

Top photo shows the original rudder configuration. The photo above depicts the author holding the model that features the optional full-depth rudder.



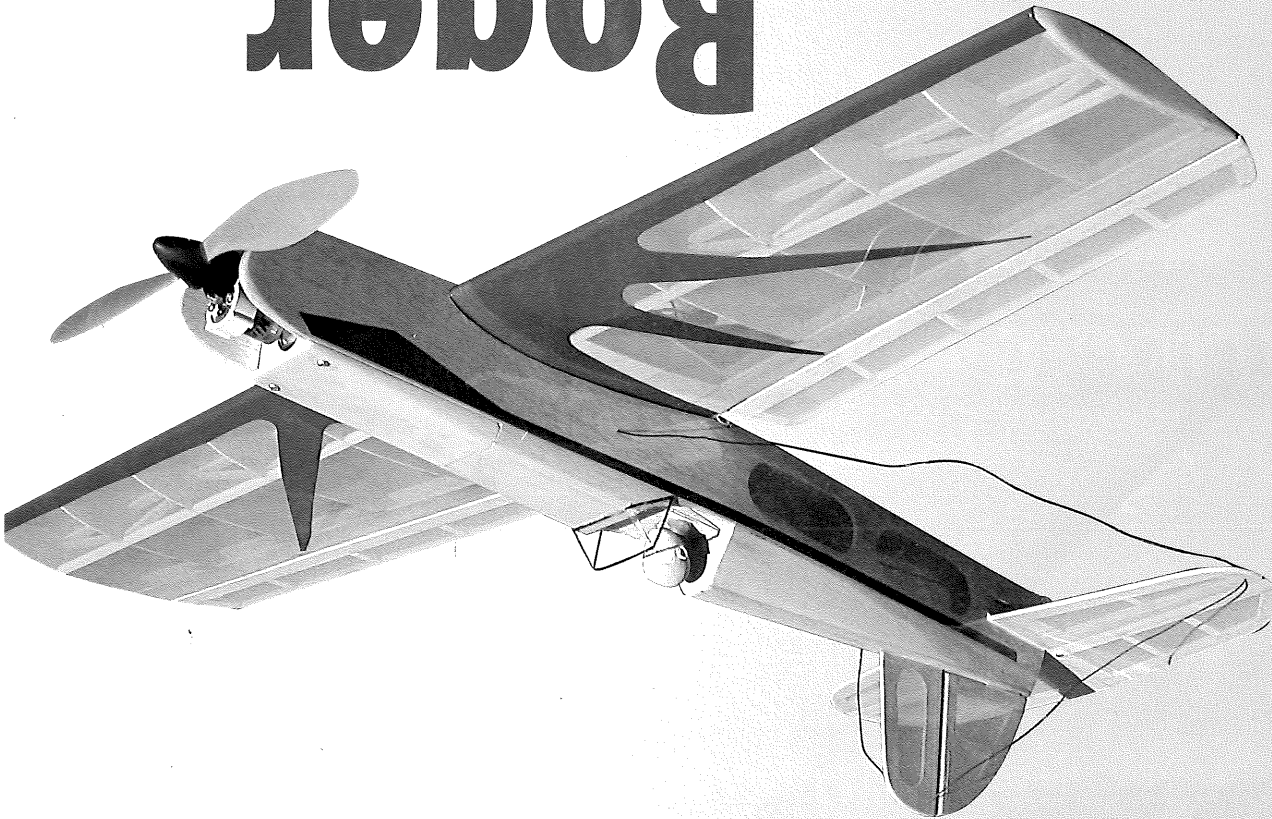
This project is based on a 50-year-old CL aircraft design by Harold "Red" Reinhart. I was so impressed at that time by Red's flying ability and his aircraft that, for some nostalgic fun, I went back in history to use this design as the basis for a new electric-powered RC sport aircraft with today's technology in equipment and power plants. At the time, Red's Roger Dodger (I don't know where he got that name) was a design and technology breakthrough of sorts. It was published in the March 1950 *Air Trails* magazine.

IF AN AIRPLANE looks good and flies well, I suspect that most modelers would have very little interest in its design history or design inspiration. This lightweight, all-built-up balsa, electric-powered sport model offers an interesting appearance and lively, fun aerobatic performance.

Sporty, easy-to-build electric funster inspired by 1950s 1/2A CL Aerobatics design

by Dick Sarpolus

Roger Dodger!



only a large Class D (.60-size engine) CL Aerobatics model on 60- or 70-foot lines could perform well. Red built this small, light airframe using a then-new .049 glow engine and flying on 1.5-foot-long string lines. He showed that it could fly great and do everything the big models could do. His designing and flying skills were absolutely top-notch.

I borrowed the Roger Dodger's overall appearance, modifying it to accommodate the electronic equipment and motor and batteries we use today for RC sport flying. I like this airplane's different appearance, and it offers plenty of sport-flying fun in a small package.

My Roger Dodger is built traditionally, with balsa ribs, spars, etc. I used no molded plastic, no foam, and no shortcuts. The ARFs are nice, but I like making sawdust in the workshop.

This model worked out to have a 35-inch wingspan with 280 square inches of wing area, and it's 27 inches long. The weight—ready to go with a brushless motor and a Li-Poly battery pack—is 17 ounces, for a wing loading of 8.7 ounces/square foot.

From some experience with similar-size and -weight airplanes, I figured that a Speed 400 or Speed 480 direct-drive setup would work and be exceptionally low in cost. However, the benefits of brushless motors—so much more power and longer flight times because of their higher efficiency—have convinced me to go brushless.

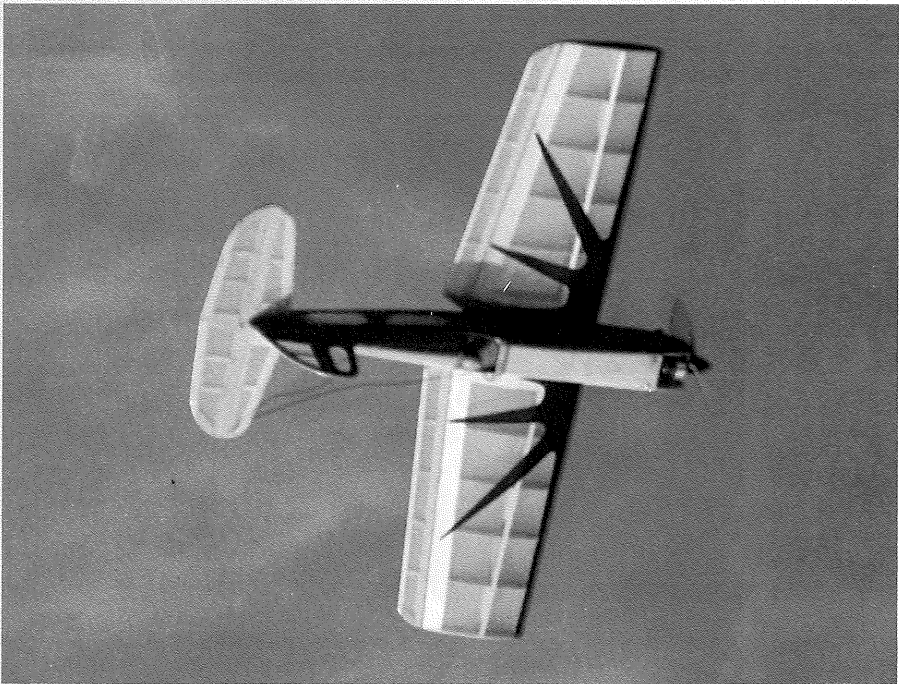
I'm using a HiMaxx 2015-4100 motor in a GWS gearbox with its D gearing, a Phoenix-25 ESC, and a three-cell 1200 mAh Li-Poly battery pack. I'm sure that many other power setups would also work well. If you're a sport-flying scratch-builder and like working from plans for your aircraft projects, take a close look and consider this design.

I didn't bother hooking up the movable rudder on my prototype model, figuring that it was quite small and that I'd get along without it for sport flying. And Roger does fly fine that way. If you're uninterested in the design heritage and want a full-house aircraft suggested rudder modification on the plans, split the elevator and install a large rudder farther to the rear for even more aerobatic fun. After flying my Roger Dodger for a while as originally built, I did chop into it and make this easy modification, as shown. I like the additional fun you can have with the large rudder.

CONSTRUCTION

As a scratch builder, you'll have to cut out all the parts to make a kit before starting construction. It's not that much work.

This spirited performer sports looks from another era. It's fully aerobatic and flies smoothly with precise response to control. It's a fun airplane.



Photos courtesy the author

a flat working area. With the wing fitted to the fuselage and bolted in place, glue the horizontal stabilizer and vertical fin to the fuselage and align with the wing. I covered the Roger Dodger with transparent Monokote because I'm used to working with that material, but lighter covering films are available. I used the cyanoacrylate-type hinges on the ailerons and hinged the elevator and rudder with ironed-on strips of Monokote.

Glue a 3/8-inch square piece of hard balsa or other wood into the first two bulkheads to accept the GWS gearbox motor mount. If you use any other type of motor, you'll have to fabricate a suitable mount. The removable hatch—that is shaped from a piece of scrap balsa—is retained by two small screws. The battery pack can be switched through the hatch opening. I let the battery lead and the ESC lead extend through holes in the front bulkhead, and I plug their connectors together to fly. Using a three-cell, 1200 mAh Li-Poly battery, the airplane balanced as it should, with no added weight or need to shift components around.

Flying: Since I do almost all of my flying over grass fields, I don't bother with a landing gear, but you could easily add a removable gear of 1/16-inch wire and light wheels. The Roger Dodger flies right out of a hand launch and settles in for slow landings. The control-surface throws should be adjusted to suit the particular pilot; I have friends who prefer extremely sensitive setups and others who prefer very soft

Final Assembly: Build the tail surfaces on rudder servo, if used, and their pushrods sheeting after the elevator servo and the edges well rounded. I add the rear bottom Add the fuselage top sheeting, with all add the rear two bulkheads.

Pull the rear fuselage sides together, and then add the top two forward bulkheads. bulkhead behind the wing TB position, and first two plywood bulkheads and the Assemble the fuselage sides with the and in the rear section of the balsa sides. lightening holes in the plywood doublers and the 1/2 plywood doublers. I put

Fuselage: Start with the 3/2 balsa sides center-section. The ailerons are built up and conventional aileron linkage is used, with the aileron servo mounted in the wing rigid.

The ailerons are built up and rigid. diagonal spar bracing between the ribs is a bit of a pain to install, but it adds little weight and makes the wing much more center sheeting to the top side. The the ribs, and add the TB sheeting and the With the wing structure removed from section sheeting.

With the wing structure removed from section sheeting. ribs in place. Add the bottom spar, along over the plans, and then add and pin the the bottom surface. Position the top spar Build the wing upside down so that the on the building surface.

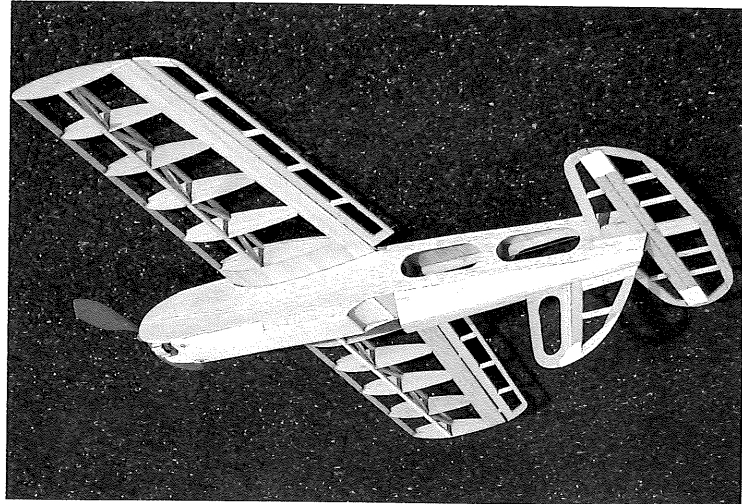
So that the wing can be assembled flat symmetrical, the ribs have "feet" by the Wing: Since the airfoil is fully

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There is nothing like constructing your own model. You can see Dick's craftsmanship and the model's lightweight design.



Dick likes to leave "feet" on rib bottoms to allow the wing to be built accurately on a flat board. Feet are removed after assembly.



Dick uses a HiMaxx 2015-4100 motor in a GWS gearbox with D gearing, a Phoenix-25 ESC, and a three-cell 1200 mAh Li-Poly battery pack.



On the Roger Dodger I increased the elevator throw to suit me. I'm pleased with the results for some sporty fun-flying and enjoyed the built-up balsa construction work. I like the overall appearance of Red's 50-year-old design, even though I did end up changing the rudder arrangement. If Red were around today, I'm sure he'd be designing and flying some great aircraft. *MA*

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Type: RC electric-powered sport

Wingspan: 35 inches

Wing area: 280 square inches

Weight: 17 ounces

Wing loading: 8.7 ounces/square foot

Length: 27 inches

Motor: HiMaxx 2015-4100 in GWS 300-series gearbox with D gearing (6.6:1).

Author suggests adding Castle Creations

Phoenix-25 ESC.

Propeller: GWS 11 x 8

Motor current: Estimated 10 amps maximum

Motor voltage: Depends on battery pack

used; 11.1 volts with three-cell Li-Poly pack.

Battery: Three-cell Li-Poly, 11.1 volts, 1200 mAh

Radio system: Any four-channel radio.

Prototype used Futaba T6XA transmitter, Berg

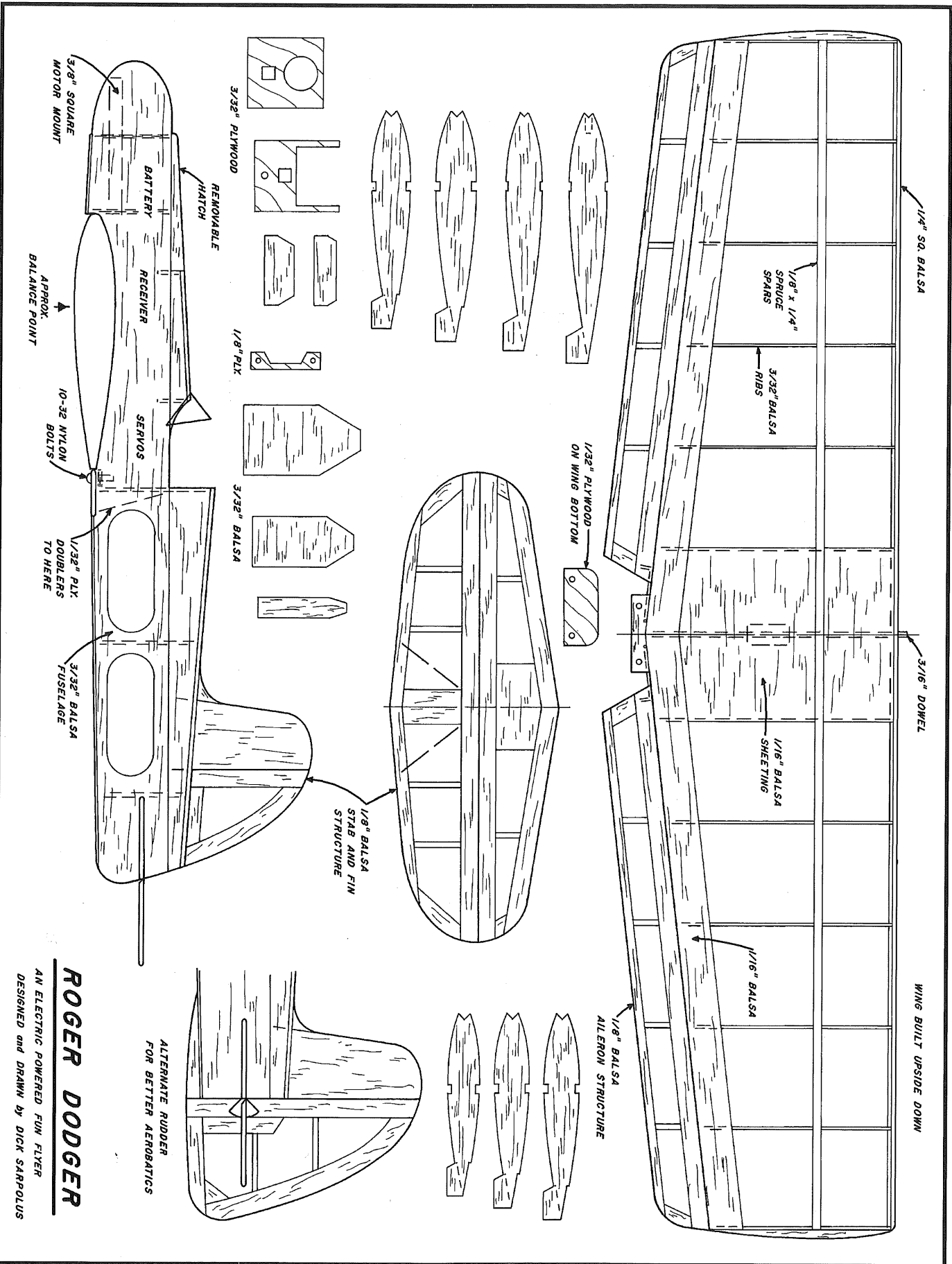
receiver, three GWS Naro servos.

Flight duration: Twelve minutes plus,

depending on throttle usage

Construction: Balsa and plywood

Covering/finish: Monokote



ROGER DODGER

AN ELECTRIC POWERED FUN FLYER
 DESIGNED and DRAWN by DICK SARPOLUS