

Profile Index



System 4-35 Hi/Hi+

CASEMENT WINDOW

PROFILE ILLUSTRATION	SHEET REF NUMBER	COMPUTER REF NUMBER	PERIMETER mm
	435Hi/1/10	600	176
		200	169
	435Hi/1/20	600	176
		212	234
	435Hi/1/150	600	176
		605	204
	435Hi/1/10	601	188
		201	181
	435Hi/1/10	602	237
		202	209
	435Hi/1/20	602	237
		212	234
	435Hi/1/50	603	254
		201	181
	435Hi/1/10	604	199
		213	192
	435Hi/1/50	606	299
		206	228
	435Hi/1/110	607	399
		206	228
	435Hi/1/50	609	243
		200	169
	435Hi/1/50	613	265
		213	192
	435Hi/1/100	613	265
		221	290
	435Hi/1/60	619	265
		211	181
	435Hi/1/40	620	168
		202	209
	435Hi/1/30	620	168
		204	244
	435Hi/1/30	620	168
		215	257
	435Hi/1/30	620	168
		216	251
	435Hi/1/40	624	159
		625	275
	435Hi/1/45	626	209
		627	287
	435Hi/1/45	626	209
		652	285
	435Hi/1/20	647	264
		649	258
	435Hi/1/47	655	243
		656	321
	435Hi/1/45	676	250
		677	170
	435Hi/1/47	679	229
		679	229
	435Hi/1/40	685	215
		686	139

Not to Scale

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SHEET 435Hi / 0 / 30

rev RP 27/06/22

Component Identification



System 4-35 Hi/Hi+

.....
CASEMENT WINDOW
.....



020

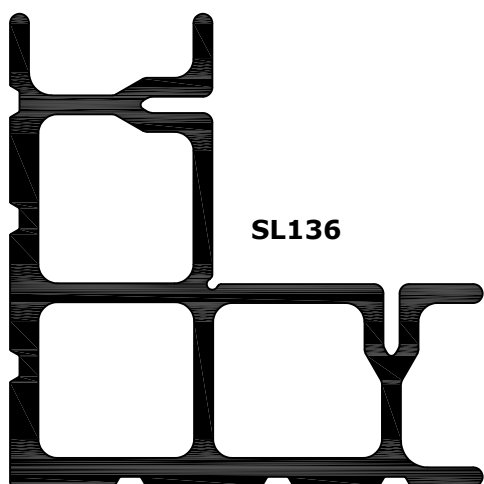


6020

CLEAT REF	SIZE	SECTION	741 SCREWS REQUIRED
520	10mm	211	1
521	11mm	200, 202	1
522	16mm	201, 218	1
523	38.5mm	206, 207	2
524	21mm	213	1

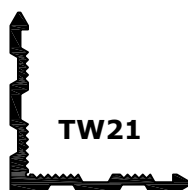
CLEAT REF	SIZE	SECTION	6741 SCREWS REQUIRED
6520	16mm	601, 603, 619, 642, 643	1
6521	11mm	600, 602, 609, 640, 641	1
6523	38.5mm	606, 607	2
6524	21mm	604, 613	1

CORNER CLEATS (CRIMPED JOINT)



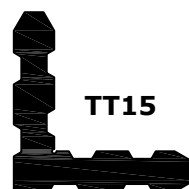
SL136

6535 - Cut @ 9.7mm
6536 - Cut @ 22.4mm



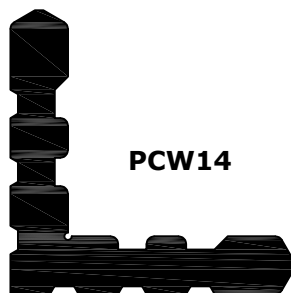
TW21

6516 - Cut @ 19.8mm



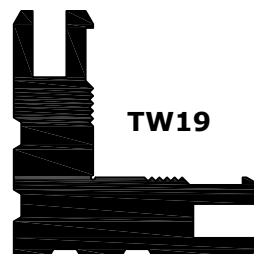
TT15

511 - Cut @ 22.5mm
6510 - Cut @ 14.6mm
6511 - Cut @ 9.7mm
6515 - Cut @ 12.8mm



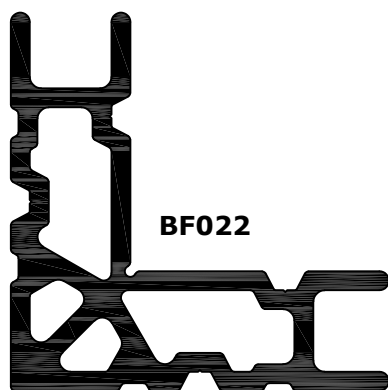
PCW14

516 - Cut @ 22.5mm
6517 - Cut @ 9.7mm
HR5046 - Cut @ 19.6mm



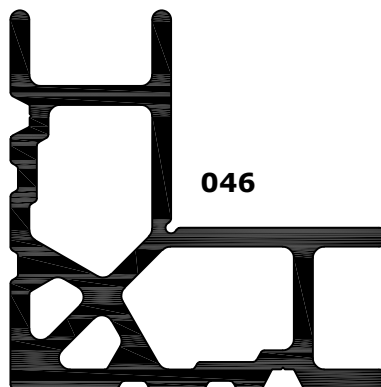
TW19

532 - Cut @ 22.6mm
PCW53 - Cut @ 19.5mm
6533 - Cut @ 9.7mm
6534 - Cut @ 10.8mm



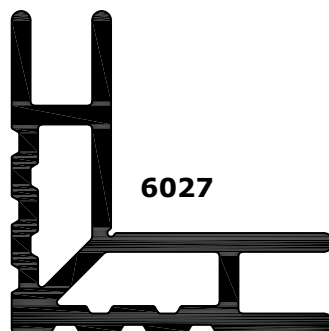
BF022

6537 - Cut @ 19.4mm



046

6538 - Cut @ 10.8mm



6027

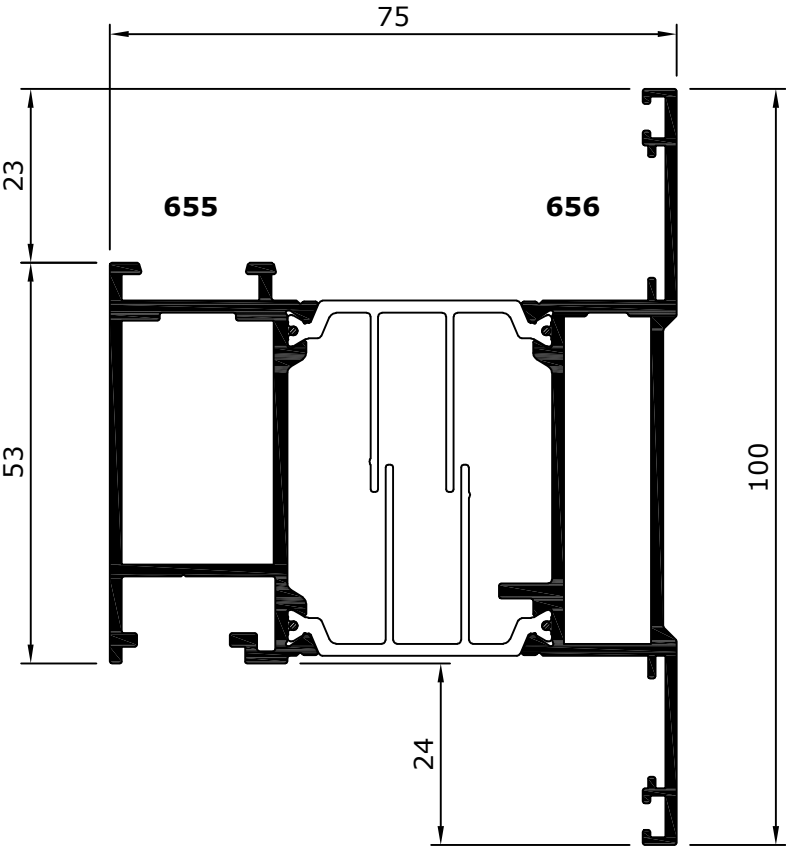
6527 - Cut @ 10.8mm

Not to Scale

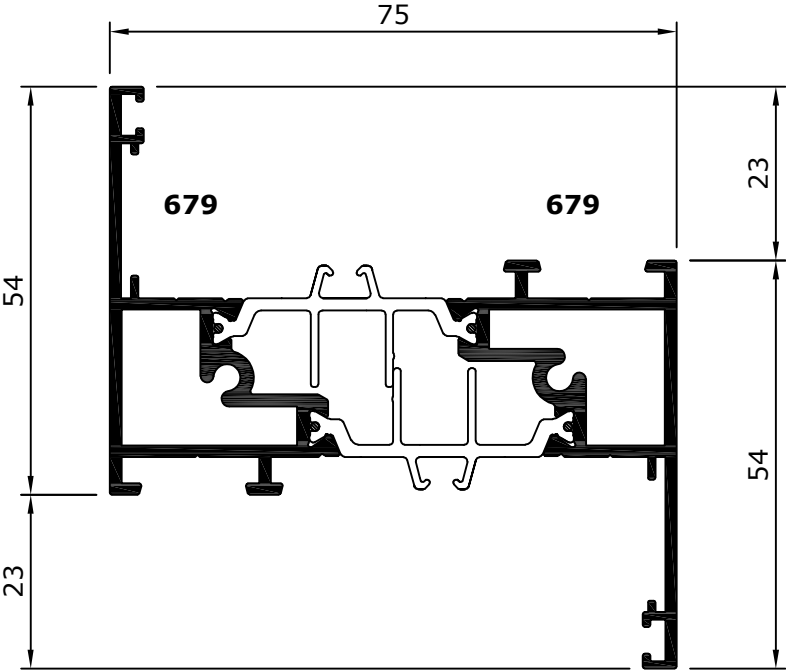
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rev RP 29/06/22

Section Drawings



655-656
RECESSED HEAVY DUTY
EURO GROOVE SASH



679-679
Z MULLION/TRANSOM
(Suitable for use with outer
frames 600-200, 601-201,
602-202, 602-212, 604-213)

Scale 1:1

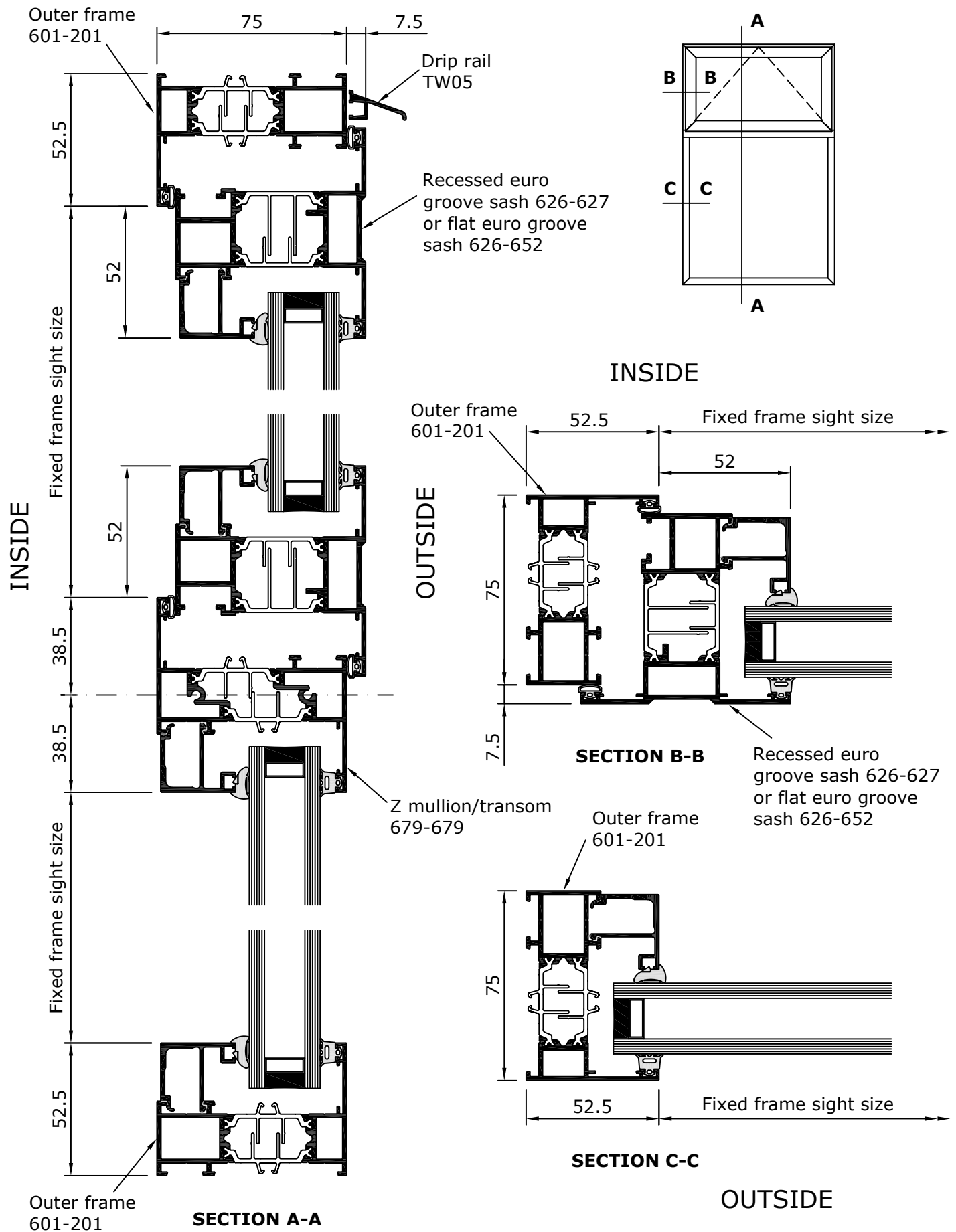
Euro Groove Glaze In Casement

Z Mullion/Transom Applications



System 4-35 Hi

CASEMENT WINDOW



Scale 1:2

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SHEET 435Hi / 2 / 62

rev RP 27/06/20

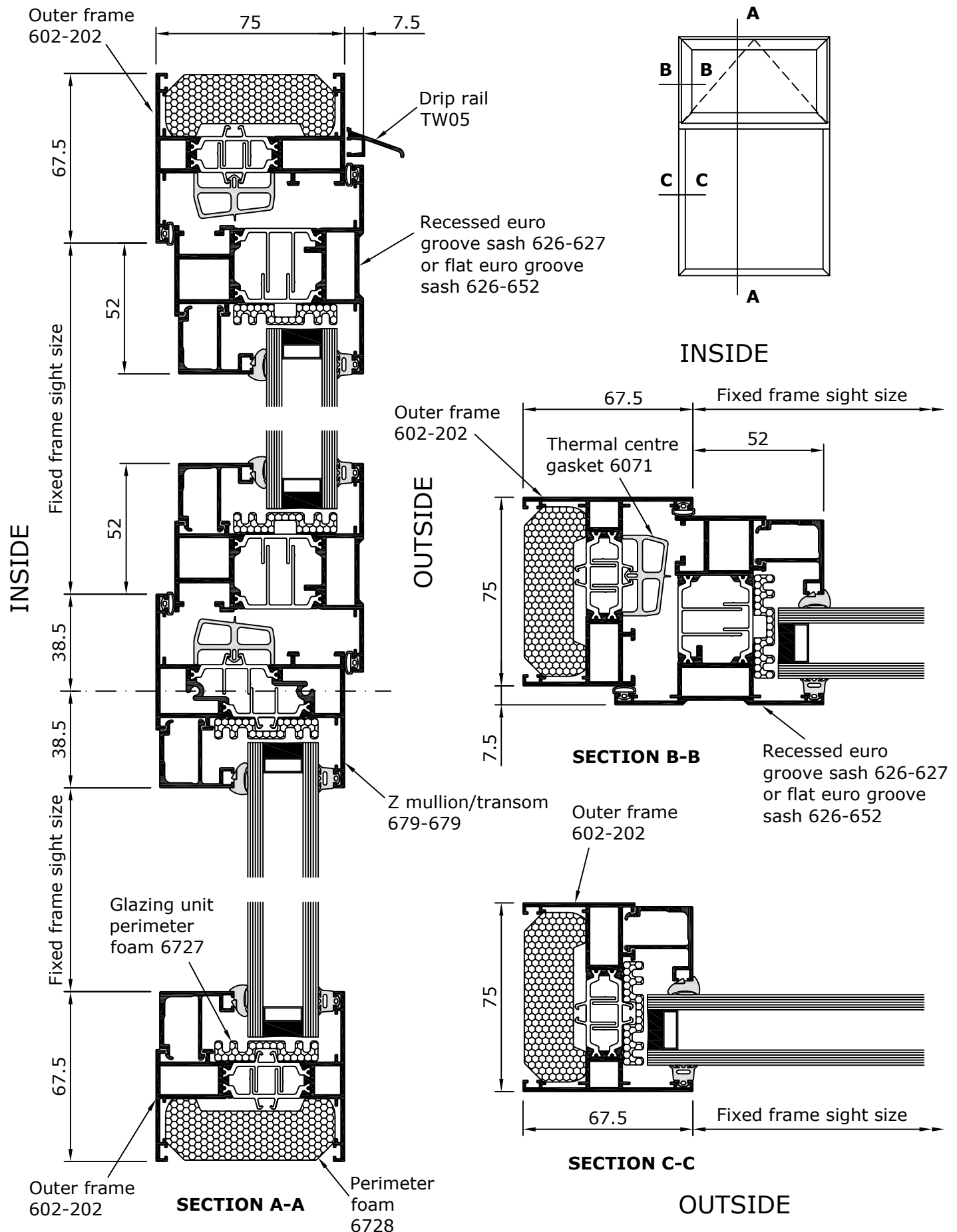
Euro Groove Glaze In Casement

Z Mullion/Transom Applications



System 4-35 Hi+

CASEMENT WINDOW



Scale 1:2

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SHEET 435Hi / 2 / 152

rev RP 27/06/20

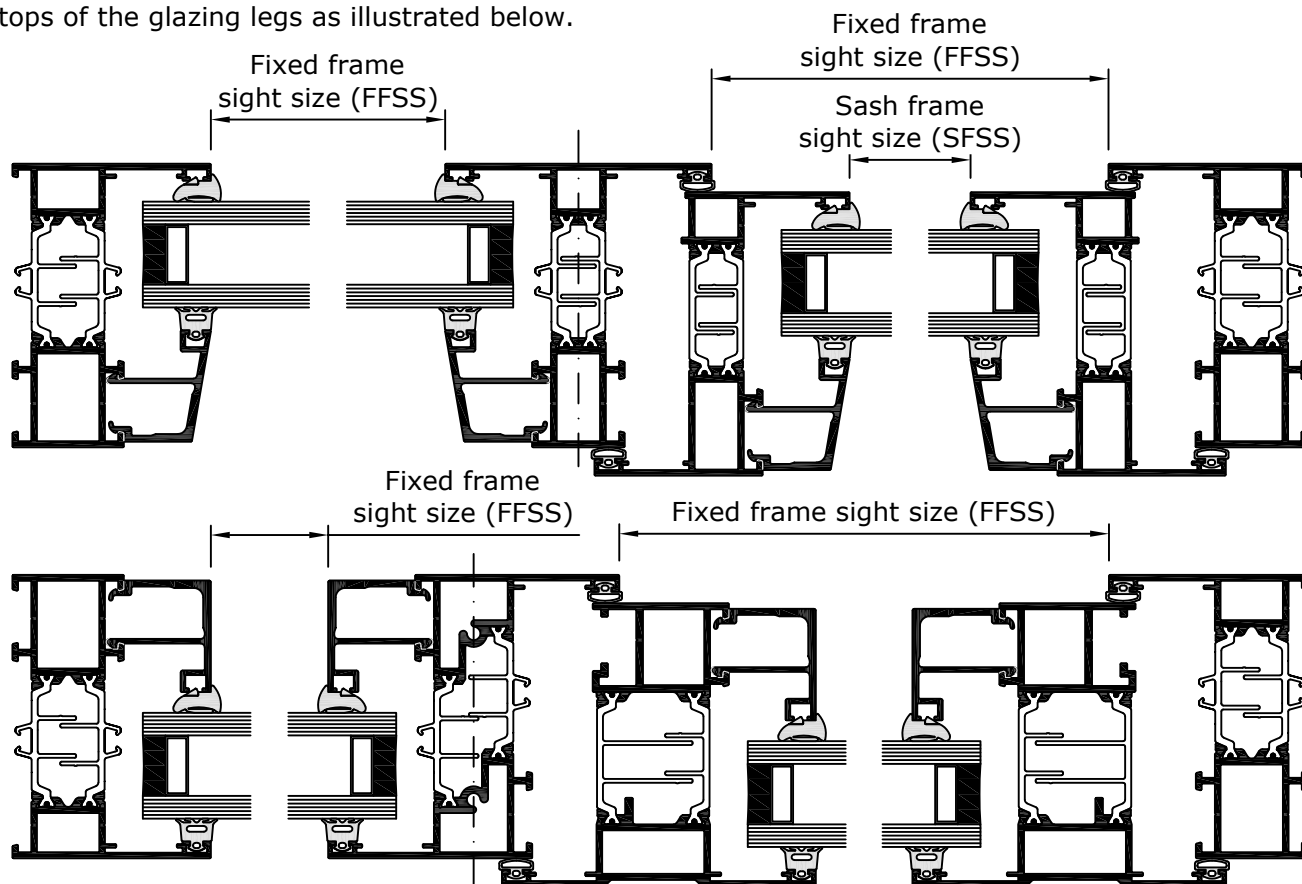
Bar Cutting Sizes

All cutting sizes in this range are calculated from the fixed frame sight sizes. This is the distance measured between the tops of the glazing legs as illustrated below.



System 4-35 Hi/Hi+

CASEMENT WINDOW



The fixed frame sight size can be calculated from the "Ready Reckoner", the section drawings or dimensioned general arrangement drawings provided.

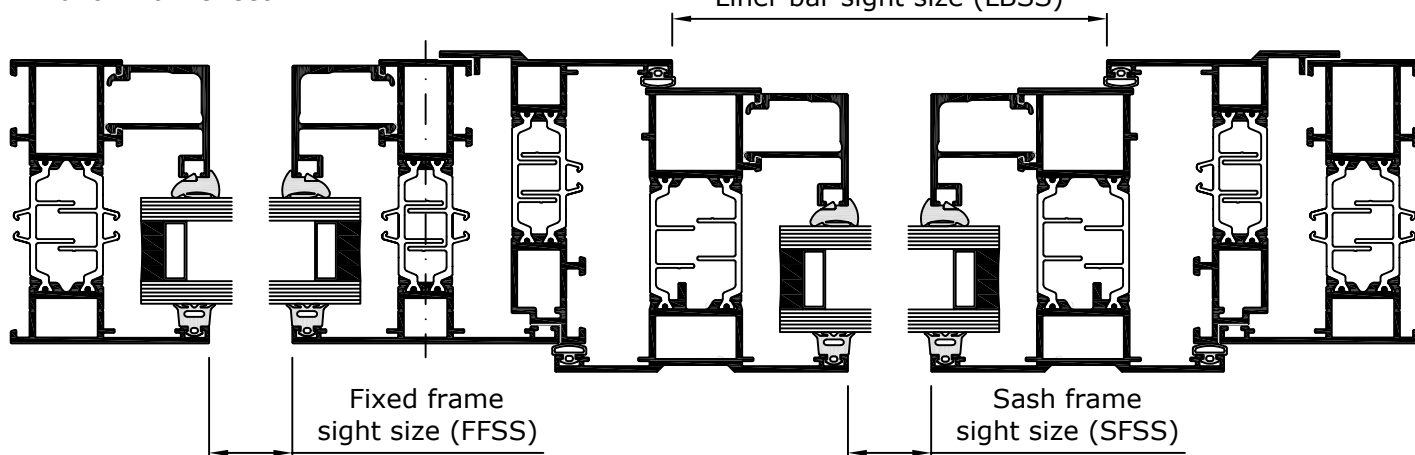
For the cutting sizes for the fixed light glass and beads see the applicable fabrication sheet entitled "Fabrication and Cutting Sizes - Fixed Light Beads and Glass Sizes", and for the opening vents the drawing specific to the sash section used.

The length of integral mullions or transoms should be calculated on the basis of fixed frame sight size plus 55mm using the end preparation shown on the applicable "Mullion/Transom End Prep" fabrication sheets.

Note: Where the mullions/transoms with extended back boxes are used an appropriate adjustment must be made if the end of the bar is more than 27.5mm beyond the line of the top of the glazing leg. See applicable "Mullion/Transom End Prep" fabrication sheet.

For additional details showing how sashes with muntin bars are calculated see "Bar Cutting Sizes For Muntin Bar" sheet.

Liner bar sight size (LBSS)



When calculating the sash size in liner bar applications the fabrication datum is measured from the "Liner bar sight size" (LBSS) as indicated.

Scale 1:2

FFSS Ready Reckoner

(To Calculate Fixed Frame Sight Sizes)



System 4-35 Hi/Hi+

CASEMENT WINDOW

The following grid can be used to calculate the fixed frame sight sizes (FFSS) directly from your fabrication sizes. Select the appropriate sections from the horizontal and vertical axes and read across to their point of intersection on the grid. Subtract the resultant figure from your fabrication size to obtain the appropriate fixed frame sight size (FFSS). All mullion/transom dimensions are calculated from the section centre line. When incorporating liner bar 685-686 add 60mm to the dimension stated in the grid and subtract the total from your fabrication size to determine your liner bar sight size (LBSS).

613-213 613-221 	87.75	92.75	97.75	-	107.75	-	102.75	75.5	78	89.25	80.5
606-206 606-207 607-206 607-207 	96.5	101.5	106.5	-	116.5	-	111.5	84.25	86.75	98	89.25
603-201 603-218 619-211 642-201 642-218 643-201 643-218 	85.25	90.25	95.25	-	105.25	-	100.25	73	75.5	86.75	78
609-200 640-200 641-200 	82.75	87.75	92.75	-	102.75	-	97.75	70.5	73	84.25	75.5
620-204 620-215 620-216 	-	-	-	-	-	-	125	97.75	100.25	111.5	102.75
679-679 	86	91	96	129	116	77	-	-	-	-	-
600-212 602-202 602-212 	115	-	-	-	135	116	-	102.75	105.25	116.5	107.75
647-649 	-	-	-	181	-	129	-	125.75	128.25	139.5	130.75
604-213 	-	-	115	-	-	96	-	92.75	95.25	106.5	97.75
601-201 	-	105	-	-	-	91	-	87.75	90.25	101.5	92.75
600-200 600-605 	95	-	-	-	115	86	-	82.75	85.25	96.5	87.75
	600-200 600-605 	601-201 	604-213 	647-649 	600-212 602-202 602-212 	679-679 	620-204 620-215 620-216 	609-200 640-200 641-200 	603-201 603-218 619-211 642-201 642-218 643-201 643-218 	606-206 606-207 607-206 607-207 	613-213 613-221

Not to Scale

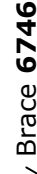
System 4-35 Hi/Hi+
.....
CASEMENT WINDOW
.....

..... CASEMENT WINDOW



DESCRIPTION	QUANTITY	LENGTH	SECTION	PREPARATION
OUTER FRAME 1 * (HEAD)	ONE	FFS1 plus DIM A plus 27.5mm	VARIOUS	45° MITRE / SQUARE
OUTER FRAME 1 * (CILL)	ONE	FFS1 plus DIM A plus 27.5mm	VARIOUS	SQUARE / 45° MITRE
OUTER FRAME 2 * (HEAD)	ONE	FFS2 plus DIM A plus 27.5mm	VARIOUS	SQUARE / 45° MITRE
OUTER FRAME 2 * (CILL)	ONE	FFS2 plus DIM A plus 27.5mm	VARIOUS	45° MITRE / SQUARE
OUTER FRAME (JAMB)	TWO	OVERALL FRAME HEIGHT	VARIOUS	45° MITRE BOTH ENDS
MULLION / TRANSOM	ONE	OVERALL FRAME HEIGHT / WIDTH	679-679	ENDS CUT SQUARE
CORNER CLEAT	SEE TABLE			
OUTER FRAME CLEAT	SEE TABLE			
BRACES	SEE TABLE			

679-679

Brace
(see table)

SHEET 435Hi / 4 / 135
.....
rev RP 23/09/22

Z Mullion Stiffener Prep



System 4-35 Hi/Hi+

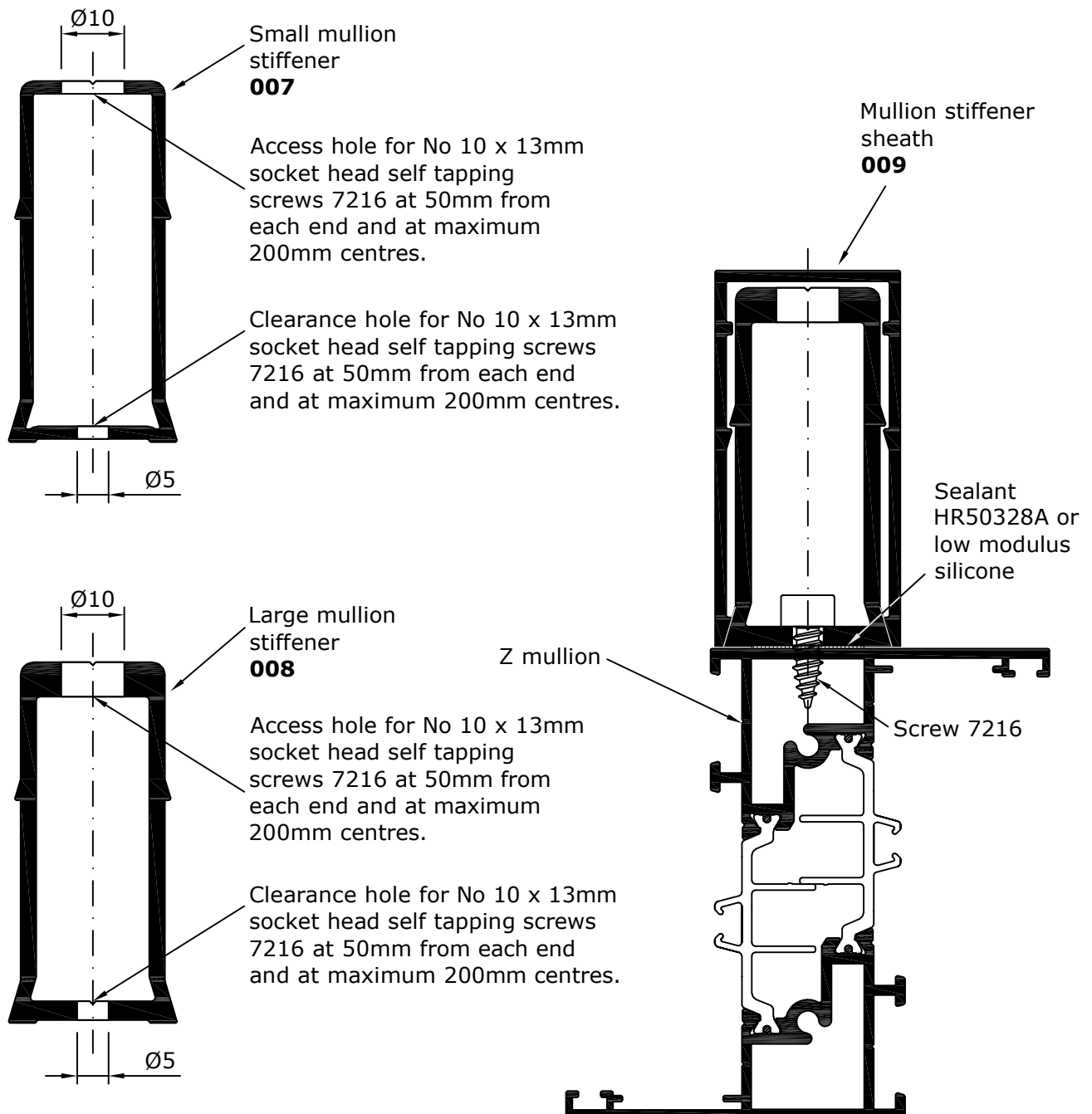
CASEMENT WINDOW

Metal Technology recommend that the No 10 x 13mm socket head self tapping screws 7216 are fixed at 200mm centres and sealed in position using HR50328A sealant or low modulus silicone. Variation from these centres will affect the structural performance of the combined mullion and must be checked and confirmed by a structural engineer.

Cutting sizes to be calculated to suit site application.

Care should be taken to accommodate cill and head liner profiles.

Profiles 007, 008, and 009 are suitable for use with 679-679 Z mullion, but must be fixed to inside only.



Scale 1:1

Outer Frame End Prep

Outer Frame Butt Joint to 679-679

Z Mullion / Transom



System 4-35 Hi/Hi+

.....
CASEMENT WINDOW
.....

Outer frames

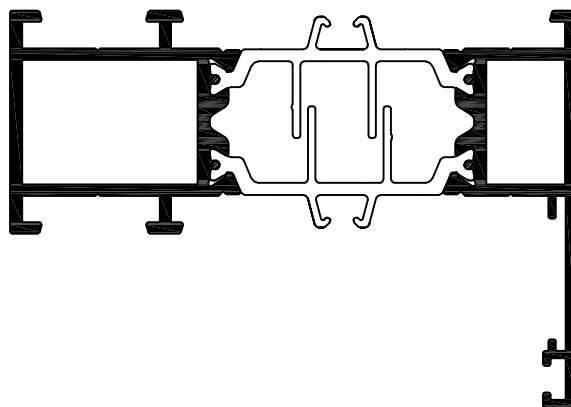
600-200

601-201

602-202

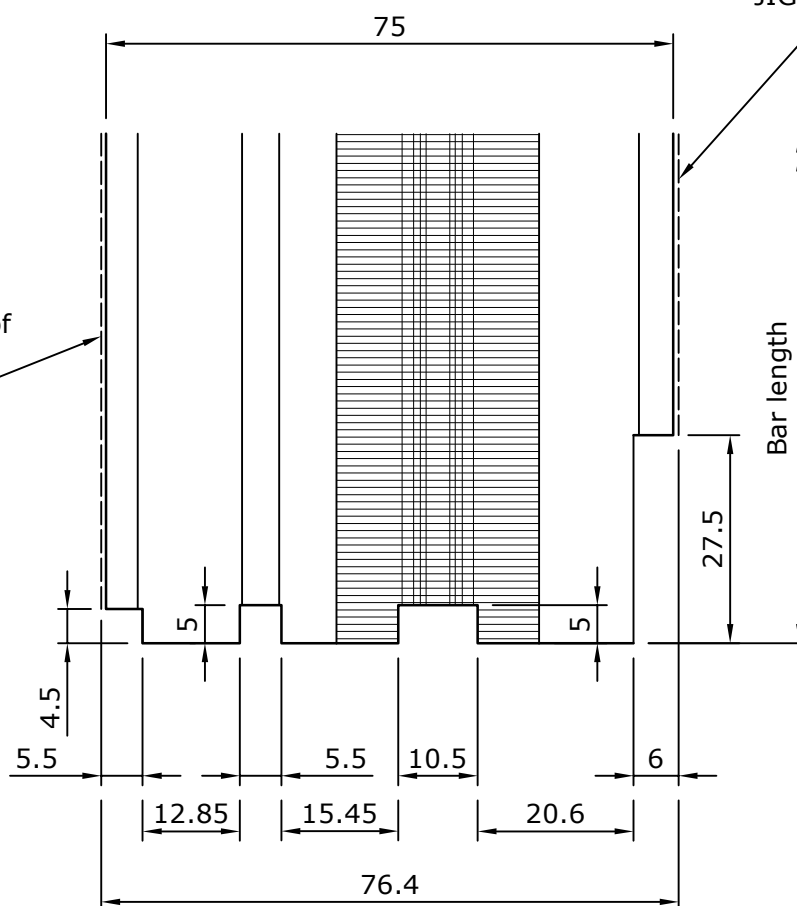
602-212

604-213

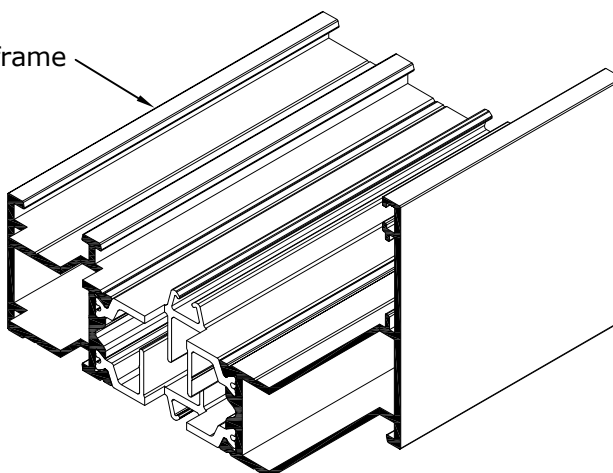


Outer edge of end
milling blade set
JIG4-35018

Outer edge of
end milling
blade set
JIG4-35018



Outer frame



Scale 1:1

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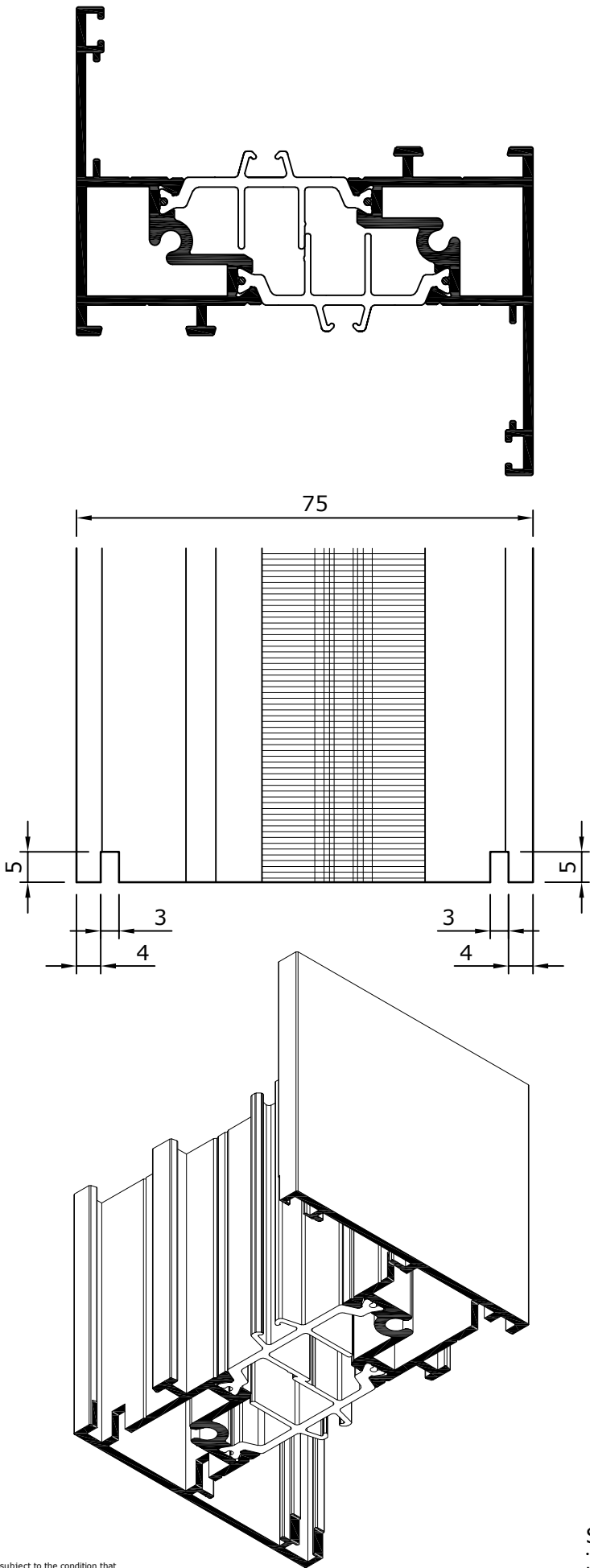
rev RP 26/09/22

679-679 Z Mullion End Prep for Head and Cill Liner Options



System 4-35 Hi/Hi+
.....
CASEMENT WINDOW
.....

Z mullion profile
679-679



Scale 1:1

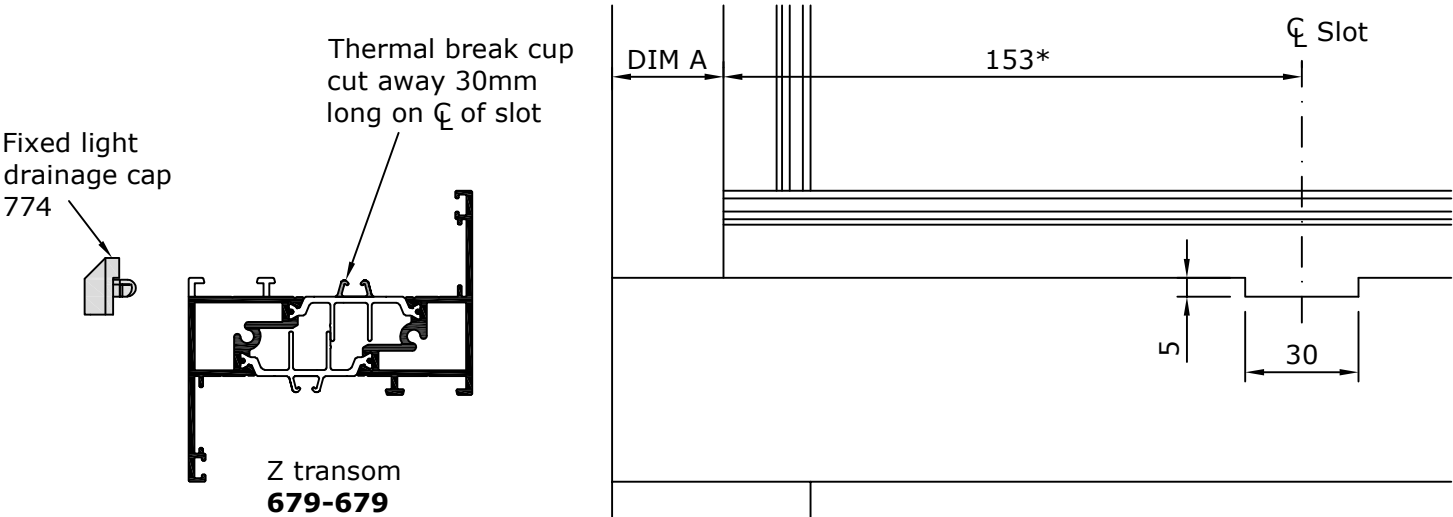
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SHEET 435Hi / 4 / 250
rev RP 23/09/22

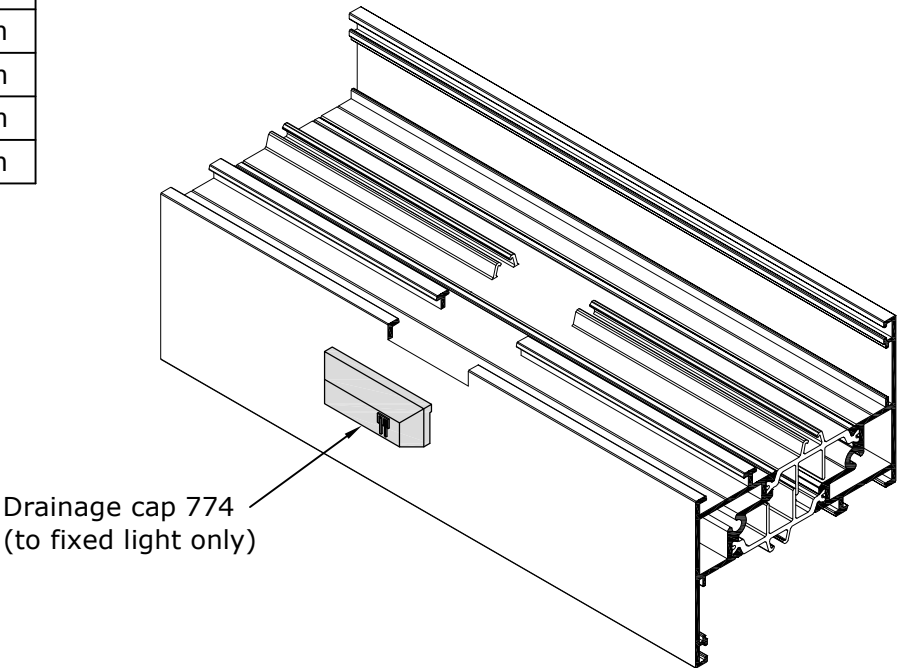
Drainage Details

To suit glaze out z transom 679-679

- * Note :
- Positions of drainage slots may need to vary from positions shown:
 - When using euro espag locking, in order to avoid compression keeps the position of the drainage prep should be amended from 153* to 45mm in the opening sash outer frame only.
 - To ensure they do not align with butt hinges.
 - In fixed lights when the FFSS is between 410mm and 180mm the drainage prep should be amended from 153* to 45mm with the glazing supports positioned centrally, subject to approval by the glass unit supplier, and structural analysis of the transom profile. As manufacturing equipment varies, fabricator to ensure that their machinery is capable of crimping the required frame sizes.
 - In opening vent applications edges of drainage slots in outer frame should be filed/rounded.



Outer frame	DIM A
600-200	24.5mm
601-201	29.5mm
602-202	44.5mm
602-212	44.5mm
604-213	34.5mm



Where centres of drainage preps exceed 1000mm provide an extra central prep.

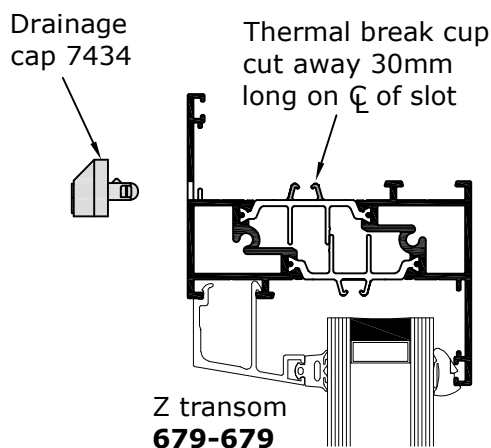
Scale 1:2

Drainage Details

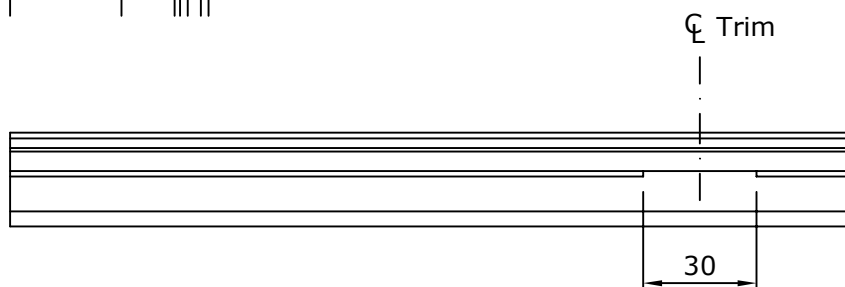
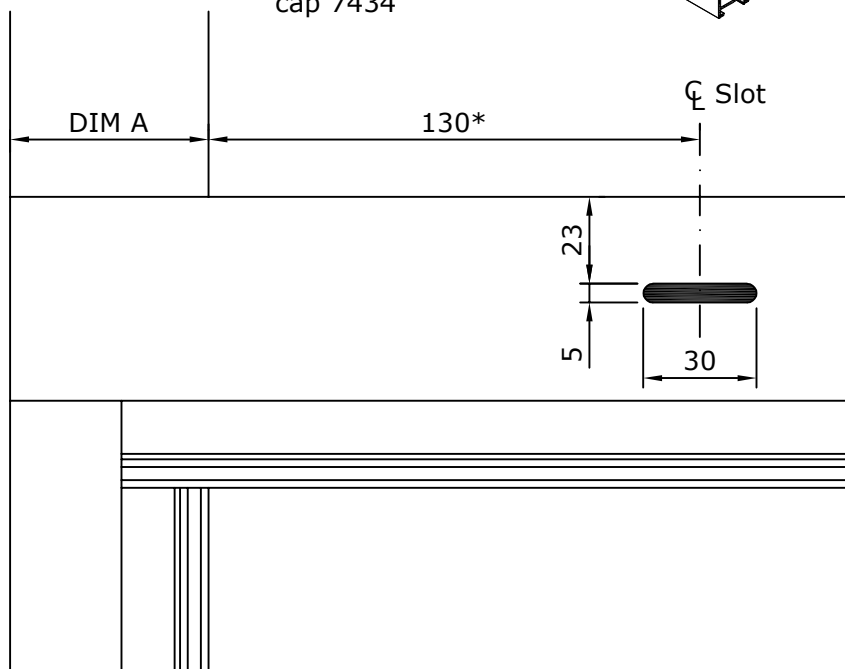
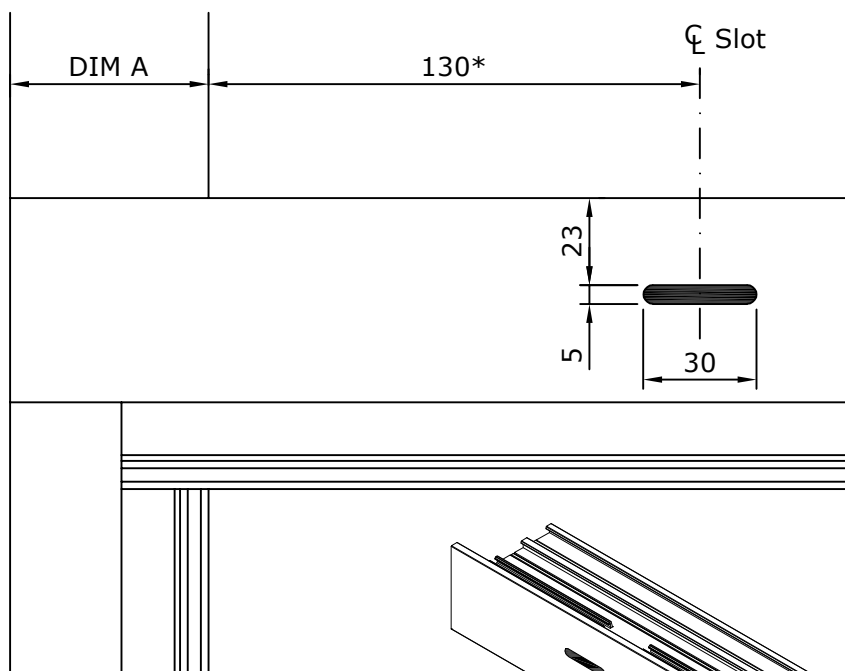
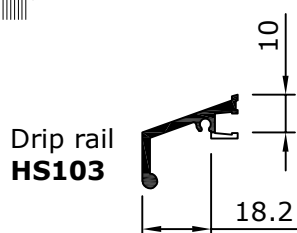
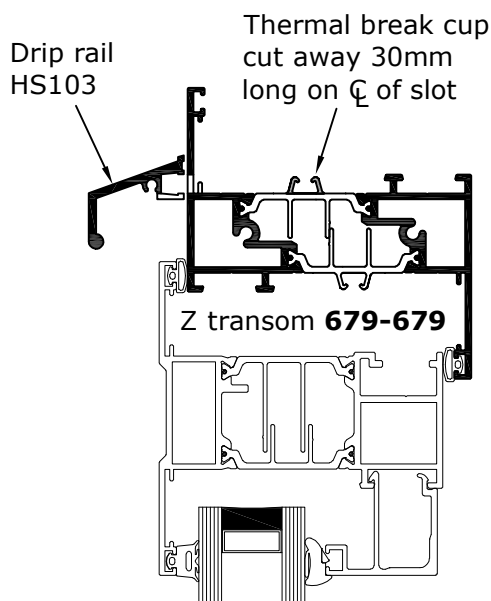
To suit glaze in z transom 679-679

* Note :

Positions of drainage slots may need to vary from positions shown in fixed lights when the FFSS is between 410mm and 180mm. The drainage prep should be amended from 130*/123* to 22mm, and from 153* to 45mm with the glazing supports positioned centrally, subject to approval by the glass unit supplier. As manufacturing equipment varies, fabricator to ensure that their machinery is capable of crimping the required frame sizes.



Outer frame	DIM A
600-200	47.5mm
601-201	52.5mm
602-202	67.5mm
602-212	67.5mm
604-213	57.5mm



Scale 1:2

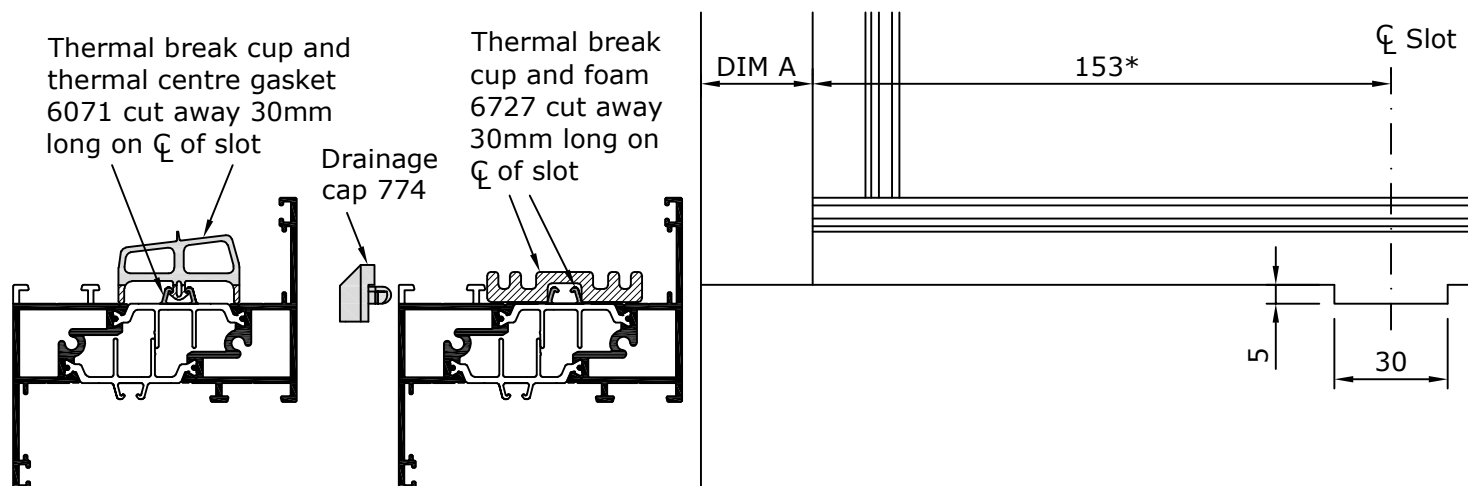
Where centres of drainage preps exceed 1000mm provide an extra central prep.

Drainage Details

To suit glaze out z transom 679-679

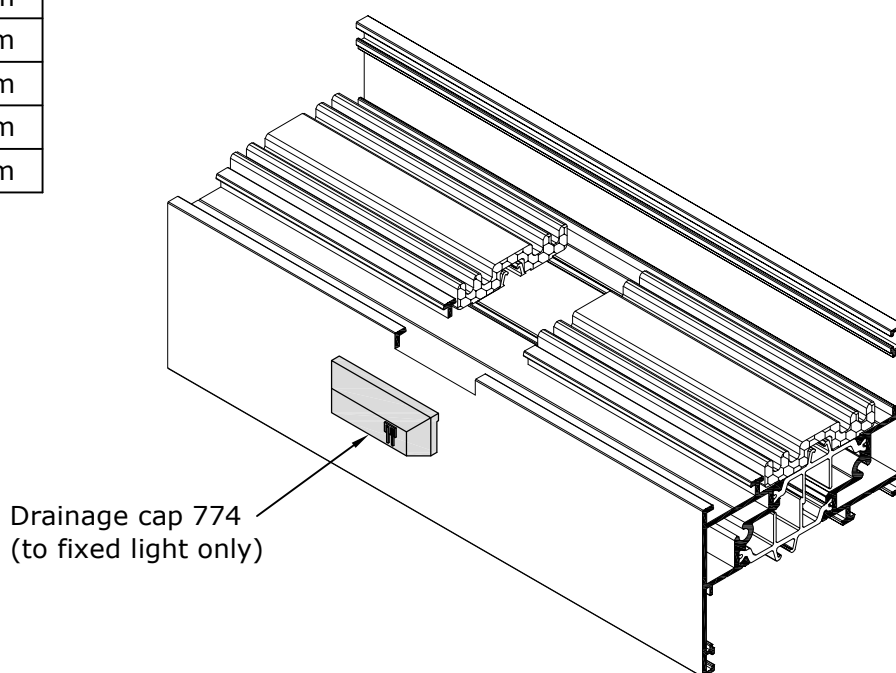
* Note :

- Positions of drainage slots may need to vary from positions shown:
 - When using euro espag locking, in order to avoid compression keeps the position of the drainage prep should be amended from 153* to 45mm in the opening sash outer frame only.
 - To ensure they do not align with butt hinges.
 - In fixed lights when the FFSS is between 410mm and 180mm the drainage prep should be amended from 153* to 45mm with the glazing supports positioned centrally, subject to approval by the glass unit supplier, and structural analysis of the transom profile. As manufacturing equipment varies, fabricator to ensure that their machinery is capable of crimping the required frame sizes.
- In opening vent applications edges of drainage slots in outer frame should be filed/rounded.
- Thermal centre gasket 6071 may be notched using 6514 gasket snips.



Z transom
679-679

Outer frame	DIM A
600-200	24.5mm
601-201	29.5mm
602-202	44.5mm
602-212	44.5mm
604-213	34.5mm



Where centres of drainage preps exceed 1000mm provide an extra central prep.

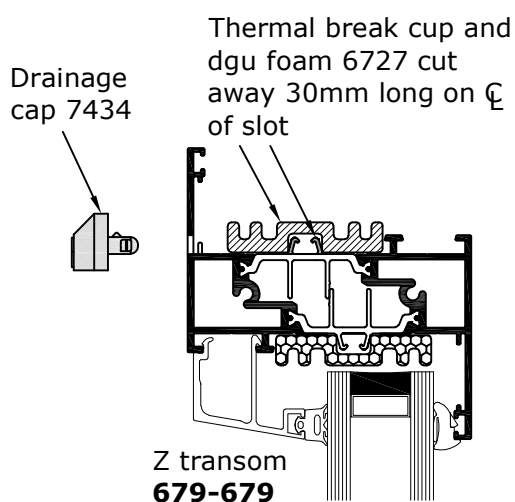
Scale 1:2

Drainage Details

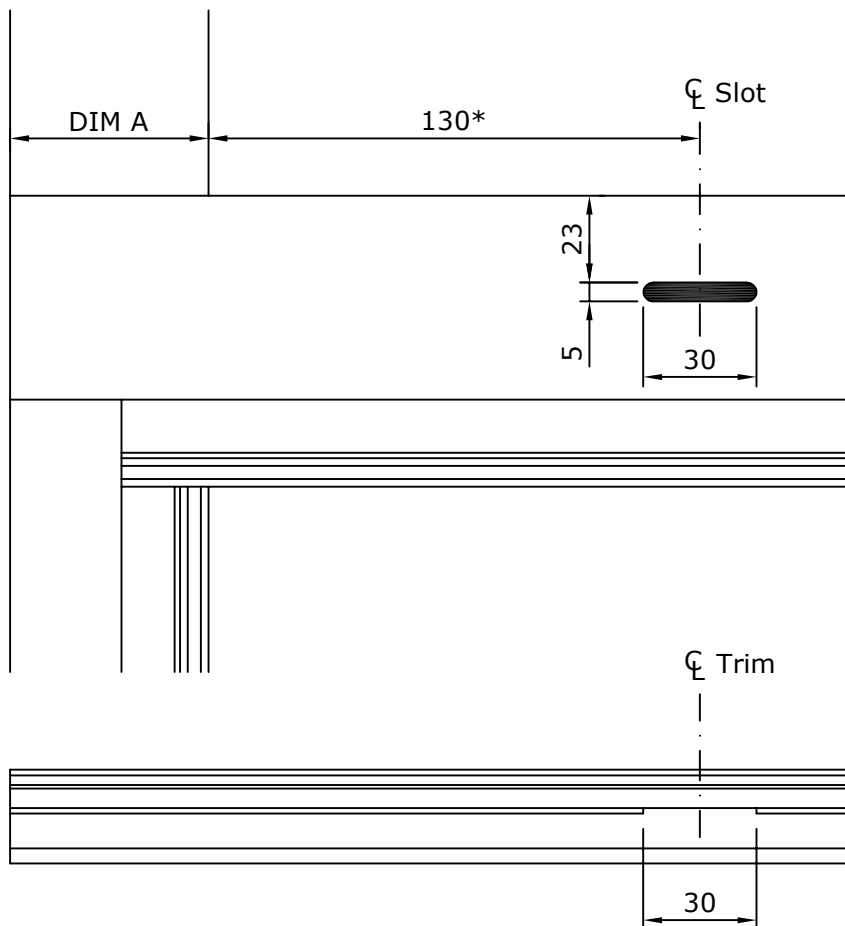
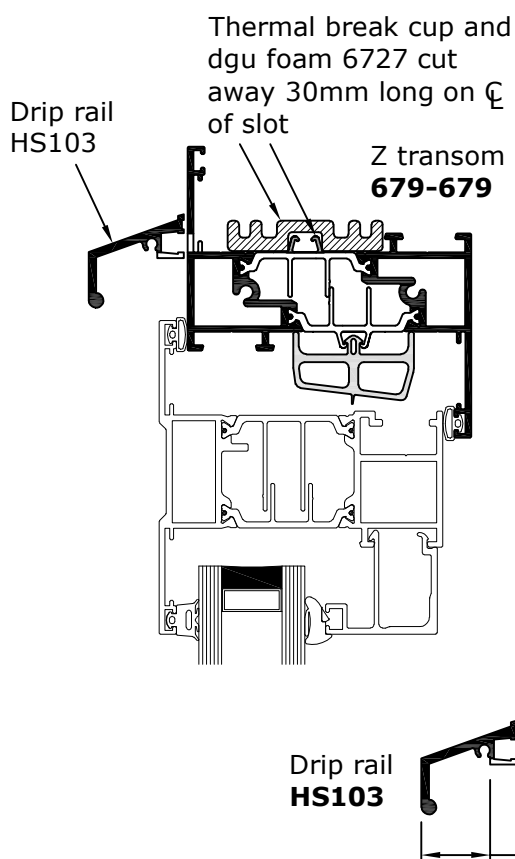
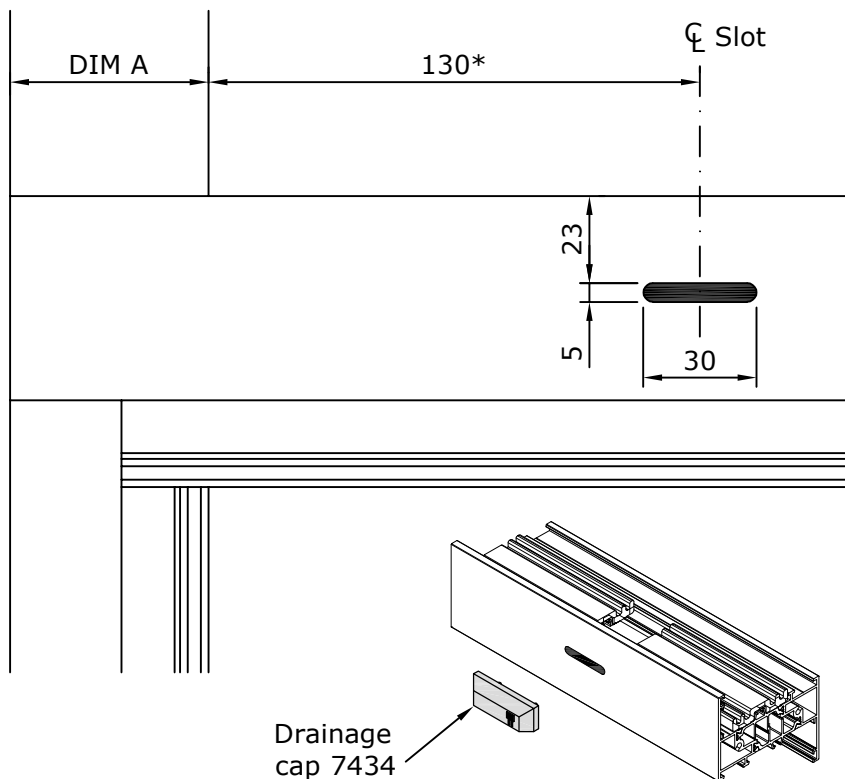
To suit glaze in z transom 679-679

* Note :

Positions of drainage slots may need to vary from positions shown in fixed lights when the FFSS is between 410mm and 180mm. The drainage prep should be amended from 130*/123* to 22mm, and from 153* to 45mm with the glazing supports positioned centrally, subject to approval by the glass unit supplier. As manufacturing equipment varies, fabricator to ensure that their machinery is capable of crimping the required frame sizes.



Outer frame	DIM A
600-200	47.5mm
601-201	52.5mm
602-202	67.5mm
602-212	67.5mm
604-213	57.5mm



Scale 1:2

Where centres of drainage preps exceed 1000mm provide an extra central prep.

Outer Frame to 679-679 Z Mullion/Transom Assembly



System 4-35 Hi/Hi+

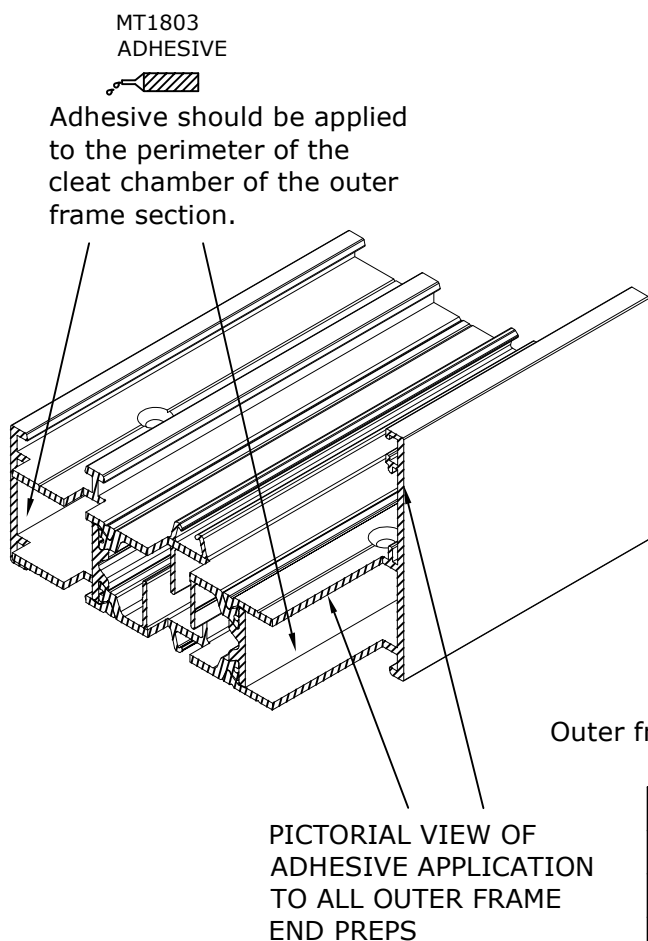
CASEMENT WINDOW

Cleated sections

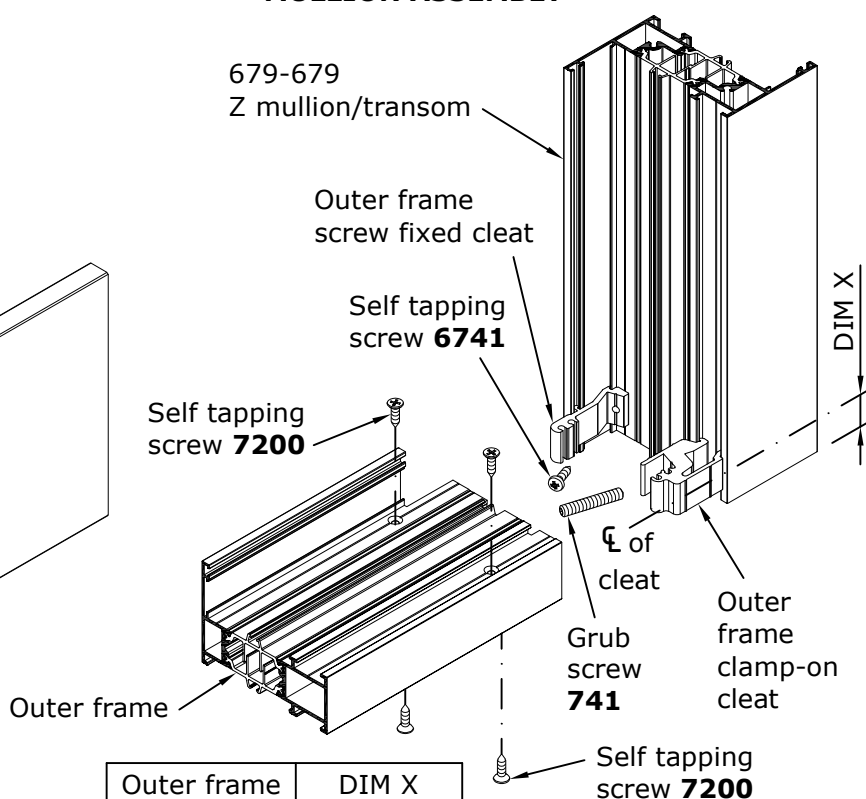
IMPORTANT: PLEASE READ THESE NOTES BEFORE ASSEMBLY.

NOTE: Z mullion/transom must be installed before frame corners are crimped.

1. Using JIG4-35002 drill and countersink the offset screw holes in the outer frame at the positions shown.
2. Before applying MT1803 adhesive ensure all surfaces are free from grease or dust. Clean all aluminium mating surfaces with MT60 surface cleaner and allow to dry. Fabricator must ensure MT60 surface cleaner is fully compatible with surface finish on a project-by-project basis.
3. Mark centre line of outer frame clamp-on cleat on Z mullion/transom using DIM X to suit outer frame profile. Place JIG4-35001 on Z mullion/transom aligning appropriate cleat centre line with position marked.
4. Clip clamp-on cleat onto Z mullion/transom through appropriate aperture in jig. Tighten 741 grub screw (minimum torque setting 3.5Nm) and ensure cleat is firmly attached.
5. With JIG4-35001 still in position drill angled hole(s) in Z mullion/transom opposite clamp-on cleat.
6. Remove JIG4-35001 and attach screw fixed cleat with 6741 self tapping screw(s).
7. Apply MT1803 adhesive to the mating surfaces of the cut aluminium and thermal break profiles (as shown).
8. Apply MT1803 adhesive to the internal perimeter of the cleat chamber to sufficient depth to ensure full bonding/sealing of the cleat.
9. Align the sections over cleats and screw tightly into the offset screwports using 7200 self-tapping screws, ensuring all screws are bedded and sealed.
10. Wipe away any excess adhesive from the joint using MT60 surface cleaner and allow to dry. Ensure all bead and gasket recesses are clear of adhesive.
11. Check the joint is tight on both sides and that there is no movement.
12. Clip transom braces 6746 into position. Bond and seal as "Transom Brace Application Detail" and "679-679 Z Mullion/Transom Sealing Detail" sheets.



OUTER FRAME TO MULLION ASSEMBLY



Outer frame	DIM X
600-200	12.25mm
601-201	14.75mm
602-202	32.25mm
602-212	32.25mm
604-213	17.25mm

Not to scale

679-679 Z Mullion/Transom Assembly

Cleated sections



System 4-35 Hi/Hi+

CASEMENT WINDOW

Detail to suit

600-200

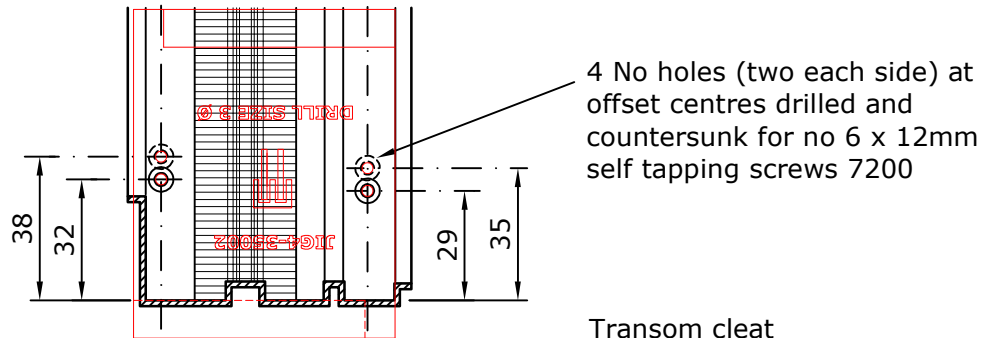
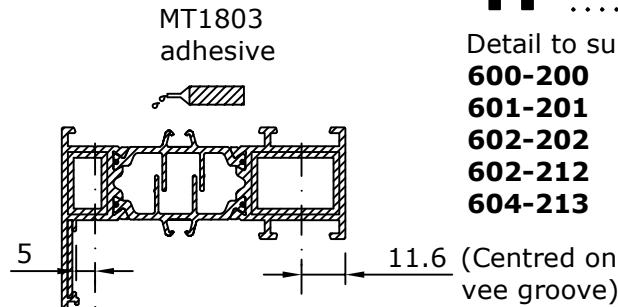
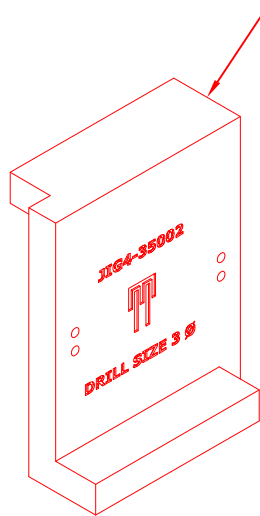
601-201

602-202

602-212

604-213

JIG4-35002



Transom cleat
6520 (16mm wide)
6521 (11mm wide)
6524 (21mm wide)
See "Component Identification" page for section references

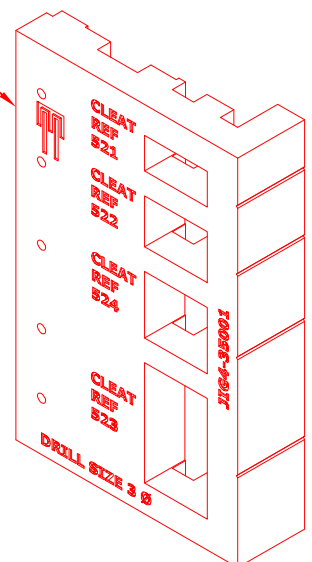
Transom cleat
521 (11mm wide)
522 (16mm wide)
524 (21mm wide)
See "Component Identification" page for section references

Detail to suit
679-679

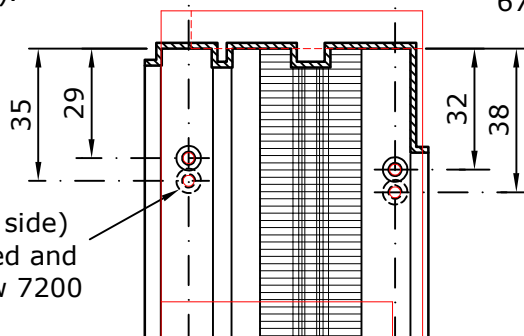
Grub screw 741 and hexagon allen key size 2.5mm A/F (minimum torque setting 3.5Nm).

No 6 x 13mm pan head stainless steel self tapping screws 6741

JIG4-35001



4 No holes (one each side) at offset centres drilled and countersunk for screw 7200



MT1803 adhesive

Detail to suit

600-200

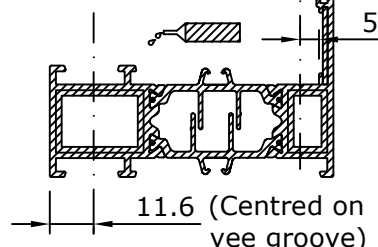
601-201

602-202

602-212

604-213

For isometric details of joint assembly and adhesive/sealant application see "679-679 Z Mullion/Transom Sealing Detail" sheet.



Scale 1:2

679-679 Z Mullion/Transom Sealing Detail



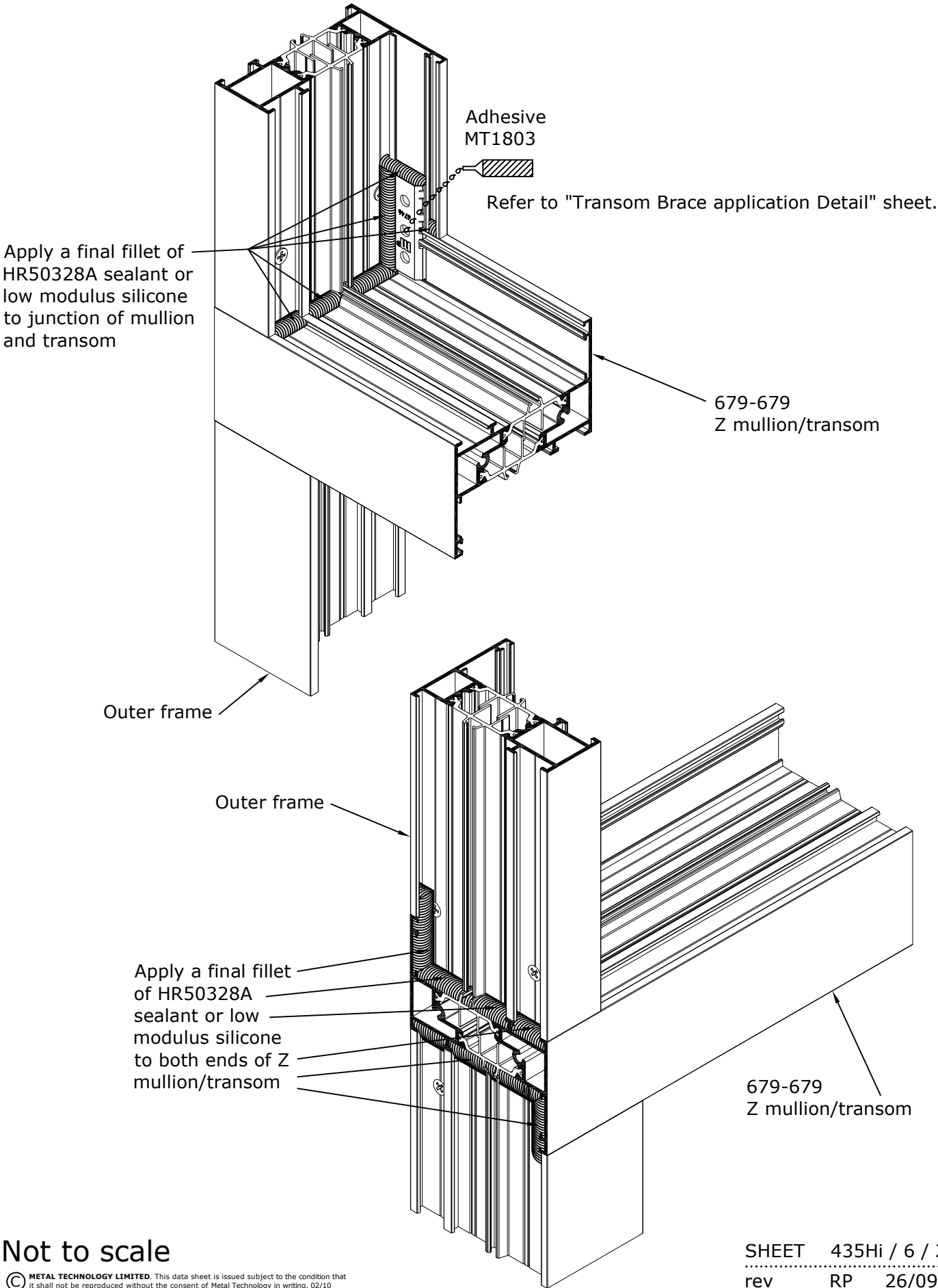
System 4-35 Hi/Hi+

.....

CASEMENT WINDOW

.....

THE FOLLOWING DETAIL SHOULD BE APPLIED TO ALL Z MULLION/TRANSOM SECTIONS. THESE DETAILS TO BE READ IN CONJUNCTION WITH ASSEMBLY DETAILS



Not to scale

Drip Rails

Preparation Details for Vents Fitted below 679-679 Z transom



System 4-35 Hi/Hi+

.....
CASEMENT WINDOW
.....

DETAIL IS APPLICABLE TO BOTH FRICTION HINGE AND BUTT HINGE APPLICATIONS.

All fixings must be sealed using HR50328A sealant or low modulus silicone.

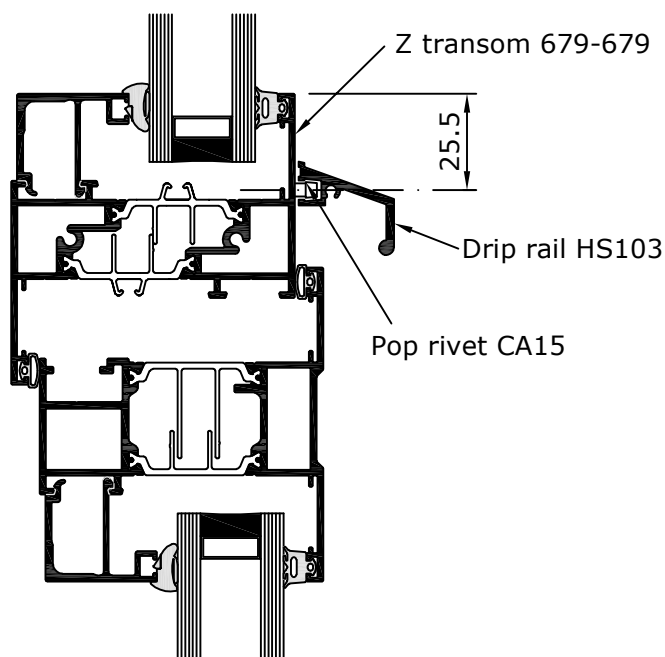
The drip rail should be used in all conditions. A length of drip rail (HS103) should be secured to the frame directly above the casement vent as shown below.

A series of 3mm pilot holes should be drilled, commencing 75mm in from each end and at the required intervals to accept the drip rail rivets (not exceeding 250mm centres).

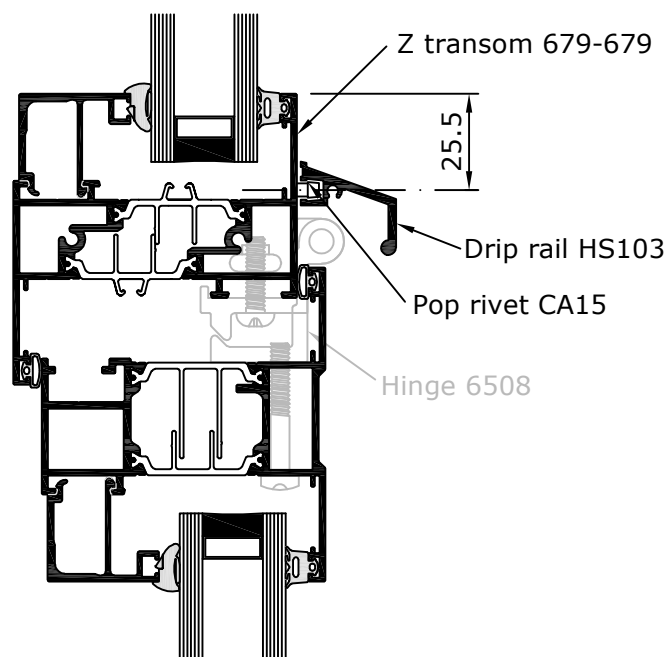
When the pop rivets are in place a bead of silicone should then be applied to the silicone groove extruded in the drip rail. The drip rail is then push-fitted over the rivets.

The length of the drip rail should be 20mm greater than the width of the sash and centralised over the sash.

WITH FRICTION HINGE



WITH BUTT HINGE



Scale 1:2

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SHEET 435Hi / 6 / 247

rev RP 26/09/22

Drip Rails

Transom and Outer Frame Selection Charts and Drip Rail Fixing Details



System 4-35 Hi/Hi+

CASEMENT WINDOW

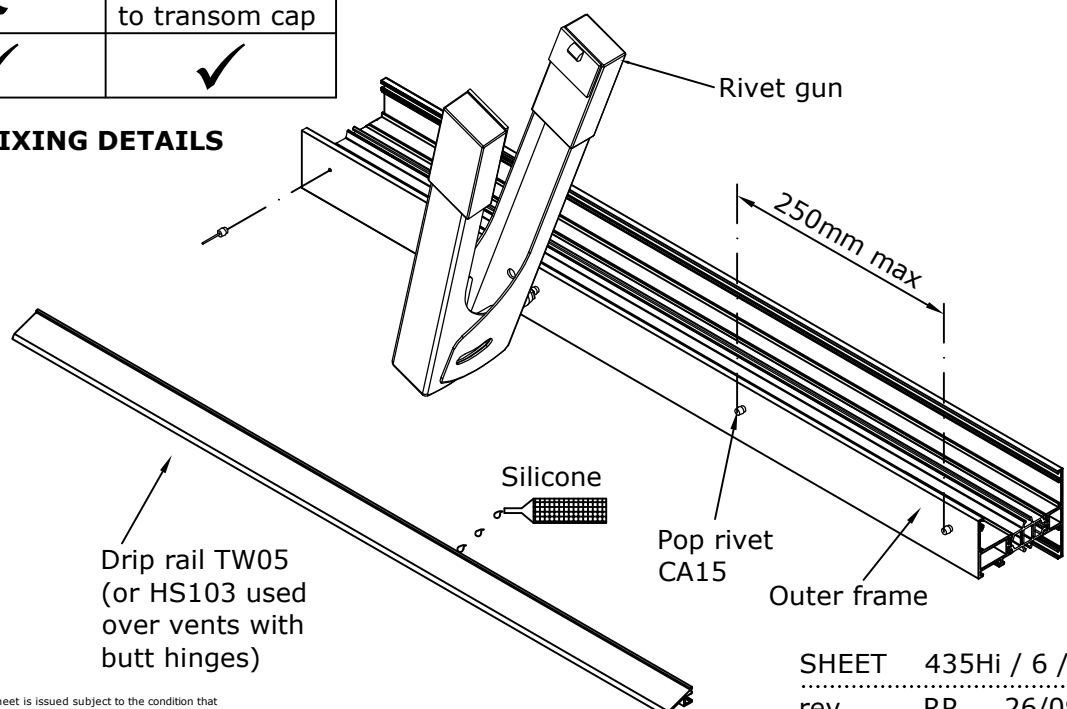
TRANSOM AND OUTER FRAME/DRIP RAIL SELECTION CHARTS - TOP HUNG APPLICATIONS

TRANSOM	VENT OVER VENT with TW05 (with friction hinges)	FIXED OVER VENT with TW05 (with friction hinges)	VENT OVER VENT with HS103 (with butt hinges)	FIXED OVER VENT with HS103 (with butt hinges)	FIXED OVER VENT with HS103 (with friction hinges)
603-201	✗	✗	✗	✗	✗
606-206	✓	✓	✓	✓	✗
609-200	✗	✗	✗	✗	✗
613-213	✓	✓	✗	✗	✗
619-211	✗	✗	✗	✗	✗
679-679	✗	✗	✗	✓	✓

OUTER FRAME	TW05 (with friction hinges)	HS103 (with butt hinges)
600-200	✓	✗
601-201	✓	✗
600-212	✓	✓
602-202	✓	✓
602-212	✓	✓
604-213	✓	✗
620-204	✗	Drip rail fixed to transom cap
620-215	✗	Drip rail fixed to transom cap
620-216	✗	Drip rail fixed to transom cap
647-649	✓	✓

Where render finishes occur it may be necessary to check against site conditions to ensure that the drip rail can be fitted.

DRIP RAIL FIXING DETAILS



Not to scale

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SHEET 435Hi / 6 / 250
rev RP 26/09/22

Butt Hinge Options

Hinge Preparation Details



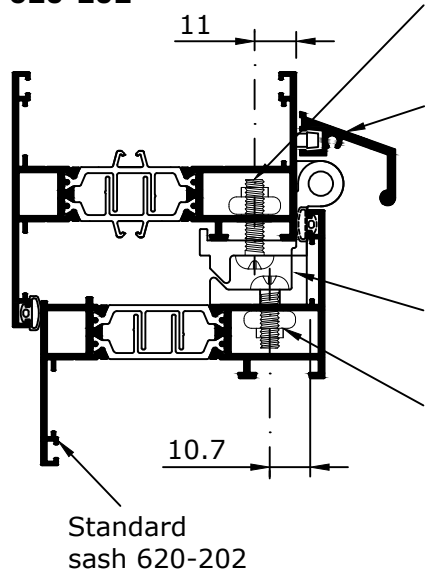
System 4-35 Hi/Hi+

CASEMENT WINDOW

All fixings must be sealed using HR50328A sealant or low modulus silicone.

Outer frame sections 600-212, 602-212, 602-202, 620-204, 620-215, 620-216 or 647-649 must be used with butt hinges. In vent over vent and back to back hinge applications the heavy duty mullion/transom section 606-206, 607-206 must be used.

FOR USE WITH STANDARD SASH 620-202



3 No. M5 x 20mm pan head stainless steel fixing screws 7208 into M5 countersunk aluminium rivnuts 7209

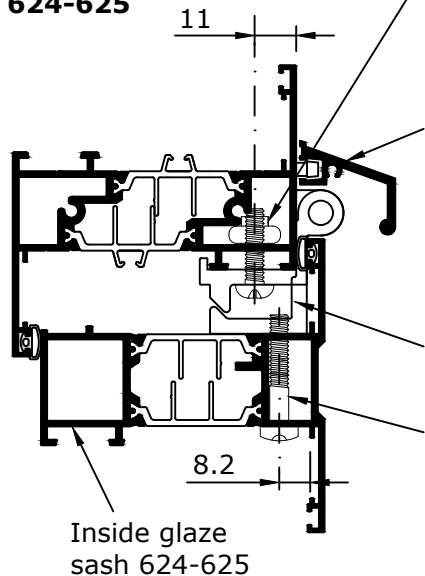
Drip rail HS103 (Top hung sash only)

Hinge aligned tightly against sash gasket groove.

6508 Hinge with 6518 gasket

3 No. M5 x 16mm pan head stainless steel fixing screws 7224 into M5 countersunk aluminium rivnuts 7209

FOR USE WITH INSIDE GLAZE SASH 624-625



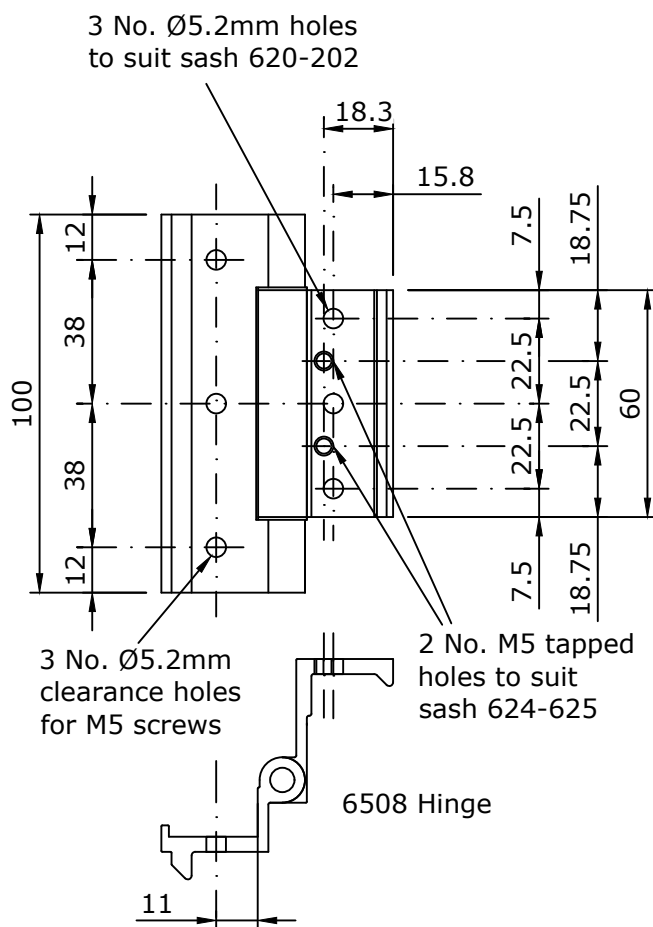
3 No. M5 x 20mm pan head stainless steel fixing screws 7208 into M5 countersunk aluminium rivnuts 7209

Drip rail HS103 (Top hung sash only)

Hinge aligned tightly against sash gasket groove.

6508 Hinge with 6518 gasket

2 No. M5 x 30mm pan head stainless steel fixing screws 7243 applied with loctite



Scale 1:2

Butt Hinge Options

Hinge Preparation Details



System 4-35 Hi/Hi+

CASEMENT WINDOW

All fixings must be sealed using HR50328A sealant or low modulus silicone.

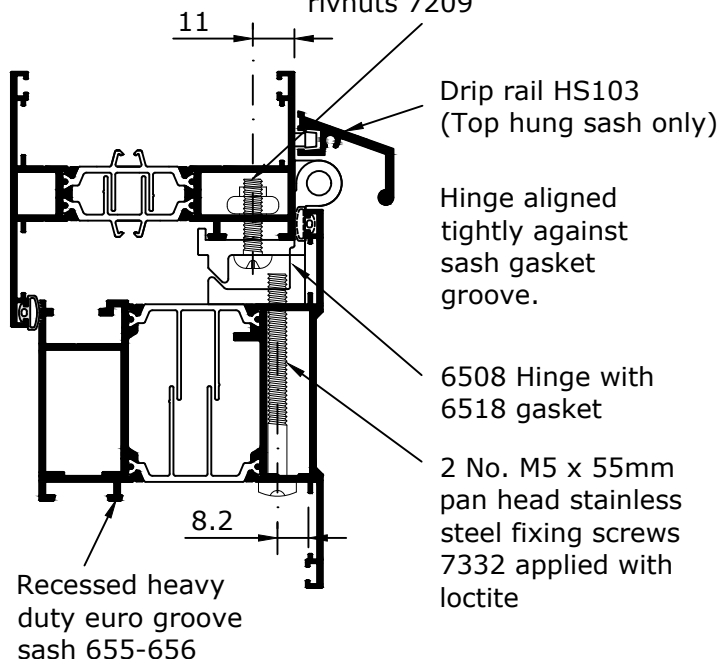
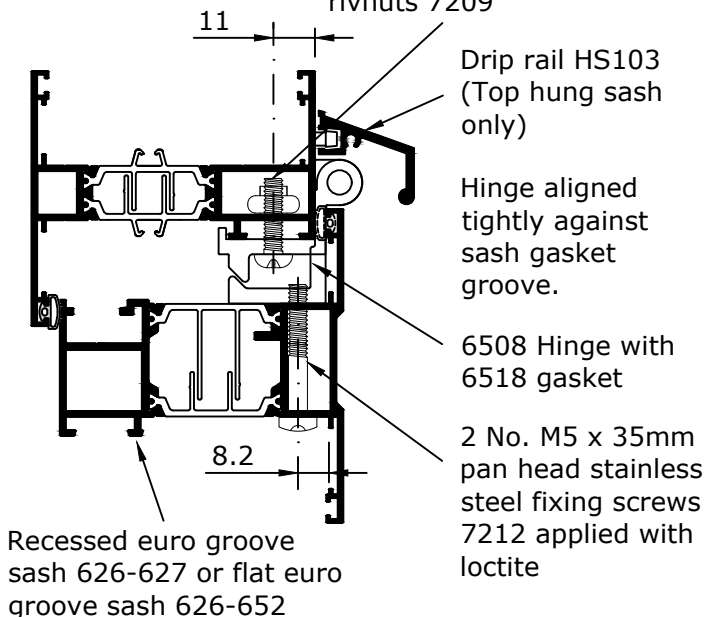
Outer frame sections 600-212, 602-212, 602-202, 620-204, 620-215, 620-216 or 647-649 must be used with butt hinges. In vent over vent and back to back hinge applications the heavy duty mullion/transom section 606-206, 607-206 must be used.

FOR USE WITH EURO GROOVE SASHES 626-627 and 626-652

3 No. M5 x 20mm pan head stainless steel fixing screws 7208 into M5 countersunk aluminium rivnuts 7209

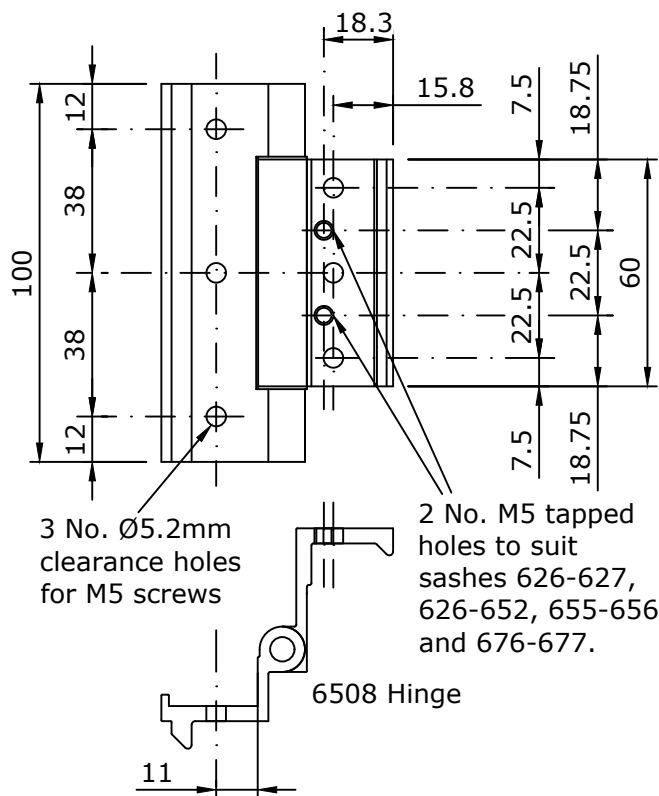
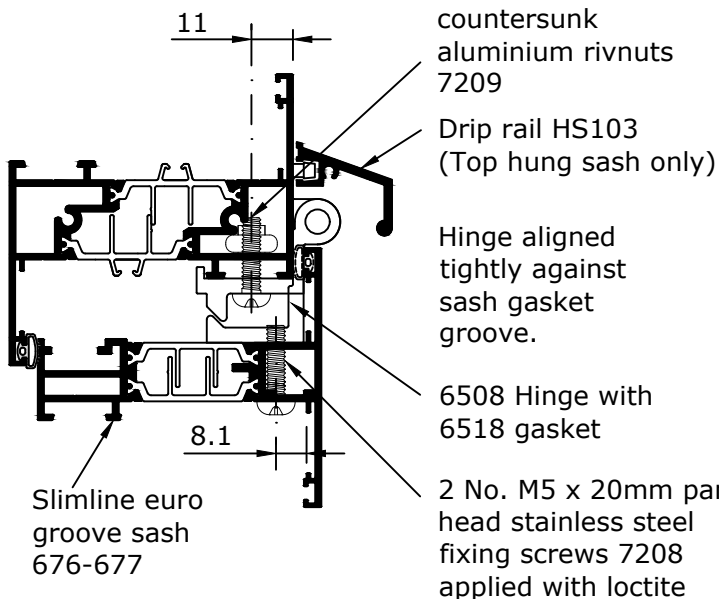
FOR USE WITH EURO GROOVE SASH 655-656

3 No. M5 x 20mm pan head stainless steel fixing screws 7208 into M5 countersunk aluminium rivnuts 7209



FOR USE WITH SLIMLINE SASH 676-677

3 No. M5 x 20mm pan head stainless steel fixing screws 7208 into M5 countersunk aluminium rivnuts 7209



Scale 1:2