

## **ELITE GROUP OF COMPANIES**

Innovation and leadership are two terms usually associated with Elite Group of Companies. Driven by passion and dedication, we offer you world class products, solutions and systems in aluminum architectural & non architectural applications. The role of fine-tuned solutions in construction is huge. Whatever the size of the business may be, companies need top quality services that the professional team at Elite Group promise. When it comes to end-to-end solutions and professional management expertise, Elite Group of Companies has always given its best.

An ISO 9001:2008 certified organizations; our group has been at the apex of providing a vast array of commendable services. Since its inception, the endeavor for each group' subsidiary has been to deliver excellence in terms of quality products and services.

Continuous investments and continuous process improvement aim, we have been successful at making a positive impact on our global customers through sheer dedication and commitment.

Elite Group has developed a stronghold in the international arena. Innovation, integrity, and respect, defines our culture. We have an extensive network of clientele that seek our in-house expertise in all necessary disciplines. With a strong management ethos and adopting a proactive approach, we have successfully catered to every demand and requirement of our valuable customers. This evolution is continuing through an increasing focus on the mentioned scope in which Elite group of companies has taken the lead.

Elite Group takes pride in being a unique organization that has the capability to link the raw material with end user. Our subsidiaries can transform the base material into the defined application, in a continuous supply chain.

The core competencies of the Elite Group include several manufacturing plants equipped with state-of-the art European technology for a full group capacity of more than 60,000 MT/year of production of extruded profiles and 24,000 MT/year of aluminum rolled products.

Premises and staff to control the extrusion lines and the continuous rolling casters along with ancillary and support equipment, makes Elite Group one of the main player in the Middle East aluminum industry to cater the global demand.

Group coating capacity is about 55,000 MT/year with 4 coating lines for profiles, 1 coating line for coils, in addition to the wood coating line and anodizing line for profiles finishing. The extrusion is supported with 3 die shops for design, manufacturing and correction of the tools. Furthermore engineering and calculation offices to serve and support the customer requirements.

## INTRODUCTION TO SYSTEM

Elite Group is oriented to fulfill the obligation to both its customers and to the community at large. Accordingly, while we have been developing aluminium profiles for the general use, we introduced the ecofriendly and energy saving thermally broken profiles; the **ECO-500 Series**.

The **ECO-500 Series** comes in sliding and casement options.

While the profiles are automatically guaranteed for superior quality by strict adherence to quality standards on the in-house manufacturing process, the thermal insulating polyamide strips are imported directly from world class European suppliers. The system in Euro-groove compatible and hence, goes with standard European accessories suppliers.

If need, our Technical Department can render all technical support and service.

The improved version **ECO-500 Series**, which supersedes the earlier issue, has been engineered to synergize aesthetics with ease of fabrication.

Please note we have withdrawn the earlier version of the catalogue and hence, customers are requested to order based only on this updated catalogue.

# ECO - 500

## THERMALLY BROKEN SLIDING SERIES

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**Sections Moment of Intertia Details**

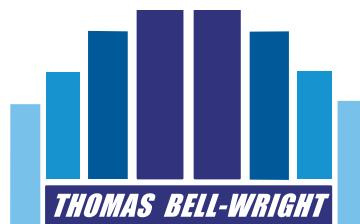
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approval is illegal.**

# ECO - 500 SLIDING

## Certificate of Testing



**Certificate Number:** CHF02

**THOMAS BELL-WRIGHT**  
*INTERNATIONAL CONSULTANTS*

**Date:** 2007, June

**Project:** Seven Tides Ibn Batuta Complex  
at Gardens Mall

**System Supplier:** Al Hamad Industries Co.,  
(L.L.C.)  
Extrusion Division  
P.O. Box 6275  
Sharjah, U.A.E.

**System:** ECO - 500 Thermal Break Sliding  
Window

<b>Tested for:</b>	Air Infiltration	Pass
	Static Water Penetration	Pass
	Structural Load	Pass
	Operation Force Test	Pass
	Structural Load to Safety	Pass

**Notes:** Testing conducted in accordance with ASTM, or industry standards.  
This certificate to be read in conjunction with the full report of testing.  
Refer to report for performance criteria.

**Thomas Bell-Wright International Consultants**

Sandy Dweik  
Sandy Dweik  
Quality Manager



Clarence P. Facun  
Testing Engineer

Date: 19 June 2007

## Test Certificate of Sliding Window

### a. Air infiltration test

PROJECT NAME:		SEVEN TIDES, IBN BATTUTA COMPLEX	
AIR INFILTRATION TEST ASTM E 283		<span style="float: right;">Monday, April 30, 2007 9:30:00 AM</span> <span style="float: right;">Reset Date</span>	
<b>AMBIENT CONDITIONS</b>			
Air Temperature	37 °C	Barometric Pressure	10.15 mb
Wind Speed	m/s	Wind Direction	Deg
<b>TESTING ENGINEER</b>			
Clark Facun		<span style="float: right;">Height</span> <span style="float: right;">1.4 m</span>	
Width	1.3 m	Test Pressure	300 Pa
Inlet Nozzle Size	56 mm	Area	1.82 m <sup>2</sup>
Nozzle Connection	A - PT L1	Length of opening joint	0.0 m
Chamber Connection	B - PT L2	Permitted Leakage area	2.00 m <sup>3</sup> /hr/m <sup>2</sup>
		Permitted Leakage(Meter opening joint)	0.0 m <sup>3</sup> /hr/m
		Total permitted Leakage	3.6 m <sup>3</sup> /hr
<b>READINGS</b>		<b>WITHOUT POLYETHYLENE</b>	
Chamber Pressure	300 Pa	Chamber Pressure	300 Pa
Nozzle Pressure	34 Pa	Nozzle Pressure	82 Pa
Differential Pressure	0 Pa	Differential Pressure	266 Pa
Flow	0 m <sup>3</sup> /hr	Flow	175 m <sup>3</sup> /hr
Nozzle Flow	<b>62.2</b> m <sup>3</sup> /hr	Nozzle Flow	<b>96.7</b> m <sup>3</sup> /hr
Data Recorded at	9:50:00 AM	Data Recorded at	10:40:00 AM
<b>SUMMARY RESULTS</b>			
Permitted Leakage	<b>4</b> m <sup>3</sup> /hr	Specimen Leakage	<b>34.55</b> m <sup>3</sup> /hr
		Conclusion	<b>Pass</b>
Signature _____			

THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

# ECO - 500 SLIDING

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b. Static water penetration test

PROJECT NAME: STATIC WATER PENETRATION TEST to ASTM E 331							
SEVEN TIDES, IBN BATTUTA COMPLEX							
Reset Date <u>Monday, 30 April 2007</u> <u>10:55:00 AM</u>							
AMBIENT CONDITIONS							
Air Temperature Wind Speed	39 °C m/s						
TESTING ENGINEER							
Clark Facun	▼						
Chamber Connection	B- PT L2 ▼						
SPECIMEN TEST CRITERIA							
Barometric Pressure	10.14 mb						
Width	1.3 m						
The spray rack will consist of	3 rows of						
Test Pressure	240 Pa						
Update Links							
READINGS							
<table border="1"> <thead> <tr> <th>Hours</th> <th>Minutes</th> <th>Seconds</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>15</td> <td>0</td> </tr> </tbody> </table>		Hours	Minutes	Seconds	0	15	0
Hours	Minutes	Seconds					
0	15	0					
<b>Timer</b> <span style="background-color: yellow; padding: 2px;">0</span> ▶							
<b>Chamber Pressure</b> <span style="background-color: yellow; padding: 2px;">240</span>							
<input type="button" value="Zero"/> <input type="button" value="Start"/> <input type="button" value="Stop"/>							
Start/reset timer <u>11:00:00 AM</u>							
Calculated finishing time <u>11:15:00 AM</u>							
Actual when timer stopped <u>11:25:00 AM</u>							
Conclusion <span style="background-color: orange; padding: 2px;">Pass</span>							
Signature _____							

THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

Test Certificate of Sliding Window

## Test Certificate of Sliding Window

### c. Structural positive wind load - serviceability test

PROJECT NAME:		SEVEN TIDES, IBN BATTUTA COMPLEX	
STRUCTURAL WIND LOAD - SERVICEABILITY		Reset Date <span style="border: 1px solid #ccc; padding: 2px;">Monday, 30 April 2007 11:30:00 AM</span> AMBIENT CONDITIONS Air Temperature <span style="border: 1px solid #ccc; padding: 2px;">39 °C</span> Barometric Pressure <span style="border: 1px solid #ccc; padding: 2px;">10.15 mb</span> Relative Humidity <span style="border: 1px solid #ccc; padding: 2px;">15 %</span>	
<b>TESTING ENGINEER</b> <span style="border: 1px solid #ccc; padding: 2px;">Clark Facun</span>		<span style="border: 1px solid #ccc; padding: 2px;">SPECIMEN TEST CRITERIA</span> <span style="border: 1px solid #ccc; padding: 2px;">Update Links</span>	
Chamber Connection <span style="border: 1px solid #ccc; padding: 2px;">C-PTI</span>		Design Wind Pressure <span style="border: 1px solid #ccc; padding: 2px;">1211 Pa</span> Mullion Length to be tested <span style="border: 1px solid #ccc; padding: 2px;">1.4 m</span> Transom Length to be tested <span style="border: 1px solid #ccc; padding: 2px;">1.3 m</span> Max. Allowable Deformation-Mullion <span style="border: 1px solid #ccc; padding: 2px;">8 mm</span> Max. Allowable Deformation-Transom <span style="border: 1px solid #ccc; padding: 2px;">7 mm</span>	
<b>LIVE READINGS</b>		<b>POSITIVE WIND LOAD</b>	
Chamber Pressure <span style="border: 1px solid #ccc; padding: 2px;">1211 Pa</span> Top Center Member LDT 1 <span style="border: 1px solid #ccc; padding: 2px;">4.3 mm</span> Middle Center Member LDT 2 <span style="border: 1px solid #ccc; padding: 2px;">4.6 mm</span> Bottom Center Member LDT 3 <span style="border: 1px solid #ccc; padding: 2px;">3.1 mm</span> Top Right Member LDT 4 <span style="border: 1px solid #ccc; padding: 2px;">3.8 mm</span> Middle Right Member LDT 5 <span style="border: 1px solid #ccc; padding: 2px;">3.8 mm</span> Bottom Right Member LDT 6 <span style="border: 1px solid #ccc; padding: 2px;">3.1 mm</span> Glass LDT 7 <span style="border: 1px solid #ccc; padding: 2px;">0.0 mm</span> LDT 8 <span style="border: 1px solid #ccc; padding: 2px;">0.0 mm</span>		Chamber Pressure <span style="border: 1px solid #ccc; padding: 2px;">1211 Pa</span> Actual Mullion Deflection <span style="border: 1 px solid #ccc; padding: 2px;">1 mm</span> <span style="border: 1px solid #ccc; padding: 2px;">Pass</span>  Chamber Pressure <span style="border: 1px solid #ccc; padding: 2px;">1211 Pa</span> Actual Transom Deflection <span style="border: 1 px solid #ccc; padding: 2px;">0 mm</span> <span style="border: 1px solid #ccc; padding: 2px;">Pass</span>  <b>RESIDUAL</b> <span style="border: 1px solid #ccc; padding: 2px;">LDT 1</span> <span style="border: 1px solid #ccc; padding: 2px;">LDT 2</span> <span style="border: 1px solid #ccc; padding: 2px;">LDT 3</span> <span style="border: 1px solid #ccc; padding: 2px;">LDT 4</span> <span style="border: 1px solid #ccc; padding: 2px;">LDT 5</span> <span style="border: 1px solid #ccc; padding: 2px;">LDT 6</span>	
<span style="border: 1px solid #ccc; padding: 2px;">Data recorded @ 11:40:20 AM</span>			

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THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

# ECO - 500 SLIDING

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**d. Structural negative wind load - serviceability test**

PROJECT NAME:		SEVEN TIDES, IBN BATTUTA COMPLEX	
STRUCTURAL WIND LOAD - SERVICEABILITY			
AMBIENT CONDITIONS			
Air Temperature	39 °C	Barometric Pressure	10.15 mb
TESTING ENGINEER		SPECIMEN TEST CRITERIA	
Clark Facun		Design Wind Pressure	1211 Pa
Chamber Connection	C-PTI ▾	Mullion Length to be tested	1.4 m
		Transom Length to be tested	1.3 m
		Max. Allowable Deformation-Mullion	8 mm
		Max. Allowable Deformation-Transom	7 mm
NEGATIVE WIND LOAD			
LIVE READINGS			
Chamber Pressure	1211 Pa	Chamber Pressure	1211 Pa
Top Center Member LDT 1	3.8 mm	Actual Mullion Deflection	1 mm
Middle Center Member LDT 2	4.8 mm		
Bottom Center Member LDT 3	3.1 mm		
Top Right Member LDT 4	3.1 mm		
Middle Right Member LDT 5	3.8 mm		
Bottom Right Member LDT 6	3.1 mm		
Glass LDT 7	0.0 mm		
LDT 8	0.0 mm		
RESIDUAL		LDT 1	LDT 2
		LDT 3	LDT 4
		LDT 5	LDT 6
Data recorded @ 12:07:18 PM			
Design WL Pressure 1211 Pa Actual Mullion Def. 1 mm Pass			
Design WL Pressure 1211 Pa Actual Transom Def 1 mm Pass			

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Test Certificate of Sliding Window

## Test Certificate of Sliding Window

### e. Post Structural - Static water penetration test

PROJECT NAME: POST STRUCTURAL - STATIC WATER PENETRATION TEST to ASTM E 331		SEVEN TIDES, IBN BATTUTA COMPLEX		
AMBIENT CONDITIONS		Reset Date	Monday, 30 April 2007 12:10:00 PM	
Air Temperature	39 °C	Barometric Pressure	10.16 mb	
Wind Speed	m/s	Relative Humidity	18 %	
SPECIMEN TEST CRITERIA				
Clark Facun	Width	1.3 m	Height	1.4 m
Chamber Connection	The spray rack will consist of	3 rows of	3 Nozzles	
B- PT L2	Test Pressure	240 Pa	Update Links	
READINGS		Hours Minutes Seconds		
		0 15 0	0 15 0	Timer
		240	240	Chamber Pressure
		Zero	Start Stop	
				Conclusion Pass
				Signature _____

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# ECO - 500 SLIDING

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**f. Post Structural - Static water penetration test**

<b>PROJECT NAME:</b> POST STRUCTURAL - STATIC WATER PENETRATION TEST to ASTM E 331		<b>SEVEN TIDES, IBN BATTUTA COMPLEX</b>												
Reset Date <b>Monday, 30 April 2007 3:00 PM</b>														
<b>AMBIENT CONDITIONS</b> <table border="1"> <tr> <td>Air Temperature <b>38 °C</b></td> <td>Wind Speed <b>m/s</b></td> <td>Barometric Pressure <b>10.06 mb</b></td> <td>Relative Humidity <b>19 %</b></td> </tr> </table>			Air Temperature <b>38 °C</b>	Wind Speed <b>m/s</b>	Barometric Pressure <b>10.06 mb</b>	Relative Humidity <b>19 %</b>								
Air Temperature <b>38 °C</b>	Wind Speed <b>m/s</b>	Barometric Pressure <b>10.06 mb</b>	Relative Humidity <b>19 %</b>											
<b>SPECIMEN TEST CRITERIA</b> <table border="1"> <tr> <td>Width <b>1.3 m</b></td> <td>Height <b>1.4 m</b></td> <td>Nozzles <b>3</b></td> </tr> <tr> <td colspan="2">The spray rack will consist of <b>3 rows of</b></td> <td>Test Pressure <b>240 Pa</b></td> </tr> </table>			Width <b>1.3 m</b>	Height <b>1.4 m</b>	Nozzles <b>3</b>	The spray rack will consist of <b>3 rows of</b>		Test Pressure <b>240 Pa</b>						
Width <b>1.3 m</b>	Height <b>1.4 m</b>	Nozzles <b>3</b>												
The spray rack will consist of <b>3 rows of</b>		Test Pressure <b>240 Pa</b>												
<b>TESTING ENGINEER</b> <table border="1"> <tr> <td>Clark Facun</td> <td>B- PT L2</td> </tr> </table>			Clark Facun	B- PT L2										
Clark Facun	B- PT L2													
<b>Chamber Connection</b>														
<b>READINGS</b> <table border="1"> <tr> <td align="center" colspan="3"><b>Timer</b></td> </tr> <tr> <td align="center"><b>Hours</b></td> <td align="center"><b>Minutes</b></td> <td align="center"><b>Seconds</b></td> </tr> <tr> <td align="center"><b>0</b></td> <td align="center"><b>15</b></td> <td align="center"><b>0</b></td> </tr> <tr> <td align="center"><b>Zero</b></td> <td align="center"><b>Start</b></td> <td align="center"><b>Stop</b></td> </tr> </table>			<b>Timer</b>			<b>Hours</b>	<b>Minutes</b>	<b>Seconds</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>Zero</b>	<b>Start</b>	<b>Stop</b>
<b>Timer</b>														
<b>Hours</b>	<b>Minutes</b>	<b>Seconds</b>												
<b>0</b>	<b>15</b>	<b>0</b>												
<b>Zero</b>	<b>Start</b>	<b>Stop</b>												
<b>Chamber Pressure</b> <b>240</b>														
Start/reset timer <b>3:50:00 PM</b> Calculated finishing time <b>3:05:00 PM</b> Actual when timer stopped <b>3:07:00 PM</b> Conclusion <b>Pass</b> Signature _____														

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**Test Certificate of Sliding Window**

## Test Certificate of Sliding Window

### g. Structural positive wind load @ 1.5 times design wind load

PROJECT NAME:		SEVEN TIDES, IBN BATTUTA COMPLEX	
STRUCTURAL WIND LOAD - SAFETY		AMBIENT CONDITIONS	
		Air Temperature 37 °C	Barometric Pressure 10.06 mb
		Reset Date Monday, 30 April 2007 4:10 PM	
		Relative Humidity 19 %	
		SPECIMEN TEST CRITERIA	
		Update Links	
		Design Wind Pressure 1817 Pa Mullion Length to be tested 1.4 m Transom Length to be tested 1.3 m Max. Allowable Deformation-Mullion 3 mm Max. Allowable Deformation-Transom 3 mm	
		<b>TESTING ENGINEER</b> Clark Facun Chamber Connection C- PT 1 ▶	
		Chamber Pressure 1817 Pa Actual Mullion Deflection 2 mm <span style="border: 1px solid red; padding: 2px;">Pass</span> Chamber Pressure 1817 Pa Actual Transom Deflection 1 mm <span style="border: 1px solid red; padding: 2px;">Pass</span> <b>RESIDUAL</b> LDT 1 LDT 2 LDT 3 LDT 4 LDT 5 LDT 6 Glass LDT 7 0.38 0.25 0.25 0.51 0.64 LDT 8 0.0 mm	
		<b>LIVE READINGS</b> <b>POSITIVE WIND LOAD</b> Chamber Pressure 1817 Pa Top Center Member LDT 1 5.6 mm Middle Center Member LDT 2 6.4 mm Bottom Center Member LDT 3 4.0 mm Top Right Member LDT 4 4.3 mm Middle Right Member LDT 5 5.1 mm Bottom Right Member LDT 6 4.6 mm Glass LDT 7 0.0 mm LDT 8 0.0 mm Data recorded @ 4:18 PM	
		Chamber Pressure 1817 Pa Actual Mullion Deflection 2 mm <span style="border: 1px solid red; padding: 2px;">Pass</span> Chamber Pressure 1817 Pa Actual Transom Deflection 1 mm <span style="border: 1px solid red; padding: 2px;">Pass</span> Design WL Pressure 1817 Pa Actual Mullion Def 2 mm <span style="border: 1px solid red; padding: 2px;">Pass</span> Design WL Pressure 1817 Pa Actual Transom Def 1 mm <span style="border: 1px solid red; padding: 2px;">Pass</span>	

THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

# ECO - 500 SLIDING

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## h. Structural negative wind load @ 1.5 times design wind load

PROJECT NAME:		SEVEN TIDES, IBN BATTUTA COMPLEX				
STRUCTURAL WIND LOAD - SAFETY		Reset Date Monday, 30 April 2007 4:25:00 PM				
AMBIENT CONDITIONS		Relative Humidity 19 %				
Air Temperature 37 °C	Barometric Pressure 10.06 mb	SPECIMEN TEST CRITERIA				
TESTING ENGINEER		Update Links				
Clark Facun	C- PT I ▶	Design Wind Pressure 1817 Pa				
Chamber Connection		Mullion Length to be tested 1.4 m				
		Transom Length to be tested 1.3 m				
		Max. Allowable Deformation-Mullion 3 mm				
		Max. Allowable Deformation-Transom 3 mm				
<b>NEGATIVE WIND LOAD</b>						
LIVE READINGS		Chamber Pressure 1817 Pa	Chamber Pressure 1817 Pa Actual Mullion Deflection 2 mm			
Top Center Member LDT 1	5.6 mm		Design WL Pressure 1817 Pa Actual Mullion Def. 2 mm			
Middle Center Member LDT 2	6.6 mm		<span style="border: 1px solid red; padding: 2px;">Pass</span>			
Bottom Center Member LDT 3	4.3 mm					
Top Right Member LDT 4	3.3 mm	Chamber Pressure 1817 Pa	Design WL Pressure 1817 Pa			
Middle Right Member LDT 5	4.8 mm	Actual Transom Deflection 1 mm	Actual Transom Def 1 mm			
Bottom Right Member LDT 6	4.1 mm	<span style="border: 1px solid red; padding: 2px;">Pass</span>	<span style="border: 1px solid red; padding: 2px;">Pass</span>			
Glass LDT 7	0.0 mm					
LDT 8	0.0 mm					
RESIDUAL	LDT 1 0.25	LDT 2 0.51	LDT 3 0.25	LDT 4 0.25	LDT 5 0.51	LDT 6 0.38
Data recorded @ 4:38 PM						

THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

Test Certificate of Sliding Window

## Test Certificate of Sliding Window

### i. Post Structural - Air infiltration test

PROJECT NAME: POST STRUCTURAL - AIR INFILTRATION TEST ASTM E 283		SEVEN TIDES, IBN BATTUTA COMPLEX	
		Tuesday, May 15, 2007 2:30:12 PM	
<b>AMBIENT CONDITIONS</b>		Reset Date	
Air Temperature	41 °C	Barometric Pressure	10.02 mb
Wind Speed	m/s	Wind Direction	Deg
<b>TESTING ENGINEER</b>		<b>SPECIMEN TEST CRITERIA</b>	
Clark Facun		Width	1.3 m
		Height	1.4 m
		Test Pressure	75 Pa
Inlet Nozzle Size	56 mm	Area	1.82 m <sup>2</sup>
Nozzle Connection	A- PT L1	Length of opening joint	0.0 m
Chamber Connection	B- PT L2	Permitted Leakage area	5.00 m <sup>3</sup> /hr/m <sup>2</sup>
		Permitted Leakage(Meter opening joint)	0.0 m <sup>3</sup> /hr/m
		Total permitted Leakage	9.1 m <sup>3</sup> /hr
<b>READINGS</b>		<b>WITHOUT POLYETHYLENE</b>	
Chamber Pressure	75 Pa	Chamber Pressure	75 Pa
Nozzle Pressure	11 Pa	Nozzle Pressure	14 Pa
Differential Pressure	61 Pa	Differential Pressure	0 Pa
Flow	83 m <sup>3</sup> /hr	Flow	0 m <sup>3</sup> /hr
Nozzle Flow	35.3 m <sup>3</sup> /hr	Nozzle Flow	39.8 m <sup>3</sup> /hr
Data Recorded at	2:45 PM	Data Recorded at	2:53 PM
<b>SUMMARY RESULTS</b>		Specimen Leakage Conclusion Pass	
Permitted Leakage	9 m <sup>3</sup> /hr	Specimen Leakage	4.54 m <sup>3</sup> /hr
		Signature	

THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

# ECO - 500 SLIDING

j. Post Structural - Air infiltration test

PROJECT NAME:		SEVEN TIDES, IBN BATTUTA COMPLEX																													
POST STRUCTURAL - AIR INFILTRATION TEST ASTM E 283																															
AMBIENT CONDITIONS		Tuesday, May 15, 2007 2:30:12 PM      Reset Date																													
Air Temperature	41 °C	Barometric Pressure	10.02 mb																												
Wind Speed	m/s	Wind Direction	Deg																												
<b>TESTING ENGINEER</b> Clark Facun																															
<b>SPECIMEN TEST CRITERIA</b> <table border="1"> <tr> <td>Width</td> <td>1.3 m</td> <td>Height</td> <td>1.4 m</td> </tr> <tr> <td>Test Pressure</td> <td>100 Pa</td> <td></td> <td></td> </tr> <tr> <td>Area</td> <td>1.82 m<sup>2</sup></td> <td></td> <td></td> </tr> <tr> <td>Length of opening joint</td> <td>0.0 m</td> <td></td> <td></td> </tr> <tr> <td>Permitted Leakage area</td> <td>5.00 m<sup>3</sup>/hr/m<sup>2</sup></td> <td></td> <td></td> </tr> <tr> <td>Permitted Leakage(Meter opening joint)</td> <td>0.0 m<sup>3</sup>/hr/m</td> <td></td> <td></td> </tr> <tr> <td>Total permitted Leakage</td> <td>9.1 m<sup>3</sup>/hr</td> <td></td> <td></td> </tr> </table>				Width	1.3 m	Height	1.4 m	Test Pressure	100 Pa			Area	1.82 m <sup>2</sup>			Length of opening joint	0.0 m			Permitted Leakage area	5.00 m <sup>3</sup> /hr/m <sup>2</sup>			Permitted Leakage(Meter opening joint)	0.0 m <sup>3</sup> /hr/m			Total permitted Leakage	9.1 m <sup>3</sup> /hr		
Width	1.3 m	Height	1.4 m																												
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Total permitted Leakage	9.1 m <sup>3</sup> /hr																														
<b>READINGS</b> <b>WITHOUT POLYETHYLENE</b>		<b>READINGS</b> <b>WITH POLYETHYLENE</b>																													
Inlet Nozzle Size	56 mm	Chamber Pressure	100 Pa																												
Nozzle Connection	A- PTL1	Nozzle Pressure	17 Pa																												
Chamber Connection	B- PT L2	Differential Pressure	0 Pa																												
		Flow	0 m <sup>3</sup> /hr																												
		Nozzle Flow	43.9 m <sup>3</sup> /hr																												
		Data Recorded at	2:53 PM																												
<b>SUMMARY RESULTS</b> <table border="1"> <tr> <td>Permitted Leakage</td> <td>9 m<sup>3</sup>/hr</td> <td>Specimen Leakage</td> <td>8.61 m<sup>3</sup>/hr</td> </tr> <tr> <td>Conclusion</td> <td colspan="3">Pass</td> </tr> </table>				Permitted Leakage	9 m <sup>3</sup> /hr	Specimen Leakage	8.61 m <sup>3</sup> /hr	Conclusion	Pass																						
Permitted Leakage	9 m <sup>3</sup> /hr	Specimen Leakage	8.61 m <sup>3</sup> /hr																												
Conclusion	Pass																														
Signature _____																															

THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

## Test Certificate of Sliding Window

# ECO - 500 SLIDING

## THERMAL TRANSMITTANCE ACCORDING TO EN ISO 10077-2

### Theory

The thermal transmittance of a frame according to EN ISO 10077-2:

$$U_f = \frac{L_{2D} - U_p * l_p}{l_f} \quad \text{and} \quad L_{2D} = \frac{q_{l,tot}}{\Delta \theta}$$

with:

$U_f$  : thermal transmittance of the window frame [W/m<sup>2</sup>K]

$U_p$  : thermal transmittance of the flanking panel [W/m<sup>2</sup>K]

$l_p$  : projected width of the flanking panel [m]

$l_f$  : projected width of the window frame [m]

$L_{2D}$  : two-dimensional coupling coefficient [W/mK]

$q_{l,tot}$  : total heat flow through the window frame and the flanking panel [W/m]

$\Delta\theta$  : temperature difference between inside ( $\theta_i$ ) and outside ( $\theta_e$ ) [K]

POWERED BY



TECHNOFORM BAUTEC

### Calculation

Item: elite sliding bisco re

input data:	$q_{l,tot} = 16.738 \text{ W/m}$	$R_{se} = 0.04 \text{ m}^2\text{K/W}$
	$\theta_e = 0.0^\circ\text{C}$	$R_{si} = 0.13 \text{ m}^2\text{K/W}$
	$\theta_i = 20.0^\circ\text{C}$	
	$d_p = 0.0241 \text{ m}$	
	$\lambda_p = 0.035 \text{ W/m}\cdot\text{K}$	
	$U_p = 1.165 \text{ W/m}^2\text{K}$	
	$l_p = 0.190 \text{ m}$	
		calculation results:
		$L_{2D} = 0.84 \text{ W/mK}$
	$l_f = 0.1163 \text{ m}$	$U_f = 5.29 \text{ W/m}^2\text{K}$

$q_{l,tot}$ :

alphanumeric output  
heat losses per boundary condition

$\Delta\theta$ :

input data, surface boundary conditions:  
inside temperature minus outside temperature

$U_p$ :

calculation, using the following formula:

$$U_p = \left[ \frac{1}{h_e} + \sum \frac{d_p}{\lambda_p} + \frac{1}{h_i} \right]^{-1}$$

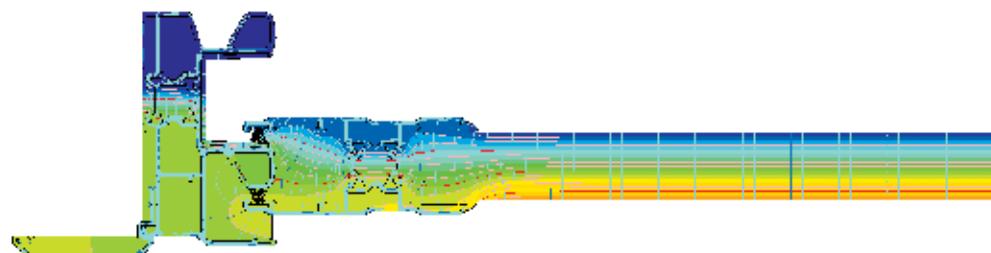
with:  $h_e / h_i$  ext./int. surface heat transfer coeff. [W/m<sup>2</sup>K]

$d_p$  thickness of panel p [m]

$\lambda_p$  thermal conductivity of panel p [W/mK]

$l_p / l_f$ :

input data: dimensions of the item



# ECO - 500 SLIDING

## THERMAL TRANSMITTANCE ACCORDING TO EN ISO 10077-2

### Theory

The thermal transmittance of a frame according to EN ISO 10077-2:

$$U_f = \frac{L_{2D} - U_p * l_p}{l_f} \quad \text{and} \quad L_{2D} = \frac{q_{l,tot}}{\Delta \theta}$$

with:

$U_f$ : thermal transmittance of the window frame [W/m<sup>2</sup>K]

$U_p$ : thermal transmittance of the flanking panel [W/m<sup>2</sup>K]

$l_p$ : projected width of the flanking panel [m]

$l_f$ : projected width of the window frame [m]

$L_{2D}$ : two-dimensional coupling coefficient [W/mK]

$q_{l,tot}$ : total heat flow through the window frame and the flanking panel [W/m]

$\Delta\theta$ : temperature difference between inside ( $\theta_i$ ) and outside ( $\theta_e$ ) [K]

POWERED BY



TECHNOFORM BAUTEC

### Calculation

Item: elite sliding central bisco re

input data:  
 $q_{l,tot} = 17.246 \text{ W/m}$   
 $\theta_e = 0.0^\circ\text{C}$   
 $\theta_i = 20.0^\circ\text{C}$

$R_{se} = 0.04 \text{ m}^2\text{K/W}$   
 $R_{si} = 0.13 \text{ m}^2\text{K/W}$

$d_p = 0.0241 \text{ m}$   
 $\lambda_p = 0.035 \text{ W/m}\cdot\text{K}$   
 $U_p = 1.165 \text{ W/m}^2\text{K}$   
 $l_p = 0.380 \text{ m}$

calculation results:  
 $L_{2D} = 0.86 \text{ W/mK}$   
 $U_f = 4.99 \text{ W/m}^2\text{K}$

$q_{l,tot}$ :

alphanumeric output  
heat losses per boundary condition

$\Delta\theta$ :

input data, surface boundary conditions:  
inside temperature minus outside temperature

$U_p$ :

calculation, using the following formula:

$$U_p = \left[ \frac{1}{h_e} + \sum \frac{d_p}{\lambda_p} + \frac{1}{h_i} \right]^{-1}$$

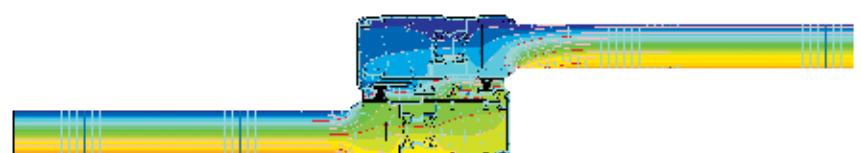
with:  $h_e / h_i$  ext./int. surface heat transfer coeff. [W/m<sup>2</sup>K]

$d_p$  thickness of panel p [m]

$\lambda_p$  thermal conductivity of panel p [W/mK]

$l_p / l_f$ :

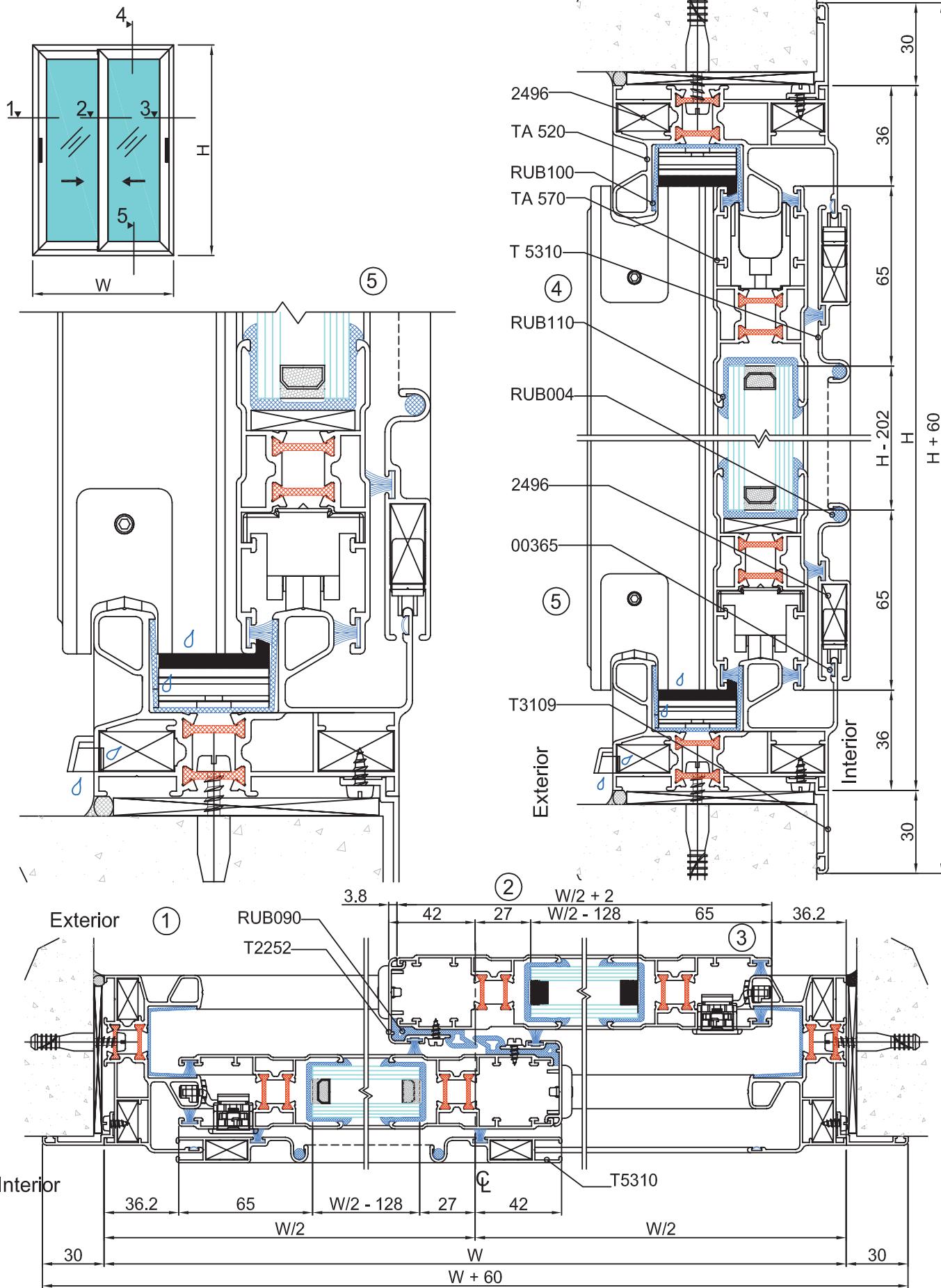
input data: dimensions of the item



## Windows and Doors Elevation sectional details

### SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

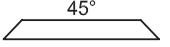
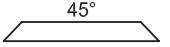
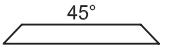
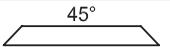
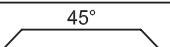
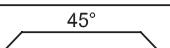
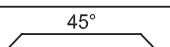
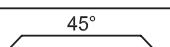
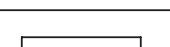
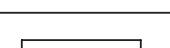
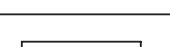
**ECO - 500**



# **THERMAL BREAK DOUBLE SLIDING WINDOW**

# **ECO - 500**

## **PROFILE CUTTING LIST**

ITEM No.	DESCRIPTION & SECTION SHAPE	PROFILE No.	PROFILE CUTTING ANGLE	CUTTING SIZE	No. OF PIECES	REMARKS
1.	 FRAME WIDTH	TA 520		W	02	
2.	 FRAME HEIGHT	TA 520		H	02	
3.	 SASH WIDTH	TA 570		W/2 + 2	04	W/2 + 2
4.	 SASH HEIGHT	TA 570		H - 72.6	04	H - 72.6
5.	 INTER LOCK HEIGHT	T2252		H - 72.6	02	H - 72.6
6.	 FLY SCREEN WIDTH	T5310		W/2 + 2	02	
7.	 FLY SCREEN HEIGHT	T5310		H - 83	02	
8.	 ARCHITRAVE WIDTH	T 3109		W + 60	02	
9.	 ARCHITRAVE HEIGHT	T 3109		H + 60	02	
10.	 CORNER CLEAT FOR FRAME	2496		19.5	08	
11.	 CORNER CLEAT FOR FLY SCREEN	5278		8.5	04	
12.	 CORNER CLEAT FOR SASH	5576		2.5	16	

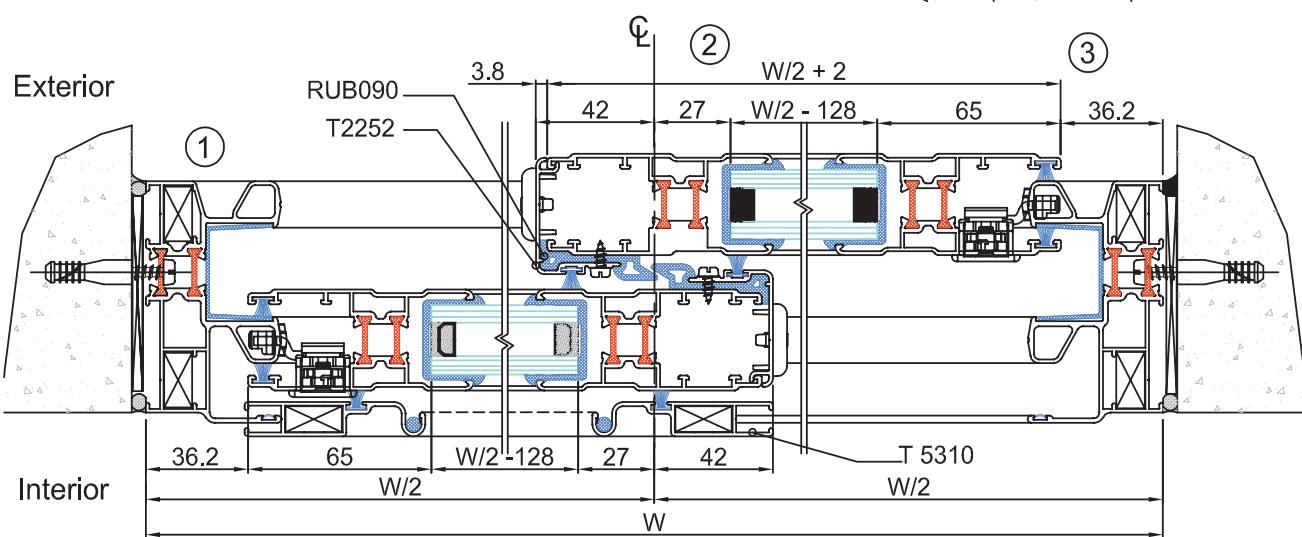
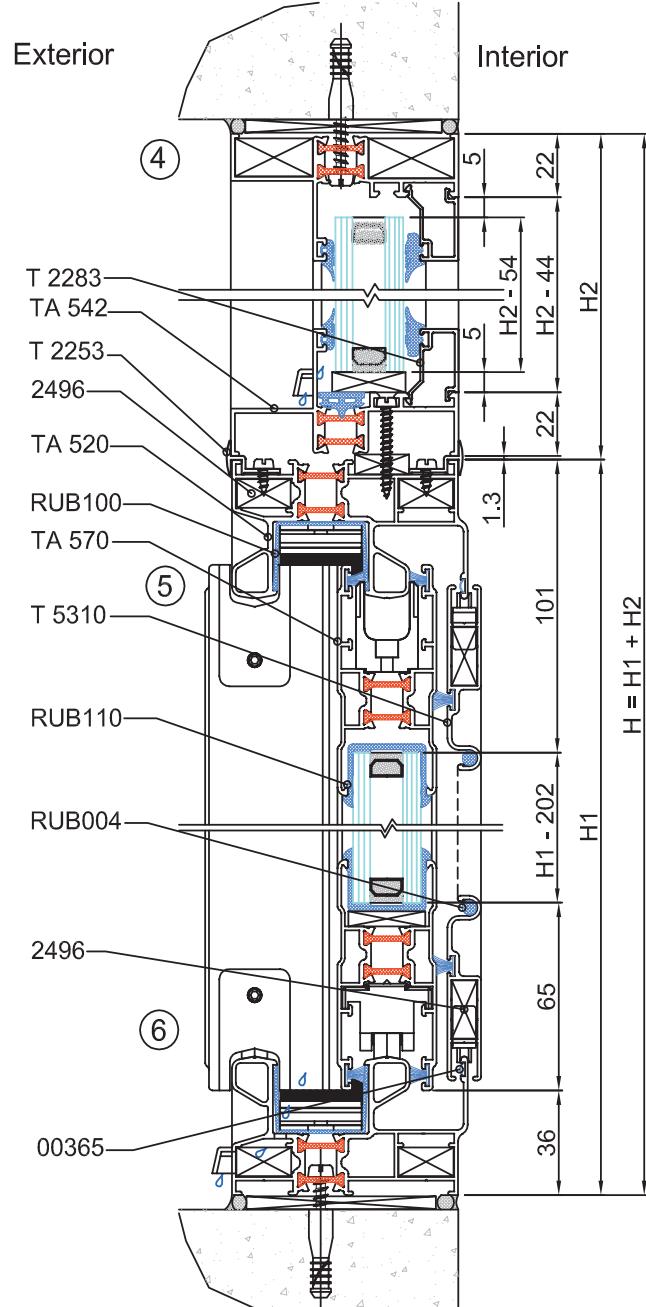
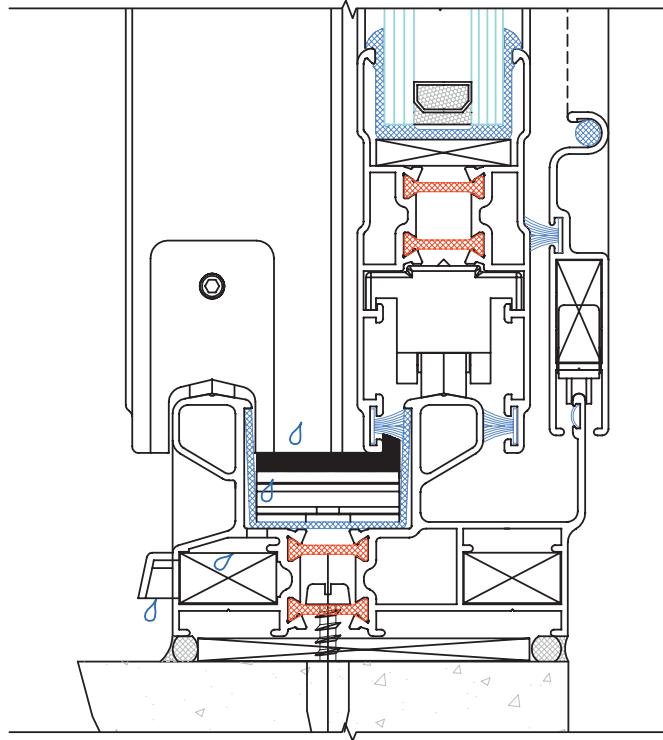
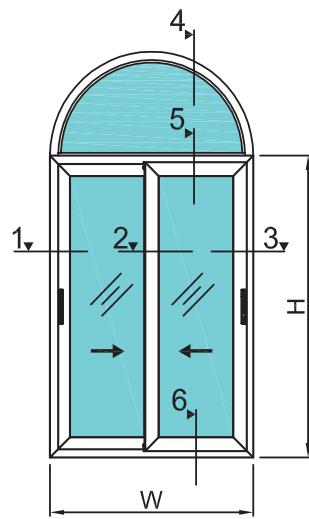
## **ACCESSORIES LIST**

ITEM No.	ACCESSORY CODE No.	DESCRIPTION	FINISH	QTY	ITEM No.	GASKET CODE No.	DESCRIPTION	QTY
1.	00365	ALIGNMENT CORNER	M. F	04	1.	RUB 110	24mm U GASKET	2W + 4H
2.	A1500	NYLON CORNER FOR SASH	M. F	08	2.	RUB 100	SLIDING FRAME GASKET	2W + 2H
3.	2314	DRAIN HOLE COVER	M. F	02	3.	RUB 090	INTER LOCK GASKET	2H
4.	03144	BUMP RUBBER	M. F	04	4.	RUB 004	FLY SCREEN GASKET	1W + 2H
5.	03143	DUST PLUG	M. F	02	5.	PB69-800-3P-HF	WEATHER PILE FOR SASH	4W + 6H
6.	03115	ROLLER	M. F	04	6.	PB69-800-4P	WEATHER PILE FOR FLY SCREEN	1W + 2H
7.	02983	HANDLE	P. C	02				
8.	03085	HANDLE KIT	M. F	02				

NOTE: SCREWS, FLY SCREEN ROLLER, ALUMINIUM MESH, SILICON & GLASS ARE NOT INCLUDED IN THE CUTTING LIST

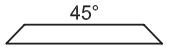
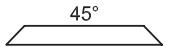
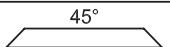
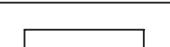
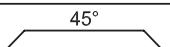
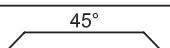
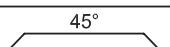
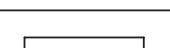
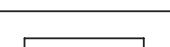
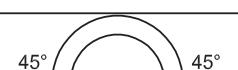
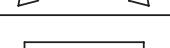
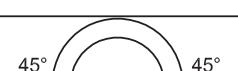
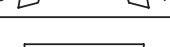
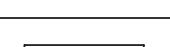
## SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

ECO - 500



# **THERMAL BREAK DOUBLE SLIDING WINDOW WITH TOP FIXLITE ECO - 500**

## **PROFILE CUTTING LIST**

ITEM No.	DESCRIPTION & SECTION SHAPE	PROFILE No.	PROFILE CUTTING ANGLE	CUTTING SIZE	No. OF PIECES	REMARKS
1.		FRAME WIDTH	TA 520		W	02
2.		FRAME HEIGHT	TA 520		H	02
3.		SASH WIDTH	TA 570		W/2 + 2	04
4.		SASH HEIGHT	TA 570		H - 72.6	04
5.		INTER LOCK HEIGHT	T2252		H - 72.6	02
6.		FLY SCREEN WIDTH	T5310		W/2 + 2	02
7.		FLY SCREEN HEIGHT	T5310		H - 83	02
8.		ARCHITRAVE WIDTH	T 3109		W + 60	02
9.		ARCHITRAVE HEIGHT	T 3109		H + 60	02
10.		CORNER CLEAT FOR FRAME	2496		19.5	08
11.		CORNER CLEAT FOR FLY SCREEN	5278		8.5	04
12.		CORNER CLEAT FOR SASH	5576		2.5	16
13.		FIXLITE FRAME WIDTH	TA 542		W	01
14.		(T4) ARCH FRAME	TA 542		(3.14 X D)/2	01
15.		GLASS BEAD FOR FIXLITE	T 2283		W - 44	01
16.		(T4) GLASS BEAD FOR FIXLITE	T 2283		(3.14 X D)/2	01
17.		ADOPTER	T 2253		W	02
18.		CORNER CLEAT FOR FIXLITE FRAME	2261		28	02
					27	02
						MILL FINISH

## **ACCESSORIES LIST**

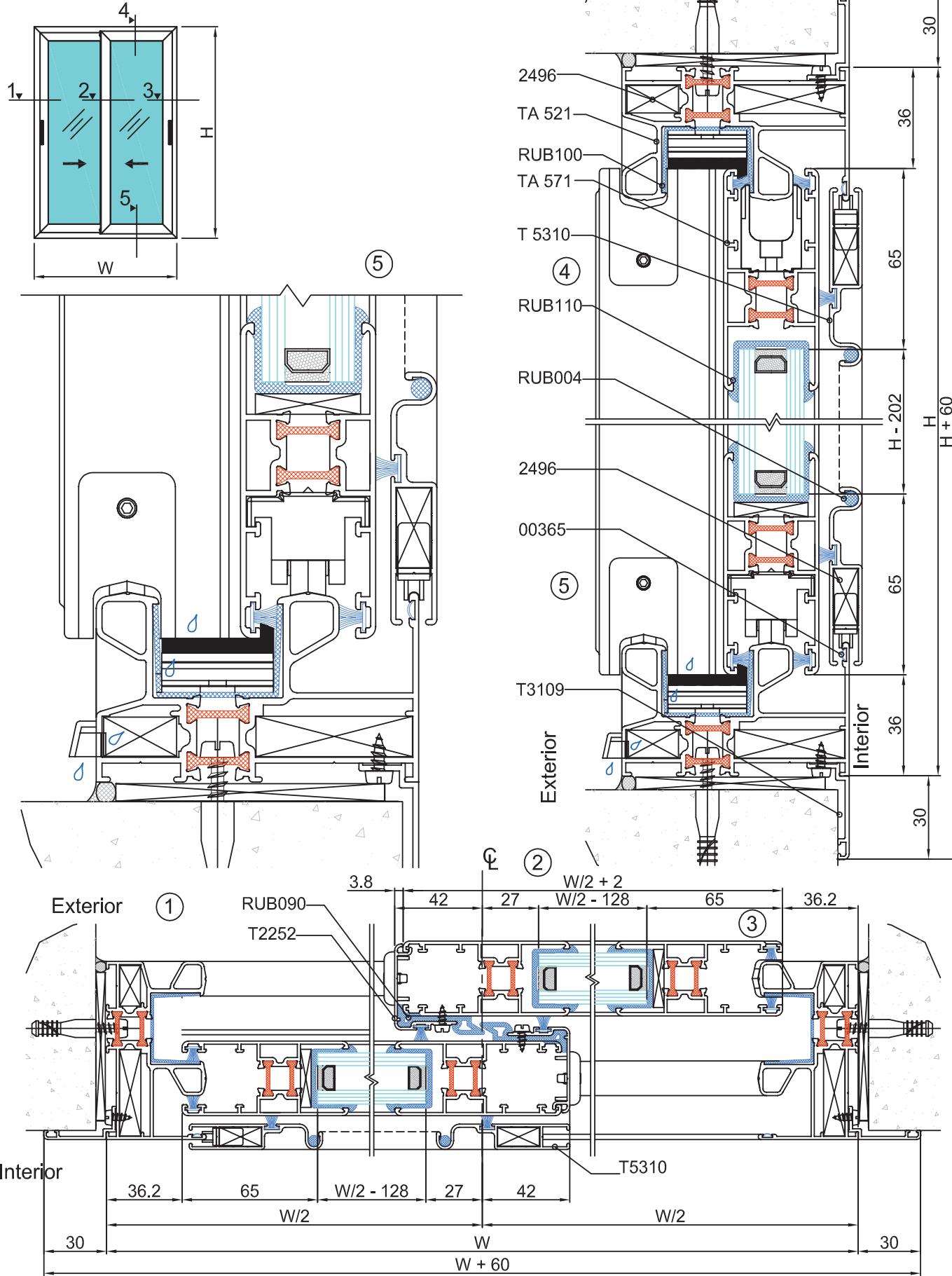
ITEM No.	ACCESSORY CODE No.	DESCRIPTION	FINISH	QTY	ITEM No.	GASKET CODE No.	DESCRIPTION	SINGLE LEAF
1.	00365	ALIGNMENT CORNER	M. F	04	1.	RUB 110	24mm U GASKET	2W + 4H
2.	A1500	NYLON CORNER FOR SASH	M. F	08	2.	RUB 100	SLIDING FRAME GASKET	2W + 2H
3.	2314	DRAIN HOLE COVER	M. F	04	3.	RUB 090	INTER LOCK GASKET	2H
4.	03144	BUMP RUBBER	M. F	04	4.	RUB 004	FLY SCREEN GASKET	1W + 2H
5.	03143	DUST PLUG	M. F	02	5.	RUB 010	THERMAL BARRIER GASKET	1W
6.	03115	ROLLER	M. F	04	6.	RUB 055	INTERNAL GLAZING GASKET	1W + 2H
7.	02983	HANDLE	P. C	02	7.	RUB 065	EXTERNAL GLAZING GASKET	1W + 2H
8.	03085	HANDLE KIT	M. F	02	8.	PB69-800-3P-HF	WEATHER PILE FOR SASH	4W + 6H
					9.	PB69-800-4P	WEATHER PILE FOR FLY SCREEN	1W + 2H

NOTE: SCREWS, FLY SCREEN ROLLER, ALUMINIUM MESH, SILICON & GLASS ARE NOT INCLUDED IN THE CUTTING LIST

## SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

ECO - 500

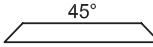
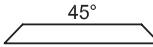
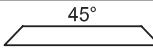
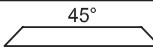
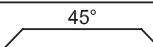
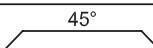
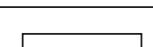
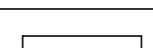
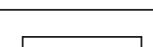
### STRAIGHT EDGE FRAME AND SASH



# **THERMAL BREAK DOUBLE SLIDING WINDOW STRAIGHT EDGE FRAME AND SASH**

**ECO - 500**

## **PROFILE CUTTING LIST**

ITEM No.	DESCRIPTION & SECTION SHAPE	PROFILE No.	PROFILE CUTTING ANGLE	CUTTING SIZE	No. OF PIECES	REMARKS
1.	 FRAME WIDTH	TA 521		W	02	
2.	 FRAME HEIGHT	TA 521		H	02	
3.	 SASH WIDTH	TA 571		W/2 + 2	04	W/2 + 2
4.	 SASH HEIGHT	TA 571		H - 72.6	04	H - 72.6
5.	 INTER LOCK HEIGHT	T2252		H - 72.6	02	H - 72.6
6.	 FLY SCREEN WIDTH	T5310		W/2 + 2	02	
7.	 FLY SCREEN HEIGHT	T5310		H - 83	02	
8.	 ARCHITRAVE WIDTH	T 3109		W + 60	02	
9.	 ARCHITRAVE HEIGHT	T 3109		H + 60	02	
10.	 CORNER CLEAT FOR FRAME	2496		19.5	08	
11.	 CORNER CLEAT FOR FLY SCREEN	5278		8.5	04	
12.	 CORNER CLEAT FOR SASH	5576		2.5	16	

## **ACCESSORIES LIST**

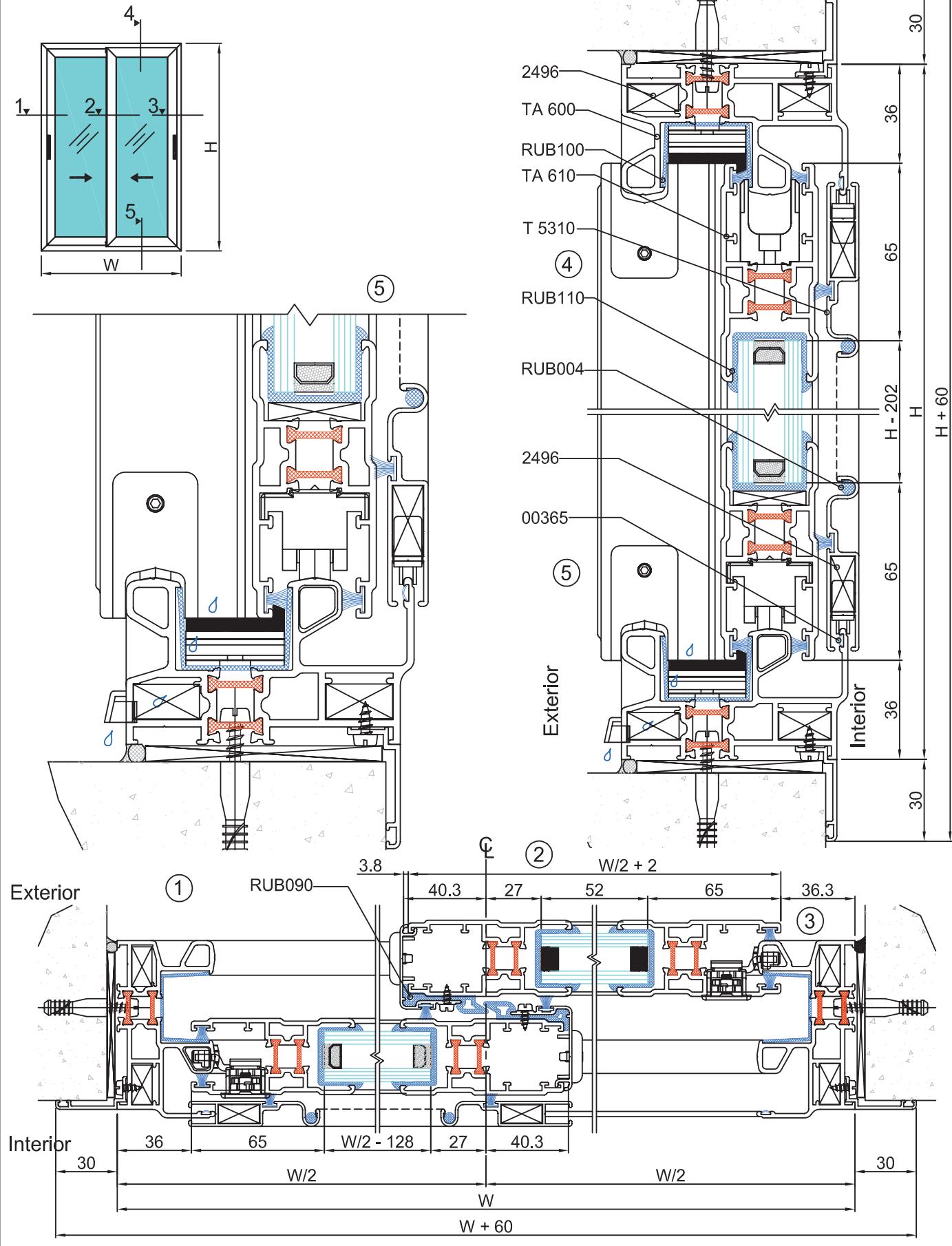
ITEM No.	ACCESSORY CODE No.	DESCRIPTION	FINISH	QTY	ITEM No.	GASKET CODE No.	DESCRIPTION	QTY
1.	00365	ALIGNMENT CORNER	M. F	04	1.	RUB 110	24mm U GASKET	2W + 4H
2.	A1500	NYLON CORNER FOR SASH	M. F	08	2.	RUB 100	SLIDING FRAME GASKET	2W + 2H
3.	2314	DRAIN HOLE COVER	M. F	02	3.	RUB 090	INTER LOCK GASKET	2H
4.	03144	BUMP RUBBER	M. F	04	4.	RUB 004	FLY SCREEN GASKET	1W + 2H
5.	03143	DUST PLUG	M. F	02	5.	PB69-800-3P-HF	WEATHER PILE FOR SASH	4W + 6H
6.	03115	ROLLER	M. F	04	6.	PB69-800-4P	WEATHER PILE FOR FLY SCREEN	1W + 2H
7.	02983	HANDLE	P. C	02				
8.	03094	HANDLE KIT	M. F	02				

NOTE: SCREWS, FLY SCREEN ROLLER, ALUMINIUM MESH, SILICON & GLASS ARE NOT INCLUDED IN THE CUTTING LIST

## SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

**ECO - 500**

### HEAVY DUTY PROFILES (2.1mm THICK)



# **THERMAL BREAK DOUBLE SLIDING WINDOW HEAVY DUTY PROFILES (2.1mm THICK)**

**ECO - 500**

## **PROFILE CUTTING LIST**

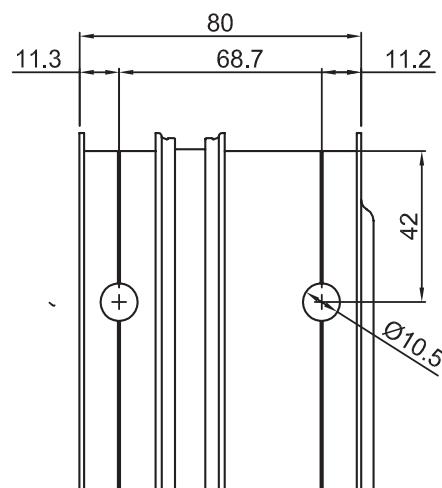
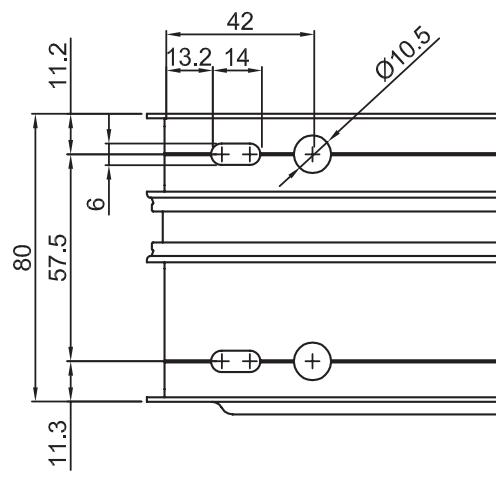
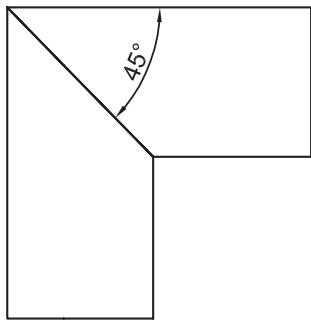
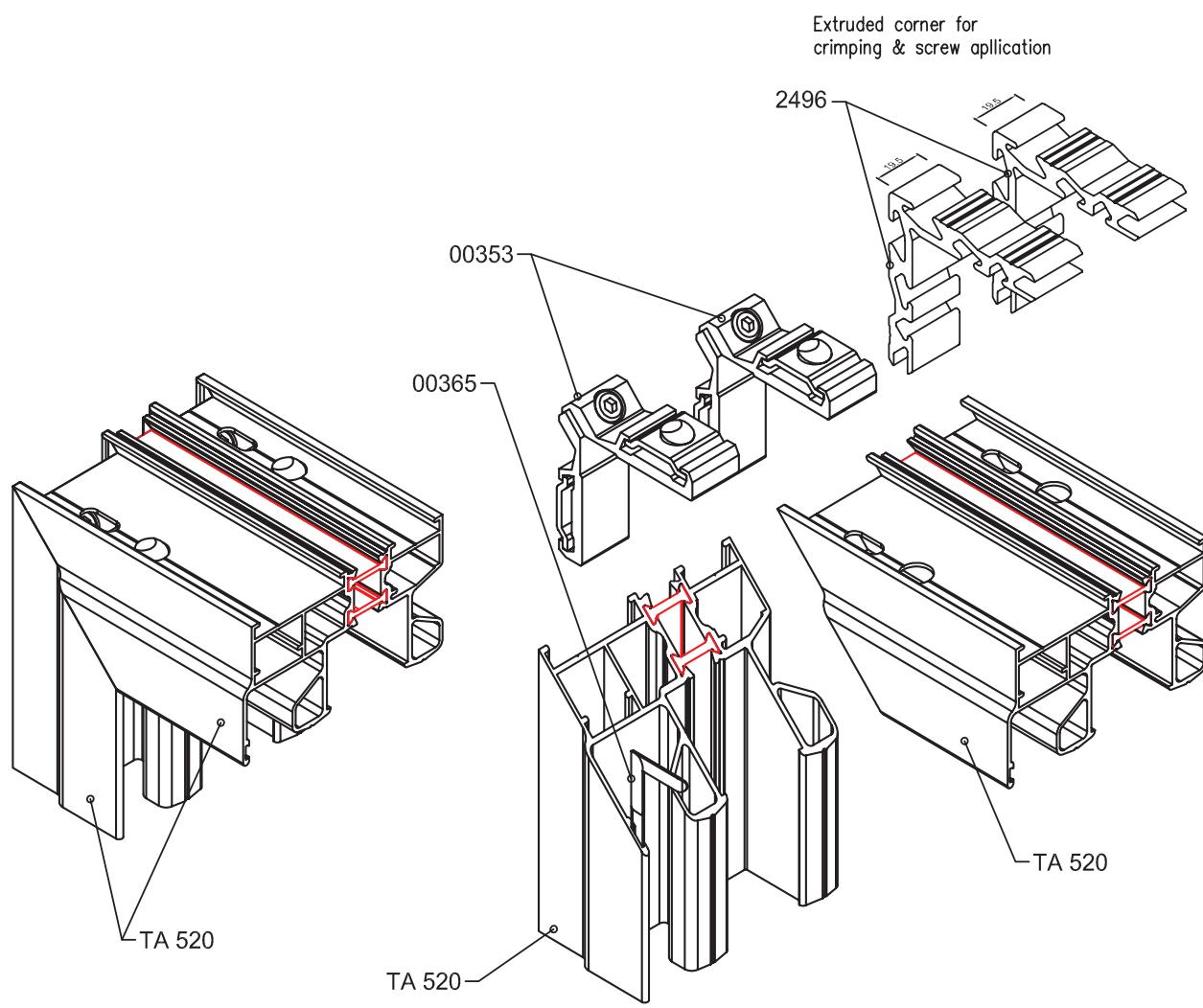
ITEM No.	DESCRIPTION & SECTION SHAPE	PROFILE No.	PROFILE CUTTING ANGLE	CUTTING SIZE	No. OF PIECES	REMARKS
1.	FRAME WIDTH	TA 600		W	02	
2.	FRAME HEIGHT	TA 600		H	02	
3.	SASH WIDTH	TA 610		W/2 + 2	04	W/2 + 2
4.	SASH HEIGHT	TA 610		H - 72.6	04	H - 72.6
5.	INTER LOCK HEIGHT	T2252		H - 72.6	02	H - 72.6
6.	FLY SCREEN WIDTH	T5310		W/2 + 2	02	
7.	FLY SCREEN HEIGHT	T5310		H - 83	02	
8.	ARCHITRAVE WIDTH	T 3109		W + 60	02	
9.	ARCHITRAVE HEIGHT	T 3109		H + 60	02	
10.	CORNER CLEAT FOR FRAME	2496		19.5	08	
11.	CORNER CLEAT FOR FLY SCREEN	5278		8.5	04	
12.	CORNER CLEAT FOR SASH	5576		2.5	16	

## **ACCESSORIES LIST**

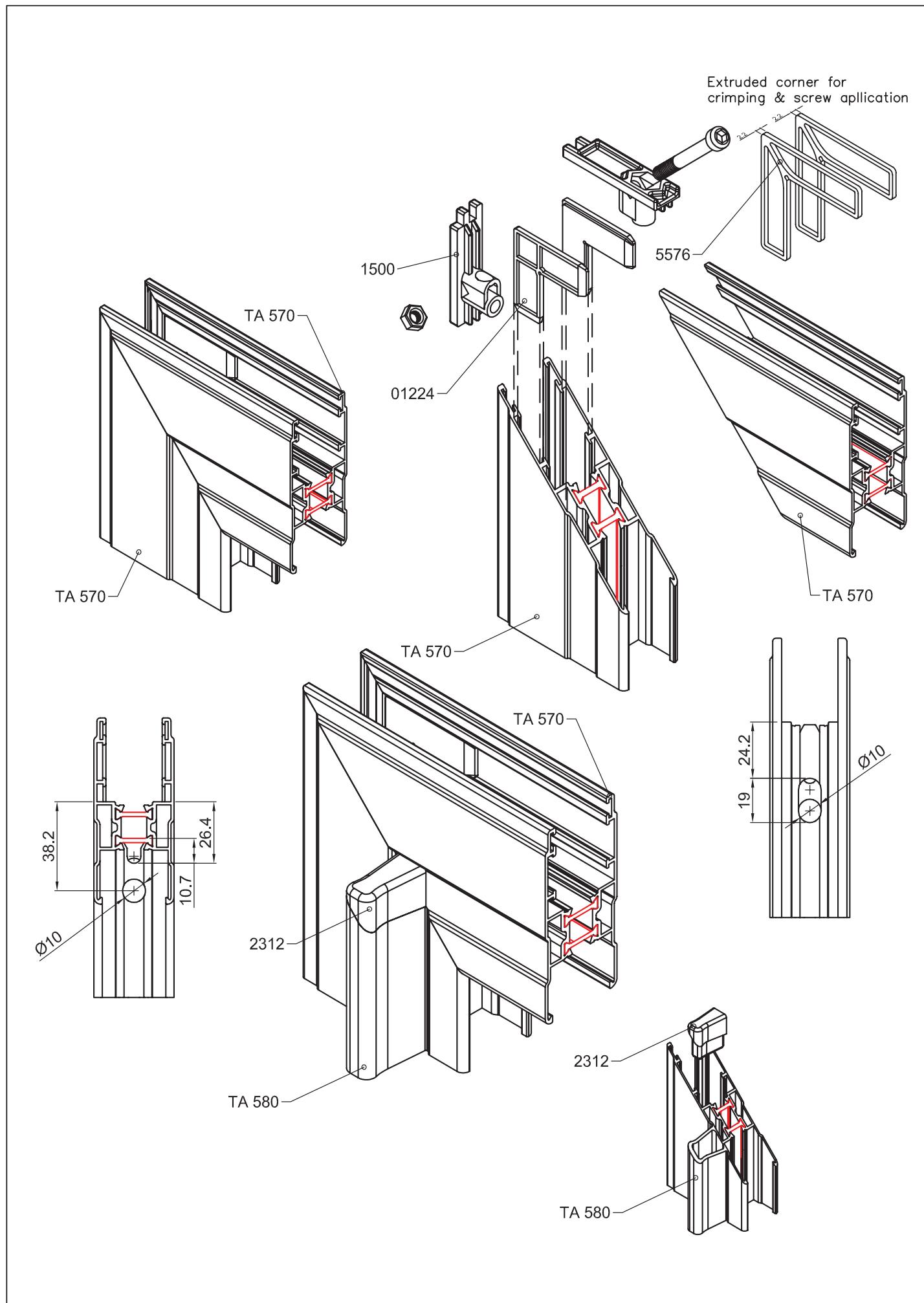
ITEM No.	ACCESSORY CODE No.	DESCRIPTION	FINISH	QTY	ITEM No.	GASKET CODE No.	DESCRIPTION	QTY
1.	00365	ALIGNMENT CORNER	M. F	04	1.	RUB 110	24mm U GASKET	2W + 4H
2.	A1500	NYLON CORNER FOR SASH	M. F	08	2.	RUB 100	SLIDING FRAME GASKET	2W + 2H
3.	2314	DRAIN HOLE COVER	M. F	02	3.	RUB 090	INTER LOCK GASKET	2H
4.	03144	BUMP RUBBER	M. F	04	4.	RUB 004	FLY SCREEN GASKET	1W + 2H
5.	03143	DUST PLUG	M. F	02	5.	PB69-800-3P-HF	WEATHER PILE FOR SASH	4W + 6H
6.	03115	ROLLER	M. F	04	6.	PB69-800-4P	WEATHER PILE FOR FLY SCREEN	1W + 2H
7.	02983	HANDLE	P. C	02				
8.	03085	HANDLE KIT	M. F	02				

NOTE: SCREWS, FLY SCREEN ROLLER, ALUMINIUM MESH, SILICON & GLASS ARE NOT INCLUDED IN THE CUTTING LIST

## 3D Assembly Drawing

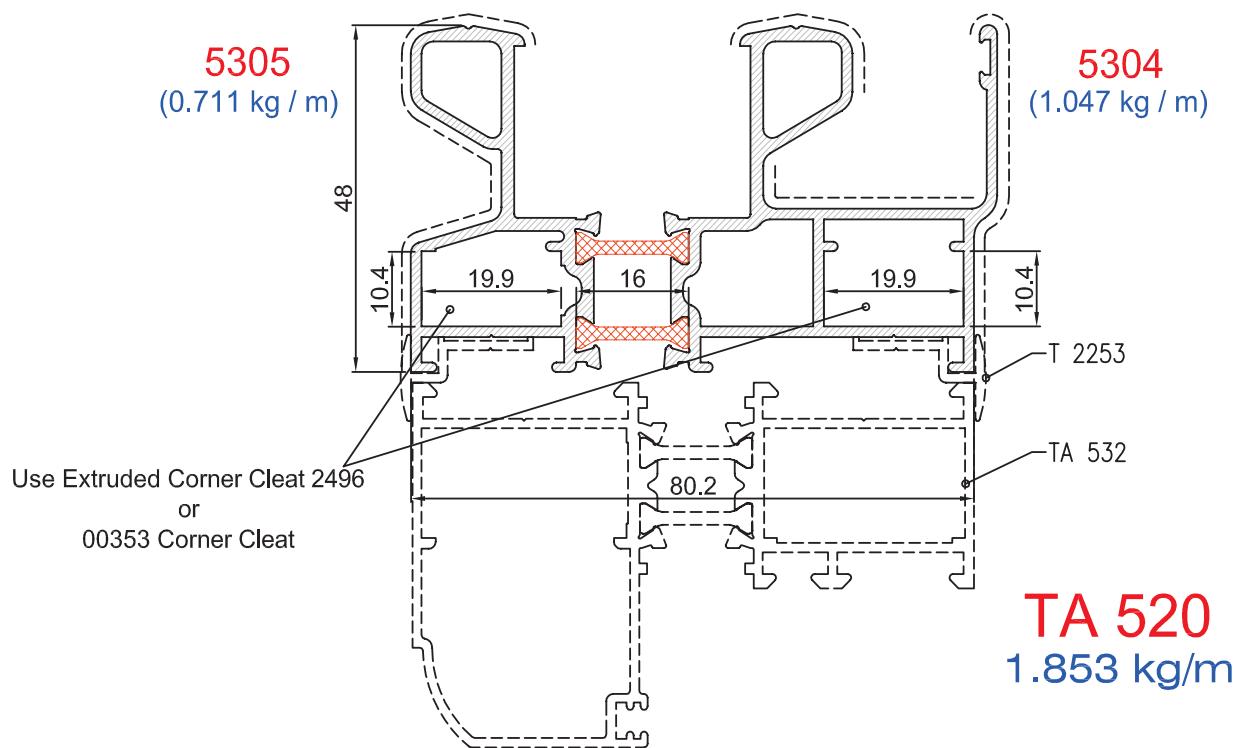
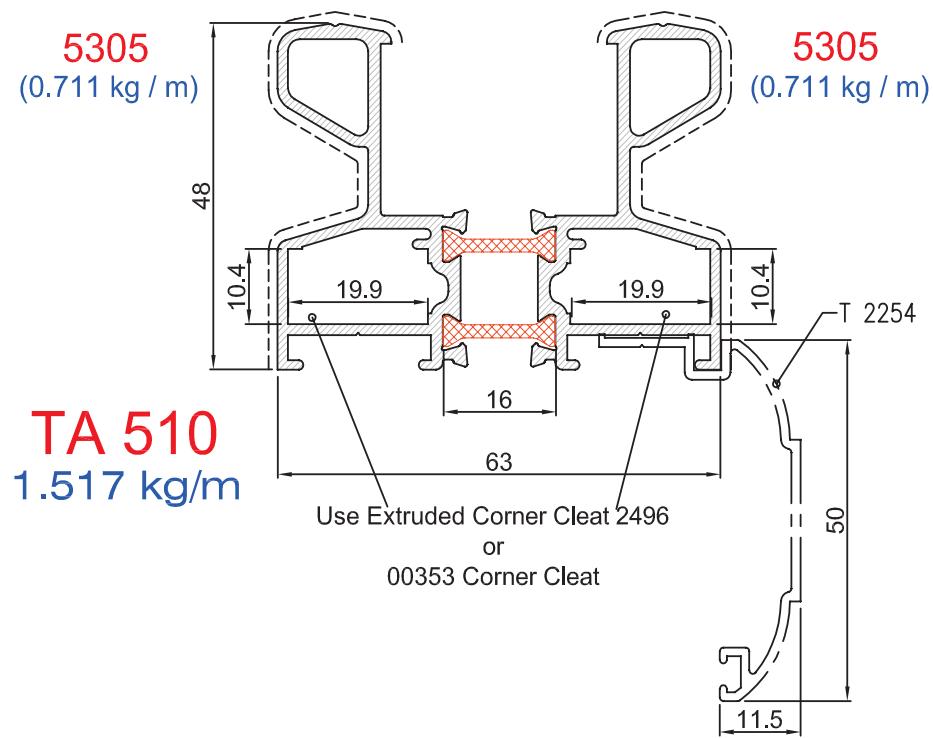


## 3D Assembly Drawing



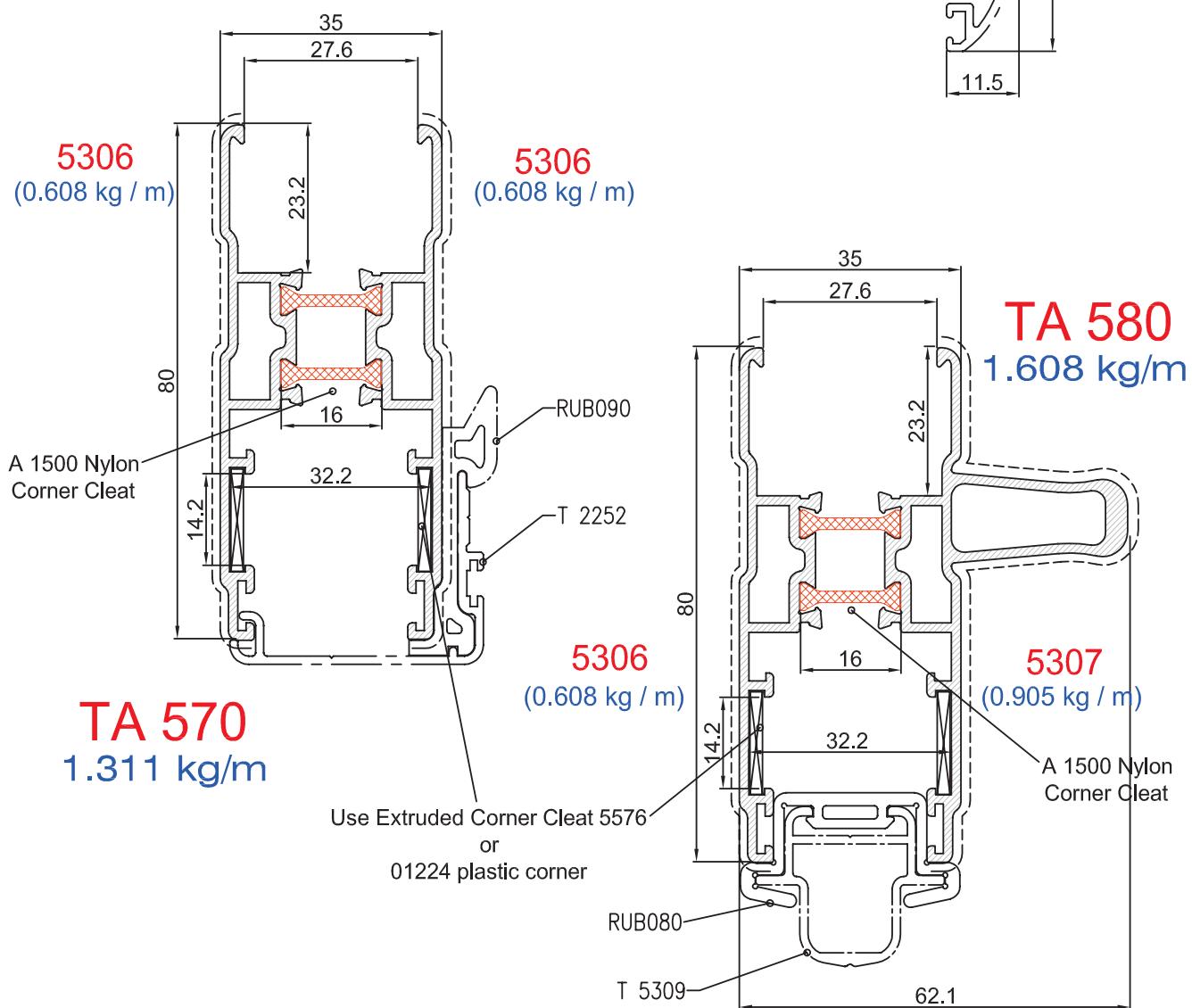
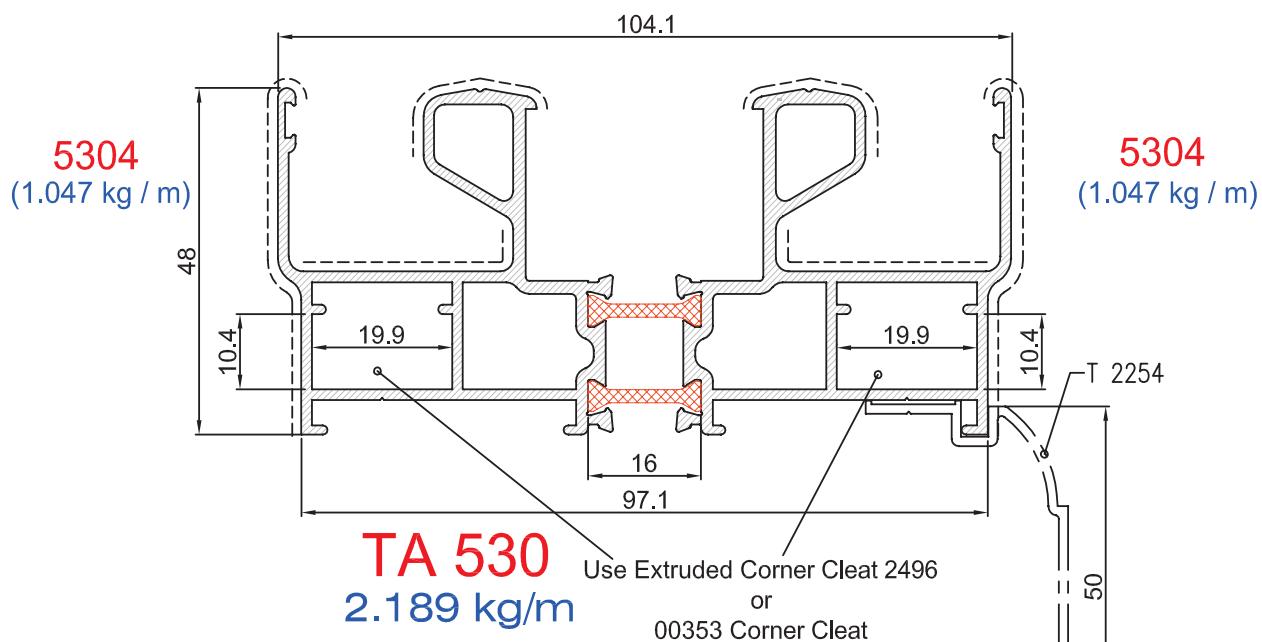
# **SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS**

# ECO - 500



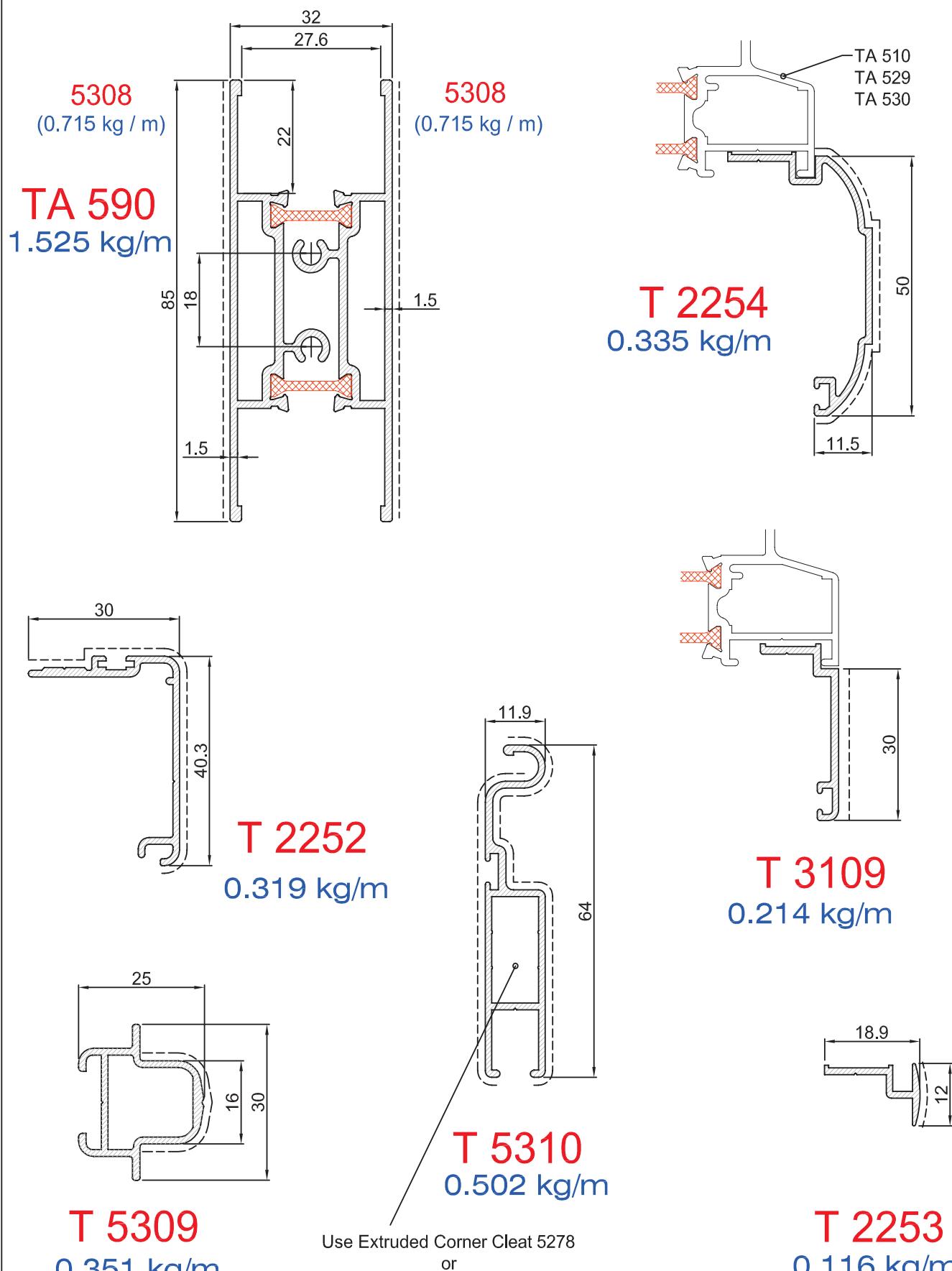
# SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

ECO - 500



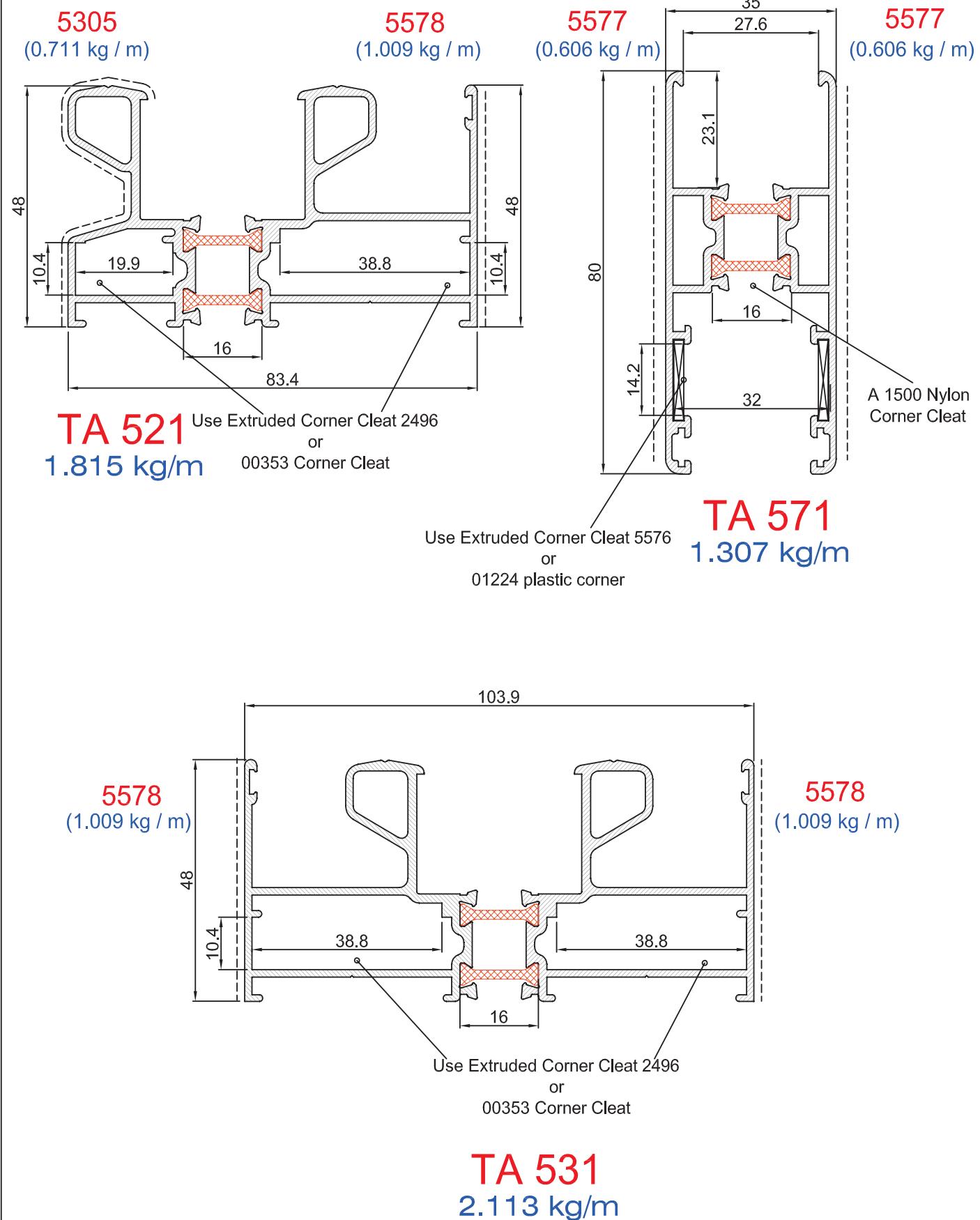
## SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

**ECO - 500**



## SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

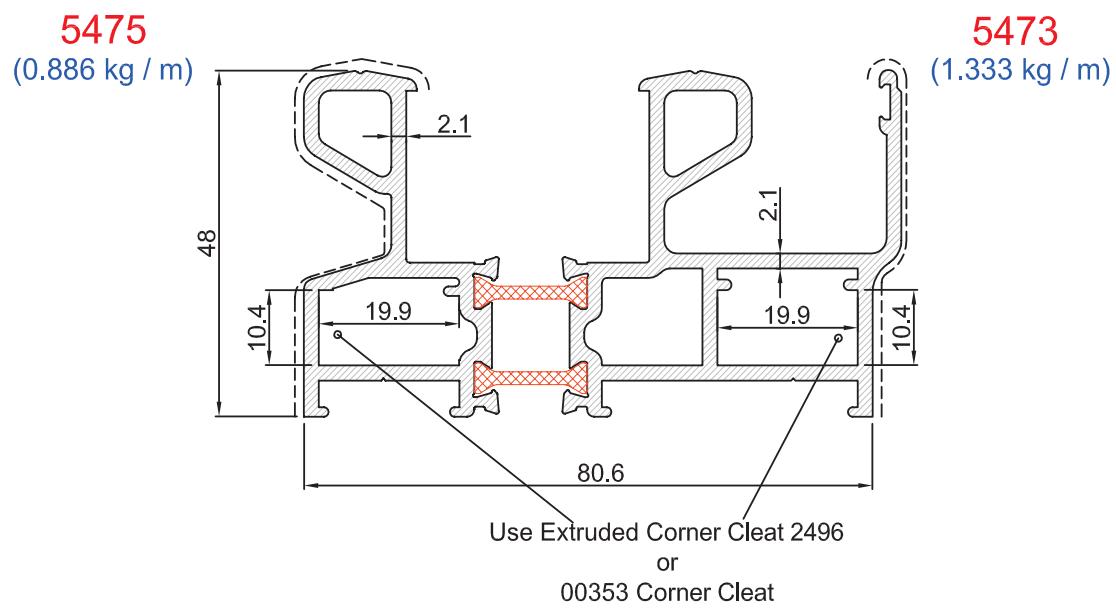
ECO - 500



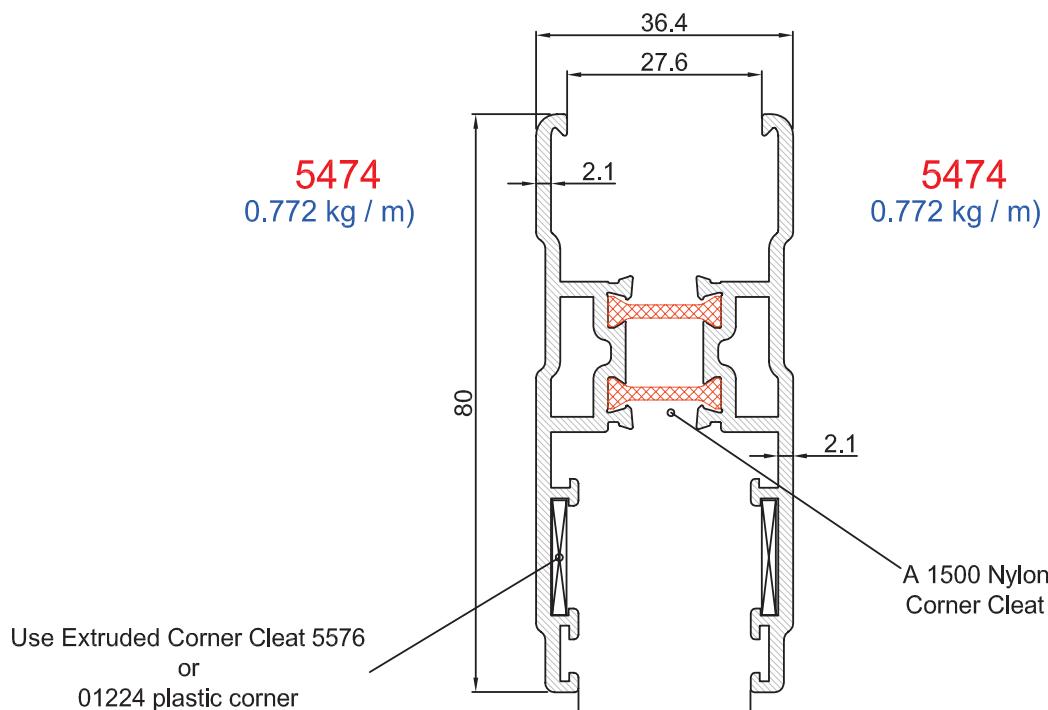
## SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

ECO - 500

### HEAVY DUTY PROFILES (2.1mm THICK)



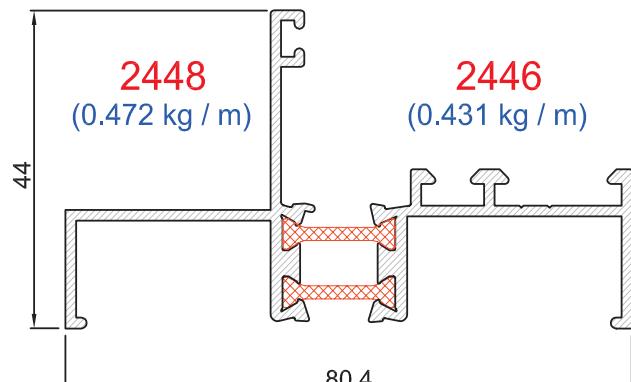
**TA 600**  
**2.314 kg/m**



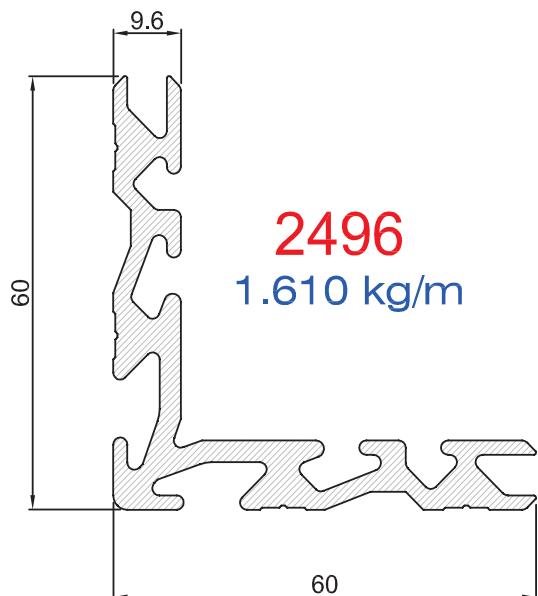
**TA 610**  
**1.639 kg/m**

## SLIDING WINDOWS AND DOORS SECTIONS TOP FIXLITE

ECO - 500



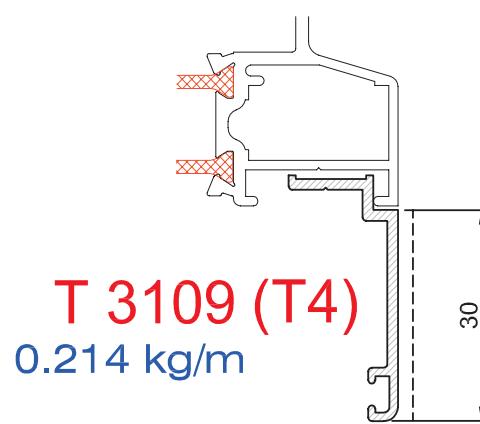
**T 542 (T4)**  
0.998 kg/m



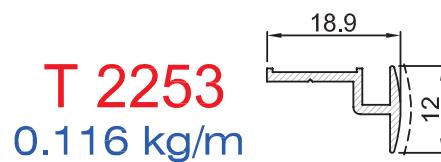
**2496**  
1.610 kg/m



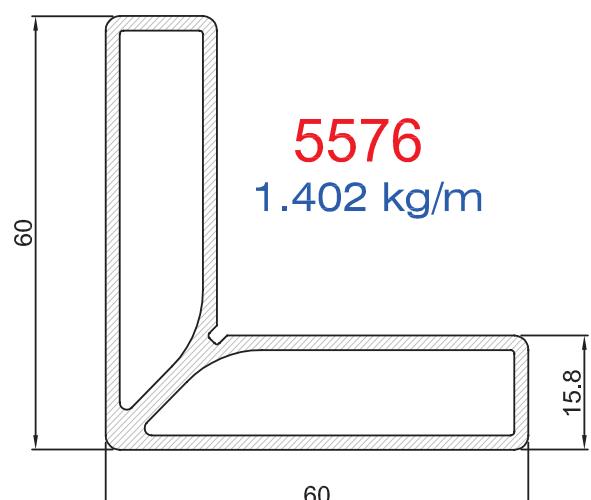
**T 2254**  
0.335 kg/m



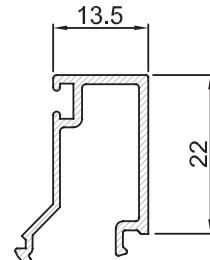
**T 3109 (T4)**  
0.214 kg/m



**T 2253**  
0.116 kg/m

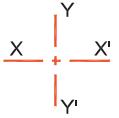
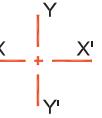
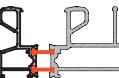
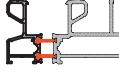
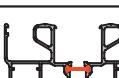
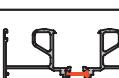
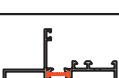
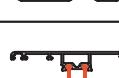
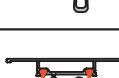
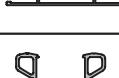


**5576**  
1.402 kg/m



**T 2283 (T4)**  
0.235 kg/m

**THERMAL BREAK SLIDING SERIES  
SECTIONS MOMENT OF INERTIA**
**ECO - 500**

	Sec. No.	I <sub>xx'</sub> (CM <sup>4</sup> )	I <sub>yy'</sub> (CM <sup>4</sup> )		Sec. No.	I <sub>xx'</sub> (CM <sup>4</sup> )	I <sub>yy'</sub> (CM <sup>4</sup> )
	TA 510	11.51	22.20				
	TA 511	14.64	64.74				
	TA 512	19.61	72.83				
	TA 520	13.29	44.07				
	TA 521	13.24	45.12				
	TA 530	15.06	76.12				
	TA 531	14.96	77.66				
	TA 542	17.71	03.50				
	TA 570	19.09	08.84				
	TA 571	19.13	08.96				
	TA 580	20.97	19.43				
	TA 590	21.98	07.64				
	TA 600	16.34	58.83				
	TA 610	24.40	12.09				