

**PROJECT-OUT WINDOW ..... 3-8**  
**OUTSWING CASEMENT WINDOW..... 9-14**  
**THERMAL CHARTS ..... 15-22**

Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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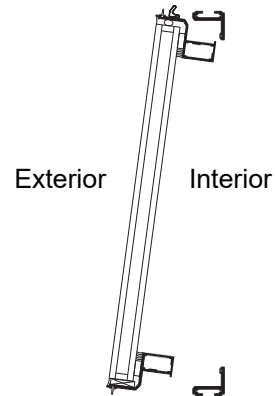
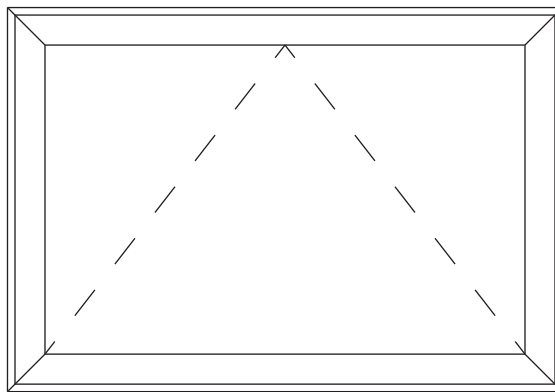
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**Features**

- Heavy Commercial Grade Window
- Tested to US Standards
- 45° Mitered Vent and Frame Corners
- Staked Corner Joinery
- Architectural Anodized Finishes and Applied Coatings

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For specific product applications,  
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<b>CLASS and GRADE</b>	Heavy Commercial Grade P-HC40 – P-HC70
<b>TESTING STANDARD</b>	AAMA / WDMA / CSA / 101 / I.S.2 / A440 (NAFS)
<b>SYSTEM DEPTH</b>	2-3/4" Overall System Depth (1" Infill) 2-1/8" Overall System Depth (1/4" Infill)
<b>TYPICAL WALL THICKNESS</b>	0.090 Nominal Frame
<b>TYPICAL MAX. VENT SIZE</b>	60" x 36"
<b>TYPICAL MIN. VENT SIZE</b>	14" x 14"
<b>INFILL OPTIONS</b>	1" and 1/4"
<b>STANDARD HARDWARE</b>	Stainless Steel 4-Bar Hinges Cast White Bronze Cam Lock
<b>OPTIONAL HARDWARE</b>	Cam Lock with Pole Ring Sash Pole Pole Ring Access Control Lock Pivot-Shoe Roto-Operator Concealed Lock with removable key Hook Bolt Lock Limit Stop
<b>OTHER OPTIONS</b>	Insect Screens

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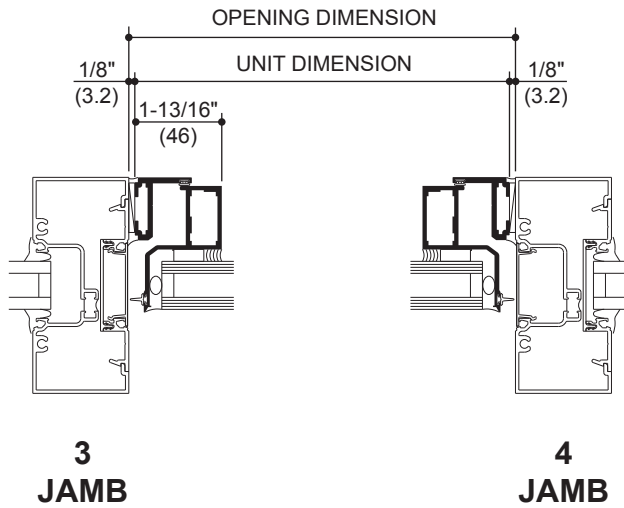
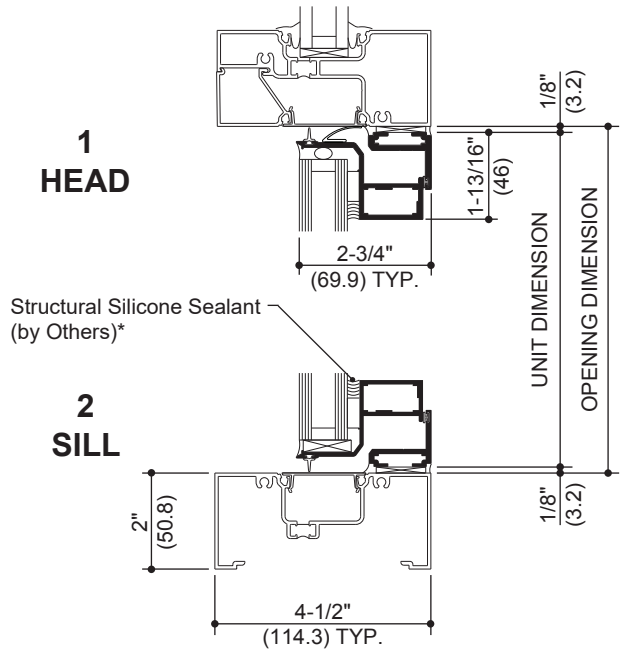
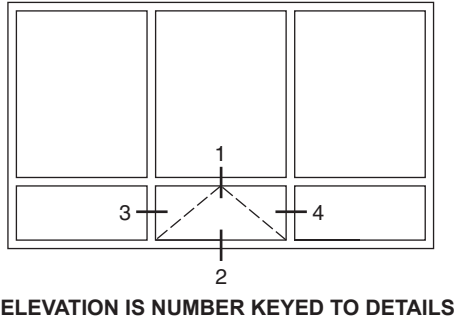
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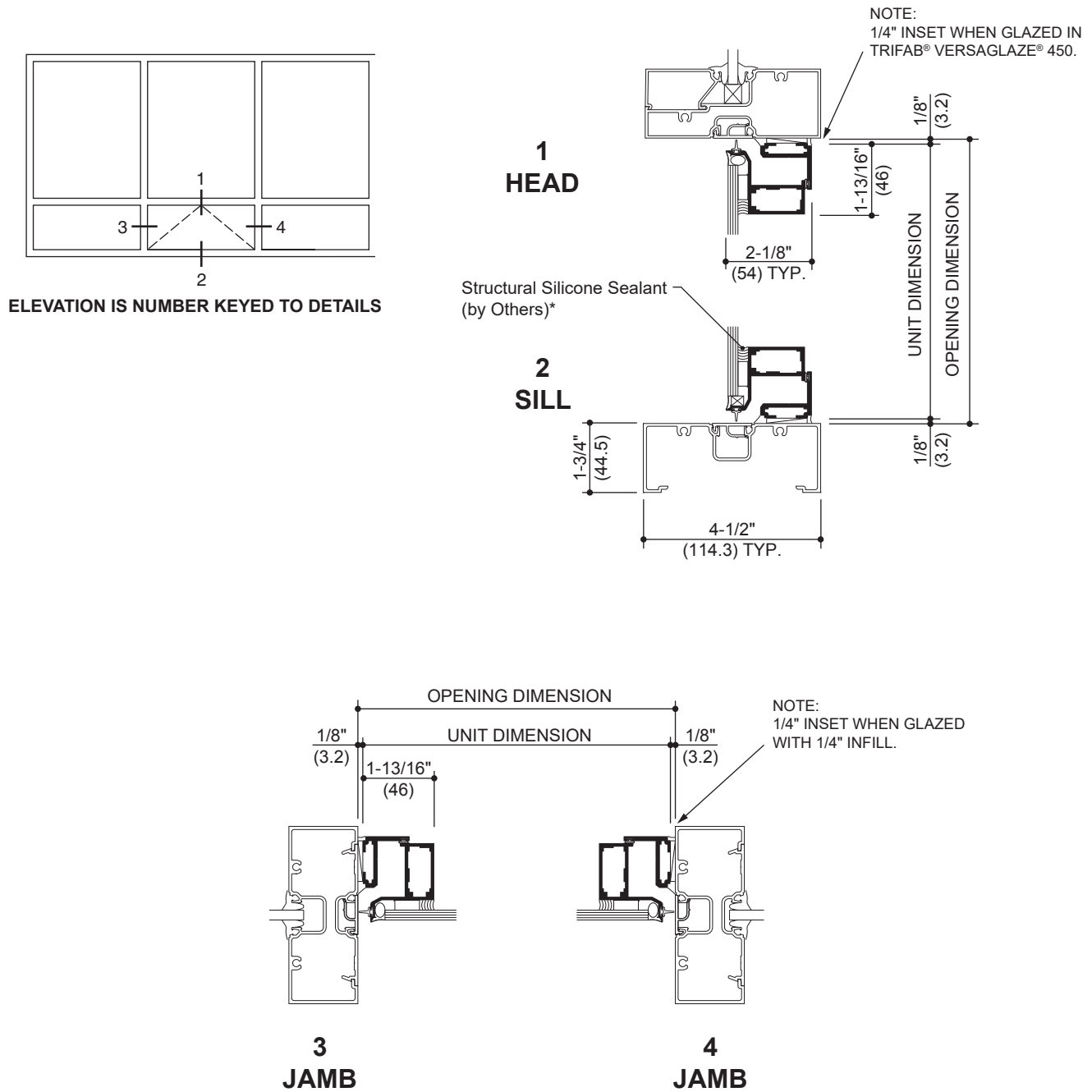
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\* **INSTALLER NOTE:** Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.

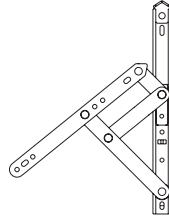
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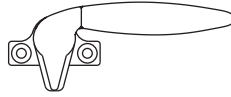
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### STAINLESS STEEL 4 BAR HINGES



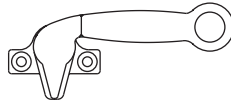
A standard hinge for ventilators providing approximately 45° to 60° openings depending on size. An optional limit stop is available to restrict hinge travel and limit vent opening.

### CAM HANDLE



Cast white bronze cam handles are standard for the manual operation and locking of ventilators.

### CAM HANDLE WITH POLE RING



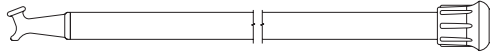
Cast white bronze cam handles with pole ring provide manual operation of ventilators located above reach. These handles are operated with a sash pole.

### POLE RING



Cast white bronze pole ring is used in conjunction with locking hardware for sash pole operation of ventilators.

### SASH POLE

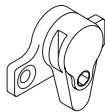


A 3/4" diameter aluminum sash pole with a cast white bronze pull down hook and black rubber tip. Available in 6 ft. and 12 ft. lengths with optional cast white bronze Pole Hanger.

### HANGER FOR SASH POLE

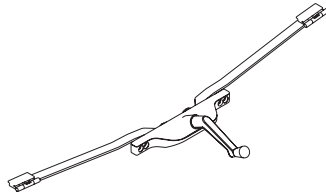


### ACCESS CONTROL LOCK



In lieu of cam handles cast white bronze access control locks are offered for managed control of vent operations. Lock is operated with a manganese bronze removable handle.

### PIVOT-SHOE ROTO-OPERATOR



Optional pivot shoe roto operator is located on the center line of the bottom horizontal frame. Standard finish shall be brushed copper nickel to match US-25-D

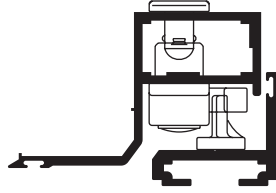
### HOOK BOLT LOCK



For use with pivot-shoe roto operator in lieu of cam handles. Standard finish shall be US-25-D clear white bronze.

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**CONCEALED  
LOCK**

In lieu of cam handles cast white bronze concealed locks are offered for managed control of vent operations. Lock is operated with a removable key.

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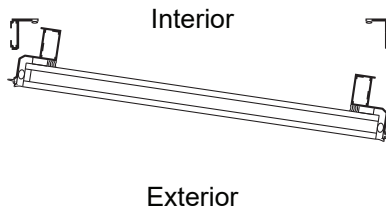
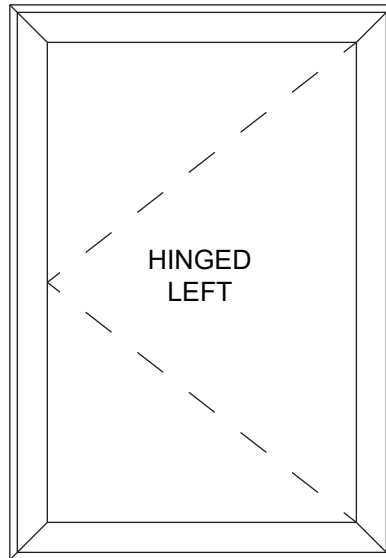


## Features

- Heavy Commercial Grade Window
- Tested to US Standards
- 45° Mitered Vent and Frame Corners
- Staked Corner Joinery
- Architectural Anodized Finishes and Applied Coatings

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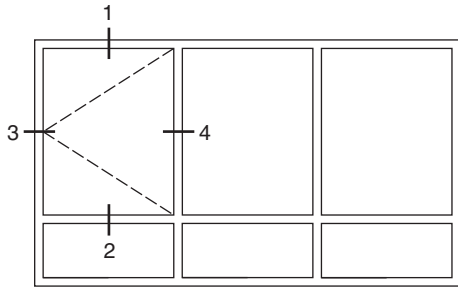
<b>CLASS and GRADE</b>	Heavy Commercial Grade P-HC40 – P-HC70
<b>TESTING STANDARD</b>	AAMA / WDMA / CSA / 101 / I.S.2 / A440 (NAFS)
<b>SYSTEM DEPTH</b>	2-3/4" Overall System Depth (1" Infill) 2-1/8" Overall System Depth (1/4" Infill)
<b>TYPICAL WALL THICKNESS</b>	0.090 Nominal Frame
<b>TYPICAL MAX. VENT SIZE</b>	36" x 60"
<b>TYPICAL MIN. VENT SIZE</b>	14" x 14"
<b>INFILL OPTIONS</b>	1" and 1/4"
<b>STANDARD HARDWARE</b>	Stainless Steel 4-Bar Hinges Cast White Bronze Cam Handles
<b>OPTIONAL HARDWARE</b>	Cam Lock with Pole Ring SashPole Pole Ring Access Control Locks Multi-Point Lock Hook Bolt Lock Concealed Lock with removable key Limit Stop
<b>OTHER OPTIONS</b>	Insect Screens

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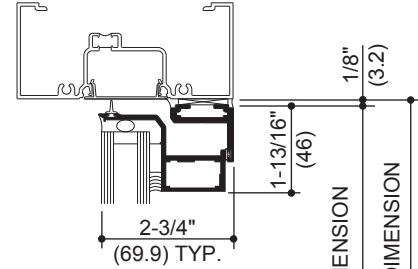
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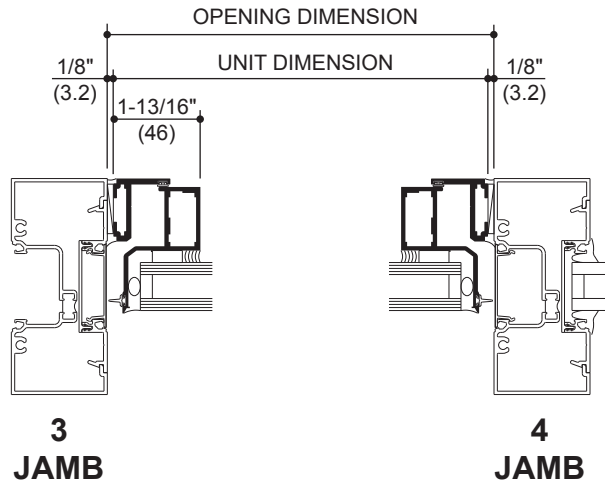
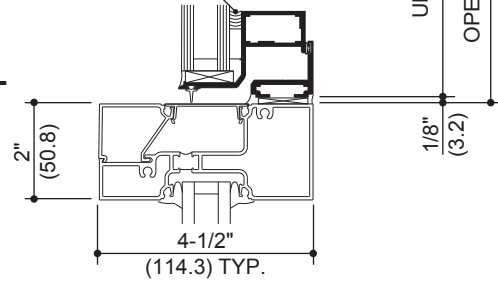
ELEVATION IS NUMBER KEYED TO DETAILS

### 1 HEAD



Structural Silicone Sealant (by Others)\*

### 2 SILL



### 3 JAMB

### 4 JAMB

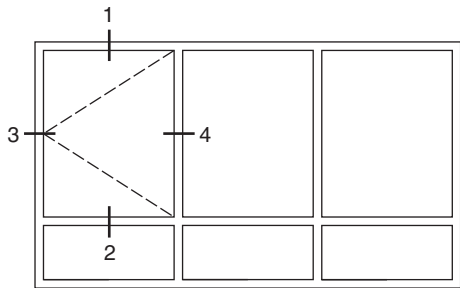
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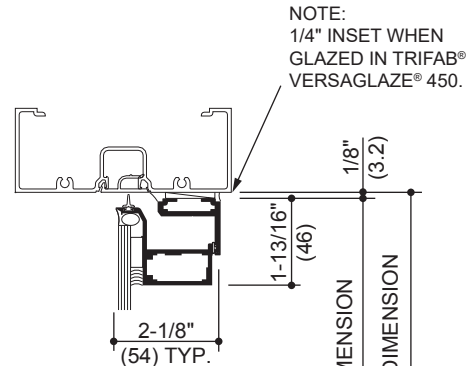
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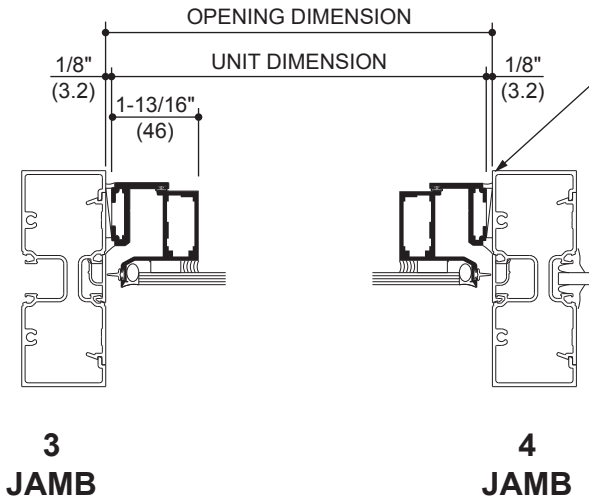
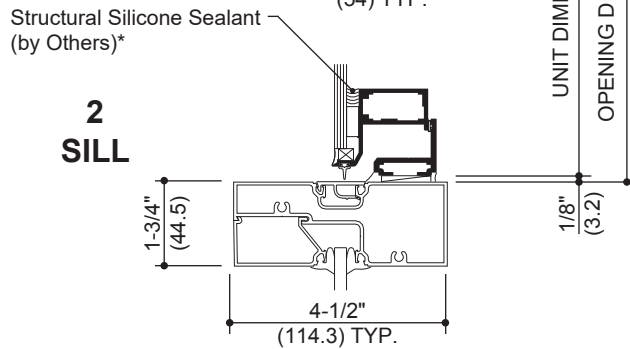


ELEVATION IS NUMBER KEYED TO DETAILS

### 1 HEAD



### 2 SILL



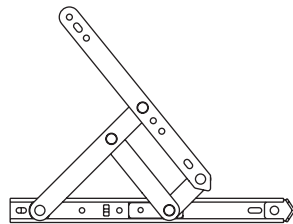
### 3 JAMB

### 4 JAMB

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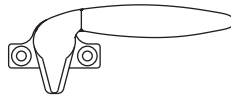
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**STAINLESS STEEL  
4 BAR HINGES**



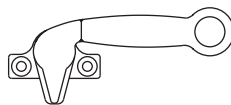
A standard hinge for ventilators providing approximately 45° to 60° openings depending on size. An optional limit stop is available to restrict hinge travel and limit vent opening.

**CAM HANDLE**



Cast white bronze cam handles are standard for the manual operation and locking of ventilators.

**CAM HANDLE  
WITH POLE RING**



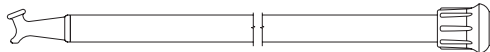
Cast white bronze cam handles with pole ring provide manual operation of ventilators located above reach. These handles are operated with a sash pole.

**POLE RING**



Cast white bronze pole ring is used in conjunction with locking hardware for sash pole operation of ventilators.

**SASH POLE**

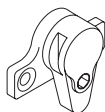
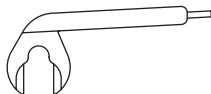


A 3/4" diameter aluminum sash pole with a cast white bronze pull down hook and black rubber tip. Available in 6 ft. and 12 ft. lengths with optional cast white bronze Pole Hanger.

**HANGER  
FOR SASH POLE**



**ACCESS CONTROL  
LOCK**



In lieu of cam handles cast white bronze access control locks are offered for managed control of vent operations. Lock is operated with a manganese bronze removable handle.

**HOOK BOLT LOCK**



For use with pivot-shoe roto operator in lieu of cam handles. Standard finish shall be US-25-D clear white bronze.

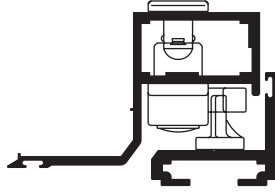
**MULTI-POINT LOCK**



Optional single locking handle for concealed multi-point locks located on the vertical frame. Standard finish shall be US-25-D clear white bronze.

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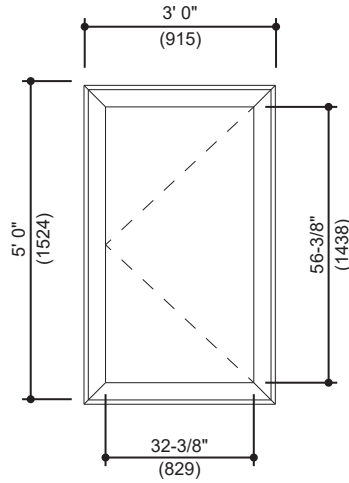
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LOCK**

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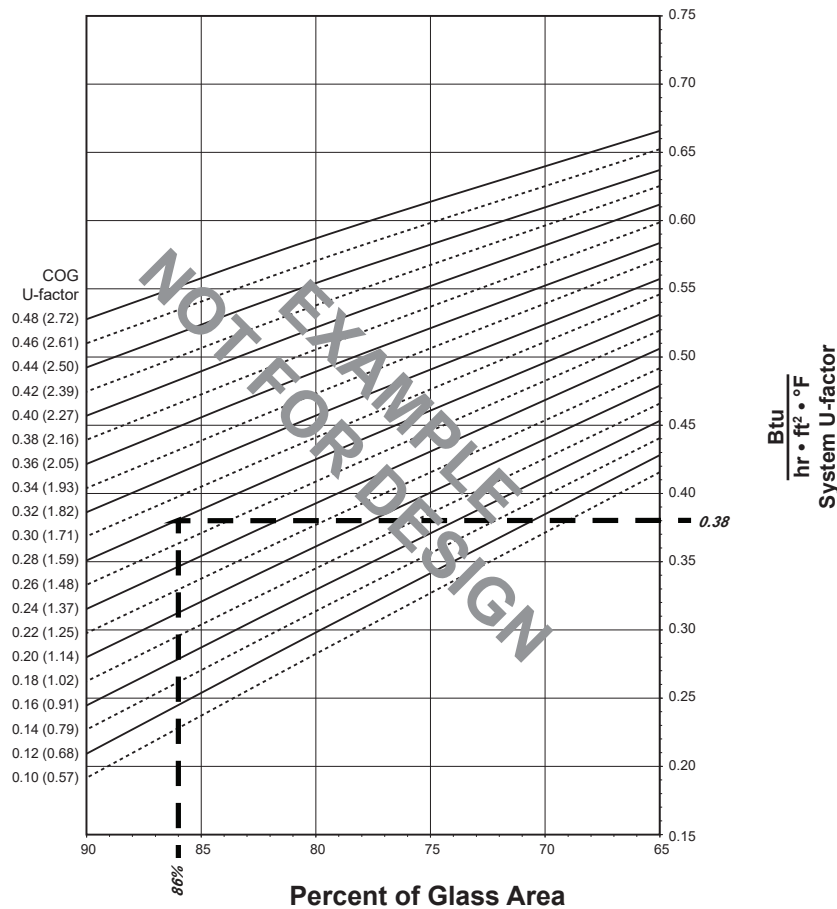
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## Generic Project Specific U-factor Example Calculation (Percent of Glass will vary on specific products depending on sitelines)



Example Glass U-Factor = 0.28 Btu/hr • ft<sup>2</sup> • °F  
 Total Daylight Opening = 32-3/8" • 56-3/8" = 12.83ft<sup>2</sup>  
 Total Projected Area = 3' 0" • 5' 0" = 15 ft<sup>2</sup>  
 Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100  
 = (12.83 ÷ 15)100 = 86%

### System U-factor vs Percent of Glass Area



Based on 86% glass and center of glass (COG) U-factor of 0.28  
 System U-factor is equal to 0.38 Btu/hr • ft<sup>2</sup> • °F

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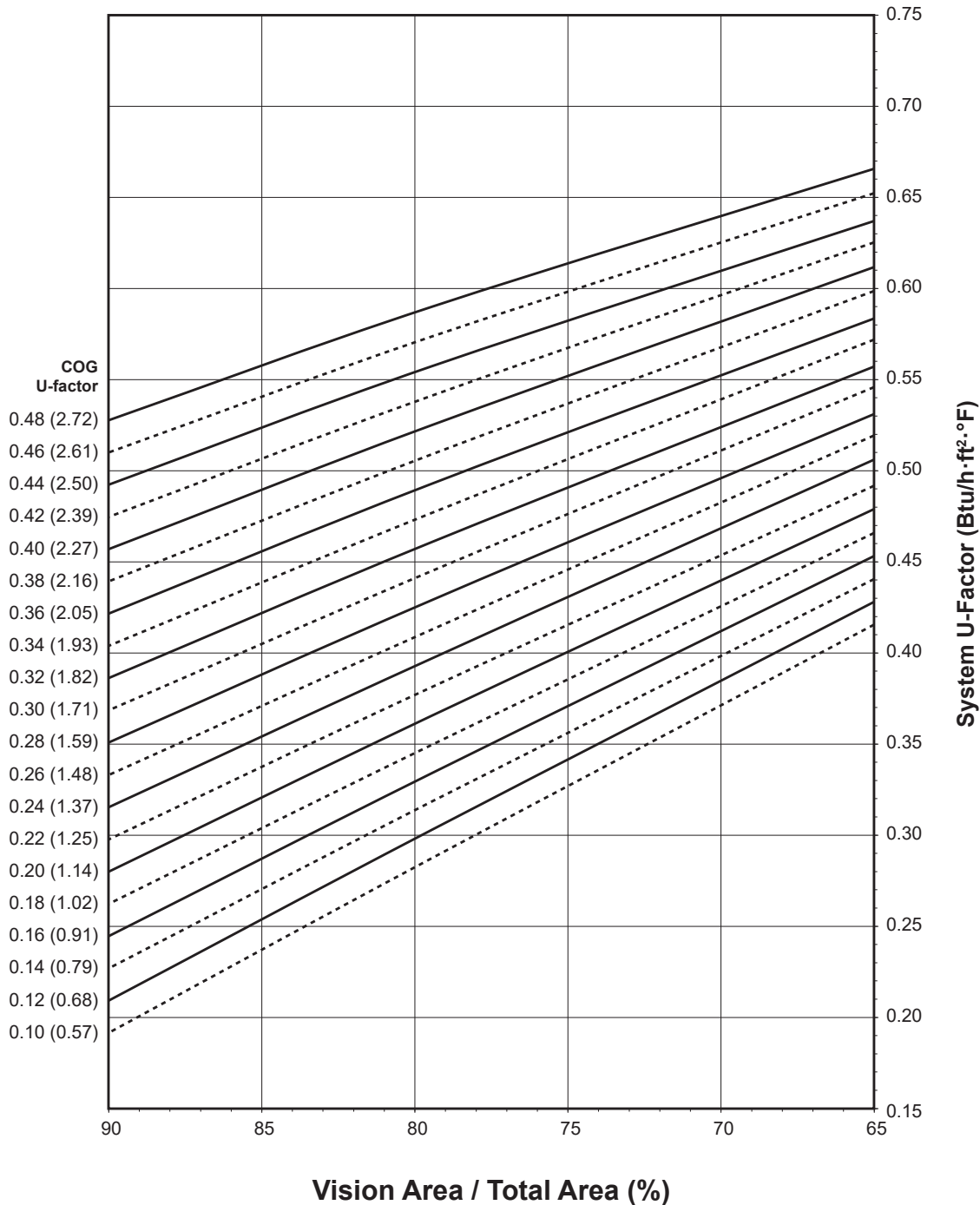
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**GLASSvent® Project-Out Window  
1" Double Glazed - Warm-Edge Glazing Spacer**

**Note:**

Values in parentheses are metric.  
COG = Center of Glass.  
Charts are generated per AAMA 507

**System U-Factor for Vision Glass**



**Notes for System U-factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.  
Glass properties are based on center of glass values and are obtained from your glass supplier.

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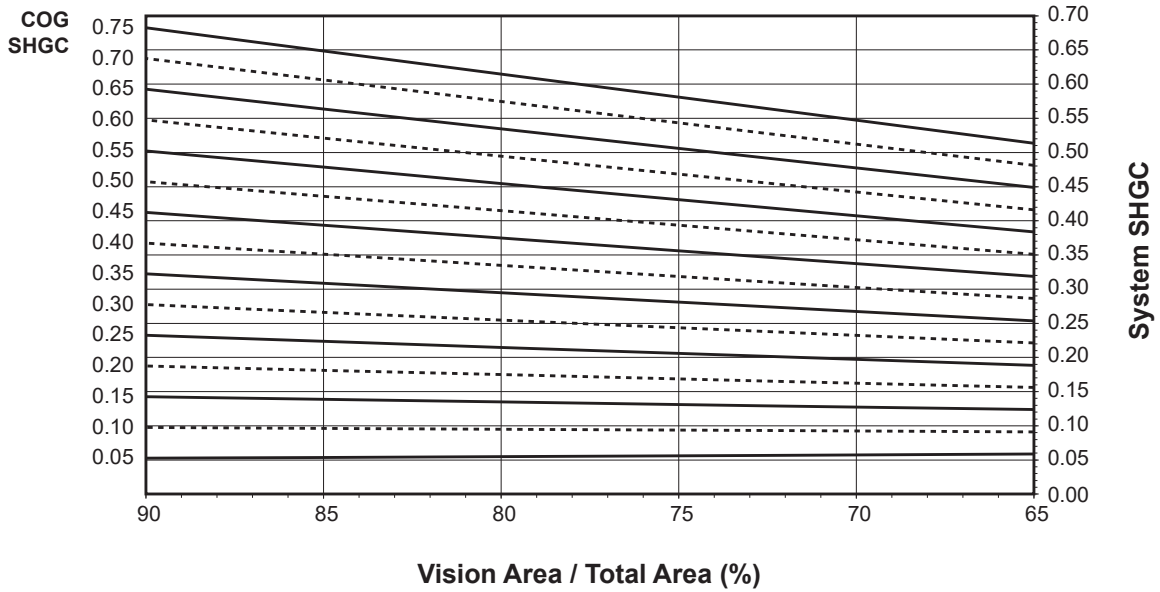
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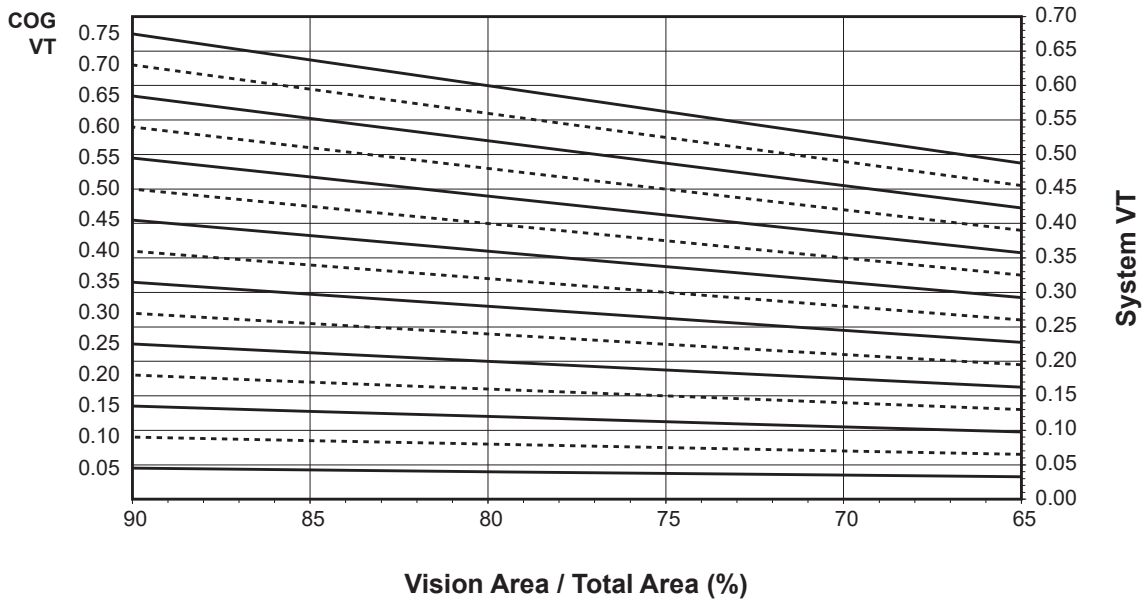


## GLASSvent® Project-Out Window 1" Double Glazed - Warm-Edge Glazing Spacer

### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



### System Visible Transmittance (VT) vs Percent of Vision Area



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### Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.59
0.46	0.57
0.44	0.56
0.42	0.54
0.40	0.52
0.38	0.51
0.36	0.49
0.34	0.48
0.32	0.46
0.30	0.44
0.28	0.43
0.26	0.41
0.24	0.40
0.22	0.38
0.20	0.37
0.18	0.35
0.16	0.33
0.14	0.32
0.12	0.30
0.10	0.29

### GLASSvent® Project-Out Window 1" Double Glazed Warm-Edge Glazing Spacer

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1,500 mm wide by 600 mm high (59-1/16" by 23-5/8").

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.61
0.70	0.57
0.65	0.53
0.60	0.49
0.55	0.45
0.50	0.41
0.45	0.37
0.40	0.33
0.35	0.29
0.30	0.25
0.25	0.21
0.20	0.17
0.15	0.13
0.10	0.09
0.05	0.06

### Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.60
0.70	0.56
0.65	0.52
0.60	0.48
0.55	0.44
0.50	0.40
0.45	0.36
0.40	0.32
0.35	0.28
0.30	0.24
0.25	0.20
0.20	0.16
0.15	0.12
0.10	0.08
0.05	0.04

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## GLASSvent® Casement (Single Vent) 1" Double Glazed - Warm-Edge Glazing Spacer

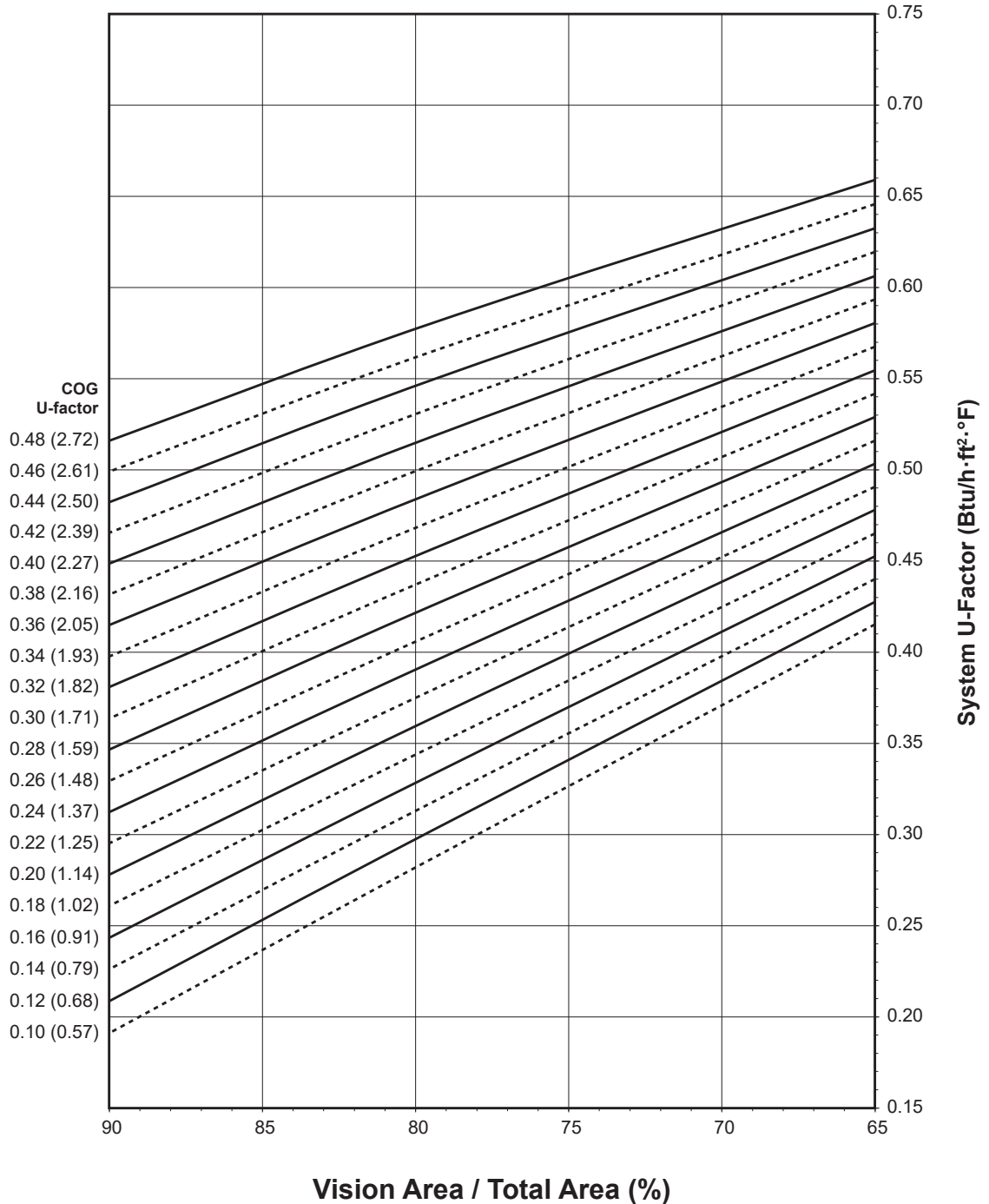
**Note:**

Values in parentheses are metric.

COG = Center of Glass.

Charts are generated per AAMA 507

### System U-Factor for Vision Glass



**Notes for System U-factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

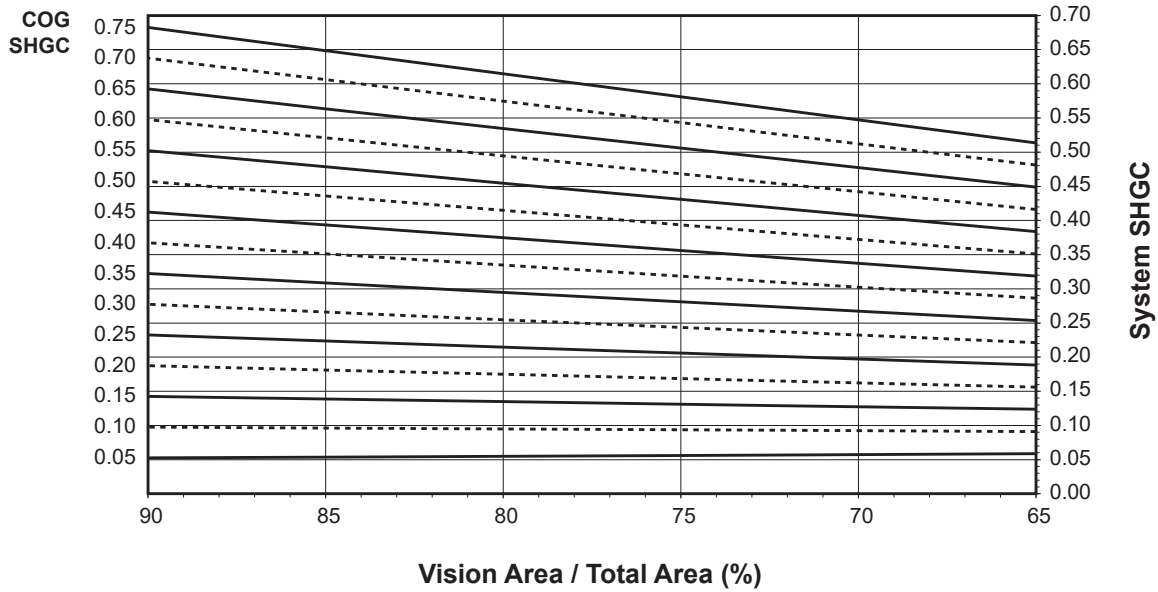
Glass properties are based on center of glass values and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

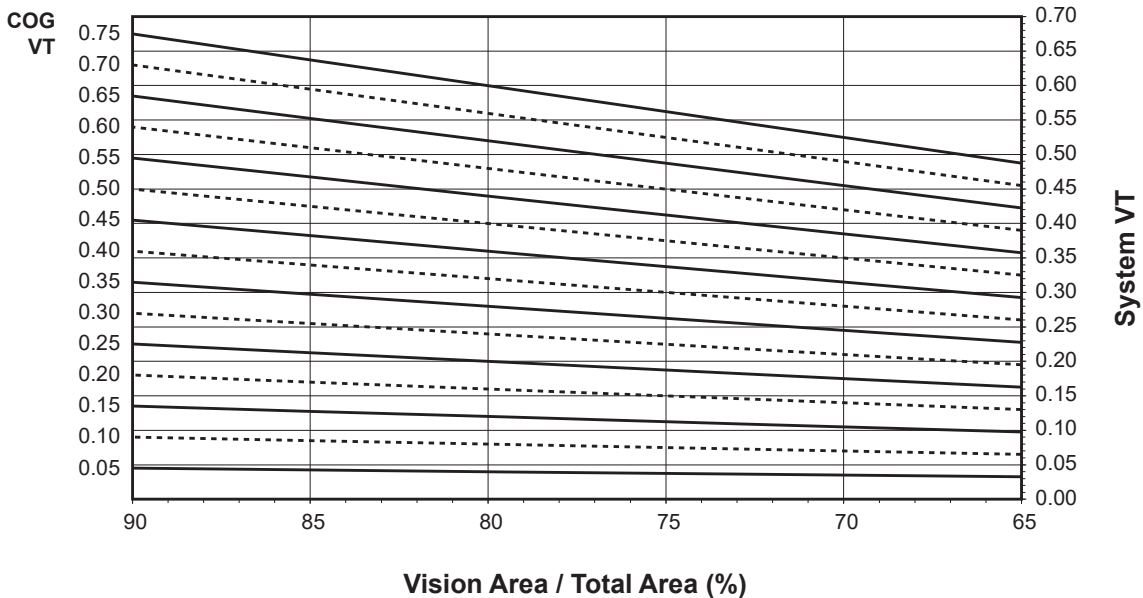
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**GLASSvent® Casement (Single Vent)  
1" Double Glazed - Warm-Edge Glazing Spacer**

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft <sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.58
0.46	0.56
0.44	0.55
0.42	0.53
0.40	0.52
0.38	0.50
0.36	0.49
0.34	0.47
0.32	0.46
0.30	0.44
0.28	0.43
0.26	0.41
0.24	0.39
0.22	0.38
0.20	0.36
0.18	0.35
0.16	0.33
0.14	0.32
0.12	0.30
0.10	0.29

**GLASSvent® Casement (Single Vent)  
1" Double Glazed  
Warm-Edge Glazing Spacer**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 600 mm wide by 1,500 mm high (23-5/8" by 59-1/16").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.61
0.70	0.57
0.65	0.53
0.60	0.49
0.55	0.45
0.50	0.41
0.45	0.37
0.40	0.33
0.35	0.29
0.30	0.25
0.25	0.21
0.20	0.17
0.15	0.13
0.10	0.09
0.05	0.06

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.60
0.70	0.56
0.65	0.52
0.60	0.48
0.55	0.44
0.50	0.40
0.45	0.36
0.40	0.32
0.35	0.28
0.30	0.24
0.25	0.20
0.20	0.16
0.15	0.12
0.10	0.08
0.05	0.04

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