

TEST REPORT

Report No.: C5191.01-109-44

Rendered to:

WINDLOCH, LLC
Arcadia, Florida

PRODUCT TYPE: Aluminum Casement/Dual Action over Fixed
SERIES/MODEL: WS-75

SPECIFICATION: AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

Title	Summary of Results	
	Test Specimen #1	Test Specimen #2
Primary Product Designator	Class AW-PG45 2134 x 2591 (84 x 102)-C	Class AW-PG70 2134 x 2591 (84 x 102)-C
Design Pressure	±2160 Pa (±45.11 psf)	±3360 Pa (±70.18 psf)
Air Infiltration	<0.1 L/s/m ² (<0.01 cfm/ft ²)	N/A
Water Penetration Resistance Test Pressure	720 Pa (15.04 psf)	N/A

Test Completion Date: 01/18/2013

Reference must be made to Report No. C5191.01-109-44, dated 01/29/13 for complete test specimen description and detailed test results.



1.0 Report Issued To: Windloch, LLC
3788 SW Armadillo TRL
Arcadia, Florida 34266

2.0 Test Laboratory: Architectural Testing, Inc.
130 Derry Court
York, Pennsylvania 17406-8405
717-764-7700

3.0 Project Summary:

3.1 Product Type: Aluminum Casement/Dual Action over Fixed

3.2 Series/Model: WS-75

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). The specimens tested successfully met the performance requirements for the following ratings: Test Specimen #1: **Class AW-PG45 2134 x 2591 (84 x 102)-C**; Test Specimen #2: **Class AW-PG70 2134 x 2591 (84 x 102)-C**.

3.4 Test Dates: 01/15/2013 - 01/18/2013

3.5 Test Record Retention End Date: All test records for this report will be retained until January 29, 2017.

3.6 Test Location: Architectural Testing, Inc. test facility in York, Pennsylvania.

3.7 Test Sample Source: The test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Architectural Testing for a minimum of four years from the report completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix C. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Yoav Ben-Shimon	Windloch, LLC
Aaron M. Shultz	Architectural Testing, Inc.
Emily C. Riley	Architectural Testing, Inc.
Michael D. Stremmel, P.E.	Architectural Testing, Inc.
Jeremy R. Bender	Architectural Testing, Inc.

**4.0 Test Specification(s):**

AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

AAMA 910-93, *Voluntary "Life Cycle" Specifications and Test Methods for Architectural Grade Windows and Sliding Glass Doors*

5.0 Test Specimen Description:**5.1 Product Sizes:****Test Specimens #1 and #2:**

Overall Area: 5.5 m ² (59.5 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	2134	84	2591	102
Casement vent	1013	39-7/8	1826	71-7/8
Dual action vent	1013	39-7/8	1826	71-7/8

The following descriptions apply to all specimens.

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, and jambs	Aluminum	Thermally improved, dual strutted extruded aluminum
Intermediate frame jamb	Aluminum	Thermally improved, dual strutted extruded aluminum
Horizontal impost	Aluminum	Thermally improved, dual strutted extruded aluminum

	Joinery Type	Detail
All corners	Mitered and keyed	Sealed with sealant and secured with two aluminum corner keys per corner. Each corner key was secured with one interlock bump per member and one #10-1/2" screw.
Intermediate frame jamb	Coped, sealed, and butted	Secured with four #10 x 1" long pan head screws through the head and horizontal impost into intermediate jamb
Horizontal impost	Coped, sealed, and butted	Secured with four #10 x 1" long pan head screws through jamb into the impost

**5.0 Test Specimen Description:** (Continued)**5.3 Vent Construction:**

Vent Member	Material	Description
Rails and stiles	Aluminum	Extruded

	Joinery Type	Detail
All corners	Mitered and keyed	Sealed with sealant and secured with two aluminum corner keys per corner. Each corner key was secured with one interlock bump per member and one #10-1/2" screw.

5.4 Weatherstripping:

Description	Quantity	Location
Custom vinyl gasket	1 Row	Perimeter of frame at the vents
Custom Kerf-mounted EPDM gasket	1 Row	Perimeter of vent at the glass edge
Custom Kerf-mounted dual leaf gasket	1 Row	Perimeter of vent

5.5 Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

5.5.1 Casement/Dual Action:

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-1/8" IG	Aluminum box spacer	1/4" clear annealed	1/4" clear annealed	Exterior glazed onto a bead of silicone

Casement:

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Vent daylight opening	1	899 x 1711	35-3/8 x 67-3/8	1/2"

Dual Action:

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Vent daylight opening	1	899 x 1711	35-3/8 x 67-3/8	1/2"



5.0 Test Specimen Description: (Continued)

5.5 Glazing: (Continued)

5.5.2 Fixed:

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-1/8" IG	Aluminum box spacer	1/4" clear annealed	1/4" clear annealed	Interior glazed onto a bead of silicone and secured with aluminum snap-in glazing beads with a custom vinyl gasket against the glass

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed daylight opening	1	1969 x 562	77-1/2 x 22-1/8	1/2"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot with cover	1" wide by 3/16" high	4	8" from edge of frame and 30" on center at horizontal impost
Weepslot with cover	1" wide by 3/16" high	4	8" from edge of frame and 30" on center on sill face
Weephole	1/4" diameter	10	8", 14", 21", 29", and 38" from jamb underneath each vent draining to exterior face
Weephole	1/8" diameter	4	Vent bottom rail corners, draining glazing

5.7 Hardware:

5.7.1 Casement:

Description	Quantity	Location
Metal snubbers	2	27" and 45-1/2" from sill at hinge jamb
Multi-point lock with handle	1	Handle located 23" from the bottom rail on the lock stile with six lock points located: Lock stile: 6-1/2", 23", 39-1/2", and 60-1/2" from the bottom rail Top rail: 15-3/4" from lock stile Bottom rail: 19" from lock stile
Limit stop	2	One 6" from the lock jamb on the sill and one 50" from the sill on the lock jamb
Hinges	2	Hinge stile, one at each end

**5.0 Test Specimen Description:** (Continued)**5.7 Hardware:** (Continued)**5.7.2 Dual Action:**

Description	Quantity	Location
Multi point lock with handle	1	Handle located 23" from the bottom rail on the lock stile with nine lock points located: Lock stile: 3", 23", 45", and 67" from the bottom rail Hinge stile: 23-1/2" and 43-1/2" from lock stile Bottom rail: 5" and 22-3/4" from lock stile Top rail: 17" from the lock stile
3-bar hinge	1	Top rail at hinge jamb
Tilt hinge	1	Head 6" from the hinge stile
Tilt/turn hinge	1	Sill, bottom of the hinge jamb

5.8 Reinforcement: No reinforcement was utilized in Test Specimen #1.**Test Specimen #2:**

Drawing Number	Location	Material
N/A	Horizontal impost	2" by 2" by 1/4" thick aluminum tube

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/4" shim space. The exterior perimeter of the window was sealed with sealant.

Location	Anchor Description	Anchor Location
Head and jambs	#14 x 3" long pan head screws	Jambs, 8", 24", 34", 48", 62", 77", and 96" from sill. Head, 5", 21", and 38" from each jamb. All fasteners were through the frame and into the wood buck.
Sill	1" wide by 5-1/2" long, 0.060" thick steel clip, secured to the window with one #10 x 1-1/2" long pan head screw and secured to the wood buck with one #14 x 2" long pan head screw	Sill, 7" and 38" from jamb



7.0 Test Results: The temperature during testing was 21°C (70°F). The results are tabulated as follows:

Test Specimen #1:

Title of Test	Results	Allowed	Note
Life Cycle per AAMA 910			
Operating Force , per ASTM E 2068	Initiate motion: 22 N (5 lbf) Maintain motion: 22 N (5 lbf) Locks: 53 N (12 lbf)	Report Only 135 N (30 lbf) max. Report Only	
Air Leakage , Infiltration per ASTM E 283 at 300 Pa (6.27 psf)	<0.1 L/s/m ² (<0.01 cfm/ft ²)	0.5 L/s/m ² (0.10 cfm/ft ²) max.	1
Water Penetration , Per ASTM E 331 at 960 Pa (20.05 psf)	Pass	No leakage	2
Sash/Vent Cycling , per AAMA 910 1250 cycles	Vent: Casement Pass	No damage	3
	Vent: Dual Action Pass	No damage	3
Locking Hardware Cycling , per AAMA 910 1250 cycles	Handle: Casement Pass	No damage	3
	Handle: Dual Action Pass	No damage	3
Misuse Testing: per AAMA 910			
Ventilator Vertical Load Test at 445 N (100 lbf)	Pass	No damage	
Stabilizing Arm Load Test at 890 N (200 lbf)	Pass	No damage	
Cleaning Position Vertical Load Test at 445 N (100 lbf)	Pass	No damage	



7.0 Test Results: (Continued)

Test Specimen #1: (Continued)

Title of Test	Results	Allowed	Note
Sash/Vent Cycling, per AAMA 910 1250 cycles	Vent: Casement Pass	No damage	3
	Vent: Dual Action Pass	No damage	3
Locking Hardware Cycling, per AAMA 910 1250 cycles	Handle: Casement Pass	No damage	3
	Handle: Dual Action Pass	No damage	3
Operating Force, per ASTM E 2068	Initiate motion: 58 N (13 lbf)	Report Only	
	Maintain motion: 58 N (13 lbf)	135 N (30 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 300 Pa (6.27 psf)	Locks: 111 N (25 lbf)	Report Only	
	<0.1 L/s/m ² (<0.01 cfm/ft ²)	0.5 L/s/m ² (0.10 cfm/ft ²) max.	1
Water Penetration, per ASTM E 547 and ASTM E 331 at 720 Pa (15.04 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 taken at horizontal impost +1920 Pa (+40.10 psf) -1920 Pa (-40.10 psf)	9.1 mm (0.36")	10.9 mm (0.43") max.	4, 5
	8.9 mm (0.35")	10.9 mm (0.43") max.	
Uniform Load Deflection, per ASTM E 330 taken between locks +1920 Pa (+40.10 psf) -1920 Pa (-40.10 psf)	<0.3 mm (<0.01")	2.3 mm (0.09") max.	4, 5
	<0.3 mm (<0.01")	2.3 mm (0.09") max.	



7.0 Test Results: (Continued)

Test Specimen #1: (Continued)

Title of Test	Results	Allowed	Note
Uniform Load Structural, per ASTM E 330 taken at horizontal impost +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	0.3 mm (0.01") 0.5 mm (0.02")	5.8 mm (0.23") max. 5.8 mm (0.23") max.	4, 5
Uniform Load Structural, per ASTM E 330 taken between locks +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	<0.3 mm (<0.01") <0.3 mm (<0.01")	1.3 mm (0.05") max. 1.3 mm (0.05") max.	4, 5
Forced Entry Resistance, per ASTM F 588, Type: B - Grade: 10	Pass	No entry	
Sash/Leaf Torsion 90 N (20 lbf)	31.8 mm (1.25")	96.0 mm (3.78") max.	6, 7
Sash Vertical Deflection 270 N (60 lbf)	<0.3 mm (<0.01")	20.1 mm (0.79") max.	6
Sash/Leaf Concentrated Load Test on Latch Rail (Horizontal) 270 N (60 lbf)	0.8 mm (0.03")	1.5 mm (0.06") max.	7
Sash/Leaf Concentrated Load Test on Latch Rail (Vertical) 400 N (90 lbf)	4.6 mm (0.18")	6.4 mm (0.25") max.	7
Vertical Concentrated Load 270 N (60 lbf)	0.8 mm (0.03")	1.0 mm (0.04") max.	
Stabilizing Arm Load Test 1780 N (400lbf)	No Damage	No Damage	7
Optional Performance			
Uniform Load Deflection, per ASTM E 330 taken at horizontal impost +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	10.4 mm (0.41") 10.7 mm (0.42")	10.9 mm (0.43") max. 10.9 mm (0.43") max.	4, 5
Uniform Load Deflection, per ASTM E 330 taken between locks +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	<0.3 mm (<0.01") <0.3 mm (<0.01")	2.3 mm (0.09") max. 2.3 mm (0.09") max.	4, 5



7.0 Test Results: (Continued)

Test Specimen #1: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Uniform Load Structural, per ASTM E 330 taken at horizontal impost +3240 Pa (+67.67 psf) -3240 Pa (-67.67 psf)	1.3 mm (0.05") 1.0 mm (0.04")	5.8 mm (0.23") max. 5.8 mm (0.23") max.	4, 5
Uniform Load Structural, per ASTM E 330 taken between locks +3240 Pa (+67.67 psf) -3240 Pa (-67.67 psf)	<0.3 mm (<0.01") 0.3 mm (0.01")	1.3 mm (0.05") max. 1.3 mm (0.05") max.	4, 5

Test Specimen #2:

Title of Test	Results	Allowed	Note
Optional Performance			
Uniform Load Deflection, per ASTM E 330 taken at horizontal impost +3360 Pa (+70.18 psf) -3360 Pa (-70.18 psf)	10.4 mm (0.41") 8.4 mm (0.33")	10.9 mm (0.43") max. 10.9 mm (0.43") max.	4, 5
Uniform Load Deflection, per ASTM E 330 taken between locks +3360 Pa (+70.18 psf) -3360 Pa (-70.18 psf)	<0.3 mm (<0.01") <0.5 mm (<0.02")	2.3 mm (0.09") max. 2.3 mm (0.09") max.	4, 5
Uniform Load Structural, per ASTM E 330 taken at horizontal impost +5040 Pa (+105.26 psf) -5040 Pa (-105.26 psf)	2.5 mm (0.10") 1.5 mm (0.06")	5.8 mm (0.23") max. 5.8 mm (0.23") max.	4, 5
Uniform Load Structural, per ASTM E 330 taken between locks +5040 Pa (+105.26 psf) -5040 Pa (-105.26 psf)	<0.3 mm (<0.01") <0.3 mm (<0.01")	1.3 mm (0.05") max. 1.3 mm (0.05") max.	4, 5



7.0 Test Results: (Continued)

Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

Note 2: Without insect screen.

Note 3: Observations: Normal wear and tear.

Note 4: Loads were held for 10 seconds.

Note 5: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Note 6: Secondary test performed on casement unit.

Note 7: Secondary test performed on dual action unit.

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.

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 specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.

Jeremy R. Bender
Technician

Michael D. Stremmel, P.E.
Senior Project Engineer

JRB:dem

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

Appendix-A: Alteration Addendum (1)

Appendix-B: Photograph (1)

Appendix-C: Drawings (9)

This report produced from controlled document template ATI 00434, issued 01/27/12.



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Test Report No.: C5191.01-109-44

Report Date: 01/29/13

Appendix A

Alteration Addendum

***Note:** No alterations were required.*



Appendix B

Photograph

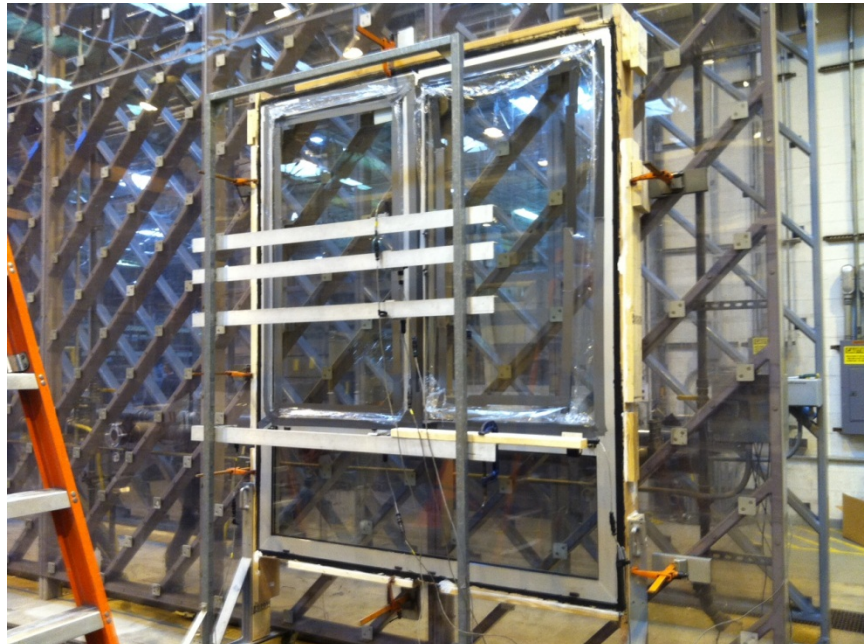


Photo No. 1
Casement/Dual Action over Fixed



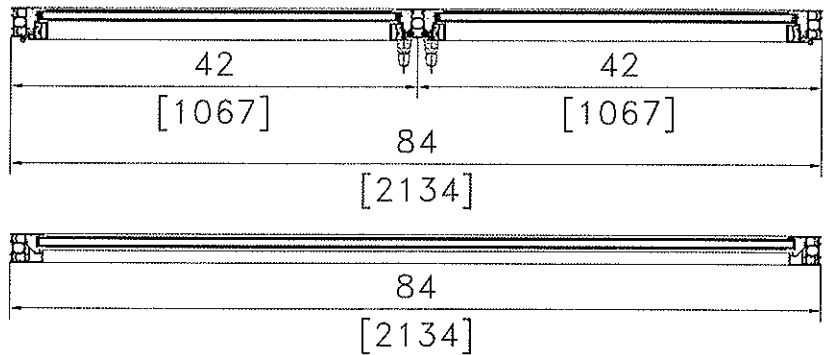
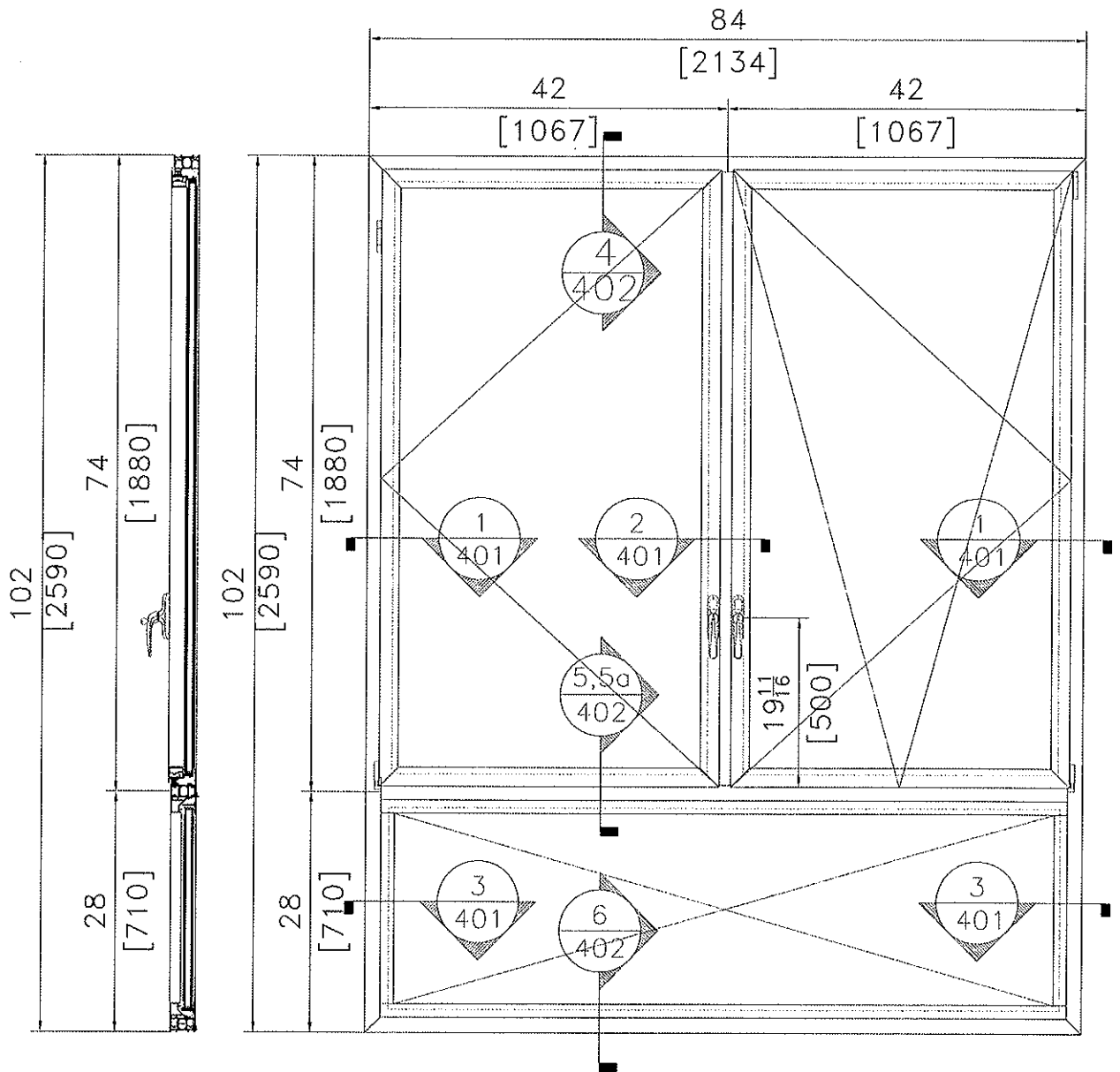
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Appendix C

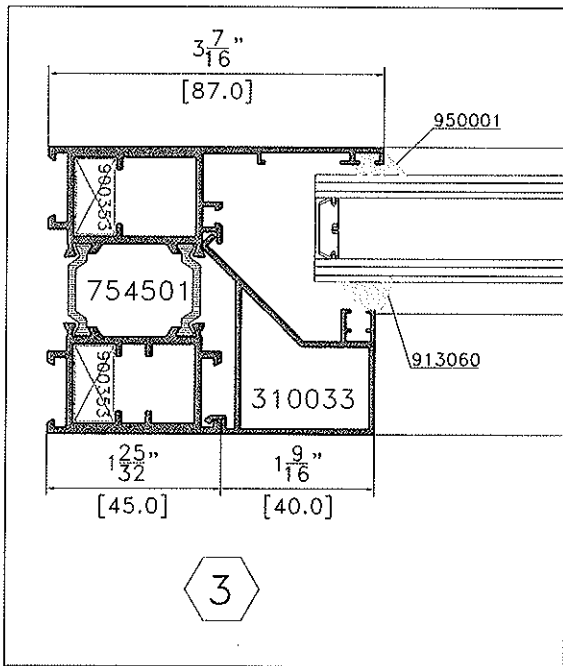
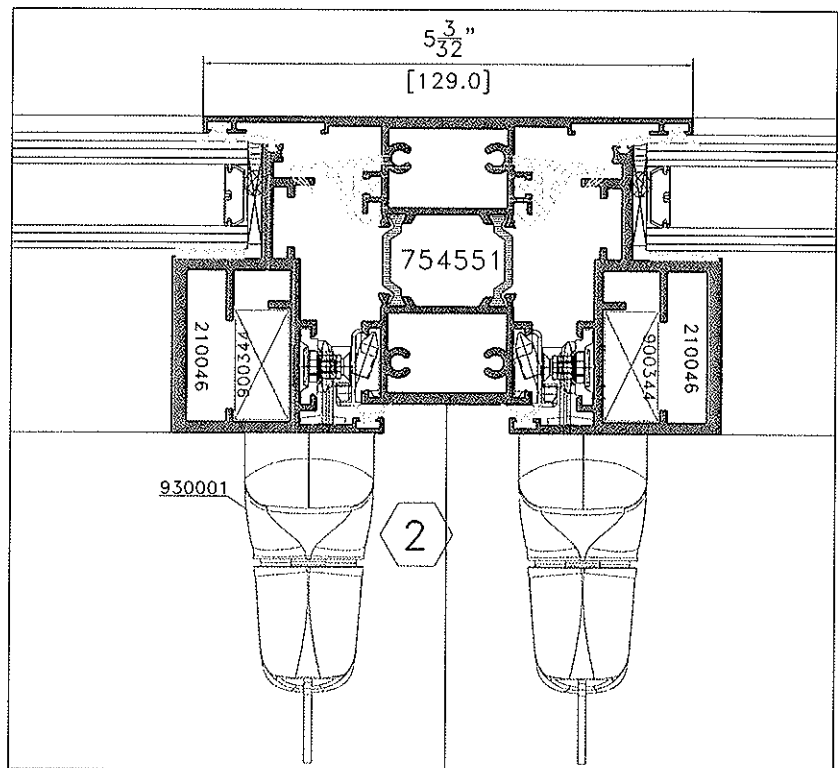
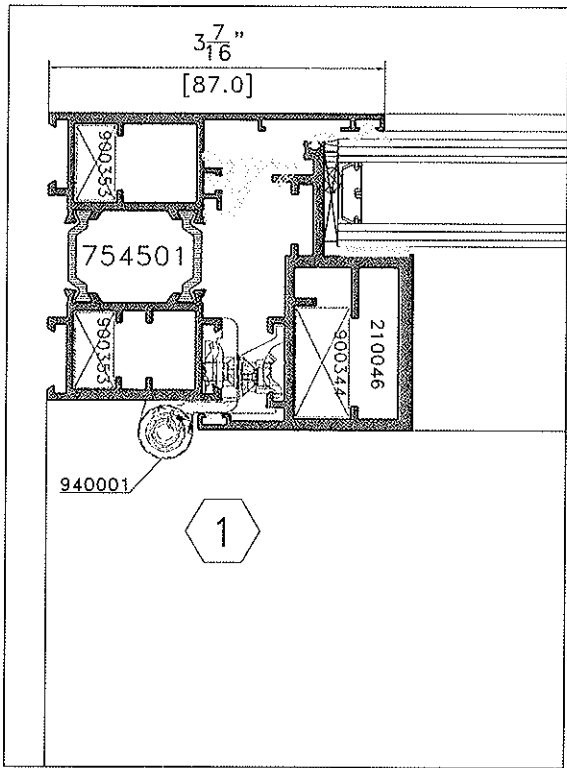
Drawings



Test sample complies with these details.
Deviations are noted.

Report# C5191
Date 1-28-13 Tech BEVOR

 WINDLOCH 3788 SW ARMADILLO TRL ARCADIA, FL 34266 (718)-640-8391 (941)-626-8272 (941)-718-4868 Fax info@windloch.com WWW.WINDLOCH.COM	PROJECT NAME: Window for Air+Water+Static+Fall Prevention Test		CAD FILE : 1100-1.dwg	
	DESCRIPTION: Dual action window - Casment and Tilt&Turn and a fixed light below		DATE: Jan/15/13	REV 1
	DESIGN BY: YOAV BEN-SHIMON		SCALE: 1:20	
	SYSTEM MODEL: WS 75		DRAWING NUMBER: 201	



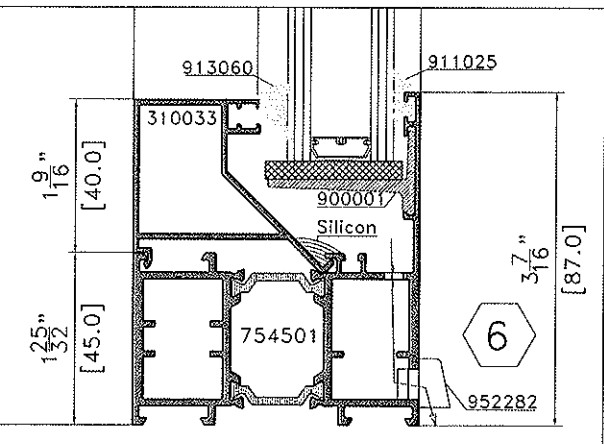
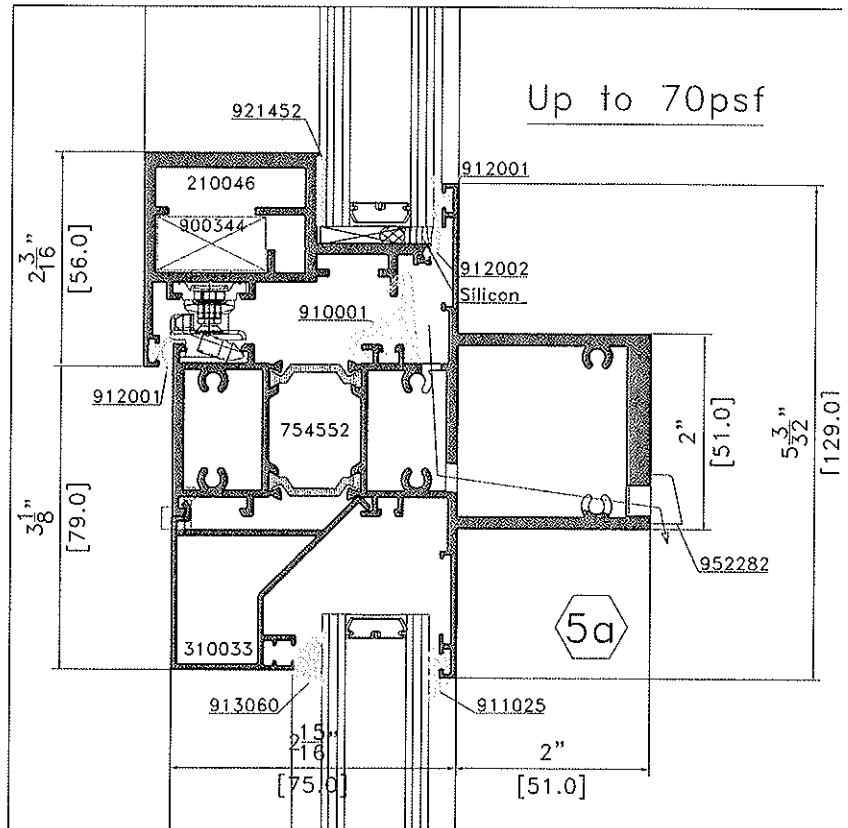
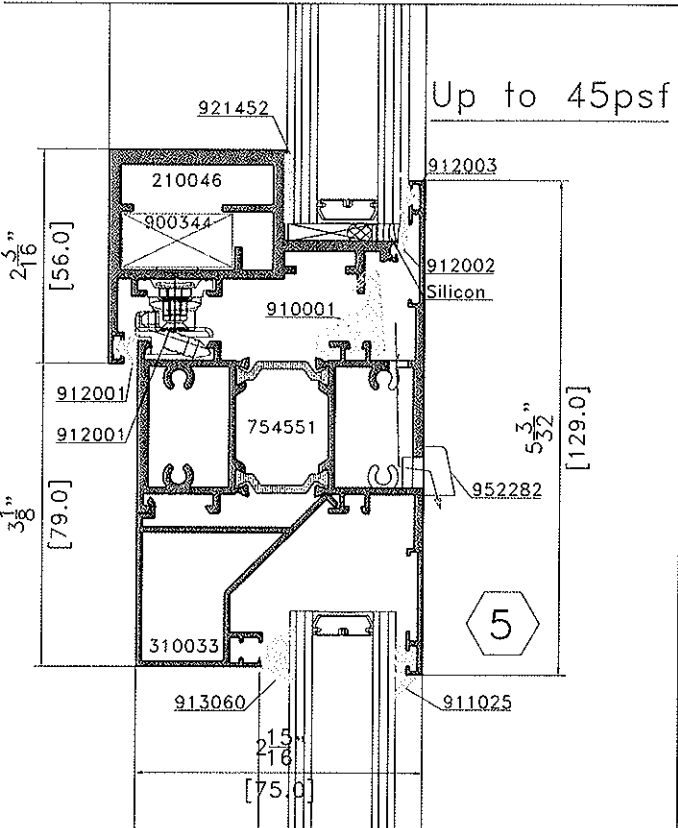
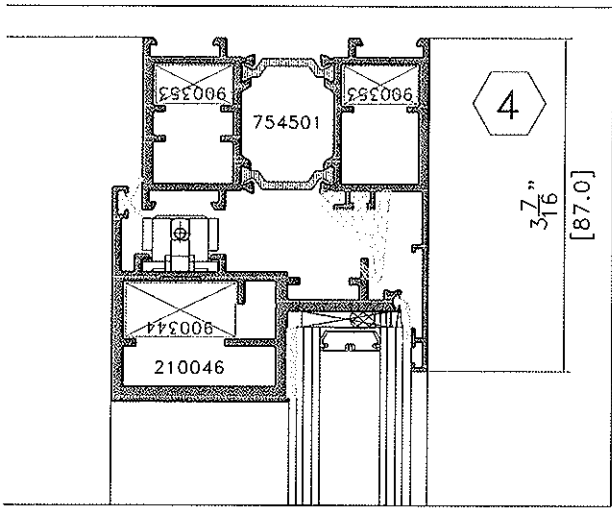
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Test sample complies with these details.
Deviations are noted.

Report# C5191
Date 1-20-13 Tech BENDER

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PROJECT NAME: Window for Air+Water+Static+Fall Prevention Test		CAD FILE : 1100-1.dwg	
DESCRIPTION: Dual action window - Casment and Tilt&Turn and a fixed light below		DATE: Jan/15/13	REV 1
DESIGN BY: YOAV BEN-SHIMON		SCALE: 1:2	
SYSTEM MODEL: WS 75		DRAWING NUMBER: 401	



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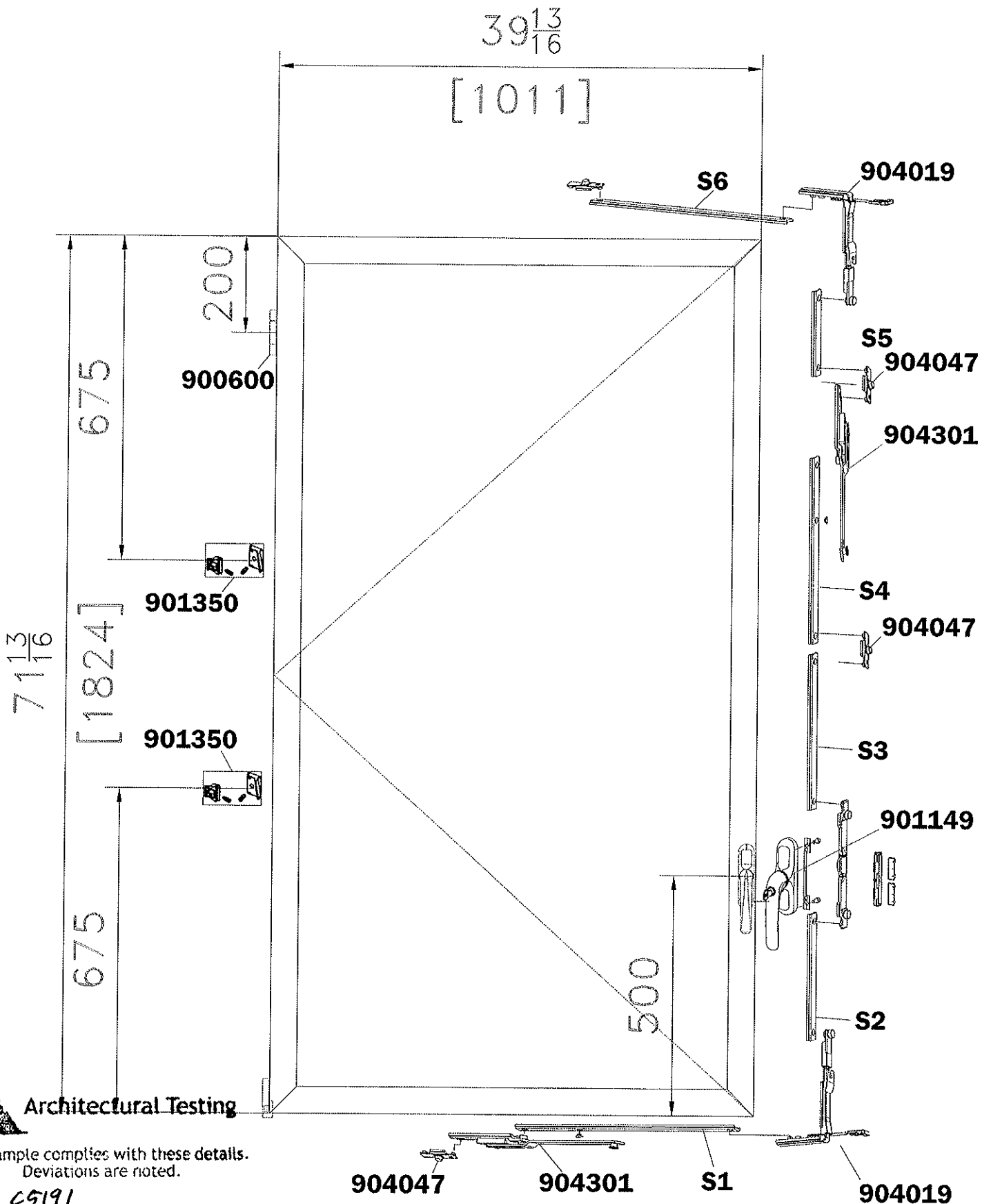
Test sample complies with these details.
Deviations are noted.

Report# CS191
Date 1-22-13 Tech BENDER



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PROJECT NAME: Window for Air+Water+Static+Fall Prevention Test		CAD FILE : 1100-1.dwg	
DESCRIPTION: Dual action window - Casment and Tilt&Turn and a fixed light below		DATE: Jan/15/13	REV 1
DESIGN BY: YOAV BEN-SHIMON		SCALE: 1:2	
SYSTEM MODEL: WS 75		DRAWING NUMBER: 402	

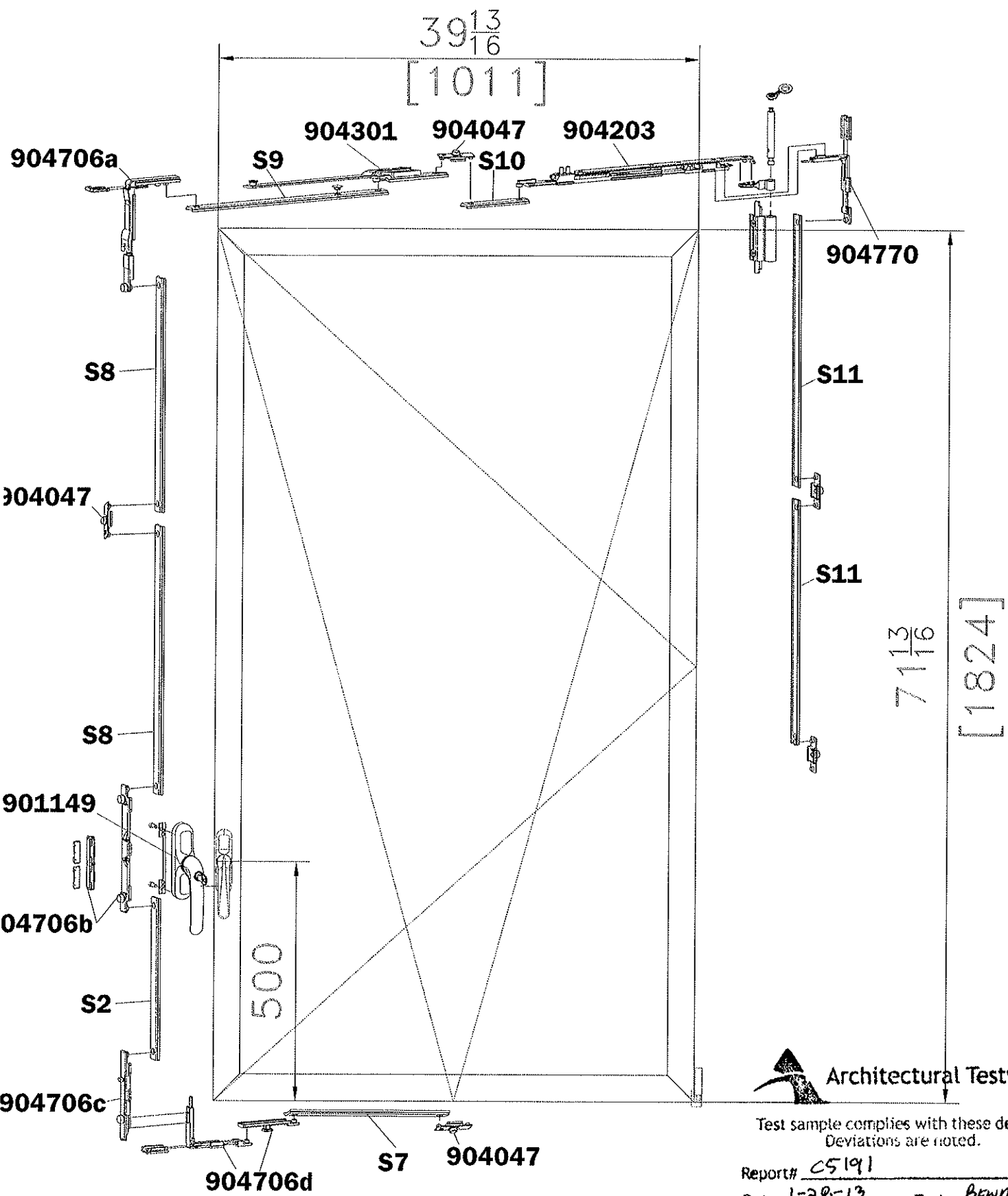


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Test sample complies with these details.
Deviations are noted.

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Date 1-28-13 Tech BENDER

 WINDLOCH 3788 SW ARMADILLO TRL ARCADIA, FL 34266 (718)-640-8391 (941)-626-8272 (941)-718-4868 Fax Info@windloch.com WWW.WINDLOCH.COM	PROJECT NAME: Window for Air+Water+Static+Fall Prevention Test		CAD FILE : 1100-1.dwg	
	DESCRIPTION: Dual action window - Casment and Tilt&Turn and a fixed light below		DATE: Jan/15/13	REV 1
	DESIGN BY: YOAV BEN-SHIMON		SCALE: 1:10	
	SYSTEM MODEL: WS 75		DRAWING NUMBER: 403	



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Test sample complies with these details.
Deviations are noted.

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PROJECT NAME: Window for Air+Water+Static+Fall Prevention Test		CAD FILE : 1100-1.dwg	
DESCRIPTION: Dual action window - Casment and Tilt&Turn and a fixed light below		DATE: Jan/15/13	REV 1
DESIGN BY: YOAV BEN-SHIMON		SCALE: 1:10	
SYSTEM MODEL: WS 75		DRAWING NUMBER: 404	

SERIES WS-75 - Aluminum Window
BILL OF MATERIALS

Art. No.	Description	Material	Quantity	Produced B		
ACCESSORIES	901149	Prima Key Handle	Die cast aluminum handle Case, slide and dummy control device in die-cast Zamak. White galvanised zamak gear. Internal sheath and base in Hostaform Nickel-plate brass key and cylinder. Steel spring Stainless steel fixing plate and screws	2 pcs.	GESSE	
	901350	Adjustable Fastening Element	Silver Plus GS zamak body Stainless steel screws	2 pcs.	GESSE	
	901347	Adjustable Single Striker	Silver Plus GS zamak striker Stainless steel screws grub screws	6+7 pcs.	GESSE	
	904047	Fixed Connecting Joint Mx-Mx	Silver Plus GS zamak connecting element	4+5 pcs.	GESSE	
	904019	Corner Drive	Silver Plus GS zamak body and clip Stainless steel plates	2 pcs.	GESSE	
	904301	Additional Arm Tilt&Turn Restrictor	Stainless steel arm. Die-cast zamak slider. Nylon spacer. Steel screws. Zamak stopper.	1 pc.	GESSE	
	900600	Bridge 2 Hinge	Extruded aluminum hinge Stainless steel pin, screws, grub screw and plates Hostaform bushes	<200lb 2pcs. >200lb 3pcs.	GESSE	
	904706	a	Corner Drive	Silver Plus GS zamak body and clip Stainless steel plates	2 pcs.	GESSE
		b	Cremona Drive & Operation Keeper	Silver Plus GS zamak	1 pc.	GESSE
		c	Bolt tip		1 pc.	GESSE
		d	Secondary Corner drive	Silver Plus GS zamak body and clip Stainless steel plates	1 pc.	GESSE
	904770	Corner Drive	Silver Plus GS zamak body and clip Stainless steel plates	1 pc.	GESSE	
	904711	Futura 3D 130 KG Hinges	Extruded aluminum hinge Stainless steel pin, screws, grub screw and plates Hostaform bushes	1 set	GESSE	
	904203	Arm Futura Logica 3D 130 KG	Stainless steel arm. Die-cast zamak slider. Nylon spacer. Steel screws. Zamak stopper.	1 pc.	GESSE	
	900353	Corner cleat for the frame	Extruded aluminum. Galvanized steel screw. Springs in hardened steel.	8 pcs.	GESSE	
900344	Corner cleat for the Vent	Extruded aluminum. Galvanized steel screw. Springs in hardened steel.	8 pcs.	GESSE		
903524	Connectiog Rod	Polyamide	14 pcs.	GESSE		
902882	Water Drainage	Polyamide	8 pcs.	GESSE		
GASKETS	910001	Center gasket	EPDM	38 ft	Trelleborg	
	912001	Rebate gasket	EPDM	38 ft	Trelleborg	
	912002	Rebate gasket	EPDM	38 ft	Trelleborg	
	912003	Rebate gasket	EPDM	7 ft	Trelleborg	
	911025	Outer glazing gasket 2.5mm	EPDM	17 ft	Trelleborg	
	913060	Inner glazing gasket 6mm	EPDM	17 ft	Trelleborg	
GLASS		Double glazing:	Inboard 1/4" Clear H.S. glass 5/8" Air spacer Outbord 1/4" Clear H.S. glass	36 ¹⁵ / ₁₆ "x69 2pcs. 78 ⁸ / ₁₆ "x23 ³ / ₈ " 2pcs.	Berkowitz	



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# CS191

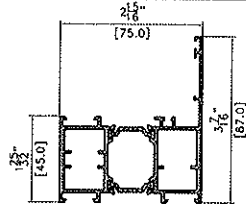
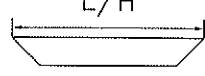
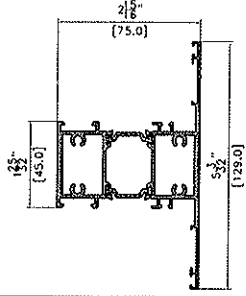
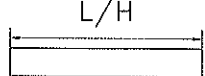
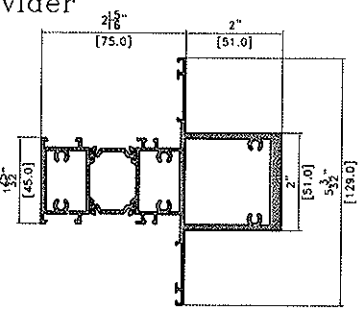
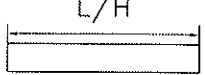
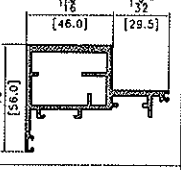
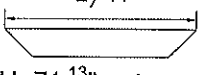
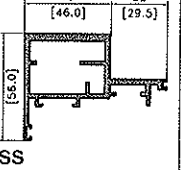
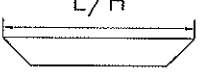
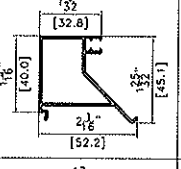
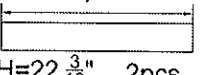
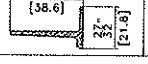
Date 1-22-13

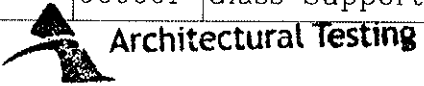
Tech BENDER

<p>WINDLOCH 3788 SW ARMADILLO TRL ARCADIA, FL 34266 (718)-640-8391 (941)-626-8272 (941)-718-4868 Fax info@windloch.com WWW.WINDLOCH.COM</p>	PROJECT NAME: Window for Air+Water+Static+Fall Prevention Test		CAD FILE : 1100-1.dwg	
	DESCRIPTION: Dual action window - Casment and Tilt&Turn and a fixed light below		DATE: Jan/15/13	REV 1
	DESIGN BY: YOAV BEN-SHIMON	SYSTEM MODEL: WS 75	DRAWING NUMBER: 501	



PROFILES

Art. No.	Description	Material	Quantity	Produced B
754501	Frame 	Aluminum A6063-T6	 H=102" 2pcs. L=84" 2pcs.	KEYMARK CORPORATION
754551	Divider 	Aluminum A6063-T6	 H=71 ³ / ₈ " 1pc. L=80 ⁷ / ₁₆ " 1pc.	KEYMARK CORPORATION
754552	Divider 	Aluminum A6063-T6	 L=80 ⁷ / ₁₆ " 1pc.	KEYMARK CORPORATION
210046	Vent profile Up to 1 ³ / ₁₆ " glass Thickness 	Aluminum A6063-T6	 H=71 ¹³ / ₁₆ " 4pcs. L=39 ¹³ / ₁₆ " 4pcs.	KEYMARK CORPORATION
210046	Vent profile 1 ¹ / ₈ " glass Thickness 	Aluminum A6063-T6	 L=39 ¹³ / ₁₆ " 4pcs.	KEYMARK CORPORATION
310033	Glazing Bead 	Aluminum A6063-T6	 H=22 ³ / ₁₆ " 2pcs. L=80 ⁷ / ₁₆ " 2pcs.	KEYMARK CORPORATION
900001	Glass Support 	Aluminum A6063-T6	L= 4" 4 pcs.	KEYMARK CORPORATION



Test sample complies with these details.
Deviations are noted.

Report# C5191
Date 1-28-13 Tech BENDER

WINDLOCH
3788 SW ARMADILLO TRL
ARCADIA, FL 34266
(718)-640-8391
(941)-626-8272
(941)-718-4868 Fax
info@windloch.com
WWW.WINDLOCH.COM

PROJECT NAME: Window for Air+Water+Static+Fall Prevention Test		CAD FILE : 1100-1.dwg	
DESCRIPTION: Dual action window - Casment and Tilt&Turn and a fixed light below		DATE: Jan/15/13	REV 1
DESIGN BY: YOAV BEN-SHIMON		SCALE: 1:4	
SYSTEM MODEL: WS 75		DRAWING NUMBER: 502	

ADDITIONAL ARM TT

04301V

Functions

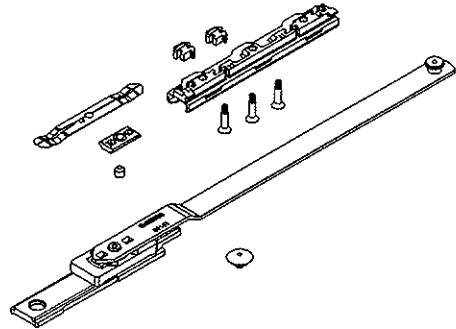
Additional arm for combining with the type 2 arm on windows with sashes wider than 1000 mm, whose function is to distribute the force with which the sash is opened during tilt opening. The same arm can also be used on ARCHED and SLANTED windows with sashes wider than 900 mm.

Finish

Base finish

Packaging

Box of 5 pieces



Technical Features

The additional arm is used on sashes wider than 1000 mm and fitted to the upper cross beam on the opposite side to the arm (corner drive side), preventing an excessive leverage during tilt opening which could otherwise impair window operation.

The arm comprises a component to be hooked to the corner drive without fixing screws, a rod and a slider to be fixed to the frame with the two supplied grub screws.

The component and the respective slider function only when through the cremone the mechanism is set in the tilt opening position. In fact, the pin on the rod fixed to the corner drive enters the slider on the frame only in this case.

During the tilt opening, the sash pin moves inside the slider, preventing the sash from opening excessively and balancing the weight on the type 2 arm as well as on the additional arm.

For ARCHED or SLANTED windows, the additional arm is used on the command side, fixed directly to the cremone drive or the window handle mechanism.

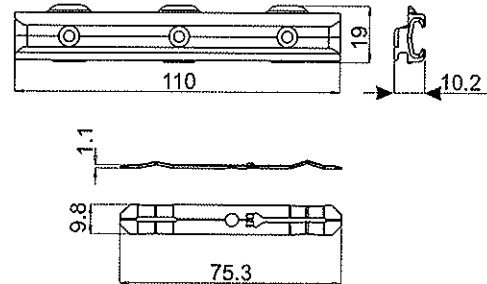
Its use, which is essential to increase the window security level, is recommended for sashes widths from 900 to 1100 mm, and compulsory for sashes wider than 1100 mm and heights greater than 1600 mm.

Parts

Instructions sheet

Materials

- Stainless steel arm
- Die-cast zamak slider
- Nylon spacer
- Steel screws
- Zamak stopper

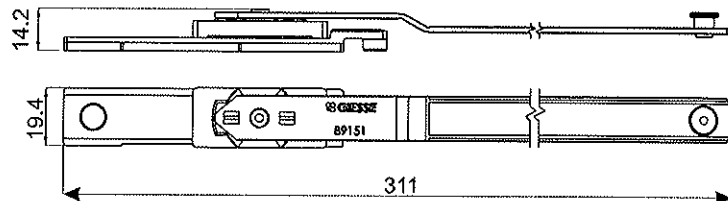


Test sample conforming with these details.
Devices used are noted.

Report# CS191

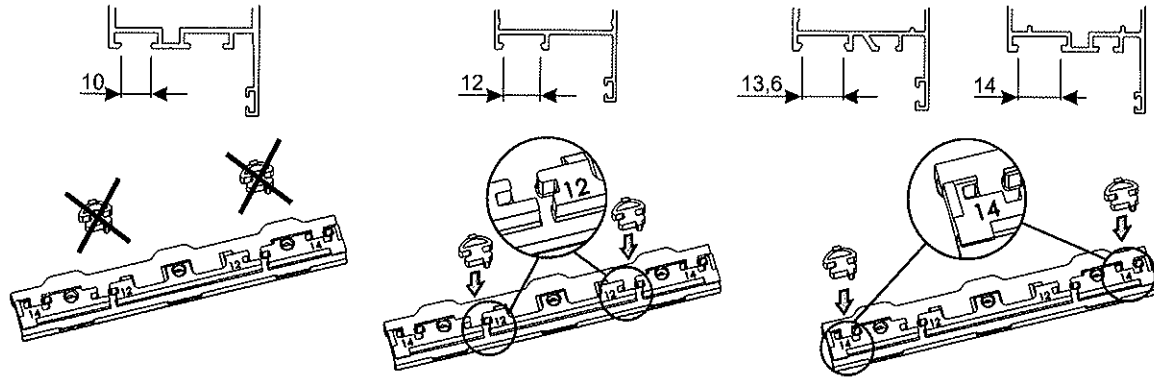
Date 1-28-13

Tech BENDER



Impiego

04301V (segue)



Test sample complies with these details.
Deviations are noted.

Report# CS191

Date 1-28-13 Tech BANDER