



CONSTRUCTION

BY DENNIS SUMNER



Bellanca Cruisemaster

An electric-powered classic not often seen at the flying field

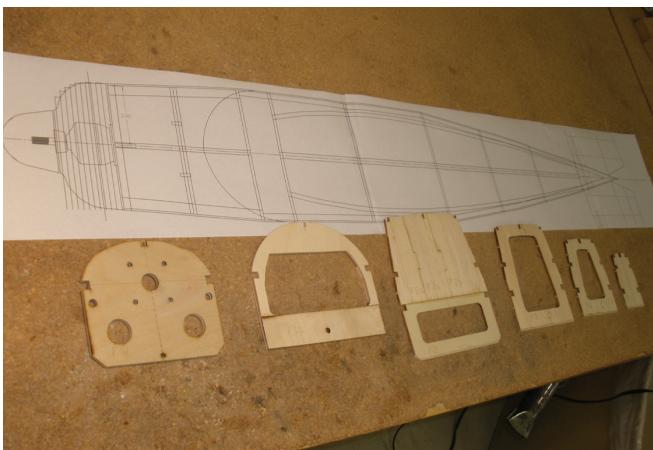
I've always liked scale models and building unique aircraft and the Bellanca Cruisemaster is one of those classic general aviation airplanes that's seldom modeled. To develop my plans I used a 3-view drawing from Bob Banka. My particular model is of a 1951 example I found on Aircraft Shopper Online. I loved the classic turquoise and white color scheme and was pleased to find out that UltraCote turquoise matched. Construction is pretty straightforward and is all balsa.

GETTING STARTED

Construction starts with the tail group, which is cut from 3/16 balsa. The tip rudders are from 1/8-inch balsa. Use firm balsa stock for the tips to the stabilizer and pin them in place with toothpicks for added strength. The tips are where the tip rudders will be added later. I use 4-40 pushrod wire for the elevator joiners.

For the fuselage, start by making the firewall and all formers. Use the plans to make two 1/16-inch balsa sides, then cut

the top turtle deck and cockpit areas 1/2 inch oversize to ensure you have enough material for the slightly angled turtle deck. Note the top fuselage sheeting between the firewall and former H3 is added after gluing the fuselage sides to the formers. Mark the fuselage sides for locations for the firewall and all formers then glue the triangle stock to the bottom of the fuselage sides. Tack-glue the formers in place along with the balsa wing saddles. Cut and install the longeron and stringers but don't glue



The firewall and formers cut out and ready to begin fuselage construction.



The fuselage construction before top sheeting installed.

SPECIFICATIONS

Wingspan: 54 in.
Length: 37.25 in.
Wing area: 407 sq. in.
Weight: 53 oz.
Wing loading: 18.75 oz. /sq. ft.
Power req'd: 430-watt motor
Radio req'd: 5-channel (rudder, throttle, ailerons, elevator, retracts)

GEAR USED

Radio: JR SM22 servos (ailers), Hitec HS65 (rudder and elevator); jramerica.com & hitecrcd.com
Motor: Scorpion 3014-1040KV w/ Cobra 60-amp speed control (innov8tivedesigns.com)
Battery: 3S 3800mAh LiPo
Propeller: APC 10x7 E (apcprop.com)
Retracts: 90-degree E-flite 15-25 size

them until all the formers had been glued in place. Add scrap balsa at the tail post to one side, then sand the insides of both fuselage sides so they can be joined and produce a 3/16-inch-wide tail post. Pull the tail together and tack-glue the aft formers in place.

Shim the fuselage on the building board so there is zero degrees of stabilizer incidence at its cutout, then set the firewall to 90-degrees square to the building board (zero down thrust). Be sure to add 2 degrees of right thrust. Make sure the formers are square to the building board and continue adding the top stringers, then pull the fuselage sides in and glue to all the formers for the turtle deck and cockpit areas. Sheet the forward section of the fuselage and wet as needed to make it bend easier around the firewall and formers.

Install the rudder and elevator servos and pushrods then finish sheeting the bottom of the fuselage. Make the access



The happy pilot after first flights!

hatch for the rudder and elevator servos which also has the cooling air exit. Make a template out of clear Mylar to position and cut out the side windows and add 1/64-inch plywood on the inside of the fuselage to help strengthen the openings. Wait until the wing is built and fitted to the fuselage before adding the bottom sheeting between the wing and firewall. This will allow you to use the wing dowel hole in F1 to position and drill the hole in the wing.

The cowl is made from stacks of balsa assembled on music-wire alignment pegs. The grill openings are removed after gluing the stack together. The cowl is held in place with alignment dowels and four 1/4-inch magnets. The locations for the dowels and magnets are shown on the firewall and the cowl back.

ON TO THE WING

Start by cutting the ribs out of medium



Firewall and motor mounting details: Note the cowl alignment dowels and magnets used to hold the cowl in place.



Right wing completed. Need to cut holes for retract assembly and wheel opening before adding top sheeting. Don't forget to add pull strings for retract and aileron wiring.



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Classic "Disney Grin" after cowl covering and installation of chrome grille.



Details of retract mounting and wheel opening.

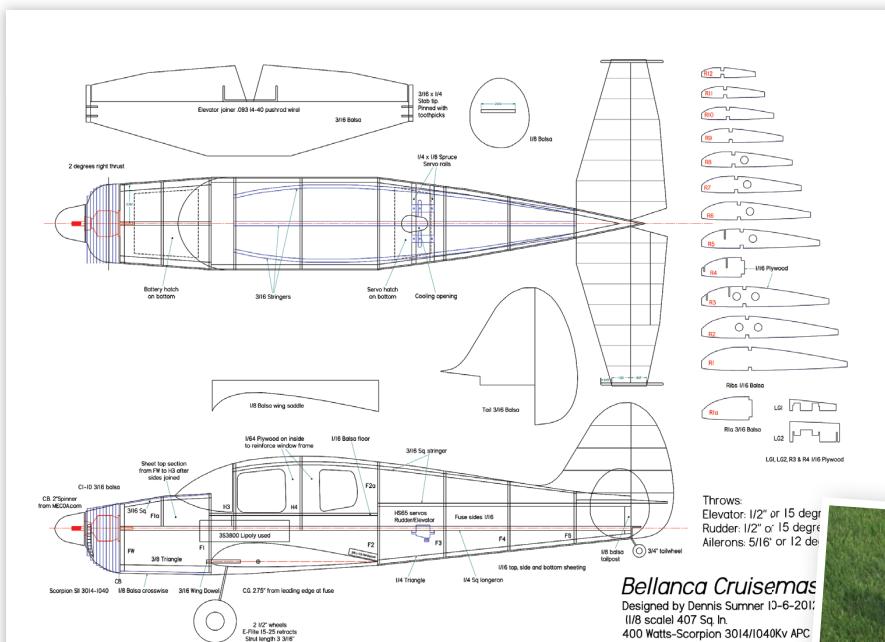
1/16-inch balsa and from 1/16-inch plywood (see the plan for details). Rib 1A is cut from 3/16-inch balsa to provide support for the wing hold-down dowel. The construction is pretty normal other than adding the E-flite (e-flite.com) retract gear mounts. Use the 85-degree R1 template to set the correct rib angle and to produce 10 degrees of total wing

dihedral. The wing is fully sheeted, so make up the four wing skins and cut them a little oversize. Use a tapered piece of 1/8 balsa sheet under the trailing edge of ribs 9 through 12 to provide some washout. Glue the bottom spar on the sheeting then install all the ribs making sure they are 90 degrees to the bottom spar. Cut the hardwood blocks for the landing gear and

dry fit in place with the plywood landing gear support parts. Make sure everything lines up then glue in place with thin and thick CA adhesive.

Use the aileron plate (centered in the aileron mount), to mark and cut the opening in the sheeting before gluing the aileron mounting plate in place. Make a rough cut in the bottom sheeting to locate and trim the opening for the retracts. Glue the top spar in place and add the shear webs except between ribs R3 through R5. Use 1/16-inch plywood for shear webs there. At this point, remove the wing from the building board and finish cutting the openings for the retracts. Make sure the retract gear fits and the wires can slide through the opening in the shear web. Test-fit the retracts with the gear down and set the strut length. Retract the gear to mark the axle location on the bottom sheeting, then trim the opening for the wheels.

After the sheeting is complete, add the leading and trailing edges and then sand the panels to shape before joining the



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To order the full-size plan, visit AirAgeStore.com

