

Fasteners and Fixings

Fixing the install



Andy Holland, technical and marketing manager at Rapiestar, highlights how poor fastener selection and application during window and door manufacturing, installation and repairs can result in end-user complaints and be one of the main reasons for call-backs after the job is complete



Andy Holland

The types of self-drilling screws used by window and door manufacturers, and how they use them, may not be an installer's biggest concern when sourcing products.

However, these tiny components often give installers the biggest headaches.

Because fasteners are small and largely unseen, they can easily be

overlooked, yet incorrect selection or installation can contribute to costly quality problems and call-backs.

Unless self-drilling fasteners are selected correctly for the many different applications, and installed in the way they were designed to be, there is no guarantee the finished unit will function properly and stand the test of time. That's why a large part of our team's work is with fabricators across the UK and Ireland to help them optimise fastener selection and use.

However, fastener selection and use are not just a fabricator concern. If you are an installer, you will be aware of the different types of frame fixings available. But if you remove any of the screws used to assemble the window or door during the installation process, such as to detach a sash, you also need to take care that the fasteners are re-inserted correctly. And if you need to replace one if it breaks or you lose it, the same type of fastener has to be used.

Care also has to be taken if you are responding to a window repair. In these situations you might need to think about using a different size screw to the one originally used, which we often refer to as a repair screw. This is why it is important to understand the most common reasons why fasteners may fail to meet expectations in a window or door assembly. Being better informed about where things may go wrong due to choice and use of the screws can be helpful when problems are experienced during installation and when responding to an issue raised by a homeowner. Understanding the five key issues below could help you resolve matters faster and more effectively.

1. Screws haven't engaged properly with steel reinforcement

A persistent misconception in fenestration is that fixings only go into PVC-U. However, in applications where the fixing is designed to engage the steel reinforcement, successful penetration and thread engagement are critical. Engagement with the PVC-U alone should not be assumed to provide the performance intended for that particular fixing otherwise it could easily work loose over time.

2. Excessive driver force may have been used

Drilling thin steel reinforcement doesn't require aggression, but controlled axial pressure. If close

attention is not paid to the amount of force being used with the screw gun and it is not kept inline, issues will often result.

Consistent axial pressure should be applied in line with the screw. Excessive pressure is not a substitute for correct alignment, speed and screw selection. When the screw is inserted slightly out of line, the driver's effective force is reduced, meaning that while it may feel like you are pushing harder, the screw doesn't engage well. This can result in the drill point overheating, which work-hardens the steel – causing it to fail without ever penetrating as it should.

3. Excessive driver speed may have been used

High driver speed feels efficient during assembly, but steel doesn't reward impatience. Self-drilling screws are designed to cut, not melt, so when too much speed is applied, heat is generated faster than the material can be removed. This results in the cutting edges losing hardness, the drill point failing and the penetration stopping.

4. Incorrect screw length for the overall thickness

One of the most significant causes of inconsistent fastening is failing to consider both the screw's drilling capacity and the overall material stack. The drill point must be capable of penetrating the reinforcement, while the screw must also be long enough to accommodate the PVC-U, hardware, brackets or other intervening components and still achieve the required thread engagement.

5. The curse of impact drivers

Impact drivers are compact, powerful, and familiar in PVC-U window and door fabrication and installation, but their popularity doesn't mean they're suitable for everyone and they can cause functional and quality issues with the finished units.

In reinforcement fixing, impact drivers can introduce shock loading and torque peaks that make controlled installation of small-diameter screws into thin reinforcement considerably more difficult. This causes drill points to fracture and threads to strip instantly, with the heads often failing just as the job seems done. For controlled, repeatable outcomes, we generally advise the use of appropriately adjusted drill/drivers or screw guns unless the fixing application specifically recommends another installation method.

Consistency beats heroics

Fenestration doesn't benefit from individual brilliance, but from repeatability. As boring as this may sound, maintaining a consistent level really pays dividends in window and door assembly and installation.

Standardised screw selection, defined speed and torque settings, correct tool choice and basic technique discipline are what's required to ensure the screws are not the reason for quality and functional issues with installed windows and doors. After all, windows and doors are 'systems' formed of different materials and components and the screws make a hugely important contribution within them.

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