stellar™
ALUMINIUM SYSTEMS

FLUSH DOOR
TECHNICAL MANUAL

CONTENTS PAGE

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, the Epwin Group 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.

As it is company policy to continually improve products, methods and materials, changes of specification may be made from time to time without prior notice.

Flush Door Min/Max Sizes

All of the following are based on overall DOOR LEAF sizes.

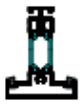
	Leaf Width	Leaf Height (WITHOUT SHOOTBOLTS)	Leaf Height (WITH SHOOTBOLTS)	Leaf Height (WITH SHOOTBOLTS AND EXTENSION)
Min	600	1815	2015	2316
Max	1000	2100	2315	2400

Dimensions in mm
DO NOT SCALE

Ixx VALUES

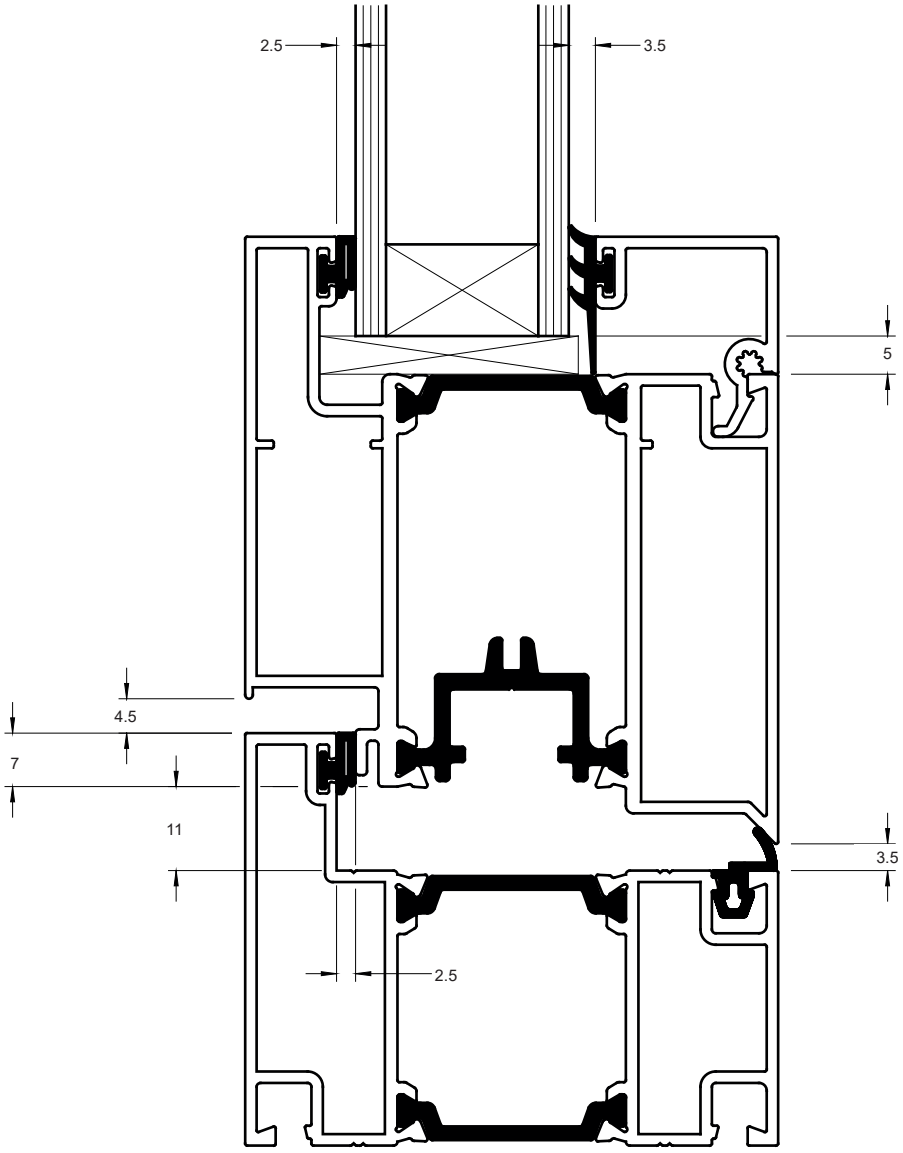
The site wind load should be calculated in accordance with BS EN 1991-1-4. Alternatively, the abbreviated method shown in Annex A of BS 6375-1 may be used, but this gives more conservative results.

The chart below shows the effective Ixx and Iyy values of the framing profiles calculated in accordance with BS EN 14024. The required Ixx of the profiles must be calculated and the correct profile (with an equal or greater Ixx) selected from the chart below.

Profile	Drawing	Iyy (cm^4) ↔		1800	1900	2000	2100	2200	2300	2400
WQ10		7.15		19.13	19.70	20.22	20.69	21.13	21.52	21.88
WQ14				34.63	36.26	37.81	39.28	40.67	41.97	43.23
WQ40				24.75	25.66	26.51	27.30	28.03	28.70	29.34
WQ41				24.33	25.23	26.05	26.82	27.53	28.17	28.78

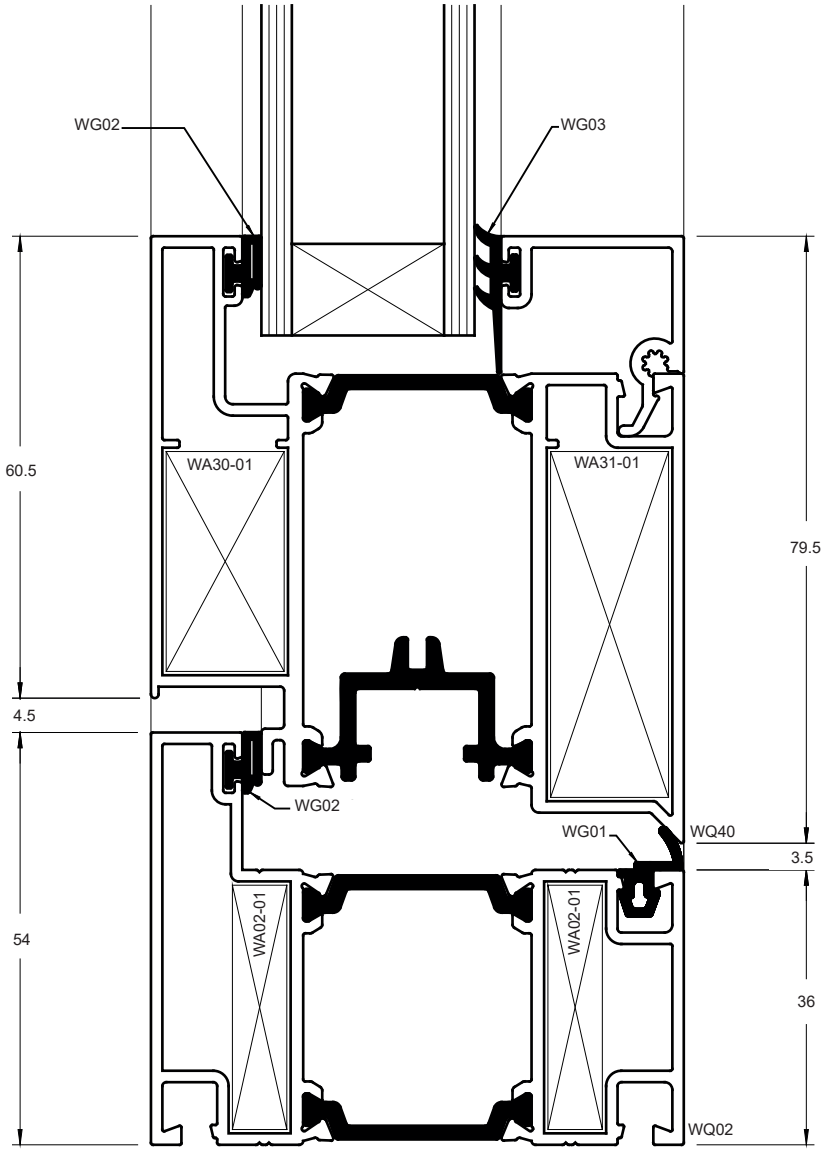
Design Criteria

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

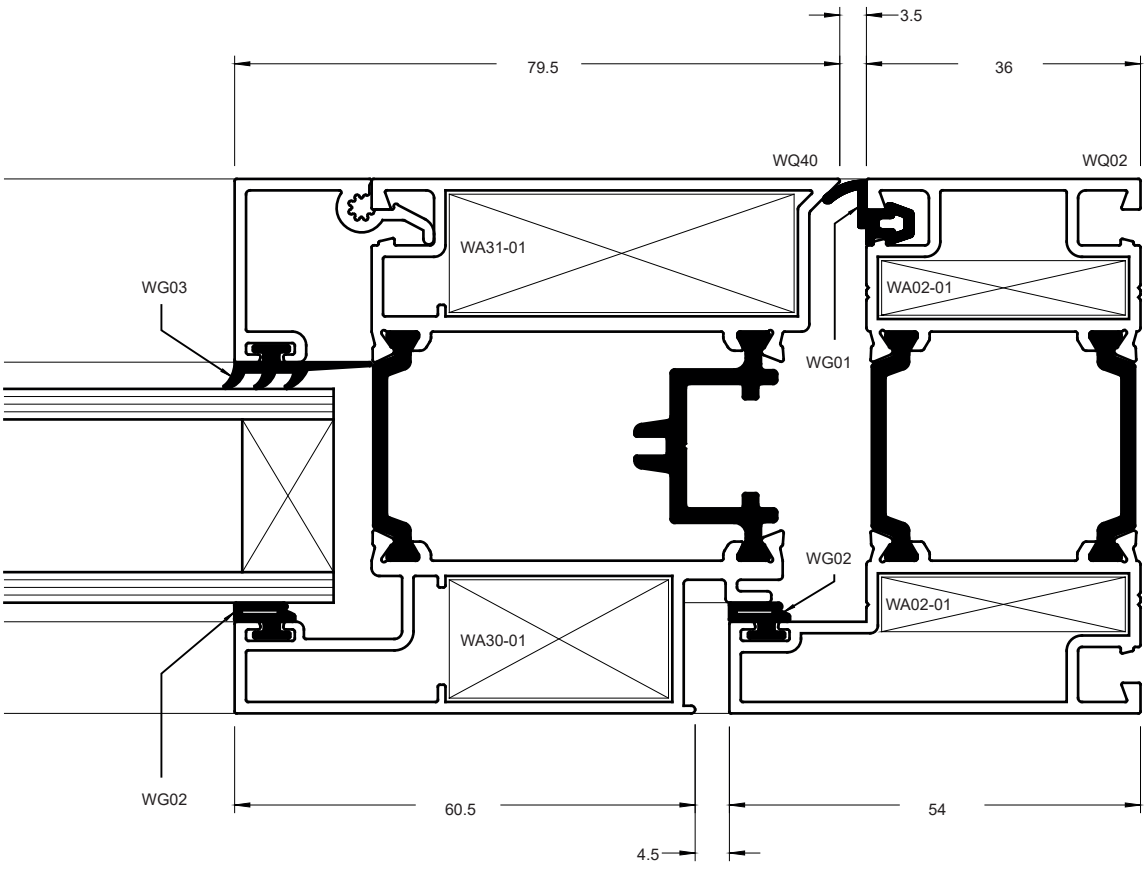


Dimensions in mm
DO NOT SCALE

Open In Frame Cill

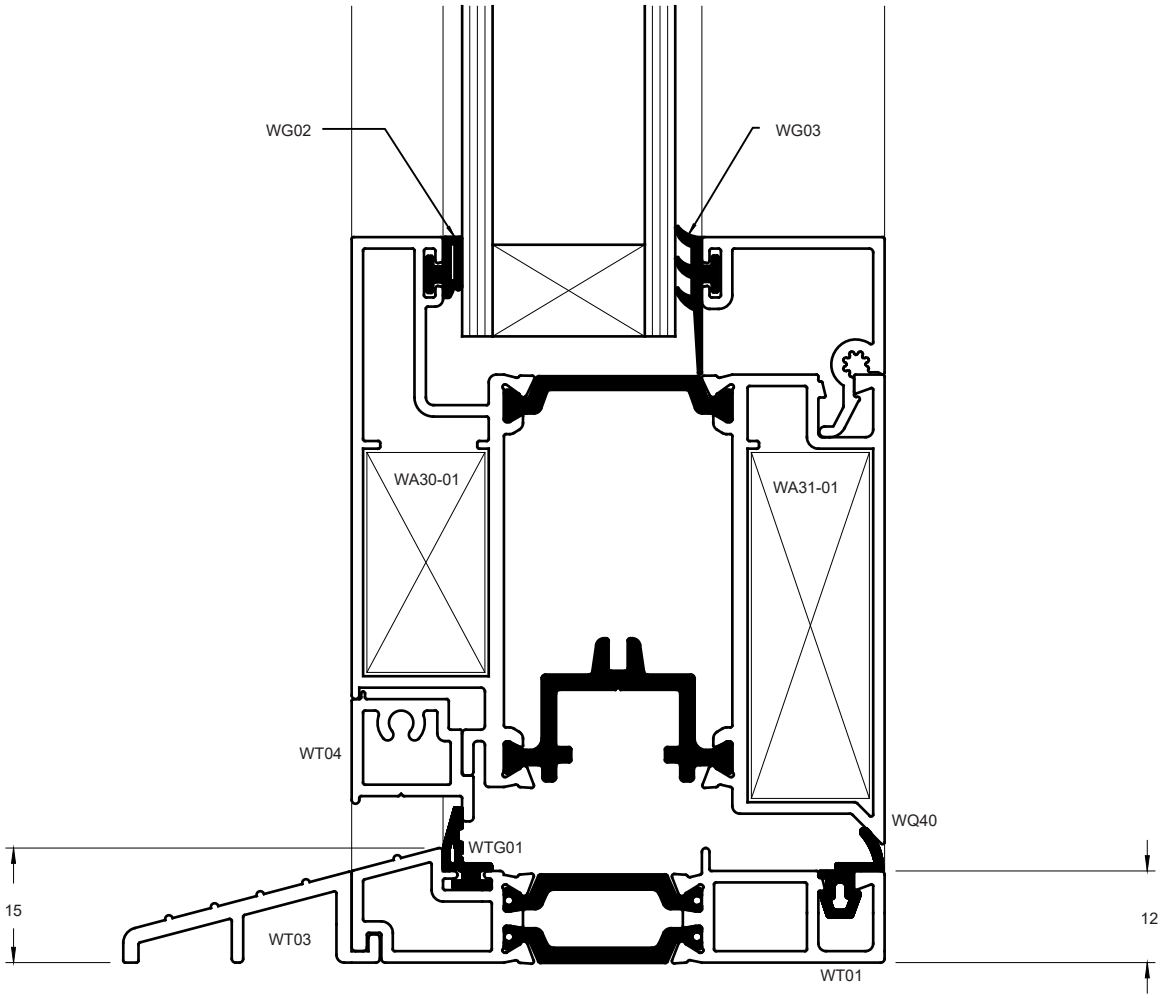


Open In Jamb

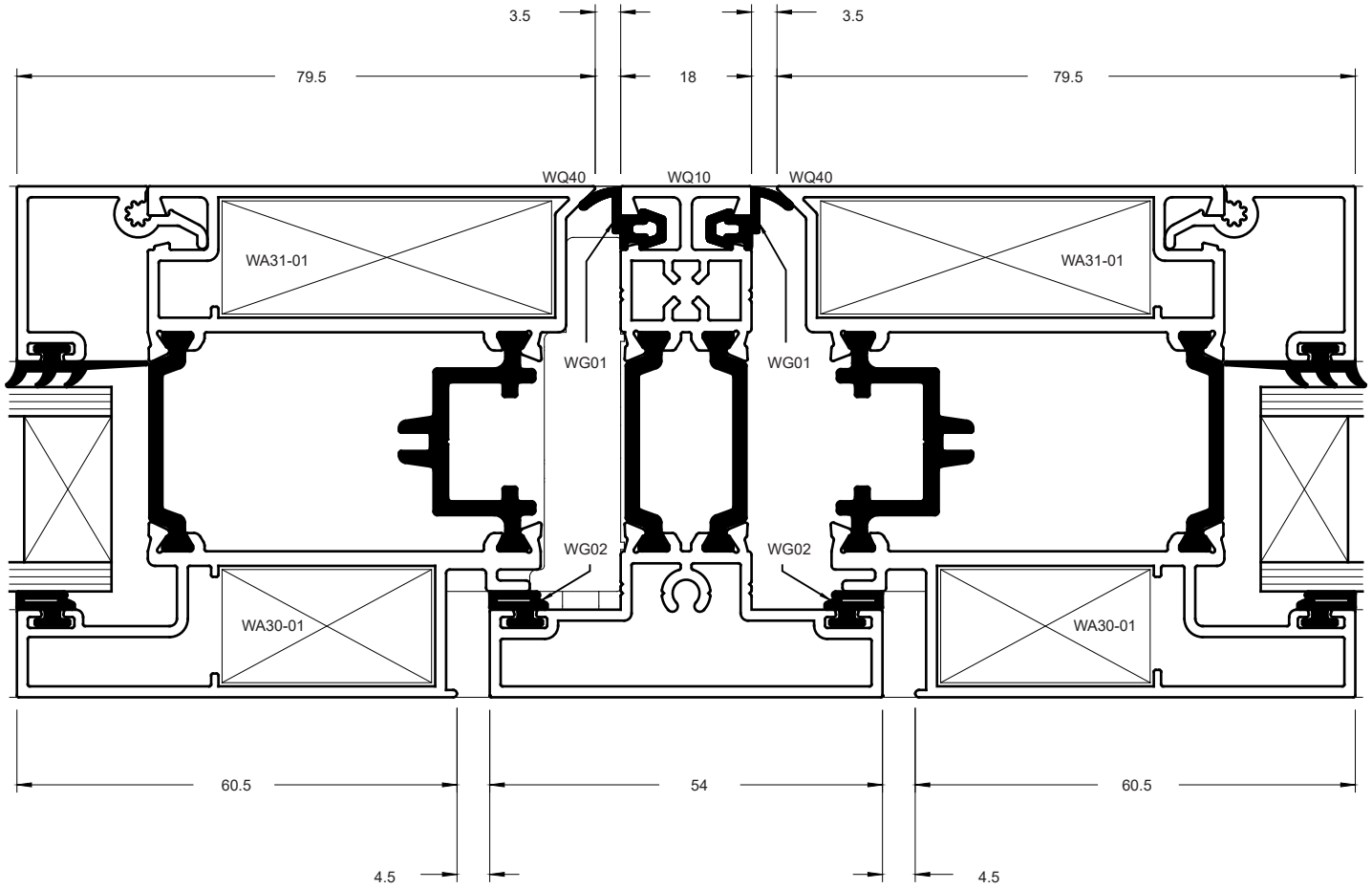


Dimensions in mm
DO NOT SCALE

Open In Low Threshold

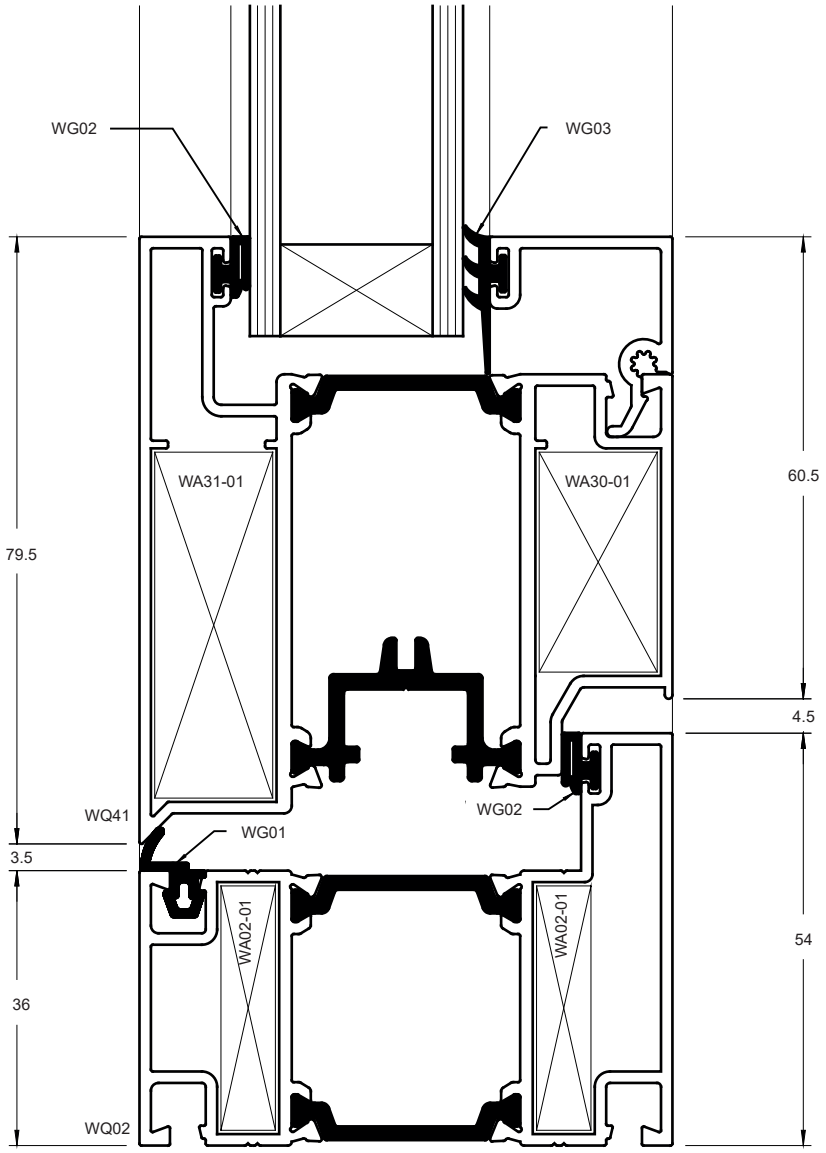


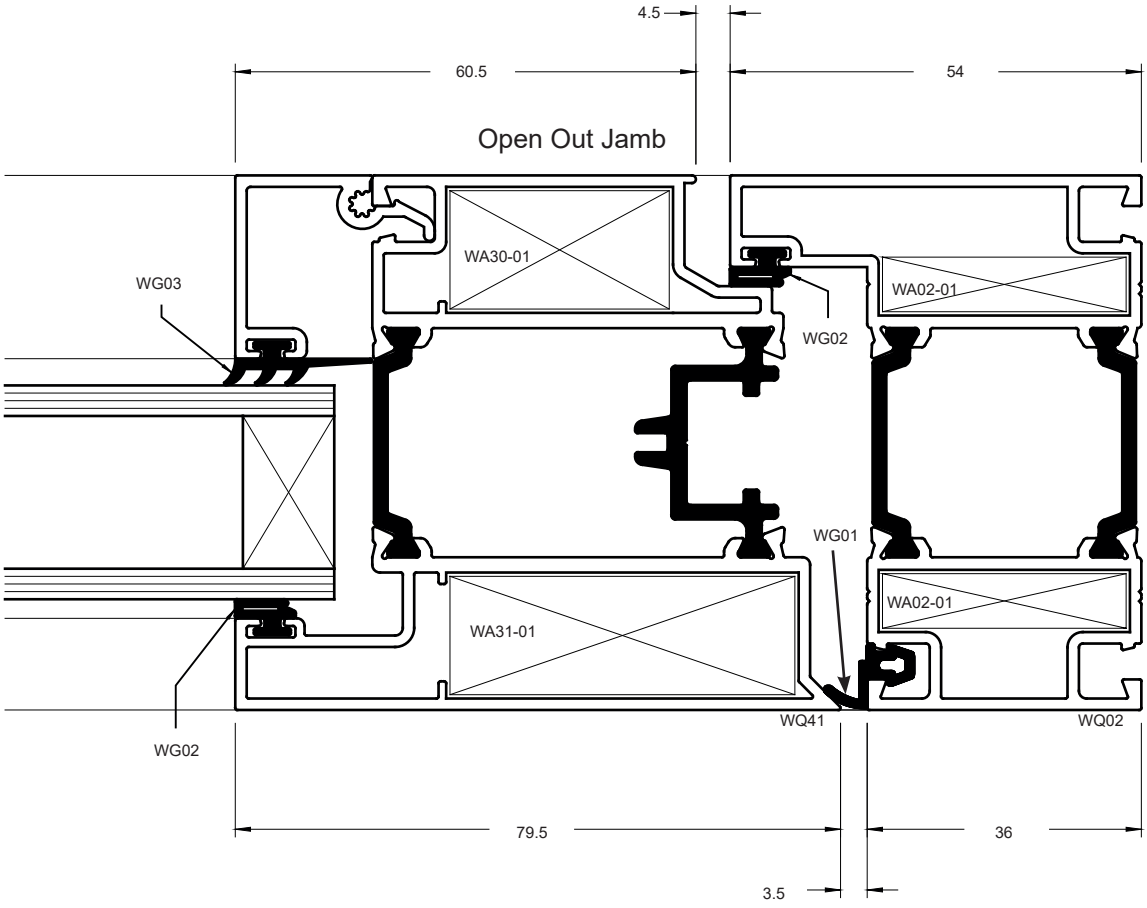
Open In Meeting Stiles



Dimensions in mm
DO NOT SCALE

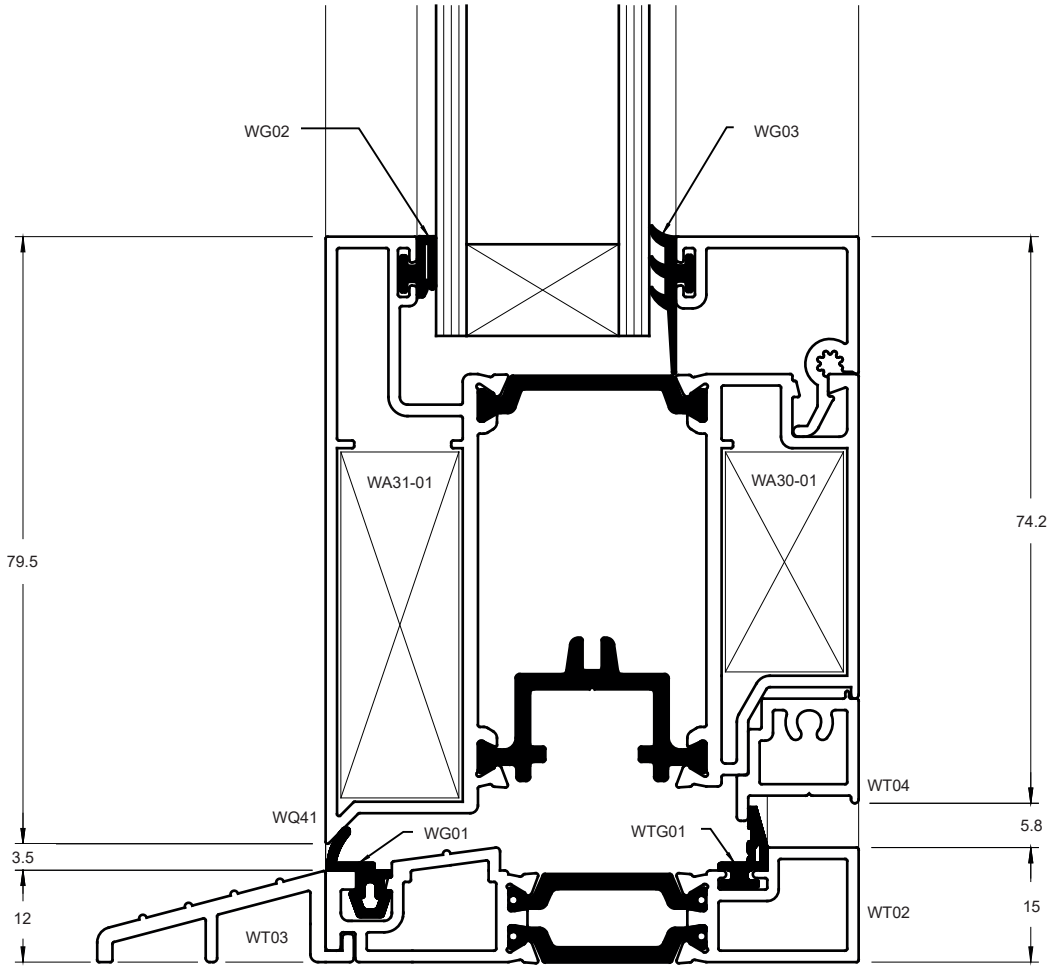
Open Out Frame Cill



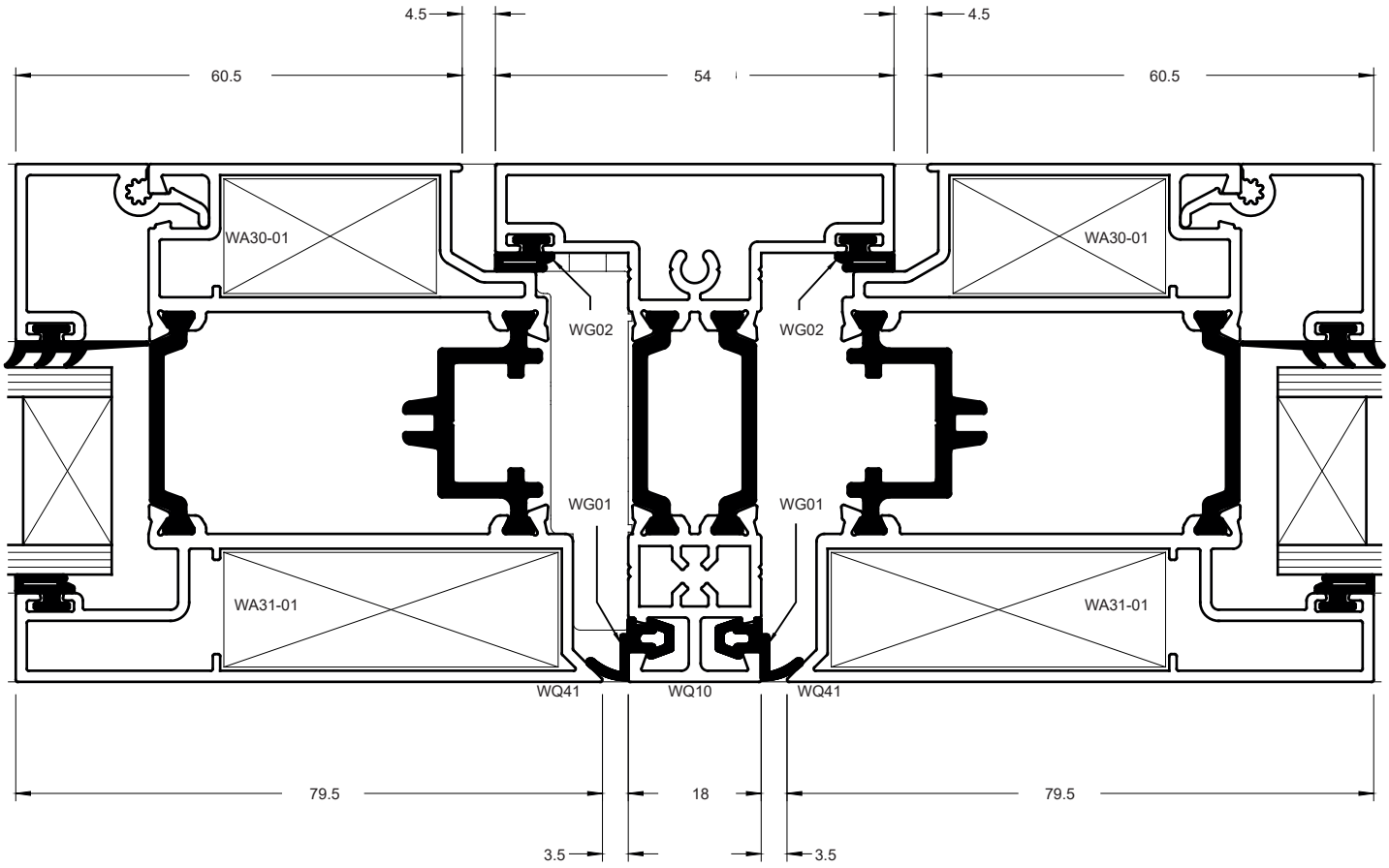


Dimensions in mm
DO NOT SCALE

Open Out Low Threshold



Open Out Meeting Stiles



Dimensions in mm
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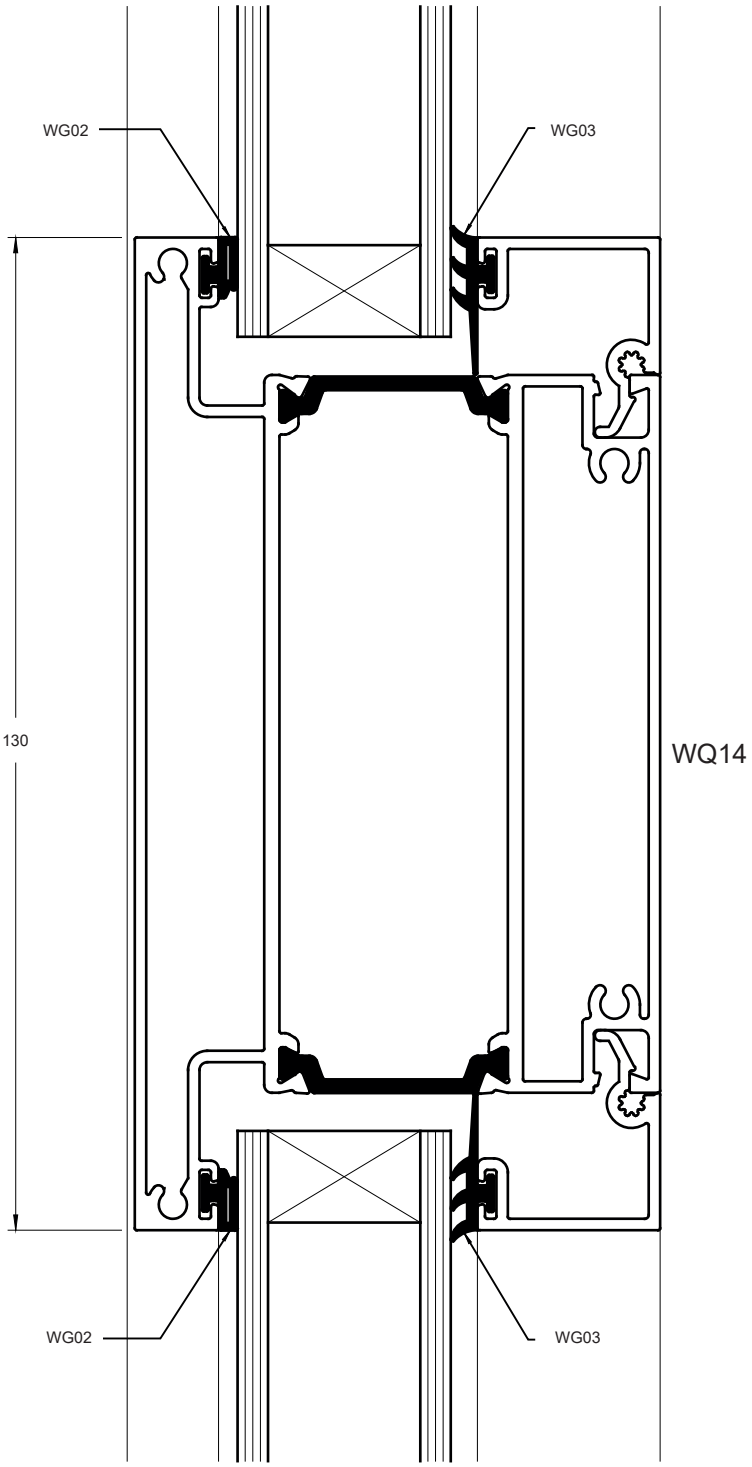
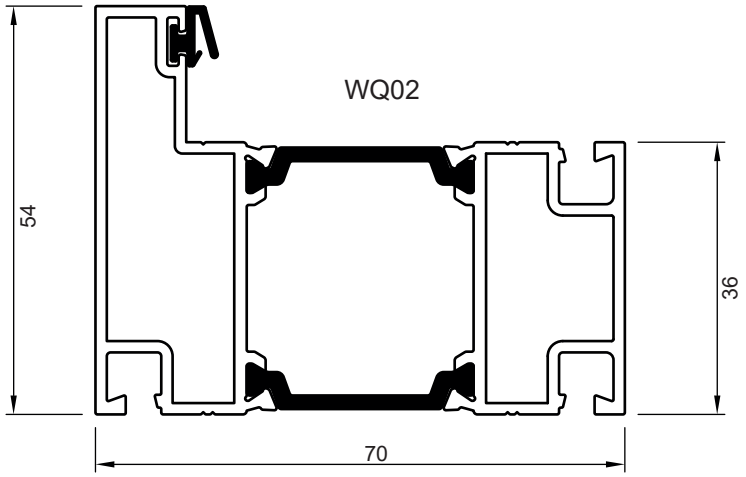
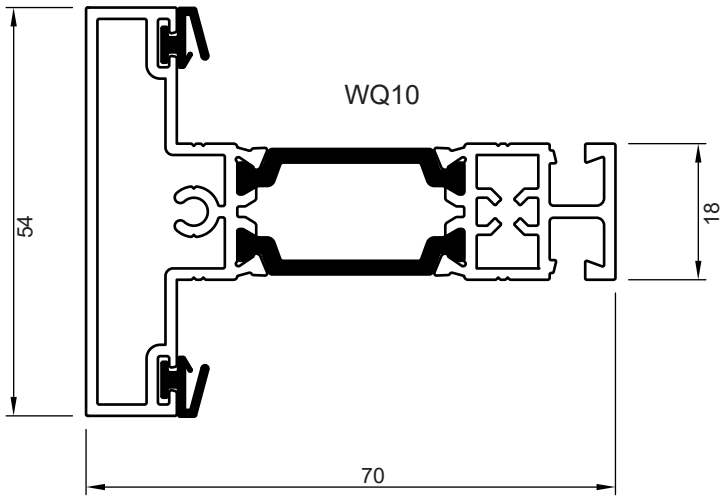
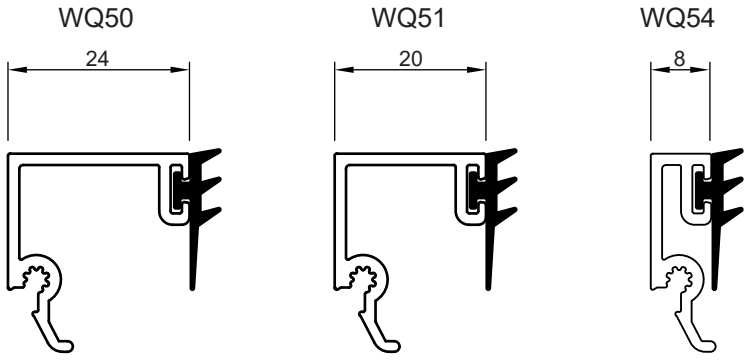
Midrail



PROFILES







Dimensions in mm
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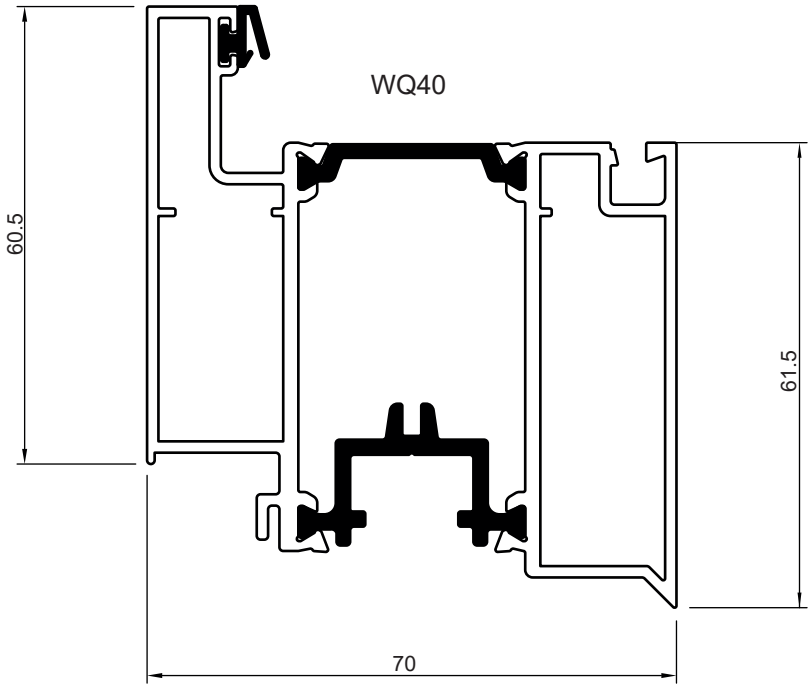
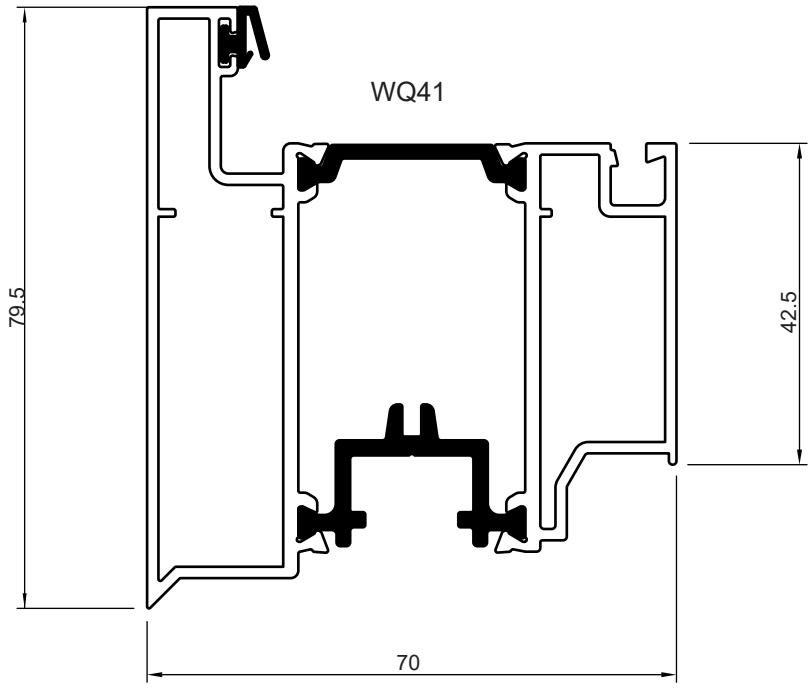
PROFILES





Dimensions in mm
DO NOT SCALE

PROFILES

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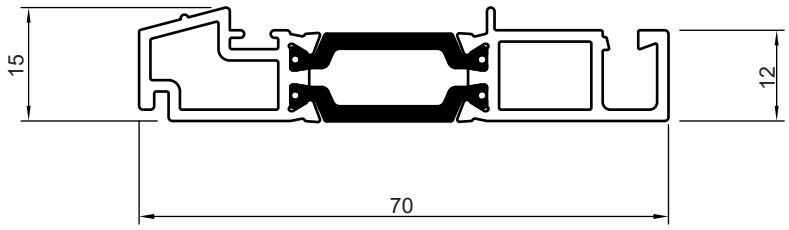
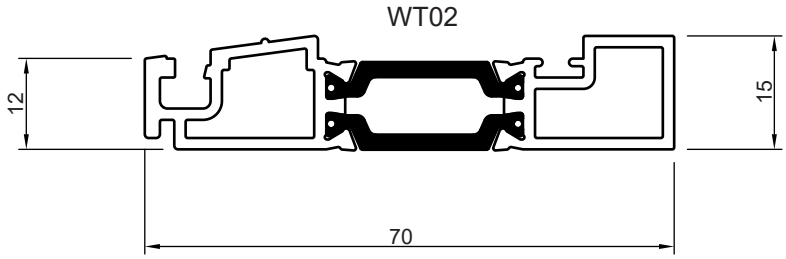


WT02



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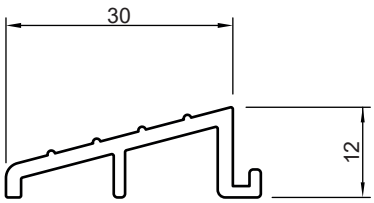
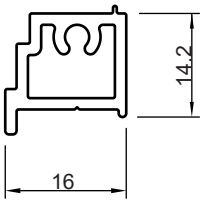


WT04



Dimensions in mm
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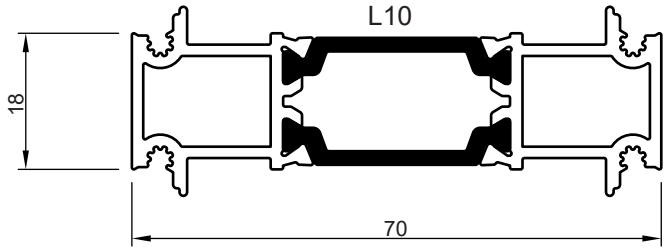
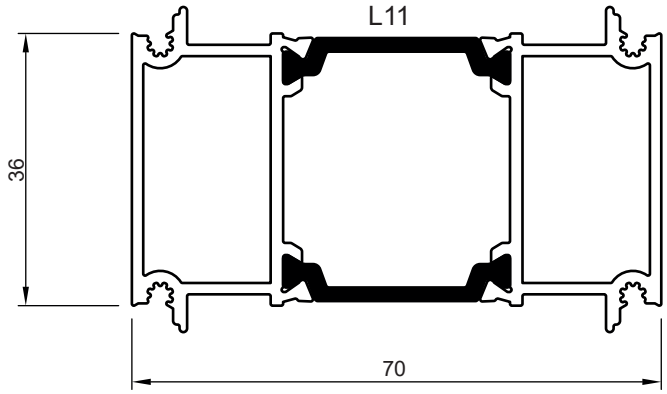
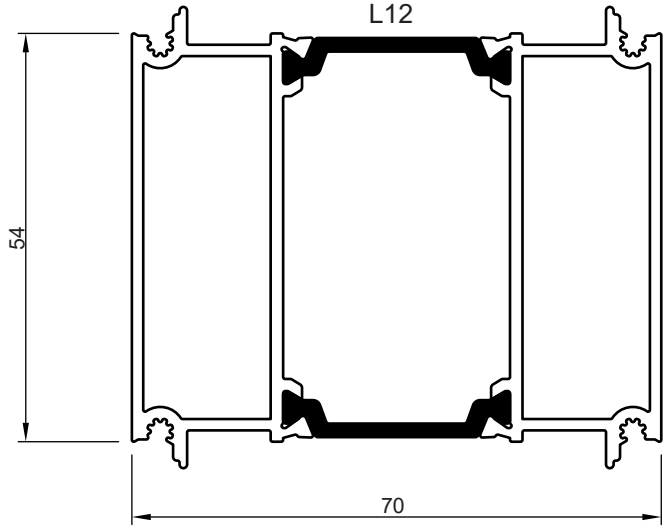
PROFILES







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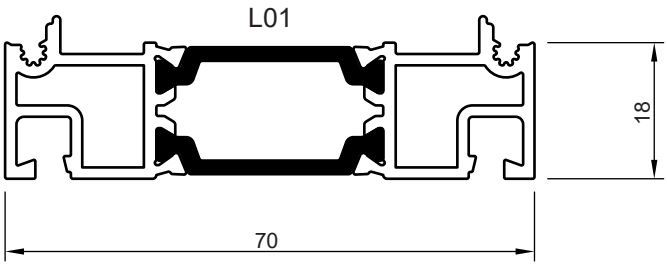
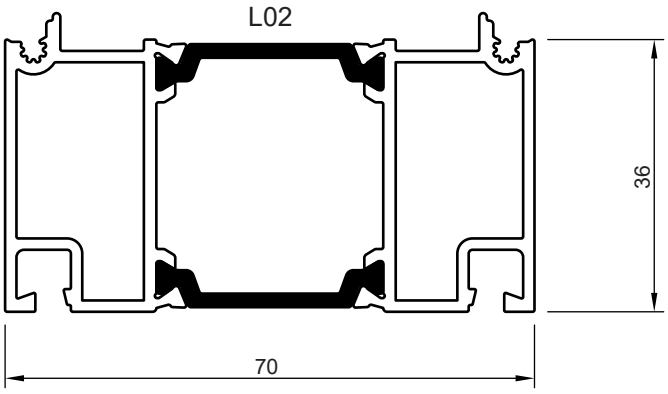
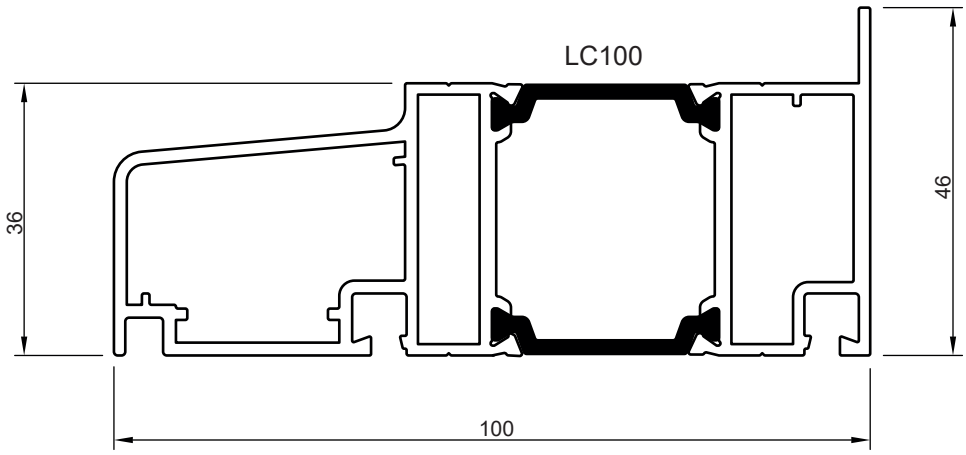
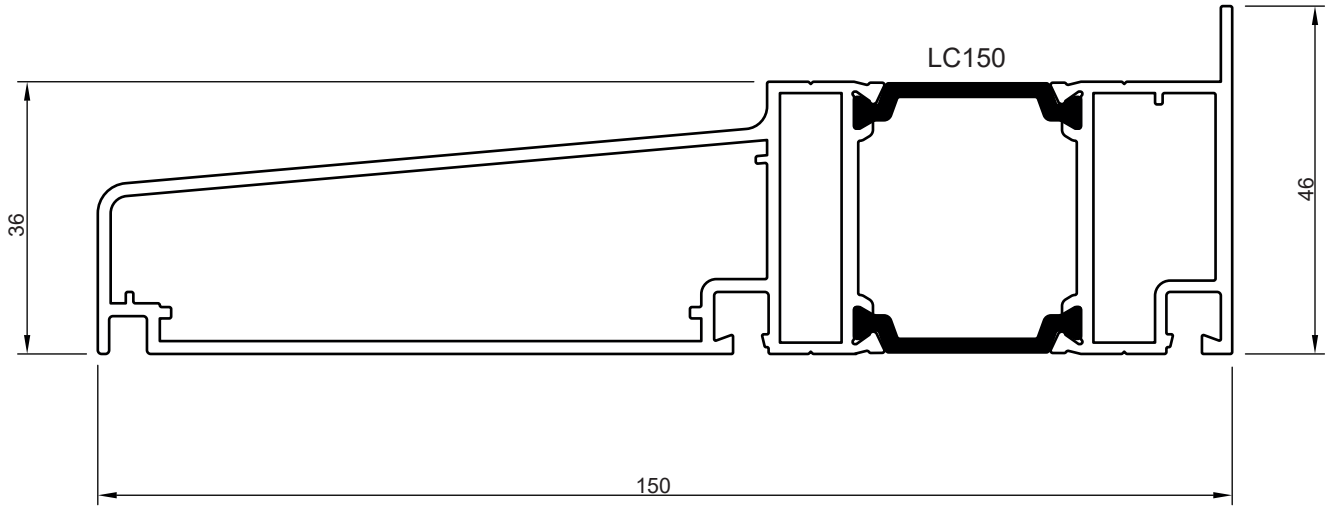




Dimensions in mm
DO NOT SCALE

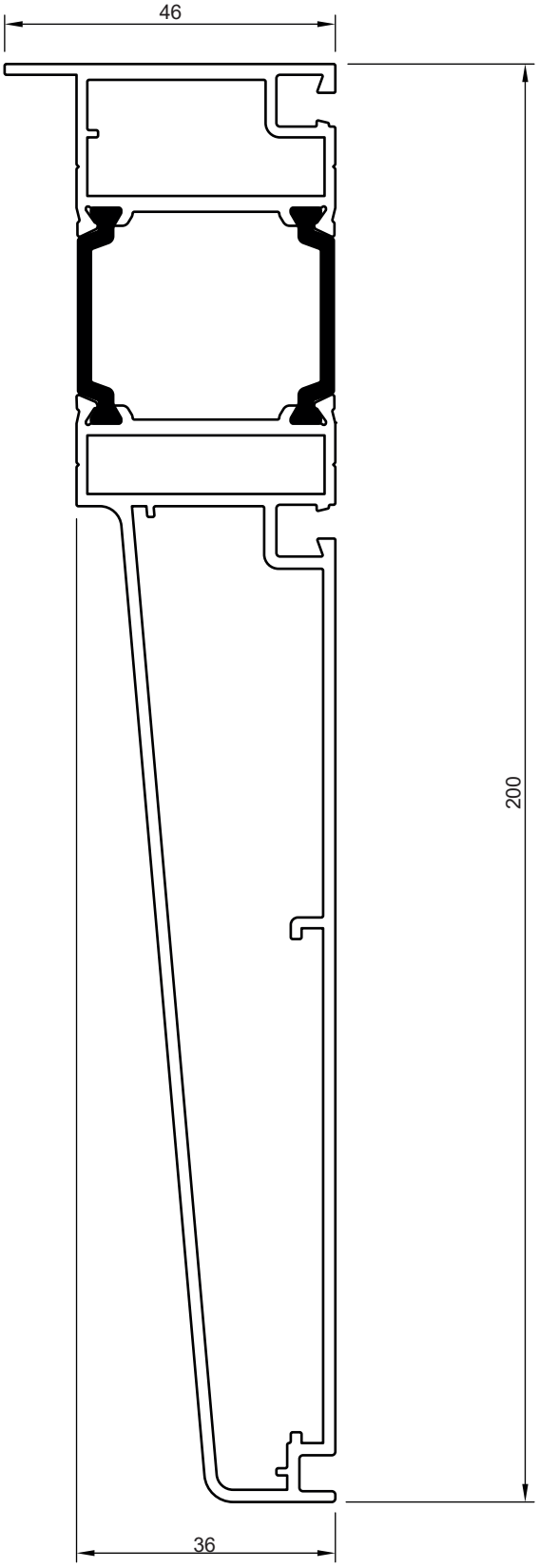
PROFILES





PROFILES

LC200



Dimensions in mm
DO NOT SCALE

CUTTING CALCULATIONS

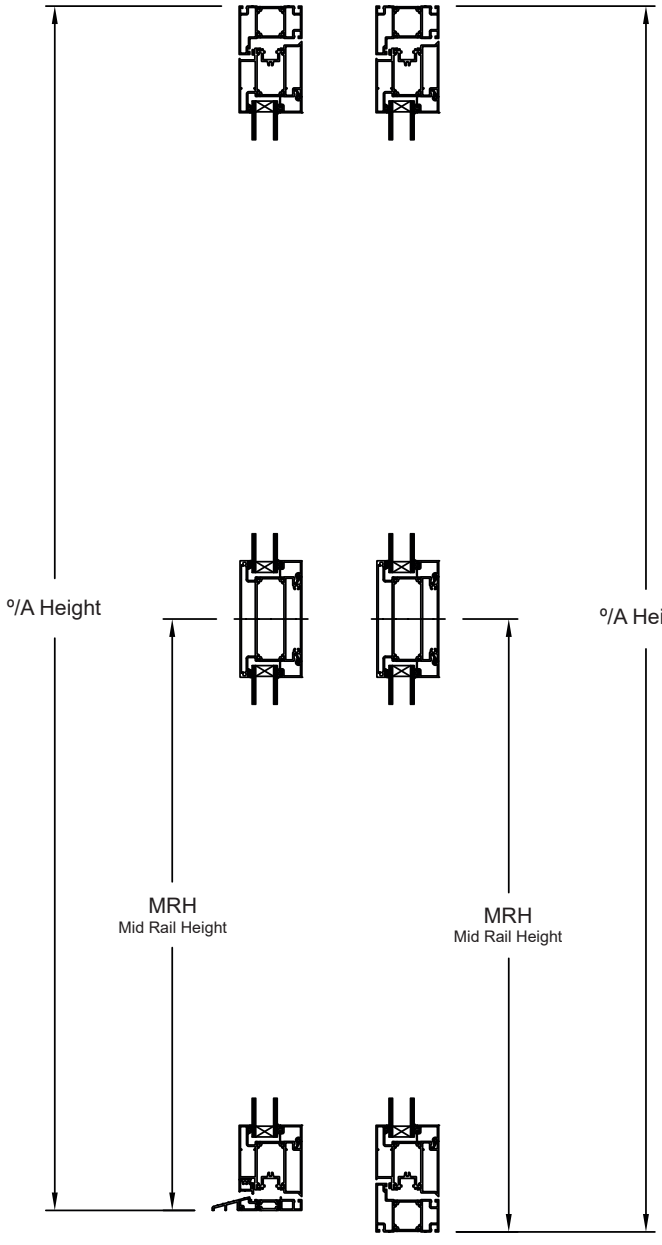
All powder coated bar lengths have jigging marks at both ends. Allowance must be made for this in cutting calculations. Bars are either square cut or mitre cut at 45°.
TOLERANCES

Cut length = +/- 0.5mm
Cut Angle = +/- 0.5°

If not already fitted, gaskets/seals (WG02 & WG03) can be pre-fitted to profiles before cutting.
Open in and open out deductions are identical

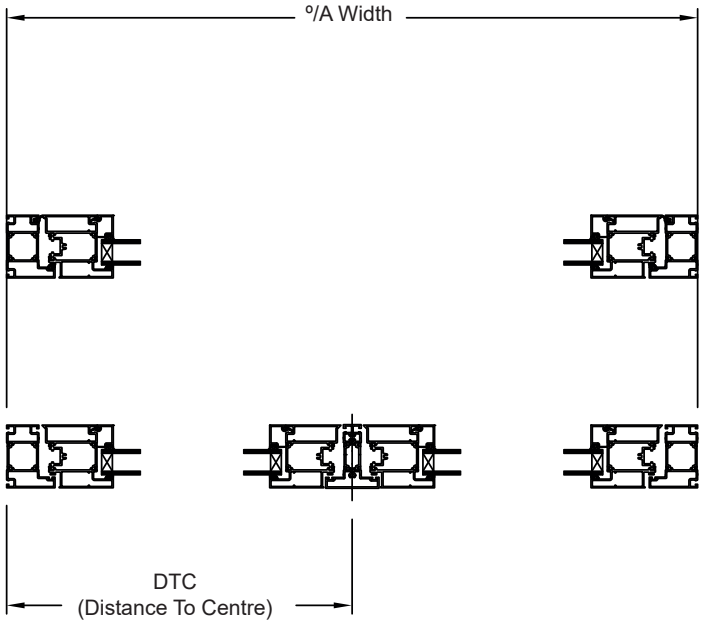
Low Threshold Doors -
Stile Length = °/A Height - 55mm (mitre/mitre)
Jamb Length = °/A Height (mitre/square)
Glass Height (no midrail) = °/A Height - 188mm
Glass Height (with Midrail)
Bottom Pane = MRH - 134mm
Top Pane = °/A Height - (MRH + 158mm)

Fully Framed Doors -
Stile Length = °/A Height - 79mm (mitre/mitre)
Jamb Length = °/A Height (mitre/mitre)
Glass Height (no midrail) = °/A Height - 212mm
Glass Height (with Midrail)
Bottom Pane = MRH - 158mm
Top Pane = °/A Height - (MRH + 158mm)



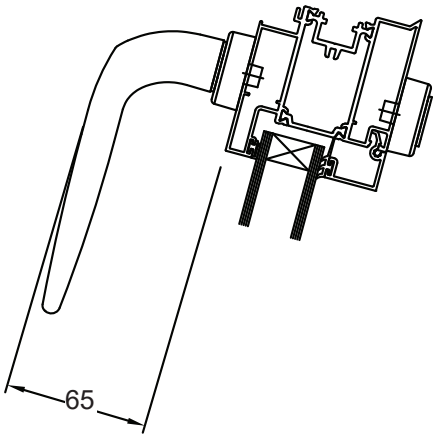
Single Doors -
Head & Cill = °/A Width (mitre/mitre)
Top & Bottom Rails = °/A Width - 80.5mm (mitre/mitre)
Midrail = °/A Width - 203.5 mm (mitre/mitre)
Low Threshold = °/A Width - 108mm (square/square)
LT Ramp = °/A Width (square/square)
LT Bottom Rail Adaptor = °/A Width - 121.5mm (square/square)
Glass Width = °/A Width - 213.5mm

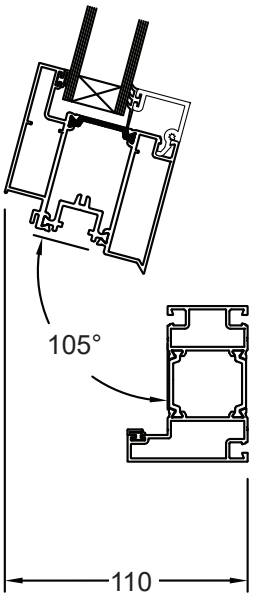
Double Doors -
Head & Cill = °/A Width (mitre/mitre)
Top & Bottom Rails = DTC - 53.5mm (mitre/mitre)
Midrail = DTC - 176.5 mm (mitre/mitre)
Low Threshold = °/A Width - 109.5mm (square/square)
LT Ramp = /A Width (square/square)
LT Bottom Rail Adaptor = DTC - 94mm (square/square)
Glass Width = DTC - 186.5mm

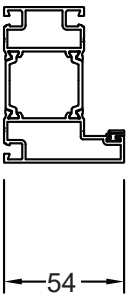


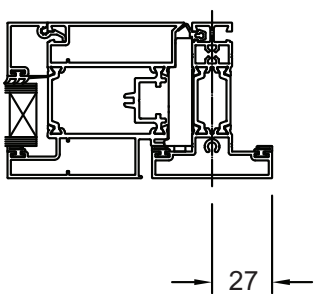
CLEAR OPENING WIDTHS

Below are shown the deductions for clear openings on doors. Provided the door can open to 105° then no additional allowance is required for the handles. If the door can only open to 90° then an additional allowance of 65 mm must be made.





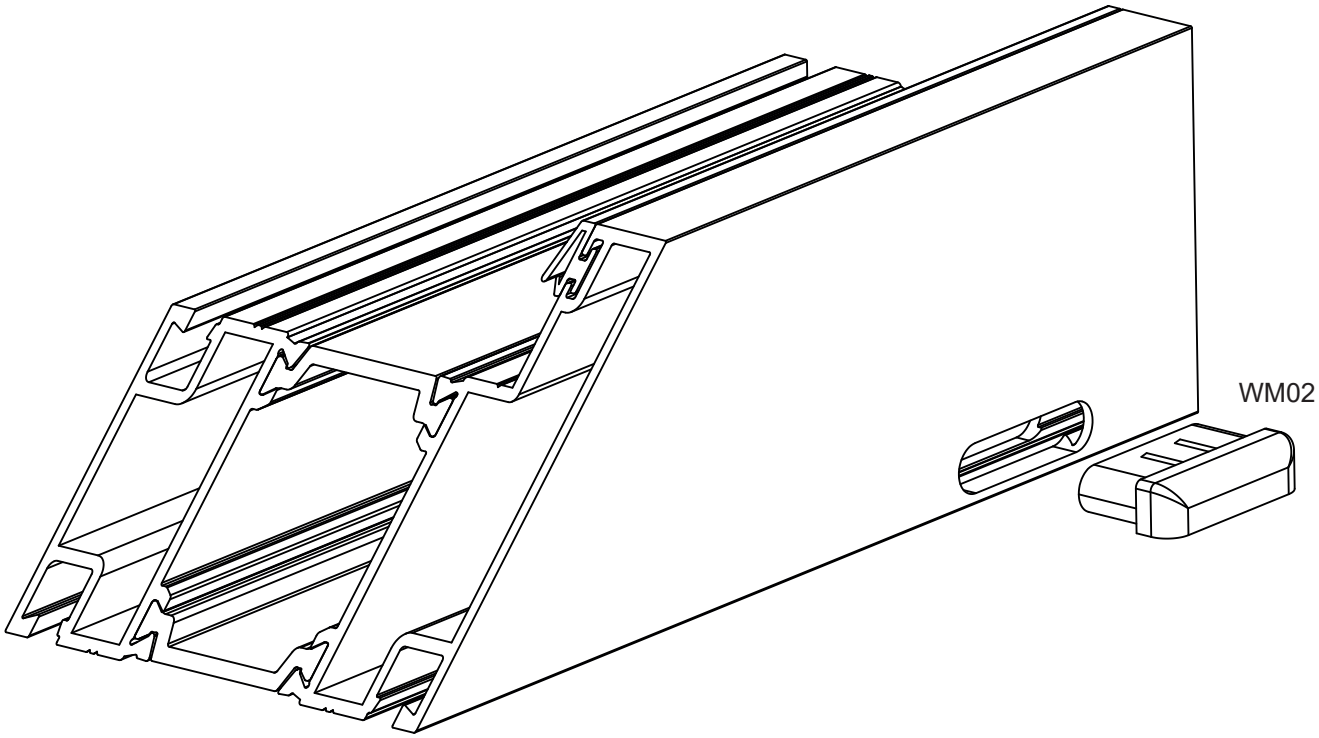


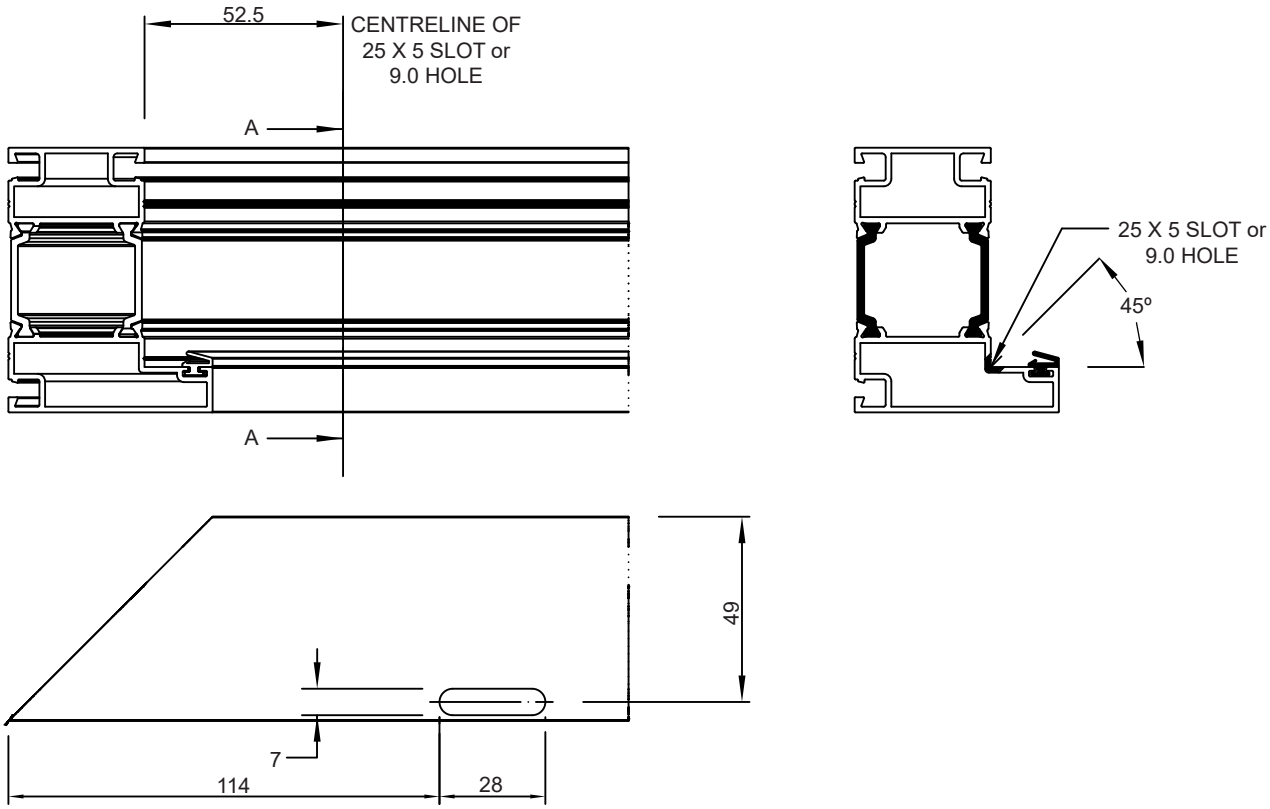


Dimensions in mm
DO NOT SCALE

OPEN IN FRAME FACE DRAINAGE

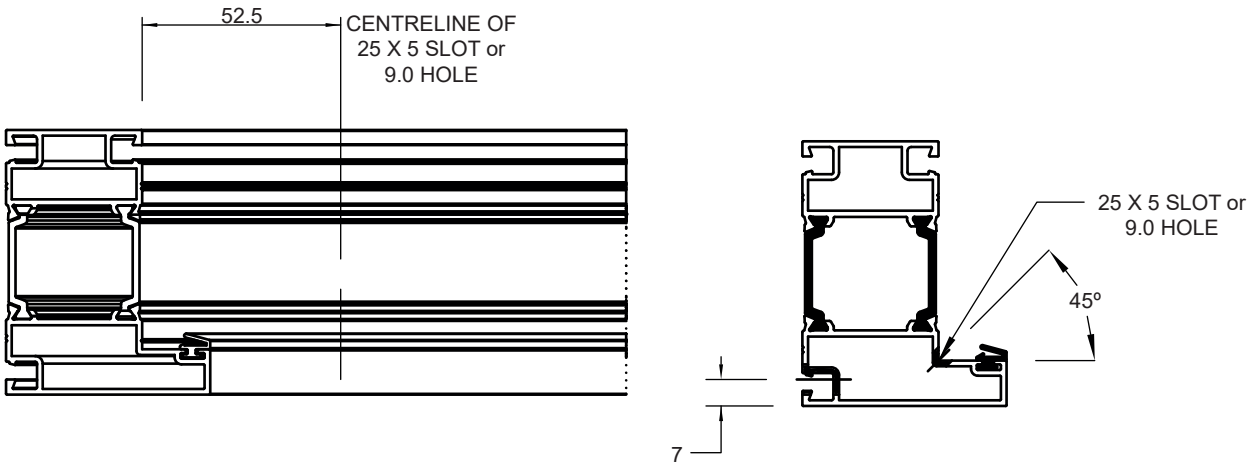
Where a cill occurs with no sub-cill, carry out face drainage preparation on the cill as shown below. On door leaves up to 900mm wide two slots as shown On door leaves over 900mm wide add one slot centrally.

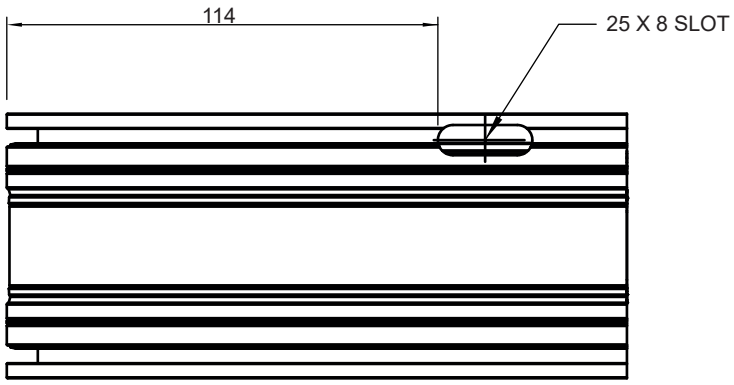




OPEN IN FRAME CONCEALED DRAINAGE

Where a cill occurs on a sub-cill, carry out concealed drainage preparation on the cill as shown below.
On door leaves up to 900mm wide two slots as shown
On door leaves over 900mm wide add one slot centrally.



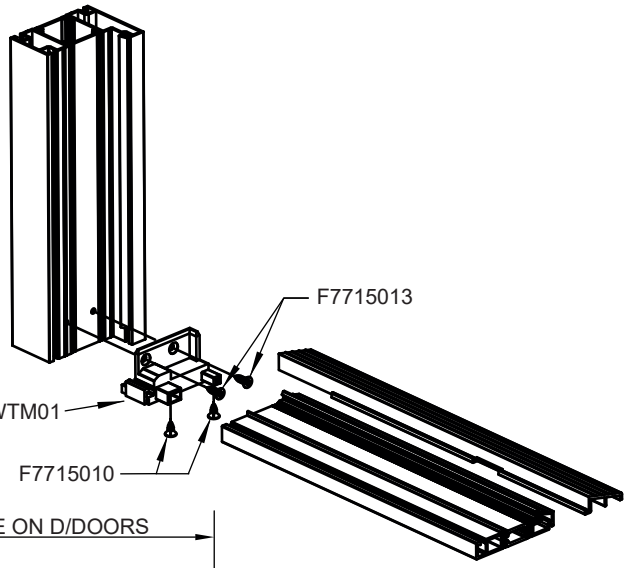


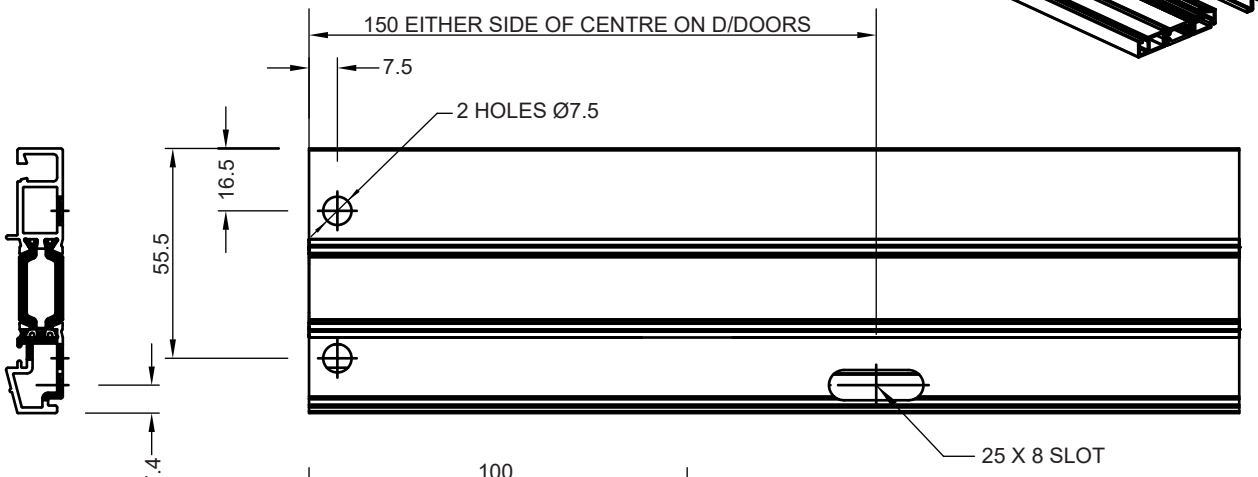
Dimensions in mm
DO NOT SCALE

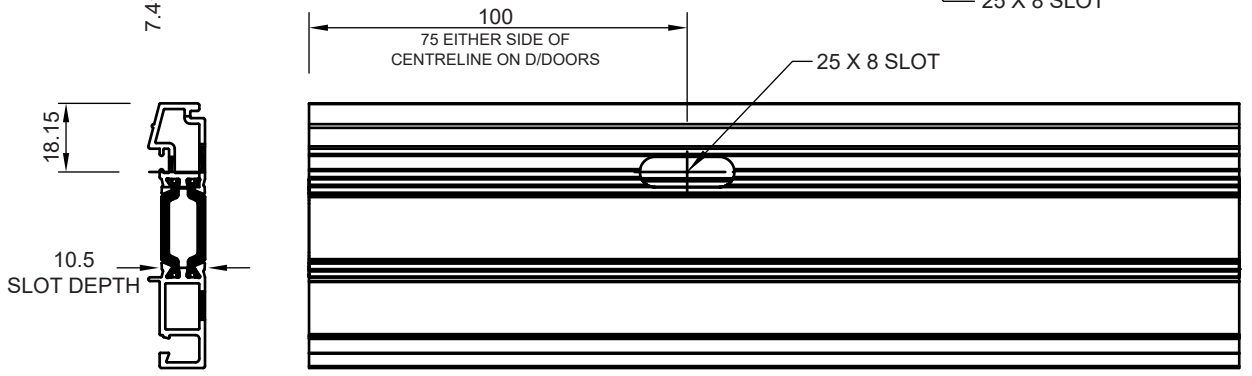
LOW THRESHOLD ASSEMBLY

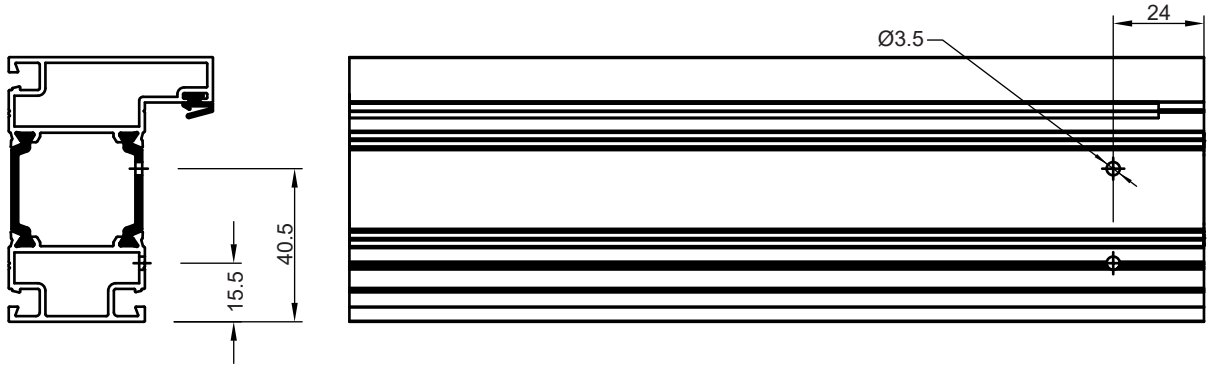
Prep drain slots @ 150 from each end as shown below and at 125 either side of centreline on double doors. Insert WTG01 seal into threshold. Notch gasket base around drain slots. Coat end of threshold with sealant. Fit WTM01 bracket to end of threshold. Drill Ø3.5 holes through holes in threshold into bracket and fix with F7715010 screws as shown. Coat mating faces of bracket with sealant then fix to jambs with F7715013 screws.

Check for any gaps and apply extra sealant where necessary. Clean off excess sealant from exposed surfaces with suitable cleaner. Fit WG01 inner seal to frame and threshold. Sealing corner joints with suitable sealant. See over page for details of ramp.



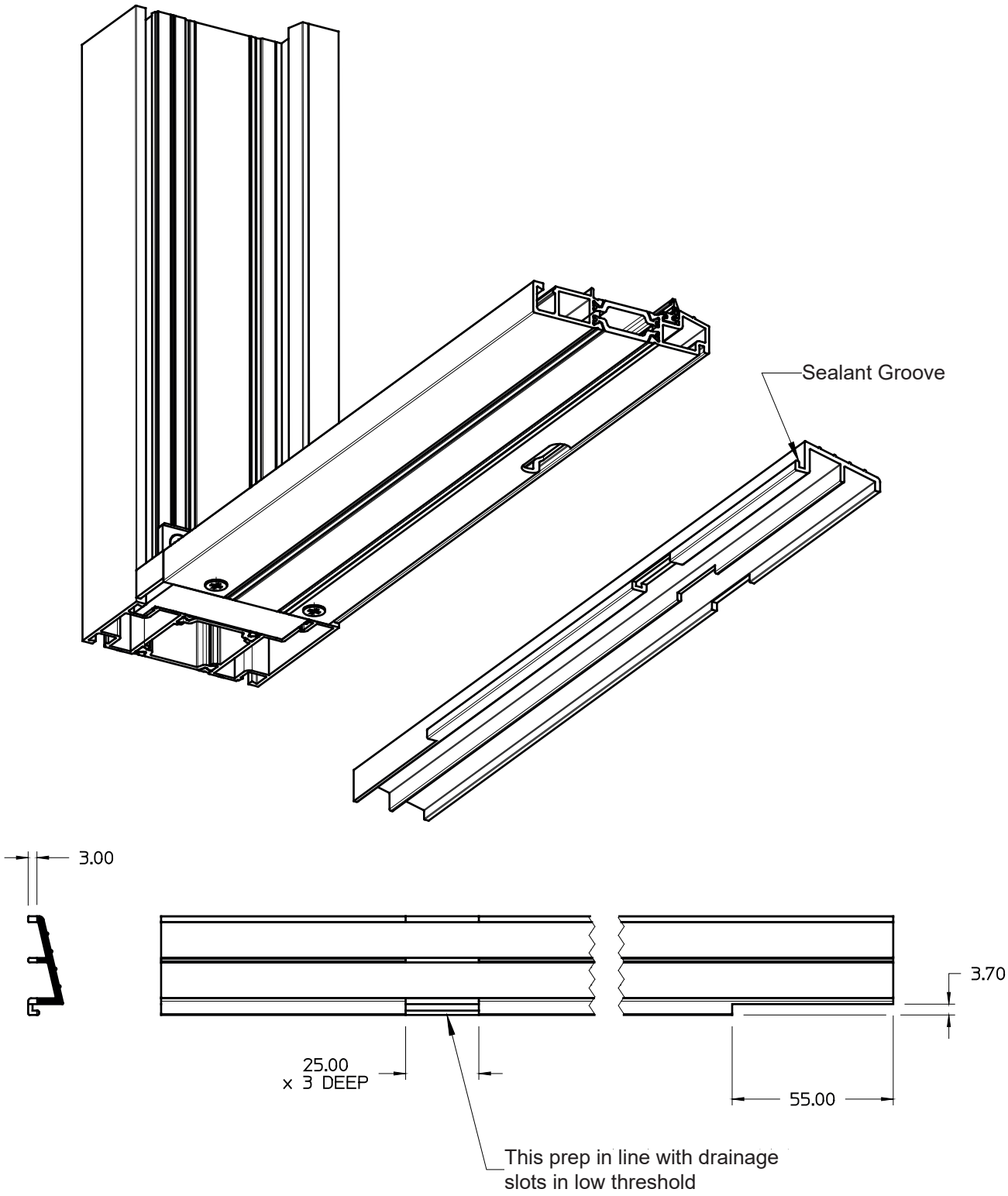






LOW THRESHOLD RAMP

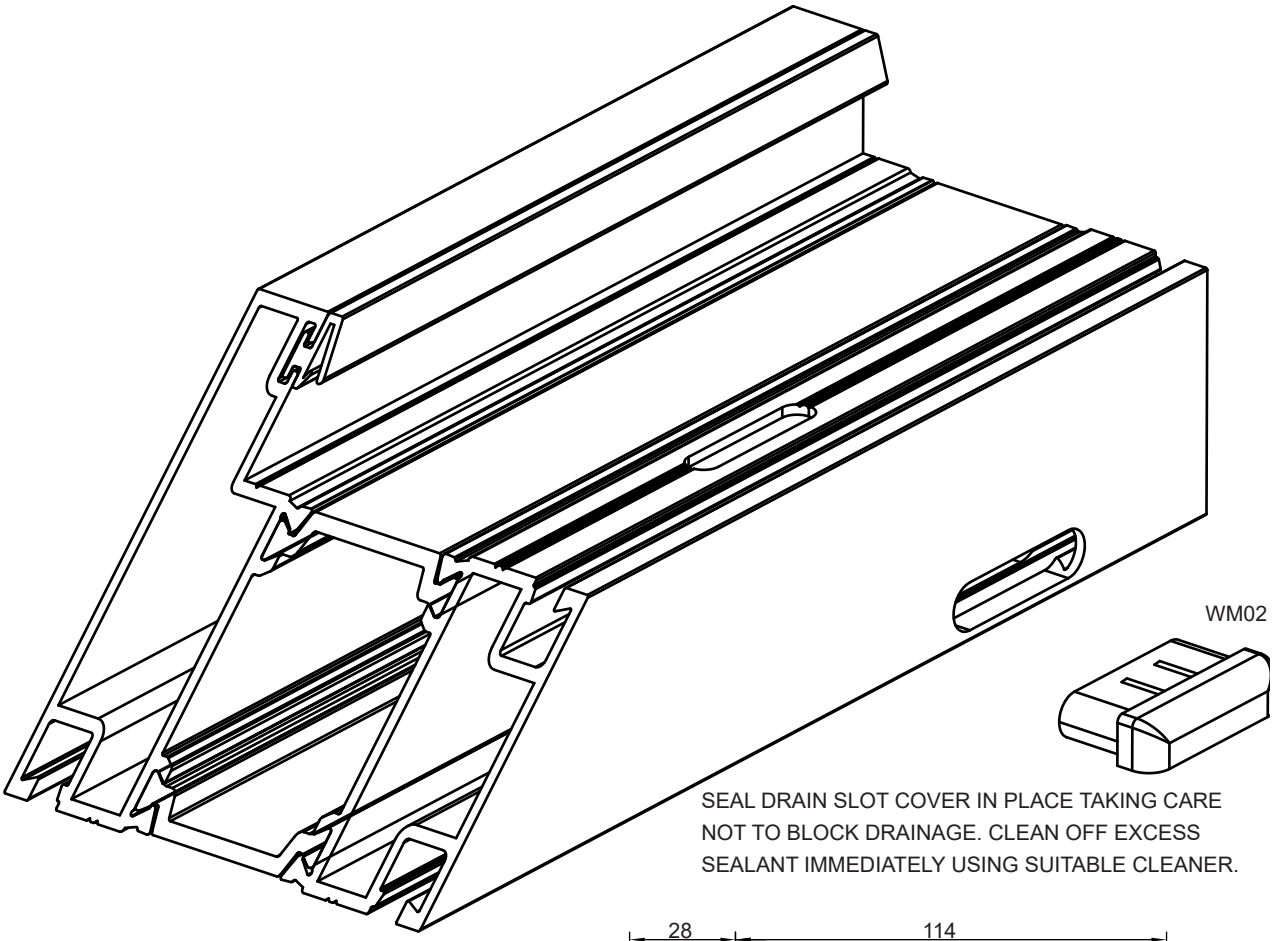
Apply silicone sealant to groove in ramp. Fit ramp to low threshold. Clean off excess sealant immediately using suitable cleaner. Allow sealant to cure before handling frame.

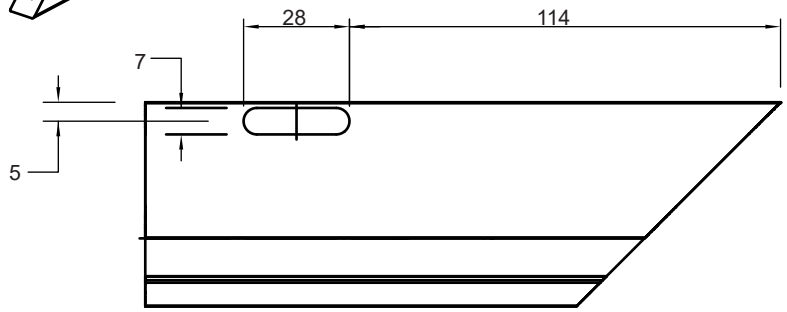


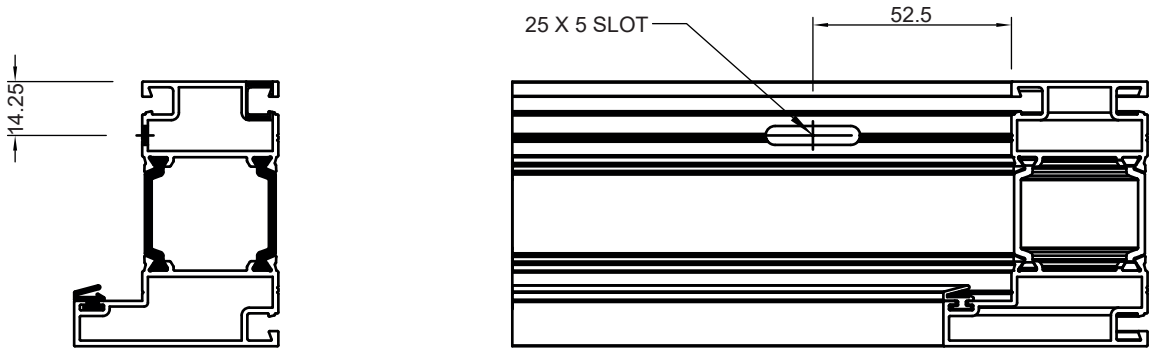
Dimensions in mm
DO NOT SCALE

OPEN OUT FRAME FACE DRAINAGE

Where a cill occurs with no sub-cill, carry out face drainage preparation on the cill as shown below. On door leaves up to 900mm wide two slots as shown On door leaves over 900mm wide add one slot centrally.

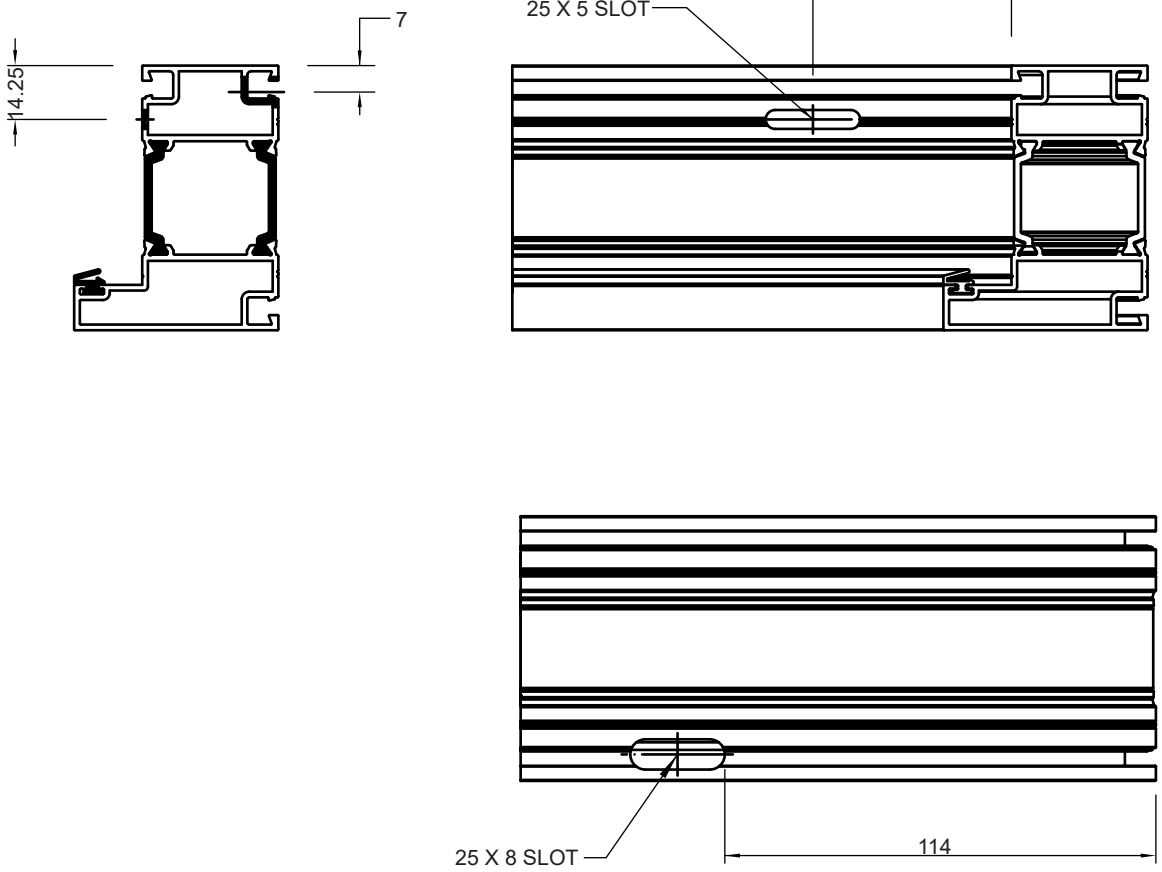






OPEN OUT FRAME CONCEALED DRAINAGE

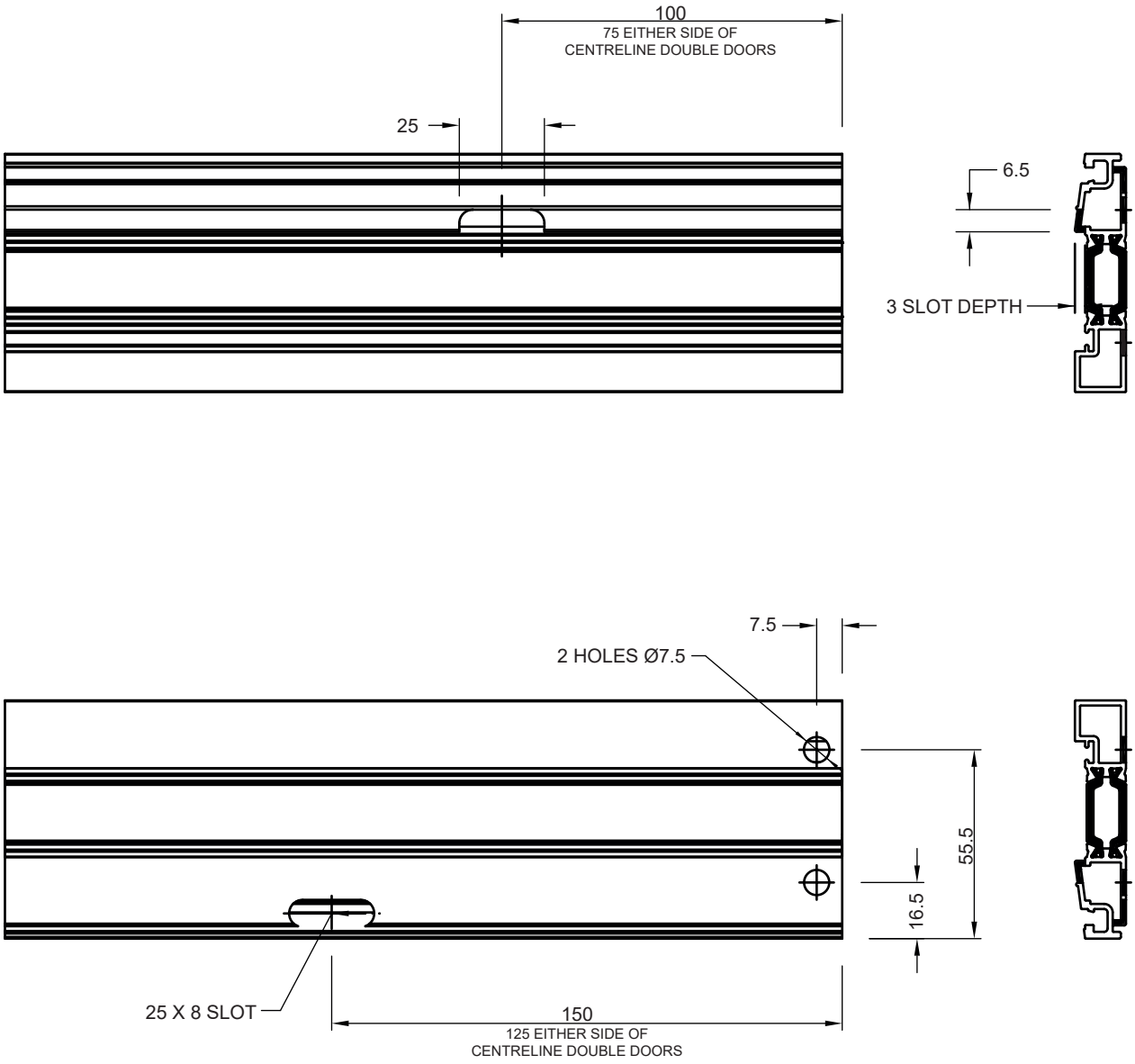
Where a cill occurs on a sub-cill, carry out concealed drainage preparation on the cill as shown below. On door leaves up to 900mm wide two slots as shown. On door leaves over 900mm wide add one slot centrally.



Dimensions in mm
DO NOT SCALE

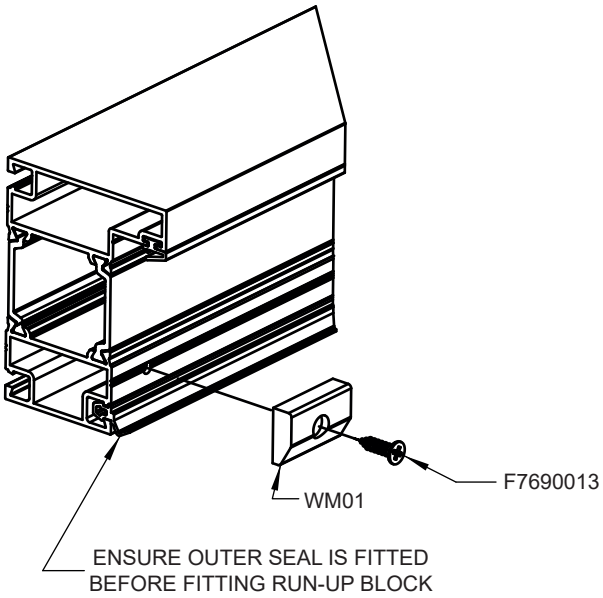
OPEN OUT LOW THRESHOLD DRAINAGE

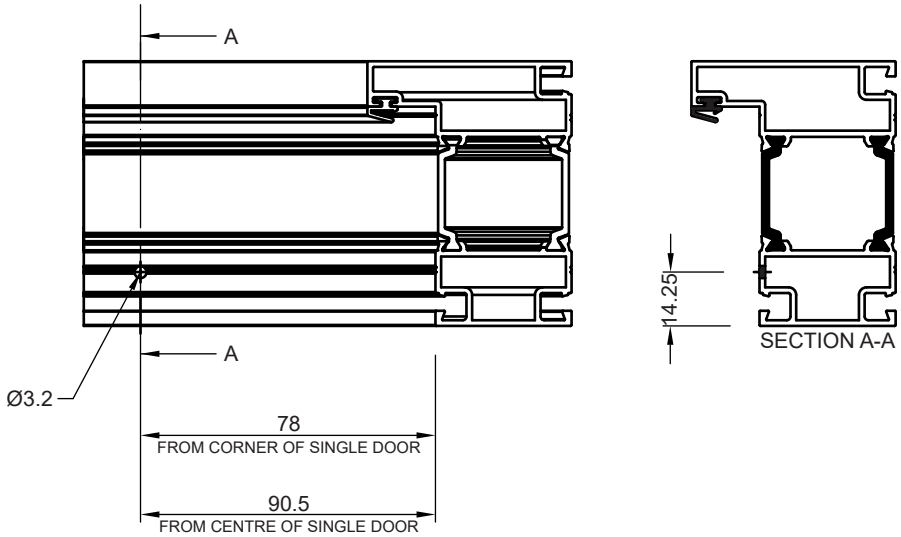
See open in low threshold details for assembly and ramp details.

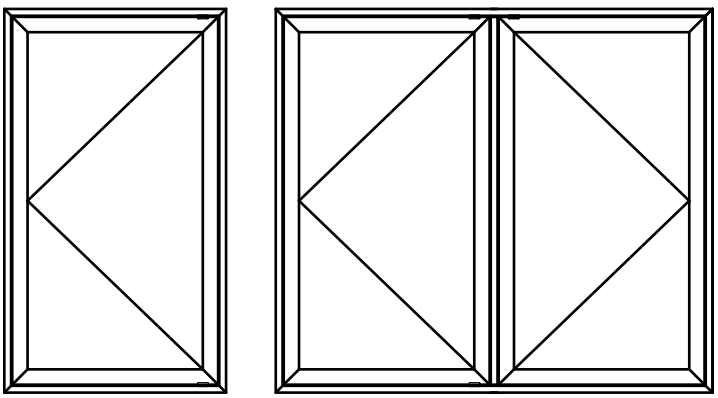


RUN-UP BLOCK FITTING

Drill frame as shown below. Fit run-up blocks using F7690013 screws. Where PAS24 is required, fit additional run-up blocks opposite to each hinge too. On low threshold doors, the run-up block is not required at the threshold.



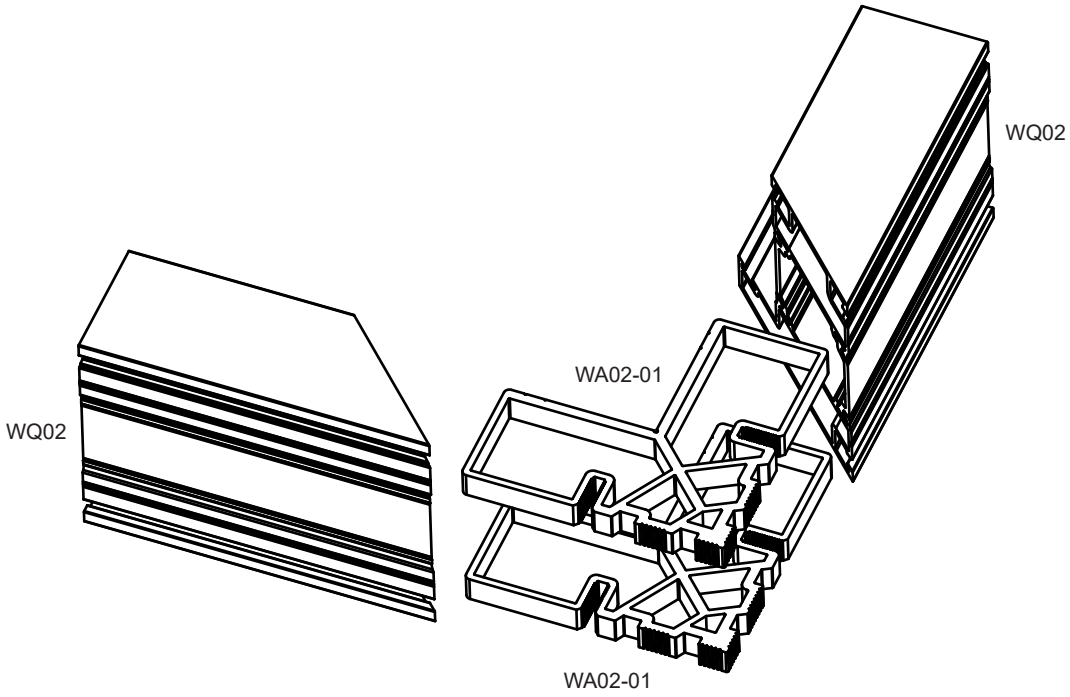


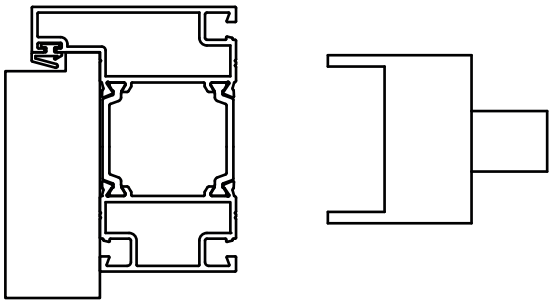


Dimensions in mm
DO NOT SCALE

OUTERFRAME CRIMPING

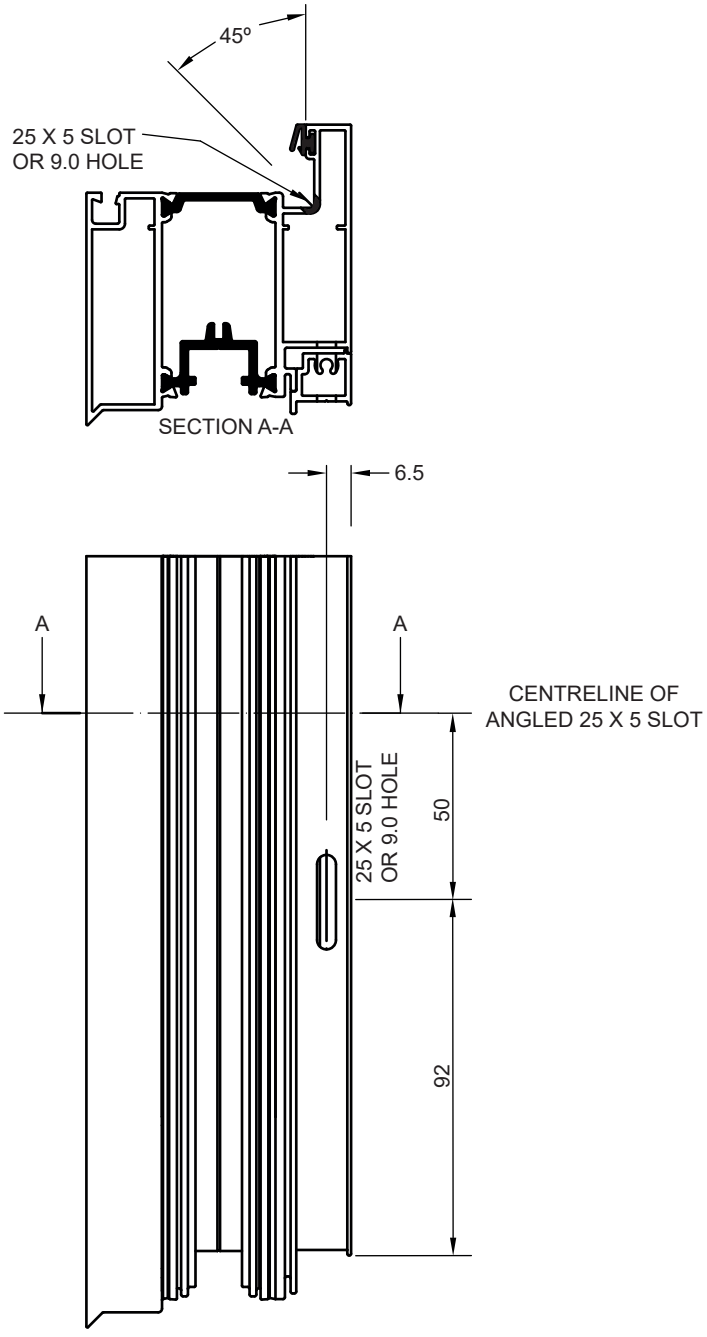
Apply 2 part epoxy adhesive to all corner cleat pockets. Apply sealant to all mating faces. Crimp using corner crimper. Clean off excess sealant from exposed faces immediately using a suitable cleaner.





OPEN IN SASH DRAINAGE

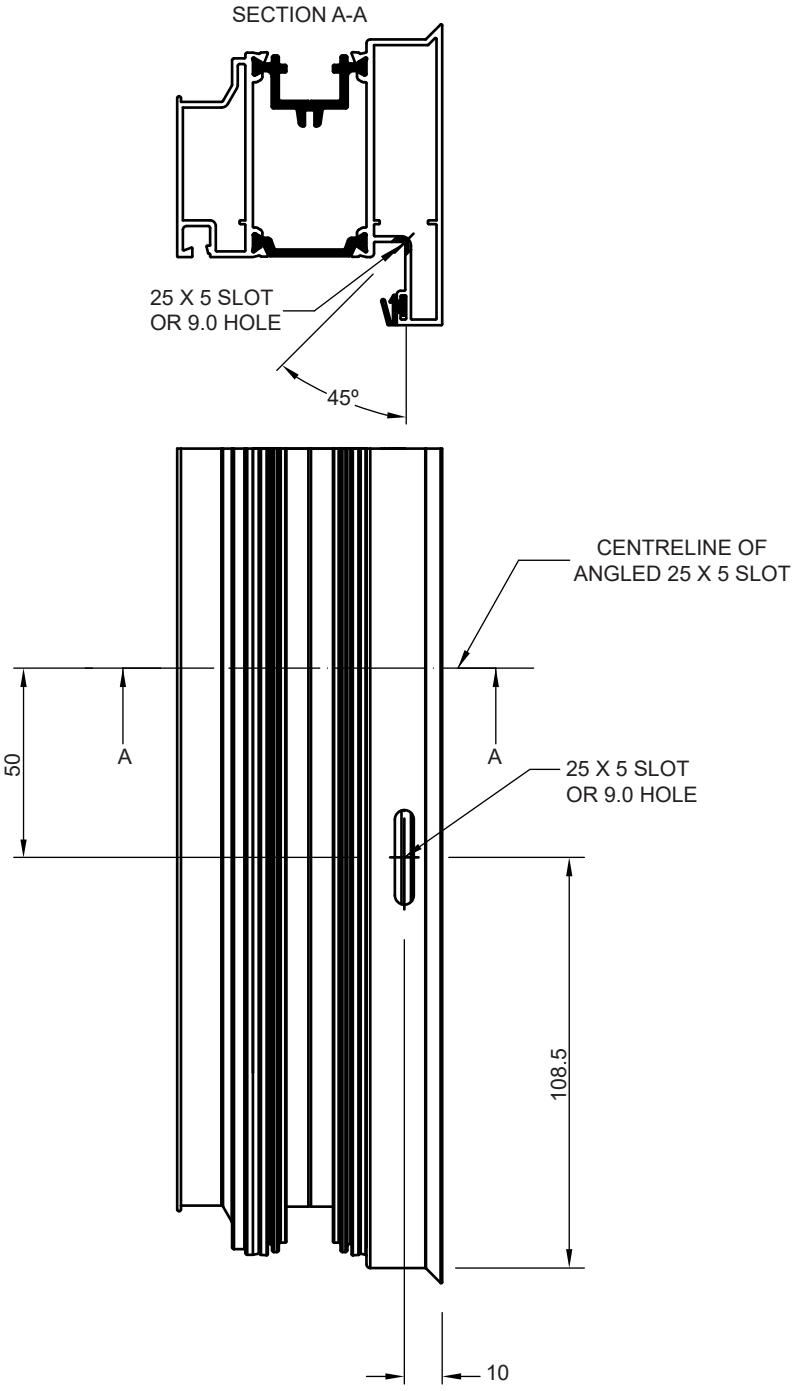
Prepare each end of the bottom rail as shown below. A ø9.0 hole may be substituted for the 25 x 5 slot. On open in Low threshold doors, also prep the outlet slot / hole in the WT04 bottom rail adaptor in line with the prep in the bottom rail



Dimensions in mm
DO NOT SCALE

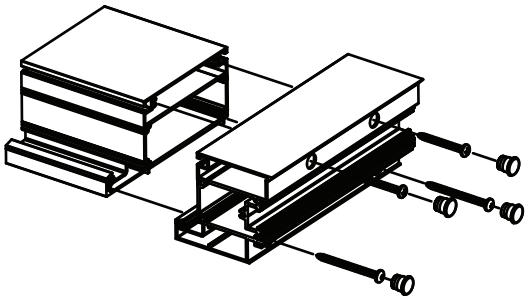
OPEN OUT SASH DRAINAGE

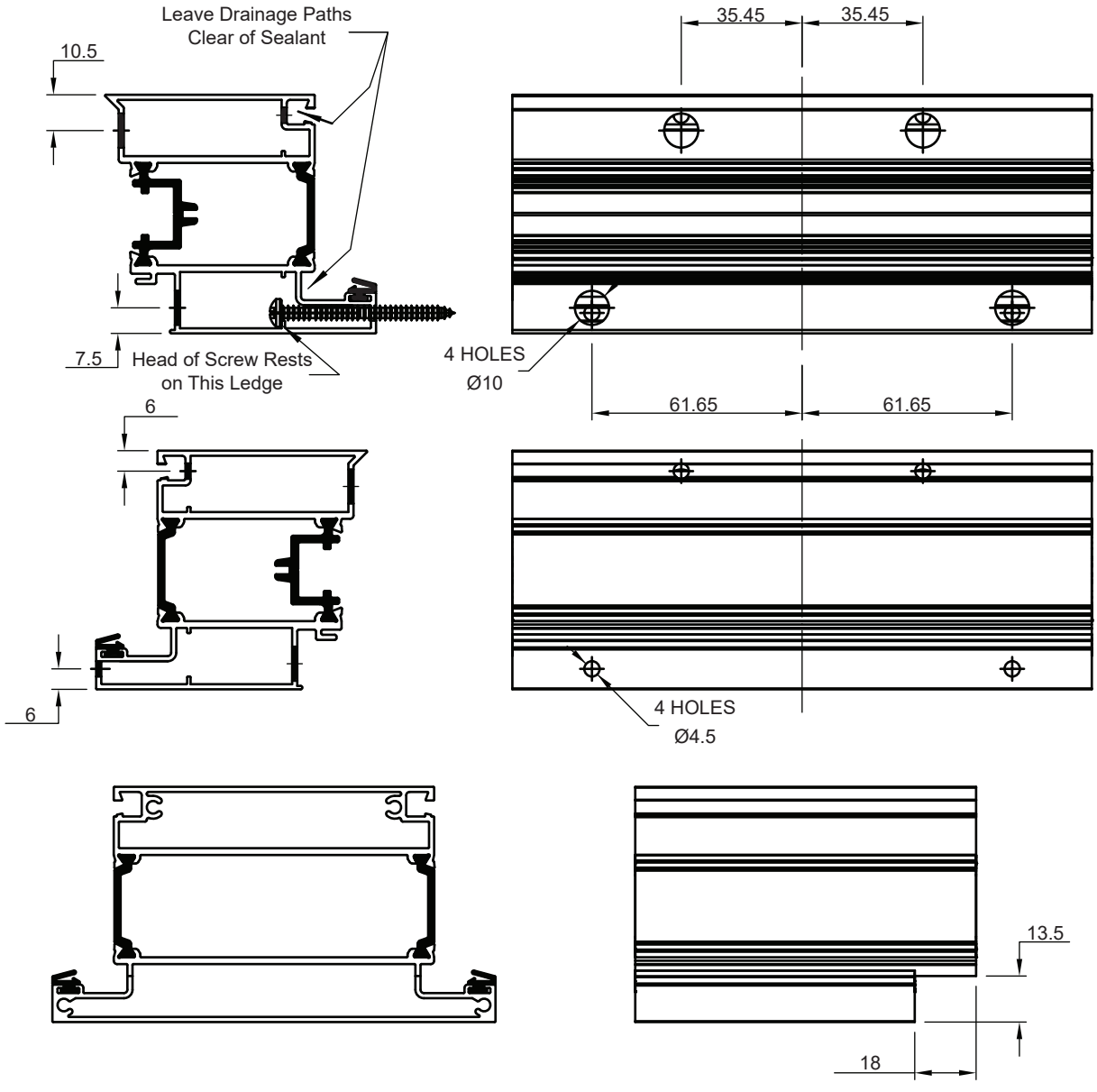
Prepare each end of the bottom rail as shown below. A ø9.0 hole may be substituted for the 25 x 5 slot.



MIDRAIL ASSEMBLY

It is easier to assemble the midrail joints BEFORE the sash corner joints. Drill stiles as shown at the required mid-rail height. (Use Drill Jig WJ51). End-mill midrail as shown. Coat mating surfaces of midrail with suitable sealant. LEAVE DRAINAGE PATHS CLEAR OF SEALANT. Assemble using screws shown. Do not over tighten screws. Head of screws on rebate side are designed to sit on ledge in stile profile as shown. Clean off excess sealant immediately using suitable cleaner. Double check that drainage paths are clear. Fit 2636 Hole plugs.

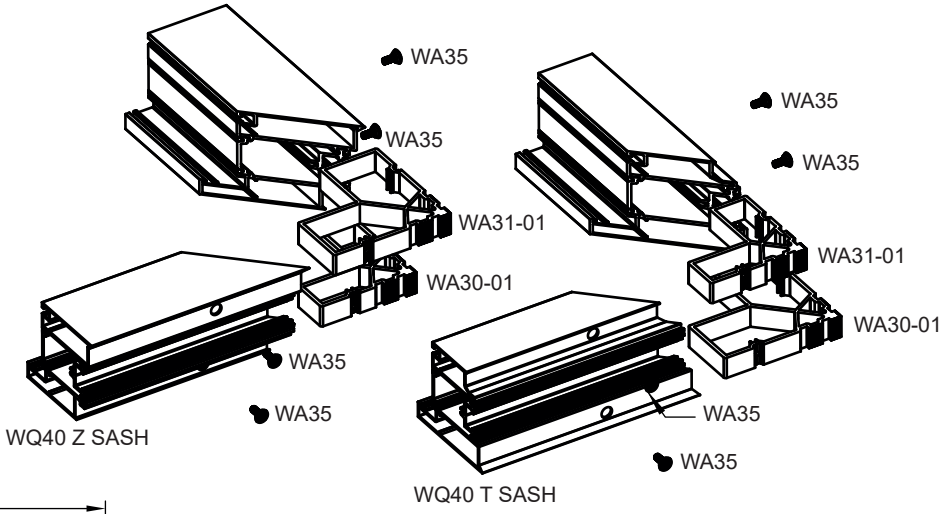


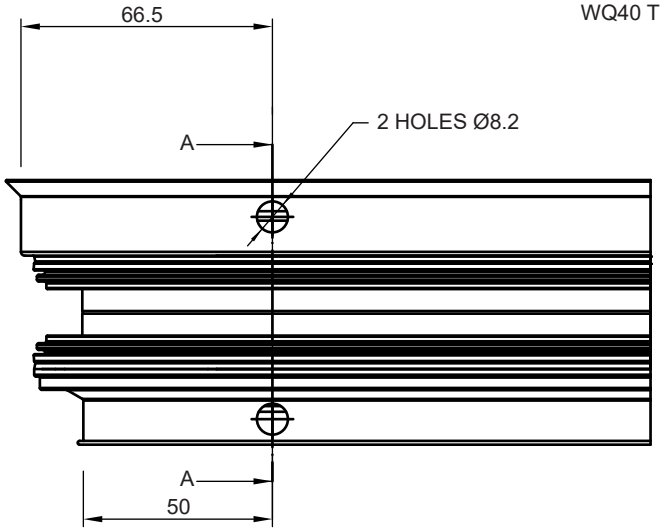


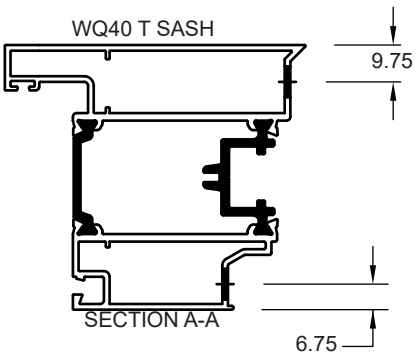
Dimensions in mm
DO NOT SCALE

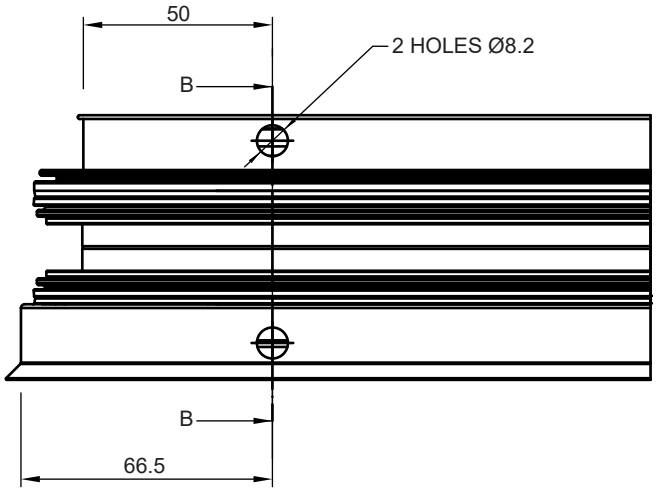
SASH MECHANICAL CORNER JOINTING

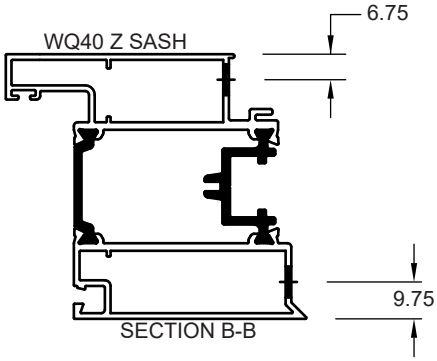
Drill stile and rail ends as shown. (Use drill jig WJ50). Apply adhesive to corner cleat recesses. Apply sealant to profile mating faces. Assemble each corner using cleats and screws shown below. Clean off excess sealant immediately using a suitable cleaner.





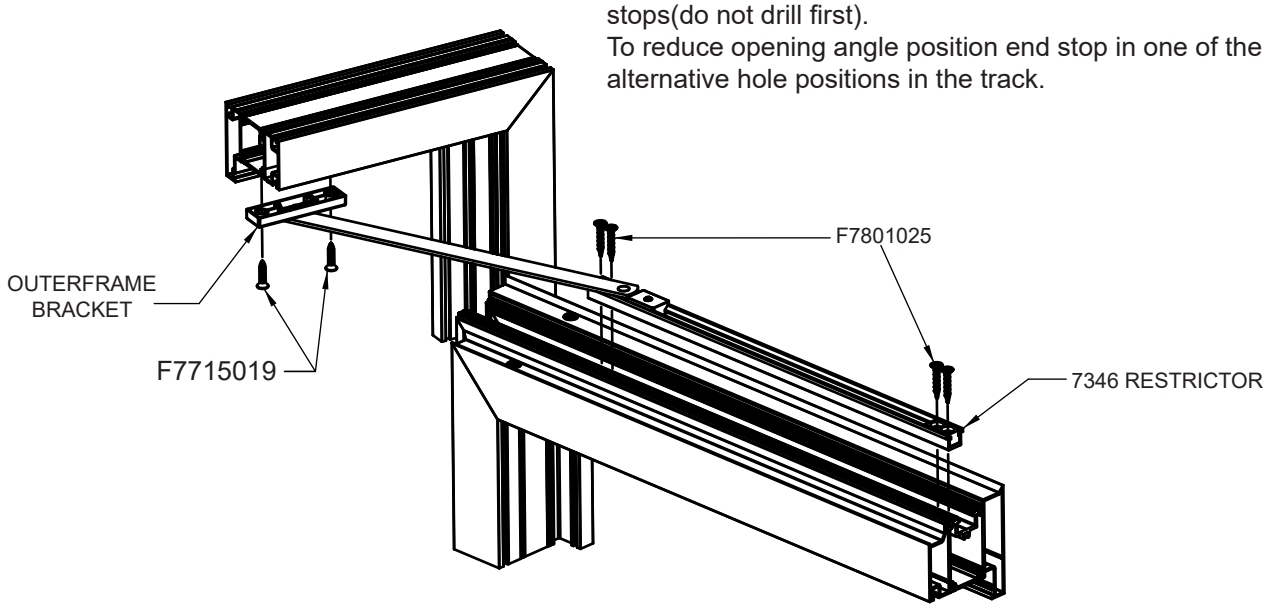


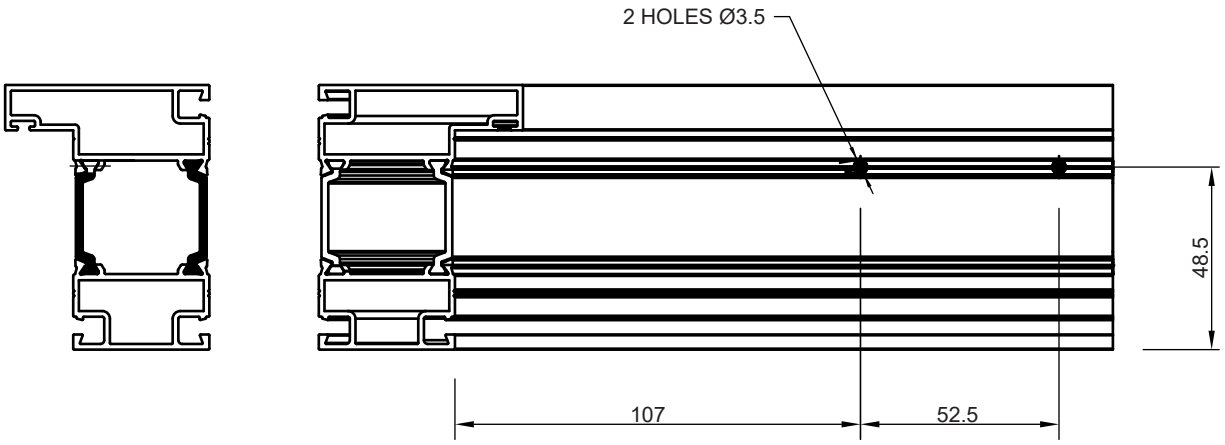


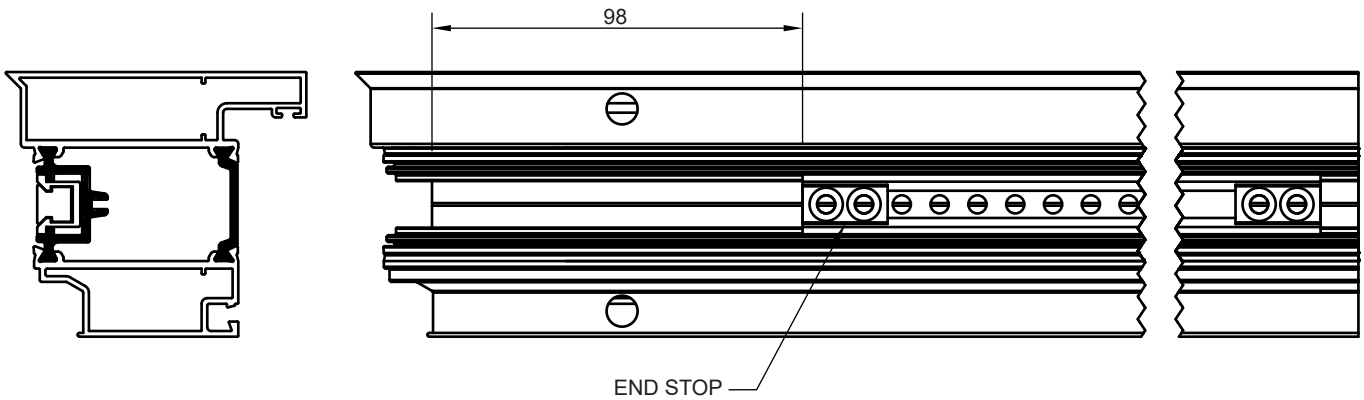


HOLD OPEN ARM FITTING

Drill outerframe as shown below. Fit outerframe bracket using F7715019 screws. Position track in top rail eurogroove as shown and fix using 4 off F7801025 screws through end stops(do not drill first).
To reduce opening angle position end stop in one of the alternative hole positions in the track.



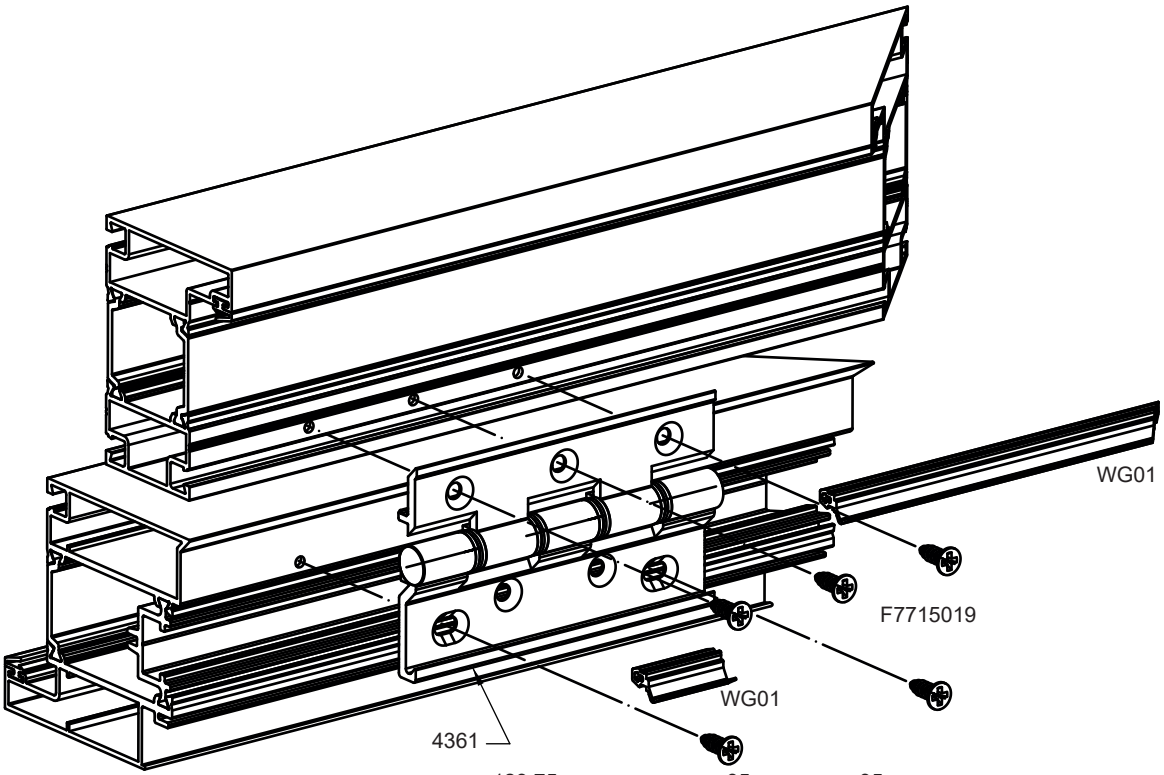


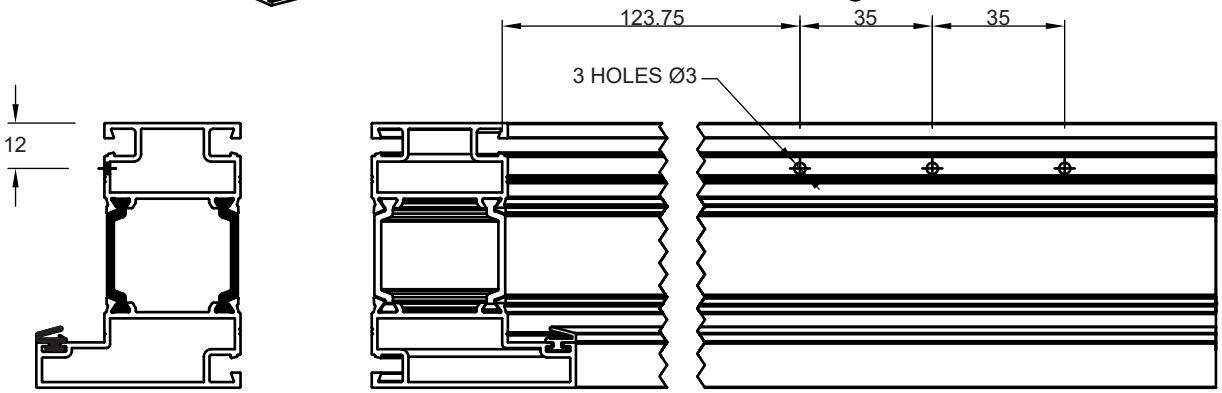


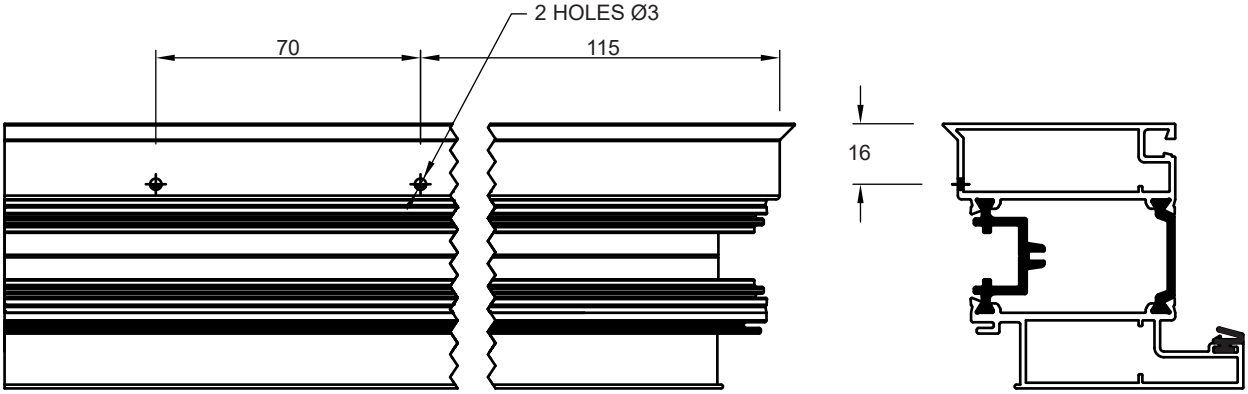
Dimensions in mm
DO NOT SCALE

4361 1D ADJUSTABLE HINGE ASSEMBLY

Drill top and bottom of stiles and jambs as shown below and repeat at centre (Use hinge as drill guide). Fit hinge to outerframe using 3 off F7715019 screws. Fit WG01 flipper seal between hinges. When hanging the door leaf fix hinge to stile using 2 off F7715019 screws into centre of fixing slots only. Adjust leaf height, then drill 3.0 dia through remaining holes and fix with 2 off F7715019 screws.



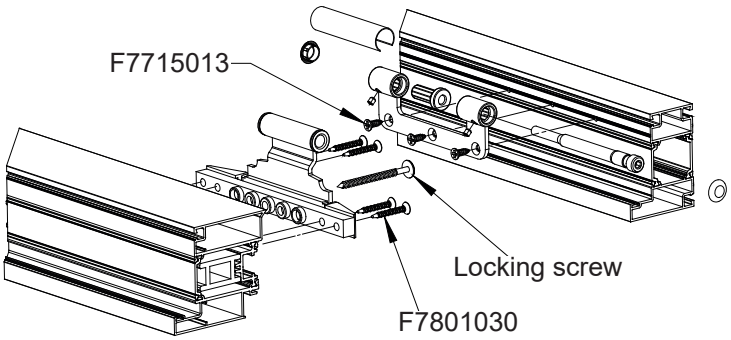


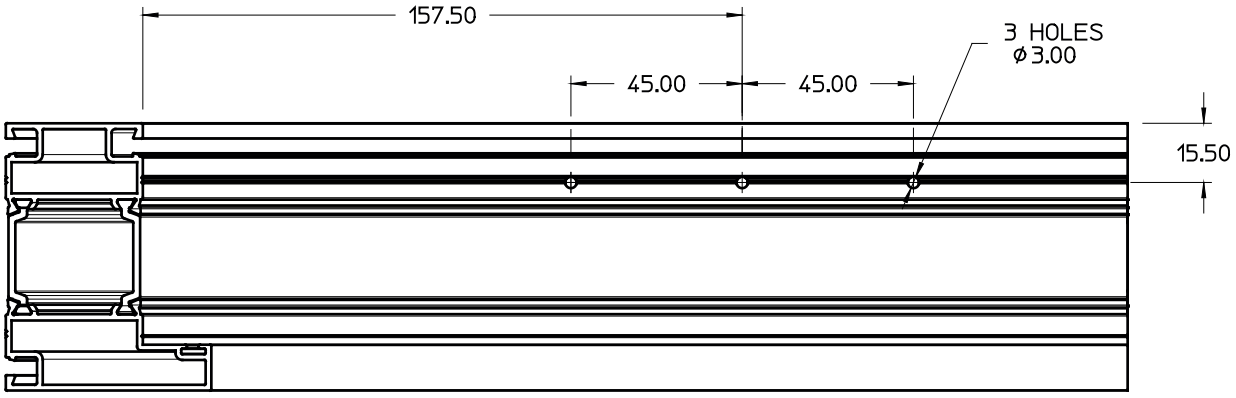


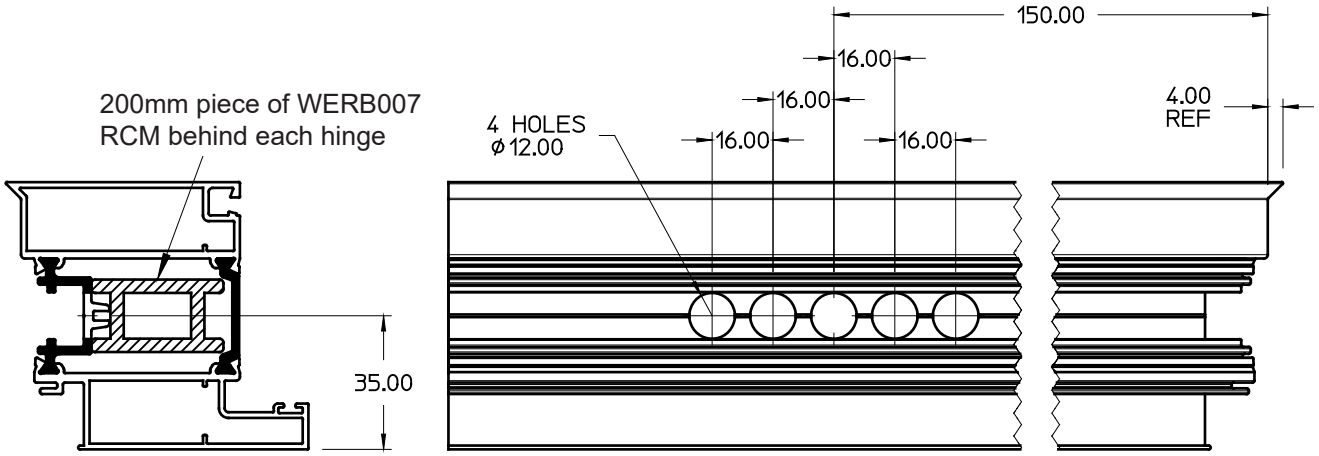
4360 3D Adjustable Hinge Assembly

Machine Jamb and stile as shown below. On door sashes over 2100 high, fit a fourth hinge at 130mm below centres below top hinge.

Use a 200mm piece of ?????? RCM behind each hinge or if preferred a full length in the stile. Use a small screw to hold the RCM in place from the glazing side of the side. Fit outer hinge half to jamb using 3 x F7715013 screws. Fit sash hinge half to stile using 4 x F7801030 screws. Also use locking screw supplied with hinge through centre hole.



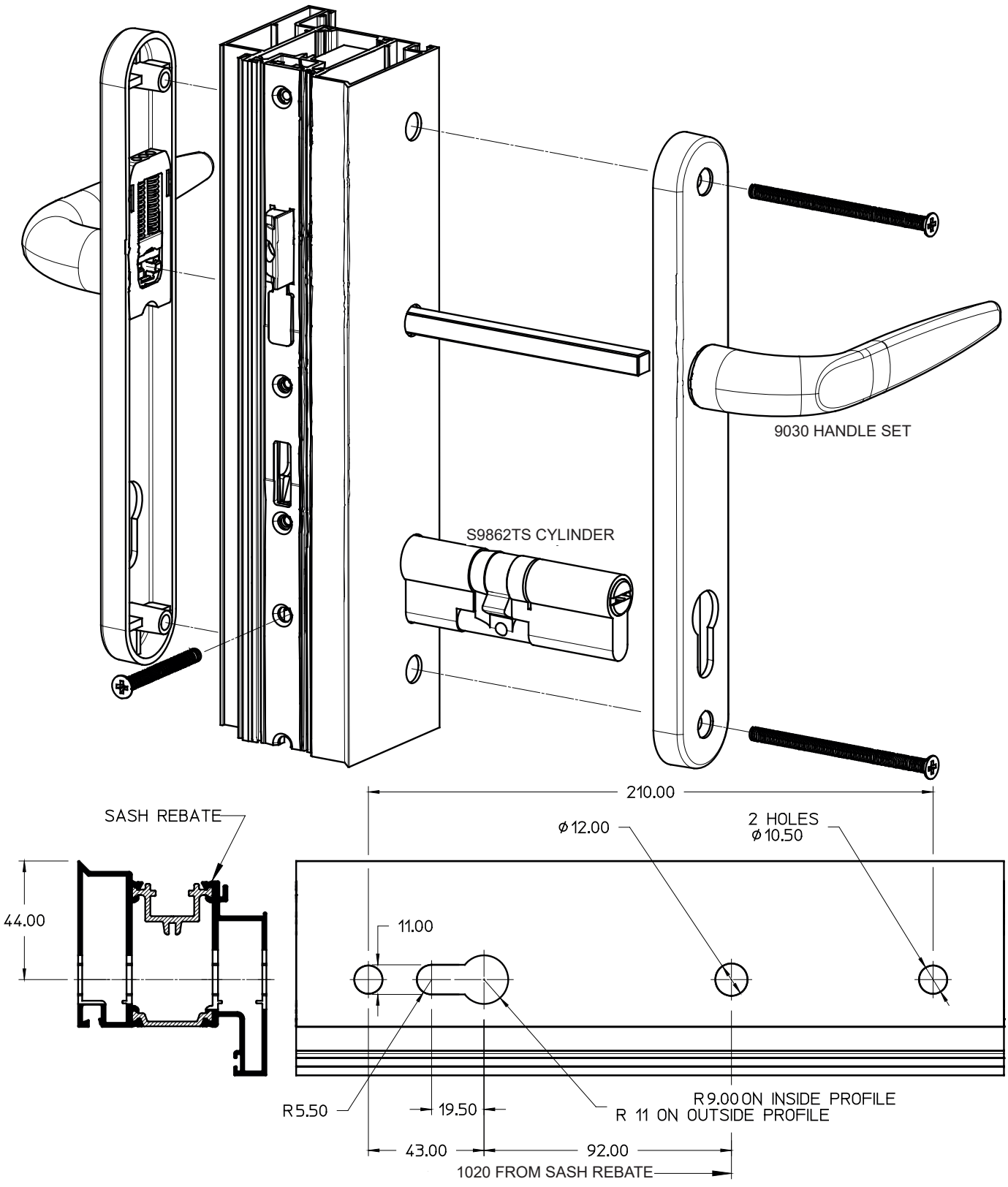




Dimensions in mm
DO NOT SCALE

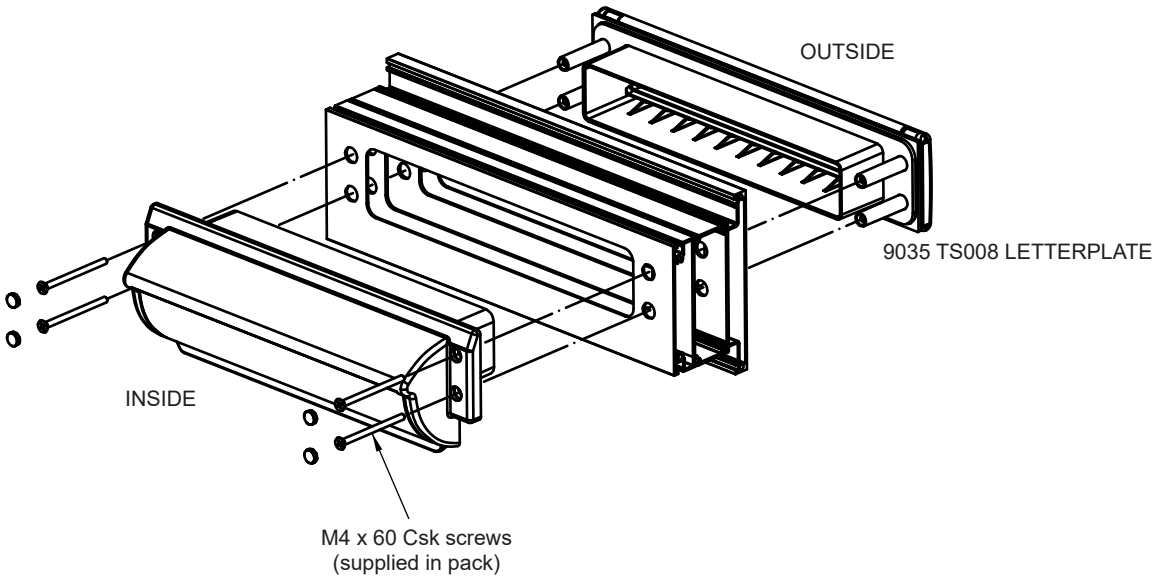
HANDLE FITTING

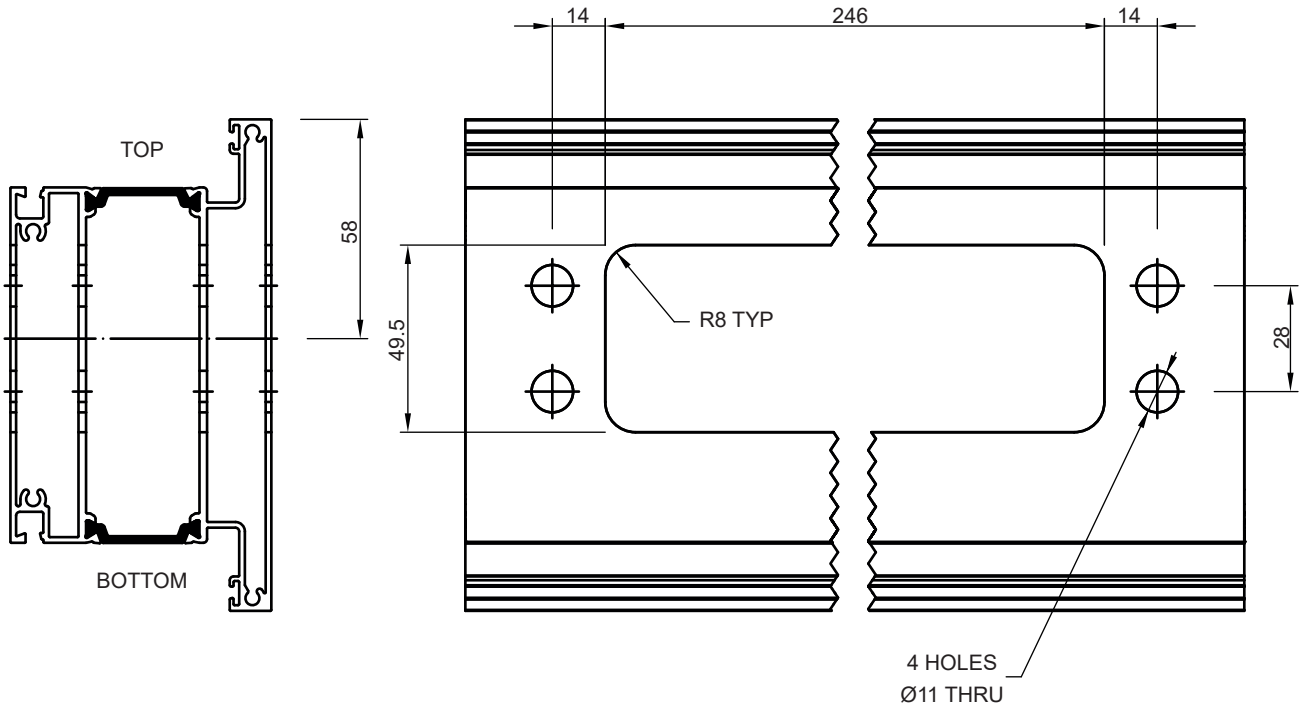
Fit cylinder through lock and loosely secure with M5 x 50 Csk screw supplied. Seal around inside of cylinder with silicone. Fit handle using 80mm long screws supplied. Fully tighten cylinder securing screw.



TS008 LETTERPLATE FITTING

Machine the centre of the midrail as shown below.
Insert the inner half into the aperture from the inside. Insert the outer half into the aperture from the outside and hold in place while screws are inserted from the inside. Insert the 60mm screws (supplied with the letterplate) into boss location holes (both ends). Ensure that screw locates into boss. Screw must not be over tightened. Recommended torque setting 3N/m. Refer to drill manufacturers data for setting. Fit screw caps.

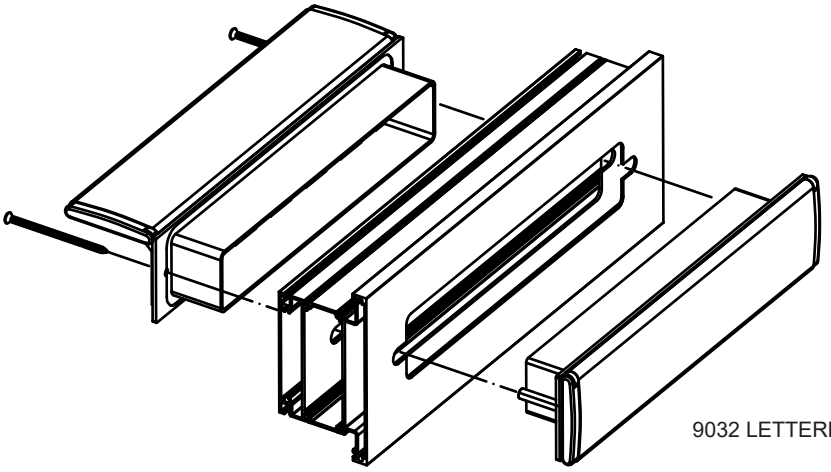




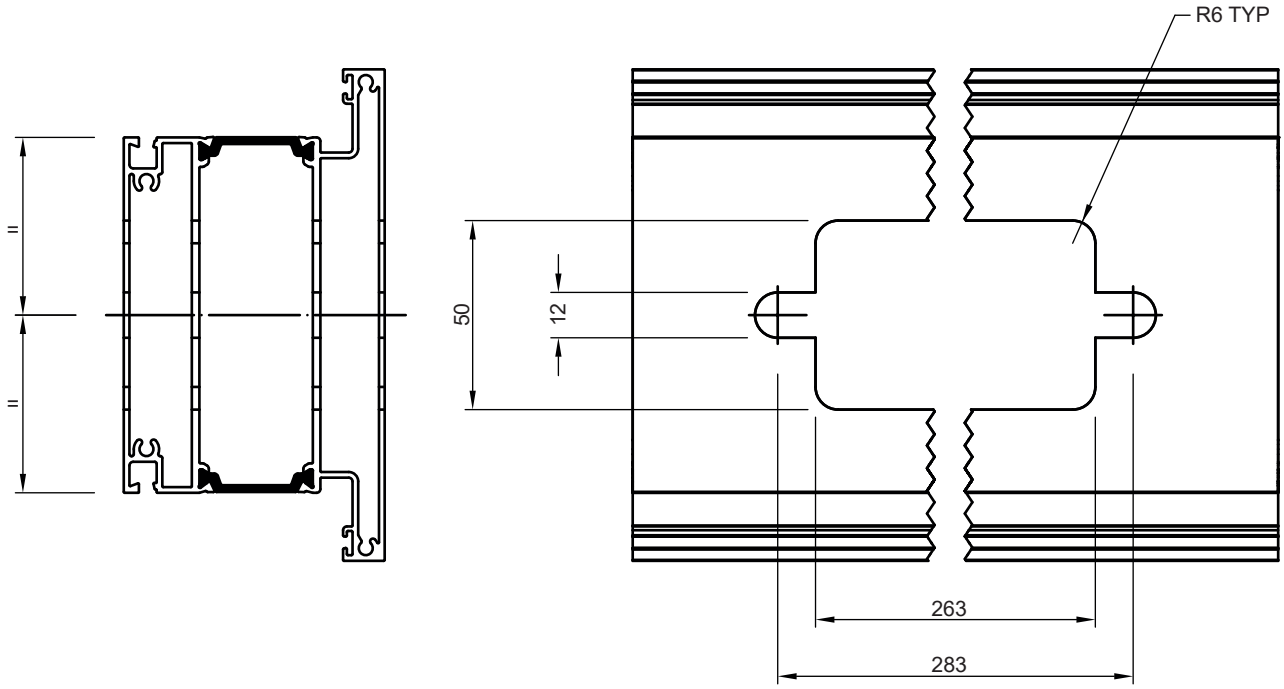
Dimensions in mm
DO NOT SCALE

LETTERPLATE FITTING

Machine the centre of the midrail as shown below.
Insert the inner half (with brushes) into the aperture from the inside. Insert the outer half into the aperture from the outside and hold in place while screws are inserted from the inside. Insert the 60mm screws (supplied with the letterplate) into boss location hole (both ends). Ensure that screw locates into boss. Screw must not be over tightened. Recommended torque setting 3N/m. Refer to drill manufacturers data for setting.

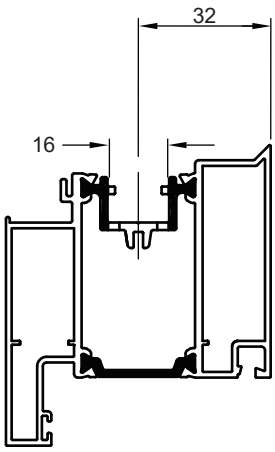


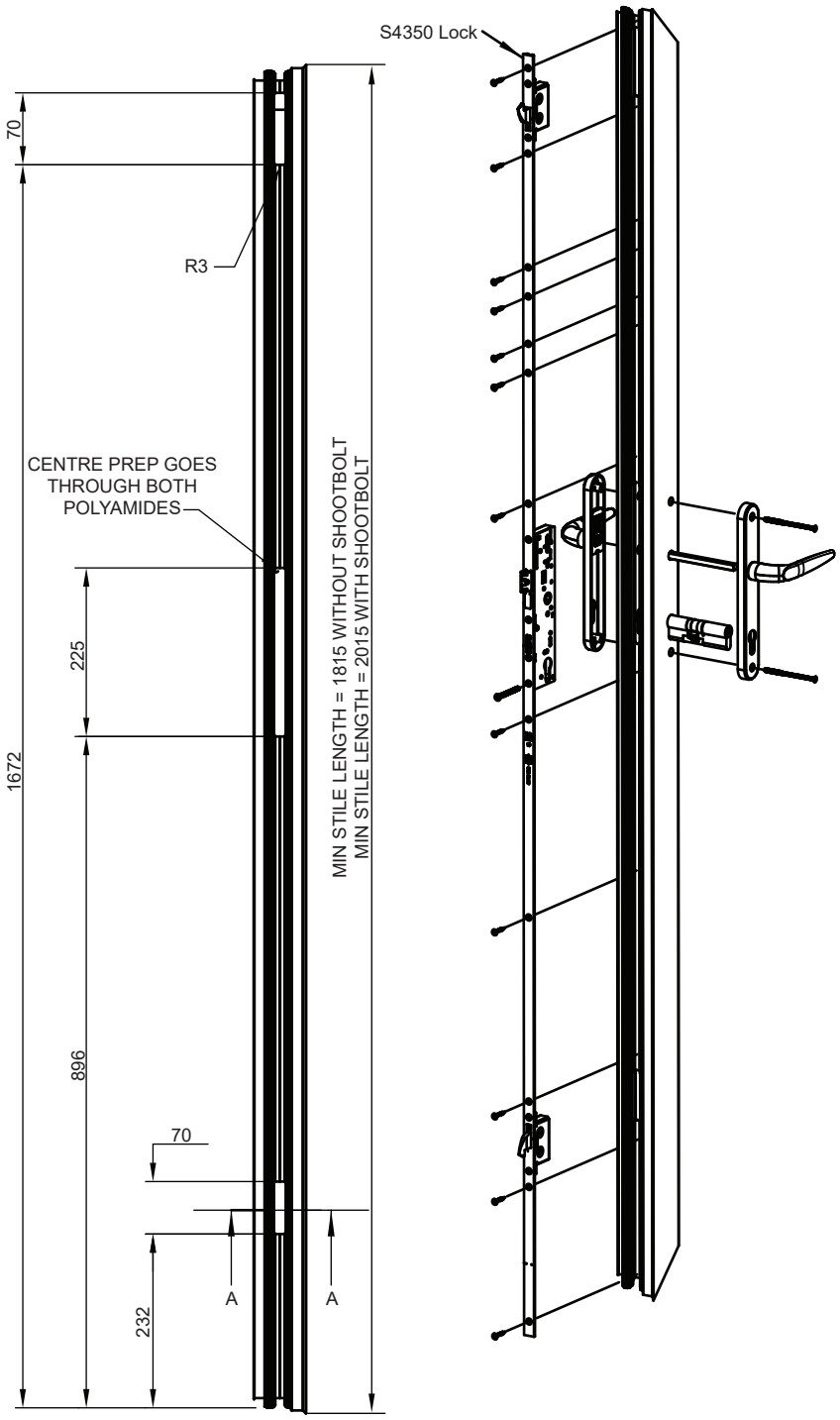
9032 LETTERPLATE



LOCK FITTING

Machine stile as shown. Cut lock faceplate to length and de-burr.
See page 38 for handle and cylinder machining. See page 45 for shootbolt fitting if required.
Fix lock using F7885025 screws (DO NOT pre-drill), taking care not to over-tighten.

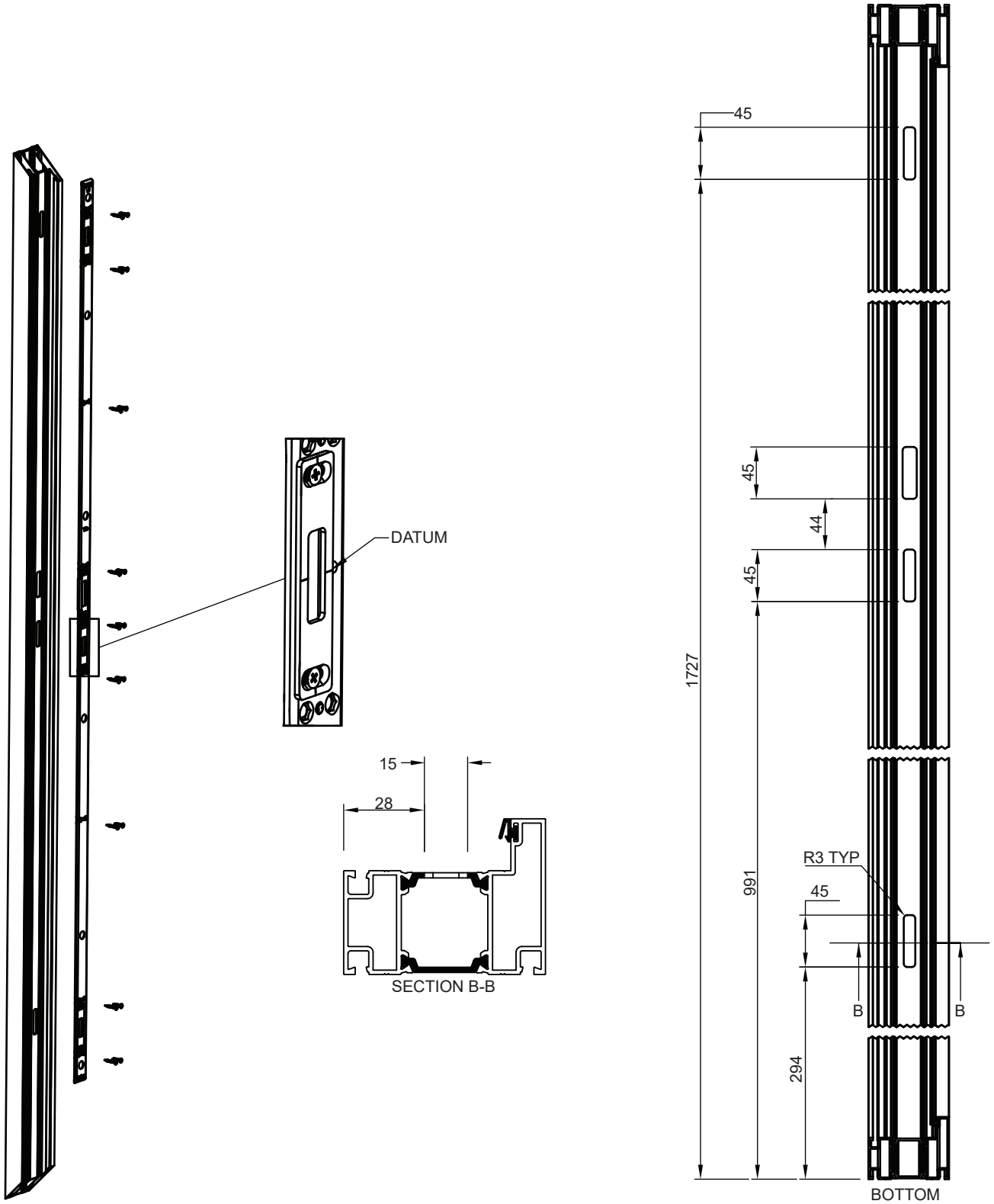




Dimensions in mm
DO NOT SCALE

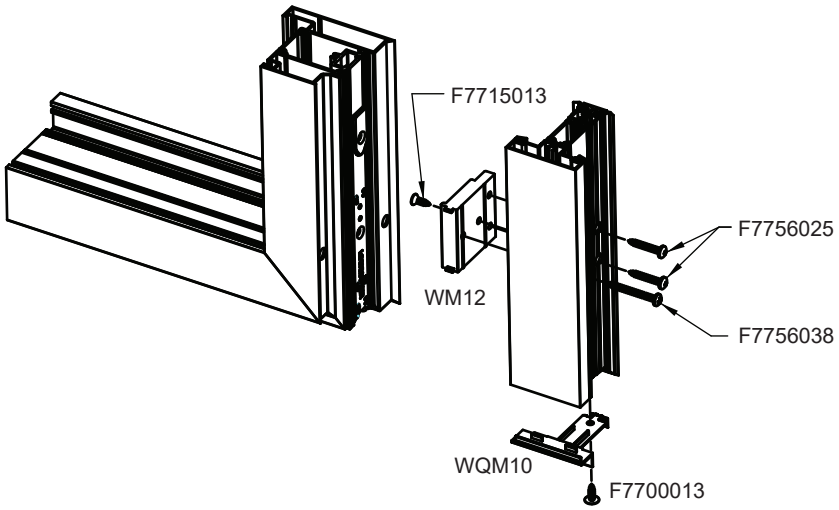
KEEP TO JAMB FITTING

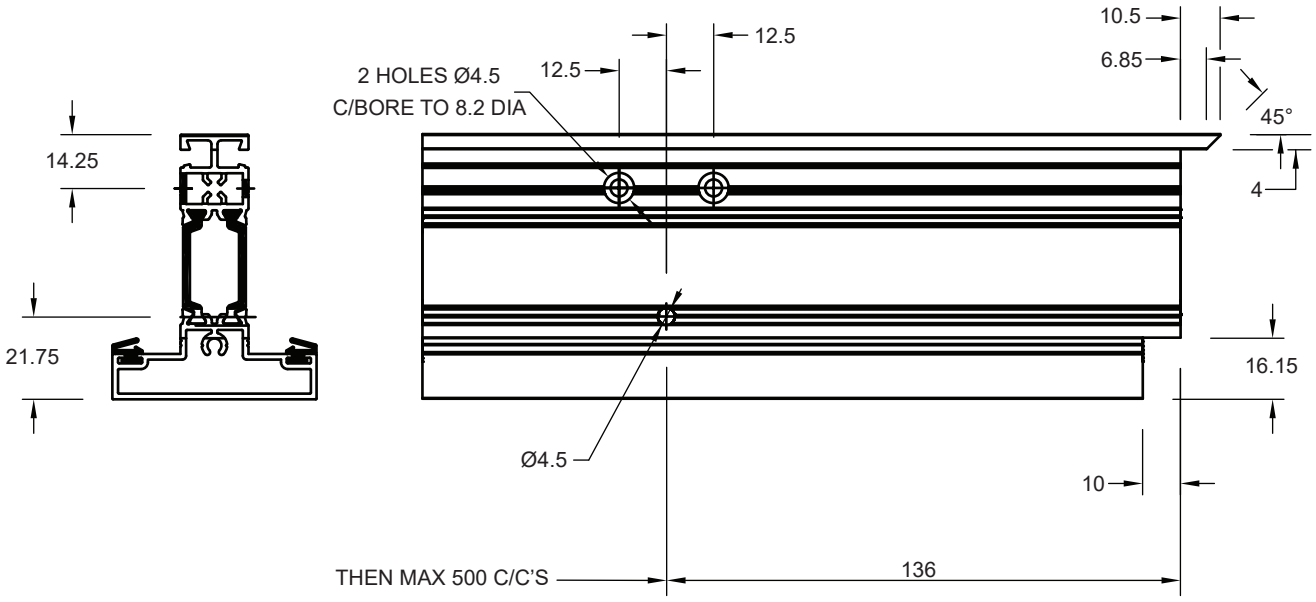
Prepare jamb as shown (LH open in / RH open out shown). After hanging door,bring stile close to jamb and transfer datum mark from lock faceplate to jamb. Align datum on keep, shown below, with this mark. Push keep back against frame rebate, and fix through front holes only using F7801025 screws (do not pre-drill).
Then drill 3.5 dia through back holes and fix using F7715019 screws.
ON LOW THRESHOLD DOORS, DEDUCT 24mm FROM DIMS TO BOTTOM (AND SQUARE CUT BOTTOM OF JAMB)



DUMMY MULLION MACHINING & FITTING

Mill dummy mullion as shown below at both ends and drill for dummy mullion spacer. Seal and fix WQM10 dummy mullion end caps to both ends of mullion using F7700013 screws. Clean off excess sealant immediately using suitable cleaner. Fit WG01 outer flipper seal to both sides of mullion. Trim flush with end of mullion following profile of end mill.
Space WM12 dummy mullion spacers at maximum 600 centres. Fix spacers to mullion using F7715013 screws as shown.
Position mullion onto sash ensuring inner and outer faces are flush with the sash faces, then drill 3.5 dia holes through existing holes in mullion into sash. Final fix with F7756038 and F7756025 screws.

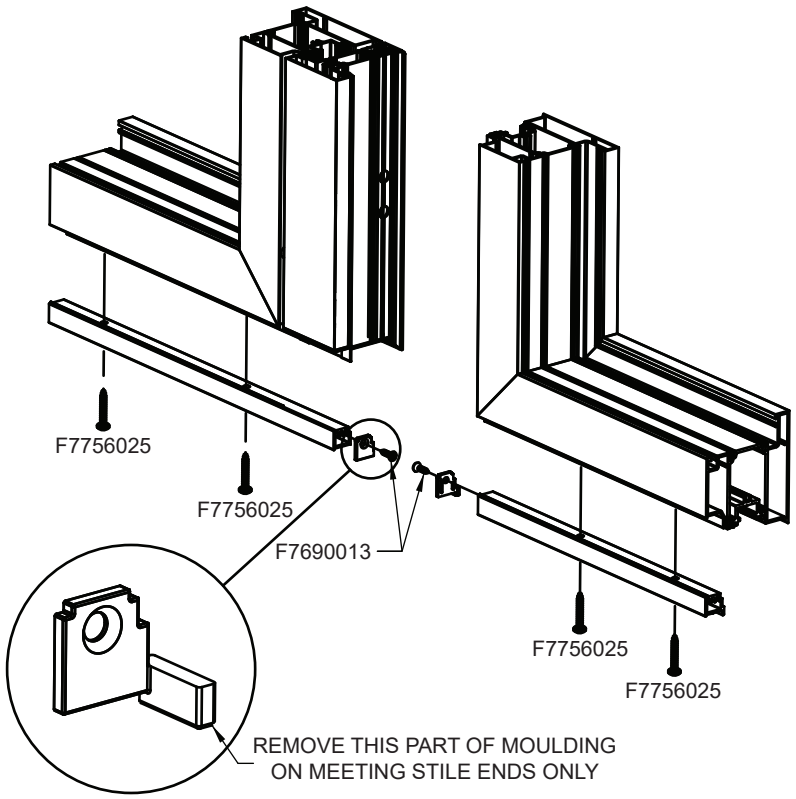


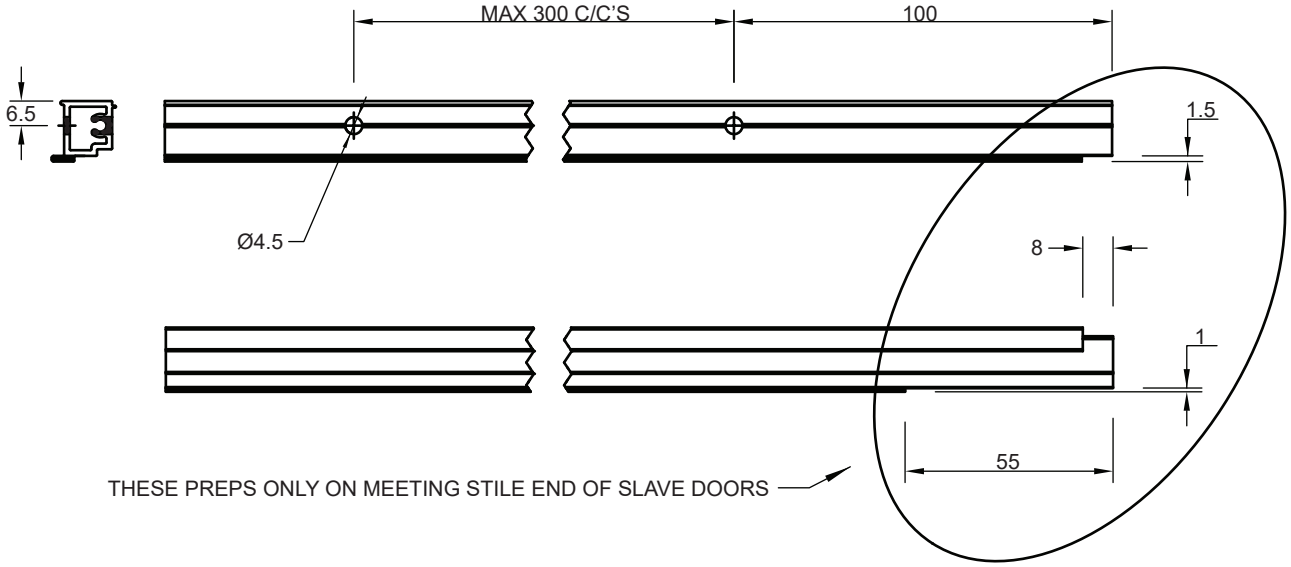


Dimensions in mm
DO NOT SCALE

LOW THRESHOLD BOTTOM RAIL ADAPTOR

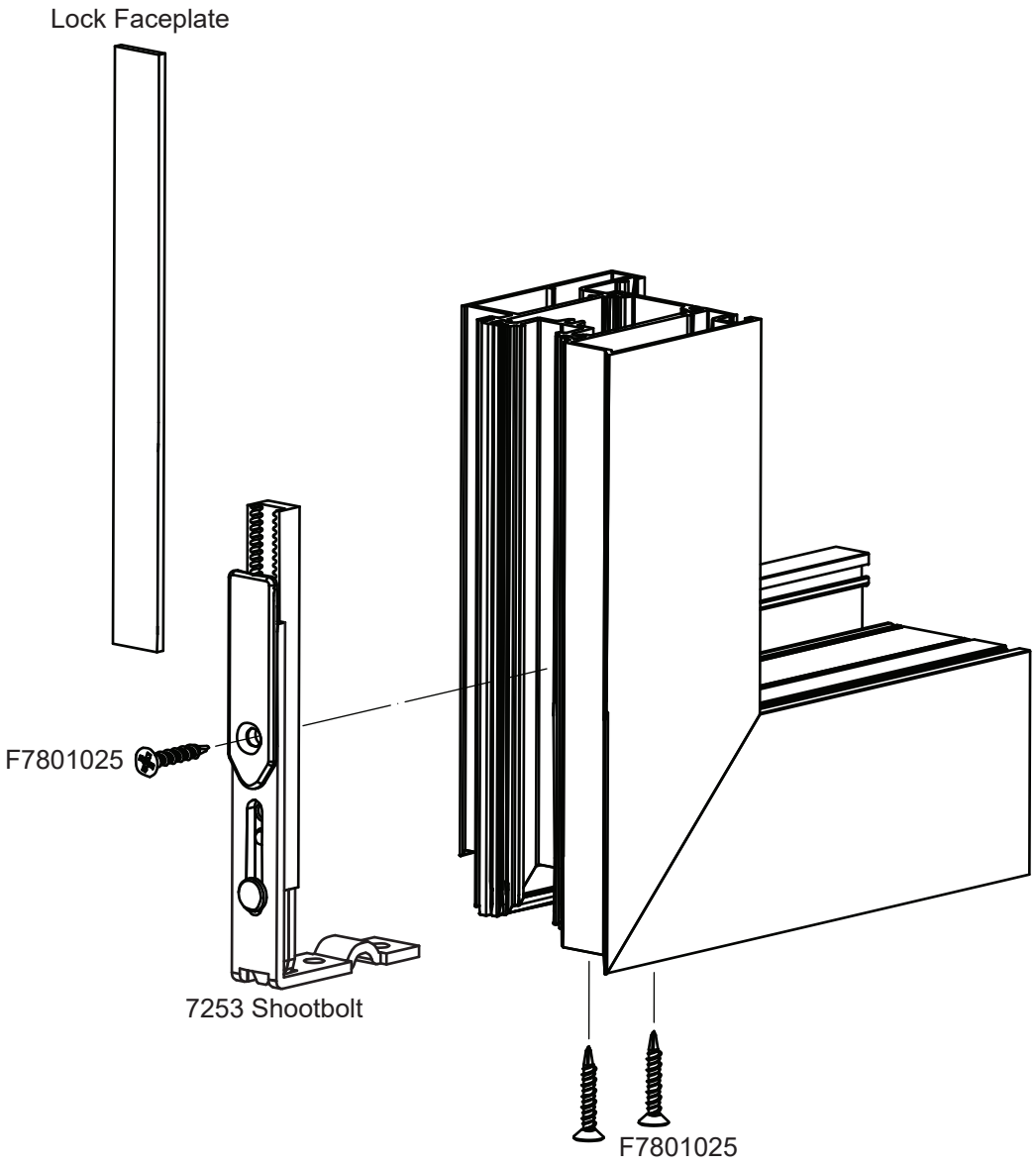
Drill fixing holes as shown below. Offer up to bottom rail and drill 3.5 DIA holes into bottom rail. Apply sealant to mating surfaces. Fix to bottom rail using screws shown. Clean off excess sealant immediately with suitable cleaner. Fit end caps using screws shown.





SHOOTBOLT FITTING

7253 Shootbolts are required at the top and bottom of all slave doors. They are optional on single and master doors. A shootbolt extension (S6562) for the top of stiles longer than 2315mm is also available.
See max / min size chart for limits on shootbolt usage.
Fix shootbolts and extensions with F7801025 screws (do not pre-drill).



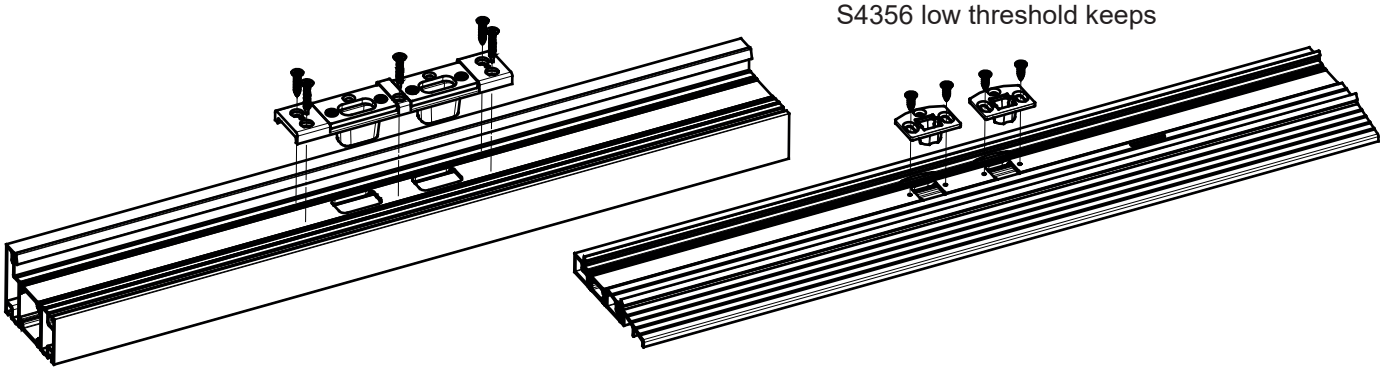
Dimensions in mm
DO NOT SCALE

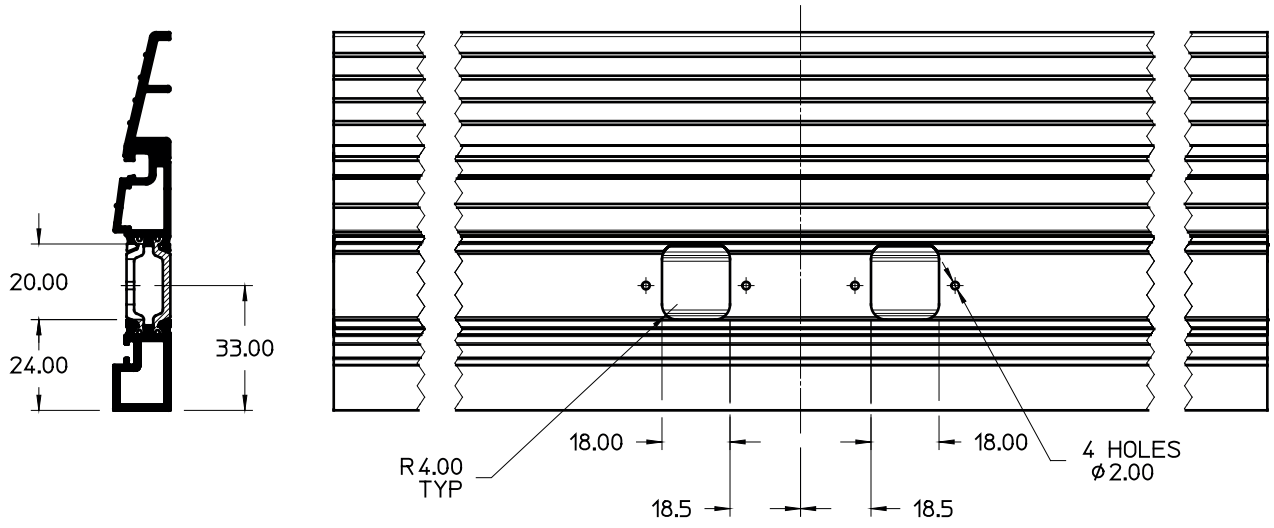
DOUBLE DOOR SHOOTBOLT KEEP FITTING

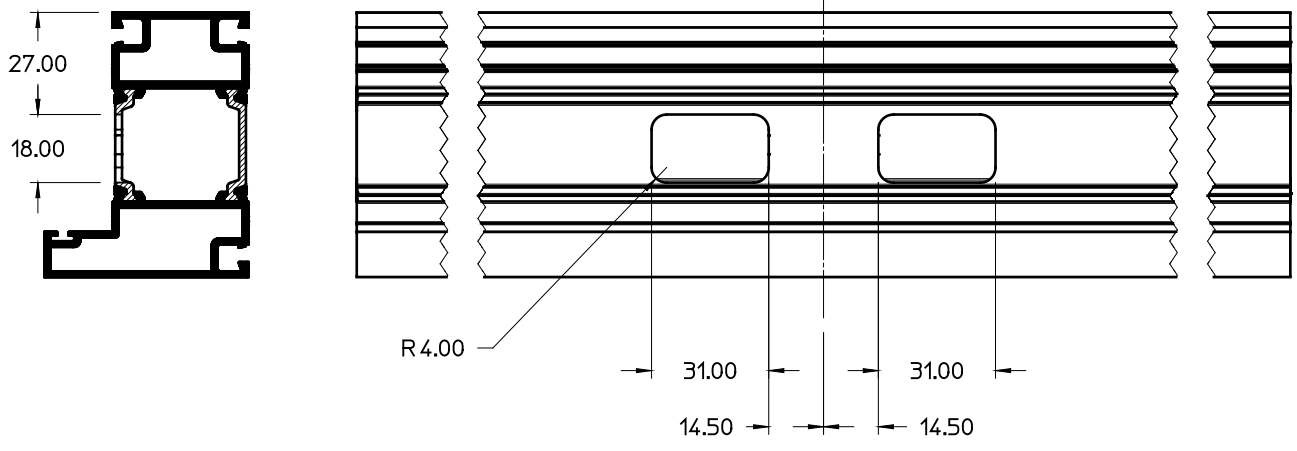
Prepare cill or threshold at the centre of double doors as shown.
Fit S4358 frame keeps with 3 off F7801025 screws into the polyamide (DO NOT pre-drill) and 2 off F7715019 screws into the metal (pre-drill 3.5dia).
Fit S4356 low threshold keeps using 2 off F7715013 screws.

S4358 keep

S4356 low threshold keeps



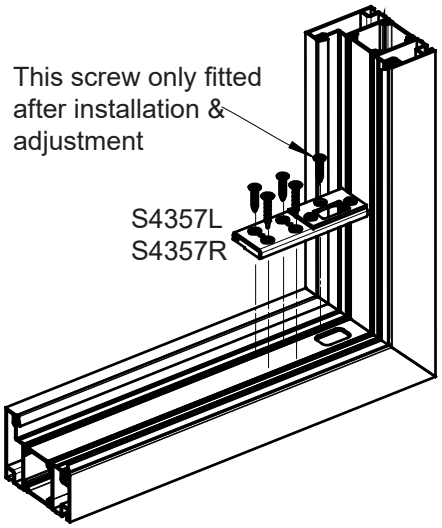


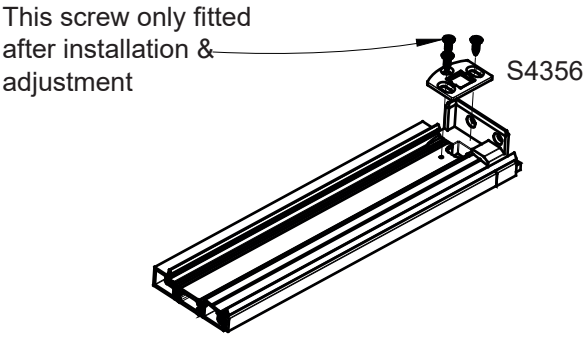


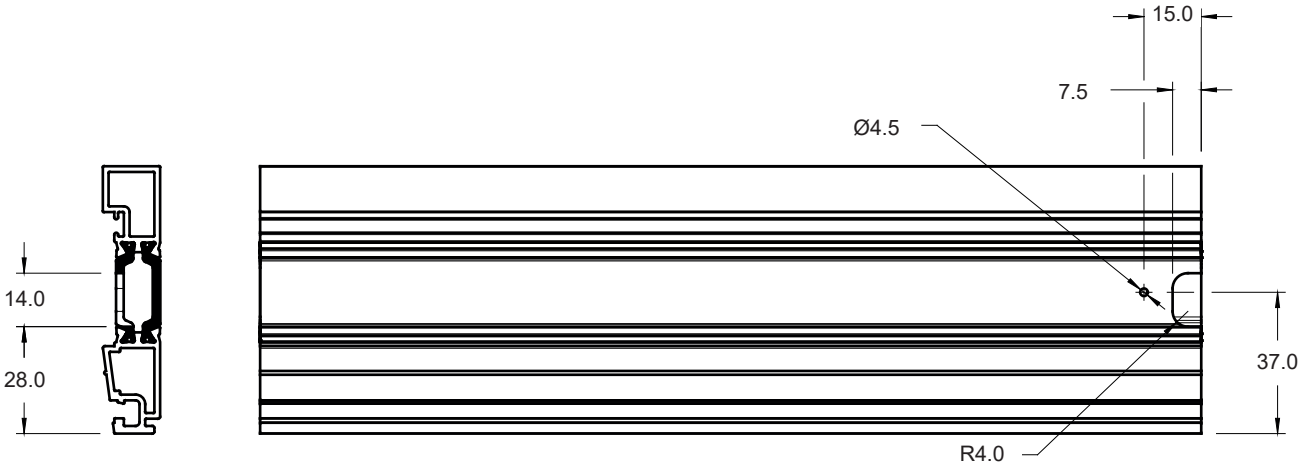
Dimensions in mm
DO NOT SCALE

SINGLE DOOR SHOOTBOLT KEEP FITTING

Use F7715019 screws into aluminium and F7801025 screws into thermal break.



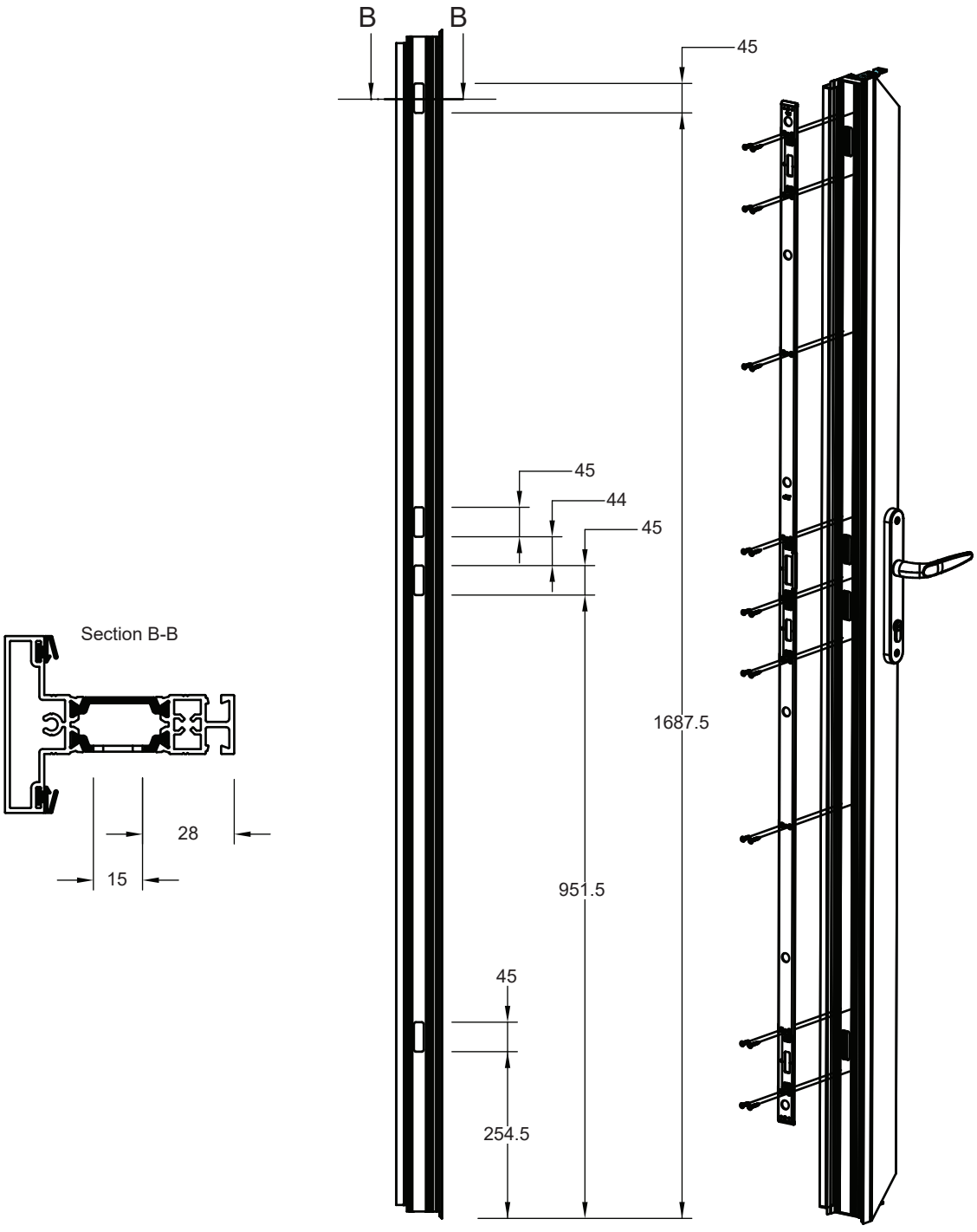




Dimensions in mm
DO NOT SCALE

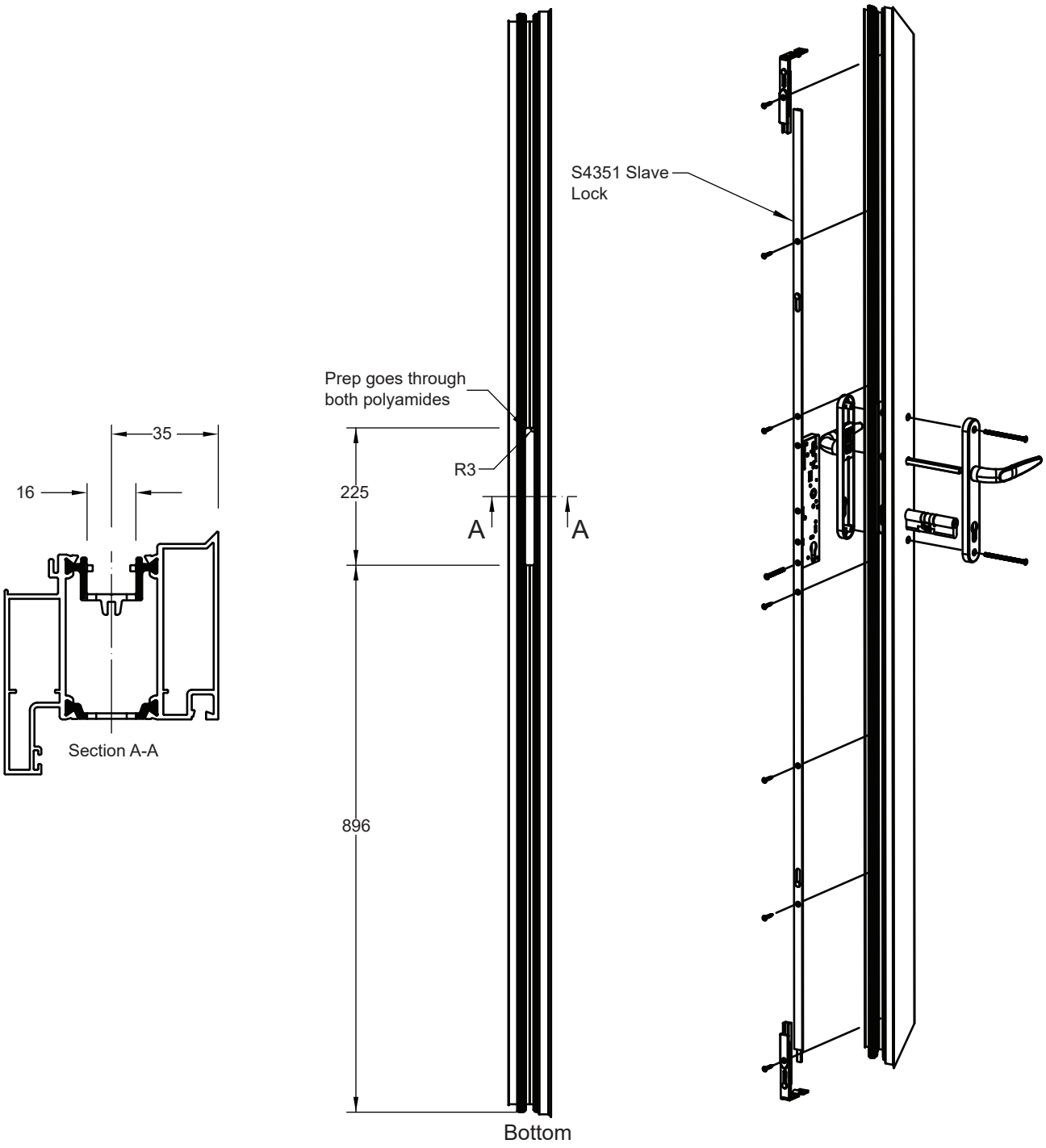
FRENCH DOOR KEEP FITTING

Prepare dummy mullion as shown (RH master open in / LH master open out shown). After hanging door, bring stile close to the mullion and transfer datum mark from lock faceplate to mullion. Align datum on keep with this mark. Push keep back against mullion rebate, and fix through front holes only using F7801025 screws (do not pre-drill). Then drill 3.5 dia through back holes and fix using F7715019 screws.



SLAVE LOCK FITTING

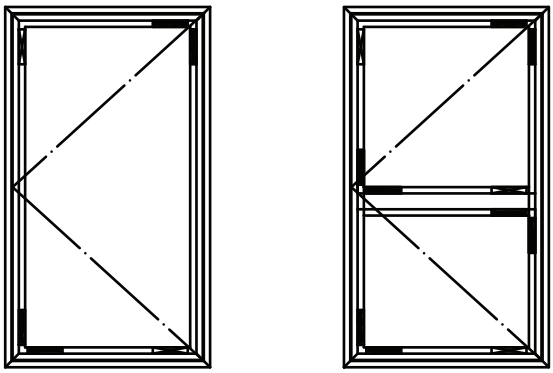
Machine slave stile as shown. Cut lock faceplate to length and de-burr. See page 38 for handle and cylinder machining. See page 45 for shootbolt fitting. Fix lock using F7801025 screws (do NOT pre-drill), taking care not to over-tighten.



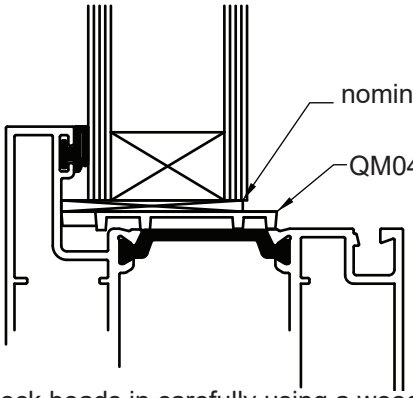
Dimensions in mm
DO NOT SCALE

GLAZING

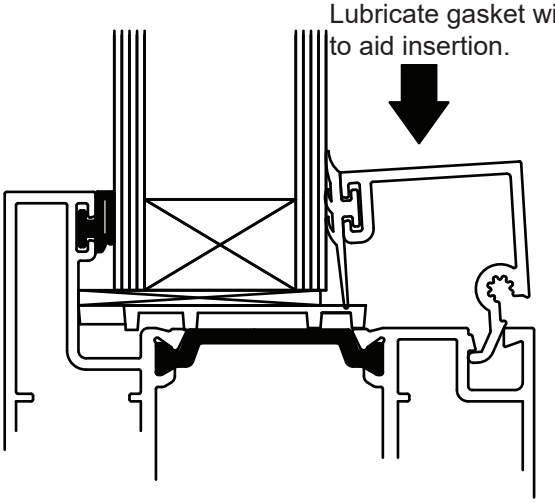
All glazing should be in accordance with BS6262 and all current codes of practice. Position the glazing packers as illustrated below ensuring that drainage isn't blocked. Note: 'Toe and heel' the packers to ensure good operation of the door. On PAS24 doors, additional packers must be placed behind locking points and at hinge points.



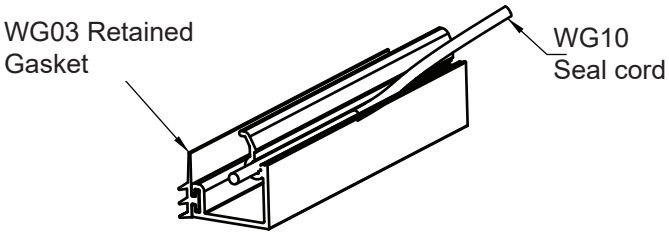
Position QM04 bridge packers as shown below. Position glazing packer on top of bridge. The nominal thickness of packer is 2mm. The width of the packer should be (width of glazing + 4mm). e.g. for a 28mm unit, the packer should be 32mm wide (as shown below).



Knock beads in carefully using a wooden block or similar to protect the bead from damage. Lubricate gasket with soapy water if necessary to aid insertion.



If not already fitted, fit WG03 retained gasket to the bead. On bottom beads only, fit WG10 seal cord as shown below. If necessary, lubricate with silicone to aid insertion.



NOTE
All bead cut ends should be sealed with a suitable sealant and excess sealant cleaned off with a suitable cleaner after bead fitting.

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