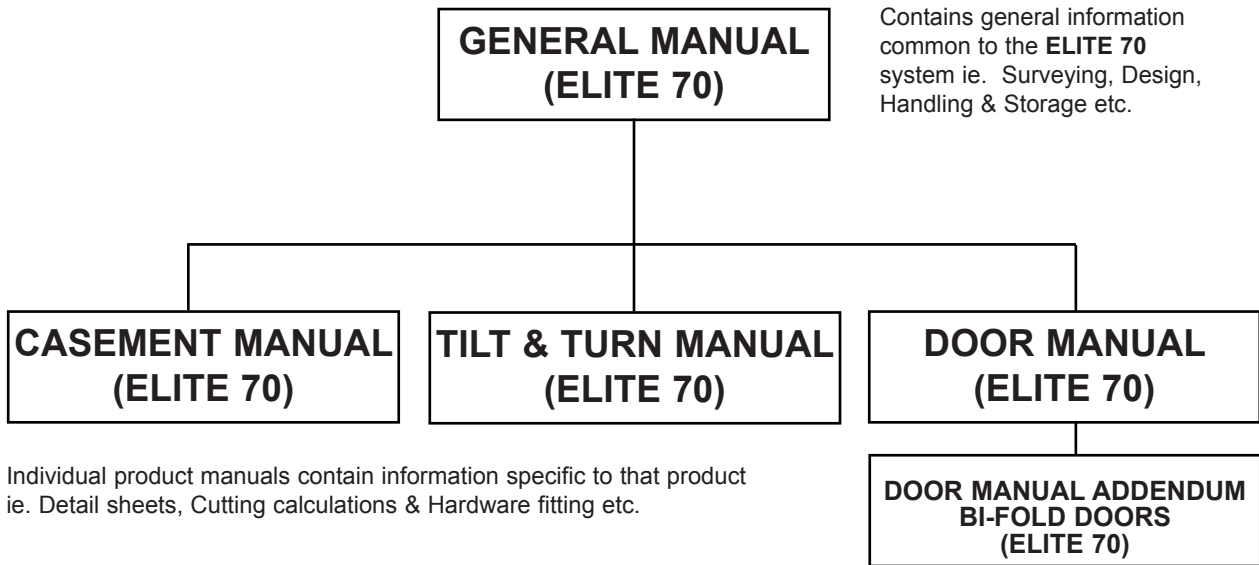


ELITE 70 

TILT & TURN MANUAL

**Issue F June 2009
Part No. 994733**

MANUAL STRUCTURE

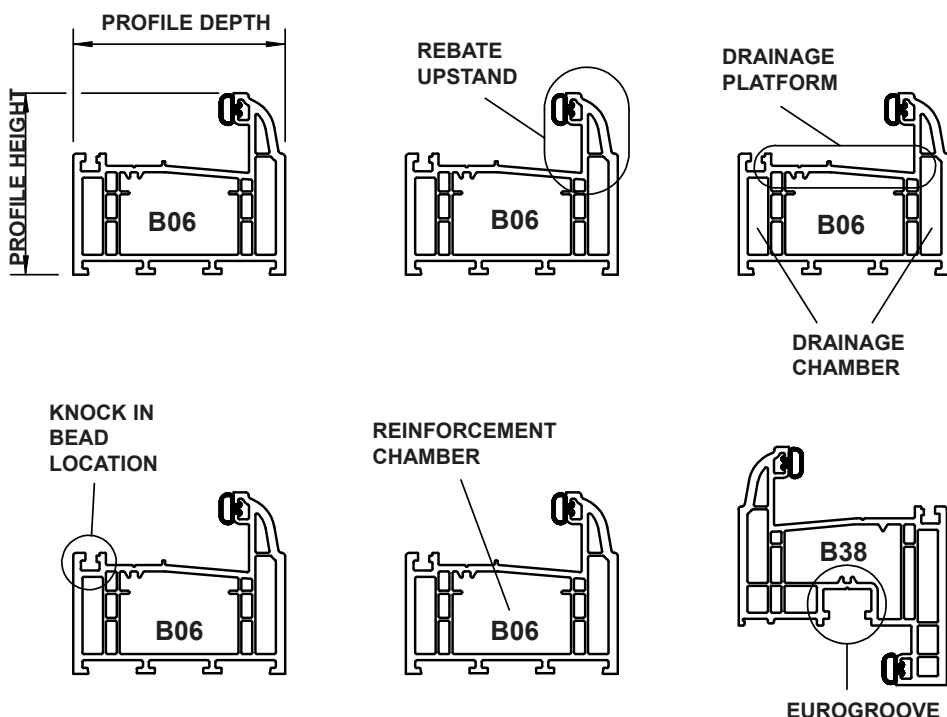


Issue F Amendments

Page no.	Amendment.
5.6	Reinforcement Rules for foiled profiles amended
6.1	Reinforcement Rules for foiled profiles amended
10.1	Address updated

TERMINOLOGY

The following terminology is used throughout this manual:



SECURITY GLAZING CLIP

Device used to secure glass into the frame.

SECURITY GLAZING TAPE

Adhesive tape used to bond the glass to the frame.

OPERATING HANDLE

Handle used to hold an opening vent closed by operating the gear.

TURN BEFORE TILT GEAR

Gearing which will allow the window to be in the turn mode with the handle horizontal or in the tilt mode with the handle vertical.

TILT BEFORE TURN GEAR

Gearing which will allow the window to be in the tilt mode with the handle horizontal or in the turn mode with the handle vertical.

ANTISLAM DEVICE

A device fitted to the gear which will help to prevent any slamming of the vent which may occur from wind action.

SWITCH BARRIER

A device fitted to the gear which prevents the simultaneous operation of the window in the tilt position and the turn position.

PART NUMBERS

All part numbers for ancillary components shown throughout this manual are for white items where relevant. Refer to the product guide for the woodgrain options.

ELITE 70 TILT & TURN MANUAL

INTRODUCTION

This manual contains information of a technical nature and consequently is only intended for use in the course of a business by persons who are skilled in the subject matter covered.

Although reasonable care has been taken in the preparation of this manual, Spectus Ltd. does not accept any liability for damage resulting (whether directly or indirectly) from the use of the information contained in this manual.

Accordingly this manual is supplied on the basis that the user accepts all risks associated with the use of the information contained within it.

		Page No.s
Section 1	Security	1.1
Section 2	Product Guide	2.1 - 2.6
Section 3	Size Limitations	3.1
Section 4	Detail Sheets	4.1 - 4.5
Section 5	Cutting Calculations	5.1 - 5.7
Section 6	Reinforcement	6.1 - 6.10
Section 7	Drainage	7.1 - 7.5
Section 8	Hardware Preparation	8.1
Section 9	Mechanical Joints	9.1 - 9.3
Section 10	Hardware Selection	10.1
Section 11	Weatherseals	11.1
Section 12	Hardware Fitting	12.1 - 12.10
Section 13	Glazing	13.1 - 13.3
Section 14	BS7950	14.1 - 14.4
Section 15	Appendicies	15.1

SECURITY

VENT

Glass packers must be positioned at all locking points to prevent the sash from being levered away from the keeps.

GEARING

Mushroom headed gearing offer more security than the roller type.

BS7950 ACCREDITATION

BS7950 specification can be achieved by following the fabrication instructions in section 14.

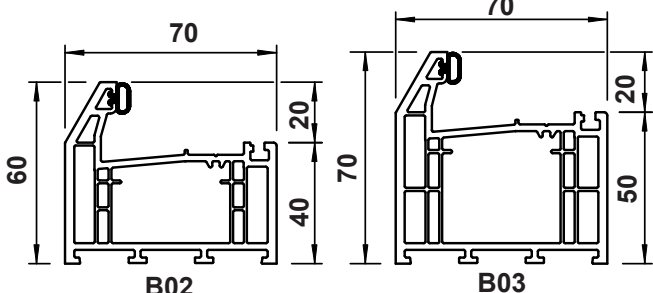
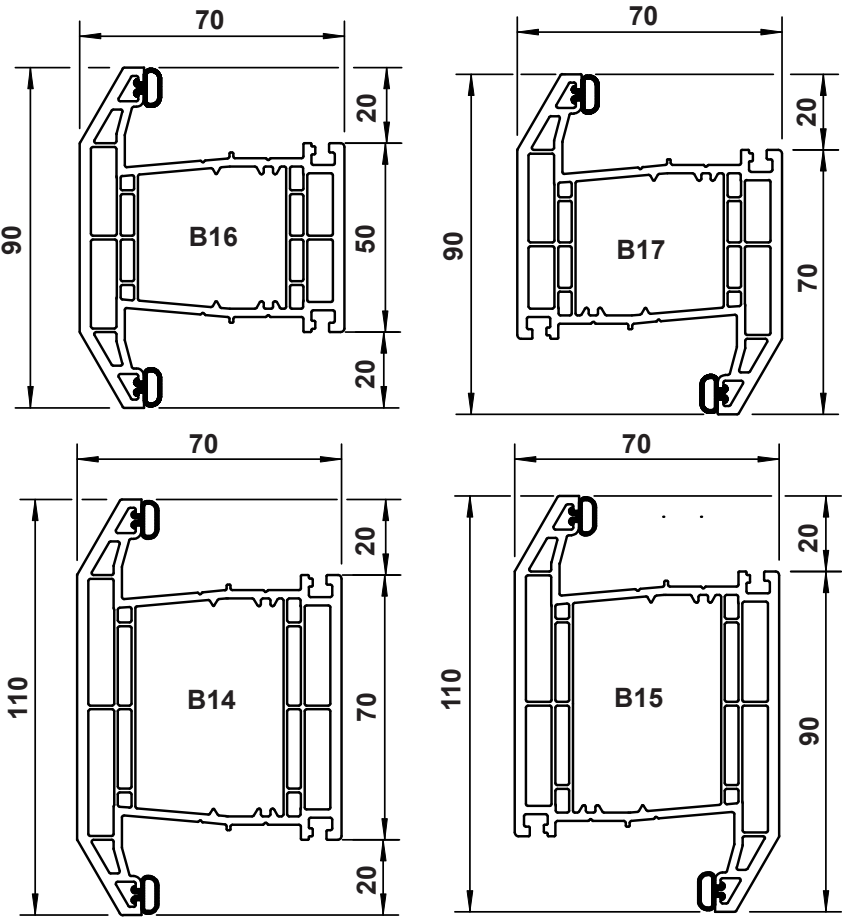
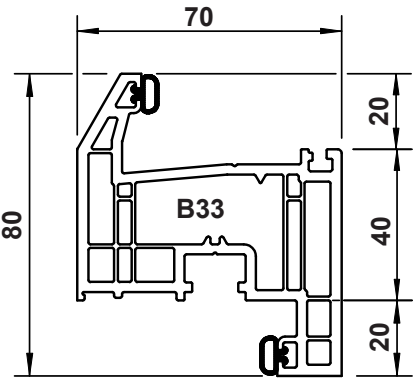
PRODUCT GUIDE

MAIN PROFILES OVOLO

<p>OUTER FRAME</p>	<p>B06 B07</p>
<p>TRANSOM</p>	<p>B22 B23</p> <p>B24 B25</p>
<p>SASH</p>	<p>B38</p>













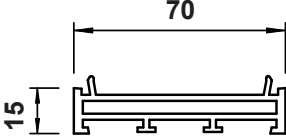
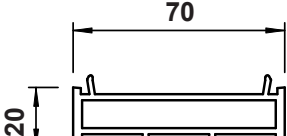
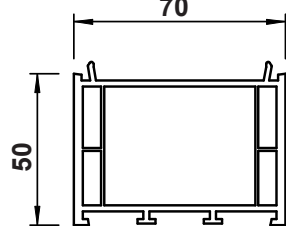
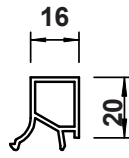
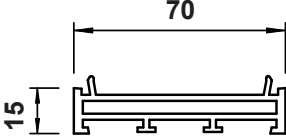
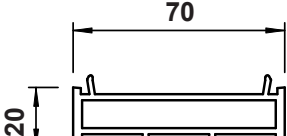
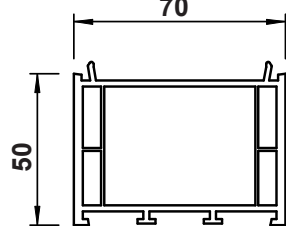
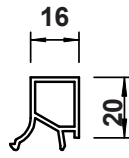
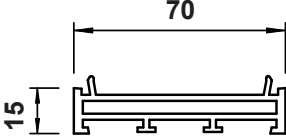
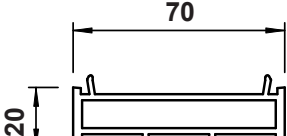
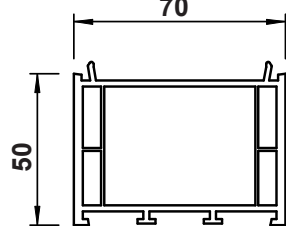
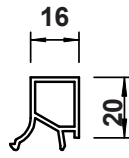



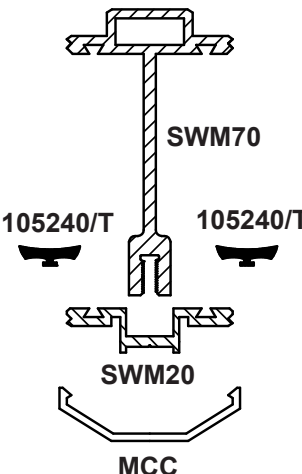

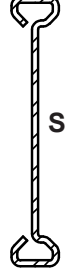






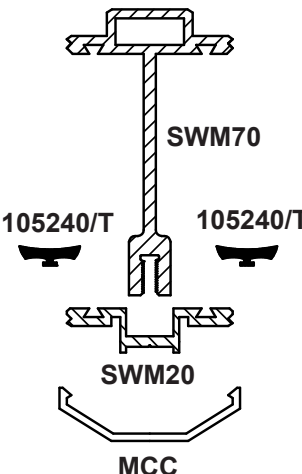

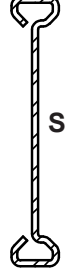






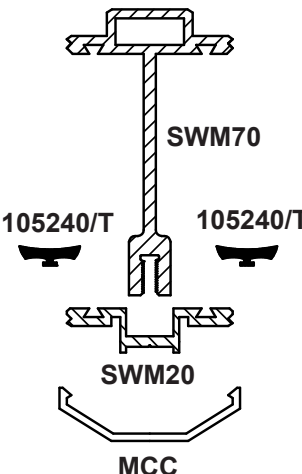

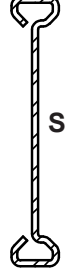



PRODUCT GUIDE

MAIN PROFILES BEVELLED

OUTER FRAME	 <p>B02</p> <p>B03</p>
TRANSOM	 <p>B16</p> <p>B17</p> <p>B14</p> <p>B15</p>
SASH	 <p>B33</p>

PRODUCT GUIDE

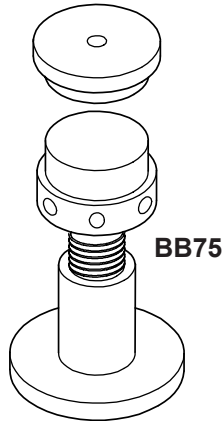
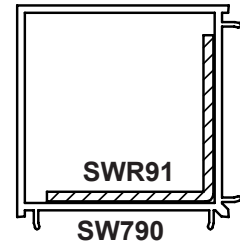
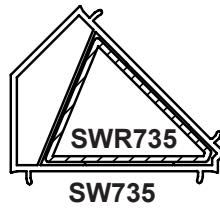
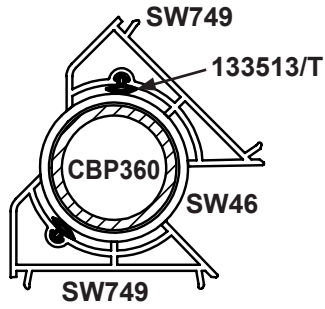
GLAZING BEADS, PACKERS AND COUPLING MULLIONS

<p>GLAZING BEADS</p>	<table border="0"> <tr> <td style="text-align: center;"> <p>28mm BEVELLED BEAD</p>  <p>B50</p> </td> <td style="text-align: center;"> <p>28mm OVOLO BEAD</p>  <p>B60</p> </td> <td style="text-align: center;"> <p>28mm STEPPED OVOLO BEAD</p>  <p>B62</p> </td> <td style="text-align: center;"> <p>24mm OVOLO BEAD</p>  <p>B61</p> </td> </tr> </table>	<p>28mm BEVELLED BEAD</p>  <p>B50</p>	<p>28mm OVOLO BEAD</p>  <p>B60</p>	<p>28mm STEPPED OVOLO BEAD</p>  <p>B62</p>	<p>24mm OVOLO BEAD</p>  <p>B61</p>								
<p>28mm BEVELLED BEAD</p>  <p>B50</p>	<p>28mm OVOLO BEAD</p>  <p>B60</p>	<p>28mm STEPPED OVOLO BEAD</p>  <p>B62</p>	<p>24mm OVOLO BEAD</p>  <p>B61</p>										
<p>PACKERS</p>	<table border="0"> <tr> <td style="text-align: center;">  <p>SW741</p> </td> <td style="text-align: center;">  <p>SW742</p> </td> </tr> <tr> <td style="text-align: center;">  <p>SW743</p> </td> <td style="text-align: center;">  <p>SW719</p> </td> </tr> </table>	 <p>SW741</p>	 <p>SW742</p>	 <p>SW743</p>	 <p>SW719</p>								
 <p>SW741</p>	 <p>SW742</p>												
 <p>SW743</p>	 <p>SW719</p>												
<p>COUPLING MULLIONS</p>	<table border="0"> <tr> <td style="text-align: center;">  <p>SW600</p> </td> <td style="text-align: center;">  <p>SW58</p> </td> <td style="text-align: center;">  <p>SW58</p> </td> <td></td> </tr> <tr> <td style="text-align: center;">  <p>SWM70</p> <p>105240/T</p> <p>105240/T</p> <p>SWM20</p> <p>MCC</p> </td> <td style="text-align: center;">  <p>SWR748</p> </td> <td style="text-align: center;">  <p>SWR748S</p> </td> <td style="text-align: center;">  <p>SW754</p> </td> </tr> <tr> <td></td> <td style="text-align: center;">  <p>SW55</p> </td> <td style="text-align: center;">  <p>SW55</p> </td> <td></td> </tr> </table>	 <p>SW600</p>	 <p>SW58</p>	 <p>SW58</p>		 <p>SWM70</p> <p>105240/T</p> <p>105240/T</p> <p>SWM20</p> <p>MCC</p>	 <p>SWR748</p>	 <p>SWR748S</p>	 <p>SW754</p>		 <p>SW55</p>	 <p>SW55</p>	
 <p>SW600</p>	 <p>SW58</p>	 <p>SW58</p>											
 <p>SWM70</p> <p>105240/T</p> <p>105240/T</p> <p>SWM20</p> <p>MCC</p>	 <p>SWR748</p>	 <p>SWR748S</p>	 <p>SW754</p>										
	 <p>SW55</p>	 <p>SW55</p>											

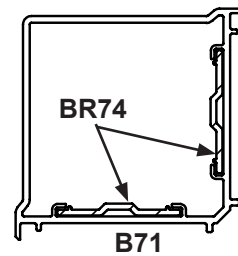
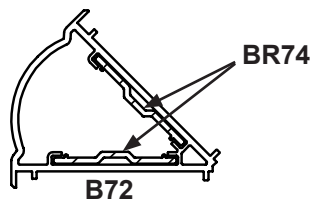
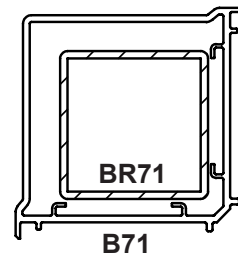
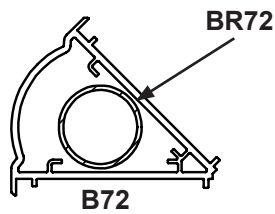
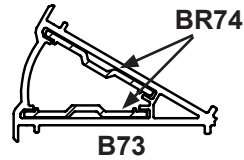
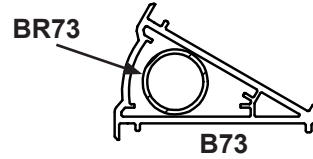
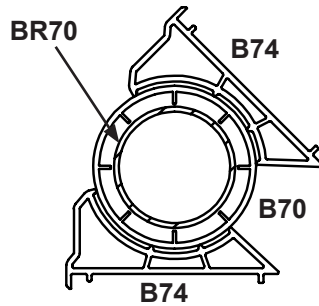
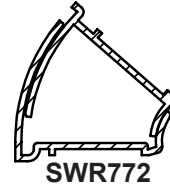
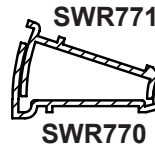
PRODUCT GUIDE

BAYS

BAY
COUPLINGS



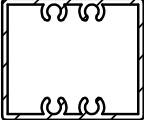
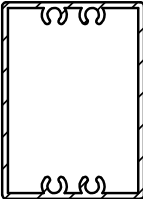

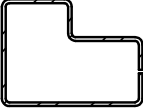
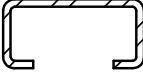
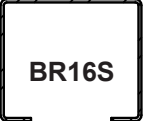

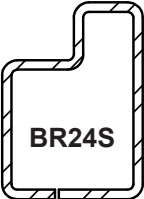
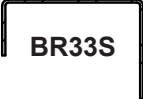


SWR773



PRODUCT GUIDE

REINFORCEMENT

ALUMINIUM REINFORCEMENT	 <p>BR06</p>  <p>BR07</p>  <p>BR16</p>  <p>BR24</p>
STEEL REINFORCEMENT	 <p>BR06S</p>  <p>BR07S</p>  <p>BR22S</p>  <p>BR16S</p>  <p>BR17S</p>  <p>BR24S</p>  <p>BR33S</p>

PRODUCT GUIDE

CILLS

<p>CILLS</p>	<p>The image displays eight technical drawings of different cill profiles, labeled C085 through C225. Each drawing shows a cross-section of the profile with dimensions for height and width. The height for all profiles is 30 units. The widths are: C085 (85), C086 (85), C110 (110), C150 (150), C151 (150), C180 (180), C181 (180), and C225 (225). The profiles vary in their internal structure and the shape of their top and bottom edges.</p>
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SIZE LIMITATIONS

MAXIMUM VENT SIZES

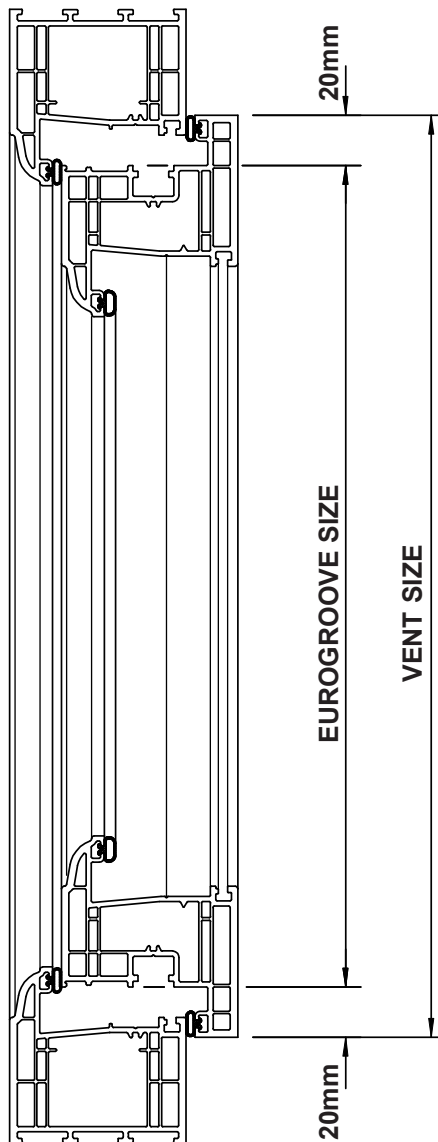
Maximum vent width = 1500mm
Maximum vent length = 1500mm

Maximum Eurogroove width = 1460mm
Maximum Eurogroove length = 1460mm

Note: The vent width must not exceed 1.5 times the height

TRANSOM AND MULLION LENGTH

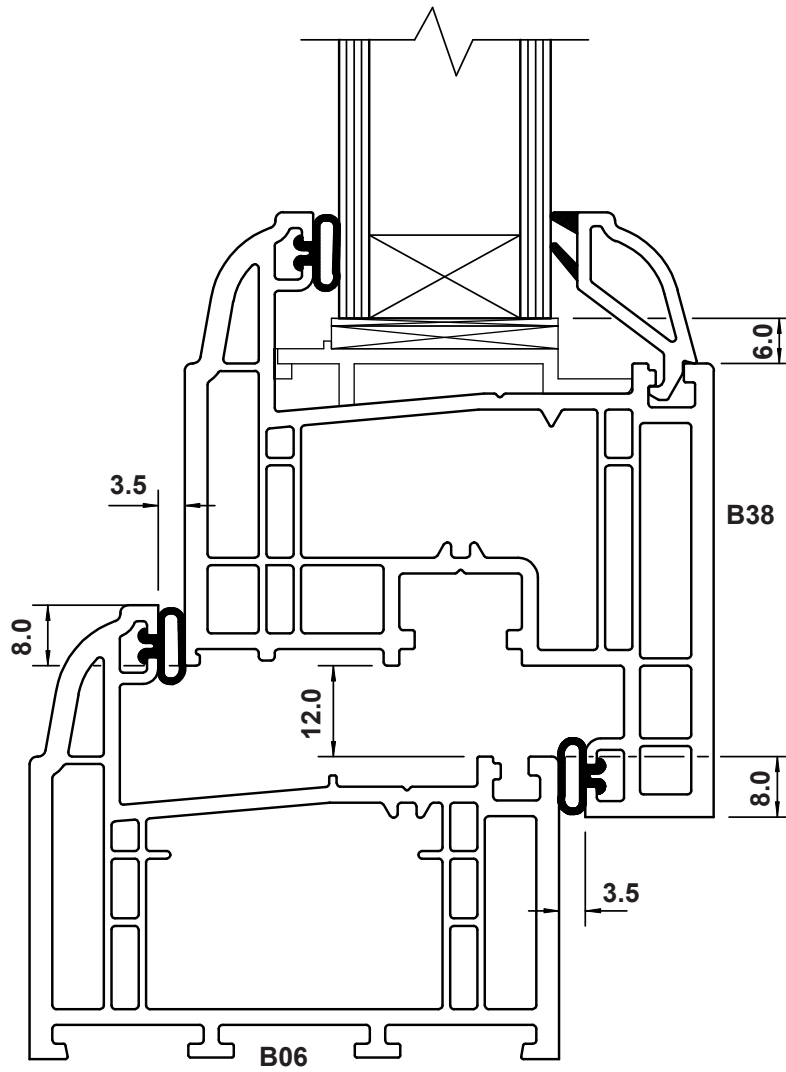
To determine the required transom and mullion to suit the windload, refer to the design section of the ELITE 70 General manual.



DETAIL SHEETS

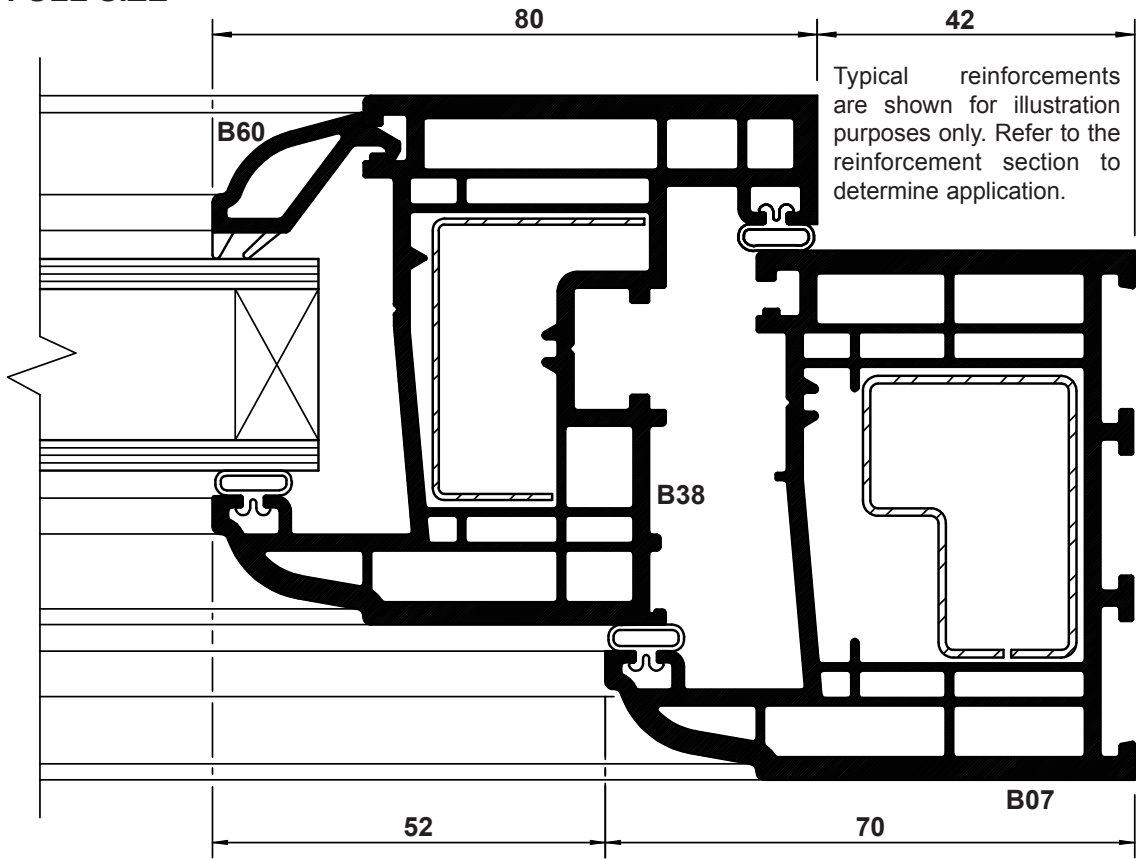
DESIGN CRITERIA

The details on the following pages are based around the overlaps and clearances shown below.

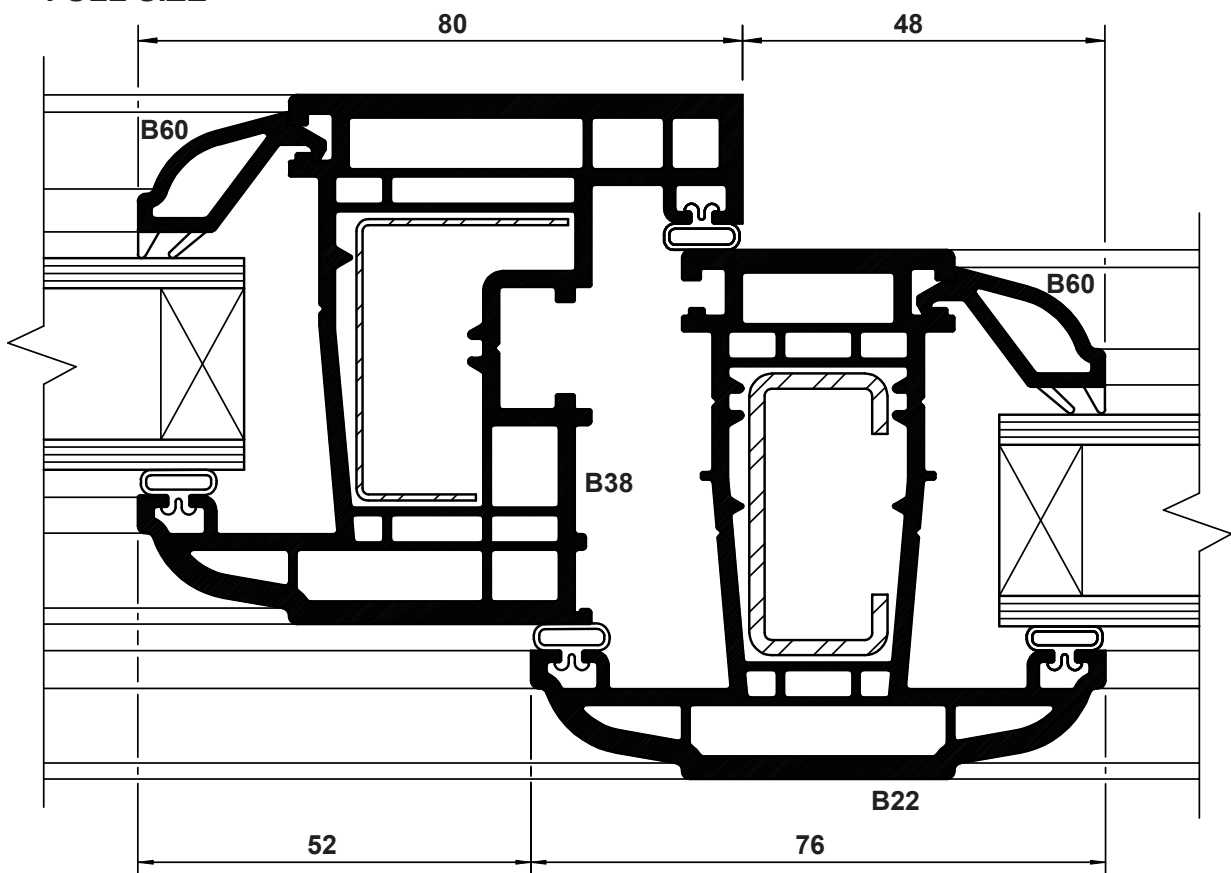


DETAIL SHEETS

FULL SIZE

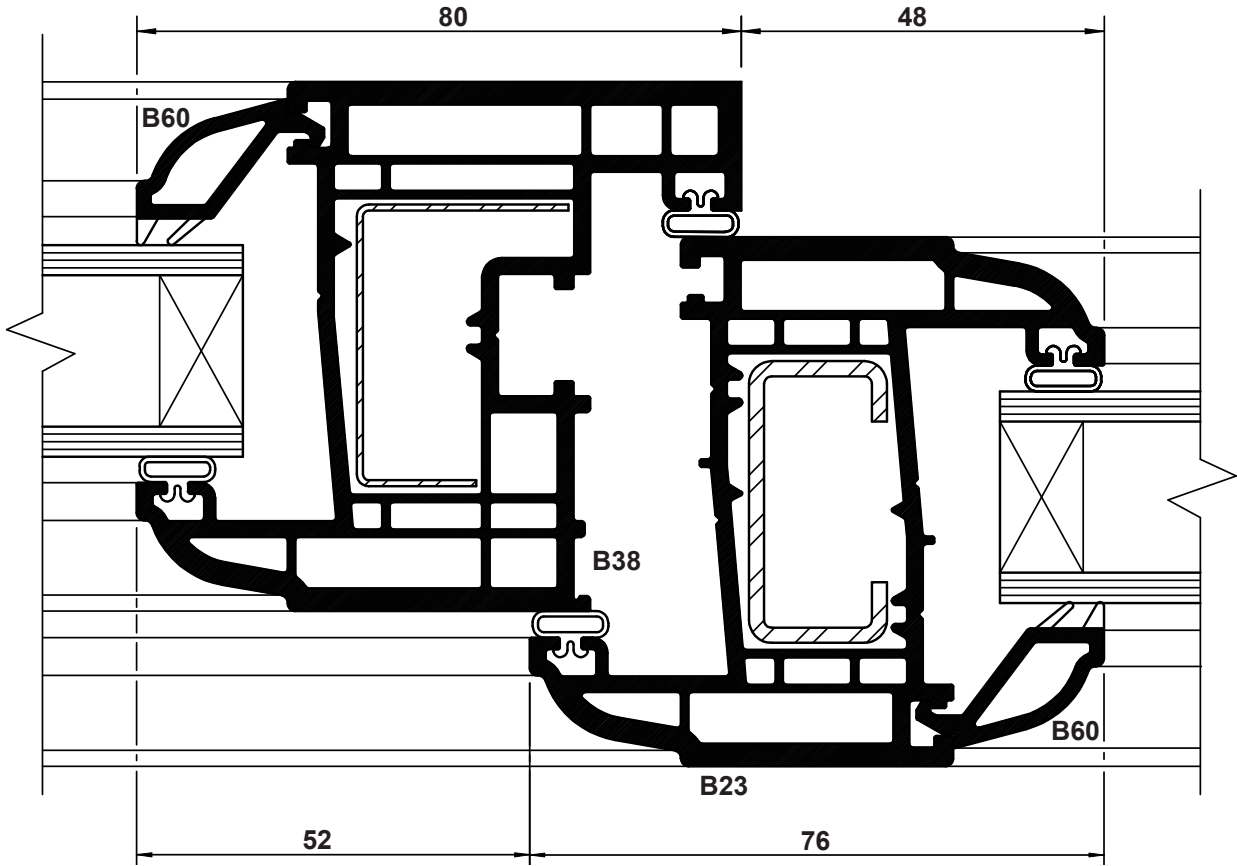


FULL SIZE

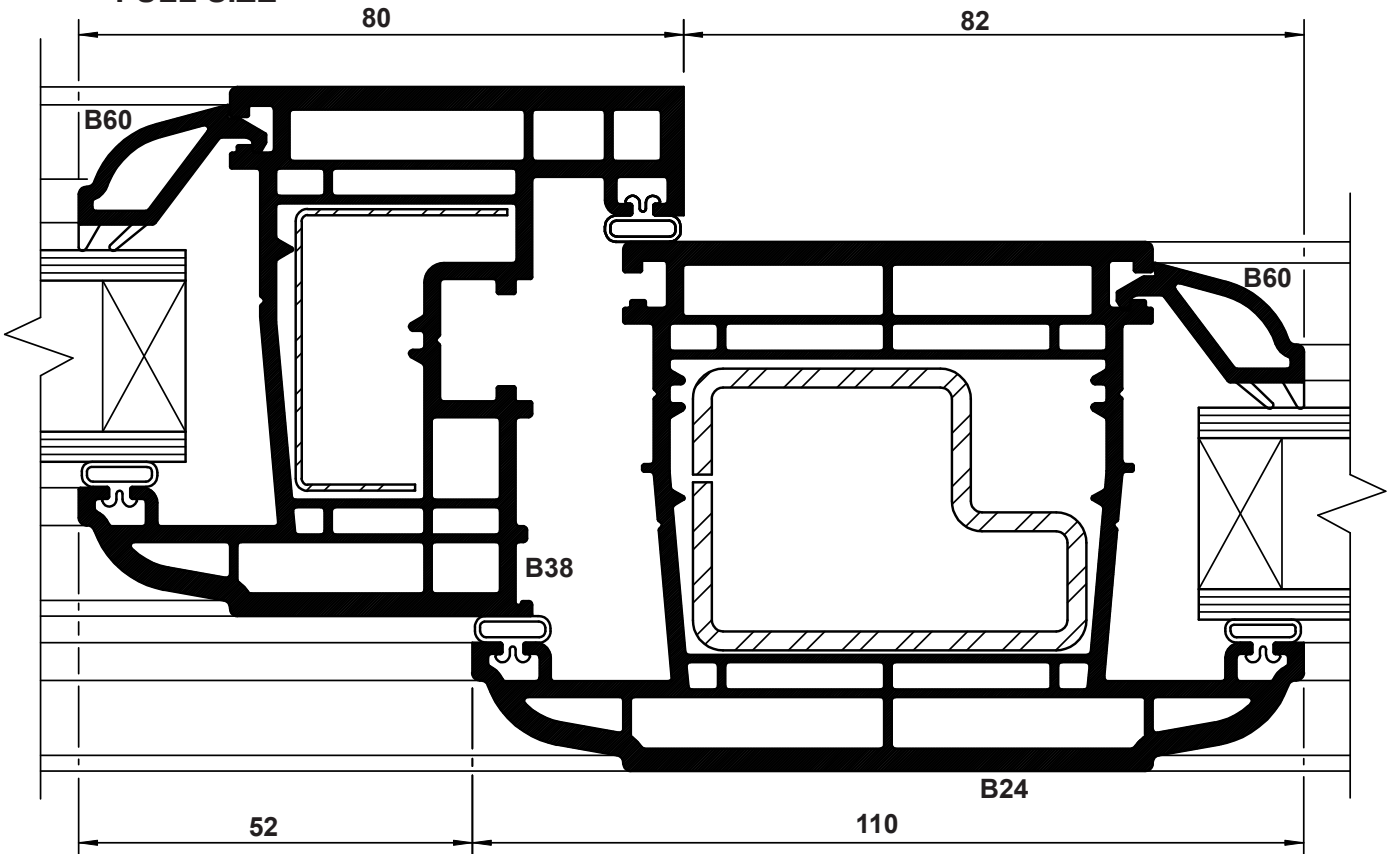


DETAIL SHEETS

FULL SIZE

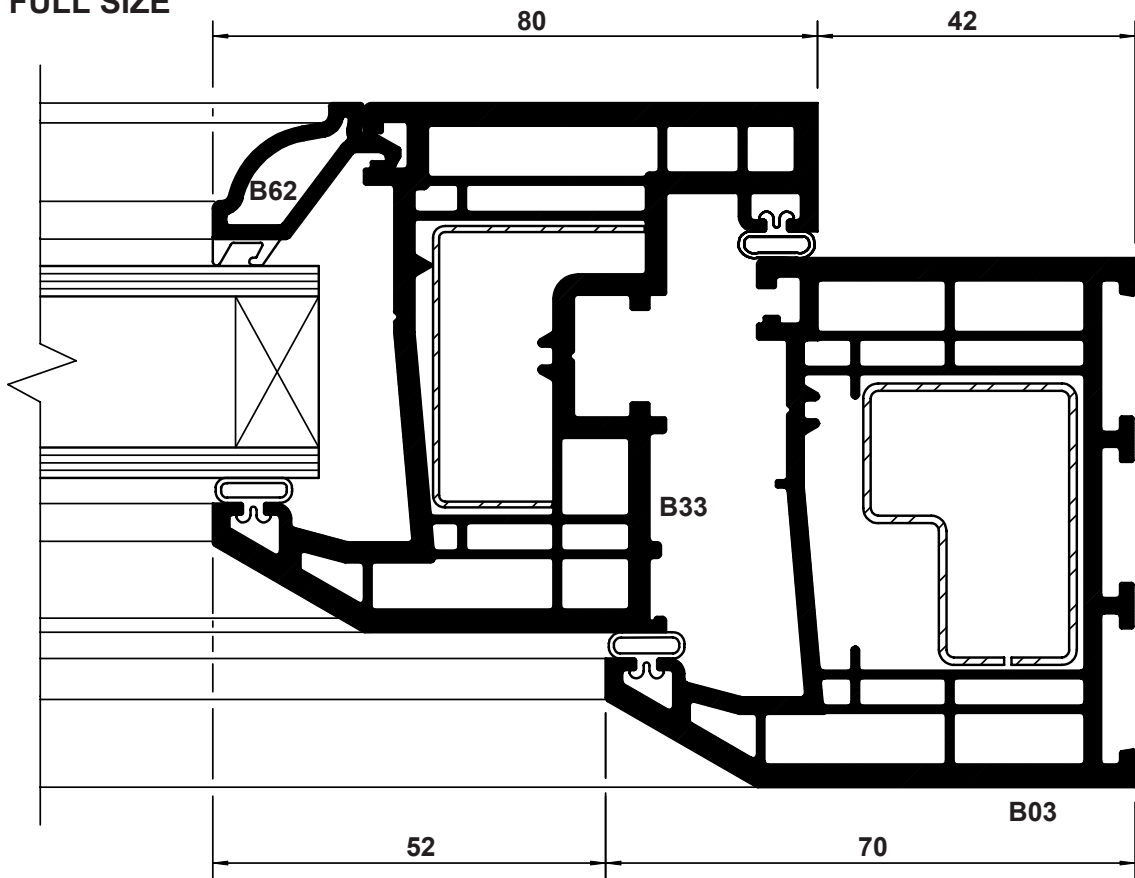


FULL SIZE

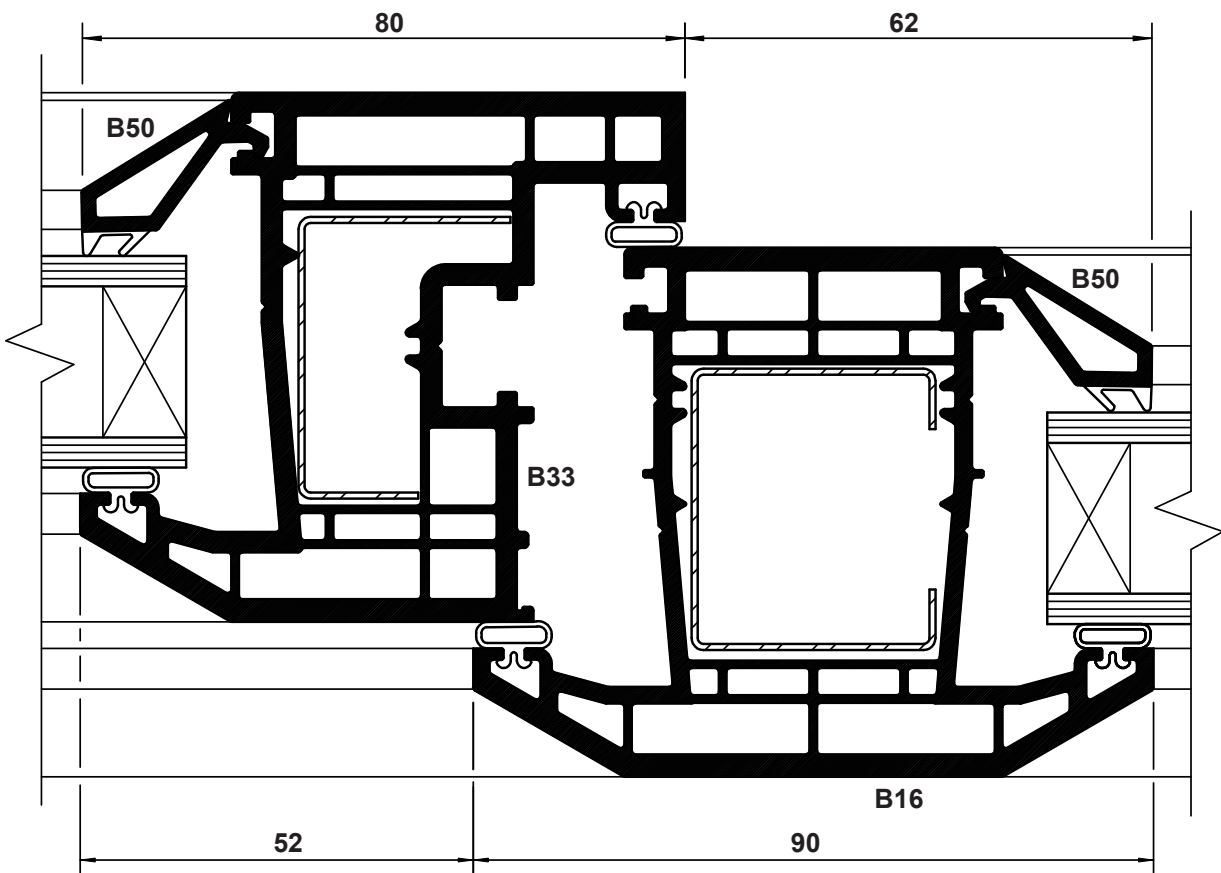


DETAIL SHEETS

FULL SIZE

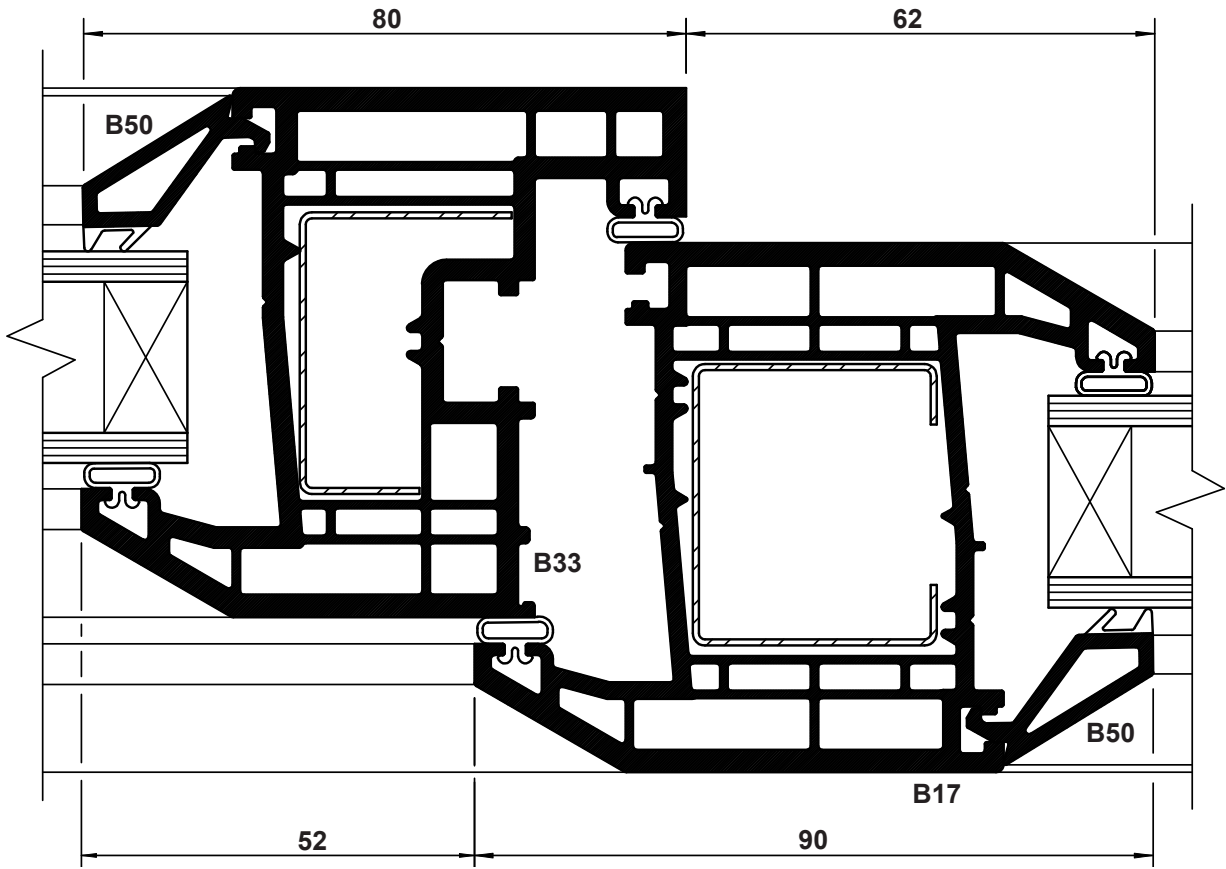


FULL SIZE

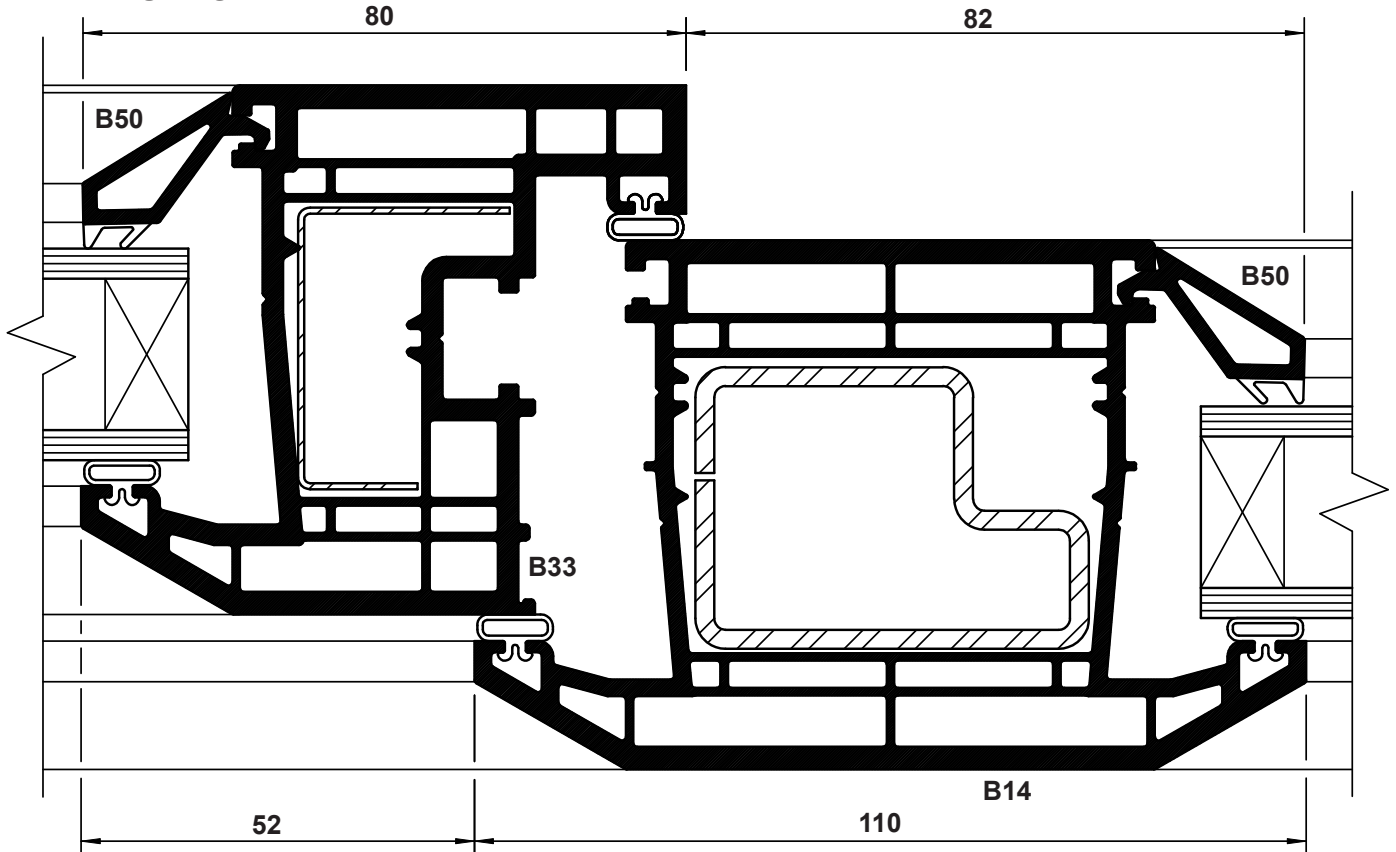


DETAIL SHEETS

FULL SIZE



FULL SIZE



CUTTING CALCULATIONS

PROFILES

The tables and calculated examples on pages 5.3, 5.4 and 5.5 cover windows with the following characteristics :

- B02 or B06 - Intermediate outer frame.
- B03 or B07 - Large outer frame.
- B16 - Large 'T' transom/mullion.
- B17 - Large 'Z' transom/mullion.
- B22 - Intermediate 'T' transom/mullion.
- B23 - Intermediate 'Z' transom/mullion.
- B14 or B24 - 'T' Midrail.
- B15 or B25 - 'Z' Midrail.
- B33 or B38 - Tilt & Turn sash.
- Glass clearance 6mm. (see fig. 5.1)
- Vent overlap 8mm (see fig. 5.1)

CRITERIA

Basic dimensions for manufacturing calculations are :

- Overall outer frame size.
- Top left corner of outer frame to the centre line of the first transom.
- Centre to centre distances of transoms where more than one is required.
- Top left corner of outer frame to the centre line of the first mullion.
- Centre to centre distances of mullions where more than one is required.

CILLS AND PACKERS

Survey dimensions include cills and stacking packers. Allow for these when deriving basic dimensions for manufacturing (see figs. 5.2 & 5.3)

WELD BURN-OFF

All PVC-U cutting dimensions for welding construction include a burn-off allowance of 2.5mm per end, per weld i.e. 5mm per bar.

MECHANICAL JOINTS

Cutting dimensions for mechanical joints are to suit Spectus recommended cutters for end milling.

DEDUCTIONS

The tables on page 5.3 and 5.4 show the amounts to be added to or subtracted from the basic dimensions. This will give the correct bar lengths for fabrication and the correct glass sizes allowing clearance for spacers and packing blocks.

TRANSOMS / MULLIONS

Sizes given for welded transom and mullion bars are for mitred bars which are then re-cut as a reverse mitre to leave a 90 degree point.

Therefore the first cut is longer than the finished length (see fig. 5.4).

REINFORCEMENT

Reinforcement requirements are listed on page 6.1. Calculations for cutting sizes are shown in the General manual.

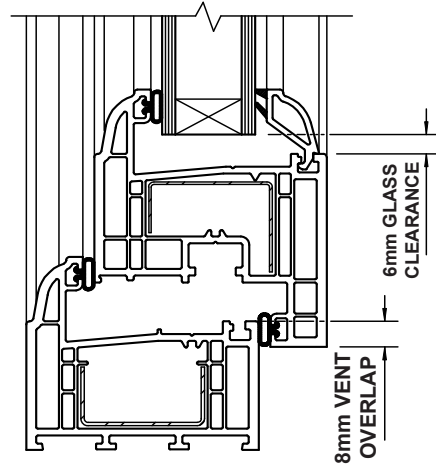


Fig. 5.1

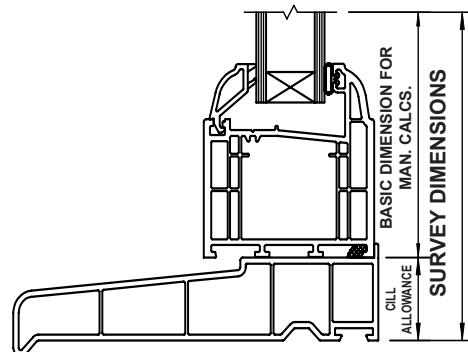


Fig. 5.2

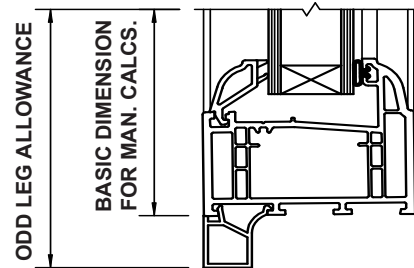


Fig. 5.3

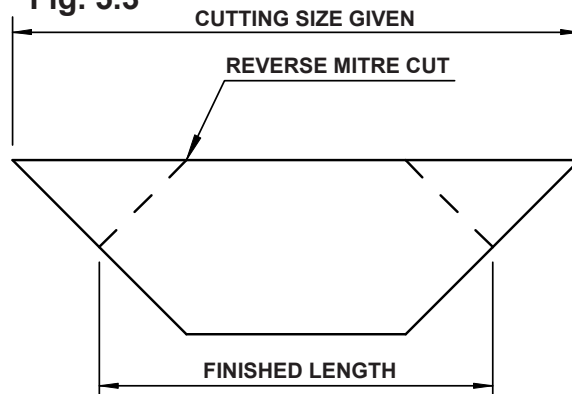


Fig. 5.4

CUTTING CALCULATIONS

DATUM

Fig. 5.5 details how the tables on pages 5.3 - 5.5 relate to the profiles.

GEORGIAN AND LEADED GLASS

The examples on page 5.7 show the glass spacings required for georgian and leaded glass.

EXAMPLES

The example on page 5.6 shows the cutting sizes for a typical stand alone and multi light internally glazed window.

DATUM REFERENCE POINTS.

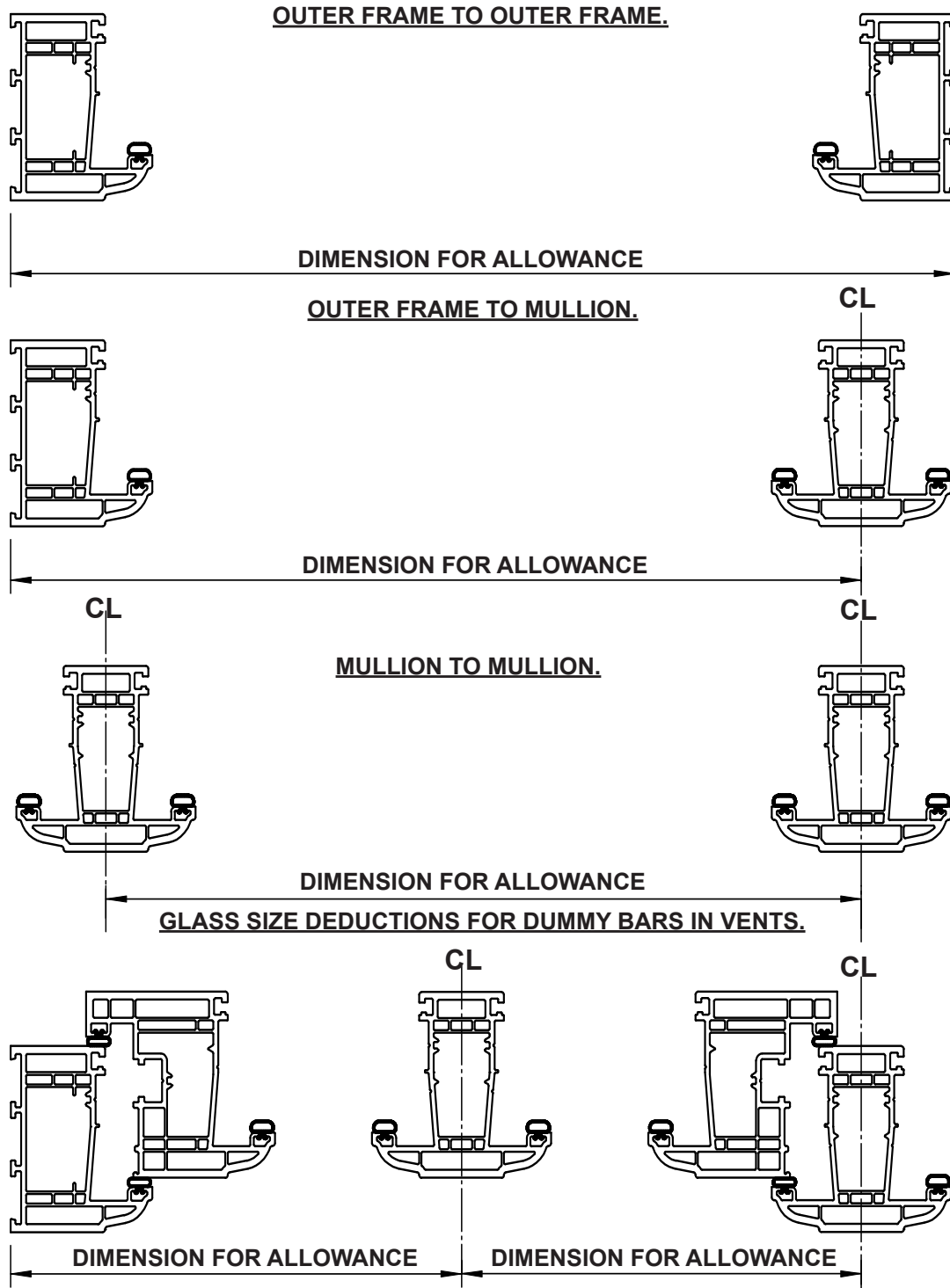


Fig. 5.5

CUTTING CALCULATIONS

OVOLO

CUTTING SIZES FOR VENTS.	
BETWEEN SECTIONS	VENT SECTION
	B38
B06 - B06	- 59
B06 - B22/23	- 37
B06 - B24/25	- 54
B07 - B07	- 79
B07 - B22/23	- 47
B07 - B24/25	- 64
B22/23 - B22/23	- 15
B22/23 - B24/25	- 32
B24/25 - B24/25	- 49

BEVELLED

CUTTING SIZES FOR VENTS.	
BETWEEN SECTIONS	VENT SECTION
	B33
B02 - B02	- 59
B02 - B16/17	- 44
B02 - B14/15	- 54
B03 - B03	- 79
B03 - B16/17	- 54
B03 - B14/15	- 64
B16/17 - B16/17	- 29
B16/17 - B14/15	- 39
B14/15 - B14/15	- 49

CUTTING SIZES FOR WELDED TRANSOMS & MULLIONS.

BETWEEN SECTIONS	TRANSOM / MULLION	
	B22/23	B24/25
B06 - B06	+ 37	-
B06 - B22/23	+ 59	-
B06 - B24/25	+ 42	-
B07 - B07	+ 17	+ 85
B07 - B22/23	+ 49	-
B07 - B24/25	+ 32	+ 100
B22/23 - B22/23	+ 81	-
B22/23 - B24/25	+ 64	-
B24/25 - B24/25	+ 47	+ 115

CUTTING SIZES FOR WELDED TRANSOMS & MULLIONS.

BETWEEN SECTIONS	TRANSOM / MULLION	
	B16/17	B14/15
B02 - B02	+ 65	-
B02 - B16/17	+ 80	-
B02 - B14/15	+ 70	-
B03 - B03	+ 45	+ 85
B03 - B16/17	+ 70	+ 110
B03 - B14/15	+ 60	+ 100
B16/17 - B16/17	+ 95	+ 135
B16/17 - B14/15	+ 85	+ 125
B14/15 - B14/15	+ 75	+ 115

CUTTING SIZES FOR MECHANICAL TRANSOMS & MULLIONS.

BETWEEN SECTIONS	VENT SECTION
	B38
B06 - B06	- 75
B06 - B22/23	- 53
B06 - B24/25	- 70
B07 - B07	- 95
B07 - B22/23	- 63
B07 - B24/25	- 80
B22/23 - B22/23	- 31
B22/23 - B24/25	- 48
B24/25 - B24/25	- 65

CUTTING SIZES FOR MECHANICAL TRANSOMS & MULLIONS.

BETWEEN SECTIONS	VENT SECTION
	B33
B02 - B02	- 75
B02 - B16/17	- 60
B02 - B14/15	- 70
B03 - B03	- 95
B03 - B16/17	- 70
B03 - B14/15	- 80
B16/17 - B16/17	- 45
B16/17 - B14/15	- 55
B14/15 - B14/15	- 65

BURN OFF ALLOWANCE

All cutting calculations are based on 2.5mm burn off per weld. Variations may be experienced due to different weld burn off.

CUTTING CALCULATIONS

OVOLO

CUTTING SIZES FOR WELDED DUMMY BARS IN VENTS.	
BETWEEN SECTIONS	DUMMY BAR B22
	VENT SECTION B38
B06 - B06	- 67
B06 - B22/23	- 45
B06 - B24/25	- 62
B07 - B07	- 87
B07 - B22/23	- 55
B07 - B24/25	- 72
B22/23 - B22/23	- 23
B22/23 - B24/25	- 40
B24/25 - B24/25	- 57

BEVELLED

CUTTING SIZES FOR WELDED DUMMY BARS IN VENTS.	
BETWEEN SECTIONS	DUMMY BAR B16
	VENT SECTION B33
B02 - B02	- 39
B02 - B16/17	- 24
B02 - B14/15	- 34
B03 - B03	- 59
B03 - B16/17	- 34
B03 - B14/15	- 44
B16/17 - B16/17	- 9
B16/17 - B14/15	- 19
B14/15 - B14/15	- 29

CUTTING SIZES FOR MECHANICAL DUMMY BAR IN VENTS.

BETWEEN SECTIONS	VENT SECTION B38
B06 - B06	- 179
B06 - B22/23	- 157
B06 - B24/25	- 174
B07 - B07	- 199
B07 - B22/23	- 167
B07 - B24/25	- 184
B22/23 - B22/23	- 135
B22/23 - B24/25	- 152
B24/25 - B24/25	- 169

CUTTING SIZES FOR MECHANICAL DUMMY BAR IN VENTS.

BETWEEN SECTIONS	VENT SECTION B33
B02 - B02	- 179
B02 - B16/17	- 164
B02 - B14/15	- 174
B03 - B03	- 199
B03 - B16/17	- 174
B03 - B14/15	- 184
B16/17 - B16/17	- 169
B16/17 - B14/15	- 159
B14/15 - B14/15	- 169

GLASS SIZES.

BETWEEN SECTIONS	FIXED	VENT
		B38
B06 - B06	- 92	- 196
B06 - B22/23	- 70	- 174
B06 - B24/25	- 87	- 191
B07 - B07	- 112	- 216
B07 - B22/23	- 80	- 184
B07 - B24/25	- 97	- 201
B22/23 - B22/23	- 48	- 152
B22/23 - B24/25	- 65	- 169
B24/25 - B24/25	- 82	- 186

GLASS SIZES.

BETWEEN SECTIONS	FIXED	VENT
		B33
B02 - B02	- 92	- 196
B02 - B16/17	- 77	- 181
B02 - B14/15	- 87	- 191
B03 - B03	- 112	- 216
B03 - B16/17	- 87	- 191
B03 - B14/15	- 97	- 201
B16/17 - B16/17	- 62	- 166
B16/17 - B14/15	- 72	- 176
B14/15 - B14/15	- 82	- 186

BURN OFF ALLOWANCE

All cutting calculations are based on 2.5mm burn off per weld. Variations may be experienced due to different weld burn off.

CUTTING CALCULATIONS

OVOLO

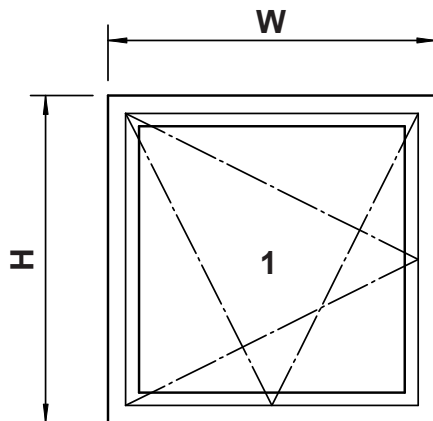
GLASS SIZES FOR DUMMY BARS IN VENTS.	
BETWEEN SECTIONS DUMMY BAR	VENT SECTION B38
B06 - B22	- 122
B07 - B22	- 132
B22/23 - B22	- 100
B24/25 - B22	- 117

BEVELLED

GLASS SIZES FOR DUMMY BARS IN VENTS.	
BETWEEN SECTIONS DUMMY BAR	VENT SECTION B33
B02 - B16	- 129
B03 - B16	- 139
B16/17 - B16	- 114
B14/15 - B16	- 124

CUTTING CALCULATIONS

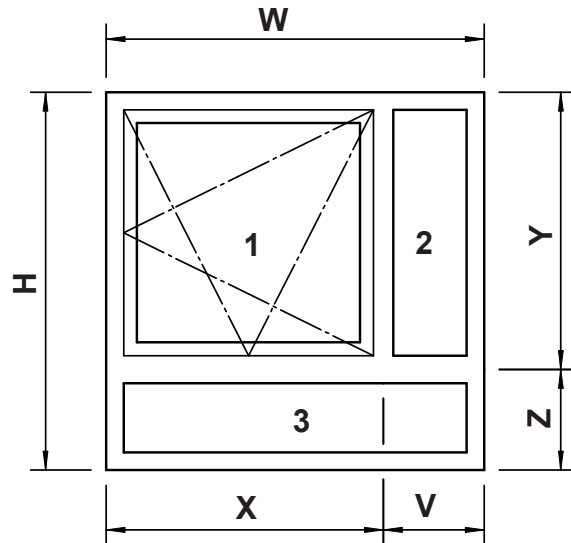
TYPICAL TILT & TURN WINDOW (BEVELLED)



OUTER FRAME B02
VENT FRAME B33

PROFILE CUTTING CALCULATIONS			
Qty.	Bar	Calc.	End Prep.
2 No	B02	W +5	Mitre/Mitre
2 No.	B02	H +5	Mitre/Mitre
2 No.	B33	V -59	Mitre/Mitre
2 No.	B33	Y -59	Mitre/Mitre

TYPICAL TILT & TURN MULTI-LIGHT WINDOW (OVOLO)



OUTER FRAME B07
VENT FRAME B38
MULLION B22
TRANSOM B24

PROFILE CUTTING CALCULATIONS			
Qty.	Bar	Calc.	End Prep.
2 No	B07	W +5	Mitre/Mitre
2 No.	B07	H +5	Mitre/Mitre
2 No	B38	X -47	Mitre/Mitre
2 No.	B38	Y -64	Mitre/Mitre
1 No.	B22	Y +32	Rev.Mitre/Rev.Mitre
1 No.	B24	W +85	Rev.Mitre/Rev.Mitre

REINFORCEMENT REQUIREMENTS		
Reinforcement	White Profile	Woodgrain Profile
Outer frame head	Over 1350	Over 1350
Vent	Width over 1000 Height over 1000	Over 600 Over 600

REINFORCEMENT REQUIREMENTS		
Reinforcement	White Profile	Woodgrain Profile
Outer frame head	Over 1350	Over 1350
Mullion	Over 1000	Over 600
Transom	Over 1000	Over 600
Vent	Width over 1000 Height over 1000	Over 600 Over 600

GLASS CALCULATIONS	
Panel 1	Width= W -196 Height=H -196

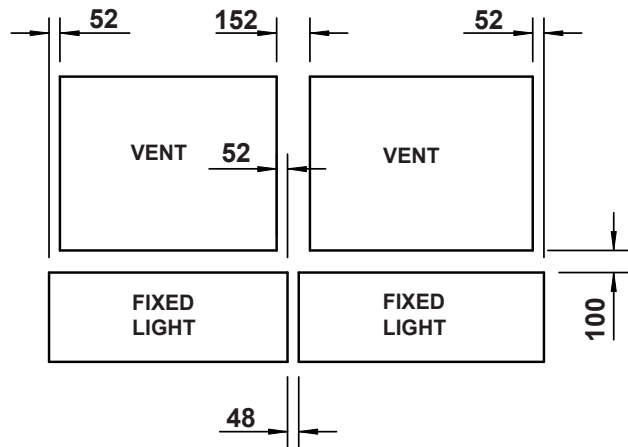
GLASS CALCULATIONS		
Panel 1	Panel 2	Panel 3
Width= W -184	Width= V -80	Width= W -112
Height= Y -201	Height= Y -97	Height= Z -97

CUTTING CALCULATIONS

GLASS SPACINGS FOR GEORGIAN AND LEADED GLASS

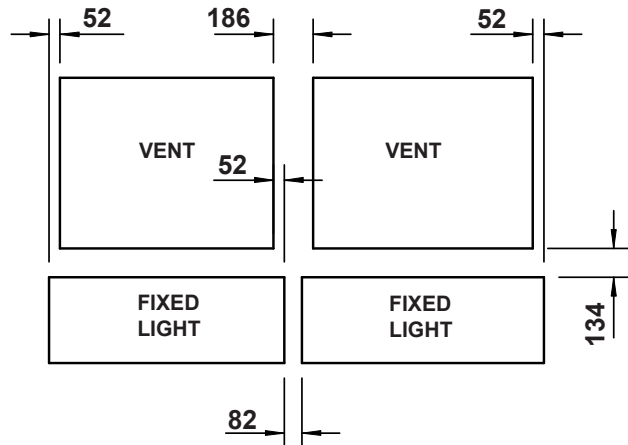
	<u>Ovolo</u>
Vent Frame	B38
Transom	B22/23
Mullion	B22/23

Vent Overlap	8mm
Glass Clearance	6mm



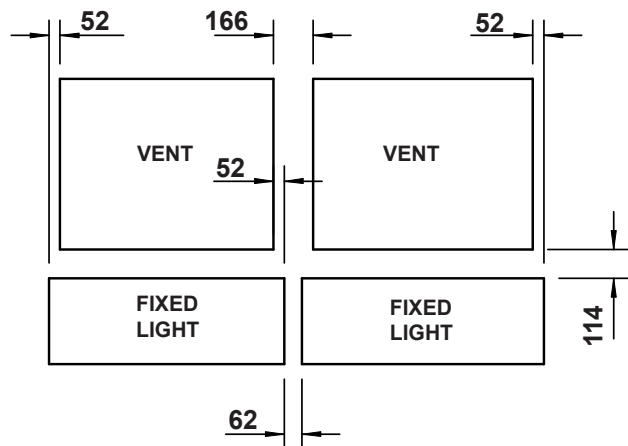
	<u>Ovolo</u>	<u>Bevelled</u>
Vent Frame	B38	B33
Transom	B24/25	B14/15
Mullion	B24/25	B14/15

Vent Overlap	8mm	8mm
Glass Clearance	6mm	6mm



	<u>Bevelled</u>
Vent Frame	B33
Transom	B16/17
Mullion	B16/17

Vent Overlap	8mm
Glass Clearance	6mm



REINFORCEMENT

REQUIREMENTS

Spectus reinforcement must be used where applicable.

In all cases, reinforcement should be continuous and unbroken, otherwise the **Spectus** warranty will be invalidated.

Spectus recommended minimum reinforcement requirements are as follows:

White foiled & cream profile reinforcement requirements are as for white profiles.

OUTER FRAME

In the head of all outer frames where the width exceeds 1350mm.

In all vertical outer frame members of all bay window segments.

In the vertical outer frame members of all coupled frames.

TRANSOMS / MULLIONS

In all transoms / mullions where the length exceeds 1000mm (*600mm for foiled profile*).

On cruciform joints where the transom and mullion both exceed 1000mm (*600mm for foiled profile*), the reinforcement should be unbroken in the shorter member. The other member should then only be reinforced in any section that exceeds 1000mm (*600mm for foiled profile*).

In all members to be mechanically jointed.

In transoms / mullions spanning from outer frame to a transom / mullion, between opening vents, where the length exceeds 600mm.

Note: Reinforcing of members requiring 'T' or cruciform welded joints should be carried out immediately after welding. This enables the reinforcement to be pushed through to clear a path through the internal weld sprue whilst it is still soft. Where more than one joint is involved, the joints are welded and reinforcement pushed through one at a time. Prior to each subsequent weld the reinforcement should be removed until the final weld is complete.

VENT

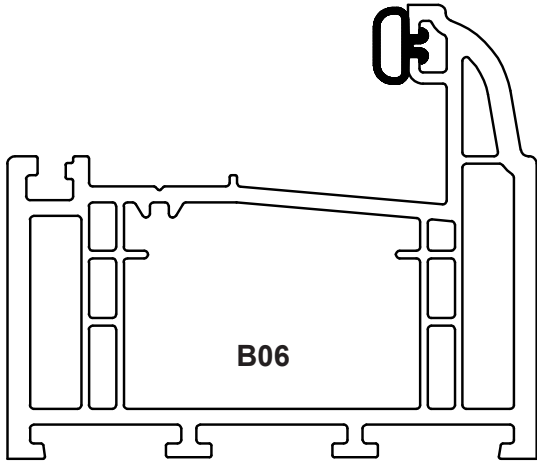
In all members forming the widths of tilt & turn vents where the width exceeds 1000mm (*600mm for foiled profile*).

In all members forming the jambs of tilt & turn vents where the height exceeds 1000mm (*600mm for foiled profile*).

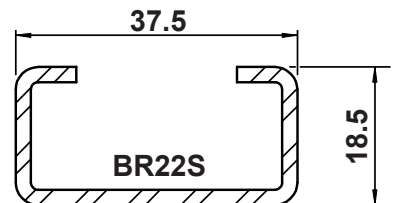
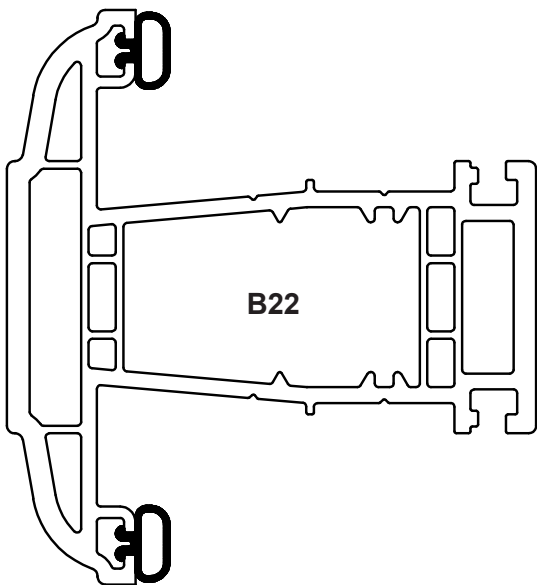
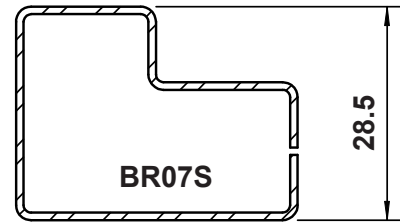
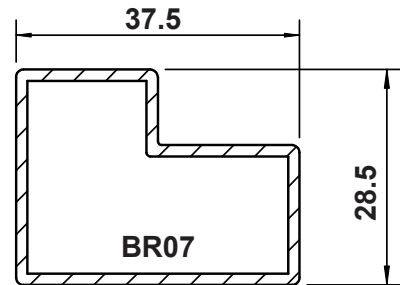
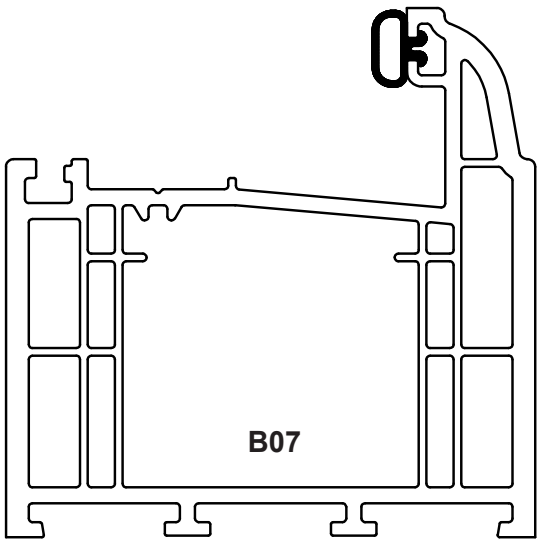
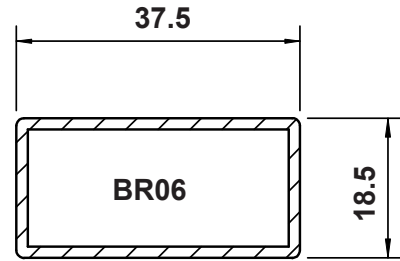
REINFORCEMENT SELECTION CHART		
OUTER FRAME	ALUMINIUM REINFORCEMENT	STEEL REINFORCEMENT
B02 or B06	BR06	BR06S
B03 or B07	BR07	BR07S
TRANSOM/MULLION		
B16/17	BR16	BR16S BR17S (Heavy Duty)
B22/23	BR06 BR22 (Mechanical Joint)	BR06S BR22S (Heavy Duty)
B14/15 or B24/25	BR24 (Mechanical Joint)	BR24S
VENT FRAME		
B33	N/A	BR33S
B38	N/A	BR33S

REINFORCEMENT

PROFILE (OVOLO)



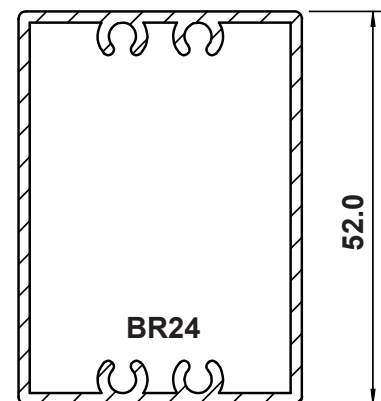
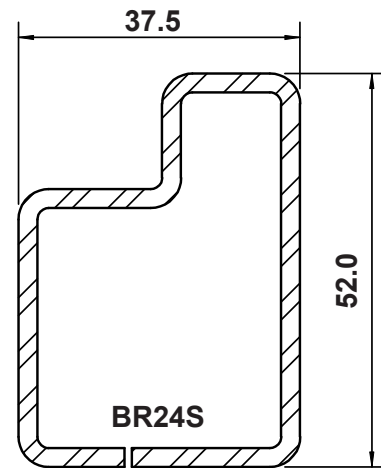
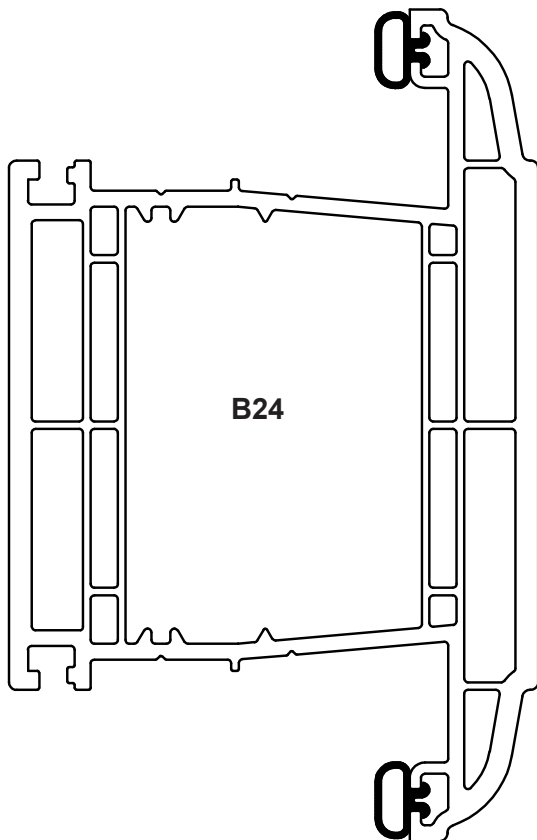
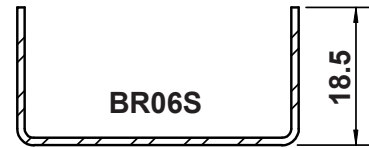
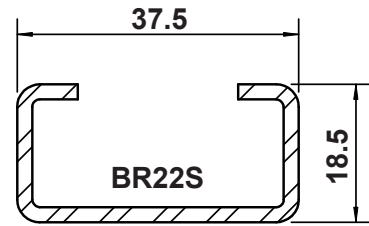
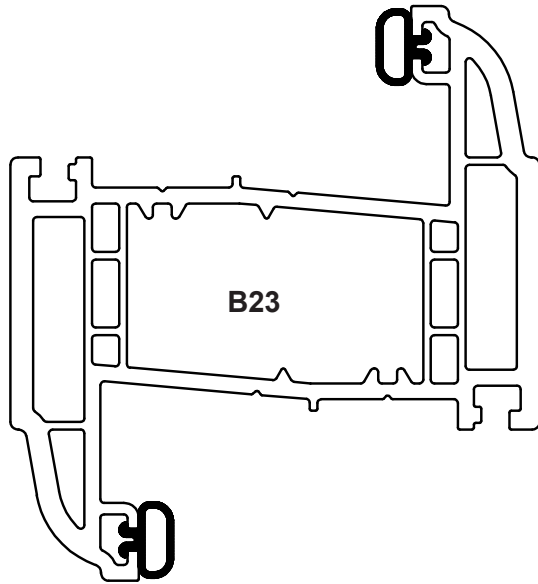
REINFORCEMENT



REINFORCEMENT

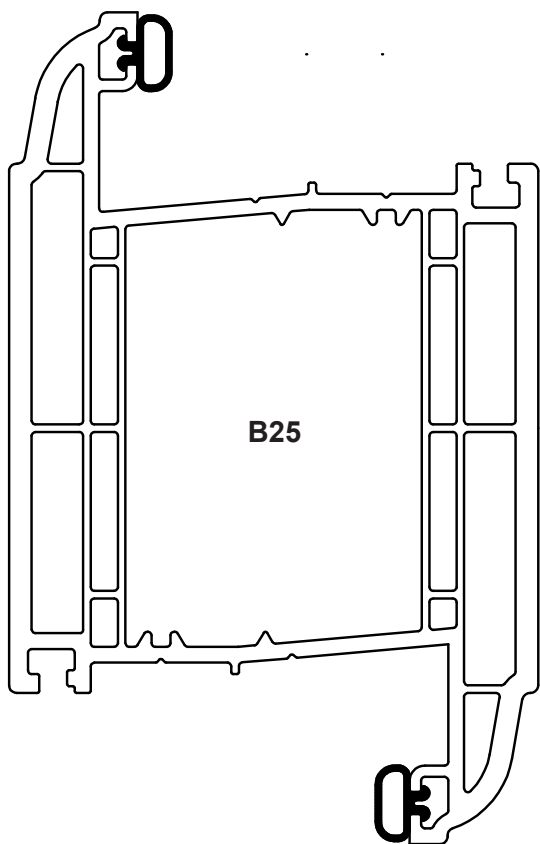
PROFILE (OVOLO)

REINFORCEMENT

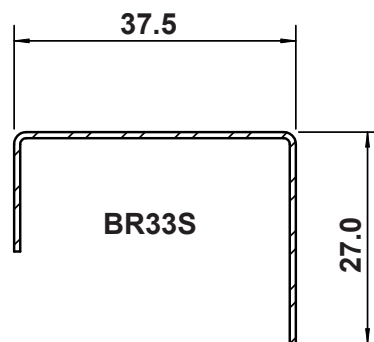
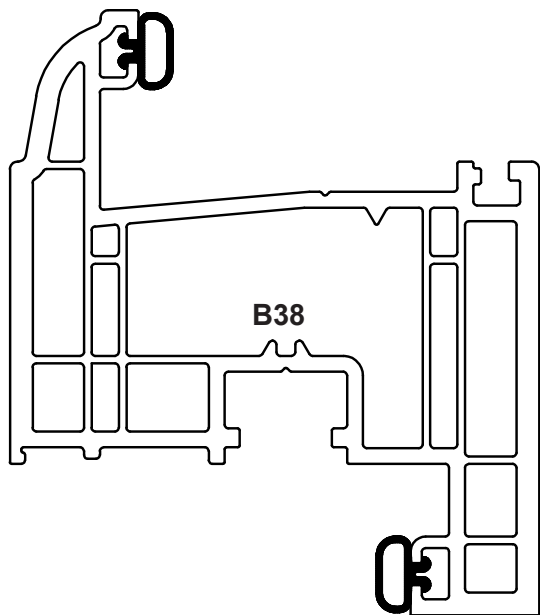
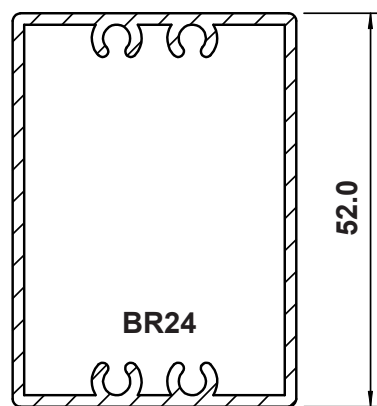
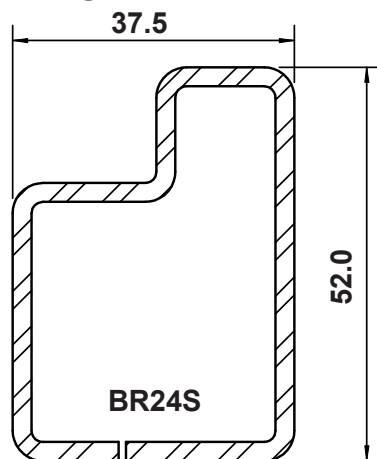


REINFORCEMENT

PROFILE (OVOLO)



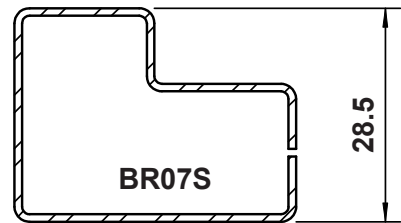
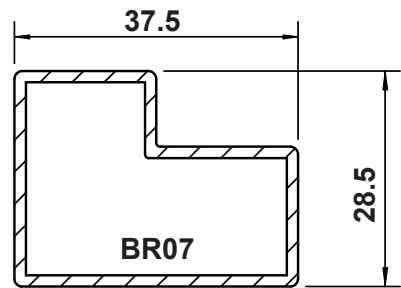
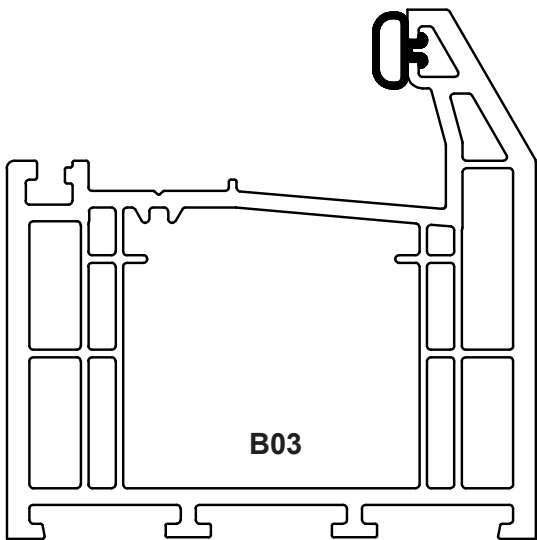
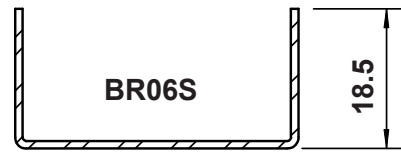
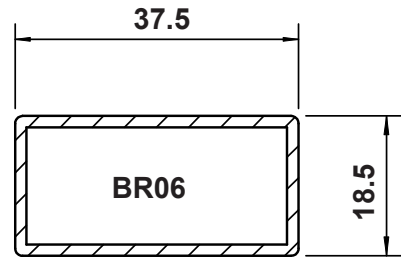
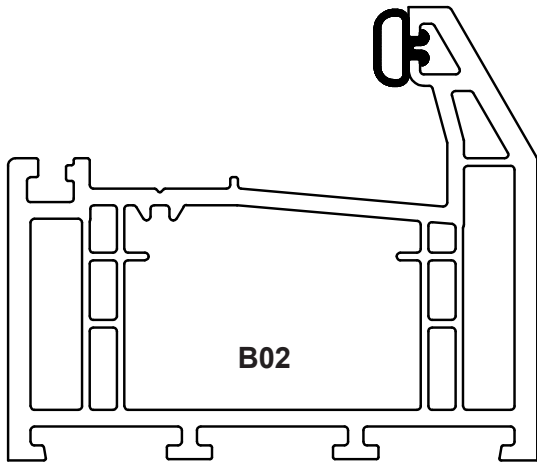
REINFORCEMENT



REINFORCEMENT

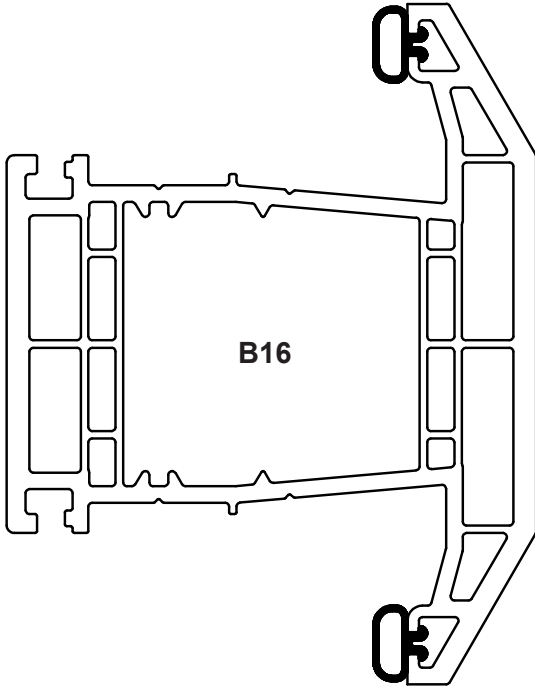
PROFILE (BEVELLED)

REINFORCEMENT

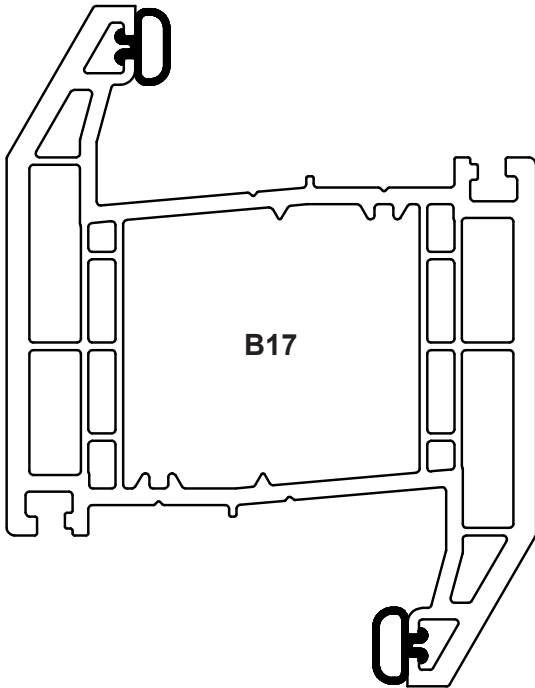
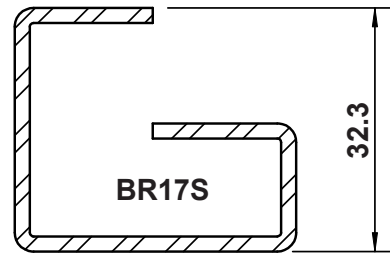
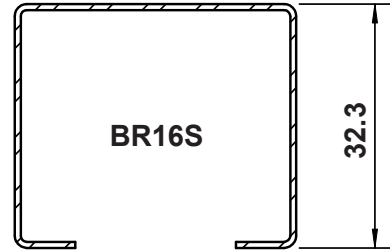
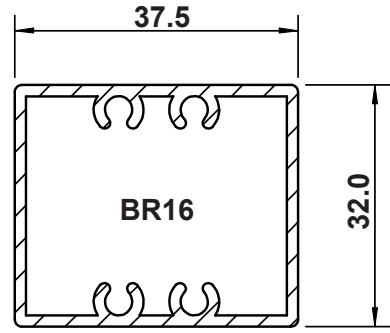


REINFORCEMENT

PROFILE (BEVELLED)



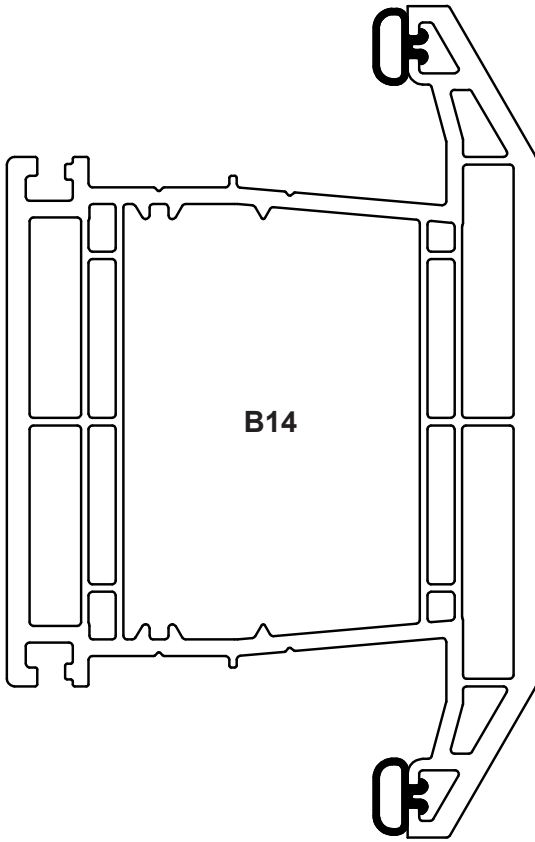
REINFORCEMENT



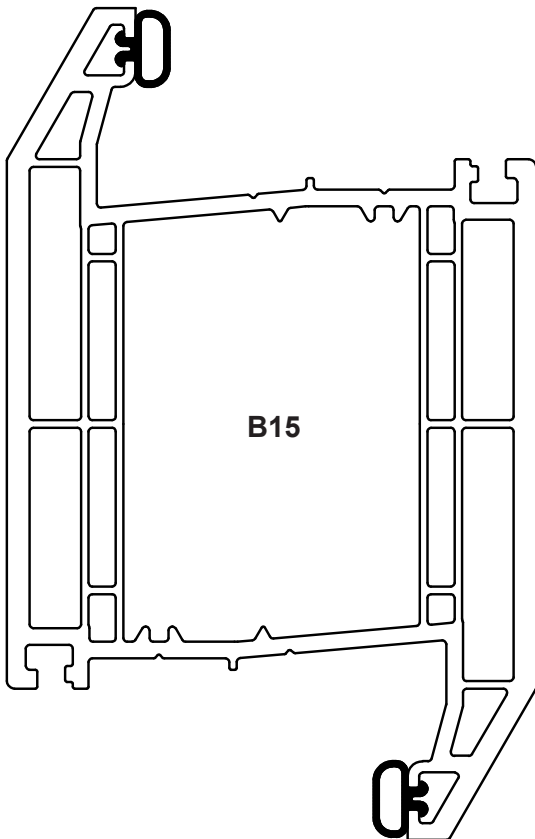
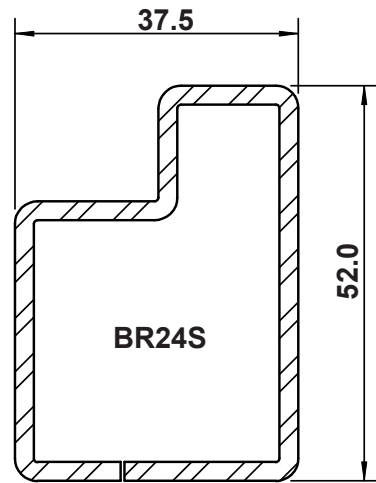
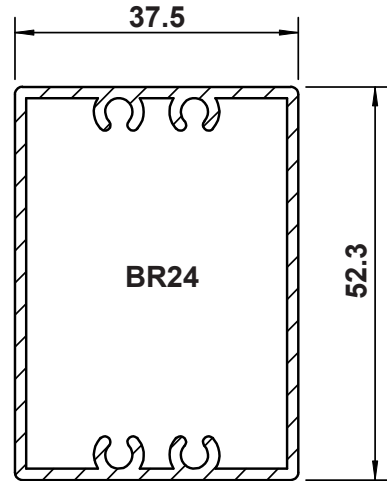
REINFORCEMENT FOR
B17 SAME AS ABOVE

REINFORCEMENT

PROFILE (BEVELLED)



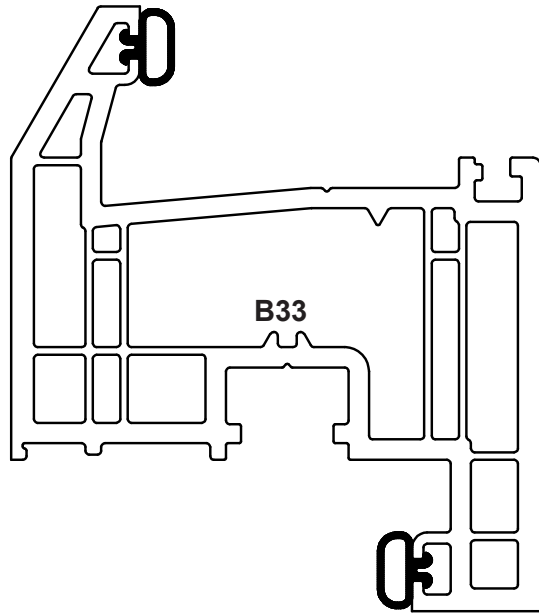
REINFORCEMENT



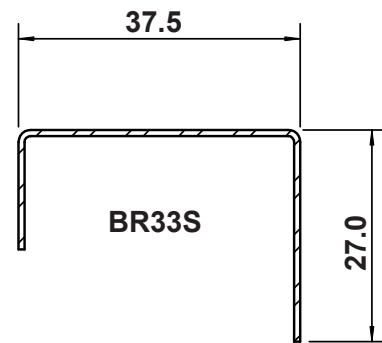
REINFORCEMENT FOR
B15 SAME AS ABOVE

REINFORCEMENT

PROFILE (BEVELLED)



REINFORCEMENT



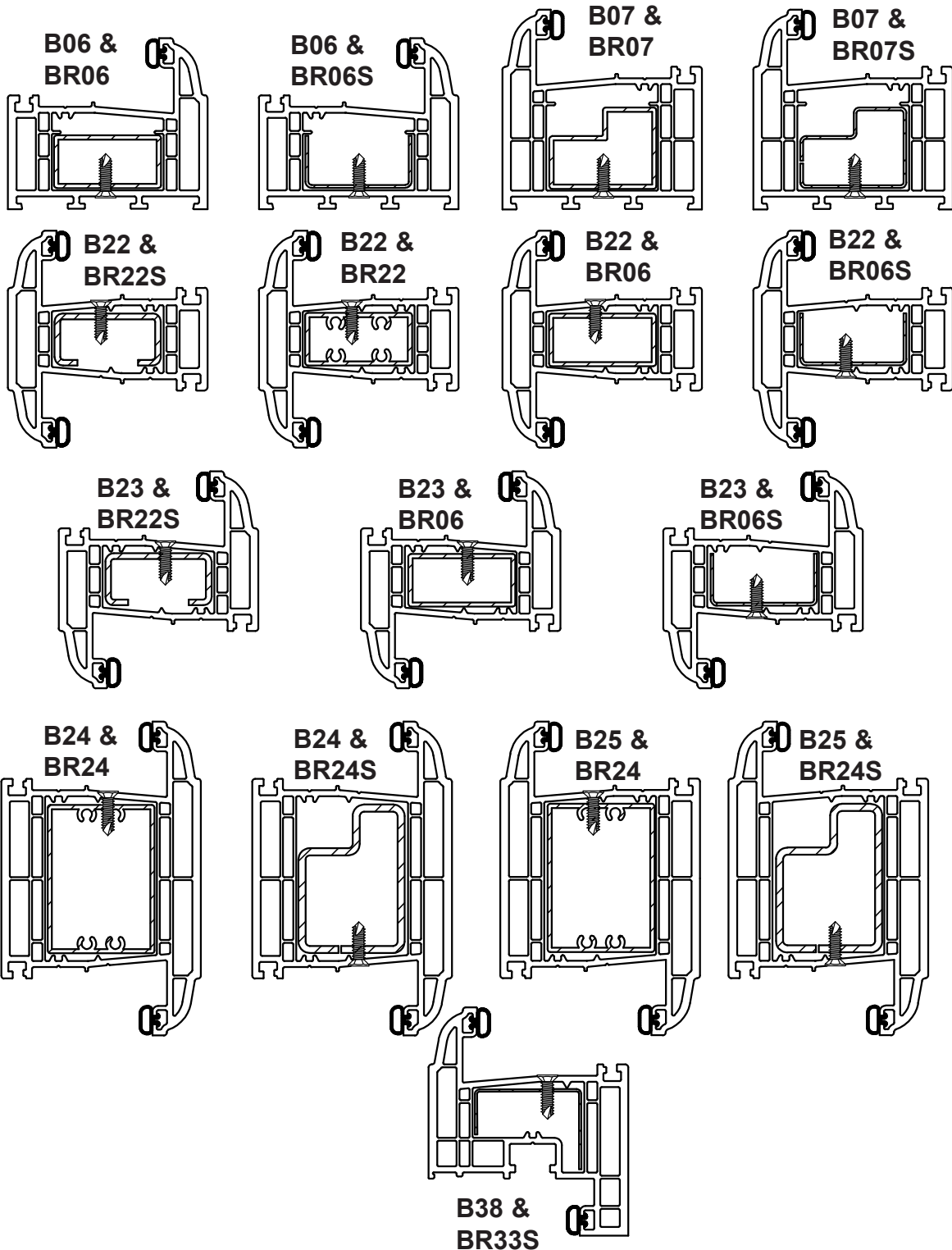
REINFORCEMENT

REINFORCEMENT FIXING

Reinforcement should be secured to the PVC-U profile at a maximum of 100mm from the ends of the reinforcement and then at a maximum of 400mm centres (300mm when using foiled profiles)

The recommended screws are self drilling, M4 12mm flat faceted head, TEKS point screws.

OVOLO PROFILES



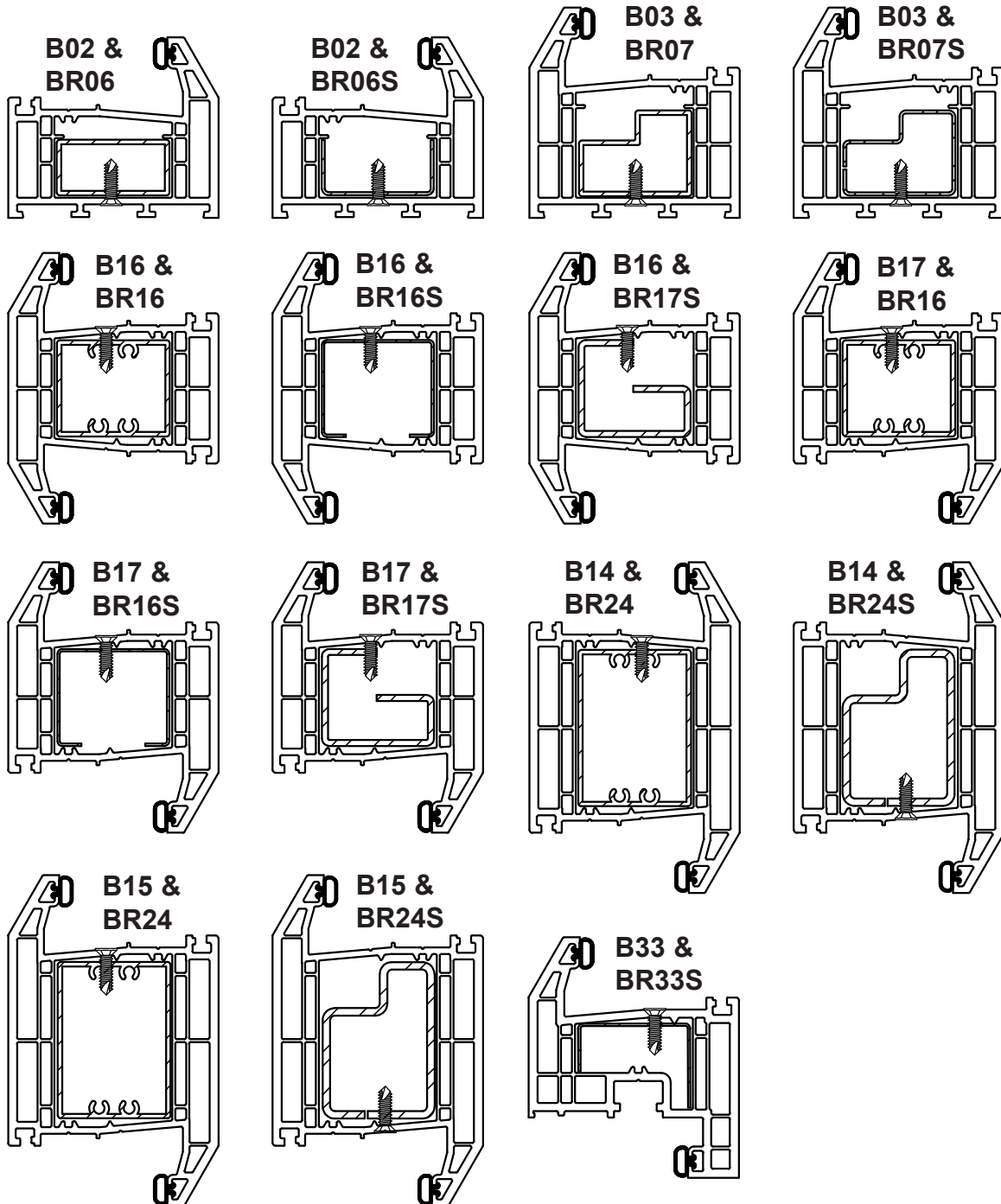
REINFORCEMENT

REINFORCEMENT FIXING

Reinforcement should be secured to the PVC-U profile at a maximum of 100mm from the ends of the reinforcement and then at a maximum of 400mm centres (300mm when using foiled profiles)

The recommended screws are self drilling, M4 12mm flat faceted head, TEKS point screws.

BEVELLED PROFILES



DRAINAGE

DRAINAGE SLOTS

Drainage slots can be machined using a preset drainage machine or by hand router.

All horizontal members, except the heads of frames and vents, require water slots - 5mm wide x 30mm long.

Drainage slots should be cut in the **outside chamber** of profile, **never** in the reinforcement chamber.

Drainage slots should be **staggered** to avoid blow back.

Face drainage slots should be positioned appropriately for appearance purposes. They can then be concealed using a face drain cover cap.

Each section of **multi-light** windows must be drained separately

PRESSURE EQUALISATION

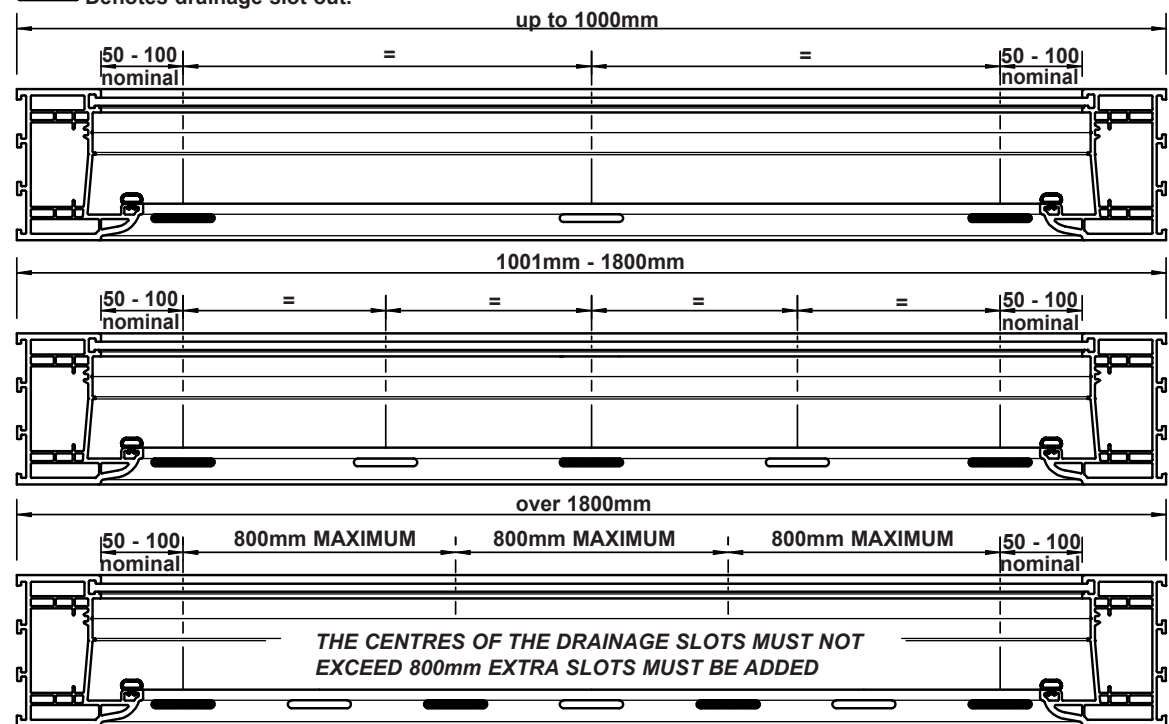
Drainage chambers on glazed-in windows should be vented at the head with a 5mm hole to aid drainage.

Horizontal drainage positions are shown below, cross sectional positions are shown on pages 7.2 & 7.3.

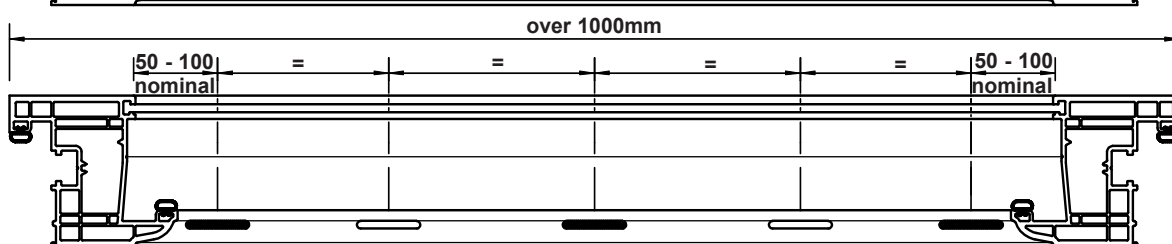
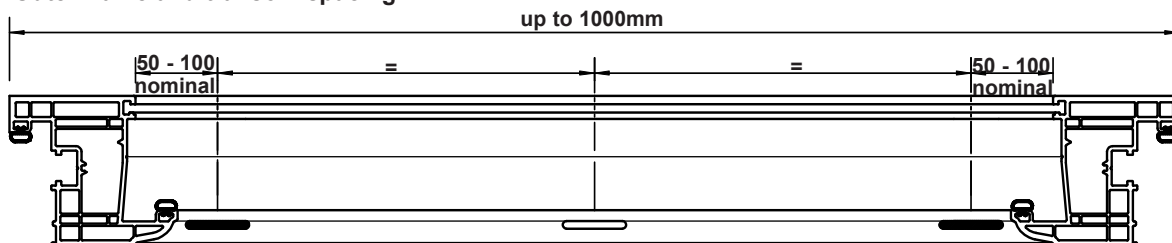
Pressure equalisation positions are shown on page 7.4.

▬ Denotes drainage slot in.
 ▭ Denotes drainage slot out.

HORIZONTAL DRAINAGE POSITIONS



Outer frame and transom spacing



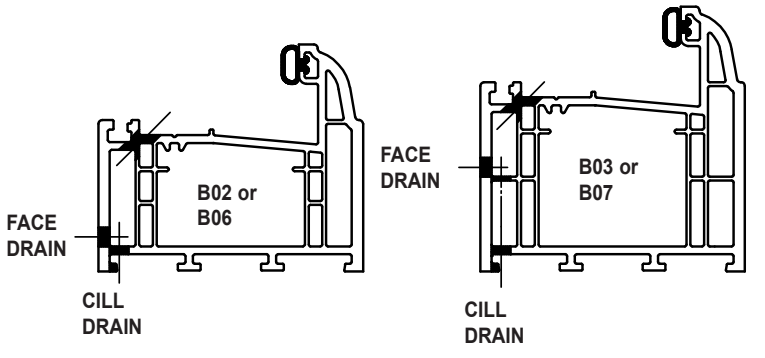
Vent spacing

DRAINAGE

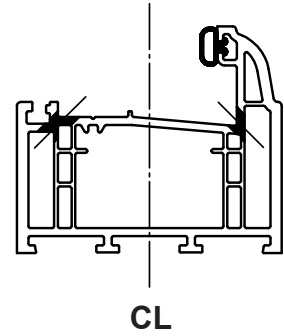
CROSS SECTIONAL DRAINAGE POSITIONS

OUTER FRAME PROFILES

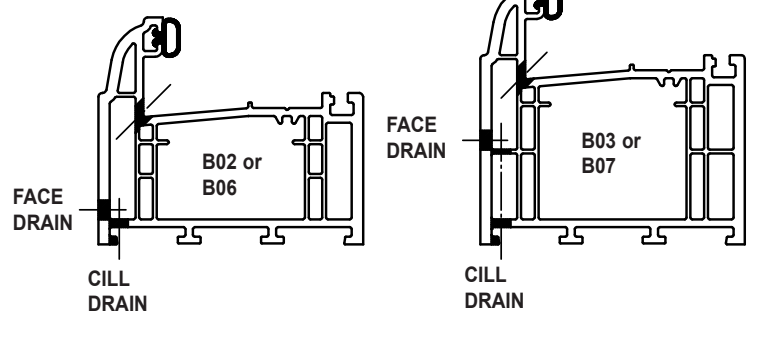
EXTERNALLY GLAZED



If the router is set correctly at 45 degrees, the machine settings remain the same for internally and externally glazed windows.

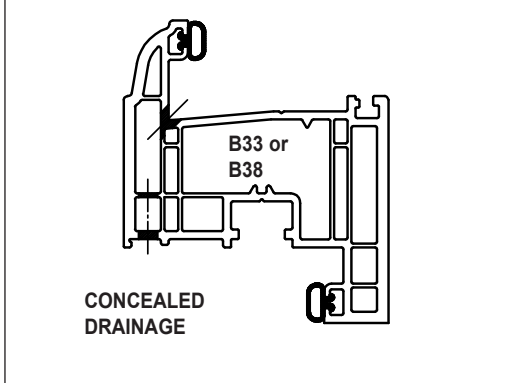


INTERNALLY GLAZED



VENT FRAME PROFILES

INTERNALLY GLAZED

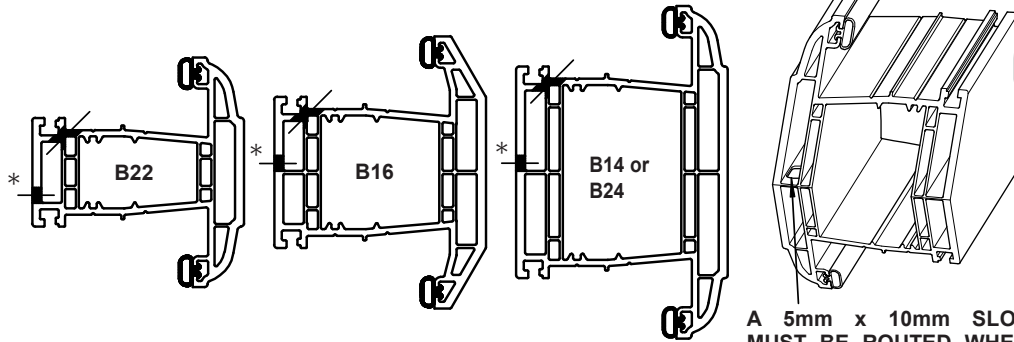


DRAINAGE

CROSS SECTIONAL DRAINAGE POSITIONS

TRANSOM PROFILES

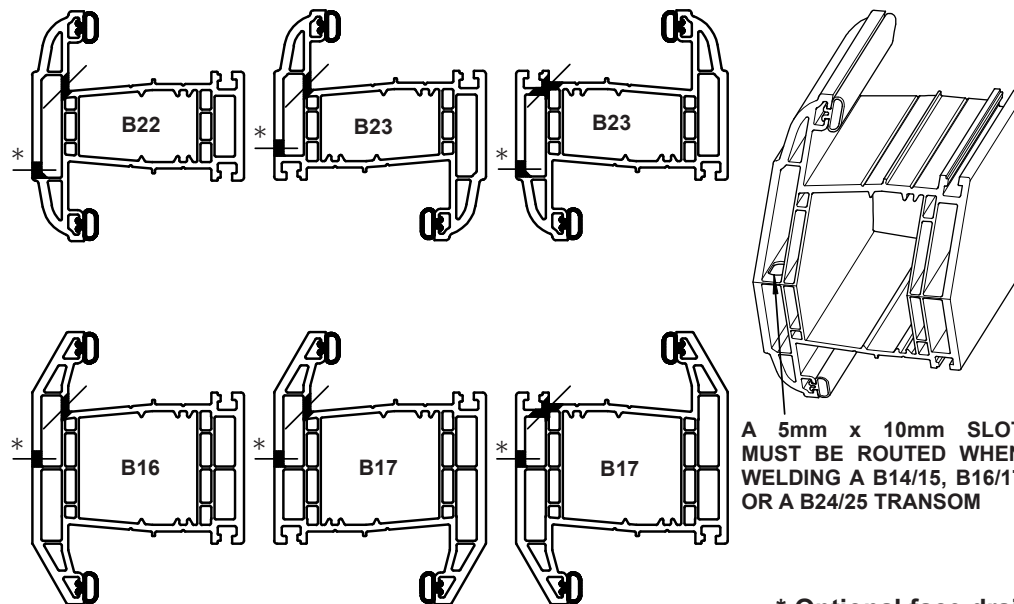
EXTERNALLY GLAZED



A 5mm x 10mm SLOT
MUST BE ROUTED WHEN
WELDING A B14/15, B16/17
OR A B24/25 TRANSOM

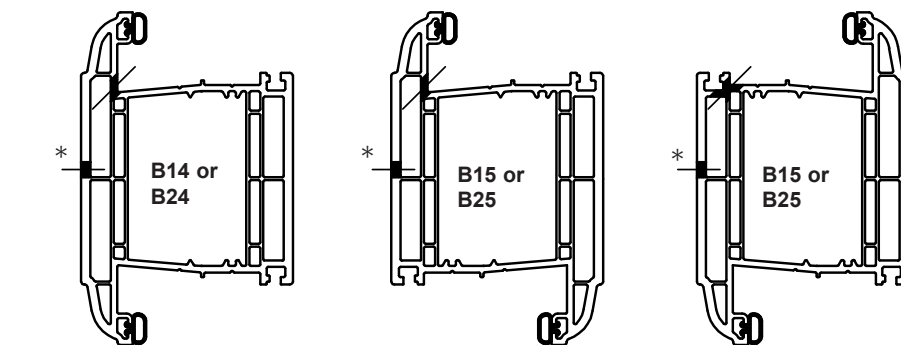
* Optional face drain

INTERNALLY GLAZED



A 5mm x 10mm SLOT
MUST BE ROUTED WHEN
WELDING A B14/15, B16/17
OR A B24/25 TRANSOM

* Optional face drain

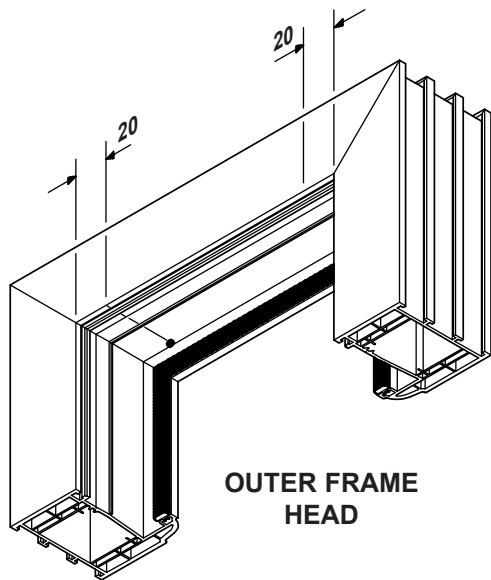


DRAINAGE

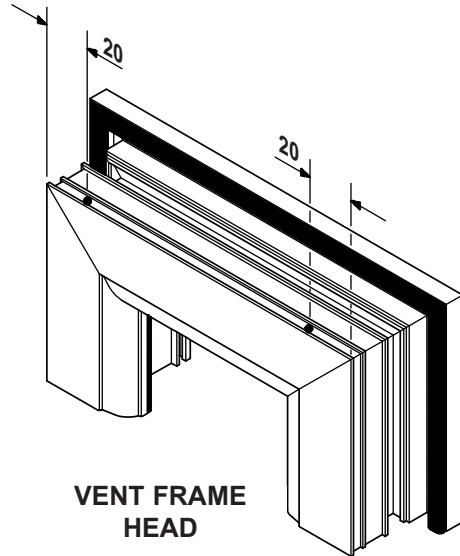
PRESSURE EQUALISATION

After fabrication of internally glazed windows, 5mm diameter pressure equalisation holes should be drilled into the head to aid drainage by preventing partial vacuum.

All pressure equalisation holes should be drilled into the drainage chamber in the positions shown below.

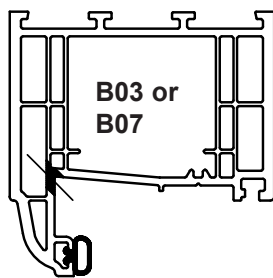


OUTER FRAME HEAD

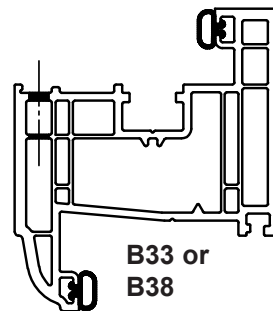


VENT FRAME HEAD

OUTER FRAME HEAD



VENT FRAME HEAD



DRAINAGE

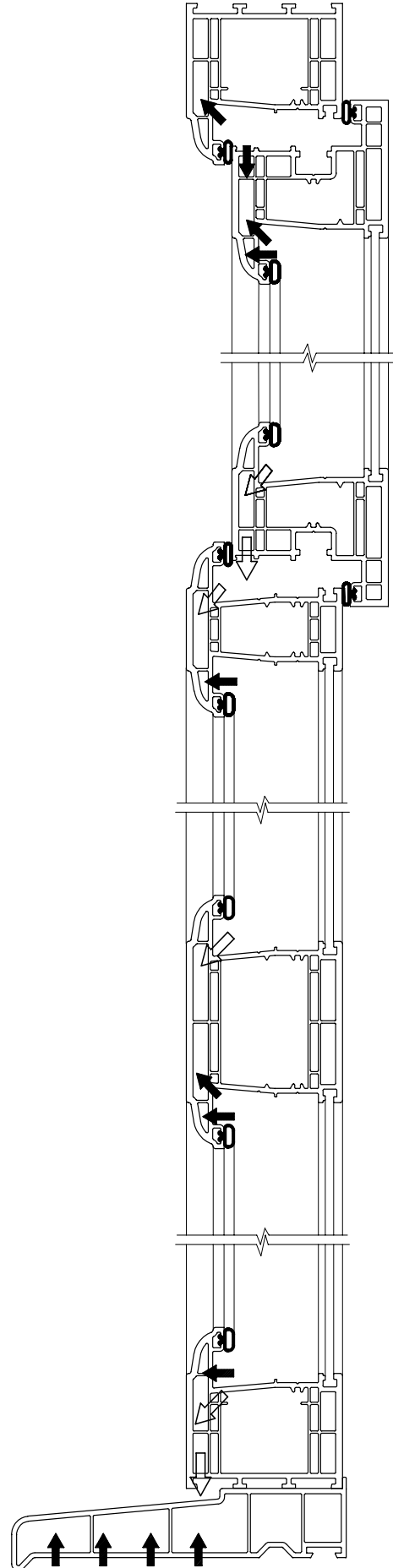
VENTING WOODGRAIN FOILED/ DARK PROFILES

Due to the thermal characteristics of woodgrain foiled profiles (whether on Brown, Tan or White base material profile) it is necessary to vent the outer chambers to encourage the dissipation of heat. This is particularly important in large profiles and assemblies e.g. Midrails, Cills and Conservatory Facades.

A 5mm diameter hole at 400mm centres is sufficient as a venting hole. The cross section drawn, shows how the venting holes integrate with the drainage slots to aid heat dissipation

↙
DENOTES DRAINAGE SLOT

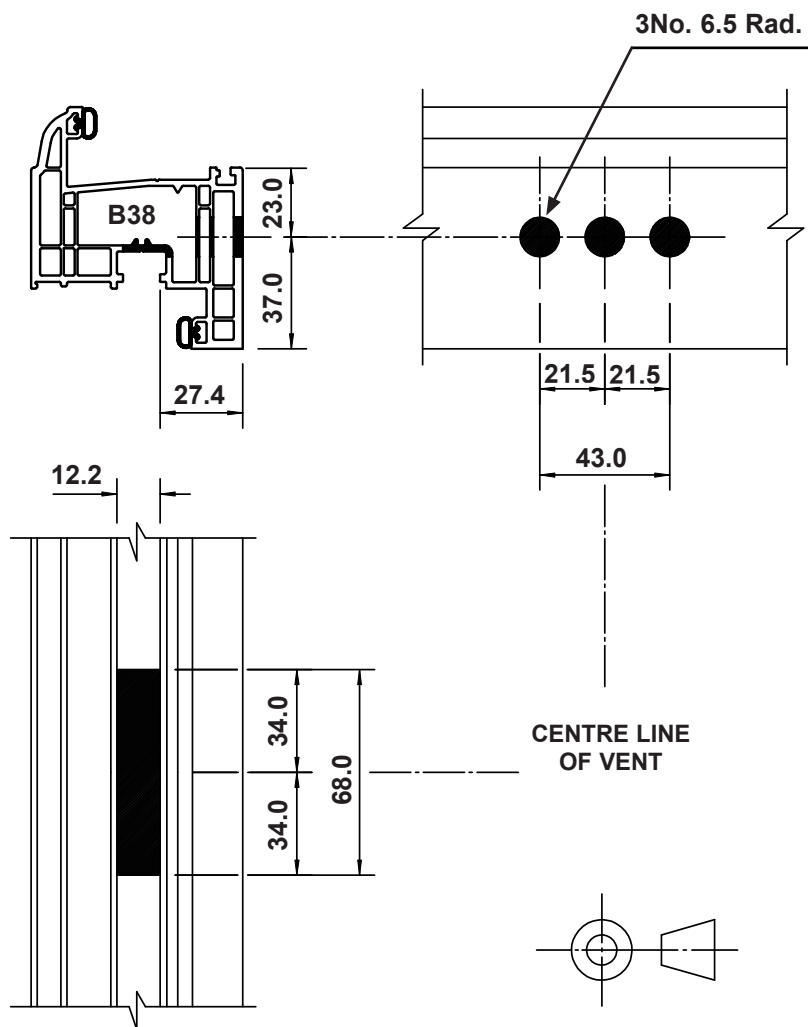
↖
DENOTES VENTING HOLE



HARDWARE PREPARATION

SIEGENIA KF3 TILT & TURN GEAR

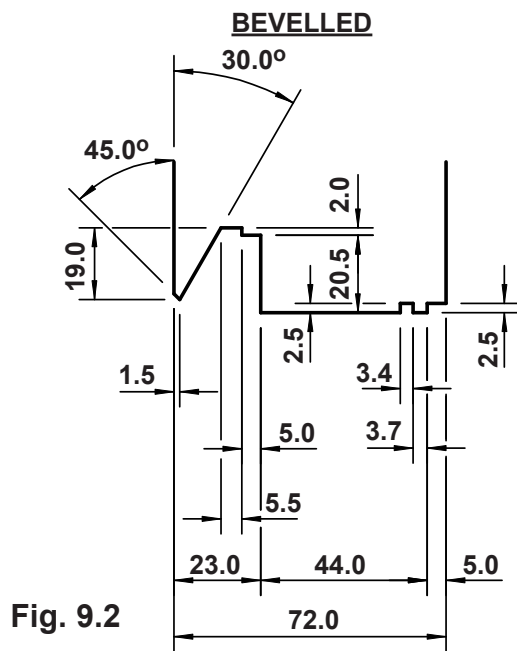
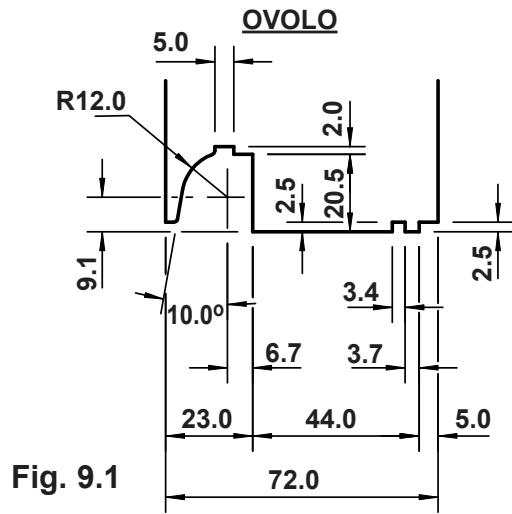
Routing for Siegenia drive gear into B33 or B38.



MECHANICAL JOINTS

MECHANICAL JOINT END PREP DETAIL

Figures 9.1 & 9.2 show the mechanical joint end preparation detail.



MECHANICAL 'T' JOINT ASSEMBLY

Mechanical 'T' joints are carried out in the following manner:

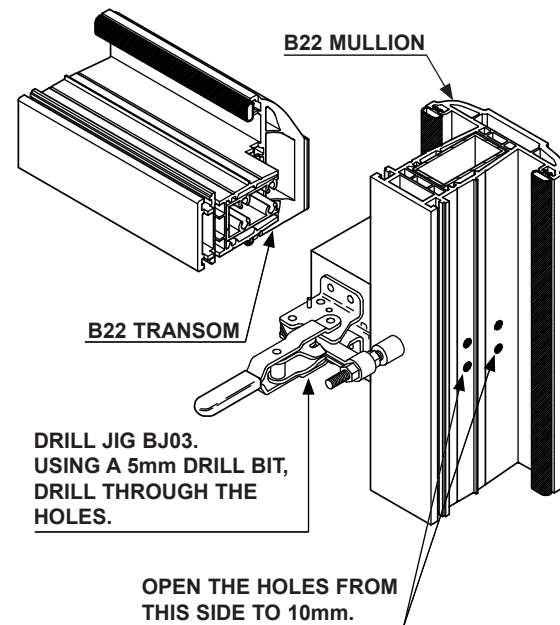
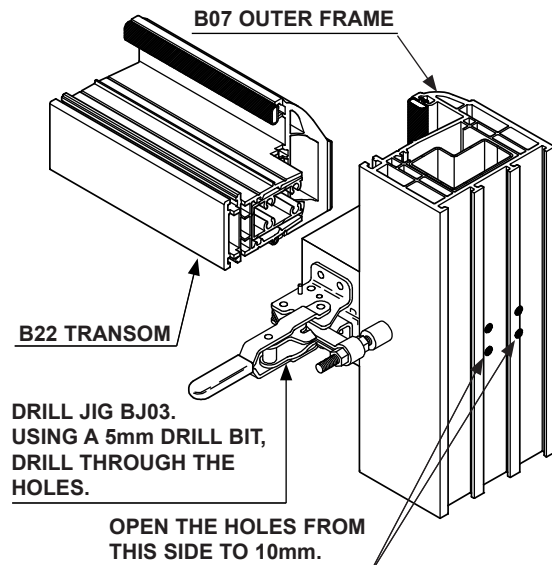
Using the drill jig, holes are drilled into the transom / mullion through both walls of the PVC-U and reinforcement from the side on which the joint is to be fixed.

The holes on the opposite side of the member are then opened out to 10mm.

The joint is then secured using self tapping mechanical joint screws, and sealed with silicone fig.9.11.

10mm screw cover caps are then fitted and sealed with silicone.

Figure 9.3 & 9.4 show B22 drill preparation, fig.9.5 shows B16 and fig.9.6 shows B14 or B24 preparation.



MECHANICAL JOINTS

MECHANICAL 'T' JOINT ASSEMBLY Continued

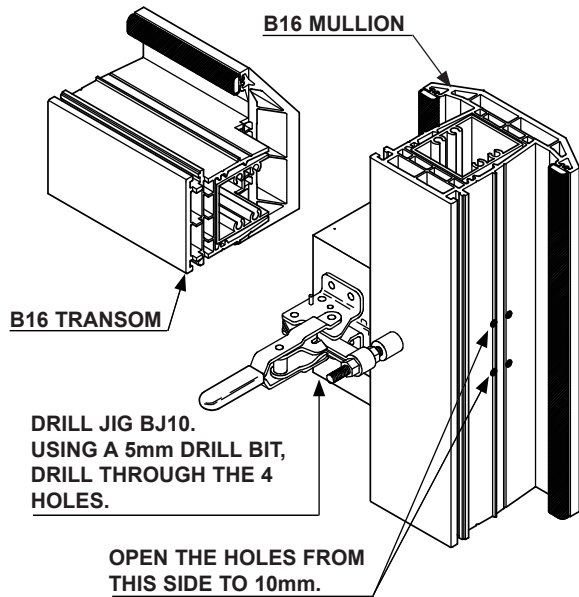


Fig. 9.5

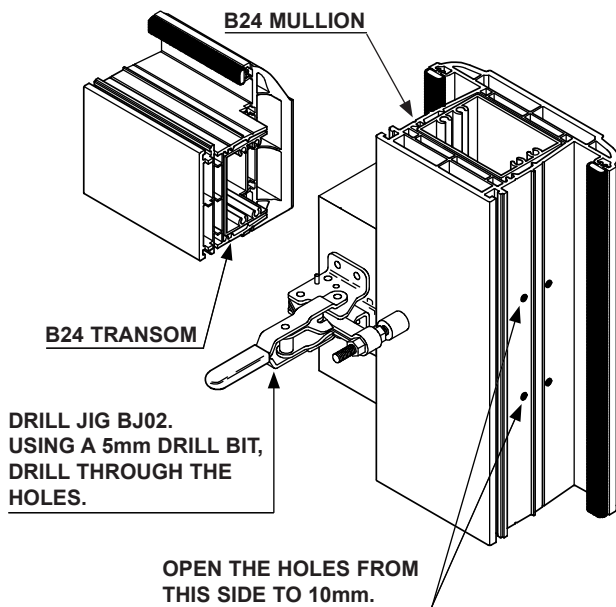


Fig. 9.6

MECHANICAL JOINT ASSEMBLY

Mechanical cruciform joints should be carried out in the following manner:

A slot is routed through the mullion. See fig.9.7.

Fig.9.8 SHOWS THE DIFFERENT HOLE SIZES REQUIRED FOR EACH TRANSOM

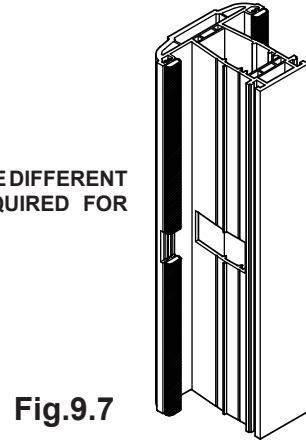


Fig.9.7

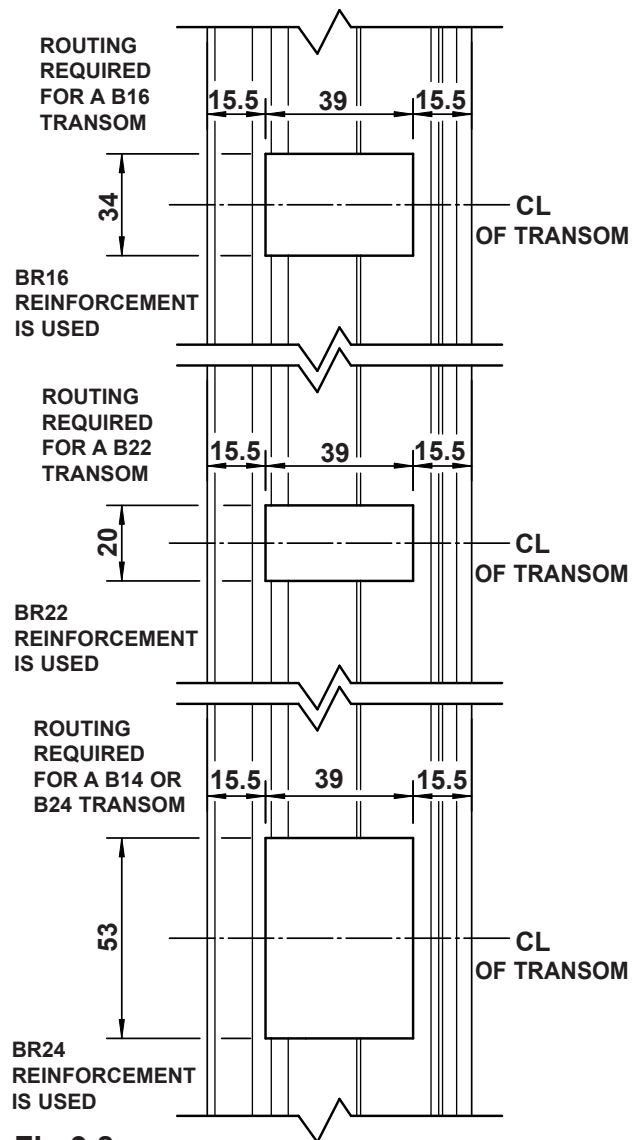


Fig.9.8

MECHANICAL JOINTS

MECHANICAL JOINT ASSEMBLY

Continued

The full width reinforcement is then inserted through the slot. See fig.9.9.

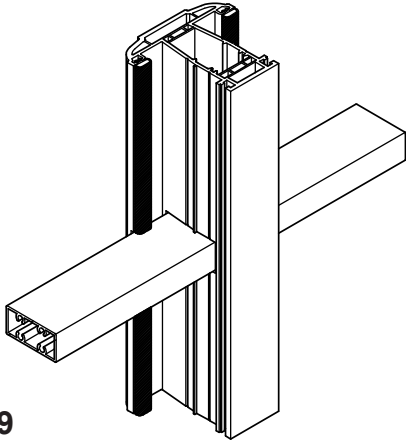


Fig.9.9

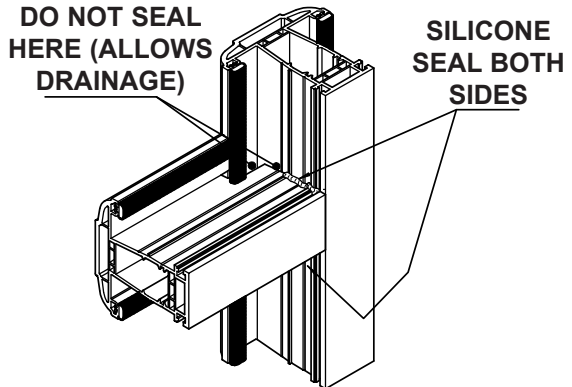


Fig.9.11

The transoms are then slid over the reinforcement, butted up tight to the mullion and fixed using M4 x 16mm self drilling / tapping reinforcement screws. See fig.9.10.

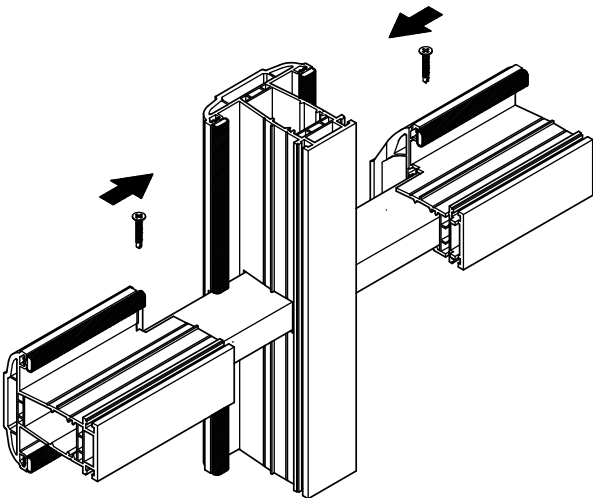


Fig.9.10

The joint is then sealed with silicone, see fig.9.11.

Reinforcement is then fixed into the mullion.

The mechanical joints between the cruciform and outer frame are then fixed as 'T' joints.

HARDWARE SELECTION

HARDWARE

Spectus do not stock hardware for **Elite 70**, but a wide range is available from various suppliers.

TILT TURN GEARING

Elite 70 has a 13mm eurogroove axis. Gearing and dedicated keeps are available from:

SIEGENIA-AUBI LIMITED

Richardson Way, Cross point, Coventry, West Midlands. CV2 2TA
Tel: 02476 622000

WINKHAUS (UK) LIMITED, 2950 Kettering Parkway, Kettering, Northants. NN15 6XZ
Tel: 01536 316000

MILA HARDWARE (UK) LIMITED, 1 Brunel Close, Drayton Fields Industrial Estate, Daventry, Northants. NN11 5RB
Tel: 01327 872511

MACO U.K. Eurolink Industrial Centre, Castle Road, Sittingbourne, Kent. ME10 3LY
Tel: 01795 433900

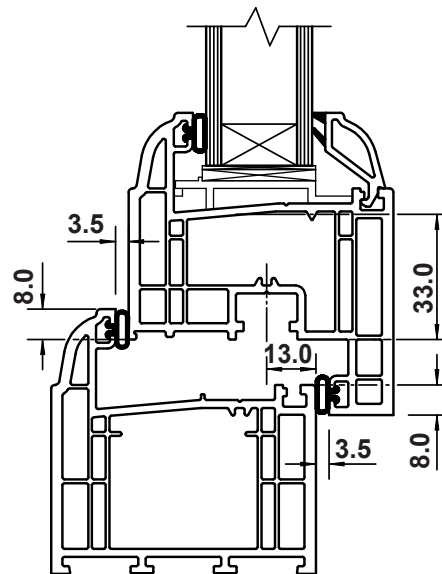
ROTO FRANK LIMITED, Swift Point, Rugby, Warwickshire. CV21 1QH
Tel: 01788 558600

SECURITY GLAZING CLIPS

Security glazing clips are available from:

GT WINDOWS LIMITED, Cedar Farm, New Road, Southam, Cheltenham, Gloucester. GL52 3NX
Tel: 01242 527260

TILT & TURN GEARING LAYOUT



WEATHERSEALS

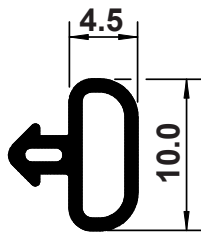
GASKETS

Elite 70 is a fully post co-extruded system, however if one of the gaskets should get damaged it can be torn out and a repair gasket is available.

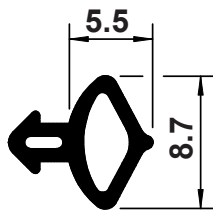
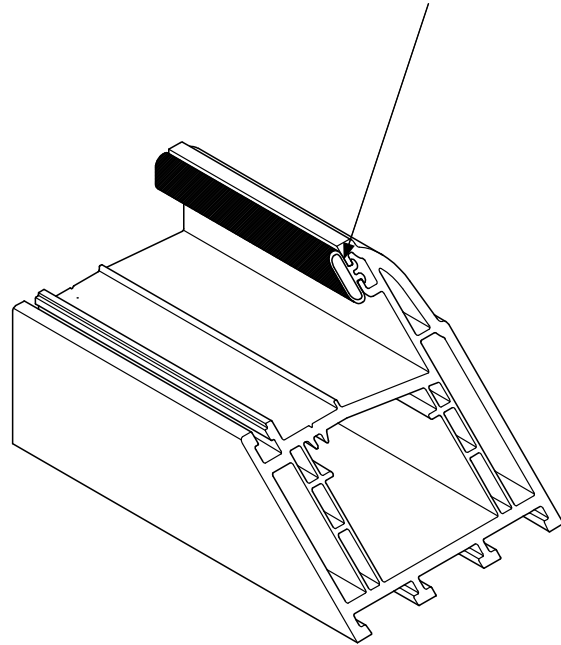
Please note:

To ensure clean cuts, more regular changes of the saw blades may be required with a PCE system

AFTER CUTTING, IF THE PCE IS NOT A CLEAN CUT, IT MAY REQUIRE TRIMMING TO ENSURE A GOOD WELD



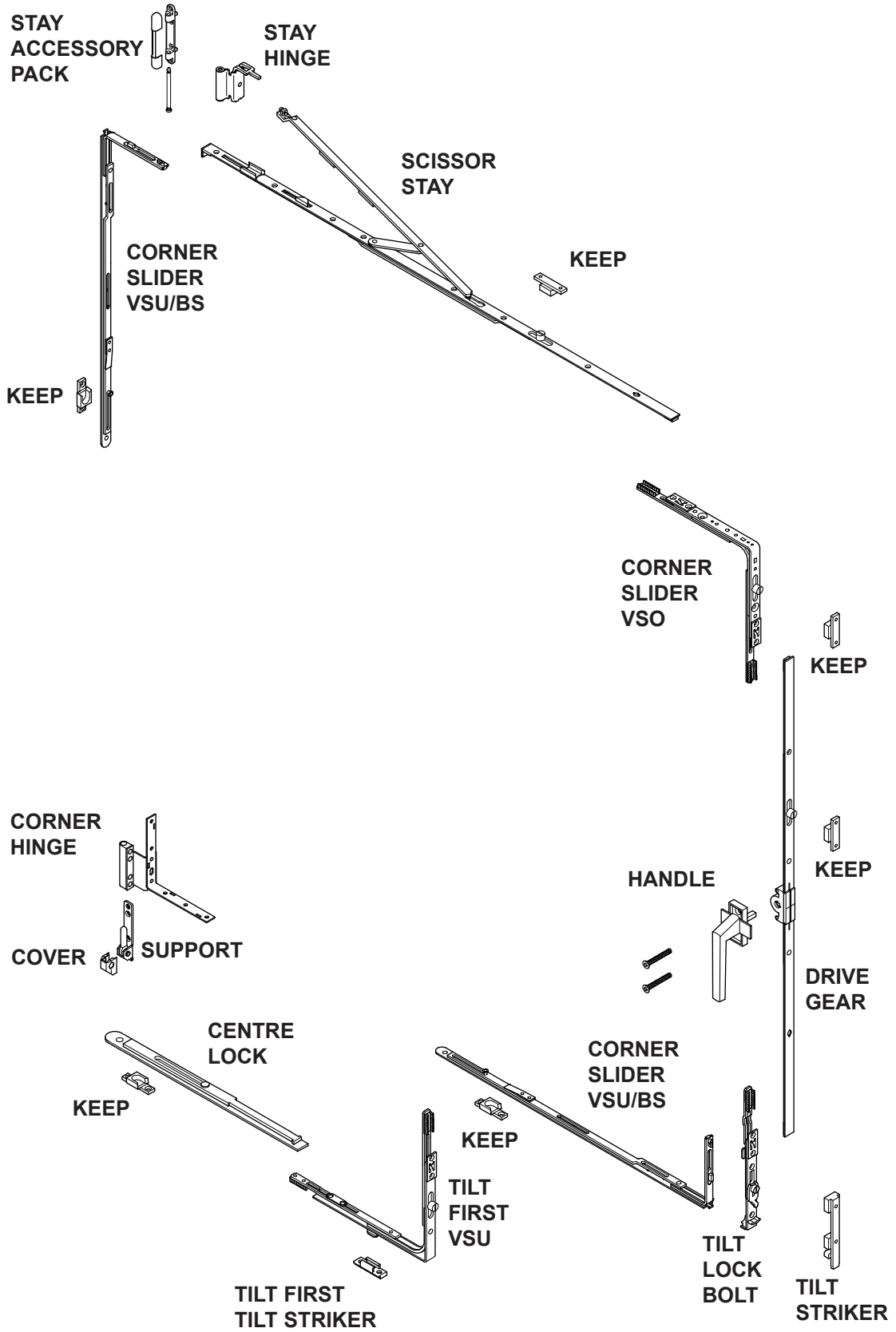
**PART No: 133700
REPAIR GASKET**



**PART No: 133513/T
BAY SADDLE GASKET**

HARDWARE FITTING

SIEGENIA TILT AND TURN GEARING COMPONENT IDENTIFICATION

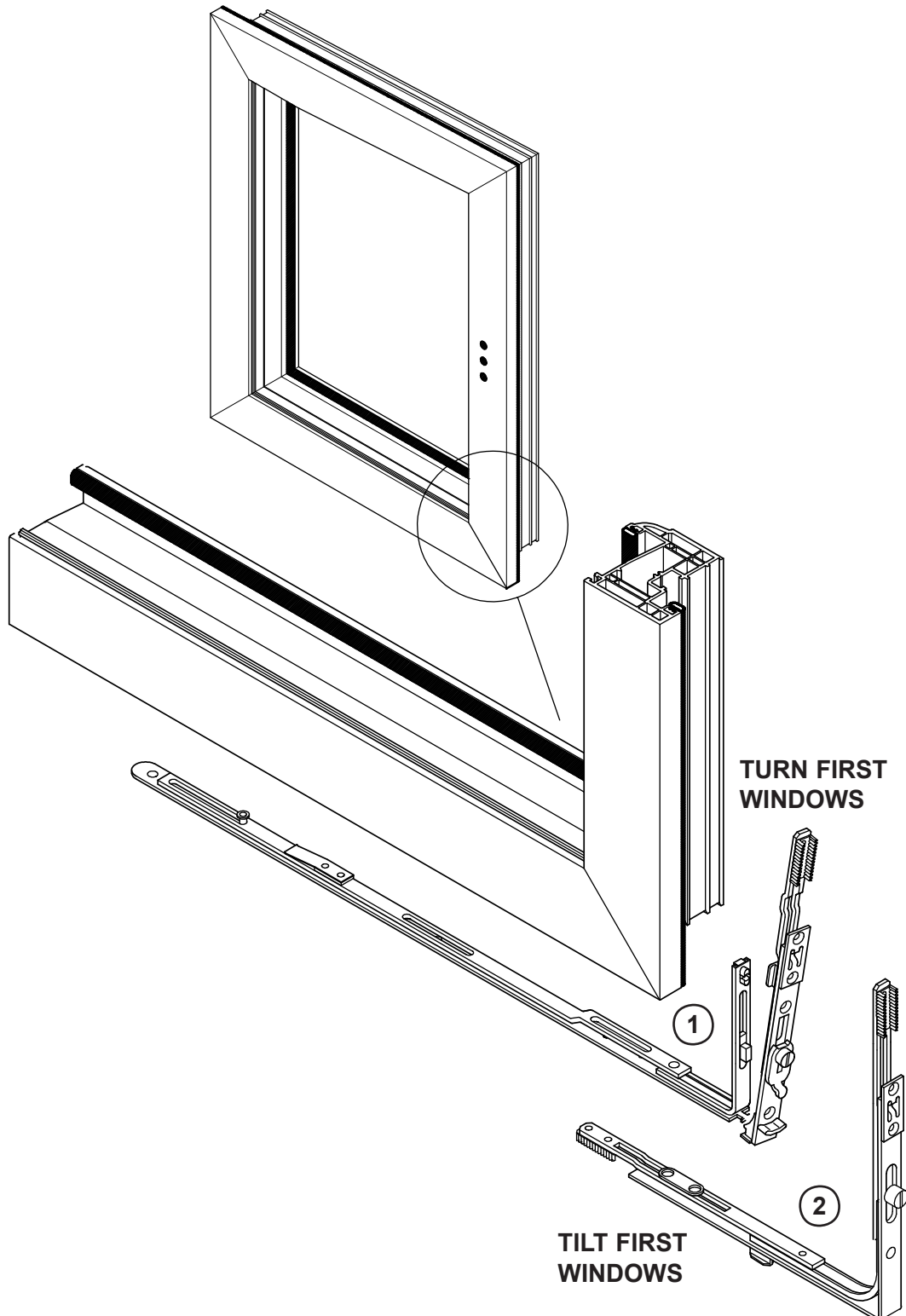


HARDWARE FITTING

SIEGENIA TILT AND TURN GEARING ASSEMBLY

1. **Turn first** windows, fix the linkage into the eurogroove using 3.9 x 25mm CSK PVC-U screws. If a corner slider VSU/BS is required, hinge together with the linkage before fixing.

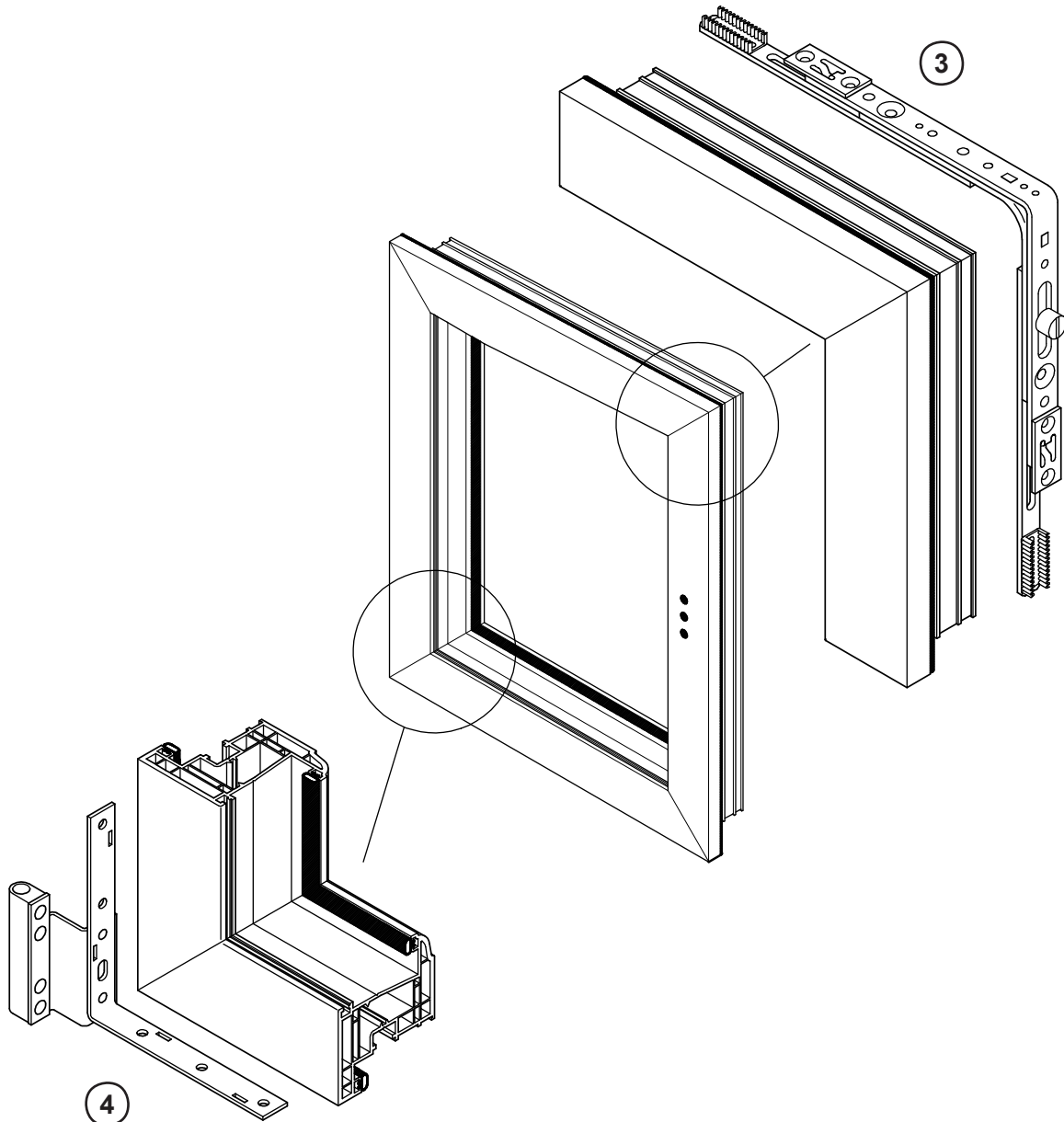
2. **Tilt first** windows, fix the tilt first VSO into the eurogroove using 3.9 x 25mm CSK PVC-U screws.



HARDWARE FITTING

SIEGENIA TILT AND TURN GEARING ASSEMBLY cont.

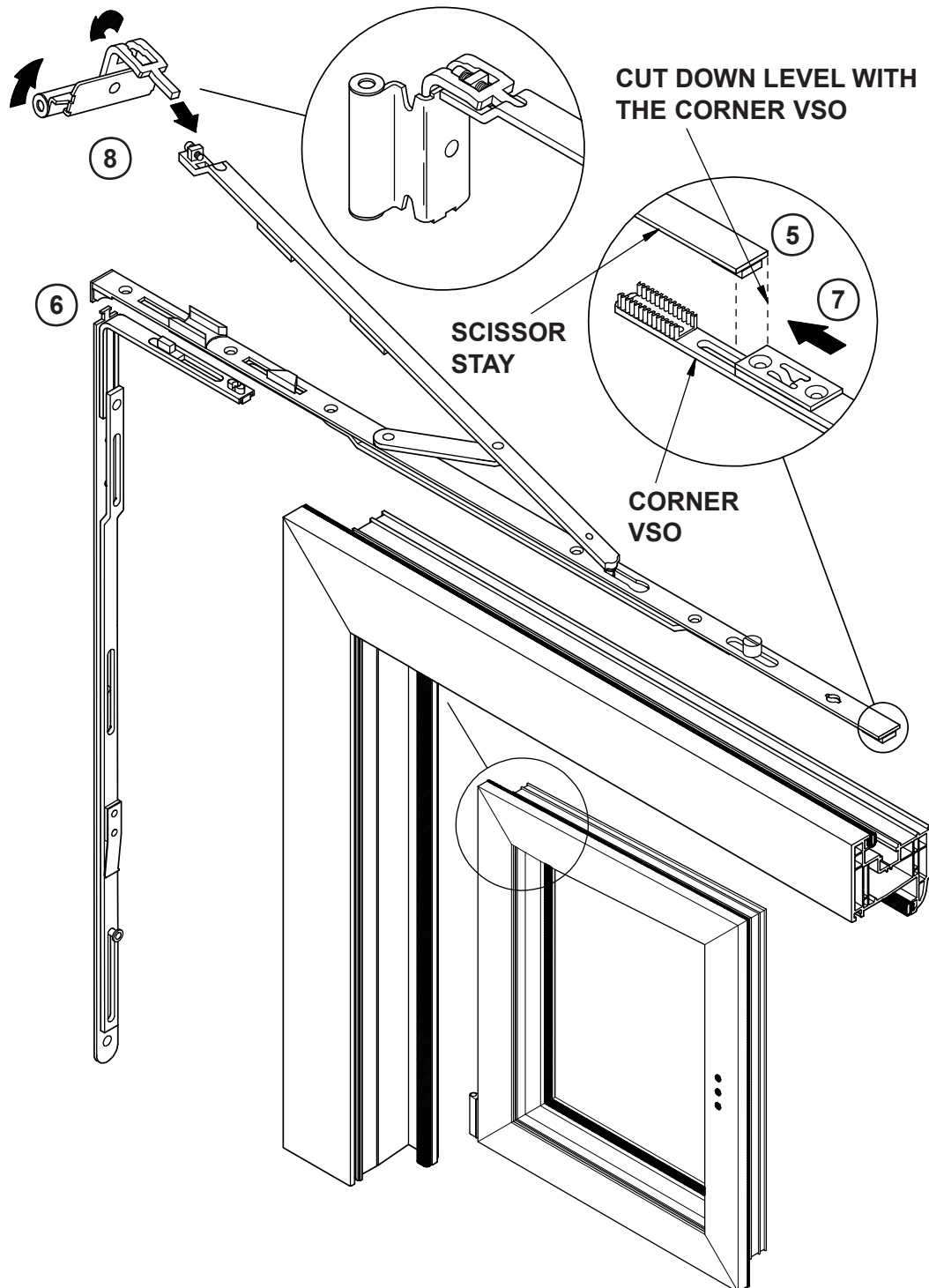
3. Fix the corner slider VSO into the euro-groove using 3.9 x 25mm CSK PVC-U screws.
4. Fix the hinge into the eurogroove using 3.9 x 25mm CSK PVC-U screws.



HARDWARE FITTING

SIEGENIA TILT AND TURN GEARING ASSEMBLY cont.

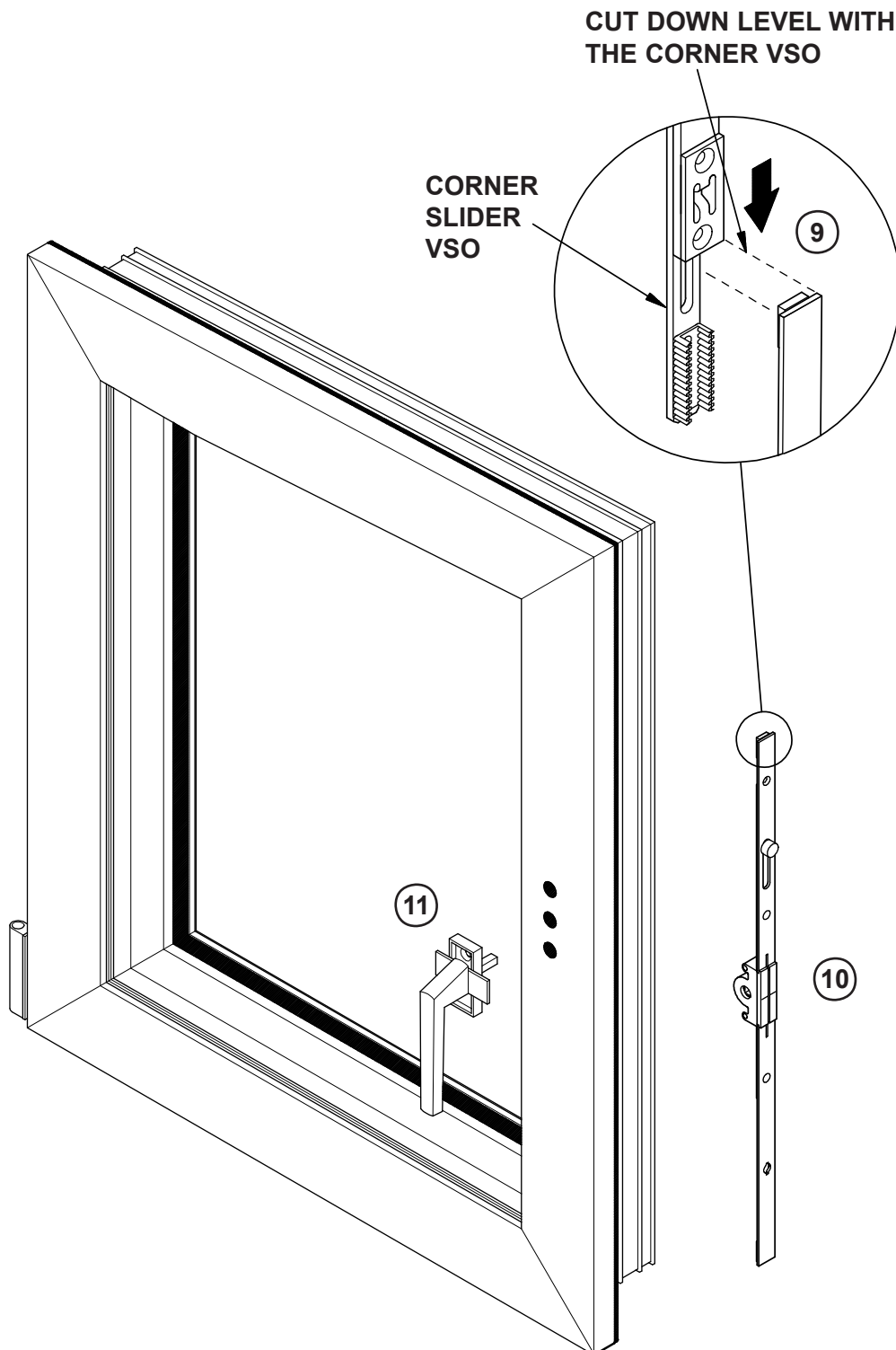
5. Insert the scissor stay and mark the position of the corner slider VSO, remove and cut down.
6. Fix the scissor stay into the eurogroove using 3.9 x 25mm CSK PVC-U screws. If a corner slider VSU/BS is required, hinge together with the scissor stay before fixing.
7. Conceal the joint with the plate on the corner slider VSO.
8. Insert the stay into the scissor stay, then swivel the stay hinge, either LH or RH until it engages.



HARDWARE FITTING

SIEGENIA TILT AND TURN GEARING ASSEMBLY cont.

9. Insert the drive gear, mark the position of the top and bottom corner slider VSO remove and cut down.
10. Fix the drive gear using 3.9 x 25mm CSK PVC-U screws.
11. Fix the handle using M5 x 50mm CSK machine screws

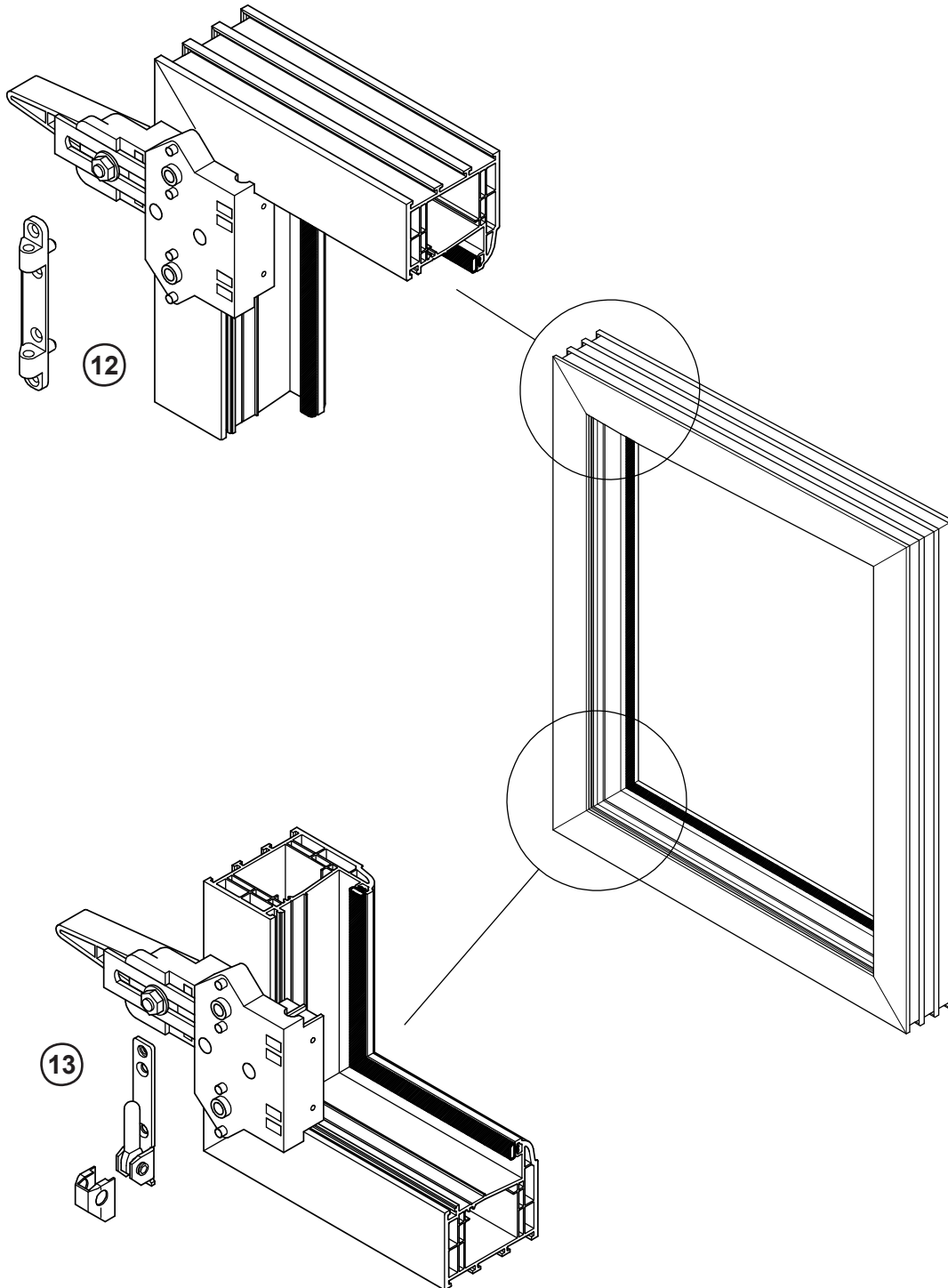


HARDWARE FITTING

SIEGENIA TILT AND TURN GEARING ASSEMBLY cont.

12. Drill for the stay support using the jig. Fix using 3.9 x 30mm CSK PVC-U screws into PVC or M4 x 30mm self drilling/self tapping CSK reinforcement screws into reinforcement.

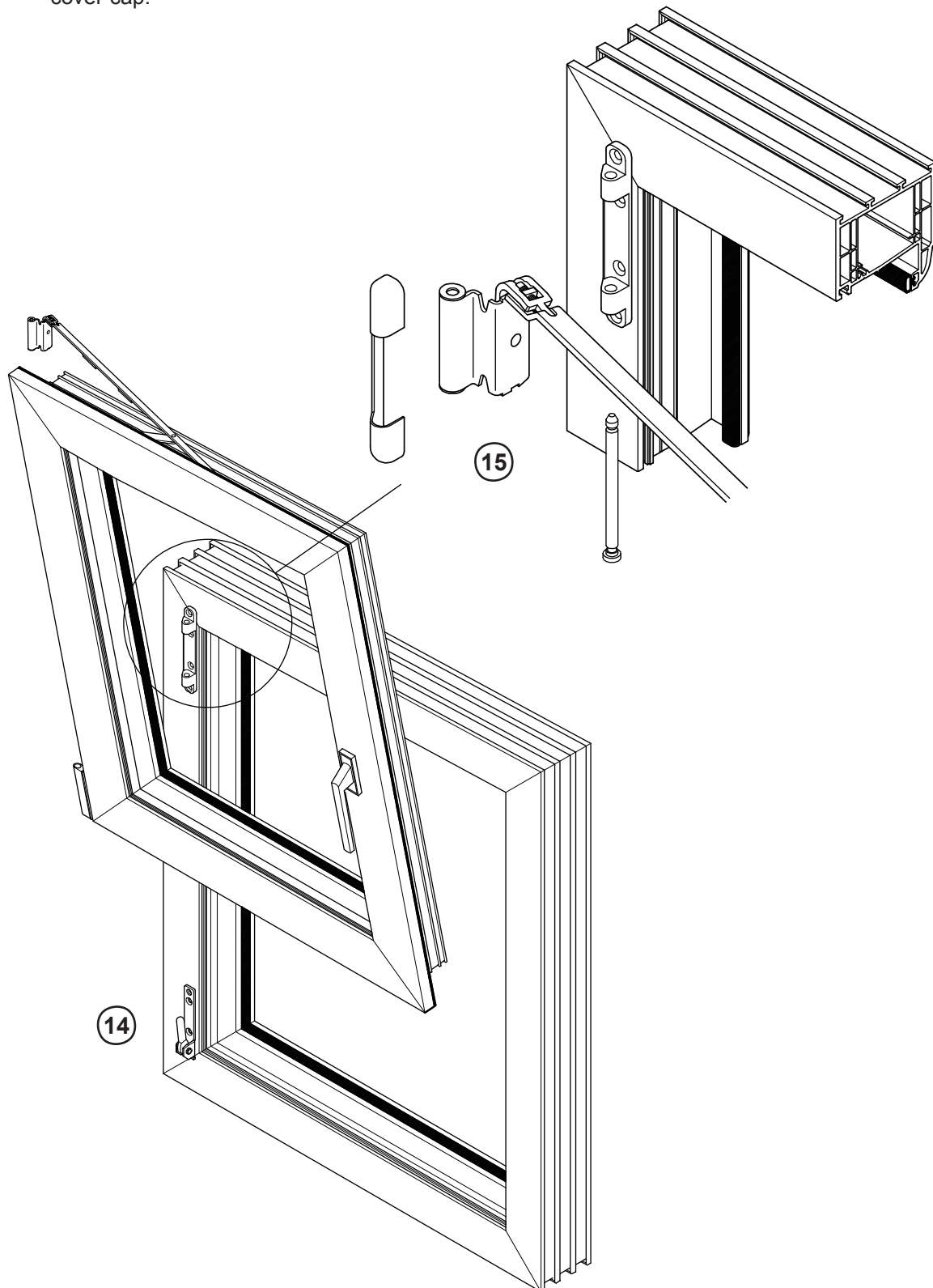
13. Drill for the bottom corner hinge using the jig. Fix using 3.9 x 30mm CSK PVC-U screws into PVC or M4 x 30mm self drilling/self tapping CSK reinforcement screws into reinforcement.



HARDWARE FITTING

SIEGENIA TILT AND TURN GEARING ASSEMBLY cont.

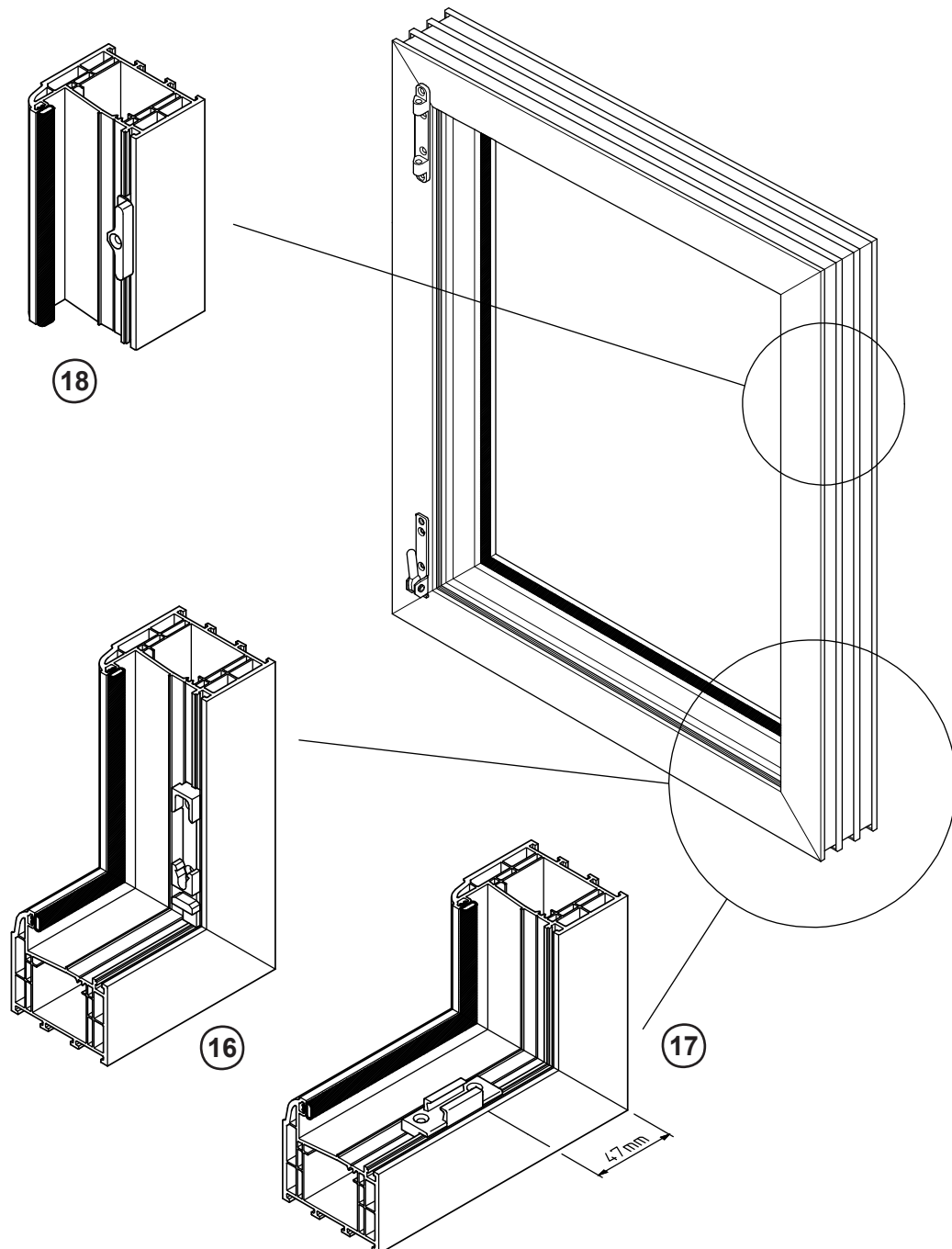
14. Fit the vent frame over the hinge on the outer frame.
15. Locate the scissor stay into the stay support and insert the pin. Conceal with the cover cap.



HARDWARE FITTING

SIEGENIA TILT AND TURN GEARING ASSEMBLY cont.

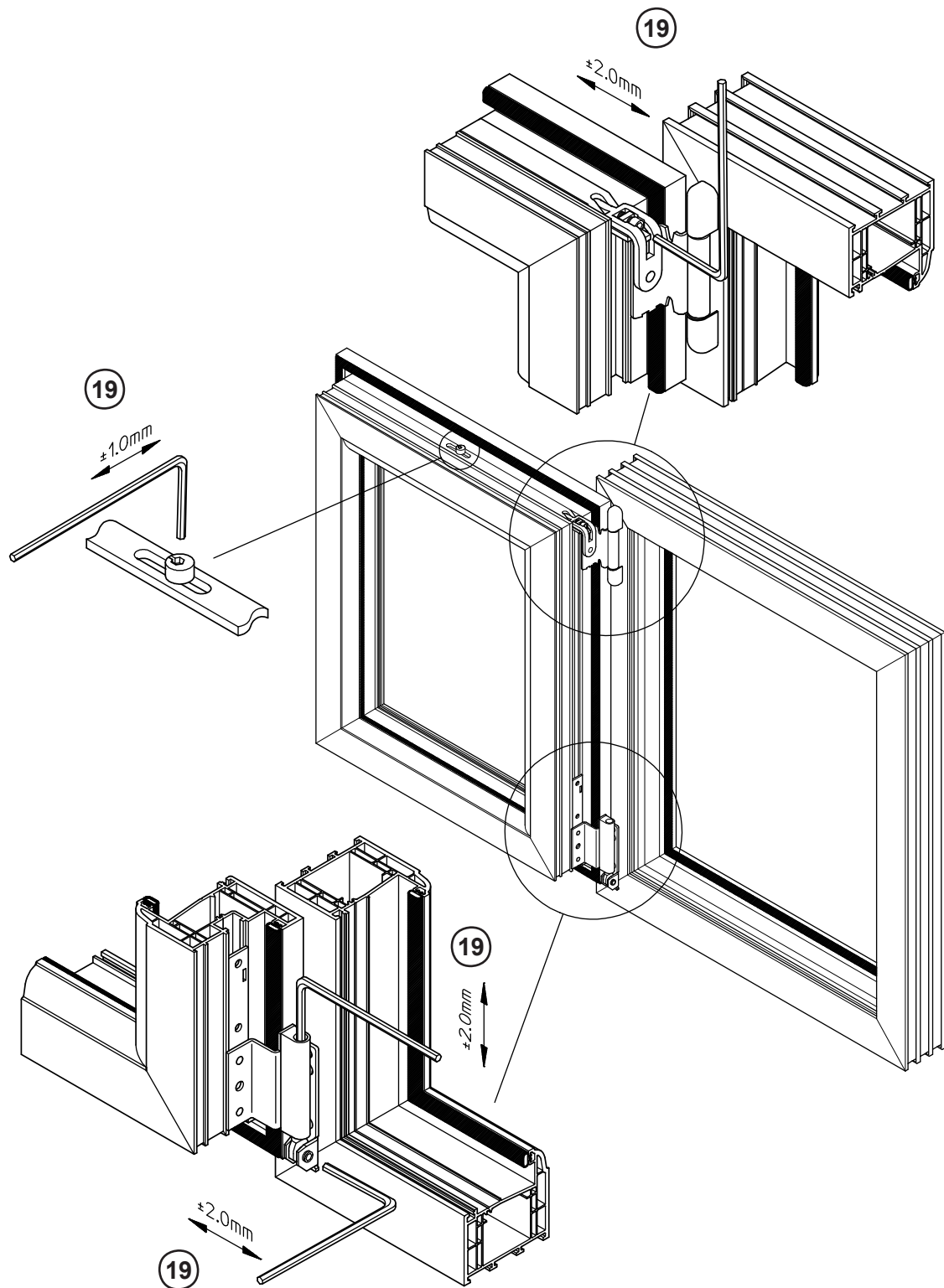
16. **Turn first** windows, fix the turn before tilt striker using 3.9 x 25mm CSK PVC-U screws into PVC or M4 x 25mm self drilling/self tapping CSK reinforcement screws into reinforcement.
17. **Tilt first** windows, fix the tilt before turn striker using 3.9 x 25mm CSK PVC-U screws into PVC or M4 x 25mm self drilling/self tapping CSK reinforcement screws into reinforcement.
18. Mark the position of the keeps and fix using 3.9 x 25mm CSK PVC-U screws into PVC or M4 x 25mm self drilling/self tapping CSK reinforcement screws into reinforcement.



HARDWARE FITTING

SIEGENIA TILT AND TURN GEARING ASSEMBLY cont.

19. Horizontal and vertical adjustment is shown below.



HARDWARE FITTING

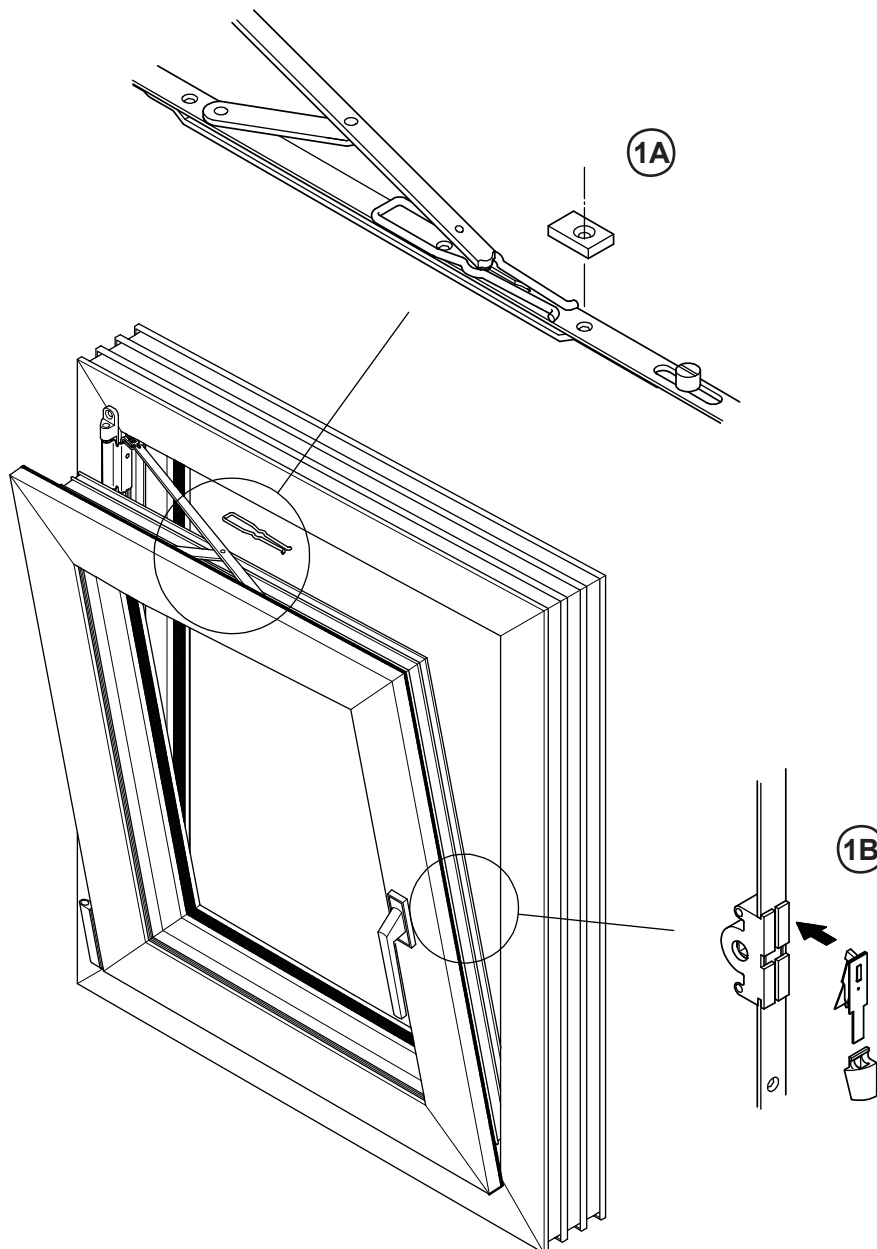
SIEGENIA TILT AND TURN GEARING (OPTIONAL)

ANTI-SLAM DEVICE

1A. An anti-slam device can be fitted to reduce any slamming of the vent which may occur from wind action. Fix to the scissor stay using 3.9 x 25mm CSK PVC-U screws into PVC or M4 x 25mm self drilling/self tapping CSK reinforcement screws into reinforcement.

SWITCH BARRIER

1B. A switch barrier can be fitted to prevent the simultaneous operation of the window in the tilt position and the turn position. Fit to the drive gear and clip the finger cover over.



GLAZING

GLASS PACKING

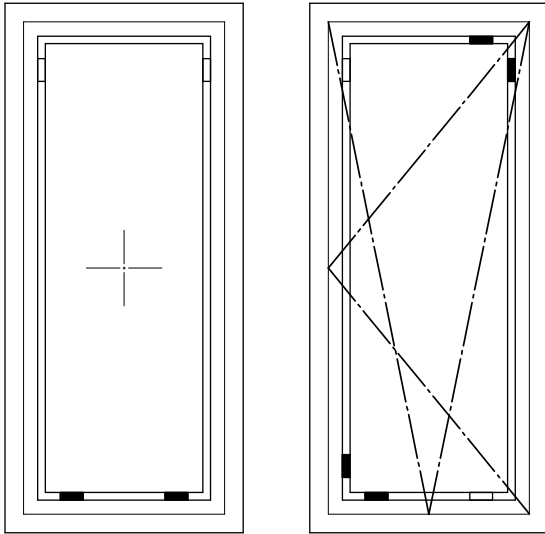
All glazing should be in accordance with BS6262 and all current codes of practice.

Position the glazing packers as illustrated in Fig 13.1.

Note: 'Toe and heel' the packers on Tilt & Turn windows to ensure good operation of the window.

Packers are also placed at the locking points to give extra security from forced entry.

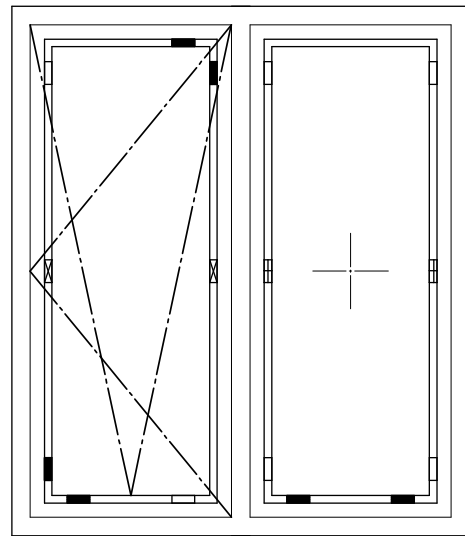
When openers are adjacent to fixed lights, packers are also put in the fixed light next to the locking points to prevent deflection of the transom or mullion. See fig 13.2.



□ Spacer

■ Glazing Packer

Fig. 13.1



⊠ Packing at locking points

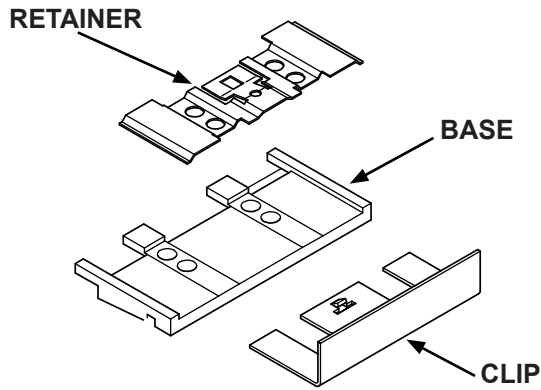
▤ Packing at jambs to transfer load

Fig.13.2

GLAZING

GT GLAZING CLIPS

COMPONENT IDENTIFICATION

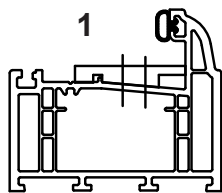
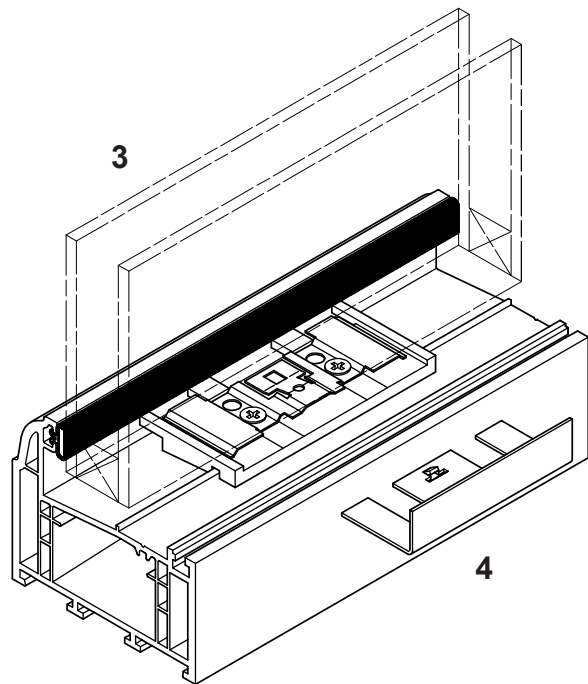
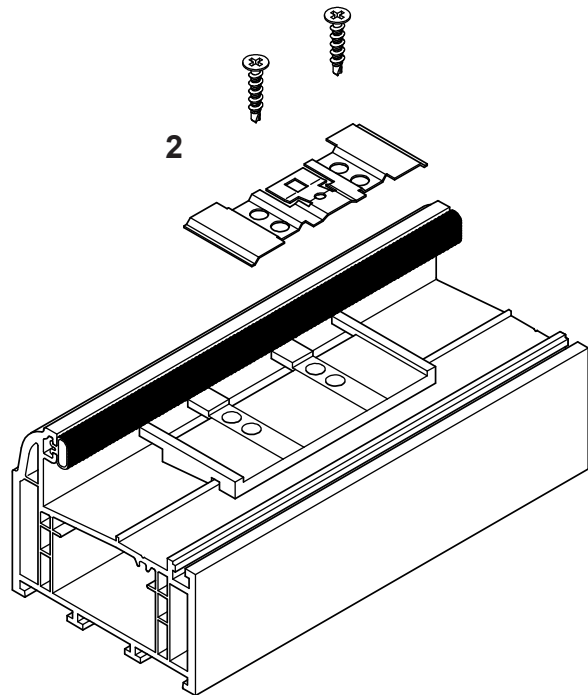


GT WINDOWS REFERENCE		
PART	FOR USE WITH	REF.
BASE	ALL PROFILES EXCEPT B31 & B36	LILAC
BASE	B31 & B36	PINK
CLIP	24mm GLAZING	P. No. 25
CLIP	28mm GLAZING	P. No. 21

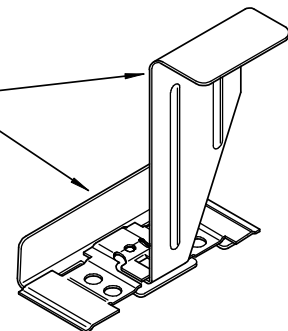
ASSEMBLY

Additional security can be achieved with glazing clips. It is recommended that two clips are used on each of the longest side, they should be positioned approximately 30mm from each corner.

1. Position the base and locate the retainer onto the base.
2. Fix using 3.9 x 19mm self tapping / drilling c/sunk screws.
3. Fit the double glazed unit on packers placed adjacent to the glazing clips.
4. Insert the clip into the body and push fully home ensuring the slot in the clip engages with the retainer and can not be pulled out.

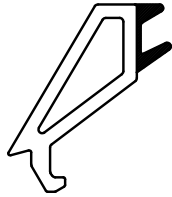


IDG key for internal deglazing.
Clip and base plate assembly.

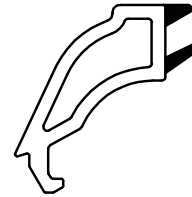


GLAZING

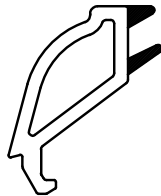
KNOCK IN GLAZING BEADS



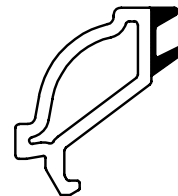
B50
28mm BEVELLED
GLAZING BEAD



B61
24mm OVOLO
GLAZING BEAD



B60
28mm OVOLO
GLAZING BEAD



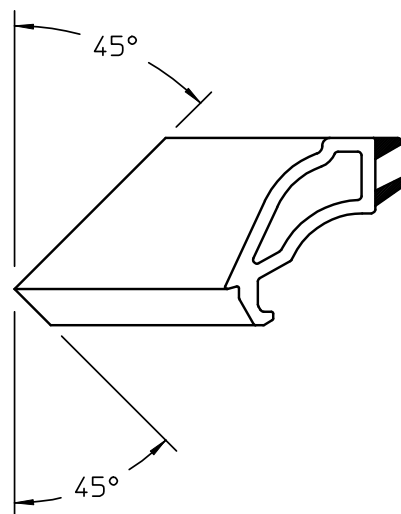
B62
28mm STEPPED OVOLO
GLAZING BEAD

BEAD CUTTING

The glazing beads have been designed to be mitred, however they can be scribed with the correct end mill cutter.

The mitred beads require suitable supports when cutting at 45 degrees to simulate their position when glazed.

Woodgrain beads are cut short by approximately 1mm per metre to allow for thermal movement.



The bead foot must be cut at 45 degrees to allow access into the profile.

BS7950

IMPROVED SECURITY PERFORMANCE OF DOMESTIC WINDOWS

The Kitemark has, for many years, successfully given confidence in weathertightness and basic security performance of windows. However, rising crime has created a demand for a further feature; an improved level of security performance.

BS7950 : 1997 KITEMARK CERTIFICATION OF IMPROVED SECURITY PERFORMANCE OF DOMESTIC WINDOWS

Certification of improved security performance is not a 'stand alone' scheme and will be an option which complements the existing BS7412 Kitemark scheme.

- BS7412 Kitemark must be held for the window specification concerned.
- Kitemark licences will be appended with a 'special schedule'.
- Approved windows will be controlled to a detailed design specification.
- Compliance with BS7950 will be assessed by testing at BSI, a window, the fabrication of which, has been witnessed by a BSI representative.
- Window manufacture is controlled to clear assembly instructions.
- Installation of windows carried out to detailed installation instructions by trained installers.
- Quality system third party audited.
- Windows audit tested.
- Kitemark may be used on the product and advertising literature.

COMPLIANCE WITH BS7950 IMPROVED SECURITY OF DOMESTIC WINDOWS

The window range described within this section of the manual have been successfully tested by BSI to BS7950: 1997

Maco Multi Trend i.S Tilt & Turn System

Hardware selection is to be carried out by contacting Maco, screw fixing must be carried out using the screws specified.

BS7950

BS7950 TILT AND TURN WINDOW SPECIFICATION

This specification is formulated to ensure that Spectus customers manufacture windows in accordance with those which have achieved BS7950.

Spectus have been awarded BS7950 on tilt & turn windows manufactured from a combination of the following sections:-

Profiles

- B02 Intermediate Outer Frame (Bevelled)
- B03 Large Outer Frame (Bevelled)
- B06 Intermediate Outer Frame (Ovolo)
- B07 Large Outer Frame (Ovolo)
- B14 Large Transom/Mullion (Bevelled)
- B15 Large Transom/Mullion (Bevelled)
- B16 Intermediate Transom/Mullion (Bevelled)
- B17 Intermediate Transom/Mullion (Bevelled)
- B22 Intermediate Transom/Mullion (Ovolo)
- B23 Intermediate Transom/Mullion (Ovolo)
- B24 Large Transom/Mullion (Ovolo)
- B25 Large Transom/Mullion (Ovolo)
- B33 Vent (Bevelled)
- B38 Vent (Ovolo)

Reinforcements

Reference must be made to Section 6.0 Reinforcement to ensure the correct application for each reinforcement.

- BR06 Outer frame reinforcement (aluminium)
- BR06S Outer frame reinforcement (steel)
- BR07 Outer frame reinforcement (aluminium)
- BR07S Outer frame reinforcement (steel)
- BR16 Transom/Mullion reinforcement for mechanical joints (aluminium)
- BR16S Transom/Mullion reinforcement (steel)
- BR17S Transom/Mullion heavy duty reinforcement (steel)
- BR22 Transom/Mullion reinforcement for mechanical joints (aluminium)
- BR22S Transom/Mullion heavy duty reinforcement (steel)
- BR24 Transom/Mullion reinforcement for mechanical joints (aluminium)
- BR24S Transom/Mullion heavy duty reinforcement (steel)
- BR33S Vent reinforcement (steel)

Beads

Refer to section 13 of this manual, Glazing.

Hardware

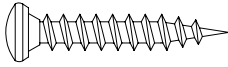
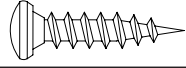
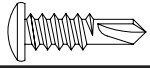
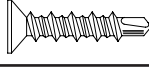

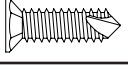
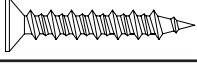
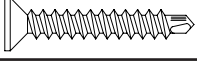
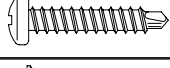
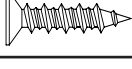
Spectus do not stock the specified hardware it can be bought direct from a Maco stockist, contact Maco to find your nearest stockist:

MACO Door & Window Hardware (U.K.) Ltd
Eurolink Industrial Centre
Castle Road
Sittingbourne
Kent
ME10 3LY

Tel No: 01795 433900

BS7950

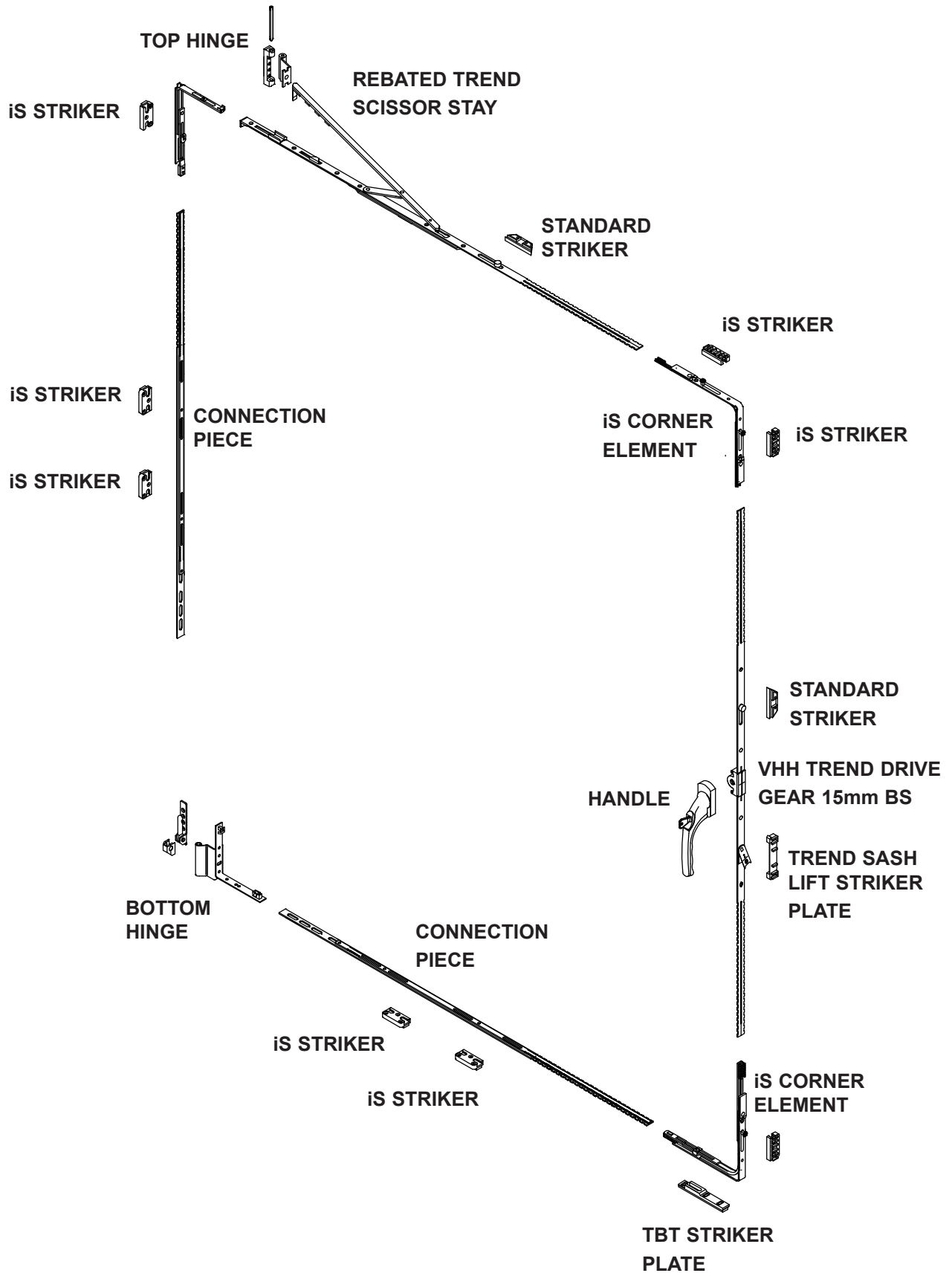
SCREWS The following stainless screws must be used for BS7950 requirements.

BS7950 SCREW SELECTION CHART		
SCREW REFERENCE	DESCRIPTION	ILLUSTRATION
A	4.8 x 25mm SS Oval Head PVC-U Screw	
B	4.3 x 20mm SS Oval Head PVC-U Screw	
C	4.8 x 16mm Pan Head Reinforcement Screw	
D	3.9 x 19mm CSK Head Reinforcement Screw	
E	3.9 x 25mm CSK Head Reinforcement Screw	
F	M4 x 16mm Facet Head Reinforcement Screw	
G	3.9 x 25mm CSK Head PVC-U screw	
H	3.9 x 25mm CSK Head Reinforcement Screw	
I	3.9 x 19mm CSK Pan Head Reinforcement Screw	
J	3.9x19 CSK Head PVC-U Screw	

Use type **G** screws to fit gearing into PVC-U sections, type **H** if reinforced.

BS7950

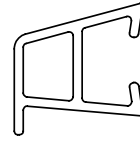
HARDWARE IDENTIFICATION



APPENDIX 1 WEATHER BAR FITTING

WEATHER DRIP BAR

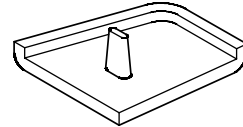
1. B86 Weather Drip Bar may be fixed externally. It is fixed to the profile using press in drip bar fixing studs (BM15), at 300-400mm centres. Positioning of the weather drip bar is achieved through the use of a drill jig (BJ12) as shown. The jig can be used both prior to hanging the sash or when the sash is hung and in the closed position. The weather bar should have 5mm minimum clearance inside the frame, when required, the end caps (BM16) should be glued in place.



**B86
WEATHER DRIP**



**BM15
FIXING STUD**



**BM16
END CAP**

