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HAFELE AMERICA CO.

TEST REPORT

SCOPE OF WORK
ANSI/BHMA A156.9-2020 – Sections 4.2 and 4.3 (Hinge Permanent Set Test and Hinge Operating Life Cycle)
per NAAWS 4.0 Section 10

Product # - 354.65.200 Hinge 5-K Advantage ST Powder Grey

REPORT NUMBER
105757062GRR-001B

ISSUE DATE
May-17-2024

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REPORT FOR HAFELE AMERICA CO.
Report No.: 105757062GRR-001B
Date: May-17-2024
P.O. No.: 24453283

SECTION 1

CLIENT INFORMATION

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SECTION 2

SUMMARY AND CONCLUSION

Date Received: Mar-07-2024-Apr-16-2024
Dates Tested: Apr-28-2024-May-06-2024
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES

Part Description:

354.65.200	Hinge 5-K Advantage ST Powder Grey

Condition of Samples: Production

WORK REQUESTED/APPLICABLE DOCUMENTS

ANSI/BHMA A156.9-2020 (Test No. 1 Hinge Permanent Set Test and Test No. 2 Hinge Operating Life Test) per NAAWS 4.0 Section 10) BHMA Grade 1 (Sections: 4.2 and 4.3)
Intertek quote: Qu-01425017

CONCLUSION

TEST		RESULTS
1.	BHMA Grade 1- 4.2 Hinge Permanent Set Test	CONFORMING
2.	BHMA Grade 1- 4.3 Hinge Operating Life Cycle Test	CONFORMING

The test results show that the **Product # - 354.65.200 Hinge 5-K Advantage ST Powder Grey** met the requirements per ANSI/BHMA A156.9-2020 Grade 1 & NAAWS NORTH AMERICAN ARCHITECTURAL WOODWORK STANDARDS 4.0 SECTION 10 SEPTEMBER 2021.

SAMPLE DISPOSITION

The samples were returned to HAFELE AMERICA CO. at the conclusion of the testing.

TEST EQUIPMENT

ASSET #	EQUIPMENT	CALIBRATION DATE	CALIBRATION DUE
138012	Scale/0-1,000#	08/10/2023	08/10/2024
138520	Steel Rule 0-48"	02/12/2024	02/12/2025
138900.13	Stopwatch	03/11/2024	03/11/2025
138279	100lb Digital force gage	02/06/2024	02/06/2025
138339	Dial Indicator	06/30/2023	06/30/2024
138340	Dial Indicator	07/06/2023	07/06/2024

4.2 HINGE PERMANENT SET TEST:

Date Received: Mar-07-2024-Apr-16-2024
Dates Tested: May-06-2024
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description:

354.65.200	Hinge 5-K Advantage ST Powder Grey

Condition of Samples: Production
Number of Samples Tested: One (1)

TEST PROCEDURE:

Test Method: Test No. 1 Grade 1 Per ANSI/BHMA A156.9-2020 Test No. 4.2:

4.2.1 Open the door 5 ±3 degrees and with no weight applied measure the position of the door with the 1 indicator located 14 inches down on the width and the second one at the end centered with the top hinge.
4.2.2 160 lbs shall be applied to the door at 14" away from the door frame.
4.2.3 Slowly open the door to a 90± 3 degrees open position and then return to the 5±3 degree open position
4.2.4 Remove the test load and then measure the position of the door as per 4.2.1.

ACCEPTANCE CRITERIA:

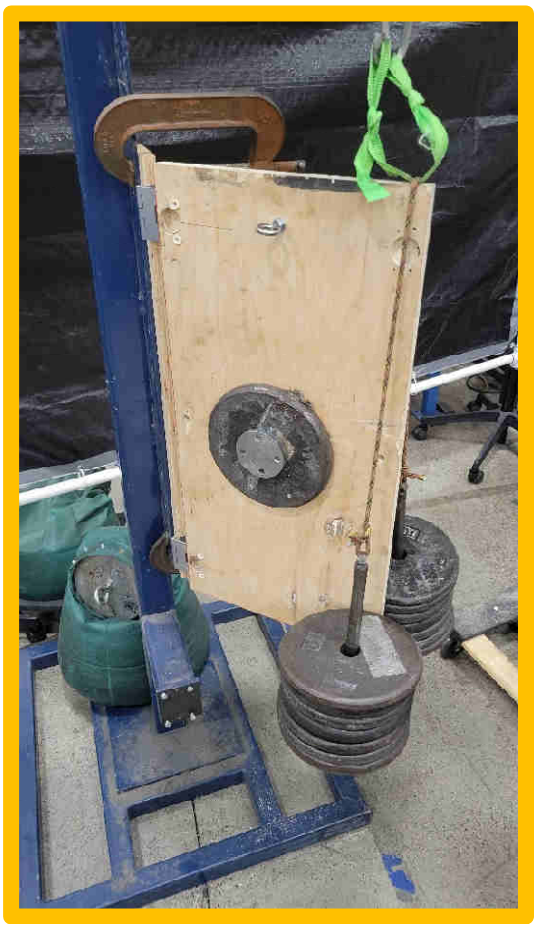
Per ANSI/BHMA A156.9-2020 Test No. 6.1:

1. The amount of set shall not exceed 0.030" in the Vertical and shall not exceed 0.020" in the Horizontal Permant Set.

RESULTS:

SAMPLE ID	HINGE LOAD	VERTICAL SET	HORIZONTAL SET	RESULTS
3	160 lbs.	.018	0.015	Conforming

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following page for photograph.



4.2 Permanent Set Test –

4.3 HINGE OPERATING LIFE CYCLE TEST:

Date Received: Mar-07-2024-Apr-16-2024
Dates Tested: Apr-28-2024-May-05-2024
Location Tested: Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description:

354.65.200	Hinge 5-K Advantage ST Powder Grey

Condition of Samples: Production
Number of Samples Received: One (1) Set

TEST PROCEDURE:

Standard Cycles: 100,000 cycles
Standard Door Load: 40 lbs.
Standard Door size: 29.5”H x 14.5” W.

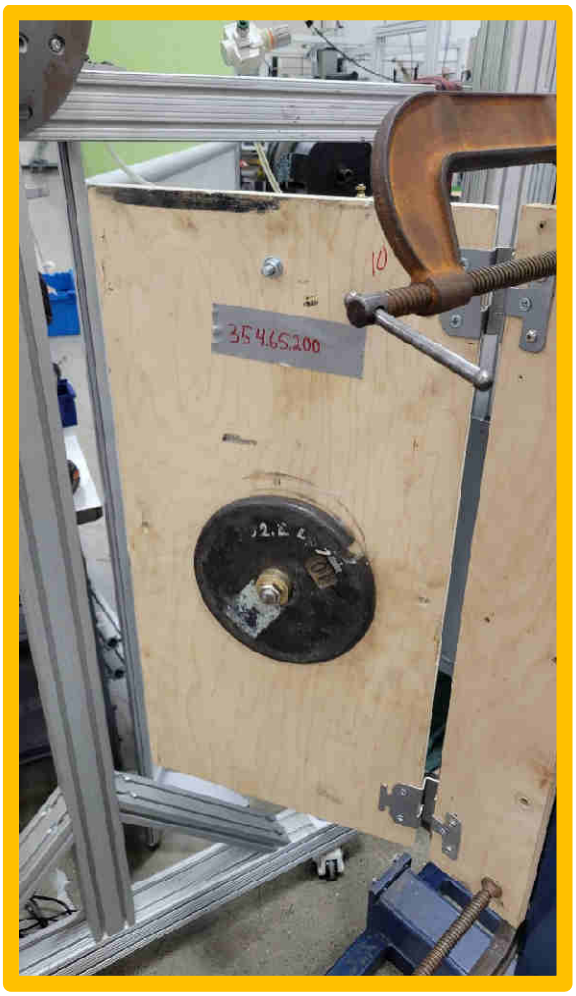
ACCEPTANCE CRITERIA:

Per ANSI/BHMA A156.9-2020:
All Grades: 100,000 cycles. The amount of set shall not exceed 0.030” in the Vertical and 0.020” in the Horizontal.

RESULTS:

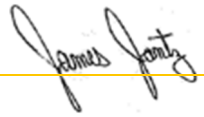
SAMPLE ID	CYCLES	Vertical Deflection (in)	Horizontal Set (in.)	RESULTS
1	0	0	0	Start of Test
	100,000	.021	0.013	Test Complete

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following pages for photographs.



4.3 HINGE OPERATING LIFE CYCLE TEST

SECTION 10

REVISIONS MADE TO TEST REPORT:

DATE	REVISION DESCRIPTION	REVISED BY	REVISED BY
May-17-2024	Initial release.	James Jantz