

**REPORT NUMBER: 213-MGA-13-021**

**SAFETY COMPLIANCE TESTING FOR FMVSS 213  
CHILD RESTRAINT SYSTEMS**

**Chicco USA Inc.  
KeyFit 30, Model 61472**

**PREPARED BY:  
MGA Research Corporation  
5000 Warren Road  
Burlington, WI 53105**



**Report Date: March 21, 2013**

**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**

This publication is distributed by the National Highway Traffic Safety Administration in the interest of information exchange. 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.

Prepared By David Nguyen

Approved By: [Signature]

Approval Date: \_\_\_\_\_

FINAL REPORT ACCEPTANCE BY OVSG:

Accepted By: Zachary Fuser

Acceptance Date: 5/8/13

213-MGA-13-021

**Technical Report Documentation Page**

1. Report No. 213-MGA-13-021		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS 213 Compliance Testing of Chicco USA Inc. KeyFit 30, Model 61472				5. Report Date March 21, 2013	
				6. Performing Organization Code MGA Research Corporation	
7. Author(s) David Nguyen, Project Engineer				8. Performing Organization Report No. 213-MGA-13-021	
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105				10. Work Unit No.	
				11. Contract or Grant No. DTNH22-12-D-00274	
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 March 6 to March 21, 2013	
				14. Sponsoring Agency Code NVS-220	
15. Supplementary Notes					
16. Abstract Compliance tests were conducted on the Chicco USA Inc., KeyFit 30, Model 61472 child restraint systems in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-213-09. Test failures identified as follows:  None					
17. Key Words  Compliance Testing Safety Engineering FMVSS 213				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin., Technology Info Services, (NPO-411) (Rm E12-100) 1200 New Jersey Avenue, SE Washington, D.C. 20590 e-mail: <a href="mailto:tis@nhtsa.dot.gov">tis@nhtsa.dot.gov</a> FAX: 202-493-2833	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 66	22. Price

## TABLE OF CONTENTS

<u>Section</u>		<u>Page No</u>
1	Purpose and Test Procedure	1
2	Introduction and Summary	2
3	Inspection and Test Data	3
<u>Data Sheets</u>		
1	Labeling	5
2	Printed Instructions for Proper Use	6
3	Registration Form	7
4	Installation	8
5	Minimum Head Support Surface	10
6	Torso Impact Protection	11
7	Protrusion Limitation	12
<u>Test Data</u>		
8.1	Item Code 021-H61472-01-12CRBLFR	13
8.2	Item Code 021-H61472-02-NINRN2FR	22
9.0	Aircraft Passenger Seat Inversion Test Conditions and Results	28
9.1	Item Code 021-H61472-Inv01-NINRB2FR	29
9.2	Item Code 021-H61472-Inv02-12CRN2FR	31
<u>Appendix</u>		
A	Interpretations and/or Deviations from FMVSS 213	A
B	Test Configuration Codes	B
C	Instrumentation Calibration	C
D	Photographs	D

**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. DTNH22-12-D-00274. The purpose of the testing is to determine whether production child restraint systems meet the minimum inspection and dynamic test requirements of TP-213-09, "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 Chicco USA Inc., KeyFit 30, Model 61472 child restraint system. The restraint was dynamically tested in the following configurations:

- 12 month old, CRABI, rear facing, optional base, lower anchor, tether free and reclined
- Newborn Infant, rear facing, other configuration, lap belt, tether free and reclined

Inversion testing was performed in both the forward Y-axis rotation and in the lateral X-axis rotation for the following configurations: newborn, rear-facing, reclined and 12 month old, rear facing, reclined.

The inspection and testing of the Chicco USA Inc., KeyFit 30, Model 61472 child restraint was conducted in accordance with TP-213-09 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 Burlington, Wisconsin. Compliance test data sheets for all tests are found in the Data Sheets and Test Data Sections of this report.

**SECTION 3  
INSPECTION AND TEST DATA**

Report No. 213-MGA-13-021

**CHILD RESTRAINT SYSTEM IDENTIFICATION**

Manufacturer:	Artsana USA Inc.
Place of Manufacture per S5.5.2(d):	1826 William Penn Way Lancaster, PA 17601
Model No.	61472
Group No.	1

1	Item Code	021-H61472-01-12CRBLFR
	Date of Manufacture	JAN 2013
	Sled Test No.	H13125F
2	Item Code	021-H61472-02-NINRN2FR
	Date of Manufacture	JAN 2013
	Sled Test No.	H13125R
3	Item Code	
	Date of Manufacture	
	Sled Test No.	
4	Item Code	
	Date of Manufacture	
	Sled Test No.	
5	Item Code	
	Date of Manufacture	
	Sled Test No.	
6	Item Code	
	Date of Manufacture	
	Sled Test No.	

## DYNAMIC TEST RESULTS

### SUMMARY TABLE

Child Restraint System - Chicco USA Inc. / KeyFit 30 / 61472										
Item Code	Sled Test No.	Dummy Selection and Test Mode (see legend below)	Lower Anchors Used Y/N	Tether Used Y/N	HIC (1000 max)	Chest g clip (60 g max)	Head Excursion (720 mm max, 813 mm max w/o tether)	Knee Excursion (915 mm max)	Seat Back Angle (70 deg max)	Pass/Fail
021-H61472-01-12CRBLFR	H13125F	12 mo (RF, R)	Y	N	330	50.5	N/A	N/A	53	P
021-H61472-02-NINRN2FR	H13125R	NIN (RF, R)	N	N	N/A	N/A	N/A	N/A	45	P

(RF) Rear Facing                      (U) Upright mode  
 (FF) Forward Facing                (R) Reclined mode

6 Yr. Old W: Weighted 6 Yr. Old Dummy



**DATA SHEET NO. 1**  
**LABELING**  
**(FMVSS 213, S5.3, S5.5)**

Report No.:	213-MGA-13-021
Test Date:	3/6/2013

Item Code:	021-H61472-01-12CRBLFR
	021-H61472-02-NINRN2FR

Pass/Fail

S5.3, S5.5 Labeling:

Pass (1)

The subject child restraint system labeling was inspected to the requirements of S5.3 (S5.3.1(b)) and S5.5 (S5.5, S5.5.1, S5.5.2, S5.5.3), as applicable, and no failures were identified.

Remarks:

- (1) S5.5.2(g)(1)(ii) The word "(LATCH)" is included on the required statement. The statement reads, "Secure this child restraint with the vehicle's child restraint anchorage system (LATCH) if available or with a vehicle belt".
- S5.5.2(k)(1) The word "it" in the required statement is replaced by the phrase, "this child restraint". The statement reads, "Use only in a rear-facing position when using this child restraint in the vehicle".
- S5.5.2(k)(3) The same label also contains the Spanish translation.

Labels may be seen in photographs presented in Appendix D.

**DATA SHEET NO. 2**  
**PRINTED INSTRUCTIONS FOR PROPER USE**  
**(FMVSS 213, S5.6)**

Report No.:	213-MGA-13-021
Test Date:	3/6/2013

Item Code:	021-H61472-01-12CRBLFR
	021-H61472-02-NINRN2FR

Pass/Fail

S5.6 Printed Instructions for Proper Use:

Pass (1)

The subject child restraint system printed instructions were inspected to the requirements of S5.6 and no failures were identified.

Remarks:

- (1) S5.6.1.7(i) The letters "[http://](#)" are omitted from the required statement. The statement reads, "For recall information, call the U.S. Government's Vehicle Safety Hotline 1-888-327-4236 (TTY: 1-800-424-9153), or go to [www.NHTSA.gov](http://www.NHTSA.gov)".

**DATA SHEET NO. 3  
REGISTRATION FORM  
(FMVSS 213, S5.8)**

Report No.:	213-MGA-13-021
Test Date:	3/6/2013

Item Code:	021-H61472-01-12CRBLFR
	021-H61472-02-NINRN2FR

Pass/Fail

S5.8 Registration Form:

Pass

The subject child restraint system registration form (attached registration form and electronic registration form, as applicable) was inspected to the requirements of S5.8 and no failures were identified.

Remarks:

**DATA SHEET NO. 4**  
**INSTALLATION**  
**(FMVSS 213, S5.3, S5.9)**

Pass/Fail

S5.3.1 No attachment to vehicle seat cushion or seat back, nor insert between them (except for components designed to attach to a child restraint anchorage system, and harnesses labeled in accordance with S5.3.1(b)).

Pass

S5.3.2 Capable of meeting the requirements of FMVSS 213 when installed solely by each of the means checked below:

Pass

Type of Add-On CRS	Means of Installation*				
	Type I Seat Belt Assembly (Lap belt)	Type I Seat Belt Assembly + tether, if needed	Child restraint anchorage system	Type II Seat Belt Assembly (Lap & shoulder belt)	Seat back mount
Harnesses labeled per S5.3.1(b)(1) – S5.3.1(b)(3) & Figure 12					
Other Harnesses					
Car Beds					
Rear-Facing Restraints	X		X	X	
Belt-Positioning Seats					
All other child restraints					

\*Shaded yellow sections indicate installation means required by standard.

S5.3.3 Lateral installation for car beds.

N/A

Remarks:

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

**INSTALLATION**

S5.9 Attachment to Anchorage System

	<u>Pass/Fail</u>
(a) Child restraint system specified in S5.9(a) has lower anchorage components which can only be removed with a tool such as a screwdriver.	<u>Pass</u>
If a rear-facing restraint with a detachable base, only base is required to have components.	<u>Pass</u>
(b) Child restraint system specified in S5.9(b) has a tether hook which conforms to the configuration and geometry specified in Figure 11 of this standard.	<u>N/A</u>
(c) Child restraint system specified in S5.9(c) has adjustable components to tighten the child restraint to the vehicle.	<u>Pass</u>
(d) Child restraint system specified in S5.9(d) contains indication when each attachment to the lower anchorage becomes fully latched or attached, or a visual indication that all attachments to the lower anchorages are fully latched or attached.	<u>Pass</u>
Visual indications are detectable under normal daylight lighting conditions.	<u>N/A</u>

Remarks:

**DATA SHEET NO. 5**  
**MINIMUM HEAD SUPPORT SURFACE**  
**(FMVSS 213, S5.2.1)**

Report No.:	213-MGA-13-021
Test Date:	3/6/2013

Item Code:	021-H61472-01-12CRBLFR
	021-H61472-02-NINRN2FR

S5.2.1.2 The child restraint system (forward-facing) meets requirements of S5.2.1.2 (i.e. target point on either side of dummy's head is below a horizontal plane tangent to the top of the standard seat assembly) and is therefore exempt from S5.2.1.1.

No

S5.2.1.1

Back Support Height

Maximum Child Weight kg (lbs)	Required Minimum Height cm (in.)	Measured Height cm (in.)	Pass/Fail
≤ 18.0 kg (40 lb)	50.0 cm (19.7 in.)	52.0 cm (20.5 in.)	Pass
> 18.0 kg (40 lb)	56.0 cm (22.0 in.)	N/A	N/A

Back Support Width

Required Minimum Width cm (in.)	Measured Width cm (in.)	Measured Side Wing Depth cm (in.)	Pass/Fail
20.3 cm (8.0 in.)	25.0 cm (9.8 in.)	N/A	Pass
15.6 cm (6.0 in.)*	N/A	N/A	N/A

\*Side wings at least 102 mm (4 in.) deep provided.

Remarks:

**DATA SHEET NO. 6**  
**TORSO IMPACT PROTECTION**  
**(FMVSS 213, S5.2.2)**

Report No.:	213-MGA-13-021
Test Date:	3/6/2013

Item Code:	021-H61472-01-12CRBLFR
	021-H61472-02-NINRN2FR

S5.2.2.1

Test	Compliance Requirement	Test Result	Pass/Fail
Back Support Surface	Flat or concave	Concave	Pass
	Area $\geq$ 548 sq. cm (85 sq. in.)	Area $\geq$ 548 sq. cm (85 sq. in.)	Pass
Side Support Surface	Flat or concave	Flat	Pass
Max. Weight $\geq$ 9 kg (20 lbs)	Area $\geq$ 155 sq. cm (24 sq. in.)	Area $\geq$ 155 sq. cm (24 sq. in.)	Pass
Max. Weight < 9 kg (20 lbs)	Area $\geq$ 310 sq. cm (48 sq. in.)	N/A	N/A
Torso Forward Restraining Surface			
Horiz. Cross Section	Flat or concave	N/A	N/A
Vertical Longitudinal Cross Section	Flat or convex	N/A	N/A
	Radius of curvature $\geq$ 5 cm (2 in.)	N/A	N/A

S5.2.2.2 Forward Fixed or Movable Surface

Yes/No	Pass/Deferred
No	Pass

Remarks:

**DATA SHEET NO. 7**  
**PROTRUSION LIMITATION**  
**(FMVSS 213, S5.2.4)**

Report No.:	213-MGA-13-021
Test Date:	3/6/2013

Item Code:	021-H61472-01-12CRBLFR
	021-H61472-02-NINRN2FR

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

Remarks:



**TEST DATA NO. 8.1**  
**DYNAMIC IMPACT TEST CONDITIONS**  
**(FMVSS 213, S6.1)**

Report No.:	213-MGA-13-021	Sled Test No.	H13125F
Test Date:	3/15/2013	Item Code	021-H61472-01-12CRBLFR

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	20 (68)
Relative Humidity %	34

Test Configuration (I or II):	I
Velocity (km/h (mph)):	48 (+0, -3) (30 (+0, -2))
Dummy Description:	12 month old
Dummy Serial Number:	083
<b>Child Restraint System</b>	
Installed Direction:	Rear-Facing
Base Usage:	Optional Base
Attachment Method:	Lower Anchor
Tether Usage:	No
Seat Back Position:	Reclined
Internal Harness Shoulder Strap Position:	Belts were threaded through the top slot from the top of the restraint
Internal Harness Crotch Strap Position:	The crotch strap position is fixed

Remarks:

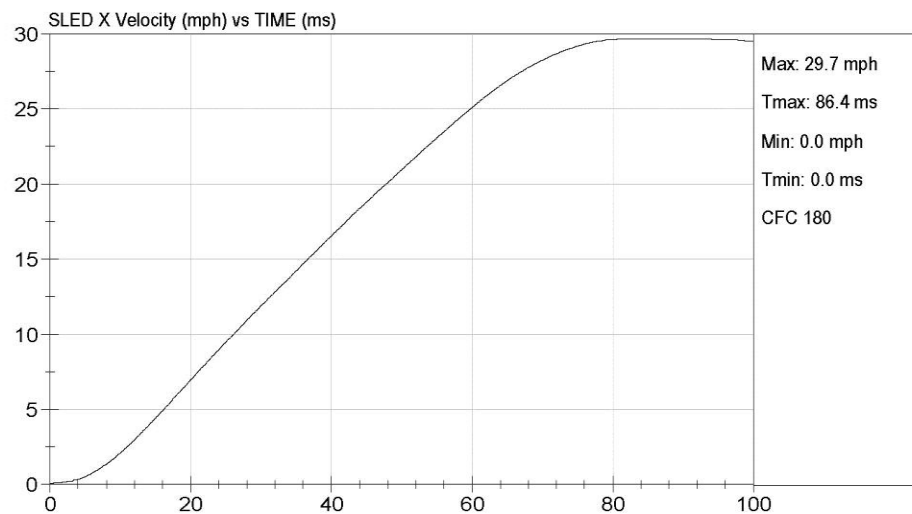
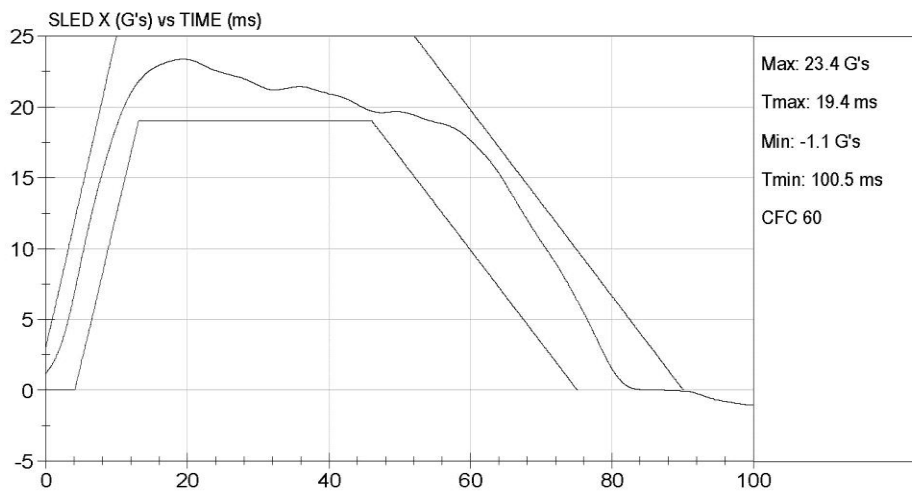
The acceleration-time history plot is presented on the following page. Pre and post test photographs are presented in Appendix D.

**TEST DATA NO. 8.1...(continued)**  
**DYNAMIC IMPACT TEST CONDITIONS**  
**(FMVSS 213, S6.1)**

Report No.:	213-MGA-13-021
Test Date:	3/15/2013

Sled Test No.	H13125F
Item Code	021-H61472-01-12CRBLFR

	FMVSS 213 TEST 021-H64172-01-12CRBLFR	TEST DATE: 03/15/2013 TEST #: H13125
---	--	---



**TEST DATA NO. 8.1...(continued)**

**BELT RESTRAINT**

**(FMVSS 213, S6.1)**

Report No.:	213-MGA-13-021	Sled Test No.	H13125F
Test Date:	3/15/2013	Item Code	021-H61472-01-12CRBLFR

S5.4.3.1 Snug Fit of Belts

Pass/Fail

Pass

Extra Webbing

Dummy	Each Shoulder Belt cm (in.)	Each Lap Belt Side cm (in.)	Crotch Belt cm (in.)
12 month old	(1)	(1)	(1)

S5.4.3.2 Direct Restraint Belts

Yes/No

Pass/Fail

- (1) Belt/dummy contact for restraint
- (2) Rigid structure behind dummy
- (3) Belt/child restraint slip possible

No  
Yes  
No

Note: If all "YES", and restraint weighs greater than 4.4 kg, restraint fails

Pass

S5.4.3.3 Seating System Belts and/or Shields

- (1) Upper Torso Belts
- (2) Lower Torso Shield
- (3) Lower Torso Belts
- (4) Lower Torso Shield
- (5) Crotch Restraint

Yes  
N/A  
Yes  
N/A  
Yes

Pass

S5.4.3.4 Harnesses

- (1) Upper Torso
- (2) Lower Torso
- (3) Prevent Standing

N/A  
N/A  
N/A

N/A

Remarks:

(1) The shoulder belts are threaded into a splitter plate behind the seat and are part of a continuous system with the lap belts with adjustment at the front of the restraint. The crotch strap is not adjustable.

**TEST DATA NO. 8.1...(continued)**  
**BUCKLE RELEASE**  
**(FMVSS 213, S5.4.3.5, S6.2)**

Report No.:	213-MGA-13-021	Sled Test No.	H13125F
Test Date:	3/15/2013	Item Code	021-H61472-01-12CRBLFR

Test	Compliance Requirement	Test Result	Pass/Fail
Buckle Minimum Surface Area	Area $\geq$ 3.9 cm <sup>2</sup> (0.6 in <sup>2</sup> )	4.4 cm <sup>2</sup> (0.7 in <sup>2</sup> )	Pass
Pre-Impact Release Force	Force Range: 40 to 62 N (9 to 14 lbs)	Right: 54.3 N (12.2 lbs) Left: 54.3 N (12.2 lbs) (1)	Pass
Buckle Integrity	Not Release During Test	No release	Pass
Post-Impact* Release Force	Force Range: $\leq$ 71 N (16 lbs)	Right: 52.1 N (11.7 lbs) Left: 52.1 N (11.7 lbs) (1)	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.

**TEST DATA NO. 8.1...(continued)**  
**RESTRAINT SYSTEM INTEGRITY**  
**(FMVSS 213, S5.1.1)**

Report No.:	213-MGA-13-021
Test Date:	3/15/2013

Sled Test No.	H13125F
Item Code	021-H61472-01-12CRBLFR

Test	Compliance Requirement	Test Result	Pass/Fail
Structural Integrity	No complete separation	None	Pass
	No partial separation with exposed edge radius < 6.35 mm (1/4 in.)	None	Pass
	No partial separation With protrusions > 9.53 mm (3/8 in.)	None	Pass
Adjustment Position	No change	None	Pass
Exposed openings (larger than 6.35 mm (1/4 in.)) become smaller during testing	Exposed openings remain larger than 6.35 mm (1/4 in.)	Remains	Pass
Back Surface/ Seating Surface Angle	Not < 45 degrees	> 45 degrees	Pass

Remarks:

**TEST DATA NO. 8.1...(continued)**  
**INJURY CRITERIA**  
**(FMVSS 213, S5.1.2)**

Report No.:	213-MGA-13-021	Sled Test No.	H13125F
Test Date:	3/15/2013	Item Code	021-H61472-01-12CRBLFR

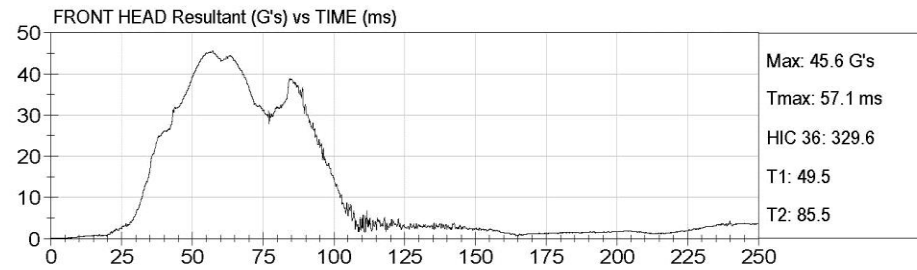
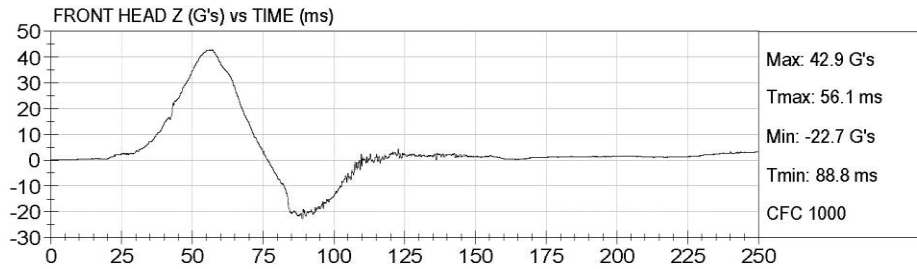
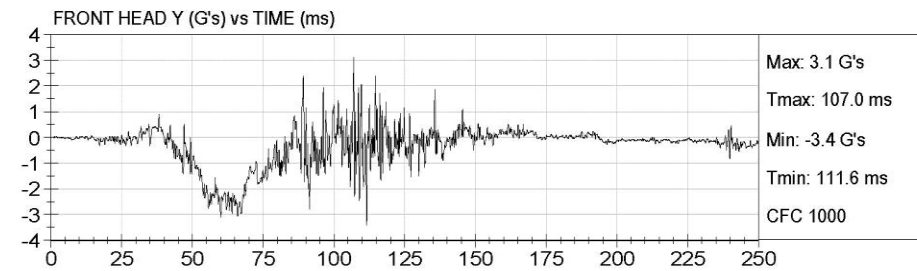
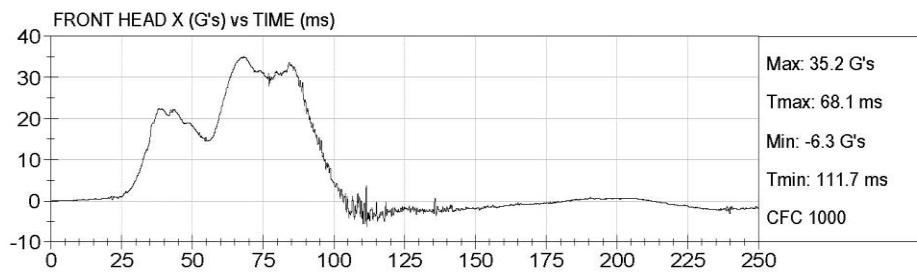
Test	Compliance Requirement	Test Result	Pass/Fail
Head Injury Criterion	$\leq 1000$	330	Pass
Chest Injury Criterion	Cumulative Duration Over 60 g $\leq 3$ ms	3 ms clip (g) = 50.5 Duration (ms) exceeded 60 g = 0.0	Pass

Remarks:

**TEST DATA NO. 8.1...(continued)**  
**INJURY CRITERIA**  
**(FMVSS 213, S5.1.2)**

Report No.:	213-MGA-13-021	Sled Test No.	H13125F
Test Date:	3/15/2013	Item Code	021-H61472-01-12CRBLFR

 FMVSS 213 TEST 021-H61472-01-12CRBLFR	TEST DATE: 03/15/2013
	TEST #: H13125

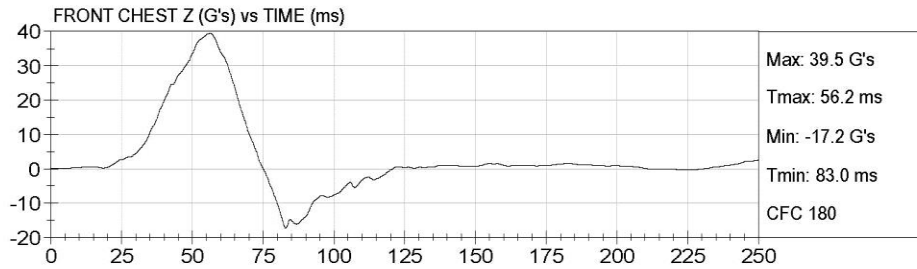
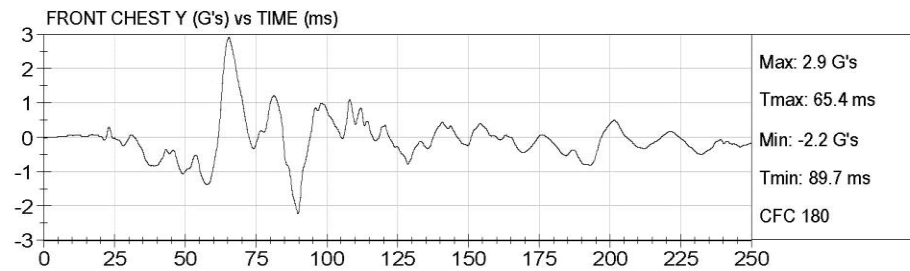


**TEST DATA NO. 8.1...(continued)**  
**INJURY CRITERIA**  
**(FMVSS 213, S5.1.2)**

Report No.:	213-MGA-13-021
Test Date:	3/15/2013

Sled Test No.	H13125F
Item Code	021-H61472-01-12CRBLFR

 <b>FMVSS 213 TEST</b> 021-H61472-01-12CRBLFR	<b>TEST DATE: 03/15/2013</b> <b>TEST #: H13125</b>
---	---





**TEST DATA NO. 8.1...(continued)**  
**OCCUPANT EXCURSION**  
**(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))**

Report No.:	213-MGA-13-021	Sled Test No.	H13125F
Test Date:	3/15/2013	Item Code	021-H61472-01-12CRBLFR

Forward-Facing Restraints

Test	Compliance Requirement	Test Result	Pass/Fail
Torso Retention (FMVSS 213, S5.1.3.1)	Retain within system	N/A	N/A
Head Excursion (FMVSS 213, S5.1.3.1)	≤ 81.3 cm (32 in.) No tether	N/A	N/A
	≤ 72.0 cm (28.4 in.) w/tether	N/A	N/A
Knee Target Excursion (FMVSS 213, S5.1.3.1)	≤ 91.5 cm (36 in.)	N/A	N/A
Head – Torso Angle (FMVSS 213, S5.2.1.1(c))	Rearward change ≤ 45 degrees	N/A	N/A

Rear-Facing Restraints

Test	Compliance Requirement	Test Result	Pass/Fail
Torso Retention (FMVSS 213, S5.1.3.2)	Retain within system	Retained	Pass
Head Target Excursion (FMVSS 213, S5.1.3.2)	Not beyond restraint's top and forward edge	Below	Pass
Back Support Angle (FMVSS 213, S5.1.4)	≤ 70 degrees	53 degrees	Pass
Head – Torso Angle (FMVSS 213, S5.2.1.1(c))	Rearward change ≤ 45 degrees	< 45 degrees	Pass

Car Bed Restraints

Test	Compliance Requirement	Test Result	Pass/Fail
Head – Torso Retention (FMVSS 213, S5.1.3.3)	Retain within confines of system	N/A	N/A

Remarks:

**TEST DATA NO. 8.2**  
**DYNAMIC IMPACT TEST CONDITIONS**  
**(FMVSS 213, S6.1)**

Report No.:	213-MGA-13-021	Sled Test No.	H13125R
Test Date:	3/15/2013	Item Code	021-H61472-02-NINRN2FR

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	20 (68)
Relative Humidity %	34

Test Configuration (I or II):	I
Velocity (km/h (mph)):	48 (+0, -3) (30 (+0, -2))
Dummy Description:	Newborn
Dummy Serial Number:	004
<b>Child Restraint System</b>	
Installed Direction:	Rear-Facing
Base Usage:	Other Configuration
Attachment Method:	Lap Belt
Tether Usage:	No
Seat Back Position:	Reclined
Internal Harness Shoulder Strap Position:	Belts were threaded through the bottom slot from the top of the restraint
Internal Harness Crotch Strap Position:	The crotch strap position is fixed

Remarks:

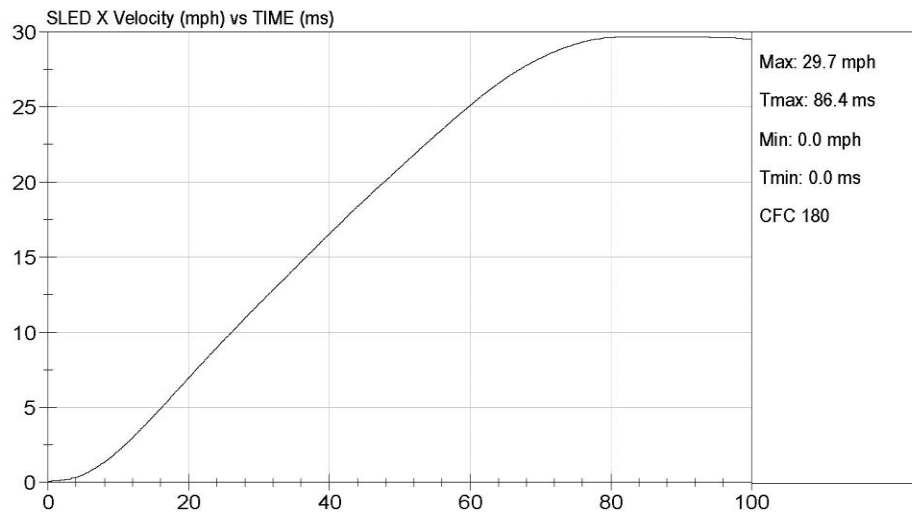
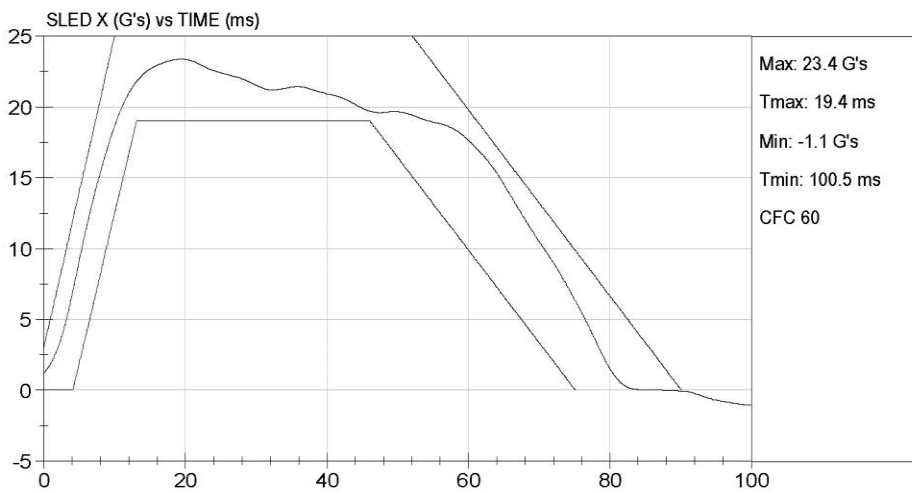
The acceleration-time history plot is presented on the following page. Pre and post test photographs are presented in Appendix D.

**TEST DATA NO. 8.2...(continued)**  
**DYNAMIC IMPACT TEST CONDITIONS**  
**(FMVSS 213, S6.1)**

Report No.:	213-MGA-13-021
Test Date:	3/15/2013

Sled Test No.	H13125R
Item Code	021-H61472-02-NINRN2FR

	FMVSS 213 TEST 021-H64172-02-NINRN2FR	TEST DATE: 03/15/2013 TEST #: H13125
---	--	---



**TEST DATA NO. 8.2...(continued)**

**BELT RESTRAINT**

**(FMVSS 213, S6.1)**

Report No.:	213-MGA-13-021
Test Date:	3/15/2013

Sled Test No.	H13125R
Item Code	021-H61472-02-NINRN2FR

Pass/Fail

S5.4.3.1 Snug Fit of Belts

Pass

Extra Webbing

Dummy	Each Shoulder Belt cm (in.)	Each Lap Belt Side cm (in.)	Crotch Belt cm (in.)
Newborn	(1)	(1)	(1)

S5.4.3.2 Direct Restraint Belts

Yes/No

Pass/Fail

- (1) Belt/dummy contact for restraint
  - (2) Rigid structure behind dummy
  - (3) Belt/child restraint slip possible
- Note: If all "YES", and restraint weighs greater than 4.4 kg, restraint fails

No  
Yes  
No

Pass

S5.4.3.3 Seating System Belts and/or Shields

Pass

- (1) Upper Torso Belts
- (2) Lower Torso Shield
- (3) Lower Torso Belts
- (4) Lower Torso Shield
- (5) Crotch Restraint

Yes  
N/A  
Yes  
N/A  
Yes

S5.4.3.4 Harnesses

N/A

- (1) Upper Torso
- (2) Lower Torso
- (3) Prevent Standing

N/A  
N/A  
N/A

Remarks:

(1) The shoulder belts are threaded into a splitter plate behind the seat and are part of a continuous system with the lap belts with adjustment at the front of the restraint. The crotch strap is not adjustable.

**TEST DATA NO. 8.2...(continued)**  
**BUCKLE RELEASE**  
**(FMVSS 213, S5.4.3.5, S6.2)**

Report No.:	213-MGA-13-021	Sled Test No.	H13125R
Test Date:	3/15/2013	Item Code	021-H61472-02-NINRN2FR

Test	Compliance Requirement	Test Result	Pass/Fail
Buckle Minimum Surface Area	Area $\geq$ 3.9 cm <sup>2</sup> (0.6 in <sup>2</sup> )	4.4 cm <sup>2</sup> (0.7 in <sup>2</sup> )	Pass
Pre-Impact Release Force	Force Range: 40 to 62 N (9 to 14 lbs)	Right: 50.3 N (11.3 lbs) Left: 50.3 N (11.3 lbs) (1)	Pass
Buckle Integrity	Not Release During Test	No release	Pass
Post-Impact* Release Force	Force Range: $\leq$ 71 N (16 lbs)	Right: 48.5 N (10.9 lbs) Left: 48.5 N (10.9 lbs) (1)	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.

**TEST DATA NO. 8.2...(continued)**  
**RESTRAINT SYSTEM INTEGRITY**  
**(FMVSS 213, S5.1.1)**

Report No.:	213-MGA-13-021
Test Date:	3/15/2013

Sled Test No.	H13125R
Item Code	021-H61472-02-NINRN2FR

Test	Compliance Requirement	Test Result	Pass/Fail
Structural Integrity	No complete separation	None	Pass
	No partial separation with exposed edge radius < 6.35 mm (1/4 in.)	None	Pass
	No partial separation With protrusions > 9.53 mm (3/8 in.)	None	Pass
Adjustment Position	No change	None	Pass
Exposed openings (larger than 6.35 mm (1/4 in.)) become smaller during testing	Exposed openings remain larger than 6.35 mm (1/4 in.)	Remains	Pass
Back Surface/ Seating Surface Angle	Not < 45 degrees	> 45 degrees	Pass

Remarks:

**TEST DATA NO. 8.2...(continued)**  
**OCCUPANT EXCURSION**  
**(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))**

Report No.:	213-MGA-13-021	Sled Test No.	H13125R
Test Date:	3/15/2013	Item Code	021-H61472-02-NINRN2FR

Forward-Facing Restraints

Test	Compliance Requirement	Test Result	Pass/Fail
Torso Retention (FMVSS 213, S5.1.3.1)	Retain within system	N/A	N/A
Head Excursion (FMVSS 213, S5.1.3.1)	≤ 81.3 cm (32 in.) No tether	N/A	N/A
	≤ 72.0 cm (28.4 in.) w/tether	N/A	N/A
Knee Target Excursion (FMVSS 213, S5.1.3.1)	≤ 91.5 cm (36 in.)	N/A	N/A
Head – Torso Angle (FMVSS 213, S5.2.1.1(c))	Rearward change ≤ 45 degrees	N/A	N/A

Rear-Facing Restraints

Test	Compliance Requirement	Test Result	Pass/Fail
Torso Retention (FMVSS 213, S5.1.3.2)	Retain within system	Retained	Pass
Head Target Excursion (FMVSS 213, S5.1.3.2)	Not beyond restraint's top and forward edge	Below	Pass
Back Support Angle (FMVSS 213, S5.1.4)	≤ 70 degrees	45 degrees	Pass
Head – Torso Angle (FMVSS 213, S5.2.1.1(c))	Rearward change ≤ 45 degrees	< 45 degrees	Pass

Car Bed Restraints

Test	Compliance Requirement	Test Result	Pass/Fail
Head – Torso Retention (FMVSS 213, S5.1.3.3)	Retain within confines of system	N/A	N/A

Remarks:

**TEST DATA NO. 9.0**  
**AIRCRAFT PASSENGER SEAT INVERSION TEST**  
**CONDITIONS AND RESULTS**  
**(FMVSS 213, S8.2, S8.2.5, S8.2.6)**

Report No.:	213-MGA-13-021
Test Date:	3/16/2013

Item Code:	021-H61472-Inv01-NINRB2FR
	021-H61472-Inv02-12CRN2FR

S8.1 Each child restraint system manufactured for use in aircraft shall be accompanied by printed instructions in English that provide a step-by-step procedure, including diagrams, for installing the system in aircraft passenger seats, securing a child in the system when it is installed in aircraft, and adjusting the system to fit the child.

Pass/Fail

Pass

Remarks:



**TEST DATA NO. 9.1**  
**AIRCRAFT PASSENGER SEAT INVERSION TEST**  
**CONDITIONS AND RESULTS**  
**(FMVSS 213, S8.2, S8.2.5, S8.2.6)**

Report No.:	213-MGA-13-021	Test No.	021N
Test Date:	3/16/2013	Item Code	021-H61472-Inv01-NINRB2FR

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21 (70)
Relative Humidity %	26

<b>Inversion Test</b>	
Dummy Description:	Newborn
Dummy Serial Number:	004
<b>Child Restraint System</b>	
Installed Direction:	Rear-Facing
Base Usage:	Optional Base
Seat Back Position:	Reclined
Internal Harness Shoulder Strap Position:	Belts were threaded through the bottom slot from the top of the restraint
Internal Harness Crotch Strap Position:	The crotch strap position is fixed

**TEST DATA NO. 9.1...continued**  
**AIRCRAFT PASSENGER SEAT INVERSION TEST**  
**CONDITIONS AND RESULTS**  
**(FMVSS 213, S8.2, S8.2.5, S8.2.6)**

Report No.:	213-MGA-13-021
Test Date:	3/16/2013

Test No.	021N
Item Code	021-H61472-Inv01-NINRB2FR

Rotation About Y-Axis (Forward)

Test	Compliance Requirement	Test Result	Pass/Fail
Dummy Retention (FMVSS 213, S8.2.5)	Retained within system	Retained	Pass
Child Restraint Retention (FMVSS 213, S8.2.5)	Retained within aircraft seat	Retained	Pass

Rotation About X-Axis (Lateral)

Test	Compliance Requirement	Test Result	Pass/Fail
Dummy Retention (FMVSS 213, S8.2.6)	Retained within system	Retained	Pass
Child Restraint Retention (FMVSS 213, S8.2.6)	Retained within aircraft seat	Retained	Pass

Remarks:

**TEST DATA NO. 9.2**  
**AIRCRAFT PASSENGER SEAT INVERSION TEST**  
**CONDITIONS AND RESULTS**  
**(FMVSS 213, S8.2, S8.2.5, S8.2.6)**

Report No.:	213-MGA-13-021	Test No.	02112
Test Date:	3/16/2013	Item Code	021-H61472-Inv02-12CRN2FR

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21 (70)
Relative Humidity %	26

<b>Inversion Test</b>	
Dummy Description:	12 month old
Dummy Serial Number:	082
<b>Child Restraint System</b>	
Installed Direction:	Rear-Facing
Base Usage:	Other Configuration
Seat Back Position:	Reclined
Internal Harness Shoulder Strap Position:	Belts were threaded through the top slot from the top of the restraint
Internal Harness Crotch Strap Position:	The crotch strap position is fixed

**TEST DATA NO. 9.2...continued**  
**AIRCRAFT PASSENGER SEAT INVERSION TEST**  
**CONDITIONS AND RESULTS**  
**(FMVSS 213, S8.2, S8.2.5, S8.2.6)**

Report No.:	213-MGA-13-021
Test Date:	3/16/2013

Test No.	02112
Item Code	021-H61472-Inv02-12CRN2FR

Rotation About Y-Axis (Forward)

Test	Compliance Requirement	Test Result	Pass/Fail
Dummy Retention (FMVSS 213, S8.2.5)	Retained within system	Retained	Pass
Child Restraint Retention (FMVSS 213, S8.2.5)	Retained within aircraft seat	Retained	Pass

Rotation About X-Axis (Lateral)

Test	Compliance Requirement	Test Result	Pass/Fail
Dummy Retention (FMVSS 213, S8.2.6)	Retained within system	Retained	Pass
Child Restraint Retention (FMVSS 213, S8.2.6)	Retained within aircraft seat	Retained	Pass

Remarks:

**APPENDIX A**

INTERPRETATION AND/OR DEVIATIONS  
FROM  
FMVSS 213

There were no deviations from FMVSS 213.

## APPENDIX B

### 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
	3H3 – 3 YO, Hybrid III
	12C -12 MO, CRABI
	6H2 – 6YO Hybrid II
	6H3 – 6YO, Hybrid III
	6W3 – 6 YO, Weighted Hybrid III
Installed Direction	R – Rear Facing
	F – Forward Facing
	S- Faces Sideways (applies to carbeds)
Base Usage	B – Optional base used with CRS
	N – All other configurations
Attachment Method	L – Lower anchors
	2 – Lap belt
	3 – Lap & shoulder belt
	M – Seat back mount
Tether Usage	T – Tether
	F – Tether Free
Seat Back Position	U – Upright
	R – Reclined
	N – Not Applicable



## APPENDIX C

### INSTRUMENTATION CALIBRATION

CERTIFICATION INSTRUMENTATION

Sled Accelerometers	Manufacturer	Model Number	Calibration Date	Due Date
Primary – S/N 611343	Sensotec	JTF/3629-02	10/22/12	4/23/13
Redundant – S/N 641016	Sensotec	JTF/3629-02	10/22/12	4/23/13

Temperature/Humidity Logger	Manufacturer	Model Number	Calibration Date	Due Date
S/N – 07042094 Accuracy 0.5°F, 2% RH	Veriteq	SP-2000-20R	11/15/12	5/17/13

Force Gauges	Manufacturer	Model Number	Calibration Date	Due Date
5 lb, Accuracy $\pm$ 0.5 lb – S/N 3460	Wagner	FDK 5	10/19/12	4/19/13
20 lb, Accuracy $\pm$ 0.5 lb S/N 3509	Wagner	FDK 20	10/1/12	4/1/13
60 lb, Accuracy $\pm$ 0.5 lb S/N 18104	Wagner	FDK 60	1/18/13	7/18/13

DUMMY CALIBRATION LAB INSTRUMENTATION

Neck Pendulum	Manufacturer	Model Number	Calibration Date	Due Date
Neck Pendulum Potentiometer S/N 18 1k, 0.99992% linearity	Spectrol	132-0-0-102	2/20/13	8/20/13
C.G. Head Potentiometer S/N 29 1k, 0.99859% linearity	Spectrol	132-0-0-102	2/20/13	8/20/13
Neck Pendulum Accelerometer S/N AGH72	Endevco	7231C-750	3/4/13	9/4/13
Thorax Pendulum S/N P73120	Endevco	7264C-2KTZ-2-360M17	11/19/12	5/19/13

Lumbar Spine Flexion	Manufacturer	Model Number	Calibration Date	Due Date
S/N 06I27-C03 250 Pounds	Entran	ELPM-T3E-250L	2/21/13	8/21/13

Head Drop Accelerometers	Manufacturer	Model Number	Calibration Date	Due Date
S/N P77654	Endevco	7264C-2KTZ-2-360M17	2/14/13	8/14/13
S/N P77655	Endevco	7264C-2KTZ-2-360M17	2/14/13	8/14/13
S/N P77656	Endevco	7264C-2KTZ-2-360M17	2/14/13	8/14/13

TEST DUMMY INSTRUMENTATION

SERIAL NUMBER 083

Head Accelerometers	Manufacturer	Model Number	Calibration Date	Due Date
Head X – S/N P73168	Endevco	7264C-2KTZ-2-360M17	9/28/12	3/28/13
Head Y – S/N P73169	Endevco	7264C-2KTZ-2-360M17	9/28/12	3/28/13
Head Z – S/N P73170	Endevco	7264C-2KTZ-2-360M17	9/28/12	3/18/13

Chest Accelerometers	Manufacturer	Model Number	Calibration Date	Due Date
Chest X – S/N P73726	Endevco	7264C-2KTZ-2-360M17	9/28/12	3/28/13
Chest Y – S/N P73727	Endevco	7264C-2KTZ-2-360M17	9/28/12	3/28/13
Chest Z – S/N P78728	Endevco	7264C-2KTZ-2-360M17	9/28/12	3/28/13

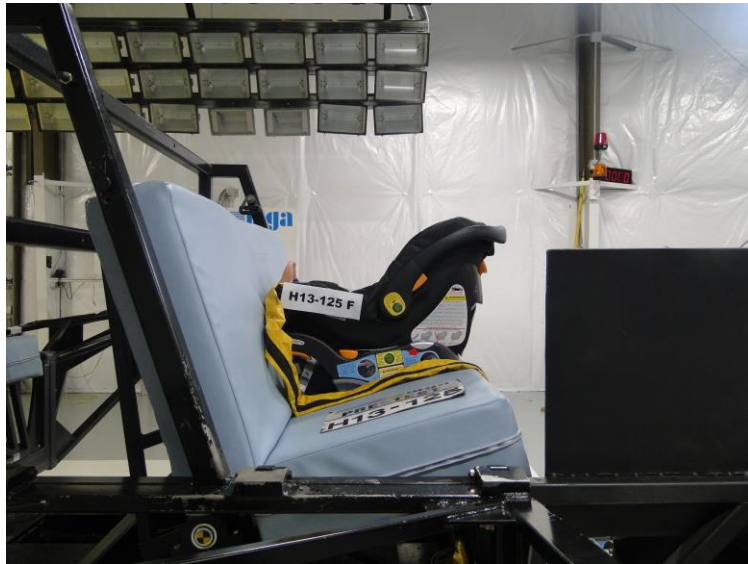
## APPENDIX D

### PHOTOGRAPHS

SLED BUCK – STANDARD BENCH SEAT  
Report No.: 213-MGA-13-021







Item Code: 021-H64172-01-12CRBLFR

Report No.: 213-MGA-13-021

Sled Test: H13125F

Pre-Test



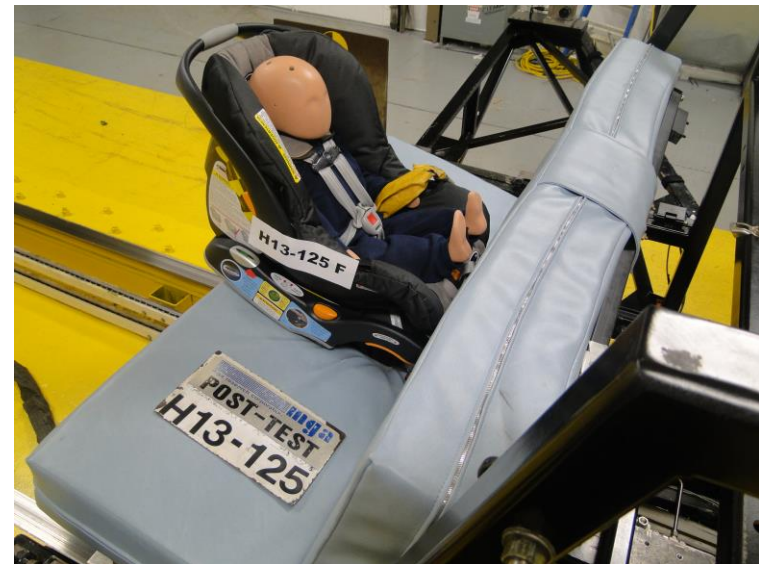
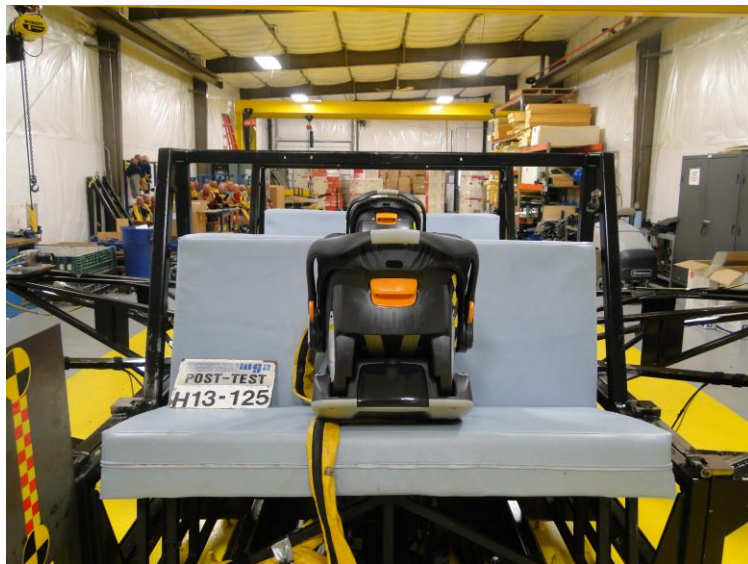


Item Code: 021-H64172-01-12CRBLFR

Report No.: 213-MGA-13-021

Sled Test: H13125F

Post-Test



Item Code: 021-H64172-01-12CRBLFR

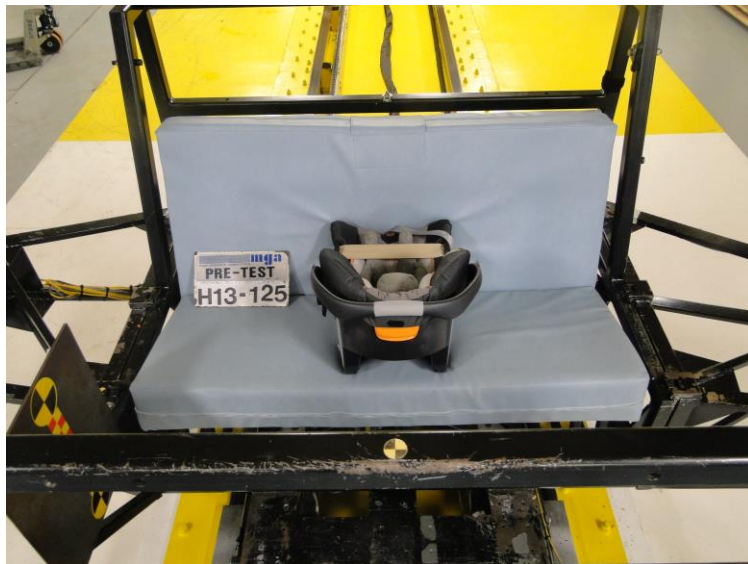
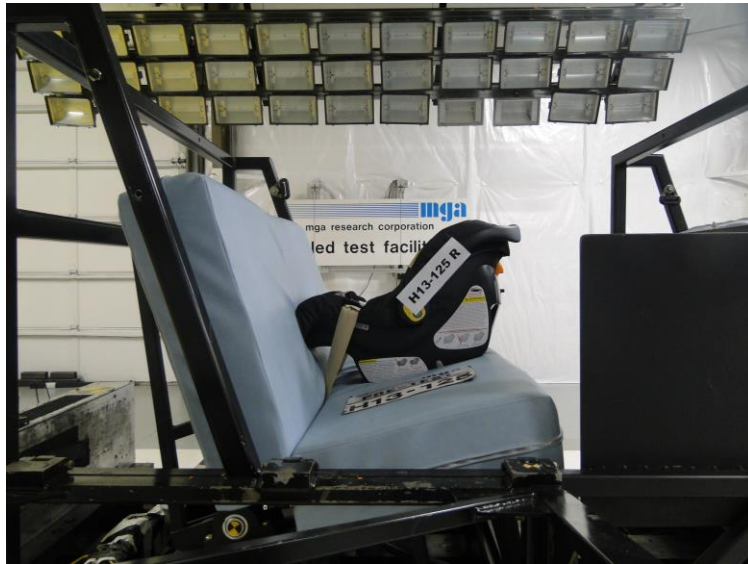
Report No.: 213-MGA-13-021

Sled Test: H13125F

Post-Test







Item Code: 021-H64172-02-NINRN2FR

Report No.: 213-MGA-13-021

Sled Test: H13125R

Pre-Test



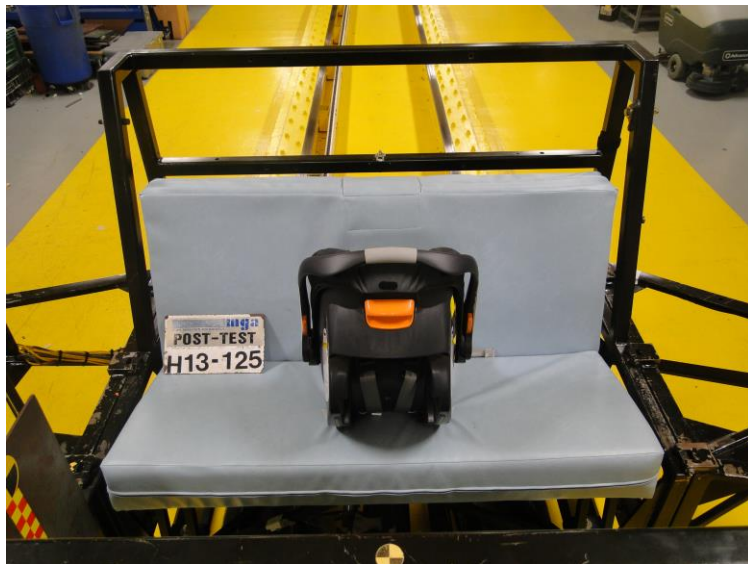


Item Code: 021-H64172-02-NINRN2FR

Report No.: 213-MGA-13-021

Sled Test: H13125R

Post-Test



6-D

Item Code: 021-H64172-02-NINRN2FR

Report No.: 213-MGA-13-021

Sled Test: H13125R

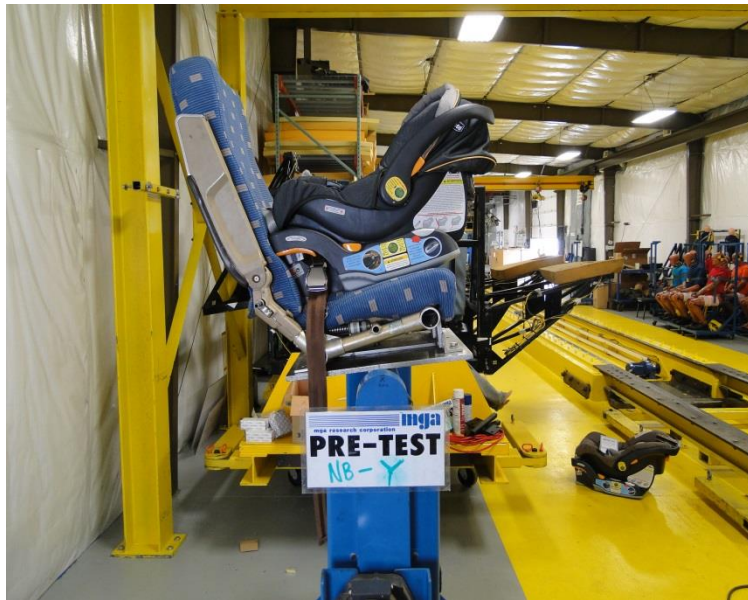
Post-Test





Test: 021N

X AND Y AXIS PRE AND POST-TEST

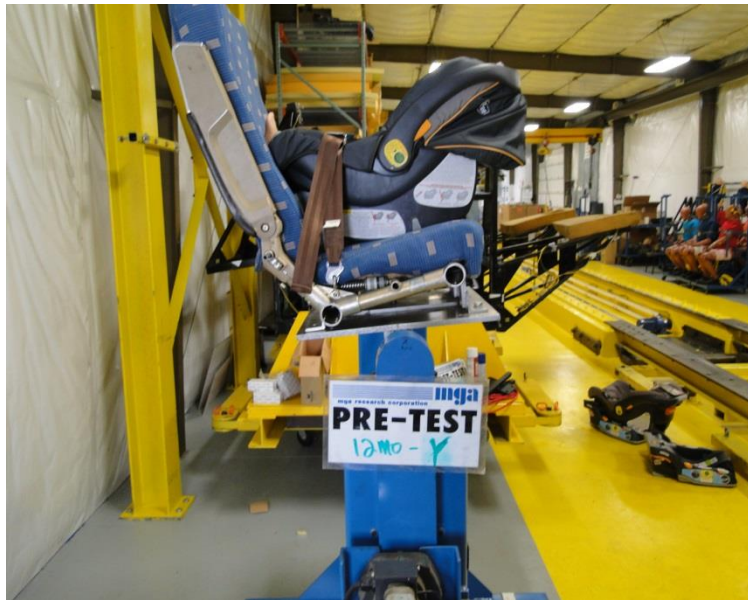


D-11



Test: 02112

X AND Y AXIS PRE AND POST-TEST



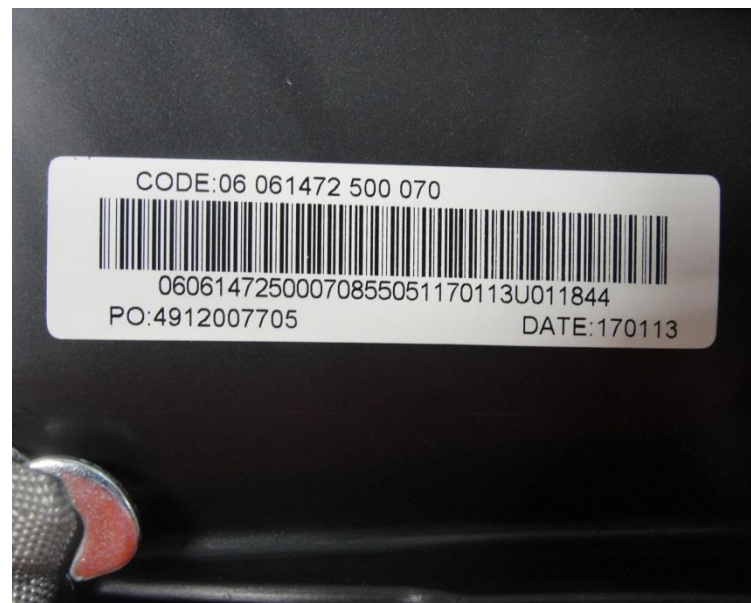
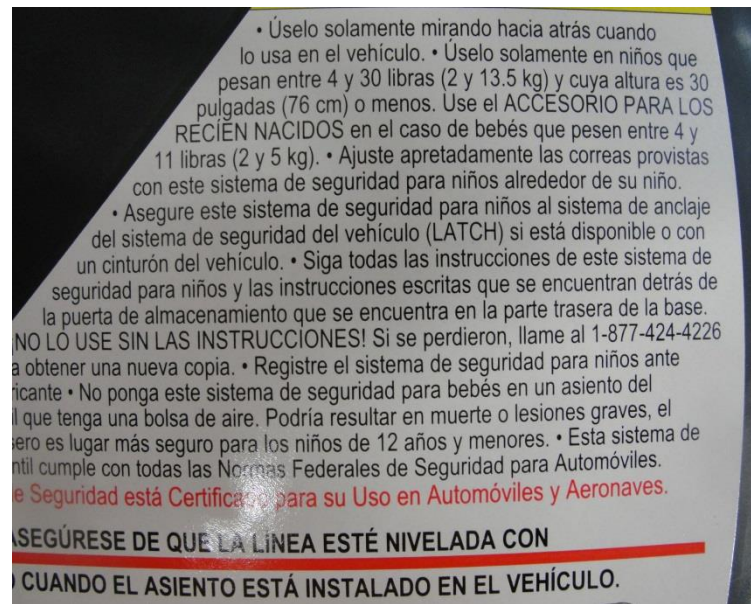


LABELS

Item Code: 021-H64172-01-12CRBLFR

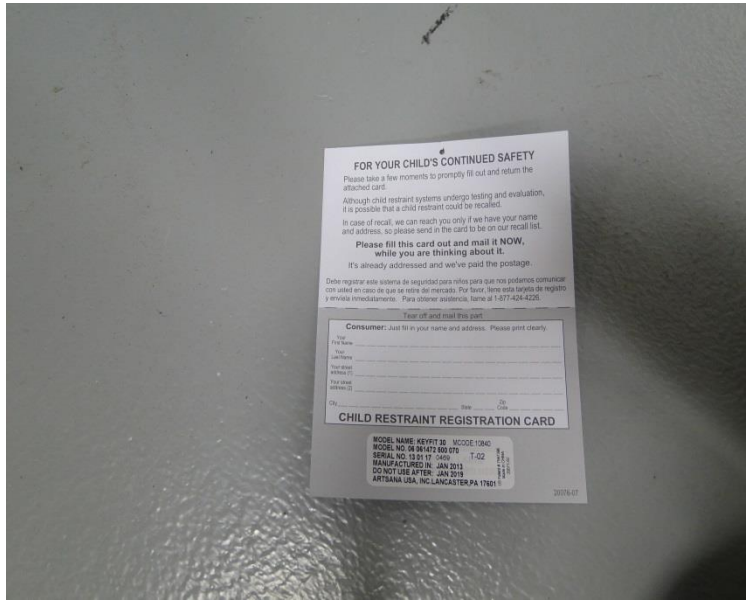


Item Code: 021-H64172-02-NINRN2FR

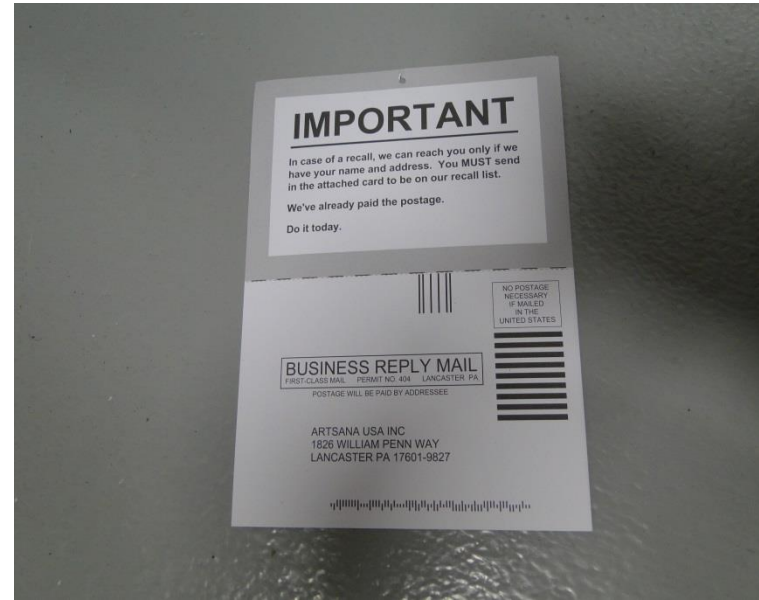


LABELS

Item Code: 021-H64172-01-12CRBLFR



Item Code: 021-H64172-02-NINRN2FR



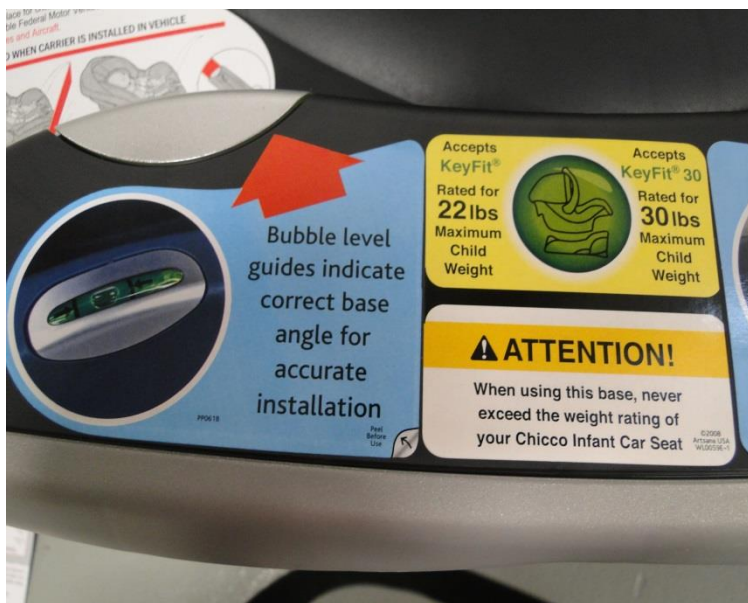
D-14





LABELS

Item Code: 021-H64172-01-12CRBLFR



Item Code: 021-H64172-02-NINRN2FR



LABELS

Item Code: 021-H64172-01-12CRBLFR



Item Code: 021-H64172-02-NINRN2FR



D-16





LABELS

Item Code: 021-H64172-01-12CRBLFR

Item Code: 021-H64172-02-NINRN2FR



D-17

LABELS

Item Code: 021-H64172-01-12CRBLFR

Item Code: 021-H64172-02-NINRN2FR

**WARNING**  
DEATH or SERIOUS INJURY can occur.

- READ OWNER'S MANUAL before installing Child Restraint.
- ONLY USE this Base with compatible Chicco Carrier.
- NEVER leave Carrier or Base unsecured in your vehicle.
- MAKE SURE nothing interferes with carrier attachment to base.
- STORE LATCH connectors when not using for installation.

**ADVERTENCIA**  
Puede ocurrir la MUERTE O UNA LESIÓN SERIA.

- LEA el manual del dueño antes de instalar la sistema de seguridad para niños. • USE SOLAMENTE esta base con el portabebés compatibles Chicco. • NUNCA deje el portabebés o la base en el vehículo sin asegurarlos.
- ASEGÚRESE de que nada interfiera con el funcionamiento de el portabebés a la base. • GUARDE las conexiones de las trabas cuando no las usa para la instalación.

10714-T02

**BASE INSTALLATION METHODS**

el portabebés a la base. • GUARDE las conexiones de las trabas cuando no las usa para la instalación. 10714-T02

**BASE INSTALLATION METHODS**  
MÉTODOS DE INSTALACIÓN DE LA BASE

**Lap Belt** Cinturón de seguridad abdominal



10713-T02A

Cinturón de seguridad

10713-T02A

**Lap-Shoulder Belt** Cinturón de seguridad abdominal / hombro



**SHOULDER BELT LOCK-OFF**  
TRABA DEL CINTURÓN

**LATCH**



**LATCH**



10713-T02B

**chicco** ADDITIONAL BASES are available at your local retailer or by calling 1-877-424-4226.  
Se dispone de bases adicionales en su comercio local o llamando al 1-877-424-4226. 10700-T02

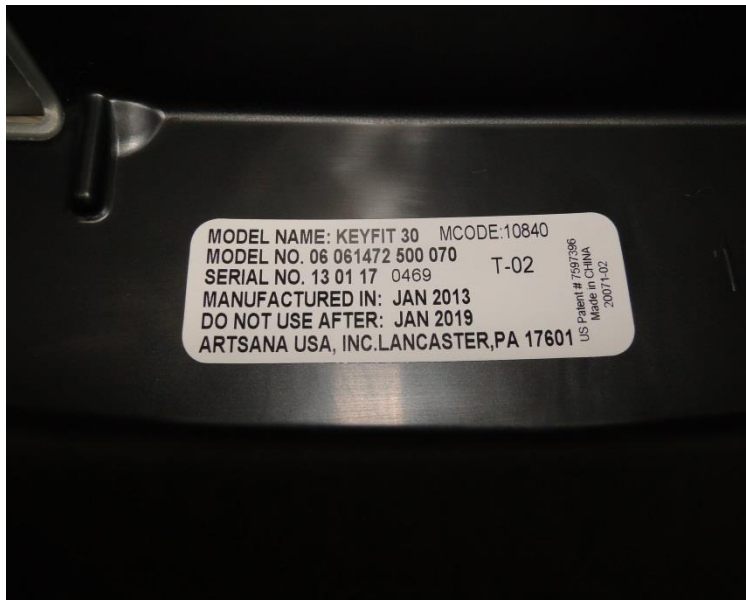
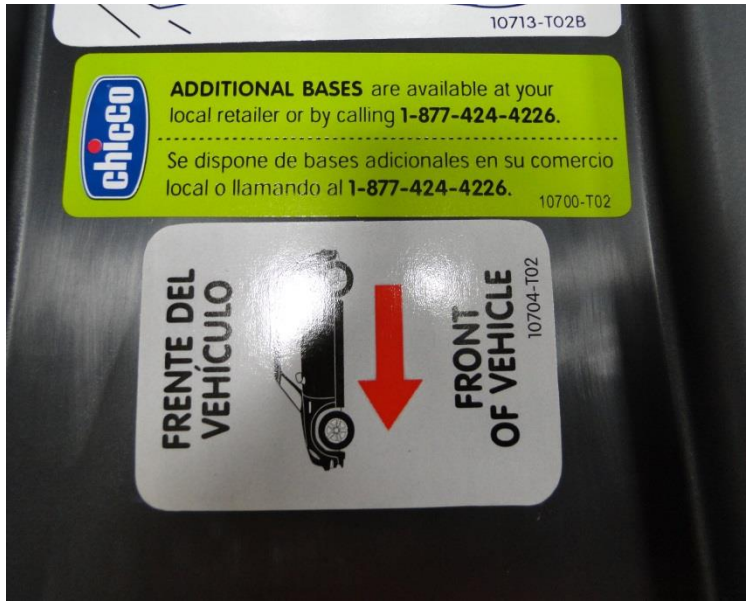
**ITE DEL VEHÍCULO** **ONT VEHICULO** 10704-T02



LABELS

Item Code: 021-H64172-01-12CRBLFR

Item Code: 021-H64172-02-NINRN2FR



LABELS

Item Code: 021-H64172-01-12CRBLFR

Item Code: 021-H64172-02-NINRN2FR





LABELS

Item Code: 021-H64172-01-12CRBLFR



Item Code: 021-H64172-02-NINRN2FR



CONFIGURATION

Item Code: 021-H64172-01-12CRBLFR

Item Code: 021-H64172-02-NINRN2FR

