

Test Report

No.: SDHG1406008735FT

Date: Jul.25, 2014

Page 1 of 11

MERRYFAIR CHAIR SYSTEM SDN BHD
NO. 2, JALAN KORPORAT 1/KU9, TAMAN PERINDUSTRIAN MERU,
KAPAR, 42200 SELANGOR, MALAYSIA.

The following sample(s) was / were submitted and identified on behalf of the client as:

Sample Description : APOLLO – OFFICE CHAIR
Style / Item No. : 908 KT A72 VB
Sample Receiving Date : Jun.12, 2014
Sample Resubmission Date : Jul.17, 2014
Test Performing Date : Jun.12, 2014 to Jul.25, 2014

Test Result Summary

Test(s) Requested	Result(s)
BS EN 1335-1-2000 (Type B)	PASS
BS EN 1335-2-2009 & BS EN 1335-3-2009+Corrigendum-2011	PASS

Summary:

1. For further details, please refer to the following page(s).

Signed for and on behalf of
SGS-CSTC Co., Ltd.



Bill Wang
Approved signatory



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TESTS AND RESULTS

Part I. Test Conducted:

BS EN 1335-1:2000 Office furniture – office working chair – Part 1: dimensions –determination of dimensions

Basis of dimensions:

The dimensions in this standard are based on the conflicting requirements of anthropometric measurements, mechanical design, subjective preference and other factors. In general, they should be suitable for people between 1510 mm and 1920 mm in body height. People with body height outside this range may need furniture of different dimensions or a footrest. Due to the variation in population heights in different countries, there will be a variation in the percentage of the office population which the dimensions will accommodate in each country.

General Test Condition:

The following test program was conducted in a laboratory environment maintained at 15°C to 25°C and 50%±5 RH. The sample was individually tested after conditioning in the test environment for at least 24 hours prior to conducting the test.

The complete detailed procedures may be found in the referenced specification and are only summarized herein. Unless otherwise specified, the tests are carried out in the following order on the same sample.

No. of Sample:

1 piece (Sample 1). For more sample information and pictures, please refer to the following page.

Office Working Chair Type: Type B. For classification of type, please refer to Annex A.

Test Items		Dimension Requirements				Test Results & Rating	
		Adjustability	Type B				
			(-) Allow.	Min.	Max.	(+) Allow.	
SEAT							
Seat height	a	Adjustable Adjustable range	yes no	420 100	510 +	yes yes	PASS
Seat depth	b	Non-adjustable Adjustable Adjustable range	no yes no	380 400 50	440 420 +	no yes yes	PASS
Depth of seat surface	c	/	no	380	+	yes	PASS
Seat width	d	/	no	400	+	yes	PASS
Inclination of seat surface	e	Non-adjustable Adjustable Adjustable range	no yes	-2° -2° +	-7° -7° +	no yes	PASS
BACK REST							
Height of the back supporting point "S" above	f	Non-adjustable Adjustable Adjustable range	no yes no	170 170 50	220 220 +	no yes yes	PASS
Height of the back pad -Adjustable	g	/	no	220	+	yes	PASS
-Non-Adjustable			no	260	+	yes	

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Dimension Requirements							Test Results & Rating
Test Items	Adjustability	Type B					
		(-) Allow.	Min.	Max.	(+) Allow.		
Height of the upper edge the backrest above the seat surface	h	/	no	360	+	yes	PASS
Backrest width	i	/	no	360	+	yes	PASS
Horizontal radius of the backrest	k	/	no	400	+	yes	PASS
Backrest inclination	l	Adjustable range	no	15°	+	yes	PASS
ARM REST							
Length of armrest	n	/	no	200	+	yes	PASS
Width of the armrest	o	/	no	40	+	yes	PASS
Height of armrest above the seat	p	Non-adjustable Adjustable	no yes	200 200	250 250	no yes	PASS
Distance from the front of the armrests to the front edge of the seat surface	q	/	no	100	+	yes	PASS
Clear Width Between The Armrest	r	/	no	460	510	no	PASS
UNDERFRAME							
Maximum offset of the underframe (Anti-stumbling-dimension)	s	/	yes	+	365	no	PASS
Stability dimension	t	/	no	195	+	yes	PASS

Annex A: Classification of office work chair type

Type A, B and C are all required to have adjustable seat height and backrest inclination. They may also have any other adjustment features listed in Table A.1.

- **Type A.** In addition to the above, a type A chair is required adjustable seat depth, seat surface inclination, (at least 6°, and a height of backrest supporting point (“S”) above the seat surface. The minimum seat height is required to be 400 mm with a minimum adjustment range of 120 mm.
- **Type B.** A type B chair has specified dimensions which are the same as those specified for a type A chair except that it is required to have a minimum seat height of 420 mm with a minimum adjustment range of 100 mm.
- **Type C.** A type C chair has specified dimensions which are similar to type A and B chairs except that limits to adjustment range and maximum dimensions are not frequently specified. The minimum seat height is 420 mm with a minimum adjustment range of 80 mm. This is to accommodate chairs with bulky upholstery.

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Part II. Test Conducted:

BS EN 1335-2:2009 Office furniture-office work chair - part 2: Safety requirements
 BS EN 1335-3-2009+Corrigendum-2011 Office furniture-office work chair - part 3: Test methods

Test Condition:

The following test program was conducted in a laboratory environment maintained at 15°C to 25°C and 50%±5 RH. The sample was individually tested after conditioning in the test environment for at least 24 hours prior to conducting the test.

The complete detailed procedures may be found in the referenced specification and are only summarized herein. Unless otherwise specified, the tests are carried out in the following order on the same sample.

No. of Sample:

2 pieces (Sample 1, 2). For more sample information and pictures, please refer to the following page.

Test	Test Description and Requirements	Test Results
EN 1335-2:2009, Clause 4 Safety requirements		
EN 1335-2:2009, Clause 4.1 General design requirements		
EN 1335-2:2009 Clause 4.1.1	Corners and edges, trapping, pinching and shearing All parts of the chair with which the user comes into contact during intended use, shall be so designed that physical injury and damage to property are avoided. These requirements are met when: a) the safety distance of accessible movable parts is either ≤ 8 mm or ≥ 25 mm in any position during movement; b) accessible corners are rounded with minimum 2 mm radius; c) the edges of the seat, back rest and arm rests which are in contact with the user when sitting in the chair are rounded with minimum 2 mm radius; d) the edges of handles are rounded with minimum 2 mm radius in the direction of the force applied; e) all other edges are free from burrs and rounded or chamfered; f) the ends of accessible hollow components are closed or capped.	PASS
EN 1335-2:2009 Clause 4.1.2	Adjusting devices Movable and adjustable parts shall be designed so that injuries and inadvertent operation are avoided. It shall be possible to operate the adjusting device from sitting position in the chair.	PASS
EN 1335-2:2009 Clause 4.1.3	Connections It shall not be possible for any load bearing part of the chair to come loose unintentionally.	PASS
EN 1335-2:2009 Clause 4.1.4	Avoidance of soiling All parts which are lubricated to assist sliding (greasing, lubricating, etc.) shall be designed to protect users from lubricant stains when in normal use.	PASS



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Test	Test Description and Requirements	Test Results
<p>EN 1335-2:2009 Clause 4.3</p>	<p>Stability during use The chair shall not overbalance under the following conditions: a) by pressing down on the front edge of the seat surface in the most adverse position; b) by leaning out over the arm rests; c) by leaning against the back rest; d) by sitting on the front edge. Requirement a) is fulfilled if the chair does not overbalance when tested according to 7.1.1 of EN 1335-3:2009 with the forces and numbers of cycles according to Table A.1 of this standard. Requirements b) and d) are fulfilled if the chair does not overbalance when tested according to 7.1.2, 7.1.3, 7.1.4 and 7.1.5 of EN 1335-3:2009 with the forces and numbers of cycles according to Table A.1 of this standard. Requirement c) is fulfilled if the chair does not overbalance when tested according to 7.1.6 or 7.1.7 of EN 1335-3:2009 with the forces and numbers of cycles according to Table A.1 of this standard.</p>	<p>PASS (For more test details, please refer to the following pages)</p>
<p>EN 1335-2:2009 Clause 4.4</p>	<p>Rolling resistance of the unloaded chair The unloaded chair shall not roll unintentionally. This requirement is met when: a) the castors are of identical construction; b) the rolling resistance is ≥ 12 N when tested according to EN 1335-3:2009, 7.4.</p>	<p>PASS (For more test details, please refer to the following pages)</p>
<p>EN 1335-2:2009 Clause 4.5</p>	<p>Strength and durability The chair shall be constructed to ensure that it does not create a risk of injury to the user of the chair under the following conditions: a) sitting on the seat, both centrally and off-centre; b) moving forward, backwards, and sideways while sitting in the chair; c) leaning over the arm rests; d) pressing down on the arm rests while getting up from the chair. These requirements are fulfilled when after the tests specified in 7.2.1, 7.2.2, 7.2.6, 7.3.1 and 7.3.2 of EN 1335-3:2009 with the forces and numbers of cycles according to Table A.2 of this standard: e) there are no fractures of any member, joint or component, and f) there is no loosening of joints intended to be rigid, and g) no major structural element is significantly deformed and the chair fulfils its functions after removal of the test loads. h) after the test in 7.2.3 of EN 1335-3:2009 with the forces and numbers of cycles according to Table A.2 of this standard, the arm rests show no fracture.</p>	<p>PASS (For more test details, please refer to the following pages)</p>



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Test	Test Description and Requirements	Test Results																														
EN 1335-2:2009 Clause 5	<p>Information for use Each chair shall be accompanied by information for use in the language of the country in which it will be delivered to the end user. It shall contain at least the following details:</p> <ul style="list-style-type: none"> a) information regarding the intended use; b) information regarding possible adjustments and chair type (see EN 1335-1:2000); c) instruction for operating the adjusting mechanisms; d) instruction for the care and maintenance of the chair; e) information regarding all adjustments; f) information for chairs with seat height adjustments with energy accumulators that only trained personnel may replace or repair seat height adjustment components with energy accumulators; g) information on the choice of castors in relation to the floor surface. 	PASS																														
Test Details for Stability, Rolling resistance of the unloaded chair, Strength and durability																																
EN 1335-3:2009 Clause 7.2.1	<p>Seat front edge static load test Position the smaller seat loading pad at loading point "F" or "J". Apply a vertical downward force 1600N through the centre of the loading pad. Number of cycles: 10 cycles</p>	PASS																														
EN 1335-3:2009 Clause 7.2.2	<p>Combined seat and back static load test Prevent the chair from moving rearwards by placing stops behind two adjacent supporting points at the rear of the chair. Chairs with a locking device(s) for seat and/or back rest angle movements shall be tested first with the device(s) locked for half of the cycles and then with the device(s) unlocked for the other half of the cycles. For the first half of the cycles the back rest shall be in the upright position. Apply a vertical force 1600N through the seat loading pad at point "A". Keep the seat loaded and apply a force 560N through the centre of the back loading pad at point "B". When fully loaded the force shall act at 90° ± 10° to the back rest plane. If the chair tends to overturn reduce the back rest force and report the actual force. Remove the back force and then the seat force. Number of cycles: 10 cycles</p>	PASS																														
EN 1335-3:2009 Clause 7.3.1	<p>Seat and back durability The upper part of the chair shall be positioned so that the centre of the back rest is midway between two adjacent supporting points of the base with stops against these supporting points. The seat load shall be applied vertically using the seat loading pad. The back rest force shall be applied at an angle of 90° ± 10° to the back rest when fully loaded using the back loading pad.</p> <table border="1" data-bbox="555 1597 1034 1856"> <thead> <tr> <th>Step</th> <th>Force</th> <th>Number of cycles</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1500</td> <td>120000</td> </tr> <tr> <td>C</td> <td>1200</td> <td>80000</td> </tr> <tr> <td>B</td> <td>320</td> <td></td> </tr> <tr> <td>J</td> <td>1200</td> <td>20000</td> </tr> <tr> <td>E</td> <td>320</td> <td></td> </tr> <tr> <td>F</td> <td>1200</td> <td>20000</td> </tr> <tr> <td>H</td> <td>320</td> <td></td> </tr> <tr> <td>D</td> <td>1100</td> <td>20000</td> </tr> <tr> <td>G</td> <td>1100</td> <td></td> </tr> </tbody> </table>	Step	Force	Number of cycles	A	1500	120000	C	1200	80000	B	320		J	1200	20000	E	320		F	1200	20000	H	320		D	1100	20000	G	1100		PASS
Step	Force	Number of cycles																														
A	1500	120000																														
C	1200	80000																														
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Test	Test Description and Requirements	Test Results
EN 1335-3:2009 Clause 7.2.6	Foot rest static load test Apply a vertical force 1300N acting 80 mm from front edge of the load bearing structure of the foot rest at those points most likely to cause failure. For round cross section ring shaped footrests, the force shall be applied through the centre of the ring cross section. If the chair tends to overturn load the seat to prevent overturning and report this. Number of cycles: 10 cycles	/ Not applicable
EN 1335-3:2009 Clause 7.3.2	Arm rest durability Apply simultaneously and cyclically the force 400N on each arm rest at points 100 mm behind the foremost point of the arm rest length. Apply a force of (10 ± 5) N through a loading device in principle functioning as shown in Figure 4. With this force applied adjust the apparatus so that each "arm" of the test apparatus has an angle of 10° ± 1° to the vertical. The length of the "arm" of the test apparatus shall be 600 mm ± 10 mm. The arm rests shall be allowed to deform freely. Number of cycles: 60000 cycles	PASS
EN 1335-3:2009 Clause 7.2.3	Arm rest downward static load test – central The arm rests shall be loaded vertically by means of the local loading pads. The loading points shall be at the mid point of the arm rest length and centred side to side. Apply the force 750N to both arm rests simultaneously for 5 cycles.	PASS
EN 1335-3:2009 Clause 7.1.1	Front edge overturning Do not position the chair with the stops against the supporting points. Fix the strap to the chair, i.e. the force is applied at the point on the front edge that is furthest from the axis of rotation, and allows the mass 27kg to hang freely.	PASS
EN 1335-3:2009 Clause 7.1.2	Forwards overturning Position the chair with two adjacent supporting points on the front against the stops. Apply by means of the stability loading device a vertical force 600N acting 60 mm from the front edge of the load bearing structure of the seat at those points most likely to result in overturning. Apply for at least 5 s a horizontal outwards force 20N from the point on the seat surface where the vertical force is applied.	PASS
EN 1335-3:2009 Clause 7.1.3	Forwards overturning for chairs with footrest For chairs with footrests repeat the principle of 7.1.2 on the footrest. For round cross section ring shaped footrests, the vertical force 1100N shall be applied through the centre of the ring cross section.	/ Not applicable
EN 1335-3:2009 Clause 7.1.4	Sideways overturning for chairs without arm rests Position the chair with two adjacent supporting points on one side against the stops. Apply by means of the stability loading device a vertical force 600N acting 60 mm from the side edge of the load bearing structure of the seat at those points most likely to result in overturning. Apply for at least 5 s a horizontal sideways force 20N outwards from the point on the seat surface where the vertical force is applied.	/ Not applicable



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Test	Test Description and Requirements	Test Results
EN 1335-3:2009 Clause 7.1.5	Sideways overturning for chairs with arm rests Apply by means of the stability loading device a vertical force 250N acting at a point 100 mm from the fore and aft centre line of the seat at the side where the supporting points are restrained and between 175 mm and 250 mm forward of the rear edge of the seat. Apply a vertical downward force 350N acting at points on the arm rest which is on the same side as the restrained supporting points up to a maximum 40 mm inwards from the outer edge of the upper surface of the arm rest, but not beyond the centre of the arm rest, and at the most adverse position along its length. Apply a horizontal sideways force 20N outwards from the same point for at least 5 s.	PASS
EN 1335-3:2009 Clause 7.1.6	Rearwards overturning for chairs without back rest inclination Position the chair with two adjacent supporting points on the back against the stops. When an independent lumbar adjustment is fitted it shall be set in the most adverse configuration. A vertical force 600N shall be applied at point "A" and a horizontal force 192N shall be applied at point "B". If the back rest pad is pivoting around a horizontal axis above the height of the seat and is free to move, the horizontal force shall be applied on the axis. If height adjustable, the axis shall be set as close as possible to 300 mm above point "A".	PASS
EN 1335-3:2009 Clause 7.1.7	Rearwards overturning for chairs with adjustable back rest inclination Do not position the chair with the supporting points against the stops. When an independent lumbar adjustment is fitted it shall be set in the most adverse configuration. Load the chair with 13 discs so that the discs are firmly settled against the back rest. If the height of the stack of discs exceeds the height of the back rest, prevent the upper discs from sliding off by the use of a light support.	PASS
EN 1335-3:2009 Clause 7.2.3	Arm rest downward static load test – central The arm rests shall be loaded vertically by means of the local loading pads. The loading points shall be at the mid point of the arm rest length and centred side to side. Apply the force 900N to both arm rests simultaneously for 5 cycles.	PASS
EN 1335-3:2009 Clause 7.4	Rolling resistance of the unloaded chair The chair shall be placed on the test surface and shall be pushed or pulled over a distance of at least 550 mm. A speed of (50 ± 5) mm/s shall be maintained over the measuring distance. The force shall be applied at a height of (200 ± 50) mm above the test surface. Record the force used to push or to pull the chair over the distance from 250 mm to 500 mm as the rolling resistance. The Rolling resistance shall be ≥12N.	PASS
Additional Function Tests: No loss of serviceability after tested.		
EN 1335-3:2009 Clause 7.2.4	Arm rest downward static load test – front The arm rests shall be loaded vertically by means of the local loading pads. The loading points shall be 75 mm from the front edge and centred side to side. Apply the force 450N to both arm rests simultaneously. Number of cycles: 5 cycles.	PASS

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Test	Test Description and Requirements	Test Results
EN 1335-3:2009 Clause 7.2.5	Arm rest sideways static load test Apply an outward horizontal force 400N to both arm rests simultaneously. Apply the forces to the edge of the arm rest at the point along the arm rest most likely to cause failure but not less than 75 mm from the front or rear edge. Number of cycles: 10 cycles.	PASS
EN 1335-3:2009 Clause 7.3.3	Swivel test The base of the chair shall be secured on a rotating table with a test surface so that the rotating axis of the chair coincides with the rotating axis of the table. The upper part of the chair shall be loosely fixed in such a way as not to hinder the rotation of the base. Load the seat in loading point A with a mass 60kg and in loading point C with a mass 35kg or any equivalent loading which will result in the same downwards force and bending moment on the chair. The angle of rotation shall be 360° at a rate of (10 ± 5) cycles/minute. Change direction after each rotation. Number of cycles: 120000 cycles	PASS
EN 1335-3:2009 Clause 7.3.4	Foot rest durability Using the local loading pad apply a vertical downward force 900N to the foot rest at the point most likely to cause failure but not less than 80 mm from the front edge. For round cross section ring shaped foot rests, the force shall be applied through the centre of the ring cross section. Number of cycles: 50000 cycles	/ Not applicable
EN 1335-3:2009 Clause 7.3.5	Castor and chair base durability This test does not apply to chairs with castors which are braked when the chair is loaded. The chair shall be placed on a rotating table with a test surface so that the rotating axis of the chair coincides with the rotating axis of the table. Load the seat in point A with 110kg. The base shall be loosely fixed in such a way that there is no rotation of the base but that the natural movements of the castors during testing are not prevented. The castors shall be left free to swivel, the table shall be rotated with a rate of 6 cycles per minute. The angle of rotation shall be from 0° to 180° and back. One rotation forward and one rotation backward constitutes one cycle. Alternatively attach the chair to a device that provides a linear movement of (1 000 ± 250) mm and a test surface. Load the seat in point "A" with M1. The base shall be loosely fixed in such a way that there is no rotation of the base but that the natural movements of the castors during testing are not prevented. The castors shall be left free to swivel, the device shall move with a rate of 6 cycles per minute. One movement forward and one movement backward constitutes one cycle. Number of cycles: 36000 cycles	PASS

Remark:

- For the sample information and pictures, please refer to the following page.



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SAMPLE INFORMATION AND PICTURES

Weight: 14.15 kg

Overall Dimensions: 630 mm L x 550 mm W x 980~1090 mm H

Other Dimensions: Base radius 344mm

Sample as Received



View 1



View 2



View 3

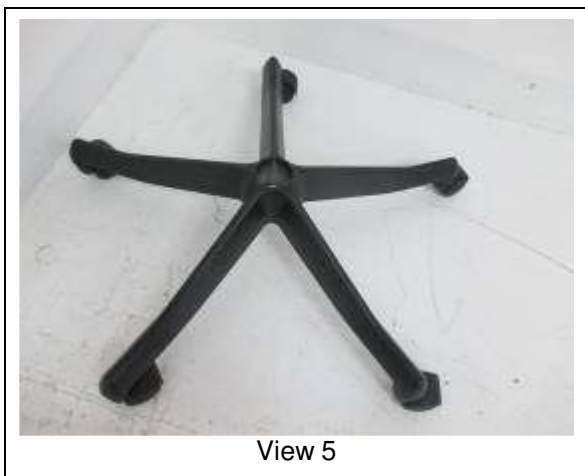


View 4



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View 5



View 6



View 7



View 8

End of Report



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