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Sweden

## Testing of Reform sofa

(1 appendix)

### Summary

Reform sofa meets the requirements for strength and security according to EN 16139:2013 level 1.

### 1 Introduction

On behalf of Johanson Design AB, a Reform sofa has been tested at SP in accordance with EN 16139:2013 Furniture - Strength, durability and safety - Requirements for non-domestic seating, level 1.

### 2 Test specimen



**Figure 1 Reform sofa**

Dimension: W=1870 mm, D=675 mm, H=1260 mm  
Seat height: 420 mm  
Frame: Steel 30x40 mm, legs 40x40 mm  
Seat: Zig Zag spring, upholstery, covered with fabric  
Backrest: Wooden board, upholstery, covered with fabric  
Other info: Sound absorbing screen on one side

The test specimen was selected by the customer and arrived at SP 2013-07-03.

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### 3 Test methods and test procedure

The test was carried out according to EN 16139:2013 Furniture – Strength, durability and safety – Requirements for non-domestic seating, level 1 and EN 1022:2005 Domestic furniture – Seating – Determination of stability.

The test was carried out in a climate of 23±2°C and 50 ±5% relative humidity.

The test methods are explained in table 1 – 3.

The test was carried out 2013-07-20 – 2013-08-30.

### 4 Results

**Table 1**

| 1.   | General requirements   | EN 16139 | Req. fulfilled |
|------|--|----------|----------------|
| 1.1  | Accessible corners shall be rounded or chamfered.  | 4.1      | Passed         |
| 1.2  | Edges of the seat, back rest and arm rests which are in contact with the user when sitting in the chair shall be rounded or chamfered. | 4.1      | Passed         |
| 1.3  | Edges of handles shall be rounded or chamfered in the direction of the force applied.  | 4.1      | Passed         |
| 1.4  | All other edges shall be free from burrs and rounded or chamfered.   | 4.1      | Passed         |
| 1.5  | Ends of hollow components shall be closed or capped.   | 4.1      | N/a            |
| 1.6  | Movable and adjustable parts shall be designed so that injuries and inadvertent operation are avoided.                                 | 4.1      | N/a            |
| 1.7  | It shall not be possible for any load bearing part of the seating to come loose unintentionally.                                       | 4.1      | Passed         |
| 1.8  | All parts which are lubricated to assist sliding shall be designed to protect users from lubricant stains when in normal use.          | 4.1      | N/a            |
| 1.9  | Shear and squeeze points when setting up and folding.  | 4.2.1    | N/a            |
| 1.10 | Shear and squeeze points under influence of powered mechanism.   | 4.2.2    | N/a            |
| 1.11 | Shear and squeeze points during use.   | 4.2.3    | Passed         |

**Table 2**

| 2.  | Stability   | EN 1022 | Req. fulfilled |
|-----|---|---------|----------------|
| 2.1 | Forwards overbalancing.                           | 6.2     | Passed         |
| 2.2 | Forwards overturning for seating with footrest.   | 6.3     | N/a            |
| 2.3 | Sideways overbalancing, all seating without arms. | 6.4     | Passed         |
| 2.4 | Sideways overbalancing, all seating with arms.    | 6.5     | N/a            |
| 2.5 | Rearwards overbalancing, all seating with backs.  | 6.6     | Passed         |

**Table 3**

| <b>3.</b> | <b>Strength, durability</b>                 | <b>Reference EN 1728</b> | <b>Cycles</b> | <b>EN 16139 level 1</b>     | <b>Req. fulfilled</b> |
|-----------|---|--------------------------|---------------|-----------------------------|-----------------------|
| 3.1       | Seat and back static load test.             | 6.4                      | 10            | Seat: 1600 N<br>Back: 560 N | Passed                |
| 3.2       | Seat front edge static load test.           | 6.5                      | 10            | 1300 N                      | Passed                |
| 3.3       | Vertical static load on back rests.         | 6.6                      | 10            | 600 N<br>Seat: 1300 N       | N/a                   |
| 3.4       | Foot rest and leg rest static load test.    | 6.8 and 6.9              | 10            | 1300 N                      | N/a                   |
| 3.5       | Arm sideways static load test.              | 6.10                     | 10            | 400 N                       | N/a                   |
| 3.6       | Arm downwards static load test.             | 6.11                     | 5             | 750 N                       | N/a                   |
| 3.7       | Vertical upwards static load on arm rests.  | 6.13.1 and 6.13.2        | 10            | 250 N                       | N/a                   |
| 3.8       | Seat and back durability test.              | 6.17                     | 100 000       | Seat: 1000N<br>Back: 300 N  | Passed                |
| 3.9       | Seat front edge durability test.            | 6.18                     | 50 000        | 800 N                       | Passed                |
| 3.10      | Arm durability test.                        | 6.20                     | 30 000        | 400 N                       | N/a                   |
| 3.11      | Foot rest durability test.                  | 6.21                     | 50 000        | 1000 N                      | N/a                   |
| 3.12      | Leg forward static load test.               | 6.15                     | 10            | 500N<br>Seat: 1000 N        | Passed                |
| 3.13      | Leg sideways static load test.              | 6.16                     | 10            | 400 N<br>Seat: 1000 N       | Passed                |
| 3.14      | Seat impact test.                           | 6.24                     | 10            | 240 mm                      | Passed                |
| 3.15      | Back impact test.                           | 6.25                     | 10            | 210/38 mm/°                 | Passed                |
| 3.16      | Arm impact test.                            | 6.26                     | 10            | 210/38 mm/°                 | N/a                   |
| 3.17      | Drop test (multiple seating).               | 6.27.1                   | 2x5           |                             | N/a                   |
| 3.18      | Auxiliary writing surface static load test. | 6.14                     | 10            | 300 N                       | N/a                   |
| 3.19      | Auxiliary writing surface durability test.. | 6.22                     | 10 000        | 150 N                       | N/a                   |

## 5 Conclusion

At the end of the test, the tested piece did not exhibit any faults, fractures or other damage judged to affect its safety and functions when used in accordance with EN 16139:2013, level 1.

The test results apply solely to the specimen tested.

### **SP Technical Research Institute of Sweden Wood Technology**

Performed by

Examined by

Hans Eriksson

Bengt-Åke Andersson

### **Appendix**

1. Pictures (1 pages)

Appendix 1

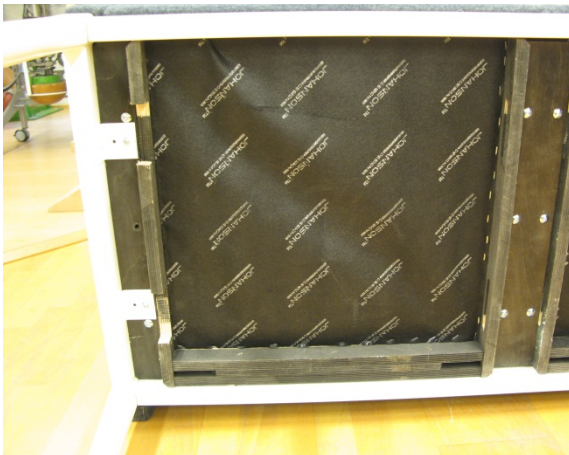
**Pictures**



**Figure 2 Reform sofa, backside**



**Figure 3 Reform sofa, underneath**



**Figure 4 Reform sofa, detail underneath**



**Figure 5 Reform sofa, detail underneath**