# Alitherm 400 Door system

## Overview

- Energy Rating DSER C / 1.4Wm²k (new dwellings, existing dwellings, existing commercial & new commercial) (1.2Wm²k centre pane uValue) 4-20–4 Planitherm Total Plus
- Outer frame 70mm (**ETD410**) with square detail (same profile all round)
- Square sash
- **QUICK*glaze* bead UN3160g** with coextruded gaskets 28mm & 28.8mm laminated
- **QUICK*glaze* bead ETC4179G** with coextruded gaskets 36mm triple glazed
- **ETC4179** non-coextruded bead with ACW20038 push in gasket inside for 38.8mm laminated triple glazed
- Crimped frame & sash system
- All sashes fitted with Toe & Heel kit (**ACET496**)
- PAS24

## Weather Performance

- Air Permeability: Class 2 300 Pa
- Water tightness: **Open In** Class 5a 200 Pa, **Open Out** Class E 1050 Pa
- Resistance to Wind Load: **Open in** Class BE 2400 Pa, **Open Out** Class AE 2400 Pa

Weather-tightness based on lift-lever locking

Important note: Low thresholds have not been weather tested as they are unlikely to exceed UK exposure category 800 X shown below

- Air Permeability: Class 1 150 Pa
- Water tightness: Class 2a 50 Pa
- Resistance to Wind Load: Class A2 800 Pa

## Standards / Options

- Single or Dual colour
- Standard Storm Sash
- Face Drain only (Secret drain is not available)
- Open In / Out
- 3 Adjustable hinges
- Standard height of midrails 900mm inc. cill, 875mm without cill
- Single doors default to open in, French doors open out
- Optional 90 degree restrictor
- Single door multipoint locking with lever/lever handle as standard
- French door multipoint locking to primary, shootbolt locking to secondary. Lever/lever handle to both doors
- Optional slam shut locking
- Optional Slam shut locking to French door (lock to primary, finger bolt to secondary)
- Trickle vents available, fitted into 42mm frame extension (**UN3042**)
- 150mm cills (**ETC457**), cut flush to the frame, i.e. no horns
- Internally beaded fanlights and side screens will be done in **ETD402** outerframe
- Side screens are coupled using **ETD455** vertically
- Fanlights are coupled using **UN3000** horizontally (this needs to be drained)
- Opening casement fanlights and sidelight with opening casements will be in selected window system
- Document M compliant ramped low aluminium thresholds

## Size Restrictions

- Max width: 1100mm Sash size, frame size (**single** door **1168**mm, **double** door **2273**mm)
- Max height: 2400mm sash size, frame size **2468**mm low Threshold **2455**mm

Multipoint lock

- Min height: 1955mm sash size, frame size **2023**mm low threshold **2010**mm - handle height from bottom of frame **1084**mm
- Min height: 1885mm sash size, frame size **1953**mm low threshold **1940**mm - handle height from bottom of frame **1014**mm

Slam Shut

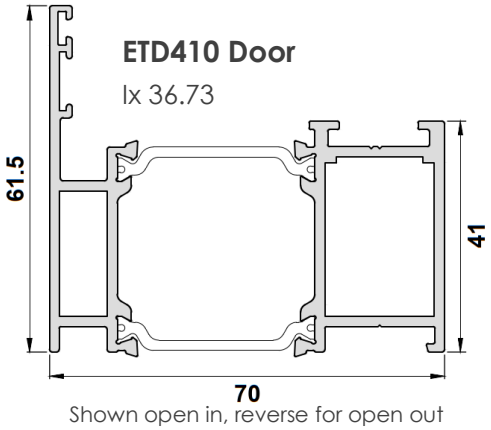
- Min height: 1820mm sash size, frame size **1888**mm low threshold **1875**mm - handle height from bottom of frame **1084**mm
- Min height: 1955mm sash size, frame size **2023**mm low threshold **2010**mm - handle height from bottom of frame **1084**mm
- Max weight: 100kg per sash

# Profile sections - Storm Sash

## Outerframe

### ETD410 Door

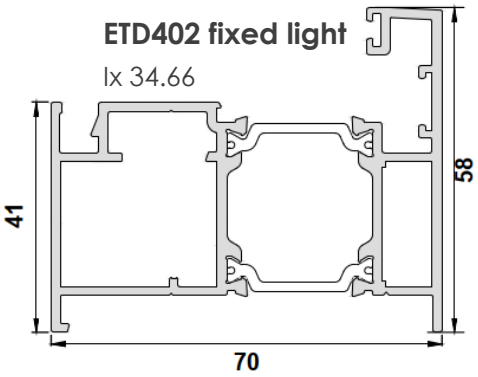
Ix 36.73




Shown open in, reverse for open out

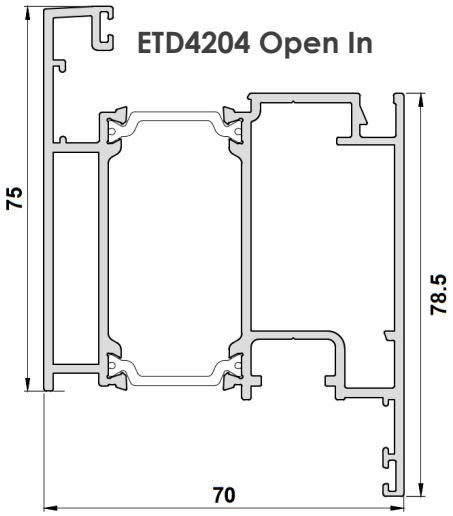
### ETD402 fixed light

Ix 34.66

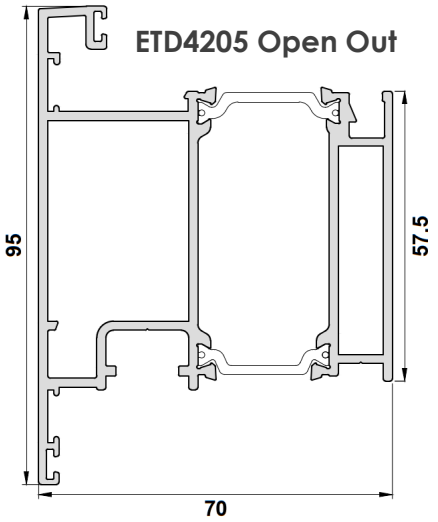



## Sash

### ETD4204 Open In

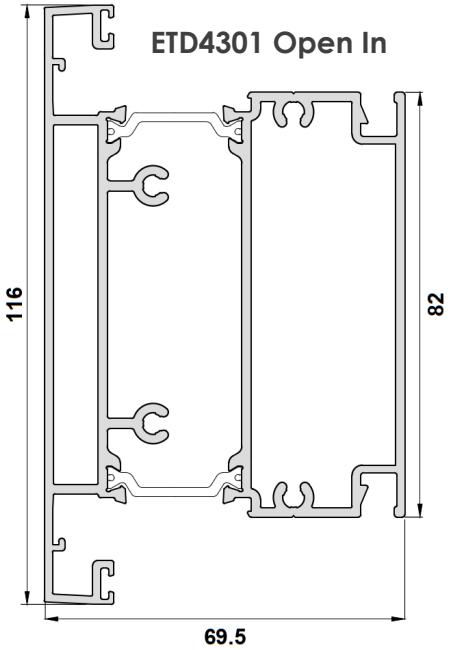



### ETD4205 Open Out

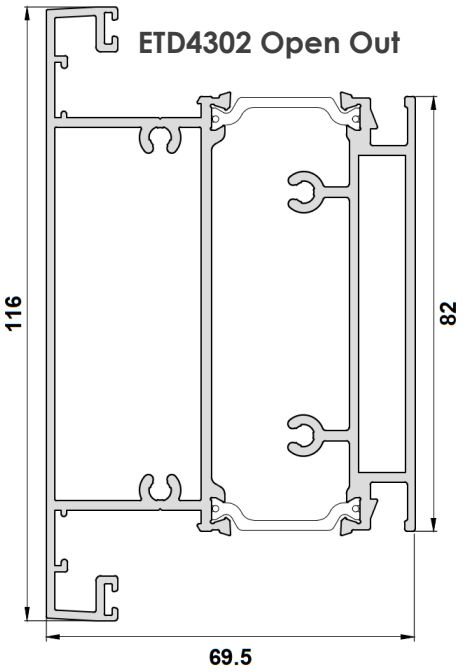



## Midrail

### ETD4301 Open In

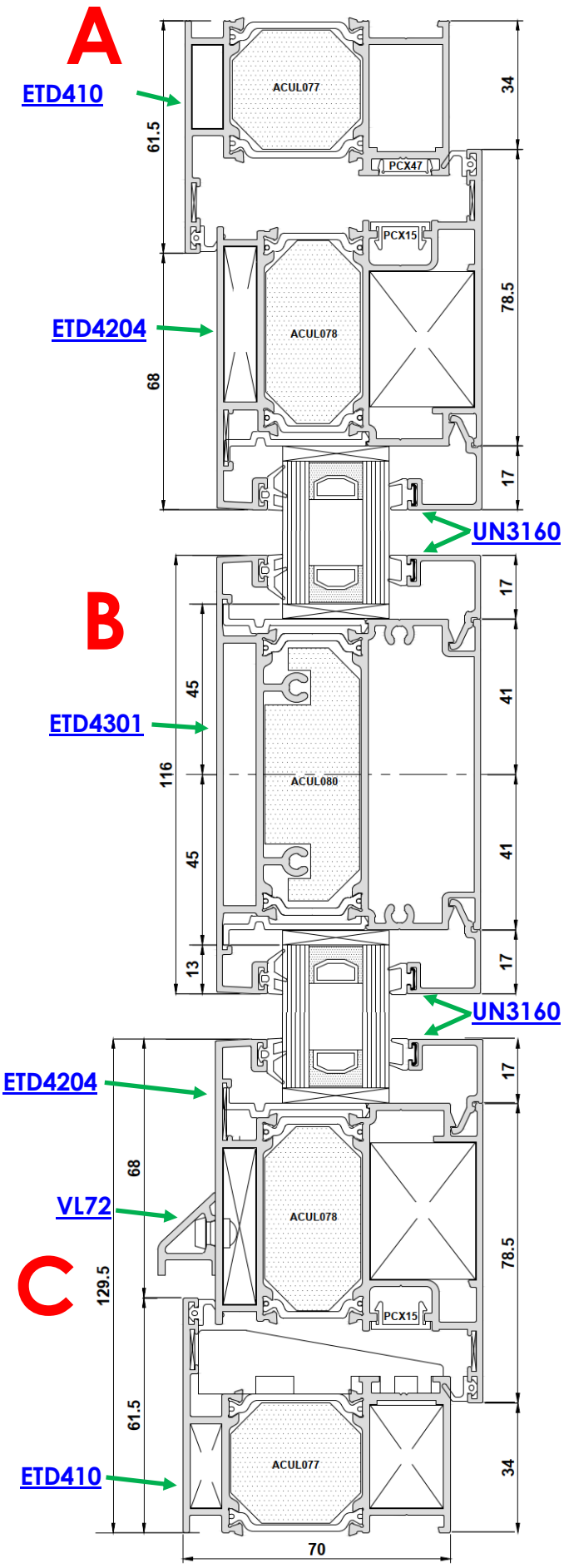


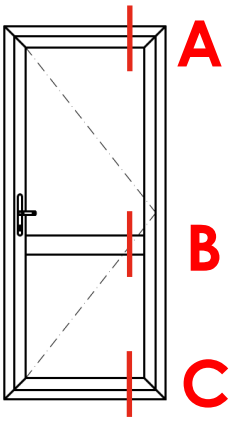

### ETD4302 Open Out



## Open In - Storm Sash Residential / French door

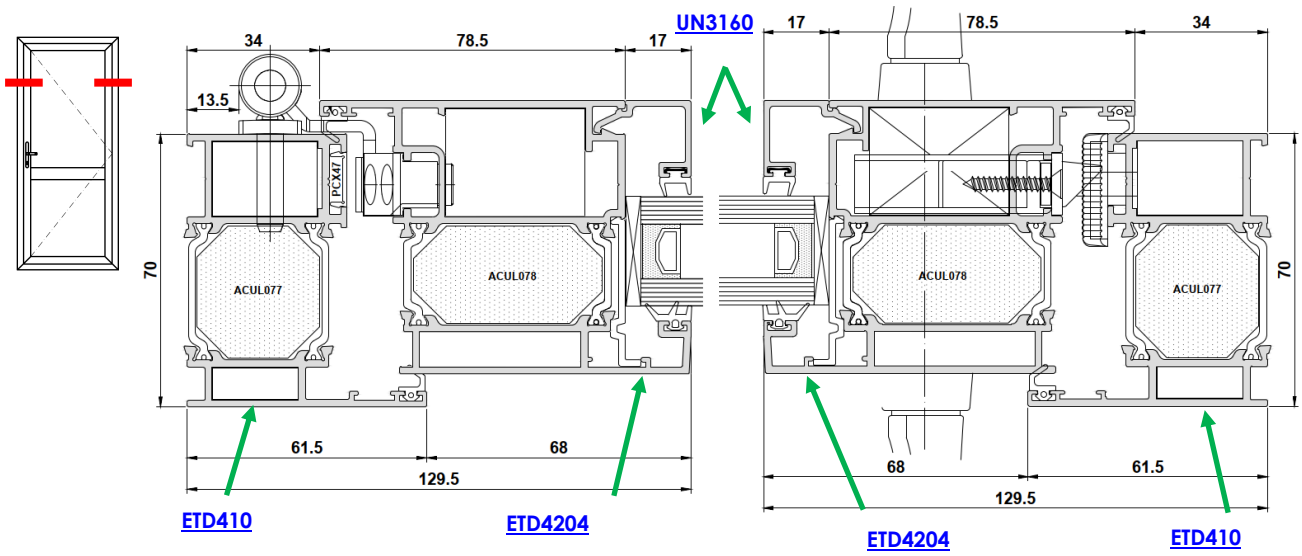
- Internally beaded
- ETD410 frame
- ETD4302 sash
- ETD4301 midrail
- 3 x ACUL250 adjustable door hinges
- Multipoint locking
- Lever/Lever handle
- Lever/

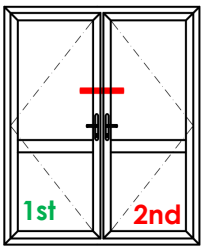



Cross section shown through these points A,B,C

## Open In - Storm sash Residential / French door



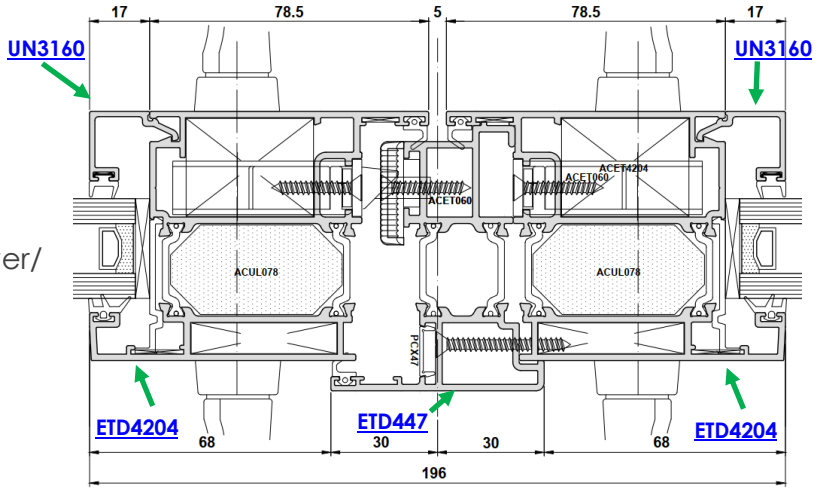

Detail showing sightline across the false mullion of a French door.

Handle to both sashes.

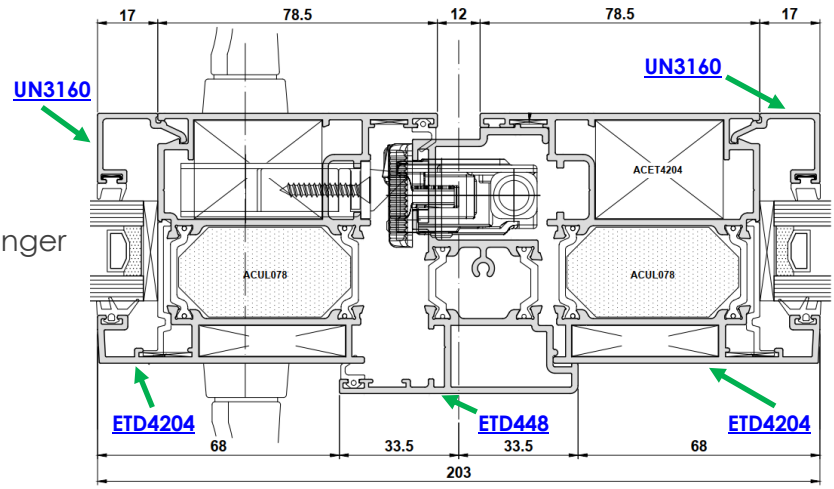
ETD448 dummy mullion is fitted to secondary opening sash.

Examples shows left hand opens first.

ETD447 false mullion for standard multipoint locking & lever/ lever handle to both sashes.

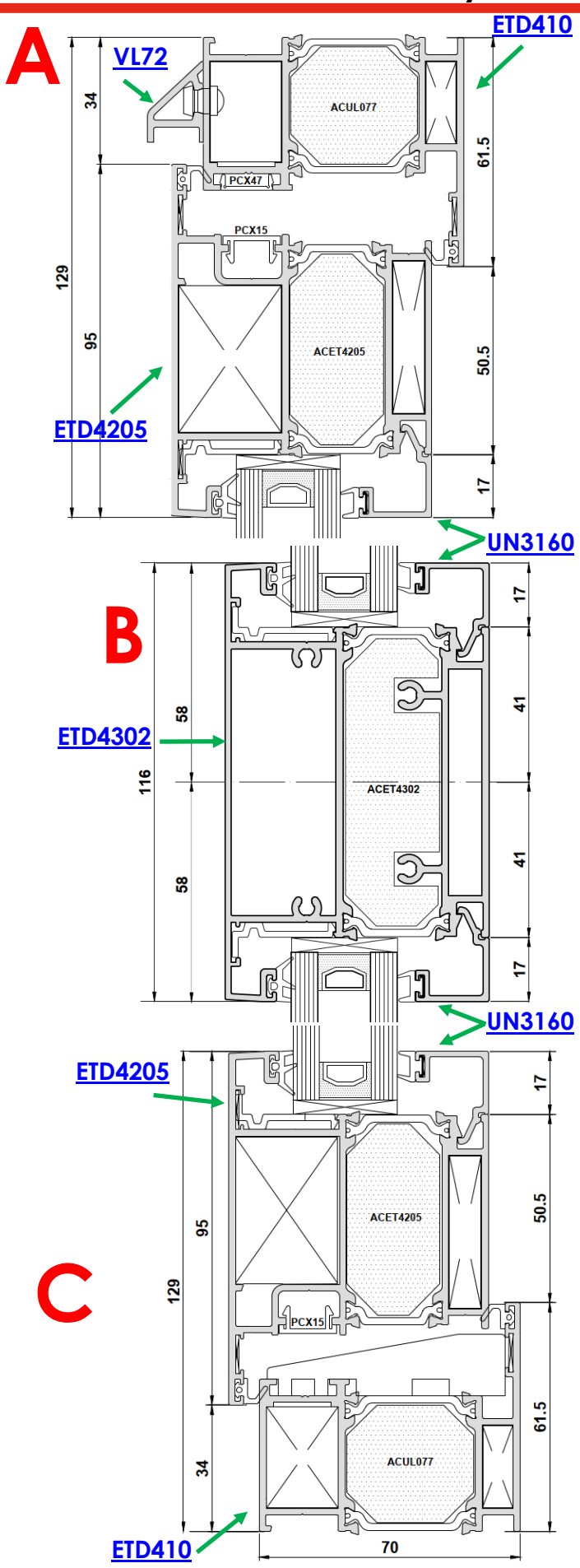


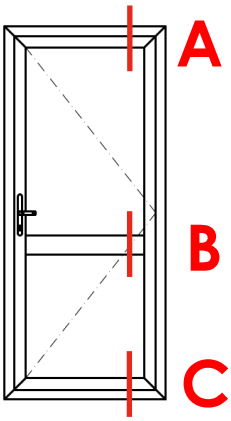

ETD448 false mullion for slam shut locking. Lock to primary door & finger bolts to secondary.



## Open Out - Storm sash
## Residential / French door

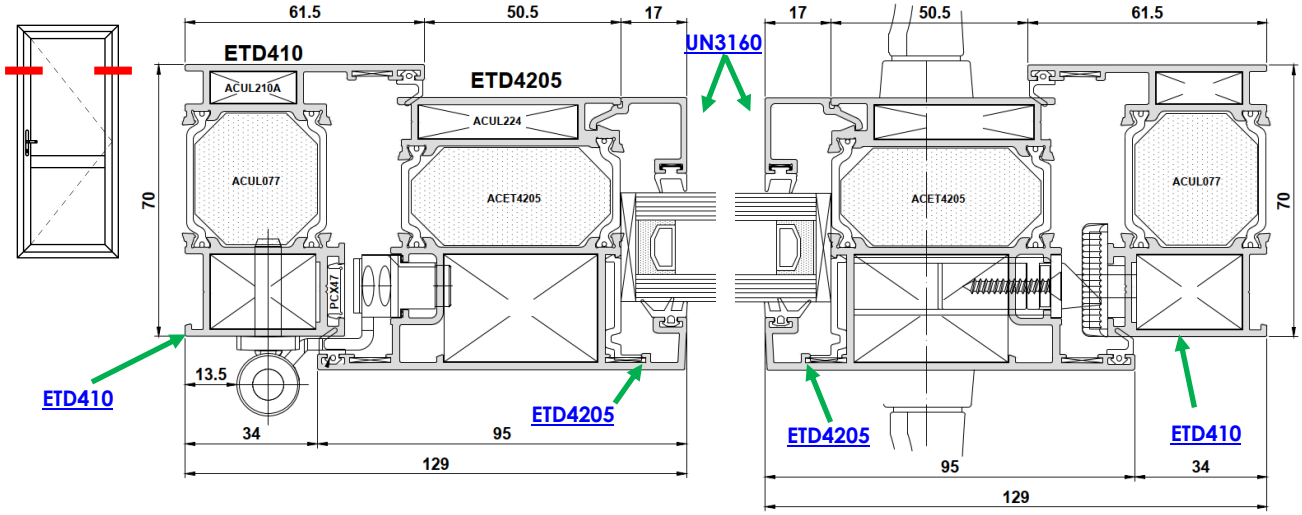
- ETD410 frame
- ETD4205 sash
- ETD4302 midrail
- Internally beaded
- 3 x ACUL250 adjustable door hinges
- Multipoint locking
- Lever/Lever handle
- Lever/

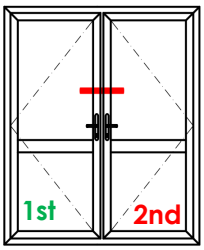



Cross section shown through these points A,B,C

## Open Out - Storm sash Residential / French door




Detail showing sightline across the false mullion of a French door.

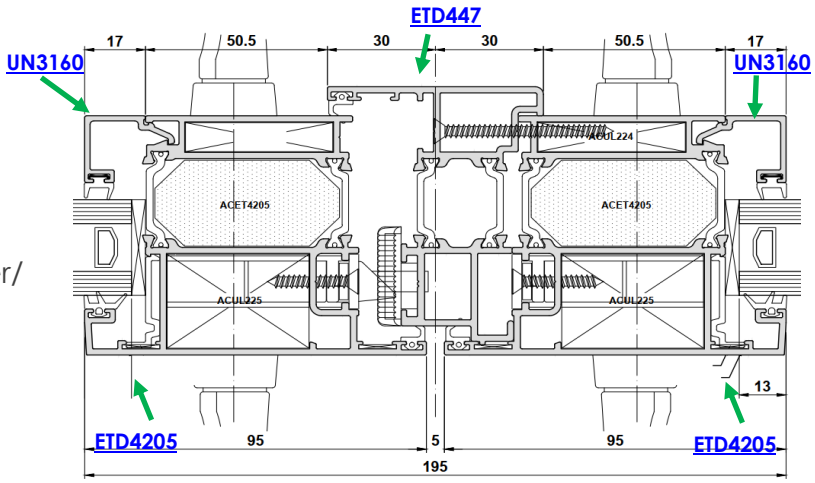
Handle to both sashes.

Dummy mullion is fitted to secondary opening sash.

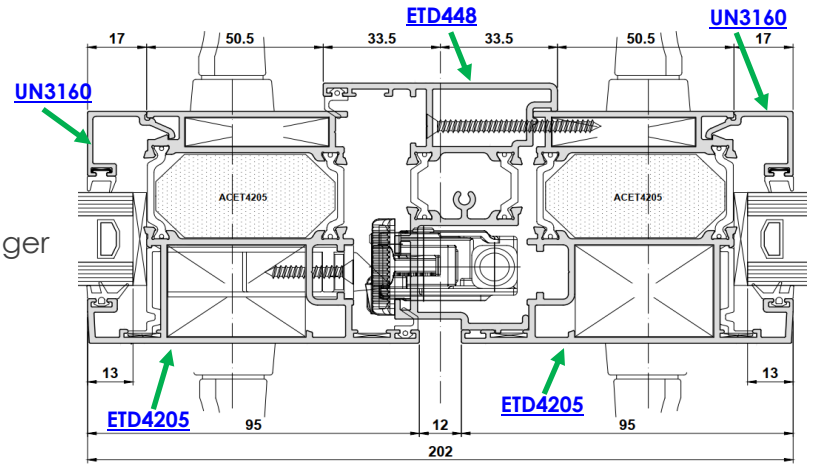
Examples shows left hand opens first.

ETD447 false mullion for

standard multipoint locking & lever/ lever handle to both sashes.




ETD448 false mullion for slam shut locking. Lock to primary door & finger bolts to secondary.



## Bead Cross Sectional Drawings

### 28mm / 28.8mm Double glazed

Unit types

4-20-4 = 28mm

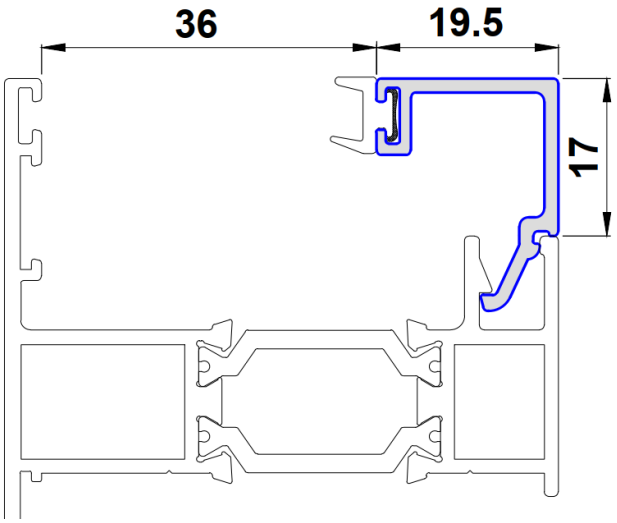
6-16-6 = 28mm

4-18-6 / 6-18-4 = 28mm

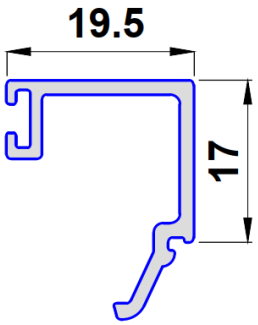
6.8-18-4 / 4-18-6.8 = 28.8mm

6.8-16-6 / 6-16-6.8 = 28.8mm

**UN3160 Coextruded**




**UN3160G non -coextruded**



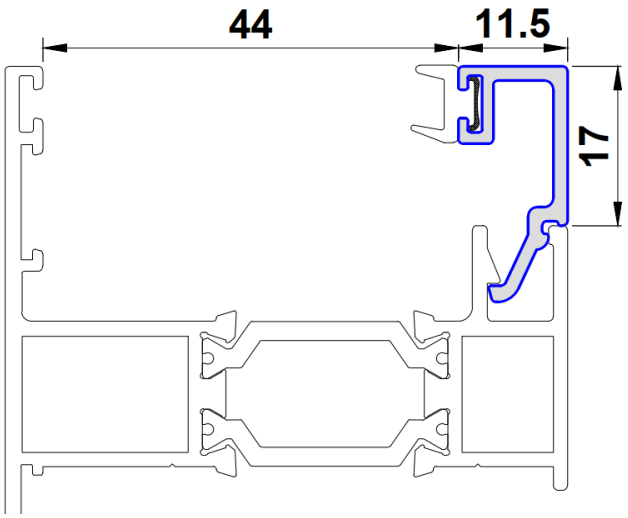

### 36mm / 38.8mm Triple glazed

Unit types

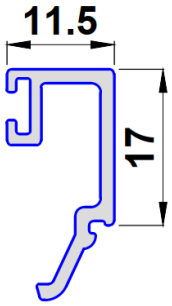
4-12-4-12-4 = 36mm

6.8-12-4-12-4 / 4-12-4-12-6.8 = 38.8mm

**ETC4179 coextruded**




**ETC4179G non-coextruded**



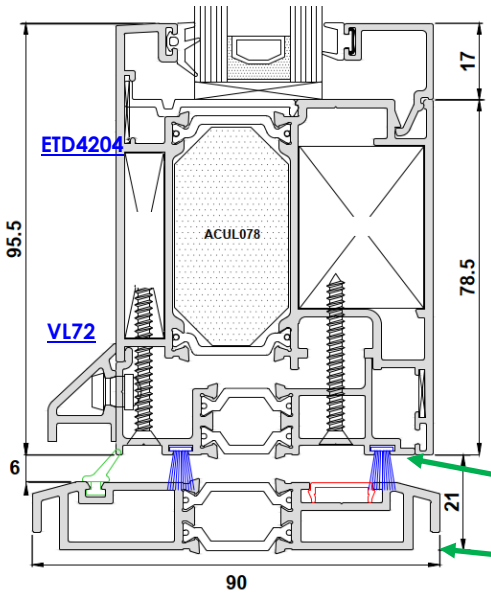

**For bead & gasket combinations see page 15**

## Low Aluminium threshold - Document M compliant

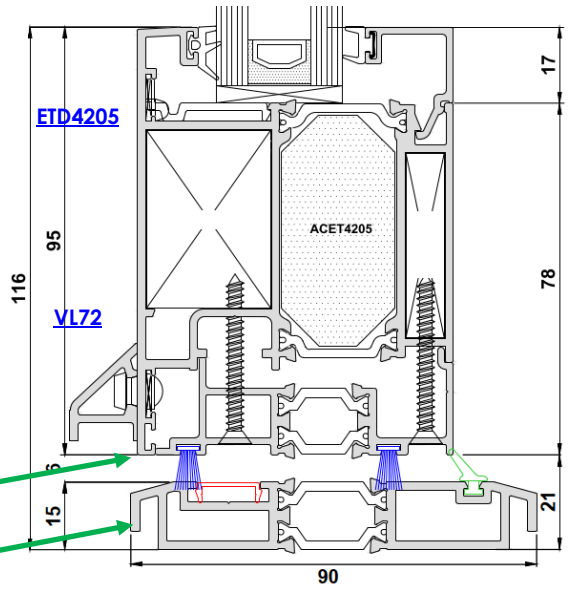
Important note: Low thresholds have not been weather tested as they are unlikely to exceed UK exposure category 800 X

**Storm sash - ETD495**
**Low threshold**

**Open In**




**Open out**

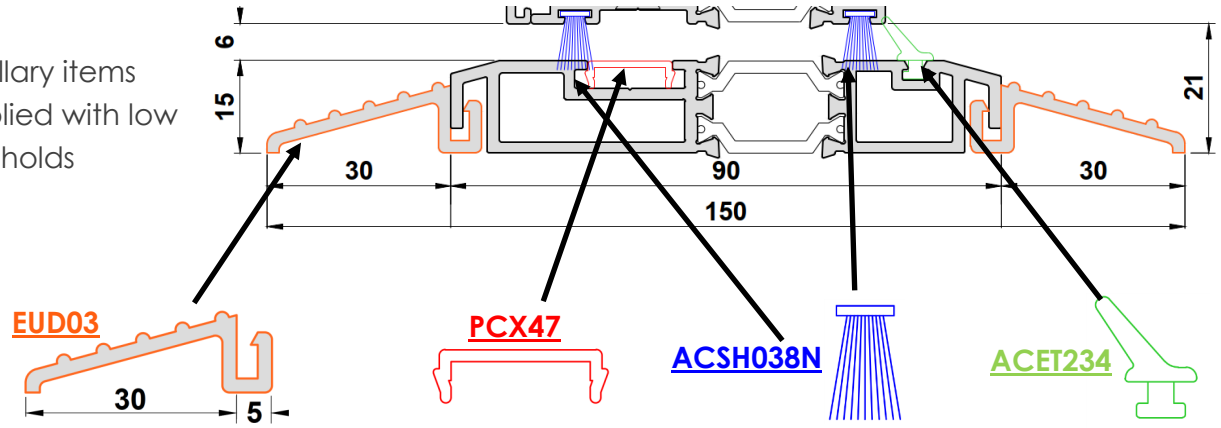






ETD495 thresholds are supplied with a 30mm projecting ramp internally & externally (**EUD03**)

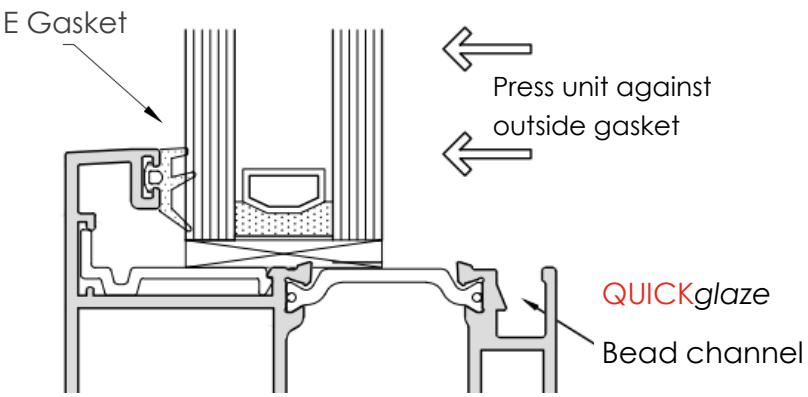
Ancillary items supplied with low thresholds

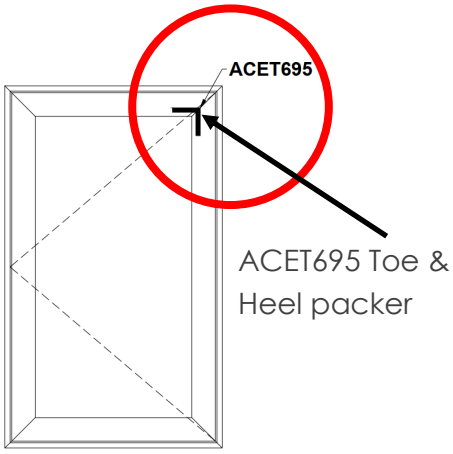


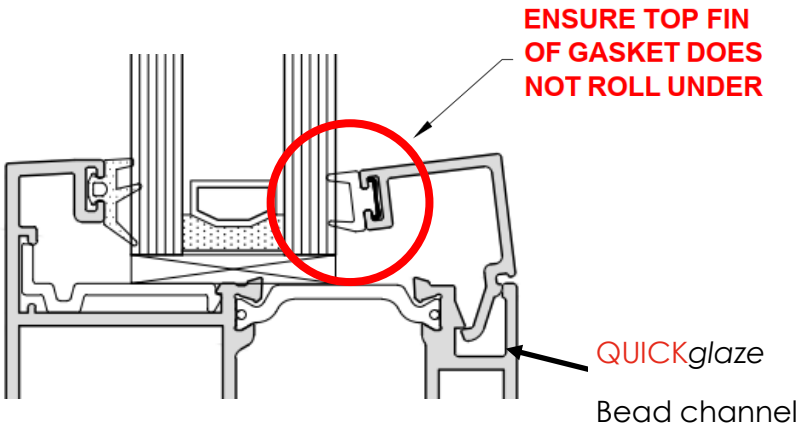
## QUICK*glaze* bead installation - UN3160G 28mm & ETC4179G 36mm bead

1. Install the E-Gasket to the frame or sash.
2. Install the glass unit, ensuring it has been pushed forward to engage the compression of the E gasket.
3. Fit ACET Toe & Heel packer (ensure ACET695 toe & heel kit is fitted)
4. Beginning with the horizontal beads.
5. Tilt the bead forward so the gasket is against the glass and slide down to locate the bead into the clip channel of sash as shown.
6. Apply firm pressure to the bead to hold it in position.
7. Using a nylon mallet, tap the bead into the channel, working from one end to the other. Take care at the stage to avoid damage to both the glazing unit and the bead.
8. Repeat steps 5-7 to install the vertical beads.
9. Once all the beads are fitted toe & heel the unit by use of the adjustment screw in the ACET695 toe & heel kit.

**To aid the stopping of gaskets folding over when glazing use a washing up liquid type substance or a silicon spray around the face of the edge of the glass units.**



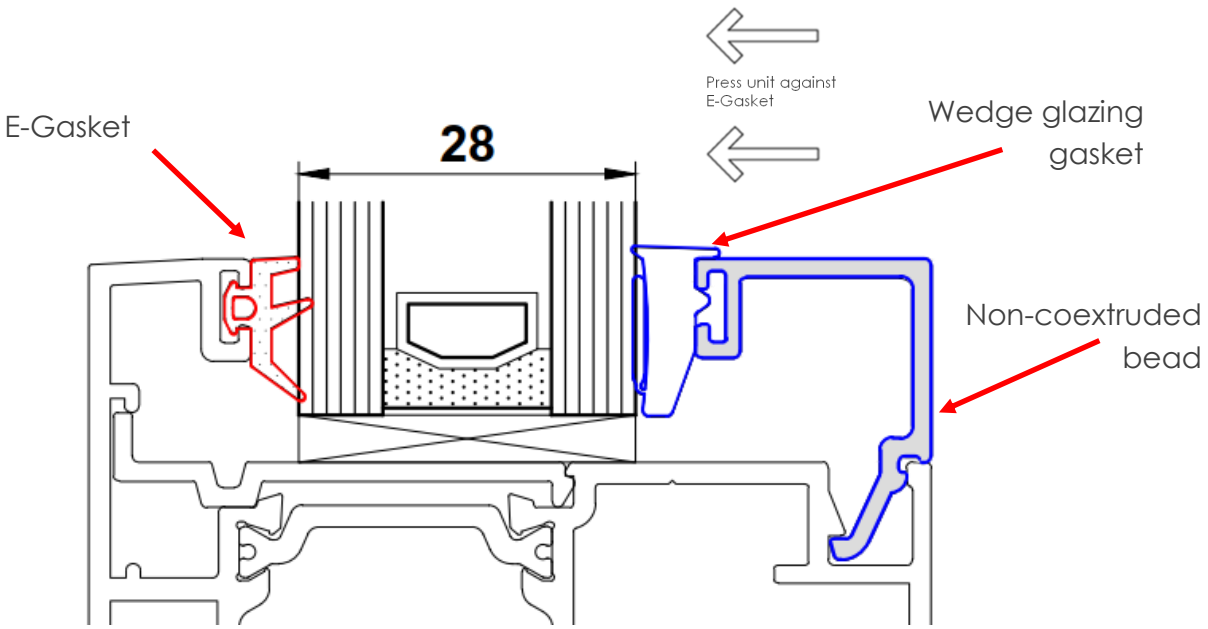




[See Video for how to glaze - HERE]

## Non-coextruded bead installation - UN3160 & ETC4179

Glazing with non coextruded bead UN3160 or ETC4179, this is done in using E-gasket and push in glazing wedge gasket.

1. Install the E-Gasket to the frame or sash.
2. Install the glass unit, ensuring it has been pushed forward to engage the compression of the E gasket.
3. Fit ACET Toe & Heel packer (ensure ACET695 toe & heel kit is fitted)
4. Beginning with the horizontal beads.
5. Locate the bead into the clip channel of sash as shown.
6. Insert wedge gasket into corner push gasket in while also push it back towards your start point this will stop the gasket being stretched and shrinking back over time
7. Repeat steps 5-7 to install the vertical beads.
8. Once all the beads are fitted toe & heel the unit by use of the adjustment screw in the ACET695 toe & heel kit.



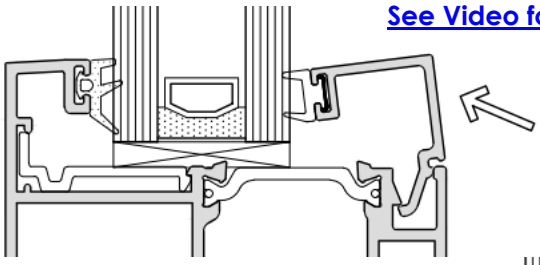
## QUICK*glaze* bead removal

Keeping the integrated bead gasket, preferred method.

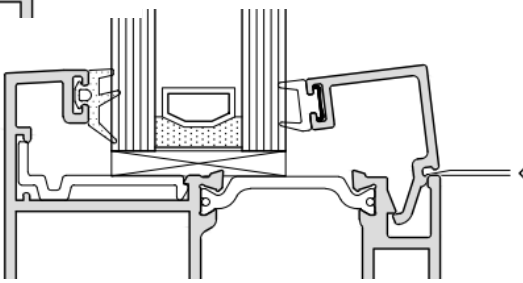
1. Starting on the vertical beads, apply pressure to bead in the direction show below in order to create a small gap between the sash and frame.
2. Gently insert de-glazing tool into the gap. Take care not to damage the profile.
3. Slowly prise the bead away from the sash.
4. The bead should now be easily removable from the QUICK*glaze* bead channel.

**Note:** If beads are being re-used make note of the position they are removed from as they need to be put back in the same position.

[See Video for how to remove bead - HERE]



Push upwards at an angle towards the glass



Insert de-glazing tool into gap

Optional method only if needed. This requires the integrated bead gasket removal. Gasket is replaced using a standard push in glazing wedge gasket.

1. Using a de-glazing tool or similar, wedge tip between co-extruded bead gasket and the aluminium bead.
2. In a levering motion prise the gasket away from the aluminium, care should be taken not to damage the glass unit or the aluminium.
3. Complete this at several locations along the length of the bead.
4. Remove the gasket and discard.
5. The bead should now be easily removable from the tap in bead channel.
6. When reglazing you will now have to use a standard wedge gasket suitable for the thickness of your glass unit. (this gasket must be requested)

[See Video for how to remove gasket - HERE]

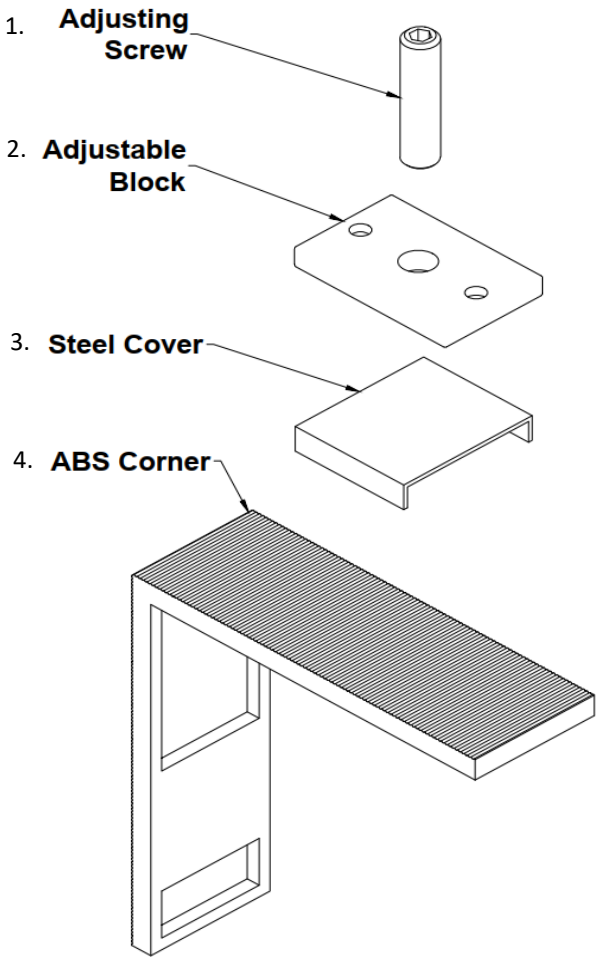
**Note:** If beads are being re-used make note of the position they are removed from as they need to be put back in the same position.

**Toe & Heeler adjustment kit - ACET496**

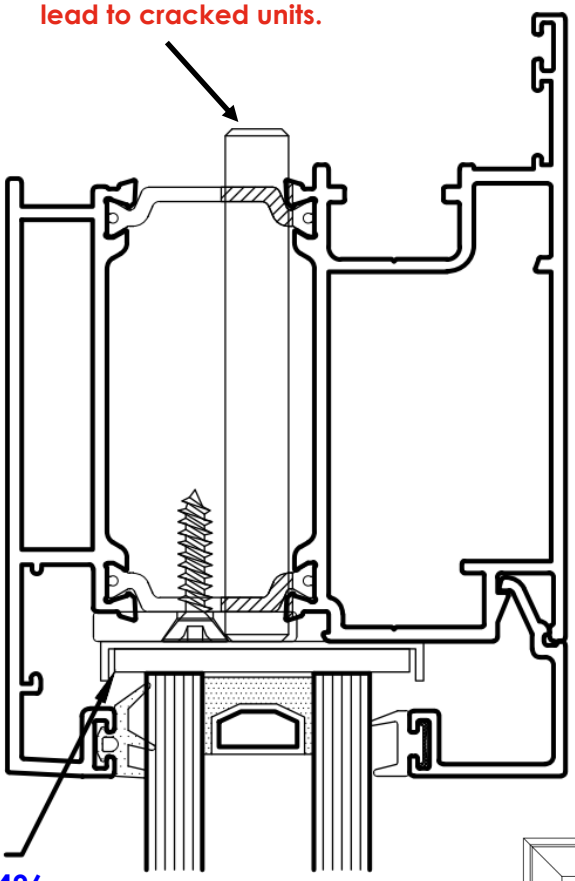
The use of the ACET496 glass adjuster will remove the need to remove the beads in order to adjust the glass position. It comprises of 4 components:

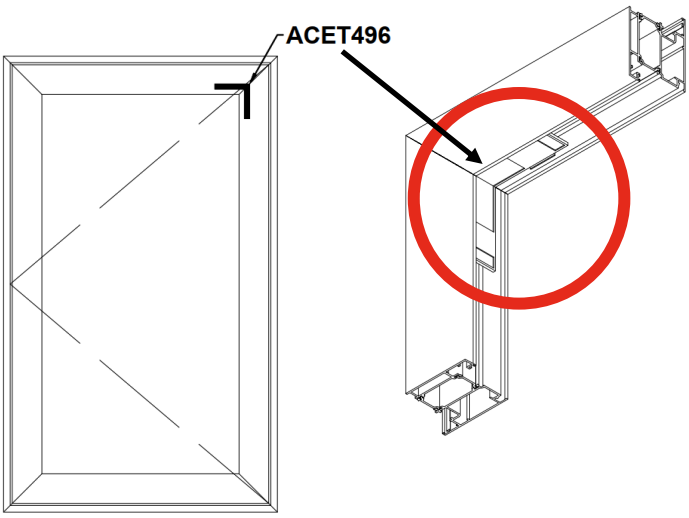
1. Adjusting screw (supplied loose)
2. Adjustable block (fitted)
3. Steel cover (supplied loose)
4. ABS Corner packer (supplied loose)

4mm allen key required to adjust screw



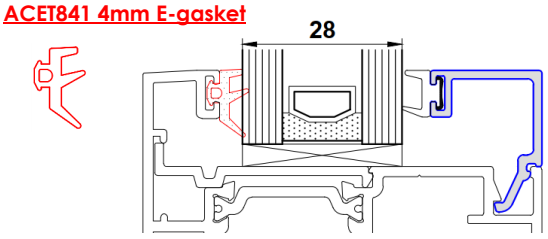
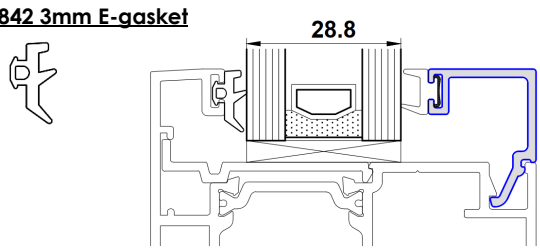

**IMPORTANT: Do not over tighten the adjusting screw 1. As it can lead to cracked units.**



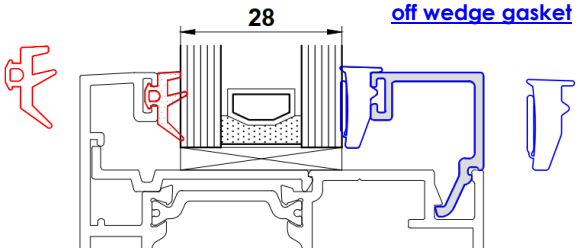
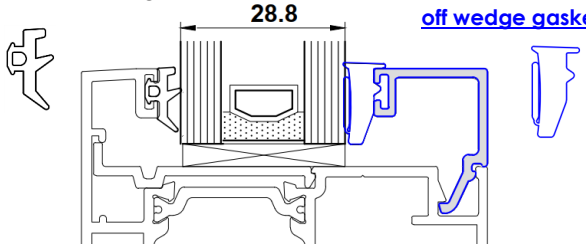



## Bead & Gasket combinations

### UN3160G bead Coextruded gasket

| 28mm Double Glazed | 28.8mm Double Glazed |
|---|---|
| ACET841 4mm E-gasket<br>  | ACET842 3mm E-gasket<br>  <br>For laminated 28.8mm unit |

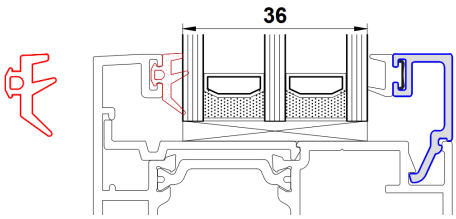
### UN3160 Non coextruded gasket - E gasket & push in glazing wedge gasket

| 28mm Double Glazed | 28.8mm Double Glazed |
|---|---|
| ACET841 4mm E-gasket<br>ACET848 5mm-4mm tear off wedge gasket<br>  | ACET842 3mm E-gasket<br>ACET848 5mm-4mm tear off wedge gasket<br>  <br>For laminated 28.8mm unit |

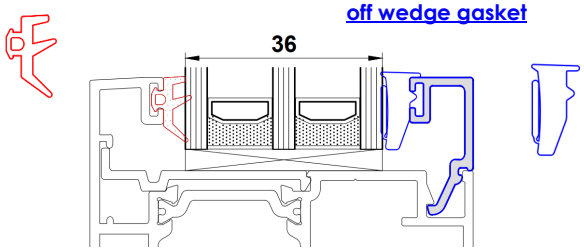
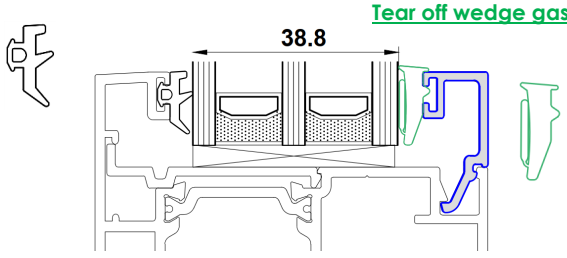
### ETC4179G bead Coextruded gasket

36mm Triple Glazed

ACET841 4mm E-gasket



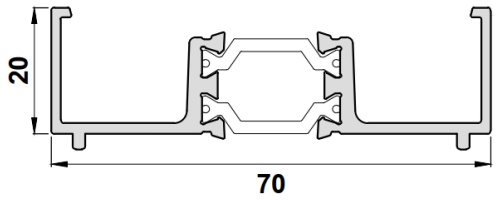

### ETC4179 Non coextruded gasket - E gasket & push in glazing wedge gasket

| 36mm Triple Glazed | 38.8mm Triple Glazed |
|---|---|
| ACET841 4mm E-gasket<br>ACET848 5mm-4mm tear off wedge gasket<br>  | ACET842 3mm E-gasket<br>ACW20038 4mm-3mm Tear off wedge gasket<br>  <br>For laminated 38.8mm unit |

## Ancillaries

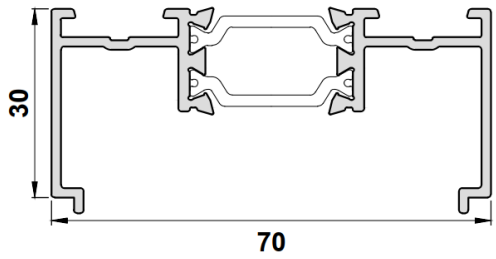
UN3020 - 20mm Frame extension

Ix value 14.8 Iy value 0.9



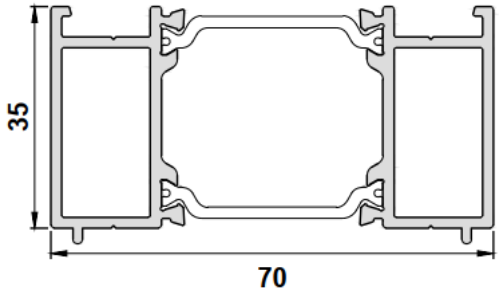

UN3370 - 30mm Frame extension

Ix value 18.4 Iy value 2.15

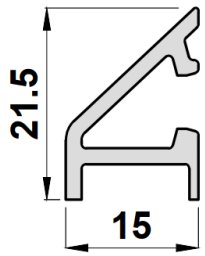



ETD456 35mm Frame extension

Ix value 5.74 Iy value 3.15



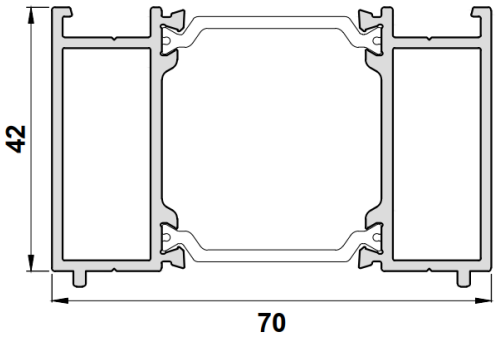

**VL72 Door drip**




**PVC END CAP**
ACVL059
**Black or White Only**

UN3042 - 42mm Frame extension

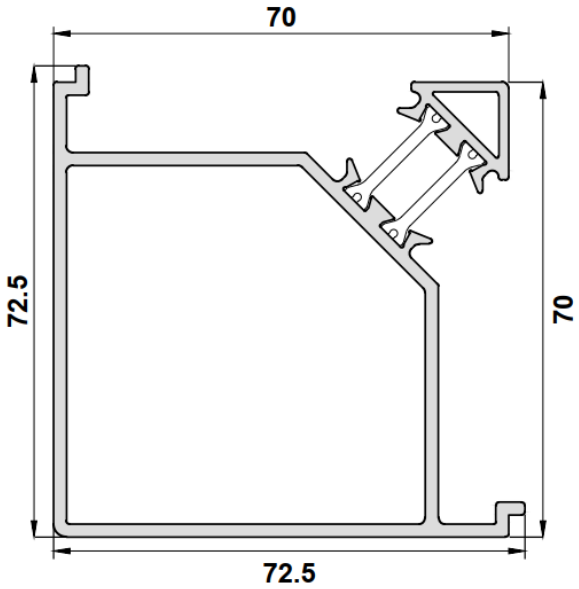
Ix value 31.2 Iy value 9.5




If frames require trickle vents then these will be routed into the UN3042 frame extension not the head of the frame nor the sash.

UN3010 Corner post

Ix value 41.4 Iy value 40.0




**Note:** All joints must be adequately sealed

**Note:** For coupler, corner post and variable bay pole suitable for bay pole jacks see section J page J04

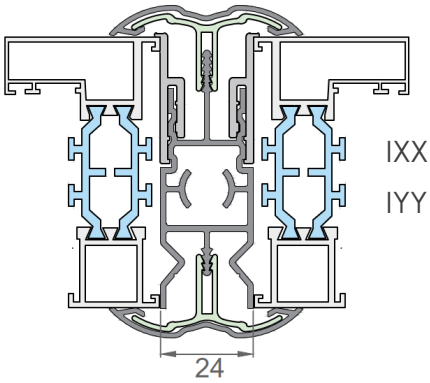
## Aluminium Couplers / Bay poles & Corner post (Load bearing options)

The sections following are only suitable for 70mm profile sections

Alitherm 400 windows
Alitherm 400 doors

Bifold Doors
Designer Doors

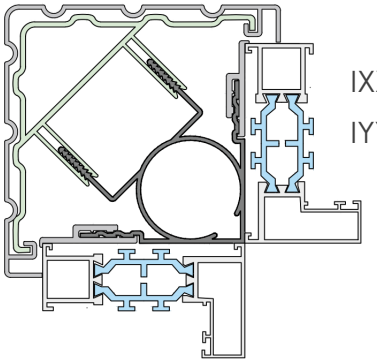
**WWL164:** 24mm Inline coupler




IXX (cm⁴) 9.2

IYY (cm⁴) 2.28

**WWL163:** Corner Post



IXX (cm⁴) 16.78

IYY (cm⁴) 12.41

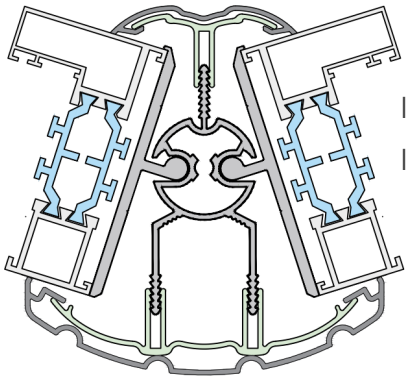
| 24mm deduction | |
|---|---|
| 1 x WWL164 reinforcing | |
| 2 x DBI pvc covers | 2 x WWL162 Ali cover |
| 2 x TB163 thermal break | Jack available Jack 19 |

| Height | Load Bearing |
|---|---|
| 900 - 1500 | 2 Tonnes |
| 1800 | 1.8 Tonnes |
| 2100 | 1.2 Tonnes |
| 2400 | 1 Tonne |

| Corner Post | |
|---|---|
| 1 x WWL163 reinforcing | |
| 1 x 90 pvc covers | 1 x WWL160 Ali cover |
| 2 x TB163 thermal break | Jack available Jack 3 |

| Height | Load Bearing |
|---|---|
| 900 - 2100 | Capped at 2 Tonnes |
| 2400 | 1.8 Tonnes |

**482055:** Variable Bay Pole (deductions see below)



IXX (cm⁴) 8.2

IYY (cm⁴) 2.9

| 1 x 482055 | |
|---|---|
| 1 x DBI internal pvc cover | 1 x DBO external pvc cover |
| 1 x WWL162 internal Ali cover | 1 x WWL161 external Ali cover |
| 2 x TB164 thermal break adaptors | Jack available Jack 19 |

| Height | Load Bearing |
|---|---|
| 900 - 1200 | 2 Tonnes |
| 1500 | 1.9 Tonnes |
| 1800 | 1.7 Tonnes |
| 2100 | 1.4 Tonnes |
| 2400 | 0.9 Tonnes |

| Angle | Deduction | Angle (reversed) | Deduction |
|---|---|---|---|
| 145 | 10 | 206 | 28 |
| 147 | 11 | 208 | 29 |
| 149 | 11 | 210 | 30 |
| 151 | 12 | 212 | 31 |
| 153 | 12 | 214 | 32 |
| 155 | 13 | 216 | 33 |

All jacks are tested to 9 tonnes and are CE approved No. 0086-CPR-614908

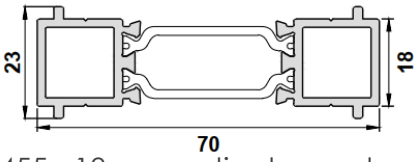
## Fixed pane Side screens & Fanlights ETD402

The following details are for fixed pane side lights and fanlights using the **ETD402** fixed pane outerframe. If openers are required then these will done in your requested casement/T&T window systems (Alitherm 400, Heritage 47 or Eco-Futural T&T).

**Note:** It is your responsibility to ensure that profiles/couplers meet the wind load requirements suitable for installation/site conditions. It may be that a stronger profile/coupler is required.

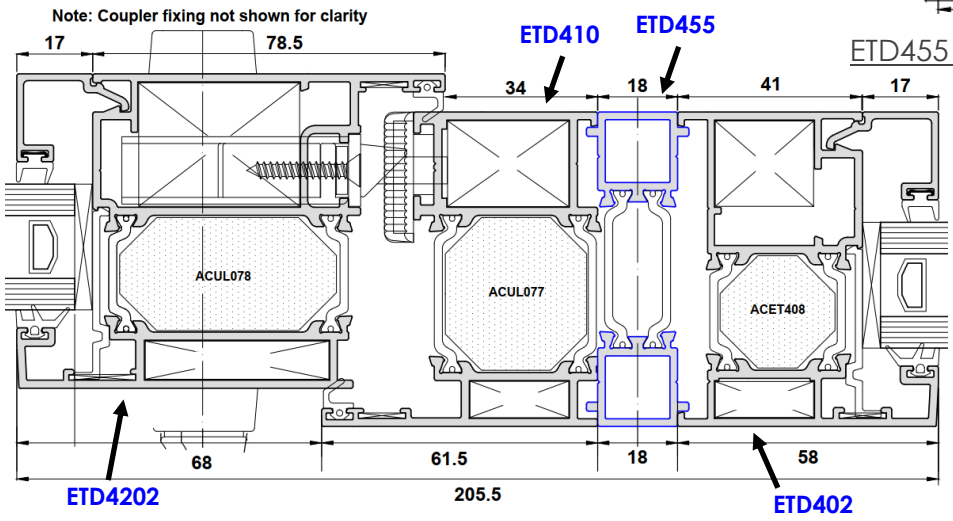
If In doubt seek advise from a structural engineer.

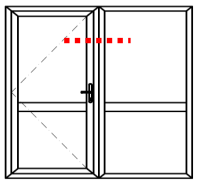
Standard vertical coupler is the **ETD455**, frame deduction 18mm.




ETD455 - 18mm vertical coupler

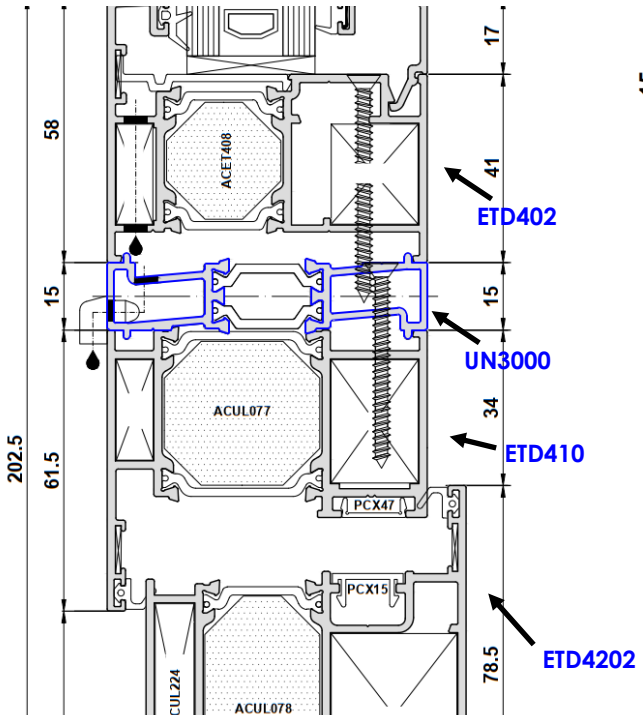
Ix value 19.16

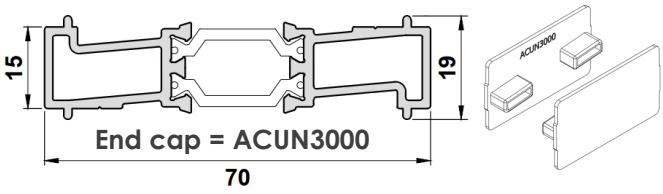


Detail showing open in door coupled to ETD402 fixed frame side light

Standard horizontal coupler is the **UN3000**, frame deduction 15mm.

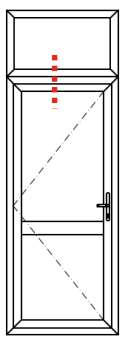



UN3000 - 15mm Flush horizontal coupler

Ix value 15.8 Iy value 0.79 (end caps are black only)

**Note: Ensure UN3000 is drained before installing**



Detail showing open in door coupled to ETD402 fixed frame fanlight

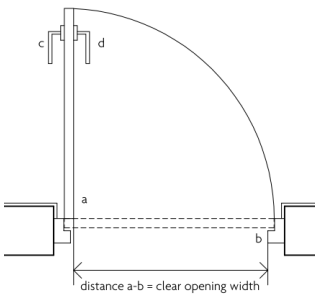
**Note: Ensure all coupled Joints are sealed**

## Document M — access to and use of buildings (Dwellings)

For a residential door to comply with Document M of the building regulations it needs to have a clear opening of **775mm** and should have an accessible threshold.

Below are the minimum frame/mullion widths to achieve the clear opening.

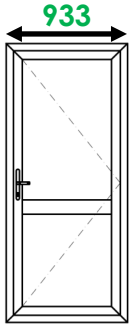
Note: Sizes are subject to door adjustment. Sizes do not include any frame extensions




Key:
a inside face of door (when open)
b inside edge of door frame or stop
c leading edge
d following edge

Notes:
1. Handles, other door furniture and weatherboards may be ignored when measuring clear opening width.

**Storm sash**
**933**



To work out frame width to suit a bespoke clear opening.

Clear opening size + Storm Sash 158mm e.g. you require a clear opening of 800mm on a **Storm sash** : 800 + 158 = 958mm door width.

## Document M — access to and use of buildings (Buildings other than dwellings)

For a door in a property other than a dwelling then the following should be observed.

The clear opening needs to be **775mm** for existing building and include an accessible threshold. (see table 2 & diagram 9) - Sizes below include for a Lever/Lever handle.

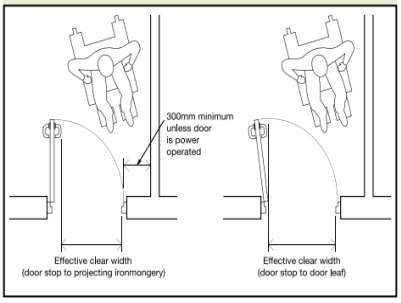
Note: Sizes are subject to door adjustment. Sizes do not include any frame extensions.

Table 2 **Minimum effective clear widths of doors**

| Direction and width of approach | New buildings (mm) | Existing buildings (mm) |
|---|---|---|
| Straight-on (without a turn or oblique approach) | 800 | 750 |
| At right angles to an access route at least 1500mm wide | 800 | 750 |
| At right angles to an access route at least 1200mm wide | 825 | 775 |
| External doors to buildings used by the general public | 1000 | 775 |

**Note:**
The effective clear width is the width of the opening measured at right angles to the wall in which the door is situated from the outside of the door stop on the door closing side to any obstruction on the hinge side, whether this be projecting door opening furniture, a weather board, the door or the door stop (see Diagram 9). For specific guidance on the effective clear widths of doors in sports accommodation, refer to "accessible sports facilities".

Diagram 9 **Effective clear width of doors**




To work out frame width to suit a bespoke clear opening.

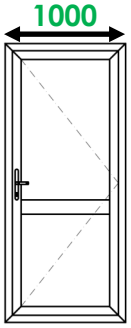
Clear opening size +

Storm Sash 225mm

e.g. you require a clear opening of 900mm on a **Storm sash** door 900 + 241 = 1141mm door width.

Note: Sizes include for a Lever/Lever handle **(67mm)**

**Storm sash**
**1000**



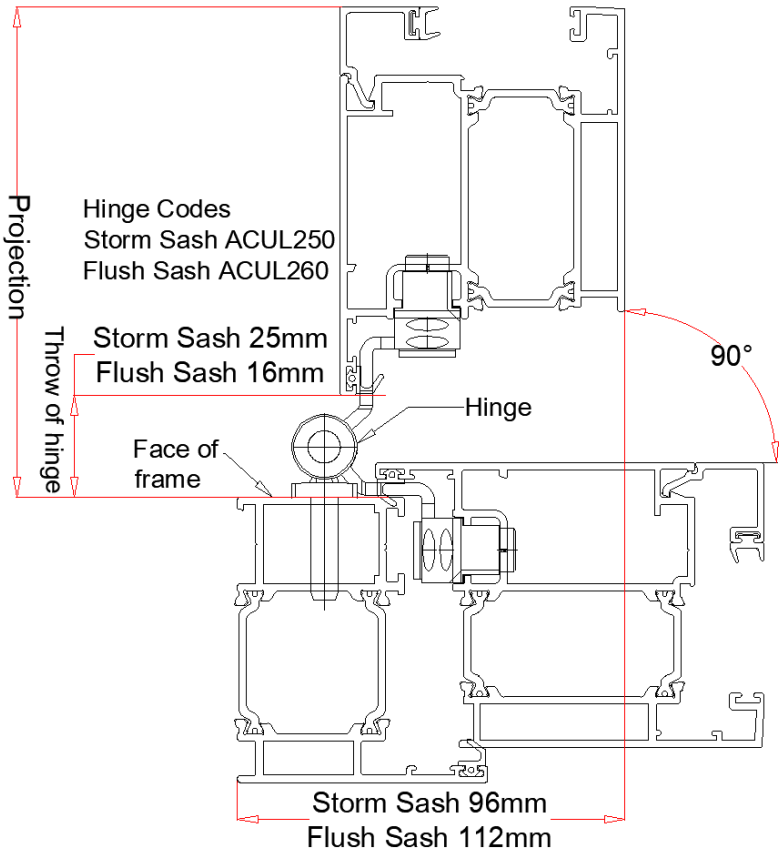
**For more detailed information on requirements on please refer to building regulations "approved Document M: access to and use of buildings Vol 1: dwellings" & " Vol 2: buildings other than dwellings"**

## Throw of hinge

How far in the door projects when open at 90 degrees is based on the sash width plus the throw of the hinge. Throw of the hinge is the distance from the face of the outerframe to the edge of the sash.

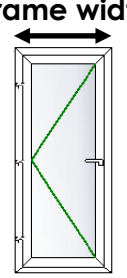
On French/Double doors projection is based on the secondary sash as this has the false mullion fitted which extends the width of the sash.

To calculate the projection use table below.




| Single doors |
|---|
| **Storm Sash** |
| frame width minus |
| **- 43mm** |

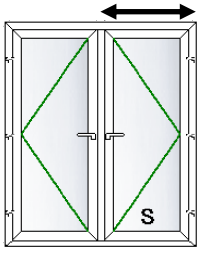
**Frame width**



**e.g Storm sash**
**1000mm - 43mm**
**= 957mm**

| French door (based on secondary sash) |
|---|
| **Storm Sash** |
| **Lever/Lever** |
| Mullion split plus |
| **+ 21mm** |
| **Slam lock** |
| Mullion split plus |
| **+ 25mm** |

**Mullion split**

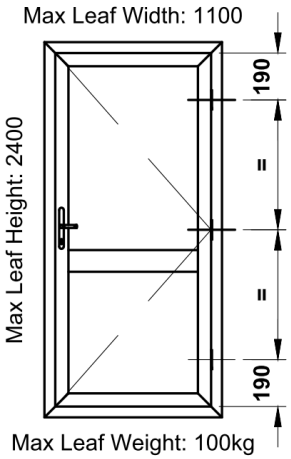



**e.g Storm sash**
**Slam lock**
**900mm + 25mm**
**= 925mm**

**Important :**

- Calculations above do not allow for hinge adjustment.
- Ensure you allow enough clearance from outside edge of sash to wall, recommend at **least 15mm**.
- Calculations are based on finish frame sizes, frame extensions are not included.

## Hinges




### Storm sash ACUL250

Door are supplied with 3 hinges as standard, positioned as shown.

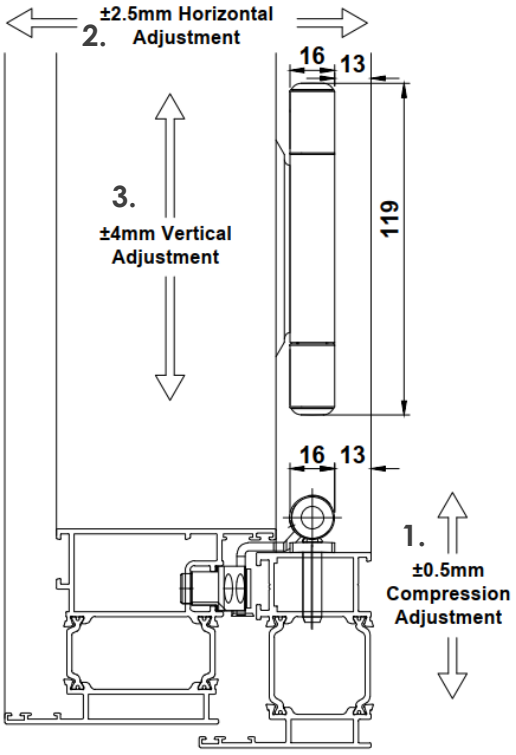
Both hinge types are fully adjustable in the vertical, horizontal & compression.

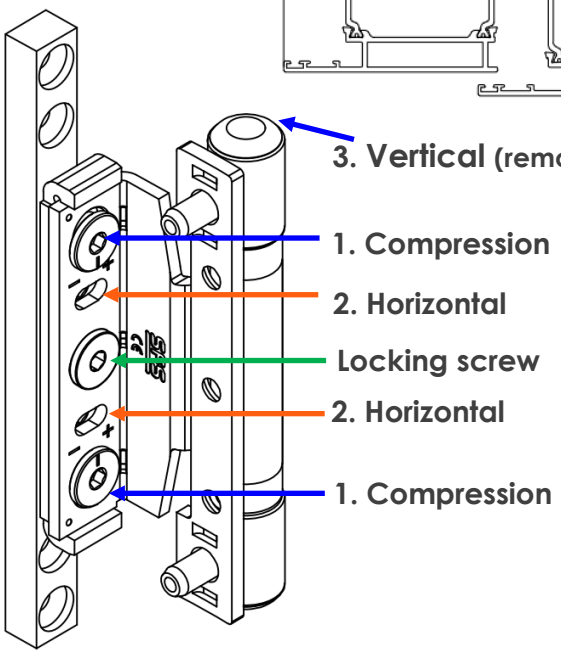
Available in White, Black, Grey and RAL

White doors will be supplied with a White hinge as standard

RAL/KL coloured door will be supplied with a black hinge as standard.

### ACUL250 Storm Sash



**3. Vertical (remove top cap, when finished put back top cap**

**1. Compression**

**2. Horizontal**

**Locking screw**

**2. Horizontal**

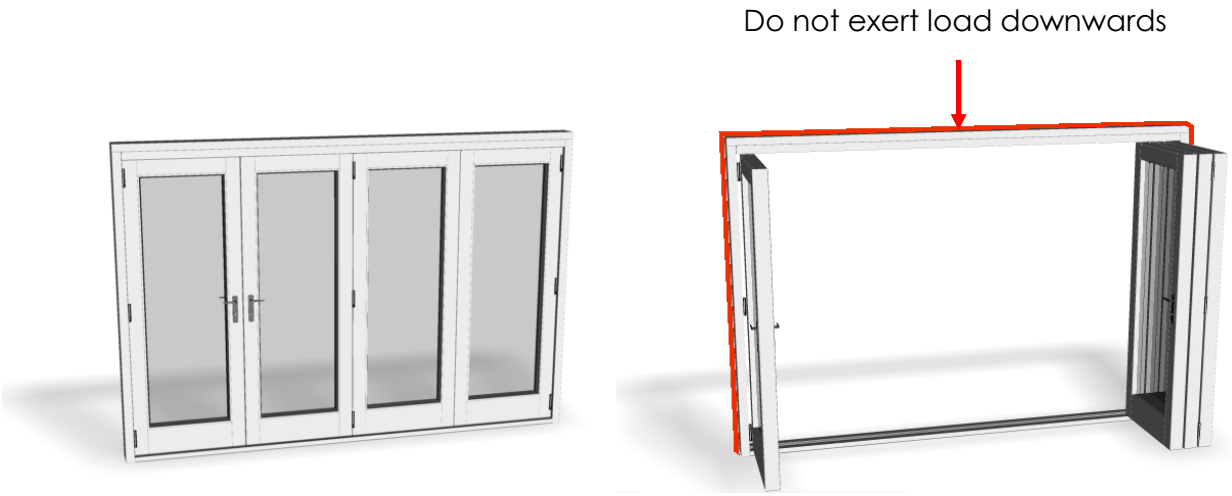
**1. Compression**

To adjust hinges use a 4mm allen key to First loosen the locking screw.

Make your compression / horizontal adjustments as necessary. Once satisfied tighten the locking screw.

Vertical adjustment remove the top cap and use 4mm allen key to adjust door. When satisfied re-fit the hinge top cap.

## Large, unsupported openings




**ADVISORY:** When coupling a full height fixed side screen to a door it is recommend that the side screen is done the door system as a frame with dummy sash. This way the profile sight lines will match.

It is important to understand that any frame with a large opening, such as wide French doors, bifold 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.

**Note:** For coupler, corner post and variable bay pole suitable for bay pole jacks see section J page J04

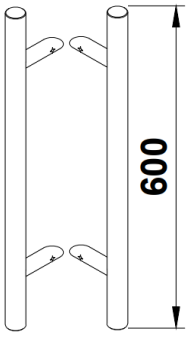
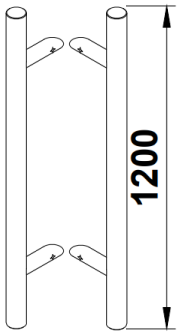
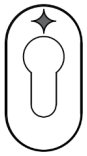
## Door handles

- **Lever / Lever (supplied as standard)**
- **Lever / Pad (inline with moveable pad)**
- **Lever / Pad fixed (inline with fixed pad adaptor)**

| Colour finishes available<br>Lever/Lever & Lever/Pad handles, Letter plates & Door knockers | | |
|---|---|---|
| White | Black | Chrome |
| Gold | Flint | Silver |
| Antique Black | Tungsten | Anthracite Grey |

If a handle is required to inside only then a handle blank will be supplied to the outside.

| Door handles for multipoint locking only | | |
|---|---|---|
|  |  |  |
| Lever/lever | Lever/Pad inline with movable pad | Door handle blank |

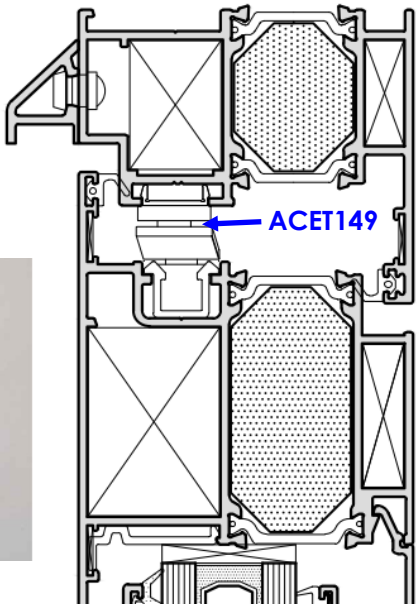
| Door handles for Slam shut locking only | | |
|---|---|---|
|  |  |  |
| Lever/Pad inline with fixed pad adaptor kit (HL0086A) | Stainless Steel bar handles | |
| | ACSM020SS pair 600 | ACSM021SS pair 1200 |
| | Double fixing kit<br>ACSM031 | |
| | ACSM015 Stainless Steel oval escutcheon internally & externally.<br>Kit includes: 1 x External cover plate, 1 x internal fixing plate & 4 x screws  | |

**Note : Lever/Lever & Lever Pad.**
**Fix door handles by hand, do not overtighten as doing so will cause the face plate to indent**

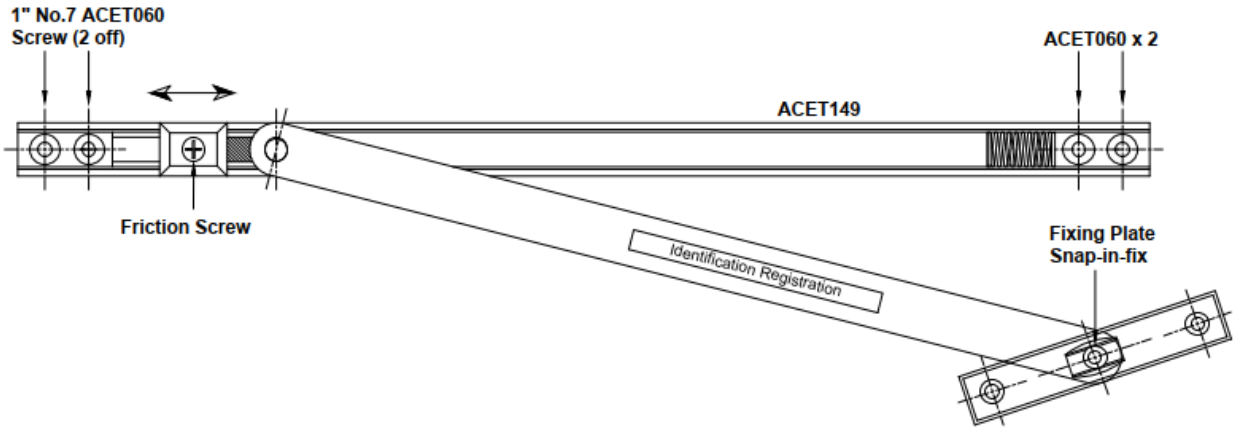
## Door Restrictor

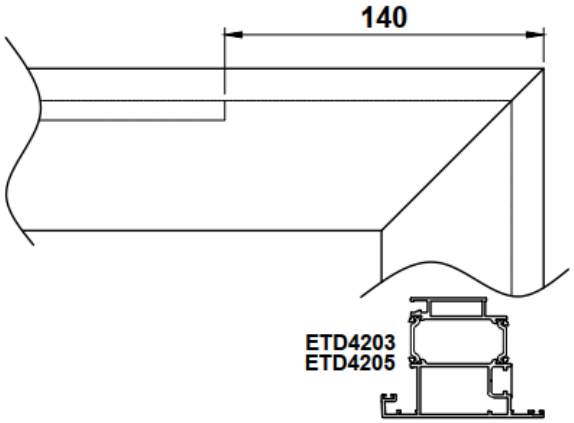
ACET149 Door restrictor suitable for storm & flush sashes.

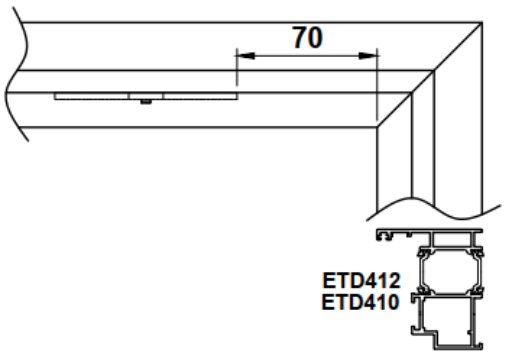
Can be used on both open in & open out doors, these only stop the going opening past 90°, they do not hold the door open







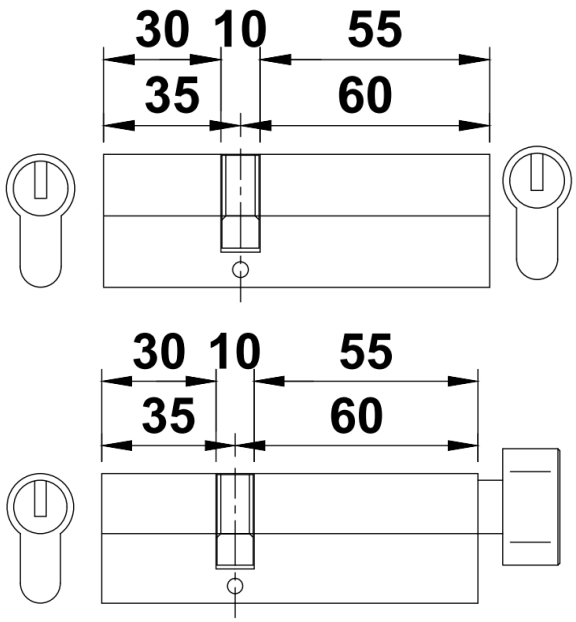



## Door Cylinders

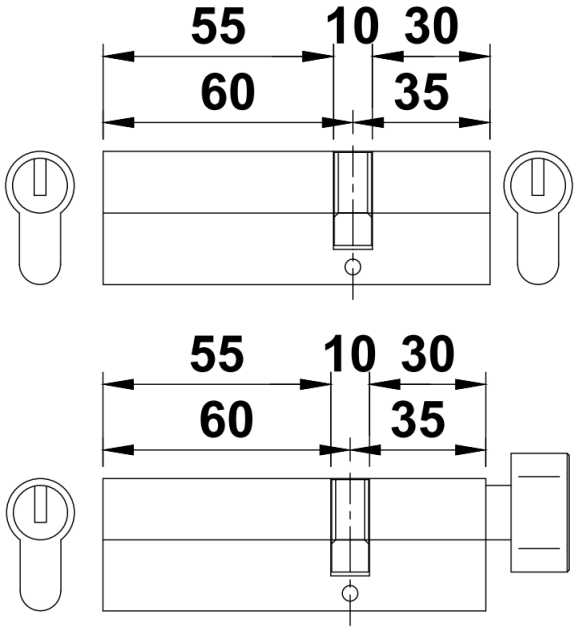
The door cylinders on Alitherm 400 doors are off set 35/60 or 60/35, dependent on opening in or out.

A key/key cylinder is reversable but if you need to order a replacement Thumbturn you need to select the correct one.

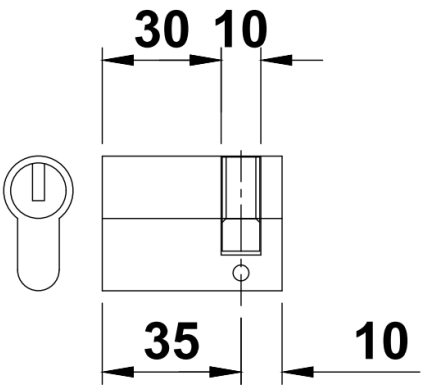
**Open OUT**

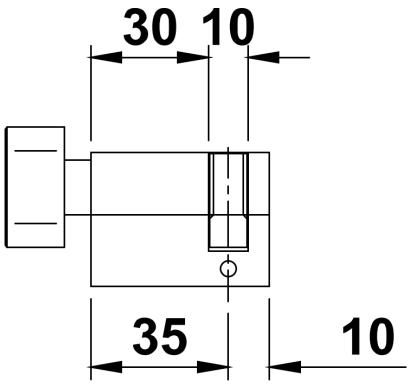



**Open IN**




Half cylinders are 35mm, open In & out.



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