

PERFORMANCE TEST REPORT

SERIES/MODEL: Window Warden

PRODUCT TYPE: Window Opening Limiting Device

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Project Summary: Architectural Testing, Inc. was contracted by PCA Design, Inc. to perform cycle and performance testing on a Window Warden, window opening limiting device installed on a vinyl window. Test specimen description and results are reported herein. The sample was provided by the client.

Test Method: The test specimen was tested and evaluated in accordance with the performance requirements of ASTM F 2090-10, *Test Method for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms (Sections 8.5 through 8.8)*.

Test Specimen Description:

Series/Model: Window Warden

Product Type: Window Opening Limiting Device

Overall Window Size: 1' 8-1/4" wide by 2' 6-1/8" high

Window Description: The window opening control device was installed onto an extruded vinyl hung window.

Opening Control Device Description: The window opening limiting device was constructed of one vinyl piece, and a steel wire spring. The device had overall dimensions of 2" tall, 7/8" wide and 5/16" deep. When assembled, the device utilized a single action to disengage the limit device. The single action required that the vinyl piece be pushed or pulled down and the device disengaged its aluminum keeper. The limit device utilized a wire spring which was utilized to keep the device engaged and assist in deploying the device for emergency disengagement. The device was manually disengaged. The device was secured to the window with two #8 x 1/4" long fillister head screws. One device were utilized on the window, along the left jamb, located 17-3/4" above the sill.

Test Results: The temperature during testing was 80°F. The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
4.17.3	Actions to Disengage (See Note #1)	One Action	Two Actions or One Dual Action
4.15	Window Opening Size	3-15/16"	<4"
8.5	Operating Force	5 lbf	15 lbf max.
8.6	Static Load testing 75 lbf (Load was applied for 10 seconds) (5 Cycles)	No Damage	No Damage
8.7	Operational Cycling (See Note #2) 4000 Cycles	No Damage	No Damage
8.8	Load Testing 75 lbf (Load was applied for 10 seconds) (100 Cycles)	No Damage	No Damage
4.15	Window Opening Size	4"	<4"
8.5	Operating Force	5 lbf	15 lbf max.

Observations: Minor cosmetic wear marks visible.

Note #1: The device required a single action to disengage. Only one device was present on the window.

Note #2: The device was manually disengaged and removed from the keeper. The device was then re-engaged in the keeper to complete one cycle.

General Notes:

- *All testing was performed in accordance with Sections 8.5 through 8.9 of the referenced standard. The window opening limiting device utilized on the test unit met all of the performance requirements for Window Opening Control Devices set forth in ASTM F 2090-10.*
- *At the completion of testing, the device was fully operational.*
- *The tested device met the requirements specified in the International Residential Code - 2009, Section R612.4 for window opening limiting devices.*

Appendix A

Test Equipment

Instrument	Manufacturer	Asset #
Force Gauge	Dillon	003445
Force Gauge	Pelouze	005067
Come Along	Process Eng. Corp.	003932

Appendix B

Photographs



Photo No. 1
View of Window with Device



Photo No. 2
View of Window Opening Limiting Device No. 1



Photo No. 3
View of Window Opening Limiting Device No. 2



Photo No. 4
View of Window Opening Limiting Device No. 3



Photo No. 5
Window Opening Size Before Cycling



Photo No. 6
View of Window While Under 75 lbf Load No.1



Photo No. 5
Window Opening Size Before Cycling



Photo No. 6
View of Window While Under 75 lbf Load No.1



Photo No. 7
View of Window While Under 75 lbf Load No.2



Photo No. 8
Window Opening Size after Cycling