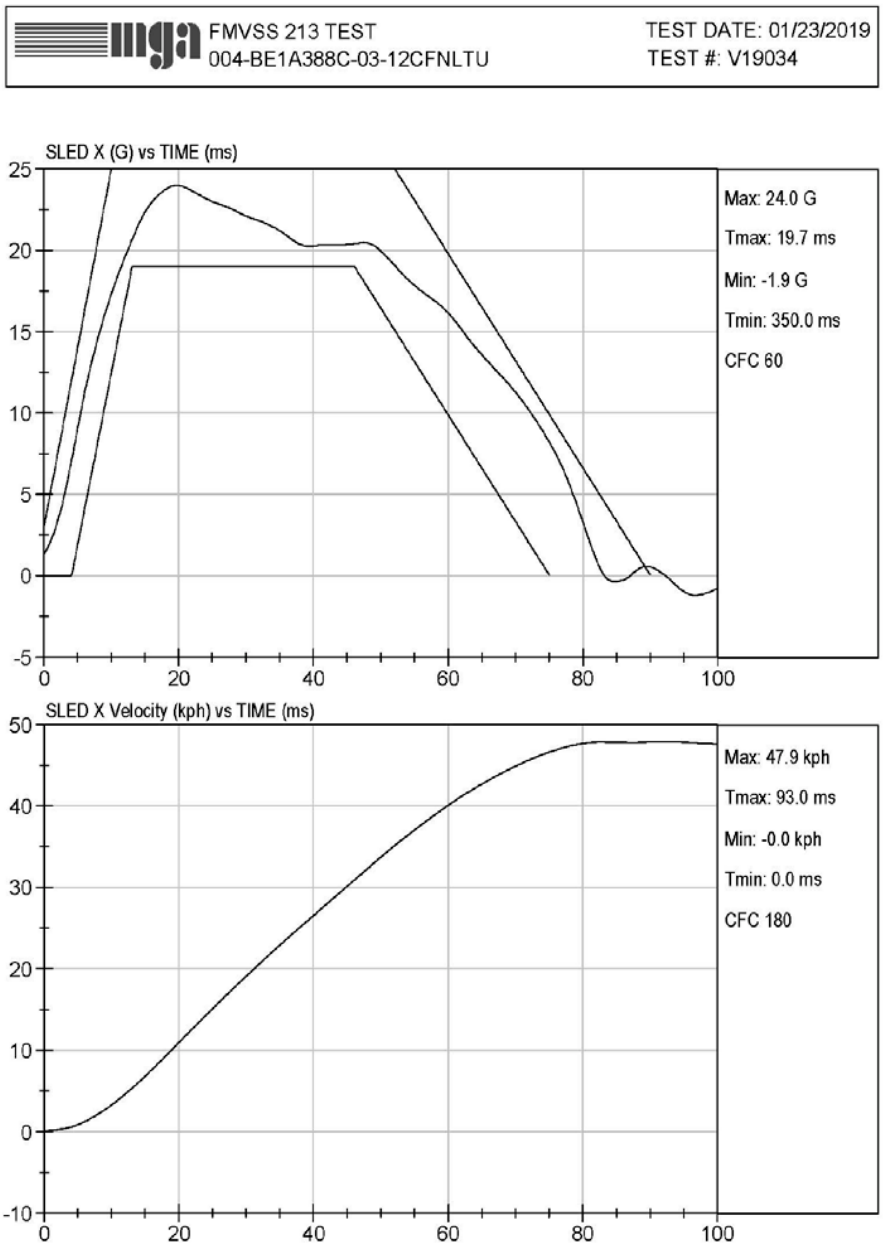
Recorded by: Matthew James Date: 1/23/2019

DYNAMIC IMPACT SLED PULSE - TEST 3

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034F
Item Code	004-BE1A388C-03-12CFNLTU



BELT RESTRAINT - TEST 3

(FMVSS 213, S5.4.3)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034F
Item Code	004-BE1A388C-03-12CFNLTU

Section	Requirement	Pass/Fail
S5.4.3.1	**Snug Fit of Belts**. Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturer's installation instructions.	Pass

Section	Requirement	Yes/No	Pass/Fail
S5.4.3.2	**Direct Restraint**. Belts impose no loads on the child resulting from the mass of the system or the test seat.		Pass
	This restraint has one or more belts that contact the dummy for restraint.	No	If all are "yes," restraint fails S5.4.3.2.
	This restraint has a rigid structure behind the dummy.	Yes	
	The restraint could move relative to the belt.	No	

Section	Requirement	Pass/Fail
S5.4.3.3	**Seating Systems**. Except for harnesses and infant restraints for children up to 10 kg (22 lb), each restraint designed for a child in a seated position and having belts shall provide:	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass/Fail
S5.4.3.4	**Harnesses**. Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap and crotch restraint)	N/A
S5.4.3.3(c)	Prevent standing	N/A

Remarks:

None

Recorded by: Matthew James Date: 1/23/2019

BUCKLE RELEASE - TEST 3

(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034F
Item Code	004-BE1A388C-03-12CFNLTU

Section	Requirement	Measurement	Pass/Fail
S5.4.3.5(a)	**Pre-Impact Release Force**— Releases under 40-62 N (9-14 lb)	L: 53 N (11.9 lb) R: 53 N (11.9 lb)	Pass (1)
S5.4.3.5(b)	**Post-Impact Release Force***— Releases ≤ 71 N (16 lb)	L: 61 N (13.7 lb) R: 61 N (13.7 lb)	Pass (1)
S5.4.3.5(c)	**Minimum Surface Area of Buckle**- ≥ 0.6 in^2 (3.9 cm^2)	0.7 in^2 (4.4 cm^2)	Pass
S5.4.3.5(e)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks:

(1) The buckle is comprised of right and left buckle tangs that do not always release at the same force.

Recorded by: Matthew James Date: 1/23/2019

SYSTEM INTEGRITY - TEST 3

(FMVSS 213, S5.1.1)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034F
Item Code	004-BE1A388C-03-12CFNLTU

S5.1.1 When dynamically tested, the child restraint system shall:

Section	Requirement	Pass/Fail
S5.1.1(a)	**Structural Integrity-** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation exposing surfaces with a radius of less than ¼ in (9.53 mm)	Pass
	Exhibit no partial separation exposing surfaces with protrusions greater than 3/8 in (6.35 mm)	Pass
S5.1.1(b)(1)	**Adjustment Position-** Remain in the same adjustment position during the test that it was in immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings-** Have no exposed opening larger than ¼ inch (9.53 mm) before the test become smaller during the testing as a result of the movement of the seating surface relative to the restraint system as a whole	Pass
S5.1.1(c)	**Seating Surface Angle-** Forward facing restraints do not allow the angle between the system's back support surface and seating surface to be less than 45 degrees at the completion of the test.	Pass

Remarks:

None

Recorded by: Matthew James Date: 1/23/2019

INJURY CRITERIA - TEST 3

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034F
Item Code	008-BE1A388C-03-12CFNLTU

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion**- The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion**- The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds.

Head Injury Criterion Results

Calculated HIC36	Pass/Fail
184	Pass

Chest Injury Criterion Results

Max acceleration lasting 3 ms (g)	Pass/Fail
47	Pass

Remarks:

None

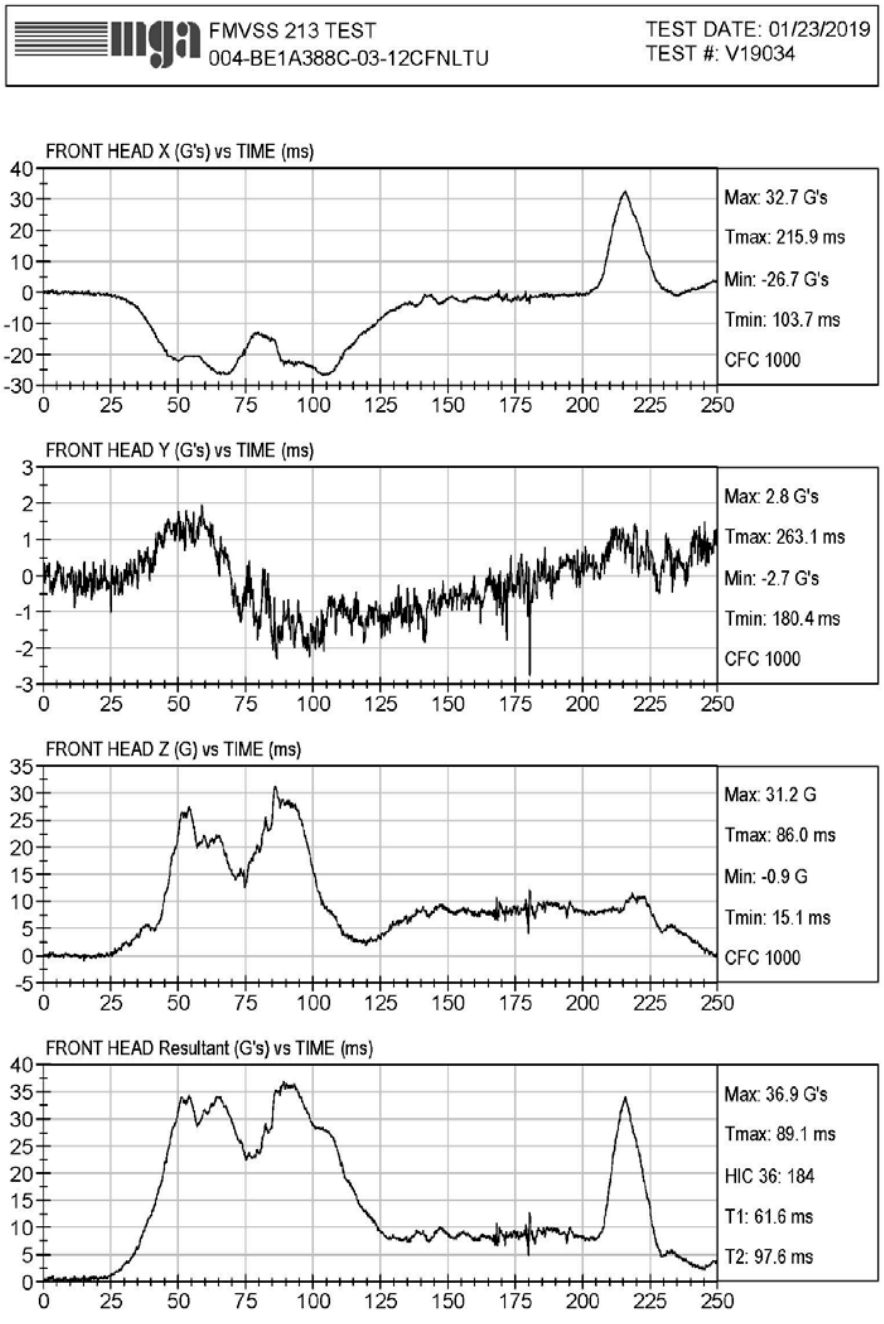
Recorded by: Matthew James Date: 1/23/2019

INJURY CRITERIA - HEAD ACCELERATION PLOTS - TEST 3

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034F
Item Code	008-BE1A388C-03-12CFNLTU

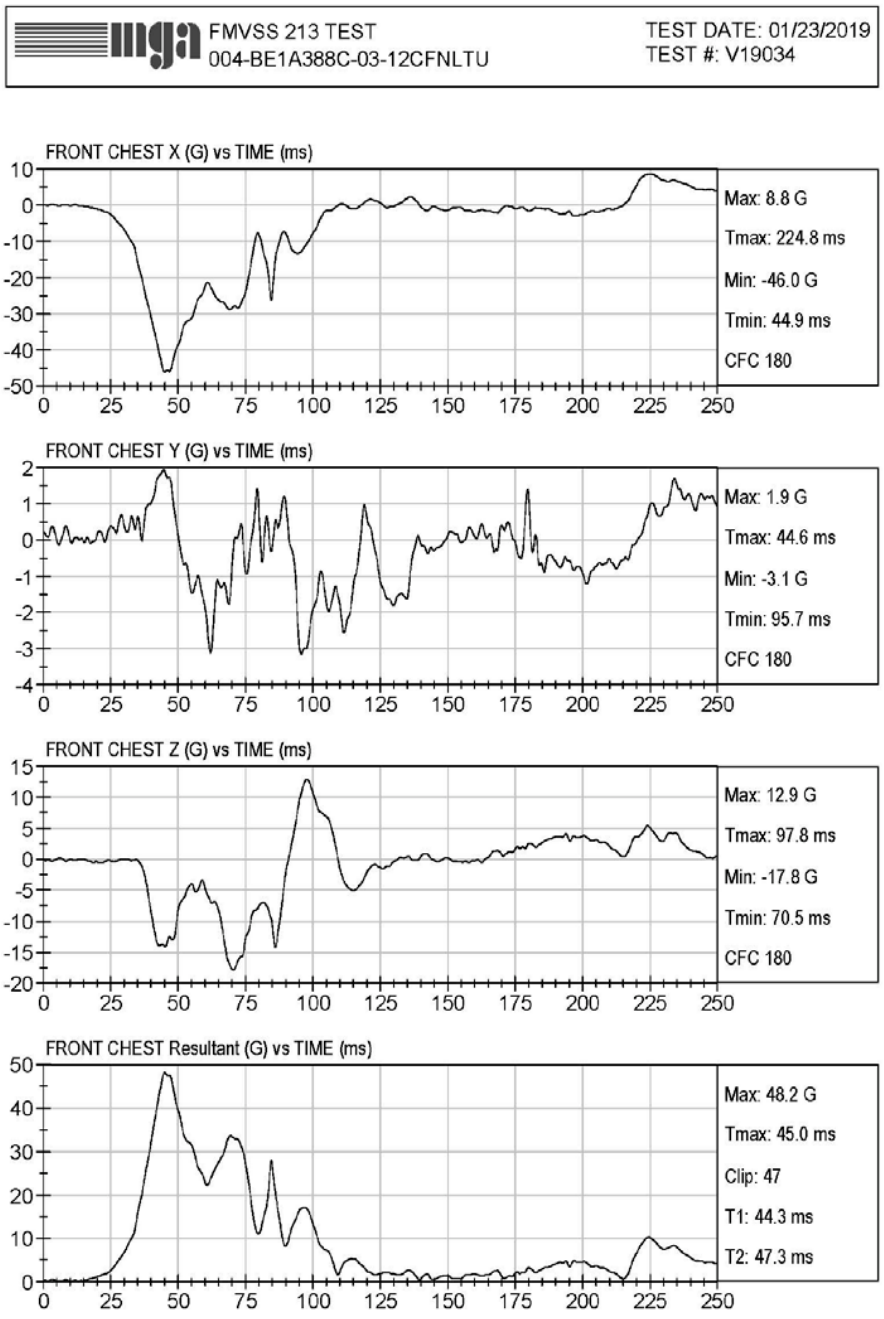


INJURY CRITERIA - CHEST ACCELERATION PLOTS - TEST 3

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034F
Item Code	008-BE1A388C-03-12CFNLTU



OCCUPANT EXCURSION - TEST 3

(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034F
Item Code	008-BE1A388C-03-12CFNLTU

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.1	***Torso retention***—CRS shall retain the torso within system		Pass
S5.1.3.1(a)(1)	***Head excursion***- ≤ 720 mm (28 in) with tether ≤ 813 mm (32 in) no tether	575 mm (22.6 in)	Pass
S5.1.3.1(a)(2)	***Knee target excursion***- ≤ 915 mm (36 in)	579 mm (22.8 in)	Pass
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	≤ 45º	Pass

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.2	***Torso retention***—CRS shall retain the torso within system		N/A
S5.1.3.2	***Head target excursion***-Not beyond restraint's top and forward edge		N/A
S5.1.4	***Back support angle***- Angle between the back support surface and the vertical ≤ 70º	N/A	N/A
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	N/A	N/A

Remarks:

Excursion camera locations (distance forward of point Z) = 813 mm, camera speeds = 1,000 frames per second, and lens focal lengths = 15 mm.

Recorded by: Corey Barlet

Date: 1/23/2019

DYNAMIC IMPACT TEST CONDITIONS - TEST 4

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034R
Item Code	004-BE1A388C-04-3H3FNLTU

Pulse:

Test Configuration (I or II)	I
Nominal Velocity (km/h)	48 (+0/-3)

Laboratory Ambient Conditions During Testing:

Temperature (ºC)	21.0
Relative Humidity (%)	19

Dummy:

Dummy Description	Hybrid III 3 Year Old (Part 572P)
Dummy Serial Number	031

Restraint Installation:

Installed Direction	Forward-Facing
Base Usage	Other Configuration
Attachment Method	Lower Anchor
Tether Usage	Yes
Seat Back Position	Upright
Shoulder Harness Position	Slot 9 of 14, Counted from the Bottom
Buckle Harness Position	Slot 1 of 2, Counted from the Seat Back Outward
Recline Position	Position 1 of 7, Counted from Most Upright
Positioning Pillow	Removed
Shoulder Harness Covers	Installed
Lock-Offs Used	Center
Impact Absorbing	Installed
Chest Pads	Installed

Remarks:

Pre-test and post-test photographs are presented in Section 9.

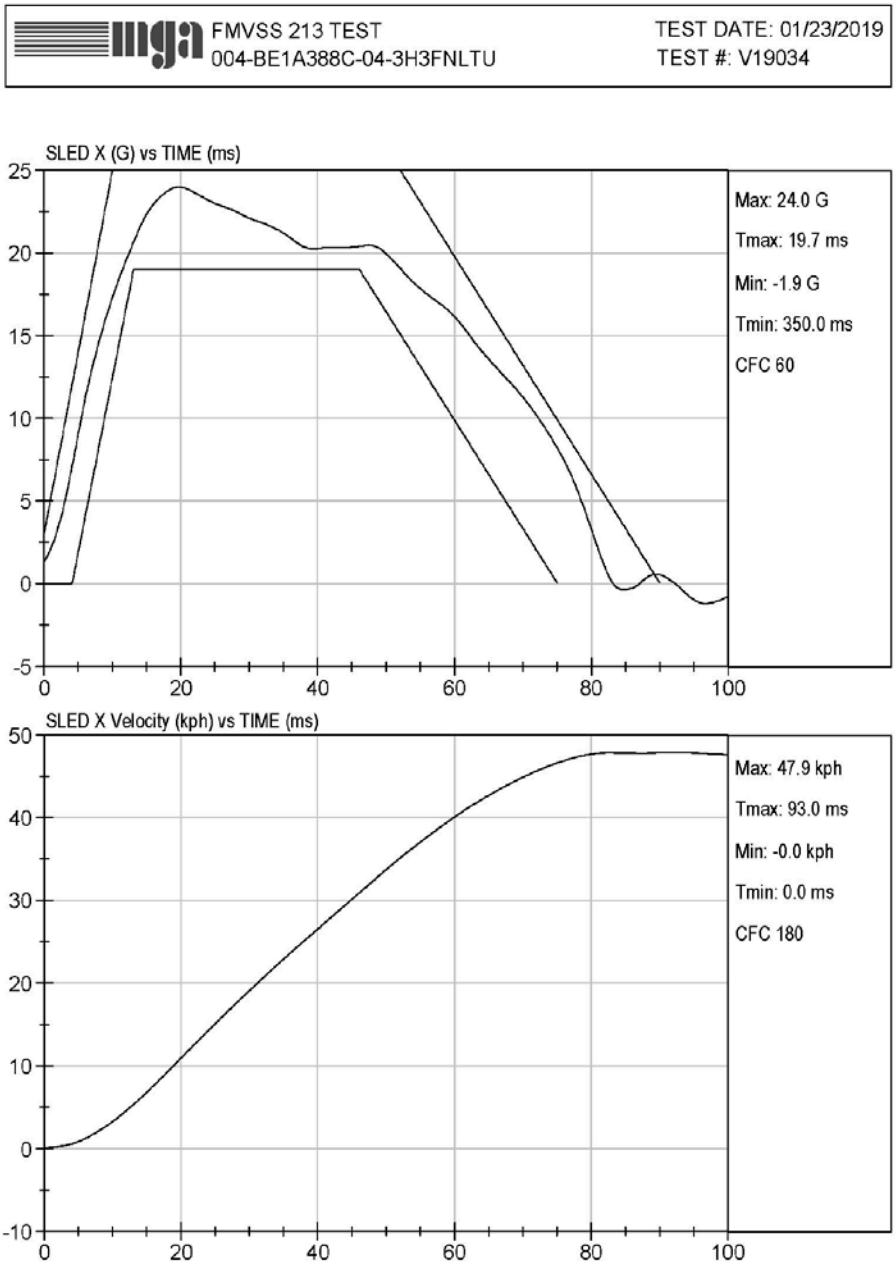
Recorded by: Matthew James Date: 1/23/2019

DYNAMIC IMPACT SLED PULSE - TEST 4

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034R
Item Code	004-BE1A388C-04-3H3FNLTU



Recorded by: Matthew James Date: 1/23/2019

BELT RESTRAINT - TEST 4

(FMVSS 213, S5.4.3)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034R
Item Code	004-BE1A388C-04-3H3FNLTU

Section	Requirement	Pass/Fail
S5.4.3.1	**Snug Fit of Belts**. Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturer's installation instructions.	Pass

Section	Requirement	Yes/No	Pass/Fail
S5.4.3.2	**Direct Restraint**. Belts impose no loads on the child resulting from the mass of the system or the test seat.		Pass
	This restraint has one or more belts that contact the dummy for restraint.	No	If all are "yes," restraint fails S5.4.3.2.
	This restraint has a rigid structure behind the dummy.	Yes	
	The restraint could move relative to the belt.	No	

Section	Requirement	Pass/Fail
S5.4.3.3	**Seating Systems**. Except for harnesses and infant restraints for children up to 10 kg (22 lb), each restraint designed for a child in a seated position and having belts shall provide:	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass/Fail
S5.4.3.4	**Harnesses**. Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap and crotch restraint)	N/A
S5.4.3.3(c)	Prevent standing	N/A

Remarks:

None

Recorded by: Corey Barlet

Date: 1/23/2019

BUCKLE RELEASE - TEST 4

(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034R
Item Code	004-BE1A388C-04-3H3FNLTU

Section	Requirement	Measurement	Pass/Fail
S5.4.3.5(a)	**Pre-Impact Release Force**— Releases under 40-62 N (9-14 lb)	L: 55 N (12.4 lb) R: 55 N (12.4 lb)	Pass (1)
S5.4.3.5(b)	**Post-Impact Release Force***— Releases ≤ 71 N (16 lb)	L: 58 N (13.0 lb) R: 58 N (13.0 lb)	Pass (1)
S5.4.3.5(c)	**Minimum Surface Area of Buckle**- ≥ 0.6 in^2 (3.9 cm^2)	0.7 in^2 (4.4 cm^2)	Pass
S5.4.3.5(e)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks:

(1) The buckle is comprised of right and left buckle tangs that do not always release at the same force.

Recorded by: Corey Barlet

Date: 1/23/2019

SYSTEM INTEGRITY - TEST 4

(FMVSS 213, S5.1.1)

Report No.:	213-MGA-19-004	Sled Test No.	V19034R
Test Date:	1/23/2019	Item Code	004-BE1A388C-04-3H3FNLTU

S5.1.1 When dynamically tested, the child restraint system shall:

Section	Requirement	Pass/Fail
S5.1.1(a)	**Structural Integrity-** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation exposing surfaces with a radius of less than ¼ in (9.53 mm)	Pass
	Exhibit no partial separation exposing surfaces with protrusions greater than 3/8 in (6.35 mm)	Pass
S5.1.1(b)(1)	**Adjustment Position-** Remain in the same adjustment position during the test that it was in immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings-** Have no exposed opening larger than ¼ inch (9.53 mm) before the test become smaller during the testing as a result of the movement of the seating surface relative to the restraint system as a whole	Pass
S5.1.1(c)	**Seating Surface Angle-** Forward facing restraints do not allow the angle between the system's back support surface and seating surface to be less than 45 degrees at the completion of the test.	Pass

Remarks:

None

Recorded by: Corey Barlet Date: 1/23/2019

INJURY CRITERIA - TEST 4

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034R
Item Code	004-BE1A388C-04-3H3FNLTU

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion**- The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion**- The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds.

Head Injury Criterion Results

Calculated HIC36	Pass/Fail
328	Pass

Chest Injury Criterion Results

Max acceleration lasting 3 ms (g)	Pass/Fail
47	Pass

Remarks:

None

Recorded by: Corey Barlet

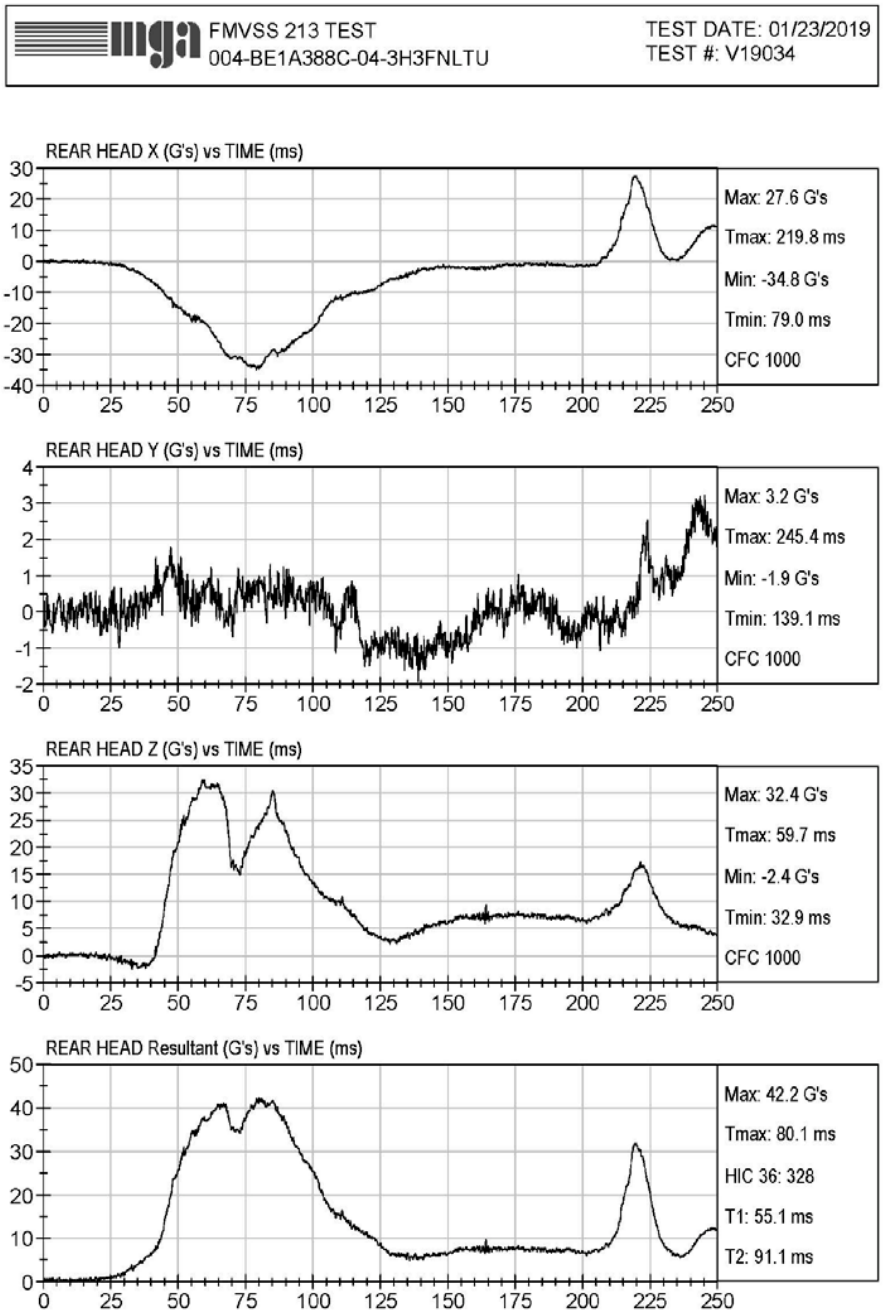
Date: 1/23/2019

INJURY CRITERIA - HEAD ACCELERATION PLOTS - TEST 4

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034R
Item Code	004-BE1A388C-04-3H3FNLTU

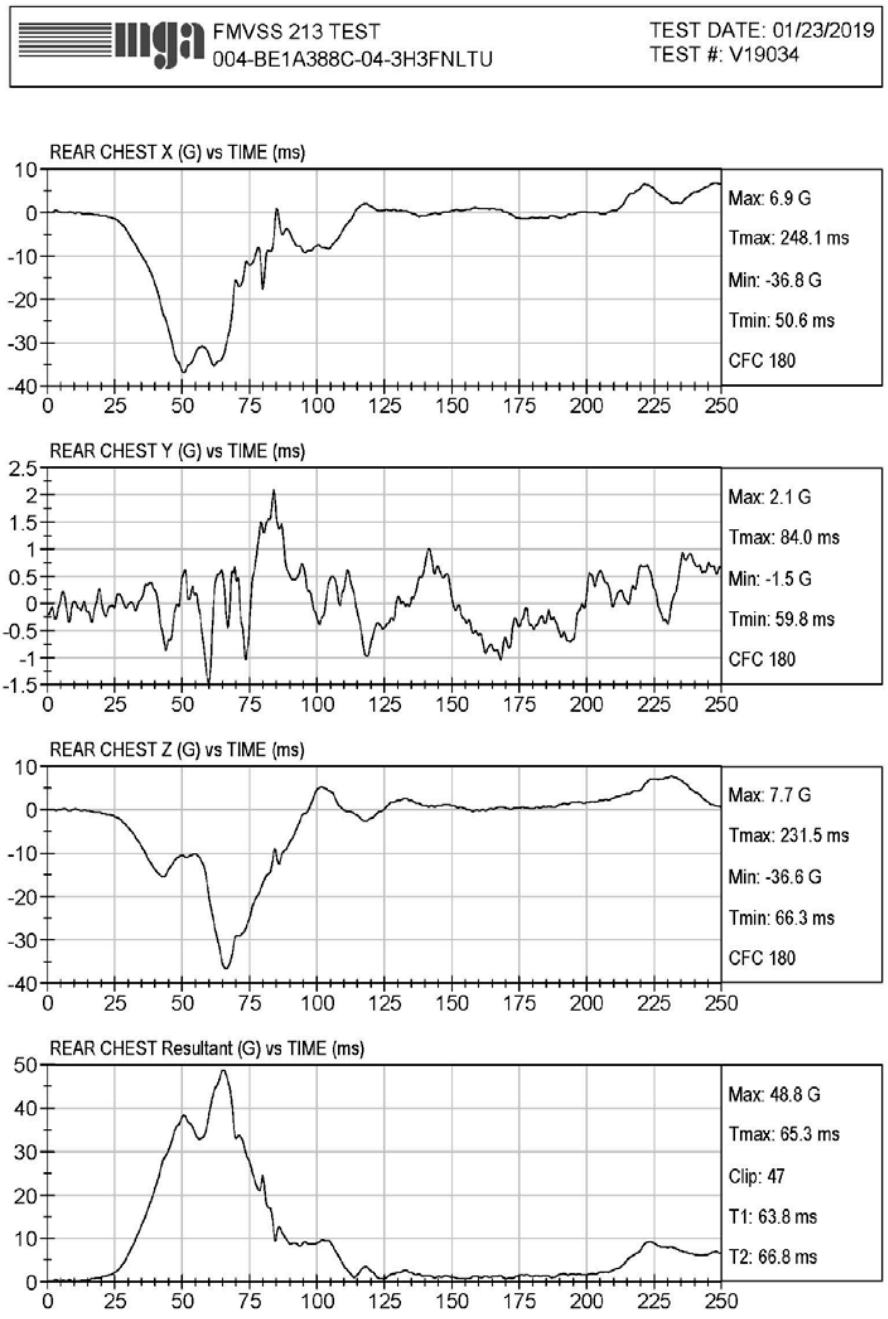


INJURY CRITERIA - CHEST ACCELERATION PLOTS - TEST 4

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034R
Item Code	004-BE1A388C-04-3H3FNLTU



OCCUPANT EXCURSION - TEST 4

(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-MGA-19-004
Test Date:	1/23/2019

Sled Test No.	V19034R
Item Code	004-BE1A388C-04-3H3FNLTU

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.1	***Torso retention***—CRS shall retain the torso within system		Pass
S5.1.3.1(a)(1)	***Head excursion***- ≤ 720 mm (28 in) with tether ≤ 813 mm (32 in) no tether	625 mm (24.6 in)	Pass
S5.1.3.1(a)(2)	***Knee target excursion***- ≤ 915 mm (36 in)	692 mm (27.2 in)	Pass
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	≤ 45º	Pass

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.2	***Torso retention***—CRS shall retain the torso within system		N/A
S5.1.3.2	***Head target excursion***-Not beyond restraint's top and forward edge		N/A
S5.1.4	***Back support angle***- Angle between the back support surface and the vertical ≤ 70º	N/A	N/A
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	N/A	N/A

Remarks:

Excursion camera locations (distance forward of point Z) = 813 mm, camera speeds = 1,000 frames per second, and lens focal lengths = 15 mm.

Recorded by: Corey Barlet

Date: 1/23/2019

DYNAMIC IMPACT TEST CONDITIONS - TEST 5

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066F
Item Code	004-BE1A388C-05-6H2FN2TU

Pulse:

Test Configuration (I or II)	I
Nominal Velocity (km/h)	48 (+0/-3)

Laboratory Ambient Conditions During Testing:

Temperature (ºC)	20.8
Relative Humidity (%)	28

Dummy:

Dummy Description	Hybrid II 6 Year Old (Part 572I)
Dummy Serial Number	213

Restraint Installation:

Installed Direction	Forward-Facing
Base Usage	Other Configuration
Attachment Method	Lap Belt
Tether Usage	Yes
Seat Back Position	Upright
Shoulder Harness Position	Slot 12 of 14, Counted from the Bottom
Buckle Harness Position	Slot 1 of 2, Counted from the Seat Back Outward
Recline Position	Position 1 of 7, Counted from Most Upright
Positioning Pillow	Removed
Shoulder Harness Covers	Installed
Lock-Offs Used	Center
Impact Absorbing	Installed
Chest Pads	Installed

Remarks:

Pre-test and post-test photographs are presented in Section 9.

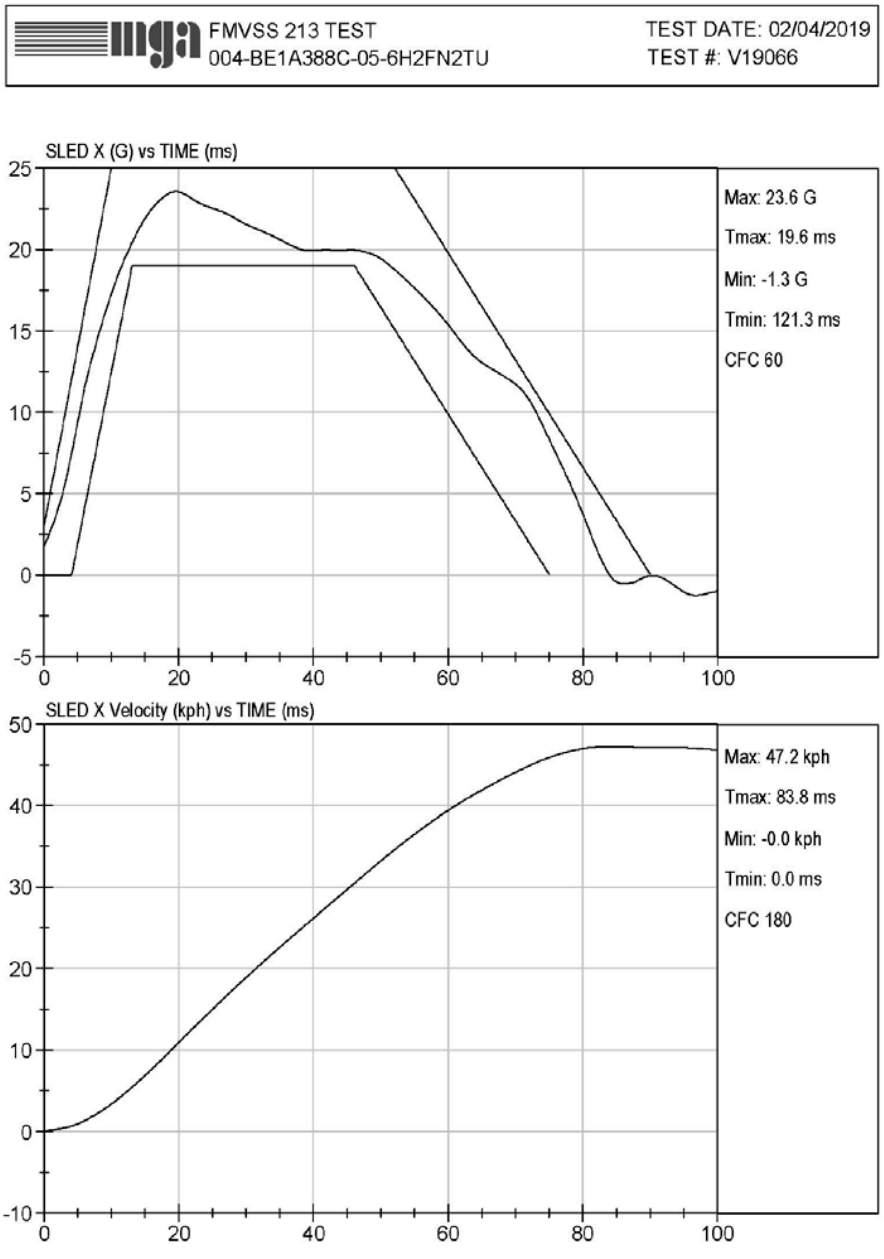
Recorded by: Brian Lorelei Murray Date: 2/4/2019

DYNAMIC IMPACT SLED PULSE - TEST 5

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066F
Item Code	004-BE1A388C-05-6H2FN2TU



BELT RESTRAINT - TEST 5

(FMVSS 213, S5.4.3)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066F
Item Code	004-BE1A388C-05-6H2FN2TU

Section	Requirement	Pass/Fail
S5.4.3.1	**Snug Fit of Belts**. Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturer's installation instructions.	Pass

Section	Requirement	Yes/No	Pass/Fail
S5.4.3.2	**Direct Restraint**. Belts impose no loads on the child resulting from the mass of the system or the test seat.		Pass
	This restraint has one or more belts that contact the dummy for restraint.	No	If all are "yes," restraint fails S5.4.3.2.
	This restraint has a rigid structure behind the dummy.	Yes	
	The restraint could move relative to the belt.	No	

Section	Requirement	Pass/Fail
S5.4.3.3	**Seating Systems**. Except for harnesses and infant restraints for children up to 10 kg (22 lb), each restraint designed for a child in a seated position and having belts shall provide:	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass/Fail
S5.4.3.4	**Harnesses**. Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap and crotch restraint)	N/A
S5.4.3.3(c)	Prevent standing	N/A

Remarks:

None

Recorded by: Brian Lovelace Murray Date: 2/4/2019

BUCKLE RELEASE - TEST 5

(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066F
Item Code	004-BE1A388C-05-6H2FN2TU

Section	Requirement	Measurement	Pass/Fail
S5.4.3.5(a)	**Pre-Impact Release Force**— Releases under 40-62 N (9-14 lb)	L: 54 N (12.1 lb) R: 54 N (12.1 lb)	Pass (1)
S5.4.3.5(b)	**Post-Impact Release Force***— Releases ≤ 71 N (16 lb)	L: 58 N (13.0 lb) R: 58 N (13.0 lb)	Pass (1)
S5.4.3.5(c)	**Minimum Surface Area of Buckle**- ≥ 0.6 in^2 (3.9 cm^2)	0.7 in^2 (4.4 cm^2)	Pass
S5.4.3.5(e)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks:

(1) The buckle is comprised of right and left buckle tangs that do not always release at the same force.

Recorded by: Brian Lovelace Murray Date: 2/4/2019

SYSTEM INTEGRITY - TEST 5

(FMVSS 213, S5.1.1)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066F
Item Code	004-BE1A388C-05-6H2FN2TU

S5.1.1 When dynamically tested, the child restraint system shall:

Section	Requirement	Pass/Fail
S5.1.1(a)	**Structural Integrity-** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation exposing surfaces with a radius of less than ¼ in (9.53 mm)	Pass
	Exhibit no partial separation exposing surfaces with protrusions greater than 3/8 in (6.35 mm)	Pass
S5.1.1(b)(1)	**Adjustment Position-** Remain in the same adjustment position during the test that it was in immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings-** Have no exposed opening larger than ¼ inch (9.53 mm) before the test become smaller during the testing as a result of the movement of the seating surface relative to the restraint system as a whole	Pass
S5.1.1(c)	**Seating Surface Angle-** Forward facing restraints do not allow the angle between the system's back support surface and seating surface to be less than 45 degrees at the completion of the test.	Pass

Remarks:

Recorded by: Brian Lovelace Murray Date: 2/4/2019

INJURY CRITERIA - TEST 5

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066F
Item Code	004-BE1A388C-05-6H2FN2TU

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion**- The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion**- The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds.

Head Injury Criterion Results

Calculated HIC36	Pass/Fail
400	Pass

Chest Injury Criterion Results

Max acceleration lasting 3 ms (g)	Pass/Fail
54	Pass

Remarks:

None

.

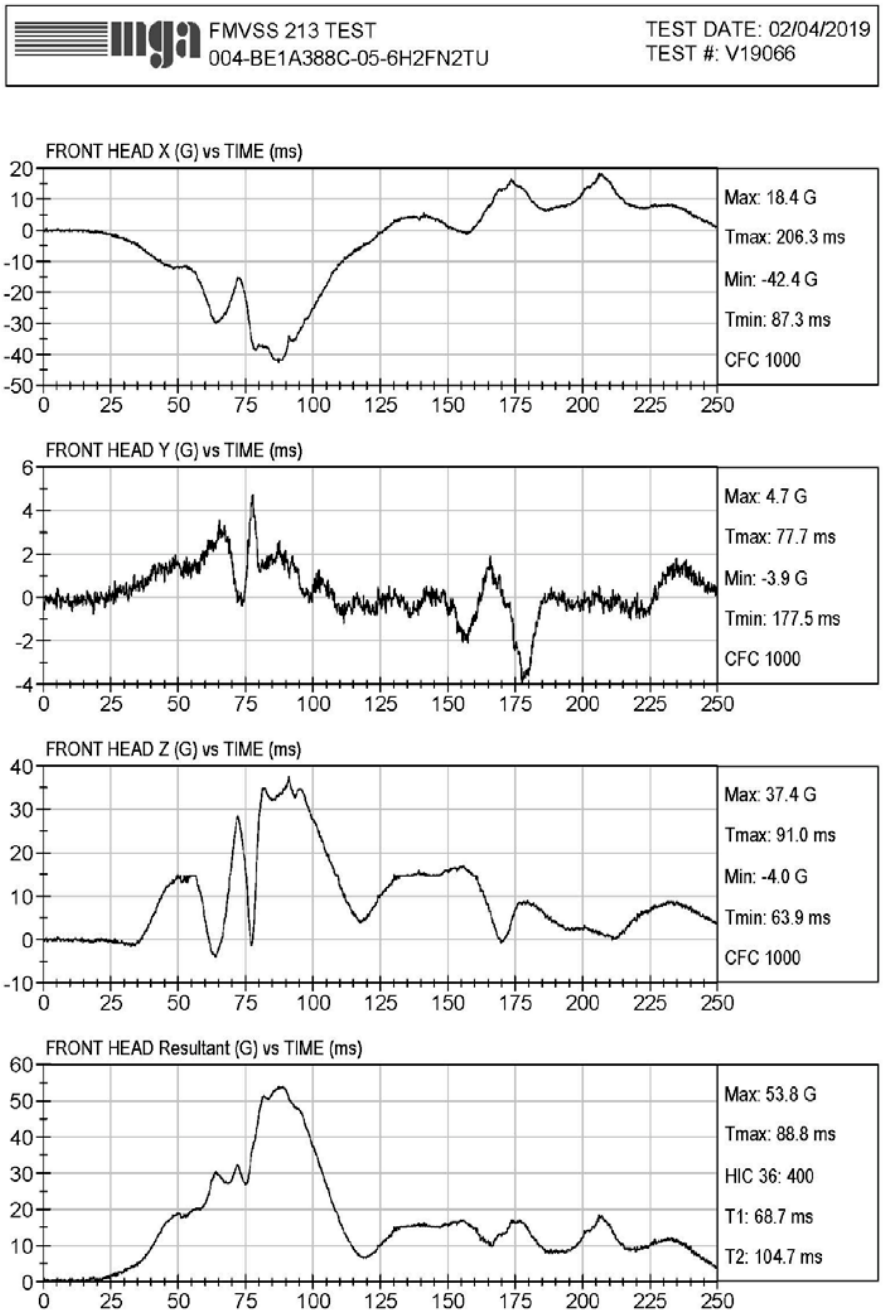
Recorded by: Brian Lovelace Murray Date: 2/4/2019

INJURY CRITERIA - HEAD ACCELERATION PLOTS - TEST 5

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066F
Item Code	004-BE1A388C-05-6H2FN2TU

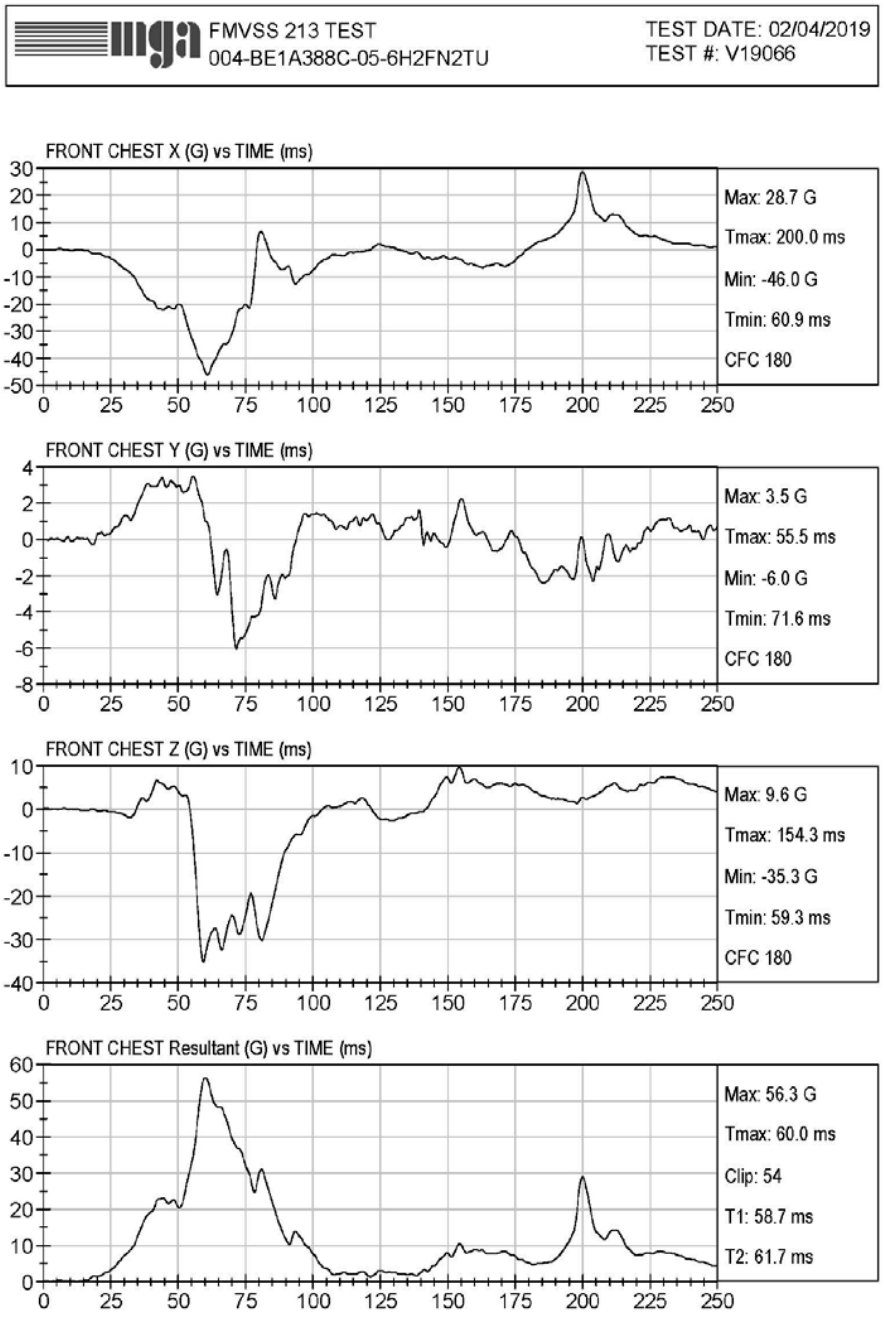


INJURY CRITERIA - CHEST ACCELERATION PLOTS - TEST 5

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066F
Item Code	004-BE1A388C-05-6H2FN2TU



OCCUPANT EXCURSION - TEST 5

(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066F
Item Code	004-BE1A388C-05-6H2FN2TU

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.1	***Torso retention***—CRS shall retain the torso within system		Pass
S5.1.3.1(a)(1)	***Head excursion***- ≤ 720 mm (28 in) with tether ≤ 813 mm (32 in) no tether	556 mm (21.9 in)	Pass
S5.1.3.1(a)(2)	***Knee target excursion***- ≤ 915 mm (36 in)	805 mm (31.7 in)	Pass
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	≤ 45º	Pass

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.2	***Torso retention***—CRS shall retain the torso within system		N/A
S5.1.3.2	***Head target excursion***-Not beyond restraint's top and forward edge		N/A
S5.1.4	***Back support angle***- Angle between the back support surface and the vertical ≤ 70º	N/A	N/A
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	N/A	N/A

Remarks:

Excursion camera locations (distance forward of point Z) = 813 mm, camera speeds = 1,000 frames per second, and lens focal lengths = 15 mm.

Recorded by: Corey Barlet

Date: 2/4/2019

DYNAMIC IMPACT TEST CONDITIONS - TEST 6

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066R
Item Code	004-BE1A388C-06-6W3FN2TU

Pulse:

Test Configuration (I or II)	I
Nominal Velocity (km/h)	48 (+0/-3)

Laboratory Ambient Conditions During Testing:

Temperature (ºC)	20.8
Relative Humidity (%)	28

Dummy:

Dummy Description	Hybrid III 6 Year Old Weighted (Part 572S)
Dummy Serial Number	127W

Restraint Installation:

Installed Direction	Forward-Facing
Base Usage	Other Configuration
Attachment Method	Lap Belt
Tether Usage	Yes
Seat Back Position	Upright
Shoulder Harness Position	Slot 12 of 14, Counted from the Bottom
Buckle Harness Position	Slot 2 of 2, Counted from the Seat Back Outward
Recline Position	Position 1 of 7, Counted from Most Upright
Positioning Pillow	Removed
Shoulder Harness Covers	Installed
Lock-Offs Used	Center
Impact Absorbing	Installed
Chest Pads	Installed

Remarks:

Pre-test and post-test photographs are presented in Section 9.

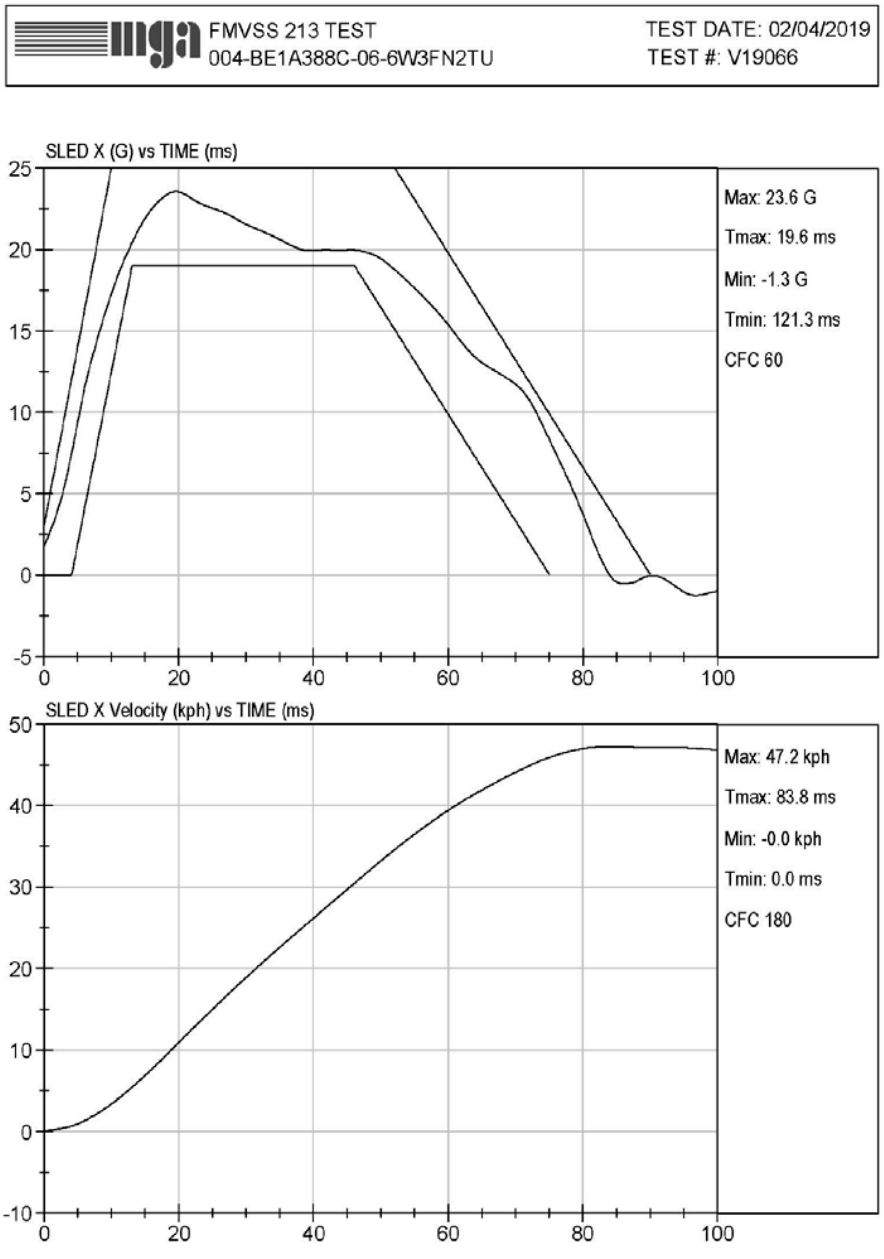
Recorded by: Corey Barlet Date: 2/4/2019

DYNAMIC IMPACT SLED PULSE - TEST 6

(FMVSS 213, S6.1)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066R
Item Code	004-BE1A388C-06-6W3FN2TU



BELT RESTRAINT - TEST 6

(FMVSS 213, S5.4.3)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066R
Item Code	004-BE1A388C-06-6W3FN2TU

Section	Requirement	Pass/Fail
S5.4.3.1	**Snug Fit of Belts**. Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturer's installation instructions.	Pass

Section	Requirement	Yes/No	Pass/Fail
S5.4.3.2	**Direct Restraint**. Belts impose no loads on the child resulting from the mass of the system or the test seat.		Pass
	This restraint has one or more belts that contact the dummy for restraint.	No	If all are "yes," restraint fails S5.4.3.2.
	This restraint has a rigid structure behind the dummy.	Yes	
	The restraint could move relative to the belt.	No	

Section	Requirement	Pass/Fail
S5.4.3.3	**Seating Systems**. Except for harnesses and infant restraints for children up to 10 kg (22 lb), each restraint designed for a child in a seated position and having belts shall provide:	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass/Fail
S5.4.3.4	**Harnesses**. Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap and crotch restraint)	N/A
S5.4.3.3(c)	Prevent standing	N/A

Remarks:

None

Recorded by: Corey Barlet Date: 2/4/2019

BUCKLE RELEASE - TEST 6

(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066R
Item Code	004-BE1A388C-06-6W3FN2TU

Section	Requirement	Measurement	Pass/Fail
S5.4.3.5(a)	**Pre-Impact Release Force**— Releases under 40-62 N (9-14 lb)	L: 53 N (11.9 lb) R: 53 N (11.9 lb)	Pass (1)
S5.4.3.5(b)	**Post-Impact Release Force***— Releases ≤ 71 N (16 lb)	L: 56 N (12.6 lb) R: 56 N (12.6 lb)	Pass (1)
S5.4.3.5(c)	**Minimum Surface Area of Buckle**- ≥ 0.6 in^2 (3.9 cm^2)	0.7 in^2 (4.4 cm^2)	Pass
S5.4.3.5(e)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks:

(1) The buckle is comprised of right and left buckle tangs that do not always release at the same force.

Recorded by: Corey Barlet

Date: 2/4/2019

SYSTEM INTEGRITY - TEST 6

(FMVSS 213, S5.1.1)

Report No.:	213-MGA-19-004	Sled Test No.	V19066R
Test Date:	2/4/2019	Item Code	004-BE1A388C-06-6W3FN2TU

S5.1.1 When dynamically tested, the child restraint system shall:

Section	Requirement	Pass/Fail
S5.1.1(a)	**Structural Integrity-** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation exposing surfaces with a radius of less than ¼ in (9.53 mm)	Pass
	Exhibit no partial separation exposing surfaces with protrusions greater than 3/8 in (6.35 mm)	Pass
S5.1.1(b)(1)	**Adjustment Position-** Remain in the same adjustment position during the test that it was in immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings-** Have no exposed opening larger than ¼ inch (9.53 mm) before the test become smaller during the testing as a result of the movement of the seating surface relative to the restraint system as a whole	Pass
S5.1.1(c)	**Seating Surface Angle-** Forward facing restraints do not allow the angle between the system's back support surface and seating surface to be less than 45 degrees at the completion of the test.	Pass

Remarks:

None

Recorded by: Corey Barlet Date: 2/4/2019

INJURY CRITERIA - TEST 6

(FMVSS 213, S5.1.2)

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066R
Item Code	004-BE1A388C-06-6W3FN2TU

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion**- The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion**- The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds.

Head Injury Criterion Results

Calculated HIC36	Pass/Fail
N/A	N/A

Chest Injury Criterion Results

Max acceleration lasting 3 ms (g)	Pass/Fail
N/A	N/A

Remarks:

None

.

Recorded by: Corey Barlet

Date: 2/4/2019

OCCUPANT EXCURSION - TEST 6

(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-MGA-19-004
Test Date:	2/4/2019

Sled Test No.	V19066R
Item Code	004-BE1A388C-06-6W3FN2TU

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.1	***Torso retention***—CRS shall retain the torso within system		N/A
S5.1.3.1(a)(1)	***Head excursion***- ≤ 720 mm (28 in) with tether ≤ 813 mm (32 in) no tether	N/A	N/A
S5.1.3.1(a)(2)	***Knee target excursion***- ≤ 915 mm (36 in)	N/A	N/A
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	N/A	N/A

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass/Fail
S5.1.3.2	***Torso retention***—CRS shall retain the torso within system		N/A
S5.1.3.2	***Head target excursion***-Not beyond restraint's top and forward edge		N/A
S5.1.4	***Back support angle***- Angle between the back support surface and the vertical ≤ 70º	N/A	N/A
S5.2.1.1(c)	***Head-torso angle***- rearward change ≤ 45º	N/A	N/A

Remarks:

Excursion camera locations (distance forward of point Z) = 813 mm, camera speeds = 1,000 frames per second, and lens focal lengths = 15 mm.

Recorded by: Corey Barlet

Date: 2/4/2019

AIRCRAFT PASSENGER SEAT INVERSION - TEST A

(FMVSS 213, S8.2, S8.2.5, S8.2.6)

Report No.:	213-MGA-19-004
Test Date:	12/3/2018

Test No.	A
Item Code	004-BE1A388C-Inv01-NINRN2FR

Dummy:

Dummy Description	CAMI Newborn (Part 572K)
Dummy Serial Number	004

Restraint Installation:

Installed Direction	Rear-Facing
Base Usage	Other Configuration
Attachment Method	Lap Belt
Tether Usage	No
Seat Back Position	Reclined
Shoulder Harness Position	Slot 1 of 14, Counted from the Bottom
Buckle Harness Position	Slot 1 of 2, Counted from the Seat Back Outward

ROTATION ABOUT Y-AXIS (FORWARD)

Section	Requirement	Pass/Fail
S8.2.5	The test dummy shall be retained within the CRS	Pass
S8.2.5	The CRS shall be retained within the aircraft seat	Pass

ROTATION ABOUT X-AXIS (LATERAL)

Section	Requirement	Pass/Fail
S8.2.6	The test dummy shall be retained within the CRS	Pass
S8.2.6	The CRS shall be retained within the aircraft seat	Pass

Remarks:

None

Recorded by: Corey Barlet

Date: 12/3/2018

AIRCRAFT PASSENGER SEAT INVERSION - TEST B

(FMVSS 213, S8.2, S8.2.5, S8.2.6)

Report No.:	213-MGA-19-004
Test Date:	12/3/2018

Test No.	B
Item Code	004-BE1A388C-Inv02-12CFN2FU

Dummy:

Dummy Description	CRABI 12 Month Old (Part 572R)
Dummy Serial Number	082

Restraint Installation:

Installed Direction	Forward-Facing
Base Usage	Other Configuration
Attachment Method	Lap Belt
Tether Usage	No
Seat Back Position	Upright
Shoulder Harness Position	Slot 7 of 14, Counted from the Bottom
Buckle Harness Position	Slot 1 of 2, Counted from the Seat Back Outward

ROTATION ABOUT Y-AXIS (FORWARD)

Section	Requirement	Pass/Fail
S8.2.5	The test dummy shall be retained within the CRS	Pass
S8.2.5	The CRS shall be retained within the aircraft seat	Pass

ROTATION ABOUT X-AXIS (LATERAL)

Section	Requirement	Pass/Fail
S8.2.6	The test dummy shall be retained within the CRS	Pass
S8.2.6	The CRS shall be retained within the aircraft seat	Pass

Remarks:

None

Recorded by: Corey Barlet Date: 12/3/2018

AIRCRAFT PASSENGER SEAT INVERSION - TEST C

(FMVSS 213, S8.2, S8.2.5, S8.2.6)

Report No.:	213-MGA-19-004	Test No.	C
Test Date:	12/3/2018	Item Code	004-BE1A388C-Inv03-3H3FN2FU

Dummy:

Dummy Description	Hybrid IIII 3 Year Old (Part 572P)
Dummy Serial Number	031

Restraint Installation:

Installed Direction	Forward-Facing
Base Usage	Other Configuration
Attachment Method	Lap Belt
Tether Usage	No
Seat Back Position	Upright
Shoulder Harness Position	Slot 9 of 14, Counted from the Bottom
Buckle Harness Position	Slot 2 of 2, Counted from the Seat Back Outward

ROTATION ABOUT Y-AXIS (FORWARD)

Section	Requirement	Pass/Fail
S8.2.5	The test dummy shall be retained within the CRS	Pass
S8.2.5	The CRS shall be retained within the aircraft seat	Pass

ROTATION ABOUT X-AXIS (LATERAL)

Section	Requirement	Pass/Fail
S8.2.6	The test dummy shall be retained within the CRS	Pass
S8.2.6	The CRS shall be retained within the aircraft seat	Pass

Remarks:

None

Recorded by: Corey Barlet Date: 12/3/2018

SECTION 6

INTERPRETATION AND/OR DEVIATIONS FROM FMVSS 213

There were no deviations from FMVSS 213.

SECTION 7
TEST CONFIGURATION CODES

The following table explains the code used to describe the test configurations in this report. For example, the test configuration code 12CFNLFU indicates that the child restraint sled test was conducted using a 12-month old CRABI dummy, installed in the forward facing direction with no optional base, the latch system, no tether, and in the upright position.

Dummy Description	**NIN** – Newborn Infant, CAMI
	12C – 12 MO, CRABI
	3H3 – 3 YO, Hybrid III
	6H2 – 6YO Hybrid II
	6H3 – 6YO, Hybrid III
	6W3 – 6 YO, Weighted Hybrid III
	TH3 – 10 YO, Hybrid III
Installed Direction	**R** – Rear Facing
	F – Forward Facing
	S – Faces Sideways (Carbeds)
Base Usage	**B** – Optional Base Used with Infant CRS
	N – All Other Configurations
Attachment Method	**L** – LATCH
	2 – Lap Belt
	3 – Lap and Shoulder Belt
	M – Seat Back Mount
Tether Usage	**T** – Tether
	F – Tether Free
Seat Back Position	**U** – Upright
	R – Reclined
	B – Booster with Back
	N – Booster without Back
	F – Flat

SECTION 8
INSTRUMENTATION CALIBRATION

CERTIFICATION INSTRUMENTATION

Sled Accelerometers	S/N	Manufacturer	Model Number	Calibration Date	Due Date
Primary	1452975	Honeywell	JTF 060-F482-05	11/16/18	5/18/19
Redundant	1452976	Honeywell	JTF 060-F482-05	11/16/18	5/18/19

Temperature/Humidity Logger	S/N	Manufacturer	Model Number	Calibration Date	Due Date
Accuracy 0.5°F, 2% RH	17092102	Vaisala	SP-2000-20R	5/10/18	5/10/19

Force Gauge	S/N	Manufacturer	Model Number	Calibration Date	Due Date
100 lb, Accuracy ± 0.1 lb	213343	Wagner	FDIX 100	11/14/18	11/14/19

Scale	S/N	Manufacturer	Model Number	Calibration Date	Due Date
100 lb, Accuracy ± 0.1 lb	16394186GM	Ohaus	D100QL	5/10/18	5/10/19

Inclinometer	S/N	Manufacturer	Model Number	Calibration Date	Due Date
Accuracy ± 0.1°	00002590	Mitutoyo	Pro 360	11/15/18	11/15/19

Caliper	S/N	Manufacturer	Model Number	Calibration Date	Due Date
6 in, Accuracy ± .001in	2G199506	Brown & Sharpe	590090	5/8/18	5/8/19

Tape Measurers	S/N	Manufacturer	Model Number	Calibration Date	Due Date
3.5 m/12 ft	00013	Stanley	33-428	5/8/18	5/8/19
3.5 m/12 ft	00011	Stanley	33-428	11/19/18	11/19/19

TEST DUMMY INSTRUMENTATION

SERIAL NUMBER 083

Sensor		S/N	Manufacturer	Model Number	Calibration Date	Due Date
Head Accelerometers	X	P79674	Endevco	7264C-2KTZ-2-360M17	11/20/18	5/22/19
	Y	P79762	Endevco	7264C-2KTZ-2-360M17	11/20/18	5/22/19
	Z	P79764	Endevco	7264C-2KTZ-2-360M17	11/20/18	5/22/19
Chest Accelerometers	X	P96871	Endevco	7264C-2KTZ-360M17	11/20/18	5/22/19
	Y	T12064	Endevco	7264C-2KTZ-360M17	11/20/18	5/22/19
	Z	T12066	Endevco	7264C-2KTZ-360M17	11/20/18	5/22/19

SERIAL NUMBER 031

Sensor		S/N	Manufacturer	Model Number	Calibration Date	Due Date
Head Accelerometers	X	P79664	Endevco	7264C-2KTZ-2-360M17	1/8/19	7/10/19
	Y	P79665	Endevco	7264C-2KTZ-2-360M17	1/8/19	7/10/19
	Z	P79667	Endevco	7264C-2KTZ-2-360M17	1/8/19	7/10/19
Chest Accelerometers	X	P85708	Endevco	7264C-2KTZ-360M17	1/8/19	7/10/19
	Y	P85709	Endevco	7264C-2KTZ-360M17	1/8/19	7/10/19
	Z	P85710	Endevco	7264C-2KTZ-360M17	1/8/19	7/10/19

SERIAL NUMBER 213

Sensor		S/N	Manufacturer	Model Number	Calibration Date	Due Date
Head Accelerometers	X	P91766	Endevco	7264C-2KTZ-360M17	1/10/19	7/12/19
	Y	P91773	Endevco	7264C-2KTZ-360M17	1/10/19	7/12/19
	Z	P91774	Endevco	7264C-2KTZ-360M17	1/10/19	7/12/19
Chest Accelerometers	X	P96044	Endevco	7264C-2KTZ-360MI7	1/10/19	7/12/19
	Y	P96045	Endevco	7264C-2KTZ-360M17	1/10/19	7/12/19
	Z	P97407	Endevco	7264C-2KTZ-360M17	1/10/19	7/12/19

SECTION 9
PHOTOGRAPHS

SLED BUCK - STANDARD BENCH SEAT AND CONFIGURATION
Report No.: 213-MGA-19-004

Item Code: 004-BE1A388C-01-12CRNLFR
Item Code: 004-BE1A388C-02-NINRNLFR
Item Code: 004-BE1A388C-03-12CFNLTU
Item Code: 004-BE1A388C-04-3H3FNLTU
Item Code: 004-BE1A388C-05-6H2FN2TU
Item Code: 004-BE1A388C-06-6W3FN2TU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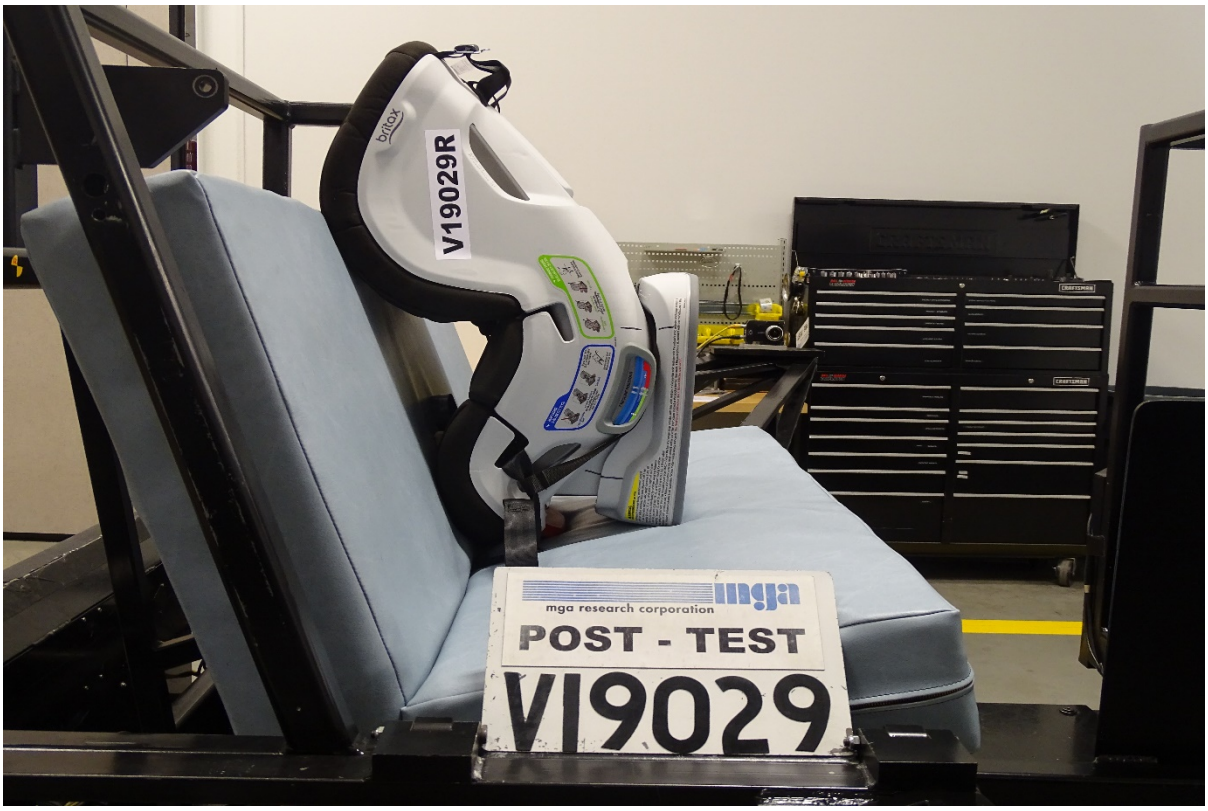
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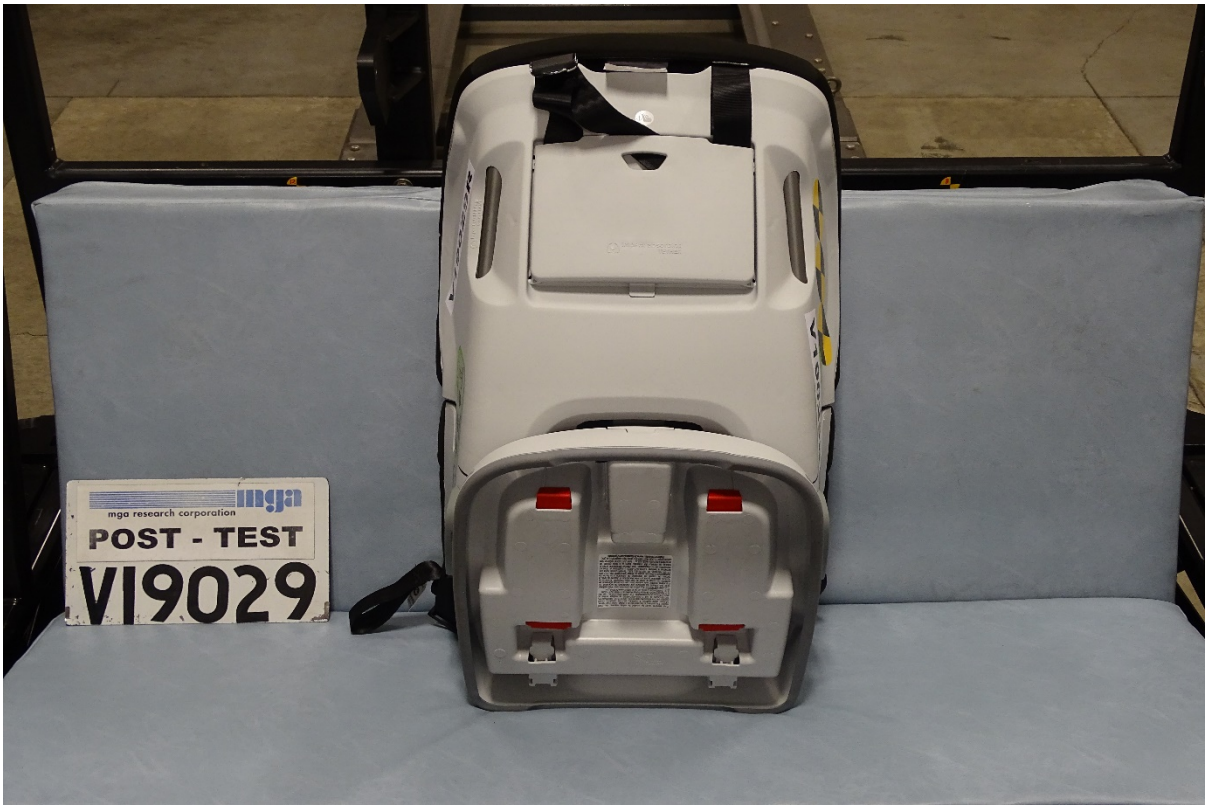
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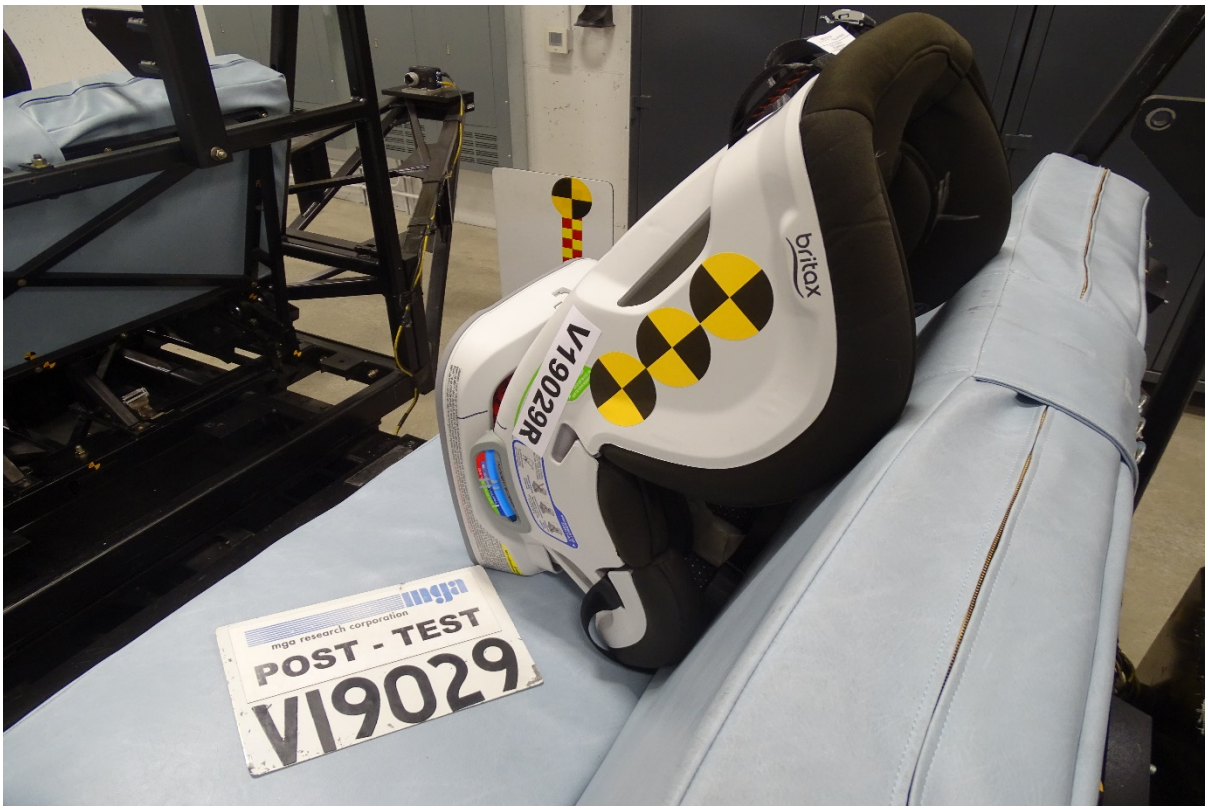
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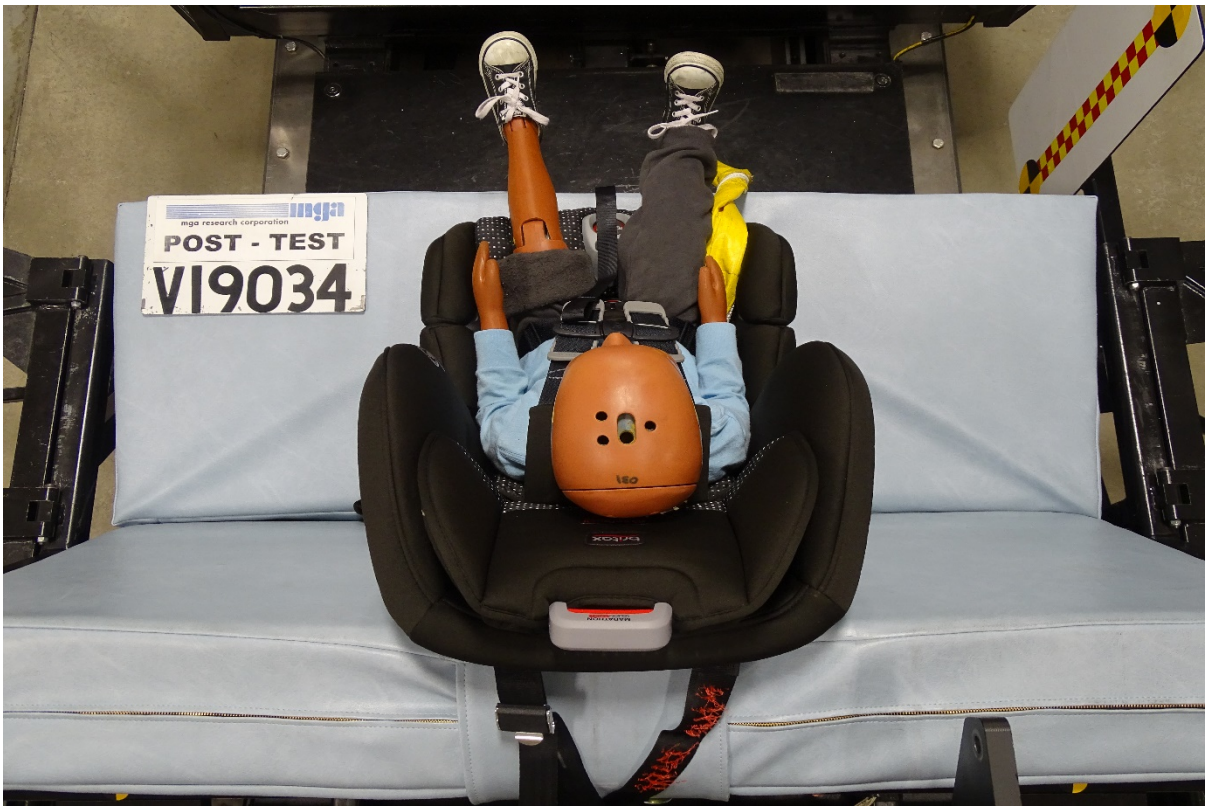
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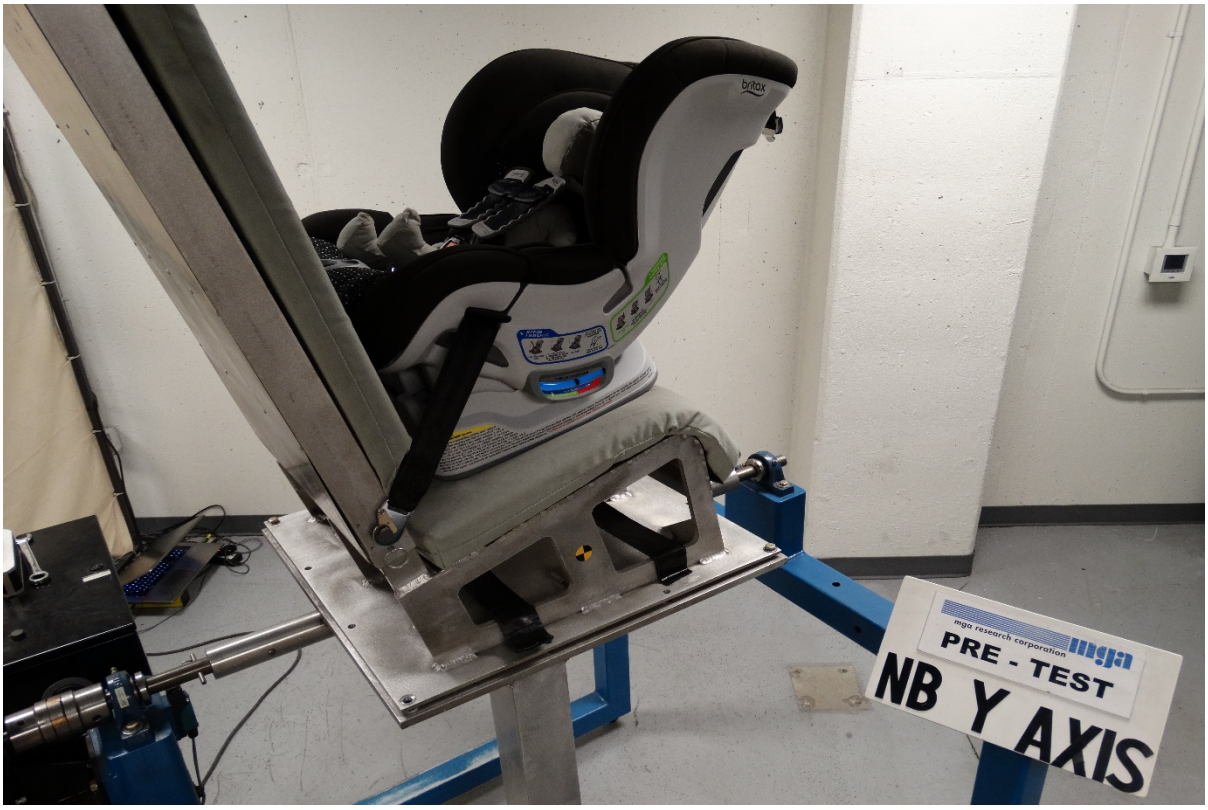
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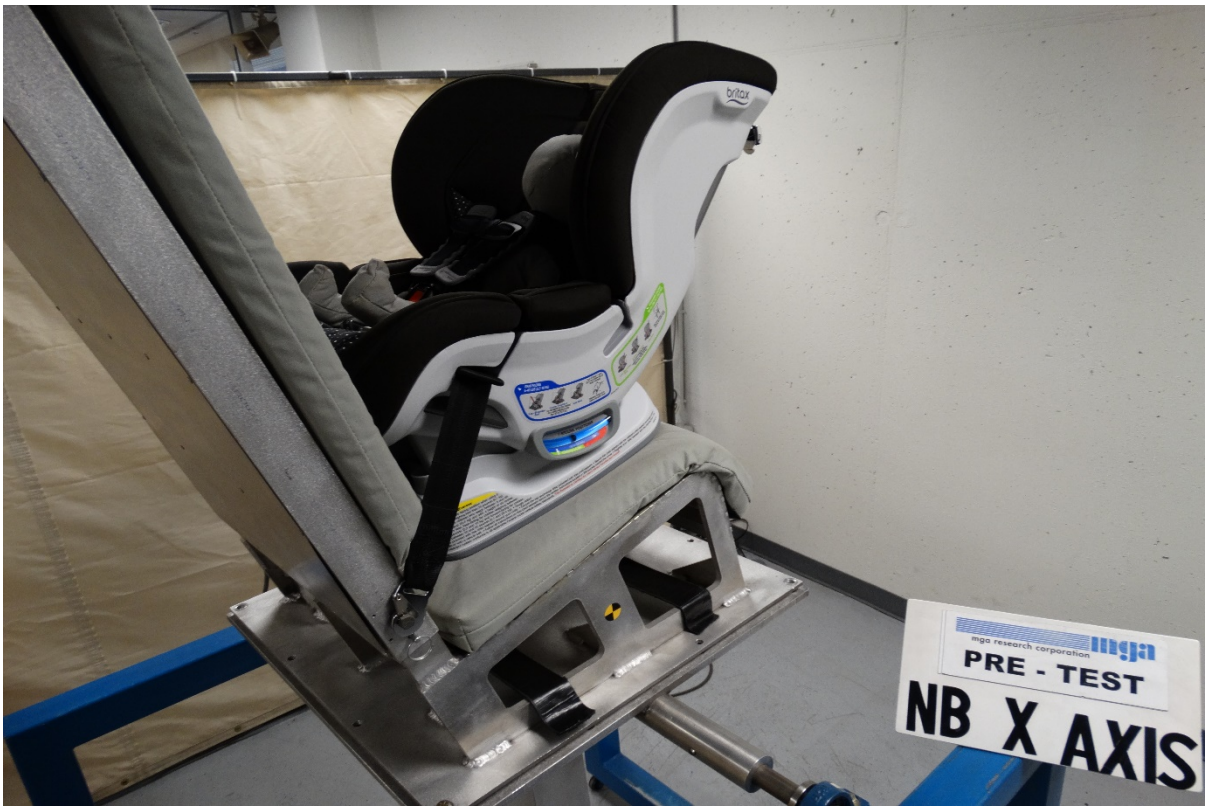
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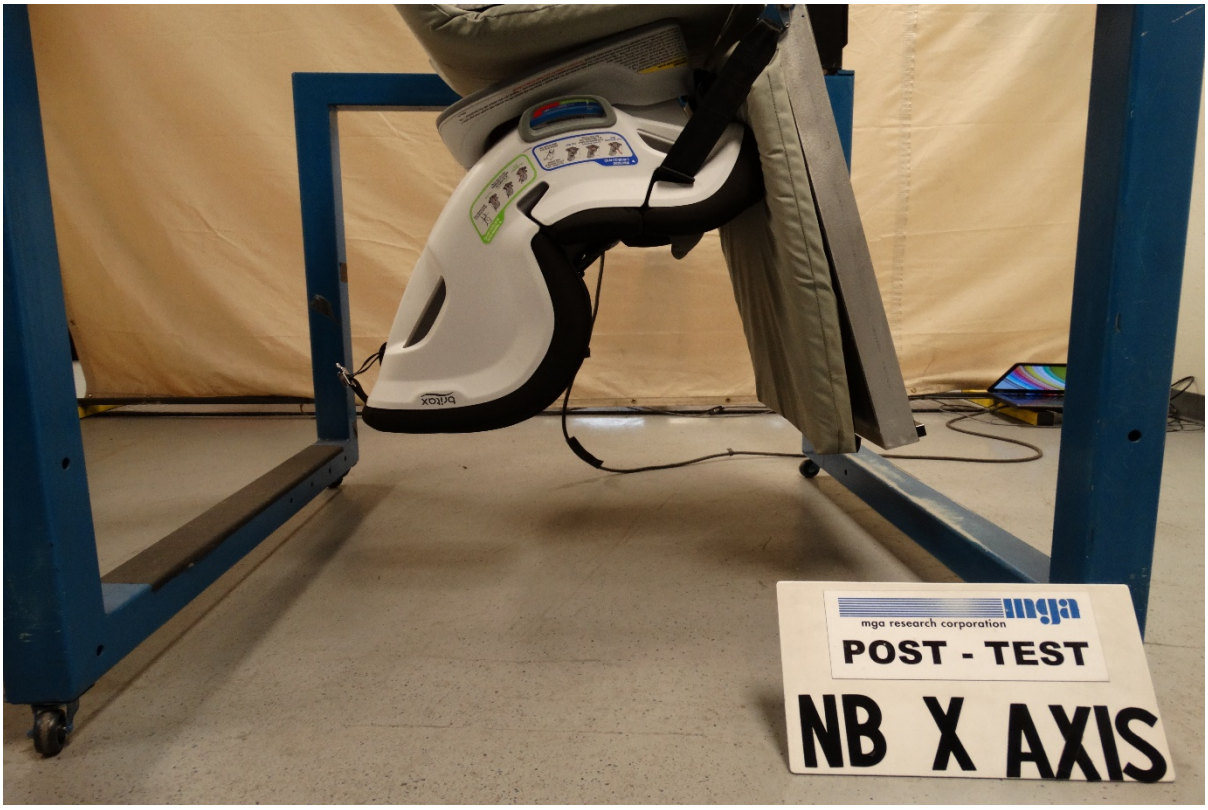
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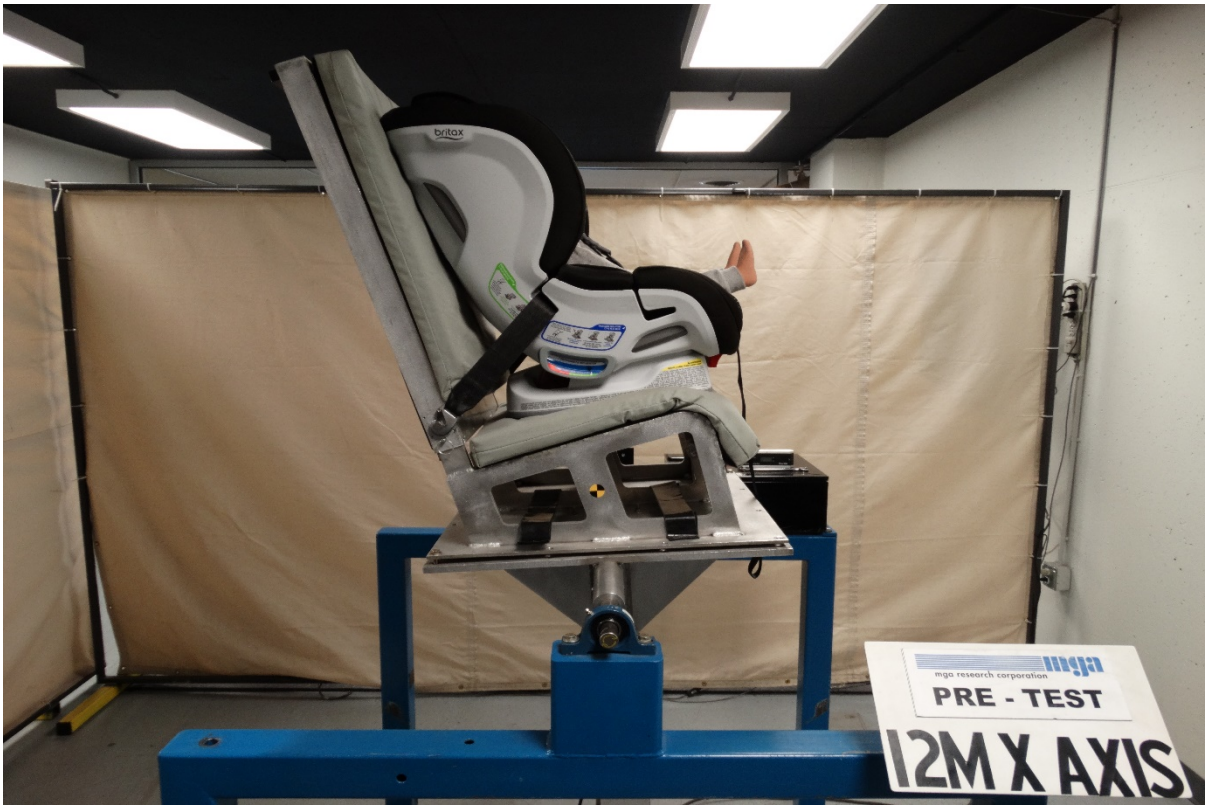
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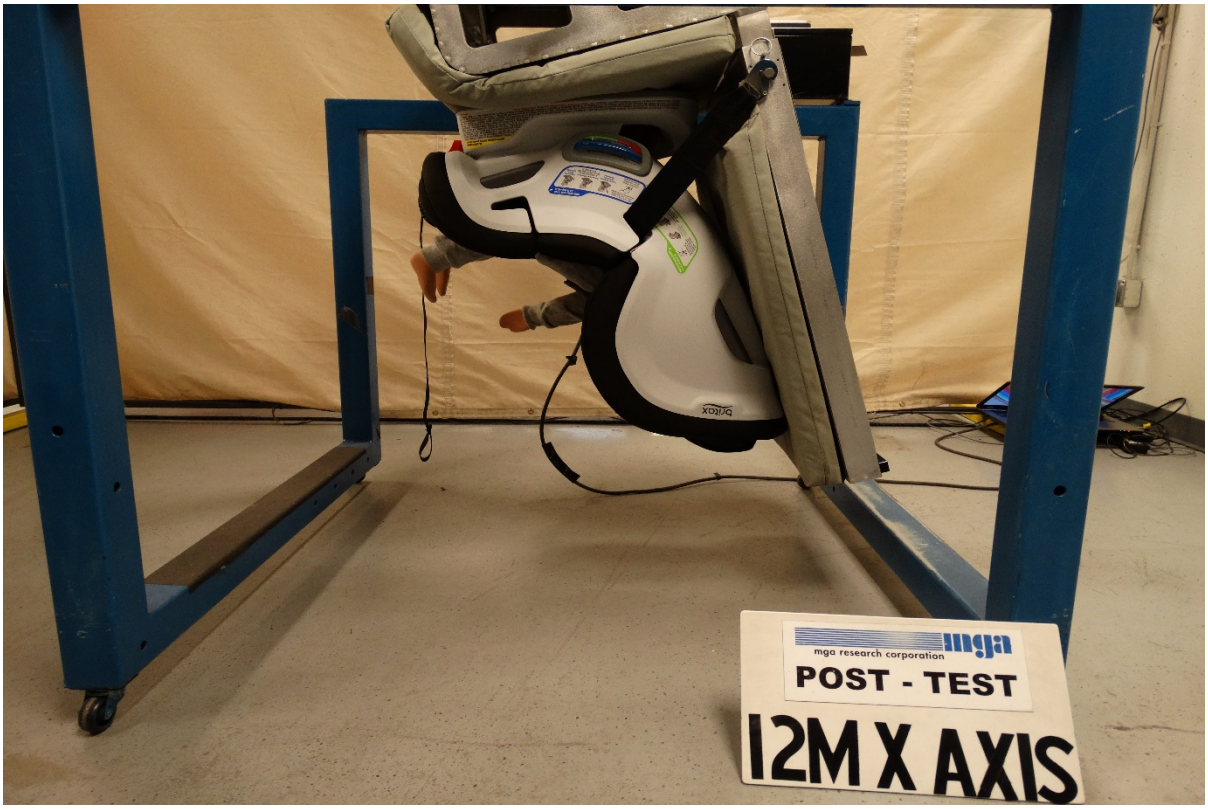
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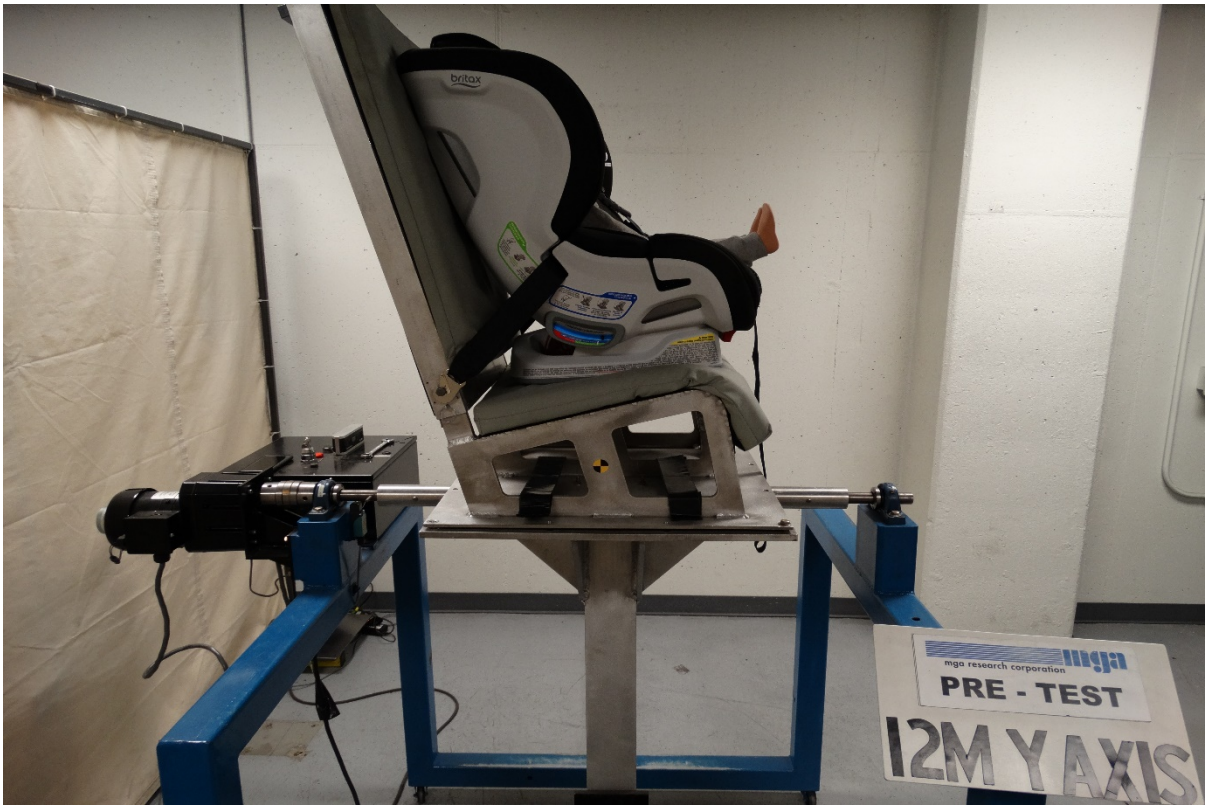
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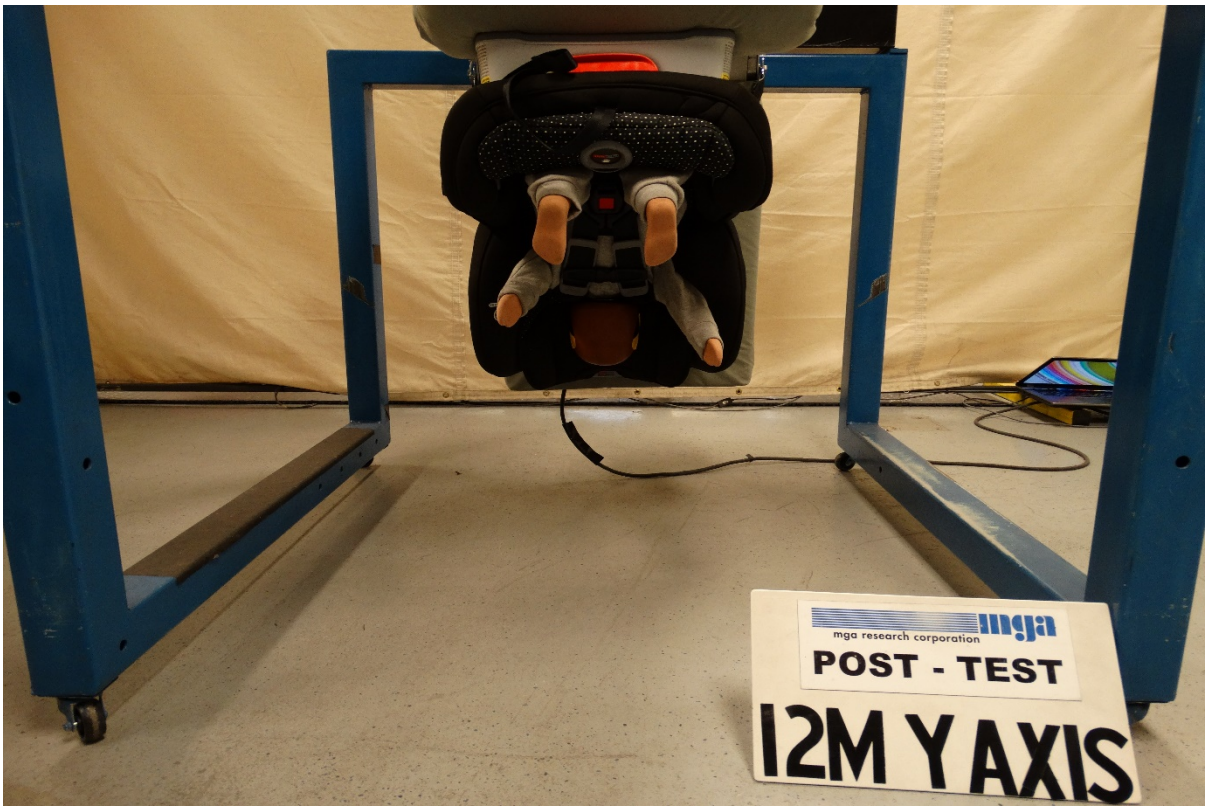
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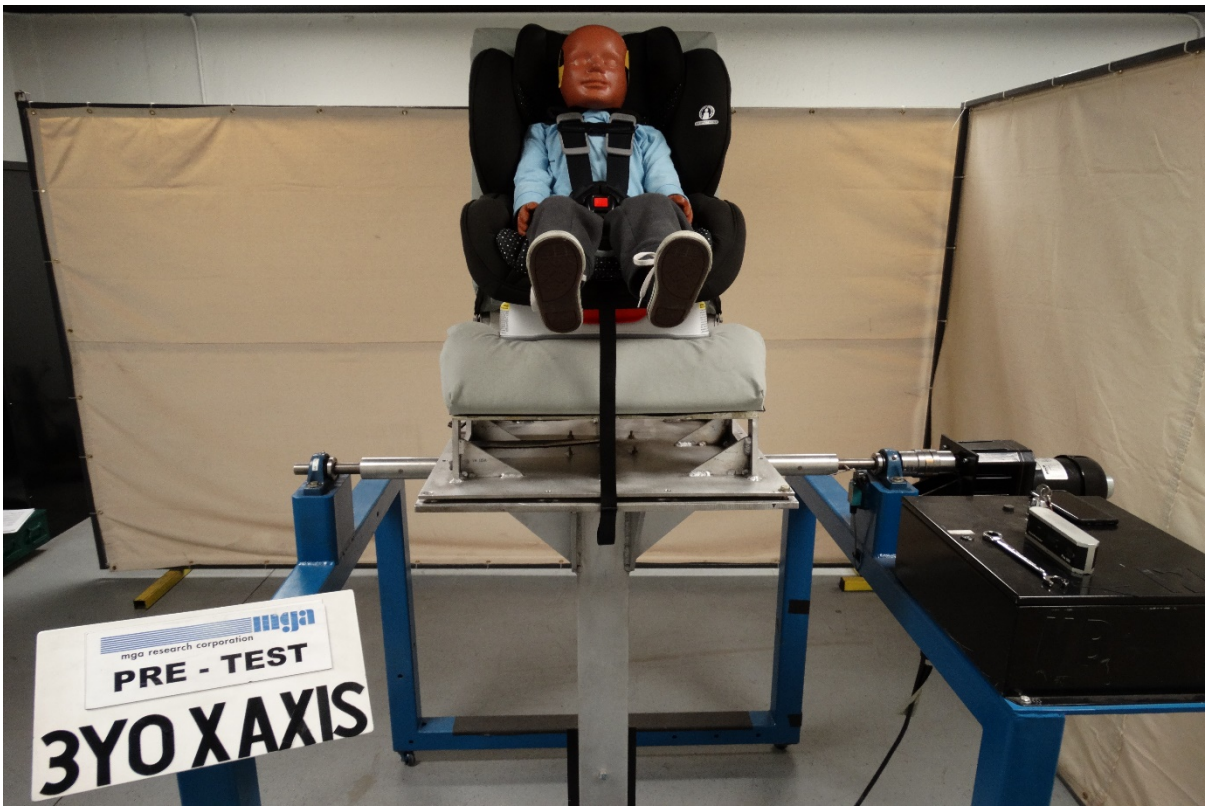
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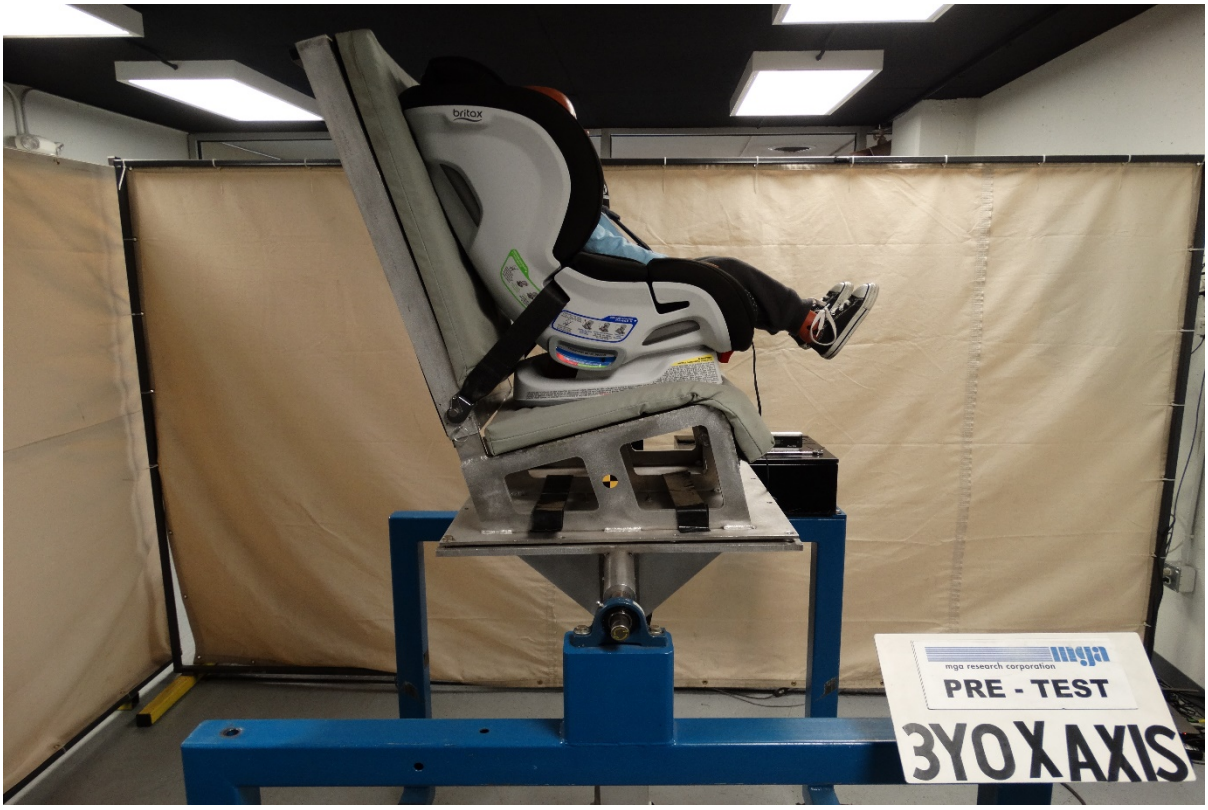
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LABELS

Item Code: 004-BE1A388C-01-12CRNLFR
Item Code: 004-BE1A388C-02-NINRNLFR
Item Code: 004-BE1A388C-03-12CFNLTU
Item Code: 004-BE1A388C-04-3H3FNLTU
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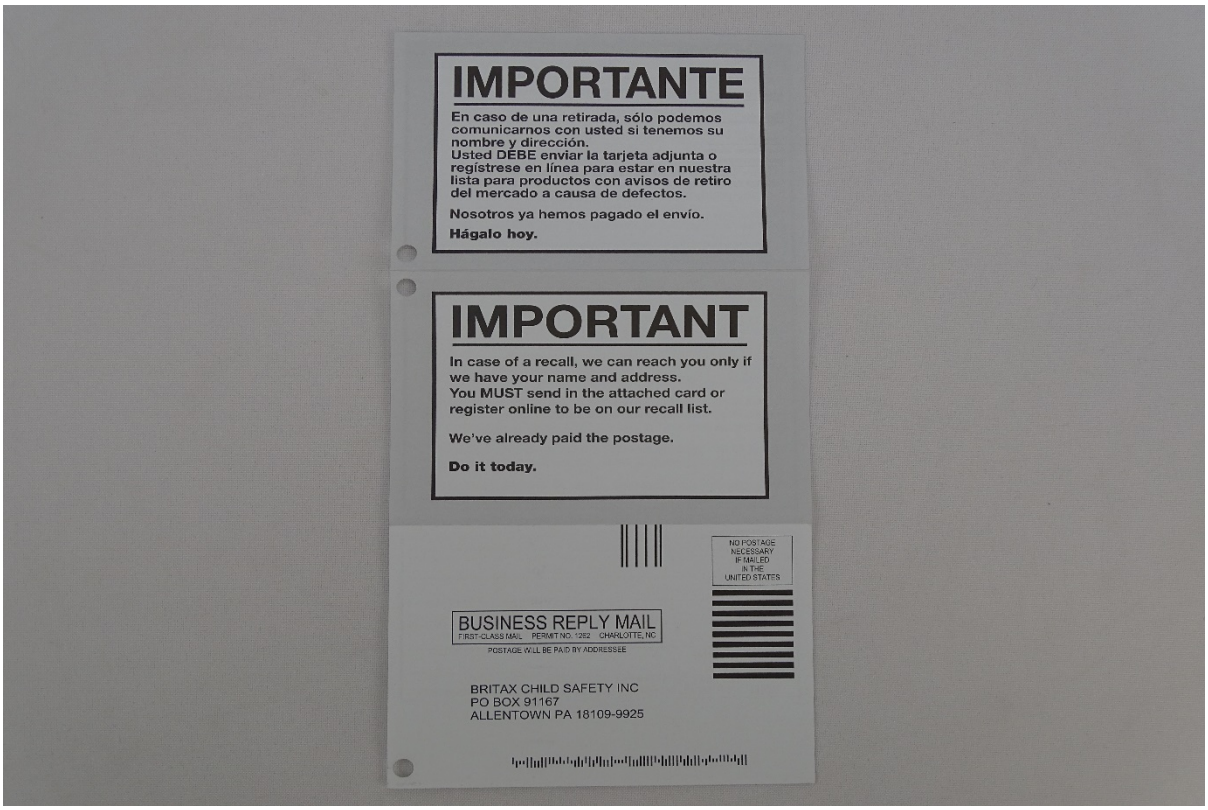

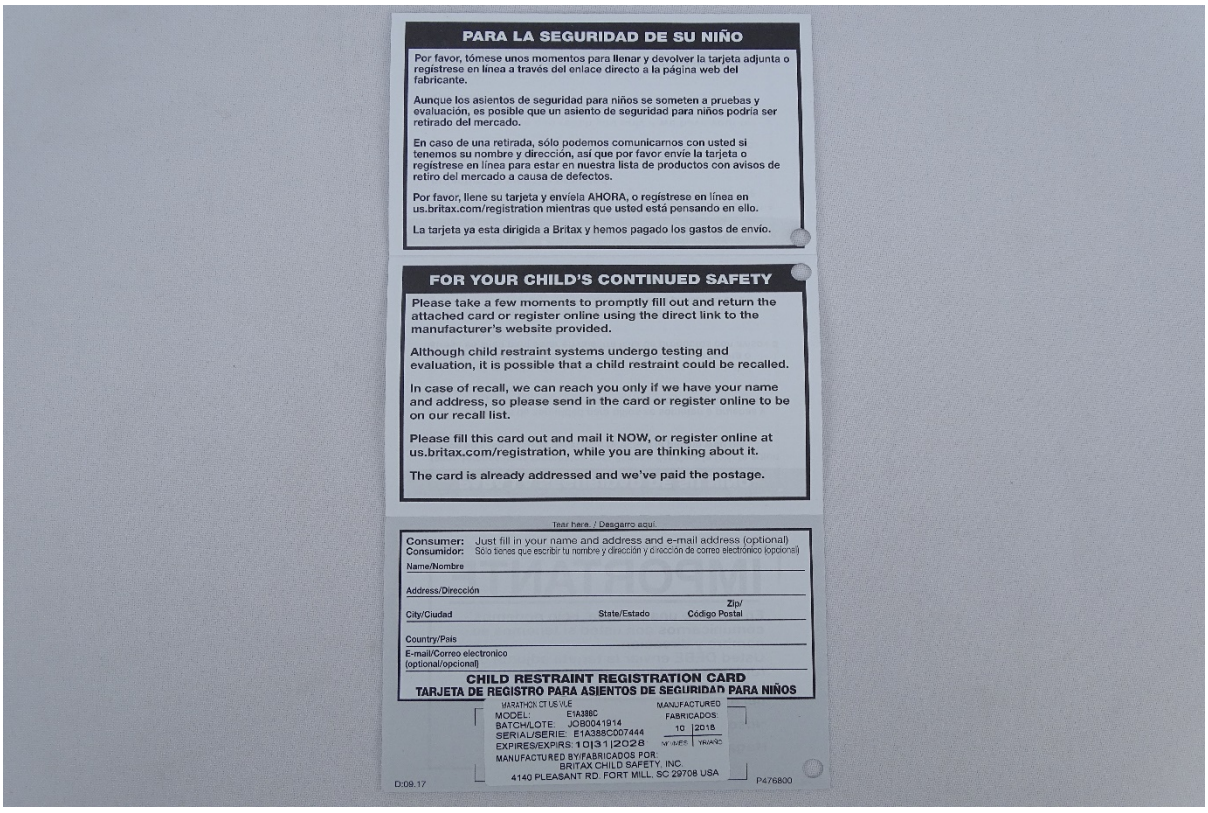

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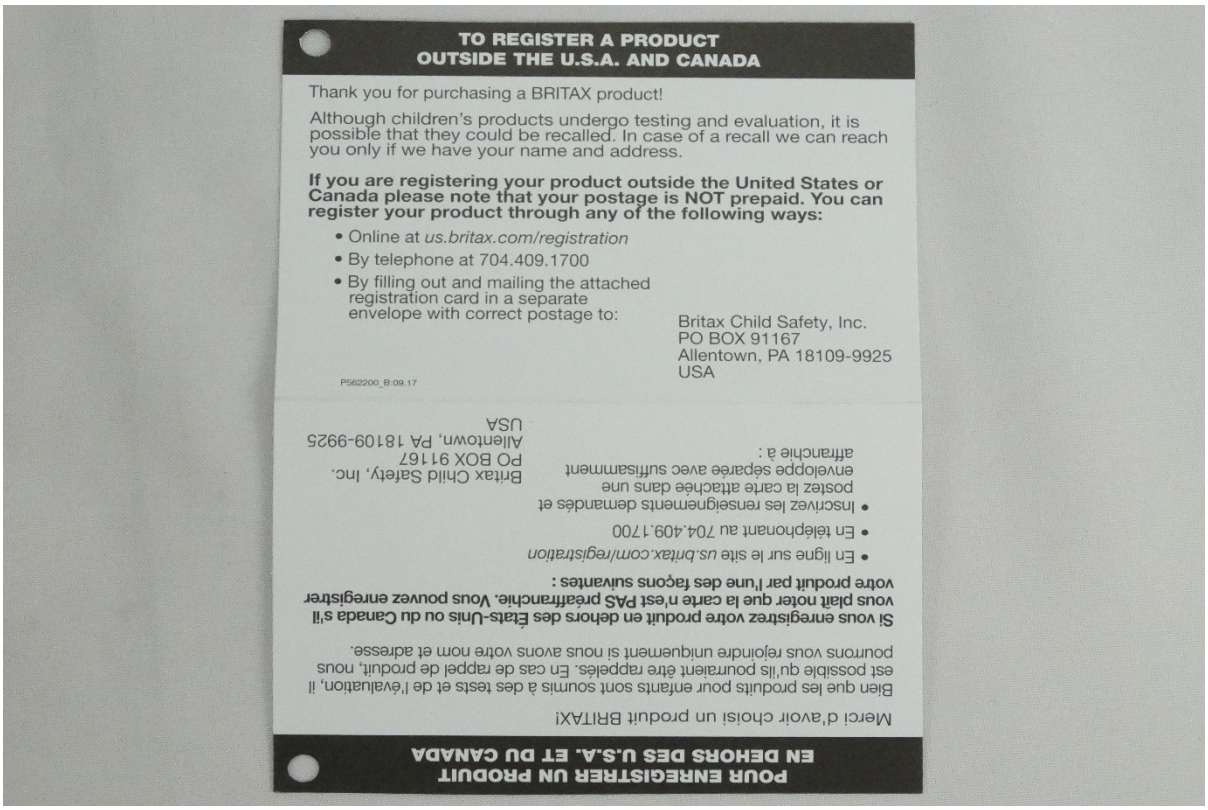

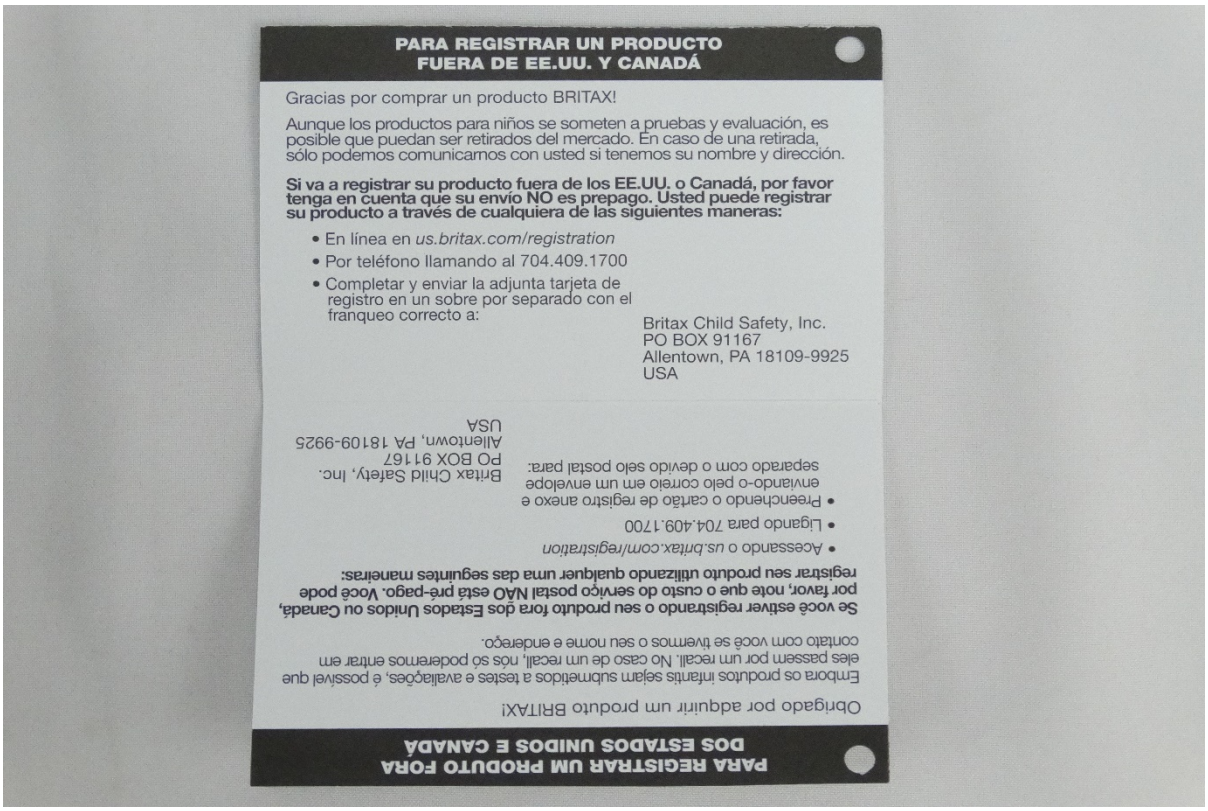

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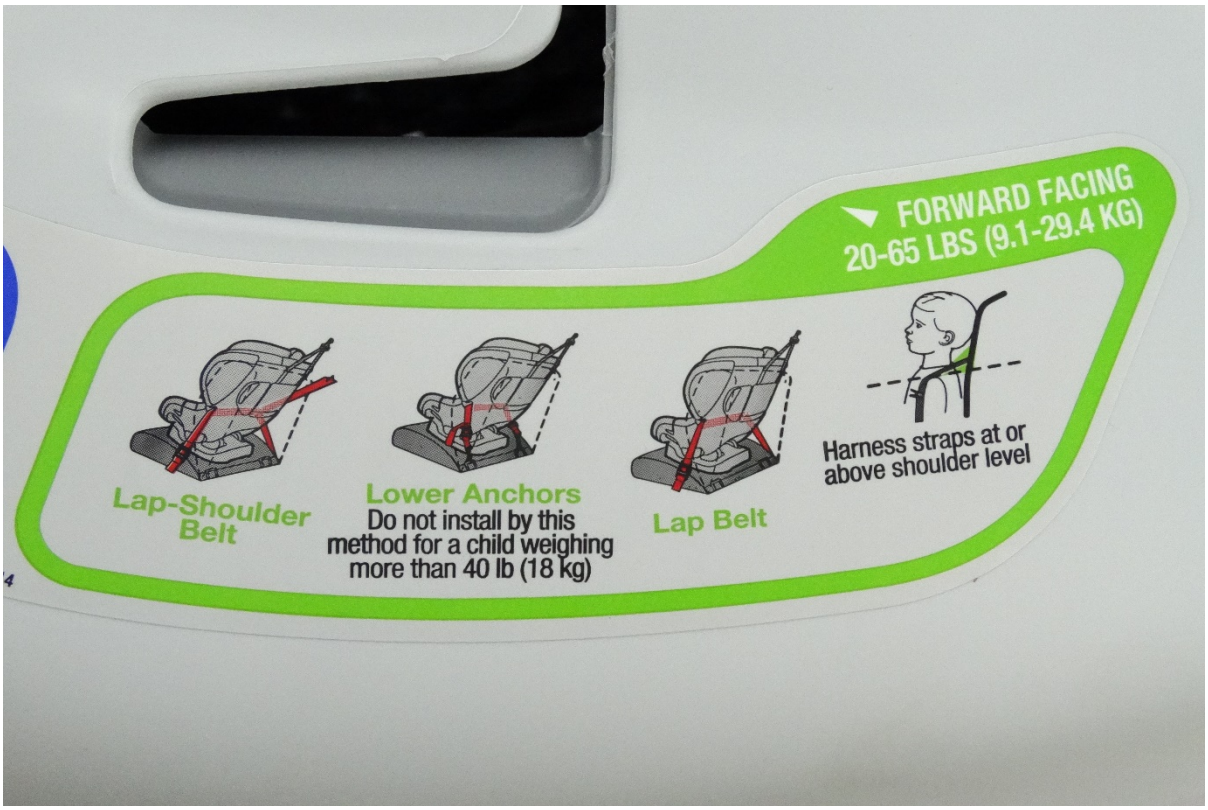

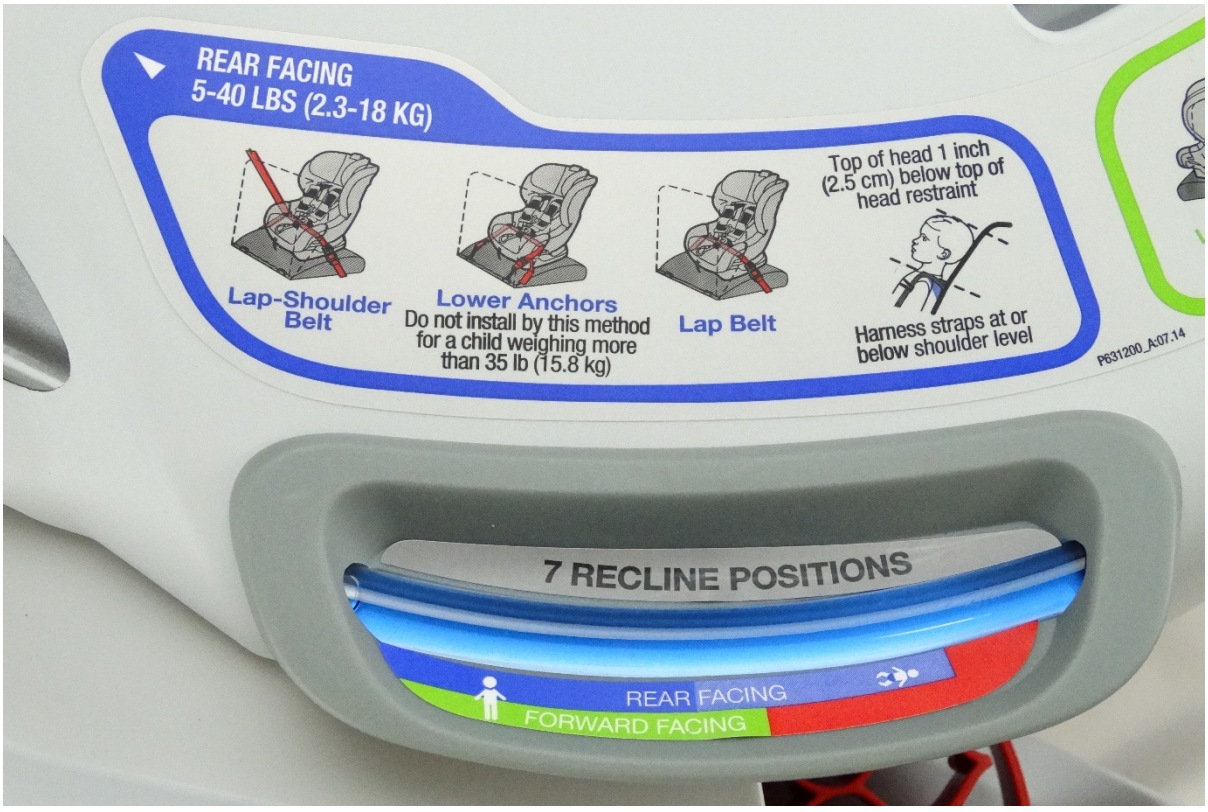

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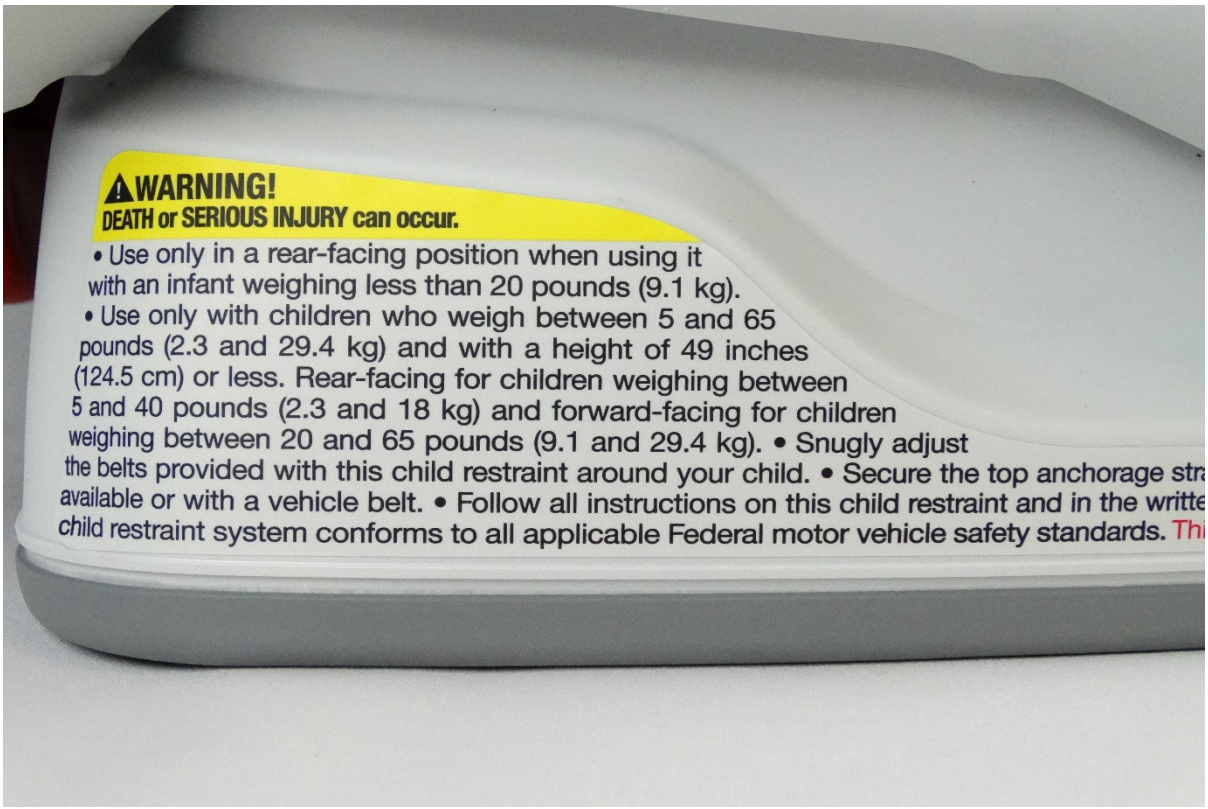

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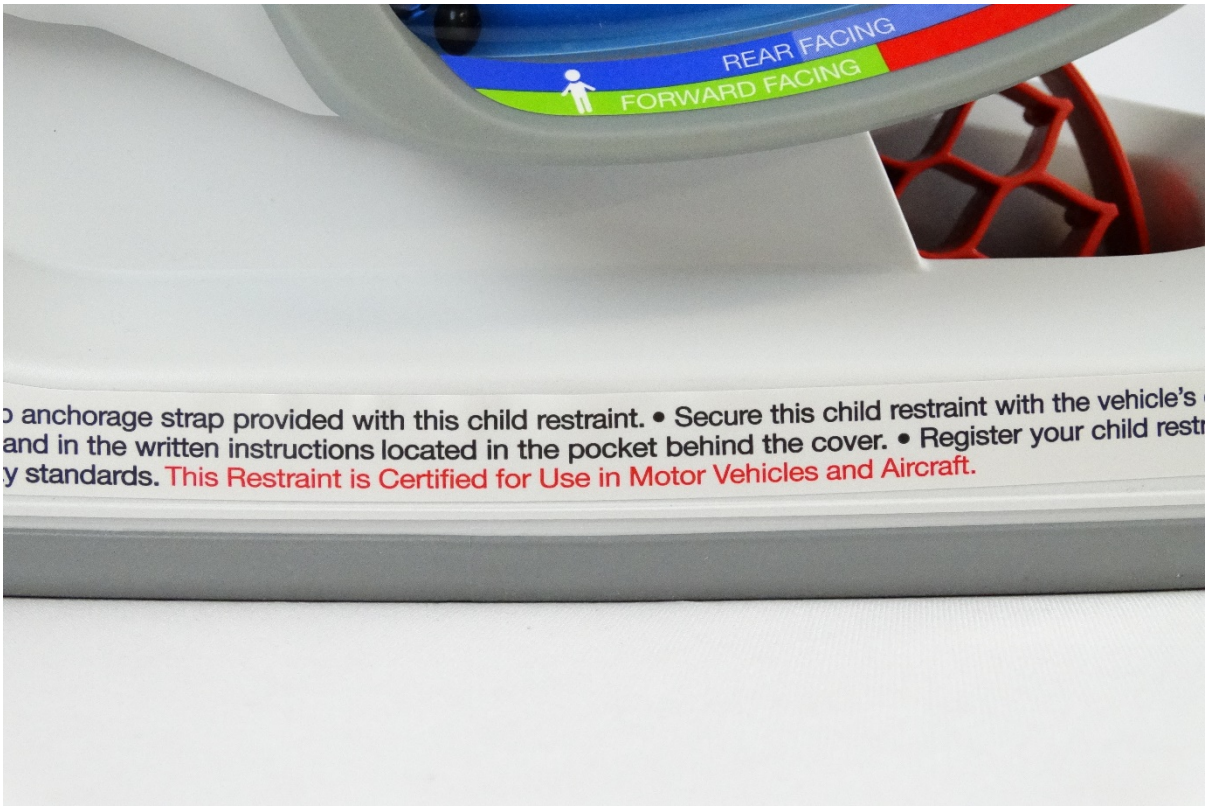

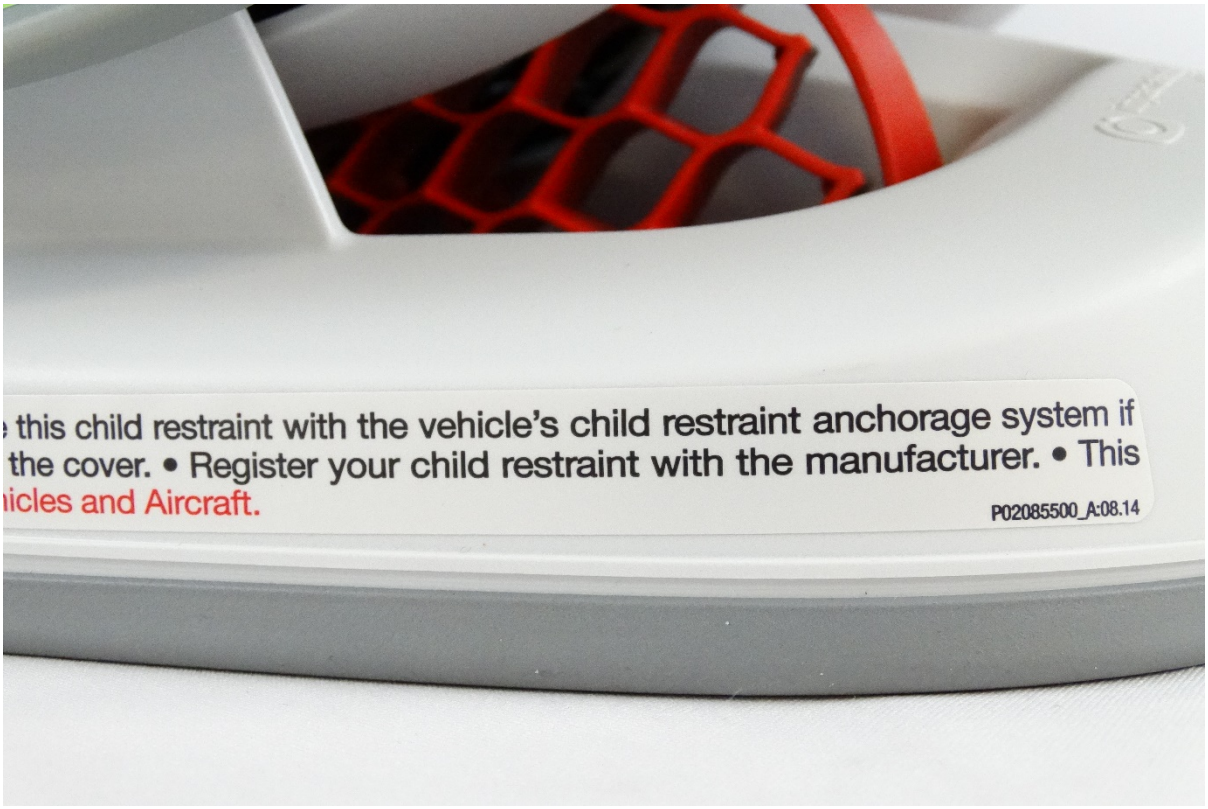

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LABELS

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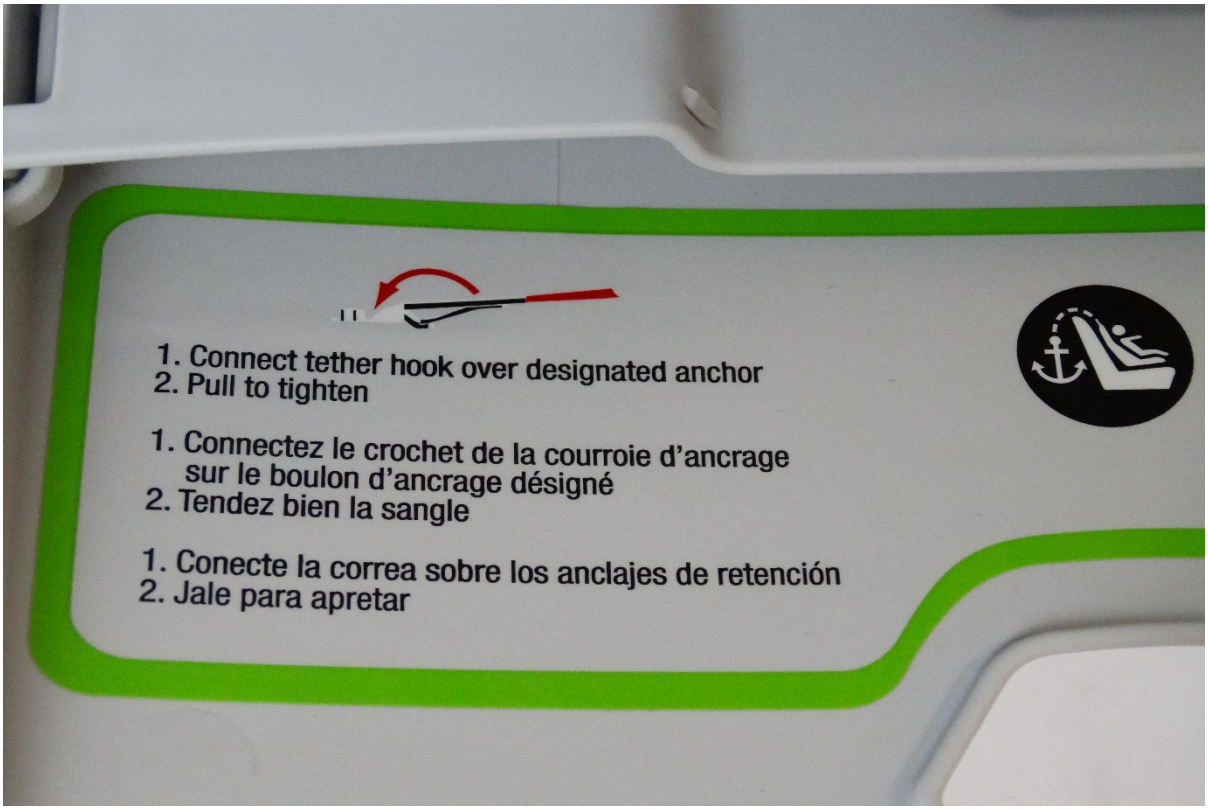

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Item Code: 004-BE1A388C-05-6H2FN2TU
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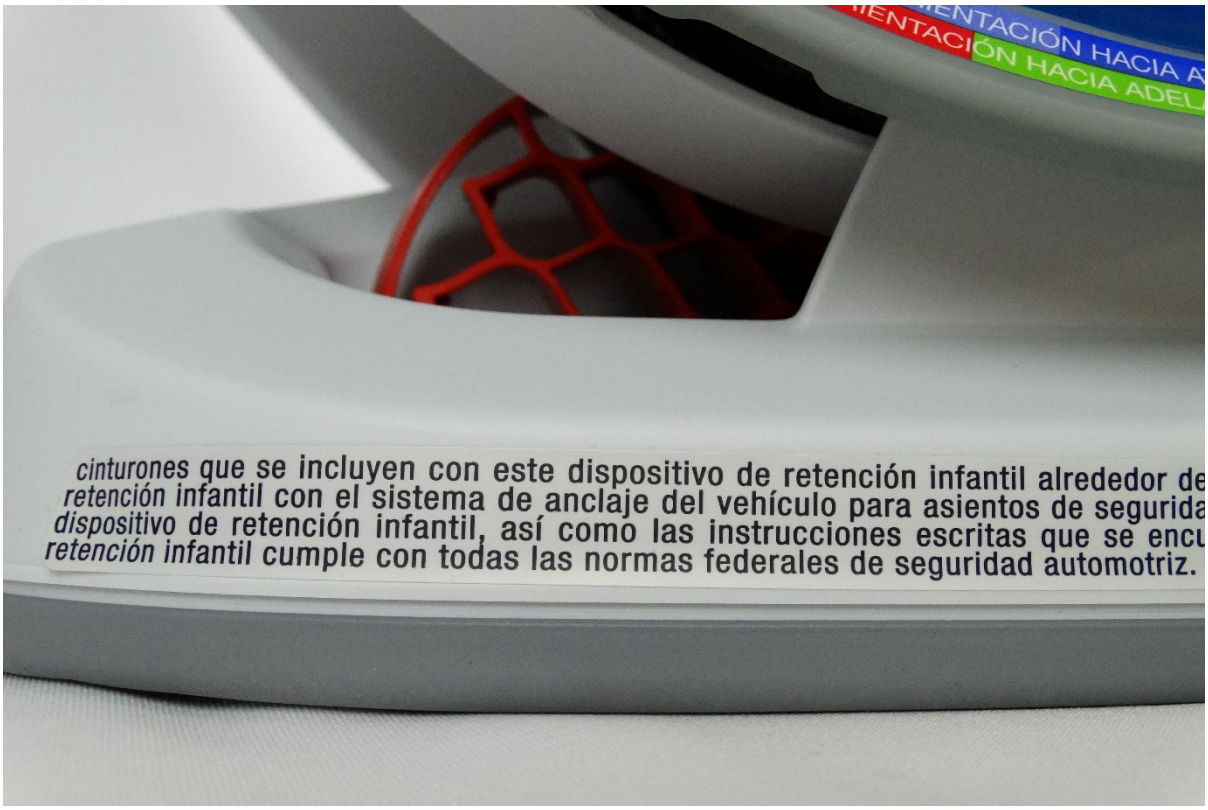

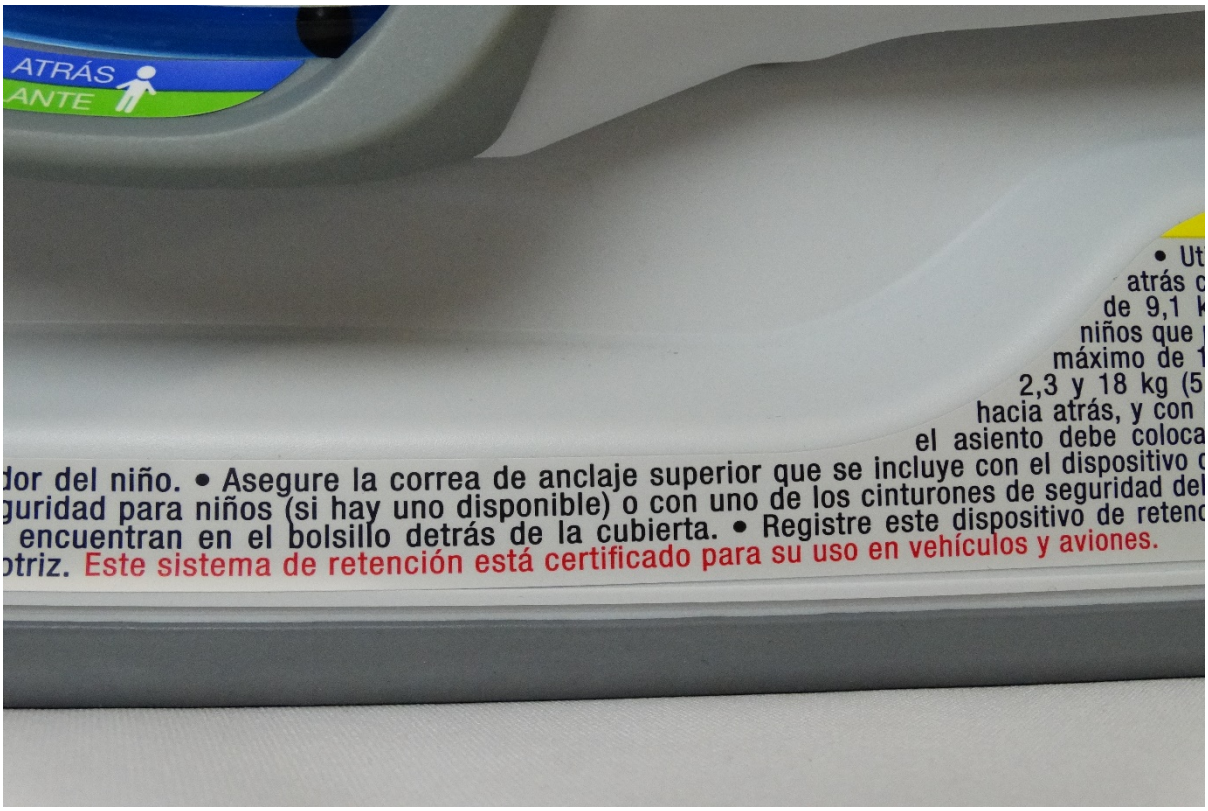

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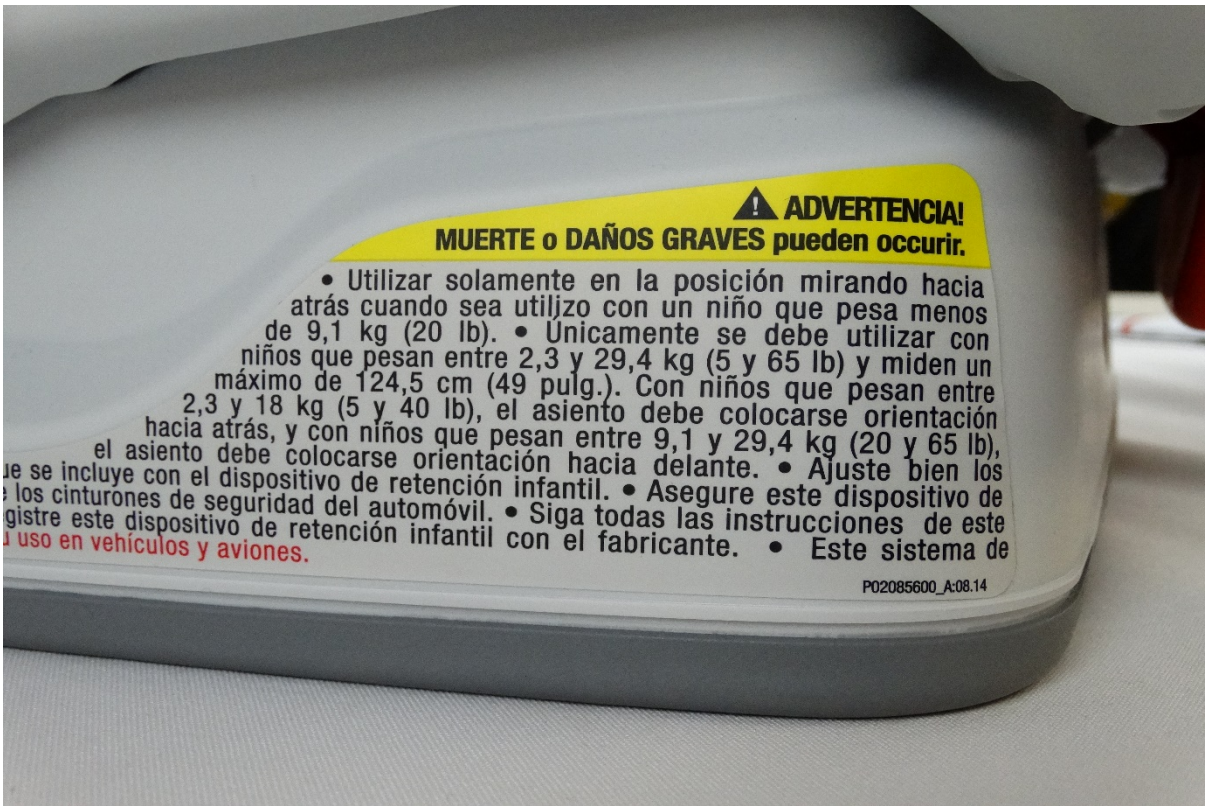

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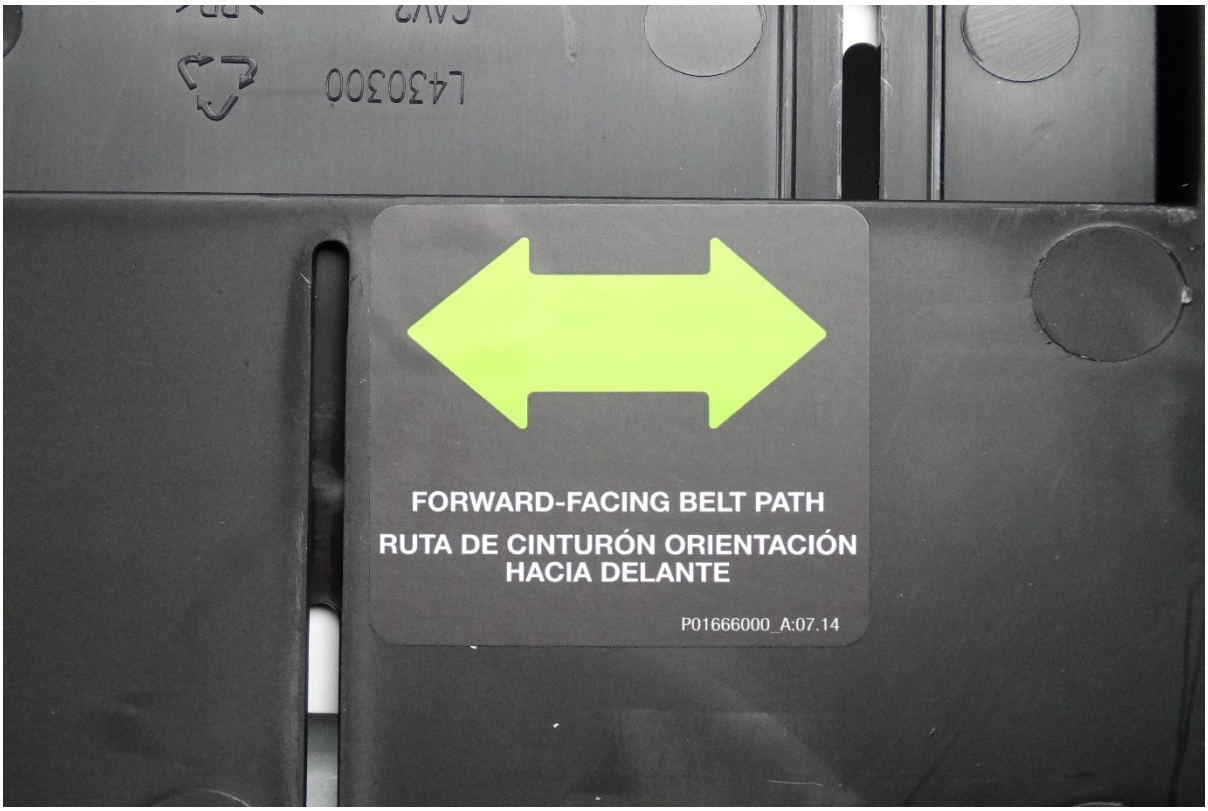

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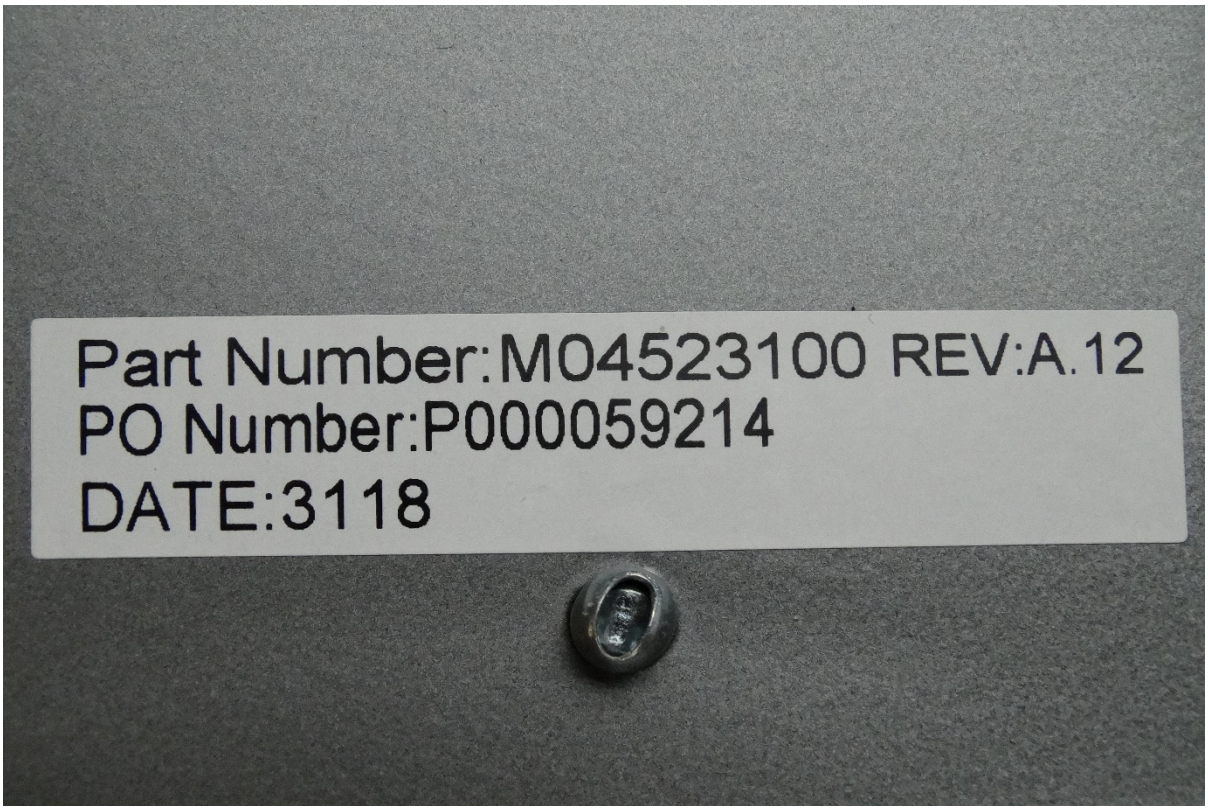

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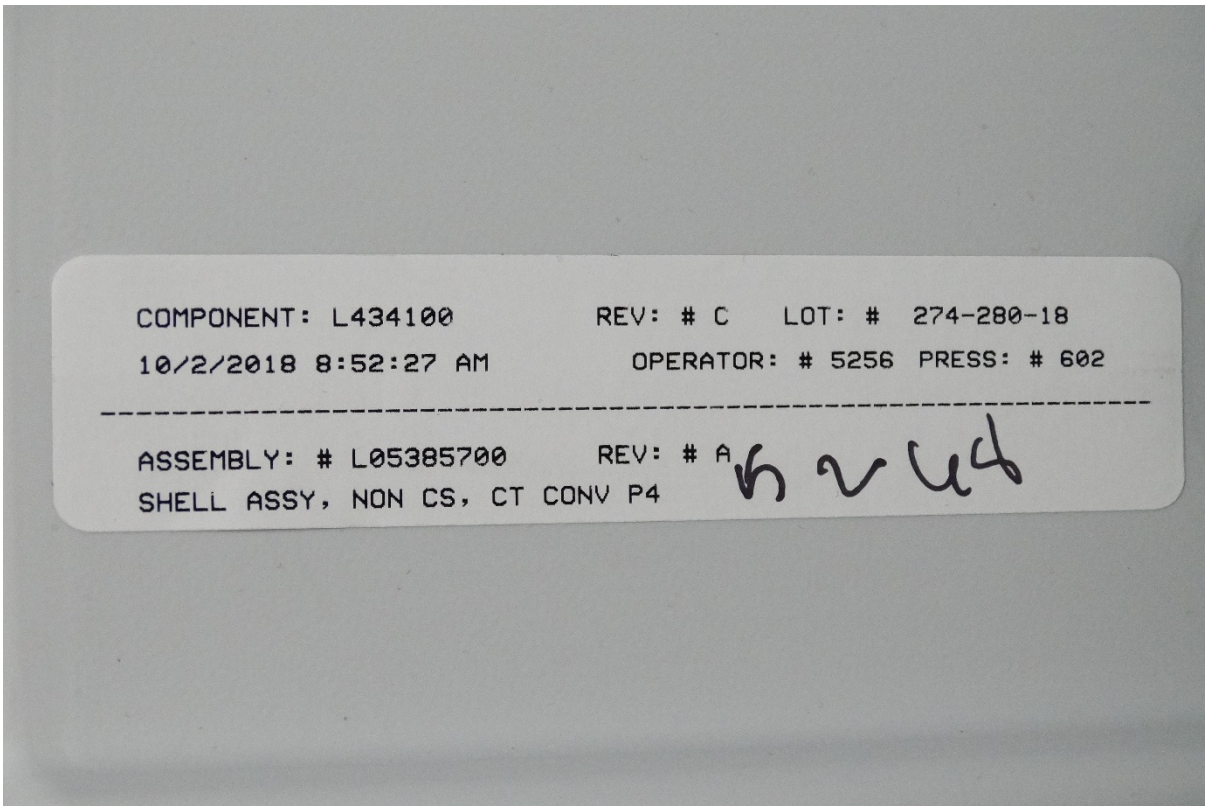

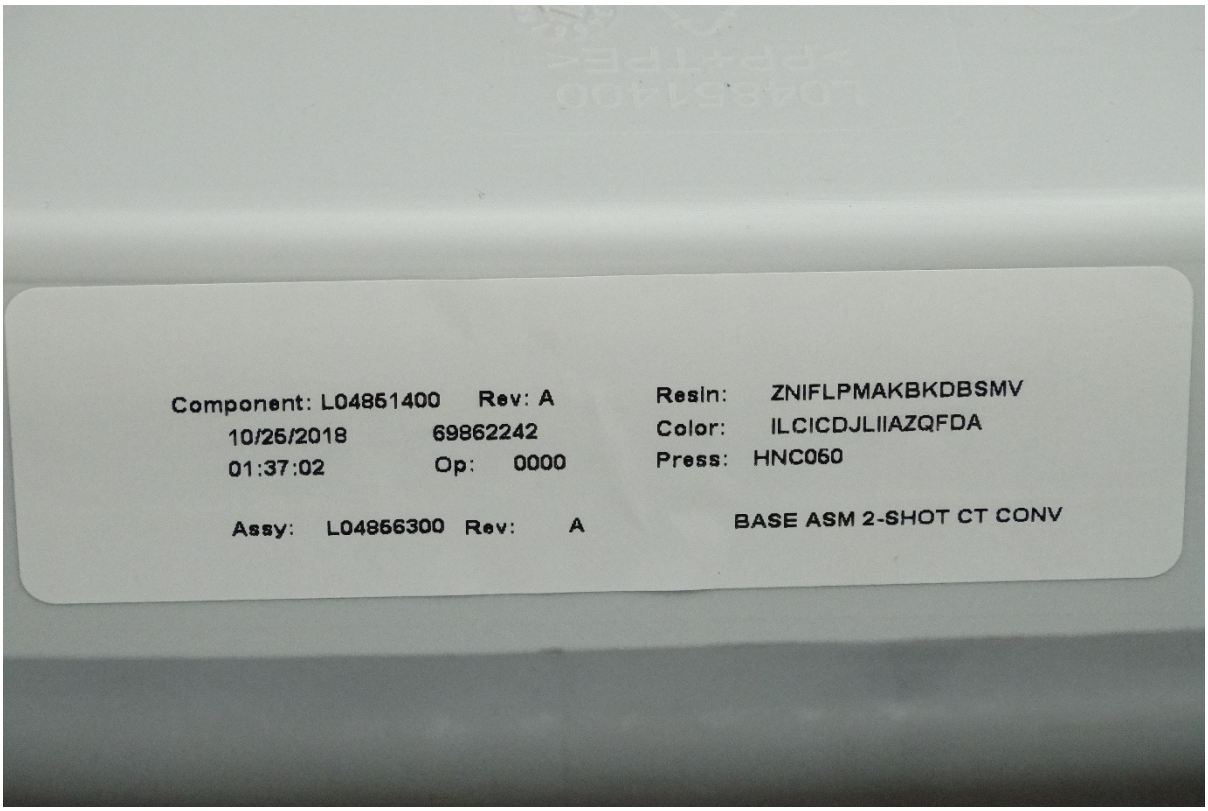

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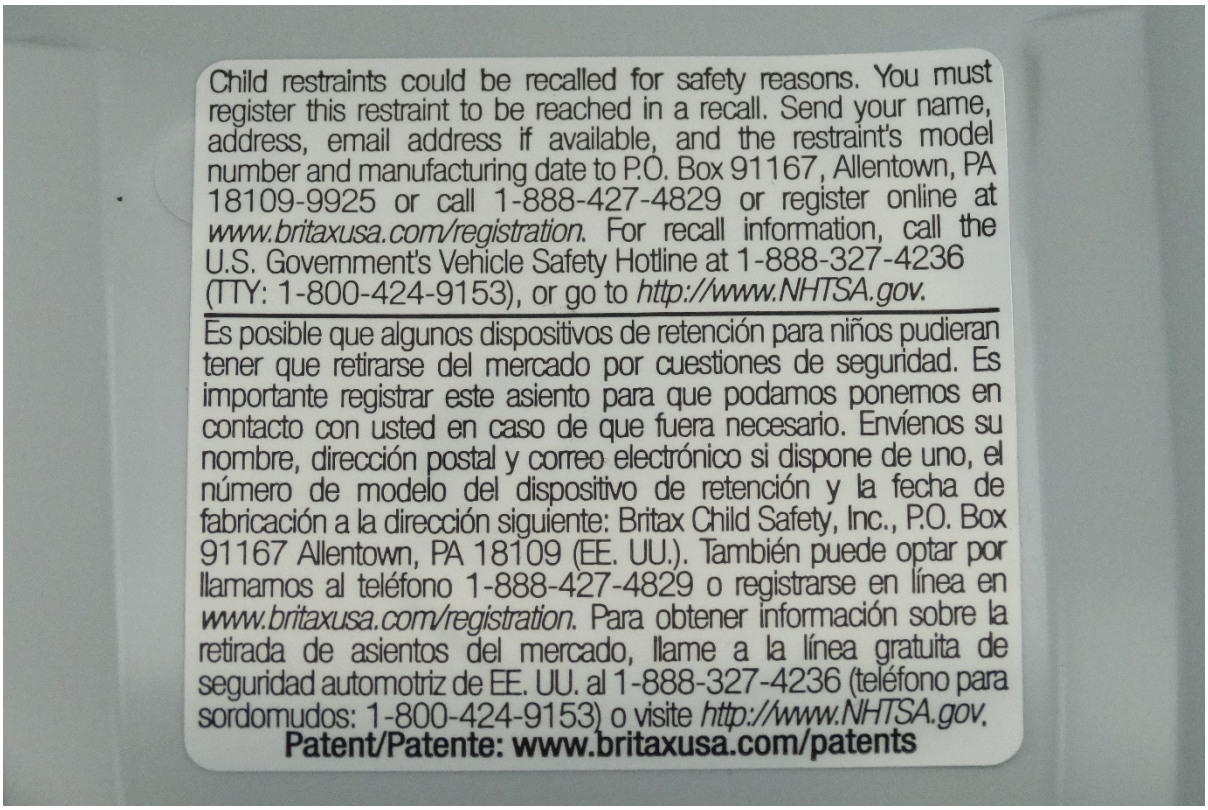

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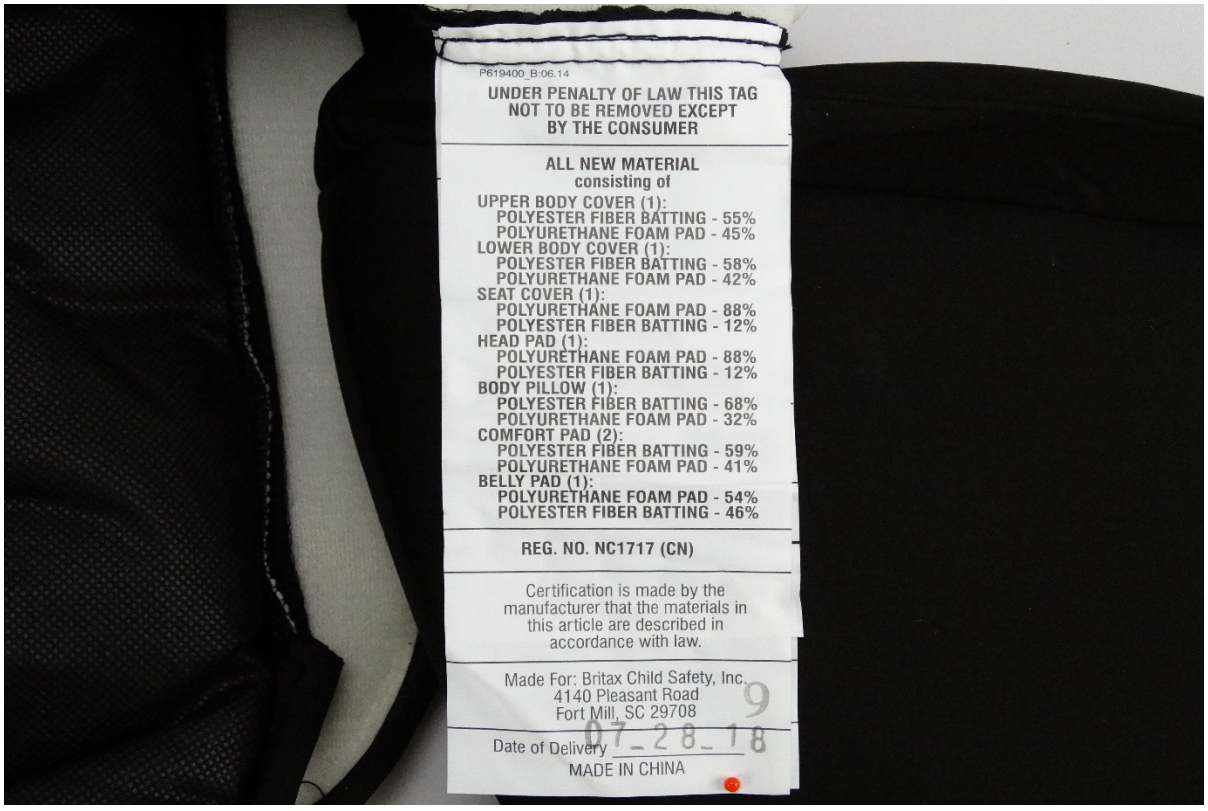

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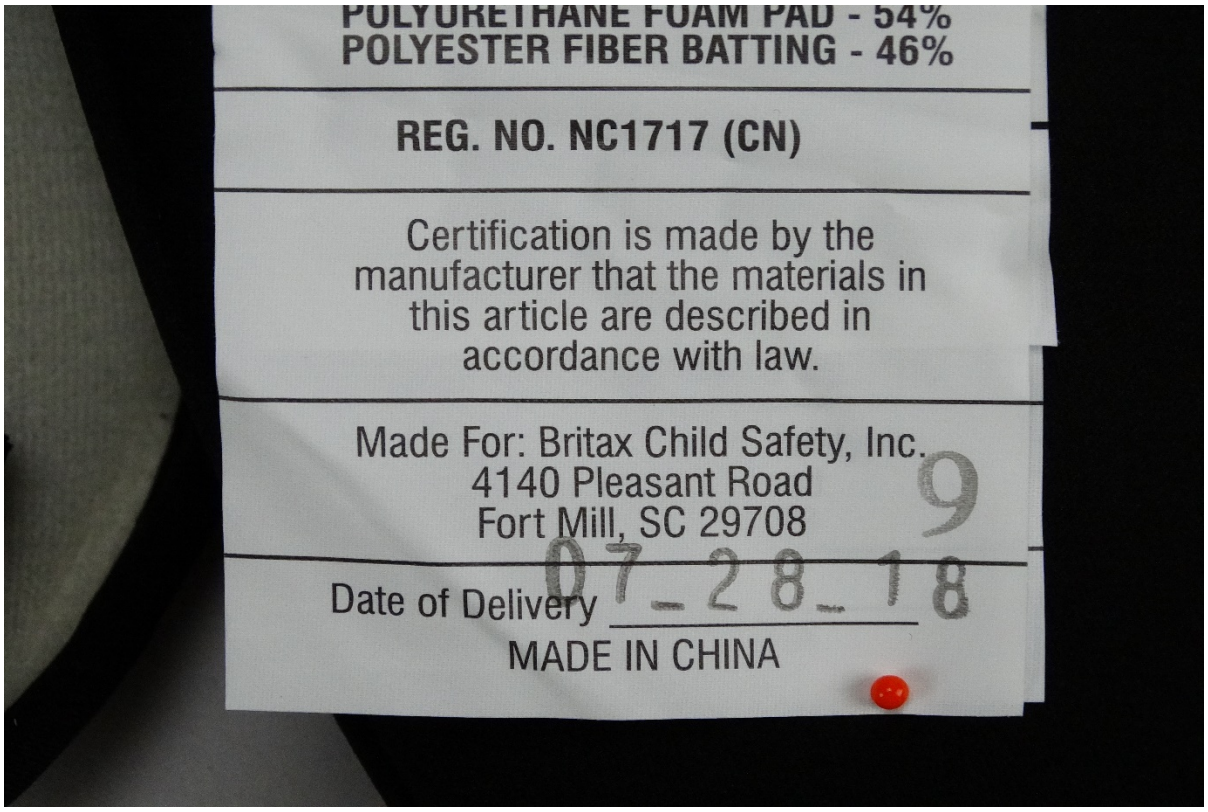

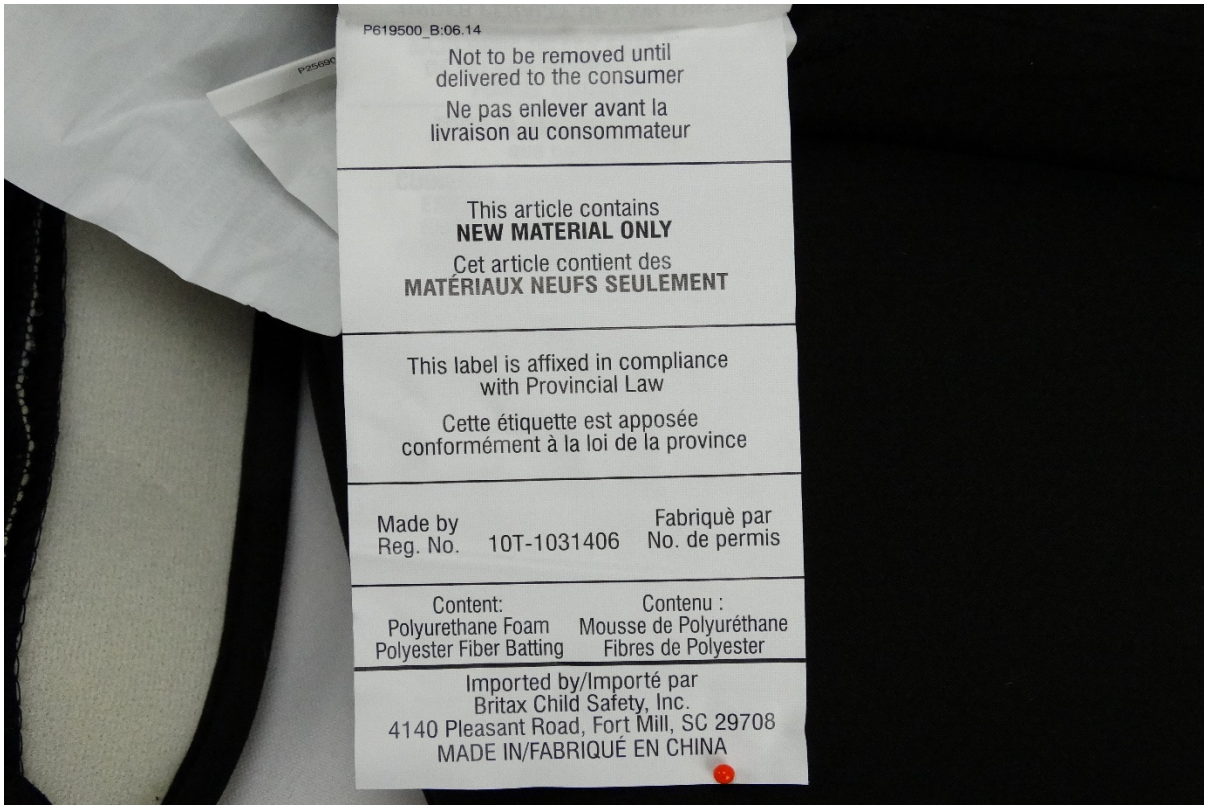

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