Technical Report No. 68.190.15.01572.01

Rev. 00

Dated 2015-12-03

Client:	Bojie Furniture Company Limited No.3 Youyi road, Gaoli industry area,Qinghutou village,Tangxia town,Dongguan city,Guangdong priovince.
Manufacturing place:	Bojie Furniture Company Limited No.3 Youyi road, Gaoli industry area,Qinghutou village,Tangxia town,Dongguan
Test subject:	Product: D00213DS MESH CHAIR Model No.: D00213DS
Test specification:	AS/NZS 4438:1997+A1:1999 – Height adjustable swivel chairs Test Level:6
Purpose of examination:	Test according to the test specification.
Test result:	Pass Details see the test result in report Clause 3.

1 Description of the test subject

1.1 Function

☒ Manufacturer's specification for intended use:
Type of product: D00213DS MESH CHAIR
Type designation: D00213DS

1.2 Technical Data

Dimension (D x W x H) (mm)	:	660x695x985-1105
Weight (kg)	:	24.5

1.3 Product Photos

2 Order

2.1 Date of Purchase Order, Customer's Reference

2015-11-10

2.2 Receipt of Test Sample, Location

2015-11-02, TÜV SÜD Certification and Testing (China) Co., Ltd. Guanlan lab

2.3 Date of Testing

From 2015-11-03 to 2015-12-03

2.4 Location of Testing

TÜV SÜD Certification and Testing (China) Co., Ltd. Guanlan lab

2.5 Points of Non-compliance or Exceptions of the Test Procedure

None

3 Test Results

Abbreviations:			
P(ass) =passed	F(ail) = failed	NA = not applicable	NT = not tested

AS/NZS 4438:1997			
SECTION 3 Functional Criteria			
Clause	Requirement ~Test	Measuring result - Remark	Verdict
3.3	**Dimension Requirements – Definition of functional dimensions**		---
3.3.1	**General** The dimensional requirements shall conform to the values detailed in Table 3.2.	See table 3.2 at page 4.	---
3.3.2	**Seat height `a'**	385mm-499mm	For reference only
3.3.3	**Seat depth `b'**	400mm-535mm	For reference only
3.3.4	**Depth of seat surface `c'**	460mm	For reference only
3.3.5	**Seat width `d'**	520mm	For reference only
3.3.6	**Inclination of seat surface `e'**	Non--adjustable for foreward: 4,5° --- 4,0°; Adjustable forward:4,0° Adjustable backward: 20°	For reference only F
3.3.7	**Height `f' of the backrest supporting point `S' above the seat surface**	195mm-315mm	For reference only
3.3.8	**Height of the backrest `g'**	500mm	For reference only
3.3.9	**Height `h' of the upper edge of the back pad above the seat surface**	513mm-593mm	For reference only
3.3.10	**Backrest width `i'**	515mm	For reference only
3.3.11	**Horizontal radius `k' of backrest**	490mm	For reference only
3.3.12	**Vertical radius `l' of backrest**	540mm	For reference only
3.3.13	**Maximum rearward projection `m' of the backrest**	280mm	For reference only
3.3.14	**Length of armrest `n'**	260mm	For reference only
3.3.15	**Width `o' of armrest**	90mm	For reference only
3.3.16	**Height `p' of armrest above seat**	238mm-318mm	For reference only
3.3.17	**Distance `q' from the front of the armrests to the front edge of seat surface**	120mm	For reference only
3.3.18	**Clear width `r' between the armrests**	450mm-500mm	For reference only

3.3.19	**Maximum off-set `λ' of chair under-frame**	320mm	For reference only
3.3.20	**Stability dimension `t'**	290mm	For reference only
3.3.21	**Dimension `w'**	325mm	For reference only

TABLE 3.2

DIMENSIONAL REQUIREMENTS

Criteria		Dimensional range		
SEAT				
a	Height	≤ 420 to	≥ 515	*a*
	Height adjustment range		≥ 100	
b	Depth			
	(i) not-adjustable	380 to	440	*b*
	(ii) adjustable	≤ 380 to	≥ 480	
c	Depth of seat surface		≥ 380	*c*
d	Width of seat		≥ 400*	*d*
e	Inclination (tilt) of surface			
	(i) non-adjustable backward	2° to	7°	*e*
	(ii) adjustable† maximum allowable range forward	10°		
	backward	7°		
	minimum range forward	3°		
	backward	7°		
BACKREST				
f	Height of point 'S' above seat surface			
	(i) non-adjustable	170 to	220	*f*
	(ii) adjustable	≤ 170 to	≥ 230	
g	Height of back pad (adjustable chair)		≥ 220	*g*
h	Height of upper edge of back pad above the seat surface (non-adjustable chair)		≥ 360	*h*
i	Width		> 360	*i*
k	Horizontal radius		> 400	*k*
l	(i) Curvature—horizontal		concave	*l*
	(ii) Curvature—vertical		convex	
m	Maximum rearward projection		≤ 1.34 × *t*	*m*
ARMREST				
n	Length		≥ 200	*n*
o	Width		≥ 40	*o*
p	(i) Height above seat fixed	200 to	250	*p*
	(ii) Height above seat adjustable	< 200 to	> 250	
q	Distance from front edge of the seat surface		≥ 100	*q*
r	Clear width between the armrests	460 to	510	*r*
OTHER				
λ	Anti-tripping dimension ‡		≤ 365	λ
t	Stability dimension		≥ 195	*t*

* Although this dimension aligns with CEN, both New Zealand and Australian practice is for seat width to be ≥ 430.

† Type 4 chairs may exceed these ranges.

‡ If castors are fitted they may project from the arm of the base by 50 mm and dimension λ may increase by 50 mm.

NOTES:
1 All dimensions are in millimetres unless otherwise shown.
2 For tolerance requirements see Clause 2.3
3 There is no dimension labelled '*j*'.

SECTION 4 Testing – Strength and Durability Requirements			
Clause	Requirement ~Test	Measuring result -Remark	Verdict
4.3	**PERFORMANCE REQUIREMENTS**		---
4.3.1	**Seat static load test** Place the chair on the test platform. Apply the downward force of 2000N at the seat	Fulfilled. See table 5.1 at page 10.	P

	loading position for a total 10 times. Then move to a position 100mm back from the front edge of the seat and apply the same force 10 times. The chair seat shall remain intact and the chair shall be free of defects that will cause either injury to the user or loss of serviceability of the chair.		
4.3.2	**Back static load test with flexibility assessment** Place the seat on the floor surface in normal use position. Load the seat with 2000N on the seat loading position**.** Apply the back force of 760N perpendicular to the back and carry out 10 cycles. The chair back shall remain intact and the chair shall be free of defects that will cause either injury to the user or loss of serviceability of the chair.	Fulfilled. See table 5.1 at page 10.	P
4.3.3	**Arm sideways static load test** Place the chair on the test platform. Simultaneously apply the outward force of 600N to the point along each arm most likely to cause failure. Repeat above operation for 10 times. The arm of the chair shall remain intact and the chair shall be free of defects that will cause either injury to the user or loss of serviceability of the chair.	Fulfilled. See table 5.1 at page 10.	P
4.3.4	**Arm downwards static load test** Place the chair on the test platform. Apply the vertical force of 1200N to the point along one arm most likely to cause failure for 10 times. If the chair overbalances, apply a load on the side of the seat opposite to the arm tested to prevent the chair from overbalancing. The arms of the chair shall remain intact and the chair shall be free of defects that will cause either injury to the user or loss of serviceability of the chair.	Fulfilled. See table 5.1 at page 10.	P
4.3.5	**Seat and back fatigue test** Place the chair on the test platform. Apply	Fulfilled. See table 5.1 at page 10.	P

	the downward force of 1200N at the seat loading position. With the downward force maintained, apply the back force of 415N at back loading position. Remove the back load and then the seat load. Repeat above operation for 200000cycles. The chair shall be free of defects that will cause either injury to the user or loss of serviceability of the chair.		
4.3.6	**Seat impact test** Place the chair on the test platform. Set the chair height to the maximum. Allow the seat impactor to fall freely from the height of 350 mm onto the seat loading position for 5 times and then using the same drop height, allow the impactor to fall onto a point as near the front edge of the seat as possible for a further 5 times. Set the chair height to the minimum and repeat above procedure for both impact points. The seat of the chair shall remain intact and the chair shall be free of defects that will cause either injury to the user or loss of serviceability of the chair.	Fulfilled. See table 5.1 at page 10.	P
4.3.7	**Back impact test** Using stops, restrain the front feet of the chair from moving forward. Allow the impact hammer to fall through the vertical height of 620 mm or angle of 68 ° and strike the top of the outer chair back in the center 10 times with the pendulum arm vertical. The seat of the chair shall remain intact and the chair shall be free of defects that will cause either injury to the user or loss of serviceability of the chair.	Fulfilled. See table 5.1 at page 10.	P
4.3.8	**Arm impact test** Place stops against the feet of the chair on the opposite side of the chair to the arm being tested. Using the impact hammer swung through the angle of 68 ° strike the outside face of the arm in an inward direction with the pendulum arm vertical at the position most likely to cause failure for a total of 10 times.	Fulfilled. See table 5.1 at page 10.	P

	The arms of the chair shall remain intact and the chair shall be free of defects that will cause either injury to the user or loss of serviceability of the chair.		
4.3.9	**Drop test** Support the chair so that the base plane is at 10 degree to the horizontal. Lift the chair to a height of 450mm. Drop the chair onto the floor 10 times on the selected leg. The seat of the chair shall remain intact and the chair shall be free of defects that will cause either injury to the user or loss of serviceability of the chair.	Fulfilled. See table 5.1 at page 10.	P
4.3.10	**Swivelling test** Using the small loading pad, apply the vertical downward force of 1200N on the seat loading position. Rotate the seat of the chair through an angle of 45 degree relative to the base for the number of 100000 cycles. The swiveling mechanism shall remain in working order.	Fulfilled. See table 5.1 at page 10.	P
SECTION 5 Testing – Stability Requirements			
5.2	**OVERTURNING PERFORMANCE REQUIREMENTS**		---
5.2.1	**Rearwards overturning (all chairs)** Set the chair to the maximum height position. Position the chair so that two feet are against the stops or for a circular based chair, so that its edge is against the stop in a position most likely to cause instability. Apply a vertical force of 600N to the seat at the SLP and apply the overturning force of 134N horizontally to the back of the chair either at a height of 300mm above the unloaded seat or at the top edge of the backrest whichever is the lower. The chair shall not overturn.	Fulfilled. See table 5.1 at page 10.	P
5.2.2	**Rearwards overturning of tilting or reclining chairs** Set the chair to the maximum height position. Place the 11 discs on the chair seat firmly settled against the contours of	Fulfilled.	P

	the back of the chair. If the discs stacked on top of each other exceed the height of the chair back, use a light stick or other means of support, to stop the upper discs from sliding off. The chair shall not overturn.		
5.2.3	**Accidental rearward overturning** Set the chair to the maximum height position. Prevent rearwards movement of the chair then tilt the chair rearwards on its rear feet so that the front edge of the seat moves through a horizontal distance of 100mm. Allow the chair to fall freely. Check whether the chair overturns. The chair shall not overturn.	Fulfilled.	P
5.3	**Rolling Stability Performance Requirement** Attach soft-tyred castors to the chair. Place an unloaded chair on the piece of flat steel. Attach a force measuring device at a height of up to 250mm above the test surface. Apply a force sufficient to allow the chair to move at 50 mm/s across the floor. The unloaded chair shall have a rolling resistance of a least 12N on a hard floor surface.	Fulfilled.	P
SECTION 6 Marking, Instructions			
6.1	**General** All chairs shall be adequately and clearly marked and supplied with full operating instructions. The information provided shall include the items in Clauses 6.2 and 6.3. In addition, test reports when required shall be provided in full and include the information in the relevant test methods.		---
6.2	**Instructions for use** Each chair shall be supplied with instructions containing the following information: (a) Instructions on the use of adjusting mechanisms.	Information for use was not provided.	NT

	(b) Instructions for upkeep and maintenance of the chair. (c) An outline on ergonomic seat back and height setting. (d) The manufacturer's or importer's name and address. (e) Care,flammability and summarized operating details.		
6.3	**Marking** All chairs shall be permanently marked with the followings (a) The manufacturer's / importer's name and address. (b) The year of manufacture. (c) A label stating: 'Hard-tyred castors are unsuitable for use on hard floors or firm chairmats in which soft-tyred castors should be used. Soft-tyred castors are distinguishable by the tyre being a different color to the body of the castor'.	No marking was provided.	NT

TABLE 5.1

TESTING REQUIREMENTS FOR STRENGTH, DURABILITY AND STABILITY

SUMMARY OF TESTS

Clause No.	Description of test	Test parameters	Test level: 3	4(G)	5(H)	6(S)
4.3.1	Seat static load	Downwards force V_s	1300 N	1600 N	2000 N	2000 N
4.3.2	Back static load with flexibility assessment	Back force H_s Balancing seat force	560 N 1300 N	760 N 1600 N	760 N 2000 N	760 N 2000 N
4.3.3	Arm sideways static load	Outward force H_a	400 N	500 N	500 N	600 N
4.3.4	Arm downwards static load	Vertical force V_a	800 N	900 N	1000 N	1200 N
4.3.5	Seat fatigue	Seat loading force Number of applications	950 N 50,000	950 N 100,000	950 N 200,000	1200 N 200,000
4.3.5	Back fatigue	Seat loading force Back loading force Number of applications	950 N 330 N 50,000	950 N 330 N 100,000	950 N 330 N 200,000	1200 N 415 N 200,000
4.3.6	Seat impact	Drop height	180 mm	240 mm	300 mm	350 mm
4.3.7	Back impact	Drop height Angle	210 mm 38°	330 mm 48°	620 mm 68°	620 mm 68°
4.3.8	Arm impact	Drop height Angle	210 mm 38°	330 mm 48°	620 mm 68°	620 mm 68°
4.3.9	Drop test	Drop Height	200 mm	300 mm	450 mm	450 mm
4.3.10	Swivelling test	Vertical downwards force Number of rotations	950 N 50,000	950 N 100,000	950 N 100,000	1,200 N 100,000
5.2.1	Rearwards overturning (all chairs)	Vertical force applied to seat Overturning force: For chairs with h > 720 mm For chairs with h < 720 mm	600 N 80 N 285.7(1-h/1000)N see Clause 5.2.2	600 N 80 N	600 N 80 N	600 N 80 N
5.2.2	Rearwards overturning of tilting or reclining chairs	See Clause 5.2.2				
5.2.3	Accidental rearward overturning	See Clause 5.2.3				
5.3	Rolling stability	See Clause 5.3				

NOTE: For tolerance requirements see Clause 2.3

LEGEND: G = General H = Heavy S = Severe

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
TÜV SÜD Group

Engineer: James Huang
James Huang
Project Handler

Technical Report checked: Kelly Zheng
Kelly Zheng
Designated Reviewer

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