



Intertek Report No. 131227067GZU-001

EVALUATION

OF

AH/FB-4545 (A2133), Brass Butt Hinge, Grade 3

FOR

Angel Metal Co., Ltd.

#1099 Woram-Dong, Dalseo-Gu, Daegu, South Korea

TEST STANDARD:

All tests were conducted in accordance with the client's test plan with reference to ANSI/BHMA A156.1:2013 American National Standard for Butts and Hinges.

TEST SAMPLES:

Sample identified as model AH/FB-4545 (A2133), Brass Butt Hinge, Grade 3.
Hinges were received in good condition on December 23, 2013 which manufactured by Angel Metal Co., Ltd.

TEST DATES:

December 27, 2013 to January 13, 2014

RESULTS:

Product **COMPLIED WITH** ANSI/BHMA A156.1:2013 grade 3 requirements.

The attached data are results of the product testing and evaluation.

Report Prepared By:

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Reviewed By:

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DATA SHEETS
ANSI/BHMA 156.1:2013
AMERICAN NATIONAL STANDARD FOR
BUTTS AND HINGES

Model: AH/FB-4545 (A2133)
 Grade: Grade 3
 Hinge height: 4.5 Inches
 Door Weight: 75 lbs

6.1 Friction Test (lbf.)

Friction Requirements Maximum Resistance (lbf.)

Inches	3	3 1/2	4	4 1/2	5	6	8
Gr.1&2	N/A	0.50	0.625	0.75	0.88	1.15	1.50
Gr.3	0.50	0.625	1.00	1.50	1.75	2.00	N/A

	In	Out	Average	Status
Friction (lbf.)	1.02	1.26	1.14	Compliant

6.2 Vertical and Lateral Baseline Measurements (inches)

	Top	Center	Bottom
Vertical	0.007	0.006	0.009
	0.009	0.007	0.008

Lateral	0.067	0.065	0.066
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6.3 Overload Test Maximum all grades: .062 inches

Lateral shift:	Status
<u>0.002</u> inches	Compliant

6.4 Cycle Test

Cycle requirements

Test door weight. 75 lbs.

Grade 1	Grade 2	Grade 3
2,500,000	1,500,000	350,000

Date	Cycle Count	Tech
2013/12/31	0	Alan Lai
2014/01/02	50,392	Alan Lai
2014/01/05	136,659	Alan Lai
2014/01/07	194,263	Alan Lai
2014/01/10	280,540	Alan Lai
2014/01/13	350,000	Alan Lai
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—	—	—
—	—	—

Post Cycle Tests:

6.5 Hinge Pin Rise Test

Hinge pin rise requirements-Maximum all Grades 1/4 inches

Pin rise inches Status

6.6 Vertical and Lateral Wear Test

Vertical wear requirements - Maximum (inches)

Grade 1	Grade 2	Grade 3
.020 inches	.030 inches	.105 inches

	Vertical		
	Top	Center	Bottom
Post Test	0.023	0.022	0.024
	0.024	0.022	0.024

Total wear Status

Lateral wear requirements - Maximum all Grades .062 inches

	Lateral		
	Top	Center	Bottom
Post Test	0.081	0.067	0.056

Total wear Status

6.7 Overload Test

Overload requirements - Maximum all Grades .062 inches

Lateral shift: inches Status

6.9 Salt Spray Test

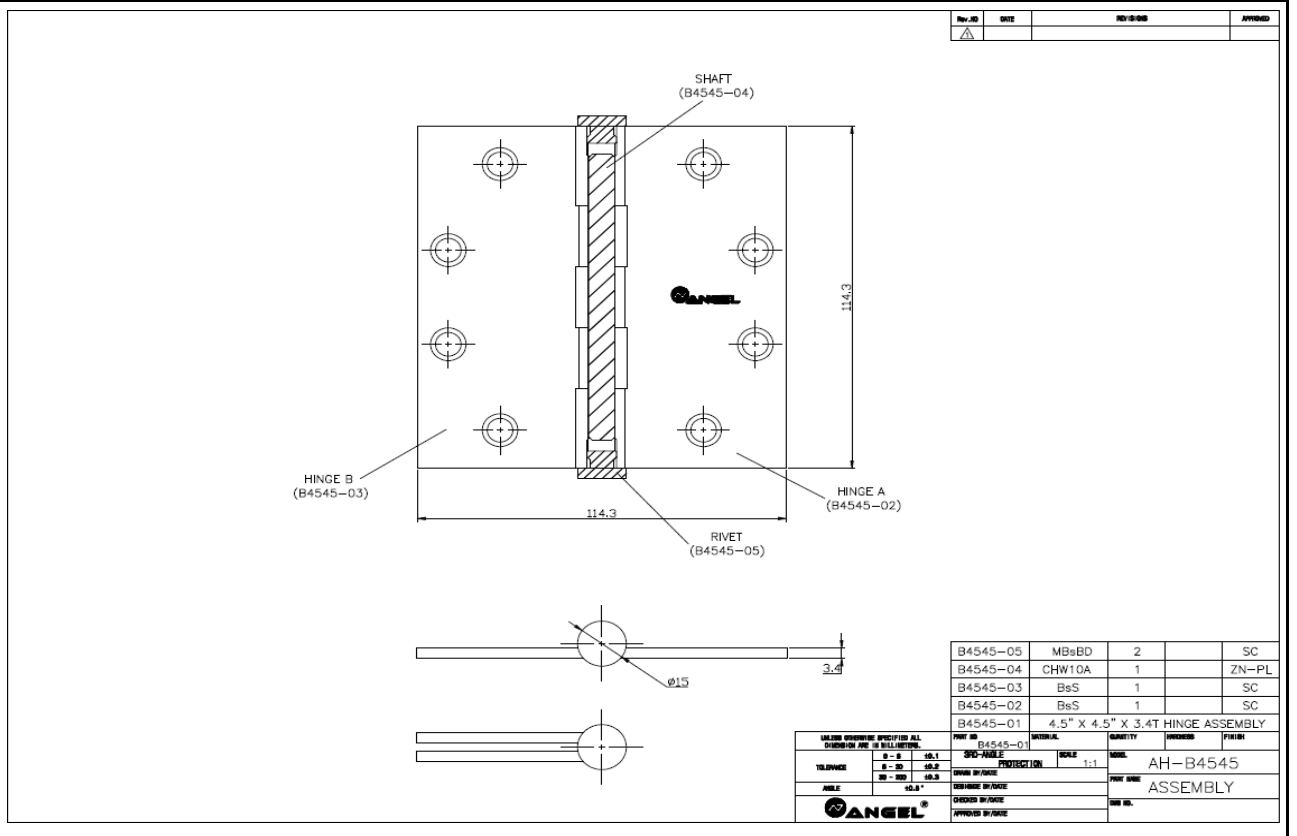
Painted material 48 hours	Exposed <u>72</u> hours Surface: Staining <u>0</u> % significant surface area ($\leq 5\%$) Max. staining spot <u>0</u> mm ($\leq 1/4$ inch) Substrate: Rust or no <u>No</u> Max. spot <u>0</u> mm ($\leq 1/16$ inch) Spot density <u>0</u> /1 in 2 (≤ 1 point) Spread from the edge <u>0</u> mm (\leq
Non-Ferrous material - plated or unplated, coated or uncoated 72 hours	
Ferrous material - multiple plated, coated or uncoated 24 hours	
Ferrous material - single plated, coated or uncoated 18 hours	
Stainless steel 200 hours	

Status

Product Photo



Product Drawing and BOM



Revision Page

Revision No.	Date	Changes	Author	Reviewer
Original	March 4, 2014	First issue	Alan Lai	Blusea Dong