EC 97911-30 FEATURES

Features

- 350 Tuffline® has 3-1/2" vertical stile, 3-3/8" top and 6-3/4" bottom rail
- 500 Tuffline® has 5" vertical stile, 5" top and 6-3/4" bottom rail
- Door is 2" deep and has 3/16" walls
- Dual moment welded corner construction
- Single acting
- · Heavy duty offset pivots, butt hinges or continuous geared hinge
- Surface mounted or concealed closers
- MS locks or panic hardware
- Architects Classic push/pulls
- 1/4", 5/8" or 1" infills
- Double weatherstripping at meeting stiles; single exterior pile and interior twin-fin polymeric adjustable astragal
- Frame is 2" x 4-1/2" and includes 3/16" wall thickness at all hardware attachment points
- Sealair® bulb polymeric weatherstripping in door frames
- Permanodic® anodized finishes in 7 choices
- Painted finishes in standard and custom choices

Optional Features

- Numerous push/pull finishes
- Paneline® exit device, Paneline® EL exit device
- Various bottom and cross rails
- Optional 3/16" wall thickness throughout frame

Product Applications

- 350 Tuffline® constructed for unequaled strength and designed for high traffic and high abuse applications such as schools, universities and sports stadiums
- 500 Tuffline® offers the same performance features as the 350 Tuffline® except in a wide stile design

For specific product applications, Consult your Kawneer representative.



2

© Kawneer Company, Inc., 2011



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

EC 97911-30 INDEX

PICTORIAL VIEW	5
350 ENTRANCE DETAILS (Standard Frame)	6
350 ENTRANCE DETAILS (Heavy Frame)	7
500 ENTRANCE DETAILS (Standard Frame)	8
500 ENTRANCE DETAILS (Heavy Frame)	9
350/500 ENTRANCE DETAILS	10
PANELINE® / PANELINE® EL EXIT DEVICE	11
DOOR AND FRAME OPTIONS	12
HARDWARE OPTIONS	13
THERMAL CHARTS	14-26

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF 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.

Metric (S1) conversion figures are included throughout these details for reference. Numbers in parentheses () are millimeters unless otherwise noted.

The following metric (S1) units are found in these details:

m – meter

cm - centimeter

mm - millimeter

s - second

Pa - pascal

MPa - megapascal

Kawneer reserves the right to change configurations without prior notice when deemed necessary for product improvement.



BLANK PAGE

EC 97911-30

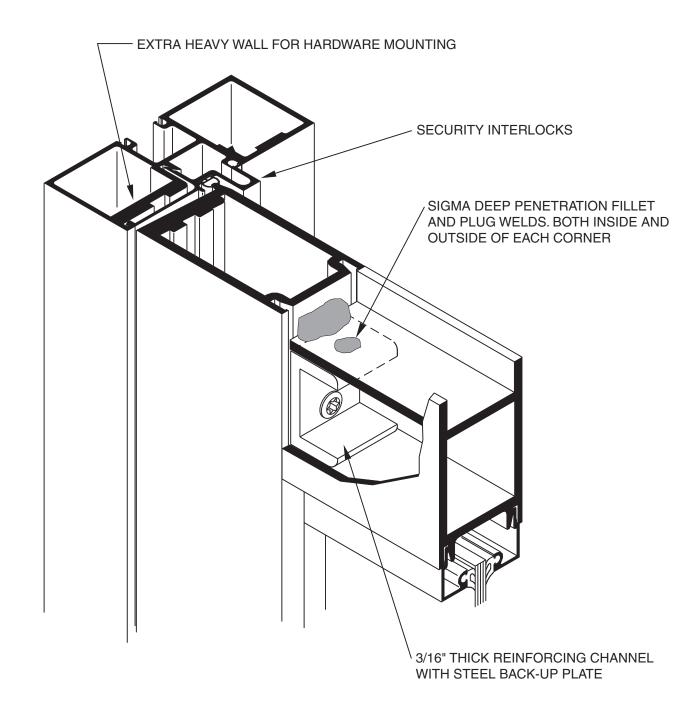
Laws and building and safety codes governing the design and use of glazed entrance, window, and cutain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

© Kawneer Company, Inc., 2011

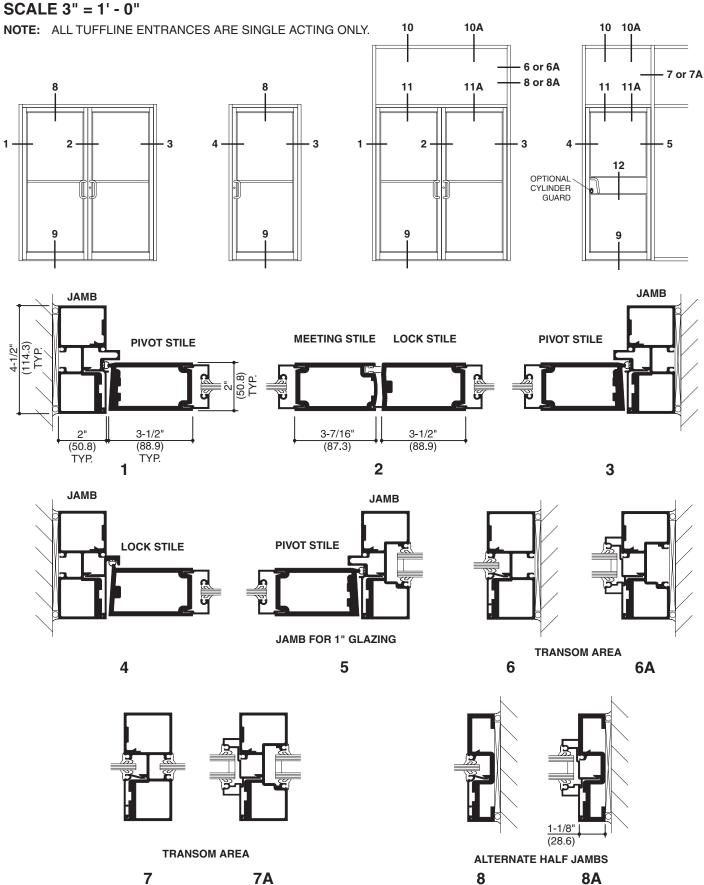


PICTORIAL VIEW EC 97911-30





350 TUFFLINE® ENTRANCE DETAILS (STANDARD FRAME)

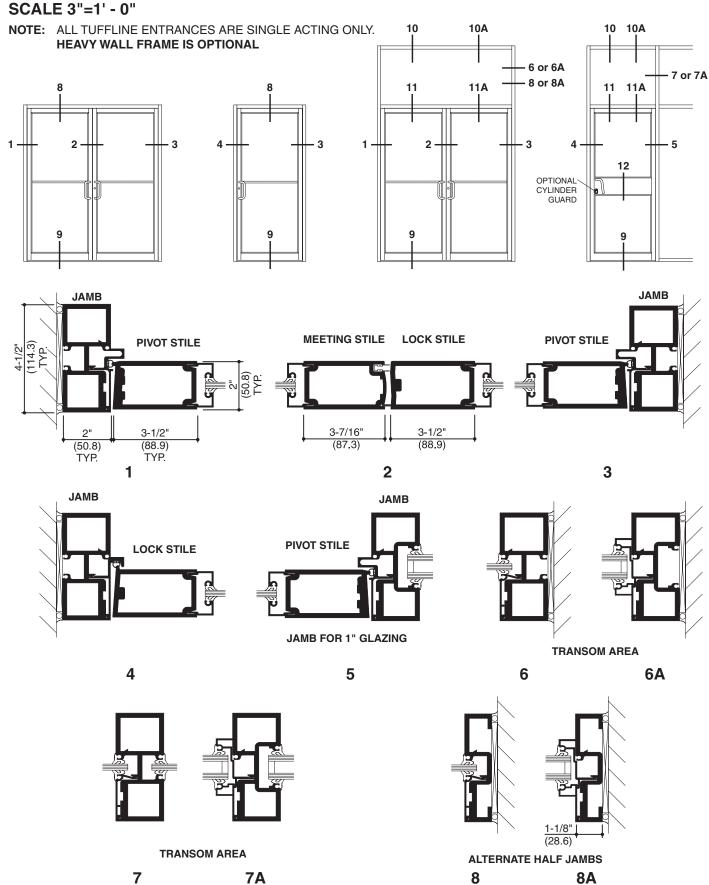




350 TUFFLINE® ENTRANCE DETAILS (HEAVY WALL FRAME)

EC 97911-30

© Kawneer Company, Inc., 2011





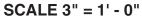
500 TUFFLINE® ENTRANCE DETAILS (STANDARD FRAME)

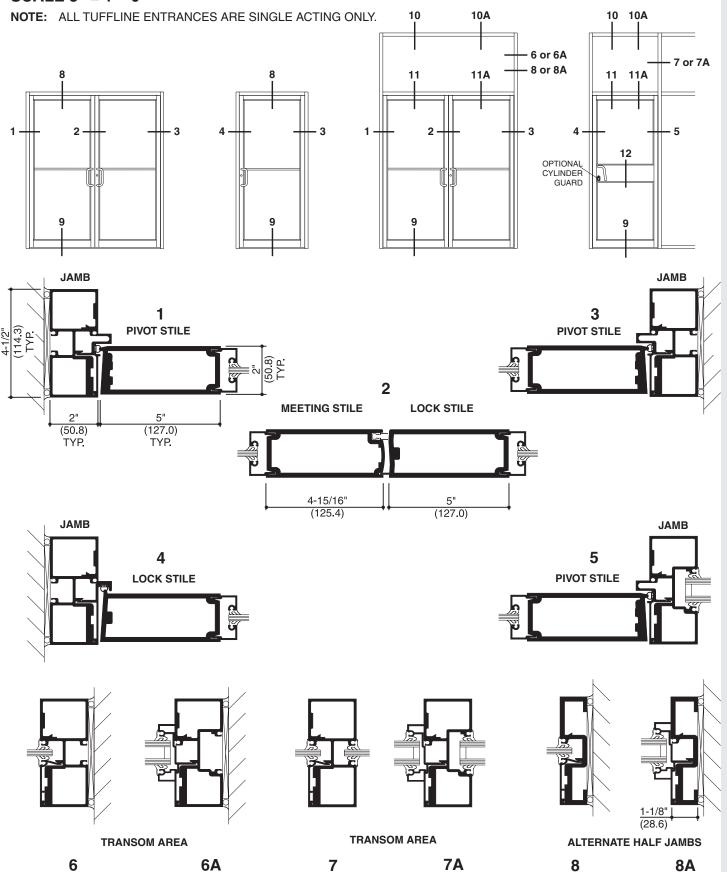
EC 97911-30

Laws and building and safety codes governing the design and use of 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.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

© Kawneer Company, Inc., 2011

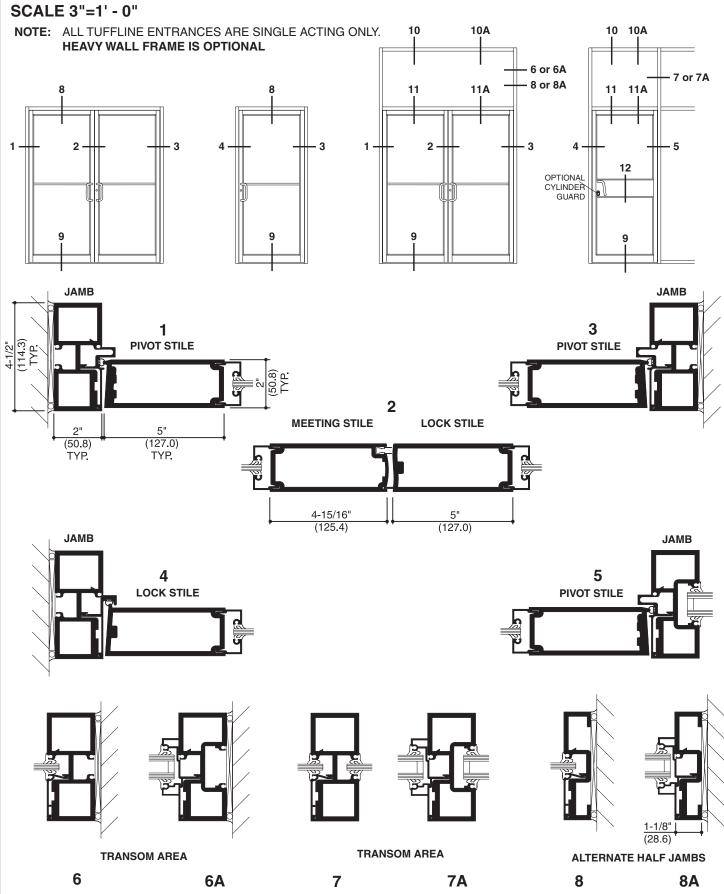




KAWNEER

500 TUFFLINE® ENTRANCE DETAILS (HEAVY WALL FRAME)

© Kawneer Company, Inc., 2011

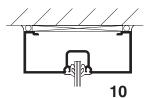


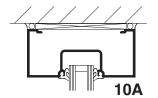
350/500 ENTRANCE DETAILS

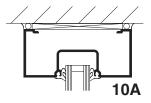
EC 97911-30

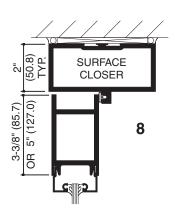
SCALE 3" = 1' - 0"

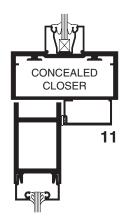


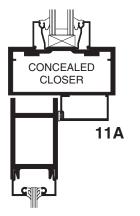


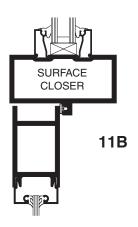


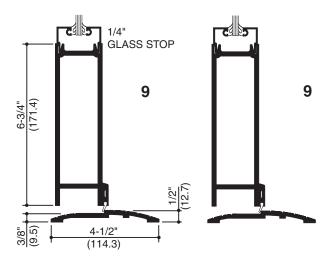












Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

© Kawneer Company, Inc., 2011

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

KAWNEER AN ALCOA COMPANY

350/500 TUFFLINE® ENTRANCES

Kawneer Company, Inc., 2011

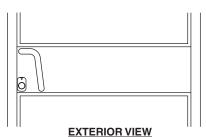
EC 97911-30 SCALE 3" = 1' - 0"

PANELINE® EXIT DEVICE

The Paneline® concealed rod exit device for 350 and 500 Tuffline doors will accommodate variations in stile width and door width as shown in the following illustrations.

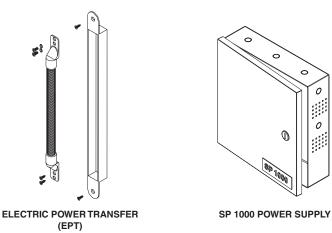
The Optional Paneline® EL device is designed for electrified access control and is compatible with most key pad and card reader

systems. See Hardware Section for complete description of Paneline hardware, including finish of units. (50.8)Paneline® uses mortise cylinder in lieu of the normal rim-type. (27.8)Dummy Paneline units are not for use with any type of lock. **INTERIOR VIEW US LISTED** LOCK STILE TRIM FILLER WIDTH VARIES WITH STILE WIDTH DOGGING LOCK (Not Available with Paneline EL) 3 (214.3 (181 12 PUSH CAD DETAIL EC103 PIVOT STILE TRIM FILLER WIDTH VARIES WITH DOOR WIDTH **350 DOOR** DOOR OPENING WIDTH 4'-0" (1219.2) MAX. - 2'-10 13/32" (873.9) MIN. 3'-0" (914.6) **ADA MIN.** 3'-0 1/32" 1'-5 7/8" (454.0) (917.8)11/16" (17.4)ACTIVE PUSH PANEL то воттом FIXED WIDTH OF DOOR **CROSSRAIL** (WITH EXIT DEVICE PUSH AND CPN PULL HANDLE) **500 DOOR** 5 7/8" DOOR OPENING WIDTH 4'-0" (1219.2) MAX. - 2'-11 29/32" (912.0) MIN. 3'-0" (914.6) **ADA MIN.**



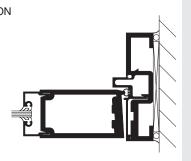
"CPN" PULL AND OPTIONAL CYLINDER GUARD SHOWN

PANELINE® EL COMPONENTS





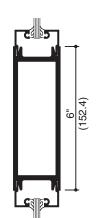
REMOVABLE MULLION MEETING STILE FOR USE WITH RIM PANIC 1/4" (6.4)



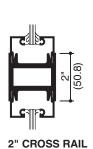
COMMON LOCK STILE DOOR JAMB

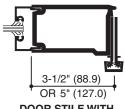
COMMON LOCK STILE DOOR JAMB

ALTERNATE PIVOT JAMB



6" CROSS RAIL

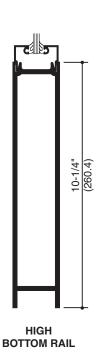




DOOR STILE WITH **CONTINUOUS HINGE**







GLAZING TYPES



SQUARE STOPS FOR 1/4" INFILL (STANDARD)



FOR 1/4" INFILL



BEVELED STOPS FOR 5/8" INFILL



SQUARE STOPS FOR 5/8" INFILL



SQUARE STOPS FOR 1" INFILL





BEVELED STOPS FOR 5/8" INFILL WITH 5/16" MUNTIN



BEVELED STOPS FOR 1/4" INFILL WITH 5/16" MUNTIN



SQUARE STOPS FOR 5/8" INFILL WITH 5/16" MUNTIN



SQUARE STOPS FOR 1/4" INFILL WITH 5/16" MUNTIN



SQUARE STOPS FOR 1" INFILL WITH 5/16" MUNTIN



e design and use of glazed widely. Kawneer does not control hardware, or glazing materials,

ws and building and safety codes governing the desig trance, window, and cutain wall products vary widely, selection of product configurations, operating hardw d assumes no responsibility therefor.

Laws a entran the se and a

350/500 TUFFLINE® ENTRANCES

EC 97911-30 HARDWARE OPTIONS

HINGES & PIVOTS

BUTT HINGES 1-1/2 pair heavy duty 5" x 4-1/2" ball bearing butt hinges per leaf.

Intermediate pivot is standard and is load bearing and adjustable.

OPTIONAL HINGES Continuous Hinge.

NOTE: Intermediate hinges and pivots are standard on all 350/500 Tuffline Entrances, no substitution of outside hinge hardware by others.

DOOR CLOSERS

CONCEALED OVERHEAD Standard COC with single acting offset arm or LCN 2030 single acting.

NOTE: For high traffic & high wind applications, a supplemental door stop is recommended.

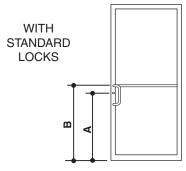
SURFACE MOUNTED Norton 1601 adjustable or 1601 BF adjustable, LCN 1260 adjustable or LCN 4040 Super Smoothe.

PUSH - PULLS

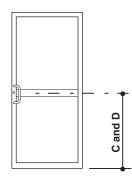
- Architects Classic style CO-9 Pull and CP-II Push Bar
- Architects Classic style CO-9 Pull and CP Push Bar
- Architects Classic style CO-12 Pull and CP-II Push Bar
- Architects Classic style CO-12 Pull and CP Push Bar
- Architects Classic style CO-9/CO-9 Pull
- Architects Classic style CO-12/CO-12 Pull
- Architects Classic style CO-9 Pull with Exit Devices
- Architects Classic style CPN Pull with Paneline® and Paneline® EL Exit Devices

LOCKS AND EXIT DEVICES

- Adams Rite 1850 Lock, Adams Rite 3 Point Lock and Adams Rite 1850-050 (single doors only)
- Kawneer Standard Flush Bolts
- Kawneer Controller®
- Cylinder Guard
- Paneline® Concealed Rod Exit Device, Paneline® EL Concealed Rod Exit Device
- Concealed Rod Exit Device
- Dor-o-matic/Falcon 1490, 1690, EL 1690 and 1990 Concealed Rod Exit Device
- Dor-o-matic/Falcon 1590, 1790, EL 1790 and 2090 Rim Exit Device







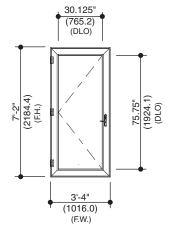
Dimension	Α	В	С	D
HARDWARE ITEM	DEADLOCK/LATCH	PUSH BAR/PULL	1690 TOUCH BAR	1790 TOUCH BAR
MEASURED TO	ှင့် OF CYLINDER	ှင့် OF PUSH BAR	© OF TOUCH BAR	© OF TOUCH BAR
HEIGHT	40-13/16" (1036.6)	44-5/16" (1125.5)	40-5/8" (1031.9)	41-5/16" (1049.4)



THERMAL CHARTS

EC 97911-30

Project Specific U-Factor Example Calculation



Example Glass U-Factor = 0.28 Btu/hr • ft² • °F

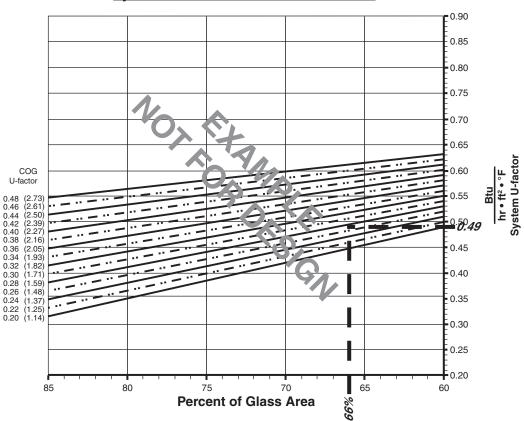
Total Daylight Opening = 30.125" x 75.75" = 15.85 ft²

Total Projected Area $= 3'-4" \times 7'-2" = 23.9 \text{ ft}^2$

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100

 $= (15.85 \div 23.9)100 = 66\%$

System U-factor vs Percent of Glass Area



Based on 66% glass and center of glass (COG) U-factor of 0.28 System U-factor is equal to 0.49 Btu/hr • ft2 • °F



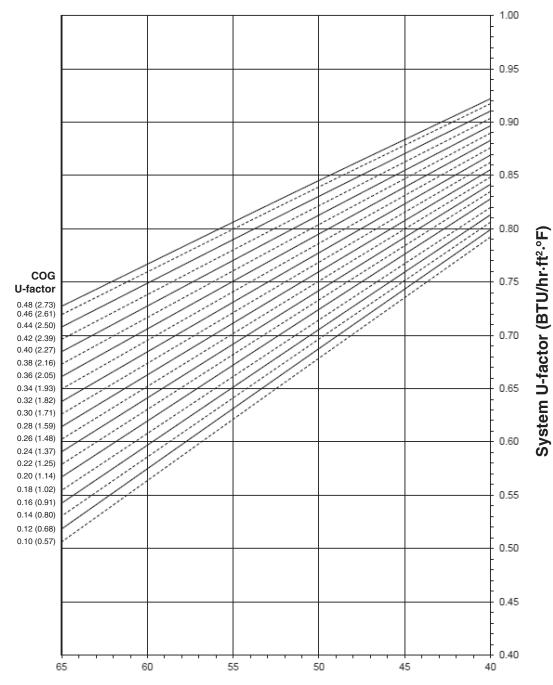
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor. Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

kawneer.com

EC 97911-30 THERMAL CHARTS

350 (SINGLE DOOR)

System U-factor vs Percent of Glass Area



Percent of Glass = Vision Area/Total Area (Total Daylight Opening / Projected Area)

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 (winter conditions) and are obtained from your glass supplier.

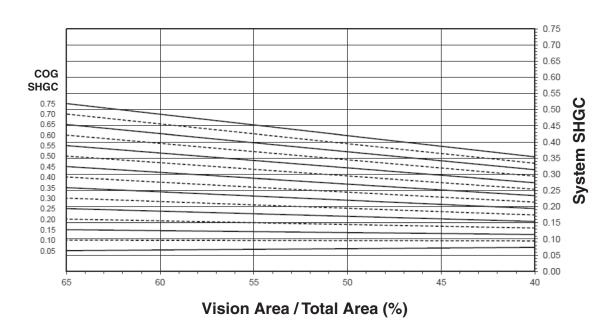


THERMAL CHARTS

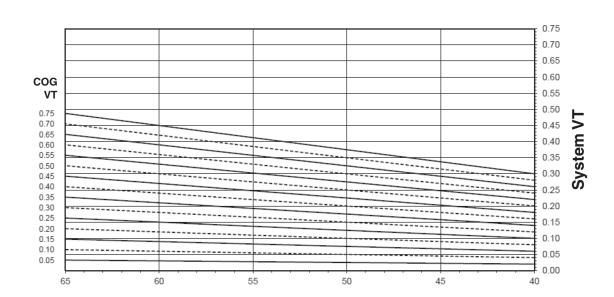
EC 97911-30

350 (SINGLE DOOR)

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



System Visible Transmittance (VT) vs Percent of Vision Area



Vision Area / Total Area (%)



governing the design and use of glazed products vary widely. Kawneer does not control ns, operating hardware, or glazing materials,

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

THERMAL PERFORMANCE MATRIX (NFRC SIZE)

EC 97911-30

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

Glass U-Factor ³	Overall U-Factor ⁴
0.48	0.83
0.46	0.82
0.44	0.81
0.42	0.81
0.40	0.80
0.38	0.79
0.36	0.78
0.34	0.77
0.32	0.76
0.30	0.75
0.28	0.74
0.26	0.73
0.24	0.72
0.22	0.71
0.20	0.70
0.18	0.69
0.16	0.68
0.14	0.68
0.12	0.67
0.10	0.66

350 (SINGLE DOOR)

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 (winter conditions) and are obtained from your glass supplier.
- 4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

SHGC Matrix²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.43
0.70	0.41
0.65	0.38
0.60	0.36
0.55	0.33
0.50	0.30
0.45	0.28
0.40	0.25
0.35	0.23
0.30	0.20
0.25	0.17
0.20	0.15
0.15	0.12
0.10	0.10
0.05	0.07

Visible Transmittance ²

Glass VT ³	Overall VT 4
0.75	0.39
0.70	0.36
0.65	0.34
0.60	0.31
0.55	0.29
0.50	0.26
0.45	0.23
0.40	0.21
0.35	0.18
0.30	0.16
0.25	0.13
0.20	0.10
0.15	0.08
0.10	0.05
0.05	0.03

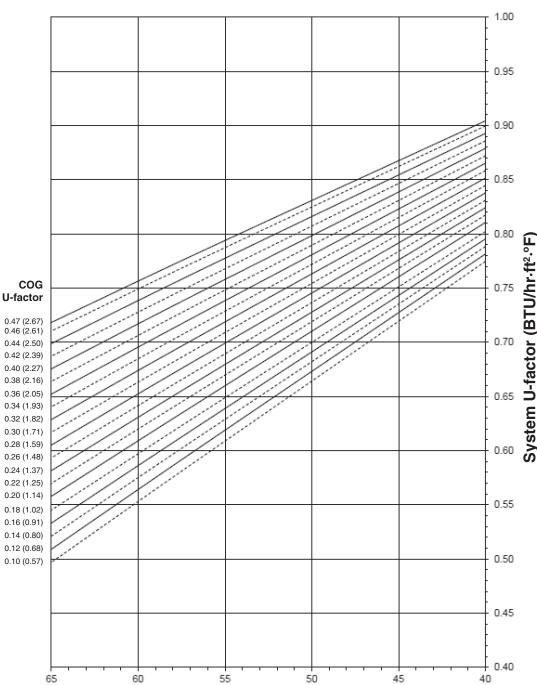


EC 97911-30

THERMAL CHARTS

350 (PAIR OF DOORS)

System U-factor vs Percent of Glass Area



Percent of Glass = Vision Area/Total Area (Total Daylight Opening / Projected Area)

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 (winter conditions) and are obtained from your glass supplier.



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

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

© Kawneer Company, Inc., 2011

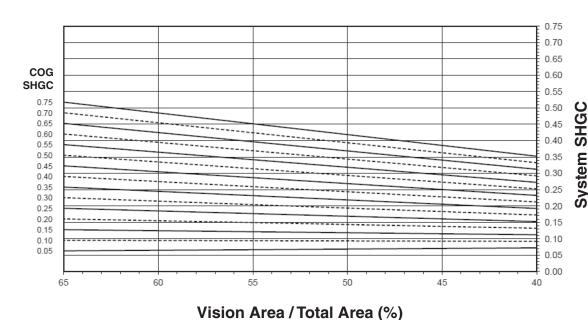
THERMAL CHARTS

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

EC 97911-30

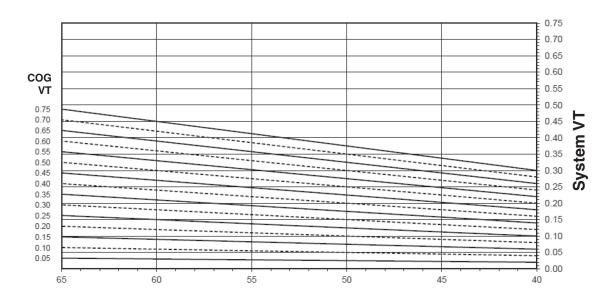
350 (PAIR OF DOORS)

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



Violoti Alca / Total Alca (70)

System Visible Transmittance (VT) vs Percent of Vision Area



Vision Area / Total Area (%)



THERMAL PERFORMANCE MATRIX (NFRC SIZE)

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

Glass U-Factor ³	Overall U-Factor 4
0.47	0.79
0.46	0.78
0.44	0.77
0.42	0.76
0.40	0.75
0.38	0.74
0.36	0.73
0.34	0.72
0.32	0.71
0.30	0.70
0.28	0.69
0.26	0.68
0.24	0.67
0.22	0.66
0.20	0.65
0.18	0.64
0.16	0.63
0.14	0.62
0.12	0.61
0.10	0.60

350 (PAIR OF DOORS)

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

- 1. U-Factors are determined in accordance with NFRC 100.
- SHGC and VT values are determined in accordance with NFRC 200.
- 3. Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.
- Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

SHGC Matrix ²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.46
0.70	0.43
0.65	0.40
0.60	0.37
0.55	0.35
0.50	0.32
0.45	0.29
0.40	0.26
0.35	0.23
0.30	0.21
0.25	0.18
0.20	0.15
0.15	0.12
0.10	0.09
0.05	0.07

Visible Transmittance ²

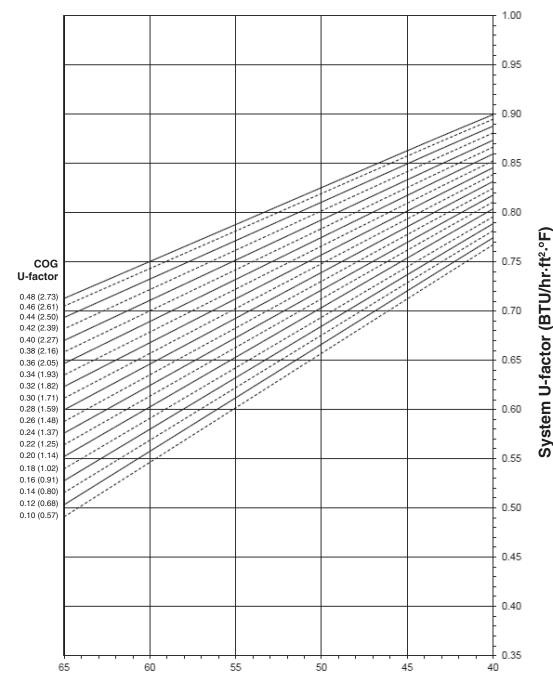
Glass VT ³	Overall VT ⁴
0.75	0.42
0.70	0.39
0.65	0.36
0.60	0.34
0.55	0.31
0.50	0.28
0.45	0.25
0.40	0.22
0.35	0.20
0.30	0.17
0.25	0.14
0.20	0.11
0.15	0.08
0.10	0.06
0.05	0.03



EC 97911-30 THERMAL CHARTS

500 (SINGLE DOOR)

System U-factor vs Percent of Glass Area



Percent of Glass = Vision Area/Total Area (Total Daylight Opening / Projected Area)

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 (winter conditions) and are obtained from your glass supplier.

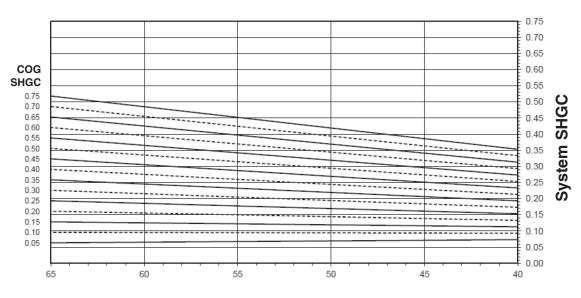


THERMAL CHARTS

EC 97911-30

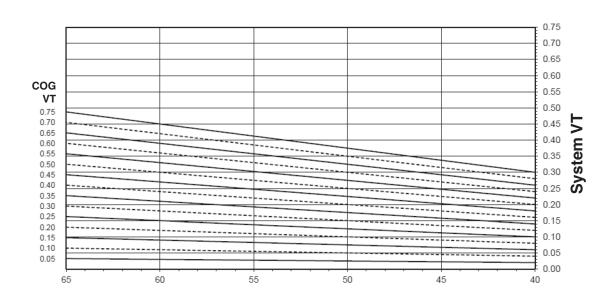
500 (SINGLE DOOR)

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



Vision Area / Total Area (%)

System Visible Transmittance (VT) vs Percent of Vision Area



Vision Area / Total Area (%)



governing the design and use of glazed products vary widely. Kawneer does not control ns, operating hardware, or glazing materials,

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

kawneer.com

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

Glass U-Factor ³	Overall U-Factor 4
0.48	0.87
0.46	0.86
0.44	0.85
0.42	0.84
0.40	0.84
0.38	0.83
0.36	0.82
0.34	0.81
0.32	0.81
0.30	0.80
0.28	0.79
0.26	0.78
0.24	0.77
0.22	0.77
0.20	0.76
0.18	0.75
0.16	0.74
0.14	0.73
0.12	0.73
0.10	0.72

500 (SINGLE DOOR)

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 (winter conditions) and are obtained from your glass supplier.
- 4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

SHGC Matrix²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.38
0.70	0.36
0.65	0.34
0.60	0.32
0.55	0.29
0.50	0.27
0.45	0.25
0.40	0.23
0.35	0.21
0.30	0.18
0.25	0.16
0.20	0.14
0.15	0.12
0.10	0.09
0.05	0.07

Visible Transmittance ²

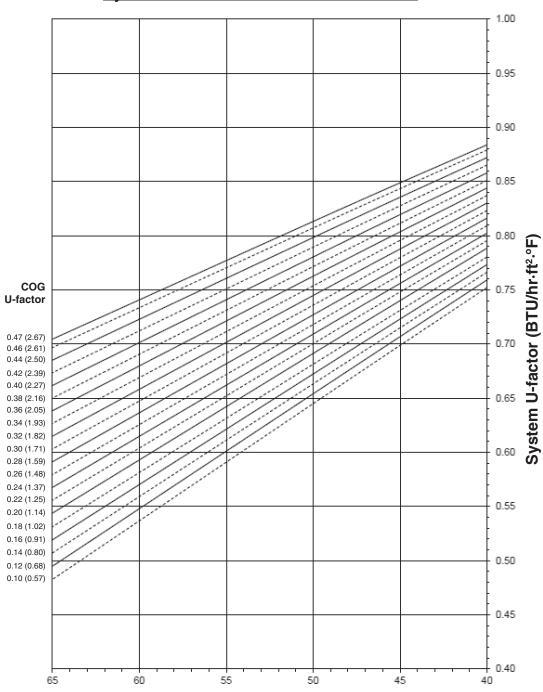
Glass VT ³	Overall VT ⁴
0.75	0.33
0.70	0.31
0.65	0.29
0.60	0.27
0.55	0.25
0.50	0.22
0.45	0.20
0.40	0.18
0.35	0.16
0.30	0.13
0.25	0.11
0.20	0.09
0.15	0.07
0.10	0.04
0.05	0.02

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

© Kawneer Company, Inc., 2011

500 (PAIR OF DOORS)

System U-factor vs Percent of Glass Area



Percent of Glass = Vision Area/Total Area (Total Daylight Opening / Projected Area)

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 (winter conditions) and are obtained from your glass supplier.

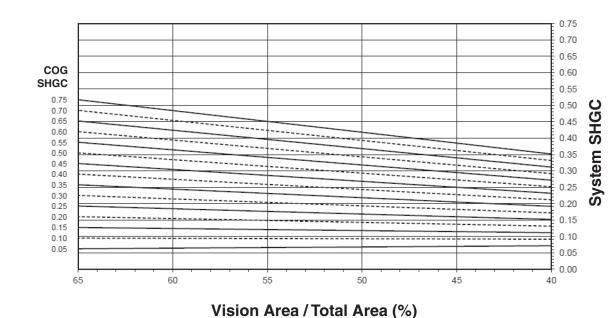


Laws and building and safety codes governing the design and use of glazed entrance, window, and cutain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

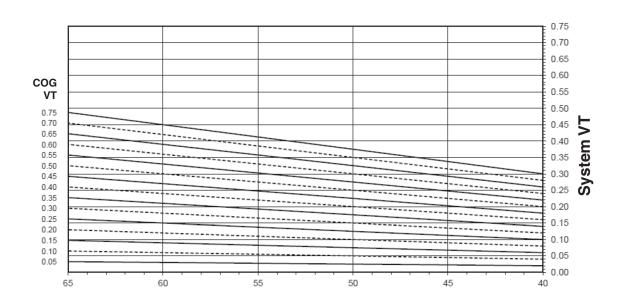
EC 97911-30 THERMAL CHARTS

500 (PAIR OF DOORS)

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



System Visible Transmittance (VT) vs Percent of Vision Area



Vision Area / Total Area (%)



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

Thermal Harrent (B16/iii R 1)	
Glass U-Factor ³	Overall U-Factor 4
0.47	0.82
0.46	0.82
0.44	0.81
0.42	0.80
0.40	0.79
0.38	0.78
0.36	0.77
0.34	0.77
0.32	0.76
0.30	0.75
0.28	0.74
0.26	0.73
0.24	0.72
0.22	0.71
0.20	0.70
0.18	0.70
0.16	0.69
0.14	0.68
0.12	0.67
0.10	0.66

500 (PAIR OF DOORS)

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

- 1. U-Factors are determined in accordance with NFRC 100.
- SHGC and VT values are determined in accordance with NFRC 200.
- 3. Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.
- 4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

SHGC Matrix ²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.41
0.70	0.38
0.65	0.36
0.60	0.34
0.55	0.31
0.50	0.29
0.45	0.26
0.40	0.24
0.35	0.21
0.30	0.19
0.25	0.17
0.20	0.14
0.15	0.12
0.10	0.09
0.05	0.07

Visible Transmittance ²

Glass VT ³	Overall VT ⁴
0.75	0.36
0.70	0.34
0.65	0.32
0.60	0.29
0.55	0.27
0.50	0.24
0.45	0.22
0.40	0.19
0.35	0.17
0.30	0.15
0.25	0.12
0.20	0.10
0.15	0.07
0.10	0.05
0.05	0.02

