Fitting Aluminum cleats to a carbon fibre mast or spar

Carbon fibre, Stainless steel and Aluminum are dissimilar compounds and if bolted together without using an inhibitor between them the Carbon fibre and Aluminum will slowly degrade. This is called electrolytic de-composition, and this is the same problem as when using Stainless steel fastenings on aluminum spars etc.

Important note- most mast manufactures would not recommend you drill any holes in your mast or spar but this is not practical for most sailors these days.

There are a lot of opinions out there on the forums etc. and different methods of attaching our products. Using a dissimilar material bonding adhesive like Plexus is popular. We recommend leaving this to the experts as if not completed correctly this could lead to damage to the structural strength of your spars. So, after taking advice from several carbon fibre spar manufactures, this is what we would advise.

Firstly, drill as few holes as possible into the carbon fiber as it has the potential to weaken the structural strength of the spar.

Secondly, do not use self-tapping screws into carbon fibre without seeking advice from a spar manufacture first as, depending on the weave and fixing position you might not be able to get a good fix into the Carbon fibre.

To attach our aluminum products to carbon fibre spars we would recommend the following.

Tools required.

Masking tape

Pencil

Drill and sharp drill bit (for correct size see bolt sizes on product or at our website)

A4 stainless steel CSK bolts, Nyloc nuts and washers. If possible , always use bolts to secure the fitting, this will ensure the load is spread evenly.

Plastic backing pad and 2 x plastic washers

Duralac or another brand of Inhibitor

Rags or paper towels to clear away the excess Duralac

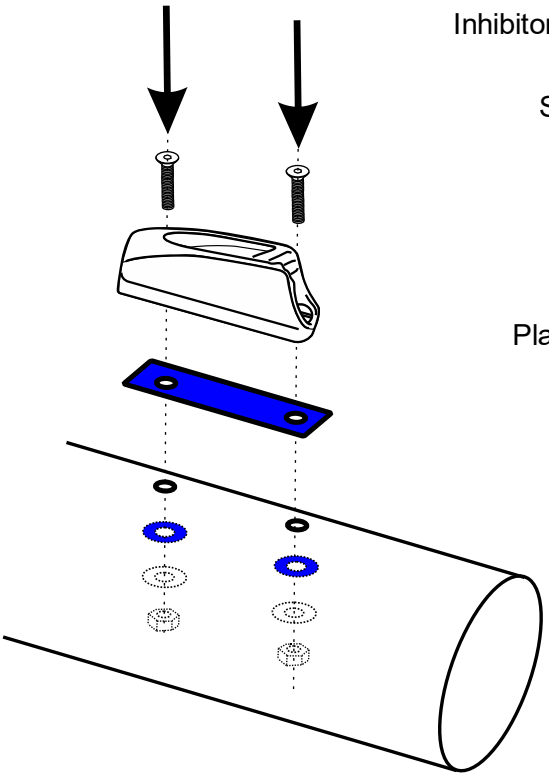
1/ Put masking tape on the spar, on the area where the cleat will be fitted. Mark out and tape the product into position and reeve the cleat to ensure it is in the correct place. Go through all the scenario for when you would use the cleat again to ensure it is in the best position.

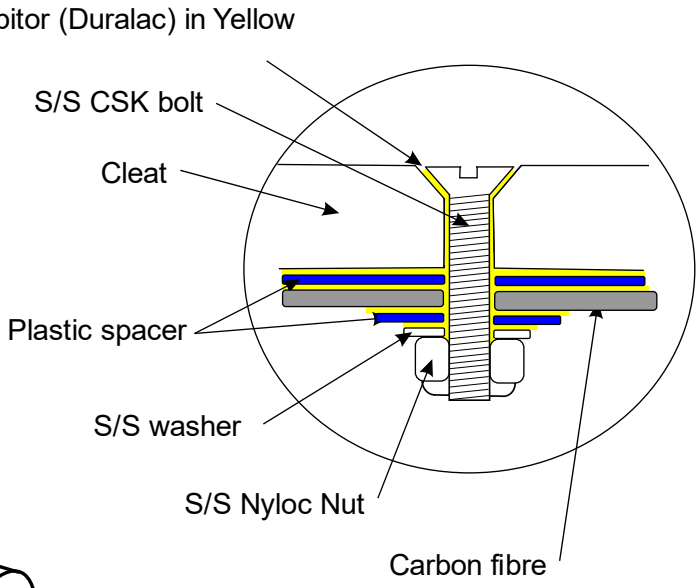
2/ Drill the holes using a sharp drill bit without applying to much pressure as this can create a problem when the drill bit breaks through the inter surface. Too much pressure can damage the inside of the hole and the fibre weave.

3/Create a plastic backing pad to go between the aluminum cleat and the carbon fibre (the retail card the cleat comes on is ideal) or a thin piece of plastic shaped to the cleat, drilled with the 2 fixing holes. Also make 2 x plastic washers the same size or larger than the 2 x S/S washers you will use to secure the cleat. A paper hole punch works well to punch out the center holes.

4/ If you are using CSK bolts which need cutting down as there are lines running inside the spars, cut them down and offer them up to ensure the length is correct before applying the Duralac.

5/ Apply an inhibitor between ALL of the surfaces. The most commonly available in Duralac. This is messy but the most important part of the project and will ensure electrolytic decomposition does not occur. If there is a good barrier between each surface (see diagram) the decomposition can't happen





If you are using Monel pop rivets

Again, apply the Duralac between ALL surfaces and, if possible if the positioning will allow, add the 2 plastic and stainless-steel washers internally onto the back of the pop rivet. Place the plastic washer against the Carbon fibre and the stainless-steel washer on top before riveting. This will spread the load and stop the fitting eventually loosening as a very small area around the drilled hole will soften over time.