



Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

BF KINSEY LLC

SERIES/MODEL: Tilt Limiter

PRODUCT TYPE: Window Sash Tilt Limiting Device

Report No.: 64640.01-109-44

Test Date: 05/02/06

And: 05/03/06

Report Date: 05/24/06

Revision 1: 06/21/06

Expiration Date: 05/03/10

PERFORMANCE TEST REPORT

Rendered to:

BF KINSEY LLC
16 White Dogwood Road
P.O. Box 1936
Beaufort, South Carolina 29907

Report No.: 64640.01-109-44
Test Date: 05/02/06
And: 05/03/06
Report Date: 05/24/06
Revision 1: 06/21/06
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Project Summary: Architectural Testing, Inc. (ATT) was contracted by BF Kinsey LLC to perform testing on a Series/Model Tilt Limiter, window sash tilt limiting device. The devices were mounted to the top and bottom sash of an aluminum double hung window. Test specimen description and results are reported herein.

Test Method: The test specimen was mounted to the sash of the double hung window. The window was held securely in a wood test buck during all testing. Both sash were tilted in to the limit of the device and returned to the vertical position. These cycles were repeated 4000 times. Periodic maintenance was performed as detailed in the test results.

Subsequent to the operational cycling, each sash was tilted in to the limit of the device. Each corner of the sash was mechanically loaded with a force gage to determine the force required to cause the sash to fall open. This test was repeated on each side one additional time.

Subsequent to the loading of each sash, the bottom sash was allowed to tilt inward uncontrolled to the limit of the devices. This test was repeated one additional time.

Test Specimen Description:

Series/Model: Tilt Limiter

Product Type: Window Sash Tilt Limiting Device

Tilt Limiting Device Description: The device consisted of a plastic slide placed into the jamb of the window and a steel wire that slipped into the plastic slide and was screwed to the sash frame. The wire was approximately 17" long and was 0.080" in diameter at each end. A section measuring approximately 6" long in the center of the wire was flattened to allow the sash to tilt open without engaging the window frame. The flat section was 0.095" wide by 0.058" thick. The wire was fastened to the sash with one #8 x 3/4" long screw. One device was used per stile on each sash.

Test Specimen Description: (Continued)

Overall Window Size: 3' 11-3/4" wide by 5' 11-1/2" high

Top Sash Size: 2' 11" wide by 3' 9" high

Top Sash Weight: 30 lbs

Bottom Sash Size: 2' 11" wide by 3' 9" high

Bottom Sash Weight: 29 lbs

Finish: All aluminum was painted.

Glazing Details: The sash were channel glazed with 7/8" thick insulating glass consisting of two sheets of single strength clear annealed glass and a box spacer.

Weatherstripping: Polypile with center fin weatherstripping was used around each sash perimeter and at the head.

Frame Construction: The frame was constructed of poured and debirdged thermally improved extruded aluminum members. The corners were mechanically fastened with two screws per corner.

Sash Construction: The sash were constructed of poured and debridged thermally improved extruded aluminum members. The corners were mechanically fastened with one screw per corner.

Hardware: Please see the Tilt Limiting Device Description for the description of the tilt limiting devices. The window also included spiral balances, plastic tilt latches, metal pivot bars and metal sweep locks. No hardware other than the tilt limiting devices was tested.

Drainage: The window utilized a sloped sill.

Reinforcement: No reinforcement was utilized.

Installation: The window was mounted to a wood buck with screws through the frame at the jambs. The window was held securely to the wood buck throughout all of the testing.

Test Results:

The results are tabulated as follows:

<u>Title of Test</u>	<u>Results</u>
Operational Cycling Top sash	Wear was observed at each frame jamb and on each stile. Paint was worn off at both places. No structural damage was observed to the window or the limiting device.
Bottom sash	Wear was observed at each frame jamb and on each stile. Paint was worn off at both places. No structural damage was observed to the window or the limiting device.

Note #1: After 600 cycles, silicone was sprayed on the jambs. Silicone was sprayed on the jambs after each subsequent 300 cycles. See pictures 1-8 for before, during, and after conditions of the test specimen.

Static Load Test	
Top sash left side	Trial 1: 95 lbs Trial 2: 60 lbs
Top sash right side	Trial 1: 150 lbs Trial 2: 95 lbs

Note #2: The devices on the top sash disengaged when the wire came out of the plastic slide in the jamb. The wire was reset into the slide and the test was performed again on each side.

Bottom sash left side	Trial 1: 125 lbs Trial 2: 110 lbs
Bottom sash right side	Trial 1: 125 lbs Trial 2: 115 lbs

Note #3: The devices on the bottom sash disengaged when the wire came out of the plastic slide in the jamb. The wire was reset into the slide and the test was performed again on each side.

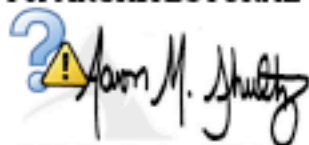
Bottom sash center of meeting rail	Trial 1: 200 lbs
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Note #4: Both devices on the bottom sash disengaged simultaneously at the above load. Please see pictures 9-12 for conditions of the test specimen.

Drop test - Bottom sash only	Trial 1-5: Passed. There was no damage to the limiting devices. The sash was stopped during each trial.
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Representative samples of the test specimen and a copy of this report will be retained by ATI for a period of four years from the original test date. This report is the exclusive property of the client so named herein and is applicable to the sample tested. Results obtained are tested values and do not constitute an opinion or endorsement by this laboratory. This report may not be reproduced, except in full, without approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:



Digitally Signed by: Aaron M. Shultz

Aaron Shultz
Technician

AS:vlm/jld

Attachments (pages):

Appendix-A: Photographs (7)



Digitally Signed by: Steven M. Urich

Steven M. Urich, P.E.
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