

TEST REPORT

Performance Testing Services

PTS Test Report: 5709

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Revision: Release

Test Report Date: 08/05/19

Sample Receipt Date: 07/16/19

Sample Receipt Cond.: Normal

Test Start Date: 07/17/19

Test Completion Date: 08/01/19

Customer: Kessebohmer Ergonomie of America Inc.
3900 Linden Avenue SE – Suite A
Grand Rapids, MI 49548

1.0 Scope

To validate the Kessebohmer Andern & Luften Pneumatic Lift Tables to the applicable test sections of ANSI/BIFMA X5.5-2014 Desk/Table Products – Tests.

2.0 Product Descriptions

Sample ID	Sample Description	Qty.
5709-1	Kessebohmer Progress Mono Andern Table with Glides and 48" x 30" worksurface. Adjustment height range (floor to top of worksurface) = 28.0"- 46.0".	1
5709-2	Kessebohmer Progress Mono Andern Table with Casters and 48" x 30" worksurface. Adjustment height range (floor to top of worksurface) = 29.0"- 47.0". Same sample as 5709-1 but with casters.	1
5709-3	Kessebohmer Progress Twin Luften Table with Glides and 60" x 30" worksurface. Adjustment height range (floor to top of worksurface) = 28.0"- 46.0".	1
5709-4	Kessebohmer Progress Twin Luften Table with Glides and 60" x 30" worksurface. Adjustment height range (floor to top of worksurface) = 28.0"- 46.0".	1
5709-5	Kessebohmer Progress Twin Luften Table with Casters and 60" x 30" worksurface. Adjustment height range (floor to top of worksurface) = 29.0"- 47.0". Same sample as 5709-4 but with casters.	1



5709-1/5709-2 (Andern)



5709-3/5709-4/5709-5 (Luften)

3.0 Summary

-Sample 5709-1 met the requirements for all of the applicable ANSI/BIFMA X5.5-2014 Test Sections 4.3, 4.6, 5.2, 5.3, 5.4, 5.5, 6.0, 7.0, 8.0 and 15.0.

-Sample 5709-2 met the requirements for all of the applicable ANSI/BIFMA X5.5-2014 Test Sections 4.3, 4.4, 4.6, 5.2, 5.3, 5.4, 5.5, 6.0, 8.0 and 18.0.

-Sample 5709-3 met the requirements for ANSI/BIFMA X5.5-2014 Test Sections 4.3, 4.6, 5.2, 5.3, 5.4, 5.5. Sample 5709-3 did not meet the requirements for the Section 15 Work Surface Vertical Adjustment Test.

-Sample 5709-4 met the requirements for ANSI/BIFMA X5.5-2014 Test Sections 6.0, 7.0, 8.0 & 15.

-Sample 5709-5 met the requirements for all of the applicable ANSI/BIFMA X5.5-2014 Test Sections 4.3, 4.4, 4.6, 5.2, 5.3, 5.4, 5.5, 6.0, 8.0 and 18.0.

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4.0 Test Results

Sample ID	ANSI/BIFMA X5.5-2014 Test Description and Acceptance Criteria	Met Criteria ?	Comments/Notes
5709-1 5709-2	Section 4.3 Stability Under Vertical Load Test <i>The unit shall not tip over.</i>	Yes Yes	Checked front & rear center positions and corner position without any issues observed. -125 lbs. used on a 12" diameter disk, 1" in from the edge. -Table Length = 48.0". -Tested at maximum heights (46.0" & 47.0").
5709-3 5709-4	Section 4.3 Stability Under Vertical Load Test <i>The unit shall not tip over.</i>	Yes Yes	Checked front & rear center positions and corner position without any issues observed. -125 lbs. used on a 12" diameter disk, 1" in from the edge. -Table Length = 60.0". -Tested at maximum heights (46.0" & 47.0").
5709-2 5709-5	Section 4.4 Horizontal Force Stability for Desks/Tables with Casters. <i>The unit shall not tip over (10 lbf or 10° minimum).</i>	Yes Yes	Met the requirements. <u>Force/Angle to Tip</u> 5709-2 Back to Front = 12.1 lbf/8.8°. 5709-2 Front to Back = 18.2 lbf/13.1°. 5709-5 Back to Front = 18.4 lbf/9.0°. 5709-5 Front to Back = 25.1 lbf/12.3°. -Tested at maximum heights (47.0").
5709-1	Section 4.6 Force Stability Test for Tall Desk/Table Products <i>The unit shall not tip over (40 lbf or 10 degrees minimum), and there shall be no loss of serviceability.</i>	Yes	<u>Table Tipping Force (lbf)/Degrees to Tip</u> Left Front = 21.6 lbf/18.6° Right Front = 21.8 lbf/18.6° Left Rear = 17.8 lbf/16.2° Right Rear = 17.9 lbf/16.2° -Tested at maximum height (46.0").
5709-2	Section 4.6 Force Stability Test for Tall Desk/Table Products <i>The unit shall not tip over (40 lbf or 10 degrees minimum), and there shall be no loss of serviceability.</i>	Yes	<u>Table Tipping Force (lbf)/Degrees to Tip</u> Left Front = 18.7 lbf/17.8° Right Front = 18.8 lbf/17.8° Left Rear = 16.3 lbf/14.4° Right Rear = 16.1 lbf/14.4° -Tested at maximum height (47.0").
5709-3	Section 4.6 Force Stability Test for Tall Desk/Table Products <i>The unit shall not tip over (40 lbf or 10 degrees minimum), and there shall be no loss of serviceability.</i>	Yes	<u>Table Tipping Force (lbf)/Degrees to Tip</u> Left Front = 27.1 lbf/18.5° Right Front = 27.2 lbf/18.5° Left Rear = 25.5 lbf/16.1° Right Rear = 25.4 lbf/16.1° -Tested at maximum height (46.0").
5709-5	Section 4.6 Force Stability Test for Tall Desk/Table Products <i>The unit shall not tip over (40 lbf or 10 degrees minimum), and there shall be no loss of serviceability.</i>	Yes	<u>Table Tipping Force (lbf)/Degrees to Tip</u> Left Front = 25.4 lbf/16.5° Right Front = 25.6 lbf/16.5° Left Rear = 21.5 lbf/14.6° Right Rear = 21.6 lbf/14.6° -Tested at maximum height (47.0").
5709-1 5709-2	Section 5.2 Concentrated Functional Load Test <i>There shall be no loss of serviceability</i>	Yes Yes	1 x 200 lbs. – 60 minutes - OK. -Table Length = 48.0". -Tested at the front edge, center of span. -Tables tested and set to a 38.0" height.
5709-3 5709-5	Section 5.2 Concentrated Functional Load Test <i>There shall be no loss of serviceability</i>	Yes Yes	1 x 200 lbs. – 60 minutes - OK. -Table Length = 60.0". -Tested at the front edge, center of span. -Tables tested and set to a 38.0" height.

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4.0 Test Results continued

Sample ID	ANSI/BIFMA X5.5-2014 Test Description and Acceptance Criteria	Met Criteria ?	Comments/Notes
5709-1 5709-2	Section 5.3 Distributed Functional Load Test <i>There shall be no loss of serviceability.</i>	Yes Yes	Perimeter = 156.0" x 1.5 = 234.0 lbs. - 60 minutes. -Table Length = 48.0". -Tested at maximum heights (46.0" & 47.0").
5709-3 5709-5	Section 5.3 Distributed Functional Load Test <i>There shall be no loss of serviceability.</i>	Yes Yes	Perimeter = 180.0" x 1.5 = 270.0 lbs. - 60 minutes. -Table Length = 60.0". -Tested at maximum heights (46.0" & 47.0").
5709-1 5709-2	Section 5.4 Concentrated Proof Load Test <i>There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</i>	Yes Yes	1 x 300 lbs. – 15 minutes – OK -Table Length = 48.0". -Tested at the front edge, center of span. -Tables tested and set to a 38.0" height.
5709-3 5709-5	Section 5.4 Concentrated Proof Load Test <i>There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</i>	Yes Yes	1 x 300 lbs. – 15 minutes – OK -Table Length = 60.0". -Tested at the front edge, center of span. -Tables tested and set to a 38.0" height.
5709-1 5709-2	Section 5.5 Distributed Proof Load Test <i>There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</i>	Yes Yes	Perimeter = 156.0" x 2.3 = 358.8 lbs. - 15 minutes. -Table Length = 48.0". -Tested at maximum heights (46.0" & 47.0").
5709-3 5709-5	Section 5.5 Distributed Proof Load Test <i>There shall be no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</i>	Yes Yes	Perimeter = 180.0" x 2.3 = 414.0 lbs. - 15 minutes. -Table Length = 60.0". -Tested at maximum heights (46.0" & 47.0").
5709-1 5709-2	Section 6.0 Top Load Ease Cycle Test <i>There shall be no loss of serviceability to the unit.</i>	Yes Yes	10,000 cycles completed on each table without issue using 200 lbs. -Units tested at Mid Height (37.0" & 38.0"). -Tested at the front edge, center of span.
5709-3 5709-4	Section 6.0 Top Load Ease Cycle Test <i>There shall be no loss of serviceability to the unit.</i>	Yes Yes	10,000 cycles completed on each table without issue using 200 lbs. -Units tested at Mid Height (37.0" & 38.0"). -Tested at the front edge, center of span.

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4.0 Test Results continued

Sample ID	ANSI/BIFMA X5.5-2014 Test Description and Acceptance Criteria	Met Criteria ?	Comments/Notes
5709-1 5709-4	Section 7.0 Desk/Table Unit Drop Test <i>There shall be no loss of serviceability.</i>	Yes Yes	5709-1 Weight = 90.1 lbs. = 7.1" drops - both ends without issue. 5709-3 Weight = 119.1 lbs. = 4.7" drops - both ends without issue. -Units tested at Mid height = 37.0".
5709-1	Section 8 Leg Strength Test <u>Functional Load</u> <i>No loss of serviceability shall occur as a result of the application of the functional loads.</i> <u>Proof Loads</u> <i>Application of the proof loads shall cause no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</i>	Yes	<u>Functional and Proof Load Requirements (Category I)</u> FA = 0.5 (90.1) + 50 lbf = 95.0 lbf. FB = 0.5 x FA = 47.5 lbf. PA = 1.5 x FA = 142.6 lbf. PB = 1.5 x FB = 71.3 lbf -Unit tested at Mid height = 37.0". -Table Weight = 90.1 lbs.
5709-2	Section 8 Leg Strength Test <u>Functional Load</u> <i>No loss of serviceability shall occur as a result of the application of the functional loads.</i> <u>Proof Loads</u> <i>Application of the proof loads shall cause no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</i>	Yes	<u>Functional and Proof Load Requirements (Category I)</u> FA = 0.5 (92.1) + 50 lbf = 96.0 lbf. FB = 0.5 x FA = 48.0 lbf. PA = 1.5 x FA = 144.1 lbf. PB = 1.5 x FB = 72.0 lbf -Unit tested at Mid height = 38.0". -Table Weight = 92.1 lbs.
5709-4	Section 8 Leg Strength Test <u>Functional Load</u> <i>No loss of serviceability shall occur as a result of the application of the functional loads.</i> <u>Proof Loads</u> <i>Application of the proof loads shall cause no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</i>	Yes	<u>Functional and Proof Load Requirements (Category I)</u> FA = 0.5 (119.1) + 50 lbf = 109.55 lbf , 100 lbf max allowed. FB = 0.5 x FA = 50 lbf PA = 1.5 x FA (100 lbf) = 150.0 lbf. PB = 1.5 x FB = 75 lbf -Unit tested at Mid height = 37.0". -Table Weight = 119.1 lbs.
5709-5	Section 8 Leg Strength Test <u>Functional Load</u> <i>No loss of serviceability shall occur as a result of the application of the functional loads.</i> <u>Proof Loads</u> <i>Application of the proof loads shall cause no sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.</i>	Yes	<u>Functional and Proof Load Requirements (Category I)</u> FA = 0.5 (120.9) + 50 lbf = 110.45 lbf , 100 lbf max allowed. FB = 0.5 x FA = 50 lbf PA = 1.5 x FA (100 lbf) = 150.0 lbf. PB = 1.5 x FB = 75 lbf -Unit tested at Mid height = 38.0". -Table Weight = 120.9 lbs.

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4.0 Test Results continued

Sample ID	ANSI/BIFMA X5.5-2014 Test Description and Acceptance Criteria	Met Criteria ?	Comments/Notes
5709-1	Section 15 Work Surface Vertical Adjustment Test <i>There shall be no loss of serviceability to the unit.</i>	Yes	4,000 cycles total completed without any issues observed using a 100 lb. load on the top right hand side (2,000 cycles) and top left hand side (2,000 cycles) per the standard. -The activating mechanism lever was not cycled independently per the standard and per the customer's request.. -Adjustment height range (floor to top of worksurface) = 28.0"- 46.0".
5709-3	Section 15 Work Surface Vertical Adjustment Test <i>There shall be no loss of serviceability to the unit.</i>	No	Did not meet the requirements. After 3,741 cycles, the right column bearing pack becoming dislodged from its position and the table would not move in the downward direction without high force. When the bearing pack became dislodged, the table would not naturally drop in the downward direction with the load on the table from the full upward position and the air cylinder used to raise and lower the table loaded on the top of the worksurface and broke the worksurface off. This table had already gone through the strength tests (Sections 5.2-5.5) prior to this test. -The activating mechanism lever was not cycled independently per the standard and per the customer's request.. -Adjustment height range (floor to top of worksurface) = 28.0"- 46.0".
5709-4	Section 15 Work Surface Vertical Adjustment Test <i>There shall be no loss of serviceability to the unit.</i>	Yes	4,000 cycles total completed without any issues observed using a 100 lb. load on the top right hand side (2,000 cycles) and top left hand side (2,000 cycles) per the standard. -The activating mechanism lever was not cycled independently per the standard and per the customer's request.. -Adjustment height range (floor to top of worksurface) = 28.0"- 46.0".
5709-2	Section 18 Durability Test for Desks and Tables with Casters <i>There shall be no loss of serviceability to a caster or the desk/table.</i>	Yes	2,500 cycles total completed without any issues observed -2,500 cycles completed over obstacles without any issues observed. -85 lb. load applied to the center of the table through a 8" diameter disk. Table Weight = 92.1 lbs.
5709-5	Section 18 Durability Test for Desks and Tables with Casters <i>There shall be no loss of serviceability to a caster or the desk/table.</i>	Yes	1,100 cycles total completed without any issues observed -100 cycles completed over obstacles and 1,000 cycles completed on a flat surface without any issues observed. -85 lb. load applied to the center of the table through a 8" diameter disk. Table Weight = 120.9 lbs.

All testing performed from 07/17/19 to 08/01/19 with the temperature and humidity ranges at 23.6-28.1°C/31-53%RH.

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4.1 Test Photos



Section 4.3



Section 4.4



Section 4.6



Section 5.2



Section 5.3



Section 5.4



Section 5.5



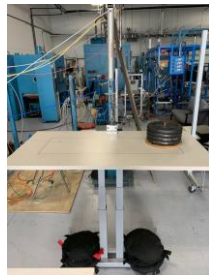
Section 6.0



Section 7.0



Section 8.0



Section 15



-----Section 15 Sample 5709-3 Issue-----



Section 18

5.0 Test Equipment Used

Equipment#	Serial Number	Description	Calibration Due
434	PTS	Digital Scale	05/11/20
426	PTS	Measuring Rule – 36"	08/13/20
PTS	PTS	Measuring Tape – 25'	Reference Only
PTS	PTS	2.5, 5, 10, 25, 50 lb. and various weights/bags/paper	06/01/20
402	Y9803D032	Shimpo Digital Force Gauge – 500 lbf	03/15/20
419	31-038-3	Digital Protractor	01/16/21

Approved By: _____

Kirk Craymer
Test Engineer