

R/C SPORT & COMPETITION

AEROBATICS

A Comprehensive Guide for Sport and Competition R/C Pilots

by Robert T. Motazedi



PRICE: **\$13.95**

PLUS S&H

Measuring 8-1/2" x 11", this softbound book is an excellent "Next Step" for R/C modelers ready to expand their flying skills.

R/C SPORT & COMPETITION AEROBATICS

A COMPREHENSIVE GUIDE FOR SPORT AND COMPETITION R/C PILOTS

By DR. ROBERT MOTAZEDI

Containing 120 pages, this book is illustrated with over 50 photographs, 26 detailed drawings, and comprehensive instructions on performing all the basic aerobatic maneuvers. From take-off to landing, the author gives you the step-by-step guidance needed to develop the aerobatic skills that all RC'ers strive for after they have soloed and have mastered the basics of R/C flight.

The subjects covered include:

Trimming Your Plane, Aerobatic Maneuvers, Stunt and Pattern Airplanes, Engines, Choosing a Radio, and Contest Preparation and Actual Competition.

Available direct from:

R/C Modeler Corp., P.O. Box 487, Sierra Madre, CA 91025

Phone: (800) 523-1736 • Fax (626) 355-6415 • See RCM Order Page for details

traits of its smaller predecessor. It also opens up the class for a plethora of 4-stroke engines which are a natural match with this class of airframe but which are rare in smaller engine sizes.

The Slow Poke Sport 40 comes in a brightly decorated 4-1/2" x 7-1/2" x 38" box that is packed full of neatly arranged sheets, sticks, and packaged hardware. The full-size rolled plans are on two 36" x 46" sheets. Great Planes also includes a wonderful 28-page manual, liberally illustrated with photos and line drawings. The "centerfold" of the manual is a reduced size plan sheet that comes in real handy as a cross reference when studying the descriptions in the manual.

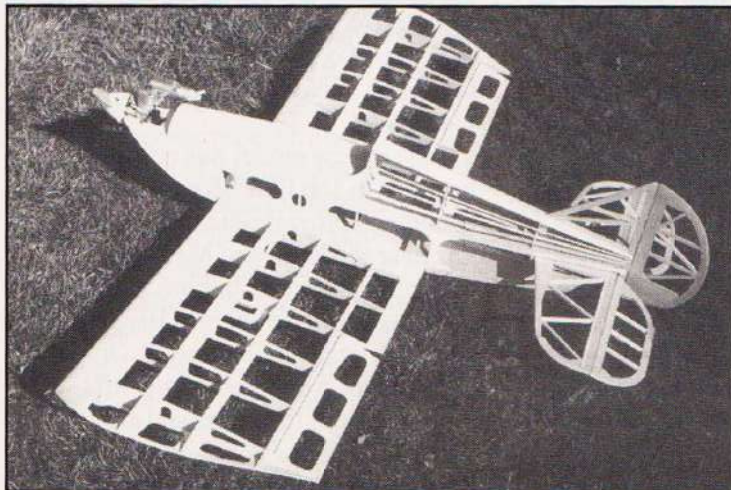
The Slow Poke 40 comes with a lot of supplied hardware which is all first rate. All the hardware supplied was used. The manual also includes a thorough list of additional hardware and material the builder will need. Great Planes wheels, wheel collars, and spinner were used on the review aircraft. It is obvious that a lot of thought and care went into executing this kit.

Construction:

Upon examining the kit contents, the sheet wood, in particular, seemed unusually hard and heavy for a Great Planes kit; however, the model is big enough to carry some extra weight. As usual for Great Planes, the die-cutting

was all crisp and clean. Everything is designed to be built on a flat board or table and over the plans, which should be protected by Great Planes plan protector (plastic) or wax paper. Great Planes thin and medium CA's, 30-minute epoxy, and aliphatic wood glues were used for all construction.

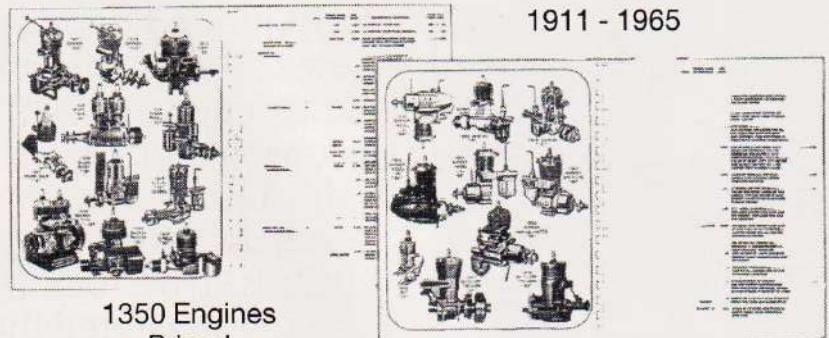
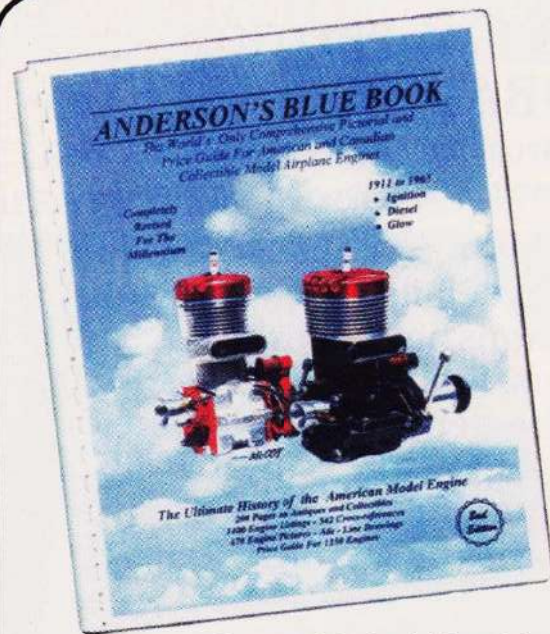
The tail feathers are nominally 1/4" thick. Curved sections are made from two laminations of die-cut 1/8" sheet, and straight pieces are sticks anywhere from 1/4" to 5/8" wide. The horizontal stab also has a 1/4" x 1/4" basswood spar that gets edge-glued to the 1/4" x 1/2" trailing edge strip to stiffen it. The tail seemed a little heavy, but it is very large



Now A Complete Price Guide !!

ANDERSON'S BLUE BOOK 2ND EDITION

1st Edition accepted for 3 Years in the U.S. & 28 Countries as
"THE ENGINE COLLECTORS BIBLE"



Current Market Values Established by Long Time Engine Collectors and Dealers
Plus Referencing the Bi-Monthly M.E.C.A. Swap Sheet
More Pages 200 More Cross-references 542 More Pictures 670
More Earlier History From 1911 with 1400 Engines Listed
This Second Edition Obsoletes Our First Edition
Don't Pay Too Much For Model Engines On The Internet Use This Price Guide

\$36.95 PLUS Shipping & Handling

+\$4.00 S&H - USA

+\$8.00 S&H - Canada & Mexico

+\$10.00 S&H - All Others

To Order, write/call: RCM, P.O. Box 487, Sierra Madre, CA 91025 • (800) 523-1736 • (626) 355-1476 • Fax (626) 355-6415
(Regular Book Store Price \$45.95)

and needs quite a bit of structure to keep it stiff. The elevators are connected using a 1/8" music wire joiner after the stabilizer is installed in the fuselage. Great Planes provides a swatch of CA hinge material from which the builder cuts the hinges for all surfaces.

Fuselage construction begins by sub assembling the sides and top crutch. The front third of the top crutch consists of a plywood engine mounting plate which has a doubler under it and the required 2° right thrust built into it. The rear 2/3 of the crutch is fabricated from two die-cut balsa pieces that are joined along the centerline, then keyed into the forward plywood crutch. The fuselage sides are made of 1/8" plywood in front to just aft of the wing saddle. The rear of the fuselage under the stabilizer is a 1/8" die-cut balsa sheet and is joined to the forward plywood with 1/8" x 1/2" balsa strip wood. The fuselage is assembled upside down on the top crutch. Die-cut plywood bulkheads are tabbed to the crutch and the fuselage sides. The bottom is cross-planked using 3/32" balsa. The top forward fuselage uses a 3/32" sheet wrapped over balsa bulkheads and stringers. The stringers need to be relieved to allow the fuel tank to be installed high enough in the

fuselage. I joined three pieces of 3/32" sheet to make a wide plank, then soaked it in ammonia water to make it easier to bend. I wiped the excess water off and glued it down using Great Planes wood glue while it was still damp. The rear upper fuselage uses stringers and a 3/16" cap over balsa bulkheads.

The wing is assembled in three main subassemblies. The center section has three ribs. The center rib includes a 5-layer balsa and plywood sandwich in the forward section which includes the leading edge pin. Dual 1/16" plywood dihedral braces are used on the main 3/8" x 1/2" balsa spars. The center section is sheathed with 1/16" balsa top and bottom.

The Slow Poke Sport 40 uses a flat-bottom airfoil and it is a cinch to build the outer wing panels on a flat table; however, the wing chord was roughly 1-1/2" wider than my building board! Because of the simplicity of the structure, this was not a problem. There are four sets of wing spars, the leading edge sheeting runs to the first set. Then there are the main spars that get joined between the 1/16" ply dihedral braces attached to the center section. Another pair of intermediate spars are located midway between the main spar and the

final pair of spars which form the hinge line for the "barn door" style ailerons. The ailerons are built over a piece of 3/32" sheet which forms the bottom surface. The "wedgie" wingtips are 3/32" sheet edge-glued along the bottom of the tip rib, then ramp up between the spars to match the top surface. I did not think the tips were stiff enough as shown, so I added webs between the spars and fit to the wing tip sheet. In fact, the robust structure only called for a few shear webs along the main spar, but there was adequate material to provide a full set of shear webs for all four spar pairs. Plywood reinforcements are installed on the first three ribs to support the landing gear blocks. The outer panels can be finish-sanded prior to joining to the center section.

Covering:

The review model was covered and trimmed in Top Flite MonoKote; Cream overall with Royal Blue trim, Orange and Green speed lines, and Maroon checkerboard on the bottom. I ordered custom license numbers in Bright Red from Custom Cut Lettering & Graphics:

<http://rcplanet.com/grafix>

These were first class and easy to install. The "Slow Poke" decals are Maroon edged in White and Black and

show up nicely on either a light or dark background. Only one "Sport 40" decal was supplied — thus it was not used. The engine compartment and (internal) tank compartment were painted with Top Flite Lusterkote Royal Blue to match the surrounding covering. The manual does not mention installing the windshield; I used "Goop" adhesive from the local hardware store. A 1/4 scale Williams Brothers pilot was also used. I did not like how high he sat so I cut about 3/8" off the bottom of the torso to get his head down. Unfortunately he is still a little too tall and gets a face full of engine oil each flight! I think the review model turned out rather pleasing and has a jaunty look. I also think a lot of Slow Pokes are going to be kit bashed into some sorta scale wannabes.

Radio:

The review model was equipped with a nice simple Futaba SkySport 4 radio, five Hobbico CS-61 standard size servos, a Tower standard size receiver, and a 1000 mAh flat battery pack. The fuselage crutch also includes the servo mounting bays right over the C.G., and all the pushrod holes line up with servos installed in this location. The builder only needs to install a plywood doubler along the mounting flanges so that the screws holding the servos have more to bite into. Depending on the engine used, the throttle servo may end up on either side of the fuselage. The throttle servo should be installed on the same side of the fuselage as the throttle arm on the engine. It's possible to locate the elevator and rudder servos in the middle of the tray, and the throttle servo can be moved to either side to accommodate an engine swap that moves the throttle arm to the other side of the fuselage. The Slow Poke is supplied with steel rod pushrods to the tail and a flexible plastic tube pushrod for the throttle. There is a lot of room behind the firewall for an oversize battery pack. Again, depending on the engine, it is likely that the battery will have to go forward to achieve the required balance point. The receiver can go anywhere the builder desires. The Slow Poke 40 is designed to use individual servos for each aileron. These can be connected together and driven through a "Y" harness (as was done with the review kit) or the servos can be driven on separate channels on a computer radio. The trays supplied for the wing servos can be configured for whatever size servos the builder chooses to use. Standard size Hobbico CS-61's were used on the review kit and were driven through a Futaba harness. The manual identifies recommended low rate

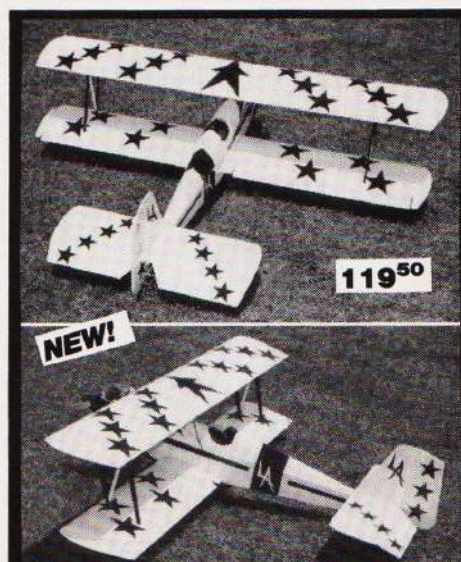
and high rate surface movements. The SkySport 4 does not have dual rates, so all control throws were set slightly less than the recommended high rates. The recommended throws for the ailerons were identified as equal up and down; however, with dual servos, it is easy to induce differential movement so the aileron moving up moves farther than the aileron moving down. The aileron servo arms were offset two splines forward at neutral to provide differential throw.

Engine:

I just happened to have an O.S. Max LA 40 in "natural" aluminum finish — just like the one in the model pictured on the cover of the kit box. The plans say to put washers under the engine mount to get 2° down thrust, but I used 2° thrust wedges from Sterling. Everything is exposed and easy to get at, and the LA 40's rear needle valve placement is easy to get used to! I had a very difficult time getting the fuel tank installed high enough in the fuselage so that the centerline of the tank was level with the carb barrel. I got it within 1/4" below using a Sullivan RST-8 fuel tank and by aggressively hollowing out the upper fuselage stringers. The O.S. was equipped with an 11 x 4 (later changed to a 10 x 6) Power Point prop and a 2-3/4" Great Planes nylon spinner. There is a large compartment under the engine; though the plans and instructions do not indicate one, I added a drain hole for any fuel or oil that may find its way in.

The review model required 6 oz. of ballast located under the engine to get to within the aft C.G. limit indicated on the plan. I was disappointed in this, but recognize that the LA 40 is a fairly light engine. For example, the Super Tiger GS-40 with the large muffler weighs about 3.5 oz. more than the LA 40, and an O.S. 52 4-stroke weighs about 4.5 oz. more than the LA 40. Thus, using a different kind of engine and maybe an aluminum spinner instead of plastic, the Slow Poke could hit its C.G. with little or no additional ballast. I also considered substituting lighter plastic pushrods to the tail in place of the supplied steel rods, but I like the stability and stiffness the steel rods provide.

The final trimmed-out weight was 6 lbs. 4 oz. versus an advertised 6.0-6.5 lbs. I mentioned that the review kit had a lot of hard/heavy wood, yet the final weight was smack in the middle of the target range — lending credibility to the published weight. At that weight, the review kit achieved a glider-like 13.3 oz. per square foot wing loading. At this loading, forward motion equates to flight!



119⁵⁰

62" LAZY ACE
"An Outstanding Flying Machine"
"Lands Like A Feather"
 The perfect biplane, fully aerobatic, IMAA legal, 1200 sq. in., 8.5 to 9.5 lbs., .61-.91 2c, .90 4c.



144⁵⁰

LAZY ACE
"The biplane that flies like others wish they could"

Custom handcrafted, highest quality kits available. All kits are complete: rolled plans, balsa, spruce, plywood. All parts machine cut and packaged. Perfect companion to the larger 4-stroke engines. Perfect for .90-1.08 2c, and 1.2 and up 4c engines, 76" span, 1800 sq. in.

SUPER LAZY ACE* 96" span, 2800 sq. in. area. The beautiful flying big model for big engines. Quadra to Sachs 3.7cid. Plans only (no kits). (Includes instructions and all templates and postage)	BIG LAZY ACE* 84" span for 2cid engines (2150 sq. in.) Plans only (no kits). (Includes instructions and all templates and postage)
--	--

30⁰⁰
 Partial kits available — please write for info

TRIPLE PLAY
"The fun airplane of the '90s"

Build her as a low wing, shoulder wing, or cabin model. For ST3000 & G38 engines. 88" span, 1400 sq. in.



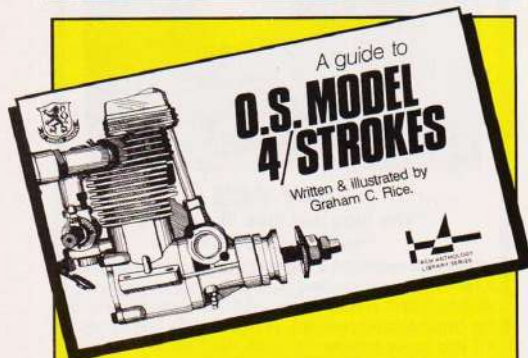
139⁵⁰
CHUCK CUNNINGHAM'S
SKY MASTER INDUSTRIES
 2440 Colonial Pkwy., Ft. Worth, TX 76109 (817) 924-9737
 Use MasterCard or Visa, personal check or money order (no C.O.D.'s). Add \$7.00 for shipping and handling. Texas res. add 7 3/4% sales tax. Foreign orders write for shipping costs. DIRECT SALES ONLY www.skymaster.net
 SEND LARGE SASE FOR CATALOG



ONLY 3 STAMPS

or \$1.00 cash for shipping.
Send for it today.
We'll also include a specials
sheet that has additional
clever hard to find
items.

HARRY B. HIGLEY & SONS INC.
P.O. Box 532, Glenwood, IL 60425
Web Site <http://members.aol.com/harryhig>



A GUIDE TO O.S. MODELS 4/STROKES

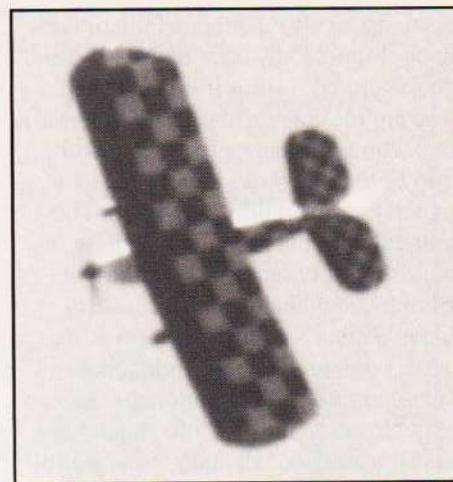
A heavily illustrated, step-by-step guide to the popular O.S. 4-stroke engines. Learn to analyze glow plugs, fuel, oil, and engine wear, as well as rebuild the entire engine. (covers engines prior to 1991.)

To order your copy for
only \$7.95 call:
(800) 523-1736

Or See RCM Order Page, Page 195

Flying:

The LA 40 hand-starts easily, even new. All I had to do was dial in the high mixture to a slightly rich setting. The low throttle servo throw turned out to be dead on, allowing for a dependable idle and will just barely kill the engine at full low trim. Everything wiggled the right way so it was time to taxi out and fly. It was a little breezy with a quartering wind from the left. I hit the throttle and got a left swerve, easily controlled by the powerful rudder. I ran on the wheels awhile then pulled it up. I discovered I needed a healthy slug of up trim and a little left. I got it under control and started feeling it out. Elevator felt responsive but the ailerons were a little sluggish for my taste. It did not have any trace of wildness but not quite a trainer either. I brought it in to reset the surfaces and re-center the trims. The next flight, I had someone else try it. Pretty much the same all the way through, only he wished it would go a little faster too. Next time I increased the aileron throw and switched from the 11 x 4 to a 10 x 6 Power Point prop. As the engine sounded good, I nudged it a little leaner too. This time the take-off roll was noticeably shorter and the airspeed faster. The aileron sensitivity now matched the elevator. I had a third person fly it, an experienced flier who had not been able to fly much recently due to work. He started wringing it out and was having a lot of fun. The Slow Poke does a nice job on any positive G maneuvers, but the flat bottom airfoil limits its performance going the other way. It is easy to sustain inverted flight with some forward stick, but it does not like to do outside loops! The Slow Poke looks big in the air, aiding with orientation. At full throttle it is nice to fly high in big turns and maneuvers while you share airspace with other fliers. It is also quite willing to be slowed down and brought in low and close in. It glides pretty well dead-stick, but it will slow down quickly if you hold the nose up too high. Rudder response is powerful with some nose-down pitching coupled in. It will do nice turns on rudder, but I could not get a rudder roll out of it. At 6+ pounds with the 40, vertical performance is not part of the repertoire, but I had a lot of fun with full power wing-overs. There is enough rudder for knife-edge but not enough power to hold it for long. Four of us tried and failed to get a spin out of the Slow Poke, at least two of us want to try it with a little less nose weight in it. The LA 40 is a delight to run and is an easy hand-starter at 1/4 throttle. It runs dependably at all throttle settings and is a great match



for the Slow Poke. On the test flight day, there was another club member breaking in an O.S. FS-52 for his Slow Poke — I think that will be a great match of engine and airframe.

Flying Part 2: The Hop-Up

After the initial successful flight tests, I opted to make some changes to see if I could wring a little more performance out of the Slow Poke. The first step was an engine upgrade. I stuffed an HP VT-49 4-stroke in place of the LA 40 and fit it with a 12 x 6 Power Point prop. This engine was 1.5 oz. lighter than the LA 40 with nose ballast previously used, and I let the C.G. drift aft by that amount. In order to help compensate for the difference in inside and outside turning ability caused by the flat bottom wing, I introduced "differential elevator" similar to the ailerons by offsetting the servo arm by two splines back. This results in more down than up elevator. I also squeezed a little more throw into the ailerons. The results of this have been promising. The extra thrust offered by the 12 x 6 prop now results in brisker take-offs and climb-outs. Airspeed is marginally faster and sustains better climbs. However, the engine is still breaking in and, to date, is not as user-friendly as the LA 40.

Conclusion:

This is a classic sport model. Great Planes Slow Poke Sport 40 is well engineered and easy to build but not as a first kit. It fits the needs of the novice pilot looking for a good airplane after a trainer or for an old pro looking for some low stress flying with a bird that is easy to see. The O.S. LA 40 is nicely matched, but I am sure that a lot of 45-60 4-strokes are going to find their way into the air on a Slow Poke. The kit is inexpensive and just screams out for customization. I think it will be the basis for a lot of club events in the near future. Coining the old expression, "Thin may be in but fat is where it's at!"

