

**Recommended Fixings Manual  
for**

**deceuninck**

**2800 Decorative**

**Suite of Profiles**



***A Breakthrough in Performance***

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Application illustrations are 1:1 scale

### The Correct Fastener

**rapierstar**<sup>®</sup> the market-leading supplier of screws to the PVC-U window industry, with its unrivalled technical expertise, has worked together with your systems company to produce this recommended fixings manual. The following pages contain advice on the correct fastener for each application.



**Your orders are despatched direct from our purpose-built premises near Congleton in Cheshire.**

### Star Performance

**rapierstar**<sup>®</sup> StarPVCU window screws conform to all relevant industry standards, guidelines and recommendations. This provides the fabricator with the most comprehensive range available, including full stainless steel options.

- All rapierstar<sup>®</sup> StarPVCU screws exceed the requirements of BS7412.
- Fast starting screws for non-reinforced applications
- High specification drill points for fast insertion without breakage for reinforced applications

### Surpassing Standards

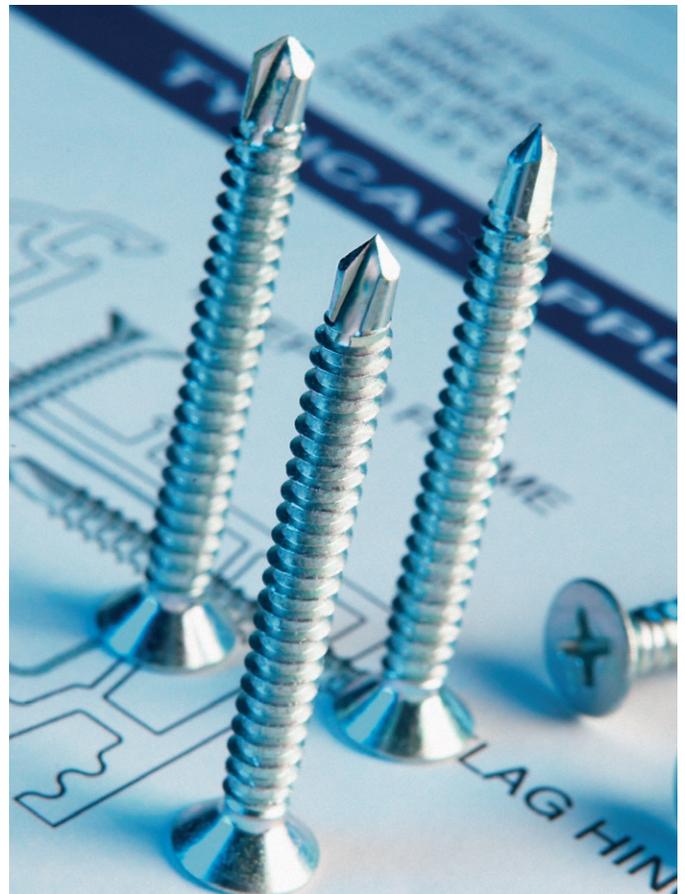
Windows and doors fabricated with **rapierstar**<sup>®</sup> screws have surpassed the following British Standards:

BS 6375 PtII, all clauses, but particular attention is drawn to our screws exceeding clause 6.5 - resistance to accidental loading.

**BS 7950:1997**, formerly known as PAS 011 covering enhanced security for windows when manufactured to BS7412. Correct screw choice and installation is vital for attainment of this standard as forces used within the test are extremely severe - 1000 Newtons (100 Kilos) of force applied in one direction and 3000 Newtons (300 Kilos) applied at 90° to all 'locking points' - i.e. friction stays, keeps, dog bolts etc. Windows, both fully reinforced and unreinforced, fabricated with **rapierstar**<sup>®</sup> screws, have exceeded the requirements of BS 7950:1997.

**PAS 23.1:1999 and PAS 24.1:1999**, covering enhanced security for doors. Again correct screw choice is important. Doors fabricated with screws supplied by **rapierstar**<sup>®</sup> have exceeded the requirements of PAS 023 and PAS 024.

**ISO 9000**, is a family of standards relating to quality management systems and are designed to help organizations ensure they meet the needs of customers. **rapierstar**<sup>®</sup> is an ISO 9001:2008 registered company and all our window screws are manufactured by ISO 9000 certificated companies. Full traceability is maintained so long as the screws remain in the box in which they were supplied.



## General Hints:

For air driven tools, check that the correct air pressure is maintained.

Check airlines, couplings and tools for leakage.

Clearly mark or label separate driving tools that have been set at different torque settings to ensure that the correct torque is used in each application.

Label bench mounted fastener containers with both fastener type and applications. Keep fastener containers well separated to avoid confusion.

Check for wear of screwdriver bits and replace when worn or damaged.

You may find it useful to have a series of screw charts available at the various work stations to illustrate which fasteners must be used for specific applications. Please contact **rapierstar**<sup>®</sup> - we will be happy to provide help and support.



## Clear Product Information

Branded, easy to read labels give clear product information, preventing identification errors.

## Screw Tips - Best Practice

**Perpendicular Insertion:** Ensure that any fastener is applied at 90° to the material at all times.

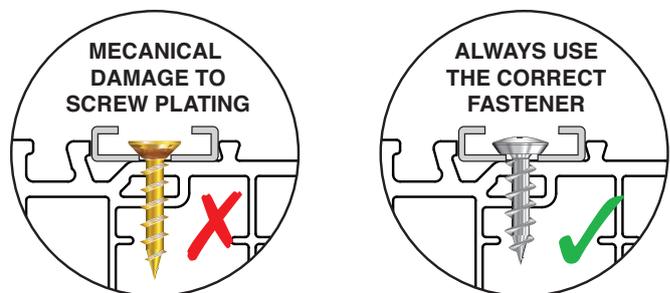
**Mechanical Damage:** It is important to use the correct torque setting and screwdriver bit for each application. If the screwdriver bit does not engage fully into the recess, or if the torque setting on the screwdriver is too high, damage to any corrosion protection layer of the screw may occur with the resulting likelihood of corrosion.

**Torque Setting:** The use of excessive torque may lead to stripping and failure of the fastener. The torque setting on the screwdriver should be the minimum required to

effect a complete fastening. At initial set-up, this should be established through trial and error on scrap material, gradually building up to the required torque level.

**Screwdriver Speed:** It is recommended by the Glass & Glazing Federation and the British Plastics Federation that driver speeds between 1500 rpm and 2000 rpm are used. For applications into PVCU only, a lower speed might be preferable. Also, the same piece of hardware may be used in both reinforced and unreinforced applications. In such cases it may be convenient to have two air screwdrivers set at the appropriate torque and speed.

Using the incorrect fastener may cause damage to the plating of the screw, resulting in the potential for corrosion.



## Avoid Corrosive Elements

Several factors can cause screws to rust, each of which can be accelerated depending on the situation of the application.

**Silicone sealants** - avoid acetic acid cured high and low modulus sealants. The vapour alone is sufficient to cause corrosion. Therefore a neutral curing sealant is recommended.

**Acrylic fillers** - contact with any carbon steel component will cause corrosion.

**Cleaners** - aggressive cleaning substances, especially those containing ammonia, chlorine etc. which are commonly used by the householder, can have a very severe effect and should not be used where screws are situated.

**New-build** - screws should not come into contact with wet plaster or cement, as the lime content will cause corrosion. Also, the acid wash that is often used to clean brickwork is highly corrosive and should be avoided completely. **Where any of the above conditions are likely to exist, the use of stainless steel is recommended.**

## 100% Stainless 100% Solution

For coastal or heavily polluted regions of the country, when attaching stainless steel hardware, or where prolonged guarantees are being offered, we recommend that stainless steel screws should be used.

### Enhanced Martensitic – Grade 410 100% stainless steel

Ideal for steel reinforcement:

Screws manufactured from enhanced 410 grade stainless steel, widely used in the U.K. for over fifteen years, are designed and manufactured specifically for drilling and tapping through galvanised steel reinforcement.

Enhanced Martensitic stainless steel screws are magnetisable, allowing for easier and more accurate use in the factory. On-site confirmation that stainless steel screws have been used is achieved by way of an identification mark stamped onto the head. Enhanced Martensitic stainless steel screws provide a high performance corrosion resistant solution from a single length of 100% stainless steel wire.

### Austenitic – Grade 302 – 100% stainless steel

Ideal for PVC-U only applications:

By specifying austenitic fasteners for PVC-U only applications, you ensure a high performance, corrosion resistant screw capable of out-living the window and many of its components.

#### Not ideal for steel reinforcement:

Austenitic stainless steel is intrinsically soft. Although ideal for PVC-U only applications, and acceptable into thin aluminium, it will not reliably self-drill or self-tap through galvanised steel reinforcement. Therefore, some austenitic screws are either treated or manufactured in such a way as to overcome this problem.

#### Bi-Metallic

These screws have an austenitic head and 'top' portion of thread with carbon steel drill point and partial thread. Often accepted by Councils and Housing Associations for use in the manufacture of windows and doors.

Austenitic stainless steel is non-magnetic, therefore on-site confirmation is achieved by use of a magnet. Please contact **rapierstar**® for details if Bi-Metallic screws are required for 'fully austenitic' contracts.

#### Identification of Stainless Window screws

Unique head design eliminates confusion between the grades of stainless steel used in the fabrication of PVC-U windows. Clear marking on the head of our window screws allows immediate identification of the grade of stainless steel from which the screws are manufactured. This ensures that specifications are adhered to.



#### Austenitic Stainless Steel - 302

Because 302 grade Austenitic stainless steel is intrinsically soft, it is unsuitable for self-drilling applications. However, it is ideal for use in PVC-U only applications, giving excellent corrosion resistance.



#### Enhanced Martensitic Stainless Steel - 410

410 grade Martensitic stainless steel is a harder grade which is capable of self-drilling and tapping into steel reinforcement. Screws are independently tested at a UKAS accredited test house to beyond 3000 hours salt spray test in accordance with BS:7479.

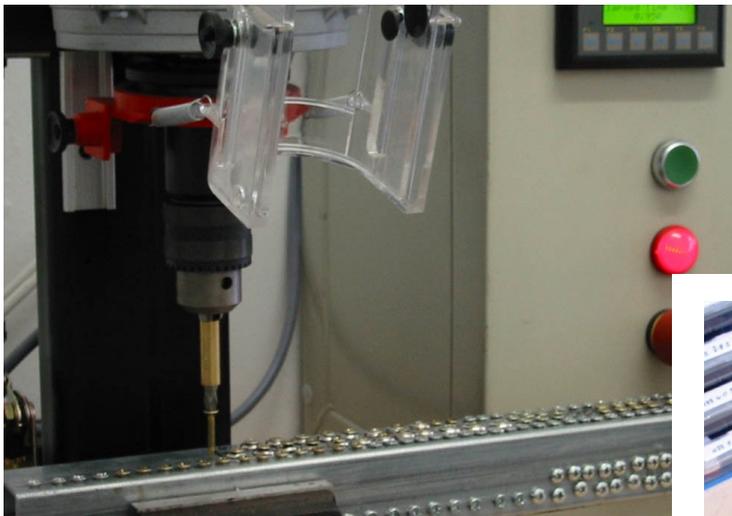
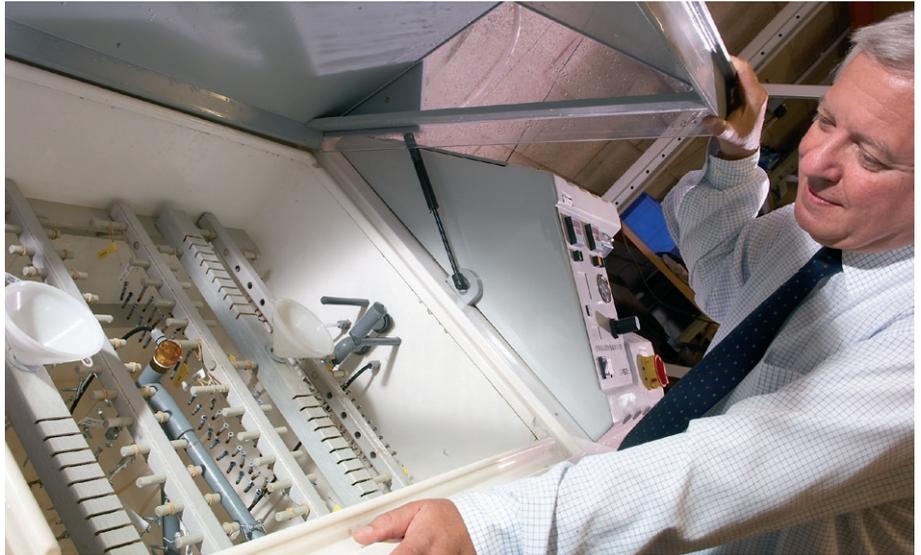


#### Bi-Metallic

Austenitic stainless steel fastener with a carbon steel drill tip. Suitable for reinforced applications. Combination recess with square drive, gives effective 'stick-fit' onto the driver bit for ease of insertion during fabrication and common Phillips no2 recess for on-site adjustment.

**Tested for Safety -  
Tested for Quality  
Durable**

Screws are tested for plating depth and corrosion resistance using internationally accepted test equipment. Salt spray testing is in accordance with BS7479:1991 / ISO 9227:1990 and to UKAS requirements. Carbon steel screws are routinely tested to 300 hours and our enhanced martensitic stainless steel carries independent certification to beyond 3000 hours salt spray test.



**Fast**

Using custom designed and built equipment, window screws are tested for speed of insertion, ensuring that self-drilling screws provide fast and efficient fastenings into steel reinforcement and that screws for fastening into PVC-U self-start easily and safely.



**Secure**

Screws are tested for 'torque-to-start', 'torque-to-insert' and 'torque-to-spin', ensuring that screws will not shear in the correct application. Screws are also tested for hydrogen embrittlement to prevent failure after insertion.



**Safe**

All aspects of our screws are tested and their dimensions checked to ensure that our high specifications are met. This includes depth of recess and 'wobble', using a certified Phillips No.2 driver bit. The internationally accepted standard is plus-or-minus 6°. **We specify plus-or-minus 3° to make insertion safer and easier.**

## Best Value

Now that Best Value has replaced Compulsory Competitive Tendering, the public sector is no longer restricted to selecting the lowest priced tender. This more business-like approach to management and accounting aims to improve the performance, quality and value for money of work on the housing stock, reducing whole life costs.

### Best Value principles in action:

Selecting a market leading fastener supplier can be essential in Achieving Best Value Performance Targets. **rapierstar**<sup>®</sup> offers quality assured products with a proven history, as well as expert technical support.

### Conclusion:

Whole sections of specifications, often originated many years ago, may not reflect material improvements and advancements in product design. Best Value now requires a regular examination of the facts of available product performance to ensure 'more efficient investment' of taxpayers money.



## Continuity of Supply

Massive stockholding of the PVC-U window industry's most comprehensive range ensures that we are able to provide a reliable same-day despatch service.



## Investors In People

**rapierstar**<sup>®</sup> is committed to the Investors In People standard. Continuous improvement and training within our company enables our staff to provide you with a high level of service. Our specialist teams of application engineers are available to advise window fabricators on correct fastener selection. Profile system specific fastener guides are maintained for all leading system companies.



## INVESTOR IN PEOPLE

## Healthy Lifestyle

In order to guarantee trouble-free installation of screws and fasteners, consideration of some general fabrication criteria should be undertaken - such as

- Securely fitting reinforcement
- Fixing operation at 90° angle
- Location of screw into flat plane of steel
- Driver speed at between 1500 and 2000 rpm
- Correct air pressure and compressor regulation
- No excessive play in power driver collar
- Suitable driver bits, regularly changed
- Unnecessary pre-drilling for stainless steel screws.

These are all potential causes of problems and are among the many areas of vital fastener performance which we would consider during your personal 'Health Check'

To satisfy the Glass & Glazing Federation and the British Plastics Federation guidelines and gain 'peace of mind', arrange for our experienced specialists to produce, free of charge, your own 'quick reference' quality management system for window screws with your individual requirements highlighted on wall charts using clear line drawings. Contact NOW:

**Telephone: 01260 223311**  
**email: [info@rapierstar.com](mailto:info@rapierstar.com)**  
**[www.rapierstar.com](http://www.rapierstar.com)**

### **Recommended Screw Supplier**

The following manufacturers of window and door products recommend Rapierstar only as an approved supplier of Window and Door Fabrication Screws to be used with their products.

It is important to the performance of both the locking mechanisms and keeps that they are correctly fitted using good quality, high strength screws, to the correct design for each application. manufacturers recommend that Rapierstar screws are supplied for their range of hardware in order to achieve optimum results.

Windows fitted with their hardware and screws supplied by Rapierstar have exceeded security tests to BS 7950:1997.



**TROJAN HARDWARE  
& DESIGNS LTD**



**Rapier®  
StarFix**

**Masonry Fixing**

- ▶ **No Plug Required**
- ▶ **High Strength Fixing**
- ▶ **50% Quicker Assembly**
- ▶ **30% Less Drive-in Torque Required**

**High Tech Fixing**

The award winning StarFix is probably the most efficient direct masonry fixing available. The patented StarForm thread provides 30% lower drive-in torque and up to 50% quicker assembly. A cost effective and time saving installation with exceptional holding power.

**Safe**

The precision StarDrive recess, utilising Torx drive, provides optimum efficiency, improving grip and extending bit life.

**Faster & No Wastage**

No need for a plug means a quicker application. StarFix masonry fixings eliminate the wastage associated with nylon installation fixings.

**Secure**

High thread cuts into masonry whilst the low thread compacts loose material for maximum holding power, rapidly penetrating all kinds of brick, stone, concrete and wood.



- ▶ **No plug required – Cost effective and simple**
- ▶ **Only 6mm or 6.5mm pilot hole required through substrate**
- ▶ **8mm clearance hole through frame**
- ▶ **Universal for all common applications**
- ▶ **Long lasting and stress free stand-off fixing**

		<b>LENGTH</b>								
		62	82	102	112	122	152	152	182	202
<b>DIAMETER</b>	7.5mm	●	●	●	●	●	●	●	●	●
<i>Yellow finish – 6/6.5mm pilot hole required, 8mm clearance hole</i>										



In all the following tests, the brick failed before the fastener

TYPICAL PULL-OUT VALUES R FFT 7.5 X 112											
1kN	2kN	3kN	4kN	5kN	6kN	7kN	8kN	9kN	10kN	11kN	12kN
Lowest Pullout 6.34kN										Engineering Brick	
Average Pullout 8.8kN											
Highest Pullout 10.13kN											
8kN	9kN	10kN	11kN	12kN	13kN	14kN	15kN	16kN	17kN	18kN	19kN
Lowest Pullout										Concrete Block	
Average Pullout 14.79kN											
Highest Pullout 15.48 kN											
5kN	6kN	7kN	8kN	9kN	10kN	11kN	12kN	13kN	14kN	15kN	16kN
Lowest Pullout										London Brick	
Average Pullout 11.75kN										Highest Pullout 13.76 kN	

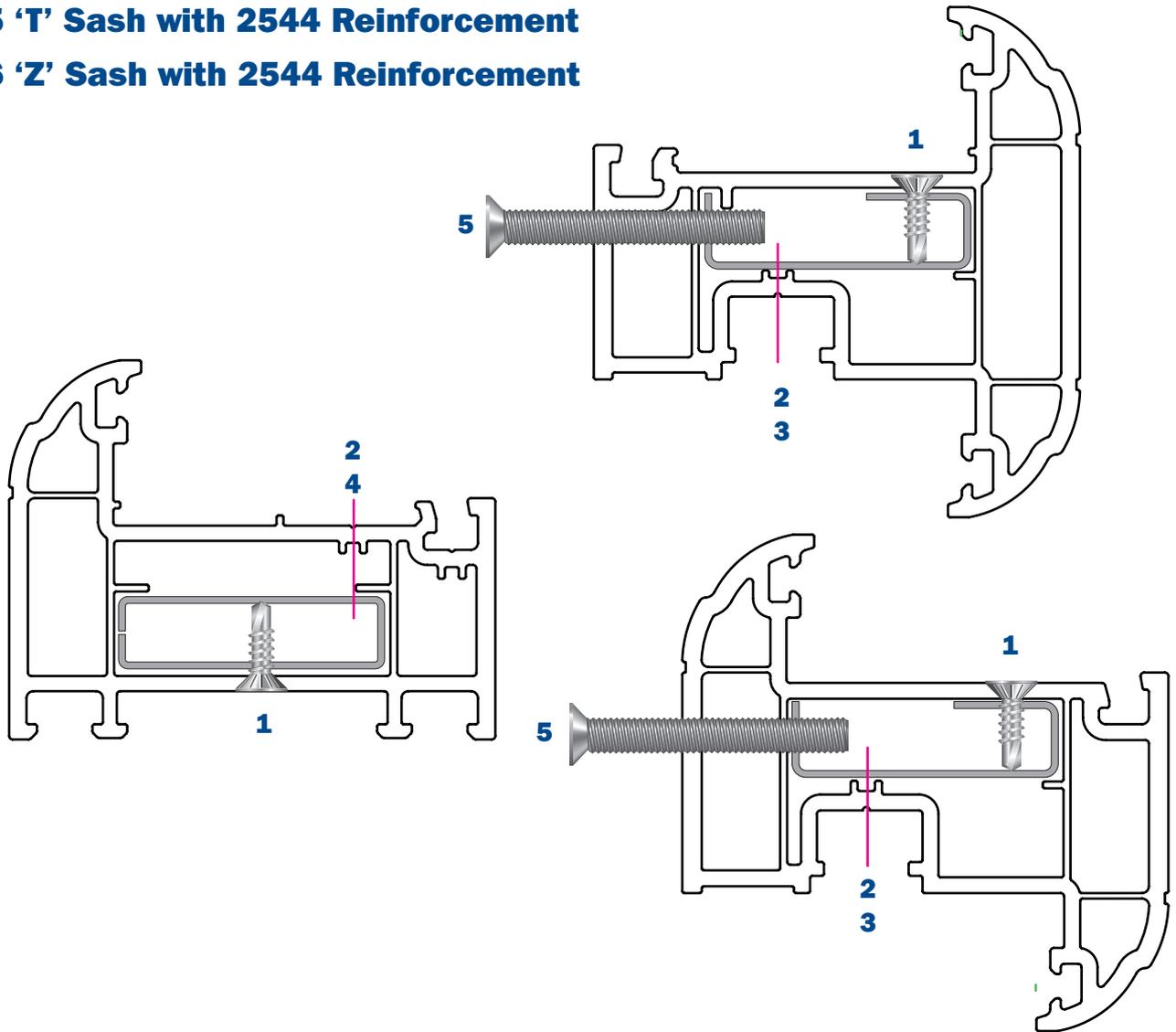
The pull-out values referred to are expressed in kN (1 kN = 100Kgf). A choice of the correct security factor is recommended.

## Casement Window

**2832 Frame with 2845 Reinforcement**

**2825 'T' Sash with 2544 Reinforcement**

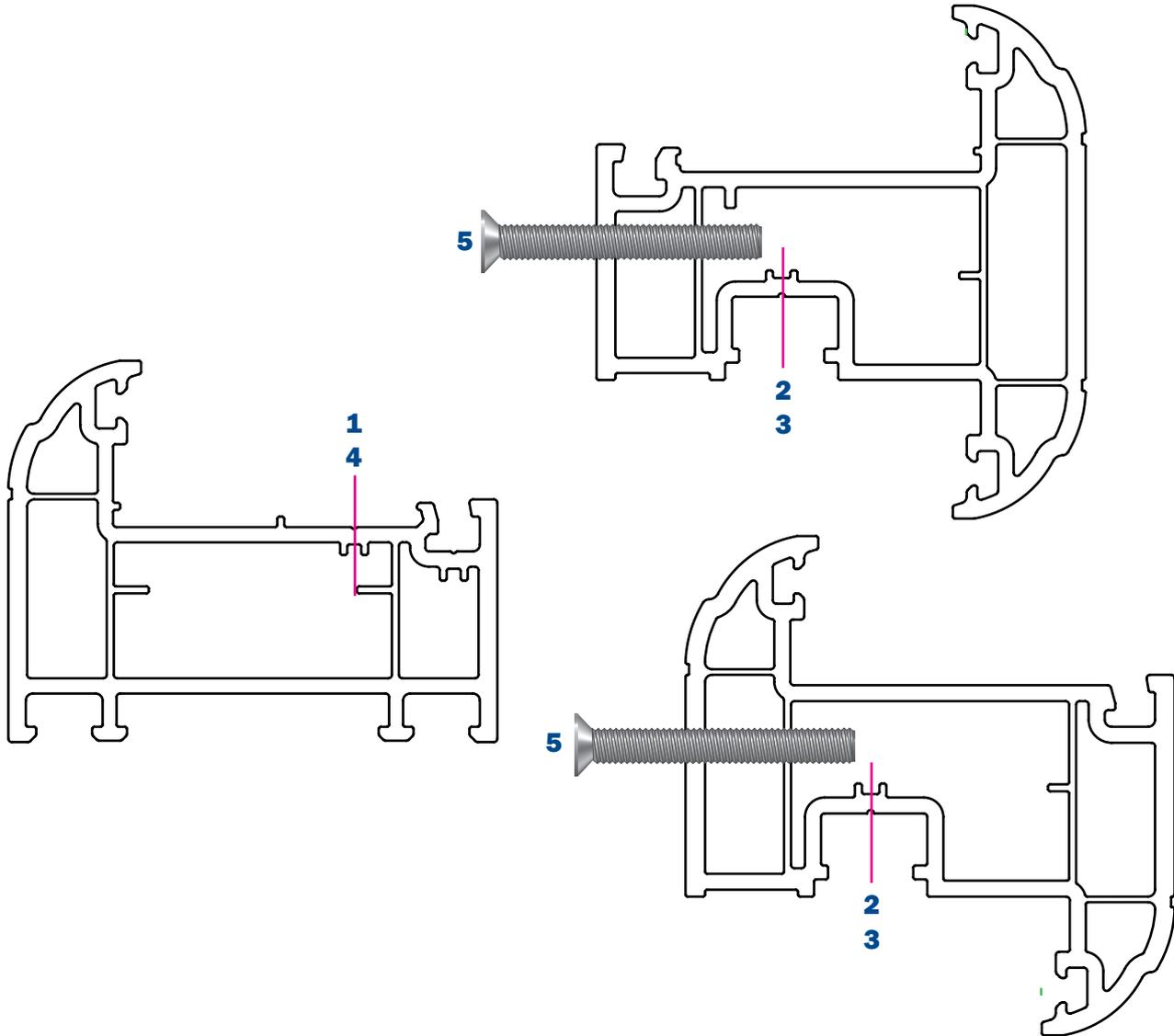
**2826 'Z' Sash with 2544 Reinforcement**



<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention
<b>2</b>		CSR 3.9 x 25 Z	Gearing to Sash. Keep to Frame
<b>3</b>		SSR 3.9 x 25 Z	Friction Stay to Sash
<b>4</b>		SSR 3.9 x 19 Z	Friction Stay to Frame
<b>5</b>		MS M5 x 40 Z	Handle

Casement Window - Unreinforced

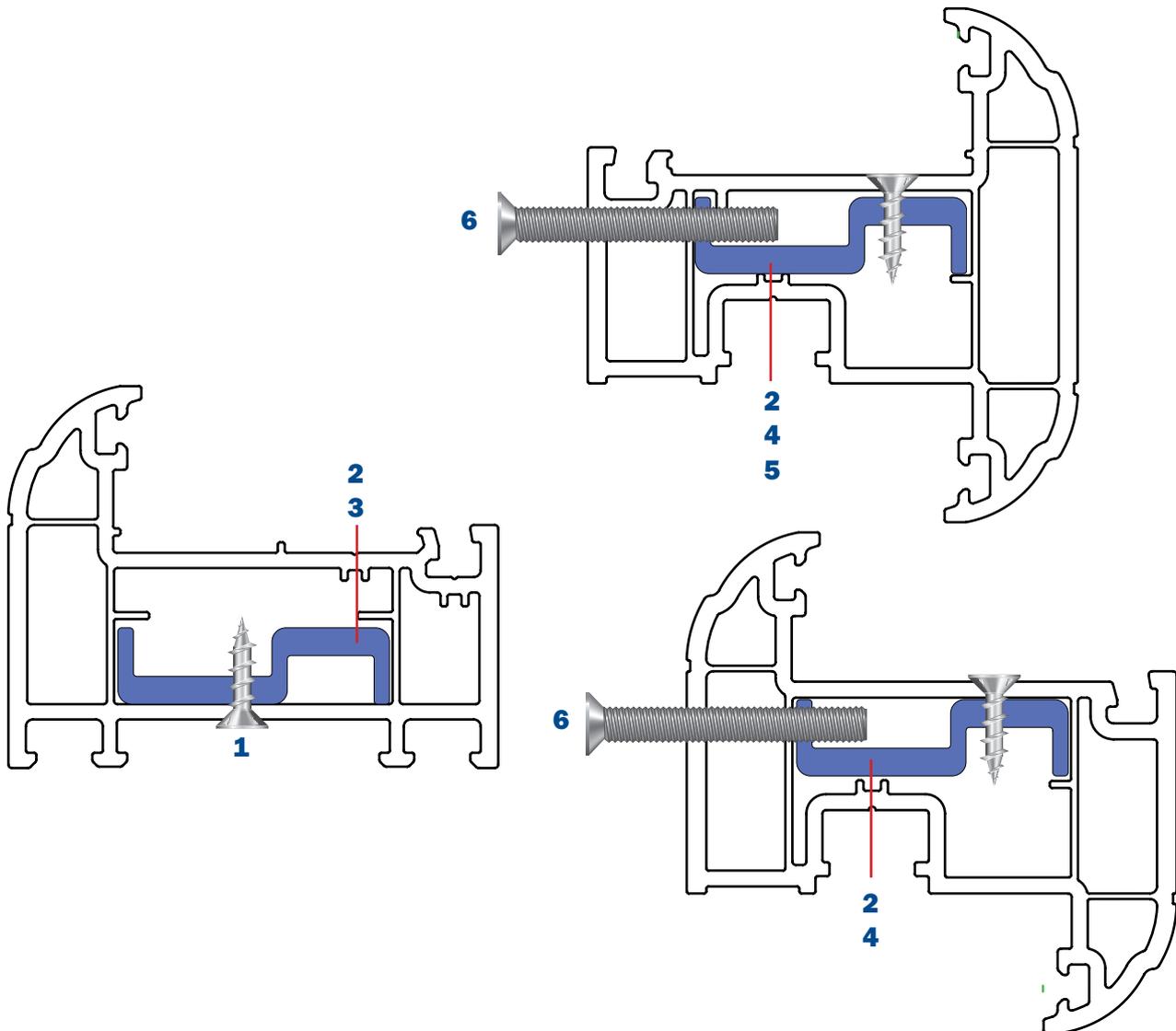
2832 Frame, 2825 'T' Sash, 2826 'Z' Sash



<b>1</b>		CFG 4.3 x 20 Z	Keep to Frame
<b>2</b>		CFG 4.3 x 25 Z	Gearing to Sash
<b>3</b>		SFG 4.3 x 25 Z	Friction Stay to Sash
<b>4</b>		SFG 4.3 x 16 Z	Friction Stay to Frame
<b>5</b>		MS M5 x 40 Z	Handle

## Casement Window with Thermal Cavity Insulator

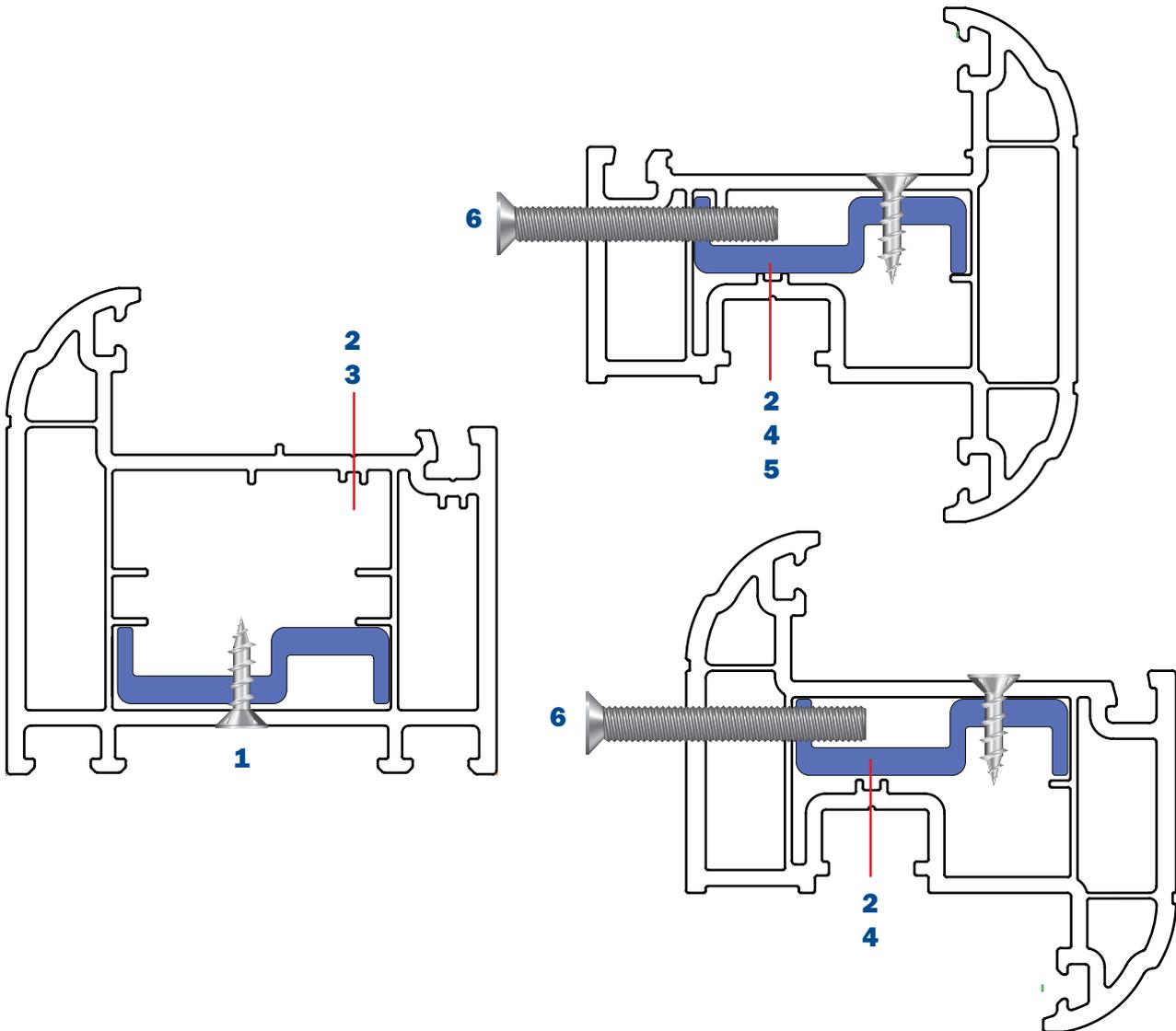
2832 Frame, 2825 'T' Sash, 2826 'Z' Sash



<b>1</b>		CFG 4.3 x 16 Z	T.C.I. retention
<b>2</b>		CFG 4.3 x 25 Z	Gearing to Sash. Keep to Frame
<b>3</b>		SFG 4.3 x 20 Z	Friction Stay (Frame)
<b>4</b>		SFG 4.3 x 25 Z	Friction Stay to Sash. Claw Lock to Frame
<b>5</b>		SFG 4.8 x 25 Z	Claw Lock to Sash
<b>6</b>		MS M5 x 40 Z	Handle

**Casement Window with Thermal Cavity Insulator**

**2833 Wide Frame - Not approved to BS7950**

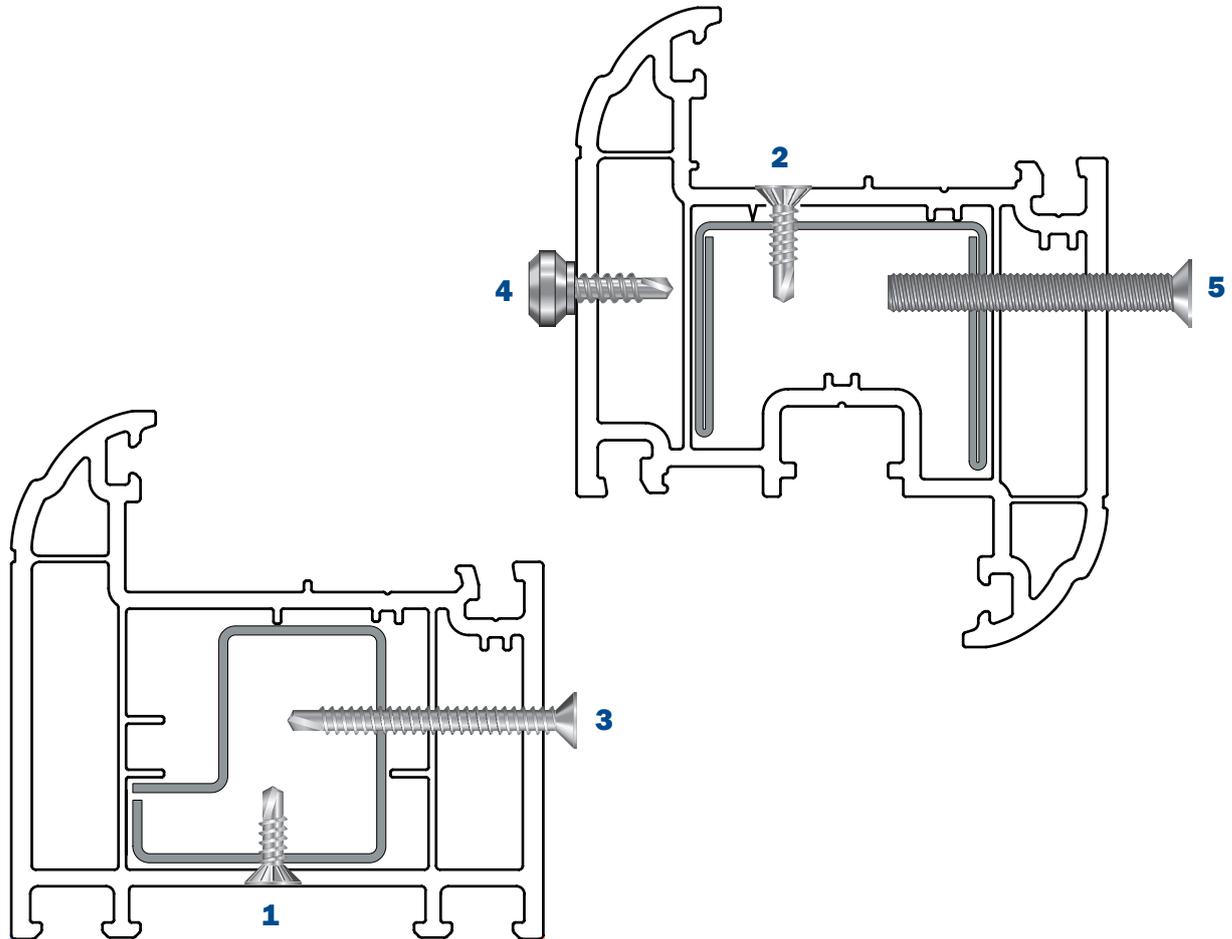


<b>1</b>		CFG 4.3 x 16 Z	T.C.I. retention
<b>2</b>		CFG 4.3 x 25 Z	Gearing to Sash. Keep to Frame
<b>3</b>		SFG 4.3 x 20 Z	Friction Stay (Frame)
<b>4</b>		SFG 4.3 x 25 Z	Friction Stay to Sash. Claw Lock to Frame
<b>5</b>		SFG 4.8 x 25 Z	Claw Lock to Sash
<b>6</b>		MS M5 x 40 Z	Handle

**Tilt & Turn Window - Reinforced - Hinge Side**

**2833 Frame with 2887 Reinforcement**

**2828 Sash with 2846 Reinforcement**

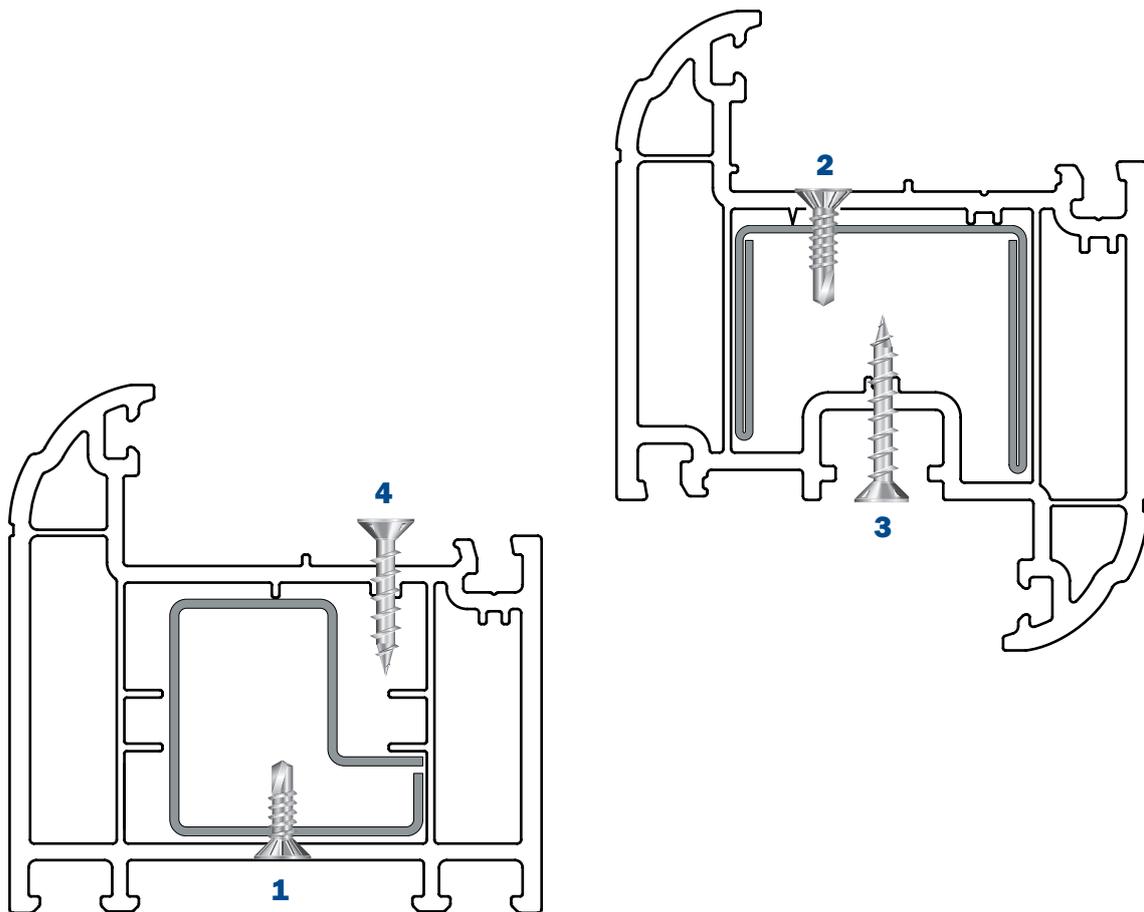


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CSR 3.9 x 38 Z	Hinge
<b>4</b>		NSR 4.0 x 13 Z	Weatherbar
<b>5</b>		MS M5 x 40 Z	Handle

**Tilt & Turn Window - Reinforced - Non Hinge Side**

**2833 Frame with 2887 Reinforcement**

**2828 Sash with 2846 Reinforcement**

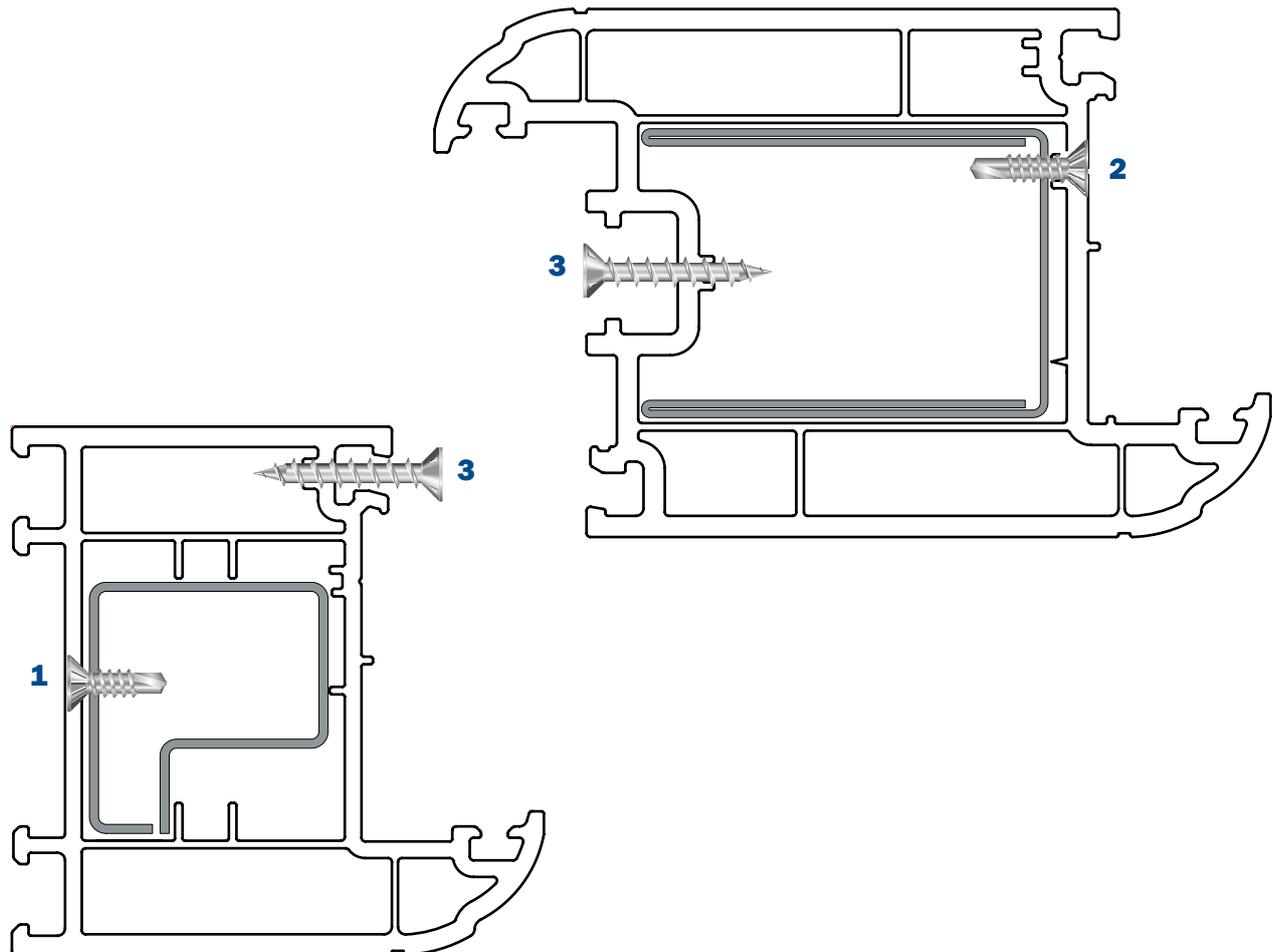


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement retention (Sash)
<b>3</b>		CFG 4.3 x 25 Z	Gearing
<b>4</b>		CFG 4.3 x 20 Z	Keep

**Tilt & Slide Patio - Reinforced - Vertical Section**

**2833 Frame with 2887 Reinforcement**

**2828 Sash with 2843 Reinforcement**

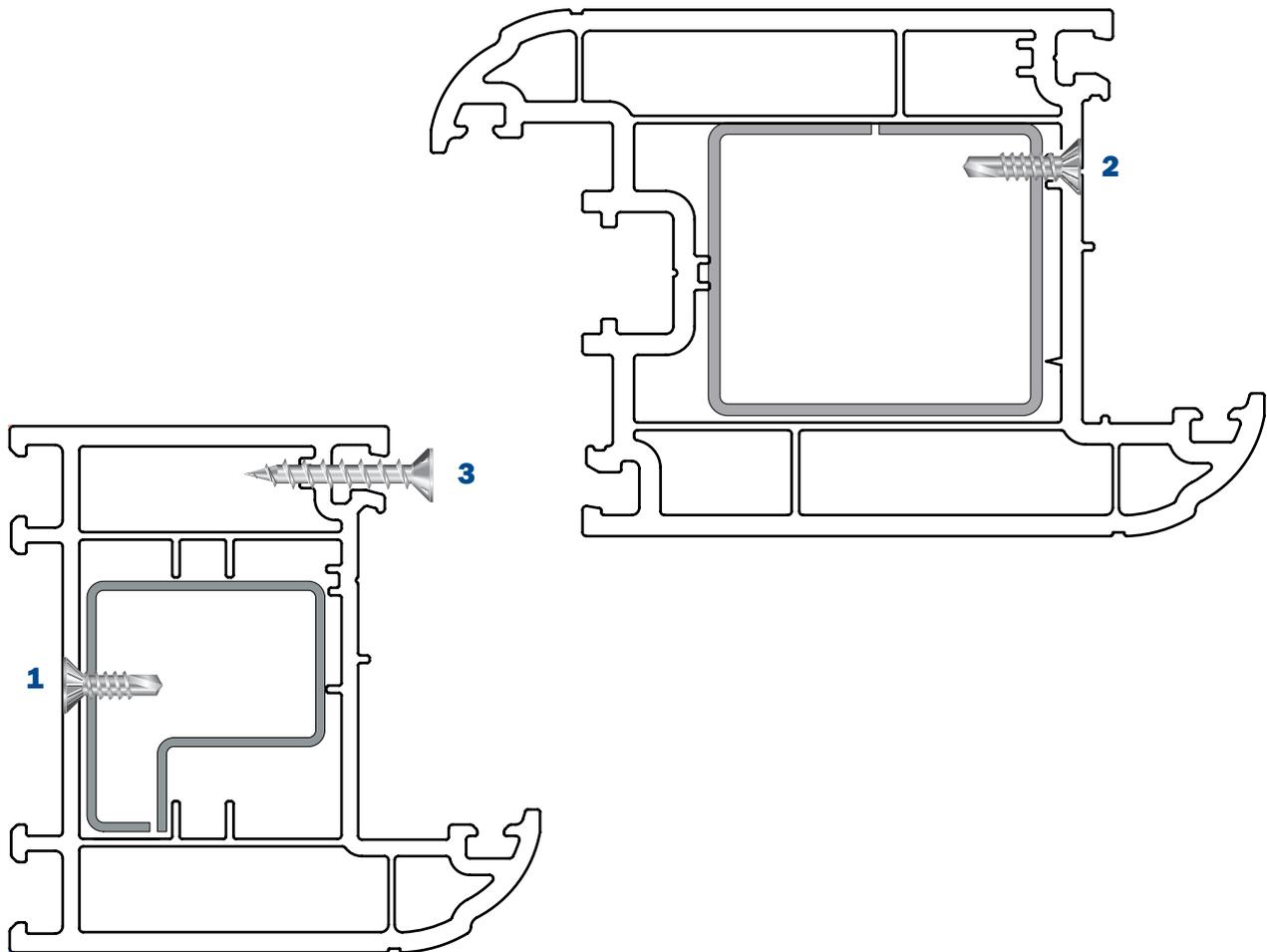


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CFG 4.3 x 25 Z	Keep to Frame, Gearing to Sash

**Tilt & Slide Patio - Reinforced - Horizontal Section**

**2833 Frame with 2887 Reinforcement**

**2828 Sash with 2859 Reinforcement**

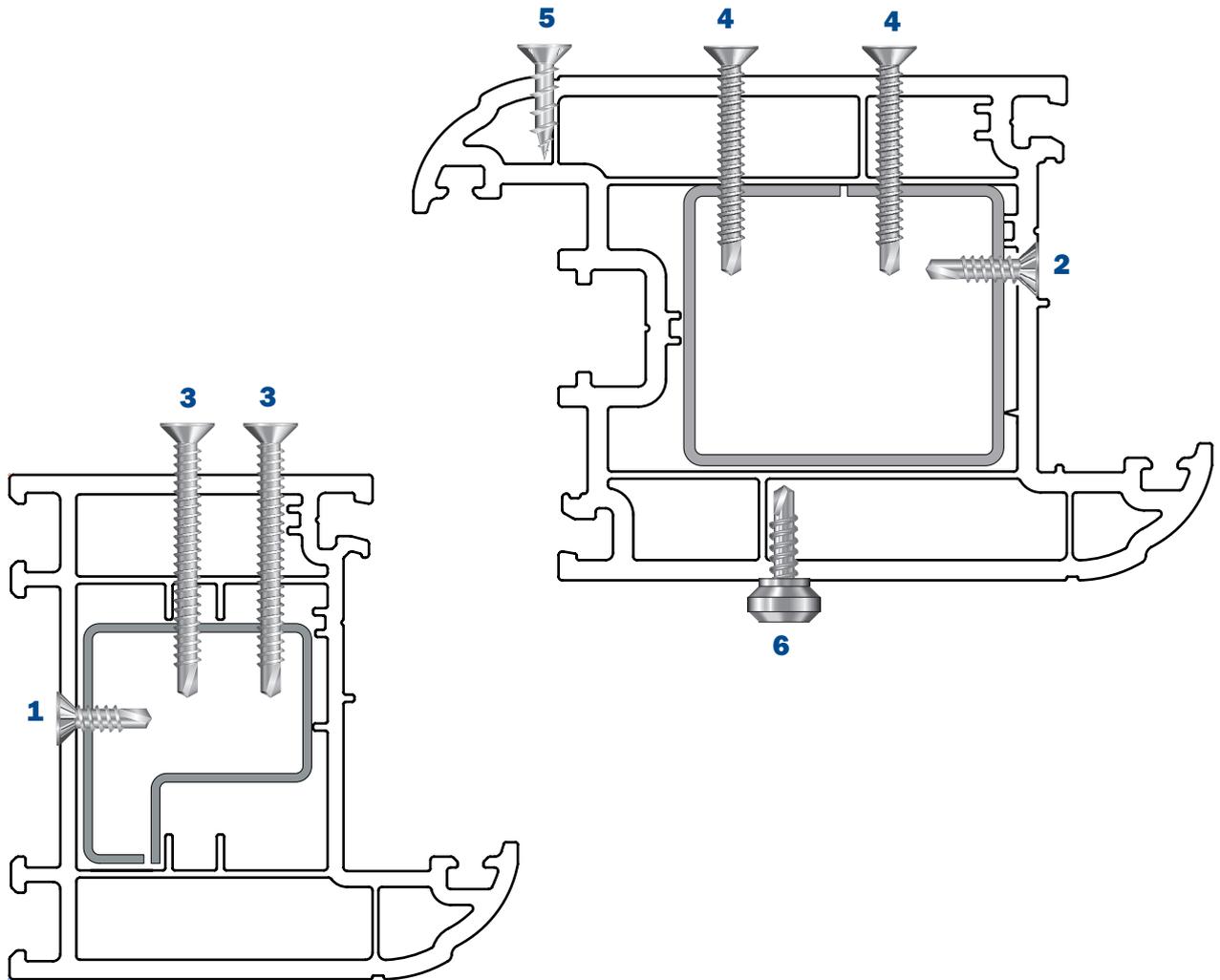


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CFG 4.3 x 25 Z	Keep

**Open-In Door - Hinge Side - Flag Hinges**

**2833 Frame with 2887 Reinforcement**

**2830 Sash with 2859 Reinforcement**

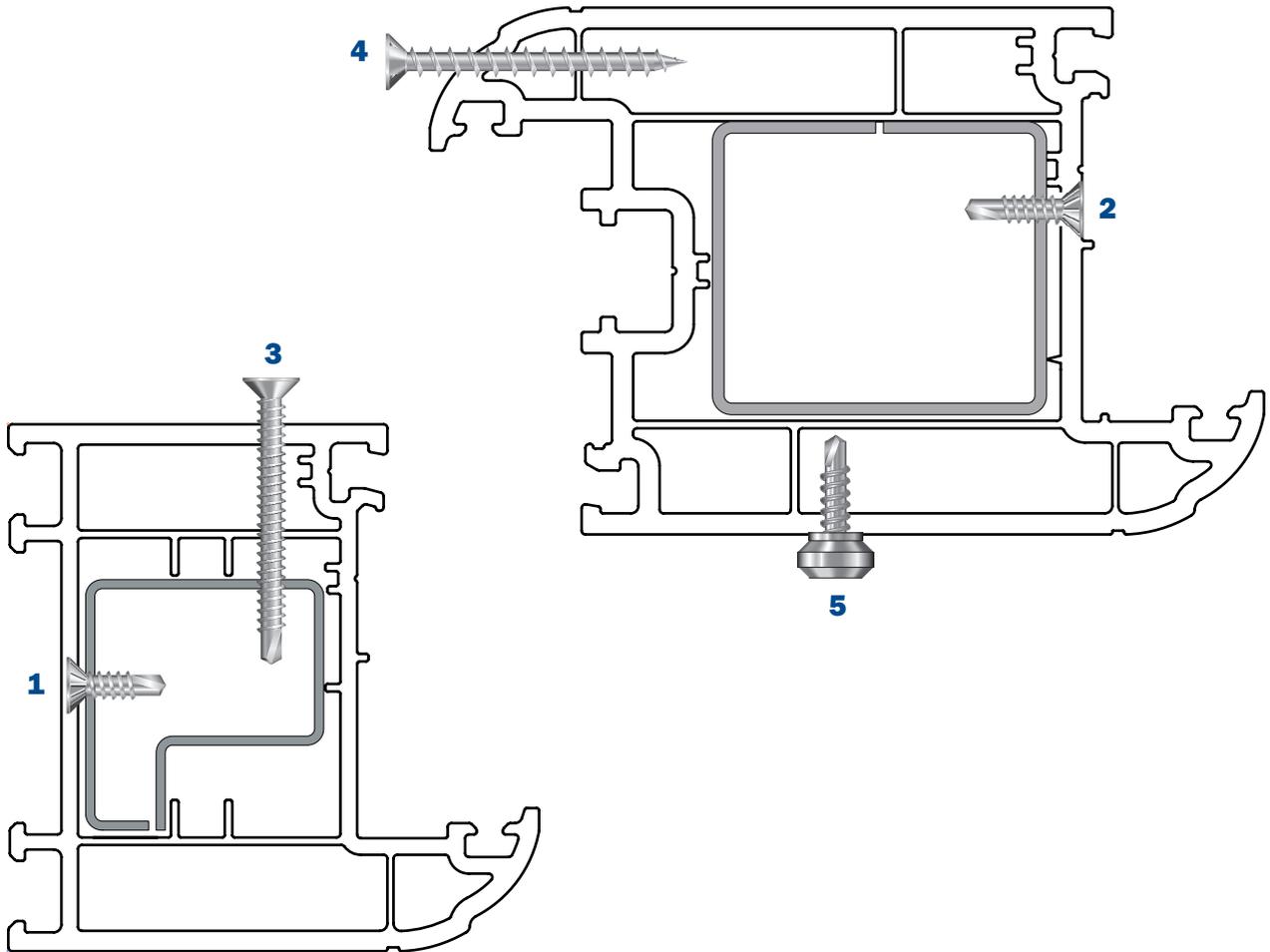


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CSR 3.9 x 38 Z	Hinge to Frame
<b>4</b>		CSR 3.9 x 32 Z	Hinge to Reinforced section of Sash
<b>5</b>		CFG 4.3 x 16 Z	Hinge to Unreinforced section of Sash
<b>6</b>		NSR 4.0 x 13 Z	Weatherbbar

Open-In Door - Hinge Side - Butt Hinges

2833 Frame with 2887 Reinforcement

2830 Sash with 2859 Reinforcement

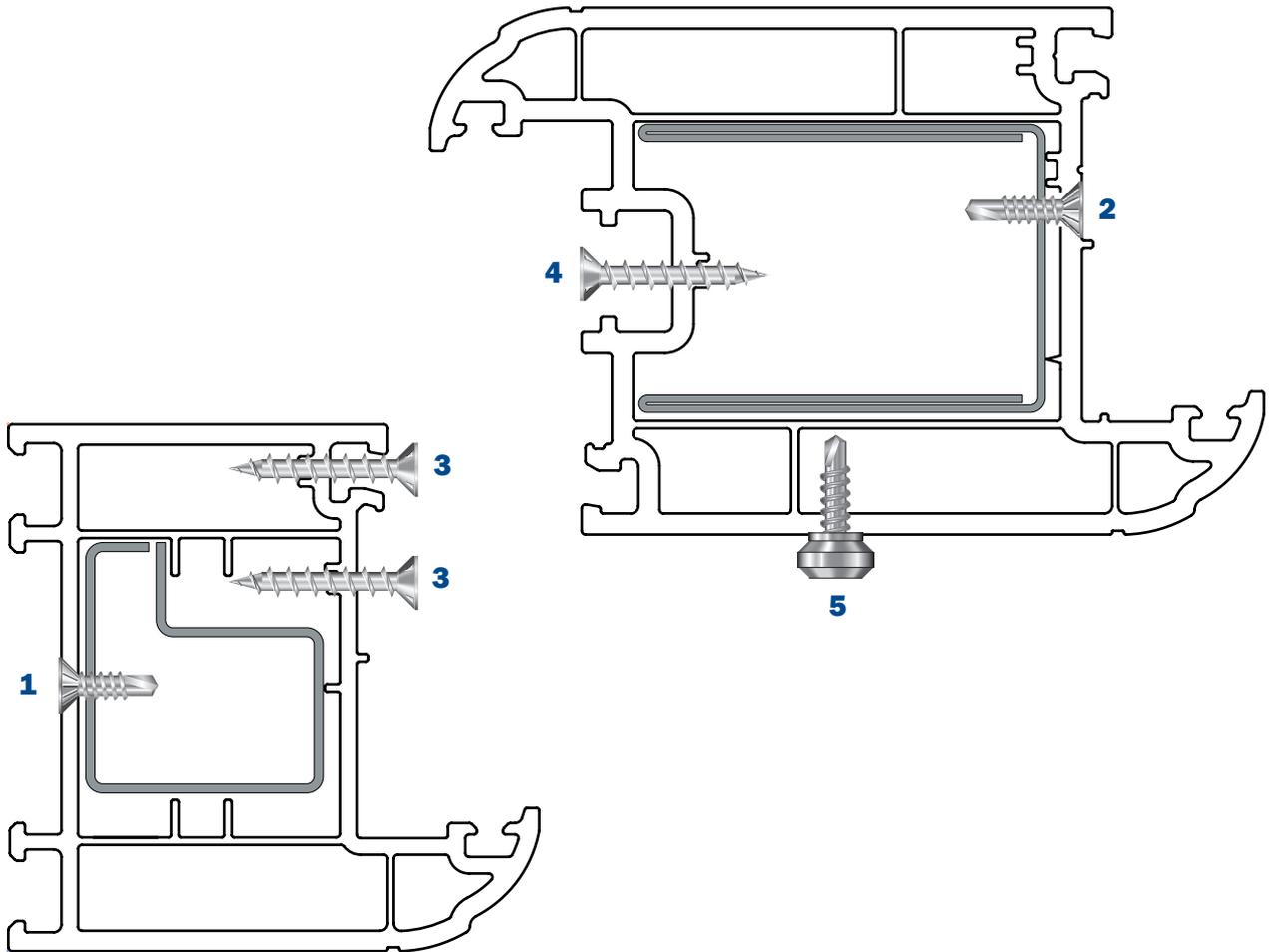


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CSR 3.9 x 38 Z	Hinge to Frame
<b>4</b>		CFG 4.3 x 40 Z	Hinge to Sash
<b>5</b>		NSR 4.0 x 13 Z	Weatherbar

**Open-In Door - Lock Side**

**2833 Frame with 2887 Reinforcement**

**2830 Sash with 2843 Reinforcement**

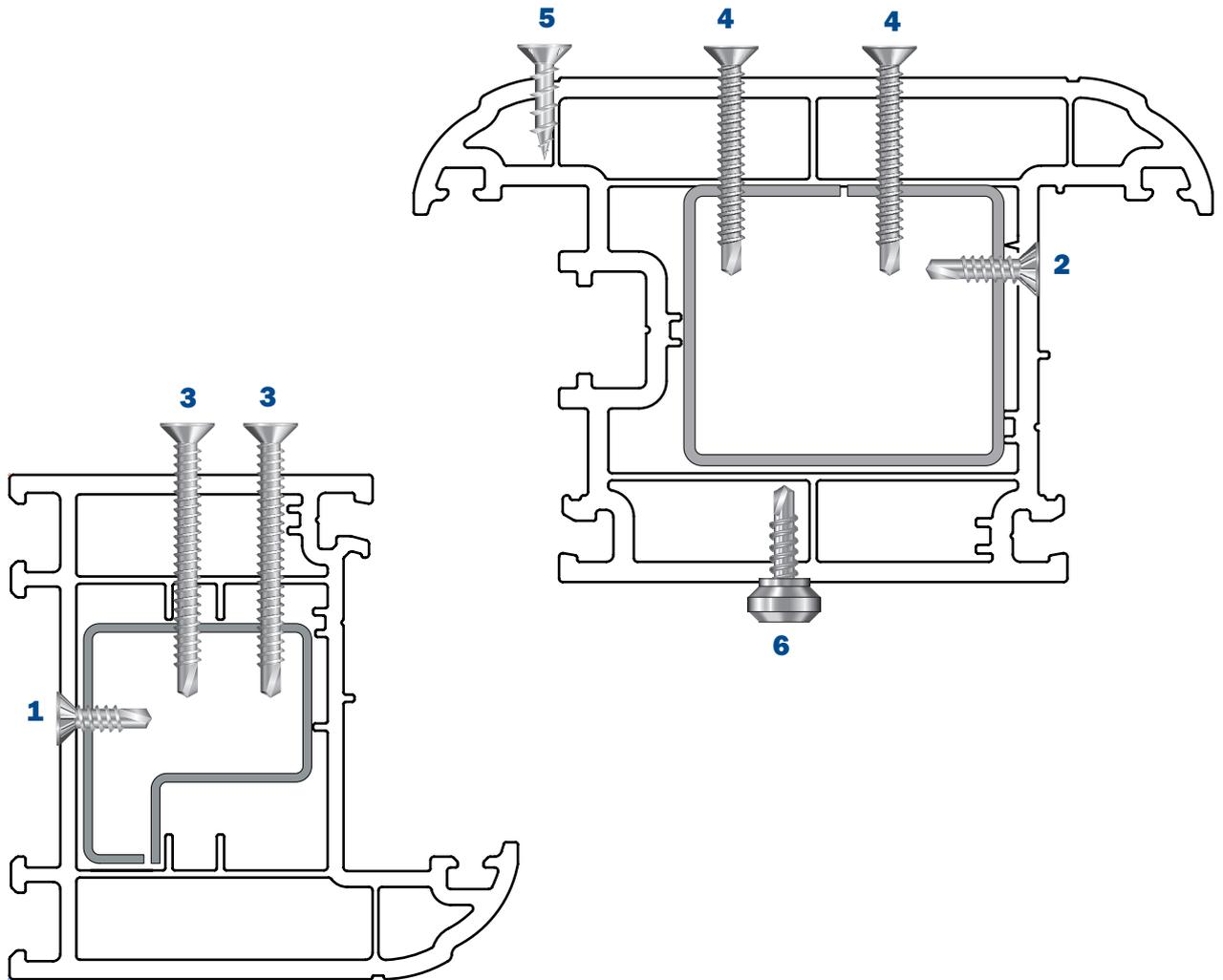


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CFG 4.3 x 25 Z	Keep to Frame
<b>4</b>		CFG 4.3 x 25 Z	Gearing to Sash
<b>5</b>		NSR 4.0 x 13 Z	Weatherbbar

Open-Out Door - Hinge Side - Flag Hinges

2833 Frame with 2887 Reinforcement

2831 Sash with 2859 Reinforcement

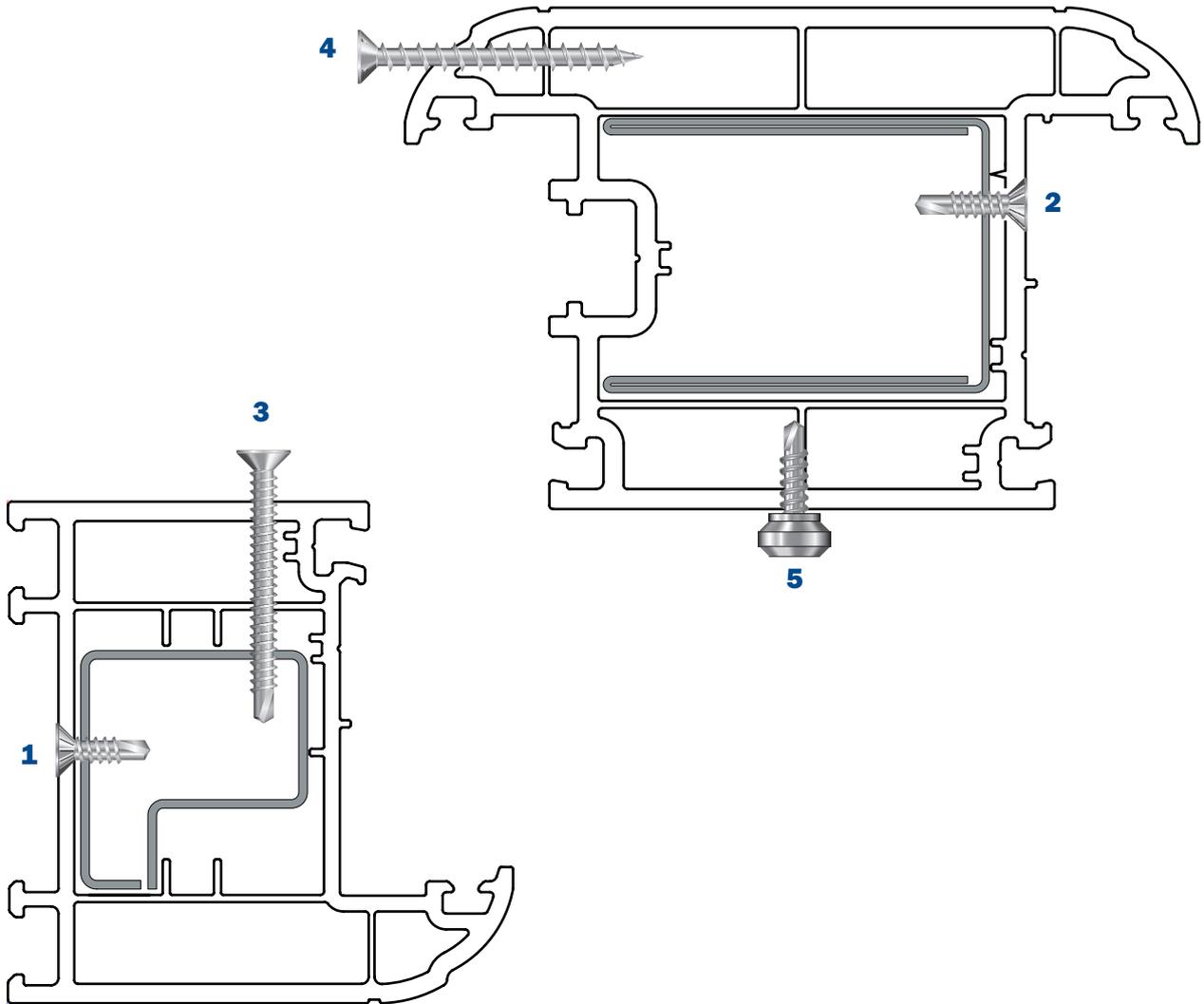


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CSR 3.9 x 38 Z	Hinge to Frame
<b>4</b>		CSR 3.9 x 32 Z	Hinge to Reinforced section of Sash
<b>5</b>		CFG 4.3 x 16 Z	Hinge to Unreinforced section of Sash
<b>6</b>		NSR 4.0 x 13 Z	Weatherbar

**Open-Out Door - Hinge Side - Butt Hinges**

**2833 Frame with 2887 Reinforcement**

**2831 Sash with 2843 Reinforcement**

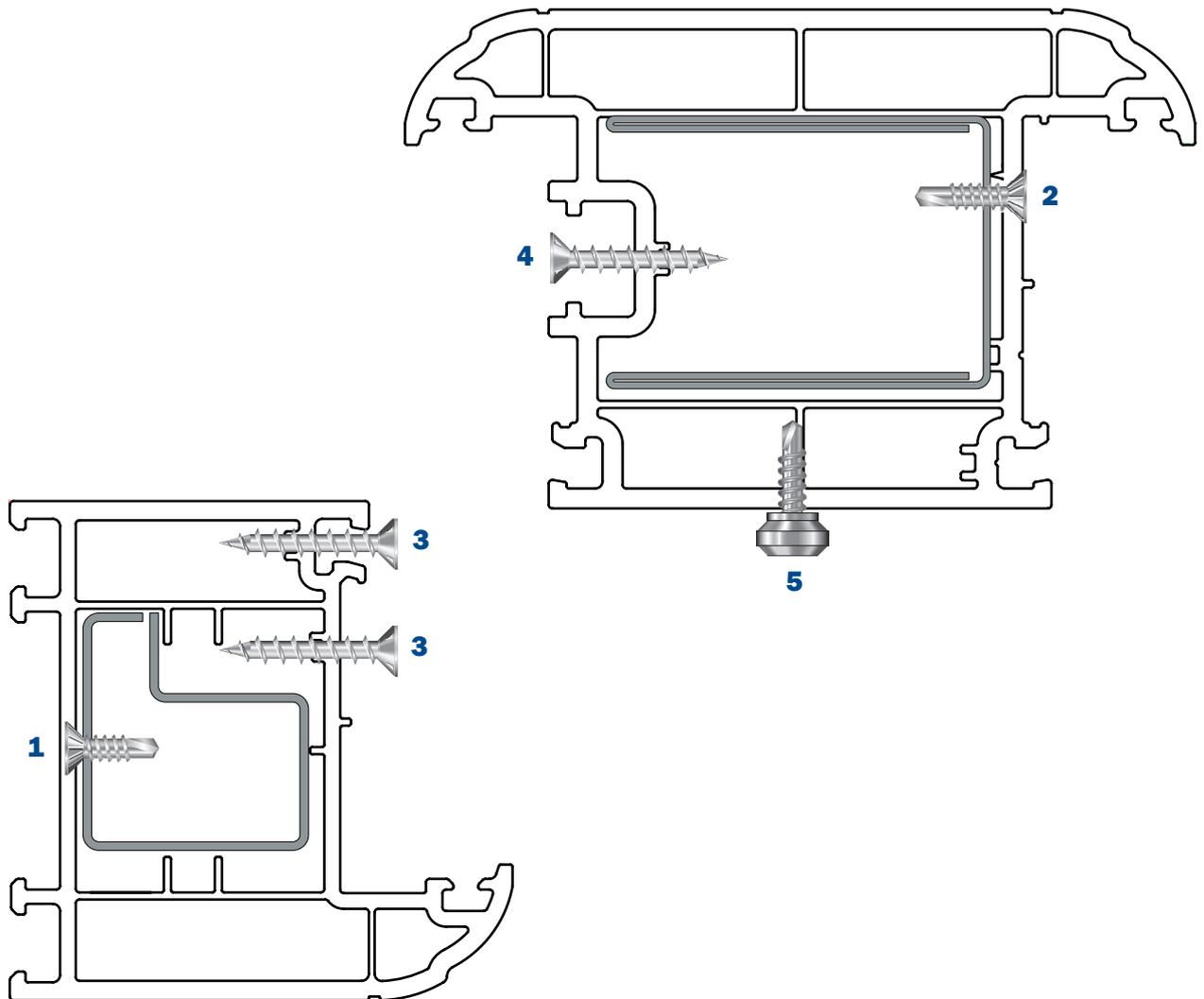


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CSR 3.9 x 38 Z	Hinge to Frame
<b>4</b>		CFG 4.3 x 40 Z	Hinge to sash
<b>5</b>		NSR 4.0 x 13 Z	Weatherbar

**Open-Out Door - Lock Side**

**2833 Frame with 2887 Reinforcement**

**2831 Sash with 2843 Reinforcement**

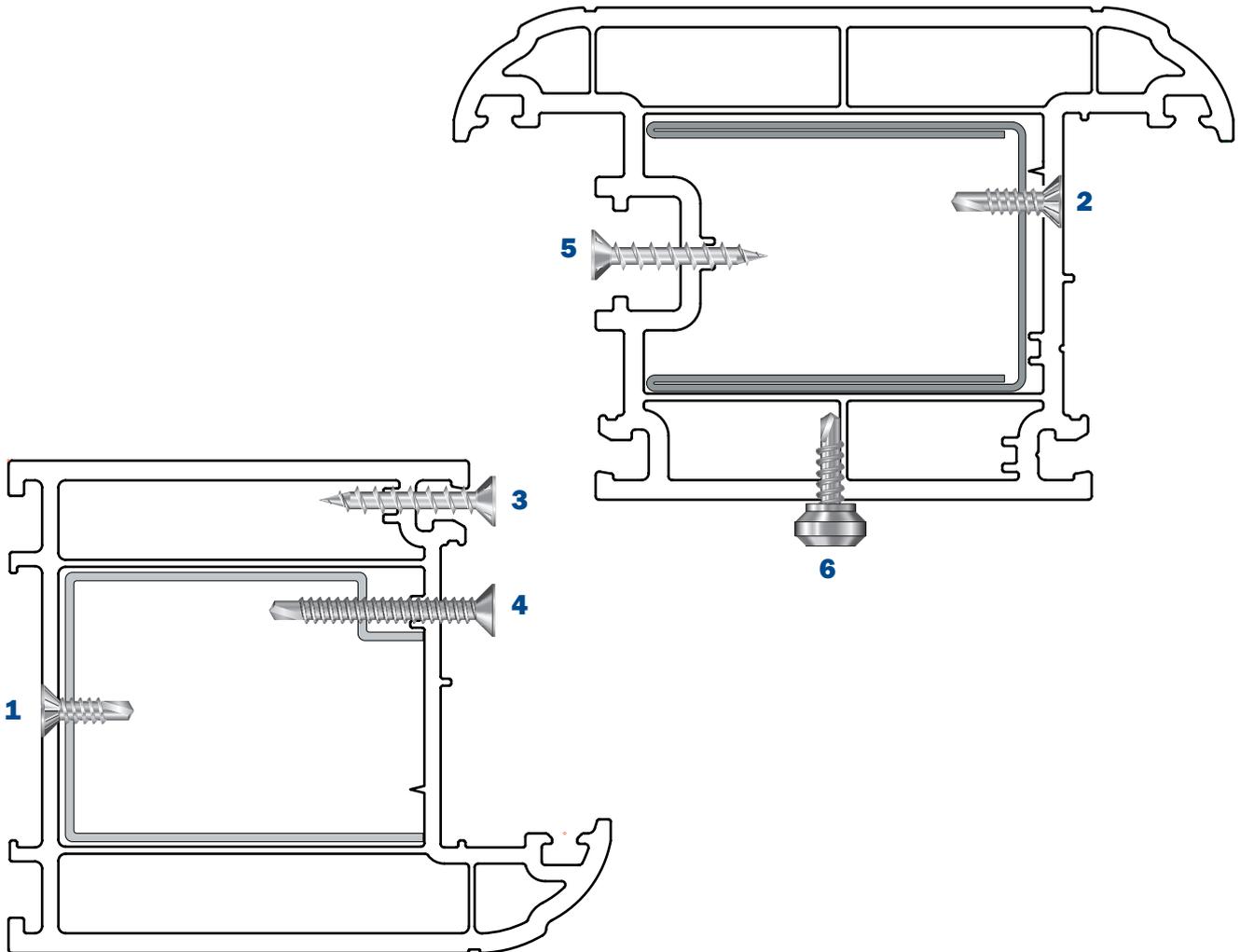


<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CFG 4.3 x 25 Z	Keep to Frame
<b>4</b>		CFG 4.3 x 25 Z	Gearing to Sash
<b>5</b>		NSR 4.0 x 13 Z	Weatherbbar

**Residential Door - Lock Side - Wide Outer Frame**

**2822 Frame with 2842 Reinforcement**

**2831 Sash with 2843 Reinforcement**



<b>1</b>		RSR 3.9 x 13 Z	Reinforcement Retention (Frame)
<b>2</b>		RSR 3.9 x 16 Z	Reinforcement Retention (Sash)
<b>3</b>		CFG 4.3 x 25 Z	Keep to Frame
<b>4</b>		CSR 3.9 x 32 Z	Keep to Frame
<b>5</b>		CFG 4.3 x 25 Z	Gearing to Sash
<b>6</b>		NSR 4.0 x 13 Z	Weatherbbar









**Tel: 01260 223311**

**Fax: 01260 223399**

**email: [info@rapiersstar.com](mailto:info@rapiersstar.com)**

**[www.rapiersstar.com](http://www.rapiersstar.com)**