THE LAZY-H BIPE FOR ELECTRIC RC

A lot of enjoyable, laid-back flying is in store for those who build this three-channel bipe, designed to go together quickly and perform well on a geared Astro 25 power system.

BY SCOTT HARTMAN

SPECIFICATIONS

WINGSPAN	49-1/2 in. top, 46-1/4 in. bottom
WING AREA	810 sq. in.
FLYING WEIGHT	5 lbs.
WING LOADING	14.3 oz./sq. ft.
OVERALL LENGTH	41 in.
POWER	Astro 25 cobalt (geared) on 14 cells
RADIO	3 channels required (rudder, elevator, throttle)

Well, the creative part of me has been working again. This time the result is a geared 25-size electric biplane, a model I call the "Lazy-H." As the name implies, this airplane builds easily and fast. It lacks the difficult features found on most bipes such as wire cabin struts, wheel pants and wing struts. It's designed for the true Sunday flier who lacks the time to build a more complex model.

The Lazy-H possesses excellent low speed characteristics and is capable of short takeoffs and landings. The model can easily take off in 15 to 20 feet, and landings are a joy with the extra drag associated with a bipe. The prototype is flown with rudder, elevator and motor control. It's capable of loops, rolls, horizontal eights, spins and most other simple maneuvers.

An Astro Flight geared 25 with 14 Sanyo SCR cells does an excellent job of powering the model. This was my first geared electric system, and to say I was impressed would be an understatement. The motor turns a 13x8 Rev-Up propeller slowly and lifts the 5-pound model off the ground in short order. Endurance is achieved by cutting back on the throttle when full power isn't needed. I normally achieve 5 to 7 minutes by flying a mixture of full throttle takeoffs, mid-speed aerobatics, low speed flight and touch-and-go's. This airplane is well suited to schoolyard type flying in a limited area.

CONSTRUCTION

Proceed by first cutting out the sheet balsa pieces to make a kit. Use light grade balsa unless noted. Lone Star Models (1623 57th St., Lubbock, TX 79412; 806-745-6394) will ship the desired grade if specified on the order. All glue joints should be made with medium or thick CA glue and accelerator.

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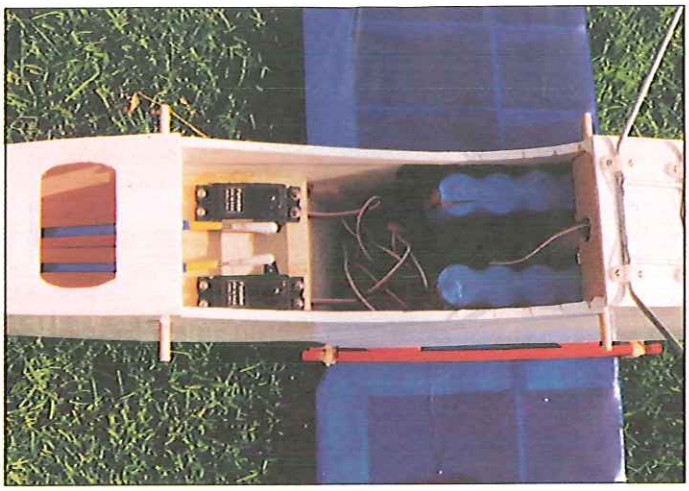

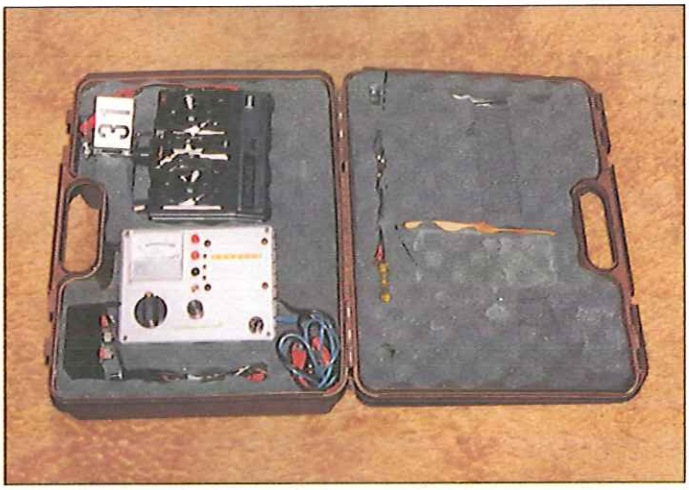

■ LEFT: Removing the bottom wing provides access to the cavernous interior. Large rectangular opening at the left is the cooling air outlet. Power for the Astro 25 is provided by two individual seven-cell packs attached to the fuselage sides with Velcro; packs go in and out through a forward hatch on top of the fuselage. Receiver is located above the batteries. ■ RIGHT: The author's flight box is made from a pistol case and holds the transmitter, Astro Flight Model 112 charger, ESV, and assorted tools. ■ BELOW: See any curved shapes here? Darn few, which is why the Lazy-H goes together so quickly and easily. We've seen a video of the model in action, and it does fly exactly as claimed. Be sure to build it light for best performance.

TAIL SURFACES

Build the tail surfaces over the plans using 3/16-inch thick hard balsa stick and light sheet stock. I used light balsa sheet for the rudder and tapered sheet for the elevator. Join the two elevator halves with a short piece of dowel.

FUSELAGE

Begin by building the cabin struts out of 3/16x3/4 spruce. Pin the 3/32 balsa fuselage side to the plan and glue the cabin strut and doublers in place. Mark the locations of the formers on the side. Make the other side the same way.

Tack-glue formers F2A, F3, F4B, F5 and F6 on one of the fuselage sides. The angle that the formers join the side should be estimated based on the plans. Tack-glue the fuselage sides together at the rear, then tack-glue the formers to the remaining side and adjust until the fuselage is straight. When satisfied, glue the formers solidly to the sides. Install the flexible pushrods (I used Sullivan Golden-Rods on the prototype).

Glue on the 1/8-inch lite-ply landing gear block and the 3/8-inch triangle stock. Sheet the bottom rear with light 1/16 balsa. Sheet the bottom of the fuselage from the lite-ply landing gear block to F2A with 1/8-inch light balsa. Glue F1 to the sides with the side thrust and down thrust as per the plans. Install the 1/2-inch balsa triangle stock and scrap pieces to the nose as shown. Test fit the motor into the nose. You will have to replace the gearbox screws with ones 1/8-inch longer to compensate for the thickness of firewall F1. Glue F2B to F2A while test fitting the motor.

Glue the upper 3/16-inch balsa sheeting to the nose. Add the remaining 1/8 balsa sheeting and make the hatch. Add the 3/32 balsa sheeting in the cockpit area. Glue on former F4A. Glue on the tail surfaces. Glue on the top and side rear decking and sand as required. Test fit the wing rubber band dowels, but don't glue them in place at this time. Cut a hole in the bottom fuselage sheeting for cooling air to escape. Also cut a small hole below the gearbox to allow for lubricating the gears.

Trial fit the landing gear. A 13-inch Hobby Lobby ready-made wire landing gear, part #RA1093, was used on the prototype. A 1/16-inch wire brace was added to reduce bouncing. A slight toe-in on the main gear will help tracking on the ground.

Sand the fuselage in preparation for covering.

WING

Choose either the top or bottom wing to start on first. Join the two halves of the spruce

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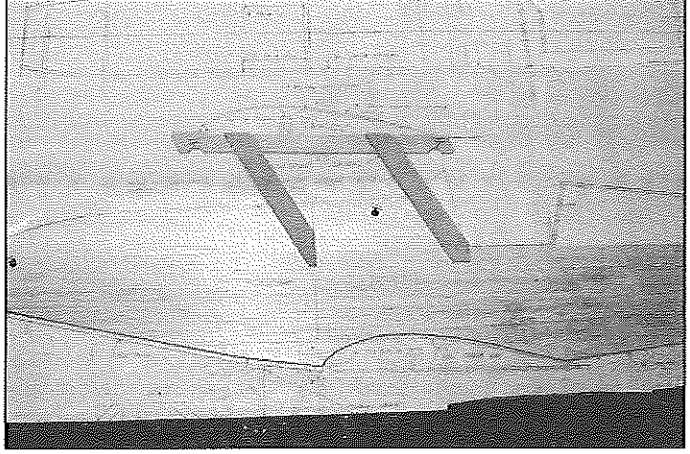
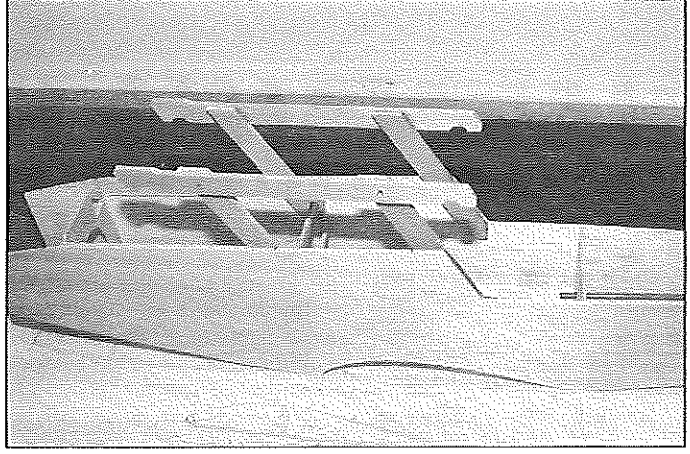




■ LEFT: Cabane struts are made of 3/16x3/4 spruce and are glued directly to the 3/32 balsa fuselage sides. As shown on the plans, the joints between the vertical and horizontal strut members are reinforced with a short piece of dowel—don't omit it! ■ RIGHT: Here the fuselage sides have been joined and are ready for the top and bottom sheeting.

wing spar with the plywood dihedral braces. Slightly feather one side of the 1-3/8x1/16 balsa trailing edge to allow for a good fit as per the plans. Pin the trailing edge sheeting to the plans. Use a rib to spot the spar over the plans, then pin the spar to the board. Pin spacers of 1/16 scrap balsa at the location of the R2 ribs to allow for the center section sheeting. Install all but the center rib and glue them in place. Install the center rib, angling it for the proper dihedral.

Glue on the 1/4-inch square balsa leading edge. Glue short pieces of 1-inch trailing edge stock at the center to allow for trimming the trailing edge as shown on the plans. Glue on the top 1-3/8x1/16 sheeting. Glue on the wingtip at a 45 degree angle. At this point the panel is finished, so remove it from the plans, slide it over and make the other side. When finished, add the 1/16-inch balsa center section sheeting. Round off the leading edge and sand the remainder of the wing until it's ready to cover. Make the other wing the same way.

COVERING

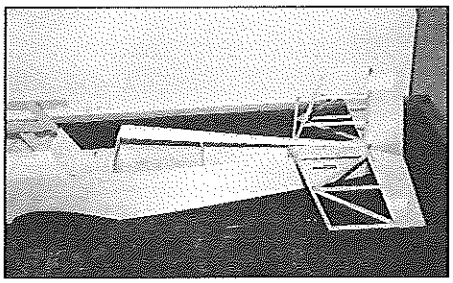
My personal preference in covering materials has been MonoKote. The Lazy-H's open framework wing and tail lend themselves to transparent covering. If a warp appears in the wing or tail, it should be removed by having a helper twist out the warp while you reshrink the covering.

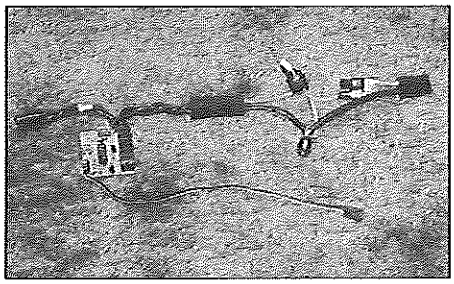
MOTOR INSTALLATION

The motor and gearbox are held in place with the gearbox screws. The prototype model uses a Flightec SEC II electronic speed control with optical isolation. Wire up the wiring harness as per the sketch on the plans. For best performance, I recommend using Sermos connectors and 14-gauge wire.

RADIO INSTALLATION

The prototype uses a Futaba Conquest FM radio with two S148 standard servos for rudder and elevator control. Adjust the control throws as per the plans.





■ LEFT: Ultra-simple tail surfaces are glued permanently to the fuselage before adding the upper turtledeck sides and top. ■ RIGHT: The electric system wiring harness is shown full-size on the plans and therefore can be made up outside the model. The Flightec SEC II speed control features optical isolation and has proven to be an excellent piece of equipment.

CHARGING

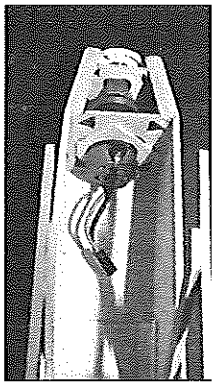
The motor battery is held in place with Velcro for easy removal. I normally charge my battery packs outside the fuselage, although a charging jack is also provided on the nose. My old Astro Flight Model 112 charger will charge up to 28 cells at one time, so I charge two sets of batteries consisting of two seven-cell packs each. This allows charging batteries for two flights in the same time it takes to charge for one. This is done very easily when using Sermos connectors, as these connectors come apart and will connect to each other. Please note that charging this way requires that all cells be of the same capacity and that all packs be dead before beginning the charge.

FLYING

Pick a calm day for the test flight. Charge the motor battery and complete the normal preflight checks. Take off into the wind by gradually feeding in throttle. Make small corrections with the rudder and gradually feed in up elevator until the airplane comes off the ground.

The geared Astro 25 with a 13x8 propellor provides an impressive climb at full throttle. After it's up to altitude, reduce power to extend the motor run time.

The Lazy-H is capable of loops and rolls as well as most sport type maneuvers. However, the most fun I have with this design is just putt-putting around, doing touch-and-go's and slow fly-bys. Build a Lazy-H bipe and return to fun flying! ***MB***



The geared Astro 25 is mounted by means of the two gearbox screws, which have to be replaced with slightly longer ones to make up for the firewall thickness. Motor is supported at the rear by former F2B.

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