

PROJECT-OUT WINDOW	3-9
OUTSWING CASEMENT WINDOW	10-15
THERMAL CHARTS	16-26

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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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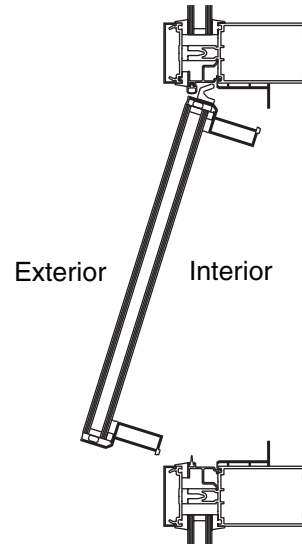
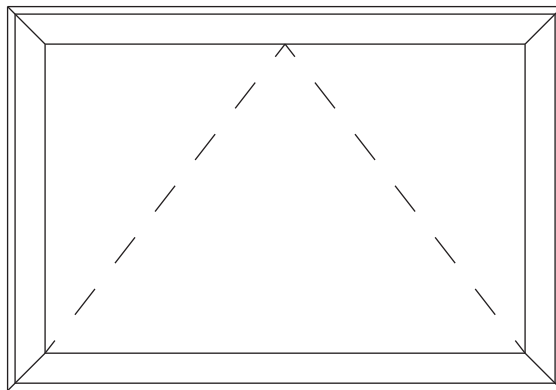
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Features

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

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CLASS and GRADE	Architectural Grade AW-PG90 / AW-PG90C
TESTING STANDARD	AAMA / WDMA / CSA / 101 / I.S.2 / A440 (NAFS)
SYSTEM DEPTH	3-7/16" Overall System Depth (1" Infill) 2-11/16" Overall System Depth (1/4" Infill)
TYPICAL WALL THICKNESS	0.125 Nominal Frame
TYPICAL MAX. VENT SIZE	60" x 72"
TYPICAL MIN. VENT SIZE	12" x 12"
INFILL OPTIONS	1" and 1/4"
STANDARD HARDWARE	Stainless Steel 4-Bar Hinges Cast White Bronze Cam Lock 4-Bar Limit Stop 88SS Support Arms
OPTIONAL HARDWARE	Cam Lock with Pole Ring Sash Pole Pole Ring Access Control Lock Concealed Lock with removable key
OTHER OPTIONS	Insect Screens

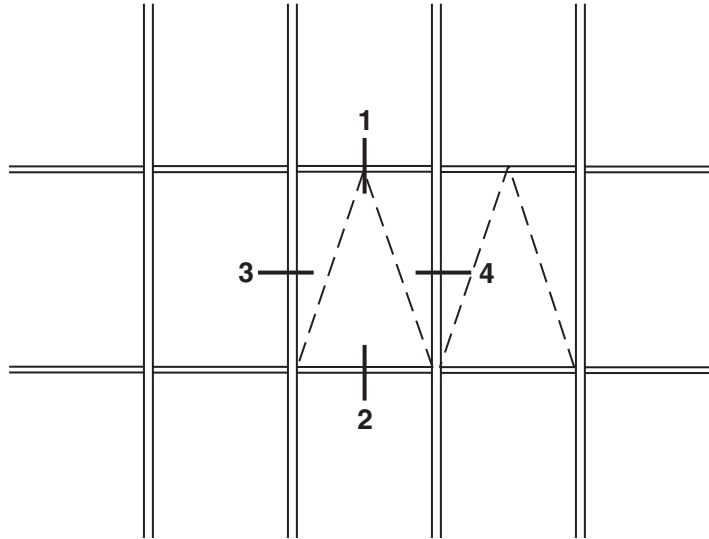
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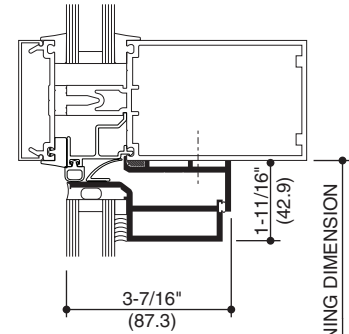
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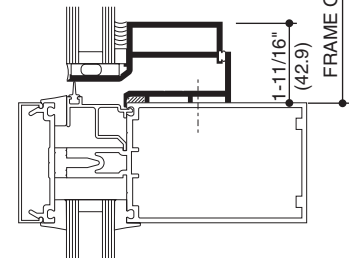
1" STRUCTURAL SILICONE GLAZING



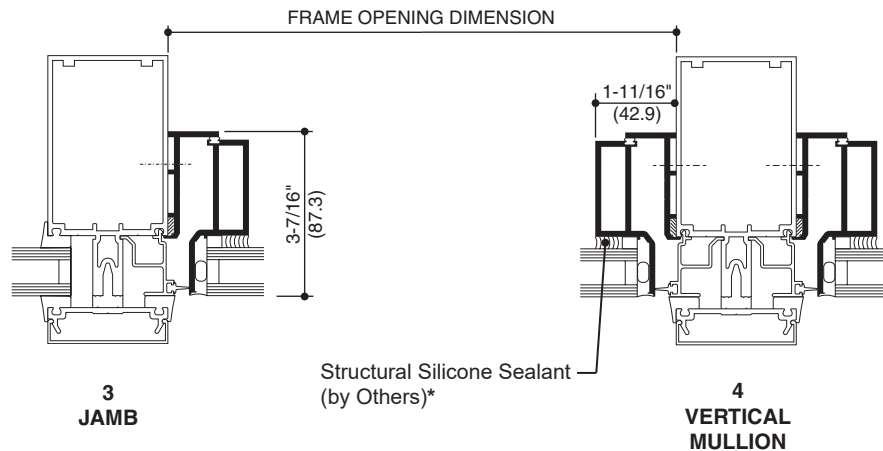
1 HEAD



2 SILL



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



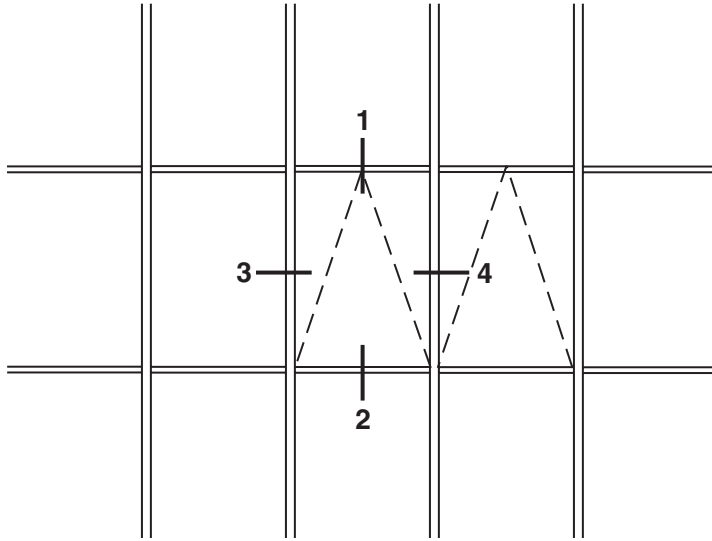
NOTE: THE KAWNEER GLASSvent® WINDOW IS SHOWN IN THESE DETAILS WITH 1600 WALL SYSTEM®1 CURTAIN WALL FOR REFERENCE. OTHER KAWNEER SYSTEMS CAN BE USED. FOR PRODUCT SPECIFIC APPLICATIONS CONSULT YOUR KAWNEER REPRESENTATIVE.

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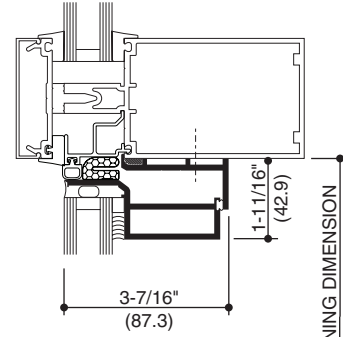
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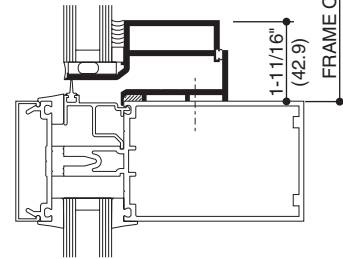
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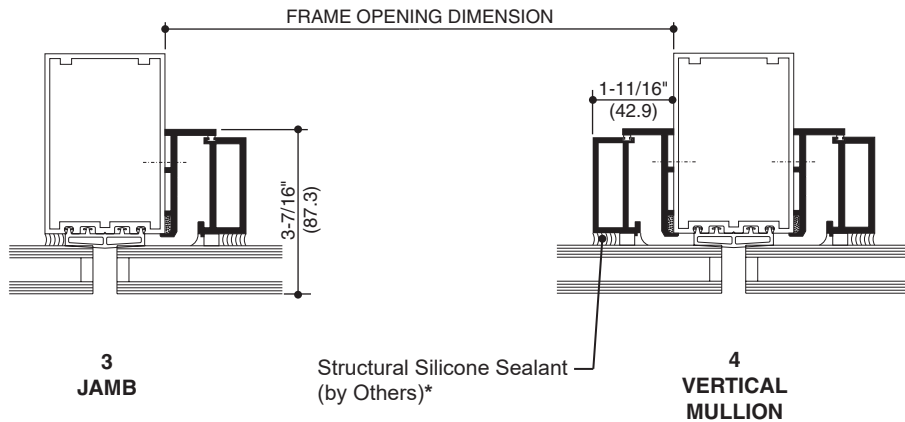
1 HEAD



2 SILL



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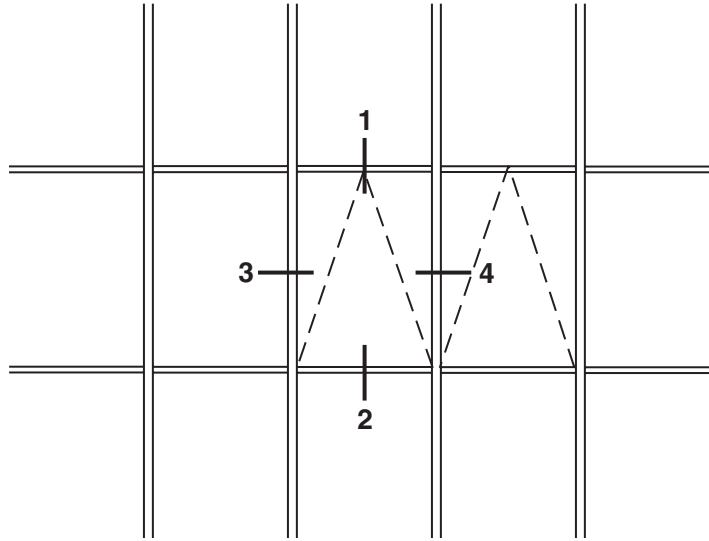
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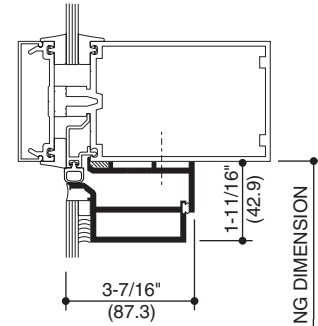
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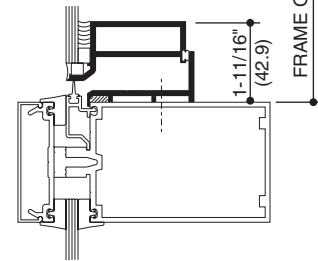
1/4" STRUCTURAL SILICONE GLAZING



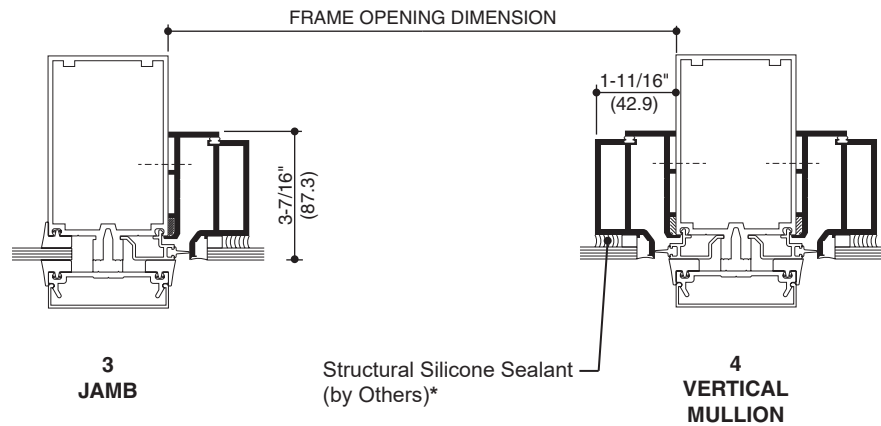
1 HEAD



2 SILL



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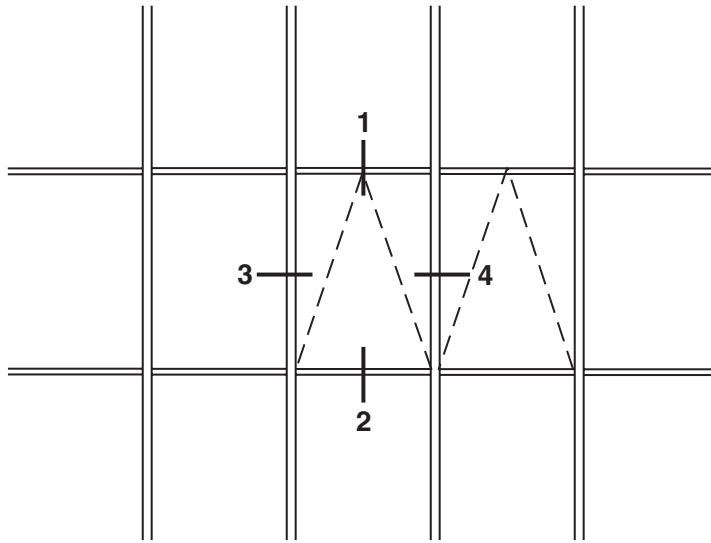
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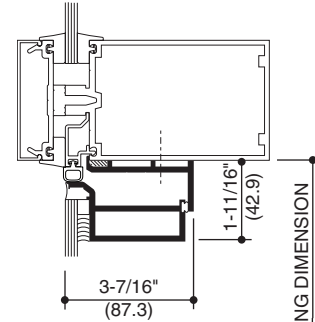
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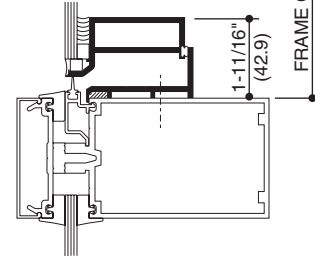
1/4" STRUCTURAL SILICONE GLAZING



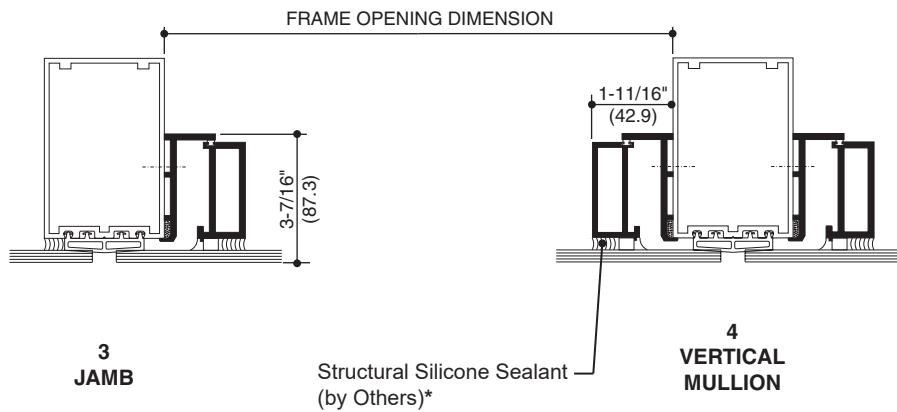
1
HEAD



2
SILL



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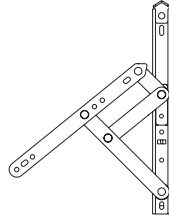


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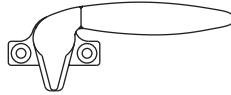
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**STAINLESS STEEL
4 BAR HINGES**



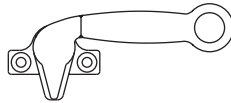
A standard hinge for ventilators providing approximately 45° to 60° openings depending on size. An optional limit stop is available to restrict hinge travel and limit vent opening.

CAM HANDLE



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

**CAM HANDLE
WITH POLE RING**



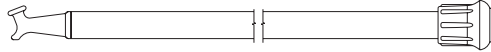
Cast white bronze cam handles with pole ring provide manual operation of ventilators located above reach. These handles are operated with a sash pole.

POLE RING



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

SASH POLE

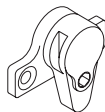
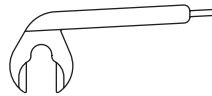


A 3/4" diameter aluminum sash pole with a cast white bronze pull down hook and black rubber tip. Available in 6 ft. and 12 ft. lengths with optional cast white bronze Pole Hanger.

**HANGER
FOR SASH POLE**

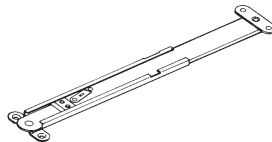


**ACCESS CONTROL
LOCK**



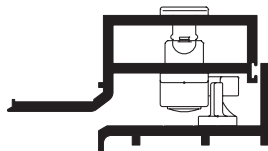
In lieu of cam handles cast white bronze access control locks are offered for managed control of vent operations. Lock is operated with a manganese bronze removable handle.

**88 SS SUPPORT
ARMS**



Support Arms are used when the curtain wall day light opening height exceeds 48". When fully extended, the hardware automatically retains the ventilator in an open position.

CONCEALED LOCK



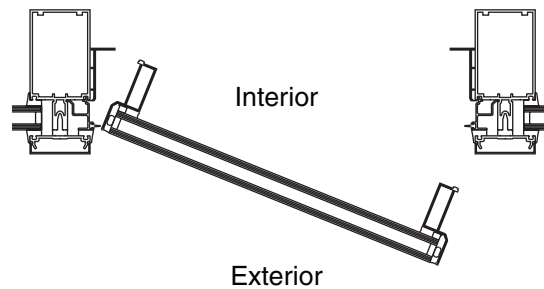
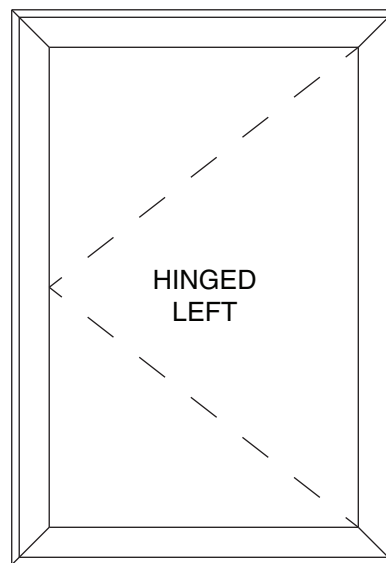
In lieu of cam handles cast white bronze concealed locks are offered for managed control of vent operations. Lock is operated with a removable key.

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Features

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



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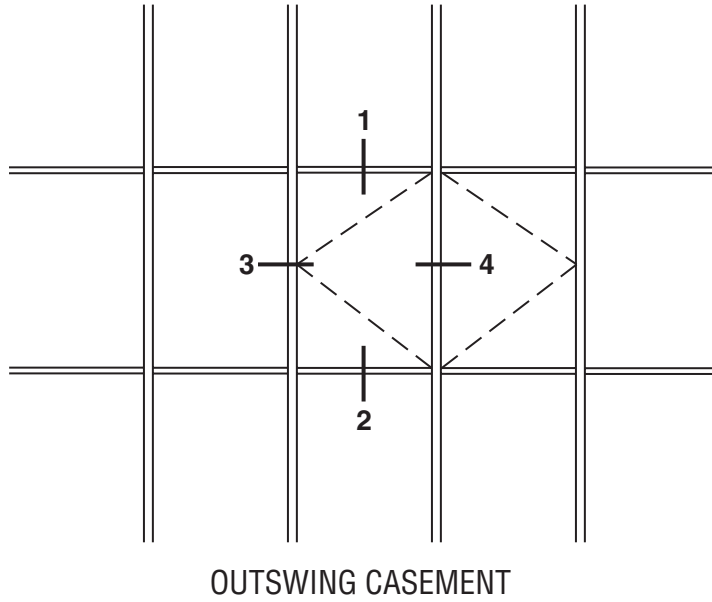
CLASS and GRADE	Architectural Grade AW-PG90 / AW-PG90C
TESTING STANDARD	AAMA / WDMA / CSA / 101 / I.S.2 / A440 (NAFS)
SYSTEM DEPTH	3-7/16" Overall System Depth (1" Infill) 2-11/16" Overall System Depth (1/4" Infill)
TYPICAL WALL THICKNESS	0.125 Nominal Frame
TYPICAL MAX. VENT SIZE	31" x 72" or 36" x 63" (1" Infill) 36" x 72" (1/4" Infill)
TYPICAL MIN. VENT SIZE	14" x 14"
INFILL OPTIONS	1" and 1/4"
STANDARD HARDWARE	Stainless Steel 4-Bar Hinges Cast White Bronze Cam Handles
OPTIONAL HARDWARE	Cam Lock with Pole Ring SashPole Pole Ring Access Control Locks Multi-Point Lock Hook Bolt Lock Concealed Lock with removable key
OTHER OPTIONS	Insect Screens

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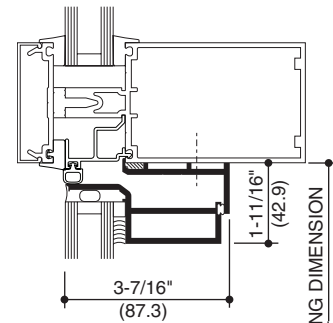
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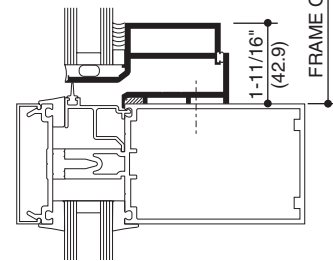
1" STRUCTURAL SILICONE GLAZING



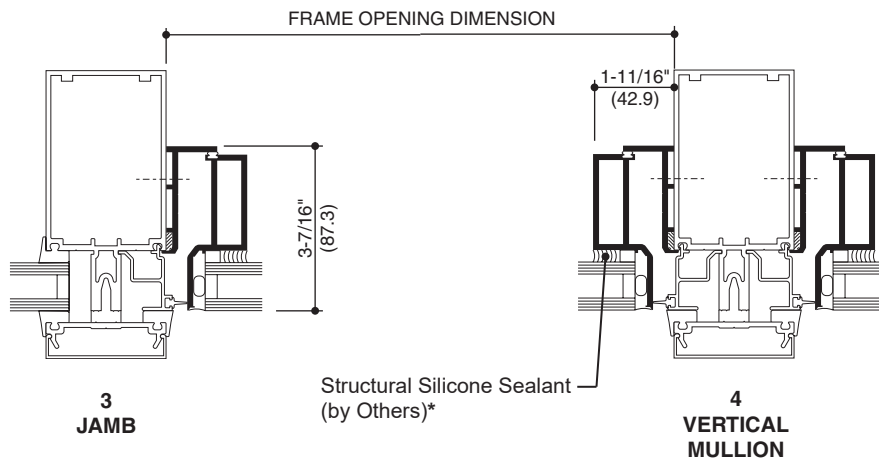
1
HEAD



2
SILL



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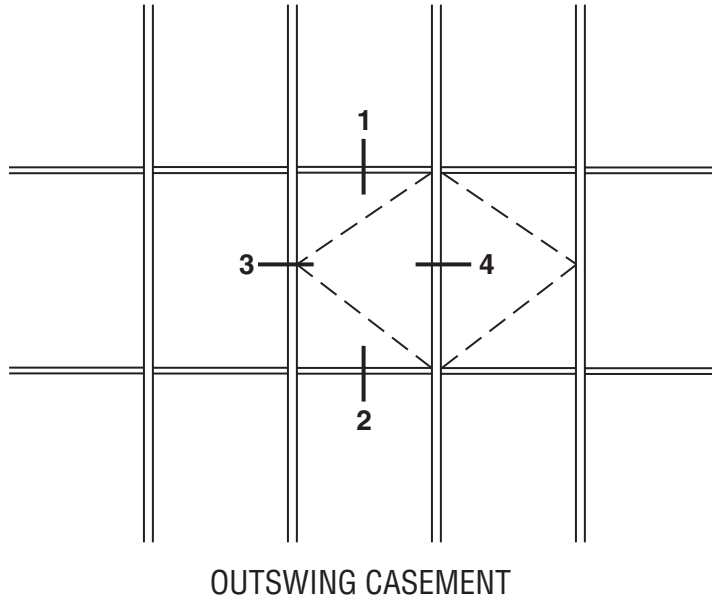
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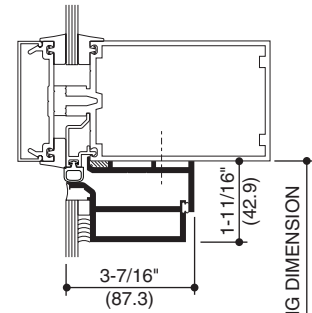
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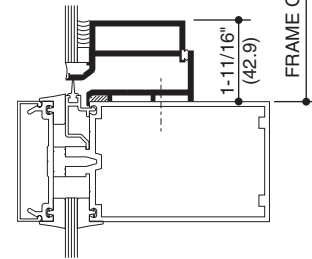
1/4" STRUCTURAL SILICONE GLAZING



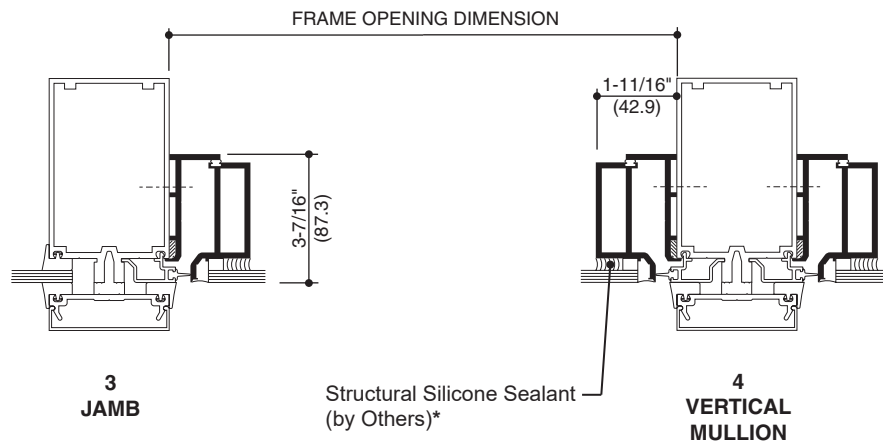
1 HEAD



2 SILL



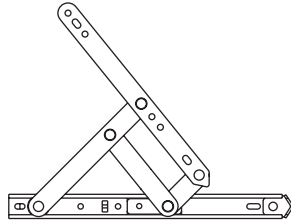
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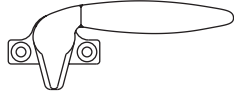
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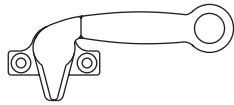
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**STAINLESS STEEL
4 BAR HINGES**

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

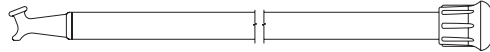
Cast white bronze cam handles are standard for the manual operation and locking of ventilators.

**CAM HANDLE
WITH POLE RING**

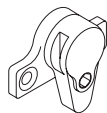
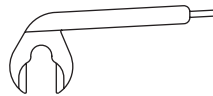
Cast white bronze cam handles with pole ring provide manual operation of ventilators located above reach. These handles are operated with a sash pole.

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.

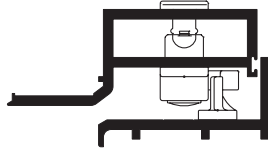
MULTI-POINT LOCK

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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CONCEALED LOCK

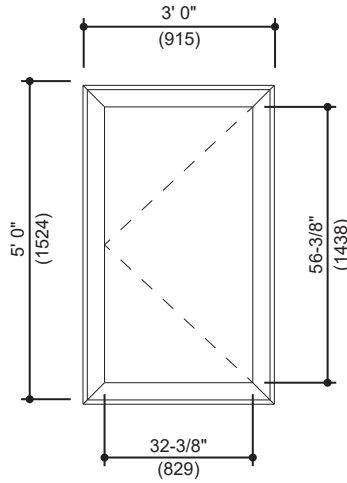


In lieu of cam handles cast white bronze concealed locks are offered for managed control of vent operations. Lock is operated with a removable key.

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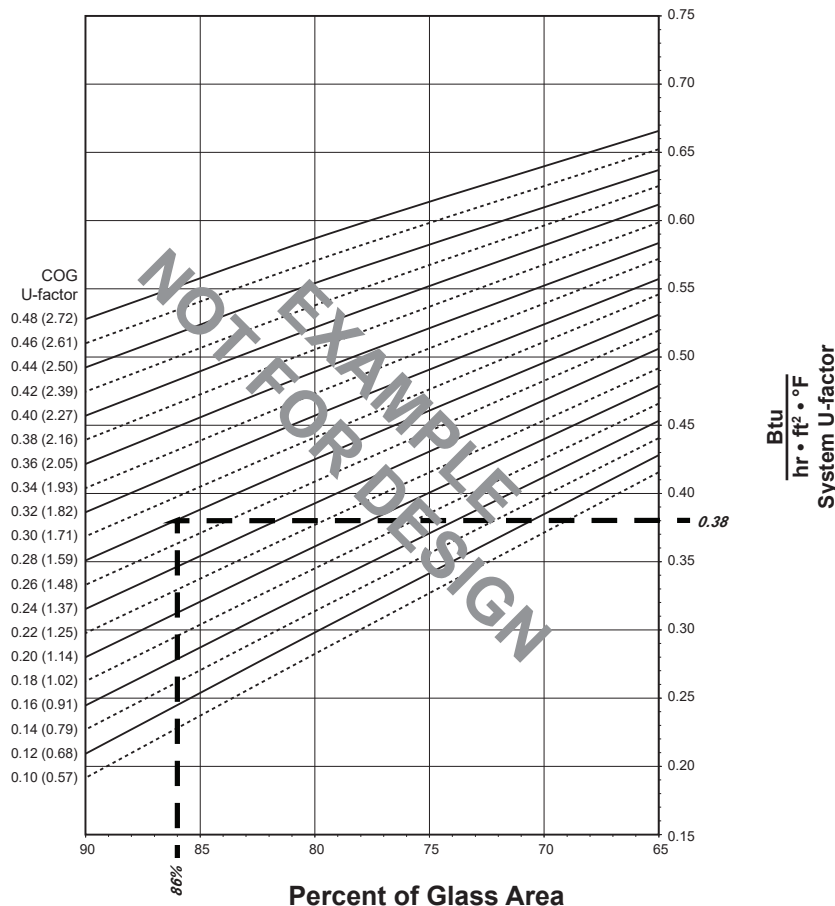
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Generic Project Specific U-factor Example Calculation
 (Percent of Glass will vary on specific products depending on sitelines)



Example Glass U-Factor = 0.28 Btu/hr • ft² • °F
 Total Daylight Opening = 32-3/8" • 56-3/8" = 12.83ft²
 Total Projected Area = 3' 0" • 5' 0" = 15 ft²
 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 • ft² • °F

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**1600 System®1 with GLASSvent® - Projecting (Awning - Single)
1" Double Glazed - Warm-Edge Glazing Spacer**

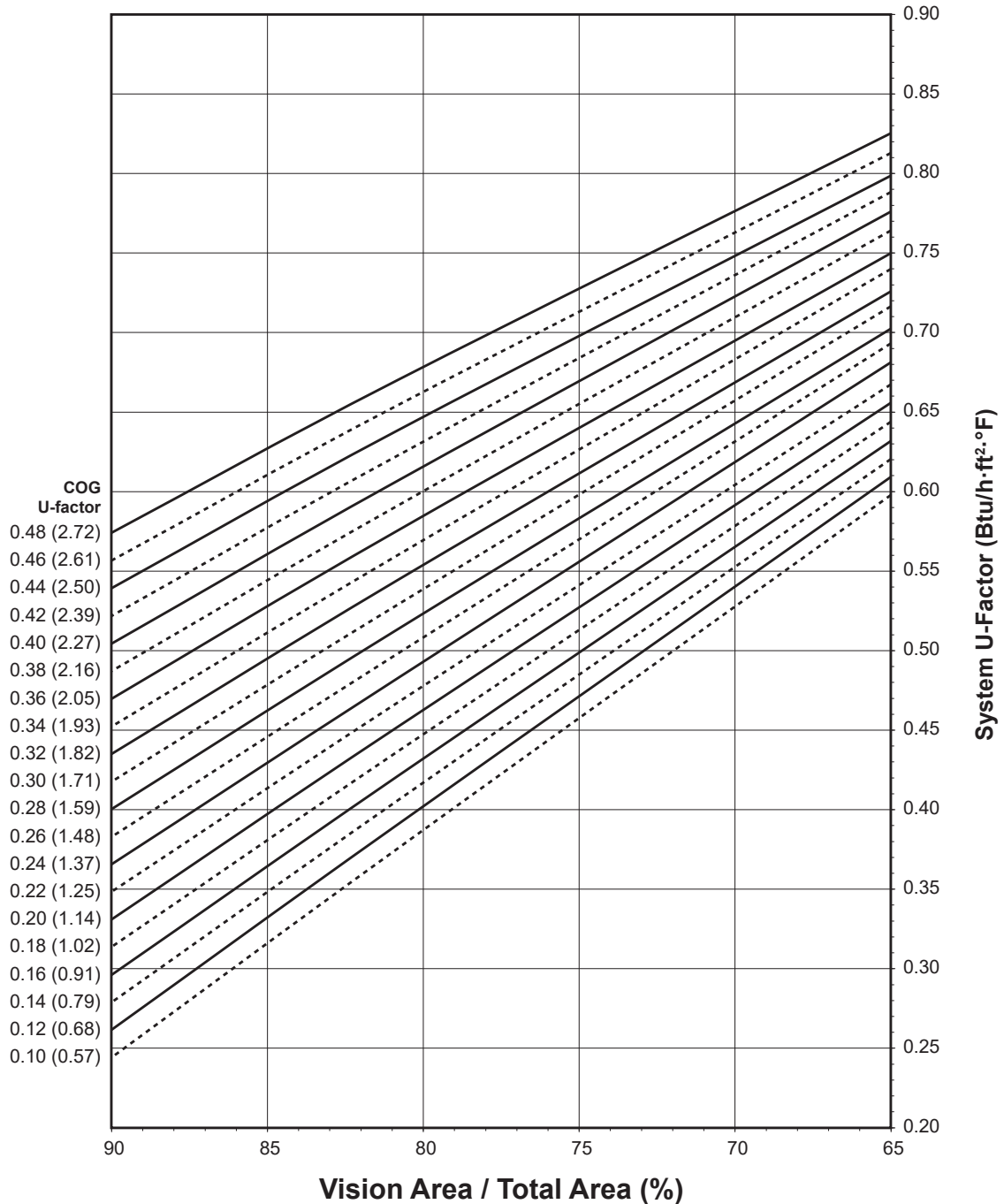
Note:

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.

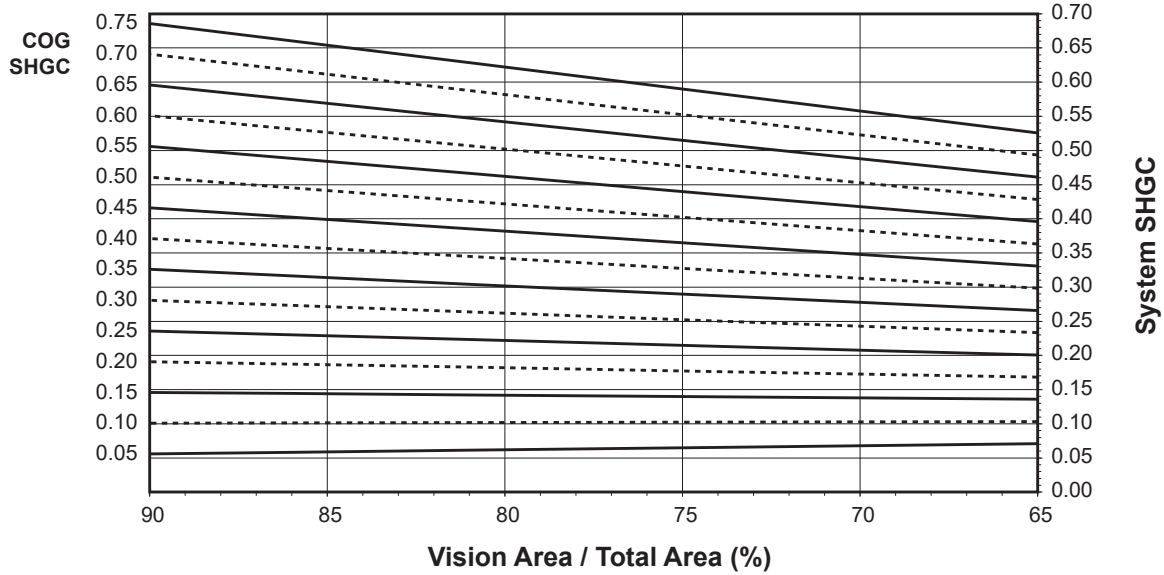
Glass properties are based on center of glass values and are obtained from your glass supplier.

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.

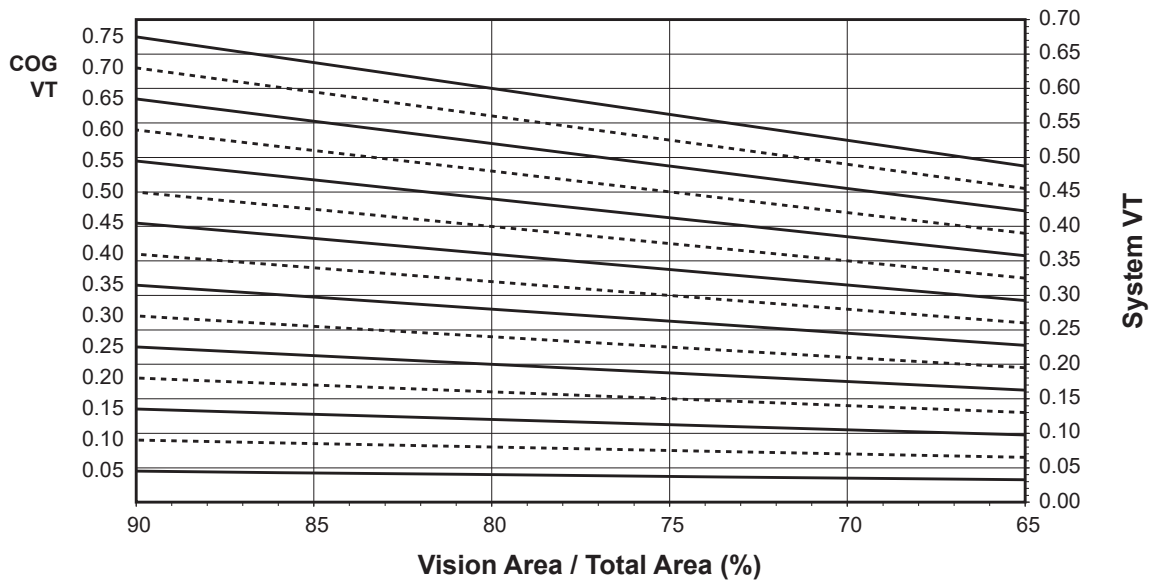
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**1600 System®1 with GLASSvent® - Projecting (Awning - Single)
1" Double Glazed - Warm-Edge Glazing Spacer**

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 ¹ (BTU/hr • ft ² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
0.48	0.67
0.46	0.65
0.44	0.64
0.42	0.62
0.40	0.61
0.38	0.59
0.36	0.58
0.34	0.56
0.32	0.54
0.30	0.53
0.28	0.51
0.26	0.50
0.24	0.48
0.22	0.47
0.20	0.45
0.18	0.44
0.16	0.42
0.14	0.41
0.12	0.39
0.10	0.38

**1600 System®1 with GLASSvent®
Projecting (Awning - Single)
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 ²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.63
0.70	0.59
0.65	0.55
0.60	0.51
0.55	0.47
0.50	0.43
0.45	0.38
0.40	0.34
0.35	0.30
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.14
0.10	0.10
0.05	0.06

Visible Transmittance ²

Glass VT ³	Overall VT ⁴
0.75	0.61
0.70	0.57
0.65	0.53
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

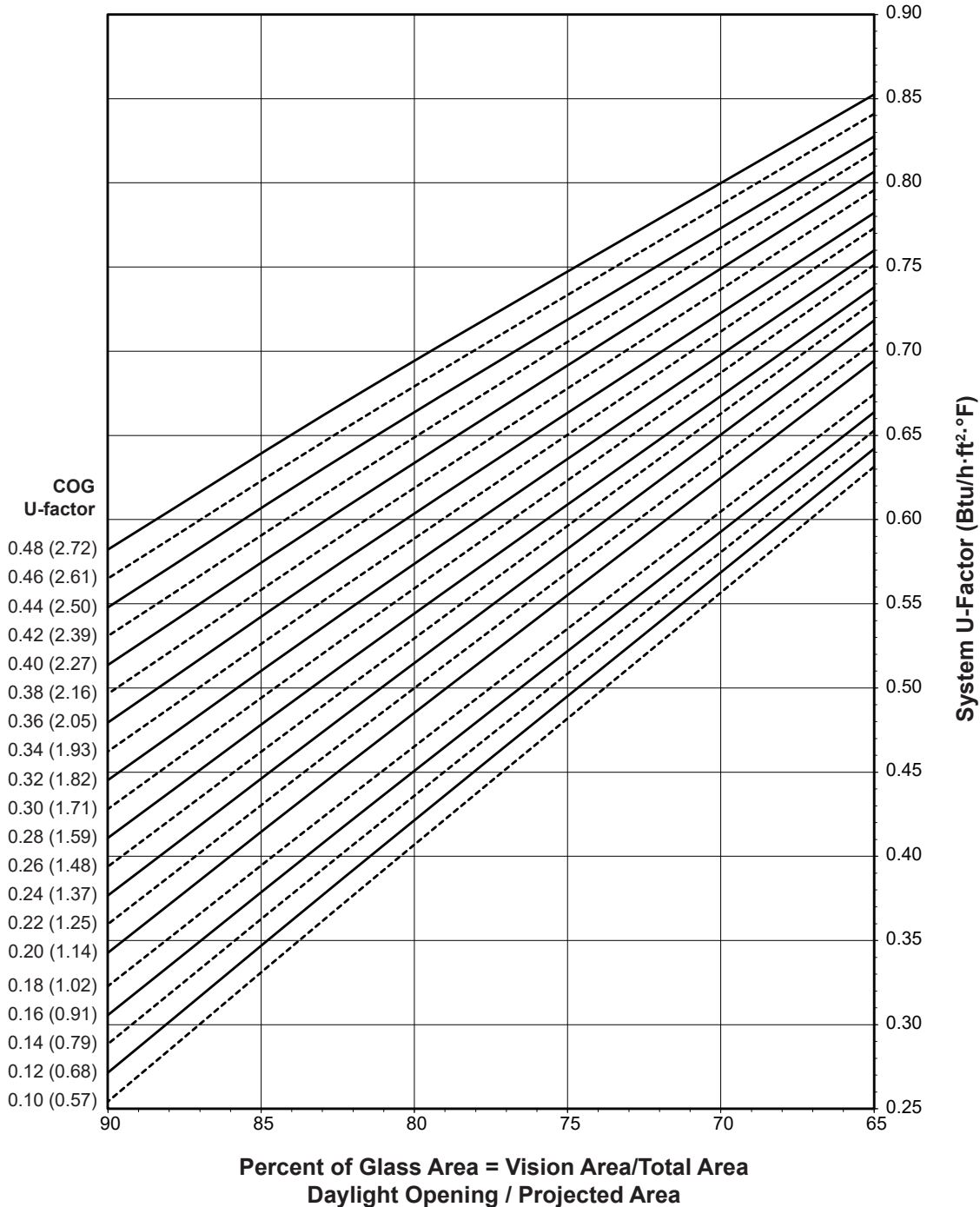
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**1600 System®1 with GLASSvent® - Projecting (Awning - Single)
1" Double Glazed - Aluminum Glazing Spacer**

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.

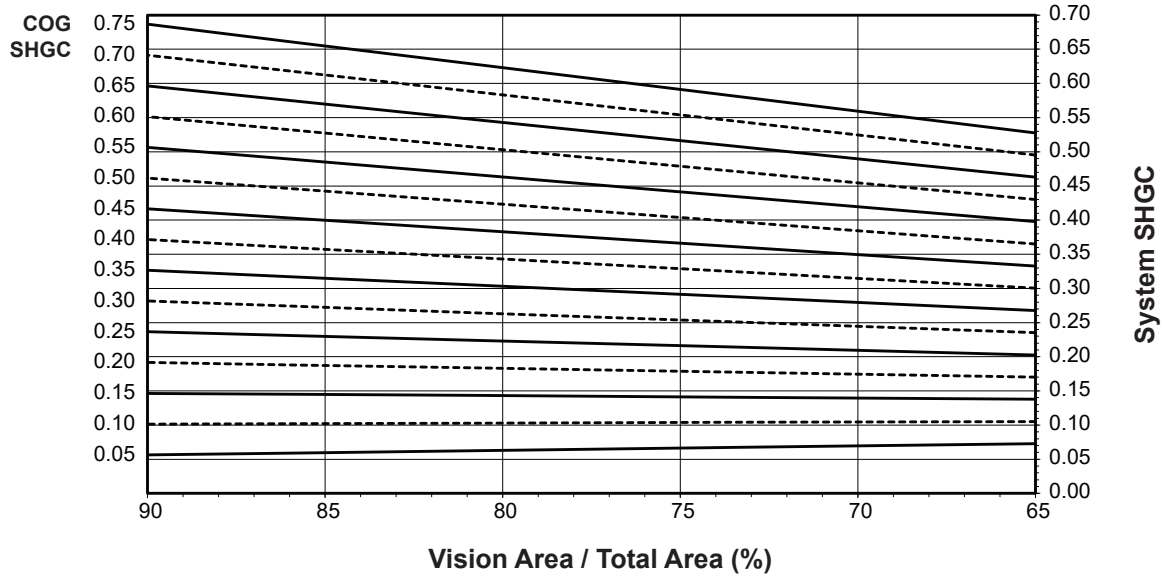
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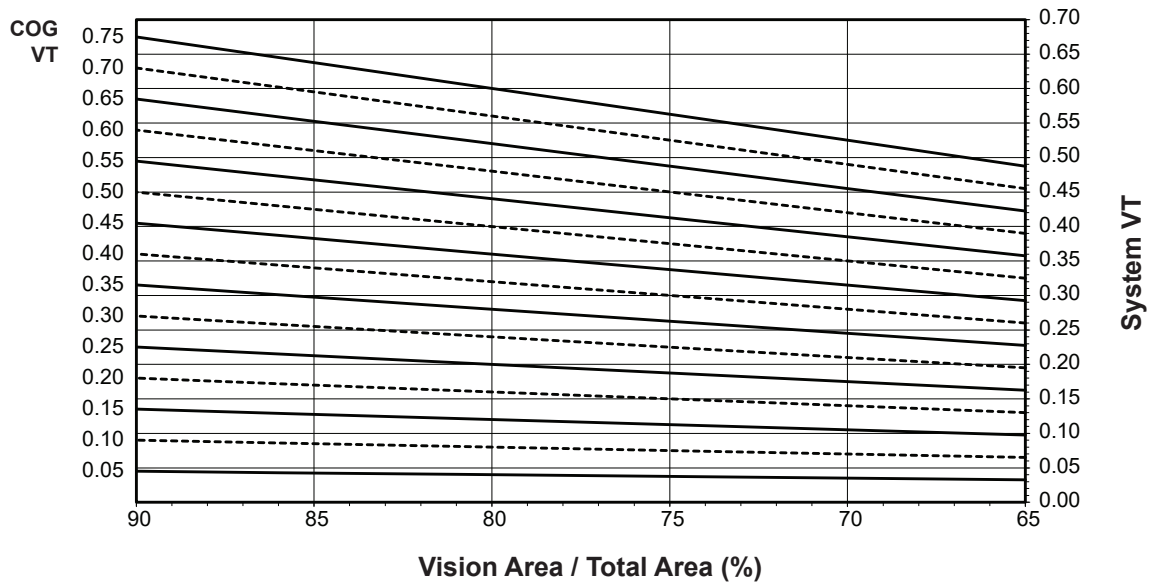
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**1600 System®1 with GLASSvent® - Projecting (Awning - Single)
 1" Double Glazed - Aluminum Glazing Spacer**

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 Transmittance¹ (BTU/hr • ft² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
0.48	0.69
0.46	0.67
0.44	0.65
0.42	0.64
0.40	0.62
0.38	0.61
0.36	0.59
0.34	0.58
0.32	0.56
0.30	0.55
0.28	0.53
0.26	0.52
0.24	0.50
0.22	0.49
0.20	0.47
0.18	0.45
0.16	0.44
0.14	0.42
0.12	0.41
0.10	0.39

**1600 System®1 with GLASSvent®
Projecting (Awning - Single)
1" Double Glazed
Aluminum 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 (59-11/16" by 23-5/8").

SHGC Matrix²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.63
0.70	0.59
0.65	0.55
0.60	0.51
0.55	0.47
0.50	0.43
0.45	0.39
0.40	0.35
0.35	0.30
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.14
0.10	0.10
0.05	0.06

Visible Transmittance²

Glass VT ³	Overall VT ⁴
0.75	0.61
0.70	0.57
0.65	0.53
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

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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**1600 System®1 with GLASSvent® - Casement (Single Vent)
1" Double Glazed - Warm-Edge Glazing Spacer**

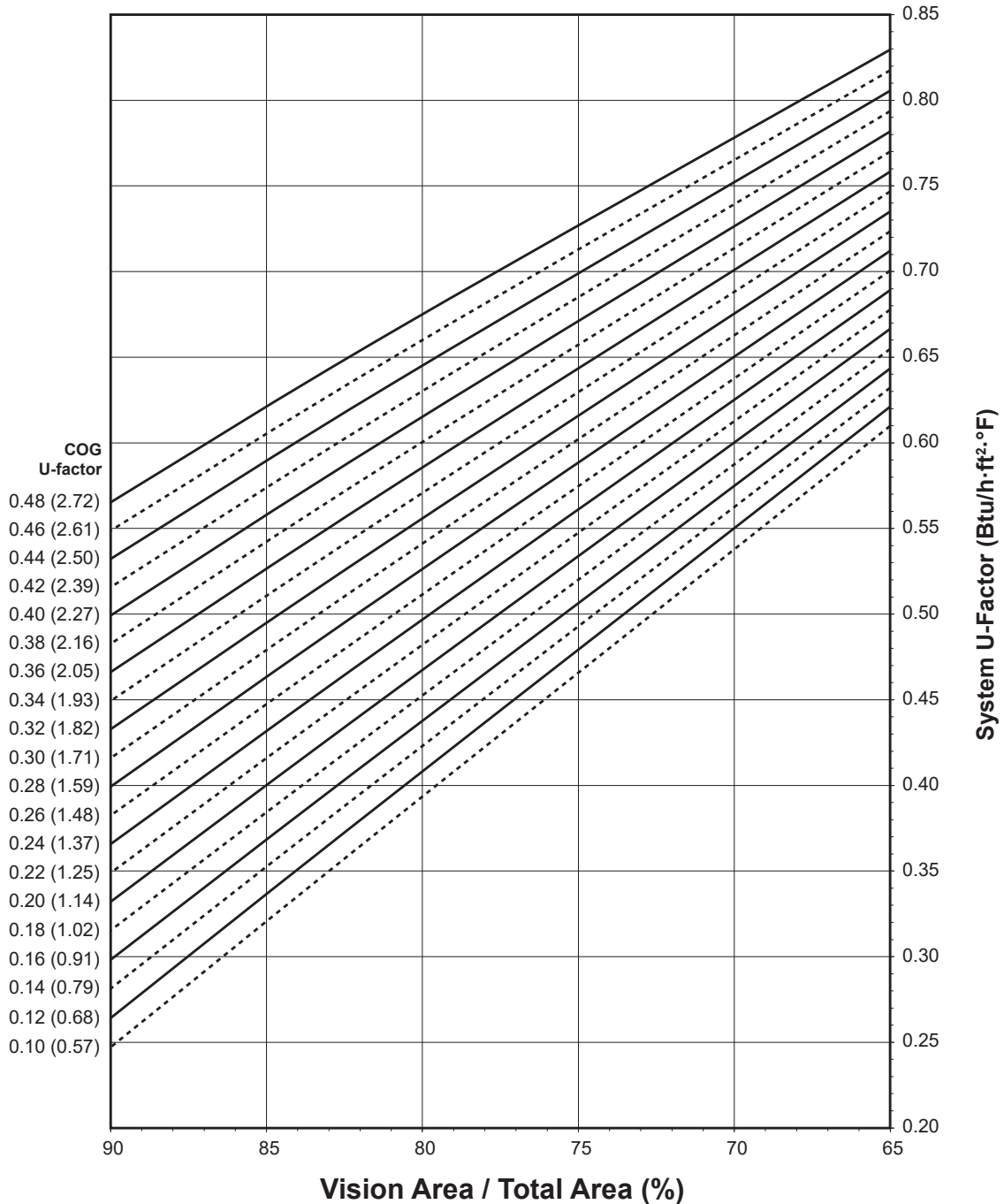
Note:

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.

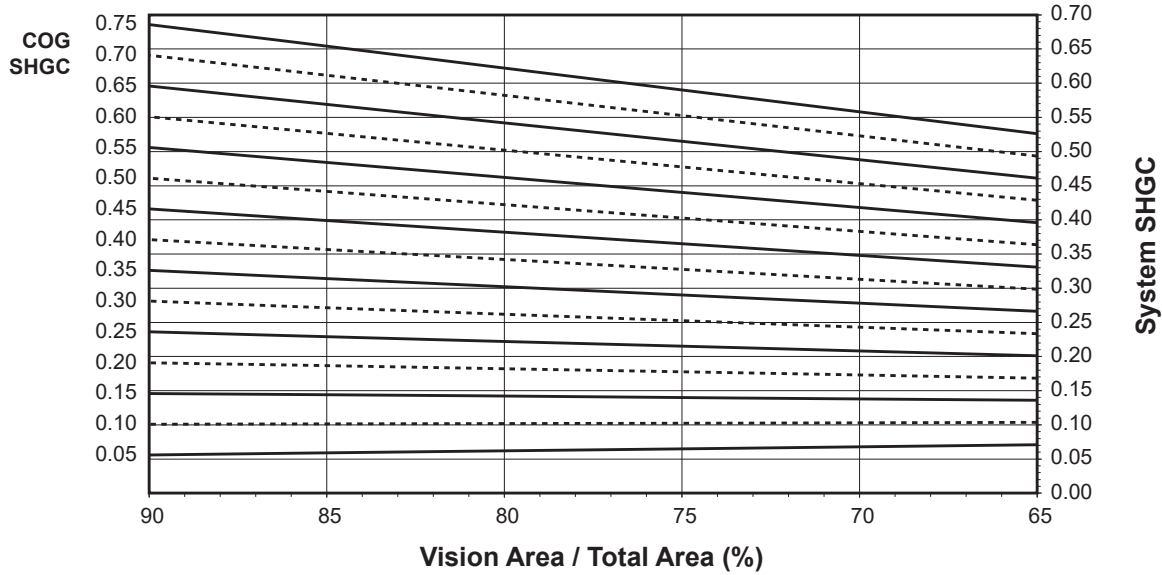
Glass properties are based on center of glass values and are obtained from your glass supplier.

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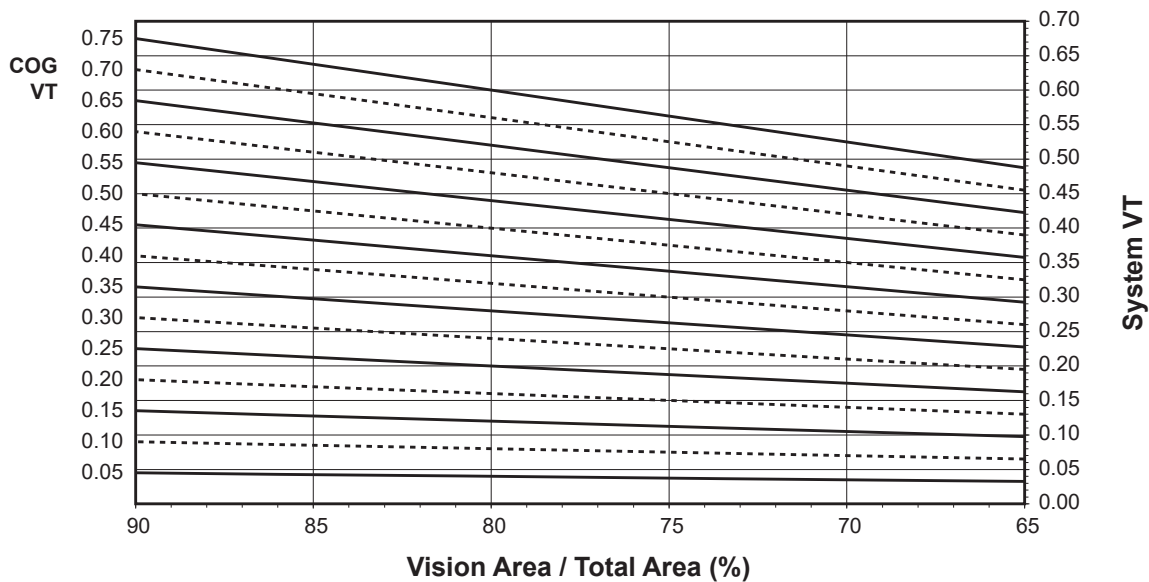
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**1600 System®1 with GLASSvent® - Casement (Single Vent)
1" Double Glazed - Warm-Edge Glazing Spacer**

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



System Visible Transmittance (VT) vs Percent of Vision Area



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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Thermal Transmittance ¹ (BTU/hr • ft ² • °F)

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0.48	0.67
0.46	0.65
0.44	0.64
0.42	0.62
0.40	0.61
0.38	0.59
0.36	0.58
0.34	0.56
0.32	0.55
0.30	0.53
0.28	0.52
0.26	0.50
0.24	0.49
0.22	0.47
0.20	0.46
0.18	0.44
0.16	0.43
0.14	0.41
0.12	0.40
0.10	0.38

**1600 System®1 with 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.
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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 ²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.63
0.70	0.59
0.65	0.55
0.60	0.51
0.55	0.47
0.50	0.43
0.45	0.38
0.40	0.34
0.35	0.30
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.14
0.10	0.10
0.05	0.06

Visible Transmittance ²

Glass VT ³	Overall VT ⁴
0.75	0.61
0.70	0.57
0.65	0.53
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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