GOLDEN OLDIE FLOATS

A Float Design For 5-8 Pound Aircraft

By Fred Reese

This photo is enough to inspire any rabid RC'er to build the Golden Oldie with floats.

Just like the Hitchcock movie. The Golden Oldie is being attacked by a flock of birds.

GOLDEN OLIDE FLOATS
Designed By:
Fred Reese
LENGTH
31 Inches
MAX WIDTH
4 Inches
MAX HEIGHT
3⅞ Inches
SIZE OF AIRCRAFT
80-128 Oz.
CONTROL FUNCTIONS
Water Rudder
MATERIALS USED
Balsa & Ply
Covered w/Glass Cloth
TOTAL WEIGHT
26 Ounces

Last month we featured Fred Reese's Golden Oldie vintage type sport biplane for .40-.45 four cycle engines. It flew so well, he added floats. These floats will also work well on other .40-.60 powered aircraft weighing up to eight pounds.

For three years I have been building and flying off of water with a variety of aircraft and float designs. With each new design I learn something new because some new problems occur. One by one the problems would be corrected to make the floats work. During this time I have read and studied everything I could find on float design for both full scale and models. My latest effort is the Golden Oldie, a 56" vintage type sport biplane using an O.S. FS 40 four cycle engine for power. I had decided that if the Golden Oldie flew as I expected, I would build a set of floats. The airplane flew as well as I hoped, even better. I quickly drew up a set of floats and built them. I called my friend Don Harris at Lake of the Pines and we arranged to fly that weekend.

We taxied the Golden Oldie around for a few minutes to check out the water rudder which turned out to be very effective. I decided it was time to try a take-off and at that point my real education on floats began. What followed was a very long, high speed taxi run. After about a quarter of a mile, the Golden Oldie did lift-off with a lot of elevator coaxing, and after what seemed like an eternity of fancy stick wiggling, it was flying. It was certainly not overpowered, but we both flew it, taking turns, and even managed some loops and rolls. We both liked it, but something had to be done about that take-off.

First, the model was not tracking straight on the water. This required a lot of rudder correction during the take-off. An inspection showed that the floats were not mounted straight. I had anticipated this problem and the mounting method shown on the plan allows for some adjustment. After some adjusting and taxiing, followed by more adjusting and taxiing, we got the model taxiing straight and the take-off's were much easier and a little shorter. Later that day I flipped the model over on the water and got everything wet, so we quit for the day. If you get your four cycle engine wet, be sure to run it afterward at full throttle for about ten minutes to get all of the water out of the crankcase and valve train. Otherwise, remove the backplate and any other covers and warm in an oven until dry and then oil everything.

That night, at home, I checked the float angle relative to the wings. On paper, I had designed the top of the floats to be at 0° relative to the bottom wing. I should qualify for Ken Willard's dum-dum award for following my own plans, as the floats were at least 2° positive, relative to the wing. The engine could not generate enough speed to overcome the extreme amount of rotation necessary to get the wings to flying attitude. A quick cure of the problem was to slip a 3/8" spacer between each float and the struts. With the floats now at the proper angle, the Golden Oldie would take-off in about three hundred feet.

I wasn't completely happy yet, but it was flying and taking-off consistently. Still, the model was sensitive to rudder corrections during take-off and several times while making a second take-off during a flight, the model would be unstable at lift-off. When I dumped the biplane in the water a couple of times, Don laughed at my

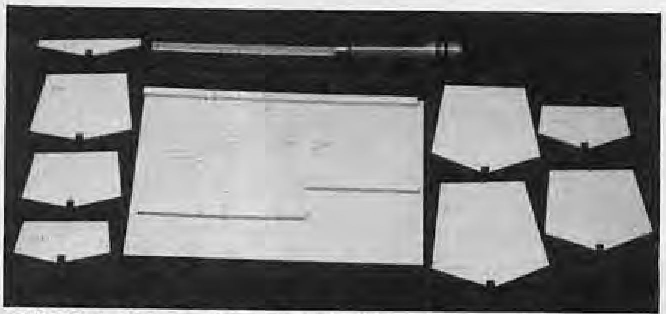

PHOTO 1: Make a miter box for bulkhead angle cuts from scrap balsa and plywood.

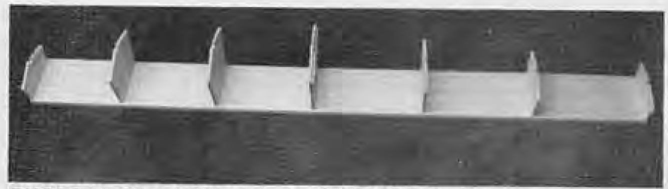

PHOTO 2: Glue bulkheads to 1/4" x 3" balsa top.

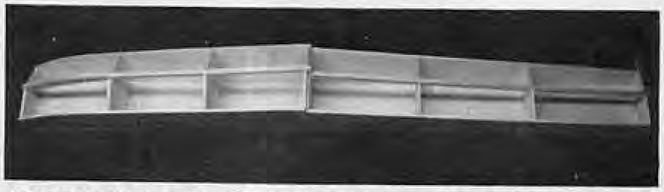

PHOTO 3: Glue on 1/8" balsa float sides and add 1/4" balsa keel.

PHOTO 4: Glue in box structures for aluminum spreaders between the two floats.

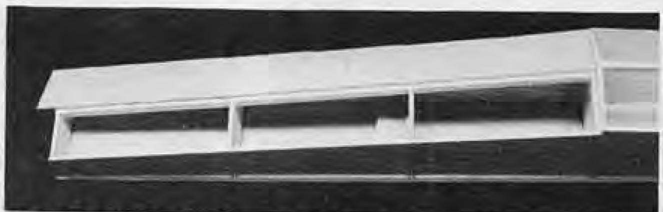

PHOTO 5: Glue on 1/8" sheet balsa bottom.

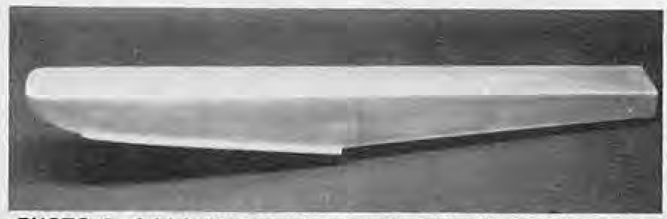

PHOTO 6: Add balsa noseblock and 1/8" plywood transom. Cover floats with 3/4 ounce glass cloth and resin. Glue on 1/4" square balsa spray rail and 1/4" plywood top mounting rail.

fumble-thumbs until it happened to him. The airplane was acting tail heavy, but that seemed improbable to me as the Golden Oldie on wheels was slightly nose heavy and very stable. I hadn't rechecked the C.G. location on floats relative to the wheeled C.G. position. It then occurred to me that the wheeled landing gear weighs thirteen ounces and is positioned several inches ahead of the C.G. The floats are only slightly heavier forward of the step and do not compensate for the heavier wheels. I screwed some weights to the nose of each float and the stability problem was cured. Before, with a full tank of fuel, the C.G. was far enough forward for the model to be stable, but later as some of the fuel burned off, the C.G. shifted rearward and the stability became marginal. With the model properly balanced it is a real pleasure to fly, but I still felt the take-off run could be improved.

During one of our flying sessions at the lake, Eut Tileston visited us. Eut has designed full scale seaplanes and his R/C floats are excellent, so I listened to his suggestions. He told me that the rudder sensitivity during take-off would be helped by moving the float step rearward a little. Now I realized that a re-design of my floats was necessary. I wanted to change the angle of the forward keel so that the float bottom just ahead of the step would also be at 0° relative to the wing. I felt that the new float bottom

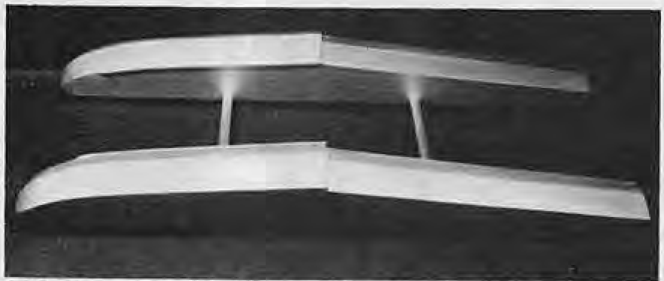

PHOTO 7: Epoxy the KS streamline aluminum tube spreaders into the floats.

PHOTO 8: Make the "kick-up" steerable rudder from .030 brass and brass tube.

PHOTO 9: Mount steerable rudder to left float. Bent pin hooks allow easy removal of monofilament control cables. Cables run from water rudder through wire "U's" to aircraft rudder.

PHOTO 10: Tiller bar on aircraft rudder. Control cables are attached to bent pin hooks with crimped aluminum tube. No need to remove tail wheel.

would cause less drag on the water. Every little bit of drag is critical on a low powered float plane. Thrust must overcome drag to reach flight speed, the more drag, the longer the take-off run. Most R/C models have the extra power to quickly reach flight speed, so float design becomes less critical with increased power. The step was moved back 1¼" to reduce the steering sensitivity. I also increased the angle of the rear portion of the floats and deepened the step for easier rotation at lift-off. Three-quarter ounce weights were glued into the nose of

PHOTO 11: 5/32" wire struts are attached to the floats with Goldberg 5/32" nylon landing gear clamps, which are also used to attach the struts to the fuselage.

PHOTO 12: 1/16" wire cross braces are soldered to the struts after aligning the floats to the wing.

each float to adjust the C.G.

We tried several different propellers, but an 11/6 Zinger seemed to work best.

The result of the changes is that the Golden Oldie will now take-off in less than one hundred feet. This has been a very interesting learning experience for me and I am very satisfied with the results.

CONSTRUCTION

Cut out the bulkheads from light 1/8" x 3" balsa. I made a little miter box from 1/4" square balsa and a scrap piece of plywood. All of the bulkhead side angle cuts and bottom angle cuts are the same. The miter box simplifies cutting out the bulkheads and makes the parts more accurate. Lay the 1/4" x 3" balsa top over the plan and mark the centerline and the bulkhead locations. Glue the bulkheads to the top. Cut out the 1/8" balsa sides and bevel the top edge and glue to the bulkheads and top. The sides will have to be pulled in at the front and the top pulled down slightly to meet the sides at the front. My original floats are not pulled in at the front and they do not look as nice as the plan floats.

Epoxy the 3/4 ounce lead weights into the nose of each float. Glue in the 1/4" x 1/2" balsa spreader spacers and the 1/8" plywood plates and 1/4" square braces to complete the boxed slots for the aluminum float spreaders. Make the forward keel from 1/4" balsa sheet and 1/4" square and glue into place. Glue in the rear 1/4" square keel. Sand the keel and sides with a large, flat sanding block to true up the edges. The bottom front sheet bottom is glued on cross grain, one piece at a time, fitting each 3" length along the keel centerline. The rear, bottom sheet halves can be glued on in one piece with the grain running lengthwise. True up the front and rear ends of the floats with a flat sanding block. Glue on the nose blocks and the 1/8" plywood transoms. Shape the nose blocks and round the edges of the top of the floats.

The entire floats are covered with 3/4 ounce glass cloth and resin. Cut a piece of cloth large enough to cover the top and both sides. Mix the resin and hardener and add one or two teaspoons of acetone to thin the mixture slightly. Brush the resin over the cloth and wrap the edges over the bottom. Remove all excess resin by unrolling a roll of toilet tissue over all of the cloth to act as a blotter. The tissue will absorb any excess resin. The tissue is immediately and carefully pulled off. This process leaves the cloth weave saturated with resin but removes any excess resin that would have to be sanded off later. I like to warm the wet resin with a hair dryer after blotting, to evaporate away the acetone before the resin sets. If the resin is not thinned with acetone, it may be too thick to brush without distorting the thin glass cloth. Thinning also makes it easier to blot away the excess resin. Lightly sand the rough cloth edges on the bottom and apply a layer of 3/4 ounce cloth to the rear bottom and a layer of 2 ounce or 6 ounce cloth on the front bottom. The cloth along the keel in the front gets scuffed and worn from scraping on the beach. I recommend you apply an extra strip of cloth over the forward keel to prevent possible leaks caused by wear. Lightly sand the edges and sand off any high spots. Fill any pores in the glass cloth and low spots with vinyl spackle and then sand. Glue on the 1/4" square spray strips along the inside front of each float along the bottom edge. Sand the spray strip to shape as shown on the float front view. Epoxy the 1/4" plywood mounting strips to the tops of the floats. Apply one or two coats of primer and then the final paint finish.

Cut the holes in the inside of each float for the 5/8" KS streamline aluminum tube spreaders. Fit the spreaders and then epoxy the spreaders into the slots. Bend the two 5/32" wire struts, which are the same as LG-2 on the aircraft plan. Attach the two wire struts to the floats, as shown using the Goldberg 5/32" nylon landing gear clamps. Mount the floats and struts to the fuselage also with the nylon landing gear clamps. Align the floats relative to the lower wing by using strips of masking tape criss-crossed on one side. Adjust the tape until the top of the floats are parallel to the bottom of the lower wing. Cut and bend the 1/16" wire cross braces and wrap the junctions with copper wire and solder.

The steerable, kick-up water rudder has proven to be very effective and trouble free. The rudder itself is loosely held in the brass clamp by a 2-56 bolt and locknut. If the rudder hits something, it can move up and down and is not damaged. Gravity holds it down and in place. The rudder shaft is 1/8" OD brass tube with a 3/32" piano wire core for strength. The brass clamp is soldered to the bottom of the rudder shaft and then drilled for the 2-56 bolt. The bearing is a 1½" length of 5/32" OD brass tube. Solder the .030 brass mounting clips to the bearing tube. The bearing tube should be held away from the transom 1/32" by the mounting clips so that the clamp does not rub against the transom. Slide the rudder shaft into the bearing and solder the tiller bar to the top of th rudder shaft. Mount the rudder assembly to the left float transom with four #4 SM screws. Glue the 1/16" wire "U" into the top of the float to act as a pully for the monofilament fishline steering cables. Bend the little "S" hooks from pins and attach them to the monofilament loops with crimped 3/32" aluminum tube.

Make the brass, aircraft rudder tiller bar and attach to the aircraft rudder. Another wire "U" must be installed in the bottom of the fuselage. Connect the monofilament cables from the water rudder, through the two wire "U's" to the aircraft rudder. Connect the cable from the left side of the aircraft rudder to the right side of the water rudder to make the rudders move in the same direction.

Check the C.G. location with the floats on the airplane. The balance point should be the same as the wheeled aircraft or a little forward.

Before attempting to fly, taxi the model and adjust the alignment of the floats until the model will taxi straight.

If you have gotten this far, it is time to fly it. Turn the nose into the wind and give full power. As the model reaches full speed, give a little up elevator and the model will lift-off in a couple of seconds. Once in the air, the Golden Oldie on floats looks and flies like a vintage biplane. To land, gradually reduce power during the approach until the airplane is descending. Let the airplane come on down until just before touchdown, cut the power and flare. To me, landing on water is easier than on land. Once on the water, the model slows down very quickly and can be taxied back to shore.

Flying from water is exciting and sometimes perplexing. I hope my experiences will be helpful to you.

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