

PHOTOGRAPHY: BOB LOBOZZO & DENNIS HYNES

The author grades ACE R/C's *Bingo* with the title "flyer". Pleased with the performance and the kit, he gives the facts on both.

An FM Product Review: ACE R/C's Bingo

By Bob Lobozzo

Some planes are simply models. This one,
says the author, is a "flyer".

What's the kit like? How does it fly? Two of the most popular questions asked at the flying field. So let's jump ahead: the kit is very good and the plane flies great. In fact, I would call the plane a "flyer". This is

an expression I use to describe those models that are good flying aircraft and most likely taken to the flying field when you want to fly.

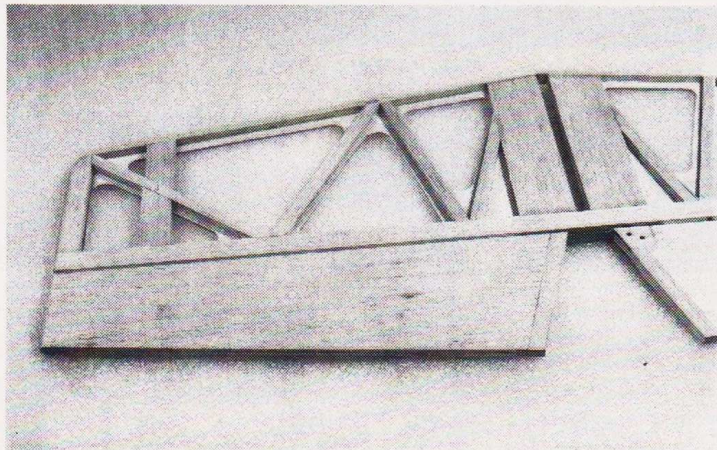
If you have read this far, I probably caught your attention, so let's review this new kit from ACE. Somehow I feel that this article

may be a little different than is usual practice. Be honest, you're not interested in how I glued rib A to spar B. The instructions that accompany the kit do a good job of that. I think what the average reader wants to know is that if they build the model, what problems might they run into, what should they expect from the kit, what did the author use for the items not supplied in the kit, and what does the author really think.

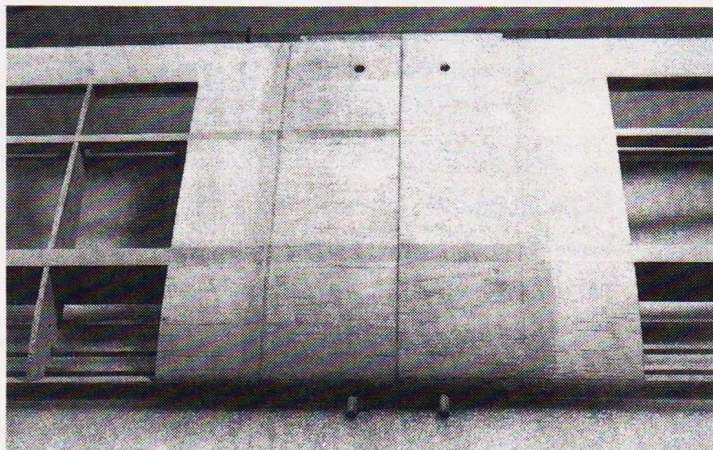
If you're still interested, let's begin. I will try to run through this in some logical sequence to get from start to finish.

To be honest, my first impression of the *Bingo*, upon picking up the box it comes in, was that this was an awful heavy package, for a supposedly light aircraft. Once all the die-cut parts are removed from their respective sheets and the scrap discarded, weight seems more reasonable.

The kit includes full size plans and the two rolled sheets show all the parts. An excellent landing gear, canopy, wheel pants, exceptional quality balsa wood, and a very good hardware package are also included. A plastic cowl and top piece are part of the construction material supplied. Design philosophy utilizes hardwood spars for the wing,



A lite ply outline of the horizontal stab (above left) provides the foundation for the surface. A balsa strip framework is then glued on top of that. The elevator is



solid sheet. Only the wing center section is sheathed (above right). Bob wrapped this with substituted 6-inch wide fiberglass tape.

with the fuselage basically all lite-ply. The tail assembly is all-balsa except for the horizontal stab which is part lite-ply. Balsa is also used for the wing ribs, wing center section sheeting and trailing edge.

The die-cutting is good quality, and removing the parts should present little problem. A photo illustrated construction manual takes you through the building sequences.

Now that you have all the parts in front of you and are ready to build, you will be faced with your first problem. Do you make the short wing version or the long wing? The short wing simply uses one less rib per wing panel. ACE recommends the long wing for the two cycle .60s.

My intention was to use a K&B .65 engine, but I did not want the long wing. Contrary to suggestion I built the short wing. I now know the short wing flies very well, so for me, I made the right decision.

Realistically, manufacturers cannot please everyone. They do want to sell their products however, and will sometimes cut corners to produce a model to sell at a competitive price. They can go the other way and include costly items or time saving parts to induce the buyer to purchase their product. This is my way of saying I do not like plastic parts in a basically wood aircraft. Some people love them: one man's drink is another man's poison, etc.

If the part supplied does the job intended, it would then not be fair to criticize the material selected. I do believe if built per instruction, with all the material supplied, the builder will be rewarded with a good model. Any minor alteration I made in building my *Bingo* would have no effect on the flying characteristics of the model.

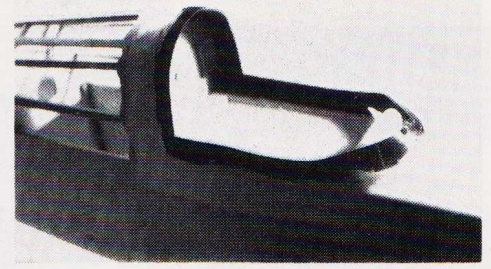
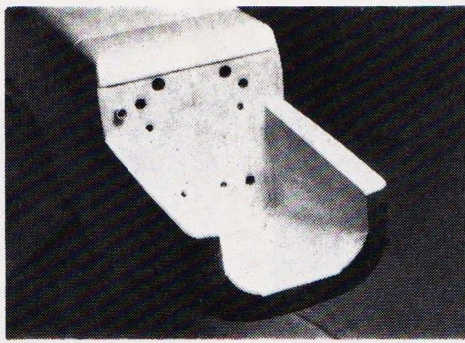
The wing was started first. It is simple construction, and following the instructions should take you through the assembly without any problems. Make sure you follow the manual and insure the spars fit flush with the top of the ribs. This will require additional work but it is necessary. Once that is done, you will also probably have to trim the tops of the spar webs. With these small tasks accomplished, the wing goes together very quickly.

Designed to be built on a flat surface, the bottom of the wing ribs from main spar to trailing edge are flat. This yields a straight wing and the construction method makes it strong. The wing tips are lite-ply which adds strength to this sometimes abused area of the wing.

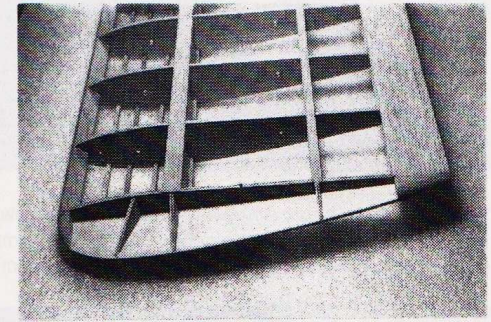
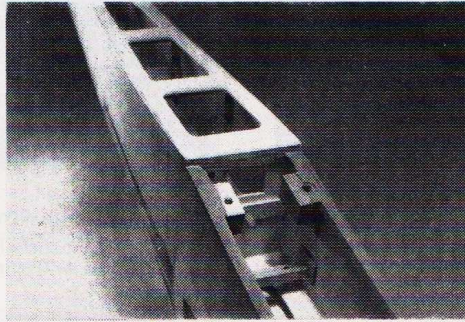
I did not use the material supplied for the center section. I substituted what I normally use, 6-inch wide fiberglass cloth from Sonic-Tronics. The wing dihedral was reduced to a total of $\frac{3}{4}$ or $\frac{3}{8}$ -inch under each wing tip. The glass cloth was secured using Hobby epoxy Formula II and, for the rest of the wing, ZAP CA was used.

The horizontal stab is built on a die-cut lite-ply piece which forms the entire bottom of the stab and balsa strips form the top surface. The elevators, fin, and rudder are simple sheet balsa. I have always felt that attaching the control horns to soft balsa was inadequate. I inlaid small pieces of $\frac{1}{32}$ -inch ply into the elevator and rudder under the location of the supplied control horns.

In order to get the elevator horn closer to the side of the fuselage I added a $\frac{3}{16} \times \frac{1}{2}$ inch section of balsa to the inside of the elevators. This is not necessary, I like to keep the unsupported section of control rod, coming out of the rear side of the fuselage as short as



Four of all those firewall holes (above left) are for the radial mount of a K&B .65. The others are for a glass filled mount. For painting purposes, an Epoxolite fairing was added around the canopy/fuselage joint (above right). A die-cut lite ply piece forms the bottom rear of the fuselage (below left). Lite ply is also used to outline the wing tip (below right) and helps resist dings.

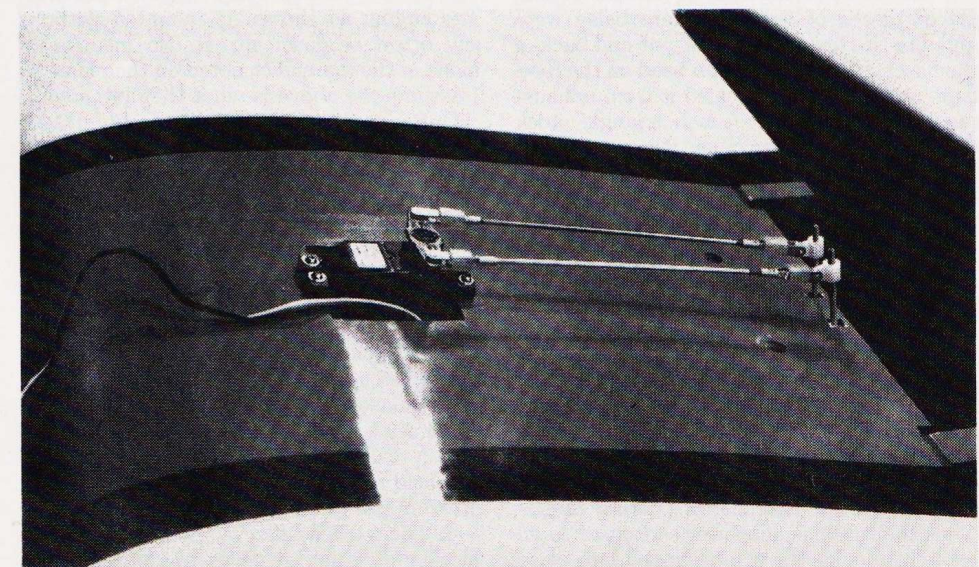


possible. If you add this piece, make sure it does not interfere with your rudder movement. The rudder and elevator halves were tapered to reduce weight. I confess to adding scrap pieces of balsa here and there to accommodate my building methods. In all cases the balsa was the lightest available and I sanded a lot to offset the addition. I doubt if I added an ounce to the total weight.

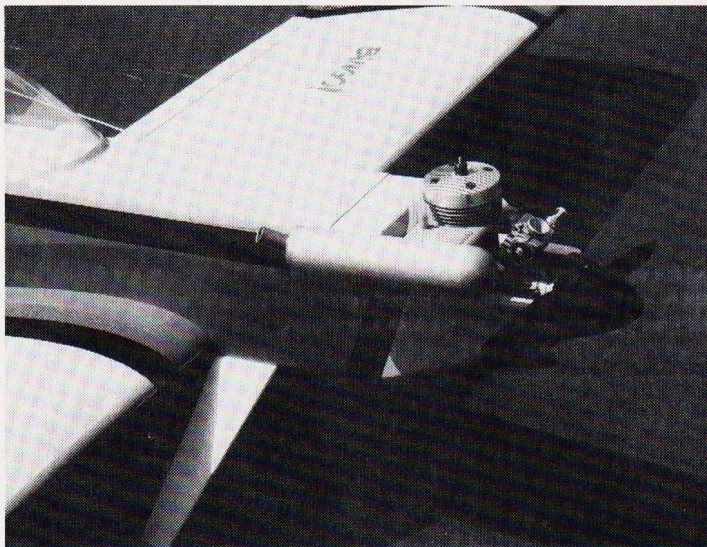
The fuselage goes together quickly. As previously noted, the fuselage is just about all lite-ply. The plastic top runs from the firewall to the back of the canopy, which is mounted to it. Construction includes splicing the fuselage sides together. While this is an annoying bit of extra work, doublers running from the firewall to out past the wing opening negate any strength lost. The only complaint was that the die-cut fuselage bottom rear piece was cut improperly. I believe someone got the fuselage true length lines wrong during the pattern making. It also had slots for tabs

which did not exist. The needed modifications are quickly determined and accomplished as this is a very minor problem.

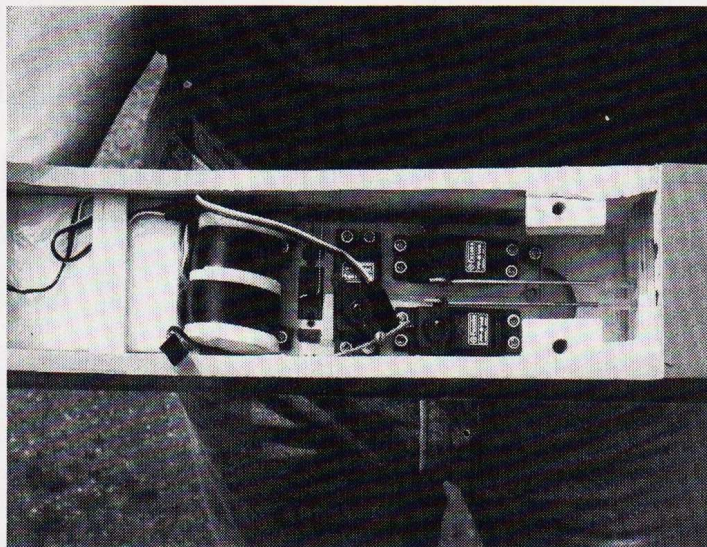
I used the plastic top and must admit, although apprehensive, it worked perfectly. Realizing that I had to paint the top to match the color scheme chosen, I decided to use a fairing on the canopy. This required a balsa doubler in front of the existing canopy former, slightly smaller than that former. This formed a lip that the canopy was glued to. ZAP CA secured the canopy to the plastic and wood. The canopy was then masked off with electrical tape and SIG Epoxolite, a two part light weight filler, was used to blend the canopy into the structure. The tape was not removed until the painting was finished and the resulting appearance was worth the effort. The plastic engine cowl I did not use. I fabricated a simple balsa cowl and permanently attached it. Due to the canopy change I had to add small balsa pieces behind the



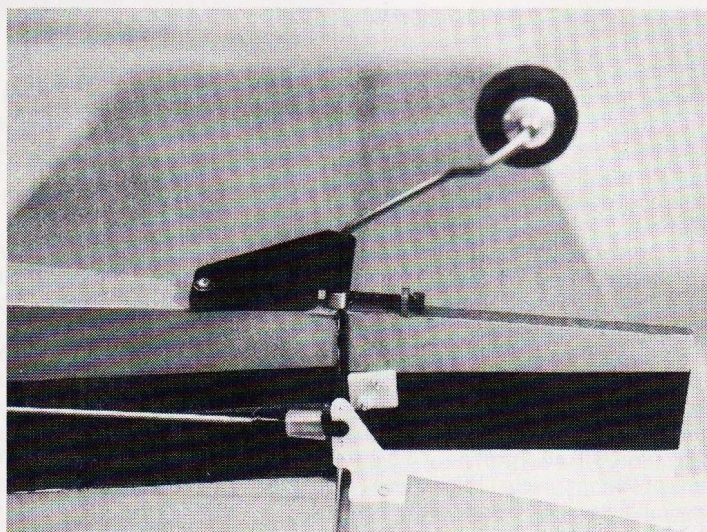
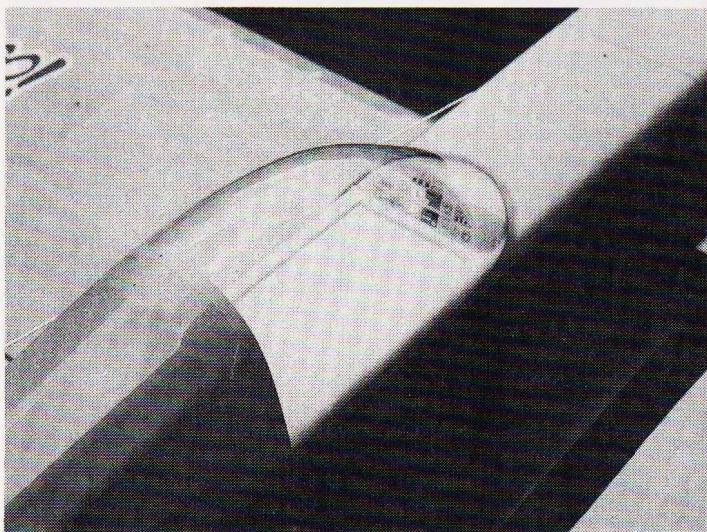
ACE R/C's Bingo



The K&B .65 in Bob's *Bingo* turns a Master Airscrew 12-8 prop (above left) which Bob cut down to 11 $\frac{1}{4}$ -inch diameter. The combination offers plenty of power. There's enough room in the radio compartment (above right) for ample



clearance between servo output arms. Finished canopy/cockpit (below left) has a bogus instrument panel. The DuBro tailwheel bracket (below right) was modified with a 4-40 screw as a tiller arm under the rudder.



canopy, between the stringers, to provide an area to adhere the covering to.

The hatch for the fuel tank is a nice touch but does not provide a fuelproof seal. A couple of pieces of $\frac{1}{8}$ -inch square balsa were glued to the fuselage at the front and back of the hatch opening. A silicon bead on the fuselage, under the hatch sealed it from exhaust residue. In addition, $\frac{1}{4}$ -inch triangle stock was added to the front of the wing saddle and $\frac{1}{8} \times \frac{3}{16}$ -inch was added to widen the fuselage wing saddle. This was done to allow for an adequate silicone seal for the wing to fuselage joint. The firewall was drilled for the K&B .65 backplate mount and also holes were started for a Dave Brown glassfilled nylon engine mount. In the event it was decided to try various engines, a new mount would be required, so we planned ahead.

With the structure pretty much assembled it was time to mount the wing to fuselage and install the wing hold down mounting system. It was noted that the wing saddle was not cut out for the aileron bearing blocks. Once the fuselage sides were trimmed to accept the blocks, the wings slipped into place. Following the instructions provided, it was a hassle-free installation. The stab was temporarily mounted and a check made of the wing

and tail incidences. It appears that the horizontal stabilizer is to be set at zero degrees to the thrust line with the wing also set at zero degrees or perhaps very slightly positive. The engine as shown, is mounted without any offset or down thrust. No mention is made in the manual or noted on the plans, so I assume the above is what they intended.

DuBro nylon steel rod assembly (#102) were installed for the elevator and rudder controls. I always use a solid steel rod in a nylon tube for these controls and disregarded the nylon tube assembly supplied.

The main landing gear was attached per instruction with sheet metal screws. The wheel pants were joined and reinforced on the inside. They add a lot of class but will probably not last if used on grass fields. A deviation was made in the tail wheel assembly. A DuBro .60 size tail wheel bracket was used. Instead of bending the tail wheel wire strut to attach to the rudder, the strut was shortened and held in place with a wheel collar. The set screw in the wheel collar was replaced with a 4-40 socket head screw approximately one inch long, which attaches to the rudder. A flat is filed in the wire strut for the screw to bottom against and thread lock on the top of the screw is used to further secure things. A

photo of the tail wheel assembly is included in the article.

UltraCote by Carl Goldberg was used to cover the model. I have used this plastic film covering before and have come to prefer it over all other materials. I used both the newly reintroduced UltraCote plus some of the old I had on hand, I could not tell the difference between the two.

The tail assembly was glued to the fuselage and braced. I made a mistake here and added triangle stock to the top of the stab also. I just assumed it was supposed to be there and added it from stock material I had on hand. When I could not find the material in the kit I should have known something was wrong.

Prior to covering, the hinge slots had been cut and now the hinges were permanently installed. I used SIG Easy Hinges instead of the ones supplied.

The aircraft was assembled and set up with a K&B .65 engine and Futaba radio. The fuel tank was a 14-ounce Dubro. The battery pack was located under the fuel tank. A weight check indicated the plane weighed an ounce or two over seven pounds and the balance point was slightly behind the most rearward C.G. location. As mentioned before, the

dihedral was $\frac{3}{8}$ -inch under each tip. One degree of downthrust and one degree of right thrust were added to offset the engine. I did not seal any of the hinge lines and the control throws were set at maximum. The prop was a 12-8 Master Airscrew cut down to $11\frac{1}{4}$ inches diameter. Fuel was Tower Power 10% premium.

The ailerons are flat and the aileron neutral position was set level with the bottom of the wing. To explain further, the wing is flat on the bottom from the main spar to the trailing edge. If you laid the bottom of the wing panel on a flat board the entire wing behind the main spar would lie perfectly flat including the aileron. It will appear that the ailerons are raised up too much when set this way. I could not find any mention of this on the plans or in the construction booklet and it definitely should be explained.

The K&B .65 engine was bench run prior to installing it in the model. After installation and when everything was done, a full tank of fuel was run through the engine. Usually, if anything is loose or overlooked or missing, this is the time you will find it, during the first engine run of the model. I do this at home before the first flight. This is also the time to verify the radio installation, perform a range check, insure the control surfaces move in the correct direction, etc. If I can successfully put the model together, start the engine, taxi around and get through a tank of gas I can reasonably be assured that when at the flying field I will be ready to fly. I will also have any odd support equipment that may be required for a particular model, normally not carried in the flite box.

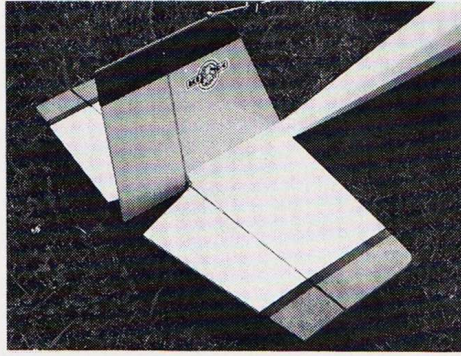
Arrangements were made with my good friend Dennis Hynes to take the flight pictures for the article.

Test flight day was cloudy but warm with a light cross wind. A fast check of everything, the engine fired up, and the *Bingo* was sent upstairs. With the K&B running on the rich side, the plane easily broke ground and climbed out with authority. Leveling off showed the plane to be in almost perfect trim for straight and level flight. Flying for photo passes took up some time and some basic maneuvers were performed. With the exception that the aileron response was too slow for my liking, the plane handled extremely well. Towards the end of the first flight, I had my first problem. The back of the engine muffler came off. Because of the dramatic sound increase I knew the muffler system had failed. The engine was quickly throttled back and the *Bingo* was landed.

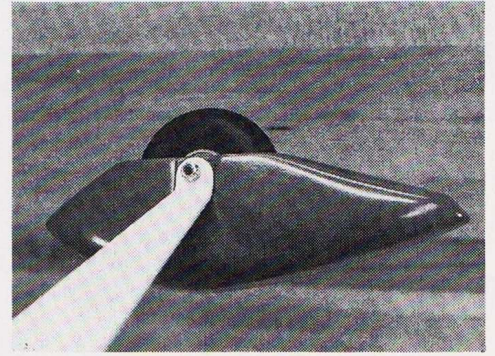
Another short flight was made. It was uneventful but noisy. That, plus, the only photos of the model being on one roll of film, it was decided to terminate flying. A call to K&B fell on friendly ears. They had made a change in the threaded rod that holds the front and rear of the muffler together and advised me that they would send out the parts that day. I honestly do not know what failed or if I may have been at fault. K&B simply backed their product and I received the needed parts at no charge in short order. I could not possibly ask for more than that.

With the photos developed, and the muffler back together and the roll rate increased, it was now time to fly.

A fair amount of subsequent flying revealed this *Bingo*'s characteristics. I realize



DuBro nylon/steel rod assemblies (#102) are used for pushrods with the elevator and the rudder (above left). The wheel pants (above right) are molded ABS plastic but may not stand up to rough grass fields.



that the *Bingo* was intended for sport flying, but its full potential was explored. The control surfaces are all set at neutral with no trim required for flying. This tends to indicate that the force arrangement of incidences, balance, engine thrust line, etc. are about right. Pulling straight up from level flight shows the model holding a fairly straight line. This is important because at this point the wing is unloaded and any unwanted trim problems will usually show up with deviation from a straight vertical track. Knife edge flight is good, it holds a decent line allowing respectable point rolls.

Another plus is that on use of rudder to either correct the aircraft heading or perform a maneuver, the aircraft responds pretty much in yaw only. No noticeable wing or nose dipping occurs. Rolling over to inverted shows that very little down elevator is required to hold straight and level flight attitude. The above traits are absolutely necessary for a decent aerobatic aircraft and awful nice in a sport model.

Ground handling and take-offs are trouble free, the plane gets off the ground fast if asked to. Flight speed is moderate, not too fast, and the plane has a positive solid feel in the air. The *Bingo* will bounce with the type of main landing gear used and its location, if you get careless on landing. Landings are in the *Ugly Stik* class. The plane can be landed quite slowly with good control response right down to the deck. No low speed snap rolling tendency has been noted. If a 12-6 prop was substituted, for the smaller diameter I am using, the landings can be slowed down even more.

Spins both erect and inverted are easily done and stop upon release of the controls. Inside and outside snaps are good, again stopping as soon as the controls are released.

All of the AMA or FAI maneuvers are well within the capabilities of the *Bingo*. Vertical performance, although very good, is limited by drag and engine power when compared to the potential of a competition pattern ship. I have been flying the full FAI turnaround schedule with my *Bingo*. It will comfortably go through the routine well enough for me to focus on flying and not worry about the plane. It will pretty much go where it's pointed and hang in there when asked.

The K&B .65 engine performed very well. It has proven perfectly reliable and has shown good power, pulling the *Bingo* around easily through any reasonable maneuver.

Summing up, I expected the plane to fly well, otherwise I would not have built it. I did not expect it to fly as well as it did. Nor did I expect the semi-symmetrical airfoil to work as well as it did. For all-out aerobatic flying I would still favor a full symmetrical airfoil but for other than that I'm not sure anymore.

In my mind the plane is strong enough and flies well enough to handle the power of any .60 size pattern engine available. This would certainly be completely out of the scope of the original flying concept, but the potential for greater performance is there.

This has been both a fun project for me and a learning experience. I hope you got something out of the article and now to answer the last question. Would I recommend the *Bingo*? Yes — as I said in the beginning, this is a flyer!

