Report No.

209-SGS-2012-17

SEAT BELT ASSEMBLY COMPLIANCE TESTING
FMVSS 209

2012 Mercedes Benz E-Class Sedan
MODEL NO. TYPE 2031
P/N A212 860 87 85

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

FINAL REPORT

2843009-17

August 9, 2012

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

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Report No.: 209-SGS-2012-17

Prepared By: SGS North America Inc.

Approved by: Frank Savino

Frank Savino

Approval Date: August 9, 2012

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:

Acceptance Date: August 9, 2012

TECHNICAL REPORT Title Page

1. Report No. 209-SGS-2012-17	2. Govt. Accession No.		3. Recipient's Catalog No.
4. Title and Sub-Title Final report of FMVSS No. 209 Compliance Testing of Autoliv M/N Type 2031, Type 2 seat belt assemblies being installed in 2012 Mercedes Benz E-Class Sedan, Front Left Seat			5. Report Date: August 9, 2012 6. Performing Organization Code SGS
7. Author Frank Savino, Project Manager			8. Performing Organization Report No. SGS Report 2843009-17
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. DTNH22-08-D-00107
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 June 14-August 2, 2012 14. Sponsoring Agency Code NVS-220
15. Supplementary Notes			
16. Abstract Compliance tests were conducted on Autoliv Type 2 seat belt assemblies being installed in 2012 Mercedes Benz E-Class Sedan 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		
19. Security Classif. (Of This Report) Unclassified	20. Security Classif. (Of This Page) Unclassified	21. No of Pages: 45	22. Price

TABLE OF CONTENTS

Section 1. Purpose of Compliance Test

Section 2. Compliance Data Summary

Section 3. Test Data

Section 4. Test Equipment List and Calibration Information

Section 5. Photographs

Section 6. Notice of Test Failure (if applicable).

SECTION 1

PURPOSE

SECTION 1

PURPOSE

Purpose: The purpose of this test was to determine if the production seat belt assemblies supplied by the National Highway Traffic Safety Administration met the requirements specified in TP-209-08 as governed by the contract.

SECTION 2

COMPLIANCE TEST DATA SUMMARY

SECTION 2

SUMMARY OF RESULTS

RETRACTOR TYPE: ___-ALR;__X__-ELR; ____ -ELR w/ALR GROUP NO.: 017

ELR RETRACTOR SENSITIVITY: _____-WSI; _____-VSI; _X_-VWSI

BELT DATE CODES:_____07.02.12_____

BELT ASSY MFR.:_____Autoliv_____

BELT ASSY PART/MODEL NO.: _____Type 2031_____

SELLER/VEHICLE MFR.: _____Mercedes-Benz USA_____

SELLER/VEH. MFR. PART/MODEL NO.: A212 860 87 85

LABELING / MARKING REQUIREMENT: _____P_____

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

(Continued on next page)

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**

REMARKS: Retractor contains a load-limiting device

RECORDED BY: Mark Ostrovsky and John Roycraft

PREPARED BY: Frank Savino

APPROVED BY: Frank Savino

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**

REMARKS:

RECORDED BY: Mark Ostrovsky and John Roycraft

PREPARED BY: Frank Savino

APPROVED BY: Frank Savino

TEST RESULTS FOR SPECIMENS 7, 8 & 9

GROUP NO.: 017 **TEST DATE:** July 19-20, 2012

CORROSION RESISTANCE
(Spec=24 hr. exposure time)
(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 **TEST DATE:** July 24-26, 2012
(Spec=48 hrs. @ 80° ± 1°C)
(P = Passed, F = Failed, NA = Not Applicable)

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

REMARKS:

BUCKLE LATCH **TEST DATE:** August 2, 2012

(Spec=200 Cycles @ 133 ± 13 N force; False Latching Spec=22 N max separation force)
(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 **TEST DATE:** August 2, 2012

(Pelvic Belt Load Spec=22,241 N min.; Upper Torso Belt Load Spec=13,345 N min.)
(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 **TEST DATE:** August 2, 2012
(Pelvic & Upper Torso 508 mm max between anchorages)
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Pelvic Belt (Type 2) Elongation, mm	165	175	168
B	Upper Torso Belt Elongation, mm	*	*	*
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 load limiter went to full extension. This could not be achieved in a single pull. After the extension limit of the Instron was reached, the crosshead of the machine was re-positioned and the remaining webbing was pulled off the retractor spool.

ASSEMBLY PERF - MAX BUCKLE REL FORCE **TEST DATE:** August 2, 2012
(Spec=133 N max. @ 667 N loop load)
(P = Passed, F = Failed, NA = Not Applicable)

		SPECIMEN NUMBER		
		7	8	9
A	Buckle Release Force, N	36	36	36
B	Buckle Release Force Pass/Fail	P	P	P

REMARKS:

ASSY PERFORMANCE - COMMON HARDWARE **TEST DATE:** August 2, 2012
(Min. Spec=26,689 N Loop)
(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 **TEST DATE:** N/A
(Pelvic Belt Load Spec=15,569 N; Upper Torso Belt Load Spec=12,455 N)
(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 **TEST DATE:** August 2, 2012
(Continuous Webbing System Load Spec=6,672 N)
(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

TEST RESULTS FOR SPECIMENS 10, 11 & 12

GROUP NO.: 017 **TEST DATE:** June 14, 2012

RETRACTOR PERFORMANCE - BASELINE CHARACTERISTICS
(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	**3.6**	**3.2**	**3.2**
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 @ 0° Angle, mm.	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 0° Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 45° Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 90° Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 135° Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 180° 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**	**16**	**18**
	Y (90° to Vehicle Centerline), mm	**16**	**15**	**17**
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) **TEST DATE:** June 20, 2012
(Spec=24 hr. salt spray, 1 hr. dry, 4 wash cycles-38 ± 5°C water & 25 manual cycles)
(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-POST TEMPERATURE CYCLING (2,500) **TEST DATE**: June 26-28, 2012
(Spec=48 hr. temp conditioning period of 24 hrs. @ 80 ± 1°C over water +
24 hrs. @ 80 ± 1°C dry oven)
(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 PERFORMANCE - DUST TEST **TEST DATE:** July 11, 2012
(Spec=5 hr. conditioning period)
(P = Passed, F = Failed, NA = Not Applicable)

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

REMARKS:

RETRACTOR PERFORMANCE - CYCLING **TEST DATE:** July 17-21, 2012
(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**

RETR PERF - POST TEST CHARACTERISTICS **TEST DATE:** July 24, 2012
(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	**2.7**	**2.7**	**2.6**
C	Percent of BASELINE (minimum = 50%), percent	**75**	**84**	**81**
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° Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 0° Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 45° Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 90° Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 135° Angle, mm	**N/A**	**N/A**	**N/A**
	Retractor Accel within 0.7g pulse corridor @ 180° 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	**14**	**19**	**19**
	Y (90° to Vehicle Centerline), mm	**19**	**18**	**18**
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**

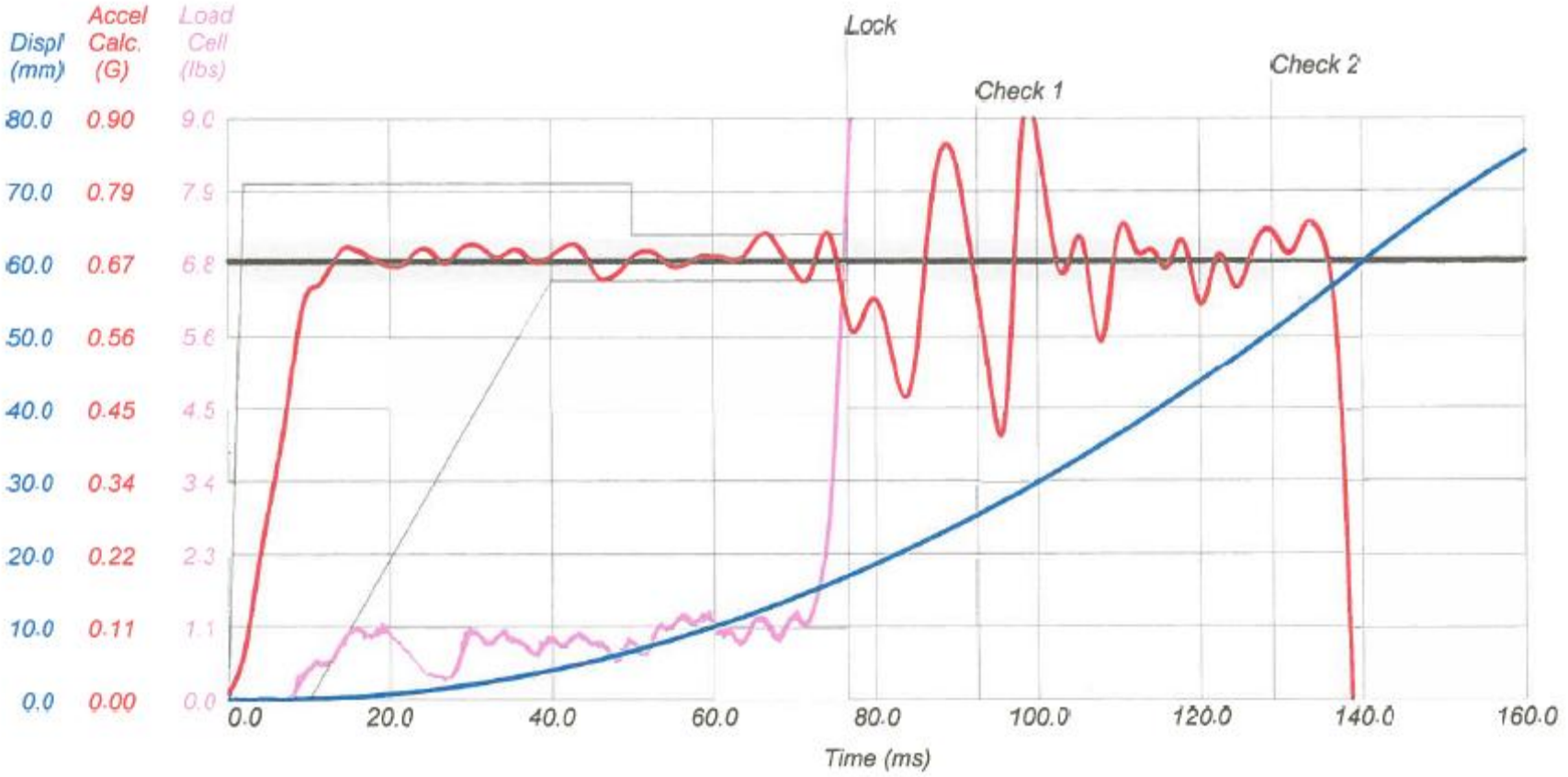
RETR PERF - MIN STRENGTH **TEST DATE:** July 24, 2012

(Continuous Webbing System Spec=13,344 ± 134 N Loop)
(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:

Initial Test
Retractor #1 - X Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.68 G*
Pos @ Lock	*17.0 mm*
Time To Lock	*76.6 ms*
Accel @ Chk 1	*0.79 G*
Accel @ Chk 2	*0.69 G*

Parameters	
Stowed Webbing	*469.9 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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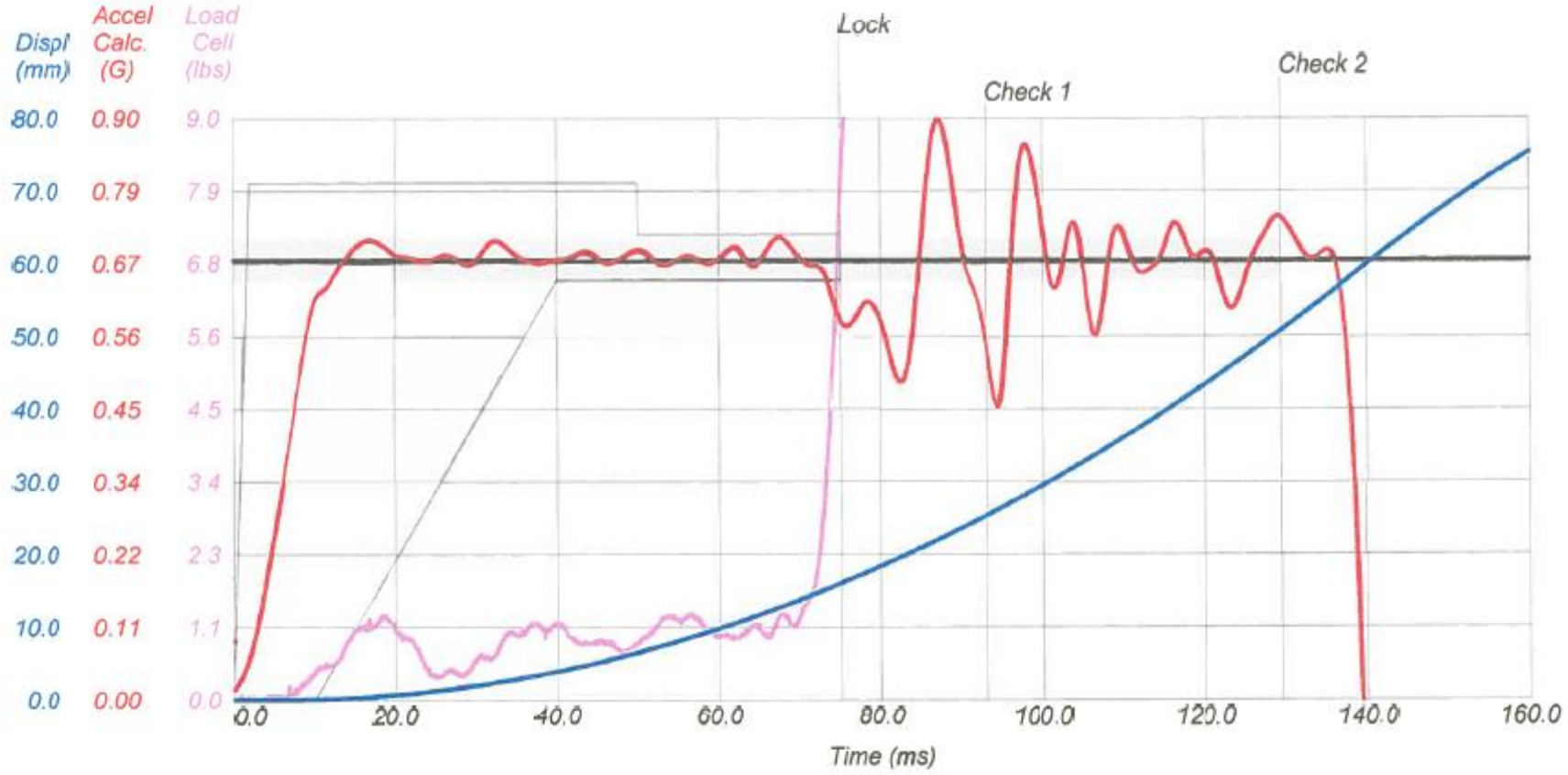
Initial Test
Retractor #1 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*16.1 mm*
Time To Lock	*75.1 ms*
Accel @ Chk 1	*0.69 G*
Accel @ Chk 2	*0.70 G*

Parameters	
Stowed Webbing	*469.8 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°*

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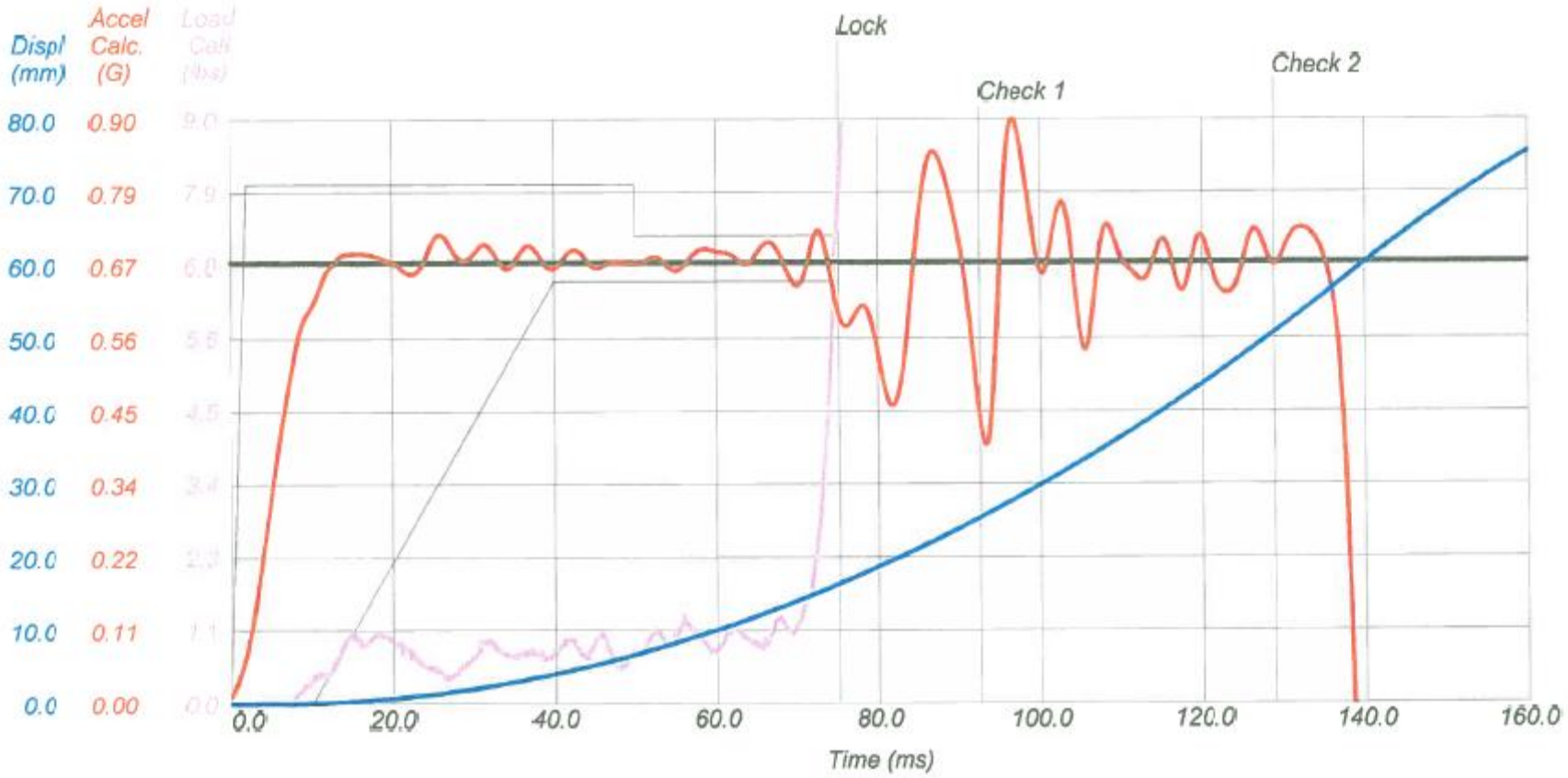
Initial Test
Retractor #2 – X Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.68 G*
Pos @ Lock	*16.3 mm*
Time To Lock	*75.2 ms*
Accel @ Chk 1	*0.69 G*
Accel @ Chk 2	*0.69 G*

Parameters	
Stowed Webbing	*469.9 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°*

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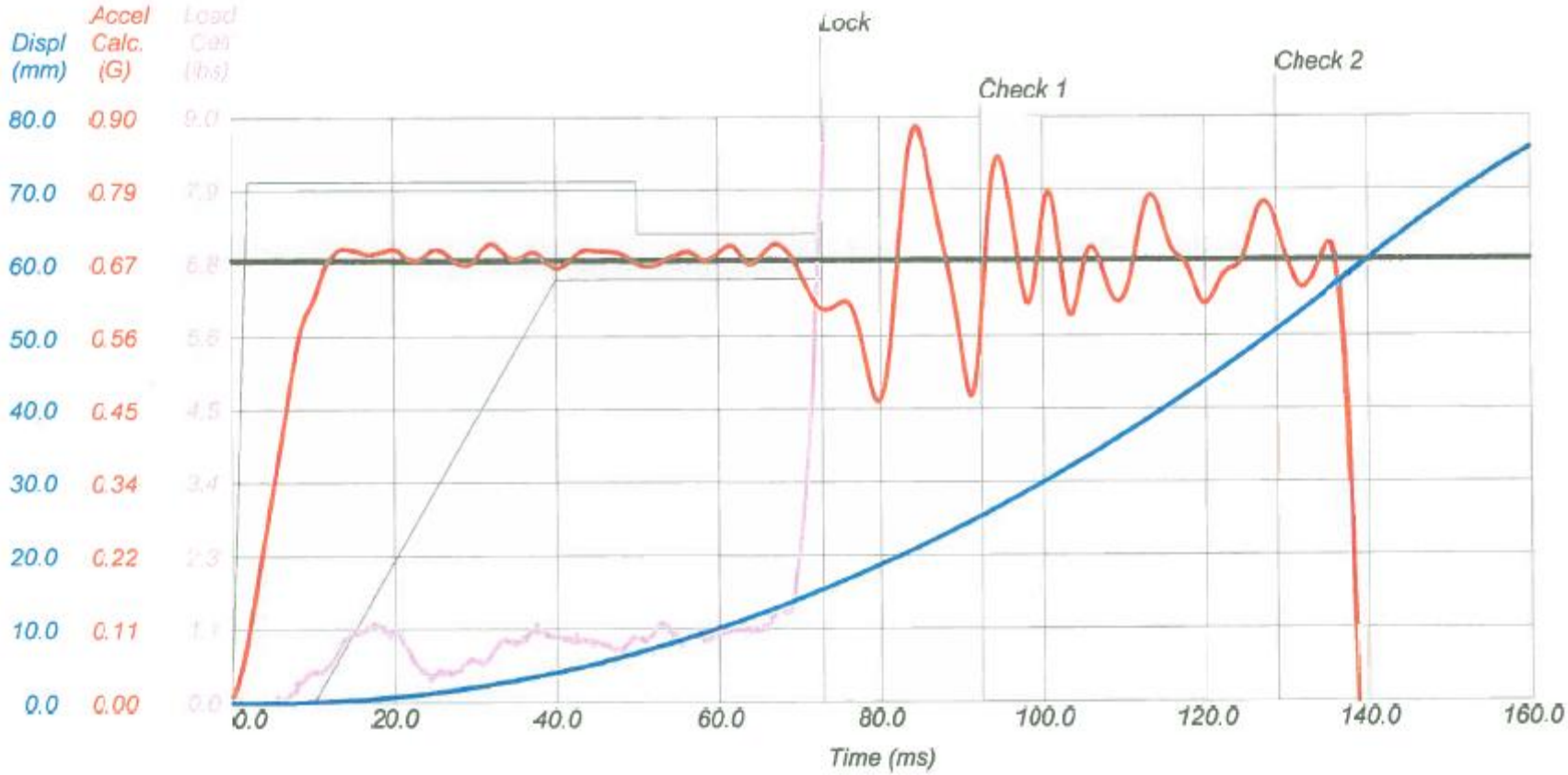
Initial Test
Retractor #2 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*15.3 mm*
Time To Lock	*72.8 ms*
Accel @ Chk 1	*0.58 G*
Accel @ Chk 2	*0.73 G*

Parameters	
Stowed Webbing	*469.9 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°*

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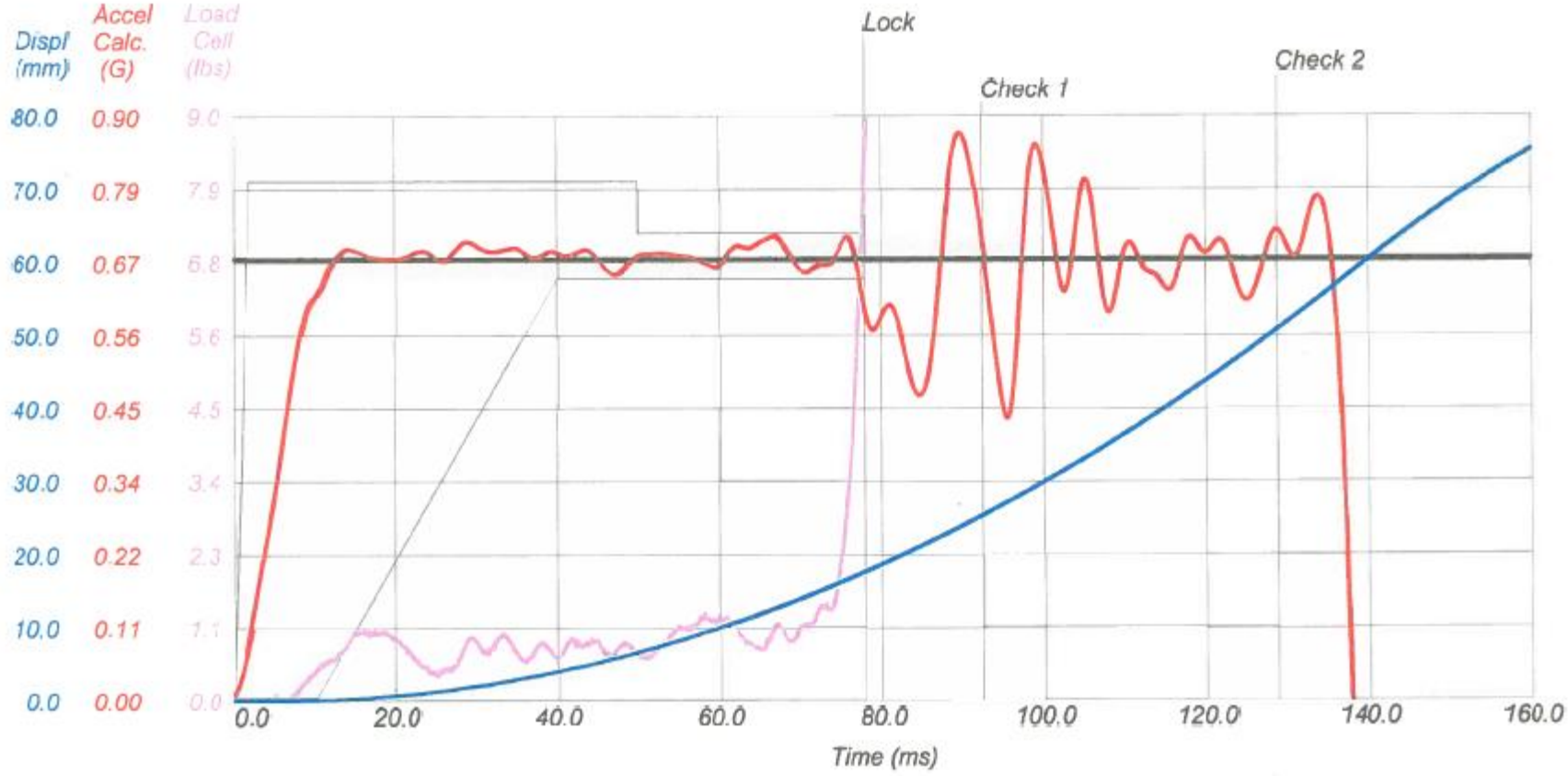
Initial Test
Retractor #3 – X Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.68 G*
Pos @ Lock	*17.7 mm*
Time To Lock	*77.9 ms*
Accel @ Chk 1	*0.81 G*
Accel @ Chk 2	*0.66 G*

Parameters	
Stowed Webbing	*470.0 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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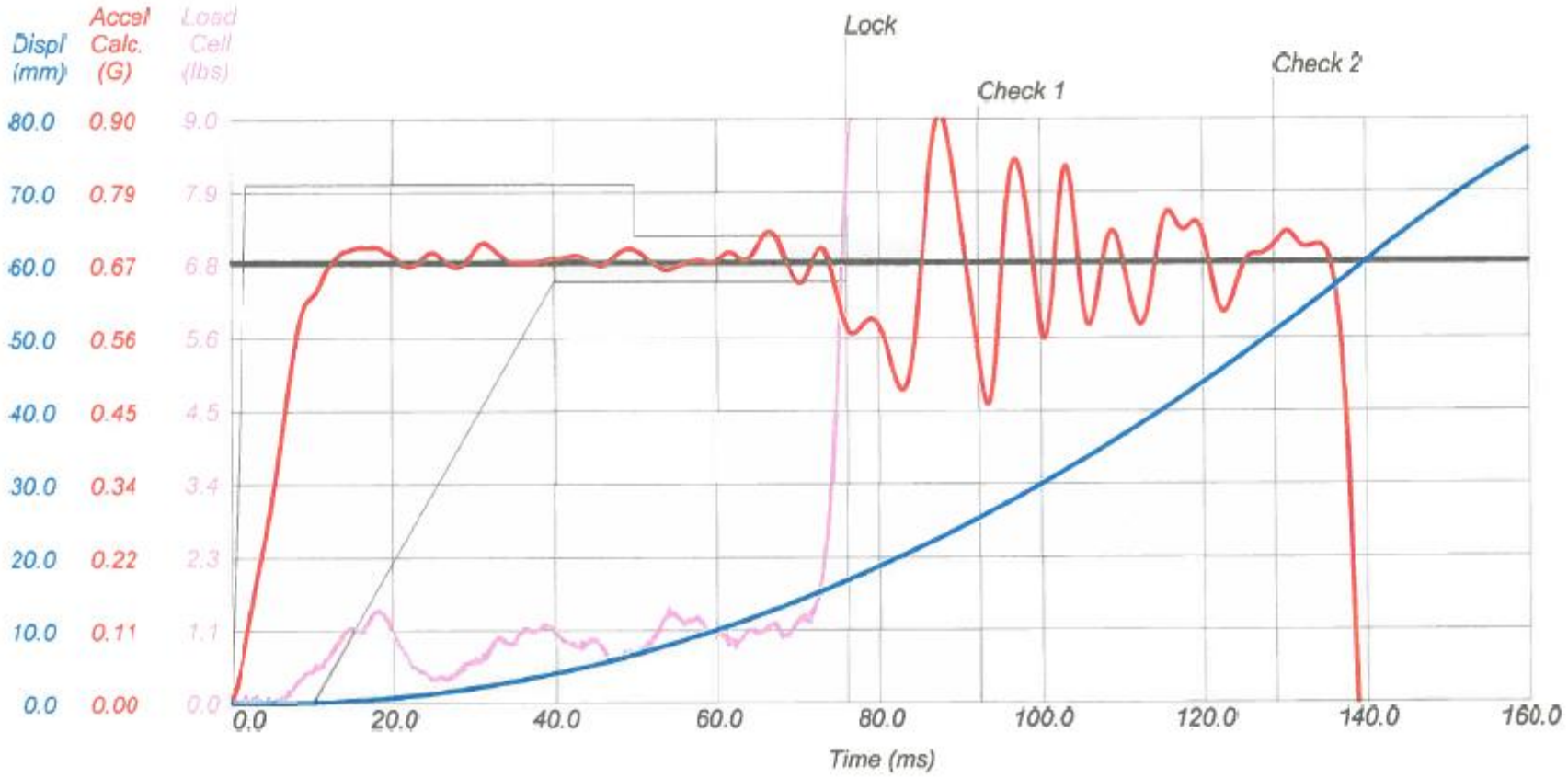
Initial Test
Retractor #3 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.66 G*
Pos @ Lock	*16.8 mm*
Time To Lock	*76.1 ms*
Accel @ Chk 1	*0.76 G*
Accel @ Chk 2	*0.68 G*

Parameters	
Stowed Webbing	*469.9 mm*
Accel Command	*0.66 G*
Onset	*66 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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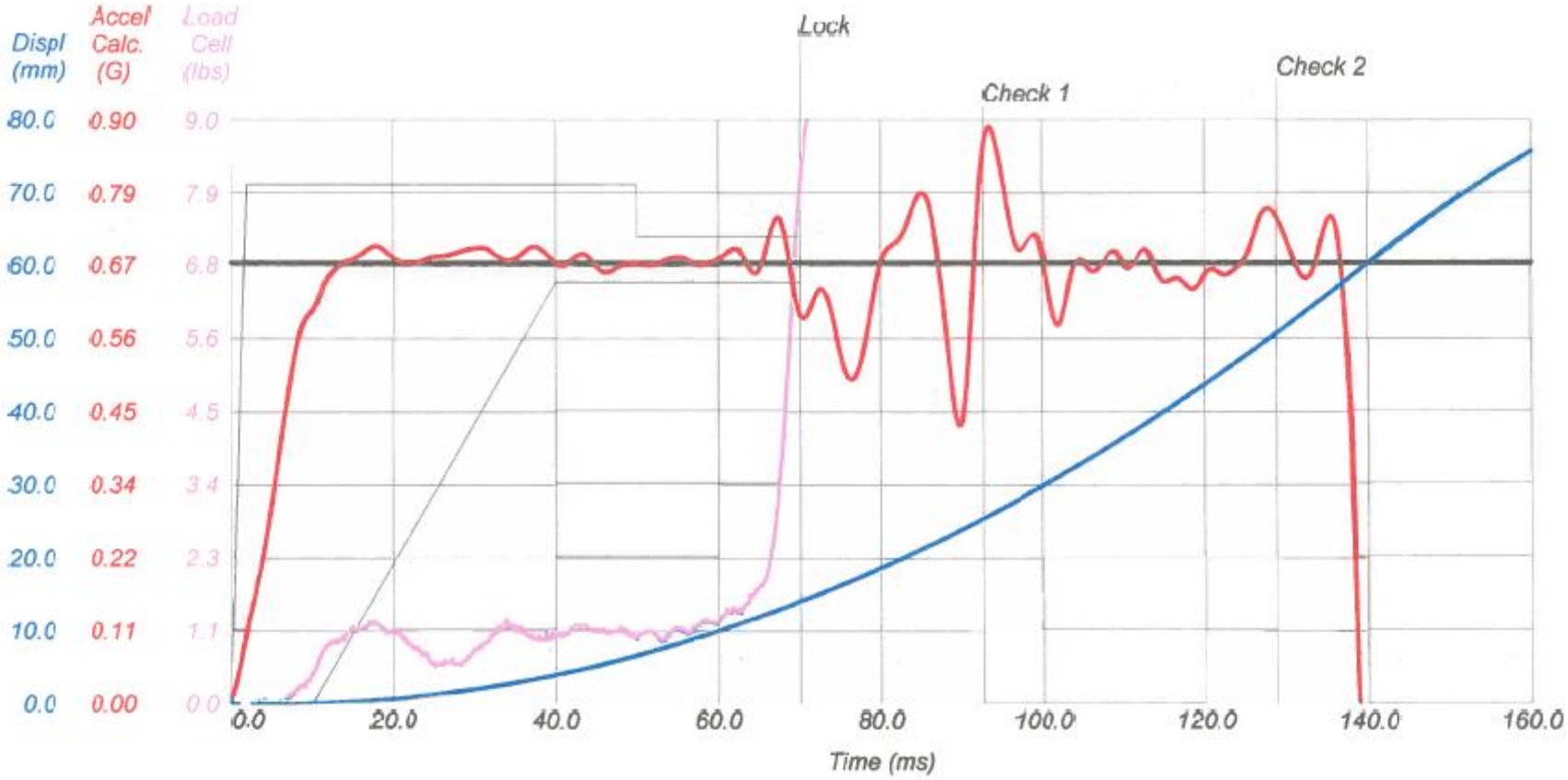
Final Test
Retractor #1 – X Direction



Results	
Lock Condition	Locked
Accel @ Lock	0.70 G
Pos @ Lock	14.1 mm
Time To Lock	70.1 ms
Accel @ Chk 1	0.57 G
Accel @ Chk 2	0.72 G

Parameters	
Stowed Webbing	469.9 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°

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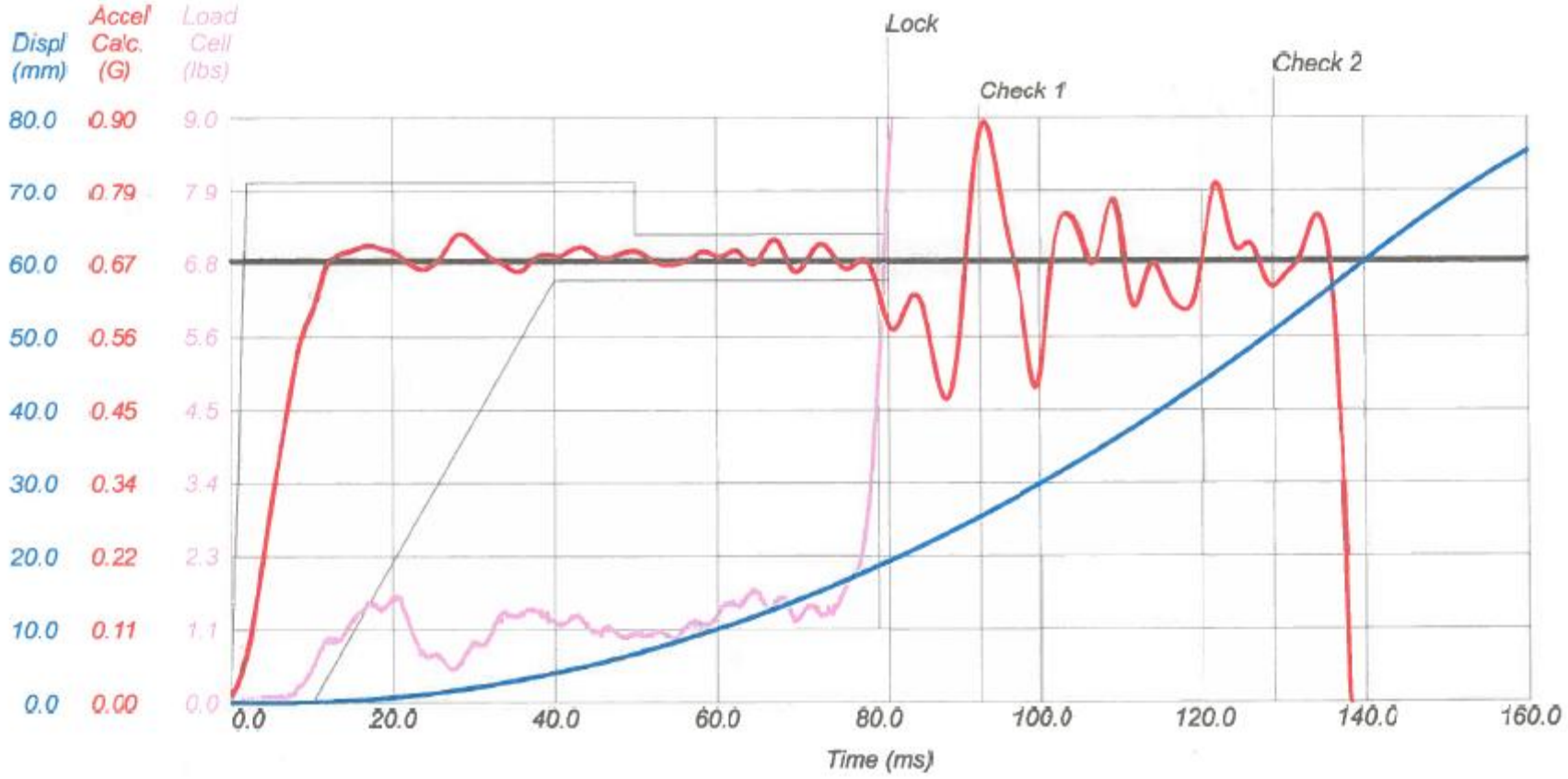
Final Test
Retractor #1 – Y Direction

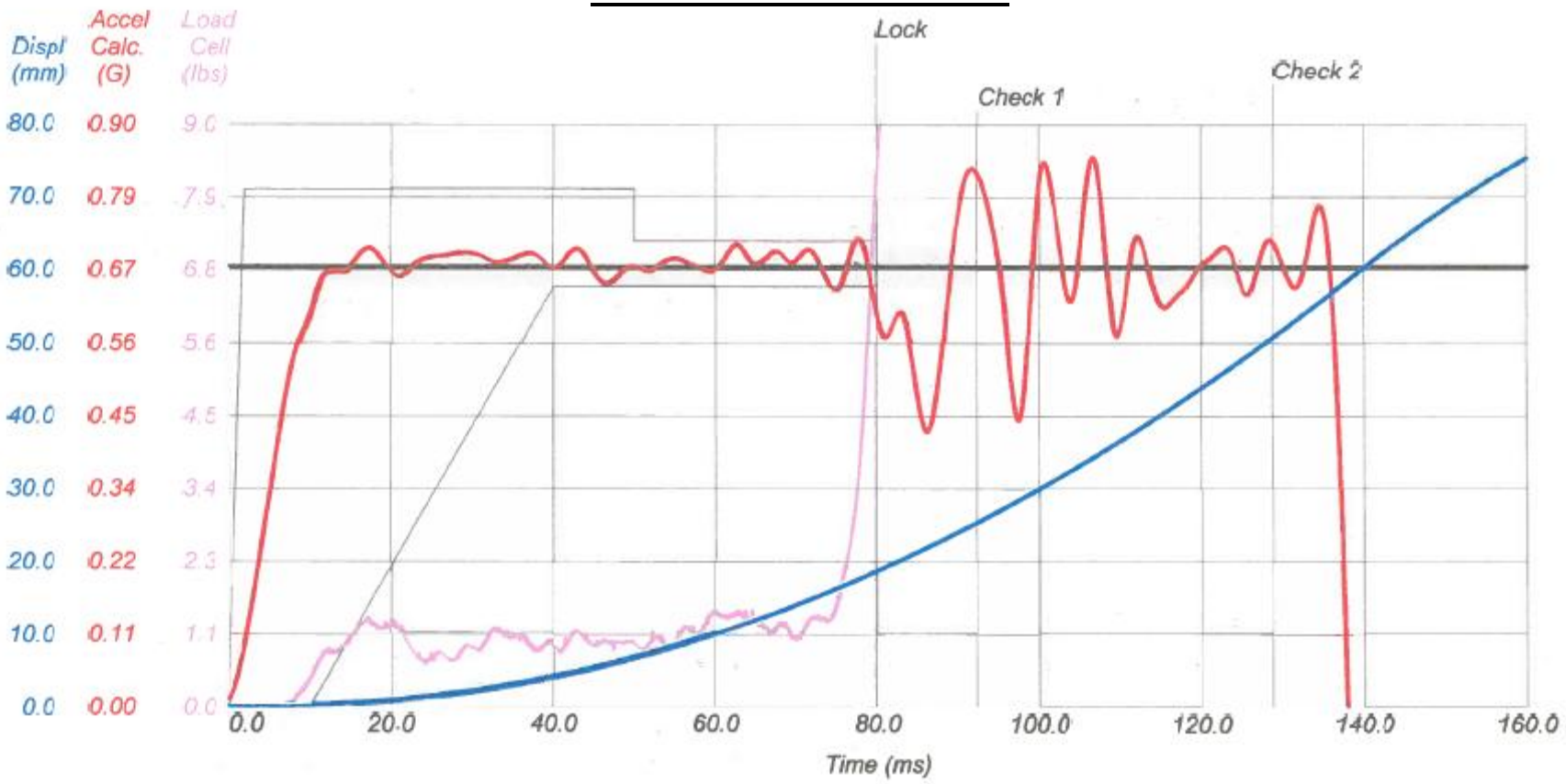


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*19.3 mm*
Time To Lock	*81.3 ms*
Accel @ Chk 1	*0.61 G*
Accel @ Chk 2	*0.68 G*

Parameters	
Stowed Webbing	*459.9 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*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*

Final Test
Retractor #2 – X Direction



Results	
Lock Condition	Locked
Accel @ Lock	0.68 G
Pos @ Lock	18.7 mm
Time To Lock	79.8 ms
Accel @ Chk 1	0.71 G
Accel @ Chk 2	0.68 G

Parameters	
Stowed Webbing	469.9 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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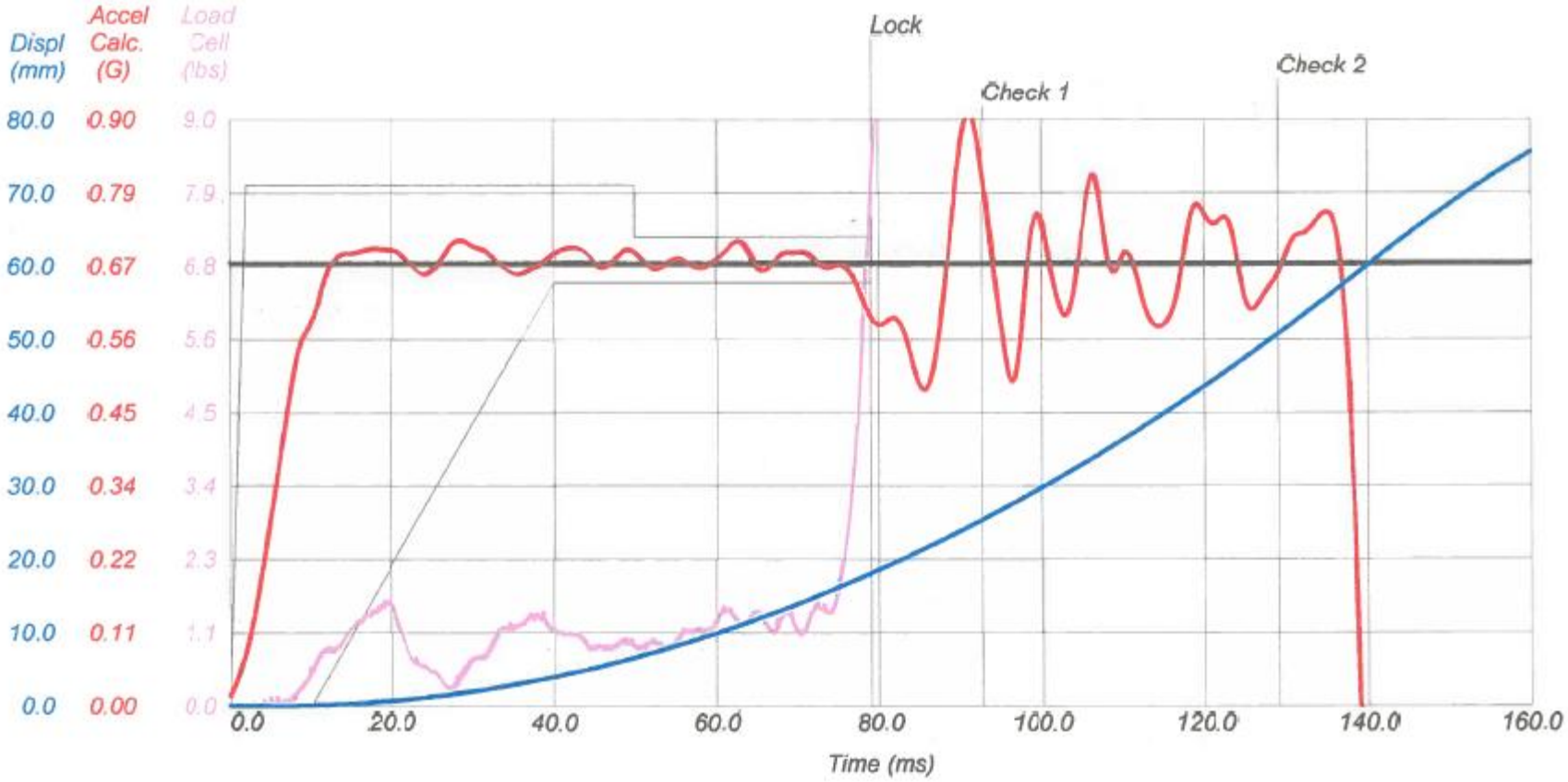
Test: Test Comment

Final Test
Retractor #2 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*18.1 mm*
Time To Lock	*79.0 ms*
Accel @ Chk 1	*0.81 G*
Accel @ Chk 2	*0.64 G*

Parameters	
Stowed Webbing	*469.9 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*
Test: *Test Comment*
Test: *Test Comment*
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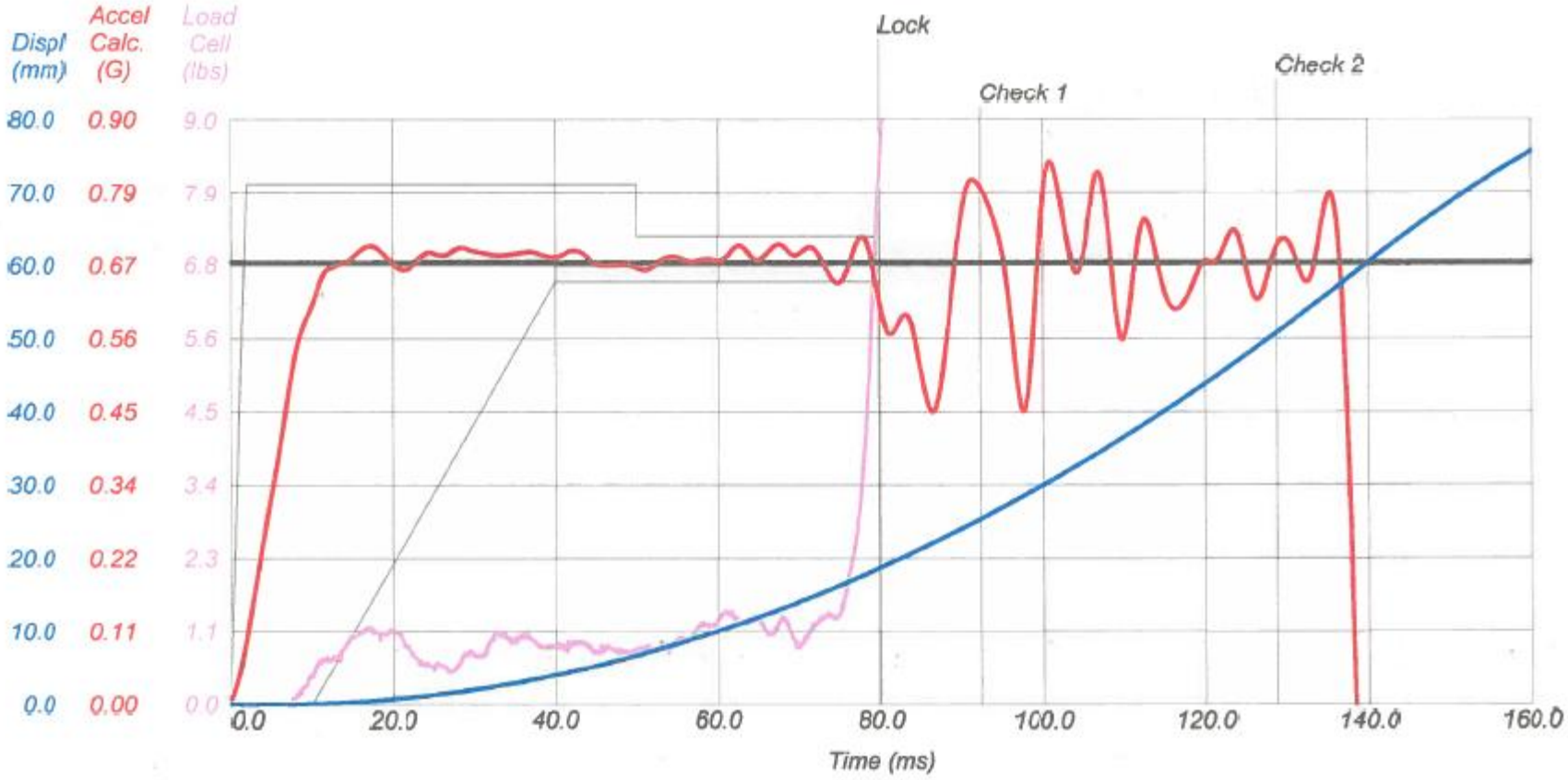
Test: *Test Comment*

Final Test
Retractor #3 – X Direction



Results	
Lock Condition	Locked
Accel @ Lock	0.68 G
Pos @ Lock	18.7 mm
Time To Lock	79.8 ms
Accel @ Chk 1	0.70 G
Accel @ Chk 2	0.67 G

Parameters	
Stowed Webbing	469.9 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
Test: Test Comment
Test: Test Comment
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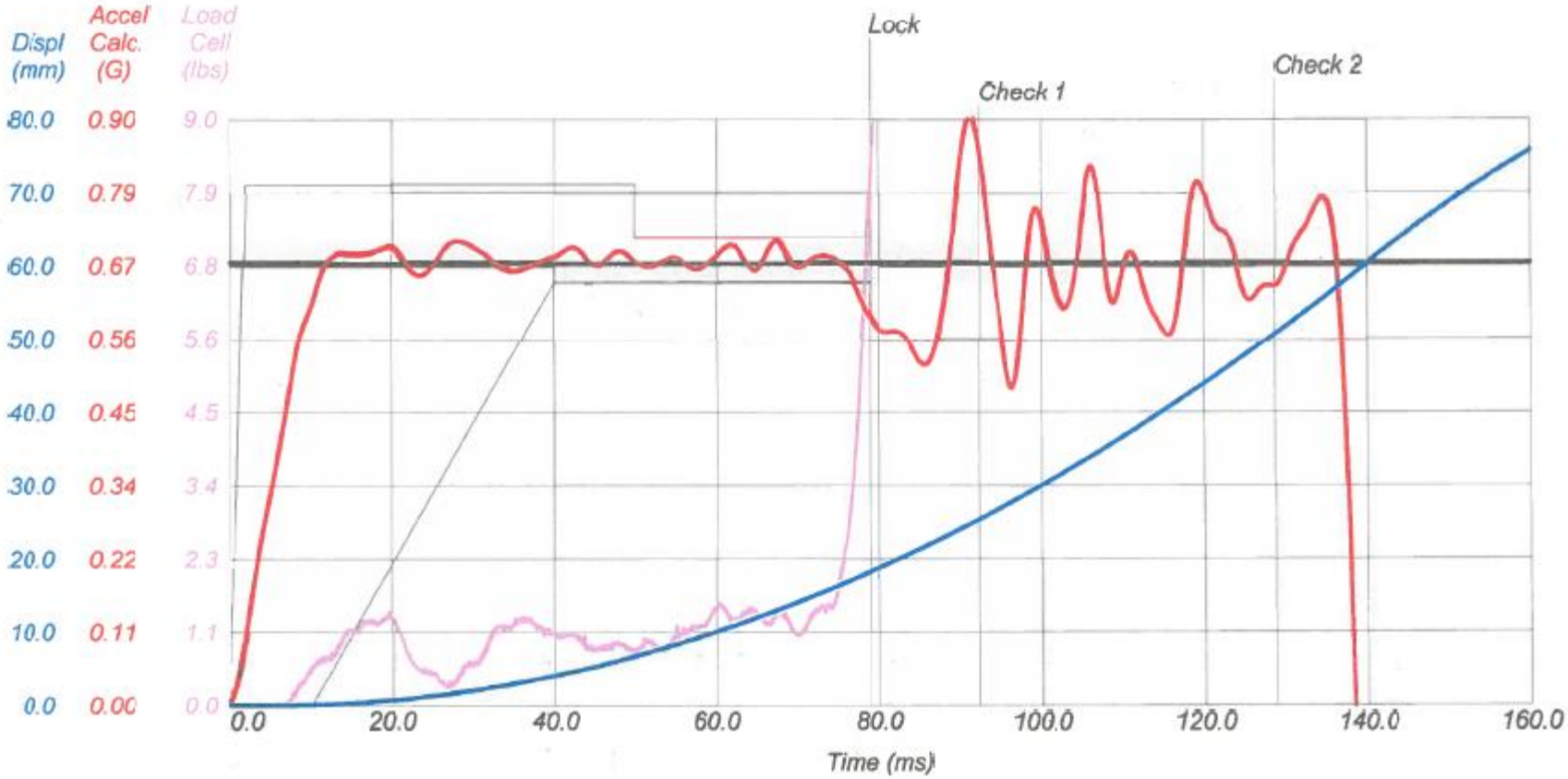
Test: Test Comment

Final Test
Retractor #3 – Y Direction



Results	
Lock Condition	Locked
Accel @ Lock	0.66 G
Pos @ Lock	18.2 mm
Time To Lock	78.9 ms
Accel @ Chk 1	0.78 G
Accel @ Chk 2	0.64 G

Parameters	
Stowed Webbing	469.9 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 LISTS

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	Chatillon	DFIS 2	25258	1 Year	5/12	+/- 1%	Retractor Performance
3	Retractor Lock-Up Stand	VSR	Acceleration Sled	1189-1202	1 Year	2/12	+/-% Ind.	Retractor Performance
4	Retractor Endurance Test Stand	VSR	Large Drum Cycler	1242-0204	1 Year	2/12	+/-% Ind.	Retractor Cycling
5	Retractor Endurance Test Stand	VSR	Large Drum Cycler	1243-0204	1 Year	2/12	+/-% Ind.	Retractor Cycling
6	Retractor Endurance Stand	VSR	620	1090-1000	1 Year	2/12	+/-% Ind.	Retractor Cycling
7	Retractor Endurance Stand	VSR	660	1388-1106	1 Year	2/12	+/-% Ind.	Retractor Cycling
8	Tensile Tester	Instron	1115	3289	1 Year	6/12	+/-1%	Retractor Performance (Strength)
9	Tensile Tester	Instron	TTC	4344	1 Year	6/12	+/- 1%	Retractor Performance (Strength)
10	Push-Pull Scale	Chatillon	DPP-50	—	1 Year	1/12	+/- 1%	Buckle Release

SGS North America Inc.

TEST EQUIPMENT
STANDARD LABORATORY CONDITIONING

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

CORROSION TESTING - TEMPERATURE/HUMIDITY

No.	Item	Mfr.	Model	Serial No.	Cal. Period	Date of Last Cal.	Accuracy	Remarks
13	Salt Spray Chamber	Singleton Corp.	SCCH22	SCCH22-21947	---	---	---	Checked daily in accordance with ASTM B-117
14	Temperature Recorder	Honeywell	DR4300	0318Y359 016800003	1 Year	4/12	+/-5ºF	Monitor Salt Spray Temperature
15	Temperature Humidity Chamber	Blue-M	FR-386PC	AA-221	1 Year	4/12	+/-2ºC +/-5% RH	Temperature-Humidity Exposure
16	Dust Chamber	VSR	---	1140-1001	1 Year	2/12	---	Timer, Pressure Gauge & Orifice

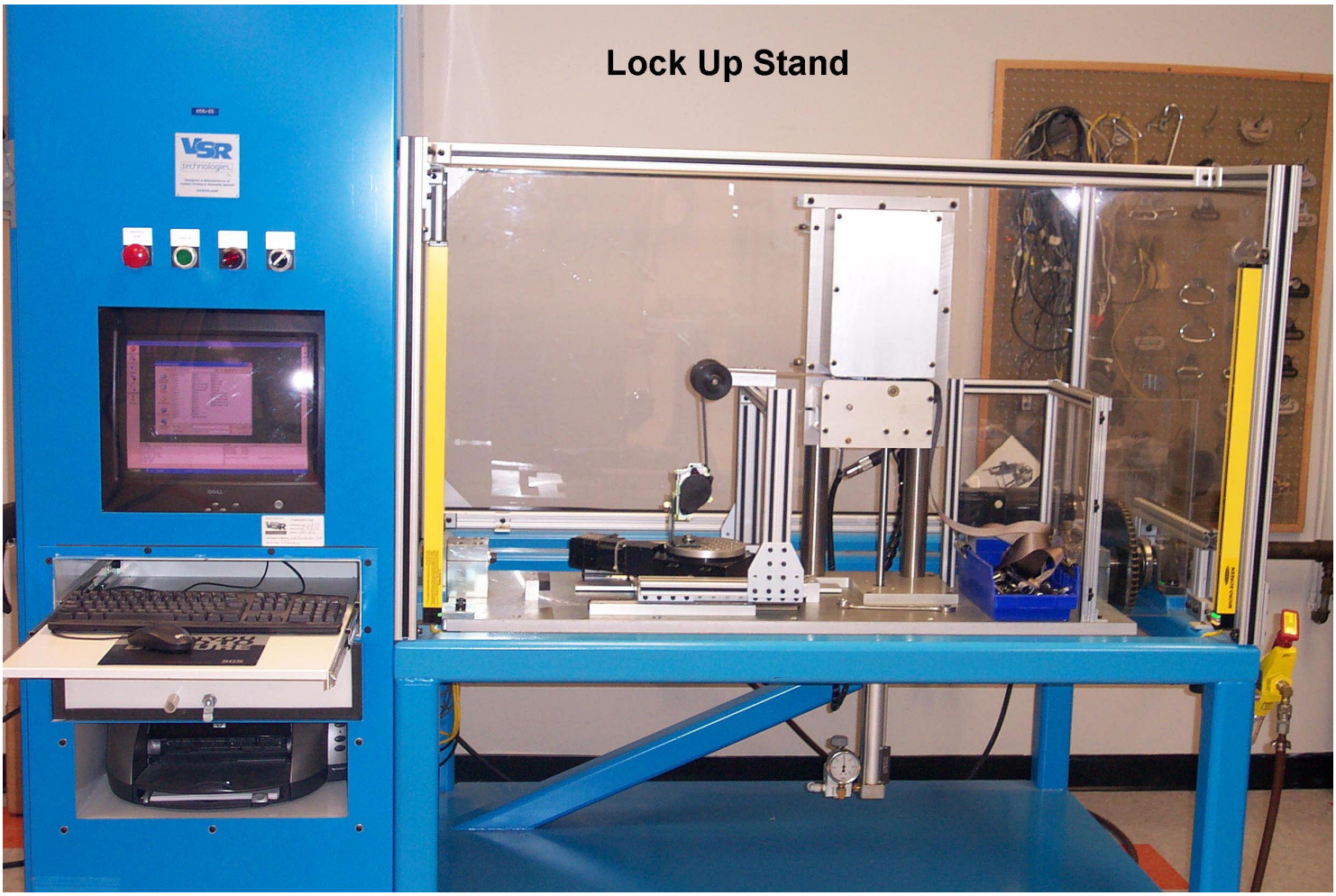
SECTION 5

PHOTOGRAPHS

IDENTIFICATION LABEL

SGS DOT#17 2012

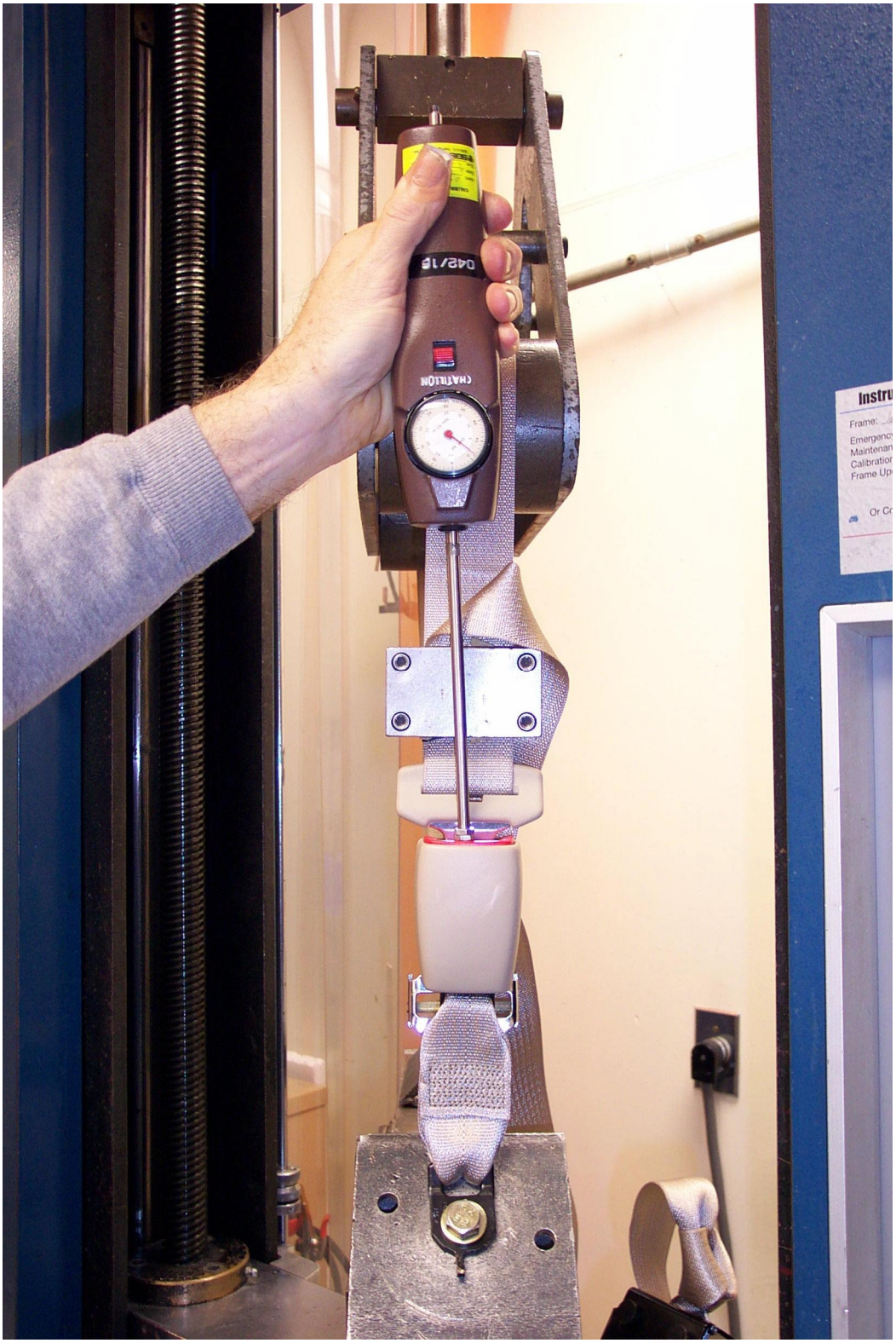
SGS DOT#17 2012



Lock Up Stand

Retraction Force Tester

Retractor Cycling Stand



Buckle Release Force

Loop Load Test

Salt Spray Chamber

Temperature Humidity Chamber

Dust Chambers