

**Report No.
4642921-061**

**CHILD RESTRAINT SYSTEM
COMPONENT TESTS
FMVSS 213**

**Model No:
Cybex Aton M**

**SGS North America Inc.
Consumer and Retail
291 Fairfield Avenue
Fairfield, NJ 07004**



July 22, 2021

FINAL REPORT

213-SGS-20-061


PREPARED FOR

**U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVE, SE (ROOM W45-304)
WASHINGTON, D.C. 20590**

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

Report No.: 4642921-061

Prepared by: SGS North America Inc.

Approved by: 
Frank Savino

Date: July 22, 2021

Report Accepted by:

**Contract Technical Manager, O.V.S.C.
Office of Vehicle Safety Compliance**

Accepted By:
Kelley-Adams-Campos

Acceptance Date:

1. Report No. 213-SGS-20-061	2. Govt. Accession No.	3. Recipient's Catalog No.	
4. Title and Sub-Title CHILD RESTRAINT SYSTEM, COMPONENT PARTS, Model No.: Cybex Aton M		5. Report Date: July 22, 2021	
6. Performing Organization Code SGS-213-20-061		7. Author: Frank Savino, Project Manager	
8. Performing Organization Report No. SGS-DOT-213-20-061		9. Performing Organization Name and Address: SGS North America Inc. 291 Fairfield Avenue Fairfield, NJ 07004	
10. Work Unit No.		11. Order Number DTNH22-17-D-00079	
12. Sponsoring Agency Name and Address: U.S. DEPARTMENT OF TRANSPORTATION NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION ENFORCEMENT OFFICE OF VEHICLE SAFETY COMPLIANCE 1200 NEW JERSEY AVE, SE (ROOM W45-304) WASHINGTON, D.C. 20590		13. Type of report and Period Covered FINAL TEST REPORT July 16 – August 14, 2020 & July 1, 2021	
14. Sponsoring Agency Code: NVS-220		15.	
16. Abstract THIS REPORT PRESENTS THE RESULTS OF TESTS PERFORMED IN ACCORDANCE WITH FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 213 ON CHILD RESTRAINT SYSTEM COMPONENT PARTS. MODEL NUMBER: Cybex Aton M The strength of the adjuster webbing after abrasion was below the minimum value required.			
17. Key Words FMVSS No. 213 Child Restraint System Safety Engineering		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services, Room 5111 (NPO-411) 1200 New Jersey Avenue, SE (Room E12-100) Washington, DC 20590 email: tis@nhtsa.dot.gov Telephone No. 202-493-2833	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this Page) Unclassified	21. No. of Pages 38	22. Price

TABLE OF CONTENTS

Section 1.	Purpose and Test Procedure
Section 2.	Inspection Data and Test Data
Appendix A.	Equipment List and Calibration Schedules
Appendix B.	Interpretations or Deviations from FMVSS No. 213
Appendix C.	Photographs of Equipment and Seat

SECTION 1

PURPOSE AND TEST PROCEDURES

PURPOSE AND TEST PROCEDURES

Purpose: The purpose of this report was to determine if the production child restraint components parts supplied by the National Highway Traffic Safety Administration met the requirements of Federal Motor Vehicle Safety Standard Number 213 - "Child Restraint System".

Test Procedures: The "SGS North America Inc. Laboratories Test Procedure for FMVSS No. 213" dated July 2012 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 No. 213 and amendments in effect as noted in the applicable order.

SECTION 2

INSPECTION DATA AND TEST DATA

INSPECTION AND TEST DATA
FMVSS NO. 213 - CHILD RESTRAINT SYSTEMS

Report No.: 4642921-061

Child Restraint System Identification

Manufacturer:

Name: Columbus Trading – Partners USA Inc

Address: 1801 Commerce Drive
Piqua, OH 45356

Model: Aton M

Technicians: Charles Kehaya, John Roycraft

Project Manager: Frank Savino

WEBBING PERFORMANCE TESTS (a213-5.4.1)**Report No.:** 4642921-061**Test Date:** August 3, 2020**Laboratory Ambient Conditions During Testing**

Temperature: 73 ° F

Relative Humidity: 50 %

Webbing Usage on Restraint: Harness

<u>Test</u>	<u>Compliance Requirement</u>	<u>Test Result</u>	<u>Pass/Fail</u>
Non-Degraded Webbing (FMVSS 209, S5.1 (b))	New webbing breaking strength, 15,000 N (webbing used to secure CRS to vehicle) or 11,000 N (webbing used to secure child within CRS)	1. 14,433 2. 14,681 3. 14,602 Median: 14,602	Pass
Resistance to Abrasion (FMVSS 209, S4.2(d) & S5.1(d)) Abrasion Cycles Performed 2500 (2500 Required)	Median breaking strength, Newtons (75% of median baseline strength)	1. 12,735 2. 12,354 3. 12,959 Median: 12,735 Strength Retained: 87.2%	Pass
Resistance to Buckle Abrasion (FMVSS 209, S5.3(c)) Abrasion cycles Performed 2500 (2500 Required)	Median breaking strength, Newtons (75% of median baseline strength)	1. N/A 2. N/A 3. N/A Median: N/A	N/A

WEBBING PERFORMANCE TESTS (a213-5.4.1) (Continued)**Report No.:** 4642921-061**Test Date:** August 3, 2020

<u>Test</u>	<u>Compliance Requirement</u>	<u>Test Result</u>	<u>Pass/Fail</u>
Resistance to Light (FMVSS 209, S4.2 (e) & S5.1(e)) Exposure Time 100 Hr. (100 Hours Required)	Median breaking strength, Newtons (60% of median baseline strength)	1. 13,665 2. 13,545 3. 13,733 Median: 13,665 Strength Retained: 93.6%	Pass
	Color Retention >= No. 2 on the Geometric Gray Scale	1. 5 2. 5 3. 5	Pass
Resistance to Micro- Organisms (FMVSS 209, S4.2 (f), S5.1 (f))	Median breaking strength, Newtons (85% of median baseline strength)	1. N/A 2. N/A 3. N/A Median: N/A	N/A
Width Requirement (FMVSS 213, S5.4.1.3)	Width >= 38 mm) If webbing contacts the test dummy torso	1. 38.0 2. 38.0 3. 38.0	Pass

Remarks:**Technicians:** John Roycraft**Project Manager:** Frank Savino

WEBBING PERFORMANCE TESTS (a213-5.4.1)**Report No.:** 4642921-061**Test Date:** August 3, 2020 & July 1, 2021**Laboratory Ambient Conditions During Testing**

Temperature: 73 ° F

Relative Humidity: 50 %

Webbing Usage on Restraint: Adjuster

<u>Test</u>	<u>Compliance Requirement</u>	<u>Test Result</u>	<u>Pass/Fail</u>
Non-Degraded Webbing (FMVSS 209, S5.1 (b))	New webbing breaking strength, 15,000 N (webbing used to secure CRS to vehicle) or 11,000 N (webbing used to secure child within CRS)	1. 15,154 2. 13,995 3. 14,164 Median: 14,164	Pass
Resistance to Abrasion (FMVSS 209, S4.2(d) & S5.1(d)) Abrasion Cycles Performed 2500 (2500 Required)	Median breaking strength, Newtons (75% of median baseline strength)	1. 8,706 2. 8,053 3. 8,019 Median: 8,053 Strength Retained: 56.9%	Fail
Resistance to Buckle Abrasion (FMVSS 209, S5.3(c)) Abrasion cycles Performed 2500 (2500 Required)	Median breaking strength, Newtons (75% of median baseline strength)	1. N/A 2. N/A 3. N/A Median: N/A	N/A

WEBBING PERFORMANCE TESTS (a213-5.4.1) (Continued)**Report No.:** 4642921-061**Test Date:** August 3, 2020

<u>Test</u>	<u>Compliance Requirement</u>	<u>Test Result</u>	<u>Pass/Fail</u>
Resistance to Light (FMVSS 209, S4.2 (e) & S5.1(e)) Exposure Time 100 Hr. (100 Hours Required)	Median breaking strength, Newtons (60% of median baseline strength)	1. 14,337 2. 15,197 3. 15,220 Median: 15,197 Strength Retained: 100+%	Pass
	Color Retention >= No. 2 on the Geometric Gray Scale	1. 5 2. 5 3. 5	Pass
Resistance to Micro- Organisms (FMVSS 209, S4.2 (f), S5.1 (f))	Median breaking strength, Newtons (85% of median baseline strength)	1. N/A 2. N/A 3. N/A Median: N/A	N/A
Width Requirement (FMVSS 213, S5.4.1.3)	Width >= 38 mm) If webbing contacts the test dummy torso	1. 25.0 2. 25.0 3. 25.0	N/A

Remarks:**Technicians:** John Roycraft**Project Manager:** Frank Savino

WEBBING PERFORMANCE TESTS (a213-5.4.1)**Report No.:** 4642921-061**Test Date:** August 3, 2020**Laboratory Ambient Conditions During Testing**

Temperature: 73 ° F

Relative Humidity: 50 %

Webbing Usage on Restraint: Latch

<u>Test</u>	<u>Compliance Requirement</u>	<u>Test Result</u>	<u>Pass/Fail</u>
Non-Degraded Webbing (FMVSS 209, S5.1 (b))	New webbing breaking strength, 15,000 N (webbing used to secure CRS to vehicle) or 11,000 N (webbing used to secure child within CRS)	1. 18,834 2. 18,954 3. 18,420 Median: 18,834	Pass
Resistance to Abrasion (FMVSS 209, S4.2(d) & S5.1(d)) Abrasion Cycles Performed 2500 (2500 Required)	Median breaking strength, Newtons (75% of median baseline strength)	1. 18,247 2. 18,561 3. 17,925 Median: 18,247 Strength Retained: 96.9%	Pass
Resistance to Buckle Abrasion (FMVSS 209, S5.3(c)) Abrasion cycles Performed 2500 (2500 Required)	Median breaking strength, Newtons (75% of median baseline strength)	1. N/A 2. N/A 3. N/A Median: N/A	N/A

WEBBING PERFORMANCE TESTS (a213-5.4.1) (Continued)**Report No.:** 4642921-061**Test Date:** August 3, 2020

<u>Test</u>	<u>Compliance Requirement</u>	<u>Test Result</u>	<u>Pass/Fail</u>
Resistance to Light (FMVSS 209, S4.2 (e) & S5.1(e)) Exposure Time 100 Hr. (100 Hours Required)	Median breaking strength, Newtons (60% of median baseline strength)	1. 18,605 2. 18,657 3. 18,661 Median: 18,657 Strength Retained: 99.1%	Pass
	Color Retention >= No. 2 on the Geometric Gray Scale	1. 5 2. 5 3. 5	Pass
Resistance to Micro- Organisms (FMVSS 209, S4.2 (f), S5.1 (f))	Median breaking strength, Newtons (85% of median baseline strength)	1. N/A 2. N/A 3. N/A Median: N/A	N/A
Width Requirement (FMVSS 213, S5.4.1.3)	Width >= 38 mm) If webbing contacts the test dummy torso	1. 38.0 2. 38.0 3. 38.0	N/A

Remarks:**Technicians:** John Roycraft**Project Manager:** Frank Savino

**BELT BUCKLE AND ADJUSTMENT HARDWARE
PERFORMANCE TESTS (S213-S5.4.2/S209-S4.3)**

Report No.: 4642921-061

Test Date: August 14, 2020

Item Code: Aton M

Laboratory Ambient Conditions During Testing

Temperature: 73 °F

Relative Humidity: 50 %

Test	Compliance Requirement	Test Result	Pass/Fail
<i>Corrosion Resistance</i> (FMVSS 209), (S4.3.(a) (2)) Exposure Time 24 Hours (24 Hours Required) Drying Time 1 Hour (1 Hour Required)	No Corrosion (NC)	1. NC 2. NC 3. NC	Pass Pass Pass
Push Buttons S213; S5.4.3.5 (c)	Area \geq 0.6 sq. in.)	0.79	Pass
	Dimensions	1.12 x 0.90	N/A
Lever Release	Cylinder Insertion	N/A	N/A
Other	Two-finger Access	N/A	N/A

**BELT BUCKLE AND ADJUSTMENT HARDWARE
PERFORMANCE TESTS (S213-S5.4.2/S209-S4.3) (Continued)**

Report No.: 4642921-061

Test	Compliance Requirement	Test Result		Pass/Fail	
Buckle Latch (FMVSS 209 S4.3(g)) Follows Corrosion Resistance Cycles 200 (200 Required)	No Functional Deterioration (NFD)	1.	NFD	1.	Pass
		2.	NFD	2.	Pass
		3.	NFD	3.	Pass
Buckle Latch (FMVSS 209 S4.3(g)) Corrosion Resistance metal to metal buckles Note: Cycle Button; Perform manual latching and unlatching prior to partial engagement test. Measurements truncated to one decimal place.	Partial Engagement Separation Force <5 lb.	Test Result As Received (Results in Pounds)		Test Result After Corrosion Resistance	
		Front	Reverse	Front	Reverse
		<u>Sample 1</u>	<u>Sample 1</u>	<u>Sample 1</u>	<u>Sample 1</u>
		1) P	1) P	1) P	1) P
		2) P	2) P	2) P	2) P
		3) P	3) P	3) P	3) P
		<u>Sample 2</u>	<u>Sample 2</u>	<u>Sample 2</u>	<u>Sample 2</u>
		1) P	1) P	1) P	1) P
		2) P	2) P	2) P	2) P
		3) P	3) P	3) P	3) P
		<u>Sample 3</u>	<u>Sample 3</u>	<u>Sample 3</u>	<u>Sample 3</u>
		1) P	1) P	1) P	1) P
2) P	2) P	2) P	2) P		
3) P	3) P	3) P	3) P		

Remarks: P = Pass

Although the buckles do not latch with the tongues in the reverse position, one or both of the tongues can become partially engaged in this position.

Technicians: Charles Kehaya
Project Manager: Frank Savino

**BELT BUCKLE AND ADJUSTMENT HARDWARE
PERFORMANCE TESTS (S213-S5.4.2/S209-S4.3)**

Report No.: 4642921-061

Test Date: August 14, 2020

Item Code: Aton M

Laboratory Ambient Conditions During Testing

Temperature: 73 °F

Relative Humidity: 50 %

<u>Test</u>	<u>Compliance Requirement</u>	<u>Test Result</u>	<u>Pass/Fail</u>
Temperature Resistance (FMVSS 209), (S4.3.(b)) Exposure Time 24 Hours (24 Hours Required) Drying Time 1 Hour (1 Hour Required)	No Functional Deterioration (NFD)	1. NFD 2. NFD 3. NFD	Pass Pass Pass
Push Buttons S213; S5.4.3.5 (c)	Area \geq 0.6 sq. in.)	0.79	Pass
	Dimensions	1.12 x 0.90	N/A
Lever Release	Cylinder Insertion	N/A	N/A
Other	Two-finger Access	N/A	N/A

**BELT BUCKLE AND ADJUSTMENT HARDWARE
PERFORMANCE TESTS (S213-S5.4.2/S209-S4.3) (Continued)**

Report No.: 4642921-061

Test	Compliance Requirement	Test Result		Pass/Fail	
Buckle Latch (FMVSS 209 S4.3(g)) Follows Temperature Resistance Cycles 200 (200 Required))	No Functional Deterioration (NFD)	1. NFD		1. Pass	
		2. NFD		2. Pass	
		3. NFD		3. Pass	
Buckle Latch (FMVSS 209 S4.3(g)) Temperature Resistance metal to metal buckles Note: Cycle Button; Perform manual latching and unlatching prior to partial engagement test. Measurements truncated to one decimal place.	Partial Engagement Separation Force <5 lb.	Test Result As Received (Results in Pounds)		Test Result After Temperature Resistance	
		Front	Reverse	Front	Reverse
		<u>Sample 1</u>	<u>Sample 1</u>	<u>Sample 1</u>	<u>Sample 1</u>
		1) P	1) P	1) P	1) P
		2) P	2) P	2) P	2) P
		3) P	3) P	3) P	3) P
		<u>Sample 2</u>	<u>Sample 2</u>	<u>Sample 2</u>	<u>Sample 2</u>
		1) P	1) P	1) P	1) P
		2) P	2) P	2) P	2) P
		3) P	3) P	3) P	3) P
		<u>Sample 3</u>	<u>Sample 3</u>	<u>Sample 3</u>	<u>Sample 3</u>
		1) P	1) P	1) P	1) P
2) P	2) P	2) P	2) P		
3) P	3) P	3) P	3) P		

Remarks: P = Pass

Although the buckles do not latch with the tongues in the reverse position, one or both of the tongues can become partially engaged in this position.

Technicians: Charles Kehaya
Project Manager: Frank Savino

APPENDIX A

EQUIPMENT LIST AND CALIBRATION

**SGS NORTH AMERICA INC.
TEST EQUIPMENT**

<u>NO.</u>	<u>ITEM</u>	<u>MANUFACTURER</u>	<u>MODEL</u>	<u>SERIAL NO.</u>	<u>CAL. PERIOD</u>	<u>DATE OF LAST CAL.</u>	<u>ACCURACY</u>	<u>REMARKS</u>
WEBBING TESTING								
1	Steel Ruler	Products Engineering	262-000	481610452	1 Year	7/20	+/-0.01 inch	Webbing Width
2	Hex-Bar Abrader	U.S. Testing	---	---	1Year*	8/20	---	*Timer-Counter Assembly and Weights
3	Weatherometer	Atlas Electric Co.	CXW	CB-12295	1 Year*	7/20	+/-1%	*Temp. and Voltage Meters
4	Weatherometer	Atlas Electric Co.	CXW	CB-1214	1 Year*	7/20	+/-1%	*Temp. and Voltage Meters
5	Weatherometer	Atlas Electric Co.	XW-WT	W0-3009	1 Year*	7/20	+/-1%	*Temp. and Voltage Meters
6	Color Change - Gray Scale	AATCC	---	---	---	---	---	Visual Comparison
7	Universal Testing Machine	Instron	1115	4742	1 Year	1/20 & 2/21	+/-1%	Webbing Strength
8	Universal Testing Machine	Instron	TTC	4344	1 Year	6/20 & 6/21	+/-1%	Webbing Strength
9	2" Split Drum Grips	U.S. Testing Co.	---	---	---	---	---	Instron Fixture

**SGS NORTH AMERICA INC.
TEST EQUIPMENT**

<u>NO.</u>	<u>ITEM</u>	<u>MANUFACTURER</u>	<u>MODEL</u>	<u>SERIAL NO.</u>	<u>CAL. PERIOD</u>	<u>DATE OF LAST CAL.</u>	<u>ACCURACY</u>	<u>REMARKS</u>
<u>BUCKLE TESTING</u>								
10	Salt Spray Chamber	Singleton Corp.	SCCH22	SCCH22-21947	---	---	---	Checked daily in accordance with ASTM B-117
11	Temperature Recorder	Honeywell	DR4300	14W47C4000 000849615	1 Year	7/20	+/- 5°F	Monitor Salt Spray Temperature
12	Temperature Humidity Chamber	Blue-M	FR-386PBX	AA278	1Year	1/20	+/-2°C +/-5% R.H	Temperature-Humidity Exposure
13	Temperature Humidity Chamber	Blue-M	LR-386B-MP1	L3-122	1 Year	4/20	+/-2°C +/-5% R.H	Temperature-Humidity Exposure
14	Temperature Chamber	Despatch	52392 V29	037-15	1 Year	4/20	+/-2°C +/-5% R.H	Temperature Exposure
15	Pushbutton Latch Fixture	U.S. Testing	---	---	1 Year*	7/20	---	Force checked prior to use. *Timer Counter

STANDARD LABORATORY CONDITIONING

16	Temperature / Humidity Recorder	Dickson	TH800	07150222	1Year	10/19	+/-2°F +/-5% R.H.	Monitor Room Conditioning
----	---------------------------------	---------	-------	----------	-------	-------	----------------------	---------------------------

APPENDIX B

INTERPRETATION AND/OR DEVIATIONS FROM FMVSS NO. 213

NO INTERPRETATIONS OR DEVIATIONS FROM FMVSS NO. 213

APPENDIX C

PHOTOGRAPHS

LISTS OF PHOTOGRAPHS

The following section identifies photographed testing equipment.

Page Number	Description of Photograph
C-2	Corrosion Resistance
C-3	Temperature Humidity Chamber
C-4	Temperature Chamber
C-5	Button Cycling Apparatus
C-6	Breaking Strength Apparatus
C-7	Resistance to Light
C-8	Hex Bar Abrasion Apparatus

The following section identifies photographs of the seat.

Photograph Number	Description of Photograph
C-9	Top of Box
C-10	Side of Box
C-11	Front of Seat
C-12	Side of Seat
C-13	Back of Seat
C-14	Registration Card

C-2

Salt Spray Chamber



C-3



Temperature/Humidity Chamber

C-4



Temperature Chamber

C-5



Button Cycling Apparatus

C-6



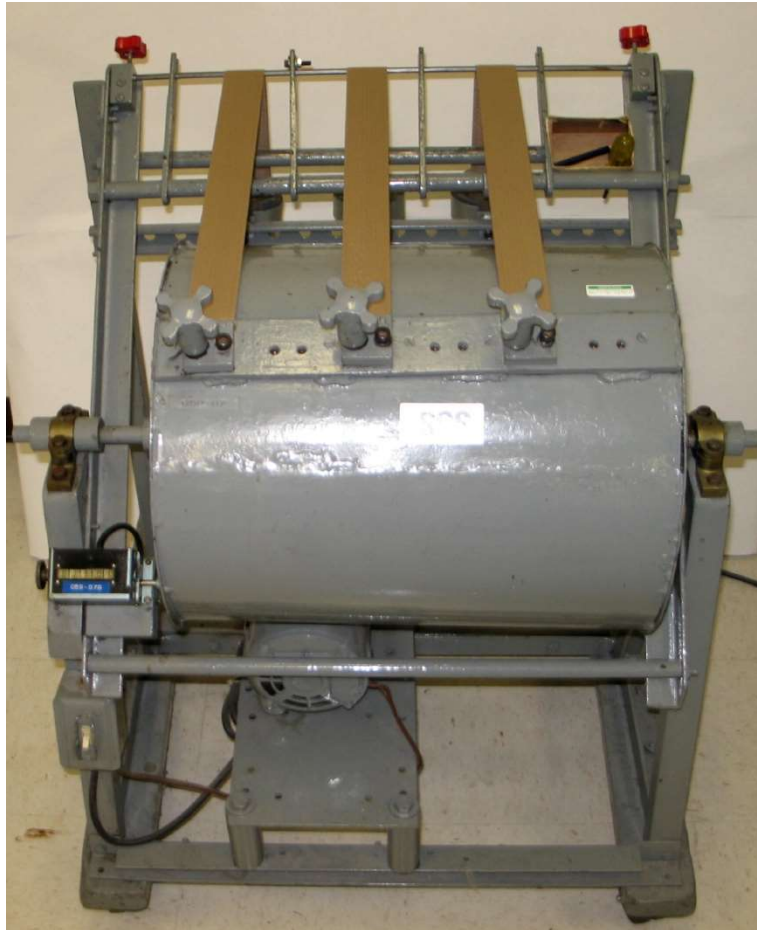
Instron Universal Testing Machine

C-7



Weatherometer

C-8

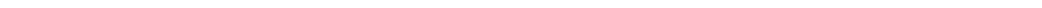


Hex Bar Abrasion Apparatus

C-9



C-10



C-11



C-13



C-14

FOR YOUR CHILD'S CONTINUED SAFETY

Please take a few moments to promptly fill out and return the attached card (or register online using the direct link to the manufacturer's registration website provided).

Although child restraint systems undergo testing and evaluation, it is possible that a child restraint could be recalled.

In case of a recall, we can reach you only if we have your name and address, so please send in the card (or register online) to be on our recall list.

Please fill this card out using blue or black ink and mail it NOW,

(or register online at: <http://register.cybex-online.com/us/carseats>) while you are thinking about it.

The card is already addressed and we've paid the postage.

Tear off and mail this part

Consumer: Just fill in your name and address and e-mail address.

Your Name _____

Your Street Address _____

City _____

State _____

Zip Code _____

E-mail Address (optional) _____

CHILD RESTRAINT REGISTRATION CARD

Model Name: Aton M US
incl. SafeLockBase US
Color: Pepper Black
CYBEX Article: 518002097
Manufactured in: 07/21/2018
Do not use after: 07/21/2024

RG5009