

# EMECO INDUSTRIES INC.

## TEST REPORT

**SCOPE OF WORK**

ANSI/BIFMA X5.1-2017 GENERAL PURPOSE OFFICE CHAIRS testing on 111 Bar Stool

**REPORT NUMBER**

103382348GRR-001

**ISSUE DATE**

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## TEST REPORT FOR EMECO INDUSTRIES INC.

Report No.: 103382348GRR-001

Date: 06-Feb-2018

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### SECTION 1

#### CLIENT INFORMATION

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**SECTION 2**

**SUMMARY AND CONCLUSION**

Date Received: 16-Jan-2018  
Dates Tested: 20-Jan-2018 to 05-Feb-2018

**DESCRIPTION OF SAMPLES**

Part Description: 111 Bar Stool  
Condition of Samples: New

**WORK REQUESTED/APPLICABLE DOCUMENTS**

ANSI/BIFMA X5.1-2017 GENERAL PURPOSE OFFICE CHAIRS  
Intertek quote Qu-00850848

**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
18. Footrest Static Load Test – Vertical	CONFORMING
19. Footrest Durability Test – Vertical – Cyclic	CONFORMING

**SAMPLE DISPOSITION**

After test completion, samples were rendered unusable and then disposed of.

**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
138112	Graduated Rule 36"	10/11/2013	10/11/2018
138148	DIGITAL PROTRACTOR	12/19/2017	12/19/2018
138279	FORCE GAUGE	12/26/2017	12/26/2018
138325	4 Station Backrest Durability Machine	VBU	VBU
138325.4	500 lb Load Cell	08/22/2017	08/22/2018
138345	3 Station Seat Impact	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: 16-Jan-2018  
 Date Tested: 05-Feb-2018  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: 111 Bar Stool  
 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: 16-Jan-2018  
Date Tested: 05-Feb-2018  
Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: 111 Bar Stool  
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: 16-Jan-2018  
 Date Tested: 20-Jan-2018  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: 111 Bar Stool  
 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

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:**

SAMPLE NO.	CYCLES	RESULTS
1	100,000	Conforming

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



Impact Test

**11. STABILITY TESTS (FRONT AND REAR):**

Date Received: 16-Jan-2018  
 Date Tested: 02-Feb-2018  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: 111 Bar Stool  
 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 X5.1-2017 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
1	30 3/8"	11.3 lbf. to tip	36.3 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: 16-Jan-2018  
 Date Tested: 30-Jan-2018 to 05-Feb-2018  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: 111 Bar Stool  
 Condition of Samples: New

**TEST PROCEDURE:**

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

Backrest Width: 14"  
 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: 16-Jan-2018  
 Date Tested: 05-Feb-2018  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: 111 Bar Stool  
 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**

**18. FOOTREST STATIC LOAD TEST – VERTICAL:**

Date Received: 16-Jan-2018  
 Date Tested: 01-Feb-2018  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: 111 Bar Stool  
 Condition of Samples: New

**TEST PROCEDURE:**

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 18

**Functional Load:**

Apply a force F1 of 100 lbf. uniformly along a 4 in. distance along the footrest but not greater than 2 in. from the outside edge at the apparent weakest point of the structure for one (1) minute in the vertical downward direction. If the footrest adjusts in height relative to the seat and allows for a force application 180 degrees (on the opposite side of the chair) from the primary force application, maintain force F1 and apply an additional force F2 of 100 lbf. to the footrest at the opposing position for an additional one (1) minute. The F2 force shall also be applied uniformly along a 4 in. distance along the footrest but not greater than 2 in. from the outside edge.

**Proof Load:**

Apply a force of 300 lbf. uniformly along a 4 in. distance along the footrest but not greater than 2 in. from the outside edge at the apparent weakest point of the structure for one (1) minute in the vertical downward direction.

Number of Samples Tested: One (1)

**ACCEPTANCE CRITERIA:**

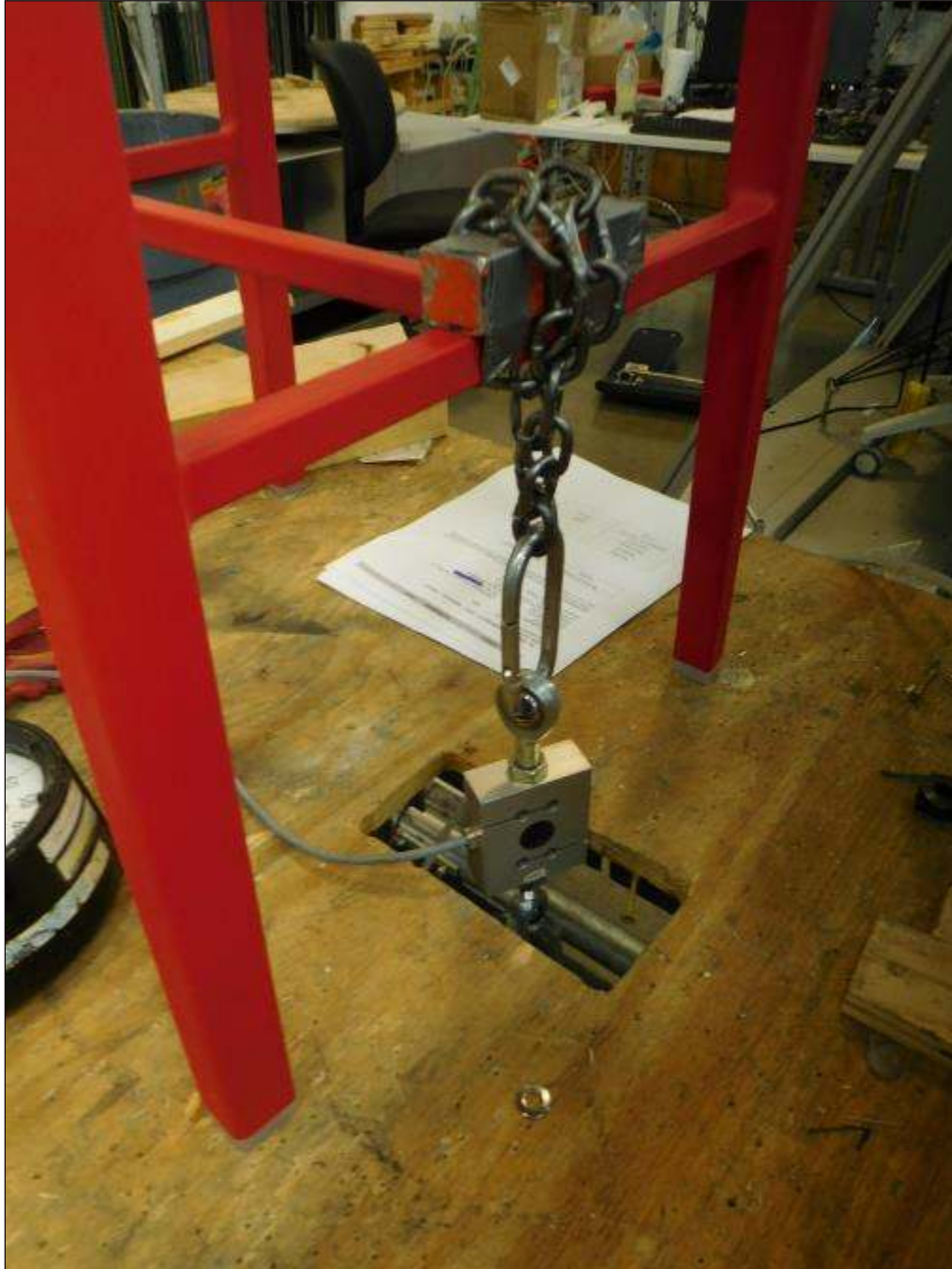
Per ANSI/BIFMA X5.1-2017 Test No. 18

The load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.

**RESULTS:**

SAMPLE ID	LOAD	RESULTS
1	Functional Load: 200 lbf.	Conforming
	Proof Load: 300 lbf.	Conforming

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



**Footrest Static Load Test -- Vertical**

**19. FOOTREST DURABILITY TEST – VERTICAL – CYCLIC:**

Date Received: 16-Jan-2018  
 Date Tested: 29-Jan-2018 to 01-Feb-2018  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: 111 Bar Stool  
 Condition of Samples: New

**TEST PROCEDURE:**

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 19  
  
 Load To Footrest: 200 lbs.  
 Direction of Force: Vertically Downward  
 Number of Cycles Required: 50,000  
 Cycles per Minute: 10 to 30  
  
 Number of Samples Tested: One (1)

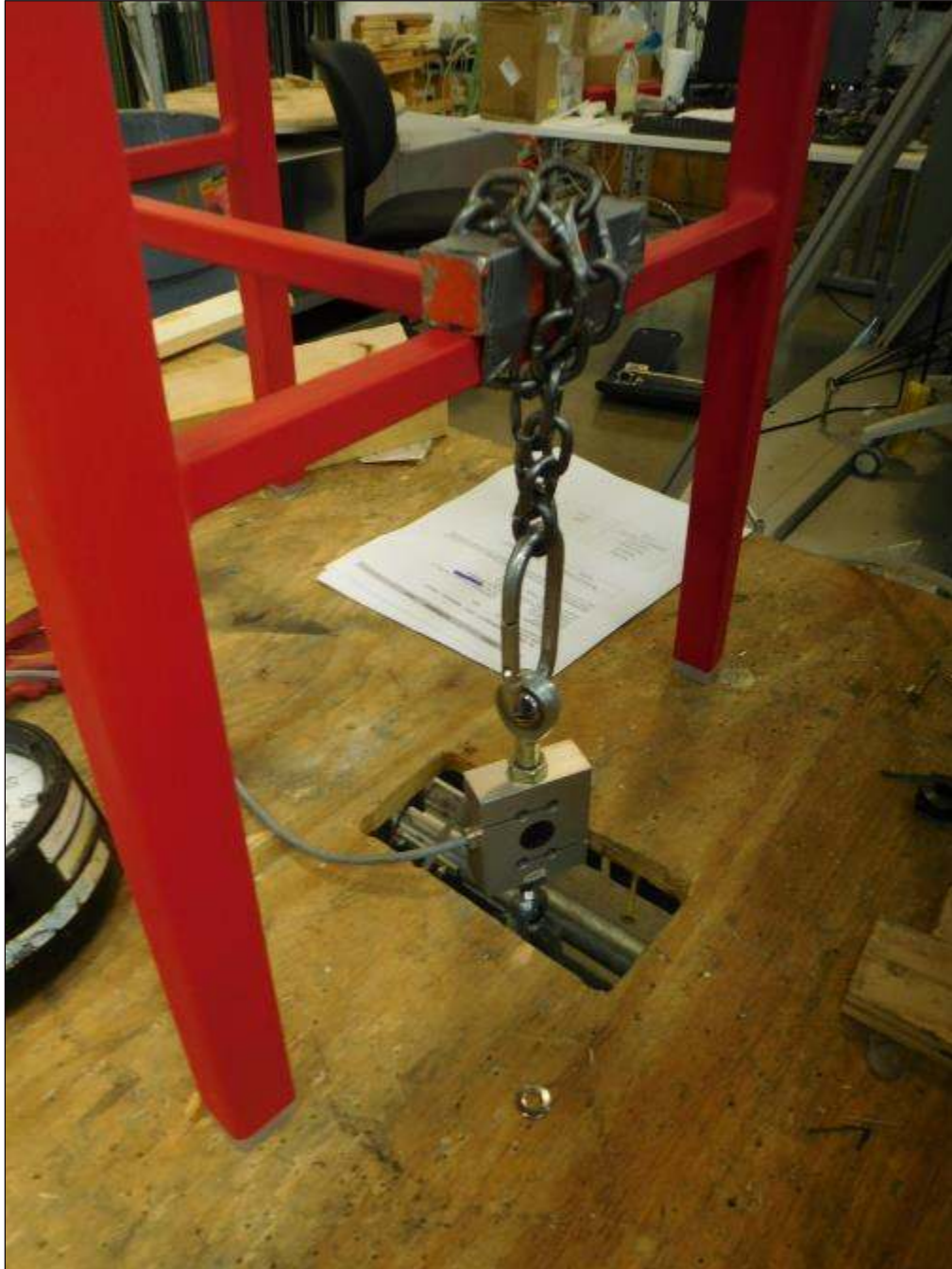
**ACCEPTANCE CRITERIA:**

Per ANSI/BIFMA X5.1-2017 Test No. 19:  
 There shall be no loss of serviceability. Adjustable footrests that move more than 25 mm (1 in.) in the first 500 cycles shall be considered to have lost their serviceability.

**RESULTS:**

SAMPLE ID	NUMBER OF CYCLES	RESULTS
1	50,000	Conforming

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



**Footrest Durability Test – Vertical – Cyclic**

**SECTION 4**

**REVISIONS MADE TO TEST REPORT:**

DATE	REVISION DESCRIPTION	REVISED BY	REVISED BY
06-Feb-2018	Initial release.	Lynwood Pearson	