

Test Report

Number: SZHH01278728

Date: Aug 16, 2018

Sample Description:

One (1) piece of submitted sample said to be :

Item Name : **Hand Crank Height Adjustable Desk.**

Date Sample Received : Jul 25, 2018.



Tests conducted:

As requested by the applicant, refer to attached page(s) for details.

Conclusion:

Tested Sample Standard Result Submitted Sample ANSI/BIFMA X5.5-2014 Desk/Table Products - Tests Pass

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Authorized by:



Test Report

Number: SZHH01278728

Tests Conducted

For Intertek Testing Services
Shenzhen Ltd.



Ben N.L. Lin

General Manager

1 Desk/Table Products – Tests

Test standard: ANSI/BIFMA X5.5-2014 - Desk/Table Products - Tests.

Number of sample tested: One (1) piece.

Categories of desks/tables: Category I.

Initial inspection: No damage was found.

Executive summary:

Section	Test Method/Requirement	Result
1	Scope	-
2	Definitions	-
3	General	-
4	Stability Tests	-
4.1	Purpose of Tests	-



Tests Conducted

<p>4.2 Stability with Extendible Elements Open Test</p>	<p>Test Setup a) Determine the two extendible elements that, when loaded and opened, provide the least stable condition. (This may require evaluation of whether interlocked extendible elements can be opened if they are activated simultaneously). Load these extendible elements with the functional load specified per Table 1. The load shall be configured per Section 3.9. If the unit does not allow two extendible elements to be opened simultaneously, only load the largest capacity extendible element. More than one loading configuration may be required to verify that the least stable condition has been evaluated. b) All remaining extendible elements and desk/table components shall be in the closed position, unlocked, and not loaded.</p> <p>Test Procedure Gradually open the loaded extendible element(s) to the fullest extension the unit will allow. (Open simultaneously if there are two extendible elements).</p> <p>Acceptance Level The unit shall not tip over. If open extendible elements prevent the unit from tipping over due to contact with the test platform, the unit does not meet the acceptance criteria. Note: The use of devices such as casters on a bottom extendible element is an acceptable method of preventing tipping.</p>	<p>NA</p>
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Tests Conducted

<p>4.3 Stability Under Vertical Load Test</p>	<p>Test Procedure</p> <p>a) For tables less than or equal to 72 in. in length: Place a 305 mm (12 in.) diameter disk so that its center is 178 mm (7 in.) from the edge of the top at the least stable location. If the center of the disk is greater than 305 mm (12 in.) from a corner of the top, move the disk such that its center is 305 mm (12 in.) from the corner keeping the edges of the disk equidistant from both sides of the top. If, at the least stable position, the top has a depth less than 356 mm (14 in.), center the loading disk across the depth at that position. For tables greater than 72 in. in length: Place two 305 mm (12 in.) diameter disks 36 in. apart (center-to-center) so that their centers are 178 mm (7 in.) from the edge of the top at the least stable location. If the center of a disk is greater than 305 mm (12 in.) from a corner of the top, move the disk such that its center is 305 mm (12 in.) from the corner keeping the edges of the disk equidistant from both sides of the top. If, at the least stable position, the top has a depth less than 356 mm (14 in.), center the loading disks across the depth at that position. (See Figures 4b and 4c).</p> <p>b) Place a 57 kg (125 lb.) static load on the disk(s).</p> <p>c) If necessary, repeat steps (a) and (b) to verify the least stable position has been evaluated.</p> <p>Acceptance Level</p> <p>The unit shall not tip over. If one of more extendible elements opens during the test and prevents the unit from tipping over due to contact with the test platform, the unit does not meet the acceptance criteria.</p>	<p>P</p>
<p>4.4 Horizontal Stability Test for Desk/Tables with Casters</p>	<p>Test Procedure</p> <p>a) Apply a 11.4 kg (25 lb.) static load through a 203 mm (8 in.) diameter disk centered 102 mm (4 in.) from the edge of the top of the desk/table at the least stable location.</p> <p>b) Gradually apply a horizontal force to the top surface, perpendicular to the worst case fulcrum (“tipping line”) but not more than 13 mm (0.5 in.) below the top surface directly opposite the load. If the geometry of the top surface does not permit a direct application of the load, the geometry of the top surface may be altered to accommodate the 13 mm (0.5 in.) dimension. The load shall be applied perpendicular to the line formed by the caster obstruction(s) in (b), until 44.5 N (10 lbf.) is reached, or the product tilts to 10 degrees minimum, whichever occurs first.</p> <p>Acceptance Level</p> <p>The unit shall not tip over. If an extendible element(s) opens during the test and prevents the unit from tipping over due to contact with the test platform, the unit does not meet the acceptance criteria.</p>	<p>NA</p>

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Tests Conducted

<p>4.5 Stability Test for Keyboard / Laptop Tables (with and without casters)</p>	<p>Test Procedure Apply a 4.5 kg (10 lb.) static load through a 203 mm (8 in.) diameter disk centered 102 mm (4 in.) from the edge of the top of the desk/table at the least stable location. Gradually apply a horizontal force to the top surface, perpendicular to the worst case fulcrum (“tipping line”) but not more than 13 mm (0.5 in.) below the top surface directly opposite the load. If the geometry of the top surface does not permit a direct application of the load, the geometry of the top surface may be altered to accommodate the 13 mm (0.5 in.) dimension. (See Fig. 4d). The load shall be applied perpendicular to the line formed by the feet/caster obstruction(s) in (b), until 44.5 N (10 lbf.) is reached, or the product tilts to 10 degrees minimum, whichever occurs first.</p> <p>Acceptance Level The unit shall not tip over.</p>	<p>NA</p>
<p>4.6 Force Stability Test for Tall Desk/Table Products</p>	<p>This test applies to any unit that is higher than or can be adjusted to heights greater than 1067 mm (42 in.).</p> <p>Test Procedure</p> <p>a) Apply the horizontal forces through the center of a disk that is 203 mm (8 in.) in diameter. If the geometry of the product inhibits the use of the 203 mm (8 in.) disk, apply the force through a smaller diameter disk. If the location for the force is centered on an open area, then move the location of the force to the closest vertical or horizontal location on the unit.</p> <p>b) Gradually increase the force until 177 N (40 lbf.) is reached, the product tilts to 10 degrees, or the horizontal movement at the point of application is 165 mm (6.5 in.) whichever occurs first (angle measuring device must be accurate to within ± 0.5 degree) at the locations specified in step (c).</p> <p>c) The forces shall be applied one at a time to the following locations in the order given located 1372 mm (54 in.) from the floor or 102 mm (4 in.) down from the top edge, whichever is lower: location 1: Apply force to front of the product at its left side, location 2: Apply force to front of the product at its right side, location 3: Apply force to back of the product at its left side, location 4: Apply force to back of the product at its right side.</p> <p>Acceptance Level The unit shall not tip over, and there shall be no loss of serviceability. Assembled desk/table products shall not disengage. If one or more extendible elements opens during the test and prevents the unit from tipping over due to contact with the test platform, the unit does not meet the acceptance criteria.</p>	<p>P</p>

Section	Test Method/Requirement	Result
5 Unit Strength Test		-



Tests Conducted

<p>5.2 Concentrated Functional Load Test</p>	<p>Note: This test does not apply to units with a primary surface greater than 965 mm (38 in.) in height. This test applies to adjustable height tables that can be adjusted to 965 mm (38 in.) or less. This test applies to Benching Systems.</p> <p>Test Procedure</p> <p>a) Apply the specified concentrated load to the primary surface per Table 1 through a 305 mm (12 in.) diameter disk so that its center is 178 mm (7 in.) from the unit's edge at its apparent weakest point.</p> <p>b) All remaining surfaces and extendible elements shall be loaded according to the distributed functional loads per Table 1. The largest two extendible elements shall be fully opened for the duration of the test. If the unit contains an interlock that will not allow two extendible elements to be opened simultaneously, open the largest capacity extendible element(s).</p> <p>c) Loads shall be allowed to remain for 60 minutes and then removed.</p> <p>Acceptance Level</p> <p>There shall be no loss of serviceability. Upon completion of the test, the extendible member(s) shall meet the pull force requirements of Section 19 as tested in 5.2.2.</p>	<p>P</p>
<p>5.3 Distributed Functional Load Test</p>	<p>Test Procedure</p> <p>a) Depending on the desk/table surface classification, apply the specified distributed loads per Table 1. For primary surfaces, loads shall be evenly distributed and centered over a line 203 mm (8 in.) in from the edge along the entire perimeter. For surfaces that are less than 406 mm (16 in.) deep, evenly distribute the load across the surface. The loads may be secured to the surface if necessary to perform this test.</p> <p>b) Loads shall be allowed to remain for 60 minutes.</p> <p>c) Close the extendible elements.</p> <p>d) Without removing any load, perform the Pull Force Test in Section 19.</p> <p>Acceptance Level</p> <p>There shall be no loss of serviceability. Upon the completion of the test, the extendible member(s) shall meet the pull force requirements of Section 19 as tested in 5.3.2.</p>	<p>P</p>
<p>5.4 Concentrated Proof Load Test</p>	<p>Test Procedure</p> <p>The setup shall be performed per Section 5.2.1 with the appropriate concentrated proof load per Table 1, except for the extendible elements, which shall remain loaded with the distributed functional loads. Loads shall be allowed to remain for 15 minutes and then removed.</p> <p>Acceptance Level</p> <p>There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</p>	<p>P</p>

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<p>5.5 Distributed Proof Load Test</p>	<p>Test Procedure Perform the setup per Section 5.3.1 using the appropriate distributed proof loads per Table 1, except for the extendible elements, which shall remain loaded with the functional loads. Loads shall be allowed to remain for 15 minutes and then removed.</p> <p>Acceptance Level There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</p>	<p>P</p>
<p>5.6 Transaction Surface Torsion Load Test</p>	<p>Test Procedure Attach a strap or stranded metallic cable to one edge of the transaction surface at its apparent weakest point. Pass the strap or stranded metallic cable over the top of the transaction surface and allow it to hang vertically below the opposite edge. The strap, cable and/or the weight shall not contact any other surfaces. Attach a 34 kg (75 lb.) weight to the free end of the strap or cable.</p> <p>Acceptance Level There shall be no loss of serviceability.</p>	<p>NA</p>
<p>5.7 Extendible Element Static Load Tests</p>	<p>NOTE: The functional loading tests for extendible elements are performed as described in Section 5.2 and 5.3 and need not be repeated if they have already been performed.</p> <p>Test Procedure Uniformly distribute a proof load per Table 1 in the selected extendible element. Close the extendible element and allow the load to remain for 15 minutes. Open the extendible element, allow the load to remain for 15 minutes, and then remove the load.</p> <p>Acceptance Level There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</p>	<p>NA</p>
<p>5.8 Benching Systems - Distributed Functional Load and Stability Test</p>	<p>Test Procedure Apply the distributed functional loads from Table 1 to the primary surface(s). Loads shall be evenly distributed and centered over a line 178 mm (7 in.) in from the edge along the front (working) edge. For surfaces that are less than 406 mm (16 in.) deep, evenly distribute the load across the surface. The loads may be secured to the surface if necessary to perform this test. Loads shall be allowed to remain for 60 minutes</p> <p>Acceptance Level There shall be no loss of serviceability. The system shall not tip over.</p>	<p>NA</p>

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<p>5.9 Benching Systems - Distributed Proof Load Test</p>	<p>Test Procedure Perform the setup per Section 5.8.1 except the unit shall be secured (to prevent tipping) for the Proof Load Test. Apply the appropriate distributed proof loads per Table 1 to all primary surfaces and functional loads (distributed for surface loadings) to all secondary surfaces and extendible elements. The largest two extendible elements shall be fully opened for the duration of the test. If the unit contains an interlock that will not allow two extendible elements to be opened simultaneously, open the largest capacity extendible element. If necessary, the closed extendible elements may be secured to assure they remain closed throughout the test. Loads shall be allowed to remain for 15 minutes.</p> <p>Acceptance Level There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</p>	<p>NA</p>
<p>6 Top Load Ease Cycle Test</p>	<p>Test Procedure The bag of 91 kg (200 lb) shall be raised until the entire weight is off the primary surface and then eased (without impact) onto the primary surface, so that it takes the entire weight without any support from the cycling device. The cycling device shall be set to operate at a rate of 14 ± 6 cycles per minute. Repeat for a total of 10,000 cycles.</p> <p>Acceptance Level There shall be no loss of serviceability to the unit. Before and after the cycling test, the extendible elements shall meet the pull force test requirements in Section 19.</p>	<p>P</p>

Section	Test Method/Requirement	Result
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Tests Conducted

<p>7 Desk/Table Unit Drop Test</p>	<p>NOTE: This test applies to ungangd freestanding category I desk or table products which are less than or equal to 1829 mm (72 in.) in length. This test does not apply to desk/table units with casters or to keyboard tables. Raise one end of the long axis of the unloaded unit so that the bottom of the base is above the test platform at the height given in the following Table 3 or at the balance point, whichever is lower. The end of the unit being tested shall be released and allowed a free fall to the test platform. Repeat test for the other end of the desk/table unit.</p> <p>Test parameter:</p> <div style="text-align: center;"> <p>Table 3</p> <p>Drop Height for Desk/Table Units</p> <table border="1"> <thead> <tr> <th>Unit Weight</th> <th>Drop Height</th> </tr> </thead> <tbody> <tr> <td><45 kg (100 lb.)</td> <td>180 mm (7.1 in.)</td> </tr> <tr> <td>45- 90 kg (100-200 lb.)</td> <td>120 mm (4.7 in.)</td> </tr> <tr> <td>>90 – 136 kg (200 - 300 lb.)</td> <td>60 mm (2.4 in.)</td> </tr> <tr> <td>> 136 kg (300 lb.)</td> <td>n/a</td> </tr> </tbody> </table> </div> <p>Test procedure</p> <ol style="list-style-type: none"> a) Assure all extendible elements and surfaces are unloaded and determine the weight of the unloaded desk/table unit to be tested. b) The unit shall be placed on a test platform and leveled. If the desk/table unit is equipped with glides, extend them to their midpoint but not to exceed 13 mm (0.5 in.) from the fully retracted position. c) Raise one end of the long axis of the unloaded unit so that the bottom of the base is above the test platform at the height given in Table 3 or at the balance point, whichever is lower. d) The end of the unit being tested shall be released and allowed a free fall to the test platform. e) Repeat steps (c) and (d) for the other end of the desk/table unit. f) Perform the pull force test in Section 19. <p>Acceptance Level</p> <p>There shall be no loss of serviceability. The extendible elements shall meet the pull force test requirements in Section 19.</p>	Unit Weight	Drop Height	<45 kg (100 lb.)	180 mm (7.1 in.)	45- 90 kg (100-200 lb.)	120 mm (4.7 in.)	>90 – 136 kg (200 - 300 lb.)	60 mm (2.4 in.)	> 136 kg (300 lb.)	n/a	<p>P</p>
Unit Weight	Drop Height											
<45 kg (100 lb.)	180 mm (7.1 in.)											
45- 90 kg (100-200 lb.)	120 mm (4.7 in.)											
>90 – 136 kg (200 - 300 lb.)	60 mm (2.4 in.)											
> 136 kg (300 lb.)	n/a											

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Tests Conducted

<p>8 Leg Strength Test</p>	<p>Test procedure Based on the desk or table Category, calculate the Functional Force "A" as follows (not to exceed 445 N):</p> <p>Category I: "A" = 0.5 x (unit weight, kg) x 9.8 + 222 N Category II and III: "A" = 0.5 x (unit weight, kg) x 9.8 + 44 N</p> <p>Calculate the Functional Force "B" as (0.5 x "A").</p> <p>Calculate the Proof Forces "A" (not to exceed 668 N (150 lbf.)) and "B" as follows: Proof Force "A" = 1.5 x (Functional Force "A"). Proof Force "B" = 1.5 x (Functional Force "B").</p> <p>Functional Test Acceptance Level No loss of serviceability shall occur as a result of the application of the functional loads. After application of the functional loads, each type and size extendible element in a leg-attached desk pedestal shall be tested to and meet the pull force requirements of Section 19. For tilt-top tables, release of the top latching mechanism during the test is considered a loss of serviceability.</p> <p>Proof Test Acceptance Levels Application of the proof loads shall cause no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</p>	<p>P</p>
<p>9 Separation Tests for Tall Desk/Table Products</p>	<p>Test procedure Place a 136 kg. (300 lb.) load in the center of the primary surface of the desk/table unit to prevent the unit from tipping during the test. The other elements in the unit shall not be loaded.</p> <p>Swing a bag that is 203 mm (8 in.) in diameter, weighing 22 kg (50 lb.) and suspended on a cable, through a horizontal distance of 609 mm (24 in.).</p> <p>Impact an unloaded unit once at each of the following locations in the order given without repositioning the impacted element. The impact shall be centered along a line that is 102 mm (4 in.) down from the top edge, but not at a height greater than 1321 mm (52 in.). If the impact location is centered on an open area (e.g. open book shelf), move the impact horizontally to the closest impactable location on the unit. location 1: Impact front of product at its left side, location 2: Impact front of product at its right side, location 3: Impact back of product at its left side, location 4: Impact back of product at its right side, location 5: Impact center of product's left side, location 6: Impact center of product's right side.</p> <p>Acceptance Level</p>	<p>NA</p>



Tests Conducted

	<p>The attached or stackable units shall not become totally separated (fall off) from the base unit as the result of the impact sequence given. Loss of serviceability is acceptable. Cracked or broken glass is not acceptable.</p>	
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Section	Test Method/Requirement	Result
10 Extendible Element Cycle Test		-
10.2 Cycle Test for Extendible Elements Deeper Than Wide	<p>Test procedure The extendible element being tested shall be uniformly loaded to the functional load per Table 1. Load shall be configured per Section 3.9. The cycling device shall be operated at a rate of 12 ± 4 cycles per minute. The extendible element shall be subjected to 50,000 cycles</p> <p>Acceptance Level There shall be no loss of serviceability. Before and after the cycle test, the extendible element(s) shall meet the pull force requirements of Section 19. If applicable, after the cycle test the extendible elements shall meet the interlock test requirements of Section 13.</p>	NA



Tests Conducted

<p>10.3 Cycle Test for Extendible Elements Wider Than Deep</p>	<p>Test procedure Extendible element being tested shall be uniformly loaded to the functional load per Table 1.</p> <p style="text-align: center;">Table 4 Cycle Test for Extendible Elements Wider Than Deep</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Pull Type</th> <th>Cycles per Location</th> </tr> </thead> <tbody> <tr> <td>single pull = 33% extendible element width or ≤ 457 mm [18 in.] in width (center pulls and single side pulls)</td> <td>50,000 cycles at center of pull</td> </tr> <tr> <td>single pull > 33% extendible element width and greater than 457 mm [18 in.] in width (wide width pulls)</td> <td>30,000 cycles at center of pull 10,000 cycles at Right Hand position (see test setup) 10,000 cycles at Left Hand position (see test setup)</td> </tr> <tr> <td>Wide pulls are > 33% of extendible element front and greater than 457 mm [18 in.] in width</td> <td></td> </tr> <tr> <td>dual pulls</td> <td>25,000 cycles at center of Right Hand pull 25,000 cycles at center of Left Hand pull</td> </tr> </tbody> </table> <p>Acceptance Level There shall be no loss of serviceability. Before and after the cycle test, the extendible element(s) shall meet the pull force requirements of Section 19. If applicable, after the cycle test the extendible elements shall meet the interlock test requirements of Section 13.</p>	Pull Type	Cycles per Location	single pull = 33% extendible element width or ≤ 457 mm [18 in.] in width (center pulls and single side pulls)	50,000 cycles at center of pull	single pull > 33% extendible element width and greater than 457 mm [18 in.] in width (wide width pulls)	30,000 cycles at center of pull 10,000 cycles at Right Hand position (see test setup) 10,000 cycles at Left Hand position (see test setup)	Wide pulls are > 33% of extendible element front and greater than 457 mm [18 in.] in width		dual pulls	25,000 cycles at center of Right Hand pull 25,000 cycles at center of Left Hand pull	<p>NA</p>
Pull Type	Cycles per Location											
single pull = 33% extendible element width or ≤ 457 mm [18 in.] in width (center pulls and single side pulls)	50,000 cycles at center of pull											
single pull > 33% extendible element width and greater than 457 mm [18 in.] in width (wide width pulls)	30,000 cycles at center of pull 10,000 cycles at Right Hand position (see test setup) 10,000 cycles at Left Hand position (see test setup)											
Wide pulls are > 33% of extendible element front and greater than 457 mm [18 in.] in width												
dual pulls	25,000 cycles at center of Right Hand pull 25,000 cycles at center of Left Hand pull											
<p>10.4 Cycle Test for Low Height Drawers</p>	<p>Test procedure Low height drawers shall be uniformly loaded per Table 1. The cycling device shall be operated at a rate of 12 ± 4 cycles per minute. The low height drawers shall be subjected to 10,000 cycles.</p> <p>Acceptance Level There shall be no loss of serviceability. Before and after the cycle test, the low height drawer shall meet the pull force requirements of Section 19.</p>	<p>NA</p>										

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Tests Conducted

<p>11 Extendible Element Retention Impact and Durability (Out Stop) Tests</p>	<p>Test procedure The extendible element being tested shall be uniformly loaded to the functional load per Table 1. A stranded metallic cable shall be attached to the most rigid point of the vertical centerline of the extendible element. This may be accomplished by means of a clamp or similar device that does not affect the test results. The opposite end of the cable shall extend horizontally to a pulley and then downward to an attached weight. Open the extendible element 38 mm (1.5 in.) and determine the minimum weight that will cause the extendible element to open to full extension. Add 2.3 kg (5 lb.) of weight. This combined weight shall be used to conduct the test. The weight shall contact the restraint device after the extendible element reaches 80% of the extendible element's total extension. Remove the weight restraint. Move the fully extended extendible element 51 mm (2 in.) toward the closed position and then release it rapidly, allowing it to impact the out stop. The distance traveled by the weight shall not be restrained. This procedure shall be repeated 15,000 cycles at a rate of 14 ± 6 cycles per minute.</p> <p>Acceptance Level There shall be no loss of serviceability. Before and after performing the Retention Tests, the extendible element shall meet the pull force requirements of Section 19.</p>	<p>NA</p>
<p>12 Extendible Element Rebound Test</p>	<p>Test procedure The extendible element to be tested shall be loaded to the functional load requirements in Table 1. A force gauge with a spring rate of 1.75 N/mm shall be mounted 51 mm from the face of the extendible element in its fully closed position per Figure 12. The extendible element shall be opened (through the free travel space) against the force gauge to a force of 9.8 N per kg of extendible element load or 178 N, whichever force is less. Release the extendible element allowing the force applied by the force gauge to close the extendible element. Record the at-rest position of the extendible element after rebound. Reset the position of the load to meet the air gap requirements of Section 3.9. Repeat steps (c) through (e) for a total of 5 times. Repeat the test as necessary for each extendible element type per Section 3.1.5.</p> <p>Acceptance Level There shall be no loss of serviceability. The rebound position of the extendible element shall not exceed 38 mm (1.5 in.) from its closed position after each of the five closings.</p>	<p>NA</p>

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<p>13 Interlock Strength Test</p>	<p>Test procedure An extendible element shall be fully extended, and a horizontal force of 133 N shall be individually applied to the center of the pull area(s) of the remaining extendible elements, one at a time. Repeat until all possible combinations of extendible elements have been tested. Load extendible elements with the functional load per Table 1. Repeat above steps until all possible combinations of extendible elements have been tested.</p> <p>Acceptance Level There shall be no loss of serviceability to the interlock system. The unopened extendible elements shall not bypass the interlock system.</p>	<p>NA</p>
<p>14 Lock Tests</p>		<p>-</p>
<p>14.2 Force Test for Extendible Element Locks</p>	<p>Test procedure Close and lock all extendible elements. a) A horizontal outward force of 222 N (50 lbf.) shall be applied once at each of the applicable locations indicated in the test setup. b) An outward and upward force (30 degrees from horizontal) of 222 N (50 lbf.) shall be applied once at each of the applicable locations indicated in the test setup.</p> <p>Note: If the extendible element pull design does not allow a user to apply an outward and upward force, step (b) does not apply. c) Repeat steps (a) and (b) for each extendible element. d) Unlock the extendible elements. e) All extendible elements in the unit shall be uniformly loaded with the functional load per Table 1. Any uniform loading configuration in Section 3.9 (Figure 3a -3d) is acceptable. f) The loaded extendible elements shall be closed and locked. g) Repeat procedure (a) through (d).</p> <p>Acceptance Level The extendible elements shall remain in the locked position during application of the forces. There shall be no loss of serviceability of the locking mechanism.</p>	<p>NA</p>
<p>14.3 Force Test for Door Locks</p>	<p>Test procedure Close and lock all doors. Apply forces to the center of the pull area of the door. a) Apply a force of 222 N (50 lbf.) in the direction of initial door travel. b) Repeat the test as necessary for each door/lock per Section 3.1.5. c) Unlock the door.</p> <p>Acceptance Level The doors shall remain in the locked position during application of the forces. There shall be no loss of serviceability of the locking mechanism.</p>	<p>NA</p>



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14.4 Locking Mechanism Cycle Test	<p>Test procedure Cycle the locking mechanism through its full range of motion for 5000 cycles. Each cycle shall consist of a complete locking and unlocking of the mechanism. For keyed systems, the key does not need to be removed from the lock mechanism. For keyless systems, the cycle may require two activations of the keypad – one to lock and one to unlock. Set the cycling device to operate at 14 ± 6 cycles per minute. Acceptance Level There shall be no loss of serviceability of the locking mechanism.</p>	NA
15 Work Surface Vertical Adjustment Test	<p>Test procedure The unit, including any latches or activation mechanisms, shall be cycled for 1000 cycles in each quartile of full travel for a total of 4000 cycles as described below: The cycle rate shall not exceed 6 cycles per minute or the manufacturer's recommended rate.</p> <p>Note: The test device shall apply the forces necessary to achieve the motion required. The latching and/or activating mechanisms may be cycled concurrently or independently for 4000 cycles.</p> <p>First Quartile: The unit shall be cycled from the lowest to the 25% position. The center of the loading disk shall be positioned 305 mm (12 in.) in from the left edge of the surface.</p> <p>Second Quartile: The unit shall be cycled from the 25% to the 50% position. The center of the loading disk shall be positioned 305 mm (12 in.) in from the left edge of the surface.</p> <p>Third Quartile: The unit shall be cycled from the 50% to the 75% position. The center of the loading disk shall be positioned 305 mm (12 in.) in from the right edge of the surface.</p> <p>Fourth Quartile: The unit shall be cycled from the 75% up to the highest position. The center of the loading disk shall be positioned 305 mm (12 in.) in from the right edge of the surface.</p> <p>For tables with crank driven height adjustment mechanisms, the operating force on the handle to adjust the table shall not exceed 50 N (11.2 lbf.) before or after the test.</p> <p>Acceptance Level There shall be no loss of serviceability to the unit. For surfaces with crank-driven height adjustment mechanisms, the operating force on the handle to adjust the table shall not exceed 50 N (11.2 lbf.) before or after the test.</p>	P

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Tests Conducted

<p>16 Keyboard Support and Input Device Support Adjustment Tests</p>	<p>Test procedure Apply an evenly distributed 4.5 kg (10 lb.) load across the keyboard support surface. If the device does not have a surface (keyboard attaches directly to the device), a test surface may be added to simulate a keyboard support surface. Apply an evenly distributed 2.3 kg (5 lb.) load across the input device support surface (if it is a separate surface from the keyboard support surface). The adjustable keyboard support and input device support shall be subjected to 2500 cycles each as follows: a) Horizontal Motion; within 6 mm (0.25 in.) of the end stops. b) Vertical Motion; within 6 mm (0.25 in.) of the end stops. c) Swivel Motion; minimum of 120 degrees of adjustment, or to within 6 mm (0.25 in.) of the end stops over its full range of motion, whichever is less. d) The cycling device shall be set to operate at rate not to exceed 6 cycles per minute.</p> <p>Acceptance Level There shall be no loss of serviceability.</p>	<p>NA</p>						
<p>Door Tests (Section 17)</p>		<p>-</p>						
<p>17.2 Strength Test for Vertically Hinged Doors, Bi-fold Doors and Vertically Receding Doors</p>	<p>Test procedure Attach the specified load per Table 6 so that it is equally distributed on both sides of the door and its center of gravity acts 100 mm (4 in.) from the edge of the door opposite the hinge.</p> <p style="text-align: center;">Table 6 - Door Height vs. Load</p> <table border="1" data-bbox="422 1075 1133 1209"> <thead> <tr> <th>Door height</th> <th>Load</th> </tr> </thead> <tbody> <tr> <td>Less than 46 cm (18 in.).</td> <td>10 kg (22 lb.)</td> </tr> <tr> <td>46 cm (18 in.) and greater</td> <td>20 kg (44 lb.)</td> </tr> </tbody> </table> <p>Cycle the door 10 times from a position 45 degrees from fully closed to a position 10 degrees from fully open (but not more than 135 degrees) and return. For bi-fold doors, cycle the door from a position 50 mm (2 in.) from fully closed to a position 50 mm (2 in.) from fully open and return.</p> <p>Acceptance Level There shall be no loss of serviceability to the unit.</p>	Door height	Load	Less than 46 cm (18 in.).	10 kg (22 lb.)	46 cm (18 in.) and greater	20 kg (44 lb.)	<p>NA</p>
Door height	Load							
Less than 46 cm (18 in.).	10 kg (22 lb.)							
46 cm (18 in.) and greater	20 kg (44 lb.)							
<p>17.3 Hinge Override Test for Vertically Hinged Doors</p>	<p>Test procedure Apply a 60 N (13.5 lbf.) horizontal force perpendicular to the plane of the door on its horizontal centerline 100 mm (4 in.) from the edge farthest from the hinge.</p> <p>Acceptance Level There shall be no loss of serviceability to the desk/table unit or its components.</p>	<p>NA</p>						

Section	Test Method/Requirement	Result
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Tests Conducted

<p>17.4 Vertical Receding Doors Strength Test</p>	<p>Test procedure Apply the 80 N (18 lbf.) horizontal force perpendicular to the plane of the door on its horizontal centerline 100 mm (4 in.) from the edge farthest from the hinge, as shown in Figure 17c. Apply the force 10 times. Repeat the test with the force application to the opposite side of the door.</p> <p>Acceptance Level There shall be no loss of serviceability to the desk/table unit or its components.</p>	<p>NA</p>
<p>17.5 Horizontal Receding Doors Strength Test</p>	<p>Test procedure a) Apply the 80 N (18 lbf.) downward force perpendicular to the plane of the door on its horizontal centerline 25 mm (1 in.) from the edge farthest from the hinge, as shown in Figure 17d. b) Apply the force 10 times.</p> <p>Acceptance Level There shall be no loss of serviceability to the desk/table unit or its components.</p>	<p>NA</p>
<p>17.6 Wear and Fatigue Test for Hinged, Horizontally Sliding, and Tambour Doors</p>	<p>Test procedure Cycle the door for a total of 20,000 cycles as specified in Table 7. The cyclic rate shall be 12 ± 4 cycles per minute unless the rate is controlled by the door operating mechanisms (pneumatic dampers, etc.). If that is the case, the rate shall not exceed the natural rate established by the movement of the mechanism.</p> <p>Acceptance Level There shall be no loss of serviceability to the desk/table unit or its components.</p>	<p>NA</p>



Tests Conducted

<p>17.7 Wear and Fatigue Test for Vertical Receding Doors</p>	<p>Test procedure</p> <p>a) Prior to performing test procedure, the door shall be tested to and meet the pull force requirements of Section 19.</p> <p>b) Cycle the door for a total of 10,000 cycles.</p> <p>c) The suspensions shall not be cleaned or lubricated during the test. Note: When necessary to compensate for ball-bearing cage creep ((ballbearing slides only) – see Section 10.2 footnote 1) the door should be reset throughout the test by fully opening and closing the element throughout the test. This interval will depend on a number of variables. The best indicator of the need to reset is increasing pull forces (typically when forces exceed 267 N [60 lbs.]) or decreasing door travel (typically greater than 13 mm [0.5 in.]). The resetting interval shall not be less than 500 cycles.</p> <p>d) Upon completion of the cycles, perform the Pull Force Test in Section 19.</p> <p>e) The cycling device shall be set to operate at 12 ± 4 cycles per minute.</p> <p>Acceptance Level</p> <p>Before and after the cycle test, the door shall meet the pull force requirements of Section 19. The door shall have no loss of serviceability.</p>	<p>NA</p>
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Section	Test Method/Requirement	Result
<p>17.8 Wear and Fatigue Test for Horizontal Receding Doors</p>	<p>Test procedure</p> <p>a) Prior to performing test procedure the door shall be tested to and meet the pull force requirements of Section 19. The door may be supported in a horizontal plane during the pull force measurement test.</p> <p>b) The door shall be cycled according to the requirements of Table 7.</p> <p>c) The suspensions shall not be cleaned or lubricated during the test.</p> <p>d) Upon completion of the cycles, perform the Pull Force Test in Section 19.</p> <p>e) The cycling device shall be set to operate at 12 ± 4 cycles per minute.</p> <p>Acceptance Level</p> <p>Before and after the cycle test, the door shall meet the pull force requirements of Section 19. The door shall have no loss of serviceability.</p>	<p>NA</p>



Tests Conducted

<p>17.9 Vertical and Horizontal Receding Door Out Stop Test – Cyclic Impact and Durability</p>	<p>Test Procedure – Cyclic Impact Test (See Figure 17h) The door with stranded metallic cable and hanging weight shall be held 38 mm (1.5 in.) from the stowed position and then released, permitting it to open rapidly (ensuring the weight is restrained according to 17.9.2(e) and impact the out stops. (See Figure 17h). Repeat this procedure for a total of 5 times.</p> <p>Test Procedure – Cyclic Durability Test (See Figure 17i) a) Remove the load restraint such that the door will travel to full extension. (See Figure 17i). b) A device shall be used to move the door 51 mm (2 in.) toward the stowed position and then to release it rapidly, allowing it to impact the out stop. This procedure shall be repeated 5,000 cycles at a rate of 10 ± 2 cycles per minute. c) Upon completion of the cycles, perform the Pull Force Test in Section 19.</p> <p>Acceptance Level There shall be no loss of serviceability. Before and after performing the cyclic out stop test, the extendible element shall meet the pull force requirements of Section 19.</p>	<p>NA</p>
<p>17.10 Slam Closed Test for Vertically Hinged and Vertically Receding Doors</p>	<p>Test procedure The door with cable and hanging weight shall be held at 300 mm (12 in.) or 30 degrees from the closed position and then released, permitting the door to close, allowing it to impact the desk/table product case. Repeat this procedure for a total of 10 times without resetting the loading gaps.</p> <p>Acceptance Level There shall be no loss of serviceability.</p>	<p>NA</p>
<p>17.11 Drop Cycle Test for Horizontally Hinged and Horizontally Receding Doors</p>	<p>Test procedure The door shall be lifted and dropped 200 times at a rate not to exceed 10 cycles per minute.</p> <p>Acceptance Level There shall be no loss of serviceability to the unit or its components.</p>	<p>NA</p>

Section	Test Method/Requirement	Result
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Tests Conducted

<p>17.12 Slam Test for Doors Which Free Fall Open or Closed</p>	<p>Test procedure a) The unit shall be placed on a test platform, leveled, and secured against movement. b) Determine the highest position from which the door will fall (move) freely open/closed throughout its greatest distance. Depending on the door's design, the door may require testing in both its opening and closing conditions. Allow the door to fall open/close freely. Repeat for a total of 50 cycles in each direction</p> <p>Acceptance Level There shall be no loss of serviceability to the desk/table unit or its components.</p>	<p>NA</p>
<p>17.13 Slam Open and Closed Test for Doors which Do Not Free Fall</p>	<p>Test procedure a) Move the door, lifting the weight so the door will travel 300 mm (11.8 in.) or to the doorstop opposite the one to be impacted, whichever is less. b) Release the door, permitting the door to move rapidly, allowing it to impact the doorstop. c) Repeat steps (a) and (b) for a total of 10 times. d) Repeat Test Setup and Test Procedure steps (a) through (c) to impact the opposite door stop on the same door.</p> <p>Acceptance Level There shall be no loss of serviceability to the desk/table unit or its components.</p>	<p>NA</p>
<p>17.14 Door Latch Test</p>	<p>Test procedure a) The unit shall be placed on a test platform, leveled, and secured against movement. b) Attach the door and/or latch to a cycling device. c) Set the cycling device to operate at 12 ± 4 cycles per minute. Operate the latch 20,000 times.</p> <p>Acceptance Level There shall be no loss of serviceability to the door or its latching mechanism.</p>	<p>NA</p>

Section	Test Method/Requirement	Result
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Tests Conducted

<p>18 Durability Test for Desks and Tables with Casters</p>	<p>Test procedure Cycle the desk/table unit for the appropriate number of cycles over a platform with and without obstructions per Table 8.</p> <p style="text-align: center;">Table 8 – Desk/Table Movement Cycle Test Parameters</p> <table border="1" data-bbox="421 448 1145 651"> <thead> <tr> <th>Unloaded Unit weight</th> <th>Cycles over obstacles</th> <th>Cycles over flat surface</th> </tr> </thead> <tbody> <tr> <td>Less than or equal to 45 kg (100 lbs.)</td> <td>2500</td> <td>0</td> </tr> <tr> <td>Greater than 45 kg (100 lbs.)</td> <td>100</td> <td>1000</td> </tr> </tbody> </table> <p>Acceptance Level There shall be no loss of serviceability to a caster or the desk/table.</p>	Unloaded Unit weight	Cycles over obstacles	Cycles over flat surface	Less than or equal to 45 kg (100 lbs.)	2500	0	Greater than 45 kg (100 lbs.)	100	1000	<p>NA</p>
Unloaded Unit weight	Cycles over obstacles	Cycles over flat surface									
Less than or equal to 45 kg (100 lbs.)	2500	0									
Greater than 45 kg (100 lbs.)	100	1000									
<p>19 Pull Force Test</p>	<p>Test procedure Extendible elements and doors shall be subjected to a one-time break-in period of up to 100 cycles if the extendible element does not initially meet the pull force requirement. One cycle is defined as travel from 0 to 6 mm (0 to 0.25 in.) of the closed position to 0 to 6 mm (0 to 0.25 in.) of the fully extended/open position and return. Open the extendible element or door from its fully closed position to its fully extended position while measuring the maximum force.</p> <p>Acceptance Level The applied force shall not exceed 50 N (11.2 lbf.).</p>	<p>NA</p>									
<p>20 Tilting Top Table -- Cycle Test</p>	<p>Test procedure Move the table top from its in-use position (typically its horizontal or near horizontal position) to its fully stowed position (typically vertical or near vertical) and then return to its in-use position for 2,500 cycles. Note: If a cycling device is used, then center the device on the top within 50 mm (2 in.) of the edge. The cycle rate shall not exceed 10 cycles per minute.</p> <p>Acceptance Level There shall be no loss of serviceability and the table top shall be able to move throughout its range of motion.</p>	<p>NA</p>									



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<p>21 Tilting Top Table – Latch Strength Test</p>	<p>Test procedure Apply an upward force of 222 N (50 lbs.) 25 mm (1 in.) inward and at the center of the edge of the table top in the direction that would typically move the table top into its stowed position. Move the tabletop to its stowed (vertical or most upright) position. With lock/latch engaged, apply a horizontal force of 133 N (30 lbs.) at the center of the edge of the table top in the direction that would typically move the table top into its in-use position.</p> <p>Acceptance Level The lock/latch shall retain the top in its test position throughout the application of the test force(s). There shall be no loss of serviceability to the unit.</p>	<p>NA</p>
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Section	Test Method/Requirement	Result
<p>22 Monitor Arm Strength Test</p>	<p>Test procedure a) The monitor arm shall be attached to the desk/table unit (or test fixture) in accordance with the manufacturer’s instructions. b) Extend the monitor arm to its most horizontally extended (worst case) position. c) A test weight simulating the weight of a monitor shall be placed on the monitor arm in accordance with the manufacturer’s maximum load rating. The simulated weight shall not exceed 76 mm (3 in.) in thickness. If no manufacturer’s load rating is provided, apply a test weight of 20 kg (44 lbs.). The load may be attached to the monitor arm with a test fixture that simulates an actual monitor, or may be applied by means of a weight suspended from the monitor attachment mechanism. d) Apply the test weight for 60 minutes.</p> <p>Acceptance Level There shall be no loss of serviceability.</p>	<p>NA</p>
<p>23 Monitor Arm Cycle Test</p>	<p>Test procedure Move the monitor arm through its entire range of motion(s) for 2,500 cycles. A cycle shall consist of the 90-95% of the adjustment range including back to forth, up to down, side to side, or whatever the range may entail. A cycle is rotation or movement in one direction from one end of the range to the other. Rotation or movement in the opposite direction is another cycle. If clamping or clutch-type mechanisms have been loosened prior to testing, reapply (tighten) them after cycling. (Due to product variations, no cycle rate is given and is determined by the manufacturer. Consider a suggested cycle rate not to exceed 6 cycles per minute.) There shall be no loss of serviceability. Clamping or clutch mechanisms shall remain functional. Tensioning mechanisms must be capable of being reset to hold the monitor in its pretest position.</p> <p>Acceptance Level</p>	<p>NA</p>

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	<p>There shall be no loss of serviceability. Clamping or clutch mechanisms shall remain functional. Tensioning mechanisms must be capable of being reset to hold the monitor in its pretest position.</p>	
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Section	Test Method/Requirement	Result
24 Monitor Arm Adapter Dislodgement Test	<p>Test procedure Apply a horizontal force of 40 N (9 lbf.) in three directions. Apply each force independently in the following locations: a) A forward (away from the user) direction at a location that is 25 mm (1 in.) inwards and downwards from the top corner of the mock up monitor/test fixture (See Figure 24). b) A rearward location (from behind the monitor in a direction towards the user) at a location that is 25 mm (1 in.) inwards and downwards from the top corner of the mock up monitor/test fixture. c) To the either side of the monitor at a location that is 25 mm (1 in.) downwards from the top corner of the mock up monitor/test fixture.</p> <p>Acceptance Level There shall be no loss of serviceability.</p>	NA

Abbreviation: P = Pass; NA = Not Applicable

Note:

Category I: surface area greater than 0.46 mDesks or tables with surfaces greater than 610 mm (24 inches) in height and have a total work ₂ (5 ft.₂).

Category II: Desks or tables with surfaces which are always less than or equal to 610 mm (24 inches) in height.

Category III: surface area less than or equal to 0.46 mDesks or tables with surfaces greater than 610 mm (24 inches) in height and have a total work ₂ (5 ft²)

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* End of report

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