



CONSUMER PRODUCTS SERVICES DIVISION

Nine United Shanghai Limited

Technical Report: (6622)256-1412
Date Received: SEP.14, 2022
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OCT.13, 2022
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Frank Pei
Nine United Shanghai Limited
15/F., Union Building No. 100, Yan'an Rd (E),
Shanghai, China

Sample Description:	Weekday bench 190x32	PO No.:	/
Manufacturer:	/	Style No	/
Buyer:	DWR	Country of	US
Country of Origin:	CHINA	Destination:	/
Color:	/	SKU No.:	/
Protocol No.:	/	Previous Report No.:	/

EXECUTIVE SUMMARY

TEST REQUESTED	CONCLUSION	Remark
1) ANSI/BIFMA X5.4-2020-BIFMA American National Standard For Office and Institutional Furnishings Public and Lounge Seating	PASS	-

REMARK:

The client specifies the test methods and requirements.

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ANSI/BIFMA X5.4-2020-BIFMA American National Standard For Office and Institutional Furnishings Public and Lounge Seating

Evaluation	Citation / Method	Criteria	Results	Rating
Backrest strength test - horizontal – static (functional load)	ANSI/BIFMA X5.4-2020 Sec. 5	[Not applicable to units with backrest height less than 200 mm (7.9 in.) or recliners with user force activated back recline mechanisms unless the backrest can be locked into position or stops at a position less than 35 degrees from vertical] Simultaneously apply a force of 667 N (150 lbf.) for 1 minute to each backrest position (max. 2). Shall cause no loss of serviceability to the unit.	Not Applicable	-
Backrest strength test - horizontal – static (proof load)	ANSI/BIFMA X5.4-2020 Sec. 5	[Not applicable to units with backrest height less than 200 mm (7.9 in.) or recliners with user force activated back recline mechanisms unless the backrest can be locked into position or stops at a position less than 35 degrees from vertical] Simultaneously apply a force of 1112 N (250 lbf.) for 10 seconds to each backrest position (max. 2). Shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	Not Applicable	-
Backrest strength test - vertical – static (functional load)	ANSI/BIFMA X5.4-2020 Sec. 6	[Applicable to all units with backrests that are fixed (or can be locked) in the upright position and do not pivot] [Not applicable to units with backrest heights greater than 965 mm (38 in.) in height or backs with overall thickness of less than 50 mm (2 in.) within 50 mm (2 in.) from the top of the back] [Not applicable to recliners with user force activated back recline mechanisms unless the backrest can be locked into position or stops at a position less than 35 degrees from vertical] A force of 890 N (200 lbf.) shall be applied simultaneously to each backrest position for 1 minute. Shall cause no loss of serviceability to the unit.	Not Applicable	-
Backrest strength test - vertical – static (proof load)	ANSI/BIFMA X5.4-2020 Sec. 6	[Applicable to all units with backrests that are fixed (or can be locked) in the upright position and do not pivot] [Not applicable to units with backrest heights greater than 965 mm (38 in.) in height or backs with overall thickness of less than 50 mm (2 in.) within 50 mm (2 in.) from the top of the back] [Not applicable to recliners with user force activated back recline mechanisms unless the backrest can be locked into position or stops at a position less than 35 degrees from vertical] A force of 1334 N (300 lbf.) shall be applied to each backrest position for a minimum of 10 seconds. Shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	Not Applicable	-

Backrest durability test - horizontal - cyclic	ANSI/BIFMA X5.4-2020 Sec. 7	[Applicable to units with backrests greater than 200 mm (7.9 in.) in height] Samples are loaded with 109 kg (240 lb.) on each seating position and simultaneously apply a 334 N (75 lbf.) force to each backrest (maximum of 2 backrests) for 120,000 cycles at an approximate rate between 10 and 30 cycles per minute. There shall be no loss of serviceability.	Not Applicable	-
Backrest durability test - vertical - cyclic	ANSI/BIFMA X5.4-2020 Sec. 8	[Applicable to units with backrests that are fixed (or can be locked) in the upright position and do not pivot] [Not applicable to units with backrest heights greater than 965 mm (38 in.) in height or backs with overall thickness of less than 50 mm (2 in.) within 50 mm (2.0 in.) from the top of the back] Apply a 890 N (200 lbf.) force at the top of the backrest for 10,000 cycles at an approximate rate between 10 and 30 cycles per minute. Repeat the test on each backrest position determined in 8.3c. There shall be no loss of serviceability.	Not Applicable	-
Arm strength test - horizontal – static (functional load)	ANSI/BIFMA X5.4-2020 Sec. 9	[Applicable to seating units with arms] For units with a distance between the arms less than 889 mm (35 in.), a force of 445 N (100 lbf.) shall be applied for 1 minute in the inward direction. Repeat setup and procedures in the outward direction. For units with distance between the arms greater than or equal to 889 mm (35 in.), a force of 592 N (133 lbf.) shall be applied for 1 minute in the inward direction. Repeat setup and procedures in the outward direction. Shall cause no loss of serviceability.	Not Applicable	-
Arm strength test - horizontal – static (proof load)	ANSI/BIFMA X5.4-2020 Sec. 9	[Applicable to seating units with arms] For units with a distance between the arms less than 889 mm (35 in.), a force of 667 N (150 lbf.) shall be applied for a minimum 10 seconds in the inward direction. Repeat setup and procedures in the outward direction. For units with distance between the arms greater than 889 mm (35 in.), a force of 890 N (200 lbf.) shall be applied for a minimum 10 seconds in the inward direction. Repeat setup and procedures in the outward direction. Shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	Not Applicable	-
Arm strength test - vertical – static (functional load)	ANSI/BIFMA X5.4-2020 Sec. 10	[Applicable to units with arms less than 965 mm (38 in.) in height from the floor] For units with armrest width of greater than 75	Not Applicable	-

		mm (3 in.) a force of 890 N (200 lbf.) shall be applied for 1 minute. For units with an armrest width of less than or equal to 75 mm (3 in.), a force of 750 N (169 lbf.) shall be applied for 1 minute. 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.		
Arm strength test - vertical – static (proof load)	ANSI/BIFMA X5.4-2020 Sec. 10	[Applicable to all units with arms less than 965 mm (38 in.) in height from the floor] For units with armrest width of greater than 75 mm (3 in.) a force of 1335 N (300 lbf.) shall be applied for a minimum of 10 seconds. For units with an armrest width of less than or equal to 75 mm (3 in.) a force of 1125 N (253 lbf.) shall be applied for a minimum of 10 seconds. Shall be no sudden and major change in the structural integrity of the unit. 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.	Not Applicable	-
Arm durability test for multiple seat units - horizontal - cyclic	ANSI/BIFMA X5.4-20 Sec. 11	[Applicable to all multiple seat units with arms] Apply and remove a 445 N (100 lbf.) force in the outward direction for 50,000 cycles at an appropriate rate between 10 and 30 cycles per minute. Shall be no loss of serviceability.	Not Applicable	-
Arm durability test for multiple seat units - vertical - cyclic	ANSI/BIFMA X5.4-2020 Sec. 12	[Applicable to all multiple seat units with arms] Apply and remove a 667 N (150 lbf.) force for 10,000 cycles at an appropriate rate between 10 and 30 cycles per minute. There shall be no loss of serviceability.	Not Applicable	-
Arm durability test for single seat units - angular - cyclic	ANSI/BIFMA X5.4-2020 Sec. 13	[Applicable to single seat units with arms] Simultaneously apply a force of 400 N (90 lbf.) to each arm initially at a 10°±1° degree angle. The force shall be applied and removed for 60,000 cycles at a rate between 10 and 30 cycles per minute. There shall be no loss of serviceability to the unit.	Not Applicable	-
Seating durability tests - cyclic	ANSI/BIFMA X5.4-2020 Sec. 14	[Applicable to all seating units] A 57 kg (125 lb.) test bag shall impact each seating position with a unique structure for 100,000 cycles at an approximate rate between 10 and 30 cycles per minute. A minimum of 2 seating positions shall be tested for a multiple seating unit. All seats not being cycled shall be loaded with 109 kg (240 lb.) of weight per seat. There shall be no loss of serviceability to the unit.	MEET	PASS



Drop test – dynamic (functional load)	ANSI/BIFMA X5.4-2020 Sec. 15	[Applicable to all seating units] A 102 kg (225 lb.) test bag shall be raised 152 mm (6 in.) above the uncompressed seating position and released 1 time. This shall be repeated for each unique structure. A minimum of two seating positions shall be tested for a multiple seating unit. All seats not being impacted shall be loaded with 109 kg (240 lb.) of weight per seat. A functional load shall cause no loss of serviceability.	MEET	PASS
Drop test – dynamic (proof load)	ANSI/BIFMA X5.4-2020 Sec. 15	[Applicable to all seating units] A 136 kg (300 lb.) test bag shall be raised 152 mm (6 in.) above the uncompressed seating position and released 1 time. This shall be repeated for each unique structure. All seats not being impacted shall be loaded with 109 kg (240 lb.) of weight per seat. A proof load shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	MEET	PASS
Leg strength test - front and side application (functional load)	ANSI/BIFMA X5.4-2020 Sec. 16	[Applicable to units without pedestal bases] Front Load test (Not applicable to folding chairs without locking mechanisms): A force of 334 N (75 lbf.) shall be applied once to each front leg individually for 1 minute. Side Load test: A force of 334 N (75 lbf.) shall be applied once to a front and rear leg individually for one 1 minute. Functional load(s) applied once in each direction shall cause no loss of serviceability. Note: A separate unit may be used for the side load portion of the test.	MEET	PASS
Leg strength test - front and side application (proof load)	ANSI/BIFMA X5.4-2020 Sec. 16	[Applicable to all units without pedestal bases] Front Load test (Front Load Test is not applicable to folding chairs without locking mechanisms.): A force of 503 N (113 lbf.) or a force equal to the weight of the entire unit, whichever is greater, but not to exceed 667 N (150 lbf.) shall be applied once to each front leg individually for minimum of 10 seconds. Side Load test: A force of 503 N (113 lbf.) or a force equal to the weight of the entire unit, whichever is greater, but not to exceed 667 N (150 lbf.), shall be applied once to a front and rear leg individually for minimum of 10 seconds. Proof load(s) applied once in each direction shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	MEET	PASS

		Note: A separate unit may be used for the side load portion of the test.												
Unit drop test - dynamic	ANSI/BIFMA X5.4-2020 Sec. 17	[Not applicable to units with pedestal bases or casters] [Individual segments of ganged units shall be tested individually. Units required by the manufacturer's instruction to be combined with another unit will be tested in the combined configuration] Lift one end of the unit to the specified height per Table 2 or to the balance point whichever comes first and allow it to drop freely so it lands squarely. Repeat on the opposite end of the unit. There shall be no loss of serviceability. <table><tr><td>Unit Weight</td><td>Drop Height</td></tr><tr><td>< 45 kg (100 lbs.)</td><td>180 mm (7.1 in.)</td></tr><tr><td>45 - 90 kg (100-200 lbs.)</td><td>120 mm (4.7 in.)</td></tr><tr><td>>90 - 136 kg (200 - 300 lbs.)</td><td>60 mm (2.4 in.)</td></tr><tr><td>> 136 kg (300 lbs.)</td><td>n/a</td></tr></table>	Unit Weight	Drop Height	< 45 kg (100 lbs.)	180 mm (7.1 in.)	45 - 90 kg (100-200 lbs.)	120 mm (4.7 in.)	>90 - 136 kg (200 - 300 lbs.)	60 mm (2.4 in.)	> 136 kg (300 lbs.)	n/a	MEET	PASS
Unit Weight	Drop Height													
< 45 kg (100 lbs.)	180 mm (7.1 in.)													
45 - 90 kg (100-200 lbs.)	120 mm (4.7 in.)													
>90 - 136 kg (200 - 300 lbs.)	60 mm (2.4 in.)													
> 136 kg (300 lbs.)	n/a													
Caster or unit base durability test for pedestal base units	ANSI/BIFMA X5.4-2020 Sec. 18.1	[Applicable to pedestal base units with casters] The unit or unit base shall be cycled 500 cycles over the obstacles and then 25,000 cycles on a smooth, hard surface without obstacles. At the conclusion of cycling, a 22 N (5 lbf.) pull force shall be applied to each caster in line with the caster stem centerline. Shall be no loss of serviceability. The caster shall not separate from the base as a result of the application of the 22 N (5 lbf.) force.	Not Applicable	-										
Caster or unit frame durability test for units with legs	ANSI/BIFMA X5.4-2020 Sec. 18.2	[Applicable to units with legs and casters] For single seating units, the unit, or unit's frame with casters, shall be cycled for 500 cycles over the obstacles and then 25,000 cycles on a smooth hard surface without obstacles. Multiple seating units shall be cycled 250 cycles over the obstacles. At the conclusion of cycling, a 22 N (5 lbf.) pull force shall be applied to each caster in line with the caster stem centerline. Shall be no loss of serviceability. No part of the caster shall separate from the base as a result of the application of the 22 N (5 lbf.) force.	Not Applicable	-										
Swivel test - cyclic	ANSI/BIFMA X5.4-2020 Sec. 19	[Applicable to units with a swivel seat] A 122 kg (270 lb.) load shall be placed on the seat. The seat or platform shall rotate for 120,000 cycles at an appropriate rate between 5 and 15 rotations per minute. There shall be no loss of serviceability.	Not Applicable	-										
Tilt / rocker / glider mechanism test - cyclic	ANSI/BIFMA X5.4-2020 Sec. 20	[Applicable to all with tilt, rocker or glider mechanisms. Not applicable to traditional curved-bottom rocking chairs]	Not Applicable	-										



		A test load of 109 kg (240 lb.) shall be secured on the center of the seat. The unit shall be cycled for 200,000 cycles at an appropriate rate between 10 and 30 cycles per minute. There shall be no loss of serviceability.		
Stability tests - rear stability for non-tilting units	ANSI/BIFMA X5.4-2020 Sec. 21.3	[Applicable to units with backrests greater than 200 mm (7.9 in.) in height] Load the seat with 6 disks. Apply a rearward force parallel to the top surface of the highest disk. The location of the force application is 6 mm (0.25 in.) from the top of the disk. For units with seat height less than 710 mm (28.0 in.): $F = 0.1964 (1195 - H)$ Newton. H is the seat height in mm. $[F = 1.1 (47 - H)$ pounds force. H is the seat height in inches.] For units with seat height equal to or greater than 710 mm (28.0 in.): Fixed force of 93 N (20.9 lbf.) The application of the specified force shall not cause the unit to tip over.	Not Applicable	-
Stability tests - rear stability for tilting units	ANSI/BIFMA X5.4-20 Sec. 21.4	[Applicable to tilting units, including recliners with backrests greater than 200 mm (7.9 in.) in height.] If a product has legrests, then set the legrests in the close position for this test. If the test causes the legrest to extend, then test as such, but note that the legrest was extended in the test report. Place the first two disks in the chair as specified. Then tilt the chair until it reaches its full tilt/recline position but not greater than 135 degrees from horizontal, then load the unit with the remaining 11 disks (total of 13 disks). If necessary, recline the chair to the full recline position. If the unit does not tip over and the tilt mechanism does not remain in its most rearward position (i.e., at its tilt stop) when the disks are placed in the seat, the unit shall also be tested according to section 21.3 with the unit in the unlocked position. The unit shall not tip over.	Not Applicable	-
Forward Stability for units less than 36.3 kg (80 lbs)	ANSI/BIFMA X5.4-2020 Sec 21.5	[Applicable to all units, including units/recliners without legrests or with retracted legrests] Apply a vertical load of 600 N (135 lbf.) centered 60 mm (2.4 in.) from to the front edge of the load bearing surface of the chair. For stools, units with casters, or units with backs, except traditional curved-bottom rocking chair, apply a horizontal force of 20 N (4.5 lbf.) at the same height that the vertical force is applied. The chair shall not tip over as the result of the force application(s).	MEET	PASS
Forward Stability for units greater than or equal to	ANSI/BIFMA X5.4-2020 Sec 21.6	[Applicable to all units, including units/recliners without legrests or with retracted legrests]	Not Applicable	-



36.3 kg (80 lbs)		Apply a 142 N (32 lbf.) downward force initially at 45°± 5° to the test platform by attaching a strap, not to exceed 76 mm (3 in.) in width, centered over the front portion of the seat. The chair shall not tip over as the result of the force application.		
Tablet arm load ease test - cyclic	ANSI/BIFMA X5.4-2020 Sec 22	[Applicable to units that come equipped with tablet arms] Apply a 25 kg (55 lbs.) load through a 203 mm (8 in.) diameter area at 1 inch from the front edge of the surface. The cycling device shall be set to operate at a rate of 14 ± 6 cycles per minute. The load shall be raised until the entire weight is off the tablet surface and then eased (without impact) onto the surface, so that it takes the entire weight without any support from the cycling device. Repeat for a total of 100,000 cycles. There shall be no loss of serviceability to the unit.	Not Applicable	-
Tablet arm load test - static	ANSI/BIFMA X5.4-2020 Sec 23	[Applicable to units that come equipped with tablet arms] Apply a load of 68 kg. (150 lb.) through a 203 mm (8 in.) diameter area at 1" from the front edge of the surface for 1 minute and remove the load. The load applied once shall cause no sudden and major change in the structural integrity of the unit. After performing the test, the tablet arm must allow egress from the unit; other losses of serviceability are acceptable.	Not Applicable	-
Structural durability test – side-to-side - cyclic	ANSI/BIFMA X5.4-2020 Sec. 24	[Applicable to units that do not swivel] [Not applicable to units with casters or products with seat heights greater than 610 mm (24 in.) or lower than 356 mm (14 in.)] Place a weight of 109 kg (240 lb.) in the center of each seating position and apply a "push-pull" action with force of 334 N (75 lbf.) to the sides of the unit at rate of 10-20 cycles per minute for 25,000 cycles. There shall be no loss of serviceability.	MEET	PASS
Cycle tests for recliners- backrest and/or legrest mechanism durability	ANSI/BIFMA X5.4-2020 Sec. 25	[Applicable to non-electrical recliners with or without legrests] A weight of 56 kg (124 lb.) shall be secured in the center of the backrest, a weight of 56 kg (124 lb.) shall be secured in the center of the seat, and a weight of 12 kg (27 lb.) shall be secured to the center of the legrest. The backrest and the legrest shall each be cycled for 25,000 cycles, at a rate not exceeding 15 cycles per minute. For multi-seat units, repeat testing on each unique recliner mechanism. There shall be no loss of serviceability.	Not Applicable	-
Legrest strength test – static load	ANSI/BIFMA X5.4-2020 Sec. 26	[Applicable to recliners with an integral legrest] For units that may remain upright (without	Not Applicable	-

		reclining the backrest) when extending the legrest, place 112 kg (248 lb.) in the center of the seat and keep the unit in the upright position. For units that must be reclined when extending the legrest, place 56 kg (124 lb.) in the center of the seat and 56 kg (124 lb.) on the center of the reclined backrest. Apply a 13.6 kg (30 lb.) load through a 203 mm (8 in.) diameter area at 25 mm (1 in.) from the weakest edge of the legrest load-bearing structure. For multi-seat units, repeat testing on each unique recliner mechanism. The load shall cause no loss of serviceability. Legrest must hold the 13.6 kg (30 lb.) load and not retract.		
Footrest static load test for stools – vertical – static (functional load)	ANSI/BIFMA X5.4-2020 Sec. 27	[Applicable for all stools that contain a footrest feature] Apply a force F1 of 445 N (100 lbf.) uniformly along a 102 mm (4 in.) distance along the footrest for 1 minute. If appropriate, apply an additional force F2 of 445 N (100 lbf.) to the opposite side for an additional 1 minute. Then F2 is removed and F1 is increased to 890 N (200 lbf.) for 1 minute. There shall be no loss of serviceability or sudden loss of footrest height.	Not Applicable	-
Footrest static load test for stools – vertical – static (proof load)	ANSI/BIFMA X5.4-2020 Sec. 27	[Applicable for all stools that contain a footrest feature] Apply a force of 1334 N (300 lbf.) uniformly along a 102 mm (4 in.) distance along the footrest for a minimum of 10 seconds. The load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	Not Applicable	-
Footrest durability test for stools – vertical – cyclic	ANSI/BIFMA X5.4-2020 Sec. 28	[Applicable for all stools that contain a footrest feature] Apply a 890 N (200 lbf.) force uniformly along a 102 mm (4 in.) distance along the footrest for 50,000 cycles at a rate between 10 and 30 cycles per minute. 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.	Not Applicable	-

ANNEX I: SUBMISSION DESCRIPTION

Sample Description: Weekday table 230x83

The overall dimension was recorded as:
 39.0 cm (D) x 190.0 cm (W) x 45.3 cm (H)

Sample weight: 16.9 kg

EXHIBIT



END