ERC-01 Electric Beaver – Building Notes

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I largely built according to plan; the only changes I remember were:

- built a shaped balsa ring (i.e. half bagel shape) for the cowling,
- added fittings for the electrics: Turnigy 3530C 1100kV out-runner mounted inside the nose to the back of the firewall, driving a 11x4.7 prop, with a w/ 30A ESC and 2200mAh battery in a tray inside the nose.
- I made a hatch in the bottom for battery access without removing the ring
- made the stab/rudder section removable (via a balsa key that fits between the longerons with a nylon nut and bolt)
- added wing struts made from aluminum streamline tube with a clevis at each end that attaches to tabs glued into the fuse and wing (the tabs are cut out of credit-card style hotel room keys - glues well and drilled with a hole that matches the clevis).

For the floats, I used Ralph's 27" float spaced 14" apart on centers, with the CG of the float (just in front of the step) aligned with the CG of the aircraft. That gave about 2" of float in front of the prop, and 2-3" of clearance from the prop to the waterline. I joined the floats with 15" lengths of streamline tube (filled with goldenrod and epoxy), which I inserted into the floats just under the 1/4" plywood mounting strip (i.e. centered about 1/2" below the top of the float). I just filed out the right shape of hole with a needle file (through the balsa and into the foam like a "post-hole"), and then drilled a counter-sunk hole down thru the top of the float into the tubing, so I could screw and epoxy them into place - a solid and clean looking connection. At the front of the float, the existing landing gear wire attaches to a bracket on the float with a couple of retaining collars; at the rear I notched some more streamline tubing and bent into similar shape to the lander gear - at both ends it inserts down at an angle into the float near the back of the plywood mounting strip (epoxied into another 'post hole' that I drilled and filed), and then it attaches to the aircraft via a single bolt & screw through the strut into the rearmost 1/2" ply crosspiece in the Beaver fuselage. In retrospect I think it would be enough to simply add a wing-mount style dowel just above that ply crosspiece, and use rubber bands to secure the rear of the float. The floats are finished with marine spar varnish and metallic silver spray paint.

For the water rudder, I drilled an exit hole in the rear plywood crosspiece, with a bit of drinking straw inserted as a sleeve, and then looped non-elastic fishing line thru the rudder servo arm (locked by the arm screw to allow trimming) and led both ends out through the fuselage. The two ends connect with fishing swivel clips to a similar piece of fishing line looped through the water rudder arms (similarly locked by the arm screw). I added a little tensioner inside the fuselage by passing the lines through a ring that's rubber-banded to the top rear of the fuselage which gives them clearance from the servos and allows the lines to exit more vertically down thru the fuselage, as well as keeping the pull-pull system relatively tight.

Floats made by Ralph Smith of http://planefunfloats.com/