



**Engineering progress
Enhancing lives**

Rio flush door

Technical Information



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01 General guidelines

1.1 Product Description

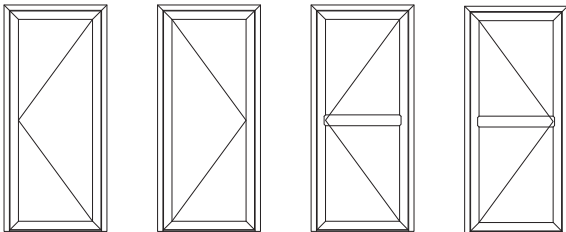
The Rio flush door gives a traditional appearance to any building and is designed to create maximum lighting effect into the room, whilst offering easy maintenance.

The Rio flush door is based on an authentic, traditional design, timber door but with all the benefits of modern PVC performance. The style consists of a single residential door where the sash fits flush into the frame.

The Rio flush door is manufactured with the outer frame profile components from the TOTAL70 system therefore you are able to either manufacture the door with a Chamfered (T70c) or Sculptured (T70s) finish depending on the style of property that the door is being fitted into.

In order to further enhance the traditional timber aesthetics the Heritage vertical sliding sculptured and square edge are utilised.

1.2 Door Styles



1.3 Storage of PVC-U profiles

For information on storage of profiles please refer to TOTAL70 Manufacturing Recommendations 706.620EN

1.4 Cutting to size

Cutting speed is 50 – 52 m per second and suitably toughened metal fine toothed saw blades should be used. High speed steel blades must be relief ground with no set. It is extremely important that all cutting tools are kept sharp, blunt tools produce excessive friction causing a film of molten material to stick to the saw blade and between its teeth. This adversely affects the cleanness of cuts and, therefore, the weld. Cut sections should be processed without delay, at most within 2 to 3 days, because of the risk of dirt pick-up in the cut faces and moisture absorption from the air. Dirt contamination can cause faults in the weld, reducing corner strength. Cutting of profiles is in accordance with fabrication sizes.

1.5 Milling and drilling

High-speed light metal and woodworking machines are suitable for milling work as well as conventional HSS drilling and milling machines.

When drilling (triple boring) simultaneously through PVC and steel in one pass, the drill bits and drilling machine must be compatible and suitable for steel to avoid deflection of the drill or other damage.

Outer Frame Drainage

Drainage of the outer frame profile is affected by milling slots into the front chamber and routing the water out via either:

- slots or holes milled in the external face and concealed with a plastic cover where face drainage is required, or
- slots milled in the underside of the profile, where concealed drainage is required.

Sash Drainage and Pressure Equalisation

The glazing rebate must be drained at the bottom via slots into the front chambers 5 x 25 mm long. At least two slots, 70 mm from the corners and a maximum of 600 mm apart should be milled in accordance with the Glazing instructions. The rebate must also be pressure equalised via similar slots placed on the outside of the profile at the top of the jambs.

1.6 Welding

For welding methods and further information please refer to TOTAL70 Manufacturing Recommendations 706.620EN.

1.7 Seals

The outer frame is supplied with the universal integral gasket, this needs to be removed and replaced with the closing seal, Art. no. 329649.

The weldable corner gasket, Art. No. 328217, then need to be inserted into the sash corners followed by closing seal, Art. No. 329649, between the corner seals. Make sure that there are no gaps and gasket is not stretched. As an option glue can be added to the foot joint if required. To aid fitting of Art. No. 328217 use hand roller or lubricate. For welded sashes the weld sprue should be removed in the corners before inserting seal.



Use of non-REHAU seals and gaskets will invalidate test certificates, performance data or third party certification applicable to REHAU door systems.

1.8 Fittings – Hardware

Hardware	Specification	REHAU article number
Hinge	- SFS Dynamic 3D for REHAU profile groove x 3	Art. 340684
Lock	- Maco PROTECT C-TS Module - C-TS Module Latch Plate RH 214693 - C-TS Module Latch Plate LH 214694 - C-TS Module Hook-Bolt 228254 - C-TS Door Lock 232310 - U-Faceplate 6x24x6 35mm backset - Eurogroove Adapter Profile 364687 16mm eurogroove 2200 mm long (x1 per door lock C-TS)	Available direct from MACO (MACO part numbers shown in bold)
Low threshold	- Exitex REHAU *SR MDS 70* RITB + Outward infill + End Caps for either Sculptured or chamfered frame - Brush Pile adaptor	Available direct from Exitex Art. 001469

Hinge jigs are available upon request from your regional sales office upon set up

Screw fixings should always penetrate two walls of PVC, the reinforcement profile or the specially designed screw ports provided. If holes are pre-drilled, the condition of equipment should be carefully checked, since blunt drill bits can reduce anchor strength substantially. Where self tapping screws are used, it is essential that a precisely shaped cutting bit is employed.

When using electric or pneumatic screw drivers, the clutch mechanism must be adjusted to avoid stripping the threads and the speed should be set to 600-1000 rpm. Higher speeds may cause partial heating of the PVC material, reducing anchorage strength of the screws.

With the fittings in position the sash is able to operate externally to the geometry set by the hinge.

1.9 Application of supplementary profiles

Profile combinations are possible with supplementary profiles from the TOTAL70 Ancillary range. Manufacturing instructions for the individual profiles should be followed.

1.10 Fitting of glazing beads

The glazing beads are snapped into the channels provided in the main sections. Generally all glazing beads should be mitre cut though this presents problems with short lengths due to the inherent rigidity of the beads. When mechanically jointing, ensure that the vertical beads are scribed on to the horizontal beads to prevent ingress of water.

1.11 Repairs

Damage by mechanical means causing holes or cracks can be repaired with welding rods of RAU-PVC 1105 and a hot air welder. Under certain conditions, some damage can be repaired with repair paste.

1.12 Cleaning

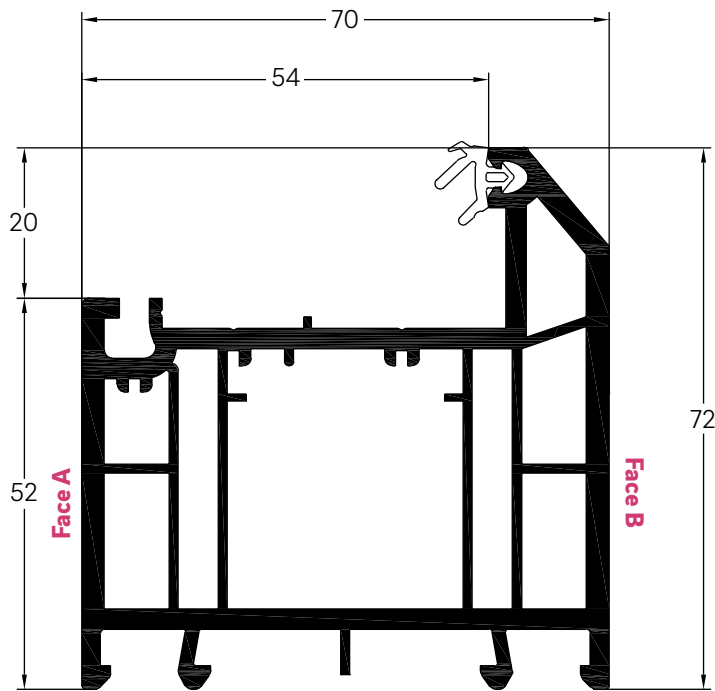
The door can be cleaned using normal washing up liquid and lukewarm water. Gritty and abrasive cleaning agents must not be used. In the event of exceptionally bad soiling, the use of a special cleaning agent is recommended which must be applied to the whole of the frame surface.

1.13 Installation

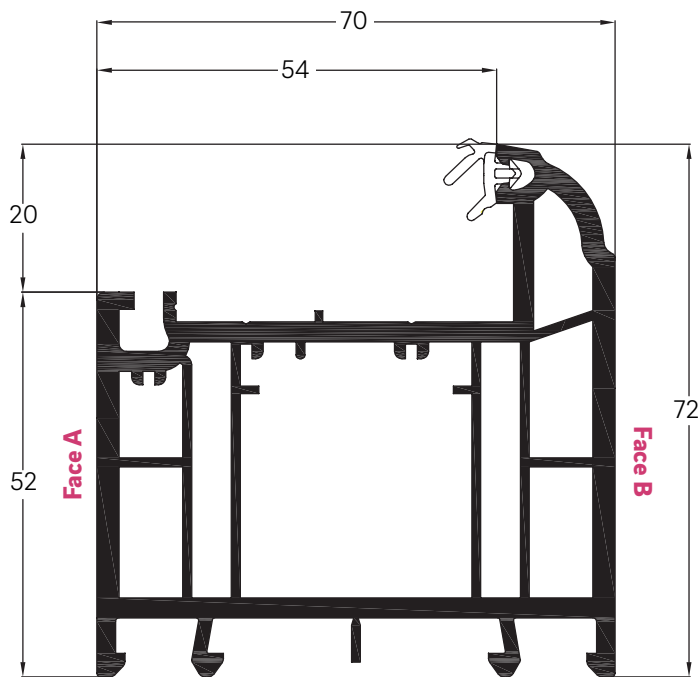
When fitting the sash to the frame, the visible gap on the outside (6mm nominal) should be no more than 5-7mm.

02 Profile print

2.1 Door frames



Universal gasket to be removed and replaced with art. 329649 closing seal

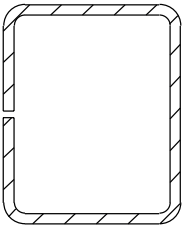


Universal gasket to be removed and replaced with art. 329649 closing seal

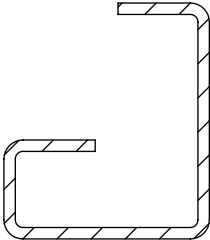
Door Frame 72mm
White Profile Art. No. 546836
Laminated Profile Art. No. 586835/586836

	216393	337955
	1.5mm	1.5mm
lx	1.44	1.42
ly	2.01	1.25

216393 - 25 x 31



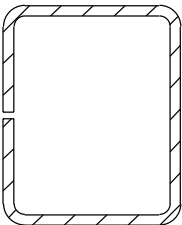
337955 - 27x31x12x13



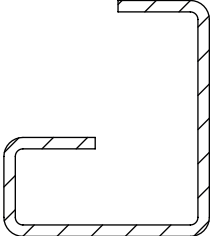
Door Frame 72mm
White Profile Art. No. 546435
Laminated Profile Art. No. 586435

	216393	337955
	1.5mm	1.5mm
lx	1.44	1.42
ly	2.01	1.25

216393 - 25 x 31

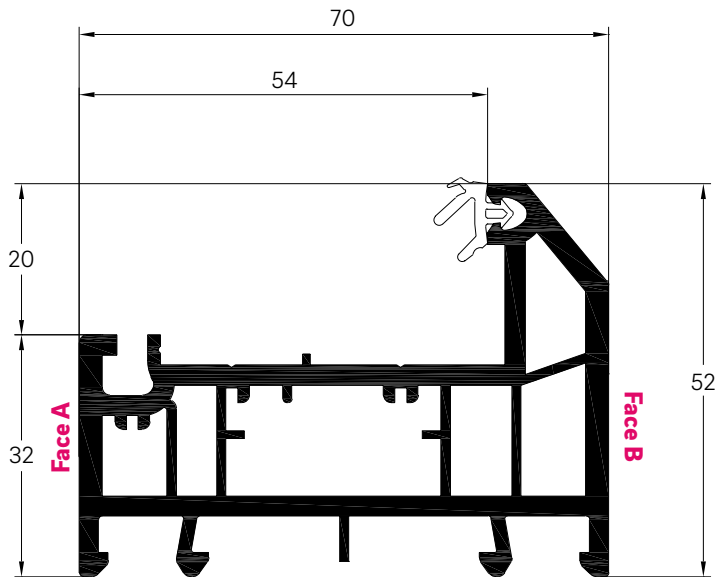


337955 - 27x31x12x13



Note: lx is in windload direction

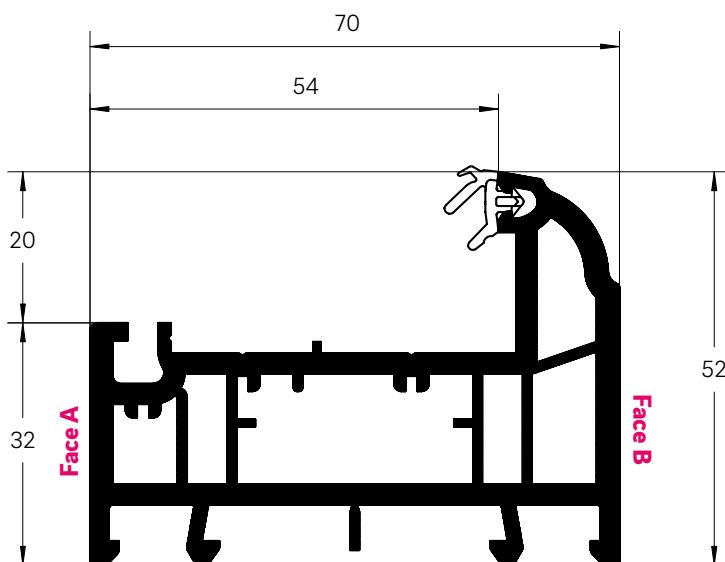
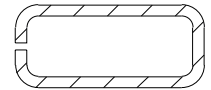
2.2 Threshold option



Slim Outer Frame 52mm
 White Profile Art. No. 546816
 Laminated Profile Art. No. 586815/586816

	216391	318555
	1.5mm	1mm
I _x	0.61	0.46
I _y	0.17	0.13

216391 - 25 x 11
 318555 - 25 x 11



Slim Outer Frame 52mm
 White Profile Art. No. 546415
 Laminated Profile Art. No. 586415

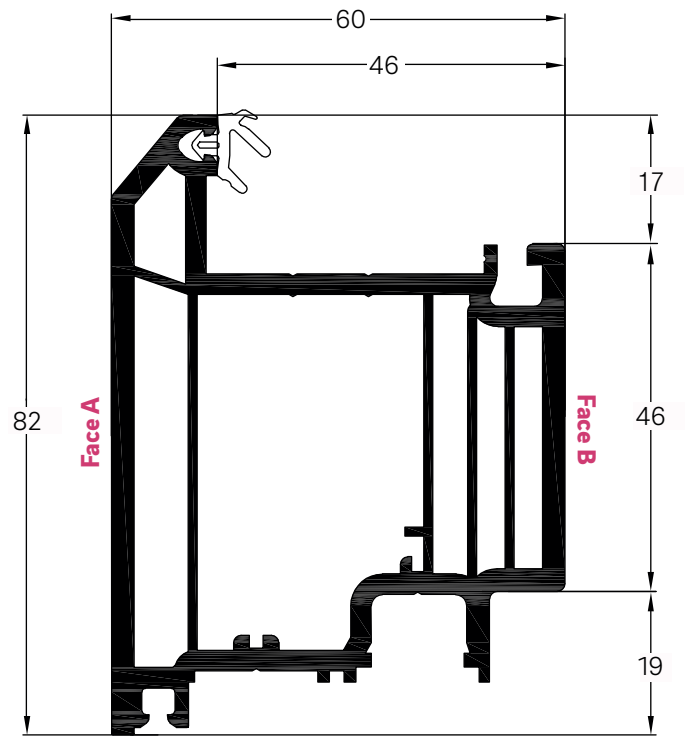
	216391	318555
	1.5mm	1mm
I _x	0.61	0.46
I _y	0.17	0.13

216391 - 25 x 11
 318555 - 25 x 11



Note: I_x is in windload direction

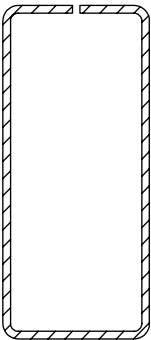
2.3 Door Sash



82mm Door sash
White Profile Art. No. 546025
Laminated Profile Art. No. 586025

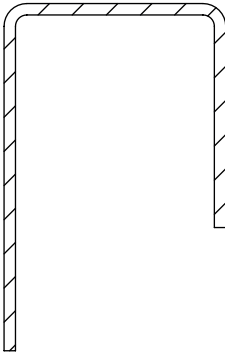
	333835	334375	334376	344328
	1mm	1.5mm	1.5mm	1.5mm
Ix	0.79	1.67	1.67	1.74
Iy	2.80	3.24	3.24	2.76

333835 - 43.75 x 19.25

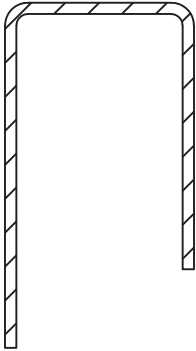


334375 - 45 x 29 x 29

334376 - 45 x 29 x 29 (Pre-routed)

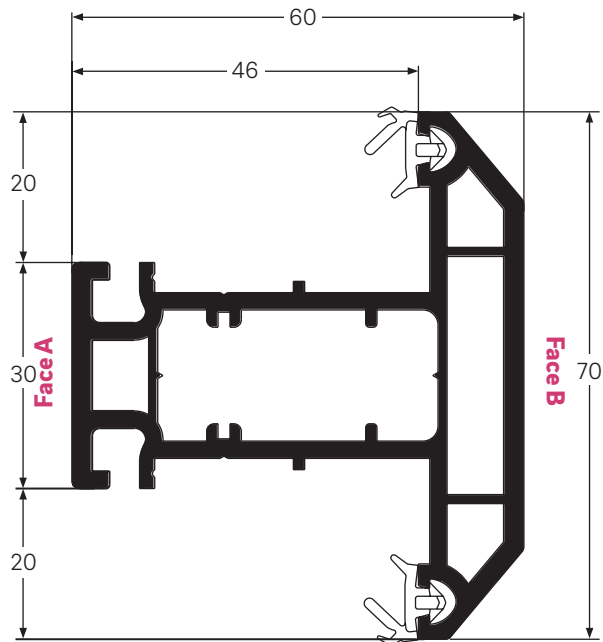


344328 - 45.65 x 25 x 35.25 (Pre-routed)



Note: Ix is in windload direction

2.4 Midrails



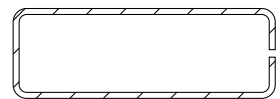
Midrail 70mm

White Profile Art. No. 503555

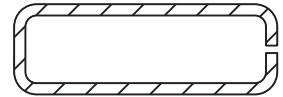
Laminated Profile Art. No. 573555

	287798	233721	200509
	1.5mm	0.8mm	Aluminium
I _x	2.9	1.8	4.6
I _y	1.6	0.9	3.0

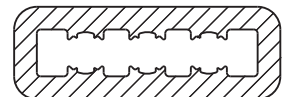
233721 - 35 x 12



287798 - 35 x 12



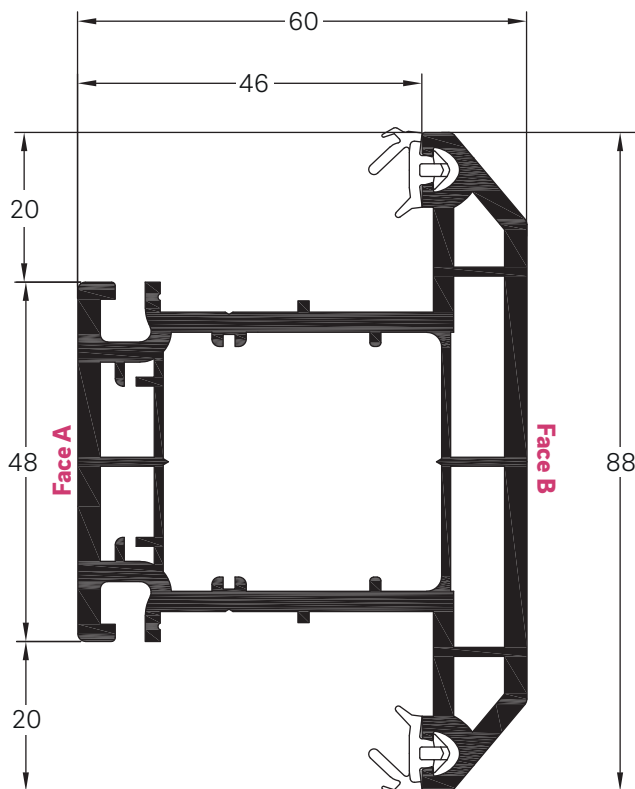
200509 - 35.2 x 12.2



Midrail 88mm

White Profile Art. No. 503795

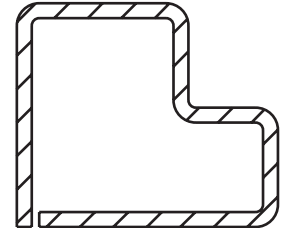
Laminated Profile Art. No. 573795



233641 **200022** **250219**

	0.8mm	2mm	2mm
I _x	1.82	3.3	4.16
I _y	1.46	2.67	3.26

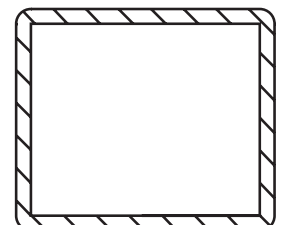
200022 - 35 x 30 x 23 x 14 x 16



233641 - 35 x 30

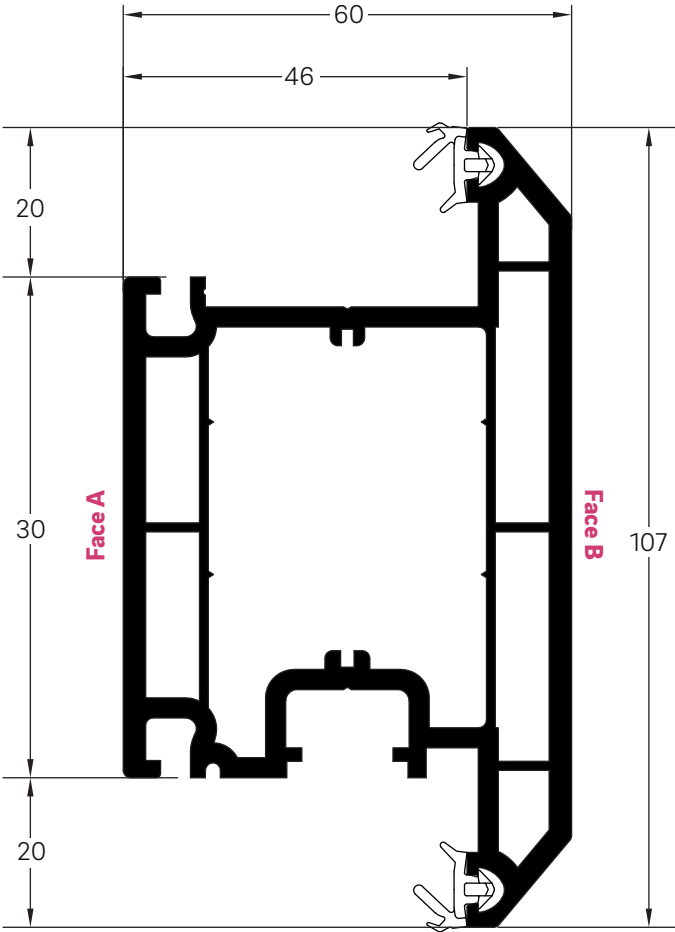


250219 - 35 x 30



Note: I_x is in windload direction

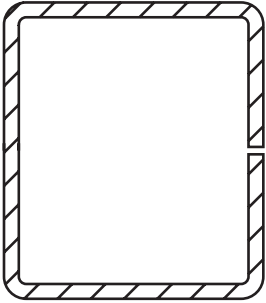
2.4 Midrails



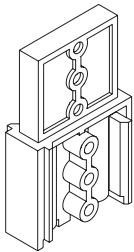
Midrail 107mm
White Profile Art. No. 503815
Laminated Profile Art. No. 573815

	287816	233671
	1.5mm	2mm
lx	4.05	5.1
ly	4.93	6.35

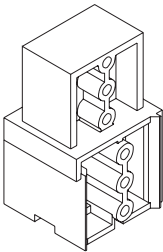
287816 - 35 x 40
233671 - 35x40



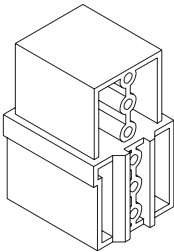
2.5 Midrail mechanical joint blocks



Mechanical joint for art.
503555
Art No. 232932



Mechanical joint for art.
503795
Art No. 232942



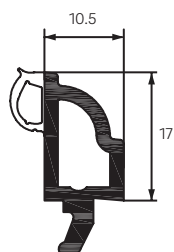
Mechanical joint for art.
503815
Art No. 232962

Note: lx is in windload directon

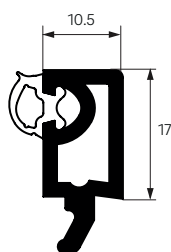
2.6 Ancillaries

Glazing bead

For 28mm Sealed Units

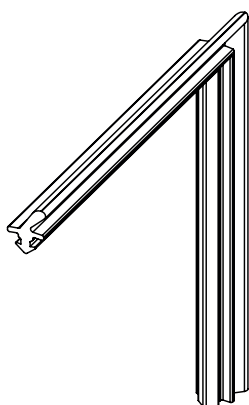


Sculptured Bead - Low Level Co-Ex
White Profile Art. No. 559600
Laminated Profile Art. No. 589600



Square edge bead
White Profile Art. No. 559605
Laminated Profile Art. No. 589605

Gaskets & brushpile



Weldable Corner Gasket
Art No. 328217



Closing Seal for Door sash
and Outerframes
Art No. 329649



12mm Brushpile
Art No. 001476

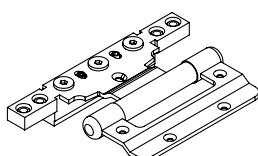


14mm Brushpile
Art No. 314995

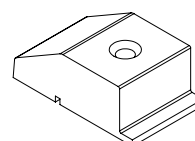
Additional profiles



Flush door adaptor
Art No. 001469



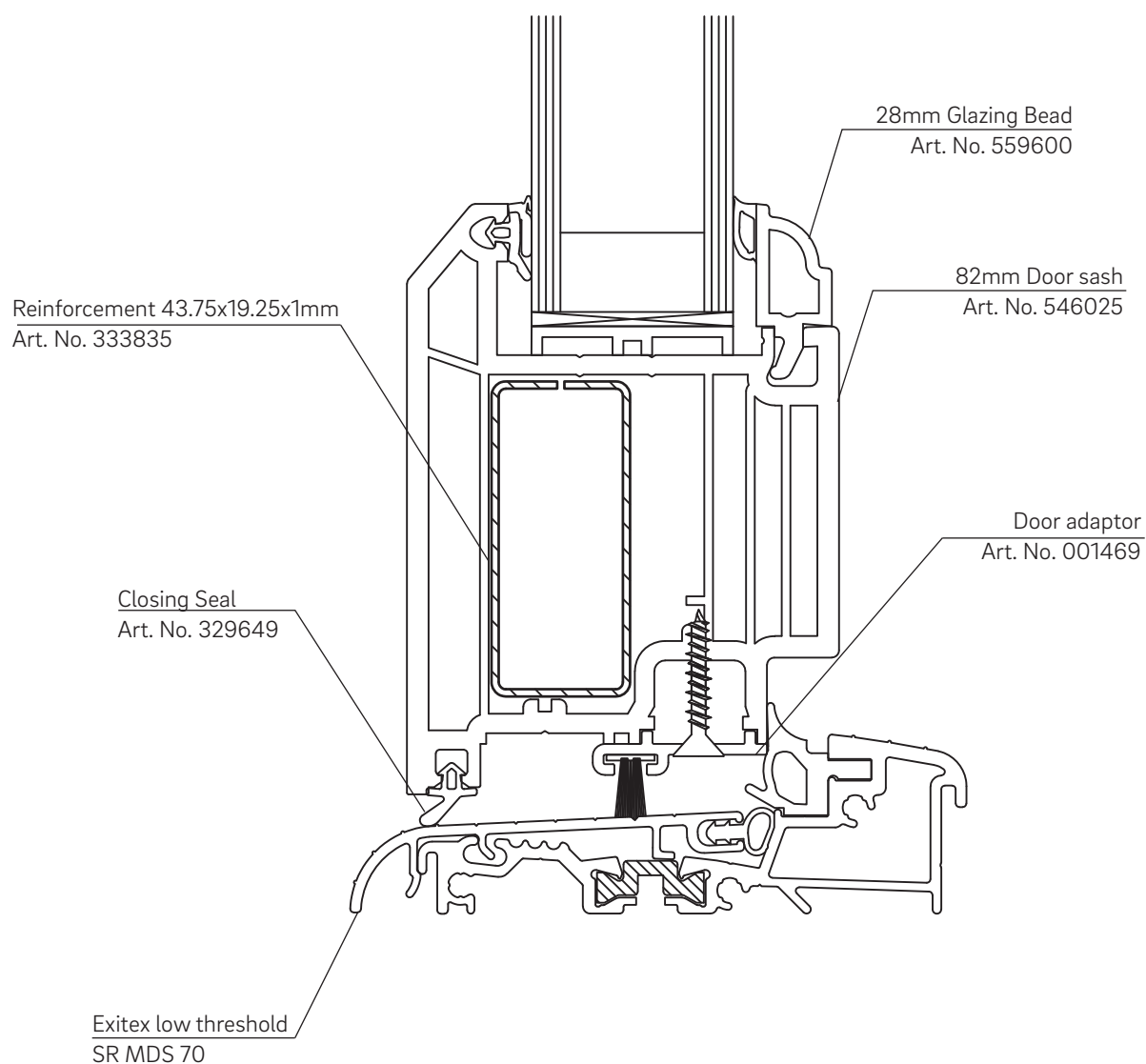
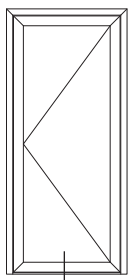
Rio SFS dynamic 3D hinge
Art No. 340684
*Available exclusively to
REHAU



Sash riser block
Art No. 329648

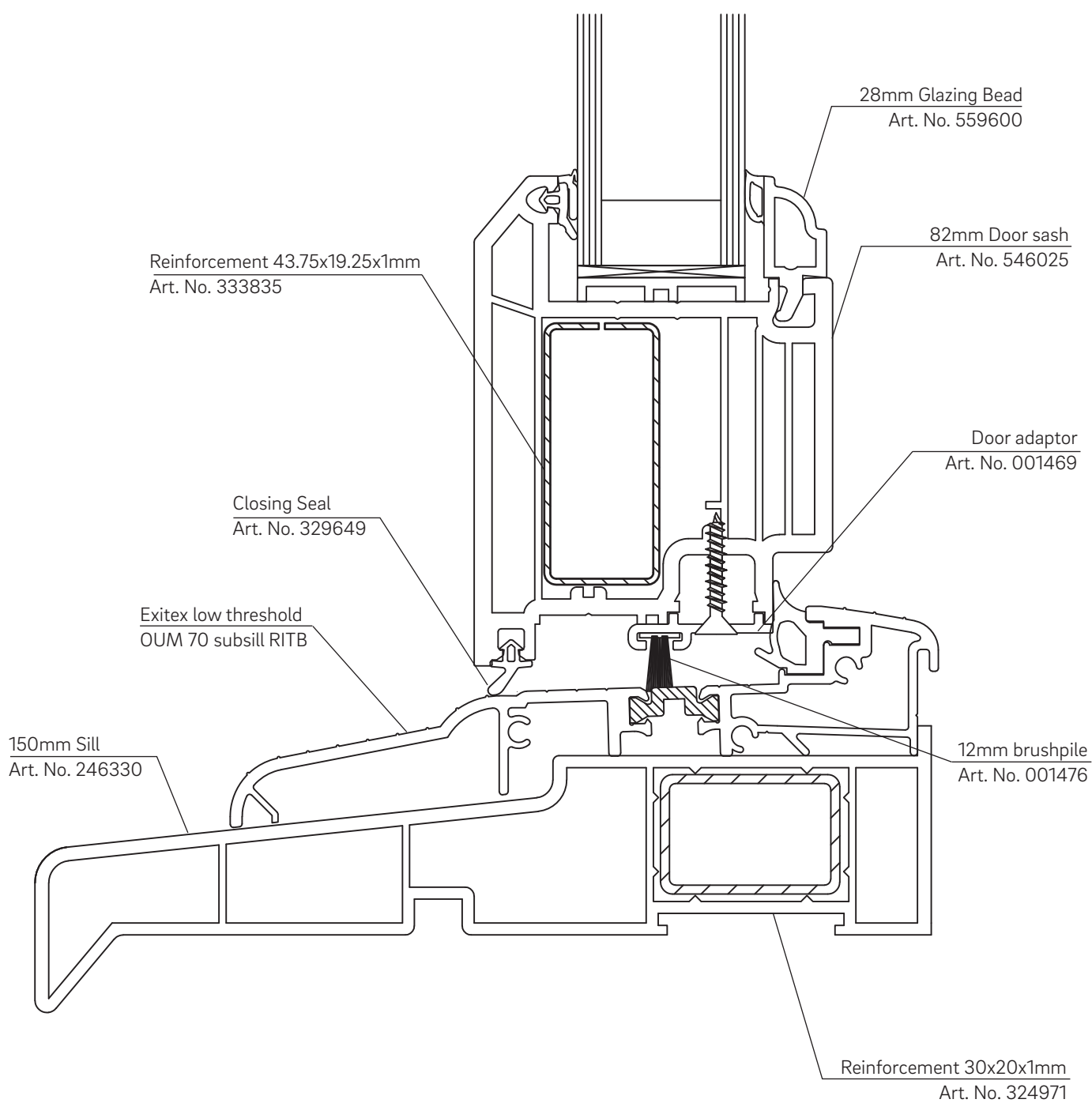
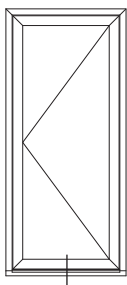
03 Production drawings

3.1 Low threshold detail

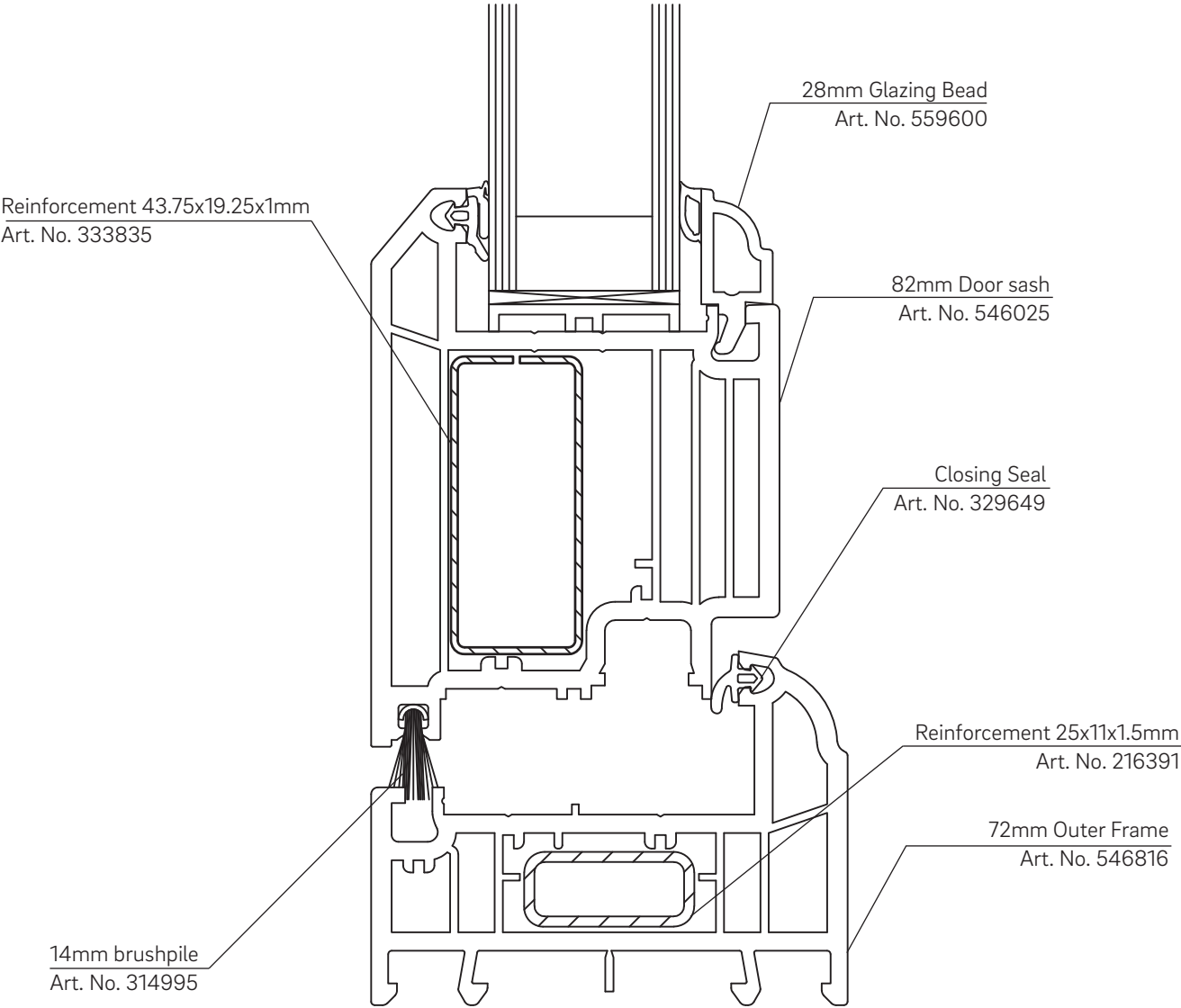
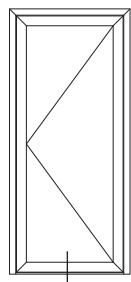


Gasket gap is set at 5mm between sash and threshold. For a 6mm-7mm gap please substitute Article 329649 with 14mm brushpile, Art. 314995.

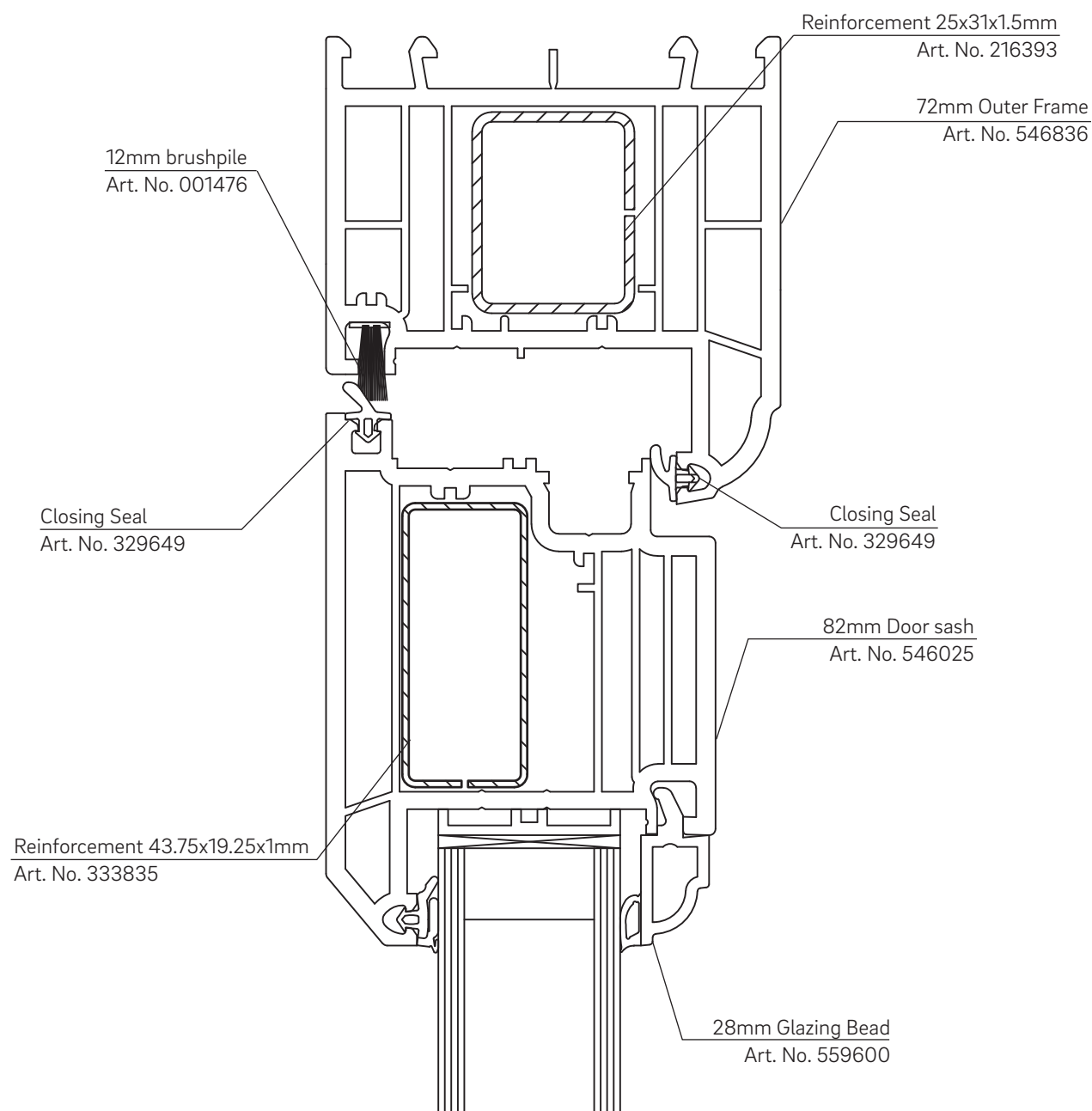
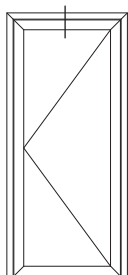
3.2 Over sill threshold detail

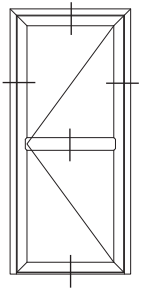


3.3 52mm frame threshold option



3.4 Head detail



3.5 Midrail detail

Reinforcement 43.75x19.25x1mm
Art. No. 333835

Closing Seal
Art. No. 329649

Reinforcement 25x31x1.5mm
Art. No. 216393

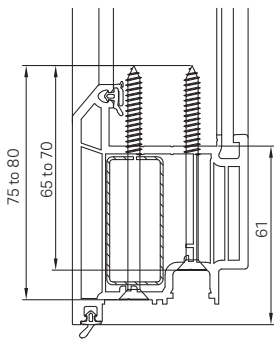
72mm Outer Frame
Art. No. 546836

Closing Seal
Art. No. 329649

28mm Glazing Bead
Art. No. 559600



Deduction for midrail, Art. 503815, is
-122 less than sash size.



Reinforcement 35x40x2mm
Art. No. 233671

107mm midrail
Art. No. 503815

Midrail drainage chamber and Glazing
rebate to be sealed off with silicone.

12mm brushpile
Art. No. 001476

Exitex low threshold
SR MDS 70

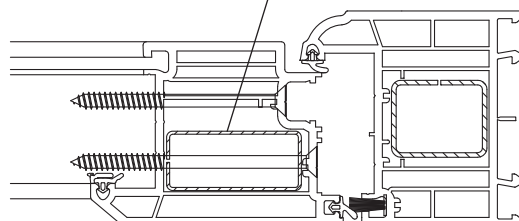
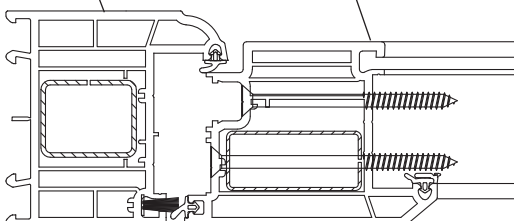
82mm Door sash
Art. No. 546025

Door adaptor
Art. No. 001469

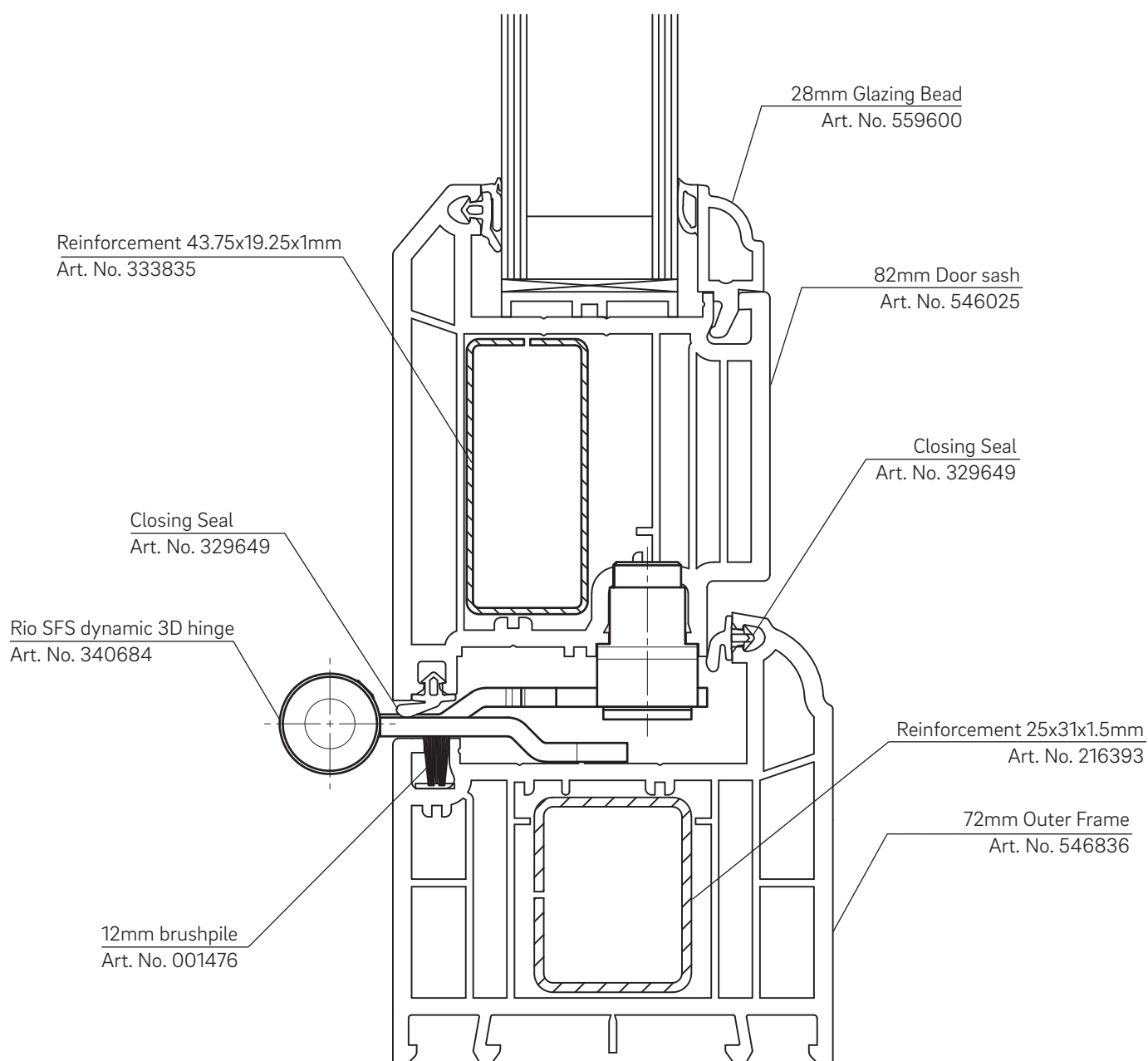
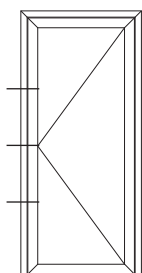
72mm Outer frame
Art. No. 546836

82mm Door sash
Art. No. 546025

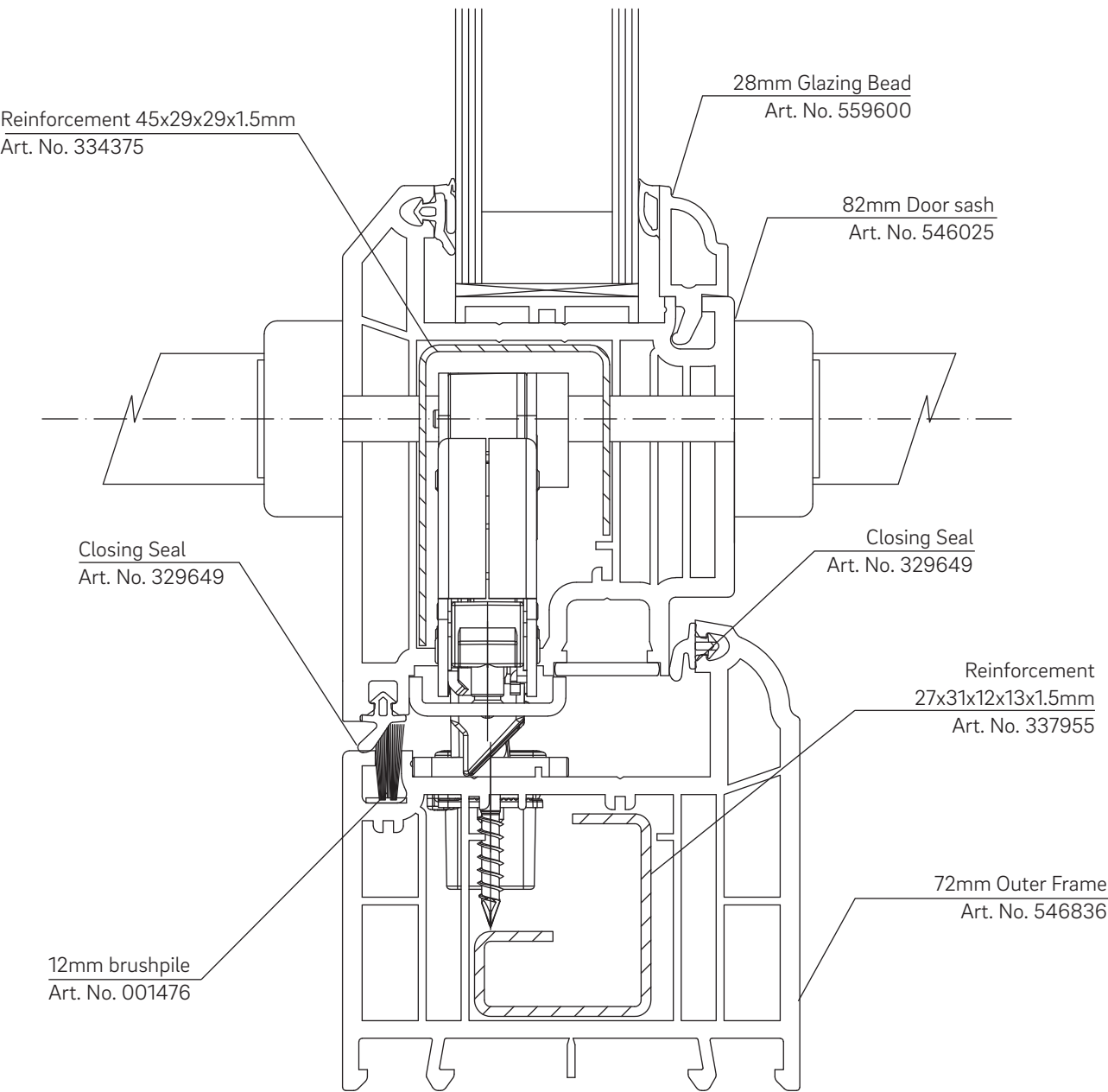
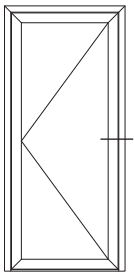
Reinforcement 45x25x35x1.5mm
Art. No. 344328



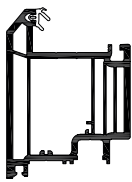
3.6 Hardware details - SFS Hinge



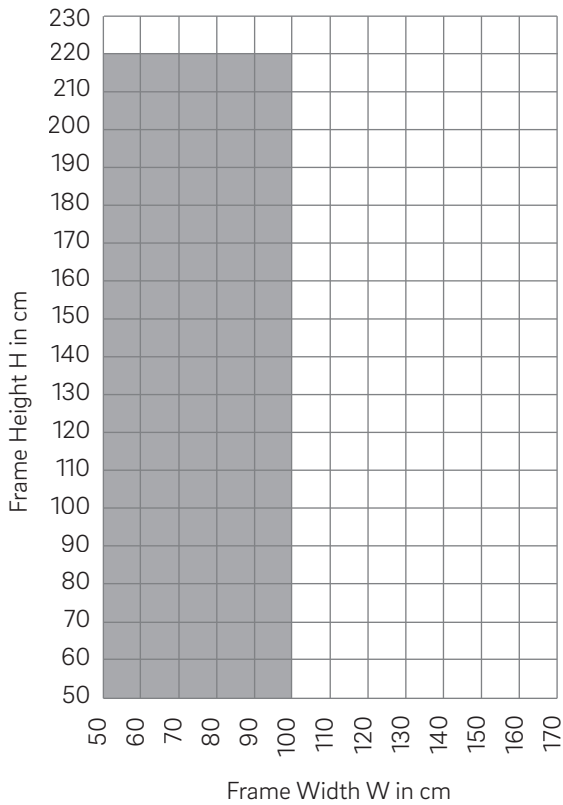
3.7 Hardware details - Maco gearing and handle



04 Maximum sash size recommendations



546025
82mm DBR



	Article No.	Reinforcement	Description	I-Value	Maximum sash weight
	333835		43.75x19.25x1mm	lx 0.79 cm4 ly 2.80 cm4	80kg
	334375 334376 (Pre-routed)		45x29x29x1.5mm	lx 1.67 cm4 ly 3.24 cm4	80kg

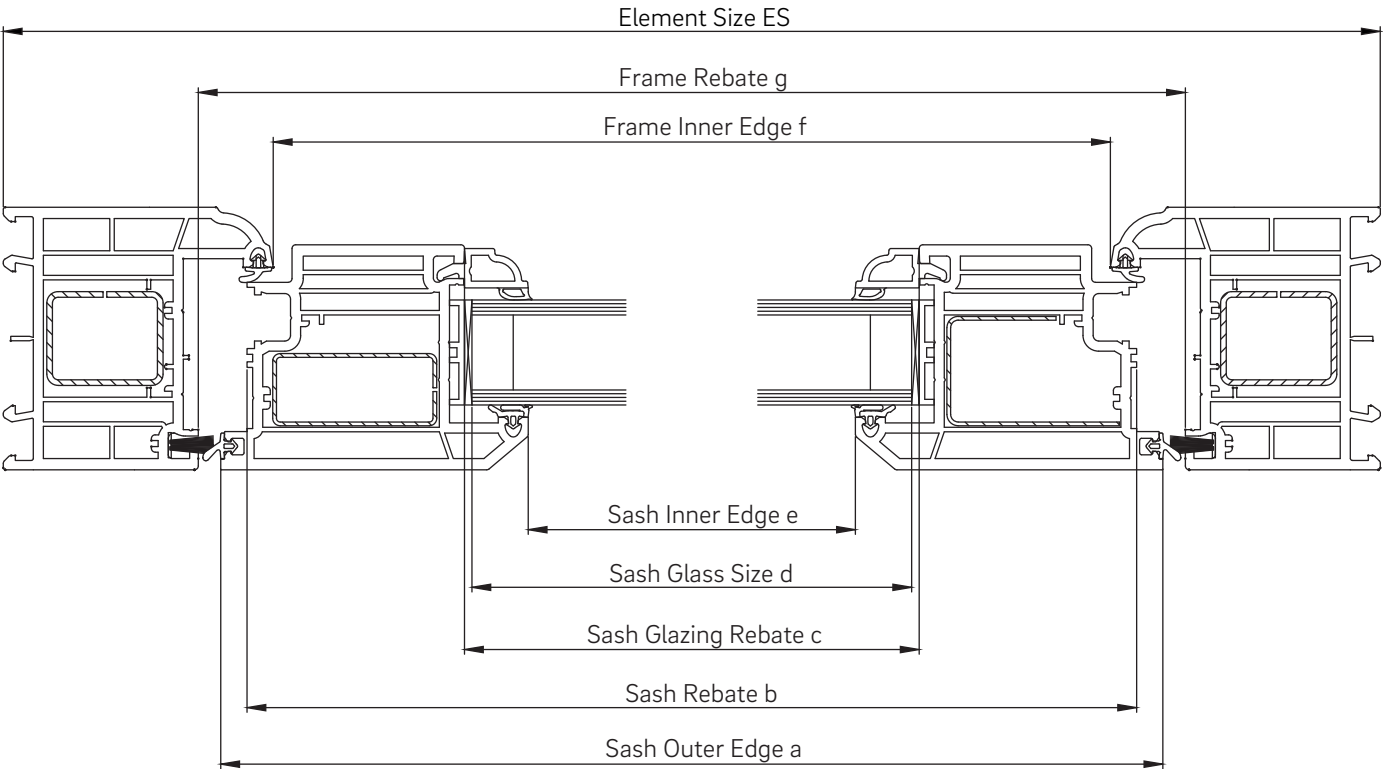


All sizes and weights subject to hardware suppliers recommendations. Maximum sizes are based on a fully welded configuration.

Note: lx is in windload direction

05 Manufacturing deductions

5.1 Horizontal deduction

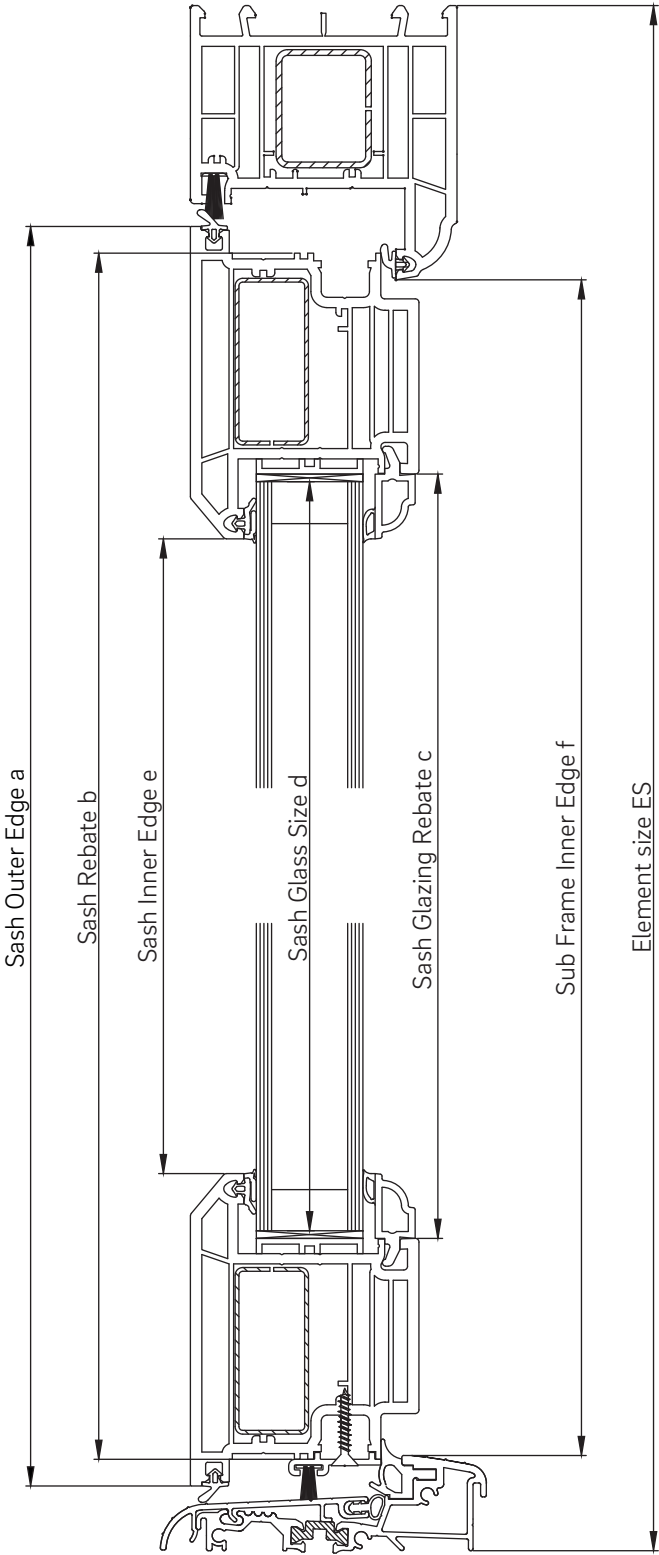


Deduction	Outer Frame Size
	72mm Universal Frame
Sash Outer Edge	a = ES - 116
Sash Rebate	b = ES
Sash Glazing Rebate	c = ES - 246
Sash Glass Size	d = ES - 125
Sash Inner Edge	e = ES - 280
Frame Inner Edge	f = ES - 144
Frame Rebate	g = ES - 104



Deductions are based on a 6mm external gasket gap

5.2 Vertical deduction



Deduction	Outer Frame Size
	72mm Universal Frame
Sash outer edge	a = ES - 75
Sash rebate	b = ES
Sash glazing rebate	c = ES - 205
Sash glass size	d = ES - 209
Sash inner edge	e = ES - 239
Sub frame inner edge	f = ES - 97



Deductions are based on a 6mm external gasket gap (5mm with low threshold)

06 Reinforcement instructions

Outer frame

- All vertical jambs to be reinforced.

Door sash (Art.No. 546025)

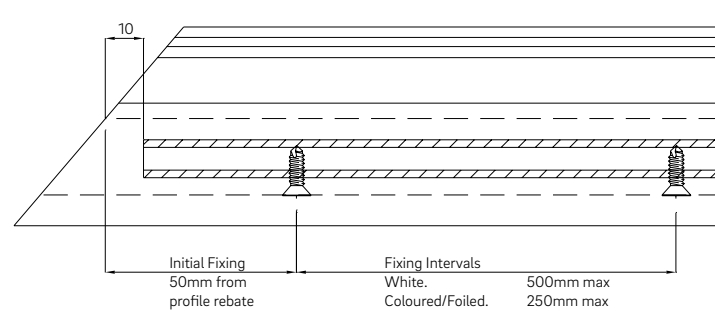
- Sash members to be reinforced on all 4 sides. Please refer to maximum sash sizes on page 19

Midrail

- All midrails to be mechanically jointed.
- Midrail members to be reinforced as required. Structural calculations and I values should be proven to decide the correct steels for the application.

General notes

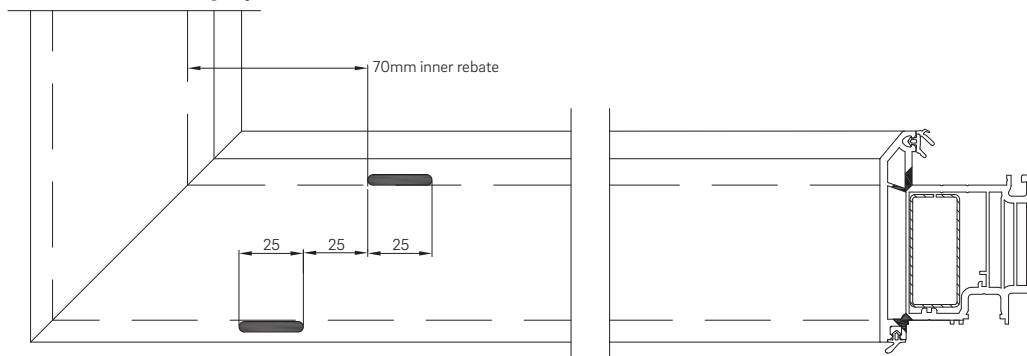
- Reinforcement screw to be located approximately 50mm from each profile end and spaced at approximately 500mm intervals for white profile and 250mm intervals for coloured/foiled, see diagram 1.
- Coloured/foiled profiles must always be reinforced irrespective of size.
- When applying a Midrail into a sash it is essential that one piece steel reinforcement section is applied and secured directly. It is unacceptable to insert two lengths.



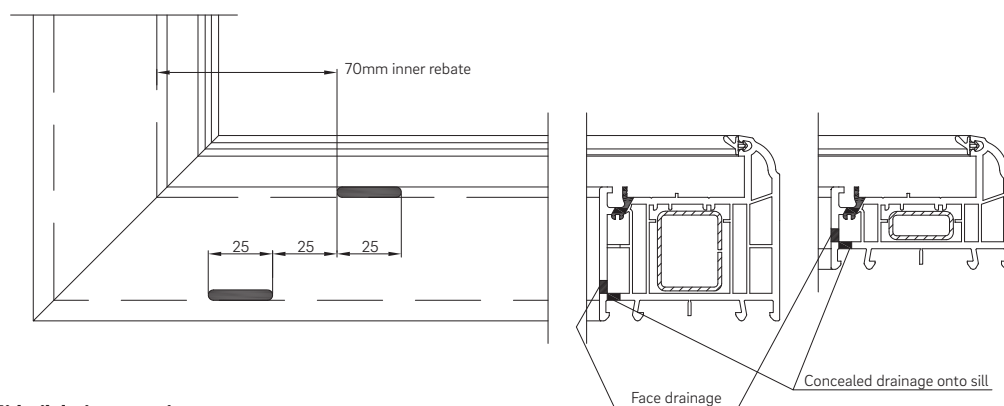
*Diagram 1

07 Drainage details

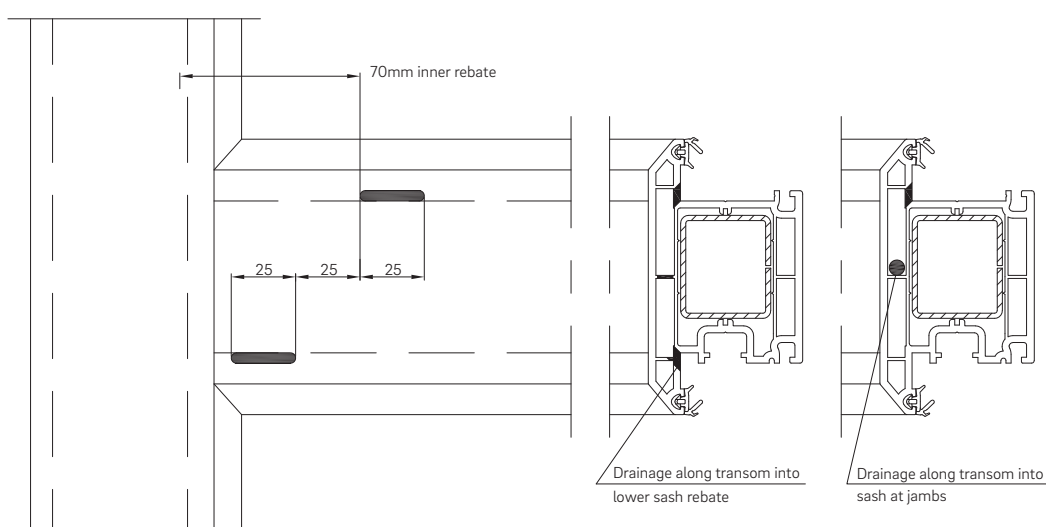
Flush door sash drainage options



Frame drainage options



Midrail drainage options



Low threshold options have been weather tested without any additional drainage requirements. Face drainage on the sash is optional

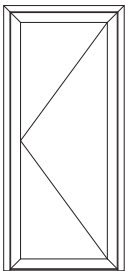
08 U-value data

Enhancing the profile selection improves the overall thermal performance of the window not only for DERs, but more importantly the U value - its' ability to retain heat within the building. The aim of which is to achieve a cost saving on energy bills as the amount of heating required will be reduced.

For more information on the REHAU Rio flush door please contact your local sales office.

Side	Configuration	U Value
Head	Reinforced 72mm outerframe and door sash	1.29
	Unreinforced 72mm outerframe and reinforced door sash	1.27
Jamb - Hinge side	Reinforced 72mm outerframe and door sash	1.29
Jamb - Gearing side	Reinforced 72mm outerframe and door sash	1.40
Threshold options	Exitex SR MDS 70 & Sash	2.59
	Exitex OUM 70 subill RITB with sash and reinforced sill	2.06
	Exitex OUM 70 subill RITB with sash and unreinforced sill	1.98
	Reinforced 52mm outerframe	1.33
	Unreinforced 52mm outerframe	1.03

09 Test data

Style	Report	Description	Results	Size	Specification
	BSI 3406708	Single leaf open out glazed door with full glass and low threshold	Air permeability - Class 2 Watertightness - E1050 Wind resistance - C3 (1200Pa) Operational strength - Met requirement of BS6375-2:2009 Basic security - Met requirement of BS6375-2:2009	1000w x 2200h	PAS 24 & SBD compliant KM13358 KM76189 Approved document Q

10 Product ordering table

Article Number	Variant Number	Description	Finish	Quantity (metres)	Packaging
001469	001	Flush door adaptor	Mill finish aluminium	120	Pack
001476	001	12mm brushpile	Black	200	Spool
200022	001	Reinforcement 35 x 30 x 23 x 14 x 16 x 2mm	Steel	6	Length
200509	001	Screwported aluminium 35.2 x 12.2	Steel	6	Length
216393	001	Reinforcement 25 x 31 x 1.5mm	Steel	6	Length
232932	001	Mechanical joint for article 503555	White	100	Pieces
232942	001	Mechanical joint for article 503795	White	100	Pieces
232962	001	Mechanical joint for article 503815	White	100	Pieces
233641	001	Reinforcement 35 x 30 x 0.8mm	Steel	6	Length
233671	001	Reinforcement 35 x 40 x 2mm	Steel	6	Length
233721	002	Reinforcement 35 x 12 x 0.8mm	Steel	6	Length
250219	004	Reinforcement 35 x 30 x 2mm	Steel	6	Length
287798	001	Reinforcement 35 x 12 x 1.5mm	Steel	6	Length
287816	001	Reinforcement 35 x 40 x 1.5mm	Steel	6	Length
314995	001	14mm Brushpile	Grey	100	Spool
328217	001	Weldable corner gasket	Black	200	Pieces
329648	001	Sash riser block	White	250	Pieces
329648	002	Sash riser block	Brown	250	Pieces
329648	003	Sash riser block	Acorn	250	Pieces
329648	004	Sash riser block	Grey	250	Pieces
329648	005	Sash riser block	Black	250	Pieces
329649	001	Closing seal	Black	300	Spool
333835	001	Reinforcement 43.75 x 19.25 x 1mm	Steel	6	Length
334375	001	Reinforcement 45 x 29 x 29 x 1.5mm	Steel	2.2	Length
334376	001	Reinforcement 45 x 29 x 29 x 1.5mm (Pre-routed)	Steel	2.2	Length
337955	002	Reinforcement 27 x 31 x 12 x 13 x 1.5mm	Steel	2	Length
340684	001	Rio SFS dynamic 3D hinge	White	12	Pack
340684	002	Rio SFS dynamic 3D hinge	Black	12	Pack
344328	001	Reinforcement 45.65 x 25 x 35.25 x 1.5mm	Steel	2.2	Length
503555	701	Midrail 70mm	White	36	Pack
503795	701	Midrail 88mm	White	36	Pack
503815	701	Midrail 107mm	White	24	Pack

Article Number	Variant Number	Description	Finish	Quantity (metres)	Packaging
546025	701	82mm door sash	White	24/480	Pack / Stillage
546415	701 / 901	Sculptured 52mm threshold	White	48/768	Pack / Stillage
546435	701 / 901	Sculptured universal outer frame 72mm	White	36 / 480	Pack / Stillage
546816	701 / 901	Chamfered 52mm threshold	White	48/768	Pack / Stillage
546836	701 / 901	Chamfered universal outer frame 72mm	White	36 / 480	Pack / Stillage
559600	701	28mm Sculptured bead	White	144	Pack
559605	701	28mm Square edge bead	White	144	Pack
Foiled article numbers - for foil variants and Standard / Non-standard information please see matrix on page 28/29					
573555	-	Midrail 70mm	Foil	12	Pack
573795	-	Midrail 88mm	Foil	12	Pack
573815		Midrail 107mm	Foil	12	Pack
586025	-	82mm door sash	Foil	36 / 12	Pack
586415	-	Sculptured 52mm threshold	Foil	36 / 12	Pack
586435	-	Sculptured universal outer frame 72mm	Foil	36 / 12	Pack
586816	-	Chamfered 52mm threshold	Foil	36 / 12	Pack
586836	-	Chamfered universal outer frame 72mm	Foil	36 / 12	Pack
589600	-	28mm Sculptured bead	Foil	36	Pack
589605	-	28mm Square edge bead	Foil	72	Pack

11 Foil matrix

Description	Article Number	Pack Size	Turner Oak on White	Turner Oak Both Sides on Acorn	Golden Oak on White	Golden Oak Both Sides on Acorn	Rosewood on White	Rosewood Both Sides on Brown	Black Brown on White	Black Brown Both Sides on Brown
			2031L	7512	168L	9631				
82mm DBR	586025	12	335 (A)	325 (AB)	321 (A)	351 (AB)	221 (A)	251 (AB)	760 (A)	750 (AB)
Sculptured Universal Outer Frame 72mm	586435	36/12*	335* (A)	325* (AB)	321 (A)	351 (AB)	221 (A)	251 (AB)	760* (A)	750* (AB)
Chamfered Universal Outer Frame 72mm	586836	36/24**/12*	335* (A)	325* (AB)	321 (A)	351 (AB)	221 (A)	251 (AB)	760* (A)	750* (AB)
Midrail 70mm	573555	12	543 (B)	325 (AB)	163 (B)	153 (AB)	162 (B)	152 (AB)	067 (B)	057 (AB)
Midrail 88mm	573795	12	543 (B)	325 (AB)	163 (B)	153 (AB)	162 (B)	152 (AB)	067 (B)	057 (AB)
Midrail 107mm	573815	12	533 (A)	325 (AB)	123 (A)	153 (AB)	122 (A)	152 (AB)	027 (A)	057 (AB)
28mm Sculptured Bead (All with black gasket)	589600	72		325		790		270		750
Square edge bead (All with black gasket)	589605	72		325		790		270		750
Sculptured 52mm threshold	586415	36/12*	335* (A)	325* (AB)	321 (A)	351 (AB)	221 (A)	251 (AB)	760* (A)	750* (AB)
Chamfered 52mm threshold	586816	36/12*	335* (A)	325* (AB)	321 (A)	351 (AB)	221 (A)	251 (AB)	760* (A)	750* (AB)

Anthracite Grey (Grained) on White	Anthracite Grey (Grained) Both Sides on Grey	Slate Grey (Grained) on White	Slate Grey (Grained) Both Sides on Grey	Chartwell Green on White	Chartwell Green Both Sides on White	Pearl Grey on White	Pearl Grey Both Sides on White	Clotted Cream on White	Clotted Cream Both Sides on White	Simply White on White	Simply White Both Sides on White	Smooth Anthracite Grey on White	Smooth Anthracite Grey Both Sides on Grey	Midnight Black on White
4443	1062L	1209L	5855	4444	9734	930L	1980L							
746 (A)	156 (AB)	016 (A)	111 (AB)	277 (A)	257 (AB)	018 (A)	077 (AB)	778 (A)	739 (AB)	728 (A)	134 (AB)	446 (A)	186 (AB)	530 (A)
746 (A)	156 (AB)	016* (A)	111* (AB)	277* (A)	257* (AB)	018* (A)	077* (AB)	778* (A)	739* (AB)	728* (A)	134* (AB)	446* (A)	186* (AB)	530* (A)
746** (A)	156* (AB)	016* (A)	111* (AB)	277* (A)	257* (AB)	018* (A)	077* (AB)	778* (A)	739* (AB)	728* (A)	134* (AB)	446* (A)	186* (AB)	530* (A)
687 (B)	650 (AB)	160 (B)	110 (AB)	872 (B)	725 (AB)	190 (B)	770 (AB)	087 (B)	039 (AB)	457 (B)	431 (AB)	644 (B)	681 (AB)	035 (B)
687 (B)	650 (AB)	160 (B)	110 (AB)	872 (B)	725 (AB)	190 (B)	770 (AB)	087 (B)	039 (AB)	457 (B)	431 (AB)	644 (B)	681 (AB)	035 (B)
647 (A)	650 (AB)	610 (A)	110 (AB)	772 (A)	725 (AB)	810 (A)	770 (AB)	877 (A)	039 (AB)	827 (A)	431 (AB)	064 (A)	681 (AB)	075 (A)
	746		016		257		018		778		754		446	
	746		016		257		018		778		754		446	
746* (A)	156 (AB)	016* (A)	111* (AB)	277* (A)	257* (AB)	018* (A)	077* (AB)	778* (A)	739* (AB)	728* (A)	134* (AB)	446* (A)	186* (AB)	530* (A)
746 (A)	156 (AB)	016* (A)	111* (AB)	277* (A)	257* (AB)	018* (A)	077* (AB)	778* (A)	739* (AB)	728* (A)	134* (AB)	446* (A)	186* (AB)	530* (A)

