Builders Forum

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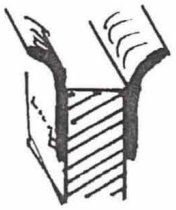
Top Strakes Made Easier

From Jim Willsie, Palm Harbor FL

Although the factory can build them leak-free, the war stories scared me, so I took every precaution possible (probably overkill).

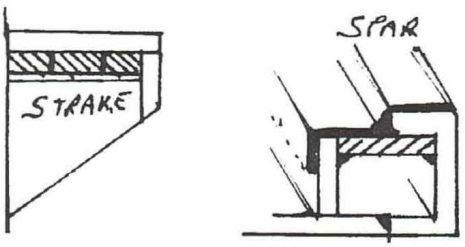
1. The fuel bulkheads surround the entire perimeter except along the fuselage, so I added a 1" wide foam lip along this area for a complete strake platform instead of just a butt joint. I also added a small piece near the front at the door edge for a temporary support.
2. The manual warns against shifting the strake when it's finally laid on, so you won't slide the goop off into the tank and/or create gaps. This is good, but only one dimension. Also important is not to press down too hard and then ease off, because this will also squeeze the goop out. To guard against over squeezing, I made about a six HIGH-POINTS with micro daubs that I filed down to the desired height. This then allows all the pressure you want without the risk of over squeeze.
3. The bulkhead and baffle flanges were next, but I made mine differently. Instead of just wide T tops, I made them V shaped with flexible sides. I did a narrow one fine bid layup on each upper side of the baffles that extended about 3/8" above the top. Then later, when it's not sticky but still pliable (we need to invent a word for this stage), I rolled the edges outward forming a V. The cured edges are flexible since they're only one ply and flex to contact to top perfectly.



4. Next, the hardest area to seal (inverted) is the area between the rear fuel bulkhead and the spar (using the 'stick trick').

This headache can be eliminated before the top strake is put on by adding horizontal foam pieces from the back of the rear fuel bulkhead to the main spar (under its top lip). By making this 2 or 3 pieces and steps depending on the length of your forearm, each piece can be completely finished and sealed underneath while it can be easily reached. You can also add the two brace pieces D and B while you're at it.

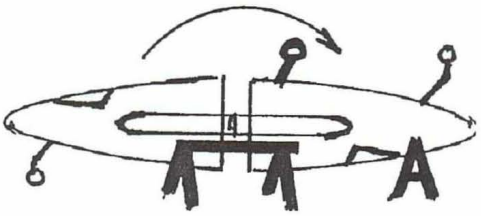
The final step is to fill, radius and seal the top side, bidding from the inside face of the fuel bulkhead over the new horizontal piece and up onto the spar cap. Now the whole thing is a gas tank and any leaks would have to be back of the spar and easy to fix (rather than inside this access space).



But if you still have to flip the plane over...

5. VELOCITY "OVER-EASY". Rather than invent another weird contraption to bolt to the plane, I tend to look for abstracts and discovered that changing the environment was easier. If you either dig a ditch or use two sawhorses (much easier) the plane can flip on its strake tips like a gyro. First I bolted two 10" x 10" pieces of wood to the outboard wing mount holes to protect the skin edges.

Then simply align two padded sawhorses at the strake ends and push it over. The horses take all the weight and a third person with a pole (notched PVC pipe) can catch and balance it at the blast off position while the lifters change sides and ease it down onto a third sawhorse sideways at the canard bulkhead.



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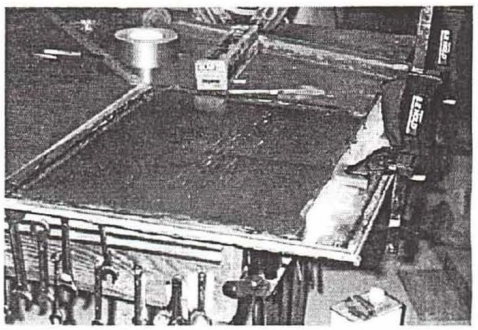
Sheet fiberglass stock, & other Tips

From Bill Wade, Unity, Maine



I have found sheet fiberglass stock to be a very useful material for fabricating parts or to provide a former for layers of reinforcement. It can easily be made by waxing a sheet of glass with mold release wax then applying mold release (PVA). It's best to use an unframed piece which will lay flat on a supporting surface. The required number of fiberglass plies are laid up in the usual manner followed by a layer of peel ply, then Glad Wrap over all. I usually use two or more layers of triax. There should be at least a l" border of prepped glass all the way around and the Glad Wrap must extend beyond the laminate. Then take a rolling pin and slowly roll the excess epoxy from the cloth, working from the center to the sides with progressively slower and firmer strokes, sealing the plastic

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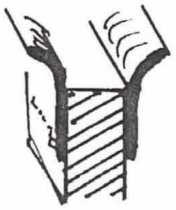

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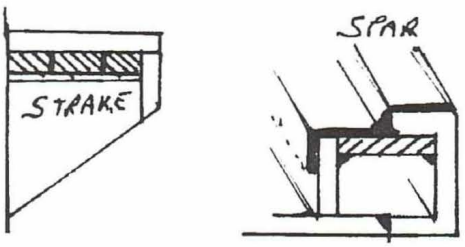

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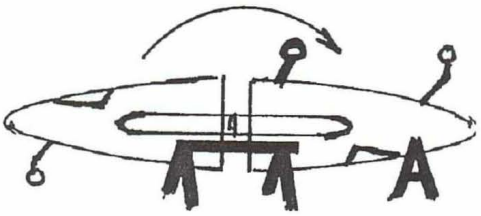

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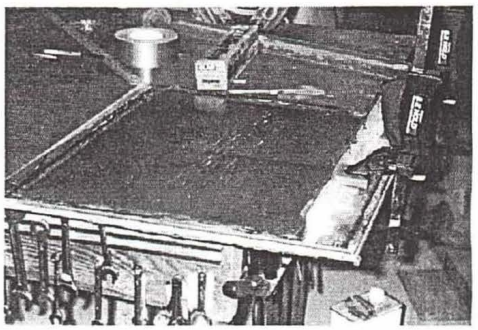

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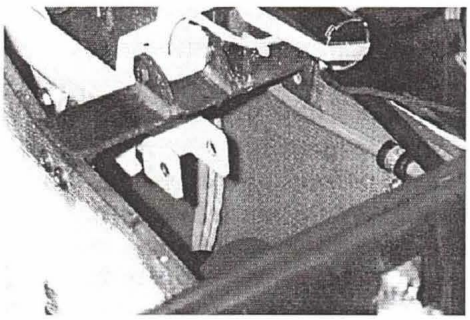
with epoxy all around. It is possible to squeeze too much resin out resulting in surface voids. After cure the PVA allows the sheet to peel off the glass easily and provides a protective coating which can be peeled or washed off with water. The peel ply should also be kept on as long as possible. The result is a material which is glassy smooth on one side and prepped for bonding on the other.

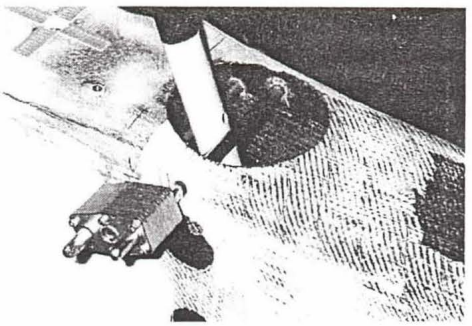
I recently discovered that it can be formed with one or more flanges, which opens up all sorts of possibilities. All you have to do is wait until the sheet is tacky but still soft. Insert a tape knife between the PVA and glass, then peel up the desired amount and bend. I used a duct-taped piece of 2x4 as a form.

Sheets can be bonded with microglass to make massive pieces-



the picture shows my nosegear overcenter safety strap, which is made from various thicknesses. It also shows part of the overcenter catch I came up with. Since there is some controversy about this I won't elaborate but if anyone would like more details they can contact me: billwade@coneentrie.net or 2692 Town farm Rd.; Unity, Me. 04988. The material can be heated and bent and I have used it to form flanges in some areas rather than doing duct tape layups. When doing this I bond a 2-ply triax piece then reinforce with additional layups as needed.

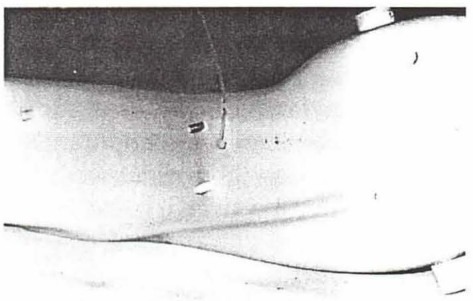
When I flipped my fuselage some hydraulic fluid leaked out of the reservoir and spread through much of the fuselage. Solvents cleaned up a lot of it but left other areas untouched. I found that dust from sanding fiberglass will draw the stuff out of crevices like nothing else- now those sweepings get saved.



I have included a picture of my antitheft device- it's self explanatory. I reinforced the console with sheet fiberglass where the lock passes through. The stick is held full forward in order to keep the nose down in gusts. The lock pokes into your leg so it's hard to overlook even if you were to ignore the lack of aft stick motion.

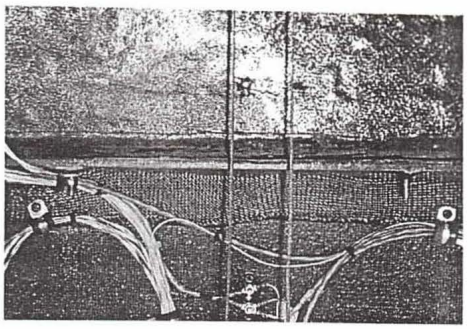
When sanding the wings the dust can help outline low spots. Spread micro dust over the area. Take a long (1 - 2') flexible straightedge, lay it flat across the contour and draw it sideways, pushing the dust from one side to the other. If done carefully the dust will remain in even very slight dips, allowing the low spots to be traced for later filling.

There are times when a stud is useful for attaching clamps. I rough up the heads on ANS2S screws and tack them to the surface using 5-minute epoxy with some microglass. Then I fill in around the head with Ezpoxy micro followed by two layers of BID, 1 - 1/2" square. The weave can be opened enough to slip



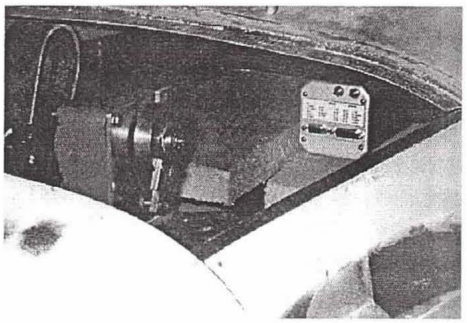
the patch over the stud. One picture shows a gear leg, and in this case the studs are to attach the gear door. Next to them is a brake hose clamp made from a nylon tie threaded through two layers of BID, about I" square. It's best to form the hole oversize to permit later replacement.

Heatshrink tubing does a very



good job of masking stud threads. It also protects them from damage.

When it came time to install the pitch trim and A/P servo I discovered that it was not very easy to visualize clearances from the avionics. I wanted to be CERTAIN that there would be no interference. I made dummies of the equipment from blue foam, allowing extra



length for connectors and wire loops. These were hot glued into place on the instrument panel as shown. As can be seen, I've opted for a different style of canard cutout. It has made installation of everything in that area much easier.

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A Canadian Version

From Richard Dargis, St. Vincent, Alberta, Canada

1997 is coming to a close and what a year it has been to all of us first airborne Velocitites. Speaking for myself, Velocity 173 RG E C-FZST first took to the skies on July 6th with Tom Jeters at the stick. After 12.5 months of assembling, fabrication, sanding, painting and go for this, go for that, the real thing was heading down runway 08 for its very first flight. This first flight, however, was very brief with one circuit done and grounded for a few hours due to high oil temps. A few hours later, another flight was undertaken with little difference in oil temperature. Tom managed to