

**NFRC U-FACTOR, SHGC / VT,  
CONDENSATION RESISTANCE  
COMPUTER SIMULATION REPORT**

**Rendered to:**

**EARTHWISE GROUP, L.L.C.**

**SERIES/MODEL: 143.000 PW  
145.000 PW**

***Baseline Product for Validation Testing***

Series Model: **143.000 PW**

Unit Size: Width: 23.625" Height: 59"

**Simulated U-Factor: 0.310**

**Glazing Information**

<i>Layer 1:</i>	SS Guardian RLE 71/38 (e=0.027,#2)
<i>Gap 1:</i>	0.234" Edgetech Super Spacer (ZF-S) - Air Fill
<i>Layer 2:</i>	SS Guardian RLE 71/38 (e=0.027,#4)
<i>Gap 2:</i>	0.234" Edgetech Super Spacer (ZF-S) - Air Fill
<i>Layer 3:</i>	SS Clear

**Reinforcement Option Description**

<i>Location</i>	<i>Material</i>
None	

**Report No.: 56109.02-116-45  
Report Date: 04/01/05  
Expiration Date: 03/23/09  
Revision Date: 04/28/05**

**NFRC U-FACTOR, SHGC / VT, CONDENSATION RESISTANCE  
COMPUTER SIMULATION REPORT**

Rendered to:

EARTHWISE GROUP, L.L.C.  
107 Pierce Road  
Clifton Park, New York 12065

Report No.:	56109.02-116-45
Simulation Date:	03/23/05
Report Date:	04/01/05
Expiration Date:	03/23/09
Revision Date:	04/28/05

**Project Summary:** Architectural Testing, Inc. (ATI) was contracted to perform U-Factor, Solar Heat Gain Coefficient, Visible Transmittance, and Condensation Resistance\* computer simulations in accordance with the National Fenestration Rating Council (NFRC). The products were evaluated in full compliance with NFRC requirements to the standards listed

*\*NFRC's Condensation Resistance rating is NOT equivalent to a Condensation Resistance Factor (CRF) determined in accordance with AAMA 1503.*

**Standards:**

- NFRC 100-2004: Procedure for Determining Fenestration Product U-Factors*
- NFRC 200-2004: Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence*
- NFRC 500-2004: Procedure for Determining Fenestration Product Condensation Resistance Values*

**Software:**

- Frame and Edge Modeling:** THERM 5.2.14
- Center-of-Glass Modeling:** WINDOW 5.2.17
- Total Product Calculations:** WINDOW 5.2.17
- Spectral Data Library:** 14.1

**Simulation Specimen Description:**

<b>Series/Model:</b>	143.000 PW	145.000 PW
<b>Type:</b>	Fixed	
<b>Frame Material:</b>	Vinyl (VY)	
<b>Sash Material:</b>	Not Applicable (N)	
<b>Width:</b>	1200 mm	
<b>Height:</b>	1500 mm	

**Technical Interpretations:**

**U-factor:** None  
**SHGC:** None

**Modeling Assumptions:**

- U-factor:**
1. The 143.000 PW and the 145.000 PW are individual product lines and can be grouped within the same validation matrix according to NFRC 100-2004 Section 4.2.1 (J).
  2. The 3/16" X 9/16", 3/16" X 5/8", 3/16" X 3/4", 1/4" X 5/8" Rectangular Muntins, 5.5mm X 18mm, 8mm X 18mm, 8mm X 25mm, 0.313" X 0.725" Contour Muntins, 7/16" X 3/8" Square Muntin, 5.9mm X 7.95mm Brass Caming Muntins were grouped for simulation purposes. The 7/16" X 3/8" Square Muntin was the group leader.
  3. Tempered glass is simulated as clear annealed per NFRC 100-2004.

- SHGC:**
1. Tempered glass is simulated as clear annealed per NFRC 200-2004.

**Specialty Products Table:** The specialty products method allow the manufacturer to determine the overall product SHGC and VT for any glazing option. The center of glass SHGC and/or VT must be determined using WINDOW 5.2. The method gives overall product SHGC and VT indexed on center of glass properties.

<i>143.000 PW</i>	No Dividers	Dividers < 1"	Dividers >= 1"
SHGC <sub>0</sub>	0.004	0.007	0.010
SHGC <sub>1</sub>	0.823	0.739	0.660
VT <sub>0</sub>	0.000	0.000	0.000
VT <sub>1</sub>	0.818	0.732	0.650

<i>145.000 PW</i>	No Dividers	Dividers < 1"	Dividers >= 1"
SHGC <sub>0</sub>	0.004	0.007	0.010
SHGC <sub>1</sub>	0.823	0.739	0.660
VT <sub>0</sub>	0.000	0.000	0.000
VT <sub>1</sub>	0.819	0.732	0.651

$$SHGC_c = SHGC_0 + SHGC_c (SHGC_1 - SHGC_0)$$

$$VT_c = VT_0 + VT_c (VT_1 - VT_0)$$

**Appendices:** The following appendices contain material required by NFRC 100-2004, NFRC 200-2004, and NFRC 500-2004.

- A. Drawings and Bills of Material used in simulation

### Spacer Option Description

<i>Spacer Type</i>	<i>Sealant</i>		
	<i>Primary</i>	<i>Secondary</i>	<i>Dessicant</i>
PPG Intercept Spacer	Butyl Rubber	Butyl Rubber	Yes
Edgetech Super Spacer	Butyl Rubber	None	No
TruSeal DuraSeal Spacer	Butyl Rubber	Butyl Rubber	No
Aluminum Swiggle Spacer	Butyl Rubber	Butyl Rubber	No
Cardinal XL Edge Spacer	Silicone	PIB	Yes

### Grid Option Description

<i>Grid Size</i>	<i>Grid Type</i>	<i>Grid Pattern</i>
3/16" X 9/16"	Allmetal Rectangular Muntin	4H x 3V
3/16" X 5/8"	Allmetal Rectangular Muntin	4H x 3V
3/16" X 3/4"	Allmetal Rectangular Muntin	4H x 3V
1/4" X 5/8"	Allmetal Rectangular Muntin	4H x 3V
5.5mm X 18mm	Allmetal Contour Muntin	4H x 3V
8mm X 18mm	Allmetal Contour Muntin	4H x 3V
8mm X 25mm	Allmetal Contour Muntin	4H x 3V
0.313" X 0.725"	Allmetal Contour Muntin	4H x 3V
7/16" X 3/8"	Square Muntin	4H x 3V
5.9mm X 7.95mm	Brass Caming Muntin	4H x 3V

### Reinforcement Option Description

<i>Location</i>	<i>Material</i>
None	

### Gas Filling Technique Description

<i>Fill Type</i>	<i>Method</i>
90% Argon	Single Probe
95% Argon	Dual Probe
90% Krypton	Dual Probe

### Edge-of-Glass Construction

<i>Interior Condition</i>	PVC glazing bead with flexible vinyl fin against glass
<i>Exterior Condition</i>	Foam tape between sash leg and glass

### Weatherstripping

<i>Type</i>	<i>Qty.</i>	<i>Location</i>
None		

**Finish**

<i>Interior Condition</i>	White PVC
<i>Exterior Condition</i>	White PVC

**Hardware** (*If modeling is required, continuous items are listed below*)

<i>Type</i>	<i>Qty.</i>	<i>Location</i>
None		

**Sealing Rules** (*To prevent air infiltration*)

Tape was applied to all interior sash crack locations.
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**U-Factor / CR**  
**143.000 PW**

		<i>PPG Intercept Spacer</i>			
		<i>No Grids</i>		<i>Grids</i>	
<b>Option Description</b>		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
1	Clear / Clear - SS,DS - 3/4" IG	0.47	44	0.48	44
2	SS Clear / DS Clear - 3/4" IG	0.47	44	0.49	44
3	Clear / Clear - 5m - 3/4" IG	0.48	42	0.51	42
4	035 / Clear - SS,DS - 3/4" IG	0.33	56	0.35	56
5	035 / Clear - 5m - 3/4" IG	0.35	52	0.39	52
6	035 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	59	0.31	59
7	035 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	55	0.34	56
8	041 / Clear w/ 90% Argon - DS - 3/4" IG	0.29	58	0.32	58
9	041 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	55	0.34	55
10	027 / Clear - SS,DS - 3/4" IG	0.32	56	0.34	56
11	027 / Clear - 5m - 3/4" IG	0.34	52	0.39	52
12	027 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	59	0.30	59
13	027 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	56	0.34	56

**U-Factor / CR**  
**143.000 PW**

Option Description		<i>Super Spacer</i>			
		<i>No Grids</i>		<i>Grids</i>	
		U-Factor	CR	U-Factor	CR
14	Clear / Clear - SS,DS - 3/4" IG	0.46	46	0.48	46
15	DS Clear / SS Clear - 3/4" IG	0.46	45	0.48	45
16	DS Clear / SS Clear w/ 90% Argon - 3/4" IG	0.44	47	0.46	47
17	Clear / Clear - 5m - 3/4" IG	0.48	44	0.50	44
18	204 / Clear - 5m - 3/4" IG	0.38	50	0.42	50
19	204 / Clear w/ 90% Argon - 5m - 3/4" IG	0.34	54	0.37	54
20	154 / Clear - DS - 3/4" IG	0.35	54	0.38	54
21	154 / Clear - 5m - 3/4" IG	0.37	51	0.41	51
22	154 / Clear w/ 95% Argon- DS - 3/4" IG	0.31	58	0.34	58
23	154 / Clear w/ 95% Argon - 5m - 3/4" IG	0.33	55	0.36	55
24	035 / Clear - SS,DS - 3/4" IG	0.32	58	0.34	58
25	035 / Clear - 5m - 3/4" IG	0.34	53	0.38	54
26	035 / Clear w/ 90% Argon- SS,DS - 3/4" IG	0.28	61	0.30	61
27	035 / Clear w/ 90% Argon - 5m - 3/4" IG	0.29	57	0.33	57
28	041 / Clear - SS,DS - 3/4" IG	0.32	57	0.34	57
29	041 / Clear - 5m - 3/4" IG	0.34	53	0.38	53
30	041 / Clear w/ 90% Argon- SS,DS - 3/4" IG	0.29	61	0.30	61
31	041 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	57	0.33	57
32	027 / Clear - SS,DS - 3/4" IG	0.32	58	0.34	58
33	027 / Clear - 5m - 3/4" IG	0.34	54	0.38	54
34	027 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.28	61	0.30	61
35	027 / Clear w/ 90% Argon - 5m - 3/4" IG	0.29	58	0.33	58
36	027 / 027 w/ 90% Argon - SS,DS - 3/4" IG	0.28	62	0.29	62

**U-Factor / CR**  
**143.000 PW**

<b>Option Description</b>		<b>Duraseal Spacer</b>			
		<b>No Grids</b>		<b>Grids</b>	
		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
37	Clear / Clear - SS,DS - 3/4" IG	0.47	45	0.48	45
38	Clear / Clear - 5m - 3/4" IG	0.48	43	0.50	43
39	044 / Clear - SS,DS - 3/4" IG	0.33	57	0.35	57
40	044 / Clear - 5m - 3/4" IG	0.35	53	0.39	53
41	044 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	61	0.31	61
42	044 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	57	0.34	57
43	041 / Clear - SS,DS - 3/4" IG	0.32	57	0.35	57
44	041 / Clear - 5m - 3/4" IG	0.34	53	0.38	53
45	041 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	61	0.31	61
46	041 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	57	0.34	57
47	027 / Clear w/ 90% Argon - DS - 3/4" IG	0.28	60	0.31	60
48	027 / Clear w/ 90% Argon - 5m - 3/4" IG	0.29	58	0.33	58

<b>Option Description</b>		<b>Aluminum Swiggle Spacer</b>			
		<b>No Grids</b>		<b>Grids</b>	
		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
49	Clear / Clear - SS,DS - 3/4" IG	0.47	45	0.48	45
50	041 / Clear - SS,DS - 3/4" IG	0.33	56	0.35	56
51	041 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	60	0.31	60
52	027 / Clear - SS,DS - 3/4" IG	0.32	57	0.34	57
53	027 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	60	0.30	60



**U-Factor / CR**  
**143.000 PW**

		<b>Cardinal XL Edge Spacer</b>			
		<b>No Grids</b>		<b>Grids</b>	
<b>Option Description</b>		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
54	Clear / Clear - DS - 3/4" IG	0.46	44	0.49	44
55	Clear / Clear - 5m - 3/4" IG	0.48	43	0.50	43
56	041 / Clear w/ 90% Argon - DS - 3/4" IG	0.29	59	0.31	59
57	041 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	56	0.34	56

		<b>Triple Glazed Super Spacer</b>			
		<b>No Grids</b>		<b>Grids</b>	
<b>Option Description</b>		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
58	Clear / Clear / Clear - SS - 3/4" IG	0.39	52	-	-
59	027 / Clear / Clear - SS - 3/4" IG	0.33	58	-	-
60	027 / Clear / Clear w/ 90% Argon - SS - 3/4" IG	0.29	62	-	-
61	027 / 027 / Clear - SS - 3/4" IG	0.29	61	-	-
62	027 / 027 / Clear w/ 90% Argon - SS - 3/4" IG	0.25	66	-	-

**U-Factor / CR**  
**143.000 PW**

		<i>Super Spacer Foam Filled</i>			
		<i>No Grids</i>		<i>Grids</i>	
<b>Option Description</b>		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
63	035 / Clear w/ 90% Argon- SS,DS - 3/4" IG	0.26	61	0.28	61
64	035 / Clear w/ 90% Argon - 5m - 3/4" IG	0.27	57	0.31	57
65	027 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.26	61	0.28	61
66	027 / Clear w/ 90% Argon - 5m - 3/4" IG	0.27	57	0.31	57

**Notes :**

1. All options available with bronze and grey tints on exterior surface.
2. "5m" stands for 3/16" glass thickness
3. Low-E's used:
  - 0.035 = PPG Solarban 60
  - 0.041 = Cardinal E172
  - 0.027 = Guardian RLE 71/38
  - 0.204 = AFG Comfort E2
  - 0.154 = LOF Advantage
  - 0.044 = Guardian PPII

**U-Factor / CR**  
**145.000 PW**

		<i>PPG Intercept Spacer</i>			
		<i>No Grids</i>		<i>Grids</i>	
<b>Option Description</b>		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
1	Clear / Clear - SS,DS - 3/4" IG	0.47	44	0.48	44
2	SS Clear / DS Clear - 3/4" IG	0.47	44	0.48	44
3	Clear / Clear - 5m - 3/4" IG	0.48	42	0.51	42
4	035 / Clear - SS,DS - 3/4" IG	0.32	56	0.34	56
5	035 / Clear - 5m - 3/4" IG	0.34	52	0.39	52
6	035 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	59	0.31	59
7	035 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	55	0.34	55
8	041 / Clear w/ 90% Argon - DS - 3/4" IG	0.29	58	0.32	58
9	041 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	55	0.34	55
10	027 / Clear - SS,DS - 3/4" IG	0.32	56	0.34	56
11	027 / Clear - 5m - 3/4" IG	0.34	52	0.38	52
12	027 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	59	0.30	59
13	027 / Clear w/ 90% Argon - 5m - 3/4" IG	0.29	56	0.33	56

**U-Factor / CR**  
**145.000 PW**

Option Description		<i>Super Spacer</i>			
		<i>No Grids</i>		<i>Grids</i>	
		U-Factor	CR	U-Factor	CR
14	Clear / Clear - SS,DS - 3/4" IG	0.46	46	0.48	46
15	DS Clear / SS Clear - 3/4" IG	0.46	45	0.48	45
16	DS Clear / SS Clear w/ 90% Argon - 3/4" IG	0.44	47	0.46	47
17	Clear / Clear - 5m - 3/4" IG	0.48	44	0.50	44
18	204 / Clear - 5m - 3/4" IG	0.38	50	0.41	50
19	204 / Clear w/ 90% Argon - 5m - 3/4" IG	0.34	54	0.37	54
20	154 / Clear - DS - 3/4" IG	0.35	54	0.38	54
21	154 / Clear - 5m - 3/4" IG	0.37	51	0.41	51
22	154 / Clear w/ 95% Argon- DS - 3/4" IG	0.31	58	0.34	58
23	154 / Clear w/ 95% Argon - 5m - 3/4" IG	0.32	55	0.36	55
24	035 / Clear - SS,DS - 3/4" IG	0.32	58	0.34	58
25	035 / Clear - 5m - 3/4" IG	0.34	54	0.38	54
26	035 / Clear w/ 90% Argon- SS,DS - 3/4" IG	0.28	61	0.30	61
27	035 / Clear w/ 90% Argon - 5m - 3/4" IG	0.29	57	0.33	57
28	041 / Clear - SS,DS - 3/4" IG	0.32	57	0.34	57
29	041 / Clear - 5m - 3/4" IG	0.34	53	0.38	53
30	041 / Clear w/ 90% Argon- SS,DS - 3/4" IG	0.28	61	0.30	61
31	041 / Clear w/ 90% Argon - 5m - 3/4" IG	0.29	57	0.33	57
32	027 / Clear - SS,DS - 3/4" IG	0.32	58	0.34	58
33	027 / Clear - 5m - 3/4" IG	0.34	54	0.38	54
34	027 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.28	61	0.30	61
35	027 / Clear w/ 90% Argon - 5m - 3/4" IG	0.29	58	0.33	58
36	027 / 027 w/ 90% Argon - SS,DS - 3/4" IG	0.27	62	0.29	62

**U-Factor / CR**  
**145.000 PW**

<b>Option Description</b>		<b>Duraseal Spacer</b>			
		<b>No Grids</b>		<b>Grids</b>	
		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
37	Clear / Clear - SS,DS - 3/4" IG	0.46	45	0.48	45
38	Clear / Clear - 5m - 3/4" IG	0.48	43	0.50	43
39	044 / Clear - SS,DS - 3/4" IG	0.32	57	0.34	57
40	044 / Clear - 5m - 3/4" IG	0.34	53	0.38	53
41	044 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	60	0.30	60
42	044 / Clear w/ 90% Argon - 5m - 3/4" IG	0.28	57	0.33	57
43	041 / Clear - SS,DS - 3/4" IG	0.32	57	0.34	57
44	041 / Clear - 5m - 3/4" IG	0.34	53	0.38	53
45	041 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	61	0.30	61
46	041 / Clear w/ 90% Argon - 5m - 3/4" IG	0.29	57	0.33	57
47	027 / Clear w/ 90% Argon - DS - 3/4" IG	0.28	60	0.31	60
48	027 / Clear w/ 90% Argon - 5m - 3/4" IG	0.29	58	0.33	58

<b>Option Description</b>		<b>Aluminum Swiggle Spacer</b>			
		<b>No Grids</b>		<b>Grids</b>	
		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
49	Clear / Clear - SS,DS - 3/4" IG	0.47	45	0.48	45
50	041 / Clear - SS,DS - 3/4" IG	0.32	56	0.34	56
51	041 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.29	60	0.31	60
52	027 / Clear - SS,DS - 3/4" IG	0.32	57	0.34	57
53	027 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.28	60	0.30	60

**U-Factor / CR**  
**145.000 PW**

		<b>Cardinal XL Edge Spacer</b>			
		<b>No Grids</b>		<b>Grids</b>	
<b>Option Description</b>		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
54	Clear / Clear - DS - 3/4" IG	0.46	44	0.49	44
55	Clear / Clear - 5m - 3/4" IG	0.48	43	0.50	43
56	041 / Clear w/ 90% Argon - DS - 3/4" IG	0.28	59	0.31	59
57	041 / Clear w/ 90% Argon - 5m - 3/4" IG	0.30	56	0.33	56

		<b>Triple Glazed Super Spacer</b>			
		<b>No Grids</b>		<b>Grids</b>	
<b>Option Description</b>		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
58	Clear / Clear / Clear - SS - 3/4" IG	0.39	52	-	-
59	027 / Clear / Clear - SS - 3/4" IG	0.33	58	-	-
60	027 / Clear / Clear w/ 90% Argon - SS - 3/4" IG	0.29	62	-	-
61	027 / 027 / Clear - SS - 3/4" IG	0.29	61	-	-
62	027 / 027 / Clear w/ 90% Argon - SS - 3/4" IG	0.25	66	-	-

**U-Factor / CR**  
**145.000 PW**

Option Description		<i>Super Spacer Foam Filled</i>			
		<i>No Grids</i>		<i>Grids</i>	
		<b>U-Factor</b>	<b>CR</b>	<b>U-Factor</b>	<b>CR</b>
63	035 / Clear w/ 90% Argon- SS,DS - 3/4" IG	0.26	61	0.28	61
64	035 / Clear w/ 90% Argon - 5m - 3/4" IG	0.27	57	0.31	57
65	027 / Clear w/ 90% Argon - SS,DS - 3/4" IG	0.26	61	0.28	61
66	027 / Clear w/ 90% Argon - 5m - 3/4" IG	0.27	57	0.31	57

**Notes :**

1. All options available with bronze and grey tints on exterior surface.
2. "5m" stands for 3/16" glass thickness
3. Low-E's used:
  - 0.035 = PPG Solarban 60
  - 0.041 = Cardinal E172
  - 0.027 = Guardian RLE 71/38
  - 0.204 = AFG Comfort E2
  - 0.154 = LOF Advantage
  - 0.044 = Guardian PPII

**SHGC/VT**  
**143.000 PW**

Option Description	SHGC			VT		
	No Grids	√	∧	No Grids	√	∧
1 Clear / Clear - SS,DS	0.65	0.58	0.52	0.67	0.60	0.53
2 Solar Bronze / Clear - SS,DS	0.52	0.47	0.42	0.50	0.44	0.39
3 Solar Gray / Clear - SS,DS	0.48	0.43	0.39	0.45	0.40	0.36
4 Clear / Clear - 5m	0.62	0.56	0.50	0.66	0.59	0.52
5 Solar Bronze / Clear - 5m	0.46	0.42	0.37	0.43	0.38	0.34
6 Solar Gray / Clear - 5m	0.42	0.38	0.34	0.37	0.33	0.29
7 035 / Clear - SS,DS	0.32	0.29	0.26	0.59	0.53	0.47
8 Clear / 035 - SS,DS	0.38	0.35	0.31	0.59	0.53	0.47
9 Solar Bronze / 035 - SS,DS	0.31	0.28	0.25	0.44	0.39	0.35
10 Solar Gray / 035 - SS,DS	0.29	0.26	0.24	0.40	0.35	0.31
11 035 / Clear - 5m	0.32	0.29	0.26	0.58	0.52	0.46
12 Clear / 035 - 5m	0.37	0.34	0.30	0.58	0.52	0.46
13 Solar Bronze / 035 - 5m	0.28	0.26	0.23	0.38	0.34	0.30
14 Solar Gray / 035 - 5m	0.26	0.24	0.21	0.33	0.29	0.26
15 041 / Clear - SS,DS	0.34	0.31	0.28	0.59	0.53	0.47
16 Clear / 041 - SS,DS	0.41	0.37	0.33	0.59	0.53	0.47
17 Solar Bronze / 041 - SS,DS	0.33	0.30	0.27	0.44	0.39	0.35
18 Solar Gray / 041 - SS,DS	0.31	0.28	0.25	0.39	0.35	0.31
19 041 / Clear - 5m	0.34	0.31	0.28	0.58	0.52	0.46
20 Clear / 041 - 5m	0.40	0.36	0.32	0.58	0.52	0.46
21 Solar Bronze / 041 - 5m	0.30	0.27	0.24	0.38	0.34	0.30
22 Solar Gray / 041 - 5m	0.27	0.25	0.22	0.33	0.29	0.26
23 027 / Clear - SS,DS	0.32	0.29	0.26	0.58	0.52	0.46
24 Clear / 027 - SS,DS	0.40	0.36	0.32	0.58	0.52	0.46
25 Solar Bronze - 027 - SS,DS	0.32	0.29	0.26	0.43	0.38	0.34
26 Solar Gray / 027 - SS,DS	0.30	0.27	0.24	0.39	0.35	0.31
27 027 / Clear - 5m	0.32	0.29	0.26	0.57	0.51	0.45
28 Clear / 027 - 5m	0.39	0.35	0.31	0.57	0.51	0.45
29 Solar Bronze / 027 - 5m	0.29	0.26	0.24	0.37	0.33	0.30
30 Solar Gray / 027 - 5m	0.27	0.24	0.22	0.32	0.29	0.25
31 204 / Clear - 5m	0.53	0.47	0.42	0.61	0.54	0.48



**SHGC/VT**  
**143.000 PW**

Option Description	SHGC			VT		
	No Grids	√	∧	No Grids	√	∧
32 Clear / 204 - 5m	0.58	0.52	0.47	0.61	0.54	0.48
33 Solar Bronze / 204 - 5m	0.42	0.38	0.34	0.40	0.36	0.32
34 Solar Gray / 204 - 5m	0.38	0.34	0.31	0.34	0.31	0.27
35 154 / Clear - SS,DS	0.54	0.48	0.43	0.61	0.55	0.49
36 Clear / 154 - SS,DS	0.59	0.53	0.47	0.61	0.55	0.49
37 Solar Bronze / 154 - SS,DS	0.47	0.42	0.38	0.45	0.41	0.36
38 Solar Gray / 154 - SS,DS	0.43	0.39	0.35	0.41	0.37	0.33
39 154 / Clear - 5m	0.52	0.47	0.42	0.61	0.54	0.48
40 Clear / 154 - 5m	0.56	0.50	0.45	0.61	0.54	0.48
41 Solar Bronze / 154 - 5m	0.42	0.37	0.34	0.40	0.36	0.32
42 Solar Gray / 154 - 5m	0.37	0.34	0.30	0.34	0.31	0.27
43 044 / Clear - SS,DS	0.34	0.31	0.28	0.56	0.50	0.45
44 Clear / 044 - SS,DS	0.39	0.35	0.32	0.56	0.50	0.45
45 Solar Bronze - 044 - SS,DS	0.32	0.29	0.26	0.42	0.37	0.33
46 Solar Gray / 044 - SS,DS	0.30	0.27	0.24	0.38	0.34	0.30
47 044 / Clear - 5m	0.34	0.30	0.27	0.56	0.50	0.44
48 Clear / 044 - 5m	0.38	0.34	0.31	0.56	0.50	0.44
49 Solar Bronze / 044 - 5m	0.29	0.26	0.23	0.36	0.32	0.29
50 Solar Gray / 044 - 5m	0.26	0.24	0.22	0.31	0.28	0.25
51 Clear / Clear / Clear - SS	0.59	0.53	0.47	0.62	0.56	0.49
52 027 / Clear / Clear - SS	0.31	0.28	0.25	0.54	0.48	0.43
53 027 / 027 / Clear - SS	0.26	0.24	0.22	0.46	0.41	0.37

**Notes :**

1. "5m" stands for 3/16" glass thickness
3. Low-E's used:
  - 0.035 = PPG Solarban 60
  - 0.041 = Cardinal E172
  - 0.027 = Guardian RLE 71/38
  - 0.204 = AFG Comfort E2
  - 0.154 = LOF Advantage
  - 0.044 = Guardian PPII

**SHGC/VT**  
**145.000 PW**

Option Description	SHGC			VT		
	No Grids	√	∧	No Grids	√	∧
1 Clear / Clear - SS,DS	0.65	0.58	0.52	0.67	0.60	0.53
2 Solar Bronze / Clear - SS,DS	0.52	0.47	0.42	0.50	0.44	0.39
3 Solar Gray / Clear - SS,DS	0.48	0.43	0.39	0.45	0.40	0.36
4 Clear / Clear - 5m	0.63	0.56	0.50	0.66	0.59	0.52
5 Solar Bronze / Clear - 5m	0.46	0.42	0.37	0.43	0.38	0.34
6 Solar Gray / Clear - 5m	0.42	0.38	0.34	0.37	0.33	0.29
7 035 / Clear - SS,DS	0.32	0.29	0.26	0.59	0.53	0.47
8 Clear / 035 - SS,DS	0.38	0.35	0.31	0.59	0.53	0.47
9 Solar Bronze / 035 - SS,DS	0.31	0.28	0.25	0.44	0.39	0.35
10 Solar Gray / 035 - SS,DS	0.29	0.26	0.24	0.40	0.35	0.31
11 035 / Clear - 5m	0.32	0.29	0.26	0.58	0.52	0.46
12 Clear / 035 - 5m	0.37	0.34	0.30	0.58	0.52	0.46
13 Solar Bronze / 035 - 5m	0.28	0.26	0.23	0.38	0.34	0.30
14 Solar Gray / 035 - 5m	0.26	0.24	0.21	0.33	0.29	0.26
15 041 / Clear - SS,DS	0.34	0.31	0.28	0.59	0.53	0.47
16 Clear / 041 - SS,DS	0.41	0.37	0.33	0.59	0.53	0.47
17 Solar Bronze / 041 - SS,DS	0.33	0.30	0.27	0.44	0.39	0.35
18 Solar Gray / 041 - SS,DS	0.31	0.28	0.25	0.39	0.35	0.31
19 041 / Clear - 5m	0.34	0.31	0.28	0.58	0.52	0.46
20 Clear / 041 - 5m	0.40	0.36	0.32	0.58	0.52	0.46
21 Solar Bronze / 041 - 5m	0.30	0.27	0.24	0.38	0.34	0.30
22 Solar Gray / 041 - 5m	0.27	0.25	0.22	0.33	0.29	0.26
23 027 / Clear - SS,DS	0.32	0.29	0.26	0.58	0.52	0.46
24 Clear / 027 - SS,DS	0.40	0.36	0.32	0.58	0.52	0.46
25 Solar Bronze - 027 - SS,DS	0.32	0.29	0.26	0.43	0.38	0.34
26 Solar Gray / 027 - SS,DS	0.30	0.27	0.24	0.39	0.35	0.31
27 027 / Clear - 5m	0.32	0.29	0.26	0.57	0.51	0.45
28 Clear / 027 - 5m	0.39	0.35	0.31	0.57	0.51	0.45
29 Solar Bronze / 027 - 5m	0.29	0.26	0.24	0.37	0.33	0.30
30 Solar Gray / 027 - 5m	0.27	0.24	0.22	0.32	0.29	0.25
31 204 / Clear - 5m	0.53	0.47	0.42	0.61	0.54	0.48

**SHGC/VT**  
**145.000 PW**

Option Description	SHGC			VT		
	No Grids	√	∧	No Grids	√	∧
32 Clear / 204 - 5m	0.58	0.52	0.47	0.61	0.54	0.48
33 Solar Bronze / 204 - 5m	0.42	0.38	0.34	0.40	0.36	0.32
34 Solar Gray / 204 - 5m	0.38	0.34	0.31	0.34	0.31	0.27
35 154 / Clear - SS,DS	0.54	0.48	0.43	0.61	0.55	0.49
36 Clear / 154 - SS,DS	0.59	0.53	0.47	0.61	0.55	0.49
37 Solar Bronze / 154 - SS,DS	0.47	0.42	0.38	0.45	0.41	0.36
38 Solar Gray / 154 - SS,DS	0.43	0.39	0.35	0.41	0.37	0.33
39 154 / Clear - 5m	0.52	0.47	0.42	0.61	0.54	0.48
40 Clear / 154 - 5m	0.56	0.50	0.45	0.61	0.54	0.48
41 Solar Bronze / 154 - 5m	0.42	0.37	0.34	0.40	0.36	0.32
42 Solar Gray / 154 - 5m	0.37	0.34	0.30	0.34	0.31	0.27
43 044 / Clear - SS,DS	0.34	0.31	0.28	0.57	0.51	0.45
44 Clear / 044 - SS,DS	0.39	0.35	0.32	0.57	0.51	0.45
45 Solar Bronze - 044 - SS,DS	0.32	0.29	0.26	0.42	0.37	0.33
46 Solar Gray / 044 - SS,DS	0.29	0.27	0.24	0.38	0.34	0.30
47 044 / Clear - 5m	0.34	0.30	0.27	0.56	0.50	0.44
48 Clear / 044 - 5m	0.38	0.34	0.31	0.56	0.50	0.44
49 Solar Bronze / 044 - 5m	0.29	0.26	0.23	0.36	0.32	0.29
50 Solar Gray / 044 - 5m	0.26	0.24	0.22	0.31	0.28	0.25
51 Clear / Clear / Clear - SS	0.59	0.53	0.47	0.62	0.56	0.49
52 027 / Clear / Clear - SS	0.31	0.28	0.25	0.54	0.48	0.43
53 027 / 027 / Clear - SS	0.26	0.24	0.22	0.46	0.41	0.37

**Notes :**

1. "5m" stands for 3/16" glass thickness
3. Low-E's used:
  - 0.035 = PPG Solarban 60
  - 0.041 = Cardinal E172
  - 0.027 = Guardian RLE 71/38
  - 0.204 = AFG Comfort E2
  - 0.154 = LOF Advantage
  - 0.044 = Guardian PPII

This report is reissued in the name of Earthwise Group, L.L.C. through written authorization of Dayton Technologies to whom the original report was rendered. The original Dayton Report No. is 56109.01-116-45.

This simulation method does not include procedures to determine the Condensation Resistance due to either air movement through the specimen or solar radiation effects. As a consequence, the Condensation Resistance results obtained do not reflect performance which may be expected from field installations because they do not account for solar radiation, air leakage effects, and the thermal bridge effects that may occur due to the specific design and construction of the fenestration system opening. Therefore, it should be recognized that the Condensation Resistance results obtained from this simulation method are for controlled laboratory conditions and should only be used for fenestration product comparisons and as input to condensation resistance performance analyses, which also include solar, air leakage and thermal bridge effects.

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

Detailed drawings, simulation data disks, and a copy of this report will be retained by ATI for a period of four years. The above results are the exclusive property of the client so named herein and are applicable to the sample simulated. ATI is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The NFRC procedure requires that the computational results be verified through actual test results. This report does not constitute an opinion or endorsement by this laboratory. This report may not be reproduced except in full without the approval of ATI.

For ARCHITECTURAL TESTING, INC.:

SIMULATED BY:

REVIEWED BY:

---

Eric Leitner  
Simulation Technician

---

Michael J. Thoman  
Director - Simulations & Thermal Testing  
Simulator In Responsible Charge

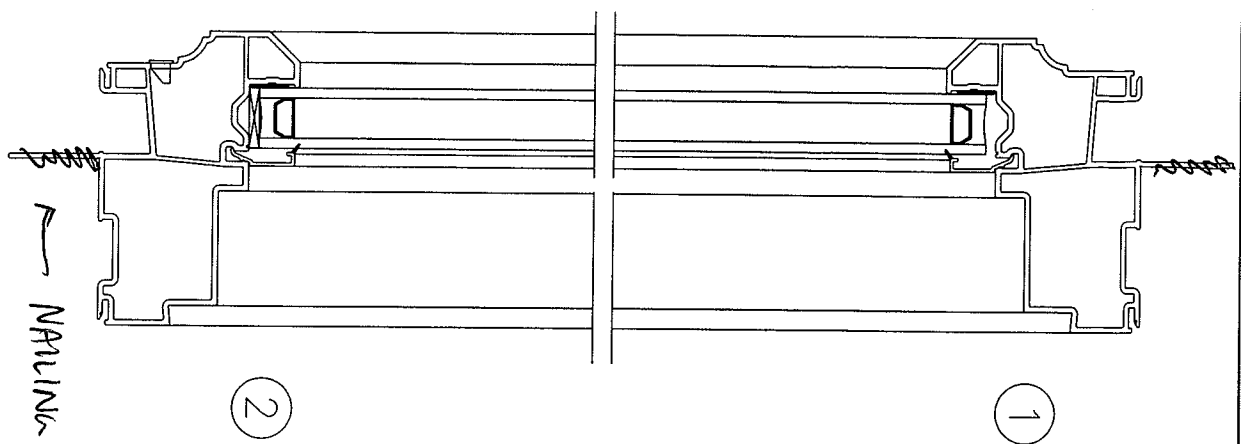
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56109.02-116-45

**Revision Log**

<b>Rev. #</b>	<b>Date</b>	<b>Page(s)</b>	<b>Revision(s)</b>
0	4/1/2005	All	Reissue .01 report to Earthwise Group, L.L.C. with only their glazing options
1	4/21/2005	All	Update Spectral Data to 14.1; Correct SHGC values
2	4/28/2005	Summary Pages	Correct grid info

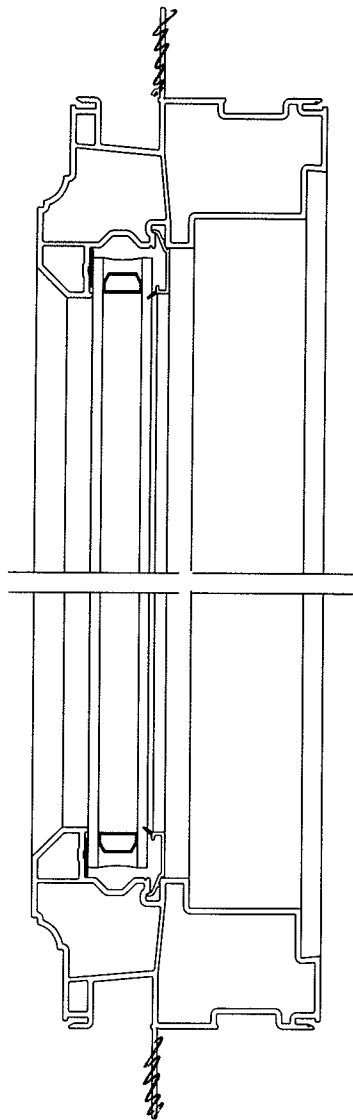
All drawings and Bills of Material used in simulating this product are enclosed in this Appendix.

**APPENDIX A**

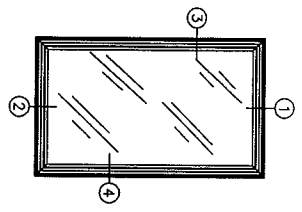


← NAILINK FIN NOT MODIFIED (TYP)

2



3



4

- NOTES:
1. This print contains proprietary information. Do not copy without express written consent of DAYTON TECHNOLOGIES.
  2. DAYTON TECHNOLOGIES reserves the right to change specifications. Assembly prints are intended to be guidelines only. See detail prints for actual construction.

<b>DAYTON TECHNOLOGIES</b>	
MODEL: DHD	Copyright 2000
SIZE: 143000 Picture Window	
DESIGN BY: CSB	10/28/99
REVISION BY: RMD	
SCALE: 1/1 1/2"	
143000PW	

REV	DATE	DESCRIPTION	BY



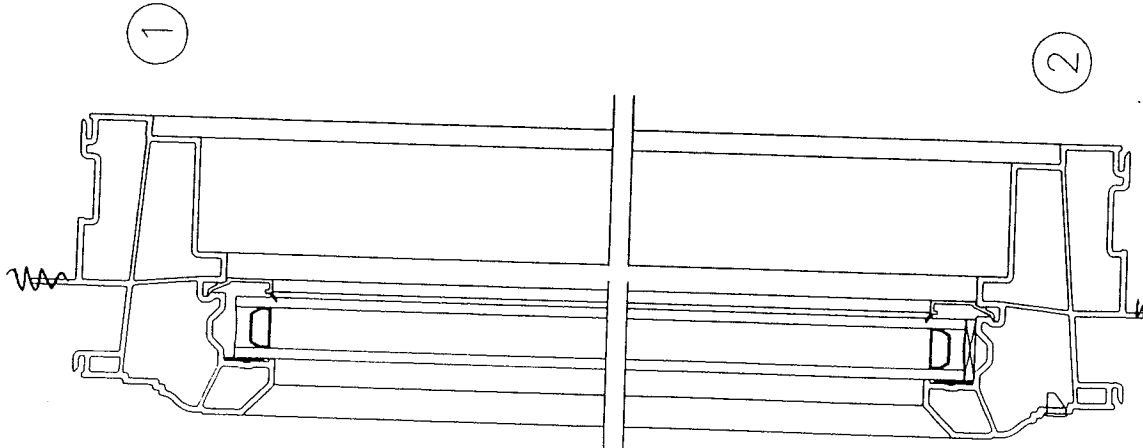
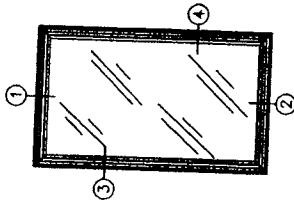
**Architectural Testing**

Test sample complies with these details.  
Deviations are noted.

Report# 56109  
Date 3/20/05 Tech ESL

MAINTAINED. CHANGES SHALL BE OPERATED BY THE DESIGN ACTIVITY.

REV. STATUS		REVISION HISTORY		APPROVED
REV.	SH	DESCRIPTION	DATE	TLN
A	1	UPDATED FRAME	03/08/09	E
-	-	-	-	-



③  
 NAILING FIN  
 NOT MODELLED (TYP.)

LAYOUT DRAWING

DESIGNER	DATE	PROJECT BY	DATE	DATE	DATE	DATE	DATE	DATE	DATE
CH	02/02/02	CH	02/02/02	CH	02/02/02	CH	02/02/02	CH	02/02/02
UNLESS OTHERWISE SPECIFIED		DIM ARE IN INCHES		DIM ON ANGLE ± 1°		2 PL. 1/8" DIA. PER INTERPRET DIM AND 1/8" PER ASKS. TIA-SH - 1294		THIRD ANGLE PROJECTION	
DAYTON TECHNOLOGIES		DAYTON TECHNOLOGIES		DAYTON TECHNOLOGIES		DAYTON TECHNOLOGIES		DAYTON TECHNOLOGIES	
145000PV		145000PV		145000PV		145000PV		145000PV	

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Architectural Testing  
 To view this drawing with these details,  
 please refer to the notes.  
 Report# 56109  
 Date 3/30/05 Tech ESL



143.000 PW FRAME - BILL OF MATERIALS					
ITEM NO.	DESCRIPTION	QUANTITY	PART NO.	FAB DWG. NO.	SOURCE
1	HEAD	1	P8687	P8687F01	A
2	SILL	1	P8687	P8687F02	A
3	JAMB	2	P8687	P8687F01	A
4	HORIZONTAL GLAZING BEAD	2	P8127	P8127F01	A
5	VERTICAL GLAZING BEAD	2	P8127	P8127F01	A
6					
7					
8	3/4" INSULATED GLASS	1	SBC2150		T
9	GLAZING TAPE	AS REQ'D	1/8" x 3/4"		W
10	SETTING BLOCKS (Refer to IG Supplier Guidelines)	AS REQ'D			RRR
11					
12	WEEP COVER	2	97-03-00-00		
13					
14	INSTALLATION PLUGS (R & R Only)	4	9946		D
15	INSTALLATION SCREWS (R & R Only)	4	#8 x 3" PPH		D
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

**DAYTON TECHNOLOGIES**  
 MONROE, OH  
 NAME: 143.000 PW  
 DWN BY: CRB  
 CHKD BY:  
 DWG NO: 143000PW  
 COPYRIGHT 2000  
 8/9/2000



**Architectural Testing**

Test sample complies with these details.  
 Deviations are noted.

Report# 56109  
 Date 3/30/05 Tech ESL

# 145.000 PW FRAME - BILL OF MATERIALS

ITEM NO.	DESCRIPTION	QUANTITY	PART NO.	FAB DWG. NO	SOURCE
1	HEAD	1	10008656 ✓	10008656F01	A
2	SILL	1	10008656	10008656F02	A
3	JAMB	2	10008656	10008656F01	A
4	HORIZONTAL GLAZING BEAD	2	10008127 ✓	P8127F01	A
5	VERTICAL GLAZING BEAD	2	10008127	P8127F01	A
6					
7					
8	3/4" INSULATED GLASS	1			
9	GLAZING TAPE	AS REQ'D	SBC2150		T
10	SETTING BLOCKS (Refer to IG Supplier Guidelin	AS REQ'D	1/8" x 3/4"		W
11					
12	WEEP COVER	2	97-03-00-00		RRR / D
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

Rev	Date	Description	By

<b>DAYTON TECHNOLOGIES</b>	
MONROE, OH	COPYRIGHT 2003
NAME: 145.000 PW	10/1/2003
DRAWN BY: CRB	145000PW
CHKD BY:	DWG. NO:



## Architectural Testing

Test sample complies with these details.  
Deviations are noted.

Report# 56109  
Date 3/30/05 Tech BL

**PROFILE: P8887**

REV	DESCRIPTION	DATE	ENG.
A	ADDED INTERNAL WALL	09/06/01	TAW

FITZ WITH:	

CONTROL DIMENSIONS		NOTED	
DIM	METH	MIN	MAX
A	V	.020	B
B	V	3.652	3.652
C	V	.922	.922
D	V	.128	.128
E	V	.195	.195
F	V	.020	B
G	V	.185	1.875
H	V	.020	B
I	V	.020	B
J	V	1.480	1.500
K	V	.020	B
L1	V	.025	0.35
M1	V	.050	0.70
N	V	3.220	3.280
O	V	1.168	1.188
P	V	.020	B
Q	V	2.470	2.500
R	V	.060	.070
S	G	.067/48	
T	G	.067/48	

REVISIONS

P8686, PB127, P5470  
IMPACT AREA

COLOR  VH  DS  EB   
 3 OTH CREME WHITE

PART WT. (LBS/FT)	RIGID	CAP	FLX	ALUM	STEEL	TOTAL
.772	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.772

THE FOLLOWING TOLERANCES APPLY

001 - 100	.005
101 - 500	1.00 - 1.500
501 - 1000	1.010 - 2.000
1001 - 5000	1.015 - 3.000
5001 - 10000	1.025 - 4.000
10001 - 50000	1.030 - 5.000
50001 - 100000	1.040 - 6.000
100001 - 500000	1.050 - 7.000
500001 - 1000000	1.060 - 8.000
1000001 - 5000000	1.070 - 9.000
5000001 - 10000000	1.080 - 10.000

NOTES:  
 1 EXTERIOR WALL THICKNESS CRITICAL TO BE MEASURED ON ALL 4 SIDES.  
 2 INTERIOR WALL THICKNESS REFERENCE.

REVISIONS		DESCRIPTION	DATE	ENG.
A	ADDED INTERNAL WALL		09/06/01	TAW

IMPACT AREA

DIM	METH	MIN	ENG	MAX	DIM	METH	MIN	ENG	MAX
A	V	.020	B		U				
B	V	3.652	3.652	3.652	V				
C	V	.922	.922	.922	W				
D	V	.128	.128	.128	X				
E	V	.195	.195	.195	Y				
F	V	.020	B		Z				
G	V	.185	1.875	1.875	AA				
H	V	.020	B		BB				
I	V	.020	B		CC				
J	V	1.480	1.500	1.520	DD				
K	V	.020	B		EE				
L1	V	.025	0.35	0.45	FF				
M1	V	.050	0.70	0.90	GG				
N	V	3.220	3.250	3.280	HH				
O	V	1.168	1.188	1.208	II				
P	V	.020	B		JJ				
Q	V	2.470	2.500	2.530	KK				
R	V	.060	.070	.080	LL				
S	G	.067/48			MM				
T	G	.067/48			NN				

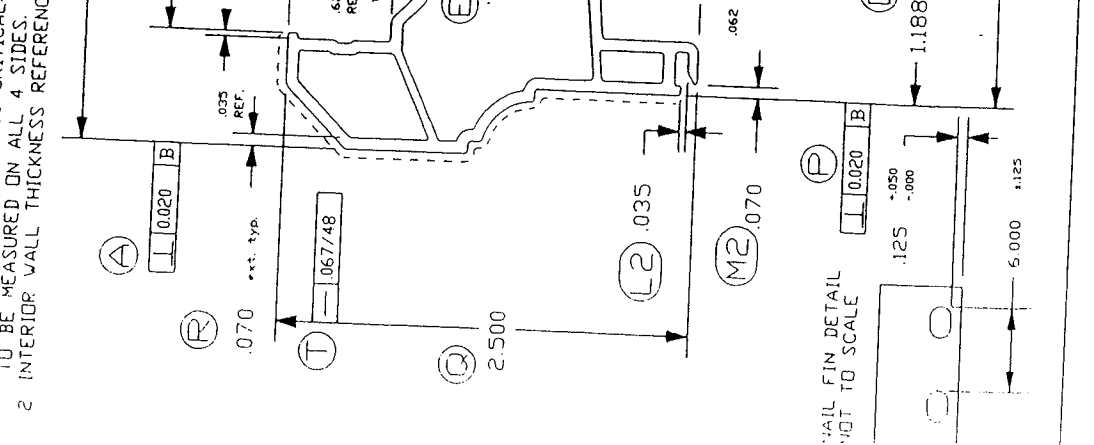
Copyright 2000 DAYTON TECHNOLOGIES  
 DAYTON TECHNOLOGIES  
 1000 W. WOODLAND BLVD.  
 MARIETTA, OHIO 45750

NAME: HEAD FRAME - SH (143.000 PW FRAME)

DRAWN BY: CRB  
 CHECKED BY:  
 DATE: 5/12/00

FILENAME: /pd/cad/parts/10008687-A

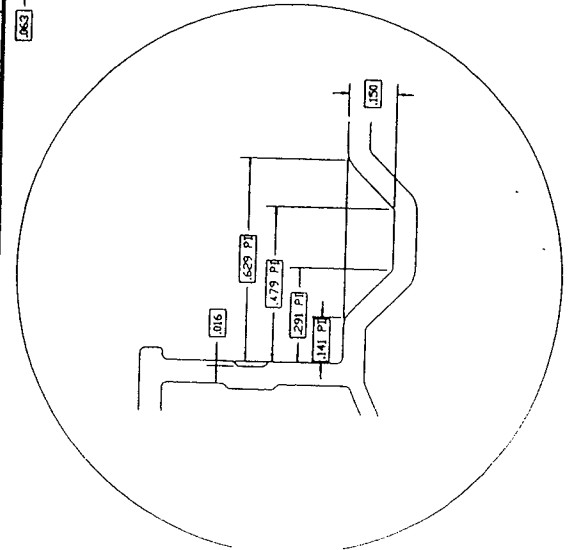
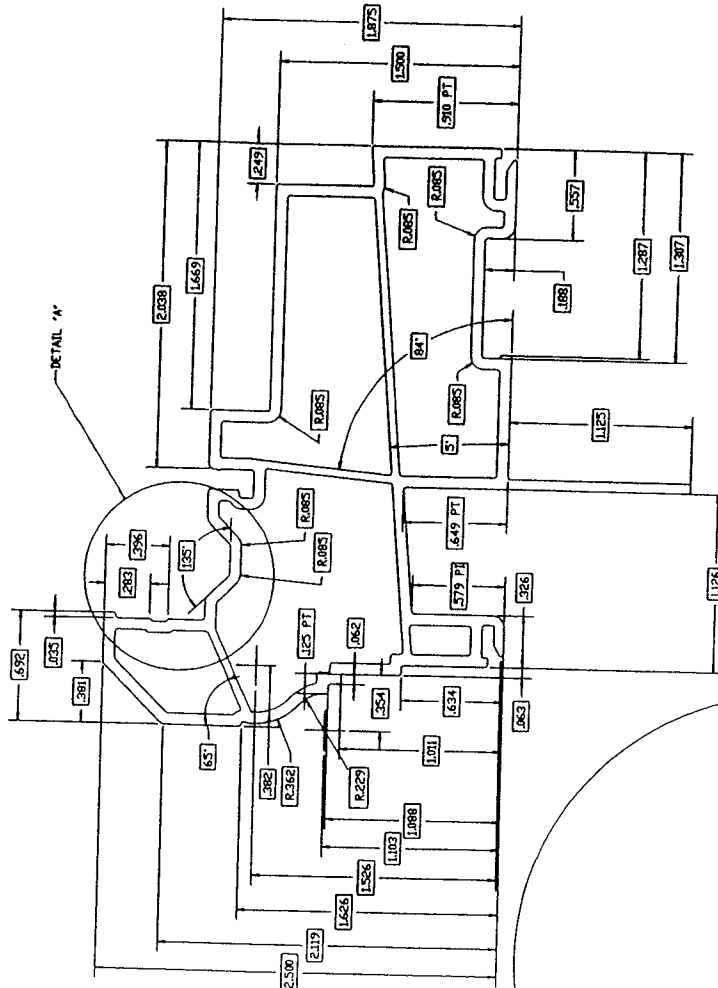
SHEET #:



**Architectural Testing**  
 Test sample complies with these details.  
 Deviations are noted.

Report# 56109  
 Date 3/30/05 Tech EL

CAD DRAWINGS SHALL BE INCORPORATED INTO DESIGN ACTIVITY.



DESIGNER BY:	DR	DATE:	03/02/02
DRAWN BY:	DR	DATE:	03/02/04
CHECKED BY:		DATE:	
FILE NAME:	1000R656_S03		
PROJECT:	HEAD FRAME-SH (PV MAIN FRAME)		

UNLESS OTHERWISE SPECIFIED:  
 DIM ARE IN INCHES  
 2 PL ON ANGLE ± 1"  
 INTERSECT DIM AND PERPENDICULAR  
 THIRD ANGLE PROJECTION

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DETAIL 'A'  
 SCALE 4:1

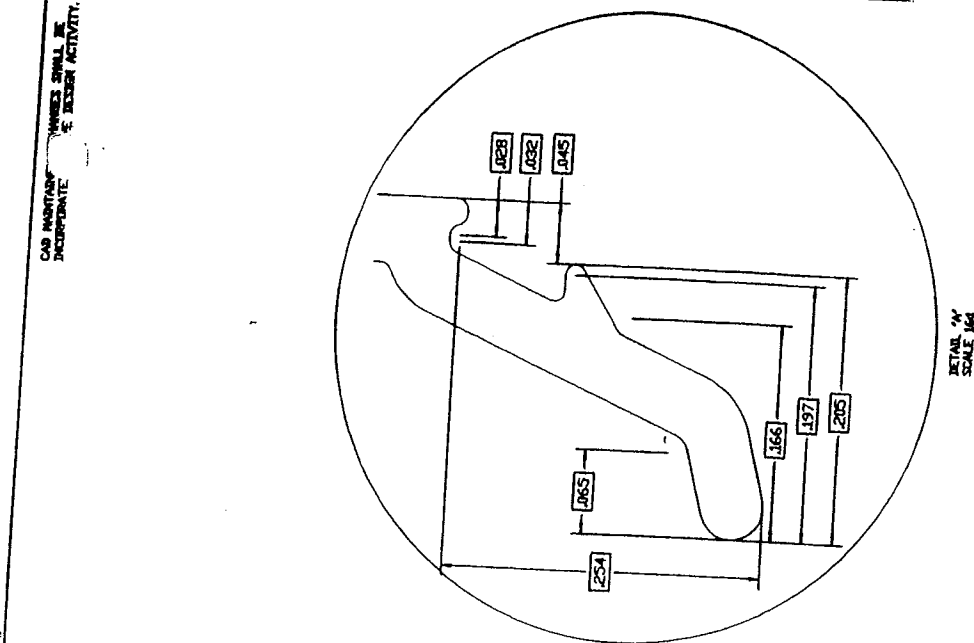


**Architectural Testing**

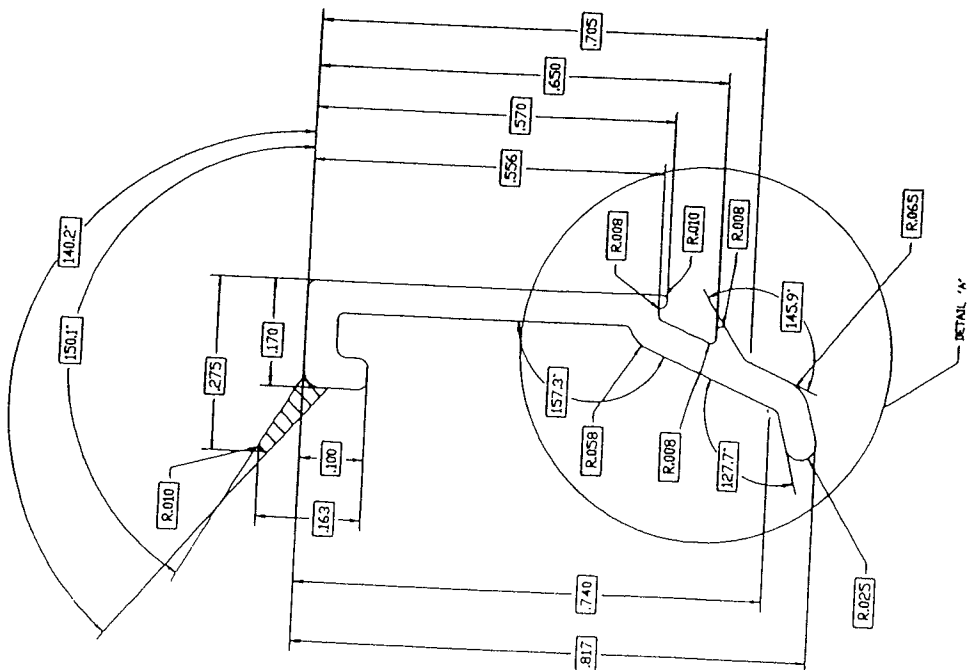
Test sample complies with these details.  
 Deviations are noted.

Report# 56109  
 Date 3/30/05 Tech ESL

CAS MORTARS SHALL BE INCORPORATED. UNLESS OTHERWISE SPECIFIED, DIMENSIONS SHALL BE IN MILLIMETERS. UNLESS OTHERWISE SPECIFIED, DIMENSIONS SHALL BE IN MILLIMETERS.



DETAIL 'M'  
SCALE 1/4"



DETAIL 'M'

PROJECT NO.	000 000
DATE	3/20/05
DESIGNER	DB
CHECKED	DB
DATE	3/22/05
DATE	3/22/05
FILE NO.	10008127
PROJECT NAME	GLAZING BEAD
CLIENT NAME	Dayton

UNLESS OTHERWISE SPECIFIED, DIMENSIONS SHALL BE IN MILLIMETERS. UNLESS OTHERWISE SPECIFIED, DIMENSIONS SHALL BE IN MILLIMETERS.  
 2 PL 3/4" x 3 PL 3/8" ANS  
 1/4" DIA. 3/8" DIA. PER  
 THIRD ANGLE PROJECTION  
 UNLESS OTHERWISE SPECIFIED, DIMENSIONS SHALL BE IN MILLIMETERS.  
 UNLESS OTHERWISE SPECIFIED, DIMENSIONS SHALL BE IN MILLIMETERS.  
 UNLESS OTHERWISE SPECIFIED, DIMENSIONS SHALL BE IN MILLIMETERS.  
 UNLESS OTHERWISE SPECIFIED, DIMENSIONS SHALL BE IN MILLIMETERS.

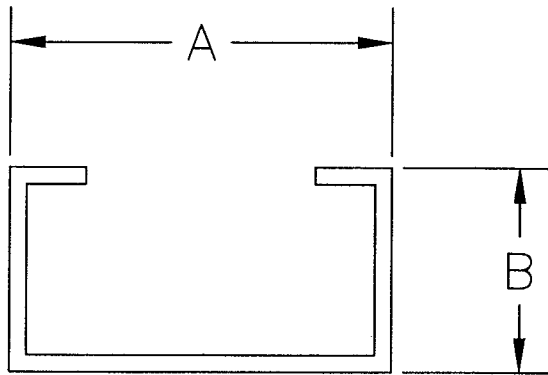


**Architectural Testing**

Test sample complies with these details.  
 Deviations are noted.

Report# 56109  
 Date 3/30/05 Tech BR

# SPACER



Material: STEEL  
Width (A): 0.512", 0.45", 0.325"  
Height (B): 0.300"  
Wall Thickness: 0.010"

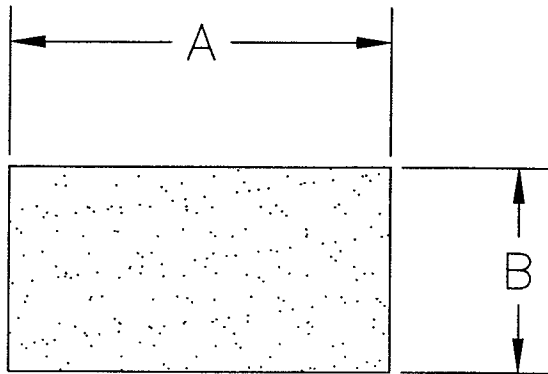


**Architectural Testing**

Test sample complies with these details.  
Deviations are noted.

Report# 56109  
Date 3/30/05 Tech EJ

# SPACER



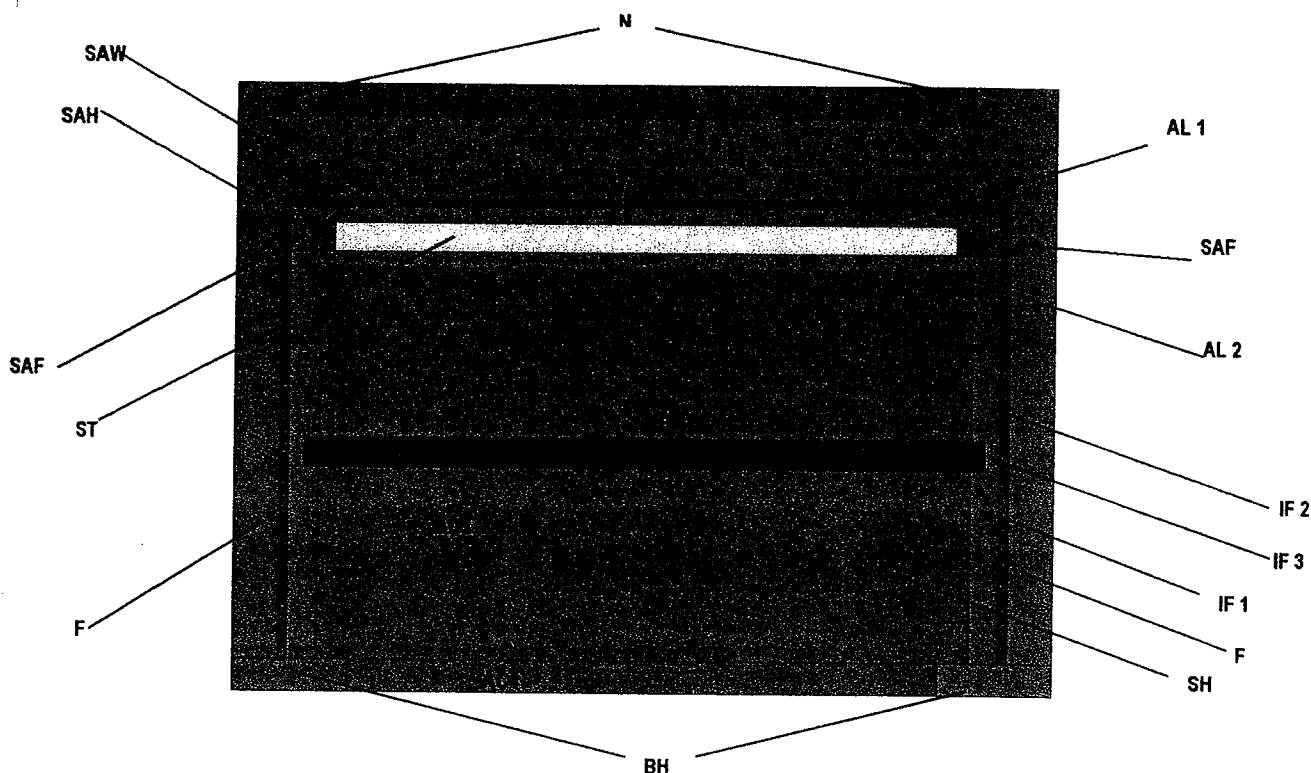
**Architectural Testing**

Test sample complies with these details.  
Deviations are noted.

Report# 56109  
Date 3/30/05 Tech B2

Material: SILICONE FOAM  
Width (A): 0.563, 0.500, 0.375  
Height (B): 0.188  
Wall Thickness: N/A

## Legend



Description		Material and Conductivity Imp	SI
N	71X	Butyl 1.603 Btu in/hr ft <sup>2</sup> °F	0.231 W/m°C
BH	71X	Butyl 1.603 Btu in/hr ft <sup>2</sup> °F	0.231 W/m°C
TL	71X	Butyl 1.603 Btu in/hr ft <sup>2</sup> °F	0.231 W/m°C
SAW	Moisture vapour barrier	Default polyethylene	Default polyethylene
SAH	Moisture vapour barrier	Default polyethylene	Default polyethylene
ST	Stiffener	Polypropylene 1.53 Btu in/hr ft <sup>2</sup> °F	0.221 W/m°C
SH	Shim	Default aluminum	Default aluminum
AL 1 2	Adhesive	Butyl 1.603 Btu in/hr ft <sup>2</sup> °F	0.231 W/m°C
AC 1 3 4	Default cavity	Default cavity	
AC 2	still air	still air – default conductivity	default still air*
SAF	Adhesive	Butyl 1.603 Btu in/hr ft <sup>2</sup> °F	0.231 W/m°C
IF 1 2 3	Adhesive	Butyl 1.603 Btu in/hr ft <sup>2</sup> °F	0.231 W/m°C
F	Adhesive	Butyl 1.603 Btu in/hr ft <sup>2</sup> °F	0.231 W/m°C

\* Corrected from previous version

If there are questions regarding this document please call

Rich Warren  
 Technical Service  
 TruSeal Technologies  
 416 438 1858  
 888 257 7610



Test sample complies with these details.  
 Deviations are noted.

Report# 56109  
 Date 3/30/05 Tech BSL



**TRUSS**  
Technologies

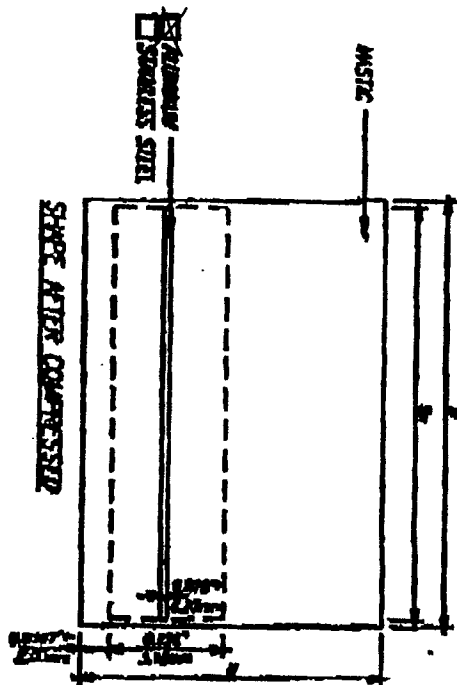
PROJECT NAME  
SPACER LIBRARY  
FOR SIMULATIONS

SHIELDING TYPE  
SINGLE SEAL  
SINGLE SEAL

DESIGNED BY  
E.A.E.  
CHECKED BY  
M.H.

DATE  
29 SEPT 00  
SCALE  
N.T.S.

PROJECT NO.  
TRUSSW  
SHEET NO.  
1



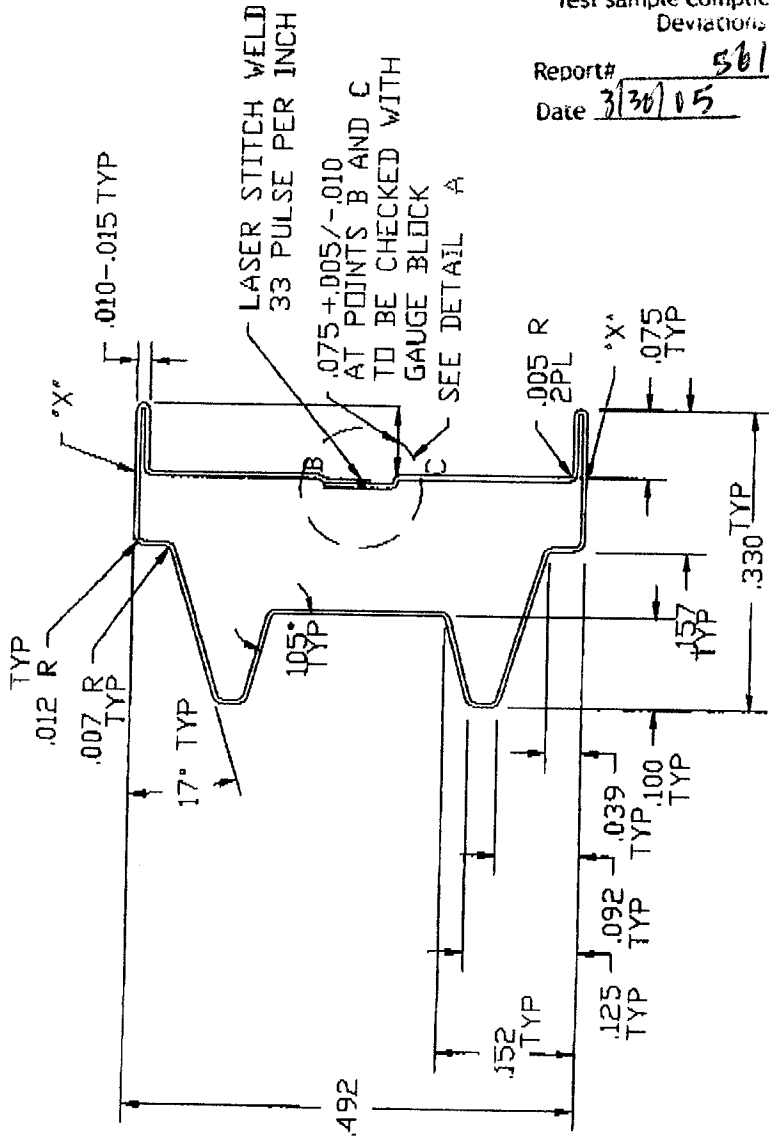
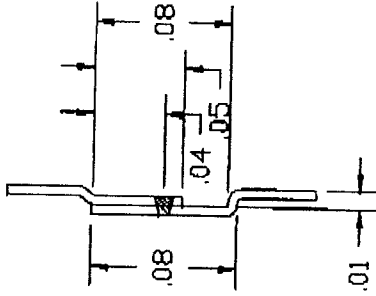
Airspace (PRG)	CODE	Internal			Exterior				
		Decid	Altepan	DW	W	H			
3716	118	0.180	1.773	6.108-6.217	0.281-0.282	4.92	4.78	4.90-4.91	7.39-7.92
15874	218	0.234	8.218	8.206-8.283	8.281-8.282	8.00	8.84	8.84-8.85	7.89-7.92
14	218	0.280	0.238	8.280-8.278	8.283-0.282	4.60	8.87	8.36-7.09	7.18-7.42
5718	318	0.319	0.238	8.215-8.240	0.283-0.282	7.90	7.90	7.90-8.08	7.18-7.42
11032	248	0.344	0.228	8.264-8.273	8.283-0.282	8.70	8.28	8.23-8.47	7.18-7.42
380	378	0.378	0.200	8.275-8.488	8.283-0.282	8.60	8.14	8.63-10.98	7.18-7.42
12732	418	0.408	0.487	0.408-0.433	0.283-0.282	10.30	10.34	10.31-11.05	7.18-7.42
2718	438	0.438	0.473	0.438-0.470	8.281-8.272	11.10	10.73	11.12-11.86	7.18-7.42
18732	478	0.468	0.448	0.468-0.468	0.283-0.282	11.80	11.43	11.81-12.85	7.18-7.42
3104	488	0.488	0.438	0.468-0.808	0.283-0.282	12.38	11.43	12.18-12.81	7.18-7.42
12732	508	0.508	0.488	0.488-0.808	0.283-0.282	12.70	12.30	12.70-13.44	7.18-7.42
12732	538	0.538	0.515	0.531-0.808	8.281-8.282	13.80	13.00	12.78-14.22	7.18-7.42
5718	808	0.808	0.648	0.648-0.480	8.281-8.282	14.30	13.91	14.30-18.04	7.18-7.42
3804	818	0.818	0.688	0.688-0.688	8.281-8.282	15.30	15.24	15.47-18.21	7.18-7.42
58	878	0.878	0.818	0.878-0.878	0.281-8.282	11.98	18.48	18.48-18.81	7.18-7.42
1718	888	0.888	0.872	0.888-0.777	0.281-8.282	17.80	17.08	17.48-18.21	7.18-7.42
12718	878	0.878	0.788	0.878-0.182	0.281-8.282	20.80	20.20	20.65-21.58	7.18-7.42

**GENERAL NOTES**  
THIS IS AN INCOMPLETE LIST FOR REFERENCE.

**Architectural Testing**  
Test sample complies with these details.  
Deviations are noted.

Report# 56109  
Date 3/30/09 Tech BL

DETAIL A SCALE=10X



LASER STITCH WELD  
33 PULSE PER INCH

.075 +.005/-0.010  
AT POINTS B AND C  
TO BE CHECKED WITH  
GAUGE BLOCK  
SEE DETAIL A



**Architectural Testing**

Test sample complies with these details.  
Deviations are noted.

Report# 56109  
Date 3/30/05 Tech: RL

- NOTE:
1. MATERIAL: 201 STAINLESS STEEL, .0050 +/- .00025 WALL THICKNESS, ANNEALED TEMPER, 1 CBA FINISH.
  2. LASER STITCH WELD 33 PULSE PER INCH, NO EXTERIOR FLASH, NO THROUGH BURNS.
  3. SURFACES LABELED 'X' MUST BE PARALLEL TO EACH OTHER.
  4. SPACER MUST BE CLEAN AND FREE OF DIRT AND OILS.

REV	DATE	DESCRIPTION
1	12/2/98	REWORK
2	3/27/99	PAV WAS 38-130
3	1/10/99	PAV WAS 200 SST U-BACK
4	1/10/99	RELEASED
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**CARDINAL IG**

TITLE	13.0mm SST U SPACER
SCALE	5X
DATE	1/10/91
DRAWN BY	SC
APPROV	
TOLERANCES	UNLESS OTHERWISE SPECIFIED
DRAWING NO.	33-130
PART	
CARDINAL IG	

# ALLMETAL

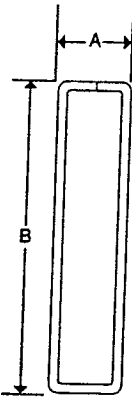
## Muntin Bar

Painted, Mill Finish and Anodized Aluminum

### TOLERANCE

A, ± .005 .127mm

B, ± .005 .127mm



The seller hereby expressly disclaims all warranties either expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose. Products are sold 'As Is' and on the condition that the purchasers shall make their own tests to determine the merchantability of such products and their fitness for any particular purpose. The liability of ALLMETAL, INC. for special, indirect or consequential damages for injury to a property for any reason or for any other loss resulting from a product defect or failure shall be limited to the purchase price of the product.

### SPECIAL NOTICE Cleaning and Handling of Muntin Bar

We recommend muntin bar to be wiped clean before installation into an insulating glass unit. A household grade liquid cleaner may be used for this purpose.

To avoid breakdown of painted surfaces, do not use M.E.K, Triethane, Alcohol or like substances for the cleaning of painted muntin bar.

When machining and processing muntin bar in your plant, keep saw tables and work areas free of saw cut filings to avoid scratching the painted surfaces.

### FRACTIONAL DECIMAL IN INCHES

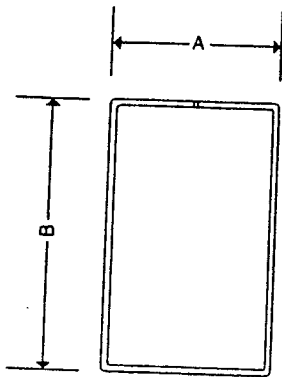
Size	A	B
3/16x1/2	.187	.500
3/16x9/16	.187	.551
3/16x5/8	.187	.630
* 3/16x.610	.187	.610
3/16x3/4	.187	.775
3/16x13/16	.187	.801
3/16x1	.187	1.000
1/4x5/16	.235	.313
1/4x9/16	.235	.562
1/4x5/8	.235	.625
1/4x3/4	.235	.765
1/4x1	.235	1.000
3/8x5/8	.325	.625
3/8x3/4	.325	.750
3/8x7/8	.325	.875
3/8x1	.325	1.000
1/2x3/4	.500	.750
1/2x1/2	.500	.500
1/2x1	.500	1.000
7/16x3/8	.425	.375
7/16x5/8	.438	.625
7/16x1	.438	1.000
5/8x5/8	.625	.625

\* Available in Tutone

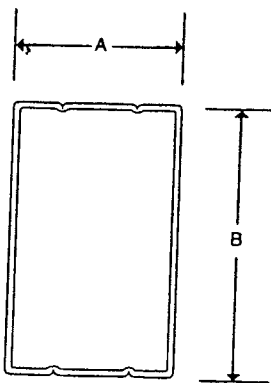
## Muntin Bar-ZT & PT - Laser-Welded

Mill Finish and Anodized Aluminum

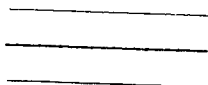
### TOLERANCE



'Zippered' Top



Perforated Top



Muntin Bar Profiles

### Architectural Testing

Test sample complies with these details.  
Deviations are noted.

### FRACTIONAL DECIMAL IN INCHES

Size	A	B
.187 x .500	.187	.500
.187 x .625	.187	.625
.187 x .750	.187	.750
.187 x 1.00	.187	1.00
.235 x .500	.235	.500
.235 x .625	.235	.625
.235 x 1.00	.235	1.00
.250 x .750	.250	.750
.312 x .500	.312	.500
.312 x .625	.312	.625
.325 x .500	.325	.500
.325 x .625	.325	.625
.325 x .750	.325	.750
.325 x .875	.325	.875
.325 x 1.00	.325	1.00
.375 x .500	.375	.500
.375 x .625	.375	.625
.437 x .500	.437	.500
.500 x .500	.500	.500
.437 x .625	.437	.625
.625 x .625	.625	.625

Report#

56109

Date

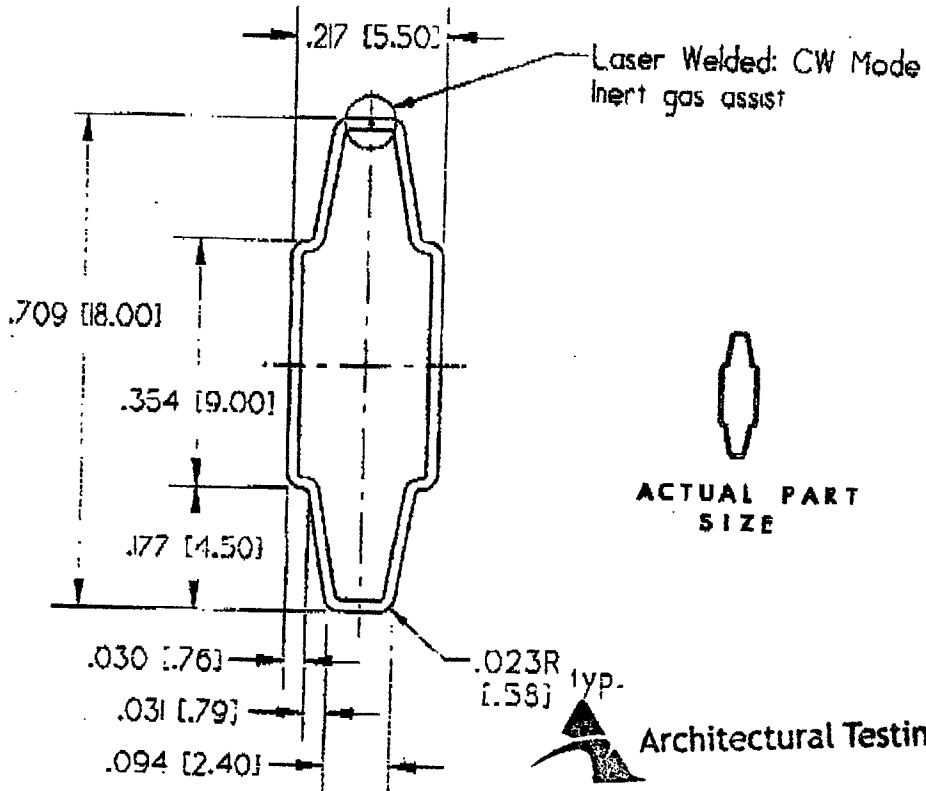
3/30/05

tech

B/v

H-41

NOTE: ALL DIMENSIONS IN [ ] BRACKETS ARE MM UNLESS NOTED



Architectural Testing

Test sample complies with these details.  
Deviations are noted.

Report# 56109  
Date 3/30/05 Tech RL

11-27-00P04:36

DATE	SYN.	REVISION	AUTH.	DRN.	CK.
4/17/97		Weld note changed. Title block changed		GRM	
12/9/92		Initial Release		GRM	



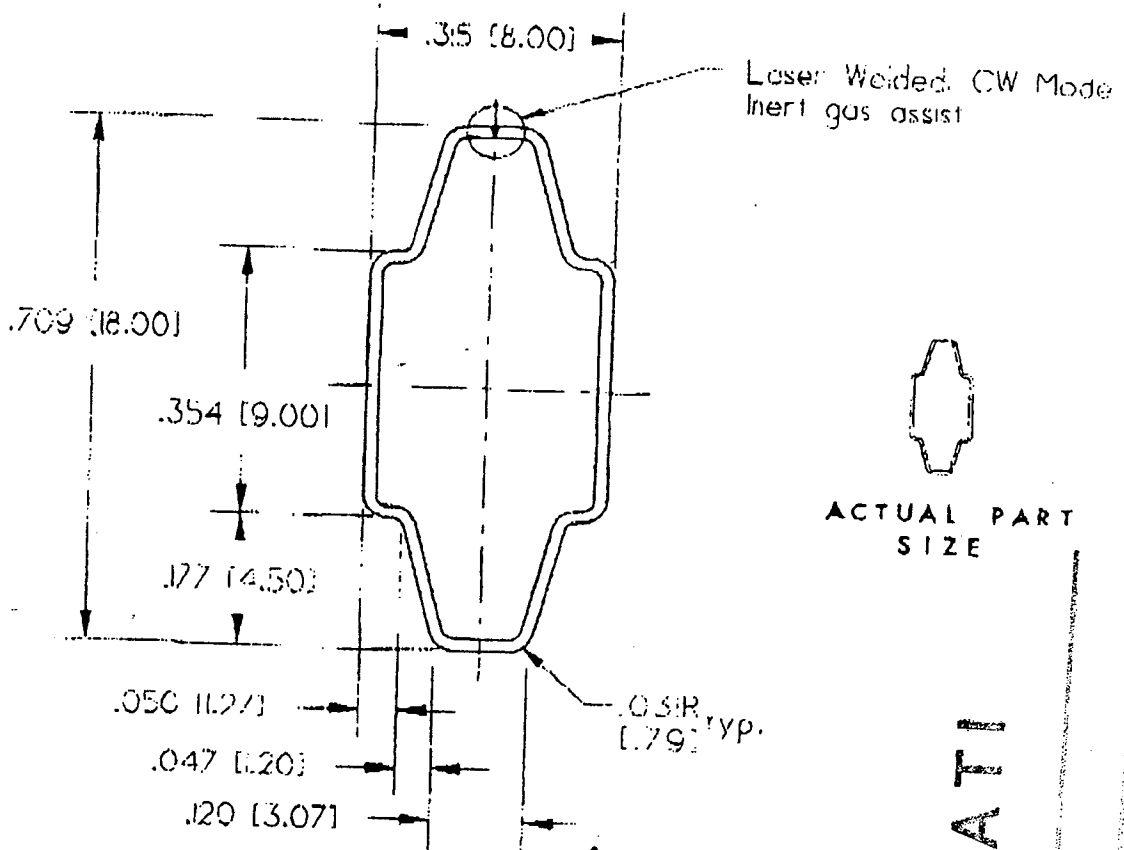
**ALLMETAL**

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OR IN PART WITHOUT THE EXPRESS PERMISSION OF  
**ALLMETAL INC.**

FILENAME: CMB5518J

<b>TOLERANCES EXCEPT AS NOTED</b>		<b>TITLE</b>		<b>DRN. BY G. Matthews</b>	
DECIMAL INCHES .XX .XXX .XXX ± .01 .005 .002		<b>5.5 x 18mm Contour Muntin Bar (CMB)</b>		CK. BY	
DECIMAL MM .XX .XXX ± .13 .06		MATERIAL <b>.016" [.41mm] 3105 Aluminum</b>		APPR. BY	
ANGULAR ± 1°		SCALE <b>4:1</b>		S.O. NO.	
		DATE <b>4/17/97</b>		DWG. NO. <b>1020301010XX255</b>	

NOTE: ALL DIMENSIONS IN [ ] BRACKETS ARE MM UNLESS NOTED



Architectural Testing

Test sample complies with these details. Deviations are noted.

Report# 56109  
Date 3/30/05 Tech BL

ATI

REPORT #  
DATE

3/30/05

DATE	SYM.	REVISION	AUTH.	DRN.	CHK.
4/17/97		Weld note changed. Title block changed			
12/9/97		Initial Release		GRM	
				GRM	



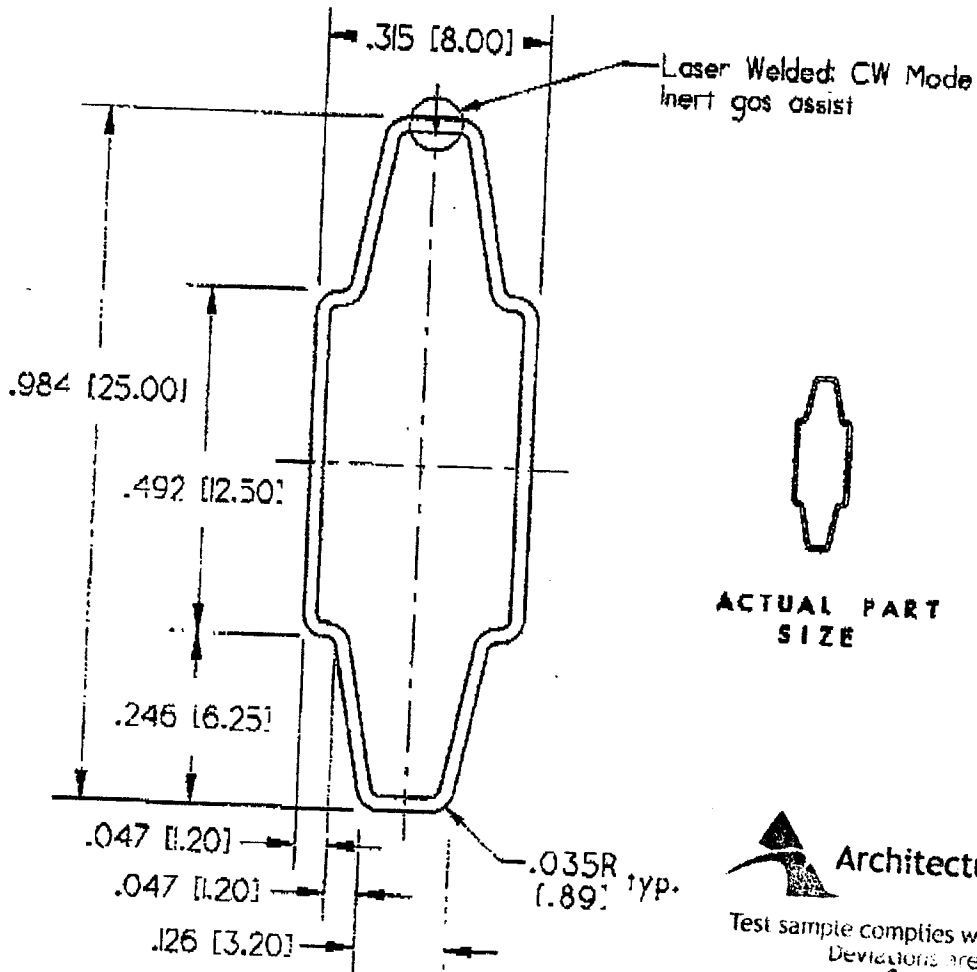
# ALLMETAL

INFORMATION SHOWN ON THIS PRINT IS PROPRIETARY. THIS DRAWING IS NOT TO BE REPRODUCED EITHER WHOLLY OR IN PART WITHOUT THE EXPRESS PERMISSION OF ALLMETAL INC.

FILENAME: CMB818J

<b>TOLERANCES EXCEPT AS NOTED</b>		<b>TITLE</b>		<b>DRN. BY G. Mast...</b>	
DECIMAL INCHES .XX .XXX .XXXX ± .01 .005 .0002		8 x 18mm Contour Muntin Bar (CMB)		CK. BY	
DECIMAL MM .XX .XXX ± .13 .06		MATL. .016" [.41mm] 3105 Aluminum		APPR. BY	
ANGULAR ± 1°		FINISH FULL RANGE (MILL. ANOD., PAINTED)		S.O. NO.	
SCALE	DATE	DWG. NO.			
4:1	4/17/97	1020301010XX280			

NOTE: ALL DIMENSIONS IN [ ] BRACKETS ARE MM UNLESS NOTED



Architectural Testing

Test sample complies with these details. Deviations are noted.

Report# 56109

Date 3/30/05 Tech ESL

DATE	SYN.	REVISION	AUTH.	DRN.	CK.
4/17/97		Weld note changed. Title block changed			GRM
4/1/95		Gauge changed from .016 to .020			GRM
12/9/92		Initial Release			GRM



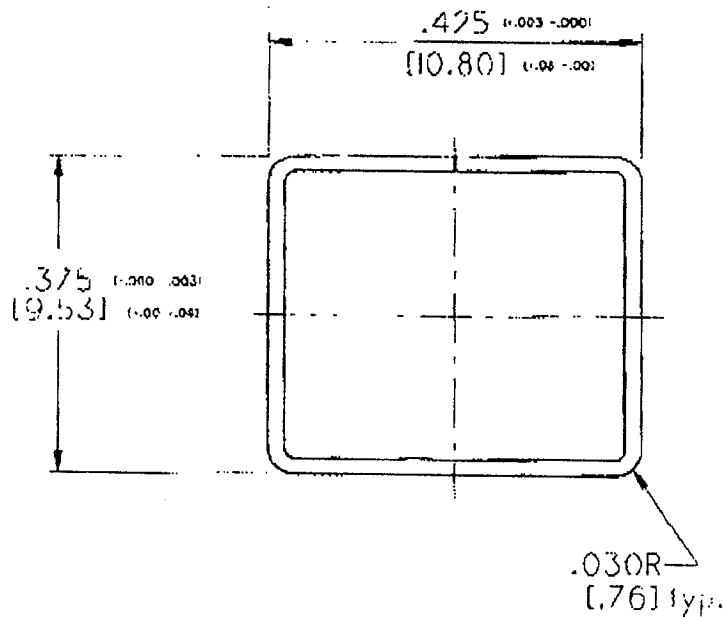
# ALLMETAL

INFORMATION SHOWN ON THIS PRINT IS PROPRIETARY. THIS DRAWING IS NOT TO BE REPRODUCED EITHER WHOLLY OR IN PART WITHOUT THE EXPRESS PERMISSION OF ALLMETAL INC.

FILENAME: CMB825J

<b>TOLERANCES EXCEPT AS NOTED</b> DECIMAL INCHES .XX .XXX .XXXX ± .01 .005 .0002 DECIMAL MM .XX .XXX ± .13 .05 ANGULAR ± 1°		<b>TITLE</b> <b>8 x 25mm Contour Muntin Bar (CMB)</b>		DRN. BY G. Matthews CK. BY APPR. BY S.O. NO.	
<b>NATL.</b> .020" [.51mm] 3105 Aluminium		<b>FINISH</b> FULL RANGE (MILL, ANOD., PAINTED)			
<b>SCALE</b> 4:1		<b>DATE</b> 4/17/97		<b>DWG. NO.</b> 1020301010XX380	

NOTE: ALL DIMENSIONS IN [ ] BRACKETS ARE MM UNLESS NOTED




Architectural Testing

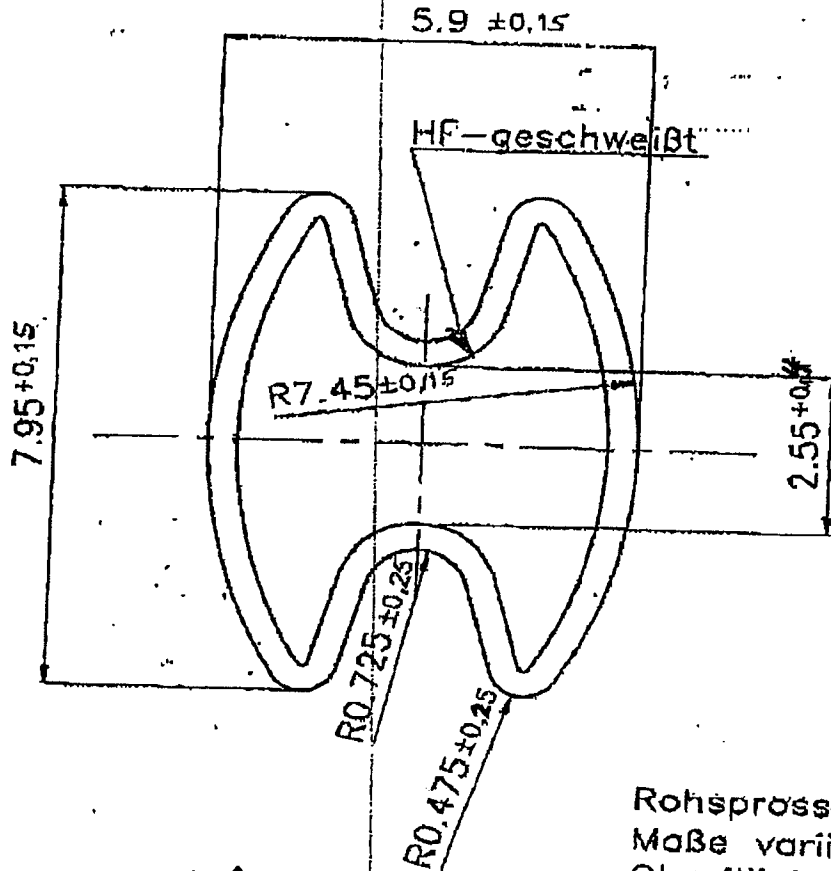
Test sample complies with these details. Deviations are noted.

ACTUAL PART SIZE

Report# 56109  
Date 3/30/05 Tech ESL

FILE NAME: \\MB\0185\716X38

DATE	SYM.	REVISION	AUTH.	DRN.	CK.
 <b>ALLMETAL</b>		INFORMATION SHOWN ON THIS PRINT IS PROPRIETARY. THIS DRAWING IS NOT TO BE REPRODUCED EITHER WHOLLY OR IN PART WITHOUT THE EXPRESS PERMISSION OF ALLMETAL INC.			
<b>TOLERANCES EXCEPT AS NOTED</b> DECIMAL INCHES .XX .XXX .XXXX ± .01 .005 .0002 DECIMAL MM .XX .XXX ± .13 .06 ANGULAR ± 1°		<b>TITLE</b> 7/16 x 3/8 MB (Muntin Bar)		DRN BY <u>G. Masters</u> CK. BY APPR. BY S.O. NO.	
<b>MATL.</b> .0185 [.47mm] 3105-H24 Aluminum		<b>FINISH</b> ALL BUT ANODIZED		SCALE 5:1	
<b>DATE</b> 11/15/01		<b>DWG. NO.</b> 1020108018XX124			



Rohsprösse!  
Maße variieren je nach  
Oberflächenbehandlung



Test sample complies with these details.  
Deviations are noted.

Verteiler: BTL  
GM 3  
Produktion  
AV

Report# 56109  
Date 3/30/05 Tech BR

1	Höhe u. Breite geändert	04.07.96	HBR	Georg
Ä-Nr./Art der Änderung		Datum	Name	Georg

Werkstoff: Bd 0,4 +0,04 -0,03		Al 99,85-ähnlich EN 1085/WN wahlweise EN AW-3003		
1996	Tag	Name	Für diese Zeichnung bzw. techn. Unterlage behalten wir uns alle Rechte vor.	Helmut Lingemann GmbH & Co. Aluminium-Press und Walzwerk Am Dockershäuschen 82 42114 Wuppertal
Georb.	24.07.	Höflinghoff		
Gepr.				
Maßstab:	Benennung:			
10:1	Einbausprosse, geschweißt			
Maß ohne Teil.-Angabe	Zeichnungsnummern			-Nr.
DIN 7168-m	KP 8x1,5G			1
	Private Wks	KP8x1,5G	Ä1	Erstellt durch: