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Date: July 13, 2010
P. O. No.: BH20100506

Project No.: G1000115498GRR-001b
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Test Report For:

**ANSI/BIFMA X5.1-2002
CHAIR TEST STANDARD**


Bryan Stratton
Reviewer


James Jantz
Project Manager

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DATE RECEIVED: 5/21/10
DATES TESTED: 5/28-10/12/10

WORK REQUESTED/APPLICABLE DOCUMENTS:

To test the submitted sample per ANSI/BIFMA X5.1-2002 Chair Test Standard for the following test program:

Test No.	Test Description
7	Base
8	Drop
9	Swivel Cycle
10	Tilt Mechanism
11	Seating Durability
12	Stability
13	Vertical Arm Strength
<u>14</u>	<u>Horizontal Arm Strength</u>
15	Backrest Durability-Tilt
17	Caster/Chair Base Durability
20	Arm Durability

CONCLUSION:

The submitted samples met the acceptance level criteria for the above tests.

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TEST EQUIPMENT:

138002	25 LB BAG WEIGHTS (96)	11/24/2006	VBU
138012	SCALE / 0-1,000 #	12/04/2009	12/04/2010
138022	DIGITAL/ 0-1,000 READOUT/ LOAD 1,000 LBS.	03/30/2010	03/30/2011
138022.2	LOAD CELL / 0-1,000 # 1-3000 LBS.	03/30/2010	03/30/2011
138042	SEATING IMPACT / 2 STATION	VBU	VBU
138107	BACK DURABILITY MACHINE	VBU	VBU
138112	GRADUATED RULE 36"	08/27/2008	08/27/2013
138906	OBSTACLE PLATE 17"	7/25/2006	VBU
138907	OBSTACLE PLATE 17"	7/25/2006	VBU
138908	OBSTACLE PLATE 17"	7/25/2006	VBU
138228	STOPWATCH	12/08/2009	12/08/2010
138913.1	FORCE INDICATOR AC	11/26/2007	VBU
138913.2	LOAD CELL 0-10 K	3/4/2010	3/4/2011

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7. BASE TEST - STATIC:

Date Tested: 9/10/10

Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 7

Time Duration of Test: 1 Minute

Functional Static Load: 2500 lbf.

Proof Static Load: 2500 lbf.

Number of Samples Tested: One (1)

Acceptance Criteria:

There shall be no sudden and major change in the structural integrity of the base. The center column may not touch the test platform during the load application.

Results:

Sample No.	Description of Results
1	Pass

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



Base Test – Static

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8. DROP TEST – DYNAMIC:

Date Tested: 10/12/10
 Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 8
 Functional Load: 225 lbs.
 Proof Load: 300 lbs.
 Drop Height: 6"
 Number of Samples Tested: One (1)

Acceptance Criteria:

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

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

Results:

Highest Position	Results
Functional Load - 225 lbs	Pass
Proof Load - 300 lbs	Pass
Lowest Position	Results
Functional Load - 225 lbs	Pass
Proof Load - 300 lbs	Pass

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



Drop Test - Dynamic

9. SWIVEL TEST - CYCLIC:

Dates Tested: 5/28-6/5/10
Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 9

Number of Cycles:

Highest Seat Position: 60,000
Lowest Seat Position: 60,000
Rotation: 360°
Cycles per Minute: 6-15
Load in Seat: 225 lbs.

Number of Samples Tested: One (1)

Acceptance Criteria:

There shall be no loss of serviceability.

Results:

Sample No.	Seat Position	Number of Cycles	Description of Results
1	Highest Setting	60,000	Pass
	Lowest Setting	60,000	Pass

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



Swivel Test – Cyclic

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10. TILT MECHANISM TEST-CYCLIC: (Type I & Type II Chairs)

Dates Tested: 9/11-9/19/10

Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 10

Tilt Adjustments: Set all adjustments at normal use conditions.

Number of Cycles: 300,000

Cycles per Minute: 10 to 30

Load in Seat: 225 lbs.

Number of Samples Tested: One (1)

Acceptance Criteria:

There shall be no loss of serviceability to the tilt mechanism.

Results:

Number of Cycles	Description of Results
0	Start of Test
300,000	Test Complete

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



TILT MECHANISM TEST-CYCLIC

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11. SEATING IMPACT TEST

Dates Tested: 6/1-6/8/10

Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 11

Section 11.3

Seat Center Impact Test

Bag Diameter: 16"

Bag Weight: 125 lbs.

Number Cycles: 100,000

Height of Drop: 1"

Cycles per Minute: 10 to 30

Section 11.4

Load Ease Test

Bag Diameter: 8"

Bag Weight: 165 lbs.

Number of Cycles Required: 20,000 to each Front Corner

Cycles per Minute: 10 to 30

Number of Samples Tested: One (1)

Acceptance Criteria:

There shall be no loss of serviceability to the chair after completion of both the Impact and Load Ease Tests.

Results:Section 11.3

Sample No.	Number of Cycles	Description of Results
1	100,000	Pass

Section 11.4

Sample No.	Location of Force	Number of Cycles	Description of Results
1	Left Front Corner	20,000	Pass
	Right Front Corner	20,000	Pass

The sample meets the acceptance criteria of the test described above. No photograph available.



SEATING IMPACT TEST

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12. STABILITY TEST -DYNAMIC (Front and Rear):

Date Tested: 9/30/10

Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 12
All of the chair's adjustable features shall be set for the most unstable conditions.

Chair Type: I

Rear Stability:

Weight in Seat
(Rear Stability Only): 173 lbs.

Front Stability:

Alternative: N/A
Vertical Load: 134.8 Lbs
Horizontal Force: 4.5 Lbs
Number of Samples Tested: One (1)

Acceptance Criteria:

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

Rear Stability: The force to tip shall not be less than:
Type I: 20 lbf.
Type II: 20 lbf.
Type III: 35 lbf.

Results:

Front Stability	Rear Stability
18 lbf. to tip	60 lbf. to tip

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



Stability Test - Rear



Stability Test - Front

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13. ARM STRENGTH TEST VERTICAL-STATIC:

Date Tested: 9/30/10
Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 13
Functional Static Load: 200 lbf.
Proof Static Load: 300 lbf.
Number of Samples Tested: One (1)

Acceptance Criteria:

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 chair. Loss of serviceability is acceptable.

Results:

Static Load (lbf.)	Description of Results
200	Pass
300	Pass

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



Arm Strength Test Vertical-Static

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14. ARM STRENGTH TEST HORIZONTAL-STATIC:

Date Tested: 9/30/10
Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 14
Functional Static Load: 100 lbf.
Proof Static Load: 150 lbf.
Number of Samples Tested: One (1)

Acceptance Criteria:

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 chair. Loss of serviceability is acceptable.

Static Load (lbf.)	Description of Results
100	Pass
150	Pass



Arm Strength Test- Horizontal-Static

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15. BACK DURABILITY TEST-CYCLIC (Type I):

Dates Tested: 8/23-8/29/10

Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 15

Number of Cycles Required: 120,000

Center Pull Location: 80,000

Off Center Pull Location: 40,000

Force Applied to Chair Back: 100 lbf.

Load in Seat: 225 lbs.

Cycles per Minute: 10 to 30

Number of Samples Tested: One (1)

Acceptance Criteria:

No structural breakage or loss of serviceability.

Results:

Sample No.	Pull Location	Number of Cycles	Description of Results
1	Center Pull	80,000	Pass
	Off Center Pull	40,000	Pass

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



Back Durability Test-Cyclic

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17. CASTER/CHAIR BASE DURABILITY TEST - CYCLIC:

Dates Tested: 5/28-6/4/10

Condition of Test Sample: Production

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 17

Number of Casters on Base: 5

Type of Casters (Hard or Soft): Hard

Travel Distance (Inches): 30 Inches

Number of Cycles Required: 100,000

Cycles over Obstacles: 2,000

Cycles over Smooth Plate: 98,000

Cycles per Minute: 9

Weight in Seat: 225 lbs.

Number of Samples Tested: One (1)

Acceptance Criteria:

Durability Cycling: There shall be no loss of serviceability.

Caster Retention: The caster shall not separate from the base as a result of the application of the 5 lb. force.

Results:

Sample No.	Test Condition	Number of Cycles	Description of Results
1	Over Obstacles	2,000	Pass
	Over Smooth Plate	98,000	Pass

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



Caster/Chair Base Durability Test - Cyclic

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20. ARM DURABILITY TEST- CYCLIC:

Dates Tested: 8/29-8/31/10

Condition of Test Sample: New

Test Procedure:

Test Method: ANSI/BIFMA X5.1-2002; Test No. 20

Load To Each Arm: 90 lbs.

Angle of Force: 10 Degrees from Vertical

Number of Cycles Required: 60,000

Cycles per Minute: 10 to 30

Number of Samples Tested: One (1)

Acceptance Criteria:

Structural breakage or loss of serviceability shall constitute failure. No failure that in any way would cause personal injury to the occupant shall be allowed.

Results:

Number of Cycles	Description
60,000	Pass

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



Arm Durability