Airush Gold Assembly Instructions

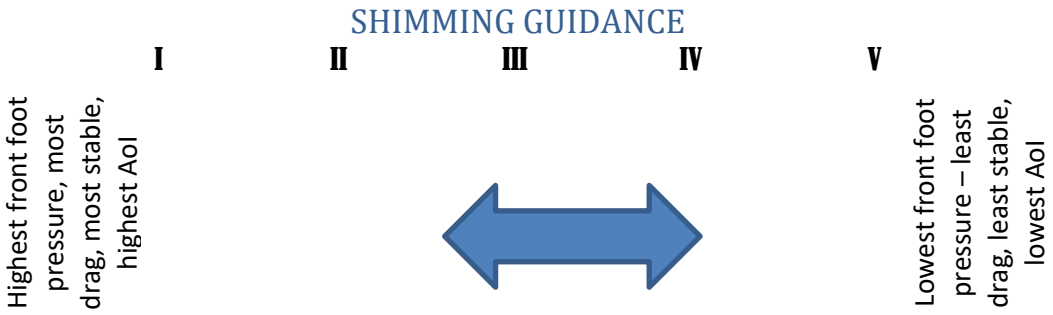
Thank you for purchasing a Gold foil. Below are assembly instructions and some extra info/background on caring for your foil.

Fitting Mast to board.

We reduced the clearance tolerance from standard tuttle of 0.15mm (15.9mm box to 15.75mm tuttle/mast) to 0.1mm (so 15.9mm box to 15.8mm tuttle/mast) to provide a tighter connection to the board. This makes it harder to get the mast fully seated in the tuttle. We recommend placing the board upside down on a soft surface and pushing the mast into the tuttle box firmly. Roll the board onto its side and tighten the forward and rear tuttle box M6 fasteners. Ensure that the tuttle is pulled into the tuttle box evenly by tightening each end progressively. Then roll the board upside down again, place a foot on the center of the board, flex the base of the mast firmly forward and aft, roll the board over and retighten the fasteners. Repeat until the fasteners do not move after flexing the mast. When fully inserted, the thickening of the mast should be about 1mm below the base level of the board, but there should always be a gap.

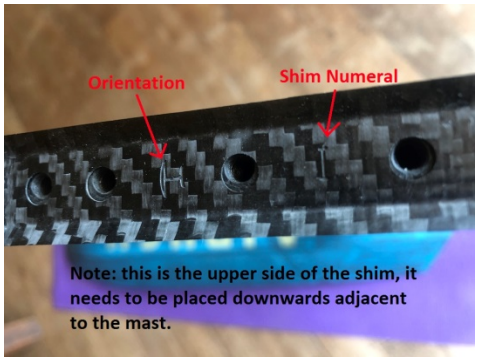
Fitting Glider to Mast

We recommend having the board fitted to the mast before fitting the glider so that the board provides stability. Place the board with mast fitted, upside down on a soft surface. Select the desired shim from the 5 provided.



For the first ride, we suggest shim I or II to initially get the feel for the foil, and light to moderate wind. After getting used to the foil and front foot pressure, you can go to the more advanced shims and ride in higher wind conditions.

The shim numeral is on the upper side of the shim adjacent to the mast. It is engraved very lightly as marking or adding anything with thickness would render the shim useless. You may need to have it at the correct angle of lighting to see this marking.

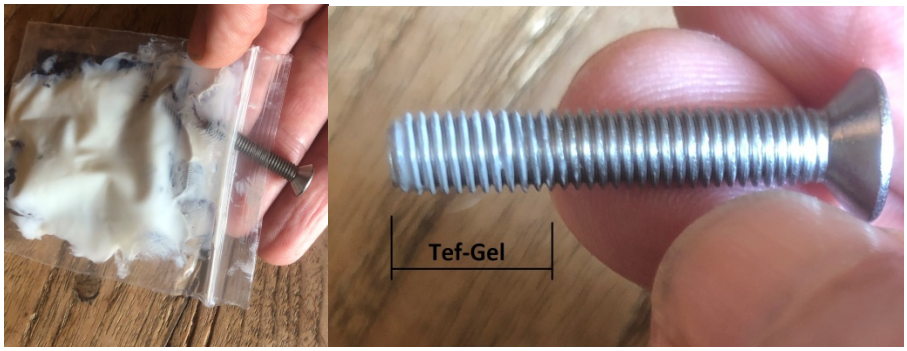


Place the shim on the mast end.

- note: a shim must always be fitted as the mast and glider have been designed only to be joined with a shim between, never without.

No Shim *Shim fitted*

Place and hold the glider over the shim (it should seat nicely on the contact face). Place a small amount of the supplied TefGel on the lower portion of each of the 5 M5 BUMAX 88 fastener (15 provided) and insert into the glider holes.



Starting with the middle number three position, screw the fastener in so it just touches the carbon fuselage. Repeat for fasteners at positions 2, 4, 1 and 5.



Again, starting with the fastener 3 position, and using the tool with 5Nm marked on it, tighten 1/4 turn, repeat with fastener 2, then fastener 4, then fastener 1 and lastly fastener 5.
Caution - Make sure enough downward pressure is applied to the tool to stop it from jumping out of the fastener when it slips.
Move back to fastener number 3 and tighten 1/4 a turn or until the tool slips, again in the same order. Repeat this exercise until all fasteners have been tightened with the torque wrench slipping on each fastener at least twice.
Caution - It is extremely important to make sure the #H3 tool is fully inserted into the fastener head before applying torque. Either check this visually or listen for a click to tell it has fully engaged. If not fully engaged, the tool may turn in the fastener, damaging the fastener head requiring early replacement.

Footstrap placement

Most Gold riders end up with the forward fastener for the rear foot strap either on the rear tuttle insert, or the adjacent forward insert. We suggest starting on the adjacent insert. Moving the rear strap rearwards increases relative front foot pressure.

Background notes and info on Foil and Board.

The Gold foil has been designed with race performance as the supreme priority. To achieve the very low presented area drag (we feel lowest in class), we have made the connection of Mast to Glider using 5 M5 fasteners, requiring special tools and procedure for assembly to avoid damage.

The M5 fasteners we supply are BUMAX 88 countersunk fasteners (ex. Sweden) exceeding the requirements of ISO 10642. Only these specific fasteners can be used in this connection, otherwise damage can occur to the glider and/or mast, hence we supply the foil with 3 sets (15 off).

These fasteners act with the shims to allow adjustment of the front wing AoA to stabiliser possible, which we believe is extremely important for a rider setting up the foil to best advantage for their riding style/ability.

The fasteners need to be tightened using the supplied fixed torque wrench which limits the torque applied to the fastener to 5Nm. The tool has 5Nm printed on the handle. This tool prevents over tightening of the fastener's which could damage the mast insert and/or the fastener itself, and under tightening which could affect performance/ride.

We think we have made the foil with uncompromising performance. But we have found that if we strike debris in the water at speed, it can more easily cause damage to the leading edge of the Wing, or more often, the Mast, than other foils which typically have blunter leading edges. Because of the high performance, the damage also has a greater effect on the foil performance than other foils. So

it is a bit of a double wammy. Easier to damage, and more noticeable drop in performance (because you are starting from a higher performance level).

We have, with great effort, got to an average of 0.35mm trailing edges on Wing, Stabiliser and the wetted area of the mast. And this 0.35mm edge is square, not rounded. This provides such a smooth drag free ride and one of the major reasons our foils perform so well. We found anything over 0.5mm is quite noticeable when riding, hence we target 0.35mm to make sure we stay below 0.5mm. But I cannot remember how many times I have cut my fingers on these edges. So please take extra care when handling the foil.

These trailing edges are also very delicate. We have managed to repair damaged ones back to new performance, but it is a slow and tricky operation. You can temporarily correct damage with filler, but this will likely fall out. For our repairs we ended up sanding back adjacent area on one side only, putting a “soft” mold onto the unsanded side, and laminating against this surface. We then vacuum bag the repairing laminates. Cure and sand back to original surface profile.

Why is there an insert behind the rear tuttle fastener? The reason for having this insert is to hopefully allow a lower/lowest AoA on the foil. From our testing, the lower you can handle the AoA and still go maximum speed downwind, the better the VMG for both upwind and downwind. Moving the foot straps rearward increases the front foot pressure so the lower AoA balances out with the foot strap moving rearwards somewhat.

We have made our board with a different top deck angle above the top of tuttle connection which gives our top decks more curvature and still maintains high nose clearance. Our testing finds this geometry more comfortable to ride so you can train harder. This means that the barrel nuts do not sit at right angles to the top of the mast, as fitted. If the mast is put into another board which is parallel with the top of tuttle box (standard board design) then these barrel nuts need to be rotated so they are at 90 degrees to the top of tuttle surface otherwise the threads might get damaged. The angle difference is small but when tightening the screws they have more resistance the further in they are screwed because they are not aligned.

Information on Galling of Stainless Steel fasteners to the threaded inserts (a major reason for the Tef-Gel paste).

Galling is a form of wear due to excessive friction between two moving surfaces. This can happen when installing a bolt into a threaded hole. It is usually prevalent with stainless steel parts but can happen with any material.

Severe galling can result in the parts becoming so seized that the part is no longer removable. This term is known as “cold welding” since the materials don’t heat up very hot, but act like they have welded together.

Causes

Friction causes galling, so any form of interference or heat build-up can cause galling. Common triggers are debris in the thread, reusing overtightened hardware, and threading soft materials together such as stainless steel.
Another common trigger is damaged to the threads.
Caution Stop when you feel resistance

This may be obvious, but when you start to feel resistance in the thread, STOP! If you catch the galling soon enough, you may be able to remove the fitting or bolt before it seizes completely.

You should discard the damaged fitting or bolt since the threads are already deformed from the first installation. Reusing this fitting will only damage the new hole and further damage the fitting.

Installation speed

Reducing the installation speed will help reduce friction between the materials. This also allows any heat build-up to dissipate through the part, rather than concentrating at the threads. Plus with a slower speed, you may be able to feel the beginning of the galling and remove the part before it completely seizes. Never tighten fasteners with a power drill.