

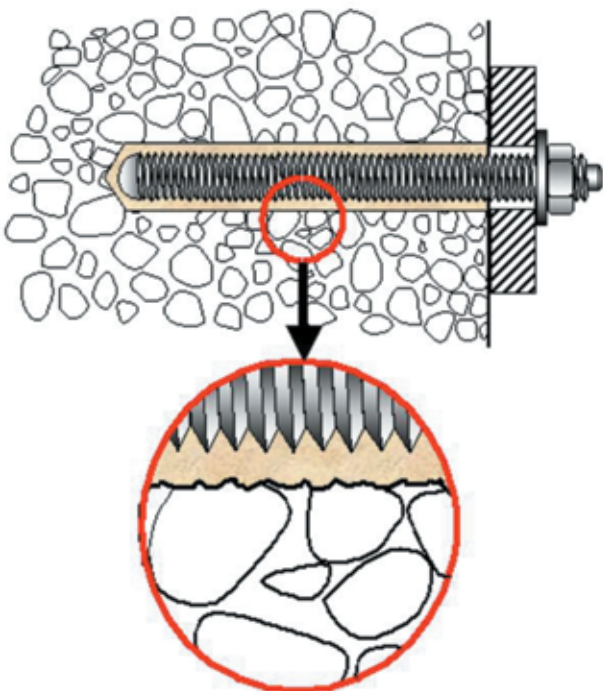
Anchor Installation - adding value

In the second article of this series from the Construction Fixings Association, Mark Salmon of Independent Fixing Consultants goes beyond the simple "Set in accordance with the manufacturer's instructions" to help you capitalise on the opportunity presented when your customers place their orders.

All anchors from CFA members come with instructions and your staff probably know the basics of how anchors are installed. They may even have had some training from the manufacturer so I do not intend to labour through every aspect of how anchors are set. What I hope to achieve here is to give them a deeper understanding of just two key topics so they will be more confident in dealing with these issues with your customers.

Cleaning the whole hole

This helps with most anchors and usually getting rid of the bulk dust with a blow out pump is good enough, it ensures there is enough room in the hole for the anchor and may prevent the dust from interfering with the mechanism, but with resin anchors you need to do more. During the drilling process the drill tip forces some of the dust against the sides of the hole where it will stick well enough to resist the efforts of a blow out pump. Left in place this dust will stop the resin from bonding with the rough surface of the hole and a large proportion of holding power may be lost. This is especially true with injection systems and hammer in glass capsules. So a brush is vital to loosen this dust which can then be removed with a further blow from the pump. Blow - brush - blow is the order of the day.



Resin anchors work by mechanical interlock between two aggressive surfaces. Free of dust.

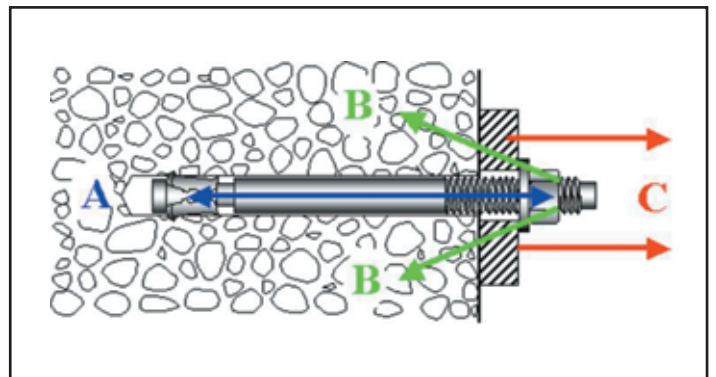
Tightening up!

The most useful tool you could sell to a fixings installer - after the drill bit and the other usual suspects - is the one you are least likely to see in an installer's tool kit. A torque wrench.

- Want to know if your anchor is functioning correctly?
- Want to ensure the fixture won't move during its design life?
- Want to protect the bolt material from being over stressed?
- Want to make sure the bond is not broken when setting a resin anchor?

All of this can be achieved with a torque wrench - it's the best protection you can sell to a contractor.

"How does it do all this?"



The ABC of how fixings work

When you turn the nut or bolt on an anchor it tries to pull the anchor out of the base material but because the anchor is "Anchored" into the substrate it resists, and a tension, "A" in the figure, is developed in the anchor rod. This can only happen because the nut cannot move toward the base material because the fixture is in the way so a compression force, "B", is developed through the fixture, clamping it against the base material. This is just what we want. If we now come along and apply a load "C" then, as long as B is greater than C, the fixture will not move. Usefully the effort we have to put on the spanner, the tightening torque, is directly proportional to the tension in the bolt and hence the clamping force. The torque needs to be set quite high initially to take account of an annoying thing called "Load relaxation" which takes place through the life of every fixing, so it's tempting to say "Just do the thing up as tight as you can," but if we were to do that we could over stress the bolt material and, on a resin anchor, we might shear the resin bond itself. Manufacturers therefore choose tightening torques with care. When fixings are safety critical, and many are, we need to get the torque right. Some smart anchors have devices built in to do this for you but on all others a torque wrench is the answer. In weak materials, such as soft brickwork or lightweight blocks, the force that will break the bond of a resin anchor is relatively low so a torque figure quoted for concrete needs to be reduced in proportion to the reduction in either the base material strength or the allowed load. And for any anchor with a projecting stud remember to supply deep reach sockets.

One thought to leave you with. When tightening most "Torque controlled expansion anchors" it usually takes around four full turns to reach the recommended torque, resin anchors by comparison need less than one full turn to achieve the correct torque. This illustrates how easily a resin anchor may be overstressed if the installer is overzealous.



Summary

As I said, an insight into just two important aspects of setting anchors which can make or mar their performance. Other aspects such as the importance of hole depth and what to do if rebar is struck, are dealt with in a special Guidance Note - Anchor Installation available free from the CFA Website at www.fixingscfa.co.uk. Detailed method statements are also available on request from CFA members for specific anchors.

The benefit to your company is that staff who are familiar with the installation of different anchor types can make sure you also supply the necessary tools. A simple question at the end of the order - "Do you have the necessary setting equipment?" is a good start. But a more informed approach, based on an open question and mentioning the specific equipment is more likely to yield results: "As well as a 14mm drill bit you will need a brush and a pump to clean the holes out, may I add these to your order?" And when they have the courage to sell a torque wrench and socket as well you will know you are really making a difference - to the safety of the fixing as well as your bottom line!

Feedback on this article can be sent to CFA@fastfair.net



A selection of the equipment you could also be supplying with each order