

# ***INTEGRITY TESTING LABORATORIES***

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## ***CONFIDENTIAL***

To: Super Client A

**Date:** August 23, 2016

**Pages** (including cover): 10

**From:** Edwin A. Leach

**Subject:** UPDATE – Awesome Chair 1

Lab No. 160XXXX-X

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Super Client,

Here is the update with all passing results except for forward stability. The seat slider range makes the chair fail the test. Limiting the seat slider back **THREE OR FOUR positions** from fully out will make the chair pass this test. If you have any questions or comments, or if I can be of further assistance, please do not hesitate to call.

Best Regards,

Ed Leach  
Laboratory Director,  
Integrity Testing Laboratories

# TESTING UPDATE

ANSI/BIFMA X5.1-2011

TEST PARAGRAPH	MODEL - Awesome Chair 1
5-BACK STRENGTH TYPE I	PASS
6-BACK STRENGTH TYPE II and III	PASS
7-BASE TEST	PASS
8-DROP TEST	PASS
9-SWIVEL CYCLE TEST	PASS
10-TILT TEST	PASS
11-SEATING DURABILITY	PASS
12-STABILITY TYPE I	PASSES REAR, FAILS FORWARD (note 1)
12-STABILITY TYPE II and III	PASSES REAR, FAILS FORWARD (note 1)
13/14 ARM STRENGTH	PASS
15-BACK DURABILITY TYPE I	PASS
16-BACK DURABILITY TYPE II and III	PASS
17 CASTER DURABILITY	PASS
18 LEG STRENGTH	NA
19 FOOTREST STATIC LOAD	NA
20 FOOTREST DURABILITY	NA
21 ARM DURABILITY	PASS
22 SEAT SLIDER OUTSTOP	PASS
<p>NOTE 1 – Your chair fails the forward stability paragraph. The chair must support a 135lb load through a fixture, and an additional 4.5lb horizontal load without tipping over. Your chair tips over with a 75 lb load and no horizontal force applied. Limiting the forward travel of your seat slider feature by 3 or 4 positions out of the available 8 will make the chair conform.</p>	

NYP = NOT YET PERFORMED

Following are the details on the forward stability results, procedures, and recommended modifications. Here is the procedure copied directly from the standard.

## **12.4 Front Stability**

Front stability shall be determined by either the method described in Sections 12.4.1 and 12.4.2 or 12.4.1 and 12.4.3.

### **12.4.1 Test Setup**

- a) The unit shall be placed on a test platform.
- b) On units with adjustable features, all adjustments shall be set at the apparent least stable condition for forward stability, such as, maximum height of seat or backrest, or both, most forward seat or backrest position or both, and at the least stable condition of casters, glides and tilt mechanism.
- c) For chairs with casters, a block or obstruction 13 mm (0.5 in.) in height shall be affixed to the test platform. The device shall prevent sliding but not restrict the unit from tipping. On units that rotate, the bases and casters, if any, shall be positioned to offer the least resistance to forward tipping of the unit.
- d) For chairs without casters, a block or obstruction 13 mm (0.5 in.) in height shall be affixed to the test platform. On units that rotate, the base shall be positioned to offer the least resistance to forward tipping of the unit.

### **12.4.2 Test Procedure - Alternative A** (See Figures 12c and 12d).

- a) This alternative may only be used on chairs that do not have a seat surface that will support the stability loading fixture (i.e., mesh, web or strap seat support surfaces).
- b) Apply a vertical load of 600 N (135 lbf.), through a 200 mm (7.87 in.) diameter disk, the center of which is 60 mm (2.4 in.) from the front center edge of the load-bearing surface of the seat. (See Figure 12e for details).
- c) Apply a horizontal force of 20 N (4.5 lbf.) at the same level of the plane of the top of the seat. The force shall be coincident with the side-to-side centerline of the seat.

### **12.4.3 Test Procedure - Alternative B** (See Figures 12f and 12g)

- a) Apply a vertical load of 600 N (135 lbf.), by means of the front stability loading fixture shown in Figure 12g at a point 60 mm (2.4 in.) from the front center edge of the loadbearing surface of the chair.
- b) Apply a horizontal force of 20 N (4.5 lbf.) at the same level of the plane of the top of the seat. The force shall be coincident with the side-to-side centerline of the seat.

### **12.4.4 Acceptance Level**

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

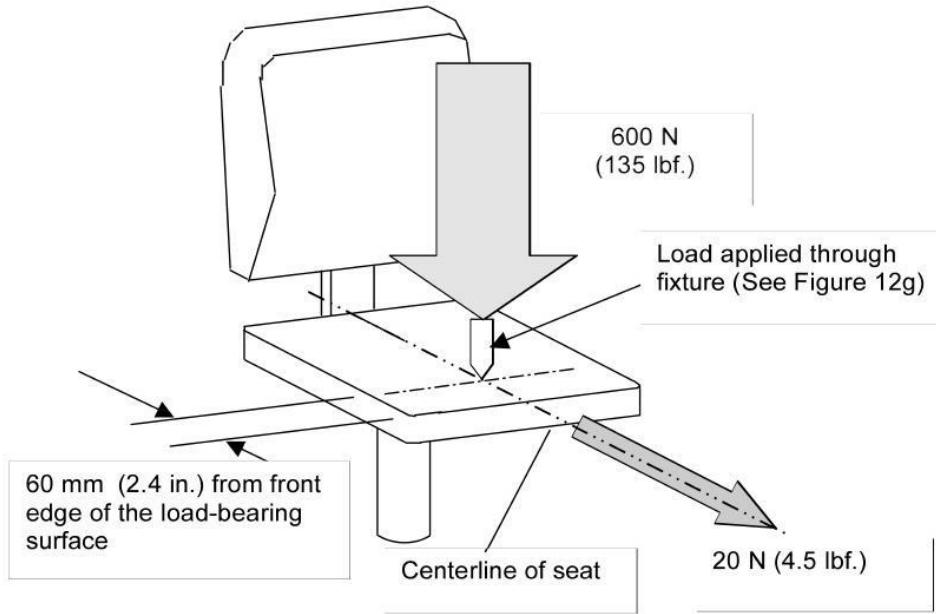


Figure 12f - Front Stability Test

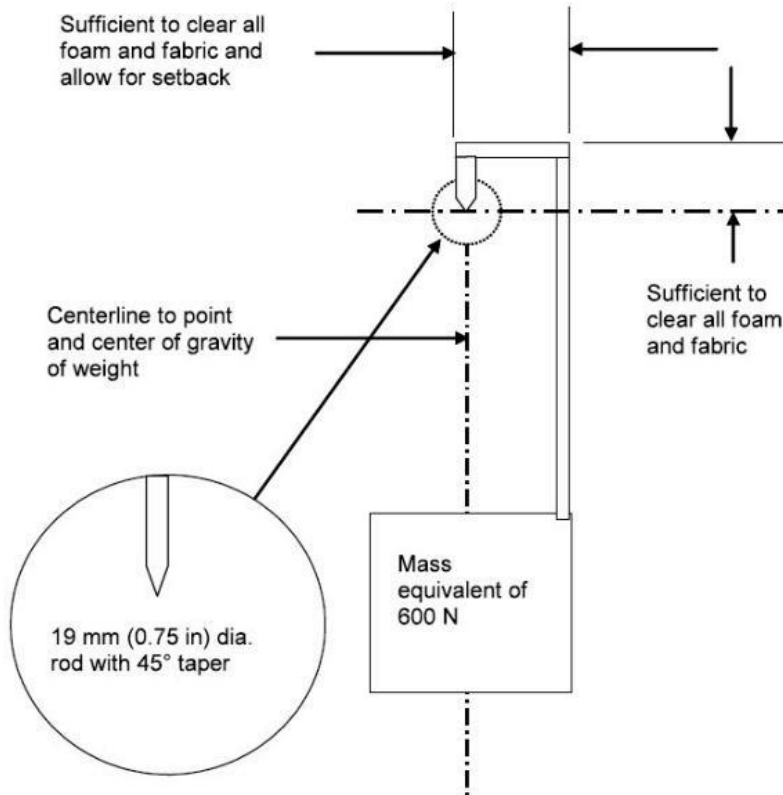
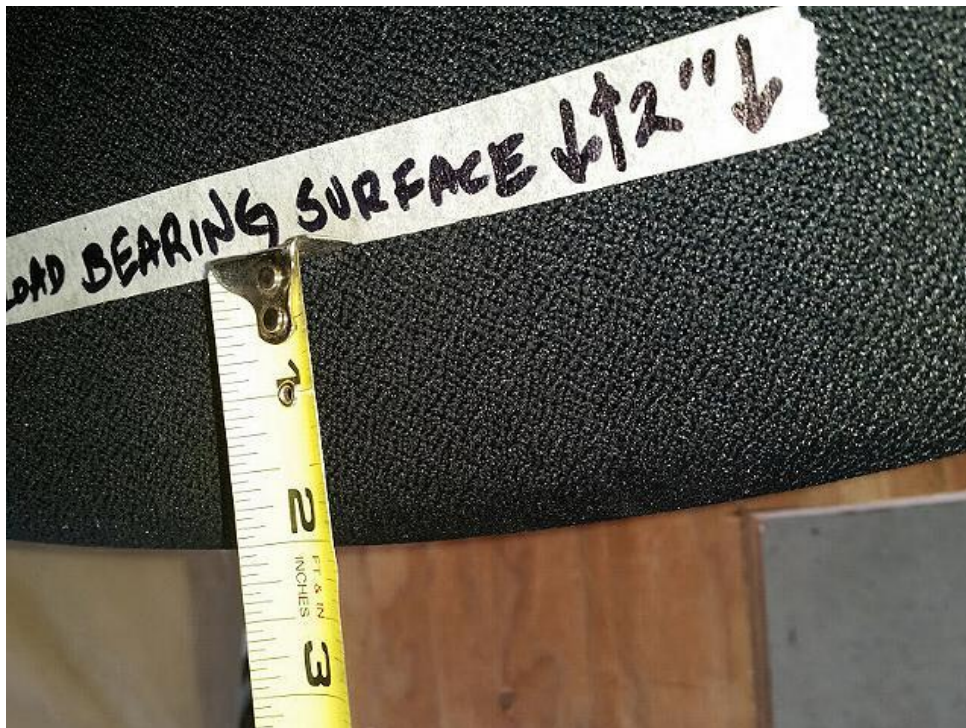


Figure 12g - Front Stability Loading Fixture

**load-bearing structure/surface:** Any element that supports loads during use. Foam and fabric, for example, are not generally considered load-bearing surfaces, nor are some portions of waterfall edges.

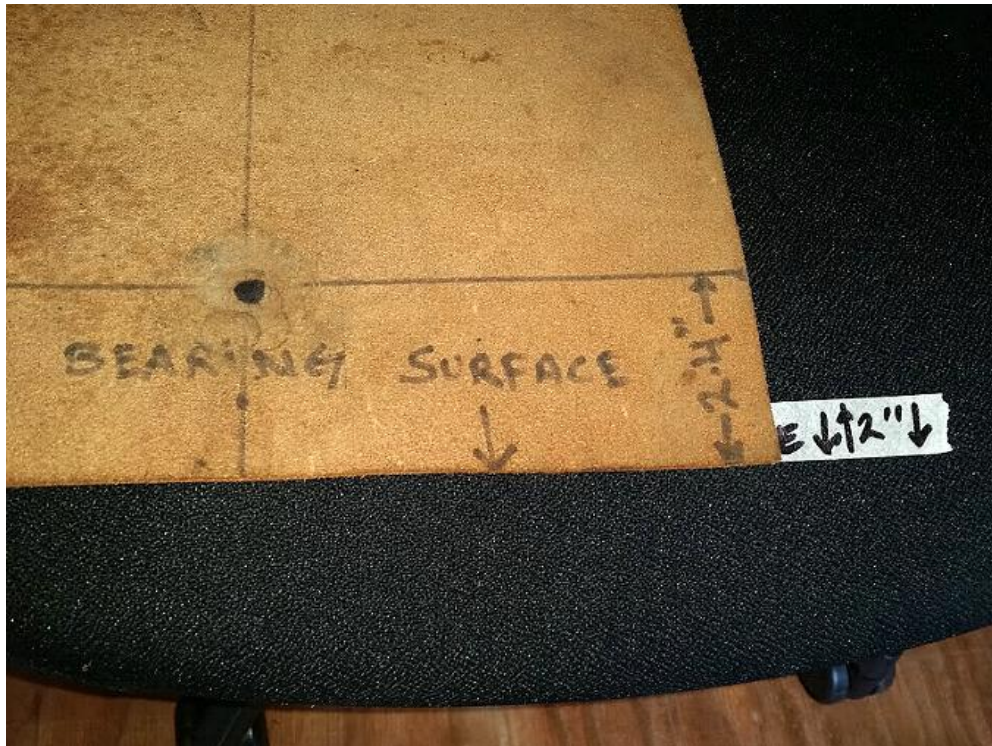


Here is where we determined the forward most “Load Bearing Surface” to be on this chair. It is a bit generous in your favor on this seat, but we feel it is accurate due to the waterfall and flexibility of the seat pan.



On your chair it measures 2". On most seating it is 1-1/2", sometimes less.





Here is one of our leather test fixtures we use so we don't poke holes in the seating. As you can see, the load point application is 2.4" back from the forward most load bearing surface that we already determined to be 2" from the front edge, or 4.4" total.



Tape with the line is at 4.4" back from the front edge, the same as the loading point.



**This picture is with the seat slider in the forward most position. Dropped vertically from the 4.4" load application point, you can easily see that the load would be well forward of the forward caster centerline. This is why the chair tips forward with the 75lb load.**



**Here is the same 4.4" load application point with the seat 3 positions in from fully forward. You can see that the load will now be behind the caster centerline.**





**Forward stability test fixture**



**Forward Stability test fixture placed at 2.4" loading point, or 4.4" back on this chair**





**Here is the chair with the seat slider 3 positions back from fully forward. The chair is able to support the 135 lb load without tipping over. The chair will pass in this position, BUT JUST BARELY MEETS THE REQUIREMENTS. The force measured to tip the chair forward was 5.4lb. The minimum requirement is 4.5lb.**



**We STRONGLY URGE you to limit the seat slider position to four positions in from the current fully forward range. We determined the forward stability tipping force at this position to be 10.6lb, a very satisfactory performance and about average. As a note to the previous result at 3 positions in: If somebody were to have a different interpretation of the “Load Bearing Surface” location by even ¼”, the chair could easily fail the test.**

Let me know if you have any questions at all !!!

Ed