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FURNITURE TESTING AND CERTIFICATION

ASSESSMENT

No. FUR 21-19

30 November 2021

Issued to	Thule Möbler AB
Address	Kungsgatan 8, 736 36 Kungsor, Sweden

Statement regarding of *Office work chair ASTRIX High back with armrests, type A.*

Introduction

On behalf of Thule Möbler AB, VsI FURNITEST Furniture testing centre has carried out an assessment on *Office work chair ASTRIX height back with armrests, type A* in accordance with the standard EN 1335-1:2020 (Office furniture – Office work chair – Part 1 – Dimensions – Determination of dimensions), EN 1335-2:2018 (Office furniture – Office work chair – Part 2 – Safety requirements) requirements.

Assessment

Based on VsI FURNITEST testing report, following *Office work chair ASTRIX Height back with armrests, type A, Art Nr 01-TUN1104H-ALA,* listed in table 1, are assessed to meet the requirements in accordance with EN 1335-1:2020 (Office furniture – Office work chair – Part 1 – Dimensions – Determination of dimensions), type A requirements and EN 1335-2:2018 (Office furniture – Office work chair – Part 2 – Safety requirements) requirements.

Table 1. List of Test Report used for assessment

	Test report No. date	Product name	Test and method
1.	BBC 21-384 29 November, 2021	*Office work chair ASTRIX height back with arm rests, type A, Art Nr 01-TUN1104H-ALA*	EN 1335-1:2020 EN 1335-2:2018

As the test specimens are representative of the production models, the test results are intended to be applied to other similar articles.

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This implies that base, wheels (castors), gas spring mechanism, arm rests, chair back adjustment mechanism of tested product, which may affect the test results, are identical for *all office work chair* of *ASTRIX:*

1. For chairs with synchro and free float function
   ASTRIX low back with arm rest, Art. TUN1104L-ALA,
   ASTRIX high back without arm rest, Art. TUN1104HU-ALA,
   ASTRIX low back without arm rest, Art. TUN1104LU-ALA.
2. For chairs with free float function (without synchro function, all other functions are the same)
   ASTRIX high back with arm rest WO synchro, Art. TUO1104H-ALA,
   ASTRIX low back with arm rest WO synchro, Art. TUO1104L-ALA,
   ASTRIX high back without arm rest WO synchro, Art. TUO1104HU-ALA,
   ASTRIX low back without arm rest WO synchro, Art. TUO1104LU-ALA.
3. For chairs with synchro function (without free float function, all other functions are the same)
   ASTRIX high back with arm rest WO free float, Art. TUS1104H-ALA,
   ASTRIX low back with arm rest WO free float, Art. TUS1104L-ALA,
   ASTRIX high back without arm rest WO free float, Art. TUS1104HU-ALA,
   ASTRIX low back without arm rest WO free float, Art. TUS1104LU-ALA.

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Director / expert Jadvyga Mickienė

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TEST REPORT No. BBC 21-384

29 11 2021
Vilnius

Determination of safety and dimensions for
Office work chair ASTRIX High back with armrests, Art. No. 01-TUN1104H-ALA, type A

Customer	Thule Mobler AB
Address of customer	Kungsgatan 6, 736 36 Kungsör, Sweden
Application for test	A 21-195-1, date 24 09 2021
Date of receive test object	28 09 2021
Manufacturer name	Thule Mobler AB
Indication of normative document	EN 1335-1:2020, 1335-2:2018, ISO 24496:2021 EN 1728:2012 including corrigendum EN 1728:2012/AC:2013, EN 1022:2018
Date of test	04 10 2021 2021 (beginning) 29 11 2021 (end)

Conclusion

Office work chair ASTRIX High back with armrests, Art. No. 01-TUN1104H-ALA **complies** with the standard EN 1335-1:2020 “Office furniture - Office work chair - Part 1: Dimensions - Determination of dimensions”, **type A** requirements and **complies** with the standard EN 1335-2:2018 “Office furniture – Office work chair – Part 2 – Safety requirements” requirements.

Test object

Office work chair ASTRIX High back with armrests, Art. No. 01-TUN1104H-ALA, type A with arm rests, soft seat and backrest, rotating around vertical axis. The base is in a shape of regular pentagon star with five beams and 60 mm height castors are fixed below. The chair has height adjustment mechanism. Seat has seat depth adjustment. The backrest is adjustable in height. Seat and backrest angle is dependently adjustable, synchro mechanism is used, additionally seat mechanism can be adjusted with forwards inclination. Adjustment mechanisms are controlled by handles located under the seat. The base of seat and backrest is made of plywood, the soft parts are made of foam and are upholstered with upholstery fabric. Arm rests are made of plastic, adjustable in 8 positions. Top part of arm rests can be moved “forward-backward” and can be turned 360 degrees over vertical axis. The adjustment and fixation is made by pushing button which is mounted on the top of armrest. Width between the armrests is adjustable armrests are fixed to the chair using M8 bolt with handle. Dimensions of work chair is specified in the table 1.

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Figure 1. *Office work chair ASTRIX High back with armrests, Art. No. 01-TUNT104H-ALA*

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Normative documents

EN 1335-1:2020 Office furniture - Office work chair - Part 1: Dimensions - Determination of dimensions;
ISO 24496:2021 Office furniture Office chairs Methods for the determination of dimensions;
EN 1335-2:2018 Office furniture – Office work chair – Part 2 – Safety requirements;
EN 1022:2018 Furniture - Seating - Determination of stability;
EN 1728:2012 with corrigendum EN 1728:2012/AC:2013 Domestic furniture. Seating. Test methods for the determination of strength, and durability.

Unless otherwise stated, the following tolerances are applicable:
- masses ± 1% of the nominal mass;
- dimensions ± 2 mm of the nominal dimension;
- angles ± 1º of the nominal angle.
- forces ± 5 % of the nominal force;

The accuracy for the positioning of loading pads ± 5 mm.

Office work chair ASTRIX High back with armrests, Art. No. 01-TUN1104H-ALA was stored in the laboratory room before the tests were performing. The tests were carried out in normal indoor ambient conditions at the temperature of (20±5)°C.

Test apparatuses

Apparatus 111 MP certificate No. 44, apparatus 115 P certificate No. 8, apparatus 113 P certificate No. 26, apparatus 195 MP certificate No. 24, apparatus CMD ISO 24496 certificate No. 63.

Table 1. *Office work chair ASTRIX High back with armrests, Art. No. 01-TUN1104H-ALA Dimension requirements and test results*

Dimension description		Requirements					Test results*	Comments
		(-)	Min	Max	(+)	Range		
EN 1335-1:2020, Table 2, Type A, Dimensions in millimetres								
a	Seat height and sitting height	yes	400	520	yes	130	pass	Min 397, Max 525 range 128
b	Adjustable depth of the seat	yes	425	450	yes	70	pass	Min 398, Max 477 range 79
	Fixed depth of the seat	no						N/A
f	Adjustable height of lumbar support	yes	170	300	yes	Min. 70 within the range	pass	Min 160, Max 270 range 110
	Fixed height of lumbar support	no	170	300	no	-		N/A
q	Maximum distance from the backrest to the front of the armrests	yes	-	300	no	-	pass	258
r	Hip breadth clearance when armrest are in widest position	no	480	-	yes	-	pass	505
z	Adjustable clear distance between armrest pads	yes	410	510	yes	-	pass	Min 388, Max 515
	Fixed clear distance between armrest pads	no						N/A
p	Height of armrests adjustable	yes	200	290	yes	100	pass	Min 185, Max 295 range 110
	Height of armrests not adjustable	no						N/A
d	Seat pad width	no	400	-	yes	-	pass	460
c	Seat pad depth	no	380	-	yes	-	pass	450
h	Backrest height	no	360	-	yes	-	pass	Min 660, Max 720
j	Backrest width	no	360	-	yes	-	pass	455
k	Radius of backrest	no	400	-	yes	-	pass	>400
n	Armrest length	no	150	-	yes	-	pass	218
o	Armrest width	no	50	-	yes	-	pass	96
s	Offset of the underframe	yes	-	415	no	-	pass	375

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Table 1. *(end)*

Dimension description		Requirements (-)	Min	Max	(+)	Range	Test results*	Comments
EN 1335-1:2020, Table 3, Type A, Dimensions in degrees								
γ^a	Angle between seat and back	no	90	-	yes	-	pass	possible to achieve
l	Backrest inclination range	Minimum 15 degrees						31
e^b	Seat pad angle adjustable	yes	0	-	yes	-	pass	Min +7,1, Max -9,4
	Minimum adjustment range	5					pass	16,5
	Seat pad angle fixed	no						N/A

Remarks, comments:

a. As long as it is possible to achieve an angle of minimum 90° between seat pad and backrest, the requirement is fulfilled.
b. The adjustment range shall include the specified seat pad angle.

For adjustable functions, the minimum and maximum values shall be obtained, with the exception of dimension *f*, "adjustable height of lumbar support".
When a range is specified, the chair shall fulfil this requirement too.
Column "Allow (-)": If there is a "yes", dimensions less than the minimum requirement are accepted. If there is a "no", the dimension shall not be less than the minimum required dimension.
Column "Allow (+)": If there is a "yes", dimensions more than the maximum dimension requirement are accepted. If there is a "no", the dimension shall not be more than the maximum required dimension.

*N/A: not applicable for this product design

Table 2. *Office work chair ASTRIX High back with armrests, Art. No. 01-TUN1104H-ALA* test results

Clause, Standard	Test and method, loads	Requirements	Test results	Pass/Fail, N/A, N/T*
4 Safety requirements, EN 1335-2:2018		**EN 1335-2:2018**		
4.1 General, EN 1335-2:2018		The chair shall be so designed as to minimise the risk of injury to the user		
4.1	All parts of the chair with which the user comes into contact, during intended use These requirements are met when:	shall be designed to ensure that physical injury and damage to property are avoided, 4.1		
	a) the edges of the seat, back rest and arm rests which are in contact with the user	are rounded with minimum 2 mm radius, 4.1	no remarks	pass
	b) edges of handles	are rounded or chamfered in the direction of the force applied, 4.1	no remarks	pass
	c) all other edges	are free from burrs and rounded or chamfered, 4.1	no remarks	pass
	d) ends of accessible hollow components	shall be closed or capped, 4.1	no remarks	pass
	Movable and adjustable parts	shall be designed so that injuries and inadvertent operation are avoided	no remarks	pass
	Operating of adjusting devices from sitting position in the chair	shall be possible, 4.1	no remarks	pass
	Any load bearing part of the chair to come loose unintentionally	shall not be possible, 4.1	no remarks	pass
4.2 Shear and squeeze points, EN 1335-2:2018		**EN 1335-2:2018**		
4.2.1	Shear and squeeze points under influence of powered mechanisms	shall be no accessible shear and squeeze points created by parts of the chair operated by powered mechanisms, i.e. springs, gas lifts and motorized systems, 4.2.1	no remarks	pass

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Table 2. *(continued)*

Clause, Standard	Test and method, loads	Requirements	Test results	Pass/Fail, N/A, N/T*
4.2.2	Shear and squeeze points during use Shear and squeeze points created by the weight of the user during normal movements and actions, e.g. manipulating levers and crank handles	shall be no accessible shear and squeeze points created by loads applied during normal use, 4.2.2 are not acceptable, 4.2.2	no remarks	pass
4.5 Structural safety requirements, EN 1335-2:2018		The structural safety requirements are met when the requirements according to 5.2 are fulfilled, 4.5		
5 Strength and durability, EN 1335-2:2018 **5.1 General, Table 2**		**EN 1335-2:2018**		
7.3, EN 1728:2012	1. Combined seat and back static load test - force F1 of 1600 N, - force F2 of 560 N, - 10 cycles	strength and durability requirements are fulfilled when, after testing: a) there are no fractures of any member, joint or component; b) there is no loosening of joints intended to be rigid; and c) the chair fulfils its functions after removal of the test loads, 5.2	no remarks	pass
7.4, EN 1728:2012	2. Seat front edge static load test - force of 1600 N, - 10 cycles		no remarks	pass
7.8, EN 1728:2012	3. Foot rest static load test - force of 1300 N - 10 cycles			N/A
7.9, EN 1728:2012	4. Seat and back durability Step 1: - force at point A of 1 500 N; - 120 000 cycles		no remarks	pass
	Step 2: - force at point C of 1 200 N, - force at point B of 320 N; - 80 000 cycles		no remarks	pass
	Step 3: - force at point J of 1 200 N, - force at point E of 320 N, - 20 000 cycles		no remarks	pass
	Step 4: - force at point F of 1 200 N, - force at point H of 320 N, - 20 000 cycles		no remarks	pass
	Step 5: - force at point D and G of 1 100 N, - 20 000 cycles		no remarks	pass
7.10, EN 1728:2012	5. Arm rest durability - force of 400 N, - 60 000 cycles		no remarks	pass
7.5, EN 1728:2012	6.1 Arm rest downward static load test - central, **before stability test** - force of 750 N, - 5 cycles		no remarks	pass
	6.2 Arm rest downward static load test - central, **after stability test** - force of 900 N, - 5 cycles		no remarks	pass

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Table 2. *(continued)*

Clause, Standard	**Test and method, loads**	**Requirements**	**Test results**	**Pass/Fail, N/A, N/T***
4.4 Stability tests and requirements, EN 1335-2:2018, Table 1		**EN 1335-2:2018**		
7.3.3, EN 1022:2018	1. Corner stability - force F1 of 300 N - 1 cycle	the seating shall not overturn, 4.4	no remarks	pass
7.3.1, EN 1022:2018	2. Forward overturning - force F1 of 600 N, - force F2 of 20 N, - 1 cycle		no remarks	pass
7.3.2, EN 1022:2018	3. Forward overturning for chairs with foot rests - force F1 of 1100 N, - force F2 of 20 N, - 1 cycle			N/A
7.3.4, EN 1022:2018	4. Sideways overturning for chairs without arm rests - force F1 of 1100 N, - force F2 of 20 N, - 1 cycle			N/A
7.3.5.1, and 7.3.5.2 EN 1022:2018	5. Sideways overturning for chairs with arm rests - force F1 of 250 N, - force F2 of 350 N, - force F3 of 20 N, - 1 cycle		no remarks	pass
7.3.6, EN 1022:2018	6. Rearwards overturning for chairs without back rest inclination and for chairs with adjustable backrest inclination that can be locked - force F1 of 600 N, - height of loaded seat above the floor 525 mm, - force F2, 136 N - 1 cycle		no remarks	pass
7.4, EN 1022:2018	Rearwards overturning - number of discs: 13, - 1 cycle		no remarks	pass
5.3 Rolling resistance test and requirements, EN 1335-2:2018		**EN 1335-2:2018**		
6.30, EN 1022:2018	Rolling resistance of the unloaded chair	The unloaded chair shall fulfil the following requirements: a) the castors shall be of identical construction; b) the rolling resistance shall be ≥ 12 N.	no remarks	pass

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Table 2. *(end)*

Clause, Standard	Test and method, loads	Requirements	Test results	Pass/Fail, N/A, N/T*
6 Information for use		**EN 1335-2:2018**		
6	Information for use	shall be available in the language of the country in which the product will be available to the end user. It shall contain at least the following details:	no remarks	pass
		a) information regarding the intended use;		
		b) information regarding possible adjustments;		
		c) instruction for operating the adjusting mechanisms;		
		d) instruction for the care and maintenance of the chair;		
		e) 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;		
		f) information on the choice of castors in relation to the floor surface.		
Remarks, comments:				

*N/A – not applicable for this product design, N/T – not tested

Head of furniture testing center Manvydas Mickus

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Tests were carried by engineer Laimonas Staškūnas

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TEST REPORT No. BBC 16-307

10 04 2017
Vilnius

Functional tests for
Office work chair ASTRIX High back with armrest, Art Nr. 01-TUN1104H-AL, type B

Customer	Thule Mobler AB
Address of customer	Kungsgatan 8, 736 36 Kungsör, Sweden
Application for test	11 12 2016
Date of receive test object	12 12 2017, sampling was made by the Customer
Indication of normative document	EN 1335-3:2009 including correction EN 1335-3:2009/AC:2009
Date of test	06 02 2017 (beginning) 10 04 2017 (end)

Conclusion

Office work chair ASTRIX High back with armrest, Art Nr. 01-TUN1104H-AL, type B **passes** additional functional tests according to EN 1335-3:2009 including correction EN 1335-3:2009/AC:2009 (Office furniture - Office work chair - Part 3: Test methods) Annex C, all test cycles multiplied by 3.

Test object

Office work chair ASTRIX High back with armrest, Art Nr. 01-TUN1104H-AL, type B with arm rests, headrest, soft seat and backrest, rotating around vertical axis. The base is in a shape of regular pentagon star with five beams and 60 mm height castors are fixed below. The chair has height adjustment mechanism. Base can be pushed “forwards-rearwards” and can be adjusted horizontally. The backrest has mechanisms and “up – down” lifting. Headrest is adjustable in height, can be moved forward-backward and angled. Seat and backrest angle is dependently adjustable, synchro mechanism is used. Adjustment mechanisms are controlled by knobs under the seat. The base of seat and backrest is made of plywood, the soft parts are made of foam and are upholstered with upholstery fabric. Arm rests are made of plastic, adjustable in height and can be fixate in 8 positions. Top part of arm rest can be moved “forward-backward” and can be turned 360 degrees over vertical axis. The adjustment and fixation is made by pushing button which is mounted on the top of armrest. The armrest is fixed to the chair using one M8 screw. Cross-section of main (lower) part of arm rest is (35x20) mm.

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Figure 1. *Office work chair ASTRIX High back with armrest, Art Nr. 01-TUN1104H-AL, type B*

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Test method and requirements

EN 1335-3:2009 including correction EN 1335-3:2009/AC:2009 Office furniture – Office work chair – Part 3 – Test methods

Unless otherwise stated, the following tolerances are applicable:
- masses ± 1% of the nominal mass;
- dimensions ± 2 mm of the nominal dimension;
- angles ± 1º of the nominal angle.
- forces ± 5 % of the nominal force;

The accuracy for the positioning of loading pads ± 5 mm.

Office work chair ASTRIX High back with armrest, Art Nr. 01-TUN1104H-AL, type B was stored in the laboratory room before the tests were performing. The tests were carried out in normal indoor ambient conditions. During tests the temperature was (19 - 23) °C.

Test apparatuses

Apparatus 194 MP certificate No. 27, apparatus 113 P certificate No. 26, apparatus 114 P certificate No. 28.

Table 1. *Office work chair ASTRIX High back with armrest, Art Nr. 01-TUN1104H-AL, type B, Annex C* test results

<table>
<tr><th>Clause, Standard</th><th>Test and method, loads</th><th>Requirements</th><th>Test results</th><th>Pass/Fail or N/A*</th></tr>
<tr><td colspan="2">Annex C, Loads, masses and cycles for functional tests, EN 1335-3:2009, table C.1</td><td>EN 1335-3:2009</td><td colspan="2"></td></tr>
<tr><td>7.2.4</td><td>Arm rest downward static load test - front
- load = 450 N,
- 3x5 cycles</td><td rowspan="5">there shall be no:
a) fracture of any component or joint;
b) loosening of any joint intended to be rigid, which can be demonstrated by hand pressure;
c) deformation or wear of any part or component such that its function is impaired;
d) loosening of any means of fixing components to the unit;
e) changes that may affect stability, 4.6</td><td>no remarks</td><td>pass</td></tr>
<tr><td>7.2.5</td><td>Arm rest sideways static load test
- load = 400 N,
- 3x10 cycles</td><td>no remarks</td><td>pass</td></tr>
<tr><td>7.3.3</td><td>Swivel test
- load M_1 = 60 kg,
- load M_2 = 35 kg,
- 3x120 000 cycles</td><td>no remarks</td><td>pass</td></tr>
<tr><td>7.3.4</td><td>Foot rest durability
- load = 900 N,
- 50 000 cycles</td><td></td><td>N/A</td></tr>
<tr><td>7.3.5</td><td>Castor and chair base durability
- load M_1 = 110 kg,
- 3x36 000 cycles</td><td>no remarks</td><td>pass</td></tr>
<tr><td>7.4</td><td>Rolling resistance on the unloaded chair</td><td>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, 4.4 EN 1335-2:2009</td><td>castors are of identical construction, rolling resistance of 19 N</td><td>pass</td></tr>
<tr><td colspan="5">Remarks, comments:
Functional tests were carried out in the sequence of Table C.1 after completing all the safety tests specified in EN 1335-2:2009, issued Test Report No. BBC 16-299, date 07 02 2017.</td></tr>
</table>

*N/A – not applicable

Head of furniture testing center Manvydas Mickus

Tests were carried by engineer Mindaugas Mickus

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