SHARK E
by
Tom Binkley

Presented here is an updated version of Eric Clutton's Sharkface from the July 1965 Aeromodeller magazine.

SHARK-E spans 22" and weighs 4 ½ ounces. Powered by a 35 Watt Outrunner and a 300 mAh LiPo, it is small, easy to transport and easy to fly in the park, even in a breeze.

To say it is quick and easy to build is an understatement. I started to built this SHARK-E at 1 PM on Thursday, stopped to take my wife out to dinner, then continued to build in the evening and went to bed. Friday morning I resumed, and by 11AM I had a finished model, ready to fly, including Clutton's shark mouth and eye.

Begin by obtaining the needed components. I recommend the 2204-14T outrunner. It has a built in prop saver and firewall mount and is the perfect size and shape.

You'll also need a 7060 GWS prop, a light ESC, micro receiver, 300 mAh 2S Lipo and 2 good quality 4gram servos.

I often start construction by making photo copies of plans parts and glueing them to cereal box cardboard to use as cutting templates. With a small model such as this, it's easy to make templates for ribs, wing tips and even the fuselage sides.

Cut 16 slightly oversized ribs out of 1/16" balsa. Stack sand them to final shape, notch them for spars and leading and trailing edges using a razor saw and razor blade.
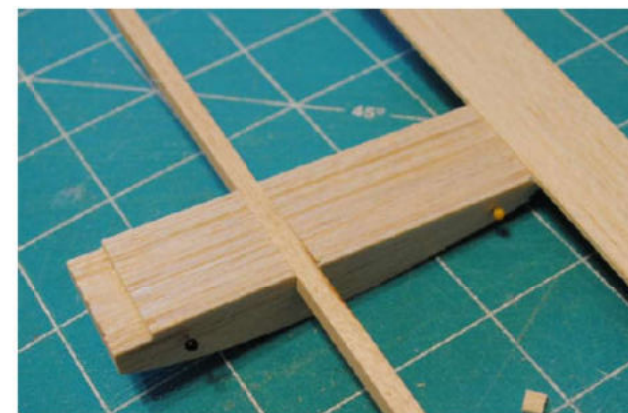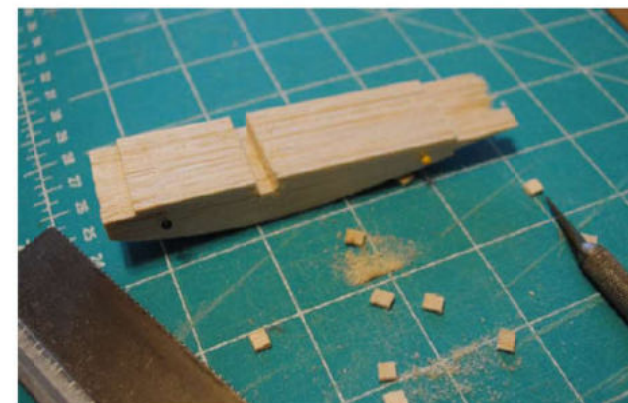
Pin 1/16" leading and trailing edges and 1/8" sq. lower spar to plans. Align and glue 3/16" LE on 1/16" LE as shown on plan. Glue ribs in place. Cant center ribs to dihedral angle. Glue top spar and top trailing edge in place.

Install 1/8" balsa wing tip gusset with CA, followed by the rear wing tip. Wet front wingtip with a drop of water to assist in bending to curvature of rib and CA in place.

Plane and sand leading edge to shape.Lift one wing tip 2 7/8" and glue 1/32" dihedral brace in place. Finish sand wing and cover with Solite.
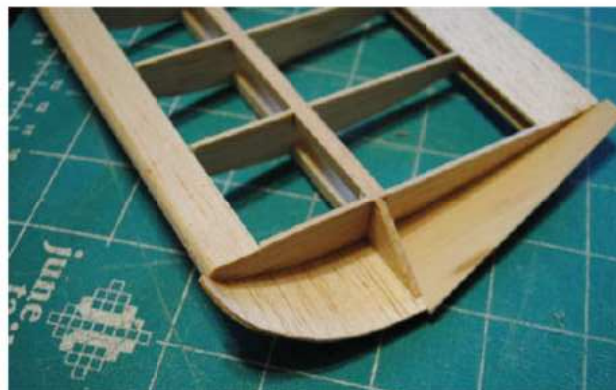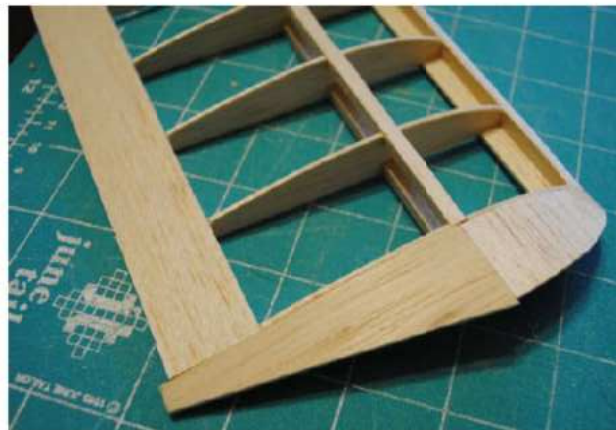
Cut sides, bulkheads and doublers out of 1/16" balsa. Glue doublers to sides and glue bulkheads to one side. Keeping everything square, glue the second side to the bulkheads. Pull tail end together, clamp and glue. Cut firewall out of 1/32" ply. Glue firewall to nose. Then plank the top of fuselage with 1/16" balsa.
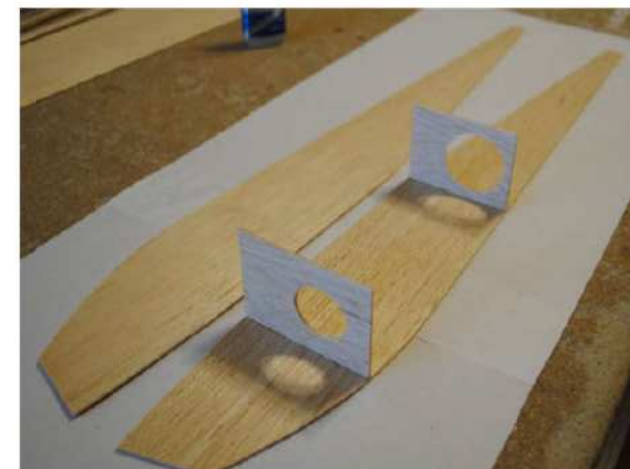
Cut stab, elevator, fin and rudder out of 1/16" balsa. Sand a bevel on mating surfaces for a hinge point. Glue stab to fuselage. Plank bottom of fuselage with 1/16" balsa forward to the first bulkhead. Plank the bottom front of fuselage with 1/32" ply.

Glue fin to fuselage, square with stab and true to the centerline. Install 1/8" dowels. Finish sand fuselage and tail parts and paint as desired. I applied 3 light coats of spray Deft, then brushed the fuselage, fin and rudder with thinned red craft paint and the stab and elevator with yellow to match the wing.

The shark smile and eyes are white and red Monokote Trim with black Sharpie Marker lines.
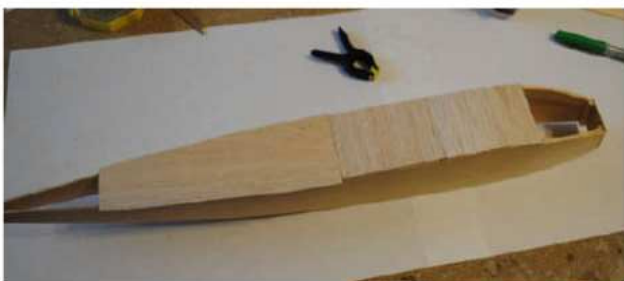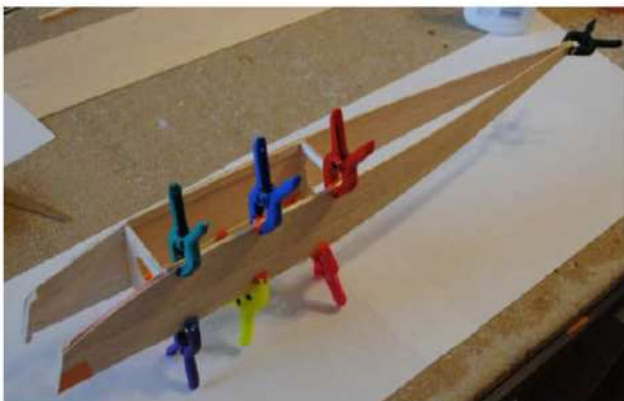
Shorten to minimum length and then solder the ESC to motor wires. Mount the motor to the firewall and attach the receiver inside the cabin with Velcro. Assemble the model with servos and battery in the fuselage. Move components for best balance and install accordingly.

Here is a simple way to install push rods in a small model. With servos mounted and rudder and elevator installed with tape hinges, cut push rod rear exit slots in the fuselage. Cut 1/8" sq balsa push rods to length and drill a hole down the center of each end about 1/2" deep.

Insert a length of .032 music wire into the elevator exit slot and feed it forward to the cabin area. Shove a 1/8" balsa push rod on to the wire and CA in place. From the rear, pull the push rod rearward, cut the wire to length and bend in a "z".

Put the elevator horn on the "z", orient it correctly and CA the horn in place on the elevator. Make sure it moves easily. Then, with servos centered make a wire from the balsa push rod to the servo horn, shove it into the 1/8" sq. balsa and after fine tuning the length, CA in place. Repeat for the rudder.

Set rudder throws to 1/2" and elevator to 3/8" each direction.

Attach the battery inside the cabin, with Velcro, located for correct balance. Shark-e should balance under the spar.

Remove any wing warps, double check controls, range check and go fly. I recommend a big grassy field and little or no breeze. Start with about about HALF throttle and a gentle hand launch.

Climb up to a safe altitude to adjust trims if needed. My Shark-e flew perfectly with no adjustments.

I copied Clutton's down thrust and incidence angles. They seem to be just right, however take note. In a full throttle hand launch (not recommended) Shark-e drops almost to the ground by the time I get my thumb on the stick. A lot of down thrust plus a lot of throttle results in some heart stopping down. Launch at half throttle.

Shark-e is generally pretty easy and relaxing to fly. It is easy to hand launch yourself, it has a nice glide, is predictable and stable and almost lands itself, but I would not recommend Shark-e to a beginner. Things happen pretty fast.

Shark-e will roll right or left and do big loops easily. In tighter loops it seems to roll somewhat.

Remember to keep it level close to the ground. With no landing gear, the low mounted stab is somewhat vulnerable.

Thanks to Eric Clutton for a great model airplane that has stood the test of time.

Shark-e	Small RET Electric Parkflyer
Wingspan	22"
Wing Area	105 Sq. In.
Wing Loading	6 oz. / Sq. Ft.
Length	20 3/4"
Weight	129g, 4 ½ Oz.
Motor	2204-14T
ESC	Castle Creations Phoenix 10
Prop	GWS sf 7060
Battery	Nano-Tech 300mAh 2S
Power	5.5A 6.4V 35 Watts
Flight Time	About 10 Minutes
Radio	Hitec Eclipse 7 Berg Microstamp
Servos	2 4.3g

Motor, ESC, prop, servos, battery and covering available from stevensaero.com

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