Aluminium Window & Door Guide

5 The Works Water-side South

Lincoln LN5 7JD

p. 01522 512525

f. 01522 567651

sales@sternfenster.co.uk

www.sternfenster.co.uk



Contents

- Page 2 — Product Data Sheets (section 1 version 1)
- Page 3 — General information, Lead Times (section 2 version 1)
- Page 4 — Information on Colour (section 3 version 1)
- Page 5-6 — Wind Loading / Large openings (section 4 version 1)
- Page 7 — Duplex Georgian bar (section 5 version 1)

My Ali Framing Solutions

Casement windows (fixed windows, open out casements)

- ◊ Alitherm 600 (page 9-18) (section 6 version 1)
- ◊ Alitherm 800 (page 19-28) (section 7 version 1)
- ◊ Alitherm 800 Flush Sash (page 29-38) (section 8 version 1)
- ◊ Alitherm 47 Heritage (page 39-46) (section 9 version 1)

Residential/French doors (open in and out)

- ◊ Alitherm Plus (page 47-52) (section 10 version 1)

Tilt & Turns (fixed windows, open in sashes)

- ◊ Eco-Futural (including Pivot windows) (page 53-62) (section 11 version 1)

Vertical Sliders

- ◊ VS600 (page 63-68) (section 12 version 1)

Patio Doors

- ◊ Visoglide Plus (page 69-82) (section 13 version 1)

Bi-folding Doors

- ◊ Visofold 1000 (page 83-94) (section 14 version 1)

Cills / Mitred cills

- ◊ External Cills and mitred cills (page 95-98) (section 15 version 1)

Commercial/Curtain walling

- ◊ Shopline Non-thermally broken (page 99-110) (section 16 version 1)
- ◊ Smartwall thermally broken (page 111-114) (section 17 version 1)
- ◊ MC600 Curtain walling (page 115-116) (section 17 version 1)

Lantern Roof (page 117-118) (section 18 version 1)

Installation Advice (page 119-122) (section 18 version 1)

Glass (page 123-132) (section 19 version 1)

General Information

Aluminium windows and doors manufactured from the Smart Systems Ltd profiles incorporating the following.

- High quality EPDM gaskets and weather brushes to aid weather proofing
- Polyamide thermal barrier reduces heat loss and improve thermal performance (not available on Shopline)
- Finishes available in KL, RAL, Sensation range and dual colour options
- **All designs are viewed from outside**
- Unless noted all casement windows are externally beaded as standard
- Head vents are only available in a 42mm frame extension to the head of the frame
- Large frames with mullions are subject to be split and coupled vertically based on a design wind load of 800pa
- Angled frames are beaded with a square bead

Lead Times

Lead times vary depending on the colour of the aluminium you select

- Stock colour white (KL009) is available in the shortest time
- KL and Sensation colours are on slightly longer lead times
- Dual colours are on the longest lead time
- Non standard colours may be subject to additional supplier pricing and extended lead time

ALI *	White (KL009) / Grey (KL005) / Black (KL008) Aluminium Bifolds	10 days
	Dual Colour - Grey (KL005) Outside / White (KL009) Inside Aluminium Bifolds	10 days
	White Aluminium Frames (Windows | Tilt/Turns | Resi doors | French doors | Patios)	20 days
	Coloured Aluminium Frames (Any frame) - One Colour (KL/RAL/Sensation/ Anodised)	30 days
	Coloured Aluminium Frames (Any frame) - Dual Colour	40 days
	Aluminium Vertical Sliders (All colours)	40 days
	Shopline Aluminium White	25 days
	Shopline Aluminium Coloured	40 days
	Non-standard RAL/Colour (Woodgrain/Metallic) - **Minimum 50 days**	On request
	Aluminium Panels (White 15 days | All other colours 25 days)	15-25 days
	Aluminium Louvers | UTL Bars | Powder coated accessories (All colours)	25 days
	Aluminium Angled Frames (35-60 days depending upon angles/upstands)	35-60 days
	Aluminium Arched Frames	60 days

*** Subject to stock**

Information on Colour

- Below is our standard range of KL colours. Please be aware that these colours come in different surface finishes as indicated below. These colours can be applied the same to both sides of the profile or you can mix and match and choose different colours for inside and out, referred to as dual colour.



Note: If you request the following colours they will be done in the Standard KL colour unless you specifically request them not to be.

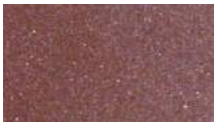
- RAL 7016 or Grey will be done in KL005
- RAL9005 or Black will be done in KL008
- White will be done in KL009

Colour matched panels or PVC products have different textures / finishes and may not be an exact match to the aluminium colour finish.

- We also offer a range of colours called "Sensation", these combine unique colours and textures. Below is just a sample, please ask to see the full range


Obsidian black


Molten copper


Antique red


Antique green


Antique grey


Antique blue

- We also offer a range of non-textured wood effect colours, please ask to see the full range of finishes, again these can be mixed and matched with any of the other colours above. Note aluminium wood effects do not match Upvc wood effect finishes.


HTG 7


HTN 8


HTD 7

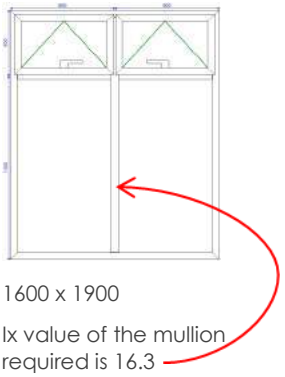
Please note that these colours are intended as a guide only. The paint finish is guaranteed for 25 years except in hazardous environments, e.g. within 500 metres of the high tide line, swimming pools and marine environments. In these cases you need to apply to us/ Smarts to confirm the exact length of guarantee.

Wind Loading

All profiles have an Ix (cm^4) value this is the strength of the profile. At certain sizes the mullions Ix value may not be enough to cope with the stresses imposed on it by the elements. Frames therefore need to be split and coupled to increase the Ix value. Aluminium systems are different to PVC as the frame and coupler Ix values can be added together to give a combined value (see example below)

We do not know where the frames we supply are being fitted therefore it is the customer's responsibility to inform us of any wind loading requirements. Mullions and transoms should be based on the design wind load of the structure based on criteria including location; exposure; average wind speeds etc. If in doubt seek advice from a structural engineer.

All quotations and orders for Alitherm 600, Alitherm 800, and Alitherm 800 flush sash, Alitherm 47 heritage will be based on a wind loading rating of 800 pascals (800pa). Please advise if a higher rating is required.



1600 x 1900

Ix value of the mullion required is 16.3

ETC631mullion achieves Ix 16.68

Frame can be made in one



1700 x 1900

Ix value of the mullion required is 17.4

ETC631 mullion achieves Ix 16.68

Frame needs to be split and coupled. Combined frame & coupling of Ix 74.92

Example based on Alitherm 600 with equal vertical mullion split using 800pa

Mullion ETC631 Ix value 16.68

Frame ETC610 Ix value 17.66

Coupler ETC517 Ix value 39.6

Frame Ix 17.66 + coupler Ix 39.6 + frame Ix 17.66 = Ix 74.92

For advice on splits please see the following pages (based on equal mullion splits only)

- Alitherm 600 - page 16
- Alitherm 800 - page 26
- Alitherm 800 Flush sash - page 35
- Alitherm 47 Heritage - page 44

Large, unsupported openings



Aluminium frames are not load bearing,

It is important to understand that any frame with a large opening, such as bifolds, wide French doors and patio doors have no structural integrity once open and therefore are not designed to take any loadings from above.

These frames are not designed to take any structural loadings from above so always consult a structural engineer and support the heads appropriately.

This is especially critical in conservatories where, if not correctly supported, the weight of the roof will push down on the frame, causing damage and operational difficulties.

It is vital that you design in a structural support capable of taking the roofs weight. We would urge you to consult a structural engineer at the design stage so that you construct a suitable goal post/lintel to fit between the frame and the roof/loading above.

Duplex

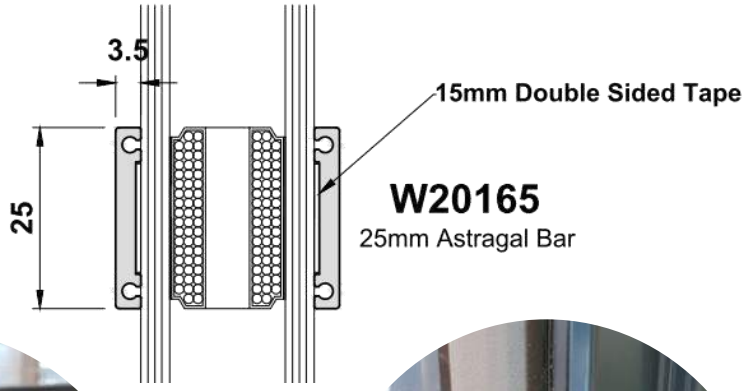
Duplex (Astragal) Georgian Bar



This is a bar stuck on to both external faces of the unit with double sided tape, spacer bars between the units to give the impression of small panes of glass. The bar is 25mm wide and square cut both ends.

This bar is the only size and shape available and can be used on all aluminium systems except Bifold doors.

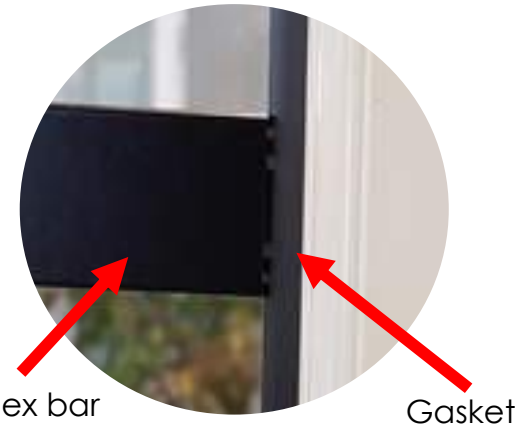
(Duplex bar is not available in a triple glazed unit)







Note : The duplex bar is square cut at the ends and runs up to the gasket. It is not scribed over it.



THIS PAGE IS INTENTIONALLY BLANK



Alitherm 600 casement window

Energy Rating C uValue 1.7Wm^{2}k

Alitherm 600 Window – Offers U-values as low as 1.4 W/m²K

- Open out casements and fixed windows with externally beaded sashes and externally beaded fixed frames as standard
- Flat outer frame and chamfered vent
- Chamfered bead
- Espagnolette with bi-directional locking
- Average U-value 1.7 W/m²K (28mm with 1.2 centre pane) – WER 'C'
- Average U-value 1.4 W/m²K (36mm with 0.8 centre pane) – WER 'B'

Features and Options

- Internally beaded opening sash and externally beaded fixed panes
- Full internally beaded window, internally beaded opening sash with internally beaded dummy sash to fixed panes
- Internally beaded chamfered sash option – 28mm & 40mm square bead only
- Internally beaded flat sash option – 28mm & 40mm square bead only
- Externally beaded flat sash option – cockspur locking handles only
- Square bead for externally beaded option available – 28mm only – ETC665
- Can be manufactured in accordance with Smarts PAS24 allowing windows to conform to Document Q – claw locks required

Size Restrictions

- Maximum sizes will depend on wind loading requirements and style of window but indicative sash sizes with VITA (17mm stack height) friction stays are as follows:

Top Hung Sashes

- Max width: 1400mm (sash size)
- Min width: 381mm (frame size 440mm)
- Max height: 1300mm (1500mm with Securistyle HD stays) (sash size)
- Min height: 251mm (frame size 312mm)
- Max weight: 50kg

Side Hung Sashes

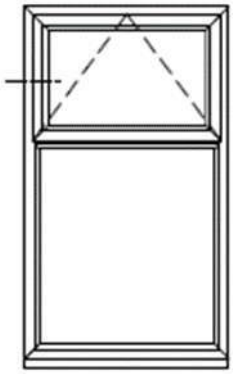
- Max width: 700mm (sash size)
- Min width: 346mm (frame size 405mm)
- Max height: 1400mm (sash size)
- Min height: 381mm (frame size 440mm)
- Max Weight: 24kg
- 450mm opening (fire escape) - frame/frame min 637mm - frame/mullion CL min 611mm

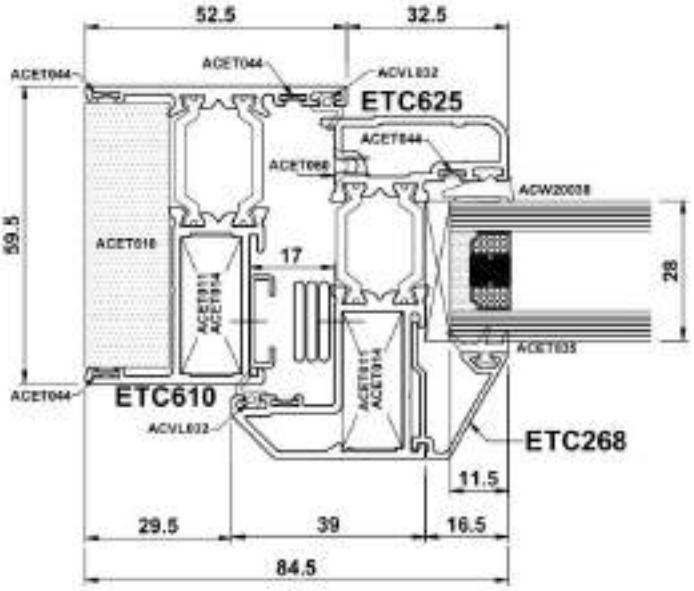
Weather Performance (BS6375-1)

- BS EN 1026: 2000 Air Permeability: Class 4 600 Pa
- BS EN 1027: 2000 Water tightness: Class E 1200 Pa
- BS EN 12211: 2000 Resistance to Wind Load: Class E 2400 Pa

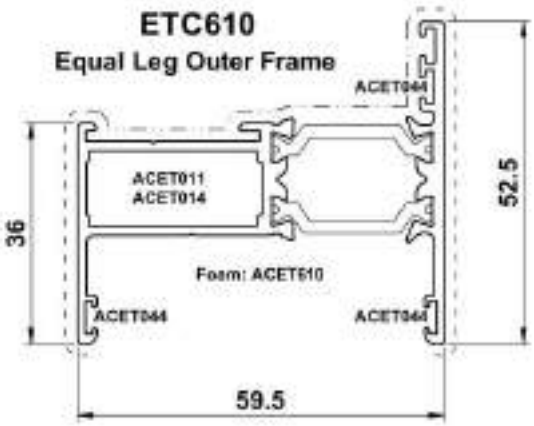
Cross Sectional Drawings

Standard Frame & Sash Detail

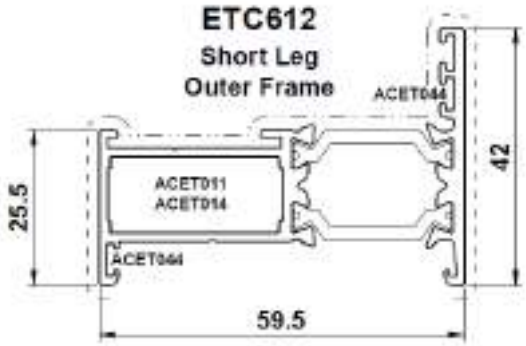




Standard Outer Frame

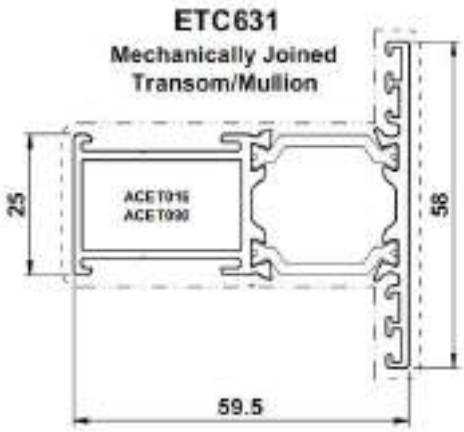


Short leg Outer Frame option

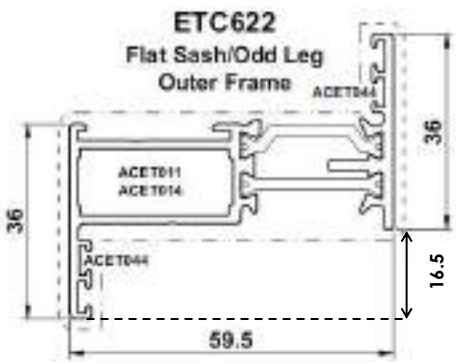


Standard Transom/Mullion

(Ovolo tran/mull not available

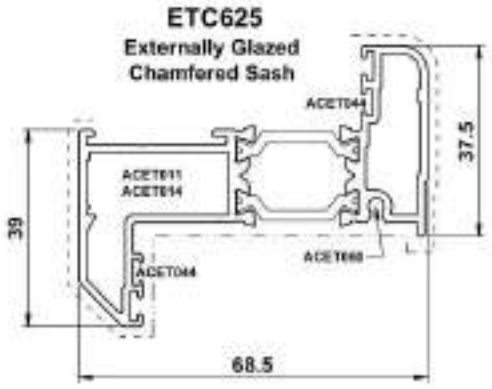


Odd Leg Outer Frame

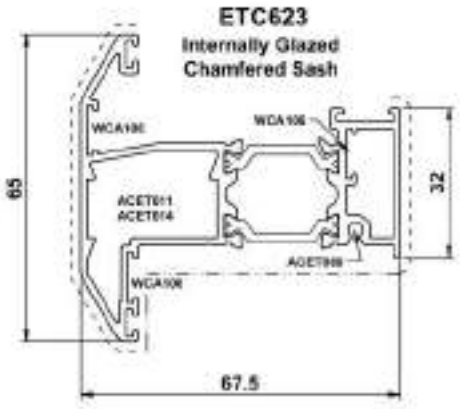


Can be used as sash – externally beaded – Cockspur locking only

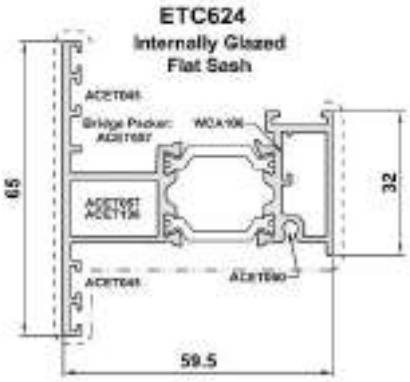
Standard Sash (externally beaded)



Chamfered Sash (Internally Beaded)

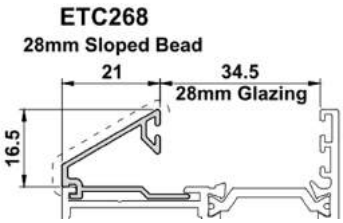


Flat Sash (Internally Beaded)

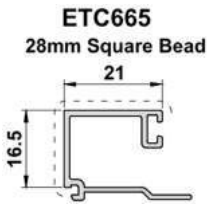


Note:
Check requirements when using internally beaded sashes. Fixed panes are externally beaded unless dummy sashes are requested

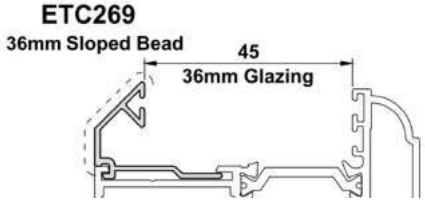
Standard external chamfered bead for 28mm double glazed



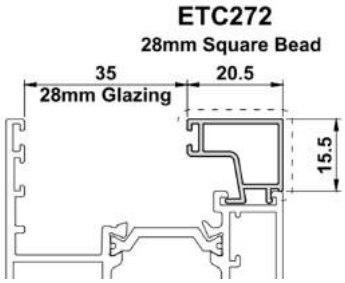
Optional external square bead for 28mm double glazed



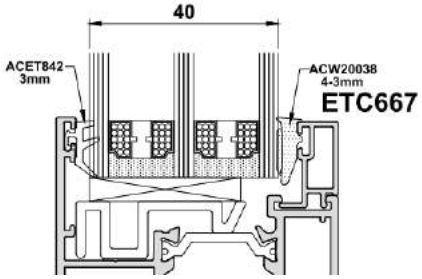
Standard external chamfered bead for 36mm triple glazed



Standard internal square bead for 28mm double glazed



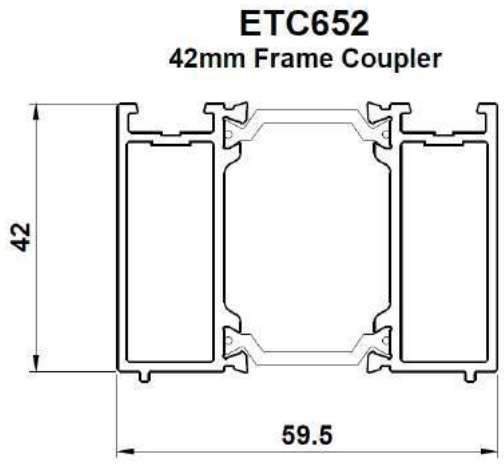
Standard internal square bead for 40mm triple glazed

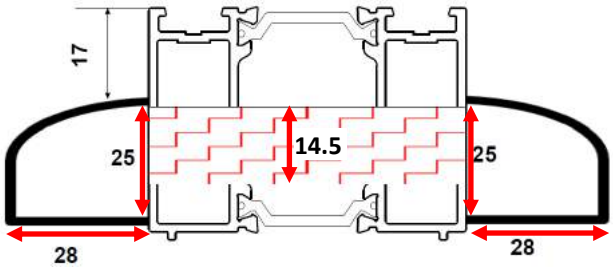


Note:

Raked/angled frames are only supplied with square bead

ETC652 59.5mm x 42mm Extension for ETC610 & ETC612

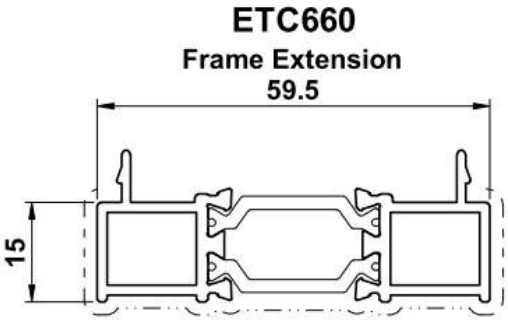




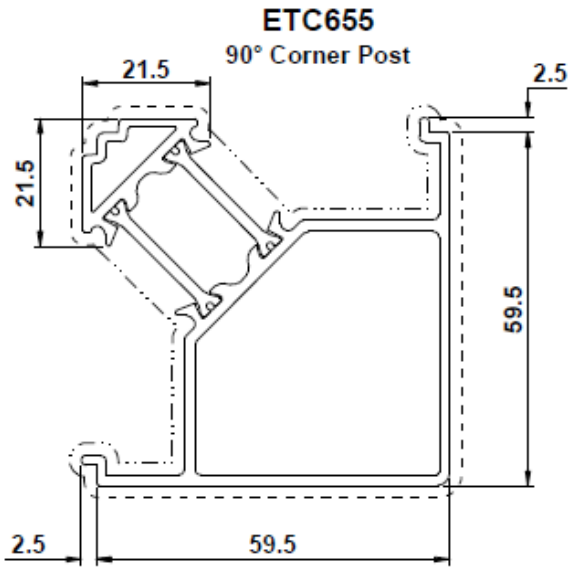
Note:

With the hood of the head vent fitted there Is approx. 17mm to the outer edge of the 42mm head extension. Extensions come fitted to outer frame and pre-routed.

15mm Extension for ETC610 & ETC612

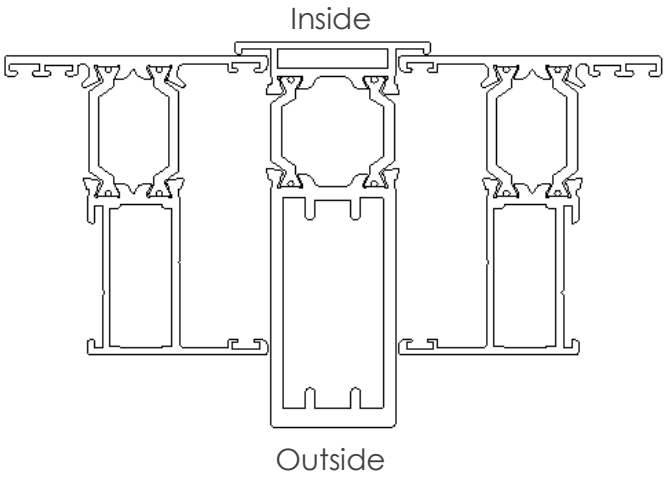


90˚ Corner Post ETC655 for ETC610 & ETC612

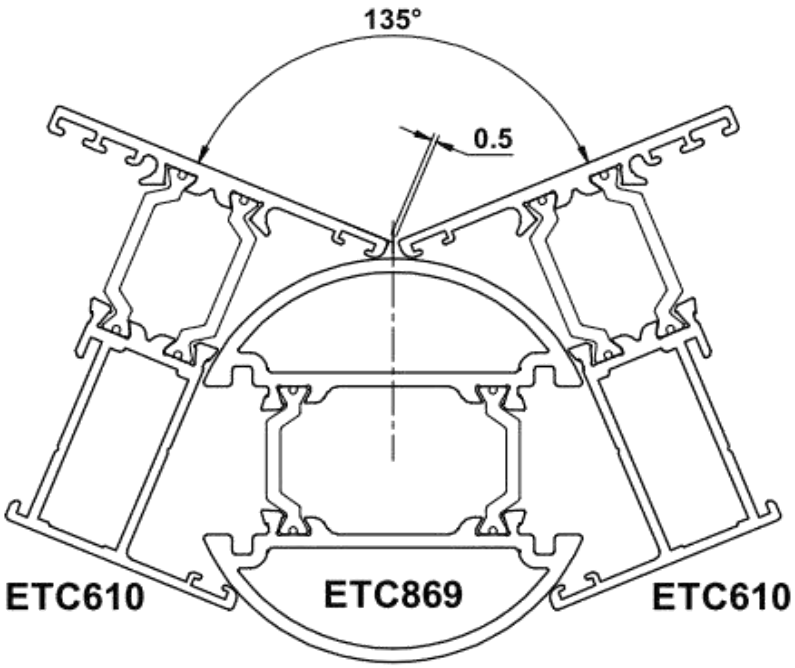


ETC517 180˚ Coupler (25mm deduction)

77mm x 25mm

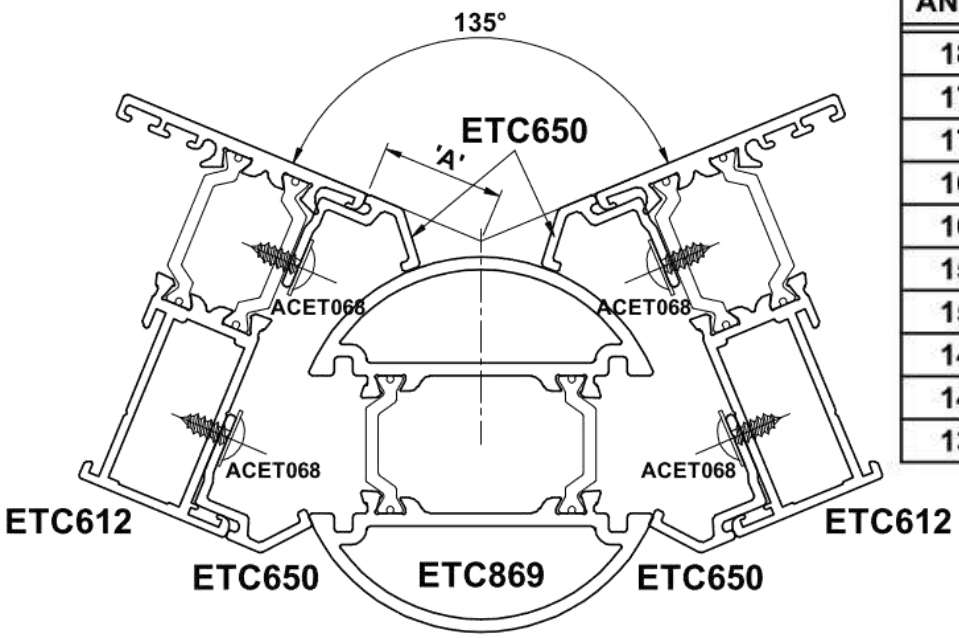


ETC869 Bay Pole for ETC610 59.5mm frame



ANGLE	DEDUCTION 'A'
180°	13
175°	11.5
170°	10.5
165°	9
160°	8
155°	6.5
150°	5
145°	3.5
140°	2
135°	0.5

ETC869 Bay Pole with ETC650 frame adaptors for ETC612 59.5mm frame

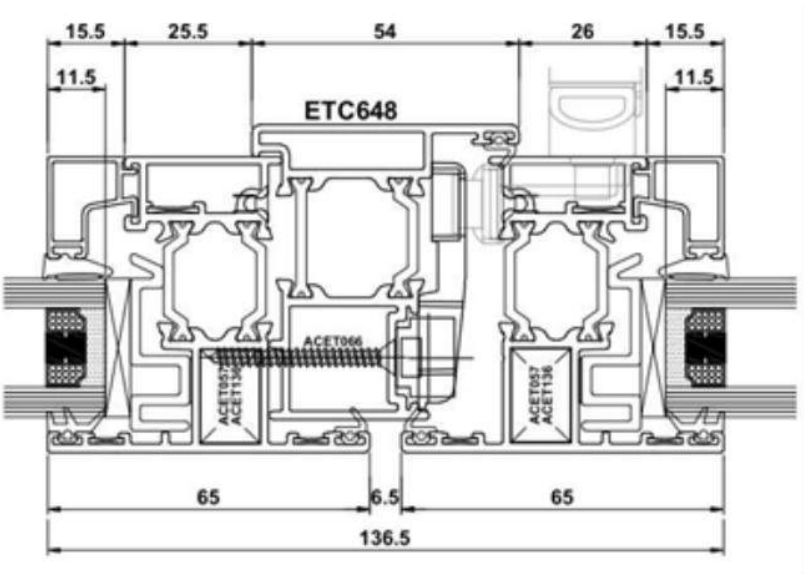


ANGLE	DEDUCTION 'A'
180°	32
175°	30.5
170°	29.5
165°	28.5
160°	27
155°	25.5
150°	24
145°	23
140°	21.5
135°	19.5

Alitherm 600 French Escape Windows

There is no option on the 600 series for a double handle French escape window.

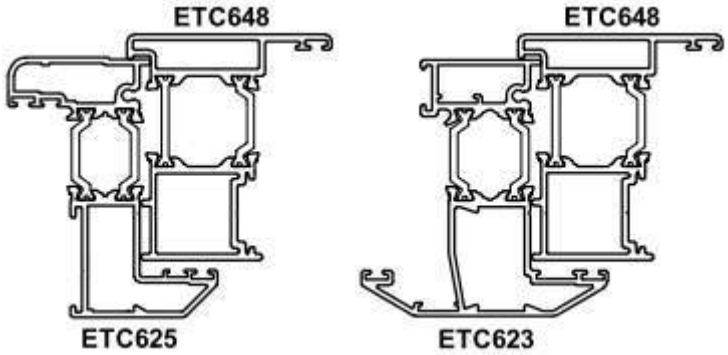
The only option available is for single handle gearing to the master and a finger operated bolt to the slave sash, as shown in the drawing.

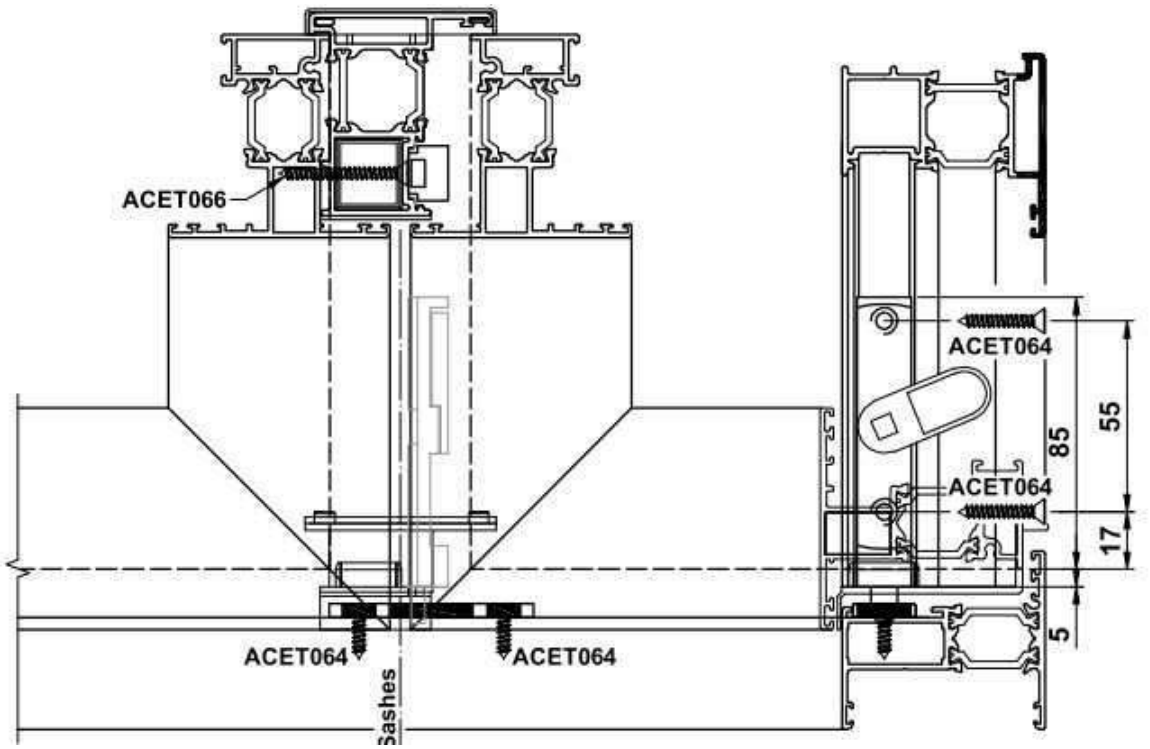


Parts

- ETC648 False mullion
- ACET648 False mullion end caps
- ACW20432 Finger bolt keeps
- ACET646 Finger Bolts

French escape windows are available with the
ETC625 Externally beaded
ETC623 Internally beaded sashes





Wind Loading – Alitherm 600

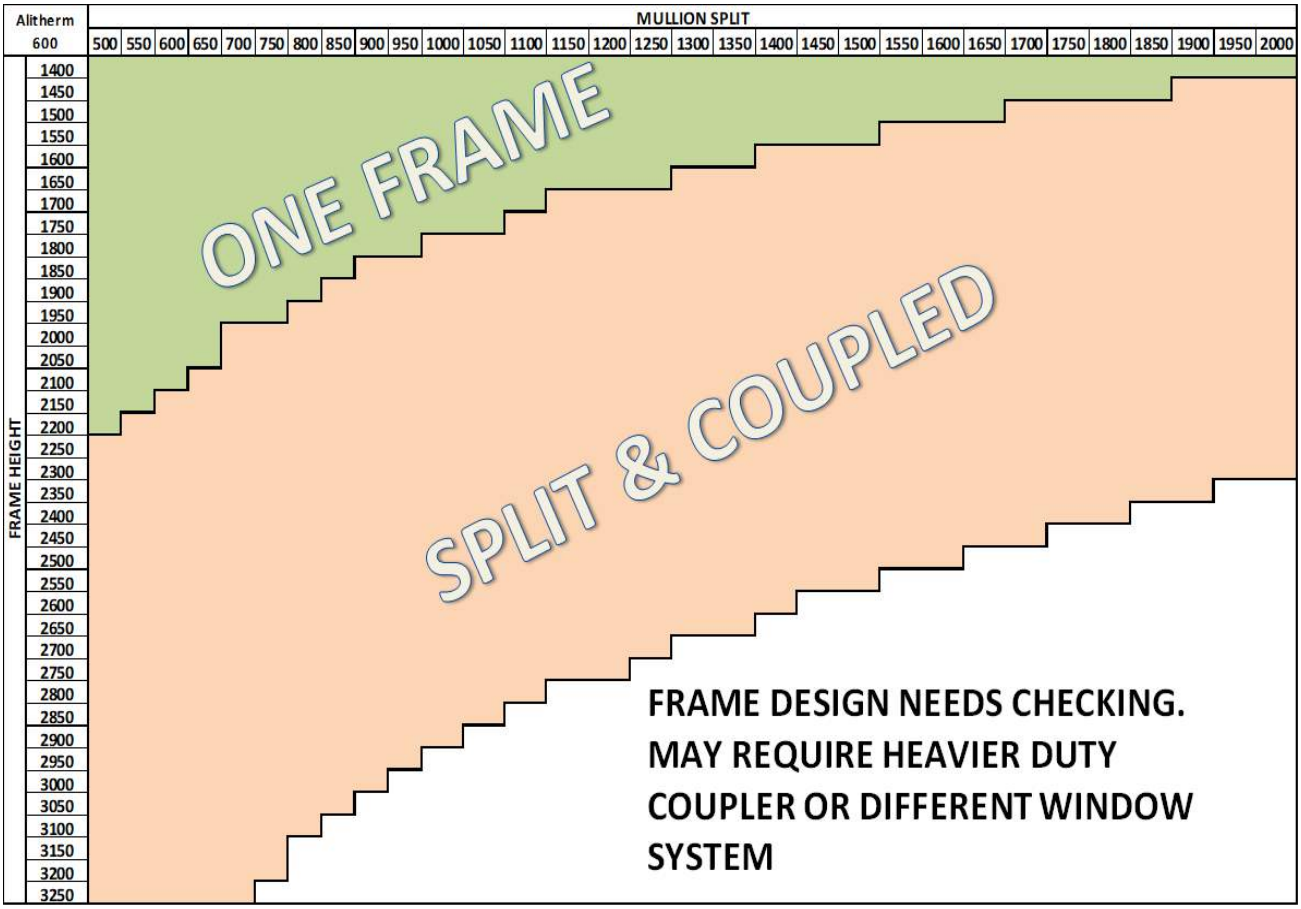
Wind loading calculations based on 800pa, and equal mullion splits.

Mullion ETC631 Ix value of 16.68

Frame ETC610 Ix value 17.66

Coupler ETC517 Ix value 39.6

Coupler and Frame combined Ix value 74.92



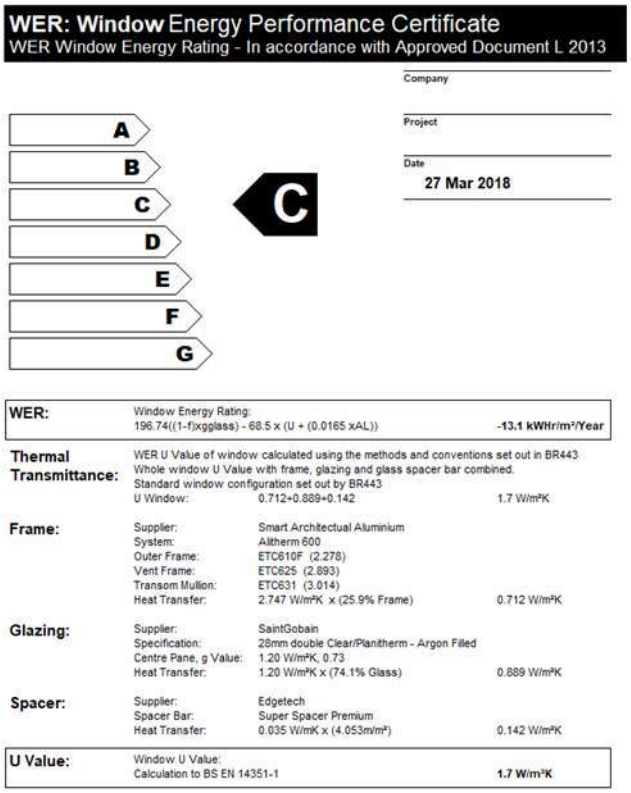
U-values for Double Glazed Units Externally Beaded

Our standard glass specification is:

- 28mm double glazed units
- 4mm Planilux clear /4mm Planitherm +
- 90% argon gas filled cavity
- 20mm black super spacer bar
- 20kg per m²

Standard 59.5mm Frame ETC610F

with Sash ETC625 and Mullion ETC631
Average U-value of 1.7 W/m²K - WER 'C'
Unit centre pane of 1.2 W/m²K



WER: Window Energy Performance Certificate
WER Window Energy Rating - In accordance with Approved Document L 2013

Company

Project

Date
27 Mar 2018

A
B
C
D
E
F
G
C

WER:	Window Energy Rating: 196.74((1-f)xglass) - 68.5 x (U + (0.0165 xAL))	-13.1 kWHr/m²/Year
Thermal Transmittance:	WER U Value of window calculated using the methods and conventions set out in BR443 Whole window U Value with frame, glazing and glass spacer bar combined. Standard window configuration set out by BR443 U Window: 0.712+0.889+0.142	1.7 W/m²K
Frame:	Supplier: Smart Architectual Aluminium System: Alitherm 600 Outer Frame: ETC610F (2.278) Vent Frame: ETC625 (2.893) Transom Mullion: ETC631 (3.014) Heat Transfer: 2.747 W/m²K x (25.9% Frame)	0.712 W/m²K
Glazing:	Supplier: SaintGobain Specification: 28mm double Clear/Planitherm - Argon Filled Centre Pane, g Value: 1.20 W/m²K, 0.73 Heat Transfer: 1.20 W/m²K x (74.1% Glass)	0.889 W/m²K
Spacer:	Supplier: Edgetech Spacer Bar: Super Spacer Premium Heat Transfer: 0.035 W/mK x (4.053m/m²)	0.142 W/m²K
U Value:	Window U Value: Calculation to BS EN 14351-1	1.7 W/m²K

Calculated in accordance with UK Building Regulations Document L and BR443
BS EN ISO 10077-2: Thermal performance of windows, doors and shutters.
Calculation of thermal transmittance. Part 2. Numerical method for frames Version 4.0 (0078)

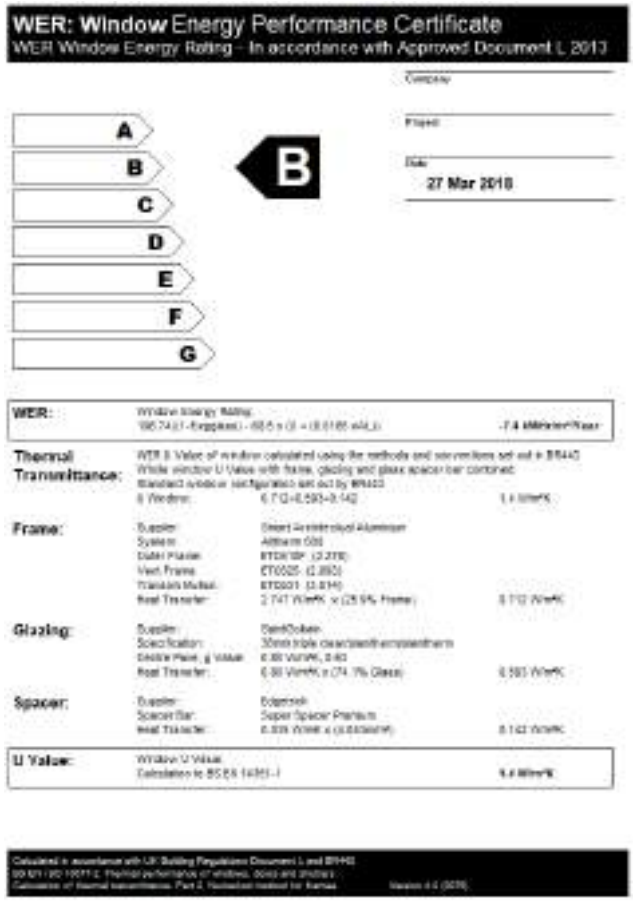
U-values for Triple Glazed Units Externally Beaded

Our standard glass specification is:

- 36mm triple glazed units
- 4mm Planilux clear /4mm Planitherm /4mm Planitherm +
- 90% argon gas filled cavity
- 12mm black super spacer bar
- 30kg per m²

Standard 59mm Frame ETC610F

with ETC625 and ETC631 Transom
Average U-value of 1.4 W/m²K - WER 'B'
Unit centre pane of 0.8 W/m²K



WER: Window Energy Performance Certificate
WER Window Energy Rating - In accordance with Approved Document L 2013

Company

Project

Date
27 Mar 2018

A
B
C
D
E
F
G
B

WER:		
Thermal Transmittance:		
Frame:		
Glazing:		
Spacer:		
U Value:		

You will need to specify at the point of quote/order if you want the triple glazed option otherwise your frames will be processed with the standard double glazed option.

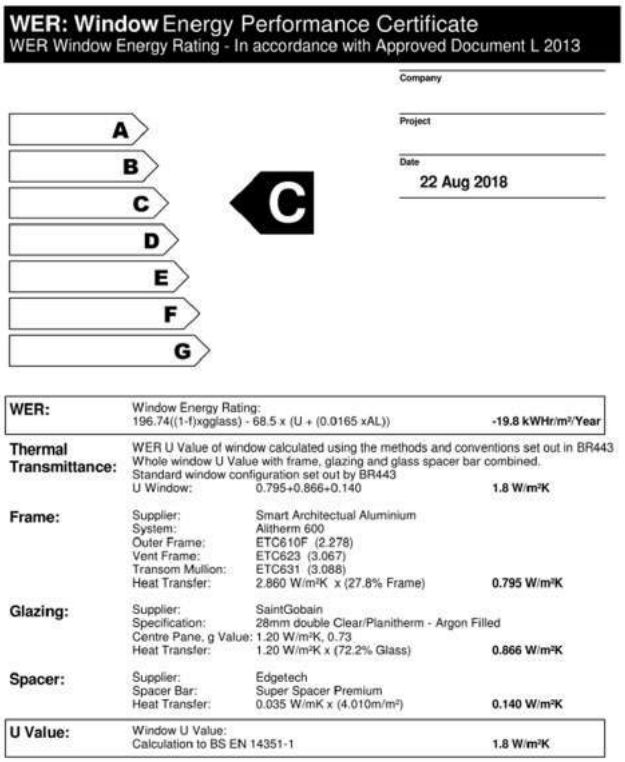
U-values for Double Glazed Units Internally Beaded

Our standard glass specification is:

- 28mm double glazed units
- 4mm Planilux clear /4mm Planitherm +
- 90% argon gas filled cavity
- 20mm black super spacer bar
- 20kg per m²

Flat 59mm Frame ETC610F

with Sash ETC623 or ETC624 and Mullion ETC631
Average U-value of 1.8 W/m²K - WER 'C'
Unit centre pane of 1.2 W/m²K



WER: Window Energy Performance Certificate
WER Window Energy Rating - In accordance with Approved Document L 2013

Company
Project
Date 22 Aug 2018

A B C D E F G — C

WER:	Window Energy Rating: 196.74((1-f)xgglass) - 68.5 x (U + (0.0165 xAL))	-19.8 kWHr/m²/Year
Thermal Transmittance:	WER U Value of window calculated using the methods and conventions set out in BR443 Whole window U Value with frame, glazing and glass spacer bar combined. Standard window configuration set out by BR443 U Window: 0.795+0.866+0.140	1.8 W/m²K
Frame:	Supplier: Smart Architectual Aluminium System: Alitherm 600 Outer Frame: ETC610F (2.278) Vent Frame: ETC623 (3.067) Transom Mullion: ETC631 (3.088) Heat Transfer: 2.860 W/m²K x (27.8% Frame)	0.795 W/m²K
Glazing:	Supplier: SaintGobain Specification: 28mm double Clear/Planitherm - Argon Filled Centre Pane, g Value: 1.20 W/m²K, 0.73 Heat Transfer: 1.20 W/m²K x (72.2% Glass)	0.866 W/m²K
Spacer:	Supplier: Edgetech Spacer Bar: Super Spacer Premium Heat Transfer: 0.035 W/mK x (4.010m/m²)	0.140 W/m²K
U Value:	Window U Value: Calculation to BS EN 14351-1	1.8 W/m²K

Calculated in accordance with UK Building Regulations Document L and BR443
BS EN ISO 10077-2. Thermal performance of windows, doors and shutters.
Calculation of thermal transmittance. Part 2. Numerical method for frames Version 4.0 (0076)

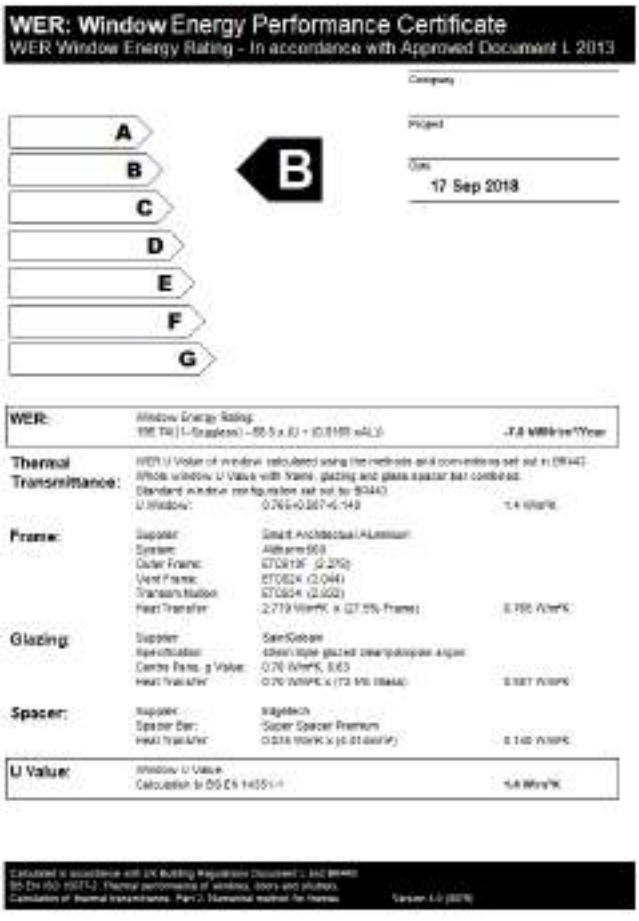
U-values for Triple Glazed Units Internally Beaded

Our standard glass specification is:

- 40mm triple glazed units
- 4mm Planilux clear /4mm Planitherm + /4mm Planitherm +
- 90% argon gas filled cavity
- 12mm black super spacer bar
- 30kg per m²

Flat 59mm Frame ETC610F

with Sash ETC623 or ETC624 and Mullion ETC631
Average U-value of 1.4 W/m²K - WER 'B'
Unit centre pane of 0.7 W/m²K

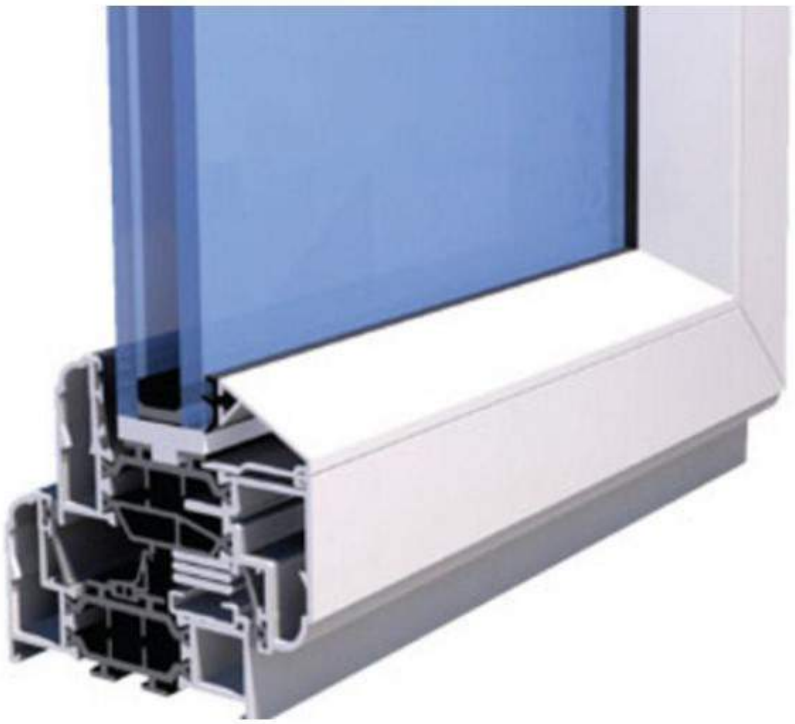


WER: Window Energy Performance Certificate
WER Window Energy Rating - In accordance with Approved Document L 2013

Company
Project
Date 17 Sep 2018

A B C D E F G — B

You will need to specify at the point of quote/order if you want the triple glazed option otherwise your frames will be processed with the standard double glazed option.



Alitherm 800 casement window

Energy Rating A uValue 1.6Wm²k

70mm thermally broken Smart's aluminium

Alitherm 800 Window – Window Energy Rating 'A'

- Open out casements and fixed windows with externally beaded sashes and externally beaded fixed frames as standard.
- Outer frame and vent available as feature Ovolo (70mm)
- Chamfered bead as standard – 28mm Double glazed – ETC867
- Chamfered bead as standard – 36mm triple glazed – ETC874
- Espagnolette with bi-directional locking
- Average U-value 1.6 W/m^{2}K (28mm with 1.2 centre pane) – WER 'A'
- Average U-value 1.3 W/m^{2}K (36mm with 0.8 centre pane) – WER 'A'

Features and Options

- Internally beaded opening sash and externally beaded fixed panes
- Full internally beaded window, internally beaded opening sash with internally beaded dummy sash to fixed panes
- Internally beaded chamfered sash option – 28mm & 36mm square bead only
- Internally beaded flat sash option – 28mm & 36mm square bead only
- Finishes available in KL, RAL, Sensation range and dual colour options
- Square bead for externally beaded option available – 28mm double glazed – ETC861
- Square bead for externally beaded option available – 36mm triple glazed – ETC873
- Can be manufactured in accordance with Smarts PAS24 allowing windows to conform to Document Q – claw locks required

Size Restrictions

- Large frames with mullions are subject to be split and coupled based on a design wind load of 800pa
- Max frame size will depend on wind loading requirements and style of window but indicative sash sizes with Securistyle (13mm stack height) friction stays are as follows:

Top Hung Sashes

- Max width: 1400mm (sash size)
- Min width: 375mm (frame size 410mm)
- Max height: 1300mm (sash size)
- Min height: 300mm (frame size 340mm) (325mm transom drop)
- Max weight: 40kg

Side Hung Sashes

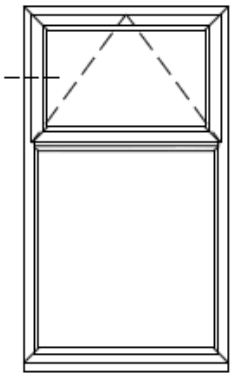
- Max width: 700mm (sash size)
- Min width: 300mm (frame size 340mm)
- Max height: 1400mm (sash size)
- Min height: 375mm (frame size 410mm)
- Max weight: 24kg
- 450mm opening (fire escape) - frame/frame min 611mm - frame/mullion CL min 597mm

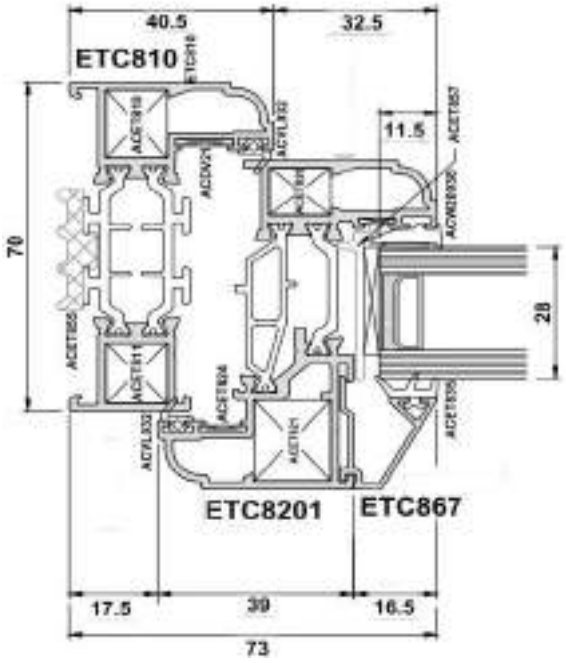
Weather Performance (BS6375-1)

- BS EN 1026: 2000 Air Permeability: Class 3 600 Pa
- BS EN 1027: 2000 Water tightness: Class E 1050 Pa
- BS EN 12211: 2000 Resistance to Wind Load: Class 5A 2000 Pa

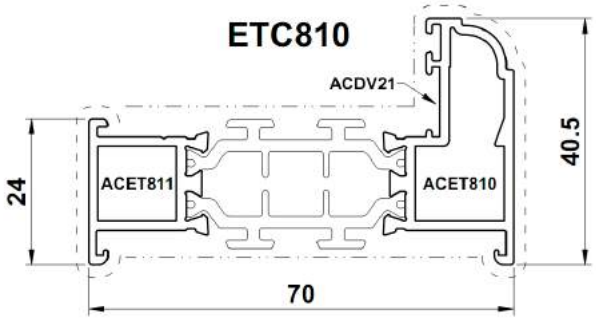
Cross Sectional Drawings

Standard Frame & Sash Detail

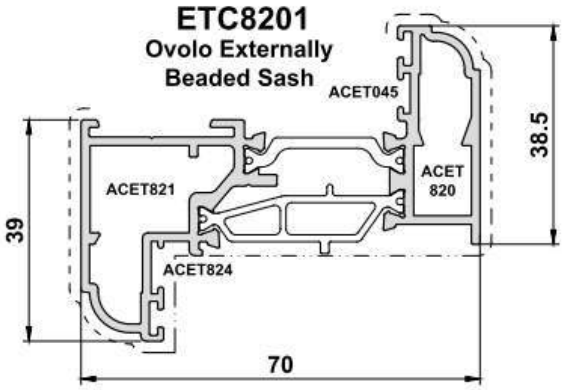




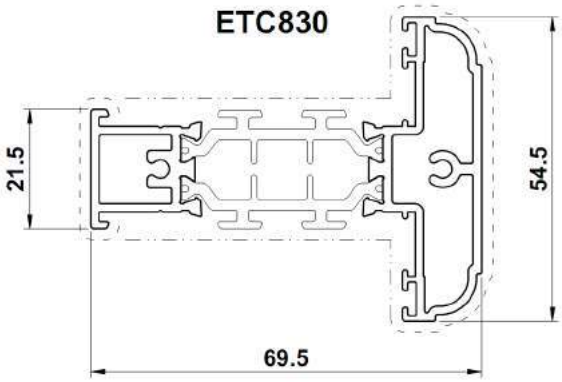
Standard Outerframe



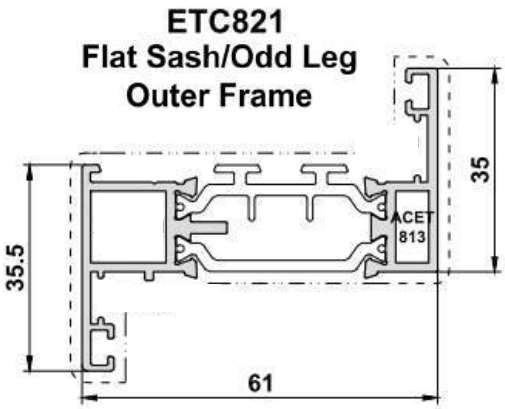
Standard Sash (externally beaded)



Standard Transom/Mullion

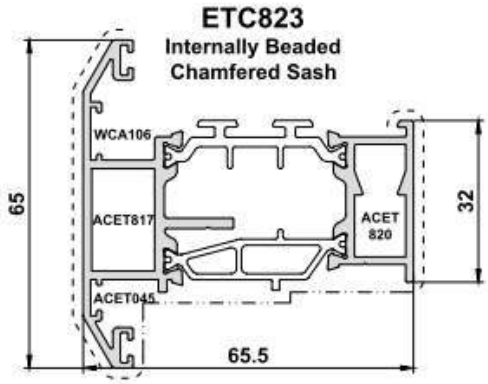


Odd leg Outerframe

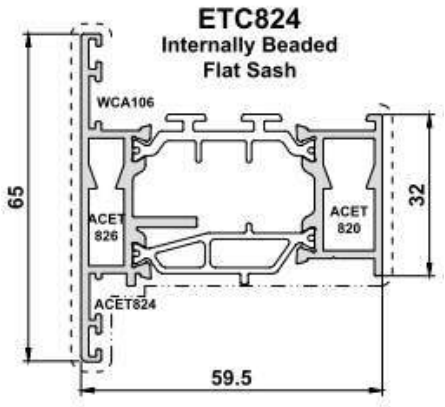


Can be used as sash – externally beaded – Cockspur locking only

Chamfered Sash (internally beaded)

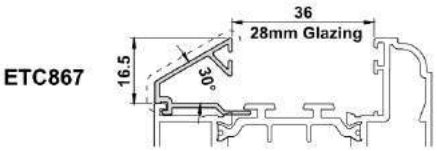


Flat Sash (internally beaded)

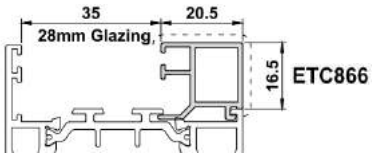


Note:
Check requirements when using internally beaded sashes. Fixed panes are externally beaded unless dummy sashes are requested

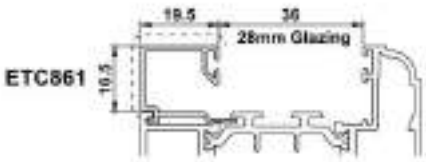
Standard external chamfered bead for 28mm double glazed



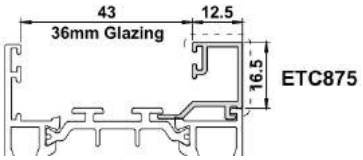
Standard internal square bead for 28mm double glazed



Optional external square bead for 28mm double glazed



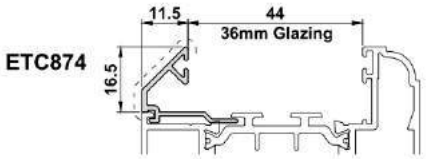
Standard internal square bead for 36mm triple glazed



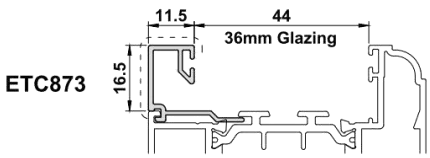
Note:

Raked/angled frames are only supplied with square bead

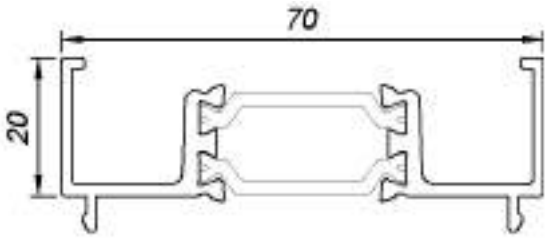
Standard external chamfered bead for 36mm triple glazed



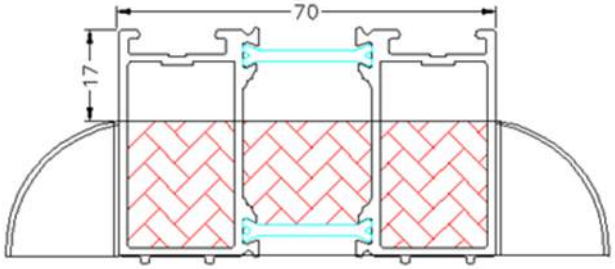
Optional external square bead for 36mm triple glazed



ETC858 70mm x 20mm extension



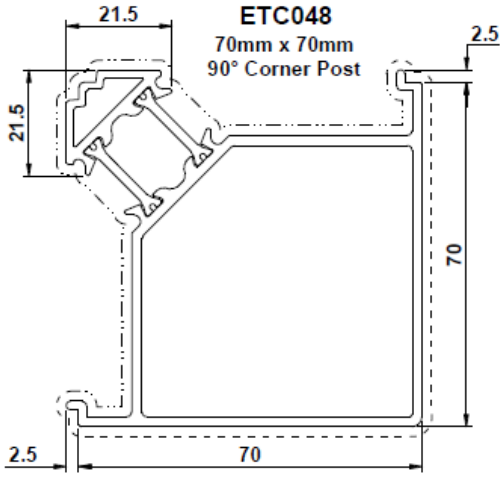
DV515 70mm x 42mm extension



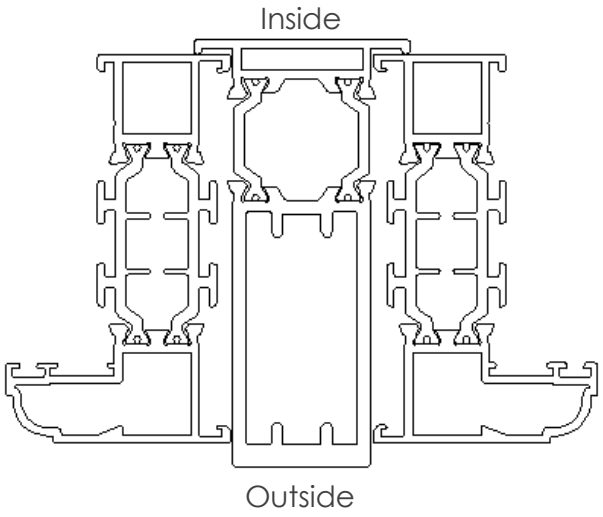
Note:

With the hood of the head fitted approx. 17mm to the outer edge of the 42mm head extension. Extensions come fitted to the outerframe and pre -routed

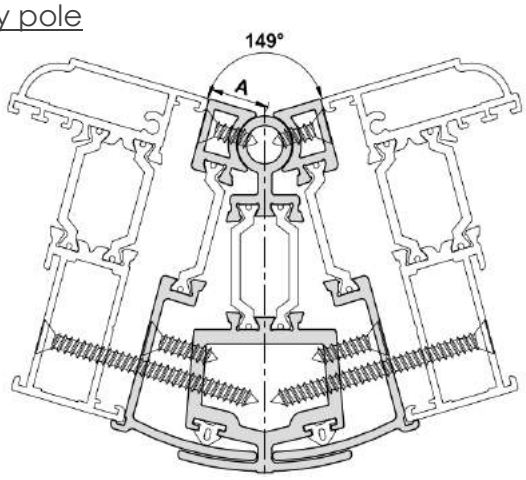
ETC048 90° Corner Post



ETC517 180° Coupler (25mm deduction)

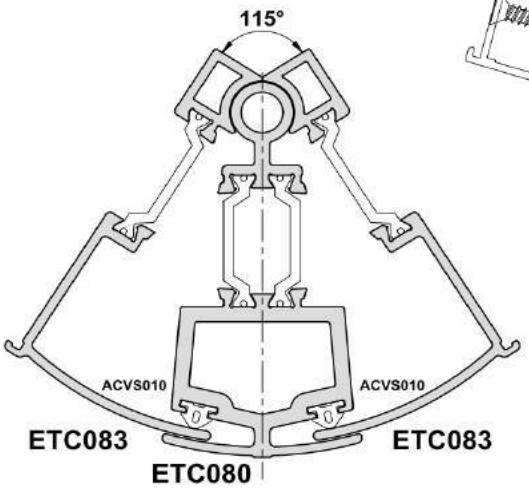


Alitherm 800 - 70mm Frame Bay pole



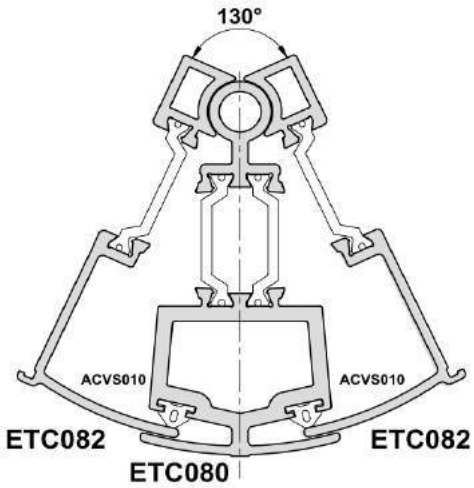
Note:

All joints must be adequately sealed



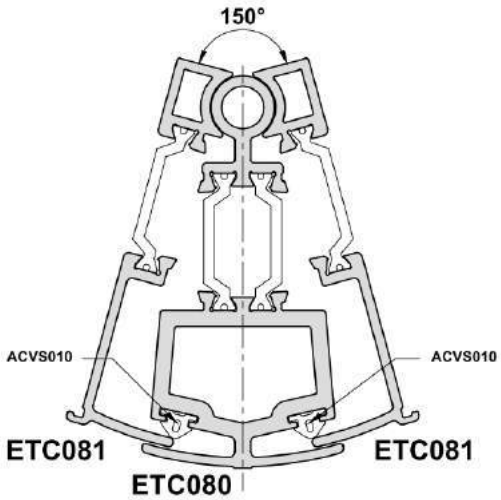
ANGLE	DEDUCTION 'A'
115°	10.5
120°	11
125°	11.5
129°	11.5

Parts
ETC080 Qty 1
ETC083 Qty 2
ACVS010 x 2



ANGLE	DEDUCTION 'A'
130°	11.5
135°	12
140°	12
145°	12.5
149°	12.5

Parts
ETC080 Qty 1
ETC082 Qty 2
ACVS010 x 2



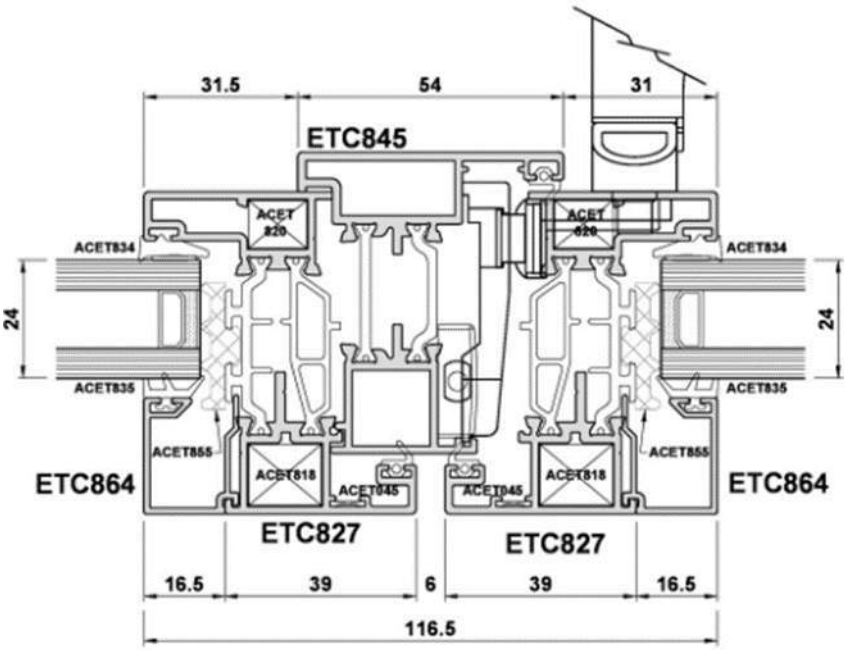
ANGLE	DEDUCTION 'A'
150°	13
155°	13
160°	13.5
165°	13.5
169°	14

Parts
ETC080 Qty 1
ETC081 Qty 2
ACVS010 x 2

Alitherm 800 French Escape Windows

There is no option on the 800 series for a double handle French escape window.

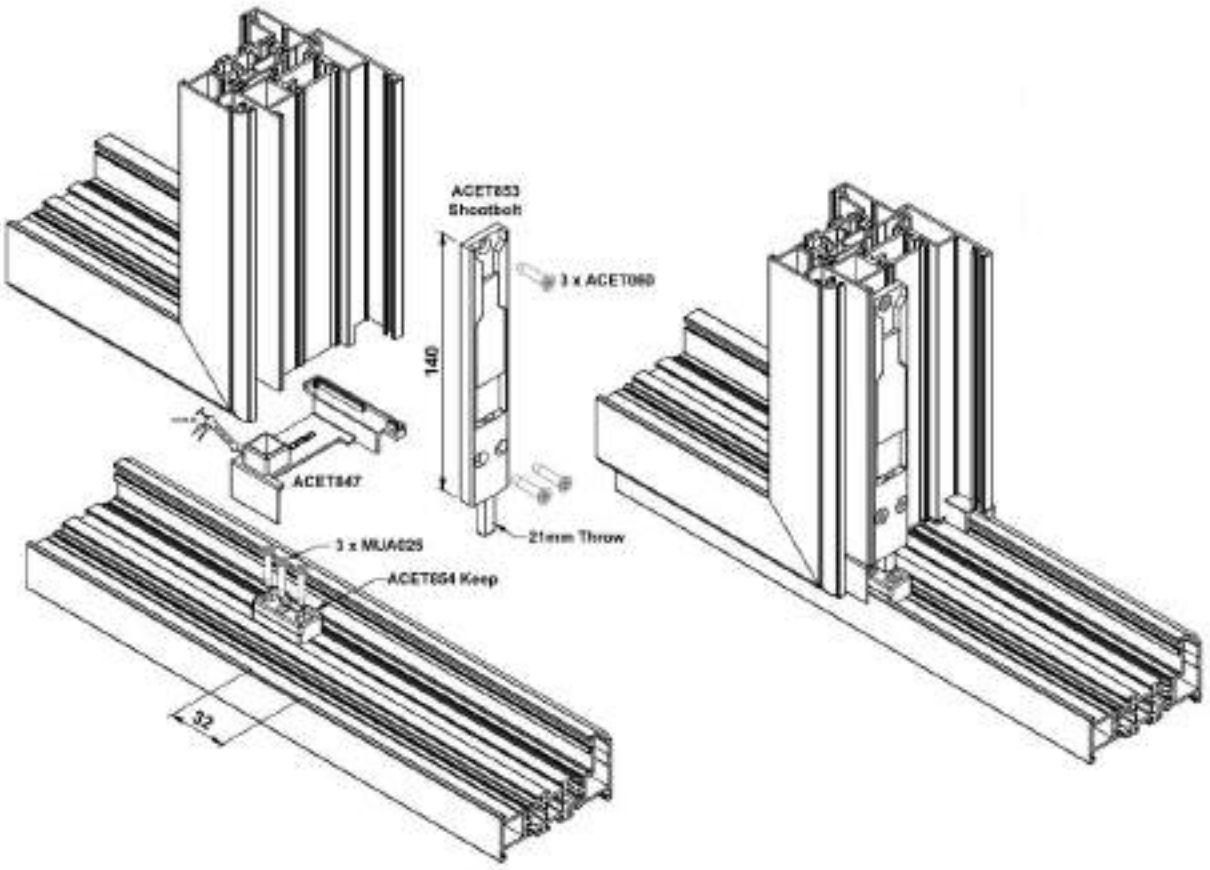
The only option available is for single handle gearing to the master and a finger operated bolt to the slave sash, as shown in the drawing.



Parts

- ETC845 False mullion
- ACET847 False mullion end caps
- ACET854 Finger bolt keeps
- ACET853 Finger Bolts

French escape windows are available with the ETC8201 Externally beaded sashes



Wind Loading – Alitherm 800

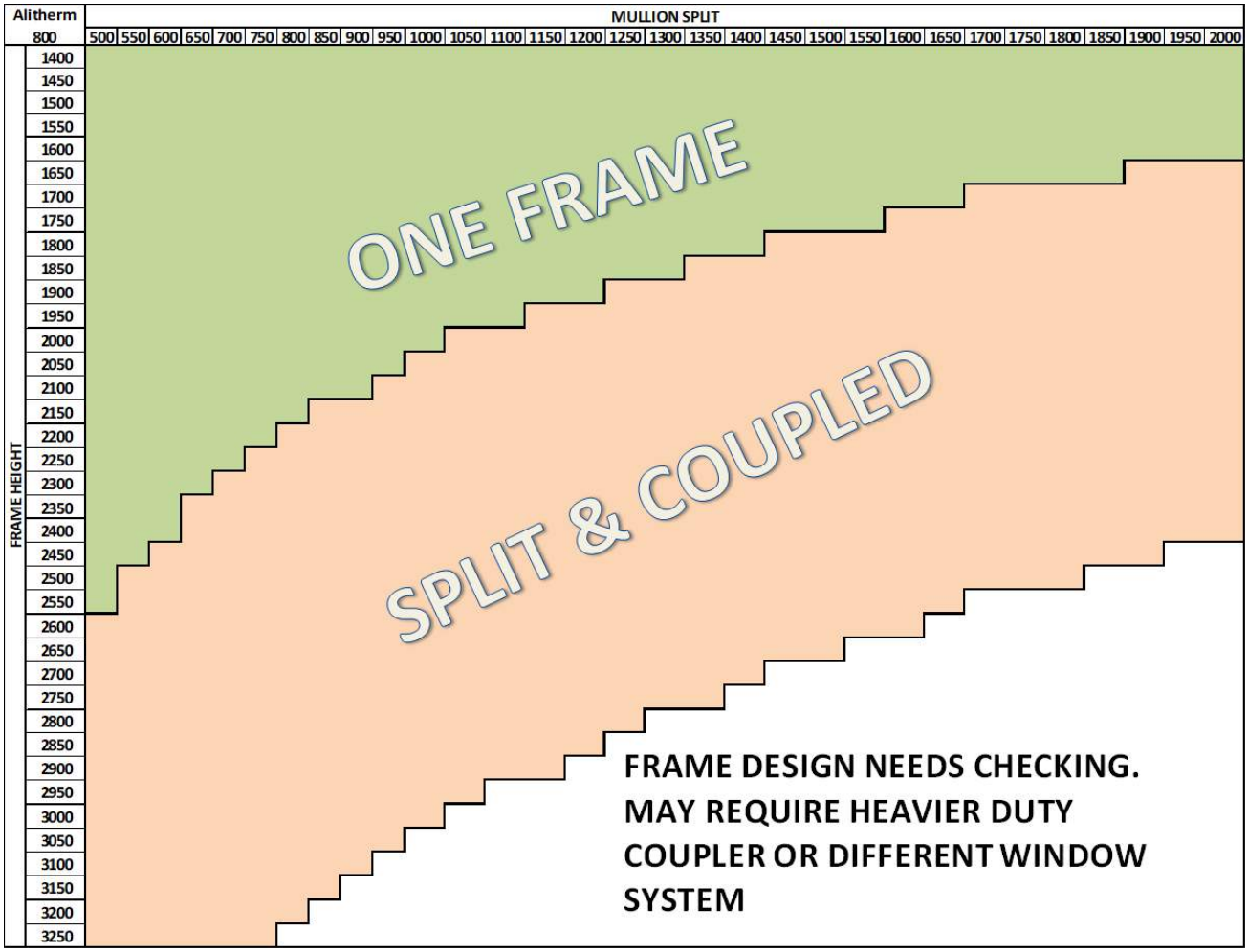
Wind loading calculations based on 800pa, and equal mullion splits.

Mullion ETC830 Ix value of 24.81

Frame ETC810 Ix value 21.90

Coupler ETC517 Ix value 39.6

Coupler and Frame combined Ix value 83.40



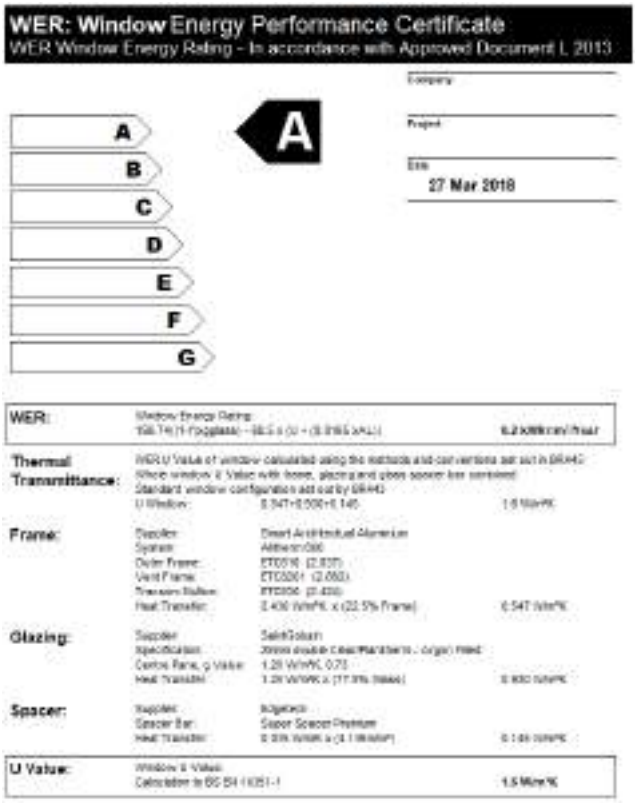
U-values for Double Glazed Units Externally Beaded

Our standard glass specification is:

- 28mm double glazed units
- 4mm Planilux clear /4mm Planitherm +
- 90% argon gas filled cavity
- 20mm black super spacer bar
- 20kg per m²

Outer Frame ETC810

with Sash ETC8201 and Mullion ETC830
Average U-value of 1.6W/m²K – WER 'A'
Unit centre pane of 1.2 W/m²K



U-values for Triple Glazed Units Externally Beaded

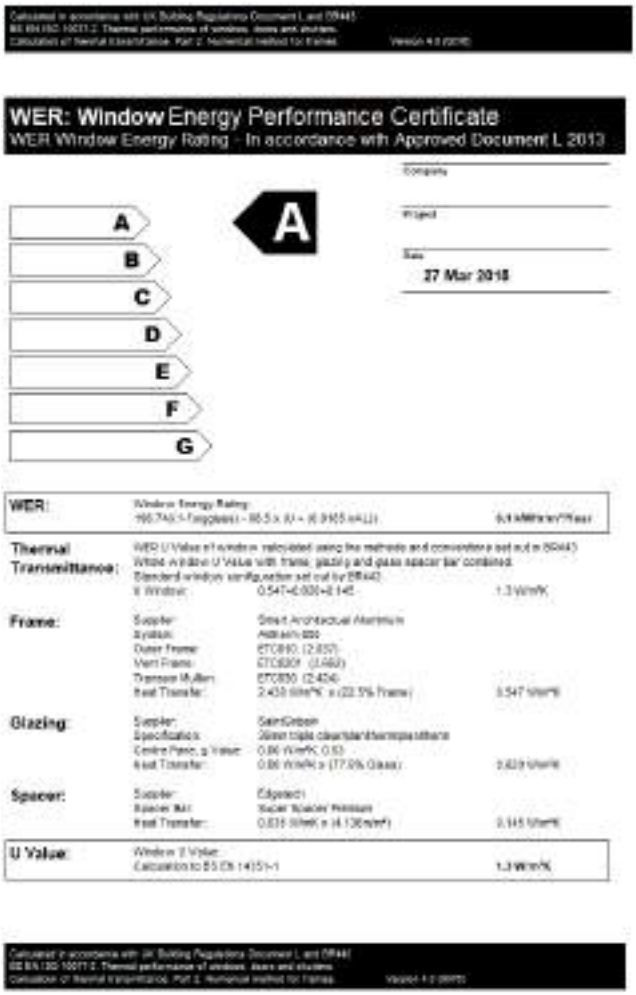
Our standard glass specification is:

- 36mm triple glazed units
- 4mm Planilux clear /4mm Planitherm + /4mm Planitherm +
- 90% argon gas filled cavity
- 20mm black super spacer bar
- 30kg per m²

Outer Frame ETC810

with Sash ETC8201 and Mullion ETC830
Average U-value of 1.3W/m²K – WER 'A'
Unit centre pane of 0.8 W/m²K

You will need to specify at the point of quote/order if you want the triple glazed option otherwise your frames will be processed with the standard double glazed option.



U-values for Double Glazed Units Externally Beaded

Our standard glass specification is:

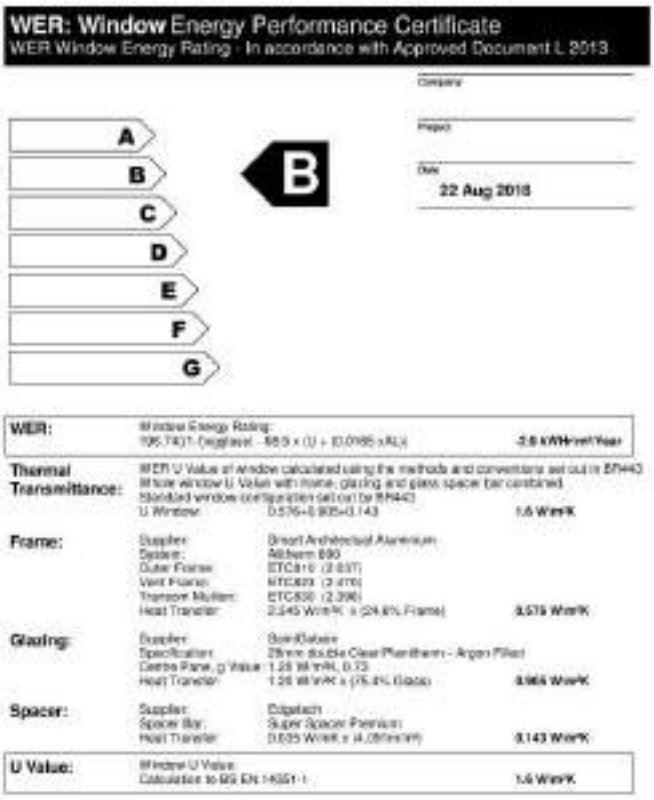
- 28mm double glazed units
- 4mm Planilux clear /4mm Planitherm +
- 90% argon gas filled cavity
- 20mm black super spacer bar
- 20kg per m²

Outer Frame ETC810

with Sash ETC823 or ETC824 and Mullion ETC830

Average U-value of 1.6W/m²K – WER 'B'

Unit centre pane of 1.2 W/m²K



U-values for Triple Glazed Units Internally beaded

Our standard glass specification is:

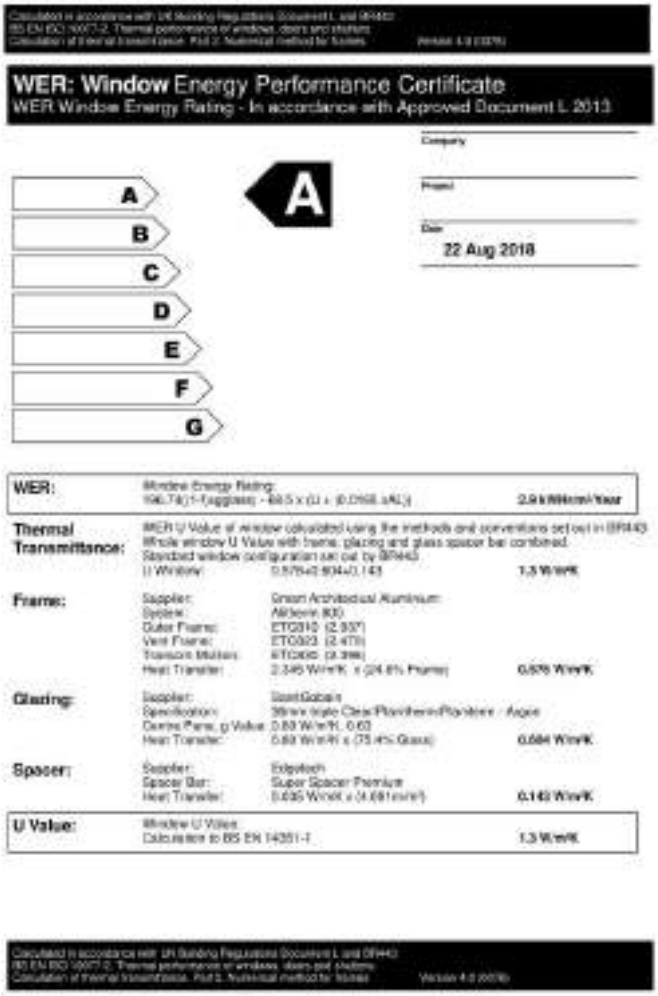
- 36mm triple glazed units
- 4mm Planilux clear /4mm Planitherm + /4mm Planitherm +
- 90% argon gas filled cavity
- 20mm black super spacer bar
- 30kg per m²

Outer Frame ETC810

with Sash ETC823 or ETC824 and Mullion ETC830

Average U-value of 1.3W/m²K – WER 'A'

Unit centre pane of 0.8 W/m²K



You will need to specify at the point of quote/order if you want the triple glazed option otherwise your frames will be processed with the standard double glazed option.



Alitherm 800 Flush casement window

Energy Rating A uValue 1.5Wm²k

70mm thermally broken Smart's aluminium

Alitherm 800 Flush Sash Window – Window Energy Rating 'A'

- Open out internally beaded casements
- Dummy sashes internally beaded to fixed panes
- Square bead to sashes as standard – 24mm double glazed only – ETC822
- Espagnolette with bi-directional locking
- Best WER energy rating average U-value 1.5 W/m^{2}K (24mm with 1.2 centre pane) – WER 'A'
- Best U-Value average U-value 1.4 W/m^{2}K (24mm with 1.1 centre pane) – WER 'B'
- There is no flush door option
- French escape windows are not available

Features and Options

- Finishes available in KL, RAL, Sensation range and dual colour options
- Can be manufactured in accordance with Smarts PAS24 allowing windows to conform to Document Q - claw locks required

Size Restrictions

- Large frames with mullions are subject to be split and coupled based on a design wind load of 800pa
- Max frame size will depend on wind loading requirements and style of window but indicative sash sizes with Securistyle (13mm stack height) friction stays are as follows:

Top Hung Sashes

- Max width: 1400mm (sash size)
- Min width: 375mm (frame size 410mm)
- Max height: 1300mm (sash size)
- Min height: 300mm (frame size 340mm) (325mm transom drop)
- Max weight: 40kg

Side Hung Sashes

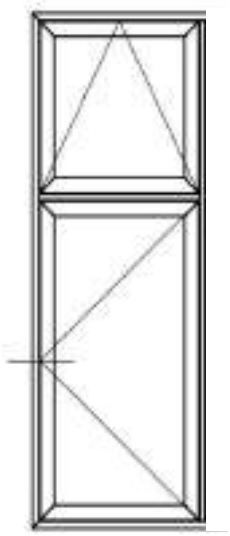
- Max width: 700mm (sash size)
- Min width: 300mm (frame size 340mm)
- Max height: 1400mm (sash size)
- Min height: 375mm (frame size 410mm)
- Max weight: 24kg
- 450mm opening (fire escape) - frame/frame min 611mm - frame/mullion CL min 597mm

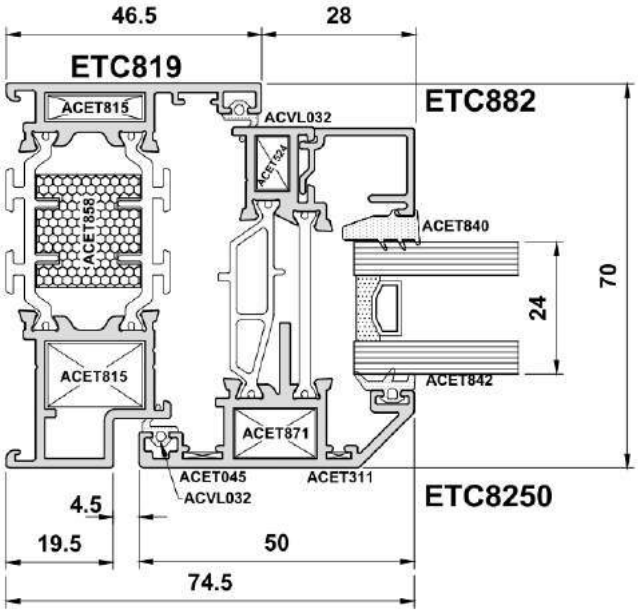
Weather Performance (BS6375-1)

- BS EN 1026: 2000 Air Permeability: Class 3 600 Pa
- BS EN 1027: 2000 Water tightness: Class E 1050 Pa
- BS EN 12211: 2000 Resistance to Wind Load: Class 5A 2000 Pa

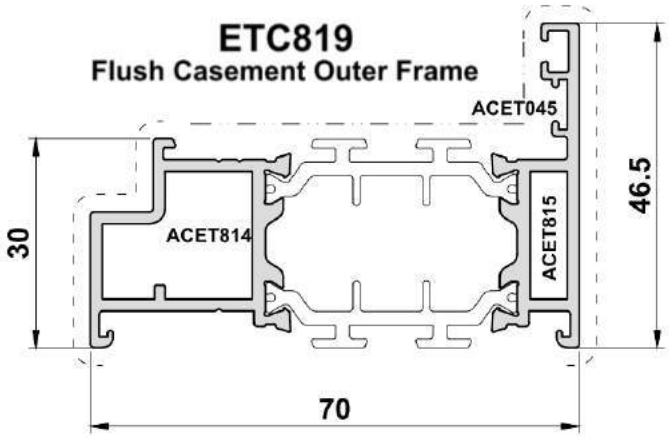
Cross Sectional Drawings

Standard Frame & Sash Detail

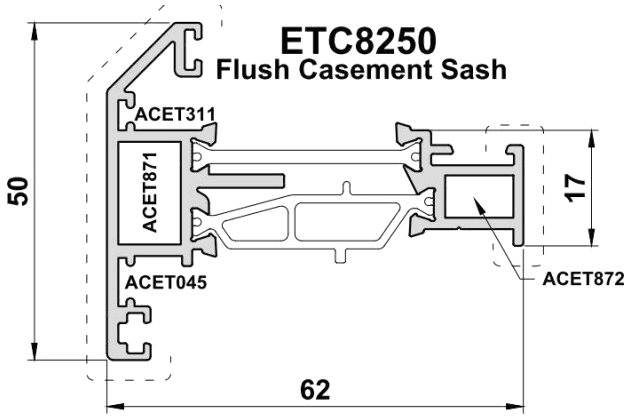




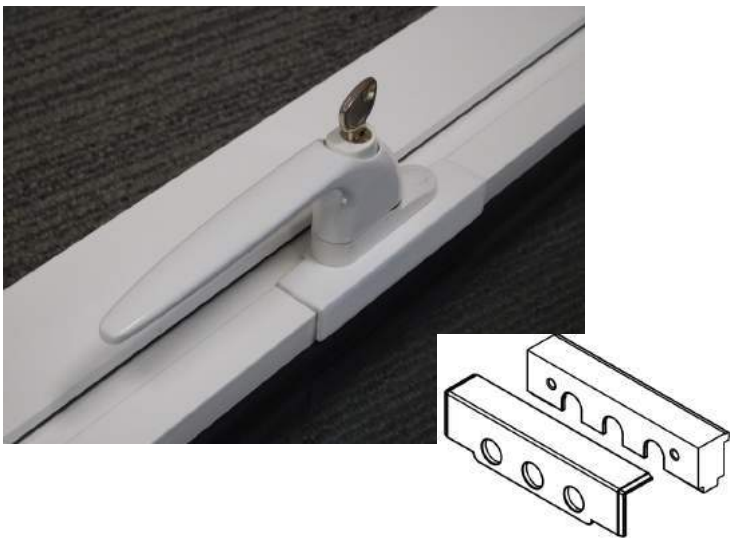
Standard Outerframe



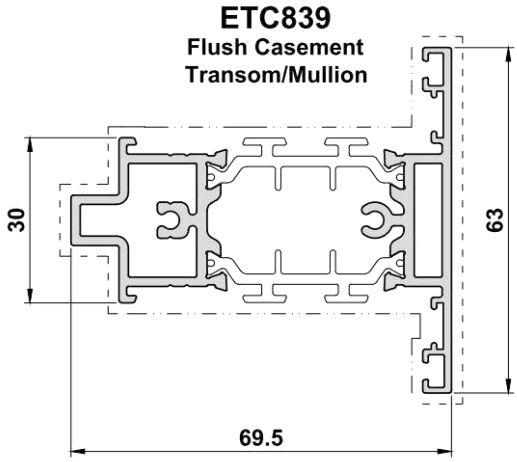
Standard Sash (internally beaded)



Handle fixing block/cover



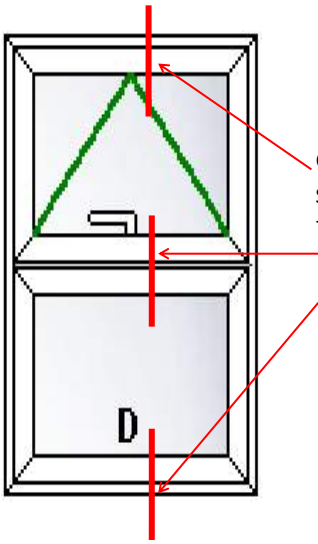
Standard Transom/Mullion



Opening sash top / Dummy sash bottom

Note:

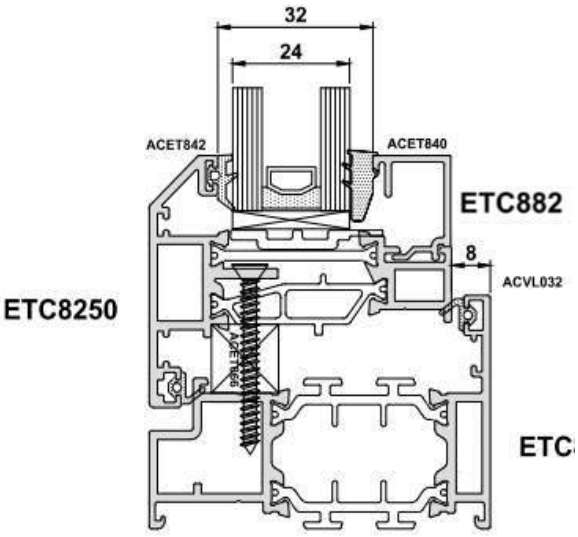
Dummy sashes to fixed panes are supplied as standard

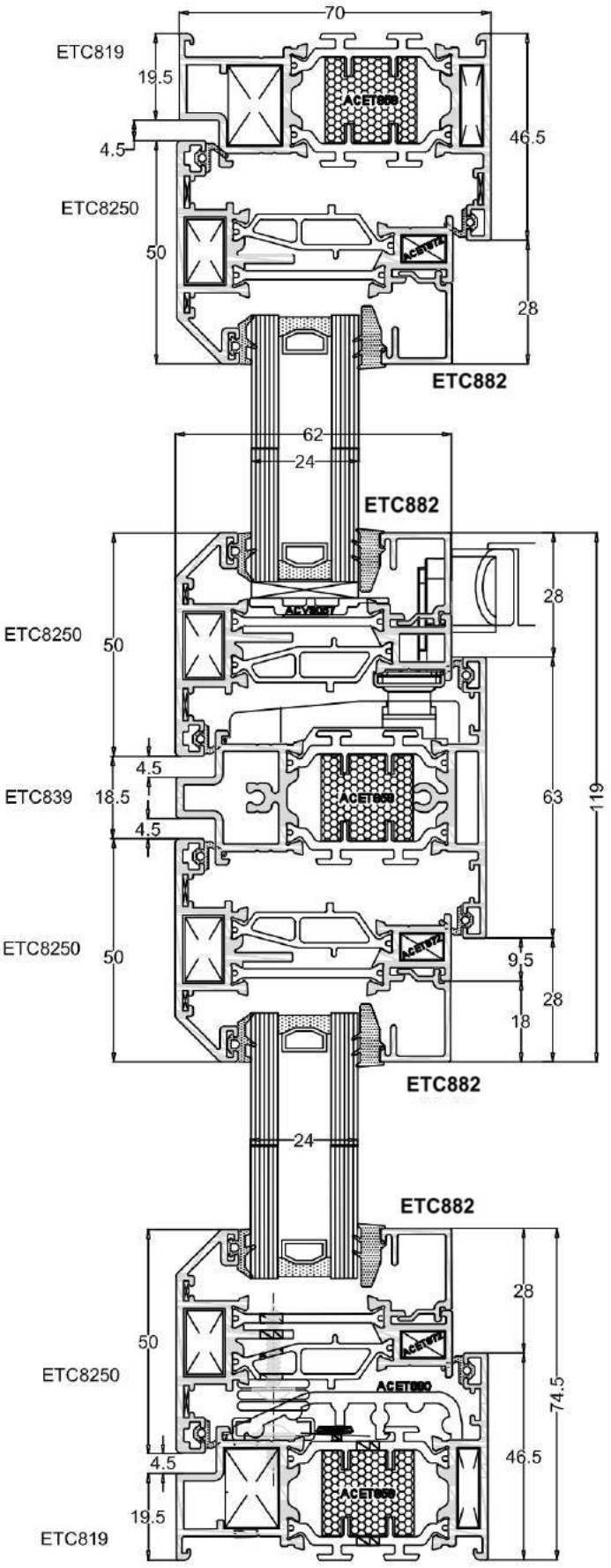


Cross section shown through these points

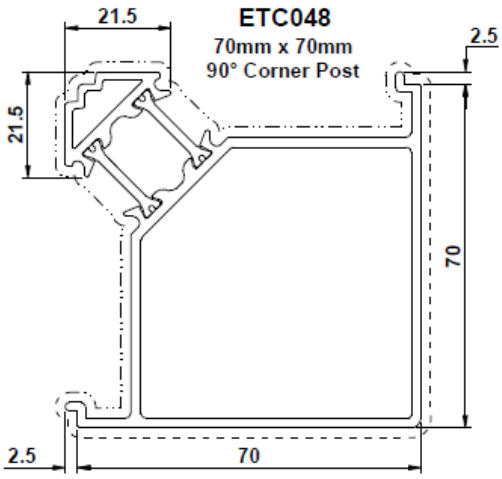
Standard internal square bead for opening & dummy sash

24mm double glazed – ETC882

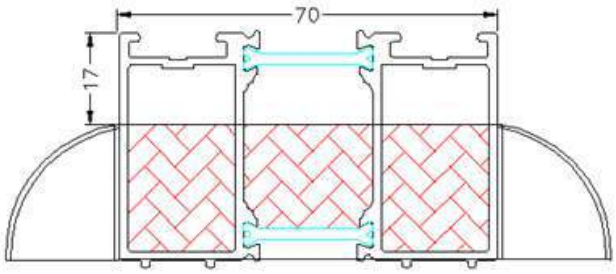




ETC048 90° Corner Post



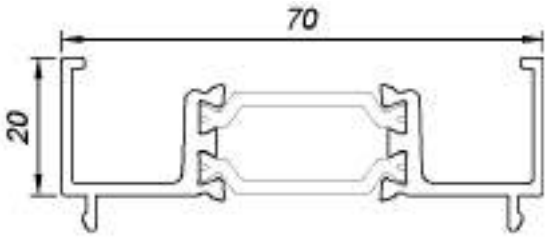
DV515 70mm x 42mm extension



Note:

With the hood of the head fitted approx. 17mm to the outer edge of the 42mm head extension. Extensions come fitted to the outerframe and pre-routed

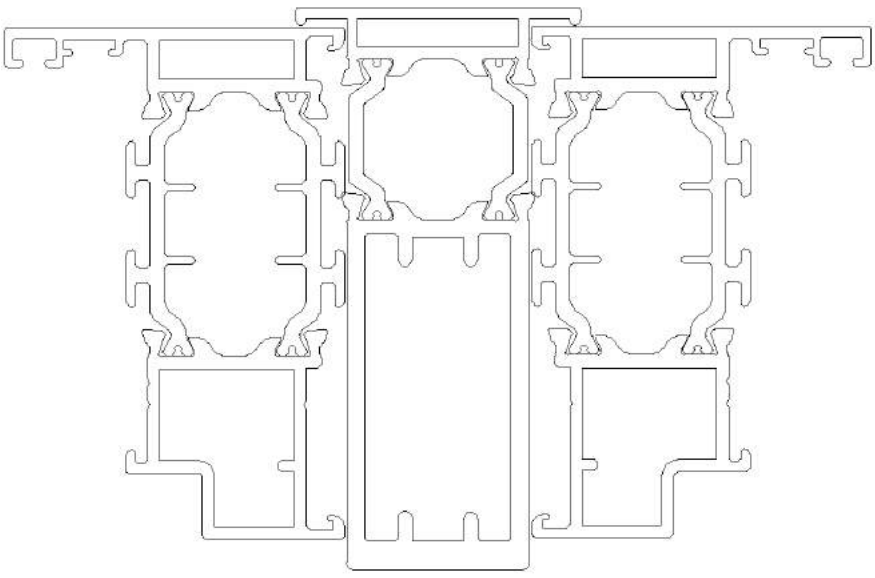
ETC858 70mm x 20mm extension



ETC517 180° Coupler (25mm deduction)

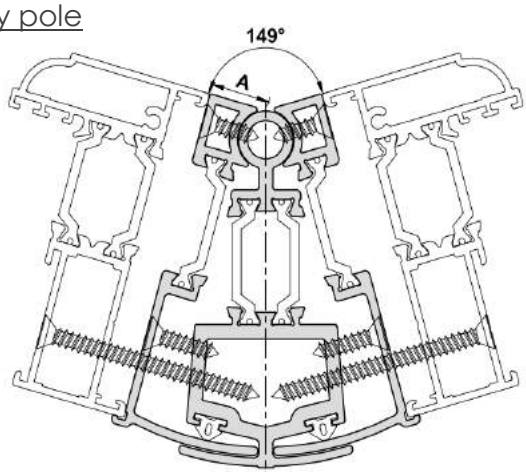
77mm x 25mm

Inside



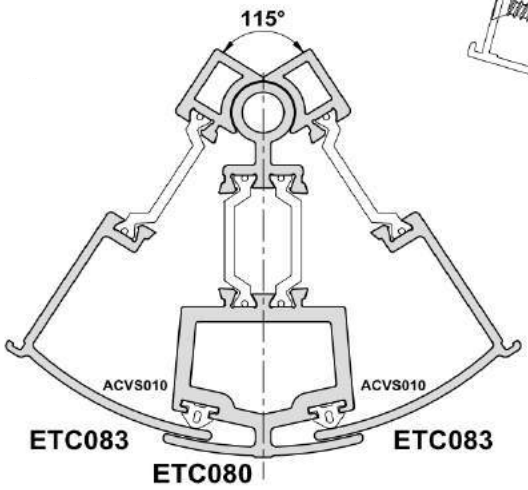
Outside

Alitherm 800 - 70mm Frame Bay pole



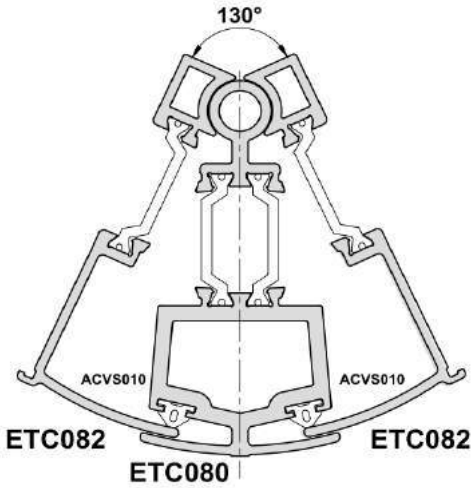
Note:

All joints must be adequately sealed



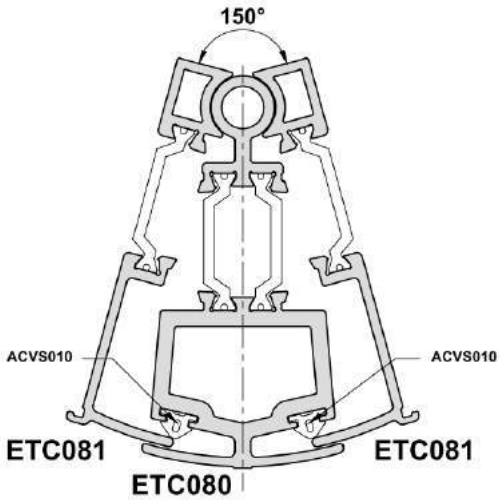
ANGLE	DEDUCTION 'A'
115°	10.5
120°	11
125°	11.5
129°	11.5

Parts
ETC080 Qty 1
ETC083 Qty 2
ACVS010 x 2



ANGLE	DEDUCTION 'A'
130°	11.5
135°	12
140°	12
145°	12.5
149°	12.5

Parts
ETC080 Qty 1
ETC082 Qty 2
ACVS010 x 2



ANGLE	DEDUCTION 'A'
150°	13
155°	13
160°	13.5
165°	13.5
169°	14

Parts
ETC080 Qty 1
ETC081 Qty 2
ACVS010 x 2

Wind Loading – Alitherm 800 Flush sash

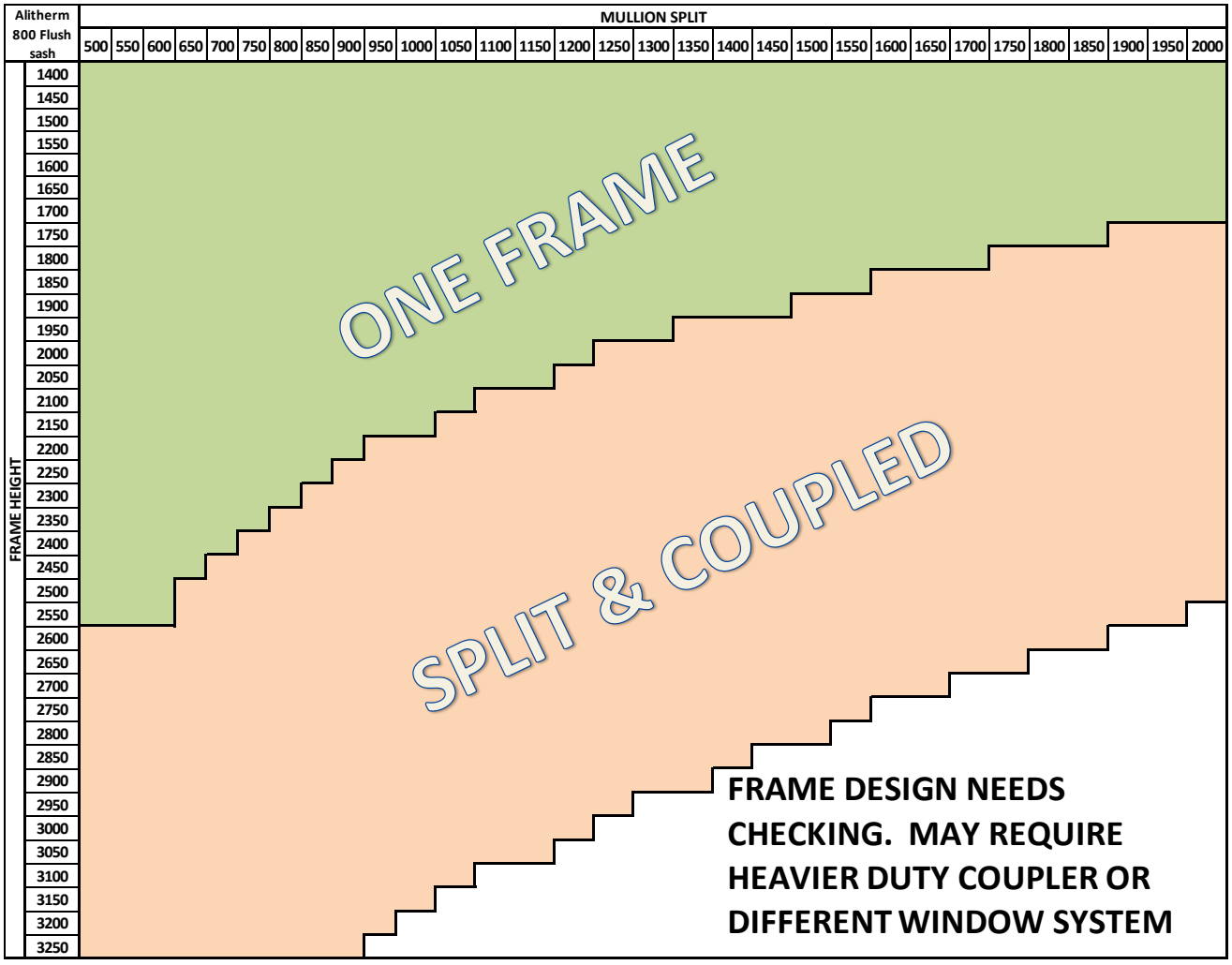
Wind loading calculations based on 800pa, and equal mullion splits.

Mullion ETC839 Ix value of 29.67

Frame ETC819 Ix value 29.23

Coupler ETC517 Ix value 39.6

Coupler and Frame combined Ix value 98.06

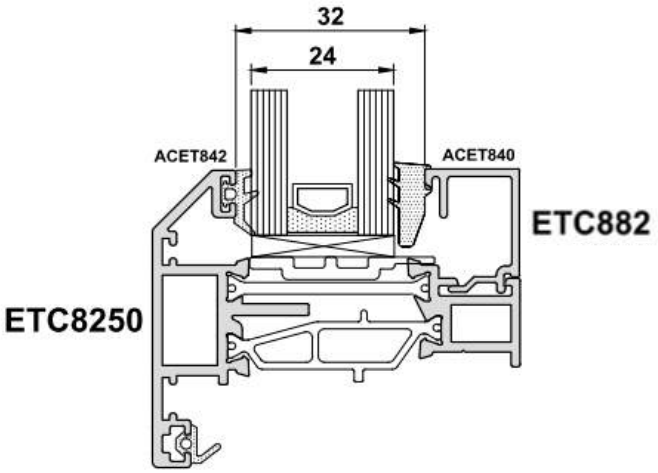


Best WER Energy rated

U-values for Double Glazed Units

Our standard glass specification is:

- 24mm double glazed units
- 4mm Planilux clear /4mm Planitherm +
- 90% argon gas filled cavity
- 16mm black super spacer bar
- 20kg per m²



Outer Frame ETC819

with Sash ETC8250 and Mullion ETC839

Average U-value of 1.5W/m²K – WER 'A'

Unit centre pane of 1.2 W/m²K

WER: Window Energy Performance Certificate
WER Window Energy Rating - In accordance with Approved Document L 2013

Company

Project

Date
27 Mar 2018

A
B
C
D
E
F
G

WER:	Window Energy Rating: 196.74((1-f)xgglass) - 68.5 x (U + (0.0165 xAL))		**4.0 kWHr/m²/Year**
Thermal Transmittance:	WER U Value of window calculated using the methods and conventions set out in BR443 Whole window U Value with frame, glazing and glass spacer bar combined. Standard window configuration set out by BR443 U Window:	0.479+0.913+0.144	1.5 W/m²K
Frame:	Supplier: System: Outer Frame: Vent Frame: Transom Mullion: Heat Transfer:	Smart Architectual Aluminium Alitherm 800 Flush ETC819 (1.607) ETC8250 (2.206) ETC839 (2.090) 2.005 W/m²K x (23.9% Frame)	0.479 W/m²K
Glazing:	Supplier: Specification: Centre Pane, g Value: Heat Transfer:	SaintGobain 28mm double Clear/Planitherm - Argon Filled 1.20 W/m²K, 0.73 1.20 W/m²K x (76.1% Glass)	0.913 W/m²K
Spacer:	Supplier: Spacer Bar: Heat Transfer:	Edgetech Super Spacer Premium 0.035 W/mK x (4.105m/m²)	0.144 W/m²K
U Value:	Window U Value: Calculation to BS EN 14351-1		**1.5 W/m²K**

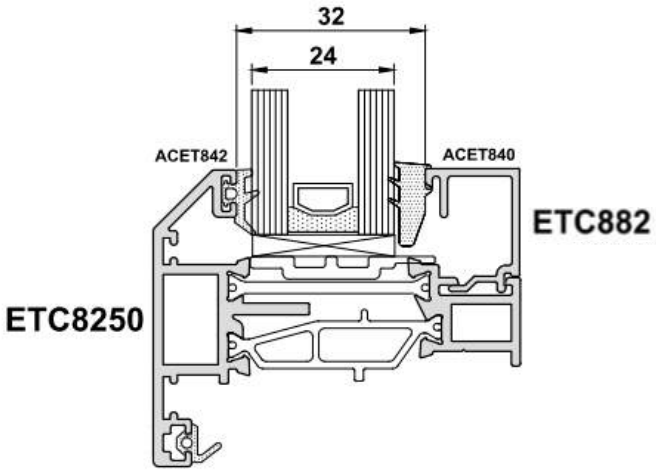
Calculated in accordance with UK Building Regulations Document L and BR443
BS EN ISO 10077-2. Thermal performance of windows, doors and shutters.
Calculation of thermal transmittance. Part 2. Numerical method for frames Version 4.0 (0076)

Best WER Energy rated

U-values for Double Glazed Units

Our standard glass specification is:

- 24mm double glazed units
- 4mm Planitherm /4mm Planitherm +
- 90% argon gas filled cavity
- 16mm black super spacer bar
- 20kg per m²



Outer Frame ETC819

with Sash ETC8250 and Mullion ETC839

Average U-value of 1.4W/m²K – WER 'B'

Unit centre pane of 1.1 W/m²K

WER: Window Energy Performance Certificate
WER Window Energy Rating - In accordance with Approved Document L 2013

Company

Project

Date
27 Mar 2018

A
B
C
D
E
F
G

B

WER:	Window Energy Rating: 196.74((1-f)xgglass) - 68.5 x (U + (0.0165 xAL))		**-2.7 kWHr/m²/Year**
Thermal Transmittance:	WER U Value of window calculated using the methods and conventions set out in BR443 Whole window U Value with frame, glazing and glass spacer bar combined. Standard window configuration set out by BR443 U Window:	0.479+0.837+0.144	1.5 W/m²K
Frame:	Supplier: System: Outer Frame: Vent Frame: Transom Mullion: Heat Transfer:	Smart Architectual Aluminium Alitherm 800 Flush ETC819 (1.607) ETC8250 (2.206) ETC839 (2.090) 2.005 W/m²K x (23.9% Frame)	0.479 W/m²K
Glazing:	Supplier: Specification: Centre Pane, g Value: Heat Transfer:	SaintGobain 28mm double Planitherm/Planitherm - Argon 1.10 W/m²K, 0.65 1.10 W/m²K x (76.1% Glass)	0.837 W/m²K
Spacer:	Supplier: Spacer Bar: Heat Transfer:	Edgetech Super Spacer Premium 0.035 W/mK x (4.105m/m²)	0.144 W/m²K
U Value:	Window U Value: Calculation to BS EN 14351-1		**1.4 W/m²K**

Calculated in accordance with UK Building Regulations Document L and BR443
BS EN ISO 10077-2. Thermal performance of windows, doors and shutters.
Calculation of thermal transmittance. Part 2. Numerical method for frames Version 4.0 (0078)

THIS PAGE IS INTENTIONALLY BLANK



Heritage 47 Casement window

Energy Rating B uValue 1.7Wm^{2}k

47mm thermally broken Smart's aluminium

Alitherm Heritage Window – Window Energy Rating 'B'

The Alitherm Heritage window system offers a modern thermally broken alternative to steel windows. The Alitherm Heritage has been designed with signature slim sightlines, attractive aesthetic contours and enhanced thermal performance.

The Alitherm Heritage window offers integral mullions, transoms and cruciforms as standard or can be built as a series of horizontal or vertical modules which can be stacked using couplers to form multi-part windows featuring a specially designed drip bar between modules.

- Fixed frames externally beaded & sashes internally beaded as standard
- Option to use dummy sash for internally beaded fixed frames
- Square bead throughout.
- Espagnolette with bi-directional locking
- Average U-value of 1.7 W/m^{2}K (28mm with 1.2 centre pane) – WER 'B'
- 36mm triple glazed available 0.8 W/m^{2}K centre pane – WER 'A' **(W20028 sash)**

Features and Options

- Ultra slim frame and sash – used as a replacement for Crittall style windows
- Claw lock available – window not comply with PAS24

Size Restrictions

- Maximum sizes will depend on wind loading requirements and style of window but indicative sash sizes with Securistyle (13mm stack height) friction stays are as follows:

Top Hung Sashes

- Max width: 1400mm (sash size)
- Min width: 376mm (frame size 400mm)
- Max height: 1300mm (sash size)
- Min height: 300mm (frame size 330mm) (transom drop 320mm)
- Max weight: 40kg

Side Hung Sashes

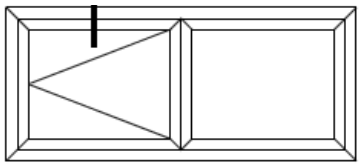
- Max width: 700mm (sash size) using side hung stays (600mm using egress/easy clean stays)
- Min width: 300mm (frame size 330mm)
- Max height: 1400mm (sash size)
- Min height: 376mm (frame size 400mm)
- Max weight: 24kg
- 450mm opening (fire escape) - frame/frame min 580mm - frame/mullion CL min 520mm

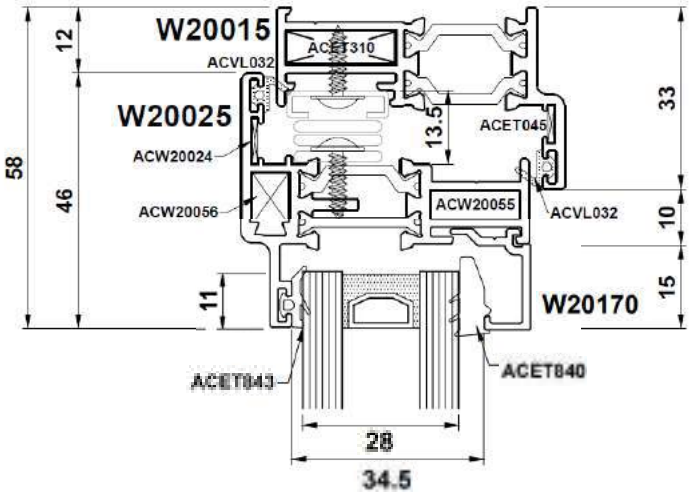
Weather Performance (BS6375-1)

- BS EN 1026: 2000 Air Permeability: Class 4 600 Pa
- BS EN 1027: 2000 Water tightness: Class 9A 600 Pa
- BS EN 12211: 2000 Resistance to Wind Load: Class AE 2400 Pa

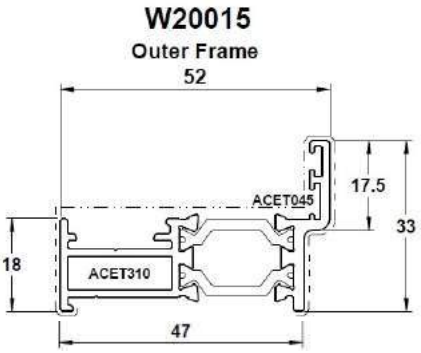
Cross Sectional Drawings

Standard Frame & Sash Detail

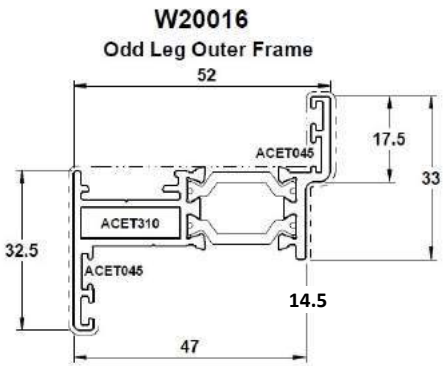




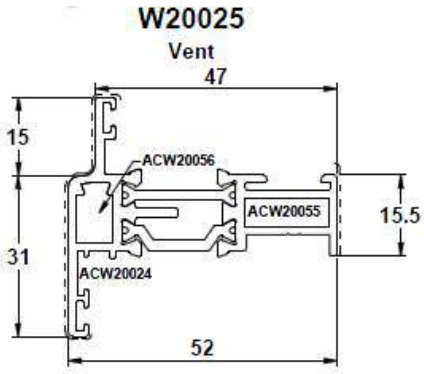
Standard Outer Frame



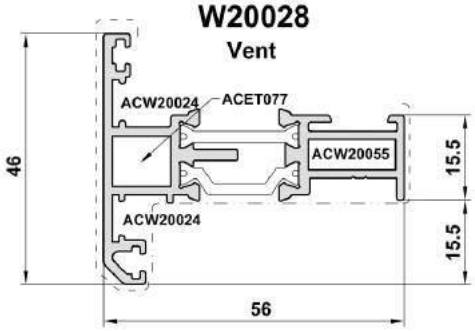
Odd leg Outer Frame



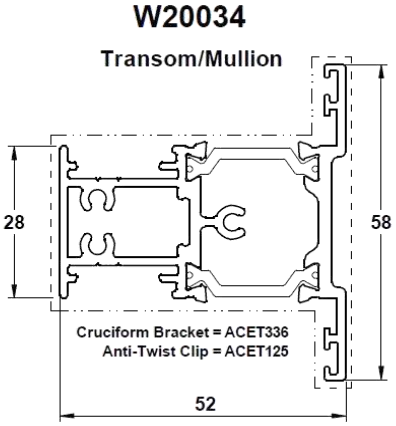
28 mm Internally Beaded Sash



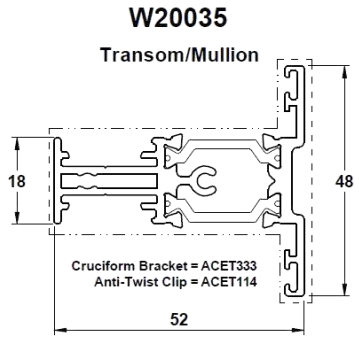
36mm Internally Beaded Sash



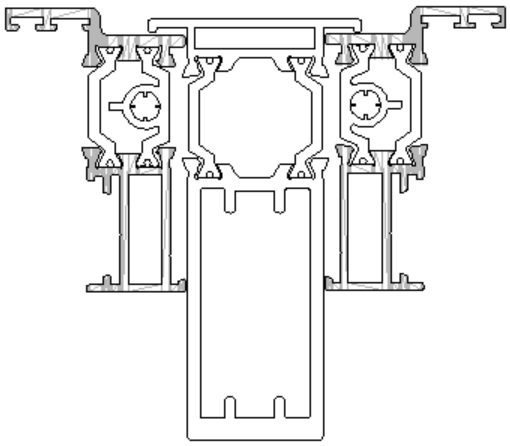
Heavy Duty Transom/Mullion



Standard Transom/Mullion

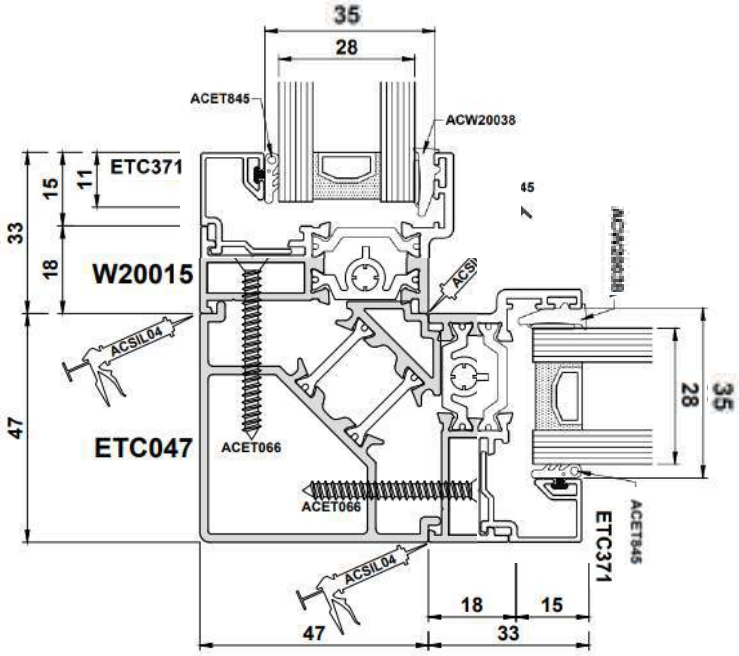


ETC517 180° - Coupler (25mm deduction)



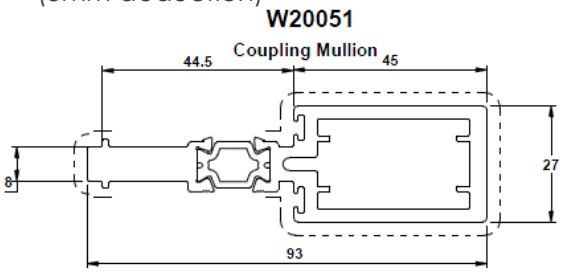
ETC047 90° Corner Post

(0mm deduction)

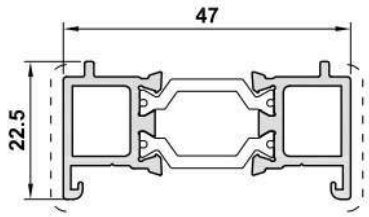


W20051 / W20054 180° Coupler

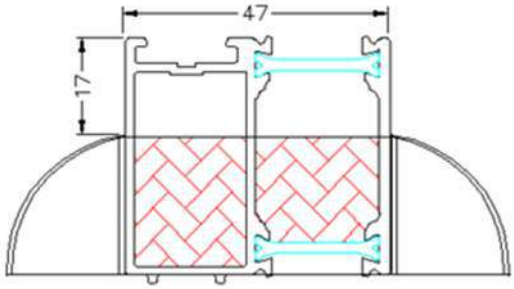
(8mm deduction)



47mm x 20 mm ETD056 Frame Extension



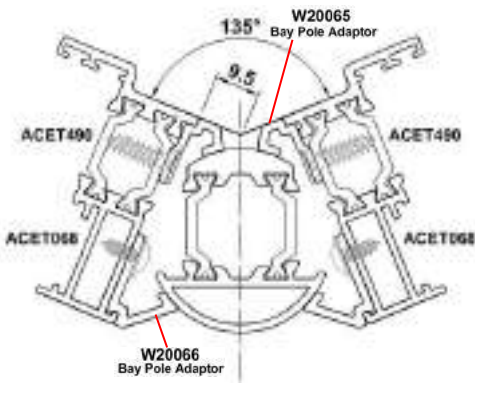
47mm x 42 mm ETD058 Head Extension



Note:

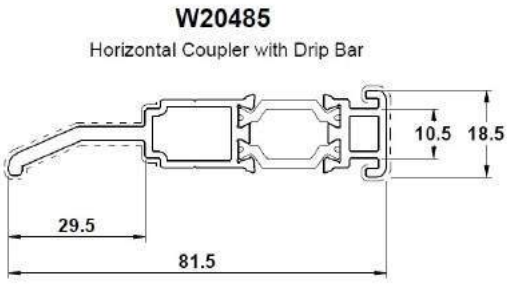
with the hood of the head vent fitted there is approx. 17mm to the outer edge of the 42mm head extension. Extensions come fitted

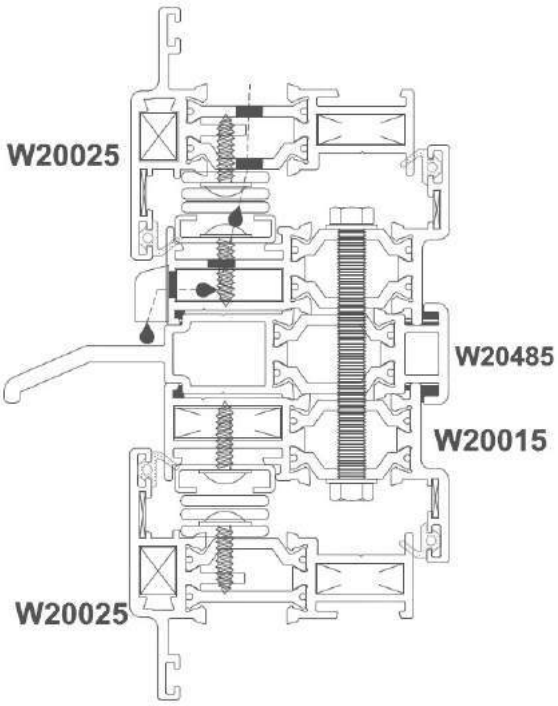
W20069 Bay Pole



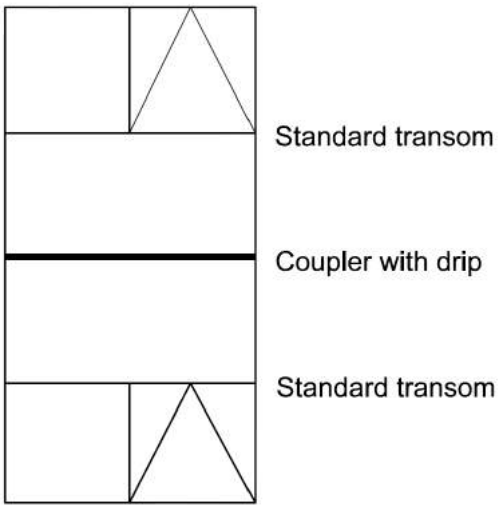
ANGLE	DEDUCTION 'A'
180°	18
175°	17
170°	16
165°	15.5
160°	14.5
155°	13.5
150°	12.5
145°	11.5
140°	10.5
135°	9.5
130°	8.5
125°	7.5
120°	6.5
115°	5

Horizontal Coupler with Drip Bar





Horizontal coupler would typically be used to construct ladder frameworks as below:

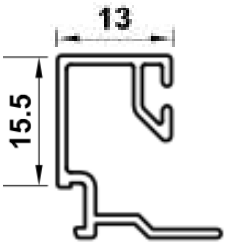


Note:

Frames are drilled and coupled on site. 5mm threaded rod shown (by others) and to be fitted at 300mm centres

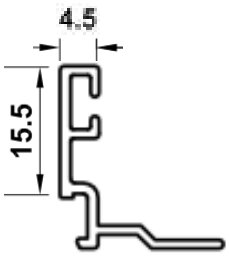
28mm External Outerframe bead

ETC371



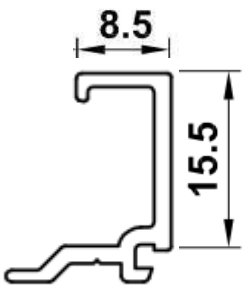
36mm External Outerframe bead

ETC376



28mm & 36mm Internal Sash bead

W20170



Wind Loading – Heritage 47

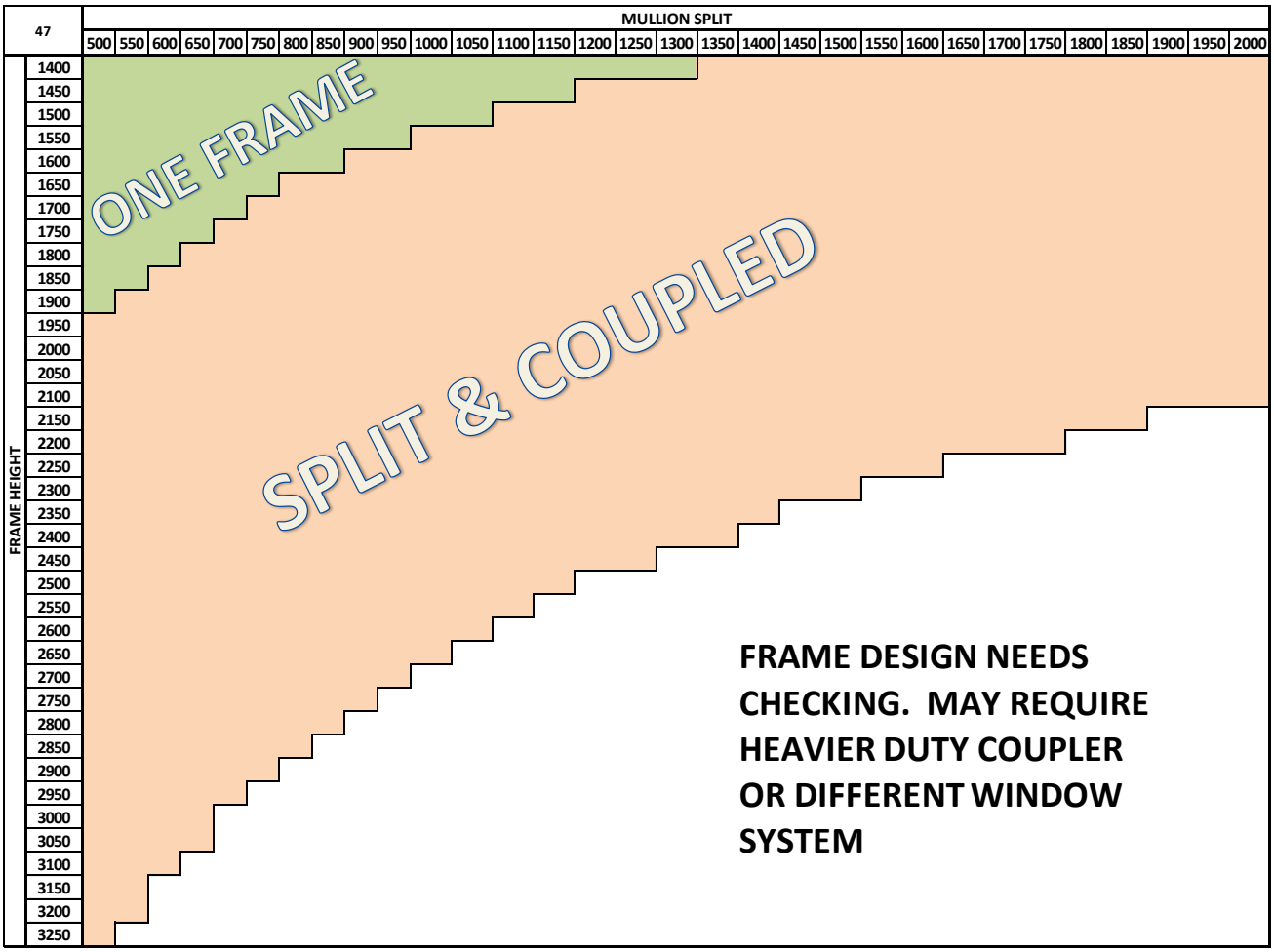
Wind loading calculations based on 800pa, and equal mullion splits.

Mullion W20035 Ix value of 10.67

Frame W20015 Ix value 8.08

Coupler ETC517 Ix value 39.6

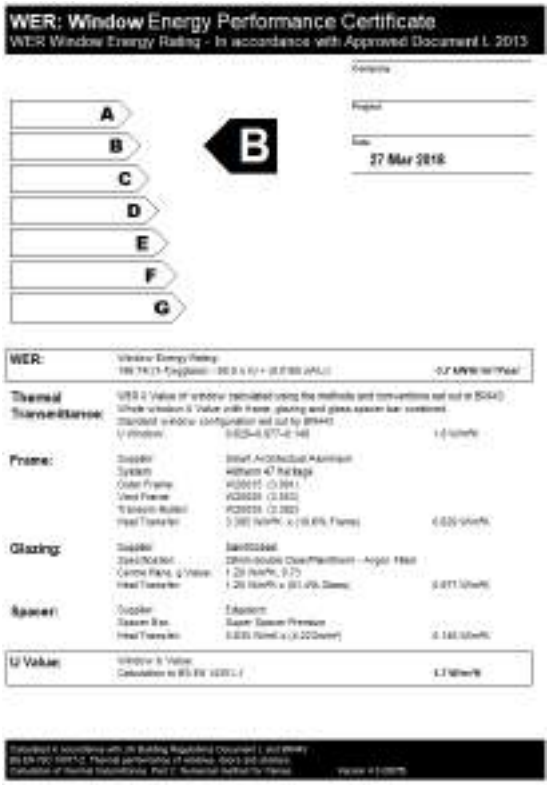
Coupler and Frame combined Ix value 55.76



U-values for Double Glazed Units

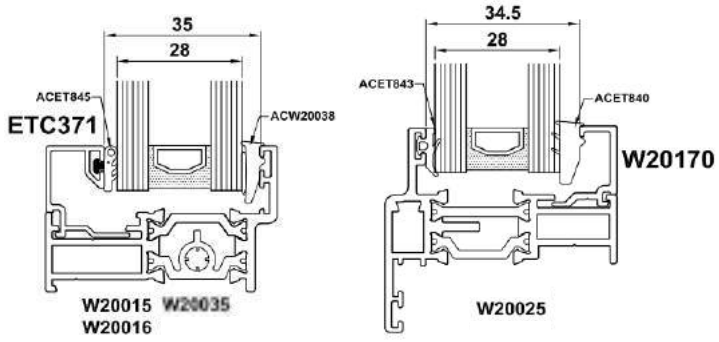
Our standard glass specification is:

- 28mm double glazed units
- 4mm Planilux clear /4mm Planitherm +
- 90% argon gas filled cavity
- 16mm Black super spacer bar
- 20kg per m²



Outer Frame W20015

with Sash W20025 and Mullion W20035
Average U-value of 1.7 W/m²K - WER 'B'
Unit centre pane of 1.2 W/m²K



U-values for Triple Glazed Units

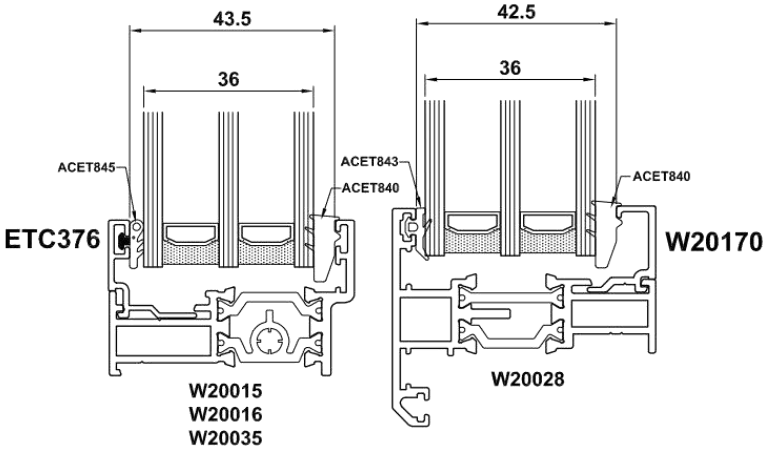
Our standard glass specification is:

- 36mm double glazed units
- 4mm Planilux clear /4mm Planitherm +/4mm Planitherm +
- 90% argon gas filled cavity
- 12mm Black super spacer bar
- 30kg per m²



Outer Frame W20015

with Sash W20028 and Mullion W20035
Average U-value of 1.4 W/m²K - WER 'A'
Unit centre pane of 0.8 W/m²K



THIS PAGE IS INTENTIONALLY BLANK



Alitherm Plus residential doors

Energy Rating C uValue 1.9Wm²k

Alitherm Plus Door

- Outer frame 70mm (**ETD015**) with scotia detail
- Optional low threshold (**ETD196**) ramps ETD198 & EUD03 supplied as standard
- Optional 47mm (**ETD012**) flat profile detail
- Open in door sash (**ETD024**), square profile
- Open out door sash (**ETD025**), square profile
- 28mm Chamfered bead (**ETC164**) – internally beaded
- Open in Midrail (**ETD030)**, open out Midrail (**ETD033**)
- ACET250 Fully adjustable hinge (available in white, black, KL005)
- DV559 20mm frame extension fitted to hinge side of all OPEN IN doors as standard
- Standard height of midrails 900mm inc cill, 875mm without cill
- Single doors defaulted to open in, French doors open out
- Restrictors fitted to all OPEN OUT doors
- All doors to have lever/lever handles as standard
- Trickle vents to be put in a 42mm frame extension (**ETC515**)
- 150 cills (**ETC157**), cut flush to the frame widths, i.e. no horns
- Combination frames are split & coupled together using (**ETC517**)
- French doors with side screens are split and coupled using (**ETC517**)
- Full height side screens matched to door profile (**ETD015**)
- Full height side screen frames next to open out doors are externally beaded
- Full height side screen frames next to open in door are internally beaded
- Fanlights required above doors are split & coupled using ((**ETC517**)
- Average U-value 1.9 W/m^{2}K (28mm with 1.2 centre pane) Triple glazed is not available
- Panels are ESP200 Polystyrene with a 1.2mm Aluminium Skin to both the inner and outer face
- Casement frames coupled to doors frame depths are not the same see pages 44 or 46
- Can be manufactured in accordance with Smarts PAS24 allowing doors to conform to Document Q

Size Restrictions

Single Doors

- Max width: 1067mm Frame size
- Max height: 2567mm Frame size
- Min height: 1550mm – Lower size possible but locking points will be lost
- Max weight: 100kg

Double Doors

- Max width: 2074mm Frame size
- Max height: 2567mm Frame size
- Min height: 1650mm - Lower size possible but locking points will be lost
- Max Weight: 200kg (100kg per leaf)

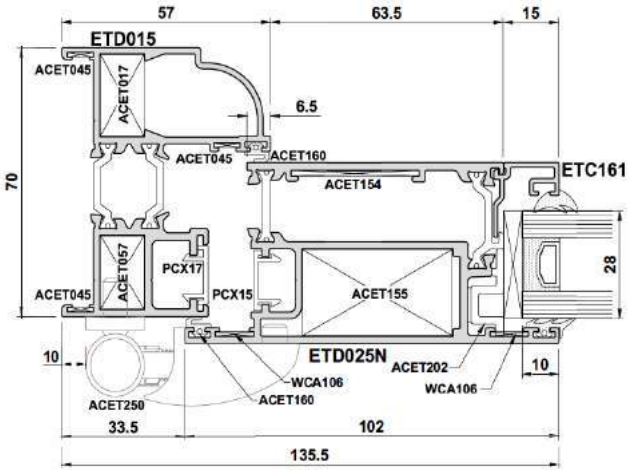
Weather Performance (BS6375-1)

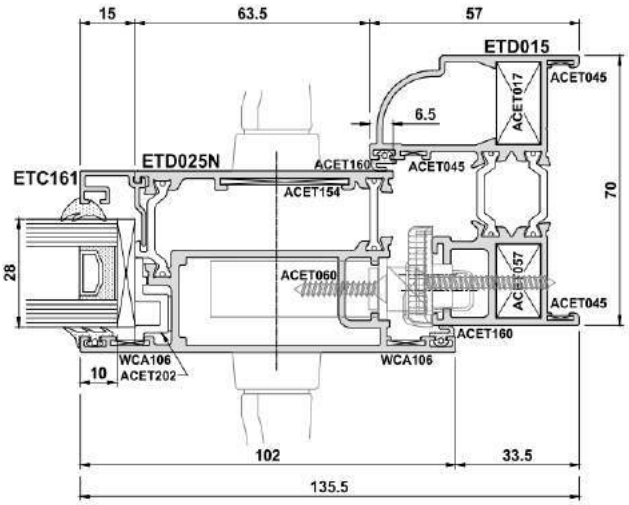
- BS EN 1026: 2000 Air Permeability: 600 Pa
- BS EN 1027: 2000 Water tightness: 600 Pa
- BS EN 12211: 2000 Resistance to Wind Load: 1200 Pa

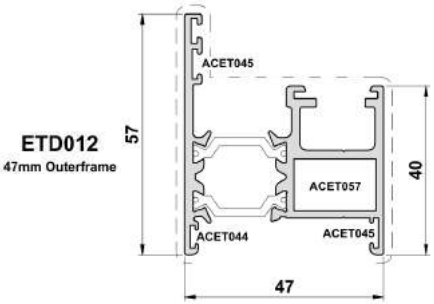
Cross Sectional Drawings

Open Out

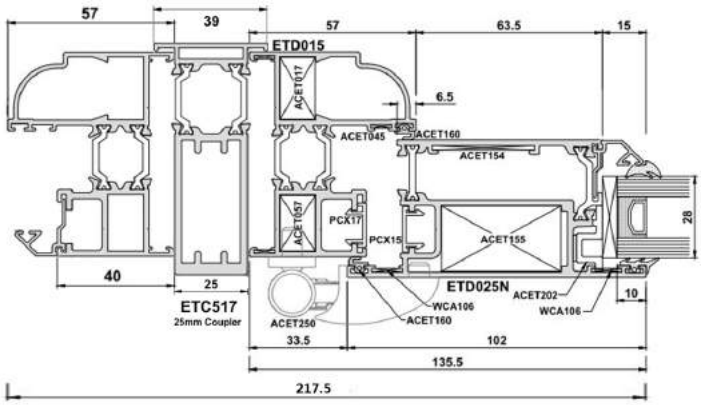
Single door





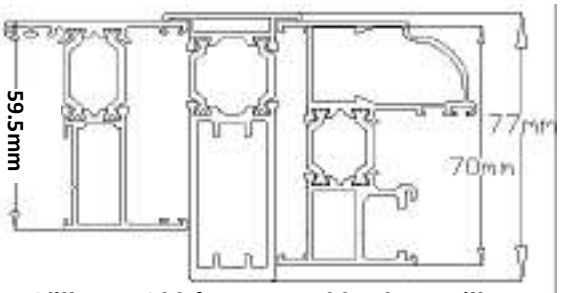


Optional 47mm door outerframe. If this frame is required it must be specified at quote request or order



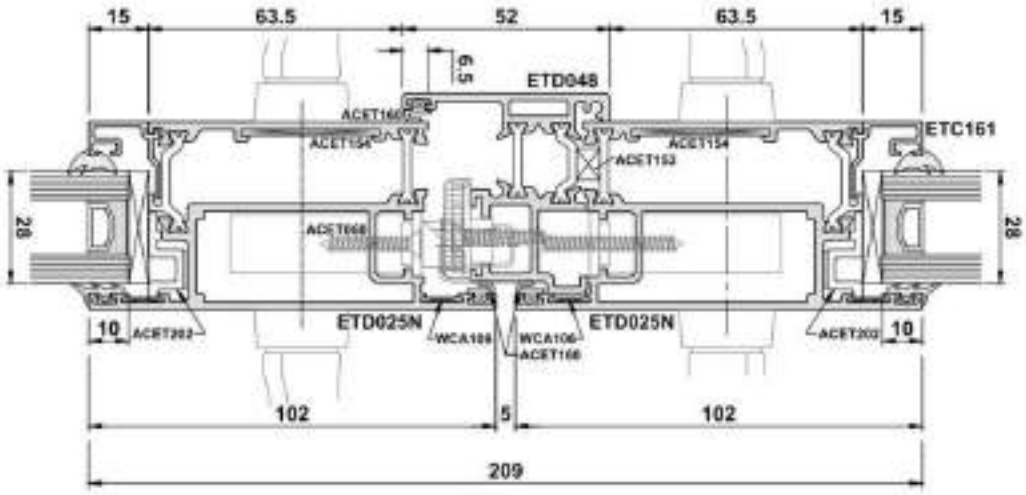
Ext beaded side screen next to door with coupler

ETC517 180 - Coupler (25mm deduction)

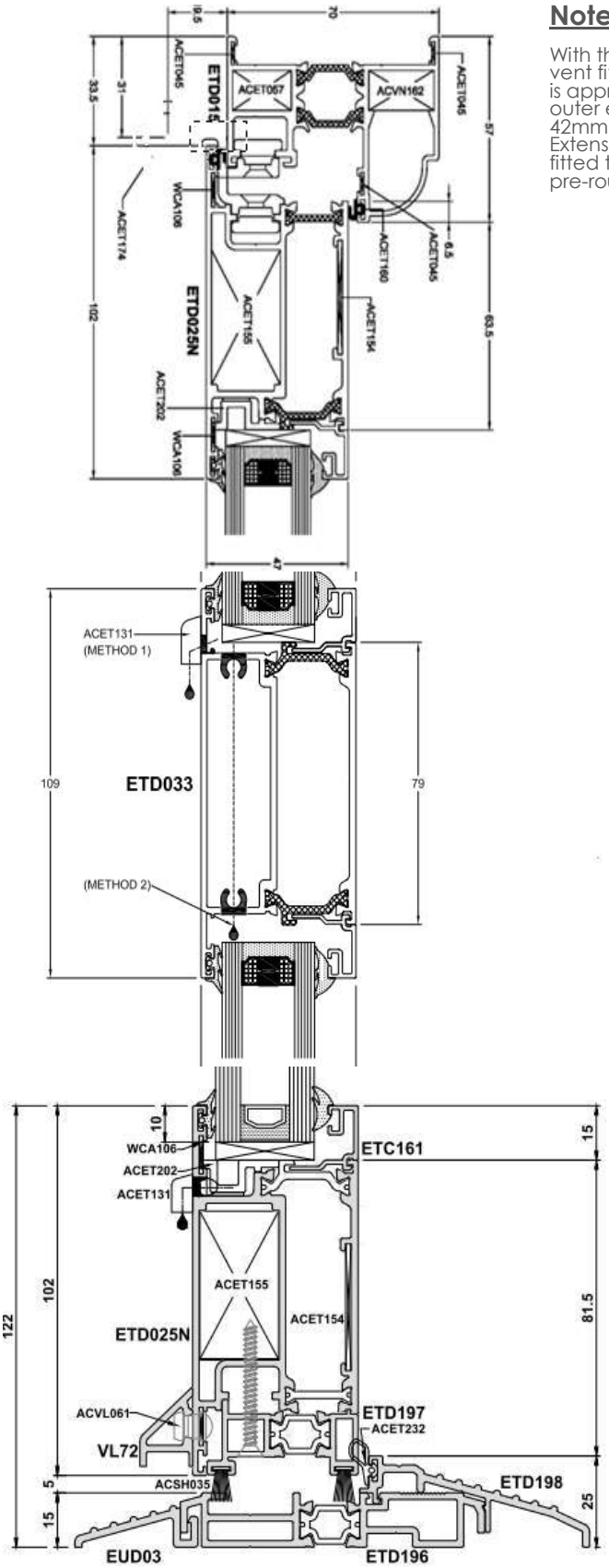


Alitherm 600 frame next to door with coupler

Centre French door

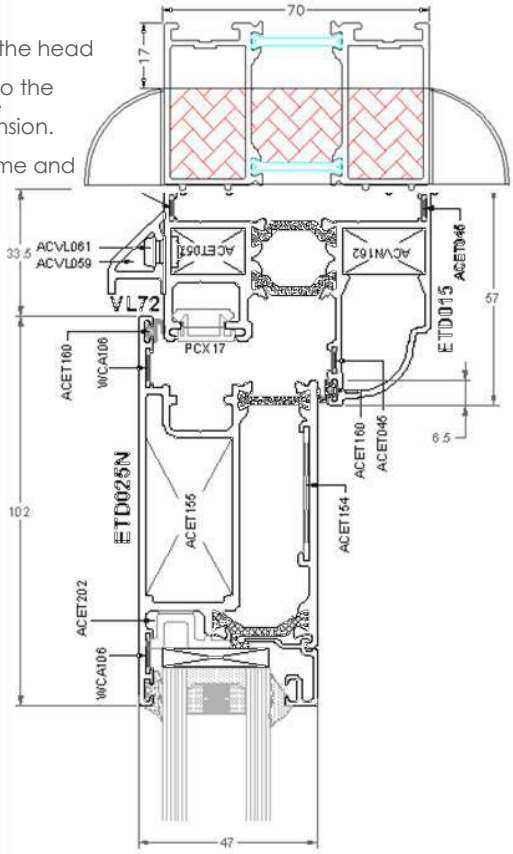


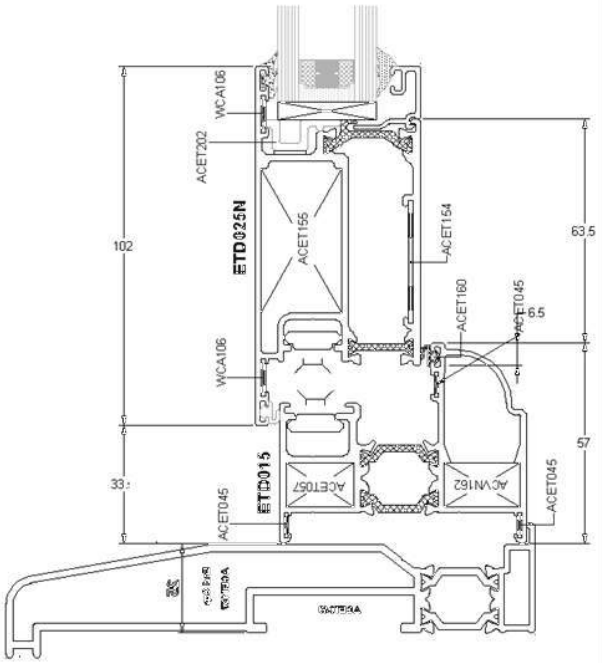
Open Out



Note:

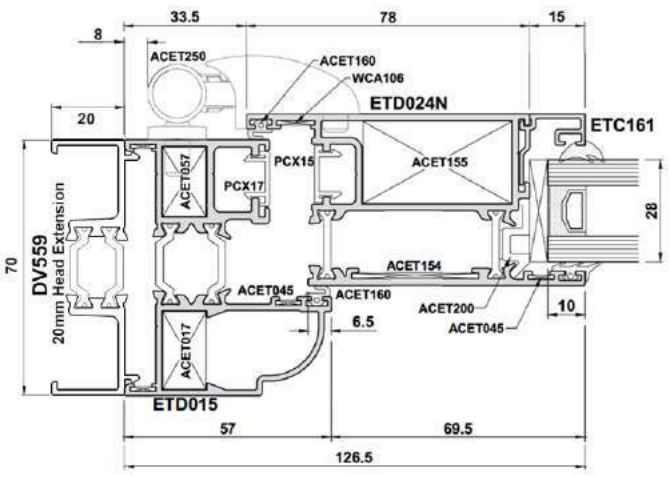
With the hood of the head vent fitted there is approx. 17mm to the outer edge of the 42mm head extension. Extensions come fitted to outer frame and pre-routed.

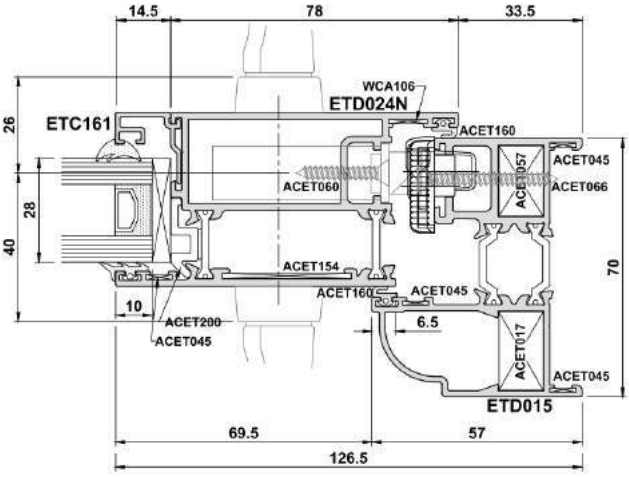




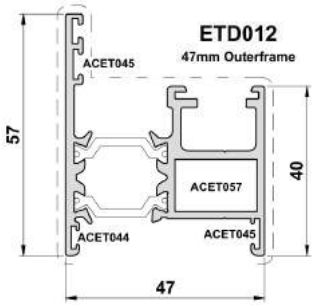
Open In

Single door

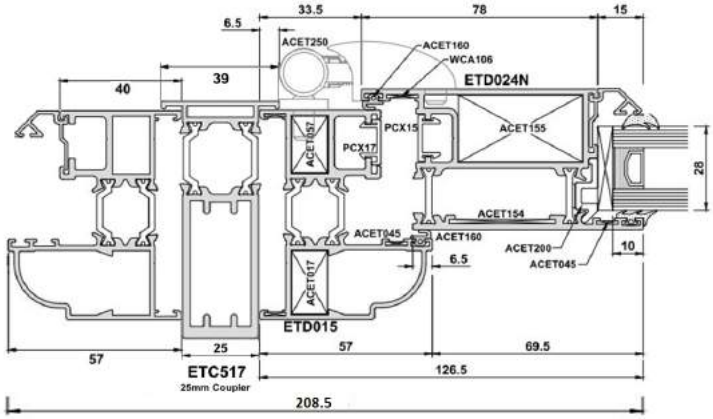




Note: On open in doors only. As there is only 8mm from edge of frame to edge of hinge a DV559 20mm frame extension will be fitted to the hinge side.

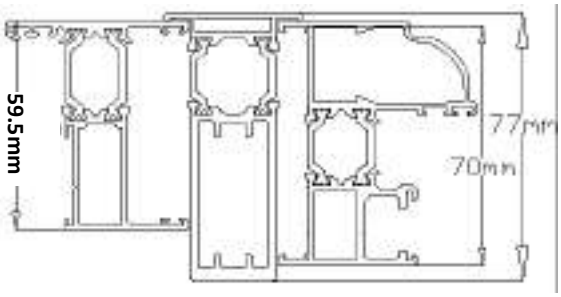


Optional 47mm door outerframe. If this frame is required it must be specified at quote request or order



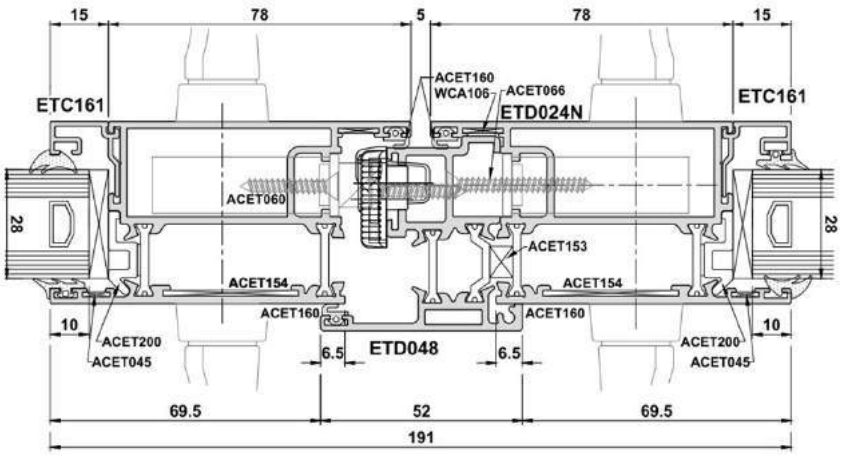
Int beaded Side screen next to door with coupler

ETC517 180 - Coupler (25mm deduction)

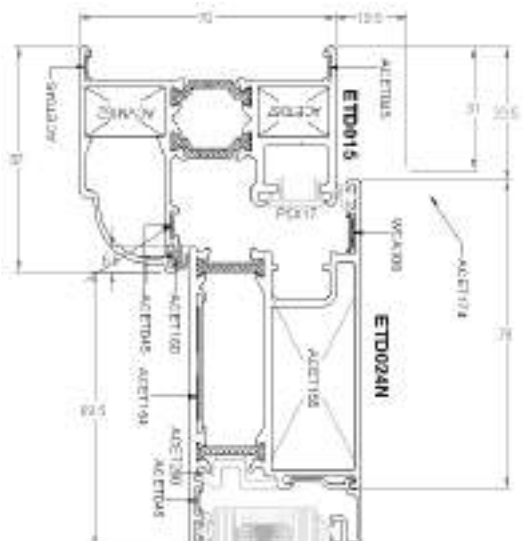


Casement frame next to door with coupler

Centre French door

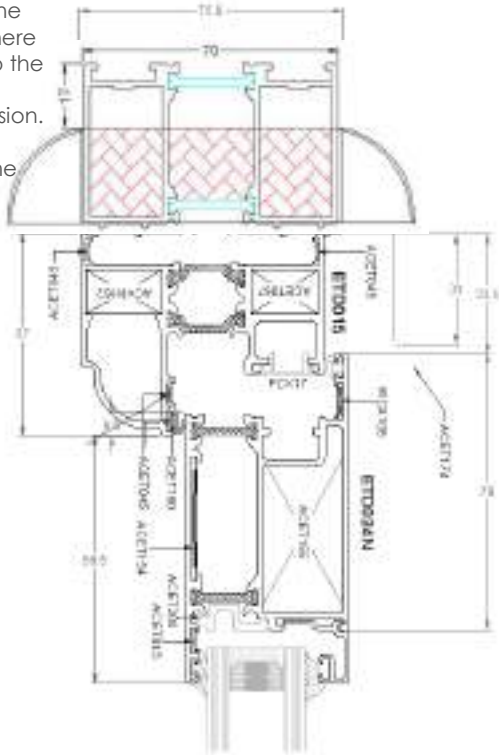


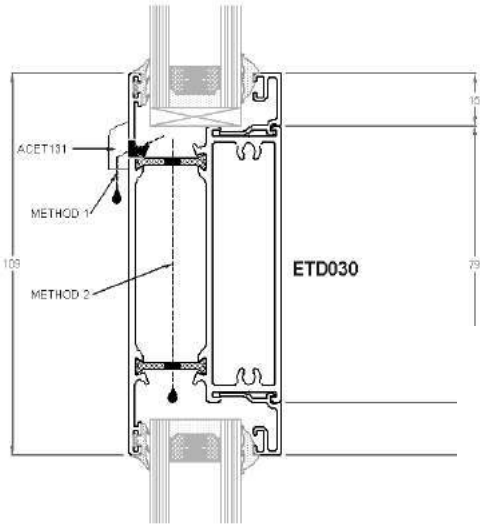
Open In

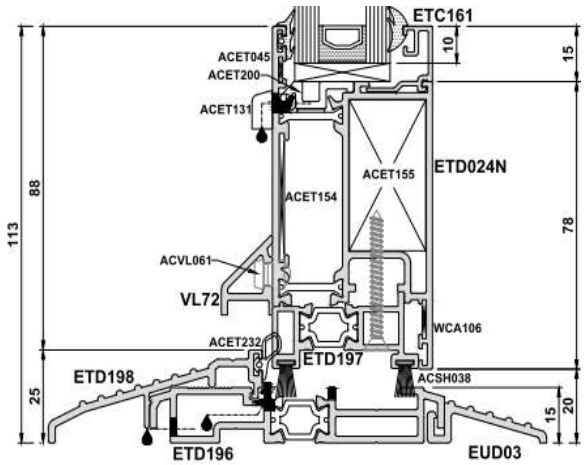


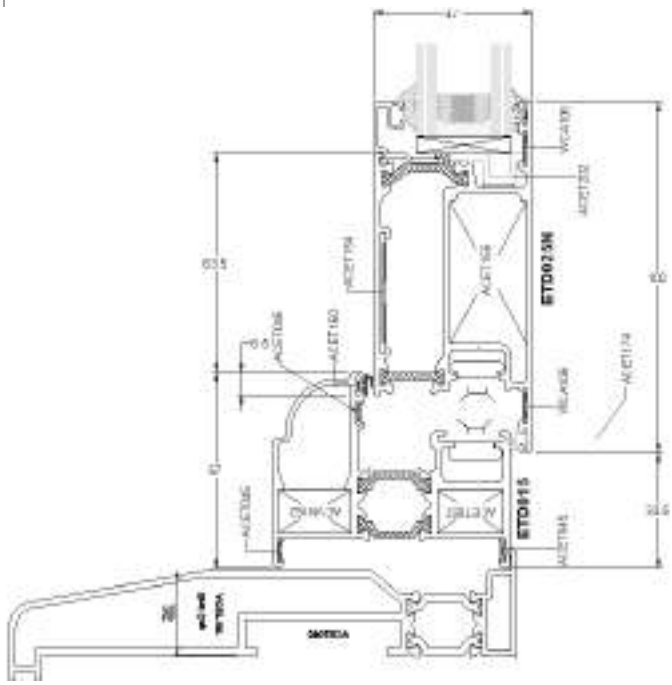
Note:

With the hood of the head vent fitted there is approx. 17mm to the outer edge of the 42mm head extension. Extensions come fitted to outer frame and pre-routed.











Eco-Futural Tilt & Turn

Energy Rating C uValue 1.6Wm²k

Eco Futural Tilt & Turn – Offers U-values as low as 1.2 W/m²K

- Flat outer frame and flat vent
- Internally beaded open in sashes and fixed panes
- Square bead
- PAS 24 Chrono safe hidden gearing to BS7950 (not secure by design)
- Average U-value 1.6 W/m²K (28mm with 1.2 centre pane) – WER 'C'
- Average U-value 1.1 W/m²K (44mm with 0.6 centre pane) – WER 'A'

Features and Options

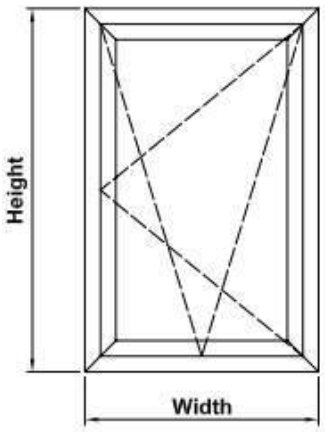
- Handles – white, black, satin anodised and colour matched
- Pivot window system available

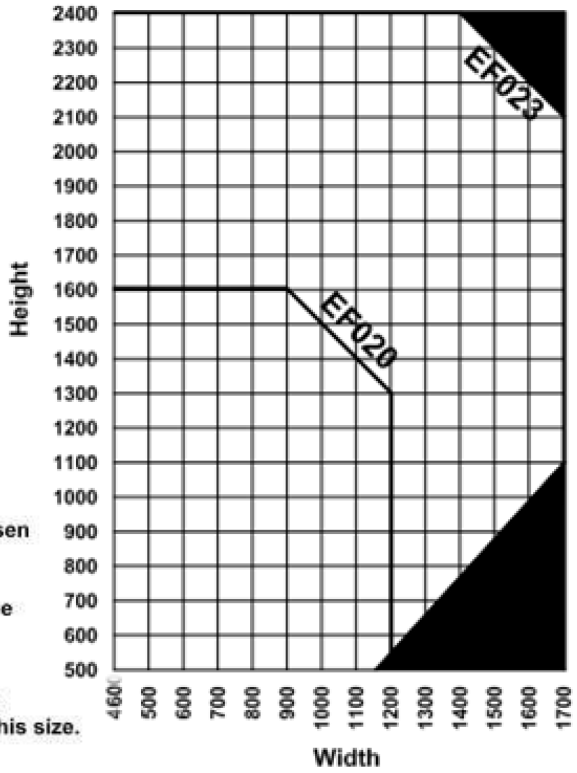
Weather Performance (BS6375-1)

- BS EN 1026: 2000 Air Permeability: Class 4 600 Pa
- BS EN 1027: 2000 Water tightness: Class E 900 Pa
- BS EN 12211: 2000 Resistance to Wind Load: Class AE 2400 Pa

Sashes

- Max width: 1700mm (sash size)
- Min width: 460mm (sash size)
- Max height: 2400mm (sash size)
- Min height: 500mm (sash size)
- Max Weight: 90kg
- As per chart larger sizes may have to be done in heavier duty sash profile (EF023)
- Large frames with mullions are subject to be split and coupled based on a design wind load of 800pa





Important Notes:

1. The size limitations of the chosen tilt & turn hardware must be adhered to
2. The width of the sash cannot be more than 1.5 times the height
3. Maximum sash weight = 90kg.

Hatched area indicates it is not possible to make tilt & turn at this size.

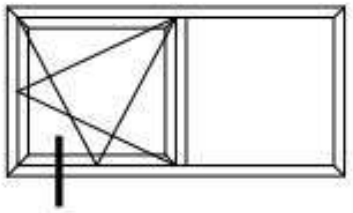
Please Note

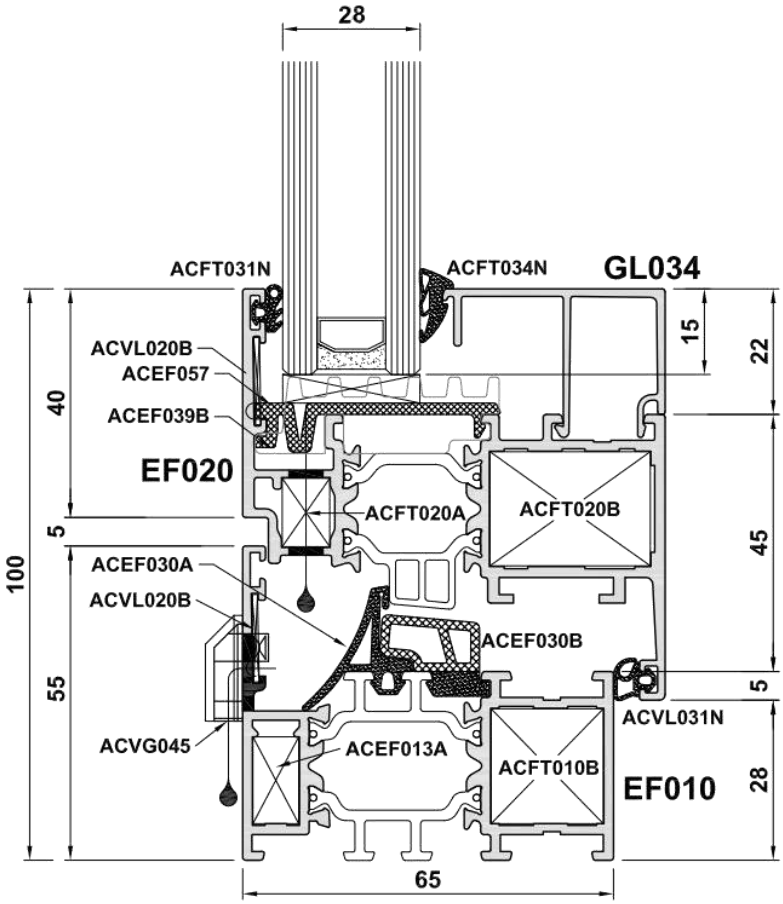
At 1700mm wide the max height is 2100mm

At 2400mm high the max width is 1400mm

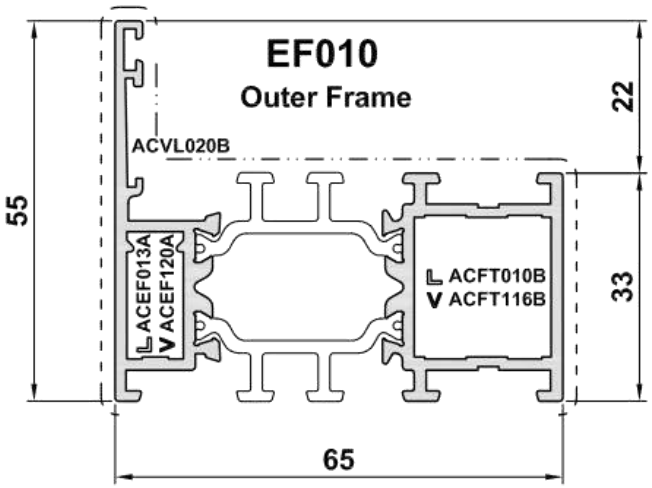
Cross Sectional Drawings

Standard Frame & Sash Detail

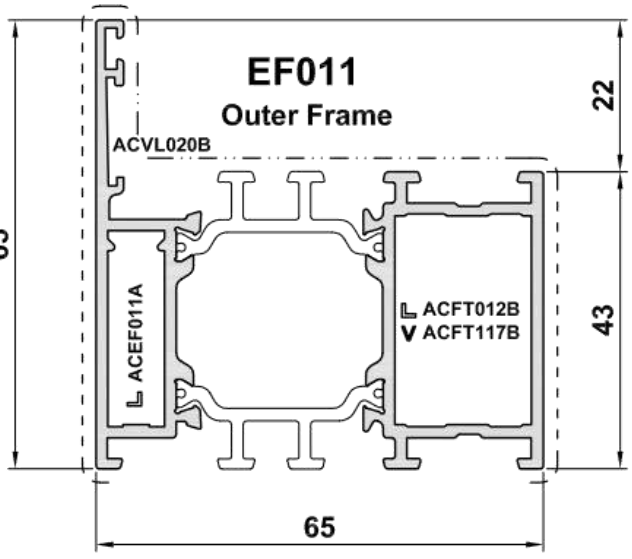




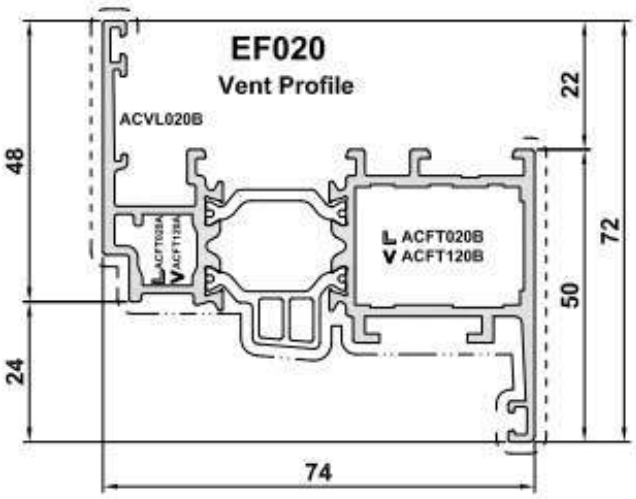
Standard Outer Frame



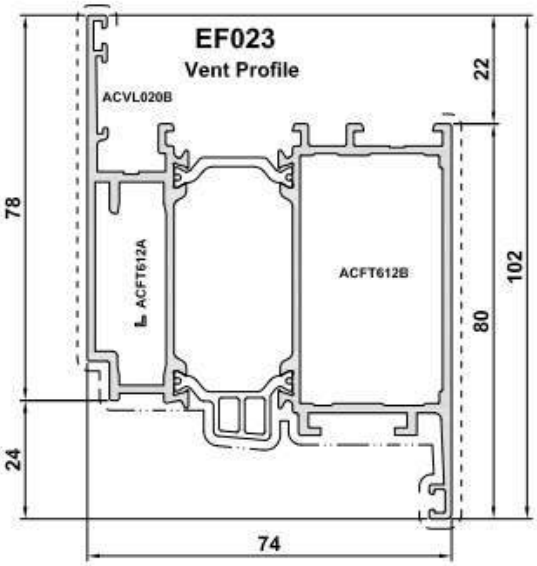
Large Outer Frame option



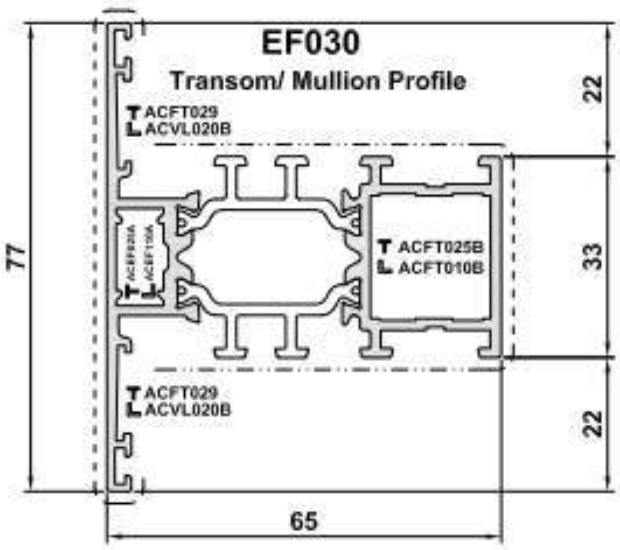
Standard Sash



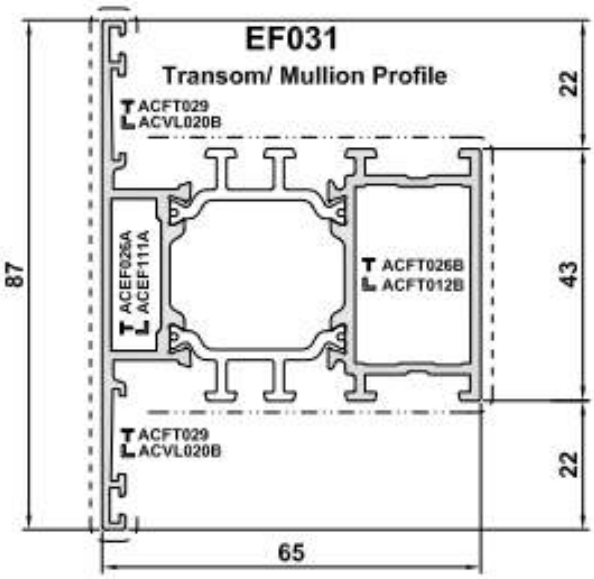
Large Sash – Automatically selected subject to sash size



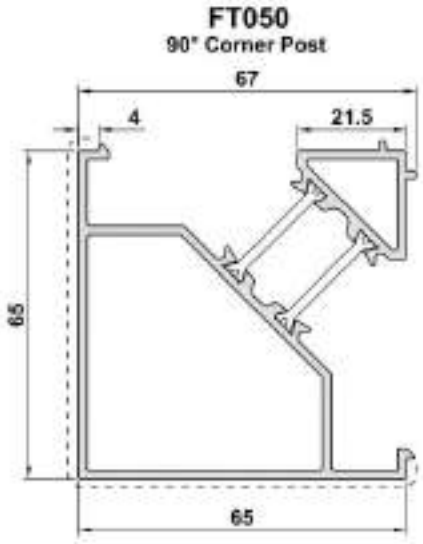
Standard Transom/Mullion



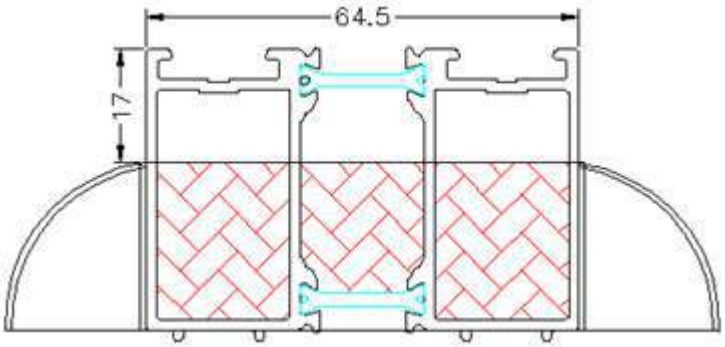
Large Transom/Mullion



90˚ Corner Post ETC655 for ETC610 & ETC612

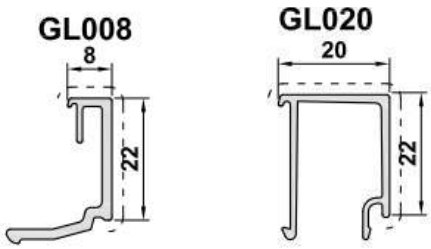


EF955 64.5mm x 42mm Extension

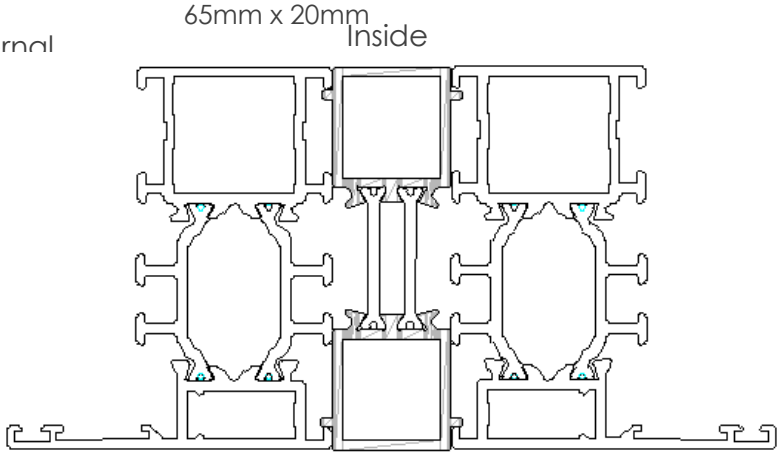


Note:
With the hood of the head vent fitted there Is approx. 12mm to the outer edge of the 42mm head extension. Extensions come fitted to outer frame and pre-routed.

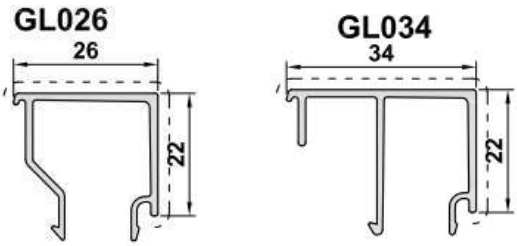
Bead for 44mm Triple Glazed
Fixed pane – GL008 – gasket internal ACFT031N, external ACFT340N
Opening sash – GL020 – gasket internal ACFT031N, external ACFT032N



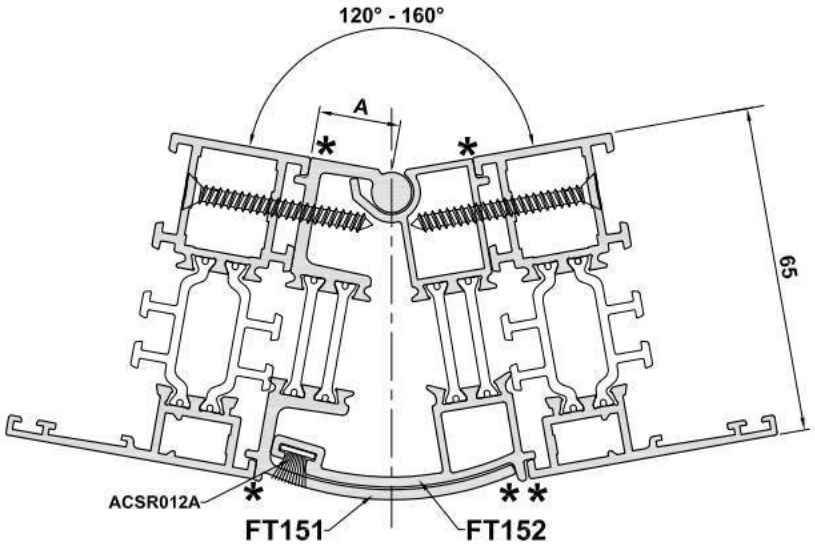
FT053 180˚ Coupler (20mm deduction)
65mm x 20mm



Bead for 28mm Double Glazed
Fixed Pane – GL026 – gasket internal ACFT033N, external ACFT031N
Opening Sash – GL034 – gasket internal ACFT031N, external ACFT034N

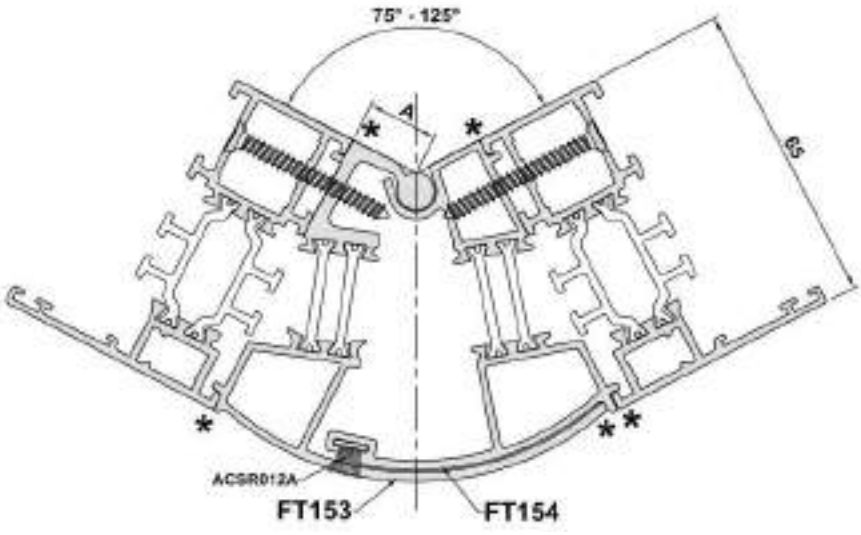


FT151/ FT152 120° - 160° Bay Pole



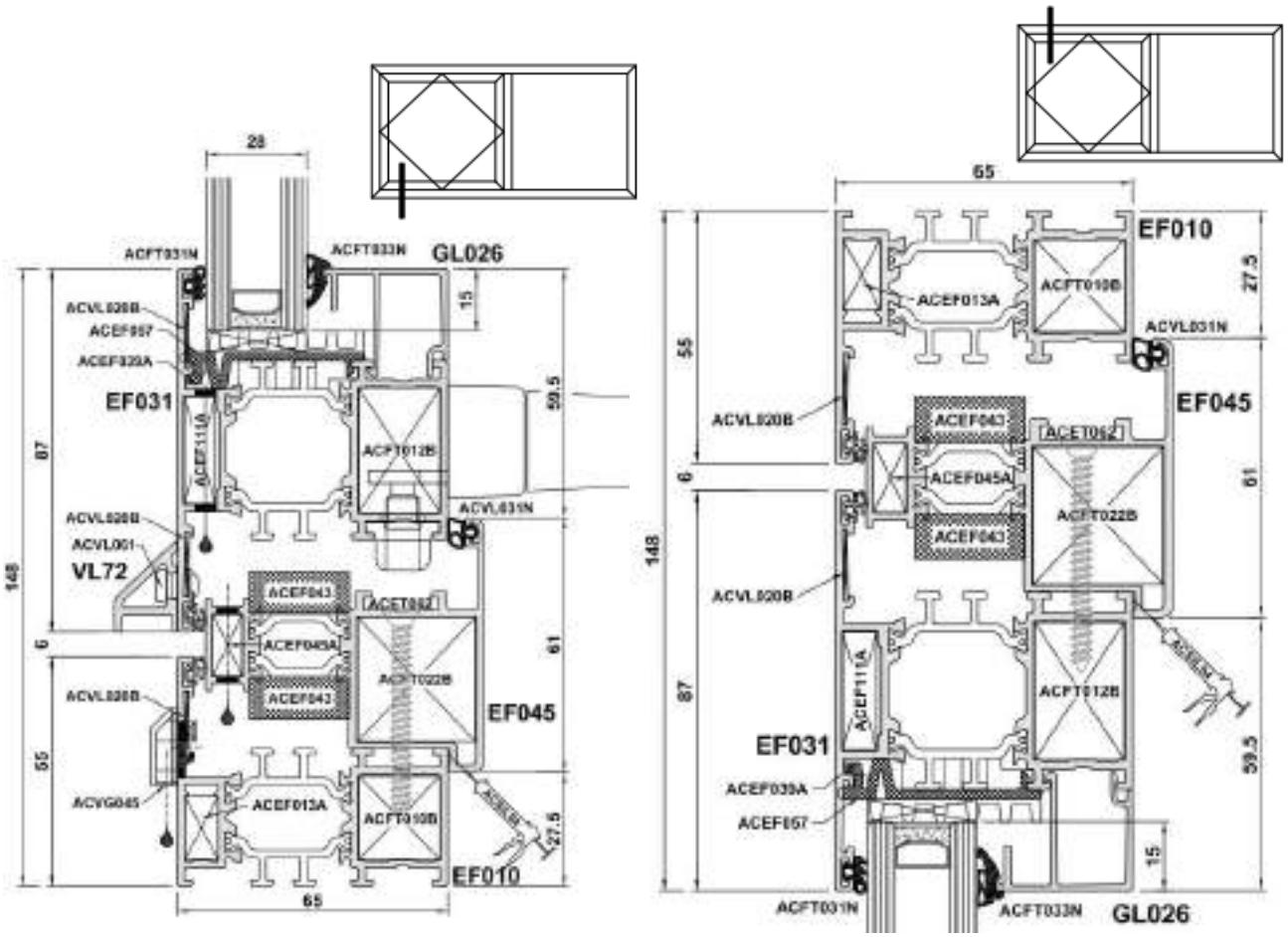
ANGLE	DEDUCTION 'A'
120°	14.5
125°	15
130°	15
135°	15.5
140°	15.5
145°	15.5
150°	16
155°	16
160°	16.5

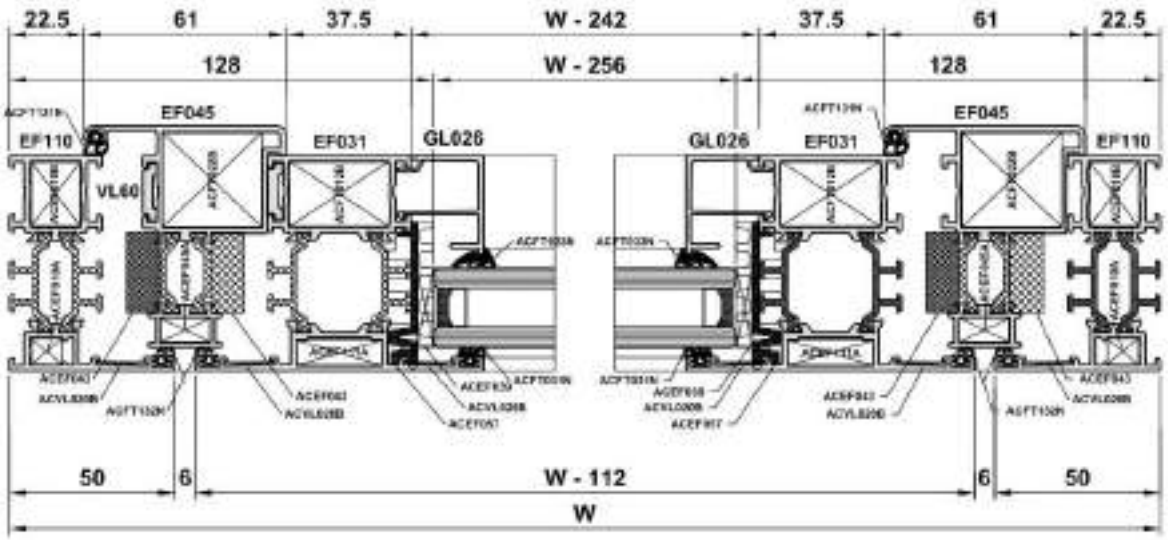
FT153/ FT153 75° - 125° Bay Pole



ANGLE	DEDUCTION 'A'
75°	12.5
80°	13
85°	13
90°	13.5
95°	14
100°	14
105°	14.5
110°	14.5
115°	15
120°	15
125°	15

Pivot Windows





Windows	Maximum Width (mm)	Minimum Width (mm)	Maximum Height (mm)	Minimum Height (mm)	Maximum Weight (kg)
Horizontal Pivot	2400	500	2000	700[d]	180
Vertical Pivot	2000	700[f]	2400	500	120

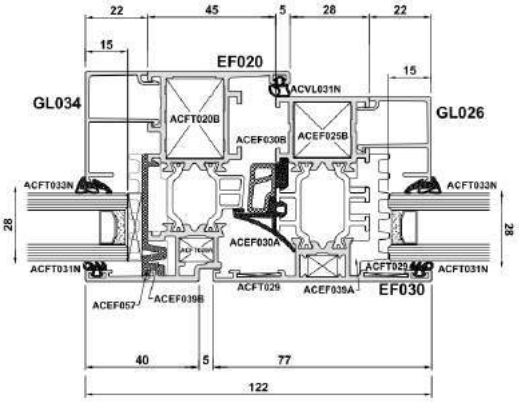
U-values for Double Glazed Units

Our standard glass specification is:

- 28mm double glazed units
- 4mm Planilux clear /4mm Planitherm +
- 90% argon gas filled cavity
- 20mm Black super spacer bar
- 20kg per m²

Standard Frame EF010

with Sash EF020 and Mullion EF030
Average U-value of 1.6 W/m²K - WER 'C'
Unit centre pane of 1.2 W/m²K

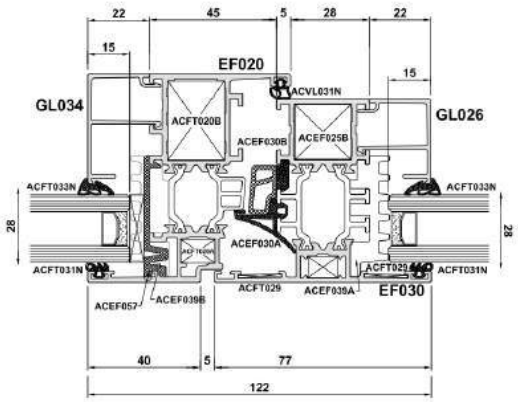


Our standard glass specification is:

- 36mm triple glazed units
- Planilux clear /4mm Planitherm +/4mm Planitherm +
- 90% argon gas filled cavity
- 12mm Black super spacer bar
- 30kg per m²

Standard Frame EF010

with Sash EF020 and Mullion EF030
Average U-value of 1.3 W/m²K - WER 'B'
Unit centre pane of 0.8 W/m²K



WER: Window Energy Performance Certificate
WER Window Energy Rating - In accordance with Approved Document L 2013

Company
Project
Date 28 Mar 2018

A
B
C ◀ C
D
E
F
G

WER:	Window Energy Rating: 196.74((1-f)xgglass) - 68.5 x (U + (0.0165 xAL))	**-13.5 kWHr/m²/Year**
Thermal Transmittance:	WER U Value of window calculated using the methods and conventions set out in BR443 Whole window U Value with frame, glazing and glass spacer bar combined. Standard window configuration set out by BR443 U Window: 0.683+0.835+0.139	1.7 W/m²K
Frame:	Supplier: Smart Architectual Aluminium System: EcoFutural Outer Frame: EF010 (2.393) Vent Frame: EF020 (2.247) Transom Mullion: EF030 (2.118) Heat Transfer: 2.246 W/m²K x (30.4% Frame)	0.683 W/m²K
Glazing:	Supplier: SaintGobain Specification: 28mm double Clear/Planitherm - Argon Filled Centre Pane, g Value: 1.20 W/m²K, 0.73 Heat Transfer: 1.20 W/m²K x (69.6% Glass)	0.835 W/m²K
Spacer:	Supplier: Edgetech Spacer Bar: Super Spacer Premium Heat Transfer: 0.035 W/mK x (3.958m/m²)	0.139 W/m²K
U Value:	Window U Value: Calculation to BS EN 14351-1	**1.6 W/m²K**

Calculated in accordance with UK Building Regulations Document L and BR443.
BS EN ISO 10077-2. Thermal performance of windows, doors and shutters.
Calculation of thermal transmittance. Part 2. Numerical method for frames. Version 4.0 (0076)

WER: Window Energy Performance Certificate
WER Window Energy Rating - In accordance with Approved Document L 2013

Company
Project
Date 28 Mar 2018

A
B ◀ B
C
D
E
F
G

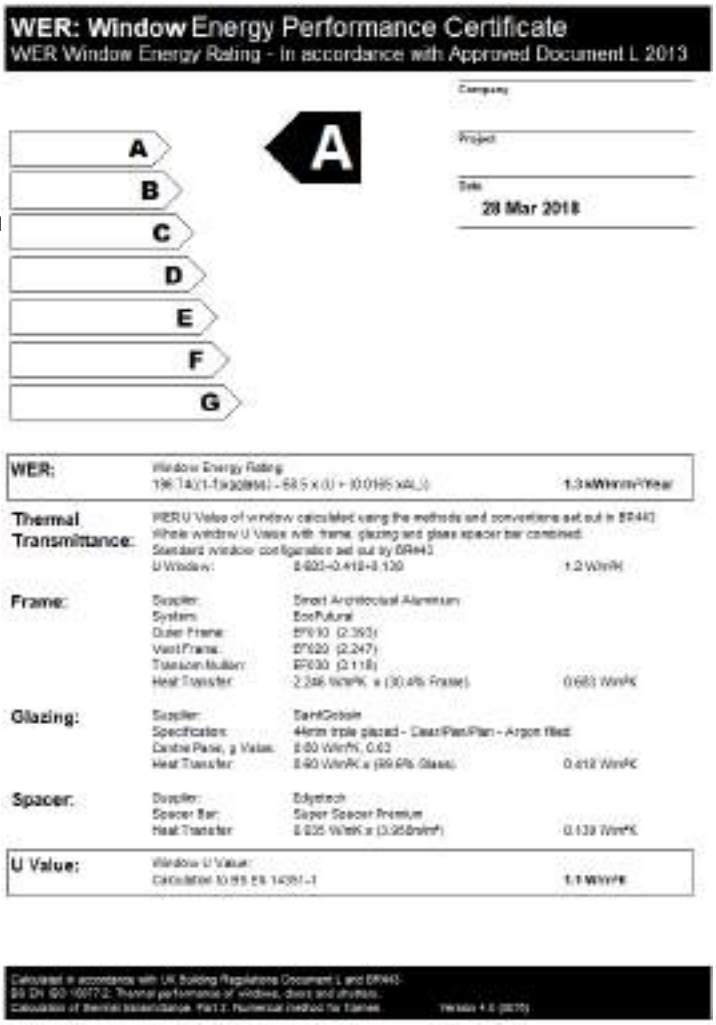
WER:	Window Energy Rating: 196.74((1-f)xgglass) - 68.5 x (U + (0.0165 xAL))	**-8.1 kWHr/m²/Year**
Thermal Transmittance:	WER U Value of window calculated using the methods and conventions set out in BR443 Whole window U Value with frame, glazing and glass spacer bar combined. Standard window configuration set out by BR443 U Window: 0.683+0.557+0.139	1.4 W/m²K
Frame:	Supplier: Smart Architectual Aluminium System: EcoFutural Outer Frame: EF010 (2.393) Vent Frame: EF020 (2.247) Transom Mullion: EF030 (2.118) Heat Transfer: 2.246 W/m²K x (30.4% Frame)	0.683 W/m²K
Glazing:	Supplier: SaintGobain Specification: 36mm triple clear/planitherm/planitherm Centre Pane, g Value: 0.80 W/m²K, 0.63 Heat Transfer: 0.80 W/m²K x (69.6% Glass)	0.557 W/m²K
Spacer:	Supplier: Edgetech Spacer Bar: Super Spacer Premium Heat Transfer: 0.035 W/mK x (3.958m/m²)	0.139 W/m²K
U Value:	Window U Value: Calculation to BS EN 14351-1	**1.3 W/m²K**

Calculated in accordance with UK Building Regulations Document L and BR443.
BS EN ISO 10077-2. Thermal performance of windows, doors and shutters.
Calculation of thermal transmittance. Part 2. Numerical method for frames. Version 4.0 (0076)

U-values for Triple Glazed Units

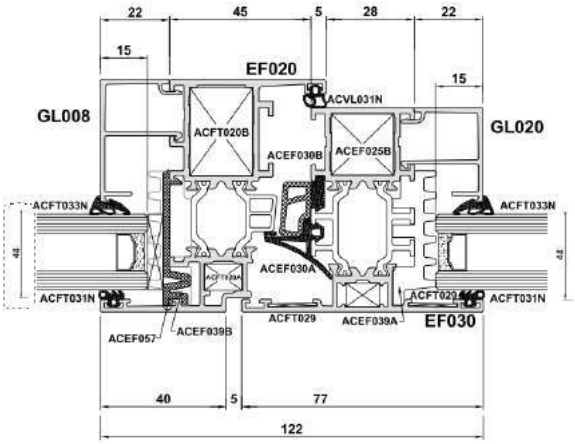
Our standard glass specification is:

- 44mm triple glazed units
- 4mm Planilux clear + /4mm Planitherm +/4mm Planitherm +
- 90% argon gas filled cavity
- 16mm Black super spacer bar
- 30kg per m²



Standard Frame EF010

with Sash EF020 and Mullion EF030
Average U-value of 1.1 W/m²K - WER 'A'
Unit centre pane of 0.6 W/m²K



THIS PAGE IS INTENTIONALLY BLANK



VS600 Vertical Sliding sash window

Energy Rating C uValue 1.8Wm^{2}k

VS600 Vertical Slider – Offers U-values as low as 1.8 W/m²K

- Traditional style vertical sliding sash window
- 28mm Internally beaded
- Square Bead
- Average U-value 1.8W/m²K (28mm with 1.2 centre pane) – WER 'C'
- Tilt restrictors to top and bottom sashes as standard
- Pre-tension balances
- Sash stops (internally and externally)
- Pre-Glazed
- Black glazing gasket
- Single colour only (Dual colour not available)
- Square cut outerframe and sash joints
- Frame extensions not available
- Finger lifts (supplied loose), Window sash locks , Sash horns as standard







Features and Options

- Trickle vents to head of frame
- Duplex bar – 25mm Flat
- Shark fin restrictors not available
- 180mm Cill/frame option (click - Page 60)

Size Restrictions

Maximum sizes will depend on wind loading requirements and/or style of window.

Frame sizes

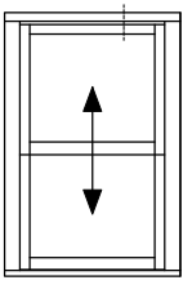
- Max width: 1600mm
- Min width: 460mm
- Max height: 2500mm
- Min height: 742mm
- Max weight: 50kg (per sash)

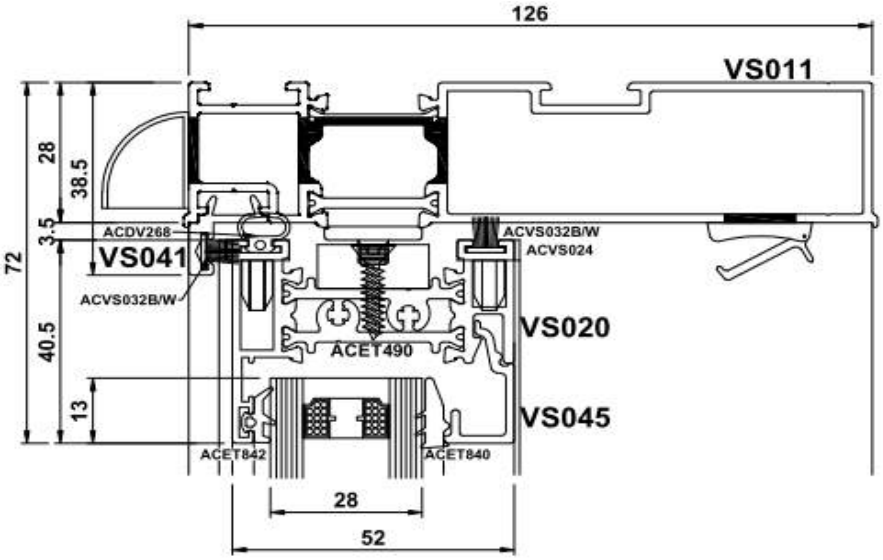
Weather Performance (BS6375-1)

- BS EN 1026: 2000 Air Permeability: Class 5a 200 Pa
- BS EN 1027: 2000 Water tightness: Class 7a 300 Pa
- BS EN 12211: 2000 Resistance to Wind Load: Class A4 1600 Pa

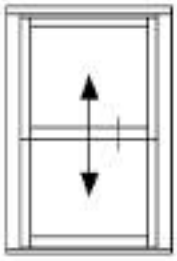
Note: Not recommended for exposed locations

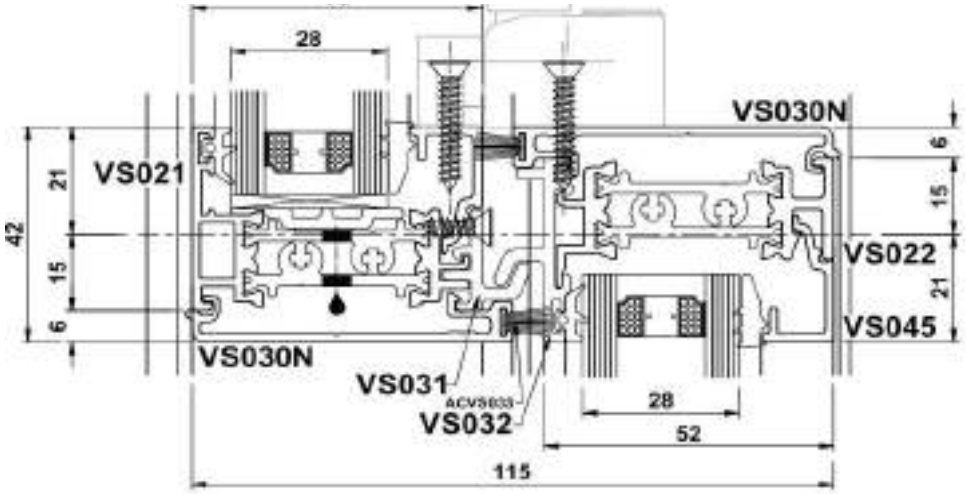
Outerframe head and top sash



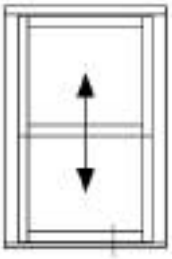


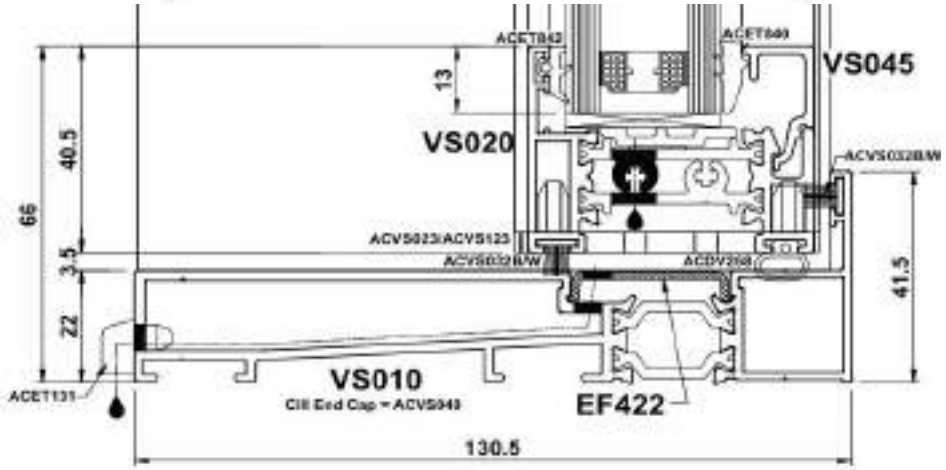
Sash interlock

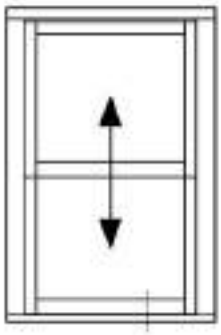




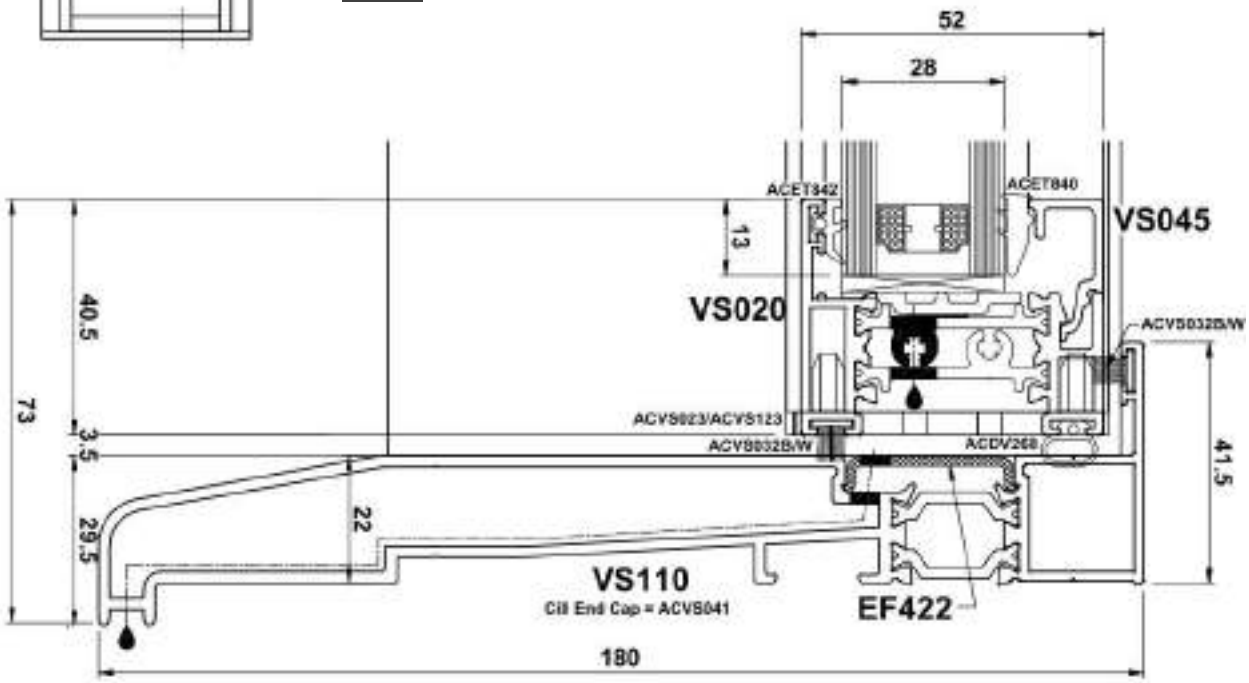
Standard cill/frame and bottom sash



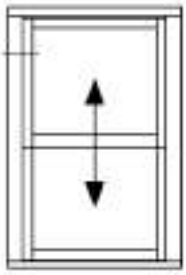


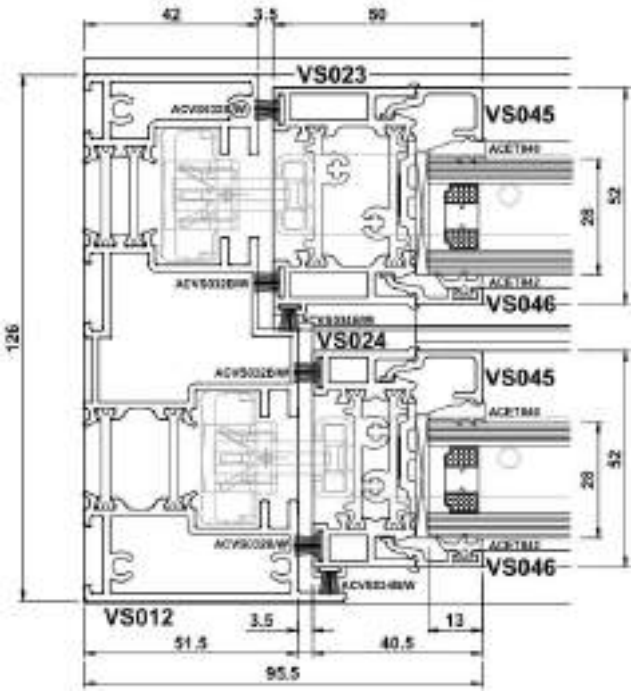


Optional 180mm cill/frame detail

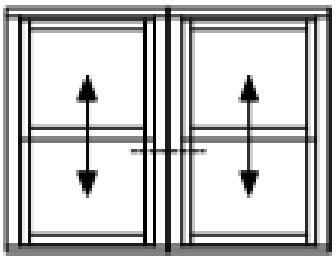


Outerframe jamb detail

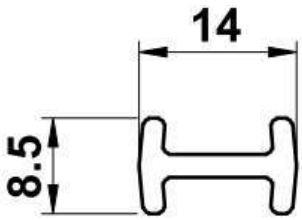


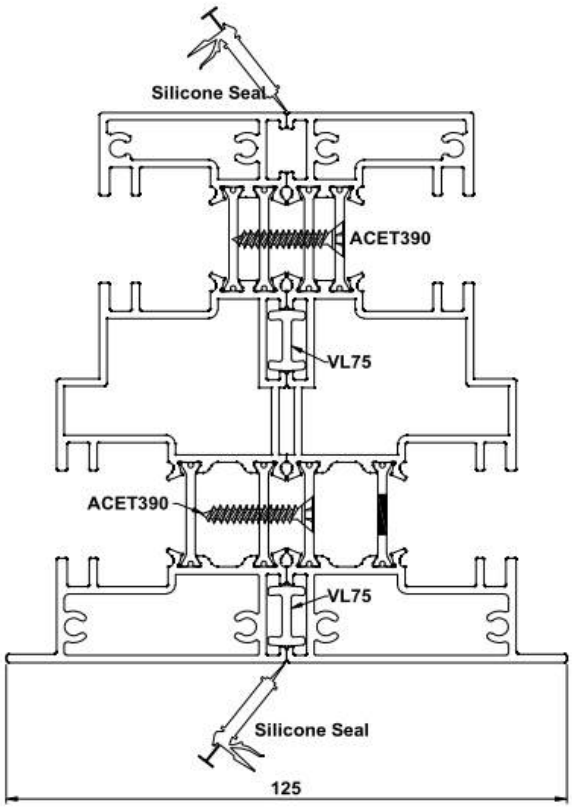


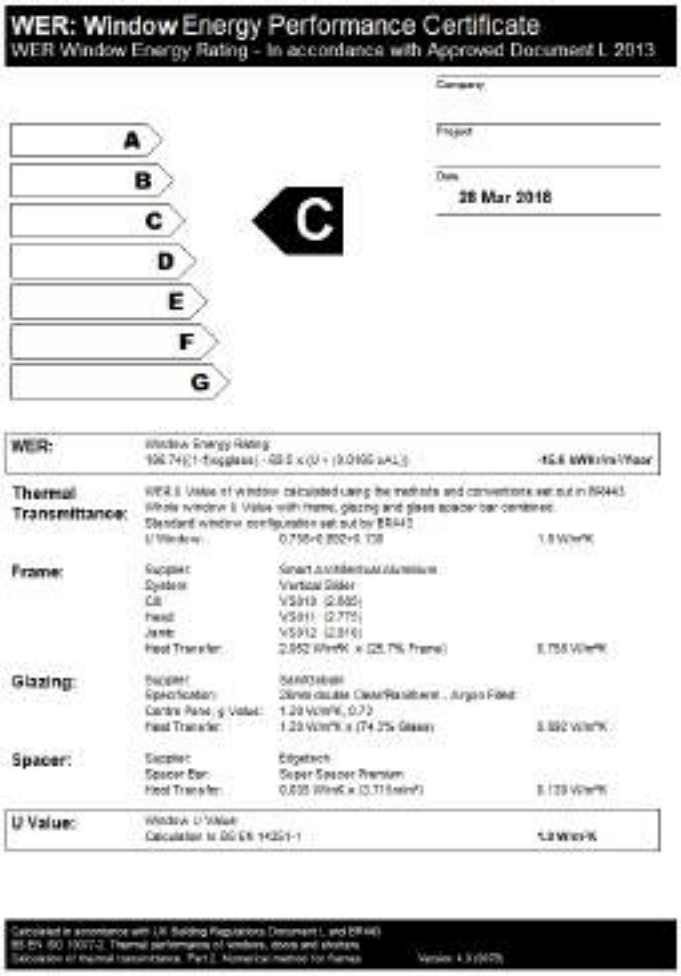
Coupling detail



VL75 Hidden coupling clip







U-values for Double Glazed Units

Our standard glass specification is:

- 28mm double glazed units
- 4mm Planitherm +/4mm Planilux clear
- 90% argon gas filled cavity
- 20mm Black super spacer bar
- 20kg per m²

Outer Frame VS011 Head VS010 Cill VS012 Jamb

with VS023/024 Bottom & top sash VS020 bottom rail

Average U-value of 1.8W/m²K – WER 'C'

Unit centre pane of 1.2 W/m²K

THIS PAGE IS INTENTIONALLY BLANK



Visoglide Plus patio door

Energy Rating C uValue 1.8Wm²k

Visoglide Plus patio door

- Available double or triple track to enable multiple sliders to move in the same direction
- Available with 2/3/4/5 or 6 sliding sashes
- The sliders are on the inside of the track unless otherwise requested
- Face drained only (secret drainage is not available)
- High security 5 Point lock and one piece keep on main opening doors
- The standard handle is a lever/lever (see image overleaf), available in White, Black &
- Satin anodised. An optional D handle is also available in Satin anodised, White & Black.
- We are also able to colour match the handles to the profile, please ensure you notify us at point of order to avoid delays.
- Standard threshold width is 99mm (165mm triple track) with Nylon rollers at the bottom of the track providing smooth and easy operation (face drained as standard).
- An alternative outer frame is available to allow the internal floor finish to be flush with the top of the track, see the data sheet for details. This MUST be requested at the time of quoting/ordering.
- Double glazed 28mm units, (Planitherm, warm edge, argon) 1.2 u-value centre pane gives an overall 1.8 u-value
- Triple glazed 36mm units, (Planitherm x1, warm edge, argon) 1.1 u-value centre pane gives an overall 1.7 u-value
- Triple glazed 36mm units, (Planitherm x2, warm edge, argon) 0.8 u-value centre pane gives an overall 1.5 u-value
- Can be manufactured in accordance with Smarts PAS24 allowing doors to conform to Document Q



Image above showing the standard lever/lever patio handles which are available in white, black or Satin anodised as standard. We are also able to colour match to the profile but you should tell us at the point of order to avoid delays as they are on a long lead time. Please note that the levers on these handles point upwards and having the locking barrels below.

Note:

Handles to one side only is not possible. If key locking to one side only is required then a handle with no cylinder is available.



Image below showing the optional D Handle which is available in white, black or satin anodised, as above we are also able to colour match this to the profile.

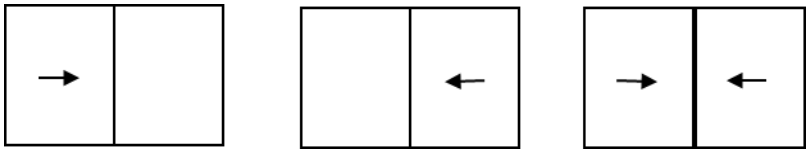


PLEASE NOTE that we fit the sliders on the inside unless otherwise specified

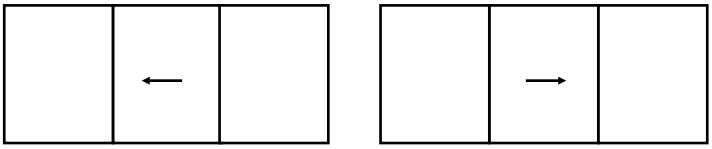
Configurations

- There are many different configurations, depending on the overall size of the patio doors, the number of door sashes you require and what combination you want them sliding in.
- Doors with 2 sliders going in the same direction will have a 3 track frame (see below)
- The maximum height is 2550mm
- The maximum weight per door leaf is 250kg
- Slim and heavy duty interlocks are available see page 77-80

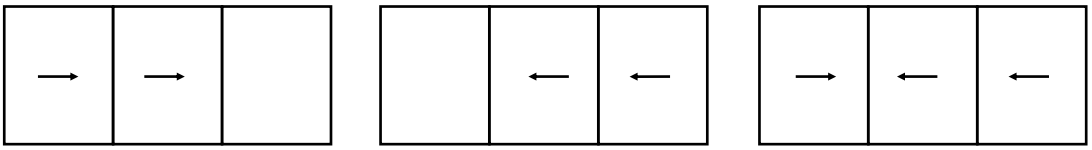
2 Door options – 2 track frame

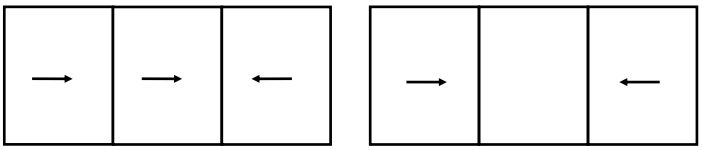


3 Door options – 2 track frame

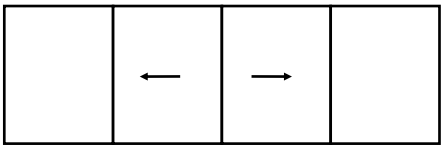


3 Door options – 3 track frame

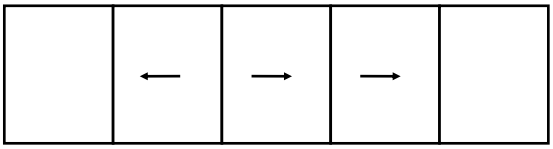




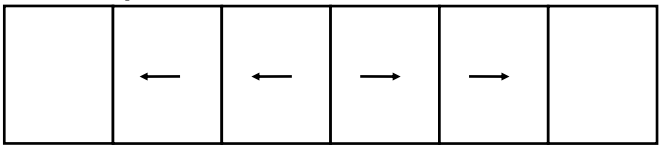
4Door options – 2 track frame



5 Door options – 3 track frame



6 Door options – 3 track frame



Please bear in mind that large doors are heavy and therefore consideration should be given to having them flat packed for assembly on site. There is a charge for this option as the doors are fully fabricated before being dismantled and wrapped separately. Full assembly and installation instructions are available on request.

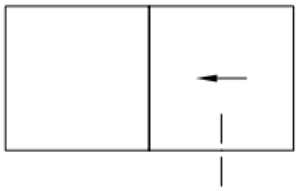
We strongly recommend that you install either a cavity tray or DPC membrane between the cill and the brickwork.

Note :

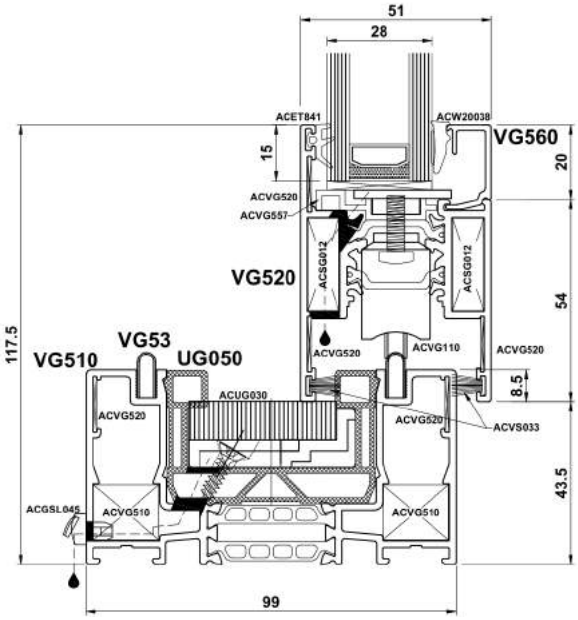
Frames over 5000mm in width will be supplied flat packed.

Sliders on the inside unless otherwise specified

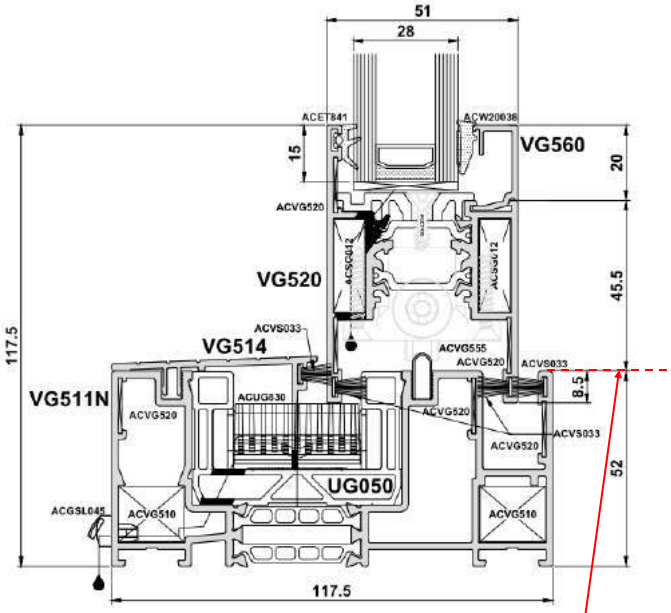
Cross sections of the double track patio



Standard double track outer frame

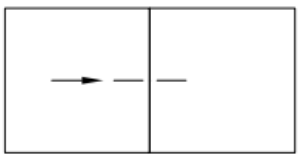


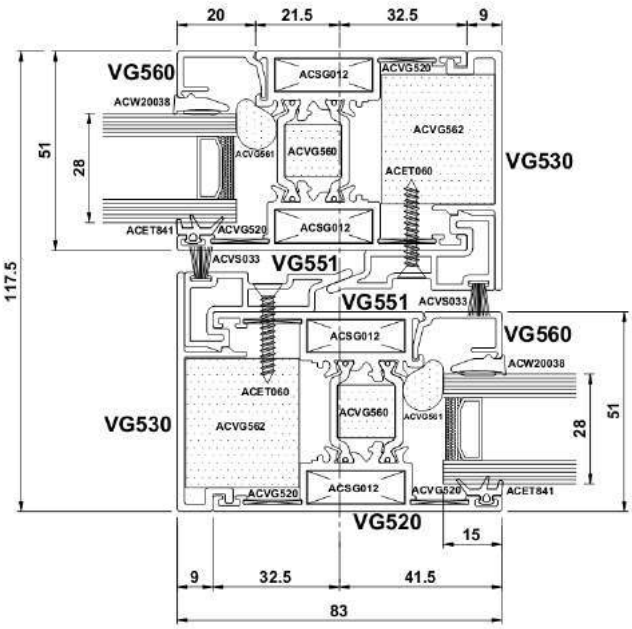
Optional flush fitting double track outer frame



VG511 outer frame allows the internal floor level to finish flush with the top lip of the patio outer frame

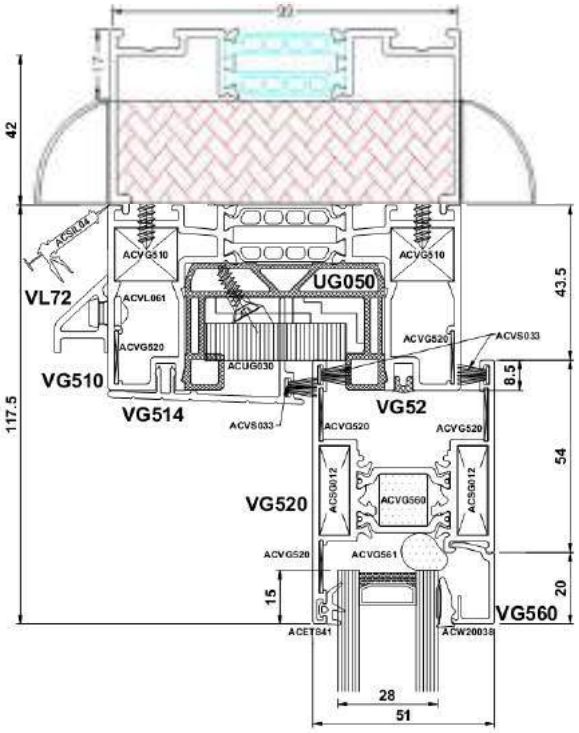
WHEN USED THIS FRAME IS ON HEAD, CILL AND JAMBS

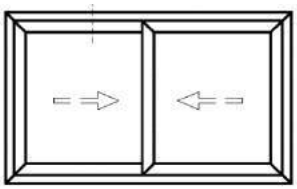




Sliders on the inside unless otherwise specified / Patio outer frames are face drained as standard

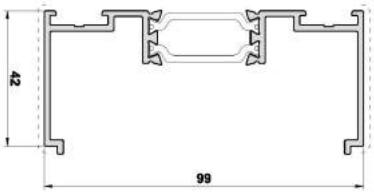
Cross sections of the double track patio



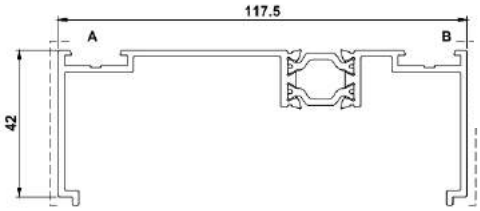


Note:

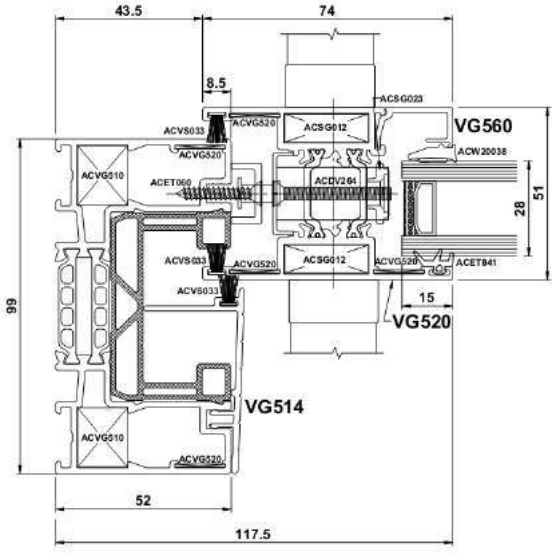
With the hood of the head vent fitted there Is approx. 12mm to the outer edge of the 42mm head extension. Extensions come fitted to outer frame and pre-routed.

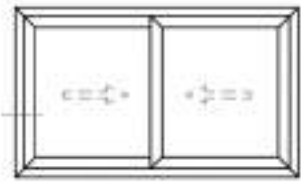


VG558
VG510 Track
Head Extension



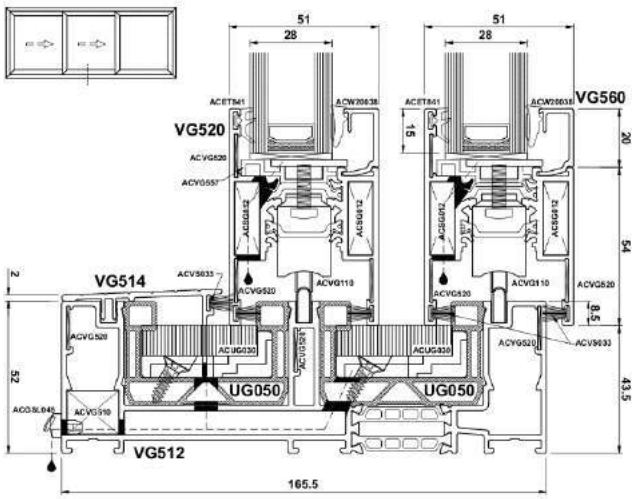
VG572
Head Extension
VG511 Track

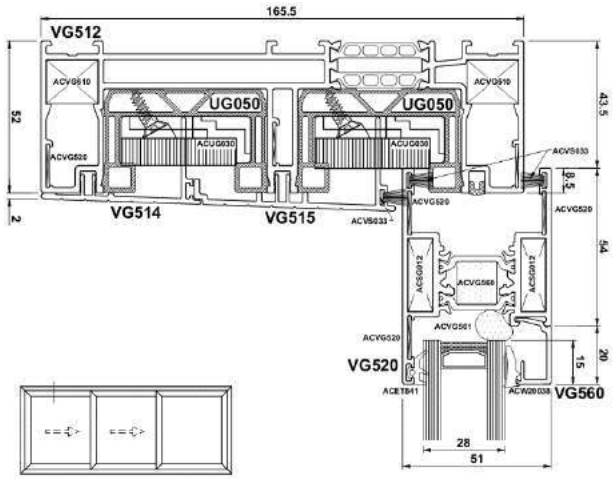


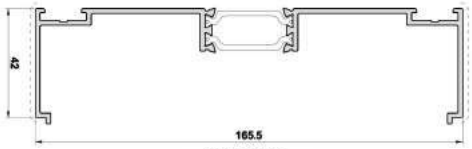


Sliders on the inside unless otherwise specified / Patio outer frames are face drained as standard

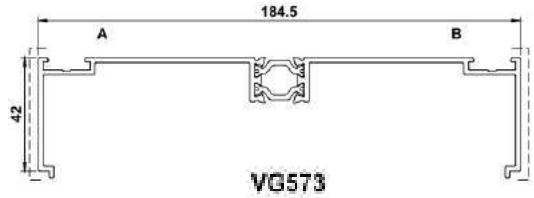
Cross sections of the triple track patio





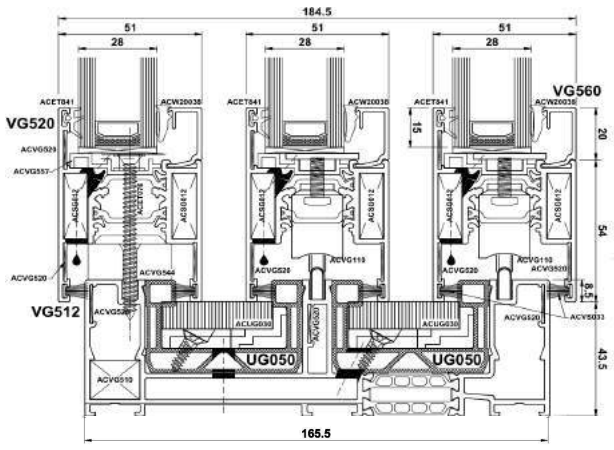


VG559
VG512 Track
Head Extension

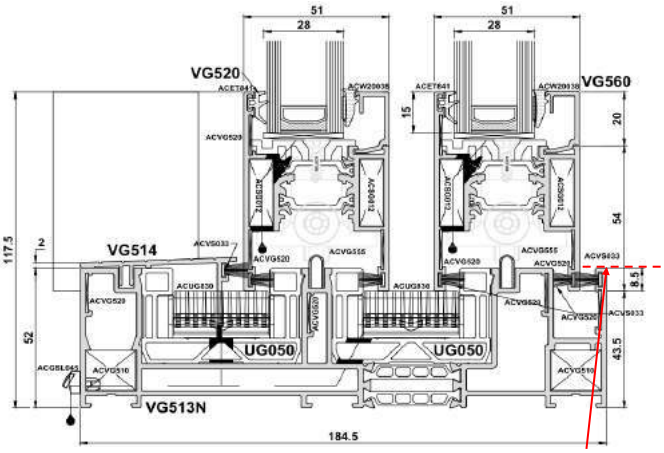


VG573
VG513 Track
Head Extension

Standard triple track outer frame

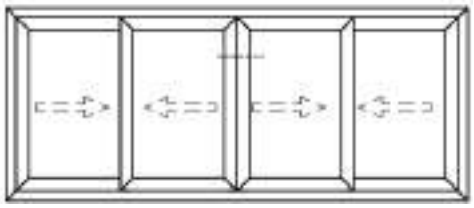


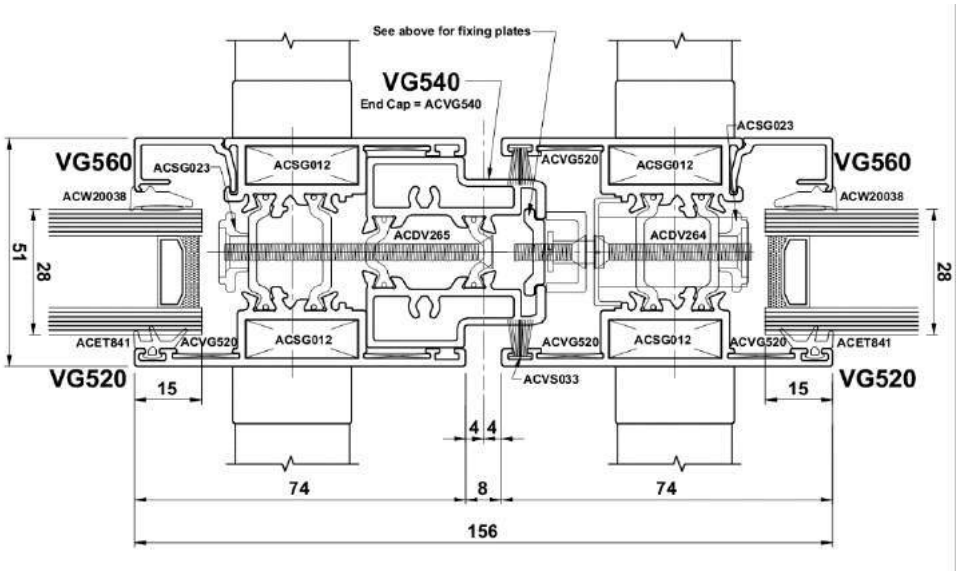
Optional flush fitting triple track outer frame



VG513 outer frame allows the internal floor level to finish flush with the top lip of the patio outer frame

Cross sections of the 4 Pane patio central interlock





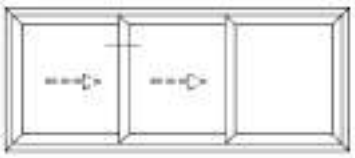
Sliders on the inside unless otherwise specified / Patio outer frames are face drained as standard

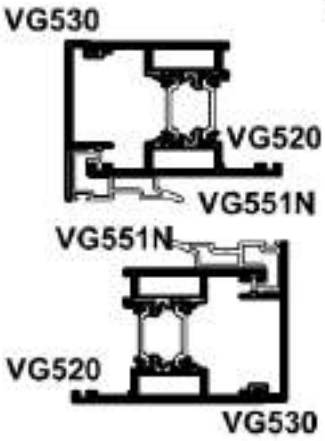
Interlock / Meeting stiles

Subject to location and wind loading requirements it may be necessary to use heavier duty interlocks it is your responsibility to advise if heavier interlocks are required if in doubt seek advice from a structural engineer.

All profiles have a wind loading strength value (Ix = cm^4) see details below of Ix values achieved.

When heavy duty interlocks are requested, the reinforcing section is fitted to the inside and outside of the sash.

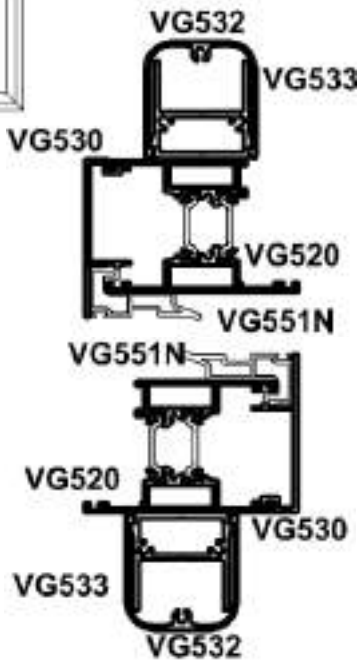




Standard interlock detail

Ix = 52cm^4

117.5mm front to back



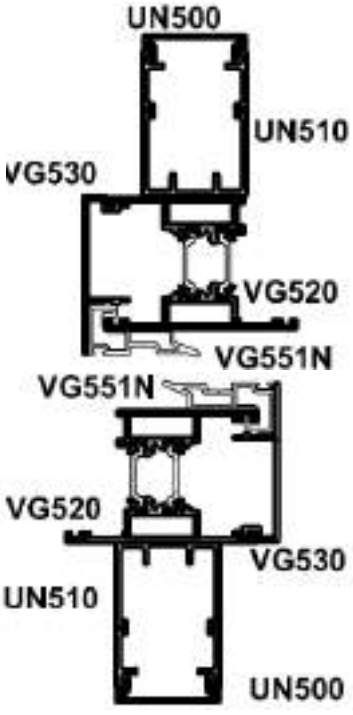
Heavy duty interlock detail

Ix = 124cm^4

Note:

Interlocks project past face of frame

206.5mm front to back



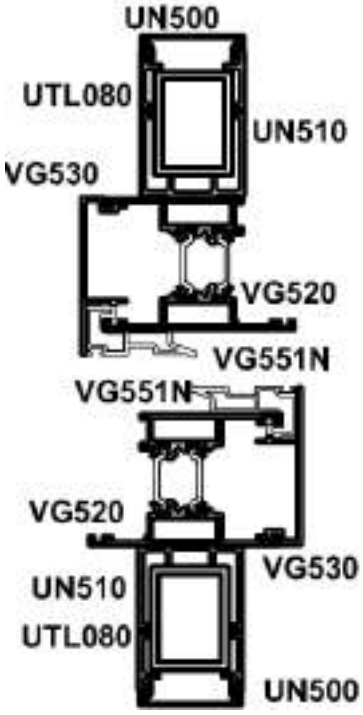
Heavier duty interlock detail

Ix = 171cm^4

Note:

Interlocks project past face of frame

241.5mm front to back



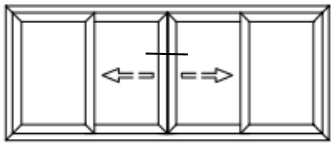
Heaviest duty interlock detail

Ix = 242cm^4

Note:

Interlocks project past face of frame

241.5mm front to back



Note:

Where sashes meet as above, the reinforced section is to the outside only

Standard meeting detail

Ix = 58cm⁴

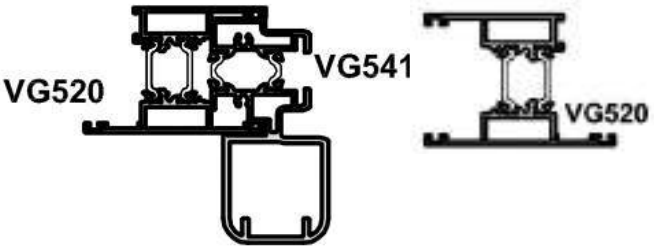


Note:

51mm front to back

Heavy duty interlock detail

Ix = 127cm⁴

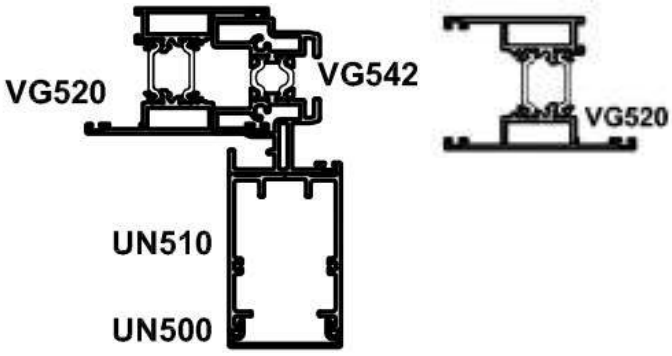


Note:

95.5 mm front to back

Heavier duty interlock detail

Ix = 142cm⁴

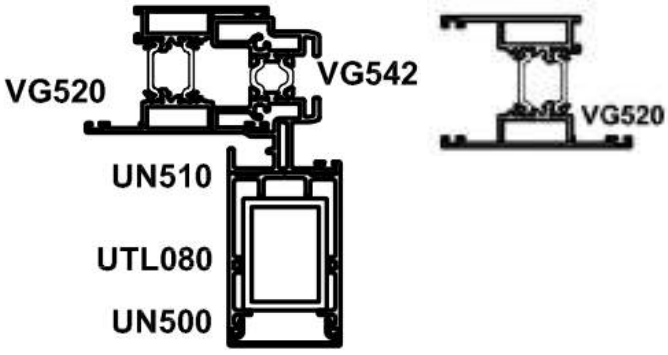


Note:

122 mm front to back

Heavier duty interlock detail

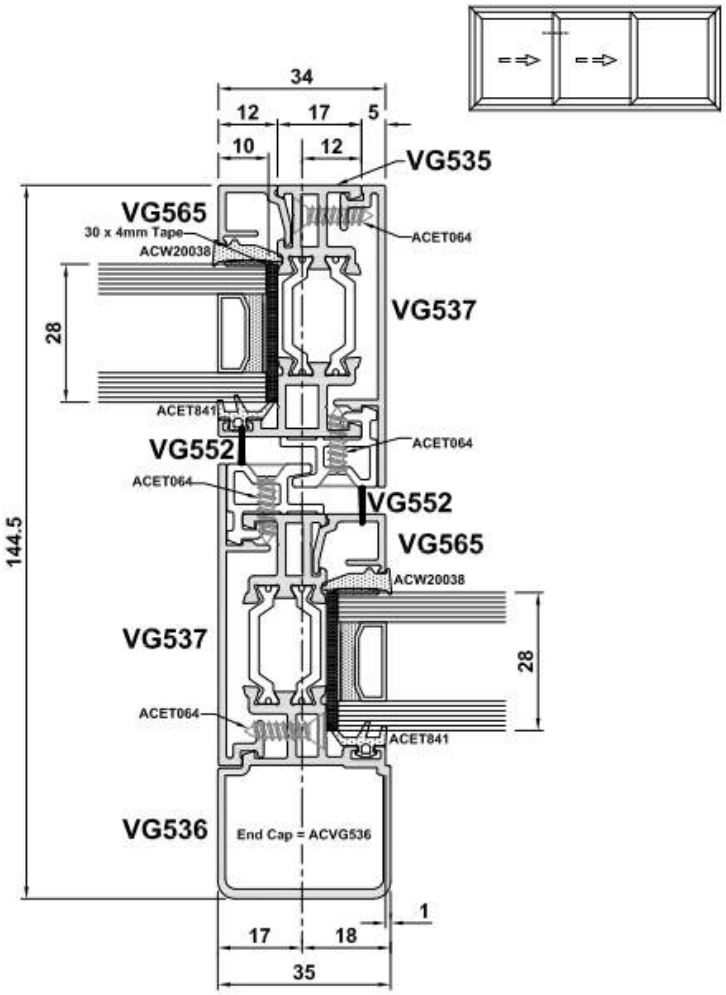
Ix = 210cm⁴



Note:

122 mm front to back

Slim Interlock

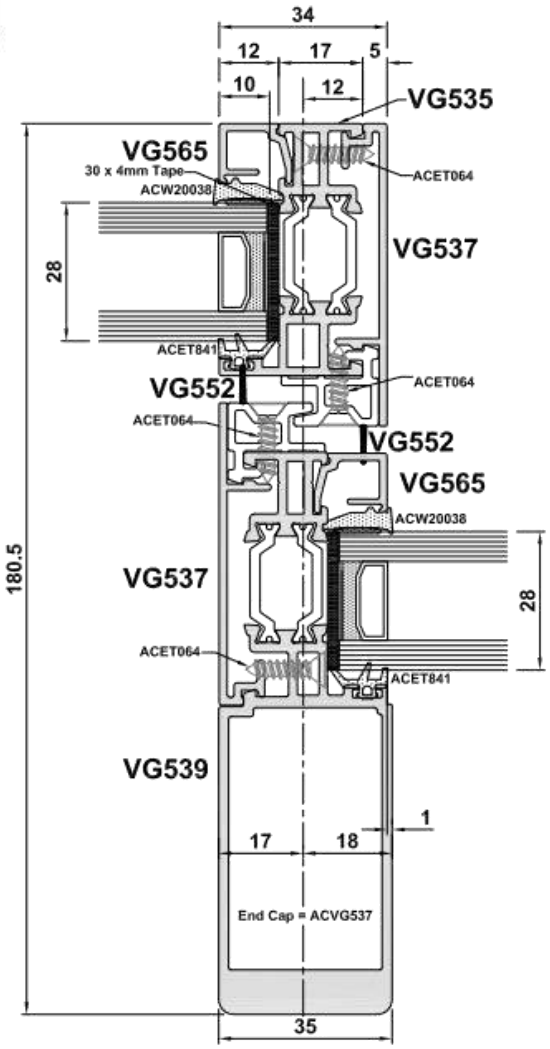


Standard slim interlock detail

Ix = 49cm⁴

Note:

144.5 mm front to back



Heavy duty slim interlock detail

Ix = 154cm⁴

Note:

180 mm front to back

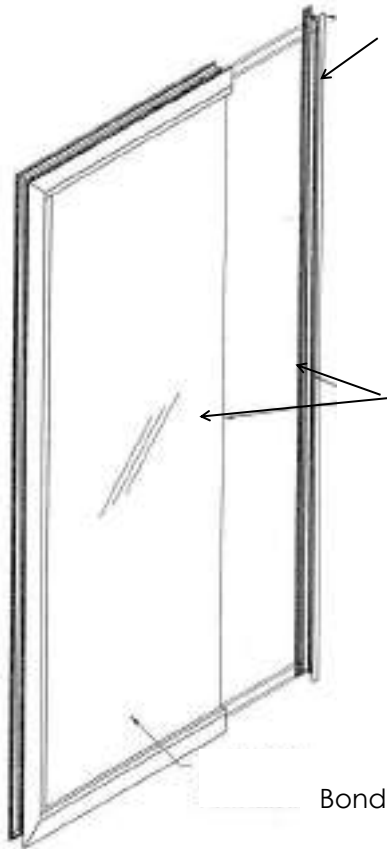
Note:

When using the slim interlocks the units must be bonded into the sash.

Units must be sealed with Butyl and without tape.

We will supply a tube of ACUN3612 Surface activator and a tube of ACUN3610 single component sealant.

Slim Interlock unit bonding



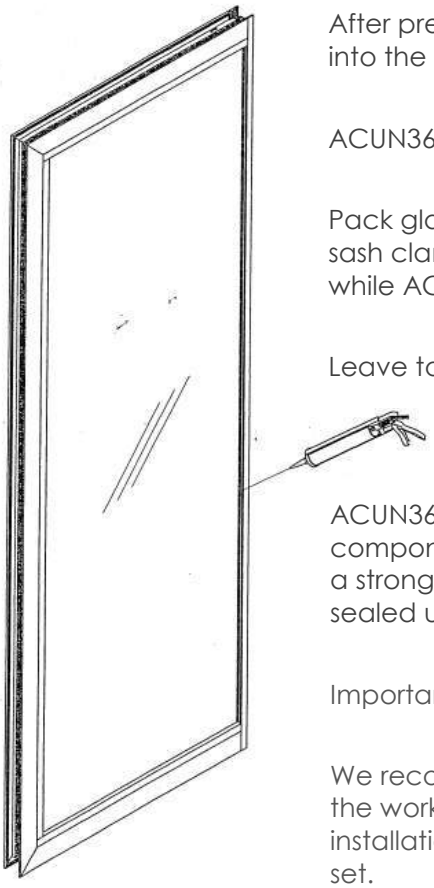
Ensure area of bonding is clean, dry and free from surface contamination.

Apply a small coating of ACUN3612 surface activator to the interlock glazing channel and the bond area of the glass only.

Allow to dry, leaving a slight residue.

Take care not to apply ACUN3612 activator to any visible surfaces

Bonding



After preparation, apply ACUN3610 single component sealant into the gap between frame and glass as in detail A

ACUN3610 must be applied to the full height of the unit.

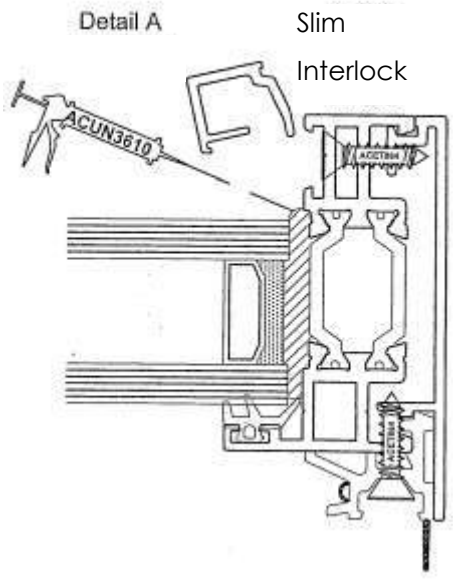
Pack glass to ensure it is positioned correctly within the sash. A sash clamp should be used to ensure the interlock is held flat while ACUN3610 sets.

Leave to set over night.

ACUN3610 Is a high quality single component adhesive that provide a strong bond between the Butyl sealed unit and frame.

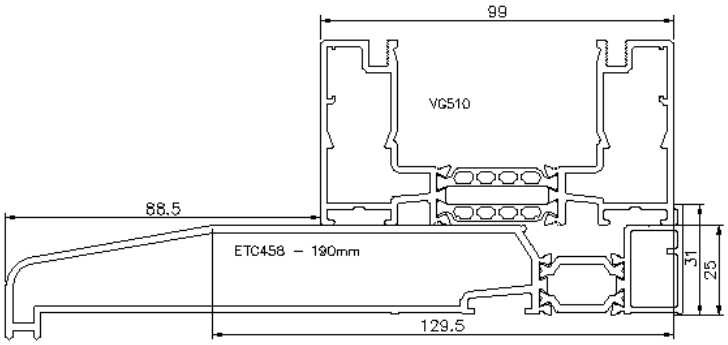
Important

We recommend glazing the sash in the workshop at least a day before installation so it can be allowed to set.

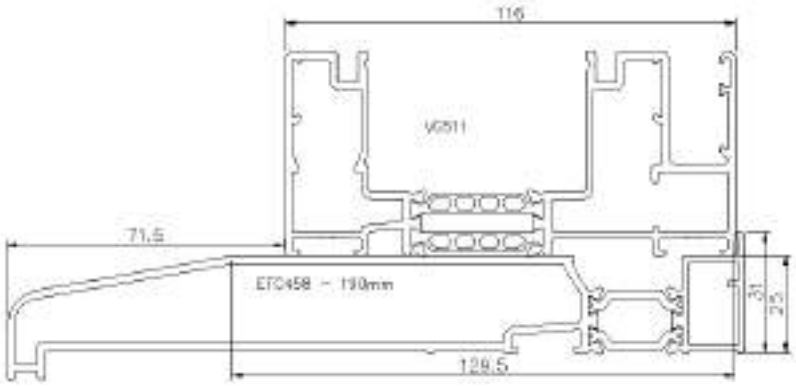


Due to the size of the patio outerframe they are restricted on which external cills can be used. The flat part of the ETC457 150mm cills is only 89.5mm

2 Track outerframe VG510 (99mm) min cill width is 190mm ETC458

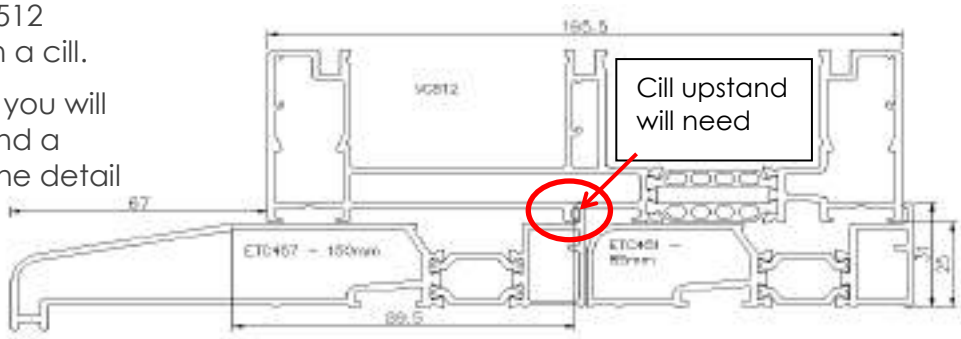


2 Track outerframe with flush up-stand VG511 (116mm) min cill width is 190mm ETC458



3 Track outerframe VG512 (165.5mm) will not fit on a cill.

If a cill is required, then you will need to pack out behind a standard cill similar to the detail shown.



Note: It is customer's responsibility to ensure correct installation.

Detail shown is not guaranteed or endorsed by Stern Fenster or Smarts

3 Track outerframe VG513 with flush upstand (165.5mm) will not fit on a cill.

If a cill is required, then you will need to pack out behind a standard cill similar to the detail shown.



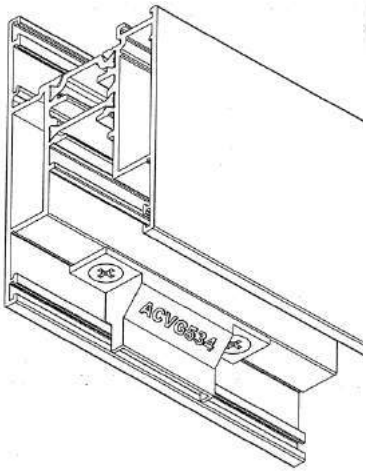
Note: It is customer's responsibility to ensure correct installation

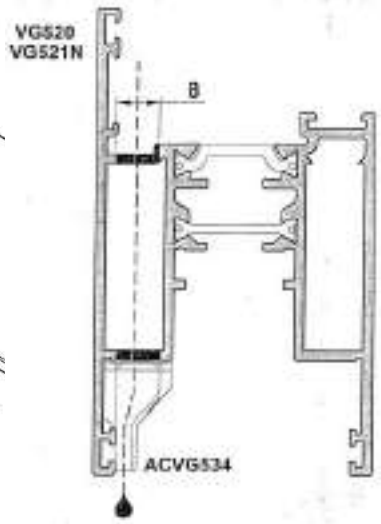
Detail shown is not guaranteed or endorsed by Stern Fenster or Smarts

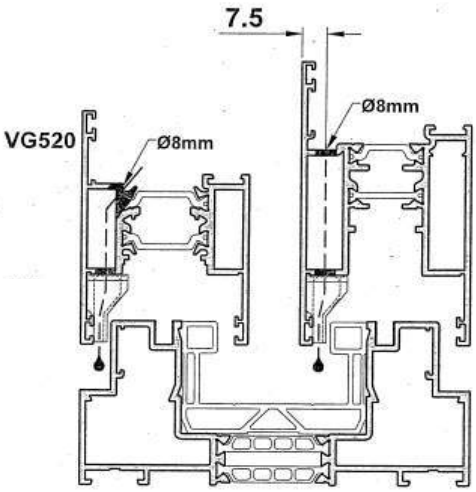
Patio drainage detail

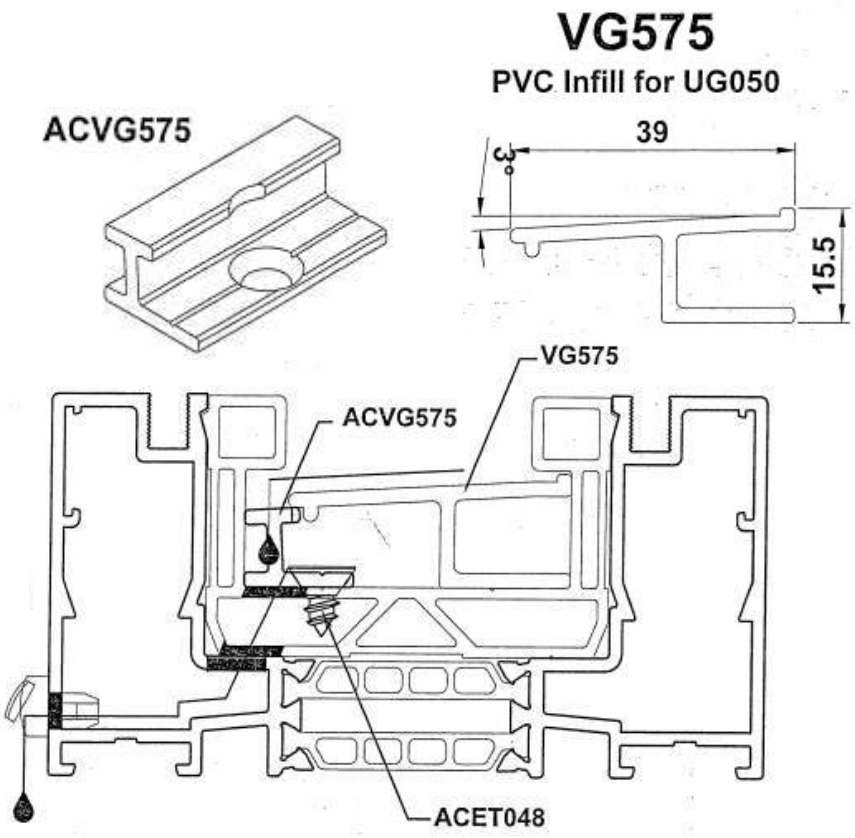
To ensure water is directed to the outside of the frame the sash drainage holes will have a drainage funnel (ACVG534) screwed to the underside of the sash.

The outerframe will have an angled PVC infill & support (VG575 & ACVG575) fitted in the channel. This infill will further direct any water to the drainage slots.











Visofold 1000 Bi-folding door

Energy Rating C uValue 1.8Wm²k

70mm thermally broken Smart's aluminium

Visofold 1000 Bifolding door

- Our doors can be open in, open out, stack from the left or the right, open at the centre, end or in-between.
- Standard threshold of 51.5mm or low threshold of 15mm (please note we do not recommend the low 15mm threshold for external use)
- High security hook bolt lock and one piece keep on main opening doors (where applicable) and handle operated shoot-bolts (non-locking) to other doors.
- Only master doors will be fitted with a lever/lever handle and key locking cylinder all others where required will be fitted with a non-locking shootbolt handle
- Highly engineered and robust hinges with D handles.
- Stainless steel rollers at the bottom of the track providing smooth and easy operation.
- High quality EPDM gaskets and weather brushes to aid weather proofing.
- Polyamide thermal barrier reduces heat loss and improves thermal performance.
- Available in KL, RAL, and Sensation range and dual colour options.
- 28mm unit (overall 1.8 W/m^2 K) or 36mm triple units (overall 1.4 W/m^{2}K)
- Integral blinds in the units (double glazed option only).
- Head vents are available in an additional 42mm frame extension.
- **All designs are viewed from outside**
- Main/Pendulum handles are available in White, Black, Chrome, Satin Chrome, Gold and Airforce Grey (shown below).
- Hinges, bogie wheels and internal D handles on the mullions are supplied Black as standard. White hinges are available on white doors but must be specified at time of quotation or order.







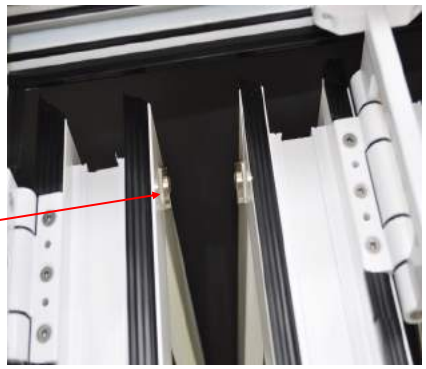
- Secure by design is available with the inclusion of the Ultion security cylinder and double glazing incorporating 6.8mm Laminated glass

- Magnetic clips are included as standard to secure the sashes together when in the open position, and will be colour matched to the handles*.



Main magnetic door clip for doors with a main handle. We recommend fitting them at the top.

Smaller magnetic clip for the doors without a main handle. We recommend fitting them at the top





*Colour finish of the satin chrome magnets is not an exact match to the satin chrome handle

Size Restrictions

- Max height of the doors is 2500mm, with a max sash width of 1200mm wide*
- Min sash width is 700mm, although it is possible to go below this size we are unable to guarantee a smooth operation and all doors must be unlocked prior to being opened. This is only available on styles that have an odd number of panes i.e. 330 / 550
- The max sash weight is 100kg

No of doors	Designs		Frame Width		No of doors	Designs		Frame Width	
			min	max				min	max
1	101	110	600	1287	2	220	202	1550	2500
						211		1200	2450
3	330	303	2260	3700	4	440	404	3020	4900
	312	321	2260	3700		413	431	3020	4900
						422		3020	4900
5	550	505	3680	6100	6	660	606	4430	7350
	514	541	3680	6100		615	651	4430	7350
	523	532	3680	6100		624	642	4430	7350
						633		4430	7350
7	770	707	5100	8500	8	880	808	5860	9400
	716	761	5100	8500		817	871	5860	9400
	725	752	5100	8500		826	862	5860	9400
	734	743	5100	8500		835	853	5860	9400
						844		5860	9400
* Sashes over **900mm** wide must be fitted with a toe & heeler during installation									

Please bear in mind that large doors are heavy and therefore consideration should be given to having them flat packed for assembly on site. There is a charge for this option as the doors are fully fabricated before being dismantled and wrapped separately. Full assembly and installation instructions are available on request.

Doors wider than 6300 and/or 7 and 8 panes or those supplied on pallets will be supplied flat packed

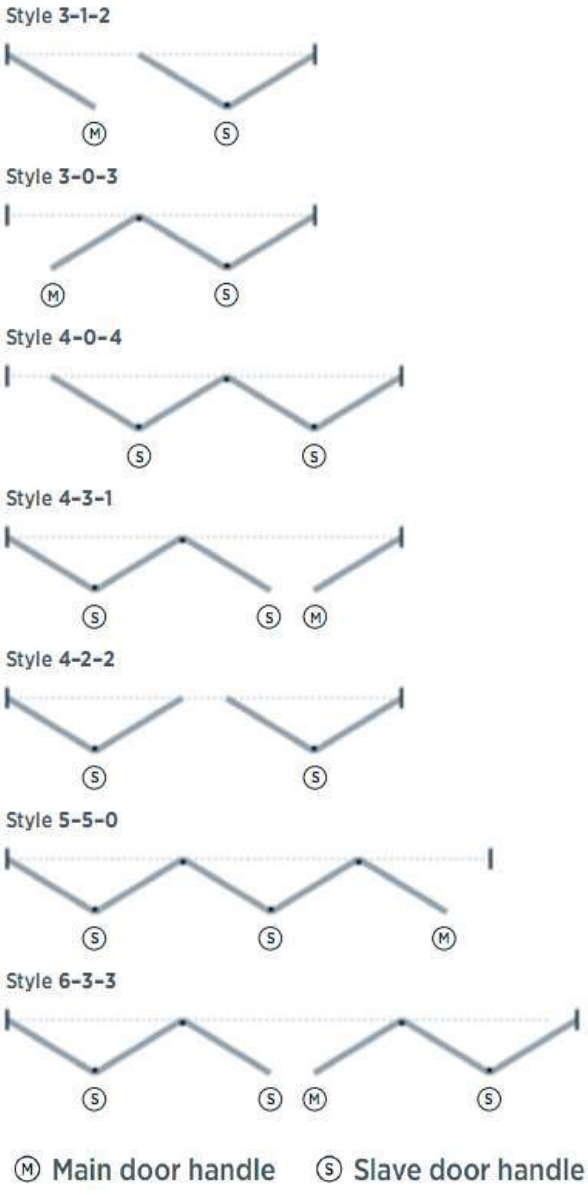
Configurations

- There are many different configurations, please see the list below, or go to our website www.mybifold.co.uk and use the quote configurator to make up the bi-fold configuration of your choice. On the list below we have highlighted in red which styles **DO NOT** have an external handle.



Important Information

Please note that if you have an **OPEN IN** door that has a floating mullion on e.g. 202/220/404/440/422/541/514 /523/532/606/660/642/624/761/716/725/752/743/734/880 /808/826/862/844, then we have to use brush pile seals on the outer frame rather than gasket. This compromises the weather tightness of the doors and therefore we do not recommend them for external locations.

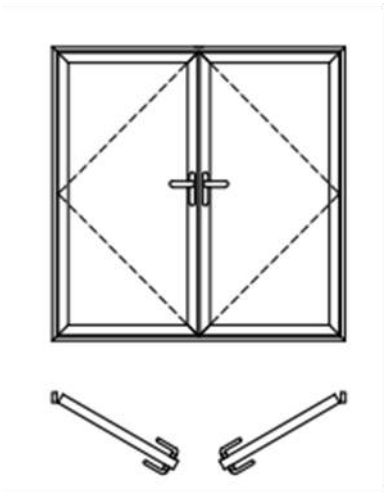


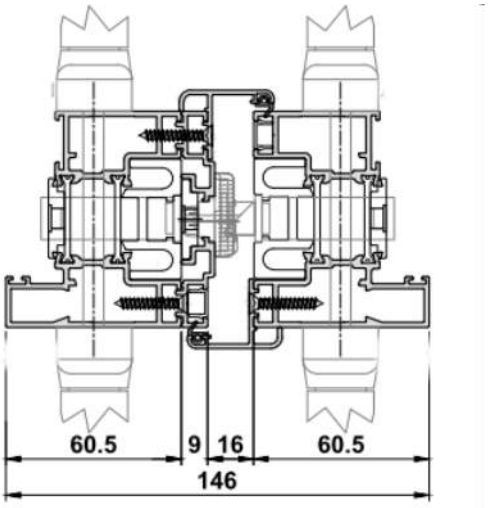
Double handle Option

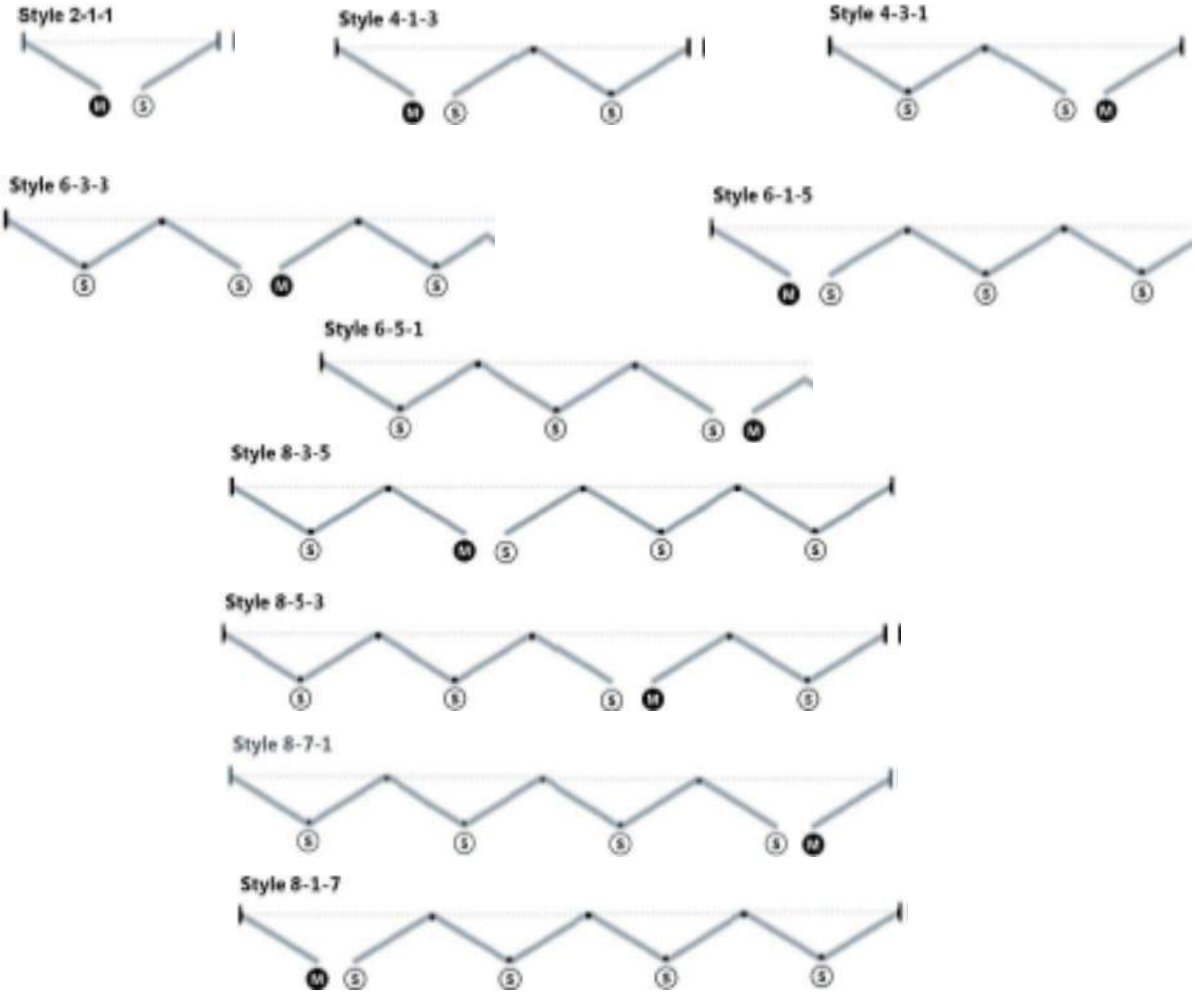
On the following styles below it is possible to have a Lever/lever handle to the master and slave sashes. An additional large magnet will also be required.

Note:

This is an option and not done as standard and incurs an additional charge

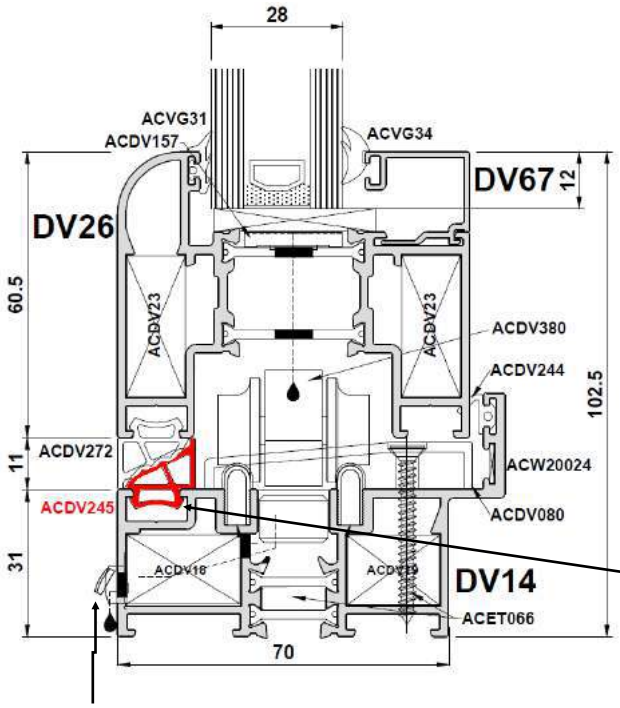




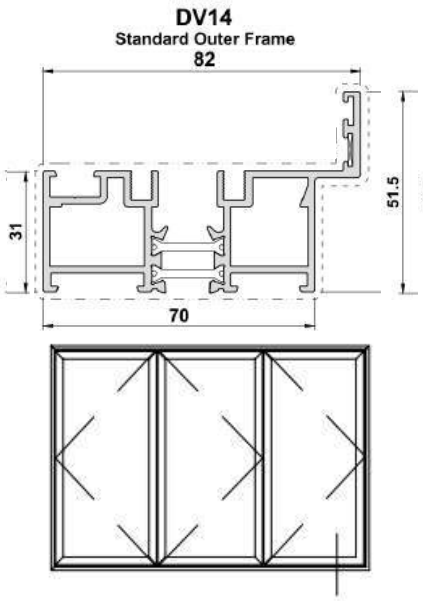


Cross sectional drawings

Standard cill detail



You need to make allowances for the external drainage on both thresholds to ensure that the water can dissipate freely.

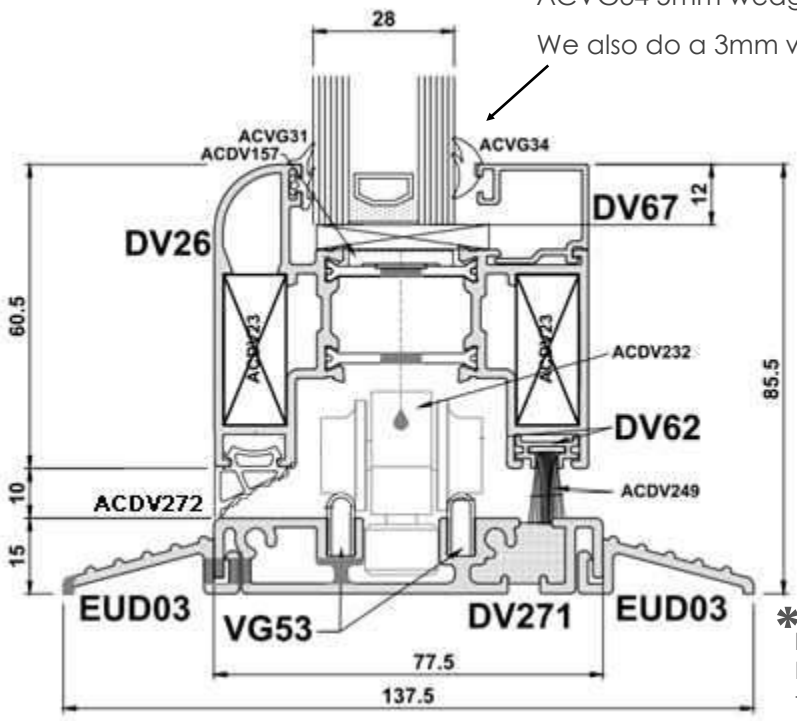


Change of gasket from ACDV272 to ACDV245 gasket on the bottom section of outer frame to allow smother operation of sashes.

Cill detail with low threshold

ACVG34 5mm wedge gasket

We also do a 3mm wedge gasket ACVG33

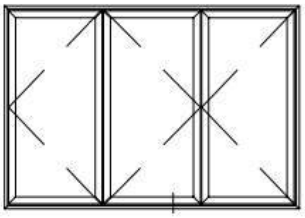


low threshold detail,

Please note

The low threshold is not recommended for

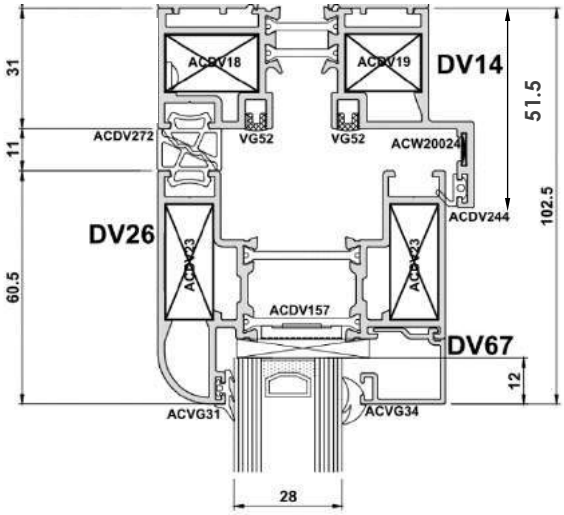
external use as it will not give a weather tight seal.

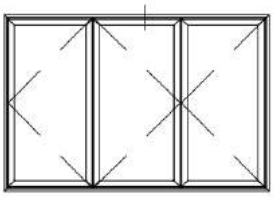


* It is important to ensure that you install a DPC membrane between the cill and the brickwork. You should also seal the underside of the low threshold where the drainage slots are to ensure that water does not seep out.

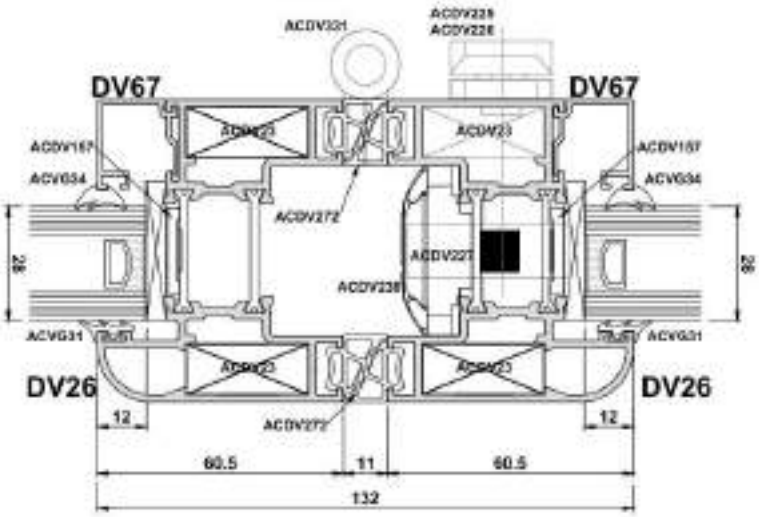
Cross sectional drawings

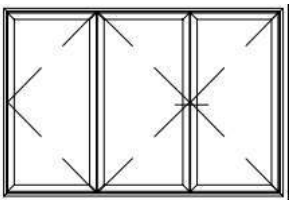
Standard head detail



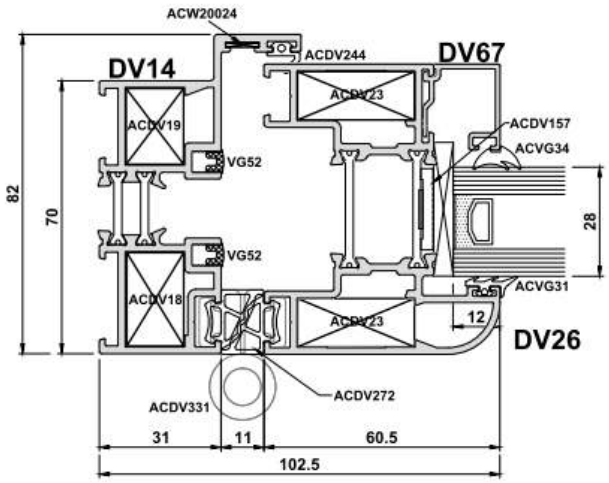


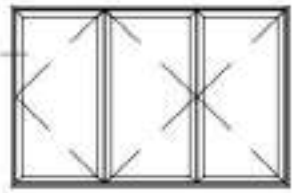
Standard style detail





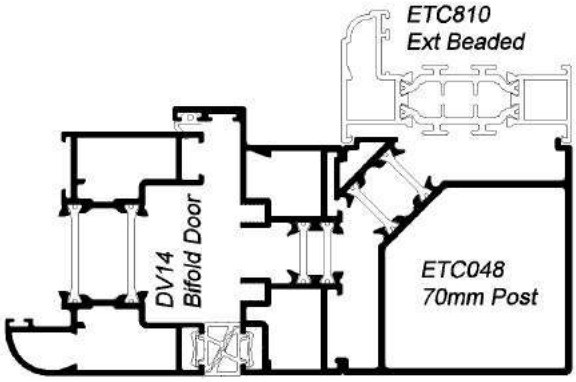
Standard jamb detail



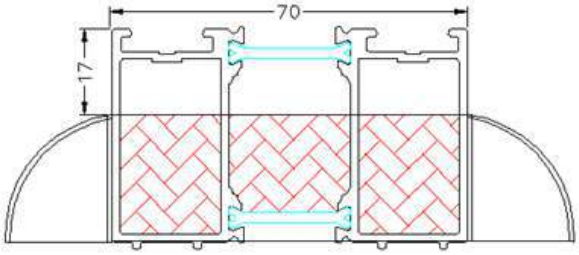


90° Bay Corner Detail

When the Bifold door is to be used in a corner detail then the return frame will be in the Alitherm 800 series – Note corner post is not load bearing see note on Large unsupported openings

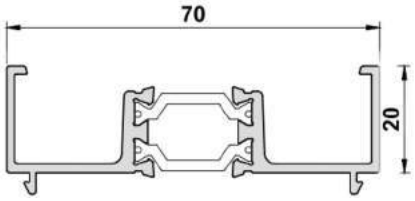


42mm frame extension and head vents



DV515 – 70mm x 42mm Frame extension

With the hood of the head vent fitted there is approx.17mm to the outer edge of the 42mm knock on



DV559 – 70mm x 20mm Frame extension

Large, unsupported openings



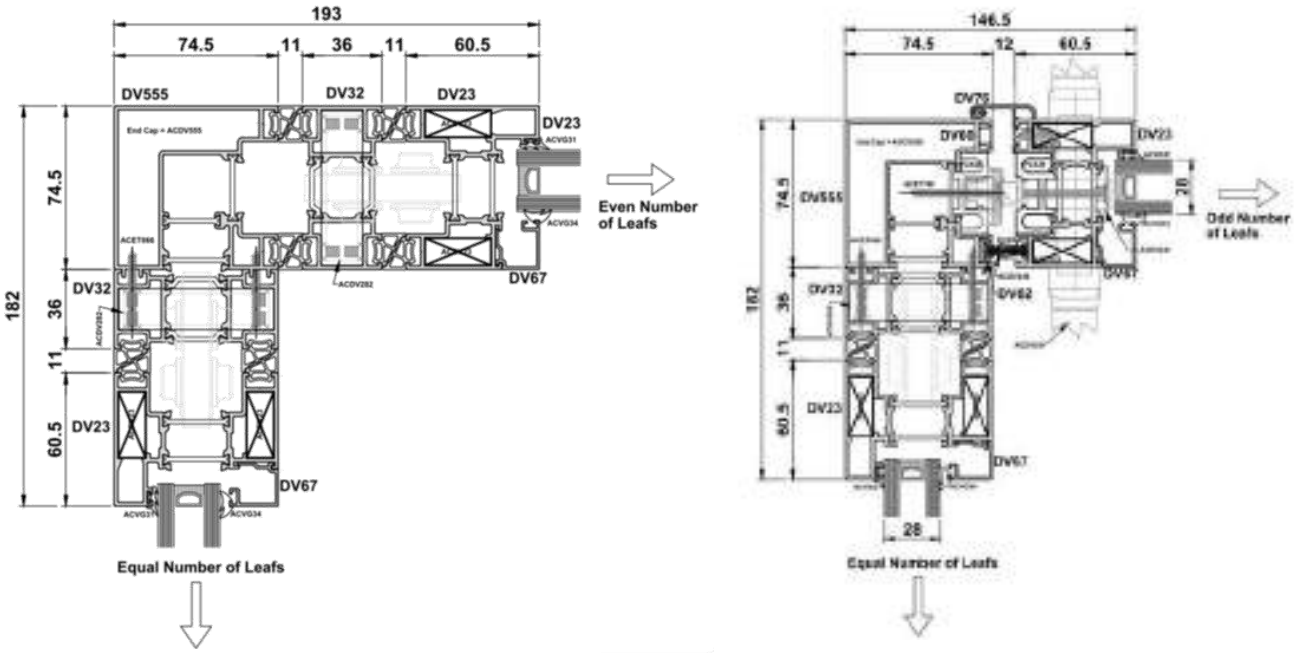
It is important to understand that any frame with a large opening, such as bifolds, wide French doors and patio doors have no structural integrity once open and therefore are not designed to take any loadings from above.

These frames are not designed to take any structural loadings from above so always consult a structural engineer and support the heads appropriately.

This is especially critical in conservatories where, if not correctly supported, the weight of the roof will push down on the frame, causing damage and operational difficulties.

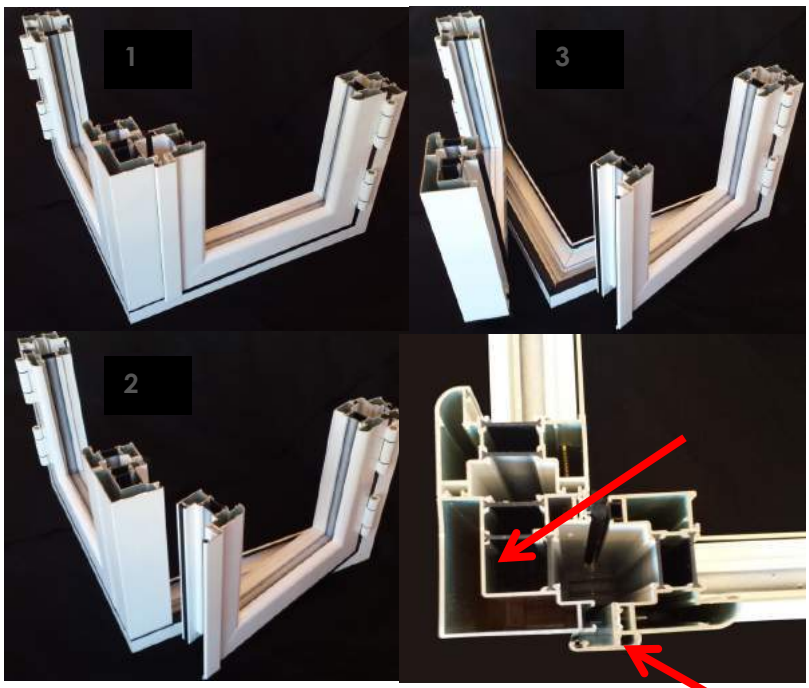
It is vital that you design in a structural support capable of taking the roofs weight. We would urge you to consult a structural engineer at the design stage so that you construct a suitable goal post/lintel to fit between the frame and the roof/loading above.

False Corners



1. Floating corner post in closed position with rebated lead door

3. Once the right hand rebated door is opened the door which has the floating corner post on can be opened



2. Right hand rebated door must open first

Rebated section that creates the seal which is fixed to the other door

Note:

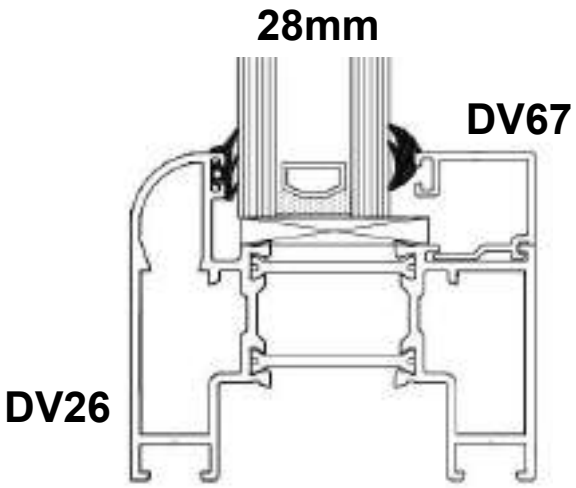
Doors can only Open Outwards. Open In is not an option.

The corner detail can only be on an External corner – internal detail is not possible

U'values for double glazed units

Our standard glass specification is: -

- 28mm double glazed units
- Toughened glass
- 4mm Planitherm +/4mm Planilux clear
- 90% argon gas filled cavity
- 20mm Black super spacer bar
- 20kg per m^2

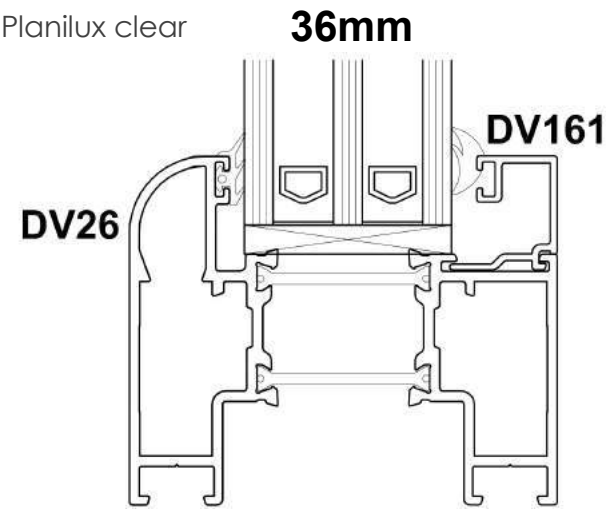


Bifolds incorporating the above specification of double glazing have an overall frame u'value of 1.8W/m^2K, with a centre pane u'value of 1.2 W/m^2K.

U'values for triple glazed units

As an optional extra We are also able to offer the 1000 series bifold doors with a triple glazed unit with the following specification: -

- 36mm triple glazed units
- Toughened glass
- 4mm Planitherm +/4mm Planitherm +/4mm Planilux clear
- 90% argon gas filled cavity
- 12mm Black super spacer bar
- 30kg per m^2

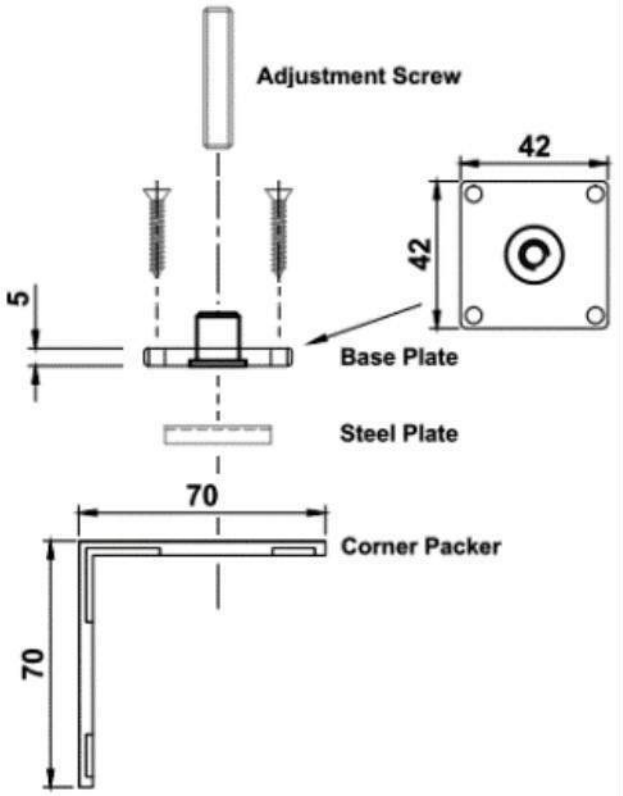


Bifolds incorporating the above specification of triple glazing have an overall frame u'value of 1.4W/m^2K, with a centre pane u'value of 0.8 W/m^2K.

You will need to specify at the point of quote/order if you want the triple glazed option otherwise your doors will be processed with the standard double glazed option.

Toe & Heeler Guide for sashes over 900mm

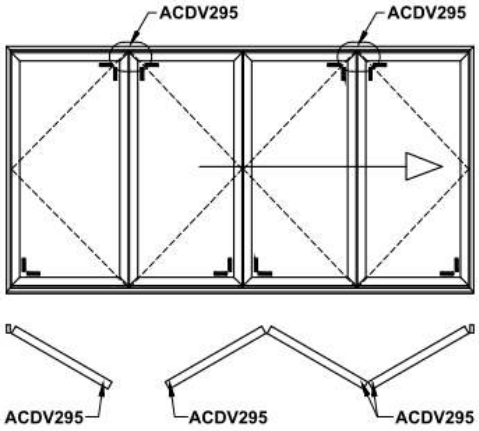
All bifold door sashes wider than 900mm and up to the maximum 1200mm must be fitted with a toe and heeler device (ACDV295) and this device comes in 4 parts as shown below.



ACDV295 Glass Adjuster Kit

The Base Plate and Adjustment Screw are pre fitted to the sash in the factory.

The Steel Plate and Corner Packer will come in the stores package and must be used in place of standard packers in the corners where the device is fitted.



The packer will have been pre-notched (see images below) to allow the bead to sit in place.



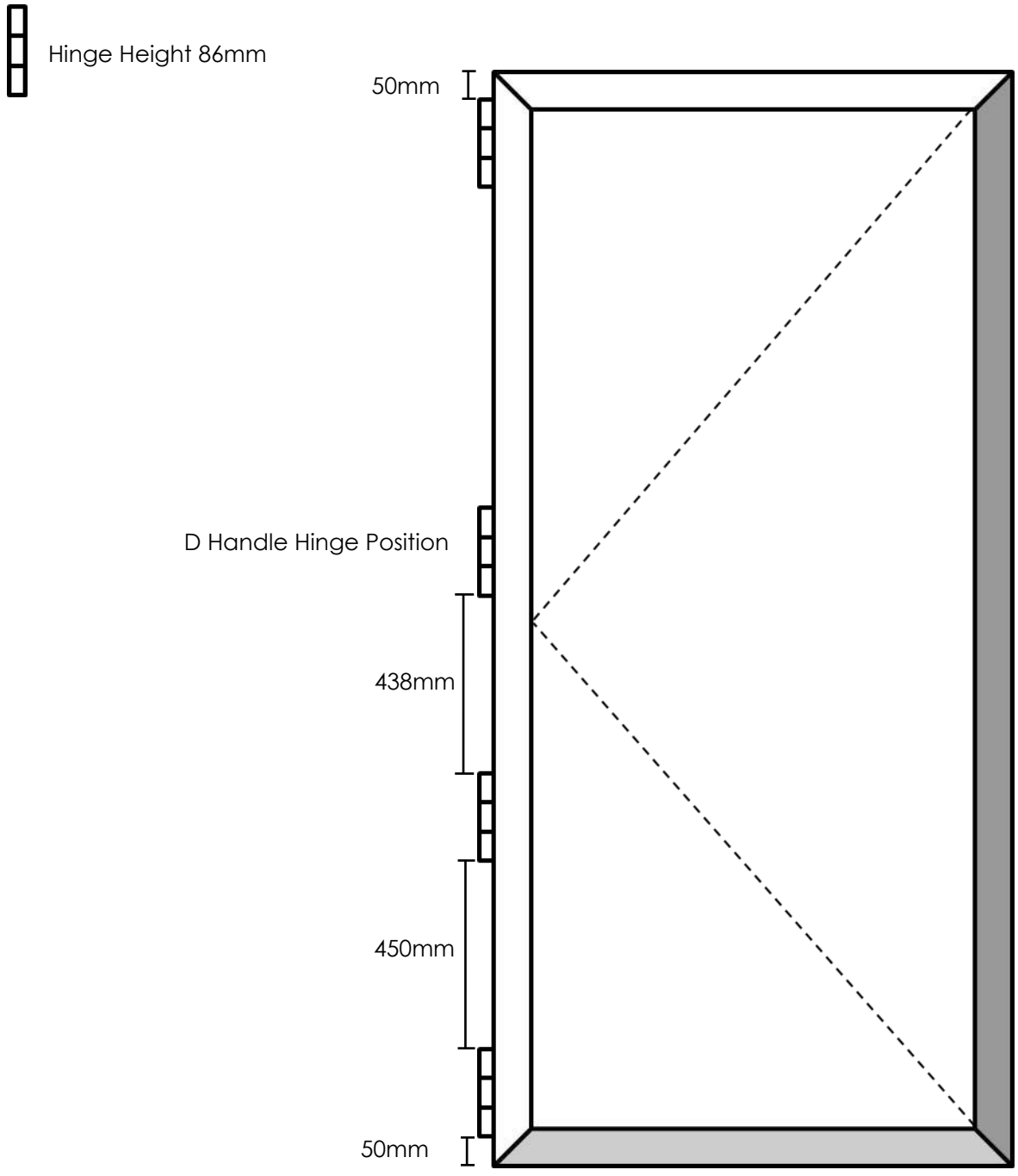
Cut out a notch here to allow the bead to sit correctly on 28mm units.



Please Note: Failure to install all of the parts will invalidate the guarantee and could potentially shatter the glass unit.

Hinge Positions

Below are the standard positions for the hinges on a Bifold door. The positions of the hinges are reliant on the shootbolt locking mechanism.

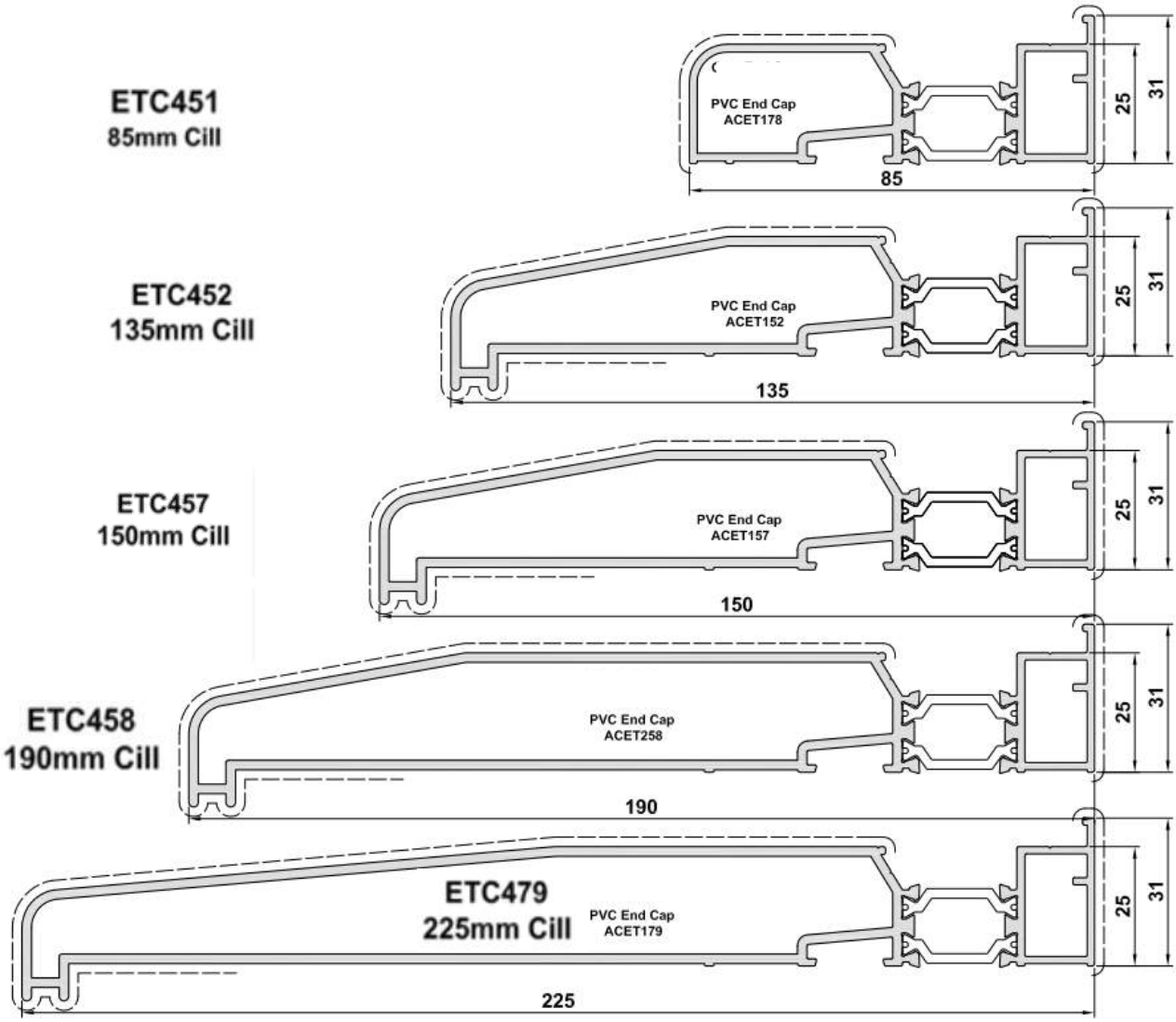


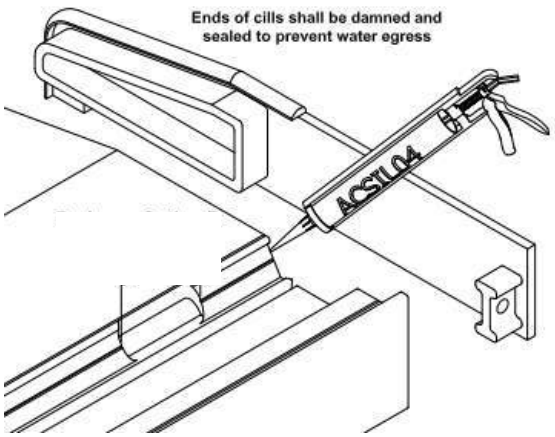
Each measurement is from the bottom/top of the profile to the bottom/top if the hinge as indicated

Cills / Mitred Cill

External projecting cills

Cills / Mitred Cills



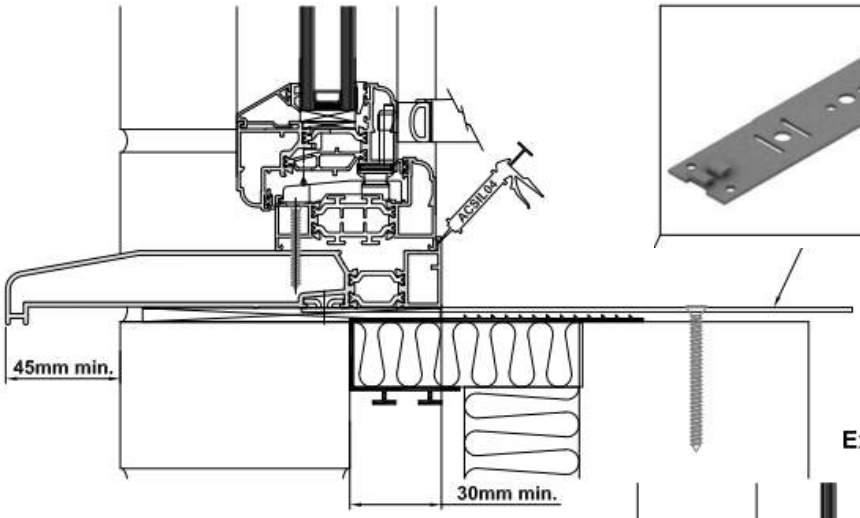


Please Note

All cills are factory drained and should have cill end caps fitted prior to installation, sealing the cill end caps to the cill with silicone to prevent water egress (do not cut the end caps and fit after installation as this will result in water penetration and invalidate guarantee).

End caps are PVC and not colour matched to frames. White and black available.

Example Lug Fixing Detail



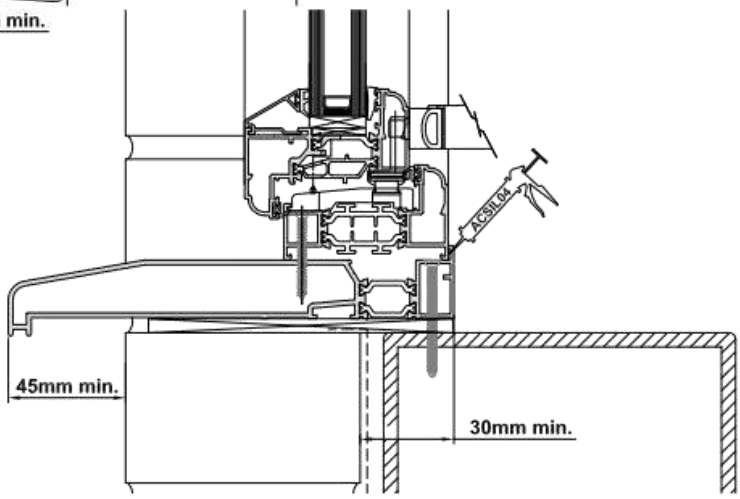


ACUN23X

Screw Fixing Lug

ACUN230: B = 160MM
ACUN232: B = 240MM
ACUN233: B = 280MM

Example Direct Fixing Detail



Please Note

Cill fixing lugs need to be ordered separately they are not included with cills – pack size: Qty 100

