

PERFORMANCE TEST REPORT

Rendered to:

ACME WINDOW AND DOOR HARDWARE

MODEL: 10" (19010) Clip-On 2-Bar Hinge

PRODUCT: Multi-Bar Hinges

Report No.: D2697.01-106-31

Report Date: 12/16/13

Test Record Retention Date: 11/29/16

Revision 1: 12/17/13

PERFORMANCE TEST REPORT

Rendered to:

ACME WINDOW AND DOOR HARDWARE
777 Schwab Road
Unit J
Hatfield, Pennsylvania 19440

Report No.: D2697.01-106-31
Test Start Date: 10/31/13
Test Completion Date: 11/29/13
Report Date: 12/16/13
Test Record Retention Date: 11/29/16
Revision 1: 12/17/13

Model: 10" (19010) Clip-On 2-Bar Hinge

Product: Multi-Bar Hinges

Project Summary: Architectural Testing, Inc. was contracted by Acme Window and Door Hardware to perform testing on their 10" (19010) Clip-On 2-Bar Hinge. Hinge specimens were provided to Architectural Testing directly by Acme Window and Door Hardware for evaluation utilizing the procedures in AAMA 904-09, *Voluntary Specification for Multi-Bar Hinges In Window Applications*.

Results Summary

Operator Model	AAMA 904	AAMA 907
10" (19010) Clip-On 2-Bar Hinge	Pass	Pass

The tested hinges completed 8,000 cycles of operation and met the AAMA 904 requirements with wear not exceeding 0.060" and also complied with AAMA 907-05 for corrosion resistance of the coating.

Test Methods: The test specimens were evaluated in accordance with the following:

AAMA 904-09, *Voluntary Specifications for Multi-Bar Hinges in Window Applications*

AAMA 907-05, *Voluntary Specifications for Corrosion Resistant Coating on Carbon Steel Components*

Test Sample Description: The 10" hinges are constructed of a stainless steel sliding rail and coated carbon steel pivot arms. The hinges were installed as a side hung unit utilizing a nominal 35" wide by 58" high sash frame. The sash and frame unit had additional weight added to achieve a total sash weight of 105 pounds. The opening angle was 90°. No lubrication was utilized and no lifting (positioning) blocks were included.

Two pairs of hinges were tested by Architectural Testing, Inc. in accordance with AAMA 904 and one was evaluated in accordance with AAMA 907.

Specimens were submitted directly to Architectural Testing by Acme Window and Door Hardware under initial submittal status.

Test Results: The results are reported in the following table.

10" (19010) Clip-On 2-Bar Hinge

Specimen Set No.	Initial Hinge Measurement (inch)		Final Hinge Measurement (inch)		Difference (inch)		Average (inch)
	Top Hinge	Bottom Hinge	Top Hinge	Bottom Hinge	Top Hinge	Bottom Hinge	
1	1.282	1.241	1.259	1.245	0.023	0.004	0.014
2	1.222	1.203	1.200	1.235	0.022	0.032	0.027

Cycle Rate: Four cycles per minute (3-5 cycles per minute required)

Number of Cycles Completed: 8,000 (8,000 cycles required)

Observations: <0.060" wear on hinges - Pass

Rating: C-C-105-35-NLR-NLBR

AAMA 907 Test Results: Upon completion of 300 hours of exposure to ASTM B 117 conditions, the specimen visual evaluations are as follows:

Specimen No.	Results
1	Pass - No visible corrosion present on significant surfaces
2	Pass - No visible corrosion present on significant surfaces

Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period.

Results obtained are tested values and were secured using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimens tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.:

Joseph M. Brickner - Laboratory Supervisor
Components / Materials Testing

Gary Hartman, P.E. - Director
Components / Materials Testing

JMB:jmb/jas

Attachments (pages) This report is complete only when all attachments listed are included.

Appendix A - Photographs (4)

Appendix B - Drawing (1)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	12/16/13	N/A	Original report issue.
1	12/17/13	All	Inclusion of AAMA 907 Results

APPENDIX A

Photographs



Photo No. 1
10" Hinge Cycling Installation - Closed Detail



Photo No. 2
10" Hinge Cycling Installation - Open Detail



Photo No. 3
10" Hinge Cycling Installation - Bottom Hinge Detail



Photo No. 4
10" Hinge Cycling Installation - Top Hinge Detail



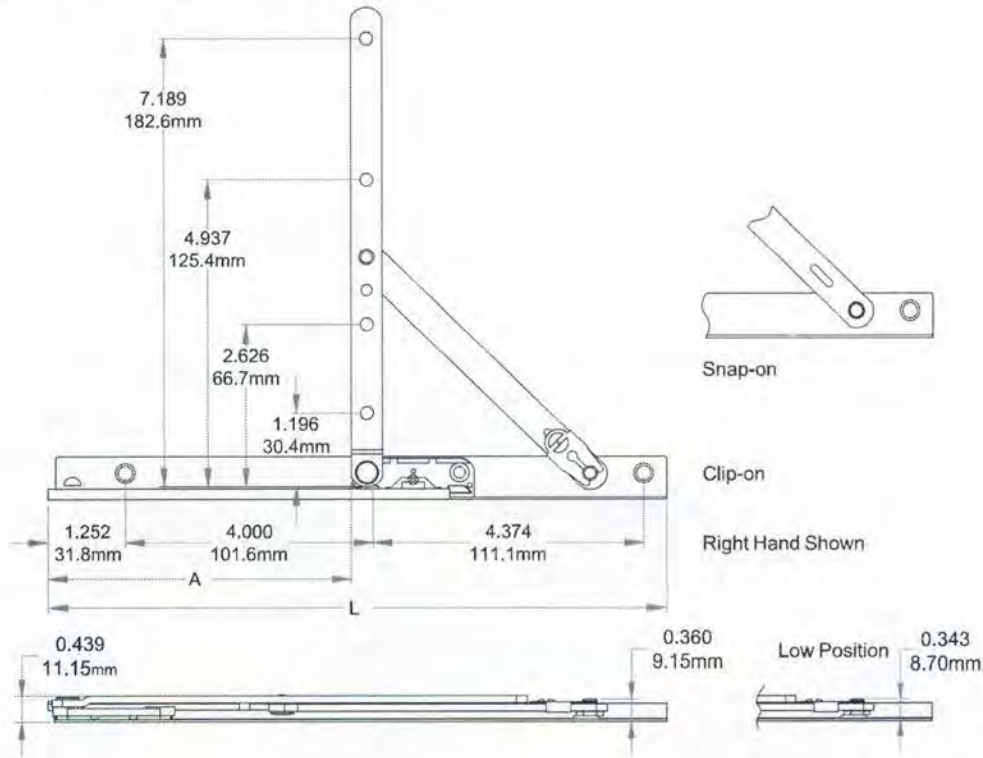
Photo No. 5
10" Hinge - Detail

APPENDIX B

Drawing



10" Standard Two Bar Hinge



Part Number	Product Name	"A"	"L"	Material	Hand
19010-SAC-01	Two Bar Hinge, 10", Standard, Adjustable, Clip-on, LH	4.905"	10"	Steel	LH
19010-SAC-00	Two Bar Hinge, 10", Standard, Adjustable, Clip-on, RH	4.905"	10"	Steel	RH
7010-SAC-01	Two Bar Hinge, 10", Standard, Adjustable, Clip-on, SST, LH	4.905"	10"	SST	LH
7010-SAC-00	Two Bar Hinge, 10", Standard, Adjustable, Clip-on, SST, RH	4.905"	10"	SST	RH
19010-SNC-01	Two Bar Hinge, 10", Standard, Non-Adjustable, Clip-on, LH	4.905"	10"	Steel	LH
19010-SNC-00	Two Bar Hinge, 10", Standard, Non-Adjustable, Clip-on, RH	4.905"	10"	Steel	RH
7010-SNC-01	Two Bar Hinge, 10", Standard, Non-Adjustable, Clip-on, SST, LH	4.905"	10"	SST	LH
7010-SNC-00	Two Bar Hinge, 10", Standard, Non-Adjustable, Clip-on, SST, RH	4.905"	10"	SST	RH
19010-SASR1-01	Two Bar Hinge, 10", Standard, Adjustable, Snap-on, LH	4.905"	10"	Steel	LH
19010-SASR1-00	Two Bar Hinge, 10", Standard, Adjustable, Snap-on, RH	4.905"	10"	Steel	RH
7010-SASR1-01	Two Bar Hinge, 10", Standard, Adjustable, Snap-on, SST, LH	4.905"	10"	SST	LH
7010-SASR1-00	Two Bar Hinge, 10", Standard, Adjustable, Snap-on, SST, RH	4.905"	10"	SST	RH
19010-SNSR1-01	Two Bar Hinge, 10", Standard, Non-Adjustable, Snap-on, LH	4.905"	10"	Steel	LH
19010-SNSR1-00	Two Bar Hinge, 10", Standard, Non-Adjustable, Snap-on, RH	4.905"	10"	Steel	RH
7010-SNSR1-01	Two Bar Hinge, 10", Standard, Non-Adjustable, Snap-on, SST, LH	4.905"	10"	SST	LH
7010-SNSR1-00	Two Bar Hinge, 10", Standard, Non-Adjustable, Snap-on, SST, RH	4.905"	10"	SST	RH
19010-SAC-01-L	Two Bar Hinge, 10", Standard, Adjustable, Clip-on, LH-Low Position	4.905"	10"	Steel	LH
19010-SAC-00-L	Two Bar Hinge, 10", Standard, Adjustable, Clip-on, RH-Low Position	4.905"	10"	Steel	RH
7010-SAC-01-L	Two Bar Hinge, 10", Standard, Adjustable, Clip-on, SST, LH-Low Position	4.905"	10"	SST	LH
7010-SAC-00-L	Two Bar Hinge, 10", Standard, Adjustable, Clip-on, SST, RH-Low Position	4.905"	10"	SST	RH
19010-SNC-01-L	Two Bar Hinge, 10", Standard, Non-Adjustable, Clip-on, LH-Low Position	4.905"	10"	Steel	LH
19010-SNC-00-L	Two Bar Hinge, 10", Standard, Non-Adjustable, Clip-on, RH-Low Position	4.905"	10"	Steel	RH
7010-SNC-01-L	Two Bar Hinge, 10", Standard, Non-Adjustable, Clip-on, SST, LH-Low Position	4.905"	10"	SST	LH
7010-SNC-00-L	Two Bar Hinge, 10", Standard, Non-Adjustable, Clip-on, SST, RH-Low Position	4.905"	10"	SST	RH
19010-SASR1-01-L	Two Bar Hinge, 10", Standard, Adjustable, Snap-on, LH-Low Position	4.905"	10"	Steel	LH
19010-SASR1-00-L	Two Bar Hinge, 10", Standard, Adjustable, Snap-on, RH-Low Position	4.905"	10"	Steel	RH
7010-SASR1-01-L	Two Bar Hinge, 10", Standard, Adjustable, Snap-on, SST, LH-Low Position	4.905"	10"	SST	LH
7010-SASR1-00-L	Two Bar Hinge, 10", Standard, Adjustable, Snap-on, SST, RH-Low Position	4.905"	10"	SST	RH
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7010-SNSR1-01-L	Two Bar Hinge, 10", Standard, Non-Adjustable, Snap-on, SST, LH-Low Position	4.905"	10"	SST	LH
7010-SNSR1-00-L	Two Bar Hinge, 10", Standard, Non-Adjustable, Snap-on, SST, RH-Low Position	4.905"	10"	SST	RH

3. Two Bar Hinges