

GREAT PLANES **SLOW POKE 40**

Is bigger better? The author provides the answer with his look at the upsized version of the original .20 size.

The Great Planes *Slow Poke Sport 40* is a friendly airplane to own and fly. It is distinctive in appearance, sort of a cross between a vintage era racer and a homebuilt. It gets attention at the flying field, both on the ground and in the air. It has a large wing, with lots of area and a high-lift, flat-bottomed airfoil. It loves to fly at a leisurely pace. The large wing makes it a bit lazy at rolling maneuvers, while the short fuselage makes it a bit lively at pitching maneuvers. It is different from the current crop of boxy-fuselage and straight wing sport models, and that accounts for its charm.

This model has a pretty common 61½-inch wingspan but a long 17-inch chord for a grand total of 1076 square inches of area. The fuselage is only 49 inches, so the tail moment appears to be rather short. The finished weight is 6.5 pounds, giving just a 14 ounces per square foot wing loading. Being a rather slow flyer, it does not take a mighty powerhouse of an engine to get the desired results. It is rated for a .32-.46 two-stroke or .40-.52 four-stroke engine. The review model uses a Magnum .52 which is more than ample, and its character really complements the model.

The first generation *Slow Poke* was smaller, for about a .15 to .25 displacement engine. It must have been popular, because Great Planes did not wait very long before introducing this .40 size version. I joke about this one being the adult size *Slow Poke*. Even with the wing removed, it fills up the luggage space of my hatchback car, but I have not given in to the SUV craze yet. The smaller *Slow Poke* used just three channels for control; however the *Slow Poke 40* model adds barn-door style ailerons, with a separate servo in each wing.

Kit contents

This project was constructed from a full kit; it's not a pre-built model. The materials are traditional balsa wood and light plywood parts plus balsa sheet stock and both balsa and basswood strips. I can remember back when lite ply was first introduced as a substitute for balsa fuselage sides, but it is standard now. The forward fuselage sides and formers were on ½-inch lite-ply sheets, and dihedral braces on ⅛-inch aircraft ply. The wing ribs, wing tips, aileron bases, and

Even though it's a .40 size plane, the *Slow Poke 40* is a fairly large plane. Ron holds it up for us to appreciate its bulk. As he says, this plane will fill a fair amount of space in the back seat of a car.

curved tail parts were located on die-cut balsa sheets. The die-cutting was excellent, and the parts separated cleanly from their sheets. However, for the most part, the die-cut balsa and strip stock were much harder and heavier than necessary. By contrast, the balsa sheet provided for wing and fuselage sheeting was a bit too soft and delicate.

The hardware package was extensive, containing pre-formed main and tail landing gear legs, control horns, clevises, and assorted nuts and bolts. The pushrods were steel wire running in plastic sheathes. A blank of heavy gauge celluloid was provided for the classic windscreen. Some *Slow Poke* decals were included. Great Planes provided top quality computer drawn plans and an illustrated 28-page construction manual. This manual contained diagrams of all the die-cut sheets for parts identification, and a centerfold of reduced size plans for quick reference.

Construction

The engineering of the structure and the building process were very well executed, and the parts fit was excellent. Three grades of Great Planes Pro CA glue were used for assembly, plus some of their 30-minute epoxy on the wing joiners.

Construction started with the tail surfaces: rudder, fin, stabilizer, and elevators. The rounded outlines were obtained by combining die-cut curved pieces with straight strips. Each of the curved pieces must be prepared by laminating

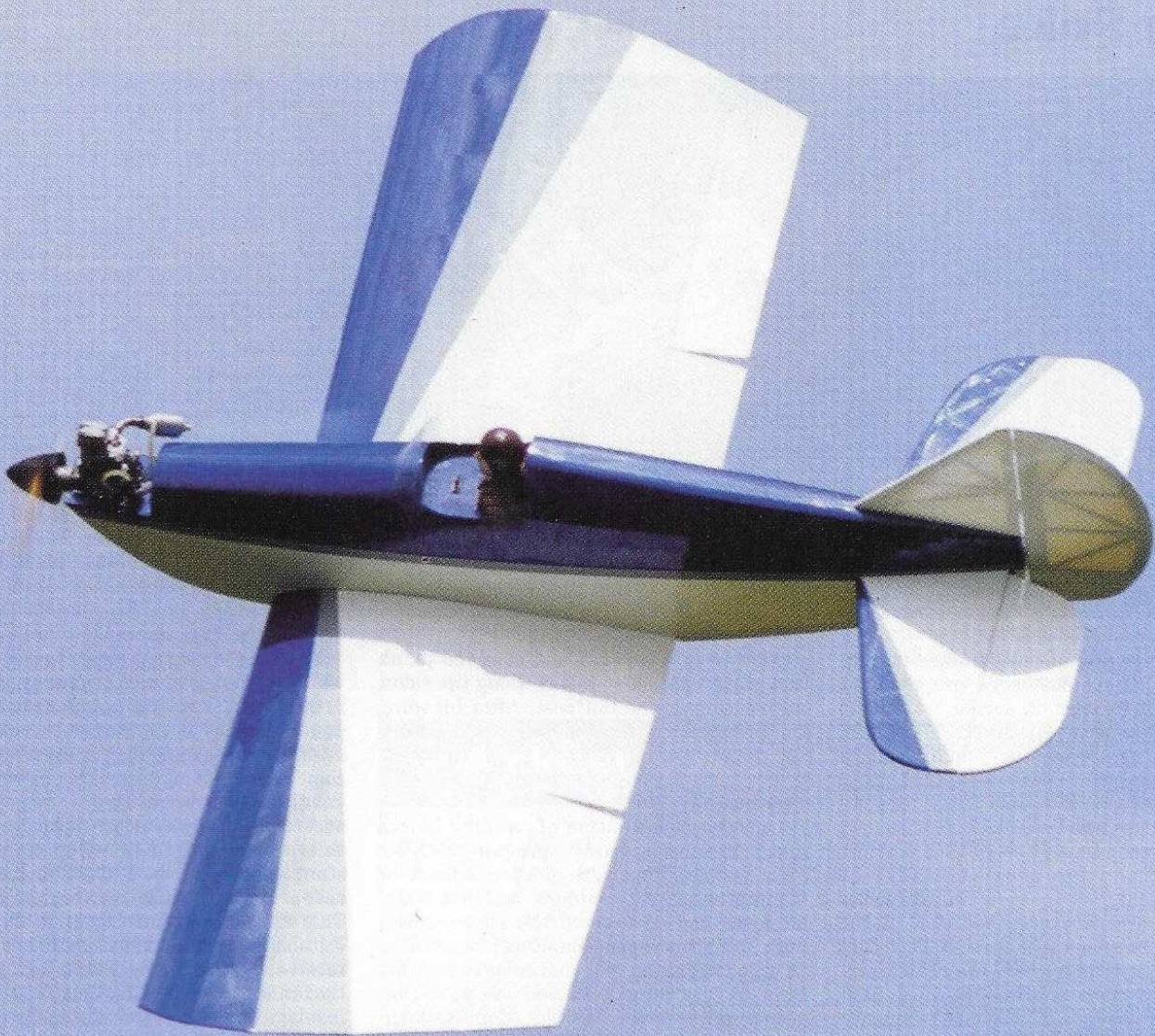
By Ron Farkas

AT A GLANCE

Type:	R/C sport
Wing span:	61.5 inches
Length:	49 inches
Airfoil:	flat bottom
Wing area:	1076 square inches
Weight:	6.5 pounds
Wing loading:	14 oz./sq.ft.
Engine required:	.32-.46 2-stroke .40-.52 4-stroke
Radio:	4-channel, 5 servos Hobbico R/C used
Manufacturer:	Great Planes P.O. Box 9021 Champaign, IL 61826 217-398-6300 www.greatplanes.com

duplicate ⅛-inch parts to make ¼-inch thick pieces. Some of the perimeter strips were ¼ × ½-inch and some ¼ × ⅝-inch. The stabilizer trailing edge was ¼ × ½-inch balsa reinforced with a ¼ × ¼-inch basswood strip. All of the cross strips were ¼-inch square balsa. I used medium Pro CA for this con-





PHOTOGRAPHY: RON FARKAS & NICK SPAGNUOLO

struction. The resulting surfaces were rigid and warp-free, but heavy.

Construction then moved on to the wing, which consisted of raised outboard panels connected to a flat center section. The dihedral break is a few inches outboard of the fuselage sides, giving the appearance of polyhedral. The center section was built first. I edge-glued four $\frac{1}{16} \times 3$ -inch sheet balsa sections to make the bottom skin, and pinned it over the plans. The center rib was pre-shaped with an extended leading edge plug that keys into the fuselage former, and I had to add the lite-ply laminates to it. Then I glued the lower spars to the bottom sheet, followed by the three respective ribs and top spars. I tapered the trailing edge filler blocks on a belt sander, and glued them in place. Thin vertical slices had to be removed from the end ribs, so the wing joiners could be glued in place against the main spars. Then I sheeted the top and added the leading edge strip.

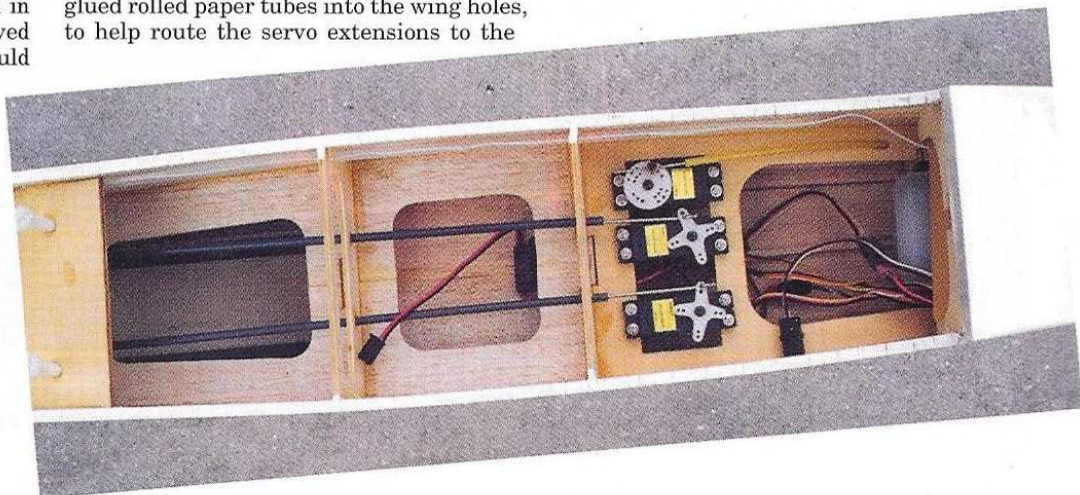
The outboard panels were built in a similar fashion, but they are only sheeted from the leading edge back to the first spar. First, I laminated the light ply doublers to the ribs that will hold the landing gear blocks. Then I placed the $\frac{1}{16}$ -inch leading edge sheet and lower spars onto the plan, followed by the ribs and top spars. The plan and instructions specified $\frac{1}{16}$ -inch sheet for the trailing edge underneath the ribs,

but I discovered that the ribs were relieved for a $\frac{3}{32}$ -inch thick piece. Since the adjacent die-cut aileron base was $\frac{3}{32}$ inch, it made sense to me to substitute some $\frac{3}{32}$ -inch sheet for the trailing edge. It fit better and was stronger, especially considering that the wing does not use any top sheeting at the trailing edge. Then I added the large die-cut wing tip part, ensuring that the top spars were properly seated into the respective notches. This was a novel way to get the desired angle and contours, but required lots of the gap filling Pro CA to make secure joints. I decided to add some internal scrap cross-grain reinforcements to prevent the tips from splitting along the grain.

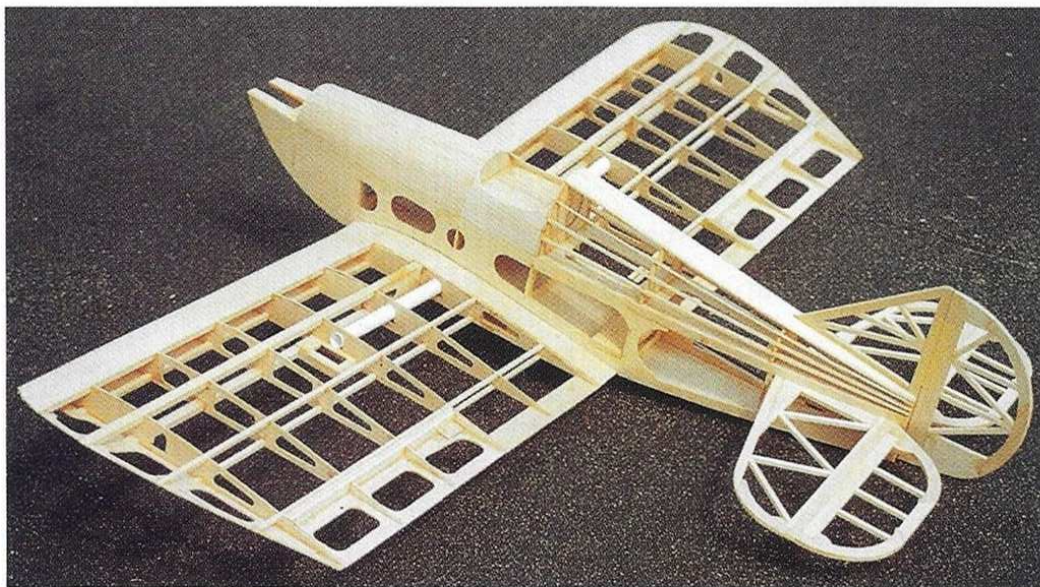
Before building the separate ailerons I glued rolled paper tubes into the wing holes, to help route the servo extensions to the

wing root. Each aileron is built using a die-cut sheet base, a front spar, and several ribs. Next, the leading edge stock was glued in place. I planed and sanded the leading edges to shape before joining the panels to the center section, since they were easier to handle that way. Finally I glued the sections together with Great Planes 30-minute epoxy. The completed wing was very large, and I found that it was difficult to handle without cracking the soft $\frac{1}{16}$ -inch sheeting. I think that $\frac{3}{32}$ -inch would have been a better choice for a plane of this size.

The Slow Poke 40 has a short nose moment so the servos are placed well forward, and the receiver and battery pack are under the fuel tank.



Slow Poke



Plenty of lite ply helps keep the airframe rigid, and the lightening holes in the structure reduce weight significantly. Note the two-spar design of the wide chord wing.

resistant to bending. I cut out the part using the pattern from the plan. Next I pre-shaped the curve by holding the piece around a vegetable can (with gloves on) while heating it with my MonoKote heat gun. Then I removed a 1/16-inch wide strip of covering material where the windscreen would go, and dabbed on some LustreKote to tint the exposed balsa wood. The following day I glued on the windscreen with Pacer Products Formula 560 (available from Frank Tiano Enterprises, 15300 Estancia Lane, West Palm Beach, Florida, 33414; phone: 561-795-6600; www.franktiano.com/zap.htm) flexible canopy glue. That method seems to work best for me.

The fuselage was initially framed-out upside down. The sides were prepared by adding the strip balsa aft section framing to the die-cut lite ply sides. Next a full-length horizontal crutch was built from die-cut ply and balsa sections, and pinned in place over the bottom view on the plan. This crutch ensured a straight and true fuselage with mirror-image side curves, a very nice feature. Next the formers were glued vertically onto the crutch, and then the sides were glued to the crutch and formers. Addition of the cross-grain bottom sheet further locked in the alignment. The front of the crutch provided a flat plate engine mount. I fuel-proofed the empty compartment beneath the mount with thinned epoxy, and made a drain hole for fuel residue.

The fuselage was flipped upright for the rest of the construction. I added the top formers, stringers, cockpit floor, and nose deck sheeting. To help with the compound curves, I soaked the 3/32-inch nose sheet in ammonia water and taped it in place overnight to dry into a shell. Then I followed the directions to rub chalk around the perimeter of the fuselage and press the sheet down to mark a cut line. After cutting along the line and doing some touch-up sanding, the fit was very good, and I glued it on permanently. The aft

section used a tapered and rounded plank along the top, and stringers along the sides, all meeting at the tail post. After blending these contours with a sanding block, I glued the tail surfaces in place.

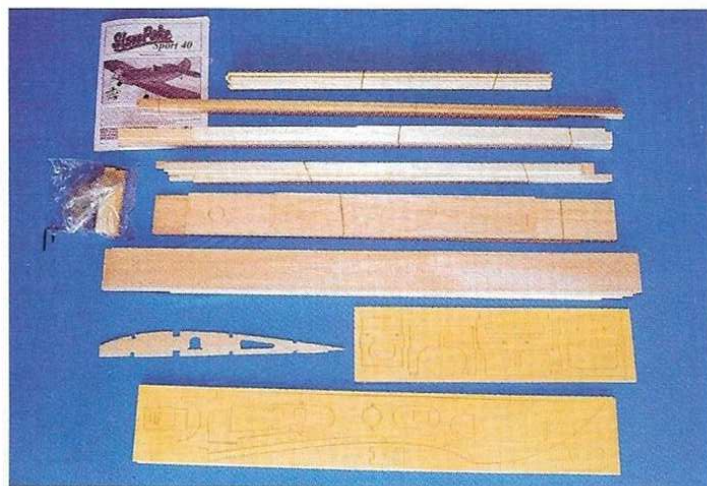
Finishing

I used a combination of sanding blocks and long sanding bars to prepare the *Slow Poke Sport 40* for covering. A bar is ideal for leading edges, rib contours, and flat stabilizer surfaces. I covered the entire model with Top Flite Super MonoKote iron-on film. In order to get the diagonal color separation lines on the wing, I spliced the pieces together as described in the MonoKote instructions; however I also added a thin overlapping reinforcing strip beneath each seam. Then I applied each panel to the structure in the usual way. I arranged for the fuselage separation lines to be over solid surfaces. The colors are white, dove gray, and royal blue. I masked and sprayed the engine mount and cockpit with Top Flite LustreKote royal blue. I installed a Williams Brothers 1/4 scale pilot, after cutting down his torso.

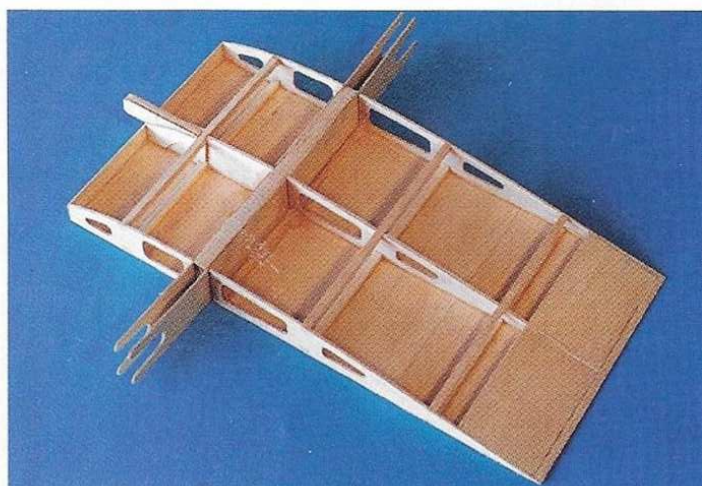
The instructions lack a step for installing the plastic windscreen. This could be troublesome since the heavy gauge material was

Years ago it was cheaper to buy another whole radio system for your next plane, rather than just additional airborne components. That is no longer the case since multiple model memory transmitters have come along. Companies like Hobbico market their own line of servos, receivers, and accessories for separate flight packs. For this project I used five Command CS-55 standard size servos and a Command CR-7 seven channel dual conversion receiver. This equipment is fully compatible with my Futaba programmable transmitter, but the receiver can be ordered for other transmitter brands as well. The *Slow Poke Sport 40* fuselage is positively huge inside, but the die-cut servo tray dictates the servo location, and both the receiver and battery should be placed beneath the fuel tank to keep the weight forward.

My model still required six ounces of lead weight beneath the engine in order to get the center of gravity into the range shown on the plans. This may have been a result of the heavy wood in the tail section, but I suspect that the short nose moment is also a factor. Still, the completed weight of 6 1/2 pounds is within the specifications, and results in a low wing loading of just 14 ounces per square foot.



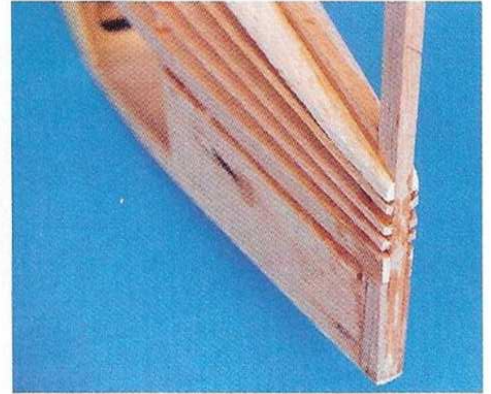
All of the wood parts, balsa and lite ply, are die-cut (above left). Also included are the sheet and strip stock, besides a large assortment of hardware. The left



and right wing panels are joined to the center section (above right) which has ply dihedral braces that join the panels. This section is fully sheeted later on.



After the lite ply sides of the fuselage are built (at left), the top section stringers and sheeting are added. The forward section will be fully sheeted. The fin trailing edge (below) forms a tail post for strength and alignment. All the aft stringers blend at the tail post.



Flying

With that low wing loading, the *Slow Poke* flies as its name implies. It is a real floater at low speeds and quite docile at higher speeds. High speed is not too high with the four-stroke Magnum XL .52, a comfortable pace for any sport pilot out there. I have not tried a smaller two-stroke engine but it should work just fine, since the model does not need full power for anything but loops and sustained climbs. Truly vertical performance is not practical for this airplane anyway.

Out on the runway, ground handling is stable due to the wide-stance of the landing gear. During takeoff, the tail comes up at about half throttle, and the model tracks well with very little rudder correction, then gently lifts off with a touch of up elevator. Full throttle just hastens the process a little. I did not find much trim change between high and low speed flight, a pleasant surprise for a flat-bottomed wing section.

I set my high rates to the recommended maximum control throws. The elevator seemed sensitive, but only at full throttle, so I quickly got used to it. The aileron response seemed a bit sluggish, but adequate for normal flying. The rudder response was powerful, but not too sensitive. This airplane would be a candidate for aileron to rudder mixing for smoothly coordinated turns, if the pilot was not used to using the left stick.

Inside loops were nice and tight. Aileron rolls were slow, and required lots of elevator correction to minimize heading or altitude change. Stall turns were crisp due to that effective rudder. Sustained inverted flight was possible by using lots of down elevator. Just for kicks, I held in full down and controlled the altitude by varying the throttle setting. I was able to struggle through outside loops, but only after descending for additional speed while inverted. I could not get an intentional spin, only a gradual spiral dive. I could not get it to stall either, just drop the nose a little, and keep flying. The *Slow Poke Sport 40* really excels at slow speed flight. That wing needs hardly any airspeed to keep on lifting, and the controls were effective at a high angle of attack. Landings were very smooth, and touch-and-go's were a walk in the park. This was all great fun, and totally consistent with the style of the airplane.

The Great Planes *Slow Poke Sport 40* has great appeal for the sport flier. This model is suitable for accomplished beginners through experienced pilots who want a low-key

change of pace. It is cute looking, much more attractive than boxy trainers, yet less serious than a scale model. Its flying characteristics range from trainer-like to all-around sport style, with some mild aerobatics thrown in. The manufacturer has combined modern kit engineering and computer drafting, with conventional wood materials and

die-cutting of parts. It is a moderately complex building experience that is satisfying to complete and a pleasure to fly. 