NORWEGIAN ACCREDITATION TEST 275

Test Report

SCANDINAVIAN BUSINESS SEATING

Test Report No. **2014-10-14-001**	Page **1(13)** Rev. 00

Customer	Scandinavian Business Seating AS Sundveien 7374 Røros, Norway
Customer contact	Product & Brand Concept v/ Christian Eide Lodgaard
Test item	Håg H05
Test item ID:	H05 5200, 5600
Serial No.	5110053777-1, 5110053777-2
Order No.	2014-10-14-001
Date of receipt.	2014-10-20
Testing commenced / finished	2014-10-22 / 2015-01-12
Performing Laboratory.	Testlab SB Seating Røros, Scandinavian Business Seating AS Sundveien 7374 Røros, Norway +47 72 40 72 00
Accredited by.	Norsk Akkreditering Fetveien 99 2007 Kjeller +47 64 84 86 00 Valid from: 2013-04-18 Valid to: 2018-04-18 Registration No.: Test 275
Tested according to.	ANSI/BIFMA X5.1-2011 Type 1/111
Test result.	**The test item passed the test specifications**

Tested by:			**Approved by:**		
2015-01-19	John Anders Spencer		2015-01-19	Christian Andersson	
2015-01-19	John Anders Spencer		2015-01-19	Christian Andersson	
Date	**Name**	**Sign.**	**Date**	**Name**	**Sign.**

Additional information.
The test results refer only to the samples tested.

Abbreviations		
	P	**=Passed**
	F	**=Failed**
	NA	**=Not applicable**
	NT	**=Not tested**

Estimated uncertainty of stability measurement		
Measurement	**Description**	**Uncertainty (N)**
12.3.1	Rear stability	9,12
12.3.2	Rear stability type I & II chairs	6,84
12.4.2	Front stability	3,37

Brief description of the test item upon receipt.

Håg H05

Office work chair with tilt mechanism, upholstered seat and backrest, adjustable armrests, seat height and depth, backrest height and depth, tilt tension and lock.

- 50mm castors made by Jenp You.
- 5-star aluminium base.
- Stabilus 150mm Type A gas spring.
- Seat mech with levers for adjusting.
    - Tilt tension.
    - Tilt lock (3 positions).
    - Seat height.
    - Seat depth and backrest height synchronously by rotatable handle.
- Upholstered seat and backrest.
- Backrest height manually adjustable independent of seat depth. Approx. +/-15mm.
- Armrests adjustable in height and depth, armrest support made of steel.
- 5200: low backrest, fully upholstered.
- 5600: high backrest, fully upholstered with headrest.

Remarks:
There were no remarks upon receipt

Standard: ANSI/BIFMA X5.1-2011 General-Purpose Office Chairs - Tests

This standard defines specific tests, laboratory equipment, conditions of test, and recommended minimum levels to be used in the test and evaluation of the safety, durability, and structural adequacy of general-purpose office chairs.

Requirement **ANSI/BIFMA X5.1-2011**
1 Scope The standard defines specific tests, the laboratory equipment that may be used, the conditions of tests, and the minimum acceptance levels to be used in evaluating general-purpose office chairs. See test specification for more.
2 Definitions See test specification
3 General See test specification
4 Types of chairs See table 1 – Test Guide by Chair Type below See test specification for more.
Remarks The chair was considered to be a type I and type III chair due the lockable tilt option.

Figure 4a - Type I - Tilting Chair

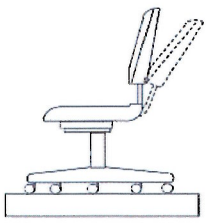


Figure 4b - Type II - Fixed seat angle, tilting backrest

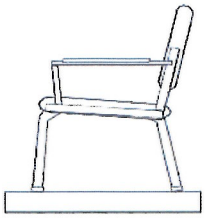


Figure 4c - Type III - Fixed seat angle, fixed backrest

Types of Chairs

TABLE 1 – Test Guide by Chair Type

Section Number	Description	Type I	Type II	Type III
5	Backrest Strength Test - Static - Type I	X		
6	Backrest Strength Test - Static - Type II and III		X	X
7	Base Test - Static	X	X	X
8	Drop Test - Dynamic	X	X	X
9	Swivel Test - Cyclic	X	X	X
10	Tilt Mechanism Test - Cyclic	X	X	
11	Seating Durability Test - Cyclic	X	X	X
12	Stability Tests	X	X	X
13	Arm Strength Test - Vertical - Static	X	X	X
14	Arm Strength Test - Horizontal - Static	X	X	X
15	Backrest Durability Test - Cyclic - Type I	X		
16	Backrest Durability Test - Cyclic - Type II and Type III		X	X
17	Caster/Chair Base Durability Test - Cyclic	X	X	X
18	Leg Strength Test - Front and Side Application	X	X	X
19	Footrest Static Load Test - Vertical	X	X	X
20	Footrest Durability Test - Vertical - Cyclic	X	X	X
21	Arm Durability Test - Cyclic	X	X	X
22	Out Stop Test for Chairs with Manually Adjustable Seat Depth	X	X	X
23	Tablet Arm Chair Static Load Test	X	X	X
24	Tablet Arm Chair Load Ease Test - Cyclic	X	X	X

Section	Requirements / Remarks	Result
5	**Backrest Strength Test - Static - Type I**	
5.1	**Applicability** This backrest strength test shall be performed on Type I chairs. For chairs with tilt locks, locking the chair changes the chair type (See Section 4) and must also be tested according to Section 6 in the upright locked position. An additional chair may be used for the Section 6 testing. **Note:** This test does not apply to chairs with backrest height less than 200 mm (7.9 in.).	
5.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair to withstand stresses such as those caused by the user exerting a rearward force on the backrest of the chair. **Functional Load** 890 N (200 lbf.) one (1) minute. **Proof Load** 1334 N (300 lbf.) one (1) minute.	P
5.5	**Acceptance Level** **Functional Load** There shall be no loss of serviceability to the chair. **Proof Load** There shall be no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.	
	Remarks The backrest post bended approx. 20° rearwards during Proof load but was considered to be no sudden and major change in the structural integrity of the chair. See pic 1	
6	**Backrest Strength Test - Static - Type II & III**	
6.1	**Applicability** This backrest strength test shall be performed on Type II and III chairs. **Note:** This test does not apply to chairs with backrest height less than 200 mm (7.9 in.).	
6.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair to withstand stresses such as those caused by the user exerting a rearward force on the backrest of the chair. **Functional Load** 667 N (150 lbf.) one (1) minute **Proof Load** 1112 N (250 lbf.) one (1) minute.	P
6.5	**Acceptance Level** **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.	
	Remarks The backrest post bended approx. 10° rearwards during Proof load but was considered to be no sudden and major change in the structural integrity of the chair. See pic 2	
7	**Base Test – Static**	
7.1	**Applicability** The test shall be performed on all pedestal bases.	
7.2	**Purpose of Test** The purpose of this test is to evaluate the ability of a pedestal base to withstand excessive vertical forces. **Test Procedures** 11,120 N (2500 lbf.) one (1) minute x 2.	P
7.5	**Acceptance Level** 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 applications.	
	Remarks See pic 3	

Section	Requirements / Remarks	Result
8	**Drop Test – Dynamic**	P
8.1	**Applicability** This test applies to all chair types.	
8.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair to withstand heavy and abusive impact forces on the seat. **Functional Load** 102 kg (225 lb.) falling 152 mm (6 in.). For chairs with seat height adjustment features, set height to its lowest position and repeat **Proof Load** Repeat functional load procedure but increase weight of test bag to 136 kg (300 lb.).	
8.5	**Acceptance Level** **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.	
	Remarks See pic 4	
9	**Swivel Test – Cyclic**	P
9.1	**Applicability** This test applies to all chair types with a swivel seat.	
9.2	**Purpose of test** The purpose of this test is to evaluate the ability of the chair to withstand stresses and wear of repeated swivelling. **Test Procedure** 113 kg (250 lb.) load, 51-64 mm forward of the rotational axis. The chair shall swivel for a total of 120,000 cycles of 360°.	
9.5	**Acceptance Level** There shall be no loss of serviceability.	
	Remarks Tested first half of the cycles with the seat in highest position, second half of the cycles in lowest position. See pic 5	
10	**Tilt Mechanism Test – Cyclic**	P
10.1	**Applicability** This test shall be performed on Type I and Type II chairs with tilting backrests.	
10.2	**Purpose of test** The purpose of this test is to evaluate the ability of the tilt mechanism to withstand the fatigue stresses and wear caused by repeated tilting. **Test Procedure** 102 kg (225 lb.) for a total of 300,000 cycles.	
10.5	**Acceptance Level** There shall be no loss of serviceability to the tilt mechanism.	
	Remarks See pic 6	

Section	Requirements / Remarks	Result
11	**Seating Durability Tests – Cyclic** **Note:** This is a two-part test. The impact test and front corner load-ease tests must be run sequentially for this evaluation.	
11.1	**Applicability** These tests apply to all chair types.	
11.2	**Purpose of test** The purpose of these tests is to evaluate the ability of chairs to withstand fatigue stresses and wear caused by downward vertical force(s) on the seat.	
11.3	**Impact Test** 57 kg (125 lb.) test bag falling 30 mm (1.2 in.) for a total of 100,000 cycles.	P
11.4	**Front Corner Load-Ease Test – Cyclic – Off-centre** 734 N (165 lbf.) force for a total of 40,000 alternating cycles.	P
11.5	**Acceptance Level** There shall be no loss of serviceability to the chair after completion of both the impact and load-ease tests.	
	Remarks See pic 4,7	
12	**Stability Tests**	
12.1	**Applicability** The stability tests shall be performed on all types of chairs. **Note:** Rearward stability tests apply only to chairs with backrests greater than 200 mm (7.9 in. in height as measured with the BIFMA CMD.	
12.2	**Purpose of test** The purpose of these tests is to evaluate the front and rear stability of chairs.	
12.3	**Rear Stability**	
12.3.1	**Rear Stability Test for Type III Chairs**	P
12.3.1.3	**Acceptance level** The chair shall not tip over.	
12.3.2	**Rear Stability Test for Type I and II Chairs**	P
12.3.2.3	**Acceptance level** The chair shall not tip over.	
12.4	**Front Stability**	P
12.4.4	**Acceptance Level** The chair shall not tip over as the result of the force application.	

Remarks	Requirement	Result
Rear Stability Test for Type III Chairs	126N	209N
Rear Stability Test for Type I and II Chairs	>13 ISO discs	>14 ISO-discs
Front Stability	600N+20N	600N+34N

Remarks
For the rear stability for type I and III chairs, model 5600 with headrest was used due to the added weight from the headrest.
For the front stability, model 5200 was used with the armrests removed.
See pic 8-10

Section	Requirements / Remarks	Result
13	**Arm Strength Test - Vertical – Static**	
13.1	**Applicability** This test applies to all chairs with arms.	
13.2	**Purpose of test** The purpose of the test is to evaluate the ability of a chair and arm to withstand stresses caused by applying vertical forces on the arm(s). **Functional Load** 750 N (169 lbf.), one (1) minute. **Proof Load** 1125 N (253 lbf.), one (1) minute.	
13.5	**Acceptance Level** **Functional Load** There shall be no loss of serviceability. For a height adjustable arm, failure to hold its height adjustment position to within 6 mm (0.25 in.) from its original set position as the result of the loading is considered a loss of serviceability. **Proof Load** There shall be no sudden and major change in the structural integrity of the chair. For a height adjustable arm, a sudden drop in height of greater than 25 mm (1 in.) does not meet this requirement. Loss of serviceability is acceptable.	P
	Remarks See pic 11	
14	**Arm Strength Test - Horizontal – Static**	
14.1	**Applicability** This test applies to all chairs with arms.	
14.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair to withstand stresses caused by applying outward forces to the arm(s). **Functional Load** 445 N (100 lbf.), one (1) minute. **Proof Load** 667 N (150 lbf.), one (1) minute.	P
14.5	**Acceptance Level** **Functional Load** A functional load applied once shall cause no loss of serviceability. **Proof Load** A proof load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	
	Remarks See pic 12	
15	**Backrest Durability Test - Cyclic - Type I**	
15.1	**Applicability** This test shall be performed on Type I Tilting chairs. **Note:** This test does not apply to chairs with backrest height less than 200 mm (7.9 in.).	
15.2	**Purpose of test** The purpose of this test is to evaluate the ability of the chairs to withstand fatigue stresses and wear caused by rearward force on the backrest of the chair. **Test procedure** 102 kg (225 lb.) load on seat, 445 N (100 lbf.) force to the back for a total of 120.000 cycles	P
15.5	**Acceptance Level** There shall be no loss of serviceability.	
	Remarks See pic. 13-14	

Section	Requirements / Remarks	Result
16	**Backrest Durability Test - Cyclic - Type II and III**	
16.1	**Applicability** This test shall be performed on Type II and III chairs. **Note:** This test does not apply to chairs with backrest height less than 200 mm (7.9 in.).	
16.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chairs to withstand fatigue stresses and wear caused by rearward force on the backrest of the chair.	
	Test procedure 102 kg (225 lb.) load on seat, 334 N (75 lbf.) force to the back for a total of 120.000 cycles	P
16.5	**Acceptance Level** There shall be no loss of serviceability.	
	Remarks See pic. 15	
17	**Caster/Chair Base Durability Test – Cyclic**	
17.1	**Caster/Chair Base Durability Test for Pedestal Base Chairs**	
17.1.1	**Applicability** This test applies to pedestal base chairs with casters.	
17.1.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair base and casters to withstand fatigue stresses and wear caused by moving the chair back and forth.	
	Test procedure 113 kg (250 lb.) load on seat. For a total of 100.000 cycles	P
17.1.5	**Acceptance Level** **Durability cycling** There shall be no loss of serviceability. **Caster Retention** No part of the caster shall separate from the chair as a result of the application of the 22 N (5 lbf.) force.	
	Remarks See pic 16	
17.2	**Caster/Chair Frame Durability Test for Chairs with Legs**	
17.2.1	**Applicability** This test applies to chairs with legs and casters. This test is not applicable to chairs with glide/caster combinations (i.e., those having two glides and two casters).	
17.2.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair frame and casters to withstand fatigue stresses and wear caused by moving the chair back and forth.	
	Test procedure 113 kg (250 lb.) load on seat. For a total of 100.000 cycles	NA
17.2.5	**Acceptance Level** **Durability cycling** There shall be no loss of serviceability. **Caster Retention** No part of the caster shall separate from the chair as a result of the application of the 22 N (5 lbf.) force.	
	Remarks	

Section	Requirements / Remarks	Result
18	**Leg Strength Test - Front and Side Application**	NA
18.1	**Applicability** This test applies to all chairs without pedestal bases.	
18.2	**Purpose of Test** The purpose of this test is to evaluate the ability of legs to withstand horizontal side and frontal forces.	
18.3	**Front Load Test** **Functional load** 334 N (75 lbf.), one (1) minute. **Proof load** 503 N (113 lbf.), one (1) minute.	
18.4	**Side Load Test** **Functional load** 334 N (75 lbf.), one (1) minute. **Proof load** 503 N (113 lbf.), one (1) minute.	
18.5	**Acceptance Level - Front and Side Load Tests** **Functional Load** Functional load(s) applied once in each direction shall cause no loss of serviceability. **Proof Load** Proof load(s) applied once each direction shall cause no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.	
	Remarks	
19	**Footrest Static Load Test – Vertical**	NA
19.1	**Applicability** The footrest static load test shall be performed on all chairs with a footrest feature and a seat height equal to or greater than (or can be adjusted to) 610 mm (24 in.).	
19.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the footrest to withstand static loading stresses.	
19.4.1	**Static Load Test – Functional Load** 445 N (100 lbf.), one (1) minute. Or 445 N (100 lbf.), one (1) minute plus 2 x 445 N (100 lbf.), one (1) minute	
19.4.2	**Acceptance level** There shall be no loss of serviceability or sudden loss of footrest height.	
19.4.3	**Static Load Test – Proof Load** 1334 N (300 lbf.), one (1) minute.	
19.5	**Acceptance level** The load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	
	Remarks	
20	**Footrest Durability Test - Vertical – Cyclic**	NA
20.1	**Applicability** The footrest durability test shall be performed on all chairs with a footrest feature.	
20.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the footrest to withstand stresses that occur as a result of repetitive loading. **Test procedure** 890 N (200 lbf.) for a total of 50,000 cycles.	
20.5	**Acceptance level** 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.	
	Remarks	

Section	Requirements / Remarks	Result
21 21.1 21.4	**Arm Durability Test – Cyclic** **Purpose of test** The purpose of this test is to evaluate the ability of the chair armrests to withstand stresses that occur as a result of repetitive loading that can be imposed on the armrest structure. Loading of this type is the result of using the armrests as a support when getting into or out of the chair. **Test procedure** 400 N (90 lbf.) for a total of 60,000 cycles. **Acceptance level** There shall be no loss of serviceability to the chair.	**P**
	Remarks See pic 17	
22 22. 22.4	**Out Stop Tests for Chairs with Manually Adjustable Seat Depth** **Purpose of Test** The purpose of this test is to evaluate the ability of the seat slide out stops to withstand excessive impact forces that may result from user adjustment of the seat depth. **Note:** This test does not apply to chairs where seat depth adjustments must occur with the user out of the chair. **Test procedure** 74 kg (163 lb.) mass on seat, 25 kg (55 lb.) mass pulling the seat forward using a pulley for a total of 25 cycles. **Acceptance Level** There shall be no loss of serviceability to the unit.	**NA**
	Remarks	
23 23.1 23.4	**Tablet Arm Chair Static Load Test** **Purpose of Test** The purpose of this test is to evaluate the ability of the unit equipped with a tablet arm or other attached auxiliary writing/laptop surface to withstand stresses caused by vertical loading. **Test procedure** 68 kg. (150 lb.), one (1) minute **Acceptance Level** The load applied once shall cause no sudden and major change in the structural integrity of the chair. After performing the test, the tablet arm must allow egress from the unit; other losses of serviceability are acceptable.	**NA**
	Remarks	
24 24.1 24.4	**Tablet Arm Chair Load Ease Test – Cyclic** **Purpose of Test** The purpose of this test is to evaluate the durability of the tablet arm chair to withstand cyclic loading of the tablet. **Test procedure** 343 N (77 lbf.), for at total of 100,000 cycles. **Acceptance Level** There shall be no loss of serviceability to the chair and/or tablet arm.	**NA**
	Remarks	

End of test report

Annex I – Photo documentation


Pic 1


Pic 2

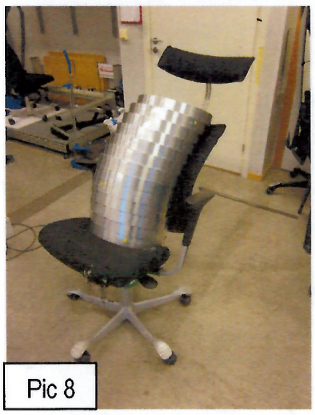

Pic 3


Pic 4


Pic 5

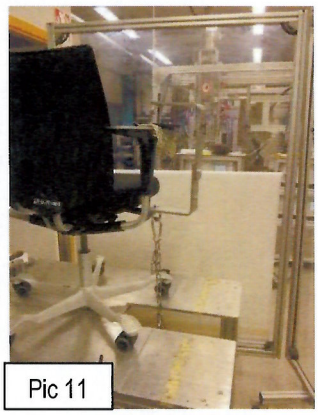

Pic 6


Pic 7

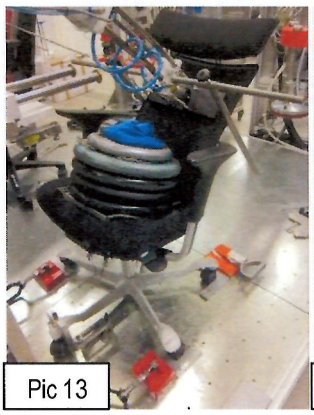

Pic 8


Pic 9

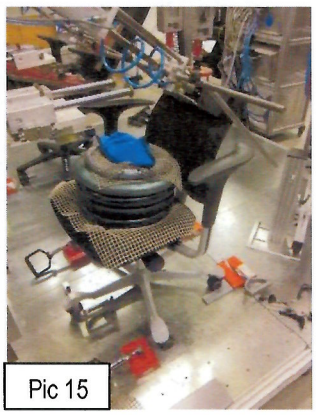

Pic 10


Pic 11


Pic 12


Pic 13


Pic 14


Pic 15

Pic 16

Pic 17