Report No.

209-SGS-2019-017

SEAT BELT ASSEMBLY COMPLIANCE TESTING
FMVSS 209

2019 Mazda CX-9
MODEL NO. TK-AH3-H988
P/N TKY8-57L90 / TKY8-57680

SGS NORTH AMERICA INC.
291 FAIRFIELD AVENUE
FAIRFIELD, NJ 07004

FINAL REPORT

4476662-017

November 25, 2019

PREPARED FOR

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

Report No.: 209-SGS-2019-017

Prepared By: SGS North America Inc.

Approved By: Frank Savino

Approval Date: November 25, 2019

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: Jack Chern

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TECHNICAL REPORT Title Page

1. Report No. 209-SGS-2019-017	2. Govt. Accession No.	3. Recipient's Catalog No.	
4. Title and Sub-Title Final report of FMVSS No. 209 Compliance Testing of Takata Corportion (Joyson Safety Systems Japan) m/n TK-AH3-H988, Type 2 seat belt assemblies being installed in 2019 Mazda CX-9, Front Left Seat		5. Report Date: November 25, 2019 6. Performing Organization Code SGS	
7. Author Frank Savino, Project Manager		8. Performing Organization Report No. SGS Report 4476662-017	
9. Performing Organization Name and Address: SGS North America Inc. 291 Fairfield Avenue Fairfield, NJ 07004		10. Work Unit No. 11. Contracts or Grant No. DTNH22-13-D-00308	
12. Sponsoring Agency Name and Address: U.S. Department of Transportation National Highway Traffic Safety Administration, Enforcement Office of Vehicle Safety Compliance (Room W45-304) 1200 New Jersey Avenue, SE Washington, D.C. 20590		13. Type of Report and Period Covered: FINAL March 22 – April 26, 2019 14. Sponsoring Agency Code NEF-200	
15. Supplementary Notes			
16. Abstract Compliance tests were conducted on Takata Corportion (Joyson Safety Systems Japan) m/n TK-AH3-H988, Type 2 seat belt assemblies being installed in 2019 Mazda CX-9 Front Left Seat in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-209-08. Test failures identified were as follows: None.			
17. Key Words FMVSS No. 209 Compliance Testing Safety Engineering	18. Distribution Statement Copies of this report are available from -- National Highway Traffic Safety Administration Technical Information Services (NPO-411) 1200 New Jersey Avenue, SE (Room E12-100) Washington, DC 20590 Email: tis@nhtsa.dot.gov Fax: 202-493-2833		
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SECTION 1

Purpose of Compliance Test

Purpose: This testing was conducted as part of the Department of Transportation, National Highway Traffic Safety Administration's Compliance Program pursuant to Federal Motor Vehicle Safety Standard (FMVSS) No. 209, "Seat Belt Assembly."[1] The purpose of this test was to determine if the production seat belt assemblies supplied by the Office of Vehicle Safety Compliance satisfy the requirements of TP-209-08[2], as governed by the contract.

Test Procedure: The SGS North America Inc. Test Procedure for FMVSS 209, 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 209 and amendments in effect as noted in the applicable contract.

1 NHTSA, FMVSS No. 209, Seat Belt Assemblies, 49 CFR Chapter V Section 571.209, April, 2016.
2 NHTSA, TP-209-08, Laboratory Test Procedure for FMVSS No. 209, "Seat Belt Assemblies", December, 2007.

SECTION 2

Compliance Test Data Summary

SEAT BELT ASSEMBLY DATA:

Retractor Type		-ALR	X	-ELR		-ELR w/ALR
Group No.	017					
ELR Retractor Sensitivity		-WSI		-VSI	X	-VWSI
Belt Date Codes	2017					
Belt Assy. Mfr.	Takata Corportion (Joyson Safety Systems Japan)					
Belt Assy. Part/Model No.	TK-AH3-H988					
Seller/Vehicle Mfr.	Mazda North America					
Seller/Veh. Mfr. Part/Model No.	TKY8-57L90 / TKY8-57680					

Labeling/Marking Requirement (P=Passed, F=Failed): P

SUMMARY OF RESULTS:

No.	Test Title:	Group Number Specimen No.	C 7	C 8	C 9
09	Hardware Corrosion Resistance		**P**	**P**	**P**
10	Hardware Temperature Resistance		**P**	**P**	**P**
11	Hardware Buckle Latch		**P**	**P**	**P**
12	Loop Load	Pelvic Type 2	**P**	**P**	**P**
		Upper Torso	**P**	**P**	**P**
13	Elongation	Pelvic Type 2	**P**	**P**	**P**
		Upper Torso	**N/A**	**N/A**	**N/A**
14	Buckle Release Force		**P**	**P**	**P**
15	Common Hardware Load		**P**	**P**	**P**
16	Cut Webbing Strength	Pelvic Type 2	**N/A**	**N/A**	**N/A**
		Upper Torso	**N/A**	**N/A**	**N/A**
17	Retractor Load	Pelvic Type	**N/A**	**N/A**	**N/A**
		Upper Torso	**P**	**P**	**P**

SUMMARY OF RESULTS (Continued)

No.	Test Title:	Group Number / Specimen No.	D 10	D 11	D 12
18	Retractor Performance--Baseline Characteristics		**P**	**P**	**P**
19	Post Corrosion Cycling (2,500 Cycles)		**P**	**P**	**P**
20	Post Temperature Cycling (2,500 Cycles)		**P**	**P**	**P**
21	Dust Test		**P**	**P**	**P**
22	Additional Cycling (5,000 to 45,000 Cycles)		**P**	**P**	**P**
23	Post Test Retractor Performance		**P**	**P**	**P**
24	Minimum Retractor Strength	Pelvic Type	**N/A**	**N/A**	**N/A**
		Upper Torso	**P**	**P**	**P**

SUMMARY OF RESULTS (P = Passed, F = Failed, NA = Not Applicable): P

REMARKS: Retractor contains a load-limiting device

RECORDED BY: Nik Kitov and John Roycraft

PREPARED BY: Frank Savino

APPROVED BY: Frank Savino

TEST RESULTS FOR SPECIMENS 7, 8 & 9

GROUP NO.: 017 **TEST DATE:** April 11-12, 2019

CORROSION RESISTANCE [S4.3(a); S5.2(a)]

All hardware shall be subjected to a 24-hour exposure period in a salt spray chamber followed by a one-hour drying period. Any attachment hardware normally installed near the floor of a vehicle will be exposed to an additional 24-hour period followed by a one hour drying period. During the one hour drying period, the parts shall be at laboratory conditions.

At the conclusion of the 24 hour drying period, the significant surfaces of the hardware shall be free of ferrous or nonferrous corrosion that may be transferred, either directly or by means of the webbing, to the occupant or his/her clothing.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Attachment Hardware Pass/Fail	**P**	**P**	**P**
B	Other Hardware Pass/Fail	**P**	**P**	**P**

REMARKS: _____

TEMPERATURE RESISTANCE [S4.3(b); S5.2(b)] **TEST DATE:** April 15-17, 2019

Condition 3 specimens with a 24-hour period of humid exposure and then with a second 24-hour period of dry heat at 80 ± 1°C (176 ± 1.8°F) in accordance with ASTM D756-78. Plastic or other nonmetallic parts of 3 specimens shall be subjected to the temperature resistance test and shall not warp or otherwise deteriorate.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Parts Deteriorated	**P**	**P**	**P**

REMARKS: _____

BUCKLE LATCH [S4.3(g); S5.2(g)] **TEST DATE:** April 18, 2019

The buckles shall not fail, gall or wear to an extent that normal latching and unlatching is impaired. A metal-to-metal buckle shall separate in any position of partial engagement by a force of not more than 22 N. Prior to securing the latch to the actuator, adjust the cycling machine to produce a force of 133 ± 13 N, and a cycling rate not to exceed 30 cycles per minute. Move the latch 200 times through the maximum possible travel against its stop.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Buckle Latch Pass/ Fail	**P**	**P**	**P**
B	False Latching Force, N	**N/A***	**N/A***	**N/A***
C	False Latching Pass/Fail	**P**	**P**	**P**

REMARKS: _____

*These metal to metal buckles were examined and partial engagement was not observed by means of any technique representative of actual use, therefore, a false latching force could not be measured.

ASSEMBLY PERFORMANCE - LOOP LOAD [S4.4(a), (b); S5.3(a), (b)]
TEST DATE: April 18, 2019

For the pelvic portion of a Type 2 assembly, apply a loop load of 22,241 N (11,120 N tensile load) using the test setup shown in Figure 9 of TP209-08. All structural components shall withstand a minimum force of 11,120 N.

For the upper torso portion of a Type 2 assembly, apply a loop load of 13,345 N (6,672 N tensile load) using the test setup shown in Figure 10 of TP209-08. All structural components shall withstand a minimum force of 6,672 N.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Pelvic Belt (Type 2) Loop Load, N	**22,241**	**22,241**	**22,241**
B	Upper Torso Belt Loop Load, N	**13,345**	**13,345**	**13,345**
C	Pelvic Belt Pass/Fail	**P**	**P**	**P**
D	Upper Torso Belt Pass/Fail	**P**	**P**	**P**

REMARKS: _____

ASSY PERFORMANCE - MAX ELONGATION [S4.4(a), (b); S5.3(a), (b)]

TEST DATE: April 18, 2019

For the pelvic portion of a Type 2 assembly, measure the loop length when a 22,241 N loop load is achieved. The assembly loop shall extend no more than 254 mm (508 mm between anchorages).

For the upper torso portion of a Type 2 assembly, measure the loop length when a 13,344 N loop load is achieved. The assembly loop shall extend no more than 254 mm (508 mm between anchorages).
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Pelvic Belt (Type 2) Elongation, mm	**114**	**111**	**107**
B	Upper Torso Belt Elongation, mm	**1139**	**>1147**	**1144**
C	Pelvic Belt Pass/Fail	**P**	**P**	**P**
D	Upper Torso Belt Pass/Fail	**N/A**	**N/A**	**N/A**

REMARKS: Retractor contains a load-limiting device

The retractor was locked at the beginning of the test. As the load increased, the webbing pay-out increased following the design limit profile. Once the load limiter was exhausted, the load increased until the required tensile force was achieved. No webbing remained on the spool when the required tensile force was achieved.

ASSEMBLY PERF - MAX BUCKLE REL FORCE [S4.3(d); S5.3(b)(2)] **TEST DATE:** April 18, 2019

After each elongation test, reduce the loop load to 667 N (334 ± 22 N force on buckle). Maximum buckle release force shall not exceed 133 N.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Buckle Release Force, N	**31**	**31**	**31**
B	Buckle Release Force Pass/Fail	**P**	**P**	**P**

REMARKS: _____

ASSY PERFORMANCE - COMMON HARDWARE [S4.4(b)(3); S5.3(b)(3)]

TEST DATE: April 18, 2019

The components common to both pelvic and upper torso restraint shall withstand a tensile force of 13,344 ± 134 N (26,689 N loop load force).
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Common Hardware Load, N	**26,689**	**26,689**	**26,689**
B	Common Hardware Pass/Fail	**P**	**P**	**P**

REMARKS: _____

ASSY PERF - MINIMUM CUT WEBBING STRENGTH [S4.4(b)(6); S5.3(b)(4)] **TEST DATE:** N/A

The portion of the webbing at the cut point shall have a breaking strength of not less than 15,569 N for a pelvic restraint, or not less than 12,455 N for an upper torso restraint.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Pelvic Belt (Type ___) Loop Load, N	**N/A**	**N/A**	**N/A**
B	Upper Torso Belt Loop Load, N	**N/A**	**N/A**	**N/A**
C	Pelvic Belt Pass/Fail	**N/A**	**N/A**	**N/A**
D	Upper Torso Belt Pass/Fail	**N/A**	**N/A**	**N/A**

REMARKS: _____

ASSY PERF–RETRACTOR STITCH LOAD [S4.4(b)(4), S4.4(b)(5); S5.3(b)(5)]

TEST DATE: April 18, 2019

The length of the webbing shall not increase more than 508mm when a 11,120 N tensile force (loop load of 22,241 N) is applied to a fully extend webbing from the ALR or ELR and pelvic or continuous webbing system; or the length of the webbing shall not increase more than 508mm when a 6,672 ± 67 N tensile force (13,344 ± 134 N loop load) is applied to the upper torso webbing systems.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Pelvic Belt Load, N	**N/A**	**N/A**	**N/A**
B	Upper Torso Belt Load, N	**P**	**P**	**P**

REMARKS: _____

TEST RESULTS FOR SPECIMENS 10, 11 & 12

GROUP NO.: 017 **TEST DATE:** March 22, 2019

RETRACTOR PERFORMANCE - BASELINE CHARACTERISTICS [ALR:S4.3(i); S5.2(i), ELR:S4.3(j); S5.2(j)]
(Pelvic & Upper Torso 1 to 7N; Webbing Travel Before Lockup Spec=25 mm max.)
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		10	**11**	**12**
A	Avg. Force (ALR) Between 75% + 51 mm & 75% - 51 mm	**N/A**	**N/A**	**N/A**
B	Lowest Retraction Force (ELR), N	**3.31**	**3.29**	**3.36**
C	Webbing Travel Before Lockup (ALR), mm	**N/A**	**N/A**	**N/A**
D	Webbing Travel Before Lockup (Web Sensitive ELR)			
	Retractor Accel to 0.28G @ 0º Angle, mm.	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 0º Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 45º Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 90º Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 135º Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 180º Angle, mm	**N/A**	**N/A**	**N/A**
E	Webbing Travel Before Lockup (Veh Sensitive ELR) Retractor Accel. Within 0.7g pulse corridor in 2 Directions - Secure Webbing & Accelerate Retractor, mm			
	X (Parallel to Vehicle Centerline), mm	**17**	**18**	**18**
	Y (90º to Vehicle Centerline), mm	**22**	**16**	**16**
F	15º Angle, No Lock Check	**P**	**P**	**P**
G	45º Angle, Lock Check	**P**	**P**	**P**
	Pelvic Belt (Type ___) Retractor Pass/Fail	**N/A**	**N/A**	**N/A**
	Upper Torso Belt Retractor Pass/Fail	**P**	**P**	**P**

REMARKS: _____

RETR PERF-POST CORROSION CYCLING (2500) [S4.3(a); S5.1(a); S5.2(k)]

TEST DATE: March 25, 2019

Suspend units in the salt for a 24 hour period. Fully extend the webbing and allow it to dry at laboratory conditions for one hour. Perform 4 wash cycles by immersing the retractor assembly in 38 ± 5°C (100 ± 9°F) water with the retractor mounted to a fixture to allow webbing extraction and retraction. After washing, fully extend the webbing from each unit and allow it to dry at 23 ± 2°C and 48 - 67% humidity for 24 hours. Extend and retract webbing 25 times and then subject the units to 2,500 cycles while applying a force of 89 N at full webbing extension. Attachment hardware of a seat belt assembly after being subjected to the conditions specified in S5.2(a) shall be free of ferrous corrosion on significant surfaces except for permissible ferrous corrosion at peripheral edges or edges of holes on underfloor reinforcing plates and washers.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		10	11	12
A	Pre-cycling Retractor Performance Pass/Fail	**P**	**P**	**P**
B	2,500 Automatic Cycles Pass/Fail	**P**	**P**	**P**

REMARKS: _____

RETR PERF TEMPERATURE CYCLING [S4.3(b); S4.4; S5.2(b); S5.2(k)]

TEST DATE: March 30, 2019

Subject the same three specimens to 24 hours of 80 ± 1°C (176 ± 1.8°F) over water and 24 hours of 80 ± 1°C (176 ± 1.8°F) in a dry oven. Extend and retract the webbing 25 times and then subject the units to 2,500 cycles. Plastic or other nonmetallic hardware parts of a seat belt assembly when subjected to the conditions specified in S5.2(b) shall not warp or otherwise deteriorate to cause the assembly to operate improperly or fail to comply with applicable requirements and S4.4.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		10	11	12
A	25 Manual Cycles Pass/Fail	**P**	**P**	**P**
B	2,500 Automatic Cycles Pass/Fail	**P**	**P**	**P**

REMARKS: _____

RETRACTOR PERF - DUST TEST [S4.3(h), (i), (j); S5.2(k)] **TEST DATE:** April 3, 2019

Install the same three specimens in a dust chamber containing 0.9 kg of coarse grain dust. Extend the webbing to the top of the chamber. Subject each retractor to a 5-hour test agitating the dust every 20 minutes, for a period of five seconds by using compressed air (550 ± 55 kPa) entering through an orifice with a diameter of 1.5 ± 0.1 mm. Within 1 or 2 minutes after each agitation of dust, cycle the units 10 times by extending the webbing to the top of the chamber and retracting it. Compliance of the retractors with applicable requirements in S4.3 (h), (i), and (j) shall be determined. Three retractors shall be tested for performance.
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		10	**11**	**12**
A	Pass/Fail	**P**	**P**	**P**

REMARKS: _____

RETRACTOR PERF – Additional CYCLING [S4.3(h), (i), (j); S5.2(k)]

TEST DATE: April 21-26, 2019

After removing the three specimens from the dust chamber, retract and extend the webbing fully 25 times. Then subject the three specimens to 5,000 cycles at 100 percent extension (or the "effective length" as in the case of continuous webbing systems) with an 89 N load for ALR units, and 45,000 cycles at 50 percent to 100 percent extension with an 89 N load for ELR units. Of the total 50,000 cycles for ELR units (5,000 + 45,000), 10,000 of them will be lockup cycles between 50 percent and 100 percent extension with an 89 N load. Compliance of the retractors with applicable requirements in S4.3 (h), (i), and (j) shall be determined. Three retractors shall be tested for performance.
(P= Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		10	**11**	**12**
A	Retractor Performance - 25 manual cycles - Pass/Fail	**P**	**P**	**P**
B	FOR ALR - 5,000 cycles @ 100% extension and 89 N load - Pass/Fail	**N/A**	**N/A**	**N/A**
C	FOR ELR - 35,000 Cycles @ 50% extension and 89 N load - Pass/Fail	**P**	**P**	**P**
D	FOR ELR - 10,000 lockup cycles @ 50% extension and 89 N load - Pass/Fail	**P**	**P**	**P**

REMARKS: _____

RETR PERF - POST TEST CHARACTERISTICS [S4.3(k)] **TEST DATE:** April 26, 2019

Retest the same three specimens. The retraction force must be at least 50 percent of that observed in the original baseline test.

(Actual Values) (P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		10	**11**	**12**
A	Avg Force (ALR) Between 75% + 51 mm + 75% - 51 mm	**N/A**	**N/A**	**N/A**
B	Lowest Retraction Force (ELR), N	**3.26**	**3.21**	**3.19**
C	Percent of BASELINE (minimum = 50%), percent	**98**	**98**	**95**
D	Webbing Travel Before Lockup (ALR), mm	**N/A**	**N/A**	**N/A**
E	Webbing Travel Before Lockup (Web Sensitive ELR)			
	Retractor Accel to 0.28G @ 0^0 Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 0^0 Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 45^0 Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 90^0 Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 135^0 Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 180^0 Angle, mm	**N/A**	**N/A**	**N/A**
F	Webbing Travel Before Lockup (Veh Sensitive ELR) Retractor Accel. Within 0.7g pulse corridor in 2 Directions - Secure Webbing & Accelerate Retractor, mm			
	X (Parallel to Vehicle Centerline), mm	**20**	**16**	**19**
	Y (90^0 to Vehicle Centerline), mm	**17**	**19**	**16**
G	15º Angle, No Lock Check	**P**	**P**	**P**
H	45º Angle, Lock Check	**P**	**P**	**P**
	Pelvic Belt (Type ___) Retractor Pass/Fail	**N/A**	**N/A**	**N/A**
	Upper Torso Belt Retractor Pass/Fail	**P**	**P**	**P**

REMARKS: _____

RETR PERF - MIN STRENGTH [4.3(h), (i), (j), (k); S4.4; S5.2(k)] **TEST DATE:** April 26, 2019
Perform a loop load test on the same three specimens with the retractors locked to simulate a 1295 mm loop or the largest loop possible if less than 1295 mm. Apply a loop load of 22,241 ± 222 N for a pelvic belt retractor, and a loop load of 13,344 ± 134 N for an upper torso belt retractor or the retractor of a continuous webbing system. A retractor used on a seat belt assembly after subjection to the tests specified in S5.2(k) shall comply with applicable requirements of S4.3(h) to (j) and S4.4, except that the retraction force shall be not less than
50 percent of its original retraction force.
(P = Passed, F = Failed, NA = Not Applicable)

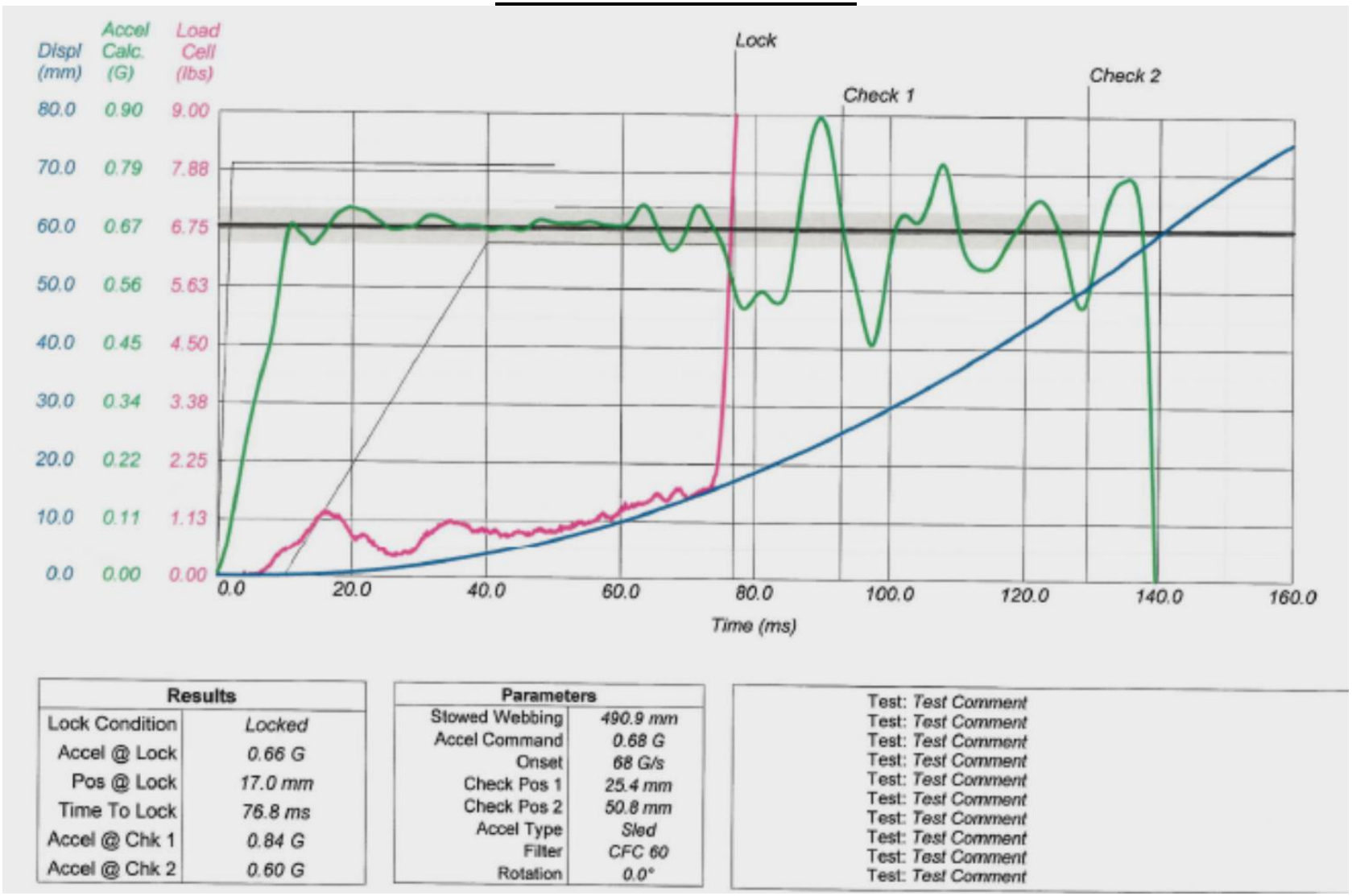
		SPECIMEN NUMBER		
		10	**11**	**12**
A	Pelvic Belt (Type ___) Retractor Performance, N	**N/A**	**N/A**	**N/A**
B	Upper Torso Belt/Contin. Web. Sys. Retr. Perf, N	**13,344**	**13,344**	**13,344**
C	Pelvic Belt Retractor Pass/Fail	**N/A**	**N/A**	**N/A**
D	Upper Torso Belt/Contin. Web. Sys. Retr. Pass/Fail	**P**	**P**	**P**

REMARKS: _____

SECTION 3

Test Data

Initial Test
Retractor #1 - X Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.66 G*
Pos @ Lock	*17.0 mm*
Time To Lock	*76.8 ms*
Accel @ Chk 1	*0.84 G*
Accel @ Chk 2	*0.60 G*

Parameters	
Stowed Webbing	*490.9 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*0.0°*

Test: *Test Comment*
Test: *Test Comment*
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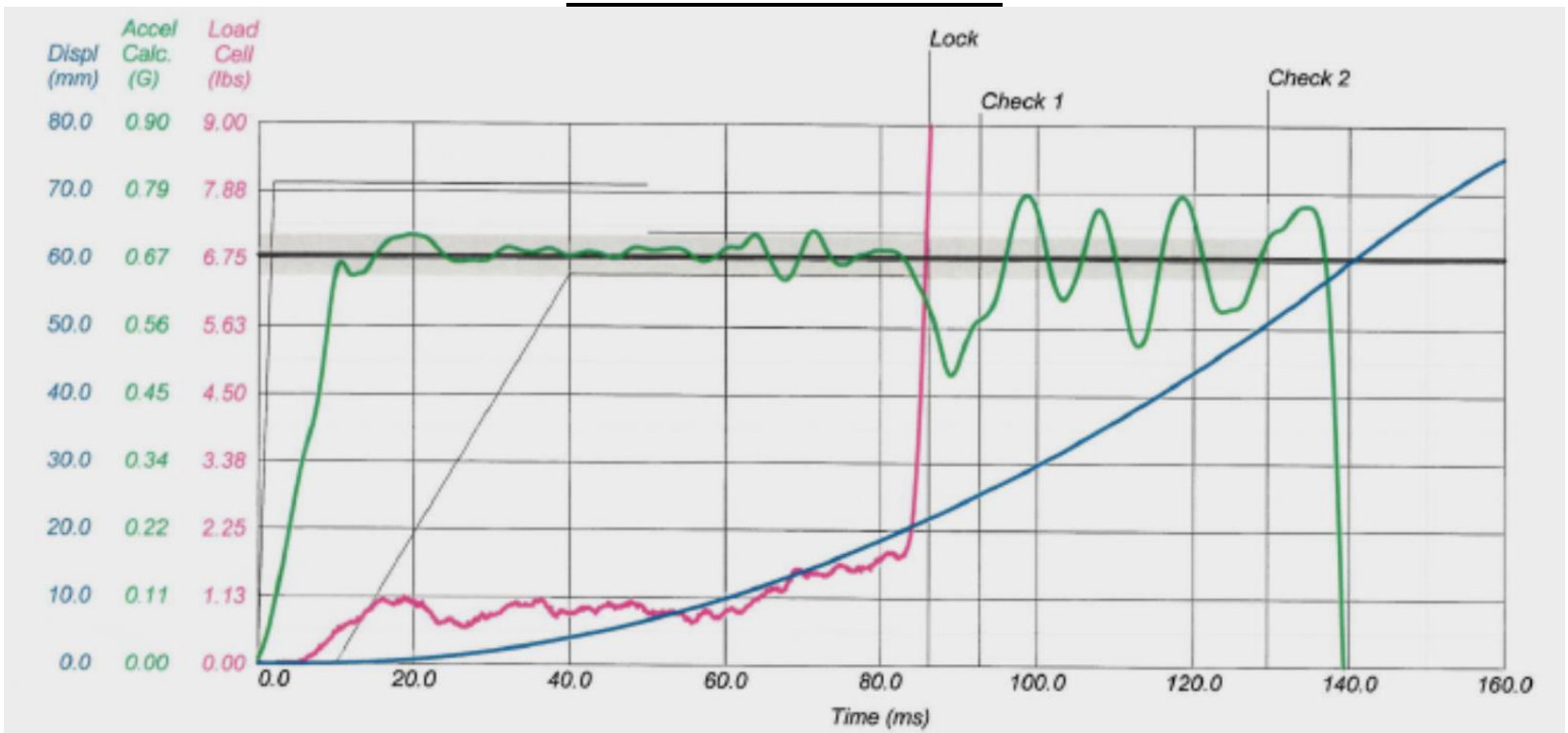
Initial Test
Retractor #1 – Y Direction



Results	
Lock Condition	Locked
Accel @ Lock	0.66 G
Pos @ Lock	21.7 mm
Time To Lock	86.2 ms
Accel @ Chk 1	0.52 G
Accel @ Chk 2	0.63 G

Parameters	
Stowed Webbing	490.9 mm
Accel Command	0.68 G
Onset	68 G/s
Check Pos 1	25.4 mm
Check Pos 2	50.8 mm
Accel Type	Sled
Filter	CFC 60
Rotation	90.0°

Test: Test Comment
Test: Test Comment
Test: Test Comment
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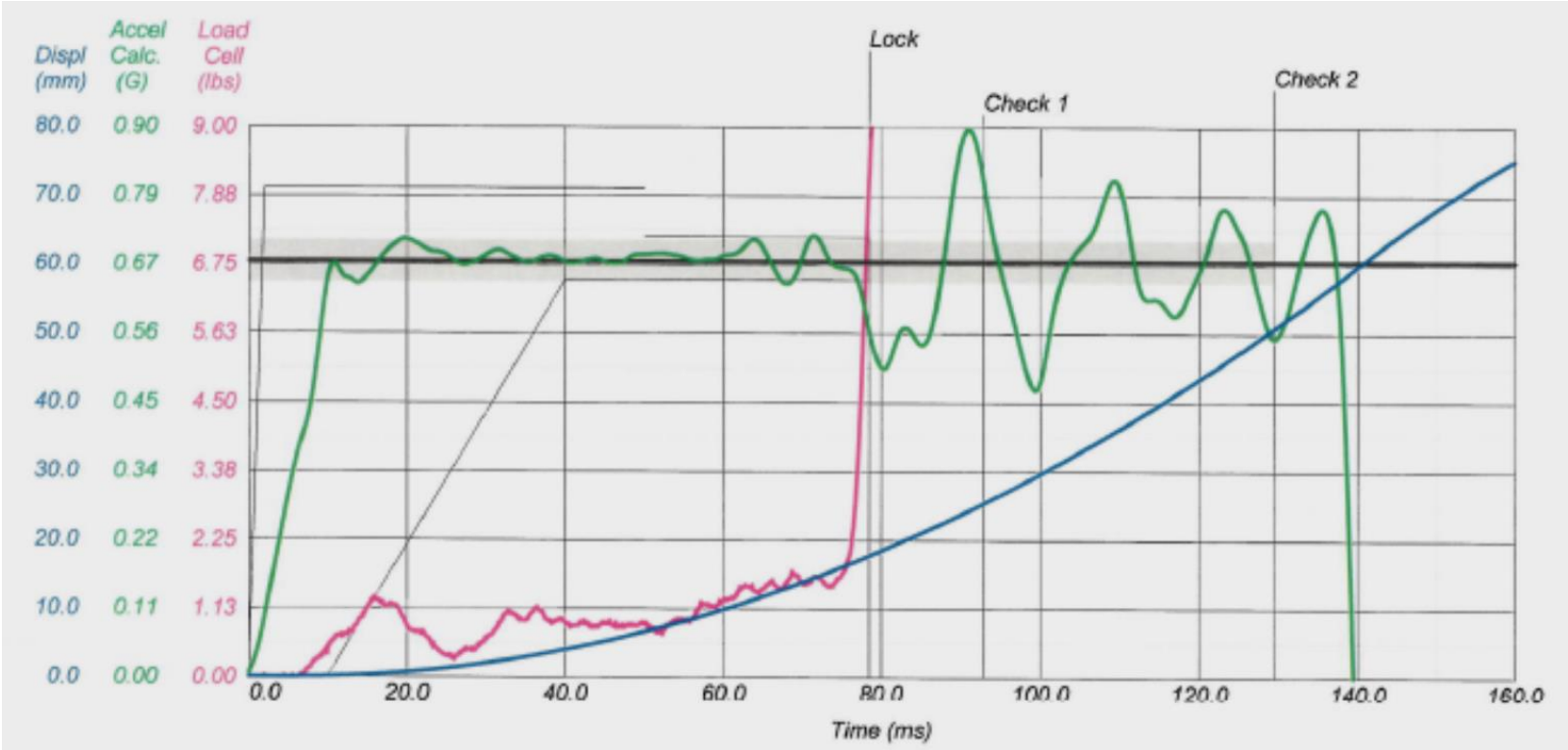
Initial Test
Retractor #2 – X Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*17.8 mm*
Time To Lock	*78.5 ms*
Accel @ Chk 1	*0.83 G*
Accel @ Chk 2	*0.66 G*

Parameters	
Stowed Webbing	*490.9 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*0.0°*

Test: *Test Comment*
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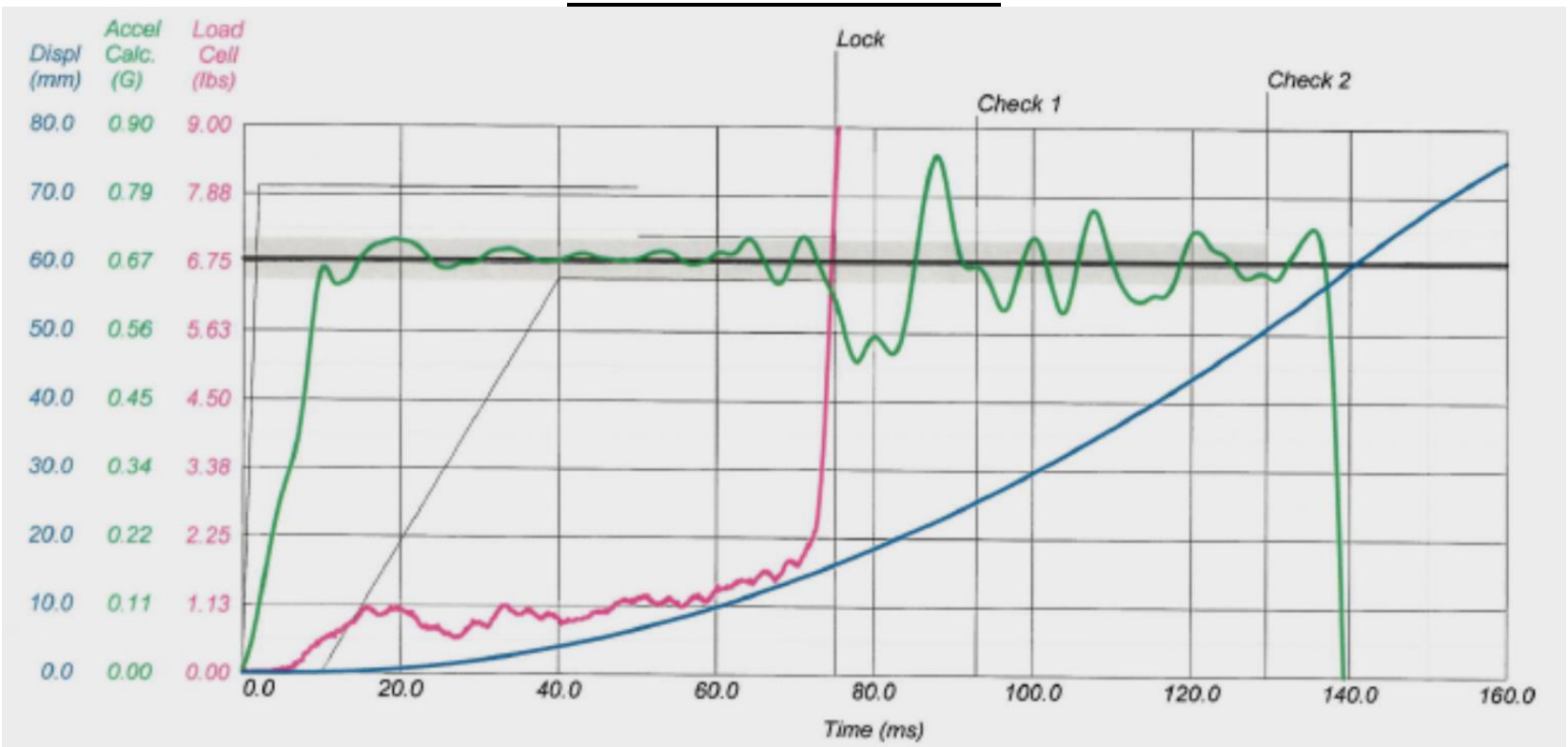
Initial Test
Retractor #2 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.68 G*
Pos @ Lock	*16.2 mm*
Time To Lock	*75.1 ms*
Accel @ Chk 1	*0.74 G*
Accel @ Chk 2	*0.67 G*

Parameters	
Stowed Webbing	*490.9 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*90.0°*

Test: *Test Comment*
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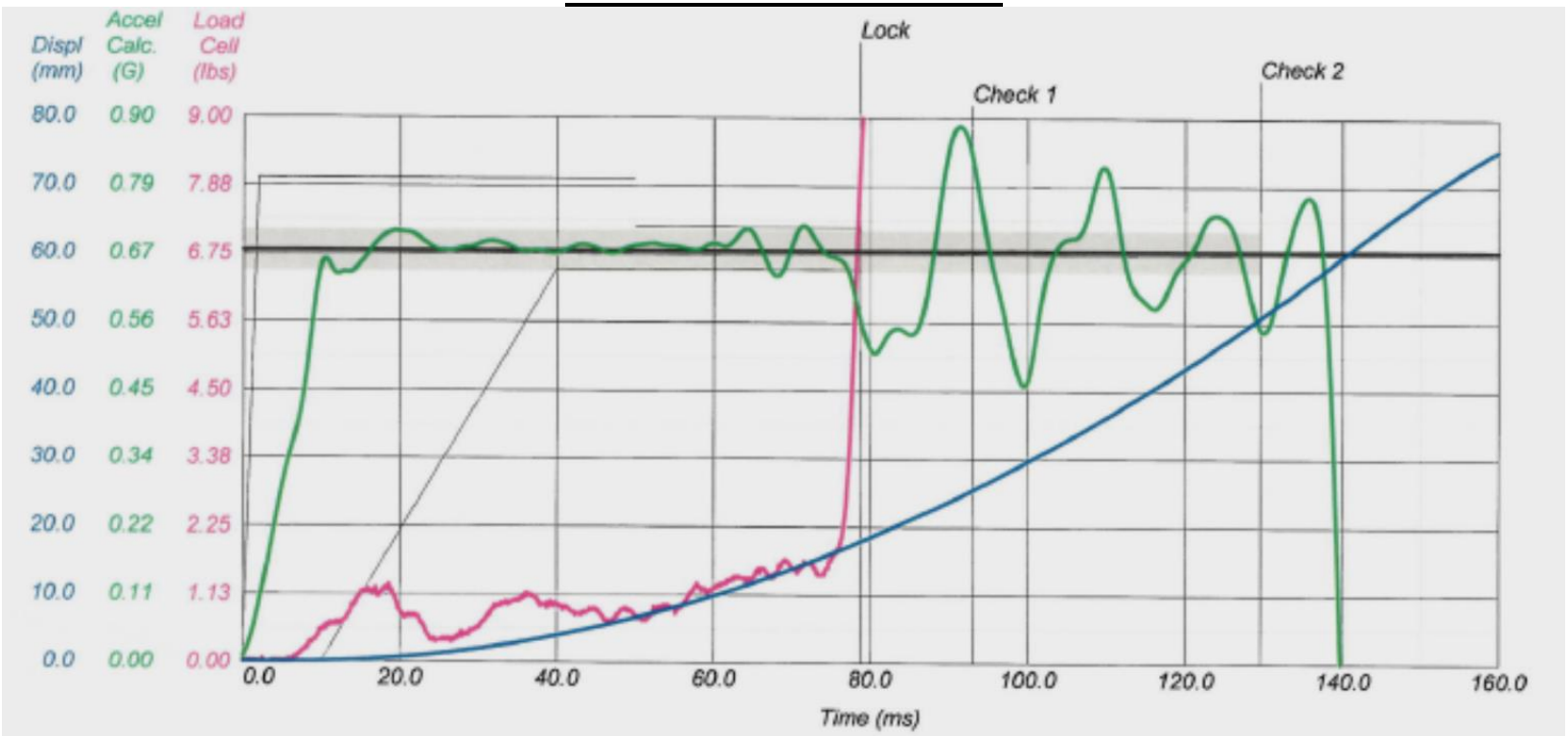
Initial Test
Retractor #3 – X Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*17.9 mm*
Time To Lock	*78.8 ms*
Accel @ Chk 1	*0.82 G*
Accel @ Chk 2	*0.67 G*

Parameters	
Stowed Webbing	*491.0 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*0.0°*

Test: *Test Comment*
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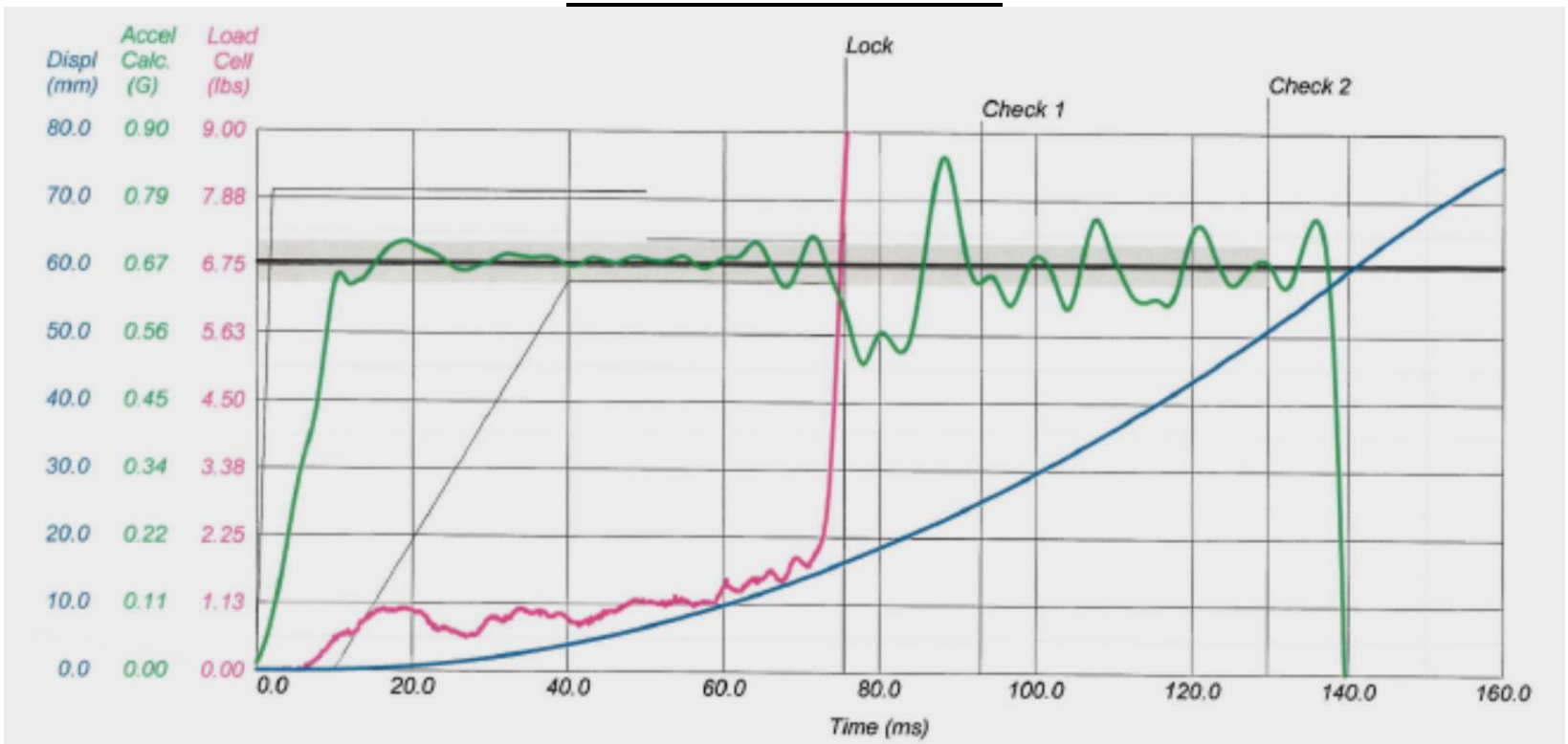
Initial Test
Retractor #3 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.68 G*
Pos @ Lock	*16.3 mm*
Time To Lock	*75.4 ms*
Accel @ Chk 1	*0.75 G*
Accel @ Chk 2	*0.67 G*

Parameters	
Stowed Webbing	*490.9 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*90.0°*

Test: *Test Comment*
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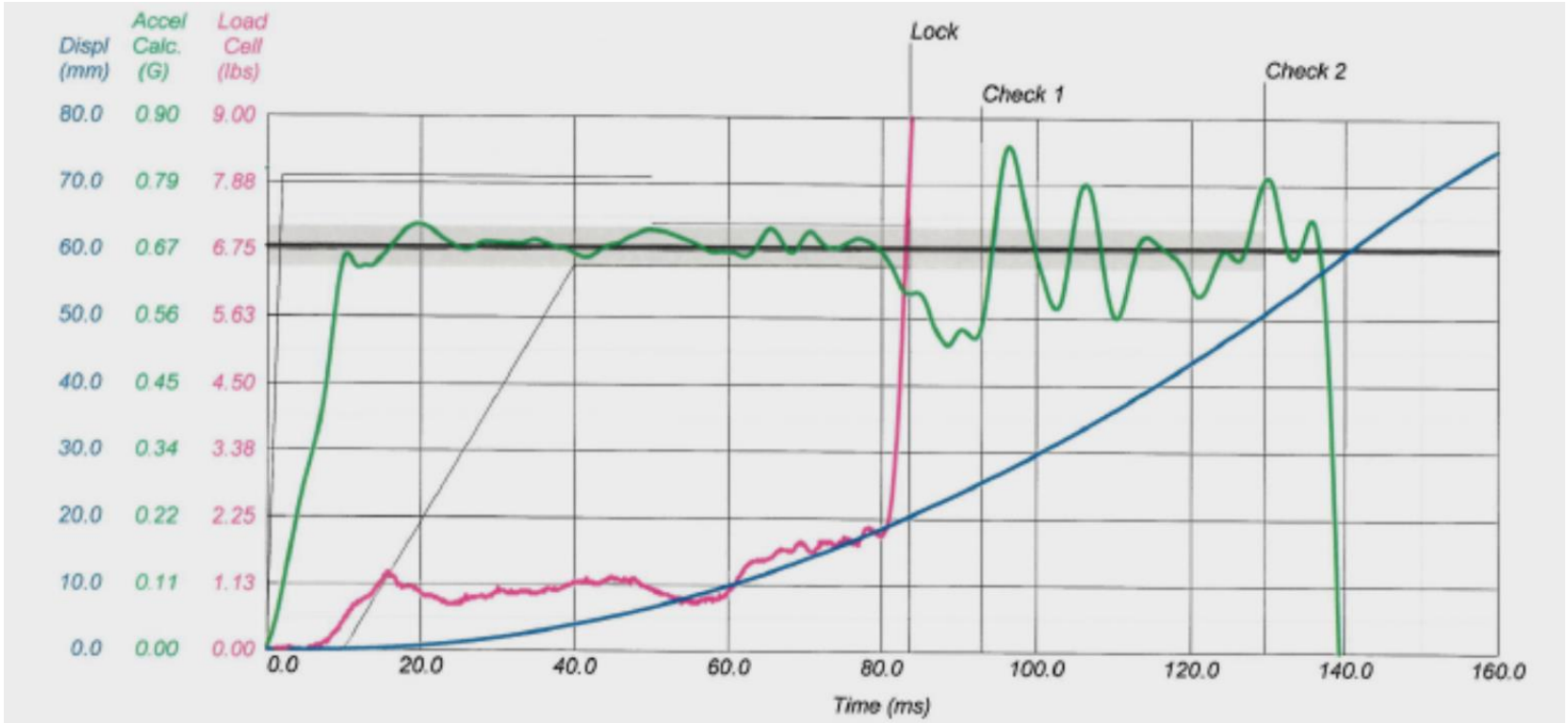
Final Test
Retractor #1 – X Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*20.3 mm*
Time To Lock	*83.6 ms*
Accel @ Chk 1	*0.53 G*
Accel @ Chk 2	*0.70 G*

Parameters	
Stowed Webbing	*490.9 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*0.0°*

Test: *Test Comment*
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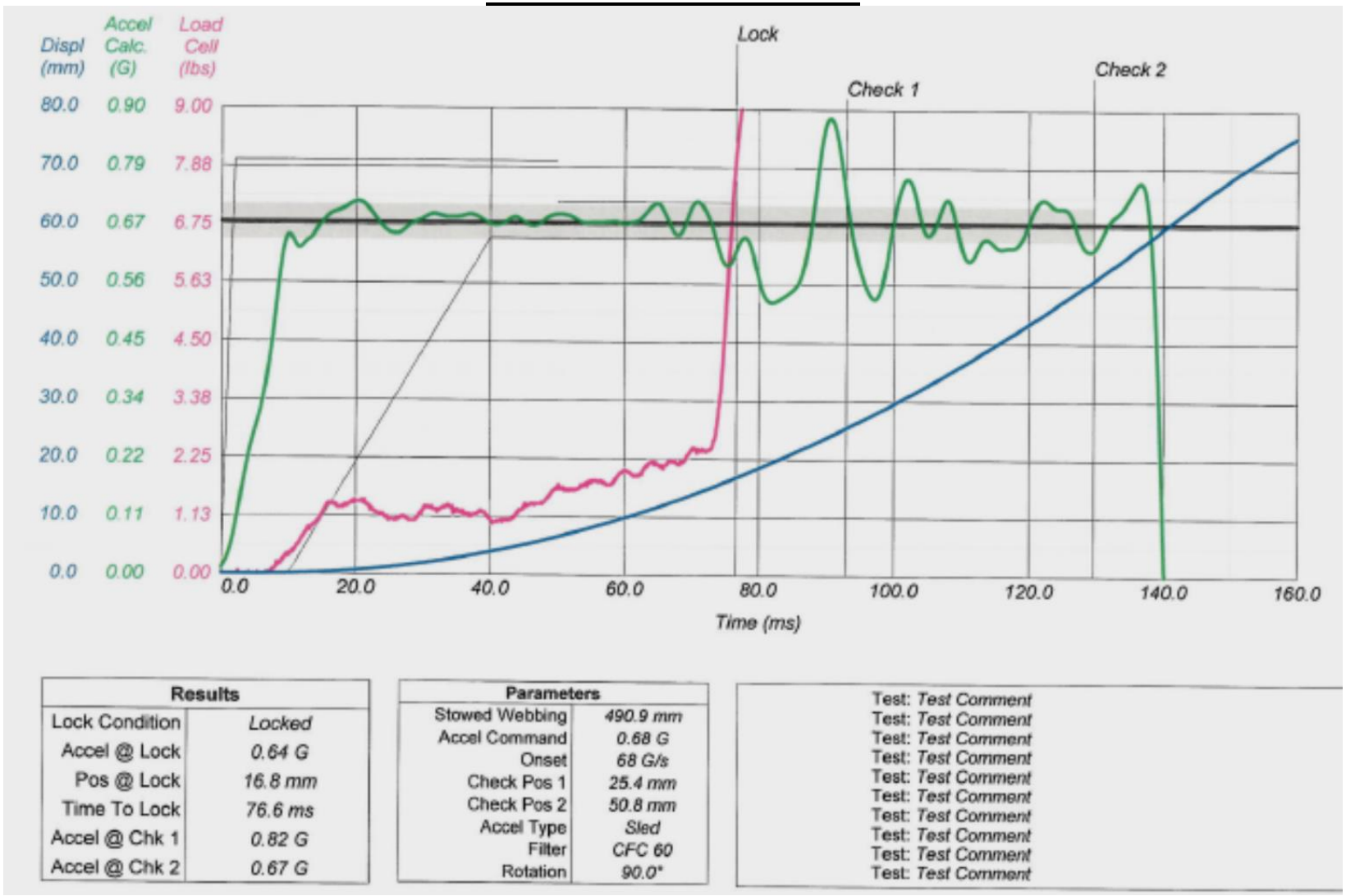
Final Test
Retractor #1 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.64 G*
Pos @ Lock	*16.8 mm*
Time To Lock	*76.6 ms*
Accel @ Chk 1	*0.82 G*
Accel @ Chk 2	*0.67 G*

Parameters	
Stowed Webbing	*490.9 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*90.0°*

Test: *Test Comment*
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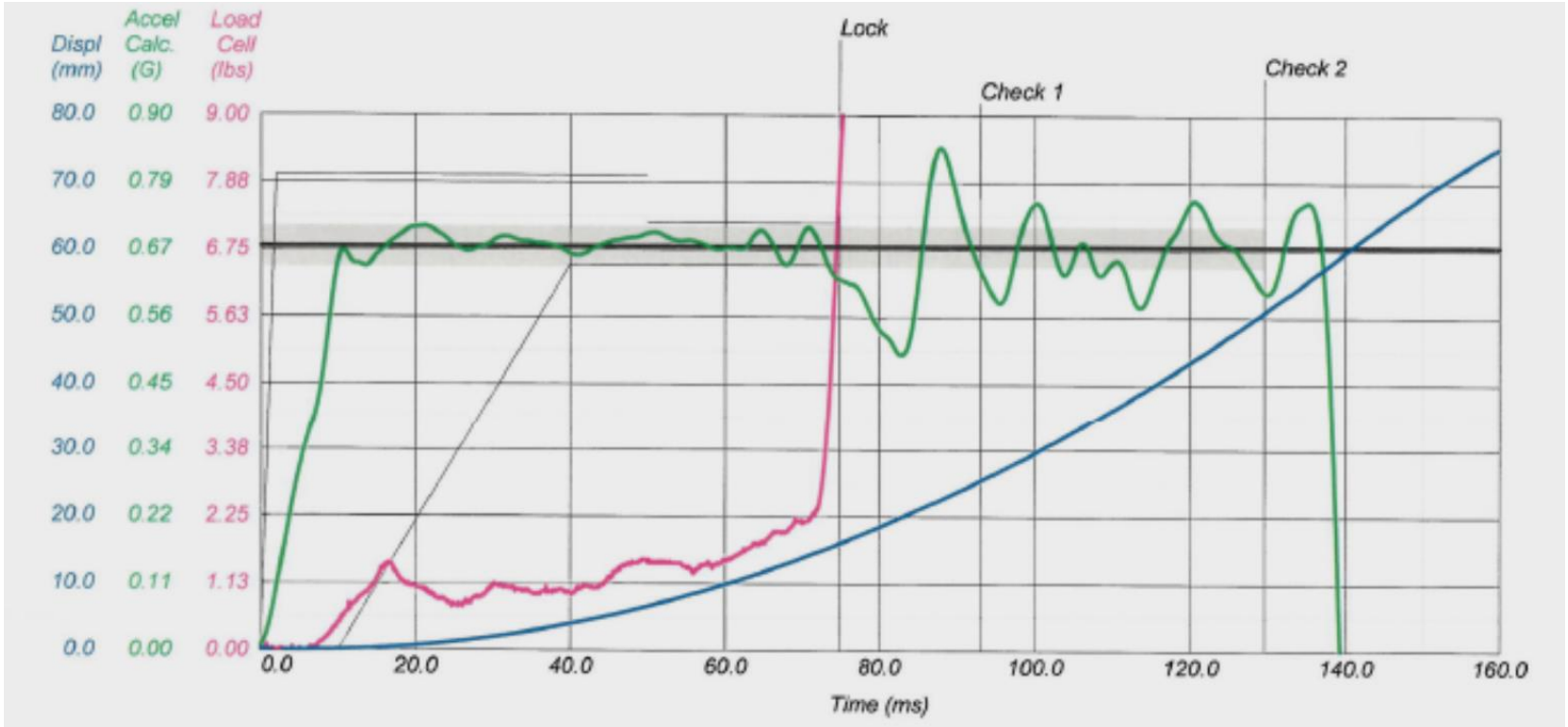
Final Test
Retractor #2 – X Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.68 G*
Pos @ Lock	*16.0 mm*
Time To Lock	*74.9 ms*
Accel @ Chk 1	*0.75 G*
Accel @ Chk 2	*0.65 G*

Parameters	
Stowed Webbing	*491.0 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*0.0°*

Test: *Test Comment*
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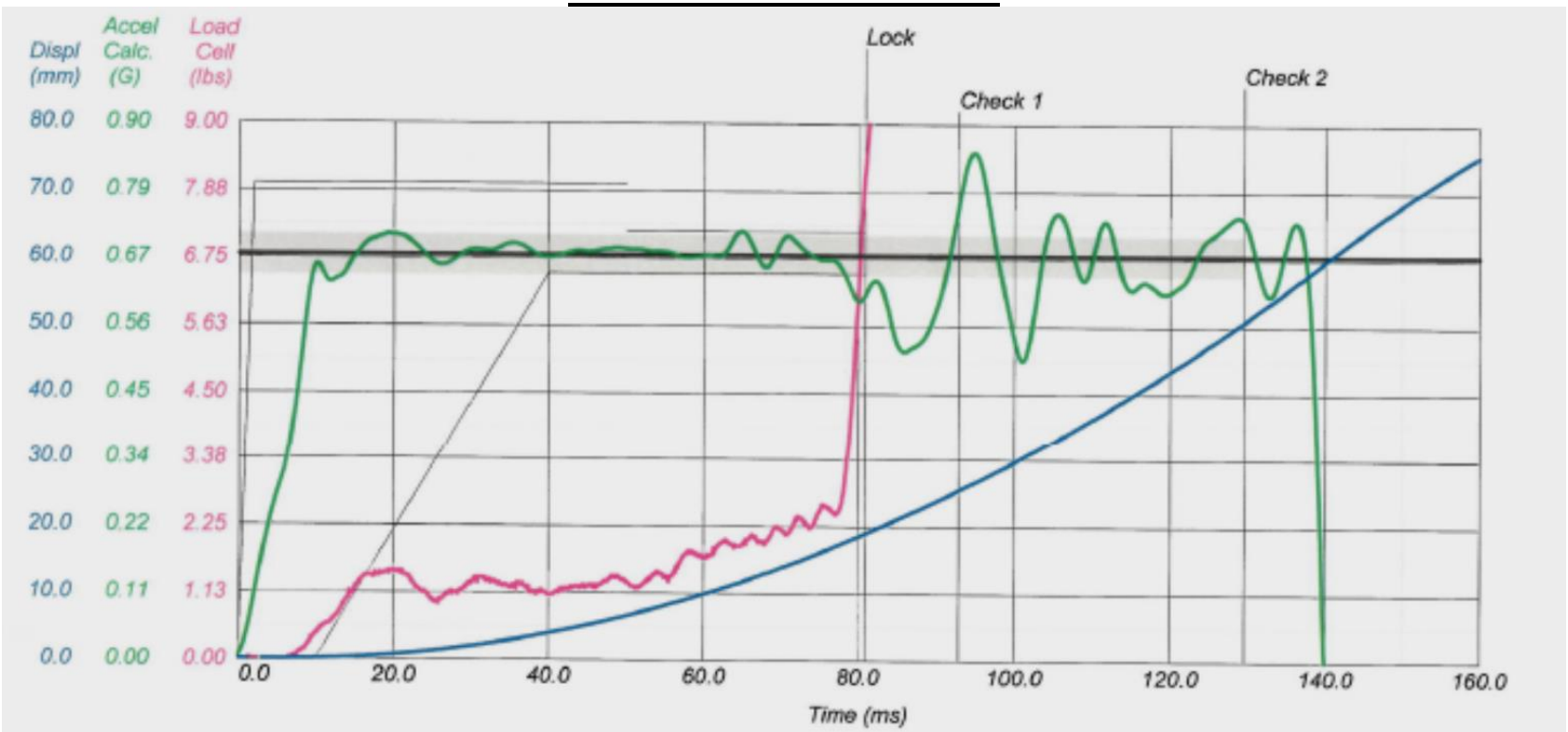
Final Test
Retractor #2 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.64 G*
Pos @ Lock	*18.9 mm*
Time To Lock	*80.9 ms*
Accel @ Chk 1	*0.62 G*
Accel @ Chk 2	*0.73 G*

Parameters	
Stowed Webbing	*490.9 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*90.0°*

Test: *Test Comment*
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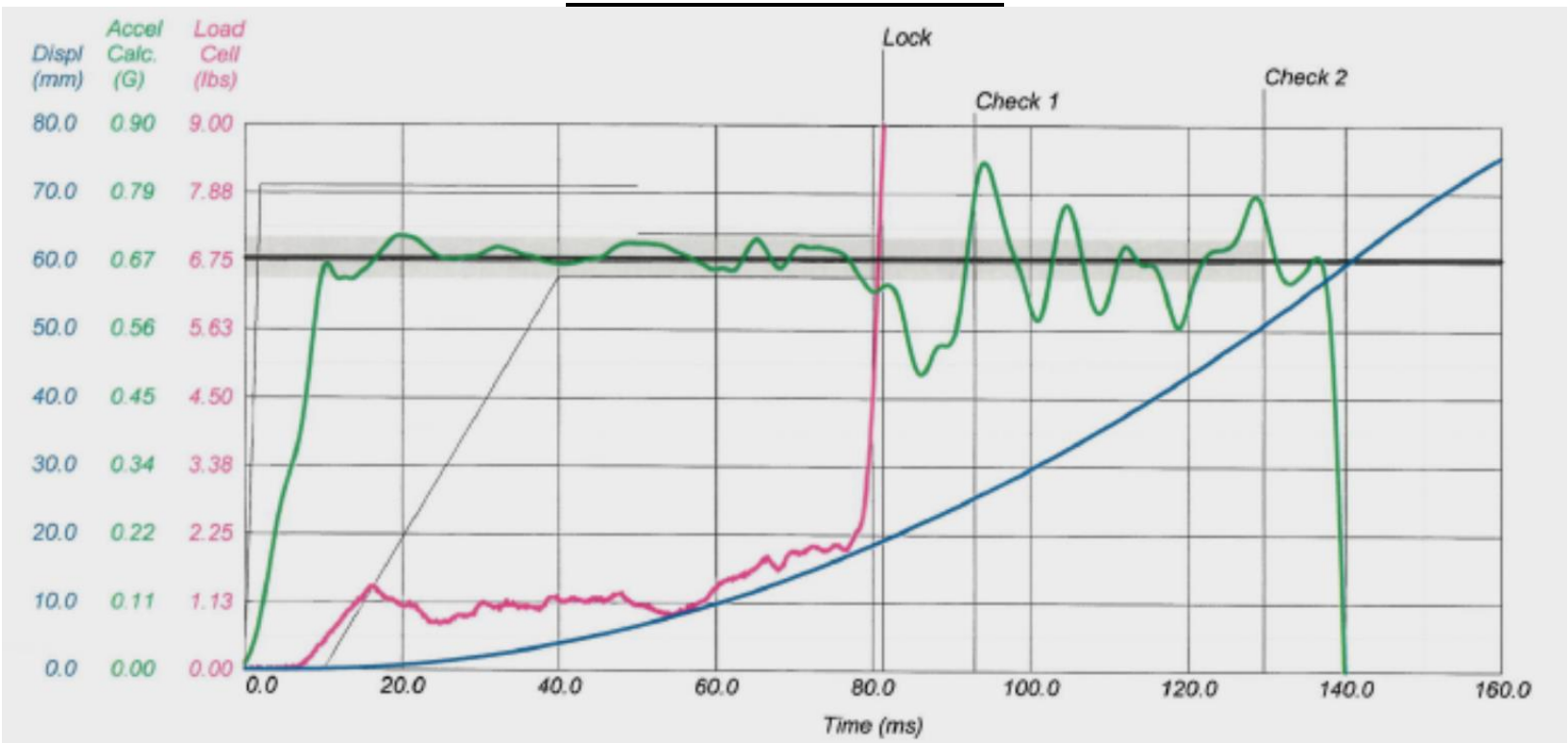
Final Test
Retractor #3 – X Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*19.1 mm*
Time To Lock	*81.3 ms*
Accel @ Chk 1	*0.60 G*
Accel @ Chk 2	*0.74 G*

Parameters	
Stowed Webbing	*490.9 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*0.0°*

Test: *Test Comment*
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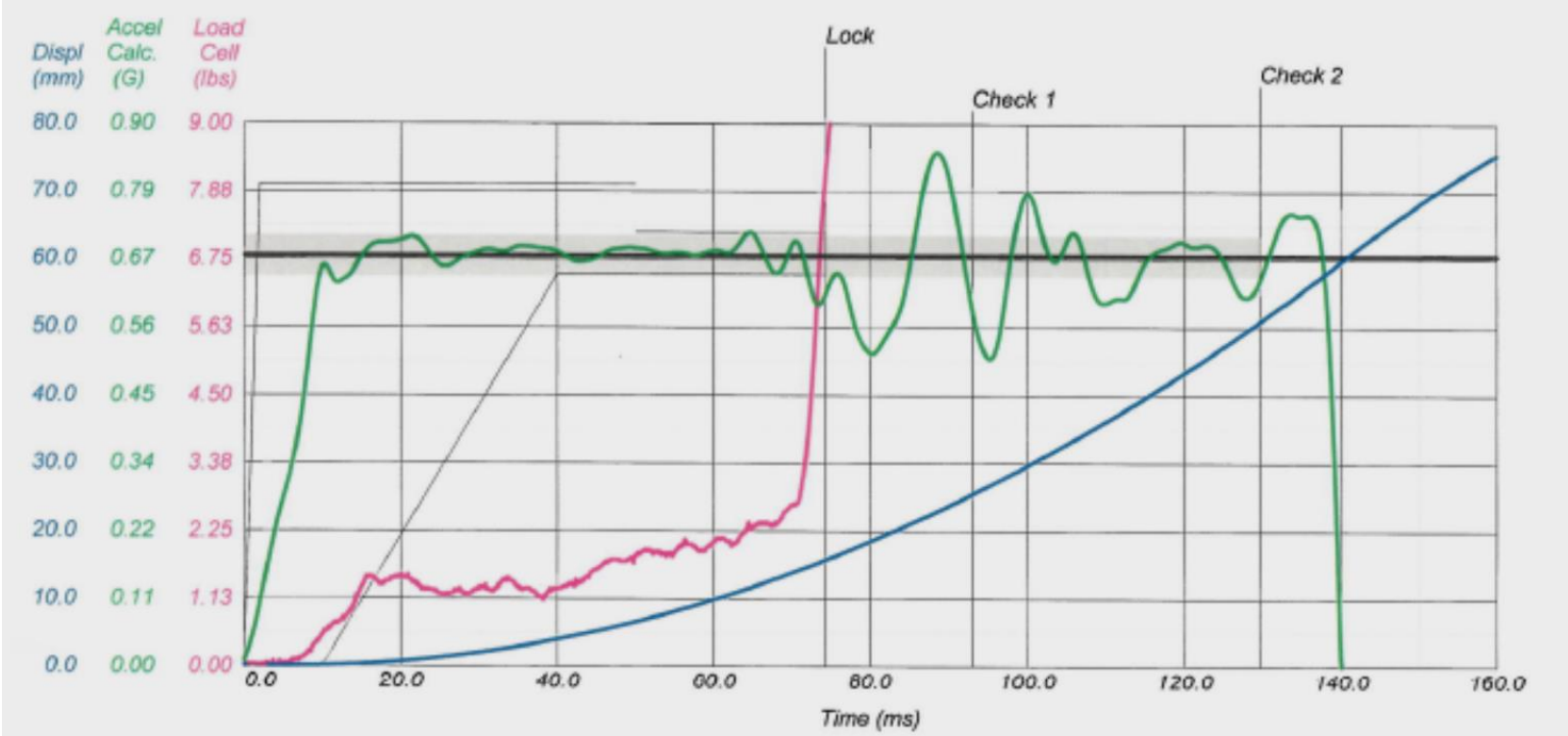
Final Test
Retractor #3 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*15.8 mm*
Time To Lock	*74.3 ms*
Accel @ Chk 1	*0.77 G*
Accel @ Chk 2	*0.64 G*

Parameters	
Stowed Webbing	*490.9 mm*
Accel Command	*0.68 G*
Onset	*68 G/s*
Check Pos 1	*25.4 mm*
Check Pos 2	*50.8 mm*
Accel Type	*Sled*
Filter	*CFC 60*
Rotation	*90.0°*

Test: *Test Comment*
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SECTION 4

Test Equipment List and Calibration Information

SGS North America Inc.

TEST EQUIPMENT
RETRACTOR TESTING

No.	Item	Mfr.	Model	Serial No.	Cal. Period	Date of Last Cal.	Accuracy	Remarks
1	Steel Tape	Stanley	W310	---	---	---	+/-1/16 in.	Webbing Length
2	Push-Pull Scale	Mark 10	M5-10	3461906	1 Year	9/18	+/- 1%	Retractor Performance
3	Retractor Lock-Up Stand	VSR	Acceleration Sled	1189-1202	1 Year	2/19	+/-% Ind.	Retractor Performance
4	Retractor Endurance Test Stand	VSR	Large Drum Cycler	1242-0204	1 Year	2/19	+/-% Ind.	Retractor Cycling
5	Retractor Endurance Test Stand	VSR	Large Drum Cycler	1243-0204	1 Year	2/19	+/-% Ind.	Retractor Cycling
6	Retractor Endurance Stand	VSR	620	1090-1000	1 Year	2/19	+/-% Ind.	Retractor Cycling
7	Retractor Endurance Stand	VSR	660	1388-1106	1 Year	2/19	+/-% Ind.	Retractor Cycling
8	Retractor Endurance Stand	VSR	660	1621-0613	1 Year	2/19	+/-% Ind.	Retractor Cycling
9	Tensile Tester	Instron	1115	4742	1 Year	1/19	+/-1%	Retractor Performance (Strength)
10	Tensile Tester	Instron	TTC	4344	1 Year	6/18	+/- 1%	Retractor Performance (Strength)
11	Push-Pull Scale	Chatillon	DPP-50	—	1 Year	1/19	+/- 1%	Buckle Release

SGS North America Inc.

TEST EQUIPMENT
STANDARD LABORATORY CALIBRATION

No.	Item	Mfr.	Model	Serial No.	Cal. Period	Date of Last Cal.	Accuracy	Remarks
12	Temperature/ Humidity Recorder	Dickson	TH 800	07150222	1 Year	10/18	+/-2ºF +/-5% RH	Monitor Room Conditioning
13	Temperature/ Humidity Recorder	Dickson	TH 800	07150221	1 Year	4/18	+/-2ºF +/-5% RH	Monitor Room Conditioning

CORROSION TESTING - TEMPERATURE/HUMIDITY

No.	Item	Mfr.	Model	Serial No.	Cal. Period	Date of Last Cal.	Accuracy	Remarks
14	Salt Spray Chamber	Singleton Corp.	SCCH22	SCCH22-21947	---	---	---	Checked per ASTM B-117
15	Temperature Recorder	Honeywell	DR4300	14W47C40000008496 15	1 Year	7/18	+/-5ºF	Monitor Salt Spray Temperature
16	Temperature Humidity Chamber	Blue-M	LR-386B-MP1	L3-122	1 Year	1/19	+/-2ºC +/-5% RH	Temperature-Humidity Exposure
17	Temperature Humidity Chamber	Blue-M	FR-386-PBX	AA-278	1 Year	4/18	+/-2ºC +/-5% RH	Temperature-Humidity Exposure
18	Dust Chamber	VSR	---	1140-1001	1 Year	2/19	---	Timer, Pressure Gauge & Orifice

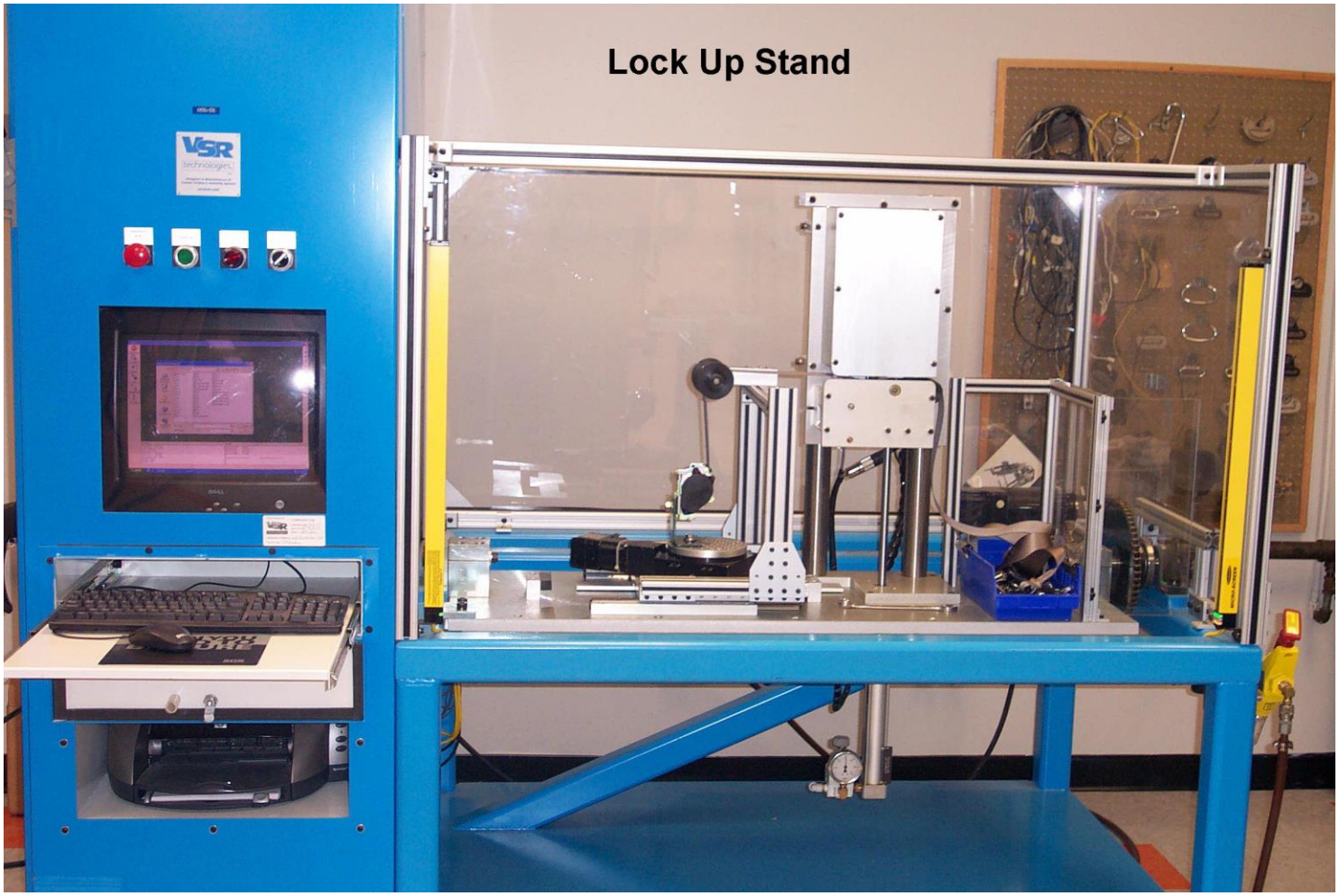
SECTION 5

Photographs

Identification Label

Test Sample

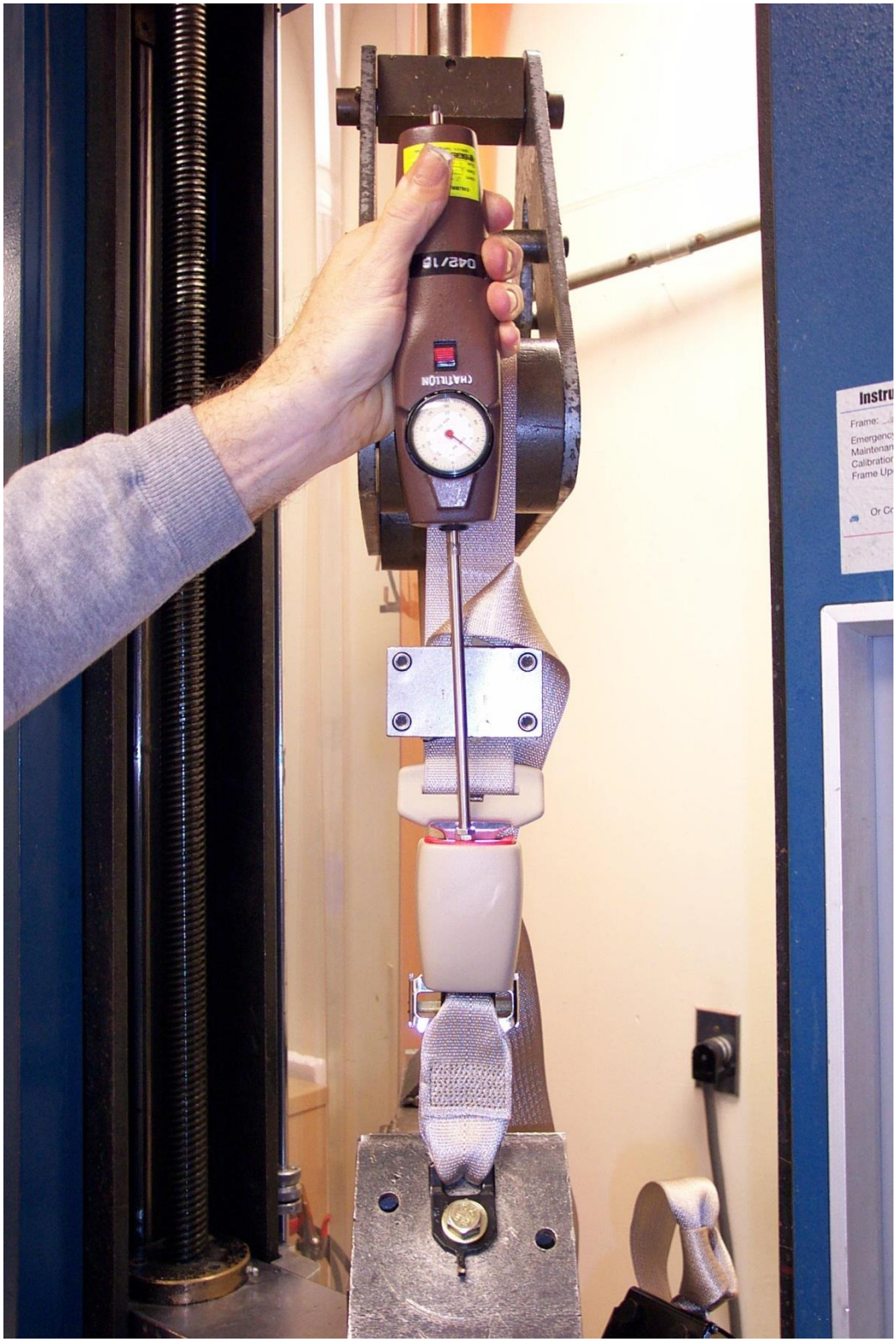

mazda
SEAT BELT FOR AUTOMOBILES
MEETS : F/CMVSS No.209,302
MODEL: TK-AH3-H988
ID. NO. MFD.IN
11 29 2017
TAKATA CORPORATION
TK48 LH
SGS DOT #17



Lock Up Stand

Retraction Force Tester

Retractor Cycling Stand



Buckle Release Force

Loop Load Test

Salt Spray Chamber

Temperature Humidity Chamber

Dust Chambers

SECTION 6

Notice of Test Failure (if applicable)