

EMECO INDUSTRIES INC

TEST REPORT

SCOPE OF WORK

ANSI/BIFMA X5.1-2017 GENERAL PURPOSE OFFICE CHAIRS testing on Navy Officer Side Chair

REPORT NUMBER

104637655GRR-002

ISSUE DATE

24-May-2021

PAGES

23

DOCUMENT CONTROL NUMBER

Per RT-AMER-L-GRR-DUR-001

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TEST REPORT FOR EMECO INDUSTRIES INC

Report No.: 104637655GRR-002

Date: 24-May-2021

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SECTION 1

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SECTION 2

SUMMARY AND CONCLUSION

Date Received: 22-April-2021 and 13-May-2021
 Dates Tested: 22-April-2021 to 20-May-2021

DESCRIPTION OF SAMPLES

Part Description: Navy Officer Side Chair
 Condition of Samples: New, packaged
 Number of Samples Received: Three (3)

WORK REQUESTED/APPLICABLE DOCUMENTS

ANSI/BIFMA X5.1-2017 GENERAL PURPOSE OFFICE CHAIRS
 Intertek quote Qu-01159714
 Reference report 104637655GRR-001

CONCLUSION

ID	TEST	RESULTS
2	6. Backrest Strength Test - Static - Type III	CONFORMING
3	7. Drop Test Dynamic	CONFORMING
3	10. Seating Durability Tests – Cyclic	CONFORMING
2	11. Stability Tests (Front and Rear)	CONFORMING
1	15. Backrest Durability Test – Cyclic – Type II and Type III	CONFORMING
1	17. Leg Strength	CONFORMING
2	24. Structural Durability Test - Cyclic	CONFORMING

SAMPLE DISPOSITION

All samples were returned to the customer.

Test Equipment:

ASSET #	EQUIPMENT	CALIBRATION DATE	CALIBRATION DUE
138012	Scale/0-1,000#	09/01/2020	09/01/2021
138039.1	Weight Bag	VBU	VBU
138039.2	Weight Bag	VBU	VBU
138148	Digital Protractor	12/21/2020	12/21/2021
138279	100Lb. Force Gauge	12/29/2020	12/29/2021
138427	1000Lb. Load Cell	10/12/2020	10/12/2021
130900.24	Stopwatch	06/17/2020	06/17/2021
138325	Back Durability Machine	VBU	VBU
138325.4	Load Cell Back Durability	08/25/2020	08/25/2021
138345	3 Station Seat Impact	VBU	VBU
138916.2	Timing Box	VBU	VBU
138394	Static load Station	08/26/2020	08/26/2021
138394.1	1,000lb Load Cell	08/26/2020	08/26/2021
138519	Graduated Rule 48"	12/28/2020	12/28/2021
138338	Controller Durability	VBU	VBU
138338.1	Load Cell	07/09/2020	07/09/2021
138338.2	Load Cell	07/09/2020	07/09/2021

SECTION 3

6. BACKREST STRENGTH TEST – STATIC – TYPE III:

Date Received: 13-May-2021
 Date Tested: 27-April-2021
 Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: Navy Officer Side Chair

TEST PROCEDURE:

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 6:

Functional Load: 150 lbf.
 Proof Load: 225 lbf.

Number of Samples Tested: One (1)

ACCEPTANCE CRITERIA:

Per ANSI/BIFMA X5.1-2017 Test No. 6:

Functional Load: There shall be no loss of serviceability to the chair.

Proof Load: There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.

RESULTS:

SAMPLE ID	STATIC LOAD	RESULTS
2	150 lbf.	Conforming
	225 lbf.	Conforming

The submitted sample met the acceptance criteria of the test described above. Refer to the following page for photograph.



Backrest Strength Test – Static

7. DROP TEST – DYNAMIC:

Date Received: 13-May-2021
 Date Tested: 20-May-2021
 Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: Navy Officer Side Chair

TEST PROCEDURE:

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 7:
 Functional Load: 225 lbs.
 Proof Load: 300 lbs.
 Drop Height: 6"

Number of Samples Tested: One (1)

ACCEPTANCE CRITERIA:

Per ANSI/BIFMA X5.1-2017 Test No. 7:

Functional Load: There shall be no loss of serviceability.

Proof Load: There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.

RESULTS:

SAMPLE ID	DROP WEIGHT	RESULTS
3	Functional Load: 225 lbs.	Conforming
	Proof Load: 300 lbs.	Conforming

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following page for photograph.



Drop Test – Dynamic Functional



Drop Test – Dynamic Proof

10. SEATING DURABILITY TESTS – CYCLIC:

Date Received: 22-April-2021 and 13-May-2021
 Date Tested: 22-April-2021 to 20-May-2021
 Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: Navy Officer Side Chair

TEST PROCEDURE:

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 10:

Test No. 10.3 Impact Test
 Bag Diameter: 16”
 Bag Weight: 125 lbs.
 Number of Cycles: 100,000
 Height of Drop: 1.4”
 Cycles per Minute: 10 to 30

Test No. 10.4 Front Corner Load-Ease Test – Cyclic – Off-center
 Bag Diameter: 8”
 Bag Weight: 200 lbs.
 Number of Cycles Required: 20,000 to each Front Corner
 Number Cycles: 10 to 30

Number of Samples Tested: One (1)

ACCEPTANCE CRITERIA:

Per ANSI/BIFMA X5.1-2017 Test No. 10:

There shall be no loss of serviceability to the chair after completion of both the Impact and Load Ease Tests. If applicable, the chair base (center structure) shall not touch the test platform as a result of the impact loads.

RESULTS:

IMPACT TEST

SAMPLE NO.	CYCLES	RESULTS
3 – Baltic Birch Seat	100,000	Conforming

FRONT LOAD EASE

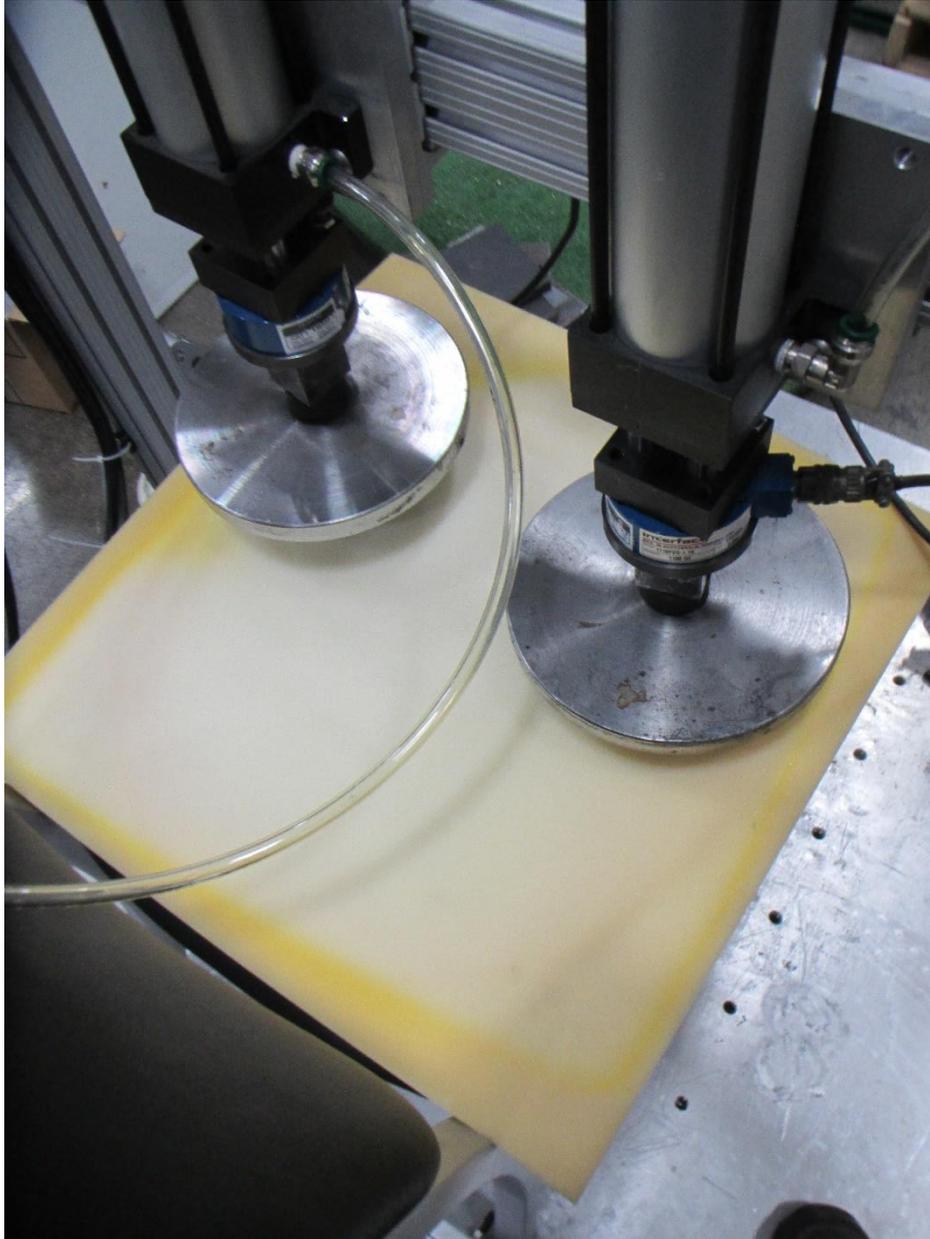
SAMPLE NO.	CYCLES	RESULTS
3 – Baltic Birch Seat	20,000 EACH CORNER	Conforming

The submitted sample met the acceptance criteria of the test described above.

Refer to the following pages for photographs.



Impact Test – Sample 3



Load Ease Test – Sample 3

11. STABILITY TESTS (FRONT AND REAR):

Date Received: 22-April-2021
 Date Tested: 22-April-2021
 Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: Navy Officer Side Chair

TEST PROCEDURE:

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 11:
 All of the chair's adjustable features shall be set for the most unstable conditions.

Chair Type: III

Test No. 11.3 Rear Stability

Weight in Seat
 Type I: 286 lbs. (13 disks)
 Type II: 286 lbs. (13 disks)
 Type III: 132 lbs. (6 disks)

Test No. 11.4 Front Stability

Alternative: N / A
 Vertical Load: 135 lbs.
 Horizontal Force: 4.5 lbf.

Number of Samples Tested: One (1)

ACCEPTANCE CRITERIA:

Per ANSI/BIFMA X5.1-2017 Test No. 11:

Rear Stability: The force to tip shall not be less than:
 Type I: Chair must not tip over
 Type II: Chair must not tip over
 Type III: [F = 1.1 (47 – H) pounds force.]. H is the seat height in inches. For chairs with seat height equal to or greater than 710 mm (28.0 in.), a fixed force of 93 N (20.9 lbf.) shall be applied.

Front Stability: The chair shall not tip over as the result of the force application of 4.5 lbf.

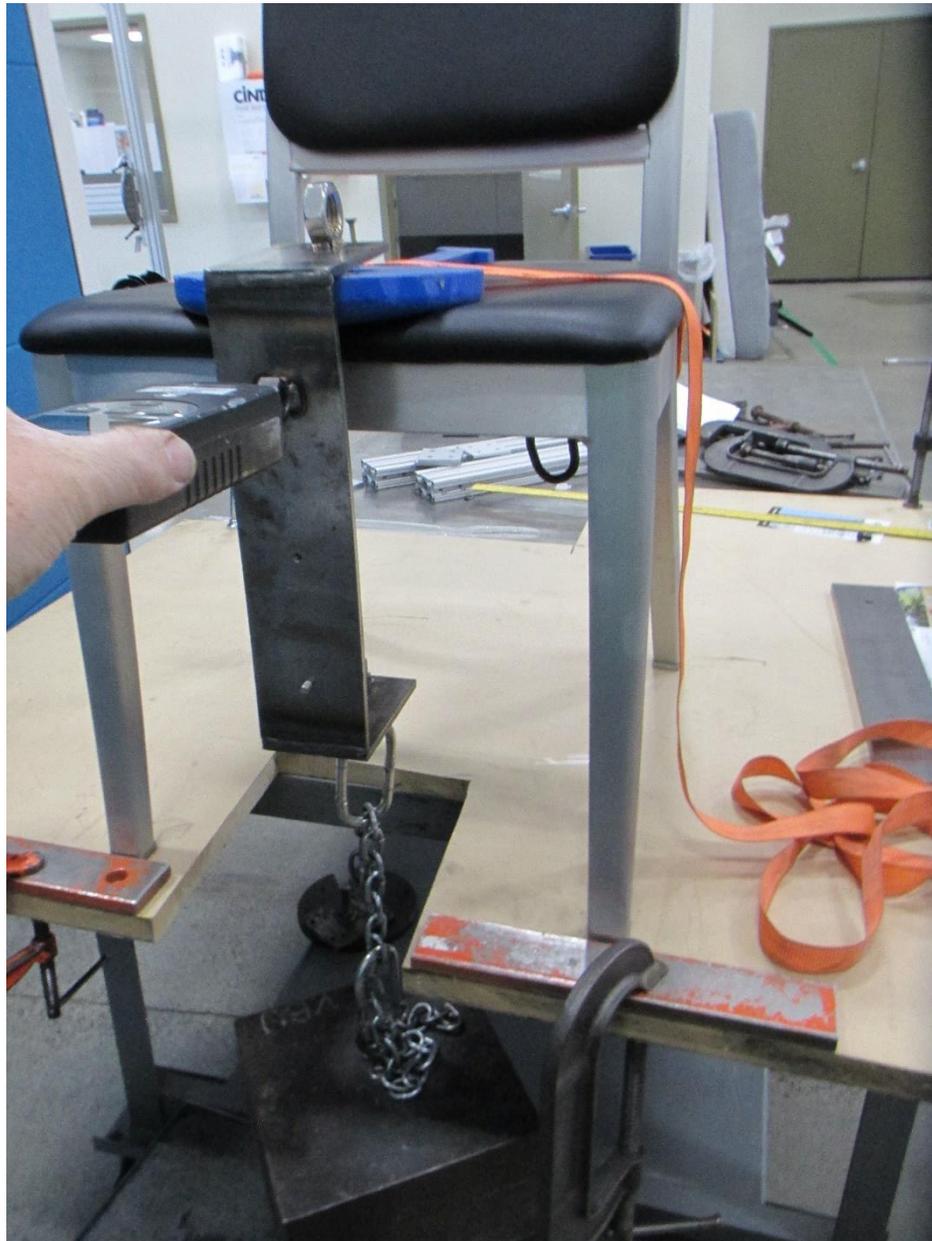
RESULTS:

SAMPLE ID	SEAT HEIGHT	FRONT STABILITY	REAR STABILITY	RESULTS
2	17-1/2"	20.4 lbf. to tip	50.1 lbf. to tip	Conforming

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following pages for photographs.



Rear Stability



Front Stability

15. BACKREST DURABILITY TEST – CYCLIC – TYPE II AND TYPE III:

Date Received: 22-April-2021
 Date Tested: 22-April-2021 to 26-April-2021
 Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: Navy Officer Side Chair

TEST PROCEDURE:

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 15:

Backrest Width: 15
 Number of Cycles Required: 120,000
 Center Pull Location: 120,000
 Force Applied to Chair Back: 75 lbf.
 Load in Seat: 240 lbs.
 Cycles per Minute: 10 to 30

Number of Samples Tested: One (1)

ACCEPTANCE CRITERIA:

Per ANSI/BIFMA X5.1-2017 Test No. 15:
 No structural breakage or loss of serviceability.

RESULTS:

SAMPLE ID	PULL LOCATION	CYCLES	RESULTS
1	Center Pull	120,000	Conforming

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following page for photograph.



Backrest Durability Test – Cyclic

17. LEG STRENGTH TEST – FRONT AND SIDE APPLICATION:

Date Received: 22-April-2021
 Date Tested: 24-April-2021
 Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: Navy Officer Side Chair

TEST PROCEDURE:

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 17:

Test No. 17.3 Front to Rear Leg Application:
 Functional Load: 75 lbf. (Load Each Leg)
 Proof Load: 113 lbf. (Load Each Leg)

Test No. 17.4 Side Load Application:
 Functional Load: 75 lbf. (Load Each Leg)
 Proof Load: 113 lbf. (Load Each Leg)

Number of Samples Tested: One

ACCEPTANCE CRITERIA:

Per ANSI/BIFMA X5.1-2017 Test No. 17:

Functional Load: No structural breakage or loss of serviceability, including stacking if applicable.

Proof Load: No sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.

RESULTS:

SAMPLE ID	LOAD APPLICATION	FUNCTIONAL	RESULTS	PROOF	RESULTS
1	Side to Side (Rear Side)	75 lbf.	Conforming	113 lbf.	Conforming
	Side to Side (Front Side)	75 lbf.	Conforming	113 lbf.	Conforming
	Front to Rear (Left Side)	75 lbf.	Conforming	113 lbf.	Conforming
	Front to Rear (Right Side)	75 lbf.	Conforming	113 lbf.	Conforming

The submitted sample met the acceptance criteria of the test described above. Refer to the following pages for photographs.



Leg Strength Test – Front Load



Leg Strength Test – Side Load

24. STRUCTURAL DURABILITY TEST – CYCLIC:

Date Received: 22-April-2021
Date Tested: 26-April-2021 to 27-April-2021
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: Navy Officer Side Chair

TEST PROCEDURE:

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 24:

Load in Seat: 240 lbs.
Force Applied: 75 lbf.
Number of Cycles Required: 25,000
Cycles per Minute: 20 ± 10 cycles per minute

Number of Samples Tested: One (1)

ACCEPTANCE CRITERIA:

Per ANSI/BIFMA X5.1-2017 Test No. 24:
There shall be no loss of serviceability.

RESULTS:

SAMPLE ID	CYCLES	RESULTS
1	25,000	Conforming

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following page for photograph.



Structural Durability Test – Cyclic

