



FSTL TEST REPORT

FSTL_TENSION

FSC 2PL 3PT GO-ES Spacesaver FOLDAWAY in pos. D in a Ford Transit



TEST REPORT

TEST(S) PERFORMED ON DATE: 07/22/2021

TEST LABORATORY: Freedman Seating Test Lab
4545 West Augusta Blvd.
Chicago , IL 60651

TEST REQUESTED BY: Scott Fenton
Fenton Mobility
1209 East 2nd St.
Jamestown, NY

TEST REPORT REVIEWED BY: _____

TEST REPORT APPROVED BY: _____

Note[s]:

N/A _____

This Test Report is provided solely for the use of the party requesting the same identified, and for no other person, entity or purpose. Reproduction of this document is strictly prohibited without the prior written permission of FSTL in each instance.

Full compliance with FMVSS and its Regulations, as set forth under 49 USC 301, et. seq., can only be achieved through proper in-vehicle testing. Freedman Seating Company, its agents, employees, affiliates and subsidiaries ("Freedman Seating") is not liable for damages resulting from the installation of any seat in a vehicle that has not been FMVSS tested or any installation of a seat that deviates from a FMVSS tested installation method. Freedman Seating has no responsibility for the design of any vehicle in which the subject seat may be placed, or any resulting damages. The results documented in this report relate only to the items tested, as described herein.

SUMMARY OF PROCEDURE

Summary of FSTL_TENSION

A force of 3,000 lb shall be applied to each lap and shoulder belt at $10^{\circ} \pm 5^{\circ}$ above the horizontal plane. In addition, a force equal to 20 times the system mass was applied simultaneously through the CG of the seating system. The required forces must be reached within 30 seconds from the onset of the test then, when reached must be held for 10 seconds.

TEST FIXTURES

Fixture #	Description	
PL-002	Pull Test Machine	

MEASURING EQUIPMENT

Equipment #	Description	Calibration #
LC-01	Load Cell	C2102
LC-02	Load Cell	C2102
LC-04	Load Cell	C2102
LC-06	Load Cell	C2102
LC-015	Load Cell	C2102

Data Sheet

FSTL
4545 w. Augusta Blvd.
Chicago, IL.

Work Order No.: 2107B4

<u>Requirements for compliant test.</u>	<u>Yes/ No / N/A</u>
Test artifact reached loads within 30 seconds	yes
Test artifact sustained loads for 10 seconds or more.	yes
Seat frame released from it's adjusted position?	n/a
Seat frame or seat adjusters detach from the test platform/vehicle?	no
Seat frame detaches from seat adjuster mechanism?	n/a
Seat adjuster separates?	n/a

Pass/Fail
PASS

Notes:

n/a

PRE-TEST PHOTOS





POST-TEST PHOTOS

p









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External Customer Artifact Test Request Work Order Form

Customer [Company]: Fenton Mobility Date Generated: 6/10/2021
 Contact Name: Scott Fenton FSC Engineer (If Applicable): _____
 Contact Phone Number: 716-499-7016 FSC Salesperson (If Applicable): _____
 Contact E-mail: scott@fentonmobility.com

What artifact will be tested? 2pl, GO-ES foldaway, Spacesaver, CS
 Position of Artifact in Vehicle? Row Two Curb Side - D
 Specific Name of Vehicle (section)? Ford Transit

What tests are requested?	Tests performed
<input type="radio"/> FMVSS 207/210	<input type="radio"/> FMVSS 225 Lower Anchors
<input type="radio"/> FMVSS/CMVSS 207/210	<input type="radio"/> FMVSS 222 Static Forward
<input type="radio"/> FMVSS 210	<input type="radio"/> FMVSS 222 Static Rearward
<input type="radio"/> CMVSS/FMVSS 210	<input type="radio"/> CMVSS 210.1
<input type="radio"/> FMVSS 49.38 - ADA	<input type="radio"/> FMVSS/CMVSS 222 Static Forward
<input checked="" type="radio"/> FSTL_Tension	<input type="radio"/> CMVSS/FMVSS 222 Static Rearward
<input type="radio"/> Other	<input type="radio"/> CMVSS 210.2
	<input type="radio"/> FMVSS 222 Quasi Static
	<input type="text" value="Apply loads , both 207 & 210 (as called out in FMVSS). Reaching the final loads in 30 seconds and holding for 10 seconds."/>

Desired completion date? _____

Is the test fixture a complete vehicle? Yes No

If 'Yes' is checked above, is the fixture drivable? Yes No

Required Drawing: Due to size constraints of our laboratory facilities, we require that you provide a drawing to FSTL showing the overall dimensions of the test vehicle, all locations in the vehicle of the seats to be tested, the locations of any structural tie downs and lift points for the vehicle, and the turning radius, if the vehicle is drivable.

When will the test fixture be sent? 6/25/2021
 When will the test fixture arrive? 6/25/2021
 What carrier will deliver the test fixture? Fenton

Testing Agency Performing Work: Freedman Seat Test lab
 Testing Agency Address: 4545 W Augusta Blvd.
 Contact Person: Ted Kolar / Dave O'Malley
 Telephone: 773-524-2440
 E-mail: fstl@freedmanseat.com

Manufacturer of Item to be Tested: _____
Attach an assembly drawing and include the assembly drawing number, if available. If no drawing exists, include a sketch describing the assembly. List the fastener types [bolts, washers, and nuts] and sizes, torque values, as well as specific amounts and locations to be used. Include wall and floor reinforcements. Instructions for the specific mounting configuration to the test fixture must also be included [a drawing or sketch is preferred].

Production Model Artifact: Yes No

Production Built Artifact: Yes No

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Item to be tested is a:

- Finished Assembly - the artifact is a complete upholstered seat
- Unfinished Assembly - seat frame and base frame assembly without foam or cover
- Weldment - the artifact is a complete welded piece without other attachments
- Other - describe

The test fixture is a:

- Complete New Vehicle
- Complete Used Vehicle
- Full - Scale Vehicle Body Section
- Reduced - Scale Vehicle Body Section
- Other - describe

Reason for Test:

N/A

Customer Please Note: You are responsible for all shipping and scrap charges for the test vehicle. Test vehicles shall be ready to test before arriving at FSTL. If more than minor modifications are to be made to a test vehicle, FSTL shall perform said modifications at the prevailing hourly rate, plus materials, including but not limited to any assembly, welding, reinforcement hardware or supplies. Hardware used to attach the seats to the test platform:

- Shall be provided by customer
- As specified by the customer.

General Understanding of Tests: Tests are destructive and may damage the test vehicle structure, likely rendering the test vehicle unusable.

Customer Monitoring of Test: FSTL shall afford you or your designated representative reasonable access to relevant areas of the laboratory for the witnessing of this testing. However, FSTL may restrict the viewing of certain items in these areas in order to maintain the confidentiality of other customers. Will Monitor Testing?

- Yes
- No

This section is to be filled out by FSTL personnel. Work Order Number: 2107B4

Scheduled Completion Date: 12/31/2021

Date Request Received: 7/14/2021 Received By: D O'Malley

Date Request Reviewed: 7/14/2021 Reviewed By: D O'Malley

Upon reviewing availability of resources and testing capabilities, FSTL is capable of performing this test as requested:

- Yes
- No

If not, then the reason being: N/A

This Test Request shall be performed by a competent subcontractor (ISO/IEC 17025 Accredited when Required)

Name of Subcontractor: N/A Chosen By: FSTL Customer n/a

If chosen by FSTL, the reason being: Unforeseen Reasons Continuing Basis/Arrangement n/a

Upon receiving a copy of this Review the Customer has been notified in writing of the Testing being Subcontracted: Yes No n/a

Date Reviewed Request was Submitted to Customer: 7/14/2021

Customer review signature: Scott Fenton

Date: #####

SIGN X 

DATE 7/19/21



FSTL

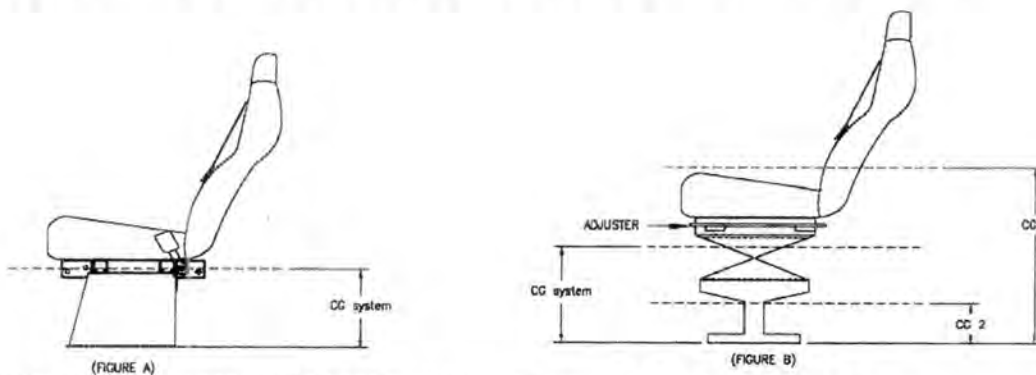
4545

Information Data Sheet

Items with red asterisk or outlined in red are required fields.
W Augusta Blvd Chicago, IL 60651

- Option 1** : For a seat whose center of gravity is in a horizontal plane that is above the seat adjuster or that passes through any part of the adjuster, use, at the manufacturer's option, either **S5.1.1(b)** or pick **Option 2** below.
- Option 2**: For a seat whose center of gravity is in a horizontal plane that is above the seat adjuster or that passes through any part of the adjuster, use, **S5.1.1(c)**.
- Option 3 [most common]**: For a seat specified in **Option 1** for which it is not physically possible to follow the procedure in S5.1.1(c), use **S5.1.1(b)**. [For all other seats whose seat back and seat bench are attached to the vehicle by the same attachments].
- Option 4**: For a seat whose center of gravity is in a horizontal plane that is below the seat adjuster, use **S5.1.1(c)**.
- Option 5**: FSTL to weigh and measure sample [must be fully built/upholstered]
- Option 6**: FSTL to use previous test data [previous Work Order 1803A2 with height of cg and weight provided below]

To Be filled out by FSTL: Work Order No. Assigned: 2107B4 PSD



Weight of fully assembled seat system - W [Figure A & B] [Options 1, 2,3,4, & 6]

118 lbs. [Decimal number required]

Height of the center of gravity of the seat system from the floor - CG system [Figure A & B] [Options 1, 2,3,4, & 6]

14.81 inches [Decimal number required]

Test Setup Review Checklist

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OK	DOES NOT APPLY	
✓		Artifact is built to print [welds, gussets, brackets, accessories, etc.]
✓		Artifact has correct fasteners, torques, and fastener engagement.
	✓	The correct fasteners and their quantity/location are used to connect the artifact to the test platform or vehicle section.
	✓	The artifact is adjusted correctly and engaged [back angle, pedestal height, slide track position, etc.]
✓		Testing fixtures placed correctly. [body and shoulder blocks, SFAD, pushing bars, belt routing, etc.]
	✓	Artifact is setup according to supplied setup drawings.
✓		The target loads and holding times are correct. <u>3,000#s LAP = SHLD + 20x(w) CG</u>
✓		The ramp rates are correct. <u>15 SEC.</u>
✓		The angles of force application are correct. <u>10° + 25°</u>
	X	The target accelerations, peak to peak displacement, frequencies, time duration, etc. are correct and that the test fixture/test artifact center of mass located over the center of the vibration table. [specific to Vibration tests]

Additional Notes: - SEAT INSTALLED BY CUSTOMER -

NOTE : Please provide test lab personnel with specific location[s] to include photographs.

- n/a -

By my signature, I have reviewed the seat assembly to be tested and the test parameters, and find them to be correct. Correcting information gathered on FSTL Records requires the originator to correct the error by lining out the error, provide the correction, and then initial and date the correction.

Seat Designer/Project Engineer [sign] [Signature] Date: 7-22-21

Seat Designer/Project Engineer [print] [Signature]

FSTL Setup Personnel D. O'Malley Date: 7/22/2021

Note: Tests will not be conducted without a copy of this form signed, dated, and completed by the designated seat designer or project engineer.

Test Performed By: [Signature] Date: 7/22/2021

Test Witnessed By: N/A Date: N/A

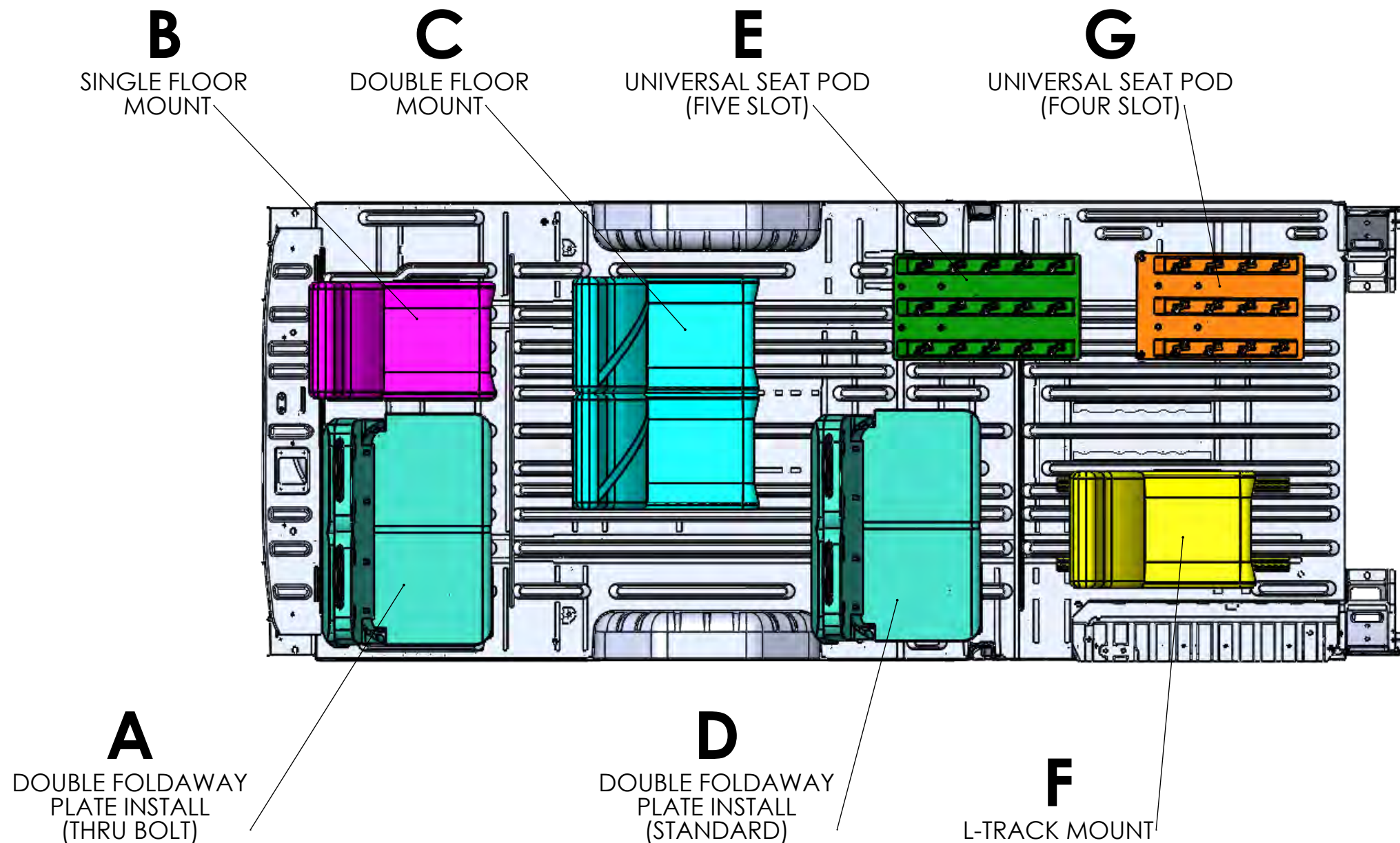
Post test option: Simplified Test Report : Yes No n/a Work Order No.: 2107B4

Pre-Test Photos By: DM

Post-Test Photos By: DM

Pre-Test Visual inspection: Check All test fixtures for signs of damage, loose items, incompleteness, etc.

Digital Setup Verification 1: DM Digital Setup Verification 2: DM



NOTE: REFERENCE CAD MODEL FOR ALL UNDIMENSIONED FEATURES

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By Dave OMalley at 1:00 pm, Jul 13, 2021

SECONDARY OPERATIONS	
TUMBLE	
TIME SAVER	
BRAKE EDGES	
WIRE WHEEL	
PAINT/POWDER PREP	
PAINT	
POWDER COAT	
OTHER (SEE NOTES)	

GAUGE: N/A
MATERIAL: N/A
FINISH: N/A
TOLERANCES (UNLESS OTHERWISE NOTED)
FABRICATED:
ANGULAR: ± 1°
TWO PLACE DECIMAL: ± 0.03
THREE PLACE DECIMAL: ± 0.02
MACHINED:
ANGULAR: ± 0.5°
TWO PLACE DECIMAL: ± 0.01
THREE PLACE DECIMAL: ± 0.005
APPLICABLE TOLERANCE:

PART NUMBER: FLOOR LAYOUT	REV A
DESCRIPTION: FLOOR LAYOUT	
THIRD ANGLE PROJECTION 	
SCALE: 1:20	SHEET: 1 OF 1

26400

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NOTE(S):

- 1) ASSEMBLED SEAT WEIGHT IS 105 LBS.
- 2) SEE DRAWING 25890 FOR PART# AND COLOR OF THE GRAB HANDLE.
- 3) CAUTION: IT IS NOT POSSIBLE TO TEST EVERY PERMUTATION OF SEAT WIDTH, ACCESSORY COMBINATION, SEAT HEIGHT, POSITION IN VEHICLE, OR SEAT BELT REQUIREMENT. FOR THIS REASON, IT MUST BE EMPHASIZED THAT COMPLIANCE CAN NOT BE ASSUMED WHERE THERE IS ANY DEVIATION FROM THE STANDARD SUPPLY OR ASSEMBLY METHOD. ADDITIONALLY, THE ADVANTAGES OF THIS PRODUCT MAY BE LOST IF INSUFFICIENT CONSIDERATION IS GIVEN TO THE METHOD OF INSTALLATION OF SEAT TO VEHICLE.
- 4) FULL FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND REGULATIONS COMPLIANCE CAN ONLY BE ACHIEVED THROUGH VEHICLE TESTING.
- 5) PRODUCT IMPROVEMENT MAY AFFECT SPECIFICATIONS.
- 6) INCLUDE ONE COPY OF #15361 WITH EVERY SEAT SET.
- 7) FOR THE RESTRAINT SYSTEM TO WORK, SEAT FRAME PLANE C MUST BE PARALLEL TO ZERO H PLANE (HORIZONTAL FLOOR).

ITEM	QTY	PART #	DESCRIPTION
1	1	SEE CHART 1	WELDMNT, SEATBASE, 3PT, CS
2	1	26410	WELDMNT, FLOORMOUNT, 3PT, CS
3	1	SEE CHART 1	WELDMNT, SEAT BACK, 3PT, CS
4	1	26414	WELDMNT, TRUSS, 3PT
5	1	26470	ROD, CONTROL, 3PT
6	1	26473	TUBE, TRUNION, 3PT
7	1	26472	TUBE, PIVOT, LOWER
8	1	38708	WELDMNT, PLATE, SIDE, AISLE, 3PT, CS
9	1	38704	WELDMNT, PLATE, SIDE, WALL, 3PT, CS
10	1	26468	PLATE, HANDLE, 3PT, CS
11	2	26466	PLATE, LOCK, CAM, 3PT
12	1	31347	FLEX-O-LATOR, BV
13	12	53962	HOOK, U, OYSTER
14	12	55859	SPRING, FLEX-O-LATOR, BV
15	1	99500	8-32 x 1 1/4 PHILLIPS PAN HEAD MACHINE SCREW, ZP
16	1	99113	SPLIT COTTER PIN, 3/16 X 2, ZP
17	1	21090	WELDMNT, LOCK MECH.
18	1	21091	WELDMNT, LOCK MECH.
19	1	21107	SPRING, RETURN
20	1	21108	SPRING, RETURN
21	6	9422301	1/2-13 PREV TORQUE HEX CONICAL TOP LOCKNUT, GR8, ZP
22	2	180124	3/8 - 16 X 1 1/4 HEX HEAD BOLT, GR 5, ZP
23	10	56408	BLACK SILICONE ADHESIVE
24	2	55965	3/8 I.D. X 1/2 LG. BLACK PLASTIC CAP
25	2	21214	RED PLASTIC COVER RECTANGLE
26	1	21210	GAS SPRING
27	2	21205	FITTINGS, BALL END
28	3	9422275	5/16 LOCK NUT, PREV TORQ, GR 5, ZP
29	1	1213	RED PLASTIC COVER, 1/2 X 1/4 X 1
30	3	180122	3/8 - 16 X 1 HEX HEAD BOLT, GR 5, ZP
31	1	180128	3/8 - 16 X 1 3/4 HEX HEAD BOLT, GR 5, ZP
32	1	94334	7/16-20 X 1 1/4 HEX HEAD BOLT, GR 8, BLACK OXIDE
33			
34			
35			
36	10	99325	7/16 - 20 PREV TORQUE HEX CONICAL TOP LCKNUT, GR C, BO

ITEM	QTY	PART #	DESCRIPTION
37	4	9422277	3/8-16 PREV TORQUE LOCK NUT, GR5, ZP
38	2	454979	7/16 - 20 X 2 1/2 HEX HEAD BOLT, GR 8, ZP
39	1	99474	7/16 - 20 X 1 1/4 X 3/4 SPECIAL THREAD, HHCS, GB, B/O
40	1	455002	1/2 - 13 X 2 1/2 HEX HEAD BOLT, GR 8, ZP
41	1	427565	1/2 - 13 X 1 3/4 HEX HEAD BOLT, GR 8, ZP
42	5	120396	1/2 SAE FLATWASHER, ZP
43			
44	4	99240	#8 X 3/4 SCREW, TEK, ROUND, PHILL, BLACK
45	1		
46	3	120392	1/4 SAE FLATWASHER, ZP
47			
48			
49	2	99332	SCREW, CAP, SOKT, SHOULDER, 3/8 X 3/8 LONG
50	1	38698	PLATE, DUMP LOCK, 3PT
51	N/A	56383	THREAD LOCKER, VIBRA-TITE, RED
52	1	26490	SPRING, 3PT, HANDLE
53			
54			
55			
56	2	SEE NOTE 2	GRAB HANDLE
57	1	26429	WELDMNT, TRUSS LEG LOCK, 3PT
58			
59			
60			
61	1	26551	FOAM, SEATBASE, 3PT FOLDAWAY, CS
62			
63			
64			
65			
66	1	SEE CHART 1	COVER, 3PT FOLDAWAY, BACK, MID-HI, CS
67	1	SEE CHART 1	COVER, 3PT FOLDAWAY, SEATBASE, CS
68	1	28585	DUMP COVER, AISLE SIDE, CS, 3PT
69	1	28586	DUMP COVER, WALL SIDE, CS, 3PT
70	4	56618	NYLINER BEARING
71			
72			
73			
74	3	99118	BELLVILLE WASHER, 1/2 ID X 1 OD
75	2	55988	BUMPER PAD, CROSS LINK POLETHYLENE 1/8 X 1 X 2 5/8
76	1	31470	VINYL BLACK, 33 1/2 X 18
77	2	55253	BLACK PLASTIC CAP, PLUG
78	1	55713	LABEL, ADHESV, SEATBACK, "CAUTION" 3"L X 3/4" W
79	2	56589	END CAP, TRUSS, FOLDAWAY
80			
81			
82	11	99324	7/16" FLATWASHER, SAE BLACK OXIDE
83	1	15361	INSTRUCTIONS, SWITCHABLE ELR
84			
85	1	56658	INSTRUCTIONS, 3PT FOLDAWAY
86	2	99015	7/16", WASHER, FLAT, USS, GB, ZP, YEL
87	5	99195	1/4" - 20 X 3/4", SCREW, SOCKET, BTN HD, FLANGE
88	1	99530	NUT, ACORN, CENTER-LOCK, 8-32, GR-A, ZP
89	1	51126474	FOAM, MID-HI BACK, REAR FACE, 3PT FLDWY
90	1	51126475	FOAM, MID-HI BACK, FRONT FACE, 3PT FLDWY
91	2	71728	SCREW, BUTN HD, 1/4-20 X 3/4, ZP
92	4	99063	1/4" NYLON FLAT WASHER
93	1	27080	RS.ASSY.RTCTR.3PT.FLDWY.CNTR.RH
94	1	27082	RS.ASSY.BUCKLE.3PT.FLDWY.STEM.HC
95	1	27078	RS.ASSY.RTCTR.3PT.FLDWY.WL.HC.RH
96	1	27073	RS.ASSY.BUCKLE.3PT.FLDWY.WEB.HC

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By Dave OMalley at 2:08 pm, Jul 13, 2021

CHART 1			
ITEM	QTY	PART #	DESCRIPTION
1	1	26402	WELDMNT, SEATBASE, 3PT, CS
3	1	26408	WELDMNT, SEAT BACK, 3PT, MID-HI, CS
66	1	26510	COVER, 3PT FOLDAWAY, BACK, MID-HI, CS
67	1	26542	COVER, 3PT FOLDAWAY, SEATBASE, CS
1	1	26402	WELDMNT, SEATBASE, 3PT, CS
3	1	39572	WELDMNT, SEAT BACK, 3PT, CMPAN, MID-HI, CS
66	1	28337	COVER, 3PT FOLDAWAY, CMPAN, BACK, MID-HI, CS
67	1	26542	COVER, 3PT FOLDAWAY, SEATBASE, CS
1	1	26534	WELDMNT, SEATBASE, 3PT, CRS, CS
3	1	26538	WELDMNT, SEAT BACK, 3PT, MID-HI, CRS, CS
66	1	26546	COVER, 3PT FOLDAWAY, BACK, MID-HI, CRS, CS
67	1	26544	COVER, 3PT FOLDAWAY, SEATBASE, CRS, CS
1	1	26534	WELDMNT, SEATBASE, 3PT, CRS, CS
3	1	39574	WELDMNT, SEAT BACK, 3PT, CMPAN, MID-HI, CRS, CS
66	1	28365	COVER, 3PT FOLDAWAY, CMPAN, BACK, MID-HI, CRS, CS
67	1	26544	COVER, 3PT FOLDAWAY, SEATBASE, CRS, CS

N	ADD 99015,71728, REMOVE 99266, UPDATE 120396 QTY	LH	2/19	7420
M	ADDED QTY TO 99324	JL	8/18	7039
L	REMOVE 70900	DN	10/14	4288
K	REPLACED 56602 WITH 27080 & 27082;			
J	REPLACED 56600 WITH 27078 & 27073	SC	11/11	2134
	ADD 99266 & 99063	EJ	06/11	1914

H	ADD 70900; DELETE 120395, 120394			

Tolerances Unless Otherwise Specified
FRACTION 1/X ±1/32"
DECIMAL .XX ±0.02"
XXX ±0.005"
ANGULAR ±1'

Material:
Specifications:
Part Name
Drawn by: RW Date: 09/27/04

Freedman Seating Co.
ASSY, 3PT FOLDAWAY, 2PL, CS
Drawing No. 26400

PAGE 1 OF 5
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Chicago, IL 60651
Rev. N

26400

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ASSEMBLY PROCEDURE

- 1) REMOVE WELD SPLATTER IN TRUSS SLIDER.
- 2) ATTACH SEATBASE TO FLOORMOUNT BY SLIDING TRUNION TUBE (26473) THROUGH SEATBASE BEARING. FASTEN USING 8-32 x 1 1/4 PHILLIPS PAN HEAD SCREW & 8-32 ACORN NUT (APPLY RED LOCTITE).
- 3) ENGAGE TRUSS IN TRUSS SLIDER CHANNELS OF SEATBASE AND SECURE AT BOTTOM WITH PIVOT TUBE, (26472) AND BEARINGS. ALIGN HOLES FOR SPRING PIN. CHECK FOR UPRIGHT VERTICAL POSITION OF SEATBASE.
- 4) ATTACH GAS SPRING END FITTING ONTO SEATBASE WITH 5/16 - 18 LOCK NUT. ASSEMBLE TWO (2) 3/8 - 16 X 1 1/4 LEVELING SCREWS TO END OF TRUSS SLIDER. ATTACH TWO (2) LOCKS, WITH SPRINGS, USING 1/2 - 13 WASHER HEAD LOCK NUTS.
- 5) FASTEN GAS SPRING END FITTING TO FLOORMOUNT USING 5/16 - 18 LOCK NUT.
- 6) "POP" THE TUBE END OF THE GAS SPRING ONTO THE FITTING ON THE SEATBASE. USING THE "LEVER ACTION FORCE TOOL," WITH THE SEATBASE IN THE UP POSITION, "POP" THE ROD END ONTO THE FITTING ON THE FLOORMOUNT. GAS SPRING IS MOUNTED WITH THE ROD END DOWN.
- 7) ATTACH FLEX-O-LATOR TO SEATBASE WITH TWELVE (12) SPRINGS AND TWELVE (12) OYSTER CLIPS. SEE PAGE 3 OF DRAWING FOR ORIENTATION AND LOCATION OF SPRINGS AND OYSTER CLIPS.
- 8) ASSEMBLE DUMP MECHANISM BY ATTACHING HANDLE (26468) AND CONTROL ROD (26470) TO LOCK (26466) WITH 1/4 - 20 BOLT AND LOCTITE. LEAVE LOOSE ENOUGH TO ROTATE. FEED ROD THROUGH REAR SEATBASE TUBE AND ATTACH LOCK (26466) TO CONTROL ROD WITH 1/4 - 20 BOLT AND LOCTITE. GREASE BOTH LOCKS AT PIVOT LOCATION. BOLT ASSEMBLY TO REAR TUBE WITH 1/2-13 BOLTS AND NUTS AS SHOWN ON PAGE 4. CHECK TO VERIFY PROPER EASY ROTATION.
- 9) ATTACH SIDE PLATE WELDMENTS (38708 AND 38704) TO SEATBASE USING 3/8 - 16 BOLTS, WASHERS AND NUTS. CONNECT HANDLE SPRING 26490 TO HANDLE AND AISLE SIDE PLATE. VERIFY OPERATION.
- 10) ATTACH SEATBACK TO SEATBASE SIDE PLATES WITH 7/16 - 20 BOLTS, WASHERS, AND NUTS. ATTACH PART (26495) TO SEATBACK. ADD FLAT SPRING TO SEATBACK USING BOLT 99330. VERIFY PROPER BACK OPERATION.
- 11) ADD DUMP LOCK 38698 TO SEAT USING BOLT 99332 WITH 5/16-18 NUT AND LOCTITE.
- 12) CHECK FOR OPERATION: UP/DOWN LOCKS, TRUSS SLIDING, DUMP MECHANISM, GAS SPRING FORCE, WELDS ON PULL DOWN WIRES AND MOTION OF SEATBACK.
- 13) CHECK THAT SEAT BACK CHUCK (MOVEMENT) IS LESS THAN 1' WHEN A REASONABLE LOAD IS APPLIED TO SEAT BACK.
- 14) PREPARE SEAT FOAM BY APPLYING TICKING TO BACKSIDE OF SEATBACK AND SEATBASE FOAM.
- 15) ATTACH SEATBACK FOAM ONTO FRAME ONLY ON TOP AND CENTER TUBES.
- 16) ATTACH RETRACTORS TO SEATBACK USING 7/16 - 20 NUTS. VERIFY PROPER BELT OPERATION.
- 17) ADD TRIM COVERS TO SEAT. CUT FABRIC ON SEATBACK WHERE INDICATED. ATTACH BEZEL TO SEATBACK USING SCREWS (99240). ATTACH BUCKLES USING 7/16 - 20 BOLTS, WASHERS, AND NUTS.
- 18) ADD DUMP COVERS, HANDLE COVERS, 3PT INSTRUCTIONS, SIDE BUCKLE AND TRUSS LEG LOCK COMPONENTS.
- 19) VERIFY PROPER OPERATION OF BELTS AND BUCKLES.

RECEIVED

By Dave OMalley at 2:08 pm, Jul 13, 2021

N	ADD 99015,71728, REMOVE 99266, UPDATE 120396 QTY	LH	2/19	7420					
M	ADDED QTY TO 99324	JL	8/18	7039					
L	REMOVE 70900	DN	10/14	4288					
K	REPLACED 56802 WITH 27080 & 27082;								
	REPLACED 56800 WITH 27078 & 27073	SC	11/11	2134					
J	ADD 99266 & 99063	EJ	06/11	1914					
Rev. Level	Description of Change	By	Date	ECN #	Rev. Level	Description of Change	By	Date	ECN #

<table border="0"> <tr> <td colspan="2">Tolerances Unless Otherwise Specified</td> <td colspan="2">Material:</td> <td colspan="2">Freedman Seating Co.</td> <td colspan="2">4545 W. Augusta Blvd Chicago, IL 60651</td> </tr> <tr> <td colspan="2">FRACTION 1/X ±1/32"</td> <td colspan="2"></td> <td colspan="2">Part Name</td> <td colspan="2">ASSY, 3PT FOLDAWAY, 2PL, CS</td> </tr> <tr> <td colspan="2">DECIMAL .XX ±0.02"</td> <td colspan="2">Specifications:</td> <td colspan="2">Drawn by: RW</td> <td colspan="2">Date: 09/27/04</td> </tr> <tr> <td colspan="2">ANGULAR ±1'</td> <td colspan="2">DO NOT SCALE DRAWING</td> <td colspan="2">Drawing No. 26400</td> <td colspan="2">Rev. N</td> </tr> </table>										Tolerances Unless Otherwise Specified		Material:		Freedman Seating Co.		4545 W. Augusta Blvd Chicago, IL 60651		FRACTION 1/X ±1/32"				Part Name		ASSY, 3PT FOLDAWAY, 2PL, CS		DECIMAL .XX ±0.02"		Specifications:		Drawn by: RW		Date: 09/27/04		ANGULAR ±1'		DO NOT SCALE DRAWING		Drawing No. 26400		Rev. N	
Tolerances Unless Otherwise Specified		Material:		Freedman Seating Co.		4545 W. Augusta Blvd Chicago, IL 60651																																			
FRACTION 1/X ±1/32"				Part Name		ASSY, 3PT FOLDAWAY, 2PL, CS																																			
DECIMAL .XX ±0.02"		Specifications:		Drawn by: RW		Date: 09/27/04																																			
ANGULAR ±1'		DO NOT SCALE DRAWING		Drawing No. 26400		Rev. N																																			

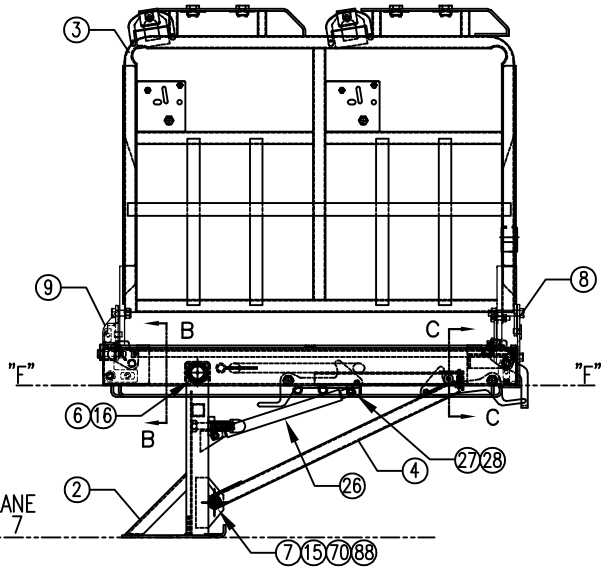
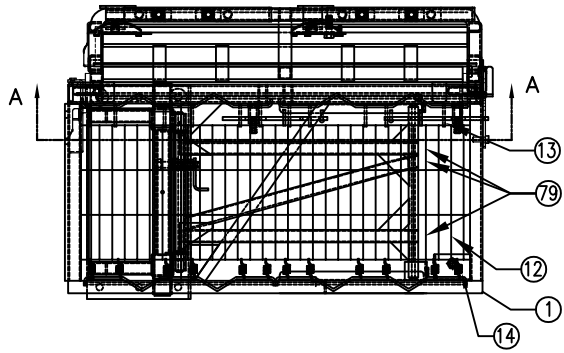
PAGE 2 OF 5

26400

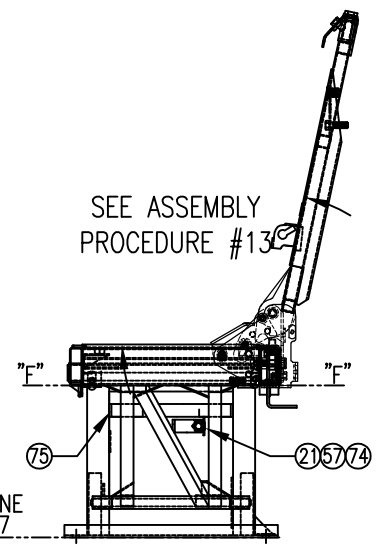
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PROPERTY OF THE FREEDMAN SEATING COMPANY.

ASSY, 3PT FOLDAWAY, 2PL, CS IS SHOWN

RECEIVED
By Dave OMalley at 2:08 pm, Jul 13, 2021



ZERO H PLANE
SEE NOTE 7



SEE ASSEMBLY
PROCEDURE #13

ZERO H PLANE
SEE NOTE 7

N	ADD 99015,71728, REMOVE 99286, UPDATE 120396 QTY	LH	2/19	7420													
M	ADDED QTY TO 99324	JL	8/18	7039													
L	REMOVE 70900	DN	10/14	4288	H	ADD 70900; DELETE 120395, 120394											
K	REPLACED 56802 WITH 27080 & 27082;					180020, 26485, & 31788											
	REPLACED 56800 WITH 27078 & 27073	SC	11/11	2134		(12 29/32) WAS 12 29/32; (6 9/32) WAS 6 9/32											
J	ADD 99286 & 99063	EJ	06/11	1914		MODIFY 21090 & 21091; 99530 WAS 99501	SC	7/10	1343								
Rev. Level	Description of Change	By	Date	ECN #	Rev. Level	Description of Change	By	Date	ECN #	Material:	Freedman Seating Co. 4545 W. Augusta Blvd Chicago, IL 60651		Specifications:		Part Name	ASSY, 3PT FOLDAWAY, 2PL, CS	
										Angular ±1°	Material:	DO NOT SCALE DRAWING		Drawing No.	26400	Rev.	N

26400

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By Dave OMalley at 2:08 pm, Jul 13, 2021

NOTE: DETAILS & SPECIFICATIONS ARE SHOWN ON DRAWING 26500

PAGE 4 OF 5

Rev. Level	Description of Change	By	Date	ECN #	Rev. Level	Description of Change	By	Date	ECN #	Material:	Part Name	Rev.		
N	ADD 99015,71728, REMOVE 99266, UPDATE 120396 QTY	LH	2/19	7420							Freedman Seating Co. 4545 W. Augusta Blvd Chicago, IL 60651			
M	ADDED QTY TO 99324	JL	8/18	7039										
L	REMOVE 70900	DN	10/14	4288	H	ADD 70900; DELETE 120396, 120394								
K	REPLACED 56602 WITH 27080 & 27082;					180020, 26485, & 31788								
J	REPLACED 56600 WITH 27078 & 27073	SC	11/11	2134		(12 29/32) WAS 12 28/32; (6 9/32) WAS 6 9/32								
J	ADD 99266 & 99063	EJ	06/11	1914		MODIFY 21090 & 21091; 99530 WAS 99501	SC	7/10	1343		ASSY, 3PT FOLDAWAY, 2PL, CS			
										Drawn by: RW	Date: 09/27/04	DO NOT SCALE DRAWING	Drawing No: 26400	Rev. N

Tolerances Unless
Otherwise Specified
FRACTION 1/X ±1/32"
DECIMAL .XX ±0.02"
.XXX ±0.005"
ANGULAR ±1'

Material: **Freedman Seating Co.** 4545 W. Augusta Blvd
Chicago, IL 60651
Part Name: ASSY, 3PT FOLDAWAY, 2PL, CS
Specifications:
Drawing No: 26400
Rev. N

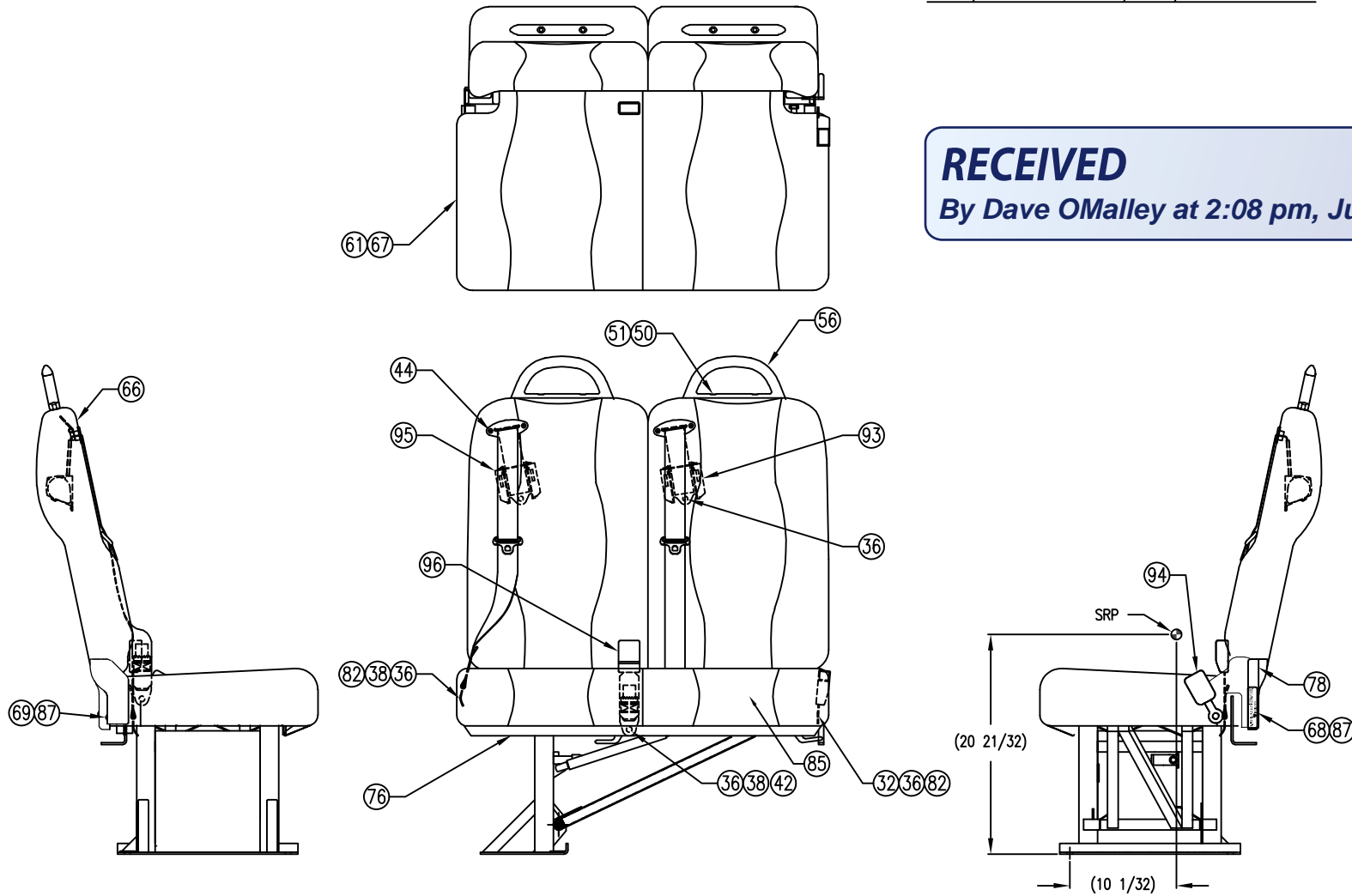
26400

NOT TO BE USED, DISCLOSED OR REPRODUCED WITHOUT PERMISSION.
PROPERTY OF THE FREEDMAN SEATING COMPANY.

ASSY, 3PT FOLDAWAY, 2PL, CS IS SHOWN

RECEIVED

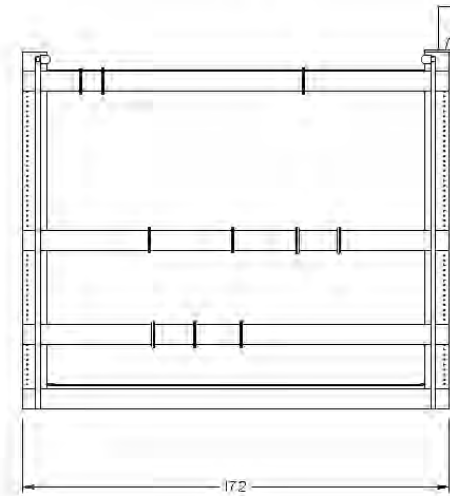
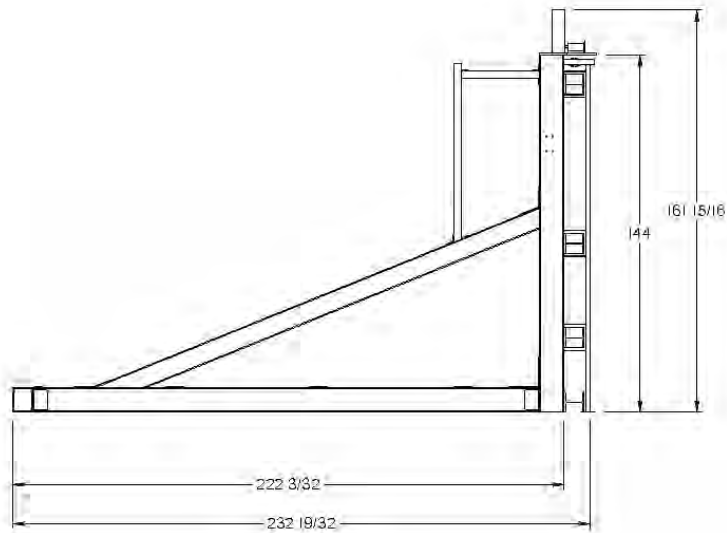
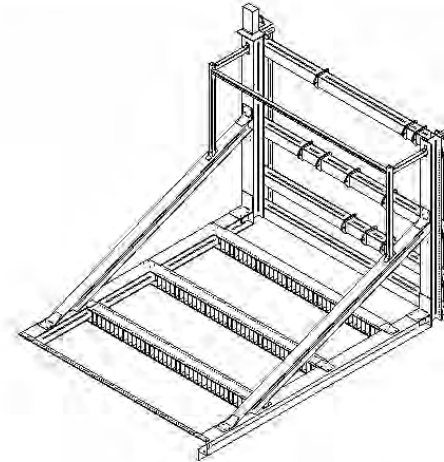
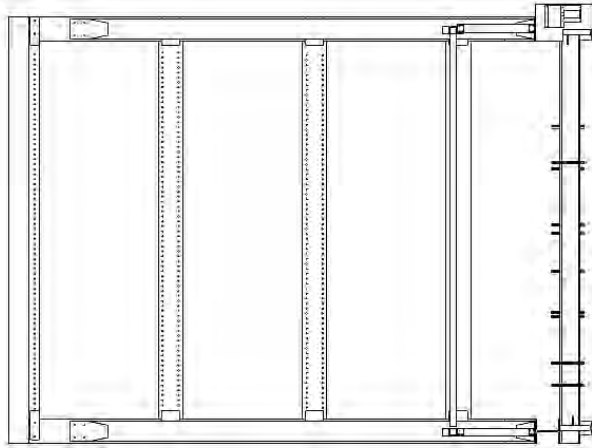
By Dave OMalley at 2:08 pm, Jul 13, 2021



PAGE 5 OF 5

N	ADD 99015, 71728, REMOVE 99266, UPDATE 120386 QTY	LH	2/19	7420																
M	ADDED QTY TO 99324	JL	8/18	7039																
L	REMOVE 70900	DN	10/14	4288	H	ADD 70900; DELETE 120385, 120384														
K	REPLACED 56802 WITH 27080 & 27082;	SC	11/11	2134		180020, 26485, & 31788														
	REPLACED 56800 WITH 27078 & 27073	SC	11/11	2134		(12 29/32) WAS 12 29/32; (6 9/32) WAS 6 9/32														
J	ADD 99266 & 99063	EJ	06/11	1914		MODIFY 21090 & 21091; 99530 WAS 99501	SC	7/10	1343											
Rev. Level	Description of Change	By	Date	ECN #	Rev. Level	Description of Change	By	Date	ECN #	Material:	Freedman Seating Co.		4545 W. Augusta Blvd Chicago, IL 60651							
										Specifications:	Part Name ASSY, 3PT FOLDAWAY, 2PL, CS		Drawing No. 26400							
										Angular: ±1°	Drawn by: RW	Date: 09/27/04	DO NOT SCALE DRAWING	Rev. N						

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PROPERTY OF FREEDMAN SEATING COMPANY



Tolerances Unless Otherwise Specified:
 Fractions: XX.X ± .032"
 Decimals: XXX ± .002"
 Angles: ± 1 Degree
 Unspecified Radii: R3

FL-02			
DATE:	REVISED:	ITEM:	82811
DESCRIPTION:		D	
NOT TO SCALE			1 of 1



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

FSTL
4545 W. Augusta Blvd.
Chicago, IL 60651
Dave Klopp Phone: (773) 524 2440

MECHANICAL

Valid To: June 30, 2023

Certificate Number: 2324.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following types of tests on transportation seating products:

<u>Test</u>	<u>Test Methods</u>
Child Restraint Anchorage Systems*: Tension Up to 9000 lbs	CMVSS 210.1, 210.2; FMVSS 571.225; FSTL Tension Test Procedures LP03, LP25, LP28
Compression*: Up to 5000 lbs	FSTL Compression Test Procedures LP04, LP23, LP25, LP28
Cyclic Fatigue*: (100 to 250) lbs Up to 12 in Up to 10 Hz	FSTL Fatigue Test Procedures LP02, LP24
Devices for Use in Defining and Measuring Vehicle Seating Accommodation – Hpoint*: Displacement Up to 36 in	SAE J826 (November 2008)
Displacement*: Up to 36 in	FSTL Displacement Test Procedures LP01
Seat Belt Assembly Anchorages*: Tension Up to 9000 lbs	CMVSS 210; FMVSS 571.210; FSTL Tension Test Procedures LP03, LP25, LP28
Seating Systems*: Tension (0 to 9000) lbs	FMVSS 571.207; CMVSS 207; FSTL Tension Test Procedures LP03, LP25, LP28

School Bus Passenger Seating and Crash Protection*:

FMVSS 571.222; CMVSS 222

Tension Up to 9000 lbs
Compression Up to 5000 lbs
Displacement Up to 36 in
Acceleration (0 to 1,000) g

Seat performance forward and rearward. Seat cushion latching and retention. Quasi-static test of compartmentalization and Type 2 seat belt performance. Impact zone requirements (Head protection Zone. Leg protection zone.)

**Also using similar test methods based on the parameters listed above.*





Accredited Laboratory

A2LA has accredited

FSTL

Chicago, IL

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 1st day of July 2021.

A blue ink signature of a person, likely the Vice President of Accreditation Services, written over a horizontal line.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2324.01
Valid to June 30, 2023

For the types of tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.



Calibration Certificate

1490 W. Bernard Dr. Suite E P: (630)613-9350
 Addison, IL 60101 www.GreatLakesCalibration.com

Certificate #: 21081-21

Your Guide To Quality Control

This calibration was performed on-site at the address below for:

FSTL
 4545 W AUGUSTA BLVD
 CHICAGO, IL 60804

Date of Calibration: Monday, February 8, 2021
Calibration Interval: 12 - Months
Calibration Due Date: 2/8/2022
Purchase Order: Y72041
Condition Received: Within Tolerance
Condition Returned: Within Tolerance

Equipment Information

Manufacturer:	INTERFACE	External Cell Mfg:	N/A	Display Mfg:	N/A
Model Number:	SSM2-AF-10K	External Cell Model:	N/A	Display Model #:	N/A
Serial Number:	1137893	External Cell Serial:	N/A	Display Serial #:	N/A
Asset ID:	LC-001	External Cell Asset ID:	N/A	Software Version:	DAQ SYS1 V1.1.0.0
Work instruction:	MECH-001	Calibration Direction:	TENSION	Temp / Hum:	73.2°F / 28%RH
Revision:	6	Calibration Device:	ASTM E-74 LOAD CELL	Technician:	Abelardo Garcia
Specification:	ASTM E4-2020	Calibration Method:	FOLLOW THE FORCE	Page:	1 of 1
Description:	9,000-lb Load Cell				

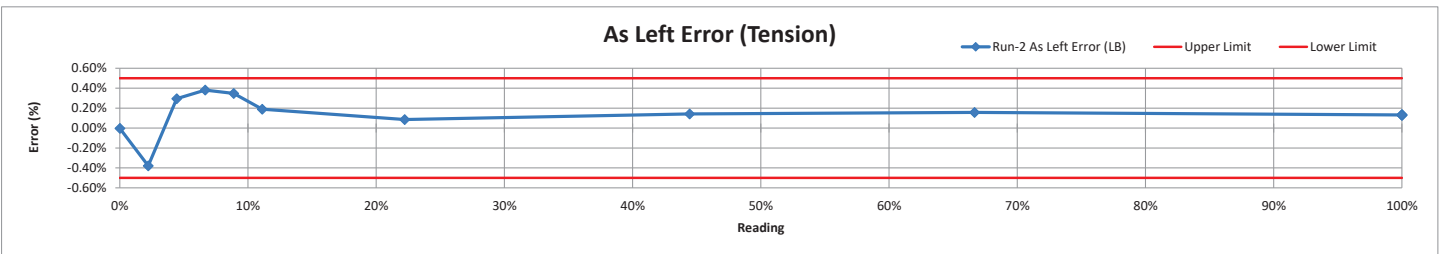
The data contained within this report pertains only to the item(s) as described above. This report shall not be reproduced except in full without the prior written approval of Great Lakes Calibration, Inc. The calibration was performed in accordance with the most current revision of work instruction MECH-001 (which is based off the requirements of ASTM E-4) and the governing specification listed above and is compliant with ISO/IEC 17025:2017, ANS/NCSL Z540-1-1994, ISO9000, and TS-16949.

The calibration device(s) used is either a Class-A temperature Compensated load cell that has been certified by an accredited laboratory in accordance with ASTM E-74 or certified Dead weights.

Calibration Data (TENSION)

Certified Range: 200 to 9000 - LB		Max Error (%): 0.38%		Tolerance (+/-): 0.50%		Check Cal / Shunt:		N/A			
Capacity: 9,000.00		units: LB		Indicator: DIGITAL							
Reading (%FS)	Nominal-UUT Indication (LB)	Resolution (LB)	Run-1 As Found (LB)	Run-1 As Found Error (LB)	Run-1 As Found Error (%)	Run-2 As Left (LB)	Run-2 As Left Error (LB)	Max Error As Left (%)	Repeatability (%)	Uncertainty (LB)	Pass/Fail
0.0%	return to zero	0.010	0.276	-0.276	0.00%	0.130	0.000	0.00%		2.9E-03	PASS
2.2%	200.000	0.010	200.760	-0.760	-0.38%	200.662	-0.662	-0.38%	0.05%	6.8E-01	PASS
4.4%	400.000	0.010	398.827	1.173	0.29%	399.120	0.880	0.29%	-0.07%	1.5E+00	PASS
6.7%	600.000	0.010	597.880	2.120	0.35%	597.724	2.276	0.38%	0.03%	1.9E+00	PASS
8.9%	800.000	0.010	797.230	2.770	0.35%	797.432	2.568	0.35%	-0.03%	2.5E+00	PASS
11.1%	1,000.000	0.010	998.320	1.680	0.17%	998.109	1.891	0.19%	0.02%	3.1E+00	PASS
22.2%	2,000.000	0.010	1,998.423	1.577	0.08%	1,998.280	1.720	0.09%	0.01%	5.9E+00	PASS
44.4%	4,000.000	0.010	3,994.363	5.637	0.14%	3,994.587	5.413	0.14%	-0.01%	1.2E+01	PASS
66.7%	6,000.000	0.010	5,990.625	9.375	0.16%	5,991.427	8.573	0.16%	-0.01%	1.8E+01	PASS
100.0%	9,000.000	0.010	8,988.250	11.750	0.13%	8,989.916	10.084	0.13%	-0.02%	2.8E+01	PASS

Reported uncertainty values have been estimated at the 95% confidence level with a coverage factor of K=2 and are a combination of the reference standard uncertainty, the UUT resolution, and the UUT repeatability. Uncertainties are reported but not combined with the UUT error for the determination of the "PASS/FAIL" status.



Check any that apply: All applicable clauses of ASTM E4 have been met unless otherwise noted below
 3.1.12 (The Resolution is stated as 1/2 the fluctuation of the indicator) 10.1 (Readings taken below 200 times the resolution) Adjustments Were Made
 7.3 (Interchangeability established) Annex A1 (Verified outside of testing machine) 10.5 (Does not return to zero within 30-seconds)
 17.1 (Error or repeatability greater than 1.0%)

Calibration Standards Used: All verification devices used are traceable to the National Institute of Standards and Technology (NIST)

Eqpt Used	ID#:	Description:	Manufacturer:	Cal Date:	Cal Due:	Class-A Ten (lb)	Class-A Comp(lb)	Calibrated By:
A	M-136B	10-kip Class-A Load Cell	MOREHOUSE	09/17/2019	09/17/2021	200	200	Morehouse
B	T-043	Temperature-Humidity Meter	EXTECH	01/11/2021	01/11/2022			GREAT LAKES CALIBRATION

Digitally signed by Miguel Flores/Deputy Tech.
 Mgr: DKS-cm-Miguel Flores/Deputy Tech. Mgr.,
 cn=Fredman Seating Co., ou=FSTL,
 email=miguel.flores@freedmanseating.com, c=US
 Date: 2021.02.23 15:35:17 -0500

Marya Black
 QA Approval - Marya Black (QM)



1490 W. Bernard Dr. Suite E Addison, IL 60101 P: (630)613-9350 www.GreatLakesCalibration.com

Your Guide To Quality Control



Calibration Certificate

Certificate #: 21081-7

This calibration was performed on-site at the address below for:

FSTL
4545 W AUGUSTA BLVD
CHICAGO, IL 60804

Date of Calibration: Monday, February 8, 2021
Calibration Interval: 12 - Months
Calibration Due Date: 2/8/2022
Purchase Order: Y72041
Condition Received: Within Tolerance
Condition Returned: Within Tolerance

Equipment Information

Manufacturer:	RICE LAKE	External Cell Mfg:	N/A	Display Mfg:	N/A
Model Number:	RL20001-T10-15K	External Cell Model:	N/A	Display Model #:	N/A
Serial Number:	21573750	External Cell Serial:	N/A	Display Serial #:	N/A
Asset ID:	LC-002	External Cell Asset ID:	N/A	Software Version:	DAQ SYS1 V1.1.0.0
Work instruction:	MECH-001	Calibration Direction:	TENSION	Temp / Hum:	72.7°F / 27%RH
Revision:	6	Calibration Device:	ASTM E-74 LOAD CELL	Technician:	Abelardo Garcia
Specification:	ASTM E4-2020	Calibration Method:	FOLLOW THE FORCE	Page:	1 of 1
Description:	9,000-lb Load Cell				

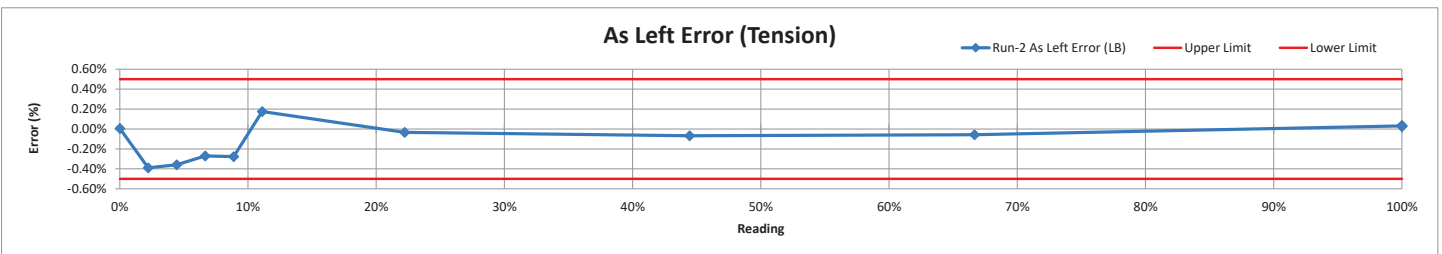
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The calibration device(s) used is either a Class-A temperature Compensated load cell that has been certified by an accredited laboratory in accordance with ASTM E-74 or certified Dead weights.

Calibration Data (TENSION)

Certified Range: 200 to 9000 - LB		Max Error (%): -0.39%		Tolerance (+/-): 0.50%		Check Cal / Shunt:		N/A				
Capacity: 9,000.00		units: LB		Indicator: DIGITAL								
Reading (%FS)	Nominal-UUT Indication (LB)	Resolution (LB)	Run-1 As Found (LB)	Run-1 As Found Error (LB)	Run-1 As Found Error (%)	Run-2 As Left (LB)	Run-2 As Left Error (LB)	Max Error As Left (%)	Repeatability (%)	Uncertainty (LB)	Pass/Fail	Eqpt Used
0.0%	return to zero	0.010	-0.490	0.490	0.01%	0.220	0.000	0.01%		2.9E-03	PASS	A
2.2%	200.000	0.010	200.782	-0.782	-0.39%	200.557	-0.557	-0.39%	0.11%	8.1E-01	PASS	A
4.4%	400.000	0.010	401.440	-1.440	-0.36%	401.336	-1.336	-0.36%	0.03%	1.3E+00	PASS	A
6.7%	600.000	0.010	601.422	-1.422	-0.24%	601.621	-1.621	-0.27%	-0.03%	1.9E+00	PASS	A
8.9%	800.000	0.010	802.220	-2.220	-0.28%	802.109	-2.109	-0.28%	0.01%	2.4E+00	PASS	A
11.1%	1,000.000	0.010	998.250	1.750	0.18%	998.620	1.380	0.18%	-0.04%	3.3E+00	PASS	A
22.2%	2,000.000	0.010	2,000.662	-0.662	-0.03%	2,000.223	-0.223	-0.03%	0.02%	6.2E+00	PASS	A
44.4%	4,000.000	0.010	4,002.733	-2.733	-0.07%	4,001.928	-1.928	-0.07%	0.02%	1.2E+01	PASS	A
66.7%	6,000.000	0.010	6,003.443	-3.443	-0.06%	6,003.028	-3.028	-0.06%	0.01%	1.8E+01	PASS	A
100.0%	9,000.000	0.010	8,997.170	2.830	0.03%	8,999.271	0.729	0.03%	-0.02%	2.8E+01	PASS	A

Reported uncertainty values have been estimated at the 95% confidence level with a coverage factor of K=2 and are a combination of the reference standard uncertainty, the UUT resolution, and the UUT repeatability. Uncertainties are reported but not combined with the UUT error for the determination of the "PASS/FAIL" status.



Check any that apply: All applicable clauses of ASTM E4 have been met unless otherwise noted below

3.1.12 (The Resolution is stated as 1/2 the fluctuation of the indicator) 10.1 (Readings taken below 200 times the resolution) 10.5 (Does not return to zero within 30-seconds)

7.3 (Interchangeability established) Annex A1 (Verified outside of testing machine) 17.1 (Error or repeatability greater than 1.0%)

Calibration Standards Used: All verification devices used are traceable to the National Institute of Standards and Technology (NIST)

Eqpt Used	ID#:	Description:	Manufacturer:	Cal Date:	Cal Due:	Class-A Ten (lb)	Class-A Comp(lb)	Calibrated By:
A	M-136B	10-kip Class-A Load Cell	MOREHOUSE	09/17/2019	09/17/2021	200	200	Morehouse
B	T-043	Temperature-Humidity Meter	EXTECH	01/11/2021	01/11/2022			GREAT LAKES CALIBRATION

Miguel Flores

Digitally signed by Miguel Flores/Deputy Tech. Mgr.
DN: cn=Miguel Flores/Deputy Tech. Mgr.,
ou=Freeman Seating Co., ou=FSTL,
email=miguel.flores@freemanseating.com, c=US
Date: 2021.02.17 13:32:29 -0500

Marya Black

QA Approval - Marya Black (QM)

Print Date: 2/16/2021 11:28



1490 W. Bernard Dr. Suite E Addison, IL 60101
 P: (630)613-9350
www.GreatLakesCalibration.com
Your Guide To Quality Control



Calibration Certificate

Certificate #: 21081-9

This calibration was performed on-site at the address below for:

FSTL
 4545 W AUGUSTA BLVD
 CHICAGO, IL 60804

Date of Calibration: Monday, February 8, 2021
Calibration Interval: 12 - Months
Calibration Due Date: 2/8/2022
Purchase Order: Y72041
Condition Received: Within Tolerance
Condition Returned: Within Tolerance

Equipment Information

Manufacturer: RICE LAKE	External Cell Mfg: N/A	Display Mfg: N/A
Model Number: RL20001-T10-15K	External Cell Model: N/A	Display Model #: N/A
Serial Number: 21583784	External Cell Serial: N/A	Display Serial #: N/A
Asset ID: LC-004	External Cell Asset ID: N/A	Software Version: DAQ SYS1 V1.1.0.0
Work instruction: MECH-001	Calibration Direction: TENSION	Temp / Hum: 73.4°F / 27%RH
Revision: 6	Calibration Device: ASTM E-74 LOAD CELL	Technician: Abelardo Garcia
Specification: ASTM E4-2020	Calibration Method: FOLLOW THE FORCE	Page: 1 of 1
Description: 9,000-lb Load Cell		

The data contained within this report pertains only to the item(s) as described above. This report shall not be reproduced except in full without the prior written approval of Great Lakes Calibration, Inc. The calibration was performed in accordance with the most current revision of work instruction MECH-001 (which is based off the requirements of ASTM E-4) and the governing specification listed above and is compliant with ISO/IEC 17025:2017, ANS/NCSL Z540-1-1994, ISO9000, and TS-16949.

The calibration device(s) used is either a Class-A temperature Compensated load cell that has been certified by an accredited laboratory in accordance with ASTM E-74 or certified Dead weights.

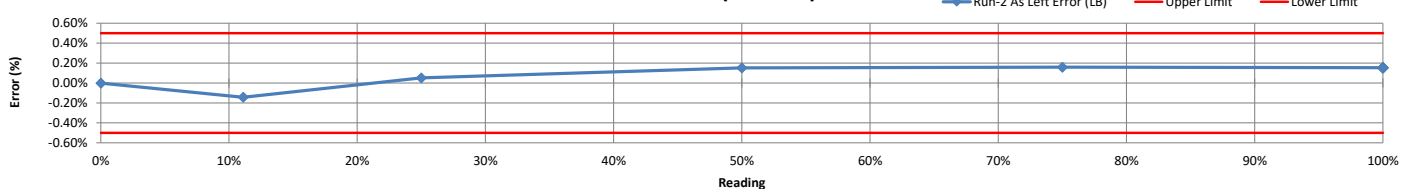
Calibration Data (TENSION)

Certified Range: 1000 to 9000 - LB		Max Error (%): 0.16%				Tolerance (+/-): 0.50%		Check Cal / Shunt:		N/A	
Capacity: 9,000.00		units: LB				Indicator: DIGITAL					
Reading (%FS)	Nominal-UUT Indication (LB)	Resolution (LB)	Run-1 As Found (LB)	Run-1 As Found Error (LB)	Run-1 As Found Error (%)	Run-2 As Left (LB)	Run-2 As Left Error (LB)	Max Error As Left (%)	Repeatability (%)	Uncertainty (LB)	Pass/Fail
0.0%	return to zero	0.100	0.090	-0.090	0.00%	0.112	0.000	0.00%		2.9E-02	PASS
11.1%	1,000.000	0.100	1,001.434	-1.434	-0.14%	1,001.202	-1.202	-0.14%	0.02%	3.2E+00	PASS
25.0%	2,250.000	0.100	2,248.830	1.170	0.05%	2,250.829	-0.829	0.05%	-0.09%	8.6E+00	PASS
50.0%	4,500.000	0.100	4,493.182	6.818	0.15%	4,495.553	4.447	0.15%	-0.05%	1.5E+01	PASS
75.0%	6,750.000	0.100	6,739.270	10.730	0.16%	6,741.283	8.717	0.16%	-0.03%	2.2E+01	PASS
100.0%	9,000.000	0.100	8,986.240	13.760	0.15%	8,988.109	11.891	0.15%	-0.02%	2.8E+01	PASS

Eqpt Used
A
A
A
A
A
A

Reported uncertainty values have been estimated at the 95% confidence level with a coverage factor of K=2 and are a combination of the reference standard uncertainty, the UUT resolution, and the UUT repeatability. Uncertainties are reported but not combined with the UUT error for the determination of the "PASS/FAIL" status.

As Left Error (Tension)



- Check any that apply: All applicable clauses of ASTM E4 have been met unless otherwise noted below
- 3.1.12 (The Resolution is stated as 1/2 the fluctuation of the indicator) 10.1 (Readings taken below 200 times the resolution) 10.5 (Does not return to zero within 30-seconds)
- 7.3 (Interchangeability established) Annex A1 (Verified outside of testing machine) 17.1 (Error or repeatability greater than 1.0%)

Calibration Standards Used: All verification devices used are traceable to the National Institute of Standards and Technology (NIST)

Eqpt Used	ID#:	Description:	Manufacturer:	Cal Date:	Cal Due:	Class-A Ten (lb)	Class-A Comp(lb)	Calibrated By:
A	M-136B	10-kip Class-A Load Cell	MOREHOUSE	09/17/2019	09/17/2021	200	200	Morehouse
B	T-043	Temperature-Humidity Meter	EXTECH	01/11/2021	01/11/2022			GREAT LAKES CALIBRATION

Marya Black

QA Approval - Marya Black (QM)
 Print Date: 2/16/2021 11:30

Force-1 REV-04.05 8/29/2018 Customer Approval



1490 W. Bernard Dr. Suite E Addison, IL 60101
 P: (630)613-9350
www.GreatLakesCalibration.com
Your Guide To Quality Control



Calibration Certificate

Certificate #: 21081-15

This calibration was performed on-site at the address below for:

FSTL
 4545 W AUGUSTA BLVD
 CHICAGO, IL 60804

Date of Calibration: Monday, February 8, 2021
Calibration Interval: 12 - Months
Calibration Due Date: 2/8/2022
Purchase Order: Y72041
Condition Received: Within Tolerance
Condition Returned: Within Tolerance

Equipment Information

Manufacturer: OMEGA	External Cell Mfg: N/A	Display Mfg: N/A
Model Number: LCCA-15K	External Cell Model: N/A	Display Model #: N/A
Serial Number: 611769	External Cell Serial: N/A	Display Serial #: N/A
Asset ID: LC-006	External Cell Asset ID: N/A	Software Version: DAQ SYS1 V1.1.0.0
Work instruction: MECH-001	Calibration Direction: TENSION	Temp / Hum: 73.8°F / 27%RH
Revision: 6	Calibration Device: ASTM E-74 LOAD CELL	Technician: Abelardo Garcia
Specification: ASTM E4-2020	Calibration Method: FOLLOW THE FORCE	Page: 1 of 1
Description: 9,000-lb Load Cell		

The data contained within this report pertains only to the item(s) as described above. This report shall not be reproduced except in full without the prior written approval of Great Lakes Calibration, Inc. The calibration was performed in accordance with the most current revision of work instruction MECH-001 (which is based off the requirements of ASTM E-4) and the governing specification listed above and is compliant with ISO/IEC 17025:2017, ANS/NCSL Z540-1-1994, ISO9000, and TS-16949.

The calibration device(s) used is either a Class-A temperature Compensated load cell that has been certified by an accredited laboratory in accordance with ASTM E-74 or certified Dead weights.

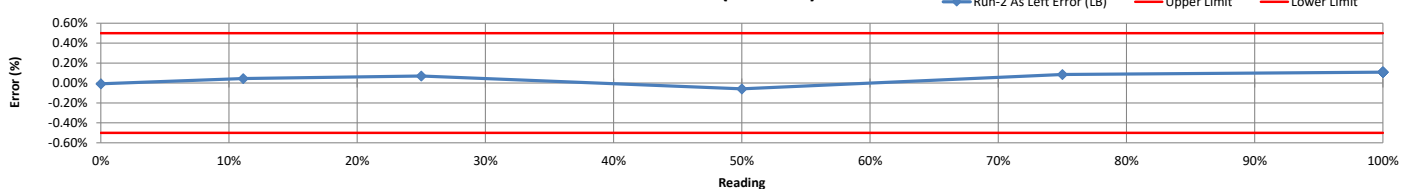
Calibration Data (TENSION)

Certified Range: 1000 to 9000 - LB		Max Error (%): 0.11%				Tolerance (+/-): 0.50%		Check Cal / Shunt:		N/A	
Capacity: 9,000.00		units: LB				Indicator: DIGITAL					
Reading (%FS)	Nominal-UUT Indication (LB)	Resolution (LB)	Run-1 As Found (LB)	Run-1 As Found Error (LB)	Run-1 As Found Error (%)	Run-2 As Left (LB)	Run-2 As Left Error (LB)	Max Error As Left (%)	Repeatability (%)	Uncertainty (LB)	Pass/Fail
0.0%	return to zero	0.100	0.660	-0.660	-0.01%	0.334	0.000	-0.01%		2.9E-02	PASS
11.1%	1,000.000	0.100	999.655	0.345	0.03%	999.552	0.448	0.04%	0.01%	3.0E+00	PASS
25.0%	2,250.000	0.100	2,248.523	1.477	0.07%	2,248.412	1.588	0.07%	0.00%	6.7E+00	PASS
50.0%	4,500.000	0.100	4,502.630	-2.630	-0.06%	4,501.280	-1.280	-0.06%	0.03%	1.4E+01	PASS
75.0%	6,750.000	0.100	6,744.280	5.720	0.08%	6,747.726	2.274	0.08%	-0.05%	2.3E+01	PASS
100.0%	9,000.000	0.100	8,990.230	9.770	0.11%	8,992.877	7.123	0.11%	-0.03%	2.9E+01	PASS

Eqpt Used
A
A
A
A
A
A

Reported uncertainty values have been estimated at the 95% confidence level with a coverage factor of K=2 and are a combination of the reference standard uncertainty, the UUT resolution, and the UUT repeatability. Uncertainties are reported but not combined with the UUT error for the determination of the "PASS/FAIL" status.

As Left Error (Tension)



- Check any that apply: All applicable clauses of ASTM E4 have been met unless otherwise noted below
- 3.1.12 (The Resolution is stated as 1/2 the fluctuation of the indicator) 10.1 (Readings taken below 200 times the resolution) 10.5 (Does not return to zero within 30-seconds)
- 7.3 (Interchangeability established) Annex A1 (Verified outside of testing machine) 17.1 (Error or repeatability greater than 1.0%)

Calibration Standards Used: All verification devices used are traceable to the National Institute of Standards and Technology (NIST)

Eqpt Used	ID#:	Description:	Manufacturer:	Cal Date:	Cal Due:	Class-A Ten (lb)	Class-A Comp(lb)	Calibrated By:
A	M-136B	10-kip Class-A Load Cell	MOREHOUSE	09/17/2019	09/17/2021	200	200	Morehouse
B	T-043	Temperature-Humidity Meter	EXTECH	01/11/2021	01/11/2022			GREAT LAKES CALIBRATION

Marya Black

QA Approval - Marya Black (QM)
 Print Date: 2/16/2021 14:10

Customer Approval



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 P: (630)613-9350
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Your Guide To Quality Control



Calibration Certificate

Certificate #: 21081-2

This calibration was performed on-site at the address below for:

FSTL
 4545 W AUGUSTA BLVD
 CHICAGO, IL 60804

Date of Calibration: Monday, February 8, 2021
Calibration Interval: 12 - Months
Calibration Due Date: 2/8/2022
Purchase Order: Y72041
Condition Received: Within Tolerance
Condition Returned: Within Tolerance

Equipment Information

Manufacturer: INTERFACE	External Cell Mfg: N/A	Display Mfg: N/A
Model Number: SSM2-AF-10K	External Cell Model: N/A	Display Model #: N/A
Serial Number: 1015713	External Cell Serial: N/A	Display Serial #: N/A
Asset ID: LC-015	External Cell Asset ID: N/A	Software Version: DAQ SYS1 V1.1.0.0
Work instruction: MECH-001	Calibration Direction: TENSION	Temp / Hum: 73.5°F / 26%RH
Revision: 6	Calibration Device: ASTM E-74 LOAD CELL	Technician: Abelardo Garcia
Specification: ASTM E4-2020	Calibration Method: FOLLOW THE FORCE	Page: 1 of 1
Description: 9,000-lb Load Cell		

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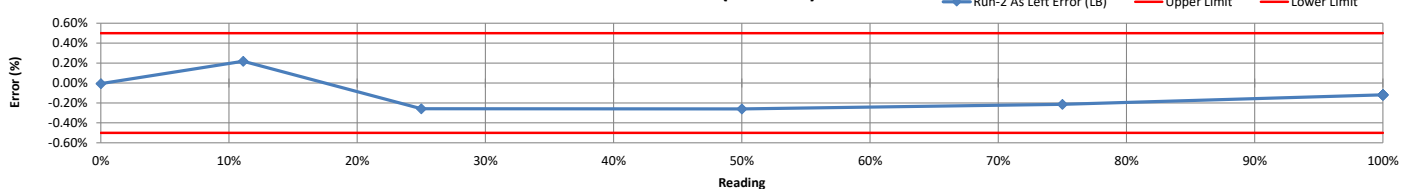
The calibration device(s) used is either a Class-A temperature Compensated load cell that has been certified by an accredited laboratory in accordance with ASTM E-74 or certified Dead weights.

Calibration Data (TENSION)

Certified Range: 1000 to 9000 - LB		Max Error (%): -0.26%		Tolerance (+/-): 0.50%		Check Cal / Shunt:		N/A				
Capacity: 9,000.00		units: LB		Indicator: DIGITAL								
Reading (%FS)	Nominal-UUT Indication (LB)	Resolution (LB)	Run-1 As Found (LB)	Run-1 As Found Error (LB)	Run-1 As Found Error (%)	Run-2 As Left (LB)	Run-2 As Left Error (LB)	Max Error As Left (%)	Repeatability (%)	Uncertainty (LB)	Pass/Fail	Eqpt Used
0.0%	return to zero	0.010	0.610	-0.610	-0.01%	0.440	0.000	-0.01%		2.9E-03	PASS	A
11.1%	1,000.000	0.010	997.820	2.180	0.22%	998.109	1.891	0.22%	-0.03%	3.2E+00	PASS	A
25.0%	2,250.000	0.010	2,255.830	-5.830	-0.26%	2,254.450	-4.450	-0.26%	0.06%	7.9E+00	PASS	A
50.0%	4,500.000	0.010	4,511.720	-11.720	-0.26%	4,511.152	-11.152	-0.26%	0.01%	1.4E+01	PASS	A
75.0%	6,750.000	0.010	6,762.830	-12.830	-0.19%	6,764.433	-14.433	-0.21%	-0.02%	2.1E+01	PASS	A
100.0%	9,000.000	0.010	9,009.620	-9.620	-0.11%	9,010.727	-10.727	-0.12%	-0.01%	2.7E+01	PASS	A

Reported uncertainty values have been estimated at the 95% confidence level with a coverage factor of K=2 and are a combination of the reference standard uncertainty, the UUT resolution, and the UUT repeatability. Uncertainties are reported but not combined with the UUT error for the determination of the "PASS/FAIL" status.

As Left Error (Tension)



- Check any that apply: All applicable clauses of ASTM E4 have been met unless otherwise noted below
- 3.1.12 (The Resolution is stated as 1/2 the fluctuation of the indicator) 10.1 (Readings taken below 200 times the resolution) 10.5 (Does not return to zero within 30-seconds)
- 7.3 (Interchangeability established) Annex A1 (Verified outside of testing machine) 17.1 (Error or repeatability greater than 1.0%)

Calibration Standards Used: All verification devices used are traceable to the National Institute of Standards and Technology (NIST)

Eqpt Used	ID#:	Description:	Manufacturer:	Cal Date:	Cal Due:	Class-A Ten (lb)	Class-A Comp(lb)	Calibrated By:
A	M-136B	10-kip Class-A Load Cell	MOREHOUSE	09/17/2019	09/17/2021	200	200	Morehouse
B	T-043	Temperature-Humidity Meter	EXTECH	01/11/2021	01/11/2022			GREAT LAKES CALIBRATION

Marya Black

QA Approval - Marya Black (QM)

Print Date: 2/16/2021 9:41