



NATIONAL CERTIFIED TESTING LABORATORIES

5 LEIGH DRIVE
YORK, PA 17406
(717)846-1200

● 8350 PARKLINE BLVD
ORLANDO, FL 32809
(407)240-1356

● 3310 HILL AVE
EVERETT, WA 98201
(425)259-4936

SIMULATION TEST REPORT

NCTL-610-21539-1E0A0

REPORT TO:

All Seasons Window & Door System Inc.
1340 Metropolitan Avenue
Brooklyn, NY 11237

SIMULATION DATE: 11/20/18

PRODUCT:

EU400 Tilt & Turn

This report is for certification of a new product line.



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Simulation Standards

ANSI/NFRC 100-2017 "Procedure for Determining Fenestration Product U-factors"
ANSI/NFRC 200-2017 "Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence"
NFRC 500-2017 "Procedure for Determining Fenestration Product Condensation Resistance Values"
THERM 7 / WINDOW 7 NFRC Simulation Manual (July 2017)
NFRC 2010 Technical Interpretations Manual (November 2017)

Approved Simulation Software

Center of Glass	Window 7.4
2-D Heat Transfer	THERM 7.4
Total Product Calculations	Window 7.4

Note: All dimensions are in the order (Width x Height) unless otherwise noted.

Report Number	NCTL-610-21536-1E0A0
Model/Series	EU400 Tilt & Turn
Operator Type	Dual Action – Tilt & Turn (DATT)
Simulation Size	1200 mm x 1500 mm (47" x 59")
Frame Type	Aluminum w/ Thermal Breaks – All Members (AT)
Sash Type	Aluminum w/ Thermal Breaks – All Members (AT)
Frame/Sash Material & Finish	Painted Aluminum Alloy
Frame Option(s)	<u>Frame 1</u> Standard Offering
Reinforcement	Not Applicable
Thermal Break(s)	Polyamide (P)
Weather Seal(s)	<u>Head</u> (3) Ethylene Propylene Diene Monomer (EPDM) gaskets <u>Jamb</u> (3) Ethylene Propylene Diene Monomer (EPDM) gaskets <u>Sill</u> (3) Ethylene Propylene Diene Monomer (EPDM) gaskets
Edge of Glass	Interior glazed with a painted aluminum alloy glazing bead with an Ethylene Propylene Diene Monomer (EPDM) gasket onto an EPDM gasket while resting on a foam rubber extrusion.

Spacer System(s)	Aluminum spacer system - dual sealed (A1-D)
Gas Fillings	Argon 90% single probe per the client (ARG)
Divider(s)	Not Applicable
Divider Notes	Where the space between lite and divider is greater than 3 mm, dividers are not modeled. Solar Heat Gain Coefficient (SHGC) and Visible Light Transmittance (VT) are calculated using default dividers of less than 1" and greater than/ equal to 1". For U-factor, SHGC, and VT calculations the standard default grid pattern of 12" is used, as established by the Window 7 program.

Notes, Additional Information, Comments, and Assumptions

All simulations use the emissivity from the approved ANSI/NFRC spectral data files with the International Glazing Database (IGDB).

For Solar Heat Gain and Visible Light Transmittance; all frame, divider and glass options are grouped using the best case center of glass/ worst-case frame values from the "U" Factor calculations as required by ANSI/NFRC 200-2017.

A default frame absorptance of 0.30 is assumed for all products except glazing window walls, glazing curtain walls, and sloped glazing wall - all of which will have a frame absorptance of 0.50

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Supporting information including THERM 7 and WINDOW 7 files are being submitted as part of this report. The simulation matrix is being submitted electronically.

Detailed assembly drawings, horizontal and vertical cross-sectional drawings, profile drawings, parts drawings, and a bill of materials as supplied by the client were used as the basis for performing the simulations. Copies are attached to this report. The results were secured by using the designated methods and NFRC approved simulation programs as required by, and in full compliance with, NFRC procedures.

This report does not constitute certification of this product. The results in this report apply only to the sample as shown in the attached drawings, using the components and construction methods described herein. NCTL does not warrant the accuracy of the computer programs used to obtain the results. Client request for work performed by NCTL and its associated documentation constitute approval by client for Inspection Agency (IA) submission.

Ratings values included in this report are for submittals to an NFRC-licensed IA and are not meant to be used directly for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes.

The Condensation Resistance results obtained from this procedure are for controlled laboratory conditions and do not include the effects of air movement through the specimen, solar radiation and the thermal bridging that may occur due to the specific design and construction of the fenestration system opening.

Units and rounding is in accordance with NFRC 601, *Units and Measurement Policy* except that all units may be reported in IP as the primary units after conversion and any matrix is reported in IP units only unless requested otherwise by the client.

The manufacturer is capable of producing, in its normal manufacturing process, products in sizes identical to the model sizes listed in the ANSI/NFRC 100 Table 4-3 and have a least deviation of 0 within the tolerances of ANSI/NFRC 100. All simulations are performed in the sizes and configurations listed in ANSI/NFRC 100 Table 4-3 except that a non-standard size may be simulated and identified in the matrix to match the manufacturer's physical test sample. Glass and glazing types, Low-E placement, finishes and other required information is included in the NFRC U-Factor Simulation Summary Report and/ or the NFRC SHGC/ VT Simulation Summary Report included in this document. Additional supporting information and modeling assumptions are included in the individual reports obtained from the approved simulation programs and in the notes following the required summary reports.

National Certified Testing Laboratories

Performed by:

Reviewed by:



CHRISTOPHER PONDOLFINO
NFRC Certified Simulator



MARK BENNETT
NFRC Certified Simulator
Simulator-In-Responsible-Charge

- Attachments
- Glazing Matrix
 - Appendix A - Revision Summary
 - Appendix B - Product Drawings

PRODUCT	Product Number	Pane ID #1	Pane ID #2	Pane ID #3	Pane Thickness #1	Pane Thickness #2	Pane Thickness #3	Gap 1	Gap 2	Gap Fill 1	Gap Fill 2	% of Gap Fill 1	% of Gap Fill 2	Emissivity Surface 1	Emissivity Surface 2	Emissivity Surface 3	Emissivity Surface 4	Emissivity Surface 5	Emissivity Surface 6	Tint	Spacer	Grid Type	Grid Size	U-factor	Condensation Resistance	SHGC NO GRID	SHGC GRID<1"	SHGC GRID>=1"	VT NO GRID	VT GRID<1"	VT GRID >=1"
No Grids	1	5 mm Solarban® 70XL	5 mm Comfort Select 73		0.184	0.185		0.856		AIR					0.018	0.148				CL	A1-D	N	0.34	40	0.20		0.43				
No Grids	2	5 mm Solarban® 70XL	5 mm Comfort Select 73		0.184	0.185		0.856		ARG		90			0.018	0.148				CL	A1-D	N	0.32	42	0.20		0.43				
No Grids	3	5 mm Solarban® 70XL	5 mm Clear		0.184	0.184		0.856		AIR					0.018					CL	A1-D	N	0.39	50	0.21		0.46				
No Grids	4	5 mm Solarban® 70XL	5 mm Clear		0.184	0.184		0.856		ARG		90			0.018					CL	A1-D	N	0.36	53	0.21		0.46				
No Grids	5	5 mm Solarban® 60	5 mm Comfort Select 73		0.184	0.185		0.856		ARG		90			0.035	0.148				CL	A1-D	N	0.32	42	0.28		0.48				
No Grids	6	5 mm Solarban® 60	5 mm Comfort Select 73		0.184	0.185		0.856		AIR					0.035	0.148				CL	A1-D	N	0.34	40	0.28		0.48				
No Grids	7	5 mm Solarban® 60	5 mm Clear		0.184	0.184		0.856		ARG		90			0.035					CL	A1-D	N	0.36	52	0.29		0.52				
No Grids	8	5 mm Solarban® 60	5 mm Clear		0.184	0.184		0.856		AIR					0.035					CL	A1-D	N	0.40	50	0.30		0.52				
No Grids	9	5 mm Clear	5 mm Clear		0.184	0.184		0.856		AIR										CL	A1-D	N	0.51	43	0.54		0.59				
No Grids	10	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	5 mm Clear	0.273	0.129	0.184	0.581	0.581	ARG	ARG	90	90			0.035				CL	A1-D	N	0.29	55	0.28		0.47				
No Grids	11	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	5 mm Solarbronze®	0.273	0.129	0.184	0.581	0.581	ARG	ARG	90	90			0.035				BZ	A1-D	N	0.29	55	0.28		0.31				
No Grids	12	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	5 mm Azuria®	0.273	0.129	0.184	0.581	0.581	ARG	ARG	90	90			0.035				AZ	A1-D	N	0.29	55	0.28		0.38				
No Grids	13	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	5 mm Solargray®	0.273	0.129	0.184	0.581	0.581	ARG	ARG	90	90			0.035				GY	A1-D	N	0.29	55	0.28		0.26				
No Grids	14	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Clear	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.543	0.543	AIR	AIR									CL	A1-D	N	0.37	55	0.45		0.53				
No Grids	15	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 70XL	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.543	0.543	AIR	AIR					0.018				CL	A1-D	N	0.30	55	0.22		0.41				
No Grids	16	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 70XL	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.543	0.543	ARG	ARG	90	90			0.018				CL	A1-D	N	0.28	55	0.22		0.41				
No Grids	17	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.543	0.543	AIR	AIR					0.035				CL	A1-D	N	0.30	55	0.29		0.47				
No Grids	18	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.543	0.543	ARG	ARG	90	90			0.035				CL	A1-D	N	0.28	55	0.28		0.47				
No Grids	19	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	5 mm Clear	0.273	0.129	0.184	0.706	0.706	ARG	ARG	90	90			0.035				CL	A1-D	N	0.29	53	0.29		0.47				
No Grids	20	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	5 mm Solarbronze®	0.273	0.129	0.184	0.706	0.706	ARG	ARG	90	90			0.035				BZ	A1-D	N	0.29	53	0.28		0.31				
No Grids	21	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	5 mm Azuria®	0.273	0.129	0.184	0.706	0.706	ARG	ARG	90	90			0.035				AZ	A1-D	N	0.29	53	0.28		0.38				
No Grids	22	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	5 mm Solargray®	0.273	0.129	0.184	0.706	0.706	ARG	ARG	90	90			0.035				GY	A1-D	N	0.29	53	0.28		0.26				
No Grids	23	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Clear	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.668	0.668	AIR	AIR									CL	A1-D	N	0.36	53	0.45		0.53				
No Grids	24	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 70XL	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.668	0.668	AIR	AIR					0.018				CL	A1-D	N	0.30	53	0.22		0.41				
No Grids	25	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 70XL	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.668	0.668	ARG	ARG	90	90			0.018				CL	A1-D	N	0.28	53	0.22		0.41				
No Grids	26	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.668	0.668	AIR	AIR					0.035				CL	A1-D	N	0.30	53	0.29		0.47				

PRODUCT	Product Number	Pane ID #1	Pane ID #2	Pane ID #3	Pane Thickness #1	Pane Thickness #2	Pane Thickness #3	Gap 1	Gap 2	Gap Fill 1	Gap Fill 2	% of Gap Fill 1	% of Gap Fill 2	Emissivity Surface 1	Emissivity Surface 2	Emissivity Surface 3	Emissivity Surface 4	Emissivity Surface 5	Emissivity Surface 6	Spacer	Grid Type	Grid Size	U-factor	Condensation Resistance	SHGC NO GRID	SHGC GRID<1"	SHGC GRID=>1"	VT NO GRID	VT GRID<1"	VT GRID >=1"
No Grids	27	Clear-2.7 / .060 PVB / Clear-2.7	3 mm Solarban® 60	Clear-2.7 / .060 PVB / Clear-2.7	0.273	0.129	0.273	0.668	0.668	ARG	ARG	90	90				0.035			CL	A1-D	N	0.28	53	0.28			0.47		
VALIDATION, No Grids	0	5 mm Solarban® 70XL	5 mm Clear		0.184	0.184		0.856		ARG		90				0.018				CL	A1-D	N	0.37	53	0.21			0.46		

Appendix A
Revision Summary

<u>Identification</u>	<u>Date</u>	<u>Revision</u>
Original Issue	11/20/18	Report to Client and Inspection Agency

Appendix B
Product Drawings

ALL SEASON EU400

Item#	Part number	Part name	Material
1	AB601	EU400 FRAME	ALUMIINUM
2	AB003	EU400 SASH	ALUMIINUM
3	GB004	EU400 1¼ GLAZING	ALUMIINUM
4	EV400 - 6	GASKET	EPDM
5	EV400 - 4	GASKET	EPDM
6	EV400 - 3	GASKET	EPDM
7	EV400 - 1	GASKET	EPDM
8	EV400 - 2	GASKET	FOAM RUBBER

9

GB009

EU400 1-3/4" GLAZING

ALUMINUM

10

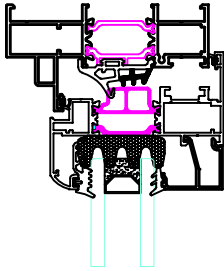
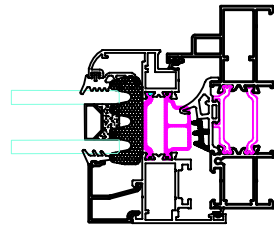
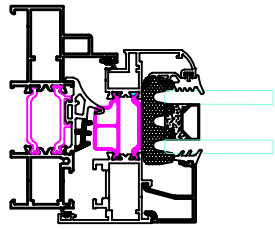
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EU400 2" GLAZING

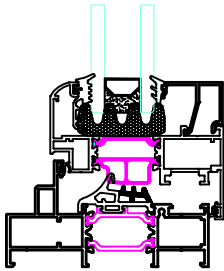
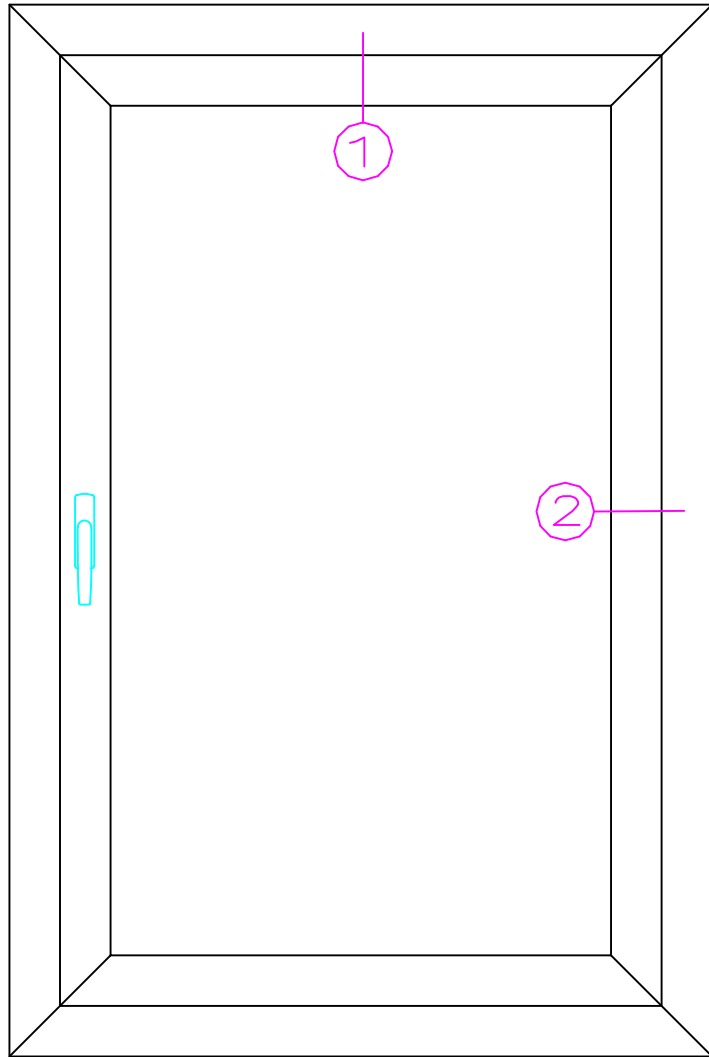
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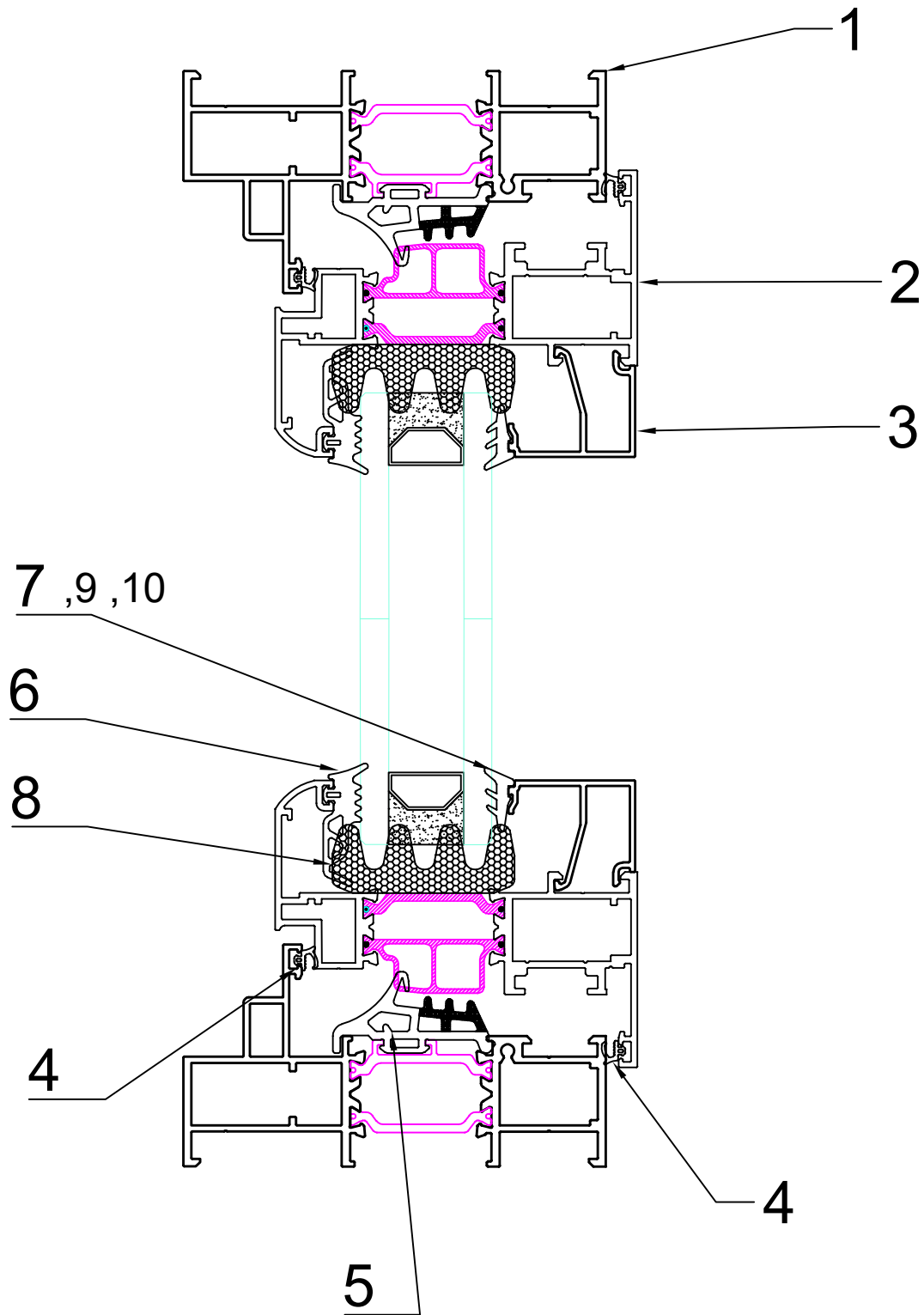
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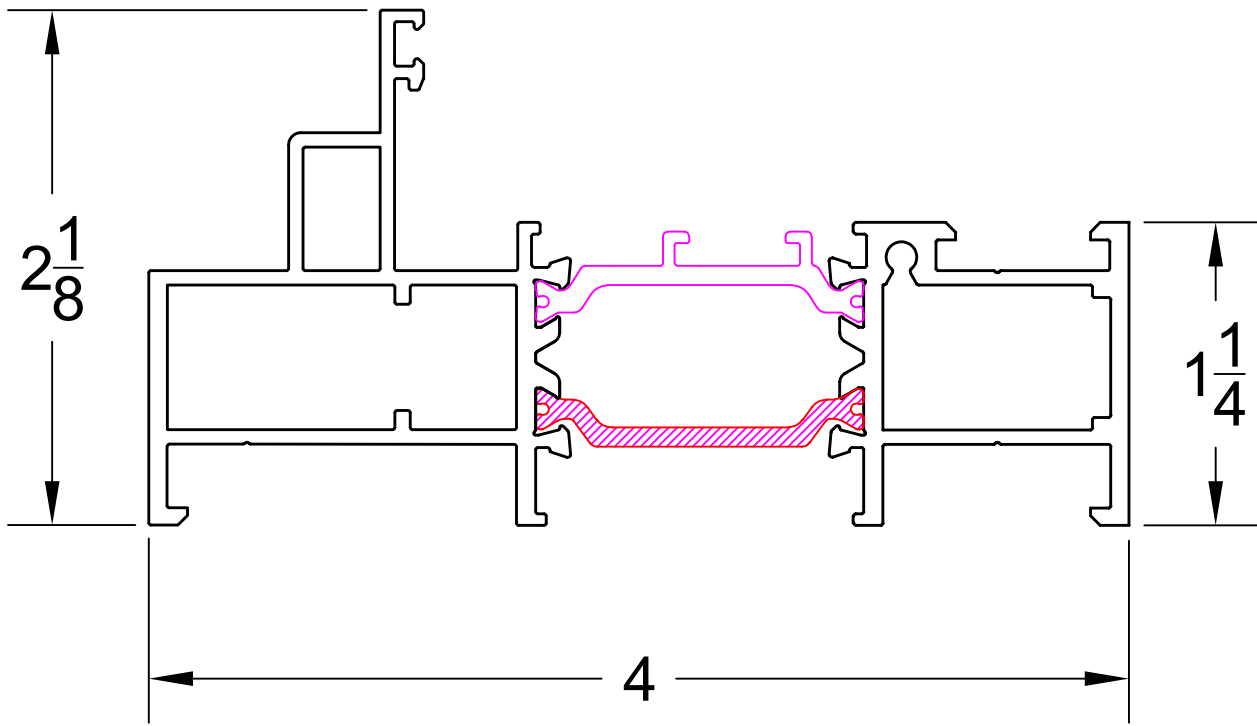
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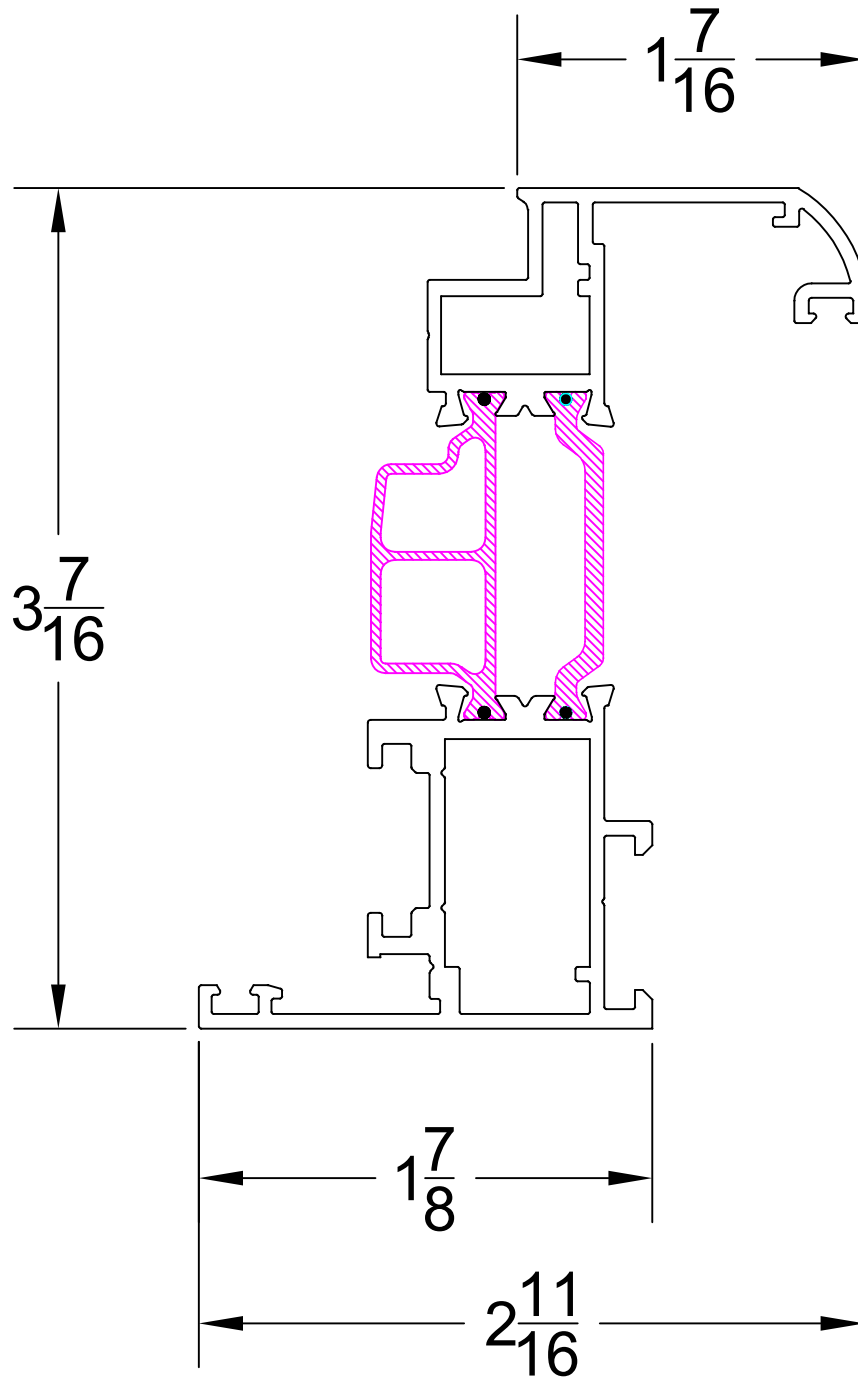
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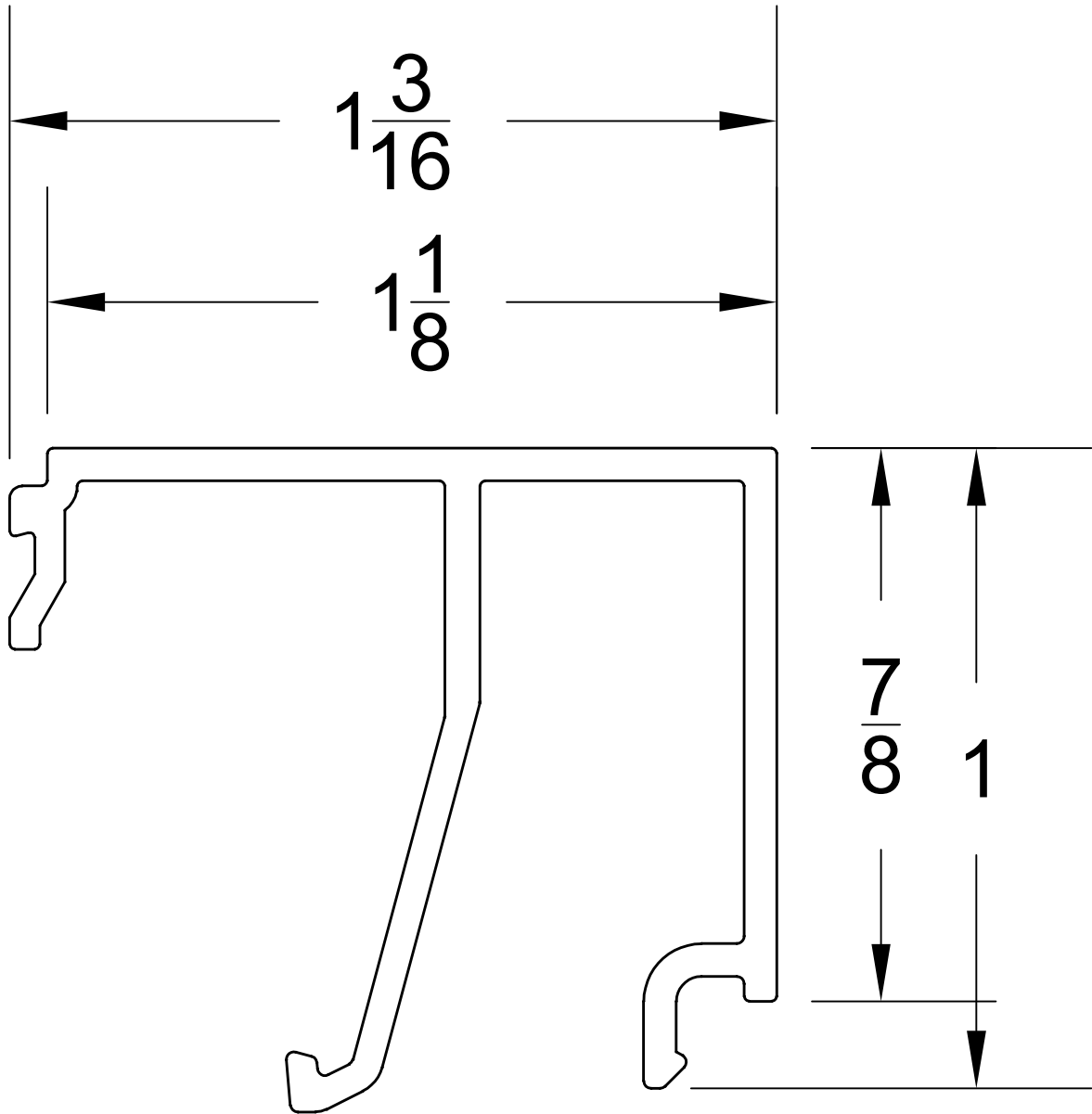


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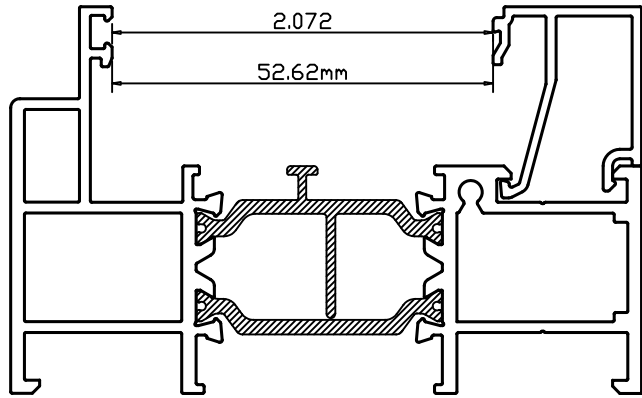


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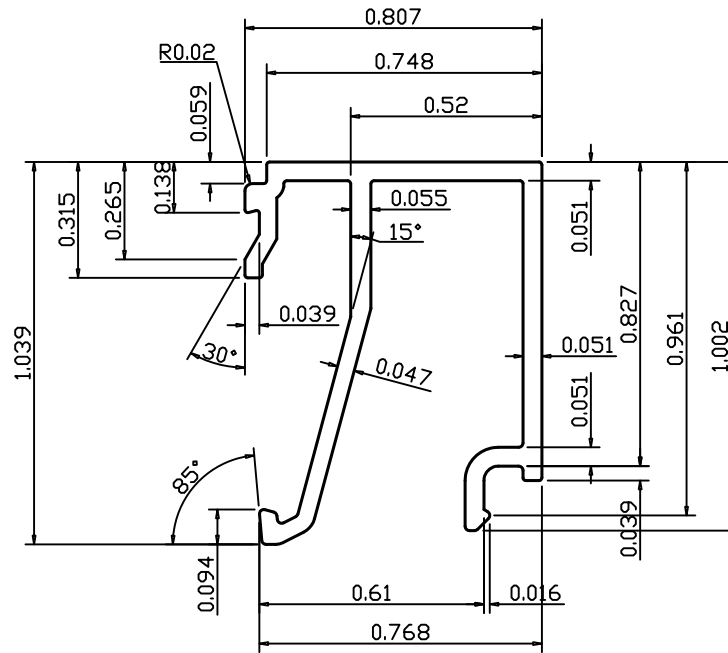
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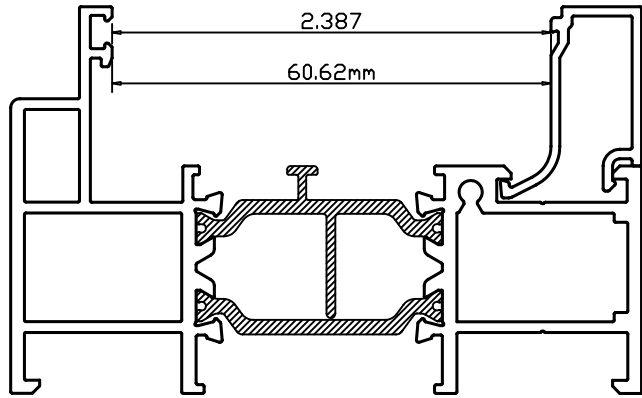
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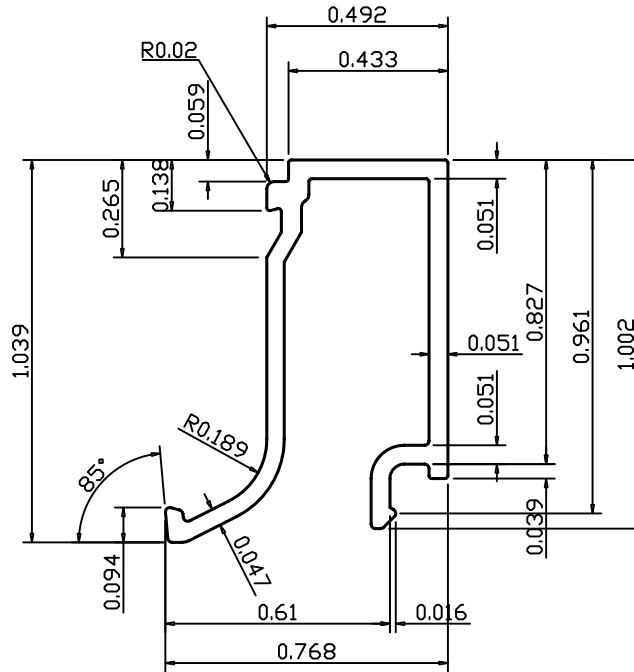
Unspecified tolerance			
size rang	tolerance		
≤0.118	±0.0055		
>0.118-0.237	±0.0071		
>0.237-0.473	±0.0079		
>0.473-0.748	±0.0091		
>0.748-0.985	±0.01		
>0.985-1.496	±0.012		
>1.496-1.969	±0.0142		
>1.969-3.937	±0.0242		
>3.937-5.906	±0.0339		
>5.906-7.874	±0.0441		
angle tolcrance	±1°		
CUSTOMER	ALL SEASONS	CUS. DWG.	
DWG. NO.	GB 009	DIE NO.	

EST AREA (Inch ²)	0.168	UNSP.THICKNESS (Inch)		STANDARD	GB5237-2008	DRAWN	
EST. WEIGHT (Lbs/foot)	0.197	UNSP.RADIUS (Inch)	R0.0078	ALLOY	6063-T5	AUDITING	
PERIMETER (Inch)	6.63	ALL SEASONS DOOR & WINDOW INC.				CHECKED	
SCALE	2:1	1340 METROPOLITAN AVE BROOKLYN,NY11237,USA				APP.	
OUT ROUND (Inch)		TEL:001-718-418 8102 FAX:001-718-418 8104				DATE	

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NCTL-610-21539-1 BY:CP
TEST COMPLETE 11/20/18



SCALE 1:1

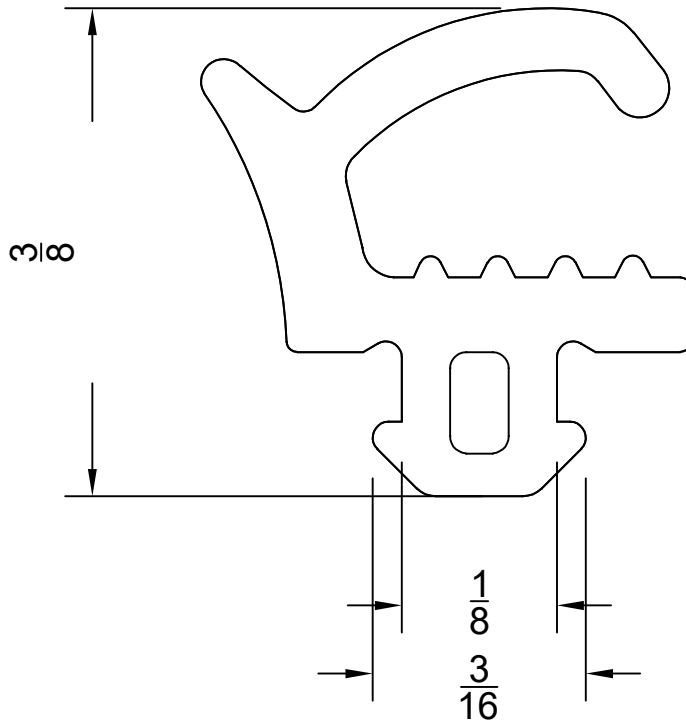


Unspecified tolerance	
size rang	tolerance
≤0.118	±0.0055
>0.118-0.237	±0.0071
>0.237-0.473	±0.0079
>0.473-0.748	±0.0091
>0.748-0.985	±0.01
>0.985-1.496	±0.012
>1.496-1.969	±0.0142
>1.969-3.937	±0.0242
>3.937-5.906	±0.0339
>5.906-7.874	±0.0441
angle tolcrance	±1°
CUSTOMER	ALL SEASONS
DWG. NO.	GB 013

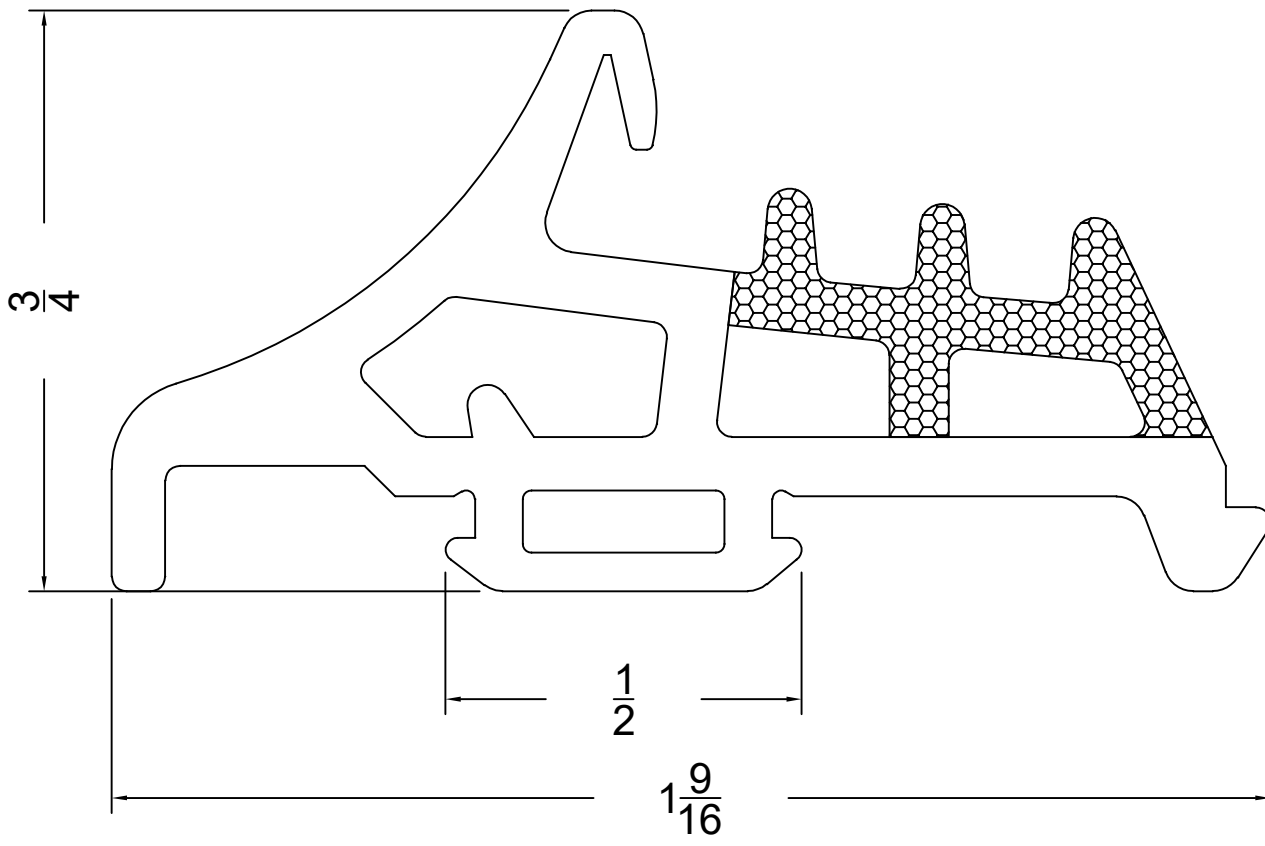
CUS. DWG.	
DIE NO.	

EST AREA (Inch ²)	0.142	UNSP.THICKNESS (Inch)		STANDARD	GB5237-2008	DRAWN	
EST. WEIGHT (Lbs/foot)	0.166	UNSP.RADIUS (Inch)	R0.0078	ALLOY	6063-T5	AUDITING	
PERIMETER (Inch)	5.615	ALL SEASONS DOOR & WINDOW INC. 1340 METROPOLITAN AVE BROOKLYN,NY11237,USA TEL:001-718-418 8102 FAX:001-718-418 8104				CHECKED	
SCALE	2:1					APP.	
OUT ROUND (Inch)						DATE	

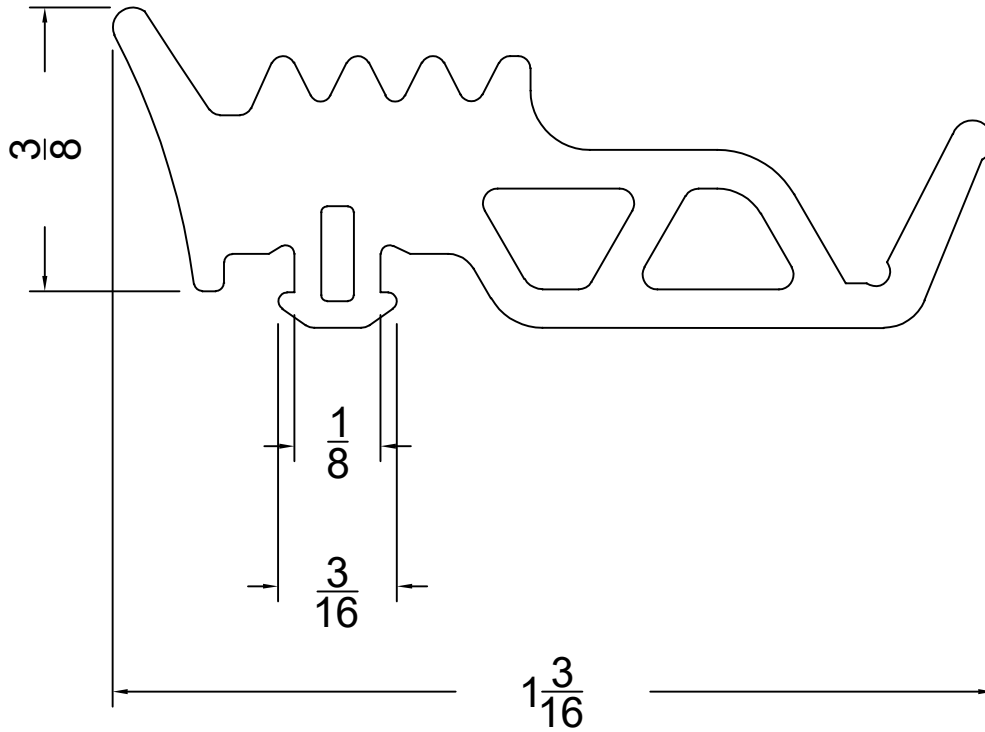
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TEST COMPLETE 11/20/18



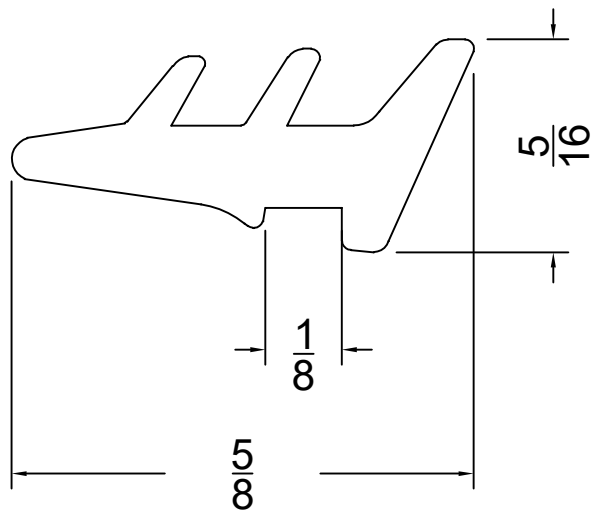
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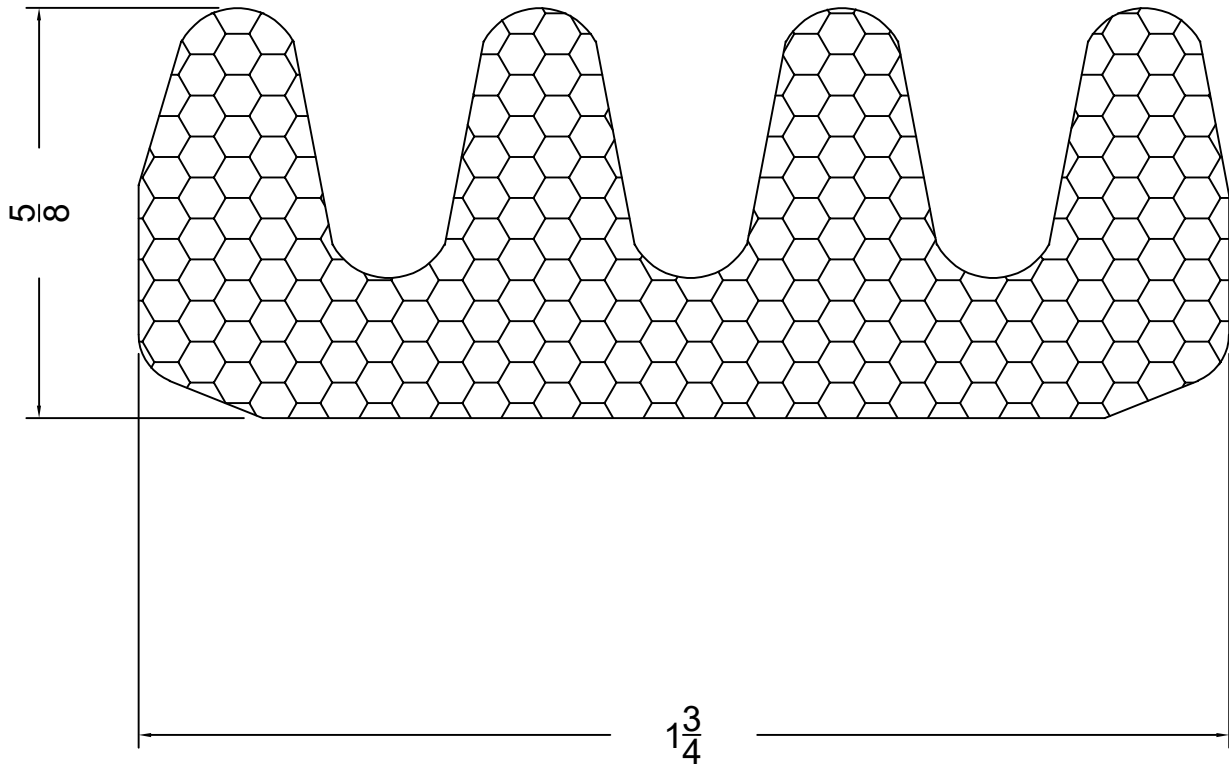
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TEST COMPLETE 11/20/18



Spacers are Profilglas

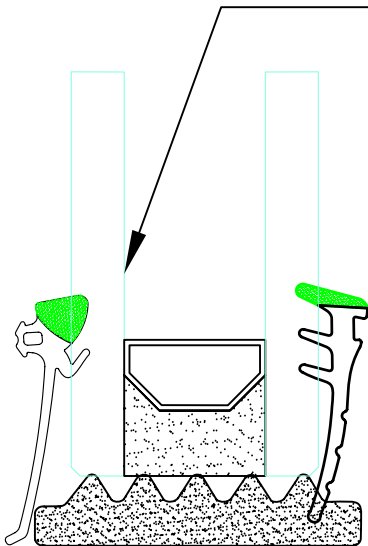
Dessicant is CHEM SOURCE Type 3A-IG

Molecular Sieve Beads

PIB is Kommerling GD115.

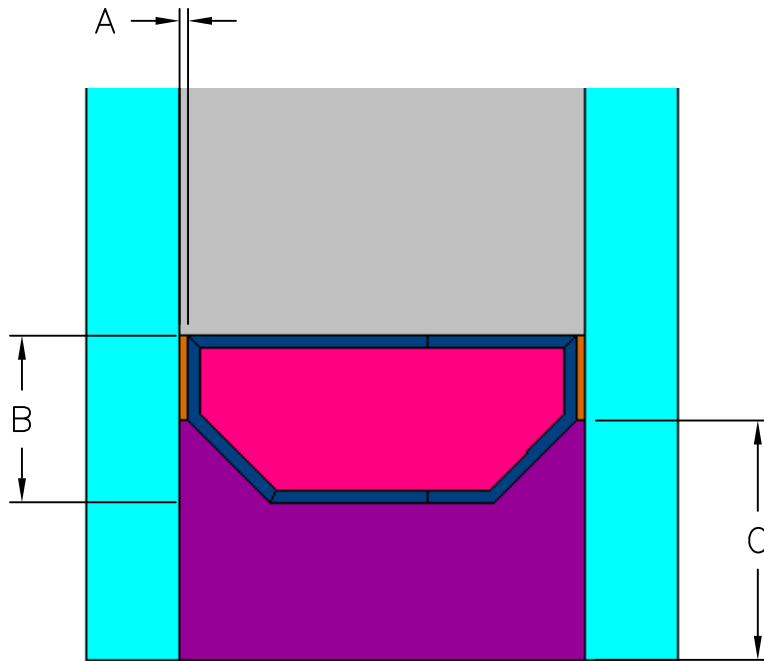
Silicone is DOW Corning 982

~~1.25"OA: Solarban 70XL (#2) over 1/4" Clear Ann. + Argon~~



TEST SPECIMEN COMPLIES
WITH THESE DETAILS.
ANY DEVIATION IS NOTED
NCTL-610-21539-1 BY:CP
TEST COMPLETE 11/20/18

MANUFACTURER:		PROFILGLAS	SPACER:	ALUMINUM SPACER
SHEET:	REV:	GAS & PERCENTAGE:		
1/1	00			
GAP WIDTHS:				
0.856", 0.581", 0.543", 0.706", 0.668",				



SPACER MATERIAL: ANODIZED ALUMINUM ALLOY
PRIMARY SEALANT: POLYISOBUTYLENE (PIB)

SECONDARY SEALANT: SILICONE

A) THICKNESS OF SEALANT BETWEEN GLASS : .015"

B) SPACER HEIGHT: .350"

C) SECONDARY SEALANT HEIGHT: .506"

ALL SEASON EU400

Item#	Part number	Part name	Material
1	AB601	EU400 FRAME	ALUMIINUM
2	AB003	EU400 SASH	ALUMIINUM
3	GB004	EU400 1¼ GLAZING	ALUMIINUM
4	EV400 - 6	GASKET	FLEXIBLE PVC
5	EV400 - 4	GASKET	FLEXIBLE PVC
6	EV400 - 3	GASKET	FLEXIBLE PVC
7	EV400 - 1	GASKET	FLEXIBLE PVC
8	EV400 - 2	GASKET	FOAM RUBBER

9

GB009

EU400 1-3/4" GLAZING

ALUMINUM

10

GB013

EU400 2" GLAZING

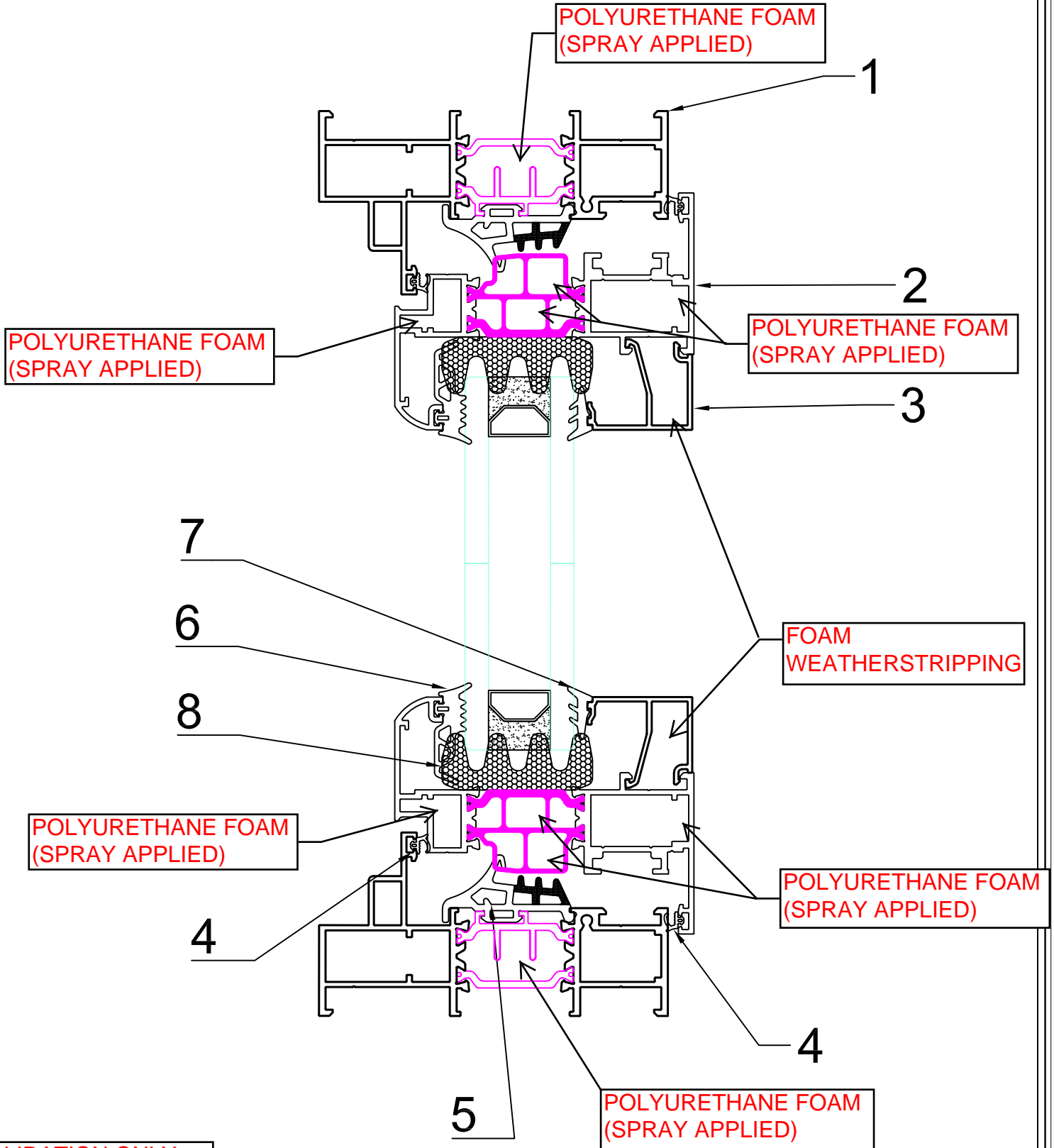
ALUMINUM

TEST SPECIMEN COMPLIES WITH THESE DETAILS.

ANY DEVIATION IS NOTED

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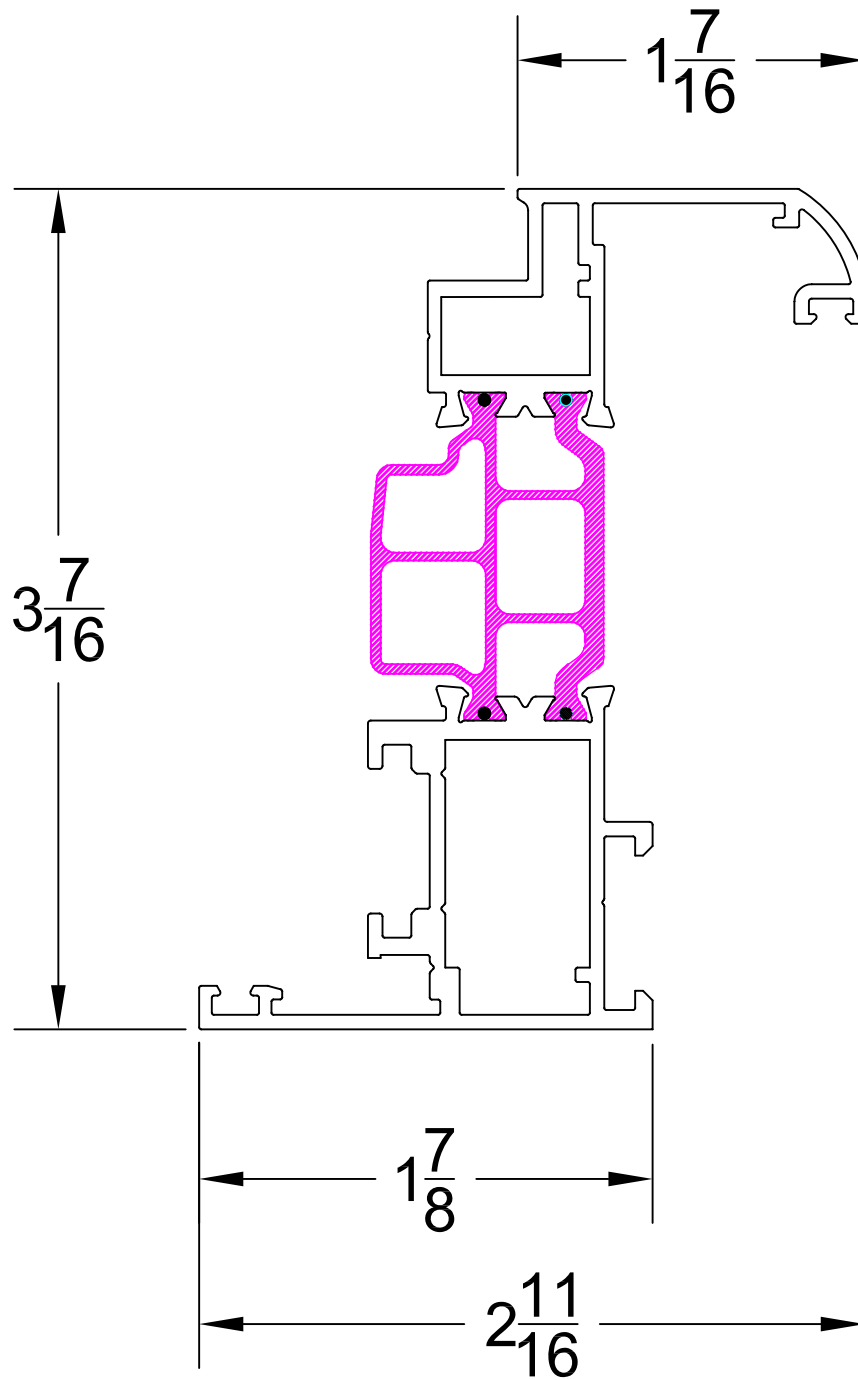


EU400 SERIES, INSWING, TILT & TURN

28 Edgeboro Rd, East Brunswick, NJ 08816
Phone: (732)238-7100 Fax: (732)322-4668

DATE 10/05/18

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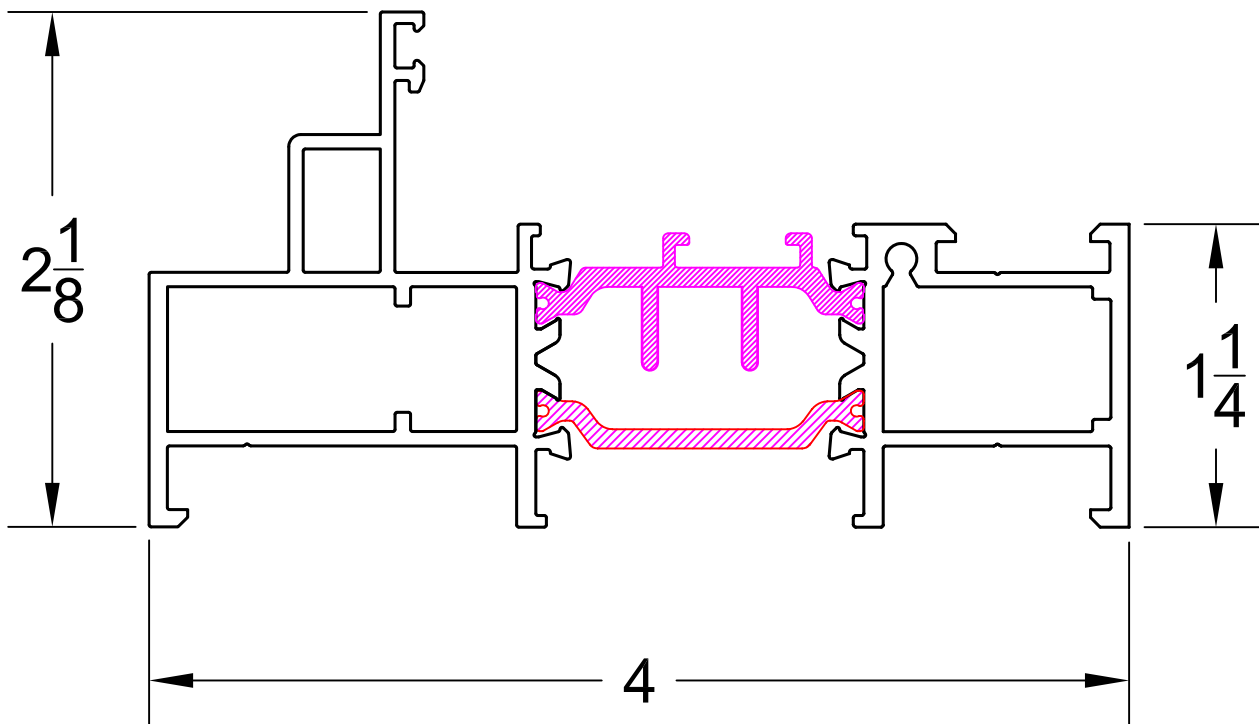
EU400 SERIES, SASH AB003

28 Edgeboro Rd, East Brunswick, NJ 08816
Phone: (732)238-7100 Fax: (732)322-4668
Page 25 of 26

DATE

10/05/18

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