Report No.

209-SGS-2012-22

SEAT BELT ASSEMBLY COMPLIANCE TESTING
FMVSS 209

2012 KIA SOUL
MODEL NO. TKK-AH2-Z118
P/N 88810-2K610 / 88830-2K500 / 88831-2K600

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

FINAL REPORT

2843009-22

September 18, 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

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety 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.: 209-SGS-2012-22

Prepared By: SGS North America Inc.

Approved by: Frank Savino

Approval Date: September 18, 2012

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:_____

Acceptance Date: September 18, 2012

TECHNICAL REPORT Title Page

1. Report No. 209-SGS-2012-22	2. Govt. Accession No.	3. Recipient's Catalog No.
4. Title and Sub-Title Final report of FMVSS No. 209 Compliance Testing of Takata Korea Co., Ltd. M/N TKK-AH2-Z118, Type 2 seat belt assemblies being installed in 2012 Kia Soul, Front Left Seat		5. Report Date: September 18, 2012 6. Performing Organization Code SGS
7. Author Frank Savino, Project Manager		8. Performing Organization Report No. SGS Report 2843009-22
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 August 19-Sept. 18, 2012 14. Sponsoring Agency Code NVS-220
15. Supplementary Notes		
16. Abstract Compliance tests were conducted on Takata Korea Co., Ltd. Type 2 seat belt assemblies being installed in 2012 Kia Soul 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.: 022

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

BELT DATE CODES: 2012 05 14

BELT ASSY MFR.: Takata Korea Co., Ltd.

BELT ASSY PART/MODEL NO.: TKK-AH2-Z118

SELLER/VEHICLE MFR.: Kia Motors America

SELLER/VEH. MFR. PART/MODEL NO.: 88810-2K610 / 88830-2K500 / 88831-2K600

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.: 022 **TEST DATE:** September 4-5, 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:** September 10-12, 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:** September 14, 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:** September 14, 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:** September 14, 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	102	111	116
B	Upper Torso Belt Elongation, mm	732	787	838
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

ASSEMBLY PERF - MAX BUCKLE REL FORCE **TEST DATE:** September 14, 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	31	27	27
B	Buckle Release Force Pass/Fail	P	P	P

REMARKS:

ASSY PERFORMANCE - COMMON HARDWARE **TEST DATE:** September 14, 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:** September 14, 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.: 022 **TEST DATE:** August 19, 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	**3.9**	**4.2**	**3.9**
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**	**17**	**18**
	Y (90° to Vehicle Centerline), mm	**15**	**15**	**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) **TEST DATE:** August 22, 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**: September 5, 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:** September 9, 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:** September 12-17, 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:** September 18, 2012
(Actual Values) (P = Passed, F = Failed, NA = Not Applicable)

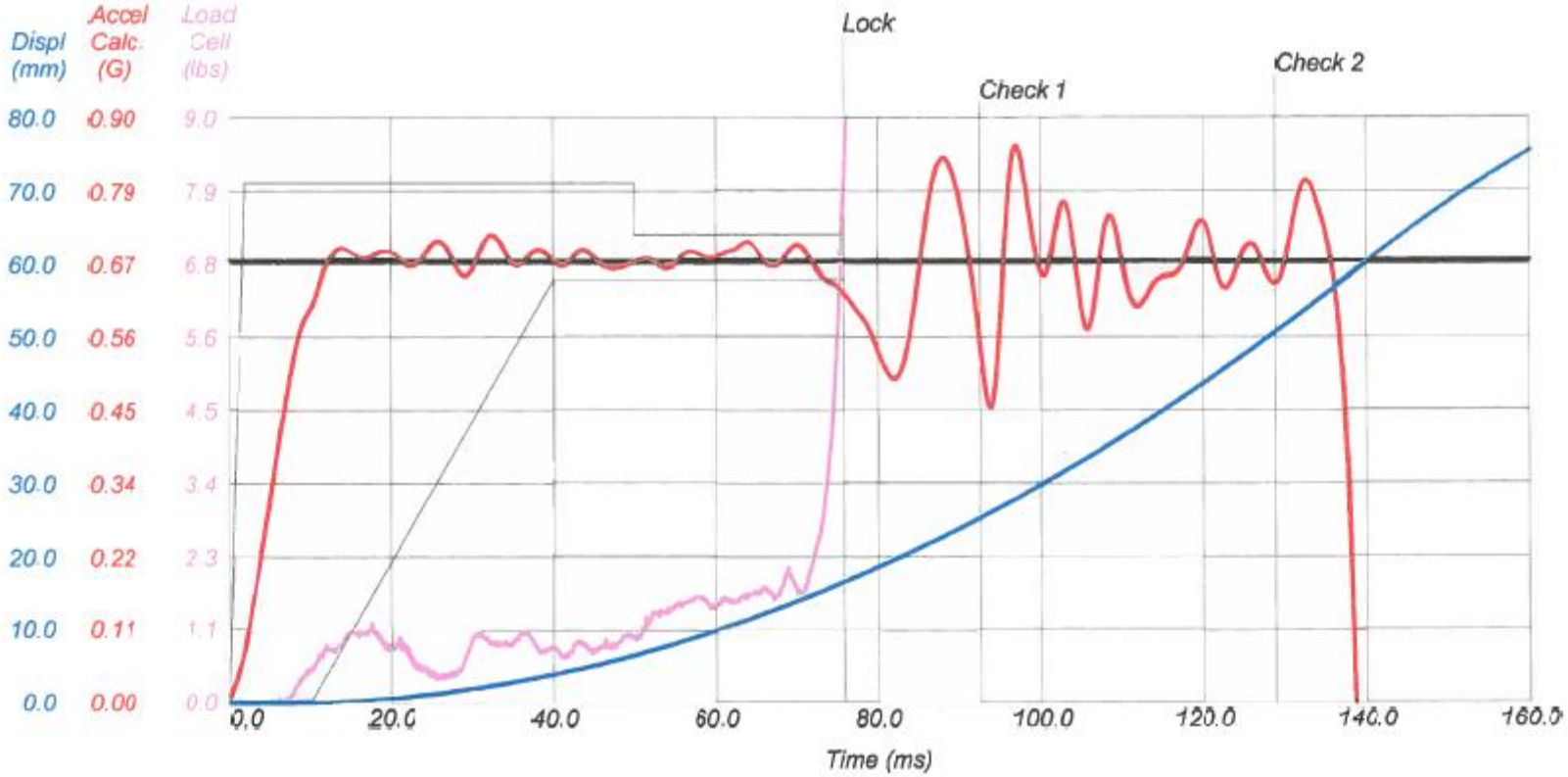
		SPECIMEN NUMBER		
		10	**11**	**12**
A	Avg Force (ALR) Between 75% + 51 mm + 75% - 51 mm	**N/A**	**N/A**	**N/A**
B	Lowest Retraction Force (ELR), N	**4.0**	**4.2**	**3.9**
C	Percent of BASELINE (minimum = 50%), percent	**100+**	**100**	**100**
D	Webbing Travel Before Lockup (ALR), mm	**N/A**	**N/A**	**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	**16**	**19**	**16**
	Y (90° to Vehicle Centerline), mm	**15**	**17**	**20**
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:** September 18, 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

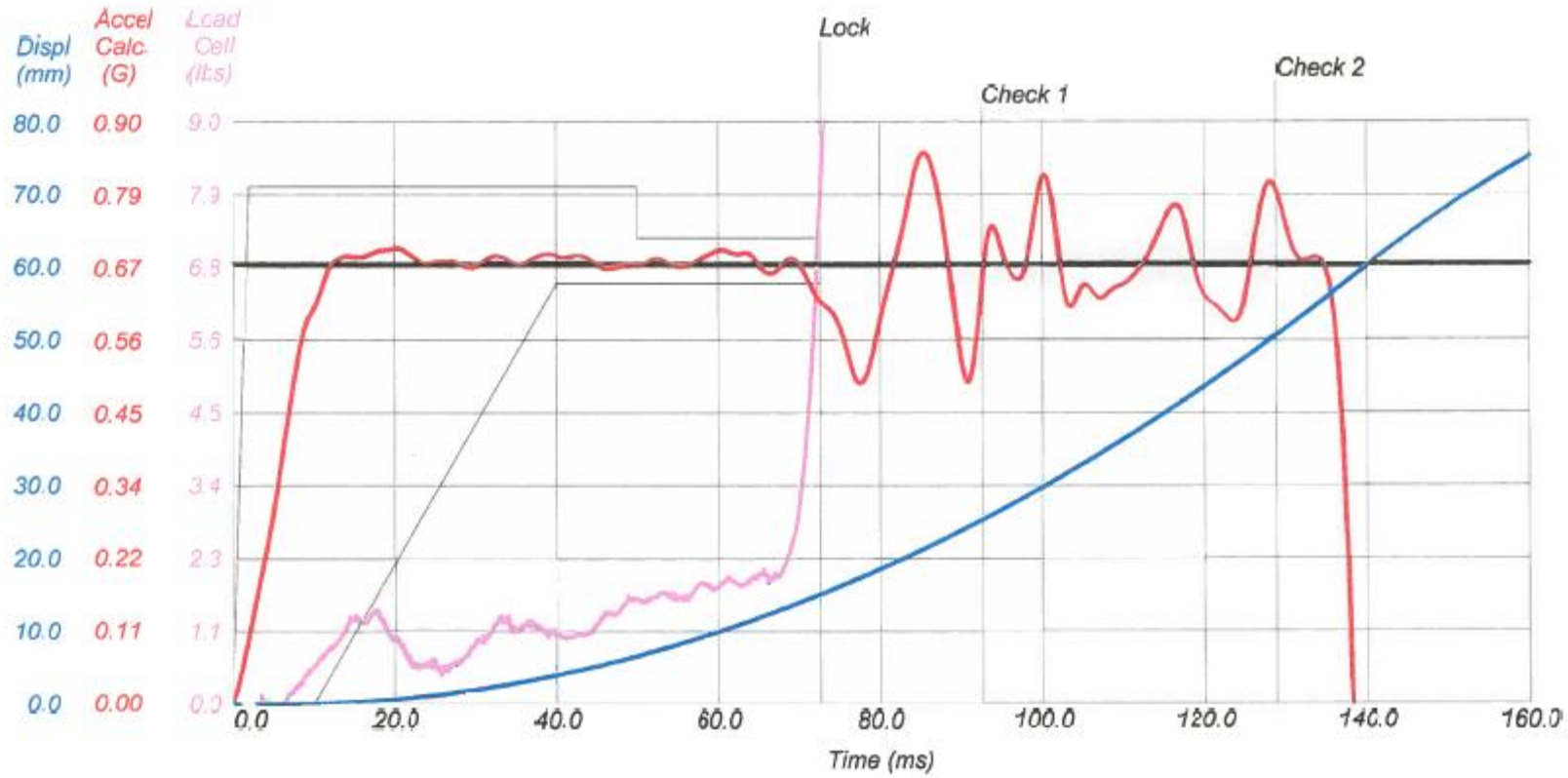


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.66 G*
Pos @ Lock	*16.6 mm*
Time To Lock	*75.8 ms*
Accel @ Chk 1	*0.75 G*
Accel @ Chk 2	*0.68 G*

Parameters	
Stowed Webbing	*445.9 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*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*

Initial Test
Retractor #1 – Y Direction

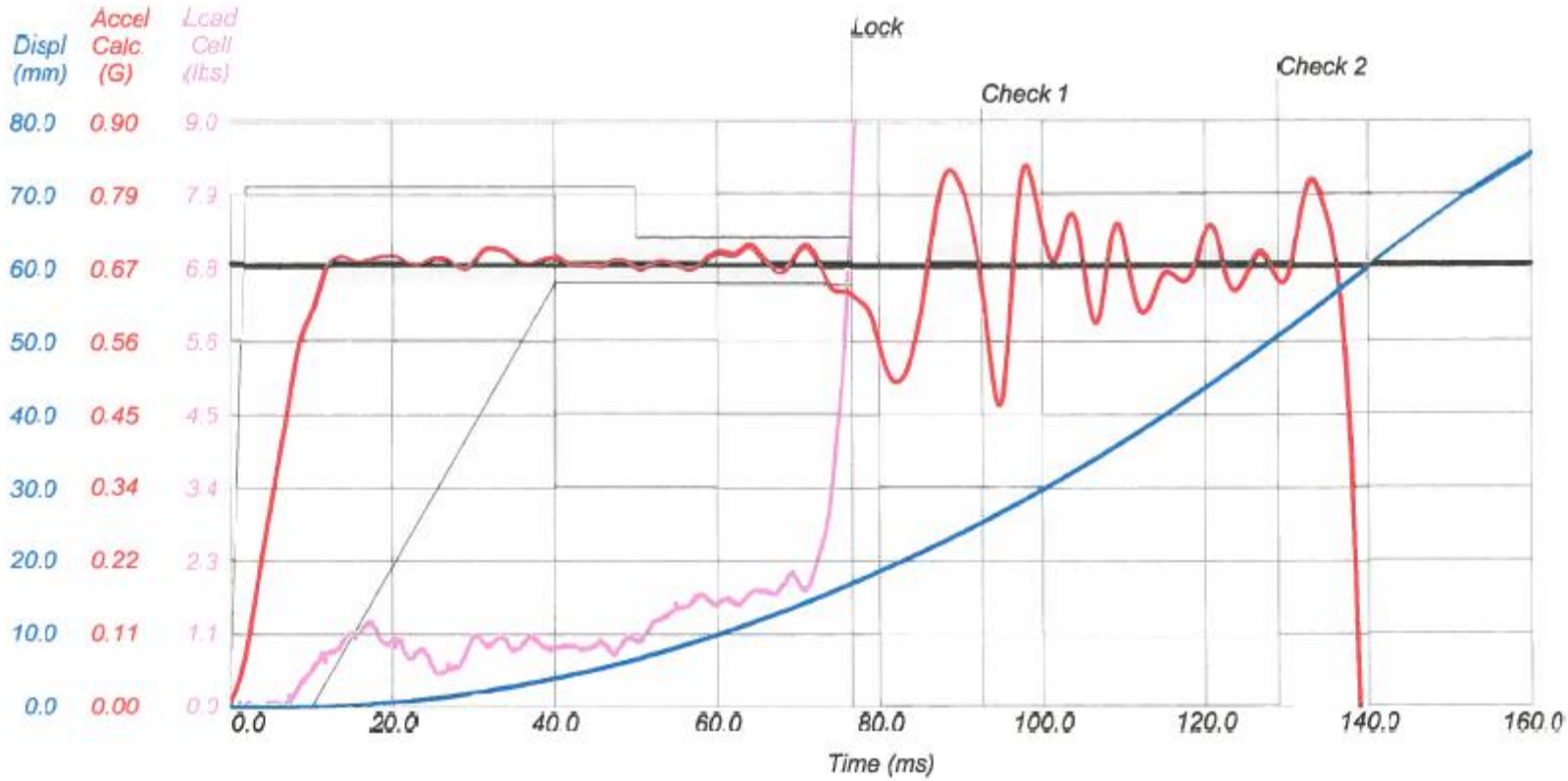


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.67 G*
Pos @ Lock	*15.2 mm*
Time To Lock	*72.6 ms*
Accel @ Chk 1	*0.59 G*
Accel @ Chk 2	*0.72 G*

Parameters	
Stowed Webbing	*445.9 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*

Initial Test
Retractor #2 – X Direction

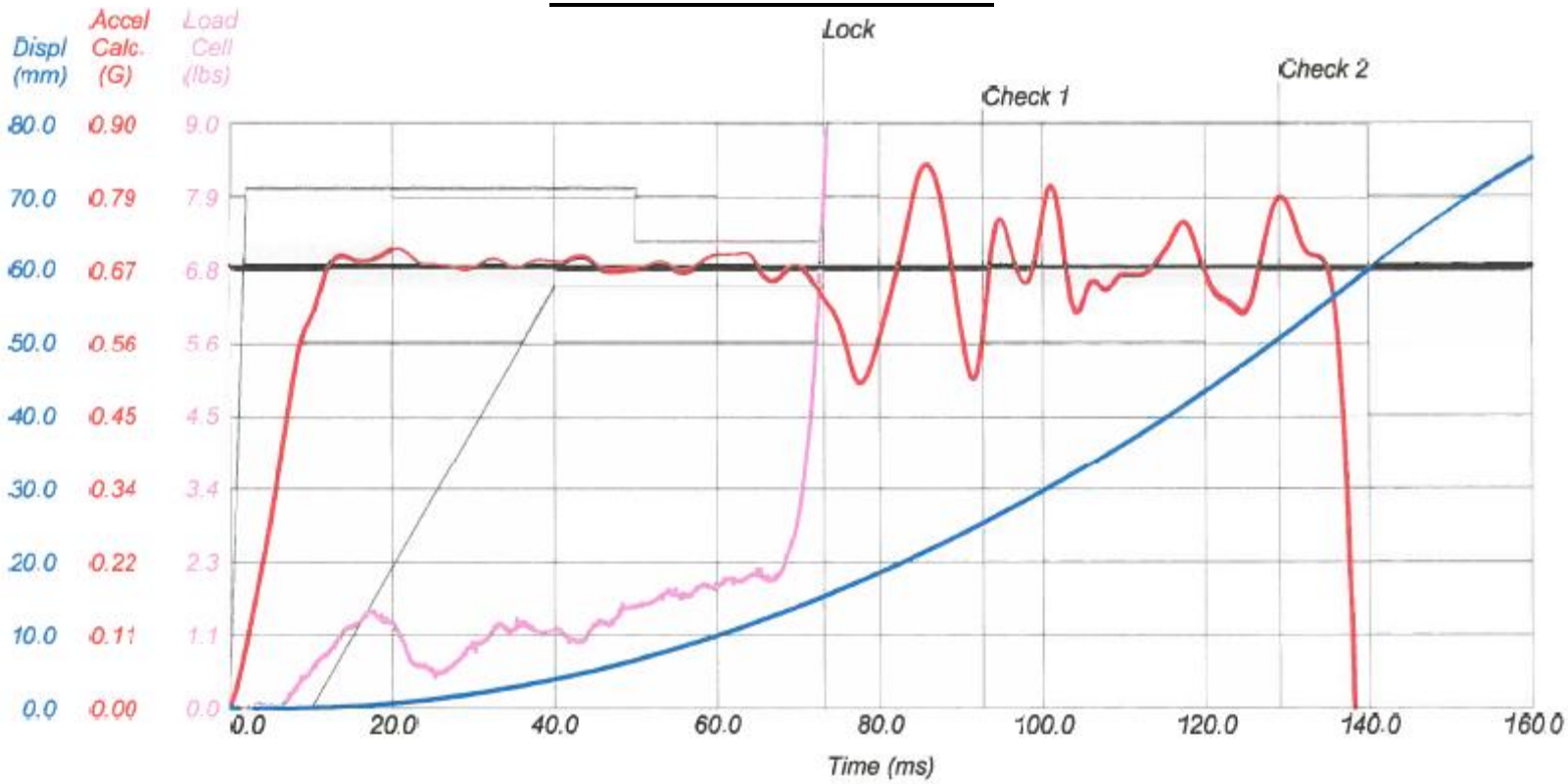


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.66 G*
Pos @ Lock	*17.0 mm*
Time To Lock	*76.7 ms*
Accel @ Chk 1	*0.78 G*
Accel @ Chk 2	*0.68 G*

Parameters	
Stowed Webbing	*445.9 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*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*

Initial Test
Retractor #2 – Y Direction

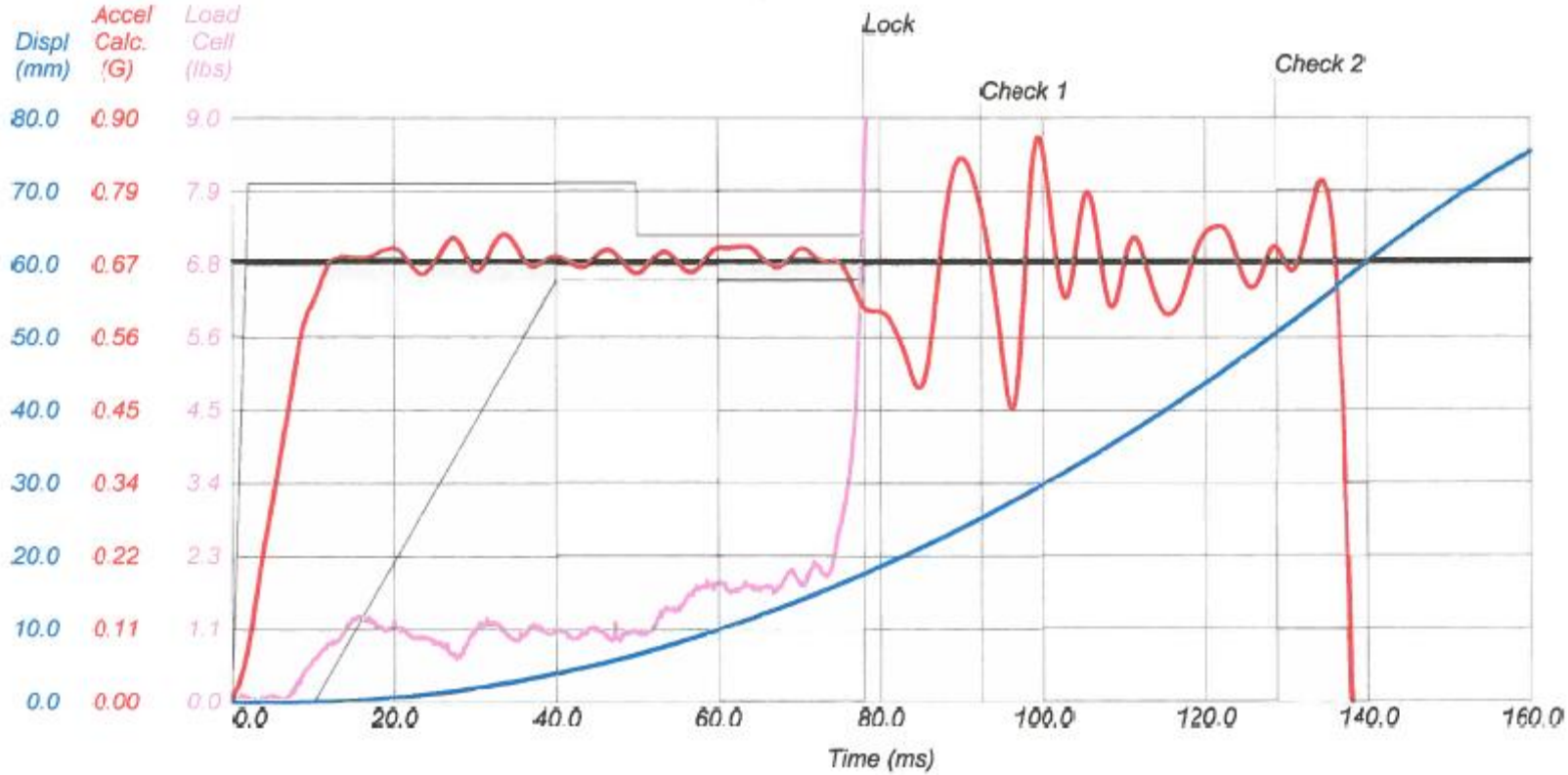


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.67 G*
Pos @ Lock	*15.4 mm*
Time To Lock	*73.2 ms*
Accel @ Chk 1	*0.60 G*
Accel @ Chk 2	*0.69 G*

Parameters	
Stowed Webbing	*445.8 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°*

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*

Initial Test
Retractor #3 – X Direction

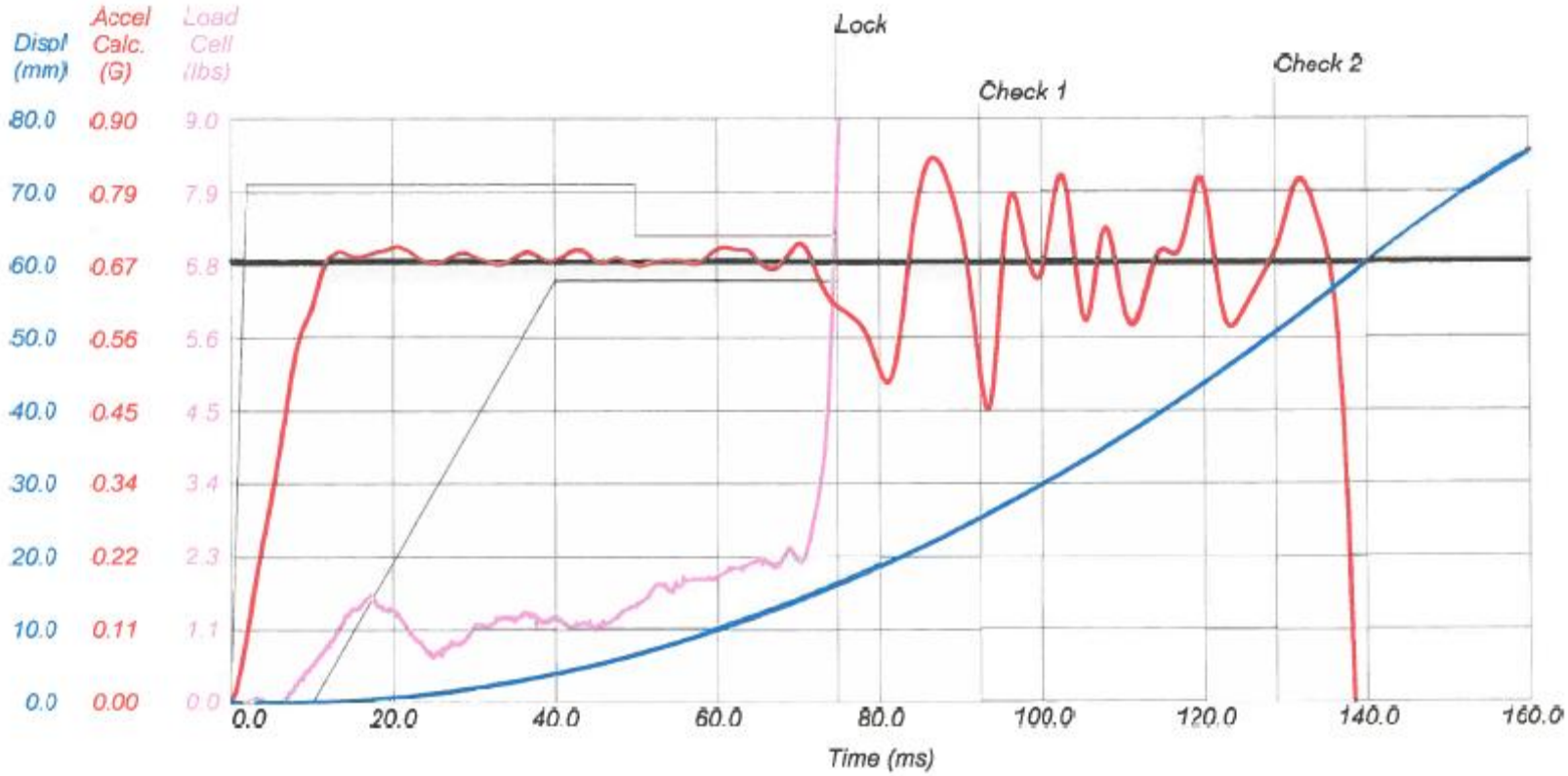


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.66 G*
Pos @ Lock	*17.7 mm*
Time To Lock	*78.0 ms*
Accel @ Chk 1	*0.80 G*
Accel @ Chk 2	*0.67 G*

Parameters	
Stowed Webbing	*445.9 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*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*

Initial Test
Retractor #3 – Y Direction

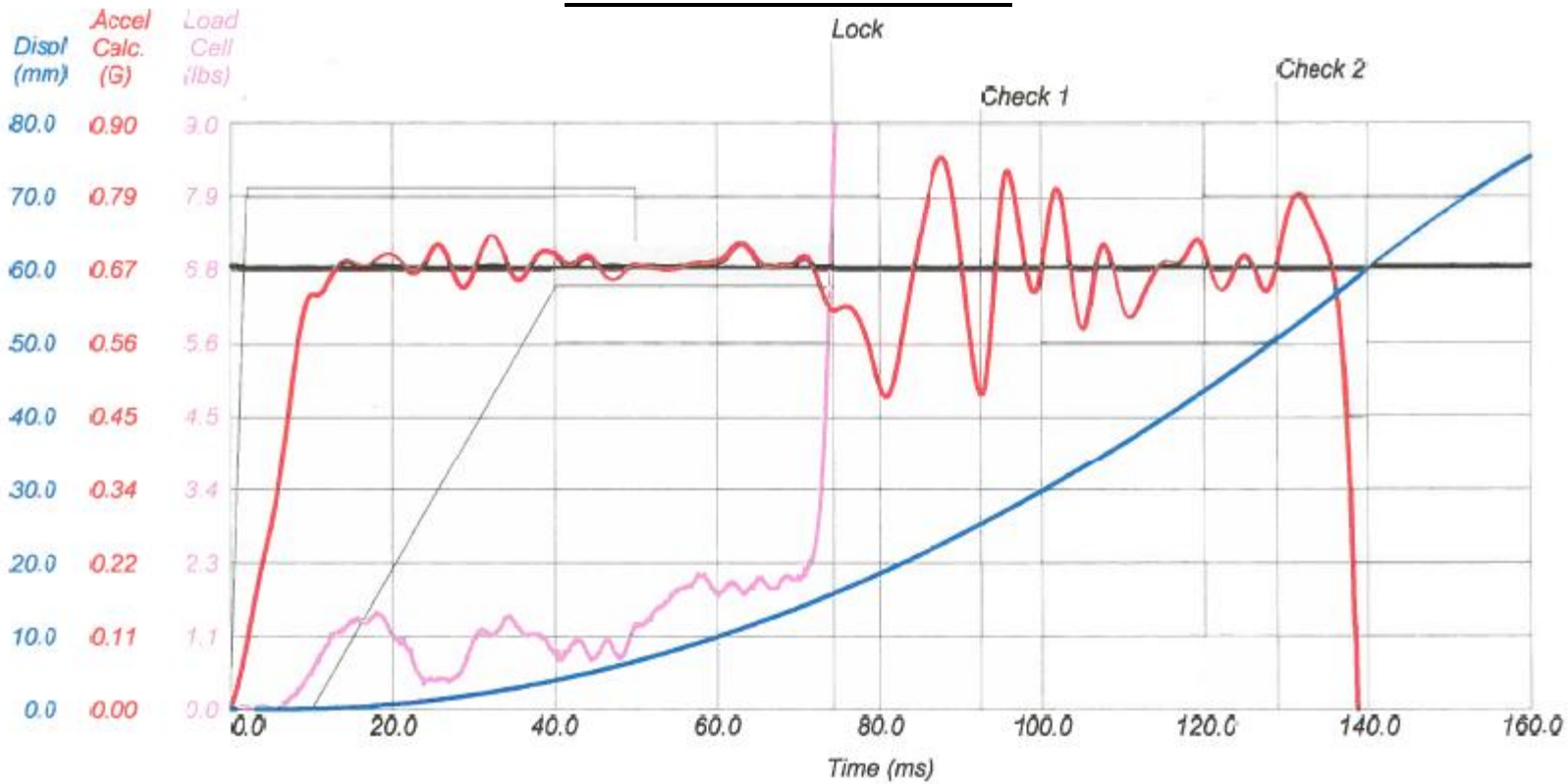


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.66 G*
Pos @ Lock	*16.2 mm*
Time To Lock	*74.8 ms*
Accel @ Chk 1	*0.72 G*
Accel @ Chk 2	*0.64 G*

Parameters	
Stowed Webbing	*445.8 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°*

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 #1 – X Direction

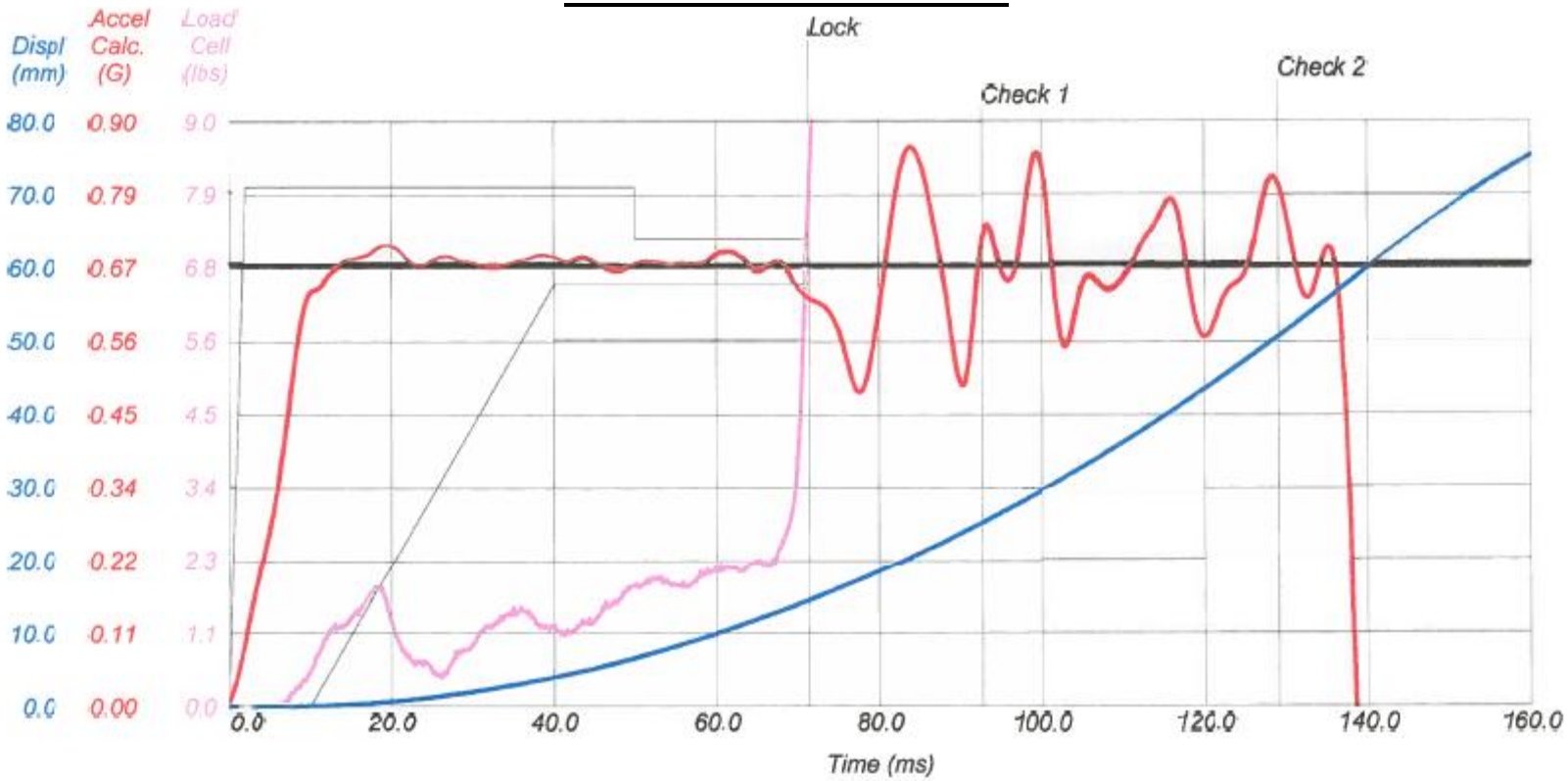


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.67 G*
Pos @ Lock	*15.9 mm*
Time To Lock	*74.3 ms*
Accel @ Chk 1	*0.69 G*
Accel @ Chk 2	*0.67 G*

Parameters	
Stowed Webbing	*445.9 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*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*

Final Test
Retractor #1 – Y Direction

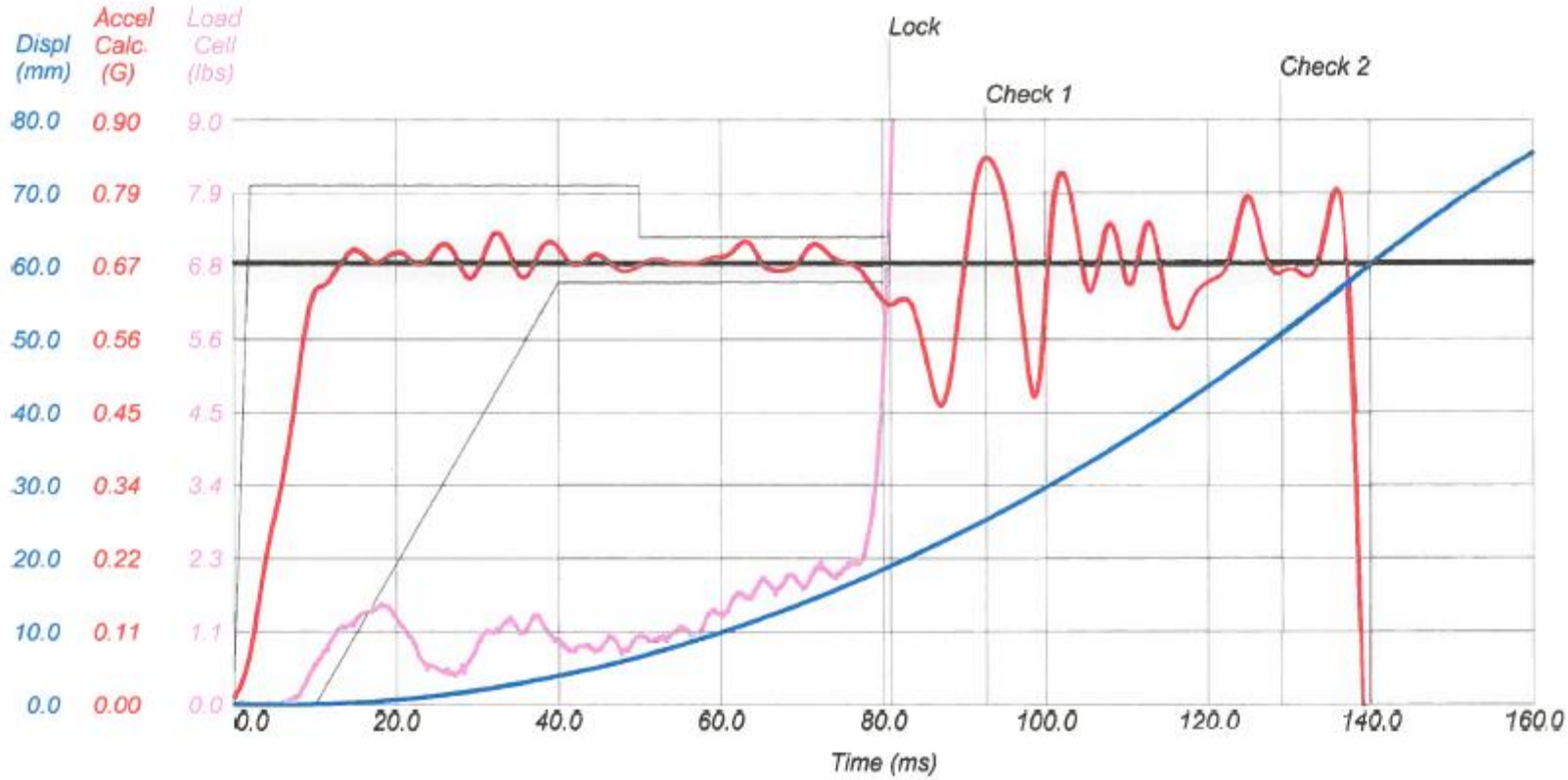


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.66 G*
Pos @ Lock	*14.5 mm*
Time To Lock	*71.4 ms*
Accel @ Chk 1	*0.58 G*
Accel @ Chk 2	*0.74 G*

Parameters	
Stowed Webbing	*445.8 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°*

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

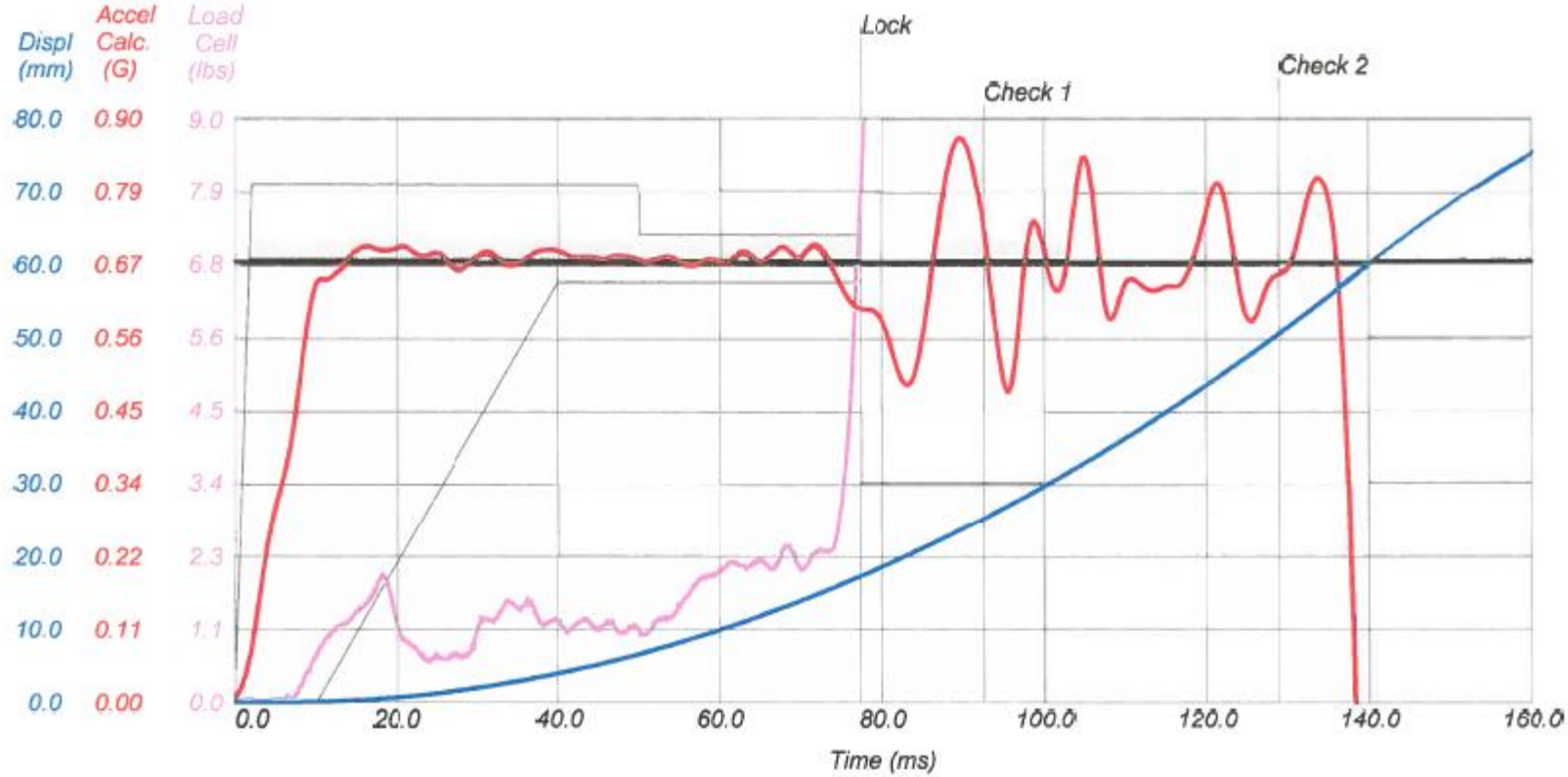


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*19.1 mm*
Time To Lock	*80.9 ms*
Accel @ Chk 1	*0.68 G*
Accel @ Chk 2	*0.72 G*

Parameters	
Stowed Webbing	*445.9 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*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*

Final Test
Retractor #2 – Y Direction

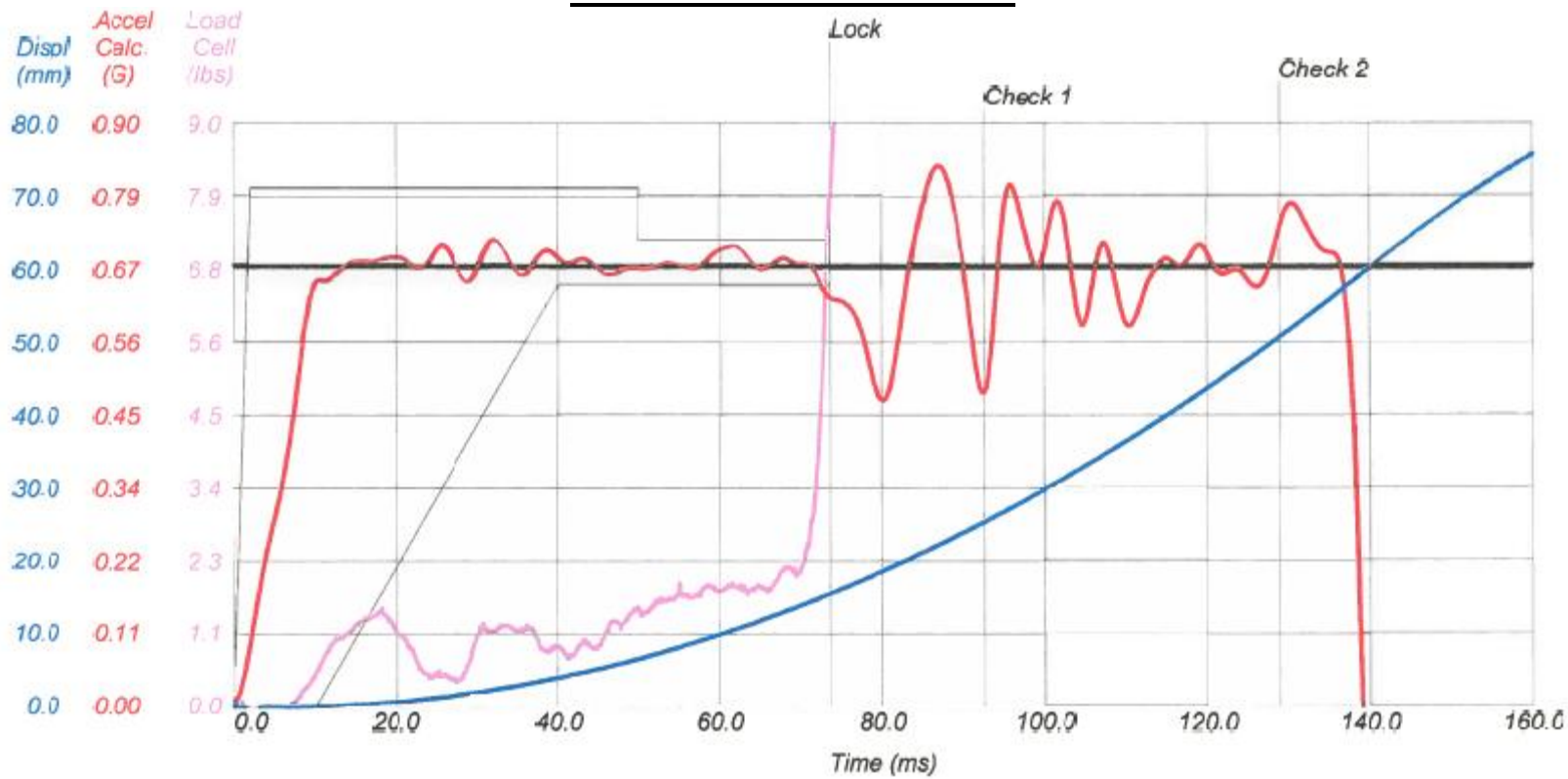


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*17.4 mm*
Time To Lock	*77.4 ms*
Accel @ Chk 1	*0.83 G*
Accel @ Chk 2	*0.63 G*

Parameters	
Stowed Webbing	*445.8 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°*

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 #3 – X Direction

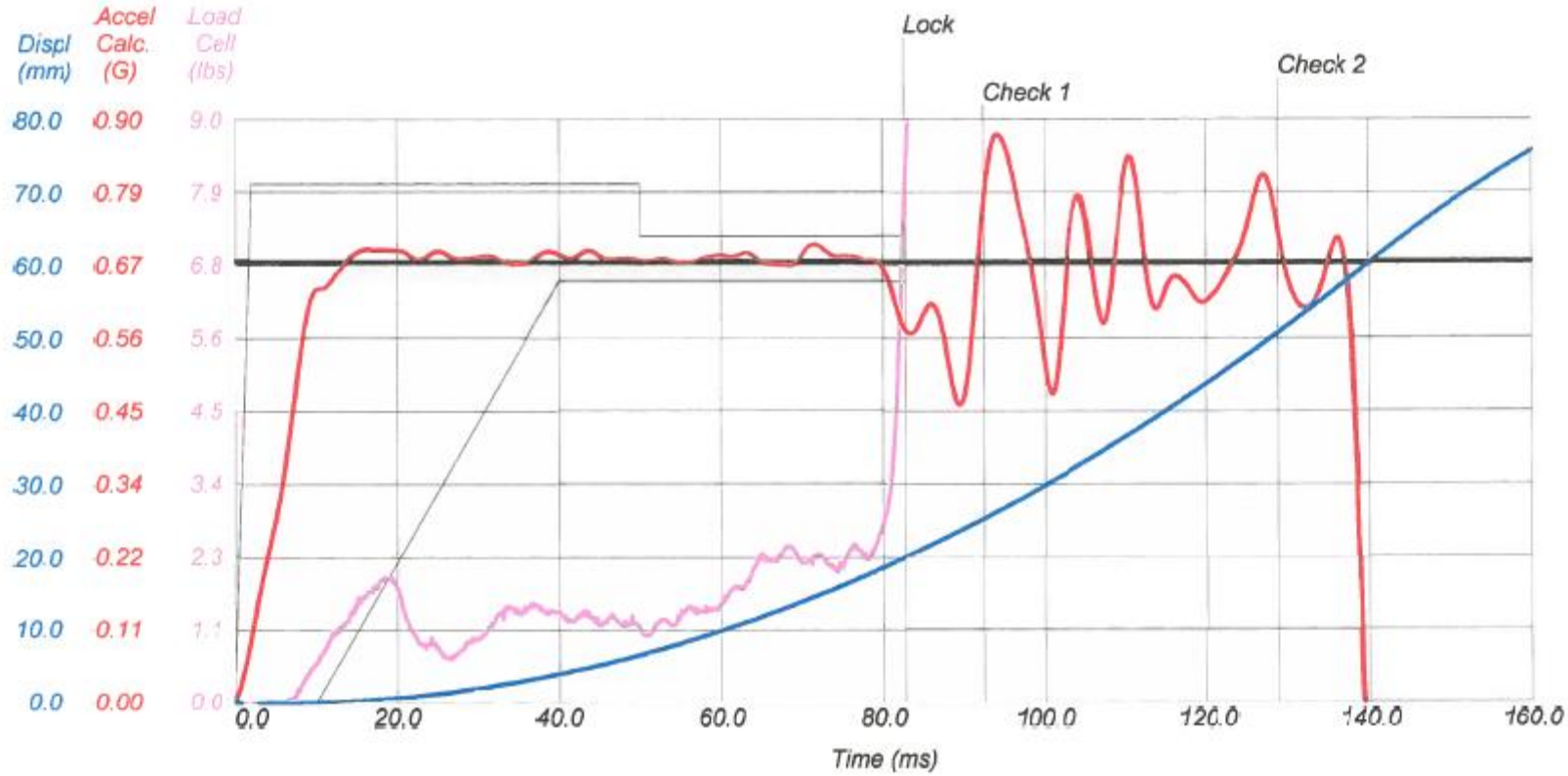


Results	
Lock Condition	*Locked*
Accel @ Lock	*0.67 G*
Pos @ Lock	*15.6 mm*
Time To Lock	*73.6 ms*
Accel @ Chk 1	*0.66 G*
Accel @ Chk 2	*0.67 G*

Parameters	
Stowed Webbing	*445.9 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*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*
Test: *Test Comment*

Final Test
Retractor #3 – Y Direction



Results	
Lock Condition	*Locked*
Accel @ Lock	*0.65 G*
Pos @ Lock	*20.1 mm*
Time To Lock	*82.7 ms*
Accel @ Chk 1	*0.55 G*
Accel @ Chk 2	*0.77 G*

Parameters	
Stowed Webbing	*445.8 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°*

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*

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

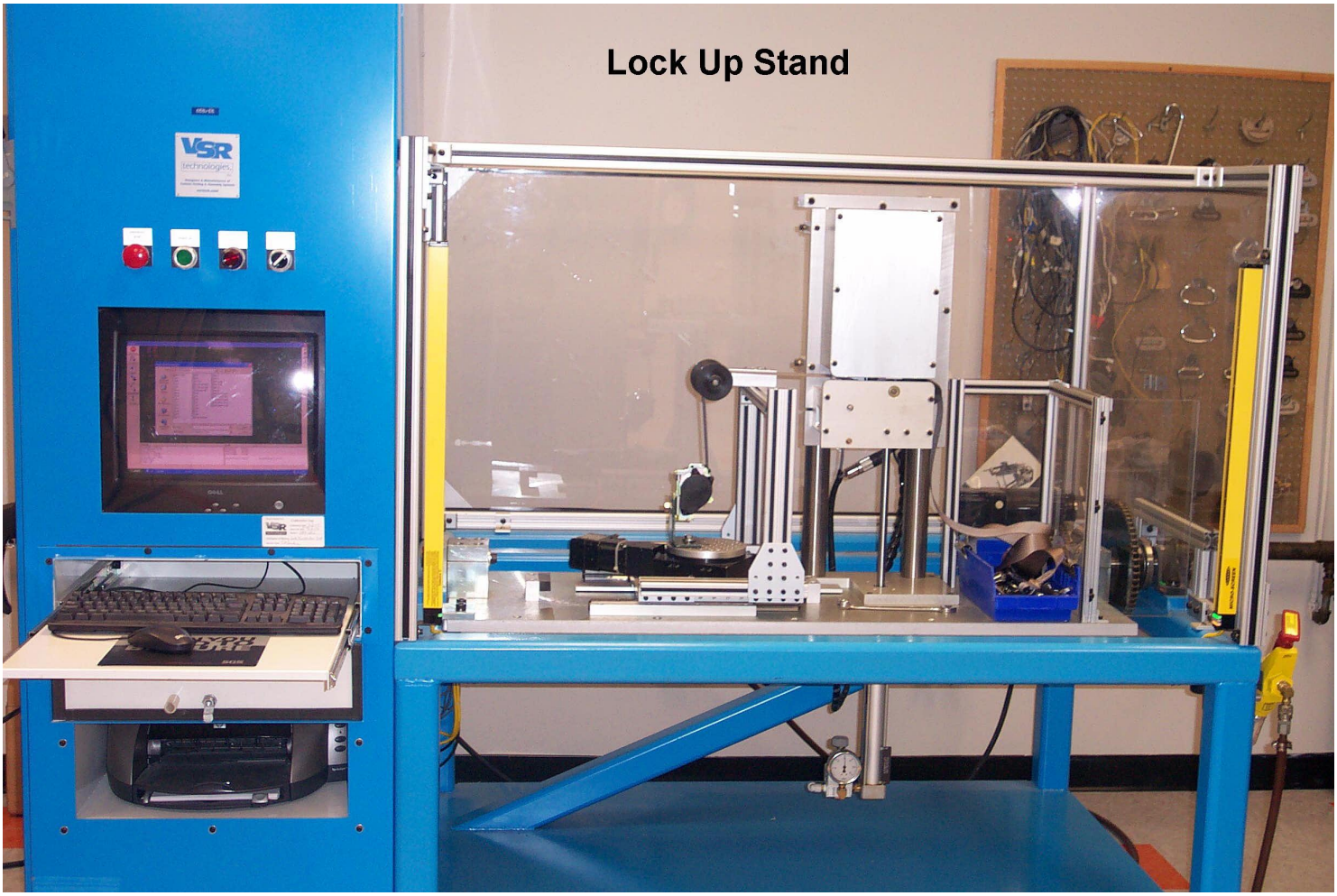
SECTION 5

PHOTOGRAPHS

IDENTIFICATION LABEL

SGS DOT#22 2012

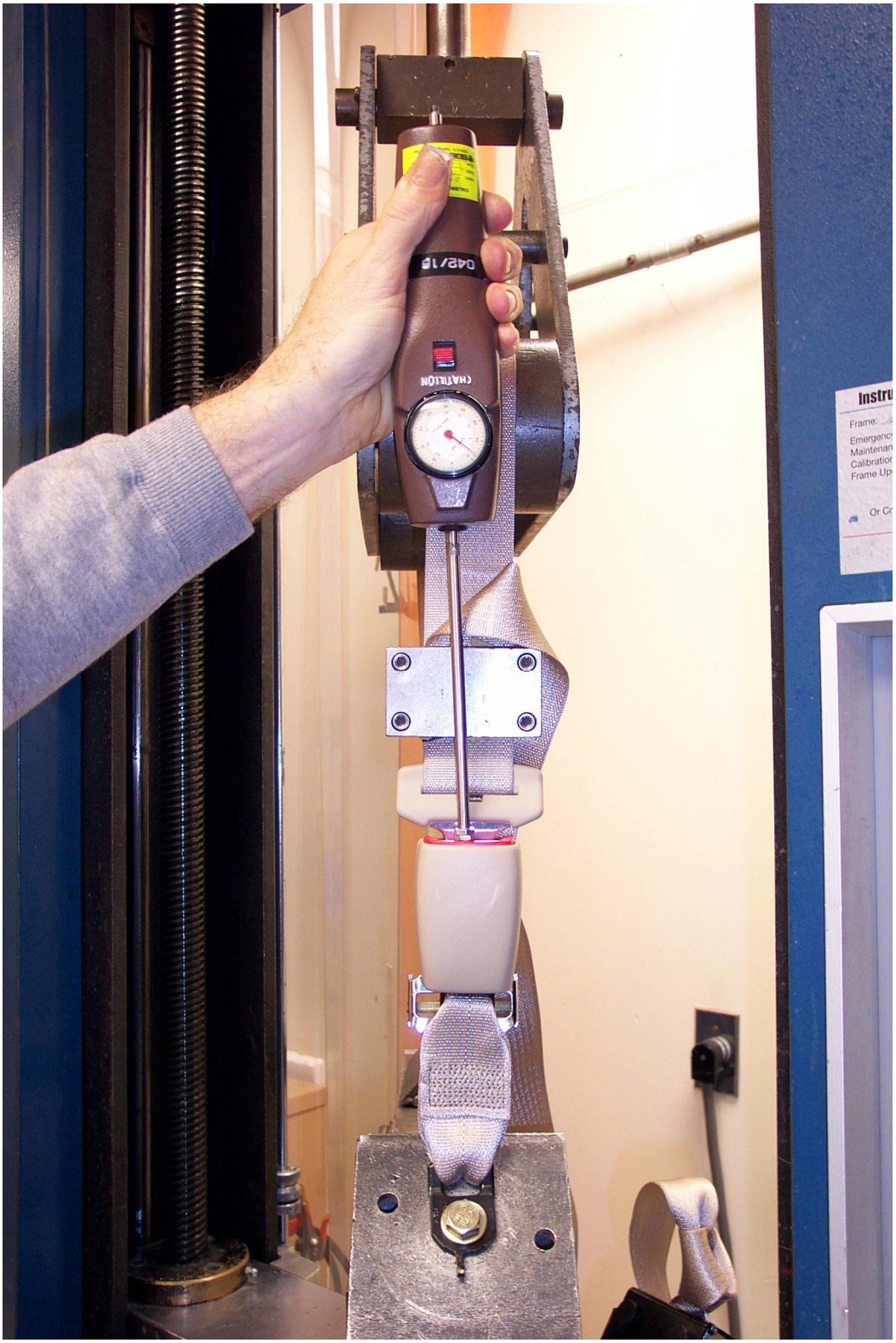
SGS DOT#22 2012
C5C
1DA



Lock Up Stand

Retraction Force Tester

Retractor Cycling Stand



Buckle Release Force

Loop Load Test

Salt Spray Chamber

Temperature Humidity Chamber

Dust Chambers