

Multi -Trend Invisible Tilt Before Turn

Technical Information
Timber



Closed

Tilt



Turn

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1. General

This technical booklet gives details of the Maco Multi Trend Tilt & Turn Invisible fittings and their application to Timber windows. There are a number of variables with Maco Trend fittings, this booklet is based on those stocked as standard by Titon.

The drawing and details given are not intended to guarantee performance.

It is recommended that testing to current standards is carried out before production commences.

BS EN 14351 Part 1
BS 6375 Parts 1 & 2
BS 7950

2. Window Criteria

2.1 Weight

Max: sash weight 100Kg (including timber, glass, ironmongery & any additional fittings)

2.2 Sash Sizes

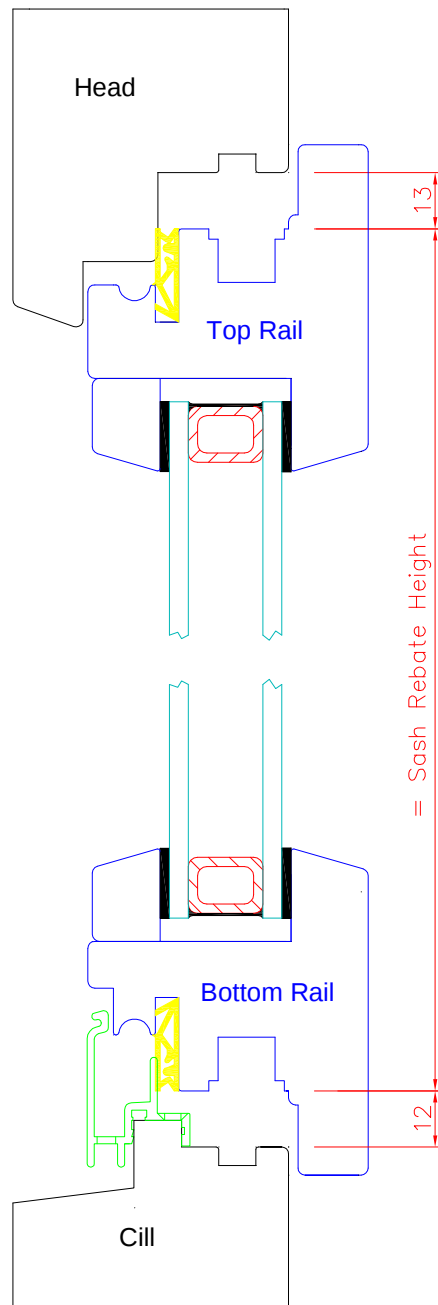
	Width (SRW)	Height (SRH)
Max Sash Rebate	1310mm	2350mm
Min Sash Rebate	395mm	500mm

The overall area must not exceed 2.4 M².

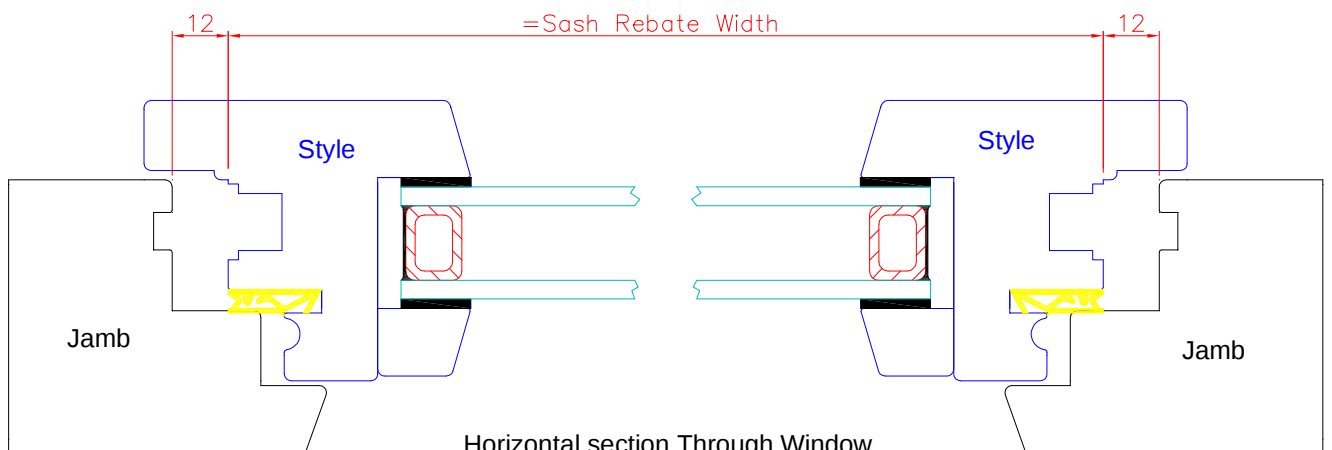
The height to width ratio must not exceed 1:1.5

E.g. a sash of height 800mm, width must not exceed 1200mm.

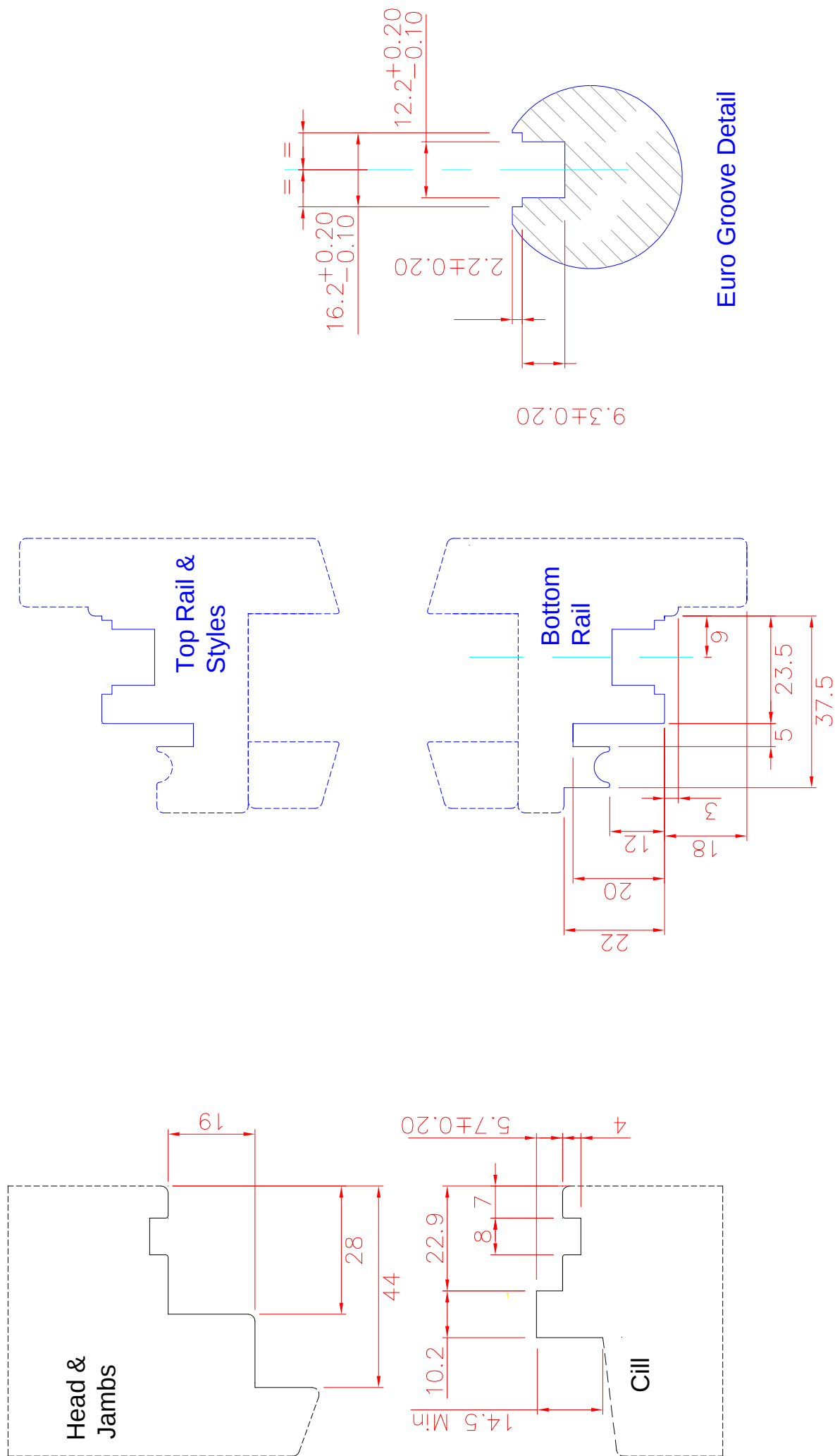
3) Example Section



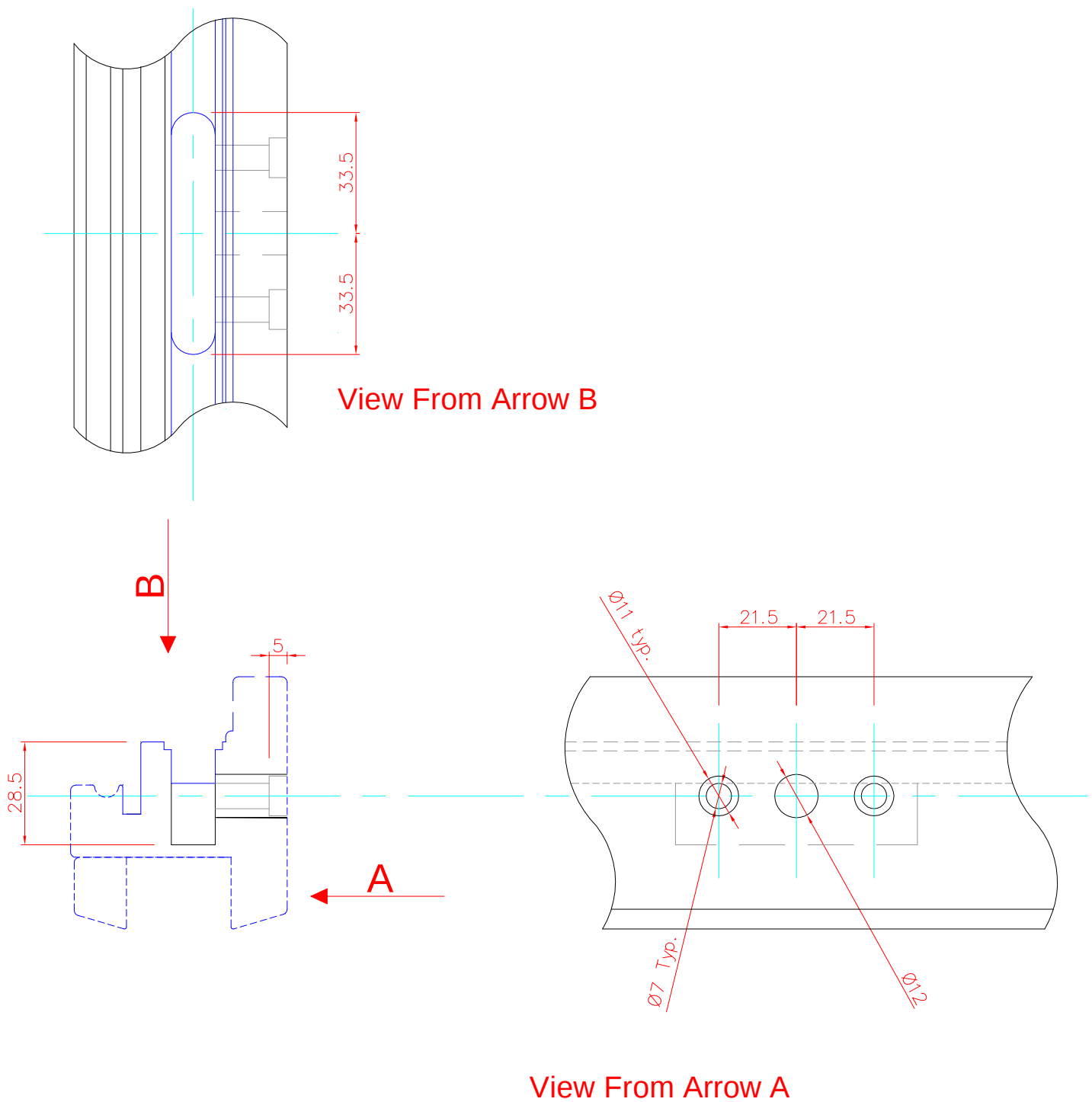
Vertical section Through Window



Horizontal section Through Window



Sections shown dotted are for illustration purposes only.
The customer is responsible for designing & approving full section details.

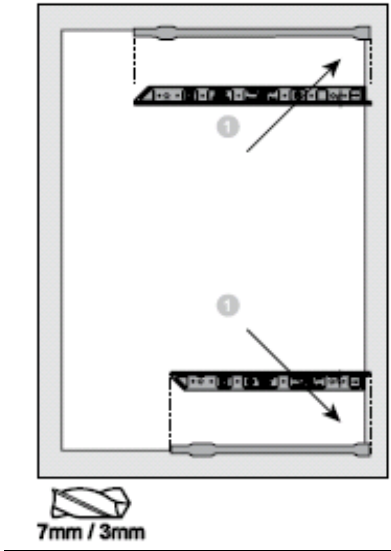


Lock Box And Handle Hole Details

Handle hole configuration may change dependent upon handle style.

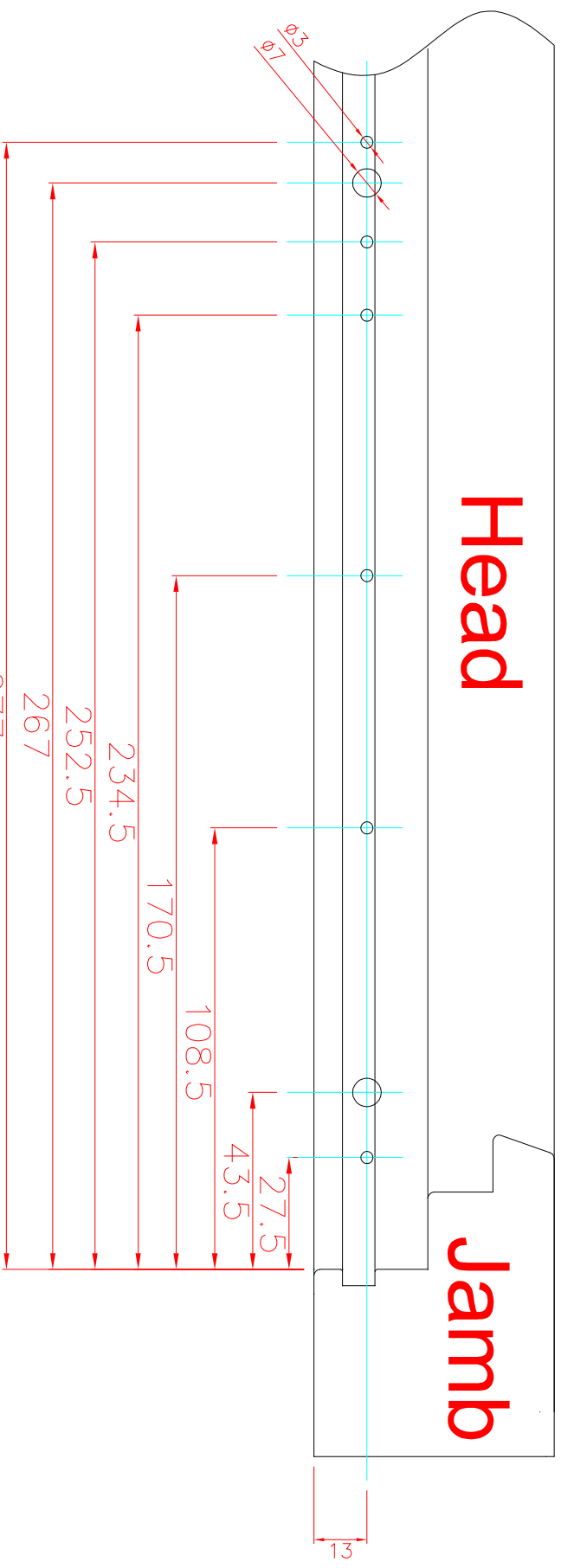
4. Frame Drilling

Pilot drilling for fixing screws and hinge dowels can either be done using a jig (as below) or by using the dimensions on the following page.

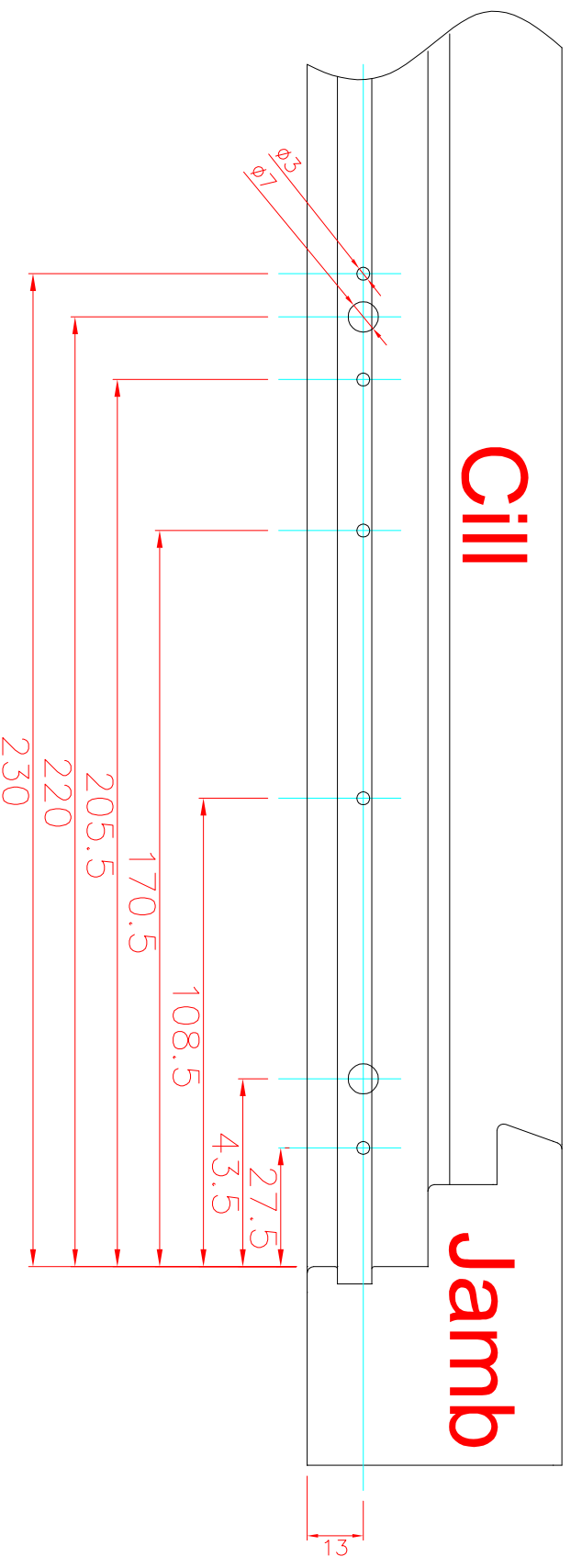
	Locate jigs, drill 3mm screw pilot holes and 7mm dowel holes, ensuring depth of 7mm holes are sufficient to suit length of dowels. Right hand configuration shown. Jig MA102978/099
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Head

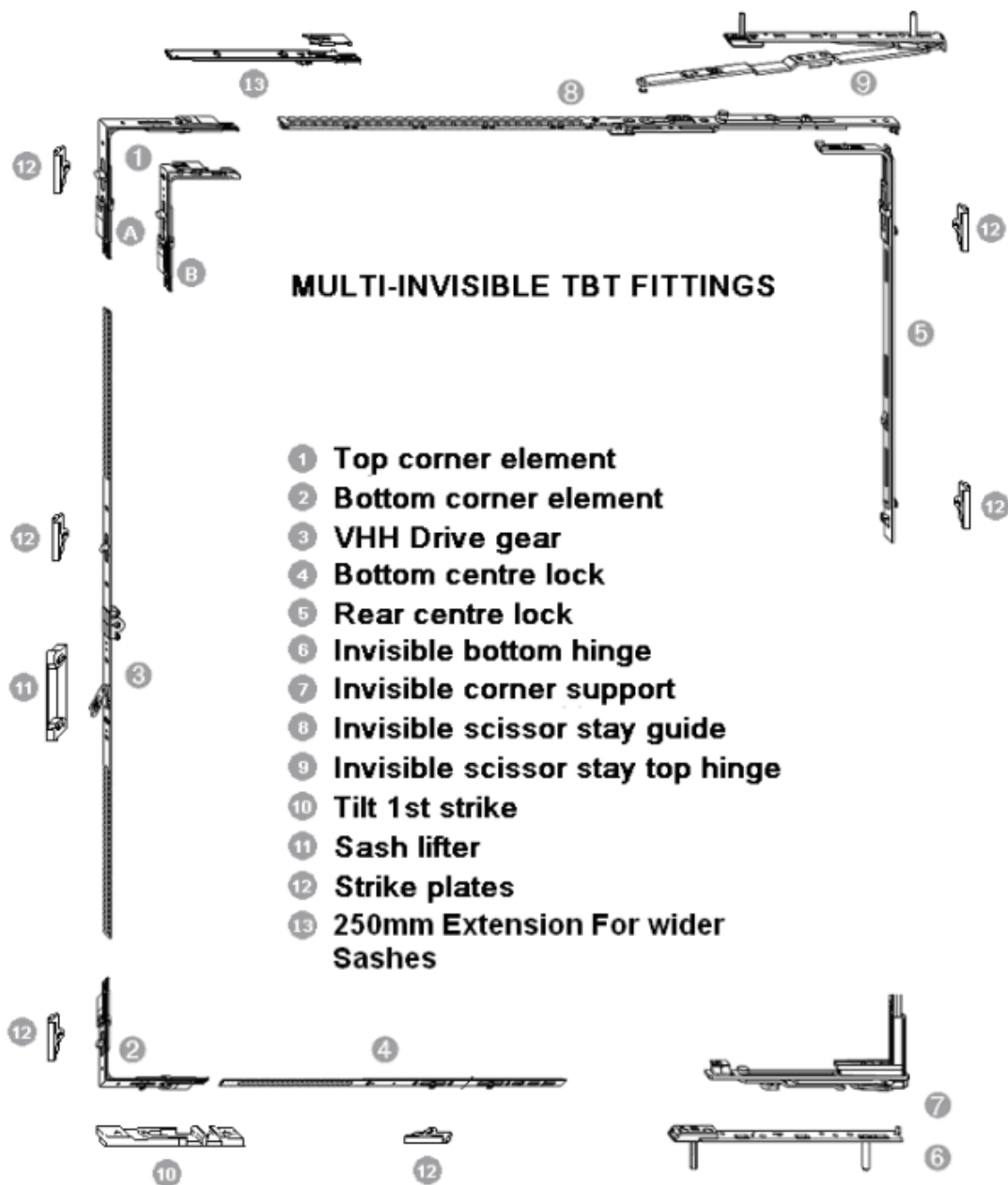
Jamb



Jamb



5) Assembly Instructions



Note All ironmongery is supplied pre set in the tilt position, moving them prior to assembly will cause aligning issues whilst assembling.

Sash Assembly (lockbox pre machined)

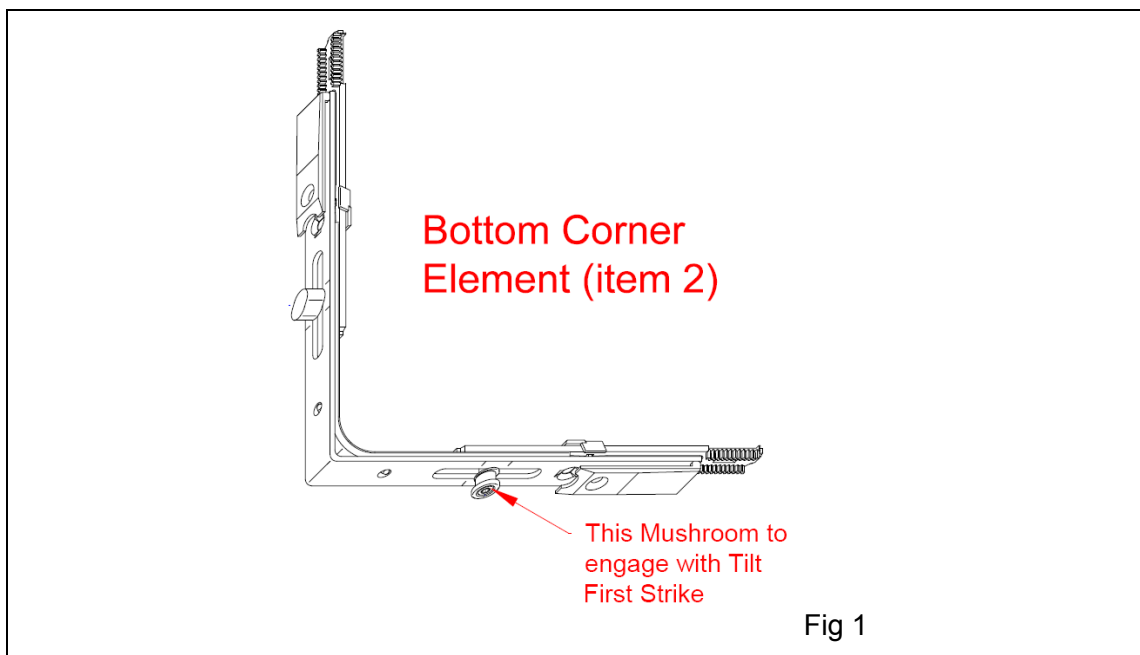
- 1: Mount top corner element (item 1).
- 2: Mount bottom corner element (item 2), IS mushroom to bottom of sash. See fig 1
- 3: Mount Bottom corner lock (item 4), this item is only required when sash exceeds 711mm wide. Use mushroom most central to cill, item can be trimmed if necessary, either to position a mushroom more centrally or to remove the second mushroom if not used.
- 4: Mark and cut drive gear (item 3) (ensure full engagement can be achieved), and then mount.
- 5: Couple scissor stay (item 8) with centre lock (item 5). Mark & cut scissor stay. Mount scissor stay and centre lock. Where sash is wider than 1061mm fit Extension (item 13), between scissor stay and top corner element.
6. Mount corner support (item 7)
- 7: Fit gasket - Mitring corners and glue. (Loctite 406 recommended).

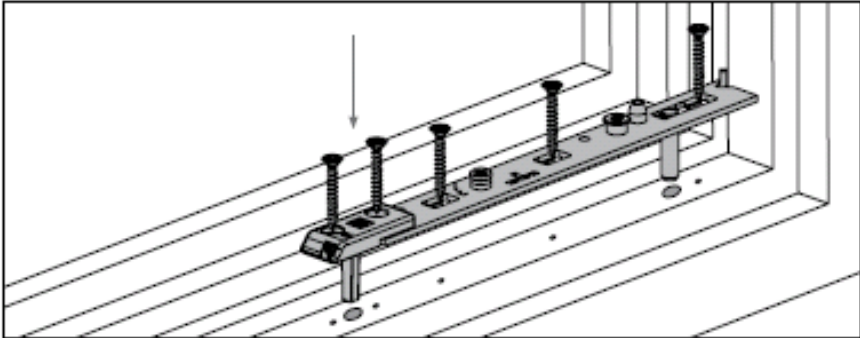
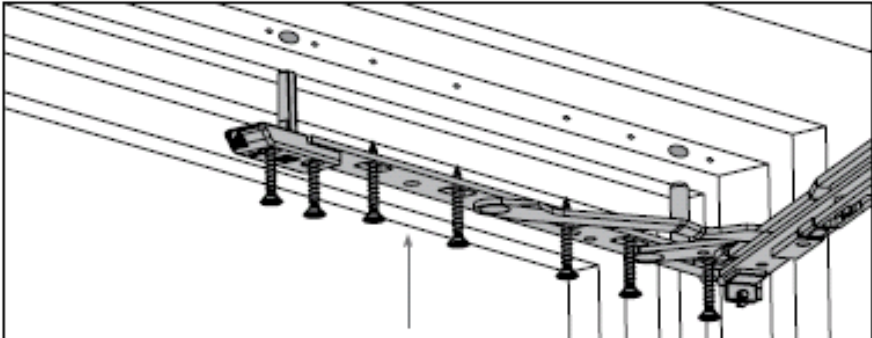
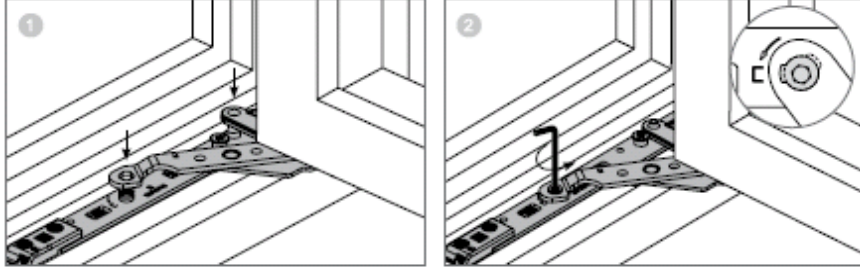
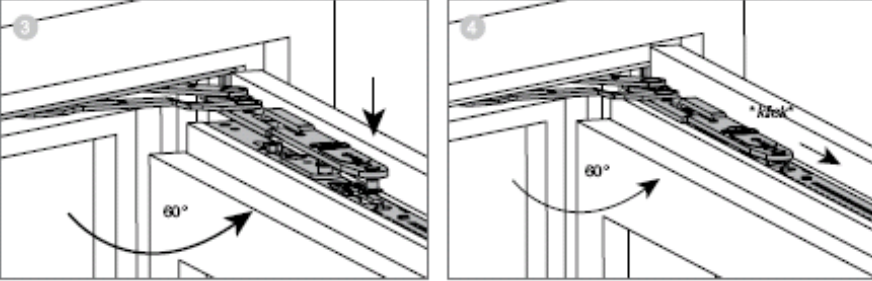
Frame Assembly (Hinges holes pre drilled)

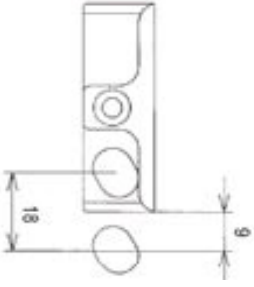
- 1: Cut waterbar to length and fit end caps, use silicone sealant to seal caps to waterbar and then both to the frame.
- 2: Mount bottom hinge(item 6) See fig 2
- 3: Mount scissor stay top hinge (item 9) See fig 3

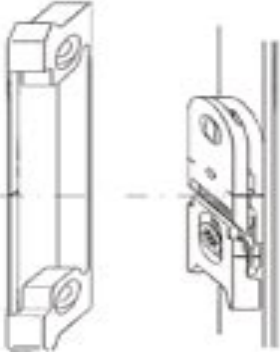
Frame And Sash Assembly

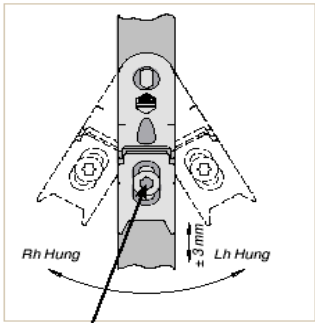
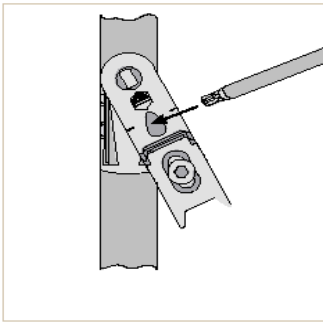
- 1: Mount sash onto bottom hinge and secure by turning eccentric pin with 4mm Allan key See fig 4.
- 2: Open sash to 60°, depress the scissor stay arm guide pin into the scissor stay guide. Pull the sash in the direction of the arrow so that the scissor stay arm clicks into the guide See fig 5.
3. Close the window and crank the handle to the open position.
- 3: Mount IS tilt first strike (item 10) up against jamb. See fig 6.
- 4: Fit Keeps (item 12). See fig 7.

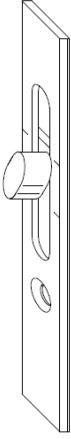


	Mount bottom hinge(item 6) Fig 2
	Mount scissor stay top hinge (item 9) Fig 3
	Fig 4
	Fig 5
	iS Tilt First Striker Plate Fig 6

	Standard Striker Plate 1. With the locking cams in the central position mark the centre of the cam onto the outer frame. See fig 9 2. Position and fix the standard striker plate so that the edge of the striker plate is 9 mm away from the centre of the cam. Fig 7
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	Sash Lifter Striker Plate 1. Ensure that the sash is square in the frame with the correct cover. 2. Transfer the centre line on the sash lifter to the outer frame. 3. Position and fix the sash lifter striker plate onto the frame ensuring that both centre lines correspond with each other. Fig 8
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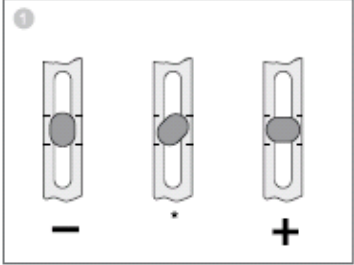
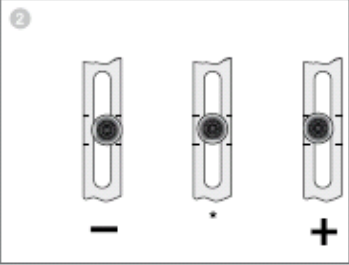
Adjusting the sash lifter  - Slacken screw with TX 15 Torx Key - Adjust plate - Re-tighten screw and open Re-setting the sash lifter:  - Press the spring with a TX 15 key - Move the sash lifter to the other side Fig 9	
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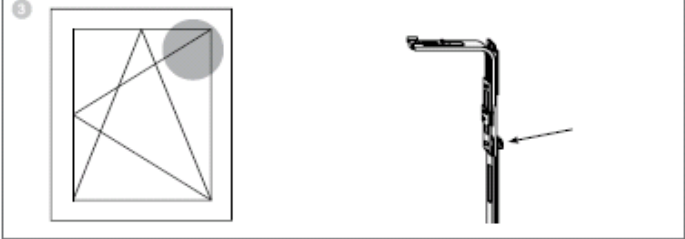
 Top Position - Locked Centre Position - Tilt Bottom Position - turn	<u>Mushroom Positioning</u> Ironmongery is supplied in the Centre tilt Position Fig 10
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	Assembly tool MA206417/099
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6. Sash Adjustment

Increase / decrease weatherstrip compression

1 	2 	Adjusting locking cam Or I.S. Cam
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3 	I.S Cam on Centre Lock
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	Pivot post adjustment
	Corner support adjustment.
	Corner Support +2mm -1.5mm
	Scissor Stay Arm +2mm -1.5mm

7. Removal Of Sash

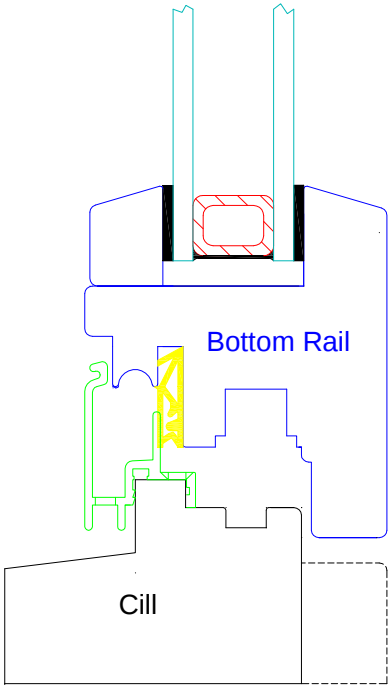
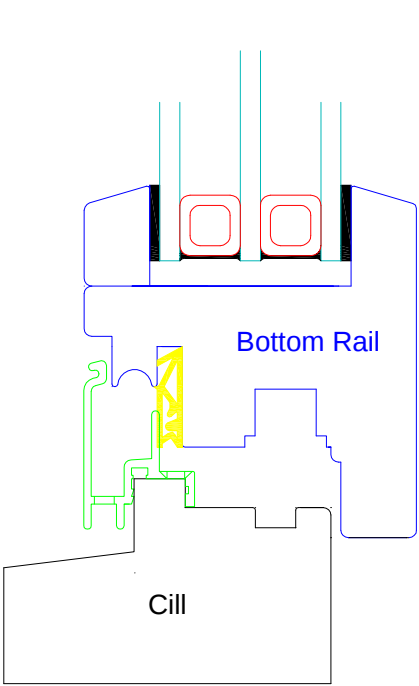
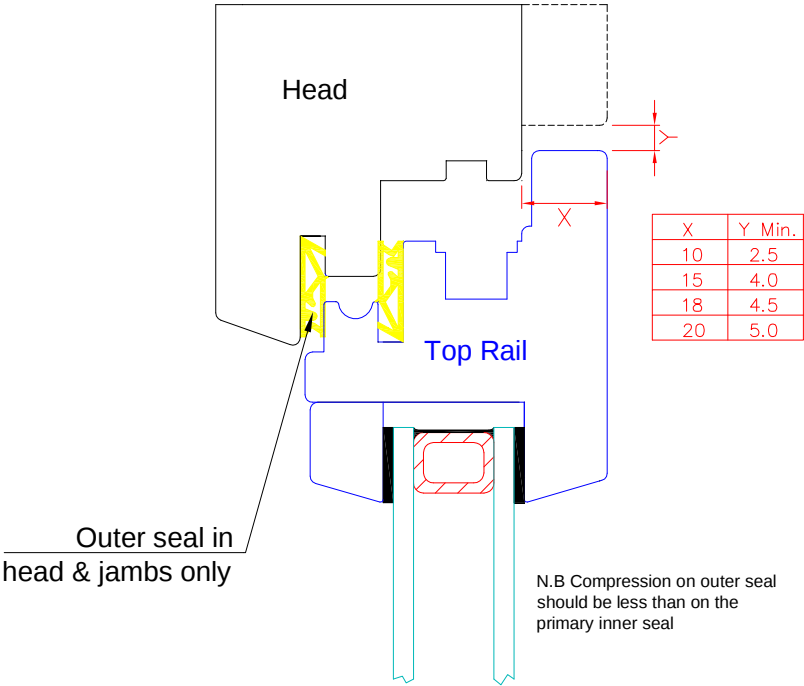
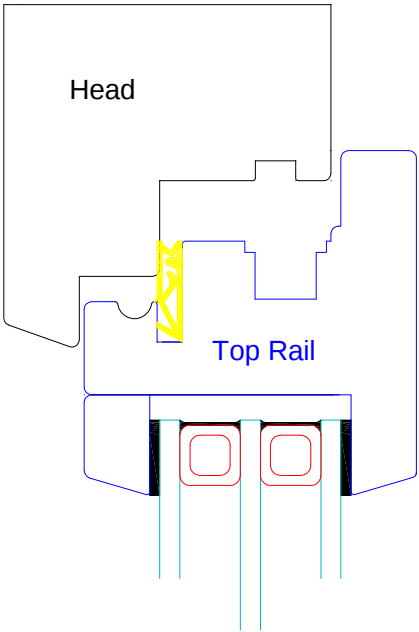


1) Rotate pin to align notch in hinge arm and lip on the pin.



2) Lift spring to disengage scissor stay top hinge from scissor stay guide. Sash will now lift off.

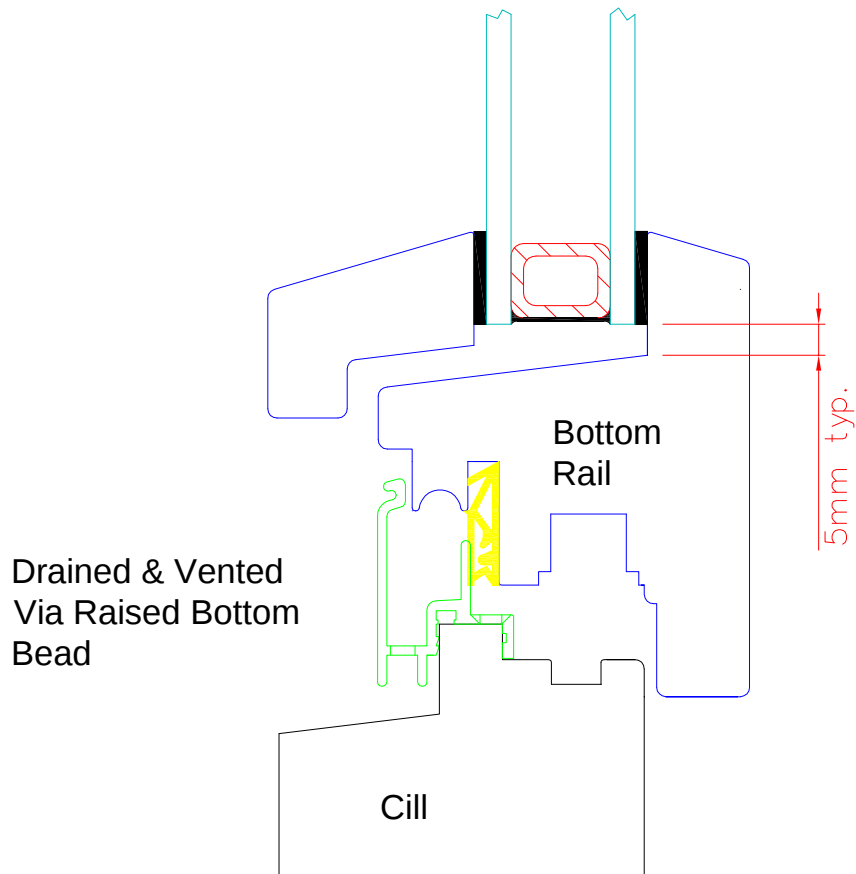
8. Section Options



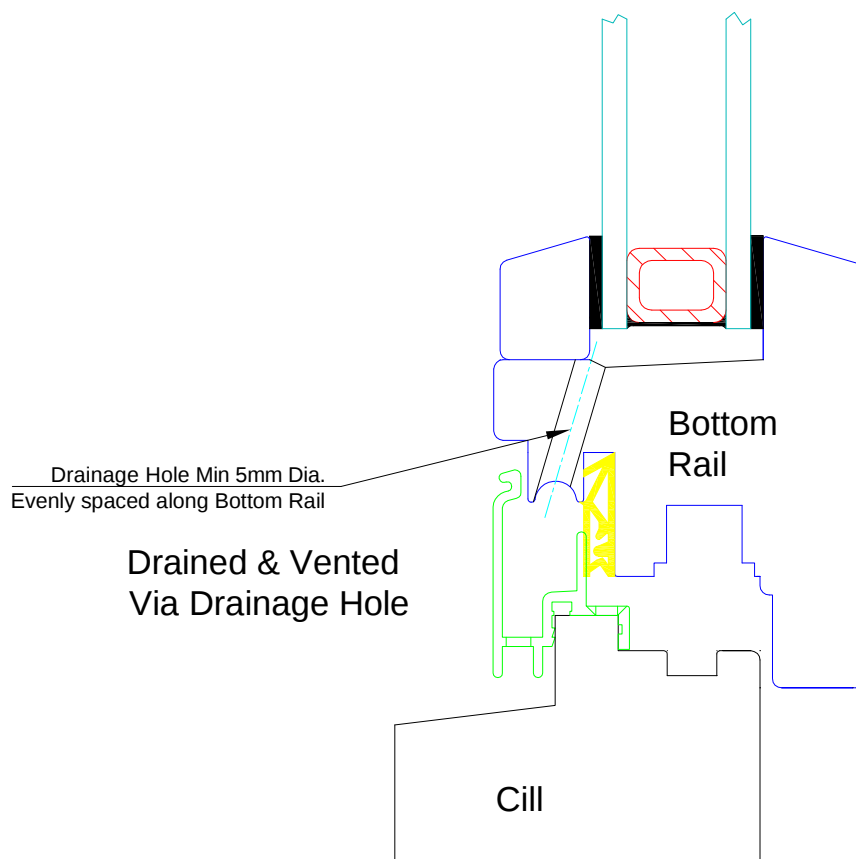
Vertical section Through Window

Triple Glazed

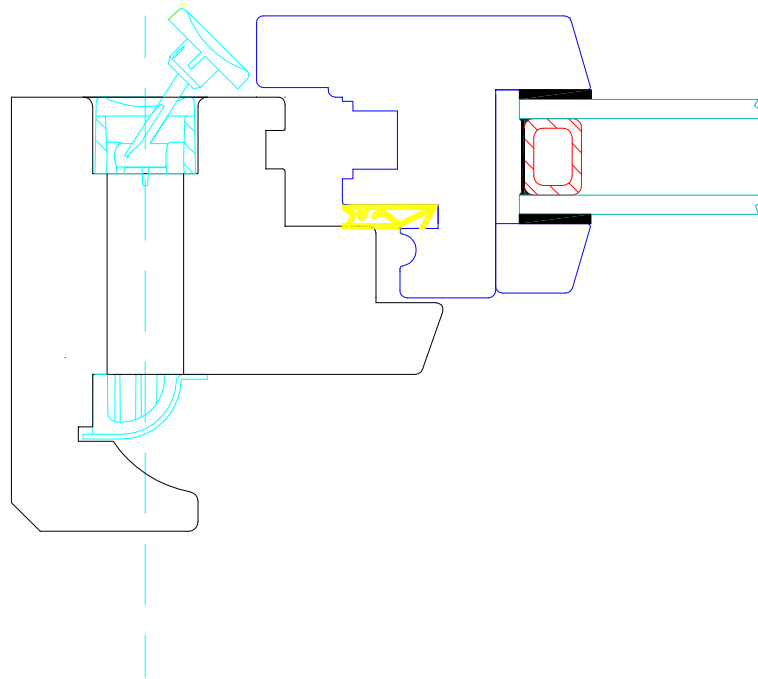
Double Weatherstrip
And/Or Internally
Flush



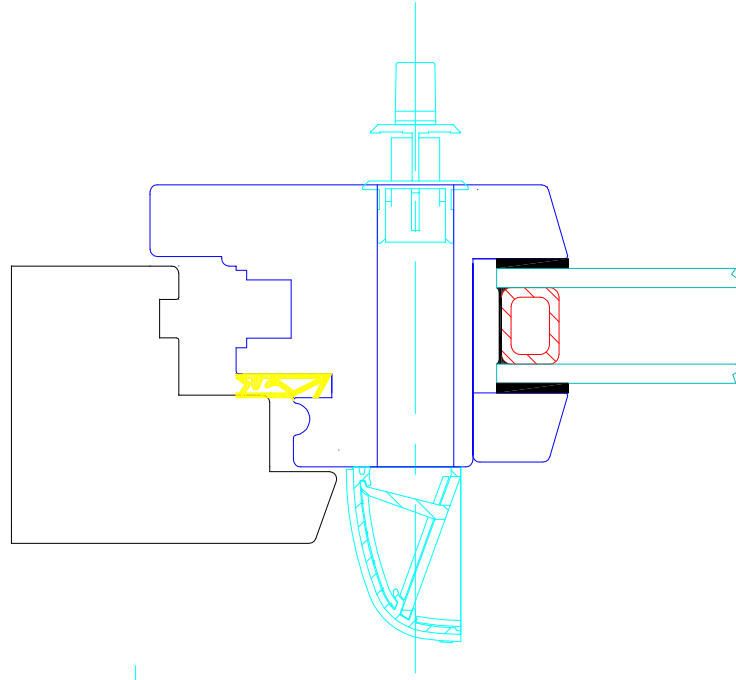
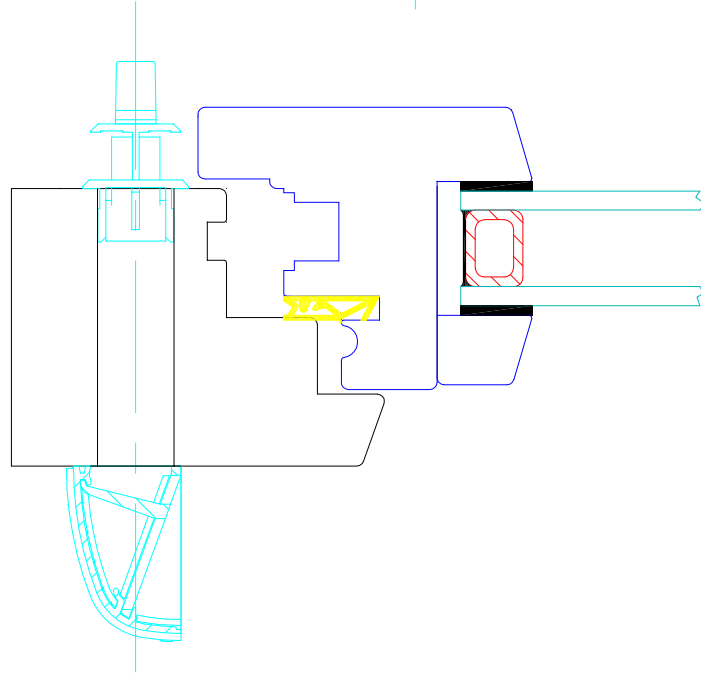
Drainage Options



Trimvent Select Xtra R16



Trimvent 90 Hi Lift



Trickle Vent Options

9) Component selection

Required components can be determined by using the matrix provided or alternatively when ordering by providing Titon with the following information.

1. **Ironmongery Type** – (Type in this brochure is - Trend Invisible)

2. **Material/Profile Details** - Timber

Profile details for the section shown in this brochure are:-

- ❖ Eurogroove Axis 9mm
- ❖ Upstand 18mm
- ❖ 7/8/4 groove.
- ❖ 15mm Backset
- ❖ 13mm Pin Axis

3. **Sash Rebate Sizes**.....Please specify

4. **Handing** Please specify



Window shown is RIGHT HAND

Windows to be viewed from the inside

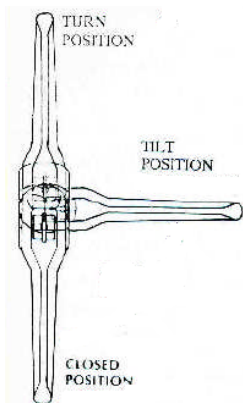
5. **Finish** Please specify, either:-

- ❖ Silver Chromate – Standard finish
- ❖ Tricoat – for use in coastal applications and where Tannic acid is present within the timber

6. **Security requirement** Please specify, either:-

- ❖ Standard
- ❖ High Security (I.S. mushroom locking)

7. **Handle Type & colour (handles are not handed)** Please specify



❖ **Non Locking Handle**

❖ **Tilt & Turn Locking Handle** - with the handle locked, the handle will not move i.e. neither Tilt or Turn mode is achievable. Once handle is unlocked the handle can be moved so both tilt & turn are achievable.

❖ **Turn Locking Handle** – with the handle locked, the handle will only move to the 90° position enabling the Tilt mode. Once the handle is unlocked, the handle can be moved to achieve the turn mode.

8. **Water Bar & Gasket**..... Please specify

Gasket – Required Y/N

Waterbar – Required Y/N – if yes Colour

(options - Mill finish, Brown, White)

Endcap – Required Y/N – if yes Colour

(options – Brown, translucent)

**Invisible TBT Matrix for 9mm Axis Eurogroove
13mm pin axis, 7/8/4 keep groove**

Description	Part Ref.	Silver Chromate Part Number	Tricoat Part Number	Sash Rebate Width							Sash Rebate Height										
				395	491	711	811	1061	500	610	751	901	1001	1301	1501	1801					
				490	710	810	1060	1310	609	750	900	1000	1300	1500	1800	2350					
Invisible Scissor Stay with 13mm pin axis Gr.0	9	Rh - MA207689SC	Rh - MA209930TR	1	1				1												
		Lh - MA207690SC	Lh - MA209931TR																		
		Rh - MA207699SC	Rh - MA209932TR			1	1	1													
		Lh - MA207700SC	Lh - MA209933TR																		
Invisible Scissor Stay Guide Gr 0	8	MA207762SC	MA209927TR	1	1																
MA207763SC		MA209928TR			1																
MA207764SC		MA209929TR					1 (1)	1													
MA10585SC		MA101018TR							1 (1)	1											
Invisible Frame Fixing Bottom Hinge with 13mm pin axis	6	Rh - MA206357SC	Rh - MA209057TR	1	1	1	1	1													
		Lh - MA206358SC	Lh - MA209067TR																		
Invisible Bottom Hinge Corner Support	7	Rh - MA206327SC	Rh - MA209060TR	1	1	1	1	1													
		Lh - MA206328SC	Lh - MA209061TR																		
Corner Element A	1	MA55907SC	MA201635TR		1 (1)	1 (1)	1 (1)	1 (1)	1 (1)												
Corner Element B		MA54592SC	MA201618TR	1 (1)																	
i.S. Corner Element C	2	MA52921SC	MA205212TR	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)												
Bottom Centre Lock Gr.2	4	MA52914SC	MA205229TR						1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)					
VHH Drive Gear Gr 1	3	MA52422SC	MA202287TR						1												
VHH Drive Gear Gr 1a		MA52423SC	MA222216TR							1											
VHH Drive Gear Gr 2a		MA52424SC	MA205154TR																		
VHH Drive Gear Gr 3		MA52425SC	MA205185TR								1 (1)	1 (1)									
VHH Drive Gear Gr 4		MA52426SC	MA205186TR										1 (1)	1 (1)							
VHH Drive Gear Gr 5	5	MA52427SC	MA205187TR													1 (2)					
i.S. Centre Lock 125 with 1 cam		MA52772SC	MA201771TR																		
i.S. Centre Lock 400 with 2 cams		MA52773SC	MA201772TR							1 (2)	1 (2)										
i.S. Centre Lock 528 with 2 cams		MA52774SC	MA201952TR									1 (2)									
i.S. Centre Lock 628 with 2 cams		MA52775SC	MA201773TR										1 (2)								
i.S. Centre Lock 828 with 2 cams	12	MA52776SC	MA201085TR												1 (2)						
i.S. Centre Lock 1178 with 3 cams		MA52777SC	MA202141TR													1 (3)					
Standard striker		MA34902SC	MA201481TR	2	2	3	4	4	1	1	2	3	3	3	5						
iS TBT Striker RH	10	MA97103SC	MA360811TR	1	1	1	1	1													
iS TBT Striker LH		MA97104SC	MA361361TR																		
Sash Lifter Striker	11	MA95113SC	MA97547TR						1	1	1	1	1	1	1	1					

Values in Brackets () = Quantity of strikes per item.

Invisible TBT Matrix for 9mm Axis Eurogroove
13mm pin axis, 7/8/4 keep groove
Burgular Resistant I.S. Cams

Description	Part Ref.	Silver Chromate	Tricoat	Sash Rebate Width						Waterbar (2m length) Mill Finish RG805-2M/006 White Paint RG805/020 Brown Paint RG805/023 Silver Paint RG805/357 Waterbar Endcaps (pairs) 8002340 Brown 8002310 Translucent Gasket D401253															
		Part Number	Part Number	395	491	711	811	1061	1310																
Invisible Scissor Stay with 13mm pin axis Gr.0	9	Rh - MA207689SC	Rh - MA209930TR	1	1					500 609	610 750	751 900	901 1000	1001 1300	1301 1500	1501 1800	1801 2350								
Invisible Scissor Stay with 13mm pin axis Gr.1 - 2		Lh - MA207690SC	Lh - MA209931TR																						
Invisible Scissor Stay Guide Gr 0		Rh - MA207699SC	Rh - MA209932TR			1	1	1																	
Invisible Scissor Stay Guide Gr 1	Lh - MA207700SC	Lh - MA209933TR																							
Invisible Scissor Stay Guide Gr 2	MA207762SC	MA209927TR	1	1																					
250mm Gear Extension	MA207763SC	MA209928TR			1																				
Invisible Frame Fixing Bottom Hinge with 13mm pin axis	MA207764SC	MA209929TR				1 (1)	1 (1)																		
Invisible Bottom Hinge Corner Support	MA10585SC	MA101018TR					1																		
	Rh - MA206357SC	Rh - MA209057TR	1	1	1	1	1																		
	Lh - MA206358SC	Lh - MA209067TR																							
Corner Element A	Rh - MA206327SC	Rh - MA209060TR	1	1	1	1	1																		
	Lh - MA206328SC	Lh - MA209061TR																							
	MA10741SC	MA100037TR		1 (2)	1 (2)	1 (2)	1 (2)																		
Corner Element B	MA52925SC	MA201640TR	1 (1)																						
I.S. Corner Element C	MA10741SC	MA100037TR	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)																		
Bottom Centre Lock Gr.2	MA52914SC	MA205229TR			1 (1)	1 (1)	1 (1)		Sash Rebate Height	610 750	751 900	901 1000	1001 1300	1301 1500	1501 1800	1801 2350									
VHH Drive Gear Gr 1	MA52422SC	MA202287TR						1																	
	MA52423SC	MA222216TR						1																	
	MA52424SC	MA205154TR						1																	
	MA52425SC	MA205185TR						1 (1)																	
	MA52426SC	MA205186TR						1 (1)																	
VHH Drive Gear Gr 4	MA52427SC	MA205187TR																							
	MA52772SC	MA201771TR															1 (1)								1 (2)
	MA52773SC	MA201772TR																		1 (2)					
	MA52774SC	MA201952TR																			1 (2)				
	MA52775SC	MA201773TR												1 (2)											
VHH Drive Gear Gr 5	MA52776SC	MA201085TR														1 (2)									
	MA57277SC	MA202141TR															1 (3)								
	MA34902SC	MA201481TR															2								
	MA96564SC	MA352994TR	2	3	4	5	5		1			2	2	2	2	2	3								
	MA97103SC	MA360811TR	1	1	1	1	1																		
Standard striker	MA97104SC	MA361361TR																							
	MA95113SC	MA97547TR										1	1	1	1	1	1								
IS Strikes	12	MA34902SC	MA201481TR																						
IS TBT Striker RH	10	MA96564SC	MA352994TR																						
IS TBT Striker LH		MA97103SC	MA360811TR																						
Sash Lifter Striker	11	MA97104SC	MA361361TR																						
		MA95113SC	MA97547TR																						

Values in Brackets () = Quantity of strikes per item.
N.B Strikes for Drive gear are standard type.

Fabrication Advice

Security Information for the assembly of load bearing security components

Advice on the MACO-Surface Coating

The MACO-Surface treatment process contains an extra layer of wax that seals the passivation layer. The resulting coating performs well when salt spray tested.

Screw Dimensions

For safety and security fittings we recommend 4 x 30 mm countersunk screws with a 7 mm head diameter. For fixing the top and bottom hinges 4 x 40 mm countersunk screws are recommended. Hardwoods with a gross

density over 400 kg/m³ can only be used after consultation with Maco. Please note that you must also contact us if you wish to use shorter screws.



The MACO Wax Coating

- Enables a high level of corrosion protection.
- Surface slide is significantly improved.
- More regular surface coating.

Care should be taken to ensure the correct hardware material is specified for use on certain types of timber window and/or in certain environmental conditions.

There is a higher risk of corrosion if hardware is fitted in coastal or heavily polluted areas, or, for example, plated steels are fitted to oak. In these instances tricoated product or suitably resistant hardware materials should be specified.

Whilst every effort has been made to ensure the accuracy of the information supplied herein, Titon cannot be held responsible for any errors or omissions.