

Flokk AS

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Fürth, July 15/2020

TEST REPORT No. FUHLFP2020-04453

Date sample received: June 16/2020
Period of testing: June 16/2020 – July 15/2020
Technical Director: Kerstin Scharrer

Test Item: Office work chair – “RH Mereo” series, including models:
200, 220, 300

Test: General safety tests to EN 1335-1:2000 and EN 1335-2:2018
to achieve the GS Mark

Determination:

The test sample “RH Mereo – mod. 300” was submitted as a representative model of the model range “RH Mereo” – mod. 200, 220, 300 for the general safety tests to EN 1335-1:2000 and EN 1335-2:2018, considering the current state of the art.

In summary, the test requirements **were fulfilled**.

Notes:

The accessibility and selection of used materials does not propose a risk in accordance with PAH requirements for GS (see document AfPS GS 2019:01 PAH), and PAH Evaluation Sheet FUHLFP2020-04453-PAH.

Please refer to the following pages for technical characteristics and results as well as detailed test conditions and requirements.

Reviewed by:
Intertek Consumer Goods GmbH



Manager Hardlines
Frank Urbich

Tested by:
Intertek Consumer Goods GmbH



Technical Expert
Anh Vu (Vincent) Nguyen

Product identification:

Test sample:	Office work chair
Model name:	“RH Mereo”
Item number:	200 220 300
Manufacturer:	Flokk AB Vallgatan 1 571 23 Nässjö Sweden
Number of test samples:	1 sample
Distributor:	Flokk
Delivered on:	16.06.2020
Delivered by:	Flokk AB

Product documents:

User Guide

Scope of the investigations:

EN 1335-1:2000, Office furniture - Office work chair – Part 1: Dimensions - Determination of dimensions

EN 1335-2:2018, Office furniture - Office work chair – Part 2: Safety requirements

Abbreviations:

*	=	Test method is not part of the accreditation scope
**	=	Outsourcing
n.a.	=	not applicable
n.t.	=	not tested
n.d.	=	not determinable (< LoQ)
LoQ	=	limit of quantification
CS	=	Combined sample
P	=	passed
F	=	failed

Applicability of measurements:

The test results refer only to the objects to be tested. The digital images in this report are intended as supplementary information and are not an integral part of this test report.



Test equipment list

The test equipment list contains a list of the measuring tools used and measuring equipment, gauges, templates and load weights that were used in accordance with the scope of the investigations.

Testing machines and devices as well as any connections that are necessary for the performance of tests are not an integral part of the test equipment list.

The following test equipment were available for testing in accordance with the scope of the investigations:

Clause	Test equipment	Equipment no.
General tests	Ruler	PM_HL_18.321
General tests	Band ruler 3000 mm	PM_HL_18.367
General tests	Calliper	PM_HL_17.044
Strength and durability tests	Load cell 5 kN	PM_HL_18.358
Strength and durability tests	Load cell 5kN	PM_HL_18.359
Strength and durability tests	Load cell 5kN	PM_HL_18.360
Strength and durability tests	Load cell 5 kN	PM_HL_18.361
Strength and durability tests	Load cell 2 kN	PM_HL_18.362
Strength and durability tests	Load cell 5,5 kN	PM_HL_18.363
Strength and durability tests	Seat dummy	PM_HL_18.199
Stability	Pull-Push-Gauge	PM_HL_17.026
Stability	Stability Table	PM_HL_18.107
Stability	Load disc 10 Kg	PM_HL_18.231
Stability	Load disc 10 Kg	PM_HL_18.232
Stability	Load disc 10 Kg	PM_HL_18.233
Stability	Load disc 10 Kg	PM_HL_18.234
Stability	Load disc 10 Kg	PM_HL_18.235
Stability	Load disc (wood)	PM_HL_18.216
Stability	Load disc (wood)	PM_HL_18.217
Stability	Load disc (wood)	PM_HL_18.218
Stability	Load disc (wood)	PM_HL_18.219
Stability	Load disc (wood)	PM_HL_18.220
Stability	Load disc (wood)	PM_HL_18.221
Stability	Load disc (wood)	PM_HL_18.222
Stability	Load disc (wood)	PM_HL_18.223
Stability	Load disc (wood)	PM_HL_18.224
Stability	Load disc (wood)	PM_HL_18.225
Stability	Load disc (wood)	PM_HL_18.226
Stability	Load disc (wood)	PM_HL_18.227
Stability	Load disc (wood)	PM_HL_18.228
Stability	Load disc (wood)	PM_HL_18.229
Loading point template - A-B	Measurement template	PM_HL_18.109
Strength and durability tests	Durability test stand	PM_HL_18.153
Strength and durability tests for castor	Linear axis test stand	PM_HL_18.066



General Testing

Technical characteristics

General dimensions

Model	"200"	"220"	"300"
Depth (mm):	670		
Height (mm):	740 - 870	840 - 970	1130 - 1260
Width (mm):	640		
Net weight (kg):	21.0	22.0	22.3

Brief description of the sample

Office work chair, model range "RH Mereo", with armrests and following features:

- 3 different backrests
- independent adjustment of backrest angle
- Lockable tilt mechanism
- Armrests adjustable in height, width and horizontal angle by approximately 20°
- Seat depth, seat height, backrest height and tilt resistance adjustable

Gas spring specifications

Manufacturer: S.C. Stabilus Romania S.R.L.

Specifications: Supporting elements of self-supporting energized devices for the height
Adjustment of office work chairs

Tube-type: Stabomat D; Drawing pos. 40; Material: 010618

Wall thickness: 2.4 mm; Surface: plasma nitrified

Differences between the models "200", "220" and "300":

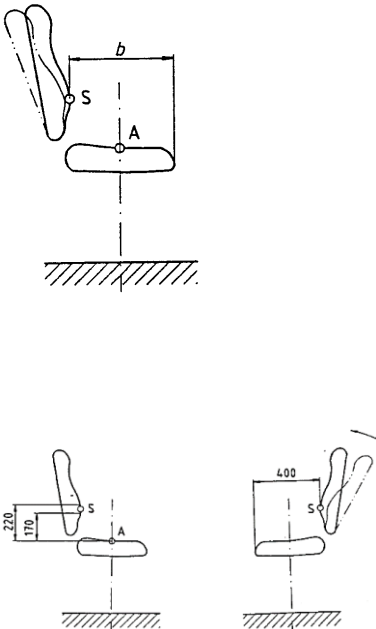
- Model "200": low backrest
- Model "220": high backrest
- Model "300": high and wide backrest

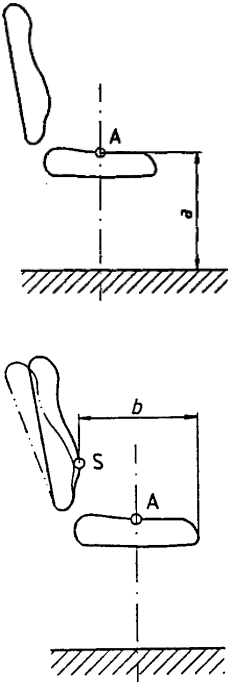


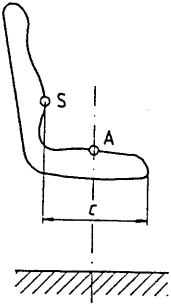
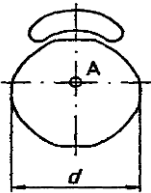
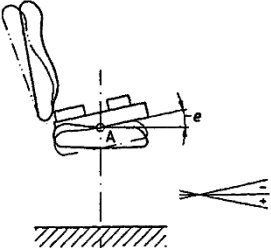
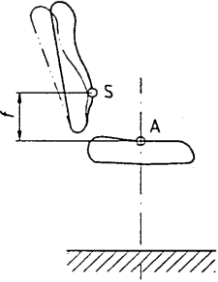
Photo documentation

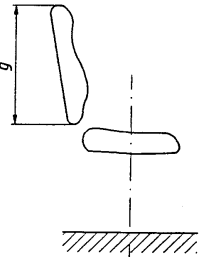
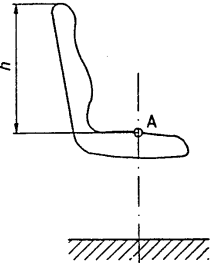
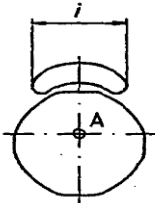
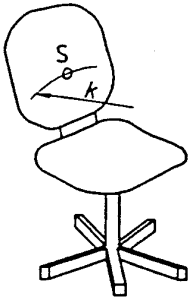


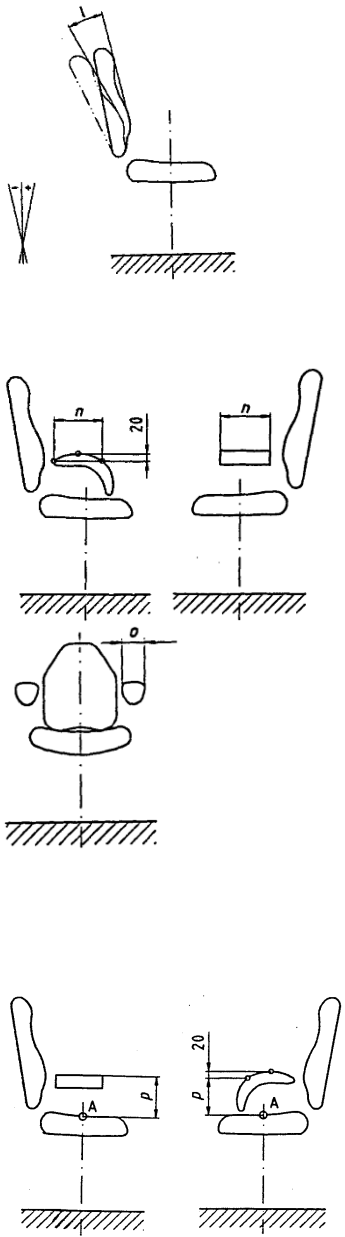
Technical Tests

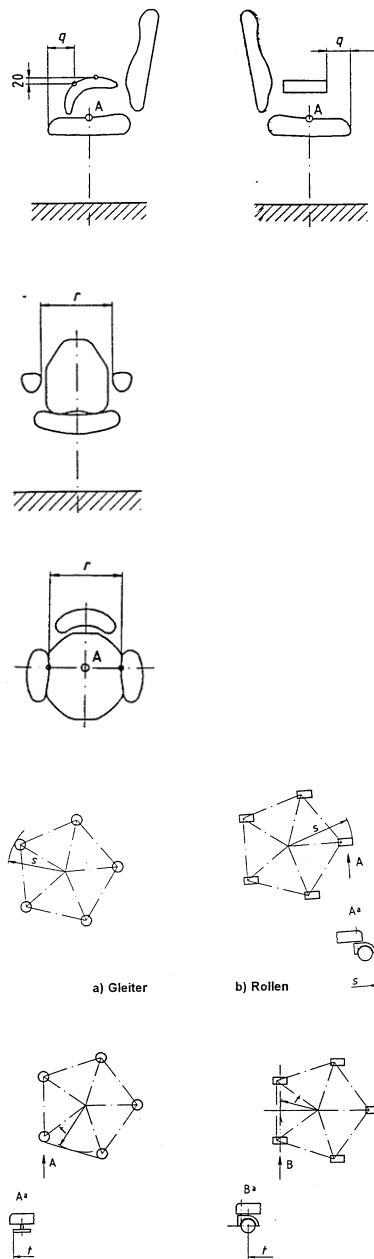
Test characteristics/requirements	Test parameters/results	Findings
<p>Dimensions in accordance with EN 1335-1:2000</p> <p>The chair shall provide support to the thighs and the lumbar region which sufficient depth and height to provide all users with a sitting position suited to their activity and their height.</p> <p>Determination of reference points</p> <p>The chair shall be positioned on a flat, rigid and horizontal test surface.</p> <p>Point "A"</p> <p>The dummy shall be placed on the seat surface symmetrically to the median plane in such a way that the centre of gravity of the main mass coincides with the axis of rotation. The seat shall be set as close as possible to the horizontal and the back rest shall be set as close as possible to the vertical. The movable mass shall be positioned so that the lower edge of the groove coincides with the vertical line tangential to the front edge of the seat. Before measuring, the seat shall be loaded and unloaded five times for a short period.</p> <p>Back supporting point "S"</p> <p>In the case of chairs with a back rest rotatable around a horizontal axes the upper and lower edges of the back rest shall be positioned vertically one above the other midway in the median plane before measurements are made. If this is not possible the closest possible position to it shall be chosen.</p>		

Test characteristics/requirements	Test parameters/results	Findings
<p>Determination of dimensions</p> <p>The chair shall be positioned on a flat, rigid and horizontal test surface. The seat shall be set as close as possible to the horizontal and the back rest shall be set as close as possible to the vertical. Linear dimensions shall have an accuracy of ± 2 mm and all angles an accuracy of $\pm 1^\circ$.</p> <p>Unless otherwise specified, all dimensions shall be measured loading at the measurement point. Where point "A" is used as reference point the seat shall be loaded by the dummy in accordance with 5.1.</p> <p>All adjustable dimensions and angles shall be measured both in the smallest and largest position.</p> <p>Seat height [a]</p> <p>The seat height [a] is the vertical distance between the floor and the point "A"</p> <p>NOTE: The height is determined by measurement, either at the front edge of the seat in combination with the slope of the dummy or directly at point "A".</p> <p>Seat depth [b]</p> <p>The seat depth [b] is the horizontal distance from the front edge of the seat to the vertical projection of the back supporting point "S", measured in the median plane.</p> <p>Before determining the seat depth of chairs with height adjustable back rests, the back supporting point "S" shall be set at a height of 220 mm above point "A". If the seat depth and back rest are adjusted simultaneously, i.e. when the seat depth is increased, the back rest height is automatically increased, the minimum seat depth shall be measured with back rest in its lowest position, and the maximum seat depth with the back rest in its highest position.</p>		

Test characteristics/requirements	Test parameters/results	Findings
<p>Depth [c] of seat surface</p> <p>The depth [c] of seat surface is the maximum horizontal distance between vertical lines through the front and rear edges of the seat surface.</p> <p>If the shape of the seat makes it impossible to define a rear edge, the maximum horizontal distance shall be measured from the rear of the seat surface below the back supporting point "S" (see 3.6) to the front edge of the seat surface. The measurement shall be carried out with the backrest set to the forward tilt.</p> <p>Seat width [d]</p> <p>The seat width [d] is the horizontal distance between vertical lines through the side edges of the seat surfaces measured in the transverse plane.</p> <p>Inclination [e] of seat surface</p> <p>The inclination [e] of the seat surface is the angle in the median plane between the lower edge of the dummy and a horizontal line. Rearwards slope is designated "-" otherwise "+".</p> <p>Height [f] of the back supporting point "S" above the seat surface</p> <p>The height [f] of the back supporting point "S" above the seat surface is the vertical distance between the point "S" and point "A".</p>	   	

Test characteristics/requirements	Test parameters/results	Findings
<p>Height [g] of the back pad</p> <p>The height [g] of the back pad is the vertical distance between the upper and lower edges of the back pad, measured in the median plane.</p> <p>Height [h] of the upper edge of the back rest above the seat surface</p> <p>The height [h] of the upper edge of the back rest above the seat surface is the vertical distance between the upper edge of the back rest and the point "A" measured in the median plane.</p> <p>Back rest width [i]</p> <p>The back rest width [i] is the maximum horizontal distance between its side edges.</p> <p>Horizontal radius [k] of back rest</p> <p>The horizontal radius [k] of the back rest is the radius measured at the height of the back supporting point "S".</p>	   	

Test characteristics/requirements	Test parameters/results	Findings
<p>Back rest inclination adjustment range [l] ("tilt")</p> <p>The back rest inclination is the angle between the transverse plane and the back rest determined at point "S". Rearwards slope is designated "-" otherwise "+".</p> <p>The back rest inclination adjustment range [l] is the angle between the foremost and the rearmost position of the inclined back rest.</p> <p>Length [n] of the useful area of the arm rest</p> <p>The length [n] of the useful area of the arm rest is the horizontal distance between vertical lines through its front and rear edges.</p> <p>In the case of an arm rest which is not horizontal or which is rounded at the ends or is of non-rigid material, the dimension [n] shall be measured in a plane 20 mm below the highest point of the useful area of the arm rest.</p> <p>Width [o] of the useful area of the arm rest</p> <p>The width [o] of the useful area of the arm rest is the horizontal distance between vertical lines through the inner and outer edges of the arm rest.</p> <p>If the shape of the arm rest does not allow for an exact measurement of this width, it shall be measured 20 mm below the top edge.</p> <p>Height [p] of the useful area of the arm rest above the seat</p> <p>The height [p] of the useful area of the arm rest above the seat is for horizontal arm rests the vertical distance between the upper surface of the arm rest and point "A".</p> <p>In the case of an arm rest which is not horizontal or which is rounded at the ends or is of non-rigid material, the dimension [p] is the vertical distance between the horizontal plane 20 mm below the highest point of the arm rest and point "A".</p>	 <p>The diagrams show four different measurement scenarios for an armrest on a chair seat. 1. Back rest inclination: A side view of a chair with the backrest tilted. A vertical dashed line represents the transverse plane, and the angle between this line and the backrest is labeled 'l'. 2. Length [n]: Two side views of a chair. The left view shows a horizontal armrest with dimension 'n' between vertical lines through its front and rear edges. The right view shows a curved armrest with dimension 'n' measured in a plane 20 mm below the highest point. 3. Width [o]: A top-down view of a chair with an armrest. Dimension 'o' is the horizontal distance between vertical lines through the inner and outer edges. 4. Height [p]: Two side views of a chair. The left view shows a horizontal armrest with dimension 'p' from the seat surface to the top of the armrest. The right view shows a curved armrest with dimension 'p' measured from a horizontal plane 20 mm below the highest point to point 'A' on the seat.</p>	

Test characteristics/requirements	Test parameters/results	Findings
<p>Distance [q] from the front of the useful area of the arm rests to the front edge of the seat</p> <p>The distance [q] from the front of the useful area of the arm rests to the front edge of the seat surface is the horizontal distance between the front edge of the arm rests and a line extended vertically above the front edge of the seat surface in the median plane.</p> <p>Clear width [r] between the useful area of the arm rests</p> <p>The clear width [r] between the useful area of the arm rests is the horizontal distance between vertical lines through the inner edges of the arm rests, measured in the transverse plane.</p> <p>Maximum offset [s] of the underframe</p> <p>The maximum offset [s] of the underframe is the maximum between the outermost point of the underframe including castors or glides and the axis of rotation.</p> <p>Stability dimension [t]</p> <p>The stability dimension [t] is the smallest distance between the overbalancing axes on the floor and the axes of rotation of the chair. Where castors are used, the most unfavourable castor position shall be used for the measurement.</p>	 <p>The diagrams show: 1) Side view of a chair with dimension 'q' from the front edge of the seat to the front edge of the arm rest. 2) Top view of a chair with dimension 'r' between the inner edges of the arm rests. 3) Underframe diagrams for 'a) Gleiter' (glides) and 'b) Rollen' (castors) showing dimension 's' as the maximum offset from the rotation axis. 4) Stability diagrams showing dimension 't' as the distance from the rotation axis to the overbalancing axes.</p>	

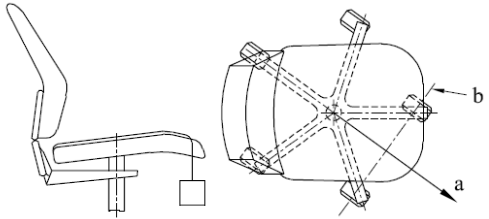
Dimension table for Office work chair – TYPE “A” / Model “300” with armrests:

Dimensions	Symbol	Adjustability	Type A				Actual value (in mm)	Results
			allowed (-)	Min. [a]	Max. [a]	allowed (+)		
Office work chair								
Seat height ^{b)}	[a]	adjustable	yes	400	510	yes	395 – 525	P
		adjustable range	no	120	+	yes	130	P
Seat depth	[b]	fixed	./.	no	no	./.	--	--
		adjustable	yes	400	420	yes	394 – 488	P
		adjustable range	no	50	+	yes	94	P
Depth of seat surface	[c]		no	380	+	yes	470	P
Seat width	[d]		no	400	+	yes	406 – 472	P
Inclination of seat surface	[e]	fixed	./.	no	no	./.	./.	--
		adjustable	yes	-2	-7	yes	+4.1° to -18.2°	P
		adjustable range	no	6°	+	yes	22.3°	P
Height of the back Supporting point “S” above the seat surface	[f]	fixed	./.	./.	./.	./.	./.	--
		adjustable	yes	170	220	yes	150 – 228	P
		adjustable range	no	50	+	yes	78	P
Height of the back pad - adjustable in height - non-adjustable in height	[g]		no	220	+	yes	632	P
			no	260	+	yes	./.	--
Height of the upper edge of the back rest above the seat surface	[h]		no	360	+	yes	580 – 656	P
Back rest width	[i]		no	360	+	yes	442	P
Horizontal radius of the back rest	[k]		no	400	+	yes	> 400	P
Back rest inclination	[l]	adjustable range	no	15°	+	yes	19.8° (42-5 incl. [e])	P
Length of arm rest	[n]		no	200	+	yes	200	--
Width of arm rest ^{c)}	[o]		no	40	+	yes	106	--
Height of arm rest above the Seat	[p]	fixed	no	200	250	no	./.	--
		adjustable	yes	200	250	yes	180 – 289	P
Distance from the front of the arm rest to the front edge of the seat surface ^{d)}	[q]		no	100	+	yes	120 - 220	P
Clear width between the arm rests ^{e)}	[r]		no	460	510	no	285 – 511	P
Maximum offset of the underframe (anti-stumbling –dimension)	[s]		yes	+	365 ^{f)}	no	392	P
Stability dimension ^{h)}	[t]		no	195	+	yes	248	P

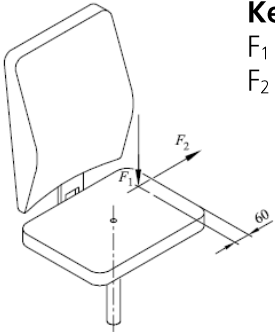
- For adjustable functions the Min. and Max. values must be obtained.
- The minimum range of adjustment is suitable for working surface heights between at least 680 mm and 780 mm. For some part of the user group a footrest is required.
- The requirement applies over the minimum value n.
- The requirement applies from a height of 170 mm above point “A”.
- The requirement applies to ¼ of the seat depth b (Measured from the front edge of the seat) with the back rest in its foremost position.
- If swivel castors are fitted the requirement is 415 mm.

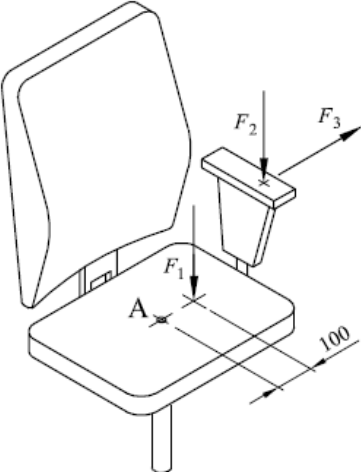
Test characteristics/requirements	Test parameters/results	Findings
<p>Safety requirements in accordance to EN 1335-2</p> <p>General design requirements</p> <p>Corners and edges, trapping, pinching and shearing</p> <p>The chair shall be so designed as to minimise the risk of injury to the user.</p> <p>All 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.</p> <p>These requirements are met when:</p> <p>a) the safety distance of accessible movable parts is either ≤ 8 mm or ≥ 25 mm in any position during movement;</p> <p>b) accessible corners are rounded with minimum 2 mm radius;</p> <p>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;</p> <p>d) the edges of handles are rounded with minimum 2 mm radius in the direction of the force applied;</p> <p>e) all other edges are free from burrs and rounded or chamfered;</p> <p>f) the ends of accessible hollow components are closed or capped.</p> <p>Adjusting devices</p> <p>Movable and adjustable parts shall be designed so that injuries and inadvertent operation are avoided.</p> <p>It shall be possible to operate the adjusting devices from sitting position in the chair.</p> <p>Connections</p> <p>It shall not be possible for any load bearing part of the chair to come loose unintentionally.</p>	<p>no risk of injury</p> <p>fulfilled</p> <p>fulfilled</p> <p>fulfilled</p> <p>fulfilled</p> <p>fulfilled</p>	<p>P</p> <p>P</p> <p>P</p> <p>P</p> <p>P</p> <p>P</p>



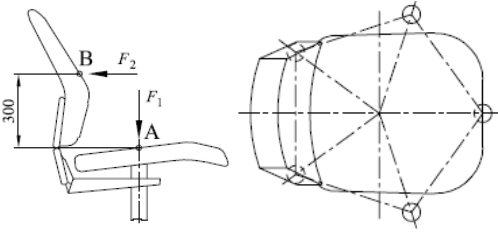
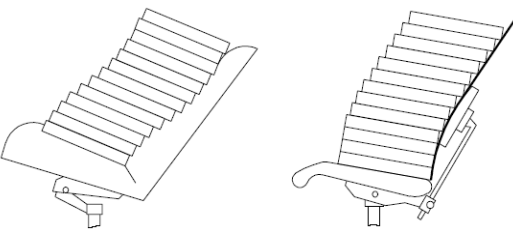
Test characteristics/requirements	Test parameters/results	Findings
<p>Avoidance of soiling</p> <p>All parts which are lubricated to assist sliding (greasing, lubricating, etc.) shall be designed to protect users from lubricant stains when in normal use.</p> <p>Stability during use</p> <p>The chair shall not overbalance under the following conditions:</p> <ul style="list-style-type: none"> 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. <p>Requirement a) is fulfilled if the chair does not overbalance when tested according to front edge overturning.</p> <p>Front edge overturning</p> <p>Do not position the chair with the stops against the supporting points (3.5). Fix the strap (5.8) to the chair as shown in Figure 7, i.e. the force is applied at the point on the front edge that is furthest from the axis of rotation, and allow the mass M1 to hang freely (see Figure 7).</p>  <p>a position of the strap on the seat surface b the tilting axis, castors in the most adverse position</p> <p>Figure 7 — Front edge overturning</p>	<p>fulfilled</p> <p>no overbalancing</p> <p>no overbalancing</p> <p>no overbalancing</p> <p>no overbalancing</p> <p>required: ≥ 300 N results: > 500 N</p>	<p></p> <p>P</p> <p>P</p> <p>P</p> <p>P</p> <p>P</p>

Test characteristics/requirements	Test parameters/results	Findings
<p>Requirements b) and d) are fulfilled if the chair does not overbalance when tested according to forwards overturning and forwards overturning for chairs with footrest.</p> <p>Forwards overturning</p> <p>Position the chair with two adjacent supporting points on the front against the stops.</p> <p>Apply by means of the stability loading device a vertical force F_1 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 F_2 from the point on the seat surface where the vertical force is applied (see Figure 8).</p> <div style="text-align: center;"> </div> <p>Key F_1 vertical force F_2 horizontal force</p> <p>Figure 8 — Forward overturning</p> <p>Forwards overturning for chairs with footrest</p> <p>For chairs with footrests repeat the principle of 7.1.2 on the footrest. For round cross section ring shaped footrests, the vertical force F_1 shall be applied through the centre of the ring cross section.</p>	<p>$F_1 = 600 \text{ N}$ $F_2 = 20 \text{ N}$ no overbalancing by = 58 N</p> <p>no footrest</p>	<p>P</p> <p>n.a.</p>

Test characteristics/requirements	Test parameters/results	Findings
<p>Sideways overturning for chairs without armrests</p> <p>Position the chair with two adjacent supporting points on one side against the stops.</p> <p>Apply by means of the stability loading device a vertical force F_1 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 F_2 outwards from the point on the seat surface where the vertical force is applied, (see Figure 9).</p> <div style="text-align: center;">  <p>Key F_1 vertical force F_2 horizontal force</p> </div> <p>Figure 9 — Sideways overturning for chairs without armrests</p>	<p>with armrests $F_1 = 600 \text{ N}$ $F_2 \text{ required} \geq 20 \text{ N} = \text{n.a.}$</p>	<p>n.a.</p>

Test characteristics/requirements	Test parameters/results	Findings
<p>Sideways overturning for chairs with armrests</p> <p>Position the chair with two adjacent supporting points on one side against the stops.</p> <p>Apply by means of the stability loading device a vertical force F_1 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 (see Figure 10) and between 175 mm and 250 mm forward of the rear edge of the seat.</p> <p>Apply a vertical downward force F_2 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 F_3 outwards from the same point for at least 5 s (see Figure 10).</p> <p style="text-align: right;">Dimensions in millimetres</p>  <p>Key A seat loading point F_1 vertical force F_2 vertical force F_3 horizontal force</p> <p>Figure 10 — Sideways overturning for chairs with armrests</p>	<p>no overbalancing by $F_1 = 250 \text{ N}$ $F_2 = 350 \text{ N}$ $F_3 = > 46 \text{ N}$ (required $\geq 20 \text{ N}$)</p>	<p>P</p>

Test characteristics/requirements	Test parameters/results	Findings
<p>The unloaded chair shall not roll unintentionally. This requirement is met when:</p> <ul style="list-style-type: none"> a) the castors are of identical construction; b) the rolling resistance is ≥ 12 N when tested according to Rolling resistance of the unloaded chair. <p>Rolling resistance of the unloaded chair</p> <p>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.</p> <p>Record the force used to push or to pull the chair over the distance from 250 mm to 500 mm as the rolling resistance.</p> <p>Rearwards overturning for chairs without back rest inclination</p> <p>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.</p> <p>A vertical force F_1 shall be applied at point "A" and a horizontal force F_2 shall be applied at point "B", (see Figure 11).</p> <p>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".</p>	<p>push and pull force = 15 N</p> <p>see above</p> <p>with backrest inclination</p>	<p>P</p> <p>n.a.</p>

Test characteristics/requirements	Test parameters/results	Findings
 <p>Key</p> <ul style="list-style-type: none"> A seat loading point (6.1) B back loading point (6.2) F₁ vertical force F₂ horizontal force <p>Figure 11 — Rearward overturning for chairs without back rest inclination</p> <p>Rearwards overturning for chairs with adjustable back rest inclination</p> <p>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.</p> <p>Load the chair with discs so that the discs are firmly settled against the back rest (see Figure 12). 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.</p>  <p>Figure 12 — Rearward overturning for chairs with adjustable back rest inclination</p>	<p>no overbalancing by 14 discs</p>	<p>P</p>

Test characteristics/requirements	Test parameters/results	Findings
<p>Strength and durability</p> <p>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:</p> <p>a) sitting on the seat, both centrally and off-centre;</p> <p>b) moving forward, backwards, and sideways while sitting in the chair;</p> <p>c) leaning over the armrests;</p> <p>d) pressing down on the arm rests while getting up from the chair.</p> <p>These requirements are fulfilled when after the tests specified in Seat front edge static load test, Combined seat and back static load test, Foot rest static load test, Seat and back durability and Armrest durability with the forces and numbers of cycles according to Table A.2 of this standard:</p> <p>e) there are no fractures of any member, joint or component, and</p> <p>f) there is no loosening of joints intended to be rigid, and</p> <p>g) no major structural element is significantly deformed and the chair fulfils its functions after removal of the test loads</p> <p>h) after the test in Arm rest downward static load test with the forces and numbers of cycles according to the tables given on the last page, the arm rests shall show no fracture.</p>	<p>no risk of injury</p> <p>fulfilled</p> <p>fulfilled</p> <p>fulfilled</p> <p>fulfilled</p> <p>no fractures</p> <p>no loosening of rigid joints</p> <p>no visible deformation</p> <p>fulfilled</p>	<p>P</p> <p>P</p> <p>P</p> <p>P</p> <p>P</p> <p>P</p> <p>P</p> <p>P</p>



Table 1 — Loads, Masses and Cycles of stability tests

Test description	Loads	Cycles	Verdict
Overturning over the front corner	$M_1 = 300 \text{ N}$	1	P
Overturning over the front edge	$F_1 = 600 \text{ N}$ $F_2 = 20 \text{ N}$	1	P
Overturning over the front edge for seating with footrest	$F_1 = 600 \text{ N}$ $F_2 = 20 \text{ N}$	1	n.a.
Overturning over the side edge for seating without armrests	$F_1 = 600 \text{ N}$ $F_2 = 20 \text{ N}$	1	n.a.
Overturning over the side edge for seating with armrests	$F_1 = 250 \text{ N}$ $F_2 = 350 \text{ N}$ $F_3 = 20 \text{ N}$	1	P
Overturning backwards for seating without backrest inclination	$F_1 = 600 \text{ N}$ $F_2 = 192 \text{ N}$	1	P
Overturning backwards for seating with backrest inclination	13 load discs	1	P

Table 2 — Loads, Masses and Cycles of strength and durability tests

Test description	Loads	Cycles	Verdict
Static load of the seat front edge	$F_1 = 1600 \text{ N}$	10	P
Combined static load test of the seat and backrest	$F_1 = 1600 \text{ N}$ $F_2 = 560 \text{ N}$	10	P
Static load test of the footrest	$F = 1300 \text{ N}$	10	n.a.
Durability test of the seat and backrest			
Step 1 — Load application point A	$F = 1500 \text{ N}$	120000	P
Step 2 — Load application point C Load application point B	$F = 1200 \text{ N}$ $F = 320 \text{ N}$	80000	P
Step 3 — Load application point J Load application point E	$F = 1200 \text{ N}$ $F = 320 \text{ N}$	20000	P
Step 4 — Load application point F Load application point H	$F = 1200 \text{ N}$ $F = 320 \text{ N}$	20000	P
Step 5 — Load application point D und G	$F = 1200 \text{ N}$	20000	P
Durability test of the armrest	$F = 400 \text{ N}$	60000	P
Test of armrests with static downwards loads	$F = 750 \text{ N}$ $F = 900 \text{ N}$	5	P



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