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EMECO INDUSTRIES INC.

TEST REPORT

SCOPE OF WORK
ANSI/BIFMA X5.1-2017 GENERAL PURPOSE OFFICE CHAIRS testing on 1" Chair

REPORT NUMBER
103307837GRR-001

ISSUE DATE
19-Dec-2017

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TEST REPORT FOR EMECO INDUSTRIES INC.

Report No.: 103307837GRR-001
Date: 19-Dec-2017
P.O.: N/A

SECTION 1

CLIENT INFORMATION

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Lynwood Pearson
Test Engineer

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Project Reviewer

SECTION 2

SUMMARY AND CONCLUSION

Date Received: 27-Sep-2017
Dates Tested: 11-Nov-2017 to 13-Dec-2017

DESCRIPTION OF SAMPLES

Part Description: 1" Chair
Condition of Samples: New

WORK REQUESTED/APPLICABLE DOCUMENTS

ANSI/BIFMA X5.1-2017 GENERAL PURPOSE OFFICE CHAIRS
Intertek quote Qu-00837222

CONCLUSION

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

SAMPLE DISPOSITION

Chairs will be disposed after 30 days unless noted.

TEST EQUIPMENT:

ASSET NUMBER	EQUIPMENT	CALIBRATION DATE	CALIBRATION DUE
138012	Scale/0-1,000#	10/12/2017	10/12/2018
138039.1	WEIGHT BAG	VBU	VBU
138039.2	WEIGHT BAG	VBU	VBU
138042	Seating Impact / 2 Station	VBU	VBU
138112	Graduated Rule 36"	10/11/2013	10/11/2018
138148	DIGITAL PROTRACTOR	12/19/2017	12/19/2018
138325	4 Station Backrest Durability Machine	VBU	VBU
138425	Scientific Stopwatch	4/26/2017	4/26/2018
138427	1000LB LOAD CELL WITH DISPLAY	5/18/2017	5/18/2018
138916.2	TIMING BOX	VBU	VBU

SECTION 3

6. BACKREST STRENGTH TEST – STATIC – TYPE III:

Date Received: 27-Sep-2017
Date Tested: 11-Dec-2017
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: 1" Chair
Condition of Samples: New

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: A functional load applied once shall cause no loss of serviceability to the chair.

Proof Load: A proof load applied once shall cause no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.

RESULTS:

SAMPLE ID	STATIC LOAD	RESULTS
1	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: 27-Sep-2017
Date Tested: 13-Dec-2017
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: 1" Chair
Condition of Samples: New

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
1	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

10. SEATING DURABILITY TESTS – CYCLIC:

Date Received: 27-Sep-2017
Date Tested: 27-Nov-2017 to 11-Dec-2017
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: 1" Chair
Condition of Samples: New

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 X5.1-2017Test 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:

SAMPLE NO.	CYCLES	RESULTS
1	100,000	Conforming

Left Front Corner	20,000	Conforming
Right Front Corner	20,000	Conforming

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

Impact Test

Load Ease Test

11. STABILITY TESTS (FRONT AND REAR):

Date Received: 27-Sep-2017
Date Tested: 20-Nov-2017
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: 1" Chair
Condition of Samples: New

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 X5.1-2017Test 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.

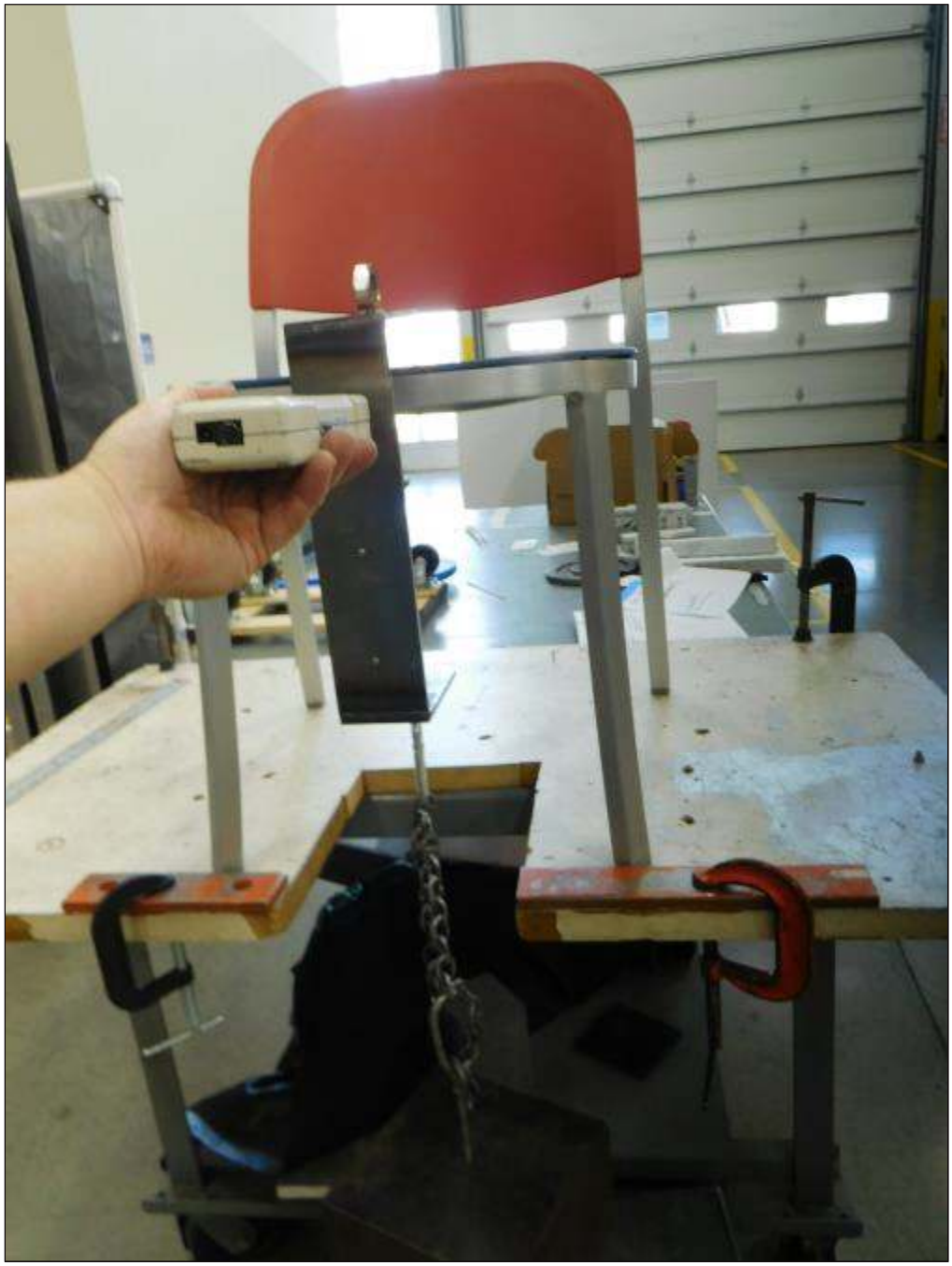
Front Stability: The chair shall not tip over as the result of the force application of 4.5 lbf.

RESULTS:

SAMPLE ID	SEAT HEIGHT	FRONT STABILITY	REAR STABILITY	RESULTS
1	18"	12.05 lbf. to tip	41.1 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: 27-Sep-2017
Date Tested: 22-Nov-2017 to 27-Nov-2017
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: 1" Chair
Condition of Samples: New

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: 27-Sep-2017
Date Tested: 11-Dec-2017
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: 1" Chair
Condition of Samples: New

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: 27-Sep-2017
Date Tested: 11-Dec-2017 to 13-Dec-2017
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description: 1" Chair
Condition of Samples: New

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:

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

SECTION 4

REVISIONS MADE TO TEST REPORT:

DATE	REVISION DESCRIPTION	REVISED BY	REVISED BY
19-Dec-2017	Initial release.	Lynwood Pearson