futureline®

THERMAL ARCHITECTURAL
425TB FRAMING SYSTEM

TECHNICAL MANUAL

CAPRAL ALUMINIUM

FUTURELINE 425TB FRAMING SYSTEM

The Capral Futureline 425TB centre glazed framing system incorporates the glazing capacity to accommodate high performance double glazed units up to 34mm while retaining crisp, clean profiles typically associated with commercial glazing systems.

The use of the latest thermal break technology, consisting of double bar polyamide strips has been incorporated for excellent levels of thermal insulation. The Futureline 425TB framing system offers the best of both worlds; a strong architectural aesthetic with a level of thermal efficiency usually associated with narrower, less substantial framing systems.

FEATURES AND BENEFITS

- Centre glazed
- Excellent 'Uw' values down to 1.7
- 100mm x 62mm Centre Glazed Framing System
- Crisp, clean square profiles
- Capable of accommodating IGU's up to 34mm
- Thermally broken Sub Frames
- High Performance Glazing Bead System
- Trickle Vent available

LocAl® GREEN

Capral's Futureline range is extruded in Australia using LocAl® Green primary aluminium.

- 50% lower-carbon emissions than global averages for primary aluminium
- 8kg CO2e/kg Al
- ASI Certified Smelter

asi MEMBER

CAPRAL ALUMINIUM

1800 ALUMINIUM (258 646)
capral.com.au
Capral Limited ABN 78 004 213 692
March 2023

MAXIMUM PERFORMANCE

Serviceability Pressure	4500Pa
Ultimate Pressure	8500Pa
Water Penetration	900Pa

FRAME DIMENSIONS

Depth	100mm
Height	62mm

MAXIMUM RECOMMENDED SIZE

Mullion Height	4000mm
Mullion Spacing	2400mm
Transom Width	3000mm

GLAZING CAPACITY

Double Glazed	22 - 34mm

ACOUSTICS (MAX)

Rw (C;Ctr)	41 (-2;-5)

WINDOW ENERGY RATINGS

Window ID	Glazing	Uw	SHGC	Tvw	Air Inf
CAP-113-01	6Clr/12/6Clr	2.8	0.63	0.70	0.05
CAP-113-02	6Clr/12Ar/6Clr	2.7	0.64	0.70	0.05
CAP-113-04	6ET/12Ar/6Clr	2.0	0.55	0.64	0.05
CAP-113-06	6.38ClrLam/12/6Clr	2.8	0.61	0.70	0.05
CAP-113-07	6.38ClrLam/12Ar/6Clr	2.7	0.61	0.70	0.05
CAP-113-08	6.38CPClr/12/6Clr	2.2	0.54	0.65	0.05
CAP-113-09	6.38CPClr/12Ar/6Clr	2.0	0.54	0.65	0.05
CAP-113-52	AGG Prime Clr 6/12/6	2.0	0.48	0.60	0.05
CAP-113-62	AGG Plus Clr 6/12/6	1.8	0.52	0.70	0.05
CAP-113-70	AGG Max Clr 6/12/6	1.7	0.25	0.57	0.05

View full list of Residential and Commercial WERs ratings at capral.com.au

Technical Manual History

The table below is a summary of this manual's update history. Contact Capral for details of past updates.

RELEASE DATE	UPDATE SUMMARY
01-02-2016	First release
01-06-2016	Split Mullions updated
01-08-2016	New extrusion & components
01-11-2016	New & updated extrusion. Replaced component
01-05-2017	Extrusions replaced. New acoustic test report summaries
01-03-2018	Renson contact updated
01-07-2018	Disclaimer updated. Glazing page reformatted
01-11-2018	Renson details & Sub frame machining updated
01-07-2019	Sub Frames updated
01-12-2019	Renson contact details updated
01-12-2020	Component added. Extrusions, trickle vent & sill machining updated
01-06-2021	Glazing updated
01-07-2021	Sliding Window insert arrangements added
01-08-2021	Formulas for sliding window insert flush filler added
17-03-2023	Renamed, Reformatted & extrusions & TRS added
01-06-2023	Component added
01-10-2023	Machining updates
01-02-2024	TRS Updated

The table below shows the details of the latest manual update.

MANUAL RELEASE – 01-04-2024	
DESCRIPTION	AFFECTED PAGES
Low Profile Sill ETB0345 added	Throughout
Variable Sill Support Block 327634 added	Throughout
Sill Drainage machining clarified	5.2

Technical Manual History

IMPORTANT CONDITIONS

By using this manual you agree to the following:

DISCLAIMER

Whilst best efforts have been made to ensure the details contained herein are accurate and correct, Capral is not responsible for any loss or damage whatsoever arising as a result of any errors contained in this manual. Interpretation of standards or codes within this manual is Capral's interpretation of such codes. Responsibility for code compliance remains with the user of this manual. In some cases product specifications may vary without notice. Users should not act or rely upon any information contained in this manual without obtaining appropriate professional advice relating to their particular circumstances. To the maximum extent permitted by law Capral disclaims all liability for loss or damage suffered by anyone who acts or fails to act in reliance of this manual.

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Product Specifications

SIZE LIMITATIONS

Mullion Height
- Minimum: 600mm
- Maximum: 4000mm

Mullion Spacing
- Minimum: 300mm
- Maximum: 2400mm

Transom Width
- Minimum: 300mm
- Maximum: 3000mm

Transom Spacing
- Minimum: 300mm
- Maximum: 1500mm

NOTE: Refer to the information on the following page & Span Tables to check the maximum sizes that can be achieved for the assigned performance requirements of the installation.

SERVICEABILITY PRESSURE & WATER PERFORMANCE

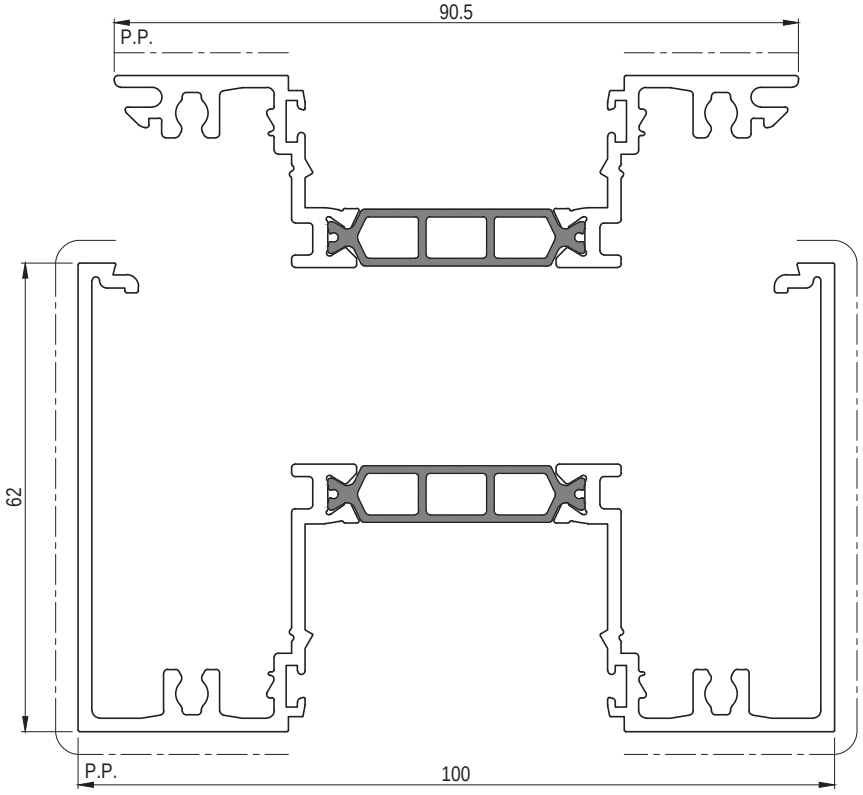
Residential & Commercial Applications:
The Serviceability Pressures listed in the Span Tables have not been limited by a water performance.
Where water performance is necessary the product should be limited to the following maximum water ratings or serviceability pressures:

Configuration	Sill	Transom	Max. Water Rating (Pa)	Max. Serviceability Pressure (Pa) (Max. Water Rating / 30%)
F.F	ETB0002 / ETB0003	-	909	3030
F.F (Internal Bead)	ETB0002 / ETB0003	-	913	3043
F/F	ETB0002 / ETB0003	ETB0002 / ETB0003	906	3020

Note: The use of a standard Subsill has been assumed for the Water Performance Ratings listed above.

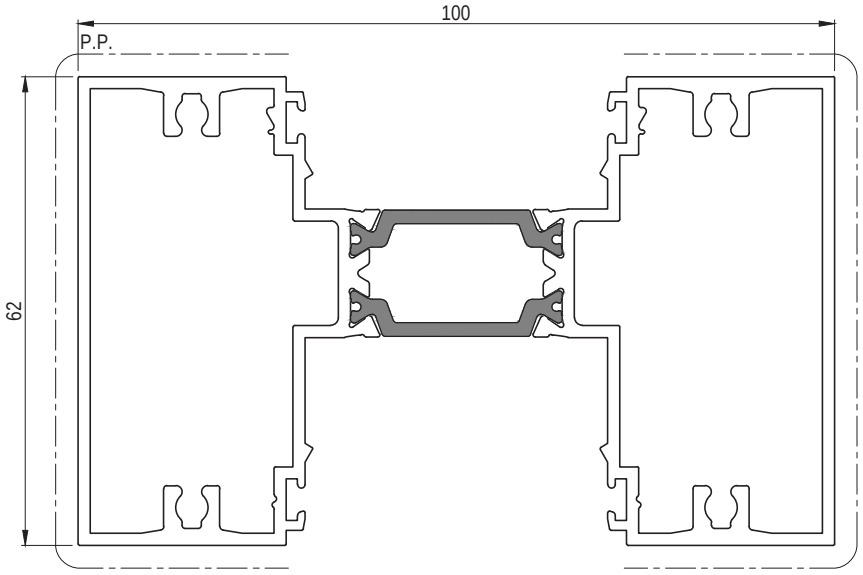
Extrusions

Scale 1:1

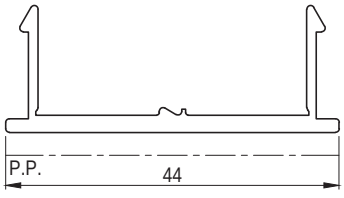


ETB0028
POCKETED FILLER
Paint Perimeter: 232mm
Anodised Perimeter: 346mm

ETB0027
FRAME
Paint Perimeter: 438mm
Anodised Perimeter: 656mm



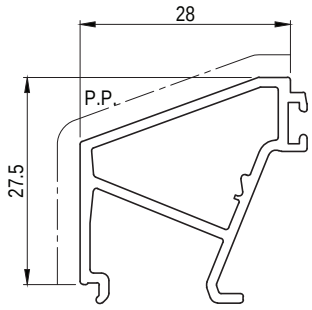
ETB0001
SOLID FRAME
Paint Perimeter: 264mm
Anodised Perimeter: 413mm



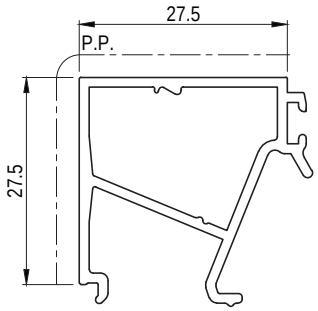
EP14756
FLUSH FILLER
Paint Perimeter: 103mm
Anodised Perimeter: 154mm

Extrusions

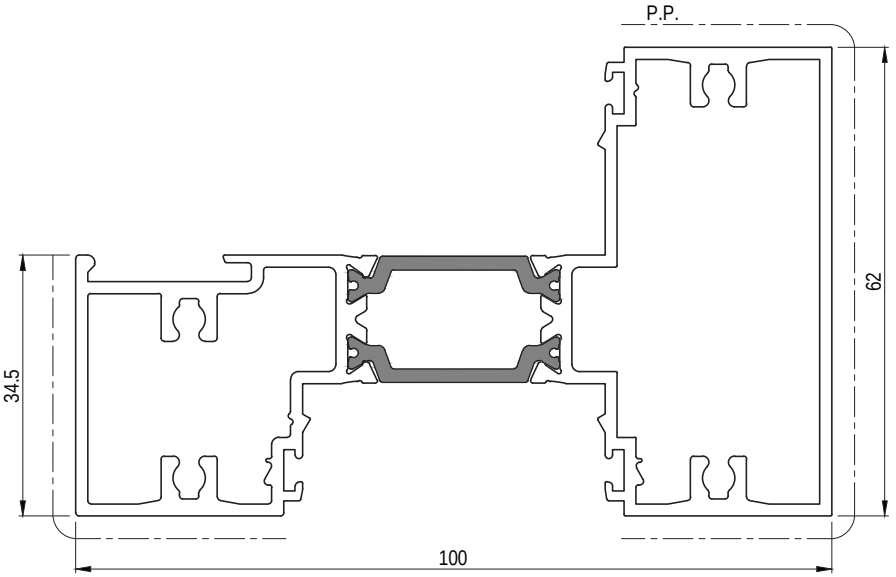
Scale 1:1



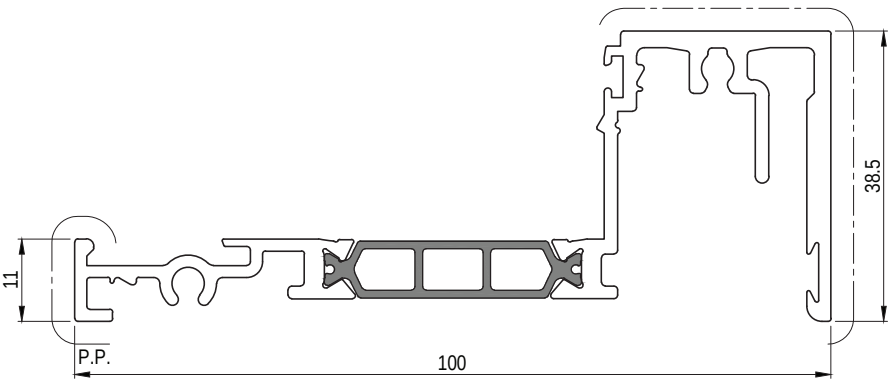
EP16151
SLOPED BEAD
Paint Perimeter: 102mm
Anodised Perimeter: 152mm



ETB0003
SQUARE BEAD
Paint Perimeter: 100mm
Anodised Perimeter: 160mm



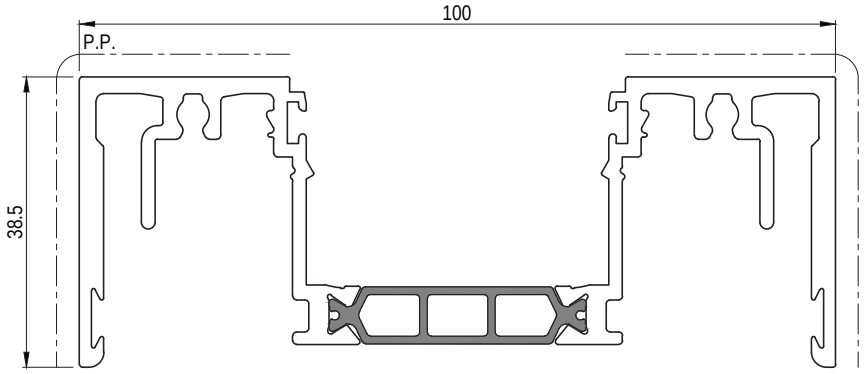
ETB0002
SILL / TRANSOM
Paint Perimeter: 204mm
Anodised Perimeter: 363mm



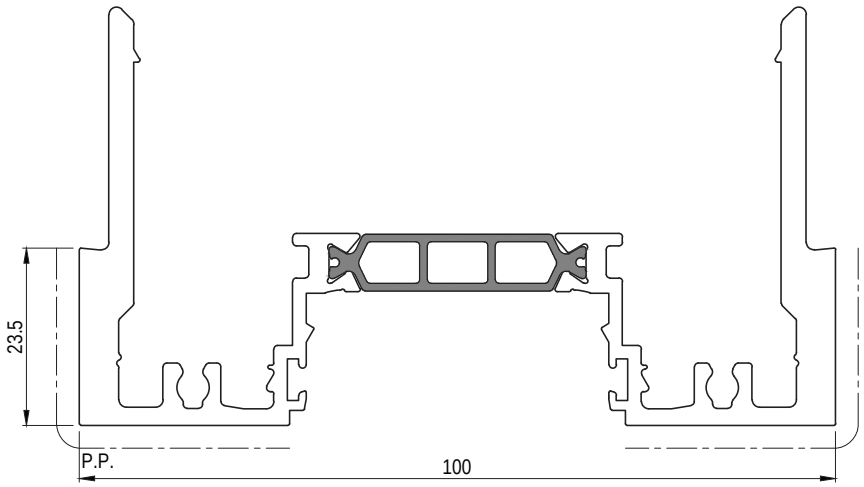
ETB0345
LOW PROFILE SILL
Paint Perimeter: 304mm
Anodised Perimeter: 456mm

Extrusions

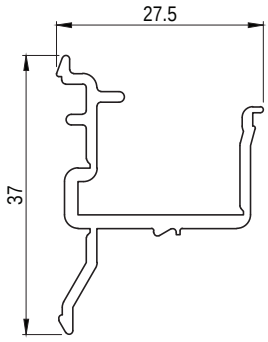
Scale 1:1



ETB0025
FEMALE MULLION / FRAME
Paint Perimeter: 133mm
Anodised Perimeter: 597mm



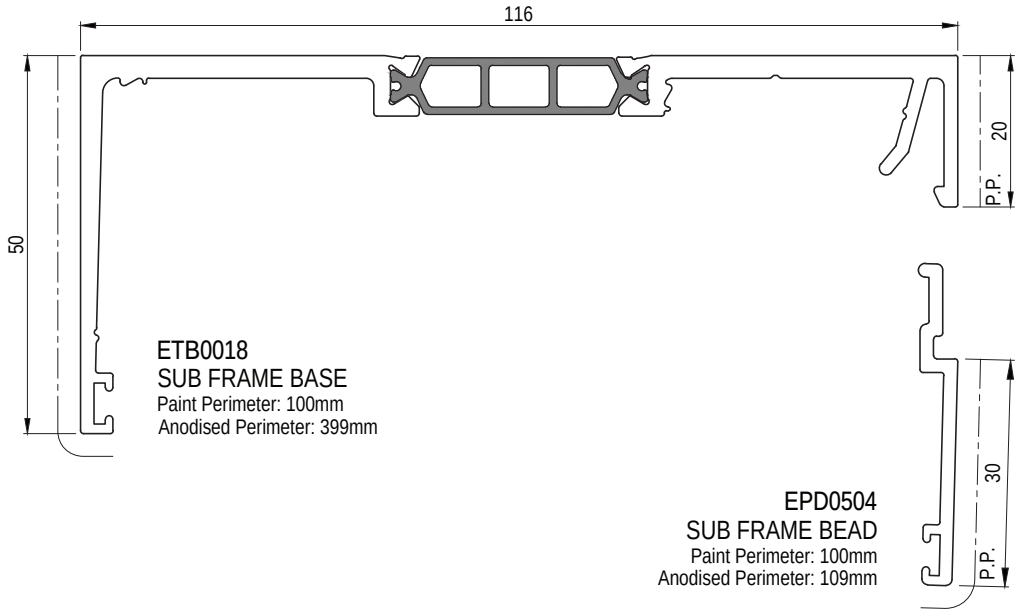
ETB0026
MALE MULLION
Paint Perimeter: 103mm
Anodised Perimeter: 556mm



ETB0043
FRAME COUPLER
Paint Perimeter: 177mm
Anodised Perimeter: 177mm

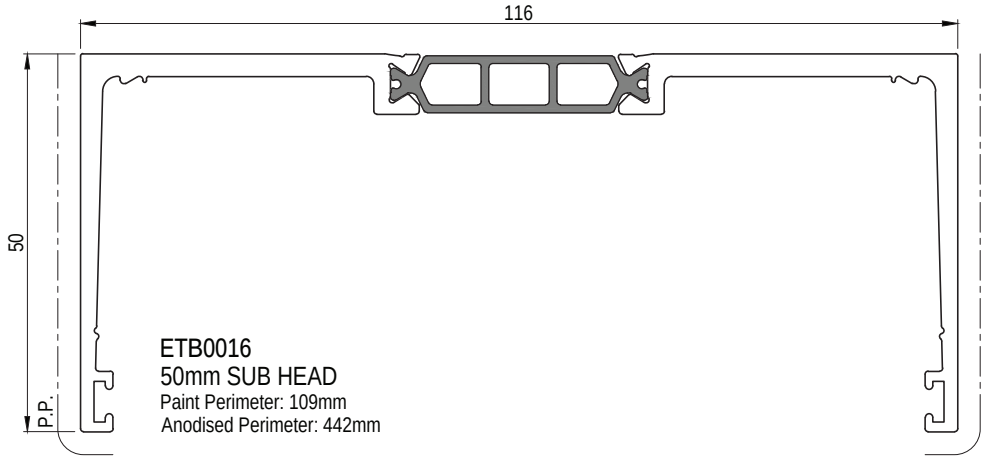
Extrusions

Scale 1:1

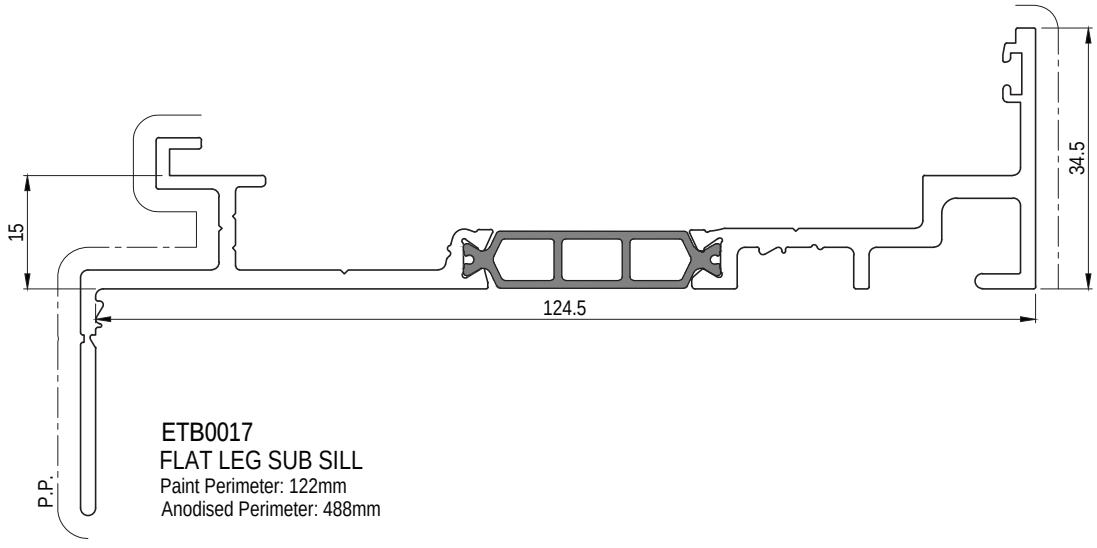


ETB0018
SUB FRAME BASE
Paint Perimeter: 100mm
Anodised Perimeter: 399mm

EPD0504
SUB FRAME BEAD
Paint Perimeter: 100mm
Anodised Perimeter: 109mm



ETB0016
50mm SUB HEAD
Paint Perimeter: 109mm
Anodised Perimeter: 442mm



ETB0017
FLAT LEG SUB SILL
Paint Perimeter: 122mm
Anodised Perimeter: 488mm

Extrusion Data

Extrusion	Description	Structural Properties *			
		Ixx (10^3mm^4)	Iyy (10^3mm^4)	Zxx (10^3mm^3)	Zyy (10^3mm^3)
ETB0001	Solid Frame *	387.216	960.497	11.992	19.210
ETB0002	Sill / Transom *	266.814	825.250	7.225	15.411
ETB0003	Square Bead *	13.892	17.090	0.783	0.983
ETB0016	50mm Sub Head *	124.438	1181.865	3.053	17.947
ETB0017	Flat Leg Sub Sill *	60.446	1190.679	1.704	18.830
ETB0018	Sub Frame Base *	75.460	930.772	2.024	16.036
ETB0025	Female Mullion / Frame *	84.567	867.806	3.916	17.356
ETB0026	Male Mullion *	179.121	1277.417	4.854	25.548
ETB0027	Frame	213.784	865.976	5.339	17.333
ETB0028	Pocketed Filler	21.476	254.570	1.319	5.650
ETB0043	Frame Coupler	9.400	10.348	0.490	0.602
ETB0345	Low Profile Sill *	74.183	484.585	3.297	7.767
EPD0504	Sub Frame Bead	15.104	0.148	0.707	0.049
EP14756	Flush Filler	2.954	28.889	0.225	1.310
EP16151	Sloped Bead	10.714	14.254	0.657	0.891

NOTE: The structural properties listed above are using the orientations as listed within the extrusion pages.

* Indicates the effective I value based on 3000mm

** Indicates the effective I value based on 1800mm

425TB Framing System

Glazing Details

Not To Scale

315787
CO EXT CAPTIVE WEDGE
3mm GAP
200m ROLL
(MSC34)

315788
CO EXT CAPTIVE WEDGE
5mm GAP
100m ROLL
(MSC28)

322527
CO EXT CAPTIVE WEDGE
9mm GAP
75m ROLL
(SPD05221)

322627
CO EXT HEADLESS
CAPTIVE WEDGE 5mm
GAP
75m ROLL
(SPD05221)

WET GLAZING

300001
GLAZING WEDGE 3mm GAP
100m ROLL
(M027101)

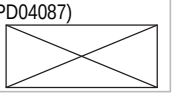
300013
GLAZING WEDGE 5mm GAP
200m ROLL
(M027142)

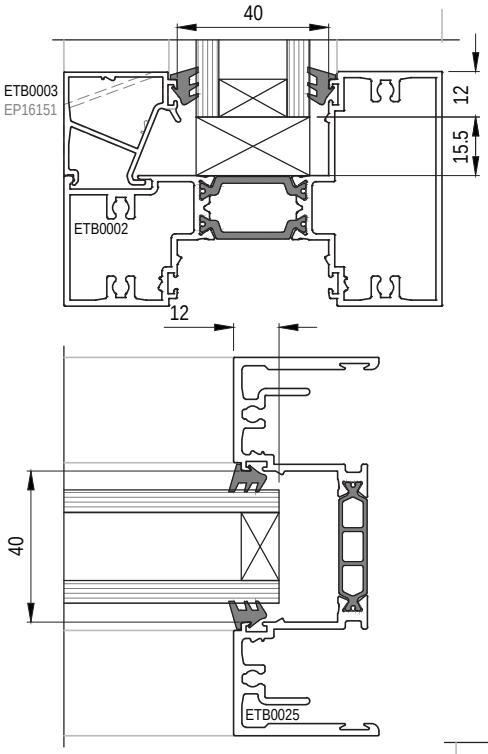
300003
GLAZING WEDGE 7mm GAP
100m ROLL
(M027103)

300004
GLAZING WEDGE 8mm GAP
100m ROLL
(M027104)

300005
GLAZING WEDGE 9.5mm GAP
100m ROLL
(M027105)

317384 - 6 x 24 x 50mm (SPD04150)
317200 - 8 x 24 x 120mm (SPD04094)
317385 - 13 x 24 x 120mm (SPD04151)
317195 - 20 x 25 x 70mm (SPD04087)
SETTING BLOCK
EACH - TRIM TO SUIT

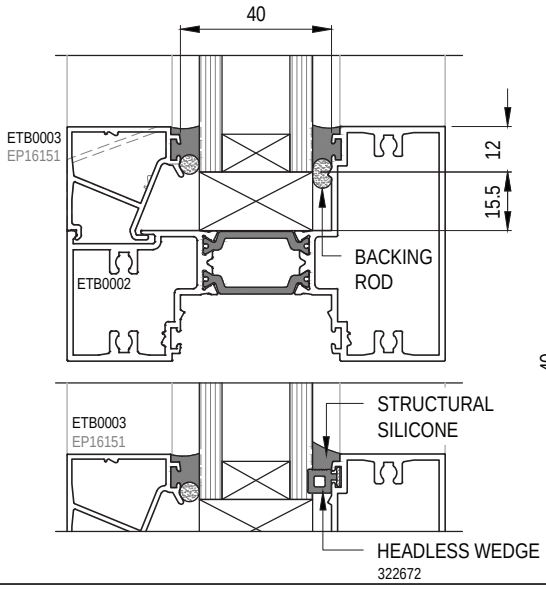


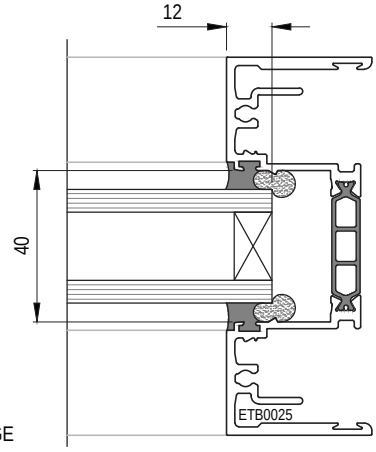


NOTE: POLYETHYLENE OR POLYPROPYLENE GLASS SETTING BLOCK RECOMMENDED FOR DG GLASS.AVOID USING PVC DUE TO THE RISK OF PLASTICISER MIGRATION

DRY GLAZING				
GLASS SIZE	WEDGE	GAP	WEDGE	GAP
22mm	322527*	9mm	300005	9.5mm
	300005	9.5mm	300005	9.5mm
23mm	322527*	9mm	300004	8mm
	300004	8mm	300005	9.5mm
24mm	300004	8mm	300004	8mm
24/25mm	322527*	9mm	300003	7mm
25mm	300003	7mm	300004	8mm
26mm	322527*	9mm	300013	5mm
	300003	7mm	300003	7mm
28mm	300013 (315788*)	5mm	300003	7mm
30mm	300013 (315788*)	5mm	300013	5mm
32mm	300001 (315787*)	3mm	300013	5mm
34mm	300001 (315787*)	3mm	300001	3mm

* Captive Wedge Alternative





WET GLAZING

- WHERE THE GLASS THICKNESS PERMITS, INSERT A BACKING ROD ON EITHER SIDE OF THE GLASS.
- CENTRE THE GLASS WITHIN THE GLAZING POCKET USING THE APPROPRIATE PACKERS ON EITHER SIDE.
- APPLY A CONTINUOUS SILICONE BEAD AROUND THE FULL PERIMETER OF THE FRAME, BOTH INSIDE AND OUT.

Components

Not To Scale

302271
SUB FRAME SEAL
1m LENGTH
(M027830)

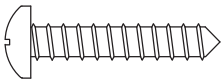
SUB FRAMES

316051
CO-EXT EXPANSION JOINT SEAL
500m ROLL
(10146)

SPLIT MULLION

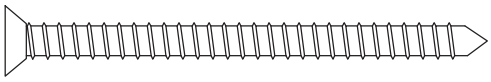
323404
ASA FLUSH FILLER
EACH - 4.8m LENGTH
(SPD05024)

300059
10g x 25mm PAN SCREW
100 PACK
(M028598)



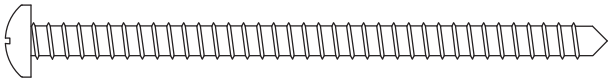
FRAME

317494
10g x 63mm CSK SCREW
(MG089)



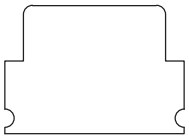
SPLIT MULLION AT POCKET

317495
10g x 76mm SS PAN SCREW
EACH
(MG086)



FRAME AT POCKET

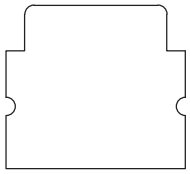
316477
SHALLOW POCKET FILLER
50 PACK
(SPD03557)



TRIM TO SUIT. TRANSOM

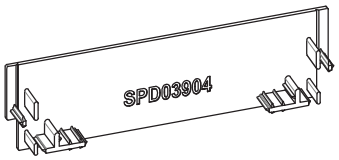
300246
COVER CAP
EACH
(M575111)

316476
DEEP POCKET FILLER
50 PACK
(SPD03556)

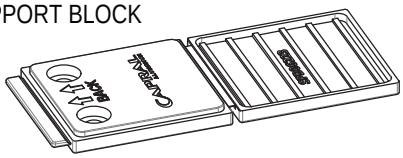


TRIM TO SUIT. TRANSOM

316481
SUB SILL END DAM
50 PACK
(SPD03904)



327634
VARIABLE SILL SUPPORT BLOCK
EACH
(SPD06223)



7mm OR 10mm WHEN COMBINED

NON STOCKED ITEMS

SILICONE

SMALL JOINT SEALANT

CLOSED CELL BACKING ROD

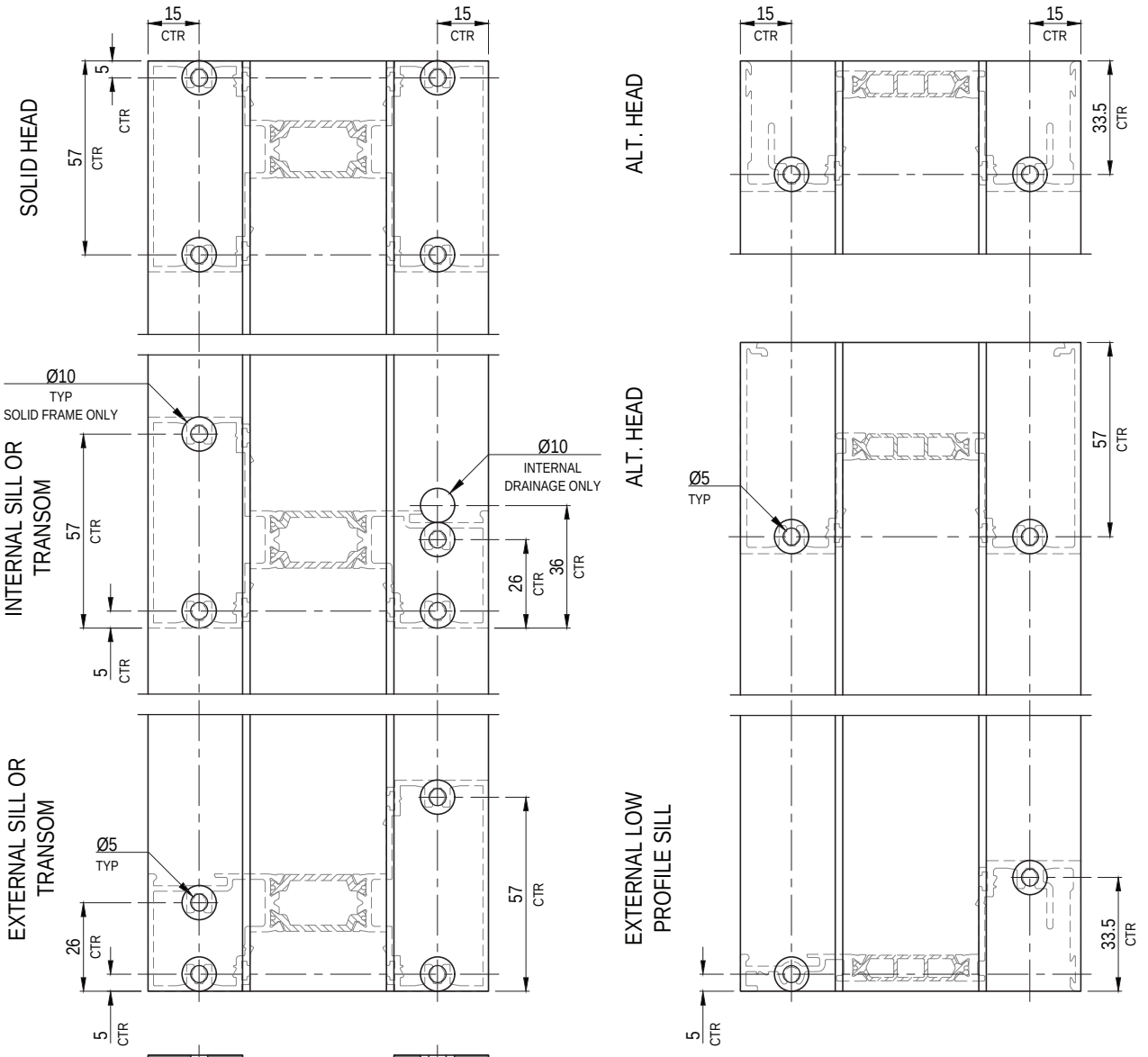
Cutting Formula and BOM

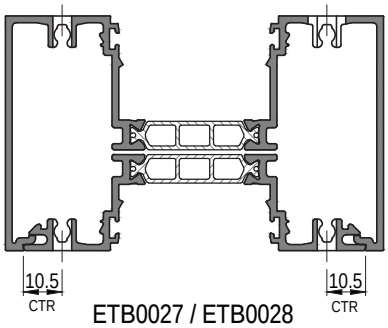
REFER TO Sec7 FOR DIMENSIONS

futureline THERMAL ARCHITECTURAL

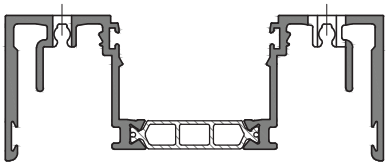
Machining - Frames

Scale 1:2

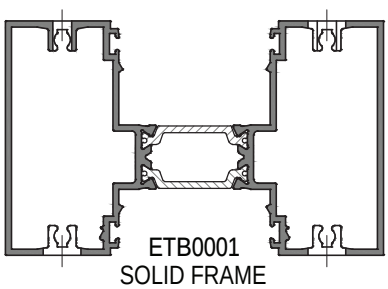




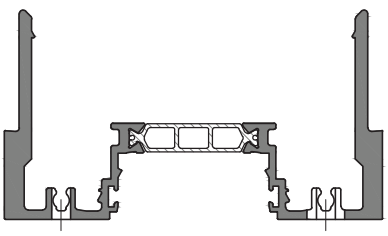
ETB0027 / ETB0028
FRAME / POCKETED FILLER



ETB0025
FEMALE FRAME / MULLION



ETB0001
SOLID FRAME
JAMB ONLY

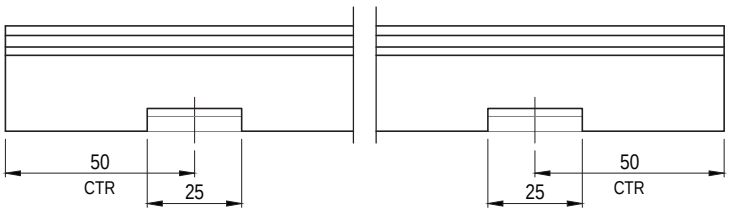


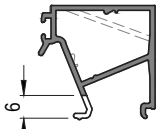
ETB0026
MALE MULLION

Machining - Transom & Beads

Scale 1:2

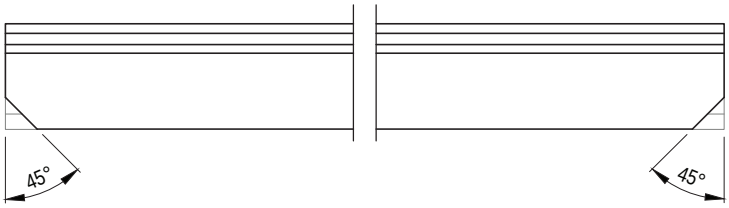
DRAINAGE OPTION 1 - ALL BEADS

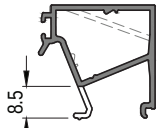




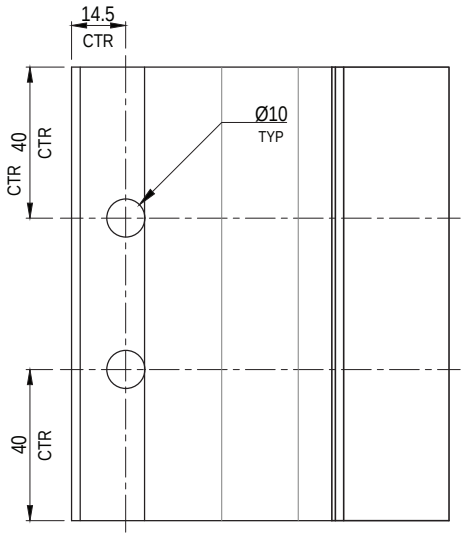
ETB0003 . EP16151
BEADS

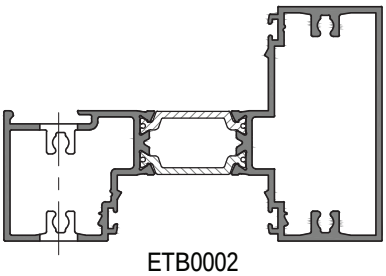
DRAINAGE OPTION 2 - ALL BEADS



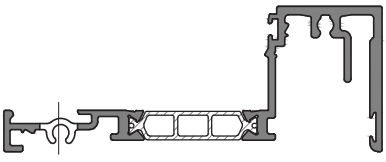


ETB0003 . EP16151
BEADS

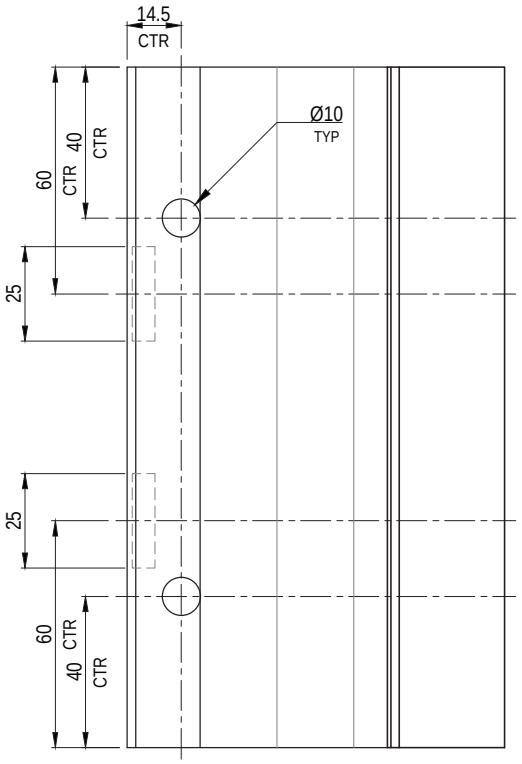


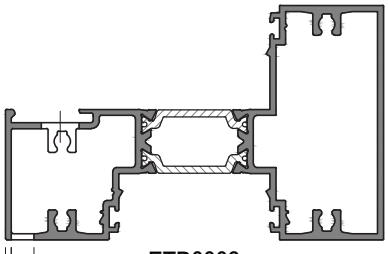


ETB0002
SILL
WITH SUB SILL ONLY



ETB0345
LOW PROFILE SILL
WITH SUB SILL ONLY

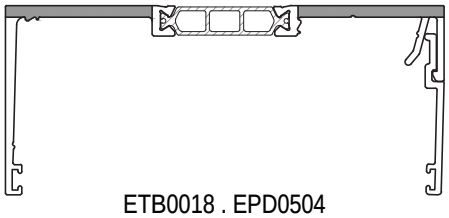




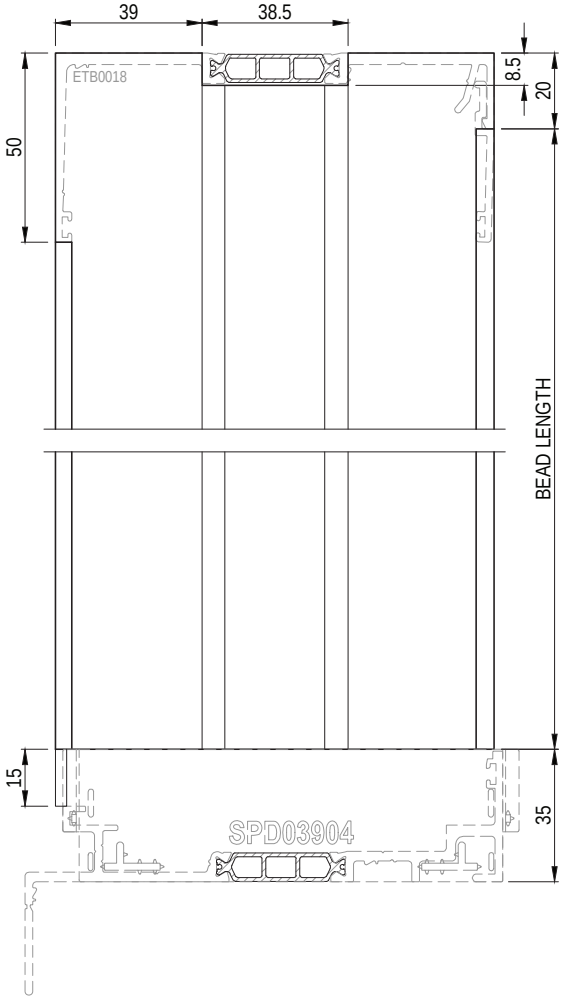
ETB0002
TRANSOM
EXTERNAL TRANSOM ONLY

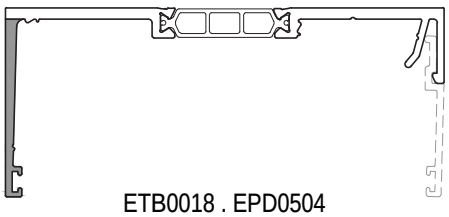
Machining - Sub Frame

Scale 1:2



ETB0018 . EPD0504
100mm SUB FRAME . SUB FRAME BEAD





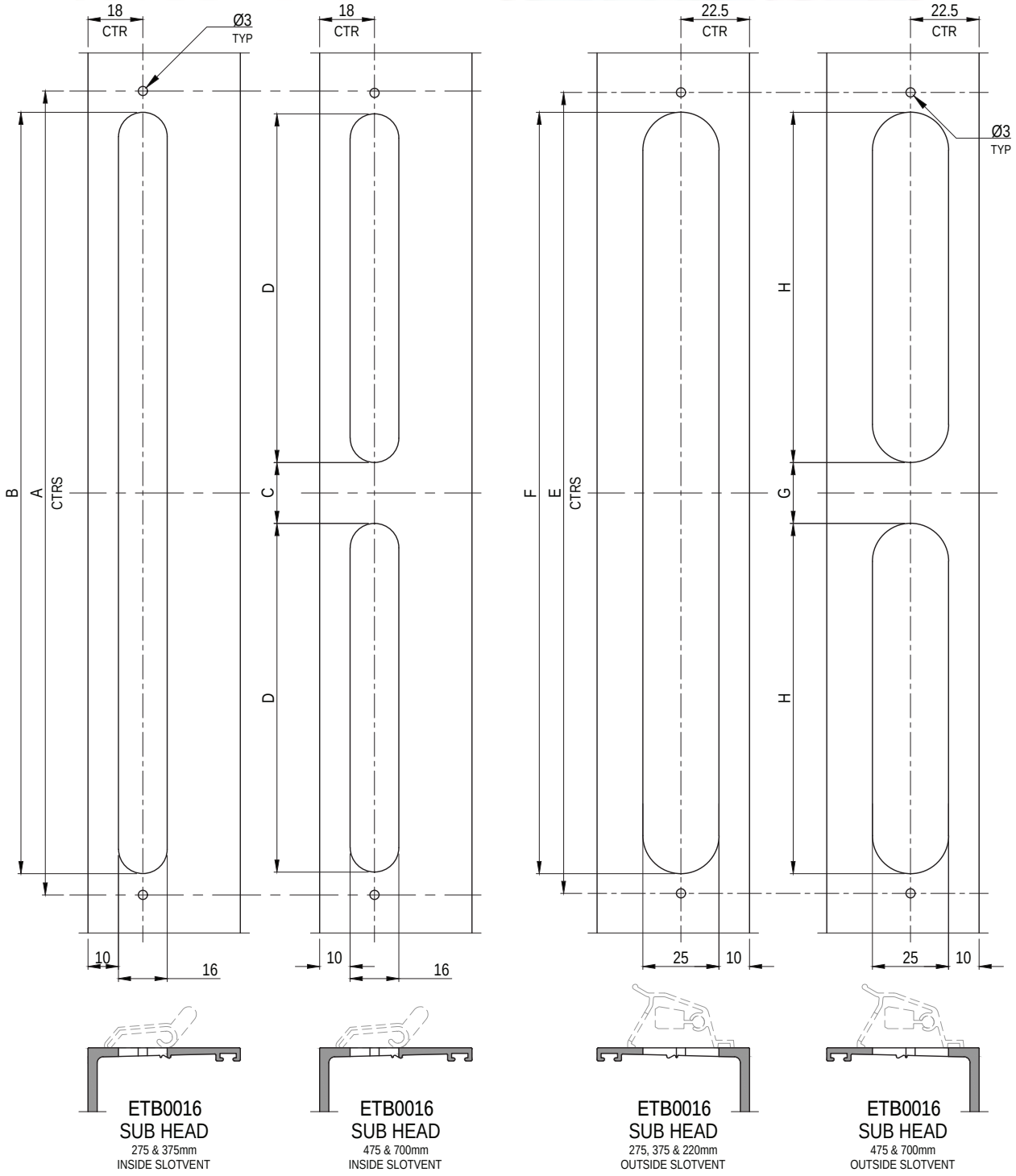
ETB0018 . EPD0504
100mm SUB FRAME . SUB FRAME BEAD

Machining - Trickle Vent

Scale 1:2

INSIDE SLOTVENT 787AK				
VNET LENGTH	A	B	C	D
275mm	259	245		
375mm	359	345		
475mm	459		31	215
700mm	684		36	325

OUTSIDE SLOTVENT 471				
VNET LENGTH	E	F	G	H
275mm	265	250		
375mm	365	350		
475mm	465		20	215
700mm	690		25	325
220mm	210	200		



ETB0016
SUB HEAD
275 & 375mm
INSIDE SLOTVENT

ETB0016
SUB HEAD
475 & 700mm
INSIDE SLOTVENT

ETB0016
SUB HEAD
275, 375 & 220mm
OUTSIDE SLOTVENT

ETB0016
SUB HEAD
475 & 700mm
OUTSIDE SLOTVENT

RENSON
Creating healthy spaces

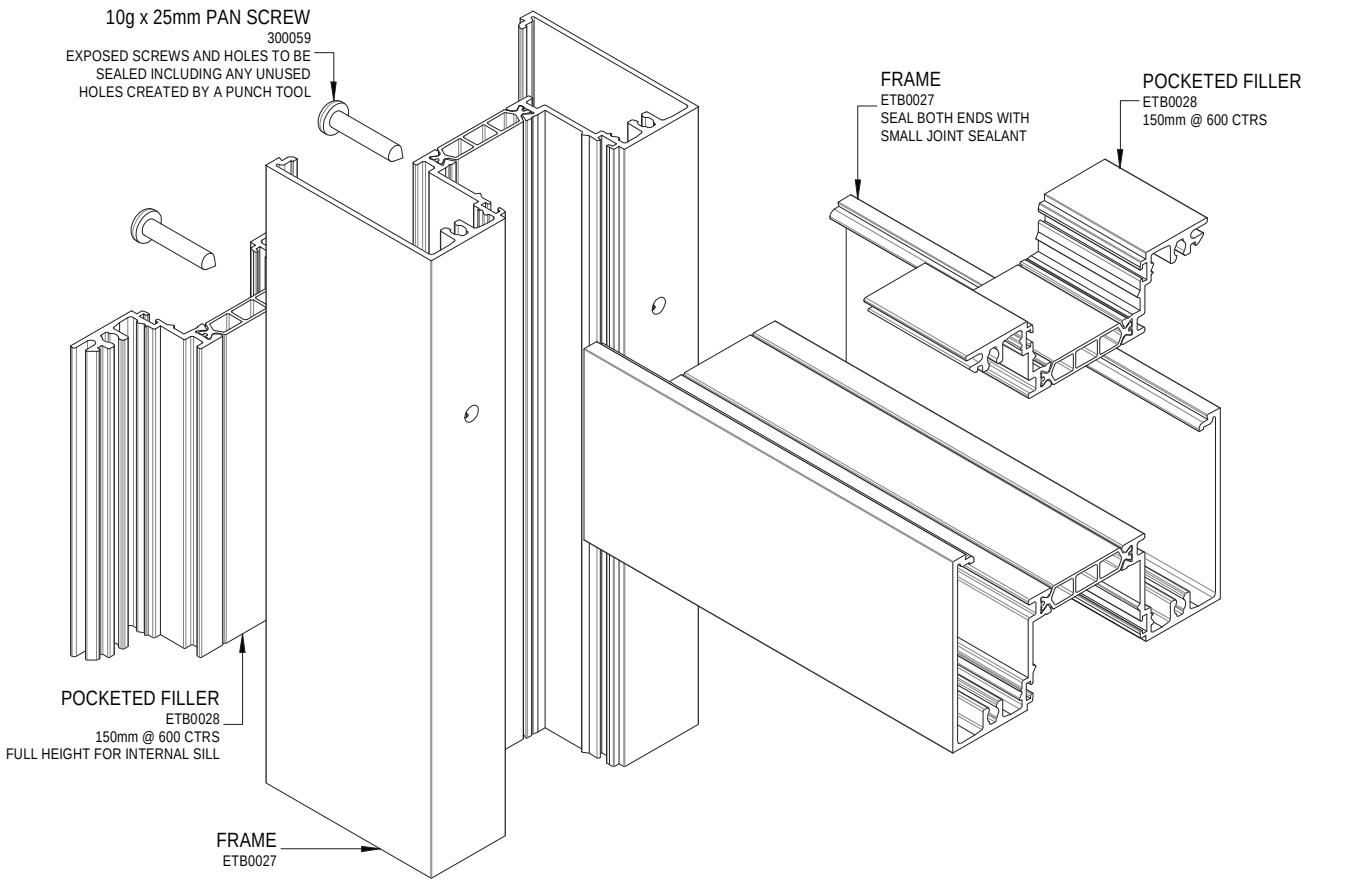
For additional installation details refer to Renson technical documentation.
Email: australia@renson.net Web: www.renson.eu

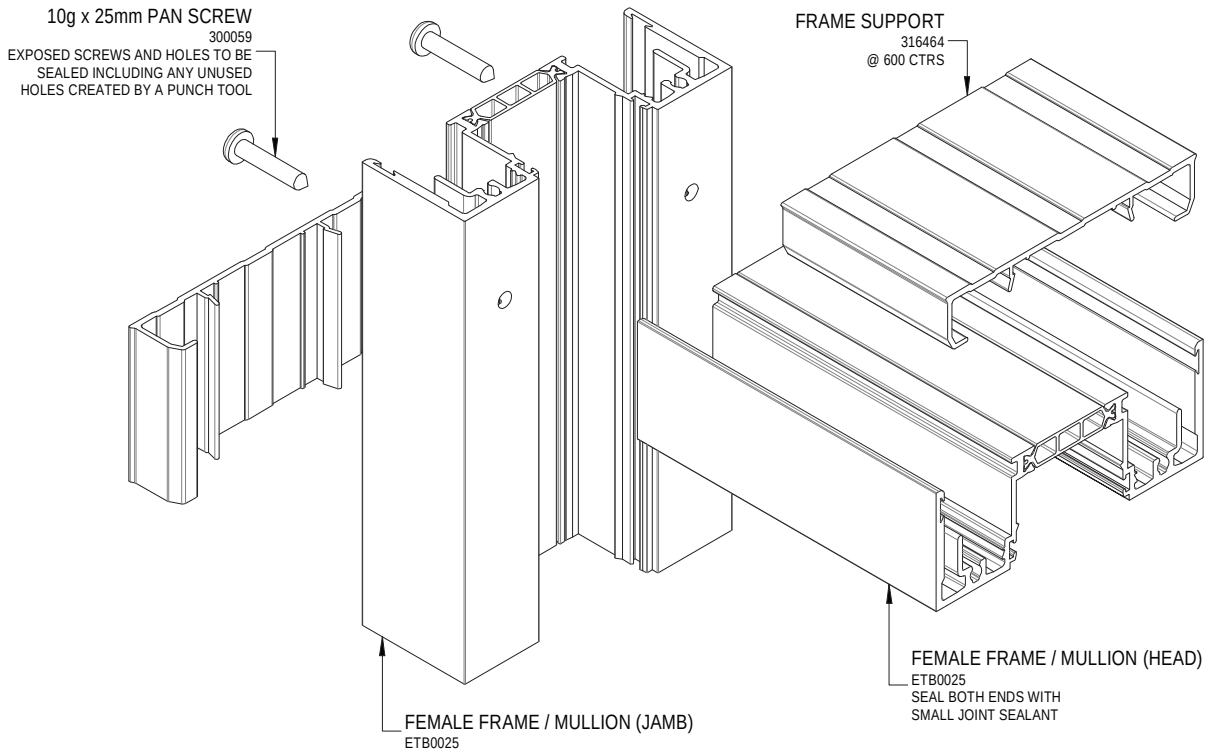
futureline THERMAL ARCHITECTURAL

Assembly - Heads

Not To Scale

NOTE: ETB0027 & ETB0004 SHOWN AS HEAD, ETB0001 HEAD SIMILAR



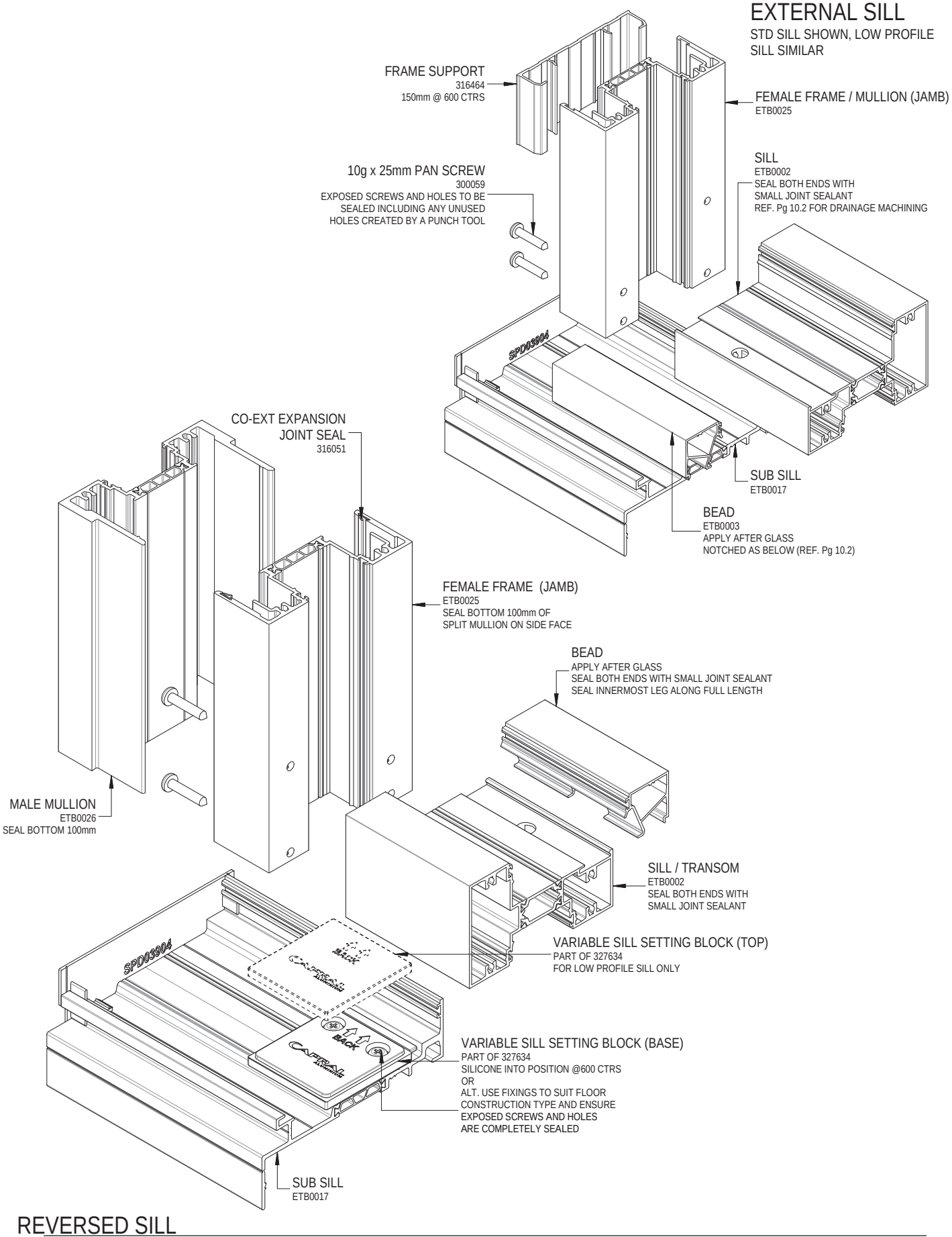


Assembly - Sills

Not To Scale

EXTERNAL SILL

STD SILL SHOWN, LOW PROFILE SILL SIMILAR



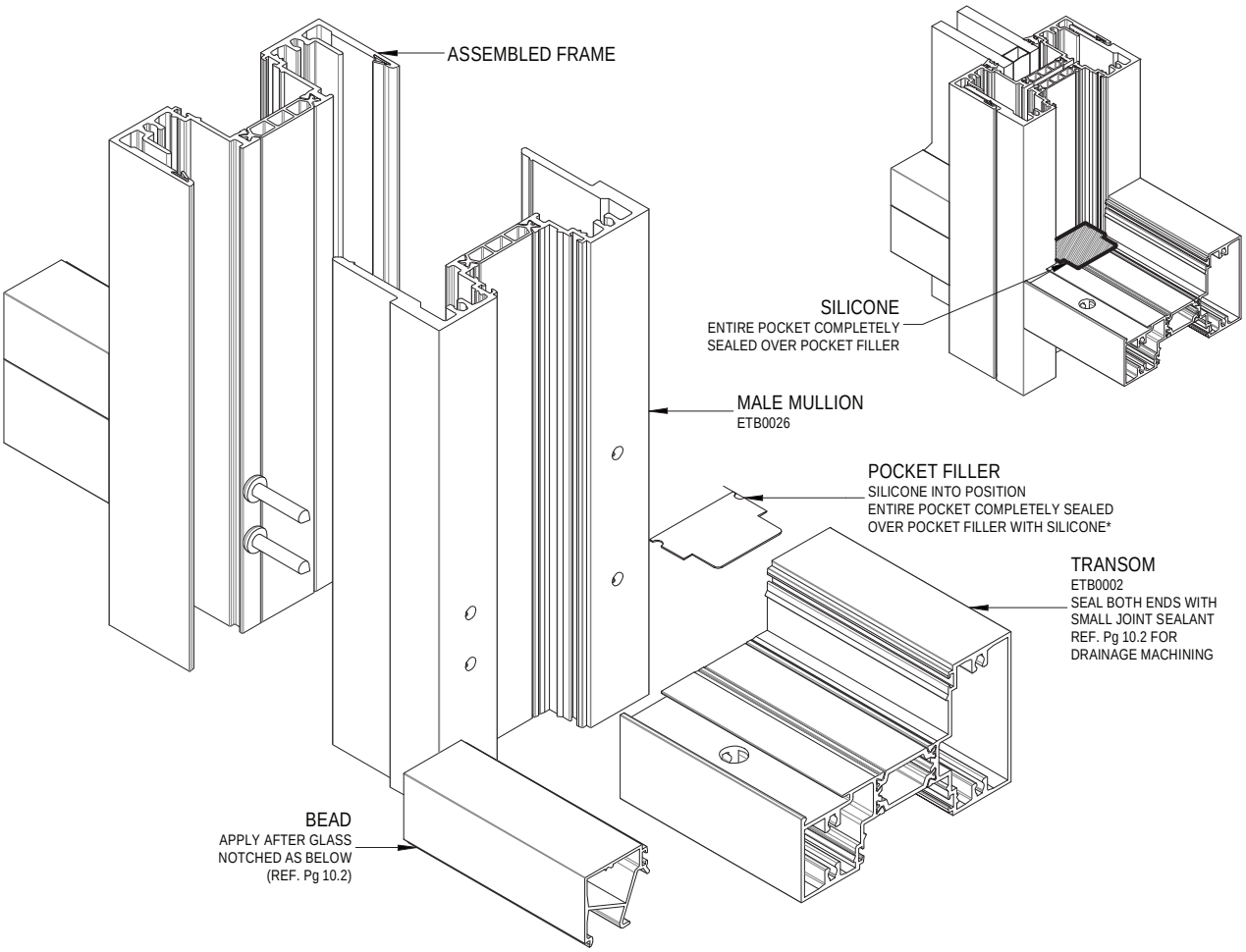
REVERSED SILL

NOT POSSIBLE WITH LOW PROFILE SILL

Please read in conjunction with Important Conditions - Index (also available on Capral website)

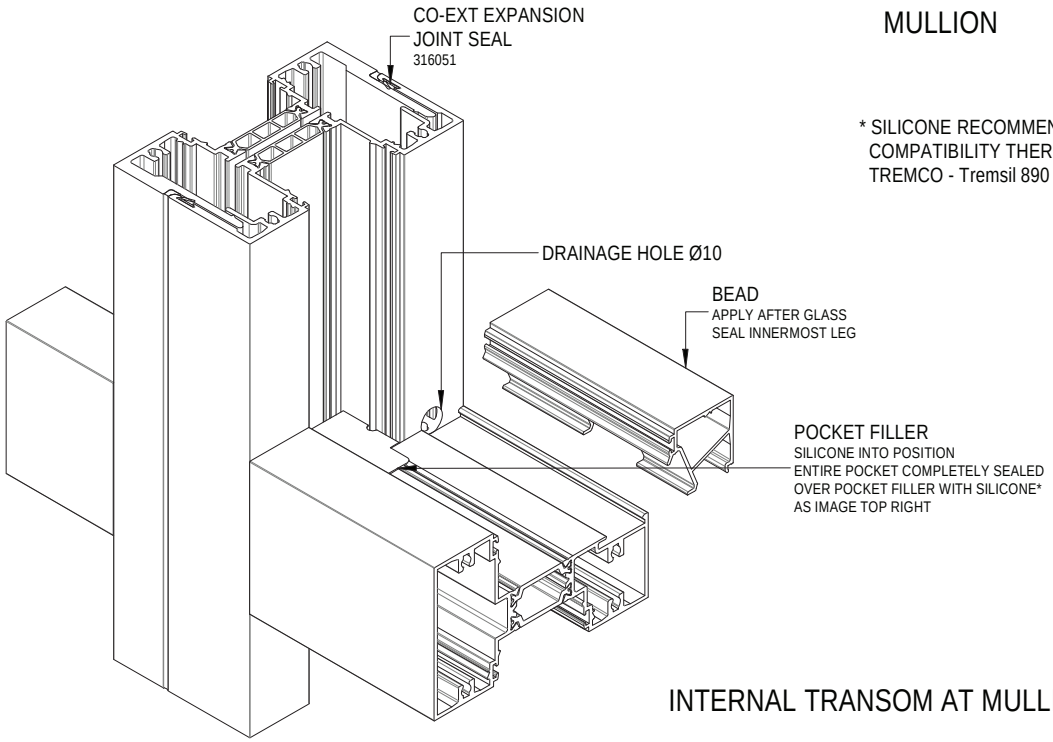
Assembly - Transom

Not To Scale



EXTERNAL TRANSOM AT MULLION

* SILICONE RECOMMENDED FOR
COMPATIBILITY THERMAL STRIPS
TREMCO - Tremsil 890 Charcoal, Spectrum 2, Proglaze 11

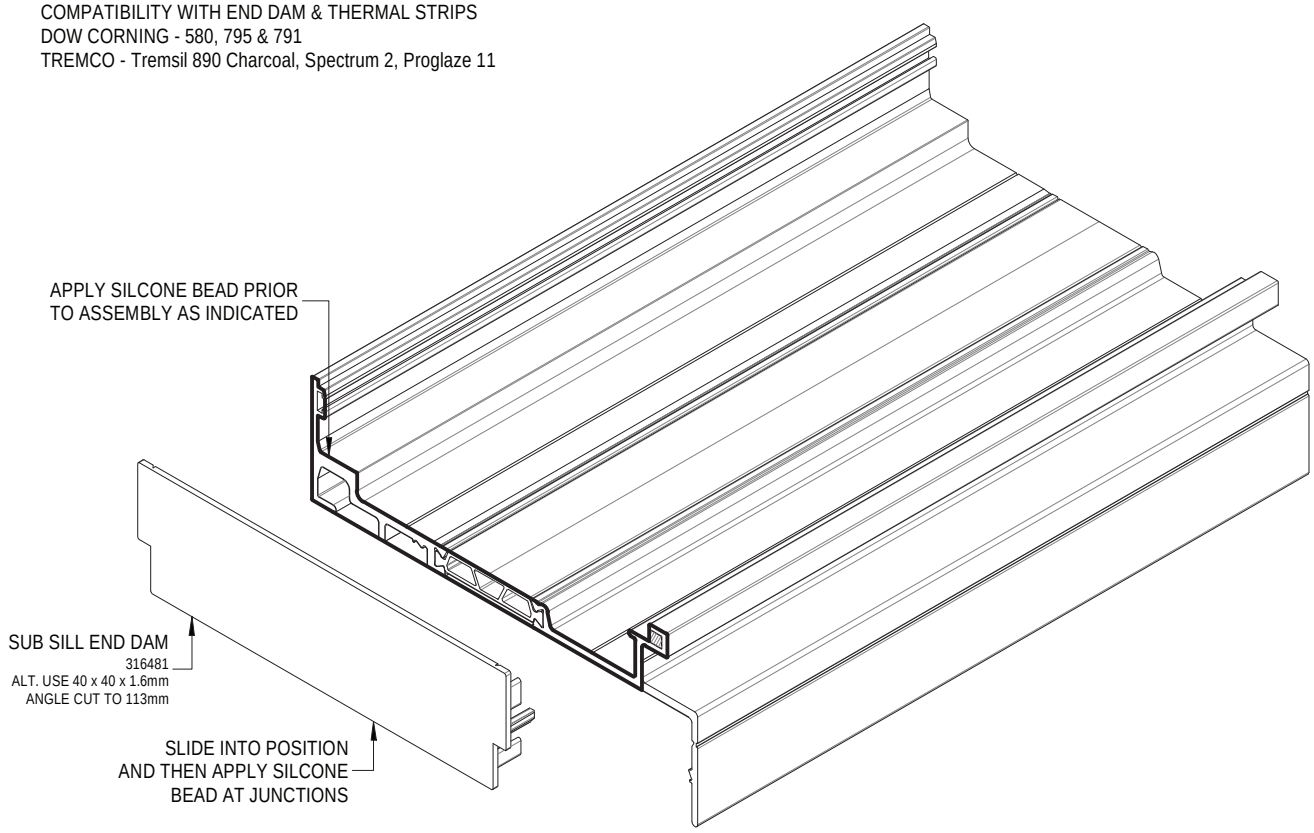


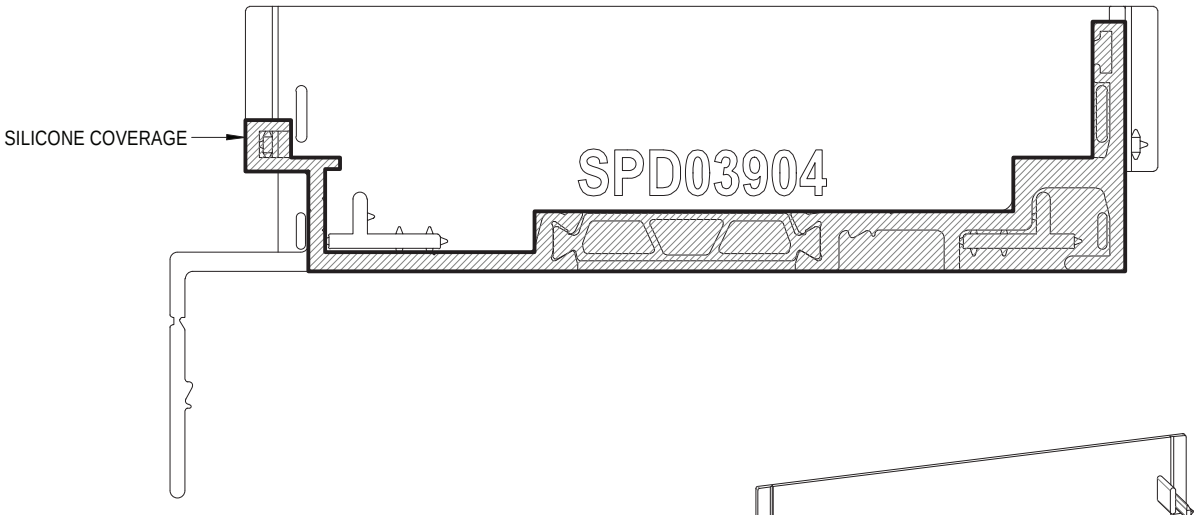
INTERNAL TRANSOM AT MULLION

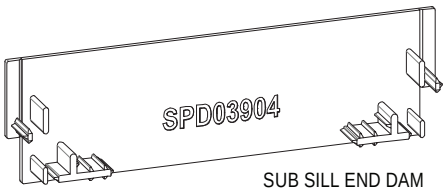
Assembly - Sub Sill End Dam

Not To Scale

SILICONE RECOMMENDED FOR
COMPATIBILITY WITH END DAM & THERMAL STRIPS
DOW CORNING - 580, 795 & 791
TREMCO - Tremsil 890 Charcoal, Spectrum 2, Proglaze 11







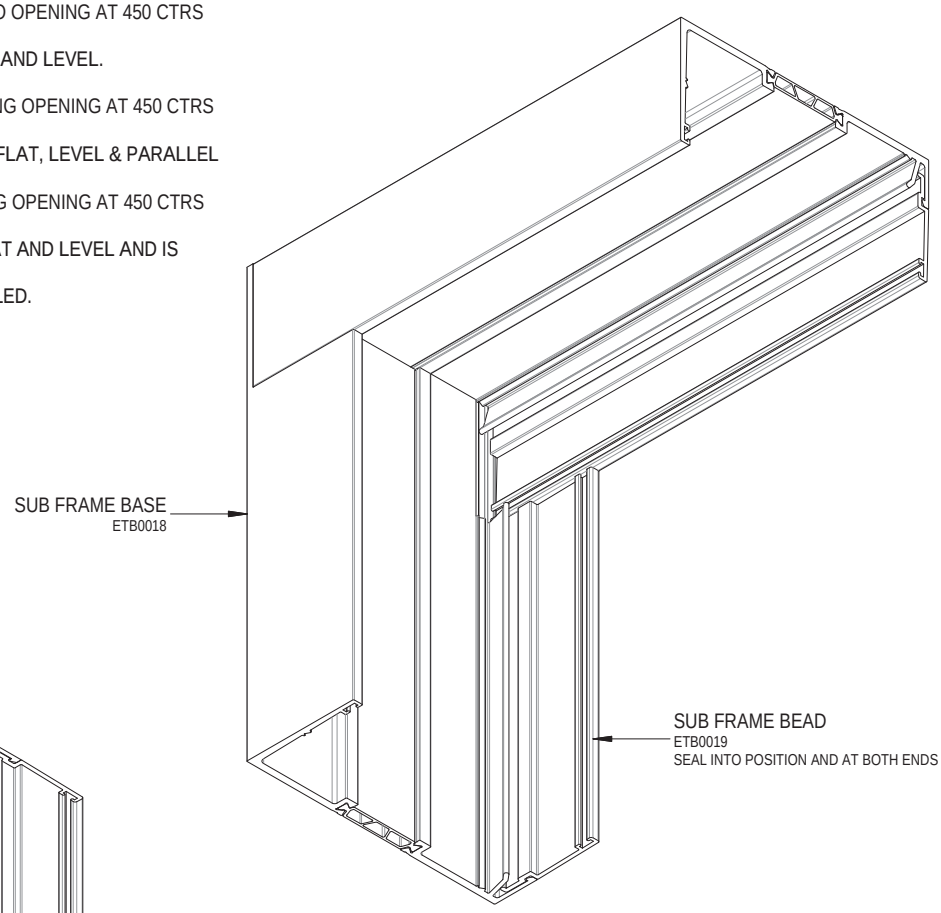
SUB SILL END DAM
316481
ALT. USE 32 x 32 x 1.6mm
ANGLE CUT TO 112mm

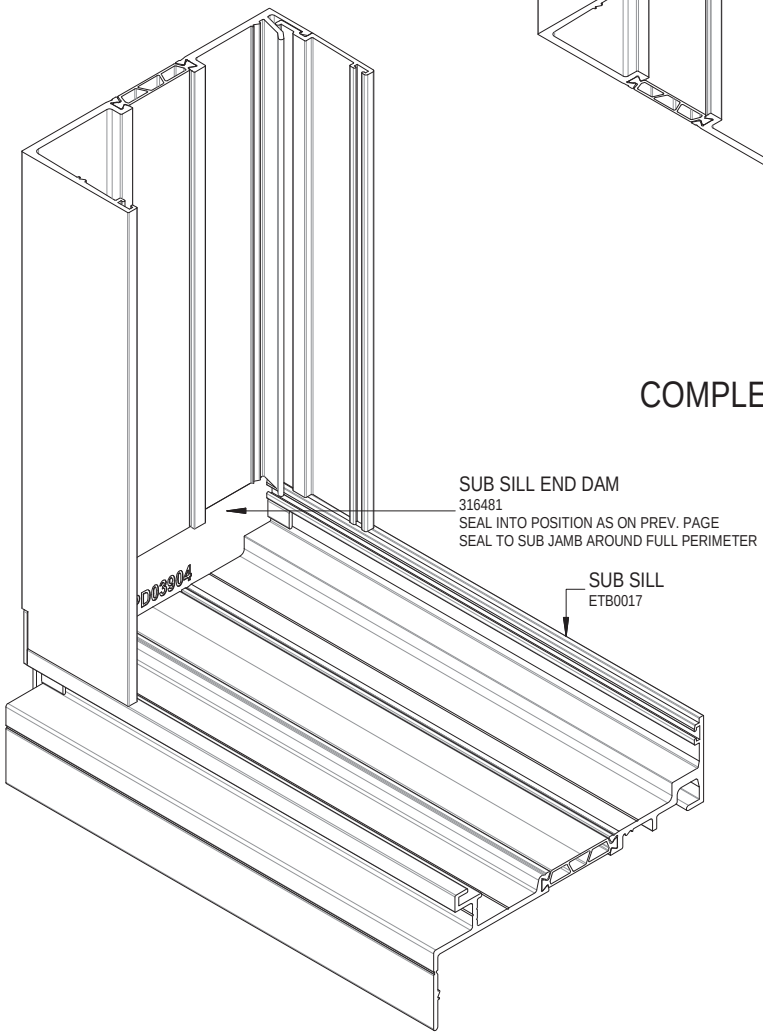
futureline® THERMAL ARCHITECTURAL

Assembly - Sub Frame

Not To Scale

1. FIT PREPARED SUB SILL ASSEMBLY TO OPENING AT 450 CTRS USING APPROPRIATE FIXINGS.
   ENSURE SUBSILL IS INSTALLED FLAT AND LEVEL.
2. FIT PREPARED SUB JAMBS TO BUILDING OPENING AT 450 CTRS USING APPROPRIATE FIXINGS.
   ENSURE SUBJAMBS ARE INSTALLED FLAT, LEVEL & PARALLEL
3. FIT PREPARED SUB HEAD TO BUILDING OPENING AT 450 CTRS USING APPROPRIATE FIXINGS.
   ENSURE SUB HEAD IS INSTALLED FLAT AND LEVEL AND IS PARALLEL TO SUB SILL.
   ENSURE ALL JOINTS ARE FULLY SEALED.



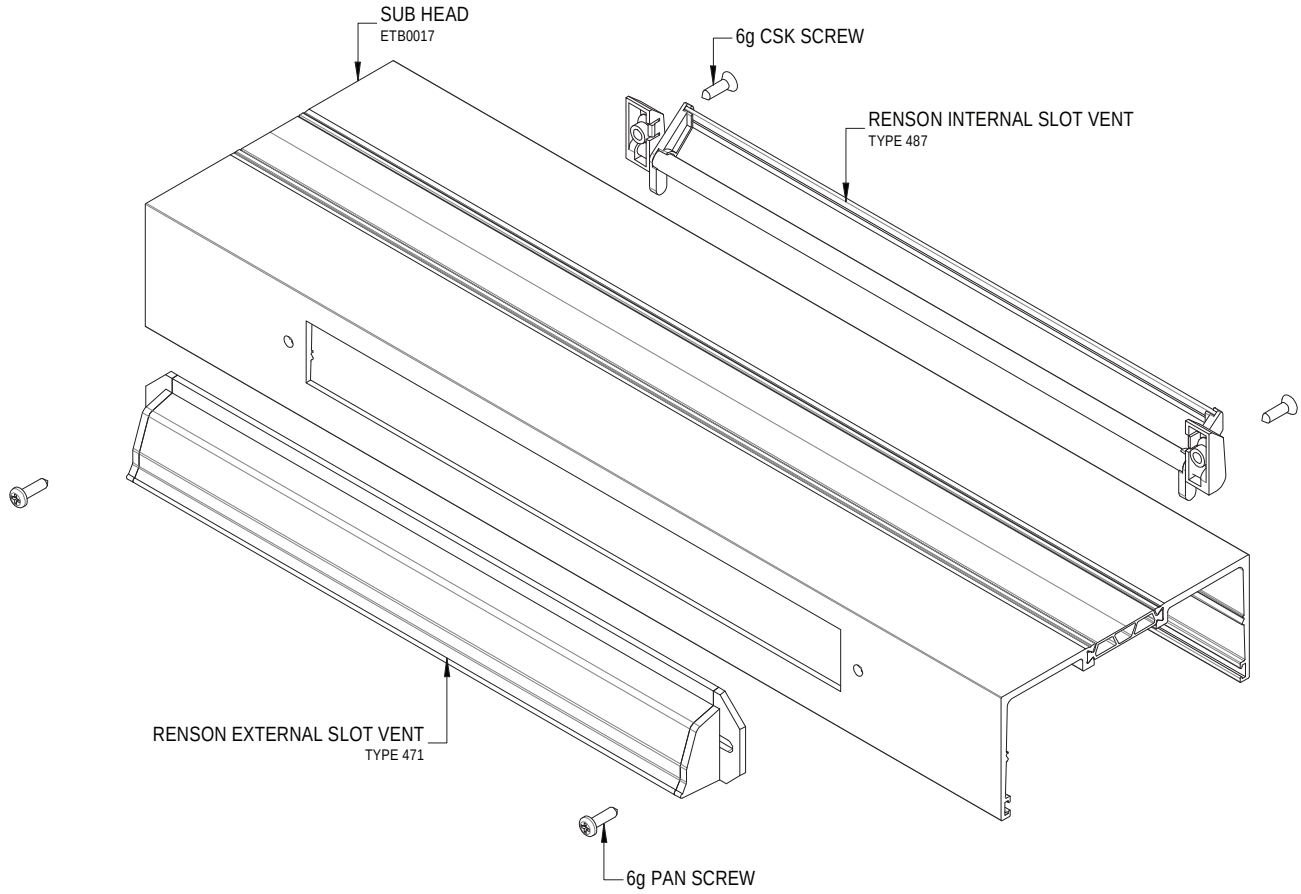


COMPLETELY SEAL ALL JOINTS

Assembly - Renson Trickle Vent

Not To Scale

NOTE: MACHINE SUB HEAD BEFORE INSTALLATION. APPLY VENTS AFTER
INSTALLATION TO AVOID INTERFERENCE OF SCREWS WHEN INSERTING WINDOWS.
NOT COMPATIBLE WITH SUB JAMBS.

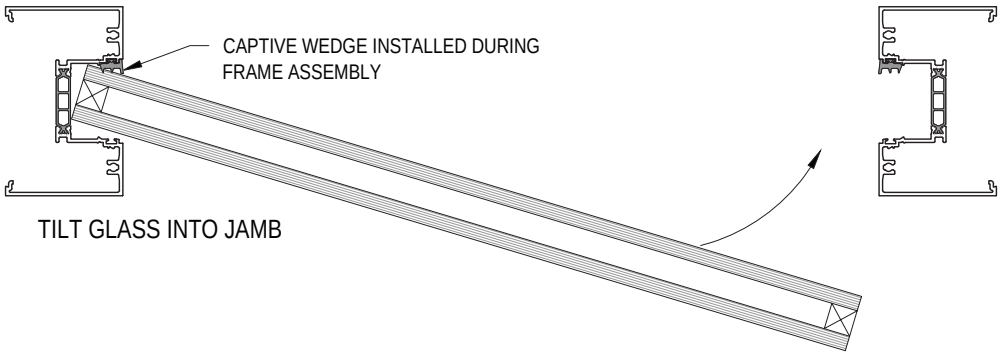


RENSON Creating healthy spaces

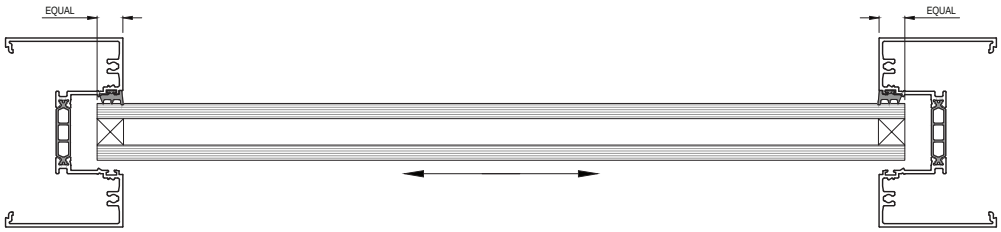
For additional installation details refer to Renson technical documentation.
Email: australia@renson.net Web: www.renson.eu

Assembly - Glazing

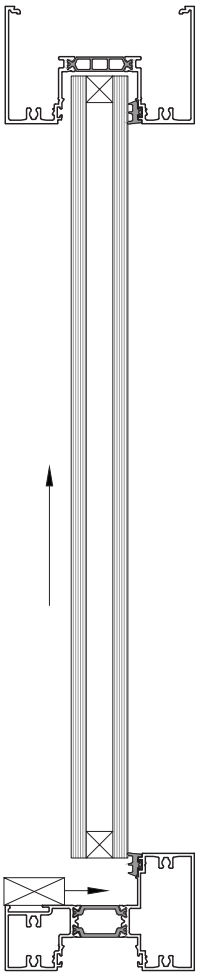
Not To Scale



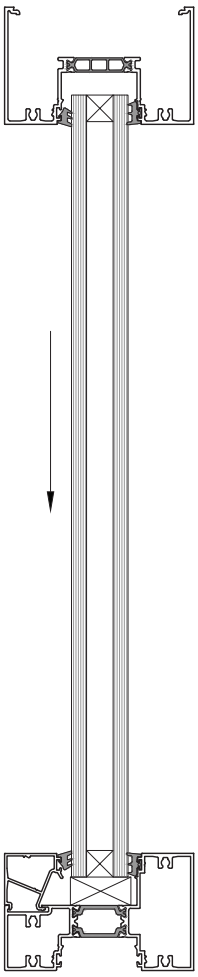
TILT GLASS INTO JAMB



CENTRE GLASS IN JAMBS



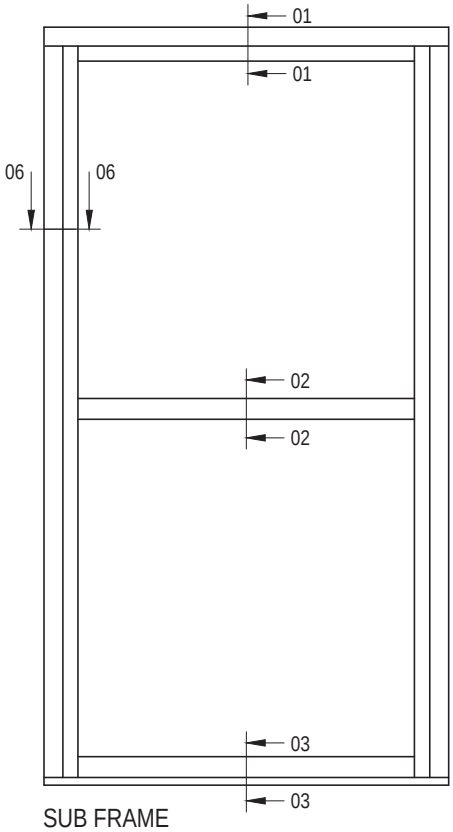
LIFT GLASS INTO HEAD
INSERT SETTING BLOCKS



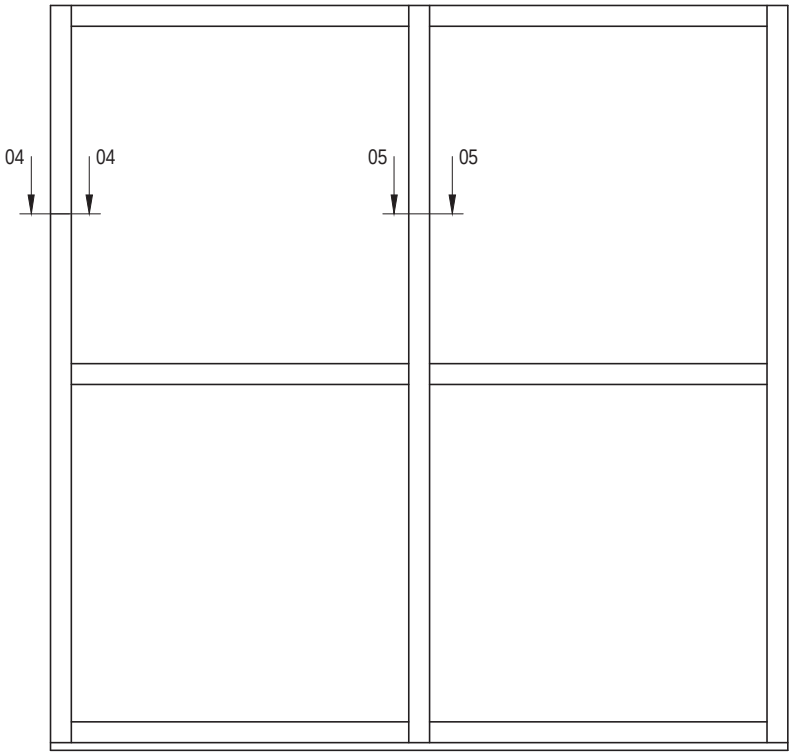
SNAP ON BEAD
ROLL IN GLAZING WEDGE/S

Configurations

Not To Scale



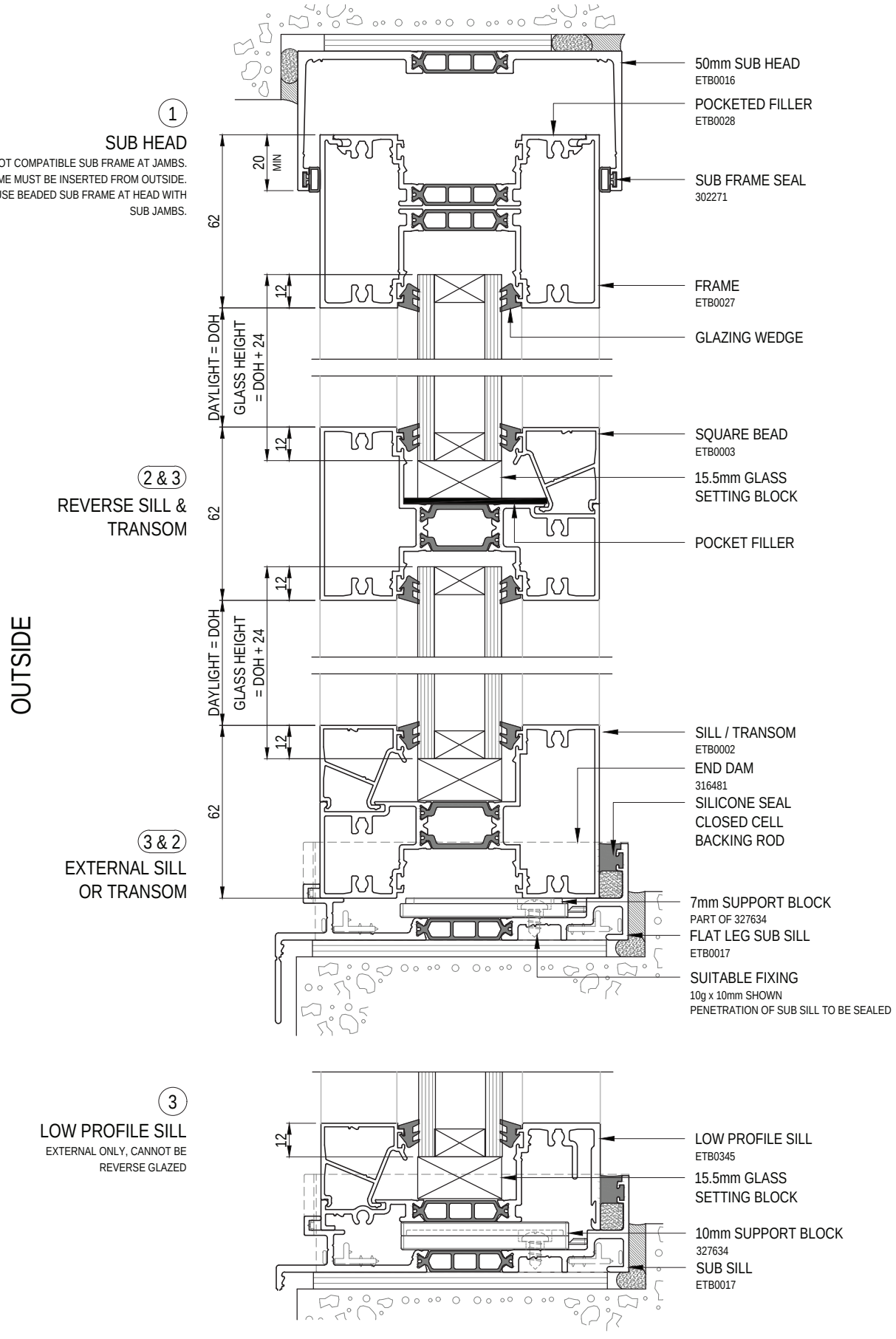
SUB FRAME



SUB SILL ONLY FRAME

Vertical Arrangement 01, 02 & 03 - Head, Transoms & Sill

Scale 1:2

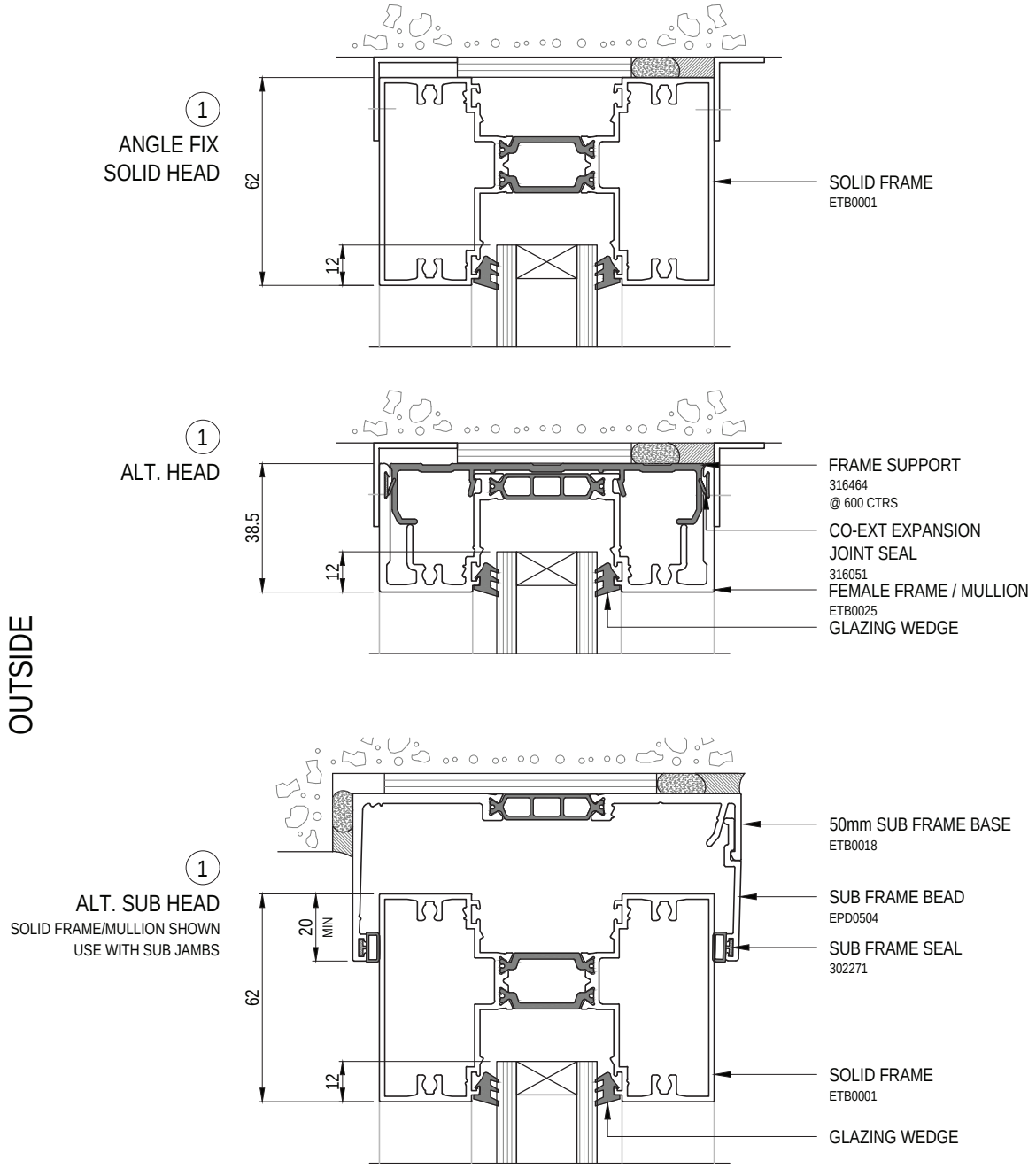


Please read in conjunction with Important Conditions – Index (also available on Capral website)

Vertical Arrangement 01 - Alternative Heads - Slab Set-Down

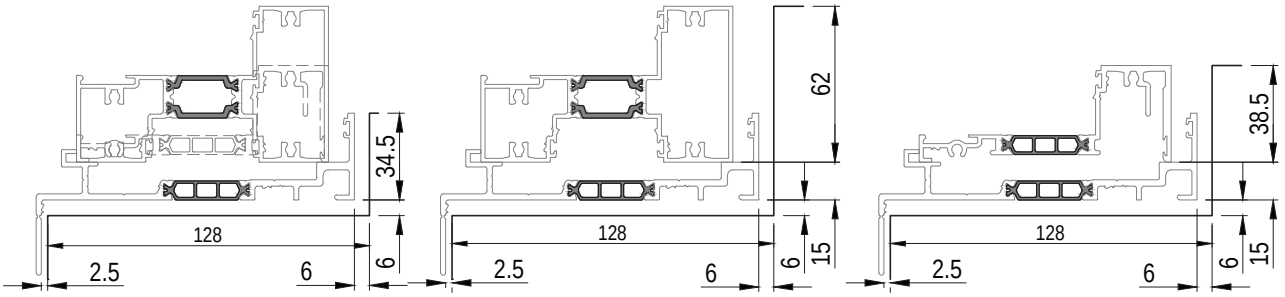
Scale 1:2

OUTSIDE



SUGGESTED SLAB SET-DOWN FOR FRAME EMBEDMENT

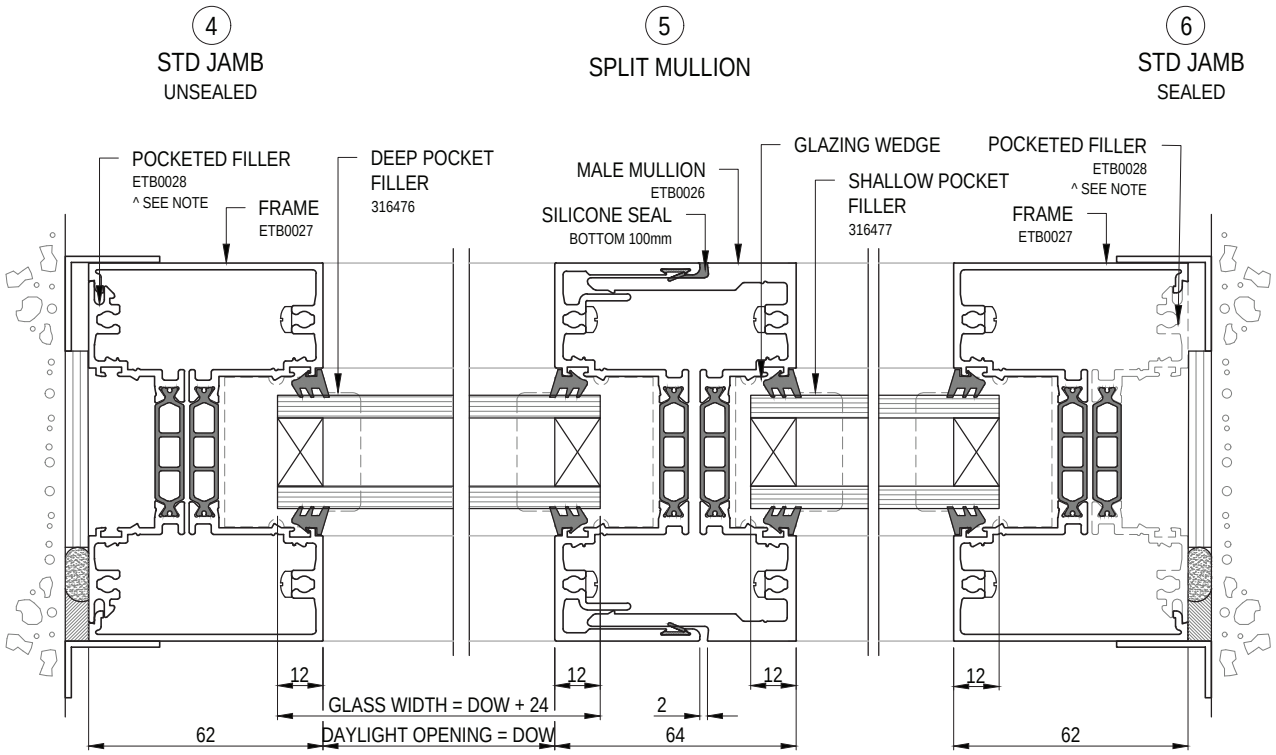
REBATE SHOWN ASSUMES A PACKING ALLOWANCE OF 6mm MAX



Horizontal Arrangement 04 to 07 - Std Jambs & Mullions

Scale 1:2

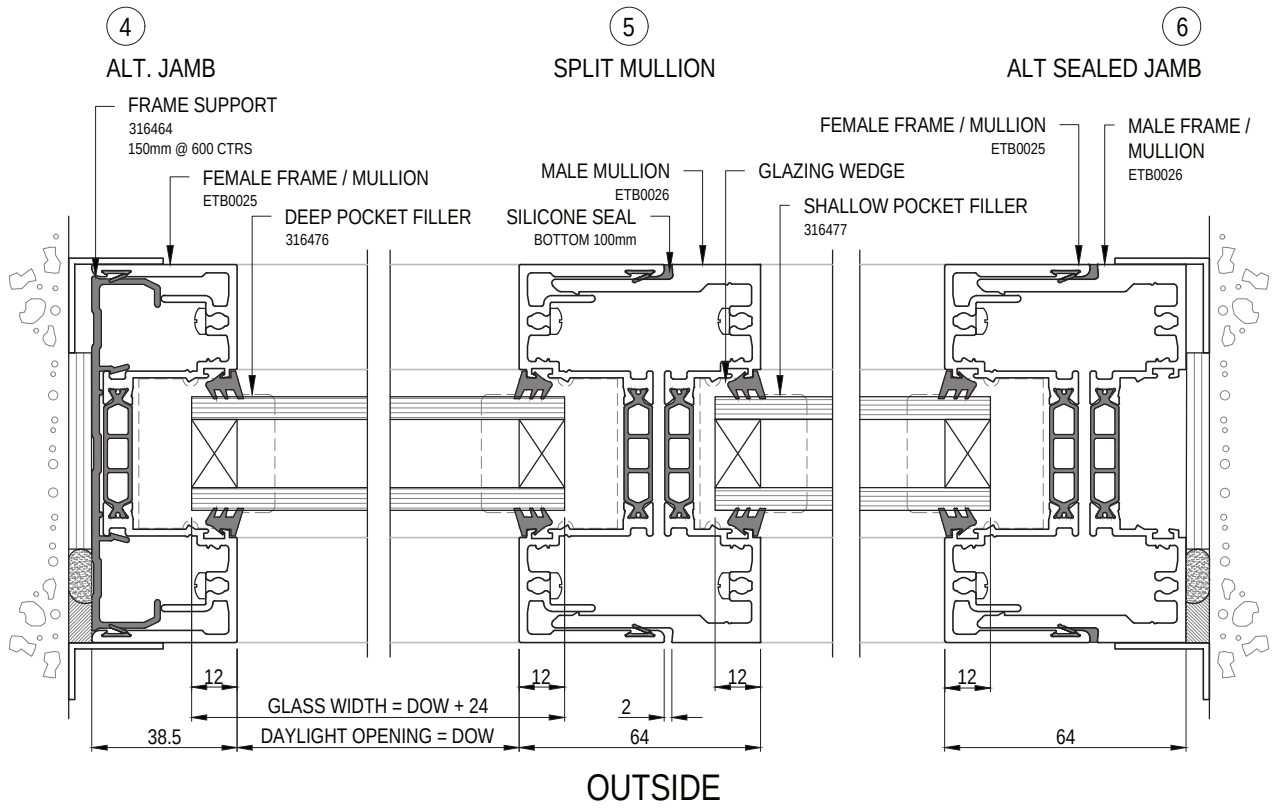
^150mm @ 600 CTRS WHEN FORWARD DRAINAGE IS USED. FULL HEIGHT WITH SIDE DRAINAGE. REF. SEC 6 FOR DETAILS
ENTIRE POCKET COMPLETELY SEALED OVER POCKET FILLER WITH SILICONE AT TRANSOMS

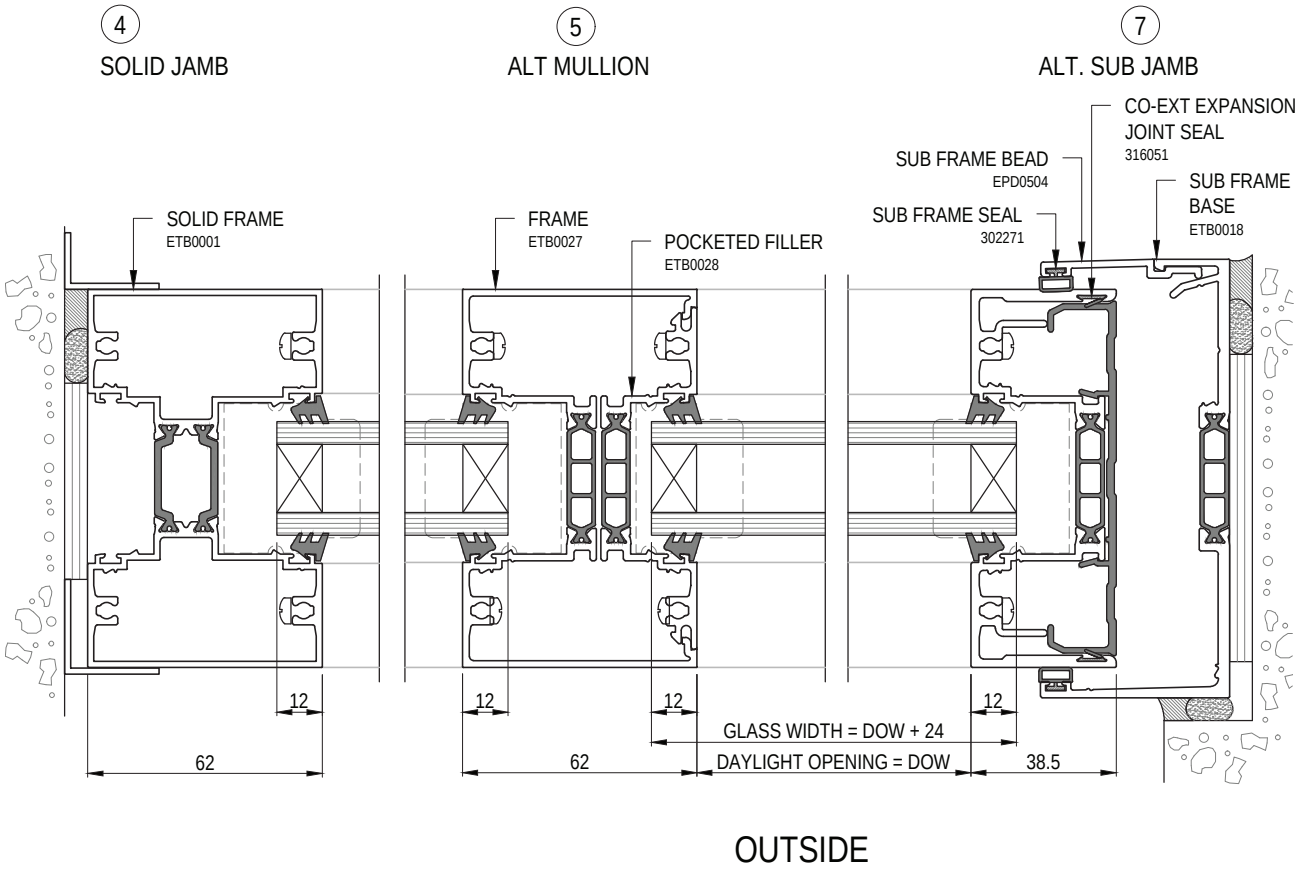


OUTSIDE

Horizontal Arrangement 04 to 07 - Alt. Jambs & Mullions

Scale 1:2

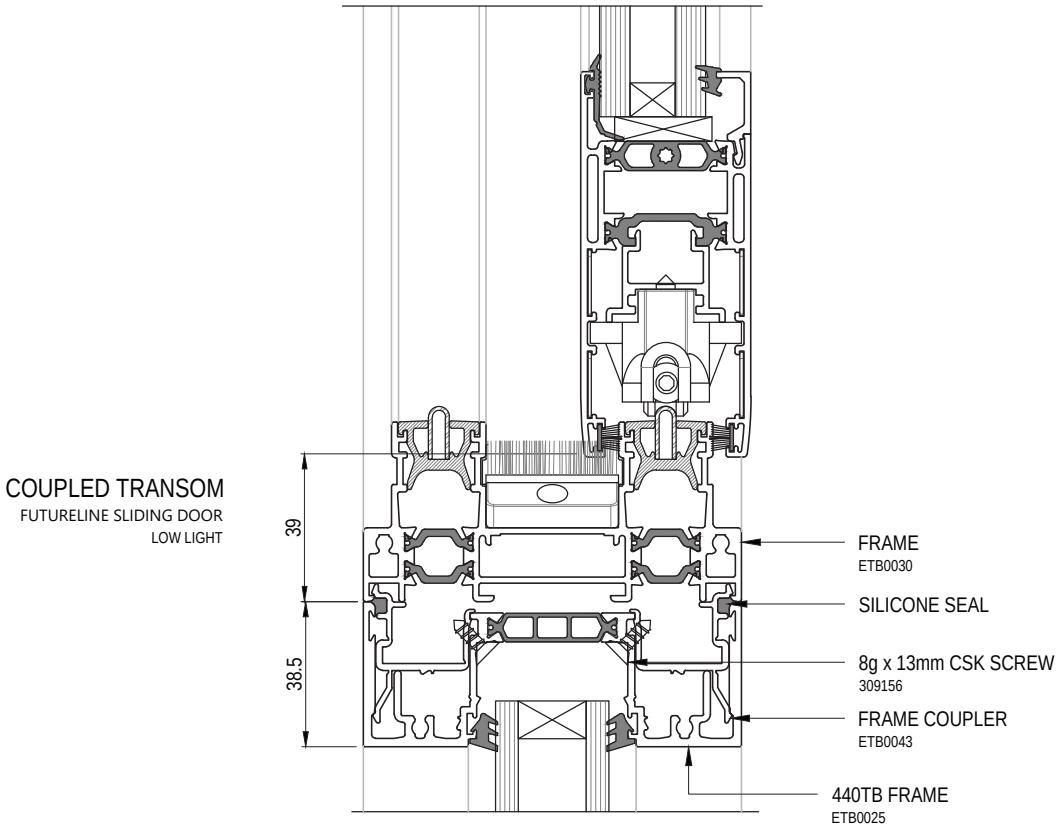


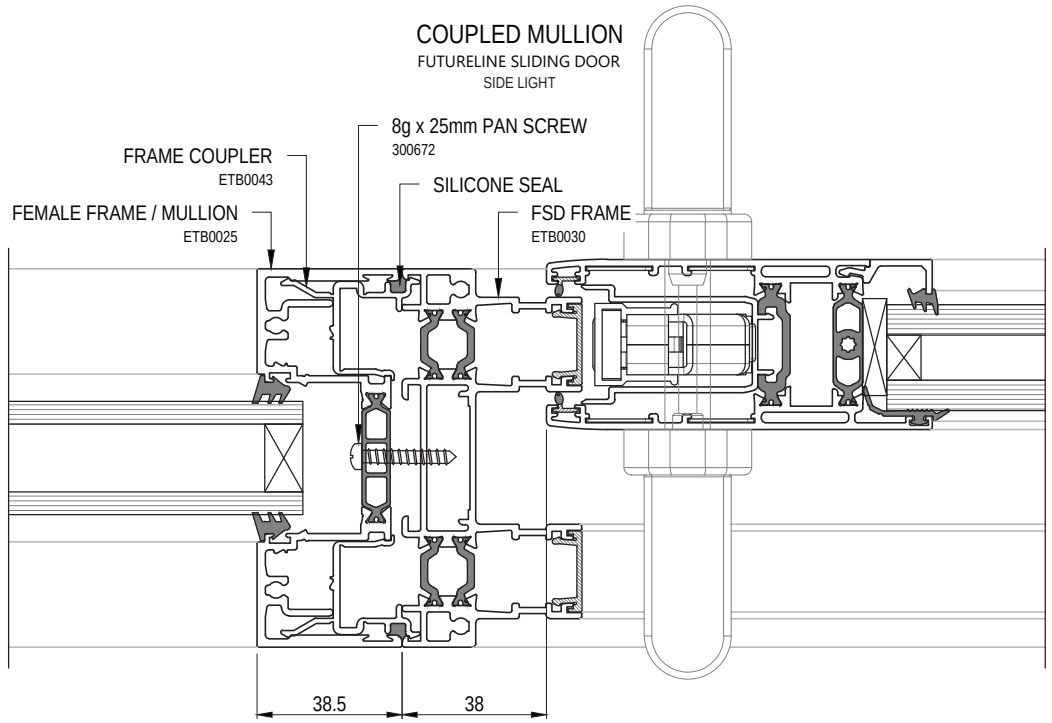


Arrangements - Frame Coupler

Scale 1:2

NOTE: TRANSOM DRAINAGE MUST BE USED FOR LOW LIGHTS
REFER TO FUTURELINE SLIDING DOORS & WINDOW TECHNICAL MANUAL FOR FURTHER INFORMATION

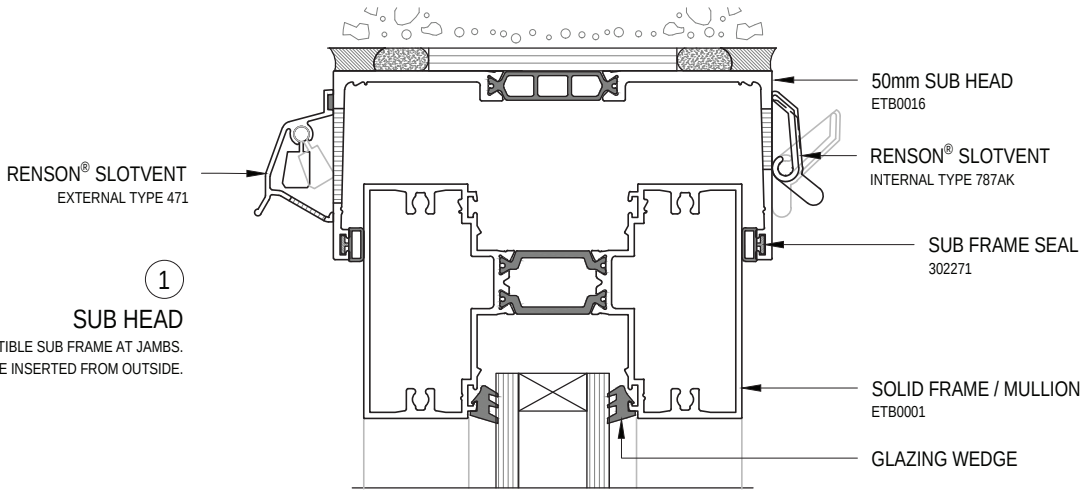




OUTSIDE

Vertical Arrangement 01 - Heads with Renson Trickle Vents

Scale 1:2

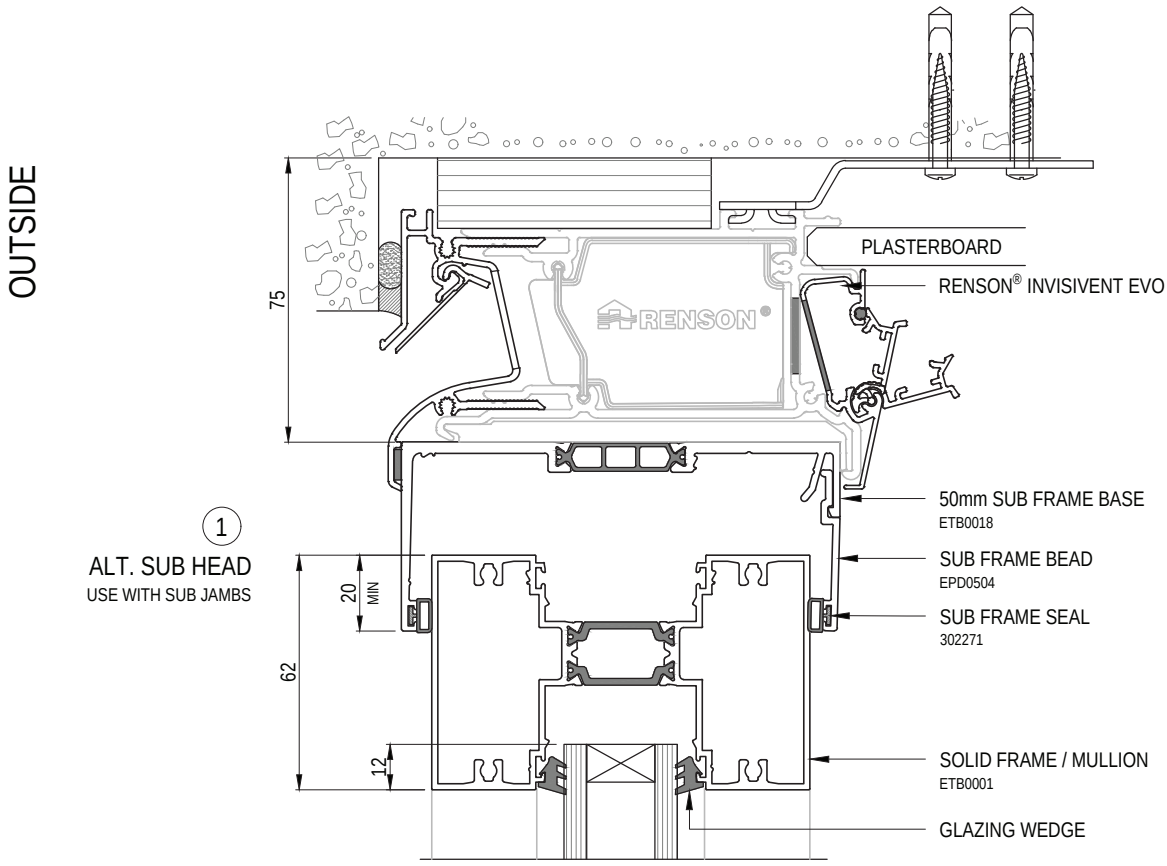


1

SUB HEAD

NOT COMPATIBLE SUB FRAME AT JAMBS.
FRAME MUST BE INSERTED FROM OUTSIDE.

"RENSON®" INTERNAL SLOTVENT MODEL 787AK
"RENSON®" EXTERNAL SLOTVENT MODEL 471



1

ALT. SUB HEAD

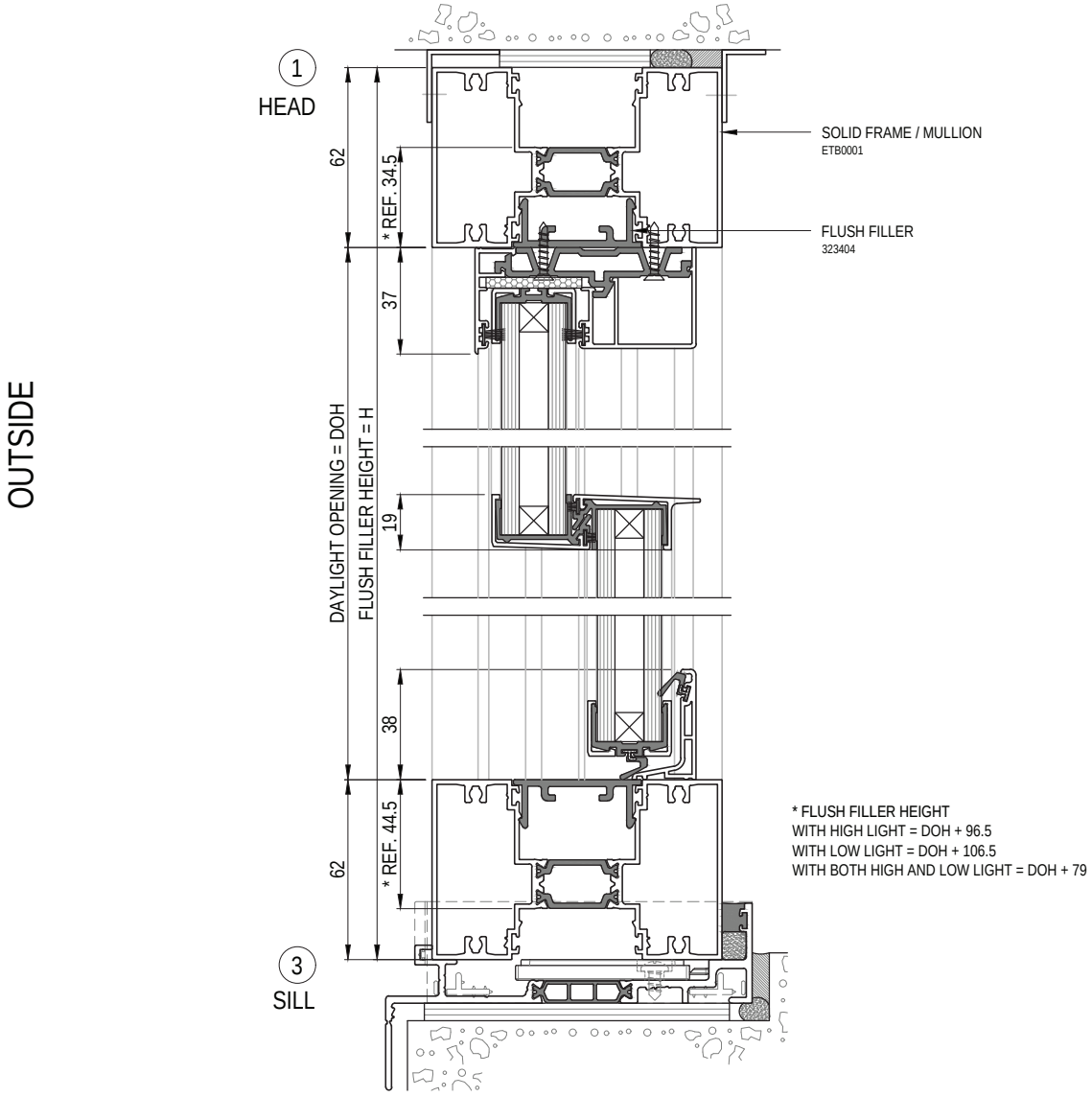
USE WITH SUB JAMBS

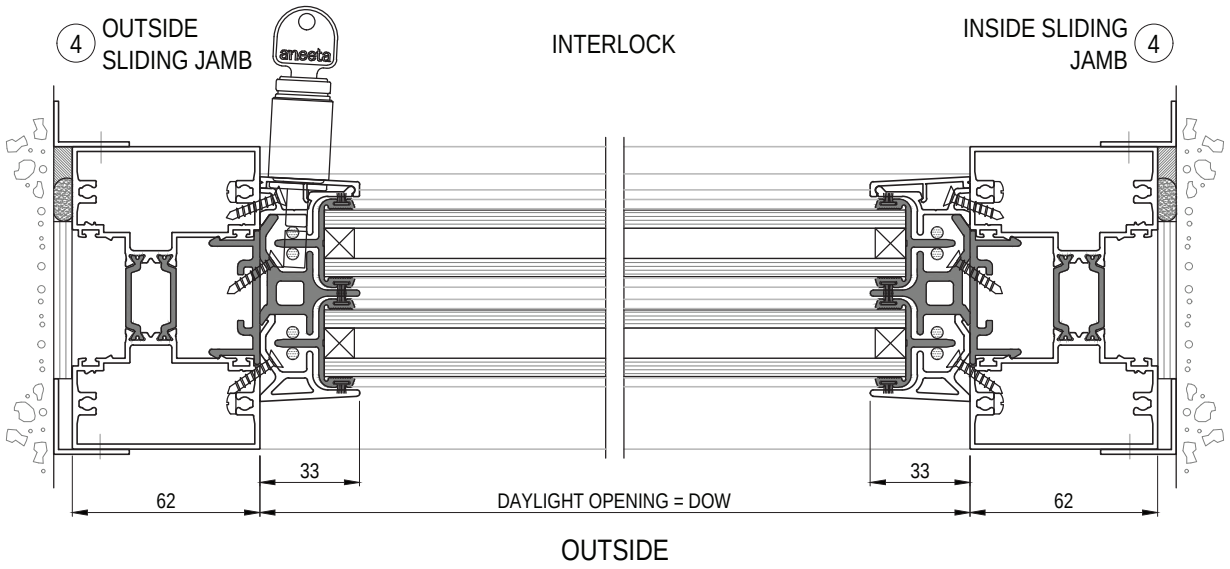
RENSON® INVISIVENT EVO MODEL 110mm – 124mm ADJUSTED TO 116mm TO SUIT 100mm SUB FRAME.
A FULL RANGE OF RENSON® INVISIVENT EVO PRODUCTS ARE AVAILABLE FOR IMPROVED ACOUSTIC OR FLOW CHARACTERISTICS, PLEASE CONSULT RENSON® WITH YOUR EXACT REQUIREMENTS.

For additional installation details refer to Renson technical documentation.
Email: australia@renson.net Web: www.renson.eu

Arrangement 01, 03 & 04 - 100mm Vertical Sliding Window

Scale 1:2.5

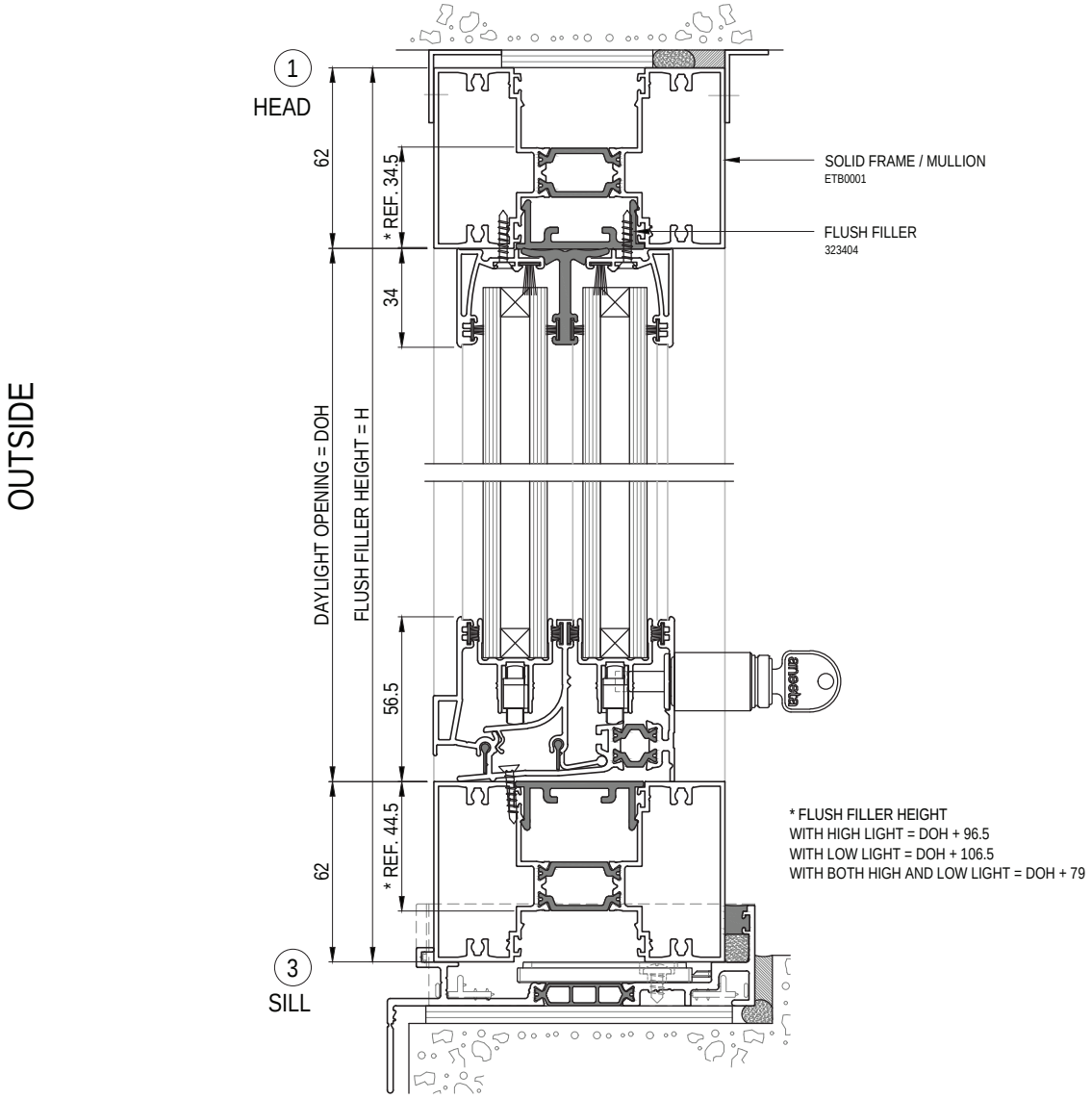


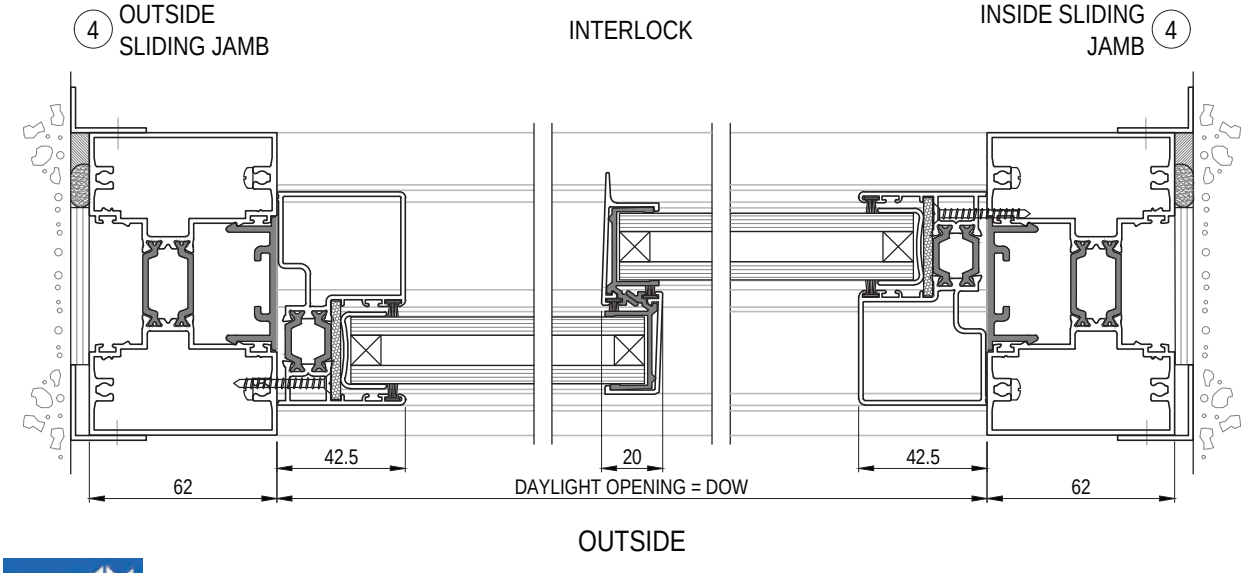


FUTURELINE VERTICAL SLIDER INDICATED.
For Ordering contact Aneeta Windows with nominated DOH & DOW
Phone: 1800 653 207 Web: www.aneetawindows.com.au/contact.asp

Arrangement 01, 03 & 04 - 100mm Horizontal Sliding Window

Scale 1:2.5





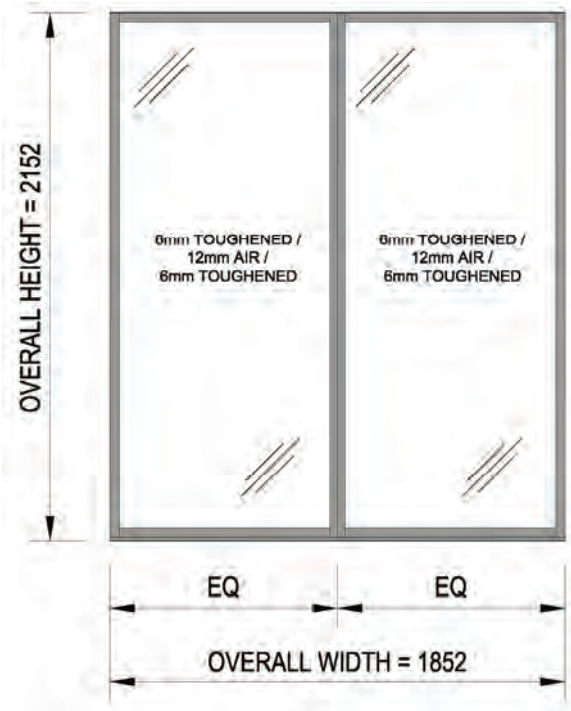
FUTURELINE HORIZONTAL SLIDER INDICATED.
For Ordering contact Aneeta Windows with nominated DOH & DOW
Phone: 1800 653 207 Web: www.aneetawindows.com.au/contact.asp

425TB Framing System

Test Report Summary

STRUCTURAL & WATER - TEST REPORT NUMBER: C013-041

Performed by: Capral Mechanical Test Laboratory, Victoria – August, 2013
Test Drawing Number: 31-660



Configuration: F.F
Glass: 6mm Toughened / 12mm Air / 6mm Toughened Glass
Bead / Glazing: External Bead / Glazing Wedge

Approved to Standard: AS4420-1996 (as called up by AS2047-1999)
Assessed to Standard: AS4420-2016 (as called up by AS2047-2014)

DEFLECTION TEST RESULTS:

	+ Test Pressure	- Test Pressure
Split Mullion: ETB0004 (*ETB0025*) / ETB0005 (*ETB0026*) (2077mm Span)	4531Pa @ L/151 *2706Pa @ L/281*	4520Pa @ L/182 *2713Pa @ L/326*

AIR INFILTRATION RESULTS:

0.05 L/s.m^2 at 75Pa Positive Test Pressure
0.01 L/s.m^2 at 75Pa Negative Test Pressure

Achieved Air Conditioned Rating

WATER PENETRATION RESULTS:

Sill: ETB0017 / ETB0002 / ETB0003

909Pa Pressure for a period of 15mins

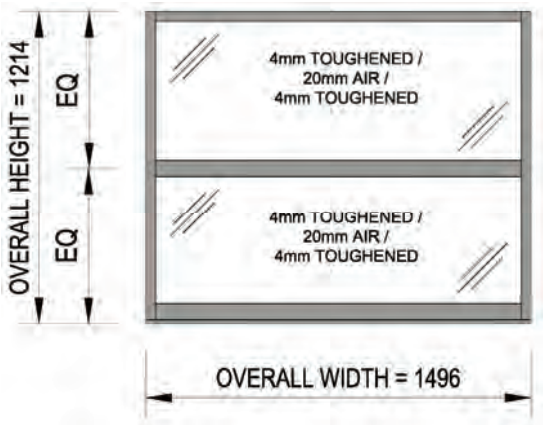
ULTIMATE STRENGTH RESULTS:

+ Test Pressure	- Test Pressure
7492Pa	7474Pa

Test Report Summary

STRUCTURAL & WATER - TEST REPORT NUMBER: C013-065

Performed by: Capral Mechanical Test Laboratory, Victoria – October, 2013
Test Drawing Number: 31-690



Configuration: F / F
Glass: 4mm Toughened / 20mm Air / 4mm Toughened Glass
Bead / Glazing: External Bead / Captive Glazing Wedge, Glazing Wedge

Approved to Standard: AS4420-1996 (as called up by AS2047-1999)
Assessed to Standard: AS4420-2016 (as called up by AS2047-2014)

DEFLECTION TEST RESULTS:

	+ Test Pressure	- Test Pressure
Fixed Light Transom: ETB0002 (1400mm Span)	4506Pa @ L/188 *3625Pa @ L/323*	4508Pa @ L/172 *3601Pa @ L/250*

AIR INFILTRATION RESULTS:

0.52 L/s.m^2 at 75Pa Positive Test Pressure
0.32 L/s.m^2 at 75Pa Negative Test Pressure

Achieved Air Conditioned Rating

WATER PENETRATION RESULTS:

Sill: ETB0017 / ETB0002 / ETB0003

906Pa Pressure for a period of 15mins

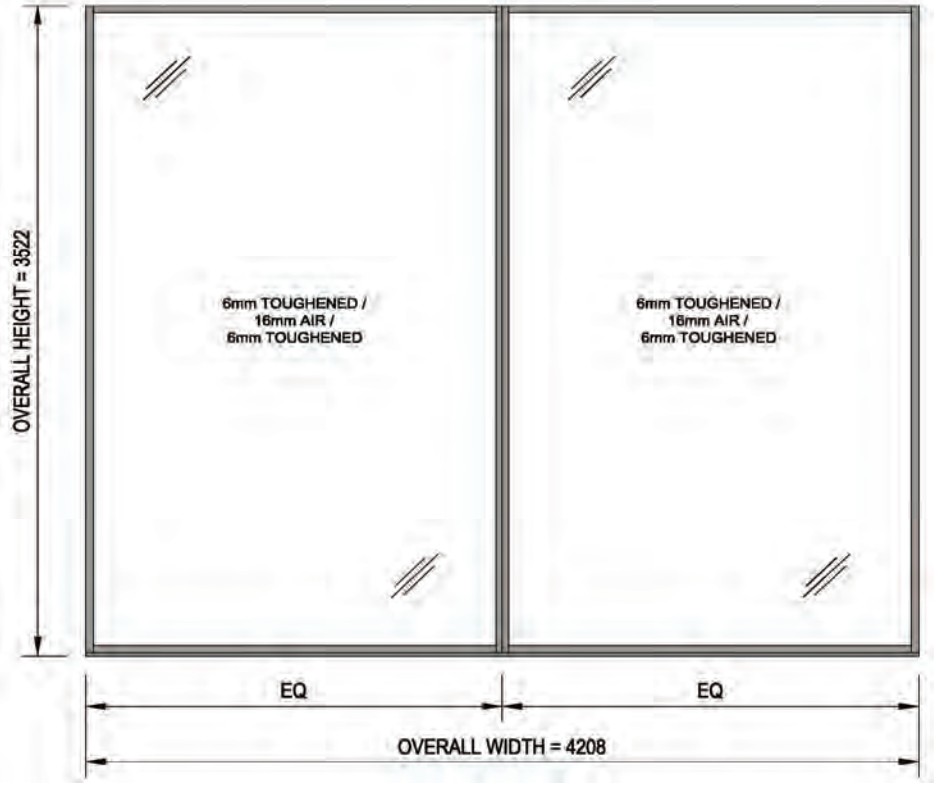
ULTIMATE STRENGTH RESULTS:

+ Test Pressure	- Test Pressure
8560Pa	8530Pa

Test Report Summary

STRUCTURAL & WATER - TEST REPORT NUMBER: C013-073

Performed by: Capral Mechanical Test Laboratory, Victoria – November, 2013
Test Drawing Number: 31-699



Configuration: F.F
Glass: 6mm Toughened / 16mm Air / 6mm Toughened Glass
Bead / Glazing: External Bead / Captive Glazing Wedge, Glazing Wedge

Approved to Standard: AS4420-1996 (as called up by AS2047-1999)
Assessed to Standard: AS4420-2016 (as called up by AS2047-2014)

DEFLECTION TEST RESULTS:

	+ Test Pressure	- Test Pressure
Split Mullion: ETB0004 (*ETB0025*) / ETB0005 (*ETB0026*) (3439mm Span)	809Pa @ L/155 *401Pa @ L/337*	802Pa @ L/163 *406Pa @ L/344*

AIR INFILTRATION RESULTS:

0.72 L/s.m^2 at 75Pa Positive Test Pressure
0.72 L/s.m^2 at 75Pa Negative Test Pressure

Achieved Air Conditioned Rating

WATER PENETRATION RESULTS:

Sill: ETB0017 / ETB0002 / ETB0003

450Pa Pressure for a period of 15mins

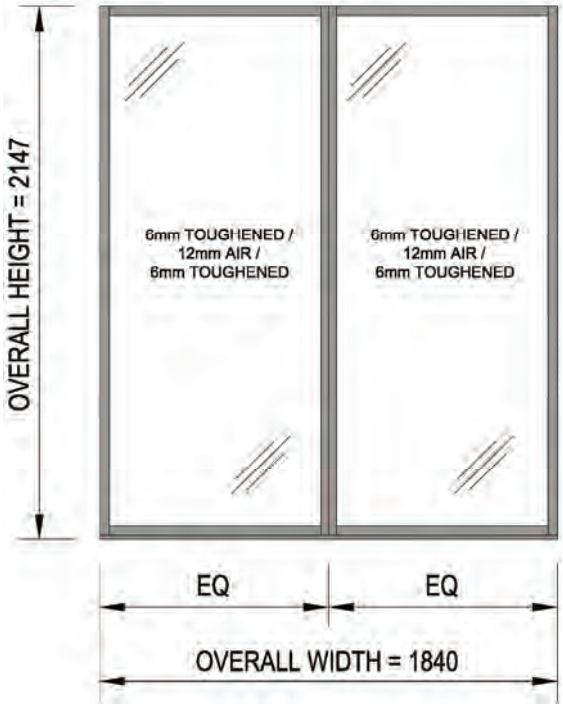
ULTIMATE STRENGTH RESULTS:

+ Test Pressure	- Test Pressure
1408Pa	1408Pa

Test Report Summary

STRUCTURAL & WATER - TEST REPORT NUMBER: C013-075

Performed by: Capral Mechanical Test Laboratory, Victoria – November, 2013
Test Drawing Number: 31-702



Configuration: F.F
Glass: 6mm Toughened / 12mm Air / 6mm Toughened Glass
Bead / Glazing: Internal Bead / Glazing Wedge, Glazing Wedge

Approved to Standard: AS4420-1996 (as called up by AS2047-1999)
Assessed to Standard: AS4420-2016 (as called up by AS2047-2014)

DEFLECTION TEST RESULTS:

	+ Test Pressure	- Test Pressure
Split Mullion: ETB0004 (*ETB0025*) / ETB0005 (*ETB0026*) (2072mm Span)	3614Pa @ L/225 *2730Pa @ L/301*	4515Pa @ L/164 *2702Pa @ L/314*

AIR INFILTRATION RESULTS:

0.05 L/s.m^2 at 75Pa Positive Test Pressure
0.03 L/s.m^2 at 75Pa Negative Test Pressure

Achieved Air Conditioned Rating

WATER PENETRATION RESULTS:

Sill: ETB0017 / ETB0002 / ETB0003

913Pa Pressure for a period of 15mins

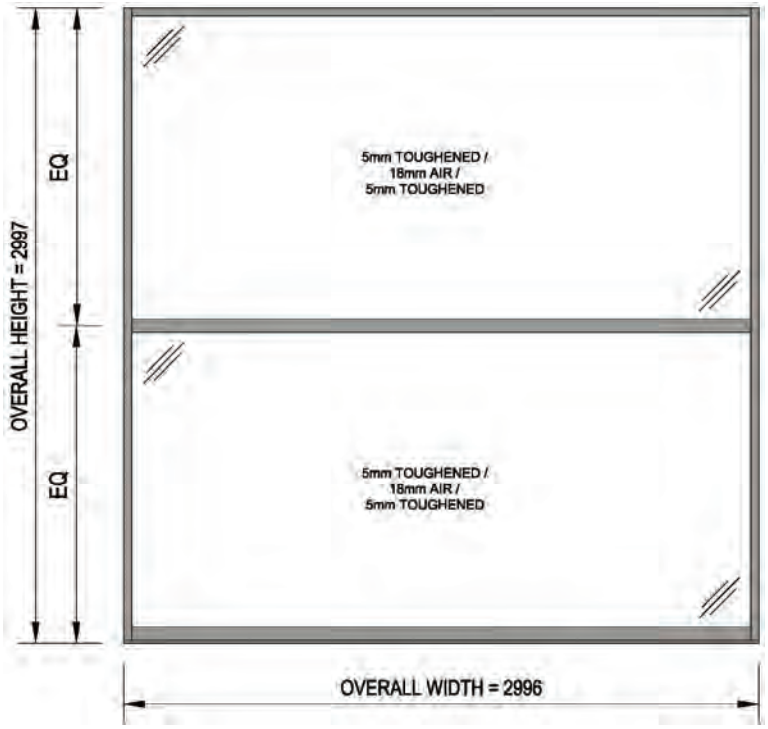
ULTIMATE STRENGTH RESULTS:

+ Test Pressure	- Test Pressure
6575Pa	6575Pa

Test Report Summary

STRUCTURAL & WATER - TEST REPORT NUMBER: C014-053

Performed by: Capral Mechanical Test Laboratory, Victoria – September, 2014
Test Drawing Number: 31-764



Configuration: F / F
Glass: 5mm Toughened / 18mm Air / 5mm Toughened Glass
Bead / Glazing: External Bead / Captive Glazing Wedge, Glazing Wedge

Approved to Standard: AS4420-1996 (as called up by AS2047-1999)
Assessed to Standard: AS4420-2016 (as called up by AS2047-2014)

DEFLECTION TEST RESULTS:

	+ Test Pressure	- Test Pressure
Fixed Light Transom: ETB0002 (2910mm Span)	553Pa@ L/259	554Pa @ L/264
	553Pa@ L/259	*554Pa @ L/264*

AIR INFILTRATION RESULTS:

0.07 L/s.m^2 at 75Pa Positive Test Pressure	Achieved Air Conditioned Rating
0.03 L/s.m^2 at 75Pa Negative Test Pressure	

WATER PENETRATION RESULTS:

Sill: ETB0017 / ETB0002 / ETB0003	202Pa Pressure for a period of 15mins

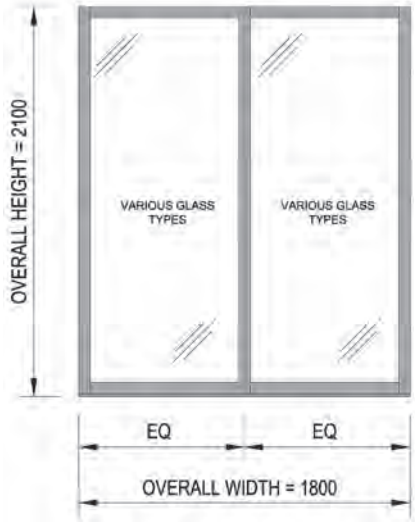
ULTIMATE STRENGTH RESULTS:

+ Test Pressure	- Test Pressure
1122Pa	1115Pa

Test Report Summary

ACOUSTIC

Performed by: CSIRO Acoustic Laboratory, Melbourne – March, 2017



Configuration: F.F

Approved to Standard: AS1191-2002 & AS1276.1-1999

TEST REPORT NUMBER: TL613-07

Test Drawing Number: 31-933

TEST SAMPLE DETAILS:

Glass:	6mm Float Glass / 16mm Argon / 6mm Float Glass
Glazing Wedge:	300003 7mm Gap Glazing Wedge; 315788 5mm Gap Captive Wedge
Frame Seal:	316051 Mullion Seal

SOUND INSULATION RATING:

Rw (C;Ctr):	34 (-1; -4)

TEST REPORT NUMBER: TL613-08

Test Drawing Number: 31-933

TEST SAMPLE DETAILS:

Glass:	6mm Float Glass / 16mm Argon / 6.5mm HUSH Laminate Glass
Glazing Wedge:	300003 7mm Gap Glazing Wedge; 315788 5mm Gap Captive Wedge
Frame Seal:	316051 Mullion Seal

SOUND INSULATION RATING:

Rw (C;Ctr):	41 (-2; -6)

Test Report Summary

TEST REPORT NUMBER: TL613-06

Test Drawing Number: 31-933

TEST SAMPLE DETAILS:

Glass:	6mm Float Glass / 16mm Argon / 10.38mm Laminated Glass
Glazing Wedge:	300013 5mm Gap Glazing Wedge; 315787 3mm Gap Captive Wedge
Frame Seal:	316051 Mullion Seal

SOUND INSULATION RATING:

Rw (C;Ctr):	39 (-2; -5)

TEST REPORT NUMBER: TL613-05

Test Drawing Number: 31-933

TEST SAMPLE DETAILS:

Glass:	6mm Float Glass / 16mm Argon / 10.5mm HUSH Laminate Glass
Glazing Wedge:	300013 5mm Gap Glazing Wedge; 315787 3mm Gap Captive Wedge
Frame Seal:	316051 Mullion Seal

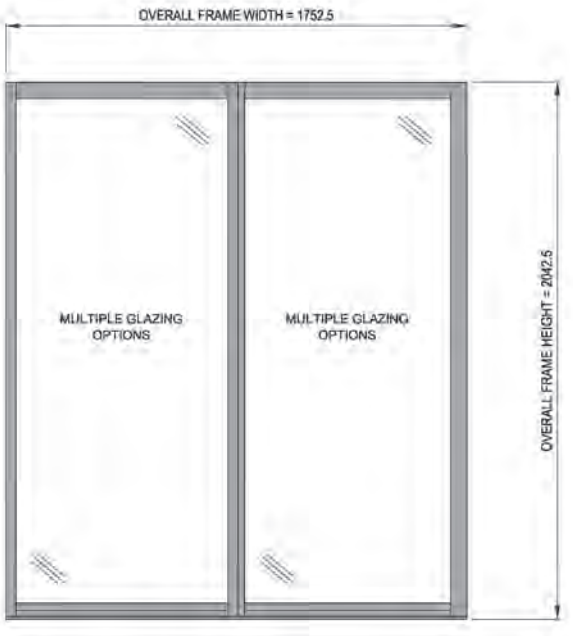
SOUND INSULATION RATING:

Rw (C;Ctr):	41 (-2; -5)

Test Report Summary

ACOUSTIC

Performed by: Commonwealth Scientific and Industrial Research Organisation (CSIRO), Clayton Victoria – February, 2023



Configuration: F.F

Approved to Standard: AS1191-2002 & AS1276.1-1999

TEST REPORT NUMBER: TL762-27-1

Test Drawing Number: 32-548

TEST SAMPLE DETAILS:

Glass:	6mm Float Glass / 12mm Argon / 6mm Float Glass
Glazing Wedge:	8mm Glazing Wedge (300004) & 8mm Glazing Wedge (300004)
Frame Seal:	316051 Mullion Seal

SOUND INSULATION RATING:

Rw (C;Ctr):	33 (-1; -3)

TEST REPORT NUMBER: TL762-28-1

Test Drawing Number: 32-548

TEST SAMPLE DETAILS:

Glass:	6.5mm Audioshield Laminate Glass / 12mm Argon / 6mm Float Glass
Glazing Wedge:	8mm Glazing Wedge (300004) & 8mm Glazing Wedge (300004)
Frame Seal:	316051 Mullion Seal

SOUND INSULATION RATING:

Rw (C;Ctr):	39 (-2; -5)

Test Report Summary

TEST REPORT NUMBER: TL762-26-1

Test Drawing Number: 32-548

TEST SAMPLE DETAILS:

Glass:	6.38mm Laminate Glass / 12mm Argon / 6mm Float Glass
Glazing Wedge:	8mm Glazing Wedge (300004) & 8mm Glazing Wedge (300004)
Frame Seal:	316051 Mullion Seal

SOUND INSULATION RATING:

Rw (C;Ctr):	34 (-1; -3)

TEST REPORT NUMBER: TL762-29-1

Test Drawing Number: 32-548

TEST SAMPLE DETAILS:

Glass:	10.38mm Laminated Glass / 12mm Argon / 6mm Float Glass
Glazing Wedge:	5mm Glazing Wedge (300013) & 7mm Glazing Wedge (300003)
Frame Seal:	316051 Mullion Seal

SOUND INSULATION RATING:

Rw (C;Ctr):	38 (-2; -4)

TEST REPORT NUMBER: TL762-30-1

Test Drawing Number: 32-548

TEST SAMPLE DETAILS:

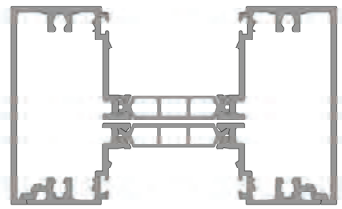
Glass:	10.5mm Audioshield Laminate Glass / 12mm Argon / 6mm Float Glass
Glazing Wedge:	5mm Glazing Wedge (300013) & 7mm Glazing Wedge (300003)
Frame Seal:	316051 Mullion Seal

SOUND INSULATION RATING:

Rw (C;Ctr):	40 (-2; -5)

Span Table

MULLION - ETB0027 / ETB0028



Note:
Serviceability pressures have been limited to a maximum pressure of 3500Pa.

Serviceability pressures have not been limited by water performance. Where water performance is necessary, refer to Product Specifications page.

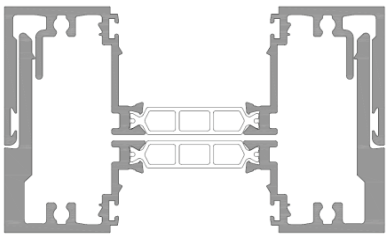
Mullion Height (mm)		Maximum Design Pressure (kPa)						
4000	S (L/250)	0.627	0.423	-	-	-	-	-
	U	2.072	1.394	-	-	-	-	-
3850	S (L/250)	0.704	0.475	-	-	-	-	-
	U	2.238	1.507	-	-	-	-	-
3700	S (L/250)	0.793	0.536	0.410	-	-	-	-
	U	2.424	1.634	1.245	-	-	-	-
3550	S (L/250)	0.899	0.608	0.465	-	-	-	-
	U	2.635	1.778	1.357	-	-	-	-
3400	S (L/250)	1.024	0.694	0.532	0.438	-	-	-
	U	2.876	1.943	1.485	1.217	-	-	-
3250	S (L/250)	1.174	0.796	0.612	0.505	0.438	-	-
	U	3.150	2.131	1.631	1.341	1.156	-	-
3100	S (L/250)	1.355	0.921	0.709	0.588	0.512	0.462	0.431
	U	3.466	2.348	1.802	1.485	1.285	1.155	1.069
2950	S (L/250)	1.575	1.072	0.828	0.689	0.603	0.548	0.514
	U	3.833	2.601	2.000	1.655	1.439	1.300	1.213
2800	S (L/250)	1.845	1.259	0.976	0.815	0.717	0.657	0.622
	U	4.261	2.897	2.235	1.856	1.622	1.475	1.389
2650	S (L/250)	2.181	1.492	1.162	0.976	0.864	0.798	0.764
	U	4.766	3.248	2.514	2.098	1.845	1.693	1.612
2500	S (L/250)	2.604	1.788	1.398	1.182	1.056	0.986	0.956
	U	5.366	3.667	2.850	2.392	2.121	1.966	1.899
2350	S (L/250)	3.145	2.168	1.705	1.452	1.311	1.240	1.222
	U	6.000	4.175	3.262	2.757	2.468	2.319	2.281
2200	S (L/250)	3.500	2.664	2.110	1.815	1.659	1.595	1.591
	U	6.000	4.798	3.772	3.217	2.916	2.789	2.780
2050	S (L/250)	3.500	3.328	2.659	2.315	2.150	2.110	2.110
	U	6.000	5.576	4.418	3.811	3.511	3.436	3.436
Mullion Spacing (mm)		600	900	1200	1500	1800	2100	2400

LEGEND: S = Serviceability Pressure, U = Ultimate Pressure

NOTE: This table is based on theoretical section properties, not on approved tests as specified by AS2047
A maximum stress level of 110MPa has been applied when generating this table.

Span Table

SPLIT MULLION - ETB0025 / ETB0026



Note:
Serviceability pressures have been limited to a maximum pressure of 4500Pa.

Serviceability pressures have not been limited by water performance. Where water performance is necessary, refer to Product Specifications page.

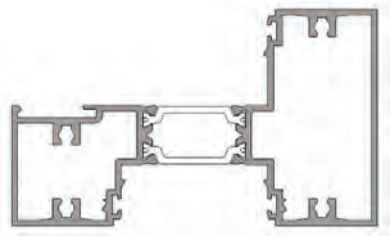
Mullion Height (mm)		Maximum Design Pressure (kPa)						
4000	S (L/250)	0.740	0.499	-	-	-	-	-
	U	2.443	1.644	-	-	-	-	-
3850	S (L/250)	0.830	0.560	0.428	-	-	-	-
	U	2.638	1.777	1.352	-	-	-	-
3700	S (L/250)	0.936	0.632	0.483	-	-	-	-
	U	2.859	1.927	1.468	-	-	-	-
3550	S (L/250)	1.061	0.718	0.549	0.451	-	-	-
	U	3.108	2.097	1.600	1.309	-	-	-
3400	S (L/250)	1.209	0.819	0.628	0.517	0.447	0.400	-
	U	3.391	2.291	1.750	1.435	1.234	1.098	-
3250	S (L/250)	1.386	0.940	0.722	0.596	0.517	0.465	0.430
	U	3.715	2.513	1.924	1.581	1.364	1.219	1.122
3100	S (L/250)	1.599	1.086	0.837	0.693	0.604	0.546	0.508
	U	4.087	2.769	2.124	1.751	1.516	1.362	1.261
2950	S (L/250)	1.858	1.265	0.977	0.813	0.711	0.647	0.607
	U	4.520	3.067	2.359	1.951	1.696	1.532	1.430
2800	S (L/250)	2.177	1.486	1.152	0.962	0.847	0.775	0.734
	U	5.024	3.416	2.635	2.188	1.913	1.740	1.638
2650	S (L/250)	2.574	1.761	1.371	1.151	1.020	0.942	0.902
	U	5.619	3.829	2.964	2.473	2.176	1.996	1.900
2500	S (L/250)	3.073	2.110	1.650	1.395	1.246	1.163	1.128
	U	6.327	4.324	3.361	2.821	2.501	2.318	2.239
2350	S (L/250)	3.711	2.558	2.012	1.714	1.547	1.463	1.442
	U	7.179	4.923	3.846	3.251	2.910	2.734	2.690
2200	S (L/250)	4.500	3.144	2.490	2.142	1.958	1.882	1.877
	U	7.500	5.658	4.448	3.793	3.438	3.288	3.278
2050	S (L/250)	4.500	3.927	3.138	2.732	2.537	2.490	2.490
	U	7.500	6.574	5.209	4.493	4.140	4.051	4.051
Mullion Spacing (mm)		600	900	1200	1500	1800	2100	2400

LEGEND: S = Serviceability Pressure, U = Ultimate Pressure

NOTE: This table is based on a comination of approved AS2047 testing data and theoretical section properties.
A maximum stress level of 110MPa has been applied when generating this table.

Span Table

TRANSOM - ETB0002



Note:
Serviceability pressures have been limited to a maximum pressure of 4500Pa.

Serviceability pressures have not been limited by water performance. Where water performance is necessary, refer to Product Specifications page.

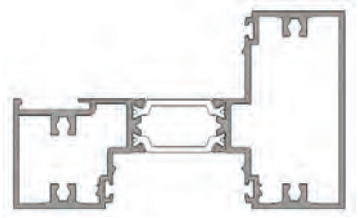
Transom Spacing (mm)		Maximum Design Pressure (kPa)						
1500	S (L/250)	3.252	1.801	1.115	0.743	0.522	-	-
	U	3.615	2.345	1.669	1.258	0.986	-	-
1450	S (L/250)	3.257	1.822	1.135	0.759	0.535	-	-
	U	3.621	2.375	1.701	1.286	1.011	-	-
1400	S (L/250)	3.270	1.847	1.157	0.777	0.548	0.403	-
	U	3.638	2.411	1.736	1.318	1.038	0.841	-
1350	S (L/250)	3.293	1.876	1.181	0.796	0.563	0.414	-
	U	3.668	2.454	1.776	1.353	1.068	0.867	-
1300	S (L/250)	3.326	1.911	1.209	0.817	0.580	0.427	-
	U	3.709	2.503	1.821	1.391	1.101	0.894	-
1250	S (L/250)	3.368	1.951	1.240	0.841	0.598	0.441	-
	U	3.763	2.560	1.871	1.433	1.136	0.924	-
1200	S (L/250)	3.421	1.996	1.275	0.867	0.618	0.456	-
	U	3.829	2.624	1.926	1.480	1.175	0.957	-
1150	S (L/250)	3.486	2.048	1.313	0.896	0.640	0.473	-
	U	3.909	2.698	1.988	1.531	1.218	0.993	-
1100	S (L/250)	3.563	2.107	1.357	0.928	0.664	0.492	-
	U	4.004	2.781	2.056	1.587	1.265	1.033	-
1050	S (L/250)	3.654	2.174	1.405	0.963	0.690	0.512	-
	U	4.115	2.874	2.133	1.650	1.317	1.077	-
1000	S (L/250)	3.761	2.250	1.460	1.003	0.720	0.535	0.408
	U	4.243	2.980	2.219	1.720	1.375	1.126	0.939
950	S (L/250)	3.884	2.337	1.521	1.047	0.753	0.560	0.428
	U	4.392	3.100	2.315	1.799	1.440	1.179	0.985
900	S (L/250)	4.028	2.435	1.590	1.097	0.790	0.588	0.450
	U	4.564	3.236	2.423	1.886	1.512	1.240	1.036
850	S (L/250)	4.194	2.548	1.668	1.154	0.832	0.620	0.474
	U	4.762	3.391	2.546	1.985	1.593	1.307	1.093
800	S (L/250)	4.387	2.677	1.757	1.217	0.879	0.656	0.502
	U	4.992	3.568	2.685	2.097	1.685	1.384	1.158
Transom Width (mm)		1500	1750	2000	2250	2500	2750	3000

LEGEND: S = Serviceability Pressure, U = Ultimate Pressure

NOTE: This table is based on a combination of approved AS2047 testing data and theoretical section properties.
A maximum stress level of 110MPa has been applied when generating this table.

Maximum Glass Thickness Table - Deadload Assessment

TRANSOM - ETB0002



Note:

Glass thickness has been limited to 20mm (Combined) according to the capacity of the suite.

These tables have been developed to assist Fabricators in making an assessment of the maximum glass thickness that the transom member can support before it is considered unstable (deflection & stress).

Wind load and human impact requirements are not included in the tables below. A glass thickness assessment for windload and human impact must still be completed in accordance with AS1288.

Height Above Transom (mm)	Maximum Glass Thickness with Support Blocks at 1/4 Points (mm)								
1500	16	12	10	6	5	4	-	-	-
1350	20	12	10	8	6	4	-	-	-
1200	20	16	12	8	6	5	4	-	-
1050	20	20	12	10	6	6	4	-	-
900	20	20	16	12	8	6	5	4	-
750	20	20	20	12	10	8	6	5	4
600	20	20	20	16	12	10	8	6	5
Transom Width (mm)	1400	1600	1800	2000	2200	2400	2600	2800	3000
Downward Deflection (mm)	2.3	2.7	3.0	3.3	3.7	4.0	4.3	4.7	5.0

Height Above Transom (mm)	Maximum Glass Thickness with Support Blocks at 1/8 Points (mm)								
1500	20	20	16	12	10	6	6	4	4
1350	20	20	20	12	10	8	6	5	4
1200	20	20	20	16	12	8	6	6	5
1050	20	20	20	16	12	10	8	6	5
900	20	20	20	20	16	12	10	8	6
750	20	20	20	20	20	12	12	8	8
600	20	20	20	20	20	16	12	12	10
Transom Width (mm)	1400	1600	1800	2000	2200	2400	2600	2800	3000
Downward Deflection (mm)	2.3	2.7	3.0	3.3	3.7	4.0	4.3	4.7	5.0

NOTE: This table is based on theoretical section properties, not on approved tests as specified by AS2047.
A deflection ratio of L/600 has been assumed, resulting in the individual deflection figures listed on the tables.