

**Test Report**

Number: SHAH01043460

Applicant: HAWORTH FURNITURE (SHANGHAI) CO., LTD  
NO.2, 360 XIYA ROAD, WAIGAOQIAO FREE  
TRADE ZONE, SHANGHAI, CHINA.

Date: Jan 16, 2019

Sample Description:

Three (3) pieces of submitted sample said to be : Chair  
Item Name : **Fern Task Chair**  
Country Of Origin : China

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Tests Conducted:

As requested by the applicant, for details refer to attached page(s).

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Conclusion:

<u>Tested samples</u>	<u>Standard</u>	<u>Result</u>
Submitted sample	ANSI/BIFMA X5.1-2017 for general purpose office chairs	Pass

To be continued

Authorized By:  
For Intertek Testing Services Ltd., Shanghai



Young Zhu  
Vice President



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**OFFICE CHAIRS TESTS**

With reference to American national standard for office furnishings - general- purpose office chairs - tests (ANSI/BIFMA X5.1-2017)

Number of sample tested: Three (3) pieces

Initial inspection: No damage was found

Executive summary:

Clause	Testing items	Test requirement	Verdict
4	Types of Chairs	Type I. Tilting chair Type II. Fixed seat angle, tilting backrest Type III. Fixed seat angle, fixed backrest:	Type I/Type III
5	Back Strength Test - Static - Type I & Type II (Functional Load)	No loss of serviceability when 667 N (150 lbs.) is applied for 1 min. Applied 70° to the back at 16 in. above the seat.	P
	Back Strength Test – Static – Type I & Type II (Proof Load)	No sudden and major change in the structural integrity (loss of serviceability is acceptable) when 1001 N (225 lbs.) is applied for 1 min. Applied 70° to the back at 16 in. above the seat.	P
6	Back Strength Test – Static – Type III (Functional Load)	No loss of serviceability when 667 N (150 lbs.) is applied for 1 min. Applied 90° to the back at 16 in. above the seat.	P
	Back Strength Test – Static – Type III (Proof Load)	No sudden and major change in the structural integrity (loss of serviceability is acceptable) when 1001 N (225 lbs.) is applied for 1 min. Applied 90° to the back at 16 in. above the seat.	P
7	Drop Test -Dynamic (Functional Load)	No loss of serviceability when 102kg (225 lbs.) weight free falls from 6 in height to the center of the seat.	P
	Drop Test -Dynamic (Proof Load)	No sudden and major change in the structural integrity (loss of serviceability is acceptable) when 136kg (300 lbs.) weight free falls from 6 in height to the center of the seat.	P
8	Swivel Test – Cyclic	No loss of serviceability after 60,000 cycles of rotation (360°) under a 122kg (270 lbs.) load on the seat at its max. height. Seat shall then withstand another 60,000 cycles of rotation at its lowest seating position. Total 120,000 cycles. Frequency: 5-15 cpm	P
9	Tilt Mechanism Test – Cyclic	No loss of serviceability after 300,000 cycles under a 109kg (240 lbs.) load to the center of the seat. Frequency: 10-30 cpm	P
10	Seat Impact Test – Cyclic	No loss of serviceability in 100,000 cycles impact. A weight of 57kg (125 lbs.) free falls onto the seat from 36 mm (1.4 in.) height. Frequency: 10-30 cpm	P
	Front Corner Load Ease Test – Cyclic – Off Center	No loss of serviceability after load each seat front corner with 890N (200 lbs.) for 20,000 cycles, total 40,000 cycles. Note: this test is done after "Impact test" on the same sample. Frequency: 10-30 cpm	P
11	Stability Test – Rear Stability for Type III Chairs	Load the chair with 6 disks, apply a horizontal force to the highest disk. The location of the force application is 6 mm (0.25 in.) from the top of the disk. For chairs with seat height less than 710 mm (28.0 in.), calculate the force as follows: F = 0.1964 (1195 – H) Newton. H is the seat height in mm. [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. The chair shall not tip over.	P



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	Stability Test – Rear Stability for Type I and II Chairs	Load the chair with 13 disks, Place the first disk into the seat using the Template from Appendix G. Make a mark on the seat at the Rear Stability mark on the template. Remove the template and place the front of the first disk at this mark. The chair shall not tip over.	P
	Stability Test – Front Stability	The chair is obstructed with a 13mm (½ in.) obstruction to the chair casters/legs. A downward load of 600N (135 lbs.) is centered 60mm (2.4 in.) from the seat front center edge. The seat shall withstand a 20N (4.5 lbf.) horizontally from the front seat edge without tipping.	P
12	Arm Strength Test Vertical – Static (Functional Load)	No loss of serviceability when 750N (169lbs.) is applied for 1 min. The vertical load is uniformly applied along a 127mm (5 in.) length at the apparent weakest point.	P
	Arm Strength Test Vertical –Static (Proof Load)	No sudden and major change in the structural integrity (loss of serviceability is acceptable) when 1125N (253 lbs.) is applied for 15s. The vertical load is uniformly applied along a 127mm (5 in.) length at the apparent weakest point.	P
13	Arm Strength Test Horizontal – Static (Functional Load)	No loss of serviceability when 445N (100 lbs.) for 1 min. is applied horizontally outward to the armrest at the most forward point of the armrest.	P
	Arm Strength Test Horizontal – Static (Proof Load)	No sudden and major change in the structural integrity (loss of serviceability is acceptable) when 667N (150 lbs.) for 15s is applied horizontally outward to the armrest at the most forward point of the armrest.	P
14	Back Durability Test – Cyclic – Type I	No loss of serviceability in 120,000 cycles with a 109kg (240 lbs.) in the center of the seat and a 445N (100 lbf.) 90° to the center of the chair backs. For chairs with a back width greater than 406mm (16 in.), test at the center of chair back for 80,000 cycles and then 102mm (4 in.) off-center 40,000 cycles, half to each side. Frequency: 10-30 cpm	P
15	Back Durability Test – Cyclic – Type II & III	No loss of serviceability in 120,000 cycles with a 109kg (240 lbs.) in the center of the seat and a 334N (75 lbf.) 90° to the center of the chair backs. For chairs with a back width greater than 406mm (16 in.), test at the center of chair back for 80,000 cycles and then 102mm (4 in.) off-center 40,000 cycles, half to each side. Frequency: 10-30 cpm	P
16	Caster/Chair Base Durability Test - Cyclic	No loss of service after 2,000 cycles over a hard surface with 3 obstacles and 98, 000 cycles over a smooth hard surface without obstacles under a 122kg (270 lbs.) load on the seat. No part of the caster shall separate from the chair as a result of the application of the 22 N (5 lbf.) force. Test stroke is adjusted to 762 +/- 50 mm (30 +/- 2 in.). The caster should not separate under 22N (5 lbs.) pulling force in line with the caster stem after the cycling test. Frequency: 8-12 cpm	P
17	Leg Strength Test – Front Load (Functional Load)	No loss of serviceability when a force of 334N (75 lbf.) is applied to each front leg individually for 1 minute.	NA
	Leg Strength Test – Front Load (Proof Load)	No sudden and major change in the structural integrity (loss of serviceability is acceptable) when a force of 503N (113 lbf.) is applied to each front leg individually for 1 minute.	NA
	Leg Strength Test – Side Load (Functional Load)	No loss of serviceability when a force of 334N (75 lbf.) is applied once to each front and rear leg individually for 1 minute.	NA
	Leg Strength Test – Side Load (Proof Load)	No sudden and major change in the structural integrity (loss of serviceability is acceptable) when a force of 503N (113 lbf.) is applied once to the front and rear leg individually for 1 minute.	NA



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18	Footrest Static Load Test – Vertical (Functional load)	The test only performed on chairs with seat height ≥ 610mm (24in.). Apply a force F1 of 445 N (100 lbf.) uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure for one (1) minute in the vertical downward direction, maintain force F1 and apply an additional force F2 of 445 N (100 lbf.) to the footrest at the opposing position for an additional one (1) minute. There shall be no loss of serviceability or sudden loss of footrest height.	NA
	Footrest Static Load Test – Vertical (Proof load)	The test only performed on chairs with seat height ≥ 610mm (24in.). Apply a force of 1334 N (300 lbf.) uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure for one (1) minute in the vertical downward direction. The load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	NA
19	Footrest Durability Test – Vertical – Cyclic	The test only performed on chairs with seat height ≥ 610mm (24in.). No loss of serviceability after 50,000 cycles of a 890N (200 lbf) load vertical along 102mm (4 in.) length of the footrest at the apparent weakest point of the structure. Frequency: 10-30 cpm	NA
20	Arm Durability Test – Cyclic	No structural breakage or loss of serviceability when a force of 400N (90 lbf.) is applied to each arm at a 10° angle ±1° for 60,000 cycles. Frequency: 10-30 cpm	P
21	Out Stop Tests For Chairs With Manually Adjustable Seat Depth	Place 70 kg (154 lb.) rigid mass in the center of the seat, 25 kg (55lbf.) hanging weight shall be held at its most rearward position, then released, permitting it to move forward rapidly and impact the out stops. Repeat for a total of 25 cycles. There shall be no loss of serviceability to the unit.	NA
22	Tablet Arm Static Load Test	Apply a load of 68 kg (150 lb.) through a 203 mm diameter area 25 mm from the edge of the surface at its apparent weakest point, for one (1) minute. Shall cause no sudden and major change in the structural integrity of the chair at the first load, and after performing the test, the tablet arm must allow egress form the unit; other losses of serviceability are acceptable.	NA
23	Tablet Arm Load Ease Test – Cyclic	A 25kg (55 lb.) bag shall be raised until the entire weight is off the tablet surface and then eased (without impact) onto the surface, repeat for a total of 100,000 cycles without loss of serviceability to the unit. Frequency: 8-20 cpm	NA
24	Structural Durability Test – Cyclic	Place a weight of 109 kg (240 lb.) in the center of the seat. A cycling device shall be attached to the unit frame midway between front and rear of the seat at the height of the midpoint of the seat frame structure. The cycling device shall be adjusted to apply a “push-pull” action. Apply a force of 334 N (75 lbf.) at an appropriate rate between 10 and 30 cycles per minute, repeat for a total of 25,000 cycles without loss of serviceability to the unit. Frequency: 10-30 cpm	NA

Abbreviation: P=Pass; NA=Not Applicable; F=Fail; NC = Not Conducted; NR = Not Requested



## Test Report

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Picture 1: Sample as received

Date Sample Received: Dec.11, 2018

Testing Period: Dec.11, 2018 to Jan.15, 2019

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End Of Report

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